POND SITING REPORT

Florida Department of Transportation

District 7

SR 45 (US 41) at SR 54 PD&E Study

From South of SR 54 Intersection to North of SR 54 Intersection

Pasco County, Florida

Work Program Item Segment No. 419182-1

Efficient Transportation Decision Making (ETDM) Number: 7883

January 2026



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

Professional Engineer Certificate

Project: US41/SR54 PD&E STUDY

FPN: 419182-1-22-01

Location: Pasco County, Florida

Client: FDOT-District 7

This item has been digitally signed and sealed by Jennifer Flores, P.E. on the date adjacent to the seal. Signature must be verified on any electronic copies.

Name: Jennifer Flores

Signature:

P.E. Number: 84372











SR 45 (US 41) at SR 54 PROJECT DEVELOPMENT & ENVIRONMENT STUDY

POND SITING REPORT

January 2026

Work Program Item Segment No: 419182-1

FDOT

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate capacity and operational improvements at the intersection of United State (US) Highway 41/State Road (SR) 45 and State Road (SR) 54 in Pasco County, Florida. Each roadway is a six-lane divided facility intersecting at-grade with a box span traffic signal. US 41 (SR 45) is a major north-south arterial that provides access to Tampa, Lutz, Land O' Lakes, and Brooksville. SR 54 is a major east-west arterial that connects US 19 near New Port Richey to the west and US 301 in Zephyrhills to the east.

The length of the project is approximately 1.7 miles along US 41 (SR 45), with limits on SR 54 from approximately 1.2 miles east and 1.2 miles west of the intersection, as well as a 0.3-mile section of Dale Mabry Highway (SR 597). This intersection is located in the Land O' Lakes area of unincorporated Pasco County, Florida. This intersection is under the jurisdiction of FDOT.

The purpose of this Pond Siting Report is to discuss the stormwater management plan for the project which evaluated two roadway alternatives—Single Point Urban Interchange (SPUI) and Diverging Diamond Interchange (DDI). This report identifies alternate pond locations, floodplain compensation locations, discusses right-of-way requirements, and documents estimated pond construction costs associated with the alternative pond sites. The preferred pond sites and Floodplain Compensation (FPC) sites identified in this report correspond to the Diverging Diamond Interchange layout.

Existing Drainage Conditions

The project is located within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The project boundaries are located within 3 basins: the South Branch basin and the Upper Rocky Creek Basin West of the intersection; and the Lake Hanna Outlet Basin East of the intersection.

The US 41 (SR 45) at SR 54 project corridor is generally divided into eight (8) hydrologic basins: south of the intersection includes Basins 3 and 4; middle of the intersection includes Basin 2, north of the intersection includes Basin 1; east of the intersection includes Basin 7 and Basin 8; and west of the intersection includes Basin 5 and 6. General basin boundaries were initially identified utilizing boundaries presented by SWFWMD permits. The hydrologic basin limits were confirmed or adjusted utilizing the Pasco County one (1) foot contour LIDAR (Light Detection and Ranging) data and design survey. Per water management discussion and existing permits, all of the hydrologic basins identified are open basins. The west portion of the intersection is within 2 waterbody ID's; Water Body ID# 1456 and WBID 1463S.

Closed storm sewer systems and wet detention ponds are presently managing the intersection's stormwater and utilizes existing cross drains to discharge into the surrounding wetlands. Each quadrant of the existing interchange area is currently developed with commercial land uses. There is a CSX railroad line along the west side of the interchange.

Proposed Drainage Conditions

The project will not have adverse impacts to the area's water quality or quantity. The design of the stormwater management facilities for the project is governed by the rules set forth by the SWFWMD and FDOT. Water quality treatment and water quantity attenuation requirements will comply with the guidelines as defined in SWFWMD and

FDEP's Environmental Resource Permit (ERP) manual, Volume I (FDEP) and II (SWFWMD), and 2024 FDOT Drainage Manual. This report will be submitted after House Bill HB 7053/Senate Bill SB 7040 Department of Environmental Protection Rules relating to stormwater has been passed as law. New stormwater criteria will be incorporated in final design.

Summary

Alternative pond sites and alternative floodplain compensation sites have been identified along the project corridor within each proposed basin. The evaluation provides estimates for right-of-way needs implementing a volumetric analysis that accounts for the water quantity and quality requirements set forth by FDOT and SWFWMD. Please refer to Table 1 and Table 1A for the Pond and FPC Site Alternatives Evaluation Matrix which includes a right-of-way cost estimate. Items marked as TBD will be updated upon completion of analyses by other disciplines. It should be noted that right-of-way cost estimates are not real estate appraisals and do not reflect market value. The FDOT uses appraisals that comply with the Uniform Standards of Professional Appraisal Practice (USPAP) for acquisition purposes.

The pond sizes and locations are subject to change during final design when detailed data becomes available for the permeability rates of the soils, estimated seasonal high-water elevations, and final roadway profiles. Please refer to Table 7 for the Summary of Stormwater Management Facility Recommendations for the preferred pond alternatives. Preferred pond alternatives are coordinated with the geometric and hydraulic requirements of the DDI configuration.

Table 7 – Summary of Stormwater Management Facility Recommendations

Basin Name	Preferred Pond	Approximate Location	Normal Water Level	Inside Berm Elevation	Design High Water Elevation	Minimum Gutter Elevation	Outfall
1	Exist. Pond D	1103+60 (LT) @ BL_SB_US 41	69.26	73.00	71.25 (25YR/24HR)	73.28	Lake Vienna
2	SMF 2D	2050+00 (RT) @BL BL_NB_US41	68.14	71.60	70.55 (25YR/24HR)	72.38	Lake Floyd
3	SMF 3D	2022+00 to 2034+40 (RT) @ BL_NB_US41	68.50	71.03	70.03 (25YR/24HR)	73.54	Wetland D
4	SMF 4D	2007+00 and 2019+00 (RT) @ BL_NB_US41	68.25	70.60	69.26 (25YR/24HR)	71.74	Wetland B
5	SMF 5D	3002+00 (RT) @ BL_SR54_EB	64.00	66.90	66.15 (25YR/24HR)	67.15	Lake Thomas
VILLAGE LAKE SHOPPING CENTER DR	No pond required for this Basin						Lake Floyd

Table 1– Pond Alternatives Evaluation Matrix

Pond Site Alternative	FEMA Flood Zone	Wetland Impacts (acre)	Arch./ Historical Impact Potential (Y/N)	Threatened or Endangered Species Impacts (Y/N)	Contamination Risk Rating (For preferred alternatives)	Major Utility Conflict Potential (Y/N)	Existing Land Use	Future Land Use	Pond costs*	Ranking
SMF 3A	X	X	N	N	-	Y	Industrial	Industrial	$1,054,634	3
	AE	X	N	N	-	N	Transportation	Mixed Use		
SMF 3B	X	X	N	N	-	N	Upland Hardwood Coniferous Mix	Mixed Use	$1,249,850	4
SMF 3C	X	X	N	N	Low	N	Commercial& Services	Mixed Use	$1,849,091	2
SMF 3D	X	0.05	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
SMF 4D	X	X	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
SMF 7A	A	X	N	N	-	N	Commercial& Services	Mixed Use	$16,146,632	2
SMF 7B	X	X	N	N	Medium	N	Commercial& Services	Mixed Use	$42,847,550	1
SMF 7C	X	X	N	N	-	N	Commercial& Services	Mixed Use	$26,434,115	3
SMF 8A	AE	0.28	N	N	No	N	Shrub & Brushland	Mixed Use	$1,711,072	1
SMF 8B	AE	0.18	N	N	-	N	Commercial& Services	Mixed Use	$4,985,393	3
SMF 8C	AE	0.8	N	N	-	N	Residential Medium Density	Mixed Use	$1,966,013	2
SMF 2A	AE	3.81	Y	N	High	Y	Commercial& Services	Mixed Use	$16,797,060	2
SMF 2B	AE	4.17	Y	N	-	Y	Commercial& Services	Mixed Use	$25,880,545	3

Pond Site Alternative	FEMA Flood Zone	Wetland Impacts (acre)	Arch./ Historical Impact Potential (Y/N)	Threatened or Endangered Species Impacts	Contamination Risk Rating (For preferred alternatives)	Major Utility Conflict Potential (Y/N)	Existing Land Use	Future Land Use	Pond Costs*	Ranking
SMF 2C	X	0.07	Y	N	-	Y	Commercial& Services	Mixed Use	$15,072,196	4
SMF 2D	AE	X	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
SMF 6A	AE	X	N	N	Medium	N	Residential Low Density	Residential	$372,224	1
SMF 6B	AE	X	Y	N	-	N	Residential Medium Density	Residential	$518,100	3
SMF 6C	X	X	Y	N	-	N	Residential Medium Density	Residential	$447,228	2
SMF 5A	X	X	Y	N	Low	N	Residential Low Density	Commercial	$4,252,569	2
SMF 5B	X	X	Y	N	-	N	Residential Low Density	Commercial	$4,579,789	4
SMF 5C	X	X	Y	N	-	N	Residential Low Density	Commercial	$3,842,349	3
SMF 5D	X	0.11	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1

*Preliminary pond constructions costs. Actual pond const. costs determined during final design.

Table 1A- FPC Site Alternatives Evaluation Matrix

FPC Site Alternative	FEMA Flood Zone	Wetland Impacts (acre)	Arch./ Historical Impact Potential (Y/N)	Threatened or Endangered Species Impacts (Y/N)	Contamination Risk Rating (For preferred alternatives)	Major Utility Conflict Potential (Y/N)	Existing Land Use	Future Land Use	FPC Site ROW Costs	Ranking
FPC 105D	AE	0.00	TBD	N	TBD	N	Industrial	Residential	TBD	1
FPC 106D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Industrial	TBD	1
FPC 107D	AE	0.10	TBD	N	TBD	N	Commercial& Services	Industrial	TBD	1
FPC 109D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Industrial	TBD	1
FPC 110D	AE	0.002	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 112D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 117D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 118D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 119D	AE	0.01	TBD	N	TBD	N	Industrial	Industrial	TBD	1
FPC 125D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 126D	AE	0.00	TBD	N	TBD	N	Commercial& Services	Mixed Use	TBD	1
FPC 120A	AE	0.00	N	N	Medium	Y	Transportation	Mixed Use	$31,002	2
FPC 120B	AE	0.00	N	N	-	N	Upland Hardwood-Coniferous Mix	Mixed Use	$31,002	3
FPC 120C	AE	0.00	N	N	-	Y	Industrial	Industrial	$83,865	4
FPC 117A	AE	0.00	N	N	Low	N	Commercial & Services	Mixed Use	$461,791	2
FPC 117B	AE	0.08	N	N	-	N	Commercial & Services	Mixed Use	$8,383,228	3

FPC Site Alternative	FEMA Flood Zone	Wetland Impacts (acre)	Arch./ Historical Impact Potential (Y/N)	Threatened or Endangered Species Impacts (Y/N)	Contamination Risk Rating (For preferred alternatives)	Major Utility Conflict Potential (Y/N)	Existing Land Use	Future Land Use	FPC Site ROW Costs	Ranking
FPC 110E	AE	0.00	N	N	Low	N	Commercial & Services	Mixed Use	$345,223	2*
FPC 113A	AE	0.00	N	N	Medium	N	Commercial & Services	Mixed Use	$291,757	2
FPC 113B	AE	0.08	N	N	-	N	Commercial & Services	Mixed Use	$673,055	3
FPC 113C	AE	0.63	N	N	-	N	Commercial & Services	Mixed Use	$8,911,340	4
FPC 116A	AE	0.00	N	N	-	N	Commercial & Services	Mixed Use	$6,497,334	3
FPC 116B	AE	0.00	N	N	Medium	N	Commercial & Services	Mixed Use	$5,354,982 (FPC 116B & FPC 114B)	2
FPC 116C	AE	0.00	N	N	-	N	Commercial & Services	Mixed Use	$9,234,723	4
FPC 114A	A	0.00	N	N	-	N	Commercial & Services	Mixed Use	$6,497,334	4
FPC 114B	A	0.00	N	N	Medium	N	Commercial & Services	Mixed Use	$5,354,982 (FPC 116B & FPC 114B)	2
FPC 114C	A	0.00	N	N	-	N	Commercial & Services	Mixed Use	$1,033,086	3
FPC 115A	AE	1.86	N	N	No	N	Wetland Forested Mixed	Wetland Forested Mixed	$1,357,800	2
FPC 115B	AE	0.00	N	N	-	N	Commercial & Services	Residential	$4,667,248	4
FPC 115C	AE	0.00	N	N	-	N	Commercial & Services	Residential	$952,501	3
FPC 126A	AE	0.00	N	N	-	N	Residential	Residential	$214,190	2**
FPC 100A	AE	0.00	N	N	-	N	Residential	Residential	$354,928	4
FPC 100B	AE	0.00	N	N	Low	N	Residential	Residential	$356,061	2
FPC 100C	AE	0.00	N	N	-	N	Residential	Residential	$262,780	3

FPC Site Alternative	FEMA Flood Zone	Wetland Impacts (acre)	Arch./ Historical Impact Potential (Y/N)	Threatened or Endangered Species Impacts (Y/N)	Contamination Risk Rating (For preferred alternatives)	Major Utility Conflict Potential (Y/N)	Existing Land Use	Future Land Use	FPC Site ROW Costs	Ranking
FPC 102A	AE	0.00	N	N	Low	N	Residential	Residential	$93,340	2
FPC 102B	AE	0.00	N	N	-	N	Residential	Residential	$109,563	3
FPC 102C	AE	0.00	N	N	-	N	Residential	Residential	$109,563	4
FPC 103A	AE	0.32	N	N	No	N	Residential	Residential	$607,227	2
FPC 103B	AE	0.00	N	N	-	N	Residential	Residential	$2,616,087	4
FPC 103C	AE	0.00	N	N	-	N	Residential	Residential	$382,364	3
FPC 104A	AE	0.00	N	N	Low	N	Residential	Residential	$169,152	2
FPC 104B	AE	0.00	N	N	-	N	Residential	Residential	$1,277,511	4
FPC 104C	AE	0.00	N	N	-	N	Residential	Residential	$981,840	3
FPC 107A	AE	0.00	N	N	Low	N	Residential	Residential	$169,152	2
FPC 107B	AE	0.00	N	N	-	N	Residential	Residential	$169,152	3
FPC 107C	AE	0.13	N	N	-	N	Industrial	Residential	$696,765	4
FPC 110A	AE	0.10	Y	N	Low	N	Commercial & Services	Industrial	$892,744	2
FPC 110B	AE	0.00	N	N	-	N	Commercial & Services	Mixed Use	$2,267,485	4
FPC 110C	AE	0.03	N	N	-	N	Residential	Residential	$1,078,759	3

*Preferred site if Basin 2 Alternative 2, SMF 2B, is selected.

**Preferred site if Basin 8 Alternative 3, SMF 8C, is selected.

SECTION 1: INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate capacity and operational improvements at the intersection of United State (US) Highway 41/State Road (SR) 45 and State Road (SR) 54 in Pasco County, Florida. Each roadway is a six-lane divided facility intersecting at-grade with a box span traffic signal. US 41 (SR 45) is a major north-south arterial that provides access to Tampa, Lutz, Land O' Lakes, and Brooksville. SR 54 is a major east-west arterial that connects US 19 near New Port Richey to the west and US 301 in Zephyrhills to the east.

The length of the project is approximately 1.7 miles along US 41 (SR 45), with limits on SR 54 from approximately 1.2 miles east and 1.2 miles west of the intersection, as well as a 0.3-mile section of Dale Mabry Highway (SR 597). This intersection is located in the Land O' Lakes area of unincorporated Pasco County, Florida. This intersection is under the jurisdiction of FDOT.

Figure 1 Project Location Map is shown in Appendix 1.

The purpose of this Pond Siting Report is to discuss the stormwater management plan for the project which evaluated two roadway alternatives—Single Point Urban Interchange (SPUI) and Diverging Diamond Interchange (DDI). This report identifies alternate pond locations, floodplain compensation locations, discusses right-of-way requirements, and documents estimated pond construction costs associated with the alternative pond sites. The preferred pond sites and Floodplain Compensation (FPC) sites identified in this report correspond to the Diverging Diamond Interchange layout.

The pond siting analysis documentation for the conceptual pond sites is found in Section 6, Proposed Pond Sites and calculations are grouped by the two roadway alternatives Appendix 6, Pond Alternatives Design Calculations-SPUI and Appendix 15- Pond Alternatives Design Calculations-DDI of this report. All figures for this report are included in Appendix 1. Other supporting documentation and information is provided in the remaining appendices. The vertical datum used for the calculations is NAVD88 unless otherwise specified.

SECTION 2: EXISTING DRAINAGE CONDITIONS

The project is located within Pasco County and is within the jurisdiction of the Southwest Florida Water Management District (SWFWMD). The Southern project limits along US41 are located within the Upper Rocky Creek Basin and the Lake Hanna Outlet Basin. The Western project boundaries are located within the South Branch Basin and the Upper Rocky Creek Basin. The Northern and Eastern project limits are in the Lake Hanna Outlet Basin.

The project is located within two watersheds, in the East Pinellas Anclote Watershed to the West of the intersection and in the Cypress Creek Watershed East of the intersection. The existing drainage patterns and basin limits have been approximated based on design survey, aerial imagery, topographic maps, and existing roadway design plans. Existing volumetric calculations were obtained from recent SWFWMD Environmental Resource Permits (ERPs) for US 41 (SR 45) and SR 54. The US 41 (SR 45) at SR 54 interchange is drained by urban (curb and gutter) drainage systems and stormwater piping. US 41 (SR 45) within the project limits drains to existing FDOT wet ponds located on the east side of US 41 (SR 45), south of SR 54. These ponds outfall to existing wetland areas east of the ponds which drain into the Cypress Creek Watershed and ultimately to the Hillsborough River.

The intersection drains to existing FDOT wet ponds located on the Southeast corner of the intersection. These ponds outfall to existing wetland areas just east of the existing ponds. The area continues to drain into the Cypress Creek

watershed which flows to the southeast and, ultimately, to the Hillsborough River. The corridor east of the intersection has two different outfall locations. The portion of the corridor in front of the Village Lakes Shopping Center, drains to an existing FDOT wet pond located south of SR 54 and east of US 41 (SR 45). This pond outfalls to an existing wetland area south of the pond. This wetland area then drains into the Cypress Creek watershed which flows southeast and, ultimately, to the Hillsborough River. The remaining eastern portion of the corridor to the end of the project limits, along SR 54, outfalls into an existing FDOT pond located north of SR54 and ultimately into Lake Toni. The areas south of the intersection along US41 from W County Line Rd to the area just past Dale Mabry Hwy and Brinson Rd drain to existing FDOT wet ponds that outfall into wetlands located east of the ponds and ultimately to the Hillsborough River. The area of SR 54 west of the intersection of US 41 (SR 45) at SR 54 drains west to a system of roadside ponds that outfall into surrounding wetlands and, ultimately, drains into the East Pinellas Anclote Basin. The corridor area located at the northern portion of US41 to the north project limits outfalls to an existing FDOT pond then discharges into Lake Vienna.

Each quadrant of the existing interchange area is currently developed with commercial land uses. There is a CSX railroad line along the west side of the interchange, and there are also several wetland areas and floodplain areas adjacent to the interchange study area.

The project is contained within the boundaries of the following Water Body Identification numbers defined by FDEP:

Anclote River/Coastal Pinellas County Planning Unit:

- 1456 South Branch Anclote River (EPA TMDL- Pollutants: TN and TP. No FDEP TMDL.)

Coastal Old Tampa Bay Tributary Planning Unit:

- 14635S Lake Thomas Outlet (Waters Not Attaining Standards on 303(d) List for Dissolved oxygen. No developed TMDL)

Hillsborough River Planning Unit:

- 1451K Lake Padgett Drain

There are no Outstanding Florida Waters within the project limits.

2.1 TOPOGRAPHY & HYDROLOGIC FEATURES

There are five (5) existing cross drains, shown in Appendix 2, Existing Drainage Map, which convey stormwater runoff under SR 54 and US41. Generally, the cross drains convey stormwater runoff in a north to south direction under State Road 54 with one (1) of the culverts, conveying runoff in a west to east direction under US41. Cross drain 4into, (2) 8'X3' CBC, connects two wetlands in a north to south direction along SR54 at station 1452+90.

There are three (3) existing outfalls serving State Road 54 and four (4) existing outfalls service US 41 (SR 45) within the project limits. The outfalls along SR 54 are as follows: Wetland at Sta 1420+00 (LT) via a system of roadside linear ponds, Wetland east of Sienna Village via roadside linear ponds; FDOT Pond 1A via a closed storm sewer system through an existing drainage easement located west of the Lowe's property, and FDOT Pond 2A north Sta. 1509+00 via a closed storm sewer system. The outfalls along US41 are as follows: FDOT Pond A via a closed storm sewer system, FDOT Pond B via a closed storm sewer system, FDOT Pond C via a closed storm sewer system, and FDOT Pond D via a closed storm sewer system.

Table 2 shows a Summary of Existing Cross Drains.

Table 2 – Summary of Existing Cross Drains

Cross Drain	Approximate Location *(CL Const. SR 54)*	Description	Outfall
1	2568+80 (CL Const US 41)	(1) – 30" RCP	Wetland
2	1431+25	(1) – 18" RCP	Wetland
3	1436+50	(1) – 42" RCP	Wetland
4	1452+90	(2) – 8' X 3' CBC	Wetland
5	1420+50	(2) – 30" RCP	Wetland

2.2 SOILS DATA & GEOTECHNICAL INVESTIGATIONS

The United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey of Seminole County, Florida has been reviewed for the project corridor. Depth to Water Table data is illustrated in Figure 7 – USDA NRCS Depth to Water Table, in Appendix 1. Hydrologic soil group data is illustrated in Figure 8 – USDA NRCS Hydrologic Soil Group, in Appendix 1.

Twenty-two (22) types of soils were encountered along the project corridor. The soil types vary and range from Hydrological Soil Group (HSG) A to HSG B/D. Type A soils are very well drained soils with low water tables and Type B/D soils have a moderate infiltration rate when thoroughly wet and the potential to have a clay pan or clay layer near the surface. Table 3 – USDA Soil Survey Information summarizes and lists the soil types including relevant information.

Table 3 – USDA Soil Survey Information

Soil No.	Pasco County USDA Soil Name	Depth to Water Table	HSG
		Depth* (feet)	
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	0.98	A/D
6	Tavares sand, 0 to 5 percent slopes	4.75	A
8	Sellers mucky loamy fine sand	0	A/D
9	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	1.01	B/D
11	Adamsville fine sand, 0 to 2 percent slopes	1.67	A/D
21	Smyrna fine sand	1.01	A/D

Soil No.	Pasco County USDA Soil Name	Depth to Water Table	HSG
		Depth* (feet)	
22	Basinger fine sand, 0 to 2 percent slopes	0.49	A/D
23	Basinger fine sand, depressional, 0 to 1 percent slopes	0	A/D
24	Quartzipsamments, shaped, 0 to 5 percent slopes	6.0	A
26	Narcoossee fine sand, 0 to 2 percent slopes	2.75	A
38	Urban land, 0 to 2 percent slopes	>6.56	-
42	Pomello fine sand, 0 to 5 percent slopes	2.75	A
46	Cassia fine sand, 0 to 5 percent slopes	1.93	A/D
52	Samsula muck, frequently ponded, 0 to 1 percent slopes	0	A/D
73	Zolfo fine sand, 0 to 2 percent slopes	2.49	A

Soil No.	Hillsborough County USDA Soil Name	Depth to Water Table	HSG
		Depth* (feet)	
2	Adamsville fine sand, 0 to 2 percent slopes	1.67	A/D
5	Basinger, Holopaw, and Samsula soils, depressional	0	A/D
27	Malabar fine sand, 0 to 2 percent slopes	0.49	A/D
29	Myakka fine sand, 0 to 2 percent slopes	1.01	A/D
43	Quartzipsamments, nearly level	>6.56	A
53	Tavares-Millhopper fine sands, 0 to 5 percent slopes	4.75	A
61	Zolfo fine sand, 0 to 2 percent slopes	2.49	A

2.3 ENVIRONMENTAL CHARACTERISTICS

Per the Preliminary Engineering Report dated August 2024, it has been determined that no FDOT PD&E Section 4(f) involvement is anticipated.

2.3.1 Land Use Data

The US 41 (SR 45) at SR 54 intersection project area is located within unincorporated Pasco County. Pasco County's future land use for the portions of the corridor predominantly includes retail/office/residential along the east side of the intersection. On the west side, the intersection is bordered by retail/office/residential, light industrial and residential (six dwelling units per gross acre). South of the interchange, at the SR 597 and US 41 (SR 45) split, future land uses include heavy industrial, residential (nine dwelling units per gross acre) and some retail/office/residential. A map of the Pasco County's 2025 future land uses for the project area is shown in Future Land Use Map, in Appendix 1.

2.3.2 Cultural Features

A Cultural Resources Assessment Survey (CRAS) was prepared in December 2024 for the original Preferred Alternative (the SPUI). A CRAS Addendum was prepared in January 2026 for the updated Preferred Alternative (the DDI). The CRASes were performed to identify and evaluate any significant or potentially significant resources that would be impacted by the project. Both surveys had a finding of No Adverse Effect to Historic Properties.
Below is a list of community features located within ¼-mile of the project study area (there are no parks or cemeteries located within the project area):

Places of Worship

- Keystone Community Church
- Iglesia Asambleas De Dios
- Church of the Lakes
- Willow Bend Community Church

Schools/Daycare Facilities

- Center Academy-Lutz (middle and high school)
- Kids' Stuff Preschool, Private School, and Childcare

Parks, Cemeteries, and Fire Stations

- Pasco County Fire Station 23

Healthcare facilities and Hospitals

- CVS Pharmacy
- Watson Peggy MD Family Medicine
- Tampa Orthopedic Clinic
- Morton Plant North Bay Hospital
- St Luke's Dental
- Roberto Garcia MD PA
- Palm Medical Center
- Sandhill Pediatrics
- David Herson MD PA
- Mahesh Bhambore MD

2.3.3 Natural Resources

For the purposes of this report, the National Wetlands Inventory (NWI) mapping for Pasco County was used to locate and quantify estimated impacts associated with the alternative pond locations. The final identification of wetlands will be conducted and evaluated in the Natural Resources Evaluation Report. Preliminary wetland mitigation costs at the potential impact sites for the pond alternatives shall be quantified using the Senate Bill costs, Florida Statutes Section 373.4137. It is anticipated that during final design and permitting of the project the Uniform Mitigation Assessment Method (UMAM), per Chapter 62-345 Florida Administrative Code, shall be used to classify, describe, and quantify the impact areas and associated mitigation costs.

2.4 EXISTING DRAINAGE BASINS

The US41/SR54 project corridor is generally divided into eight (8) hydrologic basins as listed in Table 6 below. General basin boundaries were initially identified utilizing boundaries presented by the SWFWMD and the FDEP. The hydrologic basin limits were confirmed or adjusted utilizing the Pasco County one (1) foot contour lidar data and design survey. The preferred roadway alternative; Diverging Diamond Interchange (DDI), includes Basins 1-5 which are shared with the second roadway alternative that was evaluated; the Single Point Urban Interchange (SPUI). Please refer to Table 4 for the Summary of Existing Drainage Basins.

Table 4 – Summary of Existing Drainage Basins

Basin Name	Begin *(CL Const. SR 429)*	End *(CL Const. SR 429)*	Outfall
1	2645+60 @ CL 41	2695+60 @ CL 41	Lake Vienna
2	2617+47 @CL 41 1451+68 @ CL 54	2655+14 @ CL 41 1478+62 @ CL 54	Lake Floyd
3	200+00 @ CL. 597 2588+87 @ CL.41	217+00 @ CL.597 2617+47 @ CL. 41	Wetland D (Cypress Creek)
4	North Begin of Project	2588+87 @ CL. 41	Wetland B (Cypress Creek)
5	1424+60	1433+34	Lake Thomas Outlet
6	Henley Rd	1424+60	South Branch Anclote River
7	1476+81 @ CL 54	1497+38 @ CL 54	Lake Floyd
8	1497+38 @ CL 54	1521+74 @ CL 54	Lake Toni
Village Lake Shopping Center Dr Basin	Raden Drive/Carson Rd	Raden Drive/Village Lakes Shopping Plaza	Lake Floyd

Please refer to APPENDIX 2 and APPENDIX 11 for Existing Drainage Maps.

2.4.1 Existing Basin 1

SPUI configuration: Existing Basin 1 limits begin at CL 41 Sta. 2645+60 to approximately Sta. 2695+60. Basin 1 is the most northern basin within the project limits. Permit SWFWMD ERP permit 43-29402-1 was used to estimate the

northern boundary of existing Basin 1. Existing storm drains collect runoff from the outer limits of basin 1 and flows through pipes to structure D-32 (per SWFWMD permit 43-29402-1) at Sta. 2671+40. Discharge generated within the basin includes median, sidewalks, open collection systems, and offsite properties. Stormwater runoff drains through a 48" pipe to existing FDOT Pond D. Existing FDOT Pond D treats and attenuates discharge from within the basin which outfalls to Lake Vienna.

DDI configuration: For the DDI analysis, Existing Basin 1 limits begin at BL_NB_US41 Sta. 2081+00 to approximately Sta. 2131+00.

2.4.2 Existing Basin 2

Existing Basin 2 is located at the intersection US 41 (SR 45) at SR 54. The basins limits consist of Sta. 2617+47 to Sta. 2655+14 on CL 41 and Sta. 1449+44 to Sta. 1478+62 on CL 54. Existing drainage patterns consist of an existing closed storm drain system that collects all discharge from medians, sidewalks, and travel lanes within the basin limits to an existing pond, existing Pond C, east of US41 which outfalls to Lake Floyd. In the Northeast quadrant, commercial properties are included within the basin limits since they connect to the storm drain system directly. Existing pond C treats and attenuates runoff from existing Basin 2 and includes wetland mitigation within the pond basin per SWFMD ERP permit 43-12854.

In the SWFMD ERP permit 43-12854 Basin 2 is labeled as Basin C and is divided into two sub -basins called Basin C Quasi -Equivalent treatment for SR 54 and Basin C. In this Pond Siting report Basin C sub-basins are referred to as Existing Basin 2 Quasi -Equivalent treatment for SR 54 and Existing Basin 2.

Existing Basin 2 Quasi -Equivalent treatment for SR 54 is located on CL 54 at station Sta. 1449+44 to Sta. 1454+64. Existing drainage patterns consist of an existing closed storm drain system that collects all discharge from medians, sidewalks, and travel lanes within the basin limits into an existing double 3x8 box culvert which discharges into a wooded area located within the existing floodplain. In the permit this equivalent treatment basin was implemented where it was impractical to provide treatment for the previous project widening at the project termini where the existing roadway was dropping to elevations which were too low to connect conveyance facilities to the project ponds.

2.4.3 Existing Basin 3

SPUI configuration: Existing Basin 3 consists of four areas. The first area includes roadway pavement and ditches from Sta. 200+00 to Sta. 217+00 at alignment CL. 597. The second area covers the southbound roadway pavement and railway, as well as the northbound roadway pavement, sidewalks, median ditches, and roadside ditches along both sides of Land O' Lakes Blvd from Sta. 2588+87 to Sta. 2617+47 at alignment CL. 41. The third area includes the ROW for existing pond B and the pervious area west of Brinson Rd. from Sta. 204+00 to Sta. 208+20 at alignment CL. 597. The fourth area is the additional right of way needed for proposed SMF 3A, SMF 3B, and SMF 3C. Stormwater runoff from the roadway is collected and conveyed in ditches and storm drain systems that discharge to existing Pond B for treatment per SWFMD ERP permit 43-12854. Pond B discharges to Wetland D, which ultimately outfalls Cypress Creek.

DDI configuration: Existing Basin 3 consists of four areas. The first area includes roadway pavement and ditches from Sta. 503+70 to Sta. 514+00 along alignment BL_SB_CR597_US41. The second area covers the southbound roadway pavement and railway, as well as the northbound roadway pavement, sidewalks, median ditches, and roadside ditches along both sides of Land O' Lakes Blvd from Sta. 2021+80 to Sta. 2049+90 along alignment BL_NB_US41. The third

area includes the ROW for existing pond B near Sta.2034+00 along alignment BL_NB_US41. The fourth area is the additional right of way needed for the pond alternatives. Stormwater runoff from the roadway is collected and conveyed in ditches and storm drain systems that discharge to existing Pond B for treatment per SWFMD ERP permit 43-12854. Existing Pond B discharges to Wetland D, which ultimately outfalls Cypress Creek.

2.4.4 Existing Basin 4

SPUI configuration: Existing Basin 4 consists of two areas. The first area includes Land O' Lakes Blvd. northbound and southbound roadway, starting from the intersection of Land O' Lakes Blvd and Willow Bend Parkway to approximately Sta. 2588+87 at alignment CL. 41. The second area includes the ROW of existing Pond A per SWFWMD ERP permit 43-12854. Drainage from the existing roadway pavement, from curb to curb, is collected by storm drain systems and outfalls to existing Pond A for treatment, ultimately discharging into Wetland B and then to Cypress Creek.

DDI configuration: Existing Basin 4 consists of two areas. The first area includes northbound and southbound Land O' Lakes Blvd. from the intersection of Land O' Lakes Blvd and Willow Bend Parkway to approximately Sta. 2021+80 along alignment BL_NB_US41. The second area includes the ROW of existing Pond A per SWFWMD ERP permit 43-12854. Drainage from the existing roadway pavement, from curb to curb, is collected by storm drain systems and outfalls to existing Pond A for treatment, ultimately discharging into Wetland B and then to Cypress Creek.

2.4.5 Existing Basin 5

Existing Basin 5 encompasses the western portion of the US41/SR54 project from the end of existing Basin 6 at approximately Sta. 1424+60 as the western boundary to approximately Sta. 1433+34 along SR 54 and is entirely contained within the East Pinellas Anclote Watershed. Waterbody ID 1463S is located within Existing Basin 5 is classified as not attaining water quality and therefore on the Study List for Dissolved Oxygen. A causative pollutant has not been identified.

The stormwater runoff from the existing SR 54 right-of-way corridor in existing Basin 5 is captured within an open collection system consisting of an interconnected system of roadside treatment ponds. The system collects onsite runoff from SR 54 in linear ponds where attenuation and treatment is provided and then outfalls to the wetland area east of Sienna Village's boardwalk, along westbound SR 54 approximately Sta. 1435+50 (RT).

DDI Configuration: For the DDI configuration existing Basin 5 is analyzed in 2 sub-basins: Existing Basin 5-1 and Basin 5-2. Existing Basin 5-1 encompasses drainage areas that contribute to existing pond P13E2, and existing Basin 5-2 encompass drainage areas that contribute to existing linear ponds P15E2, , P16E2, P18E2 and P19E2 per SWFWMD permit #43-16251-18.

2.4.6 Existing Basin 6

Existing Basin 6 encompasses the western portion of the US41/SR54 project from Henley Rd, as the western boundary, to approximately Sta. 1424+60 along SR 54 and is entirely contained within the East Pinellas Anclote Watershed. The basin is considered by the SWFWMD as an "open basin". TMDLs for Total Phosphorus and Total Nitrogen were established by EPA in 2008 WBID.

The stormwater runoff from the existing SR 54 right-of-way corridor in existing Basin 6 is captured within an open collection system consisting of an interconnected system of roadside treatment ponds. The system generally collects onsite runoff from SR 54 in linear ponds where attenuation and treatment is provided then discharges to a wetland

north of Sta. 1420+00 and through two (2) existing 30" reinforced concrete pipe (RCP) cross drains that outfall to the wetland area south of eastbound SR 54. The ponds in series are interconnected with equalizer pipes beginning with existing pond P7E1, then existing pond P10E1, and the last pond in series, existing pond P12E1. The existing pond names are referenced from SWFWMD permit # 43-16251-18.

2.4.7 Existing Basin 7

Existing Basin 7 limits begin at CL 54 Sta. 1476+81 to Sta. 1497+38. Existing Basin 7 is located east of the interchange of US 41 (SR 45) at SR 54. Stormwater runoff generated within the basin is conveyed through existing storm drain and roadside ditches to existing FDOT Pond 1A. Existing FDOT Pond 1A treats and attenuates discharge generated within the basin limits and outfalls to existing FDOT Pond 1B which functions as floodplain compensation and discharges to Lake Floyd.

2.4.8 Existing Basin 8

Existing Basin 8 limits begin at CL 54 Sta. 1496+19 to Sta. 1521+74. Existing Basin 8 is the most eastern basin within the project limits. Stormwater runoff generated within the right of way is conveyed through existing storm drain and roadside ditches to existing FDOT Pond 2A. Existing FDOT Pond 2A treats and attenuates discharge generated within the basin limits and outfalls to Existing FDOT Pond 2B which functions as floodplain compensation and discharges to Lake Toni.

2.4.9 Existing Village Lake Shopping Center Dr Basin

Existing Village Lake Shopping Center Dr Basin is located along the existing Raden Drive alignment from Carson Drive to the Village Lakes Shopping Center. Per SWFWMD ERP Permit: 1027.001 (App: 2736), the existing drainage patterns along Raden Drive outfall to an existing pond to the south of the alignment via a series of existing ditches.

2.5 FLOODPLAINS/EXISTING FLOODPLAIN COMPENSATION

The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Rate Maps (FIRM) for Pasco County. The existing interchange area is in a FEMA Flood Zone AE flood hazard area according to the FEMA Flood Insurance Rate Maps (FIRMs), dated September 26, 2014. The portions of the FEMA FIRMs (Panels 403, 404 and 412) used for this analysis are presented in Appendix 1 Figure 3. The flood elevations vary from 67.3 feet on the south side of SR 54 west of US 41 (SR 45) to 69.6 feet on the south side of SR 54 east of US 41 (SR 45).

There are SWFWMD permitted existing floodplain compensation ponds associated with both US 41 (SR 45) and SR 54. These floodplain compensation ponds are now floodplain zones as shown on the latest FEMA FIRMs. No impacts to existing floodplain compensation sites are anticipated. Please refer to APPENDIX 9 – FLOODPLAIN COMPENSATION CALCULATIONS-SPUI and APPENDIX 18-FLOODPLAIN COMPENSATION-DDI for the proposed floodplain compensation analysis.

There are also numerous wetland areas adjacent to the proposed project, primarily on the southwest and southeast sides of SR 54, which are discussed in detail under a separate cover in the Natural Resources Evaluation Report, dated January 2026 for the DDI configuration and Natural Resources Evaluation Report, dated August 2024 for the SPUI configuration.

2.6 EXISTING CROSS DRAIN ADEQUACY

The existing cross drains along US 41 (SR 45) and SR 54 were reviewed for hydraulic adequacy. Permit 43-16251-0 documents that culverts #2-5, along SR 54, were extended in 1987 indicated they predate that project. Existing cross drain #1, along US41 (SR45) was constructed per Permit 43-12851-1 issued in 1996. Please refer to Existing Cross Drains Exhibit and Calculations in Appendix 10. Initial evaluation of the existing cross drains show extensions may be a viable option. Proposed analysis is not provided in this report due to the large-scale interconnectivity of the floodplains; cross drains should be evaluated using the large-scale model during final design to confirm flow rates considering final pond locations and floodplain impact and compensation areas.

Culvert 1

A 30-inch RCP cross drain is located at US 41 (SR 45) Sta 2568+80 measuring 93.6 feet in length. Based on the SWFWMD Cypress Creek model, the cross drain connects network node NH1760, a ditch West of US 41 (SR 45), to node NH1780, the wetland East of US41, North of Glory Road. SWFWMD models assign this culvert a hydraulic ID 0f 362618_003. This culvert is divided into two components with an inlet in the median.

Since invert elevations are missing from survey data, the invert elevation at the outlet end of the culvert, as retrieved from SWFWMD models, is 65.66 feet and the invert elevation at the inlet end of the culvert at network node NH1760 is assumed to be 68.71 feet based on the floodplain elevation listed for this node. To verify this information, the invert elevations included in SWFWMD models align with existing ground contours downloaded from the NOAA Office of Coastal Management.

HY-8 was used to complete the analysis for this cross drain. Maximum 10-year, 25-year, 50-year, and 100-year storm events flow rate results are obtained from ICPR 3 SWFWMD models. Since this culvert outflows to a wetland, with the downstream end of the culvert having an invert elevation below the water surface level for each storm event (the maximum stage at each storm event from the ICPR model), the channel type in HY-8 is demonstrated to have a “Constant Tailwater Elevation” with the maximum stage for each of the four storm events being used as the tailwater elevation to retrieve the headwater elevation after running the HY-8 model. The maximum stages for the 10-year, 25-year, 50-year, and 100-year storm events are 67.07, 67.50, 67.80, and 68.44 feet.

After running HY-8, results indicate that overtopping occurs for the 100-year storm event. The lowest elevation along the roadway shoulder according to the geospatial contours is 71 feet and the headwater elevation for the 100-year storm events falls at an elevation of 71.01 feet.

Culvert 2

An 18-inch RCP crossing SR 54 at Sta. 1431+25 measuring 100 feet in length. Based on the Anclotte East model received from SWFWMD, the cross drain connects network node NC6820, a ditch located South of Amberfield Dr. and North of SR 54, to node NC6830, a ditch in the median between SR54 Eastbound and Westbound. This culvert is divided into two components with a ditch bottom inlet in the median. The culvert has an upstream invert elevation of 65.18 feet and a downstream invert elevation of 64.10 at the median inlet.

HY-8 was used to complete the analysis for this cross drain. Maximum 50-year and 100-year storm events flow rate results are retrieved from ICPR 3 SWFWMD models. Since the culvert is divided into two components, the second component of the 18-inch pipe connecting the median inlet to the outlet end of the culvert resembles the downstream

channel for the "Tailwater Data" in HY-8, having properties of 2 feet of ditch bottom width, since the outflow pipe from the median inlet measures 24 inches in diameter, and a 0.0068 ft/ft channel slope, as this is the slope of the outflow pipe.

After running HY-8, results indicate that overtopping occurs for the 10-year, 25-year, 50-year storm event, and 100-year storm events. The lowest elevation along the roadway shoulder according to the geospatial contours is 67 feet and the headwater elevation for all four storm events falls slightly above the roadway overtopping elevation at 67.01 feet for the 10-year and 25-year storm events and 67.02 feet for the 50-year and 100-year events.

To avoid overtopping, a proposed 18-inch double RCP crossing SR 54 at this location instead of one 18-inch RCP lowers the headwater elevations for all four storm events to below 67 feet at 66.50, 66.64, 66.78, and 66.87 feet.

Culvert 3

A 42-inch RCP crosses SR 54 at Sta. 1436+50 measuring 118 feet in length. Based on the Anclotte East model received from SWFWMD, the cross drain connects network node NC6810, a channel South of Sterlington Dr., to node NC6850, a ditch in the median between SR54 Eastbound and Westbound. This culvert is divided into two components with a ditch bottom inlet in the median. The upstream invert elevation of the cross drain is 63.18 feet and the downstream invert elevation is 62.70 at the median inlet.

HY-8 was used to complete the analysis for this cross drain. Maximum 50-year and 100-year storm events flow rate results from ICPR 3 SWFWMD models. The culvert is divided into two components, the second component of the 42-inch pipe connecting the inlet in the median to the outlet end of the culvert is treated as the downstream channel for the "Tailwater Data" in HY-8, having properties of 2.7 feet of ditch bottom width, since the outflow pipe from the median inlet measures 42 inches in diameter and the flow area is 9.6 square feet, making the width 2.7 feet, and a 0.0005 ft/ft channel slope, as this is the slope of the outflow pipe.

After running HY-8, results indicate that overtopping does not occur for the 10-year, 25-year, 50-year, and 100-year storm events. The lowest elevation along the roadway shoulder according to the geospatial contours is 71 feet and the headwater elevation for all four storm events are below the roadway overtopping elevation at 63.96 feet, 64.03 feet, 64.08 feet and 64.17 feet.

Culvert 4

Two box culverts measuring 8 feet in span and 3 feet in height are located at SR 54 Sta. 1452+90, measuring 145 feet in length. Based on the Anclotte East model received from SWFWMD, the cross drain connects network node NC6560 to node ND0895, South of SR 54 East and West. The culvert has an upstream invert elevation of 64.97 feet and a downstream invert elevation of 64.17 at the median inlet.

HY-8 was used to complete the analysis for this cross drain. Maximum 10-year, 25-year, 50-year, and 100-year storm events flow rate results are obtained from ICPR 3 SWFWMD models. Since this culvert outflows to a wetland, with the downstream end of the culvert having an invert elevation below the water surface level for each storm event (the maximum stage at each storm event from the ICPR model), the channel type in HY-8 is demonstrated to have a "Constant Tailwater Elevation" with the maximum stage for each of the four storm events being used as the tailwater elevation to retrieve the headwater elevation after running the HY-8 model. The maximum stages for the 10-year, 25-year, 50-year, and 100-year storm events are 66.95, 67.09, 67.15, and 67.30 feet.

After running HY-8, results indicate overtopping does not occur for the 10-year, 25-year, 50-year, and 100-year storm events. The lowest elevation along the roadway shoulder according to the geospatial contours is 69 feet and the headwater elevation for all four storm events are lower than the roadway overtopping elevation at 67.10, 67.39, 67.59, 68.04, and 69.00 feet.

Culvert 5

Two 30" RCP at SR 54 Sta. 1420+50 just West of Wilson Rd, measuring 213 feet in length. Based on The Anclotte East SWFWMD model, the double culvert connects network node NC7140, a ditch North of SR54, to node ND0940, a pond South of SR54, East of Henning Ln. SWFWMD models assign this double culvert link names of RC7140A and RC7140B. The invert elevations at the inlet and outlet ends of the cross drains are 63.11 feet and 62.16 feet.

HY-8 was used to complete the analysis for this cross drain. Maximum 10-year, 25-year, 50-year, and 100-year storm events flow rate results are obtained from ICPR 3 SWFWMD models. Since this culvert outflows to a wetland, with the downstream end of the culvert having an invert elevation below the water surface level for each storm event (the maximum stage at each storm event from the ICPR model), the channel type in HY-8 is demonstrated to have a "Constant Tailwater Elevation" with the maximum stage for each of the four storm events being used as the tailwater elevation to retrieve the headwater elevation after running the HY-8 model. The maximum stages for the 10-year, 25-year, 50-year, and 100-year storm events are 63.72, 64.43, 64.62, and 64.75 feet.

After running HY-8, results indicate that overtopping occurs before the 100-year storm event but after the 10-year, 25-year, and 50-year storm events. The lowest elevation along the roadway shoulder according to the geospatial contours is 69 feet and the headwater elevation for the 100-year storm event falls slightly above the roadway overtopping elevation at 69.08 feet but the headwater elevation for the 10-year, 25-year, and 50-year storm events fall below the overtopping elevation at 65.96 feet, 66.50 feet, and 67.08 feet.

SECTION 3: DESIGN CRITERIA

The design of the stormwater management facilities for the project is governed by the rules set forth by the FDOT and the SWFWMD. Water quality treatment and water quantity attenuation requirements will comply with the guidelines as defined in FDEP Environmental Resource Permit (ERP) manual, Volume I and SWFWMD Environmental Resource Permit (ERP) manual, Vol II, and 2024 FDOT Drainage Manual.

A Pre-Application meeting was held with SWFWMD on March 13, 2014. Minutes from this meeting are shown in Appendix 19-Supporting Documentation.

The project does not lie in the vicinity of any Outstanding Florida Waters.

FDOT Pond Design Criteria:

The pond designs shall meet the following criteria:

- One-foot freeboard from the Design High Water (DHW) to the inside of the maintenance berm.
- Pond maintenance berm slopes are 1:8 or flatter
- Pond maintenance berms are at least 15-feet wide
- Pond side slopes are 1:4 or flatter
- Wet detention ponds shall have a minimum permanent pool depth of six feet

Water Quality:

This project should qualify to be grandfathered into the old water quality regulations, however if PD&E completion is not within the grandfathering time frame the final design will need to review regulatory changes on water quality. This analysis will use the existing presumptive criteria. Water quality treatment shall be based on the contributing area defined as on-site directly connected impervious area in accordance with the SWFWMD Applicant's Handbook Part II (effective June 1, 2018) Section 4.5 Alternatives to Existing Public Roadway Projects Part a.2. Therefore, a wet detention treatment system shall treat one inch of runoff from this contributing area.

On the west side of the intersection, the project is in Waterbody ID 1456 within the South Branch Anclote River Basin. Water Body ID# 1456 has 2008 EPA established Total Maximum Daily Loads (TMDL's) for total nitrogen (TN) and total phosphorus (TP).

Water Body ID# 1463S is located within the South Branch Anclote River Basin and the Lake Thomas Outlet Basin on the West of the intersection. FDEP has labeled this Waterbody ID as a Waters Not Attaining Standards (WNAS) but a causative pollutant has not been identified. It is on FDEP's Florida 303 (d) Study List for Dissolved Oxygen.

Net nutrient loading analysis is required for this project.

Water Quantity:

The intersection is located in an open basin. SWFWMD requires that the 25-year, 24-hour post-development discharge rate not exceed the 25-year, 24-hour pre-development discharge rate. The Pasco County Land Development Code refers to the SWFWMD criteria. SWFWMD provided GIS data of historical flooding complaint locations. These locations are upstream of the project therefore a critical duration analysis will not be performed.

The stormwater runoff from the proposed improvements will be collected by inlets and conveyed to the proposed wet detention ponds. For contingency purposes, conservative estimates were used to determine the feasibility of the pond location and approximate size based on preliminary data and engineering judgment. Final pond configurations may change during final design when sufficient design level data becomes available.

SECTION 4: DATA COLLECTION

For completion of the review of the existing drainage conditions within the project corridor, data from various sources was obtained. Data included design topographic data, geographic information system (GIS) coverages for roadways, Federal Emergency Management Agency (FEMA) flood studies, SWFWMD coverages for wetlands and surface water bodies, and County-generated coverages for topography, land use, and contours. A list of the data collected, and their source(s) is presented in Table 5.

TABLE 5 - LIST OF DATA COLLECTED

DATA	SOURCE	AGENCY
GIS Base Layers, such as county boundaries, highways, roadways, etc.	Florida Geographic Data Library	Florida Department of Transportation (FDOT)
FEMA Floodplain Maps	Florida Geographic Data Library	FEMA
Hydrology GIS layers, such as surface water, wetlands	Florida Geographic Data Library	SWFWMD
Land Use Maps	Pasco County	Pasco County
Topographic information	FDOT	FDOT
Contours	Pasco County	Pasco County
Soil Survey maps	Florida Geographic Data Library	Natural Resources Conservation Service (NRCS)
Surface Drainage Basins	Florida Geographic Data Library	SWFWMD
Aerial Imagery	FDOT	FDOT
Parcel Boundaries	Pasco County	Pasco County

SECTION 5: PROPOSED DRAINAGE CONDITIONS

The existing drainage boundaries and local drainage basins will generally be maintained in the proposed condition. The proposed drainage basin delineations include the pond locations for each alternative. The stormwater runoff from the proposed SR 54 and US 41 (SR 45) will be collected by a closed drainage conveyance system, which will discharge into the proposed stormwater management facilities. Refer to Appendix 3-Proposed Drainage Map-SPUI and Appendix 13-Proposed Drainage Map-DDI for proposed basin delineations.

The project will not have adverse impacts to the area's water quality or quantity. The design of the stormwater management facilities for the project is governed by the rules set forth by the SWFWMD and FDOT. Water quality treatment and water quantity attenuation requirements will comply with the guidelines as defined in SWFWMD and FDEP's Environmental Resource Permit (ERP) manual, Volume I (FDEP) and II (SWFWMD), and 2024 FDOT Drainage Manual

1. The general requirements for treatment volume in a wet detention system are the following:

   Wet Detention:

   one inch (1") of runoff from the drainage area

2. Special requirements contained within this project corridor are as follows:

   Total Maximum Daily Loads – Proposed Basin 6 Only

   Proposed improvements shall demonstrate a net improvement for TN and TP

The SCS method has been used to determine the required pond size for each basin. House Bill 599, passed in 2012, and amended in 2013, alleviates the responsibility from FDOT to treat and attenuate offsite stormwater runoff comingled with onsite stormwater runoff, therefore offsite areas were not considered in the basin areas used for the preliminary pond sizing. Ponds were sized to attenuate the most stringent requirement for attenuation defined by the outfall location. Runoff volumes use a 25-year 24-hour storm event defined by SWFWMD. Historical flooding complaints were obtained from Southwest Florida Water Management District. The flooding areas are located upstream of the project location therefore critical duration analysis will not be performed. It should be noted that for

contingency purposes, conservative estimates were used to determine the feasibility of the pond locations and approximate sizes based on preliminary data and engineering judgment. Proposed pond and FPC footprints include a 20% increase in area. Design level geotechnical data was not available at the time of the report. Estimated Seasonal High Water elevations were assumed using existing permits and USDA web soil survey data and used for pond and FPC site calculations.

Existing stormwater outfall locations throughout the corridor have been identified and shall be maintained in the proposed condition. Potential stormwater outfall locations for each pond alternative were considered and recommendations on the preferred alternative are provided in the report.

Based on information available during the pond siting analysis, only hydraulically feasible pond sites which could achieve the design criteria requirements were considered. Pond sites are analyzed and evaluated for the following parameters:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, estimated Seasonal High Water Table (SHWT) established by a review of the USDA NRCS soils, stormwater conveyance feasibility,and basin outfalls
- Environmental resource impacts including wetlands
- Floodplain impacts
- Impacts to cultural resources
- Hazardous materials and contamination

5.1.1 Basin 1

SPUI configuration: Basin 1 limits begin at CL 41 Sta. 2645+60 to approximately Sta. 2695+60. Basin 1 is the most northern basin within the project limits. The proposed roadway improvements along Land O' Lakes Blvd does not change the total acreage between existing and proposed conditions. The proposed impervious area increased, and the proposed pervious area decreased in the post basin. Drainage from the roadway pavement, is collected by storm drain systems, drains through a 48" pipe to existing Pond D. Pond D treats and attenuates discharge from within the basin which outfalls to Lake Vienna.

DDI configuration: For the DDI analysis, Basin 1 limits begin at BL_NB_US41 Sta. 2081+00 to approximately Sta. 2131+00. The analysis is limited to the portion of the existing basin that is directly impacted by the Diverging Diamond Interchange (DDI) roadway design. While the roadway footprint was expanded to the east, the conversion of land use from commercial development to sidewalk and pervious areas within this affected portion does not result in an increase in runoff. This is because the replacement of highly impervious commercial surfaces with areas that allow infiltration reduces the overall runoff contribution from the impacted limits. As a result, the existing stormwater pond current storage capacity remains sufficient to accommodate the reduced runoff volume associated with these changes.

5.1.2 Basin 2

SPUI configuration: Basin 2 is located at the intersection of US 41 (SR 45) at SR 54. This basins limits consists of Sta. 2617+47 to Sta. 2655+14 on CL 41 and Sta. 1451+68 to Sta. 1478+62 on CL 54. Calculations adjust Basin 2 to account for the additional right of way needed for each pond alternative. Drainage patterns consist of a closed storm drain system that collects all discharge from medians, sidewalks, and travel lanes within the basin limits to Pond C which outfalls to Lake Floyd. In the Northeast quadrant, commercial properties are included within the basin limits since they

connect to the storm drain system directly. Proposed Basin 2 encompasses additional areas along northbound Land O' Lakes Blvd, eastbound, westbound SR 54, and frontage roads due to roadway widening and additional right of way necessary for each pond alternative.

DDI configuration: For the DDI analysis, Basin 2 is located at the intersection of US 41 (SR 45) at SR 54. This basin limit extends from Sta. 2617+47 to Sta. 2655+14 on CL 41 and from Sta. 1453+82 to Sta. 1480+20 on CL 54. Drainage patterns consist of a closed storm drain system that collects all discharge from medians, sidewalks, and travel lanes within the basin limits to the proposed SMF 2D pond and ultimately outfalls to Lake Floyd. In the Northeast quadrant, commercial properties are included within the basin limits since they connect to the storm drain system directly. Proposed Basin 2 encompasses additional areas along northbound Land O' Lakes Blvd, eastbound, westbound SR 54, and frontage roads due to roadway widening and additional right of way necessary for each pond alternative and compensation site.

Proposed Basin 2 Quasi -Equivalent treatment for SR 54 is located on BL SR54_EB at station Sta. 3004+20 to Sta. 3009+20. Proposed drainage patterns consist of a proposed closed storm drain system that collects all discharge from medians, sidewalks, and travel lanes within the basin limits into an existing double 3x8 box culvert which discharges into a wooded area located within the existing floodplain. In the proposed condition, the CN value decreases due to an increase in pervious area within the median. Even though the total basin area between the pre and post condition increases, the volume retained in ac-ft between pre and post conditions remains the same at 1.23 ac-ft thus water quality requirements are met. This approach is consistent with permit SWFMD ERP# 43-12854 Quasi-Equivalent treatment for SR 54 in system C.

5.1.3 Basin 3

SPUI configuration: Proposed Basin 3 consists of the existing roadway pavement and ditches from Sta. 200+00 to Sta. 217+00 at alignment CL. 597, the southbound roadway pavement and railway, as well as the northbound roadway pavement, sidewalks, median ditches, and roadside ditches along both sides of US41 from Sta. 2588+87 to Sta. 2617+47 at alignment CL. 41. Calculations adjust Basin 3 to account for the additional right of way needed for each pond alternative. The basin drain pattern and outfall location remains the same as existing. Increase in discharge due to roadway widening will be conveyed in ditches and storm drain systems that discharge to existing Pond B for treatment. Pond B discharges to Wetland D, which ultimately outfalls to Cypress Creek.

DDI configuration: For the DDI analysis, Proposed Basin 3 consists of the proposed roadway pavement along BL_SB_CR597_US41 from Sta. 500+00 to approximately Sta. 514+00. And the existing railway and proposed roadway along Northbound and Southbound US41 from Sta. 2021+80 to Sta. 2049+90 along alignment BL_NB_US41. This drainage area includes all proposed surface features, proposed roadway and sidewalk, contributing runoff within these limits. Calculations include the additional right of way needed for the preferred pond alternative. The basin drain pattern and outfall location remains the same as existing. Increase in discharge due to roadway widening will be conveyed in ditches and storm drain systems that discharge to proposed SMF 3D for treatment. SMF 3D discharges to Wetland D, which ultimately outfalls to Cypress Creek.

5.1.4 Basin 4

SPUI configuration: The limits of proposed Basin 4 begin at the intersection of Land O' Lakes Blvd and Willow Bend Parkway to approximately Sta. 2588+87 at alignment CL. 41. The basin boundary is similar to the existing Basin 4 basin boundary. The proposed roadway improvements along Land O' Lakes Blvd does not change the total acreage

between existing and proposed conditions. The proposed impervious area decreased, and the proposed pervious area increased in the post basin. Drainage from the roadway pavement, is collected by storm drain systems and outfalls to existing Pond A for treatment, ultimately discharging into Wetland B and then to Cypress Creek.

DDI configuration: The limits of proposed Basin 4 begin at the intersection of Land O' Lakes Blvd and Willow Bend Parkway to approximately Sta. 2021+80 along alignment BL_NB_US41.The proposed roadway improvements along Land O' Lakes Blvd encroach into the parcels east of Land O' Lakes Blvd and impact existing Pond A per SWFWMD ERP permit 43-12854. The increase of impervious area and the impact to the existing pond is mitigated by the proposed pond SMF 4D. Drainage from the roadway pavement, is collected by storm drain systems and outfalls to the proposed pond for treatment and maintains existing drainage patterns by ultimately discharging into Wetland B and then to Cypress Creek.

5.1.5 Basin 5

SPUI configuration: The limits of proposed Basin 5 begin at the end of proposed Basin 6, approximately SR 54 Sta. 142+20, to the beginning of proposed Basin 2, approximately SR 54 Sta. 1451+50.00. Calculations divide Basin 5 corresponding to the additional right of way needed for each pond alternative. The proposed roadway widening eliminates the existing system of interconnected linear ponds. Therefore, unlike in Basin 6, no existing ponds will be able to be used in the proposed condition. All attenuation and treatment volume needs for the basin are met within each proposed pond alternative. The basin will still outfall into to the wetland area east of Sienna Village's boardwalk, along westbound SR 54 approximately Sta. 1435+50 (RT). The outfall location will move to the control structure of the selected pond alternative.

Basin 5 is within the South Branch Anclote River Basin and the Lake Thomas Outlet and Water Body ID# 1463S. FDEP has labeled this Waterbody ID as a Waters Not Attaining Standards (WNAS) but a causative pollutant has not been identified. It is on FDEP's Florida 303 (d) Study List for Dissolved Oxygen. BMP selection and calculations may need to be reevaluated during final design per new SB7040.

DDI configuration: For the DDI analysis,the limits of proposed Basin 5 begin approximately SR 54 Sta. 142+20, to the beginning of proposed Basin 2, approximately SR 54 Sta. 1449+44. The proposed roadway widening along SR 54 has minimal impacts close to the basin limits. The impacts due to the roadway widening will only affect sub-basin sub-basin 5-2 which contributes to the existing linear ponds P15E2, P16E2, P18E2 and P19E2 per SWFWMD permit #43-16251-18. Since the roadway widening of SR 54 does not extend into and affect the drainage areas contributing to existing pond P13E2, sub-basin 5-2 will remain the same as existing conditions.Since the roadway widening of SR 54 does not extend to sub-basin 5-1, basin 5-1 will remain the same as existing conditions. The existing linear ponds cannot accommodate any additional runoff generated due to SR 54 roadway widening resulting in the addition of a new proposed pond which will treat and attenuate the increase runoff generated within the project limits. All attenuation and treatment volume needs for the basin are met with the existing linear ponds together with the proposed alternative. The basin will still outfall into the wetland area east of Sienna Village's boardwalk, along westbound SR 54 approximately Sta. 1435+50 (RT).

Proposed Basin 5 is within the South Branch Anclote River Basin and the Lake Thomas Outlet and Water Body ID# 1463S. FDEP has labeled this Waterbody ID as a Waters Not Attaining Standards (WNAS) but a causative pollutant has not been identified. It is on FDEP's Florida 303 (d) Study List for Dissolved Oxygen. BMP selection and calculations may need to be reevaluated during final design per new SB7040.

5.1.6 Basin 6

The limits of proposed Basin 6 begin at Henley Road to approximately SR 54 Sta. 142+20. Calculations divide Basin 6 corresponding to the additional right of way needed for each pond alternative. Proposed roadway improvements begin halfway within the basin with the roadway widening along the eastbound SR 54 lanes. The basin drain pattern will remain through a series of interconnected linear ponds which discharge into a wetland north of Sta. 1420+00 (LT) and through two (2) existing 30" RCP cross drains that outfall to the wetland area south of eastbound SR 54.

Each pond alternative will work as an added component in the existing system of ponds. The proposed pond alternatives each alter the proposed Basin 6 basin area which is reflected in the calculations.

Basin 6 is within the South Branch Anclote River Basin Springs Coast Group and impaired water body ID #1456.There are TMDL's for Total Phosphorus and Total Nitrogen pollutants. BMP selection and calculations may need to be reevaluated during final design per new SB7040.

5.1.7 Basin 7

Basin 7 limits begin at CL 54 Sta. 1476+81 to Sta. 1497+38. Basin 7 is located east of the interchange of US 41 (SR 45) at SR 54. Proposed Basin 7 includes areas along eastbound, westbound SR 54 and frontage roads due to roadway widening. Calculations adjust Basin 7 corresponding to the additional right of way needed for each pond alternative. Drainage patterns consist of stormwater runoff generated within the basin is conveyed through existing storm drain and roadside ditches to Pond 1A. Pond 1A treats and attenuates discharge generated within the basin limits and outfalls to existing FDOT Pond 1B which functions as floodplain compensation and discharges to Lake Floyd.

5.1.8 Basin 8

Basin 8 limits begin at CL 54 Sta. 1496+19 to Sta. 1521+74. Basin 8 is the most eastern basin within the project limits. Proposed Basin 8 includes areas along eastbound, westbound SR 54 and frontage roads due to roadway widening. Calculations adjusts Basin 8 corresponding to the additional right of way needed for each pond alternative. Drainage patterns consist of stormwater runoff generated within the right of way is conveyed through existing storm drain and roadside ditches to Pond 2A. Pond 2A treats and attenuates discharge generated within the basin limits and outfalls to existing FDOT Pond 2B which functions as floodplain compensation and discharges to Lake Toni.

5.1.9 Village Lake Shopping Center Dr Basin

Proposed Village Lake Shopping Center Dr Basin is located along the existing Raden Drive alignment from Carson Drive to the Village Lakes Shopping Center. The proposed condition is compliant with the SWFWMD ERP Permit: 1027.001 (App: 2736) therefore no water quantity or quality is needed, and no proposed pond alternative is required for this basin.

SECTION 6: PROPOSED POND SITES

6.1 METHODOLOGY OF POND DETERMINATION

Recommended alternatives considered sites that are hydraulically feasible and right of way permissible, and also incorporated environmental assessment results.

Proposed pond sites are analyzed and evaluated for the following parameters:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, estimated Seasonal High-Water Table (SHWT) established by a review of the USDA NRCS soils, existing permits and field observations, stormwater conveyance feasibility, and basin outfalls
- Environmental resource impacts including wetlands
- Floodplain impacts
- Alternative pond footprints, as seen on Proposed Pond Site Alternatives Exhibit in Appendix 4 and Appendix 13, which include a 20% increase in area to account for variances from final design pond sites.

Per the Natural Resources Evaluation Report dated January 2026, the preferred DDI pond alternatives with wetland impacts are SMF 5D and SMF 3D. The preferred DDI FPC sites with wetland impacts are FPC 107D, FPC 110D and FPC 119D. The project will not have adverse effects on protected species and habitats.

Per the Natural Resources Evaluation Report dated August 2024, the only SPUI pond alternative impacting wetlands is SMF 2A. The only SPUI FPC sites impacting wetlands is FPC 115A and FPC 103A. No critical habitat was identified within the project area. The project will not have adverse effects on protected species and habitats.

An updated Contamination Tech Memo for the preferred pond alternatives is pending, and this report will be updated accordingly. Per the Contamination Tech Memo dated July 2024, the only SPUI pond with a risk rating of High is SMF 2A. Potential contamination impacts are anticipated per the proximity of active and former retail gas stations and of active and former drycleaning facilities.

6.2 STORMWATER PONDS

6.2.1 Existing FDOT Pond A

Existing FDOT Pond A meets with both water quality and quantity requirements. Per SWFWMD ERP permit 43-12854, existing FDOT Pond A is a wet detention pond with NWL of 68.25. Drainage from roadway pavement is collected by the closed systems, treated by the pond, and discharged to Wetland B south of the pond, which ultimately discharges into Cypress Creek. A permanent wet detention volume of 6.62 ac-ft is provided, exceeding the required 3.93 ac-ft. In addition, 1.66 acres of littoral zone area is provided, exceeding the required 1.37 acres. The 25-year, 24-hour peak discharge is 52.40 cfs in pre-development condition and 42.80 cfs in post-development condition. Existing pond stage and storage calculation is provided to match with the information of existing FDOT Pond A from the permit. Existing FDOT Pond A remains effective in the proposed condition due to post-development basin total acreage remains the same as the pre-development basin. Proposed impervious area decreased and proposed pervious area increased in the post condition. No extra right of way is needed.

6.2.2 Existing Pond B

Existing Pond B was designed as a wet detention pond with NWL of 68.50 to meet both water quality and quantity requirements for existing Basin 3. The pond is located approximately at Sta. 2600+00, (RT) at alignment CL. 41. Per SWFWMD ERP permit 43-12854, the required permanent wet pool volume is 5.30 ac-ft, and 7.30 ac-ft is provided. A 0.66-ac littoral zone is required, and 0.91 acres are provided. The 25-year, 24-hour pre-development peak discharge is 63.04 cfs, while the actual routed discharge is 62.94 cfs. Existing pond stage and storage calculation is provided to match with the information of existing pond B per the permit.

According to SWFWMD ERP Applicant Handbook Volume II, section 4.1.a.1, treatment volume should not cause the pond level to rise more than 18 inches above the control elevation. Therefore, with the additional roadway pavement

in the proposed condition, existing pond B will not provide enough attenuation volume by simply increasing its DHW elevation, as the existing DHW is already 18 inches above the control elevation. Existing Pond B will work in conjunction with either pond B1, B2 or B3 to provide the required attenuation volume.

6.2.3 SMF 3A

SMF 3A is a wet detention system comprised of 3 facilities; 2 facilities designed to work together with existing Pond B that are connected by a proposed equalizer pipe. The first facility is located approximately at Sta. 204+00 at alignment CL. 597, (RT), and requires additional easement outside the FDOT ROW. The second facility is located approximately at Sta. 203+00 at alignment CL. 597 (LT), within the current FDOT ROW area. The two ponds will be hydraulically connected to existing Pond B and will discharge into Wetland D, maintaining the same outfall location as the existing condition. Both facilities of SMF 3A have the same NWL as existing Pond B. Existing Pond B will provide the required water quality volume, while SMF 3A will provide the required attenuation volume. Existing ground elevation for the sites is approximately elev. 71 and depth to water is 0.98 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existed pond B is 3.01 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 3A was sized to meet the delta attenuation volume needed. Required attenuation volume is 3.87 and the combined provided attenuation volume of SMF 3A is 3.88 ac-ft.

The required water quality treatment volume is 1.05 ac-ft. SMF 3A provide a treatment volume of 1.34 ac-ft, exceeding the required treatment volume.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 side slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 side slopes to the pond bottom.

6.2.4 SMF 3B

Proposed SMF 3B is the second alternative wet detention system designed to work with existing Pond B under the proposed condition. Proposed SMF 3B is located at approximately Sta. 206+50 at CL. 597 (LT), outside the 100-year floodplain boundary to avoid floodplain impact. This proposed alternative requires additional area outside the FDOT ROW. SMF 3B will be hydraulically connected to existing pond B and discharge into Wetland D, maintaining the same outfall location as the existing condition. SMF 3B will use the same NWL as existing Pond B. Existing Pond B will provide the required water quality volume, while proposed SMF 3B will provide the required attenuation volume.

The existing attenuation volume in the basin provided by SWFWMD permitted existed pond B is 3.01 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 3B was sized to meet the delta attenuation volume needed. Required attenuation volume is 3.29 and provided attenuation volume of Pond B and SMF 3B together is 3.47 ac-ft. Existing ground elevation for the site is approximately elev. 70 and depth to water is 0.98 ft.

The required water quality treatment volume is 1.05 ac-ft. Since existing Pond B provides required treatment of 1.05, SMF 3B will not provide treatment for Basin 3.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 side slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 side slopes to the pond bottom.

6.2.5 SMF 3C

Proposed SMF 3C is the final and recommended alternative for proposed Basin 3. It is a wet detention system designed to work with existing Pond B under the proposed conditions. Proposed SMF 3C is located at approximately Sta. 2597+50 at CL. 41 (RT), south of existing Pond B. This proposed alternative requires additional easement outside FDOT ROW. SMF 3C will be hydraulically connected to existing pond B, and will discharge into Wetland D, maintaining the same outfall location as the existing condition. SMF 3C will use the same NWL as existing Pond B. Existing Pond B will provide the required water quality volume, while proposed SMF 3C will provide the required attenuation volume. Existing ground elevation for the site is approximately elev. 72 and depth to water is 1.67 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existed pond B is 3.01 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 3C was sized to meet the delta attenuation volume needed. Required attenuation volume is 3.32 and provided attenuation volume of Pond B and SMF 3C together is 3.76 ac-ft.

The required water quality treatment volume is 1.05 ac-ft. Since existing Pond B provides required treatment of 1.05, SMF 3C will not provide treatment for Basin 3.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 side slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 side slopes to the pond bottom.

6.2.6 Existing Pond 1A

Existing Pond 1A is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 7 along with either alternative SMF 7A, SMF 7B or SMF 7C. The pond is located approximately at Sta. 1480+00 (RT) on alignment SR. 54. Existing Pond 1A was designed with a NWL of 68.70 ft. The permanent pool volume is 6.67 ac-ft. Existing Pond 1A provides 0.59 ac-ft of treatment and 3.18 ac-ft of attenuation. The 25-year- 24-hour peak discharge is 10.89 cfs. Existing pond stage and storage calculation is provided to match with the information of existing pond 1A per the permit SWFWMD ERP permit 19567.003. Pond 1A discharges through a control structure into existing floodplain compensation Pond 1B which discharges to Lake Floyd.

6.2.7 SMF 7A

SMF 7A is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 7. The pond is located along SR 54 at approximately Sta. 1495+00 (LT). The pond site is proposed to span across one (1) property. SMF 7A is designed to work in conjunction with existing Pond 1A at approximately Sta. 1480+00 (RT). Proposed SMF 7A will treat and provide detention for the additional runoff within proposed Basin 7. SMF 7A will outfall, through a proposed storm sewer system, to existing permitted (permit #4319567.00) existing Pond 1B which discharges to Lake Floyd. This will maintain the existing outfall in the proposed condition. SMF 7A design high water elevation and normal water level are designed to match the existing Pond 1A. Existing Pond 1A would not provide

treatment for additional impervious area from the proposed roadway therefore, SMF 7A will provide additional treatment. Existing ground elevation for the site is approximately elev. 72 and depth to water is 2.75 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existing pond 1A is 3.18 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. Pond 1A (1) was sized to meet required water quality and water quantity (attenuation) volume. Required attenuation volume is 8.06 ac-ft and provided attenuation volume of Pond 1A and Pond 1A (1) together is 8.14 ac-ft.

The required water quality treatment volume accounts for the existing treatment volume of 0.59 ac-ft plus the delta between the existing and proposed treatment volume. Both ponds provide a treatment volume of 1.55 ac-ft, exceeding the required delta of 0.80 ac-ft for both ponds treatment combined.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.2. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 side slopes from the inside berm to two feet below the normal water level. The pond will have a 1:2 side slope to the pond bottom.

6.2.8 SMF 7B

SMF 7B is a proposed wet detention pond that will provide stormwater treatment and attenuation for proposed Basin 7. The pond is located along SR 54 at approximately Sta. 1490+00 (LT). The pond site is proposed to span across one (1) property. SMF 7B is designed to work in conjunction with existing Pond 1A at approximately Sta. 1480+00 (RT). Proposed SMF 7B will treat and provide detention for the additional runoff within proposed Basin 7. Existing ground elevation for the site is approximately elev. 72 and depth to water is 2.75 ft.

Pond1A(2) will outfall, through a proposed storm sewer system, to existing permitted (permit #4319567.00) floodplain compensation area Pond 1B which discharges to Lake Floyd. This will maintain the existing outfall in the proposed condition. SMF 7B design water level and normal water level are designed to match the existing Pond 1A. Existing Pond 1A would not provide treatment for additional impervious area from the proposed roadway therefore, SMF 7B will provide additional treatment. Proposed Pond 1A (2) is chosen as the preferred alternative for Basin 7.

The existing attenuation volume in the basin provided by SWFWMD permitted existing pond 1A is 3.18 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 7B was sized to meet the attenuation volume needed. Required attenuation volume is 10.06 and provided attenuation volume of existing Pond 1A and proposed Pond 1A (2) together is 10.28 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.59 ac-ft plus the delta between the existing and proposed PAV volume. Both ponds provide a PAV volume of 1.93 ac-ft, exceeding the required delta of 0.86 ac-ft for both ponds PAV combined.

The pond has one (1) foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.2. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.9 SMF 7C

SMF 7C is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 7. The pond is located along SR 54 at approximately Sta. 1485+00 (LT). The pond site is proposed to span across three (3) properties. SMF 7C is designed to work in conjunction with existing Pond 1A at approximately Sta. 1480+00 (RT). Proposed SMF 7C will treat and provide detention for the additional runoff within proposed Basin 7. Pond1A(3) will outfall, through a proposed storm sewer system, to existing permitted (permit #4319567.00) Pond 1B which discharges to Lake Floyd. This will maintain the existing outfall in the proposed condition. SMF 7C design water level and normal water level are designed to match the existing Pond 1A. Existing Pond 1A would not provide treatment for additional impervious area from the roadway so Pond 1A (3) will provide additional treatment. Existing ground elevation for the site is approximately elev. 72 and depth to water is 2.75 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existing Pond 1A is 3.18 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 7C was sized to meet the attenuation volume needed. Required attenuation volume is 9.63 and provided attenuation volume of SMF 7A and SMF 7C together is 9.64 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.59 ac-ft plus the delta between the existing and proposed PAV volume. Both ponds provide a PAV volume of 1.81 ac-ft, exceeding the required delta of 0.86 ac-ft for both ponds PAV combined.

The pond has one foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.2. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.10 Existing Pond 2A

Existing Pond 2A is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 8 along with either alternative SMF 8B or SMF 8C. The pond is located approximately at Sta. 1521+74 (LT) on alignment SR. 54. Existing Pond 2A was designed with a NWL of 66.96 ft. Existing Pond 2A has a littoral shelf of 66.3 ft and is surrounded by an environmental buffer. Existing Pond 2A has a drainage easement that provides access from SR 54 to the pond. Existing Pond 2A provides 0.79 ac-ft of treatment and 3.01 ac-ft of attenuation. Existing pond stage and storage calculation is provided to match with the information of existing pond 2A per the permit SWFWMD ERP permit 43-19567.00. Pond 2A discharges through a control structure into existing floodplain compensation Pond 2B which discharges to Lake Toni. Existing permit elevations were converted from NGVD 1929 to NAVD 88. 0.846 was subtracted from NGVD 1929 elevation to convert to NAVD 88.

6.2.11 SMF 8A

SMF 8A is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 8. The pond is located along SR 54 at approximately Sta. 1521+00 (LT). The pond site is proposed to span across two (2) properties. SMF 8A is a widening of existing Pond 2A. Proposed SMF 8A will treat and provide detention for the additional runoff within proposed Basin 8. The existing storm drain system will connect to pond 2A and outfall to floodplain compensation Pond 2B which outfalls to Lake Toni. This will maintain the existing outfall in the proposed condition. SMF 8A normal water level is designed to match the existing Pond 2A. Existing Pond 2A would not provide

treatment for additional impervious area from the roadway so proposed SMF 8A was widened to provide additional treatment. Proposed SMF 8A is chosen as the preferred alternative for Basin 8.

The original SWFWMD permit was not located so the existing stage-storage pond calculations were generated using as-built plans from SWFWMD ERP permit App ID: 41866. As-built plans show discharges in meters cubed per second and stages in NGVD 1929. Existing permit elevations were converted from NGVD 1929 to NAVD 88. A value of 0.846 was subtracted from NGVD 1929 elevation to convert to NAVD 88. Existing ground elevation for the site is approximately elev. 69 and depth to water is 1.01 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existed Pond 2A is 3.01 ac-ft. SMF 8A was sized to meet the delta attenuation volume needed. Required attenuation volume is 4.31 and provided attenuation volume of SMF 8A is 4.34 ac-ft. Existing design high water is 68.73. In proposed conditions, design high water was reduced to 68.63.

The required water quality PAV volume accounts for the existing PAV volume of 0.79 ac-ft plus the delta between the existing and proposed PAV volume. The proposed pond provides a PAV volume of 1.02 ac-ft, exceeding the required delta of 0.78 ac-ft.

The pond has one foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.60 The maintenance berm will have a 1.0 % slope and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.12 SMF 8B

SMF 8B is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 8. The pond is located along SR 54 at approximately Sta. 1500+00 (LT). The pond site is proposed to span across four (4) properties. SMF 8B is designed to work in conjunction with existing Pond 2A at approximately Sta. 1521+00 (LT). Proposed SMF 8B will treat and provide detention for the additional runoff within proposed Basin 8. An offsite storm drain system will connect both ponds and outfall to floodplain compensation area Pond 2B which outfalls to Lake Toni. This will maintain the existing outfall in the proposed condition. SMF 8B design water level and normal water level are designed to match the existing Pond 2A. Existing Pond 2A would not provide treatment for additional impervious area from roadway so SMF 8B will provide additional treatment.

The original SWFWMD permit was not located so the existing stage-storage pond calculations were generated using as-built plans from SWFWMD ERP permit App ID: 41866. As-built plans show discharges in meters cubed per second and stages in NGVD 1929. Existing permit elevations were converted from NGVD 1929 to NAVD 88. A value of 0.846 was subtracted from NGVD 1929 elevation to convert to NAVD 88. Existing ground elevation for the site is approximately elev. 71 and depth to water is 0.98 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existing Pond 2A is 3.01 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 8B was sized to meet the attenuation volume needed. Required attenuation volume is 5.46 and provided attenuation volume of Pond 2A and SMF 8B together is 5.47 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.79 ac-ft plus the delta between the existing and proposed PAV volume. Both ponds provide a PAV volume of 1.42 ac-ft, exceeding the required delta of 0.78 ac-ft for both ponds PAV combined.

The pond has one foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.60. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.13 SMF 8C

SMF 8C is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 8. The pond is located along SR 54 at approximately Sta. 1509+00 (RT). The pond site is proposed to span across two (2) properties. SMF 8C is designed to work in conjunction with existing Pond 2A at approximately Sta. 1521+00 (LT). Proposed SMF 8C will treat and provide detention for the additional runoff within proposed Basin 8. An offsite storm drain system will connect both ponds and outfall to floodplain compensation area Pond 2B which outfalls to Lake Toni. This will maintain the existing outfall in the proposed condition. SMF 8C design water level and normal water level are designed to match the existing Pond 2A. Existing Pond 2A would not provide treatment for additional impervious area from roadway so SMF 8C will provide additional treatment.

The original SWFWMD permit was not located so the existing stage-storage pond calculations were generated using as-built plans from SWFWMD ERP permit App ID: 41866. As-built plans show discharges in meters cubed per second and stages in NGVD 1929. Existing permit elevations were converted from NGVD 1929 to NAVD 88. A value of 0.846 was subtracted from NGVD 1929 elevation to convert to NAVD 88. Existing ground elevation for the site is approximately elev. 72 and depth to water is 1.01 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existing pond 2A is 3.01 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 8C was sized to meet the attenuation volume needed. Required attenuation volume is 4.44 ac-ft and provided attenuation volume of pond 2A and SMF 8C together is 4.68 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.79 ac-ft plus the delta between the existing and proposed PAV volume. Both ponds provide a PAV volume of 1.32 ac-ft, exceeding the required delta of 0.78 ac-ft for both ponds PAV combined.

The pond has one (1) foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 69.60. The maintenance berm will have a 1.0 % slope and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.14 Existing Pond C

Existing Pond C is a proposed wet detention system that will provide stormwater treatment and attenuation for proposed Basin 2. The pond is located approximately at Sta. 2623+60 (RT) on alignment CL. 41. Existing Pond C was designed with a NWL of 68.14 ft. The permanent pool volume is 12.05 ac-ft. Existing Pond C provides 2.24 ac-ft of treatment and 13.87 ac-ft of attenuation. Existing pond stage and storage calculation is provided to match with the

information of existing pond 1A per the permit SWFWMD ERP permit 43012854.001. Existing Pond C discharges into Lake Floyd.

6.2.15 SMF 2A

Treatment and attenuation for Proposed Basin 2 is provided by SMF 2A which is a wet detention system comprised of 3 facilities; regraded existing Pond C and 2 facilities. The existing pond is designed to work in conjunction with the two other proposed facilities approximately located at CL US41 Sta. 2632+00 (RT). The pond system is proposed to span across eight (8) properties. Proposed SMF 2A will treat and provide detention for the additional runoff within proposed Basin 2. A storm drain system will connect the three ponds and outfall to Lake Floyd. This will maintain the existing outfall in proposed condition. SMF 2A design water level and normal water level are designed to match the existing Pond C. Existing Pond C would not provide treatment for additional impervious area from roadway so SMF 2A will provide additional treatment. The facilities within SMF 2A will be hydraulically interconnected through equalizer pipes to maintain system connectivity. Existing ground elevation for the site is approximately elev. 71 and depth to water is 0.98 ft.

SMF 2A provides a total attenuation of 21.77 which exceeds the required attenuation volume of 21.58 ac-ft. The required water quality PAV volume is 3.01 ac-ft. All three ponds together provide a PAV volume of 3.57 ac-ft, exceeding the required water quality PAV volume.

The pond has one (1) foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 70.3. The maintenance berm will have 1:25 slopes and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.16 SMF 2B

Treatment and attenuation for Proposed Basin 2 is provided by SMF 2B which is a wet detention system that includes 4 facilities; regraded existing Pond C, and 3 proposed facilities. The system of ponds spans across six (6) properties. Widened existing Pond C is located in the southeast corner of the intersection of US 41 (SR 45) at SR 54 at approximately Sta. 2629+00 (RT) and Sta. 1464+00 (RT). The second proposed facility of the system is located in the southwest corner of the intersection of US 41 (SR 45) at SR 54. The third and fourth proposed facilities are located in the northeast corner of the intersection of US 41 (SR 45) and SR 54. Existing ground elevation for the site is approximately elev. 71 and depth to water is 0.98 ft.

Hydraulic connectivity between the ponds will be achieved via equalizer pipes. A storm drain system will connect the 3 proposed facilities of SMF 2B to existing Pond C and outfall to Lake Floyd. This will maintain the existing outfall in the proposed condition. The design water level and normal water level of each pond are designed to match the existing Pond C. SMF 2B provides a total attenuation of 23.77 ac-ft which exceeds the required attenuation volume of 23.67 ac-ft. The required water quality PAV volume is 3.17 ac-ft, while the combined pond system provides 3.80 ac-ft, exceeding the minimum requirement.
The ponds have one (1) foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 70.3. The maintenance berm will have a 1:25 slopes and the pond will have 1:4 slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 slope to the pond bottom.

6.2.17 SMF 2C

SMF 2C is a proposed wet detention system that consists of 2 separate, hydraulically connected facilities operating together as a single integrated unit, one of which is the widening of existing Pond C. The system provides stormwater treatment and attenuation for Proposed Basin 2.

The pond is located in the southwest corner of the intersection of US 41 (SR 45) at SR 54 at approximately Sta. 2629+00 (RT) and Sta. 1464+00 (RT) respectively. The pond site is proposed to span across three (3) properties. SMF 2C is designed to work in conjunction with existing Pond C that has been regraded at approximately CL SR54 Sta. 1467+00 (RT). Proposed SMF 2C will treat and provide detention for the additional runoff within proposed Basin 2. An offsite storm drain system will hydraulically connect both ponds and discharge to Lake Floyd, preserving the existing outfall location under proposed conditions. SMF 2C design water level and normal water level are designed to match the existing Pond C. Existing ground elevation for the site is approximately elev. 73 and depth to water is 0.98 ft.

The existing attenuation volume in the basin provided by SWFWMD permitted existed pond C is 13.87 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 2C was sized to meet the delta attenuation volume needed. Required attenuation volume is 24.75 and provided attenuation volume of SMF 2C is 25.92 ac-ft.

The required water quality treatment volume accounts for the existing PAV volume of 2.24 ac-ft plus the delta between the existing and proposed reduced runoff volume. SMF 2C provides a treatment volume of 4.34 ac-ft, exceeding the required difference of 3.22 ac-ft for both ponds' treatment volume combined.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 70.3. The maintenance berm will have a 1:25 slopes and the pond will have 1:4 side slopes from the inside berm to two feet below the normal water level. The pond will have 1:2 side slopes to the pond bottom.

6.2.18 Existing Pond D

SPUI configuration: Existing Pond D was designed as a wet detention pond with seasonal high-water elevation of 69.26 to meet both water quality and quantity requirements for existing Basin 1. The pond is located at approximately Sta. 2600+00, RT at alignment CL. 41. Per SWFWMD ERP permit 43-12854.01, the required permanent wet pool volume is 9.51 ac-ft, and 9.72 ac-ft is provided. A 1.40-ac littoral zone is required, and 1.86 acres are provided. Existing pond stage/storage calculations and littoral zone required acreage is provided to match with the information of existing Pond D per the permit.

The existing attenuation volume in the basin provided by SWFWMD permitted existed pond D is 8.42 ac-ft. Pond D DHW elevation was increased from 71.25 to 71.26. Required attenuation volume is 8.46 ac-ft and provided attenuation volume of Pond D is 8.46 ac-ft, meeting the required attenuation volume. The provided water quality treatment volume is 1.97 ac-ft. Pond D's weir elevation was increased from 69.66 to 69.75 to meet the required treatment volume needed of 1.98 ac-ft.

DDI configuration: The existing pond provides adequate storage; therefore, the DHW and NWL elevations will remain unchanged from existing Pond D. The required water quality treatment volume is 1.86 ac-ft. Pond D's weir elevation was increased from 69.66 to 69.75 to meet the required treatment volume providing 1.98 ac-ft.

6.2.19 SMF 6A

SMF 6A is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 6. It is the first alternative for the basin. The pond is located south of SR 54 at approximately Sta. 1414+00 (RT). The pond site is proposed within a FDOT owned property making it the preferred alternative. It is the only alternative with no floodplain and wetland impacts. Per SWFWMD ERP permit 43-34153-004 (App. 852512), the estimated seasonal high groundwater elevation of 63.20 was used for calculations. The pond site has A/D soils. SMF 6A works with the existing system of roadside linear ponds shown in SWFWMD ERP permit 43-16251-18. SMF 6A will be hydraulically connected to keep existing drainage patterns. It will be piped to the existing linear pond system to keep the existing outfall. The system of ponds will discharge into the wetland north of SR54 Sta. 1420+20, through existing (2) 30" RCP cross drains under SR 54, and though the existing wetlands east of Evergreen Lane. Existing ground elevation for the site is approximately elev. 66 and depth to water is 0.98 ft.

The proposed roadway improvements do not impact the existing pond system in the basin. Therefore, the existing storage from the existing system of linear ponds will be used. The proposed pond was sized based on the delta between the existing and proposed condition 25-year, 24-hour peak discharges. The 25-year, 24-hour peak discharge is 10.09 ac-ft in pre-development condition and 11.18 ac-ft in post-development condition.

The existing attenuation volume in the basin provided by SWFWMD permitted existed ponds 7E1, 10E1, 12E1 is 8.36 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 6A was sized to meet the attenuation volume needed. This alternative provides a permanent wet detention volume of 1.09 ac-ft, meeting the required 1.09 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.74 ac-ft plus the delta between the existing and proposed PAV volume. The pond provides a PAV volume of 0.40 ac-ft, exceeding the required delta of 0.06 ac-ft.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 64.4. The maintenance berm will have a 1:30 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

This project should qualify to be grandfathered into the old water quality regulations, however if PD&E completion is not within the grandfathering time frame the final design will need to review regulatory changes on water quality.

6.2.20 SMF 6B

SMF 6B is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 6. It is the second alternative for the basin. The pond is located north of SR 54 at approximately station 1414+75 (LT). The pond site is proposed on one (1) offsite property. Per SWFWMD ERP permit 43-34153-004 (App. 852512), the estimated seasonal high groundwater elevation of 61.12 was used for calculations. The pond site has A/D soils. SMF 6B works with the existing system of roadside linear ponds shown in SWFWMD ERP permit 43-16251-18. The existing linear pond system will be hydraulically connected to SMF 6B resulting in a modification of the existing drainage patterns. The outfall will be moved to the north end of SMF 6B to outfall into the existing wetland but at a location that will allow the system to work efficiently. The existing (2) 30" RCP cross drains under SR 54 will remain and continue to discharge into the existing wetlands east of Evergreen Lane. Existing ground elevation for the site is approximately elev. 67 and depth to water is 0.98 ft.

The proposed roadway improvements do not impact the existing pond system in the basin. Therefore, the existing storage from the existing system of linear ponds will be used. The proposed pond was sized based on the delta between the existing and proposed condition 25-year, 24-hour peak discharges. The 25-year, 24-hour peak discharge is 9.61 ac-ft in pre-development condition and 10.94 ac-ft in post-development condition.

The existing attenuation volume in the basin provided by SWFWMD permitted existed ponds 7E1, 10E1, 12E1 is 8.36 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 6B was sized to meet the attenuation volume needed. This alternative provides a permanent wet detention volume of 1.33 ac-ft, exceeding the required delta of 1.04 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.74 ac-ft plus the delta between the existing and proposed PAV volume. The pond provides a PAV volume of 0.71 ac-ft, exceeding the required delta of 0.06 ac-ft.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.3. The maintenance berm will have a 1:8 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

This project should qualify to be grandfathered into the old water quality regulations, however if PD&E completion is not within the grandfathering time frame the final design will need to review regulatory changes on water quality.

6.2.21 SMF 6C

SMF 6C is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 6. It is the third alternative for the basin. The pond is located north of SR 54 at approximately station 1415+00 (LT). The pond site is proposed on one (1) offsite property. Per SWFWMD ERP permit 43-34153-004 (App. 852512), the estimated seasonal high groundwater elevation of 61.12 was used for calculations. The pond site has A/D soils. SMF 6C works with the existing system of roadside linear ponds shown in SWFWMD ERP permit 43-16251-18. The existing linear pond system will be hydraulically connected to SMF 6C. The outfall will be moved to the north end of SMF 6C to outfall into the existing wetland but at a location that will allow the system to work efficiently. The existing (2) 30” RCP cross drains under SR 54 will remain and continue to discharge into the existing wetlands east of Evergreen Lane. Existing ground elevation for the site is approximately elev. 67 and depth to water is 0.98 ft.

The proposed roadway improvements do not impact the existing pond system in the basin. Therefore, the existing storage from the existing system of linear ponds will be used. The proposed pond was sized based on the delta between the existing and proposed condition 25-year, 24-hour peak discharges. The 25-year, 24-hour peak discharge is 9.82 ac-ft in pre-development condition and 10.85 ac-ft in post-development condition.

The existing attenuation volume in the basin provided by SWFWMD permitted existed ponds 7E1, 10E1, 12E1 is 8.36 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed attenuation volume. SMF 6C was sized to meet the attenuation volume needed. This alternative provides a permanent wet detention volume of 1.02 ac-ft, meeting the required delta of 1.02 ac-ft.

The required water quality PAV volume accounts for the existing PAV volume of 0.74 ac-ft plus the delta between the existing and proposed PAV volume. The pond provides a PAV volume of 0.55 ac-ft, exceeding the required delta 0.06 ac-ft.

The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.3. The maintenance berm will have a 1:8 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

This project should qualify to be grandfathered into the old water quality regulations, however if PD&E completion is not within the grandfathering time frame the final design will need to review regulatory changes on water quality.

6.2.22 SMF 5A

The proposed roadway eliminates all existing linear roadway ponds within Basin 5. SMF 5A is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 5. It is the first alternative for the basin and the recommended alternative. This alternative has the least number of parcel impacts, with one parcel impact, vs the other alternatives. The pond is located south of SR 54 at approximately Sta. 1442+00 (RT). The site will require additional easement. The proposed basin will still outfall into the wetland, as it did in the existing condition, but the new outfall location will be SMF 5A's control structure location. Existing ground elevation for the site is approximately elev. 70 and depth to water is 0.98 ft.

The pond was designed with a conservative SHWE of 65.0 determined from SWFWMD permit #43-16251-18 and from field observations where standing water was observed above the weir of the control structure of existing pond P13E2 (naming from SWFWMD permit #43-16251-18). The control elevation of the pond is the normal water level which was set at the seasonal high-water elevation. The design high water elevation was set with a 1-foot clearance of the low point of the roadway. The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.9. The 15-foot maintenance berm will have a 1:30 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

The proposed roadway improvements eliminate the attenuation and treatment volumes in the basin. Therefore, the existing storage from the existing system of linear ponds is not able to be used. A permanent wet detention volume of 4.14 ac-ft is provided, exceeding the required 4.04 ac-ft. The provided water quality volume is 1.61 ac-ft, exceeding the required 1.04 ac-ft. The 25-year, 24-hour peak discharge is 7.97 ac-ft in pre-development condition and 10.48 ac-ft in post-development condition.

6.2.23 SMF 5B

The proposed roadway eliminates all existing linear roadway ponds within Basin 5. SMF 5B is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 5. It is the second alternative for the basin. This alternative has two (2) parcel impacts. The pond is located south of SR 54 at approximately station 1443+00 (RT). The site will require additional easement. The proposed basin will still outfall into the wetland, as it did in the existing condition, but the new outfall location will be SMF 5B's control structure location. Existing ground elevation for the site is approximately elev. 69 and depth to water is 0.98 ft.

The pond was designed with a conservative SHWE of 65.0 determined from SWFWMD permit #43-16251-18 and from field observations where standing water was observed above the weir of the control structure of existing pond P13E2 (naming from SWFWMD permit #43-16251-18). The control elevation of the pond is the normal water level which was

set at the seasonal high-water elevation. The design high water elevation was set with a 1-foot clearance of the low point of the roadway. The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.9. The 15-foot maintenance berm will have a 1:30 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

The proposed roadway improvements eliminate the attenuation and treatment volumes in the basin. Therefore, the existing storage from the existing system of linear ponds is not able to be used. A permanent wet detention volume of 4.22 ac-ft is provided, exceeding the required 4.08 ac-ft. The provided water quality volume is 1.63 ac-ft, exceeding the required 1.04 ac-ft. The 25-year, 24-hour peak discharge is 7.97 ac-ft in pre-development condition and 10.48 ac-ft in post-development condition.

6.2.24 SMF 5C

The proposed roadway eliminates all existing linear roadway ponds within Basin 5. SMF 5C is a proposed wet detention system that will provide stormwater treatment and attenuation for Basin 5. It is the third alternative for the basin. This alternative has six (6) parcel impacts. The pond is located south of SR 54 at approximately station 1444+00 (RT). The site will require additional right of way. The proposed basin will still outfall into the wetland, as it did in the existing condition, but the new outfall location will be SMF 5C's control structure location. Existing ground elevation for the site is approximately elev. 69 and depth to water is 0.98 ft.

The pond was designed with a conservative SHWE of 65.0 determined from SWFWMD permit #43-16251-18 and from field observations where standing water was observed above the weir of the control structure of existing SMF 5C (naming from SWFWMD permit #43-16251-18). The control elevation of the pond is the normal water level which was set at the seasonal high-water elevation. The design high water elevation was set with a 1-foot clearance of the low point of the roadway. The pond has 1 foot of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.9. The 15-foot maintenance berm will have a 1:30 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom.

The proposed roadway improvements eliminate the attenuation and treatment volumes in the basin. Therefore, the existing storage from the existing system of linear ponds is not able to be used. A permanent wet detention volume of 4.20 ac-ft is provided, exceeding the required 4.10 ac-ft. The provided water quality volume is 1.62 ac-ft, exceeding the required 1.04 ac-ft. The 25-year, 24-hour peak discharge is 7.97 ac-ft in pre-development condition and 10.50 ac-ft in post-development condition.

6.2.25 SMF 2D

This proposed pond alternative is associated with the DDI configuration.

SMF 2D is a proposed wet detention system comprised of three facilities that together provide stormwater treatment and attenuation for proposed Basin 2. The proposed roadway improvements significantly encroach upon the footprint of the existing pond (SWFWMD ERP permit 43-012854.001) located east of US41. To mitigate this impact, the first stormwater facility for SMF 2D was designed and graded within the same vicinity—approximately at Sta. 1044+00 (RT) along alignment BL SB_US41—maximizing the use of the remaining unaffected parcel.

The proposed minimum PGL roadway elevations within the Basin 2 limits along SR-54 dictated the design high water (DHW) elevation for this pond, reducing the DHW from 71.27' to 70.55'. NWL of SMF 2D remained the same from the existing conditions at 68.14 and the PAV elevation decreased from 68.70 on the existing condition to 68.50 in the

proposed condition. The inside and outside maintenance berm elevations were matched to those of the existing pond, and the existing littoral zone was restored in the proposed condition to replicate the pre-construction facilities

The second and third facility of SMF 2D is located at Sta. 1067+00 (RT) on alignment BL SB_US41 which maximizes the use of an affected parcel at the north east corner of the intersection. These stormwater facilities are required, as the initial pond alone could not meet the water quality and attenuation for proposed Basin 2. This facility will be hydraulically connected to the first facility to function as a single facility. The second facility provides treatment of 2.37 ac-ft and 16.73 ac-ft of attenuation.

The three proposed facilities will be hydraulically interconnected and designed to discharge to the same outfall location (Lake Floyd) as the existing pond, thereby maintaining the established drainage patterns.

6.2.26 SMF 3D

This proposed pond alternative is associated with the DDI configuration.

Pond SMF 3D is a wet detention pond designed to provide the required stormwater treatment and attenuation for the proposed roadway condition in addition to the volume provided by the impacted existing Pond B. Pond SMF 3D is located approximately between sta. 2022+00 and sta. 2034+40 (RT) at alignment BL_NB_US41.

The location for the pond SMF 3D requires additional parcel impacts to meet the required attenuation volume. The attenuation volume provided by Pond SMF 3D is 5.97 ac-ft which exceeds the required attenuation volume of 5.24 ac-ft. The required water quality treatment volume is 1.26 ac-ft and Pond SMF 3D provides a volume of 2.05 ac-ft.

Pond SMF 3D is designed to have 1 foot of freeboard between the design high water elevation and the inside berm. The berm will have a slope of 1:15. The pond will have side slopes of 1:8 for a width of 8.5 feet, to allow for the inclusion of a littoral zone, then continue at a slope of 1:4 from the littoral zone to the normal water level. The pond will have 1:2 slopes to the pond bottom.

6.2.27 SMF 4D

This proposed pond alternative is associated with the DDI configuration.

SMF 4D is a proposed wet detention facility that will provide stormwater treatment and attenuation for proposed Basin 4. The pond site is located approximately between Sta. 2007+00 and Sta 2019+00 (RT) along alignment BL_NB_US41. Drainage patterns are kept the same as permitted conditions where the drainage from the roadway pavement is collected by the closed systems, treated by the pond, and discharged to Wetland B south of the pond, which ultimately discharges into Cypress Creek.

The proposed DDI roadway impacts the existing pond along US 41 (SR 45). SMF 4D grading preserves as much of the existing pond footprint (per permit #43-12854) as possible on the southern side, where a wetland mitigation area currently exists. However, expansion into three adjacent parcels will be necessary to accommodate the impacts on the existing pond.

The proposed pond was sized based on the delta between the existing and proposed condition 25-yr, 24-hour runoff volume. Permitted Seasonal High Water Table of 68.25 is used as the existing pond NWL and remains the same in the proposed pond. Outside and inside berm elevations remain the same as the permitted pond. The proposed pond

provides 1.34 ft of freeboard meeting FDOT criteria. The 25-year, 24-hour peak discharge is 11.64 acre-ft in pre-development condition and 12.18 ac-ft in post-development condition.

The existing attenuation volume in the basin provided by SWFWMD permitted existing FDOT Pond A is 3.95 ac-ft. The required attenuation volume for the proposed basin is the sum of the existing attenuation volume and the delta between the existing and proposed runoff volume. SMF 4D provides an attenuation volume of 4.5 ac-ft, meeting the required 4.50 ac-ft. And a permanent wet detention volume of 8.87 ac-ft.

The required water quality PAV volume accounts for the higher of the permitted PAV and the calculated PAV from the existing and proposed PAV volume. The pond provides a PAV volume of 0.86 ac-ft, meeting the required 0.85 ac-ft.

During pond expansion, construction activities may temporarily impact the existing wetland mitigation area. Since the normal water level elevation has been maintained consistent with the littoral zone, any disturbed littoral areas can be successfully reestablished following construction.

6.2.28 SMF 5D

This proposed pond alternative is associated with the DDI configuration.

Since the existing linear ponds P15E2, P16E2, P18E2 and P19E2 cannot accommodate the increase runoff generated due to the proposed roadway, SMF 5D will work in conjunction with the existing linear ponds to provide treatment and attenuation for Basin 5. This alternative will impact one parcel and is the preferred alternative for proposed Basin 5. Proposed pond SMF 5D is located south of SR 54 at approximately Sta. 3002+00 (RT). The site will require additional right of way and keeps existing drainage patterns outfalling into the existing wetland east of Sienna Village's boardwalk.

The pond was designed to match the existing linear pond's, P15E2, P16E2, P18E2 and P19E2, SHWE of 64.0 determined from SWFWMD permit #43-16251-18. Field observations showed standing water was observed above the weir of the control structure of existing pond P13E2 (naming from SWFWMD permit #43-16251-18). Final SHWE will have to be re-evaluated during final design.

The control elevation of the pond is the normal water level which was set at the seasonal high-water elevation. The design high water elevation was set with a 1-foot clearance of the low point of the roadway. Design high water elevation was lowered from the existing pond linear ponds to 66.15 ft since the lowest PGL elevation was observed to be 67.15 ft on the existing road along the limits of the contributing runoff into proposed SMF 5D. Since SMF 5D was designed to work linearly with existing P15E2, P16E2, P18E2 and P19E2, the final elevation of the proposed design high water of SMF 5D will have to be finalized in the design phase. The SMF 5D has 2.35 ft of freeboard between the design high water and the inside berm. The inside berm elevation is set to be outside of the 100-year floodplain elevation of 66.9. The 15-foot maintenance berm will have a 1:10 slope and the pond will have 1:4 slopes from the inside berm to the pond bottom. The water quality volume provided is 0.52 ac-ft, meeting the required 0.18 ac-ft. SMF 5D provides attenuation of 0.95 which meets the required attenuation of 0.84 ac-ft.

SECTION 7: PROPOSED FLOODPLAIN COMPENSATION SITES

Alternatives for FPC sites are provided per impacted floodplain. Floodplains in the project area are either zone A or AE. Many of the impacts are to Zone AE floodplains with a couple impacts to Zone A flood zones on the east side of the intersection. The proposed floodplain compensation sites compensate the impacts both from the proposed roadway

and from impacts due to proposed pond site alternatives. Impacts were estimated per planview and seasonal high water and floodplain elevations.

Portions of the proposed Interchange SPUI improvements of US 41 (SR 45) at SR 54 will encroach into areas classified as FEMA Flood Zone AE and A as identified in the Pasco County FIRM (Panels 403, 404 and 412, September 2014). The floodplain encroachment impact areas can be seen on Appendix 7-FLOODPLAIN IMPACT EXHIBIT & SUMMARY TABLE-SPUI. A single floodplain can have multiple impacts. Therefore, the Summary Table of Floodplain Impacts lists which impacts correspond to each floodplain. Refer to Appendix 8- FLOODPLAIN COMPENSATION SITE EXHIBIT & SUMMARY TABLE-SPUI for a summary table of all the proposed floodplain compensation sites alternatives. All proposed floodplain compensation areas, including all preferred compensation areas for the SPUI configuration are shown in Appendix 4- PROPOSED POND AND FPC SITE ALTERNATIVES EXHIBIT-SPUI. Detailed floodplain impact and floodplain compensation calculations are included in Appendix 9-FLOODPLAIN COMPENSATION CALCULATIONS-SPUI.

Floodplain compensation analysis information for the DDI configuration is found:

APPENDIX 13-PROPOSED POND AND FPC SITE ALTERNATIVES EXHIBIT-DDI
APPENDIX 16-FLOODPLAIN IMPACT EXHIBIT & SUMMARY TABLE-DDI
APPENDIX 17-FLOODPLAIN COMPENSATION SITE EXHIBIT & SUMMARY TABLE-DDI
APPENDIX 18-FLOODPLAIN COMPENSATION CALCULATIONS-DDI

Compensation for the floodplain impacts was determined using a “cup for cup” methodology. Areas identified for viable compensation sites have varying depths of flood storage due to the topography around the area and varying depths to the estimated seasonal high groundwater table. Final geotechnical data will be required for final design.

Detailed modeling will be required during the design phase, based on the complex interconnectivity of the floodplains around the intersection.

Below are the FPC sites first grouped by the floodplain they are providing compensation for and then grouped by the roadway configuration, SPUI configuration followed by the DDI configuration.

Section 7.1 Floodplain #120 Zone AE Elev. 70.3 :

Section 7.1.1 FPC 120A

FPC 120A spans from Sta. 204+80 to Sta. 213+00 (LT) at alignment CL. 597 by expanding and regrading the existing ditch on the left side of CL. 597. Its purpose is to provide floodplain compensation for the floodplain impact resulting from roadway widening within flood Zone AE with the 100-year flood elevation of 70.3.

Compensation is provided between SHWE 69 and BFE 70.30. Floodplain impact net volume is 0.192 ac-ft, and the compensation volume provided by FPC 120A is 0.356 ac-ft, which meets the requirement. FPC 120A can be utilized in conjunction with either the proposed SMF 3B or SMF 3C alternatives.

Section 7.1.2 FPC 120B

FPC 120B extends from Sta. 200+00 to Sta. 201+50 (LT) at alignment CL. 597, LT. Its purpose is to provide floodplain compensation for the floodplain impact resulting from roadway widening within flood Zone AE with the 100-year flood elevation of 70.3. Compensation is provided between SHWE 69 and BFE 70.30. FPC 120B will be hydraulically connected to the existing ditch north of it by a proposed pipe installed underneath the driveway. Floodplain impact net

volume is 0.192 ac-ft, and compensation volume provided by FPC 120B is 0.354 ac-ft, which meets the requirement. FPC 120B can be utilized if either proposed SMF 3B or SMF 3C is chosen as an alternative.

Section 7.1.3 FPC 120C

FPC 120Cspans from Sta. 202+50 to 205+50(RT) at alignment CL. 597, RT. This FPC site is located between Dale Mabry Hwy and US 41 (SR 45). It is designed to offset floodplain impact resulting from roadway widening within flood Zone AE with the 100-year flood elevation of 70.3. Compensation is provided between SHWE 69 and BFE 70.30. FPC 120Cwill be connected hydraulically to the existing ditches west of the site. The compensation volume provided by FPC 120Cis 0.531 ac-ft, meeting requirements.

If proposed pond alternative Pond B1 is selected, which includes Pond B1A, Pond B1B, and existing Pond B, floodplain compensation will be provided in proposed Pond B1A (between Dale Mabry Hwy and US 41 (SR 45)). FPC 120C also serves as an alternative FPC site location if either proposed SMF 3B or SMF 3C is selected since it is located in the same parcel as proposed alternative Pond B1 This eliminates the need for additional floodplain compensation sites.

Section 7.2 Floodplain #110 Zone AE Elev. 67.3 :

Section 7.2.1 FPC 110E

FPC 110E is located on State Road 54 approximately from CL 597 stations 1459+00 to 1461+00 (RT). This floodplain compensation site will offset floodplain impact as a result of SMF 2B. It provides compensation for the impacts to the Zone AE floodplain with Elev 67.3. The site is proposed on one (1) property. This site provides compensation for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 67.01 and 100-year flood elevation 67.30. The compensation volume provided by FPC 110E is 0.27 ac-ft, which meets the floodplain impact volume of 0.261 ac-ft.

Section 7.3 Floodplain # 117 Zone AE Elev. 69.6 :

Section 7.3.1 FPC 117A

FPC 117A is located on State Road 54 approximately from stations 1466+75 to 1470+36 (RT). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on one (1) property. Per SWFWMD Permit 43-12854 Existing Pond C has an existing mitigation area of 1.47 acres that are impacted as a result of widening Pond C. This floodplain compensation was analyzed conservatively to restore the impacts caused as a result of choosing alternative SMF 2A or SMF 2B and provide compensation for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts. This floodplain site is shared as an option for alternative SMF 2A or SMF 2B.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.14 and 100-year flood elevation 69.60. The compensation volume provided is 3.70 ac-ft, which meets the floodplain impact volume of 3.65 ac-ft.

Section 7.3.2 FPC 117B

FPC 117B is comprised of two sites that together provide the necessary floodplain compensation. The site is located on State Road 54 approximately from stations 1467+10 to 1474+50 (RT). These floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on two (2) properties. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design as a result of choosing option SMF 2C. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.14 and 100-year flood elevation 69.60. The compensation volume provided by FPC 117B are 1.40 ac-ft, which meets the floodplain impact volume of 1.37 ac-ft in the event SMF 2C is selected.

Section 7.4 Floodplain #113 Zone AE Elev. 70.8 :

Section 7.4.1 FPC 113A

FPC 113A is located on State Road 54 approximately from stations 1479+35 to 1479+95 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the roadway impacts to the Zone AE floodplain with Elev 70.80. The site is proposed on one (1) property. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.24 and 100-year flood elevation 70.80. The compensation volume provided by FPC 113A is 0.10 ac-ft, which meets the floodplain impact volume of 0.08 ac-ft.

Section 7.4.2 FPC 113B

FPC 113B is located on State Road 54 approximately from stations 1476+75 to 1477+15 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 70.80. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.24 and 100-year flood elevation 70.80. The compensation volume provided by FPC 113B is 0.13 ac-ft, which meets the floodplain impact volume of 0.08 ac-ft.

Section 7.4.3 FPC 113C

FPC 113C is located on State Road 54 approximately from stations 1476+65 to 1479+50 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 70.80. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.24 and 100-year flood elevation 70.80. The compensation volume provided by FPC 113C is 0.11 ac-ft, which meets the floodplain impact volume of 0.08 ac-ft.

Section 7.5 Floodplain #116 Zone AE Elev. 69.20:

Section 7.5.1 FPC 116A

FPC 116A is located on State Road 54 approximately from stations 1492+25 to 1494+05 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Floodplain compensation site is meant to offset floodplain impact from the widening of the proposed road. however, due to the floodplain being adjacent to a neighborhood, the floodplain site was chosen to be hydraulically connected with the pond 1A (1) and impacted floodplain through proposed storm drain.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 116A is 0.07 ac-ft, which meets the floodplain impact volume of 0.07 ac-ft.

Section 7.5.2 FPC 116B

FPC 116B is located on State Road 54 approximately from stations 1488+25 to 1491+90 (LT). This floodplain compensation site will offset floodplain impact because of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Floodplain compensation site is meant to offset floodplain impact from the widening of the proposed road. however, due to the floodplain being adjacent to a neighborhood, the floodplain site was chosen to be hydraulically connected with the SMF 7B and impacted floodplain through proposed storm drain.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 116B is 0.085 ac-ft, which meets the floodplain impact volume of 0.071 ac-ft.

Section 7.5.3 FPC 116C

FPC 116C is located on State Road 54 approximately from stations 1482+05 to 1487+20 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Floodplain compensation site is meant to offset floodplain impact from the widening of the proposed road. however, due to the floodplain being adjacent to a neighborhood, the floodplain site was chosen to be hydraulically connected with the pond 1A (3) and impacted floodplain through proposed storm drain.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 116C is 0.082 ac-ft, which meets the floodplain impact volume of 0.071 ac-ft.

Section 7.6 Floodplain #114 Zone A Elev. 69.20:

Section 7.6.1 FPC 114A

FPC 114A is located on State Road 54 approximately from stations 1493+00 to 1494+55 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone A floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Elevation of floodplain Zone A will be confirmed and adjusted for the design phase of the project to represent accurately the outfall of this floodplain impact area.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 114A is 0.01 ac-ft, which meets the floodplain impact volume of 0.01 ac-ft.

Section 7.6.2 FPC 114B

FPC 114B is located on State Road 54 approximately from stations 1492+50 to 1493+00 (LT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone A floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Elevation of floodplain Zone A will be confirmed and adjusted for the design phase of the project to represent accurately the outfall of this floodplain impact area.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 114B is 0.01 ac-ft, which meets the floodplain impact volume of 0.01 ac-ft.

Section 7.6.3 FPC 114C

FPC 114Cis located on State Road 54 approximately from stations 1493+85 to 1495+15 (RT). This floodplain compensation site will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone A floodplain with Elev 69.20. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Elevation of floodplain Zone A will be confirmed and adjusted for the design phase of the project to represent accurately the outfall of this floodplain impact area.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.08 and 100-year flood elevation 69.20. The compensation volume provided by FPC 1A(1)_A3 is 0.01 ac-ft, which meets the floodplain impact volume of 0.01 ac-ft.

Section 7.7 Floodplain #115 Zone AE Elev. 69.60 :

Section 7.7.1 FPC 115A

FPC 115A is located on State Road 54 approximately from stations 1510+85 to 1514+20 (LT). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design plus the impacts

from the proposed pond alternative with the greatest floodplain impacts. To offset impacts to this floodplain, existing floodplain compensation Pond 2B was widened from existing to accommodate additional impacts.

Web soil survey data indicates type A/D soils. Per SWFWMD Permit 43-19567.00, SHW was provided in NAVGD 1929. SHWE from permit was converted from metric units to Imperial/U.S. Measurement Systems and elevation was adjusted to NAVD 88. Compensation is provided between seasonal high water of 66.96 and 100-year flood elevation 69.60. The compensation volume provided by FPC 115A is 3.12 ac-ft, which meets the floodplain impact volume of 3.12 ac-ft. in the event SMF 8A is selected.

Section 7.7.2 FPC 115B

FPC 115B is located on State Road 54 approximately from stations 1498+60 to 1503+35 (RT). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on one (1) property. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts.

Web soil survey data indicates type A/D soils. Per SWFWMD Permit 43-19567.00, SHW was provided in NAVGD 1929. SHWE from permit was converted from metric units to Imperial/U.S. Measurement Systems and elevation was adjusted to NAVD 88. Compensation is provided between seasonal high water of 66.96 and 100-year flood elevation 69.60. The compensation volume provided by FPC 115B is 3.80 ac-ft, which meets the floodplain impact volume of 3.77 ac-ft in the event SMF 8B is selected.

Section 7.7.3 FPC 115C

FPC 115C consists of two locations that together provide the required compensation needed due to the proposed roadway widening. FPC 115C is located north of State Road 54 approximately from stations 1499+25 to 1501+80 (LT). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on three (3) properties. These sites were analyzed conservatively to provide compensation for the impacts from the proposed roadway design. These two floodplains compensation sites will be hydraulically connected to the impacted floodplain to mitigate affected area.

Web soil survey data indicates type A/D soils. Per SWFWMD Permit 43-19567.00, SHW was provided in NAVGD 1929. SHWE from permit was converted from metric units to Imperial/U.S. Measurement Systems and elevation was adjusted to NAVD 88. Compensation is provided between seasonal high water of 66.96 and 100-year flood elevation 69.60. The compensation volume provided by FPC 115C is 1.79 ac-ft, which meets the floodplain impact volume of 1.61 ac-ft in the event SMF 8C is selected.

Section 7.8 Floodplain #126 Zone AE Elev. 68.5 :

Section 7.8.1 FPC 126A

FPC 126A is located on State Road 54 approximately from stations 1508+50 to 1511+30 (RT). It provides compensation for the impacts to the Zone AE floodplain with Elev 68.50. The site is proposed on two (2) properties.

Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 66.96 and 100-year flood elevation 68.50. The compensation volume provided by FPC 126A is 1.35 ac-ft, which meets the floodplain impact volume of 1.26 ac-ft in the event SMF 8C is selected.

Section 7.9 Floodplain #100 Zone AE Elev. 66.3 :

Section 7.9.1 FPC 100A

FPC 100A is located on the north side of State Road 54 approximately from stations 1412+00 to 1414+00 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 66.3. The site is proposed on one (1) property. It is intended to utilize the same parcel in conjunction with pond alternative SMF 6B. This site was analyzed for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 100A provides 1.64 ac-ft of compensation, exceeding the impact volume of 1.57 ac-ft.

Section 7.9.2 FPC 100B

FPC 100Bis located on the north side of State Road 54 approximately from stations 1417+00 to 1420+00 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 66.3. This floodplain compensation area is the preferred alternative for its utilization of existing FDOT RW. Most of the FPC site is intended to utilize the existing FDOT RW in the area. The FPC will require RW acquisition from an additional property to not encroach near the existing outfall area. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 100Bprovides 1.59 ac-ft of compensation, exceeding the impact volume of 1.57 ac-ft.

Section 7.9.3 FPC 100C

FPC 100C is located on the north side of State Road 54 approximately from station 1421+00 to 1425+00 (LT). The site is proposed on one (1) property. Access to the site will be off Wilson Road. It provides compensation for the impacts to the Zone AE floodplain with elev 66.3. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design plus the impacts from the proposed pond alternative with the greatest floodplain impacts.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 100C provides 1.70 ac-ft of compensation, exceeding the impact volume of 1.57 ac-ft.

Section 7.10 Floodplain #102 Zone AE Elev. 64.8 :

Section 7.10.1 FPC 102A

FPC 102A is located on the south side of State Road 54 approximately from stations 1415+90 to 1417+00 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 64.8. This floodplain compensation area is the preferred alternative for it would expand the existing floodplain within existing FDOT RW next to Evergreen Lane. This site provides compensation for the floodplain impacts from the proposed roadway along Eastbound SR 54.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 102A provides 0.005 ac-ft of compensation, meeting the impact volume of 0.005 ac-ft.

Section 7.10.2 FPC 102B

FPC 102B is located on the south side of State Road 54 approximately from stations 1422+00 to 1423+00 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 64.8. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This proposed floodplain compensation area would expand the existing floodplain and would require a drainage easement for access.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 102B provides 0.005 ac-ft of compensation, meeting the impact volume of 0.005 ac-ft.

Section 7.10.3 FPC 102C

FPC 102C is located on the south side of State Road 54 approximately from stations 1419+00 to 1420+00 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 64.8. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This proposed floodplain compensation area would expand the existing floodplain. The site is off Henning Lane and would require a drainage easement for access.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 102C provides 0.005 ac-ft of compensation, meeting the impact volume of 0.005 ac-ft.

Section 7.11 Floodplain #103 Zone AE Elev. 66.9 :

Section 7.11.1 FPC 103A

FPC 103A is located on the south side of State Road 54 approximately from stations 1440+00 to 1443+00 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 66.9. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This proposed floodplain compensation area would expand the existing floodplain. This is the preferred alternative for this floodplain impact because if SMF 5A is chosen it would result in only needing a single parcel for both the proposed pond and floodplain site.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 103A provides 1.91 ac-ft of compensation, exceeding the impact volume of 1.74 ac-ft.

Section 7.11.2 FPC 103B

FPC 103B is located on the south side of State Road 54 approximately from stations 1437+00 to 1439+20 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 66.9. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This proposed floodplain compensation area would expand the existing floodplain. This FPC site would be near the preferred SMF 5A. This floodplain is the outfall for Basin 5 and therefore the outfall location would be closer to the preferred pond. However, this site would impact an existing business off Brunell Trace making it the least preferred alternative.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 103B provides 1.95 ac-ft of compensation, exceeding the impact volume of 1.74 ac-ft.

Section 7.11.3 FPC 103C

FPC 103C is located on the south side of State Road 54 approximately from stations 1432+00 to 1434+00 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 66.9. The floodplain impacts are from the proposed roadway along Eastbound SR 54. A drainage easement will be required for maintenance access to the site. The site is located between two proposed driveways.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 103C provides 2.59 ac-ft of compensation, exceeding the impact volume of 1.74 ac-ft.

Section 7.12 Floodplain # 104 Zone AE Elev. 67.20 :

Section 7.12.1 FPC 104A

FPC 104A is located on the north side of State Road 54 approximately from stations 1445+65 to 1447+10 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.20. The floodplain impacts are from the proposed roadway along Westbound SR 54. There is limited space for floodplain compensation areas in this area. This site is the preferred location because it is the only alternative right next to the project limits. A drainage easement will be required for maintenance access to the site. The nearest cross street is Hunt Road.

The seasonal highwater elevation of 67.02 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 104A provides 0.13 ac-ft of compensation, exceeding the impact volume of 0.12 ac-ft.

Section 7.12.2 FPC 104B

FPC 104B is located on the north side of State Road 54 approximately from stations 1439+40 to 1440+70 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.20. This site is near the impacted floodplain however is not favorable due to RW acquisition. The FPC takes two business buildings closest to the floodplain. A drainage easement will be required for maintenance access to the site which could be provided off Devonoak Road.

The seasonal highwater elevation of 66.02 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 104B provides 0.86 ac-ft of compensation, exceeding the impact volume of 0.80 ac-ft.

Section 7.12.3 FPC 104C

FPC 104C is located on the north side of State Road 54 approximately from stations 1447+00 to 1449+50 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.20. floodplain impacts are from the proposed roadway along Westbound SR 54. There is gate access to the neighborhood off Hunt Rd. It looks to be the access to the existing pond that is within the existing Zone AE elev 70.5 floodplain in the southern portion of the neighborhood. The proposed FPC site would be located next to this existing Zone AE floodplain. This site is not a preferred site for it would require RW takes of homes in the neighborhood that are closest in proximity to impacted floodplain, closest to the project limits and the existing pond access. The existing pond access can be evaluated as the drainage easement required for maintenance access.

The seasonal highwater elevation of 66.25 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 104C provides 0.65 ac-ft of compensation, exceeding the impact volume of 0.65 ac-ft.

Section 7.13 Floodplain #107 Zone AE Elev. 67.60 :

Section 7.13.1 FPC 107A

FPC 107A is located on the north side of State Road 54 approximately from stations 1449+00 to 1452+50 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.60. The floodplain impacts are from the proposed roadway along Westbound SR 54. This is a preferred compensation site for it is located within one (1) parcel and next to the project limits. A drainage easement will be required for maintenance access to the site. The nearest cross street is Hunt Road.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 107A provides 4.32 ac-ft of compensation, exceeding the impact volume of 1.49 ac-ft.

Section 7.13.2 FPC 107B

FPC 107B is located on the north side of State Road 54 approximately from stations 1447+50 to 1452+50 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.60. The floodplain impacts are from the proposed roadway along Westbound SR 54. This is location results in one (1) parcel impact. A drainage easement will be required for maintenance access to the site. The nearest cross street is Hunt Road.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 107B provides 3.06 ac-ft of compensation, exceeding the impact volume of 1.49 ac-ft.

Section 7.13.3 FPC 107C

FPC 107C is located on the north side of State Road 54 approximately from stations 1452+90 to 1454+00 (LT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.60. The floodplain impacts are from the proposed roadway along Westbound SR 54. This is the least preferred compensation site for this floodplain due to the RW acquisition that would be required. Parcel impacts would include building and parking lot takes. A drainage easement will be required for maintenance access to the site. The nearest cross street is Hunt Road.

The seasonal highwater elevation of 64.72 was referenced from SWFWMD permit # 43-16251-18. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 107C provides 2.98 ac-ft of compensation, exceeding the impact volume of 1.49 ac-ft.

Section 7.14 Floodplain #110 Zone AE Elev. 67.30 :

Section 7.14.1 FPC 110A

FPC 110A is located on the north side of State Road 54 approximately from stations 1452+50 to 1454+50 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.30. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This is the preferred compensation site because it results in a single parcel impact. However, this is a viable location if proposed alternative, SMF 2C is not chosen. Maintenance access could be evaluated along SR 54.

The seasonal highwater elevation of 67.02 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 110A provides 0.59 ac-ft of compensation, exceeding the impact volume of 0.55 ac-ft.

Section 7.14.2 FPC 110B

FPC 110B is located on the north side of State Road 54 approximately from stations 1446+50 to 1462+50 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.30. The floodplain impacts are from the proposed roadway along Eastbound SR 54. This FPC site results in a single parcel impact. This is a viable location if proposed alternative, SMF 2C is not chosen. Maintenance access could be gained off a proposed driveway along SR 54.

The seasonal highwater elevation of 65.02 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 110B provides 4.82 ac-ft of compensation, exceeding the impact volume of 4.51 ac-ft.

Section 7.14.3 FPC 110C

FPC 110C is located on the north side of State Road 54 approximately from stations 1446+00 to 1449+50 (RT). It provides compensation for the impacts to the Zone AE floodplain with elev 67.30. The floodplain impacts are from the proposed roadway along Eastbound SR 54. The location results in one parcel impact. The adjacent road, Sofia Road, is a private road therefore drainage maintenance access would need to be off US54.

The seasonal highwater elevation of 67.02 was evaluated using the lowest contour elevation and soil data for the site. USDA web soil survey data indicates type A/D soils.

Compensation was provided between the floodplain elevation and the seasonal high-water elevation. An updated geotechnical report will be required for the design phase of the project. FPC 110C provides 0.57 ac-ft of compensation, exceeding the impact volume of 0.55 ac-ft

Section 7.15 Floodplain #105 Zone AE Elev. 68.60 :

Section 7.15.1 FPC 105D

This proposed FPC alternative is associated with the DDI configuration.

FPC 105D is located along BL_SR56_WB approximately at station 4000+00 (LT). This floodplain compensation sites will offset floodplain impact as a result of the widening along State Road 54 due to the DDI roadway alternative. It provides compensation for the impacts to the Zone AE floodplain with Elev 68.50. The site is proposed one (1) parcel. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 67.50 and 100-year flood elevation 68.50. The compensation volume provided by FPC 105D is 0.05 ac-ft, which meets the floodplain impact volume of 0.026 ac-ft.

Section 7.16 Floodplain #106 Zone AE Elev. 70.60 :

Section 7.16.1 FPC 106D

This proposed FPC alternative is associated with the DDI configuration.

FPC 106D is located along BL_SR56_EB approximately at station 3011+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 70.60. The site is proposed on one (1) parcel. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 69.62 and 100-year flood elevation 70.60. The compensation volume provided by FPC 106D is 0.016 ac-ft, which meets the floodplain impact volume of 0. 015 ac-ft.

Section 7.17 Floodplain #107 Zone AE Elev. 67.60 :

Section 7.17.1 FPC 107D

This proposed FPC alternative is associated with the DDI configuration.

FPC 107D is located west of BL_US41_Ramp A approximately at station 613+00 (LT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 67.60. The site is proposed one (1) parcel. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 66.62 and 100-year flood elevation 67.60. The compensation volume provided by FPC 107D is 0.068 ac-ft, which meets the floodplain impact volume of 0.015 ac-ft.

Section 7.18 Floodplain #109 Zone AE Elev. 70.30 :

Section 7.18.1 FPC 109D

This proposed FPC alternative is associated with the DDI configuration.

FPC 109D is located along BL_SR56_EB approximately at station 3012+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 70.30. The site is proposed one (1) parcel. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.14 and 100-year flood elevation 70.30. The compensation volume provided by FPC 109D is 0.136 ac-ft, which meets the floodplain impact volume of 0.130 ac-ft.

Section 7.19 Floodplain #110 Zone AE Elev. 67.30 :

Section 7.19.1 FPC 110D

This proposed FPC alternative is associated with the DDI configuration.

FPC 110D is located along BL_SR56_WB approximately at station 4012+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 67.30. The proposed site spans two (2) parcels that will be directly impacted by the proposed roadway improvements. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 66.32 and 100-year flood elevation 67.30. The compensation volume provided by FPC 110D is 0.719 ac-ft, which meets the floodplain impact volume of 0.691 ac-ft.

Section 7.20 Floodplain #112 Zone AE Elev. 73.20 :

Section 7.20.1 FPC 112D

This proposed FPC alternative is associated with the DDI configuration.

FPC 112D is located along BL_SR56_WB_Ramp D1 approximately at station 708+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of US 41 (SR 45). It provides compensation for the impacts to the Zone AE floodplain with Elev 73.20. The proposed site spans one (1) parcel that will be directly impacted by the proposed roadway improvements. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 72.22 and 100-year flood elevation 73.20. The compensation volume provided by FPC 112D is 0.046 ac-ft, which meets the floodplain impact volume of 0.029 ac-ft.

Section 7.21 Floodplain #117 Zone AE Elev. 69.60 :

Section 7.21.1 FPC 117D

This proposed FPC alternative is associated with the DDI configuration.

FPC 117D is located along BL_SR56_WB approximately at station 4030+00 (LT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on two (2) properties. This site was analyzed conservatively to provide compensation for the impacts from the proposed roadway design. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.14 and 100-year flood elevation 69.60. The compensation volume provided by FPC 117D is 0.337 ac-ft, which meets the floodplain impact volume of 0.313 ac-ft.

Section 7.22 Floodplain #118 Zone AE Elev. 70.30 :

Section 7.22.1 FPC 118D

This proposed FPC alternative is associated with the DDI configuration.

FPC 118D is located along BL_Ramp_C approximately at station 25+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of State Road 54. It provides compensation for the impacts to the Zone AE floodplain with Elev 70.30. The site is proposed one (1) parcel. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.14 and 100-year flood elevation 70.30. The compensation volume provided by FPC 118D is 4.622 ac-ft, which meets the floodplain impact volume of 4.234 ac-ft.

Section 7.23 Floodplain #119 Zone AE Elev. 69.90 :

Section 7.23.1 FPC 119D

This proposed FPC alternative is associated with the DDI configuration.

FPC 119D is located along BL_NB_CR597_US41 approximately at station 608+50 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening along N Dale Mabry Highway (SR 597). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.90. The site is proposed on one (1) parcel. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.90 and 100-year flood elevation 69.90. The compensation volume provided by FPC 119D is 0.425 ac-ft, which meets the floodplain impact volume of 0.420 ac-ft.

Section 7.24 Floodplain #125 Zone AE Elev. 69.60 :

Section 7.24.1 FPC 125D

This proposed FPC alternative is associated with the DDI configuration.

FPC 125D is located along BL_NB_US41 approximately at station 2016+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of US 41 (SR 45). It provides compensation for the impacts to the Zone AE floodplain with Elev 69.60. The site is proposed on one (1) parcel. A conservative analysis was performed to account for impacts through expansion of the existing floodplain. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.25 and 100-year flood elevation 69.60. The compensation volume provided by FPC 125D is 0.803 ac-ft, which meets the floodplain impact volume of 0.794 ac-ft.

Section 7.25 Floodplain #126 Zone AE Elev. 68.50 :

Section 7.25.1 FPC 126D

This proposed FPC alternative is associated with the DDI configuration.

FPC 126D is located along BL_NB_US41 approximately at station 2003+00 (RT). This floodplain compensation sites will offset floodplain impact as a result of the widening of US 41 (SR 45). It provides compensation for the impacts to the Zone AE floodplain with Elev 68.50. The site is proposed on one (1) parcel. A conservative analysis was

performed to account for impacts through expansion of the existing floodplain. Site access will be provided via an easement along Glory Road. Web soil survey data indicates type A/D soils. Compensation is provided between seasonal high water of 68.25 and 100-year flood elevation 68.50. The compensation volume provided by FPC 126D is 0.036 ac-ft, which meets the floodplain impact volume of 0.033 ac-ft.

SECTION 8: CONTAMINATION SITES

The results for the drainage sites of the preferred roadway alternative; Diverging Diamond Interchange (DDI), is pending completion of analysis.

Thirty (30) contamination sites were evaluated within the project area. Detailed results are documented in the Contamination Tech Memo dated July 2023 in Appendix B. Please refer to the *Contamination Site Map* in Appendix A of the Contamination Tech Memo in Appendix B for the contamination sites in relation to the preferred pond and FPC sites. The risk rating for the preferred sites are summarized in Table 6- Summary of Risk Rating for Preferred Drainage Sites.

Table 6 – Summary of Risk Rating for SPUI Drainage Sites

Preferred Ponds	Risk Rating
SMF 7B	Medium
SMF 8A	No
SMF 3C	Low
SMF 2A	High
SMF 2A	High
SMF 2A	Medium
SMF 6A	Medium
SMF 5A	Low
Preferred FPC	Risk Rating
FPC 116B	Medium
FPC 115A	No
FPC 120A	Medium
FPC 117A	Low
FPC 113A	Medium
FPC 102A	Low
FPC 100A	Low
FPC 103A	No
FPC 104A	Low
FPC 107A	Low
FPC 110A	Low

SECTION 9: CONCLUSION

Alternative pond sites have been identified along the project corridor. The evaluation provides estimates for right-of-way needs implementing a volumetric analysis that accounts for the water quantity and quality requirements set forth by FDOT and SWFWMD for the project area. The right-of-way cost estimate provided in this report is a budget tool used by the FDOT to estimate total acquisition costs for the properties associated with each stormwater management

facility and to budget the appropriate funds for acquisition. It should be noted that right-of-way cost estimates are not real estate appraisals and do not reflect market value. The FDOT uses appraisals that comply with the Uniform Standards of Professional Appraisal Practice (USPAP) for acquisition purposes.

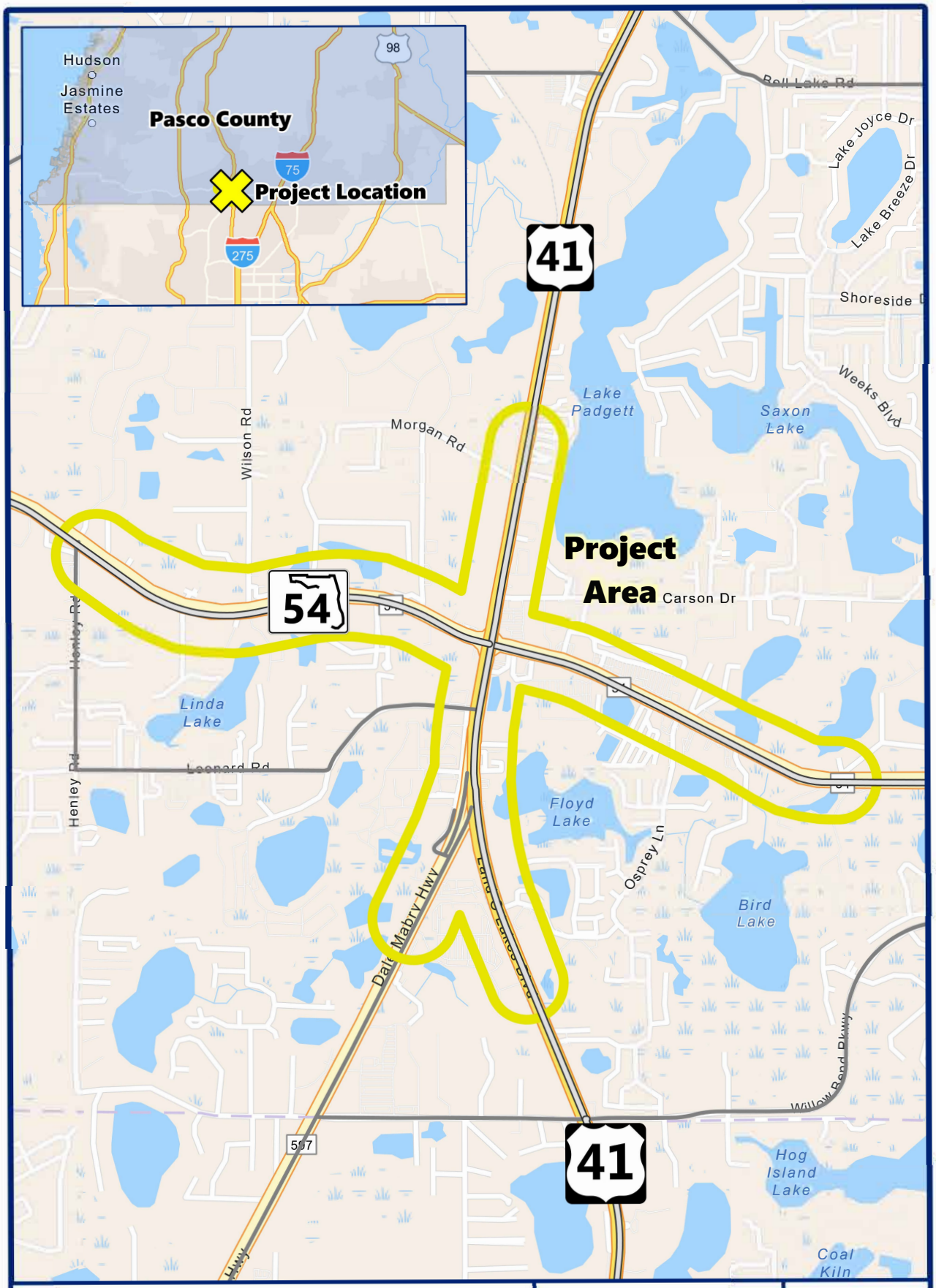
The preliminary calculations used to support the recommendations are included in Appendix 6. The graphical representation of the pond alternatives and the roadway alignment is provided in the exhibits in Appendix 4. Please note that the recommendations are based on preliminary data and calculations, reasonable engineering judgment, and assumptions. The pond sizes and locations are subject to change during final design when detailed data becomes available for the permeability rates of the soils, estimated seasonal high-water elevations, and final roadway profiles. Please refer to Table 7 for the Summary of Stormwater Management Facility Recommendations.

Table 7 – Summary of Stormwater Management Facility Recommendations

Basin Name	Preferred Pond	Approximate Location	Normal Water Level	Inside Berm Elevation	Design High Water Elevation	Minimum Gutter Elevation	Outfall
1	Exist. Pond D	1103+60 (LT) @ BL_SB_US 41	69.26	73.00	71.25 (25YR/24HR)	73.28	Lake Vienna
2	SMF 2D	2050+00 (RT) @BL BL_NB_US41	68.14	71.60	70.55 (25YR/24HR)	72.38	Lake Floyd
3	SMF 3D	2022+00 to 2034+40 (RT) @ BL_NB_US41	68.50	71.03	70.03 (25YR/24HR)	73.54	Wetland D
4	SMF 4D	2007+00 and 2019+00 (RT) @ BL_NB_US41	68.25	70.60	69.26 (25YR/24HR)	71.74	Wetland B
5	SMF 5D	3002+00 (RT) @ BL_SR54_EB	64.00	66.90	66.15 (25YR/24HR)	67.15	Lake Thomas
VILLAGE LAKE SHOPPING CENTER DR	No pond required for this Basin						Lake Floyd

APPENDIX 1

FIGURES



US 41 at SR 54 PD&E Study

from South of SR 54 Intersection to North of SR 54 Intersection

Figure 1
Project Location Map

NOAA Atlas 14, Volume 9, Version 2
Location name: Lutz, Florida, USA*
Latitude: 28.1911°, Longitude: -82.4652°
Elevation: 72 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.543** (0.456-0.660)	**0.611** (0.512-0.742)	**0.717** (0.599-0.874)	**0.801** (0.665-0.982)	**0.913** (0.725-1.15)	**0.994** (0.771-1.27)	**1.07** (0.799-1.41)	**1.15** (0.815-1.56)	**1.24** (0.844-1.74)	**1.31** (0.865-1.88)
10-min	**0.796** (0.668-0.966)	**0.894** (0.750-1.09)	**1.05** (0.877-1.28)	**1.17** (0.974-1.44)	**1.34** (1.06-1.68)	**1.46** (1.13-1.86)	**1.57** (1.17-2.06)	**1.68** (1.19-2.28)	**1.82** (1.24-2.54)	**1.92** (1.27-2.74)
15-min	**0.970** (0.815-1.18)	**1.09** (0.914-1.32)	**1.28** (1.07-1.56)	**1.43** (1.19-1.75)	**1.63** (1.30-2.05)	**1.78** (1.38-2.27)	**1.92** (1.43-2.52)	**2.05** (1.46-2.78)	**2.22** (1.51-3.10)	**2.34** (1.54-3.35)
30-min	**1.50** (1.26-1.82)	**1.66** (1.40-2.02)	**1.94** (1.62-2.36)	**2.16** (1.80-2.65)	**2.47** (1.97-3.12)	**2.70** (2.10-3.47)	**2.94** (2.19-3.87)	**3.17** (2.25-4.31)	**3.47** (2.36-4.87)	**3.70** (2.44-5.30)
60-min	**1.95** (1.64-2.36)	**2.17** (1.82-2.64)	**2.54** (2.12-3.10)	**2.85** (2.36-3.49)	**3.28** (2.62-4.15)	**3.61** (2.81-4.64)	**3.95** (2.95-5.22)	**4.29** (3.06-5.85)	**4.75** (3.24-6.68)	**5.11** (3.38-7.31)
2-hr	**2.40** (2.03-2.89)	**2.68** (2.26-3.23)	**3.14** (2.64-3.80)	**3.53** (2.95-4.30)	**4.08** (3.28-5.14)	**4.52** (3.54-5.78)	**4.96** (3.73-6.52)	**5.42** (3.88-7.34)	**6.04** (4.14-8.44)	**6.51** (4.33-9.27)
3-hr	**2.61** (2.22-3.14)	**2.93** (2.48-3.52)	**3.47** (2.92-4.18)	**3.93** (3.29-4.76)	**4.60** (3.72-5.79)	**5.14** (4.04-6.57)	**5.70** (4.31-7.49)	**6.29** (4.53-8.52)	**7.10** (4.89-9.91)	**7.74** (5.17-11.0)
6-hr	**3.02** (2.57-3.60)	**3.40** (2.89-4.06)	**4.09** (3.47-4.90)	**4.73** (3.99-5.69)	**5.71** (4.67-7.22)	**6.54** (5.19-8.36)	**7.43** (5.67-9.76)	**8.40** (6.11-11.4)	**9.78** (6.80-13.6)	**10.9** (7.33-15.4)
12-hr	**3.50** (3.00-4.15)	**3.96** (3.39-4.70)	**4.86** (4.14-5.78)	**5.74** (4.86-6.86)	**7.17** (5.95-9.11)	**8.43** (6.77-10.8)	**9.83** (7.58-12.9)	**11.4** (8.38-15.4)	**13.7** (9.62-19.1)	**15.6** (10.6-21.8)
24-hr	**4.08** (3.52-4.79)	**4.62** (3.98-5.44)	**5.75** (4.93-6.78)	**6.90** (5.88-8.18)	**8.81** (7.39-11.2)	**10.5** (8.54-13.5)	**12.5** (9.72-16.4)	**14.7** (10.9-19.9)	**18.0** (12.7-25.0)	**20.8** (14.1-28.8)
2-day	**4.74** (4.11-5.53)	**5.38** (4.66-6.28)	**6.72** (5.80-7.87)	**8.10** (6.94-9.54)	**10.4** (8.80-13.2)	**12.5** (10.2-16.0)	**14.9** (11.7-19.5)	**17.6** (13.1-23.7)	**21.6** (15.4-29.8)	**25.0** (17.1-34.5)
3-day	**5.20** (4.52-6.04)	**5.89** (5.12-6.85)	**7.32** (6.34-8.54)	**8.80** (7.57-10.3)	**11.3** (9.55-14.2)	**13.5** (11.0-17.1)	**16.0** (12.6-20.9)	**18.9** (14.2-25.3)	**23.2** (16.6-31.8)	**26.8** (18.4-36.8)
4-day	**5.61** (4.90-6.50)	**6.32** (5.51-7.33)	**7.80** (6.76-9.07)	**9.32** (8.03-10.9)	**11.8** (10.1-14.9)	**14.1** (11.6-17.9)	**16.7** (13.2-21.7)	**19.7** (14.8-26.2)	**24.0** (17.2-32.9)	**27.7** (19.1-38.0)
7-day	**6.75** (5.91-7.77)	**7.48** (6.55-8.63)	**9.00** (7.84-10.4)	**10.5** (9.13-12.3)	**13.1** (11.2-16.3)	**15.4** (12.7-19.3)	**18.0** (14.3-23.2)	**21.0** (15.8-27.8)	**25.3** (18.3-34.5)	**29.0** (20.1-39.6)
10-day	**7.75** (6.81-8.89)	**8.54** (7.50-9.81)	**10.1** (8.85-11.7)	**11.7** (10.2-13.5)	**14.2** (12.1-17.5)	**16.5** (13.6-20.5)	**19.1** (15.1-24.3)	**21.9** (16.6-28.8)	**26.1** (18.9-35.3)	**29.6** (20.6-40.2)
20-day	**10.6** (9.37-12.1)	**11.7** (10.3-13.4)	**13.7** (12.0-15.6)	**15.5** (13.5-17.8)	**18.1** (15.3-21.7)	**20.3** (16.7-24.7)	**22.6** (17.9-28.3)	**25.1** (19.0-32.4)	**28.6** (20.7-38.2)	**31.5** (22.1-42.5)
30-day	**13.2** (11.7-14.9)	**14.6** (12.9-16.6)	**17.0** (15.0-19.4)	**19.0** (16.7-21.8)	**21.9** (18.5-25.9)	**24.1** (19.9-29.1)	**26.4** (21.0-32.7)	**28.8** (21.8-36.8)	**31.9** (23.2-42.2)	**34.4** (24.2-46.2)
45-day	**16.7** (14.8-18.8)	**18.5** (16.5-20.9)	**21.5** (19.1-24.4)	**24.0** (21.1-27.3)	**27.3** (23.1-32.0)	**29.7** (24.5-35.5)	**32.1** (25.5-39.5)	**34.5** (26.2-43.8)	**37.6** (27.3-49.3)	**39.9** (28.2-53.4)
60-day	**19.8** (17.7-22.3)	**22.1** (19.7-24.8)	**25.6** (22.7-28.9)	**28.5** (25.1-32.3)	**32.2** (27.3-37.6)	**35.0** (28.9-41.6)	**37.6** (30.0-46.0)	**40.2** (30.6-50.8)	**43.5** (31.6-56.7)	**45.8** (32.5-61.2)

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

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

Please refer to NOAA Atlas 14 document for more information.

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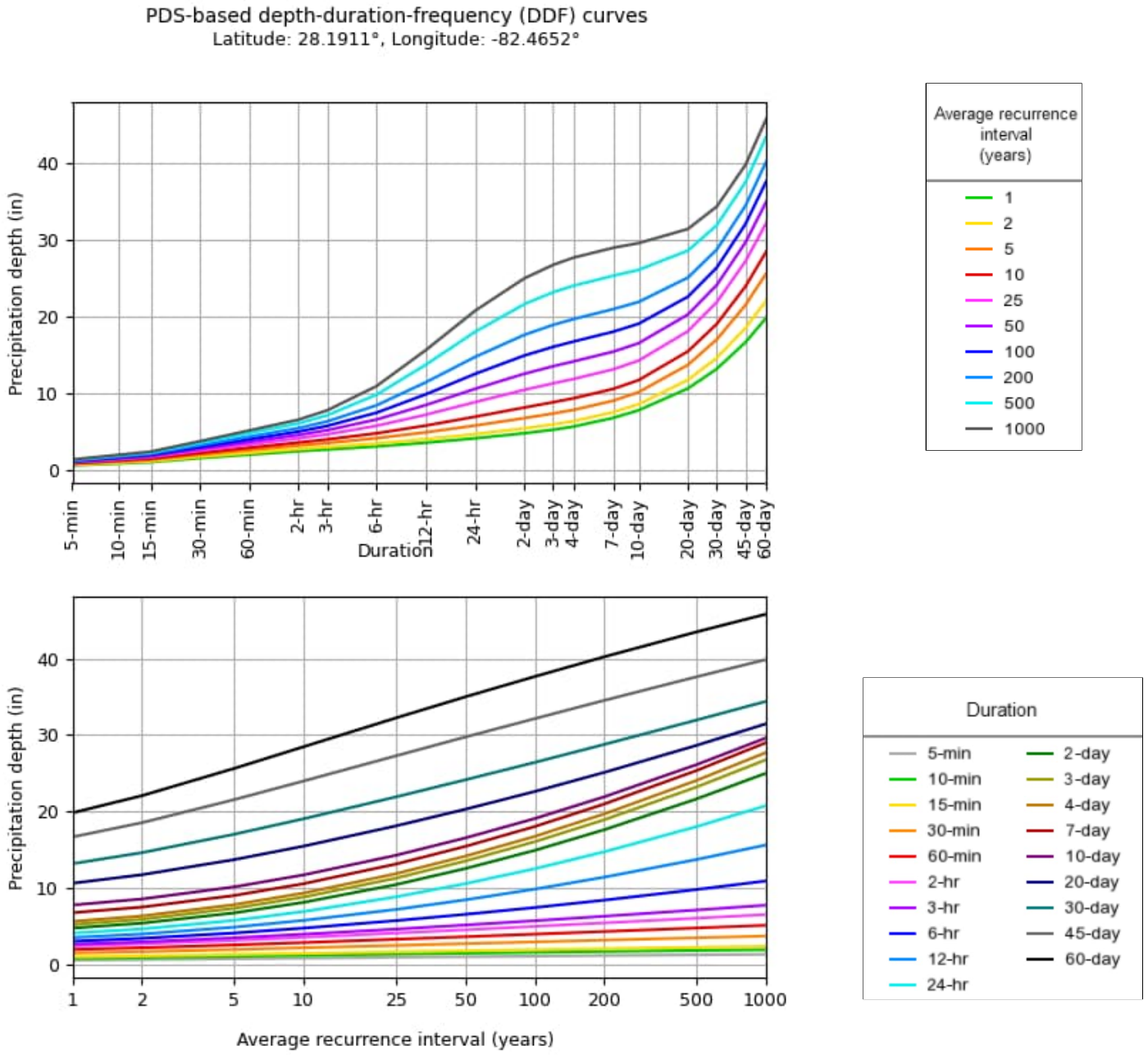
PF graphical

FIGURE 2



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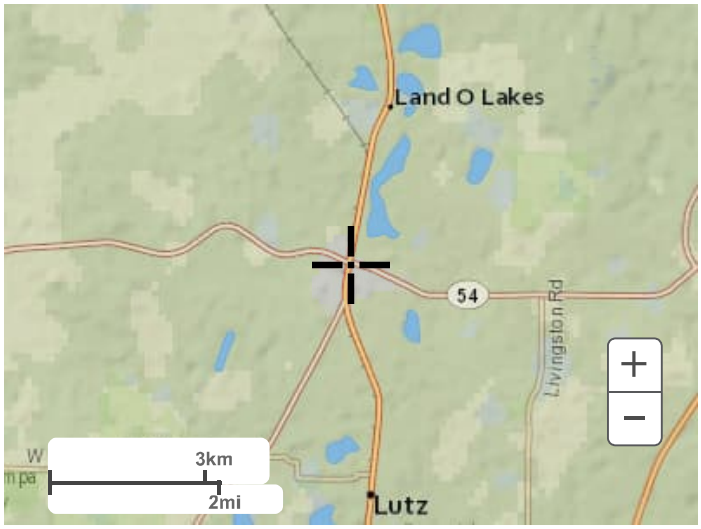
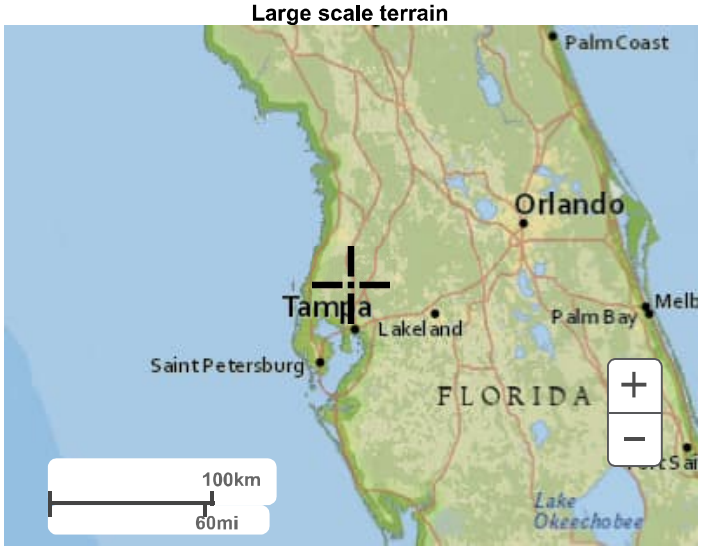
Small scale terrain



Large scale terrain



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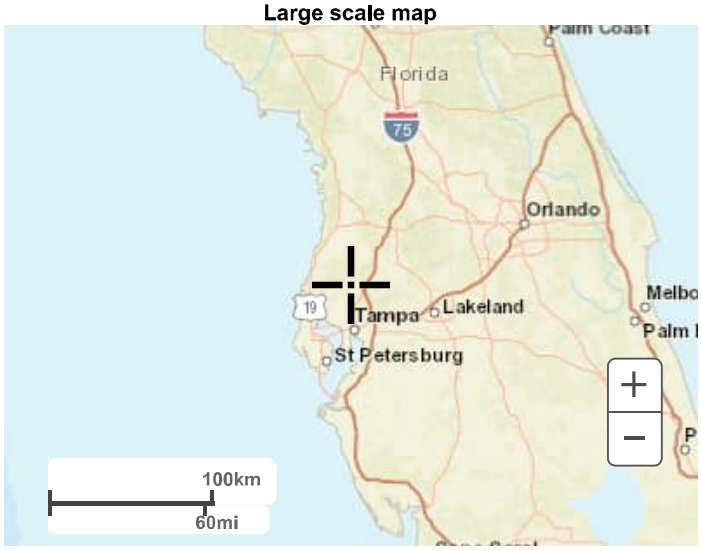
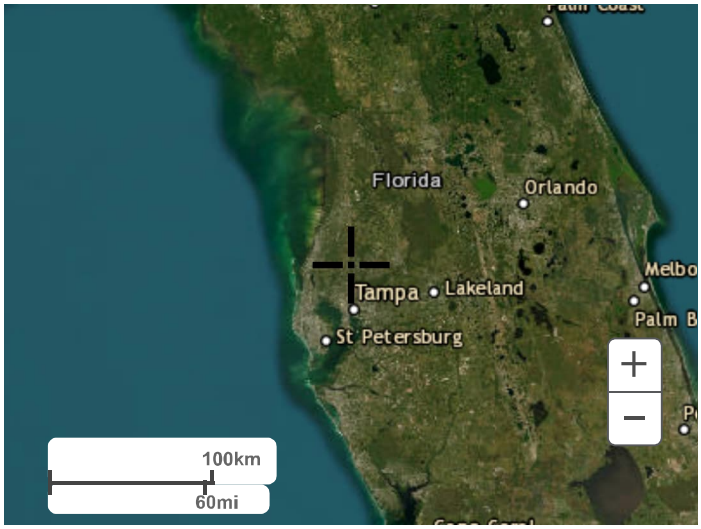


Large scale aerial



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Silver Spring, MD 20910
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NOAA Atlas 14, Volume 9, Version 2
Location name: Lutz, Florida, USA*
Latitude: 28.1816°, Longitude: -82.4656°
Elevation: 73 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

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PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.544** (0.458-0.660)	**0.612** (0.513-0.743)	**0.718** (0.600-0.874)	**0.802** (0.666-0.982)	**0.914** (0.726-1.15)	**0.995** (0.772-1.27)	**1.07** (0.800-1.41)	**1.15** (0.815-1.56)	**1.24** (0.844-1.74)	**1.31** (0.865-1.87)
10-min	**0.797** (0.670-0.967)	**0.896** (0.752-1.09)	**1.05** (0.879-1.28)	**1.18** (0.976-1.44)	**1.34** (1.06-1.68)	**1.46** (1.13-1.86)	**1.57** (1.17-2.06)	**1.68** (1.19-2.28)	**1.82** (1.24-2.54)	**1.92** (1.27-2.74)
15-min	**0.972** (0.817-1.18)	**1.09** (0.917-1.33)	**1.28** (1.07-1.56)	**1.43** (1.19-1.75)	**1.63** (1.30-2.05)	**1.78** (1.38-2.27)	**1.92** (1.43-2.52)	**2.05** (1.46-2.78)	**2.22** (1.51-3.10)	**2.34** (1.54-3.34)
30-min	**1.50** (1.26-1.82)	**1.67** (1.40-2.02)	**1.94** (1.62-2.36)	**2.17** (1.80-2.65)	**2.47** (1.97-3.12)	**2.70** (2.10-3.47)	**2.94** (2.19-3.87)	**3.17** (2.25-4.30)	**3.47** (2.36-4.86)	**3.69** (2.44-5.28)
60-min	**1.95** (1.64-2.36)	**2.17** (1.82-2.64)	**2.54** (2.13-3.10)	**2.85** (2.37-3.49)	**3.28** (2.62-4.15)	**3.62** (2.81-4.65)	**3.95** (2.96-5.22)	**4.30** (3.06-5.85)	**4.76** (3.24-6.68)	**5.11** (3.38-7.30)
2-hr	**2.40** (2.03-2.89)	**2.68** (2.26-3.23)	**3.14** (2.64-3.80)	**3.54** (2.96-4.30)	**4.09** (3.29-5.14)	**4.52** (3.54-5.78)	**4.97** (3.74-6.53)	**5.43** (3.89-7.35)	**6.04** (4.14-8.44)	**6.52** (4.34-9.26)
3-hr	**2.62** (2.22-3.14)	**2.93** (2.48-3.52)	**3.47** (2.93-4.18)	**3.94** (3.30-4.77)	**4.61** (3.73-5.80)	**5.15** (4.05-6.58)	**5.71** (4.32-7.50)	**6.30** (4.54-8.52)	**7.11** (4.90-9.92)	**7.75** (5.18-11.0)
6-hr	**3.02** (2.57-3.59)	**3.40** (2.90-4.06)	**4.10** (3.48-4.90)	**4.74** (3.99-5.69)	**5.71** (4.68-7.21)	**6.54** (5.20-8.36)	**7.43** (5.67-9.76)	**8.40** (6.11-11.4)	**9.79** (6.81-13.6)	**10.9** (7.34-15.4)
12-hr	**3.50** (3.01-4.15)	**3.96** (3.39-4.69)	**4.85** (4.14-5.76)	**5.74** (4.86-6.84)	**7.16** (5.94-9.09)	**8.42** (6.76-10.8)	**9.82** (7.57-12.9)	**11.4** (8.37-15.4)	**13.7** (9.62-19.1)	**15.6** (10.6-21.8)
24-hr	**4.08** (3.52-4.79)	**4.62** (3.98-5.43)	**5.74** (4.93-6.77)	**6.89** (5.88-8.16)	**8.80** (7.39-11.2)	**10.5** (8.54-13.5)	**12.5** (9.71-16.4)	**14.7** (10.9-19.8)	**18.0** (12.7-24.9)	**20.7** (14.1-28.8)
2-day	**4.74** (4.11-5.52)	**5.38** (4.66-6.28)	**6.72** (5.80-7.87)	**8.11** (6.95-9.54)	**10.4** (8.81-13.2)	**12.5** (10.2-15.9)	**14.9** (11.7-19.5)	**17.6** (13.1-23.6)	**21.6** (15.4-29.8)	**25.0** (17.1-34.4)
3-day	**5.20** (4.53-6.04)	**5.89** (5.12-6.84)	**7.32** (6.34-8.53)	**8.80** (7.57-10.3)	**11.3** (9.55-14.2)	**13.5** (11.0-17.1)	**16.0** (12.6-20.8)	**18.9** (14.1-25.2)	**23.2** (16.6-31.8)	**26.7** (18.4-36.7)
4-day	**5.61** (4.90-6.50)	**6.32** (5.51-7.32)	**7.80** (6.77-9.06)	**9.31** (8.03-10.9)	**11.8** (10.1-14.8)	**14.1** (11.6-17.8)	**16.7** (13.2-21.6)	**19.7** (14.8-26.2)	**24.0** (17.2-32.8)	**27.7** (19.1-37.9)
7-day	**6.75** (5.92-7.76)	**7.48** (6.55-8.62)	**8.99** (7.85-10.4)	**10.5** (9.13-12.2)	**13.1** (11.2-16.2)	**15.4** (12.7-19.3)	**18.0** (14.2-23.1)	**20.9** (15.8-27.7)	**25.3** (18.2-34.4)	**28.9** (20.1-39.4)
10-day	**7.75** (6.82-8.88)	**8.54** (7.51-9.80)	**10.1** (8.86-11.6)	**11.7** (10.2-13.5)	**14.2** (12.1-17.5)	**16.5** (13.6-20.5)	**19.0** (15.1-24.3)	**21.9** (16.5-28.7)	**26.1** (18.8-35.2)	**29.6** (20.6-40.1)
20-day	**10.6** (9.38-12.1)	**11.7** (10.4-13.3)	**13.7** (12.1-15.6)	**15.5** (13.5-17.8)	**18.1** (15.4-21.7)	**20.3** (16.7-24.7)	**22.6** (17.9-28.3)	**25.1** (19.0-32.4)	**28.6** (20.7-38.1)	**31.5** (22.0-42.4)
30-day	**13.2** (11.7-14.9)	**14.6** (13.0-16.6)	**17.0** (15.0-19.4)	**19.1** (16.7-21.8)	**21.9** (18.5-25.9)	**24.2** (19.9-29.1)	**26.4** (21.0-32.7)	**28.8** (21.8-36.8)	**32.0** (23.2-42.2)	**34.4** (24.2-46.2)
45-day	**16.7** (14.8-18.8)	**18.5** (16.5-20.9)	**21.5** (19.1-24.4)	**24.0** (21.1-27.3)	**27.3** (23.1-32.0)	**29.7** (24.6-35.5)	**32.2** (25.6-39.5)	**34.5** (26.2-43.8)	**37.6** (27.3-49.2)	**39.9** (28.2-53.4)
60-day	**19.8** (17.7-22.3)	**22.1** (19.7-24.8)	**25.6** (22.8-28.9)	**28.5** (25.1-32.3)	**32.2** (27.3-37.5)	**35.0** (28.9-41.5)	**37.6** (30.0-46.0)	**40.2** (30.6-50.7)	**43.5** (31.6-56.7)	**45.8** (32.5-61.1)

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

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

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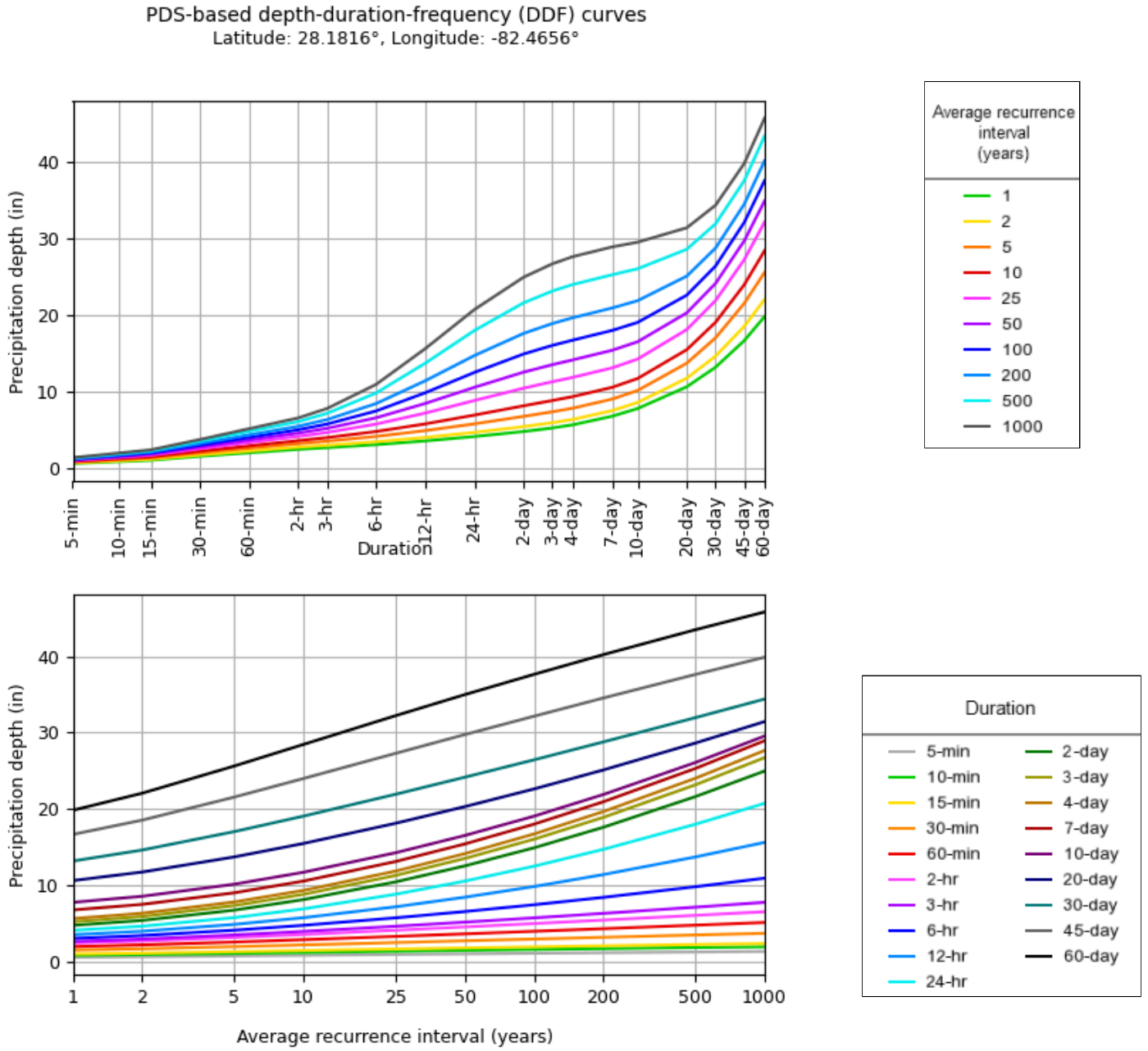
PF graphical



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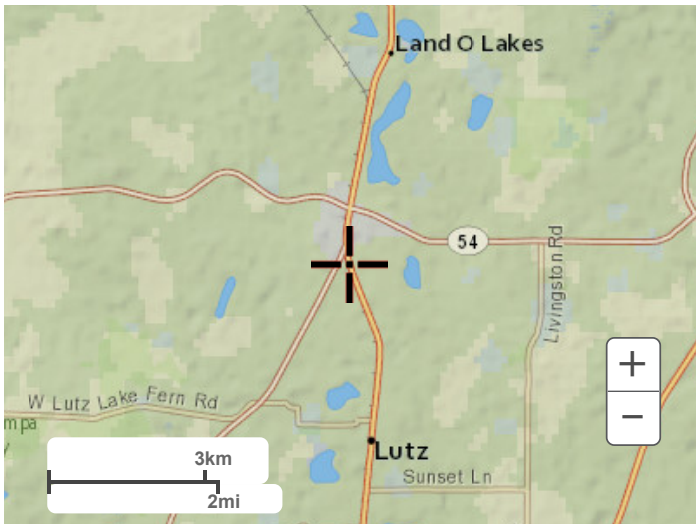
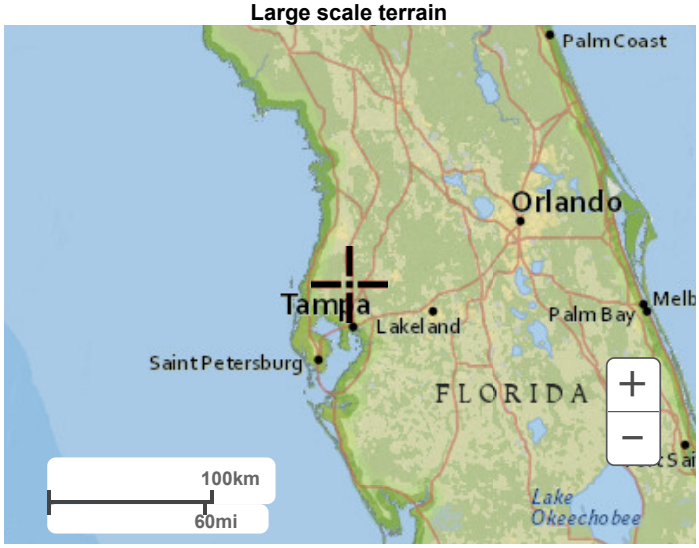


Large scale terrain



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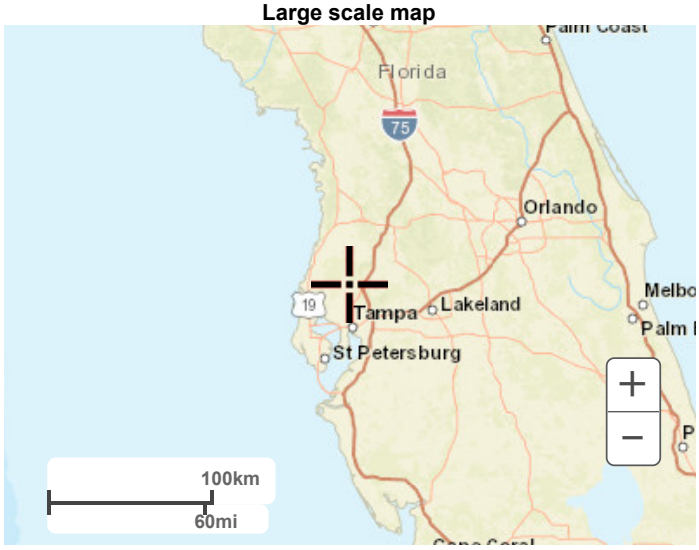
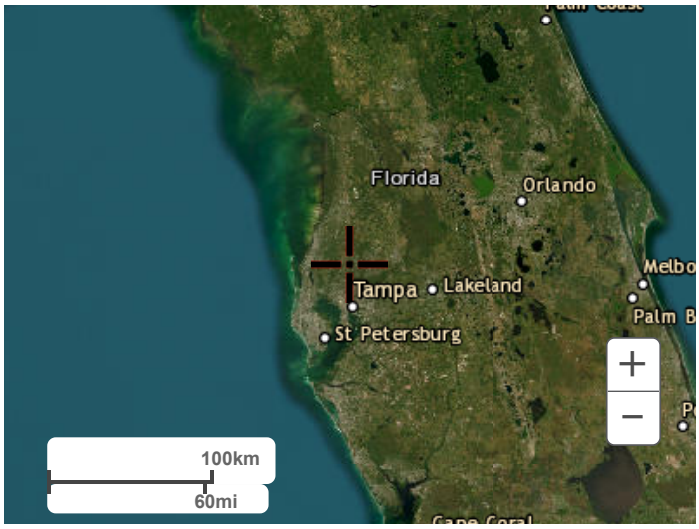


Large scale aerial



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NOAA Atlas 14, Volume 9, Version 2
Location name: Lutz, Florida, USA*
Latitude: 28.19°, Longitude: -82.4598°
Elevation: 73 ft**
* source: ESRI Maps
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POINT PRECIPITATION FREQUENCY ESTIMATES

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PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.543 (0.456-0.659)	0.610 (0.512-0.742)	0.716 (0.598-0.873)	0.800 (0.664-0.981)	0.911 (0.724-1.14)	0.993 (0.770-1.27)	1.07 (0.798-1.41)	1.15 (0.814-1.55)	1.24 (0.842-1.73)	1.31 (0.864-1.87)
10-min	0.795 (0.668-0.965)	0.893 (0.749-1.09)	1.05 (0.876-1.28)	1.17 (0.973-1.44)	1.34 (1.06-1.68)	1.45 (1.13-1.86)	1.57 (1.17-2.06)	1.68 (1.19-2.27)	1.82 (1.23-2.54)	1.91 (1.26-2.74)
15-min	0.969 (0.814-1.18)	1.09 (0.914-1.32)	1.28 (1.07-1.56)	1.43 (1.19-1.75)	1.63 (1.29-2.04)	1.77 (1.38-2.27)	1.91 (1.42-2.51)	2.05 (1.45-2.77)	2.21 (1.50-3.10)	2.33 (1.54-3.34)
30-min	1.50 (1.26-1.82)	1.66 (1.40-2.02)	1.94 (1.62-2.36)	2.16 (1.80-2.65)	2.47 (1.97-3.12)	2.70 (2.10-3.47)	2.93 (2.19-3.87)	3.16 (2.25-4.30)	3.47 (2.36-4.86)	3.69 (2.44-5.29)
60-min	1.95 (1.64-2.36)	2.17 (1.82-2.64)	2.54 (2.12-3.10)	2.85 (2.36-3.49)	3.28 (2.62-4.15)	3.61 (2.81-4.64)	3.95 (2.95-5.22)	4.29 (3.06-5.85)	4.75 (3.24-6.68)	5.10 (3.37-7.30)
2-hr	2.40 (2.03-2.89)	2.68 (2.26-3.23)	3.14 (2.64-3.80)	3.53 (2.95-4.30)	4.08 (3.28-5.14)	4.52 (3.54-5.78)	4.96 (3.73-6.52)	5.42 (3.88-7.34)	6.03 (4.14-8.43)	6.51 (4.33-9.26)
3-hr	2.61 (2.22-3.14)	2.93 (2.48-3.52)	3.46 (2.92-4.18)	3.93 (3.29-4.76)	4.60 (3.72-5.79)	5.14 (4.04-6.57)	5.70 (4.31-7.49)	6.29 (4.53-8.52)	7.10 (4.89-9.91)	7.74 (5.17-11.0)
6-hr	3.01 (2.57-3.59)	3.40 (2.89-4.06)	4.09 (3.47-4.90)	4.73 (3.98-5.69)	5.70 (4.67-7.21)	6.53 (5.19-8.36)	7.42 (5.66-9.76)	8.39 (6.10-11.4)	9.78 (6.80-13.6)	10.9 (7.33-15.3)
12-hr	3.50 (3.00-4.14)	3.96 (3.39-4.69)	4.85 (4.14-5.77)	5.74 (4.86-6.86)	7.16 (5.94-9.10)	8.42 (6.76-10.8)	9.82 (7.57-12.9)	11.4 (8.37-15.4)	13.7 (9.61-19.1)	15.6 (10.6-21.8)
24-hr	4.08 (3.51-4.79)	4.62 (3.98-5.44)	5.74 (4.92-6.78)	6.89 (5.87-8.17)	8.80 (7.38-11.2)	10.5 (8.53-13.5)	12.5 (9.70-16.4)	14.7 (10.9-19.9)	18.0 (12.7-24.9)	20.7 (14.1-28.8)
2-day	4.74 (4.11-5.53)	5.37 (4.65-6.28)	6.71 (5.79-7.86)	8.09 (6.93-9.53)	10.4 (8.79-13.2)	12.5 (10.2-15.9)	14.9 (11.6-19.4)	17.6 (13.1-23.6)	21.6 (15.4-29.8)	24.9 (17.1-34.4)
3-day	5.20 (4.52-6.04)	5.88 (5.11-6.85)	7.31 (6.33-8.53)	8.79 (7.56-10.3)	11.2 (9.53-14.2)	13.5 (11.0-17.1)	16.0 (12.6-20.8)	18.9 (14.1-25.2)	23.1 (16.6-31.8)	26.7 (18.4-36.7)
4-day	5.61 (4.89-6.50)	6.32 (5.50-7.33)	7.79 (6.76-9.06)	9.30 (8.02-10.9)	11.8 (10.0-14.8)	14.1 (11.6-17.8)	16.7 (13.2-21.7)	19.6 (14.7-26.2)	24.0 (17.2-32.9)	27.7 (19.1-37.9)
7-day	6.75 (5.91-7.77)	7.48 (6.55-8.63)	8.99 (7.84-10.4)	10.5 (9.13-12.2)	13.1 (11.1-16.3)	15.4 (12.7-19.3)	18.0 (14.2-23.1)	20.9 (15.8-27.7)	25.3 (18.2-34.4)	29.0 (20.1-39.5)
10-day	7.75 (6.81-8.89)	8.54 (7.50-9.81)	10.1 (8.85-11.7)	11.7 (10.2-13.5)	14.2 (12.1-17.5)	16.5 (13.6-20.5)	19.0 (15.1-24.3)	21.9 (16.5-28.8)	26.1 (18.8-35.3)	29.6 (20.6-40.2)
20-day	10.6 (9.37-12.1)	11.7 (10.3-13.4)	13.7 (12.0-15.6)	15.4 (13.5-17.8)	18.1 (15.3-21.7)	20.3 (16.7-24.7)	22.6 (17.9-28.3)	25.1 (19.0-32.4)	28.6 (20.7-38.1)	31.4 (22.0-42.4)
30-day	13.2 (11.7-14.9)	14.6 (12.9-16.6)	17.0 (15.0-19.4)	19.0 (16.7-21.8)	21.9 (18.5-25.9)	24.1 (19.9-29.1)	26.4 (20.9-32.7)	28.7 (21.8-36.8)	31.9 (23.1-42.1)	34.4 (24.2-46.2)
45-day	16.6 (14.8-18.8)	18.5 (16.5-20.9)	21.5 (19.1-24.4)	24.0 (21.1-27.3)	27.2 (23.0-32.0)	29.7 (24.5-35.5)	32.1 (25.5-39.5)	34.5 (26.2-43.8)	37.6 (27.3-49.2)	39.8 (28.1-53.3)
60-day	19.8 (17.7-22.3)	22.1 (19.7-24.9)	25.6 (22.7-28.9)	28.5 (25.1-32.3)	32.2 (27.3-37.6)	35.0 (28.9-41.6)	37.6 (29.9-46.0)	40.2 (30.5-50.8)	43.5 (31.6-56.7)	45.8 (32.4-61.1)

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

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

Please refer to NOAA Atlas 14 document for more information.

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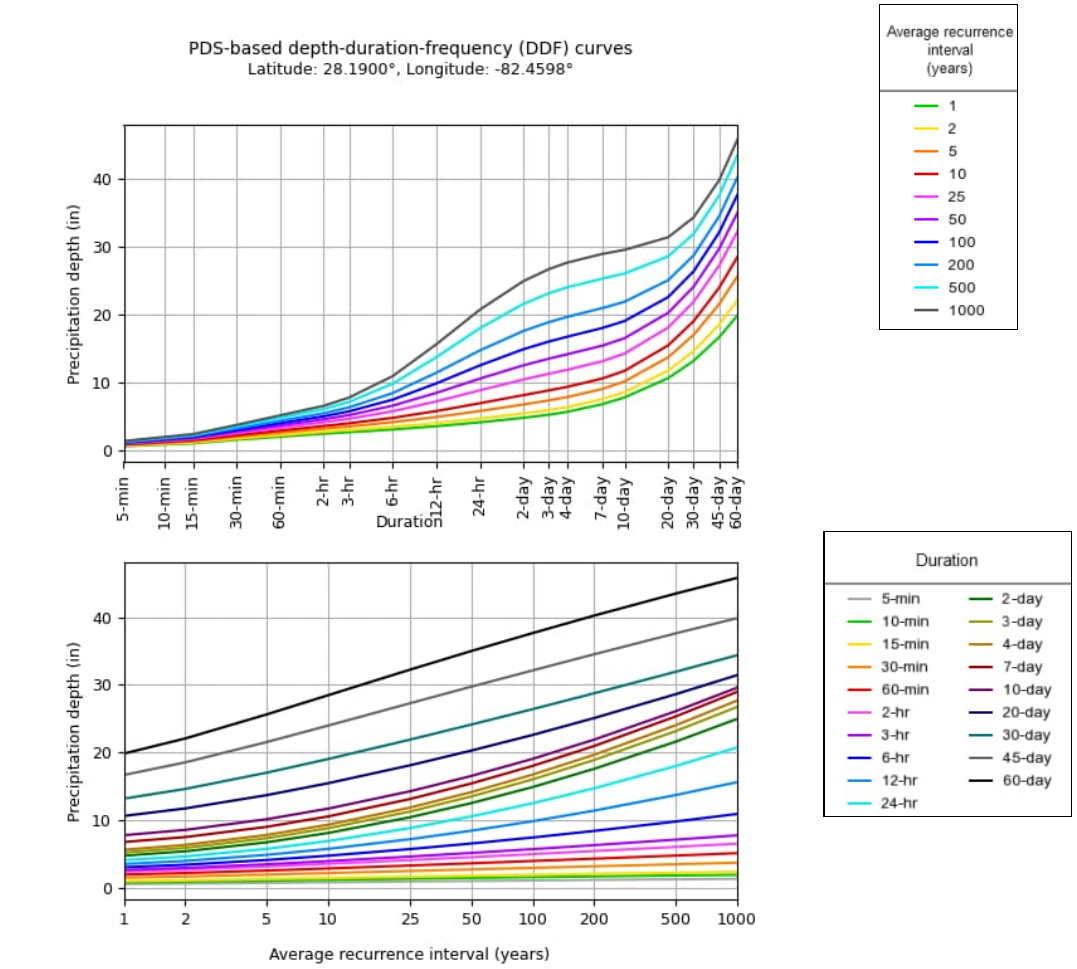
PF graphical



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Fri May 10 13:04:00 2024

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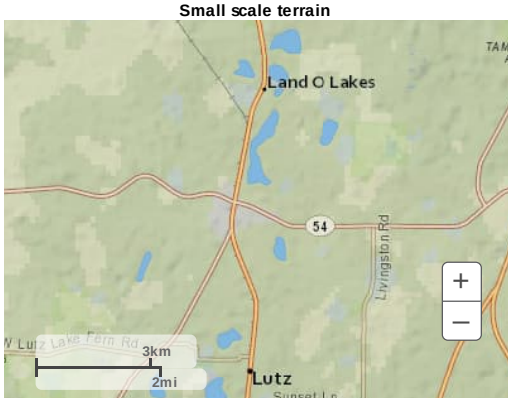
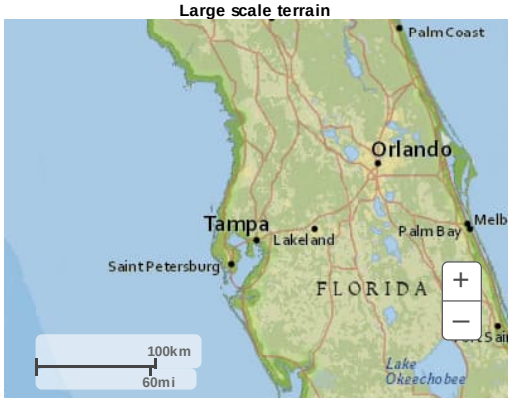
Maps & aerials

Small scale terrain

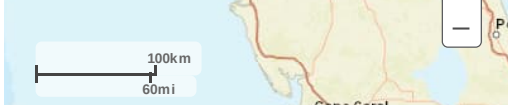


Large scale terrain

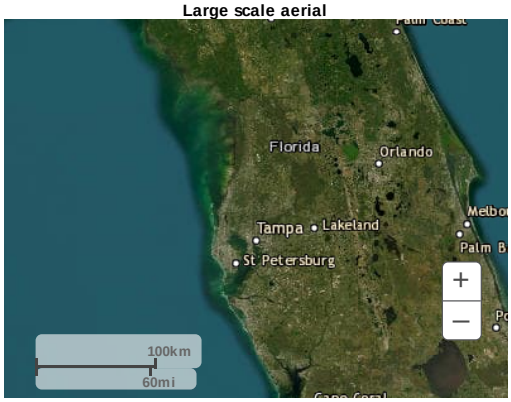


Large scale map





Large scale aerial



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

Disclaimer

od Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

PROJECT AREA

PANEL 0403F

NFIP NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

PASCO COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 403 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PASCO COUNTY	120230	0403	F

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 12101C0403F

EFFECTIVE DATE SEPTEMBER 26, 2014

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

JOINS PANEL 0411

500000 FT

505000 FT

82°28'07.5"

28°11'15"

252618

1405000 F

FIGURE 3

d Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

PROJECT AREA

PADGETT LAKE

LAKE FLOYD

ZONE A

ZONE AE (EL 71.5)

ZONE AE (EL 68.9)

ZONE AE (EL 68.8)

ZONE AE (EL 72.8)

ZONE AE (EL 67.6)

ZONE AE (EL 69.8)

ZONE AE (EL 67.8)

ZONE AE (EL 73.2)

ZONE AE (EL 71.6)

ZONE AE (EL 71.4)

ZONE AE (EL 71.0)

ZONE AE (EL 70.8)

ZONE AE (EL 70.6)

ZONE AE (EL 70.3)

ZONE AE (EL 67.3)

ZONE AE (EL 68.3)

ZONE AE (EL 69.6)

ZONE AE (EL 69.2)

ZONE AE (EL 68.9)

ZONE AE (EL 68.8)

7NC6510 7NC6500 7NC6390 7NC6490 7NC6520 7NC6550 7NC6530 7NC6540 7ND0710 7ND0885 7ND0875 7ND0877 7ND1385 7ND0707 7ND1375 7ND1390 7ND1360 7ND1380 7ND1370

3NH1205 3NH1210 3NH1215 3NH1230 3NH1140 3NH1470 3NH1220 3NH1240 3NH1200 3NH1255 3NH1260 3NH1540 3NH1270 3NH1560 3NH1520 3NH1620 3NH1280

AL6406 AL6407 AL0525

3BNDY5

252618

PAOLI DR

RUSTIC LODGE LN

MC KAIG LN

COAKLEY LN

MORGAN RD

STATION LN

LAND O LAKES BLVD

RAILROAD

JESSIE LN

EARLENE DR

CABOT RD

OTIS WAY

WILSKY RD

CUDJOE LN

CARSON DR

RADEN DR

OASIS DR

DEKAN LN

MARINER PL

VIL LKS SHOPG CTR DR

KNIGHT RD

OSPREY LN

BRINSON RD

LEONARD RD

54

$^{31}20^{000m}N$

$^{31}19^{000m}N$

28°11'15"

82°28'07.5"

R. 18 E.

R. 19 E.

JOINS PANEL 0412

510000 FT

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0404F

FIRM

FLOOD INSURANCE RATE MAP

PASCO COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 404 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PASCO COUNTY	120230	0404	F

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 12101C0404F

EFFECTIVE DATE SEPTEMBER 26, 2014

Federal Emergency Management Agency

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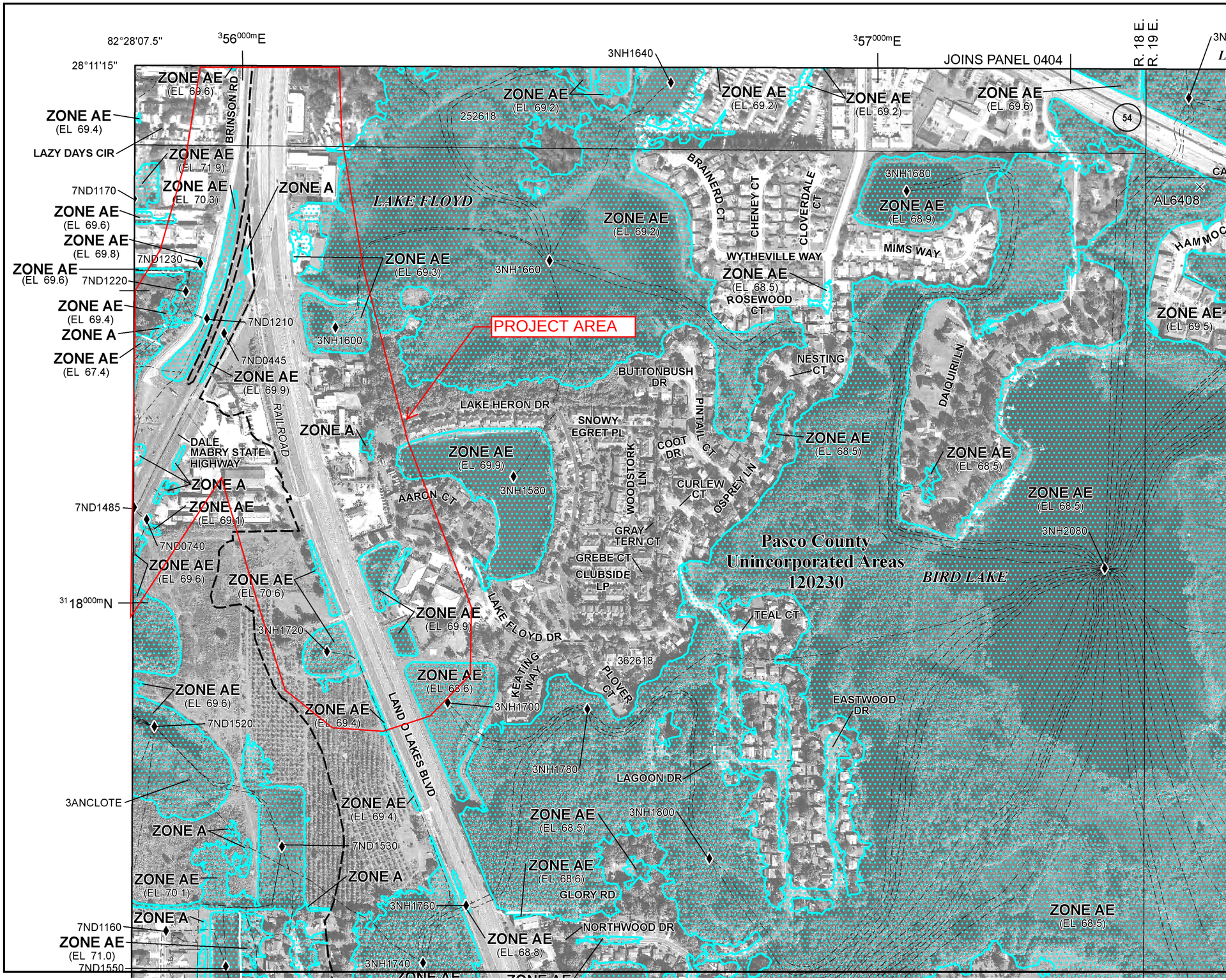


MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0412F

FIRM

FLOOD INSURANCE RATE MAP

PASCO COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 412 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PASCO COUNTY	120230	0412	F

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.

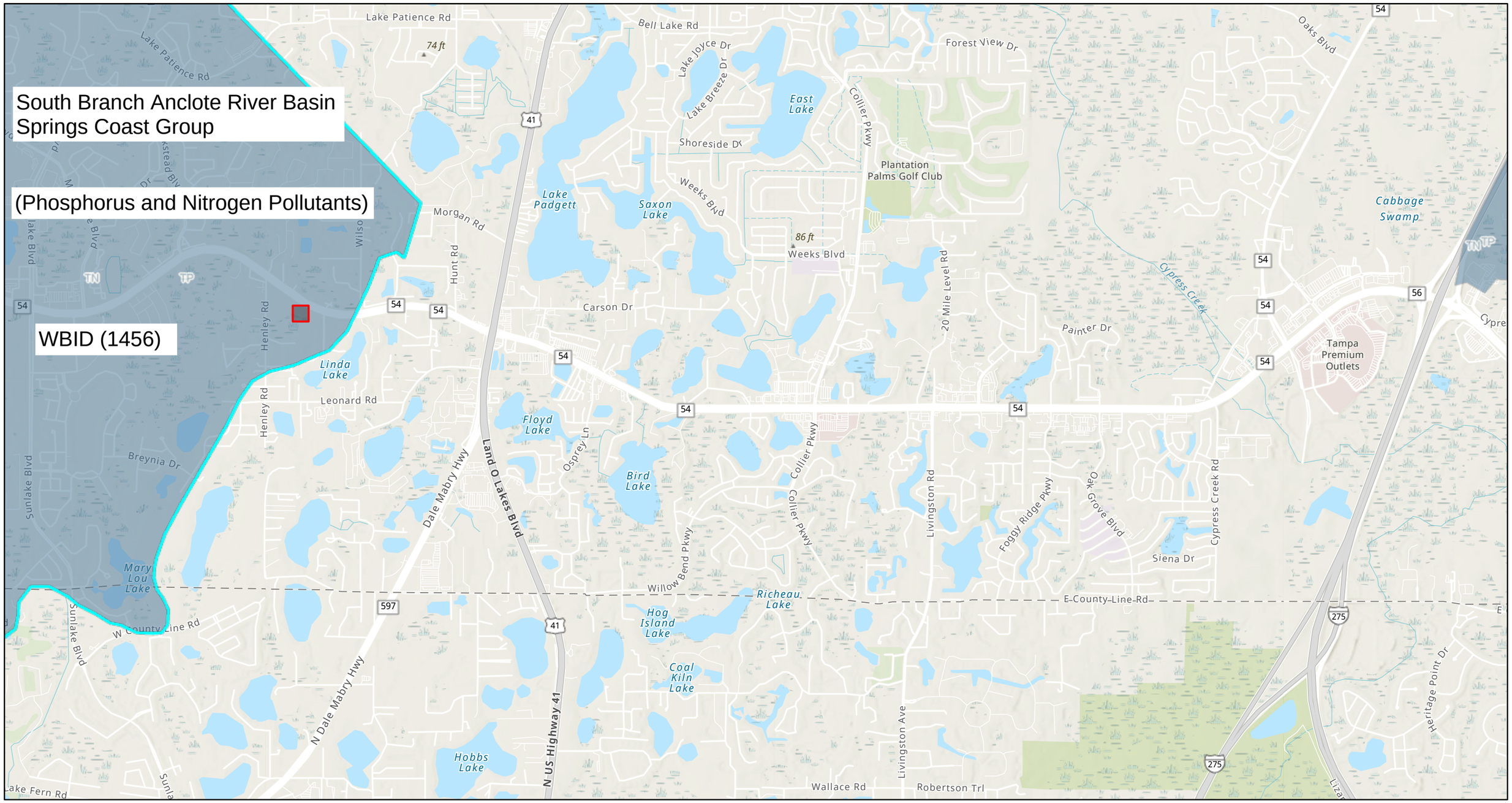
MAP NUMBER
12101C0412F

EFFECTIVE DATE
SEPTEMBER 26, 2014

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

EPA Established TMDL's



March 27, 2024

EPA Established Total Maximum Daily Loads (TMDLs)

- AMMONIA; NUTRIENTS; ORGANIC ENRICHMENT/OXYGEN DEPLETION
- PATHOGENS

1:36,112

0 0.4 0.8 1.6 mi

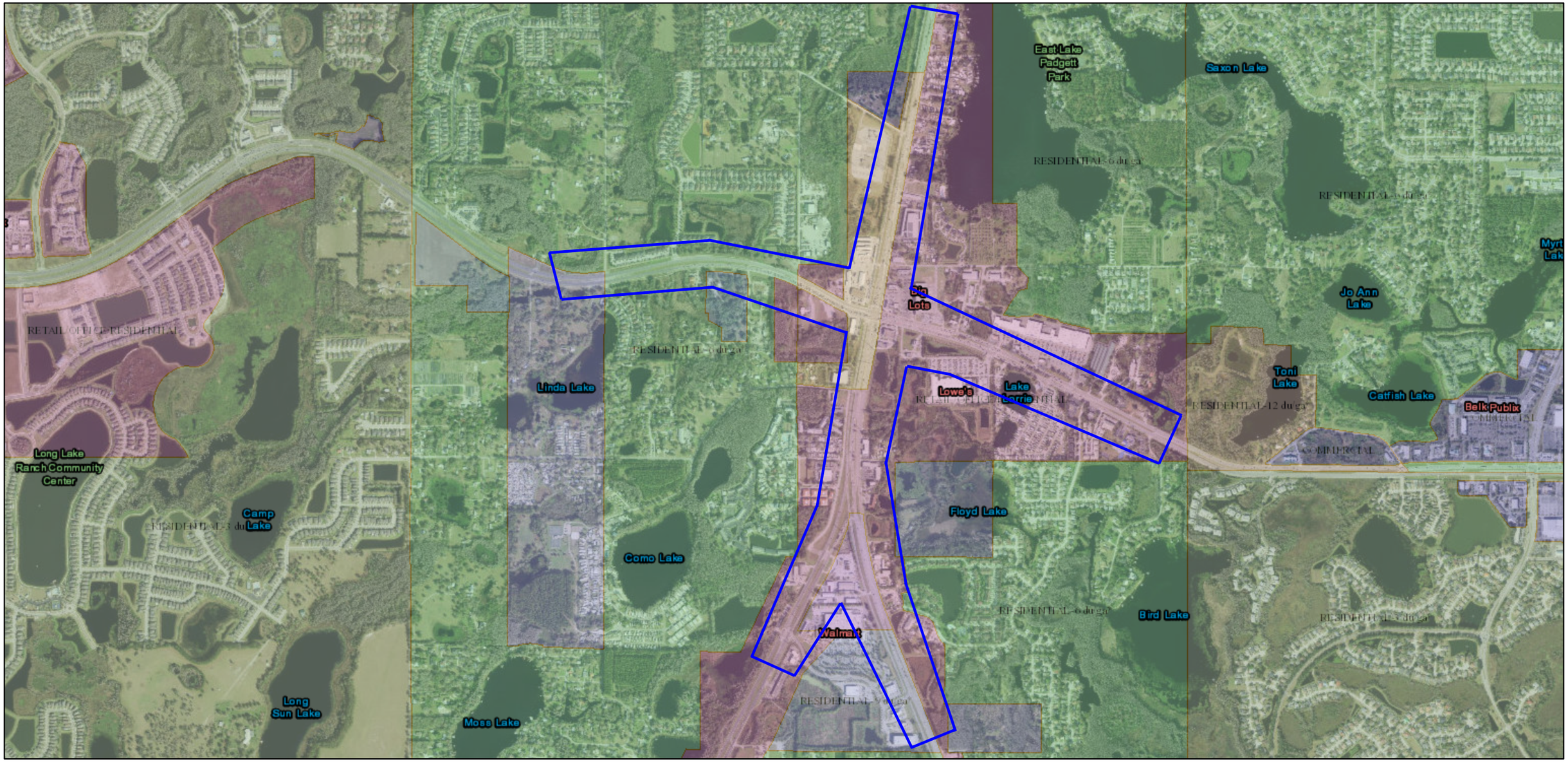
0 0.5 1 2 km

FDEP, DEAR, Esri, NASA, NGA, USGS, FEMA, FDEP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

FIGURE 4

Map created by Map Direct, powered by ESRI. NITROGEN AND
Florida Department of Environmental Protection makes no warranty,expressed or implied,or assumes any legal liability or responsibility for the accuracy,completeness,or usefulness of any information,apparatus,product,or process disclosed,or represents that its use would not infringe privately owned rights.

US 41 and SR 54 Future Land Use Map



4/3/2024, 1:23:15 PM

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

Esri, HERE, Garmin, iPC, Maxar

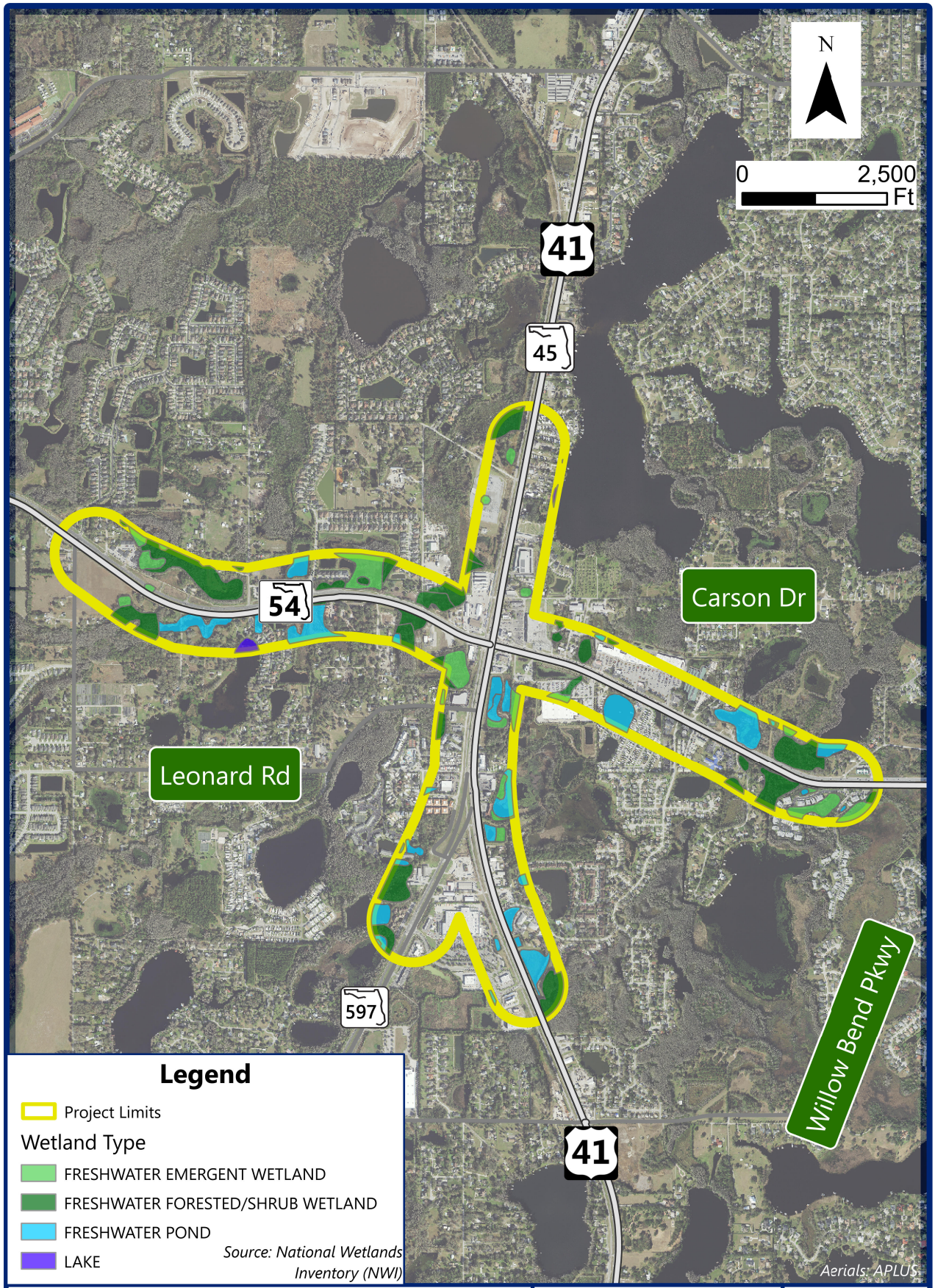
Future Landuse

- AGRICULTURAL-.1 du/ga*
- AGRICULTURAL/RURAL-.2 du/ga*
- COASTAL LAND .025 du/ga**
- COMMERCIAL
- COMMERCIAL
- CONSERVATION LANDS
- EMPLOYMENT CENTER
- GATEWAY HUB
- INDUSTRIAL-HEAVY
- INDUSTRIAL-LIGHT
- LIGHT INDUSTRIAL
- MAJOR ATTRACTORS
- MAJOR PUBLIC/SEMI-PUBLIC
- MAJOR RECREATION/OPEN SPACE
- MIXED USES
- NEW PORT CORNERS
- NEWTOWN
- OFFICE
- OFFICE
- OFFICE
- PLANNED DEVELOPMENT
- RESIDENTIAL-1 du/ga*
- RESIDENTIAL-12 du/ga*
- RESIDENTIAL-24 du/ga*
- RESIDENTIAL-3 du/ga*
- RESIDENTIAL-6 du/ga*
- RESIDENTIAL-9 du/ga*
- RETAIL/OFFICE/RESIDENTIAL
- TOWN CENTER
- VILLAGE MIXED USE - TYPE 1
- VILLAGE MIXED USE - TYPE 2B
- VILLAGE MIXED USE - TYPE 2A

Author

J Edwards | Maxar | Esri, HERE, Garmin, iPC |

FIGURE 5



US 41 at SR 54 PD&E Study

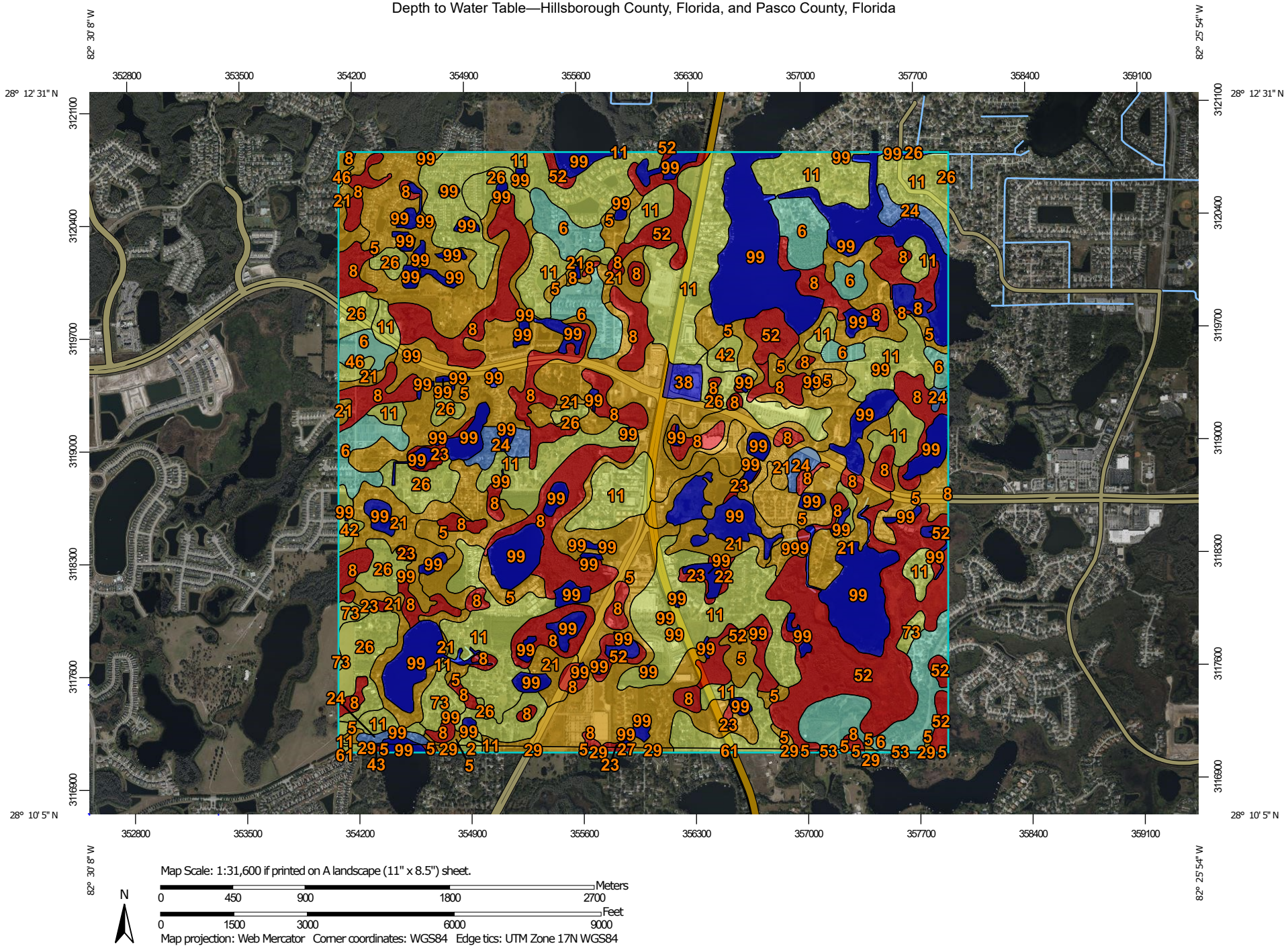
from South of SR 54 Intersection to North of SR 54 Intersection

Wetlands and Surface Waters

FIGURE 6

FIGURE 7- USDA NRCS Depth to Water Table

Depth to Water Table—Hillsborough County, Florida, and Pasco County, Florida



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Hillsborough County, Florida
Survey Area Data: Version 23, Aug 28, 2023

Soil Survey Area: Pasco County, Florida
Survey Area Data: Version 22, Sep 6, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jan 6, 2022—Jan 30, 2022

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

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
2	Adamsville fine sand, 0 to 2 percent slopes	51	1.7	0.0%
5	Basinger, Holopaw, and Samsula soils, depressional	0	3.8	0.1%
27	Malabar fine sand, 0 to 2 percent slopes	15	1.6	0.0%
29	Myakka fine sand, 0 to 2 percent slopes	31	11.3	0.3%
43	Quartzipsamments, nearly level	>200	0.2	0.0%
53	Tavares-Millhopper fine sands, 0 to 5 percent slopes	145	1.6	0.0%
61	Zolfo fine sand, 0 to 2 percent slopes	76	6.3	0.2%
99	Water	>200	3.3	0.1%
Subtotals for Soil Survey Area			**29.7**	**0.8%**
Totals for Area of Interest			**3,517.0**	**100.0%**

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	30	679.3	19.3%
6	Tavares sand, 0 to 5 percent slopes	145	210.9	6.0%
8	Sellers mucky loamy fine sand	0	426.7	12.1%
9	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	31	8.5	0.2%
11	Adamsville fine sand, 0 to 2 percent slopes	51	748.0	21.3%
21	Smyrna fine sand	31	313.9	8.9%
22	Basinger fine sand, 0 to 2 percent slopes	15	3.0	0.1%
23	Basinger fine sand, depressional, 0 to 1 percent slopes	0	17.3	0.5%
24	Quartzipsamments, shaped, 0 to 5 percent slopes	183	42.9	1.2%

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
26	Narcoossee fine sand, 0 to 2 percent slopes	84	185.8	5.3%
38	Urban land, 0 to 2 percent slopes	>200	12.3	0.4%
42	Pomello fine sand, 0 to 5 percent slopes	84	17.7	0.5%
46	Cassia fine sand, 0 to 5 percent slopes	59	5.9	0.2%
52	Samsula muck, frequently ponded, 0 to 1 percent slopes	0	265.5	7.5%
73	Zolfo fine sand, 0 to 2 percent slopes	76	27.1	0.8%
99	Water	>200	522.5	14.9%
Subtotals for Soil Survey Area			**3,487.2**	**99.2%**
Totals for Area of Interest			**3,517.0**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

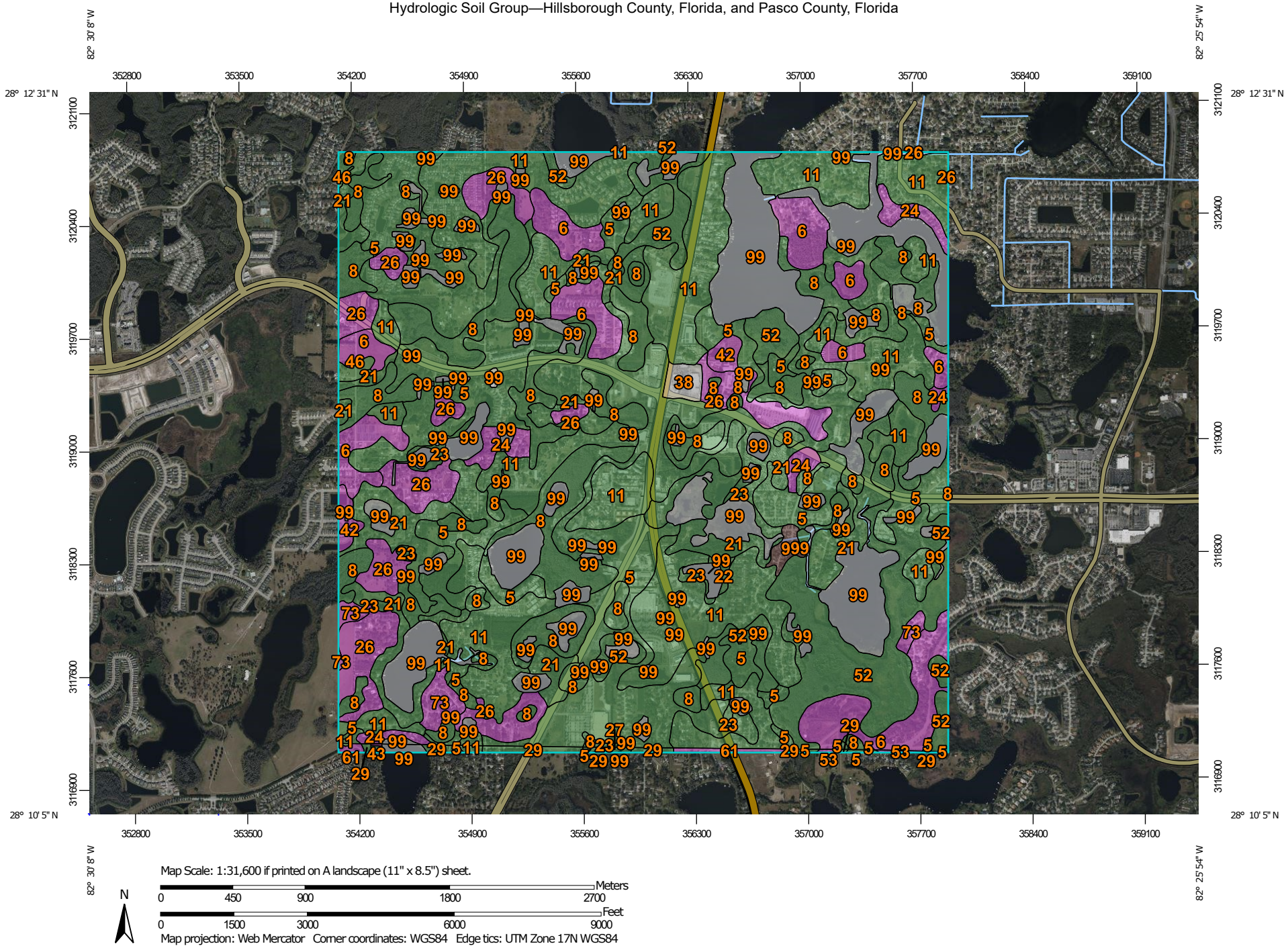
Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

FIGURE 8- USDA NRCS Hydrologic Soil Group

Hydrologic Soil Group—Hillsborough County, Florida, and Pasco County, Florida



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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Soil Survey Area: Pasco County, Florida
Survey Area Data: Version 22, Sep 6, 2023

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

Date(s) aerial images were photographed: Jan 6, 2022—Jan 30, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Adamsville fine sand, 0 to 2 percent slopes	A/D	1.7	0.0%
5	Basinger, Holopaw, and Samsula soils, depressional	A/D	3.8	0.1%
27	Malabar fine sand, 0 to 2 percent slopes	A/D	1.6	0.0%
29	Myakka fine sand, 0 to 2 percent slopes	A/D	11.3	0.3%
43	Quartzipsamments, nearly level	A	0.2	0.0%
53	Tavares-Millhopper fine sands, 0 to 5 percent slopes	A	1.6	0.0%
61	Zolfo fine sand, 0 to 2 percent slopes	A	6.3	0.2%
99	Water		3.3	0.1%
Subtotals for Soil Survey Area			**29.7**	**0.8%**
Totals for Area of Interest			**3,517.0**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	A/D	679.3	19.3%
6	Tavares sand, 0 to 5 percent slopes	A	210.9	6.0%
8	Sellers mucky loamy fine sand	A/D	426.7	12.1%
9	Ona-Ona, wet, fine sand, 0 to 2 percent slopes	B/D	8.5	0.2%
11	Adamsville fine sand, 0 to 2 percent slopes	A/D	748.0	21.3%
21	Smyrna fine sand	A/D	313.9	8.9%
22	Basinger fine sand, 0 to 2 percent slopes	A/D	3.0	0.1%
23	Basinger fine sand, depressional, 0 to 1 percent slopes	A/D	17.3	0.5%
24	Quartzipsamments, shaped, 0 to 5 percent slopes	A	42.9	1.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
26	Narcoossee fine sand, 0 to 2 percent slopes	A	185.8	5.3%
38	Urban land, 0 to 2 percent slopes		12.3	0.4%
42	Pomello fine sand, 0 to 5 percent slopes	A	17.7	0.5%
46	Cassia fine sand, 0 to 5 percent slopes	A/D	5.9	0.2%
52	Samsula muck, frequently ponded, 0 to 1 percent slopes	A/D	265.5	7.5%
73	Zolfo fine sand, 0 to 2 percent slopes	A	27.1	0.8%
99	Water		522.5	14.9%
Subtotals for Soil Survey Area			**3,487.2**	**99.2%**
Totals for Area of Interest			**3,517.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX 2

EXISTING DRAINAGE MAP-SPUI

EXISTING BASIN 1
TOTAL AREA: 32.64 AC
IMPERVIOUS AREA: 23.49 AC
PERVIOUS AREA: 7.17 AC
WATER SURFACE: 1.98 AC
CN: 91.73

EXISTING BASIN 2
TOTAL AREA: 41.64 AC
IMPERVIOUS AREA: 28.88 AC
PERVIOUS AREA: 8.39 AC
WATER SURFACE: 4.37 AC
CN: 92.75

EXISTING BASIN 3
TOTAL AREA: 23.86 AC
IMPERVIOUS AREA: 12.25 AC
PERVIOUS AREA: 9.74 AC
WATER SURFACE: 1.88 AC
CN: 92.45

EXISTING BASIN 4
TOTAL AREA: 14.64 AC
IMPERVIOUS AREA: 8.22 AC
PERVIOUS AREA: 2.56 AC
WATER SURFACE: 3.86 AC
CN: 96.08

EXISTING BASIN 5
TOTAL AREA: 15.19 AC
IMPERVIOUS AREA: 6.59 AC
PERVIOUS AREA: 8.12 AC
WATER SURFACE: 0.48 AC
CN: 86.33

EXISTING BASIN 6
TOTAL AREA: 16.30 AC
IMPERVIOUS AREA: 8.50 AC
PERVIOUS AREA: 5.76 AC
WATER SURFACE: 2.04 AC
CN: 88.55

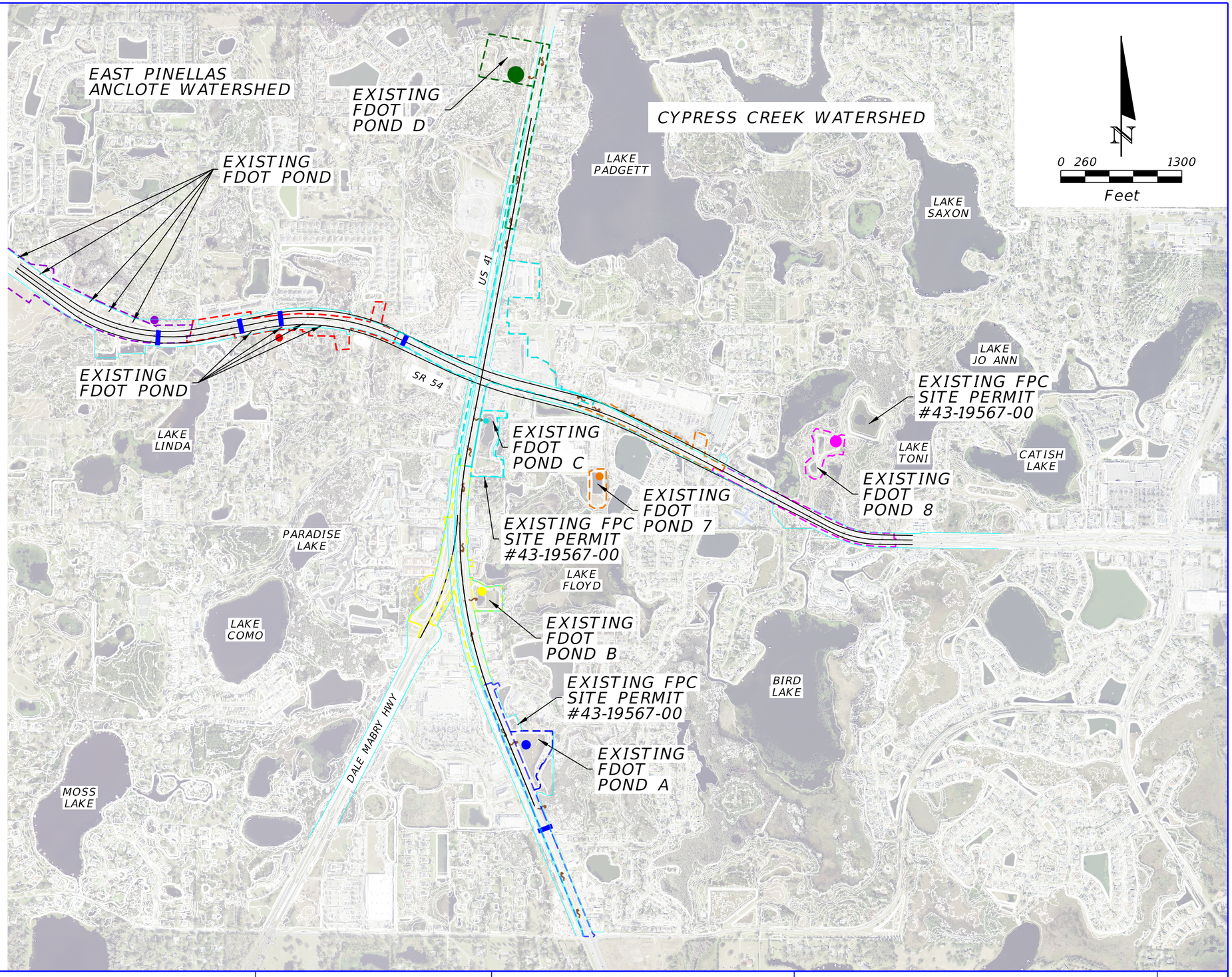
EXISTING BASIN 7
TOTAL AREA: 10.17 AC
IMPERVIOUS AREA: 5.89 AC
PERVIOUS AREA: 2.57 AC
WATER SURFACE: 1.71 AC
CN: 93.63

EXISTING BASIN 8
TOTAL AREA: 11.67 AC
IMPERVIOUS AREA: 7.07 AC
PERVIOUS AREA: 3.03 AC
WATER SURFACE: 1.57 AC
CN: 92.17

FLOW ARROW

CROSS DRAIN

EXISTING R/W



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PRE DEVELOPMENT BASIN MAP SPUI

SHEET NO.

F.A.C. NOTE

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SadakaR 1/12/2026 11:25:25 AM

APPENDIX 3

PROPOSED DRAINAGE MAP-SPUI

BASIN 1
TOTAL AREA: 32.64 AC
IMPERVIOUS AREA: 23.65 AC
PERVIOUS AREA: 7.01 AC
WATER SURFACE: 1.98 AC
CN: 91.85

BASIN 2
TOTAL AREA: 52.78 AC
IMPERVIOUS AREA: 36.06 AC
PERVIOUS AREA: 10.47 AC
WATER SURFACE: 6.25 AC
CN: 93.39

BASIN 3
TOTAL AREA: 24.20 AC
IMPERVIOUS AREA: 12.58 AC
PERVIOUS AREA: 9.31 AC
WATER SURFACE: 2.32 AC
CN: 92.81

BASIN 4
TOTAL AREA: 14.64 AC
IMPERVIOUS AREA: 8.07 AC
PERVIOUS AREA: 2.71 AC
WATER SURFACE: 3.86 AC
CN: 95.94

BASIN 5
TOTAL AREA: 18.37 AC
IMPERVIOUS AREA: 12.46 AC
PERVIOUS AREA: 4.33 AC
WATER SURFACE: 1.58 AC
CN: 83.96

BASIN 6
TOTAL AREA: 18.02 AC
IMPERVIOUS AREA: 9.55 AC
PERVIOUS AREA: 5.87 AC
WATER SURFACE: 2.60 AC
CN: 88.70

BASIN 7
TOTAL AREA: 21.61 AC
IMPERVIOUS AREA: 10.34 AC
PERVIOUS AREA: 5.75 AC
WATER SURFACE: 5.52 AC
CN: 92.00

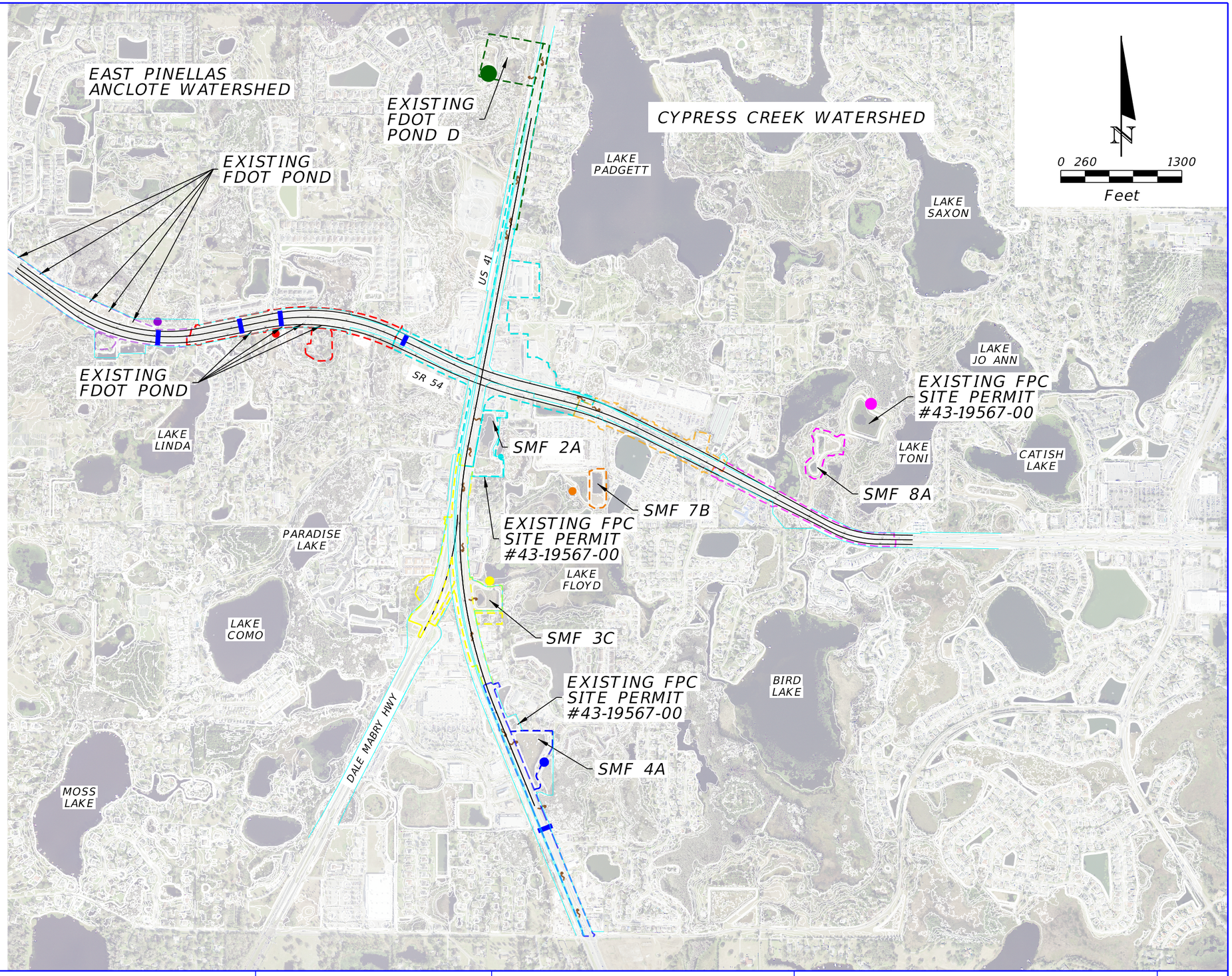
BASIN 8
TOTAL AREA: 14.03 AC
IMPERVIOUS AREA: 9.39 AC
PERVIOUS AREA: 2.60 AC
WATER SURFACE: 2.04 AC
CN: 93.84

FLOW ARROW

CROSS DRAIN

EXISTING R/W

NOTE: PROPOSED BASINS OF PREFERRED ALTERNATIVES



REVISIONS			
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ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
POST DEVELOPMENT BASIN MAP SPUI

SHEET NO.

F.A.C. NOTE

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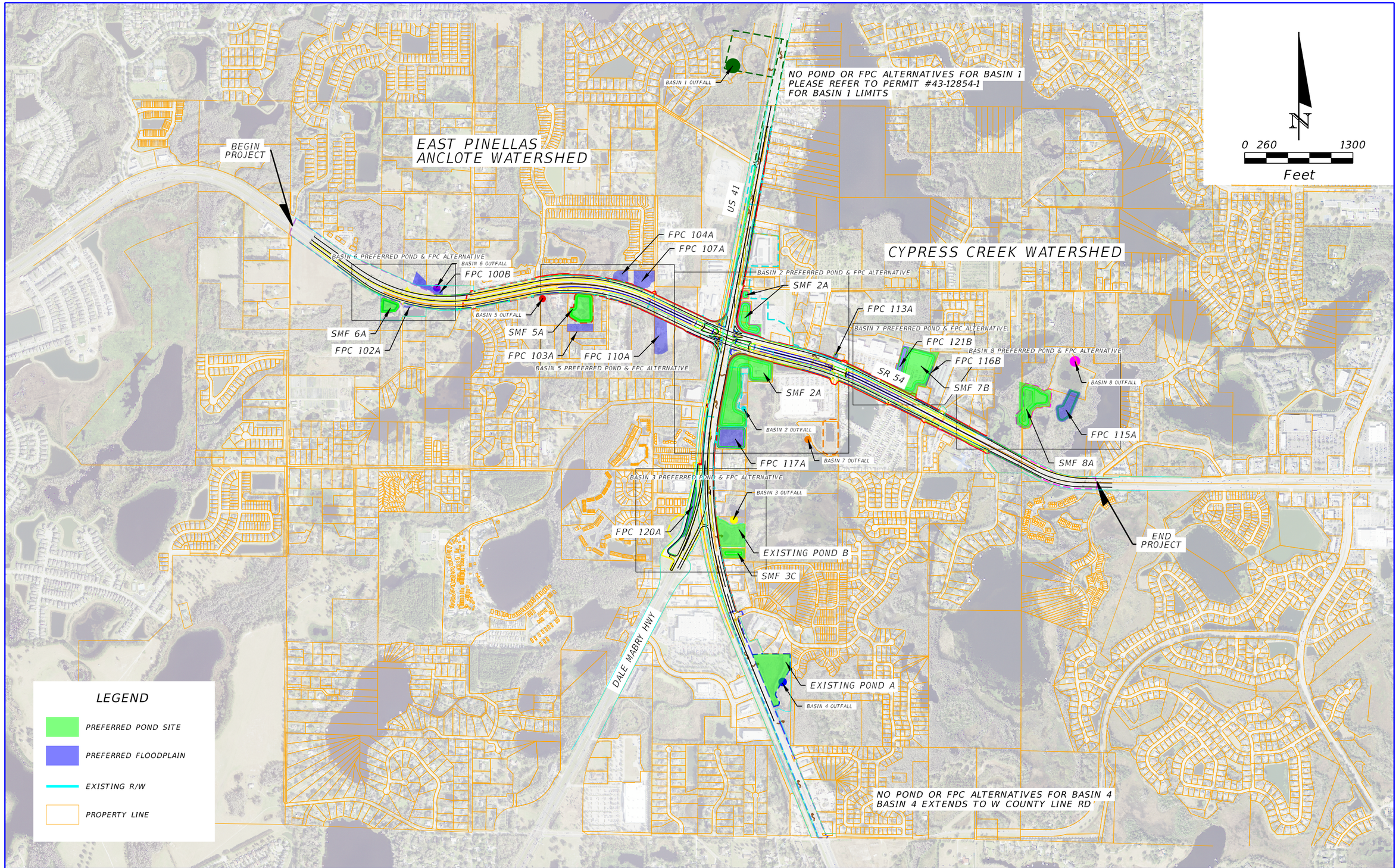
APPENDIX 4

PROPOSED POND AND FPC SITE ALTERNATIVES EXHIBIT-SPUI



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DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PREFERRED POND & FPC SITES SPUI

SHEET NO.

F.A.C. NOTE

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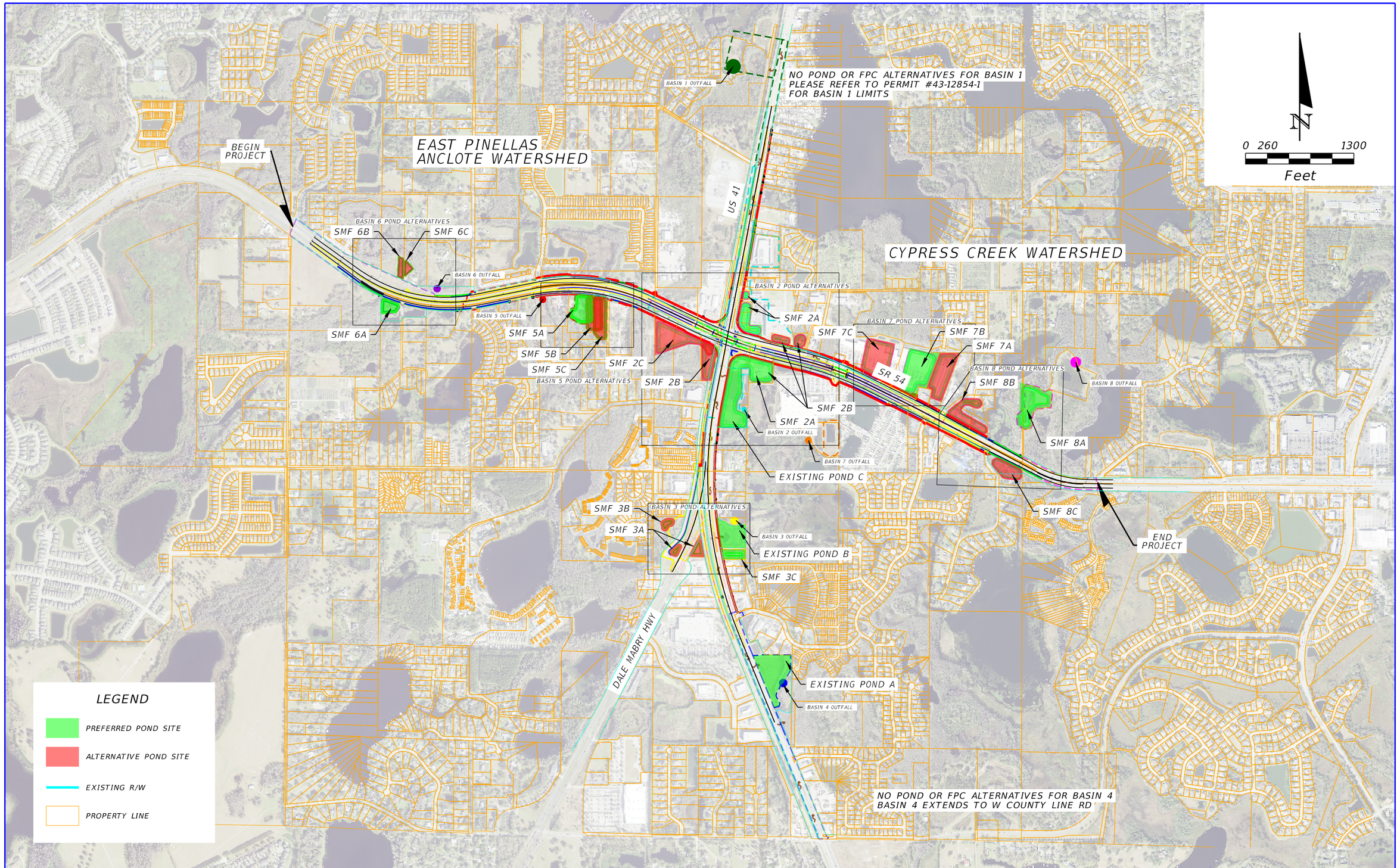

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
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ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PROPOSED POND SITES
SPUI

SHEET NO.

F.A.C. NOTE

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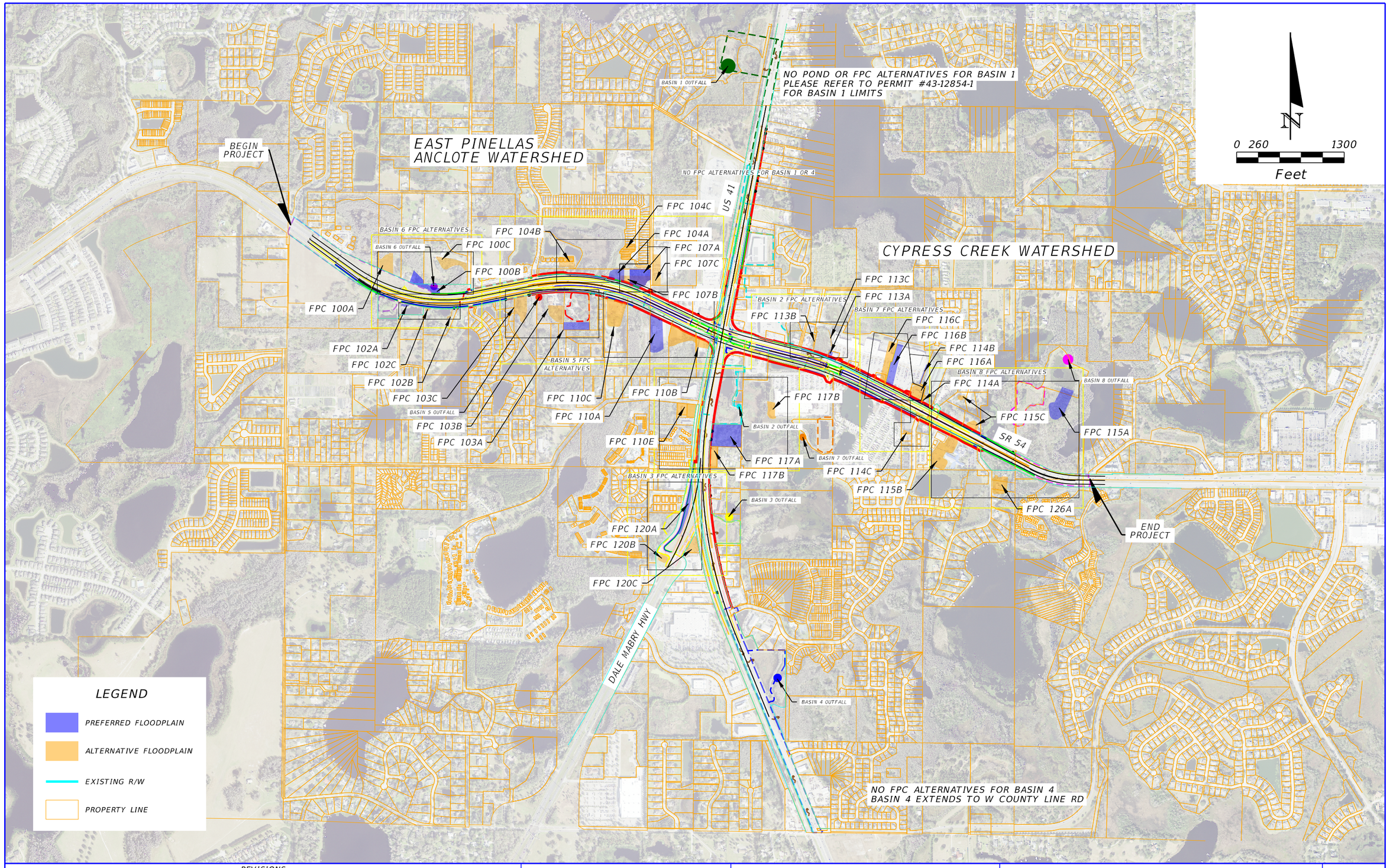

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
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390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PROPOSED FPC SITES
SPUI

SHEET NO.

F.A.C. NOTE

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APPENDIX 5

BASIN & POND SUMMARY TABLES-SPUI

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **BASIN SUMMARY TABLE-SPUI**

BASIN:	OUTFALL DESIGNATION:	SPECIAL CRITERIA:	BASELINE:	BEGIN STA:	END STA:	PGL LOW POINT STA:	PGL ELEV:	BASIN AREA (AC.)	PRE CN:	POST CN:	OPEN / CLOSED:	$ATTENUATION_{reqd.}$ (AC-FT)	$TREATMENT_{reqd.}$ (AC-FT)	CONTR. CRITERIA	POND (FACILITY TYPE):	$TREATMENT_{prov.}$ (AC-FT):	$ATTENUATION_{prov.}$ (AC-FT):	ALLOWABLE POND BASIN PGL LOW POINT EL.	POND DHW EL:	POND BASIN LOW POINT ALIGNMENT	POND BASIN LOW POINT STA:
4- No alternatives needed	CYPRESS CREEK	NA						14.64	96.08	95.94	OPEN	3.93	0.67	25yr/24hr	Wet Detention	0.85	3.95	71.00	69.25	CL. 41	Alignment not Covered
Remarks: Attenuation and treatment based on proposd condition can be provided by Ex. Pond A.			CL. 41	North Begin of Project	2588+87	Alignment not Covered	71.00														
															Ex. Pond A	0.85	3.95	71.00	69.25	CL. 41	Alignment not Covered
3-Alternative A	CYPRESS CREEK	NA						24.08	92.85	92.86	OPEN	3.87	1.05	25yr/24hr	Wet Detention	1.34	3.88	71.00	70.03	CL. 597	204+00
Remarks: Attenuation based on proposed condition will require three ponds - Ex. Pond B, SMF 3A.			CL. 597	200+00	217+00	204+00	71.00														
			CL. 41	2588+87	2617+47	2605+00	73.00														
															Ex. Pond B	1.05	3.01	72.00	70.03	CL. 41	2600+00
															SMF 3A	0.2	0.6	71.00	70.03	CL. 597	204+00
															SMF 3A	0.09	0.27	71.00	70.03	CL. 597	204+00
3-Alternative B	CYPRESS CREEK	NA						23.7	92.63	92.88	OPEN	3.29	1.05	25yr/24hr	Wet Detention	1.05	3.47	71.00	70.03	CL. 597	207+00
Remarks: Extra ROW needed for proposed SMF 3B. Attenuation based on proposed condition will require two ponds - Ex. Pond B and SMF 3B.			CL. 597	200+00	217+00	204+00	71.00														
			CL. 41	2588+87	2617+47	2605+00	73.00														
															Ex. Pond B	1.05	3.01	72.00	70.03	CL. 41	2600+00
															SMF 3B	0	0.46	71.00	70.03	CL. 597	207+00
3-Alternative C	CYPRESS CREEK	NA						24.2	92.45	92.81	OPEN	3.32	1.05	25yr/24hr	Wet Detention	1.05	3.76	72.00	70.03	CL. 41	2600+00
Remarks: Extra ROW needed for proposed SMF 3C. Attenuation based on proposed condition will require two ponds - Ex. Pond B and SMF 3C.			CL. 597	200+00	217+00	204+00	71.00														
			CL. 41	2588+87	2617+47	2605+00	73.00														
															Ex. Pond B (W.D.)	1.05	3.01	72.00	70.03	CL. 41	2600+00
															SMF 3C	0	0.75	73.00	70.03	CL. 41	2600+00
7-Alternative A	CYPRESS CREEK	NA						18.43	93.63	92.00	OPEN	8.06	0.8	25yr/24hr	Wet Detention	1.55	8.14	72.57	70.87	SR 54	1480+00
Remarks: Existing Pond 7 can not accommodate increased discharge. Basin 7 will use the existing pond and a new proposed SMF 7A to handle the increased runoff.			CL. SR 54	1476+81	1497+38	1495+50	73.31														
															Ex Pond 7	0.59	3.18	72.57	70.87	SR 54	1480+00
															SMF 7A	0.96	4.96	72.57	70.87	SR 54	1495+50
7-Alternative B	CYPRESS CREEK	NA						21.61	93.63	91.56	OPEN	10.06	0.86	25yr/24hr	Wet Detention	1.93	10.28	72.57	70.87	SR 54	1480+00
Remarks: Existing Pond 7 can not accommodate increased discharge. Basin 7 will use the existing pond and a new proposed SMF 7B to handle the increased runoff.			CL. SR 54	1476+81	1497+38	1495+50	73.31														
															Ex Pond 7	0.59	3.18	72.57	70.87	SR 54	1480+00
															SMF 7B	1.34	7.10	72.57	70.87	SR 54	1492+50

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **BASIN SUMMARY TABLE-SPUI**

BASIN:	OUTFALL DESIGNATION:	SPECIAL CRITERIA:	BASELINE:	BEGIN STA:	END STA:	PGL LOW POINT STA:	PGL ELEV:	BASIN AREA (AC.)	PRE CN:	POST CN:	OPEN / CLOSED:	$ATTENUATION_{reqd.}$ (AC-FT)	$TREATMENT_{reqd.}$ (AC-FT)	CONTR. CRITERIA	POND (FACILITY TYPE):	$TREATMENT_{prov.}$ (AC-FT):	$ATTENUATION_{prov.}$ (AC-FT):	ALLOWABLE POND BASIN PGL LOW POINT EL.	POND DHW EL:	POND BASIN LOW POINT ALIGNMENT	POND BASIN LOW POINT STA:
7-Alternative C	CYPRESS CREEK	NA						19.39	93.63	91.97	OPEN	9.63	0.86	25yr/24hr	Wet Detention	1.81	9.64	72.57	70.87	SR 54	1480+00
Remarks: Existing Pond 7 can not accommodate increased discharge. Basin 7 will use the existing pond and a new proposed SMF 7C to handle the increased runoff.			CL. SR 54	1476+81	1497+38	1495+50	73.31														
															Ex Pond 7	0.59	3.18	72.57	70.87	SR 54	1480+00
															SMF 7C	1.22	6.46	72.57	70.87	SR 54	1488+50
8-Alternative A	CYPRESS CREEK	NA						14.0	92.17	93.84	OPEN	4.32	0.78	25yr/24hr	Wet Detention	1.02	4.34	69.69	68.63	SR 54	1521+74
Remarks: Existing Pond 8 was widened to accommodate increase discharge from the project.			CL. SR 54	1497+38	East end of Project	1517+60	69.69														
															Pond 2A(1)	1.02	4.34	69.69	68.63	SR 54	1521+74
8-Alternative B	CYPRESS CREEK	NA						16.0	92.17	92.63	OPEN	5.46	0.78	25yr/24hr	Wet Detention	1.42	5.47	69.69	68.72	SR 54	1521+74
Remarks: Existing Pond 8 can not accommodate increased discharge. Basin 8 will use the existing pond and a new proposed SMF 8B to handle the increased runoff.			CL. SR 54	1497+38	East end of Project	1517+60	69.69														
															EX Pond 2A	0.79	3.01	69.69	68.73	SR 54	1521+74
															SMF 8B	0.63	2.46	69.69	68.71	SR 54	1521+74
8-Alternative C	CYPRESS CREEK	NA						15.64	92.17	91.61	OPEN	4.44	0.78	25yr/24hr	Wet Detention	1.32	4.67	69.69	68.59	SR 54	1521+74
Remarks: Existing Pond 2A can not accommodate increased discharge. Basin 8 will use the existing pond and a new proposed SMF 8C to handle the increased runoff.			CL. SR 54	1497+38	East end of Project	1517+60	69.69														
															EX Pond 2A	0.79	3.01	69.69	68.73	SR 54	1521+74
															SMF 8C	0.53	1.66	69.69	68.44	SR 54	1521+74
2-Alternative A	CYPRESS CREEK	NA						52.75	92.75	93.39	OPEN	21.58	3.01	25yr/24hr	Wet Detention	3.57	21.77	72.30	71.27	CL. 41	2623+60
Remarks: Proposed SMF 2A is a pond system that consists of 3 separate, hydraulically connected facilities operating together as a single integrated unit, one of which is the widening of existing Pond C.			CL. SR 54	1451+67	1476+81	1473+25	87.86														
			CL. 41	2617+74	2648+60	2623+60	73.09														
															SMF 2A	3.57	21.77	72.30	71.27	CL. 41	2623+60
2-Alternative B	CYPRESS CREEK	NA						55.32	92.75	92.26	OPEN	23.67	3.17	25yr/24hr	Wet Detention	3.8	23.77	72.30	71.33	CL. 41	2623+60
Remarks: Proposed SMF 2B is a pond system that consists of 4 separate, hydraulically connected facilities operating together as a single integrated unit, one of which is the widening of existing Pond C.			CL. SR 54	1451+67	1476+81	1473+25	87.86														
			CL. 41	2617+74	2648+60	2623+60	73.09														
															SMF 2B	3.8	23.77	72.30	71.33	CL. 41	2623+60

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **BASIN SUMMARY TABLE-SPUI**

BASIN:	OUTFALL DESIGNATION:	SPECIAL CRITERIA:	BASELINE:	BEGIN STA:	END STA:	PGL LOW POINT STA:	PGL ELEV:	BASIN AREA (AC.)	PRE CN:	POST CN:	OPEN / CLOSED:	$ATTENUATION_{reqd.}$ (AC-FT)	$TREATMENT_{reqd.}$ (AC-FT)	CONTR. CRITERIA	POND (FACILITY TYPE):	$TREATMENT_{prov.}$ (AC-FT):	$ATTENUATION_{prov.}$ (AC-FT):	ALLOWABLE POND BASIN PGL LOW POINT EL.	POND DHW EL:	POND BASIN LOW POINT ALIGNMENT	POND BASIN LOW POINT STA:
2-Alternative C	CYPRESS CREEK	NA						57.41	92.75	93.53	OPEN	24.75	3.22	25yr/24hr	Wet Detention	6.56	25.92	72.30	71.27	CL. 41	2623+60
Remarks: Proposed SMF 2C is a pond system that consists of 2 separate, hydraulically connected facilities operating together as a single integrated unit, one of which is the widening of existing Pond C.			CL. SR 54	1451+67	1476+81	1473+25	87.86														
			CL. 41	2617+74	2648+60	2623+60	73.09														
															Ex Pond C	2.24	13.88	72.30	71.27	CL. 41	2623+60
															SMF 2C	4.32	12.04	72.30	71.27	CL. 41	2623+68
1-No alternatives needed	EAST PINELLAS ANCLOTE	NA						32.64	91.73	91.85	OPEN	8.46	1.97	25yr/24hr	Wet Detention	2.03	1.98	72.71	71.26	CL. 41	2268+20
Remarks: Control Structure was adjusted to accommodate increase discharge. Existing pond can handle increase impervious			CL. 41	2648+60	North End of Project	2668+30	74.00														
															Existing Pond D1	2.03	1.98	72.71	71.26	CL. 41	2268+20
6-Alternative A	EAST PINELLAS ANCLOTE	TN/TP						18.02	88.55	88.70	OPEN	9.45	0.86	25yr/24hr	Wet Detention	1.14	9.45	68.50	65.76	SR 54	1410+50
Remarks: Attenuation and treatment based on proposed condition is provided by existing system of roadside linear ponds plus alternative SMF 6A.			CL. SR 54	Henley Rd	1424+60	1410+50	69.28														
															EX Pond E1	0.74	8.36	68.50	66.28	SR 54	1410+50
															SMF 6A	0.40	1.09	68.50	65.24	SR 54	1413+00
6-Alternative B	EAST PINELLAS ANCLOTE	TN/TP						17.68	88.91	88.52	OPEN	9.40	0.86	25yr/24hr	Wet Detention	1.45	9.69	68.50	65.70	SR 54	1410+50
Remarks: Attenuation and treatment based on proposed condition is provided by existing system of roadside linear ponds plus alternative SMF 6B.			CL. SR 54	Henley Rd	1424+60	1410+50	69.28														
															EX Pond E1	0.74	8.36	68.50	66.28	SR 54	1410+50
															SMF 6B	0.71	1.33	68.50	65.11	SR 54	1413+60
6-Alternative C	EAST PINELLAS ANCLOTE	TN/TP						17.52	89.07	88.57	OPEN	9.38	0.86	25yr/24hr	Wet Detention	1.29	9.38	68.50	65.67	SR 54	1410+50
Remarks: Attenuation and treatment based on proposed condition is provided by existing system of roadside linear ponds plus alternative SMF 6C.			CL. SR 54	Henley Rd	1424+60	1410+50	69.28														
															EX Pond E1	0.74	8.36	68.50	66.28	SR 54	1410+50
															SMF 6C	0.55	1.02	68.50	65.05	SR 54	1414+60

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **BASIN SUMMARY TABLE-SPUI**

BASIN:	OUTFALL DESIGNATION:	SPECIAL CRITERIA:	BASELINE:	BEGIN STA:	END STA:	PGL LOW POINT STA:	PGL ELEV:	BASIN AREA (AC.)	PRE CN:	POST CN:	OPEN / CLOSED:	$ATTENUATION_{reqd.}$ (AC-FT)	$TREATMENT_{reqd.}$ (AC-FT)	CONTR. CRITERIA	POND (FACILITY TYPE):	$TREATMENT_{prov.}$ (AC-FT):	$ATTENUATION_{prov.}$ (AC-FT):	ALLOWABLE POND BASIN PGL LOW POINT EL.	POND DHW EL:	POND BASIN LOW POINT ALIGNMENT	POND BASIN LOW POINT STA:
5-Alternative A	EAST PINELLAS ANCLOTE	NA						18.50	86.33	83.38	OPEN	4.04	1.34	25yr/24hr	Wet Detention	1.61	4.14	68.50	67.50	SR 54	1443+09
Remarks: Alternative SMF 5A provides attenuation and treatment for entire basin. Proposed condition elminates existing attenuation/treatment.			CL. SR 54	1424+60	1451+67	1433+34	69.04														
															EX Pond E2	N/A	N/A	N/A	N/A	N/A	N/A
															SMF 5A	1.61	4.14	68.50	67.50	SR 54	1443+09
5-Alternative B	EAST PINELLAS ANCLOTE	NA						18.56	86.29	83.28	OPEN	4.05	1.34	25yr/24hr	Wet Detention	1.63	4.22	68.50	67.50	N/A	N/A
Remarks: Alternative SMF 5B provides attenuation and treatment for entire basin. Proposed condition elminates existing attenuation/treatment.			CL. SR 54	1424+60	1451+67	1433+34	69.04														
															EX Pond E2	N/A	N/A	N/A	N/A	N/A	N/A
															SMF 5B	1.63	4.22	68.50	67.50	SR 54	1443+09
5-Alternative C	EAST PINELLAS ANCLOTE	NA						18.63	86.22	83.32	OPEN	4.10	1.34	25yr/24hr	Wet Detention	1.62	4.20	68.50	67.50	N/A	N/A
Remarks: Alternative SMF 5C provides attenuation and treatment for entire basin. Proposed condition elminates existing attenuation/treatment.			CL. SR 54	1424+60	1451+67	1433+34	69.04														
															EX Pond E2	N/A	N/A	N/A	N/A	N/A	N/A
															SMF 5C	1.62	4.20	68.50	67.50	SR 54	1443+30

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **POND SUMMARY TABLE-SPUI**

BASIN:	POND ALTERNATIVE	LOCATION	L&G BASIN PGL LOW EL	AVG. ESHWE (PD&E/L&G/ Design)	POND CONTR. EL.	SOIL TYPE	NUMBER OF PARCELS IMPACTED	POND SIZE (AC.)	POND (FACILITY TYPE):	PARCEL NUMBERS	REMARKS	RECOMMENDED
4												
	*Ex.Pond A *Name in Permit		71.00	68.25	68.25	A/D	0	5.18	WET DETENTION	N/A	Ex. Pond A to remain. Provides sufficient attenuation/treatment volumes	
3												
	*Ex.Pond B *Name in Permit	Sta. 2600+00 @ CL. 41, RT	72.00	68.50	68.50	A/D	0	2.64	WET DETENTION	N/A	Ex. Pond B remains and provides all required treatment volume and part of attenuation volume in proposed condition.	
	SMF 3A	Sta. 204+00 @ CL. 597, RT	71.00	68.50	68.50	A/D	1	0.75	WET DETENTION	N/A	SMF 3A works together with Ex. Pond B and provide the rest of attenuation volume in the proposed condition. NWL and DHW match with the Ex. Pond B.	
	SMF 3A	Sta. 203+00 @ CL. 597, LT	71.00	68.50	68.50	A/D	0	0.40	WET DETENTION	N/A		
	*Ex.Pond B *Name in Permit	Sta. 2600+00 @ CL. 41, RT	72.00	68.50	68.50	A/D	0	2.64	WET DETENTION	N/A	Ex. Pond B remains and provides all required treatment volume and part of attenuation volume in proposed condition.	
	SMF 3B	Sta. 206+50 @ CL. 597, LT	71.00	68.50	68.50	A/D	1	0.57	WET DETENTION	N/A	SMF 3B works together with Ex. Pond B and provides the rest of attenuation volume in the proposed condition. NWL and DHW match with the Ex. Pond B.	
	*Ex.Pond B *Name in Permit	Sta. 2600+00 @ CL. 41, RT	72.00	68.50	68.50	A/D	0	2.64	WET DETENTION	N/A	Preferred alternative: Ex. Pond B remains and provides all required treatment volume and part of attenuation volume in proposed condition. SMF 3C works together with Ex. Pond B and provides the rest of attenuation volume in the proposed condition. NWL and DHW match with the Ex. Pond B. SMF 3C is closest to existing pond and to existing outfall and will not require piping under existing rail or US41.	
	SMF 3C	Sta. 2597+50 @ CL. 41, RT	73.00	68.50	68.50	A/D	1	0.90	WET DETENTION	N/A		

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **POND SUMMARY TABLE-SPUI**

BASIN:	POND ALTERNATIVE	LOCATION	L&G BASIN PGL LOW EL	AVG. ESHWE (PD&E/L&G/ Design)	POND CONTR. EL.	SOIL TYPE	NUMBER OF PARCELS IMPACTED	POND SIZE (AC.)	POND (FACILITY TYPE):	PARCEL NUMBERS	REMARKS	RECOMMENDED
7												
	SMF 7A	Sta. 1494+25 @ CL SR 54, LT	73.31	69.08	69.08	A/D	1	3.41	WET DETENTION	N/A		
	SMF 7B	Sta. 1490+25 @ CL SR 54, LT	73.31	69.08	69.08	A/D	1	4.92	WET DETENTION	N/A	Pond location chosen instead of utilizing trailer park along eastbound SR54 and can be piped to existing outfall. This alternative has less of an impact to existing shopping center.	
	SMF 7C	Sta. 1485+00 @ CL SR 54, LT	73.31	69.08	69.08	A/D	3	4.48	WET DETENTION	N/A		
8												
	SMF 8A	Sta. 1507+60 @ CL SR 54, LT	69.69	66.96	66.96	A/D	1	3.31	WET DETENTION	N/A	utilizes existing pond, least number of parcel impacts	
	SMF 8B	Sta 1499+00 @ CL SR 54, LT	69.69	66.96	66.96	A/D	5	2.47	WET DETENTION	N/A		
	SMF 8C	Sta. 1509+00 @ CL SR 54, RT	69.69	66.96	66.96	A/D	2	1.74	WET DETENTION	N/A		
2												
	SMF 2A	Sta. 1465+20 @ CL SR 54, LT	72.30	68.14	68.14	A/D	8	9.91	WET DETENTION	N/A	alternative will not require piping under railroad.	
	SMF 2B	Sta. 1462+80 @ CL SR 54, RT	72.30	68.14	68.14	A/D	5	9.56	WET DETENTION	N/A		
	Existing Pond C* & SMF 2C *Name in Permit	Sta. 1457+45 @ CL SR 54, RT	72.30	68.14	68.14	A/D	7	11.92	WET DETENTION	N/A		
1												
	*Ex.Pond D *Name in Permit	Sta. 2670+85 @ CL 41, LT	72.71	69.26	69.26	A/D	1	4.89	WET DETENTION	N/A	Existing pond to remain. Provides sufficient attenuation/treatment volumes	

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/29/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: **POND SUMMARY TABLE-SPUI**

BASIN:	POND ALTERNATIVE	LOCATION	L&G BASIN PGL LOW EL	AVG. ESHWE (PD&E/L&G/ Design)	POND CONTR. EL.	SOIL TYPE	NUMBER OF PARCELS IMPACTED	POND SIZE (AC.)	POND (FACILITY TYPE):	PARCEL NUMBERS	REMARKS	RECOMMENDED
6												
	SMF 6A	Sta. 1414+00 @ CL SR 54, RT	68.50	63.20	63.20	A/D	1	0.91	WET DETENTION	N/A	Alternative plus (6) existing linear ponds: within FDOT RW therefore no additional RW takes needed, no floodplain impacts, no wetland impacts	
	SMF 6B	Sta. 1414+75 @ CL SR 54, LT	68.50	61.12	61.12	A/D	1	0.51	WET DETENTION	N/A		
	SMF 6C	Sta. 1415+00 @ CL SR 54, LT	68.50	61.12	61.12	A/D	1	0.39	WET DETENTION	N/A		
5												
	SMF 5A	Sta. 1442+00 @ CL SR 54, RT	68.50	65.00	65.00	A/D	1	2.30	WET DETENTION	N/A	1 parcel impact, no floodplain impacts, no wetland impacts	
	SMF 5B	Sta. 1443+00 @ CL SR 54, RT	68.50	65.00	65.00	A/D	2	2.36	WET DETENTION	N/A		
	SMF 5C	Sta. 1444+00 @ CL SR 54, RT	68.50	65.00	65.00	A/D	6	2.43	WET DETENTION	N/A		

APPENDIX 6

POND ALTERNATIVES DESIGN CALCULATIONS

SOUTH OF INTERSECTION:
BASIN 4 & 3
CALCULATIONS

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 4			**DATE**
POND/NODE DESIGNATION:	Existing POND A	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JD	6/6/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond A NWL	N/A	N/A	100	3.86	386.00
			TOTALS	**3.86**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	7.82	766.76
			TOTALS	**7.82**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	0.40	38.77
			TOTALS	**0.40**	
PERVIOUS AREAS					
Open Spaces, Fair Condition (Grass cover on 50%-75% of the area)	Basinger, Holopaw, and Samsula soils, depressional - 5 Adamsville fine sand, 0 to 2 percent slopes - 11 Samsula muck, frequently ponded, 0 to 1 percent slopes - 52	A/D	84	2.56	214.94
			TOTALS	**2.56**	

Information of Ex. Pond A is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.68**	**TOTAL BASIN AREA**	**14.64**	**COMPOSITE CN**	**85.87**
TOTAL DCIA	**79.82%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**96.08**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD (NOAA)	25-year / 24-hour	8.80	0.41	8.33	**10.16**
SWFWMD (NOAA)	100-year / 24-hour	12.50	0.41	12.02	**14.67**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 4	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND A	**CHECKED BY:**	JD	6/6/2024

Stage Storage Calculations (Information from permit #: 43-12854)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
71.40	Outside Berm	5.18				13.38
			4.74	0.80	3.79	
70.60	Inside Berm	4.30				9.59
			4.17	1.35	5.63	
69.25	DHW/ATT (25yr/24hr)	4.05				3.95
			3.97	0.78	3.10	
68.47	(PAV)	3.90				0.85
			3.88	0.22	0.85	
68.25	(NWL)	3.86				0.00
			2.94	-2.25	(6.62)	
66.00	Pond Bottom	2.02				(6.62)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 4			**DATE**
POND/NODE DESIGNATION:	SMF 4D	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	6/6/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
SMF 4D NWL	N/A	N/A	100	3.86	386.00
			TOTALS	**3.86**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	7.62	746.44
			TOTALS	**7.62**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	0.45	44.40
			TOTALS	**0.45**	
PERVIOUS AREAS					
Open Spaces, Fair Condition (Grass cover on 50%-75% of the area)	Basinger, Holopaw, and Samsula soils, depressional - 5 Adamsville fine sand, 0 to 2 percent slopes - 11 Samsula muck, frequently ponded, 0 to 1 percent slopes - 52	A/D	84	2.71	227.45
			TOTALS	**2.71**	

Information of Ex. Pond A is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.48**	**TOTAL BASIN AREA**	**14.64**	**COMPOSITE CN**	**86.01**
TOTAL DCIA	**78.41%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**95.94**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.42	8.31	**10.14**
SWFWMD	100-year / 24-hour	12.50	0.42	12.01	**14.64**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 4	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 4D	**CHECKED BY:**	JD	6/6/2024

Water Quality

Total Basin Area =	14.64	ac
Pond Area at NWL =	3.86	ac
Total Impervious Area =	8.07	ac

A. Existing Permitted Water Quality PAV =			**0.85**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.67	Ac-Ft
		Required PAV =	**0.67**	Ac-Ft
		Provided PAV =	**0.85**	Ac-Ft

Water Quantit

Post V(R)- Pre V(R) =	**(0.02)**	**ac-ft.**
Pre Att. Volume (Ex. FDOT Pond A)	**3.95**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**3.93**	**ac-ft.**

Stage Storage Calculations (based on permit #: 43-12854)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
71.40	Outside Berm	5.18				13.38
			4.74	0.80	3.79	
70.60	Inside Berm	4.30				9.59
			4.17	1.35	5.63	
69.25	DHW/ATT (25yr/24hr)	4.05				3.95
			3.97	0.78	3.10	
68.47	(PAV)	3.90				0.85
			3.88	0.22	0.85	
68.25	(NWL)	3.86				0.00
			2.94	-2.25	(6.62)	
66.00	Pond Bottom	2.02				(6.62)

Required Detention Volume for Open Basins (25YR/24HR)	=	3.93	Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	1.97	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.34	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.67	Ac-Ft

Proposed area matches with existing, Ex. Pond A work in proposed condition.
No additional floodplain impact in proposed condition, thus no floodplain compensation needed for basin A.

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 3			**DATE**
POND/NODE DESIGNATION:	Existing POND B	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond B NWL	N/A	N/A	100	1.88	188.00
			TOTALS	**1.88**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	9.40	921.08
			TOTALS	**9.40**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	2.85	279.00
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	8.65	726.48
			TOTALS	**8.65**	

Information of Ex. Pond A is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.28**	**TOTAL BASIN AREA**	**22.77**	**COMPOSITE CN**	**87.47**
TOTAL DCIA	**49.52%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.85**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.77	7.94	**15.07**
SWFWMD	100-year / 24-hour	12.50	0.77	11.62	**22.05**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 3	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND B	**CHECKED BY:**	JD	6/4/2024

Stage Storage Calculations (Information from permit #: 43-12854)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
72.20	Outside Berm	2.64				7.85
			2.43	0.70	1.70	
71.50	Inside Berm	2.22				6.15
			2.14	1.47	3.14	
70.03	DHW/ATT (25yr/24hr)	2.05				3.01
			2.00	0.98	1.96	
69.05	(PAV)	1.94				1.05
			1.91	0.55	1.05	
68.50	(NWL)	1.88				0.00
			1.35	-2.93	(3.96)	
65.57	Top of Deep Pool	0.82				(3.96)
			0.67	-5.07	(3.37)	
60.50	Pond Bottom	0.51				(7.33)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 3			**DATE**
POND/NODE DESIGNATION:	SMF 3A	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Ex. Pond B NWL	N/A	N/A	100	1.88	188.00
Proposed SMF 3A NWL	N/A	N/A	100	0.35	35.13
Proposed SMF 3A NWL	N/A	N/A	100	0.09	9.00
			TOTALS	**2.32**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	9.73	953.20
			TOTALS	**9.73**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	2.85	279.30
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	9.18	771.01
			TOTALS	**9.18**	

Information of Ex. Pond B is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**12.05**	**TOTAL BASIN AREA**	**24.08**	**COMPOSITE CN**	**87.32**
TOTAL DCIA	**50.04%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.86**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.77	7.94	**15.93**
SWFWMD	100-year / 24-hour	12.50	0.77	11.62	**23.32**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 3	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 3A	**CHECKED BY:**	JD	6/4/2024

Water Quality

Total Basin Area =	24.08	ac
Pond Area at NWL =	2.32	ac
Total Impervious Area =	12.58	ac

A. Existing Permitted Water Quality PAV = **1.05** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.05 Ac-Ft

Required PAV = **1.05** Ac-Ft

Provided PAV = **1.05** Ac-Ft Provided by Ex. Pond B.

Water Quantity

Post V(R)- Pre V(R) =	**0.86**	**ac-ft.**	Provided by Proposed SMF 3A
Pre Att. Volume (Ex. Pond B)	**3.01**	**ac-ft.**	Provided by Ex. Pond B
Required Att. Volume (Delta V(R) + Pre Att. Volume	**3.87**	**ac-ft.**	

Stage Storage Calculations

Pond B1A

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
72.00	Outside Berm	0.75				1.57	
			0.63	0.20	0.13		
71.80	Inside Berm	0.52				1.44	
			0.48	1.77	0.84		
70.03	DHW/ATT (25yr/24hr)	0.43				0.60	DHW match with Ex. Pond B
			0.42	0.23	0.10		
69.80		0.42				0.50	
			0.38	1.30	0.50		
68.50	(NWL)	0.35				0.00	NWL match with Ex. Pond B
			0.31	-2.00	(0.61)		
66.50	Slope Change	0.26				(0.61)	
			0.22	-4.00	(0.88)		
62.50	Pond Bottom	0.18				(1.49)	

Pond B1B

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.20	Outside Berm	0.40				0.54	
			0.32	0.10	0.03		
71.10	Inside Berm	0.24				0.51	
			0.22	1.07	0.24		
70.03	DHW/ATT (25yr/24hr)	0.20				0.27	DHW match with Ex. Pond B
			0.20	0.23	0.05		
69.80		0.20				0.23	
			0.17	1.30	0.23		
68.50	(NWL)	0.15				0.00	
			0.12	-2.00	(0.24)		
66.50	Slope Change	0.09				(0.24)	
			0.07	-4.00	(0.26)		
62.50	Pond Bottom	0.04				(0.50)	

Required Detention Volume for Open Basins (25YR/24HR) = 3.87 Ac-Ft

1/2 of the required detention volume (w/in 24 hrs) = 1.94 Ac-Ft

1/2 of the required treatment volume (w/in no less than 60 hrs) = 0.52 Ac-Ft

Total required treament volume (w/in no less than 120 hrs) = 1.05 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 3			**DATE**
POND/NODE DESIGNATION:	Existing POND B	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond B NWL	N/A	N/A	100	1.88	188.00
			TOTALS	**1.88**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	9.40	921.08
			TOTALS	**9.40**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	2.85	279.00
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	9.23	775.33
			TOTALS	**9.23**	

Information of Ex. Pond B is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.28**	**TOTAL BASIN AREA**	**23.36**	**COMPOSITE CN**	**87.30**
TOTAL DCIA	**48.29%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.63**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.80	7.91	**15.40**
SWFWMD	100-year / 24-hour	12.50	0.80	11.59	**22.56**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 3			**DATE**
POND/NODE DESIGNATION:	SMF 3B	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Ex. Pond B NWL	N/A	N/A	100	1.88	188.00
Proposed SMF 3B NWL	N/A	N/A	100	0.27	26.79
			TOTALS	**2.15**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	9.73	953.20
			TOTALS	**9.73**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	2.85	279.30
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	8.97	753.66
			TOTALS	**8.97**	

Information of Ex. Pond B is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.87**	**TOTAL BASIN AREA**	**23.70**	**COMPOSITE CN**	**87.38**
TOTAL DCIA	**50.11%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.88**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.77	7.94	**15.68**
SWFWMD	100-year / 24-hour	12.50	0.77	11.62	**22.96**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 3	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 3B	**CHECKED BY:**	JD	6/4/2024

Water Quality

Total Basin Area =	23.70	ac
Pond Area at NWL =	2.15	ac
Total Impervious Area =	12.58	ac

A. Existing Permitted Water Quality PAV =			**1.05**	Ac-Ft	
B.	1.0	" Over Total Impervious Area =	1.05	Ac-Ft	
		Required PAV =	**1.05**	Ac-Ft	
		Provided PAV =	**1.05**	Ac-Ft	Provided by Ex. Pond B.

Water Quantit

Post V(R)- Pre V(R) =	**0.28**	**ac-ft.**	Provided by SMF 3B
Pre Att. Volume (Ex. Ponds B1)	**3.01**	**ac-ft.**	Provided by Ex. Pond B.
Required Att. Volume (Delta V(R) + Pre Att. Volume	**3.29**	**ac-ft.**	

Stage Storage Calculations (based on permit #: 43-12854)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.20	Outside Berm	0.57				0.90	
			0.48	0.17	0.08		
71.03	Inside Berm	0.38				0.82	
			0.36	1.00	0.36		
70.03	DHW/ATT (25yr/24hr)	0.34				0.46	***DHW match with Ex. Pond B***
			0.31	1.03	0.32		
69.00		0.29				0.14	
			0.28	0.50	0.14		
68.50	(NWL)	0.27				0.00	NWL match with Ex. Pond B
			0.23	-2.00	(0.46)		
66.50	Slope Change	0.19				(0.46)	
			0.16	-4.00	(0.62)		
62.50	Pond Bottom	0.12				(1.08)	

Required Detention Volume for Open Basins (25YR/24HR) = 3.29 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	1.65	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.52	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.05	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 3			**DATE**
POND/NODE DESIGNATION:	Existing POND B	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond B NWL	N/A	N/A	100	1.88	188.00
			TOTALS	**1.88**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	9.40	921.08
			TOTALS	**9.40**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	2.85	279.00
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	9.74	817.80
			TOTALS	**9.74**	

Information of Ex. Pond B is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.28**	**TOTAL BASIN AREA**	**23.86**	**COMPOSITE CN**	**87.17**
TOTAL DCIA	**47.27%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.45**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.82	7.89	**15.69**
SWFWMD	100-year / 24-hour	12.50	0.82	11.57	**23.01**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 3			**DATE**
POND/NODE DESIGNATION:	SMF 3C	**MADE BY:**	YW	4/26/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Ex. Pond B NWL	N/A	N/A	100	1.88	188.00
Proposed SMF 3C NWL	N/A	N/A	100	0.44	43.88
			TOTALS	**2.32**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	9.73	953.20
			TOTALS	**9.73**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	2.85	279.30
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	9.31	781.77
			TOTALS	**9.31**	

Information of Ex. Pond B is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**12.05**	**TOTAL BASIN AREA**	**24.20**	**COMPOSITE CN**	**87.28**
TOTAL DCIA	**49.77%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.81**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.77	7.93	**16.00**
SWFWMD	100-year / 24-hour	12.50	0.77	11.62	**23.43**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 3	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 3C	**CHECKED BY:**	JD	6/4/2024

Water Quality

Total Basin Area =	24.20	ac
Pond Area at NWL =	2.32	ac
Total Impervious Area =	12.58	ac

A. Existing Permitted Water Quality PAV = **1.05** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.05 Ac-Ft

Required PAV = **1.05** Ac-Ft

Provided PAV = **1.05** Ac-Ft Provided by Ex. Pond B.

Water Quantity

Post V(R)- Pre V(R) =	**0.31**	**ac-ft.**	Provided by SMF 3C
Pre Att. Volume (Ex. Pond B)	**3.01**	**ac-ft.**	Provided by Ex. Pond B
Required Att. Volume (Delta V(R) + Pre Att. Volume	**3.32**	**ac-ft.**	

Stage Storage Calculations (based on permit #: 43-12854)

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
72.00	Outside Berm	0.90				1.98	
			0.76	0.50	0.38		
71.50	Inside Berm	0.63				1.60	
			0.58	1.47	0.86		
70.03	DHW/ATT (25yr/24hr)	0.54				0.75	DHW match with Ex. Pond B
			0.53	0.23	0.12		
69.80		0.52				0.62	
			0.48	1.30	0.62		
68.50	(NWL)	0.44				0.00	NWL match with Ex. Pond B
			0.38	-2.00	(0.76)		
66.50	Slope Change	0.32				(0.76)	
			0.27	-4.00	(1.08)		
62.50	Pond Bottom	0.22				(1.85)	

Required Detention Volume for Open Basins (25YR/24HR) = 3.32 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	1.66 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.52 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.05 Ac-Ft

EAST OF INTERSECTION:
BASIN 7 & 8
CALCULATIONS

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 7			**DATE**
POND/NODE DESIGNATION:	Existing FDOT POND 1A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/3/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing FDOT Pond 1A NWL	N/A	N/A	100	1.71	171.00
			TOTALS	**1.71**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	5.65	553.70
			TOTALS	**5.65**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	N/A	N/A	98	0.24	23.52
			TOTALS	**0.24**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)			74	1.42	105.08
Open Spaces (Poor Condition, grass cover on 50% or less of the area) Offsite-Undeveloped			86	1.15	98.90
Per SWFWMD ERP Permit App ID. 67030 (Permit #: 19567.003)			**TOTALS**	**2.57**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**7.36**	**TOTAL BASIN AREA**	**10.17**	**COMPOSITE CN**	**80.96**
TOTAL DCIA	**72.37%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.63**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	0.68	8.53	**7.23**
SWFWMD	100-year / 24-hour	13.00	0.68	12.22	**10.35**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing FDOT POND 1A	**CHECKED BY:**	YW	6/3/2024

Water Quality

Total Basin Area =	10.17	ac
Pond Area at NWL =	1.71	ac
Existing Impervious Area =	5.89	ac

A.	Existing Permitted Water Quality PAV =		**0.59**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.49	Ac-Ft
		Required PAV =	**0.49**	Ac-Ft

Water Quantity

Existing Provided Detention Volume= 3.18 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.00	TOB	1.90				3.43	
			1.89	0.13	0.25		
70.87	DHW/ATT	1.88				**3.18**	Provided Detention Volume
			1.80	1.44	2.59		
69.43	Weir/PAV	1.71				0.59	Provided Treatment Volume
			1.69	0.35	0.59		
69.08	Orifice/NWL	1.67				0.00	NWL is at orifice elevation
			1.65	-0.38	(0.63)		
68.70	SHW	1.62				(0.63)	
			1.29	-1.70	(2.19)		
67.00		0.96				(2.82)	
			0.77	-5.00	(3.85)		
62.00	Pond Bottom	0.58				(6.67)	

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 7			**DATE**
POND/NODE DESIGNATION:	SMF 7A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/3/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION		SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE						
Existing Pond System		N/A	N/A	100	1.71	171.00
Proposed Pond System		N/A	N/A	100	2.44	244.00
				TOTALS	**4.15**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)						
Roadway (Travel Lanes)		N/A	N/A	98	9.20	901.60
				TOTALS	**9.20**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)						
Roadway (Sidewalks)		N/A	N/A	98	0.45	44.17
				TOTALS	**0.45**	
PERVIOUS AREAS						
Open Spaces Grass Good condition: grass cover on 75% or more of the area		Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.93	216.82
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.72	53.28
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.98	72.52
				TOTALS	**4.63**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.35**	**TOTAL BASIN AREA**	**18.43**	**COMPOSITE CN**	**76.13**
TOTAL DCIA	**72.43%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.42**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.82	7.89	**12.11**
SWFWMD	100-year / 24-hour	12.50	0.82	11.57	**17.77**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 7A	**CHECKED BY:**	YW	6/3/2024

Water Quality

Total Basin Area =	18.43	ac
Pond Area at NWL =	4.15	ac
Total Impervious Area =	9.65	ac

A.	Existing Permitted Water Quality PAV =		**0.59**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.80	Ac-Ft
		Required PAV =	**0.80**	Ac-Ft
		Provided PAV =	**0.96**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**4.88**	**ac-ft.**	
Pre Att. Volume (Ex. FDOT Pond 1A)	**3.18**	**ac-ft.**	
Required Att. Volume (Delta V(R) + Pre Att. Volume	**8.06**	**ac-ft.**	EX_Pond1A will remain in use. Delta V (R) to be provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
72.00	Outside Berm	3.41				8.22	
			3.15	0.13	0.41		
71.87	Inside Berm	2.88				7.81	
		.	2.85	1.00	2.85		
70.87	DHW/ATT	2.82				4.96	Provided Detention Volume
			2.78	1.44	4.01		
69.43	(PAV)	2.74				0.96	Provided Treatment Volume
			2.73	0.35	0.96		
69.08	(NWL)	2.72				0.00	NWL is at orifice elevation
			2.34	-5.08	(11.86)		
64.00	Pond Bottom	1.95				(11.86)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR)	=	8.06	Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.03	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.40	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.80	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 7			**DATE**
POND/NODE DESIGNATION:	Existing BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/3/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing FDOT Pond 1A NWL	N/A	N/A	100	1.71	171.00
			TOTALS	**1.71**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	5.65	553.70
			TOTALS	**5.65**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	N/A	N/A	98	0.24	23.52
	N/A				
			TOTALS	**0.24**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)		C	74	1.42	105.08
Open Spaces (Poor Condition, grass cover on 50% or less of the area) Offsite-Undeveloped		C	86	1.15	98.90
Per SWFWMD ERP Permit App ID. 67030 (Permit #: 19567.003)			**TOTALS**	**2.57**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**7.36**	**TOTAL BASIN AREA**	**10.17**	**COMPOSITE CN**	**80.96**
TOTAL DCIA	**72.37%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.63**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	0.68	8.53	**7.23**
SWFWMD	100-year / 24-hour	13.00	0.68	12.22	**10.35**

CYPRESS CREEK WATERSHED

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing FDOT POND 1A	**CHECKED BY:**	YW	6/3/2024

Water Quality

Total Basin Area =	10.17	ac
Pond Area at NWL =	1.71	ac
Existing Impervious Area =	5.89	ac

A. Existing Permitted Water Quality PAV = **0.59** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.49 Ac-Ft

Required PAV = **0.49** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 3.18 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.00	TOB	1.90				3.43	
			1.89	0.13	0.25		
70.87	DHW/ATT	1.88				**3.18**	Provided Detention Volume
			1.80	1.44	2.59		
69.43	Weir/PAV	1.71				0.59	Provided Treatment Volume
			1.69	0.35	0.59		
69.08	Orifice/NWL	1.67				0.00	NWL is at orifice elevation
			1.65	-0.38	(0.63)		
68.70	SHW	1.62				(0.63)	
			1.29	-1.70	(2.19)		
67.00		0.96				(2.82)	
			0.77	-5.00	(3.85)		
62.00	Pond Bottom	0.58				(6.67)	

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 7			**DATE**
POND/NODE DESIGNATION:	SMF 7B	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/3/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond System	N/A	N/A	100	1.71	171.00
Proposed Pond System	N/A	N/A	100	3.81	381.00
			TOTALS	**5.52**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	9.20	901.60
			TOTALS	**9.20**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.45	44.17
Commercial and Business Areas (85% impervious)	N/A	N/A	94	0.69	64.86
			TOTALS	**1.14**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.93	216.82
Open Spaces Grass Good condition: grass cover on 75% or more of the area Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.82	208.68
			TOTALS	**5.75**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**14.72**	**TOTAL BASIN AREA**	**21.61**	**COMPOSITE CN**	**77.57**
TOTAL DCIA	**68.11%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.00**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.87	7.84	**14.11**
SWFWMD	100-year / 24-hour	12.50	0.87	11.51	**20.73**

CYPRESS CREEK WATERSHED

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 7B	**CHECKED BY:**	YW	6/3/2024

Water Quality

Total Basin Area =	21.61	ac
Pond Area at NWL =	5.52	ac
Total Impervious Area =	10.34	ac

A. Existing Permitted Water Quality PAV =			**0.59**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.86	Ac-Ft
		Required PAV =	**0.86**	Ac-Ft
		Provided PAV =	**1.34**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**6.88**	**ac-ft.**	
N/A	**3.18**	**ac-ft.**	
Required Att. Volume (Delta V(R) + Pre Att. Volume	**10.06**	**ac-ft.**	EX_Pond1A will remain in use. Delta V (R) to be provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
72.00	Outside Berm	4.93				11.92	
			4.62	0.13	0.60		
71.87	Inside Berm	4.31				11.32	
		.	4.22	1.00	4.22		
70.87	DHW/ATT	4.13				7.10	Provided Detention Volume
			4.00	1.44	5.76		
69.43	(PAV)	3.87				1.34	Provided Treatment Volume
			3.84	0.35	1.34		
69.08	(NWL)	3.81				0.00	NWL is at orifice elevation
			2.96	-7.08	(20.92)		
62.00	Pond Bottom	2.10				(20.92)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR)	=	10.06	Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	5.03	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.43	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.86	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 7			**DATE**
POND/NODE DESIGNATION:	Existing BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing FDOT Pond 1A NWL	N/A	N/A	100	1.71	171.00
			TOTALS	**1.71**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	5.65	553.70
			TOTALS	**5.65**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	Mostly poorly drained sandy soils	N/A	98	0.24	23.52
			TOTALS	**0.24**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)		C	74	1.42	105.08
Open Spaces (Poor Condition, grass cover on 50% or less of the area) Offsite-Undeveloped		C	86	1.15	98.90
Per SWFWMD ERP Permit App ID. 67030 (Permit #: 19567.003)			**TOTALS**	**2.57**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**7.36**	**TOTAL BASIN AREA**	**10.17**	**COMPOSITE CN**	**80.96**
TOTAL DCIA	**72.37%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.63**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	0.68	8.53	**7.23**
SWFWMD	100-year / 24-hour	13.00	0.68	12.22	**10.35**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing FDOT Pond 1A	**CHECKED BY:**	YW	6/4/2024

Water Quality

Total Basin Area =	10.17	ac
Pond Area at NWL =	1.71	ac
Existing Impervious Area =	5.89	ac

A.	Existing Permitted Water Quality PAV =		**0.59**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.49	Ac-Ft
		Required PAV =	**0.49**	Ac-Ft

Water Quantity

Existing Provided Detention Volume= **3.18** **ac-ft.** Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.00	TOB	1.90				3.43	
			1.89	0.13	0.25		
70.87	DHW/ATT	1.88				**3.18**	Provided Detention Volume
			1.80	1.44	2.59		
69.43	Weir/PAV	1.71				0.59	Provided Treatment Volume
			1.69	0.35	0.59		
69.08	Orifice/NWL	1.67				0.00	NWL is at orifice elevation
			1.65	-0.38	(0.63)		
68.70	SHW	1.62				(0.63)	
			1.29	-1.70	(2.19)		
67.00		0.96				(2.82)	
			0.77	-5.00	(3.85)		
62.00	Pond Bottom	0.58				(6.67)	

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 7			**DATE**
POND/NODE DESIGNATION:	SMF 7C	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond System	N/A	N/A	100	1.71	171.00
Proposed Pond System	N/A	N/A	100	3.46	346.00
			TOTALS	**5.17**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	9.20	901.60
			TOTALS	**9.20**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.45	44.17
Commercial and Business Areas (85% impervious)	N/A	N/A	94	0.69	64.86
			TOTALS	**1.14**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.93	216.82
Open Spaces Grass Good condition: grass cover on 75% or more of the area Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.44	180.56
			TOTALS	**5.37**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**14.37**	**TOTAL BASIN AREA**	**20.88**	**COMPOSITE CN**	**77.78**
TOTAL DCIA	**68.82%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.19**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.85	7.86	**13.68**
SWFWMD	100-year / 24-hour	12.50	0.85	11.54	**20.08**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 7	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 7C	**CHECKED BY:**	YW	6/4/2024

Water Quality

Total Basin Area =	20.88	ac
Pond Area at NWL =	5.17	ac
Total Impervious Area =	10.34	ac

A.	Existing Permitted Water Quality PAV =		**0.59**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.86	Ac-Ft
		Required PAV =	**0.86**	Ac-Ft
		Provided PAV =	**1.22**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**6.45**	**ac-ft.**	
Pre Att. Volume (Ex. FDOT Pond 1A)	**3.18**	**ac-ft.**	
Required Att. Volume (Delta V(R) + Pre Att. Volume	**9.63**	**ac-ft.**	EX_Pond1A will remain in use. Delta V (R) to be provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
72.00	Outside Berm	4.48				10.84	
			4.20	0.13	0.55		
71.87	Inside Berm	3.92				10.30	
		.	3.84	1.00	3.84		
70.87	DHW/ATT	3.76				6.46	Provided Detention Volume
			3.64	1.44	5.24		
69.43	(PAV)	3.52				1.22	Provided Treatment Volume
			3.49	0.35	1.22		
69.08	(NWL)	3.46				0.00	NWL is at orifice elevation
			3.16	-7.08	(22.34)		
62.00	Pond Bottom	2.85				(22.34)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 9.63 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.81	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.43	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.86	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 8			**DATE**
POND/NODE DESIGNATION:	Existing POND 2A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/5/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond 2A NWL	N/A	N/A	100	1.57	157.25
			TOTALS	**1.57**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	6.79	665.42
			TOTALS	**6.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	N/A	N/A	98	0.28	26.96
	Pre Att. Volume (Ex. Pond 2A)				
			TOTALS	**0.28**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)		C	74	1.74	128.60
Woods: Good Cover		A/D	77	0.02	1.24
Woods: Good Cover (OFFSITE)		A/D	77	0.49	38.07
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)		A/D	74	0.78	57.72
Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)			**TOTALS**	**3.03**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**8.36**	**TOTAL BASIN AREA**	**11.67**	**COMPOSITE CN**	**76.46**
TOTAL DCIA	**71.68%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.17**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	0.85	8.35	**8.12**
SWFWMD	100-year / 24-hour	13.00	0.85	12.03	**11.70**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 8	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND 2A	**CHECKED BY:**	YW	6/5/2024

Water Quality

Total Basin Area =	11.67	ac
Pond Area at NWL =	1.57	ac
Existing Impervious Area =	7.07	ac

A. Existing Permitted Water Quality PAV = **0.79** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.59 Ac-Ft

Required PAV = **0.59** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 3.01 ac-ft.

Pre Att. Volume (Ex. Pond 2A)

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.34	TOB	2.07				6.14	
			1.95	1.61	3.13		
68.73	DHW/ATT	1.83				**3.01**	Provided Detention Volume/Elevation of DHW
			1.74	1.28	2.22		
67.45	Weir/PAV	1.64				0.79	Provided Treatment Volume/Weir Elevation
			1.61	0.49	0.79		
66.96	Orifice/NWL	1.57				0.00	NWL and SHW is at bleeder/orifice/v-notch Elevation
			1.04	-6.99	(7.30)		
59.97	Pond Bottom	0.52				(7.30)	

**** Stage-Storage Calculations have been generated from Pond detail sheets Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)**

*****Original permit on NGVD 1929. Elevation have been converted to NAVD 88**

****Conversion factor NGVD 1929 Elevation - 0.846

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 8			**DATE**
POND/NODE DESIGNATION:	SMF 8A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/5/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond System	N/A	N/A	100	1.57	157.00
Proposed Pond System	N/A	N/A	100	0.47	47.00
			TOTALS	**2.04**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	8.69	851.62
			TOTALS	**8.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.70	68.60
	Pre Att. Volume (Ex. Pond 2A)				
			TOTALS	**0.70**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	1.32	97.79
Woods: Good Cover (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	77	0.00	0.00
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	74	1.28	94.72
			TOTALS	**2.60**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**10.73**	**TOTAL BASIN AREA**	**14.03**	**COMPOSITE CN**	**79.09**
TOTAL DCIA	**76.47%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.84**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.66	8.06	**9.42**
SWFWMD	100-year / 24-hour	12.50	0.66	11.75	**13.73**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 8	**MADE BY:**	JDZ	05/14/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 8A	**CHECKED BY:**	YW	6/5/2024

Water Quality

Total Basin Area =	14.03	ac
Pond Area at NWL =	2.04	ac
Total Impervious Area =	9.39	ac

A. Existing Permitted Water Quality PAV = **0.79** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.78 Ac-Ft

Required PAV = **0.78** Ac-Ft

Provided PAV = **1.02** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**1.30**	**ac-ft.**
Pre Att. Volume (Ex. Pond 2A)	**3.01**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**4.31**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.65	Outside Berm	3.31				10.44	
			2.92	0.32	0.92		
70.34	Inside Berm	2.53				9.52	
			3.03	1.71	5.18		
68.63	DHW/ATT	3.53				4.34	Provided Detention Volume
			2.82	1.18	3.32		
67.45	(PAV)	2.11				1.02	Provided Treatment Volume
			2.08	0.49	1.02		
66.96	(NWL)	2.04				0.00	
			1.38	-6.99	(9.65)		
59.97	Pond Bottom	0.72				(9.65)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 4.31 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.16 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.39 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.78 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 8			**DATE**
POND/NODE DESIGNATION:	Existing POND 2A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/6/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond 2A NWL	N/A	N/A	100	1.57	157.25
			TOTALS	**1.57**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	6.79	665.42
			TOTALS	**6.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	N/A	N/A	98	0.28	26.96
			TOTALS	**0.28**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)		C	74	1.74	128.60
Woods: Good Cover		A/D	77	0.02	1.24
Woods: Good Cover (OFFSITE)		A/D	77	0.49	38.07
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)		A/D	74	0.78	57.72
Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)			**TOTALS**	**3.03**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**8.36**	**TOTAL BASIN AREA**	**11.67**	**COMPOSITE CN**	**76.46**
TOTAL DCIA	**71.68%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.17**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	0.85	8.35	**8.12**
SWFWMD	100-year / 24-hour	13.00	0.85	12.03	**11.70**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 8	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND 2A	**CHECKED BY:**	YW	6/6/2024

Water Quality

Total Basin Area =	11.67	ac
Pond Area at NWL =	1.57	ac
Existing Impervious Area =	7.07	ac

A. Existing Permitted Water Quality PAV = **0.79** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.59 Ac-Ft

Required PAV = **0.59** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 3.01 ac-ft.

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.34	TOB	2.07				6.15	
			1.95	1.61	3.13		
68.73	DHW/ATT	1.83				**3.01**	Provided Detention Volume/Elevation of DHW
			1.74	1.28	2.22		
67.45	Weir/PAV	1.64				0.79	Provided Treatment Volume/Weir Elevation
			1.61	0.49	0.79		
66.96	Orifice/NWL	1.57				0.00	NWL and SHW is at bleeder/orifice/v-notch Elevation
			1.04	-6.99	(7.30)		
59.97	Pond Bottom	0.52				(7.30)	

**** Stage-Storage Calculations have been generated from Pond detail sheets Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)**

*****Original permit on NGVD 1929. Elevation have been converted to NAVD 88**

****Conversion factor NGVD 1929 Elevation - 0.846

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 8			
POND/NODE DESIGNATION:	SMF 8B	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/6/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Proposed Pond System	N/A	N/A	100	1.25	125.00
Existing Pond System	N/A	N/A	100	1.57	157.00
			TOTALS	**2.82**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	8.69	851.62
			TOTALS	**8.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.70	68.60
Commercial and Business Areas (85% impervious)	N/A	N/A	94	0.00	0.00
			TOTALS	**0.70**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	1.32	97.79
Woods: Good Cover (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	77	0.00	0.00
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	74	1.27	93.98
Open Spaces Grass Good condition: grass cover on 75% or more of the area (OFFSITE)	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	1.23	91.02
			TOTALS	**3.82**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.51**	**TOTAL BASIN AREA**	**16.03**	**COMPOSITE CN**	**77.72**
TOTAL DCIA	**71.80%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.63**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.80	7.91	**10.57**
SWFWMD	100-year / 24-hour	12.50	0.80	11.59	**15.49**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 8	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 8B	**CHECKED BY:**	YW	6/6/2024

Water Quality

Total Basin Area =	16.03	ac
Pond Area at NWL =	2.82	ac
Total Impervious Area =	9.39	ac

A.	Existing Permitted Water Quality PAV =		**0.79**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.78	Ac-Ft
		Required PAV =	**0.78**	Ac-Ft
		Provided PAV =	**1.42**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**2.45**	**ac-ft.**	Existing Pond to remain. Proposed pond design for PostV(R) -Pre V(R)
Pre Att. Volume (Ex. Pond 2A)	**3.01**	**ac-ft.**	
Required Att. Volume (Delta V(R) + Pre Att. Volume	**5.46**	**ac-ft.**	

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.65	Outside Berm	2.47				8.20	
			2.11	1.92	4.05		
69.73	Inside Berm	1.75				4.15	
			1.66	1.02	1.69		
68.71	DHW/ATT	1.57				2.46	Provided Detention Volume
			1.45	1.26	1.83		
67.45	(PAV)	1.34				0.63	Provided Treatment Volume
			1.29	0.49	0.63		
66.96	(NWL)	1.25				0.00	
			0.94	-5.00	(4.70)		
61.96	Pond Bottom	0.63				(4.70)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 5.46 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.73 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.39 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.78 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 8			**DATE**
POND/NODE DESIGNATION:	Existing POND 2A	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	YW	6/5/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	1.57	157.25
			TOTALS	**1.57**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	6.79	665.42
			TOTALS	**6.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Sidewalk)	N/A	N/A	98	0.28	26.96
			TOTALS	**0.28**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% or more of the area)		C	74	1.74	128.60
Woods: Good Cover		A/D	77	0.02	1.24
Woods: Good Cover (OFFSITE)		A/D	77	0.49	38.07
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)		A/D	74	2.02	149.34
Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)			**TOTALS**	**4.27**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**8.36**	**TOTAL BASIN AREA**	**12.90**	**COMPOSITE CN**	**75.79**
TOTAL DCIA	**64.81%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**90.43**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	9.30	1.06	8.14	**8.75**
SWFWMD	100-year / 24-hour	13.00	1.06	11.81	**12.70**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 8	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND 2A	**CHECKED BY:**	YW	6/5/2024

Water Quality

Total Basin Area =	12.90	ac
Pond Area at NWL =	1.57	ac
Existing Impervious Area =	7.07	ac

A.	Existing Permitted Water Quality PAV =		**0.79**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.59	Ac-Ft
		Required PAV =	**0.59**	Ac-Ft

Water Quantity

Existing Provided Detention Volume= 3.01 ac-ft.

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.34	TOB	2.07				6.14	
			1.95	1.61	3.13		
68.73	DHW/ATT	1.83				**3.01**	Provided Detention Volume/Elevation of DHW
			1.74	1.28	2.22		
67.45	Weir/PAV	1.64				0.79	Provided Treatment Volume/Weir Elevation
			1.61	0.49	0.79		
66.96	Orifice/NWL	1.57				0.00	NWL and SHW is at bleeder/orifice/v-notch Elevation
			1.04	-6.99	(7.30)		
59.97	Pond Bottom	0.52				(7.30)	

**** Stage-Storage Calculations have been generated from Pond detail sheets Per SWFWMD ERP Permit App ID. 41866 (Permit #: 19567.000)**
*****Original permit on NGVD 1929. Elevation have been converted to NAVD 88**
****Conversion factor NGVD 1929 Elevation - 0.846

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 8			**DATE**
POND/NODE DESIGNATION:	SMF 8C	**MADE BY:**	JDZ	5/10/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/5/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Proposed Pond System	N/A	N/A	100	1.06	106.00
Existing Pond System	N/A	N/A	100	1.57	157.00
			TOTALS	**2.63**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	8.69	851.62
			TOTALS	**8.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.70	68.60
Commercial and Business Areas (85% impervious)	N/A	N/A	94	0.00	0.00
			TOTALS	**0.70**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	1.32	97.79
Woods: Good Cover (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	77	0.49	38.07
Open Spaces (Good Condition, grass cover on 75% or more of the area) (OFFSITE)	Adaamsville Fine Sand, 0 to 2% slopes	A/D	74	0.95	70.30
Open Spaces Grass Good condition: grass cover on 75% or more of the area (OFFSITE)	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.50	37.00
			TOTALS	**3.27**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.32**	**TOTAL BASIN AREA**	**15.29**	**COMPOSITE CN**	**78.61**
TOTAL DCIA	**74.06%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.31**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.72	7.99	**10.18**
SWFWMD	100-year / 24-hour	12.50	0.72	11.68	**14.88**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 8	**MADE BY:**	JDZ	5/14/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 8C	**CHECKED BY:**	YW	6/5/2024

Water Quality

Total Basin Area =	15.29	ac
Pond Area at NWL =	2.63	ac
Total Impervious Area =	9.39	ac

A.	Existing Permitted Water Quality PAV =		**0.79**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	0.78	Ac-Ft
		Required PAV =	**0.78**	Ac-Ft
		Provided PAV =	**1.32**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**1.43**	**ac-ft.**	**Existing Pond to remain. Proposed pond design for PostV(R) -Pre V(R)**
Pre Att. Volume (Ex. Pond 2A)	**3.01**	**ac-ft.**	
Required Att. Volume (Delta V(R) + Pre Att. Volume	**4.44**	**ac-ft.**	

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
71.00	Outside Berm	1.74				5.11	
			1.55	0.66	1.03		
70.34	Inside Berm	1.36				4.08	
			1.28	1.90	2.42		
68.44	DHW/ATT	1.19				1.66	Provided Detention Volume
			1.15	0.99	1.13		
67.45	(PAV)	1.10				0.53	Provided Treatment Volume
			1.08	0.49	0.53		
66.96	(NWL)	1.06				0.00	
			0.60	-6.99	(4.20)		
59.97	Pond Bottom	0.14				(4.20)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 4.44 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.22	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.39	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.78	Ac-Ft

AT THE INTERSECTION:
BASIN 2
CALCULATIONS

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 2			**DATE**
POND/NODE DESIGNATION:	Existing POND C	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	06/17/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	4.37	437.00
			TOTALS	**4.37**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Impervious (Sidwalk)	N/A	N/A	98	13.00	1273.61
			TOTALS	**13.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	95	9.81	931.95
Commercial and Business Areas (85% impervious)	N/A	N/A	94	1.41	132.54
Residential (1/4 acre)	N/A	N/A	83	0.22	18.26
Residential (1/2 acre, 25% Impervious)	N/A	N/A	80	0.82	65.60
Industrial	N/A	N/A	93	0.87	80.91
Median	N/A	N/A	79	1.29	101.91
Added Area From Addendum	N/A	N/A	94	1.46	137.24
			TOTALS	**15.88**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% of the area)		D	80	1.34	107.20
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	1.49	110.26
Open Spaces (Fair Condition, grass cover on 75% of the area)		C	79	3.04	240.24
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	0.77	56.68
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	1.75	129.80
			TOTALS	**8.39**	

Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**17.37**	**TOTAL BASIN AREA**	**41.64**	**COMPOSITE CN**	**87.04**
TOTAL DCIA	**41.71%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.75**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.78	7.94	**27.54**
SWFWMD	100-year / 24-hour	12.50	0.78	11.61	**40.28**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 2	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND C	**CHECKED BY:**	JDZ	06/17/2024

Water Quality

Total Basin Area =	41.64	ac	
Pond Area at NWL =	4.37	ac	
Existing Impervious Area =	24.96	ac	* Per permit page 274

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft *From Permit page 276

B. 1.0 " Over Total Impervious Area = 2.08 Ac-Ft

Required PAV = **2.08** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 14.04 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
73.00	Outside Berm	5.27				20.79
			4.82	1.40	6.75	
71.60	Inside Berm	4.37				14.04
		.	4.33	0.33	1.43	
71.27	DHW/ATT	4.30				12.61
			4.03	2.57	10.37	
68.70	(PAV)	3.77				2.24
			3.71	0.56	2.08	
68.14	NWL/SHW	3.65				0.00
			2.60	-4.64	(12.05)	
63.50	Pond Bottom	1.55				(12.05)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 2			**DATE**
POND/NODE DESIGNATION:	SMF 2A	**MADE BY:**	JDZ	6/17/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	YW	6/17/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond C	N/A	N/A	100	4.37	437.00
Proposed Existing Pond C	N/A	N/A	100	1.88	188.00
			TOTALS	**6.25**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	24.02	2353.96
			TOTALS	**24.02**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business (85% impervious)	N/A	N/A	98	9.93	973.14
Residential (Average Lot Size: 1/2 acre)	N/A	N/A	94	0.00	0.00
Sidewalks	N/A	N/A	98	1.58	154.84
Railroad (Gravel)	N/A	N/A	89	0.53	47.17
			TOTALS	**12.04**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	5.65	418.10
Open Spaces Grass Good condition: grass cover on 75% or more of the area Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	4.82	356.68
			TOTALS	**10.47**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**30.27**	**TOTAL BASIN AREA**	**52.78**	**COMPOSITE CN**	**86.63**
TOTAL DCIA	**57.35%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.39**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.71	8.01	**35.25**
SWFWMD	100-year / 24-hour	12.50	0.71	11.69	**51.41**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study			
PROJECT NUMBER:	60596589	FDOT		**DATE**
BASIN DESIGNATION:	BASIN 2	**MADE BY:**	JDZ	6/17/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 2A	**CHECKED BY:**	YW	6/17/2024

Water Quality

Total Basin Area =	52.78	ac
Pond Area at NWL =	6.25	ac
Total Impervious Area =	36.06	ac

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft

B. 1.0 " Over Total Impervious Area = 3.01 Ac-Ft
Required PAV = **3.01** Ac-Ft
Provided PAV = **3.57** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**7.71**	**ac-ft.**
Pre Att. Volume	**14.04**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**21.75**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Outside Berm	9.91				36.23	
			9.01	0.73	6.58		
72.27	Inside Berm	8.11				29.65	
			7.88	1.00	7.88		
71.27	DHW/ATT (25yr/24hr)	7.66				21.77	Provided Detention Volume
			7.08	2.57	18.20		
68.70	(PAV)	6.50				3.57	Provided Treatment Volume
			6.38	0.56	3.57		
68.14	(NWL)	6.25				0.00	
			5.64	-4.64	(26.17)		
63.50	Pond Bottom	5.03				(26.17)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 21.75 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	10.87 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	1.50 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	3.01 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 2			**DATE**
POND/NODE DESIGNATION:	Existing POND C	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	4.37	437.00
			TOTALS	**4.37**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Impervious	N/A	N/A	98	13.00	1273.61
			TOTALS	**13.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	95	9.81	931.95
Commercial and Business Areas (85% impervious)	N/A	N/A	94	1.41	132.54
Residential (1/4 acre)	N/A	N/A	83	0.22	18.26
Residential (1/2 acre, 25% Impervious)	N/A	N/A	80	0.82	65.60
Industrial	N/A	N/A	93	0.87	80.91
Median	N/A	N/A	79	1.29	101.91
Added Area From Addendum	N/A	N/A	94	1.46	137.24
			TOTALS	**15.88**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% of the area)		D	80	1.34	107.20
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	1.49	110.26
Open Spaces (Fair Condition, grass cover on 75% of the area)		C	79	3.04	240.24
Open Spaces (Good Condition, grass cover on 75% of the area) Railroad Offsite		C	74	0.77	56.68
Open Spaces (Good Condition, grass cover on 75% of the area) Pond offsite		C	74	1.75	129.80
			TOTALS	**8.39**	

Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**17.37**	**TOTAL BASIN AREA**	**41.64**	**COMPOSITE CN**	**87.04**
TOTAL DCIA	**41.71%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.75**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.78	7.94	**27.54**
SWFWMD	100-year / 24-hour	12.50	0.78	11.61	**40.28**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 2	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND C	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	41.64	ac	
Pond Area at NWL =	4.37	ac	
Existing Impervious Area =	24.96	ac	* Per permit page 274

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft *From Permit page 276

B. 1.0 " Over Total Impervious Area = 2.08 Ac-Ft

Required PAV = **2.08** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 13.88 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
73.00	Outside Berm	5.27				20.63
			4.82	1.40	6.75	
71.60	Inside Berm	4.37				13.88
		.	4.33	0.33	1.43	
71.27	DHW/ATT	4.30				12.45
			4.03	2.57	10.37	
68.70	(PAV)	3.77				2.08
			3.71	0.56	2.08	
68.14	NWL/SHW	3.65				0.00
			2.60	-4.64	(12.05)	
63.50	Pond Bottom	1.55				(12.05)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 2			**DATE**
POND/NODE DESIGNATION:	SMF 2B	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond C	N/A	N/A	100	4.37	437.00
Proposed Existing Pond C	N/A	N/A	100	2.27	227.00
			TOTALS	**6.64**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	24.02	2353.96
			TOTALS	**24.02**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business (85% impervious)	N/A	N/A	98	11.85	1161.30
Residential (Average Lot Size: 1/2 acre)	N/A	N/A	94	0.00	0.00
Sidewalks	N/A	N/A	98	1.58	154.84
Railroad (Gravel)	N/A	N/A	89	0.53	47.17
			TOTALS	**13.96**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	5.65	418.10
Open Spaces Grass Good condition: grass cover on 75% or more of the area Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	5.73	424.02
			TOTALS	**11.38**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**30.66**	**TOTAL BASIN AREA**	**56.00**	**COMPOSITE CN**	**87.03**
TOTAL DCIA	**54.75%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.27**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.72	8.00	**37.33**
SWFWMD	100-year / 24-hour	12.50	0.72	11.67	**54.48**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 2	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 2B	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	56.00	ac
Pond Area at NWL =	6.64	ac
Total Impervious Area =	37.98	ac

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft

B. 1.0 " Over Total Impervious Area = 3.17 Ac-Ft

Required PAV = **3.17** Ac-Ft

Provided PAV = **3.80** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**9.79**	**ac-ft.**
Pre Att. Volume	**13.88**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**23.67**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Outside Berm	9.83				38.52	
			9.30	0.67	6.23		
72.33	Inside Berm	8.77				32.29	
			8.52	1.00	8.52		
71.33	DHW/ATT (25yr/24hr)	8.26				23.77	Provided Detention Volume
			7.59	2.63	19.97		
68.70	(PAV)	6.92				3.80	Provided Treatment Volume
			6.78	0.56	3.80		
68.14	(NWL)	6.64				0.00	
			5.87	-4.64	(27.21)		
63.50	Pond Bottom	5.09				(27.21)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 23.67 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	11.84 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	1.58 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	3.17 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 2			**DATE**
POND/NODE DESIGNATION:	Existing POND C	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	4.37	437.00
			TOTALS	**4.37**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Impervious	N/A	N/A	98	13.00	1273.61
			TOTALS	**13.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	95	9.81	931.95
Commercial and Business Areas (85% impervious)	N/A	N/A	94	1.41	132.54
Residential (1/4 acre)	N/A	N/A	83	0.22	18.26
Residential (1/2 acre, 25% Impervious)	N/A	N/A	80	0.82	65.60
Industrial	N/A	N/A	93	0.87	80.91
Median	N/A	N/A	79	1.29	101.91
Added Area From Addendum	N/A	N/A	94	1.46	137.24
			TOTALS	**15.88**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% of the area)		D	80	1.34	107.20
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	1.49	110.26
Open Spaces (Fair Condition, grass cover on 75% of the area)		C	79	3.04	240.24
Open Spaces (Good Condition, grass cover on 75% of the area) Railroad Offsite		C	74	0.77	56.68
Open Spaces (Good Condition, grass cover on 75% of the area) Pond offsite		C	74	1.75	129.80
Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)			**TOTALS**	**8.39**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**17.37**	**TOTAL BASIN AREA**	**41.64**	**COMPOSITE CN**	**87.04**
TOTAL DCIA	**41.71%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.75**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.78	7.94	**27.54**
SWFWMD	100-year / 24-hour	12.50	0.78	11.61	**40.28**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 2	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND C	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	41.64	ac	
Pond Area at NWL =	4.37	ac	
Existing Impervious Area =	24.96	ac	* Per permit page 274

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft *From Permit page 276

B. 1.0 " Over Total Impervious Area = 2.08 Ac-Ft

Required PAV = **2.08** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 13.88 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
73.00	Outside Berm	5.27				20.63
			4.82	1.40	6.75	
71.60	Inside Berm	4.37				13.88
		.	4.33	0.33	1.43	
71.27	DHW/ATT	4.30				12.45
			4.03	2.57	10.37	
68.70	(PAV)	3.77				2.08
			3.71	0.56	2.08	
68.14	NWL/SHW	3.65				0.00
			2.60	-4.64	(12.05)	
63.50	Pond Bottom	1.55				(12.05)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 2			**DATE**
POND/NODE DESIGNATION:	SMF 2C	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond C	N/A	N/A	100	4.37	437.00
Proposed Existing Pond C	N/A	N/A	100	3.23	323.00
			TOTALS	**7.60**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	24.02	2353.96
			TOTALS	**24.02**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business (85% impervious)	N/A	N/A	98	12.55	1229.90
Residential (Average Lot Size: 1/2 acre)	N/A	N/A	94	0.00	0.00
Sidewalks	N/A	N/A	98	1.58	154.84
Railroad (Gravel)	N/A	N/A	89	0.53	47.17
			TOTALS	**14.66**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	5.65	418.10
Open Spaces Grass Good condition: grass cover on 75% or more of the area Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	5.48	405.52
			TOTALS	**11.13**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**31.62**	**TOTAL BASIN AREA**	**57.41**	**COMPOSITE CN**	**87.46**
TOTAL DCIA	**55.08%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**93.53**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.69	8.03	**38.42**
SWFWMD	100-year / 24-hour	12.50	0.69	11.71	**56.01**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 2	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 2C	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	57.41	ac
Pond Area at NWL =	7.60	ac
Total Impervious Area =	38.68	ac

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft

B. 1.0 " Over Total Impervious Area = 3.22 Ac-Ft

Required PAV = **3.22** Ac-Ft

Provided PAV = **4.32** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**10.88**	**ac-ft.**
Pre Att. Volume	**13.88**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**24.76**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Outside Berm	11.42				42.71	
			10.41	0.73	7.60		
72.27	Inside Berm	9.40				35.11	
			9.18	1.00	9.18		
71.27	DHW/ATT (25yr/24hr)	8.96				25.92	Provided Detention Volume
			8.40	2.57	21.60		
68.70	(PAV)	7.84				4.32	Provided Treatment Volume
			7.72	0.56	4.32		
68.14	(NWL)	7.60				0.00	
			5.92	-4.64	(27.47)		
63.50	Pond Bottom	4.24				(27.47)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 24.76 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	12.38 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	1.61 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	3.22 Ac-Ft

NORTH OF INTERSECTION:
BASIN 1
CALCULATIONS

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 1			**DATE**
POND/NODE DESIGNATION:	Existing POND D	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond D NWL	N/A	N/A	100	1.98	198.00
			TOTALS	**1.98**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	11.78	1154.44
			TOTALS	**11.78**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	94	5.77	542.38
Commercial and Business Areas (85% impervious)	N/A	N/A	95	0.20	19.00
Residential (1/8 acre, 65% Impervious)	N/A	N/A	90	5.07	456.30
Residential (1/2 acre, 25% Impervious)	N/A	N/A	85	0.67	56.95
			TOTALS	**11.71**	
PERVIOUS AREAS					
Open Spaces (Poor Condition, grass cover on 50% or less of the area)		C	86	0.17	14.62
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)		C	79	3.94	311.26
Open Spaces (Poor Condition, grass cover on 50% or less of the area)		C	84	0.80	67.20
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)		D	84	0.02	1.68
Wood or Forest Land (Fair cover)		N/A	73	0.66	48.18
Wood or Forest Land (Good cover)		C	70	0.08	5.60
Median		N/A	79	1.50	118.50
Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)			**TOTALS**	**7.17**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.76**	**TOTAL BASIN AREA**	**32.64**	**COMPOSITE CN**	**86.95**
TOTAL DCIA	**42.16%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**91.73**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.90	7.81	**21.25**
SWFWMD	100-year / 24-hour	12.50	0.90	11.48	**31.22**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 1	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND D	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	32.64	ac	
Pond Area at NWL =	1.98	ac	
Existing Impervious Area =	19.02	ac	* Per permit page 410 Calculations Part 2

A. Existing Permitted Water Quality PAV = **1.60** Ac-Ft *From Permit page 276

B. 1.0 " Over Total Impervious Area = 1.59 Ac-Ft

Required PAV = **1.59** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 8.42 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Top of Bank	4.89				16.61	
			4.68	1.75	8.19		
71.25	DHW/ATT	4.47				8.42	Provided detention volume
			4.28	1.59	6.81		
69.66	(PAV)	4.09				1.60	Provided treatment volume
			4.04	0.40	1.60		
69.26	(NWL)	3.99				0.00	NWL at seasonal high water
			2.59	3.76	9.72		
65.50	Pond Bottom	1.18				9.72	
			0.00	0.00	0.00		

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 1			**DATE**
POND/NODE DESIGNATION:	POND D	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JDZ	6/4/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond D NWL	N/A	N/A	100	1.98	198.00
			TOTALS	**1.98**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lanes)	N/A	N/A	98	12.07	1182.86
			TOTALS	**12.07**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	94	5.66	532.04
Commercial and Business Areas (85% impervious)	N/A	N/A	95	0.20	19.00
Residential (1/8 acre, 65% Impervious)	N/A	N/A	90	5.05	454.50
Residential (1/2 acre, 25% Impervious)	N/A	N/A	85	0.67	56.95
			TOTALS	**11.58**	
PERVIOUS AREAS					
Open Spaces (Poor Condition, grass cover on 50% or less of		C	86	0.17	14.62
Open Spaces (Fair Condition, grass cover on 50%-75% of		C	79	3.82	301.78
Open Spaces (Poor Condition, grass cover on 50% or less of		C	84	0.80	67.20
Open Spaces (Fair Condition, grass cover on 50%-75% of		D	84	0.02	1.68
Wood or Forest Land (Fair cover)		N/A	73	0.62	45.26
Wood or Forest Land (Good cover)		C	70	0.08	5.60
Median		N/A	79	1.50	118.50
			TOTALS	**7.01**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**14.05**	**TOTAL BASIN AREA**	**32.64**	**COMPOSITE CN**	**86.99**
TOTAL DCIA	**43.05%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**91.85**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.89	7.83	**21.29**
SWFWMD	100-year / 24-hour	12.50	0.89	11.49	**31.27**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 1	**MADE BY:**	LH	5/20/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	POND D	**CHECKED BY:**	JDZ	6/4/2024

Water Quality

Total Basin Area =	32.64	ac
Pond Area at NWL =	1.98	ac
Total Impervious Area =	23.65	ac

A. Existing Permitted Water Quality PAV = **1.60** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.97 Ac-Ft

Required PAV = **1.97** Ac-Ft

Provided PAV = **1.98** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**0.04**	**ac-ft.**
Pre Att. Volume	**8.42**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**8.46**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Top of Bank	4.89				16.61	
		.	4.68	1.74	8.14		
71.26	DHW/ATT	4.47				8.46	Provided Detention Volume
			4.29	1.51	6.48		
69.75	(PAV)	4.11				1.98	Provided Treatment Volume
			4.05	0.49	1.98		
69.26	(NWL)	3.99				0.00	
			2.59	3.76	9.72		
65.50	Pond Bottom	1.18				9.72	Permanent Pool Volume
			0.00	0.00	0.00		

Required Detention Volume for Open Basins (25YR/24HR) = 8.46 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.23 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.99 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.97 Ac-Ft

WEST OF INTERSECTION:
BASIN 6
CALCULATIONS

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 6			**DATE**
POND/NODE DESIGNATION:	Existing POND P7E1, P10E1, P12E1	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/13/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	0.95	95.00
Existing Pond P10E1 NWL	N/A	N/A	100	0.80	80.00
Existing Pond P12E1 NWL	N/A	N/A	100	0.29	29.00
SMF 6C					
			TOTALS	**2.04**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
			TOTALS	**0.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover >75%)	Pre Att. Volume (Existing Ponds 7E1, 10E1	C	74	0.17	12.58
Offsite (Open Space > 75%)	Mostly poorly drained sandy soils	C	74	0.66	48.84
Existing Roadway (Travel Lane)	N/A	N/A	98	4.29	420.42
Existing Roadway (Other Impervious)	N/A	N/A	98	3.38	331.24
			TOTALS	**8.50**	
PERVIOUS AREAS					
Streets and Roads (Dirt)	Mostly poorly drained sandy soils	C	74	4.75	351.50
PROPOSED POND P1E1 FOOTPRINT	Sellers Mucky Loamy Fine Sand	A/D	74	1.01	74.74
SMF 6C					
			TOTALS	**5.76**	

Per SWFWMD ERP Permit App. 16251.018 (App: 712877)

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**2.04**	**TOTAL BASIN AREA**	**16.30**	**COMPOSITE CN**	**86.91**
TOTAL DCIA	**12.52%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**88.55**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.29	7.43	**10.09**
SWFWMD	100-year / 24-hour	12.50	1.29	11.07	**15.04**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 6			**DATE**
POND/NODE DESIGNATION:	SMF 6A	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	5/18/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	0.95	94.90
Existing Pond P10E1 NWL	N/A	N/A	100	0.80	79.90
Existing Pond P12E1 NWL	N/A	N/A	100	0.29	29.00
SMF 6A	N/A	N/A	101	0.56	56.82
			TOTALS	**2.60**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	8.79	861.42
			TOTALS	**8.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Sidewalks (Treated)	N/A	N/A	98	0.76	74.48
Pre Att. Volume (Existing Ponds 7E1, 10E1, 12E1)					
			TOTALS	**0.76**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on	Mostly poorly drained sandy soils	A	39	0.48	18.72
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Tavares Sand, 0 to 5% slopes	A	39	0.45	17.39
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Adamsville Fine Sand, 0 to 2 % slopes	A/D	74	1.26	93.24
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Sellers Mucky Loamy Fine Sand	A/D	74	0.16	11.77
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Smyrna Fine Sand	A/D	74	0.05	3.40
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	3.09	228.66
SMF 6A	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.39	29.02
			TOTALS	**5.87**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.39**	**TOTAL BASIN AREA**	**18.02**	**COMPOSITE CN**	**71.86**
TOTAL DCIA	**63.20%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**88.70**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.27	7.45	**11.18**
SWFWMD	100-year / 24-hour	12.50	1.27	11.09	**16.66**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION: **SMF 6C**	BASIN 6	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 6A	**CHECKED BY:**	JD	5/18/2024

Water Quality

Total Basin Area =	18.02	ac
Pond Area at NWL =	2.60	ac
Total Impervious Area =	9.55	ac

SMF 6C

A. Existing Permitted Water Quality PAV = **0.74** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.80 Ac-Ft

Required PAV = **0.86** Ac-Ft

Provided PAV = **1.14** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) = **1.09** **ac-ft.** < **1.09** **ac-ft.**

Pre Att. Volume (Existing Ponds 7E1, 10E1, 12E1) **8.36** **ac-ft.**

Required Att. Volume (Delta V(R) + Pre Att. Volume **9.45** **ac-ft.**

Stage Storage Calculations

SMF 6C

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
66.74	Outside Berm	0.91				2.11	
			0.78	0.50	0.39		
66.24	Inside Berm	0.65				1.72	
			0.62	1.00	0.62		
65.24	DHW/ATT	0.60				1.09	> Post V (R)-Pre V (R)
			0.56	1.24	0.69		
64.00	(PAV)	0.52				0.40	Provided Treatment Volume
			0.50	0.80	0.40		
63.20	(NWL)	0.48				0.00	
			0.45	-1.00	(0.45)		
62.20	Pond Bottom	0.42				(0.45)	Permanent Pool Volume

Required Detention Volume for Basin Spaces (25YR/24HR) = 9.45 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.73 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.43 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.86 Ac-Ft

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 6			**DATE**
POND/NODE DESIGNATION:	Existing POND P7E1, P10E1, P12E1	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/13/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	0.95	95.00
Existing Pond P10E1 NWL	N/A	N/A	100	0.80	80.00
Existing Pond P12E1 NWL	N/A	N/A	100	0.29	29.00
			TOTALS	**2.04**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
			TOTALS	**0.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover >75%)	Pre Att. Volume (Existing Ponds 7E1, 10E1	C	74	0.17	12.58
Offsite (Open Space > 75%)	Mostly poorly drained sandy soils	C	74	0.66	48.84
Existing Roadway (Travel Lane)	N/A	N/A	98	4.29	420.42
Existing Roadway (Other Impervious)	N/A	N/A	98	3.38	331.24
			TOTALS	**8.50**	
PERVIOUS AREAS					
Streets and Roads (Dirt)	Mostly poorly drained sandy soils	C	74	4.75	351.50
PROPOSED POND P2E1 FOOTPRINT	Sellers Mucky Loamy Fine Sand	A/D	74	0.61	45.36
			TOTALS	**5.36**	

Per SWFWMD ERP Permit App. 16251.018 (App: 712877)

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**2.04**	**TOTAL BASIN AREA**	**15.90**	**COMPOSITE CN**	**87.28**
TOTAL DCIA	**12.83%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**88.91**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.25	7.47	**9.90**
SWFWMD	100-year / 24-hour	12.50	1.25	11.12	**14.73**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 6			**DATE**
POND/NODE DESIGNATION:	SMF 6B	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	5/18/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	0.95	94.90
Existing Pond P10E1 NWL	N/A	N/A	100	0.80	79.90
Existing Pond P12E1 NWL	N/A	N/A	100	0.29	29.00
SMF 6B	N/A	N/A	101	0.26	26.21
			TOTALS	**2.30**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	8.79	861.42
			TOTALS	**8.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Sidewalks (Treated)	N/A	N/A	98	0.76	74.48
Pre Att. Volume (Existing Ponds 7E1, 10E1, 12E1)					
			TOTALS	**0.76**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	A	39	0.48	18.72
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Tavares Sand, 0 to 5% slopes	A	39	0.45	17.39
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Adamsville Fine Sand, 0 to 2 % slopes	A/D	74	1.26	93.24
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Sellers Mucky Loamy Fine Sand	A/D	74	0.16	11.77
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Smyrna Fine Sand	A/D	74	0.05	3.40
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	3.09	228.66
SMF 6B	Sellers Mucky Loamy Fine Sand, Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.35	26.16
			TOTALS	**5.83**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.09**	**TOTAL BASIN AREA**	**17.68**	**COMPOSITE CN**	**71.85**
TOTAL DCIA	**62.71%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**88.52**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.30	7.42	**10.94**
SWFWMD	100-year / 24-hour	12.50	1.30	11.07	**16.31**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 6	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 6B	**CHECKED BY:**	JD	5/18/2024

Water Quality

Total Basin Area =	17.68	ac
Pond Area at NWL =	2.30	ac
Total Impervious Area =	9.55	ac

A. Existing Permitted Water Quality PAV = **0.74** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.80 Ac-Ft

Required PAV = **0.86** Ac-Ft

Provided PAV = **1.45** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) = **1.04** **ac-ft.** < **1.33** **ac-ft.**

Pre Att. Volume (Existing Ponds 7E1, 10E1, 12E1) **8.36** **ac-ft.**

Required Att. Volume (Delta V(R) + Pre Att. Volume **9.40** **ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
66.61	Outside Berm	0.51				1.99	
			0.48	0.50	0.24		
66.11	Inside Berm/TOB	0.44				1.75	
			0.42	1.00	0.42		
65.11	DHW/ATT (25yr/24hr)	0.41				1.33	> Post V (R)-Pre V (R)
			0.38	1.65	0.62		
63.46	(PAV)	0.35				0.71	Provided Treatment Volume
			0.30	2.34	0.71		
61.12	(NWL)	0.26				0.00	
			0.23	-1.00	(0.23)		
60.12	Pond Bottom	0.20				(0.23)	Permanent Pool Volume

Required Detention Volume for Basins Spaces (25YR/24HR) = 9.40 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.70 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.43 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.86 Ac-Ft

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 6			**DATE**
POND/NODE DESIGNATION:	Existing POND P7E1, P10E1, P12E1	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/13/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond P7E1 NWL	N/A	N/A	100	0.95	95.00
Existing Pond P10E1 NWL	N/A	N/A	100	0.80	80.00
Existing Pond P12E1 NWL	N/A	N/A	100	0.29	29.00
			TOTALS	**2.04**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
			TOTALS	**0.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover >75%)	Pre Att. Volume (Existing Ponds 7E1, 10E1	C	74	0.17	12.58
Offsite (Open Space > 75%)	Mostly poorly drained sandy soils	C	74	0.66	48.84
Existing Roadway (Travel Lane)	N/A	N/A	98	4.29	420.42
Existing Roadway (Other Impervious)	N/A	N/A	98	3.38	331.24
			TOTALS	**8.50**	
PERVIOUS AREAS					
Streets and Roads (Dirt)	Mostly poorly drained sandy soils	C	74	4.75	351.50
PROPOSED POND P3E1 FOOTPRINT	Sellers Mucky Loamy Fine Sand	A/D	74	0.45	33.10
			TOTALS	**5.20**	

Per SWFWMD ERP Permit App. 16251.018 (App: 712877)

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**2.04**	**TOTAL BASIN AREA**	**15.74**	**COMPOSITE CN**	**87.44**
TOTAL DCIA	**12.96%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**89.07**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.23	7.49	**9.82**
SWFWMD	100-year / 24-hour	12.50	1.23	11.14	**14.61**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 6			**DATE**
POND/NODE DESIGNATION:	SMF 6C	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JD	5/18/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION		SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE						
Existing Pond P7E1 NWL		N/A	N/A	100	0.95	94.90
Existing Pond P10E1 NWL		N/A	N/A	100	0.80	79.90
Existing Pond P12E1 NWL		N/A	N/A	100	0.29	29.00
SMF 6C		N/A	N/A	101	0.20	20.59
				TOTALS	**2.24**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)						
Roadway (Travel Lanes)		N/A	N/A	98	8.79	861.42
				TOTALS	**8.79**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)						
Sidewalks (Treated)		N/A	N/A	98	0.76	74.48
				TOTALS	**0.76**	
PERVIOUS AREAS						
Open Spaces Grass Good conditio	26	Mostly poorly drained sandy soils	A	39	0.48	18.72
Open Spaces Grass Good conditio	6	Tavares Sand, 0 to 5% slopes	A	39	0.45	17.39
Open Spaces Grass Good conditio	11	Adamsville Fine Sand, 0 to 2 % slopes	A/D	74	1.26	93.24
Open Spaces Grass Good conditio	8	Sellers Mucky Loamy Fine Sand	A/D	74	0.16	11.77
Open Spaces Grass Good conditio	21	Smyrna Fine Sand	A/D	74	0.05	3.40
Open Spaces Grass Good conditio	5	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	3.09	228.66
SMF 6C		Sellers Mucky Loamy Fine Sand, Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.24	18.01
				TOTALS	**5.72**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.03**	**TOTAL BASIN AREA**	**17.52**	**COMPOSITE CN**	**71.81**
TOTAL DCIA	**62.98%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**88.57**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.29	7.43	**10.85**
SWFWMD	100-year / 24-hour	12.50	1.29	11.07	**16.17**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION: **SMF 6C**	BASIN 6	**MADE BY:**	JF	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 6C	**CHECKED BY:**	JD	5/18/2024

Water Quality

Total Basin Area =	17.52	ac
Pond Area at NWL =	2.24	ac
Total Impervious Area =	9.55	ac

A. Existing Permitted Water Quality PAV = **0.74** Ac-Ft

B. 1.0 " Over Total Impervious Area = 0.80 Ac-Ft

Required PAV = **0.86** Ac-Ft

Provided PAV = **1.29** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) = **1.02** **ac-ft.** < **1.02** **ac-ft.**

Pre Att. Volume (Existing Ponds 7E1, 10E1, 12E1) **8.36** **ac-ft.**

Required Att. Volume (Delta V(R) + Pre Att. Volume **9.38** **ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
66.55	Outside Berm	0.39				1.53	
			0.37	0.50	0.18		
66.05	Inside Berm	0.34				1.35	
			0.33	1.00	0.33		
65.05	DHW/ATT	0.31				1.02	> Post V (R)-Pre V (R)
			0.29	1.59	0.46		
63.46	(PAV)	0.27				0.55	Provided Treatment Volume
			0.24	2.34	0.55		
61.12	(NWL)	0.20				0.00	
			0.18	-1.00	(0.18)		
60.12	Pond Bottom	0.16				(0.18)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 9.38 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.69 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.43 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.86 Ac-Ft

WEST OF INTERSECTION:
BASIN 5
CALCULATIONS

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 5			**DATE**
POND/NODE DESIGNATION:	Existing Pond P13E2, P15E2, P16E2, P18E2, P19E2	**MADE BY:**	MB	4/3/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond NWL (P13E2)	N/A	N/A	100	0.24	24.00
Existing Pond NWL (P15,16,18,19E2)	N/A	N/A	100	0.24	24.00
			TOTALS	**0.48**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	2.23	218.54
Existing Roadway (Other Impervious)	N/A	N/A	98	0.39	38.22
			TOTALS	**2.62**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	1.74	170.52
Existing Roadway (Other Impervious)	N/A	N/A	98	2.23	218.54
			TOTALS	**3.97**	
PERVIOUS AREAS					
Open Spaces: Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	C	74	3.04	224.96
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover > 75%)	Mostly poorly drained sandy soils	D	80	2.78	222.40
PROPOSED POND P1E2 SITE	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.30	170.36
			TOTALS	**8.12**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**3.10**	**TOTAL BASIN AREA**	**15.19**	**COMPOSITE CN**	**83.26**
TOTAL DCIA	**20.41%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.33**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.58	7.16	**9.06**
SWFWMD	100-year / 24-hour	12.50	1.58	10.78	**13.65**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 5			**DATE**
POND/NODE DESIGNATION:	SMF 5A	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
PROPOSED SMF 5A NWL	N/A	N/A	100	1.58	158.03
			TOTALS	**1.58**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lane)	N/A	N/A	98	11.69	1145.76
			TOTALS	**11.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.77	75.17
			TOTALS	**0.77**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.23	165.32
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Sellers Mucky Loamy Fine Sand	A/D	74	1.36	100.45
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Tavares Sand, 0 to 5% slopes	A	39	0.02	0.73
PROPOSED SMF 5A NWL	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes, Basinger fine sand, depressional, 0 to 1 percent slopes, Narcoossee fine sand, 0 to 2 percent slopes	A/D	74	0.72	53.42
			TOTALS	**4.33**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.27**	**TOTAL BASIN AREA**	**18.37**	**COMPOSITE CN**	**77.48**
TOTAL DCIA	**72.24%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**83.96**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.91	6.87	**10.52**
SWFWMD	100-year / 24-hour	12.50	1.91	10.47	**16.02**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 5	**MADE BY:**	JF	4/22/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 5A	**CHECKED BY:**	JD	5/24/2024

Water Quality

Total Basin Area =	18.37	ac
Pond Area at NWL =	1.58	ac
Total Impervious Area =	12.46	ac

A. Existing Permitted Water Quality PAV =			**0.00**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	1.04	Ac-Ft
		Required PAV =	**1.34**	Ac-Ft
		Provided PAV =	**1.61**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**2.54**	**ac-ft.**			
Pre Att. Volume ('Existing Pond P13E2, P15E2, P16E2, P18E2, P19E2)	**1.53**	**ac-ft.**			
Required Att. Volume (Delta V(R) + Pre Att. Volume	**4.07**	**ac-ft.**	<	**4.14**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.50	Outside Berm	2.30				9.72	
			2.10	0.50	1.05		
70.00	Inside Berm	1.89				8.67	
			1.81	2.50	4.53		
67.50	DHW/ATT	1.73				4.14	Provided Detention Volume
			1.69	1.50	2.53		
66.00	(PAV)	1.64				1.61	Provided Treatment Volume
			1.61	1.00	1.61		
65.00	(NWL)	1.58				0.00	
			1.53	-1.00	(1.53)		
64.00	Pond Bottom	1.48				(1.53)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 4.07 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.04	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.67	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.34	Ac-Ft

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	EXISTING BASIN 5			**DATE**
POND/NODE DESIGNATION:	Existing Pond P13E2, P15E2, P16E2, P18E2, P19E2	**MADE BY:**	MB	4/3/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond NWL (P13E2)	N/A	N/A	100	0.24	24.00
Existing Pond NWL (P15,16,18,19E2)	N/A	N/A	100	0.24	24.00
			TOTALS	**0.48**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	2.23	218.54
Existing Roadway (Other Impervious)	N/A	N/A	98	0.39	38.22
			TOTALS	**2.62**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	1.74	170.52
Existing Roadway (Other Impervious)	N/A	N/A	98	2.23	218.54
			TOTALS	**3.97**	
PERVIOUS AREAS					
Open Spaces: Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	C	74	3.04	224.96
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover > 75%)	Mostly poorly drained sandy soils	D	80	2.78	222.40
PROPOSED SMF 5B	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.36	174.43
			TOTALS	**8.18**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**3.10**	**TOTAL BASIN AREA**	**15.25**	**COMPOSITE CN**	**83.22**
TOTAL DCIA	**20.33%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.29**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.59	7.15	**9.09**
SWFWMD	100-year / 24-hour	12.50	1.59	10.78	**13.69**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 5			**DATE**
POND/NODE DESIGNATION:	SMF 5B	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
PROPOSED POND P1E2 NWL	N/A	N/A	100	1.60	159.87
			TOTALS	**1.60**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lane)	N/A	N/A	98	11.69	1145.76
			TOTALS	**11.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.77	75.17
			TOTALS	**0.77**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.23	165.32
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Sellers Mucky Loamy Fine Sand	A/D	74	1.36	100.45
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Tavares Sand, 0 to 5% slopes	A	39	0.02	0.73
PROPOSED SMF 5B	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.76	56.12
			TOTALS	**4.37**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.29**	**TOTAL BASIN AREA**	**18.43**	**COMPOSITE CN**	**77.46**
TOTAL DCIA	**72.13%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**83.86**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.92	6.86	**10.53**
SWFWMD	100-year / 24-hour	12.50	1.92	10.45	**16.05**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 5	**MADE BY:**	JF	4/22/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 5B	**CHECKED BY:**	JD	5/24/2024

Water Quality

Total Basin Area =	18.43	ac
Pond Area at NWL =	1.60	ac
Total Impervious Area =	12.46	ac

A. Existing Permitted Water Quality PAV = **0.00** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.04 Ac-Ft

Required PAV = **1.34** Ac-Ft

Provided PAV = **1.63** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**2.55**	**ac-ft.**		
Pre Att. Volume (Existing Pond P13E2, P15E2, P16E2, P18E2, P19E2)	**1.53**	**ac-ft.**		
Required Att. Volume (Delta V(R) + Pre Att. Volume	**4.08**	**ac-ft.**	< **4.22**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.00	Outside Berm	2.36				8.99	
			2.14	0.50	1.07		
69.50	Inside Berm	1.92				7.92	
			1.85	2.00	3.70		
67.50	DHW/ATT	1.78				4.22	Provided Detention Volume
			1.72	1.50	2.59		
66.00	(PAV)	1.67				1.63	Provided Treatment Volume
			1.63	1.00	1.63		
65.00	(NWL)	1.60				0.00	
			1.55	-1.00	(1.55)		
64.00	Pond Bottom	1.50				(1.55)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 4.08 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.04 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.67 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.34 Ac-Ft

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	EXISTING BASIN 5			**DATE**
POND/NODE DESIGNATION:	Existing Pond P13E2,P15E2, P16E2, P18E2, P19E2	**MADE BY:**	MB	4/3/2024
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond NWL (P13E2)	N/A	N/A	100	0.24	24.00
Existing Pond NWL (P15,16,18,19E2)	N/A	N/A	100	0.24	24.00
			TOTALS	**0.48**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	2.23	218.54
Existing Roadway (Other Impervious)	N/A	N/A	98	0.39	38.22
			TOTALS	**2.62**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	1.74	170.52
Existing Roadway (Other Impervious)	N/A	N/A	98	2.23	218.54
			TOTALS	**3.97**	
PERVIOUS AREAS					
Open Spaces: Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	C	74	3.04	224.96
Offsite	Mostly poorly drained sandy soils	C	0	0.00	
Offsite (Grass Cover > 75%)	Mostly poorly drained sandy soils	D	80	2.78	222.40
PROPOSED POND P3E2 SITE	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes, Basinger fine sand, depressional, 0 to 1 percent slopes, Narcoossee fine sand, 0 to 2 percent slopes	A/D	74	2.43	180.06
			TOTALS	**8.25**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**3.10**	**TOTAL BASIN AREA**	**15.32**	**COMPOSITE CN**	**83.16**
TOTAL DCIA	**20.23%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.22**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.60	7.15	**9.12**
SWFWMD	100-year / 24-hour	12.50	1.60	10.77	**13.75**

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 5			**DATE**
POND/NODE DESIGNATION:	SMF 5C	**MADE BY:**	MB	4/15/2024
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	5/20/2024

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
PROPOSED SMF 5C NWL	N/A	N/A	100	1.58	157.75
			TOTALS	**1.58**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lane)	N/A	N/A	98	11.69	1145.76
			TOTALS	**11.69**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Roadway (Sidewalks)	N/A	N/A	98	0.77	75.17
			TOTALS	**0.77**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	2.23	165.32
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Sellers Mucky Loamy Fine Sand	A/D	74	1.36	100.45
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Tavares Sand, 0 to 5% slopes	A	39	0.02	0.73
PROPOSED SMF 5C	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes, Basinger fine sand, depressional, 0 to 1 percent slopes, Narcoossee fine sand, 0 to 2 percent slopes	A/D	74	0.86	63.32
			TOTALS	**4.47**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.27**	**TOTAL BASIN AREA**	**18.50**	**COMPOSITE CN**	**77.39**
TOTAL DCIA	**71.72%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**83.90**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.92	6.86	**10.58**
SWFWMD	100-year / 24-hour	12.50	1.92	10.46	**16.13**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 5	**MADE BY:**	JF	4/22/2024
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 5C	**CHECKED BY:**	JD	5/24/2024

Water Quality

Total Basin Area =	18.50	ac
Pond Area at NWL =	1.58	ac
Total Impervious Area =	12.46	ac

A. Existing Permitted Water Quality PAV =			**0.00**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	1.04	Ac-Ft
		Required PAV =	**1.34**	Ac-Ft
		Provided PAV =	**1.62**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**2.61**	**ac-ft.**			
Pre Att. Volume ('Pond P13E2, P15E2, P16E2, P18E2, P19E2)	**1.53**	**ac-ft.**			
Required Att. Volume (Delta V(R) + Pre Att. Volume	**4.13**	**ac-ft.**	<	**4.20**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.00	Outside Berm	2.43				9.02	
			2.19	0.50	1.09		
69.50	Inside Berm	1.94				7.93	
			1.86	2.00	3.73		
67.50	DHW/ATT	1.78				4.20	Provided Detention Volume
			1.72	1.50	2.58		
66.00	(PAV)	1.66				1.62	Provided Treatment Volume
			1.62	1.00	1.62		
65.00	(NWL)	1.58				0.00	
			1.52	-1.00	(1.52)		
64.00	Pond Bottom	1.46				(1.52)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 4.13 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.07	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.67	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.34	Ac-Ft

APPENDIX 7

FLOODPLAIN IMPACT EXHIBIT & SUMMARY TABLE-SPUI

EAST PINELLAS
ANCLOTE WATERSHED

CYPRESS CREEK WATERSHED

100: ZONE AE (EL. 66.3)

AREA 27: 0.161 AC.
AREA 25: 0.027 AC.
AREA 24: 0.070 AC.
AREA 22: 0.036 AC.
105: ZONE AE (EL. 68.5)
AREA 21: 0.223 AC.
AREA 19: 0.0002 AC.
110: ZONE AE (EL. 67.3)
104: ZONE AE (EL. 67.2)
AREA 16: 0.679 AC.
128: ZONE AE (EL. 66.9)
AREA 13: 0.055 AC.
110: ZONE AE (EL. 67.3)
AREA 9: 0.422 AC.
AREA 8: 0.155 AC.
AREA 1: 0.414 AC.
AREA 2: 0.003 AC.
AREA 3: 0.00003 AC.
AREA 4: 0.00004 AC.
AREA 5: 0.0002 AC.
AREA 6: 0.0006 AC.
102: ZONE AE (EL. 64.8)
AREA 7: 0.064 AC.
AREA 10: 0.25 AC.
AREA 11: 0.263 AC.
AREA 12: 0.228 AC.
AREA 14: 0.051 AC.
110: ZONE AE (EL. 67.3)
AREA 15: 0.123 AC.
103: ZONE AE (EL. 66.9)
AREA 17: 0.230 AC.
AREA 18: 0.364 AC.
AREA 20: 0.78 AC.
AREA 23: 0.372 AC.
AREA 26: 0.057 AC.
109: ZONE AE (EL 70.3)
110: ZONE AE (EL 67.3)
AREA 28: 0.19 AC.
AREA 29: 0.90 AC.
AREA 43: 0.073 AC.
AREA 44: 0.148 AC.
120: ZONE AE (EL. 70.3)

107: ZONE AE (EL 67.6)
106: ZONE AE (EL. 70.6)
US 41
SR 54
DALE MABRY HWY
126: ZONE AE (EL 68.5)

AREA 33: 0.002 AC.
AREA 34: 0.052 AC.
113: ZONE AE (EL. 70.8)
117: ZONE AE (EL 69.6)
AREA 36: 0.223 AC.
AREA 37: 0.079 AC.
114: ZONE A
AREA 38: 0.389 AC.
AREA 39: 0.904 AC.
AREA 45: 1.050 AC.
AREA 40: 0.208 AC.
AREA 41: 0.621 AC.
115: ZONE AE (EL 69.6)
116: ZONE AE (EL 69.2)
AREA 35: 0.371 AC.
AREA 32: 0.864 AC.
AREA 31: 0.167 AC.
AREA 30: 0.309 AC.
120: ZONE AE (EL. 70.3)

N
0 260 1300
Feet

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
FLOODPLAIN IMPACTS SPUI

SHEET NO.

F.A.C. NOTE

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US41/SR 54 PD&E

MADE BY: RS DATE: 12/19/2025

CHECKED BY:JF DATE:1/5/2026

CALCULATIONS FOR: SUMMARY TABLE OF FLOODPLAIN IMPACTS- SPUI

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
100: (AE, 66.3)	1	0.414
	2	0.003
	3	0.00003
	4	0.00004
	5	0.0002
	6	0.0006
	8	0.16
	9	0.42
	sub-total:	0.995

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
110: (AE, 67.3)	28	0.19
	29	0.90
	sub-total:	1.090

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
115: (AE, 69.6)	38	0.39
	39	0.90
	40	0.21
	45	1.05
	sub-total:	2.551

Floodplain Area (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
102: (AE, 64.8)	7	0.06
	sub-total:	0.064

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
117: (AE, 69.6)	31	0.17
	32	0.86
	sub-total:	1.031

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
126: (AE, 68.5)	41	0.62
	sub-total:	0.621

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
103: (AE, 66.9)	10	0.25
	11	0.26
	12	0.23
	sub-total:	0.741

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
120: (AE, 70.3)	30	0.31
	43	0.07
	sub-total:	0.382

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
120: (AE, 70.3)	44	0.15
	sub-total:	0.148

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
110: (AE, 67.3)	14	0.05
	15	0.12
	17	0.23
	18	0.36
	20	0.78
	23	0.37
	26	0.06
	sub-total:	1.977

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
117: (AE, 69.6)	33	0.002
	34	0.05
	sub-total:	0.054

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
104: (AE, 67.2)	16	0.68
	19	0.0002
	sub-total:	0.679

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
116: (AE, 69.2)	35	0.37
	36	0.22
	sub-total:	0.594

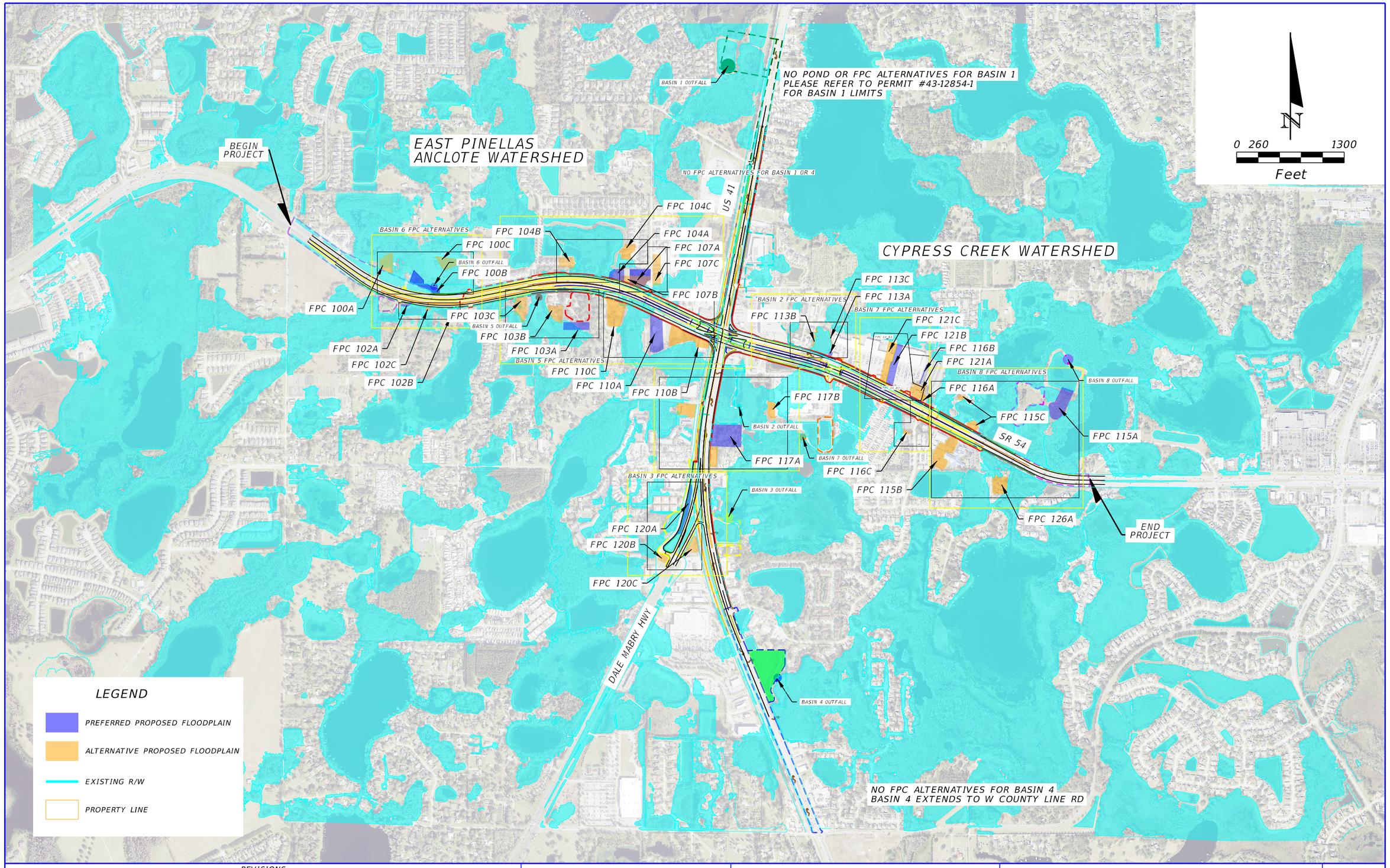
Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
107: (AE, 67.6)	21	0.22
	22	0.04
	24	0.07
	25	0.03
	27	0.16
	sub-total:	0.517

Floodplain Area # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
114: (A)	37	0.079
	sub-total:	0.079

Total Impact for US41/SR54: 11.52 acres

APPENDIX 8

FLOODPLAIN COMPENSATION SITE EXHIBIT AND SUMMARY TABLE-SPUI



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PROPOSED FPC SITES
SPUI

SHEET NO.

F.A.C. NOTE

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US41/SR 54 PD&E

MADE BY: RS DATE: 12/18/2025

CHECKED BY: JF DATE: 12/19/2025

CALCULATIONS FOR: FLOODPLAIN COMPENSATION SITES SUMMARY-SPUI

Floodplain Area (Zone - Elevation - ft NAVD)	Floodplain Compensation Pond	FPC Site Station Range	Side	Floodplain Compensation Area (ac)	Floodplain Compensation Depth (ft)	Floodplain Compensation Volume (ac-ft)	Floodplain Compensation Volume (CY)	REMARKS
Centerline Const. 597								
(AE, 70.3)	FPC 120A	204+80 to 213+00	LT	0.33	1.30	0.356	574.35	
(AE, 70.3)	FPC 120B	200+00 to 201+50	LT	0.30	1.30	0.354	571.12	
(AE, 70.3)	FPC 120C	202+50 to 205+50	RT	0.44	1.30	0.531	856.68	
(AE, 67.3)	FPC 110E	1459+00 to 1461+00	RT	0.98	0.29	0.27	442.13	
(AE, 69.6)	FPC 117A	1466+75 to 1470+35	RT	2.72	1.46	3.70	5971.11	Two alternatives, same location
(AE, 69.6)	FPC 117A	1466+75 to 1470+36	RT	2.72	1.46	3.70	5971.11	Two alternatives, same location
(AE, 69.6)	FPC 117B	1467+10 to 1474+50	RT	1.01	1.46	1.40	2258.89	
(AE, 70.8)	FPC 113A	1479+35 to 1479+95	LT	0.08	1.56	0.10	163.09	
(AE, 70.8)	FPC 113B	1476+75 to 1477+15	LT	0.10	1.56	0.13	211.41	
(AE, 70.8)	FPC 113C	1476+65 to 1479+50	LT	0.10	1.56	0.11	169.38	
(AE, 69.2)	FPC 116A	1492+25 to 1494+05	LT	0.60	0.12	0.07	115.51	
(AE, 69.2)	FPC 116B	1488+25 to 1491+90	LT	0.75	0.12	0.09	137.13	
(AE, 69.2)	FPC 116C	1482+05 to 1487+20	LT	0.72	0.12	0.08	132.29	
(A, 69.2)	FPC 114A	1493+00 to 1494+55	LT	0.09	0.12	0.01	15.84	
(A, 69.2)	FPC 114B	1492+50 to 1493+00	LT	0.09	0.12	0.01	15.75	
(A, 69.2)	FPC 114C	1493+85 to 1495+15	RT	0.09	0.12	0.01	16.64	
(AE, 69.6)	FPC 115A	1510+85 to 1514+20	LT	1.31	2.64	3.12	5035.21	
(AE, 69.6)	FPC 115B	1498+60 to 1503+35	RT	1.60	2.64	3.80	1.00	
(AE, 69.6)	FPC 115C	1499+25 to 1501+80	LT	0.83	2.64	1.80	2895.93	
(AE, 68.5)	FPC 126A	1508+50 to 1511+30	RT	1.06	1.54	1.35	2179.61	
(AE, 66.3)	FPC 100A	1412+00 to 1414+00	LT	1.06	1.58	1.64	2642.64	
(AE, 66.3)	FPC 100B	1417+00 to 1420+00	LT	1.04	1.58	1.59	2561.97	
(AE, 66.3)	FPC 100C	1421+00 to 1425+00	LT	1.08	1.58	1.70	2737.83	
(AE, 64.8)	FPC 102A	1415+90 to 1417+00	RT	0.06	0.08	0.005	8.07	
(AE, 64.8)	FPC 102B	1422+00 to 1423+00	RT	0.06	0.08	0.005	8.07	
(AE, 64.8)	FPC 102C	1419+00 to 1420+00	RT	0.06	0.08	0.005	8.07	
(AE, 66.9)	FPC 103A	1440+00 to 1443+00	RT	0.93	2.18	1.91	3079.85	
(AE, 66.9)	FPC 103B	1437+00 to 1439+20	RT	0.94	2.18	1.95	3137.93	
(AE, 66.9)	FPC 103C	1432+00 to 1434+00	RT	1.24	2.18	2.59	4180.15	
(AE, 67.2)	FPC 104A	1445+65 to 1447+10	LT	0.70	0.18	0.13	201.67	
(AE, 67.2)	FPC 104B	1439+40 to 1440+70	LT	0.75	1.18	0.86	1390.69	
(AE, 67.2)	FPC 104C	1447+00 to 1449+50	LT	0.71	0.95	0.65	1055.12	
(AE, 67.6)	FPC 107A	1449+00 to 1452+50	LT	1.60	2.88	4.32	6972.83	
(AE, 67.6)	FPC 107B	1447+50 to 1452+50	LT	1.20	2.88	3.06	4931.96	
(AE, 67.6)	FPC 107C	1452+90 to 1454+00	LT	1.18	2.88	2.98	4812.57	
(AE, 67.3)	FPC 110A	1452+50 to 1454+50	RT	2.07	0.28	0.59	945.41	
(AE, 67.3)	FPC 110B	1446+50 to 1462+50	RT	2.13	2.28	4.82	7782.72	
(AE, 67.3)	FPC 110C	1446+00 to 1449+50	RT	2.07	0.28	0.57	911.53	

APPENDIX 9

FLOODPLAIN COMPENSATION CALCULATIONS-SPUI

SOUTH OF INTERSECTION: FLOODPLAIN COMPENSATION CALCULATIONS

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 69 to 70.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 120A	70.3 (Zone AE)	204+80.	213+00.	0.148	0.192	0.356	Y
FPC 120B	70.3 (Zone AE)	200+00.	201+50.	0.148	0.192	0.354	Y
FPC 120C	70.3 (Zone AE)	202+50.	205+50.	0.148	0.192	0.531	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

** Approximate station range of floodplain impacts.

SHW = 69.0 per soil data

100-Year Floodplain Compensation			
Compensation Site FPC 120A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69		0.219	
	1.3		0.356
70.3		0.329	

Compensation area estimated based on topo.
FPC site when either proposed pond B2 or B3 is selected.
** Approximate station range of floodplain impacts.

Compensation Site FPC 120B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69		0.248	
	1.3		0.354
70.3		0.297	

Compensation area estimated based on topo.
FPC site when either proposed pond B2 or B3 is selected.

Compensation Site FPC Pond 120C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69		0.376	
	1.3		0.531
70.3		0.441	

Compensation area estimated based on topo.
Compensation provided within SMF 3A.

EAST OF INTERSECTION: FLOODPLAIN COMPENSATION CALCULATIONS

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 67.3 to 67.01	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 110E	67.30 (Zone AE)	1459+00	1461+00	0.90	0.261	0.274	Y

Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
** Approximate station range of floodplain impacts.
SHW = 67.01

100-Year Floodplain Compensation			
Compensation Site FPC 110E			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
67.01		0.910	
	0.29		0.274
67.3		0.980	

Compensation area estimated based on topo.
FPC site if proposed SMF 2B alternative is selected

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 69.08 to 69.2	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 116A	69.20 (Zone AE)	1481+00.	1494+00.	0.59	0.071	0.072	Y
FPC 116B	69.20 (Zone AE)	1481+00.	1494+00.	0.59	0.071	0.085	Y
FPC 116C	69.20 (Zone AE)	1481+00.	1494+00.	0.59	0.071	0.082	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

** Approximate station range of floodplain impacts.

SHW = 69.08 per Permit

100-Year Floodplain Compensation			
Compensation Site 116A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.59	
	0.12		0.072
69.20		0.60	
Compensation area estimated based on topo.			

100-Year Floodplain Compensation			
Compensation Site Pond 116B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.67	
	0.12		0.085
69.2		0.75	
Compensation area estimated based on topo.			

100-Year Floodplain Compensation			
Compensation Site Pond 116C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.64	
	0.12		0.082
69.2		0.72	
Compensation area estimated based on topo.			

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 68.14 to 69.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 117A	69.60 (Zone AE)	1067+45.	1081+40.	2.50	3.650	3.701	Y
FPC 117B	69.60 (Zone AE)	1067+45.	1081+40.	0.94	1.372	1.400	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

** Approximate station range of floodplain impacts.

SHW = 68.14 per Permit

100-Year Floodplain Compensation			
Compensation Site FPC 117A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.14		2.350	
	1.46		3.701
69.6		2.720	

Compensation area estimated based on topo.
FPC Restores Pond C1 existing floodplain and compensates impacts to onsite Floodplain

100-Year Floodplain Compensation			
Compensation Site FPC 117B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.14		0.910	
	1.46		1.400
69.6		1.008	

Compensation area estimated based on topo.
FPC shape compensates impacts to onsite Floodplain

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 69.24 to 70.8	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 113A	70.80 (Zone AE)	1476+65.	1479+40.	0.05	0.084	0.101	Y
FPC 113B	70.80 (Zone AE)	1476+65.	1479+40.	0.05	0.084	0.131	Y
FPC 113C	70.80 (Zone AE)	1476+65.	1479+40.	0.05	0.084	0.105	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

** Approximate station range of floodplain impacts.

SHW = 69.24

100-Year Floodplain Compensation			
Compensation Site FPC 113A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.24		0.051	
	1.56		0.101
70.8		0.079	
Compensation area estimated based on topo.			

100-Year Floodplain Compensation			
Compensation Site FPC 113B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.24		0.071	
	1.56		0.131
70.8		0.097	
Compensation area estimated based on topo.			

100-Year Floodplain Compensation			
Compensation Site FPC 113C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.24		0.037	
	1.56		0.105
70.8		0.098	
Compensation area estimated based on topo.			

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 69.08 to 69.2	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 114A	69.20 (Zone A)	1493+45.	1494+35.	0.08	0.010	0.010	Y
FPC 114B	69.20 (Zone A)	1493+45.	1494+35.	0.08	0.010	0.010	Y
FPC 114C	69.20 (Zone A)	1493+45.	1494+35.	0.08	0.010	0.010	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

** Approximate station range of floodplain impacts.

SHW = 69.08, FloodPlain elevation to be confirmed with Floodplain model.

100-Year Floodplain Compensation			
Compensation Site FPC 114A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.078	
	0.12		0.010
69.2		0.086	

Compensation area estimated based on topo.
FloodPlain elevation to be confirmed with Floodplain model.

100-Year Floodplain Compensation			
Compensation Site FPC 114B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.078	
	0.12		0.010
69.2		0.085	

Compensation area estimated based on topo.
FloodPlain elevation to be confirmed with Floodplain model.

100-Year Floodplain Compensation			
Compensation Site FPC 114C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.08		0.084	
	0.12		0.010
69.2		0.088	

Compensation area estimated based on topo.
FloodPlain elevation to be confirmed with Floodplain model.

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*****	End Station*****	Impact Area (ac) 66.96 to 69.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 115A	69.60 (Zone AE)	1495+50.	1524+00.	1.18	3.115	3.121	Y
FPC 115B	69.60 (Zone AE)	1495+50.	1524+00.	1.43	3.775	3.802	Y
FPC 115C	69.60 (Zone AE)	1495+50.	1524+00.	0.61	1.610	1.795	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

**Impact Area based on Acreage that's within the 100 year FPE and the Seasonal High Water, not overall Area.

SHW = 66.96 per Permit

***Original permit on NGVD 1929. Elevation have been converted to NAVD 88

****Conversion factor NGVD 1929 Elevation - 0.846

*****Approximate station range of floodplain impacts.

100-Year Floodplain Compensation			
Compensation Site FPC 115A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.96		1.05	
	2.64		3.121
69.60		1.31	

Compensation area estimated based on topo.
FPC Site includes Pond 2A(1) Floodplain impact and onsite basin Floodplain impact

100-Year Floodplain Compensation			
Compensation Site FPC 115B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.96		1.28	
	2.64		3.802
69.6		1.60	

Compensation area estimated based on topo.
FPC Site includes Pond 2A(2) Floodplain impact and onsite basin Floodplain impact

100-Year Floodplain Compensation			
Compensation Site FPC 115C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.96		0.53	
	2.64		1.795
69.60		0.83	

Compensation area estimated based on topo.
FPC site is only for Basin 2A option 3 onsite impacts

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station**	End Station**	Impact Area (ac) 66.96 to 68.5	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 126A	68.50 (Zone AE)	1494+30.	1524+00.	0.82	1.263	1.351	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.

**Impact Area based on Acreage that's within the 100 year FPE and the Seasonal High Water, not overall Area

SHW = 66.96 per Permit

***Original permit on NGVD 1929. Elevation have been converted to NAVD 88

****Conversion factor NGVD 1929 Elevation - 0.846

*****Approximate station range of floodplain impacts.

100-Year Floodplain Compensation			
Compensation Site FPC 126A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.96		0.82	
	1.54		1.351
68.50		0.93	
Compensation area estimated based on topo.			

WEST OF INTERSECTION: FLOODPLAIN COMPENSATION CALCULATIONS

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 100A	66.3 (Zone AE)	1413+00.	1430+00.	0.995	1.572	1.638	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 100B	66.3 (Zone AE)	1413+00.	1430+00.	0.995	1.572	1.588	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 100C	66.3 (Zone AE)	1413+00.	1430+00.	0.995	1.572	1.697	Y

* Approximate station range of floodplain impacts.

SHW per permit 43-16251-18

100-Year Floodplain Compensation			
Compensation FPC 100A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		1.011	
	1.58		1.638
66.3		1.063	
Compensation FPC 100B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.969	
	1.58		1.588
66.3		1.041	
Compensation FPC 100C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		1.067	
	1.58		1.697
66.3		1.082	

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 64.8	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 102A	64.8 (Zone AE)	1420+00.	1423+00.	0.064	0.005	0.005	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 64.8	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 102B	64.8 (Zone AE)	1420+00.	1423+00.	0.064	0.005	0.005	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 64.8	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 102C	64.8 (Zone AE)	1420+00.	1423+00.	0.064	0.005	0.005	Y

* Approximate station range of floodplain impacts.

SHW per permit 43-16251-18

100-Year Floodplain Compensation			
Compensation Site FPC 102A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.060	
	0.08		0.005
64.8		0.061	
Compensation Site FPC 102B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.060	
	0.08		0.005
64.8		0.062	
Compensation Site FPC 102C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.0615	
	0.08		0.005
64.8		0.0624	

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.9	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 103A	66.9 (Zone AE)	1425+00.	1448+00.	0.796	1.735	1.909	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.9	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 103B	66.9 (Zone AE)	1425+00.	1448+00.	0.796	1.735	1.945	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 66.9	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 103C	66.9 (Zone AE)	1425+00.	1448+00.	0.796	1.735	2.591	Y

* Approximate station range of floodplain impacts.

SHW per permit 43-16251-18

100-Year Floodplain Compensation			
Compensation FPC 103A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.820	
	2.18		1.909
66.9		0.932	
Compensation FPC 103B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.843	
	2.18		1.945
66.9		0.942	
Compensation FPC 103C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		1.141	
	2.18		2.591
66.9		1.236	

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 67.02 to 67.2	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 104A	67.2 (Zone AE)	1436+00.	1445+00.	0.679	0.122	0.125	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 66.02 to 67.2	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 104B	67.2 (Zone AE)	1436+00.	1445+00.	0.679	0.801	0.862	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 66.25 to 67.2	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 104C	67.2 (Zone AE)	1436+00.	1445+00.	0.679	0.645	0.654	Y

* Approximate station range of floodplain impacts.

SHW per lowest contour elev and soil data

100-Year Floodplain Compensation			
Compensation BASIN FPC 104A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
67.02		0.693	
	0.18		0.125
67.2		0.699	
Compensation FPC 104B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.02		0.711	
	1.18		0.862
67.2		0.751	
Compensation FPC 104C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.25		0.671	
	0.95		0.654
67.2		0.705	

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 67.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 107A	67.6 (Zone AE)	1450+00.	1456+00.	0.517	1.489	4.322	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 67.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 107B	67.6 (Zone AE)	1450+00.	1456+00.	0.517	1.489	3.057	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 64.72 to 67.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 107C	67.6 (Zone AE)	1450+00.	1456+00.	0.517	1.489	2.983	Y

* Approximate station range of floodplain impacts.

SHW per permit 43-16251-18

100-Year Floodplain Compensation			
Compensation FPC 107A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		1.407	
	2.88		4.322
67.6		1.595	
Compensation FPC 107B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.921	
	2.88		3.057
67.6		1.202	
Compensation FPC 107C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
64.72		0.893	
	2.88		2.983
67.6		1.179	

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 67.02 to 67.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 110A	67.3 (Zone AE)	1447+00.	1453+50.	1.977	0.554	0.586	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 65.02 to 67.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 110B	67.3 (Zone AE)	1447+00.	1453+50.	1.977	4.508	4.824	Y

Compensation Site	Flood EL. (feet, NAVD)	Start Station*	End Station*	Impact Area (ac) 67.02 to 67.3	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 110C	67.3 (Zone AE)	1447+00.	1453+50.	1.977	0.554	0.565	Y

* Approximate station range of floodplain impacts.

SHW per lowest contours and soil data

100-Year Floodplain Compensation			
Compensation FPC 110A			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
67.02		2.124	
	0.28		0.586
67.3		2.066	
Compensation FPC 110B			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
65.02		2.105	
	2.28		4.824
67.3		2.126	
Compensation FPC 110C			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
67.02		1.961	
	0.28		0.565
67.3		2.073	

APPENDIX 10

CROSS DRAIN CALCULATIONS



SUMMARY OF CROSS DRAINS		
ID	LOCATION	SIZE
1	STA 2568+80	30" RCP
2	STA 1431+25	18" RCP
3	STA 1436+50	42" RCP
4	STA 1452+90	(2)-8'X3' CBC
5	STA 1420+50	(2)-30" RCP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
150 N ORANGE AVE
ORLANDO, FLORIDA 32810

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US41 SR54	PASCO	

US 41 SR 54
EXISTING CROSS DRAINS

SHEET NO.

ANCLOTTE EAST ICPR3 RESULTS

NODE MIN/MAX

Scenario	Sim	Node Name	Relative Time [hrs]	Warning Stage [ft]	Maximum Stage [ft]	Time to Maximum Stage [hrs]	Maximum Total Inflow Rate [cfs]	Time to Maximum Total Inflow Rate [hrs]	Maximum Total Outflow Rate [cfs]	Time to Maximum Total Outflow Rate [hrs]	Min/Max Change in Stage [ft]	Time to Maximum Change in Stage [hrs]	Maximum Surface Area [ft2]	Time to Maximum Surface Area [hrs]
Icpr3	100Y24H	NC6560	100	70.25	67.55	15.0475	225.28	12.8834	143.81	15.1112	0.0001	12.8247	658067	15.0475
Icpr3	100Y24H	NC6810	100	74.03	66.86	20.3328	5.46	12.0834	5.17	12.0924	0.0001	12.4073	11411	20.3328
Icpr3	100Y24H	NC6820	100	75.18	66.27	12.0964	17.01	12.05	16.48	12.0964	0.0001	11.6642	15170	12.0964
Icpr3	100Y24H	NC7140	100	73.11	66.21	21.6769	123.24	14.6641	97.14	14.9306	0.0001	12.145	371572	21.6769
Icpr3	25Y24H	NC6560	100	70.25	67.14	15.3474	133.96	13.1434	76.49	13.6444	0.0001	12.5742	643590	15.3474
Icpr3	25Y24H	NC6810	100	74.03	66.18	22.58	4.08	12.0833	4.09	12.0898	-0.0008	0.9368	6930	22.58
Icpr3	25Y24H	NC6820	100	75.18	66.21	12.0994	12.25	12.0501	11.68	12.0995	0.0001	11.7215	14103	12.0998
Icpr3	25Y24H	NC7140	100	73.11	65.23	22.9546	64.45	12.3936	39.78	12.7771	0.0001	12.376	261458	22.9504
Icpr3	50Y24H	NC6560	100	70.25	67.23	14.868	164.84	13.0204	86.6	14.8428	0.0001	12.7462	647067	14.868
Icpr3	50Y24H	NC6810	100	74.03	66.41	20.681	4.54	12.0833	4.47	12.0875	-0.0001	0.8246	8201	20.681
Icpr3	50Y24H	NC6820	100	75.18	66.24	12.0983	13.88	12.0501	13.33	12.0984	0.0001	11.7174	14494	12.0984
Icpr3	50Y24H	NC7140	100	73.11	65.58	22.0634	69.56	12.2878	56.8	15.7898	0.0001	12.2332	301009	22.0634
Icpr3	10Y24H	NC6560	140	70.25	66.97	16.6962	89.28	13.4256	57.74	14.1529	0	12.2616	637745	16.6962
Icpr3	10Y24H	NC6810	140	74.03	65.82	23.6779	3.4	12.0834	3.4	12.0843	0.0001	11.3225	4755	23.678
Icpr3	10Y24H	NC6820	140	75.18	66.17	12.1067	9.66	12.0501	9.02	12.1067	0.0001	11.8643	13410	12.107
Icpr3	10Y24H	NC7140	140	73.11	64.71	16.5586	50.75	12.6193	28.8	13.0513	0.0001	12.2616	195619	16.5586

CYPRESS CREEK MODEL

NODE MIN/MAX

NAME	GROUP	SIMULATION	MAX TIME STAGE HRS	MAX STAGE FT	WARNING STAGE FT	MAX DELTA STAGE FT	MAX SURF AREA FT2	MAX TIME INFLOW HRS	MAX INFLOW CFS	MAX TIME OUTFLOW HRS	MAX OUTFLOW CFS
NH1760	H	100YR1D	18.49	68.707	0	0.0004	8990	17.5	21.44	17.76	21.4
NH1760	H	50YR24HR	17.32	68.314	0	0.0002	5231	17.5	17.316	17.55	17.325
NH1760	H	25YR24HR	17.25	68.156	0	0.0003	3724	17.5	15.345	17.96	15.367
NH1760	H	10YR24HR	17.21	67.823	0	0.0003	2000	17.14	11.652	17.21	11.652

EXISTING CROSS DRAIN #1:
(1)-30” RCP

Project:	US 41/ SR 54 PD&E		Design By:	YAA	Date: 4/17/2024
PID No.:			Check by:	JF	Date: 4/17/2024

Culvert Summary Data Sheet

Culvert: Existing 30in at US 41 Sta. 2568+80
Q Calculation: *SWFWMD Cypress Creek ICPR Model*
Design Storm: 50 Yr.

Culvert information:

Culvert diameter:	*30* in		
No of culverts:	*1*	Material:	*RCP*
Culvert length:	*93.60* ft		
Invert Elev Upstream:	*68.71* (NAVD)		
Invert Elev Downstream:	*65.66* (NAVD)		
Longitudinal slope:	0.0326 = *3.26%*		
Tailwater:	*(see below)*		
Total Flow Area (A):	4.9 *sq. ft.*		

Storm Discharge:

Frequency	Discharge	Tailwater Elevation	Headwater Elevation	HW	HW/D
(yr)	(cfs)	(NAVD) (2)	(NAVD) (2)	(ft)	
10	12	67.07	70.44	1.73	0.69
25	15	67.50	70.74	2.03	0.81
50	17	67.80	70.89	2.18	0.87
100	21	68.44	71.01	2.30	0.92
OT (3)	21	68.00	71.00	2.29	0.92

Notes:
1. Discharges from SWFWMD Cypress Creek ICPR model
2. Elevations from HY-8 model.
3. Overtopping at US41, elev = 71, roadway low point

Additional Notes:
1. Calculations are preliminary, should be verified for final design.
2. Tailwater elevations used are the maximum stages for each storm event from the SWFWMD Cypress Creek ICPR model.
3. A tailwater elevation between the 50-year and 100-year storm events is assumed in order to retrieve overtopping discharge rate and headwater elevation from HY-8 since for all the tailwater elevations for all the storm events, the OT discharge was always between the 50 and 100 year events.

HY-8 Culvert Analysis Report

Culvert Data: Culvert 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

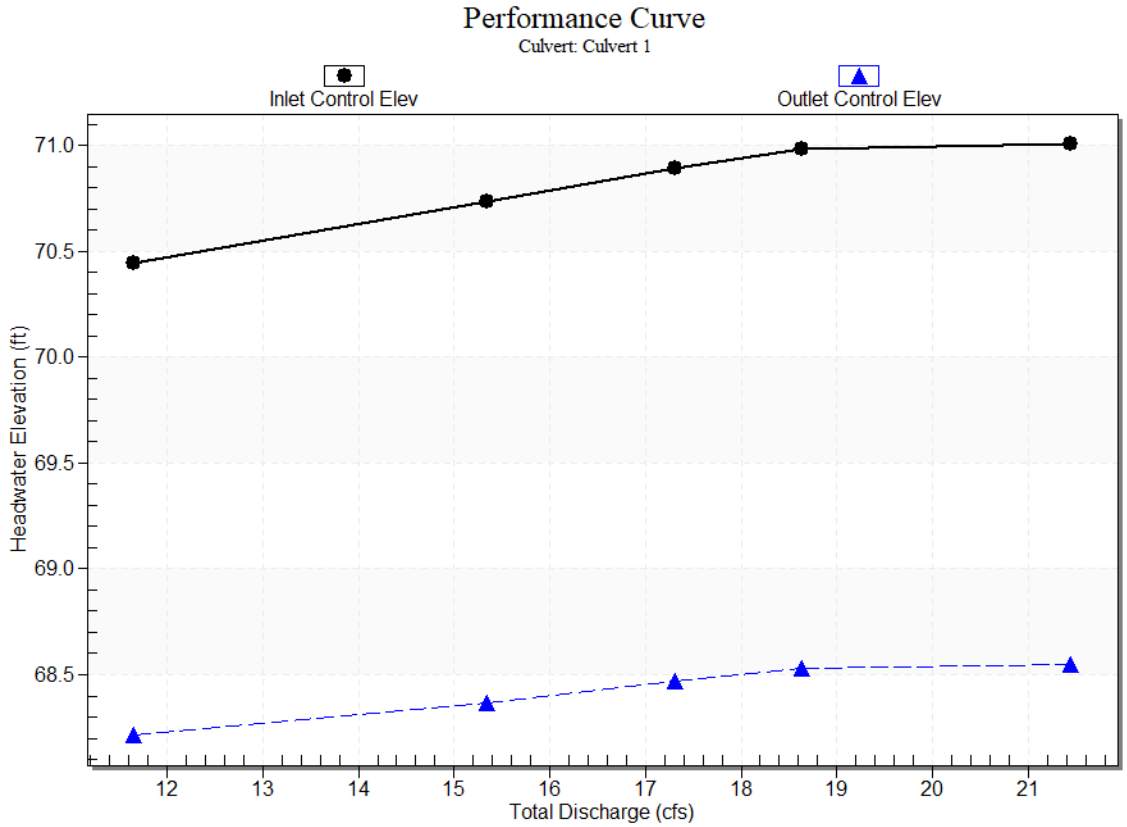
Barrel Manning's n: 0.0120

Culvert Type: Straight

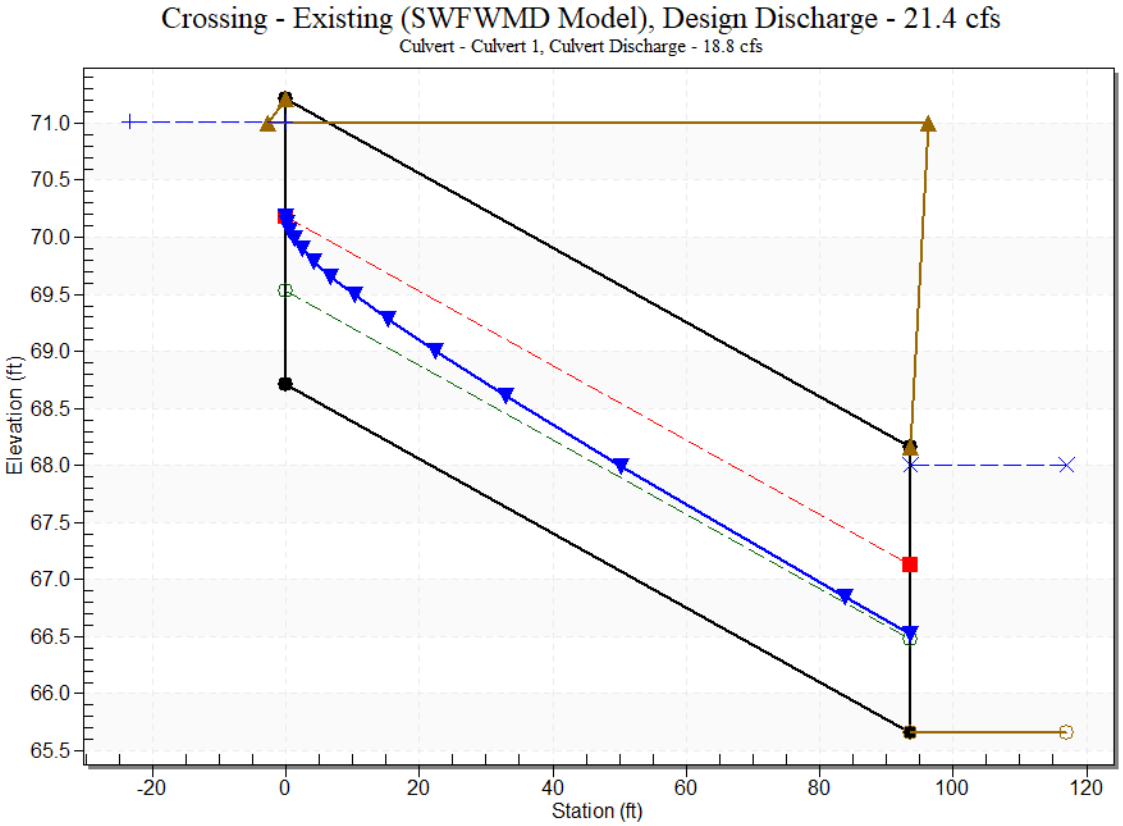
Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: None

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 68.71 ft

Outlet Station: 93.60 ft

Outlet Elevation: 65.66 ft

Number of Barrels: 1

Table 1 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	11.65 cfs	11.65 cfs	70.44	1.73	0.0*	1-JS	0.64	1.14	2.34	2.34	2.44	0.00

						1t						
25	15.35 cfs	15.35 cfs	70.74	2.03	0.0*	1-S2n	0.74	1.32	0.77	2.34	11.93	0.00
50	17.32 cfs	17.32 cfs	70.89	2.18	0.0*	1-S2n	0.79	1.41	0.83	2.34	12.21	0.00
OT	18.63 cfs	18.44 cfs	70.98	2.27	0.0*	1-S2n	0.81	1.45	0.85	2.34	12.45	0.00
100	21.44 cfs	18.75 cfs	71.01	2.30	0.0*	1-S2n	0.82	1.47	0.86	2.34	12.45	0.00

* Full Flow Headwater elevation is below inlet invert.

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

Inlet Elevation (invert): 68.71 ft,

Outlet Elevation (invert): 65.66 ft

Culvert Length: 93.65 ft,

Culvert Slope: 0.0326

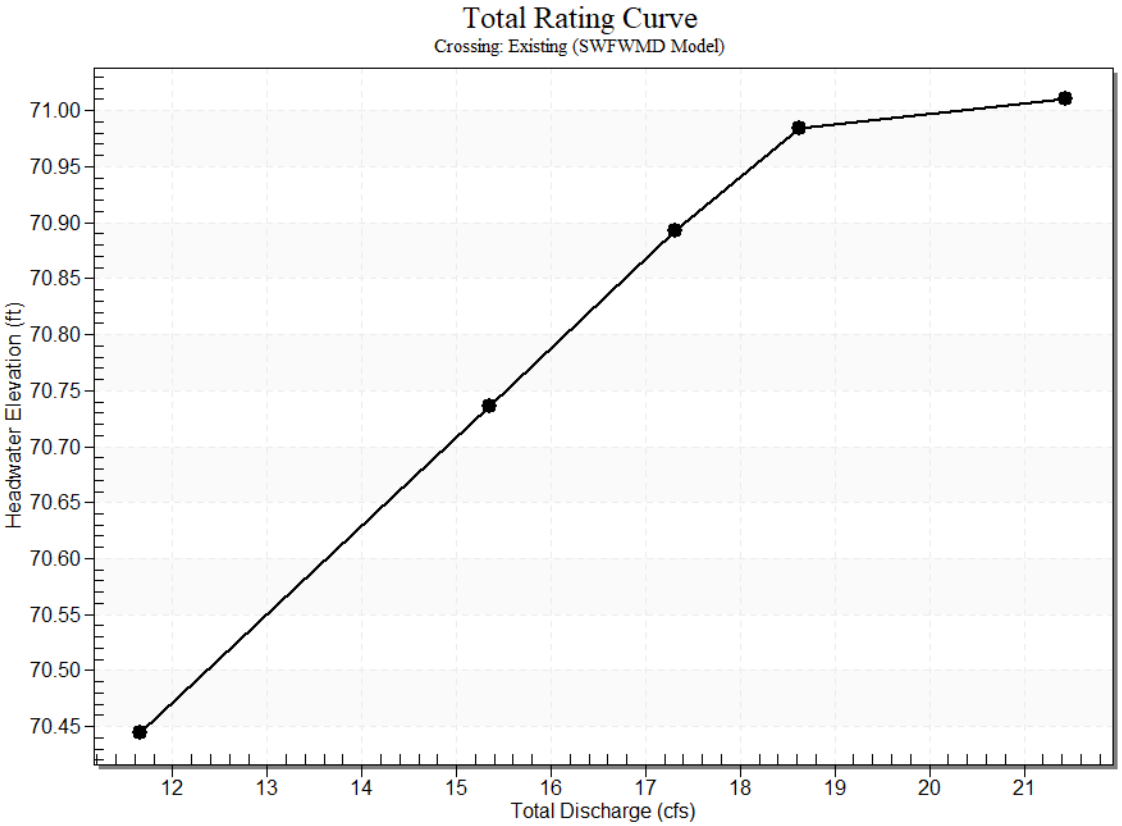
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 2 - Summary of Culvert Flows at Crossing: Existing (SWFWMD Model)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
70.44	10	11.65	11.65	0.00	1
70.74	25	15.35	15.35	0.00	1
70.89	50	17.32	17.32	0.00	1
70.98	OT	18.63	18.44	0.00	42
71.01	100	21.44	18.75	2.57	7
71.00	Overtopping	18.63	18.63	0.00	Overtopping

Rating Curve Plot for Crossing: Existing (SWFWMD Model)



Roadway Data for Crossing: Existing (SWFWMD Model)

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 811.00 ft

Crest Elevation: 71.00 ft

Roadway Surface: Paved

Roadway Top Width: 99.00 ft

Tailwater Data for Crossing: Existing (SWFWMD Model)

Table 3 - Downstream Channel Rating Curve (Crossing: Existing (SWFWMD Model))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
11.65	68.00	2.34
15.35	68.00	2.34
17.32	68.00	2.34
18.63	68.00	2.34
21.44	68.00	2.34

Tailwater Channel Data - Existing (SWFWMD Model)

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 68.00 ft

EXISTING CROSS DRAIN #2:
(1)-18” RCP

Project:	US 41/ SR 54 PD&E		Design By:	YAA	Date: 4/16/2024
PID No.:			Check by:	JF	Date: 4/17/2024

Culvert Summary Data Sheet

Culvert: Existing 18in at Sta. 1431+25
Q Calculation: *SWFWMD Anclotte East ICPR Model*
Design Storm: 50 Yr.

Culvert information:

Culvert diameter:	*18* in		
No of culverts:	*1*	Material:	*RCP*
Culvert length:	*100.00* ft		
Invert Elev Upstream:	*65.18* (NAVD)		
Invert Elev Downstream:	*64.10* (NAVD)		
Longitudinal slope:	0.0108 = *1.08%*		
Tailwater:	*(see below)*		
Total Flow Area (A):	1.8 *sq. ft.*		

Storm Discharge:

Frequency	Discharge	Tailwater Elevation	Headwater Elevation	HW	HW/D
(yr)	(cfs)	(NAVD) (2)	(NAVD) (2)	(ft)	
10	10	66.28	67.01	1.83	1.22
25	12	66.44	67.02	1.84	1.23
50	14	66.55	67.02	1.84	1.23
100	17	66.77	67.03	1.85	1.23
OT (3)	7	65.00	67.00	1.82	1.21

Notes:
1. Discharges from SWFWMD Anclotte East ICPR model
2. Elevations from HY-8 model.
3. Tailwater elevations used are the maximum stages for each storm event from the SWFWMD Cypress Creek ICPR model.
4. Overtopping at Wilson Rd, elev = 67, roadway low point

Additional Notes: 1. Calculations are preliminary, should be verified for final design.
2. A tailwater elevation lower than the 100-year storm event is assumed in order to retrieve overtopping discharge rate and headwater elevation from HY-8 since for all the tailwater elevations for all the storm events, the OT discharge was always lower than the 100 year event.

HY-8 Culvert Analysis Report

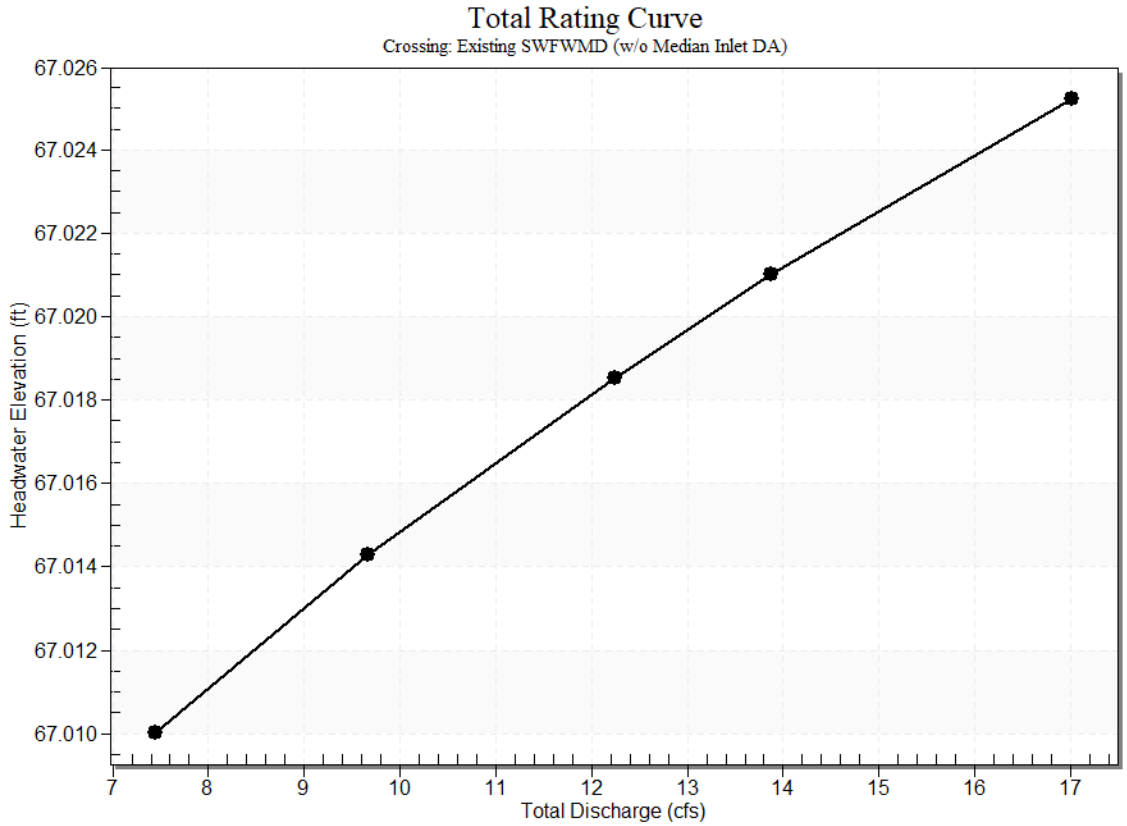
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: Existing SWFWMD (w/o Median Inlet DA)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
67.01	OT	7.45	3.86	3.53	13
67.01	10	9.66	3.89	5.75	4
67.02	25	12.25	3.93	8.28	3
67.02	50	13.88	3.95	9.92	3
67.03	100	17.01	3.98	12.87	2
67.00	Overtopping	3.77	3.77	0.00	Overtopping

Rating Curve Plot for Crossing: Existing SWFWMD (w/o Median Inlet DA)



Culvert Data: Culvert 1

Table 2 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
OT	7.45 cfs	3.86 cfs	67.01	1.12	1.830	4-FFf	0.59	0.75	1.50	2.67	2.18	0.00
10	9.66 cfs	3.89 cfs	67.01	1.13	1.834	4-FFf	0.59	0.75	1.50	2.67	2.20	0.00
25	12.25 cfs	3.93 cfs	67.02	1.13	1.839	4-FFf	0.59	0.76	1.50	2.67	2.22	0.00
50	13.88 cfs	3.95 cfs	67.02	1.14	1.841	4-FFf	0.60	0.76	1.50	2.67	2.23	0.00
100	17.01 cfs	3.98 cfs	67.03	1.14	1.845	4-FFf	0.60	0.76	1.50	2.67	2.25	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

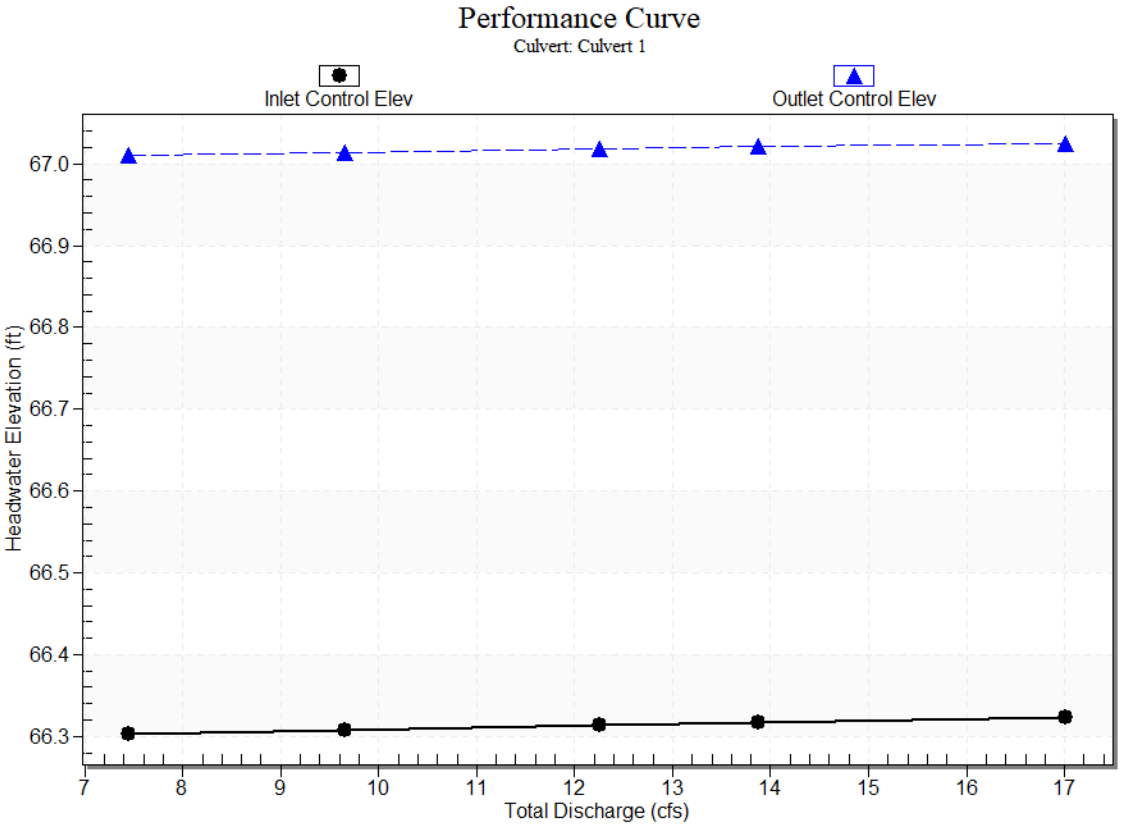
Inlet Elevation (invert): 65.18 ft,

Outlet Elevation (invert): 64.10 ft

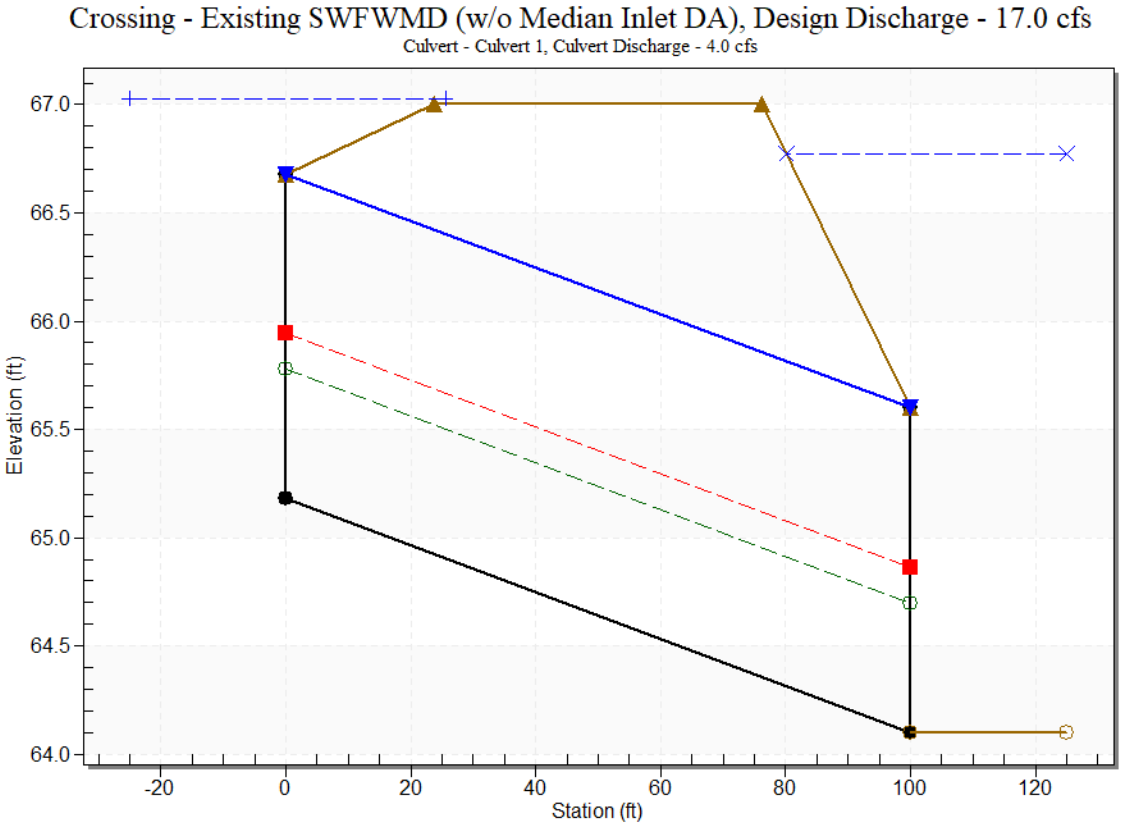
Culvert Length: 100.01 ft,

Culvert Slope: 0.0108

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 65.18 ft

Outlet Station: 100.00 ft

Outlet Elevation: 64.10 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 1.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)

Inlet Depression: None

Tailwater Data for Crossing: Existing SWFWMD (w/o Median Inlet DA)

Table 3 - Downstream Channel Rating Curve (Crossing: Existing SWFWMD (w/o Median Inlet DA))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
7.45	66.77	2.67
9.66	66.77	2.67
12.25	66.77	2.67
13.88	66.77	2.67
17.01	66.77	2.67

Tailwater Channel Data - Existing SWFWMD (w/o Median Inlet DA)

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 66.77 ft

Roadway Data for Crossing: Existing SWFWMD (w/o Median Inlet DA)

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 1061.00 ft

Crest Elevation: 67.00 ft

Roadway Surface: Paved

Roadway Top Width: 52.50 ft

EXISTING CROSS DRAIN #3:
(1)-42” RCP

Project:	US 41/ SR 54 PD&E		Design By:	YAA	Date: 4/17/2024
PID No.:			Check by:	JF	Date: 4/17/2024

Culvert Summary Data Sheet

Culvert: Existing 42in at Sta. 1436+50
Q Calculation: *SWFWMD Anclotte East ICPR Model*
Design Storm: 50 Yr.

Culvert information:

Culvert diameter:	*42* in		
No of culverts:	*1*	Material:	*RCP*
Culvert length:	*118.00* ft		
Invert Elev Upstream:	*63.18* (NAVD)		
Invert Elev Downstream:	*62.70* (NAVD)		
Longitudinal slope:	0.0041 =	*0.41%*	
Tailwater:	*(see below)*		
Total Flow Area (A):	9.6 *sq. ft.*		

Storm Discharge:

Frequency	Discharge	Tailwater Elevation	Headwater Elevation	HW	HW/D
(yr)	(cfs)	(NAVD) (3)	(NAVD) (2)	(ft)	
10	3.4	65.82	65.83	2.65	0.76
25	4.1	66.18	66.19	3.01	0.86
50	4.5	66.41	66.42	3.24	0.93
100	5.5	66.86	66.87	3.69	1.05
OT (3)	56	69.80	71.00	7.82	2.23

Notes:
1. Discharges from SWFWMD Anclotte East ICPR model
2. Elevations from HY-8 model.
3. Tailwater elevations used are the maximum stages for each storm event from the SWFWMD Cypress Creek ICPR model.
4. Overtopping at SR 54, elev = 71, roadway low point

Additional Notes: 1. Calculations are preliminary, should be verified for final design.
2. A tailwater elevation higher than the 100-year storm event is assumed in order to retrieve overtopping discharge rate and headwater elevation from HY-8 since for all the tailwater elevations for all the storm events, the OT discharge was always higher than the 100 year event.

HY-8 Culvert Analysis Report

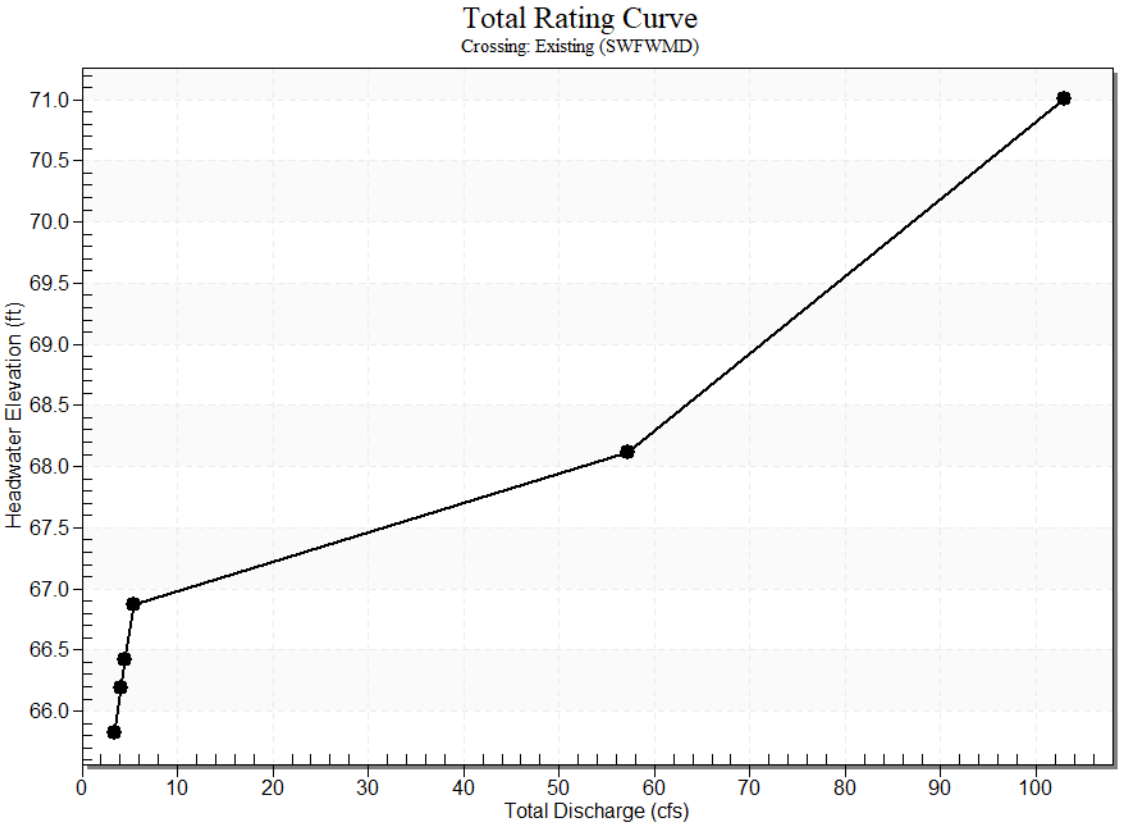
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: Existing (SWFWMD)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
65.83	10	3.40	3.40	0.00	1
66.19	25	4.08	4.08	0.00	1
66.42	50	4.54	4.54	0.00	1
66.87	100	5.46	5.46	0.00	1
68.12	OT	57.22	57.22	0.00	1
71.00	Overtopping	101.88	101.88	0.00	Overtopping

Rating Curve Plot for Crossing: Existing (SWFWMD)



Culvert Data: Culvert 1

Table 2 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	3.40 cfs	3.40 cfs	65.83	0.78	2.645	1-S1t	0.53	0.55	3.12	3.12	0.38	0.00
25	4.08 cfs	4.08 cfs	66.19	0.85	3.007	1-S1t	0.57	0.60	3.50	3.48	0.42	0.00
50	4.54 cfs	4.54 cfs	66.42	0.90	3.238	1-S1f	0.60	0.64	3.50	3.71	0.47	0.00
100	5.46 cfs	5.46 cfs	66.87	0.99	3.691	4-FFf	0.66	0.70	3.50	4.16	0.57	0.00
OT	57.22 cfs	57.22 cfs	68.12	3.92	4.937	4-FFf	2.42	2.37	3.50	4.16	5.95	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

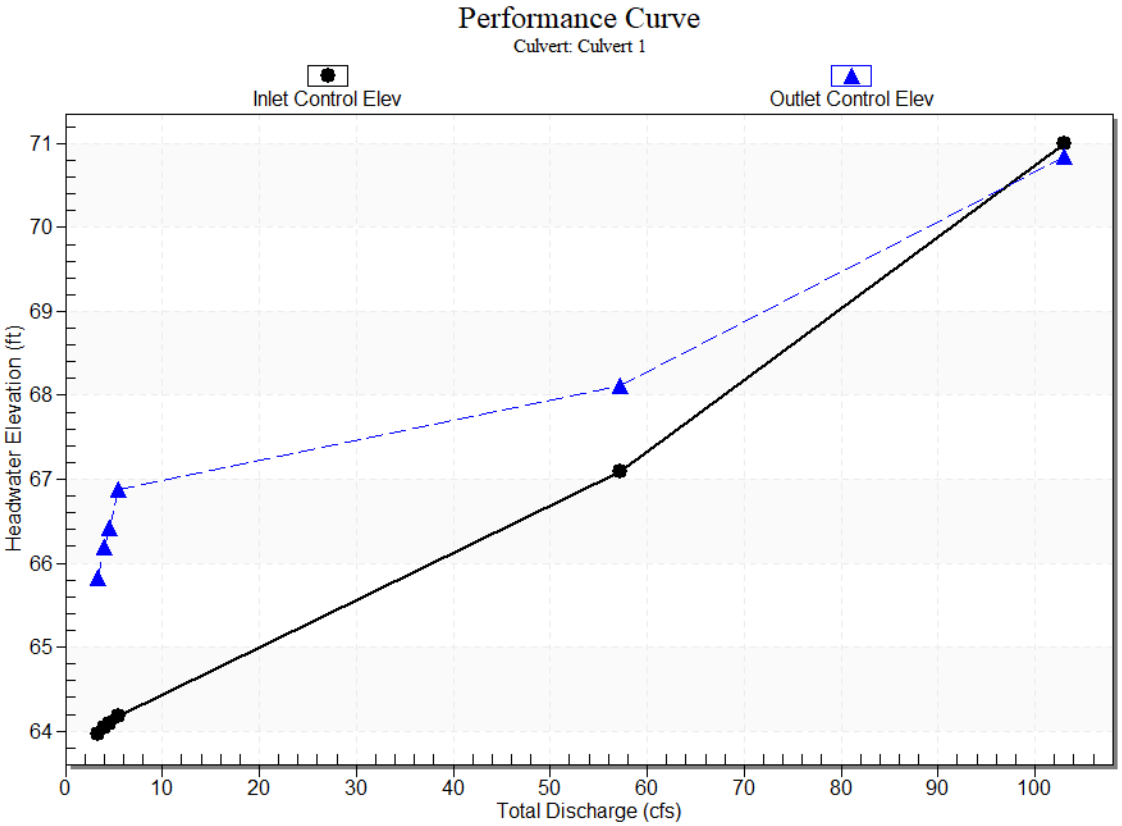
Inlet Elevation (invert): 63.18 ft,

Outlet Elevation (invert): 62.70 ft

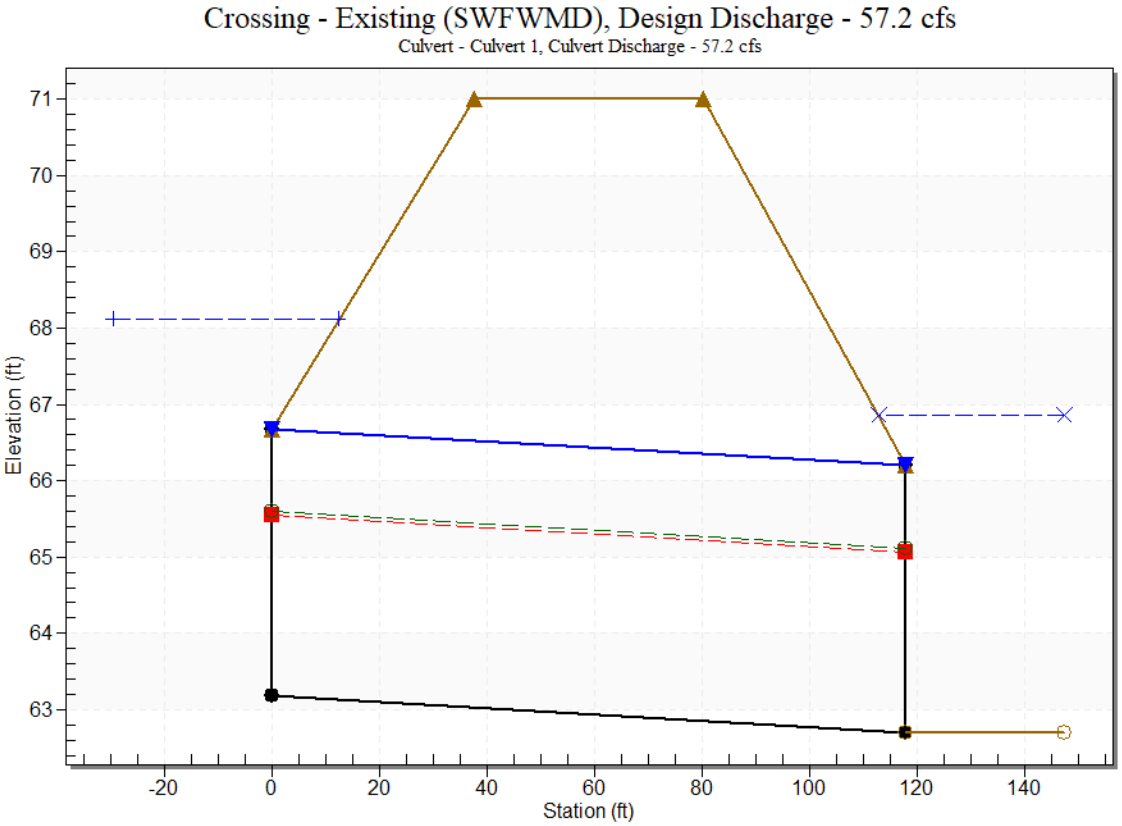
Culvert Length: 118.00 ft,

Culvert Slope: 0.0041

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 63.18 ft

Outlet Station: 118.00 ft

Outlet Elevation: 62.70 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)

Inlet Depression: None

Tailwater Data for Crossing: Existing (SWFWMD)

Table 3 - Downstream Channel Rating Curve (Crossing: Existing (SWFWMD))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)
3.40	65.82	3.12	0.00
4.08	66.18	3.48	0.00
4.54	66.41	3.71	0.00
5.46	66.86	4.16	0.00

Tailwater Channel Data - Existing (SWFWMD)

Tailwater Channel Option: Enter Rating Curve

Channel Invert Elevation: Enter Rating Curve

Roadway Data for Crossing: Existing (SWFWMD)

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 621.00 ft

Crest Elevation: 71.00 ft

Roadway Surface: Paved

Roadway Top Width: 42.50 ft

EXISTING CROSS DRAIN #4:
(2)- 8’x3’ CBC

Project:	US 41/ SR 54 PD&E		Design By:	YAA	Date: 5/2/2024
PID No.:			Check by:	JF	Date: 5/2/2024

Culvert Summary Data Sheet

Culvert: Existing (2) - 8'X3' CBC at SR 54 Sta. 1452+90
Q Calculation: *SWFWMD Anclotte East ICPR Model*
Design Storm: 50 Yr.

Existing culvert information:

Culvert span:	*8.0* ft	Culvert rise:	*3.0* ft
No of culverts:	*2*	Material:	*CBC*
Culvert length:	*145.00* ft		
Invert Elev Upstream:	*64.97* (NAVD)		
Invert Elev Downstream:	*64.17* (NAVD)		
Longitudinal slope:	0.0055 = *0.55%*		
Tailwater:	*(see below)*		
Total Flow Area (A):	48.0 *sq. ft.*		

Storm Discharge:

Frequency	Discharge	Tailwater Elevation	Headwater Elevation	HW	HW/D
(yr)	(cfs)	(NAVD) (3)	(NAVD) (2)	(ft)	
10	89	66.95	67.61	2.64	0.88
25	134	67.09	67.75	2.78	0.93
50	165	67.15	67.88	2.91	0.97
100	225	67.30	68.21	3.24	1.08
OT (3)	323	67.50	69.00	4.03	1.34

Notes:
1. Discharges from SWFWMD Anclotte East ICPR model
2. Elevations from HY-8 model.
3. Tailwater elevations used are the maximum stages for each storm event from the SWFWMD Cypress Creek ICPR model.
4. Overtopping at SR 54, elev = 69, roadway low point

Additional Notes:
1. Calculations are preliminary, should be verified for final design.
2. A tailwater elevation higher than the 100-year storm event is assumed in order to retrieve overtopping discharge rate and headwater elevation from HY-8 since for all the tailwater elevations for all the storm events, the OT discharge was always higher than the 100 year event.

HY-8 Culvert Analysis Report

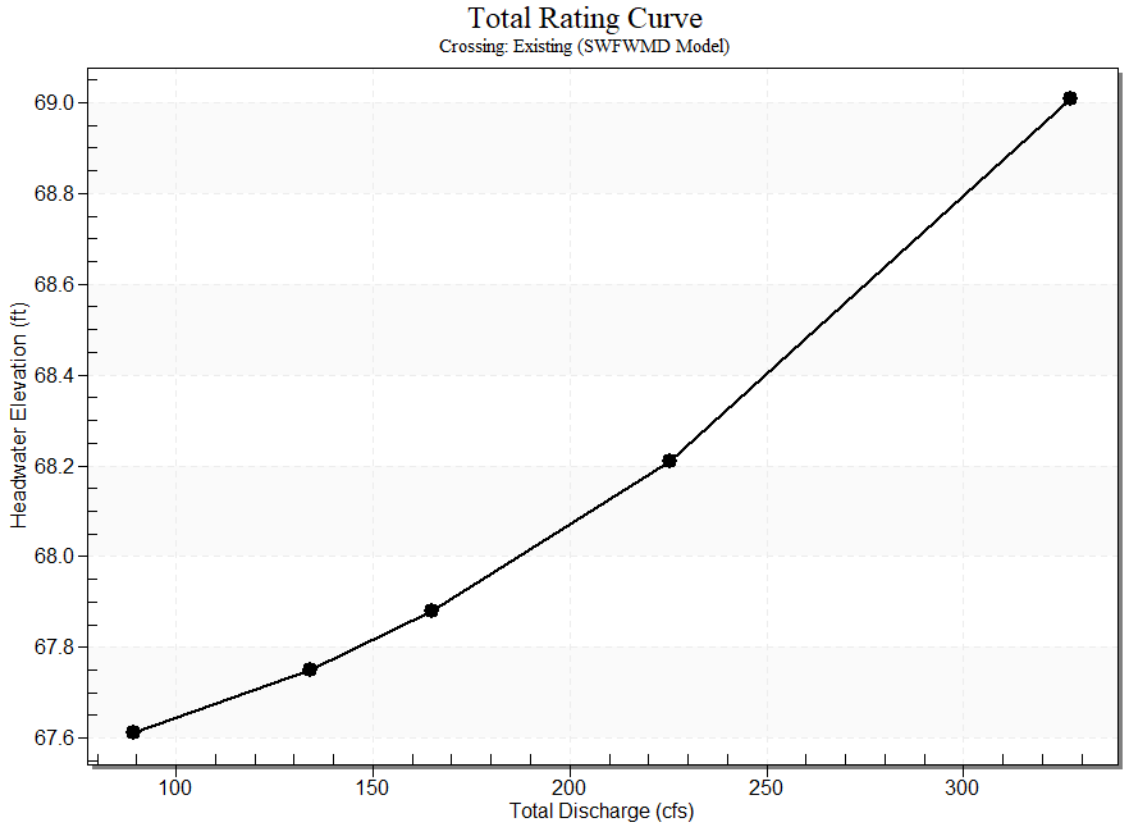
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: Existing (SWFWMD Model)

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
67.61	10	89.28	43.96	46.06	0.00	9
67.75	25	133.96	65.55	68.53	0.00	5
67.88	50	164.84	80.79	84.18	0.00	4
68.21	100	225.28	110.63	114.68	0.00	5
69.01	OT	327.13	156.77	166.98	2.18	31
69.00	Overtopping	322.96	156.40	166.56	0.00	Overtopping

Rating Curve Plot for Crossing: Existing (SWFWMD Model)



Culvert Data: Culvert 1

Table 2 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	89.28 cfs	43.96 cfs	67.61	1.67	2.642	1-S1f	0.79	0.98	3.00	3.33	1.83	0.00
25	133.96 cfs	65.55 cfs	67.75	2.16	2.780	1-S1f	1.02	1.28	3.00	3.33	2.73	0.00
50	164.84 cfs	80.79 cfs	67.88	2.48	2.910	1-S1f	1.17	1.47	3.00	3.33	3.37	0.00
100	225.28 cfs	110.63 cfs	68.21	3.07	3.241	1-S1f	1.44	1.81	3.00	3.33	4.61	0.00
OT	327.13 cfs	156.77 cfs	69.01	4.04	3.929	5-S1f	1.83	2.28	3.00	3.33	6.53	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

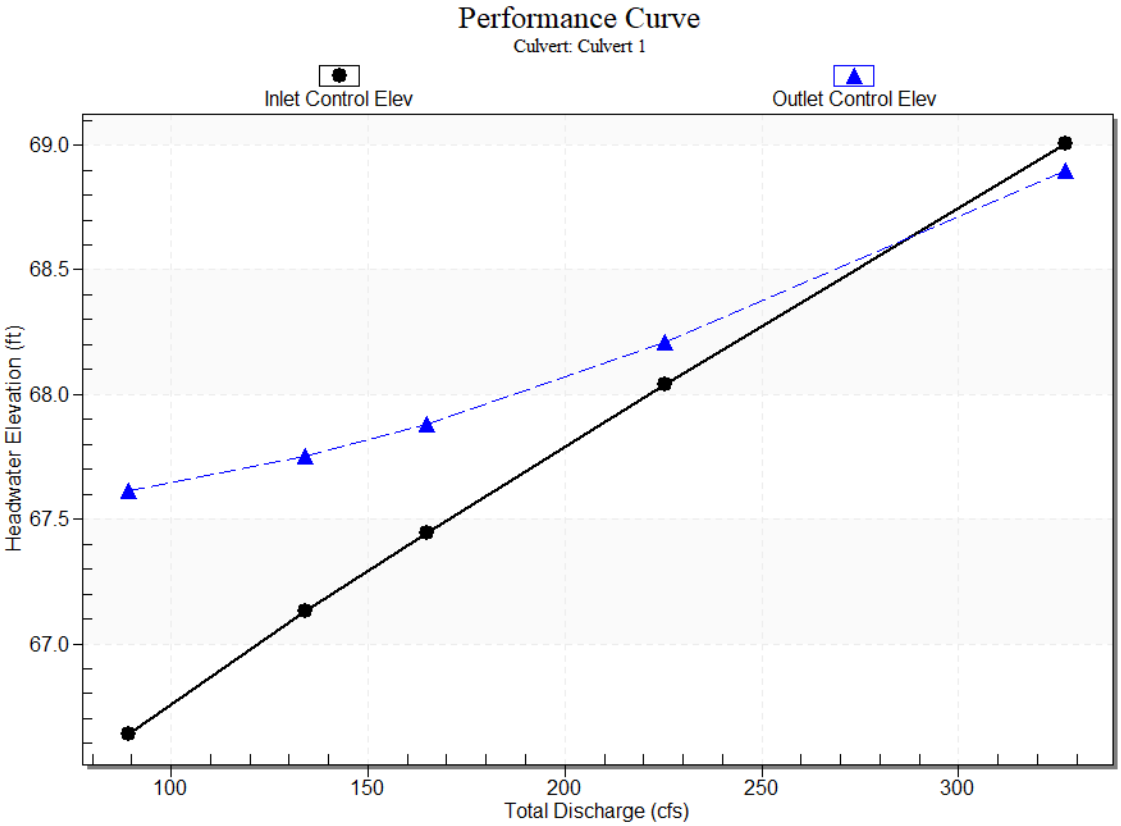
Inlet Elevation (invert): 64.97 ft,

Outlet Elevation (invert): 64.17 ft

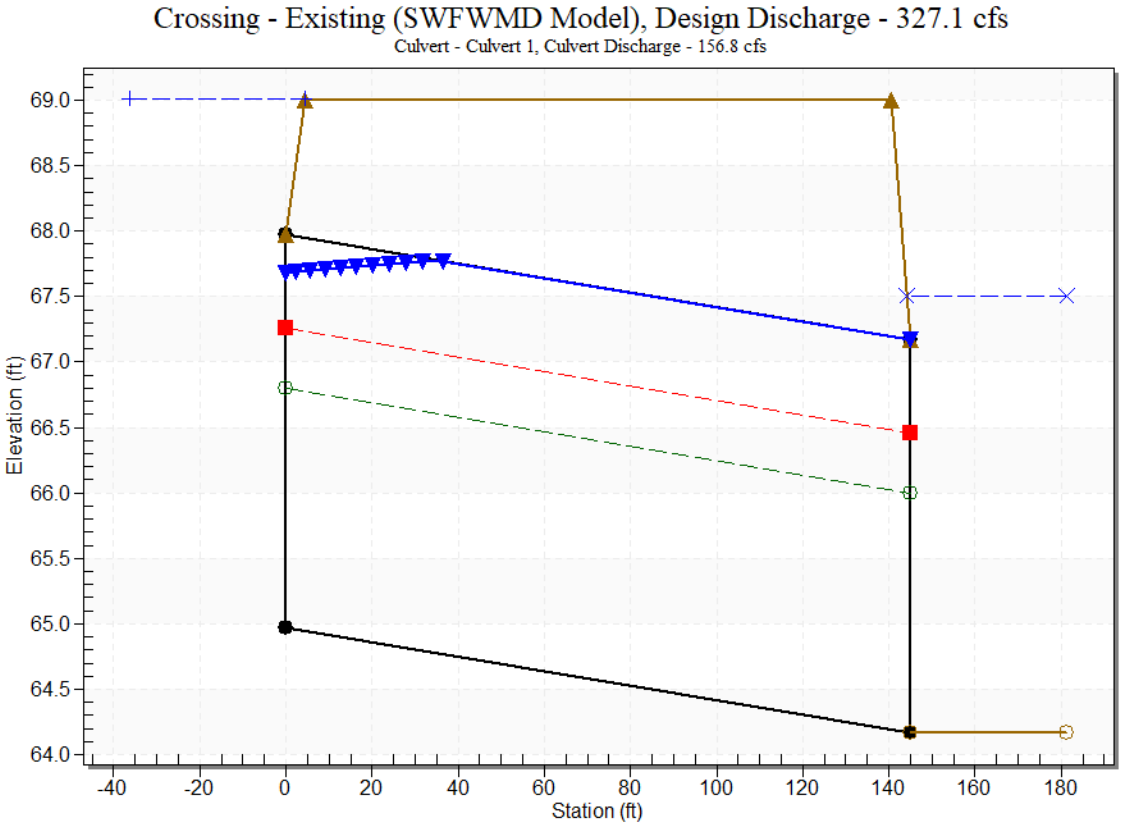
Culvert Length: 145.00 ft,

Culvert Slope: 0.0055

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 64.97 ft

Outlet Station: 145.00 ft

Outlet Elevation: 64.17 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: Concrete Box

Barrel Span: 8.00 ft

Barrel Rise: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall (Ke=0.5)

Inlet Depression: None

Culvert Data: Culvert 2

Table 3 - Culvert Summary Table: Culvert 2

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	89.28 cfs	46.06 cfs	67.61	1.72	2.983	3-M 1f	1.11	1.01	3.00	3.33	1.92	0.00
25	133.96 cfs	68.53 cfs	67.75	2.23	3.120	3-M 1f	1.44	1.32	3.00	3.33	2.86	0.00
50	164.84 cfs	84.18 cfs	67.88	2.55	3.250	3-M 1f	1.65	1.51	3.00	3.33	3.51	0.00
100	225.28 cfs	114.68 cfs	68.21	3.16	3.581	4-FF f	2.04	1.85	3.00	3.33	4.78	0.00
OT	327.13 cfs	166.98 cfs	69.01	4.28	4.378	4-FF f	2.66	2.38	3.00	3.33	6.96	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

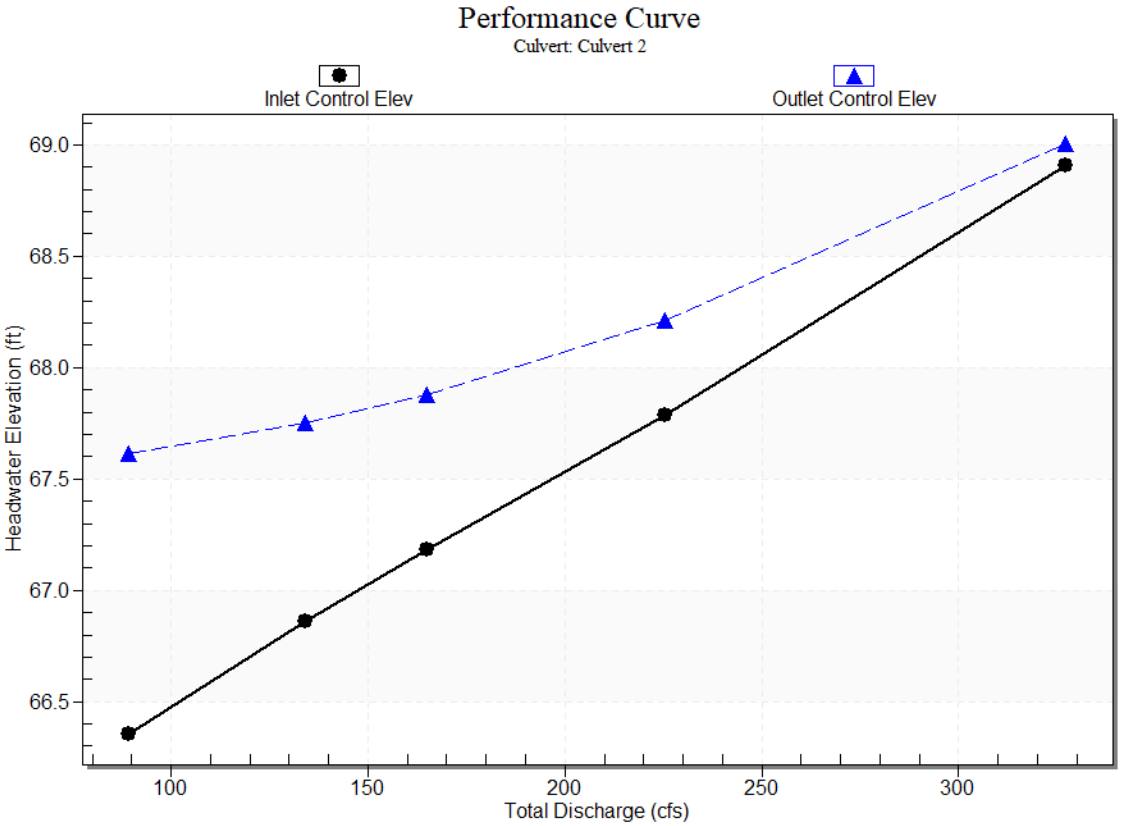
Inlet Elevation (invert): 64.63 ft,

Outlet Elevation (invert): 64.34 ft

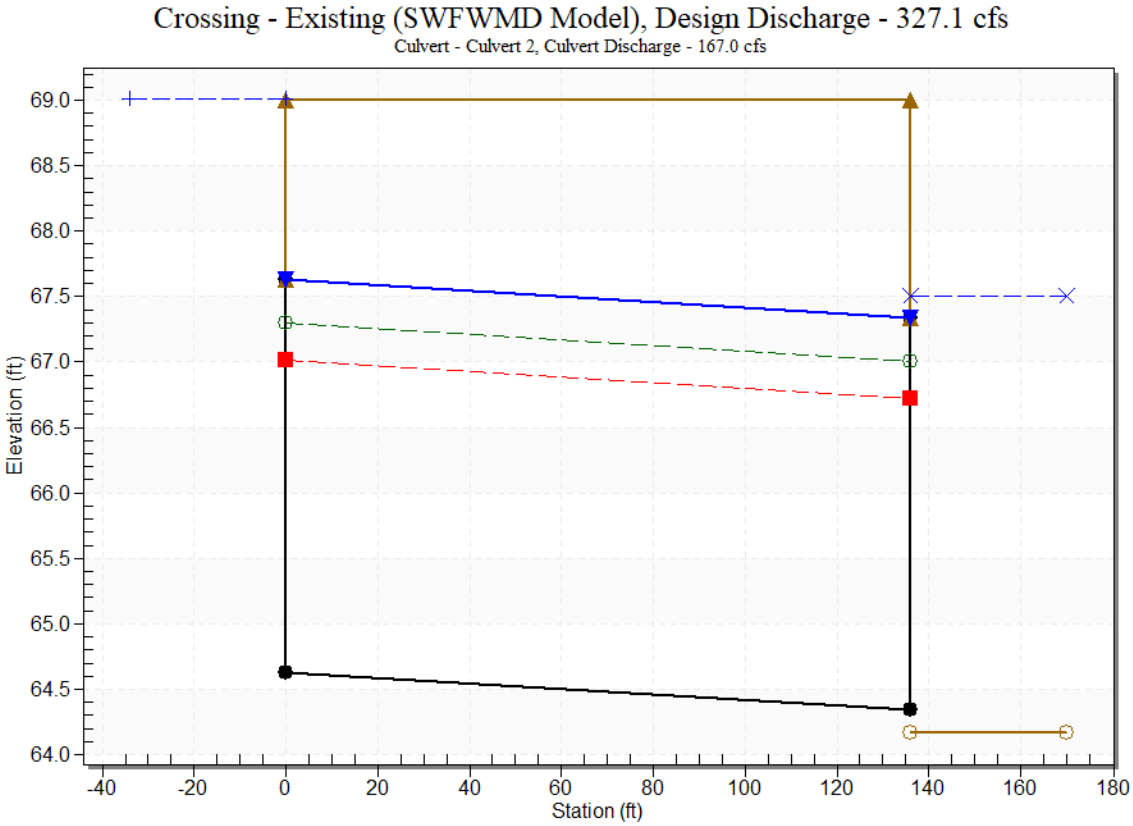
Culvert Length: 136.00 ft,

Culvert Slope: 0.0021

Culvert Performance Curve Plot: Culvert 2



Water Surface Profile Plot for Culvert: Culvert 2



Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 64.63 ft

Outlet Station: 136.00 ft

Outlet Elevation: 64.34 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 2

Barrel Shape: Concrete Box

Barrel Span: 8.00 ft

Barrel Rise: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge (90º) Headwall

Inlet Depression: None

Tailwater Data for Crossing: Existing (SWFWMD Model)

Table 4 - Downstream Channel Rating Curve (Crossing: Existing (SWFWMD Model))

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
89.28	67.50	3.33
133.96	67.50	3.33
164.84	67.50	3.33
225.28	67.50	3.33
327.13	67.50	3.33

Tailwater Channel Data - Existing (SWFWMD Model)

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 67.50 ft

Roadway Data for Crossing: Existing (SWFWMD Model)

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 1058.00 ft

Crest Elevation: 69.00 ft

Roadway Surface: Paved

Roadway Top Width: 136.00 ft

EXISTING CROSS DRAIN #5:
(2)- 30” RCP

Project:	US 41/ SR 54 PD&E		Design By:	YAA	Date: 7/2/2024
PID No.:			Check by:	JF	Date: 7/3/2024

Culvert Summary Data Sheet

Culvert: Existing 2-30in RCP at SR 54 Sta. 1420+50
Q Calculation: *SWFWMD Anclotte East ICPR Model*
Design Storm: 50 Yr.

Culvert information:

Culvert diameter:	*30* in		
No of culverts:	*2*	Material:	*RCP*
Culvert length:	*213.00* ft		
Invert Elev Upstream:	*63.11* (NAVD)		
Invert Elev Downstream:	*62.16* (NAVD)		
Longitudinal slope:	0.0045 =	*0.45%*	
Tailwater:	*(see below)*		
Total Flow Area (A):	9.8 *sq. ft.*		

Storm Discharge:

Frequency	Discharge	Tailwater Elevation	Headwater Elevation	HW	HW/D
(yr)	(cfs)	(NAVD) (2)	(NAVD) (2)	(ft)	
10	51	63.72	65.96	2.85	1.14
25	64	64.43	66.50	3.39	1.36
50	70	64.62	67.08	3.97	1.59
100	123	64.75	69.08	5.97	2.39
OT (3)	92	64.71	69.00	5.89	2.36

Notes:
1. Discharges from SWFWMD Anclotte East ICPR model
2. Elevations from HY-8 model.
3. Overtopping at SR54, elev = 69, roadway low point

Additional Notes:
1. Calculations are preliminary, should be verified for final design.
2. Tailwater elevations used are the maximum stages for each storm event from the SWFWMD Cypress Creek ICPR model.
3. A tailwater elevation between the 50-year and 100-year storm events is assumed in order to retrieve overtopping discharge rate and headwater elevation from HY-8 since for all the tailwater elevations for all the storm events, the OT discharge was always between the 50 and 100 year events.

HY-8 Culvert Analysis Report

Culvert Data: Culvert 1

Culvert Data Summary - Culvert 1

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

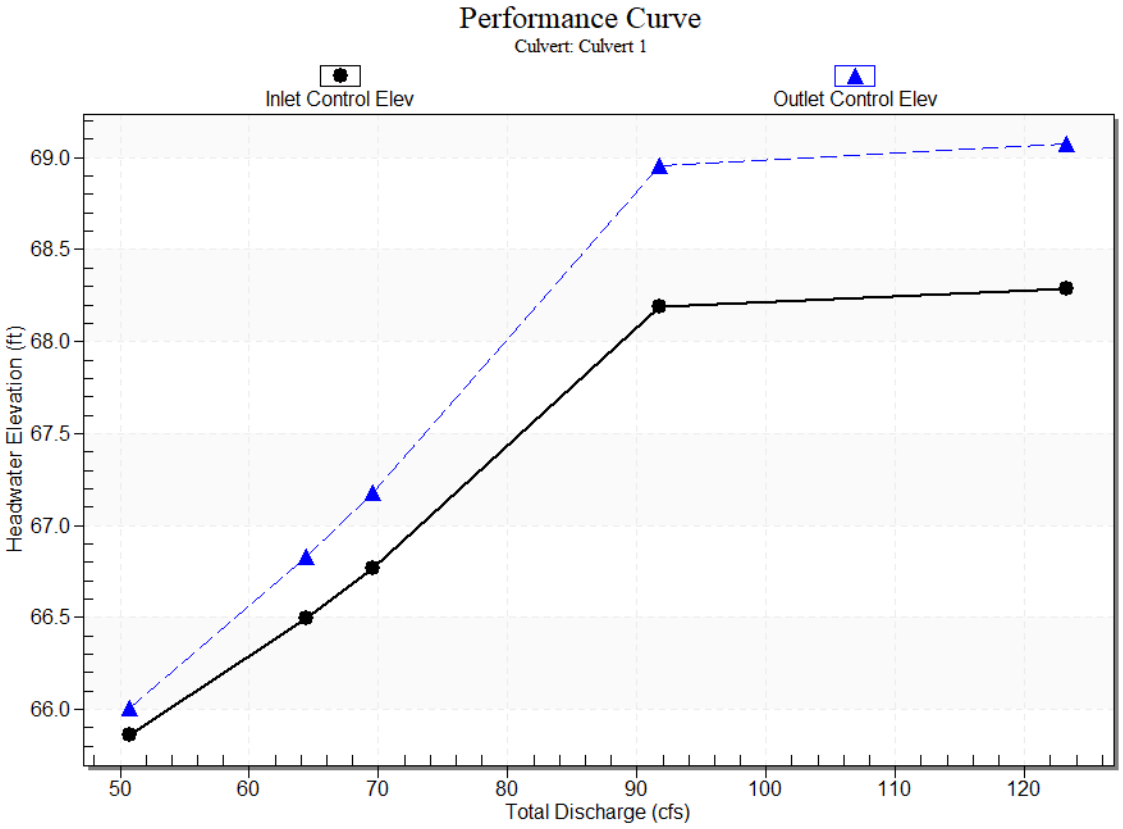
Barrel Manning's n: 0.0120

Culvert Type: Straight

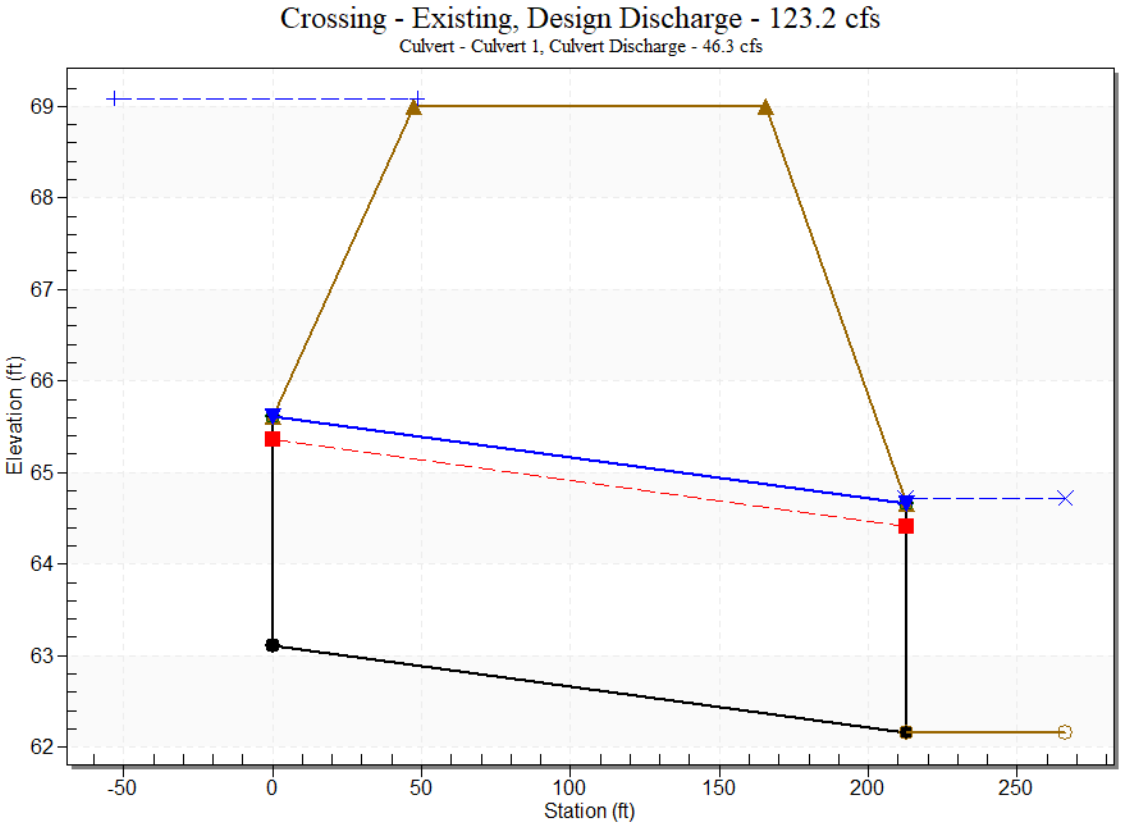
Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 63.11 ft

Outlet Station: 213.00 ft

Outlet Elevation: 62.16 ft

Number of Barrels: 1

Table 1 - Culvert Summary Table: Culvert 1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	50.75 cfs	25.38 cfs	66.01	2.75	2.897	3-M	1.78	1.72	2.50	2.55	5.17	0.00

						1f						
25	64.45 cfs	32.23 cfs	66.83	3.38	3.718	4-FFf	2.50	1.93	2.50	2.55	6.57	0.00
50	69.56 cfs	34.79 cfs	67.18	3.66	4.068	4-FFf	2.50	2.00	2.50	2.55	7.09	0.00
OT	91.73 cfs	45.62 cfs	68.95	5.08	5.845	4-FFf	2.50	2.24	2.50	2.55	9.29	0.00
100	123.24 cfs	46.28 cfs	69.08	5.18	5.968	4-FFf	2.50	2.25	2.50	2.55	9.43	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

Inlet Elevation (invert): 63.11 ft,

Outlet Elevation (invert): 62.16 ft

Culvert Length: 213.00 ft,

Culvert Slope: 0.0045

Culvert Data: Culvert 2

Culvert Data Summary - Culvert 2

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

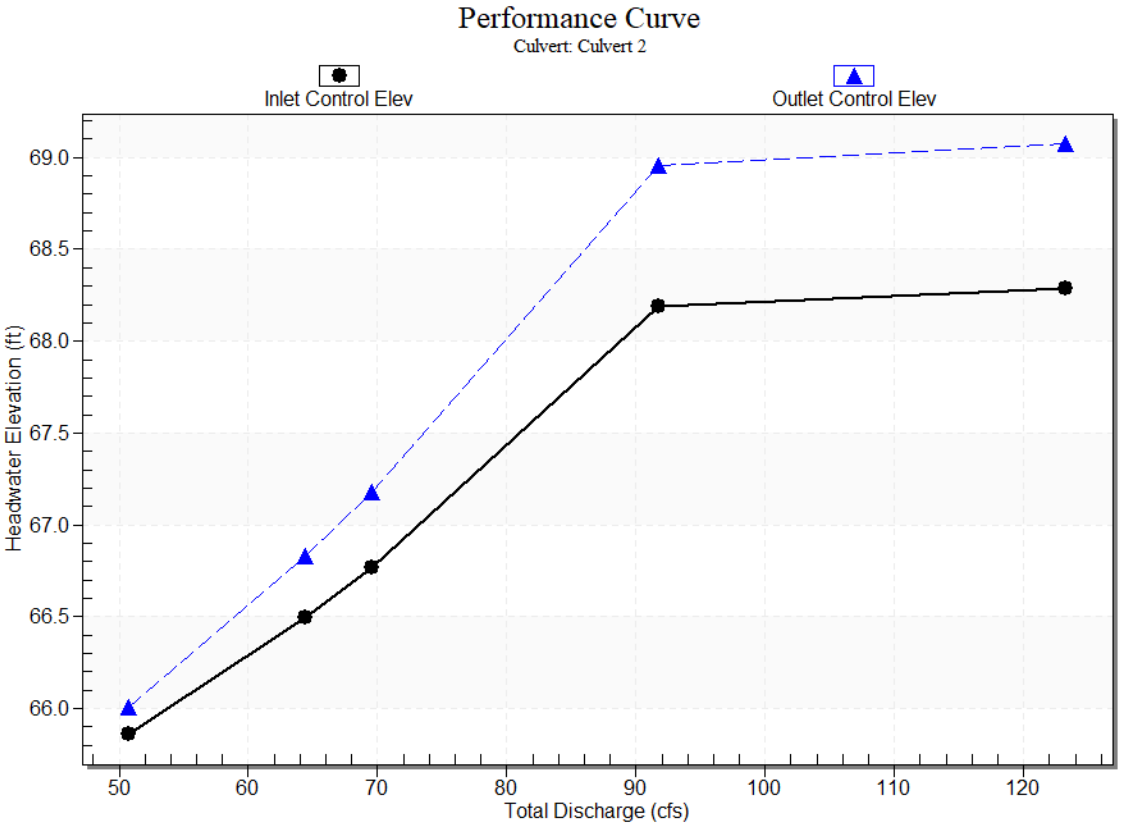
Barrel Manning's n: 0.0120

Culvert Type: Straight

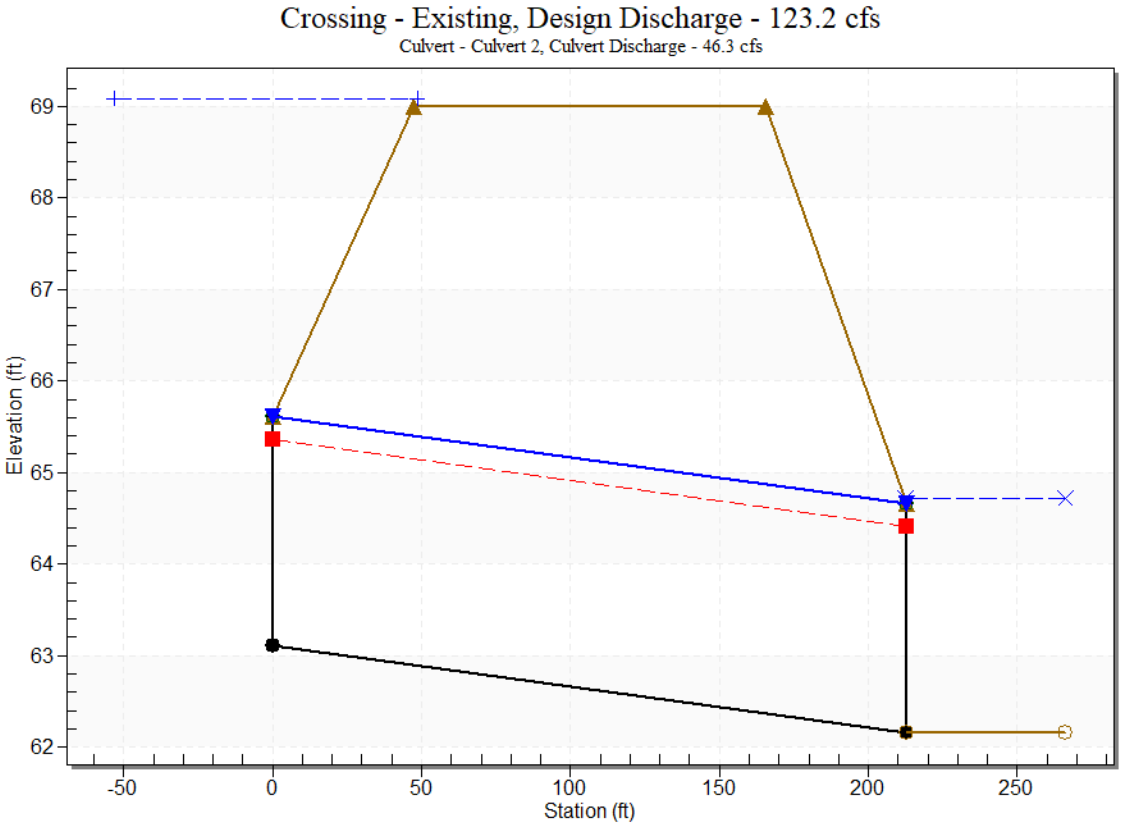
Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Culvert Performance Curve Plot: Culvert 2



Water Surface Profile Plot for Culvert: Culvert 2



Site Data - Culvert 2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 63.11 ft

Outlet Station: 213.00 ft

Outlet Elevation: 62.16 ft

Number of Barrels: 1

Table 2 - Culvert Summary Table: Culvert 2

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10	50.75 cfs	25.38 cfs	66.01	2.75	2.897	3-M	1.78	1.72	2.50	2.55	5.17	0.00

						1f						
25	64.45 cfs	32.23 cfs	66.83	3.38	3.718	4-FFf	2.50	1.93	2.50	2.55	6.57	0.00
50	69.56 cfs	34.79 cfs	67.18	3.66	4.068	4-FFf	2.50	2.00	2.50	2.55	7.09	0.00
OT	91.73 cfs	45.62 cfs	68.95	5.08	5.845	4-FFf	2.50	2.24	2.50	2.55	9.29	0.00
100	123.24 cfs	46.28 cfs	69.08	5.18	5.968	4-FFf	2.50	2.25	2.50	2.55	9.43	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

Inlet Elevation (invert): 63.11 ft,

Outlet Elevation (invert): 62.16 ft

Culvert Length: 213.00 ft,

Culvert Slope: 0.0045

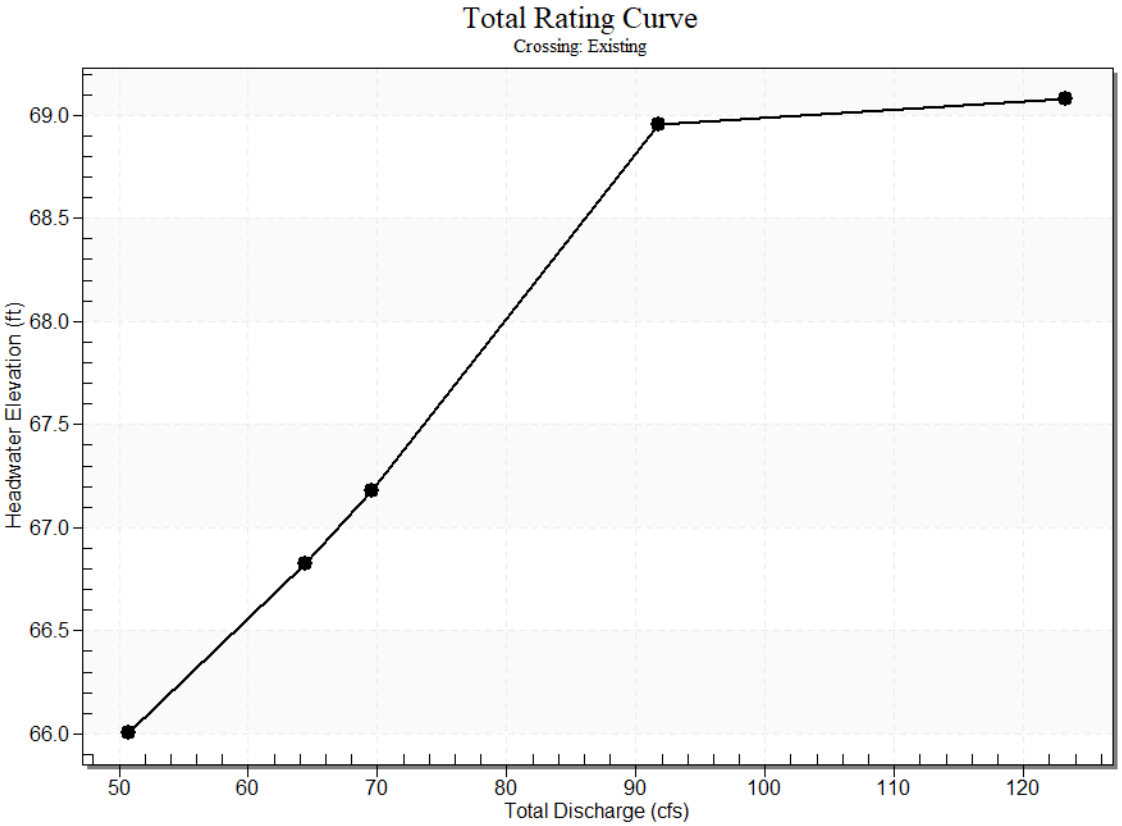
Crossing Discharge Data

Discharge Selection Method: User Defined

Table 3 - Summary of Culvert Flows at Crossing: Existing

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Culvert 2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
66.01	10	50.75	25.38	25.38	0.00	5
66.83	25	64.45	32.23	32.23	0.00	4
67.18	50	69.56	34.79	34.79	0.00	3
68.95	OT	91.73	45.62	45.62	0.00	80
69.08	100	123.24	46.28	46.28	30.48	6
69.00	Overtopping	91.73	45.86	45.86	0.00	Overtopping

Rating Curve Plot for Crossing: Existing



Roadway Data for Crossing: Existing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 479.70 ft

Crest Elevation: 69.00 ft

Roadway Surface: Paved

Roadway Top Width: 118.00 ft

Tailwater Data for Crossing: Existing

Table 4 - Downstream Channel Rating Curve (Crossing: Existing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
50.75	64.71	2.55
64.45	64.71	2.55
69.56	64.71	2.55
91.73	64.71	2.55
123.24	64.71	2.55

Tailwater Channel Data - Existing

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 64.71 ft

APPENDIX 11

EXISTING DRAINAGE MAP-DDI

EXISTING BASIN 1
TOTAL AREA: 31.07 AC
IMPERVIOUS AREA: 23.03 AC
PERVIOUS AREA: 6.48 AC
WATER SURFACE: 1.57 AC
CN: 92.80

EXISTING BASIN 2
TOTAL AREA: 42.47 AC
IMPERVIOUS AREA: 28.88 AC
PERVIOUS AREA: 9.22 AC
WATER SURFACE: 4.37 AC
CN: 92.76

EXISTING BASIN 2
QUASI-EQUIVALENT TREATMENT
TOTAL AREA: 1.72 AC
IMPERVIOUS AREA: 1.72 AC
PERVIOUS AREA: 0.00 AC
WATER SURFACE: 0.00 AC
CN: 98.00

EXISTING BASIN 3
TOTAL AREA: 34.47 AC
IMPERVIOUS AREA: 12.25 AC
PERVIOUS AREA: 20.34 AC
WATER SURFACE: 1.88 AC
CN: 89.85

EXISTING BASIN 4
TOTAL AREA: 16.87 AC
IMPERVIOUS AREA: 8.19 AC
PERVIOUS AREA: 4.45 AC
WATER SURFACE: 4.23 AC
CN: 95.65

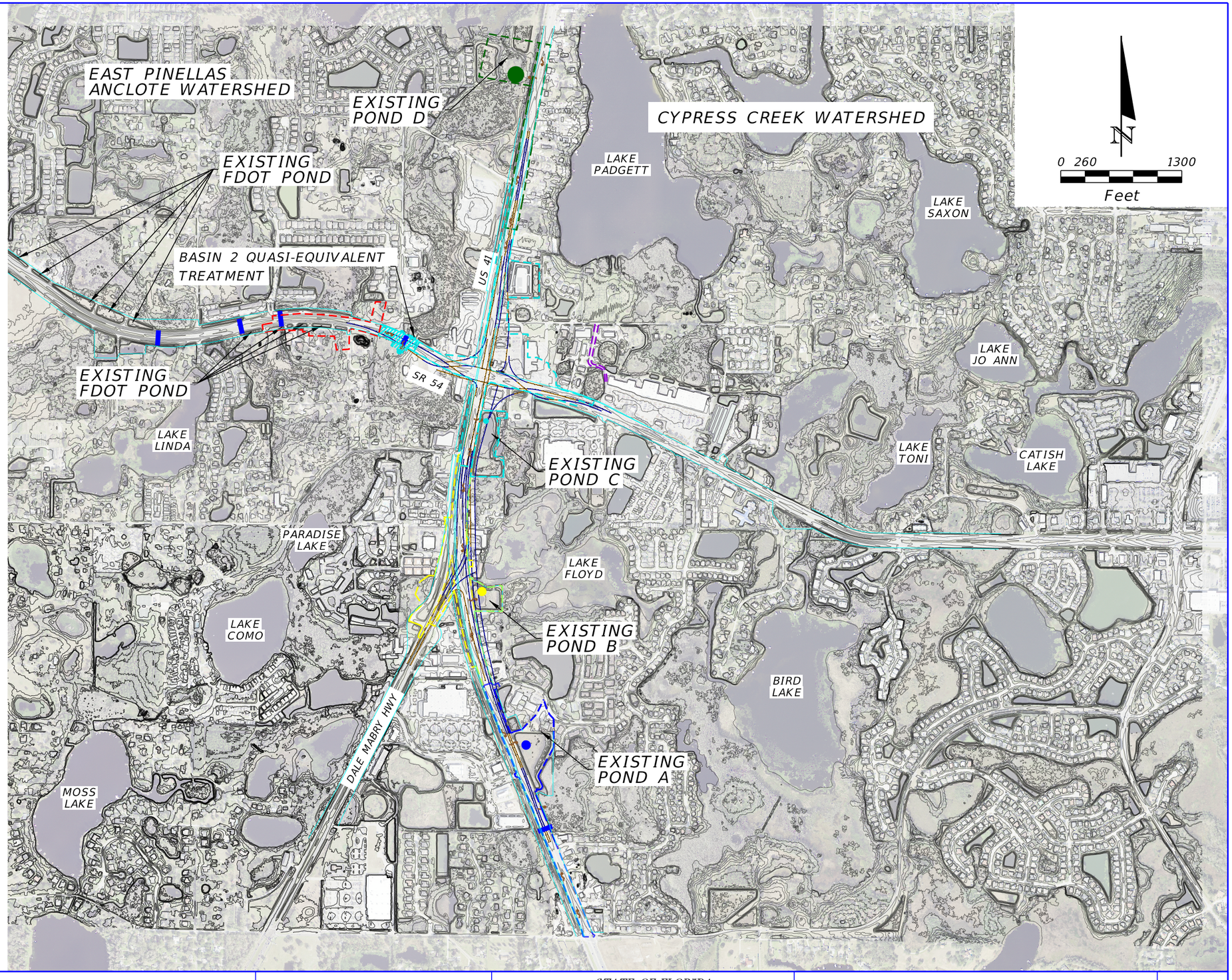
EXISTING BASIN 5
TOTAL AREA: 8.42 AC
IMPERVIOUS AREA: 3.82 AC
PERVIOUS AREA: 4.45 AC
WATER SURFACE: 0.15 AC
CN: 87.33

EXISTING BASIN VILLAGE LAKES CENTER DRIVE
TOTAL AREA: 0.73 AC
IMPERVIOUS AREA: 0.57 AC
PERVIOUS AREA: 0.16 AC
WATER SURFACE: 0.00 AC
CN: 86.19

FLOW ARROW

CROSS DRAIN

EXISTING R/W



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PRE DEVELOPMENT BASIN MAP DDI

SHEET NO.

F.A.C. NOTE

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APPENDIX 12

PROPOSED DRAINAGE MAP-DDI

PROPOSED BASIN 1
TOTAL AREA: 31.07 AC
IMPERVIOUS AREA: 22.36 AC
PERVIOUS AREA: 7.15 AC
WATER SURFACE: 1.57 AC
CN: 92.59

PROPOSED BASIN 2
TOTAL AREA: 53.51 AC
IMPERVIOUS AREA: 23.78 AC
PERVIOUS AREA: 21.49 AC
WATER SURFACE: 8.23 AC
CN: 85.45

PROPOSED BASIN 2
QUASI-EQUIVALENT TREATMENT
TOTAL AREA: 1.88 AC
IMPERVIOUS AREA: 1.10 AC
PERVIOUS AREA: 0.78 AC
WATER SURFACE: 0.00 AC
CN: 92.19

PROPOSED BASIN 3
TOTAL AREA: 37.43 AC
IMPERVIOUS AREA: 15.08 AC
PERVIOUS AREA: 18.56 AC
WATER SURFACE: 3.79 AC
CN: 91.24

PROPOSED BASIN 4
TOTAL AREA: 18.01 AC
IMPERVIOUS AREA: 8.68 AC
PERVIOUS AREA: 5.10 AC
WATER SURFACE: 4.23 AC
CN: 94.31

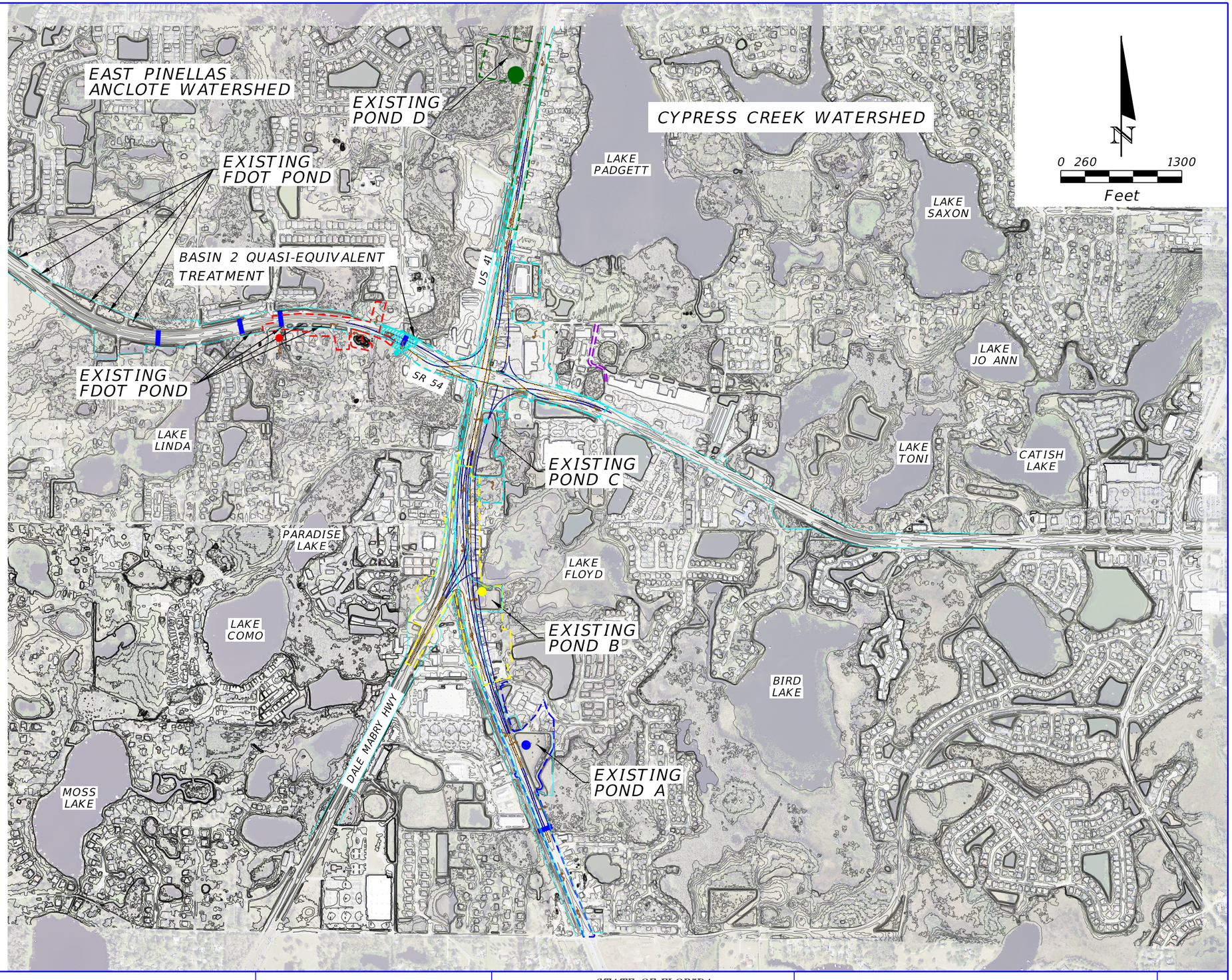
PROPOSED BASIN 5
TOTAL AREA: 9.93 AC
IMPERVIOUS AREA: 4.10 AC
PERVIOUS AREA: 5.68 AC
WATER SURFACE: 0.15 AC
CN: 86.61

PROPOSED BASIN VILLAGE LAKES CENTER DRIVE
TOTAL AREA: 0.73 AC
IMPERVIOUS AREA: 0.57 AC
PERVIOUS AREA: 0.16 AC
WATER SURFACE: 0.00 AC
CN: 86.19

FLOW ARROW

CROSS DRAIN

EXISTING R/W



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
POST DEVELOPMENT BASIN MAP DDI

SHEET NO.

F.A.C. NOTE

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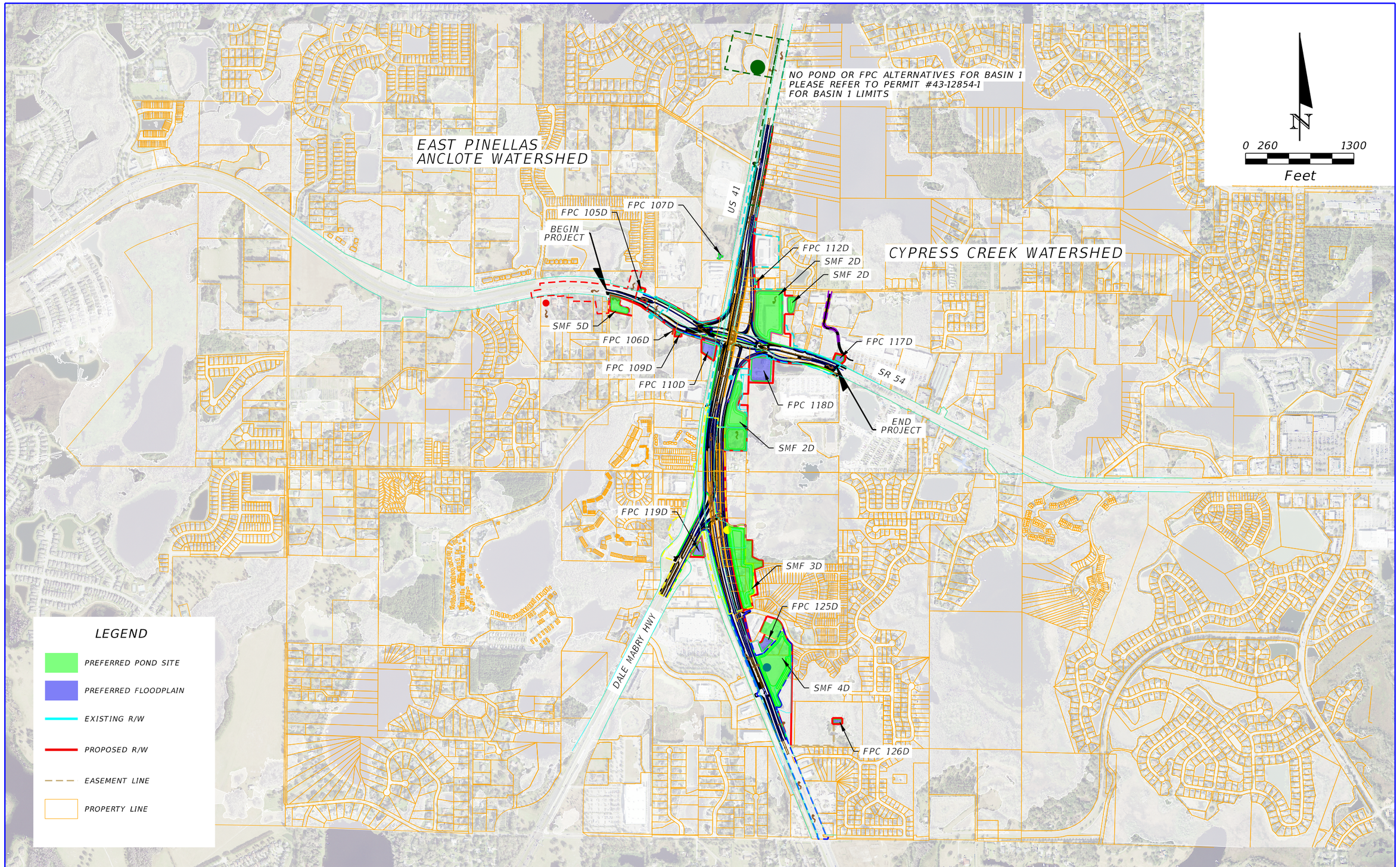
APPENDIX 13

PROPOSED POND AND FPC SITES ALTERNATIVES EXHIBIT-DDI



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
PREFERRED POND & FPC SITES DDI

SHEET NO.

F.A.C. NOTE

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APPENDIX 14

BASIN & POND SUMMARY TABLES-DDI

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/24/2025

CHECKED BY: JF DATE: 1/8/2026

SHEET DESCRIPTION: BASIN SUMMARY TABLE-DDI

BASIN:	OUTFALL DESIGNATION:	SPECIAL CRITERIA:	BASELINE:	BEGIN STA:	END STA:	PGL LOW POINT STA:	PGL ELEV:	BASIN AREA (AC.)	PRE CN:	POST CN:	OPEN / CLOSED:	ATTENUATION$_{reqd.}$ (AC-FT)	TREATMENT$_{reqd.}$ (AC-FT)	CONTR. CRITERIA	POND (FACILITY TYPE):	TREATMENT$_{prov.}$ (AC-FT):	ATTENUATION$_{prov.}$ (AC-FT):	ALLOWABLE POND BASIN PGL LOW POINT EL.*	POND DHW EL:	POND BASIN LOW POINT ALIGNMENT	POND BASIN LOW POINT STA:
1-No alternatives needed	EAST PINELLAS ANCLOTE	NA	BL. NB_US 41	2081+03	North End of Project	2092+82	73.86	31.07	92.8	92.59	OPEN	8.35	1.86	25yr/24hr	Wet Detention	1.98	8.46	72.26	71.26	BL. NB_US 41	2092+82
Remarks: Control Structure was adjusted to accommodate increase discharge.																					
																				BL. NB_US 41	2092+82
															Existing Pond D	1.98	8.46	72.26	71.26		
2	CYPRESS CREEK	NA	BL. NB_US 41	2045+19	2086+56	2045+87	73.79	53.51	92.75	85.45	OPEN	15.96	1.98	25yr/24hr	Wet Detention	2.24	15.97	71.55	70.55	BL. NB_US 41	2045+87
Remarks: Existing Pond C cannot accommodate increased discharge. Basin 2 will use the existing pond and a new proposed SMF 2D to handle the increased runoff. Basin 2 Quasi -Equivalent treatment is a sub-basin of Basin 2.																					
															SMF 2D	2.24	15.97	71.55	70.55	BL. NB_US 41	2045+87
3	CYPRESS CREEK	NA	BL. NB_US 41	2021+76	2051+22	2045+87	73.79	37.18	89.85	91.24	OPEN	5.24	1.26	25yr/24hr	Wet Detention	2.05	5.97	71.03	70.03	BL. NB_US 41	2045+87
Remarks: Existing Pond B grading will be modified to accommodate the increased discharge. The new pond configuration is designated as SMF 3D.																					
															SMF 3D	2.05	5.97	71.03	70.03	BL. NB_US 41	2045+87
4	CYPRESS CREEK	NA	BL. NB_US 41	South End of Project	2021+86	2002+03	71.14	14.64	95.65	94.31	OPEN	4.50	0.85	25yr/24hr	Wet Detention	0.86	4.53	70.26	69.26	BL. NB_US 41	2002+03
Remarks: Existing Pond A grading will be modified to accommodate the increased discharge. The new pond configuration is designated as SMF 4D.																					
															SMF 4D	0.86	4.53	70.26	69.26	BL. NB_US 41	2002+03
5	CYPRESS CREEK	NA	BL. EB_SR 56	West End of Project	3006+57	3003+19	69.21	9.93	87.33	86.61	OPEN	0.84	0.18	25yr/24hr	Wet Detention	0.52	0.95	67.15	66.15	BL. EB_SR 56	3003+19
Remarks: The series of existing FDOT ponds cannot accommodate increased discharge. Basin 2 will use the existing pond and a new proposed SMF 5D to handle the increased runoff.																					
															SMF 5D	0.52	0.95	67.15	66.15	BL. EB_SR 56	3003+19
VILLAGE LAKE SHOPPING CENTER DR	CYPRESS CREEK	NA	Existing Raden Drive	Carson Rd	Village Lakes Shopping Plaza	N/A	N/A	0.73	86.19	86.61	OPEN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PROPOSED CONDITION COMPLIANT WITH SWFWMD ERP Permit: 1027.001 (App: 2736). THEREFORE NO WATER QUANTITY OR QUALITY NEEDED; NO POND ALTERNATIVE NEEDED.																					

*Assume 1ft above pond DHW

US 41/SR 54 PD&E

MADE BY: RS DATE: 12/24/2025

CHECKED BY:JF DATE: 1/7/26

SHEET DESCRIPTION: POND SUMMARY TABLE-DDI

BASIN:	POND ALTERNATIVE	LOCATION	L&G BASIN PGL LOW EL	AVG. ESHWE (PD&E/L&G/ Design)	POND CONTROL EL.	SOIL TYPE	NUMBER OF PARCELS IMPACTED	POND SIZE (AC.)	POND (FACILITY TYPE):	REMARKS	RECOMMENDED
1											
	*Existing Pond D	Sta. 1103+60 (LT) @ BL_NB_US 41	73.86	69.26	69.26	A/D	1	4.89	WET DETENTION	Existing pond to remain. DHW increased to provide sufficient attenuation/treatment volumes.	X
2											
	SMF 2D	Sta. 2050+00 (RT) @BL BL_NB_US41	73.79	68.14	68.14	A/D	2	8.89	WET DETENTION	Existing Pond C cannot accommodate increased discharge. Basin 2 will use the existing pond and a new proposed SMF 2D to handle the increased runoff.	X
3											
	SMF 3D	Sta. 2022+00 to Sta. 2034+40 (RT) @ BL_NB_US41	73.79	68.50	68.50	A/D	9	5.57	WET DETENTION		X
4											
	SMF 4D	Sta. 2007+00 and Sta 2019+00 (RT) @ BL_NB_US41	71.14	68.25	68.25	A/D	4	6.55	WET DETENTION	SMF 4D is an expansion of the existing Pond A.	X
5											
	SMF 5D	Sta. 3002+00 (RT) @ BL_SR54_EB	69.04	64.00	64.00	A/D	1	0.96	WET DETENTION	The series of existing FDOT ponds cannot accommodate increased discharge. Basin 5 will use the existing ponds and a new proposed SMF 5D to handle the increased runoff.	X

*Name in Permit

APPENDIX 15

POND ALTERNATIVES DESIGN CALCULATIONS-DDI

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 1			**DATE**
POND/NODE DESIGNATION:	Existing POND D	**MADE BY:**	RS	11/11/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond D1 NWL	N/A	N/A	100	1.57	157.00
			TOTALS	**1.57**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Pavement	N/A	N/A	98	11.70	1146.37
			TOTALS	**11.70**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	C	94	5.34	501.519
Commercial and Business Areas (85% impervious)	N/A	D	95	0.25	23.709
Residential (1/8 acre, 65% Impervious)	N/A	C	90	5.07	481.831
Residential (1/2 acre, 25% Impervious)	N/A	C	85	0.67	56.854
			TOTALS	**11.33**	
PERVIOUS AREAS					
Open Spaces (Poor Condition, grass cover on 50% or less of the area)	-	C	86	0.17	14.458
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	-	C	79	3.92	309.297
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	-	D	84	0.82	68.955
Wood or Forest Land (Good cover)	-	C	70	0.08	5.661
Median	-	N/A	79	1.50	118.164
Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)			**TOTALS**	**6.48**	

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**13.27**	**TOTAL BASIN AREA**	**31.07**	**COMPOSITE CN**	**88.76**
TOTAL DCIA	**42.70%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

Required Detention Volume for Open Basins (25YR/24HR)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.80**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.78	7.94	**20.57**
SWFWMD	100-year / 24-hour	12.50	0.78	11.62	**30.08**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study			AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 1	**MADE BY:**	RS	11/11/2025
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND D	**CHECKED BY:**	JF	11/21/2025

Water Quality

Total Basin Area =	31.07	ac	
Pond Area at NWL =	1.57	ac	
Existing Impervious Area =	19.02	ac	Per Permit 43-16251-18 - pg. 370

A. Existing Permitted Water Quality PAV = **1.60** Ac-Ft Per Permit 43-16251-18 - pg. 372

B. 1.0 " Over Total Impervious Area = 1.59 Ac-Ft

Required PAV = **1.59** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 8.42 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Top of Bank	4.89				16.61	
			4.68	1.75	8.19		
71.25	DHW/ATT	4.47				8.42	Provided detention volume
			4.28	1.59	6.81		
69.66	(PAV)	4.09				1.60	Provided treatment volume
			4.04	0.40	1.60		
69.26	(NWL)	3.99				0.00	NWL at seasonal high water
			2.59	3.76	9.72		
65.50	Pond Bottom	1.18				9.72	
			0.00	0.00	0.00		

Required Detention Volume for Open Basins (25YR/24HR)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Proposed BASIN 1			**DATE**
POND/NODE DESIGNATION:	Existing POND D	**MADE BY:**	RS	11/11/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond D1 NWL	N/A	N/A	100	1.57	157.00
			TOTALS	**1.57**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Pavement	N/A	N/A	98	11.31	1108.15
			TOTALS	**11.31**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	C	94	4.67	438.539
Commercial and Business Areas (85% impervious)	N/A	D	95	0.25	23.709
Residential (1/8 acre, 65% Impervious)	N/A	C	90	5.07	481.831
Residential (1/2 acre, 25% Impervious)	N/A	C	85	0.67	56.854
Impervious (Sidewalk)	N/A	N/A	98	0.39	38.220
			TOTALS	**11.05**	
PERVIOUS AREAS					
Open Spaces (Poor Condition, grass cover on 50% or less of the area)	-	C	86	0.17	14.458
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	-	C	79	3.92	309.297
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	-	D	84	1.49	125.235
Wood or Forest Land (Good cover)	-	C	70	0.08	5.661
Median	-	N/A	79	1.50	118.164
			TOTALS	**7.15**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**12.88**	**TOTAL BASIN AREA**	**31.07**	**COMPOSITE CN**	**88.59**
TOTAL DCIA	**41.44%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

Required Detention Volume for Open Basins (25YR/24HR)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.59**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.80	7.92	**20.50**
SWFWMD	100-year / 24-hour	12.50	0.80	11.59	**30.01**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study			AECOM
PROJECT NUMBER:	60596589	FDOT		**DATE**
BASIN DESIGNATION:	BASIN 1	**MADE BY:**	RS	11/11/2025
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	Existing POND D	**CHECKED BY:**	JF	11/11/2025

Water Quality

Total Basin Area =	31.07	ac
Pond Area at NWL =	1.57	ac
Total Impervious Area =	22.35	ac

A. Existing Permitted Water Quality PAV = **1.60** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.86 Ac-Ft
Required PAV = **1.86** Ac-Ft
Provided PAV = **1.98** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**(0.07)**	**ac-ft.**
Pre Att. Volume	**8.42**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**8.35**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Top of Bank	4.89				16.61	
		.	4.68	1.74	8.14		
71.26	DHW/ATT	4.47				8.46	Provided Detention Volume
			4.29	1.51	6.48		
69.75	(PAV)	4.11				1.98	Provided Treatment Volume
			4.05	0.49	1.98		
69.26	(NWL)	3.99				0.00	
			2.59	3.76	9.72		
65.50	Pond Bottom	1.18				9.72	Permanent Pool Volume
			0.00	0.00	0.00		

Required Detention Volume for Open Basins (25YR/24HR) = 8.35 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	4.17 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.93 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.86 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 2			
POND/NODE DESIGNATION:	Existing POND C	**MADE BY:**	JDZ	11/07/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	12/11/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	4.37	437.00
			TOTALS	**4.37**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Impervious (Sidwalk)	N/A	N/A	98	13.00	1273.61
			TOTALS	**13.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business Areas (85% impervious)	N/A	N/A	95	9.81	931.95
Commercial and Business Areas (85% impervious)	N/A	N/A	94	1.41	132.54
Residential (1/4 acre)	N/A	N/A	83	0.22	18.26
Residential (1/2 acre, 25% Impervious)	N/A	N/A	80	0.82	65.60
Industrial	N/A	N/A	93	0.87	80.91
Median	N/A	N/A	79	1.29	101.91
Added Area From Addendum	N/A	N/A	94	1.46	137.24
			TOTALS	**15.88**	
PERVIOUS AREAS					
Open Spaces (Good Condition, grass cover on 75% of the area)		D	80	1.34	107.20
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	1.49	110.26
Open Spaces (Fair Condition, grass cover on 75% of the area)		C	79	3.19	252.01
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	0.77	56.98
Open Spaces (Good Condition, grass cover on 75% of the area)		C	74	2.43	179.82
			TOTALS	**9.22**	

Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**17.37**	**TOTAL BASIN AREA**	**42.47**	**COMPOSITE CN**	**86.64**
TOTAL DCIA	**40.89%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

Required Detention Volume for Open Basins (25YR/24HR) P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
		**From App ID 29402 (Permit#12854)	**COMPOSITE CN**		**92.76** **
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.78	7.94	**28.09**
SWFWMD	100-year / 24-hour	12.50	0.78	11.61	**41.09**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 2	**MADE BY:**	JDZ	11/07/2025
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND C	**CHECKED BY:**	JF	12/11/2025

Water Quality

Total Basin Area =	42.47	ac	
Pond Area at NWL =	4.37	ac	
Existing Impervious Area =	24.96	ac	* Per permit page 274

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft *From Permit page 276

B. 1.0 " Over Total Impervious Area = 2.08 Ac-Ft

Required PAV = **2.08** Ac-Ft

Water Quantity

Existing Provided Detention Volume= 12.61 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
73.00	Outside Berm	5.27				20.79
			4.82	1.40	6.75	
71.60	Inside Berm	4.37				14.04
		.	4.34	0.33	1.43	
71.27	DHW/ATT	4.30				12.61
			4.03	2.57	10.37	
68.70	(PAV)	3.77				2.24
			3.71	0.56	2.08	
68.14	NWL/SHW	3.65				0.00
			2.60	-4.64	(12.06)	
63.50	Pond Bottom	1.55				(12.06)

Required Detention Volume for Open Basins (25YR/24HR)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 2			**DATE**
POND/NODE DESIGNATION:	SMF 2D	**MADE BY:**	JDZ	11/07/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	12/11/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond C	N/A	N/A	100	1.39	139.40
Proposed Existing Pond C	N/A	N/A	100	5.15	515.00
Litoral Zone Water	N/A	N/A	100	1.69	
			TOTALS	**8.23**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Roadway (Travel Lanes)	N/A	N/A	98	17.03	1668.94
			TOTALS	**17.03**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Commercial and Business (85% impervious)	N/A	N/A	98	3.77	369.46
Residential (Average Lot Size: 1/2 acre)	N/A	N/A	94	0.00	0.00
Sidewalks	N/A	N/A	98	2.64	258.72
Railroad (Gravel)	N/A	N/A	89	0.34	30.37
			TOTALS	**6.75**	
PERVIOUS AREAS					
Open Spaces Grass Good condition: grass cover on 75% or more of the area	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	19.50	1443.00
Open Spaces Grass Good condition: grass cover on 75% or more of the area Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	1.25	92.50
Open Spaces Grass Good condition: grass cover on 75% or more of the area Pond Offsite	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	A/D	74	0.74	54.76
			TOTALS	**21.49**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**25.26**	**TOTAL BASIN AREA**	**53.51**	**COMPOSITE CN**	**79.63**
TOTAL DCIA	**47.22%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE Required Detention Volume for Open Basins (25YR/24HR)

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**85.45**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.70	7.05	**31.44**
SWFWMD	100-year / 24-hour	12.50	1.70	10.67	**47.56**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 2	**MADE BY:**	JDZ	11/07/2025
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 2D	**CHECKED BY:**	JF	12/11/2025

Water Quality

Total Basin Area =	53.51	ac
Pond Area at NWL =	8.23	ac
Total Impervious Area =	23.78	ac

Conservative approach use by providing a PAV volume equal to the existing permitted volume, as the proposed condition is less than the pre-condition.

A. Existing Permitted Water Quality PAV = **2.24** Ac-Ft

B. 1.0 " Over Total Impervious Area = 1.98 Ac-Ft
Required PAV = **1.98** Ac-Ft
Provided PAV = **2.24** Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**3.35**	**ac-ft.**
Pre Att. Volume	**12.61**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**15.96**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
73.00	Outside Berm	8.89				35.10	
			8.20	1.40	11.47		
71.60	Inside Berm	7.50				23.63	
			7.30	1.05	7.66		
70.55	DHW/ATT (25yr/24hr)	7.09				15.97	Provided Detention Volume
			6.70	2.05	13.73		
68.50	(PAV)	6.30				2.24	Provided Treatment Volume
			6.23	0.36	2.24		
68.14	(NWL)	6.16				0.00	
			5.37	-4.64	(24.90)		
63.50	Pond Bottom	4.57				(24.90)	Permanent Pool Volume

Required Detention Volume for Open Basins (25YR/24HR) = 15.96 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	7.98 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.99 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.98 Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 2 QUASI EQUIVALENT			**DATE**
POND/NODE DESIGNATION:	N/A	**MADE BY:**	RS	11/12/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	11/14/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	0.00	0.00
			TOTALS	**0.00**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Impervious (Sidewalk)	N/A	N/A	98	0.24	23.52
Pavement	N/A	N/A	98	1.48	145.04
			TOTALS	**1.72**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
N/A	N/A	N/A	N/A	N/A	
			TOTALS	**0.00**	
PERVIOUS AREAS					
N/A	N/A	N/A	N/A	N/A	
			TOTALS	**0.00**	

Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**1.72**	**TOTAL BASIN AREA**	**1.72**	**COMPOSITE CN**	**0.00**
TOTAL DCIA	**100.00%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**98.00**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.20	8.57	**1.23**
SWFWMD	100-year / 24-hour	12.50	0.20	12.26	**1.76**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Proposed BASIN 2 QUASI EQUIVALENT			**DATE**
POND/NODE DESIGNATION:	N/A	**MADE BY:**	RS	11/12/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JDZ	11/14/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond	N/A	N/A	100	0.00	0.00
			TOTALS	**0.00**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Pavement	N/A	N/A	98	0.97	95.06
			TOTALS	**0.97**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Impervious (Sidewalk)	N/A	N/A	98	0.13	12.74
			TOTALS	**0.13**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)		D	84	0.78	65.52
			TOTALS	**0.78**	

Per SWFWMD ERP Permit App ID. 29402 (Permit #: 12854)

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**0.97**	**TOTAL BASIN AREA**	**1.88**	**COMPOSITE CN**	**86.00**
TOTAL DCIA	**51.60%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**92.19**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	0.85	7.87	**1.23**
SWFWMD	100-year / 24-hour	12.50	0.85	11.54	**1.81**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 3			
POND/NODE DESIGNATION:	Existing POND B	**MADE BY:**	KJ	11/07/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond B NWL	N/A	N/A	100	1.88	188.00
			TOTALS	**1.88**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	9.40	921.08
			TOTALS	**9.40**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	2.85	279.00
			TOTALS	**2.85**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	11.00	924.28
Commercial (Permit history not verified, use open space for PSR)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5	A/D	84	9.34	784.56
			TOTALS	**20.34**	

Information of Ex. Pond B from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.28**	**TOTAL BASIN AREA**	**34.47**	**COMPOSITE CN**	**85.72**
TOTAL DCIA	**32.72%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**89.85**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	1.13	7.58	**21.76**
SWFWMD	equired Detention Volume for Open Basins (25YR/24HF	12.50	1.13	11.24	**32.28**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 3	**MADE BY:**	KJ	11/07/2025
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing POND B	**CHECKED BY:**	JF	11/21/2025

Water Quality

Total Basin Area =	34.47	ac*
Pond Area at NWL =	1.88	ac*
Total Impervious Area =	12.25	ac*

A.	1.0	" Over Total Impervious Area =	1.02	Ac-Ft*
		Required PAV =	**1.02**	Ac-Ft*
		Provided PAV =	**1.05**	Ac-Ft*

Water Quantity

Provided Att. Volume=	**0.17**	**ac-ft.***

Stage Storage Calculations*

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
72.20	Outside Berm	2.64				7.85
			2.43	0.70	1.70	
71.50	Inside Berm	2.22				6.15
			2.14	1.47	3.14	
70.03	DHW/ATT (25yr/24hr)	2.05				3.01
			2.00	0.98	1.96	
69.05	(PAV)	1.94				1.05
			1.91	0.55	1.05	
68.50	(NWL)	1.88				0.00
			1.35	-2.93	(3.96)	
65.57	Top of Deep Pool	0.82				(3.96)
			0.67	-5.07	(3.37)	
60.50	Pond Bottom	0.51				(7.33)

* (Information from permit #: 43-12854)

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 3			**DATE**
POND/NODE DESIGNATION:	SMF 3D	**MADE BY:**	KJ	11/10/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Proposed Pond SMF 3A NWL	N/A	N/A	100	3.59	359.00
			TOTALS	**3.59**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	13.28	1301.10
			TOTALS	**13.28**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	1.84	180.32
			TOTALS	**1.84**	
PERVIOUS AREAS					
Open Spaces (Fair Condition, grass cover on 50%-75% of the area)	Adamsville fine sand, 0 to 2 percent slopes - 11 Basinger, Holopaw, and Samsula soils, depressional - 5 Smyrna fine sand - 21	A/D	84	18.47	1551.77
			TOTALS	**18.47**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**16.87**	**TOTAL BASIN AREA**	**37.18**	**COMPOSITE CN**	**85.27**
TOTAL DCIA	**45.36%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**91.24**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.96	7.74	**23.99**
SWFWMD	100-year / 24-hour	12.50	0.96	11.42	**35.37**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 3	**MADE BY:**	KJ	11/07/2025
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 3D	**CHECKED BY:**	JF	11/21/2025

Water Quality

Total Basin Area =	37.18	ac
Pond Area at NWL =	3.59	ac
Total Impervious Area =	15.12	ac

A. Existing Permitted Water Quality PAV =			**1.05**	Ac-Ft
B.	1.0	" Over Total Impervious Area =	1.26	Ac-Ft
		Required PAV =	**1.26**	Ac-Ft
		Provided PAV =	**2.05**	Ac-Ft

Water Quantit

Post V(R)- Pre V(R) =	**2.23**	**ac-ft.**
Pre Att. Volume (Ex. Ponds B1)	**3.01**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**5.24**	**ac-ft.**

Stage Storage Calculations

	ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
	72.00	Outside Berm	5.57				15.29	
				5.08	0.97	4.93		
	71.03	Inside Berm	4.59				10.36	
				4.39	1.00	4.39		
it	70.03	DHW/ATT (25yr/24hr)	4.20				5.97	Provided Detention Volume
				4.00	0.98	3.92		
	69.05	(PAV)	3.81				2.05	
				3.70	0.55	2.05		
it	68.50	(NWL)	3.59				0.00	
				3.25	-2.93	(9.49)		
	65.57	Top of Deep Pool	2.90				(9.49)	
				2.61	-5.07	(13.23)		
	60.50	Pond Bottom	2.32				(22.73)	

Required Detention Volume for Open Basins (25YR/24HR)	=	5.24	Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.62	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.63	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	1.26	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 4			
POND/NODE DESIGNATION:	Existing FDOT POND A	**MADE BY:**	JF	11/14/25
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	DP	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing FDOT Pond A NWL	N/A	N/A	100	4.23	423.00
			TOTALS	**4.23**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Treated)	N/A	N/A	98	7.74	758.52
			TOTALS	**7.74**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Sidewalks (Treated)	N/A	N/A	98	0.45	44.10
			TOTALS	**0.45**	
PERVIOUS AREAS					
Open Spaces, Fair Condition (Grass cover on 50%-75% of the area)	Basinger, Holopaw, and Samsula soils, depressional - 5 Adamsville fine sand, 0 to 2 percent slopes - 11 Samsula muck, frequently ponded, 0 to 1 percent slopes - 52	A/D	84	2.55	214.20
Residential (1/8 acres or less)	Adamsville fine sand, 0 to 2 percent slopes-11	A/D	92	1.88	172.96
Open Spaces, Good Condition (Grass cover on 75% of the area)	Zolfo fine sand, 0 to 1 percent slopes - 61	A	39	0.02	0.78
			TOTALS	**4.45**	

Information of Ex. Pond A is from SWFWMD ER Permit #: 43-12854.

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**11.97**	**TOTAL BASIN AREA**	**16.87**	**COMPOSITE CN**	**88.17**
TOTAL DCIA	**70.95%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**95.65**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD (NOAA)	25-year / 24-hour	8.80	0.46	8.28	**11.64**
SWFWMD (NOAA)	100-year / 24-hour	12.50	0.46	11.97	**16.83**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 4	**MADE BY:**	YW	4/25/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Existing FDOT POND A	**CHECKED BY:**	JD	6/6/2024

Water Quality

Total Basin Area =	16.87	ac*
Pond Area at NWL =	4.23	ac*
Total Impervious Area =	8.19	ac*

A.	1.0	" Over Total Impervious Area =	0.68	Ac-Ft*
		Required PAV =	**0.68**	Ac-Ft*
		Provided PAV =	**0.85**	Ac-Ft*

Water Quantity

Provided Att. Volume=	**3.95**	**ac-ft.***

Stage Storage Calculations*

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
71.40	Outside Berm	5.18				13.38
			4.74	0.80	3.79	
70.60	Inside Berm	4.30				9.59
			4.17	1.35	5.63	
69.25	DHW/ATT (25yr/24hr)	4.05				3.95
			3.97	0.78	3.10	
68.47	(PAV)	3.90				0.85
			3.88	0.22	0.85	
68.25	(NWL)	3.86				0.00
			2.94	-2.25	(6.62)	
66.00	Pond Bottom	2.02				(6.62)

*** (Information from permit #: 43-12854)**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN 4			**DATE**
POND/NODE DESIGNATION:	SMF 4D	**MADE BY:**	JF	11/14/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	DP	11/21/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Proposed Pond	N/A	N/A	100	4.23	423.00
			TOTALS	**4.23**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Proposed Roadway (Treated)	N/A	N/A	98	7.84	768.32
			TOTALS	**7.84**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Proposed Sidewalks/Pavement (Treated)	N/A	N/A	98	0.84	82.32
			TOTALS	**0.84**	
PERVIOUS AREAS					
Open Spaces, Fair Condition (Grass cover on 50%-75% of the area)	Basinger, Holopaw, and Samsula soils, depressional - 5 Adamsville fine sand, 0 to 2 percent slopes - 11 Samsula muck, frequently ponded, 0 to 1 percent slopes - 52	A/D	84	5.02	421.68
Open Spaces, Good Condition (Grass cover on 75% of the area)	Zolfo fine sand, 0 to 1 percent slopes - 61	A	39	0.08	3.12
			TOTALS	**5.10**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**12.07**	**TOTAL BASIN AREA**	**18.01**	**COMPOSITE CN**	**85.37**
TOTAL DCIA	**67.02%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**94.31**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.80	0.60	8.11	**12.18**
SWFWMD	100-year / 24-hour	12.50	0.60	11.80	**17.72**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	BASIN 4	**MADE BY:**	JF	11/14/2025
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 4D	**CHECKED BY:**	DP	11/21/2025

Water Quality

Total Basin Area =	18.01	ac
Pond Area at NWL =	4.23	ac
Total Impervious Area =	8.68	ac

A.	1.0	" Over Total Impervious Area =	0.72	Ac-Ft
		Required PAV =	**0.72**	Ac-Ft
		Provided PAV =	**0.86**	Ac-Ft

Water Quantity

Post V(R)- Pre V(R) =	**0.54**	**ac-ft.**
Pre Att. Volume (Ex. FDOT Pond A)=	**3.95**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume=	**4.50**	**ac-ft.**
Provided Att. Volume=	**4.53**	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
71.40	Outside Berm	6.55				16.11
			5.98	0.80	4.78	
70.60	Inside Berm	5.41				11.33
			5.07	1.34	6.80	
69.26	DHW/ATT (25yr/24hr)	4.74				4.53
			4.53	0.81	3.67	
68.45	(PAV)	4.33				0.86
			4.28	0.20	0.86	
68.25	(NWL)	4.23				0.00
			3.94	-2.25	(8.87)	
66.00	Pond Bottom	3.65				(8.87)

Required Detention Volume for Open Basins (25YR/24HR) = 4.50 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	2.25 Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.36 Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.72 Ac-Ft

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN 5			**DATE**
POND/NODE DESIGNATION:	*Pond P15E2, P16E2, P18E2, P19E2	**MADE BY:**	RS	11/11/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JDZ	11/11/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond NWL	N/A	N/A	100	0.15	15.00
			TOTALS	**0.15**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	2.39	234.22
Existing Roadway (Other Impervious)	N/A	N/A	98	0.00	0.00
			TOTALS	**2.39**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	0.00	0.00
Existing Roadway (Other Impervious)	N/A	N/A	98	1.43	140.14
			TOTALS	**1.43**	
PERVIOUS AREAS					
Open Spaces: Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	C	74	1.67	123.58
Offsite (Grass Cover > 75%)	Mostly poorly drained sandy soils	D	80	2.78	222.40
			TOTALS	**4.45**	

Per SWFWMD ERP Permit App. 16251.018 (App: 712877)

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**2.54**	**TOTAL BASIN AREA**	**8.42**	**COMPOSITE CN**	**82.67**
TOTAL DCIA	**30.17%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**87.33**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.45	7.28	**5.11**
SWFWMD	100-year / 24-hour	12.50	1.45	10.91	**7.66**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study	FDOT		AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	Existing BASIN 5	**MADE BY:**	JF	04/03/2024
BASIN ANALYSIS (PRE/POST):	PRE			
POND DESIGNATION:	Pond P15E2, P16E2, P18E2, P19E2	**CHECKED BY:**	JDZ	11/11/2025

Water Quality

Total Basin Area =	8.42	ac	
Pond Area at NWL =	0.15	ac	
Existing Impervious Area =	1.92	ac	Based on permitted criteria in Permit 43-16251-18 (2015), permit has inconsistent data, used info on sheet #405.CN sheet uses info on permit sheet #387.

A. Existing Permitted Water Quality PAV = **0.16** Ac-Ft Based on permitted criteria in Permit 43-16251-0 (1999) & 43-16251-18 (2015)

B. 1.0 " Over Total Impervious Area = 0.16 Ac-Ft

Required PAV = 0.16 Ac-Ft

Water Quantity

Existing Provided Detention Volume= 0.71 ac-ft. Per Permit 43-16251-18 - Attenuation Volume Provided

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
67.40	TOB	0.12					P19E2 is lowest TOB Per 2015 Permit 43-16251-18
			0.13	0.21	0.03		
67.19	DHW/ATT	0.13				0.71	P19E2 is highest DHW(67.19) Per 2015 Permit 43-16251-18
			0.21	2.29	0.49		
64.90	Weir Elevation	0.29				0.23	
			0.28	0.25	0.07		
64.65	(PAV)	0.27				0.16	
			0.24	0.65	0.16		
64.00	(NWL)	0.21				0.00	
			0.11	-64.00	(6.72)		

Required Detention Volume for Open Basins (25YR/24HR)

EAST PINELLAS ANCLOTE WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	PROP BASIN 5			**DATE**
POND/NODE DESIGNATION:	SMF 5D	**MADE BY:**	RS	11/15/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JDZ	11/15/2025

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
Existing Pond NWL	N/A	N/A	100	0.15	15.00
			TOTALS	**0.15**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	2.70	264.60
Existing Roadway (Other Impervious)	N/A	N/A	98	0.00	0.00
			TOTALS	**2.70**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Existing Roadway (Travel Lane)	N/A	N/A	98	0.00	0.00
Existing Roadway (Other Impervious)	N/A	N/A	98	1.40	137.20
			TOTALS	**1.40**	
PERVIOUS AREAS					
Open Spaces: Good condition: grass cover on 75% or more of the area	Mostly poorly drained sandy soils	C	74	1.86	137.64
PROPOSED POND P1E2 SITE	Myakka-Myakka, wet, fine sands, 0 to 2 % slopes	D	80	1.05	84.00
Offsite (Grass Cover > 75%)	Mostly poorly drained sandy soils	D	80	2.77	221.60
			TOTALS	**5.68**	

Per SWFWMD ERP Permit App. 16251.018 (App: 712877)

ICPR DATA					
* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**2.85**	**TOTAL BASIN AREA**	**9.93**	**COMPOSITE CN**	**81.98**
TOTAL DCIA	**28.70%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.61**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.55	7.19	**5.95**
SWFWMD	100-year / 24-hour	12.50	1.55	10.82	**8.95**

US41/SR54 PD&E Study				
PROJECT TITLE:	US41/SR54 PD&E Study			AECOM
PROJECT NUMBER:	60596589			**DATE**
BASIN DESIGNATION:	PROP BASIN 5	**MADE BY:**	JDZ	11/14/2025
BASIN ANALYSIS (PRE/POST):	POST			
POND DESIGNATION:	SMF 5D	**CHECKED BY:**	JF	01/09/2025

Water Quality

Total Basin Area =	9.93	ac
Pond Area at NWL =	0.52	ac
Total Impervious Area =	4.10	ac

A.	Existing Permitted Water Quality PAV =		**0.16**	Ac-Ft	Based on permitted criteria in Permit 43-16251-0 (1999) & 43-16251-18 (2015)
B.	1.0	" Over Total Impervious Area =	0.34	Ac-Ft	
		Required PAV =	**0.34**	Ac-Ft	Total required PAV for entire basin.
		Provided PAV =	**0.52**	Ac-Ft	PAV (P15E2, P16E2, P18E2, P19E2) + PAV SMF 5D

Water Quantity

Post V(R)- Pre V(R) =	**0.92**	**ac-ft.**
Pre Att. Volume ('Pond P13E2, P15E2, P16E2, P18E2, P19E2)	**0.71**	**ac-ft.**
Required Att. Volume (Delta V(R) + Pre Att. Volume	**1.63**	**ac-ft.**
Required SMF 5D Att. Volume=Required ATT volume-Pre ATT volume	0.92	**ac-ft.**

Stage Storage Calculations

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)	
70.00	Outside Berm	0.96				3.56	
			0.82	1.50	1.22		
68.50	Inside Berm	0.67				2.34	
			0.59	2.35	1.39		
66.15	DHW/ATT	0.51				0.95	Provided Detention Volume
			0.47	1.25	0.59		
64.90	(PAV)	0.43				0.36	Provided Treatment Volume
			0.40	0.90	0.36		
64.00	NWL/ Pond Bottom	0.37				0.00	
			0.19	-64.00	(11.84)		

Required Detention Volume for Open Basins (25YR/24HR) = 0.92 Ac-Ft

Bleed Down Requirements

1/2 of the required detention volume (w/in 24 hrs)	=	0.46	Ac-Ft
1/2 of the required treatment volume (w/in no less than 60 hrs)	=	0.17	Ac-Ft
Total required treament volume (w/in no less than 120 hrs)	=	0.34	Ac-Ft

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	Existing BASIN Village Lakes Center Drive			**DATE**
POND/NODE DESIGNATION:	N/A	**MADE BY:**	RS	11/21/2025
BASIN ANALYSIS (PRE/POST):	PRE	**CHECKED BY:**	JF	1/8/2026

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
N/A	N/A	N/A	N/A	N/A	
			TOTALS	**0.00**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
N/A	N/A	N/A			
			TOTALS	**0.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Pavement	N/A	N/A	98	0.57	55.86
			TOTALS	**0.57**	
PERVIOUS AREAS					
Open Spaces Good Condition: grass cover on 75% or more of the area	Sellers mucky loamy fine sand	A/D	80	0.02	1.60
Open Spaces Good Condition: grass cover on 75% or more of the area	Narcoossee fine sand, 0 to 2 percent slopes-26; Pomello fine sand, 0 to 5 percent slopes	A	39	0.14	5.46
			TOTALS	**0.16**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**0.00**	**TOTAL BASIN AREA**	**0.73**	**COMPOSITE CN**	**86.19**
TOTAL DCIA	**0.00%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.19**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.60	7.14	**0.43**
SWFWMD	100-year / 24-hour	12.50	1.60	10.76	**0.65**

CYPRESS CREEK WATERSHED				
PROJECT TITLE:	US41/SR54 PD&E			AECOM
PROJECT NUMBER:	60596589			
BASIN DESIGNATION:	BASIN Village Lakes Center Dr			**DATE**
POND/NODE DESIGNATION:	N/A	**MADE BY:**	RS	11/21/2025
BASIN ANALYSIS (PRE/POST):	POST	**CHECKED BY:**	JF	1/8/2026

BASIN RUNOFF CURVE NUMBER WORKSHEET

LAND-USE DESCRIPTION	SOIL NAME	SOIL GROUP	CN	AREA (ac)	PRODUCT
WATER SURFACE					
N/A	N/A	N/A	N/A	0.00	
			TOTALS	**0.00**	
DIRECTLY CONNECTED IMPERVIOUS AREA (DCIA)					
N/A	N/A	N/A	0	0	
			TOTALS	**0.00**	
NON-DIRECTLY CONNECTED IMPERVIOUS AREA (NDCIA)					
Pavement	N/A	N/A	98	0.57	55.86
			TOTALS	**0.57**	
PERVIOUS AREAS					
Open Spaces Good Condition: grass cover on 75% or more of the area	Sellers mucky loamy fine sand	A/D	80	0.02	1.60
Open Spaces Good Condition: grass cover on 75% or more of the area	Narcoossee fine sand, 0 to 2 percent slopes-26; Pomello fine sand, 0 to 5 percent slopes	A	39	0.14	5.46
			TOTALS	**0.16**	

ICPR DATA

* BASED ON TOTAL DRAINAGE AREA		* BASED ON TOTAL DRAINAGE AREA		* BASED ON NDCIA AND PERVIOUS AREAS	
TOTAL DCIA	**0.00**	**TOTAL BASIN AREA**	**0.73**	**COMPOSITE CN**	**86.19**
TOTAL DCIA	**0.00%**				

ESTIMATE OF RUNOFF VOLUME

PROCEDURE TO DETERMINE RUNOFF VOLUME IS BASED ON THE SCS EQUATION AND IS AS FOLLOWS:

1) DETERMINE SOIL STORAGE - S ----------> S = (1000 / CN) - 10 (inches)

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

P = rainfall in inches

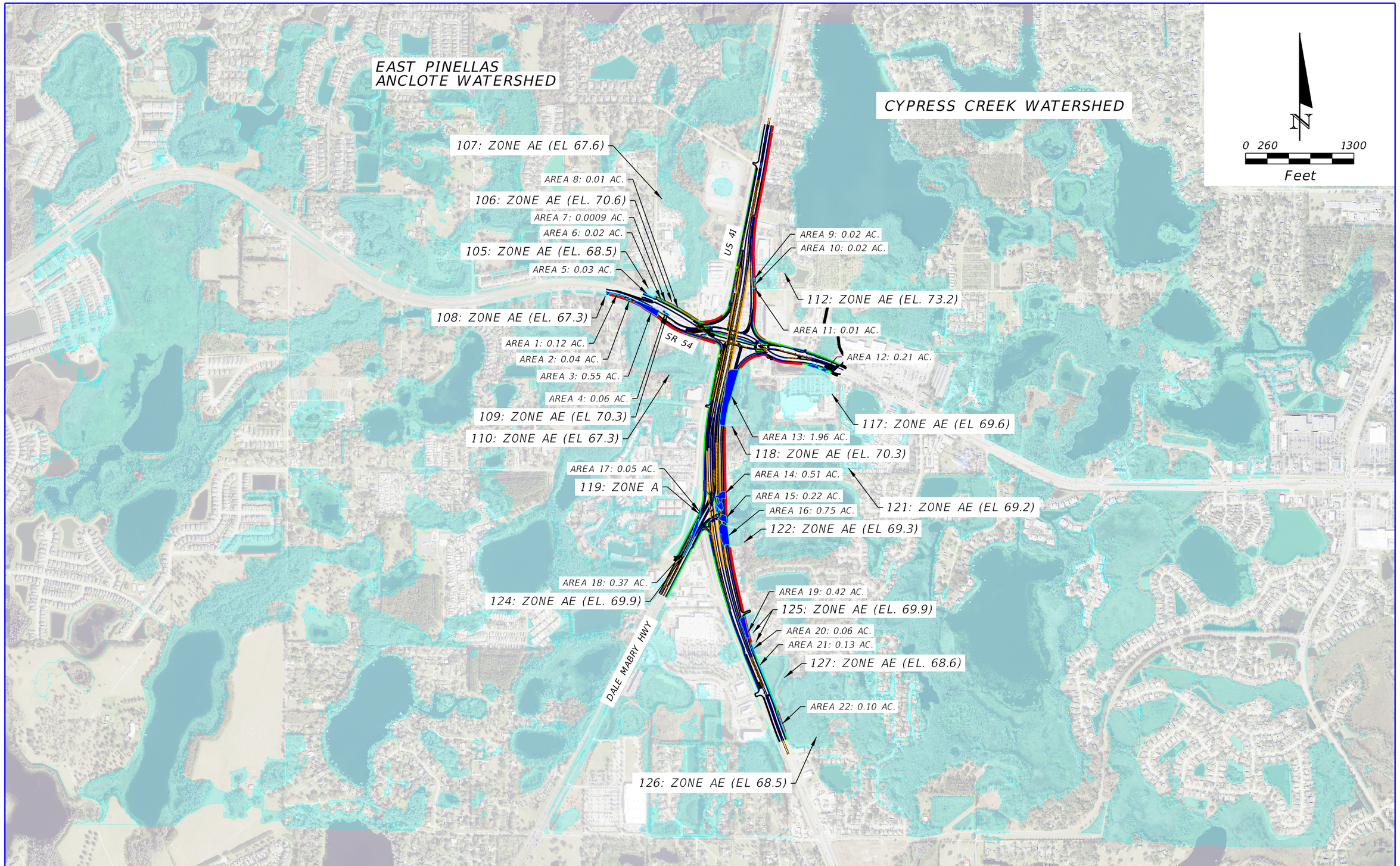
3) DETERMINE RUNOFF VOLUME - V(R) ----------> V(R) = (R / 12)*BASIN AREA (acres-feet)

CALCULATION TABLE

			BASED ON TOTAL DRAINAGE AREA		
			COMPOSITE CN		**86.19**
Agency	**Design Storm Frequency**	**P (in)**	**S (in)**	**R (in)**	**V(R) (ac-ft)**
SWFWMD	25-year / 24-hour	8.81	1.60	7.14	**0.43**
SWFWMD	100-year / 24-hour	12.50	1.60	10.76	**0.65**

APPENDIX 16

FLOODPLAIN IMPACT EXHIBIT & SUMMARY TABLE-DDI



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
FLOODPLAIN IMPACTS DDI

SHEET NO.

F.A.C. NOTE

c:\pwworking\usfl\dms25530\DRMPRD_Floodplain Impacts Sheet_DDI.dgn : FLOODPLAIN IMPACTS [SHEET]
SadakaR 1/12/2026 12:29:01 PM

US41/SR 54 PD&E

MADE BY: RS DATE: 11/17/2025
CHECKED BY: JF DATE: 1/6/2025
CALCULATIONS FOR: SUMMARY TABLE OF FLOODPLAIN IMPACTS-DDI

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
108: (AE, 67.3)	1	0.12
	2	0.04
	3	0.55
	sub-total:	0.70

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
122: (A)	16	0.75
	sub-total:	0.75

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
109: (AE, 70.3)	4	0.06
	sub-total:	0.06

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
119: (A)	17	0.05
	sub-total:	0.05

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
105: (AE, 68.5)	5	0.03
	sub-total:	0.03

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
124: (AE, 69.9)	18	0.37
	sub-total:	0.37

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
107: (AE, 67.6)	6	0.02
	7	0.0009
	sub-total:	0.02

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
125: (AE, 69.9)	19	0.42
	20	0.06
	sub-total:	0.48

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
106: (AE, 70.6)	8	0.01
	sub-total:	0.01

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
127: (AE, 68.6)	21	0.13
	sub-total:	0.13

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
112: (AE, 73.2)	9	0.02
	10	0.002
	11	0.01
	sub-total:	0.03

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
126: (AE, 68.5)	22	0.10
	sub-total:	0.10

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
117: (AE, 69.6)	12	0.21
	sub-total:	0.21

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
118: (AE, 70.3)	13	1.96
	sub-total:	1.96

Floodplain # (Zone - Elevation - ft NAVD)	Floodplain Impact #	Floodplain Impact (Acres)
121: (AE, 69.2)	14	0.51
	15	0.22
	sub-total:	0.72

Total Impact for US41/SR54: 5.63 acres

APPENDIX 17

FLOODPLAIN COMPENSATION SITE SUMMARY TABLE-DDI

US41/SR 54 PD&E

MADE BY: RS DATE: 12/18/2025
CHECKED BY: JF DATE: 12/19/2025
CALCULATIONS FOR: FLOODPLAIN COMPENSATION SITES SUMMARY-DDI

Floodplain Area (Zone - Elevation - ft NAVD)	Floodplain Compensation Pond	FPC Site Station Range	Side	Floodplain Compensation Area (ac)	Floodplain Compensation Depth (ft)	Floodplain Compensation Volume (ac-ft)	Floodplain Compensation Volume (CY)	REMARKS
(AE, 70.6)	FPC 106D	1456+31 to 1456+58*	RT	0.02	0.98	0.068	109.71	Preferred FPC Site
(AE, 69.6)	FPC 117D	1479+37 to 1480+83*	LT	0.23	1.46	0.337	543.69	Preferred FPC Site
(AE, 67.6)	FPC 107D	2640+00 to 2695+00**	LT	0.07	0.98	0.068	109.71	Preferred FPC Site
(AE,73.2)	FPC 112D	2637+40 to 2638+26**	RT	0.05	0.98	0.046	74.21	Preferred FPC Site
(AE, 70.3)	FPC 118D	1467+90 to 1471+62*	RT	2.14	2.16	4.62	7456.83	Preferred FPC Site
(AE, 70.3)	FPC 109D	1456+74 to 1457+85*	RT	0.06	2.16	0.14	219.41	Preferred FPC Site
(AE, 69.9) & (A)	FPC 119D	2599+89 to 2598+00**	LT	0.43	1.00	0.43	685.67	Preferred FPC Site
(AE, 69.9)	FPC 125D	2584+06 to 2582+49**	RT	0.49	1.65	0.80	1295.51	Preferred FPC Site
(AE, 68.5)	FPC 126D	2568+90 to 2568+45**	RT	0.15	0.25	0.04	58.08	Preferred FPC Site
(AE, 67.3)	FPC 110D	1460+69 to 1463+43*	RT	0.73	0.98	0.72	1159.99	Preferred FPC Site
(AE, 68.5)	FPC 105D	1449+34 to 1450+36*	LT	0.05	0.98	0.05	80.67	Preferred FPC Site

* CL. SR 54
** CL. US 41

APPENDIX 18

FLOODPLAIN COMPENSATION CALCULATIONS-DDI

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.14 to 69.6	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 117D	69.60 (Zone AE)	4029+32.	4030+71.	0.21	0.313	0.337	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 68.14 per Permit

100-Year Floodplain Compensation			
Compensation Site 117D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.14		0.218	
	1.46		0.337
69.60		0.244	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 69.62 to 70.60	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 106D	70.60 (Zone AE)	3007+00.	3009+23.	0.02	0.015	0.016	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 69.62 per Soil Survey Website, distance to water table is 0.984 feet

100-Year Floodplain Compensation			
Compensation Site 106D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
69.62		0.01	
	0.984		0.016
70.60		0.02	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 66.62 to 67.60	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 107D	67.60 (Zone AE)	612+55.	613+48.	0.02	0.015	0.068	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 66.62 per Soil Survey Website, distance to water table is 0.984 feet

100-Year Floodplain Compensation			
Compensation Site 107D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.62		0.06	
	0.984		0.068
67.60		0.08	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 72.22 to 73.20	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 112D	73.20 (Zone AE)	707+49.	708+39.	0.03	0.029	0.046	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 72.22 per Soil Survey Website, distance to water table is 0.984 feet, SHW estimated to be 0.984' below FPE

100-Year Floodplain Compensation			
Compensation Site 112D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
72.22		0.04	
	0.984		0.046
73.20		0.05	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.14 to 70.30	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 118D	70.30 (Zone AE)	3020+21.	3029+00.	1.96	4.234	4.622	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 68.14 per Permit

100-Year Floodplain Compensation			
Compensation Site 118D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.14		2.05	
	2.16		4.622
70.30		2.23	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.14 to 70.30	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 109D	70.30 (Zone AE)	3008+58.	3009+88.	0.06	0.130	0.136	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 68.14 per Permit

100-Year Floodplain Compensation			
Compensation Site 109D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.14		0.04	
	2.16		0.136
70.30		0.08	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Compensation Site	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.9 to 69.9	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 119D	69.9 (Zone AE) & Zone A	506+40.	514+00.	0.42	0.420	0.425	Y

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW assumed to be 1' below Zone AE Elev. Soil (5) survey states depth to water table is 6-18 inches.

100-Year Floodplain Compensation			
Compensation Site FPC 119D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.9		0.400	
	1		0.425
69.9		0.450	

Compensation area estimated based on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.25 to 69.9	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 125D	69.90 (Zone AE)	2015+11.3	2020+82.86	0.48	0.794	0.803	YES

*Lower bound elevation for floodplain impact area obtained from permit 43-12854-1 SHW for Pond A.
SHW = 68.25 per Permit

100-Year Floodplain Compensation			
Compensation Site 125D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.25		0.439	
	1.65		0.803
69.90		0.534	

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 68.25 to 68.5	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 126D	68.5 (Zone AE)	2002+53.23	2006+40.95	0.13	0.033	0.036	YES

*Lower bound elevation for floodplain impact area obtained from permit 43-12854-1 SHW for Pond A.
SHW = 68.25 per Permit

100-Year Floodplain Compensation			
Compensation Site 126D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
68.25		0.140	
	0.25		0.036
68.50		0.148	

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 66.32 to 67.30	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 110D	67.30 (Zone AE)	4010+68.	4012+86.	0.70	0.691	0.719	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 66.32 per Soil Survey Website, distance to water table is 0.984 feet, SHW estimated to be 0.984' below FPE

100-Year Floodplain Compensation			
Compensation Site 110D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
66.32		0.696	
	0.984		0.719
67.30		0.764	

Compemsation area estimated baed on topo.

100-Year Floodplain Impact & Compensation

Zone Name	Flood EL. (feet, NAVD)	Start Station	End Station	Impact Area (ac) 67.52 to 68.50	Impact Volume (ac-ft)	Floodplain Compensation (ac-ft)	If meet FPC requirement (Y/N)
FPC 105D	68.50 (Zone AE)	3004+19.	3005+15.	0.03	0.026	0.050	YES

*Lower bound elevation for floodplain impact area estimated based on lowest topo elevation within impact area boundaries.
SHW = 67.50 per Soil Survey Website, distance to water table is 0.984 feet

100-Year Floodplain Compensation			
Compensation Site 105D			
Elevation (ft)	Depth (ft)	Area of Compensation (ac)	Volume of Compensation (ac-ft)
67.52		0.040	
	0.984		0.050
68.50		0.062	

Compensation area estimated based on topo.

APPENDIX 19

SUPPORTING DOCUMENTATION

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 400962

Date:	March 13, 2014
Time:	10:00 AM
Project Name:	FDOT- SR 54 & US41- Interchange Improvements
Attendees:	Richard Alt; Blake Meinecke; Robert Johnson, Robert.e.johnson@urs.com; Chris Dailey Chris.dailey@rsandh.com, Cynthia Grizzle, Cynthia.grizzle@rsandh.com

County:	Pasco Co.	**Sec/Twp/Rge:**	25/26/18
Total Land Acreage:	100+	**Project Acreage:**	100+ acres

Prior On-Site/Off-Site Permit Activity:

- Existing roadway - 43012854.000

Project Overview:

- SR 54 flyover US 41
- 2 scenarios 3A (2.82 acres wetland impacts, 104 acres project) and 3C (0.45acre impact, 88 acres project)

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.)

- Include limits of wetlands and surface waters on plans, will review wetland limits as part of application review.
- Include limits of proposed wetland/surface water impacts on plans.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Potential to use two different mitigation banks to offset proposed functional losses, or provide cumulative impact analysis.
- Review potential mitigation area located in “Denim Pond” and address impacts to it, if applicable.

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

- WBIDs 1463O – not impaired and 1451D1 – not impaired
- Floodplain on site – preliminary revised flood maps available

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 site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable.

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

- Provide water quality treatment for required project area.
- 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, contract for sale, or easements.
- Provide appropriate O&M instructions.

Application Type and Fee Required:

- SWERP – Sections A, C and E of the ERP Application. 3A - $3,106.00, 3C - $2,798.00

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

•

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

Environmental Look Around (ELA) Meeting with SWFWMD

Date: 3/29/2024
Time: 2:00 pm
Location: Teams Meeting

Description: US41 and SR 54 Intersection PD&E

- Chris Kuzlo (SWFWMD, Chief Professional Engineer)
- Albert Gagne (SWFWMD, Environmental Regulation Coordinator)
- Rick Langlass (RS&H, Consultant PM)
- Douglas Reed (RS&H, Deputy PM)
- Jessica Lozado (RS&H, Environmental Specialist)
- Alexandria Gagne (RS&H, Environmental Specialist)
- Craig Fox (FDOT, PD&E PM)
- Eyra Cash (FDOT, Design PM)
- Omar Chebab (FDOT, Design PM)
- Jennifer Flores (AECOM)
- Dustin Perkins (AECOM)
- Marissa Bondoc (AECOM)

PD&E Overview-Rick Langlass

Concept Plans

- General improvement is a separated interchange with SR 54 going over US 41
- The lanes on the overpass will be a total of 4 lanes up and over, will stay up and go over the intersection at the Lowe's and Village Lakes Shopping Plaza
- Project includes two bridges
- Bike lanes and sidewalks in both directions

Schedule

- Currently in analysis and report writing
- Final approval and LDCA in late winter/early spring of 2025
- Department has a deign schedule for a 5-year work plan

Existing Drainage Conditions Exhibits-Jennifer Flores

Existing FDOT Pond Sites

- Chris states there are watershed studies in the area, and they follow the drainage boundaries
    - On the West side, the latest watershed study is the Anclote Conservation Effort is a pace watershed model. He will send a SharePoint link
    - On the East Side, Cypress Creek Pasco County watershed study was submitted June 2023 and he will have it available in the SharePoint

    - High water database includes flooding complaints, flooding photos, highwater marks used in watershed studies. He stated there are flooding issues and complaints all around this project. He will have it available in the SharePoint

- Dustin suggested we go through complaints and past design criteria for individual areas.
- On FDEP Water Not Attaining standards layer is nitrogen phosphorus for south branch Anclote River and Thomas Lake is flagged for not attaining standards
- Consult with Department of Environmental Protection for data on nutrient loading analysis for basins and water quality treatment criteria. There are two potential basins in our project that may need to be confirmed
- Shared by Chris: "The requirements in section 8.3 shall not apply to public transportation projects which have completed a PD&E Study prior to [effective date plus two years], or which are in the design or construction phases, as defined in FDOT's Project Development and Environment (PD&E) Manual1 as of [effective date]. For public transportation projects that have completed a PD&E Study or are in the design or construction phases, stormwater design and performance criteria in effect prior to [effective date] shall apply. The requirements of section 8.3 shall apply to public transportation projects commencing the PD&E study phase, as described in PD&E Manual, after [effective date]."

Floodplains

- No hydration issues in the area per Albert. There are a lot of regulatory conservation easements around the area but the one close to our project is at NE corner of US 41 and SR 54

Environmental Look Around (ELA) Meeting with Pasco County

Date: 3/29/2024
Time: 10:00 am
Location: Teams Meeting

Description: US41 and SR 54 Intersection PD&E

- Panos Kontses (Pasco County, Assistant County Engineer)
- Aurybel Rivero (Pasco County, PM for Utilities (water, wastewater, sewer)
- Elliot Shoberg (Pasco County, Engineering Public Works Manager)
- Jonah Mick (Pasco County, Environmental Manager)
- Melissa Charbonneau (Pasco County)-Not present
- Chris Hanning (Pasco County, Senior Roadway Engineer)
- Rick Langlass (RS&H, Consultant PM)
- Douglas Reed (RS&H, Consultant Deputy PM)
- Jessica Lozada (RS&H, Environmental Specialist)
- Alexandria Gagne (RS&H, Environmental Specialist)
- Craig Fox (FDOT, PD&E PM)
- Eyra Cash (FDOT, Design PM)
- Omar Chebab (FDOT, Design PM)
- Jennifer Flores (AECOM)
- Dustin Perkins (AECOM)
- Marissa Bondoc (AECOM)

PD&E Overview – Rick Langlass

- Three alternatives were recommended; SPUI alternative chosen with SR 54 over US 41
    - On and off ramps for SR 54
    - 4 lanes total up and over the intersection
    - 6 frontage lanes on SR 54
- Keeping 6 lanes on US 41, only providing turn lanes as needed

Typical Sections

- SR 54 West: 4 lanes elevated, frontage road with bike lane and sidewalk
- SR 54 East: 4 lanes elevated, frontage road with bike lane and sidewalk
- US 41 South: adding left and right turn lanes
- US 41 North: extending right turn lane

Concept Plans

- At the bridge, the sidewalks will stay adjacent to the ramps, will not go on the overpass
- Dale Mabry NB and US 41 NB intersection to be fully signalized
- 10 ft sidewalk for US 41 on West because there are currently no facilities and there are severe issues for bicycle safety
- Panos Kontses advised current commissioner is an advocate of shared-use paths and asked if there are plans to make the proposed sidewalks shared-use paths. Craig Fox advised that it was

not included in the design because they did not see shared-use paths in the County's Master Plan.

Schedule

- Public hearing is in October 2024
- LDCA and PD&E to be finished by early next year
- There is already funding for design
- Design phase can start (up to phase 2) before PD&E is complete

Existing Drainage Conditions Exhibits – Jennifer Flores

Existing FDOT Pond Sites

- Intersection has curb and gutter, storm sewer system and flows into FDOT pond sites. Flow from the ponds, discharges to nearby wetlands in Cypress Creek Watershed, to Hillsborough river
- West of intersection drains through a series of linear ponds to East Pinellas Anclote watershed
- Goal is to keep existing drainage patterns

Floodplains

- Old reports from 2015 show no major flooding

Pasco County Input

- Jonah mentioned Lake Padgett baffle box is being installed in FY 2025 and there are water quality concerns for residents. Planning to expand watershed and possibly doing a full watershed study of natural systems and water quality.
- Elliot mentioned that there are no big projects from public works department for the next 5 years in this area that he is aware of. Elliot will reach out to Agyei O. Eugene and Elliot E. Shoberg (Pasco County) to identify any proposed projects or see if there have been any flooding complaints.
- Aurybel will look into utility improvements (for water and wastewater) in the area and send over an email
- Rick said a utility assessment is being done in the area

MEETING MINUTES

Copies to:	Participants	**Date:**	July 15, 2024 **DRAFT**
Project:	SR45 (US41) @ SR54 from S of Intersection to N of Intersection	**Project No.:**	FPN: 419182-1-22-01
Meeting Place:	FDOT D7 Manatee Room & Microsoft Teams	**Meeting Date:**	June 21, 2024
		Meeting Time:	9:00 a.m.

Participants:

Craig Fox, FDOT
Eyra Cash, FDOT
Kirk Bogen, FDOT
Lisa Quinn, FDOT
Allison Conner, FDOT
Bill McTeer, FDOT
Omar Chehab, FDOT
Melissa Mulvaney, FDOT
Marcel Goss, FDOT
Rick Langlass, RS&H
Doug Reed, RS&H
Jennifer Flores, AECOM
Dustin Perkins, AECOM

Purpose: **Pond Selection Meeting**

This meeting is a follow up to the initial pond review meeting held on May 22, 2024. After introductions, FDOT PM noted the purpose of the meeting was to select preferred sites for pond and floodplain compensation (FPC) sites.

The review of pond sites started on the south end of US 41 corridor in Basin A. The south end of the project on US 41 has only minor impacts and can be accommodated with the existing drainage pond.

For Basin B, near the apex of US 41 and SR 597, there are three pond alternatives. The proposed ponds will work in coordination with existing Pond B. Pond B3 was recommended as preferred since it is adjacent to Pond B. An easement would be required for a portion of the parcel between Pond B and Pond B3. Ponds B1A and B1B would be combined as one alternative and would need to connect under US 41 to Pond B. Pond B2 would also need to cross SR 597 and US 41 to connect to the existing floodplain. FDOT staff noted that Pond B3 will have a higher right-of-way (ROW) cost than the other two pond alternatives. The consultant noted that the other two alternatives would have higher costs for piping the water under the railroad and US 41. Also, an easement would be needed for crossing the rail property. These costs will be documented in the Pond Siting Report (PSR). The PSR will also document the preferred alternative for this basin. For FPC

alternatives, the preferred alternative (FPC B1) is to expand the existing floodplain. This is located within the existing FDOT ROW.

At the east end of SR 54, Basin 2A, the preferred alternative is Pond 2A(1). It is located entirely within FDOT ROW. The other two alternatives, Pond 2A(2) and 2A(3) would impact private property. Similarly, the preferred FPC alternative is FPC 2A_A1. It is located entirely within FDOT ROW.

For Basin 1A, along SR 54, the preferred alternative is Pond 1A(2). It is located within a shopping plaza. Based on input from the previous meeting, the pond alternatives were moved to avoid impacts to an RV park on the south side of SR 54. The preferred alternative only takes a portion of the shopping center with the remaining portion still available for commercial use. Pond alternative 1A(1) impacts a self storage site. FDOT staff noted that this site would be very expensive due to paying for the relocation of every storage unit as well as paying for the relocation of the business. The preferred FPC sites are FPC 1A(1)_A2 and FPC Pond 1A_B2. These are also located in the same shopping plaza.

For Basin C, the preferred alternative is Pond C(1), C(1)A, and C(1)B. Pond C1 is an expansion of an existing FDOT pond. The other two sites are parcels that are impacted by the roadway improvements. The other alternatives impact a Duke energy power station or require crossing under the rail. The preferred FPC alternative is FPC_C A2. It is located within a parcel impacted by the roadway improvements.

For Basin D, along the north end of the project on US 41 has only minor impacts and can be accommodated with the existing drainage pond.

For Basin E1, the preferred alternative is Pond P1E1. This site is located within FDOT ROW and has no floodplain or wetland impacts. The other alternatives are located on private property. The preferred FPC site is FPC E1_B1 to address floodplain impacts of the roadway.

For Basin E2, the preferred alternative is Pond P1E2. The alternative impacts one parcel and has no floodplain or wetland impacts. Also, preferred FPC site FPC E2_C1 can also be included within this parcel. This alternative also avoids existing private infrastructure on the parcel. The other two pond alternatives (Pond P2E2 and Pond P3E2) impact two and six parcels, respectively.

Other preferred FPC sites for Basin E2 include FPC E2_D1, FPC E2_E1, and FPC E2_F1. These address floodplain impacts due to the roadway improvements. Sites FPC E2_D1 and FPC E2_E1 are located in parcels that are impacted by the roadway improvements. Site FPC E2_F1 is located on the property of a willing seller.

The consultant will provide a ROW impact table and figure to D7 to perform the ROW cost estimate.

The meeting concluded at approximately 10:00 a.m.
Respectfully submitted,

RS&H, INC.



Rick Langlass, PE
Project Manager
FL Cert. No. PE 62498

Attachments: Pond Siting Meeting Exhibit

X:\P\104-2490-000_US 41 at SR 54 INTERCHANGE PD&E\CORRESPONDENCE\Meeting Minutes\419182-1 PDE Study_Pond Review Mtng#2_21JUNE24_FINAL.docx

US-41 AND SR-54 INTERSECTION IMPROVEMENT
POND AND FLOODPLAIN COMPENSATION SITE RIGHT OF WAY IMPACTS

EAST PINELLAS
ANCLOTE WATERSHED

CYPRESS CREEK WATERSHED

SUMMARY OF CROSS DRAINS		
ID	LOCATION	SIZE
1	STA 2568+80	2-30" RCP
2	STA 1420+50	30" RCP
3	STA 1431+25	18" RCP
4	STA 1436+50	42" RCP
5	STA 1452+90	2-8'X3' CBC

N

0 260 1300

Feet

100: ZONE AE (EL. 66.3)
107: ZONE AE (EL 67.6)
111: ZONE AE (EL. 70.5)
FPC 104A
FPC 104B
FPC 104C
FPC 107B
SMF 6B
104: ZONE AE (EL. 67.2)
FPC 100A
SMF 6C
FPC 107A
FPC 100C
FPC 107C
FPC 100B
FPC 103C
FPC 110A
EXISTING FDOT POND
SMF 6A
FPC 102A
EXISTING FDOT POND
101: ZONE AE (EL. 64.7)
FPC 103B
FPC 102C
SMF 5A
102: ZONE AE (EL. 64.8)
FPC 110B
FPC 103A
FPC 102B
SMF 5B
SMF 2B
103: ZONE AE (EL. 66.9)
SMF 5C
FPC 110C
105: ZONE AE (EL. 68.5)
109: ZONE AE (EL 70.3)
FPC 118C
106: ZONE AE (EL. 70.6)
FPC 120A
110: ZONE AE (EL 67.3)
119: ZONE A
120: ZONE AE (EL. 70.3)
SMF 3B
SMF 3A
FPC 120B
124: ZONE AE (EL. 69.9)
FPC 120C

112: ZONE AE (EL. 73.2)
SMF 2A
FPC 113C
113: ZONE AE (EL. 70.8)
FPC 121C
FPC 113B
FPC 113A
FPC 121B
SMF 7B
SMF 2C
FPC 116B
SMF 7A
114: ZONE A
SMF 8B
FPC 115C
SMF 7C
SMF 2A
SMF 2B
FPC 121A
FPC 117B
FPC 116A
FPC 115A
SMF 8A
115: ZONE AE (EL 69.6)
118: ZONE AE (EL. 70.3)
FPC 117A
FPC 118B
116: ZONE AE (EL 69.2)
FPC 116C
FPC 115B
SMF 8C
FPC 126A
121: ZONE AE (EL 69.2)
123: ZONE AE (EL 68.9)
122: ZONE AE (EL 69.3)
SMF 3C
125: ZONE AE (EL. 69.9)
127: ZONE AE (EL. 68.6)
126: ZONE AE (EL 68.5)

LEGEND

- FLOODPLAIN
- WETLANDS
- PREFERRED POND SITE
- ALTERNATIVE POND SITE
- PREFERRED FLOODPLAIN
- ALTERNATIVE FLOODPLAIN
- EXISTING R/W
- PROPERTY LINE
- CROSS DRAIN

BASIN LEGEND

- BASIN 1
- BASIN 2
- BASIN 3
- BASIN 4
- BASIN 5
- BASIN 6
- BASIN 7
- BASIN 8

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JENNIFER FLORES, P.E.
LICENSE NUMBER: 84372
AECOM TECHNICAL SERVICES, INC.
390 N. ORANGE AVE.
ORLANDO, FLORIDA 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41 SR54	PASCO	

US 41 AT SR 54 PD&E STUDY
RIGHT OF WAY IMPACTS SPUI

SHEET NO.

F.A.C. NOTE

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APPENDIX A

EXISTING PERMITS

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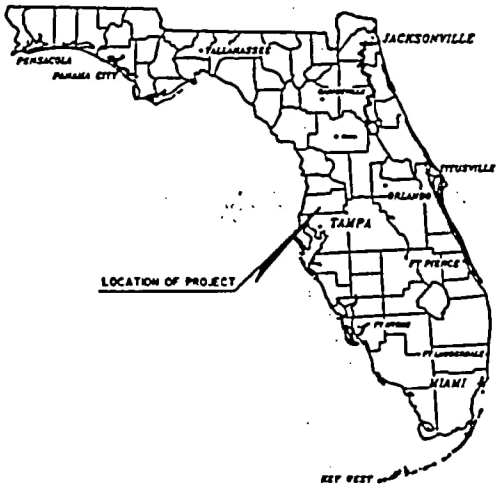
A.3 *FDOT-LOWE'S OF LAND O' LAKES* (PERMIT#44-19567-3) A-862
A.4 *FDOT-STATE ROAD 54 EAST OF U.S. 41 TO CYPRESS CREEK* (PERMIT#43-19567-0) A-902
A.5 *SR 54 E OF SUNCOAST PKWY TO W OF US 41* (PERMIT#43-16251-18) A-1158
A.6 *LIVANO AT SUNLAKE* (PERMIT#43-34153-4) A-1617

FDOT-SR 54-U.S. HIGHWAY 41
(PERMIT #43-12854-1)

100% SUBMITTAL
DRAINAGE CALCULATIONS
APRIL 12, 1996

W.P.I. NO. 7115950



AS-BUILT PLANS
ARE AVAILABLE ON THE DISTRICT
CONSTRUCTION WEBSITE
http://bilby.imageapi.com/dot/

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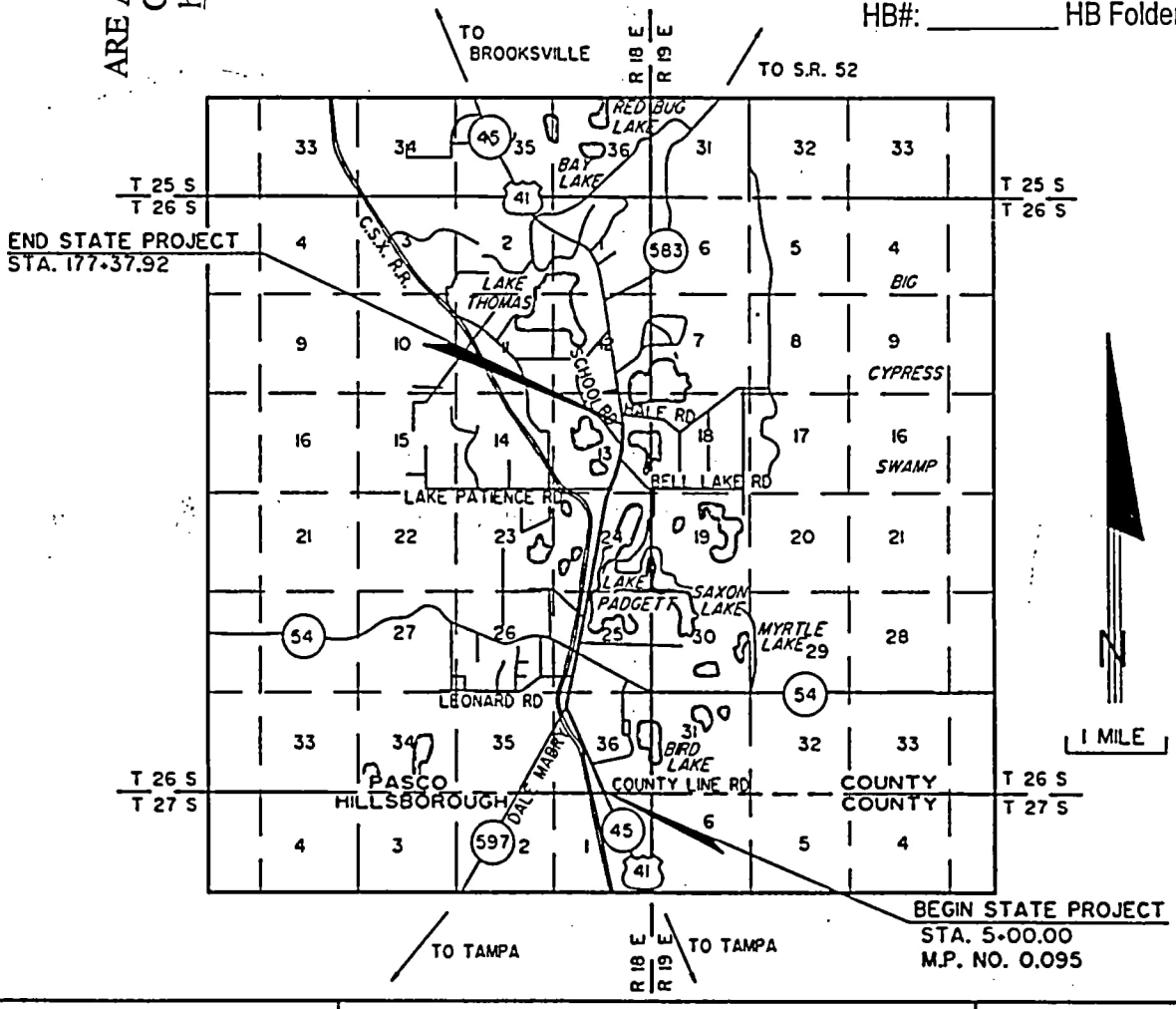
Scan attached as one doc.
Doc. Name: 256314_Calcs1
Date CRM Scanned: 5.23.07 BK
HB#: _____ HB Folder: _____



Henigar & Ray INC

STATE ROAD NO. 45

FROM 500' NORTH OF
HILLSBOROUGH COUNTY LINE TO
1000' NORTH OF BELL LAKE ROAD

STATE JOB NO. 14010 - 3518

STATE OF FLORIDA
DEPARTMENT
OF
TRANSPORTATION

001

100% SUBMITTAL
DRAINAGE CALCULATIONS BOOK

For

STATE ROAD No. 45
STATE JOB No. 14010-3518

PASCO COUNTY, FLORIDA

For

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT VII, TAMPA

April 12, 1996

Henigar & Ray
519 North Magnolia Avenue
Orlando, Florida 32801
(407) 426-8994

Registered Engineer
Gerald C. Warren, P.E.
State of Florida
No. 39671
Date:_____

002

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APRIL 12, 1996

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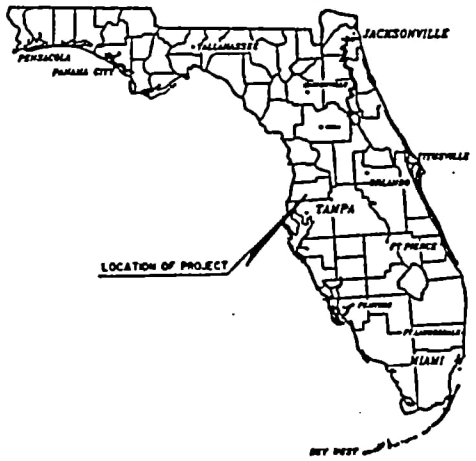

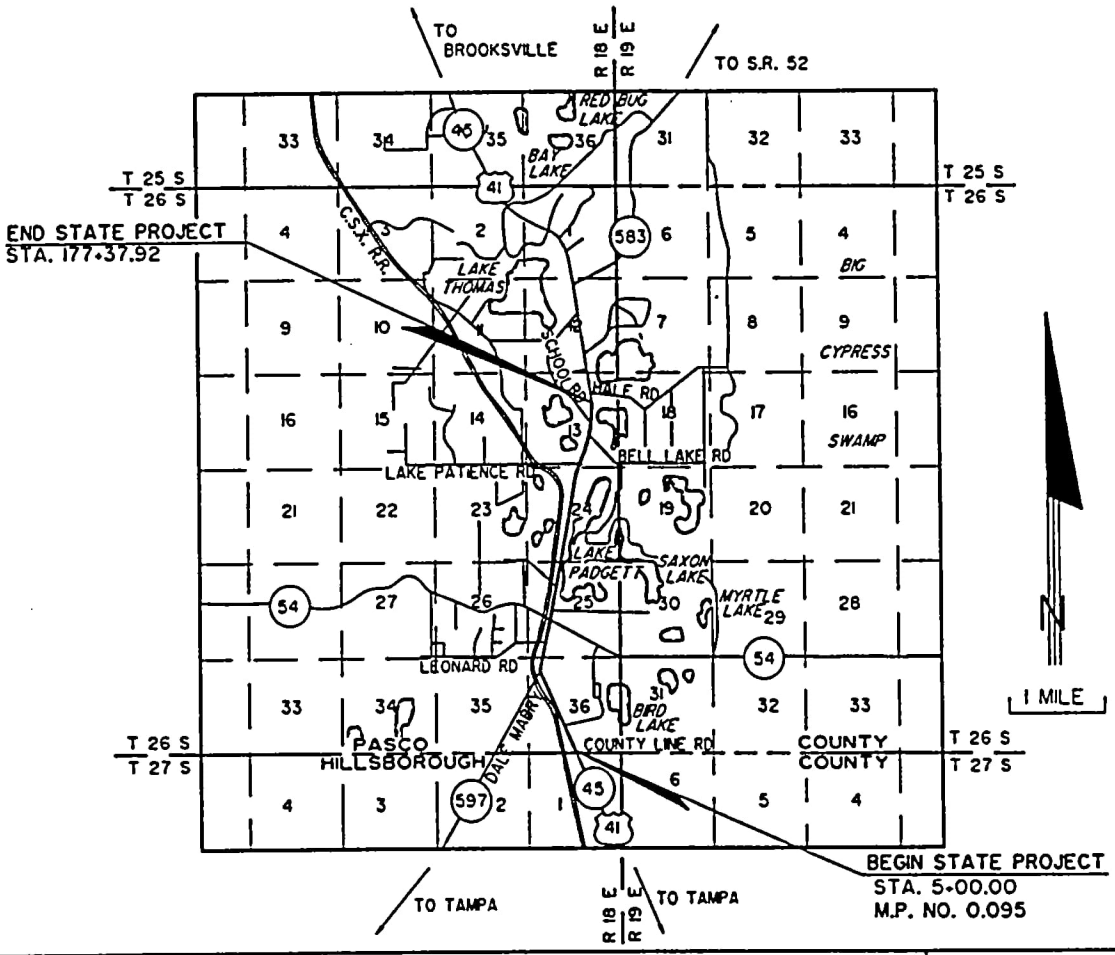

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STATE JOB NO. 14010 - 3518

STATE OF FLORIDA
DEPARTMENT
OF
TRANSPORTATION

I-1

PROJECT DESCRIPTION AND METHODOLOGY

Project Description

District 7 of The Florida Department of Transportation (The District) proposes to widen SR 45 (US 41) from the existing rural two-lane roadway with auxiliary lanes to an urban six-lane divided roadway with auxiliary lanes. The 3.3 mile project lies in Pasco County beginning approximately one-tenth of a mile north of the Hillsborourgh County line and ending approximately two-tenths of a mile north of Bell Lake Road.

This section of SR 45 lies in six drainage basins. The proposed drainage systems for each of these basins are identified as systems A through F. The District requested that an accelerated right-of-way acquisition schedule be implemented for the pond siting requirements. In order to augment this effort conservative estimates were made for the pond sizes. It was recognized that an off-setting benefit to conservative pond sizes would be an economical storm sewer system.

Flood Plain Compensation

A detailed treatment of the flood plain encroachments on this project is presented in the accompanying document entitled "SR 45 Compensating Volume Calculations".

Equivalent Treatment

There are three locations on the project where it is impractical to provide treatment for project widening in their respective basins. These three locations are at the project termini where the existing roadway is dropping to elevations which are too low to connect conveyance facilities to the project ponds. Specifically, these three locations are Dale Mabry, southwest of the railroad; SR 54, west of SR 45; and the northern project terminus beyond the crest at Sta. 180+68. At these three locations a quasi-equivalent treatment method is proposed whereby the runoff from a portion of the proposed roadway in the remote basins will be collected in the project storm sewer and conveyed to the closest project pond. The proposed roadway collection cut-off locations will ensure that no increase in runoff from impervious area will discharge to the remote basins. The portion of the impervious roadway drainage that is conveyed back to the project pond will be treated as directly connected impervious area.

Hydrology

The soil cover complex and associated runoff curve number (CN) procedure outlined in the SCS National Engineering Handbook, Section 4, Hydrology (NEH-4) was applied in developing the runoff volumes. CN's for antecedent moisture condition II were determined for respective soil type, ground cover, and land use. A 256 Shape Factor was used with a Type II Modified Storm Distribution to develop the inflow hydrographs for the pound routing analyses. The pond routing analyses were performed using Basin Runoff Networking Software (BRN).

Pond Design Criteria

All of the drainage basins along the project site are considered open basins. In accordance with the Southwest Florida Water Management District (SWFWMD) Rule 40D-4, detention ponds were designed to provide attenuation of the 25yr-24hr peak discharge. FDOT requested that critical duration

evaluation in accordance with chapter 14-86 for the 3 and 100 year events also be performed for this project. All but one of the ponds comply with chapter 14-86; the exception being Pond B. This pond would have required additional right-of-way to be in compliance with chapter 14-86.

The ponds are designed as wet detention treatment ponds with 14 day residence volume permanent pools. The soil borings indicate that suitable material for roadway embankments can be obtained at the pond sites.

Inlet Spacing

Inlet locations were selected using an intensity of 4 in/hr and limiting the allowable spread to eight feet of the outside travel lane. Spread limitations controlled the inlet spacing rather than inlet capacity.

Storm Sewer Design

After the pond design was completed using procedures discussed above, the FDOT 3 year critical duration storm event was routed through the pond to establish the HGL outlet control elevation for the storm sewer design.

For each system the weighted CN computed for the respective pond design was converted to a 3 year composite runoff coefficient using the Johnson and Meadows equation (equation 5-10, FDOT Drainage Manual). Each of the weighted runoff coefficients were then used for design of the respective storm sewer systems using FDOT's PCDRG software. Open flow calculations were performed on the physical slope of all non-pressure pipes. All pipes were designed to provide cleaning velocities in accordance with the "Table of Minimum Cleaning Velocities" included in this submittal.

Cross drains

Within the project limits there are presently seven cross drains under SR 45 and two cross drains under SR 54. The project has been designed to eliminate five of the seven existing cross drains under SR 45. These are located at Stations 48, 68, 90, 114 and 139. The runoff from the smaller off-site watersheds that previously contributed to these cross drains will now be accepted into the proposed storm sewer system and treated in the project ponds. The two remaining cross-drains under SR 45 will be replaced. They are located at Stations 15 + 13 and 173 + 20. The first, located at Sta 15 + 13, will be replaced with a like sized 30" RCP. The second is an existing 3'x2' box culvert that will be replaced with a 29"x45" ERCP cross drain "system". Both cross drains on SR 54 will be replaced. The first is located at Station 1034 + 50 and will be replaced with a like 8'x3'double box culvert. The second is located at Sta 44 + 96 and will be replaced with a like 24" RCP.

TABLE 1

SWFWMD
COMPLIANCE SUMMARY

DRAINAGE BASIN ID	DRAINAGE BASIN AREA AC	PROPOSED RETENTION/ DETENTION FACILITY	REQUIRED WATER QUALITY CF	PROVIDED WATER QUALITY CF	ALLOWABLE DISCHARGE CFS	ROUTED DISCHARGE CFS
A	10.7	Wet Detention	37,643	39,100	52.4	42.8
B	17.5	Wet Detention	48,860	49,092	63.0	62.9
C	34.9	Wet Detention	90,605	97,782	21.0 (east) 43.1 (west)	14.7 (east) 24.0 (west)
D	30.7	Wet Detention	69,060	69,626	80.5	55.6
E	13.3	Wet Detention	26,027	26,247	33.1	20.1
F	6.9	Wet Detention	24,285	24,671	26.1	20.8

TABLE 2

POND DESIGN SUMMARY

POND ID	POND AREA AC	TOP OF BANK ELEVATION FT	SHW Elevation FT	Required Wet Pool Volume AC-FT	Provided Wet Pool Volume AC-FT	100 yr 8 hr DHW Elevation	Free-Board FT
A	5.2	71.4	68.25	4.5	6.6	69.36	2.0
B	2.6	72.2	68.50	5.3	7.3	70.05	2.2
C	5.3	73.0	68.14	10.6	10.9	71.97	1.0
D	4.9	73.0	69.26	9.5	9.7	71.54	1.5
E	2.3	77.5	73.70	3.9	6.1	75.92	1.6
F	1.2	72.8	70.30	2.1	3.0	71.68	1.1

200

009

I-4

A-10

MINIMUM ALLOWABLE PIPE GRADES TO OBTAIN CLEANING VELOCITY FOR RCP

CLEANING VELOCITY 2.50 ft/s
MANNING'S n VALUE FOR FINISHED CONCRETE 0.012

PIPE SIZE (in)	MIN SLOPE (percent)
15	0.1922
18	0.1507
24	0.1027
30	0.0763
36	0.0598
42	0.0487
48	0.0408
54	0.0348
60	0.0303
66	0.0267
72	0.0237
78	0.0213
84	0.0193
96	0.0162
108	0.0138

110

010

I-5

Henigar & Ray

made by: LRP date: 5/16/94 job no. _____

PROJECT: US 41 / SR 45

checked by: _____ date: _____ sheet no. _____

SHW Determination

POND A

- Jammal Test Borings

#	* Ground Elev.	Depth to SHW	Elev. SHW	Depth to G.W.T.	Elev G.W.T.
AB-A1	70.15	2.5	67.65	4.8	65.35
AB-A2	70.75	2.5	68.25	4.8	64.05

- USDA Soil Survey Depth to SHW 2-3.5ft
- Bird Lake Beginning Stage 67.5
- Normal Pool - Determined in Field 67.27

SHW Chosen 68.25

*Approx. Ground Elevations

POND B

- Jammal Test Borings

#	Ground Elev.	Depth to SHW	Elev. SHW	Depth to GWT	Elev G.W.T
AB-B1	*70.1	2.5	67.6	4.2	
AB-B2	70.27	2.5	67.77	5.1	

- USDA Soil Survey Depth to SHW 0-1.0ft
- Lake Floyd Starting Stage 68.5

SHW Chosen 68.5

010

* Approx. Ground Elevation

011

I-6

Henigar & Ray

made by: CRP date: 5/16/94 job no. _____

PROJECT: US 41/SR 45

checked by: _____ date: _____ sheet no. _____

SHW Determination – continued

POND C

- Jammal Test Borings

#	Ground Elev.	Depth to SHW	Elev SHW	Depth to GWT	Elev G.W.T.
AB-C1	72.35	2.5	69.85	7.6	
AB-C2	* 70.3	2.5	67.8	6.0	

* APPROX. ELEV.

- USDA Soil Survey Depth to SHW 0-1.0'
- Lake Floyd Starting Stage 68.5
- SHW Determined in Field 68.14

SHW Chosen 68.14

POND D

- Jammal Test Borings

#	Ground Elev	Depth to SHW	Elev SHW	Depth to GWT	Elev. GWT
AB-D1	72.0	2.5	69.50	5.5	
AB-D2	71.32	2.5	68.82	5.0	

- USDA Soil Survey Depth to SHW 2-3.5'
- Normal Pool Elevations 69.72 & 68.20
- SHW Elev. from Lichen Line in Field 69.26

SHW Chosen 69.26

012

I-7

SHW Determination - continued

POND E

- Jammal Test Borings

#	Ground Elev.	Depth to SHW	Elev SHW	Depth to GWT	Elev GWT
AB-E1	*76.5	3.0	73.5	6.6	
AB-E2	76.72	3.0	73.72	6.0	70.72

*APPROX. ELEV.

- USDA Soil Survey Depth to SHW 2-3.5'
- Lake Padgett 2.33 Storm 70.82
- No dD Line in this area

SHW Chosen 73.7

POND F

- Jammal Test Borings

#	Ground Elev.	Depth to SHW	Elev. SHW	Depth to GWT	Elev. GWT
B-1	75.6	2.0	73.6	4.2	71.40
B-2	75.19	2.0	73.19	4.2	70.99

- USDA Soil Survey Depth to SHW 2-3.5'
- Lake Padgett 2.33 Storm 70.82
- SHW Determined in Field 70.30

SHW Chosen 70.30

SIO

013

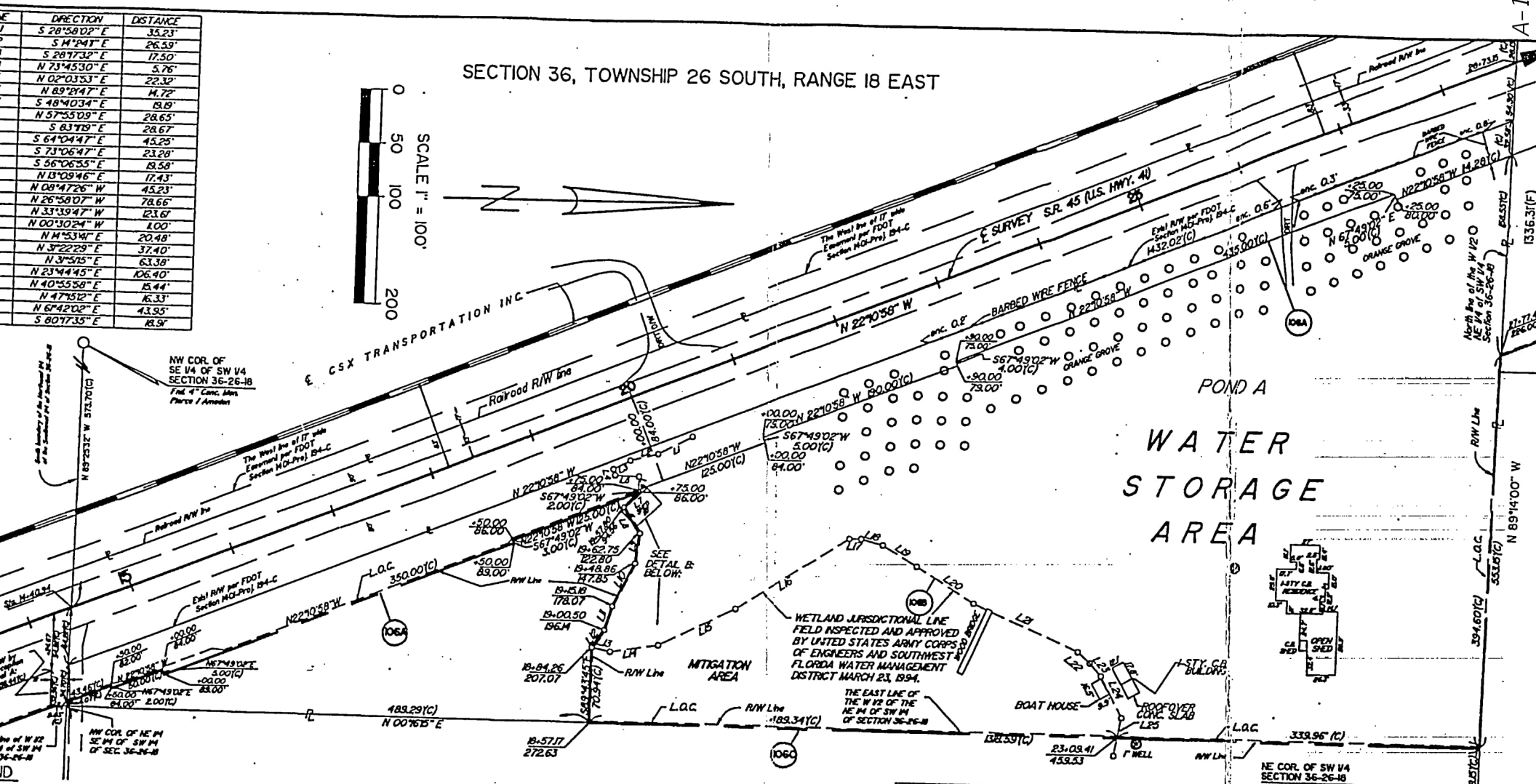
I-8

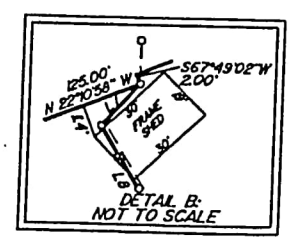
TABLE 2
AUGER BORINGS AND GROUNDWATER ESTIMATES
S.R. 45 (U.S. 41) IMPROVEMENTS
PASCO COUNTY, FLORIDA
PSI PROJECT NO. 775-35105

BORING NUMBER	STATION NUMBER	OFFSET FROM BASELINE OF SURVEY (FEET)	BORING DEPTH (FEET)	MEASURED G.W.T. DEPTH (FEET)	ESTIMATED S.H.W. TABLE DEPTH (FEET)	USDA SOIL SURVEY S.H.W. TABLE DEPTH (FEET)
DALE MABRY						
AB-17	303+00	40-LT-A	5	>5	1.0	0 - 1.0
AB-18	304+00	45-RT-B	5	>5	1.0	0 - 1.0
AB-19	305+00	40-LT-A	5	>5	2.0	0 - 1.0
AB-20	306+00	20-RT-B	5	4.7	2.0	0 - 1.0
AB-21	306+50	35-LT-A	15	6.0	2.0	0 - 1.0
RETENTION/DETENTION PONDS						
AB-A1	22+50	160-RT-	20	4.8	2.5	2 - 3.5
AB-A2	24+00	260-RT-	20	6.7	2.5	2 - 3.5
AB-B1	46+50	300-RT-	20	4.2	2.5	0 - 1.0
AB-B2	47+50	200-RT-	20	5.1	2.5	0 - 1.0
AB-C1	66+00	200-RT-	20	7.6	2.5	0 - 1.0
AB-C2	68+00	250-RT-	8	6.0	2.5	0 - 1.0
AB-D1	118+00	200-LT-	8.5	5.5	2.5	2 - 3.5
AB-D2	120+00	300-LT-	8.5	5.0	2.5	2 - 3.5
AB-E1	148+00	280-LT-	20	6.6	3.0	2 - 3.5
AB-E2	150+00	360-LT-	8	6.0	3.0	2 - 3.5

NOTE: Stations and offset distances are approximate.
A and B are Baseline "A" and Baseline "B" for Dale Mabry.

DIRECTION	DISTANCE
S 28°58'02" E	35.23'
S 14°24'17" E	26.59'
S 28°17'32" E	17.50'
N 73°45'30" E	5.76'
N 02°03'53" E	22.32'
N 89°21'47" E	14.72'
S 48°40'34" E	19.19'
N 57°55'09" E	28.65'
S 83°11'19" E	28.67'
S 64°04'47" E	45.25'
S 73°06'47" E	23.28'
S 56°06'55" E	19.58'
N 13°09'46" E	17.43'
N 08°47'26" W	45.23'
N 26°58'07" W	78.66'
N 33°39'47" W	123.61'
N 00°30'24" W	1.00'
N 14°53'41" E	20.48'
N 31°22'29" E	37.40'
N 31°51'15" E	63.38'
N 23°44'45" E	106.40'
N 40°55'58" E	15.44'
N 47°15'12" E	16.33'
N 61°42'02" E	43.95'
S 80°17'35" E	18.91'





5/8" IRON ROD (PLAIN)
RIPTIVE POINT
RISDICTIONAL LINE
UNITED STATES ARMY CORPS OF ENGINEERS
= SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

A SPECIFIC PURPOSE SURVEY FOR	
THE FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 7 PASCO COUNTY, FLORIDA	
Drawn by : G.HRENKO	Job No : 3A-2777"A"
Approved by : K.GREEN	File : 92-1663
Date : 5-25-94	SHEET NO.
Scale : 1" = 100'	1 OF 6
Field book : 02150/44-77	
Sec. 13 Twp. 26 Rge. 18	

ENGINEERS • PLANNERS • SCIENTISTS • SURVEYORS

I HEREBY CERTIFY THAT WE HAVE MADE A SURVEY OF THE ABOVE DESCRIBED PROPERTY, THAT IT IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF AND THAT THIS PLAT IS A TRUE REPRESENTATION THEREOF, AND THE SURVEY AND THIS PLAT CONFORMS TO THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G7, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES. THIS DRAWING IS NOT VALID WITHOUT AN ORIGINAL SIGNATURE AND SEAL.

DATE OF FIELD SURVEY : _____

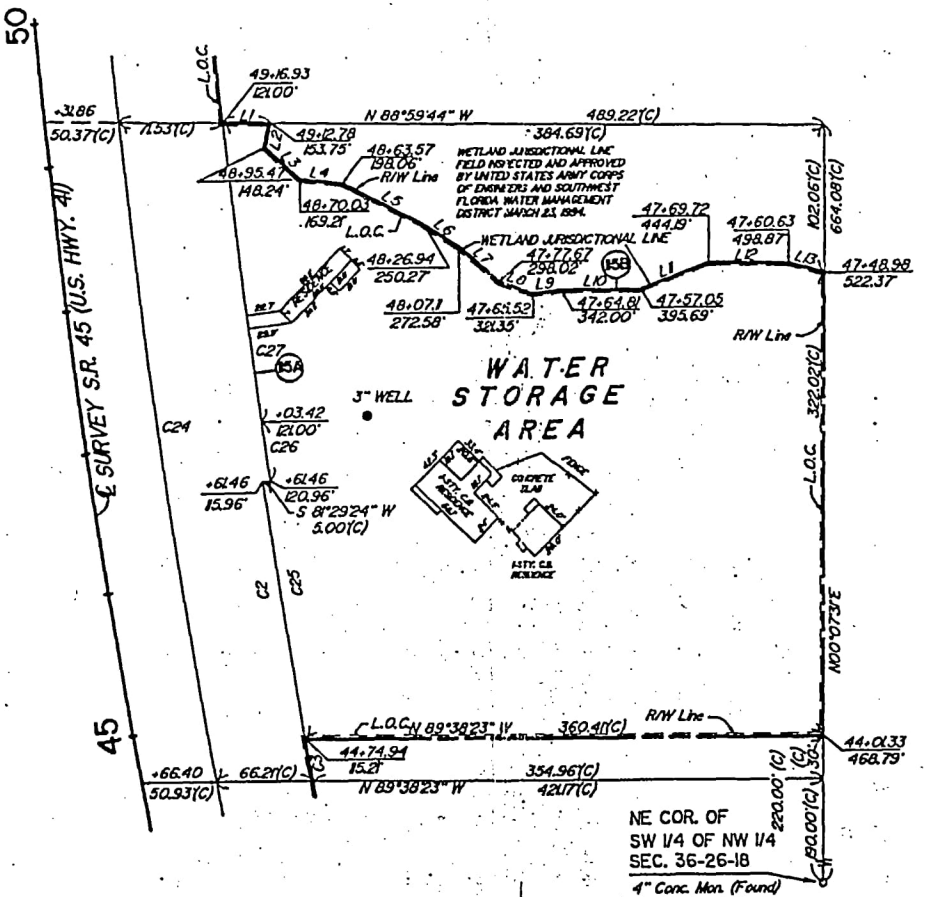
KENT GREEN
FLORIDA REGISTERED SURVEYOR NO. 2705

NOTES :

1) : A SPECIAL PURPOSE SURVEY SHOWING THE LOCATION OF THE WETLANDS JURISDICTIONAL LINE ALONG S.R. 45 (U.S. HWY. 41) IN PASCO COUNTY, FLORIDA TIED TO THE CENTERLINE OF SURVEY AS SHOWN ON S.R. 45 (U.S. HWY. 41) RIGHT-OF-WAY MAPS, SECTION 14010-2518, PASCO COUNTY, FLORIDA.
2) : THIS IS NOT A BOUNDARY SURVEY.
3) : THE WETLAND JURISDICTIONAL LINES AS SHOWN HEREON WERE STAKED BY HENIGAR & RAY, INC. AND FIELD INSPECTED AND APPROVED BY JOE BACHELER FOR THE UNITED STATES ARMY CORPS OF ENGINEERS AND DAVID SAUSKOJUS FOR SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT ON MARCH 23, 1994.
4) : THE WETLAND AREA SHOWN HEREON WAS FIELD LOCATED AND ACREAGE OF THE WETLAND AREA WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY WAS COMPUTED. THE DESCRIPTION OF THIS AREA IS ONLY SHOWN PICTORIALLY. A WRITTEN DESCRIPTION OF THE WETLANDS WILL NOT BE FURNISHED.

A-16

SECTION 36, TOWNSHIP 26 SOUTH, RANGE 18 EAST



SCALE 1" = 100'

0 50 100 200

LINE	DIRECTION	DISTANCE
L1	S89°59'44"E	33.00'
L2	S1°57'00"W	17.73'
L3	S46°40'10"E	32.43'
L4	S84°17'25"E	29.52'
L5	S62°45'30"E	62.96'
L6	S55°43'25"E	29.26'
L7	S49°33'44"E	37.81'
L8	S17°15'52"E	26.01'
L9	N84°19'39"E	20.66'
L10	S89°53'37"E	54.17'
L11	N89°49'54"E	49.90'
L12	S89°52'33"E	55.32'
L13	S73°20'56"E	25.78'

CURVE	DELTA	RADIUS	LENGTH	TANGENT	BEARING
C2	0°47'28"	6822.50'	203.26'	106.65'	S 09°24'19" E
C3	0°05'23"	6822.50'	30.59'	15.26'	S 10°10'22" E
C24	04°41'27"	5679.58'	464.99'	232.62'	S 08°17'12" E
C25	0°33'05"	6822.50'	182.75'	91.38'	S 09°16'38" E
C26	00°20'43"	6817.50'	41.08'	20.54'	S 08°20'14" E
C27	02°18'06"	5608.58'	209.00'	104.51'	S 07°05'50"

LEGEND

SET 5/8" IRON ROD (PLAIN)
DESCRIPTIVE POINT
= JURISDICTIONAL LINE
O.E. = UNITED STATES ARMY CORPS OF ENGINEERS
D. = SOUTH FLORIDA WATER MANAGEMENT DISTRICT

ilgar
Ray, INC.
HWAY 44
R, FL 34428-4399
51

A SPECIFIC PURPOSE SURVEY FOR

THE FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 7
PASCO COUNTY, FLORIDA

Drawn by : GJHRENKO	File : 3A-26I"B"
Approved by : K.GREEN	Job No : 92-1663
Date : 5-1-94	SHEET NO.
Scale : 1" = 100'	2 OF 6
Field book : 2003940/40-80	
Sec. 13 Twp. 25 Rge. 28	

ENGINEERS • PLANNERS • SCIENTISTS • SURVEYORS

I HEREBY CERTIFY THAT WE HAVE MADE A SURVEY OF THE ABOVE DESCRIBED PROPERTY, THAT IT IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF AND THAT THIS PLAT IS A TRUE REPRESENTATION THEREOF, AND THE SURVEY AND THIS PLAT CONFORMS TO THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G7, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES. THIS DRAWING IS NOT VALID WITHOUT AN ORIGINAL SIGNATURE AND SEAL.

DATE OF FIELD SURVEY : _____

KENT GREEN
FLORIDA REGISTERED SURVEYOR NO. 2705

NOTES :

1) : A SPECIAL PURPOSE SURVEY SHOWING THE LOCATION OF THE WETLANDS JURISDICTIONAL LINE ALONG S.R. 45 (U.S. HWY IN PASCO COUNTY, FLORIDA TIED TO THE CENTERLINE OF SURVEY AS SHOWN ON S.R. 45 (U.S. HWY. 41) RIGHT-OF-WAY MAPS, SECTION 14010-2518, PASCO COUNTY, FLORIDA.
2) : THIS IS NOT A BOUNDARY SURVEY.
3) : THE WETLAND JURISDICTIONAL LINES AS SHOWN HEREON WERE STAKED BY HENGAR & RAY, INC. AND FIELD INSPECTED AND APPROVED BY JOE BACHELER FOR THE UNITED STATES ARMY CORPS OF ENGINEERS AND DAVID SAUSKOJUS FOR SI FLORIDA WATER MANAGEMENT DISTRICT MARCH 23, 1994.
4) : THE WETLAND AREA SHOWN HEREON WAS FIELD LOCATED AND ACREAGE OF THE WETLAND AREA WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY WAS COMPUTED. THE DESCRIPTION OF THIS AREA IS ONLY SHOWN PICTORIALLY. A WRITTEN DESCRIPTION OF THE WETLANDS WILL NOT BE FURNISHED.

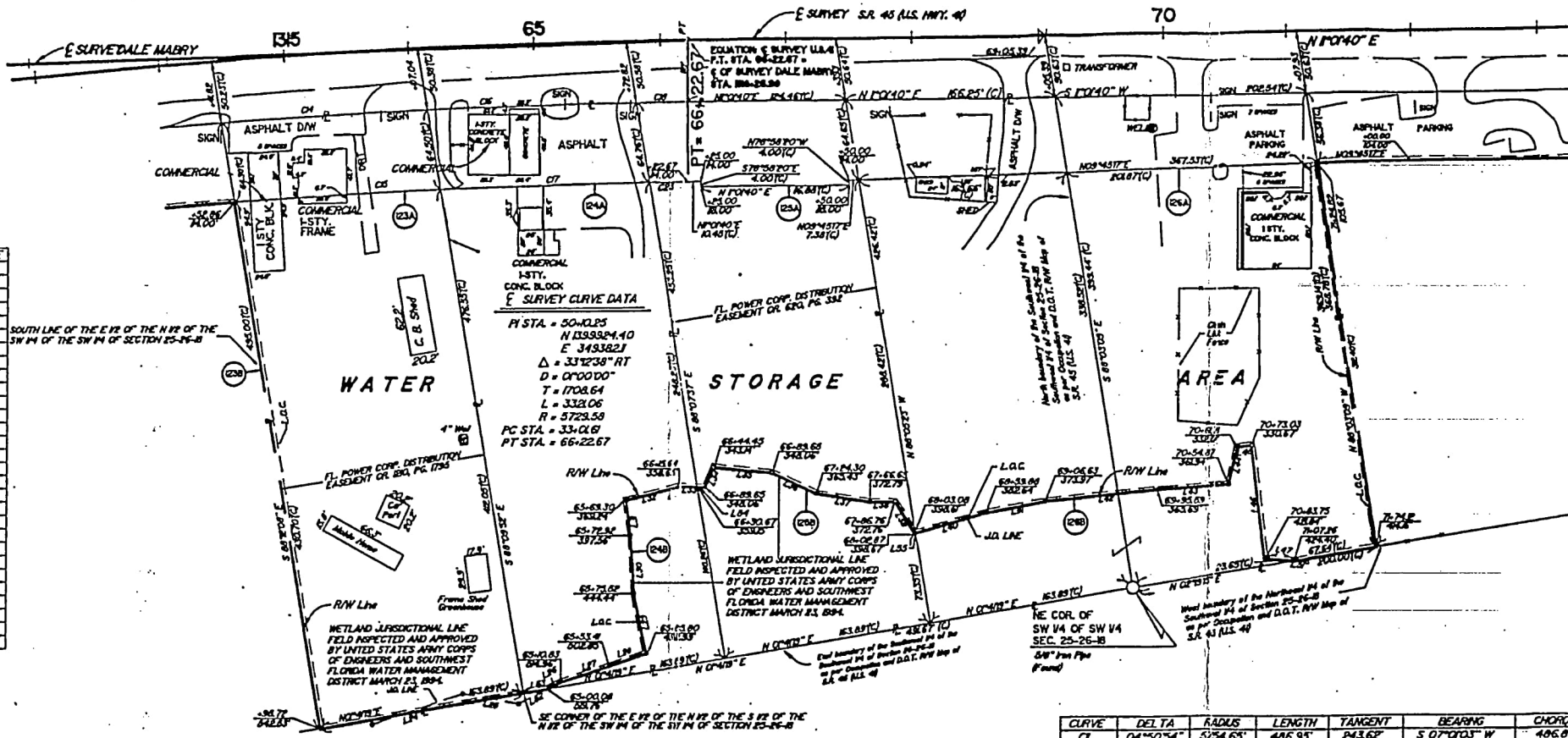
I-

SECTION 25, TOWNSHIP 26 SOUTH, RANGE 28 EAST

BEARINGS

SCALE 1" = 100'

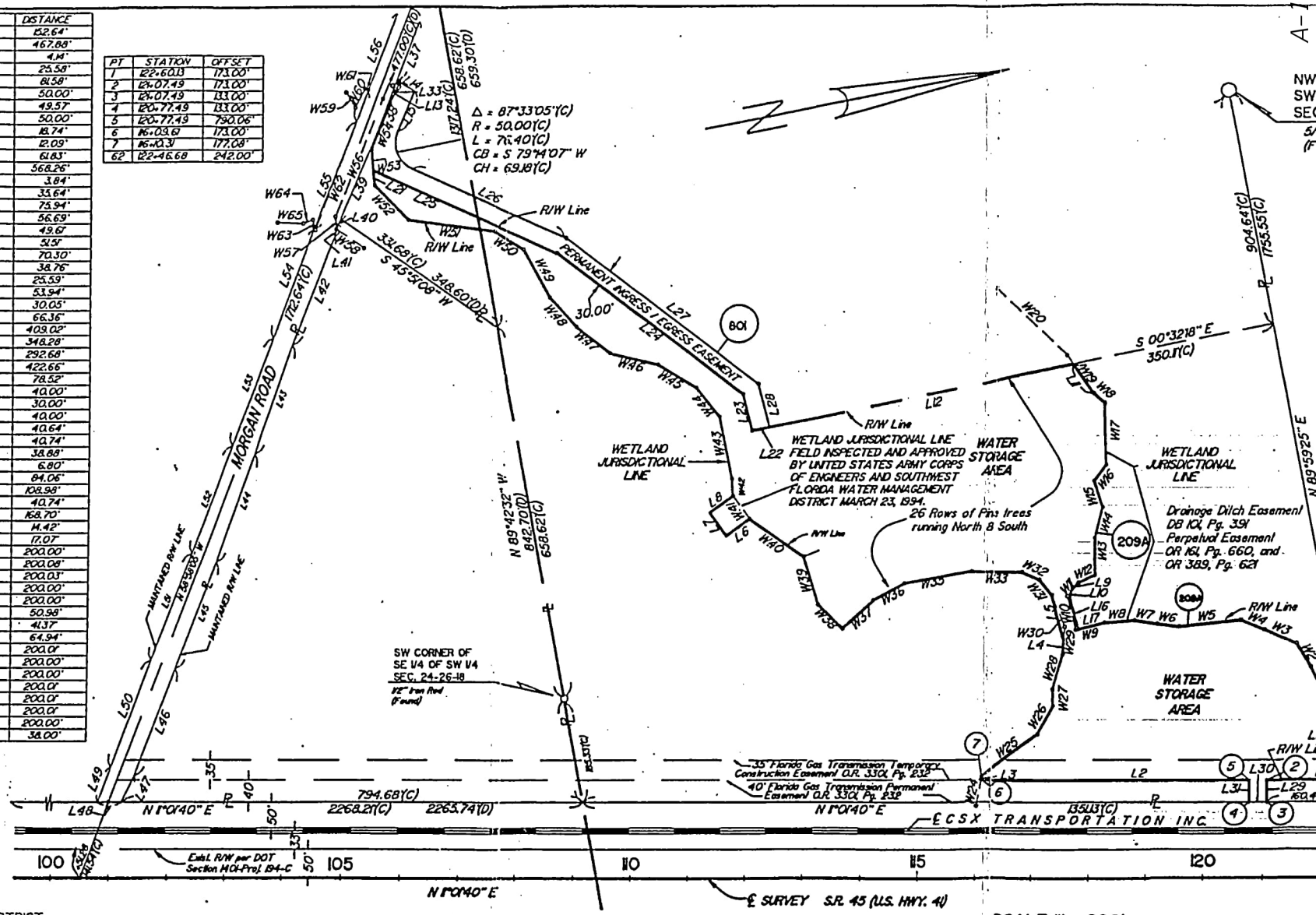
50 100 200


℄ SURVEYDALE MABRY
℄ SURVEY S.R. 45 (U.S. HWY. 41)
WATER STORAGE AREA
SOUTH LINE OF THE E 1/2 OF THE N 1/2 OF THE SW 1/4 OF THE SW 1/4 OF SECTION 25-26-18
℄ SURVEY CURVE DATA
PI STA. = 50+10.25
N 1393924.40
E 349382.21
Δ = 33°23'38" RT
D = 0°00'00"
T = 1708.64
L = 3328.06
R = 5729.58
PC STA. = 33+01.61
PT STA. = 66+22.67
PT = 66+22.67
FL. POWER CORP. DISTRIBUTION EASEMENT O.R. 1804, PG. 1795
FL. POWER CORP. DISTRIBUTION EASEMENT O.R. 1804, PG. 332
WETLAND JURISDICTIONAL LINE FIELD INSPECTED AND APPROVED BY UNITED STATES ARMY CORPS OF ENGINEERS AND SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT MARCH 23, 1994.
JD LINE
R/W Line
L.O.C.
NE COR. OF SW 1/4 OF SW 1/4 SEC. 25-26-18
5/8" Iron Pipe (Found)
SE CORNER OF THE E 1/2 OF THE N 1/2 OF THE S 1/2 OF THE N 1/2 OF THE SW 1/4 OF THE SW 1/4 OF SECTION 25-26-18
ASPHALT D/W
ASPHALT
ASPHALT PARKING
COMMERCIAL 1-STY. CONC. BLK.
COMMERCIAL 1-STY. FRAME
COMMERCIAL 1-STY. CONC. BLOCK
FRAME SHED
C.B. Shed
Mobile Home
Frame Shed Greenhouse
TRANSFORMER
SIGN
WCLAB
SHED
Oak Lot Fence
N 1°00'40" E
S 1°00'40" W
N 89°43'17" E
S 89°03'03" E
N 89°43'17" W
N 0°04'19" E
S 89°55'41" E
S 89°55'41" W
N 89°55'41" E
N 0°04'19" W
N 89°55'41" W
S 0°04'19" W
N 0°04'19" E
N 89°55'41" E
S 89°55'41" E
N 89°55'41" W
S 0°04'19" W
N 0°04'19" E
N 89°55'41" E
S 89°55'41

DIRECTION	DISTANCE
76°06'56" E	94.46'
69°49'22" E	47.70'
35°43'27" E	58.81'
33°39'59" E	43.06'
04°57'32" E	105.72'
18°37'14" E	38.08'
19°47'33" E	40.71'
06°46'30" E	52.38'
02°49'02" W	52.67'
85°49'28" E	61.00'
39°28'05" W	30.37'
14°09'59" W	32.36'
80°08'49" W	64.54'
65°05'37" W	55.28'
8°58'56" W	48.72'
41°38'25" W	34.94'
8°04'18" W	107.73'
5°54'44" W	26.87'
65°06'22" W	80.44'
55°28'46" E	168.28'
53°57'58" W	81.95'
72°22'15" W	30.41'
82°04'01" W	40.11'
69°16'17" W	51.31'
25°54'13" W	124.15'
5°45'47" W	55.81'
8°35'13" W	29.22'
63°26'41" W	62.80'
76°05'45" W	48.73'
78°36'13" W	60.05'
62°48'03" E	34.39'
35°57'51" W	32.35'
12°10'50" W	90.48'
00°55'54" W	19.91'
18°00'39" E	61.60'
32°15'15" E	71.14'
55°01'01" W	60.12'
84°24'17" W	88.46'
45°36'46" W	15.75'
64°46'38" W	49.57'
82°58'00" W	29.96'
88°43'38" W	110.78'
65°52'47" W	65.79'
4°50'06" W	78.91'
24°14'29" E	85.60'
49°29'28" W	75.13'
59°00'01" W	68.13'
7°59'46" W	94.61'
43°05'38" W	60.31'
18°48'09" W	150.48'
57°07'17" W	83.75'
83°57'00" W	64.35'
56°59'21" W	83.03'
4°58'57" W	15.47'
57°47'17" E	288.40'
83°42'59" E	21.75'
46°17'22" E	57.61'
7°03'59" W	30.55'
52°25'37" W	36.35'
27°18'37" W	6.69'
59°02'12" W	257.99'
87°15'03" E	18.43'
0°04'05" W	17.45'
3°09'36" W	43.26'

LINE	DIRECTION	DISTANCE
L1	S 1°01'40" W	152.64'
L2	S 1°01'40" W	467.88'
L3	N 69°16'17" W	4.14'
L4	N 76°05'45" W	25.59'
L5	S 85°34'08" W	81.58'
L6	S 25°13'22" E	50.00'
L7	S 64°46'38" W	49.57'
L8	N 25°13'22" W	50.00'
L9	S 39°28'05" E	18.74'
L10	S 7°28'31" E	12.09'
L11	N 65°06'22" E	61.83'
L12	N 00°32'18" W	568.26'
L13	S 41°58'57" W	3.84'
L14	S 41°58'57" W	33.64'
L15	S 56°59'21" E	75.94'
L16	N 85°34'08" E	56.69'
L17	N 02°49'02" W	49.61'
L18	N 65°49'27" E	51.51'
L19	N 89°46'39" E	70.30'
L20	N 83°57'00" W	38.76'
L21	N 83°57'00" W	25.59'
L22	N 35°43'27" E	53.94'
L22	N 00°32'18" W	30.05'
L23	S 86°02'35" W	66.36'
L24	N 47°53'49" E	409.02'
L25	N 35°27'34" E	348.28'
L26	S 35°27'34" W	292.68'
L27	S 47°53'49" W	422.66'
L28	S 86°02'35" W	78.52'
L29	S 78°58'20" E	40.00'
L30	S 1°01'40" W	30.00'
L31	N 78°58'20" W	40.00'
L32	N 89°59'25" E	40.64'
L33	N 58°58'05" W	40.74'
L34	S 58°58'05" E	38.88'
L35	S 3°01'55" W	6.80'
L36	S 68°04'18" E	84.06'
L37	S 58°58'05" E	108.98'
L38	S 58°58'05" E	40.74'
L39	S 56°56'02" E	168.70'
L40	S 56°56'02" E	14.42'
L41	S 64°00'38" E	17.07'
L42	S 58°40'54" E	200.00'
L43	S 60°32'36" E	200.08'
L44	S 59°58'14" E	200.03'
L45	S 58°49'29" E	200.00'
L46	S 59°15'16" E	200.00'
L47	S 53°59'08" E	50.98'
L48	S 1°01'40" W	41.37'
L49	N 59°08'21" W	64.94'
L50	N 59°23'52" W	200.01'
L51	N 58°58'05" W	200.00'
L52	N 59°06'41" W	200.00'
L53	N 58°23'42" W	200.01'
L54	N 59°32'27" W	200.01'
L55	N 58°23'42" W	200.01'
L56	N 58°58'05" W	200.00'
L57	N 58°58'05" W	38.00'

PT	STATION	OFFSET
1	122+60.13	173.00'
2	124+07.49	173.00'
3	124+07.49	133.00'
4	120+77.49	133.00'
5	120+77.49	790.06'
6	116+09.61	173.00'
7	116+10.31	177.08'
62	122+46.68	242.00'



ND
5/8" IRON ROD (PLAIN)
CRIPTIVE POINT
URISDICTIONAL LINE
= UNITED STATES ARMY CORPS OF ENGINEERS
= SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

ar
/INC.
44
4429-4389

A SPECIFIC PURPOSE SURVEY FOR

THE FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 7
PASCO COUNTY, FLORIDA

Drawn by : G.HRENKO	Job No : 3A-2727"D"
Approved by : K.GREEN	File : 92-1663
Date : 5-25-94	SHEET NO.
Scale : 1" = 200'	4 OF 6
Field book : 0250/44-77	
Sec. 24 Twp. 26 Rge. 18	

ENGINEERS • PLANNERS • SCIENTISTS • SURVEYORS

I HEREBY CERTIFY THAT WE HAVE MADE A SURVEY OF THE ABOVE DESCRIBED PROPERTY, THAT IT IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF AND THAT THIS PLAT IS A TRUE REPRESENTATION THEREOF, AND THE SURVEY AND THIS PLAT CONFORMS TO THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES. THIS DRAWING IS NOT VALID WITHOUT AN ORIGINAL SIGNATURE AND SEAL.

DATE OF FIELD SURVEY : _____

KENT GREEN
FLORIDA REGISTERED SURVEYOR NO. 2705

NOTES :
1) : A SPECIAL PURPOSE SURVEY SHOWING THE LOCATION OF THE WETLANDS JURISDICTIONAL LINE ALONG S.R. 45 (U.S. HWY. 41) IN PASCO COUNTY, FLORIDA TIED TO THE CENTERLINE OF SURVEY AS SHOWN ON S.R. 45 (U.S. HWY. 41) RIGHT-OF-WAY MAPS, SECTION 14010-2518, PASCO COUNTY, FLORIDA.
2) : THIS IS NOT A BOUNDARY SURVEY.
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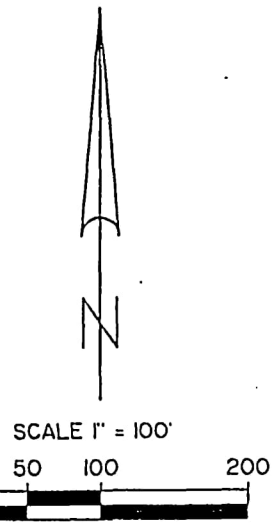
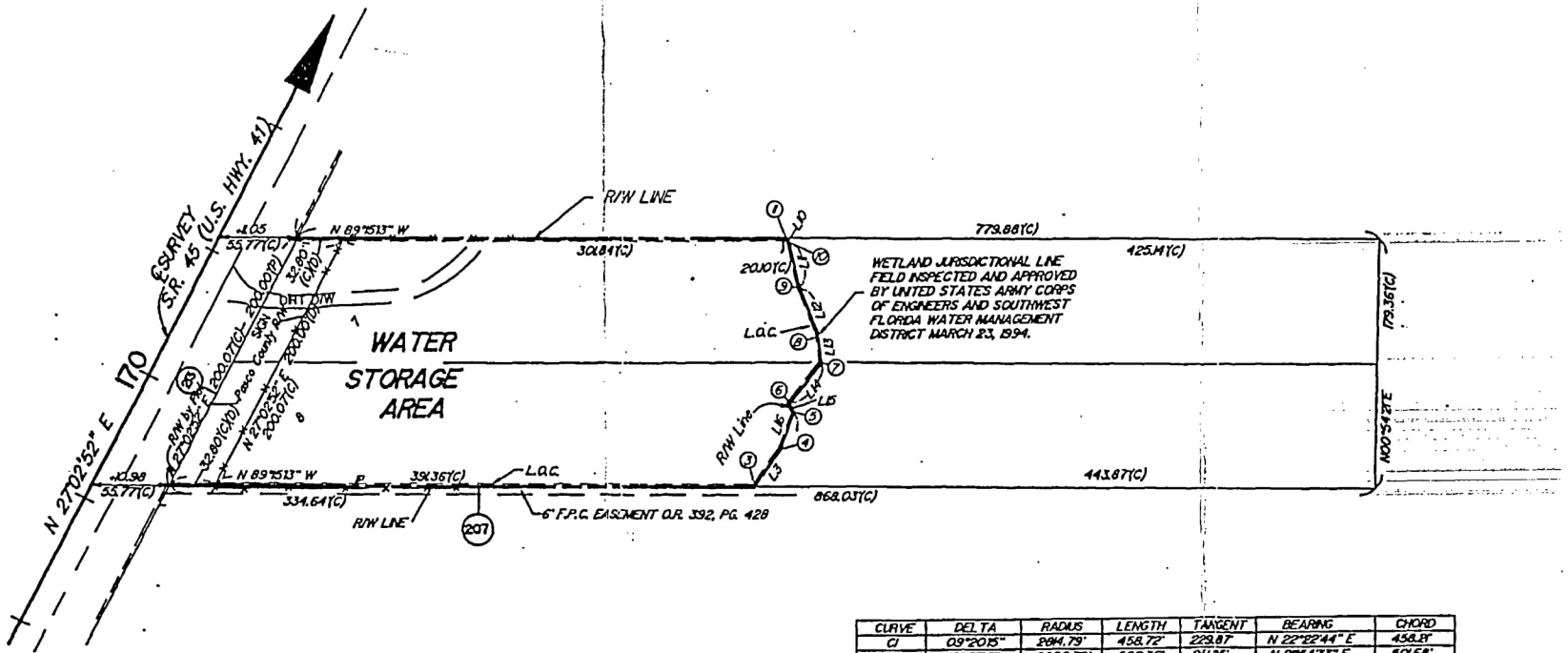
4) : THE WETLAND AREA SHOWN HEREON WAS FIELD LOCATED AND ACREAGE OF THE WETLAND AREA WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY WAS COMPUTED. THE DESCRIPTION OF THIS AREA IS ONLY SHOWN PICTORIALLY. A WRITTEN DESCRIPTION OF THE WETLANDS WILL NOT BE FURNISHED.

I-13





CURVE	DELTA	RADIUS	LENGTH	TANGENT	BEARING	CHORD
C1	09°20'15"	2814.79'	458.72'	229.87'	N 22°22'44" E	458.21'
C2	10°16'36"	2800.79'	502.36'	251.95'	N 21°54'33" E	501.68'
C3	00°40'17"	2930.79'	34.34'	17.17'	N 24°26'07" E	34.34'
C4	01°27'44"	2814.79'	60.39'	30.20'	N 26°27'15" E	60.39'
C5	02°16'36"	2928.79'	116.39'	58.20'	N 25°54'33" E	116.37'

LINE	DIRECTION	DISTANCE
L1	S 34°49'22" W	20.59'
L2	S 55°10'38" E	15.00'
L3	S 34°49'22" W	32.65'
L10	S 42°15'57" E	3.84'
L11	S 13°28'35" E	33.77'
L12	S 22°11'39" E	33.30'
L13	S 08°08'29" E	23.75'
L14	S 38°14'19" W	36.88'
L15	S 26°56'35" E	7.60'
L16	S 20°18'45" W	28.28'
L17	N 34°49'22" E	30.74'
L18	S 89°51'13" E	18.1'

LINE	DIRECTION	DISTANCE
L25	S 36°06'40" E	10.00'
L26	N 64°03'53" E	22.10'
L27	S 00°44'47" W	9.00'
L28	N 89°40'20" E	79.96'
L29	N 89°43'35" W	65.13'
L30	S 89°43'35" E	100.00'
L31	N 89°02'59" E	100.04'
L32	S 88°24'14" E	34.91'
L33	S 89°43'35" E	65.10'
L34	S 86°19'13" E	19.69'
L35	S 89°57'55" E	80.41'
L36	S 85°23'36" E	52.74'

STATION / OFFSET FOR WATER STORAGE AREA

PT	STATION	OFFSET
3	171+23.64	43
4	171+33.99	43
5	171+84.07	43
6	171+88.54	42
7	172+24.66	43
8	172+44.08	48
9	172+63.62	39
10	172+91.39	37
11	172+92.95	36

GEND
ET 5/8" IRON ROD (PLAIN)
ESCRIPTIVE POINT
= JURISDICTIONAL LINE
.E. = UNITED STATES ARMY CORPS OF ENGINEERS
M.D. = SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

NOTES :
1) : A SPECIAL PURPOSE SURVEY SHOWING THE LOCATION OF THE WETLANDS JURISDICTIONAL LINE ALONG S.R. 45 (U.S. HWY. 41) IN PASCO COUNTY, FLORIDA TIED TO THE CENTERLINE OF SURVEY AS SHOWN ON S.R. 45 (U.S. HWY. 41) RIGHT-OF-WAY MAPS, SECTION 14010-2518, PASCO COUNTY, FLORIDA.
2) : THIS IS NOT A BOUNDARY SURVEY.
3) : THE WETLAND JURISDICTIONAL LINES AS SHOWN HEREON WERE STAKED BY HENGAR & RAY, INC. AND FIELD INSPECTED AND APPROVED BY JOE BACHELER FOR THE UNITED STATES ARMY CORPS OF ENGINEERS AND DAVID SAUSKOJUS FOR SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT ON MARCH 23, 1994.
4) : THE WETLAND AREA SHOWN HEREON WAS FIELD LOCATED AND ACREAGE OF THE WETLAND AREA WITHIN THE FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY WAS COMPUTED. THE DESCRIPTION OF THIS AREA IS ONLY SHOWN PICTORIALLY. A WRITTEN DESCRIPTION OF THE WETLANDS WILL NOT BE FURNISHED.

I-14

Hengar & Ray, Inc.
WAY 44
,FL 34429-4389

A SPECIFIC PURPOSE SURVEY FOR

THE FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 7
PASCO COUNTY, FLORIDA

Drawn by : G.HRENKO	File : 3A-2727'F"
Approved by : K.GREEN	Job No : 92-1663
Date : 5-25-94	SHEET NO.
Scale : 1" = 100'	5 OF 6
Field book : 0250/44-77	
Sec. 24 Twp. 26 Rge. 18	

ENGINEERS • PLANNERS • SCIENTISTS • SURVEYORS

I HEREBY CERTIFY THAT WE HAVE MADE A SURVEY OF THE ABOVE DESCRIBED PROPERTY, THAT IT IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF AND THAT THIS PLAT IS A TRUE REPRESENTATION THEREOF, AND THE SURVEY AND THIS PLAT CONFORMS TO THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES. THIS DRAWING IS NOT VALID WITHOUT AN ORIGINAL SIGNATURE AND SEAL.

DATE OF FIELD SURVEY : _____

KENT GREEN
FLORIDA REGISTERED SURVEYOR NO. 2705

Henigar & Ray

made by: _____ date: _____ job no. _____
checked by: _____ date: _____ sheet no. _____

PROJECT: U.S. 41/S.R. 45

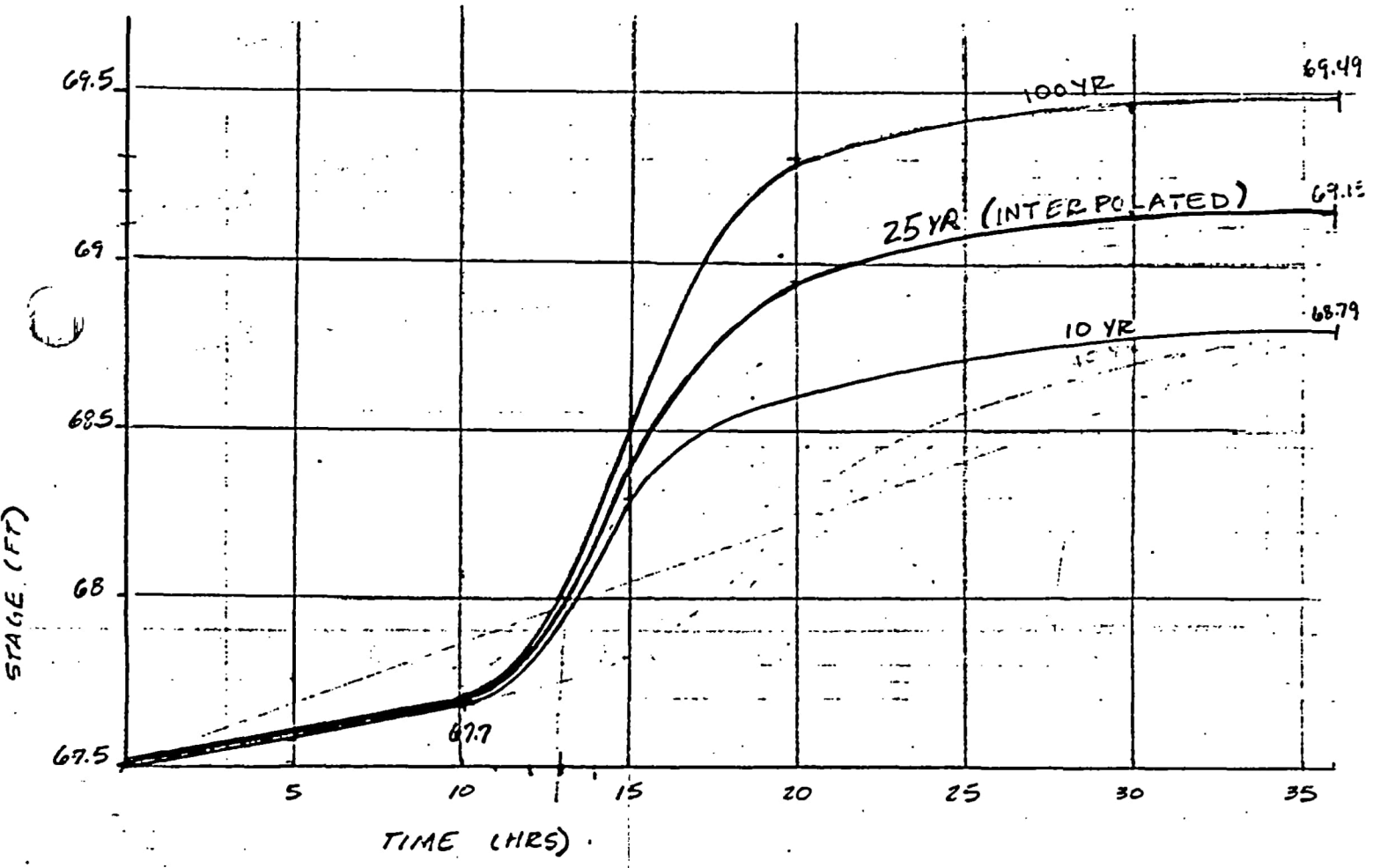
Bird Lake

10 YR

TIME	0	5	10	15	36
ELEV	67.5	67.58	67.70	68.31	68.79

100 YR

TIME	0	10	20	30	36
ELEV	67.5	67.69	69.30	69.47	69.49



Interpolated Time/Stage

25 YR

TIME	0	10	15	20	30	36
ELEV	67.5	67.7	(68.4)	(68.9)	(69.1)	69.15

3/14/94 Confirmed w/ Buddy Brass (Eng/SWFWMD) that 25 yr levels were not obtained for Lake Floyd.

020

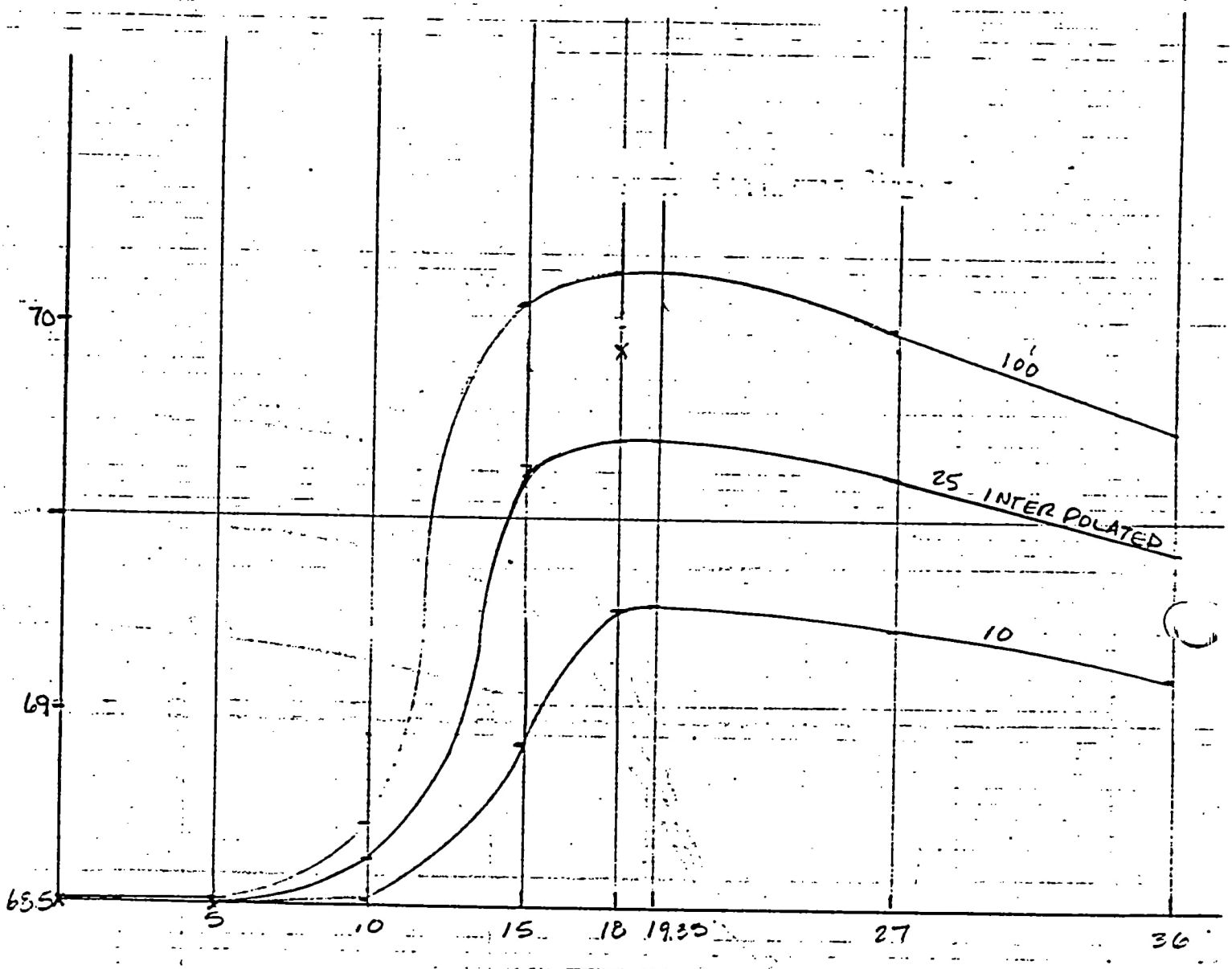
I-15

Henigar & Ray

PROJECT: US 41/SR45 "B" made by: _____ date: _____ job no. _____

checked by: _____ date: _____ sheet no. _____

FLOYD LAKE



X 10 YR

X 100 YR

INTERPOLATED VALUES for 25 YR STORM

TIME	0	5	10	15	18	27	36
STAGE	68.5	68.5	68.62	69.63	69.71	69.62	69.42

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: NBW date: 5/5/94 job no. 21663

checked by: ____ date: ____ sheet no. 1/1

Lake Vienna & Big Lake Vienna

Stage at T_o = 68.0
25yr. Peak Stage = 71.1 } Increase = 3.1 ft.

No time/stage relationship available from SWFWMD.

∴ Use similar time/stage relationship as Bell Lake Structure #8 where increases is 2.92 ft.

25yr.

→	Time (hrs)	0	7.5	15	22.5	30	33.75
→	Stage (ft.)	68.0	68.11	70.33	70.92	71.08	71.1

25yr BELL LAKE STRUCTURE #8

TIME (hr)	0	7.5	15	22.5	30	33.25
STAGE (ft)	70.1	70.3	72.29	72.85	73.0	73.02

100yr:

Time	0	7.5	15	22.5	30		
STAGE	70.1	70.36	72.75	73.47	73.83		
Time	37.5	45	60	90	120	150	180
STAGE	73.97	74.02	73.97	73.58	72.98	72.43	71.68

820 022

I-17

Henigar & Ray

PROJECT: SR 45 (US 41) POND C

made by: TWM date: 9/22/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

LITTLE MOSS LAKE STAGING

STAGE at T_o = 64.0
25yr peak STAGE = 67.5
} INCREASE = 3.5 ft

NO TIME/STAGE RELATIONSHIP AVAILABLE FROM SWFWMD

∴ use similar Time/STAGE RELATIONSHIP AS BELL LAKE Structure #8 where INCrease is 2.92 ft.

(25yr)

BELL LAKE STRUCTURE #8

Time (hr)	0	7.5	15	22.5	30	33.25
STAGE (FT)	70.1	70.3	72.29	72.85	73.0	73.02

(25yr)

DERIVED LITTLE MOSS LAKE STAGING (WEST POND C OUTFALL)

→ Time (hr)	0	7.5	15	22.5	30	33.25
→ STAGE (ft)	64.0	64.2	66.6	67.3	67.5	67.5

SSO

023

I-18

SR 45 POND D

100yr Bell Lake Structure #8

Δy_1 Time	0	7.5	15	22.5	30	37.5
STAGE	70.1	70.30	72.75	73.47	73.83	73.97

Time	45	60	90	120	150
STAGE	74.02	73.97	73.58	72.98	72.43

$\Delta_1 = 3.92$, 70.1 - 74.02 Bell

$\Delta_2 = 3.6$ 68 - 71.6 VIENNA

$$\frac{\Delta_2}{\Delta_1} * \Delta y_1 = \Delta y_2$$

* Derived 100 yr STAGE Time For LAKE VIENNA

Time	0	7.5	15	22.5	30
STAGE	68	68.24	70.43	71.1	71.4

* Derived From Bell LAKE Structure #8

BELL Δ_{100} = 70.1 → 74.02 = 3.94' = Δ_1

LITTLE MOSS Δ_{100} = 64.0 → 68.2 = 4.20' = Δ_2

BELL LAKE (100yr)

Time(hr)	0	7.5	15	22.5	30	37.5	45
STAGE(FT)	70.1	70.36	72.75	73.47	73.83	73.97	74.02

Time(hr)	60	90	120	150	180
STAGE(FT)	77.97	73.58	72.98	72.43	71.68

$$\Delta y_2 = \frac{\Delta_2}{\Delta_1} * \Delta y_1$$

DERIVED 100yr LITTLE MOSS STAGE/Time

Time (hr)	0	7.5	15	22.5	30	37.5	45
STAGE (FT)	64.0	64.28	66.84	67.61	68.0	68.15	*68.20

Time (hr)	60	90	120	150	180
STAGE (FT)	68.15	67.73	67.09	66.50	65.69

025

SR 45 POND C

Derived 100 yr STAGE-Time For LITTLE MOSS LAKE (BASED ON 100yr BELL LAKE STRUCTURE # 8)

I-20

Henigar & Ray

made by:_____ date:_____ job no._____

PROJECT: US 41/SR 45

checked by:_____ date:_____ sheet no._____

LAKE LEVEL INFORMATION

Staging Information Used for Ponds

POND A	Bird Lake
POND B	Lake Floyd
POND C	LITTLE MOSS LAKE & LAKE FLOYD
POND D	Lake Vienna
POND E	Lake Vienna
POND F	Lake Padgett

026

I-21

J. Scott

1/8/85

Revised Delineation of Watershed

Subbasins	Structure Number	Descriptions
Subbasin-1	1	Area above Dupree Lake
Subbasin-2	2	Dupree Lake
Subbasin-4B	5	Dupree Gardens + Lake-D
Subbasin-5	6	Lake A
Subbasin-6A	7	King Lake + Lake C
Subbasin-7	14	Lake-E
Subbasin-8	8	Bell Lake
Subbasin-9	9	Lake-B
Subbasin-10	10	Lake Joyce
Subbasin-11	11	East Lake
Subbasin-12	12	Canal Between East & Saxon Lak
Subbasin-13	13	Lakes Saxon & Padgett
Subbasin-16	19	Orange Grove
Subbasin-17	15	East Lake Ellis
Subbasin-18	16	Lake Sharon
Subbasin-19	17	West Lake Ellis
Subbasin-20	18	Lake-F

027

200

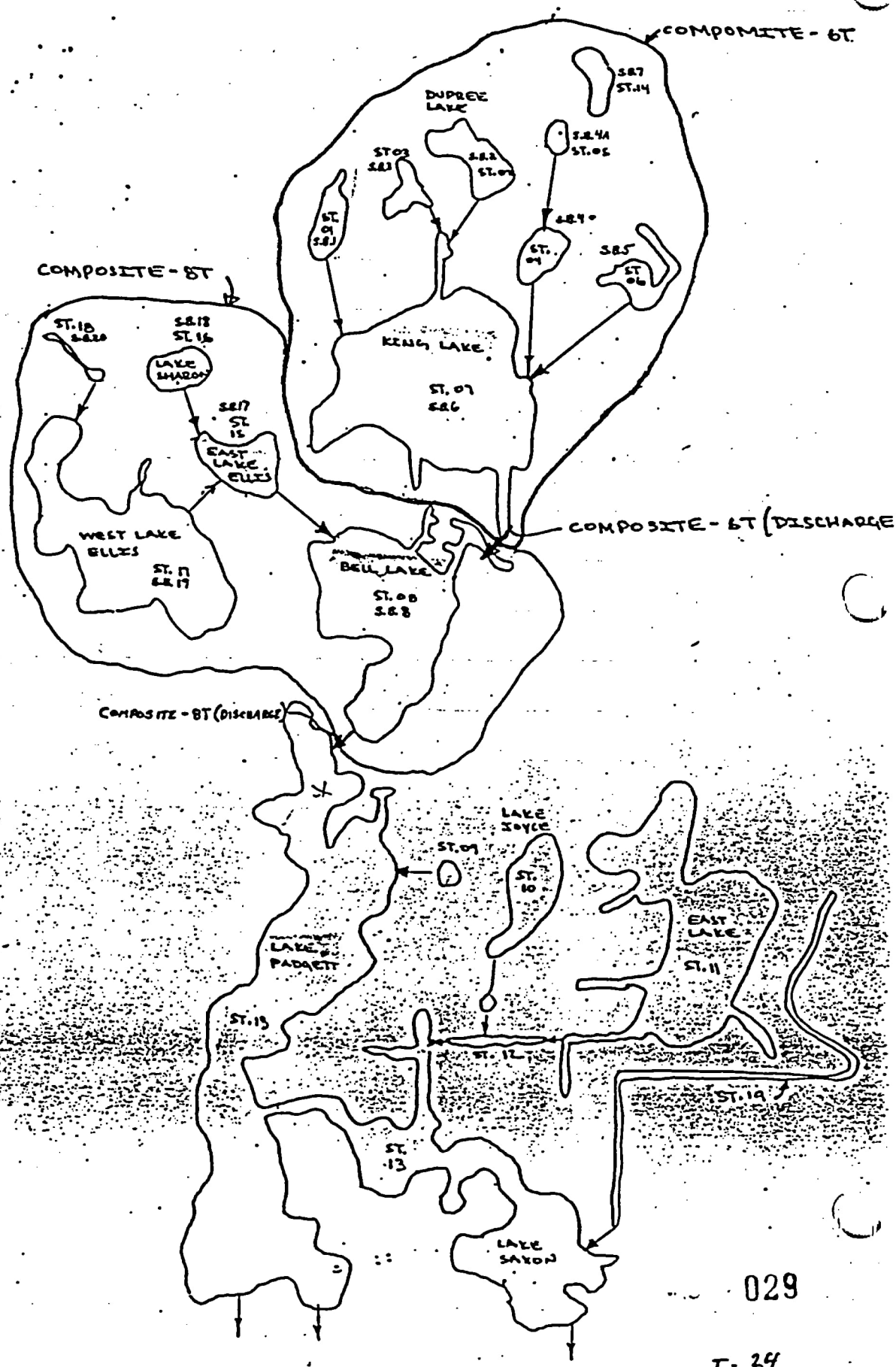
STARTING ELEVATION 8/2/84

P. SHERMAN

SUMMARY OF STARTING ELEVATIONS

SUBBASIN	STARTING ELEVATIONS (FT)
1	71.9
2	71.9
3	70.2
4	72.1
5	71.6
6	71.9
7	73.7
8	70.1
9	74.1
10	74.1
11	77.2
12	70.8
13	69.8
14	69.8
15	
16	
17	71.6
18	72.2
19	71.7
20	72.50

P. SHERMA
11/29/84



029

I-24

Stage/Time Relationships St. # 13 Lake Padgett

Structure #13 100 Yr Storm

TIME	0	5	10	15	20	22.5 (23.5)
ELEV	69.8	69.88	70.16	71.8	71.99	72.02

TIME	30	45	60	90	120
ELEV	71.85	71.46	71.18	70.86	70.64

Structure #13 500 Yr Storm

TIME	0	10	20	(23.5)
ELEV	69.8	70.2	72.16	(72.19)

Structure #13 2.33 Yr Storm

TIME	0	5	10	15	20	24.5
ELEV	69.8	69.82	69.91	70.62	70.76	70.52

Subbasin #13, Structure #13 Lake Padgett
Lake Starting Elev. 69.8

Structure #13 25 Yr Storm

TIME	0	5	10	15	20	22.5 (24)
ELEV.	69.8	69.86	70.07	71.41	71.59	71.62

TIME	30	45	60	90	120
ELEV	71.5	71.2	70.99	70.73	70.53

Stage / Time Relationships Floyd / Bird

10 Year Storm

	TIME	0	5	10	15	18	19.35	27	36
Floyd 50	ELEV	68.5	68.5	68.51	69.19	69.27	69.28	69.22	69.
Bird 60	ELEV	67.50	67.58	67.70	68.31	—	—	—	68.

100 Year storm

Tp

	TIME	0	5	10	15	18	27	36
Floyd 50	ELEV	68.5	68.51	68.72	70.06	70.14	70.01	69.74
	TIME	0	10	20	30	36.10	40	42	48
Bird 60	ELEV	67.5	67.69	69.30	69.47	69.49	69.45	69.42	69.

NODE #50 Floyd Drainage Area = 147.2 Ac

Stage	66.0	67.0	68.0	69.0	70.0	71.0
Storage	0	22.76	48.41	85.30	146.64	245.97

NODE #60 Bird

Stage	67.5	68.0	69.0	70.0	71.0
Storage	0	91.85	284.22	497.39	680.79

INTER-CONNECTED POND ROUTING PROGRAM ### IC88116 VER 2.82

(C) Copyright 1983, Peter J. Singhofen, P.E.

CATFISH100 YR
11-15-88

CONTROL DATA

Simulation time increment (mins)	-->	3
Simulation duration (hrs)	-->	48
Starting time (hrs)	-->	0
Print interval	-->	20

NODE AND INITIALIZATION DATA

NODE #	NODE TYPE	INITIAL STAGE	
10	1	75.000	Dummy
20	1	74.000	Dummy
30	1	67.800	Catfish
40	2	75.000	Dummy
50	1	68.500	Floyd
60	1	67.500	Bird
70	2	66.800	Kell
80	2	68.000	Dummy

INTER-CONNECTED POND ROUTING PROGRAM ### IC88116 VER 2.82

CATFISH100 YR
11-15-88

PEAK CONDITIONS SUMMARY

NODE #	PEAK STAGE (feet)	PEAK STORAGE (acft)	TIME TO PEAK (hrs)	PEAK OUTFLOW (cfs)	TIME TO PEAK (hrs)
10	75.00	29.42	7.60	0.00	0.05
20	75.24	799.22	48.05	0.00	0.05
30	70.22	561.30	31.45	284.59	29.75
40	75.00	0.43	0.05	0.00	0.05
50	70.14	160.32	18.00	39.73	16.30
60	69.49	388.12	36.10	327.94	42.00
70	68.70	636.39	36.00	0.00	0.05
80	68.00	0.00	0.05	0.00	0.05

Catfish
Floyd
Bud

FROM NODE	TO NODE	PEAK OUTFLOW (cfs)	TIME TO PEAK (hrs)
20	30	0.00	0.05
30	60	270.91	29.75
30	60	0.00	0.05
40	50	0.00	0.05
50	60	39.73	16.30
60	80	0.00	0.05
60	70	253.28	48.05
60	70	114.15	36.10
10	30	0.00	0.05
30	60	13.68	29.30

800

033

I-28

INTER-CONNECTED POND ROUTING PROGRAM ### IC88116 VER 2.82

Hoyt Catfish Bird

CATFISH 10 YR
11-15-88

PEAK CONDITIONS SUMMARY

NODE #	PEAK STAGE (feet)	PEAK STORAGE (acft)	TIME TO PEAK (hrs)	PEAK OUTFLOW (cfs)	TIME TO PEAK (hrs)
10	75.00	-0.00	0.05	1.00	0.05
20	75.08	326.79	36.05	0.00	0.05
30	68.96	317.28	36.05	164.00	0.05
40	75.00	0.00	0.05	0.00	0.05
50	69.28	102.33	19.35	14.42	19.35
60	68.79	244.72	36.05	150.94	15.00
70	68.28	363.81	36.05	0.00	0.05
80	68.00	0.00	0.05	0.00	0.05

FROM NODE	TO NODE	PEAK OUTFLOW (cfs)	TIME TO PEAK (hrs)
20	30	0.00	0.05
30	60	155.45	0.05
30	60	0.00	0.05
40	50	0.00	0.05
50	60	14.42	19.35
60	80	0.00	0.05
60	70	150.94	15.00
60	70	0.00	0.05
10	30	1.00	0.05
30	60	8.56	0.10

280

034

I-29

COUNTY: PASCO

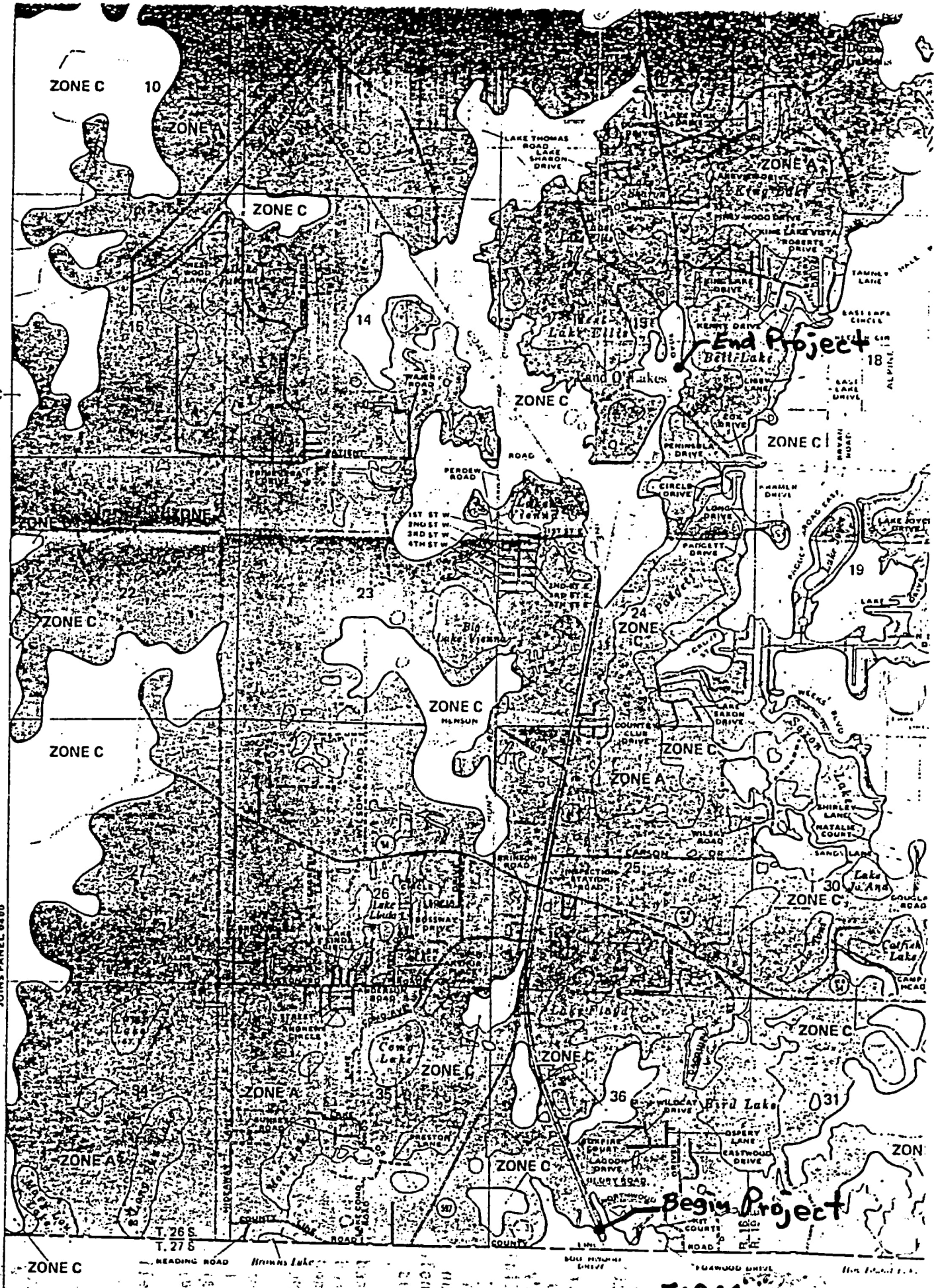
FLOOD STAGE FREQUENCIES (NGVD)

LAKE	Sec/Twp/Rng	Datum	Elev.	2.33 Yr.	5 Yr.	10 Yr.	25 Yr.	50 Yr.	100 Yr.	500 Yr.	AGENCY
Bass	34-26-17		46.8	48.1	48.4	48.8	49.1	49.2	49.5	49.8	SWFWMD
Bell	13-26-18	68.69	70.1	71.64	72.11	72.53	73.02	73.22	74.02	74.43	SWFWMD
Camp	34-26-18		62.0	63.5	63.9	64.3	64.6	64.7	65.0	65.1	SWFWMD
Canal	19-26-19		70.8	75.78	76.12	76.52	77.02	77.18	77.62	77.92	SWFWMD
Clear Duck (see Hunsader Cr.)											
Como (Little Moss)	35-26-18		64.0	65.6	66.0	67.0	67.5	67.7	68.2	68.5	SWFWMD
Crews	16-24-18			54.7	56.2	57.0	58.0	58.7	59.2		SWFWMD
East	19-26-19	71.29	77.2	78.10	78.37	78.63	78.92	79.04	79.31	79.47	SWFWMD
East Ellis	13-26-18		71.6	72.52	72.79	73.06	73.37	73.50	73.81	73.99	SWFWMD
Fierson	6-25-17		19.0	20.4	20.9	21.2	21.6	21.7	22.1	22.3	SWFWMD
Fishing	34-26-17		46.8	48.1	48.4	48.8	49.1	49.2	49.5	49.8	SWFWMD
Garden	26-25-16		19.0	20.9	21.5	22.1	22.6	23.2	23.6	24.2	SWFWMD
Geneva	35-26-17		50.2	50.8	51.0	51.2	51.4	51.5	51.6	51.6	SWFWMD
Hancock	5-24-20			105.6	106.7	107.5	108.1	108.4	109.0	109.4	SWFWMD
Hiawatha	35-26-17		48.4	49.8	50.2	50.6	51.1	51.3	51.7	51.8	SWFWMD
Iola	15-24-20			146.9	147.2	147.6	148.2	148.4	148.8	149.0	SWFWMD
Jessamine	11-24-20			142.5	143.4	144.2	145.0	146.0	146.9	147.4	SWFWMD
Joyce	19-26-19	69.94	74.1	75.71	76.20	76.66	77.16	77.35	77.84	78.11	SWFWMD
King	7-26-19	67.31	71.9	73.04	73.36	73.66	74.00	74.02	74.06	74.11	SWFWMD
King	22-25-20			104.9	105.2	105.5	106.0	106.1	106.4	106.5	SWFWMD
Linda	26-26-18		65.0	66.2	66.6	67.3	67.6	67.8	68.1	68.3	SWFWMD
Little Moss (Como)	35-26-18		64.0	65.6	66.0	67.0	67.5	67.7	68.2	68.5	SWFWMD
Middle	4-24-20			105.6	106.7	107.5	108.1	108.4	109.0	109.4	SWFWMD
Minniola	35-26-17	47.75	50.2	50.8	51.0	51.2	51.4	51.5	51.6	51.6	SWFWMD
Moody	10-24-20			109.4	110.0	110.5	111.0	111.3	111.8	112.1	SWFWMD

COUNTY: PASCO

FLOOD STAGE FREQUENCIES (NGVD)

LAKE	Sec/Twp/Rng	Datum	Elev.	2.33 Yr.	5 Yr.	10 Yr.	25 Yr.	50 Yr.	100 Yr.	500 Yr.	AGENCY
Moon	28-25-17		39.0	40.3	40.7	41.0	41.4	41.7	42.0	42.3	SWFWMD
Moss	35-26-18		62.0	63.9	64.4	65.0	65.5	65.7	66.1	66.2	SWFWMD
Nicks	29-23-20			112.9	113.7	114.5	115.4	115.7	116.6	117.6	SWFWMD
Padgett	24-26-18		69.8	70.82	71.17	71.34	71.62	71.75	72.02	72.19	SWFWMD
Parker	35-26-17	41.93	46.8	48.1	48.4	48.8	49.1	49.2	49.5	49.8	SWFWMD
Pasco	22-24-18		65.8			67.5					SWFWMD
Richey	3-26-16		12.0	13.4	13.8	14.1	14.4	14.6	14.9	15.1	SWFWMD
St. Clair	33-23-20			112.9	113.7	114.5	115.4	115.7	116.6	117.6	SWFWMD
Saxon	30-26-19	62.176	69.8	70.82	71.17	71.34	71.62	71.75	72.02	72.19	SWFWMD
Sharon	12-26-18		72.2	73.03	73.45	73.78	74.09	74.17	74.38	74.51	SWFWMD
Seminole	35-26-17	44.0	46.8	48.1	48.6	49.2	50.2	50.6	51.0	51.1	SWFWMD
Thomas	11-26-18		73.0	74.8	75.1	75.6	76.0	76.1	76.2	76.3	SWFWMD
Unnamed	12-26-18		72.5	76.05	76.10	76.15	76.16	76.19	76.19	76.20	SWFWMD
Unnamed	NW¼ 7-26-19		71.5	73.58	73.68	73.93	74.17	74.27	74.50	74.56	SWFWMD
Unnamed	SE¼ 7-26-19		76.1	73.56	73.95	74.25	74.57	74.70	75.03	75.21	SWFWMD
Unnamed	19-26-19		74.1	77.32	77.92	77.96	78.05	78.05	78.02	78.12	SWFWMD
Vienna	23-26-18		68.0	69.3	69.8	70.7	71.1	71.3	71.6	71.8	SWFWMD
West Ellis	13-26-18	68.32	71.7	73.11	73.54	73.91	74.27	74.40	74.74	74.93	SWFWMD
Wistaria	2-26-18		72.9	74.2	74.6	74.9	75.2	75.3	75.4	75.5	SWFWMD
Worley	24-25-16		20.0	21.0	21.5	22.1	22.6	23.2	23.6	24.2	SWFWMD
Worrell	26-25-16		19.0	20.9	21.5	22.1	22.6	23.2	23.6	24.2	SWFWMD
#22	27-24-18		61.0			62.6					SWFWMD



FIRM
Panel 425
037

SECTION II

RETENTION/DETENTION PONDS ASSOCIATED WITH S.R. 45 ROADWAY IMPROVEMENTS

INTRODUCTION

Professional Service Industries, Inc. (PSI)/Jammal Division was retained to provide geotechnical services for the retention/detention ponds associated with the proposed S.R. 45 (U.S. 41) improvements in Pasco County, Florida. There are six (6) ponds proposed for this segment. The locations of these ponds are tabulated below:

POND	APPROXIMATE STATION	APPROXIMATE OFFSET (feet)
A	20+00 - 25+00	120 RT
B	45+50 - 49+00	120 RT
C	64+50 - 69+50	160 RT
D	117+00 - 123+00	140 LT
E	146+50 - 150+50	260 LT
F	169+50 - 173+50	70 RT

This report will concentrate on the retention/detention ponds portion of the project. Our work for this portion included auger borings, laboratory classification testing, groundwater measurements, estimating normal seasonal high groundwater levels, Double-Ring Infiltration Testing, preliminary engineering analyses, evaluations and recommendations.

Briefly, the existing subsurface soils encountered in the borings of Ponds A through E appear to be acceptable for use as a general backfill in accordance with FDOT Index 505, and the selected stormwater retention/detention ponds are suitable locations.

PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to obtain information concerning the general subsurface conditions at the proposed stormwater retention/detention ponds in order to make engineering estimates and recommendations in each of the following areas:

1. Determination of soil stratigraphy and development of the shallow soil profiles at the boring locations.

2. Suitability of the existing soils in the retention areas for stormwater management design and borrow material. Estimation of the normal seasonal high groundwater tables.

The scope of services for the geotechnical testing program associated with the stormwater retention/detention ponds for this project consisted of the following:

1. Performed a total of ten (10) auger borings to depths ranging from eight (8) to twenty (20) feet below existing grades at the proposed pond locations (Ponds A through E). Pond F was not drilled due to access problems associated with the tenant.

2. Performed one (1) Double-Ring Infiltration test (DRIT) at each of the proposed ponds (A through E).

3. Measured groundwater levels in the borings. Estimated the normal seasonal high groundwater levels at these locations.

4. Prepared a formal engineering report summarizing our field testing, laboratory testing and the subsurface soil and groundwater conditions encountered.

FIELD EXPLORATION

To evaluate the subsurface conditions at Ponds A through E, ten (10) auger borings extending to depths ranging from eight (8) to twenty (20) feet below existing grades were performed.

Boring locations which were inaccessible to a truck-mounted drilling equipment were conducted with hand-auger equipment.

The power auger borings were performed by advancing a flight auger into the ground in a continuous "corkscrew" fashion without allowing the auger to over rotate and disturb the subsurface conditions. The auger is then pulled from the ground without allowing the auger to rotate. The soil remaining on the auger flights are then classified and stratified with representative samples placed in jars and transported back to our Tampa laboratory for visual confirmation by a geotechnical engineer.

Prior to performing the DRIT in each of the proposed ponds, a hand auger was performed to determine soil type. The results of the Double-Ring Infiltration tests performed at each proposed pond are tabulated below and shown on Plates 1 through 5 in Appendix D.

Double-Ring Infiltration Test (DRIT) results performed for Ponds A through E are summarized in a tabular format below:

DRIT NUMBER	POND	APPROXIMATE STATION	OFFSET FROM BASELINE OF SURVEY (FEET)	DEPTH (FEET)	INFILTRATION RATE (IN/HR)
1	A	24+00	275-RT-	3	12.7
2	B	46+50	200-RT-	3	3.7
3	C	65+00	250-RT-	3	10.8
4	D	119+80	190-LT-	3	2.5
5	E	148+50	300-LT-	3	6.5
6	F	*	--	--	--

* Not performed due to site inaccessibility.

LABORATORY TESTING

General

Representative soil samples collected from the auger borings were visually reviewed in the laboratory by a geotechnical engineer to confirm the field classifications. The samples were classified and stratified in general accordance with the AASHTO Soil Classification System. Our classification was based on visual observations with the results of the laboratory testing used to confirm the visual classification. Laboratory classification consisting of grain-size analysis, and moisture content tests were performed on selected soil samples believed to be representative of the materials encountered.

The following table summarizes the laboratory tests performed by type and number:

- Natural Moisture Content 5
- Grain-Size Analysis 5

Grain-Size Analysis

The grain-size analysis test measures the percentage by weight of a dry soil sample passing a series of U.S. standard sieves, including the percent passing the No. 200 sieve. In this manner, the grain-size distribution of the soil is measured. The percentage by weight passing the No. 200 sieve is the silt and clay content. The percentage by weight of silt and clay in a soil affects its engineering properties, including permeability, suitability as roadway subgrade, and suitability as general fill material.

Moisture Content

Laboratory moisture content test consists of the determination of the percentage of moisture content in selected samples. Briefly, natural moisture content is determined by weighing a sample of the selected material and then drying it in a warm oven. The sample is removed from

the oven and reweighed. The difference of the two weights is the amount of moisture removed from the sample. The weight of the moisture divided by the weight of the dry soil sample is the percentage by weight of the moisture in the sample.

Laboratory tests performed for the pond soil survey along with their results are shown on Table 3 in Appendix A, while the gradation curves are presented on Figures 59 through 63 in Appendix C.

GENERALIZED SUBSURFACE CONDITIONS

General

Pasco County is in the central or mid-peninsular physiographic zone of the Florida Peninsula. The county is characterized by discontinuous highlands in the form of ridges separated by broad valleys. The ridges are above the static level of the water in the aquifer, but the broad valleys are below it. Broad shallow lakes are common on the valley floors, and smaller deep lakes are on the ridges. Based on physiography, the county can be divided into five areas: the Coastal Swamps, the Gulf Coastal Lowlands, the Brooksville Ridge, the Tsala Apopka Plain, and the Western Valley.

The county is underlain by several thousand feet of sedimentary rock, principally various limestone formation. A very gently sloping, very flat limestone terrain extends inland from the Gulf of Mexico. This is the Coastal Swamps area. It extends the length of the county and ranges up to about 2 miles in width. As one goes inland, the terrain changes very gradually from shallow marine water to salt marshes to fresh water swamps. Much of the area is shallow to limestone, and because there are no barrier formations, sands did not accumulate and beaches did not form. In some areas, the limestone has dissolved and pockets of organic materials have accumulated. As a result, some places have a mixture of organic and mineral soils.

State Road 45 (U.S. 41) improvements are located within the Gulf Coastal lowlands. The Gulf Coastal Lowlands lie between the Coastal Swamps and the Brooksville Ridge and the Western Valley. In the northern part of the county they conjoin the Brooksville Ridge, and in the southern part they conjoin the Western Valley area at Zephyrhills Gap. The area consists mainly of pine and sawpalmetto flatwoods and has numerous small ponds and broad grassy sloughs.

The soils are predominantly nearly level, wet, and sandy. Some areas have deep, well drained and excessively drained sands which are relict sand dunes. Much of the urban development in the county has occurred on the better drained parts of the lowlands. Much of the wetter acreage is used as pastureland.

The drainage of the area has been studied. Much of the water falling on the county is returned to the atmosphere by evaporation and transpiration. The remainder enters the ground. Ultimately, all of this ground water flows into the Gulf of Mexico. It drains from the area through the underlying limestone and via a few surface streams. Streams are present only where material of slow permeability overlie the limestone or the water level in the limestone is near the ground surface. The Pitchlachascotee and Anclote Rivers drain the area west of U.S.

Highway 41 and south of Florida Highway 52. The southeastern and south-central parts of the county are drained by tributaries of the Hillsborough River. The Withlacoochee River drains the eastern part of the county.

Some areas of the county have sinkhole drainage patterns. Bear Creek, for example, drains into Bear Sink and when Bear Sink is full it drains into a second sinkhole. In periods when both of these sinks cannot drain the full water flow, the excess flows westward via a poorly developed channel across U.S. Highway 19 to the Gulf of Mexico. Several lakes east of Port Richey are drained by Rocky Sink.

Some parts of the county are drained by closed depressions. These are common in the drainage areas of streams. These closed depressions, which drain internally, generally provide adequate subsurface drainage during periods of normal rainfall. During very wet periods, the closed depressional drains may receive more water than they can release into the underlying limestone formation, allowing the closed depressions to become flowing springs.

USGS Topographic Survey

A review of the USGS Topographic Survey Map for Lutz, Florida, indicates the project alignment to be at elevations ranging from 70 to 81 feet National Geodetic Vertical Datum of 1929 (NGVD). A reproduction of the USGS Topographic Survey Map for the project vicinity is shown on Sheet 1 in Appendix A.

Pasco County Soil Survey

The Pasco County Soil Survey (1982) indicates that there are seven (7) mapping units along the project alignment. These mapping units are shown on Table 1 in Appendix A. Included on Table 1 are the general soil descriptions, soil classification by depth and soil survey estimated seasonal high groundwater tables for the soil series encountered in the project area. The USDA Soil Survey Map for the project vicinity is shown on Sheet 1 in Appendix B. The map soil units encountered are as follow:

- Myakka Fine Sand (5)
- Seller Mucky Loamy Fine Sand (8)
- Adamsville Fine Sand (11)
- Smyrna Fine Sand (21)
- Samsula Muck (52)
- Zolfo Fine Sand (73)
- Urban Land (38)

Soil Boring Results

Soil stratification is based on visual examination of the recovered soil samples, laboratory testing and interpretation of the field boring logs by a geotechnical engineer. The boring stratification lines represent the approximate boundaries between soil types of significantly different engineering properties; however, the actual transition may be gradual. In some cases, small variations in properties not considered pertinent to our engineering evaluation may have been abbreviated or omitted for clarity. The boring profiles present the conditions at the particular boring location and variations do occur among the borings.

The auger borings performed for the proposed stormwater retention/detention ponds are presented on Table 2 in Appendix A. Table 2 presents a list of auger borings performed along with their approximate baseline of survey station, offset, measured groundwater table, estimated seasonal high groundwater table depths and USDA seasonal high water table depths. Presented on Sheets 12 and 13 in Appendix B are soil profiles, along with soil borings legend and other pertinent information such as measured groundwater levels.

The soil strata encountered in the borings performed at the proposed retention/detention ponds are summarized below:

STRATUM	SOIL DESCRIPTION	AASHTO SOIL CLASSIFICATION
1	Peat (black slightly silty sand)	(A-8)
2	Fill (dark gray to dark gray-brown mottled slightly silty fine sand with traces of shell fragments, limerock fragments and traces of organics)	(A-2-4)
3	Dark gray slightly silty fine sand with trace of roots	(A-3)
4	Gray to light gray silty fine sand	(A-2-4)
5	Light brown to white fine Sand	(A-3)
6	Dark reddish brown slightly silty fine Sand	(A-3)
7	Dark brown to brown silty Sand	(A-2-4)
8	Limestone base material	-

Groundwater

The groundwater table was measured at each boring location following completion of drilling operations between August 10 and August 17, 1993. The depths to the static groundwater table at the borings performed were measured after a short stabilization period and were found to range from depths of 3.2 feet to 7.6 feet below existing grades. The groundwater table measurements at each auger boring location are presented on Table 2 in Appendix A.

Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences, such as existing swales, drainage ponds, underdrains and areas of covered soil (paved parking lots, side walks, etc.).

Estimated normal seasonal high groundwater table levels are expected to be at depths ranging from 2.5 to 3.0 feet below existing grades. Estimated normal seasonal high groundwater table

depths at each boring performed are presented on Table 2 in Appendix A. These estimates are based on the soil stratigraphy, measured groundwater levels in the borings, USDA Soil Survey information and our past experience with similar soil conditions. In areas where the subsurface soil conditions were disturbed, normal indications such as "stain lines" were not evident (stain lines help identify where the high groundwater table was during previously extended rainfalls or flood).

PRELIMINARY ENGINEERING EVALUATIONS & RECOMMENDATIONS

General

The majority of the soils encountered in the borings appear to be satisfactory for use as fill materials in accordance with FDOT Index 505. The results of the DRIT's performed at ponds A through E yielded results in the range of 2.5 to 12.7 inches per hour (in/hr). Pond F was not explored due to accessibility constraints with the tenant who is leasing the property. Peat was encountered in Pond A between Station 20+00 and Station 20+50. Delineation of the peat encountered in Pond A, revealed the peat to be present from a depth of 1 to 5.5 feet below existing grades.

Temporary Side Slopes

Side slopes for temporary excavations may stand on 1 Horizontal (H) to 1 Vertical (V) for short dry periods of time; we recommend that temporary excavations below a depth of four (4) feet be cut on stable slopes. Where site restrictions will not permit slopes to be laid back as recommended above, the excavation should be shored in accordance with OSHA requirements. Furthermore, open-cut excavations exceeding ten (10) feet in depth should be properly dewatered and sloped on 2H:1V or flatter or be benched using a bracing plan approved by a professional engineer licensed in the State of Florida. During foundation construction, excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

On-Site Soil Suitability

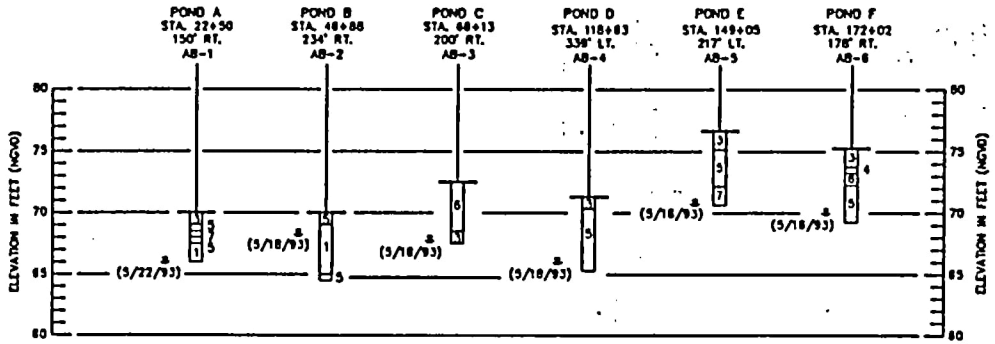
In general, the majority of the fine sands to silty sands (Strata 2, 3, 4, 5, 6 and 8) can be moved and used for grading purposes, site levelling, general engineering fill, structural fill and backfill in other areas, provided the fill is free of organic materials, clay, debris or any other material

deemed unsuitable for construction. All fills should be placed in accordance with FDOT Index 505. The peat soils (Stratum 1) should be removed from the proposed pond areas.

REPORT LIMITATIONS

The recommendations submitted in this report are based upon the anticipated location and type of construction and the data obtained from the soil borings performed at the locations indicated and does not reflect any variations which may occur among these borings. If any variations become evident during the course of construction, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. When final design plans and specifications are available, a general review by our office may be warranted to ensure that the assumptions made in preparation of this report are correct and valid and that earthwork and foundation recommendations are properly interpreted and implemented.

The scope of services, included herein, did not include any environmental assessment for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater, air, on the site, below and around the site. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items and conditions are strictly for the information of the client. Prior to construction, an environmental site assessment is recommended.



SOIL PROFILES

VERTICAL SCALE: 1"=5'

LEGEND

1 PEAT (BLACK SLIGHTLY SILTY SAND)(A-8)

2 FILL (DARK GRAY TO DARK GRAY-BROWN MOTTLED SLIGHTLY SILTY FINE SAND WITH TRACES OF SHELL FRAGMENTS, LIMEROCK FRAGMENTS AND TRACE OF ORGANICS) (A-2-4)

3 DARK GRAY SLIGHTLY SILTY FINE SAND WITH TRACE OF ROOTS (A-3)

4 GRAY TO LIGHT GRAY SILTY FINE SAND (A-2-4)

5 LIGHT BROWN TO WHITE FINE SAND (A-3)

6 DARK REDDISH BROWN SLIGHTLY SILTY FINE SAND (A-3)

7 DARK BROWN TO BROWN SILTY SAND (A-2-4)

8 LIMESTONE BASE MATERIAL

A WITH SIGNIFICANT LIMEROCK FRAGMENTS

$\triangleq$ GROUNDWATER LEVEL, DATE

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

PONDS

REVISIONS

DRAWN BY DLW 11/93

CHECKED BY RSE 11/93

APPROVED BY RAJA S. ELAWAR, P.E.

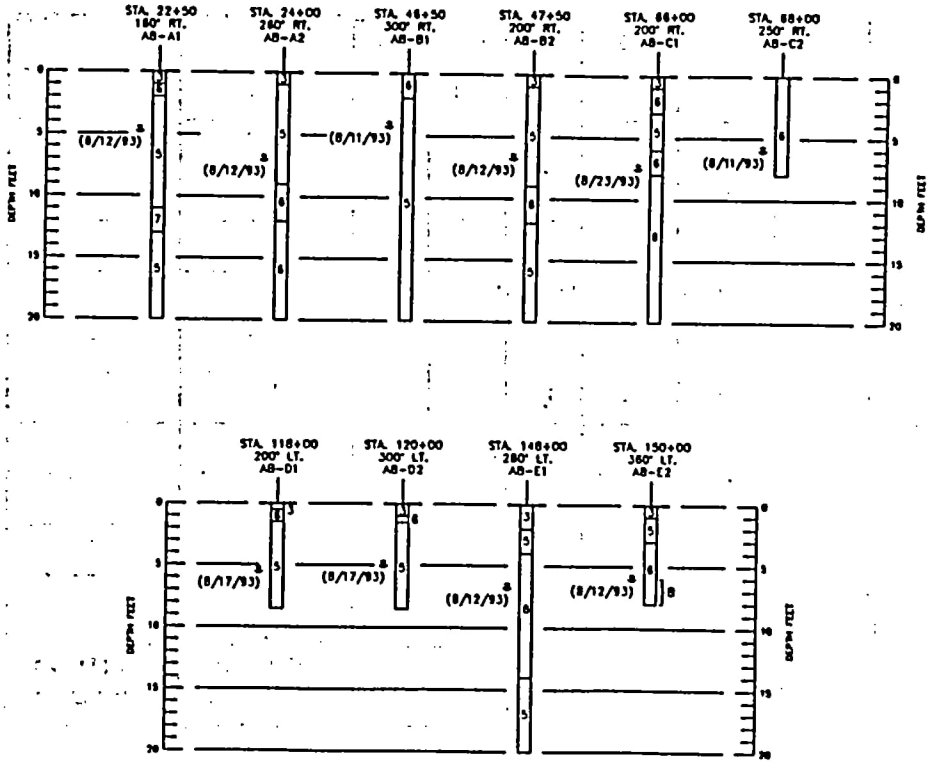
Professional Services Industries, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION

ROADWAY SOILS SURVEY

S.R. 45 (U.S. 41) IMPROVEMENTS

A-50



SOIL PROFILES

VERTICAL SCALE: 1"=5'

LEGEND

1 PEAT (BLACK SLIGHTLY SILTY SAND)(A-8)

2 FILL (DARK GRAY TO DARK GRAY-BROWN MOTTLED SLIGHTLY SILTY FINE SAND WITH TRACES OF SHELL FRAGMENTS, LIMEROCK FRAGMENTS AND TRACE OF ORGANICS) (A-2-4)

3 DARK GRAY SLIGHTLY SILTY FINE SAND WITH TRACE OF ROOTS (A-3)

4 GRAY TO LIGHT GRAY SILTY FINE SAND (A-2-4)

5 LIGHT BROWN TO WHITE FINE SAND (A-3)

6 DARK REDDISH BROWN SLIGHTLY SILTY FINE SAND (A-3)

7 DARK BROWN TO BROWN SILTY SAND (A-2-4)

8 LIMESTONE BASE MATERIAL

A WITH SIGNIFICANT LIMEROCK FRAGMENTS

& GROUNDWATER LEVEL, DATE

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

PONDS

ROADWAY SOILS SURVEY

S.R. 45 (U.S. 41) IMPROVEMENTS

FLORIDA DEPARTMENT OF TRANSPORTATION

Professional Service Industries, Inc.

DLW 11/93

RSE 11/93

SUPERVISED BY RAJA S. ELAWAR, P.E.

REVISIONS

I-45

050

120

A-51

TABLE 3
SUMMARY OF LABORATORY TEST RESULTS
S.R. 45 (U.S. 41) IMPROVEMENTS
PASCO COUNTY, FLORIDA
PSI PROJECT NO. 775-35105

BORING NUMBER	DEPTH (FEET)	ORGANIC CONTENT	NATURAL MOISTURE CONTENT (%)	SIEVE ANALYSIS					ATTERBERG LIMITS		AASHTO SOIL CLASSIFICATION	STRATUM NUMBER
				#10	#40	#60	#100	#200	LL	PI		
AB-11*	1 - 2	-	8.2	100	100	99	81	4	-	-	A-3	3
AB-14*	2 - 3	-	25.5	100	100	99	86	4	-	-	A-3	5
AB-15*	2 - 3	-	8.1	100	100	99	65	7	-	-	A-3	6
AB-19*	0 - 1	-	2.1	83	79	74	57	12	-	-	A-2-4	2
B-1	7.5 - 10	-	22.8	100	100	99	86	4	-	-	-	-
RETENTION/DETENTION PONDS												
AB-A1	5.5	-	4.0	100	100	99	88	4	-	-	A-3	5
AB-B2	1.0	-	8.5	100	100	99	87	7	-	-	A-3	3
AB-C1	5	-	23.1	100	100	100	91	6	-	-	A-3	5
AB-D2	5.5	-	19.7	100	100	100	92	7	-	-	A-3	5
AB-E1	5	-	22.5	100	100	100	91	7	-	-	A-3	6

* Borings drilled on Dale Mabry Highway.

051
Z-46
A-52

TABLE 1
USDA SOIL SURVEY
S.R. 45 (U.S. 41) IMPROVEMENTS
FROM COUNTY LINE ROAD TO BELL LAKE ROAD
PASCO COUNTY, FLORIDA
PSI PROJECT NO. 775-35105

SOIL SERIES	APPROXIMATE BASELINE STATIONS	DEPTH (INCHES)	SOIL DESCRIPTION	AASHTO CLASSIFICATION	USDA S.H.W. TABLE DEPTH (INCHES)
			S.R. 45		
Myakka Fine Sand (5)	3+30 - 10+60 15+60 - 21+60 35+30 - 43+60 59+30 - 81+60	0 - 27 27 - 38 38 - 80	Fine Sand Fine Sand, Loamy Fine Sand Fine Sand	A-3 A-3, A-2-4 A-3	0 - 12
Adamsville Fine Sand (11)	0+00 - 3+30 10+60 - 14+30 21+60 - 35+30 46+60 - 59+30 81+60 - 96+90 96+90 - 111+90-RT- 111+90 - 117+90 123+20 - 129+50 134+50 - 137+50	0 - 8 8 - 80	Fine Sand Fine Sand	A-3, A-2-4 A-3, A-2-4	24 - 42
Smyrna Fine Sand (21)	43+60 - 46+60 129+50 - 134+50	0 - 13 13 - 25 25 - 80	Fine Sand Sand, Fine Sand Fine Sand	A-3 A-3, A-2-4 A-3	0 - 12
Samsula Muck (52)	14+30 - 15+60 96+90 - 111+90-LT- 117+90 - 123+20	0 - 32 32 - 80	Muck (Pt) Fine Sand, Loamy Sand	A-8 A-3, A-2-4	+24 - 12
Zolfo Fine Sand (73)	137+50 - 161+80	0 - 3 3 - 65 65 - 80	Fine Sand Fine Sand, Sand Fine Sand, Sand	A-3 A-3, A-2-4 A-3, A-2-4	24 - 42
Urban Land (38)	161+80 - 196+80	This section has been altered by excavation and fill. Previously this appears to be Adamsville fine sand (11)/Zolfo fine sand (73).			Man-made channels dictate depth

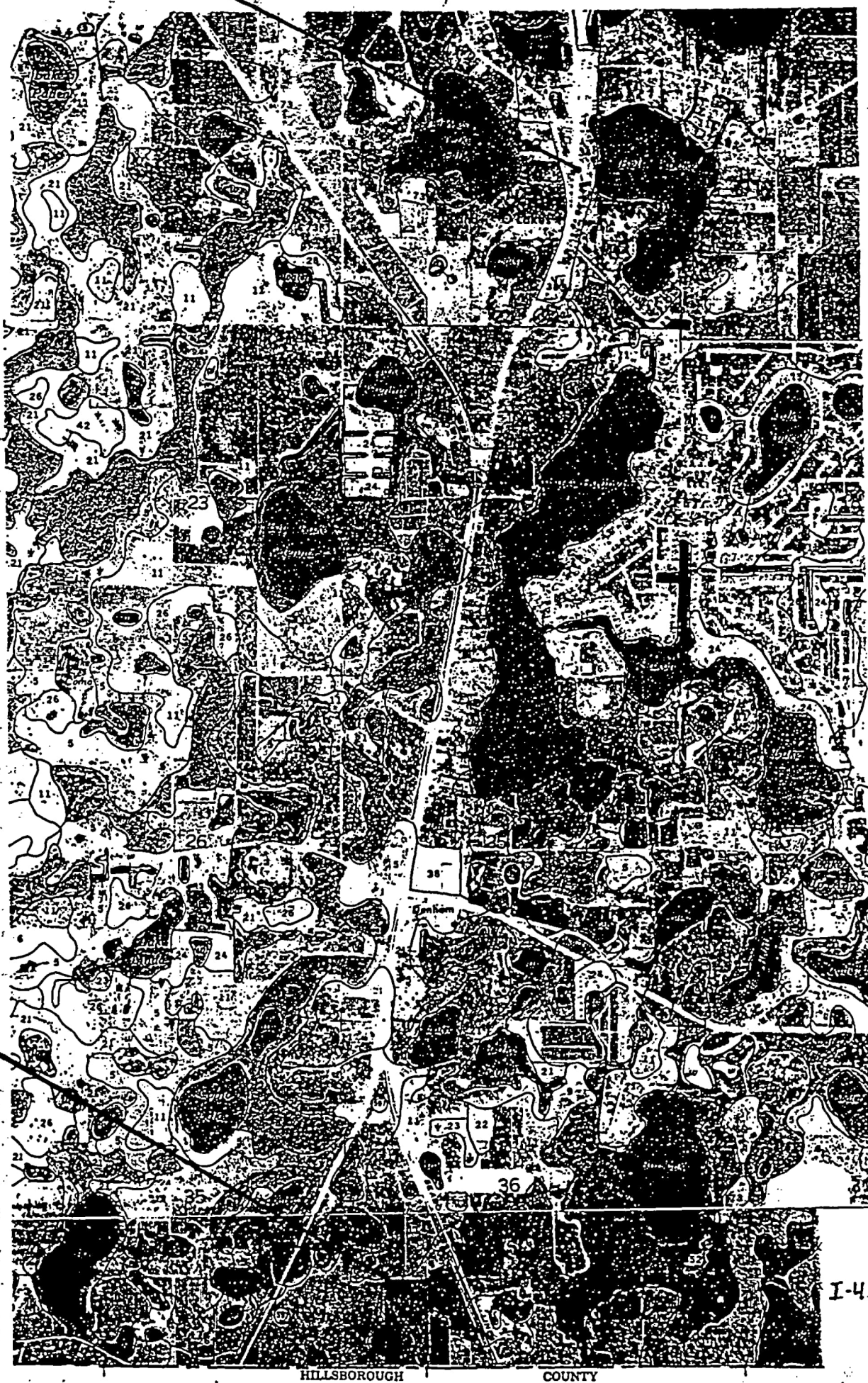
TABLE 1
USDA SOIL SURVEY
S.R. 45 (U.S. 41) IMPROVEMENTS
FROM COUNTY LINE ROAD TO BELL LAKE ROAD
PASCO COUNTY, FLORIDA
PSI PROJECT NO: 775-35105

SOIL SERIES	APPROXIMATE BASELINE STATIONS	DEPTH (INCHES)	SOIL DESCRIPTION	AASHTO CLASSIFICATION	USDA S.H.W. TABLE DEPTH (INCHES)
			S.R. 54		
Myakka Fine Sand (5)	12+00 - 14+33 14+33 - 21+00 LT 21+00 - 42+33	0 - 27 27 - 38 38 - 80	Fine Sand Fine Sand, Loamy Fine Sand Fine Sand	A-3 A-3, A-2-4 A-3	0 - 12
Sellers Mucky Loamy Fine Sand (8)	14+33 - 21+00 RT	0 - 9 9 - 24 24 - 80	Mucky Loamy Fine Sand Sand, Fine Sand, Loamy Fine Sand Sand, Fine Sand, Loamy Fine Sand	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+24 - 0
Smyrna Fine Sand (21)	42+33 - 45+00	0 - 13 13 - 25 25 - 80	Fine Sand Sand, Fine Sand Fine Sand	A-3 A-3, A-2-4 A-3	0 - 12
			DALE MABRY HIGHWAY		
Myakka Fine Sand (5)	291+10 - 305+30	0 - 27 27 - 38 38 - 80	Fine Sand Fine Sand, Loamy Fine Sand Fine Sand	A-3 A-3, A-2-4 A-3	0 - 12
Sellers Mucky Loamy Fine Sand (8)	287+50 - 291+10	0 - 9 9 - 24 24 - 80	Mucky Loamy Fine Sand Sand, Fine Sand, Loamy Fine Sand Sand, Fine Sand, Loamy Fine Sand	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	+24 - 0
Adamsville Fine Sand (11)	305+30 - 309+50	0 - 8 8 - 80	Fine Sand Fine Sand	A-3, A-2-4 A-3, A-2-4	24 - 42

053 T-84 A-54

END PROJECT

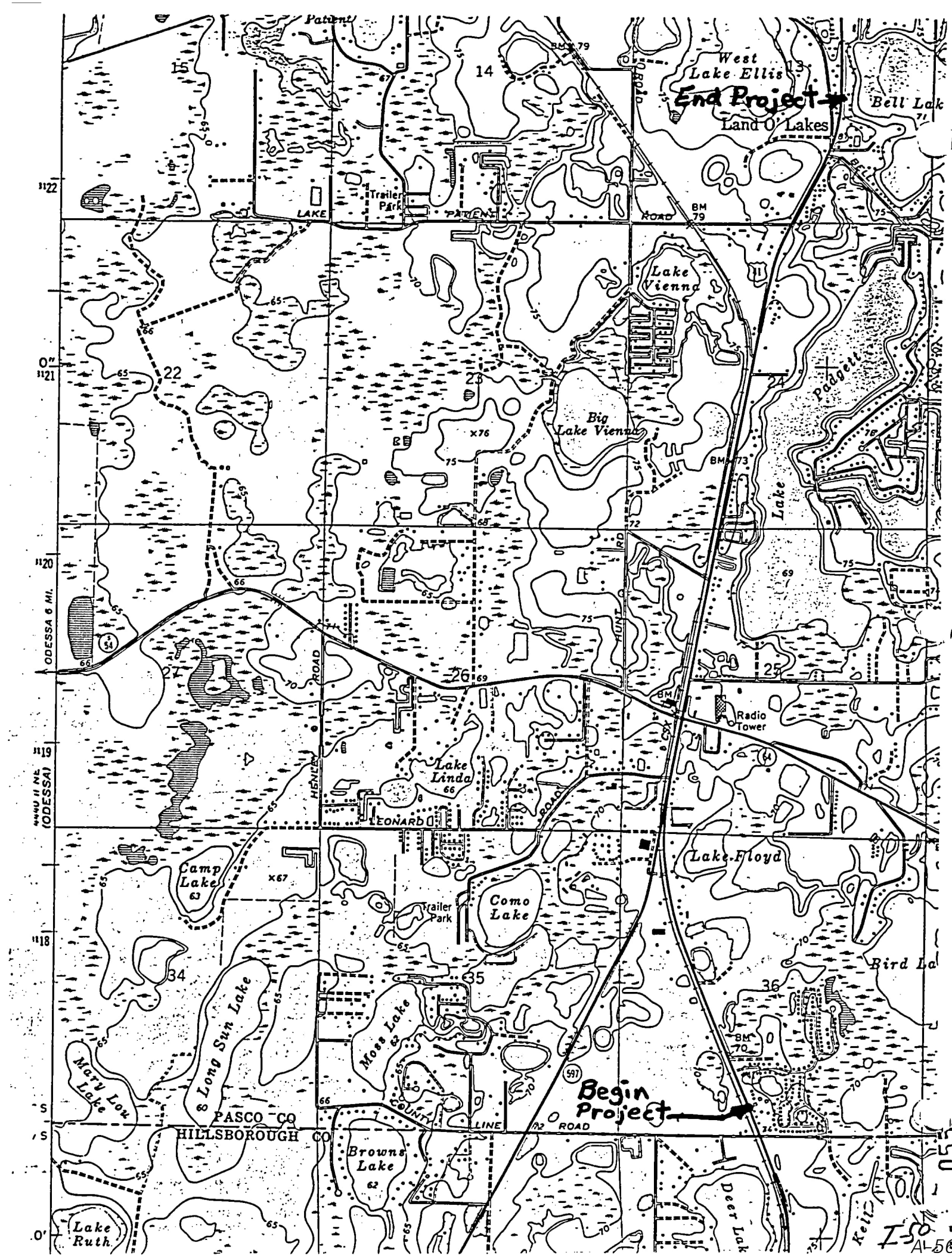
From SOIL SURVEY OF PASCO CO.
SHEETS: 45 + 55



BEGIN PROJECT

I-4

054


End Project
Land O' Lakes
West Lake Ellis
Bell Lake
Trailer Park
PATENT
ROAD
BM 79
Lake Vienna
Big Lake Vienna
Padgett Lake
BM 73
HUNT RD
ODESSA 6 MI.
ODESSA 11 NE
HENLEY ROAD
LEONARD ROAD
Radio Tower
Lake Linda
Lake Floyd
Camp Lake
Como Lake
Trailer Park
Bird Lake
Long Sun Lake
Moss Lake
Mary Lou Lake
Browns Lake
Lake Ruth
Deer Lake
PASCO CO
HILLSBOROUGH CO
COUNTY LINE
Begin Project
I-50
AL-56

Henigar & Ray made by: CJ date: _____ job no. 21663

PROJECT: SR45 checked by: _____ date: _____ sheet no. 1

Spread Analysis Typical Sections

Typical #1 OUTSIDE LANE (WITH SIDE WALK)

Full Pavement Section

Sidewalk

$C_W = [.2(2'+3') + .95(9'+38'+2'+2'+5')]/61 = .89$

$T_{MAX} = 14-6+1.5 = 9.5\text{ ft}$

$S_L = .30\%$

$S_X = .03\%$

Typical #2 Median

Full Paved with 4' conc. traffic seperate

$C_W = .95$

$T_{max} = 12-6 = 6\text{ ft}$

$S_L = .30\%$

$S_X = .02\%$

Typical #3 OUTSIDE LANE (NO SIDEWALK)

Full Paved Section

No sidewalk

$C_W = .95$

$T_{max} = 14-6+1.5$

$S_L = .30\%$

$S_X = .03\%$

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-24-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: TYPICAL #1

STATION: OUTSIDE LANE WITH SIDEWALK

DRAINAGE AREA: Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.76	9.50

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.000	0.29	1.91

$T = 14 - 6 + 1.5 = 9.5\ ft$

$$\text{Area MAX} = \frac{Q}{CI} = \frac{2.76\ cfs}{.89\ (4\ in/hr)} = .775\ Ac$$

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CJ LONES

DATE: 11-16-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: TYPICAL #2

STATION: MEDIAN LANE

DRAINAGE AREA: Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	2.62	12.00

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.083	0.00	0.000	0.24	1.82

$T = 12'$ (Flood full lane)

$$\text{Area Max.} = \frac{Q}{CI} = \frac{2.62}{(.95)(4)} = .69\ Ac$$

020 058 I-53

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: TYPICAL # 3

STATION: OUTSIDE LANE NO SIDEWALK

DRAINAGE AREA: Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.76	9.50

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.000	0.29	1.91

$T = 14 - 6 + 1.5 = 9.5$

$\text{Area Max.} = \frac{Q}{CI} = \frac{2.76}{.95(4)} = .726 \text{ Ac}$

2

SYSTEM A

HYDROLOGY

Henigar & Ray

made by: Tom W. Murphy date: 3/10/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 (US 41)

PRE-DEVELOPMENT HYDROLOGY - BASIN A

SUBAREA

- R/W LEFT STA 0 TO 31+30 PAVEMENT 1.50 Ac @ CN = 98
  (HYD C SOIL) OPEN (FAIR) 2.71 Ac @ CN = 79
  (HYD B/D SOIL) OPEN (FAIR) 1.75 Ac @ CN = 84

COMPOSITE CN = [1.50(98) + 2.71(79) + 1.75(84)] ÷ 5.96
= 85.25

R/W LT = 5.96 Ac @ CN = 85.25 THRU CULVERT

- R/W RIGHT STA 0 TO 30+50 PAVEMENT 1.97 Ac @ CN = 98
  (HYD C SOIL) OPEN (FAIR) 2.07 Ac @ CN = 79
  (HYD B/D SOIL) OPEN (FAIR) 1.21 Ac @ CN = 84

COMPOSITE CN = [1.97(98) + 2.07(79) + 1.21(84)] ÷ 5.25
= 87.28

R/W RT = 5.25 Ac @ CN = 87.28

- OFFSITE EAST
  (Hyd C SOIL) COMM. .61 Ac @ CN = 94
  (Hyd B/D SOIL) COMM. .34 Ac @ CN = 95
  (Hyd C SOIL) OPEN (FAIR) .29 Ac @ CN = 79

COMPOSITE CN = [.61(94) + .34(95) + .29(79)] ÷ 1.24
= 90.77

OFFSITE EAST = 1.24 Ac @ CN = 90.77

- POND SITE
  HYD GROUP B/D SOIL WOODS/GRASS (FAIR) .49 Ac @ CN = 8
  HYD GROUP C SOIL WOODS/GRASS (FAIR) 1.56 Ac @ CN = 7
  HYD GROUP C SOIL OPEN (FAIR) 3.30 Ac @ CN = 7

COMPOSITE CN = [.49(82) + 1.56(76) + 3.30(79)] ÷ 5.35
= 78.4

PRE POND A SITE = 5.35 Ac @ CN = 78.40

800

062 II-1

A-63

Henigar & Ray

made by: TWM date: 3/11/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 1/3

PROJECT: SR 45 (US 41)

DETERMINATION OF PRE-DEVELOPMENT TIMES OF CONCENTRATION FOR BASIN A

OFFSITE EAST

$t_c = t_1 + t_2$

t_1 = RILL FLOW

$\Delta h = 73.4 - 73.0 = 0.40$ ft

$L = 380'$

$S = 0.4/380 = 0.0011$ ft/ft

FROM SCS'S TR-55, APPENDIX F

$V = 16.1345 (S)^{.5}$

$V = 16.1345 (.0011)^{.5} = .535$ ft/s

$t_1 = \frac{380 \text{ ft}}{.535 \text{ ft/s}} \div 60 = 11.8$ min

t_2 = OPEN CHANNEL FLOW

$n = 0.06$

$L = 1500'$

$\Delta h = 73.0 - 66.3 = 6.7'$

$S = 6.7/1500 = .0045$ ft/ft

$b = 1$ ft

$D = 1.5$ ft

$m_1 = 1:4$

$m_2 = 1:3$

SEE ACCOMPANYING OUTPUT

$V = 1.41$ ft/s

$t_2 = \frac{1500 \text{ ft}}{1.41} \div 60 = 17.7$ min

$t_c = t_1 + t_2 = 11.8 + 17.7 = 29.5$ min

$\boxed{\text{PRE OFF SITE EAST} = 0.49 \text{ hr}}$

063

#-2

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/11/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 2/3

PRE-DEVELOPMENT TIMES OF CONCENTRATION CONT

PRE R/W Right

t_c = open channel flow only
= 17.7 min (SAME AS t_2 for OFFSITE EAST)

PRE-t_c R/W RIGHT = 0.30 hr

PRE R/W LEFT

t_c = OPEN channel flow only

n = 0.06
L = 2270'
Δh = 72 - 67 = 5'
S = 5/2270 = 0.0022 ft/ft
b = 10'
m_1 = 8:1
m_2 = 12:1
D = 1'
SEE ACCOMPANYING OUTPUT
V = 0.88 ft/s

$t_c = \frac{2270 \text{ ft}}{0.88 \text{ ft/s}} \div 60 = 43 \text{ min} = 0.72 \text{ hr}$

pre R/W LEFT t_c = 0.72 hr

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/15/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 3/3

PRE-DEVELOPMENT TIMES OF CONCENTRATION CONT

PRE-POND SITE

$t_c = t_1 + t_2$

t_1 = SHEET FLOW
t_2 = SHALLOW CONCENTRATED FLOW

t_1 : SHEET FLOW

FROM THE RAGAN KINEMATIC WAVE EQN (FDOT DRAINAGE MANUAL

$$t_1 = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

$L = 300'$
$n = .2$
$S = .005$ ft/ft

FROM FIG 5-7 FDOT DRAINAGE MANUAL (ZONE 6, 25 yr)

CHOOSE $I = 5.5$ in/hr $\Rightarrow$ $t_1 = 27.1$ min

t_2 : Shallow Concentrated Flow

From SCS's TR 55 APPENDIX F

$V_{unpaved} = 16.1345\,(S)^{.5}$

$L = 140'$
$S = .0107$ ft/ft

$V = 16.1345(.0107)^{.5} = 1.67$ ft/s

$\frac{140'}{1.67 \text{ ft/s}} \div 60 \text{ min} = 1.40$ min $\quad t_2 = 1.40$ min

$t_c = t_1 + t_2 = 27.1 + 1.4 = 28.5$ min

$= 0.48$ hr

t_c pre pond site = 0.48 hr

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: BASIN A OFFSITE EAST

Comment: DETERMINE OPEN CHANNEL FLOW VELOCITY FOR Tc

Solve For Discharge

Given Input Data:

Bottom Width.....	1.00 ft
Left Side Slope..	4.00:1 (H:V)
Right Side Slope.	3.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0045 ft/ft
Depth.....	1.50 ft

Computed Results:

Discharge.....	13.27 cfs
Velocity.....	1.41 fps ←
Flow Area.....	9.38 sf
Flow Top Width...	11.50 ft
Wetted Perimeter.	11.93 ft
Critical Depth...	0.85 ft
Critical Slope...	0.0700 ft/ft
Froude Number....	0.28 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
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720

066

II - 5

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: BASIN A R/W LEFT

Comment: DETERMINE OPEN CHANNEL FLOW VELOCITY FOR Tc

Solve For Discharge

Given Input Data:

Bottom Width.....	10.00 ft
Left Side Slope..	8.00:1 (H:V)
Right Side Slope.	12.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0022 ft/ft
Depth.....	1.00 ft

Computed Results:

Discharge.....	17.69 cfs
Velocity.....	0.88 fps ←
Flow Area.....	20.00 sf
Flow Top Width...	30.00 ft
Wetted Perimeter.	30.10 ft
Critical Depth...	0.40 ft
Critical Slope...	0.0777 ft/ft
Froude Number....	0.19 (flow is Subcritical)

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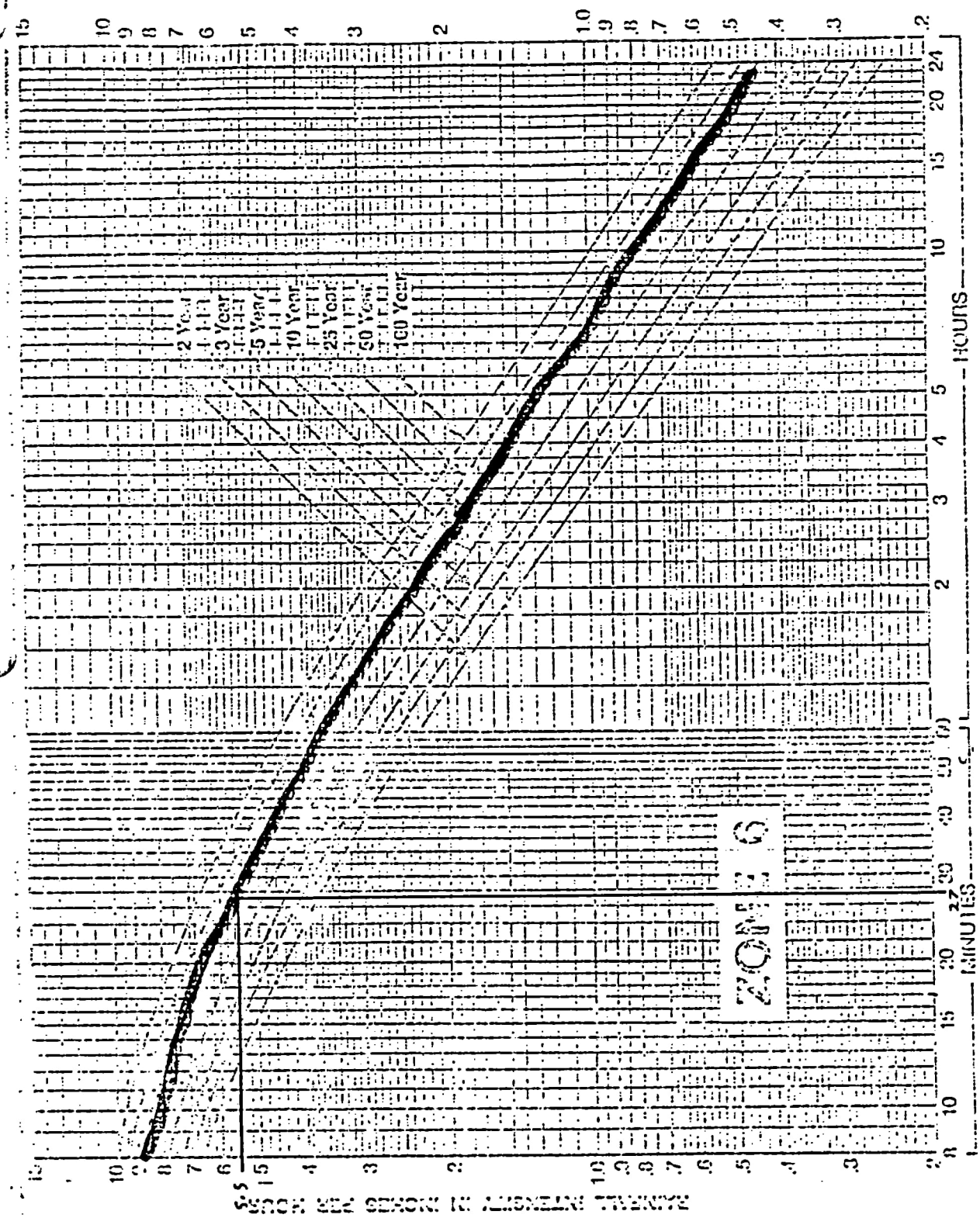
067

II - 6

A-68



Rainfall Intensity-Duration-Frequency Curves for Zone 6

SR45 (US41) - BASIN A
PRE POND SITE

Henigar & Ray

PROJECT: SR 45 (US41)

made by: TWM date: 3/10/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 1/2

POST DEVELOPMENT HYDROLOGY - BASIN A

R/W LEFT — AREA BETWEEN R/W LT & C RR = 3770 * 46' = 3.98 Ac

(HYD SOIL C) OPEN (FAIR) 3.00 Ac @ CN = 79
(HYD SOIL D/D) 0.98 Ac @ CN = 84

COMPOSITE CN = [3.00(79) + .98(84)] ÷ 3.98
= 80.23

POST R/W LEFT = 3.98 Ac @ CN = 80.23 THRU CULVERT TO LAKE

TO POND
(PROJECT + OFFSITE EAST)

PAVEMENT 9.62 Ac @ CN = 98
(HYD SOIL A) OPEN (FAIR) .75 Ac @ CN = 49

COMPOSITE CN = [9.964(98) + .776(49)] ÷ 10.74
= 94.46

TO POND = 10.74 Ac @ CN = 94.46 ←

ON POND

POND 5.35 Ac @ CN = 100

ON POND 5.35 @ CN = 100

069

II-8

A-70

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/11/94 job no. 92-1663
checked by: _____ date: _____ sheet no. 1/1

POST DEVELOPMENT TIMES OF CONCENTRATION

TO POND t_c = PIPE FLOW ONLY

FROM FDOT storm SEWER program
t_c = 24.03 min

= 0.401

POST t_c TO POND = 0.401

ON POND

$t_c = 0$

POST ON POND t_c = 0

R/W LEFT

t_c = OPEN channel flow only

$n = 0.06$
$L = 2270'$
$\Delta h = 72 - 67 = 5'$
$S = 5/2270 = .0022$ ft/ft
$b = 10'$
$m_1 = 12:1$
$m_2 = 2:1$
$D = 1'$

SEE Accompanying output

$V = .92$ ft/s

$t_c = \frac{2270 \text{ ft}}{.92 \text{ ft/s}} \div 60 = 41.1 \text{ min} = 0.69 \text{ hr}$

POST t_c R/W LEFT = 0.69 hr

070

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: POST A R/W LEFT

Comment: DETERMINE OPEN CHANNEL FLOW VELOCITY FOR Tc

Solve For Discharge

Given Input Data:

Bottom Width.....	10.00 ft
Left Side Slope..	12.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0022 ft/ft
Depth.....	1.00 ft

Computed Results:

Discharge.....	15.57 cfs
Velocity.....	0.92 fps ←
Flow Area.....	17.00 sf
Flow Top Width...	24.00 ft
Wetted Perimeter.	24.28 ft
Critical Depth...	0.38 ft
Critical Slope...	0.0777 ft/ft
Froude Number....	0.19 (flow is Subcritical)

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SYSTEM A

POND DESIGN

CALCULATIONS

Henigar & Ray

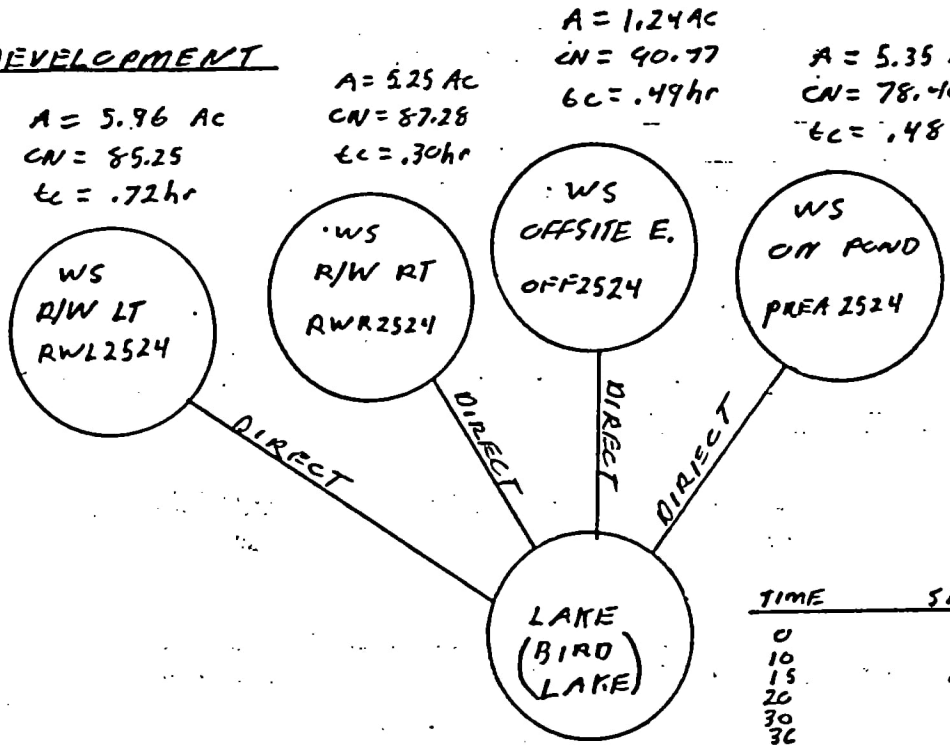
POND DESIGN CALCULATIONS

made by: TWM date: 5/25/94 job no. 2663

checked by: _____ date: _____ sheet no. 1/1

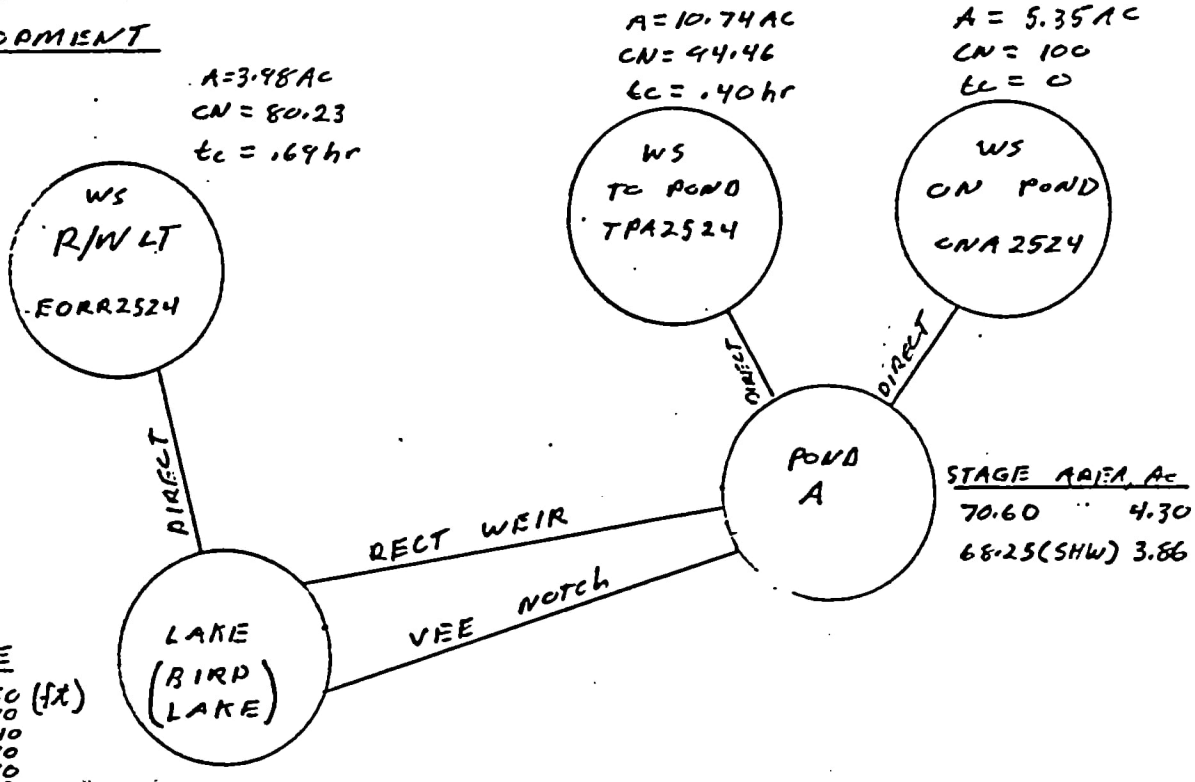
PROJECT: SR 45 BASIN A

PRE-DEVELOPMENT



TIME	STAGE
0	67.5
10	67.7
15	68.4
20	68.9
30	69.1
36	69.15

POST-DEVELOPMENT



STAGE	AREA Ac
70.60	4.30
68.25(SHW)	3.86

25yr - 24hr

TIME	STAGE
0 (hr)	67.50 (ft)
10	67.70
15	68.40
20	68.90
30	69.10
36	69.15

3yr STAGING

0 (hr)	67.50 ft
5	67.58
10	67.70

Henigar & Ray

PROJECT: SR 45 BASIN A

made by: TWM date: 5/23/94 job no. 2663
checked by: _____ date: _____ sheet no. 1/1

BASIN A WATER QUALITY VOLUME

PROJECT AREA = 7.77 AC
OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREA = 2.60 AC
10.37 AC

WATER QUALITY VOLUME COMPUTED FROM 1" OF RUNOFF FROM PROJECT AREA AND ALL OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREAS.

$$1\,in * \frac{1\,ft}{12\,in} * 10.37\,Ac * \frac{43560\,ft^2}{1\,Ac} = 37,643\,cf$$

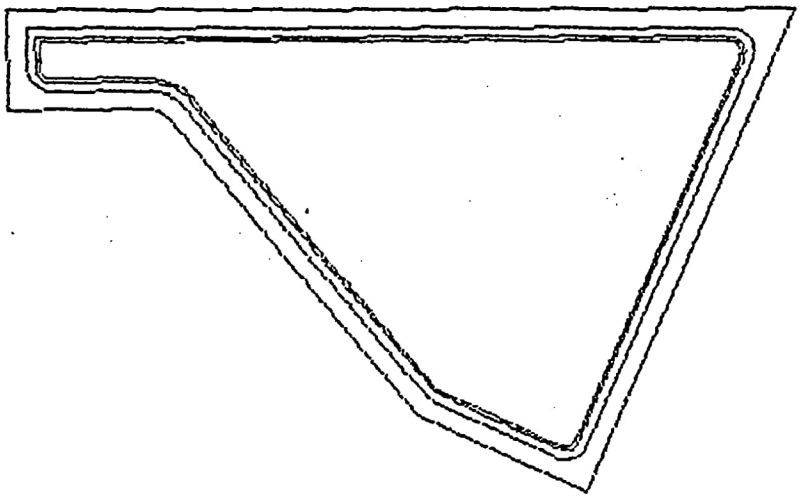
REQUIRED WATER QUALITY VOLUME = 37,643 cf

STD

#-12 074

SR 45 POND A

No.	sq.ft	STAGE, FT	acres	DIESCRIPTION
1	233096.19	N/A	5.35	R/W LIMITS
2	187198.35	70.00	4.30	TOB
3	168194.21	66.25	3.86	SHW
4	159983.39		3.67	



1"=200'

SR 45 POND A

INPUT FOR WATER QUALITY VOLUME

PROJECT A_STAGE; POND (POND)

'STAGE EL	AREA SF	PERIM LF	VOLUME CF				
70.6	187308.0	-1e+06	417653.0	TOP EL...	70.6 TOB	TOP AREA.	4.3
68.25	168141.6	-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	68.25 SHW	BOT AREA.	3.86
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	70.6
				X COORD..	Optional	Y COORD..	Optional

II-14 076

SR 45 POND A

STAGE @ REQUIRED WATER QUALITY VOLUME

BRN 3.2 Project A_STAGE
Node 0, POND, POND

Hour	Stage El.		CF Intake	CF Output	CF Storage	
0.00	70.600	TOP	0.0	0.0	417653.0	
0.10	70.463		0.0	24334.8	393318.0	
0.20	70.330		0.0	47937.6	369715.0	
0.30	70.202		0.0	70808.6	346844.0	
0.40	70.077		0.0	92948.7	324704.0	
0.50	69.957		0.0	114360.0	303293.0	
0.60	69.840		0.0	135041.0	282612.0	
0.70	69.728		0.0	154990.0	262663.0	
0.80	69.620		0.0	174207.0	243446.0	
0.90	69.516		0.0	192696.0	224957.0	REQ'D WATER QUALITY Volume
1.00	69.417		0.0	210185.0	207468.0	
4.00	68.475		0.0	377585.0	40068.3	
4.20	68.459	← 68.47	0.0	380509.0	37144.0	← 37,643 cf
22.00	68.251		0.0	417464.0	189.3	
22.10	68.251		0.0	417464.0	189.3	
22.20	68.251		0.0	417464.0	189.3	
22.30	68.251		0.0	417464.0	189.3	
22.40	68.251		0.0	417464.0	189.3	
22.50	68.251		0.0	417464.0	189.3	
22.60	68.251		0.0	417464.0	189.3	
22.70	68.251		0.0	417464.0	189.3	
22.80	68.251		0.0	417464.0	189.3	
22.90	68.251		0.0	417464.0	189.3	
23.00	68.251	SHW	0.0	417464.0	189.3	

* USE STAGE 68.47 FOR WATER QUALITY VOLUME CONTAINMENT (OVERFLOW EL).

PROVIDED WATER QUALITY VOLUME > REQUIRED WATER QUALITY VOLUME

∴ WATER QUALITY VOLUME CRITERIAN IS MET.

SR 45 POND A

INPUT for 36/60 hr Bleed down criteria

Window 0,0 - 24,79

PROJECT AAD; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF					
70.6	187308.0	-1e+06	417653.0	TOP EL...	70.6 TOB	TOP AREA.	4.3
68.25	168141.6	-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	68.25 SHW	BOT AREA.	3.86
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
						OVERFLOW EL →	
				BASE CFS.	0.0	STAGE T0.	68.47
				X COORD..	Optional	Y COORD..	Optional

SR 45 POND A
DRAWDOWN MODEL

2/15/95

Report on Paths of Project AAD.

Path..... 000, VEE NOTCH	
Upper Node 000, POND	
Lower Node 001, LAKE	
CREST EL 68.250	INPUT ID 790893544
ANGLE... 147.000	T0 CFS.. 0.18
	T0 CF... 0.00
HEIGHT.. 0.220	MAX IN.. 0.18
	MIN IN.. 0.06
	MAX OUT. 0.18
	MIN OUT. 0.06
UP PE/KE YES	FWD K... 0.00
DN PE/KE YES	REV K... 0.00
HW.. 70.600	FWD X... 0.00
TW.. 70.600	REV X... 0.00

.eport on Nodes of Project AAD.

Node..... 000, POND					
TOP EL...	70.600	TOP AREA.	4.300	INPUT ID.....	790893071
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	68.47
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	39099.76
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	68.47
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.36
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	39099.76
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	
EL.....		AREA.....		FINAL STAGE ELEVATION.....	68.36
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.00
BOT EL...	68.250	BOT AREA.	3.860	TIME OF MINIMUM STAGE, HOURS.	60.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.00
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.18
				TIME OF PEAK OUTPUT, HOURS...	0.00
BASE CFS.	0.000	STAGE T0.	68.470	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, STAGING					
FLOOD EL.	70.600	PE TO KE.	YES	INPUT ID.....	790893835
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	68.25
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	68.25
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	68.25
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.25
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.14
				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.250	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

SR 45 POND A

30/60 hr Bleeddown criteria

BRN 3.2 Project AAD
Node 0, POND, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	68.470	0.0	0.0	39099.7	← PROVIDED WQ VOLUME
0.10	68.470	0.0	64.1	39035.6	
0.20	68.469	0.0	128.0	38971.7	
0.30	68.469	0.0	191.7	38908.0	
0.40	68.469	0.0	255.2	38844.5	
0.50	68.468	0.0	318.5	38781.2	
0.60	68.468	0.0	381.6	38718.1	
0.70	68.468	0.0	444.5	38655.2	
0.80	68.467	0.0	507.2	38592.5	
0.90	68.467	0.0	569.7	38529.9	
1.00	68.466	0.0	632.1	38467.6	
36.00	68.390 ←	0.0	14263.6	24836.0	
59.00	68.360	0.0	19653.4	19446.3	
59.10	68.360	0.0	19674.1	19425.5	
59.20	68.360	0.0	19694.8	19404.8	
59.30	68.360	0.0	19715.5	19384.2	
59.40	68.360	0.0	19736.2	19363.5	
59.50	68.359	0.0	19756.8	19342.9	
59.60	68.359	0.0	19777.4	19322.2	
59.70	68.359	0.0	19798.0	19301.7	
59.80	68.359	0.0	19818.6	19281.1	
59.90	68.359	0.0	19839.1	19260.5	
60.00	68.359	0.0	19859.7	19240.0	←

$\frac{1}{2}$ REQUIRED WATER QUALITY Volume = 18,822 cf

WATER QUALITY Volume Remaining AT hour 60 = 19,240 cf.

Volume Remaining > $\frac{1}{2}$ REQUIRED W.Q.V.

∴ compliance MET.

BEGIN ATTENUATION AT STAGE 68.39

Henigar & Ray

PROJECT: SR 45 BASIN A

made by: JWM date: 10/3/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

REQUIRED PERMANENT WET POOL VOLUME

WS TO POND A = 10.74 Ac @ C* = 0.93
WS ON POND A = 5.35 Ac @ C = 1.00

$$\text{COMPOSITE } C = \frac{10.74(.93) + 5.35(1.00)}{(10.74 + 5.35)}$$

$$= 0.95$$

14 DAY RESIDENCE TIME VOLUME
= 0.2968 * C * WS AREA
= 0.2968 * 0.95 * (10.74 + 5.35) = 4.54 Ac.ft

MINIMUM PERMANENT WET POOL VOLUME
$= 0.667 \text{ in} * \frac{1 \text{ ft}}{12 \text{ in}} * 16.09 \text{ Ac} = 0.89 \text{ Ac.ft}$

4.54 Ac.ft controls

REQUIRED PERMANENT WET POOL VOLUME = 4.54 Ac.ft

* SEE ACCOMPANYING C COMPUTATION

Henigar & Ray

PROJECT: SR 45 BASIN A

made by: TWM date: 10/3/94 job no. 2166 3
checked by: _____ date: _____ sheet no. 1/1

BASIN A POST DEVELOPMENT 25yr-24hr RATIONAL C

CONVERSION OF COMPOSITE CN TO RATIONAL C (25yr -24hr) FOR PERMANENT WET POOL DESIGN

COMPOSITE CN = 94.46
25yr -24hr STORM PRECIPITATION P = 9.00 in

FROM SCS' TR 55

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - .2S)^2}{(P + .8S)}$$

WHERE: Q = RUNOFF (IN)
P = RAINFALL = 9.00 in
S = RETENTION AFTER RUNOFF BEGINS (IN)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{94.46} - 10 = 0.5865 \text{ in}$$

$$Q = \frac{[9 - .2(.5865)]^2}{(9 + (.8)(.5865)} = 8.333 \text{ in}$$

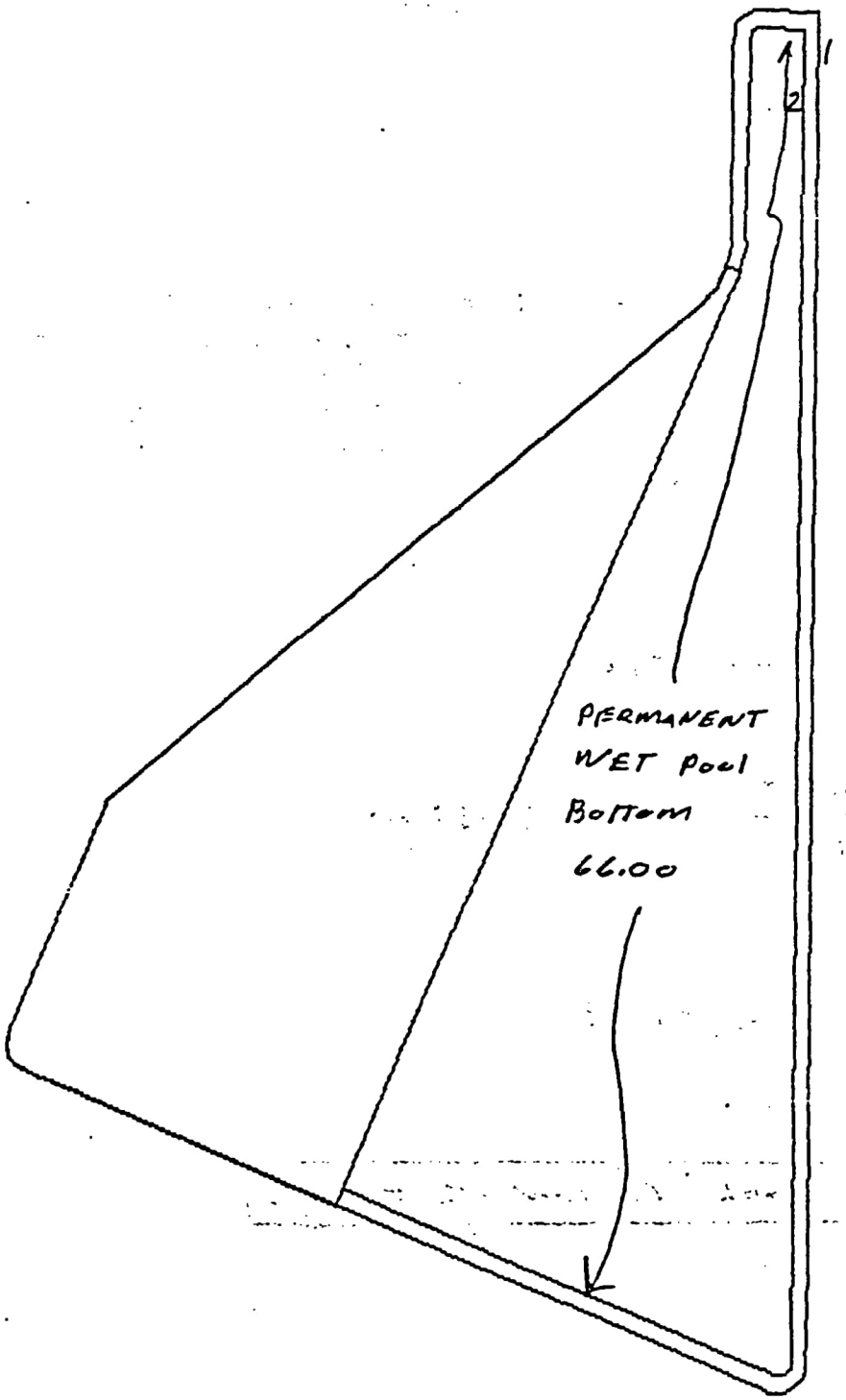
$$C = \frac{8.333 \text{ in}}{9.00 \text{ in}} = 0.93$$

BASIN A WET POOL DESIGN C = 0.93

SR 45 POND A

PERMANENT WET POOL AREA

	AREA, Ac	STAGE, ft	DESCRIPTION
1 Area = 170471.5991, Perimeter = 2013.0881	3.91	68.25	SHW
Command:			
2 Area = 87948.2771, Perimeter = 1714.3641	2.02	66.00	2.47' below overflow



II-22 084

SR 45 POND A

Provided Permanent WET Pool Volume

Window 0,0 - 24,79

PROJECT A_WETVOL; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
168.25	170319.6	-1e+06	290599.66
166.0	87991.2	-1e+06	0.0

6.61 Ac.ft

TOP EL...	68.25 SHW	TOP AREA.	3.91
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	66.0	BOT AREA.	2.02
TOP LF...	Optional	SIDE %PER	Optional
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.	68.25
X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

REQUIRED Permanent WET Pool Volume = 4.54 Ac.ft

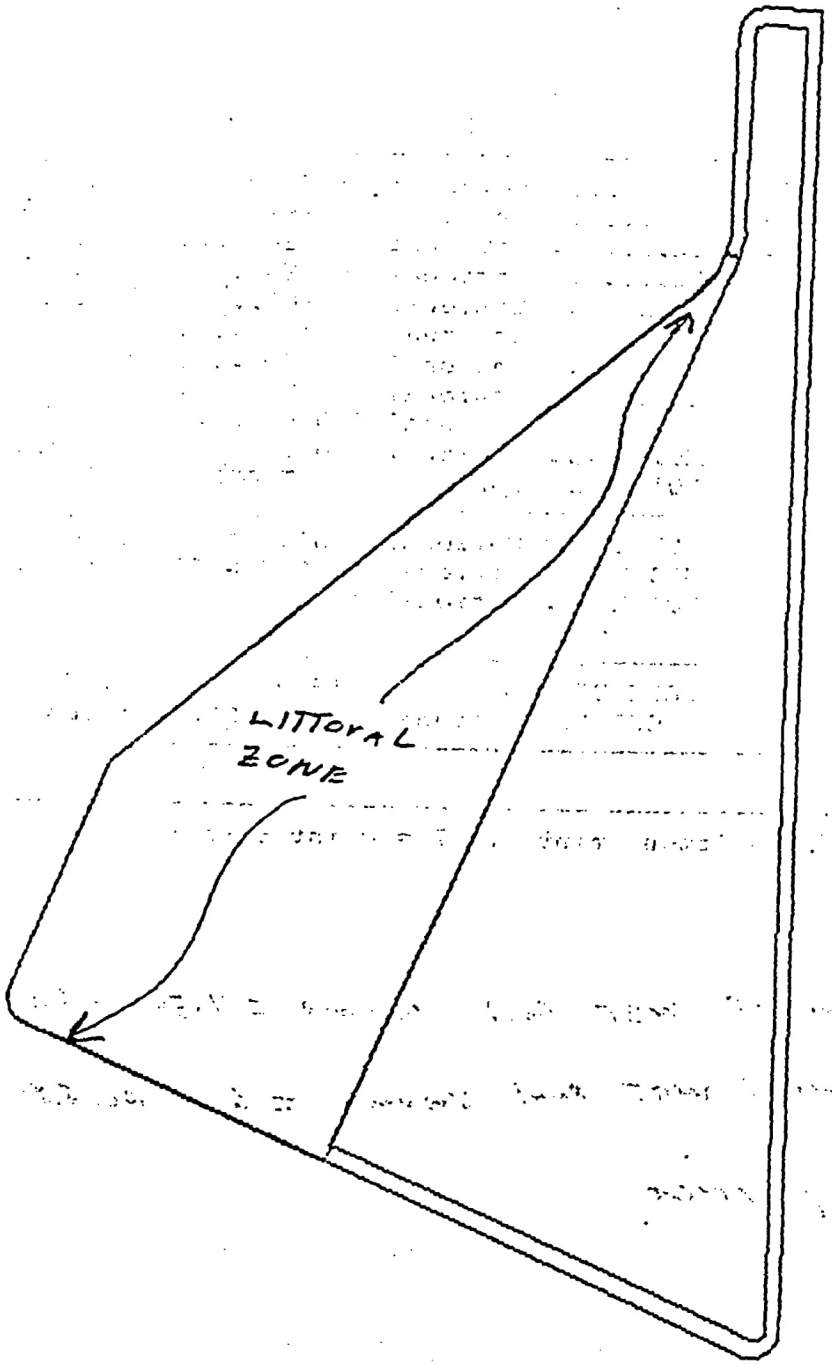
PROVIDED Permanent WET Pool Volume = 6.61 Ac.ft

⇒ compliance

220

SR 45 POND A
LITTORAL ZONE AREA

Area = 72416.1247, Perimeter = 1367.3643
1.66 AC



1" = 100'

- REQUIRED LITTORAL ZONE AREA =
  0.35 * AREA @ SHW
  = 0.35 * 3.91 = 1.37 AC

- provided LITTORAL ZONE AREA = 1.66 AC

Compliance MET

SR 45 BASIN A

25yr-24hr PRE-DEVELOPMENT NETWORK SUMMARY

Project PPA2524, Run of Sun May 22 15:37:20 1994 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS R/W LEFT	LAKE	DIRECT
1	WS R/W RIGHT	LAKE	DIRECT
2	WS OFFSITE EAST	LAKE	DIRECT
3	WS ON POND SITE PRE	LAKE	DIRECT

Node	Name	Node Type
0	LAKE	STAGING
1	WS R/W LEFT	SUBAREA
2	WS R/W RIGHT	SUBAREA
3	WS OFFSITE EAST	SUBAREA
4	WS ON POND SITE PRE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	LAKE	STAGING	67.50	0.00	68.98	24.00	NO
1	WS R/W LEFT	SUBAREA	72.00	0.00	72.00	0.00	NO
2	WS R/W RIGHT	SUBAREA	72.00	0.00	72.00	0.00	NO
3	WS OFFSITE EAST	SUBAREA	72.00	0.00	72.00	0.00	NO
4	WS ON POND SITE PRE	SUBAREA	72.00	0.00	72.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	LAKE	→52.40 @ 12.40 Hours	0.00 @ 0.00 Hours
1	WS R/W LEFT	14.63 @ 12.50 Hours	14.63 @ 12.50 Hours
2	WS R/W RIGHT	20.58 @ 12.30 Hours	20.58 @ 12.30 Hours
3	WS OFFSITE EAST	4.03 @ 12.40 Hours	4.03 @ 12.40 Hours
4	WS ON POND SITE PRE	14.92 @ 12.40 Hours	14.92 @ 12.40 Hours

25yr -24hr Pre Development Peak Discharge is 52.40 cfs

SR45 BASIN A
PRE-DEVELOPMENT 25yr-24hr Hydrographs

Subarea PRE WATERSHED FROM R/W LEFT 25YR24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... RWL2524
TOTAL DRAINAGE AREA, ACRES... 5.96	INPUT ID 764098811
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 28.4
TIME OF CONCENTRATION, HOURS. 0.72	DT, HRS. 0.1
	DATA PTS 285
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.2120399
	ACREAGE. 5.96
	TC, HRS. 0.72
	TP, HRS. 12.5
	PEAK CFS 14.634896
	ACFT VOL 3.5807957
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE WATERSHED FROM R/W RIGHT 25YR24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... RWR2524
TOTAL DRAINAGE AREA, ACRES... 5.25	INPUT ID 764098853
WEIGHTED SCS CURVE NUMBER.... 87.28	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.9
TIME OF CONCENTRATION, HOURS. 0.3	DT, HRS. 0.1
	DATA PTS 260
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.4600749
	ACREAGE. 5.25
	TC, HRS. 0.3
	TP, HRS. 12.3
	PEAK CFS 20.57674
	ACFT VOL 3.2627029
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN A

PRE-DEVELOPMENT 25yr-24hr Hydrographs cont.

Subarea PRE WATERSHED FROM OFFSITE EAST 25YR24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... OFFE2524
TOTAL DRAINAGE AREA, ACRES... 1.24	INPUT ID 764098734
WEIGHTED SCS CURVE NUMBER.... 90.77	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.0
TIME OF CONCENTRATION, HOURS. 0.49	DT, HRS. 0.1
	DATA PTS 271
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.885138
	ACREAGE. 1.24
	TC, HRS. 0.49
	TP, HRS. 12.4
	PEAK CFS 4.0318384
	ACFT VOL 0.814528
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE WATERSHED ON POND A 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PREA2524
TOTAL DRAINAGE AREA, ACRES... 5.35	INPUT ID 764098901
WEIGHTED SCS CURVE NUMBER.... 78.4	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.9
TIME OF CONCENTRATION, HOURS. 0.48	DT, HRS. 0.1
	DATA PTS 270
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 6.3713617
	ACREAGE. 5.35
	TC, HRS. 0.48
	TP, HRS. 12.4
	PEAK CFS 14.92487
	ACFT VOL 2.8396263
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN A

25yr-24hr. POST DEVELOPMENT NETWORK SUMMARY

Project PA2524, Run of Wed Sep 28 16:12:45 1994 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS BETWEEN RR & SR45	LAKE	DIRECT
3	POND	LAKE	VEE NOTCH
4	POND	LAKE	RECT WEIR

Node	Name	Node Type
0	POND	POND
1	LAKE	STAGING
2	WS BETWEEN RR & SR45	SUBAREA
3	WS TO POND	SUBAREA
4	WS ON POND	SUBAREA

Node	Name	Node Type	Min El. at Hr.		Max El. at Hr.		Flooded
0	POND	POND	68.39	0.00	69.25	12.70	NO
1	LAKE	STAGING	67.50	0.00	68.98	24.00	NO
2	WS BETWEEN RR & SR45	SUBAREA	72.00	0.00	72.00	0.00	NO
3	WS TO POND	SUBAREA	72.00	0.00	72.00	0.00	NO
4	WS ON POND	SUBAREA	72.00	0.00	72.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	67.18 @ 12.00 Hours	33.72 @ 12.70 Hours
1	LAKE	42.80 @ 12.60 Hours	1.68 @ 20.00 Hours
2	WS BETWEEN RR & SR45	9.30 @ 12.50 Hours	9.30 @ 12.50 Hours
3	WS TO POND	39.55 @ 12.30 Hours	39.55 @ 12.30 Hours
4	WS ON POND	44.22 @ 12.00 Hours	44.22 @ 12.00 Hours

PRE 25YR-24HR PEAK DISCHARGE

= 52.40 cfs

POST < PRE

42.80 < 52.40

% COMPLIANCE IS MET

PEAK POND STAGE = 69.25

II-28

090

930

SR 45 BASIN A
25yr -24hr Post Hydrographs

Subarea POST WATERSHED BETWEEN RR&SR45 25YR24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... E0RR2524
TOTAL DRAINAGE AREA, ACRES... 3.98	INPUT ID 764098350
WEIGHTED SCS CURVE NUMBER.... 80.23	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 28.2
TIME OF CONCENTRATION, HOURS. 0.69	DT, HRS. 0.1
	DATA PTS 283
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 6.5964541
	ACREAGE. 3.98
	TC, HRS. 0.69
	TP, HRS. 12.5
	PEAK CFS 9.304575
	ACFT VOL 2.1871
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WATERSHED TO POND A 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... TPA2524
TOTAL DRAINAGE AREA, ACRES... 10.74	INPUT ID 769639332
WEIGHTED SCS CURVE NUMBER.... 94.46	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.5
TIME OF CONCENTRATION, HOURS. 0.4	DT, HRS. 0.1
	DATA PTS 266
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.3325357
	ACREAGE. 10.74
	TC, HRS. 0.4
	TP, HRS. 12.3
	PEAK CFS 39.545742
	ACFT VOL 7.4551534
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN A

25 yr - 24 hr Post Hydrographs cont

Subarea WATERSHED ON POND A 25YR24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... ONA2524
TOTAL DRAINAGE AREA, ACRES... 5.35	INPUT ID 764099081
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 5.35
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 44.223812
	ACFT VOL 4.0111736
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN A
25yr - 24hr POST PATHS REPORT

Report on Paths of Project PA2524.

```
-------------------------------------
        Path...... 000, DIRECT
      Upper Node 003, WS TO POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 760833130
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      39.55
                  |MIN IN..       0.00
                  |MAX OUT.      39.55
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    72.000|FWD X...       0.00
TW EL...    70.600|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
      Upper Node 004, WS ON POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 763655767
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      44.22
                  |MIN IN..       0.00
                  |MAX OUT.      44.22
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    72.000|FWD X...       0.00
TW EL...    70.600|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 002, DIRECT
 Upper Node 002, WS BETWEEN RR & SR45
         Lower Node 001, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 763758322
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       9.30
                  |MIN IN..       0.00
                  |MAX OUT.       9.30
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    72.000|FWD X...       0.00
TW EL...    70.600|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
       Path...... 003, VEE NOTCH
         Upper Node 000, POND
         Lower Node 001, LAKE
-------------------------------------
CREST EL    68.250|INPUT ID 780100279
ANGLE...   147.000|T0 CFS..       0.07
-------- ---------|T0 CF...       0.00
HEIGHT..     0.220|MAX IN..       0.72
-------- ---------|MIN IN..      -0.06
                  |MAX OUT.       0.72
                  |MIN OUT.      -0.06
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE YES      |REV K...       0.00
MAX HW..    70.600|FWD X...       0.00
MAX TW..    70.600|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 004, RECT WEIR
         Upper Node 000, POND
         Lower Node 001, LAKE
-------------------------------------
CREST EL     68.470|INPUT ID 780781928
WIDTH...     15.000|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..      33.00
--------- ---------|MIN IN..      -2.21
BREADTH.           |MAX OUT.      33.00
--------- ---------|MIN OUT.      -2.21
                                  |
                                  |
                                  |
                                  |
                                  |
                                  |
                                  |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE YES       |REV K...       0.00
MAX HW..    70.600|FWD X...       0.00
MAX TW..    70.600|REV X...       0.00
-------------------------------------
```

SR 45 BASIN A

25yr -24hr post Nodes Report

Report on Nodes of Project PA2524.

Node..... 000, POND

TOP EL...	70.600	TOP AREA.	4.300	INPUT ID.....	76980801(
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	68.3(
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	24081.4(
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	69.2(
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.3(
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	178235.0(
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	153353.0(
EL.....		AREA.....		FINAL STAGE ELEVATION.....	68.9(
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	12.7(
BOT EL...	68.250	BOT AREA.	3.860	TIME OF MINIMUM STAGE, HOURS.	0.0(
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	67.1(
BOT LF...				TIME OF PEAK INTAKE, HOURS...	12.0(
				PEAK NODAL OUTPUT, CFS.....	33.7(
				TIME OF PEAK OUTPUT, HOURS...	12.7(
BASE CFS.	0.000	STAGE T0.	68.390	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0(

Node..... 001, STAGING

FLOOD EL.	70.600	PE TO KE.	YES	INPUT ID.....	78078288(
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	67.500	INITIAL STAGE ELEVATION.....	67.5(
TIME, HRS	10.000	STAGE EL.	67.700	INITIAL STORAGE, CUBIC FEET..	0.0(
TIME, HRS	15.000	STAGE EL.	68.400	MAXIMUM STAGE REACHED.....	68.9(
TIME, HRS	20.000	STAGE EL.	68.900	MINIMUM STAGE REACHED.....	67.5(
TIME, HRS	30.000	STAGE EL.	69.100	MAXIMUM GROSS STORAGE, CF....	0.0(
TIME, HRS	36.000	STAGE EL.	69.150	MAXIMUM DETENTION STORAGE, CF	0.0(
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.9(
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	24.0(
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.0(
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	42.8(
				TIME OF PEAK INTAKE, HOURS...	12.6(
				PEAK NODAL OUTPUT, CFS.....	1.6(
FLOOD EL.				TIME OF PEAK OUTPUT, HOURS...	20.0(
		STAGE T0.	67.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0(

Node..... 002, SUBAREA

E NAME	E0RR2524	FLOOD EL.	72.000	INPUT ID.....	764115949
INPUT ID#	764098350	---------	---------	FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	72.00
RUN, HRS.	28.200			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	72.00
DATA PTS.	283			MINIMUM STAGE REACHED.....	72.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	72.00
EXCESS...	6.596			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	3.980			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.690				
TP, HRS..	12.500				
PEAK CFS.	9.305			PEAK NODAL INTAKE, CFS.....	9.30
ACFT VOL.	2.187			TIME OF PEAK INTAKE, HOURS...	12.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	9.30
---------	---------	---------	---------	TIME OF PEAK OUTPUT, HOURS...	12.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, SUBAREA

FILE NAME	TPA2524	FLOOD EL.	72.000	INPUT ID.....	769808253
INPUT ID#	769639332	---------	---------	FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	72.00
RUN, HRS.	26.500			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	72.00
DATA PTS.	266	FLOOD EL.		MINIMUM STAGE REACHED.....	72.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	72.00
EXCESS...	8.333			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	10.740			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.400				
TP, HRS..	12.300				
PEAK CFS.	39.546			PEAK NODAL INTAKE, CFS.....	39.55
ACFT VOL.	7.455			TIME OF PEAK INTAKE, HOURS...	12.30
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	39.55
---------	---------	---------	---------	TIME OF PEAK OUTPUT, HOURS...	12.30
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, SUBAREA

ILE NAME	ONA2524	FLOOD EL.	72.000	INPUT ID.....	76962780
INPUT ID#	764099081			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	72.0
RUN, HRS.	25.000			INITIAL STORAGE, CUBIC FEET..	0.0
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	72.0
DATA PTS.	251			MINIMUM STAGE REACHED.....	72.0
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.0
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.0
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	72.0
EXCESS...	9.000			TIME OF MAXIMUM STAGE, HOURS.	0.0
ACREAGE..	5.350			TIME OF MINIMUM STAGE, HOURS.	0.0
TC, HRS..					
TP, HRS..	12.000				76962780
PEAK CFS.	44.224			PEAK NODAL INTAKE, CFS.....	44.2
ACFT VOL.	4.011			TIME OF PEAK INTAKE, HOURS...	12.0
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	44.2
				TIME OF PEAK OUTPUT, HOURS...	12.0
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

SYSTEM A

CULVERT AT
STATION 15 + 13

STRUCTURE A-25

CROSS CULVERT DESIGN

METHODOLOGY

THE RATIONAL FORMULA WAS USED IN DETERMINING THE RUNOFF (Q) DRAINING TO THE CULVERTS PROPOSED TO BE REPLACED. IN SEVERAL CASES THERE EXISTS A STANDING WATER BODY ADJACENT TO THE ROADWAY THAT FLOWS DIRECTLY TO THE CROSS DRAINS.

THE FOLLOWING METHOD WAS USED IN DETERMINING A REASONABLE Q WHEN CONSIDERING FLOW ACROSS THE WATER BODIES.

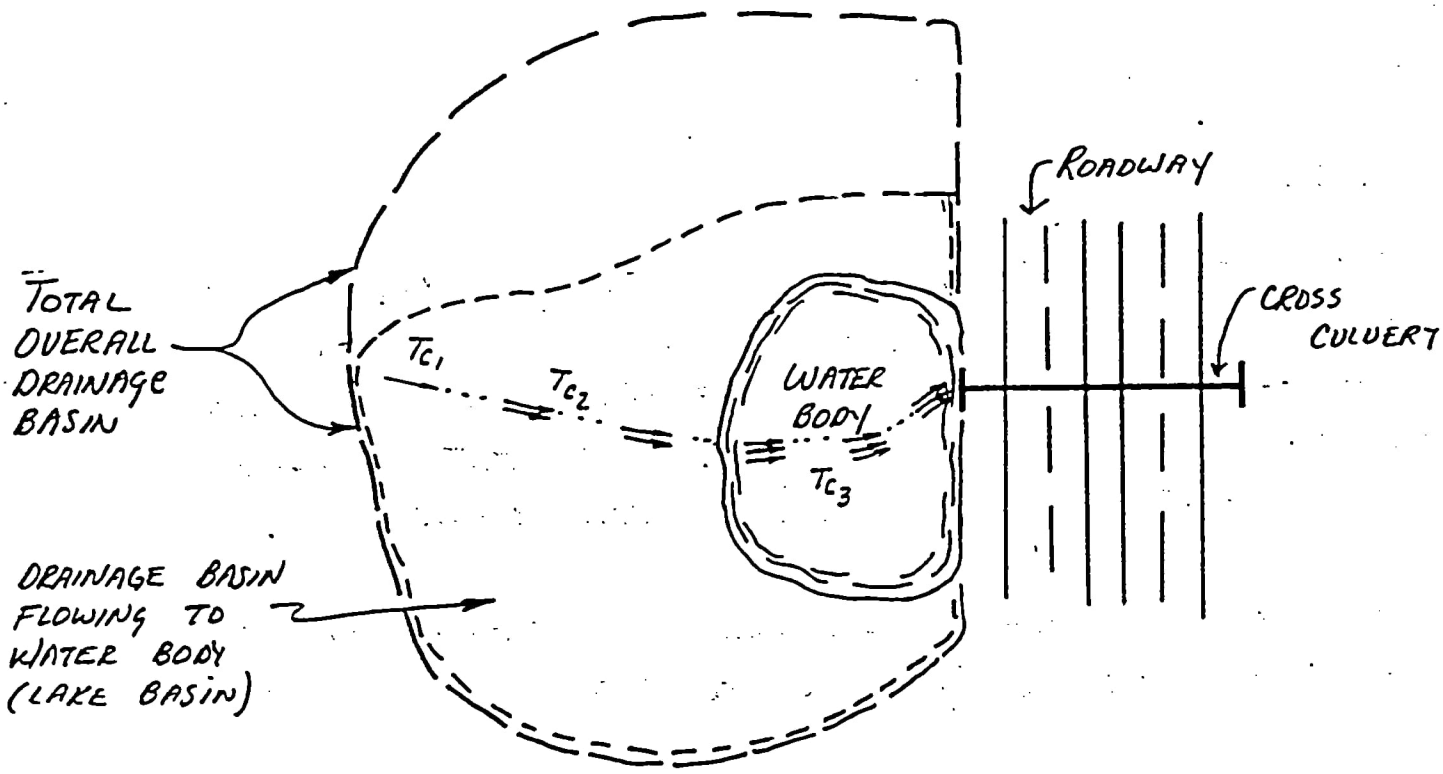
1. GENERATE A Q FOR THE BASIN DRAINING TO THE WATER BODY. THE T_c CONSIDERS ONLY THE TIME IT TAKES TO REACH THE WATERS EDGE.
2. OBTAIN A VELOCITY BY WHICH THE WATER WILL FLOW ACROSS THE LAKE BY DIVIDING Q BY A REASONABLE CROSS SECTIONAL AREA OF THE LAKE
3. DIVIDE THE DISTANCE THE WATER FLOWS ACROSS THE LAKE BY THE VELOCITY.
4. ADD THIS $T_{c(LAKE)}$ TO THE ORIGINAL T_c's. THIS WILL GIVE A REASONABLE $T_{c(TOTAL)}$ FOR THE ENTIRE BASIN
5. FIND (I_{TOTAL}) BY USING $T_{c(TOTAL)}$. FIND THE WEIGHTED RATIONAL COEFFICIENT (C_{TOTAL}) FOR THE OVERALL BASIN AND THE TOTAL AREA OF THE BASIN (A_{TOTAL}) = $Q = I_{TOTAL} \times C_{TOTAL} \times A_{TOTAL}$

(SEE NEXT PAGE)

Henigar & Ray

made by: GCW date: 2/25/15 job no. SR45

PROJECT: _____ checked by: _____ date: _____ sheet no. 202



1. Q FOR LAKE BASIN = I FROM $T_{C_1} + T_{C_2}$ (T_C PATH TO THE LAKE)
   C FROM LAKE BASIN ONLY
   A FROM LAKE BASIN ONLY

2. $Q = AV$: $V = \frac{Q}{A}$ A = CROSS SECTIONAL AREA OF WATER BODY
   A = AVERAGE DEPTH × AVERAGE WIDTH

3. T_{C_3} = VEL / DISTANCE ACROSS WATER BODY

4. FIND OVERALL DRAINAGE BASIN T_C BY ADDING ORIGINAL T_{C_1} & T_{C_2} TO THE NEW T_{C_3} = $T_{C(TOTAL)}$

5. FIND (I_{TOTAL}) FROM $T_{C(TOTAL)}$: MULTIPY BY OVERALL BASIN ACRES (A_{TOTAL}) AND OVERALL WEIGHTED C (C_{TOTAL}).

$Q_{TOTAL\ BASIN} = C_{(TOTAL\ BASIN)} \times I_{(TOTAL\ BASIN)} \times A_{(TOTAL\ BASIN)}$

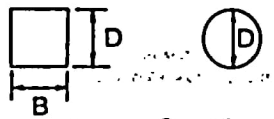
PROJECT: SR 45 Post Culvert Analysis

DESIGNER: TM

CULVERT UNDER ROADWAY SR 45

DATE: 2/20/95

HYDROLOGIC AND CHANNEL INFORMATION



D = Diameter or Height
B = Span

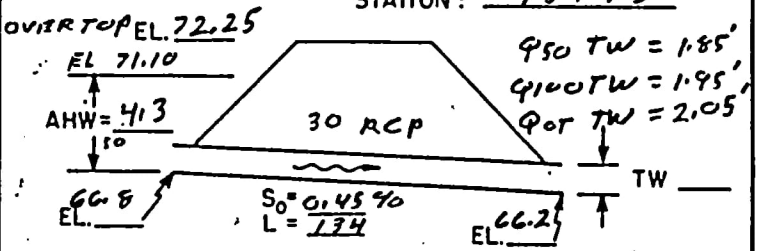
$Q_{50} = Q_1 = 30.8$ cfs
$Q_{100} = Q_2 = 39.1$ cfs
$Q_{OT} = Q_3 = 46.0$ cfs

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

ELEVATIONS
$TW_1 = 68.05$
$TW_2 = 68.15$
$TW_3 = 68.25$

SKETCH

STATION: 15+13*



MEAN STREAM VELOCITY = ____
MAX. STREAM VELOCITY = ____

LS_0 .60

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE		HEADWATER COMPUTATION											CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS	
				INLET CONTROL			OUTLET CONTROL HW = H + DTW − LS_0												
		D	B	$\frac{Q}{B}$	$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	DTW	LS_0	HW					
MES 2:1	30.8	2.5			1.32	3.3	.7	1.7	1.9	2.2	1.85	2.2	.6	3.3	3.3	7.7		HW EL = 70.1	Q50
MES 2:1	39.1	2.5			1.68	4.2	.7	2.7	2.1	2.3	1.95	2.3	.6	4.4	4.4	8.8		HW EL = 71.2	Q100
MES 2:1	46.0	2.5			2.15	5.4	.7	3.7	2.3	2.4	2.05	2.4	.6	5.5	5.5	9.9		HW EL = 72.3	QOT

SUMMARY & RECOMMENDATIONS:

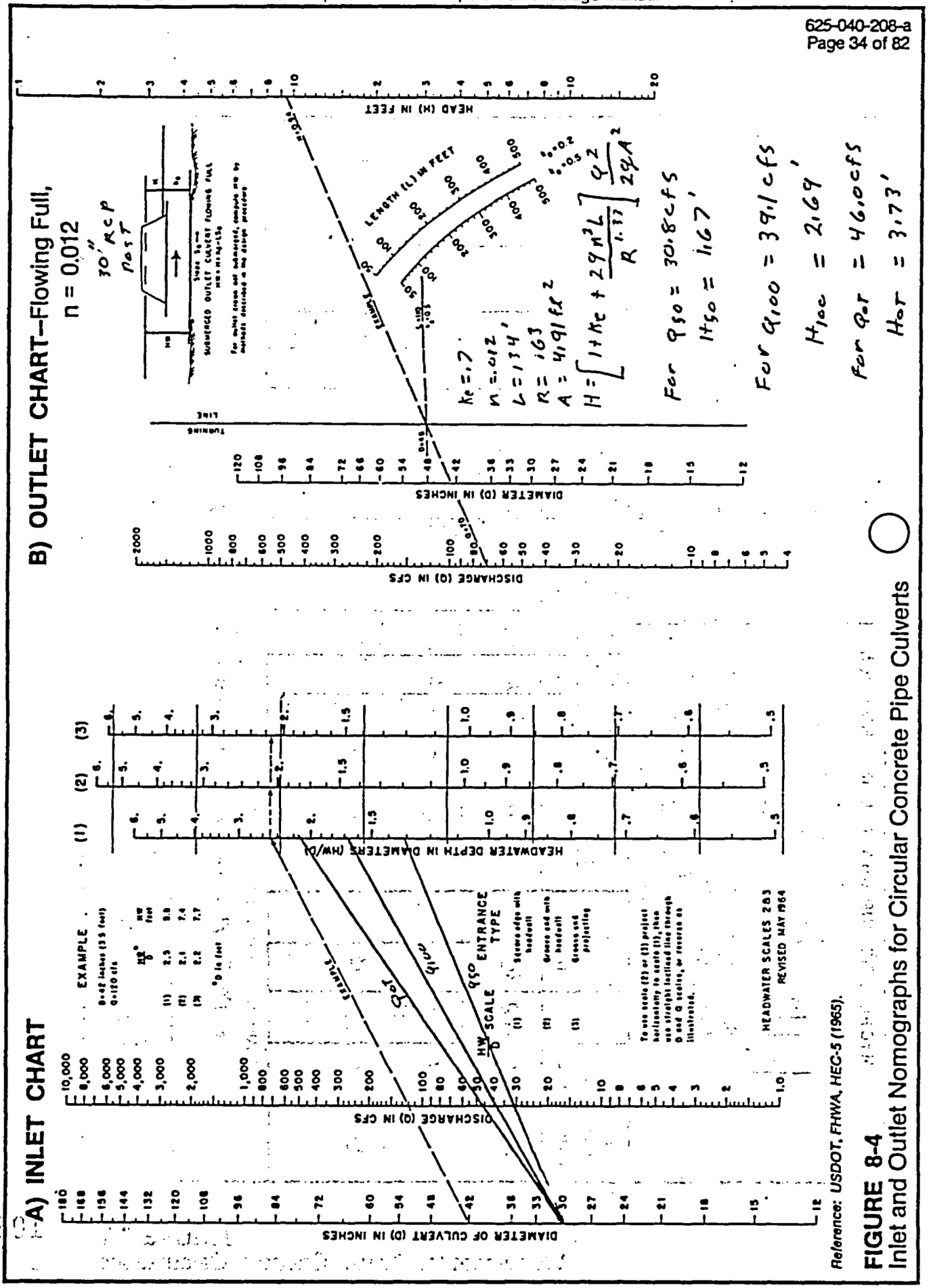
* POST ROADWAY LOW OCCURS AT STA 17+00

Design by _____ Checked by _____ Approved by _____

FIGURE 8-2
Worksheet for Culvert Capacity Calculations

SK45 POST CONDITION
CULVERT UNDER ROADWAY STA 15+B

625-040-208-a
Page 34 of 82



Reference: USDOT, FHWA, HEC-5 (1965).

FIGURE 8-4
Inlet and Outlet Nomographs for Circular Concrete Pipe Culverts

II-40

Henigar & Ray

made by: TM date: 2/20/95 job no. 2163
PROJECT: SR 45 (US 41) checked by: GCW date: 2/26/95 sheet no. 1/4

DETERMINATION OF POST PEAK FLOW RATES FOR CROSS-DRAIN AT STA 15+13 USING THE RATIONAL METHOD

Pre & POST DEVELOPMENT OFFSITE WEST

		C	*1.2 50yr C	*1.25 100yr C
OPEN (FAIR)	0.92 Ac	.20	.24	.25
OPEN (FAIR)	0.57 Ac	.20	.24	.25
WOODS/GRASS (FAIR)	12.81 Ac	.15	.18	.19
OPEN (POOR)	6.57 Ac	.20	.24	.25
OPEN (FAIR)	0.83 Ac	.20	.24	.25
OPEN (FAIR)	2.85 Ac	.20	.24	.25
SWAMP	11.08 Ac	1.00	1.00	1.00
1-AC RES	4.00 Ac	.35	.42	.44
OPEN (FAIR)	4.74 Ac	.20	.24	.25
WOODS/GRASS (FAIR)	1.46 Ac	.15	.18	.19
POND	0.21 Ac	1.00	1.00	1.00
POND	.54 Ac	1.00	1.00	1.00

COMPOSITE RUNOFF COEFFICIENTS

(50 yr)

$C = [(.92 + .57 + 6.57 + .83 + 2.85 + 4.74) .24 + (12.81 + 1.46) .18 + (11.08 + .21 + .54) 1 + (4.0) .42] \div 46.58 = 0.43$

(100yr) $[(.92 + .57 + 6.57 + .83 + 2.85 + 4.74) .25 + (12.81 + 1.46) .19 + (11.08 + .21 + .54) 1 + (4.0) .44] \div 46.58 = 0.44$

.48 (.25) = 4.12
.27 (.19) = 2.71
83 (1.0) = 11.83
00 (.44) = 1.76
20.42/46.58 = .44

POST DEVELOPMENT R/W LEFT

		C	*1.2 50yr C	*1.25 100yr C
OPEN (FAIR)	3.98 Ac	.20	.24	.25

50 yr combined $C = [(46.58) .43 + (3.98) .24] \div 50.56 = 0.42$

50 yr COMBINED TOTAL C = 50.56 AC @ C = 0.42

Henigar & Ray

made by: TM date: 2/20/95 job no. 21663
checked by: GCW date: 2/26/95 sheet no. 2/4

PROJECT: SR 45 (US 41)

DETERMINATION OF POST PEAK FLOW RATES FOR CROSS-DRAIN AT STA 15+13 USING THE RATIONAL METHOD

100 yr combined C = [(46.58) .44 + (3.98) .25] ÷ 50.56
= 0.43

100 yr combined TOTAL C = 50.56 AC @ C = 0.43

PRE & POST Development OFFSITE WEST contributing directly TO SWAMP

		C	*1.12 50yr C	*1.25 100yr C
OPEN (FAIR)	.92 AC	.20	.24	.25
OPEN (FAIR)	.57 AC	.20	.24	.25
WOODS/GRASS (FAIR)	8.93 AC	.15	.18	.19
OPEN (FAIR)	.83 AC	.20	.24	.25
OPEN (FAIR)	2.85 AC	.20	.24	.25
SWAMP	11.08 AC	1.00	1.00	1.00
1 AC RES	4.0 AC	.35	.42	.44
OPEN (FAIR)	4.74 AC	.20	.24	.25
WOODS/GRASS (FAIR)	1.46 AC	.15	.18	.19

C_{50yr} = [(.92 + .57 + .83 + 2.85 + 4.74) .24
+ (8.93 + 1.46) .18 + (11.08) 1.0
+ (4.0) .42] ÷ 35.38 = 0.48

9.91 (.24) = 2.38
0.34 (.18) = 1.87
1.08 (1.0) = 11.08
1.0 (.42) = 1.68
17.01 / 35.38 = .48

50yr TO SWAMP = 35.38 AC @ C = 0.48

C_{100yr} = [(.92 + .57 + .83 + 2.85 + 4.74) .25
+ (8.93 + 1.46) .19 + (11.08) 1 +
(4.0) .44] ÷ 35.38 = 0.49

.91 (.25) = 2.48
.34 (.19) = 1.97
.08 (1.0) = 11.08
.00 (.44) = 1.76
17.29 / 35.38 = .49

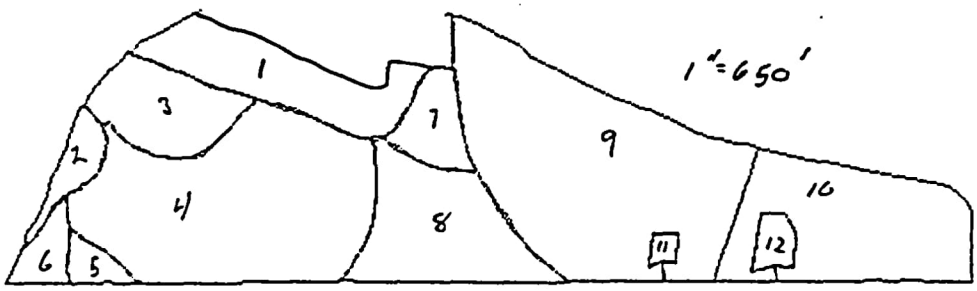
100yr TO SWAMP = 35.38 AC @ C = 0.49

SR 45 (US 41) OFFSITE WEST

BASIN A PRE & POST

No.	sq.ft	acres 4.00
~~1~~	~~272100.56~~	~~6.54~~
2	40138.98	0.92
3	124313.50	2.85
4	482588.00	11.08
5	24739.51	0.57
6	36014.50	0.83
7	63699.01	1.46
8	206520.51	4.74
9	558120.92	12.81
10	286310.16	6.57
11	8981.01	0.21
12	23716.01	0.54
		46.58 Ac

SEE SUBSEQUENT SHEET



SR 45 BASIN A
New Subarea # 1

No.	sq.ft	acres
1	174434.50	4.00



PRE/POST TIME OF CONCENTRATION FOR WATERSHED CONTRIBUTING TO CULVERT @ STA 15+13

$t_c = t_1 + t_2 + t_3$

t_1 = SHEET FLOW
t_2 = SHALLOW CONCENTRATED FLOW
t_3 = TRAVEL TIME thru SWAMP

t_1: FROM THE RAGEN KINEMATIC WAVE EQUATION (FDOT DRAINAGE MANUAL, VOL 24)

$$t_1 = \frac{0.938 L^{.6} n^{.6}}{I^{.4} S^{.3}}$$

$L = 300$ ft
$n = 0.2$
$S = (72.9 - 70) / 422' = 0.0069$ ft/ft

FROM FIG 5-7 FDOT DRAINAGE MANUAL (ZONE C, 50+100yr)

CHOOSE $I_{50} = 6.6$ in/hr $\Rightarrow t_{1\,50} =$ 22.4 min

CHOOSE $I_{100} = 7.3$ in/hr $\Rightarrow t_{1\,100} =$ 22.0 min

t_2: FROM SCS' TR 55 APPENDIX F

$$t_2 = \frac{L}{60\,[16.1345\,(S)^{1/2}]} \quad \text{(UNPAVED)}$$

$L = 111$ ft
$S = .0069$ ft/ft

$t_2 = 1.4$ min

t_3: TRAVEL TIME thru SWAMP

$Q_T = C_T\, I_{t_c}\, A$ $\quad t_{c50} = 24.3$ min., $t_{c100} = 23.4$ min

$Q_{50} = 0.48 * 6.4$ in/hr $* 35.38$ AC $= 109$ cfs

$Q_{100} = 0.49 * 7.2$ in/hr $* 35.38$ AC $= 125$ cfs

AVE X-SECT AREA: 482,645 SF (11.08 AC) ÷ TRAVEL PATH = 622'
= 776' ∴ AVE DEPTH = 3.5', X-SECT AREA = 776' * 3.5' = 2716 SF

$t_3 = \frac{L}{(Q_T/A)}$ $\quad L = 622'$

$t_{3,50} = [622' / (109 \text{ cfs} / 2716 \text{ SF})] \div 60 = 258$ min

$t_{3,100} = [622' / (125 \text{ cfs} / 2716 \text{ SF})] \div 60 = 225$ min

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PROJECT: SR 45 (US 41) checked by: _____ date: 2/26/95 sheet no. 4/4

POST PEAK RATES TO CULVERT AT STA 15+13

→ t_c 50 = (22.9 + 1.4 + 258) min = 282 min = 4.7 hr

→ t_c 100 = (22 + 1.4 + 225) min = 248 min = 4.1 hr

$Q_T = C_T I_{t_c} A$

Q_{50} = 0.42 * 1.45 in/hr * 50.56 AC = 30.79 CFS

Q_{100} = 1.43 * 1.80 in/hr * 50.56 AC = 39.13 CFS

post Q_{50} = 30.8 cfs

post Q_{100} = 39.1 cfs

SR45 Tc's for FIRST 300 ft OF OVERALL BASIN DRAINAGE to CULVERT @ STA 15+13

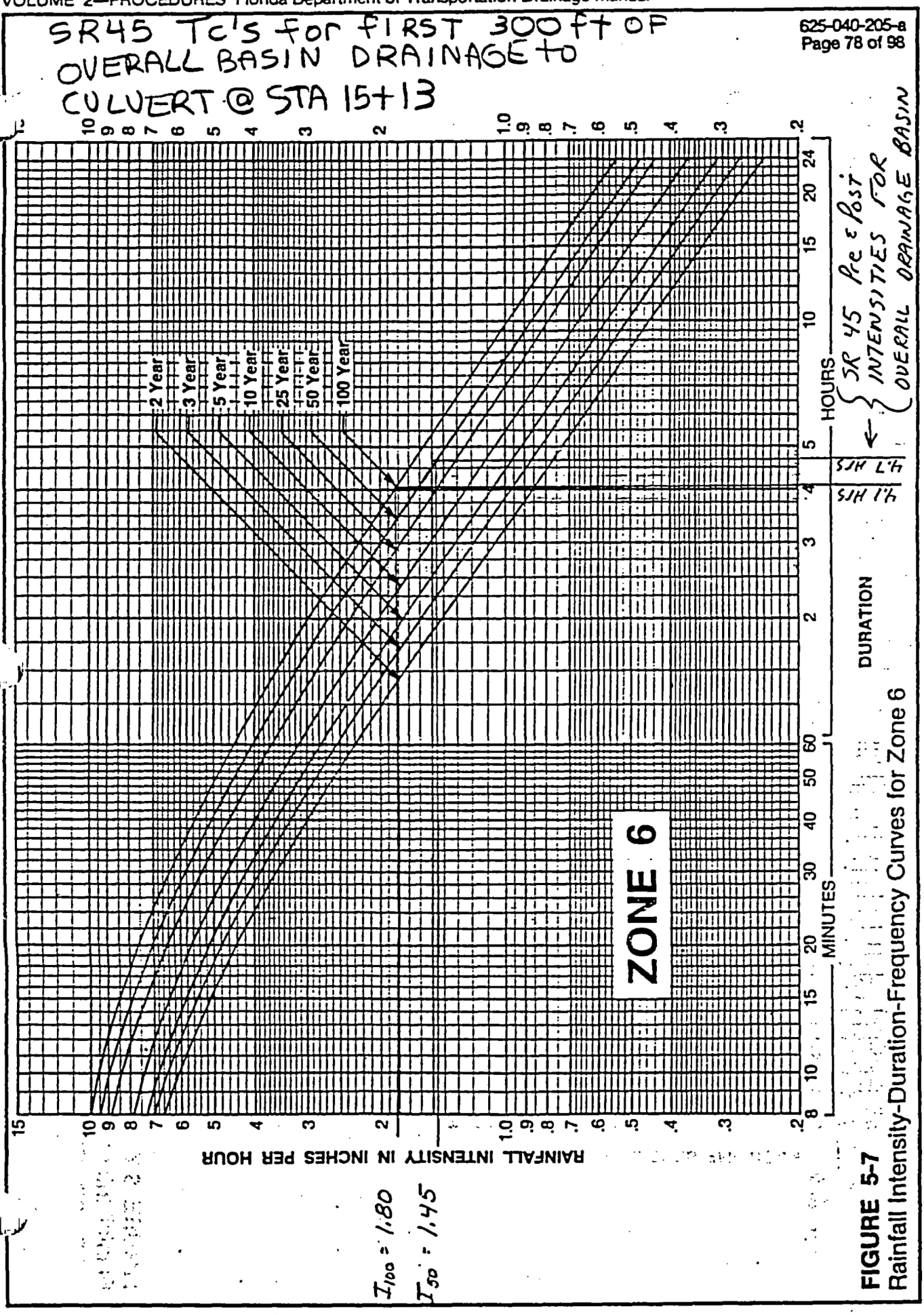


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

II-47

SR 45 PRE+POST TC'S FOR WATERSHED
T_1 { CONTRIBUTING DIRECTLY TO SWAMP FOR
THE 1ST 300ft of TC (KINEMATIC WAVE - REGAN

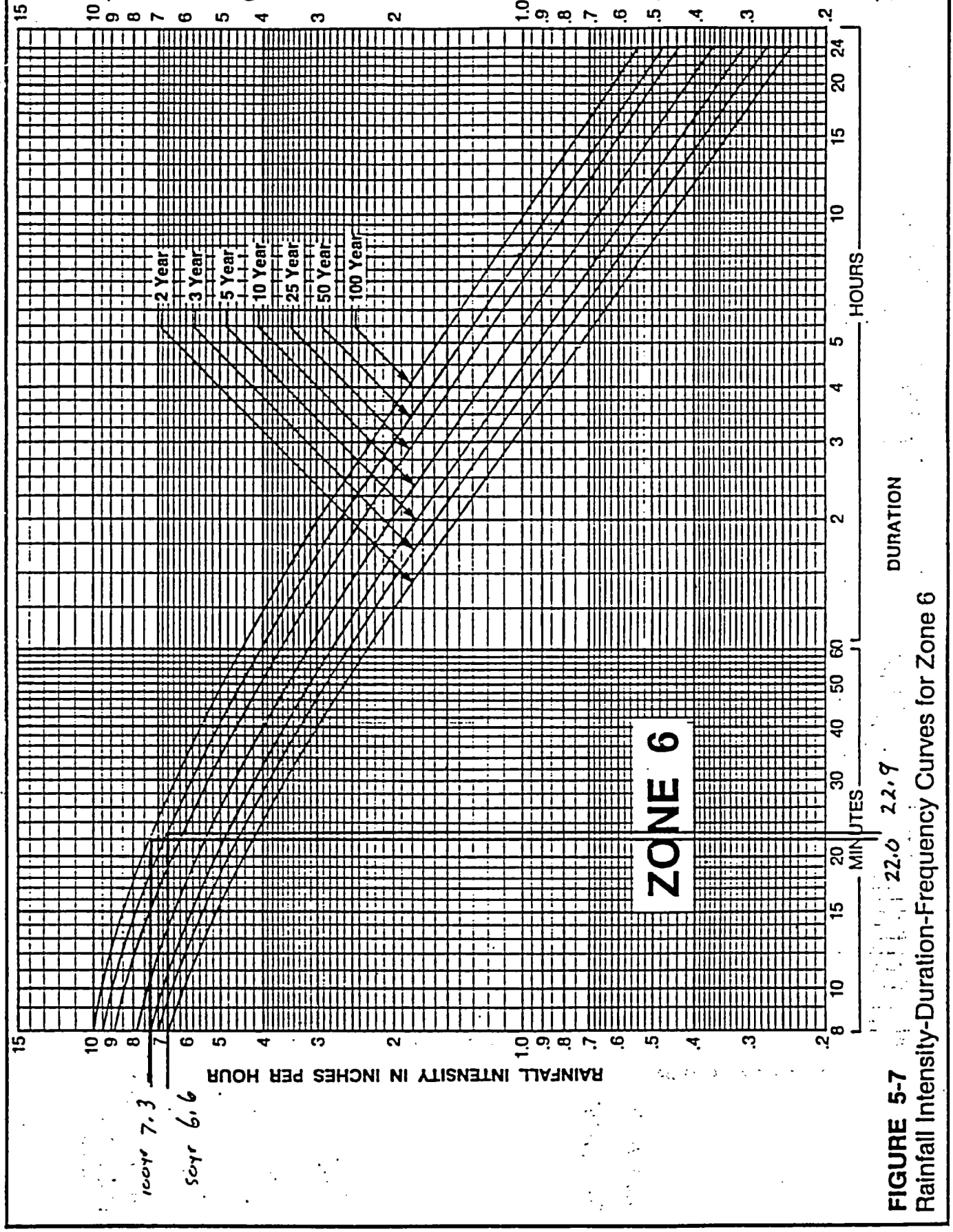


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

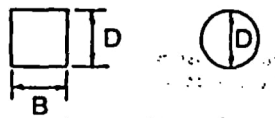
CROSS DRAIN AT STA 15+13

PROJECT: SR 45 (US 41) STA 15+13 PRE condition

DESIGNER: TM

DATE: 2/21/95

HYDROLOGIC AND CHANNEL INFORMATION



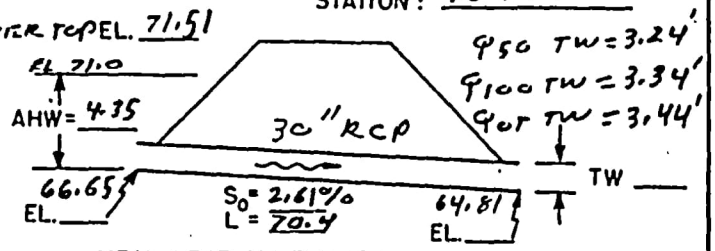
D = Diameter or Height
B = Span

*Q_{50}	Q_1 = 40.4 cfs	TW_1 = 68.05
*Q_{100}	Q_2 = 42.1 cfs	TW_2 = 68.15
Q_{OT}	Q_3 = 45.0 cfs	TW_3 = 68.25

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}; Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH

STATION: 15+13



MEAN STREAM VELOCITY = ____

MAX. STREAM VELOCITY = ____

LS_o 1.84

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE D	SIZE B	HEADWATER COMPUTATION: INLET CONTROL Q/B	INLET CONTROL HW/D	INLET CONTROL HW	OUTLET CONTROL K_e	OUTLET CONTROL H	OUTLET CONTROL d_c	OUTLET CONTROL $\frac{d_c+D}{2}$	OUTLET CONTROL TW	OUTLET CONTROL DTW	OUTLET CONTROL LS_o	OUTLET CONTROL HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS	
HEAD WALL	40.4	2.5			1.75	4.4	.5	2.1	2.15	2.33	3.24	3.24	1.84	3.5	4.4	8.3		HW EL = 71.05	Q_{50}
HEADWALL	42.1	2.5			1.82	4.6	.5	2.3	2.20	2.35	3.34	3.34	1.84	3.8	4.6	8.6		HW EL = 71.25	Q_{100}
HEADWALL	45.0	2.5			2.0	5.0	.5	2.7	2.3	2.4	3.44	3.44	1.84	4.3	5.0	9.2		HW EL 71.65	Q_{OT}

SUMMARY & RECOMMENDATIONS: Pre ROADWAY flow occurs at STA 18+00

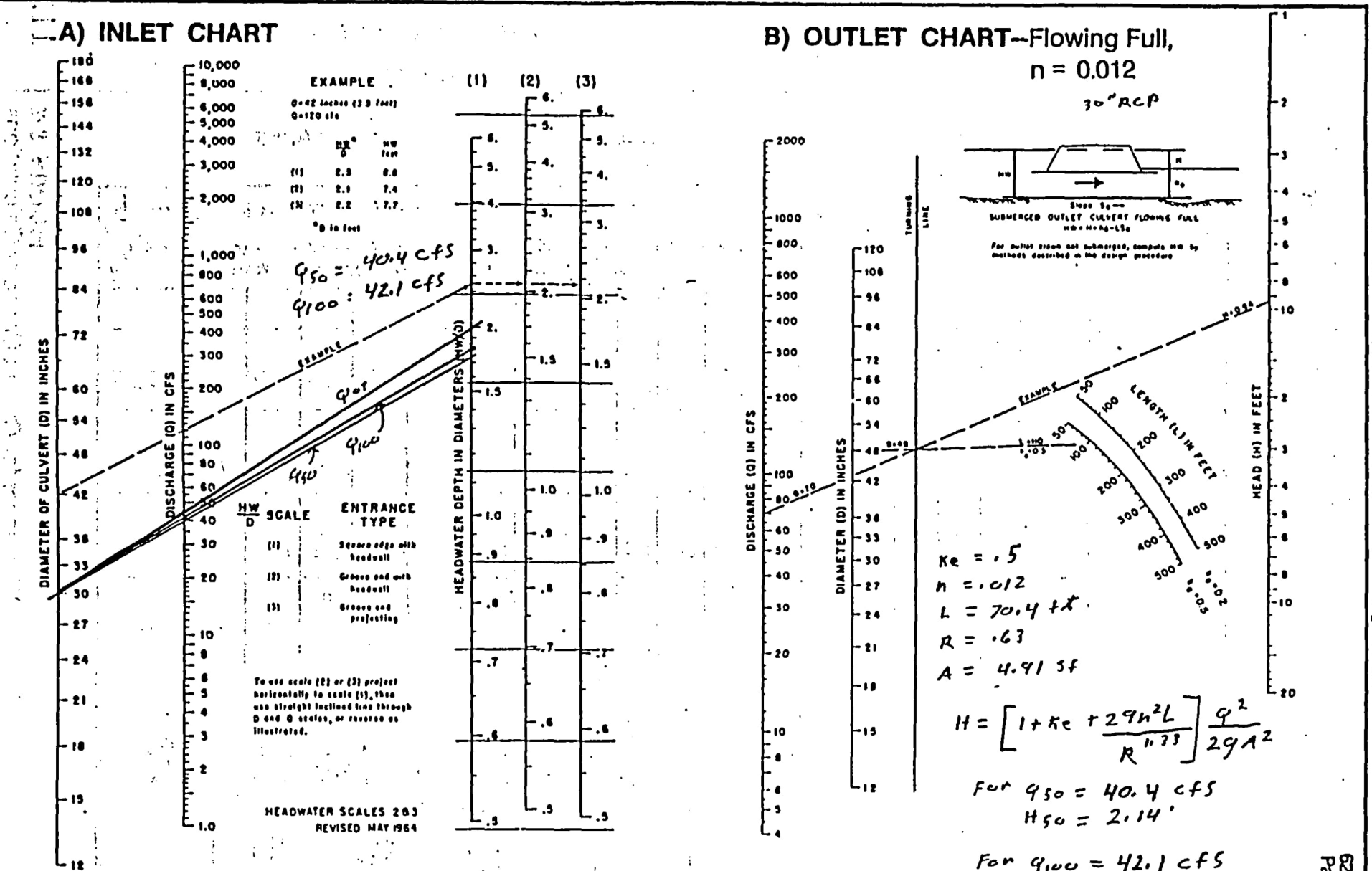
* Q_{50} = MAX Flow thru EXISTING RR CULVERT + 50yr peak Flow for R/W LT

* Q_{100} = MAX Flow thru EXISTING RR CULVERT + 100yr peak Flow for R/W LT

Design by _____ Checked by _____ Approved by _____

* SEE COMPUTATIONS for MAX Flow thru EXISTING 24" RCP UNDER RRC (Pre + Post conditions UNDER RR ARE IDENTICAL). MAX Flow thru RR CULVERT (pre + post) = 27 cfs.

FIGURE 8-2 Worksheet for Culvert Capacity Calculations



Reference: USDOT, FHWA, HEC-5 (1985).

FIGURE 8-4
Inlet and Outlet Nomographs for Circular Concrete Pipe Culverts

625-040-208-a
Page 34 of 82

SR45 - PRE-CONDITION
CROSS-DRAIN AT STA 5+13

II-50
113

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TM date: 2/26/95 job no. 21663
checked by: _____ date: _____ sheet no. 1

PRE PEAK FLOW RATE TO CULVERT AT STA 15+13

→ MAXIMUM FLOW RATE THRU EXISTING 24 RCP UNDER RR = 27cfs (see subsequent calculation)

PRE R/W LEFT (ws between RR & ROADWAY)

		C	*1.2 50yr	*1.25 100yr
OPEN (FAIR)	2.71 AC	.25	.30	.31
OPEN (FAIR)	1.75 AC	.25	.30	.31
PAVEMENT	1.50 AC	.95	.95	.95

t_c = 0.12hr (SEE BASIN A HYDROLOGY, t_c R/W LEFT)

50yr composite C = [(2.71 + 1.75).30 + (1.5).95] ÷ 5.96 = 0.46

100yr composite C = [(2.71 + 1.75).31 + (1.5).95] ÷ 5.96 = 0.47

$Q_T = C_T I_{tc} A$

$Q_{50} = .46 * 4.9 in/hr * 5.96 AC = 13.4 cfs$

$Q_{100} = .47 * 5.4 in/hr * 5.96 AC = 15.1 cfs$

PRE TOTAL $Q_{50} = 27 + 13.4 = 40.4$ cfs

PRE TOTAL $Q_{100} = 27 + 15.1 = 42.1$ cfs

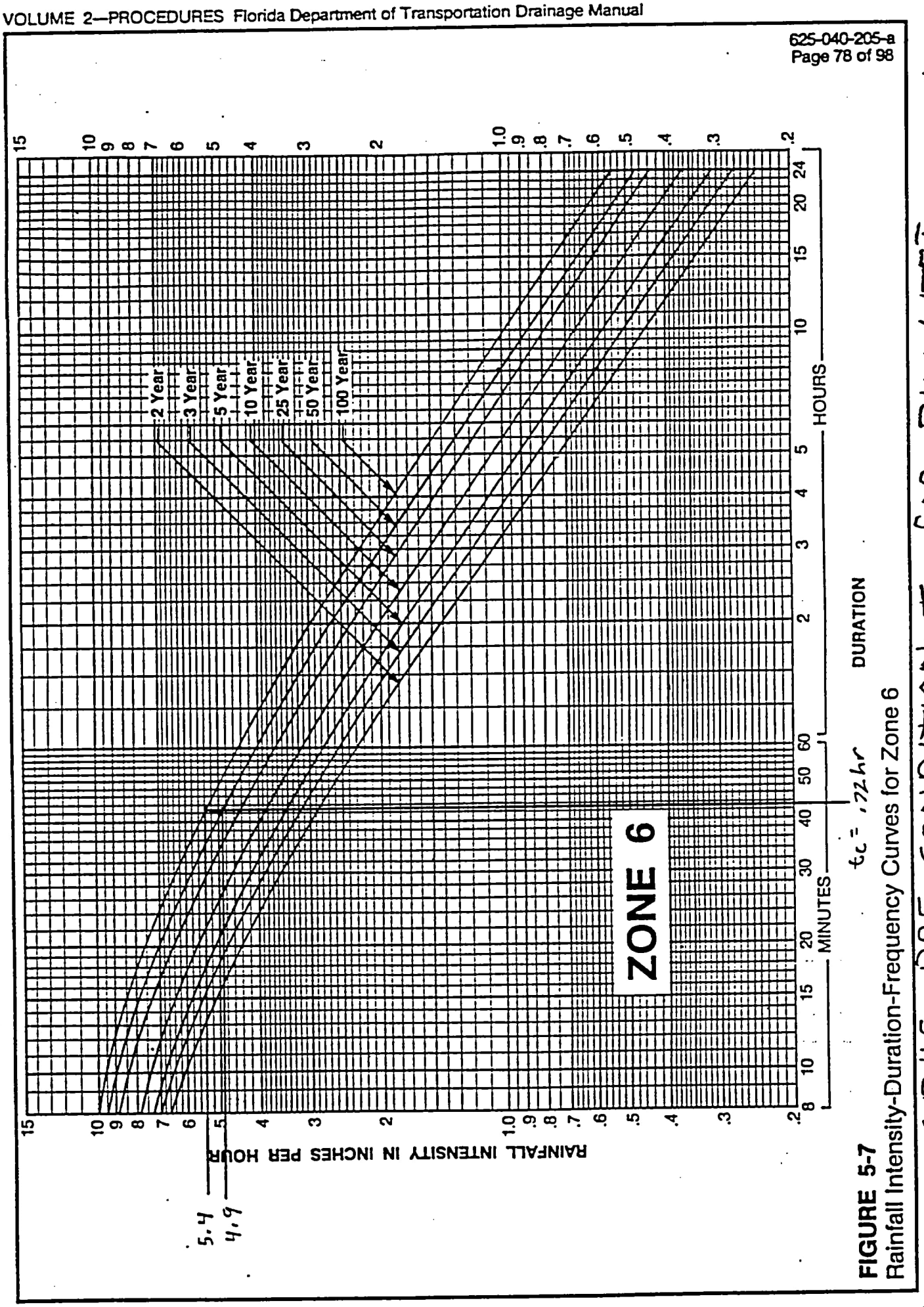


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

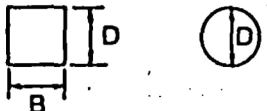
SR45 PRE CONDITION Tc FOR RIW LEFT CROSS DRAIN AT STA 164+13

pre - MAX FLOW RATE R.U Existing 24" RCP under RR

PROJECT: SR 45 (US 41) DESIGNER: TM

CULVERT UNDER RAIL ROAD DATE: 2/21/95

HYDROLOGIC AND CHANNEL INFORMATION



D = Diameter or Height
B = Span

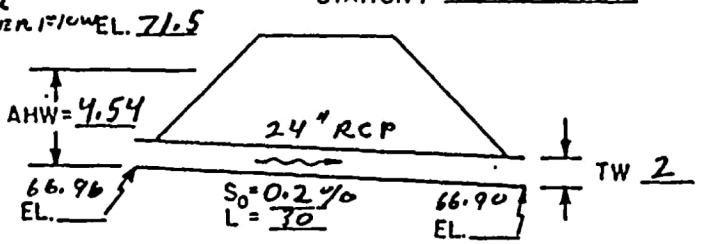
*Q_{OT} RR = Q_1 = 27 cfs TW_1 = 2

Q_2 = ____ TW_2 = ____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}; Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

SKETCH 15 of 13

STATION: UNDER RR



MEAN STREAM VELOCITY = ____

MAX. STREAM VELOCITY = ____

LS_0 0.06

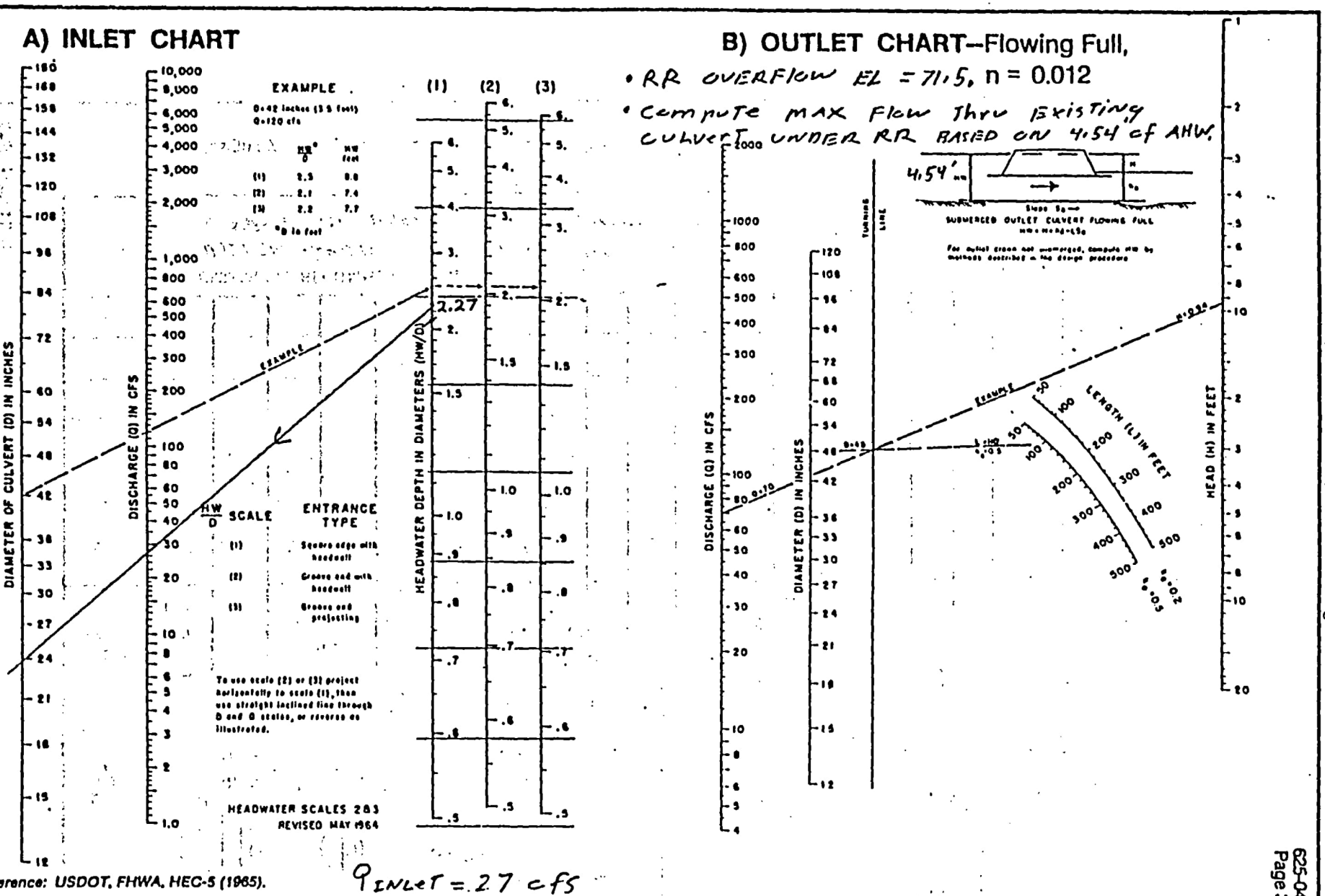
CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE D	SIZE B	HEADWATER COMPUTATION: INLET CONTROL Q/B	INLET CONTROL HW/D	INLET CONTROL HW	OUTLET CONTROL K_e	OUTLET CONTROL H	OUTLET CONTROL d_c	OUTLET CONTROL $\frac{d_c+D}{2}$	OUTLET CONTROL TW	OUTLET CONTROL DTW	OUTLET CONTROL LS_0	OUTLET CONTROL HW	CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS
HEADWALL		2			2.27	4.54												GIVEN AHW, DETERMINE PEAK FLOW RATE.

SUMMARY & RECOMMENDATIONS:

*DETERMINED MAXIMUM FLOW RATE thru EXISTING 24" RCP UNDER RR BASED ON AN OVERTOPING AHW of 4.54. Q_{OT} = 27 cfs

Design by ____ Checked by ____ Approved by ____

FIGURE 8-2
Worksheet for Culvert Capacity Calculations



Reference: USDOT, FHWA, HEC-5 (1965).

$Q_{INLET} = .27$ cfs

FIGURE 8-4
Inlet and Outlet Nomographs for Circular Concrete Pipe Culverts

SR45 (US41) Pre & POST CONDITION
CULVERT UNDER RAIL ROAD : STA 15+13

SYSTEM A

STORM SEWER

DESIGN

SR 45 BASIN A

3yr-8hr POST NETWORK SUMMARY

Project PA_3_8, Run of Thu Sep 29 08:11:27 1994 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS BETWEEN RR & SR45	LAKE	DIRECT
3	POND	LAKE	VEE NOTCH
4	POND	LAKE	RECT WEIR

Node	Name	Node Type
0	POND	POND
1	LAKE	STAGING
2	WS BETWEEN RR & SR45	SUBAREA
3	WS TO POND	SUBAREA
4	WS ON POND	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	68.25	0.00	→68.93	4.70	NO
1	LAKE	STAGING	67.50	0.00	67.70	10.00	NO
2	WS BETWEEN RR & SR45	SUBAREA	72.00	0.00	72.00	0.00	NO
3	WS TO POND	SUBAREA	72.00	0.00	72.00	0.00	NO
4	WS ON POND	SUBAREA	72.00	0.00	72.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	28.30 @ 3.80 Hours	15.60 @ 4.70 Hours
1	LAKE	19.00 @ 4.50 Hours	0.00 @ 0.00 Hours
2	WS BETWEEN RR & SR45	3.72 @ 4.30 Hours	3.72 @ 4.30 Hours
3	WS TO POND	18.23 @ 4.00 Hours	18.23 @ 4.00 Hours
4	WS ON POND	12.39 @ 3.50 Hours	12.39 @ 3.50 Hours

OUTLET CONTROL EL = 68.93

JL-49 BASIN A

3yr-8hr POST Hydrographs

Subarea POST WATERSHED TO POND A 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOA3_8
TOTAL DRAINAGE AREA, ACRES... 10.74	INPUT ID 769639284
WEIGHTED SCS CURVE NUMBER.... 94.46	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 10.5
TIME OF CONCENTRATION, HOURS. 0.4	DT, HRS. 0.1
	DATA PTS 106
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.0824962
	ACREAGE. 10.74
	TC, HRS. 0.4
	TP, HRS. 4.0
	PEAK CFS 18.226257
	ACFT VOL 3.652626
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea WATERSHED ON POND A 3YR-8HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONA3_8
TOTAL DRAINAGE AREA, ACRES... 5.35	INPUT ID 766093321
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 5.35
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 12.389748
	ACFT VOL 2.1036376
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

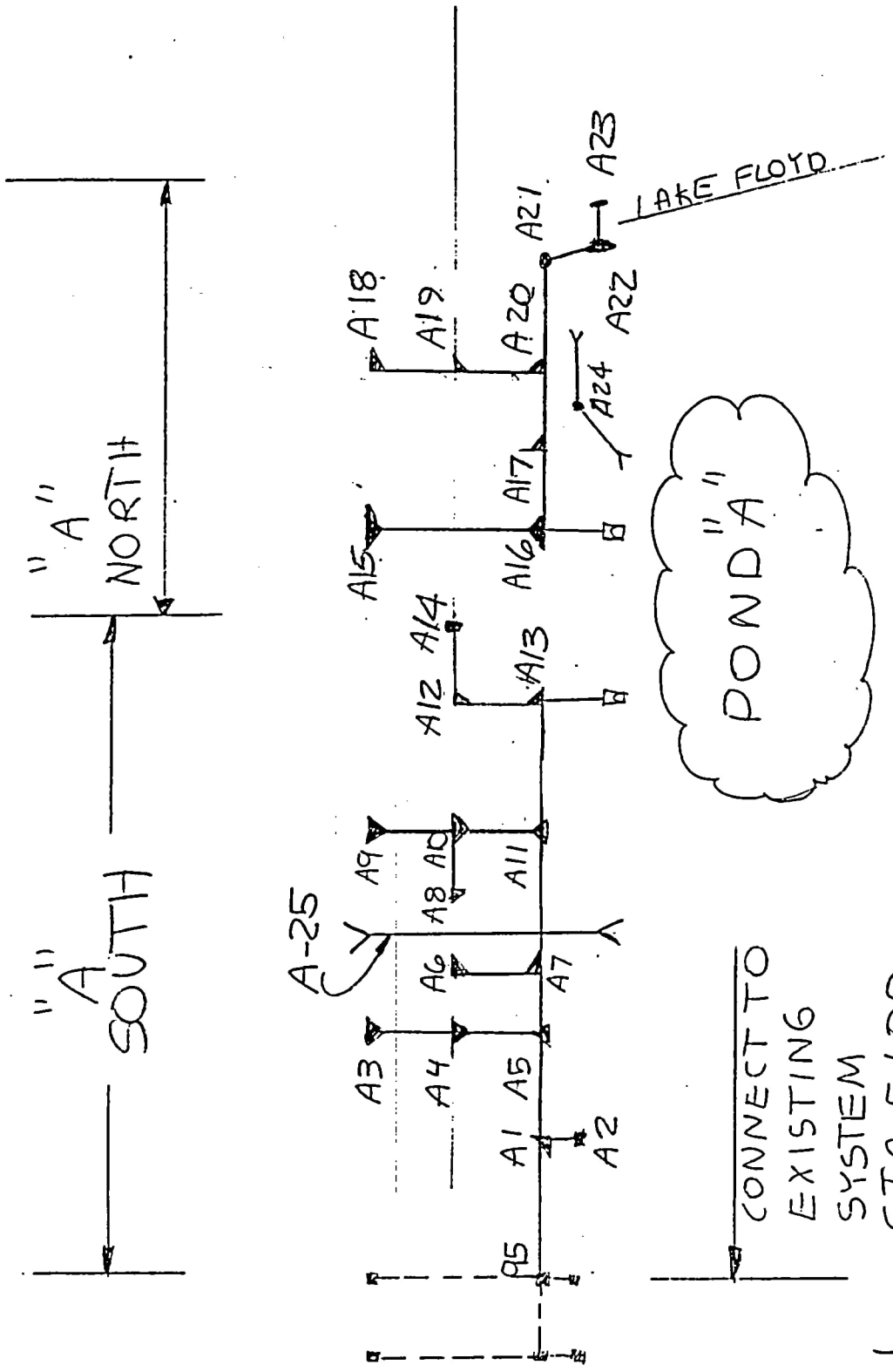
Henigar & Ray

PROJECT: SR45

made by: CLJ date: 11-22-94 job no. 21663

checked by: _____ date: _____ sheet no. 1

System "A" Schematic



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A-122

Henigar & Ray made by: CLJ date: 11-22-94 job no. 21663

PROJECT: SR45 checked by: _____ date: _____ sheet no. 1.

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #3	Typical #2	Typical #1	NON-TYPICAL INLETS
A	A-3 NORTH	A-4 NORTH	A-5 NORTH	A-1
		A-6	A-7	A-2 (Cmod)
		A-8		A-3 } SOUTH
	A-9 (S)	A-10	A-11 (S)	A-4 } SOUTH
				A-5 } SOUTH
		A-12	A-13	A-9+11 (NORTH)
		A-14		
	A-15		A-16	A-22 } LAKE
	A-17			A-23 } FLOYD
	A-18	A-19	A-20	A-21 MH

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II-58

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: A-1

STATION: 8+00 RT

DRAINAGE AREA: 0.48Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.030	0.013	1.67	8.05

S=.2033% (NBL)

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.493	0.32	1.62

Q = .87(4)(.48) = 1.67 cfs

Spread = 8.05 - 1.50 = 6.55 ft

6.55 ft < 8.0 ft ok

II - 59

123

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR 45

PROJECT NO.: 21663

INLET NO.: A-~~4~~ 3 SOUTH

STATION: 11+00 LT

DRAINAGE AREA: 0.57Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.030	0.013	2.17	8.92

S=.2083%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.450	0.35	1.73

Q=.57(.95)(4)=2.17cfs

Spread = 8.92 - 1.50 = 7.42 ft

7.42 < 8.0 ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: A-4 SOUTH

STATION: 11+00 M

DRAINAGE AREA: 0.10Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Uniform	0.002	0.020	0.013	0.37	6.25

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.020	0.00	0.000	0.13	0.97

$Q = .95(4)(.1) = .38$ cfs (Actual Q slightly less due to small grass area)

Spread = 6.25 ft

6.25 ft < 12.00 ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: A-5 SOUTH

STATION: 11+00 RT

DRAINAGE AREA: 0.39Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.030	0.013	1.48	7.66

S=.2033% (NBL)

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.515	0.31	1.57

Q = .95 (4)(.39) = 1.48 cfs (actual Q slightly less because of grass strips)

Spread = 7.66 - 1.50 = 6.16 ft

6.16 < 8.0 °° OK

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: A-9 NORTH

STATION: 17+00 LT

DRAINAGE AREA: 0.57Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.17	8.28

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.481	0.33	1.99

$Q = (.24+.33)(.95)(4) = 2.17$ cfs

Spread $= 8.28 - 1.50 = 6.78$ ft

$6.78 < 8.0$ OK

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: A-11 NORTH

STATION: 17+00 RT

DRAINAGE AREA: 0.52Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.81	7.68

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.514	0.31	1.92

$Q = (29 + .23)(4)(.87) = 1.81$ cfs

Spread $= 7.68 - 1.50 = 6.18$ ft

$6.18 < 8.0$; ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: A-~~25~~ 22

STATION: LK FLOYD

DRAINAGE AREA: 0.10Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.026	0.020	0.013	0.37	1.86

GUTTER FLOW

W (ft)	Sw (ft/ft)	e (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.998	0.13	3.58

Q = .10(.95)(4) = .37cfs

Spread = 1.86 - 1.50 = .36ft

.36ft < 6.0ft ∴ ok

II-65

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: A-~~2~~23

STATION: LK FLOYD

DRAINAGE AREA: 0.12Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.026	0.020	0.013	0.45	2.30

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.987	0.14	3.65

$Q = .12(.95)(4) = .45$ cfs

Spread = 2.3 - 1.5 = .80ft

.80' < 6.0' ∴ ok

1 ry TO eliminate A-1 Inlet

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-22-1994

PROJECT: SR 45

PROJECT NO.: 21663

INLET NO.:

STATION: 11+00 RT

DRAINAGE AREA: 0.87Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.030	0.013	3.03	10.25

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.396	0.39	1.85

Spread = 10.25 - 1.50 = 8.75ft

8.75 > 8.10

∴ Can't eliminate A-1 at 8+00 RT

II-67

Henigar & Ray made by: CJ date: 11-23-94 job no. 21663

PROJECT: SR45 checked by: _____ date: _____ sheet no. 1 OF 1

System A - Sag Inlet Checks

SAG INLET ID	INLET TYPE	AREA Ac	3 YR cfs	SPREAD LESS THAN ALLOWED
3	6	.89	3.10	X
4	7	.12	.42	NO Chart for Type 7 Inlet
5	6	.60	2.09	X
9	6	.85	2.96	X
10	7	.15	.52	NO Charts for Type 7 inlet
11	6	.88	3.06	X
165	6	.88	3.06	X
176	6	.74	2.58	X

Use C = .87 Maximum Spread of 9.5 ft

i = 4.0 in/hr relates to Q = (10.2 + 4.2) / 2

= 7.20 cfs

(From FDOT charts 12-21 and 12-22)

25 YR OVERTOPPING CHECKS

25YR - 24 HR DHW = 69.25

All Sag inlets have gutter elev. about DHW

II-68

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A-133

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED STORM SEWER DESIGN TIME PROCESSED
DATE SUBMITTED 8/ 18/95 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41) BASIN A FILE 45A98S.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 68.93 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.

PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.87 C2=0.95 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
95	1			S	300	1.96	0.00	71.97	24	0.00	0.0	0.00	0.00	70.10	68.86	.000	
5+00		50R				0.00											
						0.00											
1	5			M	300	0.48	0.00	71.36	30	0.00	0.0	0.00	0.00	68.86	~~68.25~~ 67.25	.000	
8+00		50R				0.00											
						0.00											
2	1			S	3	0.21	0.00	71.08	18	0.00	0.0	71.20	0.00	68.96	68.86	.000	
8+00		57R				0.00											
						0.00											
3	4			S	43	0.89	0.00	70.75	24	0.00	0.0	69.80	0.00	68.25	68.15	.000	
11+00		50L				0.00											
						0.00											
4	5			M	58	0.12	0.00	71.45	24	0.00	0.0	0.00	0.00	68.15	~~68.05~~ 67.55	.000	
11+00		8L				0.00											
						0.00											
5	7			M	172	0.60	0.00	70.75	36	0.00	0.0	0.00	0.00	~~68.25~~ 67.25	~~67.94~~ 66.94	.000	
11+00		50R				0.00											
						0.00											
6	7			S	43	0.06	0.00	71.97	18	0.00	0.0	0.00	0.00	~~69.46~~ 68.46	~~68.77~~ 67.77	.000	
12+72		8R				0.00											
						0.00											
7	11			M	428	0.15	0.00	71.27	42	0.00	0.0	0.00	0.00	64.74	64.53	.000	
12+72		50R				0.78											
						0.00											
8	10			S	154	0.10	0.00	71.90	18	0.00	0.0	0.00	0.00	69.40	69.15	.000	
15+50		8R				0.00											
						0.00											
9	10			S	43	0.85	0.00	70.75	18	0.00	0.0	0.00	0.00	68.25	68.15	.000	
17+00		50L				0.00											
						0.00											
10	11			M	58	0.15	0.00	71.45	18	0.00	0.0	0.00	0.00	68.15	68.04	.000	
17+02		8L				0.00											
						0.00											
11	13			M	390	0.88	0.00	70.75	42	0.00	0.0	0.00	0.00	64.53	64.38	.000	
17+00		50R				0.00											
						0.00											

PIPE IDENT FROM TO (STA)	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.87 C2=0.95 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
12 13 20+90		8R	M	43	0.00 0.00 0.00	0.00	72.62	18	0.00	0.0	0.00	0.00	69.80	68.50	.000	
13 0 20+90		50R	M	50	0.25 0.00 0.00	0.00	71.92	42	0.00	0.0	0.00	0.00	64.30	64.20	.000	
14 12 23+68		8R	S	278	0.00 0.00 0.00	0.00	73.05	18	0.00	0.0	0.00	0.00	70.33	69.80	.000	

DATE PROCESSED | FINAL SYSTEM DESIGN | TIME PROCESSED

PROJECT 14010-3518 ZONE 6 FREQ 3 PAGE 3

SR45 (US41) BASIN A FILE 45A90S.IN

* HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.87 C2=0.95 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN ELEV F.L. ELEV UPPER END	LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
95 1	S	300	1.96	1.96	1.71	10.00	1.39	6.61	1.71	11.27	71.97	70.70	70.06	0.64	24*	0.212	3.59	.012
5+00	50R		0.00	0.00	0.00							70.10	68.86					
			0.00	0.00	0.00													
2 1	S	3	0.21	0.21	0.18	10.00	0.03	6.61	0.18	1.21	71.08	70.07	70.06	0.01	18*	0.011	0.68	.012
8+00	57R		0.00	0.00	0.00						71.20	68.96	68.86					
			0.00	0.00	0.00													
1 5	M	300	0.48	2.65	2.31	11.39	1.71	6.24	2.31	14.39	71.36	70.06	69.75	0.32	30*	0.105	2.93	.012
8+00	50R		0.00	0.00	0.00							68.86	67.25					
			0.00	0.00	0.00													
3 4	S	43	0.89	0.89	0.77	10.00	0.36	6.61	0.77	5.12	70.75	69.80	69.78	0.02	24*	0.044	1.63	.012
11+00	50L		0.00	0.00	0.00						69.80	68.25	68.15					
			0.00	0.00	0.00													
4 5	M	58	0.12	1.01	0.88	10.36	0.48	6.51	0.88	5.72	71.45	69.78	69.75	0.03	24*	0.055	1.82	.012
11+00	8L		0.00	0.00	0.00							68.15	67.55					
			0.00	0.00	0.00													
5 7	M	172	0.60	4.26	3.71	13.10	0.93	5.86	3.71	21.74	70.75	69.75	69.59	0.16	36*	0.091	3.07	.012
00	50R		0.00	0.00	0.00							67.25	66.94					
			0.00	0.00	0.00													
6 7	S	43	0.06	0.06	0.05	10.00	0.36	6.61	0.05	0.34	71.97	69.60	69.59	0.01	18*	0.001	0.20	.012
12+72	8R		0.00	0.00	0.00							68.46	67.77					
			0.00	0.00	0.00													
7 11	M	428	0.15	4.47	3.89	14.03	2.61	5.68	4.63	26.31	71.27	69.59	69.34	0.25	42*	0.058	2.74	.012
12+72	50R		0.78	0.78	0.74							64.74	64.53					
			0.00	0.00	0.00													
8 10	S	154	0.10	0.10	0.09	10.00	1.28	6.61	0.09	0.57	71.90	69.51	69.50	0.01	18*	0.003	0.33	.012
15+50	8R		0.00	0.00	0.00							69.40	69.15					
			0.00	0.00	0.00													
9 10	S	43	0.85	0.85	0.74	10.00	0.26	6.61	0.74	4.89	70.75	69.58	69.50	0.08	18*	0.185	2.76	.012
17+00	50L		0.00	0.00	0.00							68.25	68.15					
			0.00	0.00	0.00													
10 11	M	58	0.15	1.10	0.96	11.28	0.28	6.27	0.96	6.00	71.45	69.50	69.34	0.16	18*	0.279	3.39	.012
17+02	8L		0.00	0.00	0.00							68.15	68.04					
			0.00	0.00	0.00													
11 13	M	390	0.88	6.45	5.61	16.64	1.88	5.25	6.35	33.34	70.75	69.34	68.98	0.37	42*	0.094	3.47	.012
17+00	50R		0.00	0.78	0.74							64.53	64.30					
			0.00	0.00	0.00													
14 12	S	278	0.08	0.08	0.07	10.00	2.32	6.61	0.07	0.46	73.05	69.81	69.80	0.01	18*	0.002	0.26	.012
23+68	8R		0.09	0.00	0.00							70.33	69.80					
			0.00	0.00	0.00													
12 13	M	43	0.08	0.16	0.14	12.32	0.36	6.03	0.14	0.84	72.62	68.98	68.98	0.00	18*	0.005	0.47	.012
20+90	8R		0.00	0.00	0.00							69.80	68.50					
			0.00	0.00	0.00													
13 0	M	50	0.25	6.86	5.97	18.52	0.24	4.99	6.71	33.45	71.92	68.98	68.93	0.05	42*	0.094	3.48	.012
20+90	50R		0.00	0.78	0.74							64.30	64.20					
			0.00	0.00	0.00													

DATE PROCESSED COST SUMMARY TIME PROCESSED

PROJECT 14818-3518 PAGE 4

SR45 (US41) BASIN A FILE 45A90S.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
95	1	10500.00	1	5	13200.00	2	1	87.00
3	4	1505.00	4	5	2030.00	5	7	9976.00
6	7	1247.00	7	11	27820.00	8	10	4466.00
9	10	1247.00	10	11	1682.00	11	13	25350.00
12	13	1247.00	13	0	3250.00	14	12	8062.00

TOTAL SYSTEM COST = 111669.00

SR45 (US41) BASIN A FILE 45A90S.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	95 TO 1
MAXIMUM VELOCITY (GRADIENT FLOW)	3.59 FPS	95 TO 1
MAXIMUM PIPE SLOPE	0.00 PERCENT	95 TO 1
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.47 FPS	12 TO 13
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	95 TO 1
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	0.95 FT	3 TO 4
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.00 FT	3 TO 4
TOTAL DRAINAGE AREA	7.64 ACRES	
WEIGHTED COEFFICIENT	0.88	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT - 14 TO 12

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS - NO PIPES

COMMENTS

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED STORM SEWER DESIGN TIME PROCESSED
DATE SUBMITTED 8/18 /95 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41) BASIN A FILE 45A90N.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 68.93 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DESIGN TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.87 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
15	16	S	100	0.88	0.00	71.65	18	0.00	0.0	0.00	0.00	69.15	68.96	.000	
26+00	50L			0.00											
				0.00											
16	0	M	45	0.74	0.00	71.65	24	0.00	0.0	0.00	0.00	68.96	68.00	.000	
26+00	50R			0.00											
				0.00											
17	16	M	250	0.38	0.00	72.40	18	0.00	0.0	0.00	0.00	69.69	68.96	.000	
28+50	52R			0.00											
				0.00											
18	19	S	43	0.41	0.00	73.11	18	0.00	0.0	0.00	0.00	70.68	70.58	.000	
30+88	50L			0.00											
				0.00											
19	20	M	57	0.10	0.00	73.81	18	0.00	0.0	0.00	0.00	70.58	70.46	.000	
30+88	7L			0.00											
				0.00											
20	17	M	238	0.37	0.00	73.11	18	0.00	0.0	0.00	0.00	70.46	69.69	.000	
30+88	52R			0.00											
				0.00											
21	20	M	272	0.00	0.00	74.54	18	0.00	0.0	0.00	0.00	71.06	70.46	.000	
33+60	43R			0.00											
				0.00											
22	21	M	54	0.10	0.00	73.07	18	0.00	0.0	0.00	0.00	71.16	71.06	.000	
30+99	21R			0.00											
				0.00											
23	22	S	63	0.12	0.00	72.37	18	0.00	0.0	0.00	0.00	71.26	71.16	.000	
31+20	36R			0.00											
				0.00											

DATE PROCESSED | FINAL SYSTEM DESIGN | TIME PROCESSED

PROJECT 14010-3518 | ZONE 6 FREQ 3 | PAGE 2

SR45 (US41) BASIN A FILE 45A90N.IN

* HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.87 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN ELEV F.L. ELEV UPPER END	LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
15 16	S	100	0.88	0.88	0.77	10.00	0.58	6.61	0.77	5.06	71.65	69.29	69.09	0.20	18*	0.198	2.86	.012
26+00	50L		0.00	0.00	0.00							69.15	68.96					
			0.00	0.00	0.00													
18 19	S	43	0.41	0.41	0.36	10.00	0.36	6.61	0.36	2.36	73.11	70.73	70.71	0.02	18*	0.043	1.33	.012
30+88	50L		0.00	0.00	0.00							70.68	70.58					
			0.00	0.00	0.00													
19 20	M	57	0.10	0.51	0.44	10.36	0.47	6.51	0.44	2.89	73.81	70.71	70.67	0.04	18*	0.065	1.63	.012
30+88	7L		0.00	0.00	0.00							70.58	70.46					
			0.00	0.00	0.00													
23 22	S	63	0.12	0.12	0.10	10.00	0.52	6.61	0.10	0.69	72.37	71.17	71.16	0.01	18*	0.004	0.39	.012
31+20	36R		0.00	0.00	0.00							71.26	71.16					
			0.00	0.00	0.00													
22 21	M	54	0.10	0.22	0.19	10.52	0.45	6.46	0.19	1.24	73.07	71.07	71.06	0.01	18*	0.012	0.70	.012
299	21R		0.00	0.00	0.00							71.16	71.06					
			0.00	0.00	0.00													
21 20	M	272	0.00	0.22	0.19	10.97	2.27	6.35	0.19	1.24	74.54	70.70	70.67	0.03	18*	0.012	0.70	.012
33+60	43R		0.00	0.00	0.00							71.06	70.46					
			0.00	0.00	0.00													
20 17	M	238	0.37	1.10	0.96	13.24	1.26	5.84	0.96	5.59	73.11	70.67	70.10	0.57	18*	0.241	3.16	.012
30+88	52R		0.00	0.00	0.00							70.46	69.69					
			0.00	0.00	0.00													
17 16	M	250	0.38	1.48	1.29	14.50	1.02	5.60	1.29	7.21	72.40	70.10	69.09	1.01	18*	0.402	4.08	.012
28+50	52R		0.00	0.00	0.00							69.69	68.96					
			0.00	0.00	0.00													
16 0	M	45	0.74	3.10	2.70	15.52	0.16	5.42	2.70	14.63	71.65	69.09	68.93	0.16	24*	0.357	4.66	.012
26+00	50R		0.00	0.00	0.00							68.96	68.00					
			0.00	0.00	0.00													

DATE PROCESSED

PROJECT 14018-3518

COST SUMMARY

TIME PROCESSED

SR45 (US41) BASIN A FILE 45A90N.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
15	16	2900.00	16	0	1575.00	17	16	7250.00
18	19	1247.00	19	20	1653.00	20	17	6902.00
21	20	7888.00	22	21	1566.00	23	22	1827.00

TOTAL SYSTEM COST = 32808.00

SR45 (US41) BASIN A FILE 45A90N.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	15 TO 16
MAXIMUM VELOCITY (GRADIENT FLOW)	4.66 FPS	16 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	15 TO 16
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.70 FPS	22 TO 21
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	15 TO 16
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	1.20 FT	23 TO 22
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.20 FT	23 TO 22
TOTAL DRAINAGE AREA	3.10 ACRES	
WEIGHTED COEFFICIENT	0.87	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

23 TO 22
22 TO 21

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

WEIGHTED CURVE NUMBER CONVERSION TO "C" COEFFICIENT
DATE : 27-May-94

METHODOLOGY FROM FDOT DRAINAGE MANUAL
VOLUME 2A , CHAPTER 5.6.1 , FORMULA 5-10

BASIN ID	CURVE NUMBER	RATIONAL COEFF C	POTENTIAL MAXIMUM RETENTION S, IN	RAINFALL P, IN	RUNOFF Q, IN
SYSTEM A	94.46	0.865	0.5865	4.72	4.08250
FULL AREA	94.46	0.926	0.5865	9.00	8.33254

CURVE NUMBER OF 94.46 FROM POND A CALCULATIONS

SYSTEM A : BACK OF SIDEWALK INLET SLOT DEPTH SELECTION AND APPROACH CHANNEL LINING SELECTION

INLET NUMBER	INLET CA	3YR DISCHARGE	10YR DISCHARGE	SLOT SIZE NEEDED FOR UNIFORM FLOW	SLOT SIZE SELECTED	SLOT ELEVATION	BACK OF SIDEWALK ELEVATION	RIGHT OF WAY ELEVATION	CHANNEL SLOPE FT/FT	CHANNE LINING NEEDEI
A-2	0.18	1.21	1.35	0.40	0.40	71.08	72.06	71.20	0.03	SOD

NOTE: 1.SLOT SIZE SELECTED FOR THE 3YR DISCHARGE AND THEN CHECKED FOR THE 10 YEAR DISCHARGE.

* = FLOW IS BEYOND THE CAPACITY OF 1(ONE) C-MOD INLET OR
FLOW CAUSES FLOODING OUTSIDE R/W

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SYSTEM B

QUASI - EQUIVALENT

TREATMENT CALCULATIONS

Henigar & Ray

PROJECT: SR 45 BASIN B

made by: TWM date: 4/4/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

QUASI-EQUIVALENT TREATMENT FOR DALE MABRY

- PRE-DEVELOPMENT IMPERVIOUS AREA WITHIN PROJECT LIMITS SW OF RR ON DALE MABRY DISCHARGING TO LAKE COMO IS 1.856 AC.
- POST DEVELOPMENT IMPERVIOUS AREA SW OF RR ON DALE MABRY IS 3.199 AC.
- INCREASED IMPERVIOUS AREA = 3.199 - 1.856 = 1.343 AC
- AREA OF POST IMPERVIOUS AREA BEING DIVERTED TO POND B IS 1.41 AC
- POST DEVELOPMENT IMPERVIOUS AREA WITHIN PROJECT LIMITS SW OF RR ON DALE MABRY DISCHARGING TO LAKE COMO IS

  3.199 AC - 1.41 AC = 1.789 AC

* SINCE POST DEVELOPMENT IMPERVIOUS AREA DRAINING TO LAKE COMO = 1.789 AC IS LESS THAN PRE-DEVELOPMENT IMPERVIOUS AREA DRAINING TO LAKE COMO = 1.856 AC, WATER QUALITY COMPLIANCE IS MET FOR LAKE COMO.

EXISTING PAVEMENT FOR DALE MABRY

Dale Mabry Sta 1287+50 to Sta 1305+66.70 ≈ 1816.7 ft Roadway

Other Dale Mabry Project Begin Resurfacing 1296+50

Existing Pavement Sta 1287+50 to Sta 1305+66.70

Base Line B

Sta 1287+50 to Sta 1292+46.56

Width (12+16) x 496.56 = 13,903.68 SF ✓

Sta 1292+46.56 to Sta 1298+00

Width (12+12+4) x 553.44 = 15,496.32 SF ✓

Sta 1292+46.56 to Sta 1296+00

1/2 (44)(353.44) = 7775.68 SF ✓

Spur Rd

30 (292+49.27 − 287+62.50) = 14603.10 SF ✓

Sta 1298+00 to Sta 1300+75 & Base Line A Existing

10,450 5820 8540 1800 2400

1/2 (28+48) 275 + 56x105 + 14x610 + 75x24 + 100x24 = 29,070 SF ✓

Total Exist Pavement 80848.78 SF = 1.856 Ac

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Proposed PAVEMENT For DALE MABRY

Rough Sizing Pond "B"

Sta 35+00 to Sta 64+00

Proposed Pavement

Base Line B

Sta 287+50 to Sta 296+73.60

Width 30' (30 x 923.6) = (27,708 SF)

Sta 296+73.60 to Sta 297+23.60

Width ½(30+42) = 36 (36 x 50) = (1800 SF)

Sta 297+23.60 to Sta 300+05.10

Width 42 (42 x 281.5) = (11,823 SF)

Last Seg 100 x ½ = (4000 SF)

Total Base Line B = 45331 SF 1.04 Ac + *0.06 AC = 1.10 AC

Base Line A

Sta 287+62.50 to Sta 305+00

Width 30' (30 x 1737.5) = 52125 SF 1.197 Ac + *0.09 AC = 1.287AC

Frontage West

Sta 296+00 to Sta 301+00

Width 38' (19000 SF)

10500 .73 4750

Conn. Front. 220 x 48 + 2(0.3146)50² + 95x50 = (16383 SF)

Total Front. West = 35383 SF = 0.812 Ac

TOTAL BL A, BLB & Frontage West = 3.049 Ac

Increased Impervious = 3.049 - 1.856 = 1.193 Ac = 51,967 SF

p.1

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* INCREASED AREAS (0.06 & 0.09 AC) Due To The Addition of Shoulder Gutter.

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SR 45 POST DEVELOPMENT

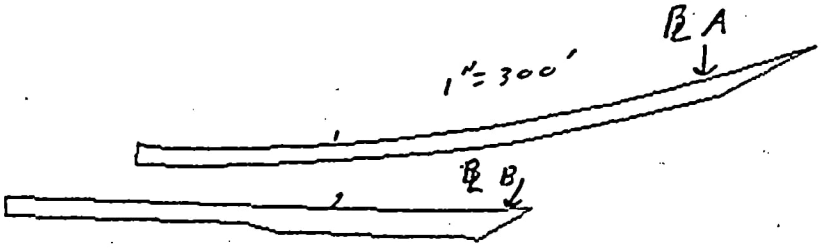
AREAS ON ℄'s A + B TO TAKE INTO POND 13

(DALE MABRY)

No.	sq.ft	acres	LAND USE	CN	HYD SOIL
1	27849.96	.73* ~~0.64~~	PAVEMENT	98 ✓	—
2	26934.50	.68* ~~0.62~~	PAVEMENT	98 ✓	—
		1.41			

1.41 Ac > INCREASED IMPERVIOUS AREA of 1.343 Ac

∴ OK.



ADDED AREA Due To ADDITION of shoulder gutter

℄ A* ADD 1,110 Lf of shoulder gutter (3.5' wide)
1110' * 3.5' = 0.09 Ac

℄ B* ADD 745 Lf of shoulder gutter (3.5' wide)
745' * 3.5' = 0.06 Ac

SYSTEM B

HYDROLOGY

Henigar & Ray

made by: TWM date: 3/31/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 (US 41)

BASIN B PRE-DEVELOPMENT HYDROLOGY

SEE DIGITIZED SHEETS FOR INCREMENTAL AREAS, LAND USE, HYDROLOGIC SOIL GROUPS & CURVE NUMBERS.

TO LAKE FLOYD

COMPOSITE CN = [(1.48 + .14 + 1.32 + .56 + .18 + .03) 98
+ (.30) 100 + (.29 + .38 + .28 + .52 + .47
+ .76) 79 + (.03 + .07 + .06 + .64 + .14
+ .16 + .23) 84 + (.05 + .36 + 1.04 + .58) 95
+ (1.81 + .24 + .13 + .44) 94 + (.04) 65
+ (1.32 + 1.57) 80 + (.16 + .58) 74
+ (.42 + .15) 73 ÷ 16.98
= 87.87

PRE TO LAKE FLOYD = 16.98 AC @ CN = 87.87

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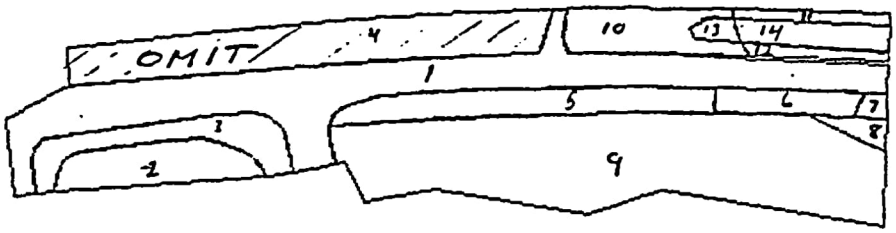
SR 45 STA'S 30+00 TO 42+00

Pre-development BASIN B

No.	sq ft	acres	LAND USE	CN	Hyd SOIL
1	64261.65	✓1.48	PAVEMENT	CN = 98	—
2	13096.59	✓0.30	POND	CN = 100	C
3	12778.48	✓0.29	OPEN (F)	CN = 79	C
~~4~~	~~34521.15~~	~~0.79~~	~~OPEN (F)~~	~~CN = 79~~	~~C~~ OMIT
5	16643.54	✓0.38	OPEN (F)	CN = 79	C
6	6223.50	✓0.14	PAVEMENT	CN = 98	—
7	1183.58	✓0.03	OPEN (F)	CN = 84	D
8	2338.82	✓0.05	COMM	CN = 95	C
9	78704.38	✓1.81	COMM	CN = 94	C
10	12040.89	✓0.28	OPEN (F)	CN = 79	C
11	3069.44	✓0.07	OPEN (F)	CN = 84	D
12	2724.96	✓0.06	OPEN (F)	CN = 84	D
13	1579.38	✓0.04	BRUSH (G)	CN = 65	C

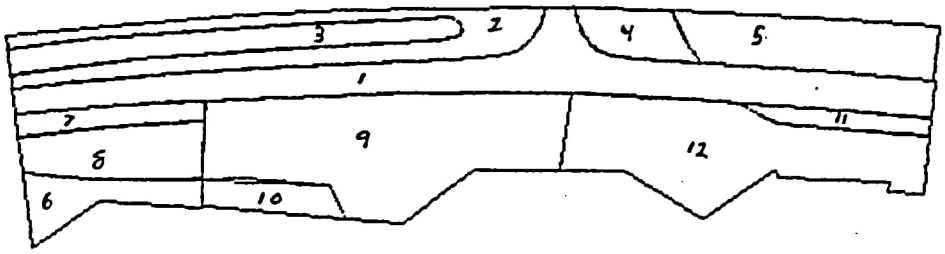


No.	sq.ft	acres		
✓ 14	6430.94	0.15	BRUSH (G)	CN = 73

SR 45 STA's 42+00 TO 54+00

pre-development BASIN B

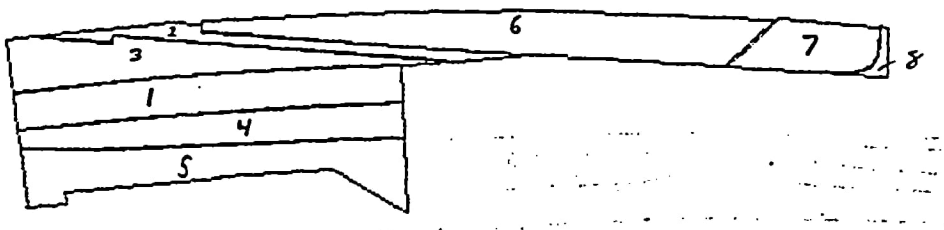
No.	sq.ft	acres	LAND USE	CN	Hyd SOIL
1	57456.12	✓1.32	PAVEMENT	CN = 95	-
2	27817.32	✓0.64	OPEN (F)	CN = 84	ID
3	18339.96	✓0.42	BRUSH (G)	CN = 73	ID
4	8284.65	✓0.19	OPEN (F)	CN = 84	ID
5	22477.23	✓0.52	OPEN (F)	CN = 79	C
6	10305.32	✓0.24	COMM	CN = 94	C
7	7017.12	✓0.16	OPEN (F)	CN = 84	ID
8	15663.16	✓0.36	COMM	CN = 95	ID
9	57371.80	✓1.32	OPEN (G)	CN = 80	ID
10	6961.24	✓0.16	OPEN (G)	CN = 74	C
11	5561.80	✓0.13	COMM	CN = 94	C
12	45361.22	✓1.04	COMM	CN = 95	ID



SR 45 STA'S 54+00 TO 66+00

PRE-DEVELOPMENT BASIN 13

No.	sq.ft	acres	LAND USE	CN	Hyd SOIL
1	24539.07	✓0.56	PAVEMENT	CN = 98	—
2	8050.46	✓0.18	PAVEMENT	CN = 98	—
3	20663.69	✓0.47	OPEN (F)	CN = 79	C
4	19335.33	✓0.44	COMM	CN = 94	C
5	25301.95	✓0.58	COMM	CN = 95	ID
6	+33197.21	✓+0.76	OPEN (F)	CN = 79	C
~~7~~	9935.38	✓0.23	OPEN (F)	CN = 84	ID
8	1137.46	✓0.03	PAVEMENT	CN = 98	—



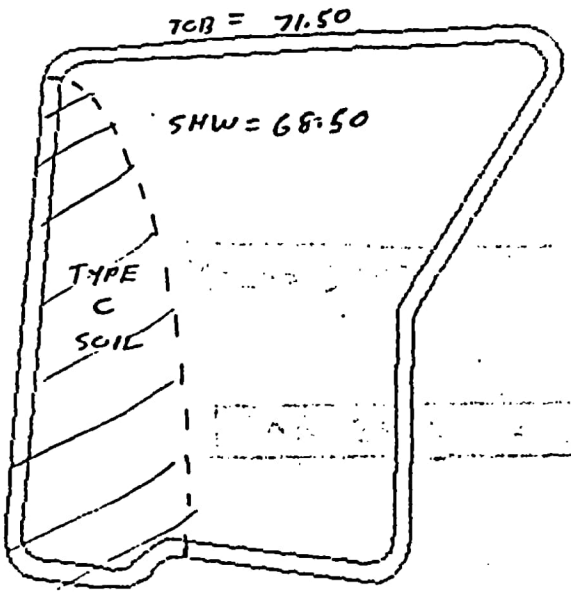
SR 45

POND B

pre-DEVELOPENT

POND site RUNOFF

No.	sq.ft	STAGE, ft	acres	DESCRIPTION
1	93544.16	71.50	2.15	TOB ←
2	80376.88	66.50	1.85	SHW



0.58 ac open(G) CN = 74 C soil

1.57 ac open(G) CN = 80 D soil

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/31/99 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN B PRE-DEVELOPMENT TIME OF CONCENTRATION

SHALLOW CONCENTRATED FLOW (RILL FLOW) UNPAVED.
FROM THE SCS'S TR 55 APPENDIX F

$V = 16.1345 (S)^{.5}$ WHERE: V = Velocity (FT/S)
S = SLOPE FT/FT

AND $t_c = \frac{L}{3600\ V}$ WHERE t_c = TIME OF CONCENTRATION (hr)
3600 CONVERSION FROM SEC TO hr

STA 38+00 EL = 73.3
STA 49+00 EL = 70.1

$S = \frac{3.2'}{1100'} = 0.0029\ ^1/_1$

$L = 1100'$

$t_c = \frac{1100\ ft}{3600\ ^S/_{hr} * (16.1345 (.0029)^{.5})} = .35\ hr$

PRE BASIN B t_c = 0.35 hr

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Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/31/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN B POST-DEVELOPMENT HYDROLOGY

SEE DIGITIZED SHEETS FOR INCREMENTAL AREAS, LAND USE, HYDROLOGIC SOIL GROUP & CURVE NUMBERS.

TO POND B

COMPOSITE CN = [(.73 + .68 + 1.73 + .08 + 3.16 + .14 + .05 + .02 + 3.44 + .11) 98 + (.21 + .05 + .05 + .08 + .23 + .27 + .73 + .04 + .41 + .30 + .04 + .65) 79 + (.96 + .22) 94 + (.03) 65 + (.11 + .31) 73 + (.07 + .10 + .04 + .11 + .41 + .08 + .09 + .06 + .11 + .07 + .17 + .52 + .13) 84 + (.05) 80 + (.09) 74 + (.18 + .07 + .25 + .10) 95] ÷ 17.53
= 91.92

POST | TO POND B 17.53 ac @ CN = 91.92

TO LAKE FLOYD

COMPOSITE CN = [(.02 + .02) 79 + (.16) 100 + (.01) 80 + (.02 + .05 + .02) 95 + .04(84)] ÷ .34
= 93.74

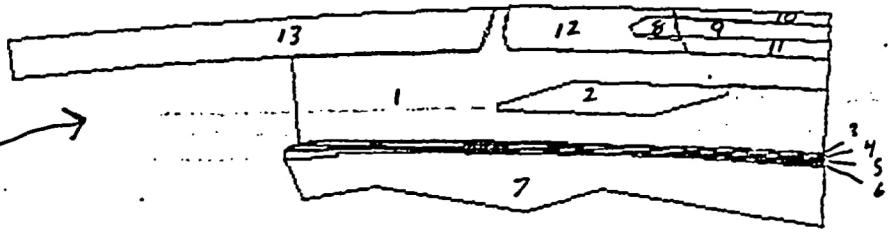
POST | TO LAKE FLOYD 0.34 AC @ CN = 93.74

POST | ON POND B 2.22 AC @ CN = 100

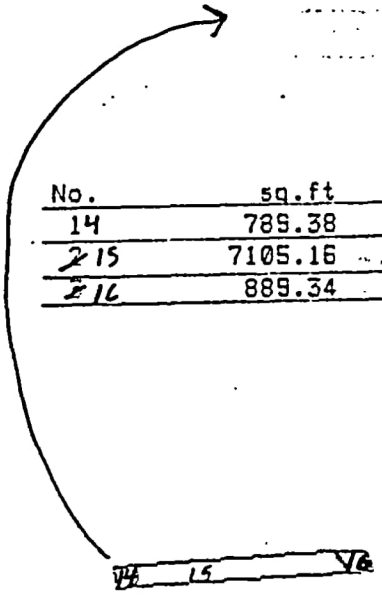
SR 45 STA'S 30+00 TO: 42+00

POST-DEVELOPMENT BASIN B

No.	sq.ft	acres	LAND USE	CN		Hyd SOIL
1	75496.16	1.73	PAVEMENT	98	✓	—
2	9052.63	0.21	OPEN (F)	79	✓	C
3	2251.13	0.05	OPEN (F)	79	✓	C
4	3695.89	0.08	PAVEMENT	98	✓	—
5	2107.48	0.05	OPEN (F)	79	✓	C
6	3573.40	0.08	OPEN (F)	79	✓	C
7	41928.66	0.96	comm	94	✓	C
8	1321.44	0.03	BRUSH (G)	65	✓	C
9	4595.56	0.11	BRUSH (G)	73	✓	/D
10	2909.77	0.07	OPEN (F)	84	✓	/D
11	4478.66	0.10	OPEN (F)	84	✓	/D
12	11649.99	0.27	OPEN (F)	79	✓	C
13	31690.89	0.73	OPEN (F)	79	✓	C



No.	sq.ft	acres	LAND USE	CN	Hyd SOIL	
14	789.38	✓ 0.02	OPEN (F)	79	C	To LAKE FLOYD
15	7105.16	✓ 0.16	POND	100	—	
16	889.34	✓ 0.02	OPEN (F)	79	C	

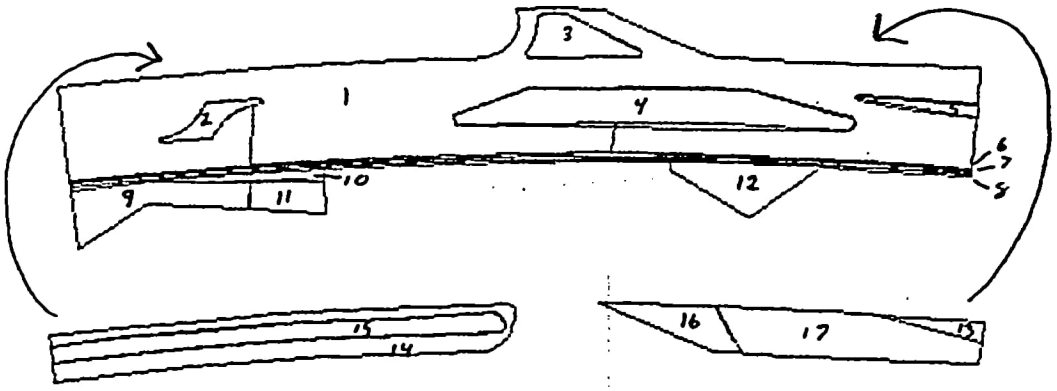


SR 45 STA'S 42+00 TO 54+00

POST-Development BASIN B

No.	sq.ft	*	acres	LAND USE	CN	HYD SOIL
1	143919.19	* 3.16	~~3.30~~	PAVEMENT	98 ✓	—
2	2468.20	* 0.04	~~0.06~~	OPEN (F)	84 ✓	/D
3	5552.62	* 0.11	~~0.13~~	OPEN (F)	84 ✓	/D
4	21959.92	* 0.41	~~0.50~~	OPEN (F)	84 ✓	/D
5	1296.42	* 0.04	~~0.05~~	OPEN (F)	79 ✓	C
6	3626.14		0.08	OPEN (F)	84 ✓	/D
7	6000.46		0.14	PAVEMENT	98 ✓	—
8	3923.67		0.09	OPEN (F)	84 ✓	/D
9	9403.93		0.22	COMM	94 ✓	C
10	2136.28		0.05	OPEN (G)	80 ✓	D
11	3927.30		0.09	OPEN (G)	74 ✓	C
12	7670.20		0.18	COMM	95 ✓	/D

No.	sq.ft	acres			
~~13~~	1966.54	0.05	PAVEMENT	98 ✓	—
14	22822.90	0.52	OPEN (F)	84 ✓	/D
~~15~~	13457.35	0.31	BRUSH (F)	73 ✓	/D
~~16~~	5784.62	0.13	OPEN (F)	84 ✓	/D
~~17~~	18034.69	0.41	OPEN (F)	79 ✓	C

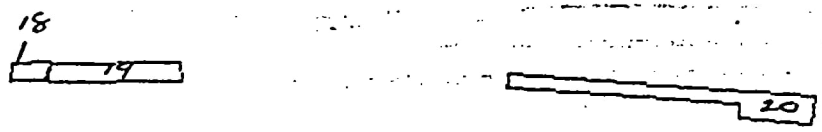


* SEE SUBSEQUENT DIGITIZED SHEETS FOR CORRECT AREAS

SR 45 STA'S 42+00 TO 54+00 CONTINUED

POST - DEVELOPMENT BASIN B

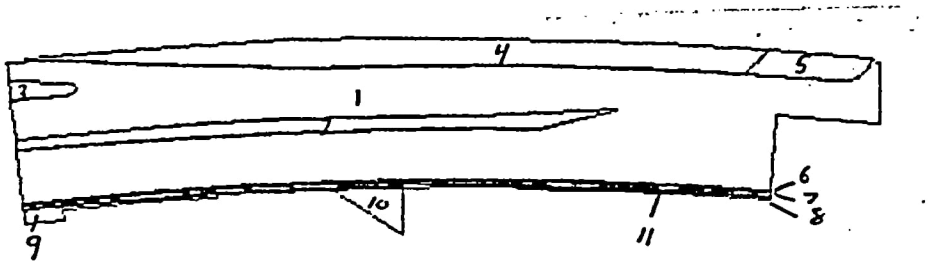
No.	sq.ft	acres	LAND USE	CN	HYD SOIL	
~~18~~	247.16	✓ 0.01	OPEN (CG)	80	1D	TO LAKE FLOYD
~~19~~	907.08	✓ 0.02	COMM	95	1D	
~~20~~	2074.14	✓ 0.05	COMM	95	1D	



SR 45 STA'S 54+00 TO 66+00

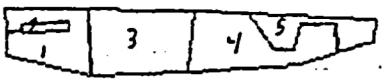
POST-DEVELOPMENT BASIN B

No.	sq.ft	acres	LAND USE	CN	Hyd SOIL	
1	149763.91	3.44	PAVEMENT	98 ✓	–	
2	13062.00	0.30	OPEN (F)	79 ✓	C	
3	1808.20	0.04	OPEN (F)	79 ✓	C	
4	26236.68	0.65	OPEN (F)	79 ✓	C	
5	4637.35	0.11	OPEN (F)	84 ✓	1D	
6	2980.61	0.07	OPEN (F)	84 ✓	1D	
7	4933.23	0.11	PAVEMENT	98 ✓	–	
8	2681.21	0.06	OPEN (F)	84 ✓	1D	
9	1581.04	0.04	OPEN (F)	84 ✓	1D	TO LAKE FLOYD
10	2932.94	0.07	COMM	95 ✓	1D	
11	785.77	0.02	COMM	95 ✓	1D	TO LAKE FLOYD



SR 45 54+00 TO 66+00
POST-DEVELOPMENT BASIN B
ADDITIONAL AREAS "TO POND B'
STA 54+00 TO 66+00

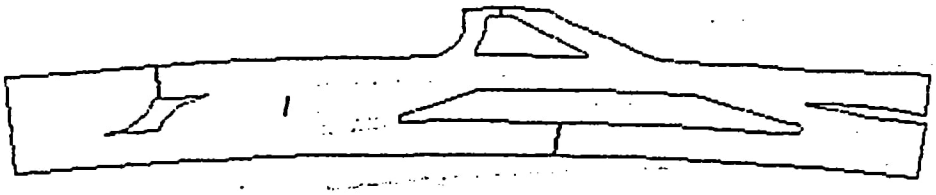
No.	sq.ft	acres	LANDUSE		CN
1	7342.73	0.17	OPEN (F)	✓	84
2	723.22	0.02	STRUCTURE	✓	98
3	10782.59	0.25	COMMERCIAL	✓	95
4	9968.26	0.23	WOODS (F)	✓	79
5	4495.58	0.10	COMMERCIAL	✓	95



SR 45 STA'S 42+00 TO 54+00
POST DEVELOPMENT BASIN B

* page 1/2 of REVISIONS

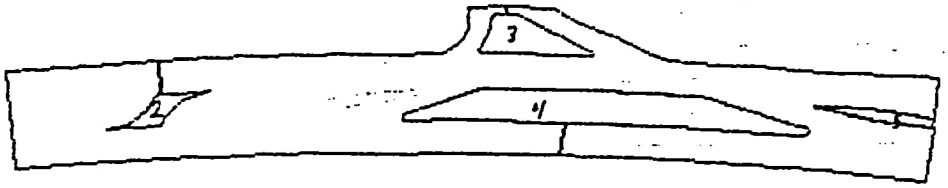
No.	sq.ft	acres
1	137794.29	3.16



SR 45 STA's 42+00 TO 54+00
POST-DEVELOPMENT BASIN B

* PAGE 2/2 of REVISIONS

2	1757.64	0.04
3	4613.82	0.11
4	17983.45	0.41
5	1566.84	0.04



Henigar & Ray

PROJECT: SR 45 BASIN B

made by: TWM date: 4/4/94 job no. 21663
checked by: _____ date: _____ sheet no. 1

BASIN B POST-DEVELOPMENT TIMES OF CONCENTRATION

TO POND B

FROM FDOT STORM SEWER PROGRAM t_c = 20.58 min = 0.34 hr
(FROM PRELIMINARY RUN)

POST "TO POND B" t_c = 0.34 hr

ON POND B

POST "ON POND B" t_c = 0

TO OFFSITE (LAKE FLOYD) t_c SAME AS "TO POND B"

POST OFFSITE t_c = 0.34 hr

SYSTEM B

POND DESIGN

CALCULATIONS

Henigar & Ray

made by: TWM date: 4/4/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN B

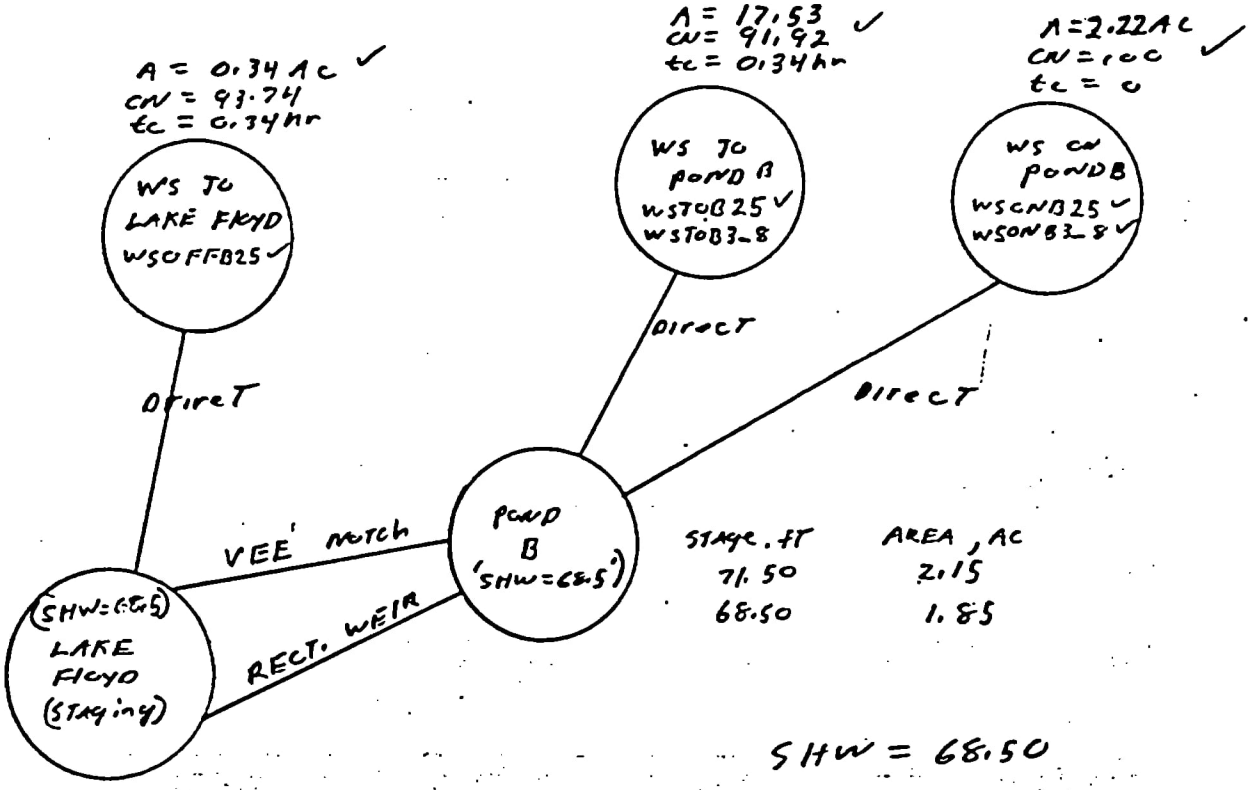
POND DESIGN CALCULATIONS

PRE



HYDROGRAPH ONLY

POST



STAGE, FT	AREA, AC
71.50	2.15
68.50	1.85

SHW = 68.50

25 yr-24 hr EVENT

Time	0	5	10	15	18	27	30 (hr)
STAGE	68.5	68.5	68.62	69.03	69.71	69.62	69.42 (ft)

3yr STAGING

Time (hr)	0	5	10
STAGE (ft)	68.5	68.5	68.51

III - 20

Henigar & Ray

made by: TWM date: 4/4/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN B

BASIN B WATER QUALITY VOLUME

PROJECT AREA within R/W LIMITS AND BASIN B LIMITS

STA 35+00 TO 42+00	*	2.49 AC
STA 42+00 TO 54+00		4.65 AC
STA 54+00 TO 64+00/65+35.31		4.13 AC
		11.27 AC

DIRECTLY CONNECTED OFFSITE IMPERVIOUS AREAS

	*	0.07 AC
		0.15 AC
(QUASI EQUIVALENT TREATMENT AREAS FOR DALE MABRY)	→	0.73 AC
	→	0.68 AC
		0.14 AC
		0.08 AC
		0.09 AC
		0.06 AC
		0.13 AC
		0.06 AC
		2.19 AC

* SEE SUBSEQUENT DIGITIZED AREAS FOR DOCUMENTATION OF THESE AREAS.

WATER QUALITY VOLUME

11.27 + 2.19 = 13.46 AC

$$1\text{ in} * \frac{1\text{ FT}}{12\text{ in}} * 13.46\text{ Ac} * \frac{43560.17\text{ ft}^2}{1\text{ Ac}} = 48,860\text{ cf}$$

SR 45

POND B STAGE/AREA

Window 0,0 - 24,79

PROJECT B_STAGE; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF				
172.2	114998.4	-1e+06	341989.25	TOP EL...	72.2(TOB)	TOP AREA.	2.64
171.5	96703.2	-1e+06	267894.0	EL.....	71.5	AREA.....	2.22
168.5	81892.8	-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	68.5(SHW)	BOT AREA.	1.88
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	72.2
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 POND B

STAGE @ REQUIRED WATER QUALITY VOLUME

BRN 3.2 Project B_STAGE
Node 0, POND, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	72.200	0.0	0.0	341989.0	
0.10	72.071	0.0	13653.0	328336.0	
0.20	71.944	0.0	27063.7	314926.0	
0.30	71.820	0.0	40232.0	301757.0	
0.40	71.698	0.0	53158.0	288831.0	
0.50	71.578	0.0	65841.7	276148.0	
0.60	71.453	0.0	78275.7	263714.0	
0.70	71.317	0.0	90437.3	251552.0	
0.80	71.184	0.0	102311.0	239678.0	
0.90	71.054	0.0	113898.0	228091.0	
1.00	70.928	0.0	125197.0	216792.0	
3.10	69.053	0.0	292633.0	49356.4	REQ'D W.Q VOLUME
3.20	69.012	← 69.047 0.0	296251.0	45738.7	← 48 860 cf
14.00	68.502	0.0	341838.0	150.9	
14.10	68.502	0.0	341846.0	143.0	
14.20	68.502	0.0	341854.0	135.6	
14.30	68.501	0.0	341861.0	128.5	
14.40	68.501	0.0	341867.0	121.8	
14.50	68.501	0.0	341874.0	115.4	
14.60	68.501	0.0	341880.0	109.4	
14.70	68.501	0.0	341886.0	103.6	
14.80	68.501	0.0	341891.0	98.2	
14.90	68.501	0.0	341896.0	92.9	
15.00	68.501	0.0	341901.0	88.0	

USE STAGE 69.05 FOR WATER QUALITY VOLUME

PROVIDED WATER QUALITY VOLUME @
STAGE 69.05 = 49,092 cf

SR 45 POND B

INPUT For 36/60hr BLEED DOWN CRITERIA

Window 0,0 - 24,79

PROJECT BAD; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF				
71.5	196703.2	1e+06	1267894.0	TOP EL...	71.5	TOP AREA.	2.22
68.5	181892.8	1e+06	0.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	68.5	BOT AREA.	1.88
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE TO.	69.05
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 POND B

WATER QUALITY BLEED DOWN Model - PATHS

Report on Paths of Project BAD.

Path..... 000, VEE NOTCH
Upper Node 000, POND
Lower Node 001, LAKE

CREST EL	→68.500	INPUT ID	813361017
ANGLE...	→48.000	TO CFS..	0.26
		TO CF...	0.00
HEIGHT..	→0.550	MAX IN..	0.26
		MIN IN..	0.05
		MAX OUT.	0.26
		MIN OUT.	0.05
UP PE/KE	YES	FWD K...	0.00
DN PE/KE	NO	REV K...	0.00
MAX HW..	71.500	FWD X...	0.00
MAX TW..	71.500	REV X...	0.00

SR 45 PUMP B

WATER QUALITY BLEED DOWN model - nodes

Report on Nodes of Project BAD.

Node..... 000, POND					
TOP EL... IN TO B	71.500	TOP AREA.	2.220	INPUT ID.....	813358851
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	69.05
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	49114.20
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	→69.05
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.77
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	49114.20
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	
EL.....		AREA.....		FINAL STAGE ELEVATION.....	→68.77
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.00
BOT EL... SHW	68.500	BOT AREA.	1.880	TIME OF MINIMUM STAGE, HOURS.	60.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.00
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.00
		OVERFLOW EL		PEAK NODAL OUTPUT, CFS.....	0.26
				TIME OF PEAK OUTPUT, HOURS...	0.00
BASE CFS.	0.000	STAGE T0.	69.050	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, STAGING					
FLOOD EL.	71.500	PE TO KE. NO		INPUT ID.....	766266512
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	68.50
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	68.50
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	68.50
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.50
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.26
				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

SR 45 POND B

36/60 hr BLEED DOWN RESULTS

BRN 3.2 Project BAD
Node 0, POND, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	69.050	0.0	0.0	49114.2	
0.10	69.049	0.0	94.3	49019.9	
0.20	69.048	0.0	188.2	48926.0	
0.30	69.047	0.0	281.7	48832.5	
0.40	69.046	0.0	374.8	48739.4	
0.50	69.045	0.0	467.6	48646.6	
0.60	69.044	0.0	559.9	48554.2	
0.70	69.043	0.0	652.0	48462.2	
0.80	69.042	0.0	743.6	48370.6	
0.90	69.041	0.0	834.9	48279.3	
1.00	69.040	0.0	925.8	48188.4	
36.00	68.841	← 0.0	18695.5	30418.7	
59.00	68.776	0.0	24425.4	24688.8	
59.10	68.776	0.0	24445.3	24668.9	
59.20	68.776	0.0	24465.2	24649.0	
59.30	68.776	0.0	24485.0	24629.2	
59.40	68.776	0.0	24504.8	24609.3	
59.50	68.775	0.0	24524.6	24589.6	
59.60	68.775	0.0	24544.3	24569.8	
59.70	68.775	0.0	24564.0	24550.1	
59.80	68.775	0.0	24583.7	24530.5	
59.90	68.775	0.0	24603.3	24510.8	
60.00	68.774	0.0	24622.9	24491.2	←

- REQUIRED WATER QUALITY VOLUME = 48 860 cf
- W.Q. VOLUME REMAINING @ HOUR 60 = 24 491 cf
- $24\,491 \text{ cf} > \frac{48\,860}{2} = 24\,430 \text{ cf}$

∴ OK

- BEGIN ATTENUATION @ STAGE 68.85

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III-27

Henigar & Ray

PROJECT: SR 45 CUS41)

made by: TWM date: 3/31/94 job no. 21663
checked by: _____ date: _____ sheet no. 4/1

BASIN B POST-DEVELOPMENT COMPOSITE C

CONVERSION OF COMPOSITE CN TO RATIONAL C FOR PERMANENT WET POOL DESIGN.

COMPOSITE CN = 91.92
25yr-24hr STORM PRECIPITATION P = 9.00 in

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - .2S)^2}{(P + .8S)}$$

WHERE: Q = RUNOFF (in)
P = RAINFALL = 9.00 in
S = POTENTIAL MAXIMUM RETENTION AFTER RUNOFF BEGINS (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{91.92} - 10 = 0.879 \text{ in}$$

$$Q = \frac{[9.0 - .2(.879)]^2}{9.0 + .8(.879)} = 8.025 \text{ in}$$

$$C = \frac{8.025 \text{ in}}{9.00 \text{ in}} = 0.89$$

BASIN B WET POOL DESIGN C = 0.89

SEE SCS' TR55 FOR REFFERANCE (P 2-1)

Henigar & Ray

PROJECT: SR 45 BASIN B

made by: TWM date: 4/6/94 job no. 21663
checked by: _____ date: _____ sheet no. 1

PERMANENT WET POOL VOLUME

WS TO POND = 17.53 Ac @ C = 0.89
WS ON POND = 2.22 Ac @ C = 1.00

composite $C = \frac{(17.53)(.89) + (2.22)(1.0)}{19.75} = .902$

14 DAY RESIDENCE TIME VOLUME = .2968(C) * WS AREA
= .2968(.902) * 19.75 = 5.3 AC.FT

REQUIRED PERMANENT WET POOL VOLUME = 5.3 Ac.ft

$0.667 in * \frac{1 ft}{12 in} * (17.53 + 2.22) AC = 1.1 AC.ft$

5.3 Ac.ft controls.

SR 45 POND B

PERMANENT WET POOL VOLUME

Window 0,0 - 24,79

PROJECT WETVOL; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF	TOP EL... 68.5 SHW	TOP AREA. 1.88
				EL..... 65.57	AREA..... 0.82
68.5 SHW	81892.8	1-1e+06	319166.31	EL..... Optional	AREA..... Optional
65.57	35719.2	1-1e+06	146864.7	EL..... Optional	AREA..... Optional
60.5 BOT	22215.6	1-1e+06	10.0	EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				BOT EL... 60.5 BOT	BOT AREA. 0.51
				TOP LF... Optional	SIDE XPER Optional
				MID LF... Optional	BASE XPER Optional
				BOT LF... Optional	
				BASE CFS. 0.0	STAGE T0. 68.5
				X COORD.. Optional	Y COORD.. Optional

7.3 AC·FT

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

- REQUIRED WET POOL VOLUME = 5.3 AC·FT
- PROVIDED WET POOL VOLUME = 7.3 AC·FT

⇒ COMPLIANCE

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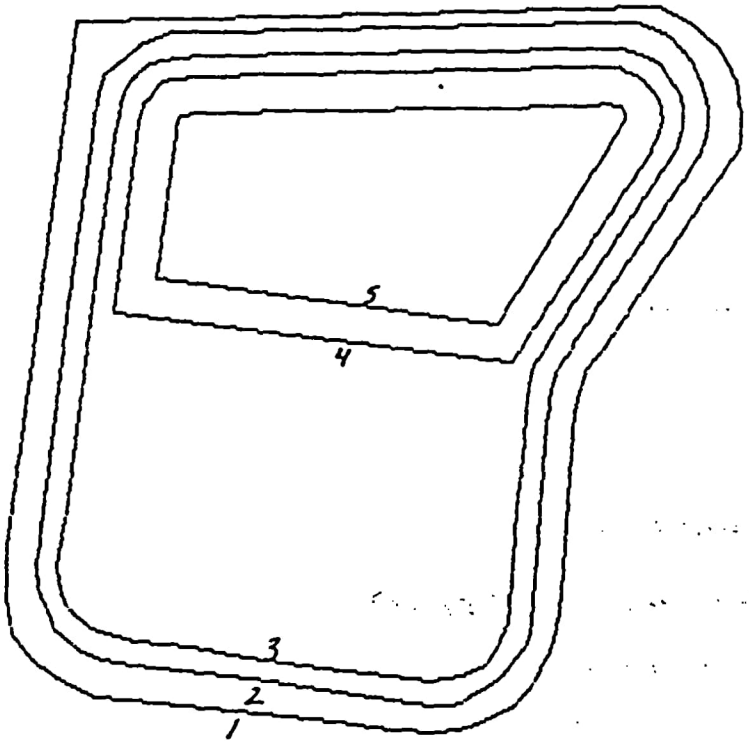
SR 45

POND B STAGE - AREA

```
1 Area = 114994.1857, Perimeter = 1339.8797

Command:
2 Area = 96648.8206, Perimeter = 1226.7096

Command:
3 Area = 82082.0720, Perimeter = 1146.2836

Command:
4 Area = 35873.3905, Perimeter = 773.0675

Command:
5 Area = 21998.8150, Perimeter = 640.4738

Command:
```

STAGE, ft	AREA, AC	comment
72.2	2.64	OUT. TOB
71.5	2.22	IN. TOB
68.5	1.88	SHW
65.57	0.82	3.5' below OVERFLOW EL.
60.5	0.51	WET POOL BOTTOM



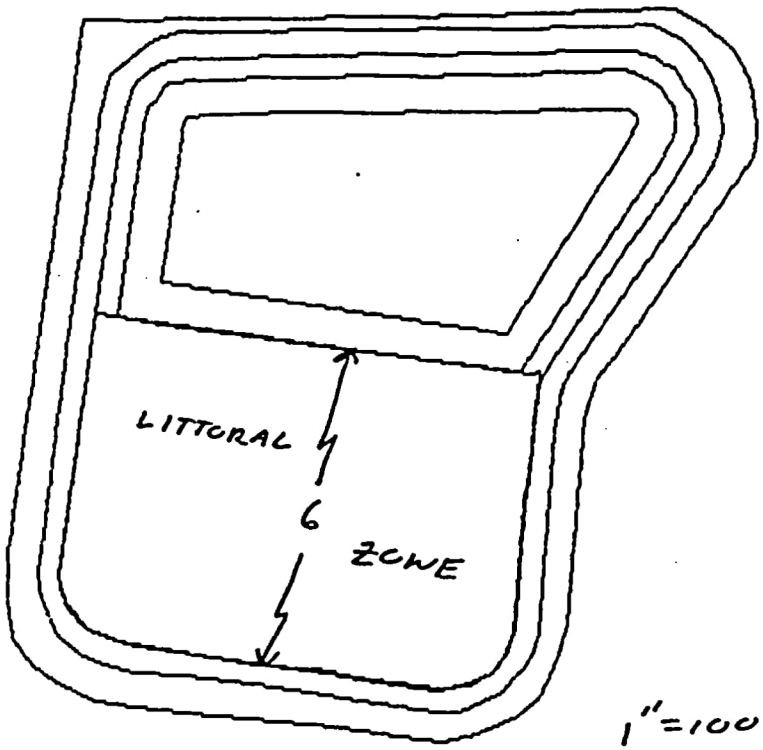
1"=100'

SR 45
POND B
AREA OF LITTORAL ZONE

6 Area = 39628.1280, Perimeter = 784.1944

ommand:

STAGE, ft.	AREA, AC	COMMENT
VARIES 68.5 - 65.7	0.91	SHW TO 3.5' bel OVERFLOW EL.



1"=100'

REQUIRED LITTORAL ZONE AREA:

0.35 * AREA AT CONTROL EL (SHW)

0.35 * 1.88 AC = 0.66 AC

PROVIDED LITTORAL ZONE AREA = 0.91 AC

⇒ Compliance

SR 45 BASIN B

25yr-24hr PRE-DEVELOPMENT peak discharge

Subarea PRE WATERSHED TO BASIN B 25yr-25hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PREB25
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 766262825
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 263
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.5320578
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 12.3
	PEAK CFS 63.038795 ←
	ACFT VOL 10.654339
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

pre 25yr-24hr peak discharge = 63.04 cfs

SR 45 BASIN B

25yr-24hr POST CONDITION NETWORK SUMMARY

Project PB25_MOD, Run of Thu Oct 12 07:50:52 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	LAKE	VEE NOTCH
3	POND	LAKE	RECT WEIR
4	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	POND	POND
1	WS TO POND	SUBAREA
2	WS ON POND	SUBAREA
3	LAKE	STAGING
4	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	68.85	0.00	→70.03	12.50	NO
1	WS TO POND	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND	SUBAREA	74.00	0.00	74.00	0.00	NO
3	LAKE	STAGING	68.50	0.00	69.71	18.00	NO
4	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	77.16 @ 12.30 Hours	61.79 @ 12.50 Hours
1	WS TO POND	68.44 @ 12.30 Hours	68.44 @ 12.30 Hours
2	WS ON POND	18.35 @ 12.00 Hours	18.35 @ 12.00 Hours
3	LAKE	→62.94 @ 12.50 Hours	0.00 @ 0.00 Hours
4	WS TO LAKE	1.34 @ 12.30 Hours	1.34 @ 12.30 Hours

PRE 25yr-24hr peak discharge = 63.04 cfs

POST 25yr-24hr peak discharge = 62.94 cfs

⇒ compliance

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SR 45 BASIN B

25 yr -24hr post condition Hydrographs

Subarea POST WATERSHED TO POND B 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOB25
TOTAL DRAINAGE AREA, ACRES... 17.53	INPUT ID 781479890
WEIGHTED SCS CURVE NUMBER.... 91.92	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.1
TIME OF CONCENTRATION, HOURS. 0.34	DT, HRS. 0.1
	DATA PTS 262
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.0248013
	ACREAGE. 17.53
	TC, HRS. 0.34
	TP, HRS. 12.3
	PEAK CFS 68.441391
	ACFT VOL 11.719021
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WATERSHED ON POND B 25YR-24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONB25
TOTAL DRAINAGE AREA, ACRES... 2.22	INPUT ID 813413673
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 2.22
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 18.350815
	ACFT VOL 1.6644496
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN B

25yr-24hr post condition Hydrographs

Subarea POST OFFSITE B WS TO LAKE FLOYD 25yr-24h

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOFFB25
TOTAL DRAINAGE AREA, ACRES... 0.34	INPUT ID 765470440
WEIGHTED SCS CURVE NUMBER.... 93.74	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.1
TIME OF CONCENTRATION, HOURS. 0.34	DT, HRS. 0.1
	DATA PTS 262
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.245409
	ACREAGE. 0.34
	TC, HRS. 0.34
	TP, HRS. 12.3
	PEAK CFS 1.3445079
	ACFT VOL 0.233542
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 25yr-24hr post condition paths Report

Report on Paths of Project PB25_MOD.

```
-------------------------------------
        Path...... 000, DIRECT
     Upper Node 001, WS TO POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 760833130
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      68.44
                  |MIN IN..       0.00
                  |MAX OUT.      68.44
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    72.200|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
     Upper Node 002, WS ON POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 763655767
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      18.35
                  |MIN IN..       0.00
                  |MAX OUT.      18.35
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    72.200|REV X...       0.00
-------------------------------------
```

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Path..... 002, VEE NOTCH
Upper Node 000, POND
Lower Node 003, LAKE

CREST EL	68.500	INPUT ID	813413709
ANGLE...	48.000	T0 CFS..	0.10
		T0 CF...	0.00
HEIGHT..	0.550	MAX IN..	0.62
		MIN IN..	0.02
		MAX OUT.	0.62
		MIN OUT.	0.02
UP PE/KE	YES	FWD K...	0.00
DN PE/KE	NO	REV K...	0.00
MAX HW..	72.200	FWD X...	0.00
MAX TW..	72.200	REV X...	0.00

Path..... 003, RECT WEIR
Upper Node 000, POND
Lower Node 003, LAKE

CREST EL	69.050	INPUT ID	813445574
WIDTH...	20.000	T0 CFS..	0.00
WEIR C..	3.200	T0 CF...	0.00
NUM ENDS	2	MAX IN..	61.18
		MIN IN..	0.00
BREADTH.		MAX OUT.	61.18
		MIN OUT.	0.00
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	NO	REV K...	0.00
MAX HW..	72.200	FWD X...	0.00
MAX TW..	72.200	REV X...	0.00

Path..... 004, DIRECT
Upper Node 004, WS TO LAKE
Lower Node 003, LAKE

DIRECT..		INPUT ID	763758322
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	1.34
		IMIN IN..	0.00
		IMAX OUT.	1.34
		IMIN OUT.	0.00
HW PE/KE NO		IFWD K...	0.00
TW PE/KE NO		IREV K...	0.00
HW EL...	74.000	IFWD X...	0.00
TW EL...	72.200	IREV X...	0.00

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SR 45 25yr-24hr post condition Nodes Report

Report on Nodes of Project PB25_MOD.

ode..... 000, POND					
TOP EL...	72.200	TOP AREA.	2.640	INPUT ID.....	813498568
EL.....	71.500	AREA.....	2.220	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	68.85
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	31254.20
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	70.03
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.85
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	136950.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	105696.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	69.67
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	12.50
BOT EL...	68.500	BOT AREA.	1.880	TIME OF MINIMUM STAGE, HOURS.	0.00
TOP LF...		SIDE XPER			
MID LF...		BASE XPER		PEAK NODAL INTAKE, CFS.....	77.16
BOT LF...				TIME OF PEAK INTAKE, HOURS...	12.30
				PEAK NODAL OUTPUT, CFS.....	61.79
				TIME OF PEAK OUTPUT, HOURS...	12.50
BASE CFS.	0.000	STAGE T0.	68.850	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, SUBAREA					
FILE NAME	WSTOB25	FLOOD EL.	74.000	INPUT ID.....	766273595
INPUT ID#	781479890			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	26.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	262			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.025			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	17.530			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.340				
TP, HRS..	12.300				
PEAK CFS.	68.441			PEAK NODAL INTAKE, CFS.....	68.44
ACFT VOL.	11.719			TIME OF PEAK INTAKE, HOURS...	12.30
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	68.44
				TIME OF PEAK OUTPUT, HOURS...	12.30
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0

Node..... 002, SUBAREA

LE NAME	WSONB25	FLOOD EL.	74.000	INPUT ID.....	813413681
INPUT ID#	813413673			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	25.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	251			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	9.000			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	2.220			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	12.000				
PEAK CFS.	18.351			PEAK NODAL INTAKE, CFS.....	18.35
ACFT VOL.	1.664			TIME OF PEAK INTAKE, HOURS...	12.00
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	18.35
				TIME OF PEAK OUTPUT, HOURS...	12.00
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, STAGING

FLOOD EL.	72.200	PE TO KE.	NO	INPUT ID.....	792860761
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.500	INITIAL STAGE ELEVATION.....	68.50
TIME, HRS	5.000	STAGE EL.	68.500	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	10.000	STAGE EL.	68.620	MAXIMUM STAGE REACHED.....	69.71
TIME, HRS	15.000	STAGE EL.	69.630	MINIMUM STAGE REACHED.....	68.50
TIME, HRS	18.000	STAGE EL.	69.710	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	27.000	STAGE EL.	69.620	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	36.000	STAGE EL.	69.420	FINAL STAGE ELEVATION.....	69.65
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	18.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	62.94
				TIME OF PEAK INTAKE, HOURS...	12.50
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE TO.	68.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, SUBAREA

ILE NAME	WSOFFB25	FLOOD EL.	74.000	INPUT ID.....	766273655
INPUT ID#	765470440			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	26.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	262			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.245			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.340			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.340				
TP, HRS..	12.300				
PEAK CFS.	1.345			PEAK NODAL INTAKE, CFS.....	1.34
ACFT VOL.	0.234			TIME OF PEAK INTAKE, HOURS...	12.30
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	1.34
				TIME OF PEAK OUTPUT, HOURS...	12.30
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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SYSTEM B

STORM SEWER

DESIGN

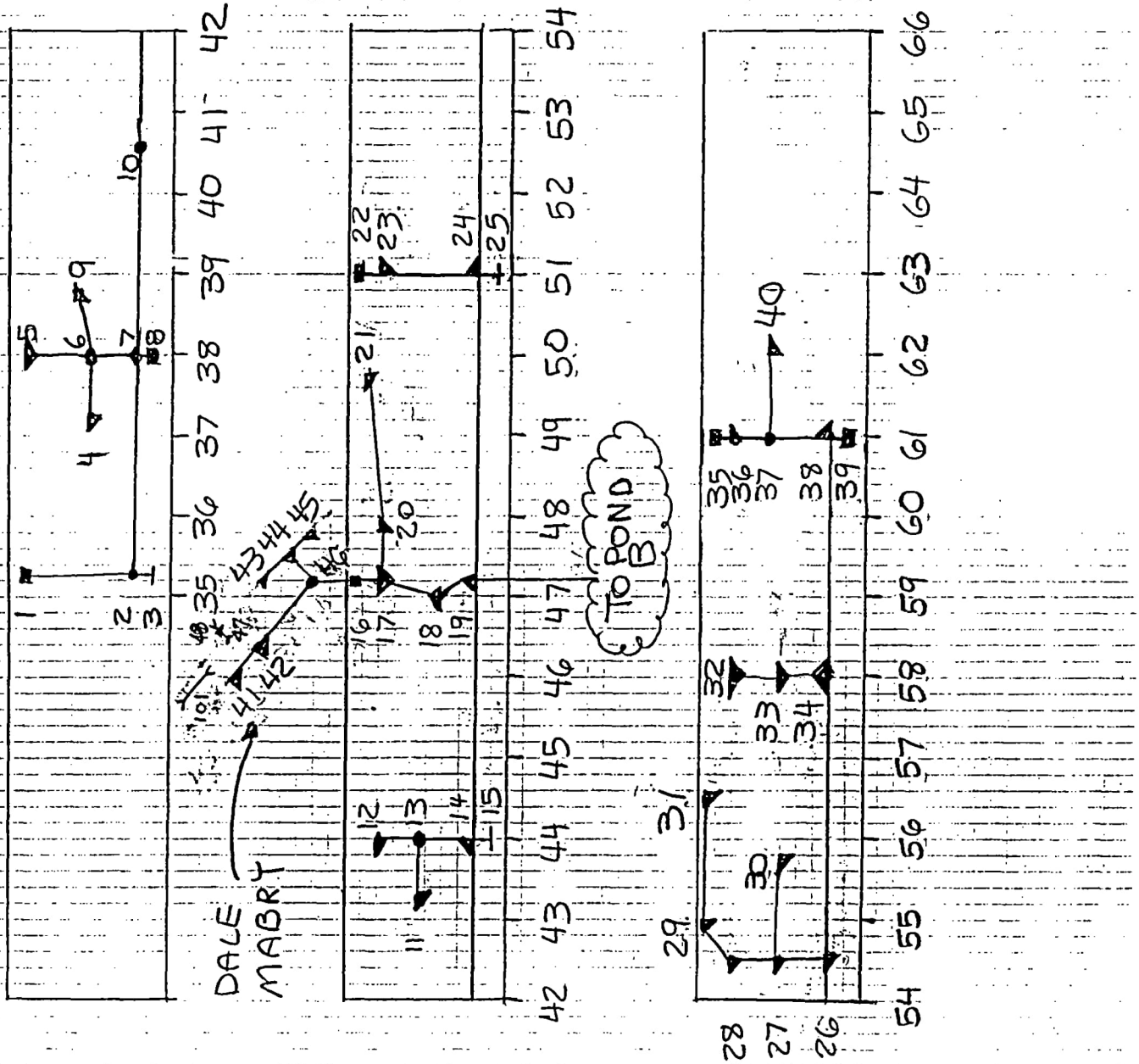
Henigar & Ray

PROJECT: SR 45-BASIN B

made by: CLJ date: 12-94 job no. 21663

checked by: _____ date: _____ sheet no. _____

STORM SEWER SCHEMATIC



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Henigar & Ray

PROJECT: SR-45

made by: CLJ date: 5-24-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System I.D	Typical #3	Typical #2	Typical #1	NON-TYPICAL INLETS
B	B-5	B-4	B-7	B-1 DBI
				B-2 MH
				B-3 Spec N.W.
	B-12		B-14	B-6 MH
			B-16	B-8 C-Mod.
	B-17		B-19	B-9 E gutter
			B-24	B-11 E gutter
			B-26	B-13 MH
				B-15 C-mod
				B-16 DBI
				B-18 E-Gutter
				B-20
	B-36	B-40	B-38	B-22 DBI
				B-23
				B-25 CMOD
				B-27 } E-gutter
				B-30 } E-gutter
				B-33 } E-gutter
				B-28
				B-29
				B-31
				B-10 MH 192

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Henigar & Ray

PROJECT: SR-45

made by: CJ date: 5-24-94 job no. 21663
checked by: _____ date: _____ sheet no. 2

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlet are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
				B-32
				B-34 (OFFSITE)
				B-35 PBI
				B-37 MH
				B-39 C Mod
				B-41, B-42 } Dale Mabry
				B-47, B-48 } Cross drain
				B-43, B-44, B-45 } Dale Mabry
				B-46 MH

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-12-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-9 NORTH

STATION: 39+10 M

DRAINAGE AREA: 0.25Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.70	6.44

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.653	0.22	1.46

Spread = 6.44 - 1.44 = 4.94 ft

OK

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-13-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-11

STATION: 43+49 M

DRAINAGE AREA: 0.29Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.93	7.35

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.587	0.24	1.53

$Q = .29(4)(.81) = .93 cfs$

Spread = 7.35 - 1.5 = 5.85 ft

5.85 < 14

∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-07-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: B-~~30~~ 17 N

STATION: 47+36 L

DRAINAGE AREA: 0.12Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	0.45	4.10

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.809	0.20	1.47

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-05-1994

PROJECT: SR 45

PROJECT NO.: 21663

INLET NO.: B-18 S

STATION: 47+02 M

DRAINAGE AREA: 0.34Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	1.09	7.90

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.552	0.25	1.57

$Q = .34(4)(.81) = 1.09$ cfs

Spread $= 7.90 - 1.50 = 6.40$ ft

$6.40 < 14.00$ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-13-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~31~~ 18 NORTH

STATION: 47+02 M

DRAINAGE AREA: 0.1 Acres √

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.32	4.15

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.852	0.18	1.31

$Q = .10(4)(.81) = .32$ cfs

Spread $= 4.15 - 1.5 = 2.65$ ft

$2.65' < 14'$

$\therefore$ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-05-1994

PROJECT: SR 45

PROJECT NO.: 21663

INLET NO.: B-20

STATION: 48+14.5 L

DRAINAGE AREA: 0.62Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.18	8.30

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.481	0.33	1.99

III - 51

199

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~38~~ 23

STATION: 51+00 L

DRAINAGE AREA: 0.16Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	0.51	4.39

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.33	0.093	0.00	0.740	0.22	1.49

Spread = 4.39 - 1.33 = 3.06 ft

3.06' < 8.0'

∴ ok

200

III - 52

A-201

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-08-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: B-~~41~~ 28

STATION: 55+58 L

DRAINAGE AREA: 0.41Acres √

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	1.56	9.22

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.480	0.28	1.69

Spread = 9.22 − 1.50 = 7.72

7.72' < 8' ∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~12~~ 27 M

STATION: 54+67 R

DRAINAGE AREA: 0.27Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.87	7.11

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.603	0.24	1.51

Spread = 7.11 - 1.50 = 5.61 ft

5.61 < 16.0

; ok

202

III-54

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-08-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: ~~B-41~~ 31 SOUTH

STATION:

DRAINAGE AREA: 0.33Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.032	0.013	1.16	6.70

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.569	0.29	1.51

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: ~~B-44~~ 31 NORTH

STATION: 56+73 L

DRAINAGE AREA: 0.32Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.002	0.040	0.013	1.04	5.60

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.33	0.093	0.00	0.586	0.30	1.54

Spread = 5.60 − 1.33 = 4.27 ft

4.27 < 7.0

, i ok

204

III - 5C

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-08-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: B-~~44~~ 29

STATION: 308+00

DRAINAGE AREA: 0.21Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.009	0.020	0.013	0.70	4.78

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.794	0.19	2.33

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~45~~ 30

STATION: 56+72 M

DRAINAGE AREA: 0.16Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.52	5.49

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.730	0.20	1.39

Spread = 5.49 - 1.50 = 3.99 FT

3.99 < 14.0

; 1 Ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~46~~ 32

STATION: 58+00 L

DRAINAGE AREA: 0.44Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.43	6.98

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.33	0.093	0.00	0.518	0.29	1.82

Spread = 6.98 - 1.33 = 5.65 ft

5.65 < 8.10

ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~47~~ 33 NORTH

STATION: 58+00 M

DRAINAGE AREA: 0.15Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.49	5.32

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.745	0.20	1.38

Spread = 5.32 - 1.50 = 3.82 ft

3.82 < 6'

ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-05-1994

PROJECT: SR 45

PROJECT NO.: 21663

INLET NO.: B-~~32~~ 33 NORTH

STATION: 58+00 M

DRAINAGE AREA: 0.30Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	1.13	8.03

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.544	0.26	1.59

Spread = 8.03 - 1.50 = 6.53 ft

6.53 < 14.0 ok

FIS

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: ~~B-48~~ 34 NORTH

STATION: 58+00 R

DRAINAGE AREA: ~~0.33~~ 0.40 Acres

DESIGN FREQUENCY: 3 Years

Calcs. not changed due to area change

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.07	6.17

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.33	0.093	0.00	0.575	0.27	1.71

Spread = 6.17 − 1.33 = 4.84 ft

4.84 < 8.0

∴ ok

P05

210

III-62

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 04-16-1994

PROJECT: SR45 BASIN B

PROJECT NO.: 21663

INLET NO.: B-~~48~~ 34 SOUTH

STATION: 58+00 R

DRAINAGE AREA: 0.37Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.20	6.48

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.33	0.093	0.00	0.552	0.28	1.75

Spread = 6.48 − 1.33 = 5.15

5.15 < 8.0

∴ ok

Henigar & Ray

PROJECT: SR45

made by: CLJ date: 12-94 job no. 21663
checked by: _____ date: _____ sheet no. _____

SPREAD CALCULATIONS
FOR
DALE MABRY HIGHWAY

1. THE INLETS ALONG DALE MABRY HIGHWAY ARE PROVIDED FOR EQUIVALENT TREATMENT PURPOSES.

2. A TYPE S GUTTER INLET AND SHOULDER GUTTER ARE USED TO COLLECT THE STORM RUNOFF AND CONVEY IT INTO POND B.

3. A WATERWAY CROSS SECTION PROGRAM WAS USED TO DETERMINE THE DEPTH OF FLOW THE GUTTER AND GRASS BACK SLOPE COULD HANDLE BEFORE FLOW WOULD EXCEED THE BACK SLOPE ELEVATION.

4. NEXT A SHOULDER GUTTER CAPACITY ANALYSIS WAS PERFORMED TO DETERMINE THE MAXIMUM AREA THE GUTTER AND BACK SLOPE COULD HANDLE BASED ON THE ROADWAY PROFILE SLOPE.

5. THE CALCULATIONS REFERENCED ABOVE WERE USED TO MEET THE CRITERIA FOR :

- SPREAD
- EQUIVALENT TREATMENT

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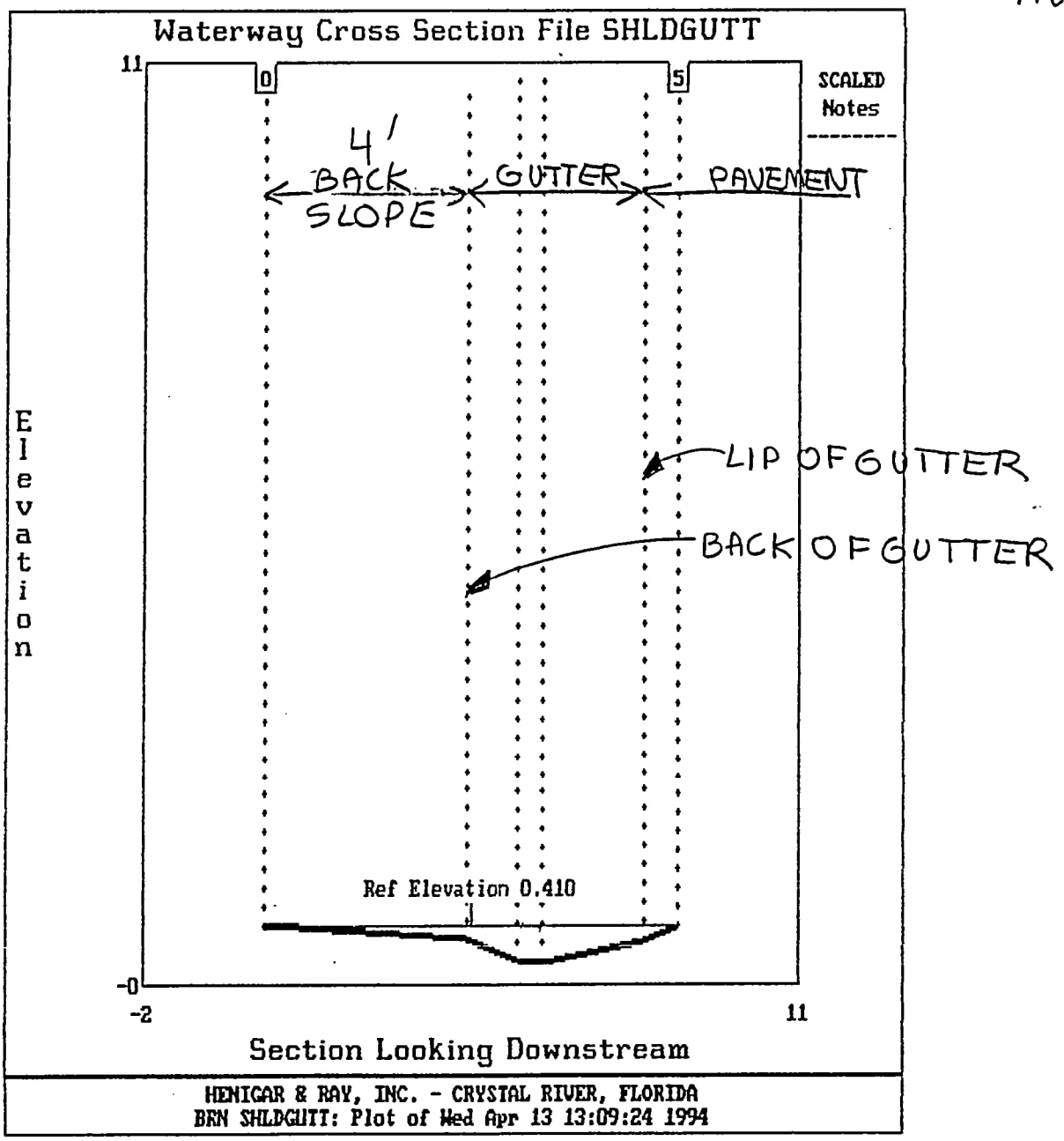
III - 64

Spread Checks for Shoulder Gutter Flow Capacity - Dale Mabry



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CROSS SECTION INPUT DATA				
Pt#	Class	Offset	Elevation	Manning N
000	BREAK	0.000	0.410	
				0.06000
001	DATA	4.000	0.250	
				0.01200
002	DATA	5.000	0.000	
				0.01200
003	DATA	5.500	0.000	
				0.01200
004	DATA	7.500	0.250	
				0.01200
005	BREAK	8.170	0.410	

3

Dale Mabry ℄ "A" Sta 295+00 to 300+00

shoulder gutter capacity analysis	
WATER ELEVATION 0.410	
TOTAL CROSS SECTION AREA.....	1.4 SF
TOTAL CROSS SECTION WIDTH.....	8.17 Feet
TOTAL CROSS SECTION CONVEYANCE	19
KINETIC ENERGY CORRECTION (a).	1.0000
ESTIMATED FLOW AT A SLOPE OF 0.002000 Ft/Ft is 0.8 CFS	

Calculate Maximum drainage Area:

$Q = CiA$ where $Q = 0.8$ cfs
$i = 4$ in/hr
$C = .81$

$$A = \frac{0.8 \text{ cfs}}{.81\ (4 \text{ in/hr})} = .2469 A_c$$

$$= 10{,}755.56 \text{ SF}$$

$$= 35.5\ (302.97) \pm$$

Use an inlet at 298+00
and at 300+00

Dale Mabry: ℄ "A" Sta 300+00 to 305+50
(Railroad Crossing)

shoulder gutter capacity analysis	
WATER ELEVATION 0.410	
TOTAL CROSS SECTION AREA.....	1.4 SF
TOTAL CROSS SECTION WIDTH.....	8.17 Feet
TOTAL CROSS SECTION CONVEYANCE	19
KINETIC ENERGY CORRECTION (a).	1.0000
ESTIMATED FLOW AT A SLOPE OF 0.002758 Ft/Ft is 1.0 CFS	

Calculate Maximum drainage area:

$Q = CiA$ where $Q = 1.0$ cfs
$i = 4$ in/hr
$C = .81$

$$A = \frac{1.0 \text{ cfs}}{.81(4 \text{ in/hr})} = .3086 \text{ Ac}$$

$$= 13{,}444.44 \text{ SF}$$

$$= (35.5)(378.72) \pm$$

2

Dale Mabry : ℄ "B" Sta 295+00 to 301+00 ±
(Railroad Crossing)

shoulder gutter capacity analysis	
WATER ELEVATION 0.410	
TOTAL CROSS SECTION AREA.....	1.4 SF
TOTAL CROSS SECTION WIDTH.....	0.17 Feet
TOTAL CROSS SECTION CONVEYANCE	19
KINETIC ENERGY CORRECTION (a).	1.0000
ESTIMATED FLOW AT A SLOPE OF 0.003701 Ft/Ft is 1.1 CFS	

Calculate Maximum area:

$Q = C\,i\,A$ where $Q = 1.1$ cfs
$i = 4$ in/hr
$C = .81$

$$A = \frac{1.1 \text{ cfs}}{.81\left(\frac{4 \text{ in/hr}}{1 \text{ hr}}\right)} = .339 \text{ Ac}$$

$$= 14{,}788.89 \text{ SF}$$

Henigar & Ray

PROJECT: SR45

made by: CJS date: 5-17-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Frontage Road Drainage B-47

1. Check Spread – West Frontage Rd. from 299+00 to 302+00

Area = Imperious + Grass

= 300(12+2+5) + 300(3)

= .131 + .021 = .152 Ac

Q = .131(.95)(4) + .021(.20)(4)

= .498 + .017 = .515 cfs

.515 cfs < .74 cfs ∴ ok

2. Check Spread – West Frontage Rd from 299+00 to Frontage East

Area = 429.56(19) + 429.56(3)

294+70.44 to Sag = .187 + .030 = .158 Ac

Q = .187(.95)(4) + .030(.20)(4)

= .711 + .024 = .735 cfs

.735 cfs < 0.91 cfs ∴ ok

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III – 70

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-17-1994

PROJECT: SR45 FRONTAGE RD

PROJECT NO.: 21663

INLET NO.: ~~B-24~~ 47 (NORTH)

STATION: 299+00 FRONTAGE RD WEST

DRAINAGE AREA: 0.15Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.51	5.47

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.733	0.20	1.38

Spread = 5.47 - 1.50 = 3.97 ft

088

219

III - 71

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-17-1994

PROJECT: SR45 FRONTAGE RD

PROJECT NO.: 21663

INLET NO.: B-~~24~~ 47 (SOUTH)

STATION: 299+00 FRONTAGE RD WEST

DRAINAGE AREA: 0.15Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.020	0.013	0.73	5.92

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.694	0.21	1.74

Spread = 5.92 − 1.5 = 4.42 ft

SR 45 BASIN B

3 yr-8hr post condition network summary

Project PB_3_MOD, Run of Thu Oct 12 10:08:19 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	LAKE	VEE NOTCH
3	POND	LAKE	RECT WEIR
4	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	POND	POND
1	WS TO POND	SUBAREA
2	WS ON POND	SUBAREA
3	LAKE	STAGING
4	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	68.50	0.00	→69.61	4.30	NO
1	WS TO POND	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND	SUBAREA	74.00	0.00	74.00	0.00	NO
3	LAKE	STAGING	68.50	0.00	68.51	8.00	NO
4	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	33.55 @ 3.90 Hours	27.35 @ 4.30 Hours
1	WS TO POND	29.57 @ 3.90 Hours	29.57 @ 3.90 Hours
2	WS ON POND	5.14 @ 3.50 Hours	5.14 @ 3.50 Hours
3	LAKE	27.86 @ 4.30 Hours	0.00 @ 0.00 Hours
4	WS TO LAKE	0.59 @ 3.90 Hours	0.59 @ 3.90 Hours

3YR FDOT_8hr OUTLET CONTROL EL = 69.61

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SR 45 BASIN B

3yr - FDOT-8hr post condition Hydrographs

Subarea POST WATERSHED TO POND B 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOB3_8
TOTAL DRAINAGE AREA, ACRES... 17.53	INPUT ID 766277557
WEIGHTED SCS CURVE NUMBER.... 91.92	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 10.1
TIME OF CONCENTRATION, HOURS. 0.34	DT, HRS. 0.1
	DATA PTS 102
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.8076468
	ACREAGE. 17.53
	TC, HRS. 0.34
	TP, HRS. 3.9
	PEAK CFS 29.568691
	ACFT VOL 5.5604983
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WATERSHED ON POND B 3YR-8HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONB3_8
TOTAL DRAINAGE AREA, ACRES... 2.22	INPUT ID 813506768
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 2.22
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 5.1411662
	ACFT VOL 0.872911
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 3/31/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN B POST-DEVELOPMENT

CONVERSION OF COMPOSITE CN TO A RATIONAL C FOR STORM SEWER DESIGN.

COMPOSITE CN = 91.92
3yr-8hr STORM PRECIPITATION P = 4.72 in

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - .2S)^2}{(P + .8S)}$$

WHERE Q = RUNOFF (in)
P = RAINFALL (IN)
S = POTENTIAL MAXIMUM RETENTION AFTER RUNOFF begins (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{91.92} - 10 = .8790 \text{ in}$$

$$Q = \frac{[4.72 - .2(.8790)]^2}{4.72 + .8(.8790)} = 3.8077 \text{ in}$$

$$C = \frac{3.8077}{4.72} = 0.81$$

BASIN B "TO POND" RATIONAL C = 0.81 (3yr-8hr storm)

SEE SCS' TR-55 FOR REFERENCE (P 2-1)

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III-75

A-224

PEGDR632 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 10/12 /95 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41)BASIN B FILE 45B9066.IN

3yr storm

CP III ALTERNATE
RUN 1
DESIGN STANDARDS

ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 69.61 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM TO (STA)	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
1 2			S	130	0.75	0.00	70.75	18	0.00	0.0	72.00	0.00	72.25	71.70	.000	
35+21	53L				0.00											
					0.00											
2 7			M	275	0.00	0.00	75.00	24	0.00	0.0	0.00	0.00	71.70	71.33	.000	
35+23	44R				0.00											
					0.00											
3 2			S	5	0.38	0.00	71.70	18	0.00	0.0	71.70	0.00	73.20	73.10	.000	
35+23	50R				0.00											
					0.00											
4 6			S	42	0.08	0.00	74.85	18	0.00	0.0	0.00	0.00	72.35	72.25	.000	
37+56	4L				0.00											
					0.00											
5 6			S	67	0.80	0.00	73.33	18	0.00	0.0	0.00	0.00	70.83	70.69	.000	
37+99	38L				0.00											
					0.00											
6 7			M	44	0.00	0.00	74.80	18	0.00	0.0	0.00	0.00	70.69	70.59	.000	
37+97	10L				0.00											
					0.00											
7 10			M	274	0.77	0.00	73.33	30	0.00	0.0	0.00	0.00	71.33	71.05	.000	
37+97	38R				0.00											
					0.00											
8 7			S	6	0.48	0.00	72.87	18	0.00	0.0	73.00	0.00	70.80	70.70	.000	
37+97	48R				0.00											
					0.00											
9 6			S	103	0.10	0.00	74.22	18	0.00	0.0	0.00	0.00	71.72	71.57	.000	
39+00	11R				0.00											
					0.00											
10 14			M	320	0.03	0.00	74.85	30	0.00	0.0	0.00	0.00	71.05	~~70.72~~ 69.72	.000	
40+71	42R				0.00											
					0.00											
11 13			S	49	0.29	0.00	73.77	18	0.00	0.0	0.00	0.00	71.27	71.17	.000	
43+49	11R				0.00											
					0.00											
12 13			S	51	0.29	0.00	73.45	18	0.00	0.0	0.00	0.00	70.95	70.85	.000	
43+98	39L				0.00											
					0.00											

224 III-76

DATE PROCESSED

PIPE IDENT FROM TO (STA)	D I S T I Y S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
13 14 43+98	M 11R	73	0.00 0.00 0.00	0.00	74.90	18	0.00	0.0	0.00	0.00	70.85	~~70.71~~ 70.20	.000	
14 19 43+92	M 39R	336	0.36 0.00 0.00	0.00	73.45	36	0.00	0.0	0.00	0.00	~~70.72~~ 69.72	~~69.45~~ 68.45	.000	
15 14 43+92	S 48R	10	0.54 0.00 0.00	0.00	71.00	18	0.00	0.0	71.80	0.00	72.50	~~71.50~~ 70.50	.000	
16 17 47+36	M 59L	20	1.41 0.00 0.00	0.00	68.88	24	0.00	0.0	72.00	0.00	65.68	65.58	.000	
17 18 47+36	M 39L	89	0.43 0.00 0.00	0.00	72.43	30	0.00	0.0	0.00	0.00	65.58	65.45	.000	
18 19 46+88	M 37R	70	0.44 0.00 0.00	0.00	72.66	30	0.00	0.0	0.00	0.00	65.45	65.35	.000	
19 0 47+36	M 86R	72	1.00 0.00 0.00	0.00	72.45	48	0.00	0.0	0.00	0.00	65.35	64.50	.000	
20 17 48+15	M 39L	79	0.36 0.00 0.00	0.00	72.60	18	0.00	0.0	0.00	0.00	70.10	69.95	.000	
21 20 302+04	S 26R	144	0.26 0.00 0.00	0.00	73.10	18	0.00	0.0	0.00	0.00	70.32	70.10	.000	
22 23 50+96	S 47L	9	0.58 0.00 0.00	0.00	69.30	18	0.00	0.0	70.20	0.00	70.80	70.70	.000	
23 24 50+96	M 38L	124	0.16 0.00 0.00	0.00	73.53	18	0.00	0.0	0.00	0.00	70.70	70.30	.000	
24 19 50+96	M 86R	357	0.16 0.00 0.00	0.00	73.53	48	0.00	0.0	0.00	0.00	68.16	67.90	.000	
25 24 50+96	S 95R	10	0.18 0.00 0.00	0.00	70.30	18	0.00	0.0	70.30	0.00	71.80	70.50	.000	
26 24 54+32	M 86R	332	0.33 0.00 0.00	0.00	73.05	42	0.00	0.0	0.00	0.00	68.33	68.16	.000	
27 26 54+61	M 21R	71	0.27 0.00 0.00	0.00	73.87	24	0.00	0.0	0.00	0.00	68.60	68.50	.000	
28 27 55+55	M 50L	120	0.41 0.00 0.00	0.00	72.65	24	0.00	0.0	0.00	0.00	68.80	68.60	.000	
29 28 308+00	M 1L	56	0.21 0.00 0.00	0.00	72.05	18	0.00	0.0	0.00	0.00	68.90	68.80	.000	

DATE PROCESSED

PIPE IDENT FROM TO (STA)	D I S T I Y E P E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
30 27 56+42	S 22R	181	0.16 0.00 0.00	0.00	72.87	18	0.00	0.0	0.00	0.00	70.37	70.03	.000	
31 29 309+00	S 01L	102	0.58 0.00 0.00	0.00	71.59	18	0.00	0.0	0.00	0.00	69.09	68.90	.000	
32 33 58+00	S 62L	84	0.44 0.00 0.00	0.00	71.45	18	0.00	0.0	0.00	0.00	68.95	68.79	.000	
33 34 58+00	M 22R	64	0.46 0.00 0.00	0.00	72.37	24	0.00	0.0	0.00	0.00	68.79	68.69	.000	
34 26 58+00	M 86R	368	0.77 0.00 0.00	0.00	72.03	42	0.00	0.0	0.00	0.00	68.53	68.33	.000	
35 36 60+93	S 73L	10	0.80 0.00 0.00	0.00	71.88	18	0.00	0.0	72.30	0.00	~~71.00~~ 70.50	~~70.90~~ 70.40	.000	
36 37 60+93	M 62L	68	0.36 0.00 0.00	0.00	73.47	18	0.00	0.0	0.00	0.00	~~70.50~~ 70.40	~~70.77~~ 70.27	.000	
37 38 60+93	M 5R	82	0.00 0.00 0.00	0.00	74.30	18	0.00	0.0	0.00	0.00	~~70.77~~ 70.27	~~70.61~~ 70.11	.000	
38 34 60+93	M 86R	287	0.33 0.00 0.00	0.00	73.02	24	0.00	0.0	0.00	0.00	70.61	68.53	.000	
39 38 60+93	S 93R	8	0.77 0.00 0.00	0.00	72.26	18	0.00	0.0	72.70	0.00	71.10	71.00	.000	
40 37 61+85	M 6L	92	0.38 0.00 0.00	0.00	73.00	18	0.00	0.0	0.00	0.00	71.00	70.82	.000	
41 42 295+00	M 30R	226	0.19 0.00 0.00	0.00	70.90	18	0.00	0.0	71.43	0.00	69.40	69.00	.000	
42 46 297+24	M 46R	236	0.33 0.00 0.00	0.00	72.00	18	0.00	0.0	0.00	0.00	69.00	68.60	.000	
43 44 297+50	S 6L	250	0.20 0.00 0.00	0.00	72.84	18	0.00	0.0	0.00	0.00	71.32	70.84	.000	
44 46 300+00	M 6L	175	0.41 0.00 0.00	0.00	72.34	18	0.00	0.0	0.00	0.00	~~69.84~~ 68.84	~~69.00~~ 68.00	.000	
45 44 302+50	S 6L	250	0.12 0.00 0.00	0.00	73.03	18	0.00	0.0	0.00	0.00	71.52	71.04	.000	
46 16 299+60	M 46R	66	0.00 0.00 0.00	0.00	73.00	18	0.00	0.0	0.00	0.00	65.81	65.68	.000	

226 III-78

DATE PROCESSED

PROJECT 14010-3518 ZONE 6 FREQ 3 PAGE 4

SR45 (US41)BASIN B FILE 45B906G.IN

* HAND WRITTEN DENOTES CROWN ELEVATION OF PIPES

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV. OF H.G. CROWN F.L. LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
1 2	S	130	0.75	0.75	0.61	10.00	0.95	6.61	0.61	4.01	70.75	71.86	71.70	0.16	18*	0.125	2.27	.012
35+21	53L		0.00	0.00	0.00						72.00	72.25	71.70					
			0.00	0.00	0.00													
3 2	S	5	0.38	0.38	0.31	10.00	0.04	6.61	0.31	2.03	71.70	71.65	71.64	0.01	18*	0.032	1.15	.012
35+23	50R		0.00	0.00	0.00						71.70	73.20	73.10					
			0.00	0.00	0.00													
2 7	M	275	0.00	1.13	0.92	10.95	2.29	6.35	0.92	5.81	75.00	71.64	71.48	0.16	24*	0.056	1.85	.012
35+23	44R		0.00	0.00	0.00							71.70	71.33					
			0.00	0.00	0.00													
4 6	S	42	0.08	0.08	0.06	10.00	0.35	6.61	0.06	0.43	74.85	72.26	72.25	0.01	18*	0.001	0.24	.012
37+56	4L		0.00	0.00	0.00							72.35	72.25					
			0.00	0.00	0.00													
5 6	S	67	0.80	0.80	0.65	10.00	0.46	6.61	0.65	4.28	73.33	71.66	71.57	0.10	18*	0.142	2.42	.012
37+99	38L		0.00	0.00	0.00							70.83	70.69					
			0.00	0.00	0.00													
9 6	S	103	0.10	0.10	0.08	10.00	0.86	6.61	0.08	0.54	74.22	71.58	71.57	0.01	18*	0.002	0.30	.012
39+00	11R		0.00	0.00	0.00							71.72	71.57					
39+00			0.00	0.00	0.00													
6 7	M	44	0.00	0.98	0.79	10.86	0.26	6.38	0.79	5.06	74.80	71.57	71.48	0.09	18*	0.198	2.86	.012
37+97	10L		0.00	0.00	0.00							70.69	70.59					
			0.00	0.00	0.00													
8 7	S	6	0.48	0.48	0.39	10.00	0.05	6.61	0.39	2.57	72.87	71.49	71.48	0.01	18*	0.051	1.45	.012
37+97	48R		0.00	0.00	0.00						73.00	70.80	70.70					
			0.00	0.00	0.00													
7 10	M	274	0.77	3.36	2.72	13.25	1.41	5.84	2.72	15.88	73.33	71.48	71.13	0.35	30*	0.128	3.24	.012
37+97	38R		0.00	0.00	0.00							71.33	71.05					
			0.00	0.00	0.00													
10 14	M	320	0.03	3.39	2.75	14.66	1.65	5.57	2.75	15.88	74.85	71.13	70.72	0.41	30*	0.128	3.24	.012
40+71	42R		0.00	0.00	0.00							71.05	69.72					
			0.00	0.00	0.00													
11 13	S	49	0.29	0.29	0.23	10.00	0.41	6.61	0.23	1.55	73.77	71.18	71.17	0.01	18*	0.019	0.88	.012
43+49	11R		0.00	0.00	0.00							71.27	71.17					
			0.00	0.00	0.00													
12 13	S	51	0.29	0.29	0.23	10.00	0.43	6.61	0.23	1.55	73.45	70.86	70.85	0.01	18*	0.019	0.88	.012
43+98	39L		0.00	0.00	0.00							70.95	70.85					
			0.00	0.00	0.00													
13 14	M	73	0.00	0.58	0.47	10.43	0.61	6.49	0.47	3.05	74.90	70.77	70.72	0.05	18*	0.072	1.73	.012
43+98	11R		0.00	0.00	0.00							70.85	70.20					
			0.00	0.00	0.00													
15 14	S	10	0.54	0.54	0.44	10.00	0.08	6.61	0.44	2.89	71.00	71.51	71.50	0.01	18*	0.065	1.64	.012
43+92	48R		0.00	0.00	0.00						71.80	71.50	71.50					
14			0.00	0.00	0.00													
19	M	336	0.36	4.87	3.94	16.31	1.89	5.30	3.94	20.90	73.45	70.03	69.75	0.28	36*	0.084	2.96	.012
43+92	39R		0.00	0.00	0.00							69.72	68.45					
			0.00	0.00	0.00													
41 42	M	228	0.19	0.19	0.15	10.00	1.88	6.61	0.15	1.02	70.50	70.42	70.40	0.02	18*	0.008	0.58	.012
295+00	30R		0.00	0.00	0.00						71.43	69.40	69.00					
			0.00	0.00	0.00													

227 D-79

DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 5

PIPE INT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV. OF H.G. CROWN F.L. LOWER END	FALL PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
42 46	M	236	0.33	0.52	0.42	11.88	1.97	6.13	0.42	2.58	72.00	70.40	70.28	0.12	18*	0.052	1.46	.012
297+24	46R		0.00	0.00	0.00							69.00	68.60					
			0.00	0.00	0.00													
43 44	S	250	0.20	0.20	0.16	10.00	2.08	6.61	0.16	1.07	72.84	70.86	70.84	0.02	18*	0.009	0.61	.012
297+50	6L		0.00	0.00	0.00							71.32	70.84					
			0.00	0.00	0.00													
45 44	S	250	0.12	0.12	0.10	10.00	2.08	6.61	0.10	0.64	73.03	71.05	71.04	0.01	18*	0.003	0.36	.012
302+50	6L		0.00	0.00	0.00							71.52	71.04					
			0.00	0.00	0.00													
44 46	M	175	0.41	0.73	0.59	12.08	1.43	6.08	0.59	3.60	72.34	70.45	70.28	0.18	18*	0.100	2.03	.012
300+00	6L		0.00	0.00	0.00							68.84	68.00					
			0.00	0.00	0.00													
46 16	M	86	0.00	1.25	1.01	13.85	0.44	5.72	1.01	5.79	73.00	70.28	70.05	0.22	18*	0.259	3.28	.012
299+60	46R		0.00	0.00	0.00							65.81	65.68					
			0.00	0.00	0.00													
16 17	M	20	1.41	2.66	2.15	14.29	0.09	5.64	2.15	12.14	68.88	70.05	70.00	0.05	24*	0.246	3.87	.012
47+36	59L		0.00	0.00	0.00						72.00	65.68	65.58					
			0.00	0.00	0.00													
21 20	S	144	0.26	0.26	0.21	10.00	1.20	6.61	0.21	1.39	73.10	70.12	70.10	0.02	18*	0.015	0.79	.012
302+04	26R		0.00	0.00	0.00							70.32	70.10					
			0.00	0.00	0.00													
20 17	M	79	0.36	0.62	0.50	11.20	0.66	6.29	0.50	3.16	72.60	70.06	70.00	0.06	18*	0.077	1.79	.012
48+15	39L		0.00	0.00	0.00							70.10	69.95					
			0.00	0.00	0.00													
17 18	M	89	0.43	3.71	3.01	14.37	0.43	5.62	3.01	16.89	72.43	70.00	69.87	0.13	30*	0.145	3.44	.012
47+36	39L		0.00	0.00	0.00							65.58	65.45					
			0.00	0.00	0.00													
18 19	M	70	0.44	4.15	3.36	14.80	0.31	5.54	3.36	18.64	72.66	69.87	69.75	0.12	30*	0.176	3.80	.012
46+88	37R		0.00	0.00	0.00							65.45	65.35					
			0.00	0.00	0.00													
22 23	S	9	0.58	0.58	0.47	10.00	0.08	6.61	0.47	3.10	69.30	70.05	70.04	0.01	18*	0.075	1.76	.012
50+96	47L		0.00	0.00	0.00						70.20	70.80	70.70					
			0.00	0.00	0.00													
23 24	M	124	0.16	0.74	0.60	10.07	0.93	6.59	0.60	3.95	73.53	70.04	69.89	0.15	18*	0.121	2.23	.012
50+96	38L		0.00	0.00	0.00							70.70	70.30					
			0.00	0.00	0.00													
25 24	S	10	0.18	0.18	0.15	10.00	0.08	6.61	0.15	0.96	70.30	69.90	69.89	0.01	18*	0.007	0.55	.012
50+96	95R		0.00	0.00	0.00						70.30	71.80	70.50					
			0.00	0.00	0.00													
31 29	S	102	0.58	0.58	0.47	10.00	0.85	6.61	0.47	3.10	71.59	70.41	70.34	0.08	18*	0.075	1.76	.012
309+00	01L		0.00	0.00	0.00							69.09	68.90					
			0.00	0.00	0.00													
29 28	M	56	0.21	0.79	0.64	10.85	0.40	6.38	0.64	4.08	72.05	70.34	70.26	0.07	18*	0.129	2.31	.012
308+00	1L		0.00	0.00	0.00							68.90	68.80					
			0.00	0.00	0.00													
28 27	M	120	0.41	1.20	0.97	11.25	1.00	6.28	0.97	6.10	72.65	70.26	70.19	0.07	24*	0.062	1.94	.01
+55	50L		0.00	0.00	0.00							68.80	68.60					
55+55			0.00	0.00	0.00													

228 III-80

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DATE PROCESSED

PROJECT 14010-351B FREQ 3 YR. PAGE 6

PIPE SEGMENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	n
30 27	S	181	0.16	0.16	0.13	10.00	1.51	6.61	0.13	0.86	72.87	70.20	70.19	0.01	18*	0.006	0.98	.012
56+42	22R		0.00	0.00	0.00							70.37	70.03					
			0.00	0.00	0.00													
27 26	M	71	0.27	1.63	1.32	12.25	0.47	6.04	1.32	7.98	73.87	70.19	70.11	0.08	24*	0.106	2.54	.012
54+61	21R		0.00	0.00	0.00							68.60	68.50					
			0.00	0.00	0.00													
32 33	S	84	0.44	0.44	0.36	10.00	0.70	6.61	0.36	2.35	71.45	70.31	70.28	0.04	18*	0.043	1.33	.012
58+00	62L		0.00	0.00	0.00							68.95	68.79					
			0.00	0.00	0.00													
33 34	M	64	0.46	0.90	0.73	10.70	0.53	6.42	0.73	4.68	72.37	70.28	70.25	0.02	24*	0.037	1.49	.012
58+00	22R		0.00	0.00	0.00							68.79	68.69					
			0.00	0.00	0.00													
35 36	S	10	0.80	0.80	0.65	10.00	0.07	6.61	0.65	4.28	71.88	71.75	71.73	0.01	18*	0.142	2.42	.012
60+93	73L		0.00	0.00	0.00						72.30	70.50	70.40					
			0.00	0.00	0.00													
36 37	M	68	0.36	1.16	0.94	10.07	0.32	6.59	0.94	6.19	73.47	71.73	71.53	0.20	18*	0.297	3.50	.012
60+93	62L		0.00	0.00	0.00							70.40	70.27					
			0.00	0.00	0.00													
40 37	M	92	0.38	0.38	0.31	10.00	0.77	6.61	0.31	2.03	73.00	71.56	71.53	0.03	18*	0.032	1.15	.012
61+85	6L		0.00	0.00	0.00							71.00	70.82					
			0.00	0.00	0.00													
37 38	M	82	0.00	1.54	1.25	10.77	0.30	6.40	1.25	7.98	74.30	71.53	71.13	0.40	18*	0.493	4.52	.012
60+93	5R		0.00	0.00	0.00							70.27	70.11					
			0.00	0.00	0.00													
39 38	S	8	0.77	0.77	0.62	10.00	0.06	6.61	0.62	4.12	72.26	71.14	71.13	0.01	18*	0.131	2.33	.012
60+93	93R		0.00	0.00	0.00						72.70	71.10	71.00					
			0.00	0.00	0.00													
38 34	M	287	0.33	2.64	2.14	11.07	1.11	6.32	2.14	13.52	73.02	71.13	70.25	0.88	24*	0.305	4.30	.012
60+93	86R		0.00	0.00	0.00							70.61	68.53					
			0.00	0.00	0.00													
34 26	M	368	0.77	4.31	3.49	12.18	2.79	6.06	3.49	21.16	72.03	70.25	70.11	0.14	42*	0.038	2.20	.012
58+00	86R		0.00	0.00	0.00							68.53	68.33					
			0.00	0.00	0.00													
26 24	M	332	0.33	6.27	5.08	14.97	1.90	5.52	5.08	28.01	73.05	70.11	69.89	0.22	42*	0.066	2.91	.012
54+32	86R		0.00	0.00	0.00							68.33	68.16					
			0.00	0.00	0.00													
24 19	M	357	0.16	7.35	5.95	16.87	2.41	5.21	5.95	31.04	73.53	69.89	69.75	0.14	48*	0.040	2.47	.012
50+96	86R		0.00	0.00	0.00							68.16	67.90					
			0.00	0.00	0.00													
19 0	M	72	1.00	17.37	14.07	19.28	0.22	4.89	14.07	68.77	72.45	69.75	69.61	0.14	48*	0.196	5.47	.012
47+36	86R		0.00	0.00	0.00							65.35	64.50					
			0.00	0.00	0.00													

229 #1-81

SR45 (US41)BASIN B FILE 4589066.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	2	3770.00	2	7	9625.00	3	2	145.00
4	6	1218.00	5	6	1943.00	6	7	1276.00
7	10	12056.00	8	7	174.00	9	6	2987.00
10	14	14080.00	11	13	1421.00	12	13	1479.00
13	14	2117.00	14	19	19488.00	15	14	290.00
16	17	700.00	17	18	3916.00	18	19	3080.00
19	0	5400.00	20	17	2291.00	21	20	4176.00
22	23	261.00	23	24	3596.00	24	19	26775.00
25	24	290.00	26	24	21580.00	27	26	2485.00
28	27	4200.00	29	28	1624.00	30	27	5249.00
31	29	2958.00	32	33	2436.00	33	34	2240.00
34	26	23920.00	35	36	290.00	36	37	1972.00
37	38	2378.00	38	34	10045.00	39	38	232.00
40	37	2668.00	41	42	6554.00	42	46	6844.00
43	44	7250.00	44	46	5075.00	45	44	7250.00
46	16	2494.00						

TOTAL SYSTEM COST = 242298.00

SR45 (US41)BASIN B FILE 4589066.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 2
MAXIMUM VELOCITY (GRADIENT FLOW)	5.47 FPS	19 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 2
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.58 FPS	41 TO 42
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 2
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-1.17 FT	16 TO 17
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.05 FT	3 TO 2
TOTAL DRAINAGE AREA	17.37 ACRES	
WEIGHTED COEFFICIENT	0.81	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

1 TO 2
4 TO 6
9 TO 6
10 TO 14
11 TO 13
12 TO 13
13 TO 14
15 TO 14
43 TO 44
45 TO 44
21 TO 20

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

SR 45 BASIN B

50yr - 24hr post condition summary

(50yr TW IN POND B for CULVERT/STORMDRAIN ANALYSIS AT STA 47+36)

Project PB5024, Run of Thu Oct 12 11:53:47 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	LAKE	VEE NOTCH
3	POND	LAKE	RECT WEIR
4	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	POND	POND
1	WS TO POND	SUBAREA
2	WS ON POND	SUBAREA
3	LAKE	STAGING
4	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	68.85	0.00	→70.13	12.50	NO
1	WS TO POND	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND	SUBAREA	74.00	0.00	74.00	0.00	NO
3	LAKE	STAGING	68.50	0.00	69.93	18.00	NO
4	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	86.16 @ 12.30 Hours	69.38 @ 12.50 Hours
1	WS TO POND	76.47 @ 12.30 Hours	76.47 @ 12.30 Hours
2	WS ON POND	20.39 @ 12.00 Hours	20.39 @ 12.00 Hours
3	LAKE	70.66 @ 12.50 Hours	0.00 @ 0.00 Hours
4	WS TO LAKE	1.50 @ 12.30 Hours	1.50 @ 12.30 Hours

50 yr TW EL IN POND B = 70.13

Subarea POST WATERSHED TO POND B 50yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOB50
TOTAL DRAINAGE AREA, ACRES... 17.53	INPUT ID 781479858
WEIGHTED SCS CURVE NUMBER.... 91.92	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.1
TIME OF CONCENTRATION, HOURS. 0.34	DT, HRS. 0.1
	DATA PTS 262
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 10.0
	EXCESS.. 9.0173616
	ACREAGE. 17.53
	TC, HRS. 0.34
	TP, HRS. 12.3
	PEAK CFS 76.47168
	ACFT VOL 13.168507
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WATERSHED ON POND B 50YR-24HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONB50
TOTAL DRAINAGE AREA, ACRES... 2.22	INPUT ID 813513051
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 10.0
	EXCESS.. 10.0
	ACREAGE. 2.22
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 20.389797
	ACFT VOL 1.8493884
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: TWM date: 10/6/94 job no. 2166 3
checked by: _____ date: _____ sheet no. 1/1

LAKE FLOYD STAGING FOR 50yr CULVERT/Stormdrai
ANALYSIS - STA 47 + 36

25yr STAGING

TIME (hr)	0	5	10	15	18	27	36
STAGE (ft)	68.50	68.50	68.62	69.63	69.71	69.62	69.42

100 yr STAGING

TIME (hr)	0	5	10	15	18	27	36
STAGE (ft)	68.50	68.51	68.72	70.06	70.14	70.01	69.74

ESTIMATED 50yr STAGING

TIME (hr)	0	5	10	15	18	27	36
STAGE (FT)	68.50	68.51	68.67	69.85	69.93	69.82	58

234

III - 86

PE6DR632 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 10/12 /95 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41)BASIN B FILE 45B9050.IN

50 YEAR STORM

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
ZONE 6, STORM FREQUENCY 50 YEARS OUTLET CONTROL ELEVATION: 70.13 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C D E
1	2			S	130	0.75	0.00	70.75	18	0.00	0.0	99.99	0.00	72.25	71.70	.000	
35+21	53L					0.00											
						0.00											
2	7			M	275	0.00	0.00	75.00	24	0.00	0.0	99.99	0.00	71.70	71.33	.000	
35+23	44R					0.00											
						0.00											
3	2			S	5	0.38	0.00	71.70	18	0.00	0.0	99.99	0.00	73.20	73.10	.000	
35+23	50R					0.00											
						0.00											
4	6			S	42	0.08	0.00	74.85	18	0.00	0.0	99.99	0.00	72.35	72.25	.000	
37+56	4L					0.00											
						0.00											
5	6			S	67	0.80	0.00	73.33	18	0.00	0.0	99.99	0.00	70.83	70.69	.000	
37+99	38L					0.00											
						0.00											
6	7			M	44	0.00	0.00	74.80	18	0.00	0.0	99.99	0.00	70.69	70.59	.000	
37+97	10L					0.00											
						0.00											
7	10			M	274	0.77	0.00	73.33	30	0.00	0.0	99.99	0.00	71.33	71.05	.000	
37+97	38R					0.00											
						0.00											
8	7			S	6	0.48	0.00	72.87	18	0.00	0.0	99.99	0.00	70.80	70.70	.000	
37+97	48R					0.00											
						0.00											
9	6			S	103	0.10	0.00	74.22	18	0.00	0.0	99.99	0.00	71.72	71.57	.000	
39+00	11R					0.00											
						0.00											
10	14			M	320	0.03	0.00	74.85	30	0.00	0.0	99.99	0.00	71.05	~~70.72~~ 69.72	.000	
40+71	42R					0.00											
						0.00											
11	13			S	49	0.29	0.00	73.77	18	0.00	0.0	99.99	0.00	71.27	71.17	.000	
43+49	11R					0.00											
						0.00											
12	13			S	51	0.29	0.00	73.45	18	0.00	0.0	99.99	0.00	70.95	70.85	.000	
43+98	39L					0.00											
						0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S D E	Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
13	14			M	73	0.00	0.00	74.90	18	0.00	0.0	99.99	0.00	70.85	~~70.71~~ 70.20	.000	
43+98	11R					0.00											
						0.00											
14	19			M	336	0.36	0.00	73.45	36	0.00	0.0	99.99	0.00	~~70.72~~ 69.72	~~69.45~~ 68.45	.000	
43+92	39R					0.00											
						0.00											
15	14			S	10	0.54	0.00	71.00	18	0.00	0.0	99.99	0.00	~~72.50~~ 71.50	~~71.50~~ 70.50	.000	
43+92	48R					0.00											
						0.00											
16	17			M	20	1.41	0.00	68.88	24	0.00	0.0	99.99	0.00	65.68	65.58	.000	
47+36	59L					0.00											
						0.00											
17	18			M	89	0.43	0.00	72.43	30	0.00	0.0	99.99	0.00	65.58	65.45	.000	
47+36	39L					0.00											
						0.00											
18	19			M	70	0.44	0.00	72.66	30	0.00	0.0	99.99	0.00	65.45	65.35	.000	
46+88	37R					0.00											
						0.00											
19	0			M	72	1.00	0.00	72.45	48	0.00	0.0	99.99	0.00	65.35	64.50	.000	
47+36	86R					0.00											
						0.00											
20	17			M	79	0.36	0.00	72.60	18	0.00	0.0	99.99	0.00	70.10	69.95	.000	
48+15	39L					0.00											
						0.00											
21	20			S	144	0.26	0.00	73.10	18	0.00	0.0	99.99	0.00	70.32	70.10	.000	
302+04	26R					0.00											
						0.00											
22	23			S	9	0.58	0.00	69.30	18	0.00	0.0	99.99	0.00	70.80	70.70	.000	
50+96	47L					0.00											
						0.00											
23	24			M	124	0.16	0.00	73.53	18	0.00	0.0	99.99	0.00	70.70	70.30	.000	
50+96	38L					0.00											
						0.00											
24	19			M	357	0.16	0.00	73.53	48	0.00	0.0	99.99	0.00	68.16	67.90	.000	
50+96	86R					0.00											
						0.00											
25	24			S	10	0.18	0.00	70.30	18	0.00	0.0	99.99	0.00	71.80	70.50	.000	
50+96	95R					0.00											
						0.00											
26	24			M	332	0.33	0.00	73.05	42	0.00	0.0	99.99	0.00	68.33	68.16	.000	
54+32	86R					0.00											
						0.00											
27	26			M	71	0.27	0.00	73.87	24	0.00	0.0	99.99	0.00	68.60	68.50	.000	
54+61	21R					0.00											
						0.00											
28	27			M	120	0.41	0.00	72.65	24	0.00	0.0	99.99	0.00	68.60	68.60	.000	
55+55	50L					0.00											
						0.00											
29	28			M	56	0.21	0.00	72.05	18	0.00	0.0	99.99	0.00	68.90	68.80	.000	
308+00	1L					0.00											
						0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S D E	Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
30	27		S		181	0.16	0.00	72.87	18	0.00	0.0	99.99	0.00	70.37	70.03	.000	
56+42	22R					0.00											
						0.00											
31	29		S		102	0.58	0.00	71.59	18	0.00	0.0	99.99	0.00	69.09	68.90	.000	
309+00	01L					0.00											
						0.00											
32	33		S		84	0.44	0.00	71.45	18	0.00	0.0	99.99	0.00	68.95	68.79	.000	
58+00	62L					0.00											
						0.00											
33	34		M		64	0.46	0.00	72.37	24	0.00	0.0	99.99	0.00	68.79	68.69	.000	
58+00	22R					0.00											
						0.00											
34	26		M		368	0.77	0.00	72.03	42	0.00	0.0	99.99	0.00	68.53	68.33	.000	
58+00	86R					0.00											
						0.00											
35	36		S		10	0.80	0.00	71.88	18	0.00	0.0	99.99	0.00	~~71.00~~ 70.50	~~70.90~~ 70.40	.000	
60+93	73L					0.00											
						0.00											
36	37		M		68	0.36	0.00	73.47	18	0.00	0.0	99.99	0.00	~~70.90~~ 70.40	~~70.77~~ 70.27	.000	
60+93	62L					0.00											
						0.00											
37	38		M		82	0.00	0.00	74.30	18	0.00	0.0	99.99	0.00	~~70.77~~ 70.27	~~70.61~~ 70.11	.000	
60+93	5R					0.00											
						0.00											
38	34		M		287	0.33	0.00	73.02	24	0.00	0.0	99.99	0.00	70.61	68.53	.000	
60+93	86R					0.00											
						0.00											
39	38		S		8	0.77	0.00	72.26	18	0.00	0.0	99.99	0.00	71.10	71.00	.000	
60+93	93R					0.00											
						0.00											
40	37		M		92	0.38	0.00	73.00	18	0.00	0.0	99.99	0.00	71.00	70.82	.000	
61+85	6L					0.00											
						0.00											
41	42		M		226	0.19	0.00	70.90	18	0.00	0.0	99.99	0.00	69.40	69.00	.000	
295+00	30R					0.00											
						0.00											
42	46		M		236	0.33	0.00	72.00	18	0.00	0.0	99.99	0.00	69.00	68.60	.000	
297+24	46R					0.00											
						0.00											
43	44		S		250	0.20	0.00	72.84	18	0.00	0.0	99.99	0.00	71.32	70.84	.000	
297+50	6L					0.00											
						0.00											
44	46		M		175	0.41	0.00	72.34	18	0.00	0.0	99.99	0.00	~~69.84~~ 68.84	~~69.00~~ 68.00	.000	
300+00	6L					0.00											
						0.00											
45	44		S		250	0.12	0.00	73.03	18	0.00	0.0	99.99	0.00	71.52	71.04	.000	
302+50	6L					0.00											
						0.00											
46	16		M		86	0.00	0.00	73.00	18	0.00	0.0	99.99	0.00	65.81	65.68	.000	
299+60	46R					0.00											
						0.00											

SR45 (US41)BASIN B FILE 4589050.IN

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
1 2	S	130	0.75	0.75	0.61	10.00	0.70	9.04	0.61	5.49	70.75	73.27	72.96	0.30	18*	0.233	3.11	.012
35+21	53L		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
3 2	S	5	0.38	0.38	0.31	10.00	0.04	9.04	0.31	2.78	71.70	73.11	73.10	0.01	18*	0.060	1.57	.012
35+23	50R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
2 7	M	275	0.00	1.13	0.92	10.70	1.78	8.84	0.92	8.09	75.00	72.96	72.66	0.30	24*	0.109	2.58	.012
35+23	44R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
4 6	S	42	0.08	0.08	0.06	10.00	0.35	9.04	0.06	0.59	74.85	72.84	72.83	0.01	18*	0.003	0.33	.012
37+56	4L		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
5 6	S	67	0.80	0.80	0.65	10.00	0.34	9.04	0.65	5.86	73.33	73.01	72.83	0.18	18*	0.266	3.32	.012
37+99	38L		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
9 6	S	103	0.10	0.10	0.08	10.00	0.86	9.04	0.08	0.73	74.22	72.84	72.83	0.01	18*	0.004	0.41	.01
39+00	11R		0.00	0.00	0.00						99.99							
39+00			0.00	0.00	0.00													
6 7	M	44	0.00	0.98	0.79	10.86	0.19	8.79	0.79	6.98	74.80	72.83	72.66	0.17	18*	0.377	3.95	.012
37+97	10L		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
8 7	S	6	0.48	0.48	0.39	10.00	0.05	9.04	0.39	3.52	72.87	72.67	72.66	0.01	18*	0.096	1.99	.012
37+97	48R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
7 10	M	274	0.77	3.36	2.72	12.48	0.98	8.38	2.72	22.81	73.33	72.66	71.94	0.72	30*	0.264	4.65	.012
37+97	38R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
10 14	M	320	0.03	3.39	2.75	13.46	1.15	8.16	2.75	22.81	74.85	71.94	71.09	0.85	30*	0.264	4.65	.012
40+71	42R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
11 13	S	49	0.29	0.29	0.23	10.00	0.41	9.04	0.23	2.12	73.77	71.21	71.19	0.02	18*	0.035	1.20	.012
43+49	11R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
12 13	S	51	0.29	0.29	0.23	10.00	0.43	9.04	0.23	2.12	73.45	71.21	71.19	0.02	18*	0.035	1.20	.012
43+98	39L		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
13 14	M	73	0.00	0.58	0.47	10.43	0.51	8.92	0.47	4.19	74.90	71.19	71.09	0.10	18*	0.136	2.37	.012
43+98	11R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
15 14	S	10	0.54	0.54	0.44	10.00	0.07	9.04	0.44	3.95	71.00	71.51	71.50	0.01	18*	0.121	2.24	.012
43+92	48R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
14 19	M	336	0.36	4.87	3.94	14.61	1.27	7.92	3.94	31.23	73.45	71.09	70.46	0.63	36*	0.187	4.42	.012
43+92	39R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													
41 42	M	226	0.19	0.19	0.15	10.00	1.88	9.04	0.15	1.39	70.90	71.79	71.76	0.03	18*	0.015	0.79	.012
295+00	30R		0.00	0.00	0.00						99.99							
			0.00	0.00	0.00													

DATE PROCESSED

PROJECT 14010-3518 FREQ 50 YR. PAGE 5

IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	CROWN F.L. ELEV UPPER END	CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
42 46 297+24	M 46R	236	0.33 0.00 0.00	0.52 0.00 0.00	0.42 0.00 0.00	11.88	1.94	8.53	0.42	3.59	72.00 99.99	71.76	71.52	0.24	18*	0.100	2.03	.012
43 44 297+50	S 6L	250	0.20 0.00 0.00	0.20 0.00 0.00	0.16 0.00 0.00	10.00	2.08	9.04	0.16	1.46	72.84 99.99	71.91	71.86	0.04	18*	0.017	0.83	.012
45 44 302+50	S 6L	250	0.12 0.00 0.00	0.12 0.00 0.00	0.10 0.00 0.00	10.00	2.08	9.04	0.10	0.88	73.03 99.99	71.88	71.86	0.01	18*	0.006	0.50	.012
44 46 300+00	M 6L	175	0.41 0.00 0.00	0.73 0.00 0.00	0.59 0.00 0.00	12.08	1.03	8.48	0.59	5.01	72.34 99.99	71.86	71.52	0.34	18*	0.194	2.84	.012
46 16 299+60	M 46R	86	0.00 0.00 0.00	1.25 0.00 0.00	1.01 0.00 0.00	13.82	0.31	8.08	1.01	8.18	73.00 99.99	71.52	71.08	0.45	18*	0.518	4.63	.012
16 17 47+36	M 59L	20	1.41 0.00 0.00	2.66 0.00 0.00	2.15 0.00 0.00	14.13	0.06	8.02	2.15	17.27	68.88 99.99	71.08	70.98	0.10	24*	0.498	5.50	.012
21 20 302+04 302+04	S 26R	144	0.26 0.00 0.00	0.26 0.00 0.00	0.21 0.00 0.00	10.00	1.20	9.04	0.21	1.90	73.10 99.99	71.14	71.10	0.04	18*	0.028	1.08	.012
20 17 48+15	M 39L	79	0.36 0.00 0.00	0.62 0.00 0.00	0.50 0.00 0.00	11.20	0.53	8.70	0.50	4.37	72.60 99.99	71.10	70.98	0.12	18*	0.148	2.47	.012
17 18 47+36	M 39L	89	0.43 0.00 0.00	3.71 0.00 0.00	3.01 0.00 0.00	14.19	0.30	8.00	3.01	24.05	72.43 99.99	70.98	70.72	0.26	30*	0.294	4.90	.012
18 19 46+88	M 37R	70	0.44 0.00 0.00	4.15 0.00 0.00	3.36 0.00 0.00	14.49	0.21	7.94	3.36	26.69	72.66 99.99	70.72	70.46	0.25	30*	0.362	5.44	.012
22 23 50+96	S 47L	9	0.58 0.00 0.00	0.58 0.00 0.00	0.47 0.00 0.00	10.00	0.06	9.04	0.47	4.25	69.30 99.99	71.08	71.07	0.01	18*	0.140	2.40	.012
23 24 50+96	M 38L	124	0.16 0.00 0.00	0.74 0.00 0.00	0.60 0.00 0.00	10.06	0.68	9.02	0.60	5.41	73.53 99.99	71.07	70.79	0.28	18*	0.226	3.06	.012
25 24 50+96	S 95R	10	0.18 0.00 0.00	0.18 0.00 0.00	0.15 0.00 0.00	10.00	0.08	9.04	0.15	1.32	70.30 99.99	70.80	70.79	0.01	18*	0.013	0.75	.012
31 29 309+00	S 01L	102	0.58 0.00 0.00	0.58 0.00 0.00	0.47 0.00 0.00	10.00	0.71	9.04	0.47	4.25	71.59 99.99	71.84	71.69	0.14	18*	0.140	2.40	.012
29 28 308+00	M 1L	56	0.21 0.00 0.00	0.79 0.00 0.00	0.64 0.00 0.00	10.71	0.29	8.84	0.64	5.65	72.05 99.99	71.69	71.56	0.14	18*	0.247	3.20	.012
28 27 55+55	M 50L	120	0.41 0.00 0.00	1.20 0.00 0.00	0.97 0.00 0.00	11.00	0.74	8.76	0.97	8.51	72.65 99.99	71.56	71.41	0.15	24*	0.121	2.71	.012

DATE PROCESSED

PROJECT 14010-3518 FREQ 50 YR. PAGE 6

)E TYPE LENGTH IDENT (FEET) FROM TO (STA)	DRAINAGE AREA (ACRES) C1=0.81 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV.	OF H.G. ELEV CROWN F.L. ELEV UPPER END	 LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) MID GRADIENT PHYSICAL	VEL. (FPS)	N
30 27 S 181 56+42 22R	0.16 0.00 0.00	0.16 0.00 0.00	0.13 0.00 0.00	10.00	1.51	9.04	0.13	1.17	72.87 99.99	71.43	71.41	0.02	18*	0.011	0.66	.012
27 26 M 71 54+61 21R	0.27 0.00 0.00	1.63 0.00 0.00	1.32 0.00 0.00	11.74	0.33	8.56	1.32	11.31	73.87 99.99	71.41	71.26	0.15	24*	0.213	3.60	.012
32 33 S 84 58+00 62L	0.44 0.00 0.00	0.44 0.00 0.00	0.36 0.00 0.00	10.00	0.70	9.04	0.36	3.22	71.45 99.99	71.65	71.58	0.07	18*	0.080	1.82	.012
33 34 M 64 58+00 22R	0.46 0.00 0.00	0.90 0.00 0.00	0.73 0.00 0.00	10.70	0.52	8.84	0.73	6.44	72.37 99.99	71.58	71.54	0.04	24*	0.069	2.05	.012
35 36 S 10 60+93 73L	0.80 0.00 0.00	0.80 0.00 0.00	0.65 0.00 0.00	10.00	0.05	9.04	0.65	5.86	71.88 99.99	74.39	74.36	0.03	18*	0.266	3.32	.012
36 37 M 68 60+93 62L	0.36 0.00 0.00	1.16 0.00 0.00	0.94 0.00 0.00	10.05	0.24	9.03	0.94	8.48	73.47 99.99	74.36	73.98	0.38	18*	0.557	4.80	.012
40 37 M 92 61+85 6L)61+85	0.38 0.00 0.00	0.38 0.00 0.00	0.31 0.00 0.00	10.00	0.77	9.04	0.31	2.78	73.00 99.99	74.04	73.98	0.06	18*	0.080	1.57	.012
37 38 M 82 60+93 5R	0.00 0.00 0.00	1.54 0.00 0.00	1.25 0.00 0.00	10.77	0.22	8.82	1.25	11.00	74.30 99.99	73.98	73.22	0.77	18*	0.937	6.23	.012
39 38 S 8 60+93 93R	0.77 0.00 0.00	0.77 0.00 0.00	0.62 0.00 0.00	10.00	0.04	9.04	0.62	5.64	72.26 99.99	73.24	73.22	0.02	18*	0.246	3.19	.012
38 34 M 287 60+93 86R	0.33 0.00 0.00	2.64 0.00 0.00	2.14 0.00 0.00	10.99	0.80	8.76	2.14	18.73	73.02 99.99	73.22	71.54	1.68	24*	0.586	5.96	.012
34 26 M 368 58+00 86R	0.77 0.00 0.00	4.31 0.00 0.00	3.49 0.00 0.00	11.79	1.98	8.55	3.49	29.85	72.03 99.99	71.54	71.26	0.28	42*	0.075	3.10	.012
26 24 M 332 54+32 86R	0.33 0.00 0.00	6.27 0.00 0.00	5.08 0.00 0.00	13.77	1.30	8.09	5.08	41.10	73.05 99.99	71.26	70.79	0.47	42*	0.142	4.27	.012
24 19 M 357 50+96 86R	0.16 0.00 0.00	7.35 0.00 0.00	5.95 0.00 0.00	15.06	1.60	7.83	5.95	46.60	73.53 99.99	70.79	70.46	0.32	48*	0.090	3.71	.012
19 0 M 72 47+36 86R	1.00 0.00 0.00	17.37 0.00 0.00	14.07 0.00 0.00	16.67	0.14	7.53	14.07	105.99	72.45 99.99	70.46	70.13	0.33	48*	0.465	8.43	.012

240

III-92

A-241

SR45 (US41)BASIN B FILE 4589050.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	2	3770.00	2	7	9625.00	3	2	145.00
4	6	1218.00	5	6	1943.00	6	7	1276.00
7	10	12056.00	8	7	174.00	9	6	2987.00
10	14	14080.00	11	13	1421.00	12	13	1479.00
13	14	2117.00	14	19	19488.00	15	14	290.00
16	17	700.00	17	18	3916.00	18	19	3080.00
19	0	5400.00	20	17	2291.00	21	20	4176.00
22	23	261.00	23	24	3596.00	24	19	26775.00
25	24	290.00	26	24	21580.00	27	26	2485.00
28	27	4200.00	29	28	1624.00	30	27	5249.00
31	29	2958.00	32	33	2436.00	33	34	2240.00
34	26	23920.00	35	36	290.00	36	37	1972.00
37	38	2378.00	38	34	10045.00	39	38	232.00
40	37	2668.00	41	42	6554.00	42	46	6844.00
43	44	7250.00	44	46	5075.00	45	44	7250.00
46	16	2494.00						

TOTAL SYSTEM COST = 242298.00

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 2
MAXIMUM VELOCITY (GRADIENT FLOW)	8.43 FPS	19 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 2
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.79 FPS	41 TO 42
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 2
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-2.52 FT	1 TO 2
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	25.60 FT	35 TO 36
TOTAL DRAINAGE AREA	17.37 ACRES	
WEIGHTED COEFFICIENT	0.81	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

3 TO 2
15 TO 14

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

Henigar & Ray

PROJECT: SR45 - BASIN B

made by: CLJ date: 12-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

50 YR STORMSEWER CHECK

AT FDOT'S REQUEST H+R HAS PERFORMED A CHECK OF THE PROPOSED SYSTEM TO ENSURE THAT THE 50YR STORM WILL NOT CAUSE FLOODING AT B-16 to POND.

Given: B-16 GrateElev. = 68.88
Shoulder PT. = 72.70
(Hinge pt.)
50YR HGL = 71.28
Q_{50} TO B-16 = 10.33 cfs
Q_{DBI} w/3" head = 20 cfs
w/ Orifice Flow

Results:

50YR HGL. < SHOULDER ELEV.
71.28 < 72.70
HeadoverGrate = 71.28 − 68.88 = 2.40 ft
∴ ORIFICE FLOW CONDITION

INLET MAX. Q > 50YR Q
20 cfs > 10.33 cfs ... 243

Conclusions: 1. Pipes from B-16 to Pond adequately sized. III-95
2. B-16 inlet can accept Q_{50}.

STORM SEWER TABULATION FORM

DATE 5-17-94 PROJECT NO. 14010-3518 ROAD SR45 - FRONTAGE RD COUNTY PASCO BY CLJ SHEET NO. 1 of 1

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	DRAINAGE AREA (ACRES) C= .54 C= C= .95 INCREMENT	SUB TOT.	SUB-TOTAL (C.A.)	TIME OF CONCENTRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (C.A.)	TOTAL RUNOFF (C.F.S.)	INLET ELEVATION (FT.)	ELEV. OF H.G. / CROWN ELEV.. / FLOW LINE ELEV. UPPER END	LOWER END	FALL (FT.)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (F.P.S.)	CAPACITY (C.F.S.)	NOTES / REMARKS
																							ZONE 6 FREQUENCY 3 YR.
																							n=.012 CONC. PIPE & CULVERTS
																							n=.024 CORRUGATED METAL PIPE
FRONTAGE -WEST			B				2.57								INVERT	69.40	69.13						
299+00	133.5	R	47	MES	S	47	1.17								67.50	69.00	68.50	1.50	18		14.91		
																67.50	67.00	1.50		1.06			
FRONTAGE -WEST			B	211			.05									69.13	68.98						Tabulation = SHW of EXIST
299+00	13.25	L	48	6	M	20	.32								70.70	68.50	68.20	.30	18		5.54		wetland area = 68.98
																67.00	66.70	.30		1.5			

III - 96 244

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 12/07 /94 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 BASIN B FRONTAGE ROAD FILE:45FRONT.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 68.98 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T I Y P E E	LENGTH (FEET)	AREA (ACRES) C1=0.54 C2=0.00 C3=0.95 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
47	48	S	47	2.57	37.00	67.50	0	0.00	0.0	70.00	0.00	0.00	0.00	.000	
299+00		34R		0.00											
				1.17											
48	0	M	20	0.05	0.00	70.70	0	0.00	0.0	0.00	0.00	0.00	0.00	.000	
299+00		13L		0.00											
				0.32											

III - 97

245

SR45 BASIN B FRONTAGE ROAD FILE:45FRONT.IN

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.54 C2=0.00 C3=0.95 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD PHYSICAL	VEL. (FPS) GRADIENT	N
47 48	S	47	2.57	2.57	1.39	37.00	0.16	3.47	2.50	8.67	67.50	69.40	69.13	0.27	18	0.582	4.91	.012
299+00	34R		0.00	0.00	0.00						70.00							
			1.17	1.17	1.11													
48 0	M	20	0.05	2.62	1.41	37.16	0.06	3.46	2.83	9.79	70.70	69.13	68.98	0.15	18	0.742	5.54	.012
299+00	13L		0.00	0.00	0.00													
			0.32	1.49	1.42													

III — 98

246

SR45 BASIN B FRONTAGE ROAD FILE:45FRONT.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
47	48	1363.00	48	0	580.00			

TOTAL SYSTEM COST = 1943.00

III — 99

247

SR45 BASIN B FRONTAGE ROAD FILE:45FRONT.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	47 TO 48
MAXIMUM VELOCITY (GRADIENT FLOW)	5.54 FPS	48 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	47 TO 48
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	4.91 FPS	47 TO 48
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	47 TO 48
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-1.90 FT	47 TO 48
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.57 FT	48 TO 0
TOTAL DRAINAGE AREA	4.11 ACRES	
WEIGHTED COEFFICIENT	0.69	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -
NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -
NO PIPES

COMMENTS

III = 100

248

Henigar & Ray

made by: CLJ date: 5-18-94 job no. 21663
checked by: _____ date: _____ sheet no. 1 of 3

PROJECT: SR45

Frontage Road Crossdrain

Time of Concentration

$$T_c = t_1 + t_2 + t_3$$

t_1 = sheet flow
t_2 = EXIST. Ditch Flow
t_3 = Proposed Ditch Flow

Where;

$$t_1 = \frac{.938\, L^{.6} n^{.6}}{I^{.3}\, S^{.4}}$$

$L = 300$ ft
$n = .06$
$S = .2\% = .002'/_1$
$I = 5.00$ in/hr

$t_1 = 18.0$ min

t_2 = time of Flow in exist. ditch

$$= \frac{\text{Length}}{\text{Velocity}}$$

Assume depth of flow = 1.0 ft

$$= \frac{600\text{ft}}{.69\text{ft/Sec}} = 869.6\text{sec} = 14.49\text{ min}$$

t_3 = time of flow in proposed ditch

$$= \frac{430\text{ft}}{1.57\text{fps}} = 4.56\text{min}$$

Assume:
FSS = 6:1
BSS = 6:1
BW = 20'
Slope $= \frac{69.9 - 67.5}{430'} = \frac{2.4}{430} = .006'/_1$

(III-101)

$t_c = 18 + 14.5 + 4.5$

$t_c = 37.0$ min

A-250

t_2 283

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: dmfront

Comment: EXIST. DITCH AT FRONTAGE ROAD

Solve For Discharge

Given Input Data:

Left Side Slope..	8.00:1 (H:V)
Right Side Slope.	6.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0020 ft/ft
Depth.....	1.00 ft

Computed Results:

Discharge.....	4.85 cfs
Velocity.....	0.69 fps
Flow Area.....	7.00 sf
Flow Top Width...	14.00 ft
Wetted Perimeter.	14.15 ft
Critical Depth...	0.50 ft
Critical Slope...	0.0847 ft/ft
Froude Number....	0.17 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

250

III - 102

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: dmfront

Comment: PROPOSED DITCH AT FRONTAGE ROAD (Estimated slope values) 5-18-94

Solve For Discharge

Given Input Data:

Left Side Slope..	6.00:1 (H:V)
Right Side Slope.	6.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0060 ft/ft
Depth.....	1.50 ft

Computed Results:

Discharge.....	21.18 cfs
Velocity.....	1.57 fps
Flow Area.....	13.50 sf
Flow Top Width...	18.00 ft
Wetted Perimeter.	18.25 ft
Critical Depth...	0.95 ft
Critical Slope...	0.0685 ft/ft
Froude Number....	0.32 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
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Henigar & Ray

PROJECT: SR45

made by: CLJ date: 5-18-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Frontage Road Areas

Inlet	Grass	Impervious
B-47	111,842 (2.57Ac)	50,941 (1.17Ac)
B-48	2188.68 (.05Ac)	13,861.6 (.32Ac)

Soils: Hydrologic Soils Group "C"

CN grass = 79 "C = .54

CN pavement = 98 C = .95

252

III-104

A-253

WEIGHTED CURVE NUMBER CONVERSION TO "C" COEFFICIENT

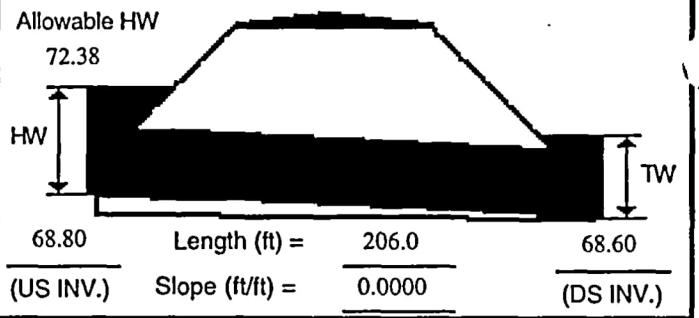
DATE : 16-May-94

BASIN ID	CURVE NUMBER	RATIONAL COEFF C	POTENTIAL MAXIMUM RETENTION S, IN	RAINFALL P, IN	RUNOFF Q, IN
FRONTAGE	79.00	0.54	2.6582	4.72	2.56220
ROAD	98.00	0.95	0.2041	4.72	4.48363

Job Description: SR45 Station: 1294+50 (B-101) Designed By: GEG

HYDROLOGIC AND CHANNEL INFORMATION

Calc.	Flow	Tailwater	n-value
☒ 10y	3.18	1.43	0.0120
☒ 25y	3.65	1.51	0.0120
☐	0.00	0.00	0.0120
☐	0.00	0.00	0.0120



Culvert Descrip.	Q cfs	Size	Inlet Cont. HW/D	Inlet Cont. HW	Outlet Control HW = H + ho - LSo: Ke	H	Dc	TW	ho	LS	HW	Req. HW	Velocity Out	HW Elev.	TW Elev.
10yr Projecting	3.18	18	0.64	0.96	0.20	0.14	0.68	1.43	1.43	0.20	1.37	1.37	1.83	70.17	70.03
25yr Projecting	3.65	18	0.69	1.04	0.20	0.29	0.73	1.51	1.51	0.20	1.60	1.60	2.07	70.40	70.11

254

III-10C

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR 45 SD @ 1294+50 (B-101)
DALE MABRY

Comment: 10 YR

Solve For Depth

Given Input Data:

Left Side Slope..	3.00:1 (H:V)
Right Side Slope.	3.00:1 (H:V)
Manning's n.....	0.070
Channel Slope....	0.0010 ft/ft
Discharge.....	3.20 cfs

Computed Results:

Depth.....	1.43 ft ← TW
Velocity.....	0.52 fps
Flow Area.....	6.16 sf
Flow Top Width...	8.60 ft
Wetted Perimeter.	9.07 ft
Critical Depth...	0.59 ft
Critical Slope...	0.1152 ft/ft
Froude Number....	0.11 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

III-107

Triangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: sr45 CD @ 12541+50 DALE MABRY (B-101)

Comment: 25YR

Solve For Depth

Given Input Data:

Left Side Slope..	3.00:1 (H:V)
Right Side Slope.	3.00:1 (H:V)
Manning's n.....	0.070
Channel Slope....	0.0010 ft/ft
Discharge.....	3.65 cfs

Computed Results:

Depth.....	1.51 ft ← TW
Velocity.....	0.54 fps
Flow Area.....	6.80 sf
Flow Top Width...	9.04 ft
Wetted Perimeter.	9.52 ft
Critical Depth...	0.62 ft
Critical Slope...	0.1132 ft/ft
Froude Number....	0.11 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
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III-108
256

Berryman & Henigar
BSI Consultants, Inc. • Henigar & Ray, Inc.

PROJECT: SR45

made by: GG date: 8/9/95 job no. _____
checked by: _____ date: _____ sheet no. _____

SIDE DRAIN @ DALE MABRY HWY.
STA 1294+50 (B-101)

$Q = CIA$

A = GRASS = 1.30 AC.
PAVEMENT = .11 AC

C = .95 FOR PAV'T
.25 FOR GRASS

I = 10 YR STORM = 7.4 IN/HR FOR 10 MIN.
25YR STORM = 8.5 IN/HR FOR 10 MIN

$Q_{10} = ((1.30 \times .25) + (.11 \times .95))(7.4) = 3.18$ C.F.S.

$Q_{25} = ((1.30 \times .25) + (.11 \times .95))(8.5) = 3.65$ C.F.S.

257

III-109

Worksheet 3: Time of concentration (T_c) or travel time (T_t)

Project SR 45 By GG Date 5/9/95

Location DALE MABRY HWY. (B-101) Checked ____ Date ____

Circle one: Present (Developed)

Circle one: T_c T_t ~~through~~ subarea

STA 1294+50

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

		Segment ID		
Sheet flow (Applicable to T_c only)				
1. Surface description (table 3-1)				
2. Manning's roughness coeff., n (table 3-1) ..				
3. Flow length, L (total L ≤ 300 ft)	ft			
4. Two-yr 24-hr rainfall, P_2	in			
5. Land slope, s	ft/ft			
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t	hr		+	=
Shallow concentrated flow		Segment ID		
7. Surface description (paved or unpaved)		UNPAVED		71.5 TO 68.7
8. Flow length, L	ft	600		
9. Watercourse slope, s	ft/ft	.005		
10. Average velocity, V (figure 3-1)	ft/s	1.15		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr	.14	+	=
Channel flow		Segment ID		
12. Cross sectional flow area, a	ft^2			
13. Wetted perimeter, p_w	ft			
14. Hydraulic radius, $r = \frac{a}{p_w}$ Compute r	ft			
15. Channel slope, s	ft/ft			
16. Manning's roughness coeff., n				
17. $V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V	ft/s			
18. Flow length, L	ft			
19. $T_t = \frac{L}{3600\ V}$ Compute T_t	hr		+	=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr			.14

USE 10 MIN. AS MINIMUM.

SYSTEM C

QUASI - EQUIVALENT TREATMENT CALCULATIONS

Berryman & Henigar
BSI Consultants, Inc. • Henigar & Ray, Inc.

PROJECT: SR 45 RASINS

made by: TM date: _____ job no. 56103
checked by: _____ date: _____ sheet no. 1/1

QUASI - EQUIVALENT TREATMENT FOR SR 54

PRE-DEVELOPMENT IMPERVIOUS AREA WITHIN PROJECT LIMITS WEST OF SR 45 ON SR 54 THAT DISCHARGES TO THE EXISTING DOUBLE 8'x3' BOX CULVERT @ STA 1034+50 (SR 54) IS 1.73 AC.

POST-DEVELOPMENT IMPERVIOUS AREA DISCHARGING TO THE BOX CULVERT IS 1.72 AC.

CONCLUSION: SINCE THE POST-DEVELOPMENT AREA DISCHARGING TO THE CULVERT IS LESS THAN THE PRE-DEVELOPMENT AREA, WATER QUALITY REQUIREMENTS ARE MET.

D-1

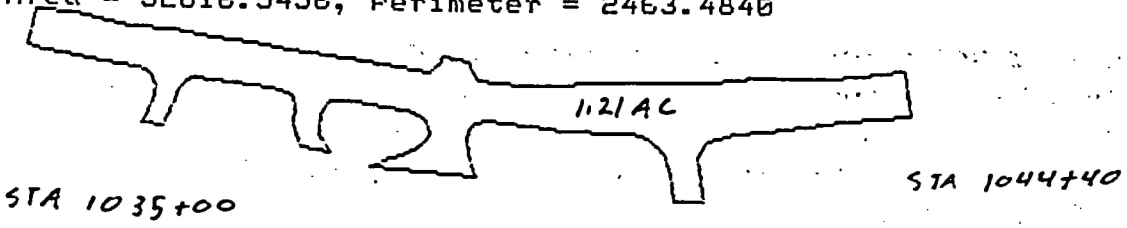
SR 45 BASIN C

8/29/95

SR 54 WEST — TOTAL pre condition PAVEMENT DRAINING TO BOX CULVERT FROM HIGHPOINT CRR) TO LIMITS of CONSTRUCTION (1027+75).

1/2

Area = 52616.5456, Perimeter = 2463.4840



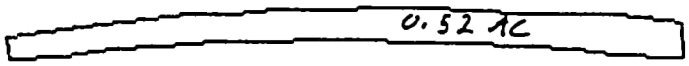
N

1" = 200'

Command:
Area = 22853.2286, Perimeter = 1466.0159

Command: prplot

What to plot -- Display, Extents, Limits, View or Window (W):



TOTAL pre-condition PAVEMENT DRAINING TO BOX CULVERT = 1.73 AC

262 IV-2

8/29/95

2/2

SR 45 BASIN C

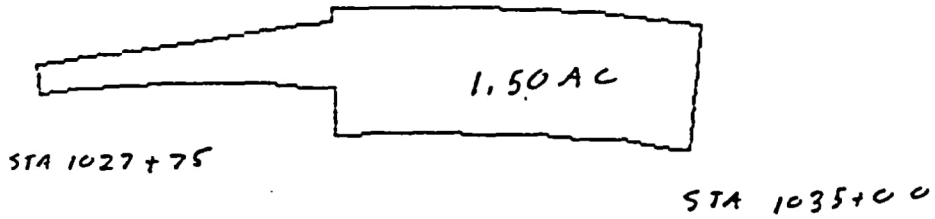
SR 54 west - Post condition pavement draining to Box culvert.

N

1" = 200'

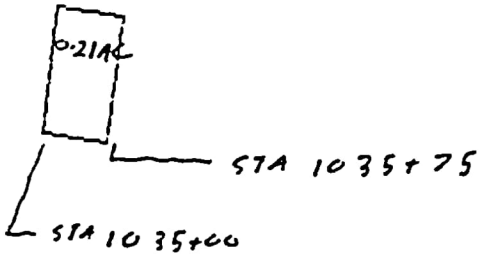
Area = 65441.9077, Perimeter = 1630.4704

Command:



Area = 9362.0950, Perimeter = 408.2210

Command:



TOTAL post condition pavement draining to Box culvert = 1.72 AC

SYSTEM C

HYDROLOGY

Henigar & Ray

PROJECT: US 41 / SR 45

made by: LRD date: 4/16/94 job no. _____
checked by: _____ date: _____ sheet no. _____

Pond C

PRE-DEVELOPMENT Hydrology summary

Pre Development CN - Calculations

Overall Tally Sheet

		CN	26	27	28	29	40	Totals
Open Fair	Type C	(79)	4156	0	110322	51281	0	165,759
Open Fair	Type D	(84)	14138	105690	0	0	0	119828
Commercial	Type C	(94)	10759	0	23052	44379	0	78,190
Commercial	Type D	(95)	54898	18427	266414*	0	0	339739*
Dense Trees	Type D	(79)	9667	0	0	0	0	9667
Open Good	Type D	(80)	0	13558	60705*	0	12561	86824*
Open Good	Type C	(74)	0	0	22066	70020	0	92086
¼ Ac Res.	Type C	(83)	0	0	9842	0	0	9842
½ Ac Res	Type C	(80)	0	0	42,616	0	0	42616
IMPERVIOUS			36266	123241	63014	28319	25104	275944

	SF	Ac	CN	A x CN
Open Fair Type C	165759	3.805	79	300.619
Open Fair Type D	119828	2.751	84	231.073
Commercial Type C	78190	1.795	94	168.730
Commercial Type D	339739*	7.799*	95	740.937*
Dense Trees Type D	9667	0.222	79	17.532
Open Good Type D	86824*	1.993*	80	159.456*
Open Good Type C	92086	2.114	74	156.436
¼ Ac Res Type C	9842	0.226	83	18.753
½ Ac Res Type C	42616	0.978	80	78.266
Impervious CN = 98	276848	6.356	98	622.844
	1221399	28.039		2494.646

1220495
* + 904
1221399

Overall Watershed

WEIGHTED CN = 88.969

Total Watershed 129884 + 260916 + 629251 + 193995 + 37665 = 1,251,715
+904
+ 904 *
1252619
- 31220
1,221,399 sf

* Take out commercial Bldg drains to Carson Dr. 265

IV-4

Henigar & Ray

PROJECT: SR 45 BASIN C

made by: JWM date: 4/20/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/3

BASIN C

PRE-DEVELOPMENT TIMES OF CONCENTRATION

$t_c = t_1 + t_2 + t_3 + t_4$ (eqn 1)

WHERE: t_1 = SHEET FLOW TRAVEL TIME
t_2 = SHALLOW CONCENTRATED FLOW TRAVEL TIME
t_3 = OPEN CHANNEL FLOW TRAVEL TIME
t_4 = CULVERT FLOW TRAVEL TIME

t_1:

≈STA 9010
420' RT

$$t = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$ (REF FDOT DRAINAGE MANUAL 2A)

WHERE t = OVERLAND FLOW TRAVEL TIME (min)
L = 300 ft
n = MANNINGS OVERLAND FLOW ROUGHNESS COEF. = 0.20
I = RAINFALL INTENSITY (in/hr)
S = SLOPE = .0053

FROM FDOT IDF CURVE ZONE 6, 25 YR EVENT
I = 5.7 in/hr

⇒ $\boxed{t_1 = 26.27 \text{ min}}$

t_2:

≈STA 9010
120' RT

FROM SCS' TR55 APPENDIX A

$$t = \frac{L}{16.1345\, S^{1/2}(60)}$$ (UNPAVED)

WHERE t = TRAVEL TIME (min)
L = 65 ft
S = SLOPE = 0.0053 ft/ft

t_{2A} = 0.92 min

STA 9910 TO 7810

L = 1,100 ft
S = (73.75 − 73.35)/1100 = .0004 ft/ft

⇒ t_{2B} = 56.81 min

$t_2 = t_{2A} + t_{2B} = .92 + 56.81 = 57.73$ min

$\boxed{t_2 = 57.73 \text{ min}}$

BASIN C

PRE-DEVELOPMENT TIMES OF CONCENTRATION CONT.

t_3:

SEE ACCOMPANYING COMPUTER OUTPUT FOR VELOCITES.

STA 78 TO 76+69.6 LT $\quad t_{3A} = \dfrac{130.4 \text{ ft}}{2.81 \frac{\text{ft}}{\text{s}} (60 \text{ sec/min})} = 0.77 \text{ min}$

STA 74+33 TO 68+10.8 LT

$$t_{3B} = \frac{622.2'}{2.27(60)} = 4.57 \text{ min}$$

STA 66+0 TO 67+0 LT

$$t_{3C} = \frac{100'}{.91(60)} = 1.83 \text{ min}$$

$$t_3 = t_{3A} + t_{3B} + t_{3C} = .77 + 4.57 + 1.83$$

$$\boxed{t_3 = 7.17 \text{ min}}$$

t_4:

CULV under SR 54 LT — SEE Accompanying computer output for velocity

$$t_{4A} = \frac{230'}{3.02(60)} = 1.27 \text{ min}$$

CULV @ STA 90+0 — Assume $V = 4'/s$

$$t_{4B} = 70/4(60) = 0.29 \text{ min}$$

CULV under RR STA 67+20

$$t_{4C} = 70/4(60) = 0.29 \text{ min}$$

$$t_4 = t_{4A} + t_{4B} + t_{4C} = 1.27 + .29 + .29$$

$$\boxed{t_4 = 1.85 \text{ min}}$$

BASIN C

PRE-DEVELOPMENT TIMES OF CONCENTRATION cont.

From eqn 1 :

$$t_c = t_1 + t_2 + t_3 + t_4$$

$$t_c = 26.27 + 57.73 + 7.17 + 1.85 \text{ min}$$

PRE-DEVELOPMENT BASIN C
$t_c = 93.02$ min

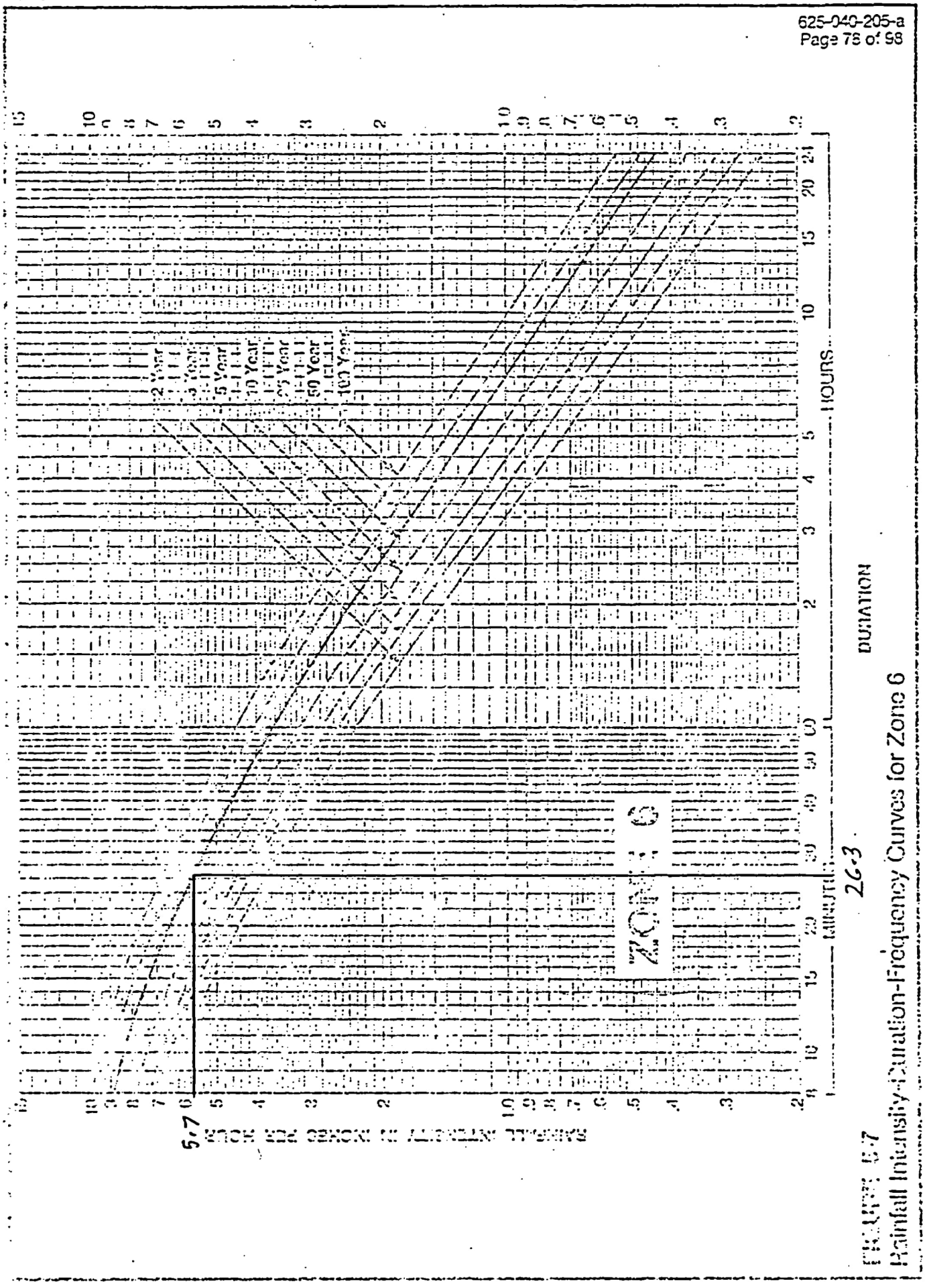


FIGURE 5.7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

SR 45
BASIN C
PRE-DEVELOPMENT
open channel flow velocities for Tc.

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: BASIN C CHANNEL FLOW

Comment: STA 78+0 TO 76+69.6 LEFT L = 130.4'

Solve For Discharge

Given Input Data:

Bottom Width.....	1.00 ft
Left Side Slope..	3.33:1 (H:V)
Right Side Slope.	2.50:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0232 ft/ft
Depth.....	1.20 ft

Computed Results:

Discharge.....	15.16 cfs
Velocity.....	2.81 fps ←
Flow Area.....	5.40 sf
Flow Top Width...	8.00 ft
Wetted Perimeter.	8.40 ft
Critical Depth...	0.95 ft
Critical Slope...	0.0683 ft/ft
Froude Number....	0.60 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
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Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: BASIN C CHANNEL FLOW

Comment: STA 74+33 TO 68+10.8 LEFT L = 622.2'

Solve For Discharge

Given Input Data:

Bottom Width.....	5.00 ft
Left Side Slope..	3.25:1 (H:V)
Right Side Slope.	3.20:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0057 ft/ft
Depth.....	2.20 ft

Computed Results:

Discharge.....	60.48 cfs
Velocity.....	2.27 fps ←
Flow Area.....	26.61 sf
Flow Top Width...	19.19 ft
Wetted Perimeter.	19.86 ft
Critical Depth...	1.26 ft
Critical Slope...	0.0571 ft/ft
Froude Number....	0.34 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: BASIN C CHANNEL FLOW

Comment: STA 68+0 TO 67+0 LEFT L = 100'

Solve For Discharge

Given Input Data:

Bottom Width.....	6.00 ft
Left Side Slope..	2.90:1 (H:V)
Right Side Slope.	5.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0010 ft/ft
Depth.....	2.00 ft

Computed Results:

Discharge.....	25.19 cfs
Velocity.....	0.91 fps ←
Flow Area.....	27.80 sf
Flow Top Width...	21.80 ft
Wetted Perimeter.	22.33 ft
Critical Depth...	0.70 ft
Critical Slope...	0.0663 ft/ft
Froude Number....	0.14 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

SR 45
BASIN C
PRE-DEVELOPMENT
CULVERT channel Flow velocity

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: CULVERT under SR 54 LT

Comment: PRE DEV SR 54 SIDE DRAIN VELOCITY FOR Tc

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	2.00 ft
Slope.....	0.0015 ft/ft
Manning's n.....	0.012
Discharge.....	9.49 cfs

Computed Results:

Full Flow Capacity.....	9.49 cfs
Full Flow Depth.....	2.00 ft
Velocity.....	3.02 fps ←
Flow Area.....	3.14 sf
Critical Depth....	1.10 ft
Critical Slope....	0.0044 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	9.49 cfs
QMAX @.94D.....	10.21 cfs
Froude Number.....	FULL

PIPE Length = 230'

$$\frac{230\ ft}{3.02\ ft/s} * \frac{1\ min}{60\ s} = 1.27\ min$$

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. ♦ 37 Brookside Rd ♦ Waterbury, Ct 06708

SR 45 (US 41) BASIN C

Pre-WATERSHED contributing TO BASIN C EAST OF R/W

1 Area = 113491.2722, Perimeter = 1383.5639 — 2.61 Ac @ CN = 87

2 Command:
Area = 31598.1984, Perimeter = 786.9119 — 0.73 Ac @ CN = 79

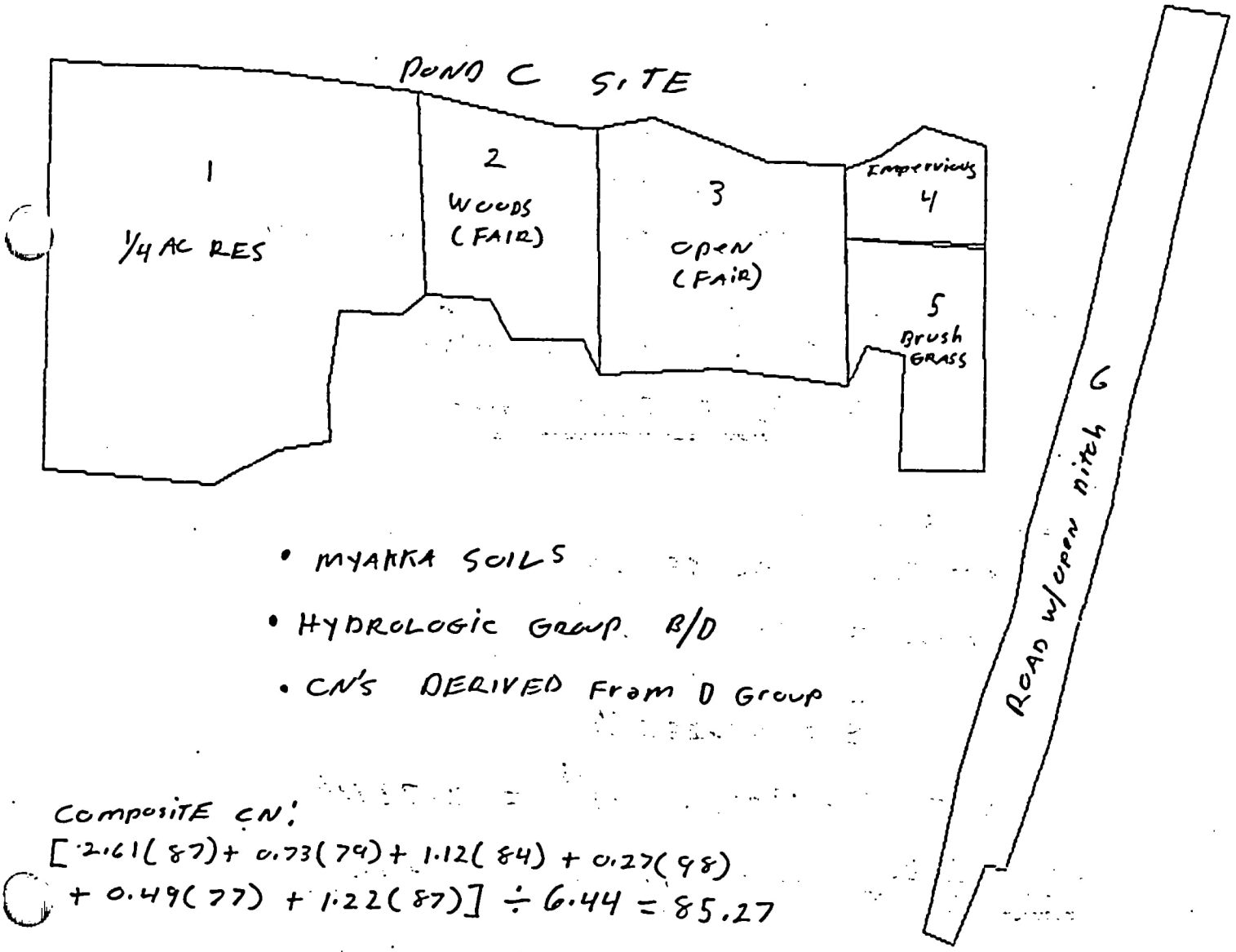
3 Command:
Area = 48661.1996, Perimeter = 900.2719 — 1.12 Ac @ CN = 84

4 Command:
Area = 11679.4260, Perimeter = 428.5211 — 0.27 Ac @ CN = 98

5 Command:
Area = 21305.8932, Perimeter = 734.4260 — 0.49 Ac @ CN = 77

6 Command:
Area = 53210.9867, Perimeter = 1875.0553 — 1.22 Ac @ CN = 87

6.44 Ac



- MYAKKA SOILS
- HYDROLOGIC GROUP B/D
- CN's DERIVED From D Group

Composite CN:

$[2.61(87) + 0.73(79) + 1.12(84) + 0.27(98) + 0.49(77) + 1.22(87)] \div 6.44 = 85.27$

Pre WS TO BASIN C EAST = 6.44 AC @ CN = 85.27

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: JWM date: 9/22/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/2

DETERMINATION OF PRE-DEVELOPMENT t_c FOR BASIN C EAST SIDE OF R/W

$t_c = t_1 + t_2$ WHERE:

t_1 = OVERLAND FLOW

t_2 = RILL FLOW

FROM THE RAGEN KINEMATIC WAVE EQ. (FDOT DRAINAGE MAN.

$$t_1 = \frac{0.938\ L^{.6}\ n^{.6}}{I^{.4}\ S^{.3}}$$ WHERE;

L = 300 ft

n = 0.15

S = 0.0033 ft/ft

I = RAINFALL INTENSITY in/hr

FROM FIGURE 5-7 FDOT DRAINAGE MANUAL
CHOOSE I = 5.9 in/hr

$\Rightarrow$ t_1 = 25.13 min

t_2: RILL FLOW

FROM SCS'S TR 55 APPENDIX F

$V_{UNPAVED} = 16.1345(S)^{.5}$

L = 105'

S = 0.0286 ft/ft

$V = 16.1345(.0286)^{.5} = 2.73$ ft/s

$t_2 = \frac{105'}{2.73 \text{ ft/s}} \div 60 \text{ min} = 0.64$ min

$t_c = t_1 + t_2 = 25.13 + 0.64 = 25.8$ min

PRE BASIN C EAST t_c = 25.8 min

IV-14

2/2

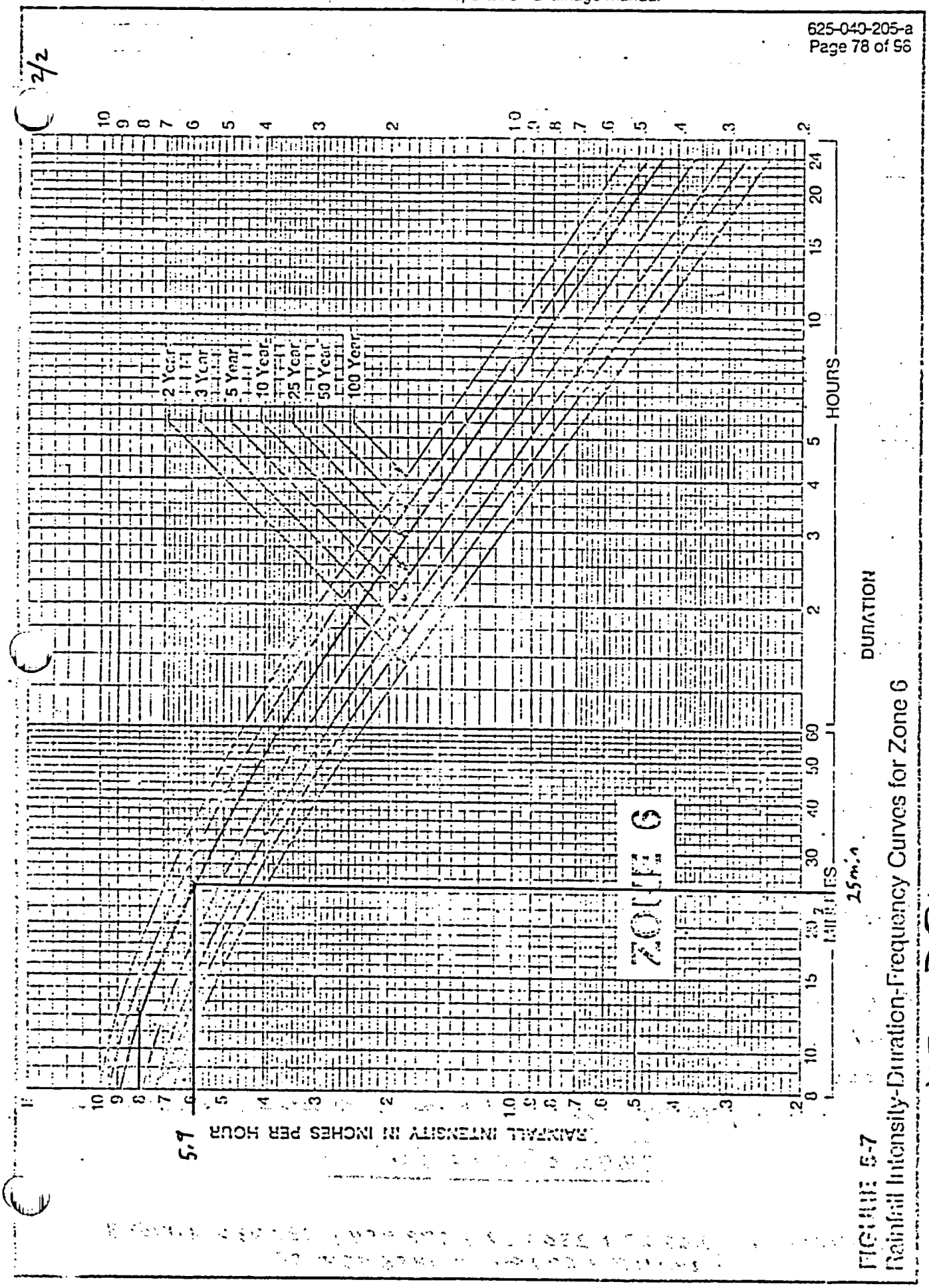


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

SR 45: PRE-CONDITION
POND C-EAST

Henigar & Ray

PROJECT: US 41 / SR 45

made by: LRP date: 4/16/96 job no. _____
checked by: _____ date: _____ sheet no. _____

Pond C POST DEVELOPMENT HYDROLOGY SUMMARY

Post Development CN Calculation

Overall Tally Sheet

	26	27	28	29	39	40	41
Open Fair Type D	0	0	0	0	0	0	0
Median	2084	14049	9973	4268	7675	16496	1782
Commercial Type D	0	18505	240,443	0	39104	106934	22465
Open Good Type D	0	4260	38435*	0	15678	0	0
Open Good Type C	0	0	16174	48909	0	0	0
Commercial Type C	0	0	18493	28674	0	14111	0
¼ Ac Residential	0	0	9766	0	0	0	0
½ Ac Residential	0	0	35653	0	0	0	0
Open Fair Type C	0	0	93767	45091	0	0	0
Industrial Type D	0	0	0	0	0	37932	0
IMPERVIOUS	24639	193273	136230	55986	55226	64695	36042

SR 54 REVISION 6/29/95

	TOTALS	Ac	CN	
Median	56,327	1.293	79	* SEE ADDENDUM NEXT SHEET
Commercial Type D	427,451	9.813	95	
Open Good Type D	58,373	1.340	80	-0.63 AC @ CN = 80
Open Good Type C	65083	1.494	74	
Commercial Type C	61278	1.407	94	
¼ Ac Residential-C	9766	0.224	83	
½ Ac Residential-C	35653	0.818	80	
Open Fair Type C	138,858	3.188	79	
Industrial Type D	37932	0.871	93	
Impervious	566113	12.996	98	+2.09 AC @ CN=98
	1,456834	33.441		* + 1.46 AC ⇒ TOTAL A = 34.90 AC

34.90 AC @ CN = 92.53

Total Watershed 26723 + 230087 + 598954 + 182930 + 117683 + 240108 + 60289 = 1456834 SF

Railroad Ditch Area = 33,375 SF = 0.766 Ac

Berryman & Henigar
BSI Consultants, Inc. • Henigar & Ray, Inc.

PROJECT: SR 45 BASIN C

made by: TM date: 8/29/95 job no. 56103
checked by: _____ date: _____ sheet no. 1/

* ADDENDUM TO SR 54 HYDROLOGY

DUE TO FDOT'S REQUESTED DESIGN CHANGE FOR SR 54, THE FOLLOWING REVISIONS TO THE HYDROLOGY ARE PRESENTED.

SR 54 WEST of SR 45

RUNOFF FROM THE INTERSECTION of SR 45 & SR 54 TO STA 1038+25 WILL BE COLLECTED AND CONVEYED TO STORMWATER POND C VIA FDOT STORMSEWER.

- ADDITION of 1,730 Lf of 6' SIDEWALK WITHIN FORMERLY GREEN AREA

  0.24 AC @ CN = 98

- REDUCE OPEN GOOD TYPE D by corresponing 0.24 AC.

- ADDITION of 870 Lf OF 28' PAVEMENT

  0.56 AC @ CN = 98

SR 54 EAST of SR 45

RUNOFF FROM THE INTERSECTION of SR 45 & SR 54 TO STA 45+00 WILL BE COLLECTED AND CONVEYED TO STORMWATER POND C VIA FDOT STORMSEWER.

- ADDITION of 2 800 Lf of 6' SIDEWALK WITHIN FORMERLY GREEN AREA

  0.39 AC @ CN = 98

- REDUCE OPEN GOOD TYPE D by corresponding 0.39 AC

- ADDITION of 1 400 Lf of 28' PAVEMENT

  0.90 AC @ CN = 98

* ADD : 0.63 AC IMPERVIOUS, CN = 98 FOR SIDEWALK
* REDUCE 0.63 AC, OPEN GOOD TYPE D FOR SIDEWALK
* ADD 1.46 AC IMPERVIOUS FOR INCREASED PAVEMENT WIDTH OF 28'.

Henigar & Ray

PROJECT: SR 45 BASIN C

made by: TWM date: 5/2/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN C

POST DEVELOPMENT TIMES OF CONCENTRATION

TO POND $t_c = t_1 + t_2$ (eqn 1)

WHERE: t_1 = SHEET FLOW TRAVEL TIME
t_2 = STORM SEWER TRAVEL TIME

STA 89+00 RT (structure C-44)

$$t_1 = \frac{0.938 L^{.6} n^{.6}}{I^{.4} S^{.3}}$$ (FDOT DRAINAGE MANUAL)

WHERE: t_1 = OVERLAND FLOW TRAVEL TIME (min)
L = 300 ft
n = MANNINGS OVERLAND FLOW ROUGHNESS COEF. = .2
I = RAINFALL INTENSITY (in/hr)
S = SLOPE = 0.0056 ft/ft

FROM FDOT IDF CURVE ZONE 6, 25 yr event
I = 5.7 in/hr

t_1 = 25.84 min ← controls

STA 87+00 RT (structure C-40)

$$t_1 = \frac{.938 (260)^{.6} (.2)^{.6}}{I^{.4} (.0048)^{.3}}$$

I = 6.00 in/hr

$\Rightarrow t_1$ = 24.33 min

t_1 = 25.84 min

FROM FDOT STORM SEWER program
t_2 = 10.24 min

FROM eqn 1 $t_c = t_1 + t_2 = 25.84 + 10.24$

POST t_c TO POND = 36.08

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A-280

Henigar & Ray

made by: TWM date: 4/20/94 job no. 21663
checked by: _____ date: _____ sheet no. 2/2

PROJECT: SR 45 BASIN C

BASIN C

POST DEVELOPMENT TIMES OF CONCENTRATION cont.

ON POND

t_c ON POND = 0

OFFSITE

AREA BETWEEN RR & ROAD FROM STA 75+00 (SR 54) TO 67+20 (RR CULV.)

$t = t_1 + t_2$ (eqn 1)

WHERE: t_1 = shallow concentrated flow travel time
t_2 = open channel flow travel time

t_1

STA 75+00 TO 74+00

$$t = \frac{L}{16.1345\ S^{1/2}(60)}$$

WHERE $L = 100'$
$S = 0.011$ ft/ft

$t_1 = 0.98$ min

t_2

t_{2a}: STA 74+0 TO 71+0

$$t_{2a} = \frac{300\ ft}{*\ 3.52\ ft/s\ (60\ sec/min)} = 1.42\ min$$

t_{2b}: STA 71+0 TO 68+0

$$t_{2b} = \frac{300}{*\ .49\ (60)} = 10.20\ min$$

t_{2c}: STA 68+0 TO 67+20

$$t_{2c} = \frac{80}{*\ .97\ (60)} = 1.37\ min$$

$t_2 = t_{2a} + t_{2b} + t_{2c} = 1.42 + 10.20 + 1.37 = 12.99$ min

FROM eqn 1 $t_c = t_1 + t_2 = 0.98 + 12.99 = 13.97$ min

POST OFFSITE C t_c = 13.97 min

* SEE ACCOMPANYING COMPUTER OUTPUT FOR VELOCITIES.

SR 45 BASIN C - POST-DEVELOPMENT

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: POST OFFSITE BASIN C

Comment: t2a: OPEN CHANNEL FLOW VEL. STA 74+0 to 71+0

Solve For Discharge

Given Input Data:

Bottom Width.....	7.00 ft
Left Side Slope..	4.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0140 ft/ft
Depth.....	2.00 ft

Computed Results:

Discharge.....	91.62 cfs
Velocity.....	3.52 fps ←
Flow Area.....	26.00 sf
Flow Top Width...	19.00 ft
Wetted Perimeter.	19.72 ft
Critical Depth...	1.42 ft
Critical Slope...	0.0543 ft/ft
Froude Number....	0.53 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. • 37 Brookside Rd • Waterbury, Ct 06708

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: POST OFFSITE BASIN C

Comment: t2b: OPEN CHANNEL FLOW VEL. STA 71+0 to 68+0

Solve For Discharge

Given Input Data:

Bottom Width.....	4.00 ft
Left Side Slope..	2.40:1 (H:V)
Right Side Slope.	2.40:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0003 ft/ft
Depth.....	2.00 ft

Computed Results:

Discharge.....	8.63 cfs
Velocity.....	0.49 fps ←
Flow Area.....	17.60 sf
Flow Top Width...	13.60 ft
Wetted Perimeter.	14.40 ft
Critical Depth...	0.47 ft
Critical Slope...	0.0749 ft/ft
Froude Number....	0.08 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. • 37 Brookside Rd • Waterbury, Ct 06708

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: POST OFFSITE BASIN C

Comment: t2c: OPEN CHANNEL FLOW VEL STA 68+0 to 67+20

Solve For Discharge

Given Input Data:

Bottom Width.....	2.50 ft
Left Side Slope..	3.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0013 ft/ft
Depth.....	2.00 ft

Computed Results:

Discharge.....	14.52 cfs
Velocity.....	0.97 fps ←
Flow Area.....	15.00 sf
Flow Top Width...	12.50 ft
Wetted Perimeter.	13.30 ft
Critical Depth...	0.78 ft
Critical Slope...	0.0686 ft/ft
Froude Number....	0.16 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

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PROJECT: SR 45 BASIN C

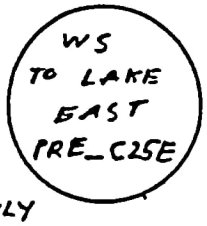
made by: TWM date: 9/27/94 job no. 2663
checked by: _____ date: _____ sheet no. 1/1

POND C DESIGN CALCULATIONS

PRE-DEVELOPMENT



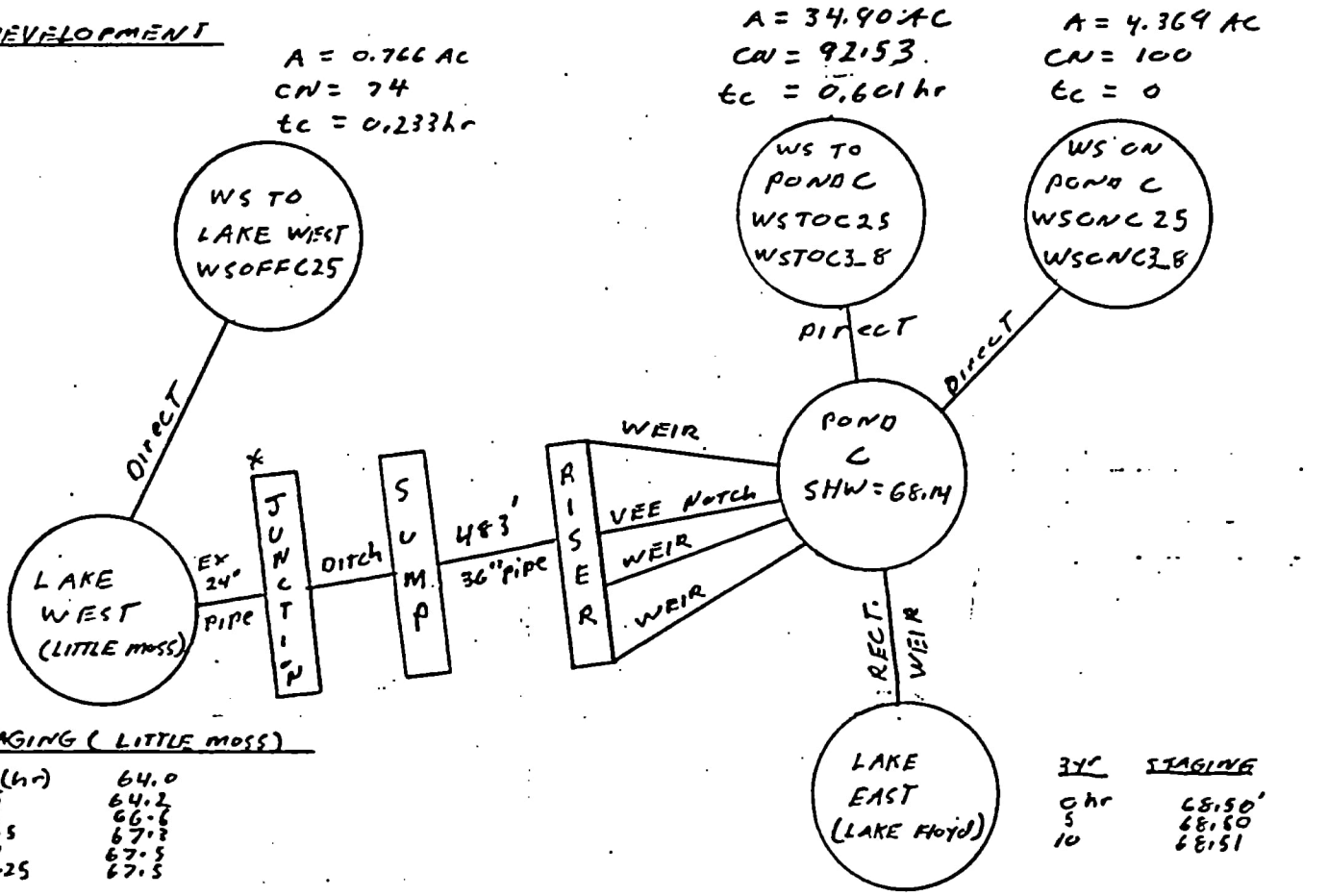
A = 28.04 AC
CN = 88.97
tc = 1.55 hr



A = 6.44 AC
CN = 85.27
tc = 0.43 hr

HYDROGRAPHS ONLY

POST-DEVELOPMENT



STAGING (LITTLE MOSS)

O(hr)	64.0
7.5	64.2
15	66.7
22.5	67.2
70	67.5
32.25	67.5

2yr	STAGING
0 hr	64.00'
8	65.6'

3yr	STAGING
0 hr	68.50'
5	68.80
10	68.51

STAGING (LAKE FLOYD)

O(hr)	68.5 FT
5	68.5
10	68.62
15	69.63
18	69.71
27	69.62
36	69.42

* This Junction LABLED AS CULVERT in the model

REQUIRED WATER QUALITY VOLUME
85,305 cf

III-24 285

A-286

Henigar & Ray

PROJECT: SR 45 BASIN C

made by: TWM date: 4/29/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN C WATER QUALITY VOLUME

PROJECT AREA = 17.39 AC
OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREA = 7.57 AC
24.96 AC

WATER QUALITY VOLUME COMPUTED FROM 1" OF RUNOFF FROM PROJECT AREA AND ALL OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREAS.

$$1\,in * \frac{1\,ft}{12\,in} * 24.96\,AC * \frac{43560.17\,ft^2}{1\,AC} = 90\,605\,cf$$

REQUIRED WATER QUALITY VOLUME = 90 605 cf = 2.08 AC.ft

SR 45 POND C

INPUT FOR WATER QUALITY VOLUME STAGE

Window 0,0 - 24,79

PROJECT C_STAGE; POND C (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
71.6	190313.64	-1e+06	604151.31
68.14 SHW	158906.88	-1e+06	0.0

INSIDE TOB

TOP EL...	71.6 ←	TOP AREA.	4.369
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	68.14 (SHW)	BOT AREA.	3.648
TOP LF...	Optional	SIDE %PER	Optional
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.→	71.6
X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 POND C

STAGE @ REQUIRED WATER QUALITY VOLUME

BRN 3.2 Project TV_VOL
Node 0, POND C, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	71.600	← INSIDE TOB 0.0	0.0	604151.0	
0.10	71.527	0.0	12821.6	591330.0	
0.20	71.454	0.0	25504.8	578646.0	
0.30	71.382	0.0	38051.1	566100.0	
0.40	71.311	0.0	50459.9	553691.0	
0.50	71.241	0.0	62730.5	541421.0	
0.60	71.171	0.0	74863.7	529288.0	
0.70	71.103	0.0	86859.9	517291.0	
0.80	71.035	0.0	98717.9	505433.0	
0.90	70.968	0.0	110438.0	493713.0	
1.00	70.901	0.0	122022.0	482130.0	
5.90	68.661	0.0	513263.0	90888.4	REQ'D WATER QUALITY VOLUME
6.00	68.641 ←	0.0	516669.0	87482.2	← 90 605 cf
23.00	68.146	0.0	603170.0	981.3	
23.10	68.146	0.0	603196.0	955.8	
23.20	68.145	0.0	603220.0	930.9	
23.30	68.145	0.0	603245.0	906.8	
23.40	68.145	0.0	603268.0	883.1	
23.50	68.145	0.0	603291.0	860.1	
23.60	68.145	0.0	603314.0	837.7	
23.70	68.145	0.0	603336.0	815.8	
23.80	68.145	0.0	603357.0	794.5	
23.90	68.145	0.0	603378.0	773.7	
24.00	68.144	0.0	603398.0	753.4	

- REQUIRED WATER QUALITY VOLUME = 90 605 cf
- → USE STAGE 68.7 FOR WATER QUALITY VOLUME CONTAINMENT (OVERFLOW ELEVATION).
- PROVIDED WATER QUALITY VOLUME = 97,782 cf

SR 45 POND C

INPUT FOR 3C/60 hr BLEED DOWN CRITERIA

Window 0,0 - 24,79

PROJECT CAD; POND C (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF				
171.6	190313.64	-1e+06	604151.31	TOP EL...	71.6 INSIDE TOB	TOP AREA.	4.369
168.14 SHW	158906.88	-1e+06	0.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	68.14 SHW	BOT AREA.	3.648
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
						OVERFLOW EL →	
				BASE CFS.	0.0	STAGE TO.	68.7
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 BASIN C

POND C DRAW DOWN model

Report on Paths of Project CAD.

Path..... 000, VEE NOTCH
Upper Node 000, POND C
Lower Node 001, STAGING

CREST EL	→68.140	INPUT ID	809879678
ANGLE...	→85.000	T0 CFS..	0.52
		T0 CF...	0.00
HEIGHT..	→0.560	MAX IN..	0.52
		MIN IN..	0.10
		MAX OUT.	0.52
		MIN OUT.	0.10
UP PE/KE	YES	FWD K...	0.00
DN PE/KE	YES	REV K...	0.00
MAX HW..	71.600	FWD X...	0.00
MAX TW..	71.600	REV X...	0.00

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SR 45 BASIN C

POND C DRAW DOWN Model

Report on Nodes of Project CAD.

Node..... 000, POND					
TOP EL...	71.600	TOP AREA.	4.369	INPUT ID.....	809879691
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	→ 68.70
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	→97781.30
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	68.70
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.41
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	97781.30
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	
EL.....		AREA.....		FINAL STAGE ELEVATION.....	68.41
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.00
BOT EL...	68.140	BOT AREA.	3.648	TIME OF MINIMUM STAGE, HOURS.	60.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.00
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.52
				TIME OF PEAK OUTPUT, HOURS...	0.00
BASE CFS.	0.000	STAGE T0.	→68.700	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, STAGING					
FLOOD EL.	71.600	PE TO KE.	YES	INPUT ID.....	790898168
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	68.14
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	68.14
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	68.14
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.14
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.52
				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.140	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

SR 45 POND C

36/60 hr ARTIFICIAL BLEED DOWN CRITERIA

BRN 3.2 Project CAD
Node 0, POND C, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage
0.00	68.700	0.0	0.0	97781.3
0.10	68.699	0.0	187.7	97593.6
0.20	68.698	0.0	374.7	97406.6
0.30	68.697	0.0	561.0	97220.3
0.40	68.696	0.0	746.5	97034.8
0.50	68.695	0.0	931.3	96850.1
0.60	68.694	0.0	1115.3	96666.0
0.70	68.693	0.0	1298.6	96482.7
0.80	68.692	0.0	1481.1	96300.2
0.90	68.691	0.0	1663.0	96118.4
1.00	68.689	0.0	1844.0	95937.3
36.00 ←	68.475 ← 68.48	0.0	39288.5	58492.8
59.00	68.409	0.0	50821.2	46960.1
59.10	68.409	0.0	50858.6	46922.7
59.20	68.409	0.0	50895.9	46885.5
59.30	68.408	0.0	50933.0	46848.3
59.40	68.408	0.0	50970.1	46811.2
59.50	68.408	0.0	51007.1	46774.2
59.60	68.408	0.0	51044.0	46737.3
59.70	68.408	0.0	51080.8	46700.5
59.80	68.407	0.0	51117.6	46663.8
59.90	68.407	0.0	51154.2	46627.1
60.00	68.407	0.0	51190.7	46590.6 ←

- 1/2 REQUIRED WATER QUALITY VOLUME = 45 303 cf
- VOLUME REMAINING @ hour 60 = 46 591 cf

⇒ compliance

- BEGIN ATTENUATION @ STAGE 68.48

Henigar & Ray

PROJECT: SR 45 BASIN C

made by: TWM date: 5/2/94 job no. 2163
checked by: _____ date: _____ sheet no. 1/1

BASIN C POST DEVELOPMENT 25yr -24hr RATIONAL C

CONVERSION OF COMPOSITE CN TO RATIONAL C
(25yr-24hr) FOR PERMANENT WET POOL DESIGN

COMPOSITE CN = 92.53
25yr-24hr STORM PRECIPITATION P = 9.00 in

FROM SCS' TR 55

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - .2S)^2}{(P + .8S)}$$

WHERE: Q = RUNOFF (in)
P = RAINFALL = 9.00 in
S = RETENTION AFTER RUNOFF begins (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{92.53} - 10 = 0.8073 \text{ in}$$

$$Q = \frac{[9.0 - .2(.8073)]^2}{(9.0 + .8(.8073))} = 8.10 \text{ in}$$

$$C = \frac{8.10 \text{ in}}{9.00 \text{ in}} = 0.90$$

BASIN C WET POOL DESIGN C = 0.90

Henigar & Ray

PROJECT: SR 45 BASIN C

made by: TWM date: 4/29/94 job no. 2166 3
checked by: _____ date: _____ sheet no. 1/1

REQUIRED PERMANENT WET POOL VOLUME.

WS TO POND C = 34.90 Ac @ *C = 0.90
WS ON POND C = 4.369 Ac @ C = 1.00

COMPOSITE C = $\frac{34.90(.90) + 4.369(1.00)}{(34.90 + 4.369)}$

= 0.91

14 DAY RESIDENCE TIME VOLUME
= 0.2968 * C * WS AREA
= 0.2968 * 0.91 * (34.90+4.369) = 10.61 Ac.ft

MINIMUM PERMANENT WET POOL VOLUME
= 0.667 in * $\frac{1 ft}{12 in}$ * (34.90+4.369)Ac = 2.18 Ac.ft

10.61 Ac.ft controls

REQUIRED PERMANENT WET POOL VOLUME = 10.61 Ac.ft

* SEE previous sheet

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SR 45 BASIN C

POND C PROVIDED WET POOL Volume

Window 0,0 - 24,79

PROJECT CWETVOL; POND C (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF					
168.14 SHW	158906.88	-1e+06	474228.62	TOP EL...	68.14 SHW	TOP AREA.	3.648
165.13	77667.48	-1e+06	118183.96	EL.....	65.13	AREA.....	1.783
163.5 BOT	67343.76	-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	63.5	BOT AREA.	1.546
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	68.14
				X COORD..	Optional	Y COORD..	Optional

10.89 Ac.ft

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

REQUIRED WET POOL VOLUME = 10.61 AC.FT

PROVIDED WET POOL VOLUME = 10.89 AC.FT

⇒ COMPLIANCE

SR 45 BASIN C

POND C WET POOL AREAS

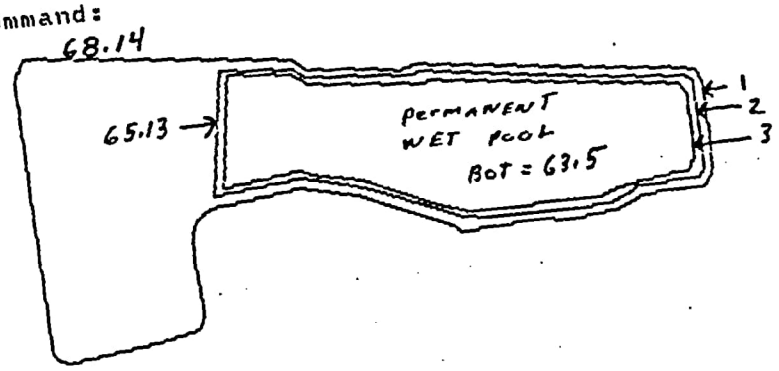
	EL, ft	AREA, AC	DESCRIPTION
	68.14	3.648	SHW
	65.13	1.783	3.5' below overflow
	63.5	1.546	WET pool BOTTOM

Command:
Area = 158914.8947, Length = 2185.0487

Command:
2 Area = 77682.7386, Perimeter = 1388.2348

Command:
3 Area = 67335.1465, Perimeter = 1314.0528

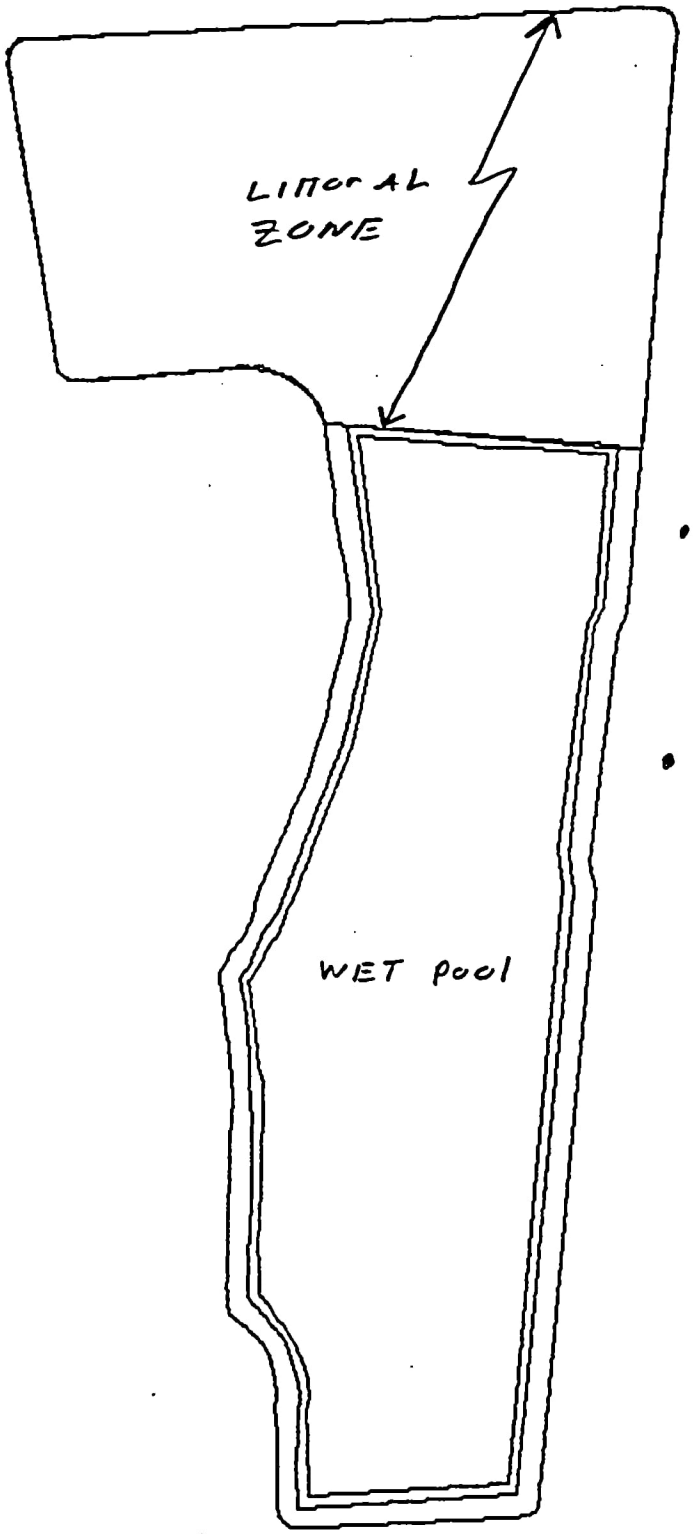
Command:



SR 45 POND C

-Area = 68186.2198, Perimeter = 1086.9956

1.56 AC



- REQUIRED LITTORAL ZONE AREA
  = .35 * AREA @ SHW
  = .35 * 3.74 AC = 1.31 AC

- PROVIDED LITTORAL ZONE AREA
  = 1.56 AC

COMPLIANCE MET

SR 45 BASIN C

25yr-24hr pre development peak discharge rate

Subarea BASIN C PRE-DEVELOPMENT

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_C_25
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 767733447
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 33.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 335
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.6661301
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 13.1
	PEAK CFS 43.104393 ←
	ACFT VOL 17.907268
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

pre LAKE WEST

25yr-24hr peak discharge = 43.10 cfs

SR 45 POND C

25yr -24hr

ALLOWABLE POND C Peak discharge

To EAST side of R/W

(Pre LAKE EAST)

LAKE FLOYD

Window 0,0 - 24,79

Pre watershed C east 25yr-25hr

UNIT HYDROGRAPH FILE..... SCS_256	IFILE.... WSCEAS25
TOTAL DRAINAGE AREA, ACRES... 6.44	IINPUT ID 780244851
WEIGHTED SCS CURVE NUMBER.... 85.27	ITYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	IRUN, HRS 26.6
TIME OF CONCENTRATION, HOURS. 0.43	IDT, HRS. 0.1
	IDATA PTS 267
	ISTORM... SCS_IIM
	IDURATION 24.0
	IRAINFALL 9.0
	IEXCESS.. 7.2144861
	IACREAGE. 6.44
	ITC, HRS. 0.43
	ITP, HRS. 12.4
	IPEAK CFS 20.971712 ←
	IACFT VOL 3.870494
	IREADY... YES
	I----------
	ICFS TOL. 0.0001
	IHRS TOL. 0.01

TITLE DATA STORM EXECUTE REVIEW PLOT DONE

25yr - 24hr

Pre LAKE EAST = 20.97 cfs

SR 45 BASIN C

POST CONDITION ROUTING (25yr-24hr SCS TYPE II mod EVENT)

LAKE EAST: PRE 20.97cfs POST 14.70cfs
LAKE WEST: PRE 43.10cfs POST 24.03cfs

⇒ COMPLIANCE

Project PC_2524, Run of Thu Aug 31 11:23:32 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND C	POND C	DIRECT
1	WS ON POND C	POND C	DIRECT
2	WS TO LAKE WEST	LAKE WEST	DIRECT
3	POND C	RISER	VEE NOTCH
4	POND C	RISER	RECT WEIR
5	POND C	RISER	RECT WEIR
6	POND C	RISER	RECT WEIR
7	RISER	SUMP	PIPE
8	SUMP	CULVERT	DITCH
9	POND C	LAKE EAST	RECT WEIR
10	CULVERT	LAKE WEST	PIPE

Node	Name	Node Type
0	POND C	POND
1	WS TO POND C	SUBAREA
2	WS ON POND C	SUBAREA
3	RISER	JUNCTION
4	LAKE EAST	STAGING
5	LAKE WEST	STAGING
6	WS TO LAKE WEST	SUBAREA
7	CULVERT	JUNCTION
8	SUMP	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND C	POND	→68.48	0.00	→71.27	13.90	NO
1	WS TO POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
3	RISER	JUNCTION	68.20	0.00	71.11	13.90	NO
4	LAKE EAST	STAGING	68.50	0.00	69.71	18.00	NO
5	LAKE WEST	STAGING	64.00	0.00	67.34	24.00	NO
6	WS TO LAKE WEST	SUBAREA	74.00	0.00	74.00	0.00	NO
7	CULVERT	JUNCTION	67.32	0.00	70.12	13.90	NO
8	SUMP	JUNCTION	68.19	0.00	70.18	13.90	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND C	112.96 @ 12.30 Hours	38.51 @ 13.80 Hours
1	WS TO POND C	102.66 @ 12.50 Hours	102.66 @ 12.50 Hours
2	WS ON POND C	36.11 @ 12.00 Hours	36.11 @ 12.00 Hours
3	RISER	23.82 @ 13.90 Hours	23.82 @ 13.90 Hours
4	LAKE EAST PRE 20.97cfs	→14.70 @ 13.80 Hours	2.69 @ 24.00 Hours
5	LAKE WEST PRE 43.10cfs	→24.03 @ 13.80 Hours	0.00 @ 0.00 Hours
6	WS TO LAKE WEST	2.68 @ 12.20 Hours	2.68 @ 12.20 Hours
7	CULVERT	23.71 @ 13.90 Hours	23.71 @ 13.90 Hours
8	SUMP	23.82 @ 13.90 Hours	23.82 @ 13.90 Hours

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SR 45 BASIN C

25yr -24hr POST CONDITION HYDROGRAPHS

Subarea POST BASIN C TO POND 25yr-24hr 8/29/95

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOC25
TOTAL DRAINAGE AREA, ACRES... 34.9	INPUT ID 809708334
WEIGHTED SCS CURVE NUMBER.... 92.53	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.7
TIME OF CONCENTRATION, HOURS. 0.601	DT, HRS. 0.1
	DATA PTS 278
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.0988007
	ACREAGE. 34.9
	TC, HRS. 0.601
	TP, HRS. 12.5
	PEAK CFS 102.659
	ACFT VOL 23.546225
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST BASIN C ON POND 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONC25
TOTAL DRAINAGE AREA, ACRES... 4.369	INPUT ID 767758802
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 4.369
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 36.114735
	ACFT VOL 3.2756668
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN C

25yr-24hr POST Hydrographs cont

Subarea POST BASIN C TO LAKE 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOFFC25
TOTAL DRAINAGE AREA, ACRES... 0.766	INPUT ID 767733559
WEIGHTED SCS CURVE NUMBER.... 74.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.4
TIME OF CONCENTRATION, HOURS. 0.233	DT, HRS. 0.1
	DATA PTS 255
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 5.8289938
	ACREAGE. 0.766
	TC, HRS. 0.233
	TP, HRS. 12.2
	PEAK CFS 2.6816869
	ACFT VOL 0.371961
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN C

POST CONDITION 25yr ROUTING PATHS REPORT

Report on Paths of Project PC_2524.

```
-------------------------------------
      Path..... 000, DIRECT
   Upper Node 001, WS TO POND C
      Lower Node 000, POND C
-------------------------------------
DIRECT.. ---------|INPUT ID 767734523
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..     102.66
                  |MIN IN..       0.00
                  |MAX OUT.     102.66
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...   74.000|FWD X...       0.00
TW EL...   73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 001, DIRECT
   Upper Node 002, WS ON POND C
      Lower Node 000, POND C
-------------------------------------
DIRECT.. ---------|INPUT ID 767734594
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      36.11
                  |MIN IN..       0.00
                  |MAX OUT.      36.11
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...   74.000|FWD X...       0.00
TW EL...   73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 002, DIRECT
   Upper Node 006, WS TO LAKE WEST
     Lower Node 005, LAKE WEST
-------------------------------------
DIRECT.. ---------|INPUT ID 767734622
                  |T0 CFS..      0.00
                  |T0 CF...      0.00
                  |MAX IN..      2.68
                  |MIN IN..      0.00
                  |MAX OUT.      2.68
                  |MIN OUT.      0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...      0.00
TW PE/KE YES      |REV K...      0.00
TW PE/KE YES      |REV K...      0.00
HW EL...   74.000|FWD X...      0.00
TW EL...   73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 003, VEE NOTCH
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL   68.140|INPUT ID 809882192
ANGLE...   85.000|T0 CFS..      0.14
-------- ---------|T0 CF...      0.00
HEIGHT..    0.560|MAX IN..      0.69
-------- ---------|MIN IN..      0.14
                  |MAX OUT.      0.69
                  |MIN OUT.      0.14
                          |
                          |
                          |
                          |
                          |
                          |
                          |
UP PE/KE YES      |FWD K...      0.00
DN PE/KE NO       |REV K...      0.00
MAX HW..   73.000|FWD X...      0.00
MAX TW..   73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 004, RECT WEIR
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL    68.700|INPUT ID 809882199
WIDTH...     4.083|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..     12.49
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.     12.49
-------- ---------|MIN OUT.      0.00
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..    73.000|FWD X...      0.00
MAX TW..    73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 005, RECT WEIR
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL    68.700|INPUT ID 809882205
WIDTH...     2.083|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..      5.48
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.      5.48
-------- ---------|MIN OUT.      0.00
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..    73.000|FWD X...      0.00
MAX TW..    73.000|REV X...      0.00
-------------------------------------
```

```
Path..... 006, RECT WEIR
  Upper Node 000, POND C
  Lower Node 003, RISER
-------------------------------------
CREST EL    68.700|INPUT ID 809882214
WIDTH...     2.083|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..      5.48
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.      5.48
-------- ---------|MIN OUT.      0.00
                  |
                  |
                  |
                  |
                  |
                  |
                  |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..  73.000|FWD X...      0.00
MAX TW..  73.000|REV X...      0.00
-------------------------------------
```

```
Path..... 007, PIPE
  Upper Node 003, RISER
  Lower Node 008, SUMP
-------------------------------------
LEN, FT.  483.000|INPUT ID 786375335
MANN N..    0.012|T0 CFS..      0.14
RISE, FT    3.000|T0 CF...      0.00
SPAN, FT    3.000|MAX IN..     23.82
INLET--- ---------|MIN IN..      0.14
INVERT..   67.050|MAX OUT.     23.82
ENT KE..    2.200|MIN OUT.      0.14
      OUTLET-- ---------|
      INVERT..  66.660|
      ENT KE..    2.500|
      -------- ---------|
      BW STEPS     0    |
      -------- ---------|
                        |
HW PE/KE NO       |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..  73.000|FWD X...      0.00
MAX TW..  73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 008, DITCH
         Upper Node 008, SUMP
       Lower Node 007, CULVERT
-------------------------------------
LENGTH..    120.000|INPUT ID 792025397
MANN N..      0.030|T0 CFS..       0.14
LF BANK.      3.000|T0 CF...       0.00
RT BANK.      2.000|MAX IN..      23.71
INLET--- ---------|MIN IN..       0.14
INVERT..     68.000|MAX OUT.      23.71
BOT W...      3.500|MIN OUT.       0.14
          ENT KE..      0.000|
          OUTLET-- ---------|
          INVERT..     67.290|
          BOT W...      3.500|
          ENT KE..      0.000|
          -------- ---------|
          BW STEPS      0    |
          -------- ---------|
HW PE/KE NO        |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     73.000|FWD X...       0.00
MAX TW..     73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 009, RECT WEIR
        Upper Node 000, POND C
       Lower Node 004, LAKE EAST
-------------------------------------
CREST EL     68.700|INPUT ID 809726827
WIDTH...      1.700|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..      14.70
-------- ---------|MIN IN..      -2.69
BREADTH.           |MAX OUT.      14.70
-------- ---------|MIN OUT.      -2.69
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE YES       |REV K...       0.00
MAX HW..     73.000|FWD X...       0.00
MAX TW..     73.000|REV X...       0.00
-------------------------------------
```

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Path..... 010, PIPE
Upper Node 007, CULVERT
Lower Node 005, LAKE WEST

LEN, FT.	40.000	INPUT ID	780257741
MANN N..	0.024	T0 CFS..	0.10
RISE, FT	2.000	T0 CF...	0.00
SPAN, FT	2.000	MAX IN..	23.71
INLET---	---	MIN IN..	0.10
INVERT..	67.290	MAX OUT.	23.71
ENT KE..	0.200	MIN OUT.	0.10
OUTLET--	---		
INVERT..	66.540		
ENT KE..	0.500		
BW STEPS	0		
HW PE/KE	NO	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

SR 45 BASIN C

POST CONDITION 25 YR ROUTING NODES REPORT

Report on Nodes of Project PC_2524.

Node..... 000, POND

TOP EL...	73.000	TOP AREA.	5.270	INPUT ID.....	809882554
EL.....	71.600	AREA.....	4.369	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	→68.48
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	59368.20
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	→71.27
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.48
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	545798.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	486430.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	69.38
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	13.90
BOT EL...	68.140	BOT AREA.	3.648	TIME OF MINIMUM STAGE, HOURS.	0.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	112.96
BOT LF...				TIME OF PEAK INTAKE, HOURS...	12.30
				PEAK NODAL OUTPUT, CFS.....	38.51
				TIME OF PEAK OUTPUT, HOURS...	13.80
BASE CFS.	0.000	STAGE T0.	68.480	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, SUBAREA

FILE NAME	WSTOC25	FLOOD EL.	74.000	INPUT ID.....	809708337
INPUT ID#	809708334			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	27.700			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	278			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.099			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	34.900			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.601				
TP, HRS..	12.500				
PEAK CFS.	102.659			PEAK NODAL INTAKE, CFS.....	102.66
ACFT VOL.	23.546			TIME OF PEAK INTAKE, HOURS...	12.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	102.66
				TIME OF PEAK OUTPUT, HOURS...	12.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 002, SUBAREA

FILE NAME	WSONC25	FLOOD EL.	74.000	INPUT ID.....	793472126
INPUT ID#	767758802			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	25.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	251			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	9.000			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	4.369			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	12.000				
PEAK CFS.	36.115			PEAK NODAL INTAKE, CFS.....	36.11
ACFT VOL.	3.276			TIME OF PEAK INTAKE, HOURS...	12.00
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	36.11
				TIME OF PEAK OUTPUT, HOURS...	12.00
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, JUNCTION

FLOOD EL.	73.000			INPUT ID.....	792860350
				FLOOD ELEVATION REACHED.....	NO
				INITIAL STAGE ELEVATION.....	68.20
				INITIAL STORAGE, CUBIC FEET..	0.00
				MAXIMUM STAGE REACHED.....	71.11
				MINIMUM STAGE REACHED.....	68.20
				MAXIMUM GROSS STORAGE, CF....	0.00
				MAXIMUM DETENTION STORAGE, CF	0.00
				FINAL STAGE ELEVATION.....	69.15
				TIME OF MAXIMUM STAGE, HOURS.	13.90
				TIME OF MINIMUM STAGE, HOURS.	0.00
				PEAK NODAL INTAKE, CFS.....	23.82
				TIME OF PEAK INTAKE, HOURS...	13.90
				PEAK NODAL OUTPUT, CFS.....	23.82
				TIME OF PEAK OUTPUT, HOURS...	13.90
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, STAGING LAKEEAST (FLOYD)

FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	793472313
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.500	INITIAL STAGE ELEVATION.....	68.50
TIME, HRS	5.000	STAGE EL.	68.500	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	10.000	STAGE EL.	68.620	MAXIMUM STAGE REACHED.....	69.71
TIME, HRS	15.000	STAGE EL.	69.630	MINIMUM STAGE REACHED.....	68.50
TIME, HRS	18.000	STAGE EL.	69.710	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	27.000	STAGE EL.	69.620	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	36.000	STAGE EL.	69.420	FINAL STAGE ELEVATION.....	69.65
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	18.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	→ 14.70
				TIME OF PEAK INTAKE, HOURS...	13.80
				PEAK NODAL OUTPUT, CFS.....	2.69
				TIME OF PEAK OUTPUT, HOURS...	24.00
		STAGE TO.	68.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, STAGING LAKE WEST (LITTLE MOSS)

FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	809727067
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	64.000	INITIAL STAGE ELEVATION.....	64.00
TIME, HRS	7.500	STAGE EL.	64.200	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	66.600	MAXIMUM STAGE REACHED.....	67.34
TIME, HRS	22.500	STAGE EL.	67.300	MINIMUM STAGE REACHED.....	64.00
TIME, HRS	30.000	STAGE EL.	67.500	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	33.250	STAGE EL.	67.500	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	67.34
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	24.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	→ 24.03
				TIME OF PEAK INTAKE, HOURS...	13.80
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE TO.	64.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

```
ode..... 006, SUBAREA
FILE NAME WSOFFC25 |FLOOD EL.    74.000||INPUT ID..................... 793472480
INPUT ID# 767733559|--------- ---------||FLOOD ELEVATION REACHED..... NO
ALT TYPE. RNF0002  |                    ||INITIAL STAGE ELEVATION.....      74.00
RUN, HRS.    25.400|                    ||INITIAL STORAGE, CUBIC FEET..      0.00
DT, HRS..     0.100|                    ||MAXIMUM STAGE REACHED........      74.00
DATA PTS.   255    |                    ||MINIMUM STAGE REACHED........      74.00
STORM.... SCS_IIM  |                    ||MAXIMUM GROSS STORAGE, CF....      0.00
HOURS....    24.000|                    ||MAXIMUM DETENTION STORAGE, CF      0.00
RAINFALL.     9.000|                    ||FINAL STAGE ELEVATION........      74.00
EXCESS...     5.829|                    ||TIME OF MAXIMUM STAGE, HOURS.      0.00
ACREAGE..     0.766|                    ||TIME OF MINIMUM STAGE, HOURS.      0.00
TC, HRS..     0.233|                    ||
TP, HRS..    12.200|                    ||
PEAK CFS.     2.682|                    ||PEAK NODAL INTAKE, CFS.......      2.68
ACFT VOL.     0.372|                    ||TIME OF PEAK INTAKE, HOURS...     12.20
EXECUTED. YES      |                    ||PEAK NODAL OUTPUT, CFS.......      2.68
--------- ---------|--------- ---------||TIME OF PEAK OUTPUT, HOURS...     12.20
BASE CFS.     0.000|                    ||POINTS OUT OF TOLERANCE......      0
X COORD..          |Y COORD..           ||MAXIMUM STAGE ERROR.........      0.00
```

```
Node..... 007, JUNCTION
FLOOD EL.    73.000|                    ||INPUT ID..................... 792860369
--------- ---------|                    ||FLOOD ELEVATION REACHED..... NO
                   |                    ||INITIAL STAGE ELEVATION.....      67.32
                   |                    ||INITIAL STORAGE, CUBIC FEET..      0.00
                   |                    ||MAXIMUM STAGE REACHED........      70.12
                   |                    ||MINIMUM STAGE REACHED........      67.32
                   |                    ||MAXIMUM GROSS STORAGE, CF....      0.00
                   |                    ||MAXIMUM DETENTION STORAGE, CF      0.00
                   |                    ||FINAL STAGE ELEVATION........      68.43
                   |                    ||TIME OF MAXIMUM STAGE, HOURS.      13.90
                   |                    ||TIME OF MINIMUM STAGE, HOURS.      0.00
                   |                    ||
                   |                    ||
                   |                    ||PEAK NODAL INTAKE, CFS.......      23.71
                   |                    ||TIME OF PEAK INTAKE, HOURS...      13.90
                   |                    ||PEAK NODAL OUTPUT, CFS.......      23.71
--------- ---------|--------- ---------||TIME OF PEAK OUTPUT, HOURS...      13.90
BASE CFS.     0.000|                    ||POINTS OUT OF TOLERANCE......      0
X COORD..          |Y COORD..           ||MAXIMUM STAGE ERROR.........      0.00
```

Node..... 008, JUNCTION

FLOOD EL.	73.000	INPUT ID.....	792860374
		FLOOD ELEVATION REACHED.....	NO
		INITIAL STAGE ELEVATION.....	68.19
		INITIAL STORAGE, CUBIC FEET..	0.00
		MAXIMUM STAGE REACHED.....	70.18
		MINIMUM STAGE REACHED.....	68.19
		MAXIMUM GROSS STORAGE, CF....	0.00
		MAXIMUM DETENTION STORAGE, CF	0.00
		FINAL STAGE ELEVATION.....	68.84
		TIME OF MAXIMUM STAGE, HOURS.	13.90
		TIME OF MINIMUM STAGE, HOURS.	0.00
		PEAK NODAL INTAKE, CFS.....	23.82
		TIME OF PEAK INTAKE, HOURS...	13.90
		PEAK NODAL OUTPUT, CFS.....	23.82
		TIME OF PEAK OUTPUT, HOURS...	13.90
BASE CFS.	0.000	POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

Job Description: SR 45/SR 54 (C-105) Station: 1034+50 Designed By: GG

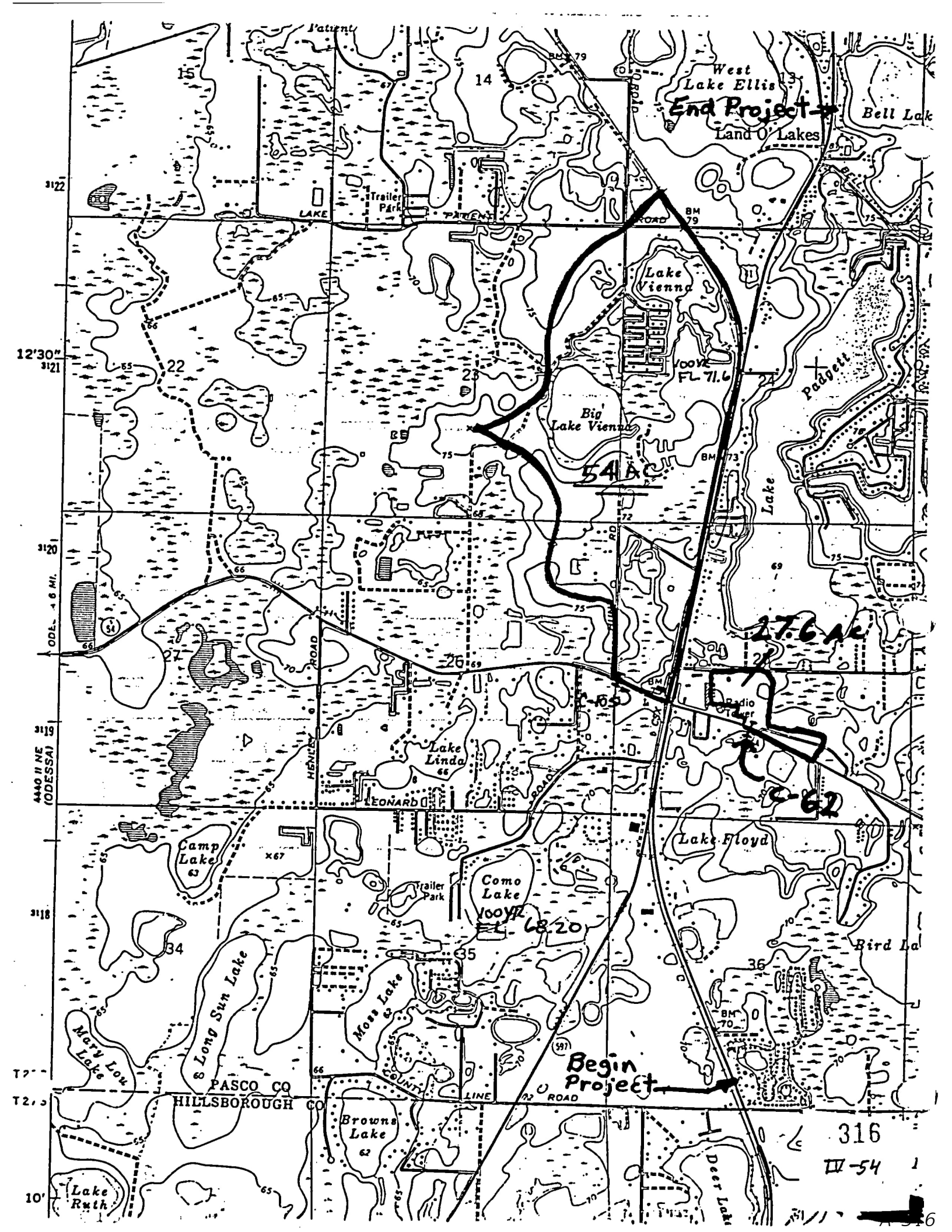
HYDROLOGIC AND CHANNEL INFORMATION

Calc.	Flow	Tailwater	n-value
☒	162.20	3.40	0.0120
☒	182.50	3.90	0.0120
☐	0.00	0.00	0.0120
☐	0.00	0.00	0.0120



Culvert Descrip.	Q cfs	Size	Inlet Cont.		Outlet Control HW = H + ho - LSo							Contr oling HW	Velo city Out	HW Elev.	TW Elev.
			HW/D	HW	Ke	H	Dc	TW	ho	LS	HW				
WW Flare 90° and	162.	3 x 8	1.39	4.17	0.50	1.4*	2.34	3.40	3.40	1.30	3.53	4.17	6.76	69.77	67.70
WW Flare 90° and	182.	3 x 8	1.56	4.67	0.50	1.81	2.53	3.90	3.90	1.30	4.41	4.67	7.60	70.27	68.20

III-53



End Project
Begin Project
54 AC
27.6 AC
C-62
C-105
Land O' Lakes
West Lake Ellis
Bell Lak
Lake Vienna
Big Lake Vienna
Lake Linda
Lake Floyd
Camp Lake
Como Lake
Moss Lake
Long Sun Lake
Mary Lou Lake
Browns Lake
Lake Ruth
Deer Lake
Bird La
Padgett
Lake
Radio Tower
Trailer Park
LAKE PATIENT ROAD
LEONARD ROAD
HENLEY ROAD
COUNTY LINE ROAD
PASCO CO
HILLSBOROUGH CO
12'30"
4440 II NE (ODESSA)
316
IV-54

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made by: G.G date: 9/12/95 job no.
checked by: date: sheet no.

PROJECT: SR 45

CROSS CULVERT AT STA 1034+50 (C-105)

TOTAL AREA =

ROADS (APPROX 24' WIDTH) = 13,120 FT

13,120' X 24' = 7.22 AC.

RESIDENTIAL HOUSES - C = .95 X 1.25 (100YR)
65 HOMES (APPROX.)
V4 AC. = 16.25 AC.
C = .42 X 1.25 (100YR) = .53

BUSINESS - COX LUMBER $\frac{300 + 450'}{2}$ X 920' = 7.92 AC

C = .80 X 1.25 (100 YR) = 1.00

TOTAL WT. 'C' VALUE

ROADS = 7.22 AC X 1.00 C = 7.22
RESIDENTIAL = 16.25 AC X .53 C = 8.61
BUSINESS = 7.92 AC X 1.00 C = 7.92

SUBTOTAL AREA = 31.39 AC. (A)(C) = 23.75

WGT. 'C' $\frac{23.75 \text{ (A)(C)}}{31.39 \text{ (A)}}$ = .76 'C'

LAKE VIENNA = 23.0 AC @ 1.0

BIG LAKE VIENNA = 39.9 AC @ 1.0

SWAMP AREA = 166.4 AC @ .90 X .72 SWAMP FACTOR = .65
@ .65 X 1.25 (100YR) = .81

WOODS - ORCHARDS - 280.3 AC @ .20C X 1.25 (100 YR)
= .25 C

WEIGHTED C =			
IMPERVIOUS	31.39 AC @ .76 C	=	23.9
LK VIENNA	23.0 AC @ 1.0 C	=	23.0
BIG LK VIENNA	39.9 AC @ 1.0 C	=	39.9
SWAMP AREA	166.4 AC @ .81 C	=	134.8
WOODS-ORCHARDS	280.3 AC @ .25C	=	70.1
	541 AC		291.7

WGT 'C' = $\frac{291.7}{541}$ = .54

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IV-55

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checked by: _____ date: _____ sheet no. _____

PROJECT: SR 45

CROSS CULVERT AT STA 1034+50 (C-105)

TC

SHEET FLOW

FROM THE RAGAN KINEMATIC WAVE EQUATION

$$T_1 = \frac{0.938\ L^{.6}\ n^{.6}}{I^{.4}\ S^{.3}}$$

L = .300
n = .40
S = .4/300 = .0013 1/1
I = RAINFALL INTENSITY (IN/HR) (TODYR)

CHOOSE I = 4.2

T_1 = 68.6 MIN

SHALLOW CONCENTRATED FLOW

FROM SCS TR55

V_1 UNPAVED = $16.1345\sqrt{S}$

L = 1100
S = .12/1100 = .0109 1/1 (EL 80-68)
$V_1 = 16.1345\sqrt{.0109}$
V_1 = 1.68 FT/S
T_2 = (1100/1.68) ÷ 60SEC = 10.91 MIN

V_2 = UNPAVED = $16.1345\sqrt{S}$

L = 4500
S = 1'/4500 = .0002 1/1 (EL 68-67.0)
$V_2 = 16.1345\sqrt{.0002}$
V_2 = .23 FT/S
T_3 = (4500/.23) ÷ 60SEC = 328.7 MIN.

$T_c = T_1 + T_2 + T_3 =$

TOTAL T_c = 68.6 MIN + 10.91 MIN + 328.7 MIN.

T_c = 408.2 MIN OR 6.8 HRS.

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checked by: _____ date: _____ sheet no. _____

PROJECT: SR 45

CROSS-CULVERT AT 1034+50 (C-105)

$Q = CIA$

$C = .54$
$A = 541$
$I = 6.8$ HRS (50 YR) = 1.11
6.8 HRS (100 YR) = 1.25

$Q_{50} = (.54)(1.11)(541)$
$= 324.3$ CFS

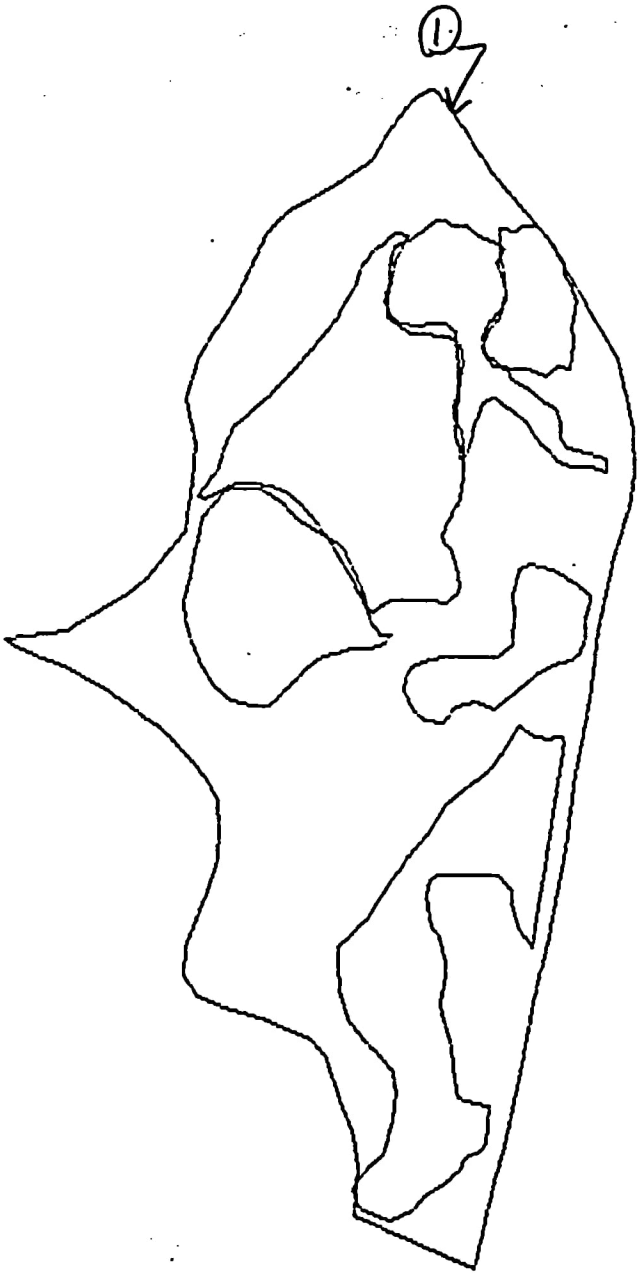
$Q_{100} = (.54)(1.25)(541)$
$= 365$ CFS

SR 45 C-105 CULVERT ANALYSIS

TOTAL BASIN AREA, AC

Area = 23585128.3987, Perimeter = 23303.9036 541 AC

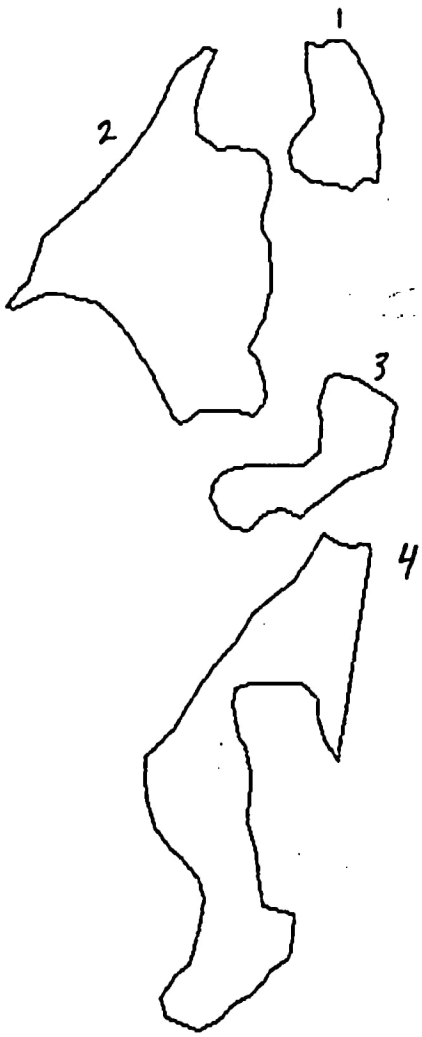
Command:



SWAMP/MARSH AREAS

	AREA, AC
1 Area = 623397.2170, Perimeter = 3353.7461	14.3
Command:	
2 Area = 3086272.2787, Perimeter = 8815.8035	70.9
Command:	
3 Area = 782851.3068, Perimeter = 4493.3014	18.0
Command:	
4 Area = 2752981.6037, Perimeter = 11565.4192	63.2

Command:



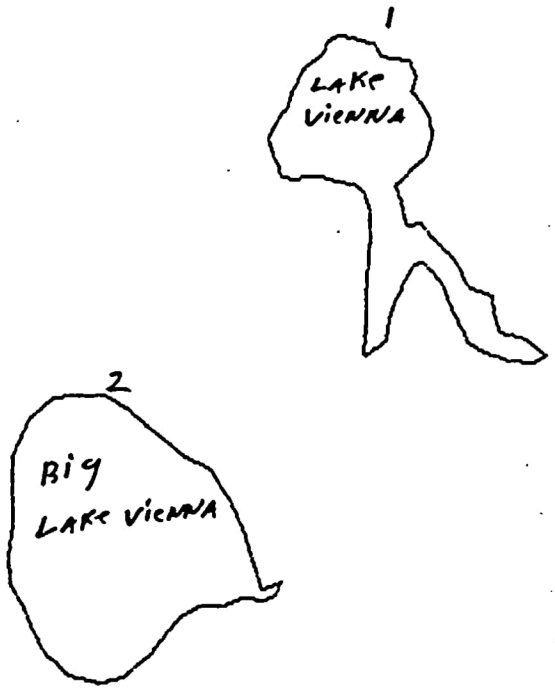
AREA, AC

1 Area = 1000406.6732, Perimeter = 7139.2052 — 23.0

Command:

2 Area = 1739162.9165, Perimeter = 5339.7751 — 39.9

Command:



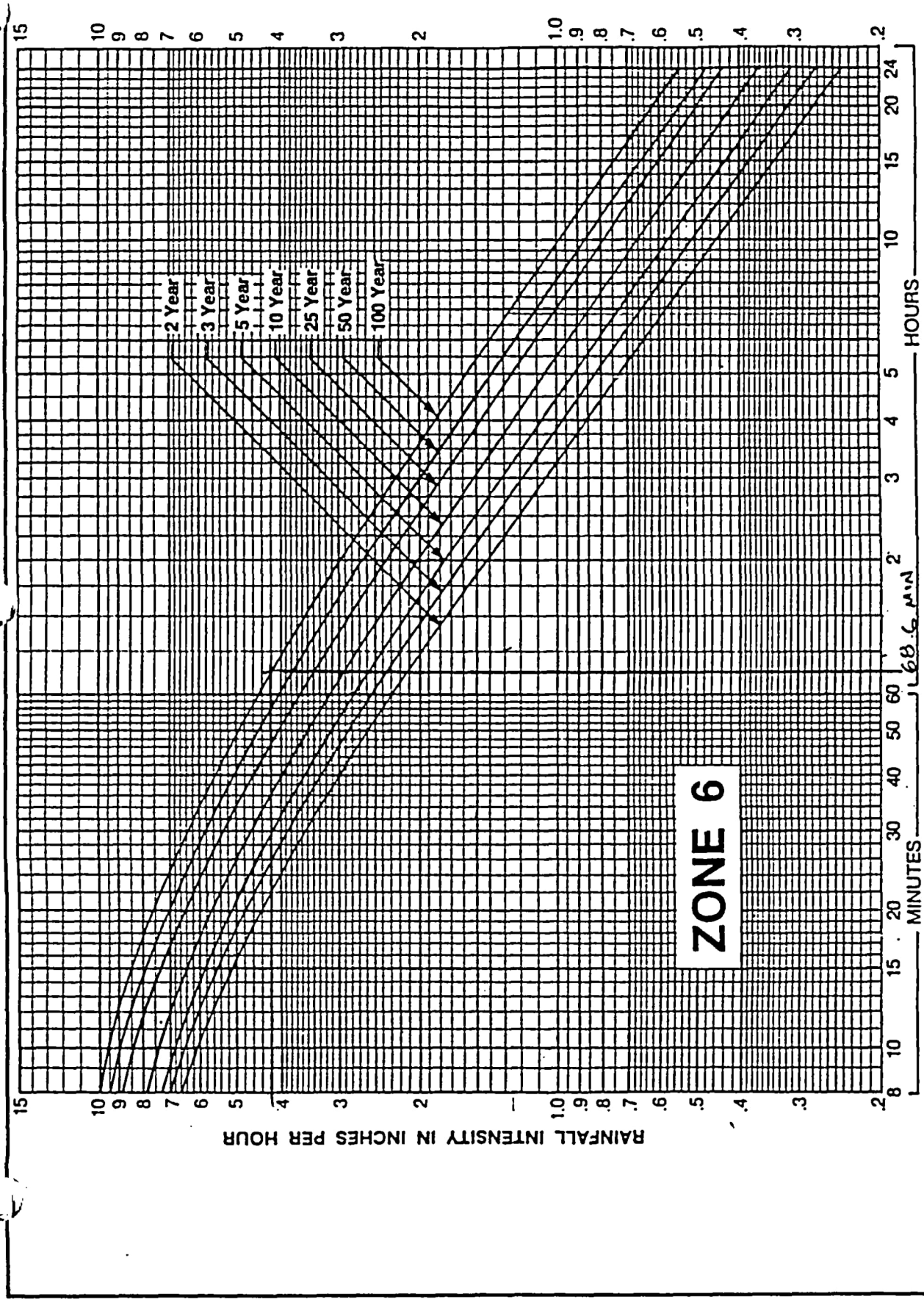
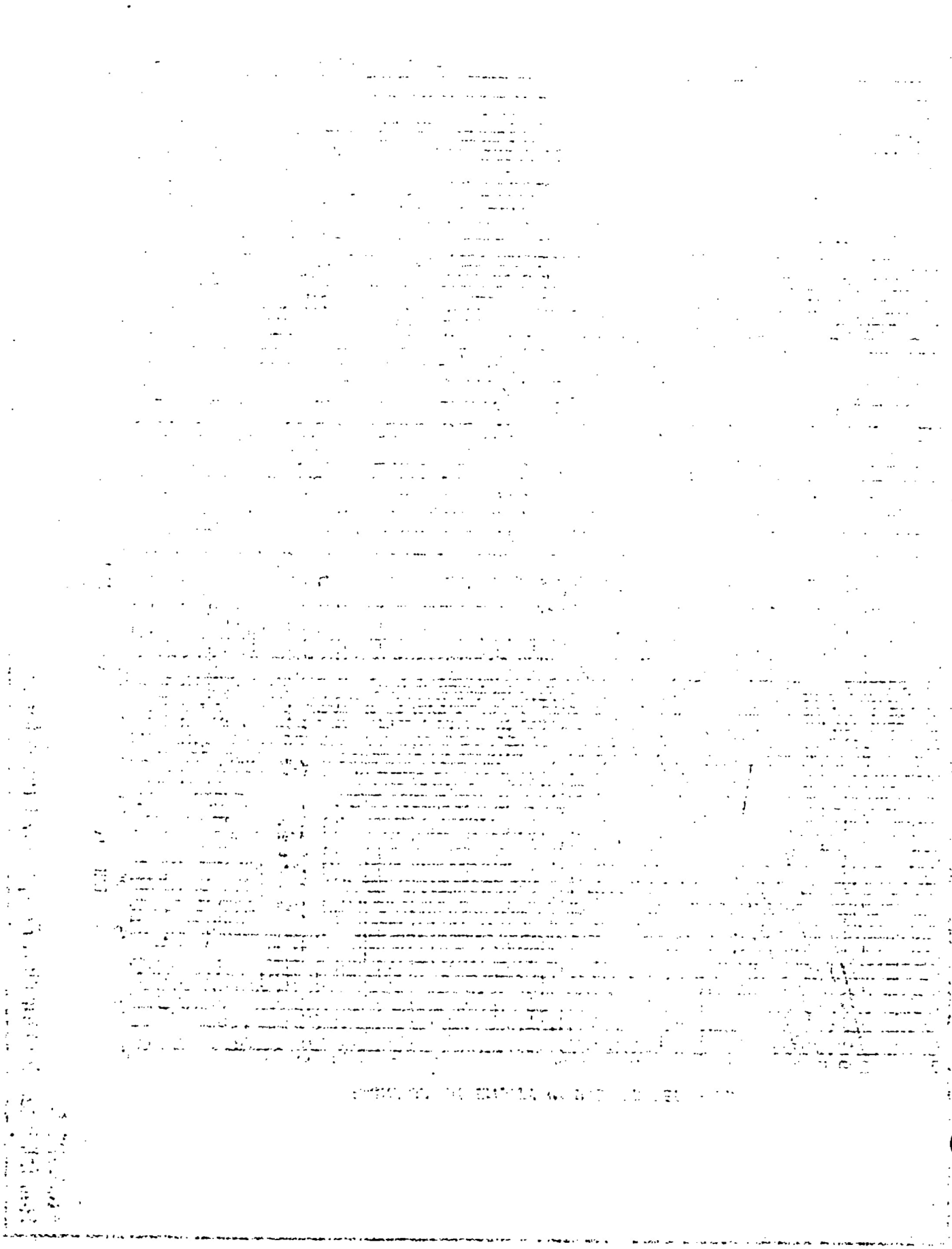


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

IV-61



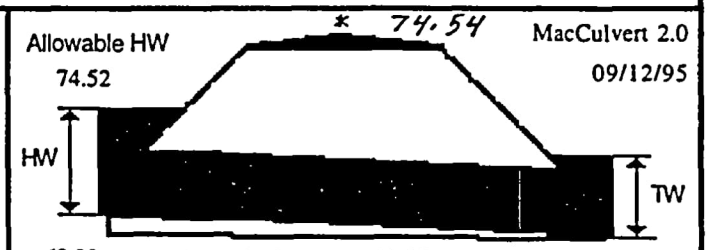
SR 45 – STA 44+96 (SR54)

CULVERT ANALYSIS with combined FLOWS

Job Description: SR 45 (SR54 EAST C-62) Station: 44+96 Designed By: TM

HYDROLOGIC AND CHANNEL INFORMATION

	Calc.	Flow	Tailwater	n-value
	☒ 50yr	18.70	1.60	0.0120
	☒ 100yr	22.10	1.84	0.0120
*	☒ OT	29.50	1.94	0.0120
	☐	0.00	0.00	0.0120



Culvert Descrip.	Q cfs	Size	Inlet Cont. HW/D	Inlet Cont. HW	Outlet Control Ke	H	Dc	TW	ho	LS	HW	Contr oling HW	Velo city Out	HW Elev.	TW Elev.
Square Edge	18.7	24	1.37	2.75	0.50	1.84	1.55	1.60	1.60	0.60	2.84	2.84	6.94	71.74	69.90
Square Edge	22.1	24	1.65	3.29	0.50	2.46	1.68	1.84	1.84	0.60	3.70	3.70	7.31	72.60	70.14
Square Edge	29.5	24	2.42	4.83	0.50	4.34	1.85	1.94	1.94	0.60	5.68	5.68	9.47	74.58	70.24

* OVERTOPPING OCCURS AT EL 74.54 AT LOW POINT of ROAD (STA 40+50).

IV-62

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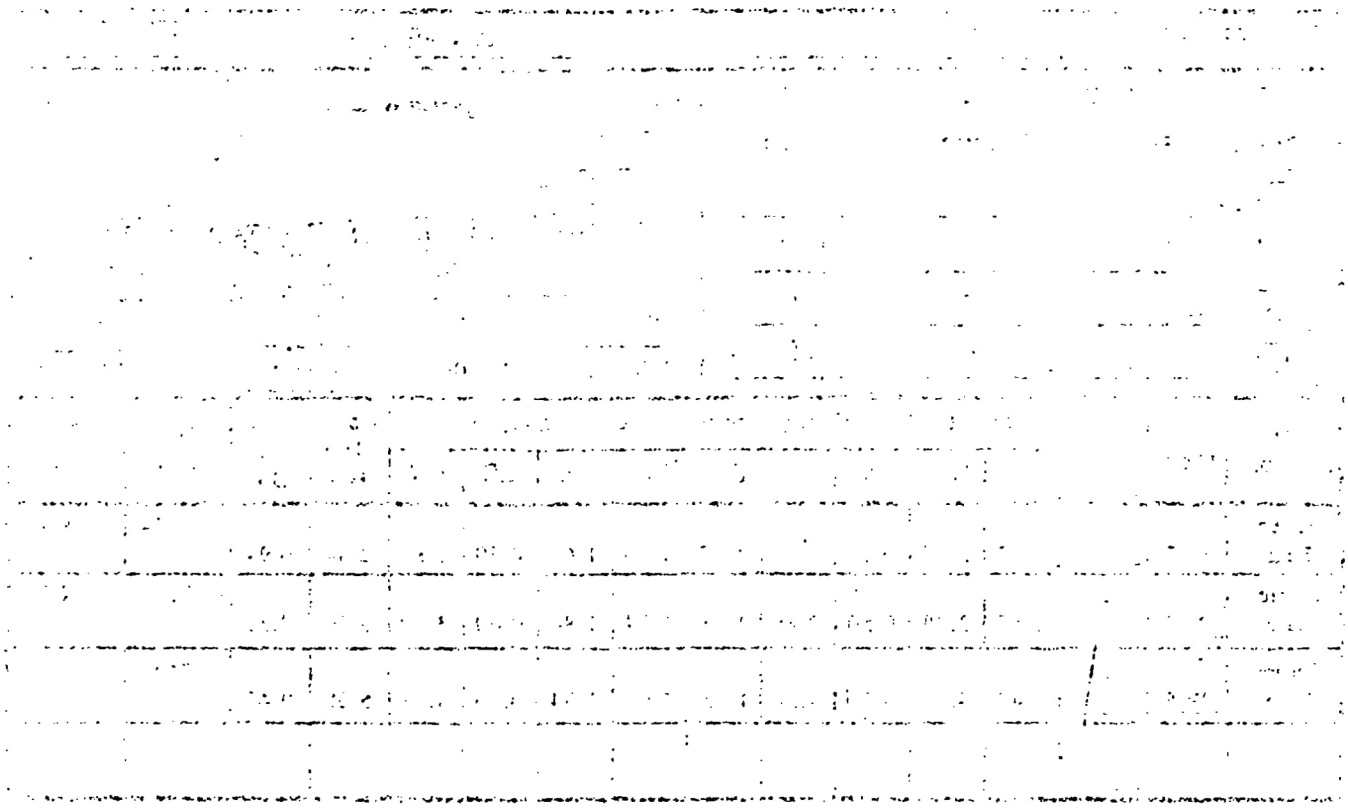

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PROJECT: SR 45 (CULVERT SR 54 EAST) checked by: _____ date: _____ sheet no. 1/1

COMBINED PEAK FLOW RATES FOR ANALYSIS AT A SIMPLE CROSS DRAIN

- PEAK FLOW RATES ENTERING CULVERT FROM THE EAST

$q_{50} \approx 4.7$ cfs

$q_{100} = 5.1$ cfs

- PEAK FLOW RATES ENTERING CULVERT FROM THE NORTH

$q_{50} = 14$ cfs

$q_{100} = 17$ cfs

- TOTAL COMBINED PEAK FLOW RATES

$q_{50} = 4.7 + 14 = 18.7$ cfs

$q_{100} = 5.1 + 17 = 22.1$ cfs

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VI-63

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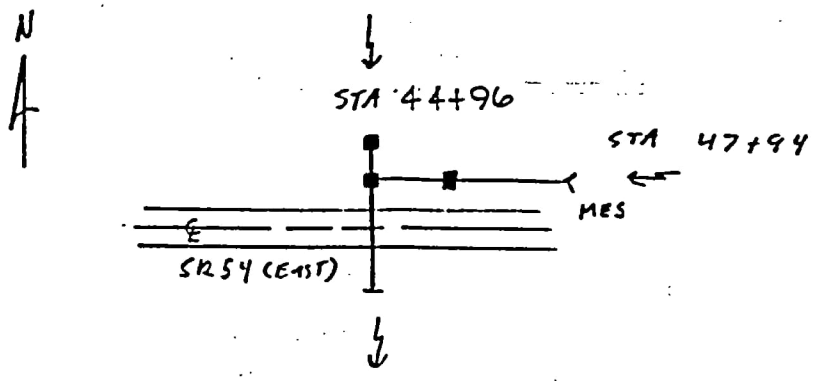
PROJECT: SR 45 (CULVERT SR 54 EAST)

HYDROLOGY (TO EAST STUB)



AREA TO EASTERLY MES

			AREA	C	*1.2 50yr C	*1.25 100yr C
½ ROADWAY	850' * 18'	=	0.25 AC	0.95	1.00	1.00
OPEN (GRASS)	600' x 70'	=	0.96 AC	0.20	0.24	0.25
OPEN (GRASS)	250' * 30'	=	0.17 AC	0.20	0.24	0.25

COMPOSITE RUNOFF COEFFICIENTS

(50 yr) $C = [0.25(1.00) + 1.13(0.24)] \div 1.38$
$= 0.38$

(100yr) $C = [0.25(1.00) + 1.13(0.25)] \div 1.38$
$= 0.39$

AREA TO EASTERLY MES	50yr : 1.38 AC @ C = 0.38
	100yr : 1.38 AC @ C = 0.39

TIME OF CONCENTRATION TO EASTERLY MES

CHANNEL LENGTH = 600'
ASSUME VELOCITY = 4 ft/s

$t_c = 600 ft / (4 ft/s) * \frac{1 min}{60 s} = 2.5 min$

2.5 min < 10 min ∴ CHOOSE t_c = 10 min

t_c TO EASTERLY MES = 10 min

$Q = CIA$ $C_{50} = 0.38$ $I_{50} = 9.0 in/hr$
$C_{100} = 0.39$ $I_{100} = 9.5 in/hr$

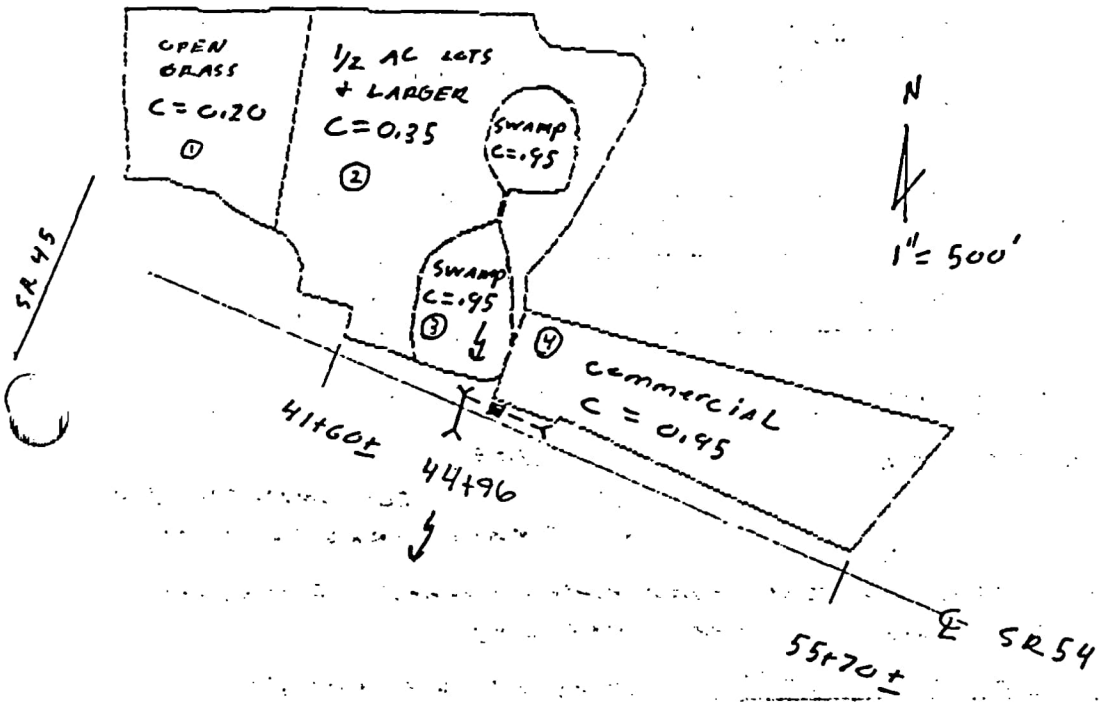
$Q_{50} = 0.38 * (9.0 in/hr) * 1.38 AC = 4.7 cfs$
$Q_{100} = 0.39 * (9.5 in/hr) * 1.38 AC = 5.1 cfs$

SR 45

1/4

CULVERT SR 54 EAST STA 44+96 HYDROLOGY (TO NORTH ENTRANCE)

	AREA, AC
(1) Area = 218202.7351, Length = 1940.5249	5.01
Command:	
(2) Area = 505917.8009, Length = 4786.6520	11.61
Command:	
(3) Area = 140904.1136, Perimeter = 2145.4489	3.23
Command:	
(4) Area = 337330.3913, Perimeter = 2879.0370	7.74
Command:	Σ 27.59 AC



	AREA	C	*1.2 50yr C	*1.25 100yr C
OPEN (GRASS)	5.01 AC	0.20	0.24	0.25
1/2 AC LOTS	11.61 AC	0.35	0.42	0.44
SWAMP	3.23 AC	0.95	0.95	0.95
COMMERCIAL	7.74 AC	0.95	0.95	0.95

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III-65

CULVERT SR 54 EAST STA 44+96 HYDROLOGY (TO NORTH ENTRANCE)

COMPOSITE RUNOFF COEFFICIENTS

(50 yr) $C = [5.01(.24) + 11.61(.42) + 3.23(.95) + 7.74(.95)] \div 27.59$
$= 0.60$

(100yr) $C = [5.01(.25) + 11.61(.44) + 3.23(.95) + 7.74(.95)] \div 27.59$
$= 0.61$

AREA TO NORTH ENTRANCE	50yr : 27.59 AC @ C = 0.60
	100yr : 27.59 AC @ C = 0.61

TIME OF CONCENTRATION FOR WS TO NORTH ENTRANCE

$t_c = t_1 + t_2 + t_3$

t_1 = SHEET FLOW
t_2 = SHALLOW CONCENTRATED FLOW
t_3 = SWAMP TRAVEL TIME

t_1: FROM THE RAGEN KINEMATIC WAVE EQUATION (FDOT DRAINAGE MANUAL, VOL 2A)

$$t_1 = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: L = 300 ft
n = 0.24
S = (75-74.2) ÷ 100' = 0.0027 ft/ft
I = RAINFALL INTENSITY (in/hr)

CHOOSE I_{50} = 5.2 in/hr ⇒ $t_{1_{50}}$ = 37 min

CHOOSE I_{100} = 5.9 in/hr ⇒ $t_{1_{100}}$ = 35 min

t_2: FROM SCS' TR 55 APPENDIX F

$$t_2 = \frac{L}{60\,[16.1345\,(S)^{1/2}]}$$

L = 800'
S = (74.2-71) ÷ 800'
= 0.004 ft/ft

t_2 = 13 min

$(t_1 + t_2)_{50} = (37+13)_{50} =$ 50 min

$(t_1 + t_2)_{100} = (35+13)_{100} =$ 48 min

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checked by: _____ date: _____ sheet no. 3/4

PROJECT: SR 45 (CULVERT SR 54 EAST)

CULVERT SR 54 EAST STA 44+86 HYDROLOGY (TO NORTH ENTRANCE)

t_3: SWAMP TRAVEL TIME

$Q_T = C_T I_{tc} A$ $C_{50} = 0.60$ $I_{50} = 4.5$ in/hr
$C_{100} = 0.61$ $I_{100} = 5.0$ in/hr

$Q_{50} = 0.60 * (4.5 \text{ in/hr}) * 27.59 \text{ Ac} =$ 74 cfs

$Q_{100} = 0.61 * (5.0 \text{ in/hr}) * 27.59 \text{ Ac} =$ 84 cfs

LOWER LOBE OF SWAMP = 1.94 AC (60%)
(84,507 sf)

LENGTH OF FLOW PATH ACROSS SWAMP = 400'

AVERAGE TRAVEL WIDTH = $\frac{84\,507 \text{ ft}^2}{400 \text{ ft}}$ = 211 ft

ASSUME 50 AND 100yr DEPTH = 4 ft

AVERAGE x-SECTIONAL AREA = 4 ft * 211 ft = 844 sf

$t_3 = \frac{L}{(Q_T/A)}$

$t_{3_{50}} = [211'/(74 \text{ cfs}/844 \text{ sf})] \div 60 =$ 40 min

$t_{3_{100}} = [211'/(84 \text{ cfs}/844 \text{ sf})] \div 60 =$ 35 min

$t_{c_{50}}$	=	50 min + 40 min	= 90 min = 1.5 hr
$t_{c_{100}}$	=	48 min + 35 min	= 83 min = 1.38 hr

TOTAL PEAK FLOW FOR WS TO NORTH ENTRANCE

$Q = C_T I_{tc} A$

$Q_{50} = 0.60 * (3.2 \text{ in/hr}) * 27.59 \text{ AC} =$ 53 cfs

*

$Q_{100} = 0.61 * (3.7 \text{ in/hr}) * 27.59 \text{ AC} =$ 62 cfs

* SEE NEXT PAGE

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checked by: _____ date: _____ sheet no. 4/4

PROJECT: SR 45 (CULVERT SR 54 EAST)

CULVERT SR 54 EAST STA 44+96 HYDROLOGY (TC NORTH ENTRANCE)

BECAUSE THE EXISTING RUNOFF FROM THE DEVELOPED AREAS (11.61 AC of ½ AC LOTS. AND 7.74 AC of COMMERCIAL PROPERTY) IS ROUTED THRU DRAINAGE DETENTION AREAS, AND BECAUSE OF THE UNREALISTIC PEAK FLOW RATES OBTAINED WHEN THIS ROUTING TIME DELAY IS Neglected (538 & 626 cfs), AN ASSUMED "ROUTED" TIME OF CONCENTRATION IS USED.

IN A 24 hour EVENT, THE TYPICAL PEAK FLOW RATE DISCHARGING FROM A DRAINAGE DETENTION AREA OCCURS APPROXIMATELY 12 hours PLUS THE TIME OF CONCENTRATION AFTER THE BEGINING OF THE EVENT. THIS CULVERT ANALYSIS USES AN ASSUMED ROUTED TIME OF CONCENTRATION OF 10 hours.

$$\boxed{t_c = 10 \text{ hours}}$$

$$Q = C_T I_{t_c} A$$

$$\boxed{\begin{aligned} Q_{50} &= 0.60 * (0.85 \text{ in/hr}) * 27.59 \text{ Ac} = 14 \text{ cfs} \\ Q_{100} &= 0.61 * (0.98 \text{ in/hr}) * 27.59 \text{ Ac} = 17 \text{ cfs} \end{aligned}}$$

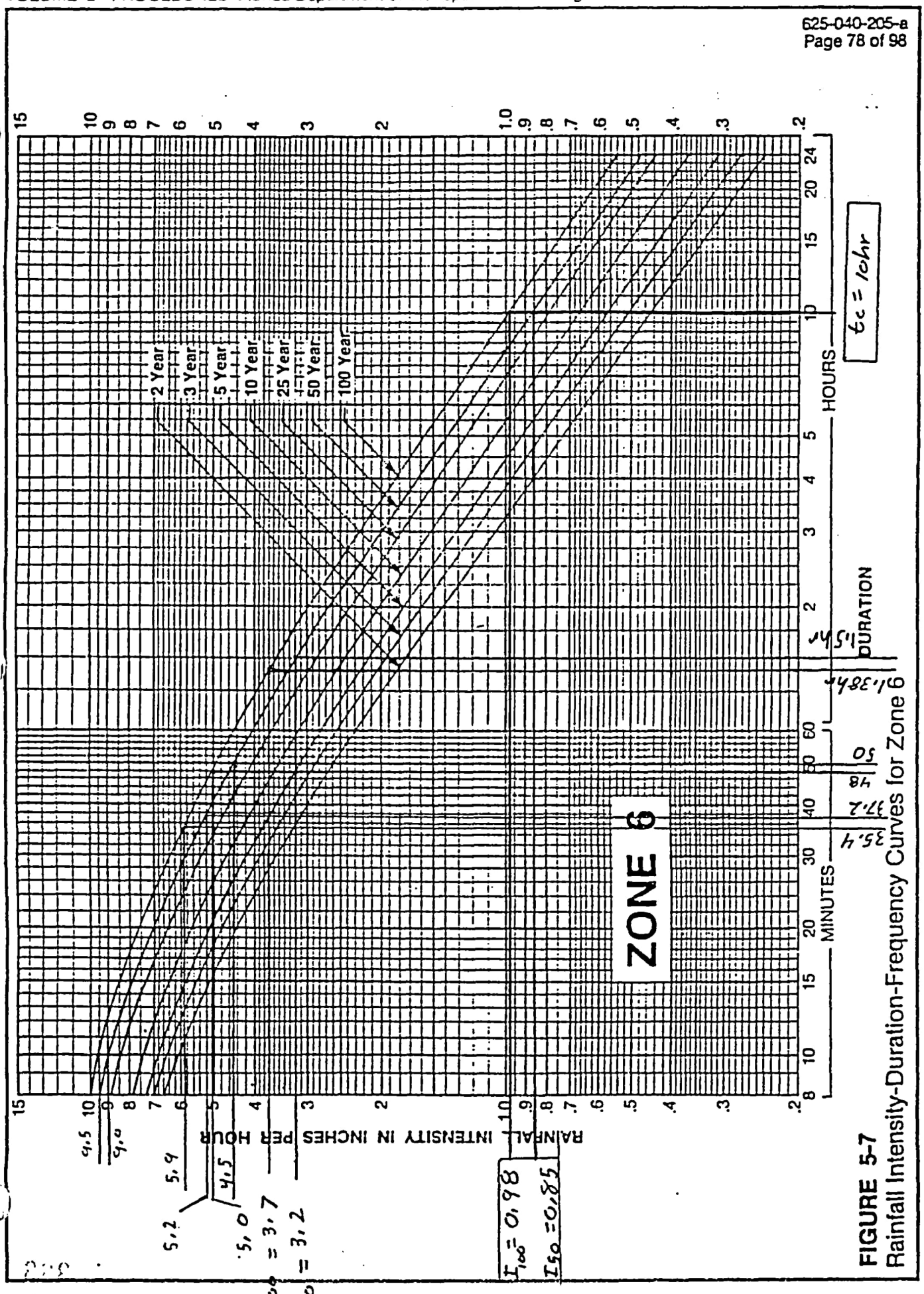

FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

There is a possibility that the cross culvert may function as a storm sewer system due to several inlets connected to the proposed 24" culvert located along the north side of the roadway. Therefore the culvert was analyzed as a storm sewer system for the 50 and 100 year events as well as the overtopping flows computed in the simple culvert analysis. The following pages illustrate these calculations.

SR 45

CULVERT SYSTEM SR 54 44+96

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 11/SEP/95 PROJECT 14010-3518 ENGINEER: TM

SR 45: CULVERT EAST 50yr EVENT

CP III ALTERNATE
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012 ✓ $\frac{dc+d}{2}$
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 70.00 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DIST (FEET)	AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
1	63	194	0.00	0.00	74.00	24	3.40	0.0	74.52	0.00	71.44	71.18	.000	
47+94	36L		0.00											
			0.00											
63	62	100	0.00	0.00	72.70	24	1.30	0.0	74.52	0.00	71.18	70.50	.000	
46+00	62L		0.00											
			0.00											
2	62	25	0.00	0.00	72.50	24	14.00	0.0	74.52	0.00	70.91	70.50	.000	
~~45+00~~ 44+96	88L		0.00											
			0.00											
62	162	131	0.00	0.00	74.42	24	0.00	0.0	74.52	0.00	70.50	70.30	.000	
~~45+00~~ 44+96	65L		0.00											
			0.00											

50yr LAKE Floyd Flood EL = 69.9

USE $\frac{dc+d}{2}$ + INV for TW

(1.78 + 68.3 = 70.08)

AHW = 74.52

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DATE PROCESSED
PROJECT 14818-3518 ZONE 6 FREQ 3 PAGE 2

SR 45: CULVERT EAST

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	M
1 63	S	194	0.00	0.00	0.00	10.00	1.62	6.61	0.00	3.40	74.00	71.14	71.10	0.04	24*	0.019	1.08	.012
47+94	36L		0.00	0.00	0.00					(3.40)	74.52	71.44	71.1					
			0.00	0.00	0.00													
63 62	M	100	0.00	0.00	0.00	11.62	0.03	6.19	0.00	4.70	72.70	71.10	71.06	0.04	24*	0.037	1.50	.012
46+00	62L		0.00	0.00	0.00					(4.70)	74.52	71.1	70.5					
			0.00	0.00	0.00							OK						
2 62	M	25	0.00	0.00	0.00	10.00	0.09	6.61	0.00	14.00	72.50	71.15	71.06	0.00	24*	0.327	4.46	.012
~~45+00~~ 44+96	88L		0.00	0.00	0.00					(14.00)	74.52	70.91	70.5					
			0.00	0.00	0.00													
62 162	M	131	0.00	0.00	0.00	12.45	0.37	6.00	0.00	18.70	74.42	71.06	70.30	0.76	24*	0.584	5.95	.012
~~45+00~~ 44+96	65L		0.00	0.00	0.00					(18.70)	74.52	70.50	70.3					
			0.00	0.00	0.00													

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SR 45: CULVERT EAST

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	63	6798.00	63	62	3500.00	2	62	875.00
62	162	4585.00						

TOTAL SYSTEM COST = 15758.00

SR 45: CULVERT EAST

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 63
MAXIMUM VELOCITY (GRADIENT FLOW)	5.95 FPS	62 TO 162
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 63
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	1.00 FPS	1 TO 63
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 63
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	1.35 FT	2 TO 62
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	3.37 FT	2 TO 62 ← ok
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -
NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -
NO PIPES

COMMENTS

SR 45

CULVERT SYSTEM SR 54 44+96

PEGDR632 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 11/SEP/95 PROJECT 14010-3518 ENGINEER: TM

SR 45: CULVERT EAST 100yr EVENT

CP III ALTERNATE
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012 $\frac{dc+d}{2}$
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 70.14 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DESIGN TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
1	63	S	194	0.00	0.00	74.00	24	3.70	0.0	74.52	0.00	71.44	71.10	.000	
47+94	36L			0.00											
				0.00											
63	62	M	100	0.00	0.00	72.70	24	1.40	0.0	74.52	0.00	71.10	70.50	.000	
46+00	62L			0.00											
				0.00											
2	62	M	25	0.00	0.00	72.50	24	17.00	0.0	74.52	0.00	70.91	70.50	.000	
~~45+00~~ 44+96	88L			0.00											
				0.00											
62	162	M	131	0.00	0.00	74.42	24	0.00	0.0	74.52	0.00	70.50	70.30	.000	
~~45+00~~ 44+96	65L			0.00											
				0.00											

100yr LAKE FLOYD flood EL = 70.14

$\frac{dc+d}{2}$ + INV = 1.84 + 68.3 = 70.14

AHW = 74.52

DATE PROCESSED
PROJECT 14010-3518 ZONE 6 FREQ 3 PAGE 2

SR 45: CULVERT EAST

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF CROWN F.L. UPPER END	H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	M
1 63	S	194	0.00	0.00	0.00	10.00	1.62	6.61	0.00	3.70	74.00	71.46	71.41	0.04	24*	0.023	1.18	.012
47+94	36L		0.00	0.00	0.00					(3.70)	74.52	71.44	71.1					
			0.00	0.00	0.00													
63 62	M	100	0.00	0.00	0.00	11.62	0.83	6.19	0.00	5.10	72.70	71.41	71.37	0.04	24*	0.043	1.62	.012
46+00	62L		0.00	0.00	0.00					(5.10)	74.52	71.1 OK	70.5					
			0.00	0.00	0.00													
2 62	M	25	0.00	0.00	0.00	10.00	0.00	6.61	0.00	17.00	72.50	71.49	71.37	0.12	24*	0.482	5.41	.012
~~45+00~~ 44+96	88L		0.00	0.00	0.00					(17.00)	74.52	70.91	70.5					
			0.00	0.00	0.00													
62 162	M	131	0.00	0.00	0.00	12.45	0.31	6.00	0.00	22.10	74.42	71.37	70.38	1.07	24*	0.815	7.03	.012
~~45+00~~ 44+96	65L		0.00	0.00	0.00					(22.10)	74.52	70.50	70.3					
			0.00	0.00	0.00													

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SR 45: CULVERT EAST

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	63	6790.00	63	62	3500.00	2	62	875.00
62	162	4585.00						

TOTAL SYSTEM COST = 15750.00

SR 45: CULVERT EAST

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 63
MAXIMUM VELOCITY (GRADIENT FLOW)	7.03 FPS	62 TO 162
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 63
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	1.18 FPS	1 TO 63
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 63
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	1.01 FT	2 TO 62
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	3.03 FT	2 TO 62 ← OK
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -
NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -
NO PIPES

COMMENTS

SR 45 CULVERT SYSTEM SR 54 44+96

PEGDR632 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 11/SEP/95 PROJECT 14010-3518 ENGINEER: TM

SR 45: CULVERT EAST OVERTOPPING

CP III ALTERNATE
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012 ✓ $\frac{dc+d}{2}$
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 70.30 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T I I Y S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
1	63	S	194	0.00	0.00	74.00	24	5.20	0.0	74.52	0.00	71.44	71.10	.000	
47+94	36L			0.00											
				0.00											
63	62	M	100	0.00	0.00	72.70	24	2.00	0.0	74.52	0.00	71.10	70.50	.000	
46+00	62L			0.00											
				0.00											
2	62	M	25	0.00	0.00	72.50	24	22.30	0.0	74.52	0.00	70.91	70.50	.000	
~~45+00~~ 44+96	88L			0.00											
				0.00											
62	162	M	131	0.00	0.00	74.42	24	0.00	0.0	74.52	0.00	70.50	70.30	.000	
~~45+00~~ 44+96	65L			0.00											
				0.00											

100YR LAKE FLOYD FLOOD EL = 70.14

ASSUME OVERTOPPING EVENT = 70.24

$\frac{dc+d}{2}$ + INV ⇒ 2.0 + 68.30 = 70.30

OVERTOPING EL = 74.54

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IV-79

DATE PROCESSED
PROJECT 14018-3518 ZONE 6 FREQ 3 PAGE 2

SR 45: CULVERT EAST

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.95 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	N
1 63	S	194	0.00	0.00	0.00	10.00	1.62	6.61	0.00	5.20	74.00	72.38	72.29	0.09	24*	0.045	1.66	.012
47+94	36L		0.00	0.00	0.00				(	5.20)	74.52	71.44	71.1					
			0.00	0.00	0.00													
63 62	M	100	0.00	0.00	0.00	11.62	0.73	6.19	0.00	7.20	72.70	72.29	72.20	0.09	24*	0.087	2.29	.012
46+00	62L		0.00	0.00	0.00				(	7.20)	74.52	71.1	70.5					
			0.00	0.00	0.00							OK						
2 62	M	25	0.00	0.00	0.00	10.00	0.06	6.61	0.00	22.30	72.50	72.41	72.20	0.21	24*	0.830	7.10	.012
~~45+00~~ 44+96	88L		0.00	0.00	0.00				(	22.30)	74.52	70.91	70.5					
			0.00	0.00	0.00													
62 162	M	131	0.00	0.00	0.00	12.34	0.23	6.02	0.00	29.50	74.42	72.20	70.30	1.90	24*	1.452	9.39	.012
~~45+00~~ 44+96	65L		0.00	0.00	0.00				(	29.50)	74.52	70.5	70.3					
			0.00	0.00	0.00													

SR 45: CULVERT EAST

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	63	6790.00	63	62	3500.00	2	62	875.00
62	162	4585.00						

TOTAL SYSTEM COST = 15750.00

SR 45: CULVERT EAST

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 63
MAXIMUM VELOCITY (GRADIENT FLOW)	9.39 FPS	62 TO 162
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 63
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	1.66 FPS	1 TO 63
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 63
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	0.09 FT	2 TO 62
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	2.11 FT	2 TO 62 ← ok
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

SYSTEM C

STORM SEWER

DESIGN

SR 45 BASIN C

POST CONDITION ROUTING (3YR-8HR FDOT EVENT)

OUTLET CONTROL EL = 69.98

Project PC_3_8, Run of Thu Aug 31 14:43:33 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND C	POND C	DIRECT
1	WS ON POND C	POND C	DIRECT
2	WS TO LAKE WEST	LAKE WEST	DIRECT
3	POND C	RISER	VEE NOTCH
4	POND C	RISER	RECT WEIR
5	POND C	RISER	RECT WEIR
6	POND C	RISER	RECT WEIR
7	RISER	SUMP	PIPE
8	SUMP	CULVERT	DITCH
9	POND C	LAKE EAST	RECT WEIR
10	CULVERT	LAKE WEST	PIPE

Node	Name	Node Type
0	POND C	POND
1	WS TO POND C	SUBAREA
2	WS ON POND C	SUBAREA
3	RISER	JUNCTION
4	LAKE EAST	STAGING
5	LAKE WEST	STAGING
6	WS TO LAKE WEST	SUBAREA
7	CULVERT	JUNCTION
8	SUMP	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND C	POND	68.14	0.00	→69.98	5.80	NO
1	WS TO POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
2	POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
3	RISER	JUNCTION	67.05	0.00	69.80	5.80	NO
4	LAKE EAST	STAGING	68.50	0.00	68.51	8.00	NO
5	LAKE WEST	STAGING	64.00	0.00	65.60	8.00	NO
6	WS TO LAKE WEST	SUBAREA	74.00	0.00	74.00	0.00	NO
7	CULVERT	JUNCTION	67.29	0.00	69.02	5.80	NO
8	SUMP	JUNCTION	66.66	0.00	69.32	5.80	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND C	55.36 @ 4.00 Hours	21.65 @ 5.80 Hours
1	WS TO POND C	49.57 @ 4.10 Hours	49.57 @ 4.10 Hours
2	WS ON POND C	10.12 @ 3.50 Hours	10.12 @ 3.50 Hours
3	RISER	14.91 @ 5.80 Hours	14.91 @ 5.80 Hours
4	LAKE EAST	6.73 @ 5.80 Hours	0.00 @ 0.00 Hours
5	LAKE WEST	15.08 @ 5.80 Hours	0.00 @ 0.00 Hours
6	WS TO LAKE WEST	0.84 @ 4.00 Hours	0.84 @ 4.00 Hours
7	CULVERT	14.91 @ 5.80 Hours	14.91 @ 5.80 Hours
8	SUMP	14.91 @ 5.80 Hours	14.91 @ 5.80 Hours

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Subarea POST BASIN C TO POND 3yr-8hr 8/29/95

UNIT HYDROGRAPH FILE.....	SCS_256	FILE....	WSTOC3_8
TOTAL DRAINAGE AREA, ACRES...	34.9	INPUT ID	809731894
WEIGHTED SCS CURVE NUMBER....	92.53	TYPE....	RNF0002
INITIAL ABSTRACTION FACTOR...	0.2	RUN, HRS	11.7
TIME OF CONCENTRATION, HOURS.	0.601	DT, HRS.	0.1
		DATA PTS	118
		STORM...	FDOT_8
		DURATION	8.0
		RAINFALL	4.72
		EXCESS..	3.8726943
		ACREAGE.	34.9
		TC, HRS.	0.601
		TP, HRS.	4.1
		PEAK CFS	49.573517
		ACFT VOL	11.259362
		READY...	YES
		CFS TOL.	0.0001
		HRS TOL.	0.01

post 3yr-8hr Hydrographs

Subarea POST BASIN C ON POND 3yr-8hr

UNIT HYDROGRAPH FILE.....	SCS_256	FILE....	WSONC3_8
TOTAL DRAINAGE AREA, ACRES...	4.369	INPUT ID	767758825
WEIGHTED SCS CURVE NUMBER....	100.0	TYPE....	RNF0002
INITIAL ABSTRACTION FACTOR...	0.2	RUN, HRS	9.0
TIME OF CONCENTRATION, HOURS.	0.0	DT, HRS.	0.1
		DATA PTS	91
		STORM...	FDOT_8
		DURATION	8.0
		RAINFALL	4.72
		EXCESS..	4.7199998
		ACREAGE.	4.369
		TC, HRS.	0.0
		TP, HRS.	3.5
		PEAK CFS	10.117908
		ACFT VOL	1.7179052
		READY...	YES
		CFS TOL.	0.0001
		HRS TOL.	0.01

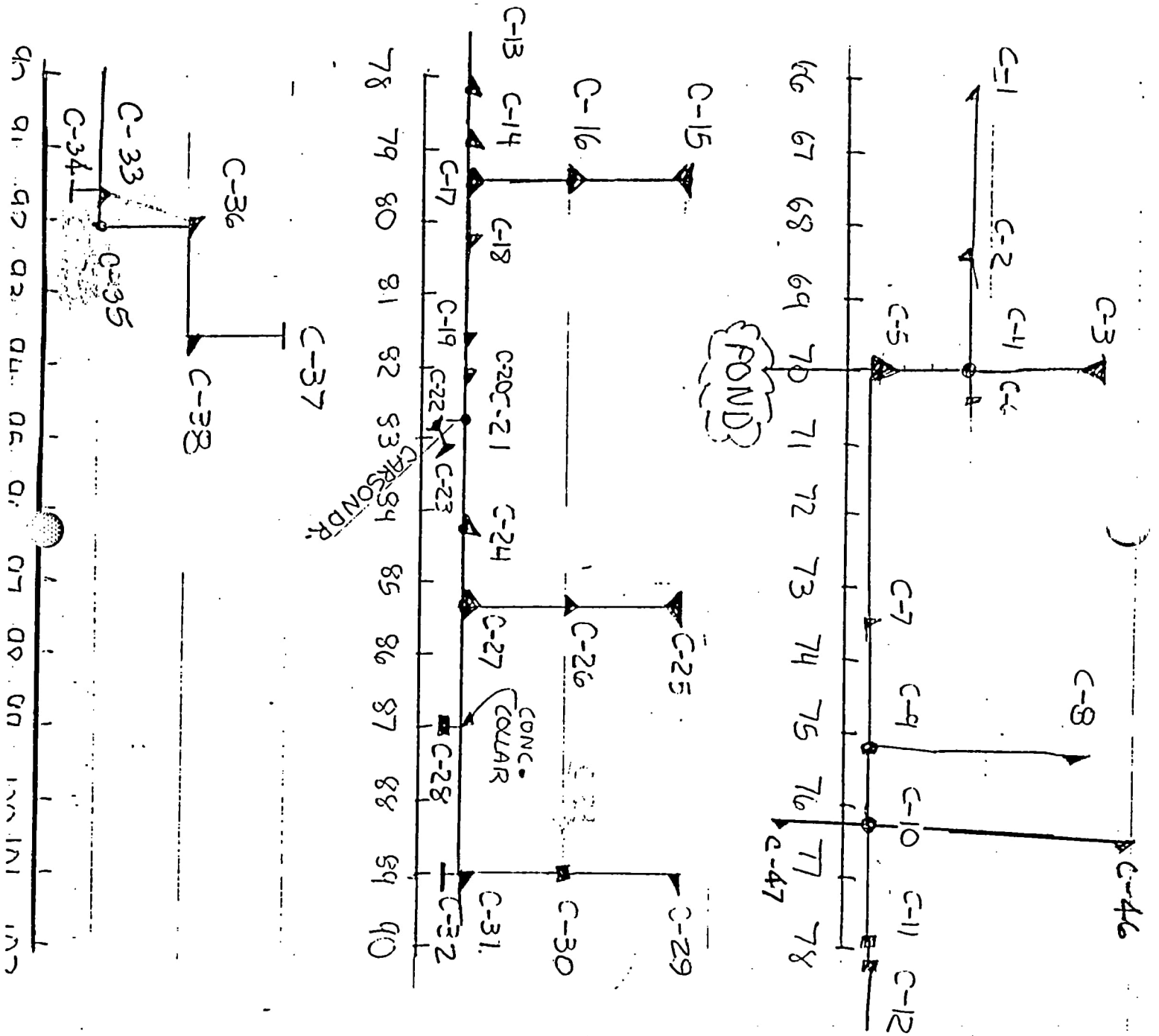
REV. 12-22-94

Henigar & Ray

PROJECT: Basin C

made by: CLJ date: 11-30-94 job no. 21663

checked by: _____ date: _____ sheet no. _____



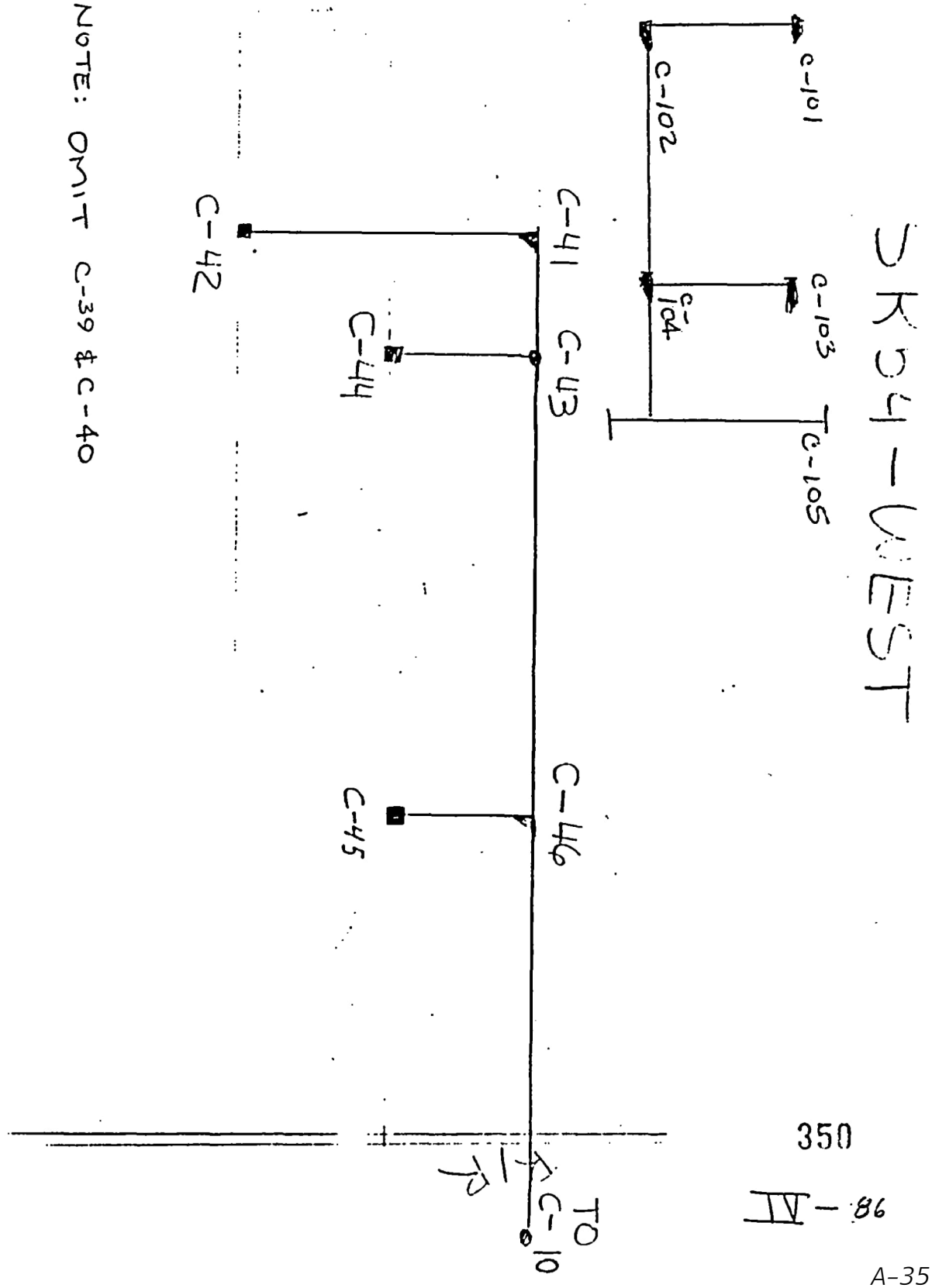
REV. 12-22-94

Henigar & Ray

PROJECT: BASIN C

made by: CLT date: 11-30-94 job no. 21663

checked by: _____ date: _____ sheet no. 2



350

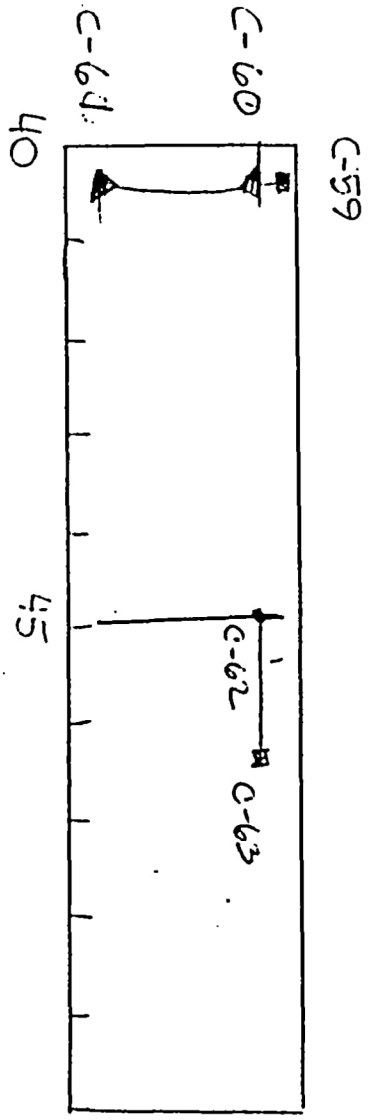
IV-86

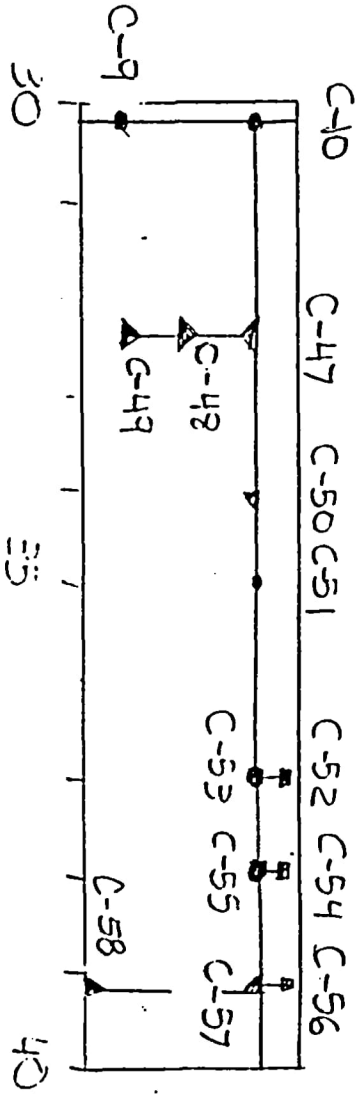
REV-12-22-94

Henigar & Ray

made by: CJ date: 11-30-94 job no. 216653

PROJECT: BASIN C checked by: _____ date: _____ sheet no. 3





UNIT - INCH

351

IV-87

Henigar & Ray

PROJECT: SR 45

made by: CLJ date: 5-94 job no. 21663
checked by: _____ date: _____ sheet no. 103

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlet are also listed with calculations attached.

RT M LOMB

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
C		C-1		C-4 MH
	C-5	C-2	C-3	C-17 OFFSITE
		C-6		C-9 MH
				C-10 MH
			C-8	
		C-16		C-11, C-12, C-13, C-14, C-15, C-17, C-18, C-19, C-20 OFFSITE
				C-21 MH
				352
				C-22, C-23 Carson Dr.

(III-88)

Henigar & Ray made by: CLS date: 5-94 job no. 21663
PROJECT: SR45 checked by: date: sheet no. 2 of 3

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
C				C-24 } OFFSITE
		C-26		C-25 } OFFSITE
		C-29		C-27 } OFFSITE
	C-32	C-31		C-28 GMOD.
				C-42 MH
	C-34	C-36		C-32 Spec. H.W.
				C-34 Spec. HW.
		C-38		C-37 Spec. H.W.
				C-30
				C-41 OFFSITE
				C-42 D Inlet
				C-44
				C-45
				C-46

Henigar & Ray made by: [illegible] date: 5-94 job no. 21663
checked by: date: sheet no. 3 of 3
PROJECT: SR45

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
C				C-47
		C-48 East		C-48 West
				C-49 West
				C-50 OFFSITE
				C-51 MH
				C-52 } D
				C-54 } Inlets
			C-57	C-56
			C-59	C-58
			C-60	
			C-101	
			C-102	
			C-103	
			C-104	
			C-105	

354

IV-90

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: C-7

STATION: 73+65 RT

DRAINAGE AREA: 0.90Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.88	9.29

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.434	0.36	2.11

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: ~~C-18~~ C-11, C-12, C-13

STATION: 78+00 R
78+12 R
78+31 R

DRAINAGE AREA: 0.73Acres (EACH)

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.75	9.12

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.441	0.35	2.09

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-~~22~~ 14

STATION: 78+92 R

DRAINAGE AREA: 0.72Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.69	9.04

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.445	0.35	2.08

328

357

IV-93

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: C-15 SOUTH

STATION: 79+50 LT

DRAINAGE AREA: 0.69Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.20	8.33

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.479	0.33	2.00

358

IV-94

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: C-15 NORTH

STATION: 79+50 LT

DRAINAGE AREA: 0.57Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.82	7.70

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.513	0.31	1.92

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: ~~C-25~~ 17 NORTH + SOUTH

STATION: 79+50 R

DRAINAGE AREA: 0.68Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.60	8.91

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.451	0.35	2.07

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-~~27~~ 18

STATION: 80+20 R

DRAINAGE AREA: 0.66Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.46	8.72

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.460	0.34	2.05

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-~~29~~ 19

STATION: 80+75 R

DRAINAGE AREA: 0.60Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.24	8.39

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.476	0.33	2.01

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-20

STATION: 81+28 R

DRAINAGE AREA: 0.55Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.01	8.02

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.495	0.32	1.96

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

CARSON DR

INLET NO.: C-~~33~~ 22

STATION: 31+19.89 R

DRAINAGE AREA: 0.21Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.021	0.020	0.013	0.80	4.04

S=2.05%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.863	0.18	3.41

364

IV-700

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-~~34~~23

CARSON PR
STATION: 31+19.89 L

DRAINAGE AREA: 0.18Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.021	0.020	0.013	0.68	3.62

S = 2.05%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.900	0.17	3.36

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: C-~~36~~ 24

STATION: 84+35 R

DRAINAGE AREA: 0.44Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.51	7.12

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.549	0.29	1.84

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: ~~C-3~~ 25 SOUTH

STATION: 85+35 L

DRAINAGE AREA: ~~0.58~~ 0.52 Acres ✓

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.56	7.22

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.542	0.30	1.86

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: C-25 NORTH

STATION: 85+35 LT

DRAINAGE AREA: 0.54Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	2.06	7.44

S=.45%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.529	0.30	2.31

368

IV-104

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: ~~C-39~~ 27 NORTH

STATION: 85+35 R

DRAINAGE AREA: 1.09Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	3.18	8.91

S=.45%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.451	0.35	2.54

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-31-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: ~~C-38~~ 27 SOUTH

STATION: 85+35 R

DRAINAGE AREA: 0.48Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.46	7.02

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.555	0.29	1.83

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 12-22-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: C-~~30~~29

STATION: 90+00 LT

DRAINAGE AREA: 0.58Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	2.20	7.66

S=.45%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.516	0.31	2.33

371

IV-107

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: GG

DATE: 09-15-1995

PROJECT: SR 45 (SR 54)

PROJECT NO.: 56103.01

INLET NO.: C-44

STATION: 1040+91

DRAINAGE AREA: .57 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Uniform	0.003	0.020	0.013	1.71	10.24

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.020	0.00	0.000	0.20	1.63

372

III - 108

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: GG

DATE: 09-15-1995

PROJECT: SR 45 (SR 54)

PROJECT NO.: 56103.01

INLET NO.: C-43

STATION: 1040+91

DRAINAGE AREA: .59 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.57	7.24

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.540	0.30	1.86

373

FW-109

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: GG

DATE: 09-15-1995

PROJECT: SR 45 (SR 54)

PROJECT NO.: 56103.01

INLET NO.: C-47

STATION: 32+60

DRAINAGE AREA: .83 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.33	6.75

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.573	0.28	1.79

USE ½ OF .83 AC TO CALC. 1.33 CFS FOR P-6 INLET SUMP.
TOTAL DISCHARGE IS 2.66 CFS AND ACCORDING TO FIGURE 12-21 OF VOL. 2B OF FDOT DRAINAGE MANUAL THE TOTAL SPREAD IS APPROX. 6.2', WHICH IS ACCEPTABLE.

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: GG

DATE: 09-15-1995

PROJECT: SR 45 (SR 54)

PROJECT NO.: 56103.01

INLET NO.: C-60/C-61

STATION: 40+50

DRAINAGE AREA: .86 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.29	6.67

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.579	0.28	1.78

USE ½ OF .86 AC. TO CALC. 1.29 CFS. FOR A P-6 INLET SUMP. TOTAL DISCHARGE IS 2.58 CFS AND ACCORDING TO FIGURE 12-21 OF VOL. 2B OF FDOT DRAINAGE MANUAL THE TOTAL SPREAD IS APPROX. 6.1', WHICH IS ACCEPTABLE.

Henigar & Ray

PROJECT: SR45

made by: CJ date: 5-25-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
C INTO BOX CULVERT	NONE	NONE	NONE	C-101 C-102 C-103 C-104

376

IV-113

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: GG

DATE: 09-15-1995

PROJECT: SR 45 (SR 54)

PROJECT NO.: 56103.01

INLET NO.: C-101/102

STATION: 1031+05

DRAINAGE AREA: .48 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.74	7.56

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.521	0.31	1.90

377

IV-113

A-378

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: MTL

DATE: 05-28-1996

PROJECT: SR 45

PROJECT NO.: 14010-35

INLET NO.: C-104/SR 54 (C-103/SR 54)

STATION: 1034+00 (1034+15)

DRAINAGE AREA: .68 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	3.60	10.16

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.399	0.38	2.23

Henigar & Ray

PROJECT: SR45

made by: CJS date: 11-30-94 job no. 21663
checked by: _____ date: _____ sheet no. _____

SYSTEM C - SAG INLET CHECKS

SAG INLET ID	INLET TYPE	AREA Ac	3YR Q CFS	*ALLOWABLE Q CFS	ok
3	211-6	1.20	3.84	7.2	
5	211-6	1.09	3.49	7.2	
15	211-6	1.26	4.03	7.2	
17	211-6	1.38	4.42	7.2	
25	211-6	1.06	3.39	7.2	
27	211-6	1.58	5.06	7.2	
47	211-6	.83	2.66	7.2	
49	211-6	.44	1.40	7.2	
60	211-6	.86	2.58	7.2	
61	211-6	.86	2.58	7.2	

$Q = C i A$
$= .80(4.0)(A)$

NOTE: INLETS 60 & 61
USE $Q = .75(4.0)(A)$

* Allowable Q based on FDOT Tables 12-21 and 12-22 for sump condition spread VS Total inlet Flow (FDOT Drainage Manual)

For Spread = 8+1.5 = 9.5'
Q = 7.20 cfs (Avg.)

25YEAR OVERTOPPING CHECK

POND C 25YR-24HR DHW = 71.23

LOWEST GUTTER ELEV = 71.56 @ C-39

379

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 5/28 /96 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41) BASIN C FILE:45C90.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 69.98 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DIST	TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
1	2		S	218	0.28	0.00	73.29	18	0.00	0.0	0.00	0.00	70.79	70.14	.000	
66+12	22R				0.00											
					0.00											
2	4		M	165	0.30	0.00	72.64	18	0.00	0.0	0.00	0.00	70.14	69.89	.000	
68+30	17R				0.00											
					0.00											
3	4		S	63	1.20	0.00	71.82	18	0.00	0.0	0.00	0.00	69.32	69.22	.000	
70+00	62L				0.00											
					0.00											
4	5		M	78	0.00	0.00	73.20	24	0.00	0.0	0.00	0.00	69.22	68.50	.000	
70+00	0L				0.00											
					0.00											
5	0		M	70	1.09	0.00	72.06	72	0.00	0.0	0.00	0.00	68.00	67.90	.000	
70+00	78R				0.00											
					0.00											
6	4		S	28	0.68	0.00	72.47	18	0.00	0.0	0.00	0.00	70.02	69.92	.000	
70+28	0L				0.00											
					0.00											
7	5		M	365	0.90	0.00	72.79	72	0.00	0.0	0.00	0.00	69.24	68.00	.000	
73+65	75R				0.00											
					0.00											
8	9		M	134	0.18	0.00	73.96	18	0.00	0.0	0.00	0.00	71.44	71.24	.000	
1044+80	60R				0.00											
					0.00											
9	7		M	135	0.00	0.00	74.60	72	0.00	0.0	0.00	0.00	69.34	69.24	.000	
75+00	69R				0.00											
					0.00											
10	9		M	142	0.00	0.00	74.80	72	0.00	0.0	0.00	0.00	69.44	69.34	.000	
76+42	67R				0.00											
					0.00											
11	10		M	158	0.73	0.00	73.52	42	0.00	0.0	73.52	0.00	69.54	69.44	.000	
78+00	63R				0.00											
					0.00											
12	11		M	12	0.73	0.00	73.48	42	0.00	0.0	73.48	0.00	69.64	69.54	.000	
78+12	63R				0.00											
					0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
13	12			M	19	0.73	0.00	73.47	42	0.00	0.0	0.00	0.00	69.74	69.64	.000	
78+31		62R				0.00											
						0.00											
14	13			M	61	0.72	0.00	73.28	42	0.00	0.0	0.00	0.00	69.84	69.74	.000	
78+92		62R				0.00											
						0.00											
15	16			M	78	1.26	0.00	72.75	18	0.00	0.0	0.00	0.00	70.25	70.13	.000	
79+50		62L				0.00											
						0.00											
16	17			M	47	0.42	0.00	73.66	18	0.00	0.0	0.00	0.00	70.13	70.03	.000	
79+50		15R				0.00											
						0.00											
17	14			M	58	1.38	0.00	73.11	42	0.00	0.0	0.00	0.00	69.94	69.84	.000	
79+50		62R				0.00											
						0.00											
18	17			M	70	0.66	0.00	73.32	42	0.00	0.0	0.00	0.00	70.04	69.94	.000	
80+20		60R				0.00											
						0.00											
19	18			M	55	0.60	0.00	73.49	42	0.00	0.0	0.00	0.00	70.14	70.04	.000	
80+75		59R				0.00											
						0.00											
20	19			M	58	0.55	0.00	73.66	42	0.00	0.0	0.00	0.00	70.24	70.14	.000	
81+33		58R				0.00											
						0.00											
21	20			M	130	0.00	0.00	73.93	42	0.00	0.0	0.00	0.00	70.34	70.24	.000	
82+63		61R				0.00											
						0.00											
22	21			M	51	0.21	0.00	73.65	18	0.00	0.0	73.65	0.00	70.45	70.35	.000	
31+20		13R				0.00											
						0.00											
23	22			S	26	0.18	0.00	73.65	18	0.00	0.0	73.65	0.00	70.55	70.45	.000	
31+20		13L				0.00											
						0.00											
24	21			M	172	0.44	0.00	73.46	42	0.00	0.0	0.00	0.00	70.45	70.34	.000	
84+35		51R				0.00											
						0.00											
25	26			S	58	1.06	0.00	73.10	18	0.00	0.0	0.00	0.00	70.75	70.65	.000	
85+50		50L				0.00											
						0.00											
26	27			M	43	0.23	0.00	73.82	18	0.00	0.0	0.00	0.00	70.65	70.55	.000	
85+50		8R				0.00											
						0.00											
27	24			M	115	1.58	0.00	73.10	42	0.00	0.0	0.00	0.00	70.64	70.45	.000	
85+50		50R				0.00											
						0.00											
28	928			S	7	0.84	24.30	72.91	15	0.00	0.0	73.50	0.00	71.55	71.45	.000	
87+00		57R				0.00											
						0.00											
928	27			M	150	0.00	0.00	73.79	30	0.00	0.0	0.00	0.00	71.10	70.64	.000	
87+00		50R				0.00											
						0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D S T I I Y S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
29	30	S	43	0.58	0.00	74.68	18	0.00	0.0	0.00	0.00	72.49	72.39	.000	
89+00	50L			0.00											
				0.00											
30	31	M	58	0.23	0.00	75.26	18	0.00	0.0	0.00	0.00	72.39	71.62	.000	
89+00	8L			0.00											
				0.00											
31	928	M	200	0.36	0.00	74.68	30	0.00	0.0	0.00	0.00	71.71	71.10	.000	
89+00	50R			0.00											
				0.00											
32	31	S	9	2.29	25.00	72.69	18	0.00	0.0	73.60	0.00	73.69	71.70	.000	
89+00	59R			0.00											
				0.00											
33	31	M	287	0.42	0.00	75.98	24	0.00	0.0	0.00	0.00	73.01	71.71	.000	
91+73	50R			0.00											
				0.00											
34	33	S	9	0.98	18.00	74.00	18	0.00	0.0	75.40	0.00	75.50	73.50	.000	
91+73	59R			0.00											
				0.00											
35	33	M	99	0.00	0.00	77.24	24	0.00	0.0	0.00	0.00	71.20	71.01	.000	
92+72	55R			0.00											
				0.00											
36	35	M	52	0.09	0.00	77.04	24	0.00	0.0	0.00	0.00	73.11	73.01	.000	
92+72	8R			0.00											
				0.00											
37	38	S	72	1.27	0.00	72.00	18	0.00	0.0	74.36	0.00	73.50	73.39	.000	
93+95	62L			0.00											
				0.00											
38	36	M	124	0.00	0.00	77.84	18	0.00	0.0	0.00	0.00	73.39	73.11	.000	
93+95	8R			0.00											
				0.00											
41	43	M	256	0.00	0.00	71.58	36	0.00	0.0	0.00	0.00	68.30	68.00	.000	
1038+35	60L			0.42											
				0.09											
42	41	S	120	0.00	0.00	71.58	18	0.00	0.0	0.00	0.00	69.18	68.98	.000	
1038+35	60R			0.38											
				0.00											
43	46	M	210	0.00	0.00	72.57	36	0.00	0.0	0.00	0.00	68.00	67.65	.000	
1040+91	60L			0.26											
				0.33											
44	43	S	53	0.00	0.00	73.17	18	0.00	0.0	0.00	0.00	70.04	69.94	.000	
1040+91	7L			0.57											
				0.00											
45	46	S	53	0.00	0.00	73.71	18	0.00	0.0	0.00	0.00	67.70	67.50	.000	
1043+00	7L			0.21											
				0.00											
46	10	M	300	0.00	0.00	73.20	36	0.00	0.0	0.00	0.00	67.65	67.47	.000	
1043+00	60L			0.17											
				0.32											
47	10	M	183	0.83	0.00	72.02	42	0.00	0.0	0.00	0.00	69.20	69.09	.000	
32+60	72L			0.00											
				0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	DIST	TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
48	47		M	67	0.43	0.00	73.00	18	0.00	0.0	0.00	0.00	70.37	69.50	.000	
32+60		7R			0.00											
					0.00											
49	48		S	53	0.44	0.00	72.38	18	0.00	0.0	0.00	0.00	70.47	70.37	.000	
32+60		60R			0.00											
					0.00											
50	47		M	157	0.00	0.00	72.49	36	0.00	0.0	0.00	0.00	69.30	69.20	.000	
34+17		72L			0.29											
					0.00											
51	50		M	61	0.00	0.00	73.26	36	0.00	0.0	0.00	0.00	69.40	69.30	.000	
34+78		56L			0.00											
					0.00											
52	53		S	8	0.29	0.00	73.00	18	0.00	0.0	73.50	0.00	71.00	70.90	.000	
37+00		65L			0.00											
					0.00											
53	51		M	222	0.00	0.00	73.76	36	0.00	0.0	0.00	0.00	69.54	69.40	.000	
37+00		56L			0.00											
					0.00											
54	55		S	8	0.58	0.00	72.70	18	0.00	0.0	73.20	0.00	70.80	70.70	.000	
38+00		65L			0.00											
					0.00											
55	53		M	100	0.00	0.00	73.46	36	0.00	0.0	0.00	0.00	69.64	69.54	.000	
38+00		56L			0.00											
					0.00											
56	57		S	5	2.26	15.00	72.40	24	0.00	0.0	72.90	0.00	70.34	70.24	.000	
39+22		65L			0.00											
					0.00											
57	55		M	122	0.00	0.00	72.87	36	0.00	0.0	0.00	0.00	69.74	69.64	.000	
39+22		60L			0.46											
					0.00											
58	57		S	120	0.00	0.00	72.85	18	0.00	0.0	0.00	0.00	70.00	69.70	.000	
39+30		60R			0.46											
					0.00											
59	60		S	5	0.82	0.00	72.00	18	0.00	0.0	72.50	0.00	69.97	69.87	.000	
40+50		65L			0.00											
					0.00											
60	57		M	128	0.00	0.00	72.49	36	0.00	0.0	0.00	0.00	69.87	69.74	.000	
40+50		60L			0.86											
					0.00											
61	60		M	115	0.00	0.00	72.49	24	0.00	0.0	72.49	0.00	70.00	69.87	.000	
40+50		60R			0.86											
					0.00											

DATE PROCESSED

PROJECT 14010-3518 ZONE 6 FREQ 3 PAGE 5

SR45 (US41) BASIN C FILE:45C90.IN

*HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV. OF H.G. ELEV LOWER END	FALL PIPE DIA (IN)	SLOPE (%) HYD PHYSICAL	VEL. (FPS) GRADIENT	N
1 2	S	218	0.28	0.28	0.22	10.00	1.82	6.61	0.22	1.48	73.29	70.33	70.29	0.04	18*	0.017	0.84	.012
66+12	22R		0.00	0.00	0.00							70.79	70.14					
			0.00	0.00	0.00													
2 4	M	165	0.30	0.58	0.46	11.82	1.37	6.14	0.46	2.85	72.64	70.29	70.18	0.10	18*	0.663	1.61	.012
68+30	17R		0.00	0.00	0.00							70.14	69.89					
			0.00	0.00	0.00													
3 4	S	63	1.20	1.20	0.96	10.00	0.29	6.61	0.96	6.34	71.82	70.38	70.18	0.20	18*	0.311	3.53	.012
70+00	62L		0.00	0.00	0.00							69.32	69.22					
			0.00	0.00	0.00													
6 4	S	28	0.68	0.68	0.54	10.00	0.23	6.61	0.54	3.59	72.47	70.21	70.18	0.03	18*	0.100	2.03	.012
70+28	0L		0.00	0.00	0.00							70.02	69.92					
			0.00	0.00	0.00													
4 5	M	78	0.00	2.46	1.97	13.19	0.35	5.85	1.97	11.51	73.20	70.18	70.01	0.17	24*	0.221	3.66	.012
70+00	0L		0.00	0.00	0.00							69.22	68.50					
			0.00	0.00	0.00													
8 9	M	134	0.18	0.18	0.14	10.00	1.12	6.61	0.14	0.95	73.96	71.25	71.24	0.01	18*	0.007	0.54	.012
~~44+80~~ 1044+00	60R		0.00	0.00	0.00							71.44	71.24					
			0.00	0.00	0.00													
15 16	M	78	1.26	1.26	1.01	10.00	0.34	6.61	1.01	6.66	72.75	71.58	71.32	0.27	18*	0.343	3.77	.012
79+50	62L		0.00	0.00	0.00							70.25	70.13					
			0.00	0.00	0.00													
16 17	M	47	0.42	1.68	1.34	10.34	0.16	6.51	1.34	8.75	73.66	71.32	71.04	0.28	18*	0.593	4.95	.012
79+50	15R		0.00	0.00	0.00							70.13	70.03					
			0.00	0.00	0.00													
23 22	S	26	0.18	0.18	0.14	10.00	0.22	6.61	0.14	0.95	73.85	71.42	71.41	0.01	18*	0.007	0.54	.012
31+20	13L		0.00	0.00	0.00						73.85	70.55	70.45					
			0.00	0.00	0.00													
22 21	M	51	0.21	0.39	0.31	10.22	0.43	6.55	0.31	2.04	73.85	71.41	71.39	0.02	18*	0.032	1.16	.012
31+20	13R		0.00	0.00	0.00						73.85	70.45	70.35					
			0.00	0.00	0.00													
25 26	S	58	1.06	1.06	0.85	10.00	0.30	6.61	0.85	5.60	73.10	71.96	71.82	0.14	18*	0.243	3.17	.012
85+50	50L		0.00	0.00	0.00							70.75	70.65					
			0.00	0.00	0.00													
26 27	M	43	0.23	1.29	1.03	10.30	0.19	6.52	1.03	6.73	73.82	71.82	71.67	0.15	18*	0.351	3.81	.012
85+50	8R		0.00	0.00	0.00							70.65	70.55					
			0.00	0.00	0.00													
28 928	S	7	0.84	0.84	0.67	24.30	0.05	4.35	0.67	2.92	72.91	72.11	72.09	0.01	15*	0.175	2.38	.012
87+00	57R		0.00	0.00	0.00						73.50	70.55	70.45					
			0.00	0.00	0.00													
29 30	S	43	0.58	0.58	0.46	10.00	0.36	6.61	0.46	3.07	74.68	72.66	72.63	0.03	18*	0.073	1.73	.012
89+00	50L		0.00	0.00	0.00							72.49	72.39					
30			0.00	0.00	0.00													
6 31	M	58	0.23	0.81	0.65	10.36	0.41	6.51	0.65	4.22	75.26	72.63	72.55	0.08	18*	0.138	2.39	.012
89+00	8L		0.00	0.00	0.00							72.39	71.62					
89+00			0.00	0.00	0.00													
32 31	S	9	2.29	2.29	1.83	25.88	0.03	4.22	1.83	7.73	72.69	72.59	72.55	0.04	18*	0.462	4.37	.012
89+00	59R		0.00	0.00	0.00						73.60	73.69	71.70					
			0.00	0.00	0.00													

384 IV-120

DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 6

PIPE NT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF CROWN F.L. UPPER END	H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
34 33	S	9	0.98	0.98	0.78	18.80	0.07	4.95	0.78	3.88	74.00	73.51	73.50	0.01	18*	0.117	2.29	.012
91+73	59R		0.00	0.00	0.00						75.40	75.50	73.50					
			0.00	0.00	0.00													
37 38	S	72	1.27	1.27	1.02	10.00	0.32	6.61	1.02	6.71	72.00	74.02	73.77	0.25	18*	0.349	3.88	.012
93+95	62L		0.00	0.00	0.00						74.36	73.50	73.39					
			0.00	0.00	0.00													
38 36	M	124	0.08	1.35	1.08	10.32	0.52	6.52	1.08	7.04	77.84	73.77	73.29	0.48	18*	0.384	3.98	.012
93+95	8R		0.00	0.00	0.00							73.39	73.11					
			0.00	0.00	0.00													
36 35	M	52	0.09	1.44	1.15	10.83	0.37	6.38	1.15	7.35	77.04	73.29	73.24	0.05	24*	0.698	2.34	.012
92+72	8R		0.00	0.00	0.00							73.11	73.01					
			0.00	0.00	0.00													
35 33	M	99	0.00	1.44	1.15	11.20	0.71	6.29	1.15	7.35	77.24	73.24	73.16	0.09	24*	0.698	2.34	.012
92+72	55R		0.00	0.00	0.00							71.20	71.01					
			0.00	0.00	0.00													
33 31	M	287	0.42	2.84	2.27	18.87	1.34	4.94	2.27	11.22	75.98	73.16	72.55	0.60	24*	0.210	3.57	.012
91+73	50R		0.00	0.00	0.00							73.01	71.71					
			0.00	0.00	0.00													
31 928	M	200	0.36	6.30	5.04	25.83	0.77	4.22	5.04	21.25	74.68	72.55	72.09	0.46	30*	0.229	4.33	.012
89+00	50R		0.00	0.00	0.00							71.71	71.10					
			0.00	0.00	0.00													
928 27	M	150	0.00	7.14	5.71	26.60	0.52	4.15	5.71	23.71	73.79	72.09	71.67	0.43	30*	0.285	4.83	.012
87+00	50R		0.00	0.00	0.00							71.10	70.64					
			0.00	0.00	0.00													
27 24	M	115	1.58	10.01	8.01	27.12	0.56	4.11	8.01	32.91	73.10	71.67	71.56	0.11	42*	0.091	3.42	.012
85+50	50R		0.00	0.00	0.00							70.64	70.45					
			0.00	0.00	0.00													
24 21	M	172	0.44	10.45	8.36	27.68	0.81	4.06	8.36	33.98	73.46	71.56	71.39	0.17	42*	0.097	3.53	.012
84+35	51R		0.00	0.00	0.00							70.45	70.34					
			0.00	0.00	0.00													
21 20	M	138	0.00	10.84	8.67	28.49	0.68	4.00	8.67	34.71	73.93	71.39	71.26	0.13	42*	0.102	3.61	.012
82+63	61R		0.00	0.00	0.00							70.34	70.24					
			0.00	0.00	0.00													
20 19	M	58	0.55	11.39	9.11	29.09	0.26	3.96	9.11	36.07	73.66	71.26	71.20	0.06	42*	0.110	3.75	.012
81+33	58R		0.00	0.00	0.00							70.24	70.14					
			0.00	0.00	0.00													
19 18	M	55	0.60	11.99	9.59	29.35	0.23	3.94	9.59	37.79	73.49	71.20	71.13	0.07	42*	0.121	3.93	.012
80+75	59R		0.00	0.00	0.00							70.14	70.04					
			0.00	0.00	0.00													
18 17	M	78	0.66	12.65	10.12	29.59	0.28	3.92	10.12	39.70	73.32	71.13	71.04	0.09	42*	0.133	4.13	.012
80+20	60R		0.00	0.00	0.00							70.04	69.94					
			0.00	0.00	0.00													
17 14	M	58	1.38	15.71	12.57	29.87	0.19	3.90	12.57	49.06	73.11	71.04	70.92	0.12	42*	0.203	5.16	.012
79+50	62R		0.00	0.00	0.00							69.94	69.84					
			0.00	0.00	0.00													
14 13	M	61	0.72	16.43	13.14	30.06	0.19	3.89	13.14	51.13	73.28	70.92	70.79	0.13	42*	0.221	5.31	.012
92	62R		0.00	0.00	0.00							69.84	69.74					
78+92			0.00	0.00	0.00													

DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 7

PIPE POINT FROM (STA)	TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	ELEV. OF H.G. CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	SLOPE (%) PHYSICAL	VEL. (FPS) GRADIENT	N
13	12	M	19	0.73	17.16	13.73	30.25	0.06	3.88	13.73	53.22	73.47	70.79	70.74	0.05	42*	0.239		5.53	.012
78+31	62R			0.00	0.00	0.00							69.74	69.64						
				0.00	0.00	0.00														
12	11	M	12	0.73	17.89	14.31	30.31	0.03	3.87	14.31	55.43	73.48	70.74	70.71	0.03	42*	0.259		5.76	.012
78+12	63R			0.00	0.00	0.00						73.48	69.64	69.54						
				0.00	0.00	0.00														
11	10	M	158	0.73	18.62	14.90	30.34	0.44	3.87	14.90	57.65	73.52	70.71	70.27	0.44	42*	0.288		5.99	.012
78+00	63R			0.00	0.00	0.00						73.52	69.54	69.44						
				0.00	0.00	0.00														
42	41	S	128	0.00	0.00	0.00	10.00	1.00	6.61	0.28	1.88	71.58	70.40	70.37	0.03	18*	0.027		1.67	.012
1038+35	60R			0.38	0.38	0.28							69.18	68.98						
				0.00	0.00	0.00														
41	43	M	256	0.00	0.00	0.00	11.00	2.13	6.34	0.65	4.15	71.58	70.37	70.36	0.01	36*	0.003		0.59	.012
1038+35	60L			0.42	0.80	0.60							68.30	68.00						
				0.09	0.09	0.05														
44	43	S	53	0.00	0.00	0.00	10.00	0.44	6.61	0.43	2.82	73.17	70.40	70.36	0.03	18*	0.062		1.68	.012
1040+91	7L			0.57	0.57	0.43							70.04	69.94						
				0.00	0.00	0.00														
43	46	M	210	0.00	0.00	0.00	13.13	1.75	5.86	1.47	8.64	72.57	70.36	70.33	0.03	36*	0.014		1.22	.012
1040+91	60L			0.26	1.63	1.22							68.00	67.65						
				0.33	0.42	0.25														
46	46	S	53	0.00	0.00	0.00	10.00	0.44	6.61	0.16	1.04	73.71	70.34	70.33	0.01	18*	0.008		0.59	.012
1043+00	7L			0.21	0.21	0.16							67.70	67.50						
				0.00	0.00	0.00														
46	10	M	300	0.00	0.00	0.00	14.88	2.58	5.53	1.95	10.79	73.20	70.33	70.27	0.07	36*	0.022		1.53	.012
1043+00	60L			0.17	2.01	1.51							67.65	67.47						
				0.32	0.74	0.44														
49	48	S	53	0.44	0.44	0.35	10.00	0.44	6.61	0.35	2.33	72.38	70.57	70.55	0.02	18*	0.042		1.32	.012
32+60	60R			0.00	0.00	0.00							70.47	70.37						
				0.00	0.00	0.00														
48	47	M	67	0.43	0.87	0.70	10.44	0.44	6.48	0.70	4.51	73.00	70.55	70.44	0.11	18*	0.158		2.55	.012
32+60	7R			0.00	0.00	0.00							70.37	69.50						
				0.00	0.00	0.00														
52	53	S	8	0.29	0.29	0.23	10.00	0.07	6.61	0.23	1.53	73.00	71.03	71.02	0.01	18*	0.018		0.87	.012
37+00	65L			0.00	0.00	0.00						73.50	71.00	70.90						
				0.00	0.00	0.00														
54	55	S	8	0.58	0.58	0.46	10.00	0.07	6.61	0.46	3.07	72.70	71.23	71.22	0.01	18*	0.073		1.73	.012
38+00	65L			0.00	0.00	0.00						73.20	70.80	70.70						
				0.00	0.00	0.00														
56	57	S	5	2.26	2.26	1.81	15.00	0.03	5.51	1.81	9.96	72.40	71.37	71.36	0.01	24*	0.166		3.17	.012
39+22	65L			0.00	0.00	0.00						72.90	70.34	70.24						
				0.00	0.00	0.00														
58	57	S	120	0.00	0.00	0.00	10.00	1.00	6.61	0.34	2.28	72.85	71.41	71.36	0.05	18*	0.040		1.29	.012
39+30	60R			0.46	0.46	0.34							70.00	69.70						
				0.00	0.00	0.00														
59	60	S	5	0.82	0.82	0.66	10.00	0.03	6.61	0.66	4.33	72.00	71.41	71.40	0.01	18*	0.145		2.45	.012
39+50	65L			0.00	0.00	0.00						72.50	69.97	69.87						
				0.00	0.00	0.00														

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DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 8

PIPE SEGMENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.75 C3=0.60 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	N
61 60	M	115	0.00	0.00	0.00	10.00	0.96	6.61	0.64	4.26	72.49	71.43	71.40	0.03	24*	0.030	1.36	.012
40+50	60R		0.86	0.86	0.64						72.49	70.00	69.87					
			0.00	0.00	0.00													
60 57	M	128	0.00	0.82	0.66	10.96	1.07	6.35	1.95	12.36	72.49	71.40	71.36	0.04	36*	0.029	1.75	.012
40+50	60L		0.86	1.72	1.29							69.87	69.74					
			0.00	0.00	0.00													
57 55	M	122	0.00	3.08	2.46	15.03	0.59	5.51	4.44	24.47	72.87	71.36	71.22	0.14	36*	0.115	3.46	.012
39+22	60L		0.46	2.64	1.98							69.74	69.64					
			0.00	0.00	0.00													
55 53	M	100	0.00	3.66	2.93	15.61	0.44	5.41	4.91	26.54	73.46	71.22	71.08	0.14	36*	0.135	3.76	.012
38+00	56L		0.00	2.64	1.98							69.64	69.54					
			0.00	0.00	0.00													
53 51	M	222	0.00	3.95	3.16	16.06	0.95	5.34	5.14	27.44	73.76	71.08	70.76	0.32	36*	0.145	3.88	.012
37+00	56L		0.00	2.64	1.98							69.54	69.40					
			0.00	0.00	0.00													
51 50	M	61	0.00	3.95	3.16	17.01	0.26	5.19	5.14	27.44	73.26	70.76	70.67	0.09	36*	0.145	3.88	.012
34+78	56L		0.00	2.64	1.98							69.40	69.30					
			0.00	0.00	0.00													
50 47	M	157	0.00	3.95	3.16	17.27	0.67	5.16	5.36	27.62	72.49	70.67	70.44	0.23	36*	0.146	3.91	.012
34+17	72L		0.29	2.93	2.20							69.30	69.20					
			0.00	0.00	0.00													
47 10	M	183	0.83	5.65	4.52	17.94	0.86	5.06	6.72	34.00	72.02	70.44	70.27	0.18	42*	0.098	3.53	.012
32+60	72L		0.00	2.93	2.20							69.20	69.09					
			0.00	0.00	0.00													
10 9	M	142	0.00	24.27	19.42	30.78	0.74	3.84	23.56	90.50	74.80	70.27	70.21	0.06	72*	0.039	3.28	.012
76+42	67R		0.00	4.94	3.70							69.44	69.34					
			0.00	0.74	0.44													
9 7	M	135	0.00	24.45	19.56	31.52	0.78	3.79	23.71	90.50	74.60	70.21	70.16	0.05	72*	0.039	3.28	.012
75+00	69R		0.00	4.94	3.70							69.34	69.24					
			0.00	0.74	0.44													
7 5	M	365	0.90	25.35	20.28	32.22	1.88	3.75	24.43	91.50	72.79	70.16	70.01	0.15	72*	0.040	3.24	.012
73+65	75R		0.00	4.94	3.70							69.24	68.00					
			0.00	0.74	0.44													
5 0	M	70	1.09	28.90	23.12	34.10	0.33	3.63	27.27	98.99	72.06	70.01	69.98	0.03	72*	0.047	3.58	.012
70+00	78R		0.00	4.94	3.70							68.00	67.90					
			0.00	0.74	0.44													

SR45 (US41) BASIN C FILE:45C90.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	2	6322.00	2	4	4785.00	3	4	1827.00
4	5	2730.00	5	0	11200.00	6	4	812.00
7	5	58400.00	8	9	3886.00	9	7	21600.00
10	9	22720.00	11	10	10270.00	12	11	780.00
13	12	1235.00	14	13	3965.00	15	16	2262.00
16	17	1363.00	17	14	3770.00	18	17	4550.00
19	18	3575.00	20	19	3770.00	21	20	8450.00
22	21	1479.00	23	22	754.00	24	21	11180.00
25	26	1682.00	26	27	1247.00	27	24	7475.00
28	928	161.00	928	27	6600.00	29	30	1247.00
30	31	1682.00	31	928	8800.00	32	31	261.00
33	31	10045.00	34	33	261.00	35	33	3465.00
36	35	1820.00	37	38	2088.00	38	36	3596.00
41	43	14848.00	42	41	3480.00	43	46	12180.00
44	43	1537.00	45	46	1537.00	46	10	17400.00
47	10	11895.00	48	47	1943.00	49	48	1537.00
50	47	9106.00	51	50	3538.00	52	53	232.00
53	51	12876.00	54	55	232.00	55	53	5800.00
56	57	175.00	57	55	7076.00	58	57	3480.00
59	60	145.00	60	57	7424.00	61	60	4025.00

TOTAL SYSTEM COST = 362581.00

SR45 (US41) BASIN C FILE:45C90.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 2
MAXIMUM VELOCITY (GRADIENT FLOW)	5.99 FPS	11 TO 10
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 2
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.54 FPS	8 TO 9
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 2
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-2.18 FT	37 TO 38
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.09 FT	60 TO 57
TOTAL DRAINAGE AREA	34.58 ACRES	
WEIGHTED COEFFICIENT	0.79	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

8 TO 9
30 TO 31
32 TO 31
34 TO 33
33 TO 31

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

SYSTEM C : BACK OF SIDEWALK INLET SLOT DEPTH SELECTION AND APPROACH CHANNEL LINING SELECTION

NEW INLET NUMBER	INLET CA	3YR DISCHARGE	10YR DISCHARGE	SLOT SIZE NEEDED FOR UNIFORM FLOW	SLOT SIZE SELECTED	SLOT ELEVATION	BACK OF SIDEWALK ELEVATION	RIGHT OF WAY ELEVATION	CHANNEL SLOPE FT/FT
C-28	0.67	2.92	4.96	0.60	1.00	72.91	74.49	73.50	0.15
C-33	1.83	7.73	13.54	*	1.00	73.81	75.39	73.60	-0.05
C-35	0.78	3.88	5.77	*	1.00	75.07	76.65	75.40	0.08

NOTE: 1.SLOT SIZE SELECTED FOR THE 3YR DISCHARGE AND THEN CHECKED FOR THE 10 YEAR DISCHARGE.

* = FLOW IS BEYOND THE CAPACITY OF 1(ONE) C-MOD INLET OR FLOW CAUSES FLOODING OUTSIDE R/W

IV-126
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CHANNEL LINING NEEDED	TOP OF SLOT ELEV. ABOVE (+) OR BELOW (-) R/W ELEVATION	REQUIRED SLOT ELEVATION FOR NORMAL FLOW TO BE BELOW R/W ELEV.	COMMENT LINE
SOD	0.01	73.50-0.6 72.9	
	1.21		TYPE C MODIFIED INLET WILL NOT WORK
SOD	-0.33	75.40-1.00 74.40	TYPE C MODIFIED INLET WILL NOT WORK

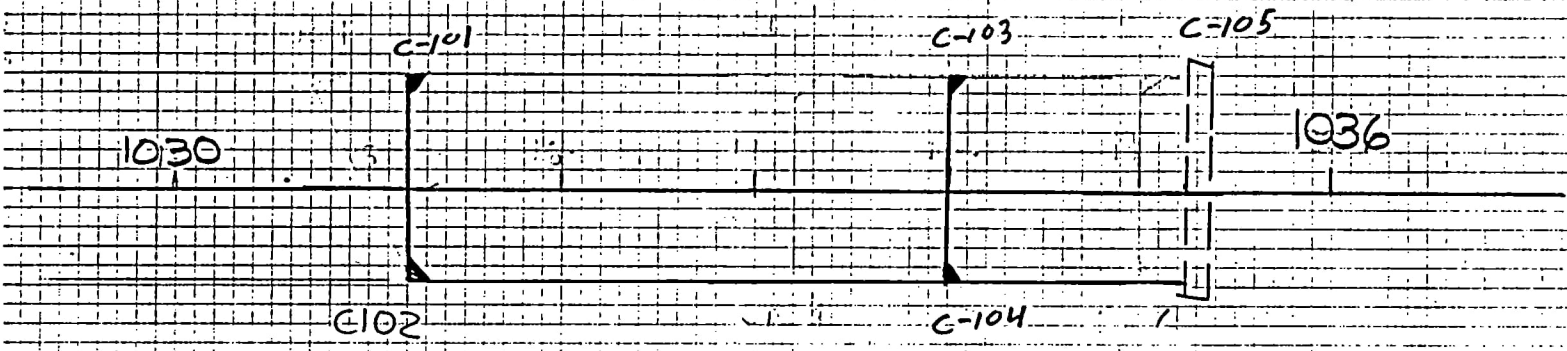
EV - 127 391

Henigar & Ray

PROJECT: SR45 - BASIN C

made by: CJS date: 5-10-56 job no. 21663

checked by: _____ date: _____ sheet no. 1



SR-54

System

Schematic

IV - 128

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PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 5/28 /96 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41) BASIN C FILE:45CT.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 67.32 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DIST	TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.25 C2=0.95 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
101	102		S	120	0.03	0.00	69.39	0	0.00	0.0	0.00	0.00	67.30	67.60	.000	
1031+85		60L			0.45											
					0.00											
102	104		M	295	0.03	0.00	69.39	0	0.00	0.0	0.00	0.00	67.00	66.70	.000	
1031+85		60R			0.45											
					0.00											
103	104		S	121	0.03	0.00	70.32	0	0.00	0.0	0.00	0.00	67.00	66.70	.000	
1034+15		60L			0.65											
					0.00											
104	0		M	50	0.08	0.00	70.28	0	0.00	0.0	0.00	0.00	66.70	66.50	.000	
1034+00		60R			0.60											
					0.00											

SR45 (US41) BASIN C FILE:45CT.IN

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.25 C2=0.95 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	ELEV. OF H.G. CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
101 102	S	120	0.03	0.03	0.01	10.00	1.00	6.61	0.43	2.87	69.39	68.22	68.14	0.08	18	0.064	1.63	.012
1031+05	60L		0.45	0.45	0.43							67.30	67.00					
			0.00	0.00	0.00													
102 104	M	295	0.03	0.06	0.01	11.00	1.58	6.34	0.87	5.52	69.39	68.14	67.45	0.69	18	0.235	3.12	.012
1031+05	60R		0.45	0.90	0.85							67.00	66.70					
			0.00	0.00	0.00													
103 104	S	121	0.03	0.03	0.01	10.00	0.86	6.61	0.62	4.13	70.32	67.61	67.45	0.16	18	0.132	2.34	.012
1034+15	60L		0.65	0.65	0.62							67.00	66.70					
			0.00	0.00	0.00													
104 0	M	50	0.08	0.17	0.04	12.58	0.21	5.97	2.09	12.46	70.28	67.45	67.32	0.13	24	0.259	3.96	.012
1034+00	60R		0.60	2.15	2.04							66.70	66.50		(19"x30")			
			0.00	0.00	0.00													

SR45 (US41) BASIN C FILE:45CT.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
101	102	3480.00	102	104	8555.00	103	104	3509.00
104	0	1750.00						

TOTAL SYSTEM COST = 17294.00

SR45 (US41) BASIN C FILE:45CT.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	101 TO 102
MAXIMUM VELOCITY (GRADIENT FLOW)	3.96 FPS	104 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	101 TO 102
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	1.63 FPS	101 TO 102
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	101 TO 102
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	1.17 FT	101 TO 102
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.17 FT	101 TO 102
TOTAL DRAINAGE AREA	2.32 ACRES	
WEIGHTED COEFFICIENT	0.90	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -
NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -
NO PIPES

COMMENTS

5

SYSTEM D

HYDROLOGY

Henigar & Ray

PROJECT: US41/SR45

made by: CLJ date: 9-29-94 job no. 2166-3
checked by: _____ date: _____ sheet no. V-1

BASIN D HYDROLOGY

PRE-DEVELOPMENT

ROADWAY WATERSHED = 24.086 Ac CN=87.13

ON POND 4.89 Ac WOODS/GRASS FAIR CN = 76.0

$$CN = \frac{24.09(87.13) + 4.89(76)}{28.98} = 85.25$$

PRE BASIN D = 28.98Ac @ CN=85.25

Henigar & Ray

made by: LRD date: 5/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/10

PROJECT: US 41/SR 45

Pre-Development

Overall Tally sheet

	Land Use	STA 94+00 102+00	STA 102+00 114+00	STA 114+00 126+00	STA 126+00 134+00	TOTAL
96	Open Poor Type C	38616			24452	63062
94	Commercial Type C	60696	106735	89461	21181	278,073
65	Brush Type C	6550	38226	54655	7484	106,915
95	Commercial Type D		6821			6821
90	1/8 Ac Res. Type C		240049			240049
	1/8 Ac Res. Type D		26549			26549
73	Brush Good Type D		41133	24498	20946	86577
85	1/2 Ac Res Type C			39771	10495	50266
79	Open Fair Type C			13603		13603
84	Open Fair Type D			15428	10450	25878
	Woods Good Type D				5541	5541
70	Woods Good Type C				12591	12591
98	Pavement	18459	43148	42836	28823	133266

	TOTAL	AC	CN	AXCN	
Open Poor Type C	63062	1.448	86	124.503	
Commercial Type C	278,073	6.384	94	600.066	
Brush Good Type C	106915	2.454	65	159.538	
Commercial Type D	6821	0.157	95	14.876	
1/8 Ac Res. Type C	240049	5.511	90	495.969	
1/8 Ac Res Type D	26549	0.609	92	56.072	
Brush Good Type D	86577	1.988	73	145.090	
1/2 Ac Res. Type C	50266	1.154	85	98.086	400
Open Fair Type C	13603	0.312	79	24.670	
Open Fair Type D	25878	0.594	84	49.902	
Woods Good Type D	5541	0.127	77	9.795	
Woods Good Type C	12591	0.289	70	20.233	
Pavement	133266	3.059	98	299.815	

V-2

WEIGHTED CN = 87.13

1049191 = 24.086 Ac 2098.618 + POND (see summary sheet)

Henigar & Ray

made by: CRP date: 5/94 job no. 21663
checked by: ____ date: ____ sheet no. 2/10

PROJECT: US 41/SR45

Pond D STA 94+00 to 102+00
Pre-Development
- All Type C

Overall Watershed 2.85 Ac

Open Poor Type C	CN = 86	58610
Commercial Type C	CN = 94	60696
Brush Type C	CN = 65	6550

Pavement 124315 - 105,856 = 18,459

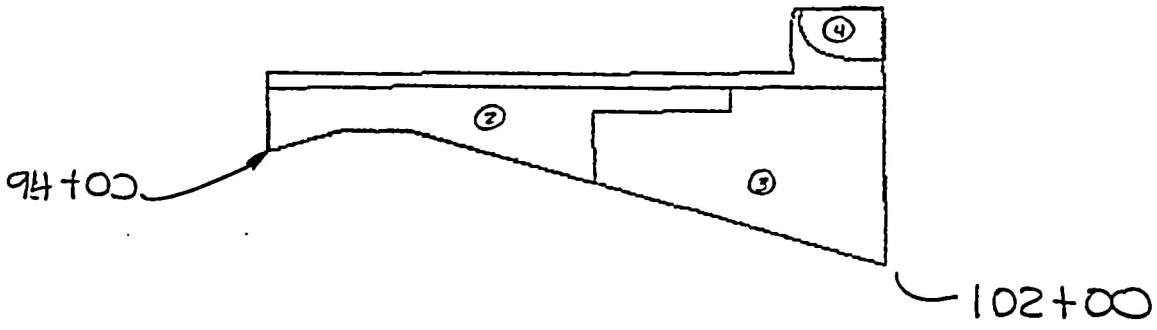
401

V-3

A-402

Pre- Development

No.	sq.ft	acres	
~~1~~	~~125529.11~~	~~2.88~~	
No.	sq.ft	acres	
1	124315.29	2.85	Overall Watershed
2	38609.75	0.89	Open Poor Type C
3	60696.02	1.39	Commercial Type C
4	6550.38	0.15	Brush Type C



Henigar & Ray

made by: LRP date: 5/94 job no. 21663
checked by: _____ date: _____ sheet no. 4/D

PROJECT: US 41/SR 45

Pond D - STA 102+00 to 114+00

Pre Development

Soils Type C & D

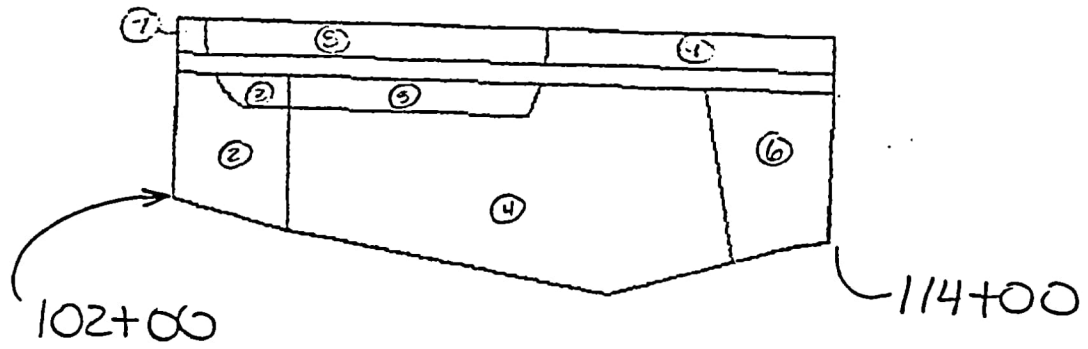
Overall Watershed 11.54 Ac

Commercial Type C	CN = 94	45905 + 60830 = 106735
Commercial Type D	CN = 95	6821
½ Ac Residential Type C	CN = 90	240049
½ Ac Residential Type D	CN =	26549
Brush Good Type C	CN = 65	3407 + 34819 = 38226
Brush Good Type D	CN = 73	41133

Pavement 502661 - 459513 = 43,148 SF

Pre Development

No.	sq.ft	acres	
1	502660.81	11.54	Overall Watershed
2	45905.18	1.05	Commercial Type C
3	6820.94	0.16	Commercial Type D
4	240048.50	5.51	1/8 Ac Residential Type C
5	26548.91	0.61	1/8 Ac Residential Type D
6	60829.63	1.40	Commercial Type C
7	3406.70	0.08	Brush Good Type C
8	41132.90	0.94	Brush Good Type D
9	34818.59	0.80	Brush Good Type C



Henigar & Ray

made by: LRP date: 5/94 job no. 21663
checked by: ____ date: ____ sheet no. 6/10

PROJECT: US 41/SR 45

Pond D STA 114+00 to 126+00

Pre-Development

Soils Type C & D

Overall Watershed ~~6.54~~ Ac 6.43 Ac

Commercial Type C CN = 94 Area = 60579 + 28882 = 89461

½ Ac Res Type C CN = 85 Area = 22344 + 17427 = 39771

Open Fair Type C CN = 79 Area = 16474 - 2871 = 13603

Open Fair Type D CN = 84 Area = 19253 - 3825 = 15428

Brush Good Type C CN = 65 Area = 54655

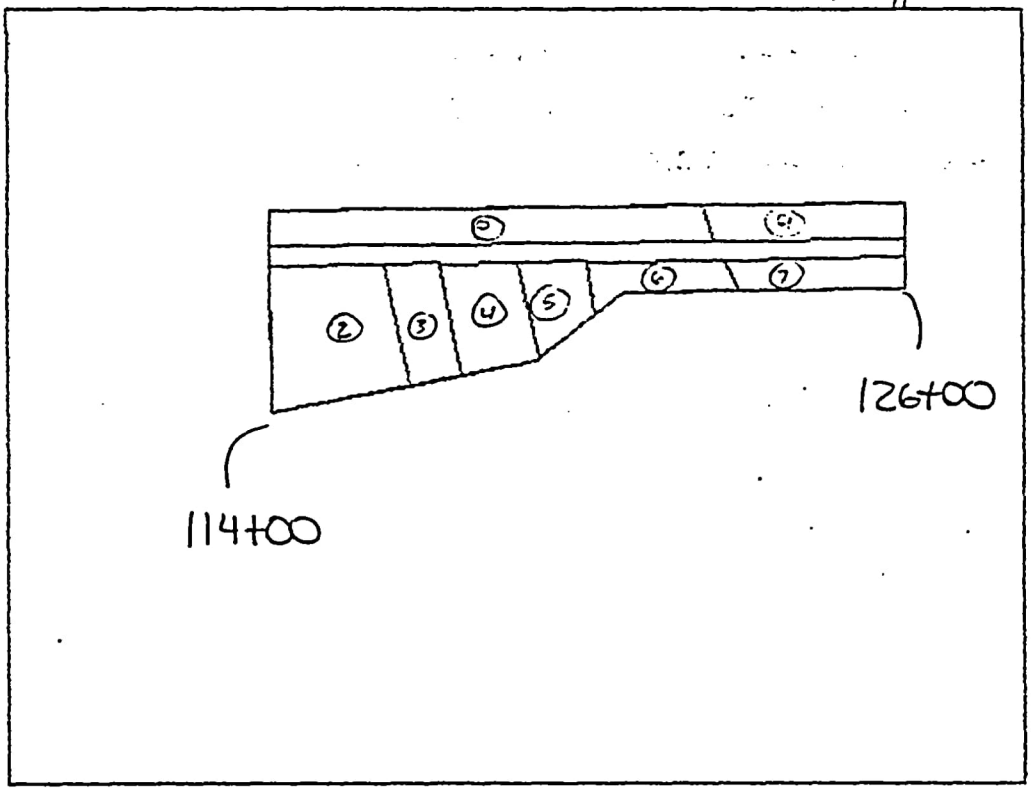
Brush Good Type D CN = 73 Area = 24498

Pavement = ~~286948 - 244112~~ = 42,836

280,252 - 237416 = 42836

Pre-Development

No.	sq.ft	acres	
1	286947.66	6.59	Overall Watershed
2	60578.59	1.39	Commercial Type C
3	22344.06	0.51	1/2 Ac Res. Type C
4	28881.86	0.66	Commercial Type C
5	17426.73	0.40	1/2 Ac Res Type C
6	16474.37	0.38	Open Fair Type C
7	19253.07	0.44	Open Fair Type D
8	54654.60	1.25	Brush Good Type C
9	24497.94	0.56	Brush Good Type D



8/10

Pre Development

No.	sq.ft	acres		
1	2870.88	0.07	Open Fair	Type C Reduce
2	3824.82	0.09	Open Fair	Type D Reduce



Henigar & Ray made by: LRD date: 5/94 job no. 21663

PROJECT: US 41/SR 45 checked by: ____ date: ____ sheet no. 9/10

Pond D STA 126+00 to 134+00

Pre-Development

Soils Type C & D

Overall Watershed 3.26 Ac

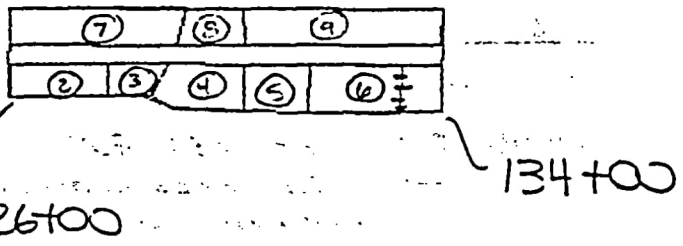
Open Fair Type D	CN = 84	Area = 10450	
Woods Good Type D	CN =	Area = 5541	
Woods Good Type C	CN = 70	Area = 12591	
½ Ac Res. Type C	CN = 85	Area = 10495	
Brush Good Type D	CN = 73	Area = 20946	
Brush Good Type C	CN = 65	Area = 7484	
Open Poor Type C	CN = 86	Area = 24452	
Commercial Type C	CN = 94	Area = 21181	

Pavement 141,963 - 113,140 = 28,823

10/10

Pre Development

No.	sq.ft	acres	
1	141963.36	3.26	Overall Watershed
2	10449.99	0.24	Open Fair Type D
3	5541.13	0.13	Woods Good Type D
4	12590.53	0.29	Woods Good Type C
5	10495.09	0.24	1/2 Ac Residential Type C
~~6~~	~~14797.49~~	~~0.34~~	
7	20945.53	0.48	Brush Good Type D
8	7483.98	0.17	Brush Good Type C
9	24452.14	0.56	Open Poor Type C
6 ~~10~~	21181.05	0.49	Commercial Type C



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IV-11

Henigar & Ray

made by: TWM date: 5/3/94 job no. 21663

PROJECT: SR 45 BASIN D checked by: _____ date: _____ sheet no. 1/1

BASIN D

PRE-DEVELOPMENT TIME OF CONCENTRATION

$t_c = t_1 + t_2$ (eqn 1)

WHERE: t_1 = SHALLOW CONCENTRATED FLOW TRAVEL TIME
t_2 = OPEN CHANNEL FLOW TRAVEL TIME

t_1 (STA 134+00 TO 130+00 LT)

$$t = \frac{L}{60\,[16.1345\,(S)^{1/2}]}$$ UNPAVED REF: SCS' TR 55

WHERE $L = 400'$

$S = (74.7 - 73.2)/400 = .0038'/'$

$t_1 = 6.7$ min

t_2 (STA 130+00 TO 113+50 LT)

$$t_2 = \frac{L}{60\,(\text{open channel flow vel})}$$

WHERE: $L = 1650$ ft

→ SEE ACCOMPANYING COMPUTER OUTPUT FOR Channel PARAMETES + Velocity

$$t_2 = \frac{1650'}{60\,(.98\,ft/s)} = 28.06 \text{ min}$$

$t_2 = 28.1$ min

FROM eqn 1 $t_c = t_1 + t_2 = 6.7 + 28.1 = 34.8$ min

Pre t_c = 34.8 min

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V-12

SR 45

PRE BASIN D

OPEN CHANNEL FLOW VELOCITY FOR tc

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR45 PRE BASIN D

Comment: PRE OPEN CHANNEL FLOW VEL. FOR Tc

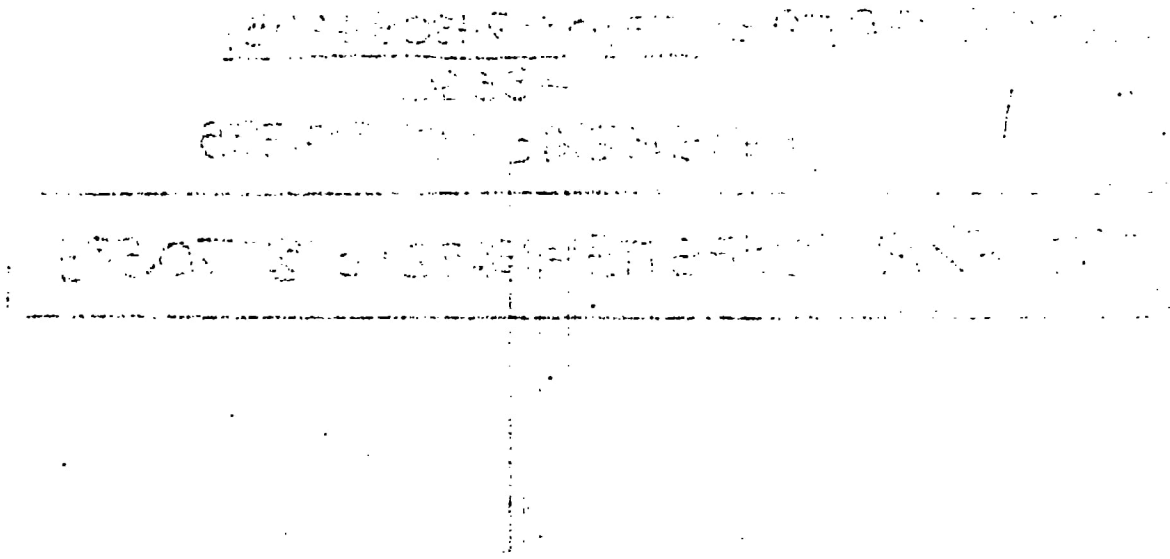
Solve For Discharge

Given Input Data:

Bottom Width.....	5.00 ft
Left Side Slope..	4.00:1 (H:V)
Right Side Slope.	5.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0027 ft/ft
Depth.....	1.00 ft

Computed Results:

Discharge.....	9.34 cfs
Velocity.....	0.98 fps ←
Flow Area.....	9.50 sf
Flow Top Width...	14.00 ft
Wetted Perimeter.	14.22 ft
Critical Depth...	0.42 ft
Critical Slope...	0.0772 ft/ft
Froude Number....	0.21 (flow is Subcritical)



Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. • 37 Brookside Rd • Waterbury, Ct 06708

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V – 13

Henigar & Ray

PROJECT: US41/SR45

made by: CLS date: 9-29-94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN-D POST DEVELOPMENT HYDROLOGY

ROADWAY AREA = ORIGINAL AREA + NEW AREA

= 29.50 Ac + 1.21 Ac = 30.71
(CN=91.56) (CN=81.64)

WEIGHTED CN = $\frac{29.50(91.56)+1.21(81.64)}{30.71}$

= 91.17

TO POND = 30.71 Ac @ CN = 91.17

ON POND = 4.89 Ac @ CN = 100

RAILROAD AREA = $\frac{17310+74808+61131}{43560}$

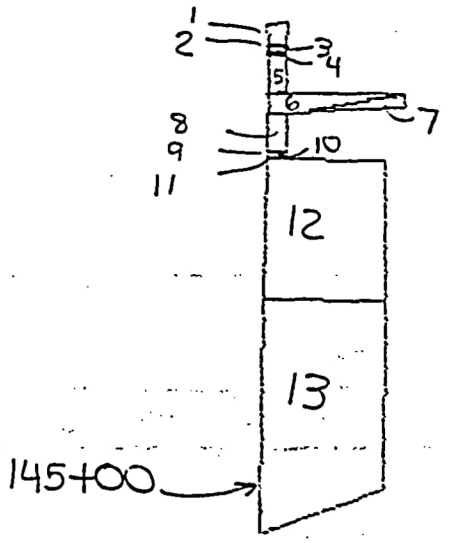
= 3.52 Ac @ 70.585

TO R/R OFFSITE = 3.52 Ac @ 70.585

BASIN D + E
POST DEVELOPMENT REVISIONS

No.	sq.ft		acres	LAND USE	CN VALUE
1	492.96		0.01	COMM.	94
2	41.22	.0009	~~0.00~~	OPEN (F)	79
3	101.42	.0023	~~0.00~~	IMPERV.	98
4	67.36	.0015	~~0.00~~	OPEN (F)	79
5	791.88		0.02	ASPH.	98
6	1926.88		0.04	ASPH.	98
7	848.92		0.02	OPEN (F)	79
8	854.04		0.02	ASPH.	98
9	48.94	.0011	~~0.00~~	OPEN (F)	79
10	77.04	.0018	~~0.00~~	IMPERV.	98
11	46.62	.0011	~~0.00~~	OPEN (F)	79
12	18476.32		0.42	COMM.	94
13	28938.50		0.66	WOODS (F)	73

1.209 Ac
use 1.21 Ac



AREA = 1.21 Ac

CN = [(.0023+.02+.04+.02
+.0018)98
+(.01+.42)94
+(.0009+.0015+.02
+(.0011+.0011)79
+.66(73)] ÷ 1.21 Ac

CN = 81.64

THESE AREAS ARE TO BE:

- REMOVED FROM BASIN E
- ADDED TO BASIN D

Henigar & Ray

made by: LRP date: 4-26-94 job no. 21663

PROJECT: US 41/SR 45 checked by: _____ date: _____ sheet no. 1/14

Post Development

BASIN D

Overall Tally sheet

Land Use	STA 95+20 to 102+00	STA 102+00 to 114+00	STA 114+00 to 126+00	STA 126+00 to 138+00 (TO RAIL ROAD)	STA 138+00 to 145+00	TOTAL
Open Poor Type C	7323			~~17310~~ TO RR		7323
Commercial Type C	44547	87584	67675	7092	25508	232406 TO RR
To RR ~~Brush Good Type C~~	~~4695~~	~~26858~~	~~38179~~	~~5076~~		~~74808~~ RR
Median	7277	73319	17478	21726	5355	65155
½ Ac Res. Type C		220932				220932
To RR ~~Brush Good Type D~~		~~29008~~	~~17203~~	~~14920~~		~~61131~~ TO RR
½ Ac Res Type C			25970	3166		29136
Open Fair Type D			1062		34696	35758
Woods Good Type C				3523		3523
Open Fair Type C				5870	164674	170544
Commercial Type D				1840	9031	10871
Pavement	72,220	124761	120103	116085	76379	509551

	TOTALS	AC	CN	A x CN	
Open Poor Type C	7323	.168	86	14.458	
Commercial Type C	232406	5.335	94	501.519	
* ~~Brush Good Type C~~	~~74808~~	~~1.717~~	~~65~~	~~111.628~~	TO RAIL ROAD
Median	65155	1.496	79	118.164	
½ Ac Res. Type C	220932	5.072	90	456.471	
* ~~Brush Good Type D~~	~~61131~~	~~1.403~~	~~73~~	~~102.446~~	TO RAIL ROAD
½ Ac Res. Type C	29136	0.669	85	56.854	
Open Fair Type D	35758	0.821	84	68.955	
Woods Good Type C	3523	0.081	70	5.661	
Open Fair Type C	170544	3.915	79	309.297	
Commercial Type D	10871	0.250	95	23.709	414
Pavement	509551	11.698	98	1146.373	
				2701.47	

Overall Watershed 29.505AC

Weighted CN = 91.56

* NOTE: TO RR = OFFSITE TO LAKE

Henigar & Ray made by: LRD date: 4-26-94 job no. 21663

PROJECT: US41/SR45 checked by: _____ date: _____ sheet no. 2/14

Pond D

Post Development to RR Culvert

STA 95+20 to 102+00

Brush Good type C CN = 65 Area = 4695

STA 102+00 to 114+00

Brush Good Type C CN = 65 Area = 2372 + 24486 = 26858
Brush Good Type D CN = 73 Area = 29008

STA 114+00 to 126+00

Brush Good Type C CN = 65 Area = 38179
Brush Good Type D CN = 73 Area = 17203

STA 126+00 to 138+00

Brush Good Type D CN = 73 Area = 14920
Brush Good Type C CN = 65 Area = 5076
Open Poor Type C CN = 86 Area = 17310

Totals	SF	Ac	CN	A x CN
Brush Good Type C	74808	1.717	65	111.628
Brush Good Type D	61131	1.403	73	102.446
Open Poor Type C	17310	0.397	86	34.175
		3.517 Ac		248.249

CN = 70.585

Henigar & Ray

made by: LRP date: 4/26/94 job no. 21663

PROJECT: US 41/SR 45 checked by: ____ date: ____ sheet no. 3/14

Pond D STA 95+20 to 102+00

Post Development

- All Type C

Overall Watershed = 3.12 Ac

Open Poor Type C	CN = 86	Area = 7323
Commercial Type C	CN = 94	Area = 44547
Brush Good Type C	CN = 65	Area = 4695 (TO R/R)
Median	CN = 79	Area = 1960 + 2114 + 3203 = 7277 SF

Pavement = 136,062 - 63842 = 72,220

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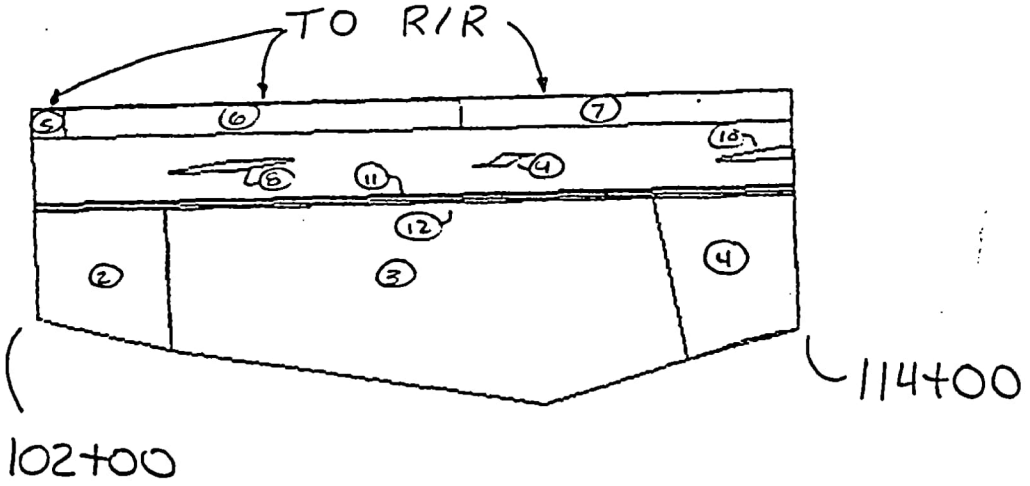
V-18

Post Development

No.	sq.ft	acres	
1	502462.01	11.53	Overall Watershed
2	40628.37	0.93	Commercial Type C
3	220931.93	5.07	⅛ Ac Residential Type C
4	46956.43	1.08	Commercial Type C
5	2372.39	0.05	Brush Good Type C } TO R/R
6	29008.03	0.67	Brush Good Type D } TO R/R
7	24486.30	0.56	Brush Good Type C } TO R/R
8	1925.93	0.04	Median
9	639.28	0.01	Median
10	1366.55	0.03	Median
11	3609.19	0.08	Median
12	5778.12	0.13	Median



Henigar & Ray made by: LRP date: 4/26/94 job no. 21663

PROJECT: US 41/SR 45 checked by: _____ date: _____ sheet no. 7/14

Pond D STA 114+00 to 126+00

Post-Development

Soil Types C & D

Overall Watershed 6.60 Ac

Commercial Type C CN=94 Area= 47286+20389 = 67675

½ Ac Residential Type C CN=85 Area= 16297+9673 = 25970

Open Fair Type D CN=84 Area=1062

Brush Good Type C CN=65 Area=38179 } TO R/R

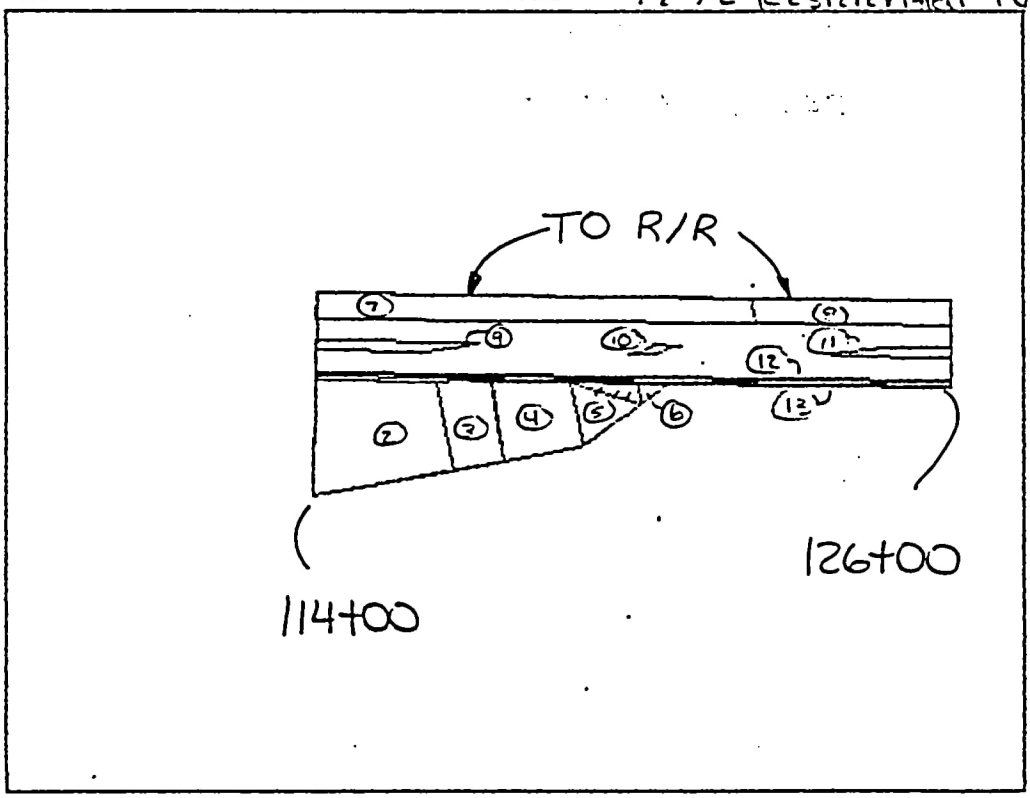
Brush Good Type D CN=73 Area=17203 }

Median CN=79 Area= 4641+650+3277+3608+5302 = 17478

Pavement 287670 - 167567 = 120,103

Post Development

No.	sq.ft	acres	
1	287670.13	6.60	Overall Watershed
2	47285.57	1.09	Commercial Type C
3	16296.63	0.37	½ Ac Residential Type C
4	20389.41	0.47	Commercial Type C
~~5~~	~~7204.61~~	~~0.17~~	
6	1062.24	0.02	Open Fair Type D
7	38178.83	0.88	Brush Good Type C } TO R/R
8	17203.11	0.39	Brush Good Type D }
9	4641.20	0.11	Median
10	650.40	0.01	Median
11	3276.82	0.08	Median
12	3607.86	0.08	Median
13	5301.59	0.12	Median
5 ~~14~~	9673.04	0.22	½ Ac Residential Type C



Henigar & Ray

made by: LRP date: 4/26/94 job no. 2663

PROJECT: US 41/SR45 checked by: _____ date: _____ sheet no. 9/14

Pond D STA 126+00 to 138+00

Post Development

Soil Types C & D

Overall Watershed 207564 - (1314 + 9639) = 196,611 SF = 4.514 Ac

Woods Goods Type C CN = 70 Area = 3523

1/2 Ac Residential Type C CN = 85 Area = 3166

Commercial Type C CN = 94 Area = 7092

Open Fair Type C CN = 79 Area = 5870

Brush Good Type D CN = 73 Area = 14920 (TO R/R)

Brush Good Type C CN = 65 Area = 5076 (TO R/R)

Open Poor Type C CN = 86 Area = 17310 (TO R/R)

Median CN = 79 Area = 5040 + 641 + 7896 + 3486 + 4663 = 21,726 SF

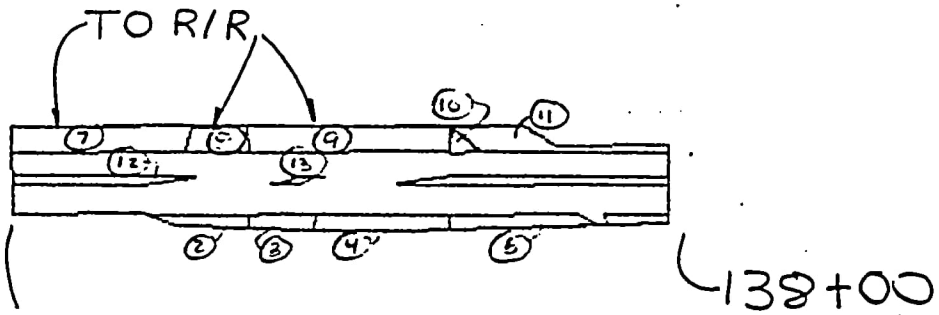
Commercial Type D CN = 95 Area = 1840

Pavement = 196,611 − 80523 = 116088 SF

10/14

Post Development

No.	sq.ft	acres	
1	207563.84	4.77	Overall Watershed
2	3522.62	0.08	Woods Good Type C
3	3166.25	0.07	1/2 Acres Type C
4	7092.20	0.16	Commercial Type C
5	5869.75	0.13	Open Fair Type C
6	1840.47	0.04	Commercial Type D
7	14920.03	0.34	Brush Good Type D } TO R/R
8	5075.68	0.12	Brush Good Type C
9	17310.14	0.40	Open Poor Type C
~~10~~	~~1313.60~~	~~0.03~~	~~Open Fair Type C~~
~~11~~	~~9628.61~~	~~0.22~~	~~Open Poor Type D~~
12	5040.28	0.12	Median
13	640.64	0.01	Median



126+00

138+00

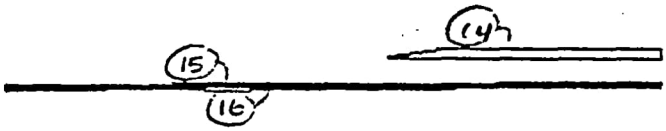
421

II-25

11/14

Post Development

No.	sq. ft	acres	
14	7896.18	0.18	Median
15	3485.71	0.08	Median
16	4663.11	0.11	Median



4	2611.72	0.06

Henigar & Ray made by: LRP date: 4-28-94 job no. 21663

PROJECT: US 41/SR 45 checked by: _____ date: _____ sheet no. 12/14

Pond D STA 138+00 to 145+20

Post Development

Soil Type C & D

Overall Watershed 7.25 Ac

Commercial Type D CN=95 Area = 9031

Open Fair Type D CN = 84 Area = 23749 + 10947 = 34696

Open Fair Type C CN = 79 Area = 144466 + 20208 = 164,674

Commercial Type C CN = 94 Area = 25508

Median CN = 79 Area = 585 + 1972 + 2798 = 5355

Pavement 315643 - 239264 = 76379 SF

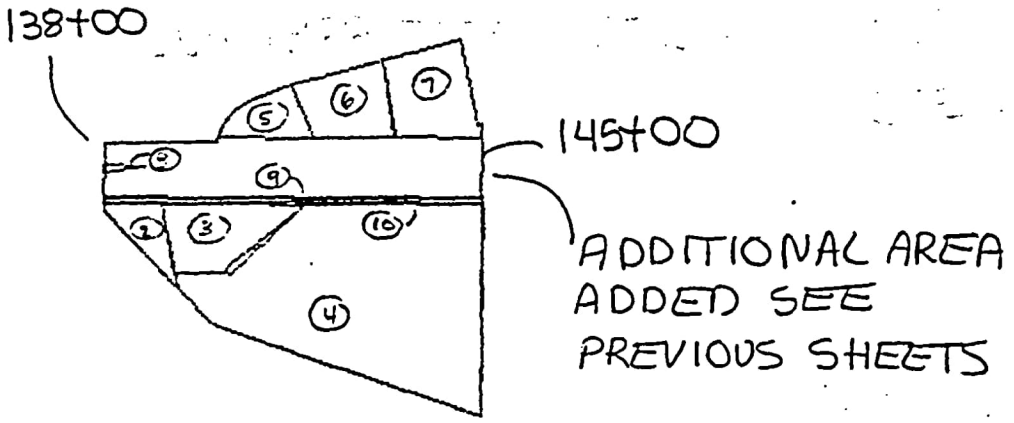
ADDITIONAL AREA ADDED SEE PREVIOUS SHEETS

13/14

(Pond D)

Post Development

No.	sq.ft	acres	
1	315642.99	7.25	Overall Watershed
2	9030.06	0.21	Commercial Type D
3	23749.05	0.55	Open Fair Type D
4	144466.14	3.32	Open Fair Type C
5	10946.64	0.25	Open Fair Type D
6	20208.15	0.46	Open Fair Type C
7	25508.10	0.59	Commercial Type C
8	584.80	0.01	Median
9	1971.83	0.05	Median
10	2796.25	0.06	Median



ADDITIONAL AREA ADDED SEE PREVIOUS SHEETS

424

II-28

A-425

Henigar & Ray made by: CRP date: 4/24/94 job no. 21663

PROJECT: US 41/SR 45 checked by: _____ date: _____ sheet no. 14/14

Pond D

Post Development

Directly Connected Impervious Areas

R/W Area 87159 SF

Offsite Area 0

R/W Area 154808 SF

Offsite Area 3425+3675+ 0.65(219894)+2924+7697 = 160,652

R/W Area 153414 SF

Offsite Area 10095

R/W Area 152990

Offsite Area 0

R/W Area 89240

Offsite Area 316+5882+8344+2451 = 16393

NEW AREA R/W AREA 3572 SF

Total R/W = 637,501 SF + 3572 SF = 641,073.8 SF

Offsite = 187,640 SF

TOTAL = 641,074 + 187640 = 828,714 SF

425

V-29

Henigar & Ray

made by: TWM date: 5/3/94 job no. 21063
checked by: ____ date: ____ sheet no. 1/2

PROJECT: SR 45 BASIN D

BASIN D

POST-DEVELOPMENT TIMES OF CONCENTRATION

TO POND

$t_c = t_1 + t_2 + t_3$ (eqn 1)

WHERE: t_1 = SHEET FLOW TRAVEL TIME
t_2 = SHALLOW CONCENTRATED FLOW TRAVEL TIME
t_3 = STORM SEWER TRAVEL TIME

t_1: (STA 142+65 RT)

FROM FDOT DRAINAGE MANUAL, VOL 2A

$$t = \frac{0.938\, L^{.6} n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: $L = 300'$
$n = 0.20$
$S = 0.00178$ ft/ft
I = RAINFALL INTENSITY (in/hr)

FROM ZONE 6 IDF CURVE, 25yr EVENT

$I = 4.7$ in/hr
$\Rightarrow t = 39.4$ min

$t_1 = 39.4$ min

t_2: (STA 142+65 RT)

$$t = \frac{L}{60\,[16.1345\,(S)^{1/2}]}$$

REF: SCS' TR 55 (UNPAVED)

where: $S = .00178$
$L = 150'$

$t_2 = 3.7$ min

t_3: FROM FDOT STORM SEWER program

$t_3 = 10.02$ min

FROM eqn 1: $t_c = t_1 + t_2 + t_3 = 39.4 + 3.7 + 10.0$

POST TO POND $t_c = 53.1$

Henigar & Ray

made by: JWM date: 5/5/94 job no. 21663
checked by: ---- date: ---- sheet no. 2/2

PROJECT: SR 45 BASIN D

BASIN D

POST DEVELOPMENT TIMES OF CONCENTRATION cont

ON POND

POST ON POND $t_c = 0$

OFF SITE

$t_c = t_1 + t_2$ (eqn 1)

WHERE: t_1 = SHALLOW CONCENTRATED FLOW TRAVEL TIME
t_2 = OPEN CHANNEL FLOW TRAVEL TIME

t_1 (STA 134+00 TO 130+00 LT)

$$t = \frac{L}{60[16.1345(S)^{1/2}]}$$ (UNPAVED) REF: SCS TR 55

WHERE $L = 400'$
$S = (74.7 - 73.2)/400 = 0.0038'/'$

$t_1 = 6.7$ min

t_2 (STA 130+00 TO 113+50 LT)

$$t_2 = \frac{L}{60'(\text{open channel vel.})}$$

WHERE: $L = 1650$ ft
→ SEE ACCOMPANYING COMPUTER OUTPUT FOR CHANNEL PARAMETERS & VELOCITY.

$$t_2 = \frac{1650'}{60(1.21)} = 22.73 \text{ min}$$

$t_2 = 22.73$ min

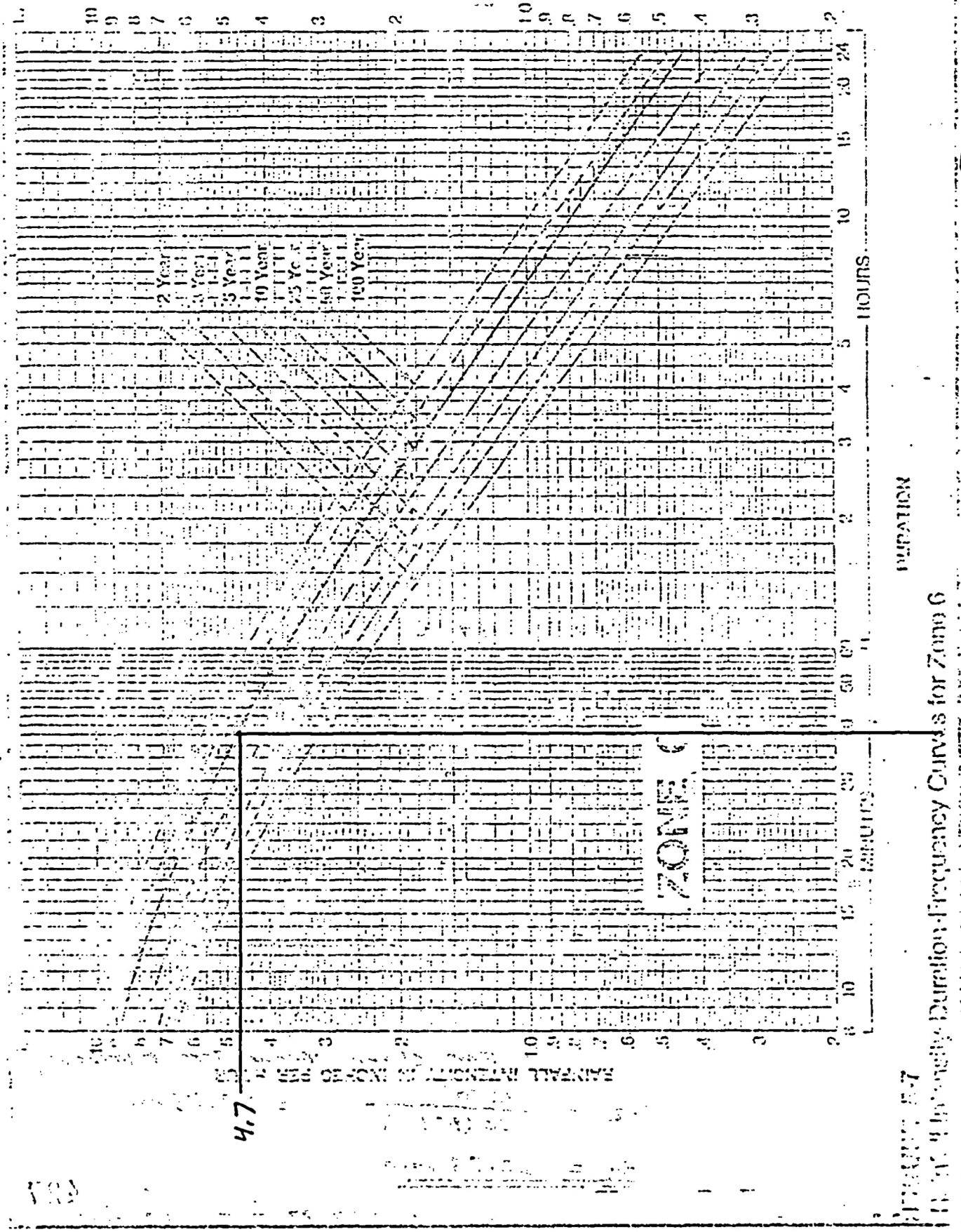
427

FROM eqn 1 $t_c = 6.7 + 22.73 = 29.43$ min

POST OFFSITE $t_c = 29.43$ min

V-31

A-428



Rainfall Intensity-Duration-Frequency Curves for Zone 6

SR45 - BASIN D

39.4

4.7

SR 45 BASIN D

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR45 POST BASIN D

Comment: OFFSITE OPEN CHANNEL FLOW VEL. FOR Tc

Solve For Discharge

Given Input Data:

Bottom Width.....	3.00 ft
Left Side Slope..	2.60:1 (H:V)
Right Side Slope.	2.60:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0027 ft/ft
Depth.....	1.50 ft

Computed Results:

Discharge.....	12.52 cfs
Velocity.....	1.21 fps ←
Flow Area.....	10.35 sf
Flow Top Width...	10.80 ft
Wetted Perimeter.	11.36 ft
Critical Depth...	0.67 ft
Critical Slope...	0.0701 ft/ft
Froude Number....	0.22 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Henigar & Ray

made by: TWM date: 5/5/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN D

POND DESIGN CALCULATIONS

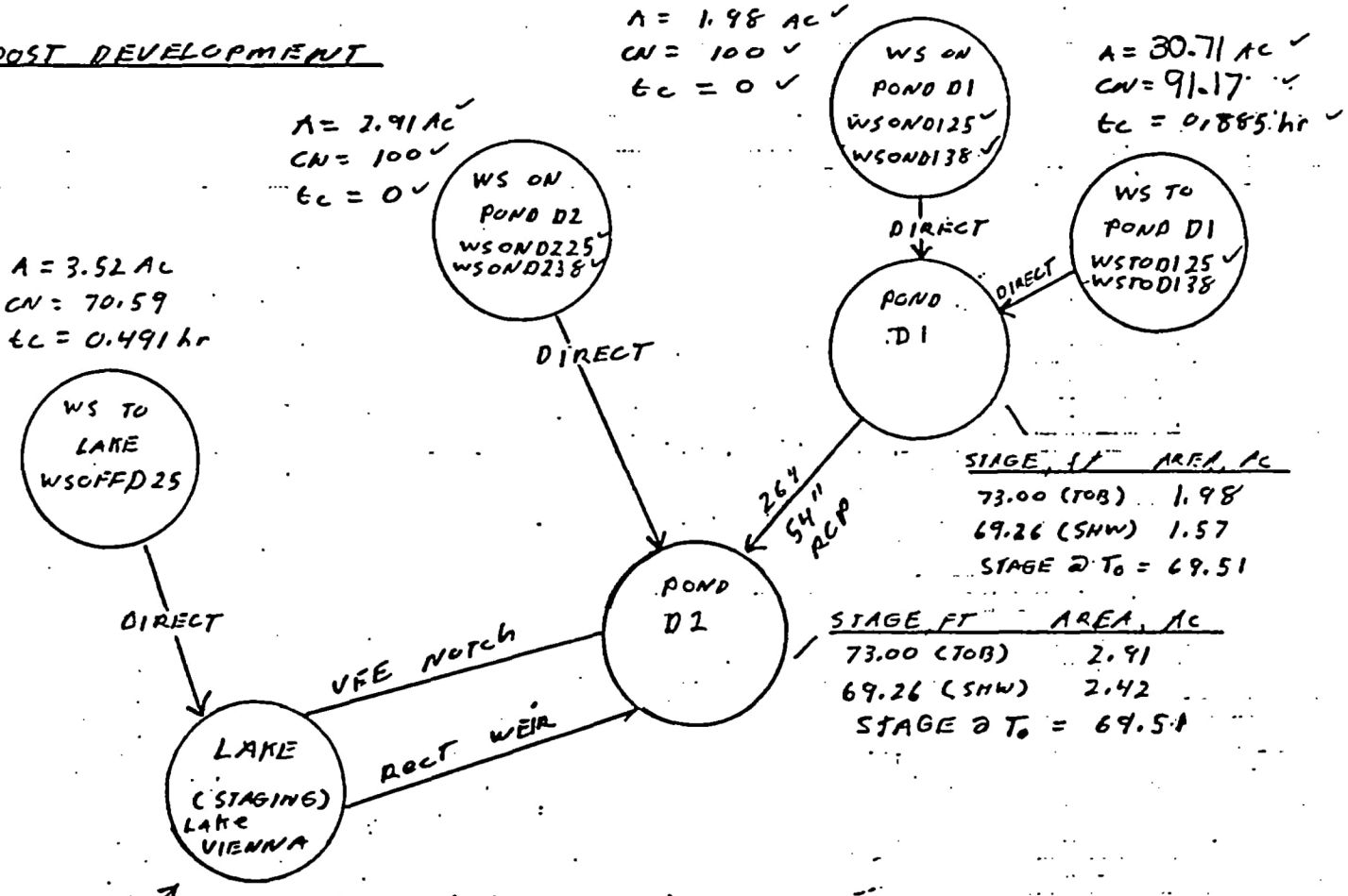
PRE-DEVELOPMENT



A = 28.98 Ac ✓
CN = 85.25 ✓
tc = 0.580 hr ✓

HYDROGRAPH ONLY

POST DEVELOPMENT



STAGE, FT AREA, Ac
73.00 (TOB) 1.98
69.26 (SHW) 1.57
STAGE @ T_o = 69.51

STAGE FT AREA, Ac
73.00 (TOB) 2.91
69.26 (SHW) 2.42
STAGE @ T_o = 69.51

25yr-24hr Staging

TIME (hr)	0	7.5	15	22.5	30	33.75
STAGE (FT)	68.0	68.21	70.33	70.92	71.08	71.1

3yr staging uses MAS of 2.33yr. - From 68.0 to 69.3

REQUIRED WATER QUALITY VOLUME = 69 060 cf

Henigar & Ray

made by: TWM date: 5/4/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN D

BASIN D

BASIN D REQUIRED WATER QUALITY VOLUME

PROJECT AREA = 641,074 sf
OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREA = 187,640 sf
828,714 sf

WATER QUALITY VOLUME COMPUTED FROM 1" OF RUNOFF FROM PROJECT AREA AND ALL OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREAS.

$$1\ in * \frac{1\ ft}{12\ in} * 828{,}714\ in^2 = 69060\ cf$$

REQUIRED WATER QUALITY VOLUME
= 69,060 cf
= 1.585 Ac·ft

SR 45 POND D

INPUT FOR WATER QUALITY VOLUME STAGE (PONDS D1 + D2 combined)

Window 0,0 - 24,79

PROJECT D_STAGE; COMBINED POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
73.0	213008.4	-1e+06	723339.5
69.26	173804.4	-1e+06	0.0

TOP EL...	73.0 (TOB)	TOP AREA.	4.89
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	69.26 (SHW)	BOT AREA.	3.99
TOP LF...	Optional	SIDE %PER	Optional
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.	73.0
X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 POND D

STAGE 2 REQUIRED WATER QUALITY Volume (PONDS D1 & D2 combined)

BRN 3.2 Project D_STAGE
Node 0, COMBINED POND, POND

0.00	73.000 (TOB)	0.0	0.0	723340.0	
0.10	72.846	0.0	29839.6	693500.0	
0.20	72.695	0.0	59049.0	664291.0	
0.30	72.547	0.0	87630.4	635709.0	
0.40	72.402	0.0	115582.0	607757.0	
0.50	72.261	0.0	142907.0	580432.0	
0.60	72.123	0.0	169603.0	553737.0	
0.70	71.988	0.0	195669.0	527670.0	
0.80	71.857	0.0	221107.0	502232.0	
0.90	71.728	0.0	245916.0	477424.0	
1.00	71.603	0.0	270096.0	453244.0	REQ'D WATER QUALITY Volume
4.10	69.632 ← 69.618	0.0	651439.0	71900.3	← 69060 cf
4.20	69.616	0.0	654604.0	68735.1	
19.00	69.262	0.0	723081.0	258.1	
19.10	69.262	0.0	723094.0	245.9	
19.20	69.262	0.0	723105.0	234.1	
19.30	69.262	0.0	723117.0	222.8	
19.40	69.262	0.0	723128.0	211.8	
19.50	69.261	0.0	723138.0	201.2	
19.60	69.261	0.0	723148.0	191.1	
19.70	69.261	0.0	723158.0	181.2	
19.80	69.261	0.0	723168.0	171.6	
19.90	69.261	0.0	723177.0	162.4	
20.00	69.261 (SHW)	0.0	723186.0	153.6	

- USE STAGE 69.62 FOR WATER QUALITY VOLUME CONTAINMENT (OVERFLOW EL).

- PROVIDED WATER QUALITY VOLUME @ STAGE 69.62 = 69,626 cf

VOLUME PROVIDED > VOLUME REQ'D

SR 45 POND D 8/16/95

INPUT for 30/60 hr DRAW DOWN CRITERIA

Window 0,0 - 24,79

PROJECT DAD_2; POND D (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF	TOP EL... 73.0 (TOB)	TOP AREA. 4.89
				EL..... Optional	AREA..... Optional
73.0	213008.4	-1e+06	723339.5	EL..... Optional	AREA..... Optional
69.26	173804.4	-1e+06	10.0	EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				EL..... Optional	AREA..... Optional
				BOT EL... 69.26 (SHW)	BOT AREA. 3.99
				TOP LF... Optional	SIDE %PER Optional
				MID LF... Optional	BASE %PER Optional
				BOT LF... Optional	
					OVERFLOW →
				BASE CFS. 0.0	STAGE T0. 69.62
				X COORD.. Optional	Y COORD.. Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

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SR 45 pond D 8/10/95

Draw Down model

Report on Paths of Project DAD_2.

```
-----------------------------------------
      Path..... 000, VEE NOTCH
        Upper Node 001, POND D
        Lower Node 000, STAGING
-----------------------------------------
CREST EL    69.260|INPUT ID 768138275
ANGLE...   115.000|T0 CFS..       0.29
-------- ---------|T0 CF...       0.00
HEIGHT..     0.360|MAX IN..       0.29
-------- ---------|MIN IN..       0.09
                  |MAX OUT.       0.29
                  |MIN OUT.       0.09
                  |
                  |
                  |
                  |
                  |
                  |
                  |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE NO       |REV K...       0.00
MAX HW..   73.000|FWD X...       0.00
MAX TW..   73.000|REV X...       0.00
-----------------------------------------
```

SR 45 POND D 3/16/95
Draw down model

Report on Nodes of Project DAD_2.

ode..... 000, STAGING					
FLOOD EL.	73.000	PE TO KE.	NO	INPUT ID.....	769615490
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	68.00
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	68.00
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	68.00
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.00
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.29
				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE TO.	68.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND					
TOP EL...	73.000	TOP AREA.	4.890	INPUT ID.....	808580614
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	69.62
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	69626.40
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	69.62
EL.....		AREA.....		MINIMUM STAGE REACHED.....	69.45
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	69626.40
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	0.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	69.45
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.00
BOT EL...	69.260	BOT AREA.	3.990	TIME OF MINIMUM STAGE, HOURS.	60.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.00
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.00
				PEAK NODAL OUTPUT, CFS.....	0.29
				TIME OF PEAK OUTPUT, HOURS...	0.00
BASE CFS.	0.000	STAGE TO.	69.620	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

SR 45 BASIN D 8/16/95

36/60 hr BLEED DOWN CRITERIA

BRN 3.2 Project DAD_2
Node 1, POND D, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	69.620	0.01	0.01	69626.41	←
0.10	69.620	0.01	103.61	69522.81	
0.20	69.619	0.01	206.91	69419.51	
0.30	69.618	0.01	309.91	69316.51	
0.40	69.618	0.01	412.71	69213.71	
0.50	69.617	0.01	515.11	69111.31	
0.60	69.617	0.01	617.31	69009.11	
0.70	69.616	0.01	719.21	68907.21	
0.80	69.616	0.01	820.81	68805.71	
0.90	69.615	0.01	922.11	68704.41	
1.00	69.615	0.01	1023.11	68603.31	
36.00	69.498	0.01	23646.01	45980.41	←
59.10	69.453	0.01	32353.31	37273.21	
59.20	69.452	0.01	32387.11	37239.31	
59.30	69.452	0.01	32420.91	37205.51	
59.40	69.452	0.01	32454.71	37171.71	
59.50	69.452	0.01	32488.41	37138.01	
59.60	69.452	0.01	32522.11	37104.31	
59.70	69.451	0.01	32555.81	37070.61	
59.80	69.451	0.01	32589.51	37036.91	
59.90	69.451	0.01	32623.11	37003.31	
60.00	69.451	0.01	32656.71	36969.71	←

- REQ'D WATER QUALITY volume = 69 060 cf
- Volume REMAINING @ hour 60 = 36 970 cf
- 36 970 cf > $\frac{69\,060}{2}$ = 34 530 cf

⇒ compliance

- BEGIN ATTENUATION @ STAGE 69.51

Henigar & Ray

made by: TWM date: 5/5/94 job no. 2166 3

PROJECT: SR 45 BASIN D checked by: _____ date: _____ sheet no. 1/1

BASIN D

BASIN D POST DEVELOPMENT 25yr-24hr RATIONAL C

CONVERSION OF COMPOSITE CN TO RATIONAL C (25yr -24hr) FOR PERMANENT WET POOL DESIGN

COMPOSITE CN = 91.17

25yr -24hr STORM PRECIPITATION P = 9.00 in

FROM SCS' TR 55

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - .2S)^2}{(P + .8S)}$$

WHERE: Q = RUNOFF (in)
P = RAINFALL = 9.00 in
S = RETENTION AFTER RUNOFF BEGINS (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{91.17} - 10 = 0.9685 \text{ in}$$

$$Q = \frac{[9.00 - .2(.9685)]^2}{(9.00 + .8(.9685))} = 7.934 \text{ in}$$

$$C = \frac{7.934 \text{ in}}{9.00 \text{ in}} = 0.88$$

BASIN D WET POOL DESIGN C = 0.88

Henigar & Ray

made by: JWM date: 5/4/94 job no. 21663
checked by: ____ date: ____ sheet no. 1/1

PROJECT: SR 45 BASIN D

BASIN D

REQUIRED PERMANENT WET POOL VOLUME

WS TO POND D = 30.71 Ac @ C = .88
WS ON POND D = 4.89 Ac @ C = 1.00

COMPOSITE C = $\frac{30.71(.88) + 4.89(1.00)}{(30.71 + 4.89)}$

= 0.896 ≈ .90

14 DAY RESIDENCE TIME VOLUME
= 0.2968 * C * WS AREA
= 0.2968 * .90 * 35.60 = 9.51 Ac·ft

MINIMUM PERMANENT WET POOL VOLUME
= 0.667 in * $\frac{1 ft}{12 in}$ * 35.6 Ac = 1.98 Ac

9.51 Ac ft controls

REQUIRED PERMANENT WET POOL VOLUME
9.51 Ac ft

SR 45 POND D

PROVIDED PERMANENT WET POOL VOLUME

PROJECT DWETVOL; POND D1 (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
169.26 SHW	68389.2	1-1e+06	225671.41
166.12	54450.0	1-1e+06	32813.895
165.5 BOT	151400.8	1-1e+06	10.0

5.18 Ac.ft

TOP EL...	69.26	TOP AREA.	1.57
EL.....	66.12	AREA.....	1.25
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	65.5	BOT AREA.	1.18
TOP LF...	Optional	SIDE %PER	Optional
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.	69.26
X COORD..	Optional	Y COORD..	Optional

PROJECT DWETVOL; POND D2 (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
169.26 SHW	105415.2	1-1e+06	195182.73
166.12 BOT	18905.04	1-1e+06	10.0

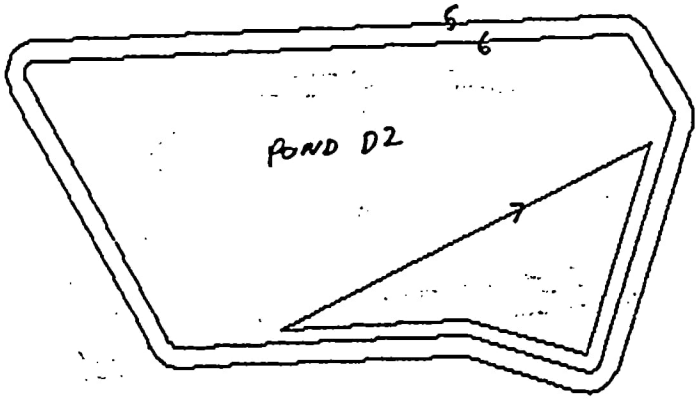
4.48 Ac.ft

TOP EL...	69.26	TOP AREA.	2.42
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	66.12	BOT AREA.	0.434
TOP LF...	Optional	SIDE %PER	Optional
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.	69.26
X COORD..	Optional	Y COORD..	Optional

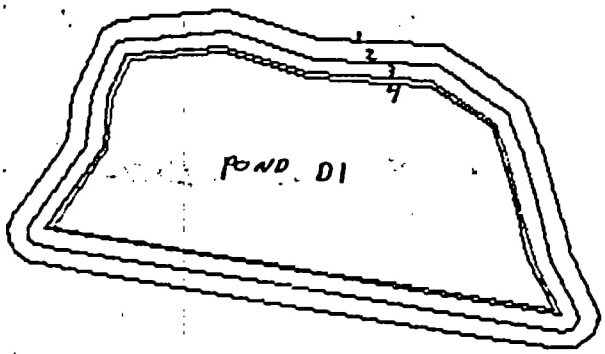
- REQUIRED PERMANENT WET pool volume = 9.51 Ac.ft
- PROVIDED Permanent WET Pool volume
  = (5.18 + 4.48) Ac.ft
  = **9.66 Ac.ft**

SR 45 - POND D

	STAGE, ft	AREA, Ac	DESCRIPTION	
Area = 86340.98, Perimeter = 1229.60	73.00	1.98	TOB	POND D1
Command: 2 Area = 68426.58, Perimeter = 1131.74	69.26	1.57	SHW	
Command: 3 Area = 54566.81, Perimeter = 1045.44	66.12	1.25	LOWEST LITTORAL SHELF EL.	
Command: 4 Area = 51315.41, Perimeter = 1015.67	65.5	1.18	WET pool BOTTOM	
Command: 5 Area = 126851.90, Perimeter = 1462.24	73.00	2.91	TOB	POND D2
Command: 6 Area = 105208.96, Perimeter = 1368.50	69.26	2.42	SHW	
Command: 7 Area = 18908.54, Perimeter = 759.29	66.12	0.434	LOWEST LITTORAL SHELF EL.	

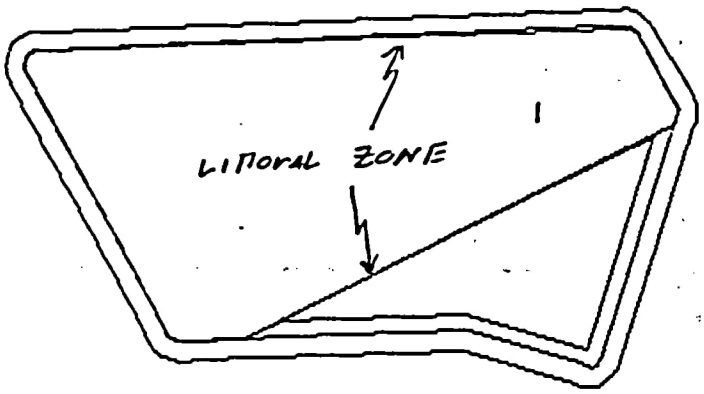


1" = 150'



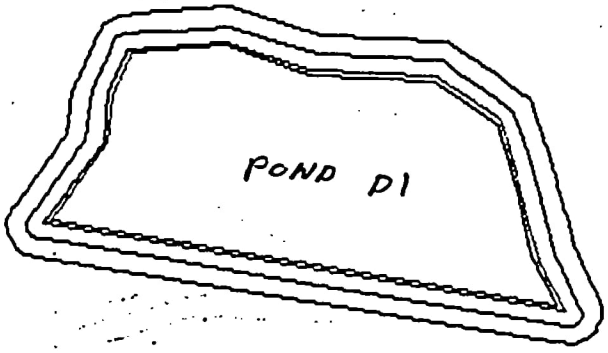
SR 45 POND D

	AREA, Ac	DESCRIPTION
1 Area = 80820.38, Perimeter = 1264.70	1.86	LITTORAL ZONE



POND D2

1" = 150'



- REQUIRED LITTORAL ZONE AREA
  = 0.35 * AREA @ SHWL
  = 0.35 * (1.57 + 2.42) = 1.40 Ac

- PROVIDED LITTORAL ZONE AREA = 1.86 Ac

SR 45 BASIN D

PRE-DEVELOPMENT PEAK DISCHARGE (25yr-24hr EVENT)

Subarea PRE BASIN D 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_D_25
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768141221
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 276
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.2120399
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 12.5
	PEAK CFS 80.449501 ←
	ACFT VOL 17.411318
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

pre peak discharge = 80.45 cfs

SR 45

25 yr - 24hr POST DEVELOPMENT NETWORK SUMMARY

revised 2/9/95

Project PD2524, Run of Thu Feb 09 08:54:47 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND D1	POND D1	DIRECT
1	WS ON POND D1	POND D1	DIRECT
2	POND D1	POND D2	PIPE
3	WS ON POND D2	POND D2	DIRECT
4	WS TO LAKE	LAKE	DIRECT
5	POND D2	LAKE	VEE NOTCH
6	POND D2	LAKE	RECT WEIR

Node	Name	Node Type
0	WS TO POND D1	SUBAREA
1	POND D1	POND
2	WS ON POND D1	SUBAREA
3	POND D2	POND
4	WS ON POND D2	SUBAREA
5	LAKE	STAGING
6	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
1	POND D1	POND	69.51	0.00	71.25	13.20	NO
2	WS ON POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
3	POND D2	POND	69.51	0.00	71.08	30.00	NO
4	WS ON POND D2	SUBAREA	74.00	0.00	74.00	0.00	NO
5	LAKE	STAGING	68.00	0.00	71.08	30.00	NO
6	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND D1	70.92 @ 12.60 Hours	70.92 @ 12.60 Hours
1	POND D1	72.79 @ 12.60 Hours	56.91 @ 13.00 Hours
2	WS ON POND D1	16.37 @ 12.00 Hours	16.37 @ 12.00 Hours
3	POND D2	58.77 @ 13.00 Hours	51.82 @ 13.40 Hours
4	WS ON POND D2	24.05 @ 12.00 Hours	24.05 @ 12.00 Hours
5	LAKE	→55.64 @ 13.30 Hours	1.14 @ 30.00 Hours
6	WS TO LAKE	8.28 @ 12.40 Hours	8.28 @ 12.40 Hours

25yr-24hr

Pre-development Peak Discharge = 80.45 cfs

Post-development Peak Discharge = 55.64 cfs

⇒ Compliance MET

444 IV-48

SA 45 BASIN D
POST 25yr-24hr Hydrographs

Subarea POST WS TO POND D1 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOD125
TOTAL DRAINAGE AREA, ACRES... 30.71	INPUT ID 780952009
WEIGHTED SCS CURVE NUMBER.... 91.17	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.4
TIME OF CONCENTRATION, HOURS. 0.885	DT, HRS. 0.1
	DATA PTS 295
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.9337397
	ACREAGE. 30.71
	TC, HRS. 0.885
	TP, HRS. 12.6
	PEAK CFS 70.919327
	ACFT VOL 20.297049
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WS ON POND D1 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOND125
TOTAL DRAINAGE AREA, ACRES... 1.98	INPUT ID 768169555
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 1.98
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 16.366943
	ACFT VOL 1.4845091
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN D

POST 25yr-24hr Hydrographs cont

Subarea POST WS ON POND D2 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOND225
TOTAL DRAINAGE AREA, ACRES... 2.91	INPUT ID 768169391
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 2.91
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 24.054447
	ACFT VOL 2.1817785
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST BASIN D OFFSITE 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOFFD25
TOTAL DRAINAGE AREA, ACRES... 3.52	INPUT ID 768169268
WEIGHTED SCS CURVE NUMBER.... 70.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.0
TIME OF CONCENTRATION, HOURS. 0.491	DT, HRS. 0.1
	DATA PTS 271
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 5.4078755
	ACREAGE. 3.52
	TC, HRS. 0.491
	TP, HRS. 12.4
	PEAK CFS 8.2761507
	ACFT VOL 1.5857854
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Post 25yr-24hr EVENT PATHS SUMMARY

Report on Paths of Project PD2524.

Path..... 000, DIRECT
Upper Node 000, WS TO POND D1
Lower Node 001, POND D1

DIRECT..	---------	INPUT ID	768170852
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	70.92
		IMIN IN..	0.00
		IMAX OUT.	70.92
		IMIN OUT.	0.00
		|	
		|	
		|	
		|	
		|	
		|	
		|	
HW PE/KE NO		IFWD K...	0.00
TW PE/KE YES		IREV K...	0.00
HW EL...	74.000	IFWD X...	0.00
TW EL...	73.000	IREV X...	0.00

Path..... 001, DIRECT
Upper Node 002, WS ON POND D1
Lower Node 001, POND D1

DIRECT..	---------	INPUT ID	768170881
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	16.37
		IMIN IN..	0.00
		IMAX OUT.	16.37
		IMIN OUT.	0.00
		|	
		|	
		|	
		|	
		|	
		|	
		|	
HW PE/KE NO		IFWD K...	0.00
TW PE/KE YES		IREV K...	0.00
HW EL...	74.000	IFWD X...	0.00
TW EL...	73.000	IREV X...	0.00

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```
-------------------------------------
        Path...... 002, PIPE
      Upper Node 001, POND D1
      Lower Node 003, POND D2
-------------------------------------
LEN, FT.   261.000|INPUT ID 768774923
MANN N..     0.012|T0 CFS..      0.00
RISE, FT     4.500|T0 CF...      0.00
SPAN, FT     4.500|MAX IN..     56.89
INLET--- ---------|MIN IN..     -0.46
INVERT..    61.820|MAX OUT.     56.89
ENT KE..     0.400|MIN OUT.     -0.46
         OUTLET-- ---------|
         INVERT..    61.680|
         ENT KE..     1.000|
         -------- ---------|
         BW STEPS     0    |
         -------- ---------|
                           |
                           |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE YES      |REV K...      0.00
MAX HW..    73.000|FWD X...      0.00
MAX TW..    73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 003, DIRECT
    Upper Node 004, WS ON POND D2
      Lower Node 003, POND D2
-------------------------------------
DIRECT.. ---------|INPUT ID 768171215
                  |T0 CFS..      0.00
                  |T0 CF...      0.00
                  |MAX IN..     24.05
                  |MIN IN..      0.00
                  |MAX OUT.     24.05
                  |MIN OUT.      0.00
                           |
                           |
                           |
                           |
                           |
                           |
                           |
                           |
HW PE/KE NO       |FWD K...      0.00
TW PE/KE YES      |REV K...      0.00
HW EL...    74.000|FWD X...      0.00
TW EL...    73.000|REV X...      0.00
-------------------------------------
```

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```
-------------------------------------
        Path...... 004, DIRECT
      Upper Node 006, WS TO LAKE
        Lower Node 005, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 768148476
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       8.28
                  |MIN IN..       0.00
                  |MAX OUT.       8.28
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 005, VEE NOTCH
       Upper Node 003, POND D2
        Lower Node 005, LAKE
-------------------------------------
CREST EL    69.260|INPUT ID 780176605
ANGLE...   115.000|T0 CFS..       0.12
-------- ---------|T0 CF...       0.00
HEIGHT..     0.360|MAX IN..       0.90
-------- ---------|MIN IN..      -0.01
                  |MAX OUT.       0.90
                  |MIN OUT.      -0.01
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE YES      |REV K...       0.00
MAX HW..    73.000|FWD X...       0.00
MAX TW..    73.000|REV X...       0.00
-------------------------------------
```

Path..... 006, RECT WEIR
Upper Node 003, POND D2
Lower Node 005, LAKE

CREST EL	69.620	INPUT ID	780958498
WIDTH...	15.000	T0 CFS..	0.00
WEIR C..	3.200	T0 CF...	0.00
NUM ENDS	2	MAX IN..	50.93
		MIN IN..	-1.13
BREADTH.		MAX OUT.	50.93
		MIN OUT.	-1.13
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

post 25yr-24hr Nodes Report

Report on Nodes of Project PD2524.

Node..... 000, SUBAREA

FILE NAME	WSTOD125	FLOOD EL.	74.000	INPUT ID.....	780953730
INPUT ID#	780952009			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	29.400			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	295			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	7.934			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	30.710			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.885				
TP, HRS..	12.600				
PEAK CFS.	70.919			PEAK NODAL INTAKE, CFS.....	70.92
ACFT VOL.	20.297			TIME OF PEAK INTAKE, HOURS...	12.60
EXECUTED.	YES	FLOOD EL.		PEAK NODAL OUTPUT, CFS.....	70.92
				TIME OF PEAK OUTPUT, HOURS...	12.60
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL...	73.000	TOP AREA.	1.980	INPUT ID.....	792337900
EL.....	69.260	AREA.....	1.570	FLOOD ELEVATION REACHED.....	NO
EL.....	69.250	AREA.....	0.057	INITIAL STAGE ELEVATION.....	69.51
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	38261.80
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	71.25
EL.....		AREA.....		MINIMUM STAGE REACHED.....	69.51
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	172407.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	134145.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	71.07
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	13.20
BOT EL...	61.820	BOT AREA.	0.057	TIME OF MINIMUM STAGE, HOURS.	0.00
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	72.79
BOT LF...				TIME OF PEAK INTAKE, HOURS...	12.60
				PEAK NODAL OUTPUT, CFS.....	56.91
				TIME OF PEAK OUTPUT, HOURS...	13.00
BASE CFS.	0.000	STAGE T0.	69.510	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

451 V-55.

Node..... 002, SUBAREA

FILE NAME	WSOND125	FLOOD EL.	74.000	INPUT ID.....	76817190
INPUT ID#	768169555			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.0
RUN, HRS.	25.000			INITIAL STORAGE, CUBIC FEET..	0.0
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.0
DATA PTS.	251			MINIMUM STAGE REACHED.....	74.0
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.0
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.0
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.0
EXCESS...	9.000			TIME OF MAXIMUM STAGE, HOURS.	0.0
ACREAGE..	1.980			TIME OF MINIMUM STAGE, HOURS.	0.0
TC, HRS..					
TP, HRS..	12.000				
PEAK CFS.	16.367			PEAK NODAL INTAKE, CFS.....	16.3
ACFT VOL.	1.485			TIME OF PEAK INTAKE, HOURS...	12.0
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	16.3
				TIME OF PEAK OUTPUT, HOURS...	12.0
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

Node..... 003, POND

TOP EL...	73.000	TOP AREA.	2.910	INPUT ID.....	792338059
EL.....	69.260	AREA.....	2.420	FLOOD ELEVATION REACHED.....	NO
EL.....	69.250	AREA.....	0.057	INITIAL STAGE ELEVATION.....	69.5
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	48489.1
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	71.0
EL.....		AREA.....		MINIMUM STAGE REACHED.....	69.5
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	230163.0
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	181674.0
EL.....		AREA.....		FINAL STAGE ELEVATION.....	71.0
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	30.0
BOT EL...	61.680	BOT AREA.	0.057	TIME OF MINIMUM STAGE, HOURS.	0.0
TOP LF...		SIDE XPER			
MID LF...		BASE XPER		PEAK NODAL INTAKE, CFS.....	58.7
BOT LF...				TIME OF PEAK INTAKE, HOURS...	13.0
				PEAK NODAL OUTPUT, CFS.....	51.8
				TIME OF PEAK OUTPUT, HOURS...	13.4
BASE CFS.	0.000	STAGE TO.	69.510	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

Node..... 004, SUBAREA

FILE NAME	WSOND225	FLOOD EL.	74.000	INPUT ID.....	76875108
INPUT ID#	768169391			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	25.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	251			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	9.000			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	2.910			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	12.000				
PEAK CFS.	24.054			PEAK NODAL INTAKE, CFS.....	24.05
ACFT VOL.	2.182			TIME OF PEAK INTAKE, HOURS...	12.00
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	24.05
				TIME OF PEAK OUTPUT, HOURS...	12.00
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, STAGING

FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	78095184
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.000	INITIAL STAGE ELEVATION.....	68.00
TIME, HRS	7.500	STAGE EL.	68.210	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	70.330	MAXIMUM STAGE REACHED.....	71.00
TIME, HRS	22.500	STAGE EL.	70.920	MINIMUM STAGE REACHED.....	68.00
TIME, HRS	30.000	STAGE EL.	71.080	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	33.750	STAGE EL.	71.100	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	71.00
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	30.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	55.07
				TIME OF PEAK INTAKE, HOURS...	13.30
				PEAK NODAL OUTPUT, CFS.....	1.14
				TIME OF PEAK OUTPUT, HOURS...	30.00
		STAGE TO.	68.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 006, SUBAREA

FILE NAME	WSOFFD25	FLOOD EL.	74.000	INPUT ID.....	76814853
INPUT ID#	768169266			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	27.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	271			MINIMUM STAGE REACHED.....	74.00
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	74.00
EXCESS...	5.408			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	3.520			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.491				
TP, HRS..	12.400				
PEAK CFS.	8.276			PEAK NODAL INTAKE, CFS.....	8.28
ACFT VOL.	1.586			TIME OF PEAK INTAKE, HOURS...	12.40
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	8.28
				TIME OF PEAK OUTPUT, HOURS...	12.40
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

SYSTEM D

STORM SEWER

DESIGN

SR45 – BASIN D
POST 3YR-8 HR EVENT
SYSTEM SUMMARY

Project PD_3_8, Run of Fri Sep 30 17:49:39 1994 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND D1	POND D1	DIRECT
1	WS ON POND D1	POND D1	DIRECT
2	POND D1	POND D2	PIPE
3	WS ON POND D2	POND D2	DIRECT
4	WS TO LAKE	LAKE	DIRECT
5	POND D2	LAKE	VEE NOTCH
6	POND D2	LAKE	RECT WEIR

Node	Name	Node Type
0	WS TO POND D1	SUBAREA
1	POND D1	POND
2	WS ON POND D1	SUBAREA
3	POND D2	POND
4	WS ON POND D2	SUBAREA
5	LAKE	STAGING
6	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
1	POND D1	POND	69.26	0.00	→70.52	5.40	NO
2	WS ON POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
3	POND D2	POND	69.26	0.00	70.27	5.60	NO
4	WS ON POND D2	SUBAREA	74.00	0.00	74.00	0.00	NO
5	LAKE	STAGING	68.00	0.00	69.30	8.00	NO
6	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND D1	35.34 @ 4.30 Hours	35.34 @ 4.30 Hours
1	POND D1	36.97 @ 4.30 Hours	27.58 @ 4.90 Hours
2	WS ON POND D1	4.59 @ 3.50 Hours	4.59 @ 3.50 Hours
3	POND D2	29.46 @ 4.80 Hours	25.98 @ 5.60 Hours
4	WS ON POND D2	6.74 @ 3.50 Hours	6.74 @ 3.50 Hours
5	LAKE	27.49 @ 5.50 Hours	0.00 @ 0.00 Hours
6	WS TO LAKE	2.63 @ 4.20 Hours	2.63 @ 4.20 Hours

OUTLET CONTROL ELEVATION
70.52

456 V-59

SR 45 BASIN D

POST 3YR-8HR HYDROGRAPHS

Subarea POST WS TO POND D1 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOD138
TOTAL DRAINAGE AREA, ACRES... 30.71	INPUT ID 780952171
WEIGHTED SCS CURVE NUMBER.... 91.17	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 13.4
TIME OF CONCENTRATION, HOURS. 0.885	DT, HRS. 0.1
	DATA PTS 135
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.7284875
	ACREAGE. 30.71
	TC, HRS. 0.885
	TP, HRS. 4.3
	PEAK CFS 35.344513
	ACFT VOL 9.5386662
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WS ON POND D1 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOND138
TOTAL DRAINAGE AREA, ACRES... 1.98	INPUT ID 768170040
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 1.98
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 4.5853648
	ACFT VOL 0.778543
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

457 IV-60

SR 45 BASIN D

post 3yr-8hr Hydrographs cont.

Subarea POST WS ON POND D2 3yr-8hr

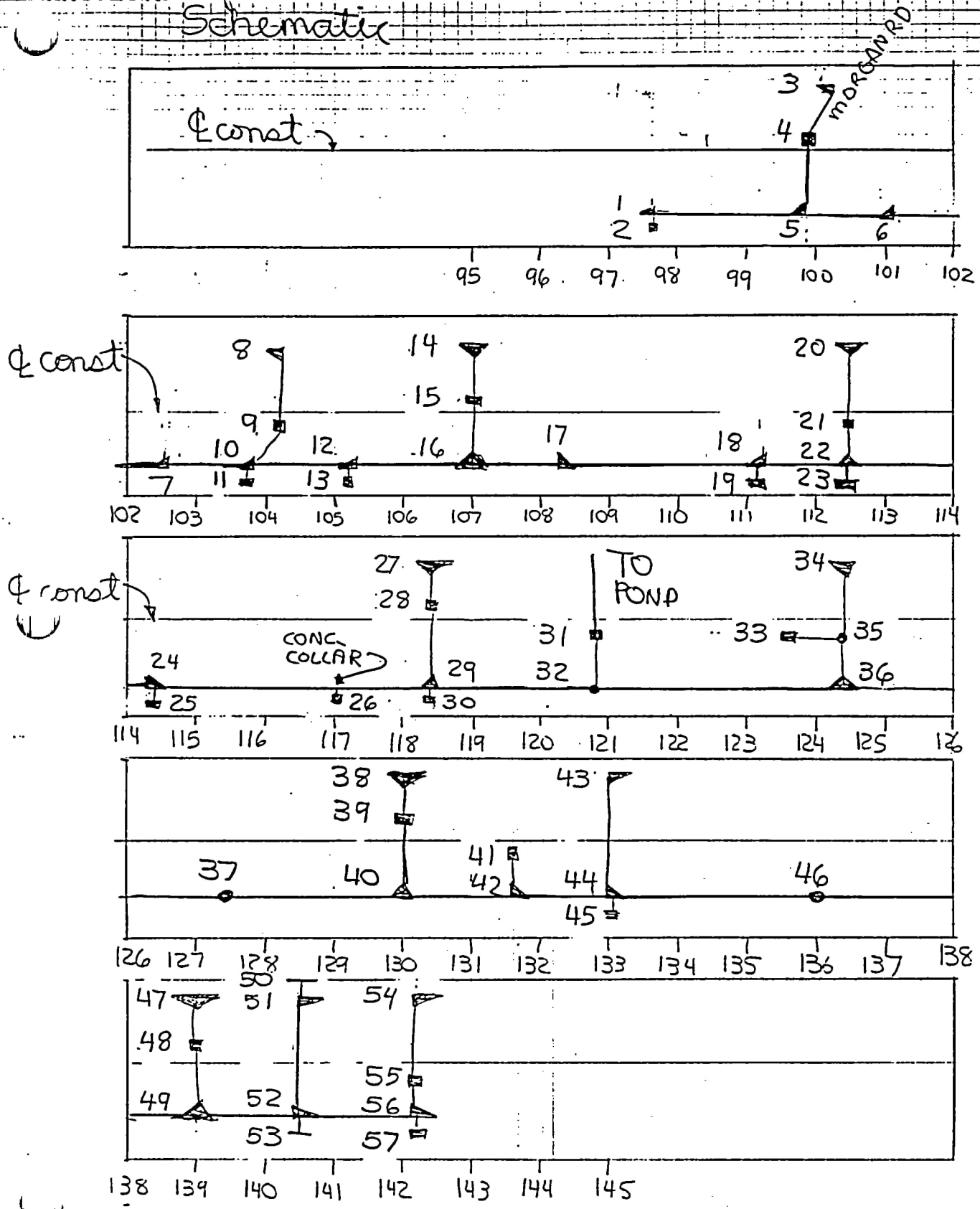
UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOND238
TOTAL DRAINAGE AREA, ACRES... 2.91	INPUT ID 768169472
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 2.91
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 6.7390965
	ACFT VOL 1.1442216
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

458 V-61

Henigar & Ray made by: CS date: 5-6-94 job no. 21663

PROJECT: System D checked by: _____ date: _____ sheet no. _____

Schematic



459 V - 62

Henigar & Ray made by: CLJ date: 10-3-94 5-25-94 job no. 21663

PROJECT: SR45 checked by: date: sheet no. 1 of 2

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #3 LT.	Typical #2 median	Typical #1 RT.	NON-TYPICAL INLETS
D			D-1	D-2 Cmod
	D-3	D-4	D-5	D-6 OFFSITE
				D-7 OFFSITE
	D-8	D-9	D-10	D-11 C-MOD
				D-12 OFFSITE
	D-14	D-15		D-13 C-MOD
			D-18	D-16 (N+S) OFFSITE
	D-20	D-21	D-22	D-17 OFFSITE
			D-24	D-19 HEADWALL
				D-23 HEADWALL
	D-27	D-28	D-29	D-25 C-MOD
		D-31		D-26 C-MOD
		D-33		D-30 C-MOD
	D-34		D-36	D-32 MH
				D-35 MH
				D-37 MH
	D-38	D-39		D-40 OFFSITE
		D-41		D-42 OFFSITE
	D-43		D-44	D-45 C-MOD
	D-47(S)	D-48(S)		D-46 MH
				D-49 SOUTH (OFFSITE)

10-3-94

Henigar & Ray made by: CLJ date: 5-25-94 job no: 21663

PROJECT: SR54 checked by: _____ date: _____ sheet no. 2 of 2

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
D				D-47(N), D-48(N), D-49(N) } S_L=.46%
				D-50 HEADWALL
				D-51, D-52 } S_L=.46%
				D-53 HEADWALL
				D-54, D-55, D-56 } S_L=.46%
				D-57 C-MOD

461

V-64

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-06-1994

PROJECT: SR45 BASIN D

PROJECT NO.: 21663

INLET NO.: D-~~10~~ 6

STATION: 101+01 R

DRAINAGE AREA: 0.61 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.10	8.18

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.486	0.33	1.98

Spread = 8.18 - 1.50 = 6.68 ft

6.68 < 8.0 ∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-06-1994

PROJECT: SR45 BASIN D

PROJECT NO.: 21663

INLET NO.: D-~~12~~ 7

STATION: 102+60 R

DRAINAGE AREA: 0.79 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.72	9.08

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	v (fps)
1.50	0.083	0.00	0.443	0.35	2.09

Spread = 9.08 - 1.50 = 7.58 ft

7.58 < 8.0 ∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-05-1994

PROJECT: SR 45 BASIN D

PROJECT NO.: 21663

INLET NO.: D-~~18~~ 12

STATION: 105+18

DRAINAGE AREA: .56 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.92	7.87

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.503	0.32	1.94

Spread = 7.87' - 1.50' = 6.37 ft

6.37' < 8' ∴ ok

464

V - 67

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-05-1994

PROJECT: SR 45 BASIN D

PROJECT NO.: 21663

INLET NO.: D-~~21~~ 16 NORTH

STATION: 107+00

DRAINAGE AREA: 1.08 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.97	9.41

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.429	0.36	2.14

D-21 South Area = 0.87 Ac
16
Q = 2.1 cfs
2.1 cfs < 2.97 cfs
∴ Spread ok D-21 SOUTH
16

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~23~~ 17

STATION: 108+25 R

DRAINAGE AREA: 1.01Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.83	9.22

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.437	0.36	2.10

Spread = 9.22 - 1.50 = 7.72 ft

7.72 < 8.0 ; ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-03-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: D-~~45~~ 40 SOUTH

STATION: 130+00 RT

DRAINAGE AREA: 0.37Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.27	6.61

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.584	0.28	1.78

Spread = 6.61 - 1.50 = 5.11 ft

5.11 < 8.0 , ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-03-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: D-~~46~~ 40 NORTH

STATION: 130+00 RT

DRAINAGE AREA: 0.41Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.09	6.18

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.615	0.27	1.72

Spread = 6.18 - 1.50 = 4.68 ft

4.68 < 8.0 ; Ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~48~~ 42

STATION: 131+72.5 RT

DRAINAGE AREA: 0.2 Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	0.66	4.94

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.723	0.23	1.56

Spread = 4.94 - 1.50 = 3.44

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~52~~ 47 NORTH

STATION: 138+84 L

DRAINAGE AREA: 0.15Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	0.56	4.10

S=.46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.808	0.20	1.82

Spread = 4.10 − 1.50 = 2.60 ft

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~53~~ 48 NORTH

STATION: 138+84 M

DRAINAGE AREA: 0.09Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.020	0.013	0.34	5.14

S=.46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.083	0.00	0.000	0.10	1.28

Spread= 5.14 - 0 = 5.14ft

5.0 < 8 ∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~54~~ 49 SOUTH

STATION: 138+84 R

DRAINAGE AREA: 0.63Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.35	8.57

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.467	0.34	2.03

Spread = 8.57 - 1.50 = 7.07 ft

7.07 < 8 ; ok

472

V - 75

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: D-~~54~~ 49 NORTH

STATION: 136+84 R

DRAINAGE AREA: 0.17Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	0.64	4.39

S=.46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.779	0.21	1.86

Spread = 4.39 − 1.50 = 2.89 ft

2.89 < 8.0

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES DATE: 05-30-1994

PROJECT: SR45 (US41) PROJECT NO.: 21663

INLET NO.: D-~~56~~ 51 STATION: 140+30 L

DRAINAGE AREA: 0.27Acres DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	0.94	5.26

S = .46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.693	0.24	1.99

Spread = 5.26 − 1.50 = 3.76 ft

3.76 < 8.0 ok

474

V-77

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES DATE: 05-30-1994

PROJECT: SR45 (US41) PROJECT NO.: 21663

INLET NO.: D-~~52~~ 52 STATION: 140+30 R

DRAINAGE AREA: 0.50Acres DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	1.85	7.07

S = .46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.552	0.29	2.27

Spread = 7.07 − 1.50 = 5.57 ft

5.57 < 8 ∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-04-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: D-~~BQ~~ 54

STATION: 142+65 L

DRAINAGE AREA: 1.09Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	3.51	9.22

S=.46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.436	0.36	2.62

Spread = 9.22 − 1.50 = 7.72 ft

7.72 < 8.0 ∴ ok

476

V-79

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-04-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: D-~~81~~ 55

STATION: 142+65 M

DRAINAGE AREA: 0.18Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.020	0.013	0.67	6.67

S = .46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.083	0.00	0.000	0.13	1.52

477

V - 80

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 10-04-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: D-~~83~~ 56

STATION: 142+65 R

DRAINAGE AREA: 0.32Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.005	0.030	0.013	1.12	5.70

S=.46%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.654	0.25	2.06

Spread=5.70-1.50=4.20ft

4.20 < 8 ∴ ok

478

V-81

Henigar & Ray made by: CLJ date: 11-30-94 job no. 21663
PROJECT: SR 415 checked by: date: sheet no.

SYSTEM D SAG INLET CHECKS

SAG INLET ID	INLET TYPE	AREA Ac	3 YR Q CFS	*ALLOWABLE Q CFS
14	6	0.58	1.86	7.20
16	6	1.95	6.24	7.20
20	6	0.55	1.76	7.20
22	6	0.38	1.22	7.20
27	6	0.60	1.92	7.20
29	6	0.70	2.24	7.20
34	6	0.63	2.02	7.20
36	6	0.77	2.46	7.20
38	6	0.56	1.79	7.20
40	6	0.79	2.53	7.20
47	6	0.47	1.50	7.20
49	6	0.79	2.53	7.20

Use $Q = CiA$
$= .80(4.0)(A)$

* Allowable Q based on FDOT Tables 12-21 and 12-22 for sump condition spread VS Total inlet Flow (FDOT Drainage Manual)

For Spread = 8+1.5 = 9.5'
Q = 7.20 cfs (Avg.)

25 YR OVERTOPPING CHECK

POND D 25YR-24HR DHW = 71.25

479

Lowest gutter inlet elevation = 73.79 @ D-14+16
OK

V-82

SYSTEM D : BACK OF SIDEWALK INLET SLOT DEPTH SELECTION AND APPROACH CHANNEL LINING SELECTION

30-Nov-94

OLD INLET NUMBER	NEW INLET NUMBER	INLET CA	3YR DISCHARGE cfs	INLET TIME OF FLOW min	10YR DISCHARGE cfs	SLOT SIZE NEEDED FOR UNIFORM FLOW	SLOT SIZE SELECTED	SLOT ELEVATION	BACK OF SIDEWALK ELEVATION	RIGHT OF WAY ELEVATIO
D-2	D-2	0.10	0.69	10.00	0.74	0.33	0.80	75.92	77.30	76.3(
D-15	D-11	0.53	3.49	10.00	3.92	0.70	0.50	74.28	75.36	75.4(
D-17	D-13	0.42	2.80	10.00	3.11	0.60	0.40	74.06	75.04	74.7(
D-24	D-19	1.13	7.45	10.00	8.36	*	0.90	73.52	75.00	73.5(
D-28	D-23	1.34	5.38	28.20	6.43	*	1.00	73.01	74.59	73.8(
D-30	D-25	0.80	3.01	31.94	3.60	0.70	1.00	73.50	75.08	74.1;
D-32	D-26	0.30	1.10	34.55	1.32	0.33	0.33	74.06	74.97	74.4
D-36	D-30	0.58	2.26	30.26	2.67	0.60	0.60	73.36	74.54	74.1(
D-50	D-45	0.20	1.32	10.00	1.48	0.40	0.40	74.61	75.59	75.2(
D-55	D-50	0.39	1.77	22.54	2.11	*	1.00	74.61	76.19	74.2(
D-58	D-53	1.39	6.60	20.56	7.78	*	0.90	74.71	76.19	75.3(
D-62	D-57	1.30	5.71	43.05	4.94	0.90	0.70	75.99	77.27	77.0(

NOTE: 1.SLOT SIZE SELECTED FOR THE 3YR DISCHARGE AND THEN CHECKED FOR THE 10 YEAR DISCHARGE.

* = FLOW IS BEYOND THE CAPACITY OF 1(ONE) C-MOD INLET OR FLOW CAUSES FLOODING OUTSIDE R/W

480

V-'93

SYSTEM D : BACK OF SIDEWALK INLET SLOT DEPTH SELECTION AND APPROACH CHANNEL LINING SELECTION

CHANNEL SLOPE FT/FT	CHANNEL LINING NEEDED	TOP OF SLOT ELEV. ABOVE (+) OR BELOW (-) R/W ELEVATION	REQUIRED SLOT ELEVATION FOR NORMAL FLOW TO BE BELOW R/W ELEV.	COMMENT LINE
0.09	LAPPED SOD	0.42	76.30-0.33=75.97	DEEPEN SLOT TO KEEP NORMAL DEPTH OF FLOW BELOW THE R/
0.28	LAPPED SOD	-0.62	75.40-0.70=74.70	
0.16	SOD	-0.24	74.70-0.60=74.10	DEEPEN SLOT TO KEEP NORMAL DEPTH OF FLOW BELOW THE R/
		0.86		TYPE C MODIFIED INLET WILL NOT WORK
		0.21	73.80-1.00=72.80	TYPE C MODIFIED INLET WILL NOT WORK
0.17	ASPHALT	0.33	74.17-0.70=73.47	DEEPEN SLOT TO KEEP NORMAL DEPTH OF FLOW BELOW THE R/
0.09	SOD	-0.02	74.41-0.33=74.08	
0.18	LAPPED SOD	-0.14	74.10-0.60=73.50	
0.15	SOD	-0.19	75.20-0.40=74.80	
-0.10	SOD	1.41	74.20-0.40=73.80	TYPE C MODIFIED INLET WILL NOT WORK
0.15		0.31	75.30-0.90=74.40	TYPE C MODIFIED INLET WILL NOT WORK
0.25	ASPHALT	-0.31	77.00-0.90=76.10	

V-84
181
A-482

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 8/21 /95 PROJECT 14016-3518 ENGINEER: CL JONES

SR45 (US41) BASIN D FILE:45DR90.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 70.52 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	360.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	DIST TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
1	5	M	235	0.30	0.00	76.60	18	0.00	0.0	0.00	0.00	73.91	73.22	.000	
97+64	50R			0.00											
				0.00											
2	1	S	6	0.13	10.00	75.92	18	0.00	0.0	75.92	0.00	74.50	73.91	.000	
97+64	57R			0.00											
				0.00											
3	4	S	49	0.53	10.00	75.94	18	0.00	0.0	0.00	0.00	73.44	73.34	.000	
100+22	50L			0.00											
				0.00											
4	5	M	60	0.18	0.00	76.59	18	0.00	0.0	0.00	0.00	73.34	73.22	.000	
99+99	8L			0.00											
				0.00											
5	6	M	102	0.67	0.00	75.89	18	0.00	0.0	0.00	0.00	73.22	73.02	.000	
99+99	55R			0.00											
				0.00											
6	7	M	159	0.49	19.00	75.59	24	0.00	0.0	0.00	0.00	73.02	72.61	.000	
101+01	50R			0.00											
				0.00											
7	10	M	137	0.79	10.00	75.11	24	0.00	0.0	0.00	0.00	72.61	~~71.95~~ 70.95	.000	
102+60	50R			0.00											
				0.00											
8	9	S	58	0.43	10.00	74.66	18	0.00	0.0	0.00	0.00	72.16	72.04	.000	
104+09	50L			0.00											
				0.00											
9	10	M	45	0.19	0.00	75.36	18	0.00	0.0	0.00	0.00	72.04	~~71.95~~ 70.95	.000	
104+09	8R			0.00											
				0.00											
10	12	M	121	0.15	0.00	74.78	30	0.00	0.0	0.00	0.00	~~71.95~~ 70.95	~~71.83~~ 70.83	.000	
103+97	50R			0.00											
				0.00											
11	10	S	6	0.66	10.00	74.28	18	0.00	0.0	74.28	0.00	~~72.50~~ 71.50	~~71.95~~ 70.95	.000	
103+97	57R			0.00											
				0.00											
12	16	M	182	0.56	10.00	74.34	30	0.00	0.0	0.00	0.00	~~71.83~~ 70.83	~~71.83~~ 70.50	.000	
105+18	50R			0.00											
				0.00											

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DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.80 C3=0.80 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
13	12			S	6	0.53	10.00	74.06	18	0.00	0.0	74.06	0.00	~~72.50~~ 71.50	~~71.83~~ 70.83	.000	
105+18		57R				0.00											
						0.00											
14	15			S	43	0.58	10.00	73.79	18	0.00	0.0	0.00	0.00	71.29	71.18	.000	
107+00		50L				0.00											
						0.00											
15	16			M	58	0.18	0.00	74.49	24	0.00	0.0	0.00	0.00	71.18	71.08	.000	
107+00		8L				0.00											
						0.00											
16	17			M	140	1.95	10.00	73.79	42	0.00	0.0	0.00	0.00	71.09	70.99	.000	
107+00		50R				0.00											
						0.00											
17	18			M	290	1.01	10.00	74.17	42	0.00	0.0	0.00	0.00	70.99	70.81	.000	
108+40		50R				0.00											
						0.00											
18	22			M	137	0.15	0.00	74.30	42	0.00	0.0	0.00	0.00	70.81	70.71	.000	
111+30		50R				0.00											
						0.00											
19	18			S	~~10~~ 7	1.41	10.00	~~72.30~~ 73.50	18	0.00	0.0	~~73.56~~ 74.50	0.00	~~73.00~~ 70.00	~~71.00~~ 69.50	.000	
111+30		50R 57L				0.00											
						0.00											
20	21			S	58	0.55	10.00	73.89	18	0.00	0.0	0.00	0.00	71.39	71.28	.000	
112+67		50L				0.00											
						0.00											
21	22			M	43	0.21	0.00	74.59	18	0.00	0.0	0.00	0.00	71.28	71.18	.000	
112+67		8R				0.00											
						0.00											
22	24			M	163	0.38	0.00	73.89	42	0.00	0.0	0.00	0.00	70.71	70.61	.000	
112+67		50R				0.00											
						0.00											
23	22			S	~~10~~ 7	1.67	28.20	~~71.83~~ 73.00	18	0.00	0.0	73.33	0.00	~~73.33~~ 70.00	~~71.33~~ 69.50	.000	
112+67		57R				0.00											
						0.00											
24	926			M	275	0.17	0.00	74.38	48	0.00	0.0	0.00	0.00	70.61	70.48	.000	
114+30		50R				0.00											
						0.00											
25	24			S	6	1.00	31.90	73.50	18	0.00	0.0	73.50	0.00	71.50	70.66	.000	
114+30		57R				0.00											
						0.00											
26	926			S	6	0.38	34.50	74.06	18	0.00	0.0	74.06	0.00	71.50	69.23	.000	
117+05		57R				0.00											
						0.00											
926	29			M	145	0.00	0.00	74.27	48	0.00	0.0	0.00	0.00	70.48	70.38	.000	
117+05		50R				0.00											
						0.00											
27	28			S	43	0.60	10.00	73.84	18	0.00	0.0	0.00	0.00	71.34	71.24	.000	
118+50		50L				0.00											
						0.00											
28	29			M	58	0.19	0.00	74.54	18	0.00	0.0	0.00	0.00	71.24	71.13	.000	
118+50		8L				0.00											
						0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
29	32			M	243	0.70	0.00	73.84	48	0.00	0.0	0.00	0.00	70.38	70.24	.000	
118+50		50R				0.00											
						0.00											
30	29			S	6	0.73	30.30	73.36	18	0.00	0.0	73.36	0.00	71.50	71.15	.000	
118+50		57R				0.00											
						0.00											
31	0			M	232	0.02	0.00	75.27	48	0.00	0.0	0.00	0.00	67.55	67.44	.000	
120+93		0R				0.00											
						0.00											
32	31			M	51	0.00	0.00	75.26	48	0.00	0.0	0.00	0.00	70.24	70.14	.000	
120+93		58R				0.00											
						0.00											
33	35			S	78	0.10	10.00	74.77	18	0.00	0.0	0.00	0.00	72.27	72.12	.000	
123+73		0R				0.00											
						0.00											
34	35			S	55	0.63	10.00	73.84	18	0.00	0.0	0.00	0.00	71.36	71.25	.000	
124+50		50L				0.00											
						0.00											
35	36			M	45	0.00	0.00	75.30	18	0.00	0.0	0.00	0.00	71.25	69.65	.000	
124+50		5R				0.00											
						0.00											
36	32			M	358	0.77	0.00	73.84	42	0.00	0.0	0.00	0.00	70.56	70.34	.000	
124+50		50R				0.00											
						0.00											
37	36			M	300	0.00	0.00	75.42	42	0.00	0.0	0.00	0.00	70.74	70.56	.000	
127+50		57R				0.00											
						0.00											
38	39			S	43	0.56	10.00	73.99	18	0.00	0.0	0.00	0.00	71.51	71.41	.000	
130+00		50L				0.00											
						0.00											
39	40			M	58	0.10	0.00	74.69	18	0.00	0.0	0.00	0.00	71.41	70.80	.000	
130+00		0L				0.00											
						0.00											
40	37			M	250	0.79	0.00	73.99	42	0.00	0.0	0.00	0.00	70.89	70.74	.000	
130+00		50R				0.00											
						0.00											
41	42			S	43	0.10	10.00	75.21	18	0.00	0.0	0.00	0.00	72.71	71.50	.000	
131+73		0R				0.00											
						0.00											
42	40			M	173	0.20	0.00	74.51	42	0.00	0.0	0.00	0.00	~~71.64~~ 71.10	70.89	.000	
131+73		50R				0.00											
						0.00											
43	44			S	101	0.33	10.00	74.89	18	0.00	0.0	0.00	0.00	72.39	72.22	.000	
133+00		50L				0.00											
						0.00											
44	42			M	128	0.41	0.00	74.89	36	0.00	0.0	0.00	0.00	71.74	~~71.64~~ 71.00	.000	
133+00		50R				0.00											
						0.00											
45	44			S	6	0.25	10.00	74.61	18	0.00	0.0	74.61	0.00	72.50	72.22	.000	
133+00		57R				0.00											
						0.00											

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DATE PROCESSED

PIPE IDENT FROM (STA)	TO (STA)	DIST	TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.80 C2=0.80 C3=0.80 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
46	44		M	300	0.00	0.00	76.45	36	0.00	0.0	0.00	0.00	72.05	71.74	.000	
136+00	55R				0.00											
					0.00											
47	48		S	43	0.47	10.00	74.87	18	0.00	0.0	0.00	0.00	72.55	72.45	.000	
139+00	50L				0.00											
					0.00											
48	49		M	58	0.20	0.00	75.59	18	0.00	0.0	0.00	0.00	72.45	71.84	.000	
139+00	8L				0.00											
					0.00											
49	46		M	300	0.79	0.00	74.87	30	0.00	0.0	0.00	0.00	~~72.53~~ 71.80	~~72.05~~ 71.55	.000	
139+00	50R				0.00											
					0.00											
50	51		S	9	0.49	22.50	73.40	18	0.00	0.0	74.60	0.00	74.90	74.40	.000	
140+30	59L				0.00											
					0.00											
51	52		M	101	0.27	0.00	75.49	18	0.00	0.0	0.00	0.00	72.99	~~72.30~~ 72.00	.000	
140+30	50L				0.00											
					0.00											
52	49		M	130	0.50	0.00	75.49	30	0.00	0.0	0.00	0.00	~~72.99~~ 72.00	~~72.53~~ 71.80	.000	
140+30	50R				0.00											
					0.00											
53	52		S	~~18~~ 7	1.74	20.50	~~73.43~~ 74.86	18	0.00	0.0	~~75.30~~ 75.86	0.00	~~74.99~~ 72.20	~~72.99~~ 72.00	.000	
140+30	60R				0.00											
					0.00											
54	55		S	58	1.09	23.50	76.57	18	0.00	0.0	0.00	0.00	74.09	73.98	.000	
142+65	50L				0.00											
					0.00											
55	56		M	43	0.18	0.00	77.27	18	0.00	0.0	0.00	0.00	73.98	73.88	.000	
142+65	8R				0.00											
					0.00											
56	52		M	235	0.32	0.00	76.57	24	0.00	0.0	0.00	0.00	~~73.88~~ 73.00	~~72.53~~ 72.00	.000	
142+65	50R				0.00											
					0.00											
57	56		S	6	1.62	23.70	75.99	18	0.00	0.0	75.99	0.00	74.09	73.88	.000	
142+65	57R				0.00											
					0.00											

DATE PROCESSED
PROJECT 14010-3518 ZONE 6 FREQ 3 PAGE 5

SR45 (US41) BASIN D FILE:45DR90.IN

* HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF CROWN F.L. UPPER END	H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
2 1	S	6	0.13	0.13	0.10	10.00	0.05	6.61	0.10	0.69	75.92	74.59	74.58	0.01	18*	0.004	0.39	.012
97+64	57R		0.00	0.00	0.00						75.92	74.50	73.91					
			0.00	0.00	0.00													
1 5	M	235	0.30	0.43	0.34	10.05	1.96	6.59	0.34	2.27	76.60	74.58	74.48	0.09	18*	0.040	1.28	.012
97+64	50R		0.00	0.00	0.00							73.91	73.22					
			0.00	0.00	0.00													
3 4	S	49	0.53	0.53	0.42	10.00	0.41	6.61	0.42	2.80	75.94	74.58	74.55	0.03	18*	0.061	1.59	.012
100+22	50L		0.00	0.00	0.00							73.44	73.34					
			0.00	0.00	0.00													
4 5	M	60	0.18	0.71	0.57	10.41	0.48	6.49	0.57	3.69	76.59	74.55	74.48	0.06	18*	0.105	2.09	.012
99+99	8L		0.00	0.00	0.00							73.34	73.22					
			0.00	0.00	0.00													
5 6	M	102	0.67	1.81	1.45	12.01	0.34	6.10	1.45	8.83	75.89	74.48	73.87	0.62	18*	0.604	5.00	.012
99+99	55R		0.00	0.00	0.00							73.22	73.02					
			0.00	0.00	0.00													
6 7	M	159	0.49	2.30	1.84	19.00	0.92	4.92	1.84	9.06	75.59	73.87	73.65	0.22	24*	0.137	2.88	.012
101+01	50R		0.00	0.00	0.00							73.02	72.61					
101+01			0.00	0.00	0.00													
7 10	M	137	0.79	3.09	2.47	19.92	0.60	4.81	2.47	11.89	75.11	73.65	73.33	0.32	24*	0.236	3.78	.012
102+60	50R		0.00	0.00	0.00							72.61	70.95					
			0.00	0.00	0.00													
8 9	S	58	0.43	0.43	0.34	10.00	0.48	6.61	0.34	2.27	74.66	73.39	73.36	0.02	18*	0.040	1.29	.012
104+09	50L		0.00	0.00	0.00							72.16	72.04					
			0.00	0.00	0.00													
9 10	M	45	0.19	0.62	0.50	10.48	0.37	6.47	0.50	3.21	75.36	73.36	73.33	0.04	18*	0.080	1.62	.012
104+09	8R		0.00	0.00	0.00							72.04	70.95					
			0.00	0.00	0.00													
11 10	S	6	0.66	0.66	0.53	10.00	0.05	6.61	0.53	3.49	74.28	73.34	73.33	0.01	18*	0.094	1.97	.012
103+97	57R		0.00	0.00	0.00						74.28	71.50	70.95					
			0.00	0.00	0.00													
10 12	M	121	0.15	4.52	3.62	20.52	0.58	4.74	3.62	17.14	74.70	73.33	73.15	0.18	30*	0.149	3.49	.012
103+97	50R		0.00	0.00	0.00							70.95	70.83					
			0.00	0.00	0.00													
13 12	S	6	0.53	0.53	0.42	10.00	0.05	6.61	0.42	2.80	74.86	73.16	73.15	0.01	18*	0.051	1.59	.012
105+18	57R		0.00	0.00	0.00						74.86	71.50	70.83					
			0.00	0.00	0.00													
12 16	M	182	0.56	5.61	4.49	21.10	0.71	4.67	4.49	20.98	74.34	73.15	72.74	0.41	30*	0.223	4.27	.012
105+18	50R		0.00	0.00	0.00							70.83	70.50					
			0.00	0.00	0.00													
14 15	S	43	0.58	0.58	0.46	10.00	0.36	6.61	0.46	3.07	73.79	72.73	72.76	0.03	18*	0.073	1.73	.012
107+00	50L		0.00	0.00	0.00							71.29	71.18					
			0.00	0.00	0.00													
15 16	M	58	0.18	0.76	0.61	10.36	0.48	6.51	0.61	3.96	74.49	72.76	72.74	0.02	24*	0.026	1.26	.012
107+00	8L		0.00	0.00	0.00							71.18	71.08					
			0.00	0.00	0.00													
16 17	M	148	1.95	8.32	6.66	21.81	0.73	4.60	6.66	30.60	73.79	72.74	72.63	0.11	42*	0.079	3.18	.012
107+00	58R		0.00	0.00	0.00							71.09	70.99					
			0.00	0.00	0.00													

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DATE PROCESSED

PROJECT 14018-3518 FREQ 3 YR. PAGE 6

POINT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF CROWN F.L. UPPER END	H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	N
17 18	M	290	1.01	9.33	7.46	22.54	1.38	4.52	7.46	33.75	74.17	72.63	72.35	0.28	42*	0.096	3.51	.012
108+40	50R		0.00	0.00	0.00							70.99	70.81					
			0.00	0.00	0.00													
19 18	S	~~18~~ 7	1.41	1.41	1.13	10.00	0.84	6.61	1.13	7.45	~~72.30~~ 73.50	72.39	72.35	0.04	18*	0.430	4.22	.012
111+30	~~68R~~ 57R		0.00	0.00	0.00						~~73.56~~ 74.50	70.00	69.50					
			0.00	0.00	0.00													
18 22	M	137	0.15	10.89	8.71	23.92	0.57	4.39	8.71	38.22	74.30	72.35	72.18	0.17	42*	0.123	3.97	.012
111+30	50R		0.00	0.00	0.00							70.81	70.71					
			0.00	0.00	0.00													
20 21	S	58	0.55	0.55	0.44	10.00	0.48	6.61	0.44	2.91	73.89	72.27	72.23	0.04	18*	0.065	1.65	.012
112+67	50L		0.00	0.00	0.00							71.39	71.28					
			0.00	0.00	0.00													
21 22	M	43	0.21	0.76	0.61	10.48	0.32	6.47	0.61	3.94	74.59	72.23	72.18	0.05	18*	0.120	2.23	.012
112+67	8R		0.00	0.00	0.00							71.28	71.18					
			0.00	0.00	0.00													
23 22	S	~~18~~ 7	1.67	1.67	1.34	28.20	0.85	4.83	1.34	5.38	~~71.89~~ 73.00	72.28	72.18	0.02	18*	0.224	3.84	.012
112+67	57R		0.00	0.00	0.00						~~73.33~~ 74.00	70.00	69.50					
			0.00	0.00	0.00													
22 24	M	163	0.38	13.70	10.96	28.25	0.59	4.82	10.96	44.07	73.89	72.18	71.91	0.27	42*	0.164	4.58	.012
~~112~~+67	50R		0.00	0.00	0.00							70.71	70.61					
			0.00	0.00	0.00													
25 24	S	6	1.00	1.00	0.80	31.90	0.85	3.77	0.80	3.01	73.50	71.92	71.91	0.01	18*	0.070	1.71	.012
114+30	57R		0.00	0.00	0.00						73.50	71.50	70.66					
			0.00	0.00	0.00													
24 926	M	275	0.17	14.87	11.90	31.95	1.29	3.76	11.90	44.77	74.38	71.91	71.69	0.23	48*	0.083	3.56	.012
114+30	50R		0.00	0.00	0.00							70.61	70.48					
			0.00	0.00	0.00													
26 926	S	6	0.38	0.38	0.30	34.50	0.85	3.61	0.30	1.10	74.06	71.70	71.69	0.01	18*	0.009	0.62	.012
117+85	57R		0.00	0.00	0.00						74.06	71.50	69.23					
			0.00	0.00	0.00													
926 29	M	145	0.00	15.25	12.20	34.55	0.68	3.60	12.20	44.77	74.27	71.69	71.57	0.12	48*	0.083	3.56	.012
117+85	50R		0.00	0.00	0.00							70.48	7038					
			0.00	0.00	0.00													
27 28	S	43	0.60	0.60	0.48	10.00	0.36	6.61	0.48	3.17	73.84	71.68	71.64	0.03	18*	0.078	1.79	.012
118+50	50L		0.00	0.00	0.00							71.34	71.24					
			0.00	0.00	0.00													
28 29	M	58	0.19	0.79	0.63	10.36	0.42	6.51	0.63	4.11	74.54	71.64	71.57	0.08	18*	0.131	2.33	.012
118+50	8L		0.00	0.00	0.00							71.24	71.13					
			0.00	0.00	0.00													
30 29	S	6	0.73	0.73	0.58	30.30	0.85	3.87	0.58	2.26	73.36	71.58	71.57	0.01	18*	0.040	1.28	.012
118+50	57R		0.00	0.00	0.00						73.36	71.50	71.15					
			0.00	0.00	0.00													
29 32	M	243	0.70	17.47	13.98	35.23	1.82	3.57	13.98	49.83	73.84	71.57	71.32	0.25	48*	0.103	3.97	.012
118+50	50R		0.00	0.00	0.00							70.38	70.24					
			0.00	0.00	0.00													
-33 35	S	78	0.10	0.10	0.08	10.00	0.65	6.61	0.08	0.53	74.77	72.13	72.12	0.01	18*	0.002	0.30	.012
~~123~~+73	8R		0.00	0.00	0.00							72.27	72.12					
123+73			0.00	0.00	0.00													

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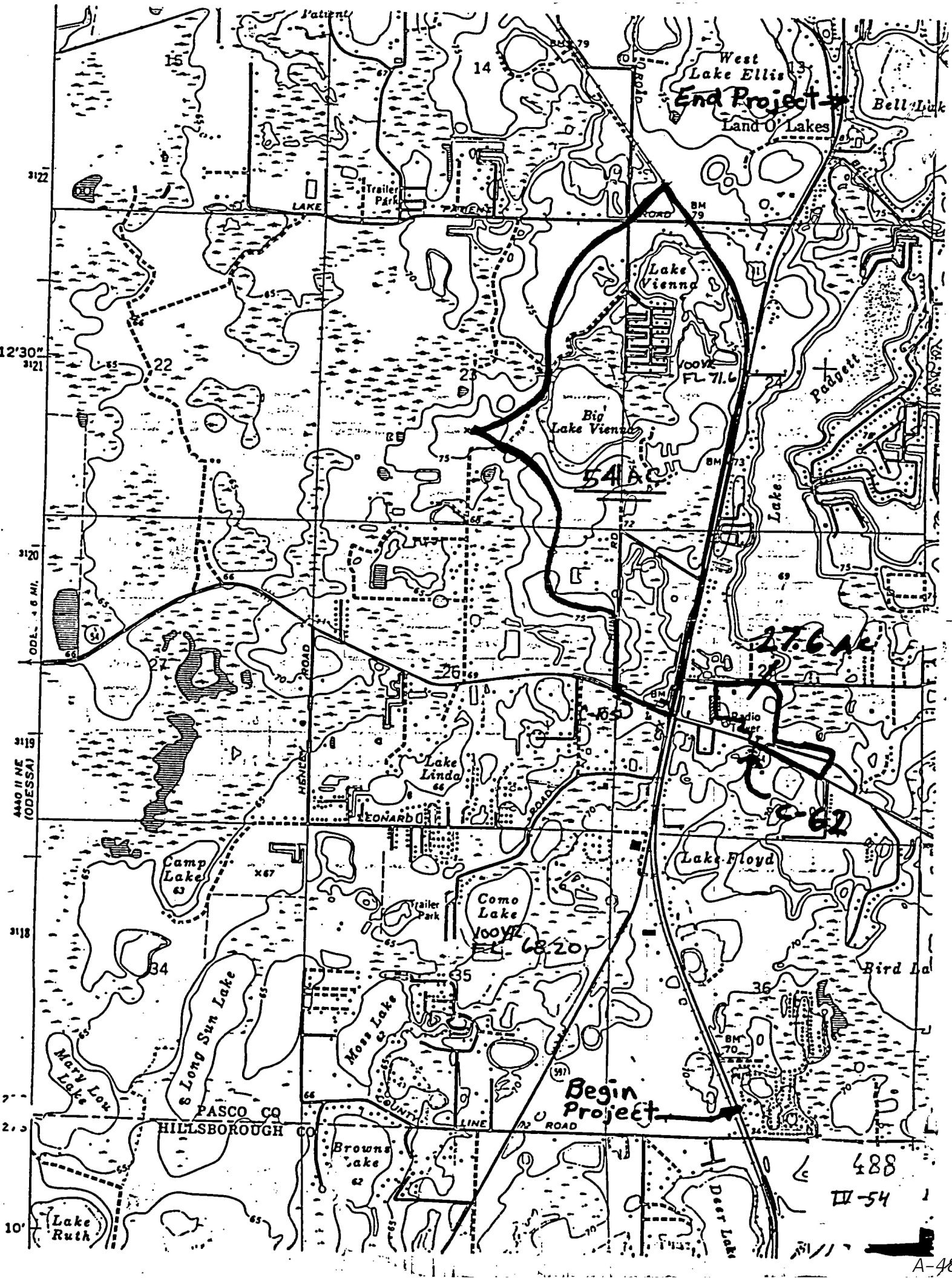
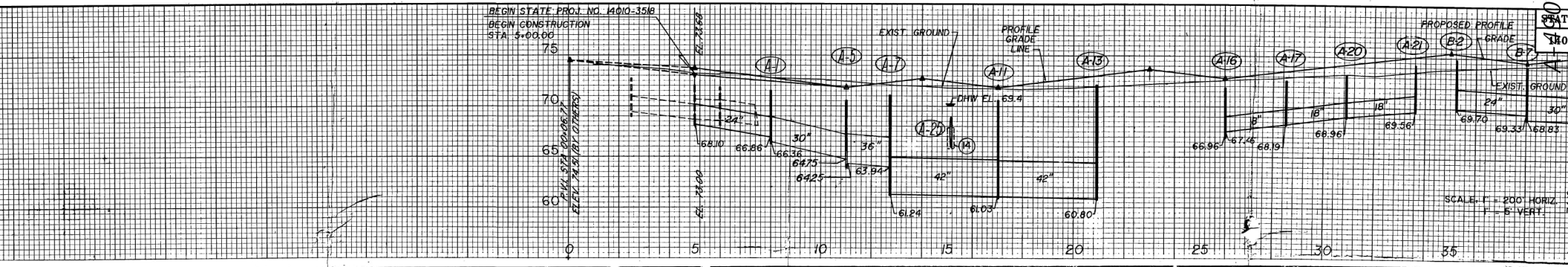
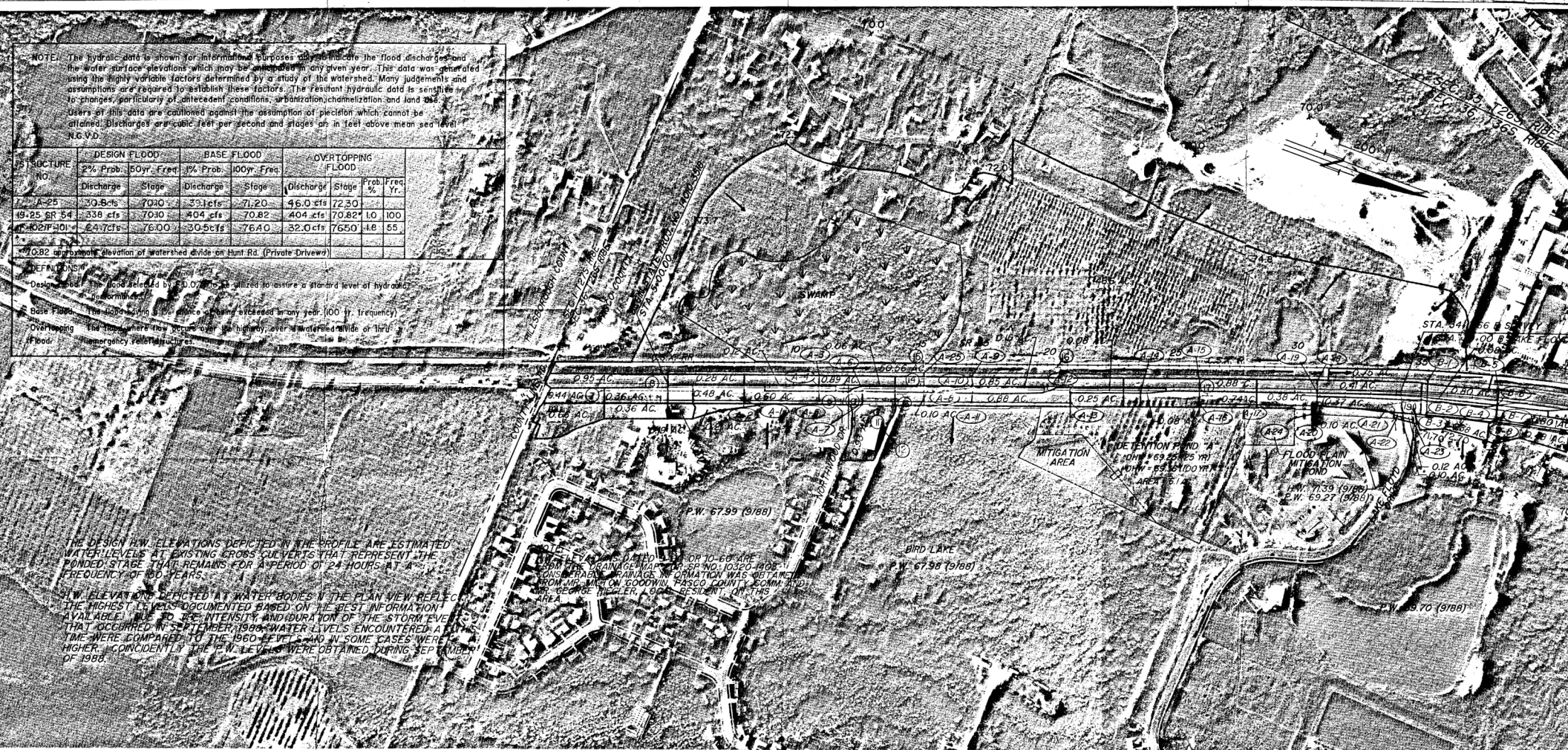


West Lake Ellis
End Project
Land O' Lakes
Bell Lak
Trailer Park
LAKE PATIENT ROAD
Lake Vienna
Big Lake Vienna
FL 71.6
54 AC
Padgett
Lake
27.6 AC
Radio Tower
C-62
Lake Linda
LEONARD ROAD
HENLEY ROAD
Camp Lake
Como Lake
FL 68.20
Lake Floyd
Bird La
Long Sun Lake
Moss Lake
Mary Lou Lake
PASCO CO
HILLSBOROUGH CO
COUNTY LINE ROAD
Begin Project
Browns Lake
Lake Ruth
Deer Lake
488
IV-54
12'30"
10'





NOTE: The hydralic data is shown for informational purposes only to indicate the flood discharges and the water surface elevations which may be anticipated in any given year. This data was generated using the 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 of antecedent conditions, urbanization, channelization and land use. Users of this data are cautioned against the assumption of precision which cannot be attained. Discharges are cubic feet per second and stages are in feet above mean sea level N.G.V.D.

STRUCTURE NO.	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD			
	2% Prob.	50yr. Freq.	1% Prob.	100yr. Freq.				
	Discharge	Stage	Discharge	Stage	Discharge	Stage	Prob. %	Freq. Yr.
A-25	30.8cfs	70.10	39.1cfs	71.20	46.0 cfs	72.30		
19+25 SR 54	338 cfs	70.10	404 cfs	70.82	404 cfs	70.82*	1.0	100
1-102/F-101	24.7cfs	76.00	30.5cfs	76.40	32.0 cfs	76.50	1.8	55

*70.82 approximate elevation of watershed divide on Hunt Rd. (Private Driveway)

DEFINITIONS:

Design Flood: The flood selected by F.D.O.T. to be utilized to assure a standard level of hydraulic performance.

Base Flood: The flood having a 1% chance of being exceeded in any year. (100 yr. frequency)

Overtopping Flood: The flood where flow occurs over the highway, over a watershed divide or thru emergency relief structures.

THE DESIGN H.W. ELEVATIONS DEPICTED IN THE PROFILE ARE ESTIMATED WATER LEVELS AT EXISTING CROSS CULVERTS THAT REPRESENT THE PONDED STAGE THAT REMAINS FOR A PERIOD OF 24 HOURS AT A FREQUENCY OF 100 YEARS.

H.W. ELEVATIONS DEPICTED AT WATER BODIES IN THE PLAN VIEW REFLECT THE HIGHEST LEVELS DOCUMENTED BASED ON THE BEST INFORMATION AVAILABLE. DUE TO THE INTENSITY AND DURATION OF THE STORM EVENT THAT OCCURRED IN SEPTEMBER, 1988, WATER LEVELS ENCOUNTERED AT THIS TIME WERE COMPARED TO THE 1960 LEVELS AND IN SOME CASES WERE HIGHER. COINCIDENTLY THE P.W. LEVELS WERE OBTAINED DURING SEPTEMBER OF 1988.

REVISIONS											
BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

	NAME	DATE		NAME	DATE
DESIGNED BY	GCW	12/94	DRAWN BY	LAE	12/94
CHECKED BY	JBL	12/94	CHECKED BY	JRL	12/94
SUPERVISED BY					

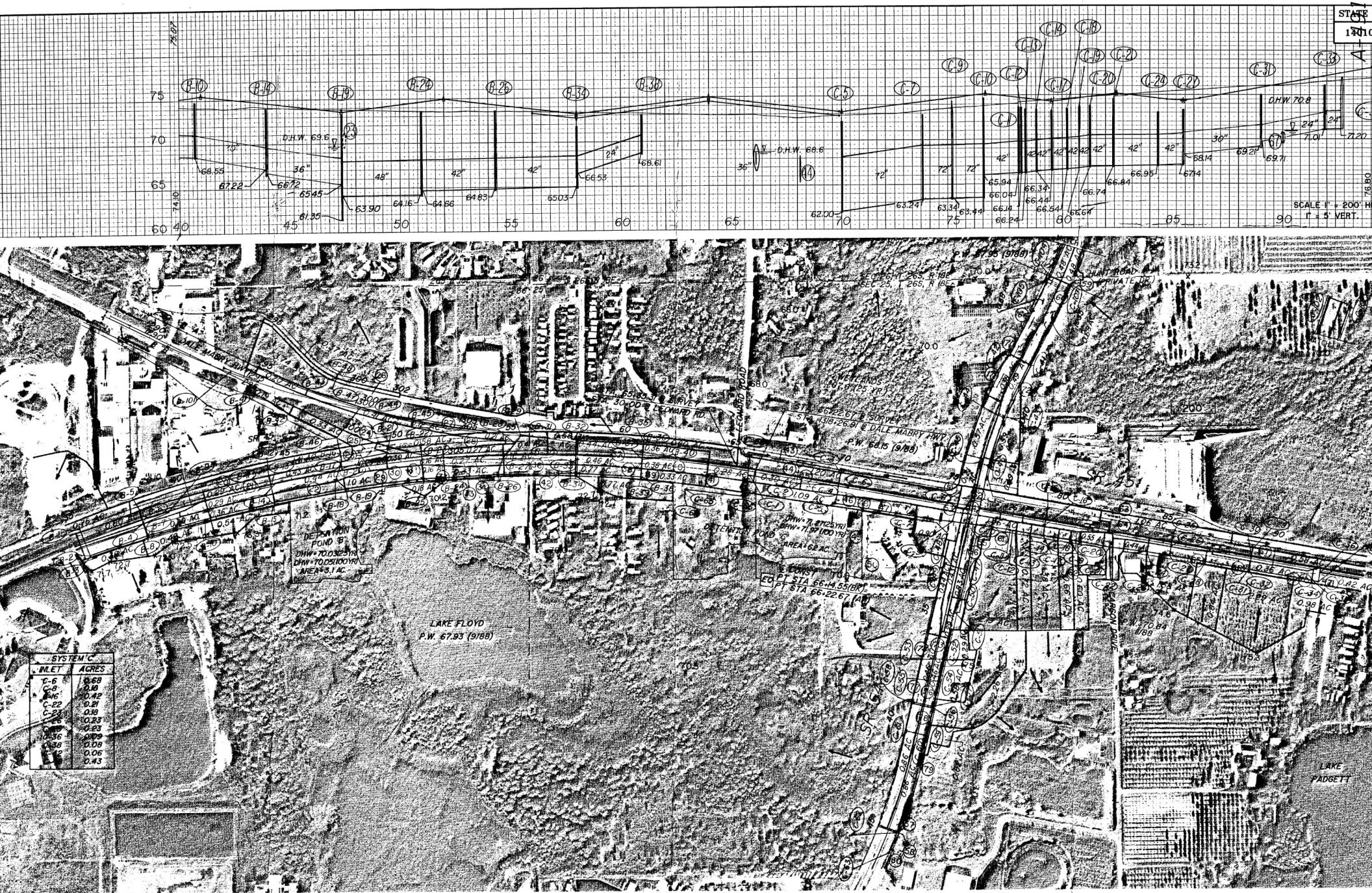
FLORIDA DEPARTMEN OF TRANSPORTATIO

APPROVED BY :

DATE :

Henigar & Ray INC

DRAINAGE



REVISIONS											
BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

	NAME	DATE		NAME	DATE
DESIGNED BY	GCW	12/94	DRAWN BY	LAE	12/94
CHECKED BY	JBL	12/94	CHECKED BY	JRL	12/94

SUPERVISED BY RUDY J. BERES, P.E.

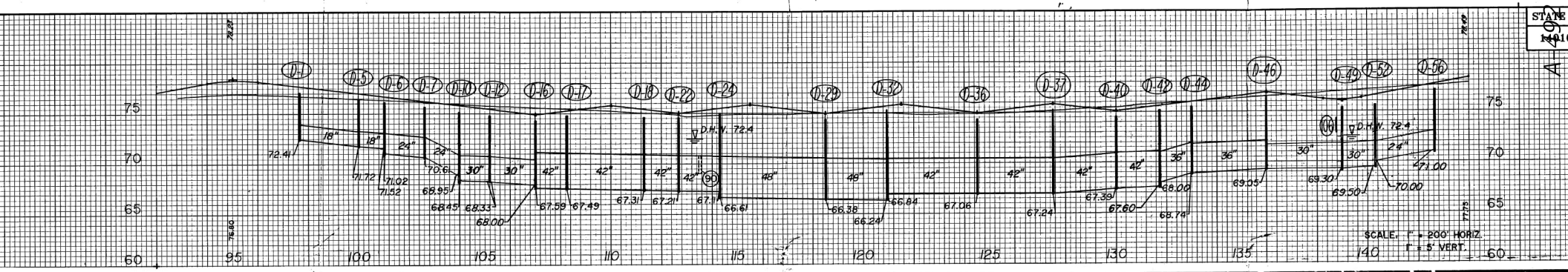
FLORIDA DEPARTMENT OF TRANSPORTATION

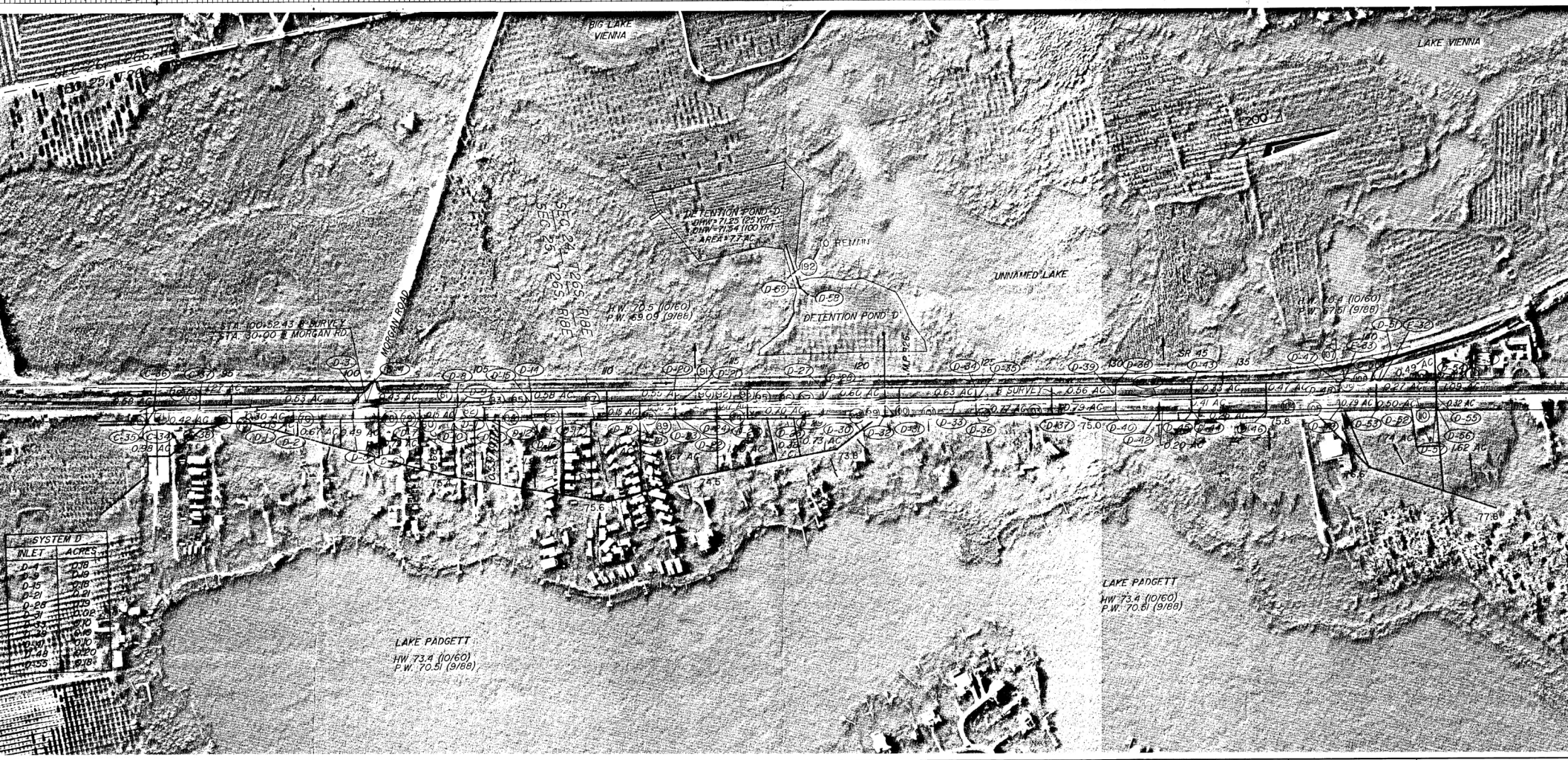
APPROVED BY :

DATE :

Henigar & Ray INC

DRAINAGE





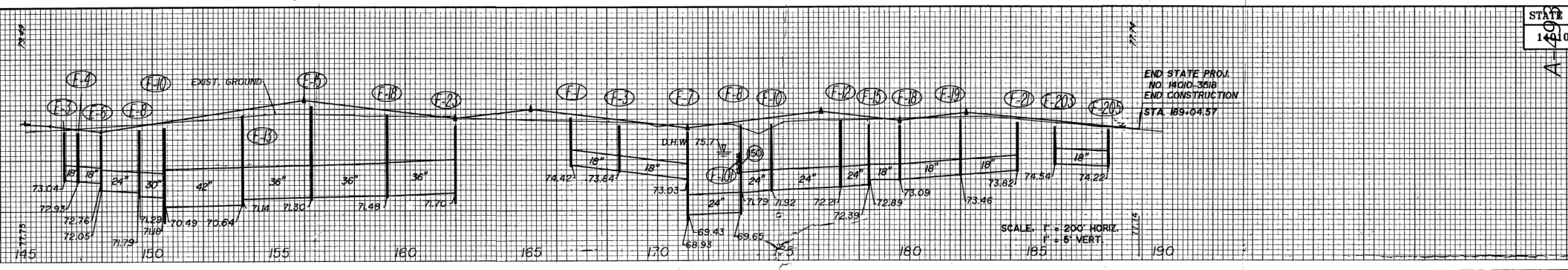
REVISIONS											
BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

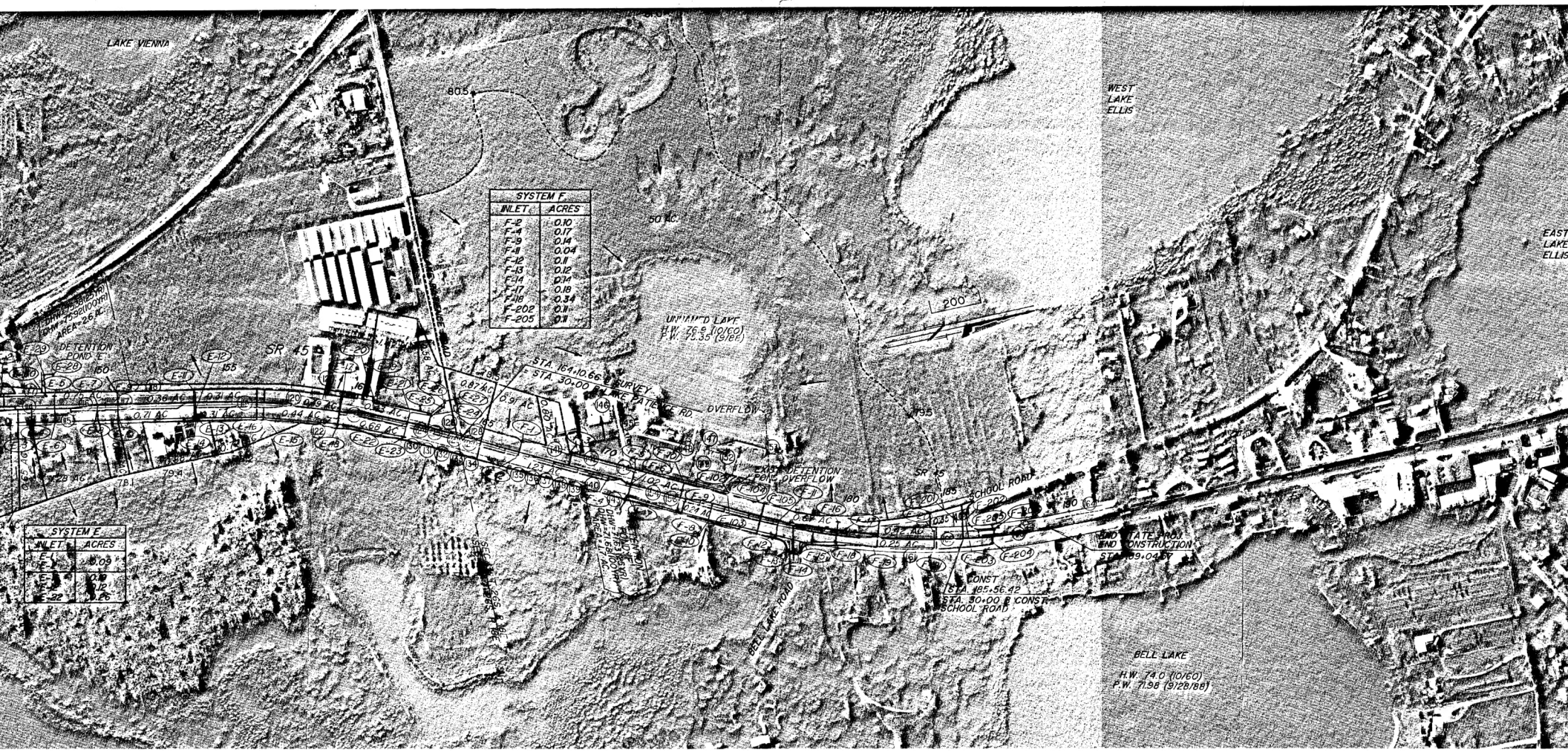
	NAME	DATE		NAME	DATE
DESIGNED BY	GCW	12/94	DRAWN BY	LAE	12/94
CHECKED BY	JBL	12/94	CHECKED BY	JRL	12/94
SUPERVISED BY	RUDY J. BERES, P.E.				

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY :
DATE :

Henigar & Ray INC

DRAINAGE





SYSTEM F	
INLET	ACRES
F-2	0.10
F-4	0.17
F-9	0.14
F-11	0.04
F-12	0.11
F-13	0.12
F-14	0.14
F-17	0.18
F-18	0.34
F-202	0.11
F-205	0.11

SYSTEM E	
INLET	ACRES
E-1	0.09
E-3	0.19
E-12	0.12
E-22	0.26

REVISIONS

BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	GCW	12/94	DRAWN BY	LAE	12/94
CHECKED BY	JBL	12/94	CHECKED BY	JRL	12/94

SUPERVISED BY RUDY J. BERES, P.E.

FLORIDA DEPARTMENT OF TRANSPORTATION

APPROVED BY :

DATE :

Henigar & Ray INC

DRAINAGE

DATE PROCESSED

PROJECT 14818-3518 FREQ 3 YR. PAGE 7

PE TYPE LENGTH	DRAINAGE AREA (ACRES)			TIME	TIME	INTENSITY	TOTAL	Q	GUTTER	ELEV. OF H.G.		FALL	PIPE	SLOPE	VEL.	N
ENT (FEET)	C1=0.80			OF	OF	(IN/HR)	CA	(CFS)	OR	CROWN ELEV			DIA	(%)	(FPS)	
FROM TO	C2=0.00			CONC	FLOW				INLET	F.L. ELEV			(IN)	HYD GRADIENT		
(STA)	C3=0.00		SUB	(MIN)	IN			INCLUDES	ELEV							
		SUB	TOTAL		PIPE			ADDED		UPPER	LOWER			PHYSICAL		
	INCREMENT	TOTAL	CA		(MIN)			FLOW OF()		END	END					
34 35 S 55	0.63	0.63	0.50	10.00	0.46	6.61	0.50	3.33	73.84	71.80	71.75	0.05	18*	0.086	1.88	.012
124+50 50L	0.00	0.00	0.00							71.36	71.25					
	0.00	0.00	0.00													
35 36 M 45	0.00	0.73	0.58	10.65	0.35	6.43	0.58	3.75	75.30	71.75	71.70	0.05	18*	0.109	2.12	.012
124+50 5R	0.00	0.00	0.00							71.25	69.65					
	0.00	0.00	0.00													
38 39 S 43	0.56	0.56	0.45	10.00	0.36	6.61	0.45	2.96	73.99	72.28	72.25	0.03	18*	0.068	1.68	.012
130+60 50L	0.00	0.00	0.00							71.51	71.41					
	0.00	0.00	0.00													
39 40 M 58	0.10	0.66	0.53	10.36	0.48	6.51	0.53	3.44	74.69	72.25	72.19	0.05	18*	0.091	1.94	.012
130+00 8L	0.00	0.00	0.00							71.41	70.80					
	0.00	0.00	0.00													
41 42 S 43	0.10	0.10	0.08	10.00	0.36	6.61	0.08	0.53	75.21	72.32	72.31	0.01	18*	0.002	0.30	.012
131+73 8R	0.00	0.00	0.00							72.71	71.50					
	0.00	0.00	0.00													
43 44 S 101	0.33	0.33	0.26	10.00	0.84	6.61	0.26	1.74	74.89	72.53	72.50	0.02	18*	0.024	0.99	.012
133+00 50L	0.00	0.00	0.00							72.39	72.22					
	0.00	0.00	0.00													
45 44 S 6	0.25	0.25	0.20	10.00	0.05	6.61	0.20	1.32	74.61	72.51	72.50	0.01	18*	0.014	0.75	.012
133+00 57R	0.00	0.00	0.00						74.61	72.50	72.22					
	0.00	0.00	0.00													
47 48 S 43	0.47	0.47	0.38	10.00	0.36	6.61	0.38	2.48	74.87	73.98	73.96	0.02	18*	0.048	1.41	.012
139+00 50L	0.00	0.00	0.00							72.55	72.45					
	0.00	0.00	0.00													
48 49 M 58	0.20	0.67	0.54	10.36	0.48	6.51	0.54	3.49	75.59	73.96	73.91	0.05	18*	0.094	1.97	.012
139+00 8L	0.00	0.00	0.00							72.45	71.84					
	0.00	0.00	0.00													
50 51 S 9	0.49	0.49	0.39	22.58	0.08	4.53	0.39	1.77	73.48	74.41	74.48	0.01	18*	0.024	1.00	.012
140+30 59L	0.00	0.00	0.00						74.68	74.90	74.40					
	0.00	0.00	0.00													
51 52 M 101	0.27	0.76	0.61	22.58	0.84	4.52	0.61	2.75	75.49	74.26	74.20	0.06	18*	0.058	1.55	.012
140+30 50L	0.00	0.00	0.00							72.99	72.00					
	0.00	0.00	0.00						74.86							
53 52 S ~~18~~	1.74	1.74	1.39	20.58	0.04	4.74	1.39	6.60	~~73.47~~	74.24	74.20	0.03	18*	0.337	3.74	.012
140+30 60R 7	0.00	0.00	0.00						~~75.38~~	72.70	72.00					
	0.00	0.00	0.00						75.86							
54 55 S 58	1.09	1.09	0.87	23.58	0.44	4.43	0.87	3.86	76.57	74.83	74.76	0.07	18*	0.115	2.18	.012
142+65 50L	0.00	0.00	0.00							74.09	73.98					
	0.00	0.00	0.00													
55 56 M 43	0.18	1.27	1.02	23.94	0.28	4.38	1.02	4.45	77.27	74.76	74.70	0.07	18*	0.154	2.52	.012
142+65 8R	0.00	0.00	0.00							73.98	73.88					
	0.00	0.00	0.00													
57 56 S 6	1.62	1.62	1.30	23.70	0.03	4.41	1.30	5.71	75.99	74.71	74.70	0.02	18*	0.253	3.23	.012
142+65 57R	0.00	0.00	0.00						75.99	74.09	73.88					
	0.00	0.00	0.00													
52 M 235	0.32	3.21	2.57	24.23	1.10	4.36	2.57	11.19	76.57	74.70	74.20	0.49	24*	0.209	3.56	.012
~~142~~+65 50R	0.00	0.00	0.00							73.00	72.00					
142+65	0.00	0.00	0.00													

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DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 8

TYPE OF INT	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.80 C2=0.60 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	ELEV. OF H.G. CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS) HYD GRADIENT PHYSICAL	N
FROM TO (STA)																		
52	M	130	0.50	6.21	4.97	25.33	0.50	4.26	4.97	21.16	75.49	74.20	73.91	0.30	30*	0.227	4.31	.012
140+30	50R		0.00	6.00	0.00							72.00	71.80					
			0.00	0.00	0.00													
49	M	360	0.79	7.67	6.14	25.83	0.95	4.22	6.14	25.87	74.87	73.91	72.89	1.02	30*	0.340	5.27	.012
139+00	50R		0.00	0.00	0.00							71.80	71.55					
			0.00	0.00	0.00													
46	M	300	0.00	7.67	6.14	26.78	1.37	4.14	6.14	25.87	76.45	72.89	72.50	0.39	36*	0.128	3.66	.012
136+00	55R		0.00	0.00	0.00							72.05	71.74					
			0.00	0.00	0.00													
44	M	128	0.41	8.66	6.93	28.14	0.54	4.03	6.93	27.92	74.89	72.50	72.31	0.19	36*	0.150	3.95	.012
133+00	50R		0.00	0.00	0.00							71.74	71.00					
			0.00	0.00	0.00													
42	M	173	0.20	8.96	7.17	28.68	0.97	3.99	7.17	28.59	74.51	72.31	72.19	0.12	42*	0.069	2.97	.012
131+73	50R		0.00	0.00	0.00							71.16	70.89					
			0.00	0.00	0.00													
40	M	250	0.79	10.41	8.33	29.65	1.23	3.92	8.33	32.63	73.99	72.19	71.97	0.22	42*	0.090	3.39	.012
130+00	50R		0.00	0.00	0.00							70.89	70.74					
			0.00	0.00	0.00													
37	M	300	0.00	10.41	8.33	30.88	1.47	3.83	8.33	32.63	75.42	71.97	71.78	0.27	42*	0.090	3.39	.012
127+50	57R		0.00	0.00	0.00							70.74	70.56					
			0.00	0.00	0.00													
36	M	358	0.77	11.91	9.53	32.36	1.61	3.74	9.53	35.61	73.84	71.78	71.32	0.38	42*	0.107	3.78	.012
124+50	50R		0.00	0.00	0.00							70.56	70.34					
			0.00	0.00	0.00													
32	M	51	0.00	29.38	23.50	36.25	0.13	3.51	23.50	82.46	75.26	71.32	71.17	0.14	48*	0.281	6.56	.012
120+93	58R		0.00	0.00	0.00							70.24	70.14					
			0.00	0.00	0.00													
31	M	232	0.02	29.40	23.52	36.38	0.59	3.50	23.52	82.46	75.27	71.17	70.52	0.65	48*	0.281	6.56	.012
0	8R		0.00	0.00	0.00							67.55	67.44					
120+93			0.00	0.00	0.00													

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V-92

SR45 (US41) BASIN D FILE:45DR90.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	5	6815.00	2	1	174.00	3	4	1421.00
4	5	1740.00	5	6	2958.00	6	7	5565.00
7	10	4795.00	8	9	1682.00	9	10	1305.00
10	12	5324.00	11	10	174.00	12	16	8008.00
13	12	174.00	14	15	1247.00	15	16	2030.00
16	17	9100.00	17	18	18850.00	18	22	8905.00
19	18	290.00	20	21	1682.00	21	22	1247.00
22	24	10595.00	23	22	290.00	24	926	20625.00
25	24	174.00	26	926	174.00	926	29	10875.00
27	28	1247.00	28	29	1682.00	29	32	18225.00
30	29	174.00	31	0	17400.00	32	31	3825.00
33	35	2262.00	34	35	1595.00	35	36	1305.00
36	32	23270.00	37	36	19500.00	38	39	1247.00
39	40	1682.00	40	37	16250.00	41	42	1247.00
42	40	11245.00	43	44	2929.00	44	42	7424.00
45	44	174.00	46	44	17400.00	47	48	1247.00
48	49	1682.00	49	46	13200.00	50	51	261.00
51	52	2929.00	52	49	5720.00	53	52	290.00
54	55	1682.00	55	56	1247.00	56	52	8225.00
57	56	174.00						

TOTAL SYSTEM COST = 312959.00

*** THE ABOVE SYSTEM WAS FOUND TO BE IMPOSSIBLE UNDER THE SPECIFIED CONDITIONS ***

(SEE NOTE ON PAGE V-94)

SR45 (US41) BASIN D FILE:45DR90.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 5
MAXIMUM VELOCITY (GRADIENT FLOW)	6.56 FPS	32 TO 31
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 5
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	1.26 FPS	15 TO 16
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 5
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-1.01 FT	50 TO 51
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	-0.11 FT	47 TO 48
TOTAL DRAINAGE AREA	29.40 ACRES	
WEIGHTED COEFFICIENT	0.80	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

33 TO 35
50 TO 51

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

PLEASE NOTE THAT TWO INLETS HAVE A FREEBOARD SLIGHTLY LESS THAN 1.0 ft.

- D-47 HAS 0.89 ft

- D-49 HAS 0.96 ft

496

V-94

Henigar & Ray

made by: YJ date: 5-5-7- job no. 21663
checked by: _____ date: _____ sheet no. 1

PROJECT: Basin D

Storm Sewer Times of Concentration

Inlet # D-57 Slope = $\frac{77.8 - 77.00}{450'} = .1778\%$

$t = t_1 + t_2$ where

$n = .20$
$L = 300'$
$I = 4.7$ in/hr

FDOT Drainage Manual (Method #1)

$$t_1 = \frac{.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

$$t_1 = \frac{.938(300)^{.6}(.2)^{.6}}{4.7^{.4}\,.001778^{.3}} = 39.38 \text{ min}$$

$t_2 \Rightarrow$ Shallow Concentrated flow SCSTR 55 method

$$V = 16.1345 \cdot (S)^{.5}$$
$$= 16.1345 \cdot (.001778)^{.5}$$
$$= .68 \text{ ft/sec}$$

$$\therefore t_2 = \frac{150 \text{ ft}}{.68 \text{ ft/sec}} = 220.48 \text{ sec}$$
$$= 3.6747 \text{ min}$$

$t_c = 39.38 + 3.67 = 43.05$ min

*SEE SHEET V-99 ALSO

497

V-95

Henigar & Ray

PROJECT: Basin D

made by: XJ date: 5-5-7- job no. 2163

checked by: _____ date: _____ sheet no. 2

Inlet # D-53

$$t_c = t_1 = \frac{.938\,L^{.6}\,n^{.6}}{I^{.4}\,S^{.3}}$$

$$= \frac{.938(225)^{.6}\,.2^{.6}}{6.4^{.4}\,.005778^{.3}}$$

$t_c = 20.5$ min

L = 225 ft

n = .20

$S = \frac{76.6 - 75.30}{225}$

$= .005778'/_1$

I = 6.4 in/hr

Inlet # D-50

$$t_c = t_1 = \frac{.938\,L^{.6}\,n^{.6}}{I^{.4}\,S^{.3}}$$

$$t_c = \frac{.938(250)^{.6}\,.2^{.6}}{6.1^{.4}\,.0056^{.3}}$$

$= 22.5$ min

L = 250 ft

n = .20

$S = \frac{76 - 74.6}{250}$

$= .0056'/_1$

I = 6.1 in/hr

Inlet # D-54

$$t_c = t_1 = \frac{.938(265)^{.6}\,.2^{.6}}{6.0^{.4}\,.0056^{.3}}$$

$= 23.5$ min

L = 265 ft

n = .20

S = Same as D-50

I = 6.0 in/hr

Inlet # D-30

$$t_c = \frac{.938(135)^{.6}\,.2^{.6}}{5.4^{.4}\,.00072^{.3}}$$

$= 30.3$ min

L = 135 ft

n = .20

$S = \frac{73.79 - 73.7}{125}$

$= .00072'/_1$

I = 5.4 in/hr

V-9.6

Henigar & Ray

PROJECT: Basin D

made by: VJ date: 5-3-94 job no. 21663
checked by: _____ date: _____ sheet no. 3

Inlet # D-26

$$t_c = \frac{.938(160)^{.6}(.2)^{.6}}{5^{.4}\ .00072^{.3}}$$

$t_c = 34.5$ min

L = 160 ft
n = .20
S = assume same as C-30
= .00072'/,
I = 5.0 IN/hr

Inlet # D-25

$$t_c = \frac{.938(210)^{.6}(.2)^{.6}}{5.1^{.4}(.001571)^{.3}}$$

$t_c = 31.9$ min

L = 210 ft
n = .20
$S = \frac{74.5 - 74.17}{210}$
= .001571'/,
I = 5.1 in/hr

Inlet # D-11

$t_c = t_1 + t_2$

t_1 = < 10 min

t_2 = < 10 min

t_c = 10 min

(using method #1)
FDOT

$L_1 = 175'$
$n_1 = .011$
$S_1 = \frac{75.4 - 75.1}{175'}$
= .001714'/,

$L_2 = 125'$
n_2 = ...
$S_2 = \frac{75.1 - 74.5}{125}$
= .004800'/,

Henigar & Ray

PROJECT: BASIN D

made by: LJ date: 5-94 job no. 2163
checked by: _____ date: _____ sheet no. 4

Inlet D-12

$t_c = t_1 + t_2$

$t_1 = \frac{.938(220)^{.6}(.011)^{.6}}{(8.9)^{.4}(.000455)^{.3}}$

$t_1 = 6.7$ min

$S_1 = \frac{75.4-75.3}{220}$

$= .000455$ ft/ft

$I_1 = 8.9$ in/hr

t_2 = Gutter Flow $\Rightarrow$ Velocity = 1.94 fps

$\therefore t_2 = \frac{L_2}{V_2} = \frac{115 \text{ ft}}{1.94 \text{ ft/sec}} = 59.28$ sec

$= \pm 1$ min

$t_c = 10$ min

Inlet D-13 assume slope same as D-12; S_1

$t_c = \frac{.938(245)^{.6}(.011)^{.6}}{(8.9)^{.4}(.000455)^{.3}}$ $I = 8.9$ in/hr

$= 7.1$ min use 10

Inlet D-16

$t_1 = \frac{.938(300)^{.6}(.20)^{.6}}{(\text{—})^{.4}(.004375)^{.3}}$

$= \pm 5$ min

Slope $= \frac{75.6-74.2}{320}$

$= .004375$ ft/ft

use this slope for the t_1 portion of

D-16
D-17
D-19
D-23

t_2 = Gutter Flow when Vel = 2.14 fps

$\therefore t_2 = \frac{120}{2.14} = 56.0$ sec

use $t_c = 10$ min $= \pm 1$ min

590

V-98

Henigar & Ray

PROJECT: BASIN D

made by: CJ date: 5-5-94 job no. 21653
checked by: _____ date: _____ sheet no. 5

Inlet D-17

$t_1 = \frac{.938(300)^{.6}(.011)^{.6}}{(\quad)^{.4}(.004375)^{.3}}$ $I = \quad$ in/hr

$= \pm 5$ min

$t_2 =$ Same as D-16

$\therefore t_c =$ use 10 min

Inlet D-19

$t_1 = \pm 5$ min

$t_2 =$ Shallow Conc. Flow $S_2 = \frac{74.5 - 73.45}{160'} = .006563'/'$

$t_2 = \frac{L_2}{V_2} = \frac{190'}{20.3282(.006563)^{.5}}$

↑ From TR55 Appendix F

$= 115.3$ sec $= 1.92$ min

$t_c = < 10$ min $\therefore$ use 10 min

Inlet D-23

Similar flow length to D-19

$t_c = \frac{.938(300)^{.6}(.2)^{.6}}{(5.5)^{.4}(.004375)^{.3}}$

$= 28.2$ min

501

V-99

For Inlets 1, 5, 6 and 7 use a slope for t_1
$S = .001714'/'$ (Ex: D-11)

D-7

$$t_1 = \frac{.938(140)^{-.6}(.011)^{.6}}{(\quad)^{.4}\ .001714^{.3}} \qquad I = \text{—} \text{ in/hr}$$

$t_1 = < 10$ min

t_2 = gutterflow

$$= \frac{L_2}{V_2} = \frac{160}{2.09} = 76.55 \text{ sec} = 1.28 \text{ min}$$

$t_c = 10$ min

D-6

$$t_1 = \frac{.938(100)^{-.6}(.2)^{.6}}{(68)^{.4}\ .001714^{.3}} \qquad I = 6.8 \text{ in/hr}$$

$t_1 = 17.77$ min

t_2 = gutterflow

$$= \frac{L_2}{V_2} = \frac{150}{1.98} = 75.76 \text{ sec} = 1.26 \text{ min}$$

$t_c = 17.77 + 1.26 = 19.0$ min

Henigar & Ray

made by: CLJ date: 5-6-94 job no. 21663
PROJECT: Basin D checked by: _____ date: _____ sheet no. 7

Inlet D-5

$T_c = t_1 + t_2 + t_3$ (back of slope; gutter)

overland

$$t_1 = \frac{.938(55)^{.6}(2)^{-.6}}{(.7-.9)^{.4}(.001714)^{.3}} \qquad S_1 = .001714\,ft/ft$$

$$= 11.69 \text{ min}$$

$$t_2 = \frac{.938(70)^{.6}(.2)^{.6}}{(.8-.3)^{.4}(.003571)^{.3}} \qquad S_2 = \frac{76.45-76.2}{70} = .003571\,ft/ft$$

$$= 10.62$$

t_3 = gutter Flow

$$= \frac{L_3}{V_3} = \frac{100}{1.88} = 53.19 \text{ sec} = .88 \text{ min}$$

$t_c = 11.69 + 10.62 + .88$

$= 23.19$ min

Henigar & Ray

made by: CJ date: 10-4-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

PROJECT: System D

Reduce the area of Subarea 57 to a $T_c = 24$ minutes to check storm sewer design.

Inlet D-62 57 Slope $= \frac{77.8 - 77.00}{450} = .1778\%$

$$t_1 = \frac{.938(150)^{.6}(.2)^{.6}}{5.9^{.4}\ .001778^{.3}} = 23.72 \text{ min}$$

∴ Reduce area to a 150 ft Deep lot

$$\text{Area} = 150\left(\frac{245+257}{2}\right) + 150\left(\frac{245+195}{2}\right)$$

$$= .864 \text{ Ac} + .758 \text{ Ac}$$

$$= 1.622 \text{ Ac}$$

Reduced Area $= 30.71 - 2.93 + 1.62$

$= 29.40$ Ac

Weighted CN $= [30.71(91.17) - (2.02 + .86)(79) - (.91 + .76)(73)]\ 29.40$

$= 91.74$

Weighted C_{34R} = Reduced Area $= .80$

504
V-102

6

SYSTEM E

HYDROLOGY

Henigar & Ray

made by: TWM date: 4/13/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN E

PRE-DEVELOPMENT HYDROLOGY, BASIN E (TO LAKE VIENNA)

* COMPOSITE CN = [(.36 + 1.21 + .21)98 + (.06 + .38 + 3.57 + .56 + .27 + .40) 79 + (.37 + .16) 89 + (.21 + .89 + .37) 84 + (.11 + .34) 95 + (.69 + 1.26 + .94 + .63 + 1.22) 94 + (1.14) 73 + (1.51) 80] ÷ 15.86
= 85.59

STA 134+00 TO 155+00

PRE BASIN E = 15.86 Ac @. CN = 85.59

* SEE SUBSEQUENT DIGITIZED AREA SHEETS FOR SUBAREAS, LAND USE AND CURVE NUMBERS

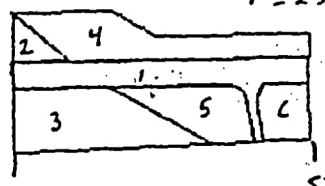
VI-1

507

SR 45 BASIN E
PRE-DEVELOPMENT Hydrology

No.	sq.ft	acres	LAND USE		CN	
1	15713.15	0.36	PAVEMENT	✓	98	
2	2522.84	0.06	OPEN (F)	✓	79	
3	16671.00	0.38	OPEN (F)	✓	79	
4	16105.79	0.37	OPEN (P)	✓	89	Hyd D
5	9257.82	0.21	OPEN (F)	✓	84	Hyd D
6	5003.42	0.11	commercial	✓	95	Hyd D

1"=250'

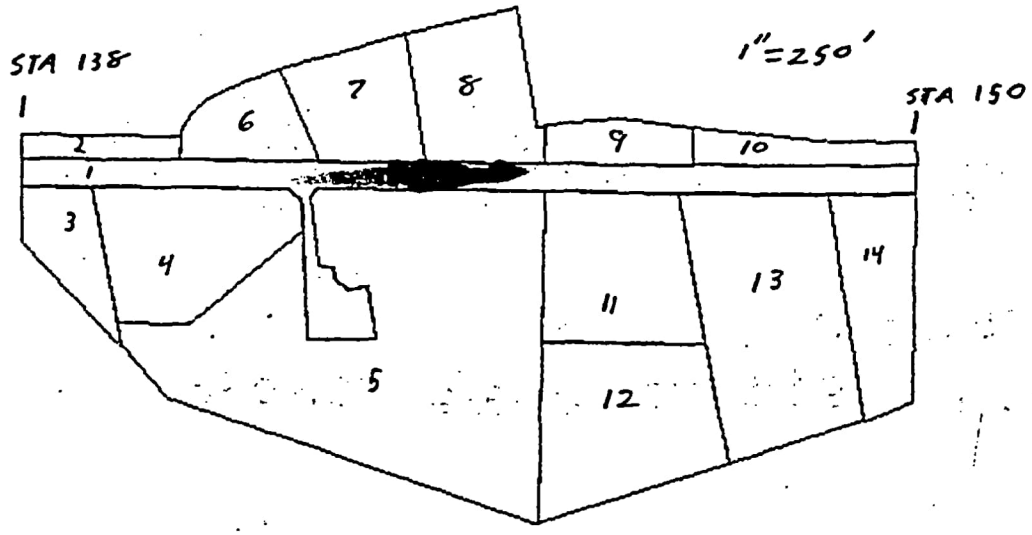


STA 134.

STA 138

SR 45 BASIN E
PRE-DEVELOPMENT Hydrology

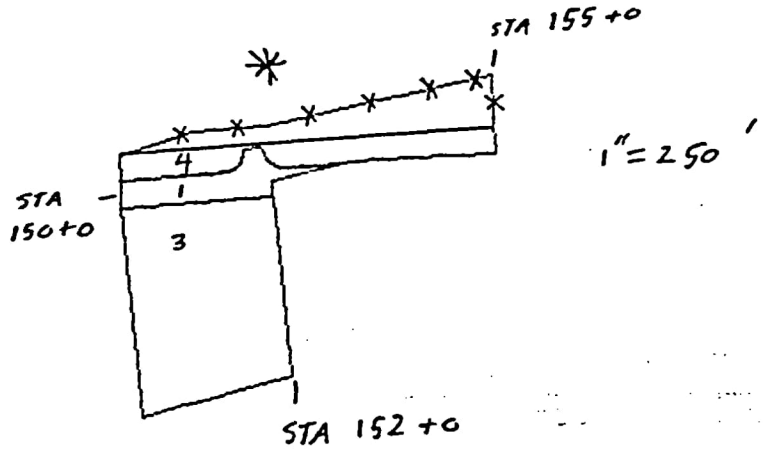
No.	sq.ft	acres	LAND USE		CN	
1	52859.09	1.21	PAVEMENT	✓	98	
2	7067.69	0.16	OPEN (P)	✓	89	Hyd D
3	14928.47	0.34	COMMERCIAL	✓	95	Hyd D
4	38749.74	0.89	OPEN (F)	✓	84	Hyd D
5	155640.85	3.57	OPEN (F)	✓	79	
6	16016.93	0.37	OPEN (F)	✓	84	Hyd D
7	24223.63	0.56	OPEN (F)	✓	79	
8	29977.67	0.69	COMMERCIAL	✓	94	
9	11504.81	0.26	COMMERCIAL	✓	94	
10	11563.81	0.27	OPEN (F)	✓	79	
11	40803.21	0.94	COMMERCIAL	✓	94	
12	49565.18	1.14	WOODS (F)	✓	73	
13	65939.75	1.51	½ AC RES	✓	80	
14	27280.66	0.63	COMMERCIAL	✓	94	



A-510

SR 45 BASIN E
PRE- DEVELOPMENT Hydrology

No.		sq.ft		acres	LAND USE		CN
1		9073.73		0.21	PAVEMENT	✓	98
2	*	33255.56	0.40	~~0.76~~	OPEN (FF)	✓	79
3		52992.18		1.22	Commercial	✓	94



1" = 250'

* AREA REVISED :

NO. 4 = $\left(\frac{30+40}{2}\right)(500) \div 43560 = 0.40$ Ac

Henigar & Ray made by: TWM date: 4/18/94 job no. 21663
checked by: ____ date: ____ sheet no. 1/2

PROJECT: SR 45 BASIN E

BASIN E PRE-DEVELOPMENT TIME OF CONCENTRATION

$t_c = t_1 + t_2 + t_3 + t_4$ _____ (eqn 1)

WHERE: t_1 = SHEET FLOW TRAVEL TIME (hr)
t_2 = SHALLOW CONCENTRATED FLOW TRAVEL TIME (hr)
t_3 = OPEN CHANNEL FLOW TRAVEL TIME (hr)
t_4 = CULVERT TRAVEL TIME (hr)

SHEETFLOW (STA 145 RT)
FROM FDOT DRAINAGE MANUAL, VOL 2A:

$$t = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: L = 300 ft
n = 0.2
S = 0.0013 ft/ft
I = RAINFALL INTENSITY, in/hr

FROM ZONE 6 IDF CURVE 25 yr FREQUENCY, choose I = 4.4 in/hr

$\Rightarrow t$ = 44.42 min = 0.74 hr

t_1 = 0.74 hr

SHALLOW CONCENTRATED FLOW (STA 145 RT)

From SCS' TR 55 APPENDIX F

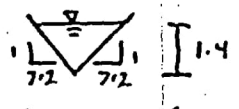
$$t_2 = \frac{L}{3600[16.1345(S)^{1/2}]}$$ (UNPAVED)

where: S = 0.0013 ft/ft
L = 115 ft

t_2 = 0.055 hr

OPEN CHANNEL FLOW

STA 145+00 EL = 75.5
STA 138+81 EL = 73.06 L = 619' & S = 0.0039 ft/ft



V = 1.21 ft/s (SEE ACCOMPANYING COMPUTER OUTPUT)

$$t_3 = 619\,ft * \frac{1s}{1.21\,ft} * \frac{1min}{60s} * \frac{1hr}{60\,min} = 0.142\ hr$$

BASIN E PRE-DEVELOPMENT TIME OF CONCENTRATION CONT.

CULVERT FLOW

ASSUME CULVERT FLOWS FULL @ 6.0 ft/s

$t_4 = \frac{L}{V}$ where $L = 60'$

$t = \frac{60'}{6.0 ft/s} = 1 sec \approx 0 hr$

$t_4 = 0 hr$

From eqn 1:

$t_c = t_1 + t_2 + t_3 + t_4$

$= 0.74 + 0.055 + 0.142 + 0 = 0.94 hr$

PRE BASIN E $t_c = 0.94$ hr

SR 45 PRE-BASIN E CHANNEL Flow Velocity For tc Determination

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: PRE BASIN E CHAN. FL

Comment: PRE BASIN E CHANNEL VEL. FOR Tc DETERMINAION

Solve For Discharge

Given Input Data:

Bottom Width.....	0.00 ft
Left Side Slope..	7.20:1 (H:V)
Right Side Slope.	7.20:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0039 ft/ft
Depth.....	1.40 ft

Computed Results:

Discharge.....	17.10 cfs
Velocity.....	1.21 fps ←
Flow Area.....	14.11 sf
Flow Top Width...	20.16 ft
Wetted Perimeter.	20.35 ft
Critical Depth...	0.81 ft
Critical Slope...	0.0718 ft/ft
Froude Number....	0.26 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. • 37 Brookside Rd • Waterbury, Ct 06708

VI-7

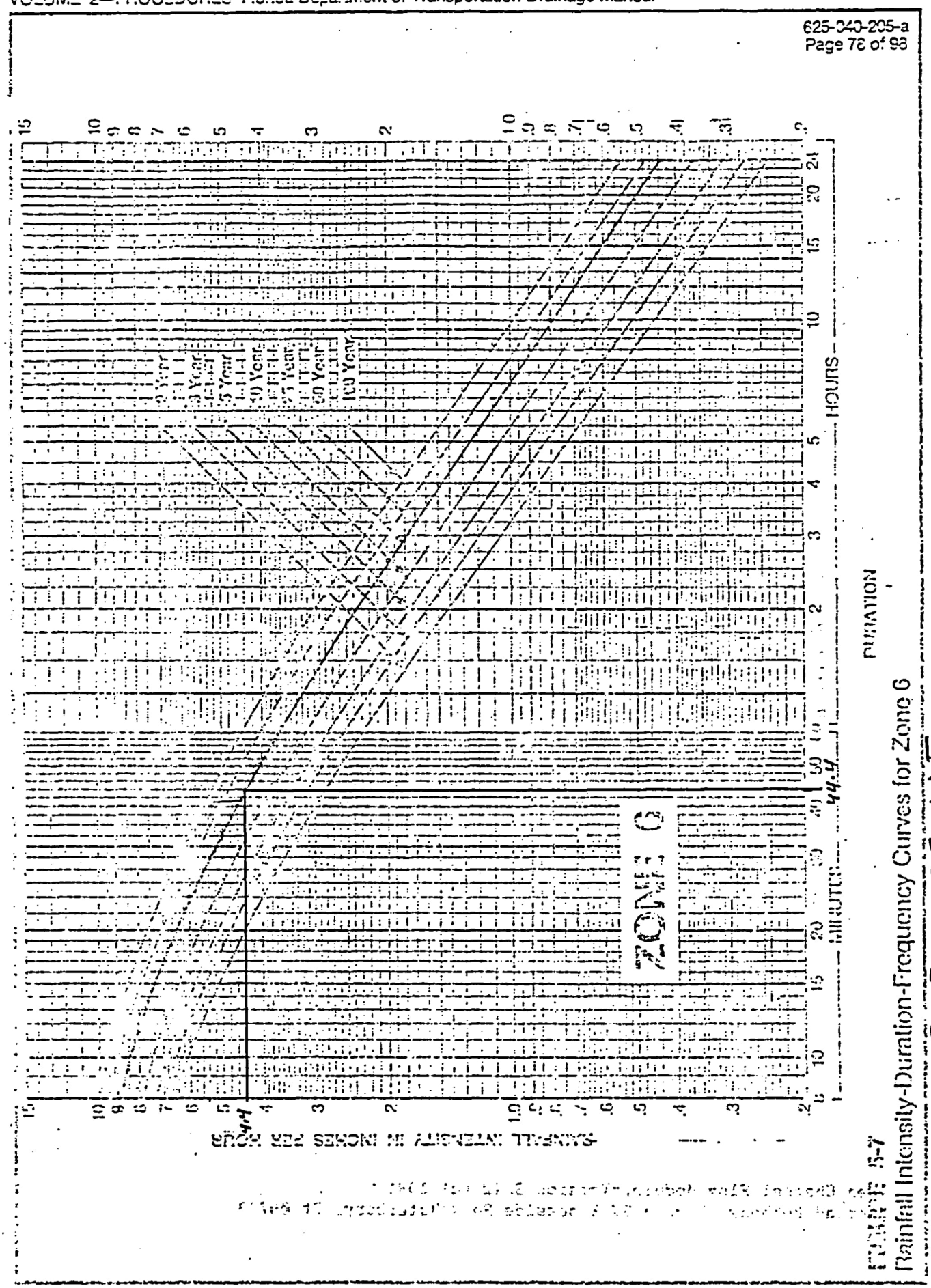


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

SR 45 BASIN E

Henigar & Ray

CLS 9/29/94

made by: TWM date: 4/13/94 job no. 21663

checked by: ____ date: ____ sheet no. 1/1

PROJECT: SR 45 BASIN E

POST-DEVELOPMENT HYDROLOGY, BASIN E

TO POND E STA 145+00 TO 165+00

COMPOSITE CN = [(1.04 + .06 + .06 + 2.70 + .39 + .03 + .14 + .15 + .83 + .03 + .01 + .13 + .01)98 + (.03 + .03 + .14 + .08 + .08 + .08 + .01 + .12 + 1.08 + .74 + .02 + .01 + .01 + .24 + .06)79 + (.14 + .70 + .48 + .96 + .85)94 + (1.26)80 + (1.14)73 + (.19 + .48)76 - (.0023 + .02 + .04 + .02 + .0018)98 - (.009 + .0015 + .02 + .0011 + .0011)79 - (.01 + .42)94 - .66(73)] / ____

POST "TO POND E" = 13.32 Ac @ CN = 89.63

ON POND E

POST "ON POND E" = 1.69 Ac @ CN = 100

OFFSITE Thru CULVERT TO LAKE VIENNA

(STA 134 TO 140 LT)

composite CN = [(0.03)79 + (.22 + .06)89] / 0.31

= 88.03

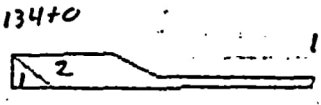
POST OFFSITE E = 0.31 Ac @ CN = 88.03

SR 45 BASIN E

POST-DEVELOPMENT offsite thru CULVERT

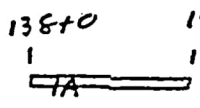
TO LAKE VIENNA

No.	sq.ft	acres	LAND USE		CN	
1	1208.90	0.03	OPEN (F)	✓	79	
2	9506.83	0.22	OPEN (P)	✓	89	Hyd D SOIL



1"=250'

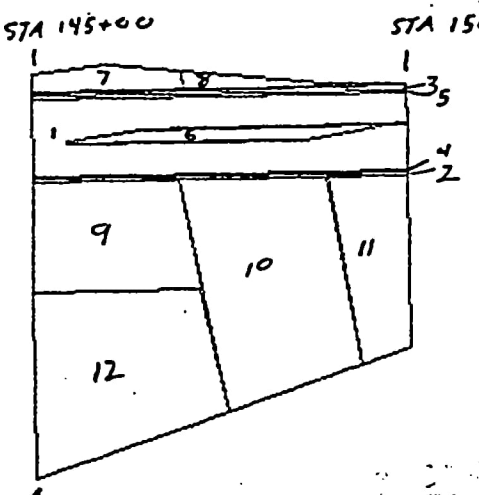
No.	sq.ft	acres	LAND USE	CN	
1A	2754.63	0.06	OPEN (P)	89	Hyd D soil



1"=250'

SR 45 BASIN E
POST-DEVELOPMENT Hydrology
TO POND E

No. No.	sq.ft sq.ft	acres acres	LANDUSE		CN
1	45375.13	1.04	PAVEMENT	✓	98
2	2504.99	0.06	PAVEMENT	✓	98
3	2706.48	0.06	PAVEMENT	✓	98
4	1357.20	0.03	OPEN (CF)	✓	79
5	1402.79	0.03	OPEN (CF)	✓	79
6	5897.73	0.14	OPEN (CF)	✓	79
7	5981.56	0.14	COMMERCIAL	✓	94
8	3354.05	0.08	OPEN (CF)	✓	79
9	30377.28	0.70	COMMERCIAL	✓	94
10	54793.70	1.26	½-AC RES	✓	80
11	21084.26	0.48	COMMERCIAL	✓	94
12	49652.69	1.14	WOODS (F)	✓	73



1" = 250'

SEE THE NEXT AREA SHEET
WHICH REVISES BASINS D/E

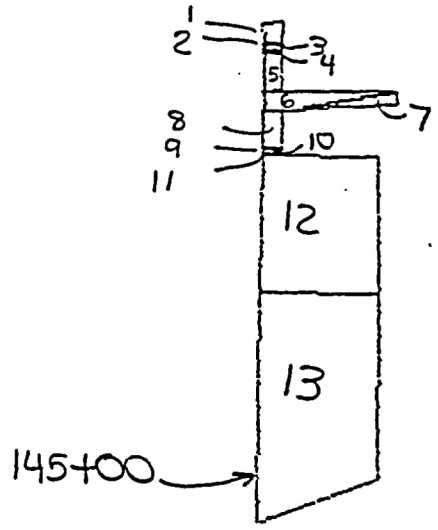
BASIN D + E

POST DEVELOPMENT REVISIONS

No.	sq.ft		acres	LAND USE	CN VALUE
1	492.96		0.01	COMM.	94
2	41.22	.0009	~~0.00~~	OPEN (F)	79
3	101.42	.0023	~~0.00~~	IMPERV.	98
4	67.36	.0015	~~0.00~~	OPEN(F)	79
5	791.88		0.02	ASPH.	98
6	1926.88		0.04	ASPH.	98
7	848.92		0.02	OPEN (F)	79
8	854.04		0.02	ASPH.	98
9	48.94	.0011	~~0.00~~	OPEN(F)	79
10	77.04	.0018	~~0.00~~	IMPERV.	98
11	46.62	.0011	~~0.00~~	OPEN (F)	79
12	18476.32		0.42	COMM.	94
13	28938.50		0.66	WOODS(F)	73

1.209 Ac

use 1.21 Ac



THESE AREAS ARE TO BE:

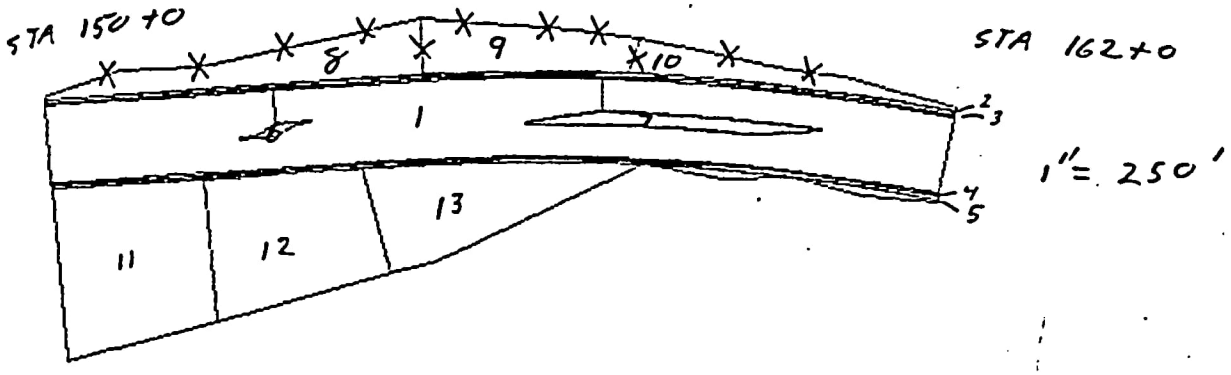
- REMOVED FROM BASIN E
- ADDED TO BASIN D

518

II-12

SR 45 BASIN E
POST-DEVELOPMENT HYDROLOGY
TO POND E

No.	sq.ft	acres	LAND USE		CN
* ~~1~~	~~120458.81~~	~~2.87~~	2.70 AC PAVEMENT	✓	98
2	6193.55	0.14	PAVEMENT	✓	98
3	3577.76	0.08	OPEN (CF)	✓	79
4	3676.42	0.08	OPEN (CF)	✓	79
5	6331.44	0.15	PAVEMENT	✓	98
6	644.44	0.01	OPEN (CF)	✓	79
7	5399.48	0.12	OPEN (CF)	✓	79
8	20535.44	~~0.47~~	OPEN (CF)	✓	79
9 **	17303.08	~~0.40~~	OPEN (CF)	✓	86
10	10812.77	~~0.25~~	COMMERCIAL	✓	94
11	41741.23	0.96	COMMERCIAL	✓	94
12	36956.22	0.85	COMMERCIAL	✓	94
13	32052.59	0.74	OPEN (CF)	✓	79



* SEE NEXT SHEET FOR CORRECT AREA

** AREAS 8, 9, 10 REMOVED

519

VI-13

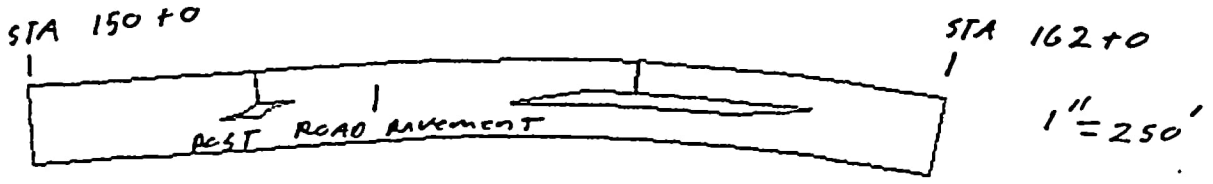
SR 45 BASIN E ADDENDEM TO previous SHEET

post-development Hydrology

TO POND E

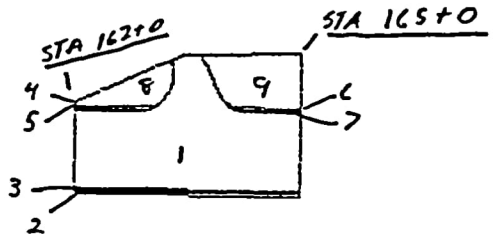
No.	sq.ft	acres
1	117517.28	2.70

correct AREA USED IN previous pa



SR 45 BASIN E
POST-DEVELOPMENT HYDROLOGY
TO POND E

No.	sq.ft		acres	LAND USE		CN
1	36108.15		0.83	PAVEMENT	✓	98
2	1259.16		0.03	PAVEMENT	✓	98
3	839.94		0.02	OPEN (F)	✓	79
4	532.20		0.01	PAVEMENT	✓	98
5	275.34		0.01	OPEN (F)	✓	79
6	491.28		0.01	PAVEMENT	✓	98
7	255.38		0.01	OPEN (F)	✓	79
8	3931.11	0.06	~~0.09~~	OPEN (F)	✓	79
9	8239.07		0.19	WOOD/GRASS (F)		76
			0.03	PAVEMENT		98



SR 45 BASIN E

POST - DEVELOPMENT HYDROLOGY

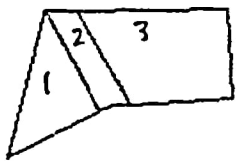
TO POND E

ADDITIONAL AREAS

No.	sq.ft	acres	LAND USE	CN	
1	10517.52	0.24	OPEN (F)	79	
2	5512.51	0.13	PAVEMENT	96	* ✓
3	20723.13	0.48	WEEDS/GRASS	76	✓

STA 162 TO 165

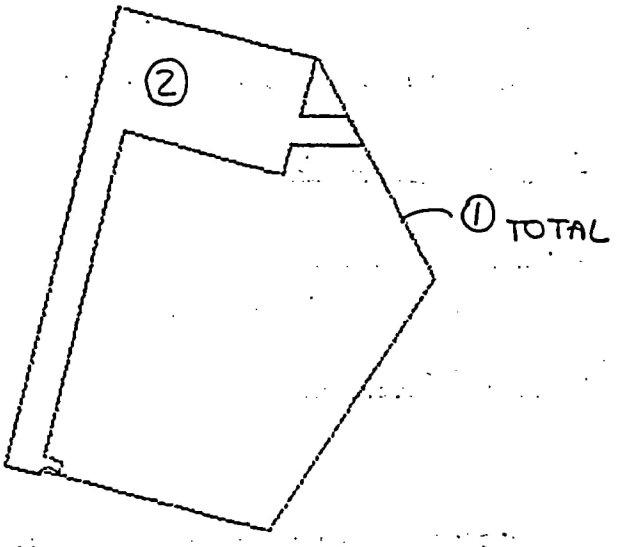
1" = 250'



* Directly Connected Impervious AREA

SR45 BASIN E
POST-DEVELOPMENT HYDROLOGY
ADDITIONAL AREA AT LAKE PATIENCE + SR45

No.	sq.ft	acres	LANDUSE	CN	
1	63986.49	1.47	—	—	TOTAL AREA
2	16894.96	0.39	PAVEMENT	98	
		1.08	OPEN (F)	79	



Henigar & Ray

made by: TWM date: 4/18/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/2

PROJECT: SR45 BASIN E

BASIN E POST-DEVELOPMENT TIMES OF CONCENTRATION

* TO POND E

$t_c = t_1 + t_2 + t_3$ (eqn 1)

WHERE: t_1 = SHEET FLOW TRAVEL TIME (hr)
t_2 = SHALLOW CONCENTRATED FLOW TRAVEL TIME (hr)
t_3 = SEWER FLOW TRAVEL TIME (hr)

SHEET FLOW

SAME AS PRE-DEVELOPMENT t_1 = 0.74 hr

$t_1 = 0.74$ hr

SHALLOW CONCENTRATED FLOW

SAME AS PRE-DEVELOPMENT t_2 = 0.053 hr

$t_2 = 0.055$ hr

SEWER FLOW

FROM PCDRG OUTPUT t_3 = 3.40 min = 0.0567 hr

From eqn 1

$t_c = t_1 + t_2 + t_3$
$= 0.74 + 0.055 + 0.0567$ hr
$= 0.85$ hr

POST t_c TO POND = 0.85 hr

Henigar & Ray

made by: TWM date: 4/18/94 job no. 2663

checked by: ___ date: ___ sheet no. 2/2

PROJECT: SR 45 BASIN E

BASIN E POST-DEVELOPMENT TIMES OF CONCENTRATION CONT.

* ON POND

POST ON POND = 0

* OFFSITE Thru CULVERT TO LAKE VIENNA (STA 134-140 LT)

$t_c = t_1 + t_2$

WHERE: t_1 = SHALLOW CONCENTRATED FLOW TRAVEL TIME (hr)
t_2 = OPEN CHANNEL FLOW TRAVEL TIME (hr)

SHALLOW CONCENTRATED FLOW

From SCS' TR 55 APPENDIX F

$$t_1 = \frac{L}{3600\,[16.1345\,(S)^{1/2}]}$$ UNPAVED

WHERE: S = .003 ft/ft
L = 200'

$t_2 = 0.063$ hr

OPEN CHANNEL FLOW

V = 1.22 ft/s (SEE ACCOMPANYING OUTPUT)

$$t_2 = \frac{18}{1.22\,ft} * \frac{1\,min}{60s} * \frac{1\,hr}{60\,min} * 2.81' = 0.064\,hr$$

$t_c = t_1 + t_2 = 0.031 + 0.064 = 0.095$ hr <
10 min = 0.167 hr ∴ use $t_c = 0.167$ hr

POST OFFSITE ∴ = 0.167 hr

525

VI-19

SR 45
POST-Development BASIN E
OFFSITE channel Flow velocity

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: POST BASIN E OFFSITE

Comment: POST BASIN E CHANNEL FLOW VEL FOR Tc

Solve For Discharge

Given Input Data:

Bottom Width.....	4.00 ft
Left Side Slope..	2.86:1 (H:V)
Right Side Slope.	2.86:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0060 ft/ft
Depth.....	0.70 ft

Computed Results:

Discharge.....	5.14 cfs
Velocity.....	1.22 fps ←
Flow Area.....	4.20 sf
Flow Top Width...	8.00 ft
Wetted Perimeter.	8.24 ft
Critical Depth...	0.34 ft
Critical Slope...	0.0818 ft/ft
Froude Number....	0.30 (flow is Subcritical)

Open Channel Flow Module, Version 3.42 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

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VI-20

SYSTEM E

POND DESIGN

CALCULATIONS

Henigar & Ray

made by: TWM date: 4/18/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN E

POND DESIGN CALCULATIONS

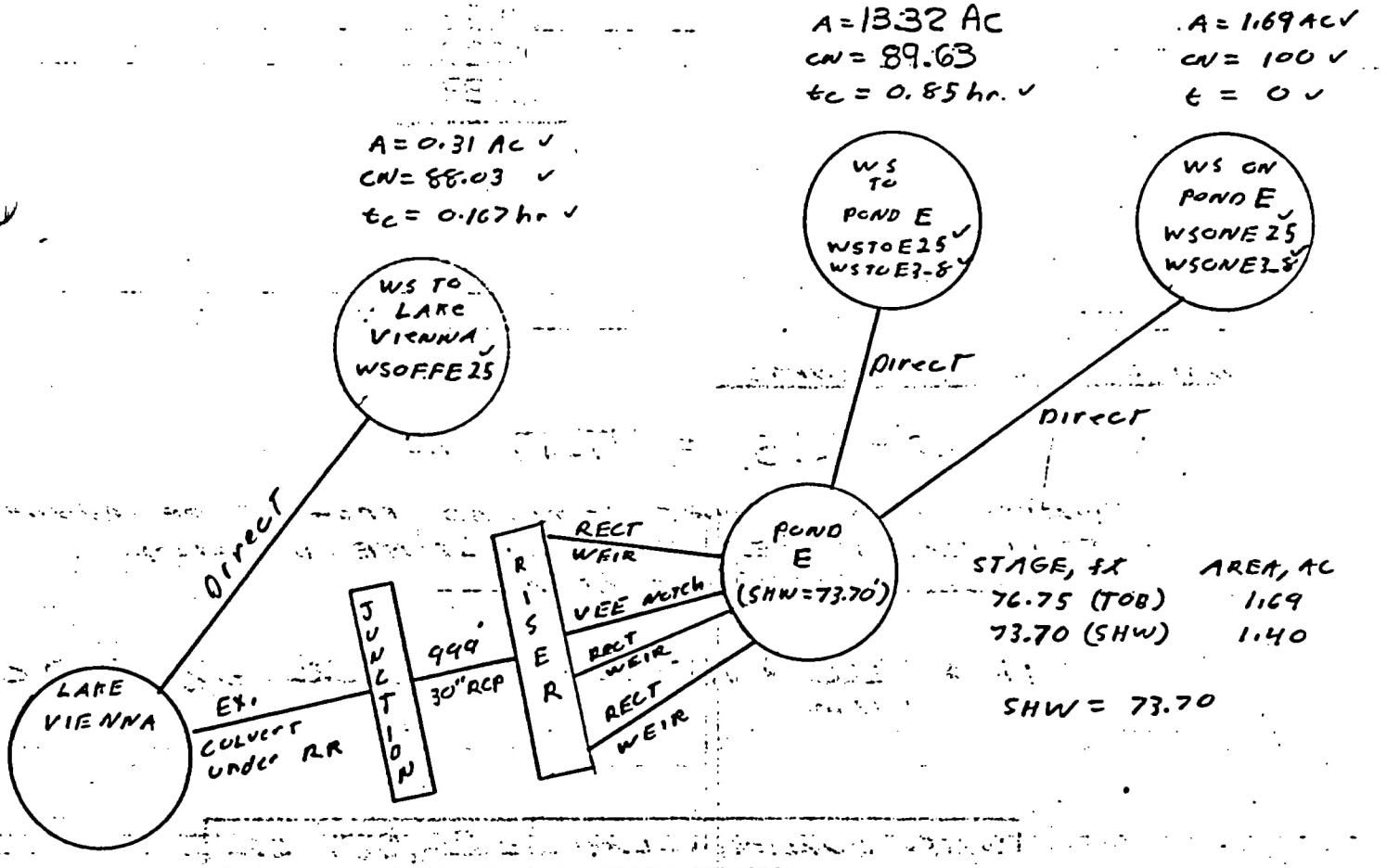
PRE-DEVELOPMENT



A = 15.86 Ac ✓
CN = 85.59 ✓
tc = 0.94 hr ✓

HYDROGRAPH ONLY

POST-DEVELOPMENT



WATER QUALITY VOLUME
26 027 Cf

25yr-24hr STAGING

TIME (hr)	0	7.5	15	22.5	30	33.75
STAGE (ft)	68.0	68.21	70.33	70.92	71.08	71.11

3yr STAGING

68 To 69.3

528

VI-21

Henigar & Ray

CLS 9/26/94

made by: TWM date: 4/18/94 job no. 2163

checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN E

BASIN E WATER QUALITY VOLUME

PROJECT AREA WITHIN R/W & POST BASIN E LIMITS

	STA 145+0	TO 150+0	1.47 Ac
	STA 150+0	TO 162+0	3.60 Ac
	STA 162+0	TO 165+0	1.01 Ac
REMOVE	STA 145+0	TO 145+21	− .06 Ac
			6.02 Ac

DIRECTLY CONNECTED OFFSITE IMPERVIOUS AREAS

0.13
0.02
0.02
0.10
0.04
0.22
0.23
0.39

1.15 Ac

WATER QUALITY VOLUME

$$6.02 + 1.15 = 7.17 \text{ Ac}$$

WATER QUALITY VOLUME COMPUTED FROM 1" OF RUNOFF FROM PROJECT AREA AND ALL OFFSITE DIRECTLY CONNECTED IMPERVIOUS AREAS.

$$1 \text{ in} * \frac{1 \text{ ft}}{12 \text{ in}} * 7.17 \text{ Ac} * \frac{43560 \text{ ft}^2}{1 \text{ Ac}} = 26{,}027 \text{ cf}$$

WATER QUALITY VOLUME = 26,027 cf

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VI-22

SR 45 BASIN E

INPUT FOR WATER QUALITY VOLUME STAGE

PROJECT E_STAGE; POND E (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF				
176.75	173616.4	1-1e+06	205265.81	TOP EL...	76.75 TW13	TOP AREA.	1.69
173.7	160984.0	1-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	73.7 SHW	BOT AREA.	1.4
				TOP LF...	Optional	SIDE XPER	Optional
				MID LF...	Optional	BASE XPER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	76.749
				X COORD..	Optional	Y COORD..	Optional

SR 45 BASIN = E

STAGE @ REQUIRED WATER QUALITY Volume

BRN 3.2 Project E_STAGE
Node 0, POND E, POND

0.00	76.749	0.0	0.0	205199.0	
0.10	76.649	0.0	6750.6	198448.0	
0.20	76.550	0.0	13387.8	191811.0	
0.30	76.453	0.0	19912.0	185287.0	
0.40	76.358	0.0	26323.1	178875.0	
0.50	76.264	0.0	32621.4	172577.0	
0.60	76.172	0.0	38806.6	166392.0	
0.70	76.082	0.0	44878.9	160320.0	
0.80	75.994	0.0	50838.1	154360.0	
0.90	75.907	0.0	56684.6	148514.0	
1.00	75.822	0.0	62418.0	142781.0	REQ'D WATER QUALITY Vol.
3.90	74.110	0.0	177591.0	27607.5	← 26,027 cf
4.00	74.084 ← 74.086	0.0	179331.0	25867.2	
19.00	73.701	0.0	205149.0	49.4	
19.10	73.701	0.0	205149.0	49.4	
19.20	73.701	0.0	205149.0	49.4	
19.30	73.701	0.0	205149.0	49.4	
19.40	73.701	0.0	205149.0	49.4	
19.50	73.701	0.0	205149.0	49.4	
19.60	73.701	0.0	205149.0	49.4	
19.70	73.701	0.0	205149.0	49.4	
19.80	73.701	0.0	205149.0	49.4	
19.90	73.701	0.0	205149.0	49.4	
20.00	73.701	0.0	205149.0	49.4	

• USE STAGE 74.09 For WATER QUALITY VOLUME CONTAINMENT (OVERFLOW EL.).

SR 45 POND E 8/16/99

INPUT FOR 36/60 hr BLEED DOWN CRITERIA

Window 0,0 - 24,79

PROJECT EAD; POND E (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF					
176.75	173616.4	-1e+06	205265.81	TOP EL...	76.75 TOB	TOP AREA.	1.69
173.7	160984.0	-1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	73.7 SHW	BOT AREA.	1.4
				TOP LF...	Optional	SIDE XPER	Optional
				MID LF...	Optional	BASE XPER	Optional
				BOT LF...	Optional		
						OVERFLOW EL	7
				BASE CFS.	0.0	STAGE T0.	74.09
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

SR 45 POND E DRAW DOWN model 8/16/95

Report on Paths of Project EAD.

```
---------------------------------------
Path..... 000, VEE NOTCH
Upper Node 000, POND E
Lower Node 001, RISER
---------------------------------------
CREST EL    73.700|INPUT ID 780936010
ANGLE...    56.000|T0 CFS..      0.14
-------- ---------|T0 CF...      0.00
HEIGHT..     0.390|MAX IN..      0.14
-------- ---------|MIN IN..      0.02
                  |MAX OUT.      0.14
                  |MIN OUT.      0.02
                  |
                  |
                  |
                  |
                  |
                  |
                  |
                  |
UP PE/KE YES      |FWD K...      0.00
DN PE/KE NO       |REV K...      0.00
MAX HW..   76.750|FWD X...      0.00
MAX TW..   76.750|REV X...      0.00
---------------------------------------
```

533

VI-27

5/16/95

POND E Drawdown Model

Report on Nodes of Project EAD.

Node..... 000, POND

TOP EL...	76.750	TOP AREA.	1.690	INPUT ID.....	78093498
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	74.0
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	26247.0
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	74.0
EL.....		AREA.....		MINIMUM STAGE REACHED.....	73.8
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	26247.0
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	0.0
EL.....		AREA.....		FINAL STAGE ELEVATION.....	73.8
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.0
BOT EL...	73.700	BOT AREA.	1.400	TIME OF MINIMUM STAGE, HOURS.	60.0
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.0
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.0
				PEAK NODAL OUTPUT, CFS.....	0.1
				TIME OF PEAK OUTPUT, HOURS...	0.0
BASE CFS.	0.000	STAGE T0.	74.090	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

Node..... 001, STAGING

FLOOD EL.	76.750	PE TO KE.	NO	INPUT ID.....	766677670
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	73.0
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.0
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	73.0
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	73.0
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.0
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.0
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	73.0
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.0
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.0
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.1
				TIME OF PEAK INTAKE, HOURS...	0.0
				PEAK NODAL OUTPUT, CFS.....	0.0
				TIME OF PEAK OUTPUT, HOURS...	0.0
		STAGE T0.	73.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

SR 45 BASIN E

36 hr BLEED DOWN CRITERIA

8/16/95

BRN 3.2 Project EAD
Node 0, POND E, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	74.090	0.0	0.0	26247.0	← WQ volume provided
0.10	74.089	0.0	49.8	26197.3	
0.20	74.088	0.0	99.4	26147.6	
0.30	74.088	0.0	148.9	26098.2	
0.40	74.087	0.0	198.2	26048.9	
0.50	74.086	0.0	247.3	25999.7	
0.60	74.086	0.0	296.3	25950.8	
0.70	74.085	0.0	345.1	25901.9	
0.80	74.084	0.0	393.7	25853.3	
0.90	74.083	0.0	442.2	25804.8	
1.00	74.083	0.0	490.6	25756.4	
36.00	73.933 ←	0.0	10566.0	15681.1	
59.00	73.895	0.0	13102.8	13144.2	
59.10	73.895	0.0	13111.4	13135.7	
59.20	73.895	0.0	13119.9	13127.1	
59.30	73.895	0.0	13128.5	13118.5	
59.40	73.895	0.0	13137.0	13110.0	
59.50	73.895	0.0	13145.6	13101.5	
59.60	73.894	0.0	13154.1	13092.9	
59.70	73.894	0.0	13162.7	13084.4	
59.80	73.894	0.0	13171.2	13075.9	
59.90	73.894	0.0	13179.7	13067.3	
60.00	73.894	0.0	13188.2	13058.8	←

- REQUIRED WATER QUALITY Volume = 26 027 cf
- WATER QUALITY volume REMAINING AT hour 60 = 13 059 cf
- $13\,059\ cf > \frac{26\,027}{2} = 13\,014\ cf$ ∴ OK
- BEGIN ATTENUATION @ STAGE 73.94

Henigar & Ray

made by: CLS 9/26/94 date: 4/19/94 job no. 21663

checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 (US 41)

BASIN E POST DEVELOPMENT 25yr-24hr RATIONAL C

CONVERSION OF COMPOSITE CN TO RATIONAL C (25yr-24hr) FOR PERMANENT WET POOL DESIGN

COMPOSITE CN = 89.63

25yr-24hr STORM PRECIPITATION P = 9.00 in

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{(P + .8S)}$$

WHERE: Q = RUNOFF (in)
P = RAINFALL = 9.0 in
S = RETENTION AFTER RUNOFF BEGINS (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{89.63} - 10 = 1.157 \text{ in}$$

$$Q = \frac{[9.0 - .2(1.157)]^2}{(9.0 + .8(1.157))} = 7.746 \text{ in}$$

$$C = \frac{7.746 \text{ in}}{9.00 \text{ in}} = 0.86$$

BASIN E WET POOL DESIGN C = .86

CLJ 9/26-94

Henigar & Ray

made by: IWM date: 4/19/94 job no. 21663

PROJECT: SR 45 BASIN E

checked by: ____ date: ____ sheet no. 1/1

PERMANENT WET POOL VOLUME

WS TO POND E = 13.32 Ac @ C = 0.86

WS ON POND E = 1.69 Ac @ C = 1.00

$$\text{COMPOSITE } C = \frac{13.32(.86) + 1.69(1.0)}{(13.32 + 1.69)} = 0.88$$

14 DAY RESIDENCE TIME VOLUME = .2968 (C) * WS AREA

= 0.2968 (.88) * 15.01 = 3.92 Ac·ft

PERMANENT WET POOL VOLUME MUST NOT BE LESS THAN 0.667 in * AREA.

CHECK: $0.667 \text{ in} * \frac{1 \text{ ft}}{12 \text{ in}} * 15.01 \text{ Ac} = .83 \text{ Ac·ft}$

since 3.92 Ac·ft > .83 Ac·ft

Ac·ft controls

REQUIRED PERMANENT WET POOL VOLUME = 3.92 Ac·ft

537

VI-31

SR 45 POND E

Permanent WET Pool Volume

Window 0,0 - 24,79

PROJECT EWETPOOL; POND (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF					
73.7	160984.0	1-1e+06	→ 266970.44	TOP EL...	73.7 (SHW)	TOP AREA.	1.4
70.58	131798.8	1-1e+06	122229.48	EL.....	70.58	AREA.....	0.73
65.7	118295.2	1-1e+06	0.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	65.7	BOT AREA.	0.42
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	73.7
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

REQUIRED Permanent wet Pool Volume = 3.92 Ac.ft

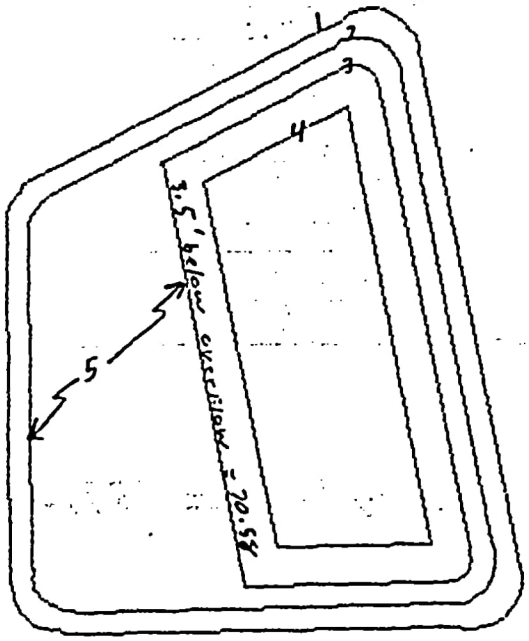
Provided Permanent wet pool Volume = 6.13 Ac.ft

6.13 Ac.ft > 3.92 Ac.ft ∴ OK

SR 45

POND E

No.	sq.ft		acres	
No.	sq.ft	STAGE, FT	acres	DESCRIPTION
1	73425.42	76.75	1.69	TOB
2	61057.76	73.70	1.40	SHW
3	31803.07	70.58	0.73	LOWEST EL OF LITTORAL SHELF
4	18210.07	65.70	0.42	WET POND BOTTOM



5	22435.51	0.52	LITTORAL ZONE

REQUIRED LITTORAL SHELF AREA:

.35 * AREA @ SHW = .135 * 1.140 Ac = 0.49 Ac

Provided Littoral shelf AREA = 0.52 Ac > 0.49 Ac

∴ OK

SR 45 BASIN E

25yr-24hr Pre-development Peak Discharge RATE

Subarea PRE BASIN E 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_E_25
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 780930812
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 298
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.2536211
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 12.7
→	PEAK CFS 33.067142
	ACFT VOL 9.5836919
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

25 yr-24hr pre peak rate = 33.07 cfs

post 25yr-24hr Network Summary SR 45 Basin E

(revised 2/15/95)

Project PE2524, Run of Wed Feb 15 16:50:05 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	RISER	VEE NOTCH
3	POND	RISER	RECT WEIR
4	POND	RISER	RECT WEIR
5	POND	RISER	RECT WEIR
6	RISER	JUNCTION	PIPE
7	JUNCTION	LAKE	PIPE
8	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	RISER	JUNCTION
4	LAKE	STAGING
5	WS TO LAKE	SUBAREA
6	JUNCTION	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	77.75	0.00	77.75	0.00	NO
1	POND	POND	73.94	0.00	75.38	13.50	NO
2	WS ON POND	SUBAREA	77.75	0.00	77.75	0.00	NO
3	RISER	JUNCTION	70.83	0.00	75.17	13.50	NO
4	LAKE	STAGING	68.00	0.00	70.95	24.00	NO
5	WS TO LAKE	SUBAREA	77.75	0.00	77.75	0.00	NO
6	JUNCTION	JUNCTION	68.85	0.00	71.00	24.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	31.16 @ 12.60 Hours	31.16 @ 12.60 Hours
1	POND	32.75 @ 12.60 Hours	19.89 @ 13.50 Hours
2	WS ON POND	13.97 @ 12.00 Hours	13.97 @ 12.00 Hours
3	RISER	19.89 @ 13.50 Hours	19.89 @ 13.50 Hours
4	LAKE	20.06 @ 13.40 Hours	0.00 @ 0.00 Hours
5	WS TO LAKE	1.51 @ 12.10 Hours	1.51 @ 12.10 Hours
6	JUNCTION	19.89 @ 13.50 Hours	19.89 @ 13.50 Hours

25yr-24hr pre PEAK RATE = 33.07 cfs

25yr-24hr post PEAK RATE = 20.06 cfs

⇒ compliance

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SR 45 BASIN E
25yr - 24hr POST Hydrographs

Subarea POST WS TO POND E 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOE25
TOTAL DRAINAGE AREA, ACRES... 13.32	INPUT ID 780931307
WEIGHTED SCS CURVE NUMBER.... 89.63	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.2
TIME OF CONCENTRATION, HOURS. 0.85	DT, HRS. 0.1
	DATA PTS 293
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.746489
	ACREAGE. 13.32
	TC, HRS. 0.85
	TP, HRS. 12.6
	PEAK CFS 31.156839
	ACFT VOL 8.5957503
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Subarea POST WS ON POND E 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONE25
TOTAL DRAINAGE AREA, ACRES... 1.69	INPUT ID 779214834
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 1.69
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 13.969765
	ACFT VOL 1.267081
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

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SR 45 BASIN E

25yr - 24hr POST Hydrographs cont

Subarea POST WS TO OFFSITE E 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOFFE25
TOTAL DRAINAGE AREA, ACRES... 0.31	INPUT ID 766702071
WEIGHTED SCS CURVE NUMBER.... 88.03	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.1
TIME OF CONCENTRATION, HOURS. 0.167	DT, HRS. 0.1
	DATA PTS 252
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.5515699
	ACREAGE. 0.31
	TC,. HRS. 0.167
	TP, HRS. 12.1
	PEAK CFS 1.5106093
	ACFT VOL 0.195002
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

SR 45 BASIN E POST 25yr-24hr PATHS REPORT
(REVISED 2/15/95)

Report on Paths of Project PE2524.

```
-------------------------------------
        Path...... 000, DIRECT
      Upper Node 000, WS TO POND
         Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 766850003
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      31.16
                  |MIN IN..       0.00
                  |MAX OUT.      31.16
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    77.750|FWD X...       0.00
TW EL...    76.750|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
      Upper Node 002, WS ON POND
         Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 766850014
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      13.97
                  |MIN IN..       0.00
                  |MAX OUT.      13.97
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    77.750|FWD X...       0.00
TW EL...    76.750|REV X...       0.00
-------------------------------------
```

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```
-------------------------------------
      Path...... 002, VEE NOTCH
         Upper Node 001, POND
        Lower Node 003, RISER
-------------------------------------
CREST EL     73.700|INPUT ID 780937038
ANGLE...     56.000|T0 CFS..       0.05
-------- ---------|T0 CF...       0.00
HEIGHT..      0.390|MAX IN..       0.35
-------- ---------|MIN IN..       0.05
                  |MAX OUT.       0.35
                  |MIN OUT.       0.05
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE NO       |REV K...       0.00
MAX HW..     76.750|FWD X...       0.00
MAX TW..     76.750|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 003, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-------------------------------------
CREST EL     74.090|INPUT ID 780937109
WIDTH...      4.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..      10.10
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.      10.10
-------- ---------|MIN OUT.       0.00
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
HW PE/KE YES      |FWD K...       0.00
TW PE/KE NO       |REV K...       0.00
MAX HW..     76.750|FWD X...       0.00
MAX TW..     76.750|REV X...       0.00
-------------------------------------
```

```
-----------------------------------------
      Path...... 004, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-----------------------------------------
CREST EL     74.090|INPUT ID 792884774
WIDTH...      2.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..       4.81
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.       4.81
-------- ---------|MIN OUT.       0.00
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     76.750|FWD X...       0.00
MAX TW..     76.750|REV X...       0.00
-----------------------------------------
```

```
-----------------------------------------
      Path...... 005, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-----------------------------------------
CREST EL     74.090|INPUT ID 792884774
WIDTH...      2.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..       4.81
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.       4.81
-------- ---------|MIN OUT.       0.00
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     76.750|FWD X...       0.00
MAX TW..     76.750|REV X...       0.00
-----------------------------------------
```

```
-------------------------------------
        Path...... 006, PIPE
      Upper Node 003, RISER
     Lower Node 006, JUNCTION
-------------------------------------
LEN, FT.    999.000|INPUT ID 792884821
MANN N..      0.012|T0 CFS..       0.03
RISE, FT      2.500|T0 CF...       0.00
SPAN, FT      2.500|MAX IN..      19.89
INLET---  ---------|MIN IN..       0.03
INVERT..     70.790|MAX OUT.      19.89
ENT KE..      5.400|MIN OUT.       0.03
          OUTLET-- ---------|
          INVERT..    69.700|
          ENT KE..     6.000|
          -------- ---------|
          BW STEPS     0    |
          -------- ---------|
                            |
                            |
HW PE/KE NO        |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     76.750|FWD X...       0.00
MAX TW..     76.750|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 007, PIPE
     Upper Node 006, JUNCTION
       Lower Node 004, LAKE
-------------------------------------
LEN, FT.     40.000|INPUT ID 780938560
MANN N..      0.012|T0 CFS..       0.03
RISE, FT      2.000|T0 CF...       0.00
SPAN, FT      2.000|MAX IN..      19.89
INLET---  ---------|MIN IN..       0.03
INVERT..     68.840|MAX OUT.      19.89
ENT KE..      0.200|MIN OUT.       0.03
          OUTLET-- ---------|
          INVERT..    68.070|
          ENT KE..     0.500|
          -------- ---------|
          BW STEPS     0    |
          -------- ---------|
                            |
                            |
HW PE/KE NO        |FWD K...       0.00
TW PE/KE YES       |REV K...       0.00
MAX HW..     76.750|INPUT ID       0.00
MAX TW..     76.750|REV X...       0.00
-------------------------------------
```

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Path..... 008, DIRECT
Upper Node 005, WS TO LAKE
Lower Node 004, LAKE

DIRECT..		INPUT ID	766850075
		T0 CFS..	0.00
		T0 CF...	0.00
		MAX IN..	1.51
		MIN IN..	0.00
		MAX OUT.	1.51
		MIN OUT.	0.00
HW PE/KE	NO	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
HW EL...	77.750	FWD X...	0.00
TW EL...	76.750	REV X...	0.00

SR 45 BASIN E
post 25yr-24hr Nodes Report

Report on Nodes of Project PE2524. (revised 2/15/95)

Node..... 000, SUBAREA

FILE NAME	WSTOE25	FLOOD EL.	77.750
INPUT ID#	780931307		
ALT TYPE.	RNF0002		
RUN, HRS.	29.200		
DT, HRS..	0.100		
DATA PTS.	293		
STORM....	SCS_IIM		
HOURS....	24.000		
RAINFALL.	9.000		
EXCESS...	7.746		
ACREAGE..	13.320		
TC, HRS..	0.850		
TP, HRS..	12.600		
PEAK CFS.	31.157		
ACFT VOL.	8.596		
EXECUTED.	YES		
BASE CFS.	0.000		
X COORD..		Y COORD..	

INPUT ID.....	780937251
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	77.75
INITIAL STORAGE, CUBIC FEET..	0.00
MAXIMUM STAGE REACHED.....	77.75
MINIMUM STAGE REACHED.....	77.75
MAXIMUM GROSS STORAGE, CF....	0.00
MAXIMUM DETENTION STORAGE, CF	0.00
FINAL STAGE ELEVATION.....	77.75
TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME OF MINIMUM STAGE, HOURS.	0.00
PEAK NODAL INTAKE, CFS.....	31.16
TIME OF PEAK INTAKE, HOURS...	12.60
PEAK NODAL OUTPUT, CFS.....	31.16
TIME OF PEAK OUTPUT, HOURS...	12.60
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL...	76.750	TOP AREA.	1.690
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....	76.750	AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
BOT EL...	73.700	BOT AREA.	1.400
TOP LF...		SIDE %PER	
MID LF...		BASE %PER	
BOT LF...			
BASE CFS.	0.000	STAGE T0.	73.940
X COORD..		Y COORD..	

INPUT ID.....	780937273
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	73.94
INITIAL STORAGE, CUBIC FEET..	16152.40
MAXIMUM STAGE REACHED.....	75.38
MINIMUM STAGE REACHED.....	73.94
MAXIMUM GROSS STORAGE, CF....	113330.00
MAXIMUM DETENTION STORAGE, CF	97177.40
FINAL STAGE ELEVATION.....	74.25
TIME OF MAXIMUM STAGE, HOURS.	13.50
TIME OF MINIMUM STAGE, HOURS.	0.00
PEAK NODAL INTAKE, CFS.....	32.75
TIME OF PEAK INTAKE, HOURS...	12.60
PEAK NODAL OUTPUT, CFS.....	19.89
TIME OF PEAK OUTPUT, HOURS...	13.50
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

Node..... 002, SUBAREA

FILE NAME	WSONE25	FLOOD EL. 77.750	INPUT ID..... 77921523
INPUT ID#	779214834		FLOOD ELEVATION REACHED..... NO
ALT TYPE.	RNF0002		INITIAL STAGE ELEVATION..... 77.7
RUN, HRS.	25.000		INITIAL STORAGE, CUBIC FEET.. 0.0
DT, HRS..	0.100		MAXIMUM STAGE REACHED..... 77.7
DATA PTS.	251		MINIMUM STAGE REACHED..... 77.7
STORM....	SCS_IIM		MAXIMUM GROSS STORAGE, CF.... 0.0
HOURS....	24.000		MAXIMUM DETENTION STORAGE, CF 0.0
RAINFALL.	9.000		FINAL STAGE ELEVATION..... 77.7
EXCESS...	9.000		TIME OF MAXIMUM STAGE, HOURS. 0.0
ACREAGE..	1.690		TIME OF MINIMUM STAGE, HOURS. 0.0
TC, HRS..			
TP, HRS..	12.000		
PEAK CFS.	13.970		PEAK NODAL INTAKE, CFS..... 13.9
ACFT VOL.	1.267		TIME OF PEAK INTAKE, HOURS... 12.0
EXECUTED.	YES		PEAK NODAL OUTPUT, CFS..... 13.9
			TIME OF PEAK OUTPUT, HOURS... 12.0
BASE CFS.	0.000		POINTS OUT OF TOLERANCE..... 0
X COORD..		Y COORD..	MAXIMUM STAGE ERROR..... 0.0

Node..... 003, JUNCTION

FLOOD EL.	76.750		INPUT ID..... 766850542
			FLOOD ELEVATION REACHED..... NO
			INITIAL STAGE ELEVATION..... 70.83
			INITIAL STORAGE, CUBIC FEET.. 0.00
			MAXIMUM STAGE REACHED..... 75.17
			MINIMUM STAGE REACHED..... 70.83
			MAXIMUM GROSS STORAGE, CF.... 0.00
			MAXIMUM DETENTION STORAGE, CF 0.00
			FINAL STAGE ELEVATION..... 71.75
			TIME OF MAXIMUM STAGE, HOURS. 13.50
			TIME OF MINIMUM STAGE, HOURS. 0.00
			PEAK NODAL INTAKE, CFS..... 19.89
			TIME OF PEAK INTAKE, HOURS... 13.50
			PEAK NODAL OUTPUT, CFS..... 19.89
			TIME OF PEAK OUTPUT, HOURS... 13.50
BASE CFS.	0.000		POINTS OUT OF TOLERANCE..... 0
X COORD..		Y COORD..	MAXIMUM STAGE ERROR..... 0.00

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Node..... 004, STAGING

FLOOD EL.	76.750	PE TO KE.	YES	INPUT ID.....	780937657
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.000	INITIAL STAGE ELEVATION.....	68.00
TIME, HRS	7.500	STAGE EL.	68.210	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	70.330	MAXIMUM STAGE REACHED.....	70.95
TIME, HRS	22.500	STAGE EL.	70.920	MINIMUM STAGE REACHED.....	68.00
TIME, HRS	30.000	STAGE EL.	71.080	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	33.750	STAGE EL.	71.110	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	70.95
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	24.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	20.06
				TIME OF PEAK INTAKE, HOURS...	13.40
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, SUBAREA

FILE NAME	WSOFFE25	FLOOD EL.	77.750	INPUT ID.....	779215295
INPUT ID#	766702071			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	77.75
RUN, HRS.	25.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	77.75
DATA PTS.	252			MINIMUM STAGE REACHED.....	77.75
STORM....	SCS_IIM			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	24.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.000			FINAL STAGE ELEVATION.....	77.75
EXCESS...	7.552			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.310			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.167				
TP, HRS..	12.100				
PEAK CFS.	1.511			PEAK NODAL INTAKE, CFS.....	1.51
ACFT VOL.	0.195			TIME OF PEAK INTAKE, HOURS...	12.10
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	1.51
				TIME OF PEAK OUTPUT, HOURS...	12.10
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 006, JUNCTION

FLOOD EL.	76.750	INPUT ID.....	78094171
		FLOOD ELEVATION REACHED.....	NO
		INITIAL STAGE ELEVATION.....	68.8
		INITIAL STORAGE, CUBIC FEET..	0.0
		MAXIMUM STAGE REACHED.....	71.0
		MINIMUM STAGE REACHED.....	68.8
		MAXIMUM GROSS STORAGE, CF....	0.0
		MAXIMUM DETENTION STORAGE, CF	0.0
		FINAL STAGE ELEVATION.....	71.0
		TIME OF MAXIMUM STAGE, HOURS.	24.0
		TIME OF MINIMUM STAGE, HOURS.	0.0
		PEAK NODAL INTAKE, CFS.....	19.8
		TIME OF PEAK INTAKE, HOURS...	13.5
		PEAK NODAL OUTPUT, CFS.....	19.8
		TIME OF PEAK OUTPUT, HOURS...	13.5
BASE CFS.	0.000	POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.0

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SYSTEM E

STORM SEWER

DESIGN

SR 45 BASIN E

3yr-8hr post Network Summary

Project PE_3_8, Run of Wed Feb 22 14:46:11 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	RISER	VEE NOTCH
3	POND	RISER	RECT WEIR
4	POND	RISER	RECT WEIR
5	POND	RISER	RECT WEIR
6	RISER	JUNCTION	PIPE
7	JUNCTION	LAKE	PIPE
8	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	RISER	JUNCTION
4	LAKE	STAGING
5	WS TO LAKE	SUBAREA
6	JUNCTION	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	77.75	0.00	77.75	0.00	NO
1	POND	POND	73.70	0.00	74.71	5.10	NO
2	WS ON POND	SUBAREA	77.75	0.00	77.75	0.00	NO
3	RISER	JUNCTION	70.79	0.00	73.54	5.10	NO
4	LAKE	STAGING	68.00	0.00	69.30	8.00	NO
5	WS TO LAKE	SUBAREA	77.75	0.00	77.75	0.00	NO
6	JUNCTION	JUNCTION	68.84	0.00	70.22	5.10	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	15.02 @ 4.30 Hours	15.02 @ 4.30 Hours
1	POND	16.53 @ 4.20 Hours	12.75 @ 5.10 Hours
2	WS ON POND	3.91 @ 3.50 Hours	3.91 @ 3.50 Hours
3	RISER	12.75 @ 5.10 Hours	12.74 @ 5.10 Hours
4	LAKE	12.92 @ 5.10 Hours	0.00 @ 0.00 Hours
5	WS TO LAKE	0.56 @ 3.80 Hours	0.56 @ 3.80 Hours
6	JUNCTION	12.74 @ 5.10 Hours	12.74 @ 5.10 Hours

3yr FAOT-8hr OUTLET control EL = 74.71

554

VI-47

3YR-8HR POST HYDROGRAPHS

Subarea POST WS TO POND E 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOE3_8
TOTAL DRAINAGE AREA, ACRES... 13.32	INPUT ID 780932739
WEIGHTED SCS CURVE NUMBER.... 89.63	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 13.2
TIME OF CONCENTRATION, HOURS. 0.85	DT, HRS. 0.1
	DATA PTS 133
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.5687311
	ACREAGE. 13.32
	TC, HRS. 0.85
	TP, HRS. 4.3
	PEAK CFS 15.02433
	ACFT VOL 3.9599743
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

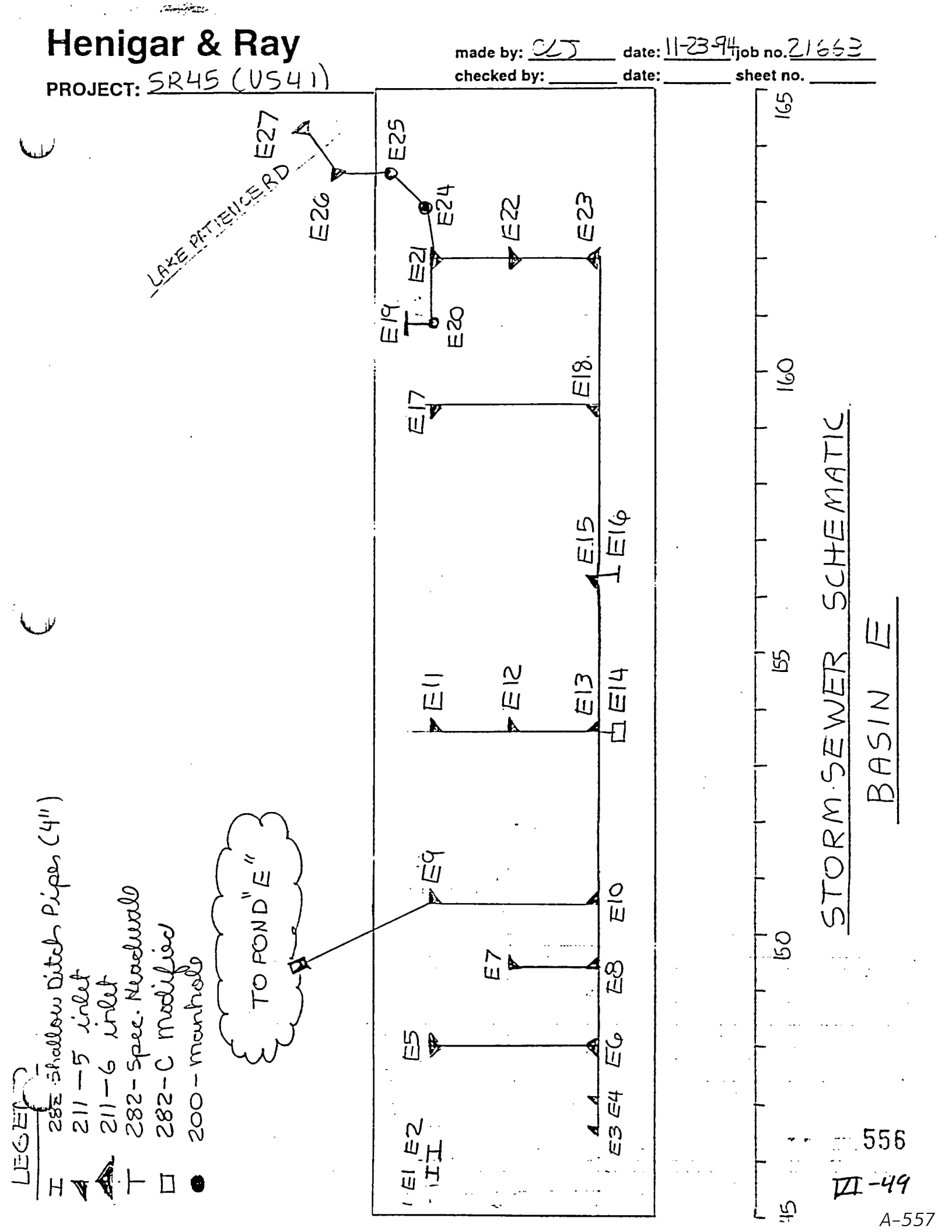
Subarea POST WS ON POND E 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONE3_8
TOTAL DRAINAGE AREA, ACRES... 1.69	INPUT ID 780933514
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 1.69
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 3.9137709
	ACFT VOL 0.664514
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Henigar & Ray

made by: CJS date: 11-23-94 job no. 21663
checked by: _____ date: _____ sheet no. _____

PROJECT: SR45 (US41)



STORM SEWER SCHEMATIC

BASIN E

556

VI-49

Henigar & Ray

PROJECT: SR 45

made by: CJ date: 5-25-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	RT. Typical #1 .89	Mid. Typical #2 .95	LT. Typical #3	NON-TYPICAL INLETS
E			NONE	E-1 } Shallow Ditch Pipe
			E-5 SOUTH	E-2 }
		E-7		
			E-9	E-3 } Precious offsite over gutter
	E-18		E-17	E-4
	E-23	E-22	E-21	E-6
				E-8
				E-10
				E-5 (NORTH)
				E-11, E-9
				E-12
				E-13
				E-14 (Cmod.)
				E-15 (MH)
				E-16 (Spec. HW)
				E-19 (" ")
				E-20 MH
				E-24 MH
				E-25 MH
				E-26 } Lake
				E-27 } Patio

557 VI-50

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~X~~3

STATION: 146+55 R

DRAINAGE AREA: 0.51Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.33	6.75

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.574	0.28	1.79

Spread = 6.75 - 1.50 = 5.25 ft

9-29-94 Revised Area = .39 Ac Q = 1.22 cfs
∴ Spread still ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~8~~4

STATION: 147+10 R

DRAINAGE AREA: 0.65Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.61	7.32

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.536	0.30	1.87

Spread = 7.32 − 1.50 = 5.82 ft

5.82 < 8.0

ok

559

VI-52

A-560

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~10~~ 6 SOUTH

STATION: 148+00 R

DRAINAGE AREA: 0.71Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.81	7.68

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.514	0.31	1.92

Spread = 7.68 - 1.50 = 6.18 ft

6.18 < 8.0

ok

560

VII-53

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-23-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: E-6 NORTH

STATION: 148+00 RT

DRAINAGE AREA: 1.17Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.004	0.030	0.013	3.43	9.50

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.425	0.37	2.42

Spread = 9.50 - 1.50 = 8.0 ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-23-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: E-7

STATION: 149+76 M

DRAINAGE AREA: 0.19Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Uniform	0.004	0.020	0.013	0.70	7.03

S = .0038 ft/ft

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.020	0.00	0.000	0.14	1.43

Spread = 7.03 ft (ok)

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~13~~ 8

STATION: 149+76 R

DRAINAGE AREA: 0.46Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.004	0.030	0.013	1.60	6.93

S=.0038'/,

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.561	0.29	2.05

Spread = 6.93 - 1.50 = 5.43 ft

5.43 < 8'

∴ ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~14~~ 9

STATION: 150+50 L

DRAINAGE AREA: 0.36Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.004	0.030	0.013	1.29	6.31

S=.0038%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.605	0.27	1.96

Spread = 6.31 - 1.50 = 4.81 ft

4.81 < 8.00 ok

564

VII - 57

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-23-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: E-10

STATION: 150+50 RT

DRAINAGE AREA: 0.81Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.004	0.030	0.013	2.92	8.91

S=.0038'/,

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.451	0.35	2.33

Spread = 8.91 - 1.50 = 7.41 ft

7.41 < 8.0

ok

565

VI - 58

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-30-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-~~20~~ 12

STATION: 153+57.5 M

DRAINAGE AREA: 0.11Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Uniform	0.004	0.020	0.013	0.41	5.72

S=.0038'/,

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
0.00	0.020	0.00	0.000	0.11	1.25

Spread= 5.72 ft Spread < 14' OK

9-29-94 Area Revised to .12 Ac @ 0.46 cfs
Spread still < allowable
.46cfs < .74cfs

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-25-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: E-11 ✓ E-13

STATION: 153+57.5 L 153+57.5 R

DRAINAGE AREA: 0.31Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.004	0.030	0.013	1.09	5.88

S=.0038%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.640	0.26	1.89

Spread = 5.88 − 1.50 = 4.38 ft

Spread < 8' o.o ok

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 11-23-1994

PROJECT: SR45

PROJECT NO.: 21663

INLET NO.: E-26
E-27

STATION: 28+38

DRAINAGE AREA: .55 Acres ±

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.018	0.020	0.013	0.95	4.65

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.806	0.19	3.29

Spread = 4.65 - 1.50 = 3.15 ft

ok

Henigar & Ray

PROJECT: SR 45

made by: CLJ date: 11-23-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

SYSTEM E – SAG INLET CHECKS

SAG INLET ID	INLET TYPE	AREA AC	3YR Q CFS	*ALLOWABLE Q CFS
5	6	.75	2.34	7.20
6	6	1.28	3.99	7.20
21	6	.43	1.34	7.20
22	7	.26	.81	———
23	6	.68	2.12	7.20
26	6	.58	1.81	5.25
27	6	.87	2.71	5.25

Use $Q = CiA$
where $C = .78$
$i_{10min} = 4.0$ in

* Allowable Q based on FDOT Tables 12-21 and 12-22 for sump condition spread VS Total inlet Flow (FDOT Drainage Manual)

For Spread = 8 + 1.5 = 9.5'
Q = 7.20 cfs (Avg.)

For Spread = 6 + 1.5 = 7.5'
Q = 5.25 cfs (Avg.)

25YR OVERTOPPING CHECK

Pond E 25YR-24HR DHW = 75.39
Lowest gutter inlet elevation = 76.75 @ E-5 + E6

OK

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 11/28 /94 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 BASIN E REDUCED AREA FILE:45ER90JR.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 74.71 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.

PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T I S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.78 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
3	4	S	55	0.27	0.00	77.18	18	0.00	0.0	0.00	0.00	74.54	74.43	.000	
146+55	51R			0.00											
				0.00											
4	6	M	90	0.30	0.00	77.82	18	0.00	0.0	0.00	0.00	74.43	74.26	.000	
147+10	51R			0.00											
				0.00											
5	6	S	101	0.75	0.00	76.75	18	0.00	0.0	75.76	0.00	74.25	74.05	.000	
148+00	50L			0.00											
				0.00											
6	8	M	171	1.28	0.00	76.75	24	0.00	0.0	0.00	0.00	74.05	73.79	.000	
148+00	50R			0.00											
				0.00											
7	8	S	58	0.19	0.00	78.12	18	0.00	0.0	0.00	0.00	75.93	74.90	.000	
149+71	8L			0.00											
				0.00											
8	10	M	79	0.35	0.00	77.40	30	0.00	0.0	0.00	0.00	73.79	73.68	.000	
149+71	51R			0.00											
				0.00											
9	0	M	95	0.36	0.00	77.70	42	0.00	0.0	0.00	0.00	73.89	69.20	.000	
150+50	51L			0.00											
				0.00											
10	9	M	101	0.71	0.00	77.70	42	0.00	0.0	0.00	0.00	73.99	73.89	.000	
150+50	50R			0.00											
				0.00											
11	12	M	58	0.31	0.00	78.87	18	0.00	0.0	0.00	0.00	76.37	76.26	.000	
153+58	51L			0.00											
				0.00											
12	13	M	43	0.12	0.00	79.57	18	0.00	0.0	0.00	0.00	76.26	76.16	.000	
153+58	8R			0.00											
				0.00											
13	10	M	308	0.31	0.00	78.87	42	0.00	0.0	0.00	0.00	74.14	73.93	.000	
153+58	50R			0.00											
				0.00											
14	13	S	6	0.88	0.00	78.10	18	0.00	0.0	78.10	0.00	76.26	76.16	.000	
153+58	59R			0.00											
				0.00											

DATE PROCESSED

PIPE IDENT FROM (STA)	TO	D I S T	S D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.78 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
15	13			M	272	0.00	0.00	80.36	36	0.00	0.0	0.00	0.00	74.30	74.14	.000	
156+30		53R				0.00											
						0.00											
16	15			S	6	0.77	0.00	78.30	18	0.00	0.0	78.30	0.00	~~73.00~~ 78.80	~~77.20~~ 78.30	.000	
156+30		59R				0.00											
						0.00											
17	18			M	101	0.49	0.00	78.80	18	0.00	0.0	0.00	0.00	76.30	76.10	.000	
159+30		51L				0.00											
						0.00											
18	15			M	300	0.44	0.00	78.80	36	0.00	0.0	0.00	0.00	74.48	74.30	.000	
159+30		51R				0.00											
						0.00											
19	20			S	10	1.47	0.00	76.80	18	0.00	0.0	78.30	0.00	78.30	76.80	.000	
160+80		61L				0.00											
						0.00											
20	21			M	120	0.00	0.00	78.36	18	0.00	0.0	0.00	0.00	76.80	76.57	.000	
160+80		53L				0.00											
						0.00											
21	22			M	43	0.43	0.00	77.99	30	0.00	0.0	0.00	0.00	74.90	74.80	.000	
162+00		51L				0.00											
						0.00											
22	23			M	58	0.26	0.00	78.69	30	0.00	0.0	0.00	0.00	74.80	74.70	.000	
162+00		8L				0.00											
						0.00											
23	18			M	270	0.68	0.00	77.99	36	0.00	0.0	0.00	0.00	74.70	74.48	.000	
162+00		51R				0.00											
						0.00											
24	21			M	88	0.00	0.00	78.94	24	0.00	0.0	0.00	0.00	75.03	74.90	.000	
162+86		57L				0.00											
						0.00											
25	24			M	60	0.00	0.00	78.00	24	0.00	0.0	0.00	0.00	75.13	75.03	.000	
28+60		28R				0.00											
						0.00											
26	25			M	23	0.58	0.00	76.87	24	0.00	0.0	76.87	0.00	75.23	75.13	.000	
28+38		19L				0.00											
						0.00											
27	26			S	40	0.87	0.00	76.87	18	0.00	0.0	76.87	0.00	74.83	74.73	.000	
28+38		19L				0.00											
						0.00											

DATE PROCESSED
PROJECT 14816-3518 ZONE 6 FREQ 3 PAGE 3

SR45 BASIN E REDUCED AREA FILE:45ER90JR.IN

* HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.78 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV. OF H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
3 4	S	55	0.27	0.27	0.21	10.00	0.46	6.61	0.21	1.39	77.18	75.68	75.67	0.01	18*	0.015	6.79	.012
146+55	51R		0.00	0.00	0.00							74.54	74.43					
			0.00	0.00	0.00													
4 6	M	98	0.30	0.57	0.44	10.46	0.75	6.48	0.44	2.88	77.82	75.67	75.61	0.06	18*	0.064	1.63	.012
147+10	51R		0.00	0.00	0.00							74.43	74.26					
			0.00	0.00	0.00													
5 6	S	101	0.75	0.75	0.58	10.00	0.77	6.61	0.58	3.87	76.75	75.73	75.61	0.12	18*	0.116	2.19	.012
148+00	50L		0.00	0.00	0.00						75.76	74.25	74.05					
			0.00	0.00	0.00													
6 8	M	171	1.28	2.60	2.03	11.21	0.70	6.29	2.03	12.75	76.75	75.61	75.15	0.46	24*	0.271	4.06	.012
148+00	50R		0.00	0.00	0.00							74.05	73.79					
			0.00	0.00	0.00													
7 8	S	58	0.19	0.19	0.15	10.00	0.48	6.61	0.15	0.98	78.12	75.16	75.15	0.01	18*	0.007	0.55	.012
149+71	8L		0.00	0.00	0.00							75.93	74.90					
			0.00	0.00	0.00													
8 10	M	79	0.35	3.14	2.45	11.91	0.43	6.12	2.45	14.93	77.40	75.15	75.06	0.09	30*	0.114	3.05	.012
149+71	51R		0.00	0.00	0.00							73.79	73.68					
			0.00	0.00	0.00													
11 12	M	58	0.31	0.31	0.24	10.00	0.48	6.61	0.24	1.60	78.87	76.27	76.26	0.01	18*	0.020	0.90	.012
153+58	51L		0.00	0.00	0.00							76.37	76.26					
			0.00	0.00	0.00													
12 13	M	43	0.12	0.43	0.34	10.48	0.36	6.47	0.34	2.17	79.57	76.18	76.16	0.02	18*	0.036	1.23	.012
153+58	8R		0.00	0.00	0.00							76.26	76.16					
			0.00	0.00	0.00													
14 13	S	6	0.88	0.88	0.69	10.00	0.04	6.61	0.69	4.54	78.10	76.17	76.16	0.01	18*	0.159	2.57	.012
153+58	59R		0.00	0.00	0.00						78.10	76.26	76.16					
			0.00	0.00	0.00													
16 15	S	6	0.77	0.77	0.60	10.00	0.04	6.61	0.60	3.97	78.30	77.21	77.20	0.01	18*	0.122	2.25	.012
156+30	59R		0.00	0.00	0.00						78.30	78.80	78.30					
			0.00	0.00	0.00													
17 18	M	101	0.49	0.49	0.38	10.00	0.84	6.61	0.38	2.53	78.80	76.15	76.10	0.05	18*	0.049	1.43	.012
159+30	51L		0.00	0.00	0.00							76.30	76.10					
			0.00	0.00	0.00													
19 20	S	10	1.47	1.47	1.15	10.00	0.04	6.61	1.15	7.58	76.80	77.15	77.10	0.04	18*	0.444	4.29	.012
160+80	61L		0.00	0.00	0.00						78.30	78.30	76.80					
			0.00	0.00	0.00													
20 21	M	120	0.00	1.47	1.15	10.04	0.47	6.60	1.15	7.58	78.36	77.10	76.57	0.53	18*	0.444	4.29	.012
160+80	53L		0.00	0.00	0.00							76.80	76.57					
			0.00	0.00	0.00													
27 26	S	40	0.87	0.87	0.68	10.00	0.26	6.61	0.68	4.48	76.87	76.56	76.50	0.06	18*	0.156	2.54	.012
28+38	19L		0.00	0.00	0.00						76.87	74.83	74.73					
			0.00	0.00	0.00													
26 25	M	23	0.58	1.45	1.13	10.26	0.16	6.53	1.13	7.39	76.87	76.50	76.48	0.02	24*	0.091	2.35	.012
28+38	19L		0.00	0.00	0.00						76.87	75.23	75.13					
			0.00	0.00	0.00													
25 24	M	60	0.00	1.45	1.13	10.43	0.43	6.49	1.13	7.39	78.00	76.48	76.42	0.05	24*	0.091	2.35	.012
28+60	28R		0.00	0.00	0.00							75.13	75.03					
			0.00	0.00	0.00													

DATE PROCESSED

PROJECT 14816-3518 FREQ 3 YR. PAGE 4

LINE FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.78 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	ELEV. OF H.G. CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
24 21	M	88	0.00	1.45	1.13	10.85	0.62	6.38	1.13	7.39	78.94	76.42	76.34	0.08	24*	0.091	2.35	.012
162+86	57L		0.00	0.00	0.00							75.03	74.90					
			0.00	0.00	0.00													
21 22	M	43	0.43	3.35	2.61	11.47	0.22	6.22	2.61	16.26	77.99	76.34	76.29	0.06	30*	0.134	3.31	.012
162+00	51L		0.00	0.00	0.00							74.90	74.80					
			0.00	0.00	0.00													
22 23	M	58	0.26	3.61	2.82	11.69	0.27	6.17	2.82	17.38	78.69	76.29	76.20	0.09	30*	0.153	3.54	.012
162+00	8L		0.00	0.00	0.00							74.80	74.70					
			0.00	0.00	0.00													
23 18	M	270	0.68	4.29	3.35	11.96	1.56	6.11	3.35	20.44	77.99	76.20	75.98	0.22	36*	0.080	2.89	.012
162+00	51R		0.00	0.00	0.00							74.70	74.48					
			0.00	0.00	0.00													
18 15	M	300	0.44	5.22	4.07	13.52	1.50	5.78	4.07	23.54	78.00	75.98	75.66	0.32	36*	0.106	3.33	.012
159+30	51R		0.00	0.00	0.00							74.48	74.30					
			0.00	0.00	0.00													
15 13	M	272	0.00	5.99	4.67	15.02	1.25	5.51	4.67	25.73	80.36	75.66	75.32	0.35	36*	0.127	3.64	.012
156+30	53R		0.00	0.00	0.00							74.30	74.14					
			0.00	0.00	0.00													
13 10	M	308	0.31	7.61	5.94	16.27	1.57	5.30	5.94	31.49	78.87	75.32	75.06	0.26	42*	0.084	3.27	.012
[illegible]+58	50R		0.00	0.00	0.00							74.14	73.99					
			0.00	0.00	0.00													
10 9	M	101	0.71	11.46	8.94	17.84	0.36	5.08	8.94	45.38	77.70	75.66	74.88	0.18	42*	0.174	4.72	.012
150+50	50R		0.00	0.00	0.00							73.99	73.89					
			0.00	0.00	0.00													
9 0	M	95	0.36	11.82	9.22	18.19	0.33	5.03	9.22	46.36	77.70	74.88	74.71	0.17	42*	0.181	4.82	.012
150+50	51L		0.00	0.00	0.00							73.89	69.20					
			0.00	0.00	0.00													

SR45 BASIN E REDUCED AREA FILE:45ER90JR.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
3	4	1595.00	4	6	2610.00	5	6	2929.00
6	8	5985.00	7	8	1682.00	8	10	3476.00
9	0	6175.00	10	9	6565.00	11	12	1682.00
12	13	1247.00	13	10	20020.00	14	13	174.00
15	13	15776.00	16	15	174.00	17	18	2929.00
18	15	17400.00	19	20	290.00	20	21	3480.00
21	22	1892.00	22	23	2552.00	23	18	15660.00
24	21	3080.00	25	24	2100.00	26	25	805.00
27	26	1160.00						

TOTAL SYSTEM COST = 121438.00

SR45 BASIN E REDUCED AREA FILE:45ER90JR.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	3 TO 4
MAXIMUM VELOCITY (GRADIENT FLOW)	4.82 FPS	9 TO 8
MAXIMUM PIPE SLOPE	0.00 PERCENT	3 TO 4
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.79 FPS	3 TO 4
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	3 TO 4
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-0.35 FT	19 TO 20
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.03 FT	5 TO 6
TOTAL DRAINAGE AREA	11.82 ACRES	
WEIGHTED COEFFICIENT	0.78	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

11 TO 12
12 TO 13
14 TO 13
16 TO 15
17 TO 18
20 TO 21

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

Henigar & Ray

PROJECT: Basin E Storm Sewer

made by: CLJ date: 5-23-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Design Methodology based on Full and reduced areas as described in Section I of this report.

Full Area Data

$Area_F = 14.16\ Ac$

$CN_F = 89.17$

$T_C = 47.6\ min$ @5-2 (See Pond E for Calculations)

Reduced Area Data

$Area_R = 12.02\ Ac$

$CN_R = 90.93$

$T_C = 10\ min.$

Documentation submitted for reduced area only.

10-10-94 REVISED REDUCED AREA = 11.82 Ac
THE C=.78 WAS USED FOR THE NEW RUN.

WEIGHTED CURVE NUMBER CONVERSION TO "C" COEFFICIENT
DATE : 24-May-94

METHODOLOGY FROM FDOT DRAINAGE MANUAL
VOLUME 2A , CHAPTER 5.6.1 , FORMULA 5-10

BASIN ID	CURVE NUMBER	RATIONAL COEFF C	POTENTIAL MAXIMUM RETENTION S, IN	RAINFALL P, IN	RUNOFF Q, IN
SYSTEM E	89.17	0.75	1.2145	4.72	3.52173
FULL	89.17	0.85	1.2145	9.00	7.69049
AREA					
SYSTEM E	90.93	0.78	0.9975	4.72	3.70335
REDUCED	90.93	0.88	0.9975	9.00	7.90458
AREA					

CURVE NUMBER OF 89.17 FROM POND F CALCULATIONS

CURVE NUMBER OF 90.93 FROM REDUCED AREA CALCULATIONS

577

VII - 70

LRP
Area Reduction Calcs.

L = VAR
n = .2
S = .0013'/'

Pond E

tc Sheet Flow
for 300 - 46' = 254'

tc = 39.15 min = 0.65 hr
t_{tp} = 44.42 - 39.15 = 5.27 min

X = 37.6 min
254' = 39.15 min
300' = 44.42 min

$\frac{46}{x} = \frac{300-254}{x} = \frac{44.42-39.15}{1.55} = \frac{5.27}{1.55}$

x = 13.5'

tc Sheet Flow
for 300 - (46+14) = 240'
⇒ tc = 37.60 I = 4.775 in/hr

tc Sheet Flow
for 230' I = 4.825 in/hr
⇒ tc = 36.50 min

Change C_N Calc

Reductions

Woods CN = 73 Area = 200 × 240 = 48,000 SF = 1.102 Ac

½ Ac Rec CN = 80 Area = 128 × 194 = 24,832 SF = 0.570 Ac

Comm CN = 94 Area = ½(74)(391) = 14,467 SF = 0.332 Ac

Reduction in Watershed = 1.102 + 0.570 + 0.332 = 2.004

Composite CN ⇒	C_N × Ac
5.16 Ac × 98	505.68
2.15 Ac × 79	169.85
((3.38 − 0.332) Ac) × 94	286.51
((1.26 − 0.570) Ac) × 80	55.20
((1.14 − 1.102) Ac × 73	2.774
0.40 Ac × 86	34.40
0.67 Ac × 76	50.92
12.156 Ac	1105.334

CN = 90.93

$S = (1000/90.93) - 10$

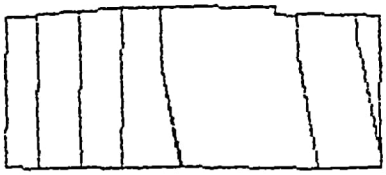
$Q = (9 - 0.2(0.997))^2/(9 + 0.8(0.997)) = 77.454/9.798$

$C = Q/P = 7.905/9 = 0.878$

Storm Sewer E

Revised Areas for Tc = 10 min (1/2)

No.	sq.ft	acres	
1	8605.86	0.20	E-2
2	11720.58	0.27	E-6
3	11578.63	0.27	E-7
4	12881.69	0.30	E-8
5	38697.82	0.89	E-10
6	16914.79	0.39	E-11
7	3113.44	0.07	E-13



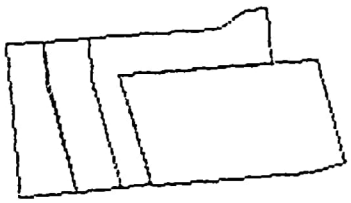
580

VI - 73

Storm Sewer E

Revised Areas for Tc = 10 min. 2/2.

No.	sq.ft	acres	
1	12033.44	0.28	E-13
2	12033.26	0.28	E-15
3	18876.00	0.43	E-17
4	38599.73	0.88	E-22



Conversion of CN to C

BASIN : E
DATE : 21-Apr-94

PLAN PROFILE SHEET NO./SIDE	BASIN ID	CURVE NUMBER	RATIONAL COEFF C	POTENTIAL MAXIMUM RETENTION S, IN	RAINFALL P, IN	RUNOFF Q, IN
34/LT	8	79.00	0.54	2.6582	4.72	2.56220
	9	86.00	0.68	1.6279	4.72	3.20655
	10	94.00	0.85	0.6383	4.72	4.03193
34/RT	11	94.00	0.85	0.6383	4.72	4.03193
	12	94.00	0.85	0.6383	4.72	4.03193
	13	79.00	0.54	2.6582	4.72	2.56220
35/LT	8	79.00	0.54	2.6582	4.72	2.56220
	9	76.00	0.49	3.1579	4.72	2.30672
	9	73.00	0.44	3.6986	4.72	2.06313
	10	80.00	0.56	2.5000	4.72	2.65006
	11	94.00	0.85	0.6383	4.72	4.03193
	12	94.00	0.85	0.6383	4.72	4.03193
	13	79.00	0.54	2.6582	4.72	2.56220

582

VI - 75

7

SYSTEM F

QUASI - EQUIVALENT TREATMENT CALCULATIONS

Henigar & Ray **CLS 9-26-94

made by: TWM date: 5/27/94 job no. 21663

checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45 BASIN F

QUASI-EQUIVALENT TREATMENT FOR SR 45 FROM STA 180+68 TO STA 184+25

- PRE-DEVELOPMENT IMPERVIOUS AREA WITHIN PROJECT LIMITS FROM STA 180+68 SR 45 (PRE-DEVELOPMENT BREAK POINT FOR DRAINAGE DISCHARGING TO BASIN F AND THAT DRAINAGE DISCHARGING TO BELL LAKE) TO PROJECT END AT STA 189+04.57 IS 0.78 AC.
- POST DEVELOPMENT IMPERVIOUS AREA FOR SR 45 FROM STA 184+40 TO PROJECT END AT STA 189+04.57 IS 0.76 AC.

* SINCE POST DEVELOPMENT IMPERVIOUS AREA DRAINING TO BELL LAKE = 0.76 AC IS LESS THAN PRE-DEVELOPMENT IMPERVIOUS AREA DRAINING TO BELL LAKE = 0.78 AC, WATER QUALITY COMPLIANCE MET FOR BELL LAKE.

** THESE CALCULATIONS HAVE BEEN REVISED TO ACCOUNT FOR THE SIDEWALK ADDED DUE TO SEPT. 13, 1994 MEETING.

POST < PRE

.76 Ac < .78 Ac

∴ EQUIVALENT TREATMENT IS MET.

585

VII-1

SR45
BASIN F

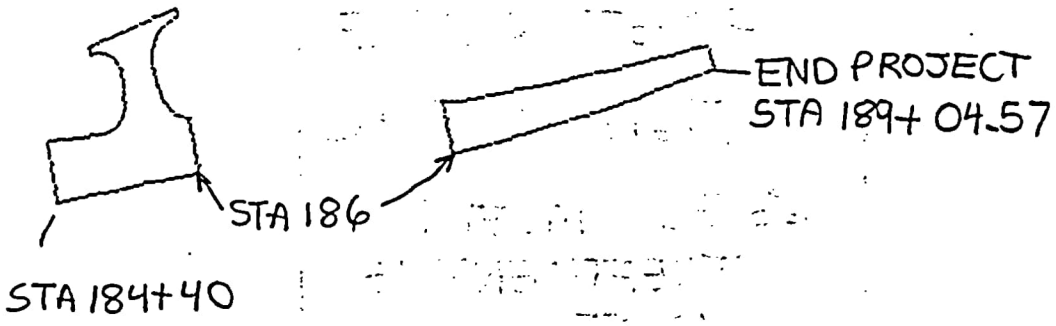
PROPOSED ROADWAY PAVEMENT: STA 184+40 to 189+04.57

SIDEWALK = (385' + 75' + 200')(5)
= 660'(5) = 3300 SF
= .08 Ac

POST IMPERVIOUS = SIDEWALK + ROADWAY
= .08 + (.37 + .31) = .76 Ac

No.	sq.ft	acres
1	16288.76	0.37
2	13300.55	0.31

1" = 210'



POST IMPERVIOUS = .76 Ac

586

VII-2

SR 45

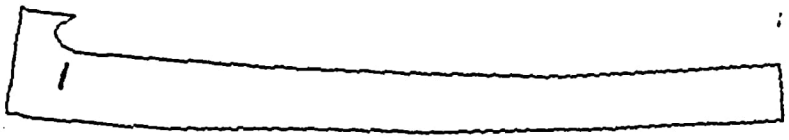
BASIN F

Existing Pavement – SR 45 From STA 180+68 TO 189+04.57 (For Equivalent TREATMENT computation)

No.	sq.ft	acres
1	22761.33	0.52

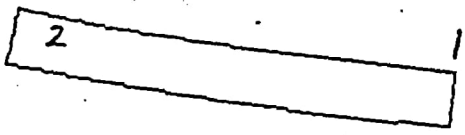
180+68

1"=120'



No.	sq.ft	acres
~~1~~ 2	11325.41	0.26

189+04.57 END project



TOTAL EXISTING PAVEMENT = 0.78 AC

587

VIII-3

SYSTEM F

HYDROLOGY

Henigar & Ray

PROJECT: SR45 BASIN F

made by: CLS date: 9-22-94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN F

PRE-DEVELOPMENT HYDROLOGY

* COMPOSITE CN = [(.83+1.21+.14+.88+.39+.09)98
+(1.10+.46+.24+.33+1.21+.04
+.03+.07+.49)94
+(1.50+.29+.17+.12+.04+.26
+1.05+1.08)79
+(.25)86 + (.83+1.25)76
+(.15)83] ÷ 14.50

= 1268.42 ÷ 14.50

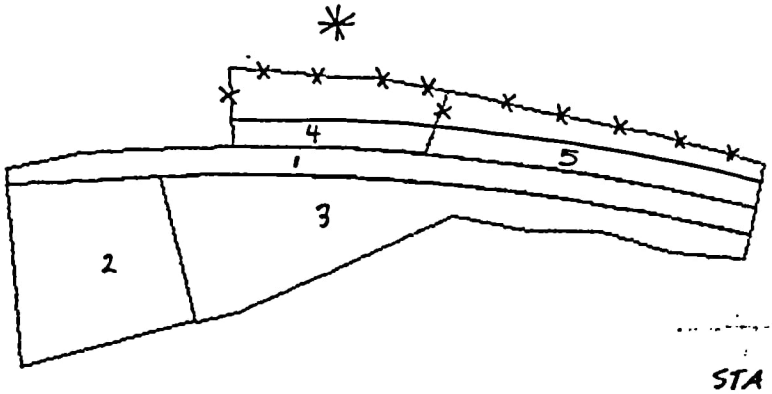
= 87.477

PRE BASIN F = 14.50 Ac @ CN = 87.48

* SEE SUBSEQUENT DIGITIZED AREAS FOR DOCUMENTATION.

SR 45 BASIN F
Pre-Development Hydrology
STA 152+00 TO 162+00

	No.	sq.ft		acres	LANDUSE	CN	
	1	36166.45		0.83	PAVEMENT	98	✓
	2	47984.83		1.10	COMMERCIAL	94	✓
	3	65147.53		1.50	OPEN (F)	79	✓
*	4	26746.95	0.25	~~0.61~~	OPEN (P)	86	✓
*	5	30994.57	0.46	~~0.71~~	COMMERCIAL	94	✓



1"= 250'

STA 162

STA 152+00

* AREAS REVISED:

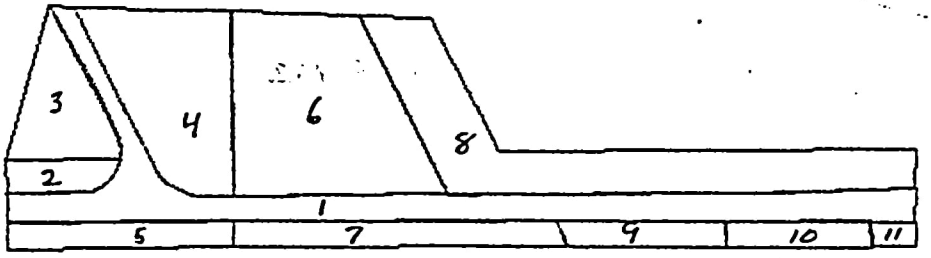
NO.4 = 270' X 40' ÷ 43560' = 0.25 Ac

NO.5 = 440' X 45' ÷ 43560 = 0.46 Ac

SR 45 BASIN F
PRE-DEVELOPMENT HYDROLOGY
STA 162+0 TO 174+0

No.		sq.ft		acres	LAND USE	CN
1		52640.89		1.21	PAVEMENT	98 ✓
2		6199.23		0.14	PAVEMENT	98 ✓
3	*	16603.10	0.29	~~0.38~~	OPEN (F)	79 ✓
4		35973.79		0.83	WOODS/GRASS (F)	76 ✓
5		10258.11		0.24	COMMERCIAL	94 ✓
6		54651.28		1.25	WOODS/GRASS (F)	76 ✓
7		14564.18		0.33	COMMERCIAL	94 ✓
8		52527.69		1.21	COMMERCIAL	94 ✓
9		7282.80		0.17	OPEN (F)	79 ✓
10		6542.25		0.15	1/4-AC RES.	83 ✓
11		1956.48		0.04	COMMERCIAL	94 ✓
				0.09	PAVEMENT	98

* AREA REVISED TO ACCOUNT FOR ASPHALT PUMT.



1"=250'

162+0

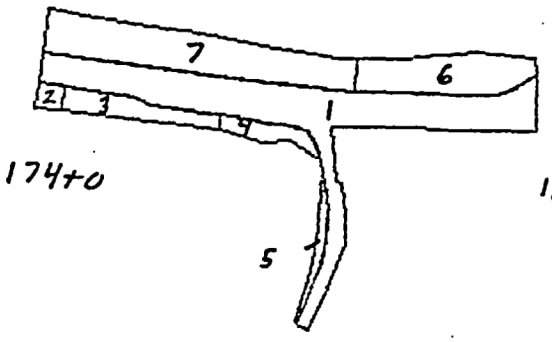
174+0

SR 45 BASIN F

PRE-DEVELOPMENT Hydrology

STA 174+0 TO 180+68

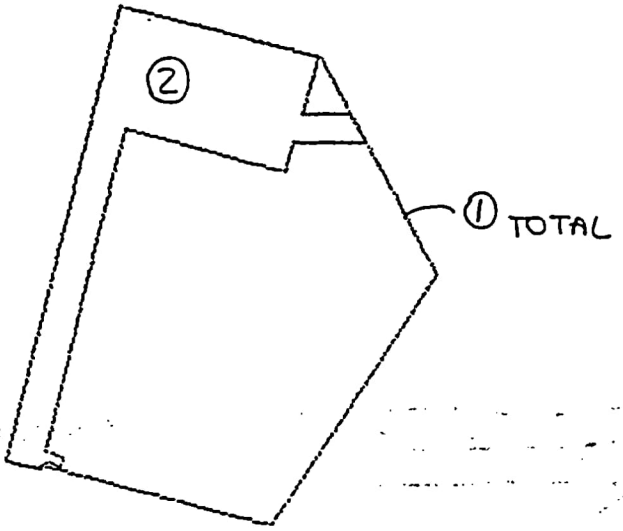
No.	sq.ft	acres	LANDUSE	CN
1	38306.45	0.88	PAVEMENT	98 ✓
2	1209.76	0.03	COMMERCIAL	94 ✓
3	5436.11	0.12	OPEN (F)	79 —
4	3163.70	0.07	COMMERCIAL	94 ✓
5	1699.42	0.04	OPEN (F)	79 ✓
6	11489.75	0.26	OPEN (F)	79 ✓
7	21397.90	0.49	COMMERCIAL	94 ✓



1" = 250'

SR45 BASIN F
PRE-DEVELOPMENT HYDROLOGY
ADDITIONAL AREA AT LAKE PATIENCE + SR45

No.	sq.ft	acres	LANDUSE	CN	
1	63986.49	1.47	—	—	TOTAL AREA
2	16894.96	0.39	PAVEMENT	98	
		1.08	OPEN (F)	79	



SR45 BASIN F
PRE-DEVELOPMENT HYDROLOGY
ADDITIONAL AREA

No.	sq.ft	acres
1	4056.22	0.09

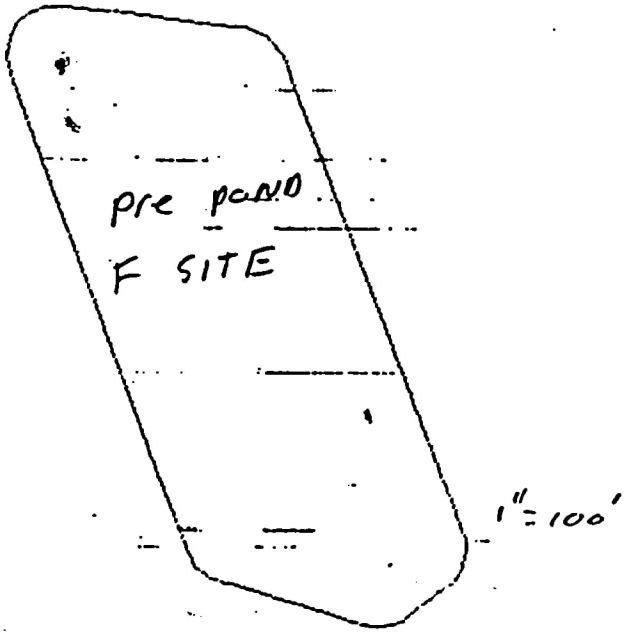


Minus out this area (.09Ac) from the Open (F) area #3 Pre-Development Hydrology design sheet Sta 162+00 to 174+00.

SR45 POND F

Pre-development Hydrology

No.	sq.ft	acres	LAND USE	CN
1	45845.91	1.05	OPEN (FAIR)	79



SR 45 BASIN F TWM

Hydrologic soil Types

73 = C

*38 = URBAN LAND - ASSUME ADJACENT Hydrologic soil Type. THAT is, 73 TO the west & 11 TO the EAST. Since both 11 & 73 are Hydrologic TYPE C, ASSUME 38 is ALSO Type C.

BASIN F is TYPE C Hyd. soil TYPE

596

VII - 11

Henigar & Ray made by: TWM date: 4/27/94 job no 21663

PROJECT: SR 45 BASIN F checked by: _____ date: _____ sheet no. 1/3

BASIN F

PRE-DEVELOPMENT TIME OF CONCENTRATION

$t_c = t_1 + t_2 + t_3$ (eqn 1)

WHERE: t_c = TIME OF CONCENTRATION
t_1 = SHEET FLOW TRAVEL TIME
t_2 = SHALLOW CONCENTRATED FLOW TRAVEL TIME
t_3 = OPEN CHANNEL FLOW TRAVEL TIME
t_4 = CULVERT TRAVEL TIME

t_1 (STA 152 to RT)

From FDOT DRAINAGE MANUAL, Vol 2A

$$t = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: t = OVERLAND TRAVEL TIME (min)
L = 250'
n = MANNING'S Coef. for SHEET FLOW = 0.011 (PAVMNT)
I = RAINFALL INTENSITY (in/hr)
S = AVERAGE SLOPE = 0.0034 ft/ft

FROM IDF curve (ZONE C, 25 yr EVENT) [FDOT MANUAL]

$I = 8.75$ in/hr $\Rightarrow$ $t = 3.98$ min (CALCD FROM eqn)

$\Rightarrow t < 8$ min (LIMIT OF CHART) $\therefore t_1 = 10$ min

$t_1 = 10$ min

t_2

FROM SCS TR55 APPENDIX F

$$t = \frac{L}{60\,[16.1345\,(S)^{.5}]} \quad \text{(UNPAVED)}$$

WHERE: t = TRAVEL TIME (min)
L = 300 ft
S = 0.0007 ft/ft
60 = CONVERSION FACTOR FROM SEC TO MIN

$t_2 = 11.71$ min

BASIN F

PRE-DEVELOPMENT TIME OF CONCENTRATION cont.

t_3

$$t_3 = \frac{L}{60\,V}$$

WHERE: L = Length, ft
* V = Velocity ft/s
60 = Conversion factor, sec to min

* SEE Accompanying computer output for channel parameters and velocities.

t_{3a}: STA 155+00 TO 158+53

$$t_{3a} = \frac{353}{60(.27)} = 21.79 \text{ min}$$

t_{3b}: STA 159+00 TO 163+00

$$t_{3b} = \frac{400}{60(.55)} = 12.12 \text{ min}$$

t_{3c}: STA 172+00 TO 173+12.5

$$t_{3c} = \frac{112.5}{60(.44)} = 4.26 \text{ min}$$

$$t_3 = t_{3a} + t_{3b} + t_{3c}$$
$$= 21.79 + 12.12 + 4.26 = 38.17 \text{ min}$$

$t_3 = 38.17$ min

BASIN F

PRE-DEVELOPMENT TIME OF CONCENTRATION CONT

t_4

$$t_4 = \frac{L}{60V}$$

SEE ACCOMPANYING COMPUTER OUTPUT FOR VELOCITES

t_{4A} STA 163+00 TO 169+35

$$t_{4A} = \frac{635}{60(1.15)} = 9.20 \text{ min}$$

t_{4B} STA 169+35 TO 172+00

$$t_{4B} = \frac{265}{60(1.29)} = 3.42 \text{ min}$$

t_{4C} STA 158+53 TO 159+00

$$t_{4C} = \frac{47}{60(2.64)} = .29 \text{ min}$$

$t_4 = t_{4a} + t_{4b} + t_{4c}$
$= 9.20 + 3.42 + .29$
$= 12.91$ min

$t_4 = 12.91$ min

From eqn 1: $t_c = t_1 + t_2 + t_3 + t_4$
$= 10 + 11.71 + 38.17 + 12.91$
$= 72.79$ min

pre BASIN F $t_c = 72.79$ min $= 1.21$ hr

A-600

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t4a CULVERT FLOW VELOCITY

Solve For Actual Discharge

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0008 ft/ft
Manning's n.....	0.019 (WEIGHTED n For RCP + CMP combination)
Depth.....	1.50 ft

Computed Results:

Discharge.....	2.03 cfs
Velocity.....	1.15 fps ←
Flow Area.....	1.77 sf
Critical Depth....	0.54 ft
Critical Slope....	0.0106 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	2.03 cfs
QMAX @.94D.....	2.19 cfs
Froude Number.....	FULL

Open Channel Flow Module, Version 3.42 (c) 1991
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600

VII - 15

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t4b CULVERT FLOW VELOCITY

Solve For Actual Discharge

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0016 ft/ft
Manning's n.....	0.024
Depth.....	1.50 ft

Computed Results:

Discharge.....	2.28 cfs
Velocity.....	1.29 fps ←
Flow Area.....	1.77 sf
Critical Depth....	0.57 ft
Critical Slope....	0.0170 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	2.28 cfs
QMAX @.94D.....	2.45 cfs
Froude Number.....	FULL

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VII - 16

A-602

Circular Channel Analysis & Design
Solved with Manning's Equation

Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t4c CULVERT FLOW VELOCITY

Solve For Full Flow Capacity

Given Input Data:

Diameter.....	1.50 ft
Slope.....	0.0070 ft/ft
Manning's n.....	0.024
Discharge.....	4.76 cfs

Computed Results:

Full Flow Capacity.....	4.76 cfs
Full Flow Depth.....	1.50 ft
Velocity.....	2.69 fps ←
Flow Area.....	1.77 sf
Critical Depth....	0.84 ft
Critical Slope....	0.0194 ft/ft
Percent Full.....	100.00 %
Full Capacity.....	4.76 cfs
QMAX @.94D.....	5.12 cfs
Froude Number.....	FULL

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VII - 17

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t2a: OPEN CHANNEL FLOW VELOCITY

Solve For Discharge

Given Input Data:

Bottom Width.....	3.00 ft
Left Side Slope..	6.00:1 (H:V)
Right Side Slope.	4.30:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0003 ft/ft
Depth.....	0.80 ft

Computed Results:

Discharge.....	1.54 cfs
Velocity.....	0.27 fps ←
Flow Area.....	5.70 sf
Flow Top Width...	11.24 ft
Wetted Perimeter.	11.40 ft
Critical Depth...	0.18 ft
Critical Slope...	0.1007 ft/ft
Froude Number....	0.07 (flow is Subcritical)

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VII-18

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t3b OPEN CHANNEL FLOW VELOCITY

Solve For Discharge

Given Input Data:

Bottom Width.....	5.00 ft
Left Side Slope..	1.00:1 (H:V)
Right Side Slope.	1.20:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0007 ft/ft
Depth.....	1.00 ft

Computed Results:

Discharge.....	3.34 cfs
Velocity.....	0.55 fps ←
Flow Area.....	6.10 sf
Flow Top Width...	7.20 ft
Wetted Perimeter.	7.98 ft
Critical Depth...	0.24 ft
Critical Slope...	0.0902 ft/ft
Froude Number....	0.10 (flow is Subcritical)

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VII - 19

A-605

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: SR 45 PRE-BASIN F

Comment: t3c: OPEN CHANNEL FLOW VELOCITY

Solve For Discharge

Given Input Data:

Bottom Width.....	0.00 ft
Left Side Slope..	1.00:1 (H:V)
Right Side Slope.	1.00:1 (H:V)
Manning's n.....	0.060
Channel Slope....	0.0032 ft/ft
Depth.....	0.50 ft

Computed Results:

Discharge.....	0.11 cfs
Velocity.....	0.44 fps ←
Flow Area.....	0.25 sf
Flow Top Width...	1.00 ft
Wetted Perimeter.	1.41 ft
Critical Depth...	0.24 ft
Critical Slope...	0.1695 ft/ft
Froude Number....	0.16 (flow is Subcritical)

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Henigar & Ray

CLS 9/26/94

PROJECT: SR 45 BASIN F

made by: IWM date: 4/25/94 job no. 21663

checked by: _____ date: _____ sheet no. 1/1

BASIN F
POST DEVELOPMENT HYDROLOGY

* TO POND F

COMPOSITE CN = [(2.01 + .11 + .11 + .01 + 2.14
+ .05 + .03 + .003 + .04 + .004) 98
+ (0.05 + .06 + .06 + .03 + .05 + .13
+ .01 + .03 + .03 + .04 + .04 + .01
+ .02 + .02 + .38) 79 + (.89) 76
+ (.38) 94 + (.15 + .03) 98
+ (.01 + .02 + .08) 79 − .15 (79)] ÷ 6.88
= 92.35

POST "TO POND" = 6.88 Ac @ CN = 92.35

* TO LAKE

POST "TO LAKE" = 0.09 Ac @ CN = 98

* ON POND F

POST ON POND = 1.05 Ac @ CN = 100

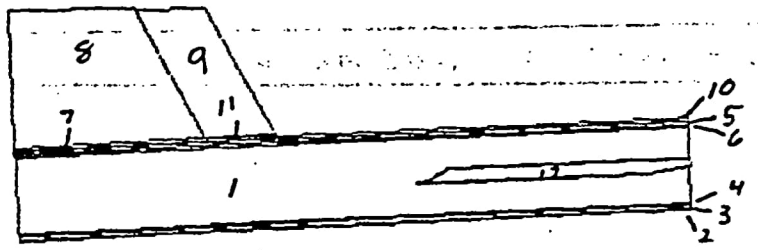
* SEE SUBSEQUENT DIGITIZED AREAS FOR DOCUMENTATION

SR 45 BASIN F

POST DEVELOPMENT HYDROLOGY

STA 165+0 TO 174+0

No.	sq.ft	acres	LAND USE	CN
1	87589.97	2.01	PAVEMENT	98 ✓
2	2165.22	0.05	OPEN (F)	79 ✓
3	4646.95	0.11	PAVEMENT	98 ✓
4	2432.15	0.06	OPEN (F)	79 ✓
5	4686.15	0.11	PAVEMENT	98 ✓
6	2599.07	0.06	OPEN (F)	79 ✓
7	1379.83	0.03	OPEN (F)	79 ✓
8	38656.99	0.89	WOODS/GRASS (F)	76 ✓
9	16626.44	0.38	COMMERCIAL	94 ✓
10	2104.54	0.05	OPEN (F)	79 ✓
11	489.82	0.01	PAVEMENT	98 ✓
12	5755.67	0.13	OPEN (F)	79 ✓



1" = 250'

165+0

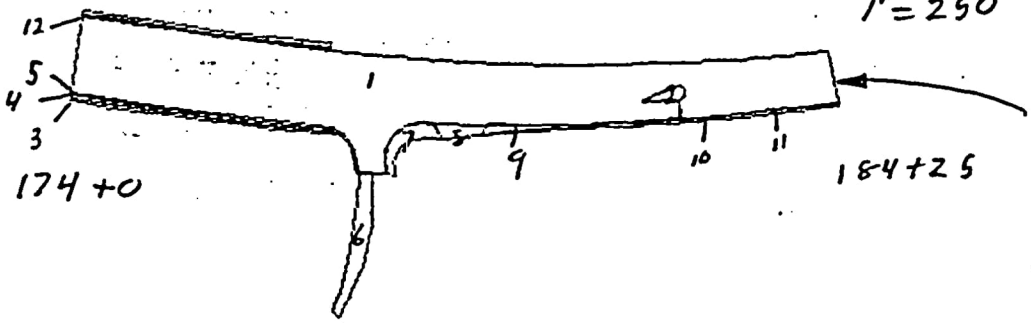
174+0

SR 45 BASIN F

Post Development Hydrology

STA 174+0 TO 184+25

No.	sq.ft	acres	LANDUSE	CN
1	93339.58	2.14	PAVEMENT	98 ✓
2	620.39	0.01	OPEN (F)	79 ✓
3	1235.47	0.03	OPEN (F)	79 ✓
4	1992.70	0.05	PAVEMENT	98 ✓
5	1139.52	0.03	OPEN (F)	79 ✓
6	3940.46	0.09	PAVEMENT (TO LAKE)	98 * ✓
7	1846.64	0.04	OPEN (F)	79 ✓
8	+1096.66	+0.03	PAVEMENT	98 ✓
~~8~~	~~1352.98~~	~~0.04~~		
9	1884.53	0.04	OPEN (F)	79 ✓
10	125.48	0.00	PAVEMENT (.003 AC)	98 ✓
11	635.46	0.01	OPEN (F)	79 ✓
12	1011.94	0.02	OPEN (F)	79 ✓



1" = 250'

AREA EXTENDED TO 184+40 SEE SUBSEQUENT SHEETS

608

VII-23

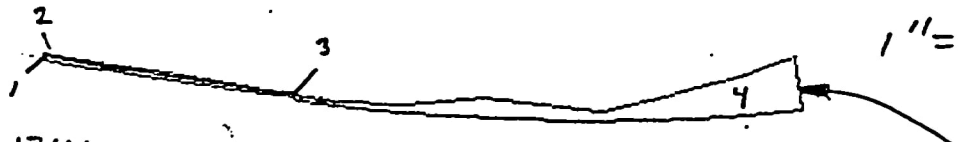
A-609

SR 45 BASIN F

Post Development Hydrology

ADDITIONAL AREAS STA 174+0 TO 184+25

No.	sq.ft	acres	LAND USE	CN
1	1797.04	0.04	PAVEMENT	98 ✓
2	933.09	0.02	OPEN (F)	79 ✓
3	169.44	0.00	PAVEMENT (.004AC)	98 ✓
4	16582.77	0.38	OPEN (F)	79 ✓



1"=250'

AREA EXTENDED TO 184+40 SEE SUBSEQUENT SHEETS

609

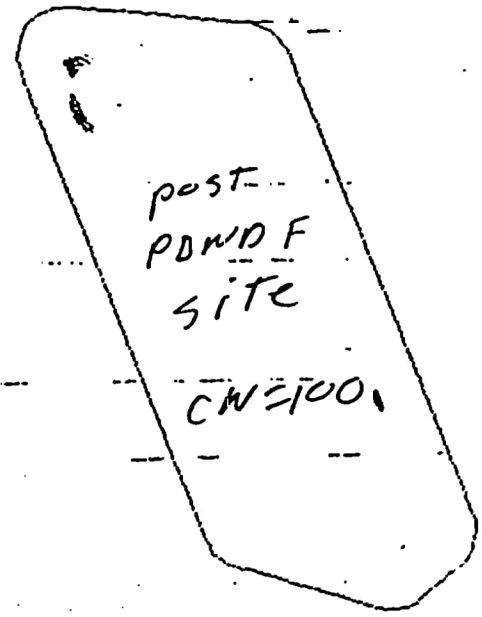
VII-24

A-610

SR45 POND F

post-development Hydrology

No.	sq.ft	acres	LAND USE	CN
1	45845.91	1.05	WATER	100



1"=100'

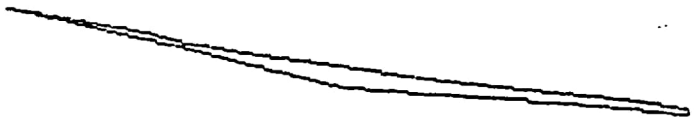
610

III-25

SR45 – BASIN F

ADDITIONAL AREA RESULTING FROM NEW SIDEWALK

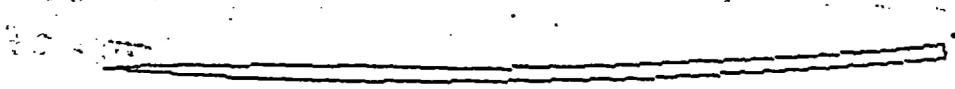
No.	sq.ft	acres	LAND USE	CN
1	493.06	0.01	OPEN(F)	79



STA 177+00 to 179+00 LT

No.	sq.ft	acres	LAND USE	CN
1	3309.98	0.08	OPEN(F)	79

611



STA 180+00 to 184+40

VII-26

Henigar & Ray

PROJECT: SR45 - BASIN F

made by: CLJ date: 9-26-94 job no. 21663

checked by: _____ date: _____ sheet no. 1/1

ADDITIONAL AREA

AS A RESULT OF SIDEWALK BEING ADDED THE EQUIVALENT TREATMENT CHANGED AND THE STATION OF THE LAST STORM INLETS WAS REVISED FROM 184+25 to 184+40.

THE FOLLOWING NEW AREAS HAVE BEEN ADDED:

$$\text{TOTAL} = 15'(156') \div 43560 = .054 \text{ Ac}$$

$$\text{IMPERVIOUS} = \text{SIDEWALK} + \text{ROADWAY}$$

$$= \left[30'(5') + \left(\frac{70+69}{2}\right)(15)\right] \div 43560$$

$$= 1{,}192.50 \text{ SF}$$

$$= .027 \text{ Ac}$$

NEW AREA = .05 Ac
GRASS = .02 Ac
IMPERV. = .03 Ac

612

VII-27

Henigar & Ray made by: CLJ date: 9-26-94 job no. 21663

PROJECT: SR45 BASIN F checked by: _____ date: _____ sheet no. 1/1

NEW IMPERVIOUS DUE TO SIDEWALK

SIDE
LEFT
RIGHT

Area = (18440 − 17737.9)(5)
+ (18440 − 17869.57 + 60)(5)
= 702.1 (5) + 630.43 (5)
= 6662.65 SF
= .15 Ac

Henigar & Ray

made by: TWM date: 4/27/94 job no. 2163

checked by: _____ date: _____ sheet no. 1

PROJECT: SR 45 BASIN F

BASIN E

POST DEVELOPMENT TIMES OF CONCENTRATION

TO POND

$t_c = t_1 + t_2$

WHERE: t_1 = SHEET FLOW TRAVEL TIME
t_2 = STORM SEWER TRAVEL TIME

t_1 (STA 166+59 LT)

FROM FDOT DRAINAGE MANUAL, VOL 2A

$$t = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: t = OVERLAND TRAVEL TIME (min)
n = MANNING'S Coeff. FOR SHEET FLOW = 0.2
I = RAINFALL INTENSITY (in/hr)
S = AVERAGE SLOPE = 0.0032 ft/ft
L = 250'

FROM IDF CURVE (ZONE 6, 25 YR EVENT)

$I = 5.55$ in/hr $\Rightarrow$ $t = 27.69$ min

$t_1 = 27.69$ min

t_2

FROM FDOT STORM SEWER PROGRAM

$t_2 = 3.5$ min

$t_c = t_1 + t_2 = 27.69 + 3.5 = 31.19$ min

POST t_c TO POND = 31.19 min

614

VII-29

A-615

Henigar & Ray

made by: JWM date: 4/27/94 job no. 21663

PROJECT: SR 45 BASIN F checked by: _____ date: _____ sheet no. 21

BASIN F

POST DEVELOPMENT TIMES OF CONCENTRATION cont.

TO LAKE

POST TO LAKE	= 10 min = 0.167 hr

ON POND

POST ON POND	= 0

SR45 BASIN
POST
2 Year
3 Year
10 Year
25 Year
50 Year
100 Year
5.55

616

VII - 31

SYSTEM F

POND DESIGN

CALCULATIONS

Henigar & Ray

PROJECT: SR 45 BASIN F

made by: TWM date: 4/27/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

POND DESIGN CALCULATIONS

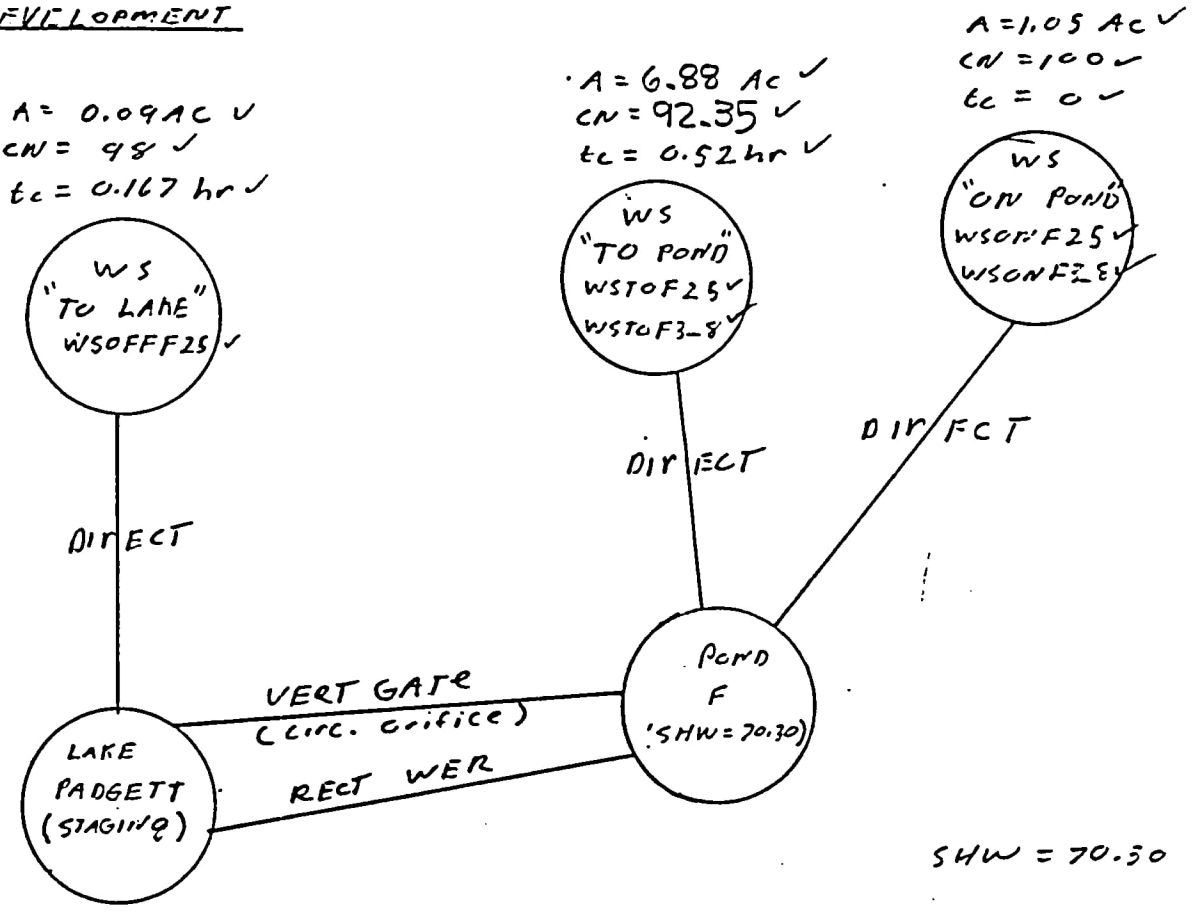
PRE- DEVELOPMENT



A = 14.50 Ac
CN = 87.48
tc = 1.21 hr ✓

HYDROGRAPH ONLY

POST DEVELOPMENT



SHW = 70.30

Structure #13
LAKE PADGETT 25 yr

Time (hr)	0	5	10	15	20	22.5	30	45	60
STAGE (ft)	69.8	69.86	70.07	71.41	71.59	71.62	71.5	71.20	70.99

3 yr staging

0 hr	5	10
69.8 ft	69.82	69.91

WATER QUALITY VOLUME
24,285 cf

618

Henigar & Ray

PROJECT: SR 45 BASIN F

made by: TWM date: 4/25/94 job no. 21063
checked by: _____ date: _____ sheet no. 1/1

BASIN F WATER QUALITY VOLUME

PROJECT AREA WITHIN R/W AND BASIN F LIMITS

STA 165 TO 174	2.76 Ac
STA 174 TO 180+68	2.08 Ac
	4.84 Ac

DIRECTLY CONNECTED IMPERVIOUS AREAS

1.19 Ac
0.61 Ac
0.05 Ac
1.85

WATER QUALITY VOLUME

WATER QUALITY VOLUME COMPUTED FROM 1" OF RUNOFF FROM PROJECT AREA AND ALL DIRECTLY CONNECTED IMPERVIOUS AREAS.

$$4.84 + 1.85 = 6.69 \text{ Ac}$$

$$1 \text{ in} * \frac{1 \text{ FT}}{12 \text{ in}} * 6.69 \text{ Ac} * \frac{43560.17 \text{ ft}^2}{1 \text{ Ac}} = 24{,}285 \text{ cf}$$

WATER QUALITY VOLUME = 24,285 cf

SR 45 POND F

INPUT FOR WATER QUALITY VOLUME STAGE

Window 0,0 - 24,79

NODE	NODE NAME	NODE TYPE	RECORD#: 1			
0000	STAGING	STAGING	00	TOP EL... 72.8 (TOP)		TOP AREA. 1.19
0001	POND F	POND ←	01	EL..... Optional		AREA..... Optional
0002			02	EL..... Optional		AREA..... Optional
0003			03	EL..... Optional		AREA..... Optional
0004			04	EL..... Optional		AREA..... Optional
0005			05	EL..... Optional		AREA..... Optional
0006			06	EL..... Optional		AREA..... Optional
0007			07	EL..... Optional		AREA..... Optional
0008			08	EL..... Optional		AREA..... Optional
0009			09	EL..... Optional		AREA..... Optional
0010			10	BOT EL... 70.3 (SHW)		BOT AREA. 0.763
0011			11	----------		----------
0012			12	TOP LF... Optional		SIDE %PER Optional
0013			13	MID LF... Optional		BASE %PER Optional
0014			14	BOT LF... Optional		
0015			15			
0016			16	----------		----------
0017			17	BASE CFS. 0.0		STAGE TO. 72.8 ←
0018			18	X COORD.. Optional		Y COORD.. Optional

Press RETURN to Set/Reset Type

SET NODE TYPES, RIGHT CURSOR INTO DATA WINDOW; HOME WHEN DONE

620

SR 45 POND F

STAGE 2 REQUIRED WATER QUALITY VOLUME ✓

BRN 3.2 Project F_STAGE
Node 1, POND F, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	72.800	0.0	0.0	106341.0	
0.10	72.736	0.0	2721.6	103619.0	
0.20	72.673	0.0	5407.8	100933.0	
0.30	72.611	0.0	8058.8	98282.0	
0.40	72.549	0.0	10674.5	95666.4	
0.50	72.488	0.0	13254.8	93086.0	
0.60	72.429	0.0	15800.0	90540.9	
0.70	72.370	0.0	18309.7	88031.2	
0.80	72.311	0.0	20784.2	85556.6	
0.90	72.254	0.0	23223.5	83117.4	REQ'D WATER
1.00	72.198	0.0	25627.3	80713.6	QUALITY VOL
4.00	70.888	← 70.88 0.0	81324.7	25016.2	← 24,285 cf
4.10	70.857	0.0	82632.6	23708.3	
17.00	70.301	0.0	106279.0	61.7	
17.10	70.301	0.0	106282.0	59.0	
17.20	70.301	0.0	106284.0	56.5	
17.30	70.301	0.0	106287.0	54.1	
17.40	70.301	0.0	106289.0	51.8	
17.50	70.301	0.0	106291.0	49.5	
17.60	70.301	0.0	106293.0	47.4	
17.70	70.301	0.0	106295.0	45.4	
17.80	70.301	0.0	106297.0	43.5	
17.90	70.301	0.0	106298.0	42.5	
18.00	70.301	0.0	106298.0	42.5	

USE 70.88 FOR WATER QUALITY CONTAINMENT

(OVERFLOW EL = 70.88)

SR 45 POND F

INPUT FOR 36/Co hr BLEED DOWN CRITERIA ✓

Window 0,0 - 24,79

PROJECT FAD; POND F (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF				
72.8(TOP)	151836.4	1e+06	106340.85	TOP EL...	72.8	TOP AREA.	1.19
70.3(SHW)	33236.28	1e+06	10.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	70.3	BOT AREA.	0.763
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
						OVERFLOW EL 7	
				BASE CFS.	0.0	STAGE T0.	70.88
				X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

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SR 45 POND F
DRAW DOWN MODEL

2/15/95

Report on Paths of Project FAD.

Path..... 000, VERT GATE			
Upper Node 001, POND F			
Lower Node 000, STAGING			
CREST EL	70.300	INPUT ID	796491742
WIDTH...	0.146	T0 CFS..	0.06
HEIGHT..	0.146	T0 CF...	0.00
ORFC C..	0.600	MAX IN..	0.06
SHAPE...	CIRCULAR	MIN IN..	0.04
FLAPGATE	NO	MAX OUT.	0.06
HANDLE..		MIN OUT.	0.04
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	72.800	FWD X...	0.00
MAX TW..	72.800	REV X...	0.00

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KH-37

Report on Nodes of Project FAD.

ode..... 000, STAGING					
FLOOD EL.	72.800	PE TO KE.	YES	INPUT ID.....	79691156
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS		STAGE EL.		INITIAL STAGE ELEVATION.....	70.0(
TIME, HRS		STAGE EL.		INITIAL STORAGE, CUBIC FEET..	0.0(
TIME, HRS		STAGE EL.		MAXIMUM STAGE REACHED.....	70.0(
TIME, HRS		STAGE EL.		MINIMUM STAGE REACHED.....	70.0(
TIME, HRS		STAGE EL.		MAXIMUM GROSS STORAGE, CF....	0.0(
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.0(
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	70.0(
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	0.0(
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.0(
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	0.0(
				TIME OF PEAK INTAKE, HOURS...	0.0(
				PEAK NODAL OUTPUT, CFS.....	0.0(
				TIME OF PEAK OUTPUT, HOURS...	0.0(
		STAGE T0.	70.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0(

Node..... 001, POND					
TOP EL...	72.800	TOP AREA.	1.190	INPUT ID.....	796913816
EL.....		AREA.....		FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	70.8(
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	24670.8(
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	70.8(
EL.....		AREA.....		MINIMUM STAGE REACHED.....	70.64
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	24670.8(
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	
EL.....		AREA.....		FINAL STAGE ELEVATION.....	70.64
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	0.0(
BOT EL...	70.300	BOT AREA.	0.763	TIME OF MINIMUM STAGE, HOURS.	60.0(
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	0.0(
BOT LF...				TIME OF PEAK INTAKE, HOURS...	0.0(
				PEAK NODAL OUTPUT, CFS.....	0.0(
				TIME OF PEAK OUTPUT, HOURS...	0.0(
BASE CFS.	0.000	STAGE T0.	70.880	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0(

SR 45 POND F

36/60 hr BLEED DOWN CRITERIA ✓

BRN 3.2 Project FAD
Node 1, POND F, POND

Hour	Stage El.	CF Intake	CF Output	CF Storage	
0.00	70.880	0.0	0.0	24670.8	← W.Q.
0.10	70.879	0.0	20.2	24650.7	volume
0.20	70.879	0.0	40.3	24630.5	provided
0.30	70.879	0.0	60.4	24610.4	
0.40	70.878	0.0	80.6	24590.3	
0.50	70.878	0.0	100.7	24570.2	
0.60	70.877	0.0	120.8	24550.0	
0.70	70.877	0.0	140.9	24529.9	
0.80	70.876	0.0	161.0	24509.9	
0.90	70.876	0.0	181.1	24489.8	
1.00	70.875	0.0	201.1	24469.7	
36.00	70.724 ←	0.0	6646.6	18024.3	
59.00	70.639	0.0	10244.4	14426.4	
59.10	70.639	0.0	10259.0	14411.8	
59.20	70.638	0.0	10273.6	14397.2	
59.30	70.638	0.0	10288.2	14382.6	
59.40	70.638	0.0	10302.9	14368.0	
59.50	70.638	0.0	10317.4	14353.4	
59.60	70.637	0.0	10332.0	14338.8	
59.70	70.637	0.0	10346.6	14324.2	
59.80	70.636	0.0	10361.2	14309.7	
59.90	70.636	0.0	10375.7	14295.1	
60.00	70.636	0.0	10390.3	14280.5 ←	

- REQUIRED WATER QUALITY VOLUME = 24,285 cf
- STORAGE REMAINING AT HOUR 60 = 14,281 cf

  14,281 cf > ½ * 24,285 cf = 12,143 cf

  ∴ 60 hour criterion met

- BEGIN ATTENUATION AT STAGE 70.73

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A-626

Henigar & Ray

PROJECT: SR 45 BASIN F

made by: TWM date: 4/25/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

BASIN F POST DEVELOPMENT 25yr - 24hr RATIONAL C

CONVERSION OF COMPOSITE CN TO RATIONAL C (25yr - 24hr) FOR PERMANENT WET POOL DESIGN

COMPOSITE CN (TO ROAD E) = 92.35
25yr - 24 hr STORM PRECIPITATION = 9.00 in

FROM SCS' TR 55:

$$S = \frac{1000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{(P + .8S)}$$

WHERE; Q = RUNOFF (in)
P = RAINFALL = 9.00 in
S = RETENTION AFTER RUNOFF BEGINS (in)
C = RATIONAL COEFFICIENT

$$C = \frac{Q}{P}$$

$$S = \frac{1000}{92.35} - 10 = 0.8284 \text{ in}$$

$$Q = \frac{[9.00 - .2(.8284)]^2}{(9.00 + .8(.8284))} = 8.07 \text{ in}$$

$$C = \frac{8.07 \text{ in}}{9.00 \text{ in}} = .897 \cong .90$$

BASIN F WET POOL DESIGN C = .90

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A-627

Henigar & Ray

PROJECT: SR 45 BASIN F

made by: TWM date: 4/25/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

POND F

REQUIRED PERMANENT WET POOL VOLUME

WS TO POND F = 6.88 Ac @ C = 0.90
WS ON POND F = 1.05 Ac @ C = 1.00
COMPOSITE C = $\frac{6.88(.90) + 1.05(1.00)}{(6.88 + 1.05)} = .91$

- 14 DAY RESIDENCE TIME VOLUME
  = 0.2968 (C) * WS AREA
  = 0.2968 (.91) * 7.93
  = 2.14 Ac · ft

- AS 0.667 in OF RUNOFF (Vmin)

  Vmin = $0.667 \text{ in} * \frac{1 \text{ ft}}{12 \text{ in}} * 7.93 \text{ Ac}$

  = 0.44 Ac · ft

  2.14 Ac · ft controls

REQUIRED PERMANENT WET POOL VOLUME
= 2.14 Ac · ft

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A-628

SR 45 pond F

Provided Permanent wet pool volume ✓

Window 0,0 - 24,79

PROJECT FWETVOL; POND F (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF					
170.3 (SHW)	33236.28	1-1e+06	131141.81	TOP EL...	70.3	TOP AREA.	0.763
167.5	14810.4	1-1e+06	63876.395	EL.....	67.5	AREA.....	0.34
162.3 (BOT)	9757.44	1-1e+06	0.0	EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				EL.....	Optional	AREA.....	Optional
				BOT EL...	62.3	BOT AREA.	0.224
				TOP LF...	Optional	SIDE %PER	Optional
				MID LF...	Optional	BASE %PER	Optional
				BOT LF...	Optional		
				BASE CFS.	0.0	STAGE T0.	70.3
				X COORD..	Optional	Y COORD..	Optional

3.01 ac-ft

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

REQUIRED Permanent pool volume = 2.14 ac-ft

provided Permanent pool volume = 3.01 ac-ft

⇒ compliance

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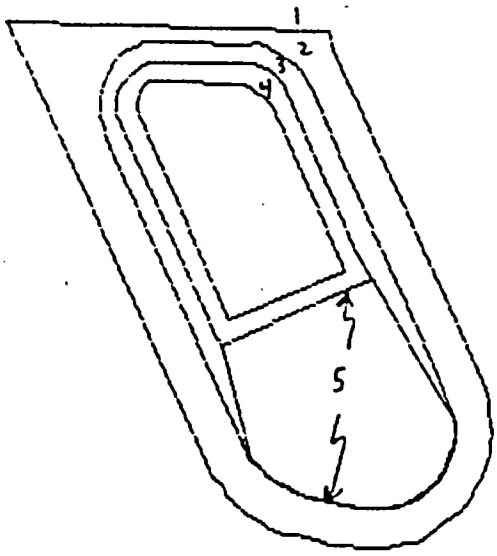
A-629

SR 45 POND F

STAGE / AREA

	STAGE, ft	AREA, AC	DESCRIPTION
Command: 1Area = 51904.1143, Perimeter = 946.5285	72.80	1.19	TOB
Command: 2Area = 33217.0414, Perimeter = 750.1975	70.30	0.763	SHW
Command: 3Area = 14797.0496, Perimeter = 487.3465	67.50	0.340	± 3.5' below outflow EL.
Command: 4Area = 9767.6581, Perimeter = 406.2326	62.30	0.224	BOT of WET Pool
Command: 5Area = 12476.7092, Perimeter = 420.0986	VARIES FROM 70.30 TO 67.50	0.286	AREA OF LITTORAL ZONE
Command:			



- REQUIRED LITTORAL ZONE AREA
  = .35 * AREA @ SHW
  = .35 * .763 = 0.267 AC

- PROVIDED LITTORAL ZONE AREA = 0.286 AC

⇒ Compliance

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SR 45 BASIN F

Pre-Development Peak Rate of Runoff

25yr - 24hr

Subares PRE DEVELOPMENT BASIN F 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_F_25
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 780847733
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 31.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 314
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.4844813
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 12.8
	PEAK CFS 26.120024 ←
	ACFT VOL 9.0407586
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

25yr - 24hr pre

peak discharge = 26.12 cfs

SR 45 BASIN F

POST condition 25yr-24hr NETWORK SUMMARY

Project PF2524, Run of Mon Apr 03 08:51:39 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS TO LAKE	LAKE	DIRECT
3	POND	LAKE	RECT WEIR
4	POND	LAKE	VERT GATE

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	WS TO LAKE	SUBAREA
4	LAKE	STAGING

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	73.80	0.00	73.80	0.00	NO
1	POND	POND	70.73	0.00	→71.63	12.60	NO
2	WS ON POND	SUBAREA	73.80	0.00	73.80	0.00	NO
3	WS TO LAKE	SUBAREA	73.80	0.00	73.80	0.00	NO
4	LAKE	STAGING	69.80	0.00	71.62	22.50	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	21.98 @ 12.40 Hours	21.98 @ 12.40 Hours
1	POND	25.32 @ 12.30 Hours	20.59 @ 12.60 Hours
2	WS ON POND	8.68 @ 12.00 Hours	8.68 @ 12.00 Hours
3	WS TO LAKE	0.47 @ 12.10 Hours	0.47 @ 12.10 Hours
4	LAKE	→ 20.80 @ 12.60 Hours	0.00 @ 0.00 Hours

PRE 25yr-24hr peak rate = 20.12cfs

POST 25yr-24hr Peak rate = 20.80 cfs

⇒ compliance

25yr-24hr DHV = 71.63

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IR 45 Basin F
25yr-24hr post hydrographs

Subarea POST WS TO POND F 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOF25
TOTAL DRAINAGE AREA, ACRES... 6.88	INPUT ID 780848543
WEIGHTED SCS CURVE NUMBER.... 92.35	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.2
TIME OF CONCENTRATION, HOURS. 0.52	DT, HRS. 0.1
	DATA PTS 273
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.0769711
	ACREAGE. 6.88
	TC, HRS. 0.52
	TP, HRS. 12.4
	PEAK CFS 21.982212
	ACFT VOL 4.629266
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WS ON POND F 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONF25
TOTAL DRAINAGE AREA, ACRES... 1.05	INPUT ID 780849290
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 251
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 9.0
	ACREAGE. 1.05
	TC, HRS. 0.0
	TP, HRS. 12.0
	PEAK CFS 8.6794395
	ACFT VOL 0.78724
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN F
25yr -24hr post Hydrographs cont

Subarea POST WS TO LAKE 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSOFFF25
TOTAL DRAINAGE AREA, ACRES... 0.09	INPUT ID 767540962
WEIGHTED SCS CURVE NUMBER.... 98.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 25.1
TIME OF CONCENTRATION, HOURS. 0.167	DT, HRS. 0.1
	DATA PTS 252
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 8.7596474
	ACREAGE. 0.09
	TC, HRS. 0.167
	TP, HRS. 12.1
	PEAK CFS 0.470432
	ACFT VOL 0.065675
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN F

post condition 25yr-24hr PATHS REPORT

Report on Paths of Project PF2524.

```
-------------------------------------
        Path...... 000, DIRECT
      Upper Node 000, WS TO POND
         Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 767542578
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      21.98
                  |MIN IN..       0.00
                  |MAX OUT.      21.98
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    73.800|FWD X...       0.00
TW EL...    72.800|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
      Upper Node 002, WS ON POND
         Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 767542603
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       8.68
                  |MIN IN..       0.00
                  |MAX OUT.       8.68
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    73.800|FWD X...       0.00
TW EL...    72.800|REV X...       0.00
-------------------------------------
```

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```
-------------------------------------
        Path...... 002, DIRECT
      Upper Node 003, WS TO LAKE
         Lower Node 004, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 767542643
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       0.47
                  |MIN IN..       0.00
                  |MAX OUT.       0.47
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    73.800|FWD X...       0.00
TW EL...    72.800|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 003, RECT WEIR
         Upper Node 001, POND
         Lower Node 004, LAKE
-------------------------------------
CREST EL    70.880|INPUT ID 796916917
WIDTH...    10.000|T0 CFS..       0.00
WEIR C..     3.200|T0 CF...       0.00
NUM ENDS     2    |MAX IN..      20.51
-------- ---------|MIN IN..       0.00
BREADTH.          |MAX OUT.      20.51
-------- ---------|MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE YES      |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
MAX HW..    72.800|FWD X...       0.00
MAX TW..    72.800|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 004, VERT GATE
         Upper Node 001, POND
         Lower Node 004, LAKE
-------------------------------------
CREST EL     70.300|INPUT ID 780873999
WIDTH...      0.146|T0 CFS..       0.05
HEIGHT..      0.146|T0 CF...       0.00
ORFC C..      0.600|MAX IN..       0.08
SHAPE... CIRCULAR |MIN IN..       0.00
FLAPGATE NO       |MAX OUT.       0.08
HANDLE..          |MIN OUT.       0.00
         -------- ----------|
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE YES      |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
MAX HW..    72.800|FWD X...       0.00
MAX TW..    72.800|REV X...       0.00
-------------------------------------
```

SR 45 Basin F

Post condition 25yr-24hr Nodes Report

Report on Nodes of Project PF2524.

Node..... 000, SUBAREA

FILE NAME WSTOF25	FLOOD EL. 73.800	INPUT ID.....	796916990
INPUT ID# 780848543		FLOOD ELEVATION REACHED.....	NO
ALT TYPE. RNF0002		INITIAL STAGE ELEVATION.....	73.80
RUN, HRS. 27.200		INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS.. 0.100		MAXIMUM STAGE REACHED.....	73.80
DATA PTS. 273		MINIMUM STAGE REACHED.....	73.80
STORM.... SCS_IIM		MAXIMUM GROSS STORAGE, CF....	0.00
HOURS.... 24.000		MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL. 9.000		FINAL STAGE ELEVATION.....	73.80
EXCESS... 8.077		TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE.. 6.880		TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS.. 0.520			
TP, HRS.. 12.400			
PEAK CFS. 21.982		PEAK NODAL INTAKE, CFS.....	21.98
ACFT VOL. 4.629		TIME OF PEAK INTAKE, HOURS...	12.40
EXECUTED. YES		PEAK NODAL OUTPUT, CFS.....	21.98
		TIME OF PEAK OUTPUT, HOURS...	12.40
BASE CFS. 0.000		POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL... 72.800	TOP AREA. 1.190	INPUT ID.....	796916975
EL.....	AREA.....	FLOOD ELEVATION REACHED.....	NO
EL.....	AREA.....	INITIAL STAGE ELEVATION.....	70.73
EL.....	AREA.....	INITIAL STORAGE, CUBIC FEET..	18290.60
EL.....	AREA.....	MAXIMUM STAGE REACHED.....	71.63
EL.....	AREA.....	MINIMUM STAGE REACHED.....	70.73
EL.....	AREA.....	MAXIMUM GROSS STORAGE, CF....	56587.00
EL.....	AREA.....	MAXIMUM DETENTION STORAGE, CF	38296.40
EL.....	AREA.....	FINAL STAGE ELEVATION.....	71.61
EL.....	AREA.....	TIME OF MAXIMUM STAGE, HOURS.	12.60
BOT EL... 70.300	BOT AREA. 0.763	TIME OF MINIMUM STAGE, HOURS.	0.00
TOP LF...	SIDE XPER		
MID LF...	BASE XPER	PEAK NODAL INTAKE, CFS.....	25.32
BOT LF...		TIME OF PEAK INTAKE, HOURS...	12.30
		PEAK NODAL OUTPUT, CFS.....	20.59
		TIME OF PEAK OUTPUT, HOURS...	12.60
BASE CFS. 0.000	STAGE TO. 70.730	POINTS OUT OF TOLERANCE.....	0
Y COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

```
Node...... 002, SUBAREA
 ILE NAME WSONF25  |FLOOD EL.     73.800||INPUT ID..................... 79691
INPUT ID# 780849290|--------- ---------||FLOOD ELEVATION REACHED...... NO
ALT TYPE. RNF0002  |                    ||INITIAL STAGE ELEVATION......      73.8
RUN, HRS.    25.000|                    ||INITIAL STORAGE, CUBIC FEET..       0.0
DT, HRS..     0.100|                    ||MAXIMUM STAGE REACHED........      73.8
DATA PTS.   251    |                    ||MINIMUM STAGE REACHED........      73.8
STORM.... SCS_IIM  |                    ||MAXIMUM GROSS STORAGE, CF....       0.0
HOURS....    24.000|                    ||MAXIMUM DETENTION STORAGE, CF       0.0
RAINFALL.     9.000|                    ||FINAL STAGE ELEVATION........      73.8
EXCESS...     9.000|                    ||TIME OF MAXIMUM STAGE, HOURS.       0.0
ACREAGE..     1.050|                    ||TIME OF MINIMUM STAGE, HOURS.       0.0
TC, HRS..          |                    ||
TP, HRS..    12.000|                    ||
PEAK CFS.     8.679|                    ||PEAK NODAL INTAKE, CFS.......       8.6
ACFT VOL.     0.787|                    ||TIME OF PEAK INTAKE, HOURS...      12.0
EXECUTED. YES      |                    ||PEAK NODAL OUTPUT, CFS.......       8.6
--------- ---------|--------- ---------||TIME OF PEAK OUTPUT, HOURS...      12.0
BASE CFS.     0.000|                    ||POINTS OUT OF TOLERANCE......       0
X COORD..          |Y COORD..           ||MAXIMUM STAGE ERROR..........       0.0

Node...... 003, SUBAREA
FILE NAME WSOFFF25 |FLOOD EL.     73.800||INPUT ID..................... 796917034
INPUT ID# 767540962|--------- ---------||FLOOD ELEVATION REACHED...... NO
ALT TYPE. RNF0002  |                    ||INITIAL STAGE ELEVATION......      73.8
RUN, HRS.    25.100|                    ||INITIAL STORAGE, CUBIC FEET..       0.0
DT, HRS..     0.100|                    ||MAXIMUM STAGE REACHED........      73.8
DATA PTS.   252    |                    ||MINIMUM STAGE REACHED........      73.8
STORM.... SCS_IIM  |                    ||MAXIMUM GROSS STORAGE, CF....       0.0
HOURS....    24.000|                    ||MAXIMUM DETENTION STORAGE, CF       0.0
RAINFALL.     9.000|                    ||FINAL STAGE ELEVATION........      73.8
EXCESS...     8.760|                    ||TIME OF MAXIMUM STAGE, HOURS.       0.0
ACREAGE..     0.090|                    ||TIME OF MINIMUM STAGE, HOURS.       0.0
TC, HRS..     0.167|                    ||
TP, HRS..    12.100|                    ||
PEAK CFS.     0.470|                    ||PEAK NODAL INTAKE, CFS.......       0.47
ACFT VOL.     0.066|                    ||TIME OF PEAK INTAKE, HOURS...      12.1
EXECUTED. YES      |                    ||PEAK NODAL OUTPUT, CFS.......       0.47
--------- ---------|--------- ---------||TIME OF PEAK OUTPUT, HOURS...      12.1
BASE CFS.     0.000|                    ||POINTS OUT OF TOLERANCE......       0
X COORD..          |Y COORD..           ||MAXIMUM STAGE ERROR..........       0.0
```

Node..... 004, STAGING

LOOD EL.	72.800	PE TO KE.	YES	INPUT ID.....	79691704
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	69.800	INITIAL STAGE ELEVATION.....	69.8
TIME, HRS	5.000	STAGE EL.	69.860	INITIAL STORAGE, CUBIC FEET..	0.0
TIME, HRS	10.000	STAGE EL.	70.070	MAXIMUM STAGE REACHED.....	71.6
TIME, HRS	15.000	STAGE EL.	71.410	MINIMUM STAGE REACHED.....	69.8
TIME, HRS	20.000	STAGE EL.	71.590	MAXIMUM GROSS STORAGE, CF....	0.0
TIME, HRS	22.500	STAGE EL.	71.620	MAXIMUM DETENTION STORAGE, CF	0.0
TIME, HRS	30.000	STAGE EL.	71.500	FINAL STAGE ELEVATION.....	71.6
TIME, HRS	45.000	STAGE EL.	71.200	TIME OF MAXIMUM STAGE, HOURS.	22.5
TIME, HRS	60.000	STAGE EL.	70.990	TIME OF MINIMUM STAGE, HOURS.	0.0
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	20.8
				TIME OF PEAK INTAKE, HOURS...	12.6
				PEAK NODAL OUTPUT, CFS.....	0.0
				TIME OF PEAK OUTPUT, HOURS...	0.0
		STAGE T0.	69.800	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

SYSTEM F

CULVERT AT

STATION 173 + 20

-- 649

3/1/95

SR 45 BASIN F

TM 1/3

Pre condition ANALYSIS for culvert at STA 173 +20

Existing Box culvert 3'x2' @ 79.5'

W INV = 73.41

E INV = 73.68

Pre condition Hydrology to culvert

pavement 163 - 175 LT * 36/2 = 21,000 ft²

pavement 175 - 180+58 * 36 = 20,088 ft²

41,088 ft²

ADDITIONAL AREA IN PRE CONDITION ONLY

		C	*1.12 50yr C	*1.25 100yr C
pavement	0.96 Ac	.95	.95	.95
open (poor)	0.25 Ac	.20	.24	.25
commercial	0.46 Ac	.95	.95	.95
pavement	0.14 Ac	.95	.95	.95
open (F)	0.29 Ac	.20	.24	.25
woods/grass (F)	0.83 Ac	.15	.18	.19
woods/grass (F)	1.25 Ac	.15	.18	.19
commercial	1.21 Ac	.95	.95	.95
commercial	0.49 Ac	.95	.95	.95
open (F)	0.26 Ac	.20	.24	.25
pavement	0.39 Ac	.95	.95	.95
open (F)	1.08 Ac	.20	.24	.25
combined AREA	49.96 Ac	—	.43	.43
From post-condition CALCS.			641	(VII-54)

3/1/95

SR 45 BASIN F

tm 2/3

Pre condition ANALYSIS For CULVERT AT STA 173+20

50 yr Composite C

$C_{50} = [(.96 + .46 + .14 + 1.21 + .49 + .39) .95$
$+ (.25 + .29 + .26 + 1.08) .24$
$+ (.83 + 1.25) .18 + (49.96) .43] \div 57.57$
$= 0.4477$

pre 50yr 57.57 AC @ C = 0.45

100 yr Composite C

$C_{100} = [(.96 + .46 + .14 + 1.21 + .49 + .39) .95$
$+ (.25 + .29 + .26 + 1.08) .25$
$+ (.83 + 1.25) .19 + (49.96) .43] \div 57.57$
$= 0.4484$

pre 100yr 57.57 AC @ C = 0.45

642

3/1/95

SR 45 BASIN F

3/-

Pre Condition ANALYSIS for culvert AT Sta 173 +20

controling t_c is For WS Flowing TO Existing Lake.

* $t_{c_{50}} = 6.7hr \Rightarrow I_{50} = 1.15 in/hr$

* $t_{c\,100} = 5.8hr \Rightarrow I_{100} = 1.42 in/hr$

$Q_T = C_T I_{t_c}$

$Q_{50} = .45 * 1.15 in/hr * 57.57 AC = 29.8 cfs$

$Q_{100} = .45 * 1.42 in/hr * 57.57 AC = 36.8 cfs$

Pre $Q_{50} = 29.8 cfs$

Post $Q_{100} = 36.8 cfs$

643

* see post condition ANALYSIS

VII -56

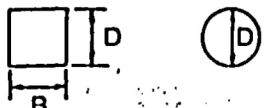
PROJECT: SR 45 BASIN F

DESIGNER: TM

Pre CULVERT ANALYSIS

DATE: 3/1/95

HYDROLOGIC AND CHANNEL INFORMATION



D = Diameter or Height
B = Span

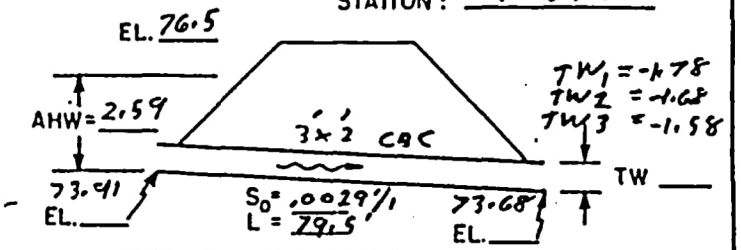
$Q_{50} = Q_1 =$ 29.8 cfs
$Q_{100} = Q_2 =$ 36.8 cfs
$Q_{OT} =$ 31 cfs

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50} OR Q_{100})

TW ELEVATIONS
$TW_1 =$ 71.9
$TW_2 =$ 72.0
$TW_3 =$ 72.1

SKETCH

STATION: 173+20



MEAN STREAM VELOCITY = ____
MAX. STREAM VELOCITY = ____
LS_o 1.23

CULVERT DESCRIPTION (ENTRANCE TYPE)	Q	SIZE		HEADWATER COMPUTATION											CONTROLLING HW	OUTLET VELOCITY	COST	COMMENTS	
				INLET CONTROL			OUTLET CONTROL HW=H+DTW-LS_o												
		D	B	$\frac{Q}{B}$	$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	DTW	LS_o	HW					
	29.8	2	3	9.9	1.27	2.5	.5	.83	1.46	1.7	-1.78	1.7	1.23	2.3	2.5	5.7	*	HW EL = 76.41	Q_{50}
	36.8	2	3	12.3	1.51	3.0	.5	1.26	1.68	1.8	-1.68	1.8	1.23	2.8	3.0	5.8	*	HW EL = 76.91	Q_{100}
	31	2	3	10.3	1.30	2.6	.5	.89	1.49	1.75	-1.58	1.75	1.23	2.4	2.6	5.8	*	HW EL = 76.51	Q_{OT}

SUMMARY & RECOMMENDATIONS:

* USED DTW Depth To Compute Hydraulic RADIOUS For INLET control Velocity

Design by _____ Checked by _____ Approved by _____

625-040-208-a
Page 32 of 82

FIGURE 8-2 Worksheet for Culvert Capacity Calculations

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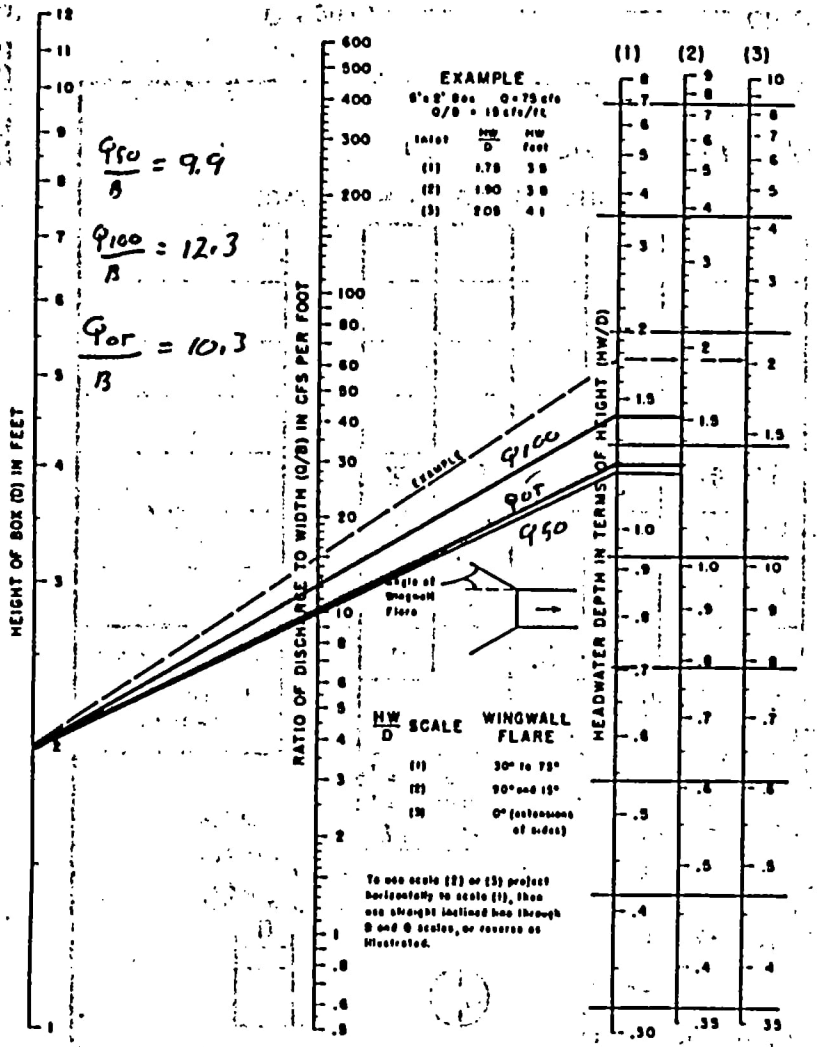
SR 45 PRE condition CULVERT ANALYSIS STA 173+20

A) INLET CHART

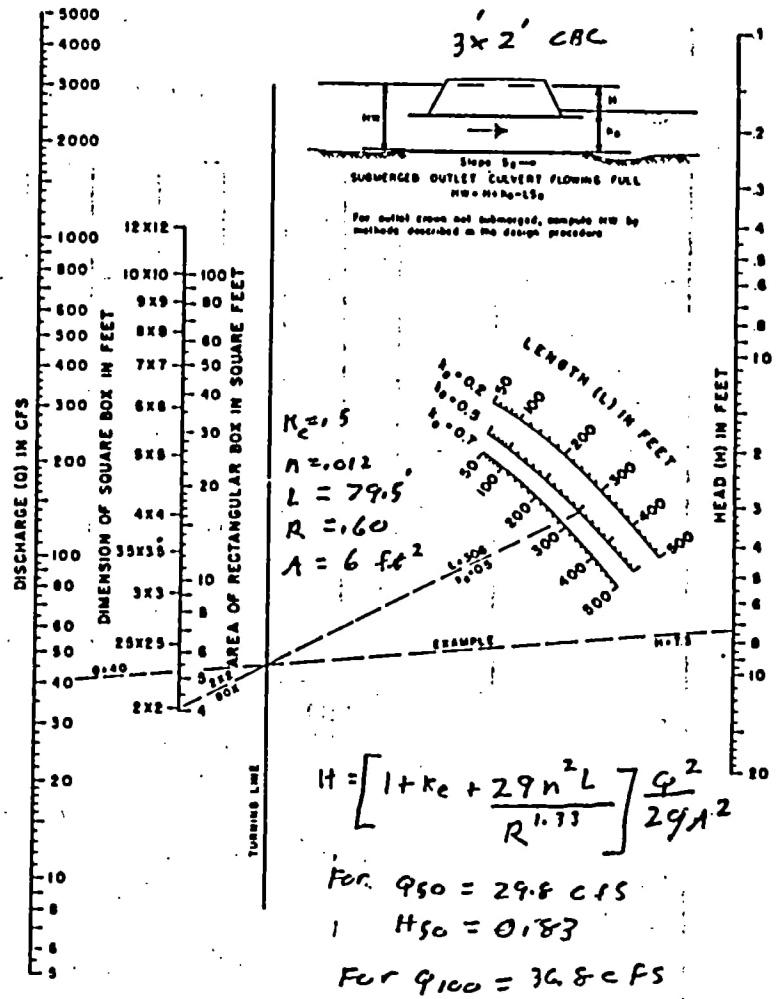


$\frac{Q_{50}}{B} = 9.9$

$\frac{Q_{100}}{B} = 12.3$

$\frac{Q_{OT}}{B} = 10.3$

B) OUTLET CHART--Flowing Full, n = 0.012



3'x 2' CBC

$K_e = 1.5$

$n = .012$

$L = 79.5'$

$R = 1.60$

$A = 6\ ft^2$

$$H = \left[1 + K_e + \frac{29 n^2 L}{R^{1.33}}\right] \frac{Q^2}{29 A^2}$$

For $Q_{50} = 29.8$ cfs

$H_{50} = 0.183$

For $Q_{100} = 36.8$ cfs

$H_{100} = 1.26$

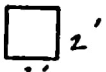
For $Q_{OT} = 31$

$H_{OT} = .189$

Reference: USDOT, FHWA, HEC-5 (1965).

Standard Format: Span x Rise

FIGURE 8-3
Inlet and Outlet Nomographs for Concrete Box Culverts



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EI-58

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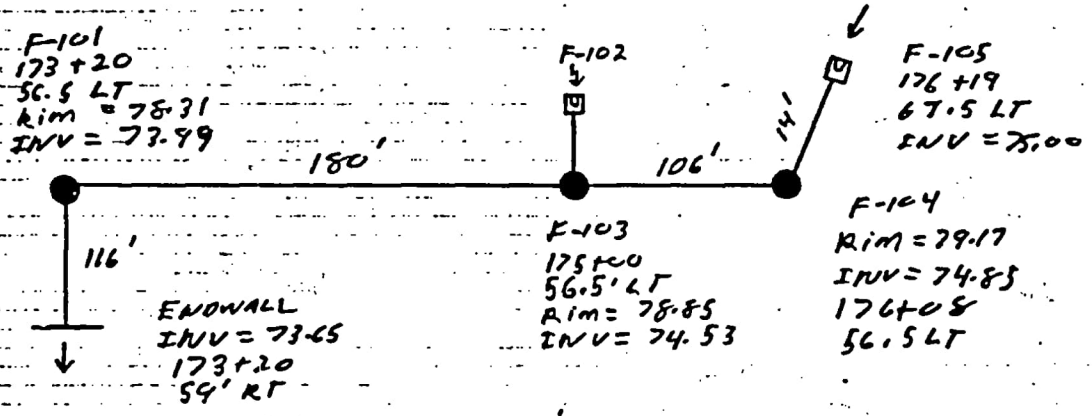
Berryman & Henigar
BSI Consultants, Inc. • Henigar & Ray, Inc.

made by: TM date: 2/24/95 job no. 2663
checked by: _____ date: _____ sheet no. 1/1

PROJECT: SR 45

POST CROSS CULVERT SYSTEM AT STA 173+20

ALL PIPE = 29" x 45" ERCP



LAKE PADGETT FLOOD PLAIN

100yr TW = 72.0 @ tc + 12hr = 17.8 hr (used 20hr. 100yr stage from SWFWMD study)

$\left(\frac{dc+d}{2}\right)_{50} = 1.9'$ $\quad dc_{50} = 1.35'$

$\left(\frac{dc+d}{2}\right)_{100} = 2.0'$ $\quad dc_{100} = 1.50'$

$q_{50} = 24.7 \text{ cfs}$

$q_{100} = 30.5 \text{ cfs}$

OVERFLOW TO PRIVATE PROPERTY OCCURS AT EL 76.5'

SR 45 WS TO CULVERT SYSTEM AT STA 176+19

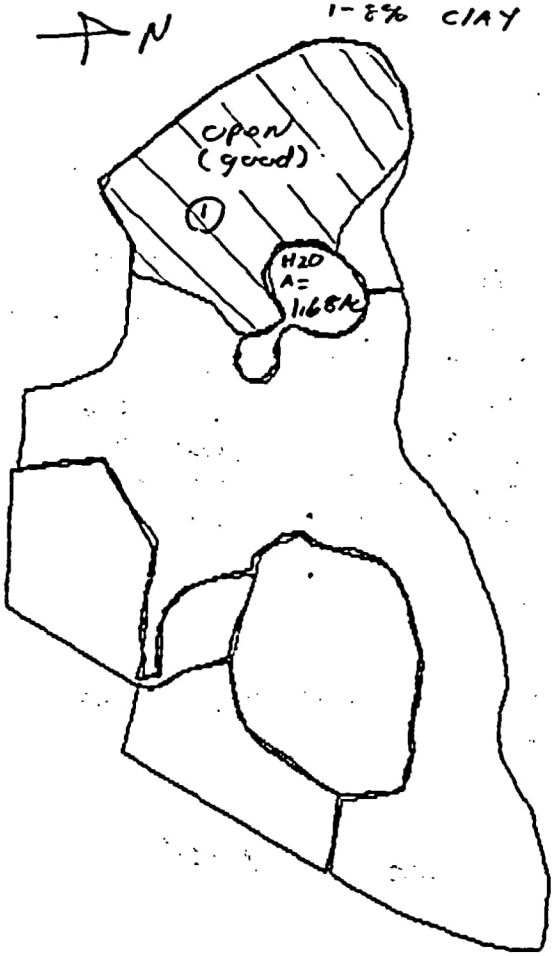
WS TO WEST DEPRESSIONAL AREA

Area = 519965.5194, Perimeter = 3076.2427

	AREA, AC	C	50yr C	100yr C
	11.94	.20	.24	.25
*	1.68	1.0	1.0	1.0

* see next sheet, Area (3)

SOIL (73) ZOLFO HYD C
FINE SAND
1-5% CLAY



100yr composite C =

$[11.94(.25) + 1.68(1.0)] \div 13.62$

$C_{100} = 0.34$

$R_{100} = C_{100} P_{100}$

$P_{100} = 11.3$ in

$R_{100} = .34 * 11.3$ in

$= 3.84$ in

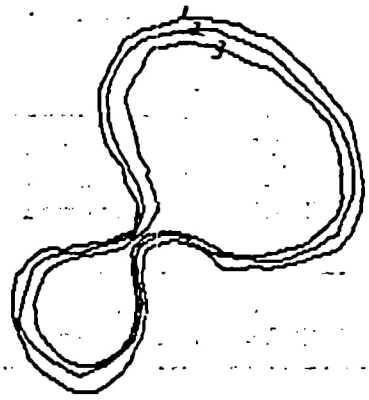
Volume = $3.84 \text{ in} * 13.62 \text{ AC} * \frac{1 \text{ ft}}{12 \text{ in}}$

100 yr runoff vol = 4.36 Ac.ft

SR 45

DEPRESSIONAL AREA IN WS DRAINING TO CULVERT SYSTEM AT STA 176+19

	EL	AREA, AC
1 Area = 110825.4051, Perimeter = 1647.7447	78	2.54
Command:		
2 Area = 92331.7636, Perimeter = 1532.5806	76	2.12
Command:		
3 Area = 73172.9157, Perimeter = 1426.3747	74 (WATER LEVEL)	1.68



VII-C1

SR 45

DEPRESSIONAL AREA IN WS DRAINING TO CULVERT SYSTEM AT STA 176+19

Window 0,0 - 24,79

PROJECT CULV_DEP; DEPRESSION (POND)

STAGE EL	AREA SF	PERIM LF	VOLUME CF
178.0	110642.4	1-1e+06	368953.19
176.0	92347.2	1-1e+06	165963.59
174.0	73616.4	1-1e+06	10.0

TOTAL VOLUME FROM EXISTING WATER ELEVATION TO BERM OVERFLOW = 8.47 AC.FT

TOP EL...	78.0	TOP AREA.	2.54
EL.....	76.0	AREA.....	2.12
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
EL.....	Optional	AREA.....	Optional
BOT EL...	74.0	BOT AREA.	1.69
TOP LF...	Optional	SIDE %PER	Optio
MID LF...	Optional	BASE %PER	Optional
BOT LF...	Optional		
BASE CFS.	0.0	STAGE T0.	78.0
X COORD..	Optional	Y COORD..	Optional

Press HOME To Return, F6 = Setup Printer, F7 = Print Screen

CONCLUSION:

SINCE THE 100YR RUNOFF VOLUME OF 4.36 AC.FT IS LESS THAN THE 8.47 AC.FT OF VOLUME CAPACITY IN THE DEPRESSIONAL AREA, THE SUB BASIN DRAINING TO THE DEPRESSION CAN BE OMITTED FROM THE WATERSHED THAT DRAINS TO THE CULVERT AT STA 176+19.

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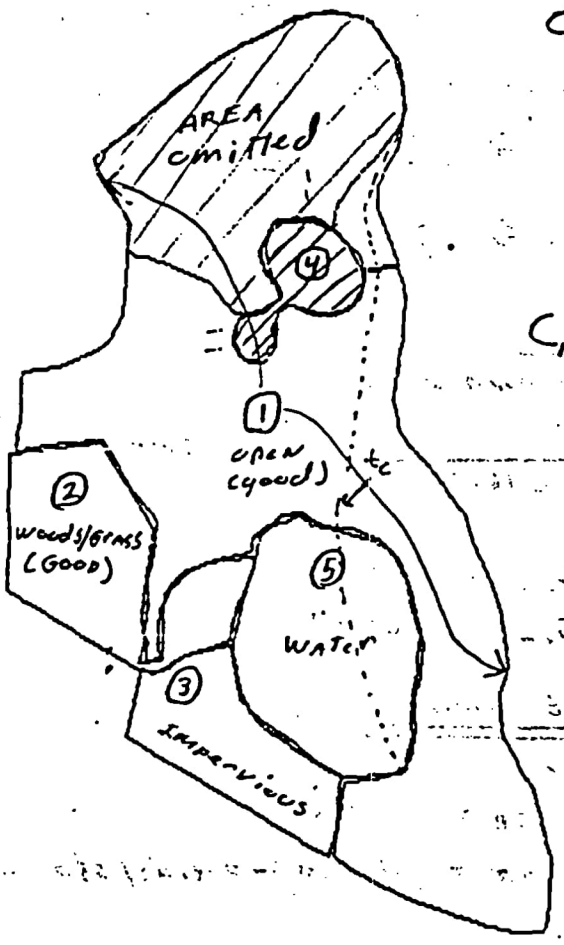
VII-62

A-650

SR 45 WS TO CULVERT SYSTEM AT STA 176+19

	AREA, AC	C	*1.2 50yr C	*1.25 100yr C
rea = 1834761.0108, Perimeter = 10884.9110	42.1 − 11.94* = 30.16	.120	.124	.125
Command:				
2 Area = 296179.5545, Perimeter = 3091.1342	6.8	.15	.18	.19
Command:				
3 Area = 202268.6482, Perimeter = 2096.9678	4.6	.95	.95	.95
Command:				
~~4 Area = 85329.3736, Perimeter = 1479.9630~~	~~2.0~~ *	omit		
Command:				
5 Area = 366928.5036, Perimeter = 2276.3695	8.4	1.0	1.0	1.0

SOIL (73) ZOLFO Hyd C
FINE SAND
1-5% CLAY



50 yr composite C

$C_{50} = [30.16(.124) + 6.8(.18) + 4.6(.95) + 8.4(1.0)] \div 49.96 = 0.425$

$C_{50} = 0.43$

100 yr composite C

$C_{100} = [30.16(.25) + 6.8(.19) + 4.6(.95) + 8.4(1.0)] \div 49.96 = 0.432$

$C_{100} = 0.43$

TOTAL AREA TO CULVERT = 49.96 AC

* AREAS omitted because the 100yr runoff volume generated is contained IN depressional AREA (4). See previous sheets for documentation.

Henigar & Ray

made by: TM date: 2/24/95 job no. 21663

PROJECT: SR 45 (US 41) checked by: date: sheet no. 1/3

DETERMINATION OF PRE/POST CONDITION t_c FOR WS DRAINING TO CULVERT AT STA 176 + 19'

$$t_c = t_1 + t_2 + t_3 + t_4$$

t_1 = SHEET FLOW
t_2 = SHALLOW CONCENTRATED FLOW
t_3 = POND FLOW
t_4 = PIPE FLOW

t_1 SHEET FLOW:

FROM THE RAGEN KINEMATIC WAVE EQUATION (FDOT DRAINAGE MANUAL, VOL 2A)

$$t_1 = \frac{0.938\, L^{.6}\, n^{.6}}{I^{.4}\, S^{.3}}$$

WHERE: $L = 300'$
$n = .24$
$S = (81.0 - 79.0)/850 = .0024'/'$
I = RAINFALL INTENSITY (in/hr)

FROM ZONE 6 IDF CURVE 50 AND 100 yr FREQUENCY

$I_{50} = 5.1$ in/hr $\Rightarrow$ 38.9 min

$I_{100} = 5.8$ in/hr $\Rightarrow$ 36.9 min

t_2 SHALLOW CONCENTRATED FLOW

FROM SCS TR 55 APPENDIX F

$$t_2 = \frac{L}{60\,[16.1345\,(S)^{1/2}]} \quad \text{(UNPAVED)}$$

FOR t_{2A}: $L_{2A} = 550'$
$S_{2A} = .0024'/'$

t_{2A} = 11.6 min

FOR t_{2B}: $L_{2B} = 550'$
$S_{2B} = (79.0 - 74.0)/550' = .0091$

t_{2B} = 6.0 min

Henigar & Ray

made by: TM date: 2/26/95 job no. 21663
checked by: _____ date: _____ sheet no. 2/3

PROJECT: SR 45 (US 41)

t_3; POND FLOW

* AREA DRAINING DIRECTLY TO POND

45.36 AC

$C_{50} = 0.37$

$C_{100} = 0.38$

* t_c FOR WATERSHED DRAINING DIRECTLY TO POND

$t_{c_{50}} = 38.9 + 11.6 + 6.0 = 56.5$ min

$t_{c_{100}} = 36.9 + 11.6 + 6.0 = 54.5$ min

$$Q_T = C_T I_{t_c} A$$

$I_{50} = 4.2$ in/hr

$I_{100} = 4.8$ in/hr

$Q_{50} = .37 * 4.2$ in/hr $* 45.36$ AC $= 70.5$ cfs

$Q_{100} = .38 * 4.8$ in/hr $* 45.36$ AC $= 82.7$ cfs

POND AREA = 365,904 ft² (8.4 ac)
PATH ACROSS POND = 689 ft
AVERAGE POND WIDTH = $\frac{365,904 ft^2}{689 ft} = 531$ ft
ASSUME AVE DEPTH = 4'
X-SECTIONAL AREA = $4' * 531' = 2124 ft^2$

$$t_3 = \frac{L}{(Q_T/A)}$$

$t_{3_{50}} = \left[\frac{689'}{(70.5 ft^3/s / 2124 ft^2)}\right] \div 60 = \underline{346 \text{ min}}$

$t_{3_{100}} = \left[\frac{689'}{(82.7 ft^3/s / 2124 ft^2)}\right] \div 60 = \underline{295 \text{ min}}$

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VII-6

Henigar & Ray

made by: 2/20/95 date: 2/26/95 job no. 21663
checked by: _____ date: _____ sheet no. 3/3

PROJECT: SR 415 (CS 41)

t_4 : Pipe Flow

Assume $v = 6'/s$

Length $= 267'$

$$t_4 = \left[\frac{267 \text{ ft}}{6 \text{ ft/s}}\right] \div 60 = .7 \text{ min}$$

$$t_{c_{50}} = 38.9 + 11.6 + 6.0 + 346 + .7 = 403.2 \text{ min} = 6.7 \text{ hr}$$

$$t_{c_{100}} = 36.9 + 11.6 + 6.0 + 295 + .7 = 350.2 \text{ min} = 5.8 \text{ hr}$$

$t_{c_{50}} = 6.7 \text{ hr} \Rightarrow I_{50} = 1.15 \text{ in/hr}$

$t_{c_{100}} = 5.8 \text{ hr} \Rightarrow I_{100} = 1.42 \text{ in/hr}$

$Q_T = C_T I_{t_c} A$ where $A = 49.96 \text{ Ac}$, $C_T = 0.43$

$Q_{50} = .43 * 1.15 \text{ in/hr} * 49.96 \text{ Ac} = 24.7 \text{ cfs}$

$Q_{100} = .43 * 1.42 \text{ in/hr} * 49.96 \text{ Ac} = 30.5 \text{ cfs}$

$Q_{50}^{post} = 24.7 \text{ cfs}$

$Q_{100}^{post} = 30.5 \text{ cfs}$

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SR 45 pre and post intensity per sheet flow to culvert - STA 176+19

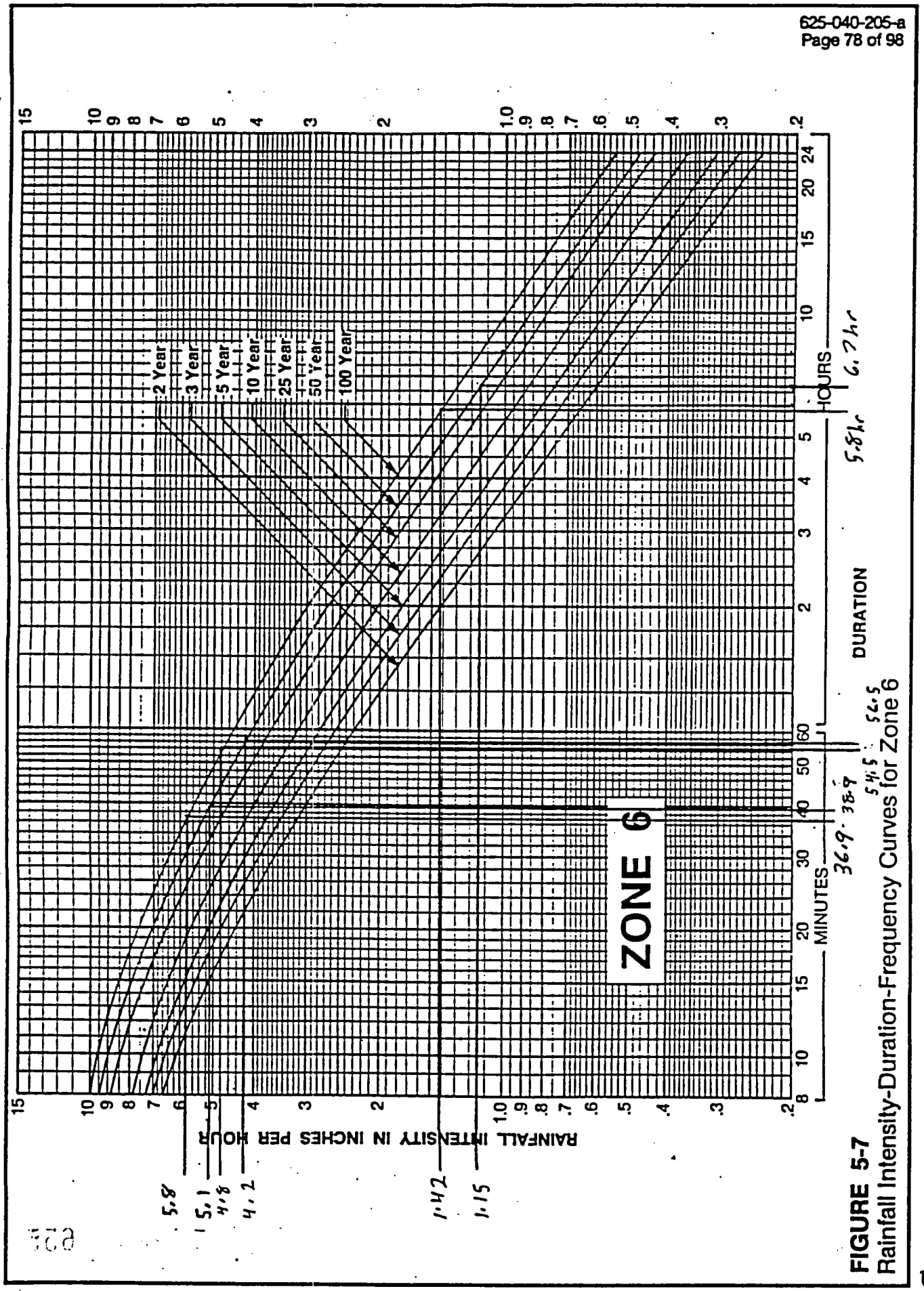


FIGURE 5-7
Rainfall Intensity-Duration-Frequency Curves for Zone 6

VII-67

The proposed system passing offsite flow across the project consists of two mitered end sections collecting runoff from the west and conveyiong this flow to the south and finally to the east thru the project via a "culvert" system. Therefore this system was analyzed as a storm sewer system for the 50year, 100 year and over topping events. The following pages illustrate these calculations.

PEGDRG32 L(3) 07/31/85
DATE PROCESSED
DATE SUBMITTED 2/FEB/95

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER DESIGN
PROJECT 14010--351

TIME PROCESSED
ENGINEER: TWM

CULV @ STA 176+19 50YR EVENT post condition

50yr Event

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 50 YEARS OUTLET CONTROL ELEVATION: 75.55 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM TO (STA)	DIST	SIDE	TYPE	LENGTH (FEET)	AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	CODE
105 104			M	14	0.00	0.00	76.50	36 *	24.70	0.0	80.00	80.00	0.00	0.00	.012	
176+19	68L				0.00											
					0.00											
104 103			M	106	0.00	0.00	79.17	36	0.00	0.0	80.00	80.00	0.00	0.00	.012	
176+08	57L				0.00											
					0.00											
103 101			M	180	0.00	0.00	78.85	36	0.00	0.0	80.00	80.00	0.00	0.00	.012	
175+00	57L				0.00											
					0.00											
101 0			M	116	0.00	0.00	78.31	36	0.00	0.0	80.00	80.00	0.00	0.00	.012	
173+20	57L				0.00											
					0.00											

ENTRANCE INV = 75.00
EVIT INV = 73.65

AHW = 1.5' (@ EL 76.50 ⇒ overflow to private property)

Q_{50} = 24.7 cfs

TW_{50} EL = 71.9

DTW_{50} EL = $73.65 + \frac{dc_{50} + D}{2} = 73.65 + 1.9 = 75.55$

$\boxed{HW_{50} \text{ EL} = 76.04'}$

* 29" x 45" ERCP EQUIV. DIA = 36" RCP

VII-69

656

A-657

DATE PROCESSED | FINAL SYSTEM DESIGN | TIME PROCESSED
PROJECT 14818—351 | ZONE 6 FRE050 | PAGE 2

CULV @ STA 176+19 50YR EVENT

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L.	ELEV UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
185 184	M	14	0.00	0.00	0.00	10.00	0.07	9.04	0.00	24.70	76.58	76.84	76.82	0.02	36"	0.117	3.49	.012
176+19	68L		0.00	0.00	0.00					(24.70)	80.00							
			0.00	0.00	0.00													
184 183	M	186	0.00	0.00	0.00	10.07	0.51	9.02	0.00	24.70	79.17	76.82	75.98	0.12	36"	0.117	3.49	.012
176+84	57L		0.00	0.00	0.00					(24.70)	80.00							
			0.00	0.00	0.00													
183 181	M	188	0.00	0.00	0.00	10.57	0.86	8.87	0.00	24.70	78.85	75.98	75.69	0.21	36"	0.117	3.49	.012
175+00	57L		0.00	0.00	0.00					(24.70)	80.00							
			0.00	0.00	0.00													
181 0	M	116	0.00	0.00	0.00	11.43	0.55	8.64	0.00	24.70	78.31	75.69	75.55	0.14	36"	0.117	3.49	.012
173+28	57L		0.00	0.00	0.00					(24.70)	80.00							
			0.00	0.00	0.00													

OK

657

VOL-70

DATE PROCESSED COST SUMMARY TIME PROCESSED

PROJECT 14818—351 PAGE 3

CULV @ STA 176+19 50YR EVENT

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
185	184	812.00	184	183	6148.00	183	181	10448.00
181	0	6728.00						

TOTAL SYSTEM COST = 24128.00

CULV @ STA 176+19 50YR EVENT

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	105 TO 104
MAXIMUM VELOCITY (GRADIENT FLOW)	3.49 FPS	101 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	105 TO 104
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	3.49 FPS	101 TO 0
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	0.46 FT	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	3.9% FT	105 TO 104
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

PEGWS32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED STORM SEWER DESIGN TIME PROCESSED
DATE SUBMITTED 2/FEB/95 PROJECT 14010-351 ENGINEER: TWM

SR 45 CULVERT SYSTEM @ STA 176+19—100yr EVENT POST condition 100yr Event

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 6, STORM FREQUENCY 50 YEARS OUTLET CONTROL ELEVATION: 75.65 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM TO (STA)	D I S T S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
105 104	M	14	0.00	0.00	76.58	36*	30.50	0.0	88.00	88.00	0.00	0.00	.012	
176+19	68L		0.00											
			0.00											
104 103	M	106	0.00	0.00	79.17	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
176+88	57L		0.00											
			0.00											
103 101	M	188	0.00	0.00	78.65	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
175+00	57L		0.00											
			0.00											
101 0	M	116	0.00	0.00	78.31	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
173+20	57L		0.00											
			0.00											

ENTRANCE INV = 75.00
EXIT INV = 73.65
AHW = 1.5' (@ EL 76.50 ⇒ overflow to private property)

Q_{100} = 30.5 cfs

TW_{100} EL = 72.0

DTW_{100} EL = $73.65 + \frac{dc_{100} + D}{2} = 73.65 + 2.0 = 75.65$

HW_{100} EL = 76.39

* 29" x 45" ERCP EQUIV. DIA. = 36" RCP

660
VII-73

SR 45 CULVERT SYSTEM @ STA 176+19--100yr EVENT

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV. OF H.G. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	SLOPE (%) PHYSICAL	VEL. (FPS) GRADIENT	N
185 184	M	14	0.00	0.00	0.00	10.00	0.05	9.84	0.00	38.50	76.50	76.39	76.37	0.03	36"	0.179		4.31	.012
176+19	68L		0.00	0.00	0.00					(38.50)	88.00	OK							
			0.00	0.00	0.00														
184 183	M	186	0.00	0.00	0.00	10.05	0.41	9.82	0.00	38.50	79.17	76.37	76.18	0.19	36"	0.179		4.31	.012
176+88	57L		0.00	0.00	0.00					(38.50)	88.00								
			0.00	0.00	0.00														
183 181	M	188	0.00	0.00	0.00	10.46	0.78	9.91	0.00	38.50	78.85	76.18	75.86	0.32	36"	0.179		4.31	.012
175+88	57L		0.00	0.00	0.00					(38.50)	88.00								
			0.00	0.00	0.00														
181 0	M	116	0.00	0.00	0.00	11.16	0.45	9.71	0.00	38.50	78.31	75.86	75.65	0.21	36"	0.179		4.31	.012
173+28	57L		0.00	0.00	0.00					(38.50)	88.00								
			0.00	0.00	0.00														

661

CII-74

SR 45 CULVERT SYSTEM @ STA 176+19--100yr EVENT

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
105	104	812.00	104	103	6148.00	103	101	10448.00
101	0	6720.00						

TOTAL SYSTEM COST = 24128.00

SR 45 CULVERT SYSTEM @ STA 176+19—100yr EVENT

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	105 TO 104
MAXIMUM VELOCITY (GRADIENT FLOW)	4.31 FPS	101 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	105 TO 104
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	4.31 FPS	101 TO 0
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	0.11 FT	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	3.61 FT	105 TO 104
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

PEGDR632 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED STORM SEWER DESIGN TIME PROCESSED
DATE SUBMITTED 2/FEB/95 PROJECT 14010—351 ENGINEER: TWM

SR 45 CULVERT @ STA 176+19—OVERTOPING post condition overtoping

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012 ✓
ZONE 6, STORM FREQUENCY 50 YEARS OUTLET CONTROL ELEVATION: 75.70 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.
PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	188.00	200.00	238.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM TO (STA)	D S T I I Y S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
185 184	N	14	0.00	0.00	76.58	36 *	32.00	0.0	88.00	88.00	0.00	0.00	.012	
176+19	68L		0.00											
			0.00											
184 183	N	186	0.00	0.00	79.17	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
176+88	57L		0.00											
			0.00											
183 181	N	188	0.00	0.00	78.85	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
175+88	57L		0.00											
			0.00											
181 0	N	116	0.00	0.00	78.31	36	0.00	0.0	88.00	88.00	0.00	0.00	.012	
173+20	57L		0.00											
			0.00											

ENTRANCE INV = 75.00
EXIT INV = 73.65
AHW = 1.5' (@ EL 76.50 ⇒ OVERFLOW TO private property)
Q_{OT} = 32 cfs
TW_{OT} EL = 75.70
DTW_{OT} EL = 75.70

HW_{OT} EL = 76.52

818 664

* 29" × 45" ERCP EQUIV. DIA. = 36" RCP TH-77

SR 45 CULVERT @ STA 176+19—OVERTOPING

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.43 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD	VEL. (FPS) GRADIENT PHYSICAL	N
185 184	M	14	0.00	0.00	0.00	10.00	0.05	9.84	0.00	32.00	(76.58)	76.52	76.49	0.03	36*	0.197	4.53	.012
176+19	68L		0.00	0.00	0.00					(32.00)	80.00	OT						
			0.00	0.00	0.00													
184 183	M	186	0.00	0.00	0.00	10.05	0.39	9.03	0.00	32.00	79.17	76.49	76.28	0.21	36*	0.197	4.53	.012
176+88	57L		0.00	0.00	0.00					(32.00)	80.00							
			0.00	0.00	0.00													
183 181	M	188	0.00	0.00	0.00	10.44	0.66	8.91	0.00	32.00	78.65	76.28	75.93	0.35	36*	0.197	4.53	.012
175+00	57L		0.00	0.00	0.00					(32.00)	80.00							
			0.00	0.00	0.00								✓					
181 0	M	116	0.00	0.00	0.00	11.10	0.43	8.73	0.00	32.00	78.31	75.93	75.70	0.23	36*	0.197	4.53	.012
173+28	57L		0.00	0.00	0.00					(32.00)	80.00							
			0.00	0.00	0.00													

SR 45 CULVERT @ STA 176+19—OVERTOPING

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
185	184	812.88	184	183	6148.88	183	181	10448.88
181	0	6728.88						

TOTAL SYSTEM COST = 24128.88

SR 45 CULVERT @ STA 176+19—OVERTOPING

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	105 TO 104
MAXIMUM VELOCITY (GRADIENT FLOW)	4.53 FPS	101 TO 0
MAXIMUM PIPE SLOPE	0.00 PERCENT	105 TO 104
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	4.53 FPS	101 TO 0
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	-0.02 FT	105 TO 104
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	3.48 FT	105 TO 104
TOTAL DRAINAGE AREA	0.00 ACRES	
WEIGHTED COEFFICIENT	????	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

SYSTEM F

STORM SEWER

DESIGN

SR 45 BASIN F

POST 3YR-8HR NETWORK SUMMARY

Project PF_3_8, Run of Mon Apr 03 11:32:07 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS TO LAKE	LAKE	DIRECT
3	POND	LAKE	RECT WEIR
4	POND	LAKE	VERT GATE

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	WS TO LAKE	SUBAREA
4	LAKE	STAGING

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	73.80	0.00	73.80	0.00	NO
1	POND	POND	70.30	0.00	71.31 ←	4.50	NO
2	WS ON POND	SUBAREA	73.80	0.00	73.80	0.00	NO
3	WS TO LAKE	SUBAREA	73.80	0.00	73.80	0.00	NO
4	LAKE	STAGING	69.80	0.00	69.91	10.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	10.30 @ 4.10 Hours	10.30 @ 4.10 Hours
1	POND	11.84 @ 4.00 Hours	9.24 @ 4.50 Hours
2	WS ON POND	2.43 @ 3.50 Hours	2.43 @ 3.50 Hours
3	WS TO LAKE	0.19 @ 3.70 Hours	0.19 @ 3.70 Hours
4	LAKE	9.33 @ 4.50 Hours	0.00 @ 0.00 Hours

OUTLET control EL. = 71.31

669

VII-81

3yr - 8hr POST Hydrograph

Subarea POST WS TO POND F 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSTOF3_8
TOTAL DRAINAGE AREA, ACRES... 6.88	INPUT ID 780949684
WEIGHTED SCS CURVE NUMBER.... 92.35	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 11.2
TIME OF CONCENTRATION, HOURS. 0.52	DT, HRS. 0.1
	DATA PTS 113
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.8534374
	ACREAGE. 6.88
	TC, HRS. 0.52
	TP, HRS. 4.1
	PEAK CFS 10.297443
	ACFT VOL 2.208573
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea POST WS ON POND F 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSONF3_8
TOTAL DRAINAGE AREA, ACRES... 1.05	INPUT ID 767541089
WEIGHTED SCS CURVE NUMBER.... 100.0	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.0
TIME OF CONCENTRATION, HOURS. 0.0	DT, HRS. 0.1
	DATA PTS 91
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 4.7199998
	ACREAGE. 1.05
	TC, HRS. 0.0
	TP, HRS. 3.5
	PEAK CFS 2.4316328
	ACFT VOL 0.412863
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

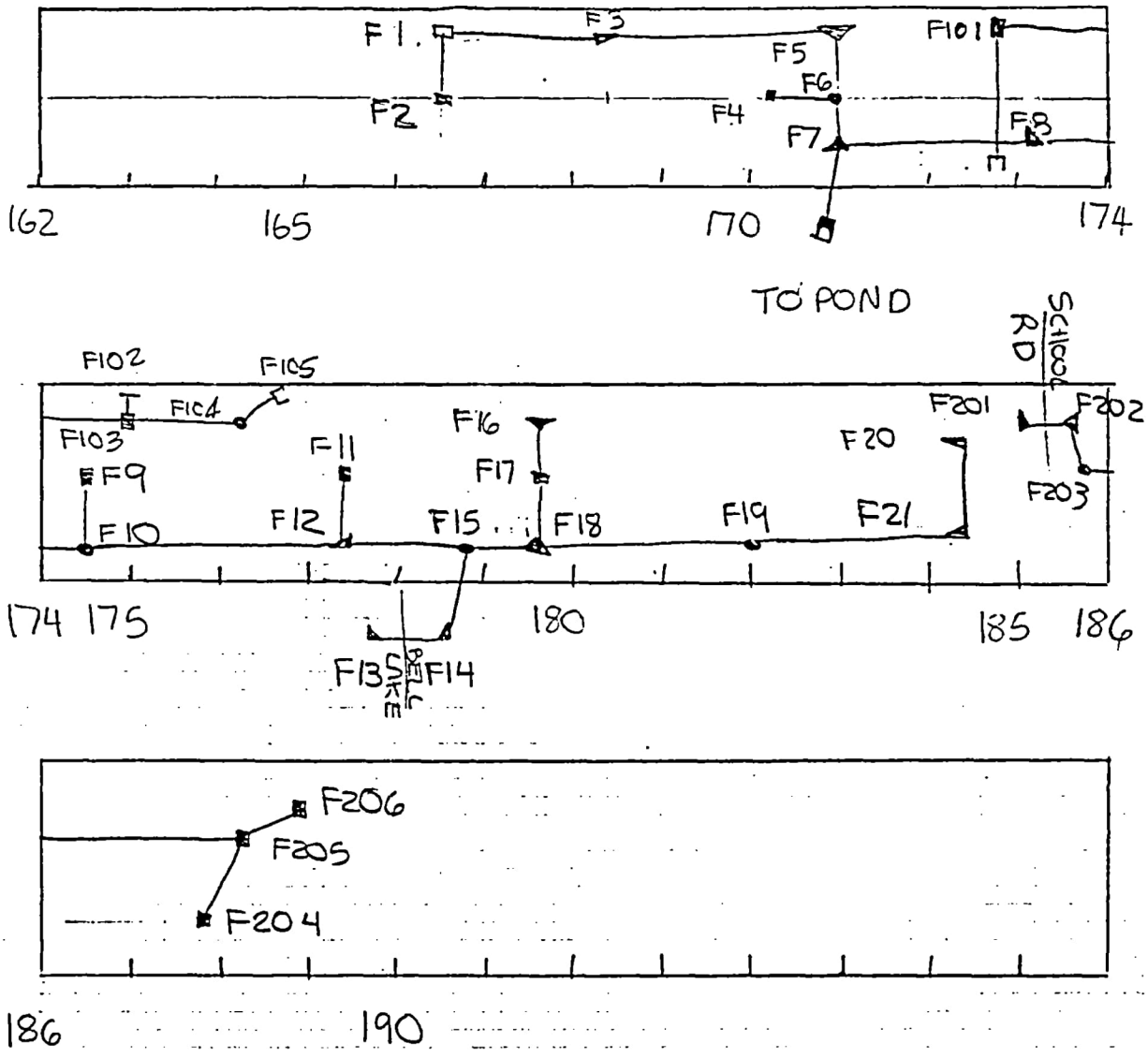
Henigar & Ray

PROJECT: SR45

made by: CJ date: 5-23-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

System F Schematic

NTS



671

VII — 83

Henigar & Ray

PROJECT: SR45

made by: CJ date: 9-23-94 job no. 21663
checked by: _____ date: _____ sheet no. _____

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
F		F-2 F-4		F-1 C-MOD F-3 (OFFSITE)
	F-5		F-7	F-6 MH
		F-9	F-8	
		F-11	F-12	F-10 MH
				F-13 } Bell
		F-17	F-18	F-14 } Lake
	F-16			F-15 MH
				F-19 MH
				F-20
				F-21

672

VII - 84

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-27-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: F-3

STATION: 168+50 L

DRAINAGE AREA: 0.80Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	2.74	9.10

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.442	0.35	2.09

Spread = 9.10 - 1.5 = 7.60 ft

7.6' < 8' ∴ ok

673

VII - 85

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-27-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: F-13

STATION: 30+88.6 R Bell Lake Rd

DRAINAGE AREA: 0.14Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.016	0.020	0.013	0.46	2.99

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.950	0.15	2.87

Spread = 2.99 - 1.50ft = 1.49ft

674

VII-86

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-27-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

Bell Lake Rd

INLET NO.: F-14

STATION: 31+01 L

DRAINAGE AREA: 0.14Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.016	0.020	0.013	0.52	3.34

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.923	0.16	2.90

Spread = 3.34 − 1.50ft = 1.84ft

675

VII-87

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 09-28-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: F-~~23~~ 20

STATION: 184+40 L

DRAINAGE AREA: 0.42Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	1.22	6.54

S=.292%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.588	0.28	1.74

Spread = 6.54 - 1.50 = 5.04 ft

676

VII-88

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 09-28-1994

PROJECT: SR45 (US41)

PROJECT NO.: 21663

INLET NO.: F~~22~~ 21

STATION: 184+40 R

DRAINAGE AREA: 0.25Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.030	0.013	0.89	5.67

S=.292%

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.657	0.25	1.63

Spread= 5.67 - 1.5 = 4.17ft

677

VII-89

Henigar & Ray

made by: CJ date: 11-23-94 job no. 21663
PROJECT: SR45 checked by: _____ date: _____ sheet no. 1 OF 1

System F - Sag Inlet Checks

SAG INLET ID	INLET TYPE	AREA Ac	3 YR cfs	SPREAD LESS THAN ALLOWED
5	6	1.02	3.47	YES
7	6	1.23	4.18	YES
16	6	.67	2.28	YES
17	7	.18		— NO Charts for type 7
18	6	.34	1.16	YES
13	5	.12		— 100% interception
14	5	.14		— " "
201	6	.35	1.19	YES } 7.5' spread
202	6	.11	.37	YES } w/Q=5.25 cfs

Use C = .85
i_{10min} = 4.0 in

Maximum Spread of 9.5 ft relates to Q = (10.2 + 4.2) / 2
= 7.20 cfs
(From FDOT charts 12-21 and 12-22)

---

25 YR OVERTOPPING CHECKS

25YR - 24 HR DHW = 71.76

All Sag inlets have gutter elev. about DHW

678

VII - 90

A-679

PEGDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 8/21 /95 PROJECT 14010-3518 ENGINEER: CL JONES

3SR45 (US41) BASIN F FILE:45FT95.IN

CP III ALTERNATE
RUN 3
DESIGN STANDARDS

ZONE 6, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 71.31 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.

PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S I T	S D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.85 C2=0.60 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
1	3			M	192	0.36	0.00	77.54	18	0.00	0.0	77.85	0.00	75.92	75.34	.000	
166+58		57L				0.00											
						0.00											
2	1			S	64	0.10	0.00	79.11	18	0.00	0.0	0.00	0.00	76.61	75.92	.000	
166+58		8R				0.00											
						0.00											
3	5			M	270	0.80	0.00	77.84	18	0.00	0.0	0.00	0.00	75.34	74.53	.000	
168+50		50L				0.00											
						0.00											
4	6			S	94	0.17	0.00	78.02	18	0.00	0.0	0.00	0.00	75.52	75.42	.000	
170+27		8L				0.00											
						0.00											
5	6			M	50	1.02	0.00	77.03	18	0.00	0.0	0.00	0.00	74.53	74.43	.000	
171+20		50L				0.00											
						0.00											
6	7			M	51	0.00	0.00	78.70	18	0.00	0.0	0.00	0.00	74.43	74.33	.000	
171+20		0L				0.00											
						0.00											
7	0			M	73	1.23	0.00	77.03	30	0.00	0.0	0.00	0.00	71.43	70.00	.000	
171+20		50R				0.00											
						0.00											
8	7			M	210	6.24	0.00	78.27	24	0.00	0.0	0.00	0.00	71.65	71.43	.000	
173+30		50R				0.00											
						0.00											
9	10			S	60	0.14	0.00	78.72	18	0.00	0.0	0.00	0.00	~~76.22~~ 75.22	~~76.12~~ 75.12	.000	
174+51		8L				0.00											
						0.00											
10	8			M	120	0.00	0.00	78.64	24	0.00	0.0	0.00	0.00	73.92	73.79	.000	
174+51		55R				0.00											
						0.00											
11	12			S	58	0.04	0.00	79.10	18	0.00	0.0	0.00	0.00	76.60	75.89	.000	
177+42		8L				0.00											
						0.00											
12	10			M	294	0.11	0.00	78.39	24	0.00	0.0	0.00	0.00	74.21	73.92	.000	
177+42		50R				0.00											
						0.00											

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DATE PROCESSED

PIPE IDENT FROM TO (STA)	D I S T	S I D E	T Y P E	LENGTH (FEET)	AREA (ACRES) C1=0.85 C2=0.00 C3=0.00 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
13 14 30+87	19R		S	37	0.12 0.00 0.00	0.00	77.25	18	0.00	0.0	0.00	0.00	74.75	74.55	.000	
14 15 30+87	19L		M	38	0.14 0.00 0.00	0.00	77.05	18	0.00	0.0	0.00	0.00	74.55	74.45	.000	
15 12 178+31	58R		M	91	0.00 0.00 0.00	0.00	78.35	24	0.00	0.0	0.00	0.00	74.39	74.21	.000	
16 17 179+60	44L		S	52	0.67 0.00 0.00	0.00	77.93	18	0.00	0.0	0.00	0.00	75.43	75.33	.000	
17 18 179+60	8R		M	29	0.18 0.00 0.00	0.00	78.39	18	0.00	0.0	0.00	0.00	75.33	75.23	.000	
18 15 179+60	36R		M	136	0.34 0.00 0.00	0.00	78.11	18	0.00	0.0	0.00	0.00	74.59	74.39	.000	
19 18 182+00	39R		M	240	0.00 0.00 0.00	0.00	79.41	18	0.00	0.0	0.00	0.00	74.96	74.59	.000	
20 21 184+40	32L		S	68	0.42 0.00 0.00	0.00	77.87	18	0.00	0.0	0.00	0.00	75.43	75.32	.000	
21 19 184+40	35R		M	244	0.25 0.00 0.00	0.00	77.80	18	0.00	0.0	0.00	0.00	75.32	74.96	.000	

DATE PROCESSED
PROJECT 14016-3518 ZONE 6 FREQ 3 PAGE 3

35R45 (US41) BASIN F FILE:45FT90.IN

* HAND WRITTEN DENOTES CROWN ELEVATION

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.85 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. UPPER END	ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
2 1	S	64	0.10	0.10	0.09	10.00	0.53	6.61	0.09	0.56	79.11	76.38	76.37	0.01	18*	0.002	0.32	.012
166+58	8R		0.00	0.00	0.00							76.61	75.92					
			0.00	0.00	0.00													
1 3	M	192	0.36	0.46	0.39	10.53	1.60	6.46	0.39	2.53	77.54	76.37	76.28	0.09	18*	0.049	1.43	.012
166+58	57L		0.00	0.00	0.00						77.85	75.92	75.34					
			0.00	0.00	0.00													
3 5	M	270	0.80	1.26	1.07	12.13	1.22	6.07	1.07	6.50	77.84	76.28	75.39	0.88	18*	0.327	3.68	.012
168+50	58L		0.00	0.00	0.00							75.34	74.53					
			0.00	0.00	0.00													
5 6	M	50	1.02	2.28	1.94	13.36	0.13	5.81	1.94	11.27	77.03	75.39	74.90	0.49	18*	0.982	6.38	.012
171+20	58L		0.00	0.00	0.00							74.53	74.43					
			0.00	0.00	0.00													
4 6	S	94	0.17	0.17	0.14	10.00	0.78	6.61	0.14	0.95	78.82	75.43	75.42	0.01	18*	0.007	0.54	.012
170+27	8L		0.00	0.00	0.00							75.52	75.42					
			0.00	0.00	0.00													
6 7	M	51	0.00	2.45	2.08	13.49	0.12	5.79	2.08	12.05	78.78	74.90	74.33	0.57	18*	1.124	6.82	.012
171+20	0L		0.00	0.00	0.00							74.43	74.33					
			0.00	0.00	0.00													
9 10	S	60	0.14	0.14	0.12	10.00	0.50	6.61	0.12	0.79	78.72	76.13	76.12	0.01	18*	0.005	0.44	.012
174+51	8L		0.00	0.00	0.00							75.22	75.12					
			0.00	0.00	0.00													
11 12	S	58	0.04	0.04	0.03	10.00	0.48	6.61	0.03	0.22	79.10	75.90	75.89	0.01	18*	0.000	0.13	.012
177+42	8L		0.00	0.00	0.00							76.60	75.89					
			0.00	0.00	0.00													
13 14	S	37	0.12	0.12	0.10	10.00	0.31	6.61	0.10	0.67	77.25	74.73	74.72	0.01	18*	0.004	0.38	.012
30+87	19R		0.00	0.00	0.00							74.75	74.55					
			0.00	0.00	0.00													
14 15	M	38	0.14	0.26	0.22	10.31	0.32	6.52	0.22	1.44	77.65	74.72	74.71	0.01	18*	0.016	0.82	.012
30+87	19L		0.00	0.00	0.00							74.55	74.45					
			0.00	0.00	0.00													
16 17	S	52	0.67	0.67	0.57	10.00	0.41	6.61	0.57	3.76	77.93	75.65	75.59	0.06	18*	0.110	2.13	.012
179+60	44L		0.00	0.00	0.00							75.43	75.33					
			0.00	0.00	0.00													
17 18	M	29	0.18	0.85	0.72	10.41	0.18	6.49	0.72	4.69	78.39	75.59	75.54	0.05	18*	0.170	2.66	.012
179+60	8R		0.00	0.00	0.00							75.33	75.23					
			0.00	0.00	0.00													
20 21	S	68	0.42	0.42	0.36	10.00	0.57	6.61	0.36	2.36	77.87	76.07	76.04	0.03	18*	0.043	1.33	.012
184+40	32L		0.00	0.00	0.00							75.43	75.32					
			0.00	0.00	0.00													
21 19	M	244	0.25	0.67	0.57	10.57	1.96	6.45	0.57	3.67	77.80	76.04	75.79	0.25	18*	0.104	2.08	.012
184+40	35R		0.00	0.00	0.00							75.32	74.96					
			0.00	0.00	0.00													
19 18	M	240	0.00	0.67	0.57	12.52	1.92	5.99	0.57	3.67	79.41	75.79	75.54	0.25	18*	0.104	2.08	.012
182+00	39R		0.00	0.00	0.00							74.96	74.59					
			0.00	0.00	0.00													
18 15	M	136	6.34	1.86	1.58	14.45	0.45	5.61	1.58	8.87	78.11	75.54	74.71	0.83	18*	0.608	5.82	.012
179+60	36R		0.00	0.00	0.00							74.59	74.39					
			0.00	0.00	0.00													

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DATE PROCESSED

PROJECT 14010-3518 FREQ 3 YR. PAGE 4

PE ENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.85 C2=0.00 C3=0.00 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF ()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN ELEV F.L. ELEV UPPER END	LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
15	12 M	91	0.00	2.12	1.80	14.90	0.48	5.53	1.80	9.96	78.35	74.71	74.56	0.15	24*	0.166	3.17	.012
178+31	58R		0.00	0.00	0.00							74.39	74.21					
			0.00	0.00	0.00													
12	10 M	294	0.11	2.27	1.93	15.38	1.46	5.45	1.93	10.51	78.39	74.56	74.02	0.54	24*	0.184	3.35	.012
177+42	50R		0.00	0.00	0.00							74.21	73.92					
			0.00	0.00	0.00													
10	8 M	120	0.00	2.41	2.05	16.84	0.59	5.22	2.05	10.69	78.64	74.02	73.79	0.23	24*	0.191	3.40	.012
174+51	55R		0.00	0.00	0.00							73.92	73.79					
			0.00	0.00	0.00													
8	7 M	210	0.24	2.65	2.25	17.43	0.95	5.13	2.25	11.56	78.27	72.05	71.58	0.47	24*	0.223	3.68	.012
173+30	50R		0.00	0.00	0.00							71.65	71.43					
			0.00	0.00	0.00													
7	0 M	73	1.23	6.33	5.38	18.38	0.22	5.00	5.38	26.92	77.03	71.58	71.31	0.27	30*	0.368	5.48	.012
171+20	50R		0.00	0.00	0.00							71.43	70.00					
			0.00	0.00	0.00													

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VII-94

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3SR45 (US41) BASIN F FILE:45FT90.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
1	3	5568.00	2	1	1856.00	3	5	7830.00
4	6	2726.00	5	6	1450.00	6	7	1479.00
7	0	3212.00	8	7	7350.00	9	10	1740.00
10	8	4260.00	11	12	1682.00	12	10	10290.00
13	14	1073.00	14	15	1102.00	15	12	3185.00
16	17	1508.00	17	18	841.00	18	15	3944.00
19	18	6960.00	20	21	1972.00	21	19	7076.00

TOTAL SYSTEM COST = 77044.00

3SR45 (US41) BASIN F FILE:45FT90.IN

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	1 TO 3
MAXIMUM VELOCITY (GRADIENT FLOW)	6.82 FPS	6 TO 7
MAXIMUM PIPE SLOPE	0.00 PERCENT	1 TO 3
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.82 FPS	14 TO 15
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	1 TO 3
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	1.17 FT	1 TO 3
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.56 FT	3 TO 5
TOTAL DRAINAGE AREA	6.33 ACRES	
WEIGHTED COEFFICIENT	0.85	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -

4 TO 6
6 TO 7
9 TO 10
11 TO 12
10 TO 8

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -

NO PIPES

COMMENTS

Henigar & Ray

PROJECT: SR45

made by: CLJ date: 5-25-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Inlet Spread Compliance Summary Table

This table lists the inlets which meet the typical maximum areas. Non-typical inlets are also listed with calculations attached.

System ID	Typical #1	Typical #2	Typical #3	NON-TYPICAL INLETS
F Transition to EXIST.	NONE	NONE	NONE	F-201 } School F-202 } Rd. F-203 MH F-204 F-205 F-206 MES

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VII-96

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-09-1994

PROJECT: SR45 BASIN F

PROJECT NO.: 21663

INLET NO.: F-201

STATION: 29+26 School Rd R

DRAINAGE AREA: 0.35Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.010	0.020	0.013	1.04	5.79

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.705	0.21	2.57

Spread = 5.79 - 1.50ft = 4.29ft

****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-09-1994

PROJECT: SR45 BASIN F

PROJECT NO.: 21663

INLET NO.: F-202

STATION: 29+26 School Rd L

DRAINAGE AREA: 0.11Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.010	0.020	0.013	0.42	3.31

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.926	0.16	2.33

Spread = 3.31 - 1.50 = 1.81 ft

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****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-09-1994

PROJECT: SR45 BASIN F

PROJECT NO.: 21663

INLET NO.: F-204

STATION: 187+73

DRAINAGE AREA: 0.26Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.015	0.013	0.93	8.82

S = .00292'/,

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.542	0.23	1.42

Spread = 8.82 - 1.50 = 7.32

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****
***** ROADWAY DRAINAGE DESIGN *****
****

DESIGNER: CL JONES

DATE: 05-09-1994

PROJECT: SR45 BASIN F

PROJECT NO.: 21663

INLET NO.: F-205

STATION: 187+84.5

DRAINAGE AREA: 0.11Acres

DESIGN FREQUENCY: 3 Years

ROADWAY & DISCHARGE DATA

Cross-Slope	S (ft/ft)	Sx (ft/ft)	n	Q (cfs)	T (ft)
Composite	0.003	0.020	0.013	0.41	4.86

S = 0.00292'/,

GUTTER FLOW

W (ft)	Sw (ft/ft)	a (in)	Eo	d (ft)	V (fps)
1.50	0.083	0.00	0.787	0.19	1.33

Spread = 4.86 - 1.50 = 3.36ft

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PESDRG32 L(3) 07/31/85 FLORIDA DEPARTMENT OF TRANSPORTATION
DATE PROCESSED
DATE SUBMITTED 10/10 /94 PROJECT 14010-3518 ENGINEER: CL JONES

SR45 (US41) BASIN F FILE:45FT90.IN

CP III ALTERNATE
RUN 1
DESIGN STANDARDS
MANNING ROUGHNESS COEFFICIENT SET EQUAL TO N= .012 .012 .012
ZONE 5, STORM FREQUENCY 3 YEARS OUTLET CONTROL ELEVATION: 76.24 FT.
MINIMUM CLEARANCE H.G. BELOW GUTTER: 1.00 FT. MINIMUM PIPE COVER BELOW GUTTER: 2.50 FT.

CROWN OF DOWN STREAM 18"CMP

PIPE COST DATA: SIZE(IN): COST($):

12	15	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
17.00	23.00	29.00	35.00	44.00	58.00	65.00	75.00	94.00	135.00	145.00	160.00	180.00	200.00	230.00	270.00	300.00	340.00

SYSTEM INPUT

PIPE IDENT FROM (STA)	TO	D I S T I Y S D P T E E	LENGTH (FEET)	AREA (ACRES) C1=0.54 C2=0.00 C3=0.95 INCREMENT	MIN TC (MIN)	GUTTER OR GRATE ELEV	PIPE DIA (IN)	EXTRA FLOW (CFS)	MAX DEPTH CUT	H.G. MAX CONTROL	MAX CROWN ELEV	CROWN ELEV UPPER END	CROWN ELEV LOWER END	'N' VALUE	C O D E
STRUCTURE															
201	202	S	39	0.17	0.00	77.22	18	0.00	0.0	76.72	0.00	76.24	76.14	.000	
29+26	25R			0.00											
211-6				0.18											
202	203	M	47	0.00	0.00	77.42	18	0.00	0.0	76.92	0.00	76.14	76.04	.000	
29+26	13L			0.00											
211-6				0.11											
203	205	M	212	0.00	0.00	78.11	18	0.00	0.0	0.00	0.00	76.04	75.72	.000	
185+72	27L			0.00		RIM									
200				0.00											
204	205	S	40	0.00	0.00	77.55	18	0.00	0.0	0.00	0.00	75.82	75.72	.000	
187+73	20R			0.00											
211-5				0.27											
205	206	M	16	0.00	0.00	77.90	18	0.00	0.0	0.00	0.00	75.72	75.62	.000	
187+84	20L			0.00											
211-5				0.11											

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DATE PROCESSED

PROJECT 14010-3518 ZONE 5 FREQ 3 PAGE 2

SR45 (US41) BASIN F FILE:45FT90.IN

PIPE IDENT FROM TO (STA)	TYPE	LENGTH (FEET)	DRAINAGE AREA (ACRES) C1=0.54 C2=0.00 C3=0.95 INCREMENT	SUB TOTAL	SUB TOTAL CA	TIME OF CONC (MIN)	TIME OF FLOW IN PIPE (MIN)	INTENSITY (IN/HR)	TOTAL CA	Q (CFS) INCLUDES ADDED FLOW OF()	GUTTER OR INLET ELEV	ELEV. OF H.G. CROWN F.L. ELEV UPPER END	ELEV. OF H.G. CROWN F.L. ELEV LOWER END	FALL	PIPE DIA (IN)	SLOPE (%) HYD GRADIENT PHYSICAL	VEL. (FPS)	N
201 202	S	39	0.17	0.17	0.09	10.00	0.32	6.61	0.25	1.74	77.22	76.39	75.38	0.01	18*	0.023	0.33	.012
29+26	25R		0.00	0.00	0.00						76.72	76.24	76.14	.10		.26		
			0.18	0.18	0.17							74.74	74.64					
202 203	M	47	0.00	0.17	0.09	10.32	0.39	6.52	0.37	2.39	77.42	76.38	76.36	0.02	18*	0.044	1.35	.012
29+26	13L		0.00	0.00	0.00						76.92	76.14	76.04	.10		.21		
			0.11	0.29	0.28							74.64	74.54					
203 205	M	212	0.00	0.17	0.09	10.72	1.77	6.41	0.37	2.39	78.11	76.36	76.26	0.09	18*	0.044	1.35	.012
185+72	27L		0.00	0.00	0.00							76.04	75.72	.32		.15		
			0.00	0.29	0.28							74.54	74.22					
204 205	S	40	0.00	0.00	0.00	10.00	0.33	6.61	0.25	1.69	77.55	76.27	76.26	0.01	18*	0.022	0.96	.012
187+73	20R		0.00	0.00	0.00							75.82	75.72	.10		.25		
			0.27	0.27	0.26							74.32	74.22					
205 206	M	16	0.00	0.17	0.09	12.48	0.11	5.99	0.73	4.37	77.90	76.26	76.24	0.02	18*	0.147	2.47	.012
187+84	20L		0.00	0.00	0.00							75.72	75.62	.10		.63		
			0.11	0.67	0.64							74.22	74.12					

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SR45 (US41) BASIN F FILE:45FT90.IN

PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)	PIPE IDENT FROM	TO	COST ($)
201	202	1131.00	202	203	1383.00	203	205	6149.00
204	205	1160.00	205	206	454.00			

TOTAL SYSTEM COST = 10266.00

MESSAGE		PIPE LINE
MAXIMUM DEPTH OF CUT (TO CROWN)	0.00 FT	201 TO 202
MAXIMUM VELOCITY (GRADIENT FLOW)	2.47 FPS	205 TO 206
MAXIMUM PIPE SLOPE	0.00 PERCENT	201 TO 202
MINIMUM VELOCITY IN MAIN (H.G. FLOW)	0.98 FPS	201 TO 202
MINIMUM VELOCITY (GRAVITY FLOW)	0.00 FPS	201 TO 202
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO GUTTER	0.53 FT	201 TO 202
MINIMUM HYDRAULIC GRADIENT CLEARANCE TO CONTROL	0.28 FT	204 TO 205
TOTAL DRAINAGE AREA	0.64 ACRES	
WEIGHTED COEFFICIENT	0.67	

MAXIMUM DEPTH OF CUT CONTROL USED FOR RESTRAINT AT -
NO PIPES

DESIGN FLOW GREATER THAN 10 FPS IN THE FOLLOWING PIPE LENGTHS -
NO PIPES

COMMENTS

Henigar & Ray

PROJECT: Basin F

made by: CJ date: 5-3-94 job no. 21663
checked by: _____ date: _____ sheet no. 1

Time of Concentration – Storm Sewer F

Offsite located at 166+59 LT

Use FDOT Method – Drainage Manual, Vol 2A

$$t_c = \frac{.938\ L^{.6}\ n^{.6}}{I^{.4}\ S^{.3}}$$

where t = travel time, min
n = manning coeff, $n = .20$
I = intensity
S = Avg Slope $S = .0032'/'$
L = length, 61'

$$t_c = \frac{.938\,(61)^{.6}\,(0.2)^{.6}}{(8.5)^{.4}\,(.0032)^{.3}} = 10 \text{ min}$$

Reduced Area = $61(225) + \frac{1}{2}(69)(26)$
= .336 Ac Use .34 Ac

F – 1 = .34 + .02 = .36 Ac

Weighted (REDUCED AREA) $CN_{25} = 93.77$
$C_{3YR} = .85$ (See next sheet)

Henigar & Ray

PROJECT: SR45 BASIN F

made by: CLJ date: 9-28-94 job no. 21663
checked by: _____ date: _____ sheet no. _____

POST BASIN F - 3YR-24HR RATIONAL C

METHODOLOGY IS FROM SCSTR55 AS DESCRIBED PREVIOUSLY IN THIS SECTION WHERE:

CN = 93.71
P = 4.72
REDUCED AREA CN

$$S = \frac{1000}{CN} - 10 = \frac{1000}{93.77} - 10 = .6644$$

$$Q = \frac{[4.72 - .2(.6644)]^2}{(4.72 + .8(.6644)} = 4.00$$

$$C = \frac{4.00}{4.72} = .8474 \quad \text{Use } .85$$

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CRITICAL DURATION

ANALYSIS

CRITICAL DURATION ANALYSIS

A critical duration analysis was performed for the 3 year and 100 year events in each of the six systems. Eight hours was found to be the critical duration for all systems A through F.

SR 45 CRITICAL STORM ROUTING
(BEGIN ATTENUATION AT OVERFLOW ELEVATION)

POND ID	OVERFLOW ELEVATION (ft)	CRITICAL PRE-CONDITION PEAK DISCHARGE (cfs)	CRITICAL POST-CONDITION PEAK DISCHARGE (cfs)	CRITICAL DHW (ft)	TOB EL. (ft)
A	68.47	50.4	50.0	69.4	71.4
B	69.05	57.1	65.3	70.1	72.2
C	68.70 68.70	19.8 (east) 49.6 (west)	19.8 (east) 27.0 (west)	72.0	73.0
D	69.62	80.2	71.8	71.5	73.0
E	74.09	35.3	21.8	75.9	77.5
F	70.88	29.0	23.0	71.7	72.8

POND A

Henigar & Ray

made by: NBW date: 4/12/11 job no. 2166

PROJECT: SR 45 (US 41) checked by: _____ date: _____ sheet no. 1 of

BASIN A - Critical Duration Analysis - 3yr. FDOT event

C:\BRN31\SR45BASA.WBS\PPA324.STS(11 Lines)
INPUT: PROJECT FILE PPA324, RUN ID# 764178378 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 241 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*9.23	12.00	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	3.02	12.20	3.02	12.20	NO
0002	WS R/W RIGHT	SUBAREA	3.08	11.90	3.08	11.90	NO
0003	WS OFFSITE EAST	SUBAREA	0.73	12.00	0.73	12.00	NO
0004	WS ON POND SITE PRE	SUBAREA	2.48	12.10	2.48	12.10	NO

C:\BRN31\SR45BASA.WBS\PPA38.STS(11 Lines)
INPUT: PROJECT FILE PPA38, RUN ID# 764178596 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 81 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*21.49	4.10	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	6.42	4.30	6.42	4.30	NO
0002	WS R/W RIGHT	SUBAREA	8.21	3.90	8.21	3.90	NO
0003	WS OFFSITE EAST	SUBAREA	1.83	4.10	1.83	4.10	NO
0004	WS ON POND SITE PRE	SUBAREA	5.49	4.10	5.49	4.10	NO

C:\BRN31\SR45BASA.WBS\PPA34.STS(11 Lines)
INPUT: PROJECT FILE PPA34, RUN ID# 764178831 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 41 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*19.07	2.70	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	5.86	2.90	5.86	2.90	NO
0002	WS R/W RIGHT	SUBAREA	7.21	2.40	7.21	2.40	NO
0003	WS OFFSITE EAST	SUBAREA	1.65	2.60	1.65	2.60	NO
0004	WS ON POND SITE PRE	SUBAREA	4.83	2.80	4.83	2.80	NO

Critical Duration is 8 hr. - Peak Discharge = 21.49 cfs

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VIII - 3

Henigar & Ray

made by: WBW date: 4/12/94 job no. 2166

PROJECT: SR45 (US 41) checked by: _____ date: _____ sheet no. 7

BASIN A - Critical Duration Analysis - 100yr, FDOT event

C:\BRN31\SR45BASA.WBS\PPA10024.STS(11 Lines)
INPUT: PROJECT FILE PPA10024, RUN ID# 764177449 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 241 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*17.36	12.00	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	5.63	12.20	5.63	12.20	NO
0002	WS R/W RIGHT	SUBAREA	5.59	11.80	5.59	11.80	NO
0003	WS OFFSITE EAST	SUBAREA	1.29	12.00	1.29	12.00	NO
0004	WS ON POND SITE PRE	SUBAREA	4.96	12.10	4.96	12.10	NO

C:\BRN31\SR45BASA.WBS\PPA1008.STS(11 Lines)
INPUT: PROJECT FILE PPA1008, RUN ID# 764177745 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 81 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*50.42	4.00	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	15.04	4.20	15.04	4.20	NO
0002	WS R/W RIGHT	SUBAREA	18.25	3.90	18.25	3.90	NO
0003	WS OFFSITE EAST	SUBAREA	3.90	4.00	3.90	4.00	NO
0004	WS ON POND SITE PRE	SUBAREA	14.28	4.10	14.28	4.10	NO

C:\BRN31\SR45BASA.WBS\PPA1004.STS(11 Lines)
INPUT: PROJECT FILE PPA1004, RUN ID# 764178124 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 41 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*43.57	2.50	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	13.26	2.80	13.26	2.80	NO
0002	WS R/W RIGHT	SUBAREA	15.85	2.30	15.85	2.30	NO
0003	WS OFFSITE EAST	SUBAREA	3.44	2.50	3.44	2.50	NO
0004	WS ON POND SITE PRE	SUBAREA	12.08	2.70	12.08	2.70	NO

Critical Duration is 8hr - Peak Discharge = 50.42 cfs

Henigar & Ray

made by: WBW date: 4/12/94 job no. 2166

PROJECT: SR 45 (US 41)

checked by: _____ date: _____ sheet no. 3 of

BASIN A – Critical Storm Analysis – conclusions

C:\BRN31\SR45BASA.WBS\PPA2524.STS(11 Lines)
INPUT: PROJECT FILE PPA2524. RUN ID# 764116273 (5 NODES)
RESULTS: 0 BAD POINTS OUT OF 241 TOTAL, MAX STAGE ERROR 0.0000 FEET

NODAL THRUPUT SUMMARY

NODE	NODE NAME	NODE TYPE	CFS IN	AT HR.	CFS OUT	AT HR.	FLOOD
0000	LAKE	STAGING	*52.40	12.40	0.00	0.00	NO
0001	WS R/W LEFT	SUBAREA	14.63	12.50	14.63	12.50	NO
0002	WS R/W RIGHT	SUBAREA	20.58	12.30	20.58	12.30	NO
0003	WS OFFSITE EAST	SUBAREA	4.03	12.40	4.03	12.40	NO
0004	WS ON POND SITE PRE	SUBAREA	14.92	12.40	14.92	12.40	NO

SWFWMD Design Event is 25yr.-24hr. Type II Mod. Rainfall
Peak Discharge = 52.40 cfs for SWFWMD Design Event

FDOT Critical Event is 100yr. – 8 hr. FDOT-8 Rainfall
Peak Discharge = 50.42 cfs for FDOT Critical Event.

50.42 cfs < 52.40 cfs

∴ SWFWMD Design requirement exceeds FDOT Critical Storm and Pond Design also meets FDOT Critical Storm

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VIII-5

SR 45 BASIN A

post Development Critical Duration FDOT Routing - 100 yr FDOT-8hr EVENT

Network Summary

Project PA_CRIT, Run of Tue Feb 14 10:36:30 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS BETWEEN RR & SR45	LAKE	DIRECT
3	POND	LAKE	VEE NOTCH
4	POND	LAKE	RECT WEIR

Node	Name	Node Type
0	POND	POND
1	LAKE	STAGING
2	WS BETWEEN RR & SR45	SUBAREA
3	WS TO POND	SUBAREA
4	WS ON POND	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	→68.47	0.10	→69.36	4.30	NO
1	LAKE	STAGING	67.50	0.00	67.65	8.00	NO
2	WS BETWEEN RR & SR45	SUBAREA	72.00	0.00	72.00	0.00	NO
3	WS TO POND	SUBAREA	72.00	0.00	72.00	0.00	NO
4	WS ON POND	SUBAREA	72.00	0.00	72.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND	56.79 @ 3.80 Hours	40.59 @ 4.30 Hours
1	LAKE	→49.98 @ 4.30 Hours	0.00 @ 0.00 Hours
2	WS BETWEEN RR & SR45	9.45 @ 4.20 Hours	9.45 @ 4.20 Hours
3	WS TO POND	36.89 @ 4.00 Hours	36.89 @ 4.00 Hours
4	WS ON POND	24.15 @ 3.50 Hours	24.15 @ 3.50 Hours

BEGIN ATTENUATION AT OVERFLOW EL 68.47

Pre 100yr FDOT-8hr Event peak rate = 50.42cfs

Post 100yr FDOT-8hr Event Peak rate = 49.98cfs

⇒ Compliance

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VIII-6

SR 45 BASIN A Post Development critical duration FDOT Routing. 100 yr FDOT-6hr Event

PATHS REPORT

Report on Paths of Project PA_CRIT.

```
-------------------------------------
      Path..... 000, DIRECT
   Upper Node 003, WS TO POND
     Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 760833130
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      36.89
                  |MIN IN..       0.00
                  |MAX OUT.      36.89
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...   72.000|FWD X...       0.00
TW EL...   71.400|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 001, DIRECT
   Upper Node 004, WS ON POND
     Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 763655767
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      24.15
                  |MIN IN..       0.00
                  |MAX OUT.      24.15
                  |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...   72.000|FWD X...       0.00
TW EL...   71.400|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 002, DIRECT
 Upper Node 002, WS BETWEEN RR & SR45
         Lower Node 001, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 763758322
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       9.45
                  |MIN IN..       0.00
                  |MAX OUT.       9.45
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    72.000|FWD X...       0.00
TW EL...    71.400|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
       Path...... 003, VEE NOTCH
          Upper Node 000, POND
          Lower Node 001, LAKE
-------------------------------------
CREST EL    68.250|INPUT ID 780100279
ANGLE...   147.000|T0 CFS..       0.18
--------  ---------|T0 CF...       0.00
HEIGHT..     0.220|MAX IN..       0.77
--------  ---------|MIN IN..       0.18
                  |MAX OUT.       0.77
                  |MIN OUT.       0.18
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE YES      |REV K...       0.00
MAX HW..    71.400|FWD X...       0.00
MAX TW..    71.400|REV X...       0.00
-------------------------------------
```

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```
-------------------------------------
      Path..... 004, RECT WEIR
         Upper Node 000, POND
         Lower Node 001, LAKE
-------------------------------------
CREST EL    68.470|INPUT ID 780781928
WIDTH...    15.000|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..     39.82
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.     39.82
-------- ---------|MIN OUT.      0.00
                                  |
                                  |
                                  |
                                  |
                                  |
                                  |
                                  |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE YES      |REV K...      0.00
MAX HW..    71.400|FWD X...      0.00
MAX TW..    71.400|REV X...      0.00
-------------------------------------
```

SR 45 BASIN A POST DEVELOPMENT CRITICAL DURATION
FDOT ROUTING. 100YR FDOT_8hr EVENT

Report on Nodes of Project PA_CRIT. NODES REPORT

Node..... 000, POND

TOP EL...	71.400	TOP AREA.	5.180	INPUT ID.....	792776028
EL.....	70.600	AREA.....	4.300	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	68.47
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	39099.70
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	69.36
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.47
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	196804.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	157704.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	68.77
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	4.30
BOT EL...	68.250	BOT AREA.	3.860	TIME OF MINIMUM STAGE, HOURS.	0.10
TOP LF...		SIDE XPER			
MID LF...		BASE XPER		PEAK NODAL INTAKE, CFS.....	56.79
BOT LF...				TIME OF PEAK INTAKE, HOURS...	3.80
				PEAK NODAL OUTPUT, CFS.....	40.59
				TIME OF PEAK OUTPUT, HOURS...	4.30
BASE CFS.	0.000	STAGE T0.	68.470	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, STAGING

FLOOD EL.	71.400	PE TO KE.	YES	INPUT ID.....	792776041
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	67.500	INITIAL STAGE ELEVATION.....	67.50
TIME, HRS	10.000	STAGE EL.	67.690	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	20.000	STAGE EL.	69.390	MAXIMUM STAGE REACHED.....	67.65
TIME, HRS	30.000	STAGE EL.	69.470	MINIMUM STAGE REACHED.....	67.50
TIME, HRS	36.000	STAGE EL.	69.490	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	67.65
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	49.98
				TIME OF PEAK INTAKE, HOURS...	4.30
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	67.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 002, SUBAREA

FILE NAME	E0RR2524	FLOOD EL.	72.000	INPUT ID.....	792277110
INPUT ID#	792277095			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	72.00
RUN, HRS.	12.200			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	72.00
DATA PTS.	123			MINIMUM STAGE REACHED.....	72.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	72.00
EXCESS...	6.787			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	3.980			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.690				
TP, HRS..	4.200				
PEAK CFS.	9.455			PEAK NODAL INTAKE, CFS.....	9.45
ACFT VOL.	2.250			TIME OF PEAK INTAKE, HOURS...	4.20
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	9.45
				TIME OF PEAK OUTPUT, HOURS...	4.20
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, SUBAREA

FILE NAME	TPA2524	FLOOD EL.	72.000	INPUT ID.....	792277196
INPUT ID#	792277178			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	72.00
RUN, HRS.	10.500			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	72.00
DATA PTS.	106			MINIMUM STAGE REACHED.....	72.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	72.00
EXCESS...	8.532			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	10.740			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.400				
TP, HRS..	4.000				
PEAK CFS.	36.889			PEAK NODAL INTAKE, CFS.....	36.89
ACFT VOL.	7.633			TIME OF PEAK INTAKE, HOURS...	4.00
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	36.89
				TIME OF PEAK OUTPUT, HOURS...	4.00
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, SUBAREA

FILE NAME	ONA2524	FLOOD EL. 72.000	INPUT ID..... 79227725
INPUT ID#	792277248		FLOOD ELEVATION REACHED..... NO
ALT TYPE.	RNF002		INITIAL STAGE ELEVATION..... 72.0
RUN, HRS.	9.000		INITIAL STORAGE, CUBIC FEET.. 0.0
DT, HRS..	0.100		MAXIMUM STAGE REACHED..... 72.0
DATA PTS.	91		MINIMUM STAGE REACHED..... 72.0
STORM....	FDOT_8		MAXIMUM GROSS STORAGE, CF.... 0.0
HOURS....	8.000		MAXIMUM DETENTION STORAGE, CF 0.0
RAINFALL.	9.200		FINAL STAGE ELEVATION..... 72.0
EXCESS...	9.200		TIME OF MAXIMUM STAGE, HOURS. 0.0
ACREAGE..	5.350		TIME OF MINIMUM STAGE, HOURS. 0.0
TC, HRS..			
TP, HRS..	3.500		
PEAK CFS.	24.149		PEAK NODAL INTAKE, CFS..... 24.1
ACFT VOL.	4.100		TIME OF PEAK INTAKE, HOURS... 3.5
EXECUTED.	YES		PEAK NODAL OUTPUT, CFS..... 24.1
			TIME OF PEAK OUTPUT, HOURS... 3.5
BASE CFS.	0.000		POINTS OUT OF TOLERANCE..... 0
X COORD..		Y COORD..	MAXIMUM STAGE ERROR..... 0.0

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VIII- 12

POND B

SR 45 BASIN B

CRITICAL DURATION ANALYSIS -3yr FDOT EVENT

Subarea PRE WATERSHED TO BASIN B 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB38
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768752502
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 10.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 103
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.390646
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 4.0
	PEAK CFS 25.901237 ←
	ACFT VOL 4.7961781
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

3yr critical EVENT is the 8hr RAINFALL.

Peak Discharge = 25.90 CFS.

712

VIII-13

PPB38

SR 45 BASIN B

Subarea PRE WATERSHED TO BASIN B 3yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB324
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768752424
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 263
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 6.6
	EXCESS.. 5.1908073
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 11.9
	PEAK CFS 9.9220028 ←
	ACFT VOL 7.3425642
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE WATERSHED TO BASIN B 3yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB34
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768752598
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 6.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 63
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 3.88
	EXCESS.. 2.6057856
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 2.5
	PEAK CFS 22.833551 ←
	ACFT VOL 3.6859677
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

713

VIII-14

SR 45 BASIN B

CRITICAL DURATION ANALYSIS - 100 yr FDOT EVENT

Subarea PRE WATERSHED TO BASIN B 100yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB1008
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768752267
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 10.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 103
	STORM... FDOT_8
	DURATION 8.0 ✓
	RAINFALL 9.2 ✓
	EXCESS.. 7.7283969
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 3.9
	PEAK CFS 57.054493 ←
	ACFT VOL 10.932066
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

100yr CRITICAL EVENT is the 8hr RAINFALL.

Peak Discharge = 57.05 cfs

714

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PPB1008

SR 45 BASIN B

Subarea PRE WATERSHED TO BASIN B 100yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB10024
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768753443
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 263
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 11.2
	EXCESS.. 9.6983366
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 11.9
	PEAK CFS 17.961647 ←
	ACFT VOL 13.718609
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE WATERSHED TO BASIN B 100yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPB1004
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 768753164
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 6.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 63
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 7.28
	EXCESS.. 5.8507471
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 2.3
	PEAK CFS 49.751514 ←
	ACFT VOL 8.2760703
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN B

SCS TYPE II Mod. 25yr-24hr EVENT

Subarea PRE WATERSHED TO BASIN B 25yr-25hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PREB25
TOTAL DRAINAGE AREA, ACRES... 16.98	INPUT ID 766262825
WEIGHTED SCS CURVE NUMBER.... 87.87	TYPE.... RNF002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 26.2
TIME OF CONCENTRATION, HOURS. 0.35	DT, HRS. 0.1
	DATA PTS 263
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.5320578
	ACREAGE. 16.98
	TC, HRS. 0.35
	TP, HRS. 12.3
	PEAK CFS 63.038795 ←
	ACFT VOL 10.654339
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

- SWFWMD DESIGN EVENT is 25yr-24hr Type II Mod. RAINFALL. Peak Discharge = 63.04 cfs.

- FDOT Critical EVENT is 100yr-8hr FDOT-8 RAINFALL. Peak Discharge = 57.05 cfs.

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SR 45 BASIN B

POST CONDITION CRITICAL DURATION FDOT ROUTING

100YR FDOT-6hr EVENT

Project PB_CRIT, Run of Thu Oct 12 10:15:10 1995 (CONVERGED)

NET WORK SUMMARY

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	LAKE	VEE NOTCH
3	POND	LAKE	RECT WEIR
4	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	POND	POND
1	WS TO POND	SUBAREA
2	WS ON POND	SUBAREA
3	LAKE	STAGING
4	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND	POND	→69.05	0.40	→70.05	4.10	NO
1	WS TO POND	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND	SUBAREA	74.00	0.00	74.00	0.00	NO
3	LAKE	STAGING	68.50	0.00	68.64	8.00	NO
4	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow		Maximum CFS Outflow	
0	POND	69.51 @	3.90 Hours	64.19 @	4.10 Hours
1	WS TO POND	61.76 @	3.90 Hours	61.76 @	3.90 Hours
2	WS ON POND	10.02 @	3.50 Hours	10.02 @	3.50 Hours
3	LAKE	→65.35 @	4.10 Hours	0.00 @	0.00 Hours
4	WS TO LAKE	1.21 @	3.90 Hours	1.21 @	3.90 Hours

PRE 100YR FDOT-6hr EVENT PEAK RATE = 57.05cfs

POST 100YR FDOT-6hr EVENT PEAK RATE = 65.35 cfs

⇒ NON COMPLIANCE

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SR 45 BASIN B
100yr FDOT 8hr EVENT Paths Report

Report on Paths of Project PB_CRIT.

```
-------------------------------------
        Path...... 000, DIRECT
      Upper Node 001, WS TO POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 760833130
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      61.76
                  |MIN IN..       0.00
                  |MAX OUT.      61.76
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    72.200|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
      Upper Node 002, WS ON POND
        Lower Node 000, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 763655767
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      10.02
                  |MIN IN..       0.00
                  |MAX OUT.      10.02
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    72.200|REV X...       0.00
-------------------------------------
```

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Path..... 002, VEE NOTCH
Upper Node 000, POND
Lower Node 003, LAKE

CREST EL	68.500	INPUT ID	813507287
ANGLE...	48.000	T0 CFS..	0.24
		T0 CF...	0.00
HEIGHT..	0.550	MAX IN..	0.70
		MIN IN..	0.24
		MAX OUT.	0.70
		MIN OUT.	0.24
UP PE/KE	YES	FWD K...	0.00
DN PE/KE	NO	REV K...	0.00
MAX HW..	72.200	FWD X...	0.00
MAX TW..	72.200	REV X...	0.00

Path..... 003, RECT WEIR
Upper Node 000, POND
Lower Node 003, LAKE

CREST EL	69.050	INPUT ID	813507294
WIDTH...	20.000	T0 CFS..	0.00
WEIR C..	3.200	T0 CF...	0.00
NUM ENDS	2	MAX IN..	63.48
		MIN IN..	0.00
BREADTH.		MAX OUT.	63.48
		MIN OUT.	0.00
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	NO	REV K...	0.00
MAX HW..	72.200	FWD X...	0.00
MAX TW..	72.200	REV X...	0.00

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```
-----------------------------------------
        Path...... 004, DIRECT
     Upper Node 004, WS TO LAKE
        Lower Node 003, LAKE
-----------------------------------------
DIRECT.. ---------|INPUT ID 763758322
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       1.21
                  |MIN IN..       0.00
                  |MAX OUT.       1.21
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE NO       |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    72.200|REV X...       0.00
-----------------------------------------
```

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SR 45 BASIN B
100yr FDOT-6hr EVENT NODES Report

Report on Nodes of Project PB_CRIT.

ode..... 000, POND					
TOP EL...	72.200	TOP AREA.	2.640	INPUT ID.....	813507175
EL.....	71.500	AREA.....	2.220	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	69.05
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	49114.20
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	70.05
EL.....		AREA.....		MINIMUM STAGE REACHED.....	69.05
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	138351.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	89236.70
EL.....		AREA.....		FINAL STAGE ELEVATION.....	69.27
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	4.10
BOT EL...	68.500	BOT AREA.	1.880	TIME OF MINIMUM STAGE, HOURS.	0.40
TOP LF...		SIDE XPER			
MID LF...		BASE XPER		PEAK NODAL INTAKE, CFS.....	69.51
BOT LF...				TIME OF PEAK INTAKE, HOURS...	3.90
				PEAK NODAL OUTPUT, CFS.....	64.19
				TIME OF PEAK OUTPUT, HOURS...	4.10
BASE CFS.	0.000	STAGE T0.	69.050	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, SUBAREA					
FILE NAME	WSTOB00	FLOOD EL.	74.000	INPUT ID.....	792798846
INPUT ID#	792798247			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	10.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	102			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.223			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	17.530			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.340				
TP, HRS..	3.900				
PEAK CFS.	61.756			PEAK NODAL INTAKE, CFS.....	61.76
ACFT VOL.	12.009			TIME OF PEAK INTAKE, HOURS...	3.90
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	61.76
				TIME OF PEAK OUTPUT, HOURS...	3.90
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 002, SUBAREA

ILE NAME	WSONB00	FLOOD EL.	WSONB00	INPUT ID.....	813507236
INPUT ID#	813507231			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	9.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	91			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	9.200			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	2.220			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	3.500				
PEAK CFS.	10.021			PEAK NODAL INTAKE, CFS.....	10.02
ACFT VOL.	1.701			TIME OF PEAK INTAKE, HOURS...	3.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	10.02
				TIME OF PEAK OUTPUT, HOURS...	3.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, STAGING

FLOOD EL.	72.200	PE TO KE.	NO	INPUT ID.....	792777868
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.500	INITIAL STAGE ELEVATION.....	68.50
TIME, HRS	5.000	STAGE EL.	68.510	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	10.000	STAGE EL.	68.720	MAXIMUM STAGE REACHED.....	68.64
TIME, HRS	15.000	STAGE EL.	70.060	MINIMUM STAGE REACHED.....	68.50
TIME, HRS	18.000	STAGE EL.	70.140	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	27.000	STAGE EL.	70.010	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	36.000	STAGE EL.	69.740	FINAL STAGE ELEVATION.....	68.64
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	65.35
				TIME OF PEAK INTAKE, HOURS...	4.10
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 004, SUBAREA

ILE NAME	WSOFFB00	FLOOD EL.	74.000	INPUT ID.....	792798881
INPUT ID#	792798173			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	10.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	102			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.444			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.340			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.340				
TP, HRS..	3.900				
PEAK CFS.	1.214			PEAK NODAL INTAKE, CFS.....	1.21
ACFT VOL.	0.239			TIME OF PEAK INTAKE, HOURS...	3.90
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	1.21
				TIME OF PEAK OUTPUT, HOURS...	3.90
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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SST

POND C

SR 45 BASIN C

CRITICAL DURATION ANALYSIS — 3yr FDOT EVENT

Subarea BASIN C PRE-DEVELOPMENT 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC38
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768626
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 17.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 175
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.5013933
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 4.8
	PEAK CFS 22.228226 ←
	ACFT VOL 8.1788842
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN C

Subarea BASIN C PRE-DEVELOPMENT 3yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC324
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768541
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 33.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 335
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 6.6
	EXCESS.. 5.3147583
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 12.8
	PEAK CFS 12.735267 ←
	ACFT VOL 12.414713
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea BASIN C PRE-DEVELOPMENT 3yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC34
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768696
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 12.2
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 123
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 3.88
	EXCESS.. 2.7077899
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 3.4
	PEAK CFS 21.163013 ←
	ACFT VOL 6.3243361
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

SR 45 BASIN C

CRITICAL DURATION ANALYSIS – 100yr FDOT EVENT

Subarea BASIN C PRE-DEVELOPMENT 100yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC1008
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768425
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 17.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 175
LAKE EAST	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 9.2
	EXCESS.. 7.8631115
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 4.8
	PEAK CFS 49.629135 ←
	ACFT VOL 18.367396
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

- CRITICAL EVENT is the 100yr-8hr FDOT RAINFALL.

Peak Discharge = 49.63 cfs. ✓

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PPC1008

SR 45 BASIN C

WS EAST 100yr-8hr FDOT EVENT

TO LAKE EAST

PRE WS C EAST 100YR FDOT-8HR

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... WSCE_CRI
TOTAL DRAINAGE AREA, ACRES... 6.44	INPUT ID 809819535
WEIGHTED SCS CURVE NUMBER.... 85.27	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 10.6
TIME OF CONCENTRATION, HOURS. 0.43	DT, HRS. 0.1
	DATA PTS 107
LAKE WEST	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 9.2
	EXCESS.. 7.4090533
	ACREAGE. 6.44
	TC, HRS. 0.43
	TP, HRS. 4.0
	PEAK CFS 19.81584 ←
	ACFT VOL 3.9748768
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

PEAK RATE = 19.82 cfs

100yr-8hr FDOT EVENT is THE CRITICAL EVENT

SR 45 BASIN C

Subarea BASIN C PRE-DEVELOPMENT 100yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC10024
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768027
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 33.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 335
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 11.2
	EXCESS.. 9.8383732
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 12.8
	PEAK CFS 23.180166 ←
	ACFT VOL 22.981399
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea BASIN C PRE-DEVELOPMENT 100yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPC1004
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 768768478
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 12.2
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 123
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 7.28
	EXCESS.. 5.9781156
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 3.3
	PEAK CFS 45.854931 ←
	ACFT VOL 13.962725
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

729

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SR 45 BASIN C

SCS TYPE II Mod. 25yr-24hr EVENT

Subarea BASIN C PRE-DEVELOPMENT 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_C_25
TOTAL DRAINAGE AREA, ACRES... 28.04	INPUT ID 767733447
WEIGHTED SCS CURVE NUMBER.... 88.97	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 33.4
TIME OF CONCENTRATION, HOURS. 1.55	DT, HRS. 0.1
	DATA PTS 335
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.6661301
	ACREAGE. 28.04
	TC, HRS. 1.55
	TP, HRS. 13.1
	PEAK CFS 43.104393 ←
	ACFT VOL 17.907268
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

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SR 45 BASIN C

POST CONDITION CRITICAL STORM ROUTING (100yr-8hr FOOT EVENT)

LAKE EAST :	PRE 19.82 cfs POST 19.76 cfs
LAKE WEST :	PRE 49.63 cfs POST 27.03 cfs

⇒ compliance

Project PC_CRIT, Run of Thu Aug 31 11:42:52 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND C	POND C	DIRECT
1	WS ON POND C	POND C	DIRECT
2	WS TO LAKE WEST	LAKE WEST	DIRECT
3	POND C	RISER	VEE NOTCH
4	POND C	RISER	RECT WEIR
5	POND C	RISER	RECT WEIR
6	POND C	RISER	RECT WEIR
7	RISER	SUMP	PIPE
8	SUMP	CULVERT	DITCH
9	POND C	LAKE EAST	RECT WEIR
10	CULVERT	LAKE WEST	PIPE

Node	Name	Node Type
0	POND C	POND
1	WS TO POND C	SUBAREA
2	WS ON POND C	SUBAREA
3	RISER	JUNCTION
4	LAKE EAST	STAGING
5	LAKE WEST	STAGING
6	WS TO LAKE WEST	SUBAREA
7	CULVERT	JUNCTION
8	SUMP	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	POND C	POND	68.70	0.50	→71.97	5.80	NO
1	WS TO POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
2	WS ON POND C	SUBAREA	74.00	0.00	74.00	0.00	NO
3	RISER	JUNCTION	68.36	0.50	71.82	5.80	NO
4	LAKE EAST	STAGING	68.50	0.00	68.64	8.00	NO
5	LAKE WEST	STAGING	64.00	0.00	64.45	8.00	NO
6	WS TO LAKE WEST	SUBAREA	74.00	0.00	74.00	0.00	NO
7	CULVERT	JUNCTION	67.48	0.60	70.56	6.00	NO
8	SUMP	JUNCTION	68.34	0.60	70.66	6.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	POND C	115.58 @ 4.00 Hours	46.65 @ 5.70 Hours
1	WS TO POND C	103.84 @ 4.10 Hours	103.84 @ 4.10 Hours
2	WS ON POND C	19.72 @ 3.50 Hours	19.72 @ 3.50 Hours
3	RISER	26.88 @ 5.90 Hours	26.88 @ 5.90 Hours
4	LAKE EAST PRE 19.82 cfs	→19.76 @ 5.80 Hours	0.00 @ 0.00 Hours
5	LAKE WEST PRE 49.63 cfs	→27.03 @ 5.50 Hours	0.00 @ 0.00 Hours
6	WS TO LAKE WEST	2.32 @ 3.90 Hours	2.32 @ 3.90 Hours
7	CULVERT	26.47 @ 6.00 Hours	26.47 @ 6.00 Hours
8	SUMP	26.86 @ 5.90 Hours	26.86 @ 5.90 Hours

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VIII-31

SR 45 BASIN C

POST CONDITION CRITICAL ROUTING PATHS REPORT

Report on Paths of Project PC_CRIT.

```
-----------------------------------------
        Path...... 000, DIRECT
     Upper Node 001, WS TO POND C
        Lower Node 000, POND C
-----------------------------------------
DIRECT.. ---------|INPUT ID 767734523
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..     103.84
                  |MIN IN..       0.00
                  |MAX OUT.     103.84
                  |MIN OUT.       0.00
                                |
                                |
                                |
                                |
                                |
                                |
                                |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    73.000|REV X...       0.00
-----------------------------------------
```

```
-----------------------------------------
        Path...... 001, DIRECT
     Upper Node 002, WS ON POND C
        Lower Node 000, POND C
-----------------------------------------
DIRECT.. ---------|INPUT ID 767734594
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..      19.72
                  |MIN IN..       0.00
                  |MAX OUT.      19.72
                  |MIN OUT.       0.00
                                |
                                |
                                |
                                |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    73.000|REV X...       0.00
-----------------------------------------
```

732

VIII-32

```
-------------------------------------
        Path...... 002, DIRECT
   Upper Node 006, WS TO LAKE WEST
      Lower Node 005, LAKE WEST
-------------------------------------
DIRECT.. ---------|INPUT ID 767734622
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       2.32
                  |INPUT ID       0.00
                  |MAX OUT.       2.32
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    74.000|FWD X...       0.00
TW EL...    73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 003, VEE NOTCH
          Upper Node 000, POND C
          Lower Node 003, RISER
-------------------------------------
CREST EL    68.140|INPUT ID 809883633
ANGLE...    85.000|T0 CFS..       0.54
-------- ---------|T0 CF...       0.00
HEIGHT..     0.560|MAX IN..       0.69
-------- ---------|MIN IN..       0.32
                  |MAX OUT.       0.69
                  |MIN OUT.       0.32
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE NO       |REV K...       0.00
MAX HW..    73.000|FWD X...       0.00
MAX TW..    73.000|REV X...       0.00
-------------------------------------
```

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```
-------------------------------------
      Path..... 004, RECT WEIR
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL    68.700|INPUT ID 809883637
WIDTH...     4.083|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..     14.53
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.     14.53
-------- ---------|MIN OUT.      0.00
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..  73.000|FWD X...      0.00
MAX TW..  73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 005, RECT WEIR
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL    68.700|INPUT ID 809883641
WIDTH...     2.083|T0 CFS..      0.00
WEIR C..     3.200|T0 CF...      0.00
NUM ENDS     2    |MAX IN..      6.00
-------- ---------|MIN IN..      0.00
BREADTH.          |MAX OUT.      6.00
-------- ---------|MIN OUT.      0.00
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
                                   |
HW PE/KE YES      |FWD K...      0.00
TW PE/KE NO       |REV K...      0.00
MAX HW..  73.000|FWD X...      0.00
MAX TW..  73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 006, RECT WEIR
        Upper Node 000, POND C
        Lower Node 003, RISER
-------------------------------------
CREST EL     68.700|INPUT ID 809883645
WIDTH...      2.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..       6.00
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.       6.00
-------- ---------|MIN OUT.       0.00
                    |
                    |
                    |
                    |
                    |
                    |
                    |
HW PE/KE YES        |FWD K...       0.00
TW PE/KE NO         |REV K...       0.00
MAX HW..    73.000|FWD X...       0.00
MAX TW..    73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 007, PIPE
    Upper Node 003, RISER
      Lower Node 008, SUMP
-------------------------------------
LEN, FT.   483.000|INPUT ID 786375335
MANN N..     0.012|T0 CFS...       0.54
RISE, FT     3.000|T0 CF....       0.00
SPAN, FT     3.000|MAX IN..       26.86
INLET--- ---------|MIN IN..        0.53
INVERT..    67.050|MAX OUT.       26.86
ENT KE..     2.200|MIN OUT.        0.53
       OUTLET-- ---------|
       INVERT..    66.660|
       ENT KE..     2.500|
       -------- ---------|
       BW STEPS     0    |
       -------- ---------|
                         |
                         |
HW PE/KE NO         |FWD K...       0.00
TW PE/KE NO         |REV K...       0.00
MAX HW..    73.000|FWD X...       0.00
MAX TW...   73.000|REV X...       0.00
-------------------------------------
```

Path..... 008, DITCH
Upper Node 008, SUMP
Lower Node 007, CULVERT

LENGTH..	120.000	INPUT ID	792025397
MANN N..	0.030	T0 CFS..	0.54
LF BANK.	3.000	T0 CF...	0.00
RT BANK.	2.000	MAX IN..	26.47
INLET---	---	MIN IN..	0.53
INVERT..	68.000	MAX OUT.	26.47
BOT W...	3.500	MIN OUT.	0.53
ENT KE..	0.000		
OUTLET--	---		
INVERT..	67.290		
BOT W...	3.500		
ENT KE..	0.000		
BW STEPS	0		
HW PE/KE	NO	FWD K...	0.00
TW PE/KE	NO	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

Path..... 009, RECT WEIR
Upper Node 000, POND C
Lower Node 004, LAKE EAST

CREST EL	68.700	INPUT ID	809725894
WIDTH...	1.700	T0 CFS..	0.00
WEIR C..	3.200	T0 CF...	0.00
NUM ENDS	2	MAX IN..	19.76
---	---	MIN IN..	0.00
BREADTH.		MAX OUT.	19.76
---	---	MIN OUT.	0.00
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

Path..... 010, PIPE
Upper Node 007, CULVERT
Lower Node 005, LAKE WEST

LEN, FT.	40.000	INPUT ID	780257741
MANN N..	0.024	T0 CFS..	0.54
RISE, FT	2.000	T0 CF...	0.00
SPAN, FT	2.000	MAX IN..	26.47
INLET---	---	MIN IN..	0.53
INVERT..	67.290	MAX OUT.	26.47
ENT KE..	0.200	MIN OUT.	0.53
OUTLET--	---		
INVERT..	66.540		
ENT KE..	0.500		
BW STEPS	0		
HW PE/KE	NO	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

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SR 45 BASIN C

POST CONDITION CRITICAL ROUTING NODES REPORT

Report on Nodes of Project PC_CRIT.

Node..... 000, POND

TOP EL...	73.000	TOP AREA.	5.270	INPUT ID.....	809883706
EL.....	71.600	AREA.....	4.369	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	→68.70
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	97781.30
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	→71.97
EL.....		AREA.....		MINIMUM STAGE REACHED.....	68.70
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	681162.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	583381.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	71.21
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	5.80
BOT EL...	68.140	BOT AREA.	3.648	TIME OF MINIMUM STAGE, HOURS.	0.50
TOP LF...		SIDE XPER			
MID LF...		BASE XPER		PEAK NODAL INTAKE, CFS.....	115.58
BOT LF...				TIME OF PEAK INTAKE, HOURS...	4.00
			overflow EL	PEAK NODAL OUTPUT, CFS.....	46.65
				TIME OF PEAK OUTPUT, HOURS...	5.70
BASE CFS.	0.000	STAGE T0.	→68.700	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, SUBAREA

FILE NAME	WSTOC00	FLOOD EL.	74.000	INPUT ID.....	809706313
INPUT ID#	809706271			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	11.700			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	118			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	8.297			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	34.900			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.601				
TP, HRS..	4.100				
PEAK CFS.	103.841			PEAK NODAL INTAKE, CFS.....	103.84
ACFT VOL.	24.124			TIME OF PEAK INTAKE, HOURS...	4.10
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	103.84
				TIME OF PEAK OUTPUT, HOURS...	4.10
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 002, SUBAREA

FILE NAME	WSONC00	FLOOD EL.	74.000
INPUT ID#	792855128		
ALT TYPE.	RNF0002		
RUN, HRS.	9.000		
DT, HRS..	0.100		
DATA PTS.	91		
STORM....	FDOT_8		
HOURS....	8.000		
RAINFALL.	9.200		
EXCESS...	9.200		
ACREAGE..	4.369		
TC, HRS..			
TP, HRS..	3.500		
PEAK CFS.	19.721		
ACFT VOL.	3.348		
EXECUTED.	YES		
BASE CFS.	0.000		
X COORD..		Y COORD..	

INPUT ID.....	792857266
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	74.00
INITIAL STORAGE, CUBIC FEET..	0.00
MAXIMUM STAGE REACHED.....	74.00
MINIMUM STAGE REACHED.....	74.00
MAXIMUM GROSS STORAGE, CF....	0.00
MAXIMUM DETENTION STORAGE, CF	0.00
FINAL STAGE ELEVATION.....	74.00
TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME OF MINIMUM STAGE, HOURS.	0.00
PEAK NODAL INTAKE, CFS.....	19.72
TIME OF PEAK INTAKE, HOURS...	3.50
PEAK NODAL OUTPUT, CFS.....	19.72
TIME OF PEAK OUTPUT, HOURS...	3.50
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

Node..... 003, JUNCTION

FLOOD EL.	73.000		
BASE CFS.	0.000		
X COORD..		Y COORD..	

INPUT ID.....	792857273
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	68.36
INITIAL STORAGE, CUBIC FEET..	0.00
MAXIMUM STAGE REACHED.....	71.82
MINIMUM STAGE REACHED.....	68.36
MAXIMUM GROSS STORAGE, CF....	0.00
MAXIMUM DETENTION STORAGE, CF	0.00
FINAL STAGE ELEVATION.....	71.06
TIME OF MAXIMUM STAGE, HOURS.	5.80
TIME OF MINIMUM STAGE, HOURS.	0.50
PEAK NODAL INTAKE, CFS.....	26.88
TIME OF PEAK INTAKE, HOURS...	5.90
PEAK NODAL OUTPUT, CFS.....	26.88
TIME OF PEAK OUTPUT, HOURS...	5.90
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

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Node..... 004, STAGING

FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	792857675
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.500	INITIAL STAGE ELEVATION.....	68.50
TIME, HRS	5.000	STAGE EL.	68.510	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	10.000	STAGE EL.	68.720	MAXIMUM STAGE REACHED.....	68.64
TIME, HRS	15.000	STAGE EL.	70.060	MINIMUM STAGE REACHED.....	68.50
TIME, HRS	18.000	STAGE EL.	70.140	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	27.000	STAGE EL.	70.010	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	36.000	STAGE EL.	69.740	FINAL STAGE ELEVATION.....	68.64
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	→ 19.76
				TIME OF PEAK INTAKE, HOURS...	5.80
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.500	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, STAGING

FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	792857669
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	64.000	INITIAL STAGE ELEVATION.....	64.00
TIME, HRS	7.500	STAGE EL.	64.280	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	66.840	MAXIMUM STAGE REACHED.....	64.45
TIME, HRS	22.500	STAGE EL.	67.610	MINIMUM STAGE REACHED.....	64.00
TIME, HRS	30.000	STAGE EL.	68.000	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	37.500	STAGE EL.	68.150	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	45.000	STAGE EL.	68.200	FINAL STAGE ELEVATION.....	64.45
TIME, HRS	60.000	STAGE EL.	68.150	TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS	90.000	STAGE EL.	67.730	TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS	120.000	STAGE EL.	67.090		
TIME, HRS	150.000	STAGE EL.	66.500		
				PEAK NODAL INTAKE, CFS.....	→ 27.03
				TIME OF PEAK INTAKE, HOURS...	5.50
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	64.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 006, SUBAREA

FILE NAME	WSOFFC00	FLOOD EL.	74.000	INPUT ID.....	792857298
INPUT ID#	792850341			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	9.400			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	95			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	6.012			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.766			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.233				
TP, HRS..	3.900				
PEAK CFS.	2.324			PEAK NODAL INTAKE, CFS.....	2.32
ACFT VOL.	0.384			TIME OF PEAK INTAKE, HOURS...	3.90
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	2.32
				TIME OF PEAK OUTPUT, HOURS...	3.90
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 007, JUNCTION

FLOOD EL.	73.000			INPUT ID.....	792857322
				FLOOD ELEVATION REACHED.....	NO
				INITIAL STAGE ELEVATION.....	67.48
				INITIAL STORAGE, CUBIC FEET..	0.00
				MAXIMUM STAGE REACHED.....	70.56
				MINIMUM STAGE REACHED.....	67.48
				MAXIMUM GROSS STORAGE, CF....	0.00
				MAXIMUM DETENTION STORAGE, CF	0.00
				FINAL STAGE ELEVATION.....	70.09
				TIME OF MAXIMUM STAGE, HOURS.	6.00
				TIME OF MINIMUM STAGE, HOURS.	0.60
				PEAK NODAL INTAKE, CFS.....	26.47
				TIME OF PEAK INTAKE, HOURS...	6.00
				PEAK NODAL OUTPUT, CFS.....	26.47
				TIME OF PEAK OUTPUT, HOURS...	6.00
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

741

VIII-41

Node..... 008, JUNCTION

FLOOD EL.	73.000	INPUT ID.....	792857327
		FLOOD ELEVATION REACHED.....	NO
		INITIAL STAGE ELEVATION.....	68.34
		INITIAL STORAGE, CUBIC FEET..	0.00
		MAXIMUM STAGE REACHED.....	70.66
		MINIMUM STAGE REACHED.....	68.34
		MAXIMUM GROSS STORAGE, CF....	0.00
		MAXIMUM DETENTION STORAGE, CF	0.00
		FINAL STAGE ELEVATION.....	70.16
		TIME OF MAXIMUM STAGE, HOURS.	6.00
		TIME OF MINIMUM STAGE, HOURS.	0.60
		PEAK NODAL INTAKE, CFS.....	26.86
		TIME OF PEAK INTAKE, HOURS...	5.90
		PEAK NODAL OUTPUT, CFS.....	26.86
		TIME OF PEAK OUTPUT, HOURS...	5.90
BASE CFS.	0.000	POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

742

VIII-42

POND D

SR 45 BASIN D

CRITICAL DURATION ANALYSIS – 3yr FDOT EVENT

Subarea PRE BASIN D 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD38
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768771988
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 11.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 116
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.1341746
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 4.2
	PEAK CFS 34.409084 ←
	ACFT VOL 7.5665291
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

3yr critical EVENT is the 8hr RAINFALL.

Peak discharge = 34.41 cfs.

744

VIII-43

SR 45 BASIN D

Subarea PRE BASIN D 3yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD324
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768771940
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 276
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 6.6
	EXCESS.. 4.8986969
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 12.1
	PEAK CFS 15.18094 ←
	ACFT VOL 11.826442
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE BASIN D 3yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD34
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768772058
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 7.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 76
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 3.88
	EXCESS.. 2.372431
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 2.8
	PEAK CFS 30.875093 ←
	ACFT VOL 5.7275267
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

745

VIII- 44

SR 45 BASIN D

CRITICAL DURATION ANALYSIS — 100yr FDOT EVENT

Subarea PRE BASIN D 100yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD1008
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768771834
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 11.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 116
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 9.2
	EXCESS.. 7.4065919
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 4.1
	PEAK CFS 80.165535 ←
	ACFT VOL 17.881006
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

100 yr CRITICAL EVENT is the 8 hr RAINFALL.

Peak Discharge = 80.17 cfs.

746

VIII - 45

PPD1008

SR45 Basin D

Subarea PRE BASIN D 100yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD10024
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768771700
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 276
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 11.2
	EXCESS.. 9.3616409
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 12.1
	PEAK CFS 28.258699 ←
	ACFT VOL 22.600889
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE BASIN D 100yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPD1004
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768771883
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 7.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 76
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 7.28
	EXCESS.. 5.5492702
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 2.7
	PEAK CFS 69.745033 ←
	ACFT VOL 13.397057
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

747

VIII - 46

SR 45 BASIN D

SCS Type II Mod. 25yr - 24hr EVENT

Subarea PRE BASIN D 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_D_25
TOTAL DRAINAGE AREA, ACRES... 28.98	INPUT ID 768141221
WEIGHTED SCS CURVE NUMBER.... 85.25	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 27.5
TIME OF CONCENTRATION, HOURS. 0.58	DT, HRS. 0.1
	DATA PTS 276
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.2120399
	ACREAGE. 28.98
	TC, HRS. 0.58
	TP, HRS. 12.5
	PEAK CFS 80.449501 ←
	ACFT VOL 17.411318
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

- SWFWMD DESIGN EVENT is 25 yr - 24hr Type II Mod. RAINFALL. Peak Discharge = 80.45 cfs.

- FDOT critical EVENT is 100yr - 8hr FDOT_8 RAINFALL. Peak Discharge = 80.17 cfs.

748

VIII - 47

SR 45 BASIN D

Post Development critical Duration FDOT Routing.
100yr FDOT-8hr EVENT

Network Summary

Project PD_CRIT, Run of Tue Feb 14 11:52:26 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND D1	POND D1	DIRECT
1	WS ON POND D1	POND D1	DIRECT
2	POND D1	POND D2	PIPE
3	WS ON POND D2	POND D2	DIRECT
4	WS TO LAKE	LAKE	DIRECT
5	POND D2	LAKE	VEE NOTCH
6	POND D2	LAKE	RECT WEIR

Node	Name	Node Type
0	WS TO POND D1	SUBAREA
1	POND D1	POND
2	WS ON POND D1	SUBAREA
3	POND D2	POND
4	WS ON POND D2	SUBAREA
5	LAKE	STAGING
6	WS TO LAKE	SUBAREA

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
1	POND D1	POND	→69.62	0.00	→71.54	5.00	NO
2	WS ON POND D1	SUBAREA	74.00	0.00	74.00	0.00	NO
3	POND D2	POND	→69.62	0.20	70.86	5.10	NO
4	WS ON POND D2	SUBAREA	74.00	0.00	74.00	0.00	NO
5	LAKE	STAGING	68.00	0.00	68.35	8.00	NO
6	WS TO LAKE	SUBAREA	74.00	0.00	74.00	0.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND D1	75.93 @ 4.30 Hours	75.93 @ 4.30 Hours
1	POND D1	79.16 @ 4.20 Hours	67.15 @ 4.70 Hours
2	WS ON POND D1	8.94 @ 3.50 Hours	8.94 @ 3.50 Hours
3	POND D2	70.95 @ 4.70 Hours	66.60 @ 5.10 Hours
4	WS ON POND D2	13.14 @ 3.50 Hours	13.14 @ 3.50 Hours
5	LAKE	→71.76 @ 5.10 Hours	0.00 @ 0.00 Hours
6	WS TO LAKE	7.99 @ 4.10 Hours	7.99 @ 4.10 Hours

Pre 100yr FDOT-8hr EVENT peak rate = 80.17cfs

Post 100yr FDOT-8hr EVENT peak rate = 71.76 cfs

⇒ compliance ... 749

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SR 45 BASIN D

POST DEVELOPMENT CRITICAL DURATION FDOT ROUTING.

PATHS REPORT

Report on Paths of Project PD_CRIT.

```
-----------------------------------
      Path..... 000, DIRECT
  Upper Node 000, WS TO POND D1
    Lower Node 001, POND D1
-----------------------------------
DIRECT.. ---------|INPUT ID 768170852
                  |IT0 CFS..      0.00
                  |IT0 CF...      0.00
                  |MAX IN..      75.93
                  |MIN IN..       0.00
                  |MAX OUT.      75.93
                  |MIN OUT.       0.00
                  |
                  |
                  |
                  |
                  |
                  |
 HW PE/KE NO      |FWD K...       0.00
 TW PE/KE YES     |REV K...       0.00
 HW EL...  74.000 |FWD X...       0.00
 TW EL...  73.000 |REV X...       0.00
-----------------------------------
```

```
-----------------------------------
      Path..... 001, DIRECT
  Upper Node 002, WS ON POND D1
    Lower Node 001, POND D1
-----------------------------------
DIRECT.. ---------|INPUT ID 768170881
                  |IT0 CFS..      0.00
                  |IT0 CF...      0.00
                  |MAX IN..       8.94
                  |MIN IN..       0.00
                  |MAX OUT.       8.94
                  |MIN OUT.       0.00
                  |
                  |
                  |
                  |
                  |
                  |
 HW PE/KE NO      |FWD K...       0.00
 TW PE/KE YES     |REV K...       0.00
 HW EL...  74.000 |FWD X...       0.00
 TW EL...  73.000 |REV X...       0.00
-----------------------------------
```

```
-------------------------------------
        Path...... 002, PIPE
     Upper Node 001, POND D1
     Lower Node 003, POND D2
-------------------------------------
LEN, FT.    261.000|INPUT ID 768774923
MANN N..      0.012|T0 CFS..      0.00
RISE, FT      4.500|T0 CF...      0.00
SPAN, FT      4.500|MAX IN..     67.14
INLET--- ---------|MIN IN..      0.00
INVERT..     61.820|MAX OUT.     67.14
ENT KE..      0.400|MIN OUT.      0.00
          OUTLET-- ---------|
          INVERT..    61.680|
          ENT KE..     1.000|
          -------- ---------|
          BW STEPS     0    |
          -------- ---------|
                            |
                            |
HW PE/KE YES       |FWD K...      0.00
TW PE/KE YES       |REV K...      0.00
MAX HW..     73.000|FWD X...      0.00
MAX TW..     73.000|REV X...      0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 003, DIRECT
     Upper Node 004, WS ON POND D2
     Lower Node 003, POND D2
-------------------------------------
DIRECT.. ---------|INPUT ID 768171215
                  |T0 CFS..      0.00
                  |T0 CF...      0.00
                  |MAX IN..     13.14
                  |MIN IN..      0.00
                  |MAX OUT.     13.14
                  |MIN OUT.      0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO        |FWD K...      0.00
TW PE/KE YES       |REV K...      0.00
HW EL...     74.000|FWD X...      0.00
TW EL...     73.000|REV X...      0.00
-------------------------------------
```

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```
-------------------------------------
      Path..... 004, DIRECT
    Upper Node 006, WS TO LAKE
      Lower Node 005, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 768148476
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       7.99
                  |MIN IN..       0.00
                  |MAX OUT.       7.99
                  |MIN OUT.       0.00
                         |
                         |
                         |
                         |
                         |
                         |
                         |
                         |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL....    74.000|FWD X...       0.00
TW EL....    73.000|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path..... 005, VEE NOTCH
    Upper Node 003, POND D2
      Lower Node 005, LAKE
-------------------------------------
CREST EL     69.260|INPUT ID 780176605
ANGLE...    115.000|T0 CFS..       0.29
-------- ---------|T0 CF...       0.00
HEIGHT..      0.360|MAX IN..       1.14
-------- ---------|MIN IN..       0.29
                  |MAX OUT. 780176605
                  |MIN OUT.       0.29
                         |
                         |
                         |
                         |
                         |
                         |
                         |
                         |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE YES      |REV K...       0.00
MAX HW..     73.000|FWD X...       0.00
MAX TW..     73.000|REV X...       0.00
-------------------------------------
```

Path..... 006, RECT WEIR
Upper Node 003, POND D2
Lower Node 005, LAKE

CREST EL	69.620	INPUT ID	780958498
WIDTH...	15.000	T0 CFS..	0.00
WEIR C..	3.200	T0 CF...	0.00
NUM ENDS	2	MAX IN..	65.46
		MIN IN..	0.00
BREADTH.		MAX OUT.	65.46
		MIN OUT.	0.00
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	73.000	FWD X...	0.00
MAX TW..	73.000	REV X...	0.00

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VIII-52

SR 45 BASIN D
Post Development critical Duration FDOT Routing.
100 yr FDOT 8hr Event
Report on Nodes of Project: PD_CRIT.
Nodes Report

Node..... 000, SUBAREA

FILE NAME	WSTOD125	FLOOD EL.	74.000
INPUT ID#	792280304		
ALT TYPE.	RNF0002		
RUN, HRS.	13.400		
DT, HRS..	0.100		
DATA PTS.	135		
STORM....	FDOT_8		
HOURS....	8.000		
RAINFALL.	9.200		
EXCESS...	8.132		
ACREAGE..	30.710		
TC, HRS..	0.885		
TP, HRS..	4.300		
PEAK CFS.	75.933		
ACFT VOL.	20.804		
EXECUTED.	YES		
BASE CFS.	0.000		
X COORD..		Y COORD..	

INPUT ID.....	792280318
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	74.00
INITIAL STORAGE, CUBIC FEET..	0.00
MAXIMUM STAGE REACHED.....	74.00
MINIMUM STAGE REACHED.....	74.00
MAXIMUM GROSS STORAGE, CF....	0.00
MAXIMUM DETENTION STORAGE, CF	0.00
FINAL STAGE ELEVATION.....	74.00
TIME OF MAXIMUM STAGE, HOURS.	0.00
TIME OF MINIMUM STAGE, HOURS.	0.00
PEAK NODAL INTAKE, CFS.....	75.93
TIME OF PEAK INTAKE, HOURS...	4.30
PEAK NODAL OUTPUT, CFS.....	75.93
TIME OF PEAK OUTPUT, HOURS...	4.30
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL...	73.000	TOP AREA.	1.980
EL.....	69.260	AREA.....	1.570
EL.....	69.250	AREA.....	0.057
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
EL.....		AREA.....	
BOT EL...	61.820	BOT AREA.	0.057
TOP LF...		SIDE %PER	
MID LF...		BASE %PER	
BOT LF...			
BASE CFS.	0.000	STAGE T0.	69.620
X COORD..		Y COORD..	

INPUT ID.....	792780599
FLOOD ELEVATION REACHED.....	NO
INITIAL STAGE ELEVATION.....	69.62
INITIAL STORAGE, CUBIC FEET..	46767.00
MAXIMUM STAGE REACHED.....	71.54
MINIMUM STAGE REACHED.....	69.62
MAXIMUM GROSS STORAGE, CF....	195324.00
MAXIMUM DETENTION STORAGE, CF	148557.00
FINAL STAGE ELEVATION.....	70.54
TIME OF MAXIMUM STAGE, HOURS.	5.00
TIME OF MINIMUM STAGE, HOURS.	0.00
PEAK NODAL INTAKE, CFS.....	79.16
TIME OF PEAK INTAKE, HOURS...	4.20
PEAK NODAL OUTPUT, CFS.....	67.15
TIME OF PEAK OUTPUT, HOURS...	4.70
POINTS OUT OF TOLERANCE.....	0
MAXIMUM STAGE ERROR.....	0.00

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Node..... 002, SUBAREA

FILE NAME	WSOND125	FLOOD EL.	74.000	INPUT ID.....	79228037
INPUT ID#	792280360			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.0
RUN, HRS.	9.000			INITIAL STORAGE, CUBIC FEET..	0.0
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.0
DATA PTS.	91			MINIMUM STAGE REACHED.....	74.0
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.0
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.0
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.0
EXCESS...	9.200			TIME OF MAXIMUM STAGE, HOURS.	0.0
ACREAGE..	1.980			TIME OF MINIMUM STAGE, HOURS.	0.0
TC, HRS..					
TP, HRS..	3.500				
PEAK CFS.	8.938			PEAK NODAL INTAKE, CFS.....	8.9
ACFT VOL.	1.518			TIME OF PEAK INTAKE, HOURS...	3.5
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	8.9
				TIME OF PEAK OUTPUT, HOURS...	3.5
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.0

Node..... 003, POND

TOP EL...	73.000	TOP AREA.	2.910	INPUT ID.....	792780658
EL.....	69.260	AREA.....	2.420	FLOOD ELEVATION REACHED.....	NO
EL.....	69.250	AREA.....	0.057	INITIAL STAGE ELEVATION.....	69.62
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	61258.80
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	70.86
EL.....		AREA.....		MINIMUM STAGE REACHED.....	69.62
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	205340.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	144081.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	70.33
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	5.10
BOT EL...	61.680	BOT AREA.	0.057	TIME OF MINIMUM STAGE, HOURS.	0.20
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	70.95
BOT LF...				TIME OF PEAK INTAKE, HOURS...	4.70
				PEAK NODAL OUTPUT, CFS.....	66.60
				TIME OF PEAK OUTPUT, HOURS...	5.10
BASE CFS.	0.000	STAGE T0.	69.620	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, SUBAREA

FILE NAME	WSOND225	FLOOD EL.	74.000	INPUT ID.....	792280434
INPUT ID#	792280428			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	9.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	91			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	9.200			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	2.910			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	3.500				
PEAK CFS.	13.136			PEAK NODAL INTAKE, CFS.....	13.14
ACFT VOL.	2.230			TIME OF PEAK INTAKE, HOURS...	3.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	13.14
				TIME OF PEAK OUTPUT, HOURS...	3.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, STAGING

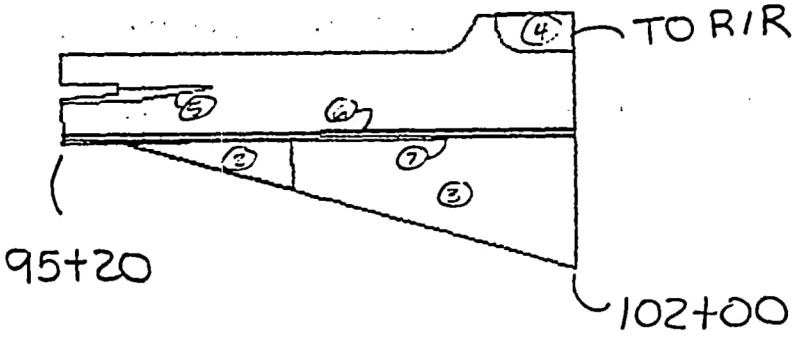
FLOOD EL.	73.000	PE TO KE.	YES	INPUT ID.....	792280245
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.000	INITIAL STAGE ELEVATION.....	68.00
TIME, HRS	7.500	STAGE EL.	68.200	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	70.430	MAXIMUM STAGE REACHED.....	68.35
TIME, HRS	22.500	STAGE EL.	71.100	MINIMUM STAGE REACHED.....	68.00
TIME, HRS	30.000	STAGE EL.	71.400	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.35
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	71.76
				TIME OF PEAK INTAKE, HOURS...	5.10
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 006, SUBAREA

FILE NAME	WSOFFD25	FLOOD EL.	74.000	INPUT ID.....	79228048
INPUT ID#	792280479			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	74.00
RUN, HRS.	11.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	74.00
DATA PTS.	111			MINIMUM STAGE REACHED.....	74.00
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	74.00
EXCESS...	5.585			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	3.520			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.491				
TP, HRS..	4.100				
PEAK CFS.	7.988			PEAK NODAL INTAKE, CFS.....	7.99
ACFT VOL.	1.638			TIME OF PEAK INTAKE, HOURS...	4.10
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	7.99
				TIME OF PEAK OUTPUT, HOURS...	4.10
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Post Development

No.	sq.ft	acres	
1	136062.31	3.12	Overall Watershed
2	7323.72	0.17	Open Poor Type C
3	44546.52	1.02	Commercial Type C
4	4695.41	0.11	Brush Good Type C (TO R/R)
5	1960.45	0.05	Median
6	2114.09	0.05	Median
7	3203.07	0.07	Median



Henigar & Ray

made by: LRP date: 4/26/94 job no. 21663

PROJECT: US 41/SR45 checked by: _____ date: _____ sheet no. 5/14

Pond D STA 102+06 to 114+00
Post Development

Soil Types C & D

Overall Watershed 11.53 Ac

Commercial Type C	CN = 94	Area = 40628+46956 = 87584
1/8 Ac Residential Type C	CN = 90	Area = 220937
Brush Good Type C	CN = 65	Area = 2372+24486 = 26858 ←
Brush Good Type D	CN = 73	Area = 29008 ← (TO R/R)
Median	CN = 79	Area = 19261639+1367+3609+5778 = 13319

Pavement = 502462 − 377,701 = 124,761

POND E

SR 45 BASIN E

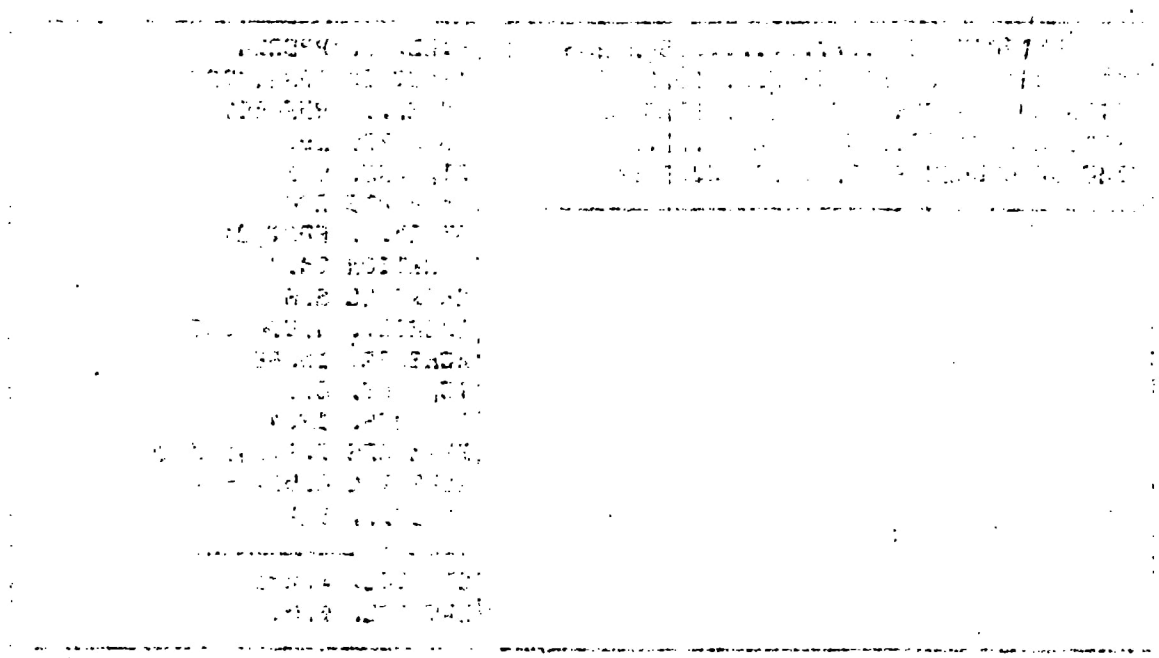
CRITICAL STORM ANALYSIS

Subarea PRE BASIN E 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE38
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808414367
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 13.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 138
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.1668847
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 4.4
	PEAK CFS 15.108307 ←
	ACFT VOL 4.1841794
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

3yr CRITICAL EVENT is THE 8hr RAINFALL

Peak Discharge = 15.11 cfs



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Subarea PRE BASIN E 3yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE34
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808414561
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 98
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 3.88
	EXCESS.. 2.4019697
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 3.1
	PEAK CFS 14.042109 ←
	ACFT VOL 3.173545
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Subarea PRE BASIN E 3yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE324
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808414729
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 298
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 6.6
	EXCESS.. 4.9363556
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 12.4
	PEAK CFS 7.6754107 ←
	ACFT VOL 6.5220514
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Subarea PRE BASIN E 100yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE1008
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808415093
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 13.7
TIME OF CONCENTRATION, HOURS: 0.94	DT, HRS. 0.1
	DATA PTS 138
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 9.2
	EXCESS.. 7.4484262
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 4.4
	PEAK CFS 35.271667 ←
	ACFT VOL 9.8410764
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

100 yr CRITICAL EVENT is the 8hr rainFALL

Peak discharge = 35.27 cfs

Subarea PRE BASIN E 100yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE10024
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808415307
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 298
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 11.2
	EXCESS.. 9.4055862
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 12.4
	PEAK CFS 14.316851 ←
	ACFT VOL 12.426923
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Subarea PRE BASIN E 100yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPE1004
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 808415492
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 9.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 98
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 7.28
	EXCESS.. 5.5882406
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 3.0
	PEAK CFS 31.751122 ←
	ACFT VOL 7.3833487
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

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Subarea PRE BASIN E 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_E_25
TOTAL DRAINAGE AREA, ACRES... 15.86	INPUT ID 780930812
WEIGHTED SCS CURVE NUMBER.... 85.59	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 29.7
TIME OF CONCENTRATION, HOURS. 0.94	DT, HRS. 0.1
	DATA PTS 298
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.2536211
	ACREAGE. 15.86
	TC, HRS. 0.94
	TP, HRS. 12.7
	PEAK CFS 33.067142 ←
	ACFT VOL 9.5836919
	READY... YES
	CFS TOL. 0.001
	HRS TOL. 0.01

Conclusion

CRITICAL STORM IS THE 100yr-8hr EVENT

Peak Discharge = 35.27 cfs

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SR 45 BASIN E

Post Development Critical Duration FDOT Routing.

100yr FDOT-8hr Event

Network Summary

Project PE_CRIT, Run of Tue Feb 14 15:31:58 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	POND	RISER	VEE NOTCH
3	POND	RISER	RECT WEIR
4	POND	RISER	RECT WEIR
5	POND	RISER	RECT WEIR
6	RISER	JUNCTION	PIPE
7	JUNCTION	LAKE	PIPE
8	WS TO LAKE	LAKE	DIRECT

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	RISER	JUNCTION
4	LAKE	STAGING
5	WS TO LAKE	SUBAREA
6	JUNCTION	JUNCTION

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	77.75	0.00	77.75	0.00	NO
1	POND	POND	74.09	0.30	75.92	5.60	NO
2	WS ON POND	SUBAREA	77.75	0.00	77.75	0.00	NO
3	RISER	JUNCTION	70.91	0.30	75.75	5.60	NO
4	LAKE	STAGING	68.00	0.00	68.39	8.00	NO
5	WS TO LAKE	SUBAREA	77.75	0.00	77.75	0.00	NO
6	JUNCTION	JUNCTION	68.86	0.30	70.67	5.60	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	32.96 @ 4.30 Hours	32.96 @ 4.30 Hours
1	POND	36.09 @ 4.10 Hours	21.51 @ 5.60 Hours
2	WS ON POND	7.63 @ 3.50 Hours	7.63 @ 3.50 Hours
3	RISER	21.51 @ 5.60 Hours	21.51 @ 5.60 Hours
4	LAKE	21.75 @ 5.40 Hours	0.00 @ 0.00 Hours
5	WS TO LAKE	1.21 @ 3.80 Hours	1.21 @ 3.80 Hours
6	JUNCTION	21.51 @ 5.60 Hours	21.51 @ 5.60 Hours

Pre 100yr FDOT-8hr EVENT Peak rate = 35.27 cfs

Post 100yr FDOT-8hr EVENT Peak rate = 21.75 cfs

⇒ Compliance

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SR 45 BASIN E

Post Development Critical Duration FDOT Routing.
100 yr FDOT - 8hr EVENT

PATHS Report

Report on Paths of Project PE_CRIT.

```
-------------------------------------
        Path...... 000, DIRECT
     Upper Node 000, WS TO POND
        Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 766850003
                 |T0 CFS..       0.00
                 |T0 CF...       0.00
                 |MAX IN..      32.96
                 |MIN IN..       0.00
                 |MAX OUT.      32.96
                 |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO      |FWD K...       0.00
TW PE/KE YES     |REV K...       0.00
HW EL...    77.750|FWD X...       0.00
TW EL...    77.500|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 001, DIRECT
     Upper Node 002, WS ON POND
        Lower Node 001, POND
-------------------------------------
DIRECT.. ---------|INPUT ID 766850014
                 |T0 CFS..       0.00
                 |T0 CF...       0.00
                 |MAX IN..       7.63
                 |MIN IN..       0.00
                 |MAX OUT.       7.63
                 |MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE NO      |FWD K...       0.00
TW PE/KE YES     |REV K...       0.00
HW EL...    77.750|FWD X...       0.00
TW EL...    77.500|REV X...       0.00
-------------------------------------
```

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```
-------------------------------------
      Path...... 002, VEE NOTCH
         Upper Node 001, POND
        Lower Node 003, RISER
-------------------------------------
CREST EL     73.700|INPUT ID 780937038
ANGLE...     56.000|T0 CFS..       0.12
-------- ---------|T0 CF...       0.00
HEIGHT..      0.390|MAX IN..       0.35
-------- ---------|MIN IN..       0.12
                  |MAX OUT.       0.35
                  |MIN OUT.       0.12
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
UP PE/KE YES      |FWD K...       0.00
DN PE/KE NO       |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 003, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-------------------------------------
CREST EL     74.090|INPUT ID 780937109
WIDTH...      4.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..      11.12
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.      11.12
-------- ---------|MIN OUT.       0.00
                          |
                          |
                          |
                          |
                          |
                          |
                          |
                          |
HW PE/KE YES      |FWD K...       0.00
TW PE/KE NO       |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-------------------------------------
```

```
-----------------------------------------
      Path...... 004, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-----------------------------------------
CREST EL     74.090|INPUT ID 792787547
WIDTH...      2.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..       5.13
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.       5.13
-------- ---------|MIN OUT.       0.00
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-----------------------------------------
```

```
-----------------------------------------
      Path...... 005, RECT WEIR
         Upper Node 001, POND
        Lower Node 003, RISER
-----------------------------------------
CREST EL     74.090|INPUT ID 792787547
WIDTH...      2.083|T0 CFS..       0.00
WEIR C..      3.200|T0 CF...       0.00
NUM ENDS      2    |MAX IN..       5.13
-------- ---------|MIN IN..       0.00
BREADTH.           |MAX OUT.       5.13
-------- ---------|MIN OUT.       0.00
                              |
                              |
                              |
                              |
                              |
                              |
                              |
                              |
HW PE/KE YES       |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-----------------------------------------
```

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```
-------------------------------------
        Path...... 006, PIPE
       Upper Node 003, RISER
      Lower Node 006, JUNCTION
-------------------------------------
LEN, FT.    999.000|INPUT ID 792793589
MANN N..      0.012|T0 CFS..       0.08
RISE, FT      2.500|T0 CF...       0.00
SPAN, FT      2.500|MAX IN..      21.51
INLET--- ---------|MIN IN..       0.08
INVERT..     70.790|MAX OUT.      21.51
ENT KE..      5.400|MIN OUT.       0.08
          OUTLET-- ---------|
          INVERT..    69.700|
          ENT KE..     6.000|
          -------- ---------|
          BW STEPS     0    |
          -------- ---------|
                            |
                            |
HW PE/KE NO        |FWD K...       0.00
TW PE/KE NO        |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
        Path...... 007, PIPE
       Upper Node 006, JUNCTION
       Lower Node 004, LAKE
-------------------------------------
LEN, FT.     40.000|INPUT ID 780938560
MANN N..      0.012|T0 CFS..       0.08
RISE, FT      2.000|T0 CF...       0.00
SPAN, FT      2.000|MAX IN..      21.51
INLET--- ---------|MIN IN..       0.07
INVERT..     68.840|MAX OUT.      21.51
ENT KE..      0.200|MIN OUT.       0.07
          OUTLET-- ---------|
          INVERT..    68.070|
          ENT KE..     0.500|
          -------- ---------|
          BW STEPS     0    |
          -------- ---------|
                            |
                            |
HW PE/KE NO        |FWD K...       0.00
TW PE/KE YES       |REV K...       0.00
MAX HW..     77.500|FWD X...       0.00
MAX TW..     77.500|REV X...       0.00
-------------------------------------
```

Path..... 008, DIRECT
Upper Node 005, WS TO LAKE
Lower Node 004, LAKE

DIRECT..	---------	INPUT ID	766850075
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	1.21
		IMIN IN..	0.00
		IMAX OUT.	1.21
		IMIN OUT.	0.00
HW PE/KE	NO	IFWD K...	0.00
TW PE/KE	YES	IREV K...	0.00
HW EL...	77.750	IFWD X...	0.00
TW EL...	77.500	IREV X...	0.00

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SR 45 BASIN E
Post Development CRITICAL Duration FDOT Routing.
100 yr FDOT_8hr Event

Report on Nodes of Project PE_CRIT.

Nodes Report

Node..... 000, SUBAREA

FILE NAME	WSTOE25	FLOOD EL.	77.750	INPUT ID.....	792353532
INPUT ID#	792353527			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	77.75
RUN, HRS.	13.200			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	77.75
DATA PTS.	133			MINIMUM STAGE REACHED.....	77.75
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	77.75
EXCESS...	7.944			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	13.320			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.850				
TP, HRS..	4.300				
PEAK CFS.	32.960			PEAK NODAL INTAKE, CFS.....	32.96
ACFT VOL.	8.815			TIME OF PEAK INTAKE, HOURS...	4.30
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	32.96
				TIME OF PEAK OUTPUT, HOURS...	4.30
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL...	77.500	TOP AREA.	2.300	INPUT ID.....	792786328
EL.....	76.750	AREA.....	1.690	FLOOD ELEVATION REACHED.....	NO
EL.....		AREA.....		INITIAL STAGE ELEVATION.....	74.09
EL.....		AREA.....		INITIAL STORAGE, CUBIC FEET..	26247.00
EL.....		AREA.....		MAXIMUM STAGE REACHED.....	75.92
EL.....		AREA.....		MINIMUM STAGE REACHED.....	74.09
EL.....		AREA.....		MAXIMUM GROSS STORAGE, CF....	149719.00
EL.....		AREA.....		MAXIMUM DETENTION STORAGE, CF	123472.00
EL.....		AREA.....		FINAL STAGE ELEVATION.....	75.00
EL.....		AREA.....		TIME OF MAXIMUM STAGE, HOURS.	5.60
BOT EL...	73.700	BOT AREA.	1.400	TIME OF MINIMUM STAGE, HOURS.	0.30
TOP LF...		SIDE %PER			
MID LF...		BASE %PER		PEAK NODAL INTAKE, CFS.....	36.09
BOT LF...				TIME OF PEAK INTAKE, HOURS...	4.10
				PEAK NODAL OUTPUT, CFS.....	21.51
				TIME OF PEAK OUTPUT, HOURS...	5.60
BASE CFS.	0.000	STAGE T0.	74.090	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 002, SUBAREA

FILE NAME	WSONE25	FLOOD EL.	77.750	INPUT ID.....	792353606
INPUT ID#	792353601			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	77.75
RUN, HRS.	9.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	77.75
DATA PTS.	91			MINIMUM STAGE REACHED.....	77.75
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	77.75
EXCESS...	9.200			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	1.690			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	3.500				
PEAK CFS.	32.960			PEAK NODAL INTAKE, CFS.....	7.63
ACFT VOL.	1.295			TIME OF PEAK INTAKE, HOURS...	3.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	7.63
				TIME OF PEAK OUTPUT, HOURS...	3.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, JUNCTION

FLOOD EL.	77.500			INPUT ID.....	792786389
				FLOOD ELEVATION REACHED.....	NO
				INITIAL STAGE ELEVATION.....	70.91
				INITIAL STORAGE, CUBIC FEET..	0.00
				MAXIMUM STAGE REACHED.....	75.75
				MINIMUM STAGE REACHED.....	70.91
				MAXIMUM GROSS STORAGE, CF....	0.00
				MAXIMUM DETENTION STORAGE, CF	0.00
				FINAL STAGE ELEVATION.....	74.57
				TIME OF MAXIMUM STAGE, HOURS.	5.60
				TIME OF MINIMUM STAGE, HOURS.	0.30
				PEAK NODAL INTAKE, CFS.....	21.51
				TIME OF PEAK INTAKE, HOURS...	5.60
				PEAK NODAL OUTPUT, CFS.....	21.51
				TIME OF PEAK OUTPUT, HOURS...	5.60
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 004, STAGING

FLOOD EL.	77.500	PE TO KE.	YES	INPUT ID.....	792786396
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	68.000	INITIAL STAGE ELEVATION.....	68.00
TIME, HRS	7.500	STAGE EL.	68.240	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	15.000	STAGE EL.	70.430	MAXIMUM STAGE REACHED.....	68.39
TIME, HRS	22.500	STAGE EL.	71.100	MINIMUM STAGE REACHED.....	68.00
TIME, HRS	30.000	STAGE EL.	71.400	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS		STAGE EL.		MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS		STAGE EL.		FINAL STAGE ELEVATION.....	68.39
TIME, HRS		STAGE EL.		TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	21.75
				TIME OF PEAK INTAKE, HOURS...	5.40
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	68.000	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 005, SUBAREA

FILE NAME	WSOFFE25	FLOOD EL.	77.750	INPUT ID.....	792353670
INPUT ID#	792353665			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	77.75
RUN, HRS.	9.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	77.75
DATA PTS.	92			MINIMUM STAGE REACHED.....	77.75
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	77.75
EXCESS...	7.748			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.310			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.167				
TP, HRS..	3.800				
PEAK CFS.	1.212			PEAK NODAL INTAKE, CFS.....	1.21
ACFT VOL.	0.200			TIME OF PEAK INTAKE, HOURS...	3.80
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	1.21
				TIME OF PEAK OUTPUT, HOURS...	3.80
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

774 VIII – 70

Node..... 006, JUNCTION

FLOOD EL.	77.500	INPUT ID.....	792786403
		FLOOD ELEVATION REACHED.....	NO
		INITIAL STAGE ELEVATION.....	68.86
		INITIAL STORAGE, CUBIC FEET..	0.00
		MAXIMUM STAGE REACHED.....	70.67
		MINIMUM STAGE REACHED.....	68.86
		MAXIMUM GROSS STORAGE, CF....	0.00
		MAXIMUM DETENTION STORAGE, CF	0.00
		FINAL STAGE ELEVATION.....	70.51
		TIME OF MAXIMUM STAGE, HOURS.	5.60
		TIME OF MINIMUM STAGE, HOURS.	0.30
		PEAK NODAL INTAKE, CFS.....	21.51
		TIME OF PEAK INTAKE, HOURS...	5.60
		PEAK NODAL OUTPUT, CFS.....	21.51
		TIME OF PEAK OUTPUT, HOURS...	5.60
BASE CFS.	0.000	POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

775 VIII - 71

POND F

SR 45 BASIN F

CRITICAL STORM ANALYSIS

Subarea PRE DEVELOPMENT BASIN F 3yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF38
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417089
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 15.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 154
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 4.72
	EXCESS.. 3.3518212
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 4.6
	PEAK CFS 12.728134 ←
	ACFT VOL 4.0487785
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

3yr CRITICAL EVENT is the 8hr RAINFALL

peak Discharge = 12.73 cfs

777 VIII-72

Subarea PRE DEVELOPMENT BASIN F 3yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF324
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417274
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 31.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 314
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 6.6
	EXCESS.. 5.1470466
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 12.6
	PEAK CFS 6.8587174 ←
	ACFT VOL 6.2172912
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE DEVELOPMENT BASIN F 3yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF34
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417387
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 11.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 114
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 3.88
	EXCESS.. 2.5702028
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 3.2
	PEAK CFS 12.024571 ←
	ACFT VOL 3.1046351
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE DEVELOPMENT BASIN F 100yr-8hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF1008
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417484
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 15.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 154
	STORM... FDOT_8
	DURATION 8.0
	RAINFALL 9.2
	EXCESS.. 7.6805778
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 4.5
	PEAK CFS 28.987167 ←
	ACFT VOL 9.2776304
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

100yr CRITICAL EVENT is the 8hr RAINFALL

Peak Discharge = 28.99 cfs

779 VID-14

Subarea PRE DEVELOPMENT BASIN F 100yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF10024
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417604
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 31.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 314
	STORM... FDOT_24
	DURATION 24.0
	RAINFALL 11.2
	EXCESS.. 9.6484995
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 12.5
	PEAK CFS 12.601982 ←
	ACFT VOL 11.65475
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Subarea PRE DEVELOPMENT BASIN F 100yr-4hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PPF1004
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 808417720
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 11.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 114
	STORM... FDOT_4
	DURATION 4.0
	RAINFALL 7.28
	EXCESS.. 5.8057008
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 3.1
	PEAK CFS 26.527826 ←
	ACFT VOL 7.0129027
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

780 VIII-75

Subarea PRE DEVELOPMENT BASIN F 25yr-24hr

UNIT HYDROGRAPH FILE..... SCS_256	FILE.... PRE_F_25
TOTAL DRAINAGE AREA, ACRES... 14.5	INPUT ID 780847733
WEIGHTED SCS CURVE NUMBER.... 87.48	TYPE.... RNF0002
INITIAL ABSTRACTION FACTOR... 0.2	RUN, HRS 31.3
TIME OF CONCENTRATION, HOURS. 1.21	DT, HRS. 0.1
	DATA PTS 314
	STORM... SCS_IIM
	DURATION 24.0
	RAINFALL 9.0
	EXCESS.. 7.4844813
	ACREAGE. 14.5
	TC, HRS. 1.21
	TP, HRS. 12.8
	PEAK CFS 26.120024 ←
	ACFT VOL 9.0407586
	READY... YES
	CFS TOL. 0.0001
	HRS TOL. 0.01

Conclusion

CRITICAL Storm is the 100yr-8hr EVENT

Peak Discharge = 28.99 cfs

781 VIII-76

SR 45 BASIN F

POST CONDITION CRITICAL DURATION FDOT Routing.

100yr FDOT_8hr EVENT

NETWORK SUMMARY

Project PF_CRIT, Run of Mon Apr 03 08:41:35 1995 (CONVERGED)

Path	Up Stream Node Name	Down Stream Node Name	Path Type
0	WS TO POND	POND	DIRECT
1	WS ON POND	POND	DIRECT
2	WS TO LAKE	LAKE	DIRECT
3	POND	LAKE	RECT WEIR
4	POND	LAKE	VERT GATE

Node	Name	Node Type
0	WS TO POND	SUBAREA
1	POND	POND
2	WS ON POND	SUBAREA
3	WS TO LAKE	SUBAREA
4	LAKE	STAGING

Node	Name	Node Type	Min El.	at Hr.	Max El.	at Hr.	Flooded
0	WS TO POND	SUBAREA	73.80	0.00	73.80	0.00	NO
1	POND	POND	→70.88	0.20	→71.68	4.20	NO
2	WS ON POND	SUBAREA	73.80	0.00	73.80	0.00	NO
3	WS TO LAKE	SUBAREA	73.80	0.00	73.80	0.00	NO
4	LAKE	STAGING	69.80	0.00	70.05	8.00	NO

Node	Name	Maximum CFS Inflow	Maximum CFS Outflow
0	WS TO POND	21.49 @ 4.10 Hours	21.49 @ 4.10 Hours
1	POND	24.65 @ 3.90 Hours	22.78 @ 4.20 Hours
2	WS ON POND	4.74 @ 3.50 Hours	4.74 @ 3.50 Hours
3	WS TO LAKE	0.38 @ 3.70 Hours	0.38 @ 3.70 Hours
4	LAKE	→ 23.04 @ 4.20 Hours	0.00 @ 0.00 Hours

BEGIN ATTENUATION AT the overflow EL. (70.88)

PRE 100yr FDOT_8hr EVENT PEAK RATE = 28.99 cfs

POST 100yr FDOT_8hr EVENT PEAK RATE = 23.04 cfs

⇒ Compliance

782 VIII-77

SR 45 BASIN F
Post condition critical Storm Routing.
100yr FDOT_6hr EVENT

Report on Paths of Project PF_CRIT.

PATHS REPORT

Path..... 000, DIRECT
Upper Node 000, WS TO POND
Lower Node 001, POND

DIRECT..	----------	INPUT ID	767542578
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	21.49
		IMIN IN..	0.00
		IMAX OUT.	21.49
		IMIN OUT.	0.00
HW PE/KE NO		IFWD K...	0.00
TW PE/KE YES		IREV K...	0.00
HW EL...	73.800	IFWD X...	0.00
TW EL...	72.800	IREV X...	0.00

Path..... 001, DIRECT
Upper Node 002, WS ON POND
Lower Node 001, POND

DIRECT..	----------	INPUT ID	767542603
		IT0 CFS..	0.00
		IT0 CF...	0.00
		IMAX IN..	4.74
		IMIN IN..	0.00
		IMAX OUT.	4.74
		IMIN OUT.	0.00
HW PE/KE NO		IFWD K...	0.00
TW PE/KE YES		IREV K...	0.00
HW EL...	73.800	IFWD X...	0.00
TW EL...	72.800	IREV X...	0.00

```
-------------------------------------
        Path...... 002, DIRECT
      Upper Node 003, WS TO LAKE
         Lower Node 004, LAKE
-------------------------------------
DIRECT.. ---------|INPUT ID 767542643
                  |T0 CFS..       0.00
                  |T0 CF...       0.00
                  |MAX IN..       0.38
                  |MIN IN..       0.00
                  |MAX OUT.       0.38
                  |MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE NO       |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
HW EL...    73.800|FWD X...       0.00
TW EL...    72.800|REV X...       0.00
-------------------------------------
```

```
-------------------------------------
      Path...... 003, RECT WEIR
         Upper Node 001, POND
         Lower Node 004, LAKE
-------------------------------------
CREST EL    70.880|INPUT ID 796915863
WIDTH...    10.000|T0 CFS..       0.00
WEIR C..     3.200|T0 CF...       0.00
NUM ENDS     2    |MAX IN..      22.69
-------- ---------|MIN IN..       0.00
BREADTH.          |MAX OUT.      22.69
-------- ---------|MIN OUT.       0.00
                            |
                            |
                            |
                            |
                            |
                            |
                            |
                            |
HW PE/KE YES      |FWD K...       0.00
TW PE/KE YES      |REV K...       0.00
MAX HW..    72.800|FWD X...       0.00
MAX TW..    72.800|REV X...       0.00
-------------------------------------
```

Path..... 004, VERT GATE
Upper Node 001, POND
Lower Node 004, LAKE

CREST EL	70.300	INPUT ID	780873999
WIDTH...	0.146	T0 CFS..	0.06
HEIGHT..	0.146	T0 CF...	0.00
ORFC C..	0.600	MAX IN..	0.09
SHAPE...	CIRCULAR	MIN IN..	0.06
FLAPGATE	NO	MAX OUT.	0.09
HANDLE..		MIN OUT.	0.06
HW PE/KE	YES	FWD K...	0.00
TW PE/KE	YES	REV K...	0.00
MAX HW..	72.800	FWD X...	0.00
MAX TW..	72.800	REV X...	0.00

SR 45 BASIN F
POST CONDITION CRITICAL STORM RATING.
100YR FDOT-8hr EVENT

Report on Nodes of Project PF_CRIT.

NODES REPORT

Node..... 000, SUBAREA

FILE NAME WSTOF25	FLOOD EL. 73.800	INPUT ID.....	796915896
INPUT ID# 792355078		FLOOD ELEVATION REACHED.....	NO
ALT TYPE. RNF0002		INITIAL STAGE ELEVATION.....	73.80
RUN, HRS. 11.200		INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS.. 0.100		MAXIMUM STAGE REACHED.....	73.80
DATA PTS. 113		MINIMUM STAGE REACHED.....	73.80
STORM.... FDOT_8		MAXIMUM GROSS STORAGE, CF....	0.00
HOURS.... 8.000		MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL. 9.200		FINAL STAGE ELEVATION.....	73.80
EXCESS... 8.276		TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE.. 6.880		TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS.. 0.520			
TP, HRS.. 4.100			
PEAK CFS. 21.491		PEAK NODAL INTAKE, CFS.....	21.49
ACFT VOL. 4.743		TIME OF PEAK INTAKE, HOURS...	4.10
EXECUTED. YES		PEAK NODAL OUTPUT, CFS.....	21.49
		TIME OF PEAK OUTPUT, HOURS...	4.10
BASE CFS. 0.000		POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

Node..... 001, POND

TOP EL... 72.800	TOP AREA. 1.190	INPUT ID.....	796915928
EL.....	AREA.....	FLOOD ELEVATION REACHED.....	NO
EL.....	AREA.....	INITIAL STAGE ELEVATION.....	70.88
EL.....	AREA.....	INITIAL STORAGE, CUBIC FEET..	24670.80
EL.....	AREA.....	MAXIMUM STAGE REACHED.....	71.68
EL.....	AREA.....	MINIMUM STAGE REACHED.....	70.88
EL.....	AREA.....	MAXIMUM GROSS STORAGE, CF....	58822.10
EL.....	AREA.....	MAXIMUM DETENTION STORAGE, CF	34151.20
EL.....	AREA.....	FINAL STAGE ELEVATION.....	71.09
EL.....	AREA.....	TIME OF MAXIMUM STAGE, HOURS.	4.20
BOT EL... 70.300	BOT AREA. 0.763	TIME OF MINIMUM STAGE, HOURS.	0.20
TOP LF...	SIDE XPER		
MID LF...	BASE XPER	PEAK NODAL INTAKE, CFS.....	24.65
BOT LF...		TIME OF PEAK INTAKE, HOURS...	3.90
		PEAK NODAL OUTPUT, CFS.....	22.78
		TIME OF PEAK OUTPUT, HOURS...	4.20
BASE CFS. 0.000	STAGE T0. 70.880	POINTS OUT OF TOLERANCE.....	0
X COORD..	Y COORD..	MAXIMUM STAGE ERROR.....	0.00

Node..... 002, SUBAREA

ILE NAME	WSONF25	FLOOD EL.	73.800	INPUT ID.....	796915955
INPUT ID#	792355152			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	73.80
RUN, HRS.	9.000			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	73.80
DATA PTS.	91			MINIMUM STAGE REACHED.....	73.80
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	73.80
EXCESS...	9.200			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	1.050			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..					
TP, HRS..	3.500				
PEAK CFS.	4.740			PEAK NODAL INTAKE, CFS.....	4.74
ACFT VOL.	0.805			TIME OF PEAK INTAKE, HOURS...	3.50
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	4.74
				TIME OF PEAK OUTPUT, HOURS...	3.50
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

Node..... 003, SUBAREA

FILE NAME	WSOFFF25	FLOOD EL.	73.800	INPUT ID.....	796916485
INPUT ID#	792355228			FLOOD ELEVATION REACHED.....	NO
ALT TYPE.	RNF0002			INITIAL STAGE ELEVATION.....	73.80
RUN, HRS.	9.100			INITIAL STORAGE, CUBIC FEET..	0.00
DT, HRS..	0.100			MAXIMUM STAGE REACHED.....	73.80
DATA PTS.	92			MINIMUM STAGE REACHED.....	73.80
STORM....	FDOT_8			MAXIMUM GROSS STORAGE, CF....	0.00
HOURS....	8.000			MAXIMUM DETENTION STORAGE, CF	0.00
RAINFALL.	9.200			FINAL STAGE ELEVATION.....	73.80
EXCESS...	8.960			TIME OF MAXIMUM STAGE, HOURS.	0.00
ACREAGE..	0.090			TIME OF MINIMUM STAGE, HOURS.	0.00
TC, HRS..	0.167				
TP, HRS..	3.700				
PEAK CFS.	0.376			PEAK NODAL INTAKE, CFS.....	0.38
ACFT VOL.	0.067			TIME OF PEAK INTAKE, HOURS...	3.70
EXECUTED.	YES			PEAK NODAL OUTPUT, CFS.....	0.38
				TIME OF PEAK OUTPUT, HOURS...	3.70
BASE CFS.	0.000			POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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Node..... 004, STAGING

FLOOD EL.	72.800	PE TO KE.	YES	INPUT ID.....	796915993
				FLOOD ELEVATION REACHED.....	NO
TIME, HRS	0.000	STAGE EL.	69.800	INITIAL STAGE ELEVATION.....	69.80
TIME, HRS	5.000	STAGE EL.	69.880	INITIAL STORAGE, CUBIC FEET..	0.00
TIME, HRS	10.000	STAGE EL.	70.160	MAXIMUM STAGE REACHED.....	70.05
TIME, HRS	15.000	STAGE EL.	71.800	MINIMUM STAGE REACHED.....	69.80
TIME, HRS	20.000	STAGE EL.	71.990	MAXIMUM GROSS STORAGE, CF....	0.00
TIME, HRS	22.500	STAGE EL.	72.020	MAXIMUM DETENTION STORAGE, CF	0.00
TIME, HRS	30.000	STAGE EL.	71.850	FINAL STAGE ELEVATION.....	70.05
TIME, HRS	45.000	STAGE EL.	71.460	TIME OF MAXIMUM STAGE, HOURS.	8.00
TIME, HRS		STAGE EL.		TIME OF MINIMUM STAGE, HOURS.	0.00
TIME, HRS		STAGE EL.			
TIME, HRS		STAGE EL.			
				PEAK NODAL INTAKE, CFS.....	23.04
				TIME OF PEAK INTAKE, HOURS...	4.20
				PEAK NODAL OUTPUT, CFS.....	0.00
				TIME OF PEAK OUTPUT, HOURS...	0.00
		STAGE T0.	69.800	POINTS OUT OF TOLERANCE.....	0
X COORD..		Y COORD..		MAXIMUM STAGE ERROR.....	0.00

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9

DESIGN HIGH WATER

AT EXISTING

CROSS DRAIN

LOCATIONS

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: ZBW date: 10/13/94 job no. 21663

checked by: _____ date: _____ sheet no. 1

Determination of Post-Development 50yr DHW (24hr, standing water) at Pre-Development Cross Drain Locations.

Sta. 15+13

No "pop-off" DHW = Lake Bird 50yr DHW **EL. 69.2**
SHW = (67.9)

Sta. 48

Investigate: Exist. pop-off @ Sta. 49 Rt. (69.7), obsolete due to const.
Lake Floyd 50yr DHW (69.6)
Pond B Discharge EL (69.07)
SHW = (68.98)
∴ **DHW = 69.6**

Sta. 68

Investigate: Exist. pop-off @ Sta 67 Lt. (67.29)
Little Moss Lake 50yr DHW (67.8)
Pond C Discharge EL to East (68.7)
Pond C Discharge EL to West (68.7)
Lake Floyd 50yr DHW (69.6)

SHW = (68.2)
∴ **DHW = 69.6**

Sta. 90

Investigate: Exist. pop-off @ Sta. 86 Lt. (74.1), obsolete due to construction standing water presently in ditch between SR 45 and the RR will be released into Storm sewer system C at structure C-37 where FL = 72.00. Conveyance to Pond C where DHW = 68.7 (24hr standing)
SHW = (70.8)
∴ **DHW = 70.8**

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: WBW date: 10/13/94 job no. 21663

checked by: ____ date: ____ sheet no. 2

Determination of Post-Development 50yr DHW (24hr, stand water) at Pre-Development Cross Drain Locations,

Sta. 114

Investigate: Existing pop-off @ Sta. 114 Lt. (68.84); further out (<70)
Vienna Lake 50yr DHW (71.3)
Pond D Discharge EL (69.62)
SHW = (72.4)

∴ $\boxed{DHW = 72.4}$

Sta. 139

Investigate: Existing pop-off @ Sta. 139 Lt. (68.84), further out (<70)
Vienna Lake 50yr DHW (71.3)
SHW = (72.5)

∴ $\boxed{DHW = 72.5}$

Sta. 173

Investigate: Existing pop-off @ Sta. 173+21.5 (75.7)
Lake Padgett 50yr DHW (71.5)
Pond F Discharge EL (71.88)
SHW = 74.6

∴ $\boxed{DHW = 75.7}$

Pond E (Sta. 149)

Investigate: Pond E Discharge EL (74.09)
Vienna Lake 50yr DHW (71.3)
SHW = (74.8)

∴ $\boxed{DHW = 74.8}$

Berryman & Henigar
BSI Consultants, Inc. • Henigar & Ray, Inc.

made by: TM date: 7/14/95 job no. 56103.01
checked by: _____ date: _____ sheet no. 3

PROJECT: SR 45 (US 41)

STA 45+00 RT SR 54

INVESTIGATE: EXISTING POP-off @ 45+00 RT (69.0)
ESTIMATED SHW = (69.1)
LAKE FLOYD 50 yr DHW (69.6)

∴ DHW = 69.6

STA 1034+50 RT SR 54

INVESTIGATE: EXISTING POP-off @ STA 1034+50 RT (67.0)
ESTIMATED SHW (66.5)
AVERAGE 50 yr DHW (LAKES VIENNA & LITTLE MOSS)
(69.6)

∴ DHW = 69.6

Henigar & Ray

PROJECT: U.S. 41/S.R. 45

made by: _____ date: _____ job no. _____
checked by: _____ date: _____ sheet no. _____

Bird Lake

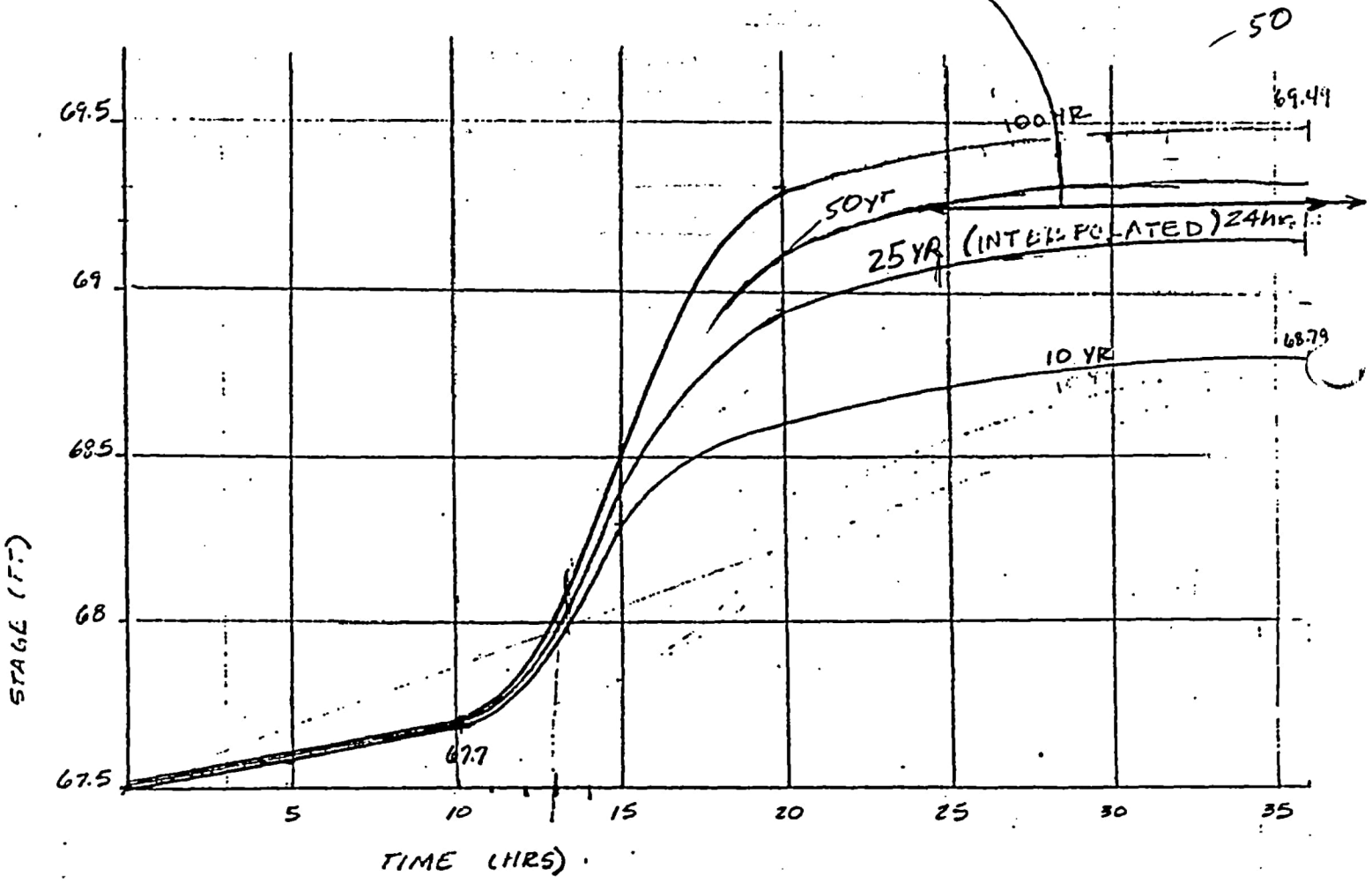
10 YR

TIME	0	5	10	15	36
ELEV	67.5	67.58	67.70	68.31	68.79

100 YR

TIME	0	10	20	30	36
ELEV	67.5	67.69	69.30	69.47	69.49

Estimate 50 yr. 24hr lasting stage
DHW = 69.2



Interpolated Time/Stage

25 YR

TIME	0	10	15	20	30	36
ELEV	67.5	67.7	(68.4)	(68.9)	(69.1)	69.15

3/14/94 Confirmed w/ Buddy Brass (Eng/SWFWMD) that 25 yr levels were not obtained for Lake Floyd.

IX-4

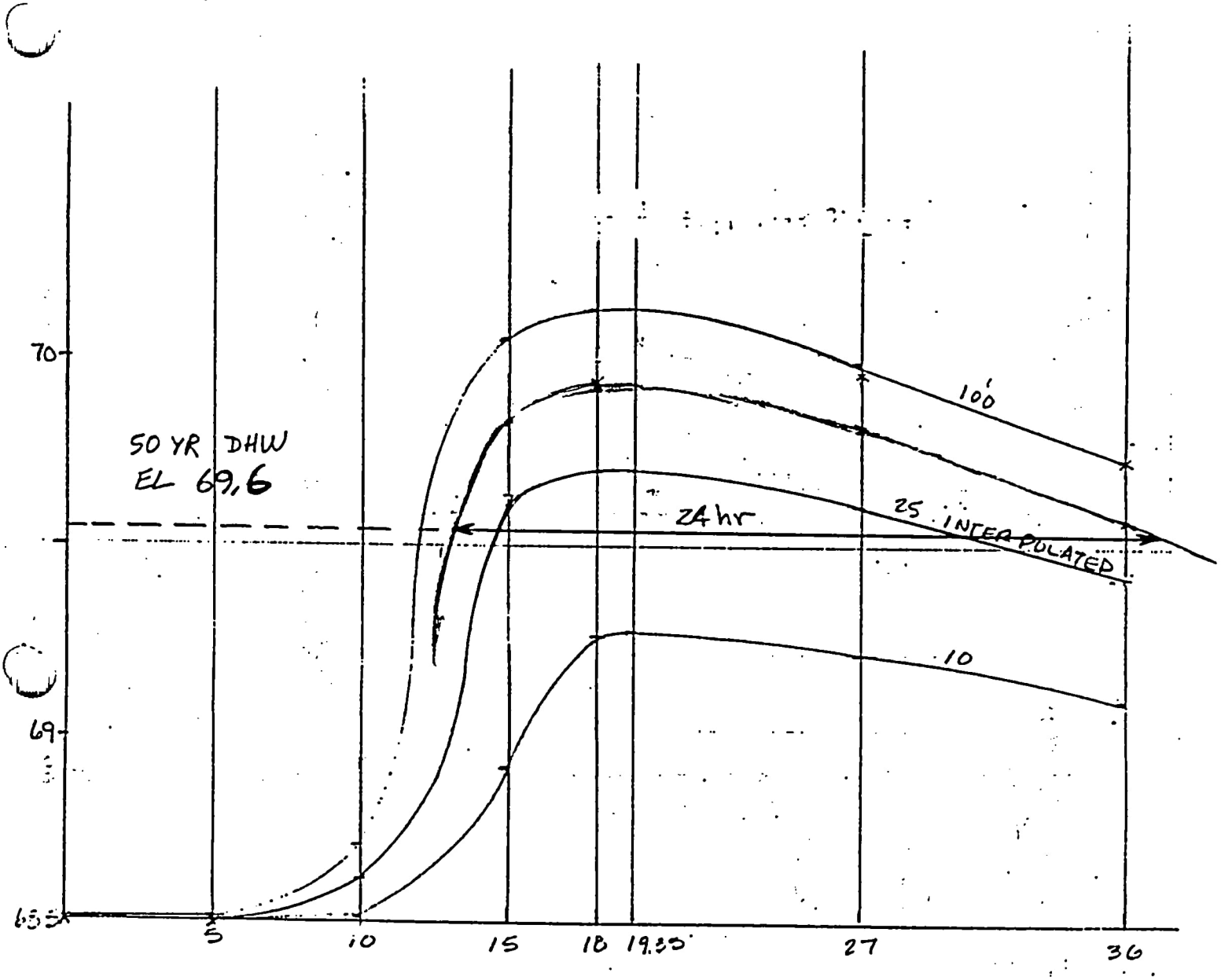
794

Henigar & Ray

PROJECT: US 41/SR 45 "B"

made by: _____ date: _____ job no. _____

checked by: _____ date: _____ sheet no. _____



FLOYD LAKE

× 10 YR

× 100 YR

INTERPOLATED VALUES for 25 YR STORM

TIME	0	5	10	15	18	27	36
STAGE	68.5	68.5	68.62	69.63	69.71	69.62	69.42

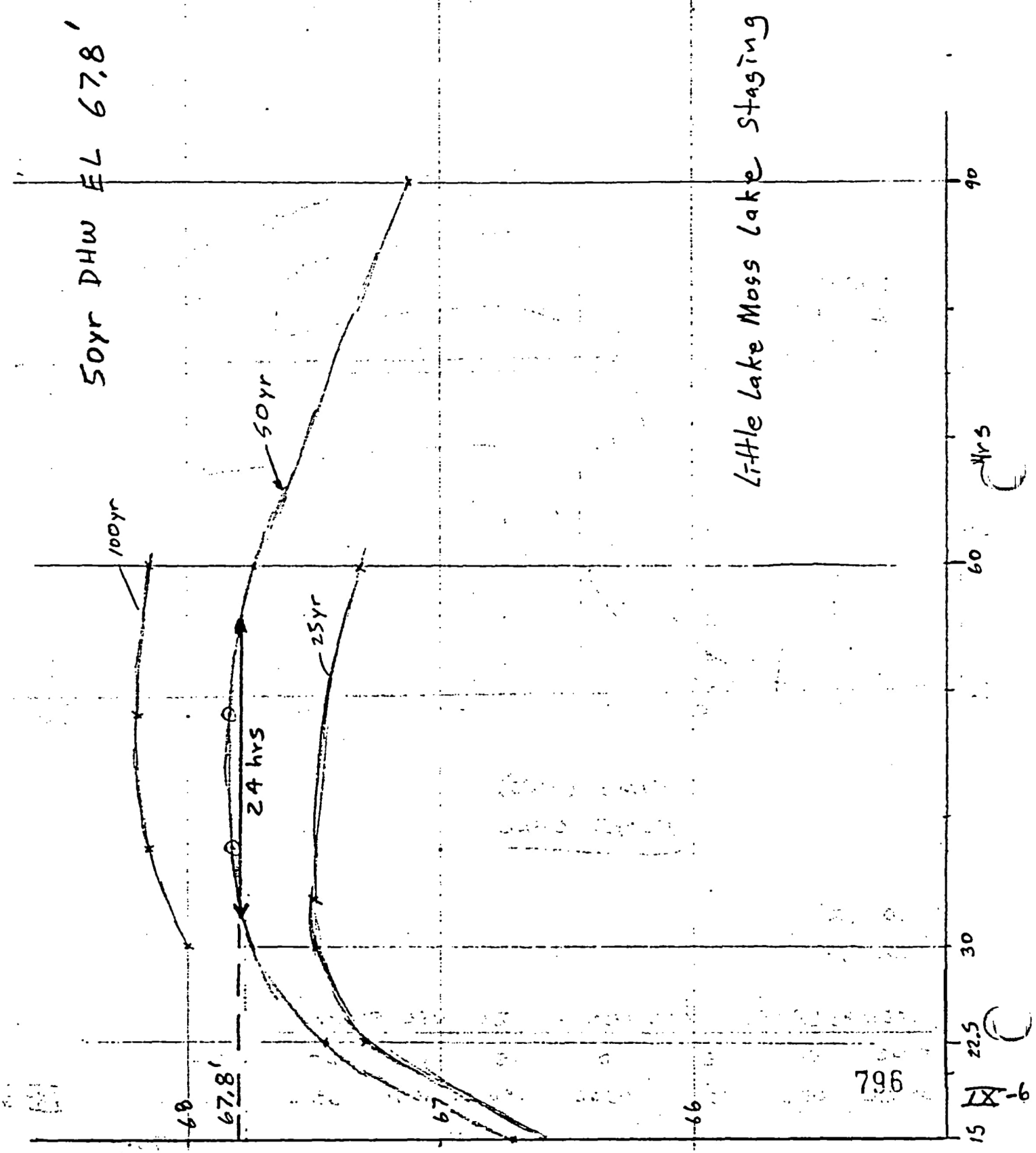
IX-5

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: ZBW date: 10/12/94 job no. 21663

checked by: ____ date: ____ sheet no. ____



796

IX-6

Henigar & Ray

PROJECT: SR 45 (US 41) PONDC

made by: JWM date: 9/22/94 job no. 21663
checked by: _____ date: _____ sheet no. 1/1

LITTLE MOSS LAKE STAGING

100yr
68.2
− 64.
4.2

STAGE at T_o = 64.0
25yr peak STAGE = 67.5 } INCREASE = 3.5 FT

NO TIME/STAGE RELATIONSHIP AVAILABLE FROM SWFWMD.

∴ USE SIMILAR TIME/STAGE RELATIONSHIP AS BELL LAKE STRUCTURE #8 where INCREASE is 2.92 FT. (100yr, → 3.92)

(25yr)

BELL LAKE STRUCTURE #8

Time (hr)	0	7.5	15	22.5	30	33.25
STAGE (FT)	70.1	70.3	72.29	72.85	73.0	73.02
TIME (hr.)	60	120				
STAGE (ft.)	72.87	72.19				

(25yr)

DERIVED LITTLE MOSS LAKE STAGING (WEST POND OUTFALL)

→ Time (hr)	0	7.5	15	22.5	30	33.25
→ STAGE (ft)	64.0	64.2	66.6	67.3	67.5	67.5
TIME	60	120				
STAGE	67.32	66.51				

100yr

BELL LAKE STRUCTURE #8

TIME (hr.)	0	7.5	15	22.5	30	37.5	48	60	90
Stage (ft.)	70.1	70.36	72.75	73.47	73.83	73.97	74.02	73.97	73.5

(100yr)

DERIVED LITTLE MOSS LAKE STAGING

TIME	0	7.5	15	22.5	30	37.5	48	60	90
STAGE	64	64.39	66.84	67.61	68.00	68.15	68.20	68.15	67.73

(50yr) DERIVED LITTLE MOSS LAKE STAGING

STAGE	64	64.30	66.72	67.46	67.75	—	—	67.74	67.12

797

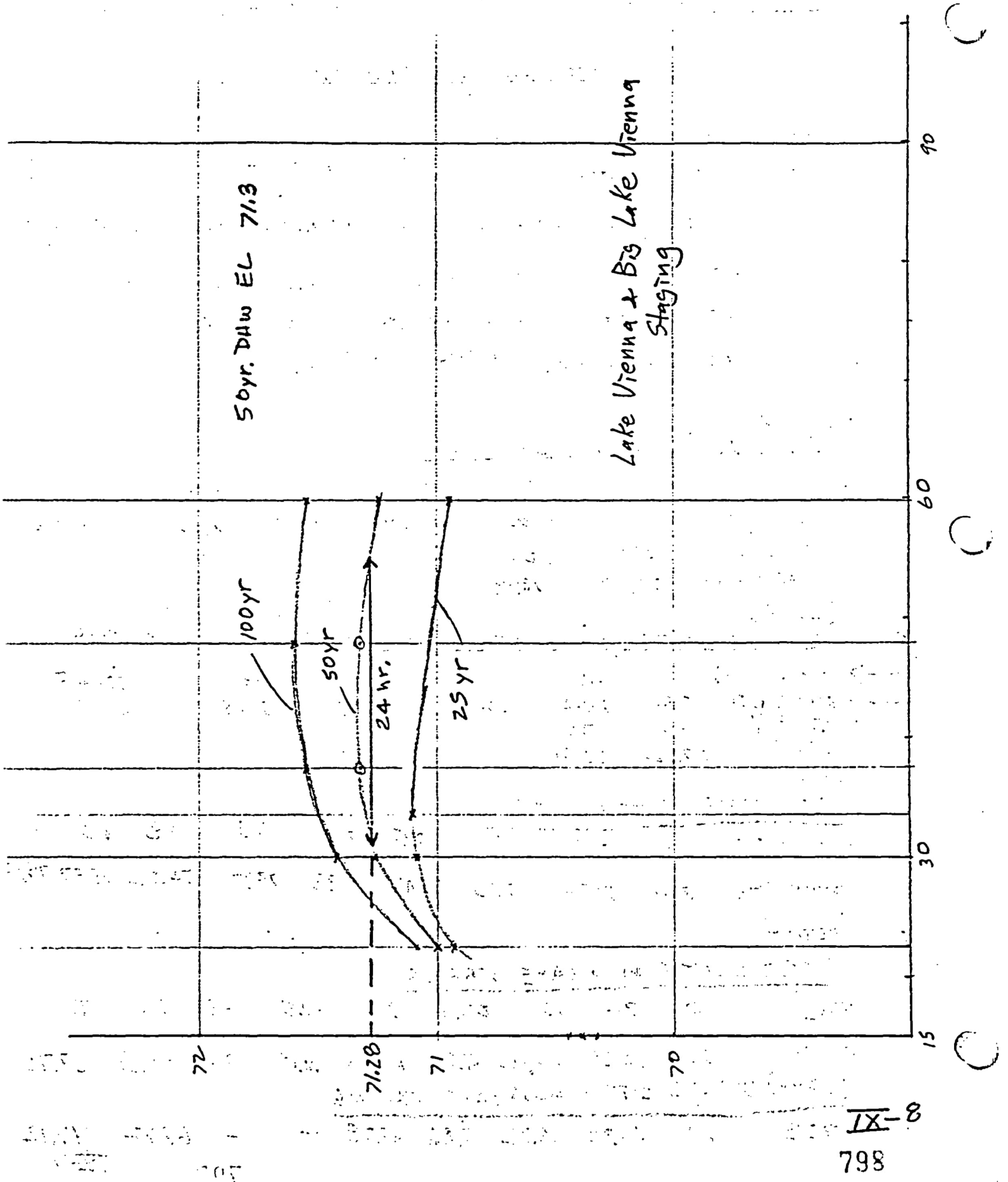
IX-7

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: NBW date: 10/12/84 job no. 21663

checked by: _____ date: _____ sheet no. _____



Henigar & Ray

PROJECT: SR 45 (US 41)

made by: NBW date: 5/5/94 job no. 21663

checked by: ____ date: ____ sheet no. 1/1

Lake Vienna & Big Lake Vienna

Stage at T_o = 68.0
25yr. Peak Stage = 71.1 } Increase = 3.1 ft.

100yr
71.6
68
3.6

No time/stage relationship available from SWFWMD.
∴ Use similar time/stage relationship as Bell Lake Structure #8 where increases is 2.92 ft. 3.92 100yr

25yr.

Time (hrs)	0	7.5	15	22.5	30	33.75	60
Stage (ft.)	68.0	68.14 / 68.21	70.33 ✓	70.92 ✓	71.08 ✓	71.1	70.94

Bell LAKE STRUCTURE #8 25yr Storm

Time (hr)	0	7.5	15	22.5	30	33.25	60 72.8
EL (ft)	70.10	70.10	72.29	72.85	73.00	73.02	

100yr
BELL LAKE STRUCTURE #8

TIME	0	7.5	15	22.5	30	37.5	48	60	90
stage	70.1	70.36	72.75	73.47	73.83	73.97	74.02	73.97	73.58

POND E

100yr
Derived Vienna Staging

TIME	0	7.5	15	22.5	30	37.5	48	60	90
stage	68	68.24	70.44	71.09	71.43	71.55	71.60	71.55	71.20

50yr
Derived Vienna Staging

TIME	0	7.5	15	22.5	30	37.5	48	60	90
Stage	68	68.22	70.39	71.00	71.26	—	—	71.24	

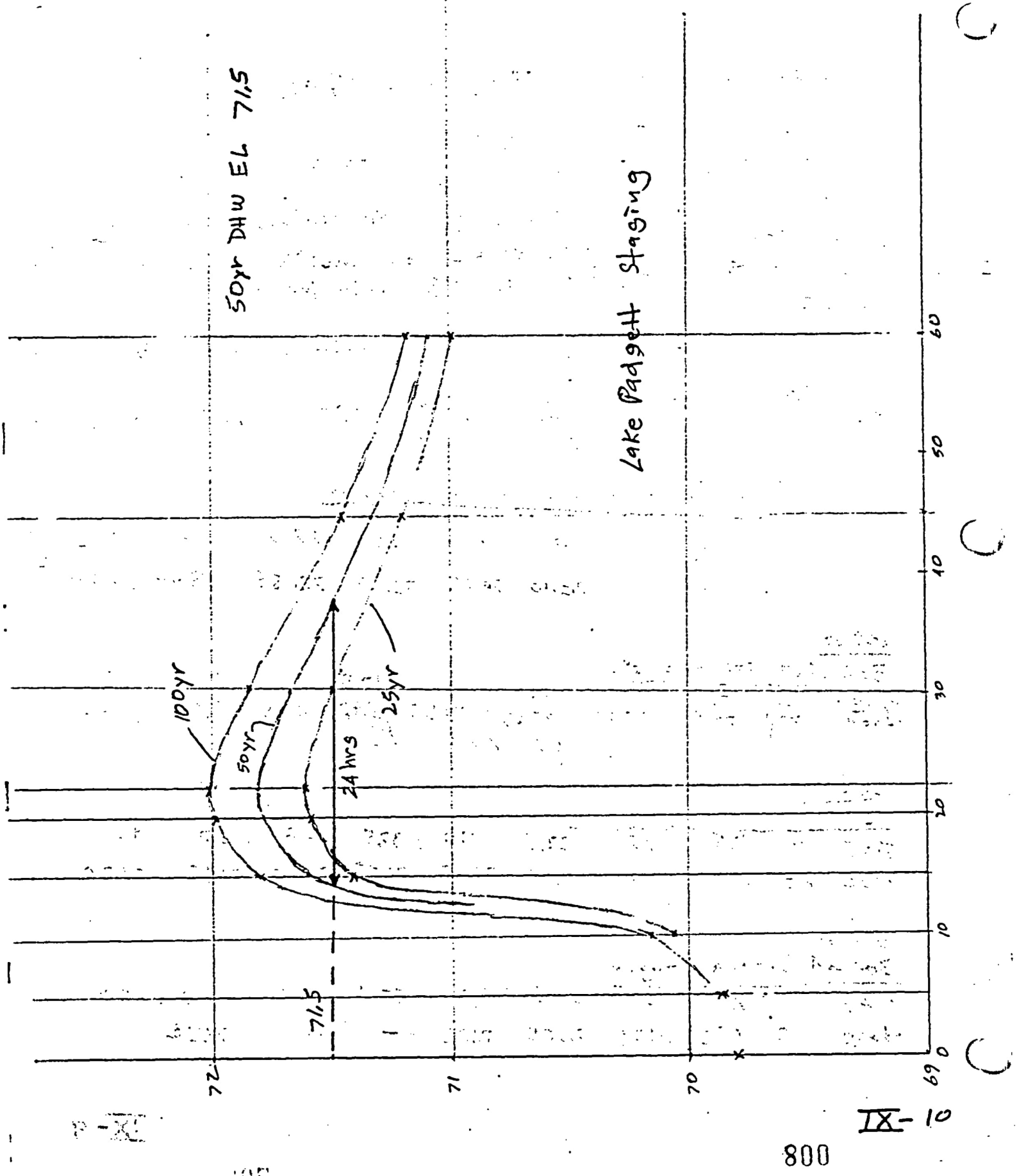
IX-9

Henigar & Ray

PROJECT: SR 45 (US 41)

made by: WDW date: 10/12/94 job no. 21663

checked by: _____ date: _____ sheet no. _____



IX-10

800

TABLE 2
GROUNDWATER ESTIMATE
S.R. 45 (U.S. 41)
PSI PROJECT NO 775-35105

STATION NUMBER	OFFSET FROM C.L. (FEET)	GROUND SURFACE ELEVATION (FEET)	MEASURED G.W.T. DEPTH (FEET)	ESTIMATED S.H.W.T. TABLE DEPTH (FEET)	USDA SOIL SURVEY ESTIMATED S.H.W. TABLE DEPTH (FEET)
0+00	25-RT-			3.5	2.0 - 3.5
5+00	25-LT-	72.1		1.8 70.3	0 - 1.0
10+00	25-RT-	70.9		3.3 67.6	0 - 1.0
13+00	30-LT-	70.7	5.3	2.3 68.4	2.0 - 3.5
15+00	25-RT-	70.7		3.5 67.2	+2.0 - 1.0
19+00	25-RT-	70.3		2.4 67.9	0 - 1.0
23+00	25-LT-	71.3	5.3	2.3 69.00	2.0 - 3.5
26+00	25-RT-	70.9		1.7 69.20	2.0 - 3.5
30+00	35-RT-	72.2		2.8 69.40	2.0 - 3.5
35+00	35-LT-	73.6	5.7	1.8 71.80	2.0 - 3.5
40+00	25-RT-	72.6		0.9 71.7	0 - 1.0
45+00	25-LT-	73.7	6.7	3.4 70.3	0 - 1.0
50+39	40-RT-	71.7		2.4 69.3	2.0 - 3.5
55+00	25-LT-	73.2	6.7	2.7 70.5	2.0 - 3.5
60+00	47-RT-	71.7		2.2 69.5	0 - 1.0
65+00	31-LT-	72.7		1.9 70.8	0 - 1.0
70+00	25-RT-	72.0		3.8 68.2	0 - 1.0
75+00 SR 54	25-LT-	73.4	6.4	2.9' 2.5 70.9	0 - 1.0
80+00	37-RT-	73.2		2.3 70.9	0 - 1.0
85+00	40-LT-	73.6	6.6	3.3 70.3	2.0 - 3.5
90+00	25-RT-	74.8		4.0 70.8	2.0 - 3.5

*Man-made channels dictate depth

Notes: Groundwater measurements from Station 0+00 to Station 90+00 were completed on May 28, 1993, and the remaining groundwater measurements were completed on May 29, 1993.

TABLE 2 (CONT.)
GROUNDWATER ESTIMATE
S.R. 45 (U.S. 41)
PSI PROJECT NO 775-35105

STATION NUMBER	OFFSET FROM C.L. (FEET)	GROUND SURFACE ELEVATION (FEET)	MEASURED G.W.T. DEPTH (FEET)	ESTIMATED S.H.W. TABLE DEPTH (FEET)	USDA SOIL SURVEY ESTIMATED S.H.W. TABLE DEPTH (FEET)
95+00	25-LT-	75.9 +0.?	6.0	0.9 75.00	2.0 - 3.5
100+00	40-RT-	76.1 -1.[illegible]	[illegible]'	4.0 72.1	2.0 - 3.5
105+00	25-LT-	74.4 -0.3	4.8	2.0 72.40	+2.0 - 1.0
110+00	27-RT-	73.3 -3.[illegible]	[illegible]'	3.8 69.5	2.0 - 3.5
115+00	25-LT-	73.7 -0.7	6.3	1.3 72.4	2.0 - 3.5
120+00	25-RT-	74.2 -1.3	[illegible]'	2.6 71.6	+2.0 - 1.0
125+00	25-LT-	73.2 -1.0	5.8	1.3 71.9	2.0 - 3.5
130+00	26-RT-	73.8 -1.2	[illegible]'	2.5 71.3	0 - 1.0
135+00	25-LT-	75.3 -0.7	7.6	2.3 73.0	2.0 - 3.5
140+00	24-RT-	76.0 -2.0	[illegible]'	3.5 72.5	2.0 -.3.5
145+00	23-LT-	76.9 -0.1	6.3	1.5 75.4	2.0 - 3.5
150+00	27-RT-	77.9 -0.3	[illegible]'	3.1 74.8	2.0 - 3.5
155+00	23-LT-	79.4 +1.0	6.7	2.2 77.2	2.0 - 3.5
160+00	27-RT-	76.9 -0.3	4.7	0.9 76.0	2.0 - 3.5
165+50	25-RT-	77.7 -0.1	7.0	2.5 75.2	*
170+00	24-RT-	77.1 -1.8	[illegible]'	2.5 74.6	*
175+00	30-LT-	77.1 -0.6	5.6	1.6 75.5	*
180+00	30-RT-	79.3 -1.2	[illegible]'	4.7 74.6	*
185+00	24-LT-	[illegible]	[illegible]	1.5	*
190+85	35-RT-	[illegible]	[illegible]	4.0	*
195+00	23-LT-	[illegible]	[illegible]	4.0	*

*Man-made channels dictate depth

Notes: Groundwater measurements from Station 0+00 to Station 90+00 were completed on May 28, 1993, and the remaining groundwater measurements were completed on May 29, 1993.

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PROJECT

CORRESPONDENCE

Henigar & Ray
ENGINEERING ASSOCIATES INC

ARCHITECTS • ECOLOGISTS • ENGINEERS • LANDSCAPE ARCHITECTS • PLANNERS • SURVEYORS
CRYSTAL RIVER • OCALA
640 East Highway 44, Crystal River, FL 32629 Telephone: (904) 795-6551 (904) 489-9094
FAX: (904) 563-1530

Meeting Notes

U.S. 41 in Pasco County
from the Hillsborough County Line to Suydam Road
S.P. Nos. 14010-1518 and 14010-1519
W.P.I. Nos. 7115950 and 7115951

Date: April 20, 1989

Time: 1:00 p.m.

Location: Southwest Florida Water Management District
Office - Brooksville

Attendees:
Larry Gaddy - FDOT District Seven
Mark Hoskins - FDOT District Seven
Wojciech M. Mroz - SWFWMD
Dana L. West - SWFWMD
Mark S. Easley - Greiner
Whit Thompson - Greiner
John A. Saunders - Henigar & Ray
Linda Pigeon - Henigar & Ray

Distribution: Don Henderson - Greiner

Notes By: John A. Saunders and Linda Pigeon

On-line treatment systems shall treat all comingled water.

Treatment shall occur before water is discharged.

The peak elevation for Bird Lake should be obtained from Jeff Vomacka of SWFWMD.

Henigar & Ray has obtained information from Jeff Vomacka in January and February of 1989, but it apparently is not the latest available and might not reflect the September, 1988 rains.

The drainage systems along the U.S. 41 project are considered Open Basins, except there may be some isolated exceptions in the northern part of the project around the Lake Thomas area.

SWFWMD cannot process permits where there are disturbed wetlands unless the wetlands are compensated for.

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ARTHUR D RAY P L S
ROBERT L HENIGAR P L S
TERRY L McLEOD P L S
W BRUCE WHITE P E
KEVIN ATKINS ECOLOGIST
EDWARD L CZARNECKI P E
KENT GREEN P L S
RUEI HO P E
JOHN T BARR P L S
ALAN BURCAW AIA
AVIS CRAIG-AYOTTE AICP
V GAIL EASLEY AICP
PAUL C GIBBS ASLA
RICHARD J HICKMAN P L S
RICHARD A LONG P E
LINDA R PIGEON P E
RICHARD L PORTER P E
JOHN SAUNDERS P E

U.S. 41 in Pasco County
from the Hillsborough County Line to Suydam Road
S.P. Nos. 14010-1518 and 14010-1519
W.P.I. Nos. 7115950 and 7115951

The equivalent treatment method may be considered as long as the pollutant load at points of discharge does not increase.

The Seasonal High Water elevations determined from soil borings may not be accurate enough.

The impact of the roadway on the 100-year flood plain is considered significant and the mitigation may be done in the 24-hour peak attenuation pond since the peak for the 100-year flood peak would occur after the peak for the much smaller roadway drainage area. The 100-year volume would start at the SHW Elevation.

At the Sun Bank from Station 170+00 to Station 180+00 on the left, the stormwater flowing from the lake and from the existing stormwater treatment pond is not considered directly connected impervious area when it is picked up by the U.S. 41 drainage system.

In the rural roadway section, no curb and gutter, stormwater treatment and attenuation may be done in the roadway ditches. A right-of-way berm with lateral percolation may be considered.

Henigar & Ray, INC.

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640 East Highway 44, Crystal River FL 34429-4399
Telephone: (904) 795-6551 (904) 489-9094 FAX (904) 563-1530 • AA C001164

MEETING MINUTES

Project: SR 45 (US 41)
State Project Number 14010-3518

Date: March 17, 1994

A Project Meeting was held at the offices of FDOT District 5 in Tampa beginning at 1:00 p.m. March 17, 1994.

The purpose of this meeting was to review drainage design accomplished to date and solidify future project goals.

THOSE ATTENDING:		
	Lisa Hansen	- FDOT District Seven
	Kirk Bogen	- FDOT District Seven
	Robert Grinsley	- FDOT District Seven
	Steve Tidwell	- FDOT District Seven
	Bruce White	- HENIGAR & RAY, INC.
	Linda Pigeon	- HENIGAR & RAY, INC.
	Tom Murphy	- HENIGAR & RAY, INC.

The following is a list of items addressed at this meeting:

- Determine if existing pond adjacent to proposed Pond A is isolated from abutting wetlands. If so, incorporate in Pond A design for a possible house save.

- Critical duration evaluation in accordance with chapter 14-86 for the 3 and 100 year events is required for this project. If it is not feasible (such as the taking of a house) FDOT will sign-off on a variance. For an open basin pre-post peak discharge is the only consideration. For a closed basin, the pre-post volume must also be considered.

- H&R obtained a copy of the Proposed Procedures for Entry onto Private Property from the FDOT survey department.

- It is recommended by H&R that storm sewer pipe velocities be limited to 6 fps and the HGL kept 1' below the gutter elevation without consideration of form losses. Lisa Hanson and Kirk Bogen stated that form losses for the storm sewer design need not be considered where the velocities are less than 10 fps and the HGL is kept 1' below the gutter elevation. For DBI's, the HGL may come up to the inlet grate elevations and, in some cases, may exceed this elevation. Terminal discharge velocities at the pond entrances will be kept to a minimum. The outlet control elevation for the storm sewer design shall be based on the FDOT 3 year critical duration storm. Storm sewer pipe sizes up to 72" will not be a concern.

- The use of the median for the storm sewer trunk line will not be allowed, due to future maintenance considerations. Currently, the east side of the right-of-way is being considered for the location of the storm sewer

- Lisa Hansen will obtain a copy of the Dredge and Fill Permit for the Dale Mabry R/W.

- Lisa Hansen suggested that H&R contact DSA to determine if compensating volume was incorporated in DSA's mitigation plan. If not, H&R will incorporate compensating volume for the frontage road encroachment. Possible sites include the triangular area between the R/W's of Dale Mabry and US 41, south of the intersection, and upland areas northwest of the Dale Mabry R/W. Lisa indicated that the median was not suitable because of future roadway plans.

- A minimum clearance of 12" is required between the bottom of base and design high water for this project.

- Possible well and septic tank locations near proposed pond sites were discussed. Robert Grimsley said that central water and sewer had been proposed for this area of US 41. He suggested contacting Bob Steinle from Pasco County Utility Department to determine possible schedule for water and sewer lines to be in service.

- The proposed 40' gas line right-of-way located on the west side of the railroad was discussed as a possible maintenance access from Morgan Street for Pond D. Steve Tidwell will contact the gas company to see if this is available. Also, it may be worked out with the gas company to use the 40' gas line right-of-way for the maintenance berm on the one side of the drainage pond using double locks on the gates.

- Possible strategies for the avoidance of the 30" gas line by the storm sewer pipe at the jack and bore location were discussed. The need to protect the RCP from the electric charge of the gas line was addressed. The application of poly wrap to the RCP where it crosses near the gas line was mentioned as a possible solution.

This report represents Henigar & Ray's, summation of the proceedings and is not a transcript. Unless written notice of any corrections or clarifications is received by Hengiar & Ray within seven (7) days of issue, this report shall be considered factually correct and become part of the official project record.

Submitted by:

HENIGAR & RAY, INC.

W. Bruce White

W. Bruce White, P.E.

cc: Attendees
Mike Skrzypkowiak
Rudy Beres
Ed Czarnecki
Jack Loyer

MEMORANDUM

Bruna 3/22/94 3:49

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Mike Skryzpkowiak	From Rudy
Co. FAXED	Co.
Dept.	Phone #
Fax # 813-977-8213	Fax # 904 563-1530

TO: Mike Skryzpkowiak

FROM: Rudy J. Beres

DATE: March 22, 1994

SUBJECT: US 41 Pasco
Stormwater Trunkline/TCE Requirements

Larger than normal pipe sizes are anticipated for the storm sewer trunk in order to satisfy difficult hydraulic requirements. If the trunk line is constructed along the easterly curb line (normal location), the trench excavation will extend beyond the R/W line and will require temporary construction easements (TCE). Options include:

A. Storm sewer located along curb line - TCE's would be required from as many as 70 parcels and would adversely impact the R/W schedule.

B. Storm sewer located under the northbound lanes - TCE's would not be required but manholes would be located in the roadway surface.

C. Storm sewer located along the median - no TCE's and no manholes in the roadway.

Please advise as soon as possible.

3/23/94

MIKE CALLED TO ADVISE THAT THE STORM SEWER TRUNK LINE IS TO BE LOCATED ALONG THE CURB LINE. TYPE -J- STRUCT BOTTOMS SHOULD EXTEND UNDER THE ROADWAY. THE CONTRACTOR WILL BE REQUIRED TO USE SHORING, ETC TO STAY WITHIN THE R/W. NO TCE'S.

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HENIGAR & RAY, INC.

PROJECT CONTACT RECORD

CONTRACT NUMBER:	DATE:	TIME:	Conference ___ Incoming ___ Visit X Outgoing ___ Telephone ___ Off. Mtg ___	H&R DEPARTMENT:
21663	4/5/94	4:00		Engr.

PROJECT NAME/SUBJECT:	AGENCY/FIRM:	PHONE NUMBER:
SR 45 (US 41)	SWFWMD	( )

NAME OF PERSON CONTACTED OR IN CONTACT WITH YOU:
Wojciech Mroz

SUMMARY OF CONVERSATION/OBSERVATION:

I stoped by SWFWMD to verify our proposed way of handling the treatment at intersections where the sideroads fall away into other basins where we plan no treatment facilities.

I discussed two situations in particular. Dale Mabry & CR 54.

I explained that we are physically capturing a calculated amount of impervious pavement area from that other basin and bucking grade to bring it into our proposed US 41 ponds. We are considering this area as directly connected impervious area. The remaining impervious area which will continue to drain into the other basin will not be greater than the present impervious area draining to that basin.

Wojciech likened this to be similar to equivalent treatment and said it will be OK.

ACTION REQUIRED:

ACTION TAKEN:
NO

810

COPY TO FILE/OTHERS:
Wojciech Mroz, Linda, Cindy, Tom

SIGNATURE:
W. Bruce White

HENIGAR & RAY, INC.

PROJECT CONTACT RECORD

CONTRACT NUMBER:	DATE:	TIME:		H&R DEPARTMENT:
21663	9/19/94	3:30	Conference ____ Incoming ____ Visit ____ Outgoing X Telephone ____ Off. Mtg ____	Engineering
PROJECT NAME/SUBJECT: SR 45 (US 41)			AGENCY/FIRM: SWFWMD	PHONE NUMBER: (800) 423-1476

NAME OF PERSON CONTACTED OR IN CONTACT WITH YOU:
Jeff Vomacka

SUMMARY OF CONVERSATION/OBSERVATION:
Jeff stated that the 9/88 Storm Event was studied by SWFWMD and found to support their lake model in Pasco County. They had discussions with numerous residents who confirmed that the lake level in 9/88 prior to the storm was about 1½ ft. lower than the starting level for their model. It was a very dry season for two years prior to that 9/88 storm and the anticedent moisture was very low. SWFWMD concluded that 9/88 peak stages were not as high as expected for an event of that magnitude (4day - 40yr. frequency) when compared with their model because of the anticedint condition.

Jeff stated that the 10/60 HW for Lake Padgett was high compared to the model because many culverts have been constructed since 1960 connecting Lake Padgett to adjacent wetlands. He said the 9/88 HW elevations for Lake Padgett supports their model very well.

ACTION REQUIRED:

ACTION TAKEN:

811

COPY TO FILE/OTHERS: SR 45 (US 41) FILE

SIGNATURE: W. Bruce White

HENIGAR & RAY, INC.
Form 15/July 1992

Rudy

SR 45
Project Meeting
9:00 a.m., Friday, September 30, 1994

Date of Memo:	**10/03/94**	
Location:	**FDOT District 7 - Tampa Office**	
Attendees:	**Lisa Hansen**	**- FDOT**
	Dwayne Kile	**- PBS&J**
	Rudy Beres	**- Henigar & Ray**
	Jerry Warren	**- Henigar & Ray**

Steve Tidwell, FDOT, attended the meeting briefly to discuss the gas main issues with R. Beres.

The purpose of the meeting was to discuss several drainage issues deemed critical to the overall design of the project. The following is a summary of the items discussed:

H&R presented the weir structure proposed for the outfall structures in the ponds. FDOT did not object to the utilization of the sharp-crested weir design. They concurred that the 8:1 slope would be adequate for the transition from the top of berm to the flowline of the weir channel. They also stated that they prefer H&R's design include ditch pavement to the top of berm as well as 5 foot beyond the break point, with toewalls at the end of the pavement.

H&R stated that all DBI's utilized as final outfall structures (bubbler inlets) have been eliminated. The only area requiring a sump condition is the outfall of Pond C. This sump area would be approximately 3 feet in depth.

FDOT still has a problem with utilizing SWFWMD's model for setting final roadway grades. H&R stated that we only utilized the model to establish tailwater conditions for routing the 25 year storm to analyze pre vs. post attenuation. Modeling the 3 year storm had no affect on the tailwater condition for establishing the HGL of the stormwater system.

H&R presented the DBI outfall structures for Ponds C and F. FDOT requested we try to maintain a 1 foot clearance over the pipe in the retention areas in lieu of 6" with ditch pavement.

FDOT stated that red-lined drawings of the revised drainage plans would be adequate for the submittal on October 13 (1 set). They also stated that they would require a full set of drainage calculations to be submitted as part of the permit package.

FDOT stated that it would be a good idea to contact Jerry Sanford (FDOT maintenance engineer) for concerns regarding maintenance issues.

FDOT said that they will accept lo-head pipe but only for outfalls.

Cast-in-place (CIP) inlets may be used in special cases to avoid utility conflicts, however they should not be rqutinely used to keep the stormsewer system shallow. CIP inlets should be noted in the remarks column on the Summary of Drainage Structures sheets.

FDOT advised that we talk directly to Steve Tidwell with questions about utility relocations.

The above comments represent a summary of the items discussed to the recollection of HENIGAR & RAY, INC. Any discrepancies should be brought to the attention of Rudy Beres.

E:\B2\SR45\MINUTES.930

Rudy

Henigar & Ray Inc.

ENGINEERS • PLANNERS • SCIENTISTS • SURVEYORS

PROJECT CONTACT RECORD

CONTRACT NUMBER:	DATE:	TIME:		H & R DEPARTMENT:
21663	10/5/94	1:30	Conference ✓ Visit ___ Telephone ___ Incoming ___ Outgoing ___ Out. Mtg. ___	TRANSPORTATION
PROJECT NAME/SUBJECT: FDOT- SR 45			AGENCY/FIRM:	PHONE NUMBER: ( )

NAME OF PERSON CONTACTED OR IN CONTACT WITH YOU:
JERRY SANFORD - FDOT MAINTENANCE ENGINEER

SUMMARY OF CONVERSATION/OBSERVATION:

VISIT WITH JERRY SANFORD TO DISCUSS DRAINAGE ISSUES REGARDING SR 45 PROJECT.

MR SANFORD STATED THAT TO THE BEST OF HIS RECOLLECTION, THERE ARE NO HISTORICAL FLOODING PROBLEMS WITH THIS STRETCH OF ROADWAY. HE DID MENTION THAT AT THE INTERSECTION OF SR 45 WITH SR 54 THERE HAS BEEN LOCALIZED PROBLEMS WITH STANDING WATER, HOWEVER THE PONDING SUBSIDES WITH TIME. HE DOES NOT EVER REMEMBER THERE BEING WATER OVER TOPPING THE ROADWAY.

HE ADVISED THAT HE WOULD RECOMMEND REPLACEMENT OF ALL CROSS CULVERTS IN LIEU OF EXTENDING THEM, ALONG THE MAINLINE. THE ROAD WAS BUILT IN THE 1930'S AND THAT IS A GOOD CHANCE THAT THE CULVERTS ORIGINALLY CONSTRUCTED FOR THE PROJECT ARE STILL IN PLACE. THIS MAY NOT BE IMMEDIATELY APPARENT DUE TO MORE RECENT WIDENINGS AND THE RESULTANT EXTENSION OF CULVERTS.

I STATED THAT WE DID NOT INTEND TO REPLACE THE DOUBLE 8×4 ALONG SR 54. THE CULVERT LIES AT THE WESTERLY TIE-IN WITH THE EXISTING ROADWAY OF SR 54.

SUMMARY:

814

COPY TO FILE/OTHERS: R. Berry, B. White, T. Murphy, C. Jones

SIGNATURE: Gerald C. Wall

TROPICAL VILLAGE
(PERMIT #46-026875-0)

ENVIRONMENTAL RESOURCE PERMIT APPLICATION

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

2379 BROAD STREET • BROOKSVILLE, FL 34604-6899
(352) 796-7211 OR FLORIDA WATS 1 (800) 423-1476

FOR AGENCY USE ONLY

ACOE Application # _____ DEP/WMD Application # _____
Date Received _____ Date Received _____
Proposed Project Latitude _____° _____' _____" Fee Received $ _____
Proposed Project Longitude _____° _____' _____" Fee Receipt # _____

SECTION A

PART 1:

Are any of the activities described in this application proposed to occur in, on, or over wetlands or other surface waters? ☐ yes ☐ no
Is this application being filed by or on behalf of an entity eligible for a fee reduction? ☐ yes ☐ no

PART 2:

A. Type of Environmental Resource Permit Requested (check at least one)

☐ Noticed General - include information requested in Section B.
☐ Standard General (single family dwelling)-include information requested in Sections C and D.
☐ Standard General (all other projects) - include information requested in Sections C and E.
☒ Standard General (minor systems) - include information requested in Sections C and H.
☐ Standard General (borrow pits) - include information requested in Sections C and I.
☐ Individual (single family dwelling) - include information requested in Sections C and D.
☐ Individual (all other projects) - include information requested in Sections C and E.
☐ Individual (borrow pits) - include information requested in Sections C and I.
☐ Conceptual - include information requested in Sections C and E.
☐ Mitigation Bank (construction) - include information requested in Section C and F.
(If the proposed mitigation bank involves the construction of a surface water management system requiring another permit listed above, check the appropriate box and submit the information requested by the applicable section.)
☐ Mitigation Bank (conceptual) - include information requested in Section C and F.

B. Type of activity for which you are applying (check at least one)

☐ Construction or operation of a new system, including dredging or filling in, on or over wetlands and other surface waters. (If reapplying for an expired, denied or withdrawn permit/ application, please provide previous permit #_____.)
☐ Alteration or operation of an existing system which was not previously permitted by SWFWMD or DEP.
☐ Modification of a system previously permitted by SWFWMD or DEP. Provide previous permit #_____ and check applicable modification type.
☐ Alteration of a system ☐ Extension of permit duration ☐ Abandonment of a system
☐ Construction of additional phases of a system ☐ Removal of a system

C. Are you requesting authorization to use State Owned Submerged Lands. ☐ yes ☐ no
If yes, include the information requested in Section G.

D. For activities in, on or over wetlands or other surface waters, check type of federal dredge and fill permit requested:
☐ Individual ☐ Programmatic General ☐ General ☐ Nationwide ☐ Not Applicable

E. Are you claiming to qualify for an exemption? ☐ yes ☐ no
If yes, provide rule number if known_____.

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PART 3: A. OWNER(S) OF LAND	B. APPLICANT (IF OTHER THAN OWNER)
NAME Scott Wagman	NAME
COMPANY AND TITLE President Houghton-Wagman Partnership, Ltd.	COMPANY AND TITLE
ADDRESS 1219 Darlington Oak Circle NE	ADDRESS
CITY, STATE, ZIP St. Petersburg, Florida 33703	CITY, STATE, ZIP
TELEPHONE (727) 502-5544 FAX (727) 822-7183	TELEPHONE ( ) FAX ( )
C. AGENT AUTHORIZED TO SECURE PERMIT (IF AN AGENT IS USED)	D. CONSULTANT (IF DIFFERENT FROM AGENT)
NAME	NAME Sheikh M. Hasan
COMPANY AND TITLE	COMPANY AND TITLE President Award Engineering, Inc.
ADDRESS	ADDRESS 7804 N Florida Avenue
CITY, STATE, ZIP	CITY, STATE, ZIP Tampa, Florida 33604
TELEPHONE ( ) FAX ( )	TELEPHONE (813) 238-4393 FAX (813) 237-3909

PART 4: PROJECT INFORMATION

A. Name of project, including phase if applicable: Tropicana Village
B. Is this application for part of a multi-phase project? ☐ yes ☒ no
C. Total applicant-owned area contiguous to the project: 4.80 acres
D. Total project area for which a permit is sought: 4.80 acres
E. Total impervious area for which a permit is sought: 1.78 acres
F. Total area (metric equivalent for federally funded projects) of work in, on, or over wetlands or other surface waters: 0 acres or 0 square feet (0 hectares or 0 square meters)
G. Total number of new boat slips proposed: 0

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PART 5: PROJECT LOCATION (use additional sheets, if needed)

County(ies) Pasco
Section(s) 36 Township 26S Range 18E
Section(s) _____ Township _____ Range _____
Land Grant name, if applicable _____
Tax Parcel Identification Number 36-26-18-0000-00800-0051
Street address, road, or other location 1520/1532 Land O'Lakes Blvd.
City, Zip Code, if applicable Lutz, Florida 33549

PART 6: DESCRIBE IN GENERAL TERMS THE PROPOSED PROJECT, SYSTEM, OR ACTIVITY.

Exist Tropicana Village containing buildings, paving and storm sewers and retention is to be expanded to include a new 3,850 square foot building. A portion of existing shell paving is to be replaced with asphalt paving.

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PART 7:

A. If there have been any pre-application meetings for the proposed project, with regulatory staff, please list the date(s), location(s), and names of key staff and project representatives.

N/A

Date(s)	Location(s)	Names

B. Please identify by number any MSSW/WRM (dredge & fill)/ERP/ACOE permits or applications pending, issued or denied and any related enforcement actions at the proposed project site.

None

Agency	Date	Number / Type	Action Taken

C. Note: The following information is required for projects proposed to occur in, on or over wetlands that need a federal dredge and fill permit and/or authorization to use state owned submerged lands. Please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding applicant) and/or is located within a 500 foot radius of the project boundary (for proprietary authorizations, if any). Please provide a drawing identifying each owner and adjoining property lines. (Use additional sheets, if needed).

N/A

1.

2.

3.

4.

5.

6.

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PART 8:

A. By signing this application form, I am applying, or I am applying on behalf of the owner or applicant, for the permit and/or proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application, and represent that such information is true complete and accurate. I understand that knowingly making any false statement or representation in the application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001. I understand this is an application and not a permit and work prior to approval is a violation. I understand that this application and any permit or proprietary authorization issued pursuant thereto, does not relieve me of any obligation for obtaining any other required federal, state, water management district or local permit prior to commencement of construction. I agree, or I agree on behalf of the owner or applicant, to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a responsible operation entity.

Scott K. Woodson — President

Typed/Printed Name of Owner, Applicant or Agent — Corporate Title, if applicable

Signature of Owner, Applicant or Agent — Date 3/24/04

B. AN AGENT MAY SIGN ABOVE ONLY IF THE FOLLOWING IS COMPLETED:

I hereby designate and authorize the agent listed above to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirement which may be necessary to procure the permit or authorization indicated above.

/Printed Name of Owner or Applicant — Corporate Title, if applicable

Signature of Owner or Applicant — Date

C. PERSON AUTHORIZING ACCESS TO THE PROPERTY MUST COMPLETE THE FOLLOWING:

I either own the property described in this application or I have legal authority to allow access to the property, and I consent, after receiving prior notification, to any site visit on the property by agents or personnel from the Department of Environmental Protection, the Southwest Florida Water Management District and the U.S. Army Corps of Engineers necessary for the review and inspection of the proposed project specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review and inspection. Further, I agree to provide entry to the project site for such agents or personnel to monitor authorized work if a permit is granted.

Scott K. Woodson — President

Typed/Printed Name — Corporate Title, if applicable

Signature — Date 3/24/04

D. I certify that the engineering features of this surface water management system have been designed by me or under my responsible charge and in my professional opinion conform with sound engineering principles and all applicable rules and specifications. I further agree that I or my engineering firm will furnish the applicant/ permittee with a set of guidelines and schedules for maintenance and operation of the surface water management system.

By: _____
Signature of Engineer of Record

Sheikh M. Hasan 16612
Name *(please type)* FL P.E. No.

• AFFIX SEAL •

Date: 3/24/04

Award Engineering, Inc.
Company Name

7804 N Florida Avenue
Company Address

Phone: (813) 238-4393

Tampa, Florida 33604
City, State, Zip

STATE OF FLORIDA PROFESSIONAL ENGINEER 16612

S.W.F.W.M.D. MAR 29 2004 ARR RECORDS & DATA

S.W.F.W.M.D. MAR 26 2004 BRO-REG RECEIVED

ENVIRONMENTAL RESOURCE PERMIT APPLICATION

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

2379 BROAD STREET • BROOKSVILLE, FL 34604-6899
(352) 796-7211 OR FLORIDA WATS 1 (800) 423-1476

SECTION C

ENVIRONMENTAL RESOURCE PERMIT NOTICE OF RECEIPT OF APPLICATION

This information is required in addition to that required in other sections of the application. Please submit five copies of this notice of receipt of application and all attachments. **PLEASE SUBMIT ALL INFORMATION ON 8 ½" BY 11" PAPER.**

Project Name: Tropicana Village
County: Pasco
Owner: Scott Wagman
Applicant: Scott Wagman
Applicant Address: 1219 Darlington Oak Circle NE, St. Petersburg, FL 33703

1. Indicate the project boundaries on a USGS quadrangle map, reduced or enlarged as necessary to legibly show the entire project. If not shown on the quadrangle map, provide a location map, that shows a north arrow, a graphic scale, Section(s), Township(s), and Range(s), and detail sufficient to allow a person unfamiliar with the site to find it. Attached

2. Provide the names of all wetland or other surface waters that would be dredged, filled, impounded, diverted, drained or would receive discharge (either directly or indirectly), or would otherwise be impacted by the proposed activity, and specify if they are in an Outstanding Florida Water or Aquatic Preserve: N/A

3. Attach a depiction (plan and section views), which clearly shows the works or other facilities proposed to be constructed. The depiction must use a scale sufficient to show the location and type of works. Attached

4. Briefly describe the proposed project (such as "construct a deck with boat shelter", "replace two existing culverts", "construct surface water management system to serve 150 acre residential development"): See attached

5. Specify the acreage of wetlands or other surface waters, if any, that are proposed to be disturbed, filled, excavated, or otherwise impacted by the proposed activity: None

6. Provide a brief statement describing any proposed mitigation for impacts to wetlands and other surface waters: N/A

S.W.F.W.M.D.
MAR 29 2004
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RECORDS & DATA

FOR AGENCY USE ONLY
Application Name: _____
Application Number: _____
Office where the application can be inspected:
_____

NOTE TO NOTICE RECIPIENT: The information in this notice has been submitted by the applicant and has not been verified by the Southwest Florida Water management District. It may be subject to change prior to final agency action.

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FORM 547.27/ERP(8/94)C

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4. Description of the proposed project:

Exist Tropicana Village containing buildings, paving and storm sewers and retention is to be expanded to include a new 3,850 square foot building. A portion of existing shell paving is to be replaced with asphalt paving.

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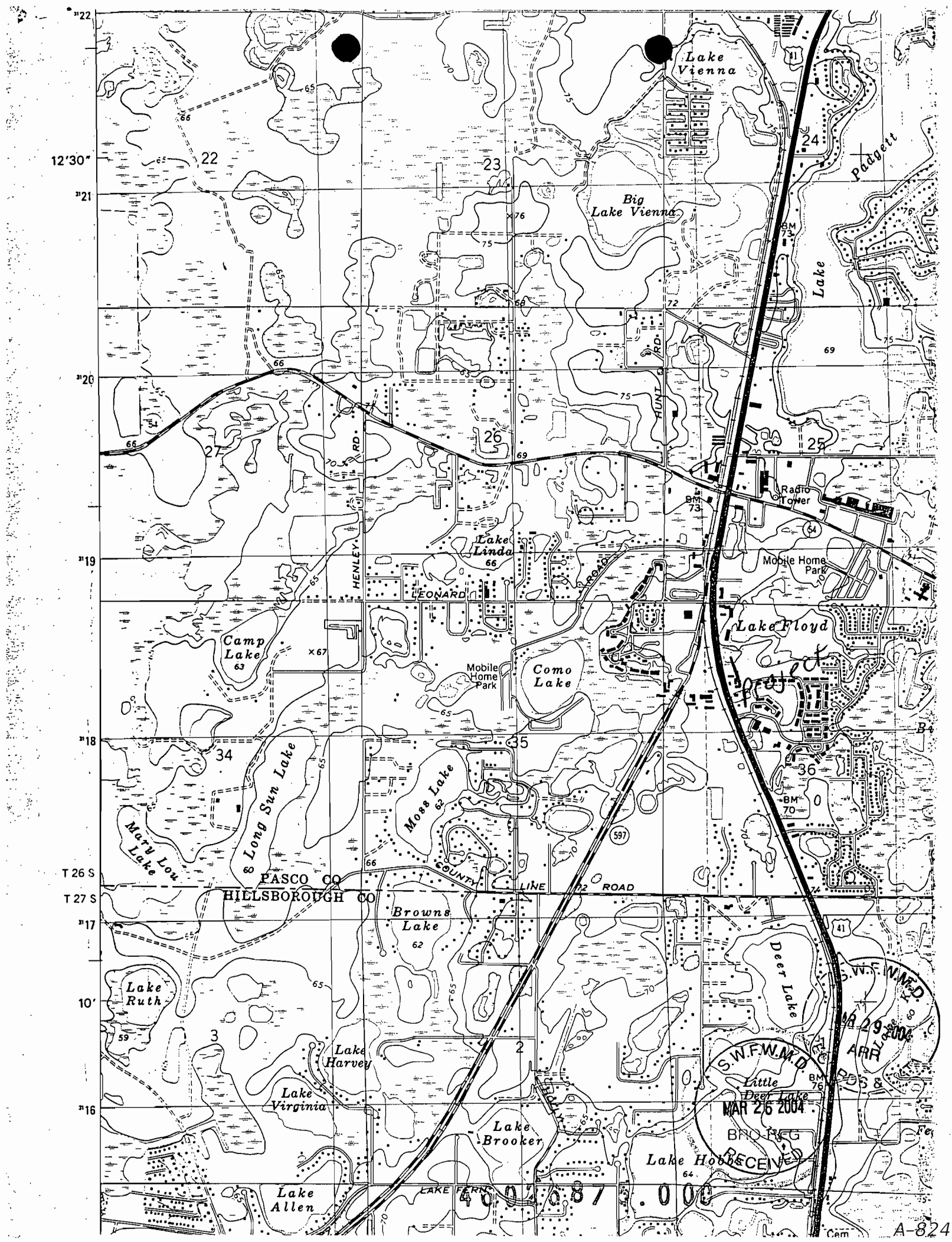

Lake Vienna
Big Lake Vienna
Lake Padgett
Radio Tower
Mobile Home Park
Lake Linda
LEONARD ROAD
HENLEY RD
HUNT RD
Lake Floyd
Camp Lake
Como Lake
Mobile Home Park
Long Sun Lake
Moss Lake
Mary Lou Lake
PASCO CO
HILLSBOROUGH CO
COUNTY LINE ROAD
Browns Lake
Deer Lake
Lake Ruth
Lake Harvey
Lake Virginia
Little Deer Lake
Lake Brooker
Lake Hobbs
Lake Allen
LAKE FERN
12'30"
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T 27 S
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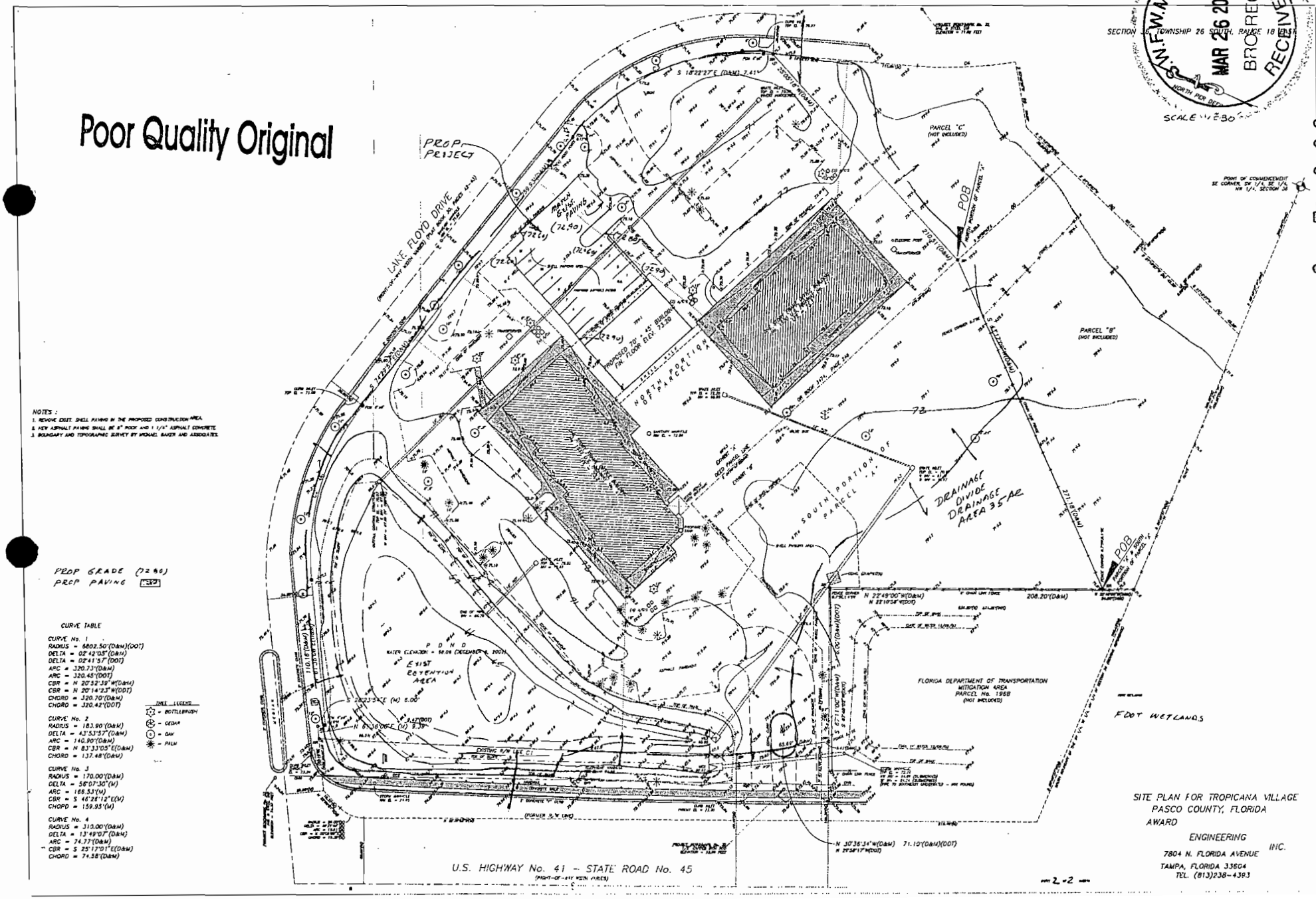

NOTES :
1. REMOVE EXIST. SHELL PAVING IN THE PROPOSED CONSTRUCTION AREA.
2. NEW ASPHALT PAVING SHALL BE 8" ROCK AND 1 1/4" ASPHALT CONCRETE.
3. BOUNDARY AND TOPOGRAPHIC SURVEY BY MICHAEL BAKER AND ASSOCIATES.

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ENVIRONMENTAL RESOURCE
PERMIT APPLICATION

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

2379 BROAD STREET • BROOKSVILLE, FL 34609-6899
(904) 796-7211 OR FLORIDA WATS 1 (800) 423-1476

SECTION H

INFORMATION FOR STANDARD GENERAL ENVIRONMENTAL RESOURCE PERMITS FOR MINOR SURFACE WATER SYSTEMS

To obtain a Standard General Permit for a Minor Surface Water Management System, the project must meet all of the requirements of Section A, Part 1 OR one of the requirements of Section A, Part 2 and both of the requirements of Section A, Part 3. Indicate which thresholds apply to your project and submit the information requested in Section B.

A. Project Thresholds

Part 1.

X The total land area does not equal or exceed 10 acres;
X The area of impervious surface will not equal or exceed two acres;
X Any activities to be conducted in, on or over wetlands or other surface waters will consist of less than 100 square feet of dredging or filling;
X The activities will not utilize pumps for stormwater management;
X The activities will not utilize storm drainage facilities larger than one 24 inch diameter pipe or its hydraulic equivalent;
X Discharges from the site will meet State water quality standards, and the surface water management system will meet the applicable technical criteria for stormwater management in the Basis of Review;
X The proposed building floors will be above the 100-year flood elevations;
X The surface water management system can be effectively operated and maintained, and;
X The proposed activities will not cause significant adverse impacts to occur individually or cumulatively.

Part 2.

___ 40D-4.051(4) - DISTRICT PERMIT RECEIVED PRIOR TO OCTOBER 1, 1984
___ 40D-4.051(6) - NOTICED DRI/PHASED PROJECT APPROVED PRIOR TO OCTOBER 1, 1984
___ 40D-4.051(7) - NORMAL AND NECESSARY FARMING AND FORESTRY

Part 3.

___ Discharges from the site will meet State water quality standards, and the surface water management system will meet the applicable technical criteria for stormwater management in the Basis of Review described in Rule 40D-4.091(1), and
___ The Surface Water Management System can be effectively operated and maintained.

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B. Technical and Legal Information

1. Provide a copy of the boundary survey and/or a legal description and acreage of the total land area of contiguous property owned or controlled by the applicant, including the project site.
   Attached
2. Provide recent aerials, legible for photo interpretation with a scale of 1" = 400' or more detailed, with total land, project area and any on-site wetlands delineated.
   Attached
3. Provide a detailed topographic map (with contours) of the site and adjacent hydrologically related area. The location and description of bench marks (minimum of one per major water control structure) should be included. Attached
4. Describe the location, size (in acres) and type of any on-site wetlands or other surface waters.
   None
5. Provide the project site development plan and acreage of the total area of impervious surface.
   Total Area = 4.80 acres IMP Area = 1.78
6. Provide the Surface Water Management System design plans, calculations and reports signed and sealed by a Florida Registered Professional Engineer, as required by law.
   Attached
7. Provide construction drawings signed and sealed by the design engineer showing the location and details of the Surface Water Management System including but not limited to any preserved wetlands, lakes, culverts, pipes, under drains, exfiltration trenches, discharge structures, pumps and related facilities such as paving, grading and erosion or sediment control measures to be employed. Attached
8. Indicate type of water quality treatment system used:

   ___ Wet detention
   _X_ On-line retention
   ___ On-line detention w/ effluent filtration
   ___ Off-line retention
   ___ Off-line exfiltration
   ___ Other (explain)

9. If a Water Use Permit has been issued for the project, state the permit number.
   None
10. Indicate how any existing wells located within the project site will be utilized or abandoned.
    N/A
11. Provide a letter or other current evidence of potential acceptance by the operation and maintenance entity, if the entity is to be a public body such as a city or drainage district. If the entity is a homeowners or other association, final draft documents verifying either the present or imminent existence of such an organization and its ability to accept operation and maintenance responsibility are required. Attached

S.W.F.W.M.D. MAR 26 2004 BRO-REG RECEIVED

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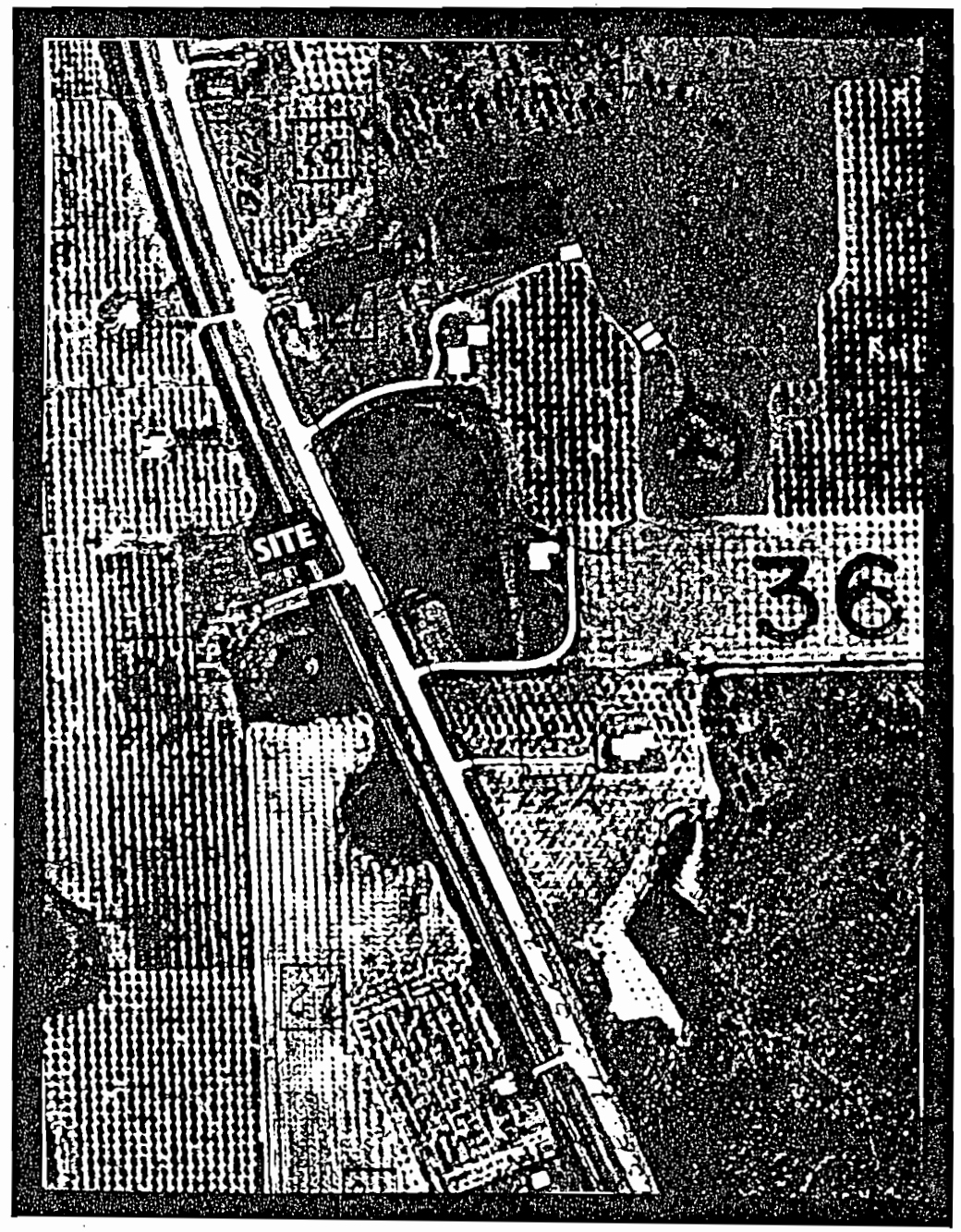
PLATE # 3



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AERIAL PHOTOGRAPHIC MAP

DATE: 1966

SCALE: 1" = 400'

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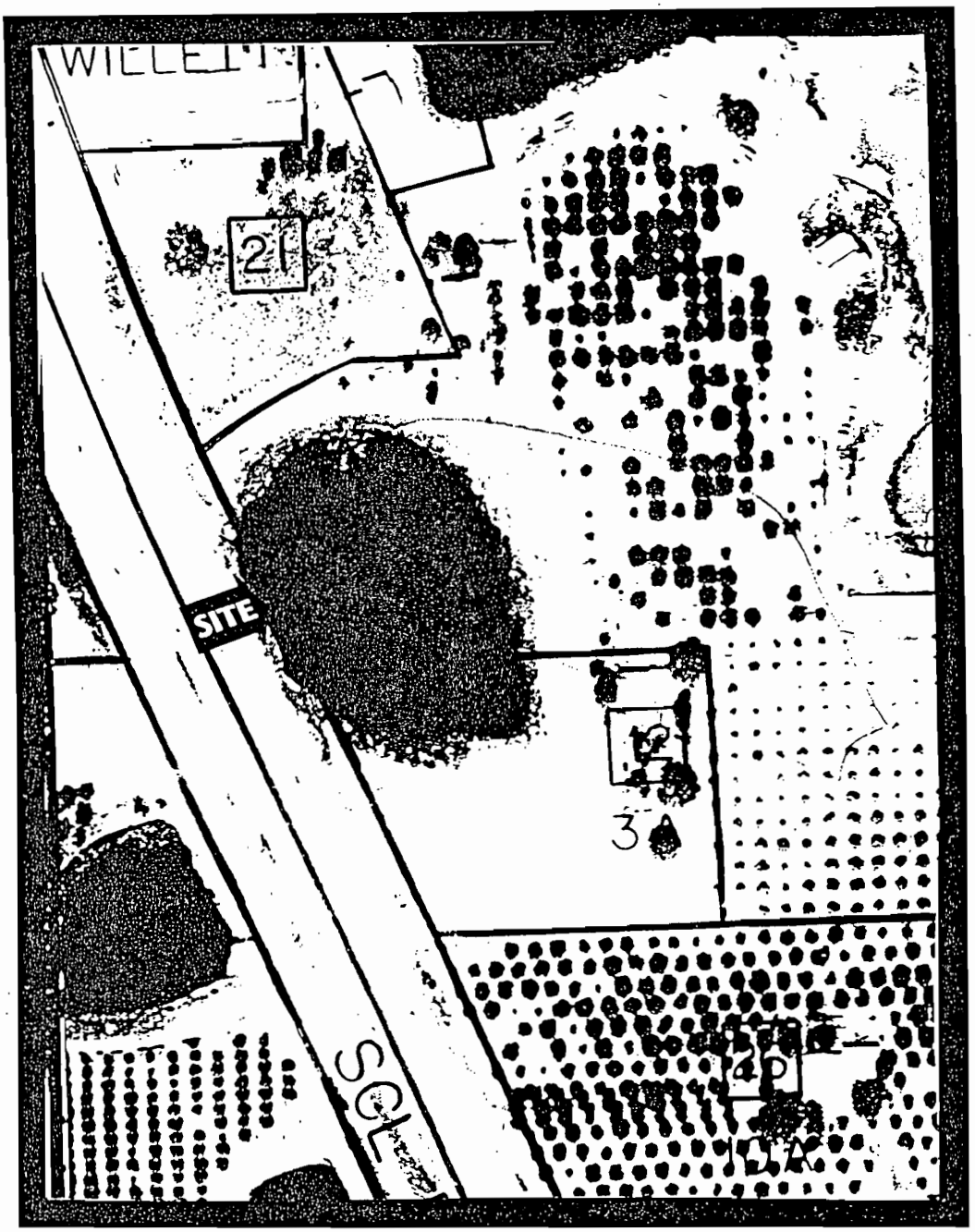
PLATE # 4



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AERIAL PHOTOGRAPHIC MAP

DATE: 1982

SCALE: 1" = 200'

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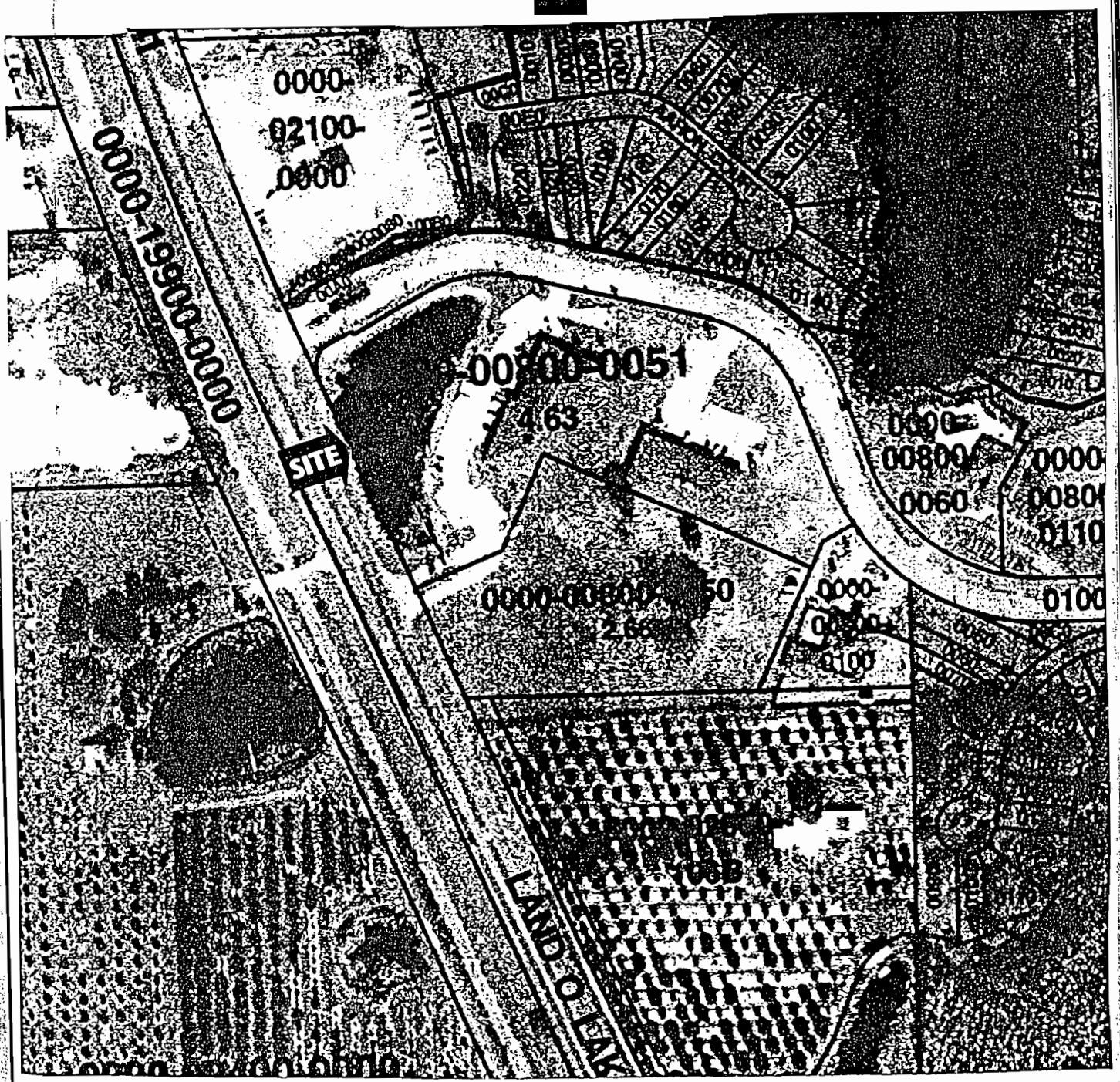
PLATE # 5



AERIAL PHOTOGRAPHIC MAP

DATE: MAY 8 1995 SCALE: 1" = 200'

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AWARD Engineering, Inc.

S.W.F.W.M.D. MAR 26 2004 BRO. REG. RECEIVED
S.W.F.W.M.D. MAR 29 2004 RECORDS & DATA

AWARD ENGINEERING, INC.

ENVIORNMENTAL CONSULTANTS
BUILDING INSPECTIONS
MARINE, SOILS, CIVIL ENGINEER

Office Location:
7804 N Florida Avenue
Tampa, Florida 33604
(813) 238-4393
(813) 237-3909 Facsimile

March 24, 2004

Scott Wagman, President
Houghton-Wagman Partnership, Ltd.
1219 Darlington Oak Circle NE
St. Petersburg, Florida 33703

RE: Tropicana Village
Pasco County, Florida

Dear Mr. Wagman:

Enclosed herewith is a copy of the Storm Drainage Report with instructions for operation and maintenance of the storm drainage system on the above referenced project. If you have any questions, please call.

Sincerely,

Sheikh M. Hasan, P.E.

SMH/ajh

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MAR 29 2004
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TROPICANA VILLAGE PASCO COUNTY, FLORIDA

STORM DRAINAGE REPORT

1. INTRODUCTION

Tropicana Village is an existing development containing a total of 4.80 acres and is located at the northeast corner of the intersection of Lake Floyd Drive and US Highway 41(State Road No. 45) in Pasco County, Florida. It is proposed to add a building containing 3150 square feet. A portion of the shell paving will be replaced by asphalt paving. The project site is shown on the attached copy of the USGS Map and on the attached aerial.

2. EXISTING LAND USE, SOIL AND DRAINAGE

The site is presently contains two buildings, asphalt drives, paved parking as well as shell paving. Soils Map prepared by the Soils Conservation Service indicate on-site soils to Soil Symbol #11 Adamsville Fine Sand with the following soils characteristics:

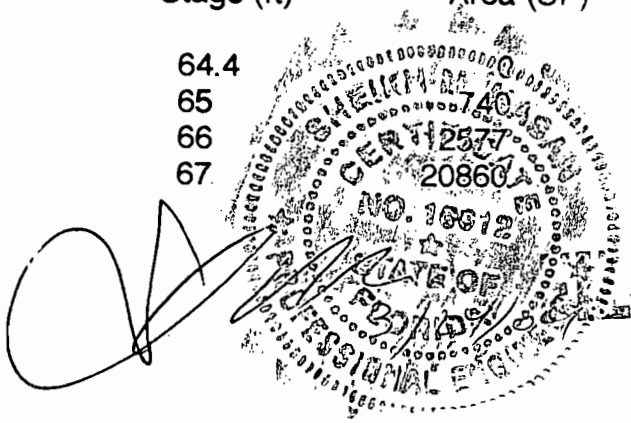
Depth (Inches)	USDA Texture	United Classification	Permeability K (in/hr)
0 - 8	Fine Sand	SP-SM	6 - 20
8 - 80	Fine Sand, Sand	SP-SM, SP	6 - 20

Hydrologic Group:	A
Frequency for Flooding:	None
Depth to High Water Table:	1.5 - 3.5 feet, Apparent from July to October
Depth to Bedrock:	> 60"

Majority of the site (approximately 3.4 acres) drains to an existing pond on the site. The overflow from this pond is discharged to the FDOT Mitigation Area which connects to FDOT Wetlands. This pond also receives the runoff from approximately 0.1 acres of US Hwy 41 area. A remainder of the site drains directly to the FDOT Mitigation Area.

Stage Storage data for the existing pond are as follows:

Stage (ft)	Area (SF)	Volume (CF)
64.4	140	0
65	1257	222
66	2086	6880
67	2860	23600





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3. PROPOSED DRAINAGE

The proposed building and paved parking will also drain to the existing pond. The pond overflow elevation is 68.87. Therefore, the volume provided in the pond is approximately 21,400 cubic feet. The total drainage area (Site + US 41 area) is 3.5 acres. The existing retention volume in the pond is equivalent to 1.20 inches of runoff from the drainage area.

4. RECOVERY CALCULATIONS

Calculations for the recovery of first 0.5" of stormwater runoff are attached. These calculations show that the first 0.5" of runoff will be easily recovered within 72 hours.

5. EROSION & SEDIMENT CONTROL

Erosion control facilities will be constructed prior to the start of any construction and maintained throughout construction. Erosion Control information is shown on the Drainage Plan.

6. OPERATION TO MAINTENANCE

All drainage facilities will be maintained by the Property Owner. The drainage facilities shall be examined after every storm event providing 1/2" of rainfall or more. Any erosion occurring as a result of this rainfall shall be immediately repaired. If any sinkholes appear in the water retention areas, the Southwest Florida Management District will be notified promptly. A geotechnical report outlining the procedure for repair shall be submitted to the Water Management District. Upon approval of the District, the repair shall be undertaken and the district notified. A copy of this report has been furnished to the owner of this project as per attached letter

S.W.F.W.M.D.
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TROPICANA VILLAGE
PASCO COUNTY, FLA
STORM DRAINAGE

DRAINAGE AREA TO EXIST. POND
= 3.5 Ac

RUNOFF VOLUME @ 0.5" OF RUNOFF
$= 3.5 \times \frac{0.5}{12} \times 43560 = 6352\ FT^3$

STAGE STORAGE DATA FOR EXIST DRA

STAGE	AREA	VOLUME
64.4	0	0
65	740	222
66	12577	6880
67	20860	23600

MAX W.S.EL FOR TREATMENT VOLUME = 66
Assume Percolation Area = Area @ EL 65 = 74
Percolation Rate Required to remove
Volume in 72 Hours = $\frac{6352}{3 \times 740}$
$= 2.86'/DAY$
Measured Vertical Hydraulic Conductivity
$= 4.56'/DAY$

S.W.F.W.M.D.
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RECORDS & DATA

S.W.F.W.M.D.
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AWARD
ENGINEERING, INC.

7804 N. FLORIDA AVENUE, TAMPA, FLORIDA 33604
Phone: 813/238-4393; Fax: 813/237-3909; E-mail: award1@gte.net
Website: http://www.awardengineering.4t.com

February 26, 2003

Scott Wagman
Houghton-Wagman Partnership, Ltd.
1219 Darlington Oak Circle NE
St. Petersburg, FL 33703

RE: **Technical Report # 03-2740**
SOIL BORING AND DOUBLE RING INFILTROMETER TESTING REPORT FOR
Village Center
1520-1532 Land O' Lakes Boulevard
Lutz, FL

Dear Mr. Wagman:

As requested and authorized by you, we have completed one (1) soil boring and one (1) Double Ring Infiltrometer (DRI) test at the above site. Test procedures used were in general accordance with the applicable ASTM Standard Procedures or geotechnical practice. The soil profile was obtained by hand auger boring. The test locations were determined by proposed location of the ponds. The following soil parameters were obtained from the field and laboratory tests, which may be used in the design of the retention ponds.

The following tests were conducted to arrive at the recommended design parameters. In-situ permeability was measured in the field by a Double Ring Infiltrometer test based on ASTM D-3385 procedure. The results are applicable for the unsaturated condition analysis according to Standard Drainage Manual.

The storage coefficient was based on an assumed porosity of 0.3 and a calculated unit weight of 98.0 pcf. The locations of soil boring SB-1 and the DRI test are shown on Plate #1. The soil profile at the test location is shown in the attached boring log, Plate #2, and the DRI test results are shown in Plate #3.

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DESIGN PARAMETERS	RECOMMENDED VALUES
Permeability (K)	6.96 ft/day
Vertical Hydraulic Conductivity (Kv)	4.56 ft/day
Horizontal Permeability (Kh)	2.40 ft/day
Recommended Factor of Safety	1.50
Effective Storage Coefficient	0.30
Design Ground Water Elevation	3'-2"

All field tests and soil borings were conducted on February 25, 2003. The seasonal high water table or the Design High Water elevation is based on water entry at a depth of 4'-2" below the land surface on February 25, 2003 in Soil Boring SB-1. The test data and soil boring log obtained by auger boring are shown in the attached sheets. The permeability rate as evidenced by the DRI test is very slow. Consideration should be given to relocating the pond design.

DESIGN OF POND UNDERDRAINS

A retention pond may be designed with the bottom of the pond one foot above the design Ground Water Elevation. If additional water quality volume is required, an exfiltration type retention can be designed using the area under the parking and paved areas. In the design of such a system, either an exfiltration system design as installed in-situ, or a prefabricated system such as an infiltrometer engineered prefabricated system or any equivalent system approved by an engineer may be used.

Underdrains under paved areas are applicable if the volume of retention exceeds the allowable areas.

We appreciate the opportunity to serve as your geotechnical consultant. If you need any additional information, please feel free to contact our office.

Sincerely,

M.K. Khan Ternikar, P.E., E.A.C., C.E.S.
B.E., M.Sc.(Eng.), M.I.C.E., C.Eng.
Professional Engineer
Geotechnical Consultant

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APPENDIX "A"

Plate # 1 : Location of Soil Boring and DRI

Plate #2 : Boring Log SB-1

Plate # 3: DRI Test

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Plate # 3

DOUBLE RING INFILTROMETER TEST

Date:	February 25, 2003	**Site:**	1520/1532 Land O' Lakes Blvd., Lutz, FL
Operator:	M. M. Blassy	**Client:**	Scott Wagman
Weather:	Sunny 74°	**Type:**	Double Ring Infiltrometer
Rain:	No	**Depth:**	12' below land surface
Water Table:	4'-2"	**Job#:**	03-2740

TIME IR Hr:Min:Sec	*TIME* OR Hr:Min:Sec	*DROP INCHES*	*TOTAL TIME Min:Sec* IR	*TOTAL TIME Min:Sec* OR	*INFILTRATION RATE Inches/Minute* IR	*INFILTRATION RATE Inches/Minute* OR
09:50:00	09:50:00	½"				
10:04:00	10:00:45	1"	14:00	10:45		
10:04:00	10:05:00	½"				
10:18:30	10:16:10	1"	14:30	11:10		
10:20:00	10:16:10	½"				
10:35:20	10:27:25	1"	15:20	11:15		
10:35:20	10:30:00	½"				
10:51:35	10:42:00	1"	16:15	12:10		
11:00:00	11:00:00	½"				
11:16:45	11:12:25	1"	16:45	12:25		
11:16:45	11:20:00	½"				
11:33:45	11:32:45	1"	17:00	12:45		
11:45:00	11:45:00	½"				
12:03:00	11:58:00	1"	17:00	13:00		
12:03:00	12:10:00	½"				
12:20:00	12:23:00	1"	17:00	13:00		
12:30:00	12:30:00	½"				
12:47:00	12:43:00	1"	17:00	13:00		
12:47:00	12:50:00	½"				
01:04:00	01:03:00	1"	17:00	13:00		
01:10:00	01:10:00	½"				
01:27:00	01:23:00	1"	17:00	13:00		
01:27:00	01:30:00	½"				
01:44:00	01:43:00	1"	17:00	13:00		
01:47:00	01:45:00	½"				
02:04:00	01:58:00	1"	17:00	13:00		
02:04:00	02:00:00	½"				
02:21:00	02:13:00	1"	17:00	13:00		
					0.038 in/hr	0.058 in/hr
					***K* = 6.96** ft/day ***Kv* = 4.56** ft/day ***Kh* = 2.40** ft/day	

OR – Outer Ring
IR – Inner Ring

Lowest Infiltration Rate: 2.40 **feet/day**
Test Conducted by Geotechnical Engineer: M. M. Blassy
Certified by Professional Engineer: M.K. Ternikar

AWARD Engineering, Inc.

BORING LOG # SB-1 PLATE # 2

Weather:	Sunny	Project Site:	1520/1532 Land O'Lakes Blvd., Lutz, FL
Time:	8:00 a.m.		
Location:		Date:	February 20, 2003
Water Level:	4' 0"	Insitu Tests:	Nil
Client:	Scott Wagman	Job #:	03-2740

Depth (ft)	Log	Description
1		Light Gray Fine Sand / Sugar Sand
2		Black Silty Organic Sand
3		Tan Fine Sand
4		Light Tan Fine Sand
5		Reddish Brown Fine Sand

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FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM

O.M.B. No. 3067-0077
Expires July 31, 2002

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1 - 7.

SECTION A - PROPERTY OWNER INFORMATION

For Insurance Company Use:

BUILDING OWNER'S NAME: Houghton-Wagman Partnership
Policy Number:
BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO.: 1532 US Hwy No. 41 (Land O Lakes Blvd.)
Company NAIC Number:
CITY: Land O Lakes
STATE: Florida
ZIP CODE: 34689
PROPERTY DESCRIPTION (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.): Portion of SE 1/4 of NW 1/4 Sec. 36, Twp 26S Rl3E., Pasco County
BUILDING USE (e.g., Residential, Non-residential, Addition, Accessory, etc. Use a Comments area, if necessary.): Non-residential
LATITUDE/LONGITUDE (OPTIONAL) (##° - ## - ##.## or ##.#####°)
HORIZONTAL DATUM: [ ] NAD 1927 [ ] NAD 1983
SOURCE: [ ] GPS (Type): [ ] USGS Quad Map [ ] Other:

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP COMMUNITY NAME & COMMUNITY NUMBER	B2. COUNTY NAME	B3. STATE
Pasco County 120230	Pasco	Florida

B4. MAP AND PANEL NUMBER	B5. SUFFIX	B6. FIRM INDEX DATE	B7. FIRM PANEL EFFECTIVE/REVISED DATE	B8. FLOOD ZONE(S)	B9. BASE FLOOD ELEVATION(S) (Zone AO, use depth of flooding)
120230 0425	E	Sept. 30, 1992	Sept. 30, 1992	A	71.5

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in B9.
[ ] FIS Profile [ ] FIRM [X] Community Determined [ ] Other (Describe):
B11. Indicate the elevation datum used for the BFE in B9: [X] NGVD 1929 [ ] NAVD 1988 [ ] Other (Describe):
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? [ ] Yes [ ] No
Designation Date: per firm

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: [ ] Construction Drawings* [ ] Building Under Construction* [X] Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.
C2. Building Diagram Number 1 (Select the building diagram most similar to the building for which this certificate is being completed - see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)
C3. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO
Complete Items C3.a-i below according to the building diagram specified in Item C2. State the datum used. If the datum is different from the datum used for the BFE in Section B, convert the datum to that used for the BFE. Show field measurements and datum conversion calculation. Use the space provided or the Comments area of Section D or Section G, as appropriate, to document the datum conversion.
Datum NGVD 29 Conversion/Comments
Elevation reference mark used USCG U-257-1965 Does the elevation reference mark used appear on the FIRM? [ ] Yes [X] No

[X] a) Top of bottom floor (including basement or enclosure)	73.2	ft.(m)
[ ] b) Top of next higher floor	N/A	ft.(m)
[ ] c) Bottom of lowest horizontal structural member (V zones only)	N/A	ft.(m)
[ ] d) Attached garage (top of slab)	N/A	ft.(m)
[X] e) Lowest elevation of machinery and/or equipment servicing the building (Describe in a Comments area.)	72.8	ft.(m)
[X] f) Lowest adjacent (finished) grade (LAG)	72. .8	ft.(m)
[X] g) Highest adjacent (finished) grade (HAG)	73.1	ft.(m)
[ ] h) No. of permanent openings (flood vents) within 1 ft. above adjacent grade	0	
[ ] i) Total area of all permanent openings (flood vents) in C3.h	0	sq. in. (sq. cm)

License Number, Embossed Seal, Signature, and Date

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SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information.
I certify that the information in Sections A, B, and C on this certificate represents my best efforts to interpret the data available.
I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME: Michael J. Baker
LICENSE NUMBER: LS 4086
TITLE: Land Surveyor
COMPANY NAME: Michael Baker Associates
ADDRESS: 220 S. Safford Ave.
CITY: Tarpon Springs
STATE: Florida
ZIP CODE: 34689
SIGNATURE:
DATE: 12-31-2002
TELEPHONE: 727-938-5026

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IMPORTANT: In these spaces, copy the corresponding information from Section A.

For Insurance Company Use:

BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO.

1582 US Hwy 41

Policy Number

CITY: Land O Lakes | STATE: FL | ZIP CODE: 34689

Company NAIC Number

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

COMMENTS

C3e - Air conditioners

☐ Check here if attachments

SECTION E - BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zone AO and Zone A (without BFE), complete Items E1. through E4. If the Elevation Certificate is intended for use as supporting information for a LOMA or LOMR-F, Section C must be completed.

E1. Building Diagram Number _____ (Select the building diagram most similar to the building for which this certificate is being completed – see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)

E2. The top of the bottom floor (including basement or enclosure) of the building is ☐☐ ft.(m) ☐☐ in.(cm) ☐ above or ☐ below (check one) the highest adjacent grade. (Use natural grade, if available.)

E3. For Building Diagrams 6-8 with openings (see page 7), the next higher floor or elevated floor (elevation b) of the building is ☐☐ ft.(m) ☐☐ in.(cm) above the highest adjacent grade. Complete Items C3.h and C3.i on front of form.

E4. For Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F - PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, C (Items C3.h and C3.i only), and E for Zone A (without a FEMA-Issued or community-issued BFE) or Zone AO must sign here. *The statements in Sections A, B, C, and E are correct to the best of my knowledge.*

PROPERTY OWNER'S OR OWNER'S AUTHORIZED REPRESENTATIVE'S NAME

ADDRESS | CITY | STATE | ZIP CODE

SIGNATURE | DATE | TELEPHONE

COMMENTS

☐ Check here if attachments

SECTION G - COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below.

G1. ☐ The information in Section C was taken from other documentation that has been signed and embossed by a licensed surveyor, engineer, or architect who is authorized by state or local law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4-G9) is provided for community floodplain management purposes.

G4. PERMIT NUMBER	G5. DATE PERMIT ISSUED	G6. DATE CERTIFICATE OF COMPLIANCE/OCCUPANCY ISSUED

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building is: _____.___ ft.(m) Datum: _____

G9. BFE or (in Zone AO) depth of flooding at the building site is: _____.___ ft.(m) Datum: _____

LOCAL OFFICIAL'S NAME | TITLE

COMMUNITY NAME | TELEPHONE

SIGNATURE | DATE

COMMENTS

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☐ Check here if attachments

- No lead-based paint testing was performed due to no local regulation.
- No asbestos testing was authorized.
- No radon testing was performed due to the low potential of radon emanation in this region.

2.0 ASSET INFORMATION

The following asset information was developed through investigation by AWARD Engineering, Inc.:

Asset:	Retail / Strip Office 1520 / 1532 Land O' Lakes Boulevard Lutz, Florida 33549
Client:	Scott Wagman Houghton-Wagman Partnership, Ltd. 1219 Darlington Oak Circle NE St. Petersburg, Florida 33703
Bank:	Attn: Kevin McKenney, Vice President Northern Trust Bank 1515 Ringling Boulevard Sarasota, FL 34236

3.0 SITE BACKGROUND

a. *Site Location and Description*

i. Legal Description: See *Appendix "A"* for the complete legal description. The subject property is in Section 36, Township 26S, Range 18E in Pasco County, Florida.

Address: 1520 / 1532 Land O' Lakes Boulevard
Lutz, Florida 33549

ii. Site Photographs are presented in *Appendix "B"*. Site maps and drawings are included in *Appendix "C"*.

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iii. Type of Property

Location:	1520 / 1532 Land O' Lakes Boulevard Lutz, Florida 33549
Property ID #:	36-26-18-0000-00800-0051
Record Owner:	Hallmark Properties, Inc.
Land Size:	3.76± Acres
Total Building Area:	16,800± square feet
Year Built:	1987
Zoning:	"OOC2" – Commercial 2
Flood Zoning:	Zone "A", as per Panel # 04256/120L30, dated September 30, 1992
Surface Soils:	Soil Symbol #11 – Adamsville
Geology:	Stratified Sequence of Cenozoic Tertiary Miocene Sand Limestone Inter-bedded Clay
U.S.G.S. Quad Map:	Lutz, Florida
Radon Potential:	Zone "3" – with a predicted average indoor potential screening level less than 2 pCi/L
Physiographic Province:	Gulf Coastal Lowlands of Florida

b. *Properties Surrounding the Site*

Adjacent properties surrounding the subject site include the following:

North: Lake Floyd Drive
South: Vacant Parcel

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4.0 SITE HISTORY

a. *Record Ownership Data*

Appendix "A" contains the pages D1 to D4, indicating the ownership of the subject property with the following data:

	Date	Bk/Page	From	To
D1	31 Oct 1994 Corrective Warranty Deed	3473/248		Hallmark Properties, Inc., a Florida corporation
D2	31 Oct 1994	3473/250	Signature Page	
D3 & D4	31 Oct 1994	3473/251 3473/252	Legal Definition	

The current record owner of the subject property is:

HALLMARK PROPERTIES, INC., A FLORIDA CORPORATION

There does not appear to be any environmental-type lien on this subject property as per the prior record of ownership search.

b. *Site Photographs*

Appendix "B" contains photographs P1 to P18 taken on November 6, 2002, with the following details:

P1 Property Entrance Sign View
P2 Property Entrance View
P3 Front View of Building #1532
P4 Front Porch View of Building #1532
P5 Rear View of Building #1532
P6 South View of Building #1532
P7 Entrance View of Building #1532
P8 Ceiling View of Building #1532
P9 Entrance View of Building #1520
P10 Front View of Building #1520
P11 Rear View of Building #1520
P12 West Boundary of the Property
P13 North Boundary of the Property

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P14 South Boundary of the Property
P15 Parking and Driveway View
P16 Well View
P17 Garbage Dumpster View
P18 Ground-Mounted Transformer View

c. *Site Maps*

Appendix "C" contains Plates # 1 to # 8, with the following information:

Plate # 1 Street Location Map Not to Scale

The subject property is located east of Land O' Lakes Boulevard and south of Lake Floyd Drive in Lutz, Florida.

Plate # 2 Folio Map Not to Scale

The subject property's folio map is shown.

Plate # 3 Aerial Topographic Map 1966 1"=400'

The subject property was an orange grove and a lake before the present development.

Plate # 4 Aerial Topographic Map 1982 1"=200'

The subject property was an orange grove with a lake.

Plate # 5 Aerial Topographic Map May 8, 1995 1"=200'

The subject property was developed to the current status, with two buildings on site.

Plate # 6 S.C.S. Soil Survey Map, Sheet #55 1975 1:20,000

The subject property is in Soil Symbol #11 – Adamsville Fine Sand soil classification, with the following soil characteristics:

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Depth (inches)	USDA Texture	United Classification	Permeability K (in/hr)
0 – 8	Fine Sand	SP-SM	6 – 20
8 – 80	Fine Sand, Sand	SP-SM, SP	6 – 20

Hydrologic Group: A
Frequency for Flooding: None
Depth to High Water Table: 1.5 – 3.5 feet, Apparent from July to October
Depth to Bedrock: > 60"

Plate # 7 U.S.G.S. Quad Map, Lutz, Florida 1987 1:24,000

The subject property is located at an elevation of 10± feet above mean sea level, with a surface downgradient towards the east.

Plate # 8 EPA Map of Radon Zones

The subject property is in Zone "3" – with a predicted average indoor potential screening level less than 2 pCi/L.

d. *Site Observation*

On November 6, 2002, the subject property and adjoining properties were inspected. F.M. Syed, DAE, of AWARD Engineering, Inc. conducted the site inspection. The following is our list of observations:

1. The subject property consists of two buildings east of Land O' Lakes Boulevard and south of Lake Floyd Drive in Lutz, Florida.

2. There is a retention pond west of the subject property.

3. The subject property contained no aboveground or underground storage tanks (ASTs or USTs).

4. The adjoining properties contained no aboveground or underground storage tanks.

5. No spills of petroleum products or chemicals were noted.

6 No storage of drums or containers were noted on the site.

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6.0 SITE INVESTIGATION AND REVIEW OF HAZARDS

a. *Topography*
See Plate # 7 of *Appendix "C"*. The U.S.G.S. Quad Map, Lutz, Florida, indicates that the subject property is at an elevation of 10± feet above mean sea level, with a surface downgradient towards the east.

b. *Soils*
See Plate # 6 of *Appendix "C"*. The subject property is in Soil Symbol # 11 – Adamsville Fine Sand. See Section 4.0 c for the soil characteristics.

c. *Geology*
Pasco County is in the central or mid-peninsular physiographic zone of the Florida peninsula. The Suwanee Limestone is white, cream or tan, variably textured, fossiliferous, poorly indurated to well indurated and variably crystallized.

The Hawthorne Group has been raised from formation status to group status. It includes sediments that were included in the Tampa, Hawthorne and Bone Valley formations in the past. The Hawthorne Group consists of the Arcadia Formation and the Peace River Formation, in ascending order.

Deposits of Holocene Age (10,000 years ago to the present) are mainly limited to present stream flood plains, beaches, swamps, marshes and lakes. They consist of sand, silt, clay and organic material.

The County is underlain by several thousand feet of sedimentary rock, principally various limestone formations. A very gently sloping, very flat limestone terrain extends inland from the Gulf of Mexico.

d. *Hydrology*
The water of Pasco County comes mainly from the Floridan Aquifer, which is an artesian aquifer throughout most of the County. The Surficial Aquifer and the Intermediate Aquifer System are also in the County. The Surficial Aquifer consists primarily of quartz sand and includes surficial sand and clay. The top of the Surficial Aquifer is ground water that is virtually unconfined. The Intermediate Aquifer System is in the western part of the county south of Pasco County. It is a confined aquifer made up of limestone

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95380871
Rcpt: 26969 Rec: 28.50
DS: 0.70 IT: 0.00
09/13/95 B Cunningham Dpty Clerk

JED PITTMAN, PASCO COUNTY CLERK
09/13/95 11:49am 1 of 6
OR BK 3473 PG 248

Prepared by and Return to:
Carl Anderson
19235 U.S. Highway 41 North
Lutz, FL 33549

PIN/Folio No: 36-26-18-0000-00800-0050

CORRECTIVE WARRANTY DEED

NOTE: This Corrective Deed is being recorded to correct an error in the legal description as described in Exhibit "C" of that certain Warranty Deed recorded in Official Records Book 3362, Page 425, Public Records of Pasco County, Florida.

THIS INDENTURE, is made and effective on this 31st day of October, 1994, by PAUL PRITCHARD, as trustee under that certain unrecorded Land Trust Agreement dated December 29, 1993, whose post office address is 19235 U.S. Highway 41 North, Lutz, Florida 33549, ("Grantor"), in favor of HALLMARK PROPERTIES, INC., a Florida corporation, whose post office address is 19235 U.S. Highway 41 North, Lutz, FL 33549, ("Grantee")

WITNESSETH:

For and in consideration of Ten Dollars and other good and valuable consideration, the receipt whereof is hereby acknowledged, Grantor has granted,bargained, sold, transferred, and conveyed to Grantee forever the following-described land situated in Pasco County, Florida:

See Exhibit "A" attached hereto and made a part hereof by reference.

SUBJECT TO: Taxes for the year 1994, which are not yet due and payable and all subsequent years; easements, restrictions, covenants, liens, claims, encumbrances, limitations, and all other matters appearing in the chain of title or of record (including, specifically the Ingress/Egress/Parking Easement defined and described below); facts and other matters which would be disclosed by an accurate and comprehensive survey of the premises; rights or claims of parties in possession; construction related liens where no notice thereof appears of record; and easements or claims of easement not shown by the public records; and Grantor's reservation, of the Drainage Easement and Easement Area defined and described below.

Grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all persons whomsoever.

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D2

OR BK 3473 PG 250
3 of 6

Signed, Seal and Delivered
in our Presence:

Witness to Grantor
Name: NORMA J. MEADOWS

Witness to Grantor
Name: Carl Anderson

Paul W. Pritchard, as trustee under that certain unrecorded Land Trust dated December 29, 1993

STATE OF FLORIDA

COUNTY OF HILLSBOROUGH

Before me, the undersigned authority, the foregoing Warranty Deed was duly executed and acknowledged by Paul Pritchard, as trustee under that certain unrecorded Land Trust Agreement dated December 29, 1993. He is personally known to me or has produced the following identification: Florida Drivers License and did/did not take an oath, all on the 29 day of August ~~1994~~ 1995

ANNA M ANKERS
My Commission CC441267
Expires Feb. 23, 1999
Bonded by HJI
800-422-1555

Anna M. Ankers
ANNA M ANKERS
Print Name:
Notary Public, State of Florida
My Commission #

(Seal)

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ARR
RECORDS & DATA

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(D3)

Exhibit "A" - Transferred/Servient Estate

Commence at the Southeast corner of the Southwest 1/4, of the Southeast 1/4 of the Northwest 1/4 of Section 36, Township 26 South, Range 18 East, Pasco County, Florida, and run along the South line thereof, S 89° 48'37" W, a distance of 598.68 feet; thence N 22°38'53" W, a distance of 164.47 feet to the Point of Beginning. Thence from said Point of Beginning the following sixteen (16) courses:

1) N 22°38'53"W, 350.99 feet, to a point of curve;
2) Along the arc of a curve to the right, concave to the East radius 25.00 feet, delta 045°37'44", arc 19.91 feet, chord bearing N 00°09'59" E, 19.39 feet, to a point of tangency;
3) N 22°58'51" E, 18.37 feet;
4) N 61°36'06" E, 48.30 feet;
5) S 28°23'54" E, 6.00 feet;
6) N 61°36'06" E, 110.16 feet, to a point of curve;
7) Along the arc of a curve to the right, concave to the South radius 183.90 feet, delta 043°53'57", arc 140.90 feet, chord bearing N 83°33'05" E, 137.48 feet, to a point of tangency;
8) S 74°29'57" E, 259.93 feet, to a point of curve;
9) Along the arc of a curve to the right, concave to the Southwest radius 170.00 feet, delta 056°07'30", arc 166.53 feet, chord bearing S 46°26'12" E, 159.95 feet, to a point of tangency;
10) S 18°22'27" E, 118.43 feet, to a point of curve;
11) Along the arc of a curve to the left, concave to the Northeast radius 310.00 feet, delta 013°49'07", arc 74.77 feet, chord bearing S 25°17'00" E, 74.58 feet;
12) Leaving said curve, S 57°48'26" W, 50.69 feet;
13) S 21° 15'30" W, 39.64 feet;
14) N 64° 59'43" W, 384.45 feet;
15) S 24°44'35" W, 149.05 feet;
16) S 67°21'07" W, 128.31 feet;

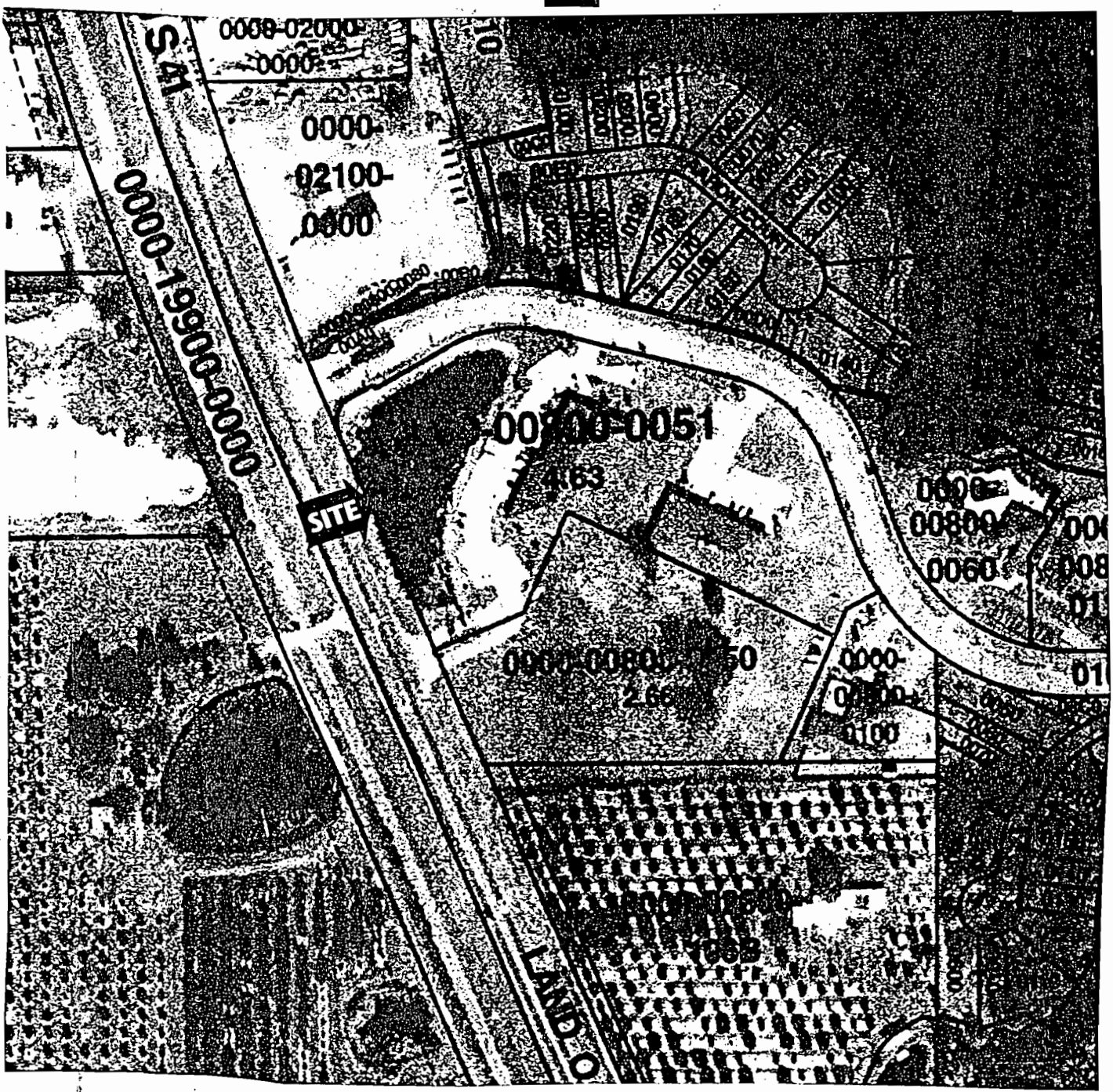
to the aforementioned Point of Beginning.

Contains 4.6294 acres, more or less.

S.W.F.W.M.D.
MAR 26 2004
BRO-REG
RECEIVED

46026875.000

PLATE # 1



Poor Quality Original

LOCATION MAP

DATE: 2002

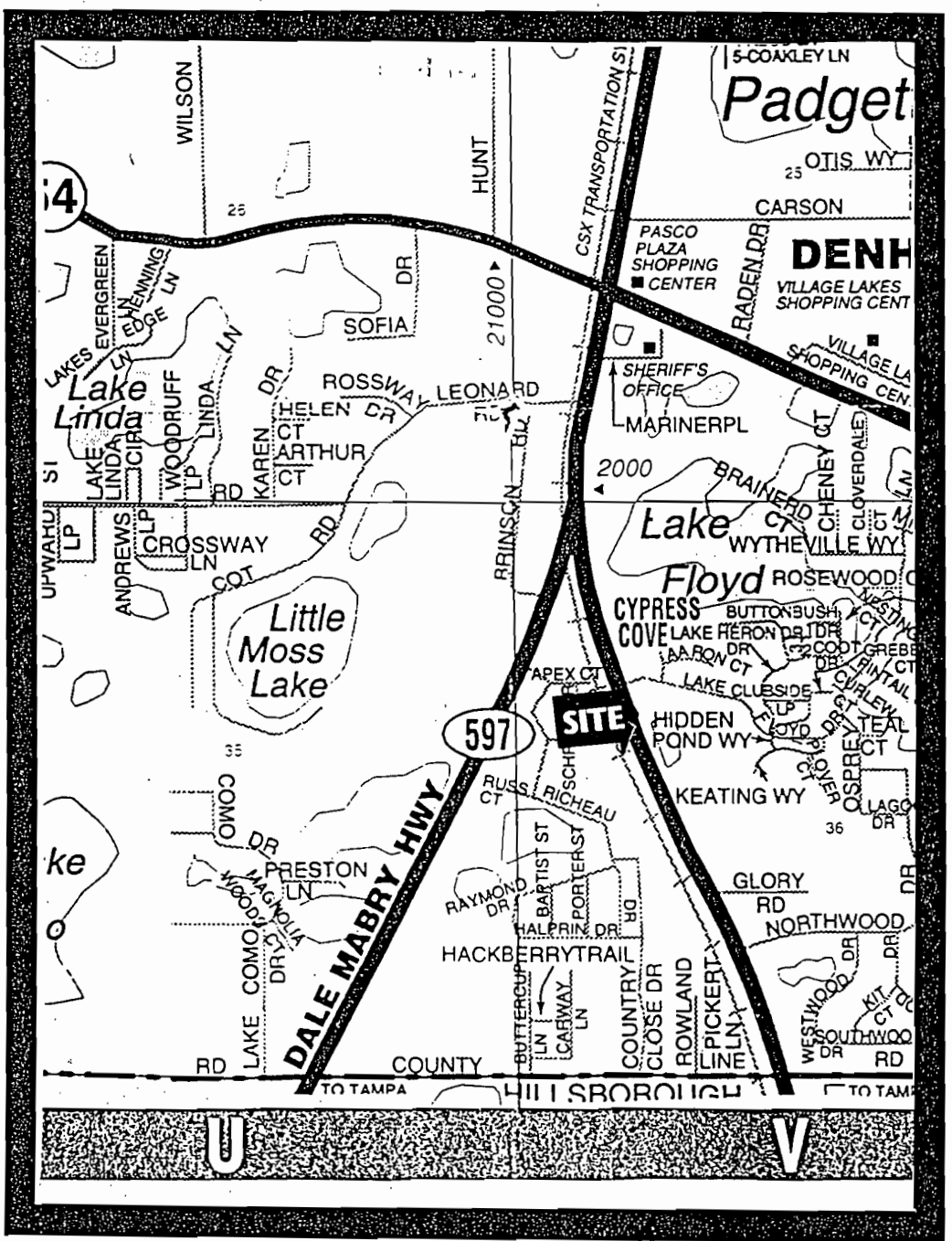
SCALE: N.T.S.

S.W.F.W.M.D.
MAR 26 2004
BRO-REG
RECEIVED

46026875.000

AWARD Engineering, Inc.

PLATE # 1



Poor Quality Original

STREET LOCATION MAP

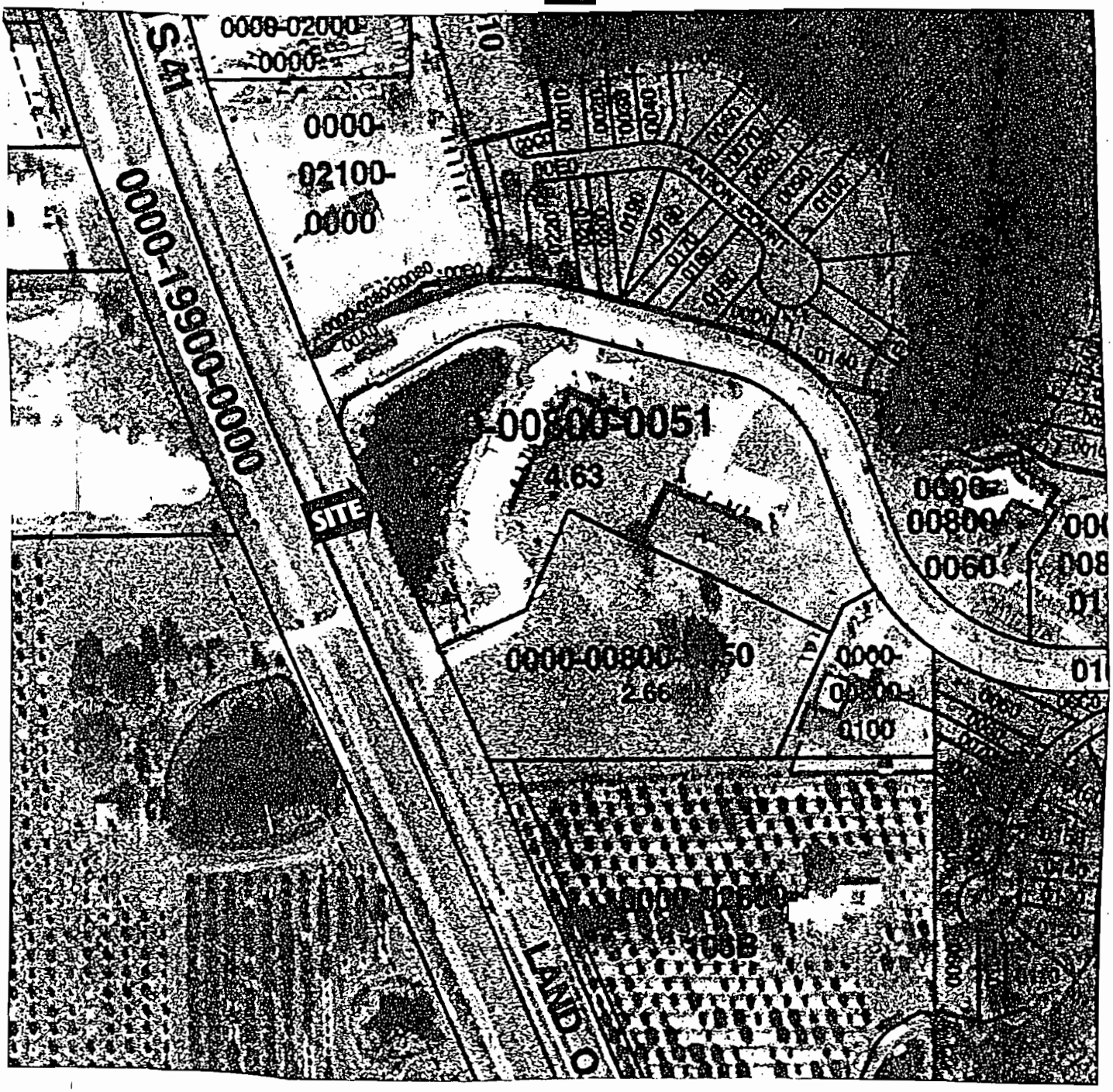
CITY: LUTZ COUNTY: PASCO STATE: FLA.

46026875.000

MAR 26 2004
BRO-REG
RECEIVED

AWARD Engineering, Inc.

PLATE # 2



FOLIO MAP

DATE: 2002

SCALE: N.T.S.

Poor Quality Original

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MAR 26 2004
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RECEIVED

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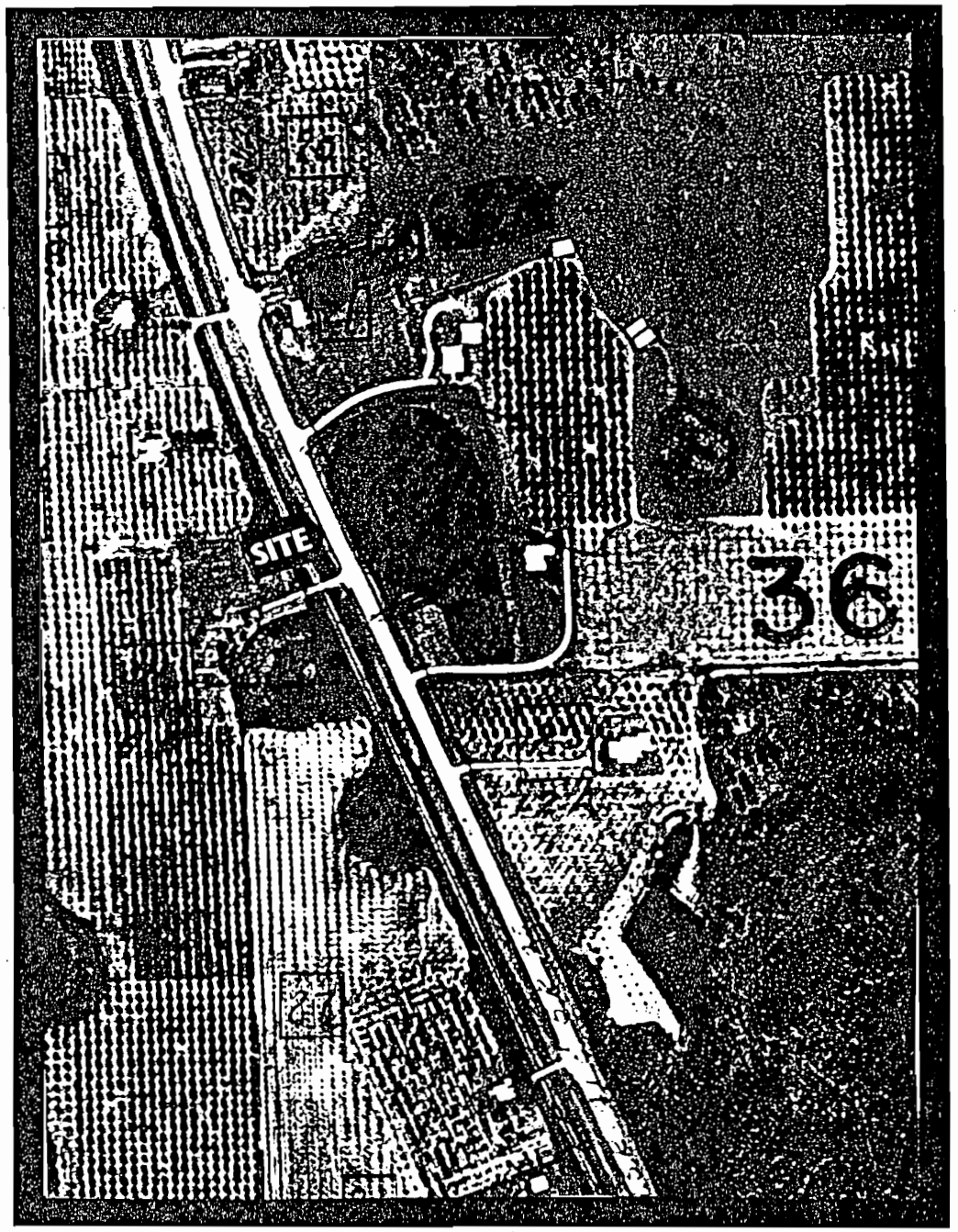
AWARD Engineering, Inc.

PLATE # 3



Poor Quality Original

AERIAL PHOTOGRAPHIC MAP

DATE: 1966

SCALE: 1" = 400'

S.W.F.W.M.D.
MAR 26 2004
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AWARD Engineering, Inc.

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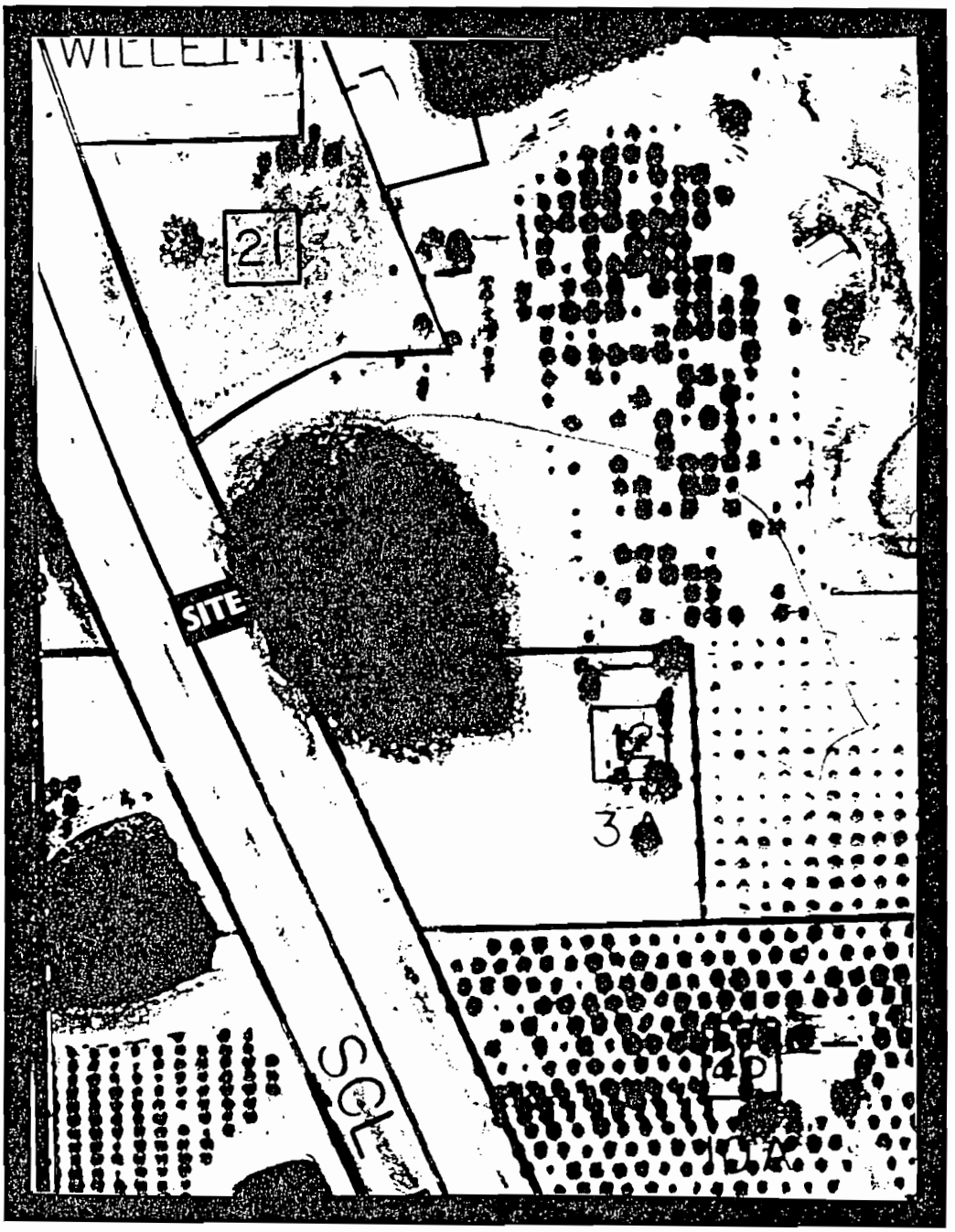
PLATE # 4



Poor Quality Original

AERIAL PHOTOGRAPHIC MAP

DATE: 1982

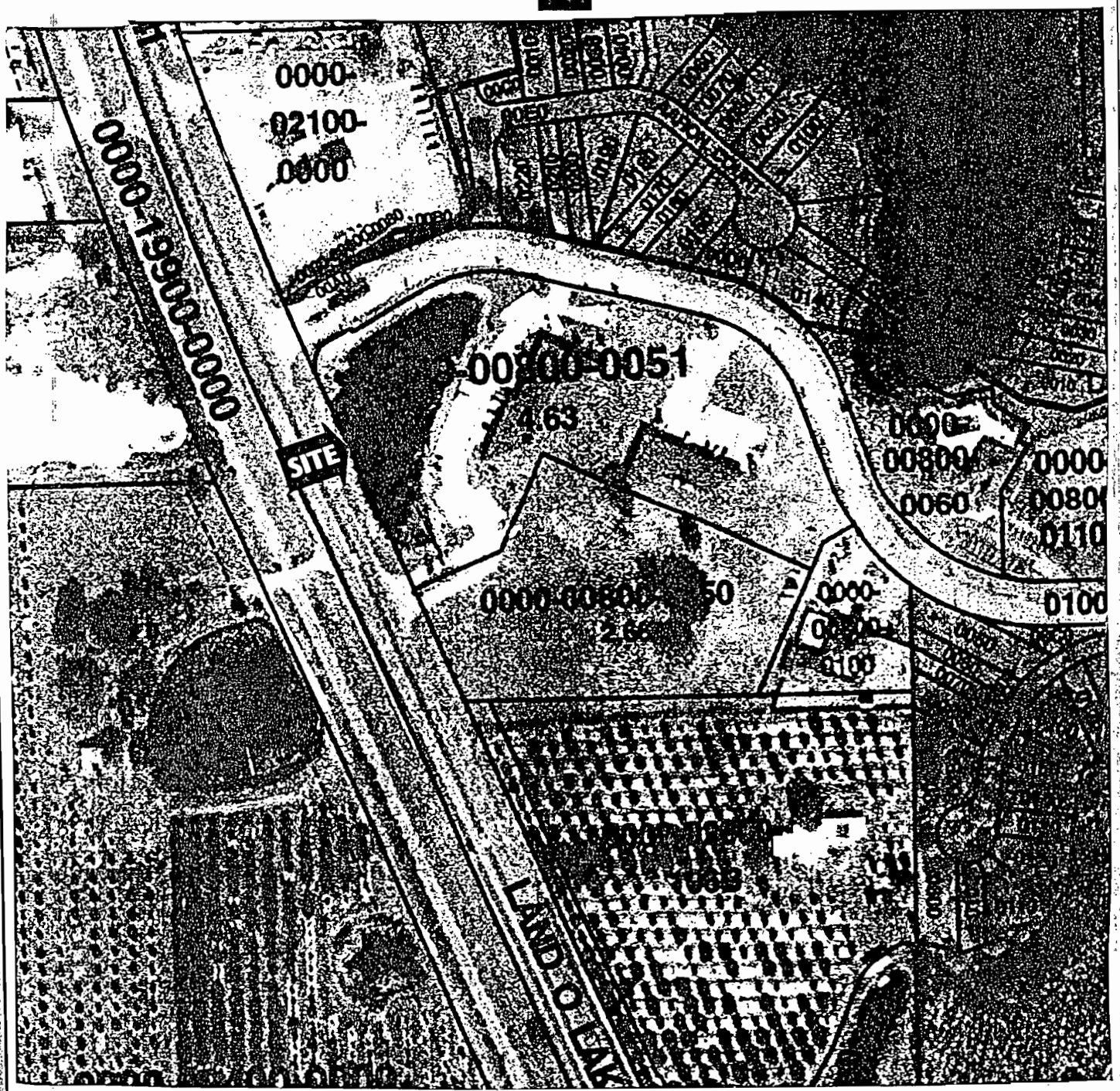
SCALE: 1" = 200'

S.W.F.W.M.D.
MAR 26 2004
BRO-REG
RECEIVED

46026875.000

AWARD Engineering, Inc.

PLATE # 5



AERIAL PHOTOGRAPHIC MAP

DATE: MAY 8 1995 SCALE: 1" = 200'

Original

S.W.F.W.M.D.
MAR 26 2004
BRO-REG

46026875.000

AWARD Engineering, Inc.

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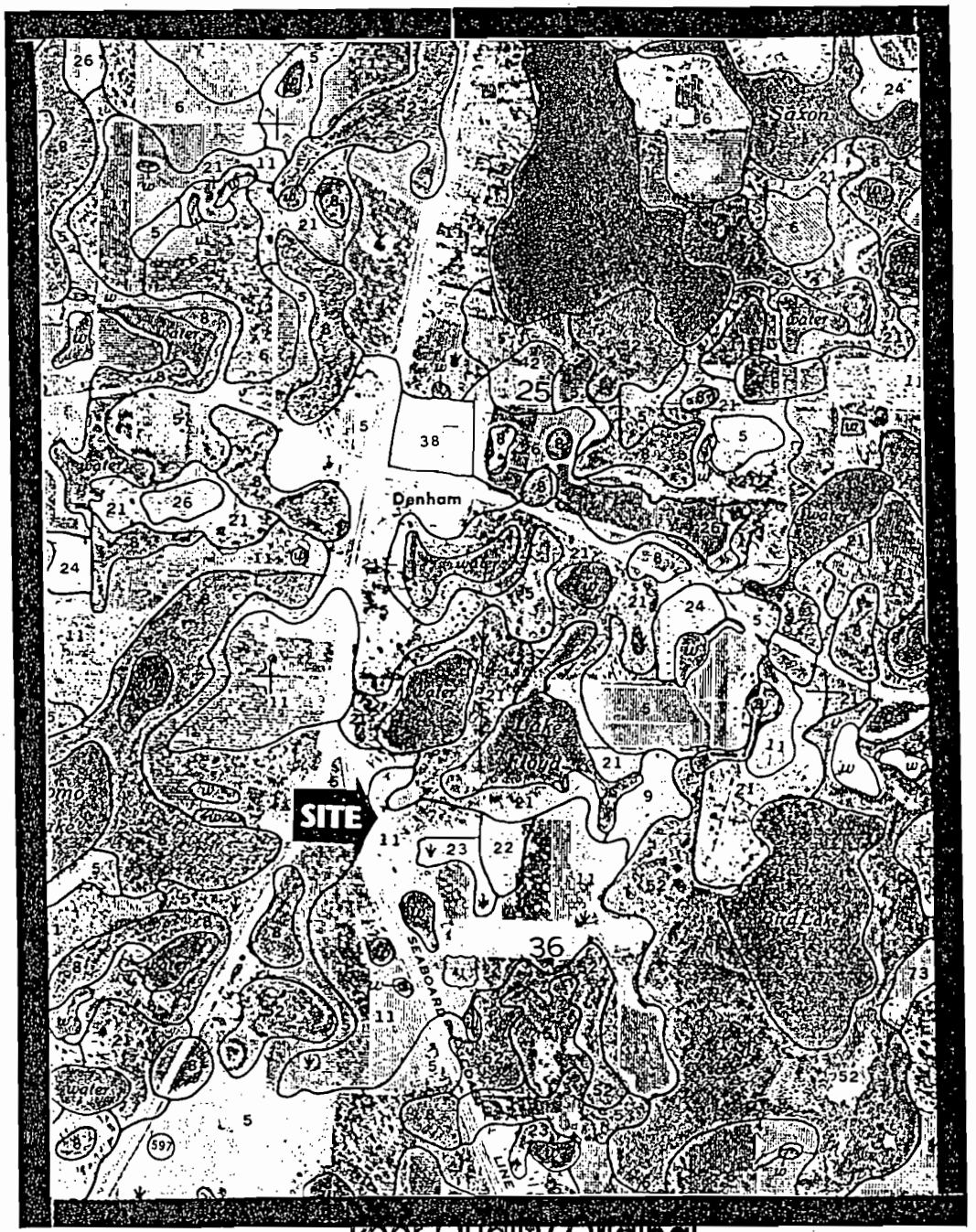
PLATE # 6



Poor Quality Original

SOIL CONSERVATION SERVICE MAP
S.C.S. MAP

DATE: 1979

SCALE: 1:20,000

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MAR 26 2004
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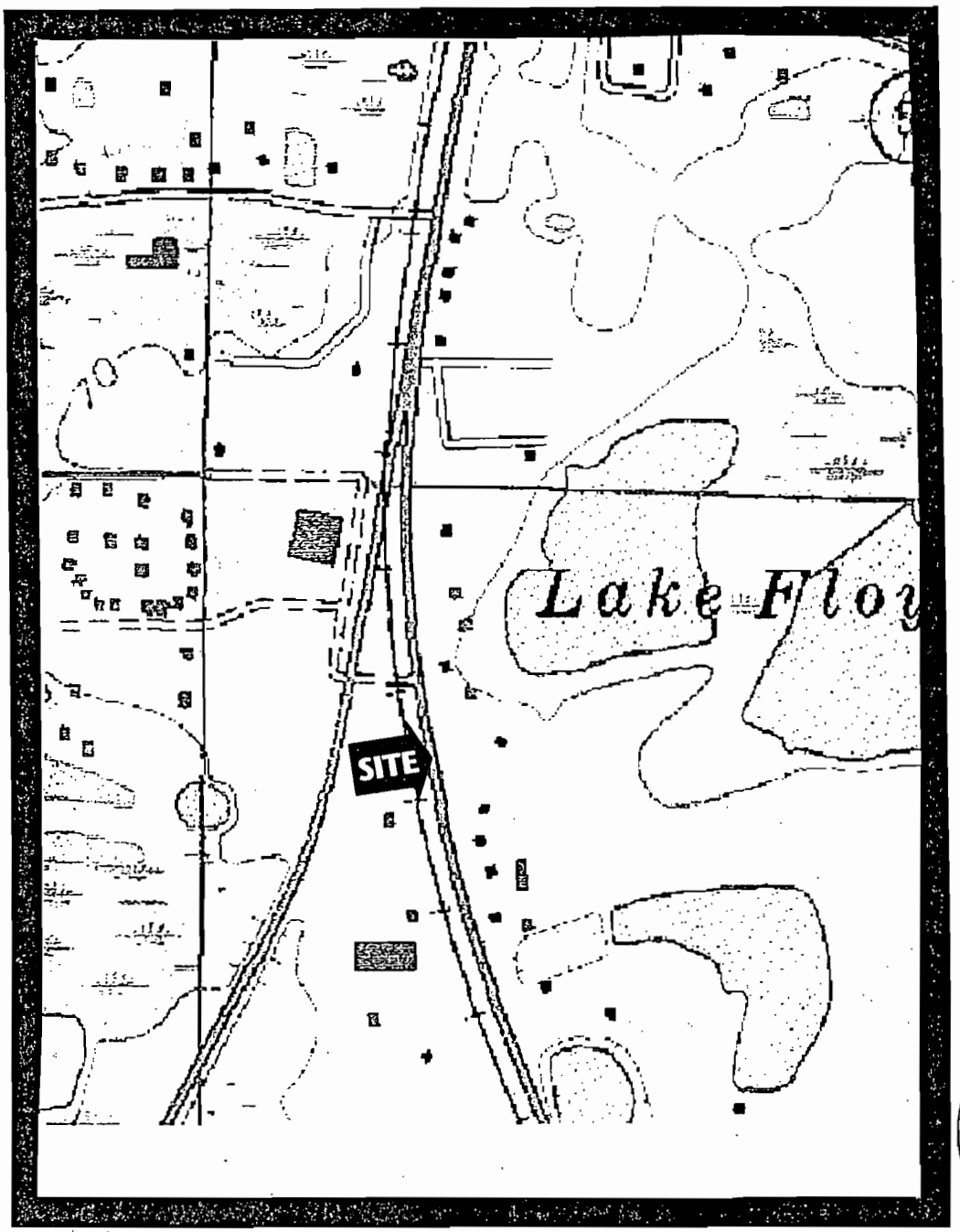
46026875.000

AWARD Engineering, Inc.

PLATE # 7



S.W.F.W.M.D.
MAR 29 2004
ARR
RECORDS & DATA

Poor Quality Original

U.S.G.S. QUAD MAP LUTZ, FLA

DATE: 1987 SCALE: 1:24000

S.W.F.W.M.D.
MAR 26 2004
BRO-REG
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4602687 5.000

AWARD Engineering, Inc.

FLORIDA - EPA Map of Radon Zones

The purpose of this map is to assist National, State and local organizations to target their resources and to implement radon-resistant building codes.

This map is not intended to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones. ***All homes should be tested, regardless of zone designation.***



Poor Quality Original

Zone 1 Zone 2 Zone 3

IMPORTANT: Consult the publication entitled "Preliminary Geologic Radon Potential Assessment of Florida" before using this map. This document contains information on radon potential variations within counties. EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.

S.W.F.W.M.D.
MAR 26 2004
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RECEIVED

46026875.000

PLATE 4 8

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

2379 BROAD STREET, BROOKSVILLE, FL 34604-6899

DISTRICT RECEIPT NO. BR04-03636A

HMSS
3-30-04

****

Date: 03/29/2004 **Mail Receipt**

Descr: ERP PERMIT FEES **Re:** BRO0282

Paid By: CHECK **Chk. Date:** 03/15/2004 **Chk. No.:** 7136

Amount: $200.00

Project: TROPICANA VILLAGE

AWARD ENGINEERING, INC
7804 N. FLORIDA AVE
TAMPA, FL 33604

KERRI MEADORS
Cashier

Add'l Info:

****

Received
MAR 30 2004
PERMITS DATA
Brooksville, Florida

S.W.F.W.M.D.
MAR 30 2004
BRO-REG
RECEIVED

FILE OF RECORD

RDBS UPDATE

APR 0 2 2004

By: mc

46026875.000

PARTIAL AS–BUILT SURVEY
PORTION OF TROPICAL VILLAGE
PASCO COUNTY, FLORIDA

SECTION 36, TOWNSHIP 26 SOUTH, RANGE 18 EAST

NORTH PER DEED

DESCRIPTION (PARCEL A):
A PORTION OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26S, RANGE 18 EAST, PASCO COUNTY, FLORIDA, BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26 SOUTH, RANGE 18 EAST AND RUN ALONG THE SOUTH BOUNDARY OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36,
S 89°48'37"W, A DISTANCE OF 408.25 FEET; THENCE LEAVING SAID SOUTH BOUNDARY AND RUN ALONG THE FLORIDA DEPARTMENT OF TRANSPORTATION MITIGATION PARCEL No. 196B
N 22°49'00"W, 24.00 FEET TO THE POINT OF BEGINNING. THENCE FROM SAID POINT OF BEGINNING THE FOLLOWING THIRTEEN (13) COURSES:

1) CONTINUE ALONG PARCEL 196B, N 22°49'00"W, 208.20 FEET; THENCE
2) CONTINUE ALONG PARCEL 196B, S 67°11'00"W, 116.00 FEET; TO THE EAST RIGHT–OF–WAY LINE OF U.S. HIGHWAY 41; THENCE
3) ALONG SAID RIGHT–OF–WAY LINE N 30°36'34"W, 71.10 FEET, TO A POINT ON A CURVE; THENCE
4) CONTINUE ALONG SAID RIGHT–OF–WAY LINE AND ALONG THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE NORTHEAST RADIUS = 6802.50 FEET, DELTA: 02°42'05", ARC = 320.73 FEET, CHORD BEARING N 20°52'39"W, 320.70 FEET; TO THE SOUTH RIGHT–OF–WAY LINE OF LAKE FLOYD DRIVE; THENCE
5) ALONG SAID SOUTH RIGHT–OF–WAY LINE, N 61°36'06"E, 9.39 FEET; THENCE
6) S 28°23'54"E, 6.00 FEET; THENCE
7) N 61°36'06"E, 110.16 FEET, TO A POINT OF CURVE; THENCE
8) ALONG THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE SOUTH RADIUS = 183.90 FEET, DELTA: 43°53'57", ARC = 140.90 FEET, CHORD BEARING: N 83°33'05"E, 137.48 FEET, TO A POINT OF TANGENCY; THENCE
9) S 74°29'57"E, 259.93 FEET, TO A POINT OF CURVE; THENCE
10) ALONG THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE SOUTHWEST RADIUS = 170.00 FEET, DELTA: 56°07'30", ARC = 166.53 FEET, CHORD BEARING: S 46°26'12"E, 159.95 FEET, TO A POINT OF TANGENCY; THENCE
11) S 18°22'27"E, 7.41 FEET; THENCE LEAVING SAID RIGHT–OF–WAY LINE OF LAKE FLOYD DRIVE, RUN
12) S 25°05'18"W, 210.51 FEET; THENCE
13) S 43°17'09"W, 271.18 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINING 4.8043 ACRES, MORE OR LESS.

DESCRIPTION: NORTH PORTION OF PARCEL A
A PORTION OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26S, RANGE 18 EAST, PASCO COUNTY, FLORIDA, BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26 SOUTH, RANGE 18 EAST AND RUN ALONG THE SOUTH BOUNDARY OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, S 89°48'37" W, A DISTANCE OF 408.25 FEET; THENCE LEAVING SAID SOUTH BOUNDARY
N 22°49'00" W, 24.00 FEET; THENCE N 43°17'09" E, A DISTANCE OF 271.18 FEET TO THE POINT OF BEGINNING.
THENCE FROM SAID POINT THE FOLLOWING THIRTEEN (13) COURSES:

1) N 64°59'43" W, 275.39 FEET; THENCE
2) S 24°44'35" W, 149.05 FEET; THENCE
3) S 67°21'07" W, 69.76 FEET TO THE EAST RIGHT–OF–WAY LINE OF U.S. HIGHWAY 41; THENCE
4) ALONG SAID RIGHT–OF–WAY LINE N 30°36'34" W, 65.69 FEET, TO A POINT ON A CURVE; THENCE
5) CONTINUE ALONG SAID RIGHT–OF–WAY LINE AND THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE NORTHEAST,
RADIUS = 6802.50 FEET, CENTRAL ANGLE = 02°42'05", ARC = 320.73 FEET,
CHORD BEARING: N 20°52'39" W, 320.70 FEET TO THE SOUTH RIGHT–OF–WAY LINE OF LAKE FLOYD DRIVE; THENCE
6) ALONG SAID RIGHT–OF–WAY LINE, N 61°36'06" E, 9.39 FEET; THENCE
7) S 28°23'54" E, 6.00 FEET; THENCE
8) N 61°36'06" E, 110.16 FEET, TO A POINT OF CURVE; THENCE
9) ALONG THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE SOUTH, RADIUS = 183.90 FEET,
CENTRAL ANGLE = 43°53'57", ARC = 140.90 FEET, CHORD BEARING: N 83°33'05" E,
137.48 FEET, TO A POINT OF TANGENCY; THENCE
10) S 74°29'57" E, 259.93 FEET, TO A POINT OF CURVE; THENCE
11) ALONG THE ARC OF A CURVE TO THE RIGHT, CONCAVE TO THE SOUTHWEST, RADIUS = 170.00 FEET,
CENTRAL ANGLE = 56°07'30", ARC = 166.53 FEET, CHORD BEARING: S 46°26'12" E, 159.95 FEET;
THENCE
12) S 18°22'27" E, 7.41 FEET; THENCE
13) LEAVING SAID RIGHT–OF–WAY LINE OF LAKE FLOYD DRIVE, S 25°05'18" W, 210.51 FEET TO
THE AFOREMENTIONED POINT OF BEGINNING.

SAID PARCEL CONTAINING 3.7679 ACRES, MORE OR LESS.

DESCRIPTION: SOUTH PORTION OF PARCEL A

A PORTION OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26S, RANGE 18 EAST, PASCO COUNTY, FLORIDA, BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36, TOWNSHIP 26 SOUTH, RANGE 18 EAST AND RUN ALONG THE SOUTH BOUNDARY OF THE SOUTHWEST ¼ OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 36,
S 89°48'37" W, A DISTANCE OF 408.25 FEET; THENCE LEAVING SAID SOUTH BOUNDARY AND
RUN ALONG THE FLORIDA DEPARTMENT OF TRANSPORTATION MITIGATION PARCEL No. 196B
N 22°49'00" W, 24.00 FEET TO THE POINT OF BEGINNING.
THENCE FROM SAID POINT OF BEGINNING THE FOLLOWING SEVEN (7) COURSES:

1) CONTINUE ALONG PARCEL 196B, N 22°49'00" W, 208.20 FEET; THENCE
2) CONTINUE ALONG PARCEL 196B, S 67°11'00" W, 116.00 FEET TO THE EAST RIGHT–OF–WAY LINE OF U.S. HIGHWAY 41; THENCE ALONG SAID RIGHT–OF–WAY LINE,
3) N 30°36'34" W, 5.41 FEET; THENCE
4) LEAVING SAID RIGHT–OF–WAY LINE N 67°21'07" E, 69.76 FEET; THENCE
5) N 24°44'35" E, 149.05 FEET; THENCE
6) S 64°59'43" E, 275.39 FEET; THENCE
7) S 43°17'09" W, 271.18 FEET;
TO THE AFOREMENTIONED POINT OF BEGINNING.

SAID PARCEL CONTAINING 1.0365 ACRES, MORE OR LESS.

NOTES:

–THIS IS NOT A BOUNDARY SURVEY. NO CORNERS HAVE BEEN SET.

–THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A COMPLETE AND UP–TO–DATE TITLE REPORT. EASEMENTS AND OTHER ENCUMBRANCES MAY EXIST OTHER THAN AS SHOWN HEREON.

–THIS PARCEL APPEARS TO LIE IN FLOOD ZONE "A" PER FLOOD INSURANCE RATE MAP, COMMUNITY PANEL No. 120230 0425 E, MAP REVISED SEPTEMBER 30, 1992, NATIONAL FLOOD INSURANCE PROGRAM, FEDERAL EMERGENCY MANAGEMENT AGENCY.

–BEARINGS ARE REFERENCED TO THE SOUTH RIGHT–OF–WAY LINE OF LAKE FLOYD DRIVE, BEING S 74°29'57"E (ASSUMED).

–ALL DIMENSIONS SHOWN HEREON ARE IN U.S. FEET AND DECIMALS OF U.S. FEET.

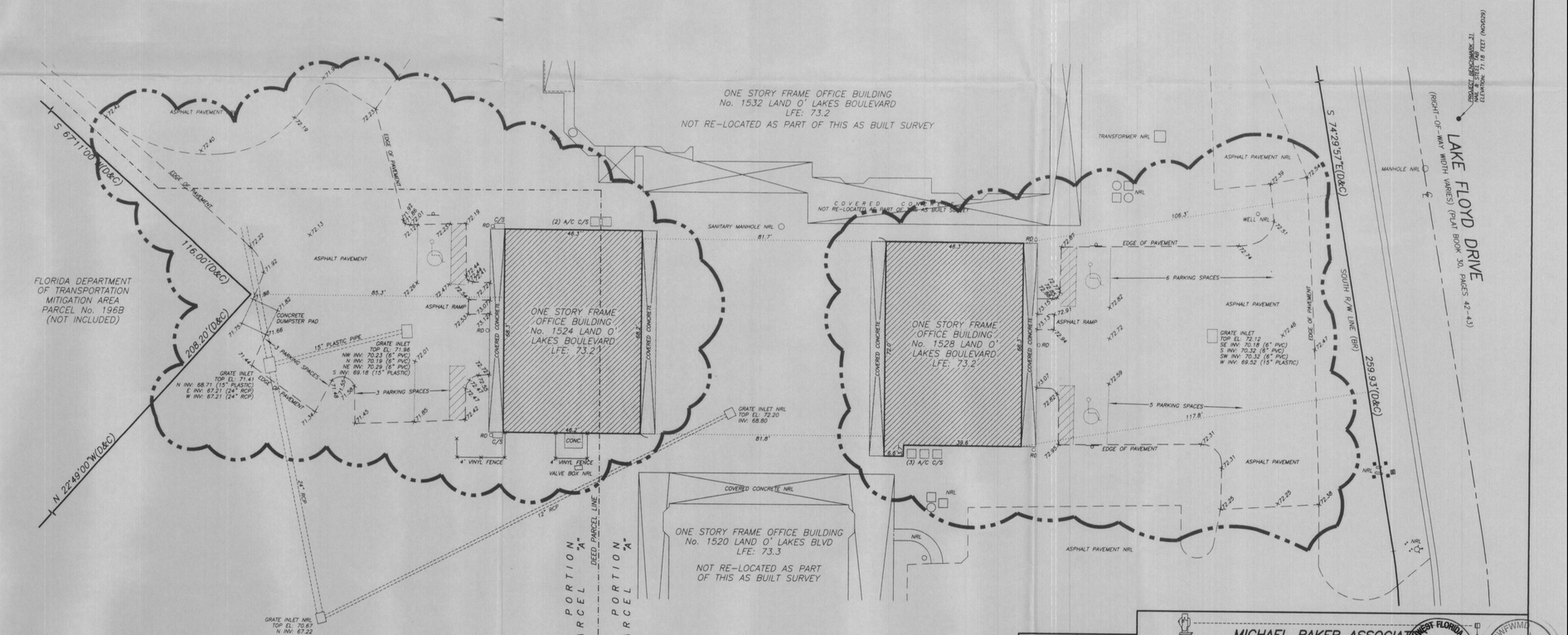
–HORIZONTAL SURVEY ACCURACY EXCEEDS 1 U.S. FOOT IN 10000 U.S. FEET.

–ELEVATIONS SHOWN HEREON ARE IN NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).

–ELEVATIONS ARE REFERENCED TO PASCO COUNTY BENCHMARK #791, USC&G DISK No. U–257–1965. ELEVATION: 69.72 FEET (NGVD29).

–REFERENCE: STATE OR FLORIDA DEPARTMENT OF TRANSPORTATION RIGHT–OF–WAY MAP OF STATE ROAD No. 45 (U.S. ROUTE 41), SHEET 5 OF 32, DATED 9–30–94, LAST REVISED 6–20–95.

–AREAS CLOUDED: AREAS ADDRESSED IN THIS AS–BUILT SURVEY DATED OCTOBER 23, 2010 ONLY.



LEGEND AND ABBREVIATIONS:
℄ = CENTERLINE, FIR = FOUND IRON ROD, RCP = REINFORCED CONCRETE PIPE, C/S = CONCRETE SLAB, (M) = MEASURED, (P) = PER PLAT, (C) = CALCULATED, PCP = PERMANENT CONTROL POINT, A/C = AIR CONDITIONER, = COVERED AREA, R/W = RIGHT OF WAY, N = NORTH, S = SOUTH, E = EAST, W = WEST, BLVD = BOULEVARD, CONC. = CONCRETE, SIR = SET 1/2" IRON ROD No. 4086, (BR) = BEARING REFERENCE, –o– = SIGN, RD = ROOF DRAIN, W/C = WITNESS CORNER, PRM = PERMANENT REFERENCE MONUMENT, LFE = LOWEST FLOOR ELEVATION, INV = INVERT ELEVATION, X0.00 = EXISTING ELEVATION, LB = LICENSED BUSINESS, NRL = NOT RE–LOCATED AS PART OF THIS AS BUILT SURVEY

FIELD BOOK	PAGE
616	3–6
618	7,17,37,38
629	19
631	78
633	28
665	2
708	46–48
REVISIONS	

MICHAEL BAKER ASSOCIATES
LAND SURVEYORS and PLANNERS
220 SOUTH SAFFORD AVENUE
TARPON SPRINGS, FLORIDA 34689
(727) 938–5026 FAX (727) 938–2566
AUTHORIZATION NUMBER LB 4019

FIELD DATE: OCTOBER 23, 2010	SCALE: 1" = 20'
FILE: CA2WAGX_AB	SURVEYED BY: GNEWT
	DRAWN BY: RAC

FOR REFERENCE ONLY
NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

I HEREBY CERTIFY: THAT THE ATTACHED SKETCH OF SURVEY IS TRUE AND CORRECT AND THAT IT MEETS THE MINIMUM TECHNICAL STANDARDS SET FORTH BY THE FLORIDA STATE BOARD OF SURVEYORS AND MAPPERS AND CHAPTER 5J–17, FLORIDA ADMINISTRATIVE CODE.

MICHAEL D. BAKER, P.S.M. FLORIDA REG. No. 4086 — DATE SIGNED 4/05/11

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT RECEIVED MAR 11 2011 RRD - TAMPA

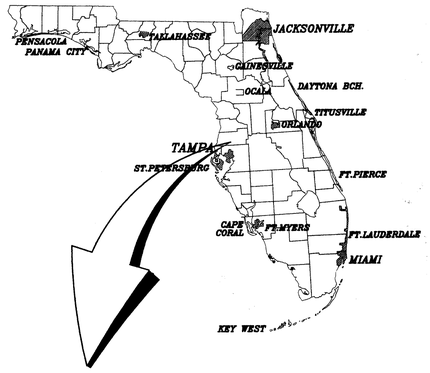
SWFWMD Received MAR 18 2011 BRD REG

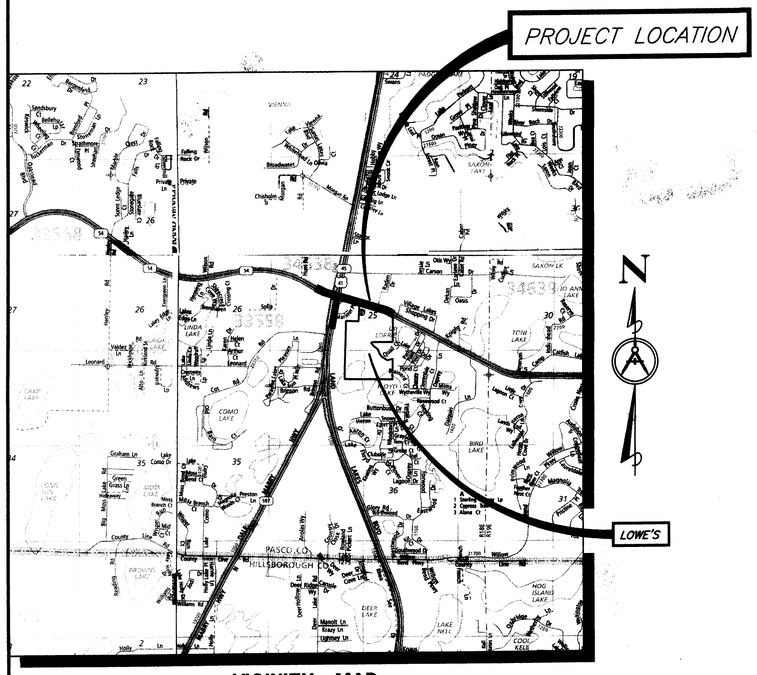
FILE OF RECORD

46026875.000

A-861

FDOT-LOWE'S OF LAND O' LAKES
(PERMIT#44-19567-3)





VICINITY MAP
Sec. 25 & 36, T26S, R18E
Land O' Lakes, Pasco County, Florida

OFFSITE IMPROVEMENTS

FOR

LOWE'S OF LAND O' LAKES

PASCO COUNTY, FLORIDA

PREPARED FOR

LOWE'S HOME CENTERS, INC.

P.O. BOX 1111
NORTH WILKESBORO, NC 28656

PERMITTED SHALL NOT BE IN WRITING THE PRIOR ... DEPARTMENT, SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT ... BEGINS.

SWFWMD MAY 2010 PERMITTED DRAWINGS

THIS DOES NOT CONTAIN EXEMPT INFO
44019567.003

OWNER/DEVELOPER
MIKE REYNOLDS
LOWE'S HOME CENTERS, INC.
P.O. BOX 1111
NORTH WILKESBORO, NC 28656
(336) 658-2182

ENGINEER OF RECORD
DAVID W. DESILET
LINCKS & ASSOCIATES, INC.
5023 W. LAUREL ST.
TAMPA, FL 33607
(813) 289-0039

SURVEYOR
JERRY CARTWRIGHT
CARTWRIGHT & CHITTUM, INC.
9310 N. 16TH ST., SUITE 203
TAMPA, FL 33612
(813) 931-7079

FILE OF RECORD

BRO 7828

LOWE'S
HOME CENTERS, IN
P.O. BOX 1111 N. WILKESBORO, NC 2

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.325

THIS DRAWING IS THE PROPERTY OF LOWE'S HOME CENTERS, INC. ANY USE OR REPRODUCTION IN WHOLE OR PART IS PROHIBITED WITHOUT THE EXPRESSED WRITTEN CONSENT OF LOWE'S HOME CENTERS, INC. COPYRIGHT 2001 ALL RIGHTS RESERVED

LINCKS & ASSOCIATES, INC.
ENGINEERS PLANNERS
5023 WEST LAUREL STREET
TAMPA, FLORIDA 33607
PH. (813) 289-0039
Lic. No. EB0004638

INDEX

R1	Cover Sheet	R24	SR 54 Cross Sections
R2	General Notes	R25	US 41 Cross Sections
R3	Key Sheet Typical Sections	R26	Details
R4	SR 54 SWPPP	R27	Details
R5	US 41 (SR 45) SWPPP	R28	Details
R6	Roadway Plan	R29	Details
R7	Roadway Plan	R30	Details
R8	Roadway Plan	R31	Details
R9	Roadway Plan	R32	Offsite Utility Plan
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R12	Pavement Marking & Signage		T1 - T9
R13	Pavement Marking & Signage		
R14	Pavement Marking & Signage		
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R17	Pavement Marking & Signage		
R18	FDOT Pond 1A		
R19	SR 54 Cross Sections		
R20	SR 54 Cross Sections		
R21	SR 54 Cross Sections		
R22	SR 54 Cross Sections		
R23	SR 54 Cross Sections		

DATE:	SIGNED:	JOB NO:
08/26/08		L04101
REVISION		SHEET
12-08-08 FDOT COMMENTS		R1
06-18-09 FDOT COMMENTS		

OCT 20 2009
David W. Desilet
PE No. 24760

SWFWMD Received NOV - 3 2009 BRO-REG

Date: 06/18/09 Drawing: L04101 Land O Lakes Offsite.dwg

44019567.003

JUN 17 2009

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101cv Land O Lakes Offsite.dwg, Layout C1 Cover Sheet

A-863

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY CONTROL POINTS FOR LINE AND GRADE PRIOR TO CONSTRUCTION.

2. LOCATION, ELEVATION, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN IN ACCORDANCE WITH THE BEST INFORMATION AVAILABLE AT TIME OF THE PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT.

3. THE CONTRACTOR SHALL VERIFY THE LOCATION, ELEVATION, AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES AFFECTING HIS WORK AND SHALL COMPLY WITH ALL STATE, COUNTY, AND LOCAL ORDINANCES AND OBTAIN ANY NECESSARY WORK PERMITS THAT MAY BE REQUIRED PRIOR TO CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE COORDINATION OF CONSTRUCTION SCHEDULING BETWEEN THE CONTRACTOR AND ALL UTILITY AGENCIES. THE CONTRACTOR SHALL ADJUST HIS SCHEDULE TO COINCIDE WITH OTHER REQUIRED UTILITIES.

5. THE ENGINEER RESERVES THE RIGHT TO PERFORM QUALITY ASSURANCE TESTING ON ALL MATERIALS DELIVERED TO PROJECT.

6. IN THE EVENT UNSUITABLE MATERIAL IS ENCOUNTERED DURING EXCAVATION IT IS TO BE REMOVED FROM THE SITE EXCEPT THAT IT MAY BE USED TO FLATTEN SLOPES IN AREAS APPROVED BY THE ENGINEERS.

7. OVERALL CLEANUP SHALL BE ACCOMPLISHED BY THE CONTRACTOR IN ACCORDANCE WITH PASCO COUNTY AND/OR FDOT STANDARDS OR AS DIRECTED BY THE ENGINEER. ANY AND ALL EXPENSES INCURRED FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OTHER ITEMS.

8. THE CONTRACTOR SHALL ENDEAVOR TO PROTECT PRIVATE PROPERTY. ANY DAMAGE CAUSED BY THE CONTRACTOR IN THE PERFORMANCE OF HIS WORK SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. PAYMENT SHALL NOT BE MADE FOR THIS WORK.

9. ANY DAMAGE TO STATE, COUNTY, OR LOCAL ROADS CAUSED BY THE CONTRACTOR'S EQUIPMENT AND OPERATORS SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. PAYMENT SHALL NOT BE MADE FOR THIS WORK.

10. ANY NGS (U.S.C. AND G.S.) MONUMENT WITHIN LIMITS OF CONSTRUCTION SHALL BE PROTECTED BY THE CONTRACTOR. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHALL NOTIFY:
FLORIDA'S STATE GEODETIC ADVISOR
RONNIE L. TAYLOR AND RANDY WEGNER
C/O FLDEP, BUREAU OF SURVEY AND MAPPING, MS 105
3900 COMMONWEALTH BLVD.
TALLAHASSEE, FL 32399
TELEPHONE: (850) 245-2606
FAX: (850) 245-2645
(HTTP://WWW.NGS.NOAA.GOV/ADVISORS/FLORIDA.SHTML)

11. CONSTRUCTION OF POTABLE WATER AND SANITARY SEWAGE SYSTEMS ARE TO INCLUDE CONNECTION TO EXISTING FACILITIES AS SHOWN.

12. SIDEWALKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH FDOT REQUIREMENTS.

13. WHEREVER MATERIAL OR CONSTRUCTION ITEM SPECIFICATIONS ARE NOT SPECIFICALLY COVERED BY THESE PLANS, THE COUNTY OF PASCO, FLORIDA, OR DIRECTED BY THE ENGINEER, "THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST EDITION, SHALL APPLY.

14. COMPACTION FOR PIPE BACKFILL SHALL COMPLY WITH AASHTO AND PASCO COUNTY. ALL FILL UP TO THE SPRING LINE OF THE PIPE MUST BE HAND TAMPED.

15. ALL STREET AND STORM SEWER CONSTRUCTION TO BE IN ACCORDANCE WITH THE CURRENT PASCO COUNTY STANDARDS AND SPECIFICATIONS. ALL WATER, SANITARY SEWER AND WASTEWATER FACILITIES CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PASCO COUNTY STANDARDS AND SPECIFICATIONS.

16. FLORIDA STATUTE REQUIRES A MINIMUM OF 2 DAYS AND A MAXIMUM OF 5 DAYS NOTICE BEFORE A CONTRACTOR MAY EXCAVATE. THE CONTRACTOR SHALL CALL SUNSHINE 1-800 432-4770 BEFORE EXCAVATION SHALL COMMENCE.

17. CONTRACTOR SHALL SUBMIT TO THE ENGINEER AND/OR ARCHITECT FOR REVIEW, 5 COPIES OF SHOP DRAWINGS ON BID ITEMS (FIRE HYDRANTS, VALVES, PIPES, INLETS, MANHOLES, PUMPS, CONTROL PANELS, LIGHT FIXTURES, PLUMBING FIXTURES, ETC.). THE CONTRACTOR SHALL ALLOW A MINIMUM OF 5 DAYS FOR REVIEW OF SHOP DRAWINGS. APPROVAL OF SHOP DRAWINGS IS REQUIRED PRIOR TO INSTALLATION OR CONSTRUCTION. SUBSTITUTION OF SPECIFIED ITEMS, IF REQUESTED, WILL BE EVALUATED BY THE ENGINEER.

18. THE OWNER SHALL SELECT A LOCAL TESTING LABORATORY FOR ON SITE TESTS SUCH AS: CONCRETE STRENGTH, SLUMP, DENSITIES OR LBR OF ROADBEDS, ETC.. COPIES OF ALL TESTS SHALL BE SENT TO THE ENGINEER AND/OR ARCHITECT WITHIN 10 DAYS OF THE TESTS. RETEST WILL BE AT THE EXPENSE OF THE CONTRACTOR.

19. THE CONTRACTOR SHALL CONTACT THE ENGINEER'S OFFICE IMMEDIATELY ON ANY CONFLICTS BETWEEN WHAT IS SHOWN HEREIN AND ACTUAL CONDITION DISCOVERED DURING CONSTRUCTION OF ANY IMPROVEMENTS SHOWN ON THE DRAWINGS.

20. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITIES TO BE EXTENDED OR CROSSED. ANY CONFLICTS AND THE CONTRACTOR'S PROPOSED RESOLUTIONS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR APPROVAL.

21. ALL PRACTICABLE EFFORT SHALL BE TAKEN DURING CONSTRUCTION TO CONTROL AND PREVENT EROSION AND TRANSPORT OF SEDIMENT MATERIALS TO INLETS, SURFACE DRAINS, WETLANDS AND LAKE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION EFFORTS THAT MAY BE REQUIRED.

22. THE CONTRACTOR IS TO CONTROL ALL FUGITIVE DUST ORIGINATING ON THIS PROJECT BY WATERING OR OTHER METHODS AS REQUIRED.

23. THE CONTRACTOR, WORKING WITH THE ENGINEER AND PASCO COUNTY, SHALL COORDINATE THE SHUTDOWN, STARTUP AND/OR PARTIAL INTERFERENCE WITH ONGOING PUMP STATION OPERATIONS. INSTALLATION AND WORK ON THE EXISTING SYSTEMS ARE NOT TO BE MADE DURING TIMES OF PEAK FLOWS. WRITTEN NOTICE SHALL BE GIVEN 48 HOURS PRIOR TO SHUTTING DOWN ANY PUMP STATION OR PRESSURE MAIN. CONFIRMATION MUST BE RECEIVED FROM PASCO COUNTY BEFORE ANY SHUTDOWN IS PERFORMED BY CONTRACTOR.

24. ALL DISTURBED AREAS SHALL BE SODDED, UNLESS OTHERWISE NOTED, AFTER REGRADING.

25. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH IN THE FIELD RIGHT OF WAY LINES, BASE LINES, BENCH MARKS (ELEV.), CENTER LINES, AND STATIONING AS REQUIRED TO CONSTRUCT THIS PROJECT.

26. CONTRACTOR SHALL COORDINATE AND REIMBURSE THE APPROPRIATE OVERHEAD UTILITY COMPANY FOR REQUIRED SUPPORT OF UTILITY POLES WHERE CONSTRUCTION MAY CAUSE THE POLE TO LOSE ITS SELF SUPPORTING ABILITY.

27. SPECIAL PIPE FOUNDATIONS, IF REQUIRED, SHALL BE DETERMINED IN THE FIELD AND THE TYPE REQUIRED WILL BE AS DIRECTED BY THE ENGINEER.

28. FINISHED GRADE FOR GROUND ELEVATIONS ON DRAWINGS REFER TO GRADE AFTER SODDING.

29. ALL ELEVATIONS ARE NGVD 1929 (TO CONVERT TO NAVD 1988 SUBTRACT 0.84')

30. ALL EXISTING DRAINAGE STRUCTURES WITHIN THE RIGHT-OF-WAY SHALL REMAIN UNLESS SHOWN ON THE PLANS TO BE REMOVED.

31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING MEASURES TO MITIGATE ADVERSE IMPACT OFF-SITE. THE CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENT CONTROL WHERE SHOWN ON THE PLANS AND WHERE NECESSARY. BALED HAY OR STRAW BARRIERS AND SILT FENCE SHALL BE PROVIDED PER FDOT INDEX NO. 102.

32. CONTRACTOR TO RAISE ALL VALVE BOXES AND MANHOLES AS NEEDED DUE TO CONSTRUCTION.

33. THE STORAGE OF MATERIALS, SOIL OR HEAVY EQUIPMENT SHALL NOT BE PERMITTED IN AREAS IN OR ADJACENT TO TREE BARRICADES.

WATER NOTES

1. ALL WORK OF THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH PASCO COUNTY.

2. NOTIFY UTILITY COMPANY, OWNER, AND ENGINEER AT LEAST 48 HOURS PRIOR TO: CONNECTION TO EXISTING FACILITIES, TESTING, AND CHLORINATION.

3. SEE PLAN SHEETS FOR WATER MAIN FITTINGS, AND VALVES. LOCATION OF FITTINGS AND VALVES ARE APPROXIMATE AND MAY BE ADJUSTED (MINOR) IN THE FIELD AS REQUIRED UPON NOTIFICATION OF OWNER AND ENGINEER.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACTUAL TIE-IN CONNECTION TO ALL WATER LINES AND VALVES. CONTRACTOR TO NOTIFY A UTILITY REPRESENTATIVE 48 HOURS IN ADVANCE TO BE ONSITE DURING ALL UTILITY CONNECTIONS TO EXISTING UTILITY LINES.

5. NEW OR RELOCATED UNDERGROUND WATER MAINS INCLUDED IN THIS PROJECT WILL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER, STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.; A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-TYPE SANITARY SEWER (OR A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-TYPE SANITARY SEWER IF THE BOTTOM OF THE WATER MAIN WILL BE LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER); A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.; AND A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM." [FAC 62-555.314(1); EXCEPTIONS ALLOWED UNDER FAC 62-555.314(5)]

6. NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED GRAVITY- OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES ABOVE THE OTHER PIPELINE OR AT LEAST 12 INCHES BELOW THE OTHER PIPELINE; AND NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OTHER PIPELINE. [FAC 62-555.314(2); EXCEPTIONS ALLOWED UNDER FAC 62-555.314(5)]

7. AT THE UTILITY CROSSINGS DESCRIBED IN PART II.C.I.W (NOTE 5) ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE WILL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE OR THE PIPES WILL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. [FAC 62-555.314(2); EXCEPTIONS ALLOWED UNDER FAC 62-555.314(5)]

8. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ABOVE SURFACE WATER WILL BE ADEQUATELY SUPPORTED AND ANCHORED, PROTECTED FROM DAMAGE AND FREEZING, AND ACCESSIBLE FOR REPAIR OR REPLACEMENT. [FAC 62-555.320(21)(B) AND RSWW 8.7.1]

AA. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS UNDER SURFACE WATER WILL HAVE A MINIMUM COVER OF TWO FEET [FAC 62-555.320(21)(B)AND RSWW 8.7.2]

BB. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS UNDER SURFACE WATER COURSES GREATER THAN 15 FEET IN WIDTH WILL HAVE FLEXIBLE OR RESTRAINED, WATERTIGHT PIPE JOINTS AND WILL INCLUDE VALVES AT BOTH ENDS OF THE WATER CROSSING SO THE UNDERWATER MAIN CAN BE ISOLATED FOR TESTING AND REPAIR; THE AFOREMENTIONED ISOLATION VALVES WILL BE EASILY ACCESSIBLE AND WILL NOT BE SUBJECT TO FLOODING; THE ISOLATION VALVE CLOSEST TO THE WATER SUPPLY SOURCE WILL BE IN A MANHOLE; AND PERMANENT TAPS WILL BE PROVIDED ON EACH SIDE OF THE ISOLATION VALVE WITHIN THE MANHOLE TO ALLOW FOR INSERTION OF A SMALL METER TO DETERMINE LEAKAGE FROM THE UNDERWATER MAIN AND TO ALLOW FOR SAMPLING OF WATER FROM THE UNDERWATER MAIN. [FAC 62-555.320(21)(B) AND RSWW 8.7.2]

9. ALL FITTINGS SHALL BE RESTRAINED. SEE RESTRAINED JOINT CHART.

10. DIMENSIONS SHOWN ARE TO CENTERLINE OF PIPE OR FITTING OR CLEARANCE DIMENSION TO OUTSIDE OF PIPE.

11. ALL CHLORINE INJECTION POINTS ARE 1" DOUBLE STRAPPED SADDLE, AND PLUGGED WITH A BRASS PLUG AFTER USE.

BROOKSVILLE MAINTENANCE FDOT GENERAL NOTES

ALL WORK PERFORMED IN THE DEPARTMENT'S RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT EDITIONS OF:
A) F.D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
B) F.D.O.T. DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS ON THE STATE HIGHWAY SYSTEM.
C) F.D.O.T. ROADWAY PLANS PREPARATION MANUAL VOLUME 1, CHAPTER 2 AND/OR 25.
D) F.D.O.T. FLEXIBLE PAVEMENT DESIGN MANUAL FOR NEW CONSTRUCTION AND PAVEMENT REHABILITATION.

1. ALL AREAS IN THE FDOT RIGHT OF WAY DISTURBED DURING CONSTRUCTION SHALL BE RESTORED, COMPACTED, SODDED AND WATERED IN CONFORMANCE WITH THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 575 AND 981 AND DESIGN STANDARDS INDEX 105.

2. DAYTIME WORK ONLY. THE F.D.O.T. ENGINEER MUST APPROVE NIGHT WORK AND LANE CLOSURES AT LEAST 48 HOURS IN ADVANCE. THE APPLICANT MUST NOTIFY THE FLORIDA DEPARTMENT OF TRANSPORTATION LOCAL MAINTENANCE OFFICE 48 HOURS IN ADVANCE OF STARTING ANY PROPOSED WORK. CALL: BROOKSVILLE MAINTENANCE, JOHN KILKENNY @ 352 797-5700.

3. ALL TRAFFIC STRIPES AND MARKINGS ARE TO BE LEAD-FREE, NON-SOLVENT BASED THERMOPLASTIC. THE PERMITTEE SHALL FURNISH THE DEPARTMENT WITH THE MANUFACTURER'S CERTIFICATION THAT THE THERMOPLASTIC IS "LEAD FREE." REMOVAL OF EXISTING STRIPING SHALL BE DONE BY MILLING AND RESURFACING OF THE FRICTION/SURFACE COURSE TO OBLITERATE OBSOLETE PAVEMENT MARKINGS.

4. ALL PROPOSED TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH AND CONSTRUCTED TO THE FDOT DESIGN STANDARDS INDEX SERIES 11000 AND 17000 SERIES. THE PROPERTY OWNER MUST MAINTAIN THE TRAFFIC SIGNS AND MARKINGS FOR THE DRIVEWAY.

5. THE FDOT REQUIRES DOCUMENTATION FOR SUCCESSFUL COMPLETION OF AN APPROVED WORK ZONE TRAFFIC CONTROL TRAINING COURSE FOR THE AGENCY, UTILITY OR CONTRACTOR EMPLOYEE(S) INSTALLING AND/OR MAINTAINING THE APPROVED MAINTENANCE OF TRAFFIC PLAN. DOCUMENTATION IS TO BE FURNISHED TO THE DEPARTMENT AT THE PRE-CONSTRUCTION MEETING OR BEFORE OCCUPYING STATE RIGHT-OF-WAY.

6. MAINTENANCE OF TRAFFIC PLAN FOR WORK ZONES SHALL BE IN CONFORMANCE WITH AND CONSTRUCTED TO THE FDOT DESIGN STANDARDS INDEX 600 SERIES ACCORDING TO THE TYPE OF ROADWAY AND TYPE OF WORK BEING PERFORMED.

7. SILT FENCE FOR EROSION CONTROL IN CONFORMANCE WITH DESIGN STANDARDS INDEX (DSI) 102 IS REQUIRED FOR ALL AREAS OF CONSTRUCTION WITHIN FDOT R/W: PERPENDICULAR TO AND PARALLEL WITH THE STATE ROAD.

8. SIDEWALK SHALL BE CONSTRUCTED PER FDOT INDEX 304 AND 310. DETECTABLE WARNING STRIPS, A.K.A. TRUNCATED DOMES, FOR DISTRICT SEVEN CONSTRUCTION AND MAINTENANCE SHOULD BE EITHER INSET CERAMIC TILES OR THERMOPLASTIC DETECTABLE WARNING STRIPS. THESE WARNING SURFACES SHALL ONLY BE PROVIDED BY THE FOLLOWING VENDORS/MANUFACTURERS.
1. INLINE TRUNCATED DOME EZ TILE SUPPLIED BY PROFESSIONAL PAVEMENT PRODUCTS
2. TOPMARK SUPPLIED BY FLINT TRADING
3. VANGUARD TRUNCATED DOME SUPPLIED BY VANGUARD

9. MAINTENANCE OF TRAFFIC PLAN MUST INCLUDE FDOT DESIGN STANDARDS INDEX 660 PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALKS.

10. DRIVEWAYS ARE TO BE CONSTRUCTED PER FDOT INDEX 515. THOUGH INDEX 515 ALLOWS A 2% SLOPE ACROSS SIDEWALKS, CURRENT ADA REQUIREMENTS ARE THAT 2% IS THE MAXIMUM ALLOWABLE SLOPE AS CONSTRUCTED. PLEASE DESIGN SIDEWALK SLOPE WITHIN FDOT RIGHT OF WAY AT 1.5% TO ALLOW CONSTRUCTION VARIANCES.

11. ALL DISTURBED AREAS WITHIN THE FDOT RIGHT-OF-WAY WILL BE SODDED (SEE TYPICAL CROSS-SECTIONS).

12. HANDRAIL REMOVED FROM FDOT ROW MUST BE TRANSPORTED TO THE FDOT BROOKSVILLE MAINTENANCE YARD, CALL JOHN KILKENNY 352-797-5700 TO COORDINATE DELIVERY.

MAINTENANCE OF TRAFFIC/ROADWAY CONSTRUCTION

1. THE CONTRACTOR SHALL PREPARE MAINTENANCE OF TRAFFIC AND SEQUENCE OF CONSTRUCTION PLANS (INCLUDING SIGNING AND PAVEMENT MARKING) AND SUBMIT THEM TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK. FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS SECTION 600 AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES SET FORTH THE BASIC DESIGN GUIDELINES TO BE FOLLOWED.

2. INSTALL CONSTRUCTION SIGNING AND MARKING PRIOR TO COMMENCEMENT OF CONSTRUCTION AND MAINTAIN SAME IN ACCORDANCE WITH THE APPROVED CONSTRUCTION PLAN.

3. TEMPORARY PAVEMENT MARKINGS SHALL INCLUDE LANE LINES, EDGE LINES, STORAGE AREAS, AND STOP BARS TO FULLY DEFINE TRAFFIC MOVEMENT. THESE TEMPORARY MARKINGS SHALL BE PROVIDED AS SOON AS PRACTICABLE AFTER EACH DAY'S PAVING OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY PAVEMENT MARKINGS THROUGHOUT THE CONSTRUCTION PERIOD. TEMPORARY PAVEMENT MARKERS SHALL BE USED IN ACCORDANCE WITH INDEX 600.

4. LOCAL ACCESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.

5. UTILITY ADJUSTMENTS MUST BE COMPLETED PRIOR TO PERMANENT ROADWAY CONSTRUCTION.

6. INSTALL TEMPORARY STRIPING AND REMOVE ALL CONFLICTING STRIPING WHERE REQUIRED.

7. MAINTENANCE OF TRAFFIC WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND IN ACCORDANCE WITH STATE OF FLORIDA D.O.T. STANDARD INDEX 600, 613, 615, 616, 619, 625U, 635, 660, 670.

EROSION CONTROL NOTES

1. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

2. ALL EXPOSED AREAS SHALL BE SODDED AS SPECIFIED WITHIN 14 DAYS OF FINAL GRADING.

3. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN AND AT LEAST ONCE A WEEK.

4. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.

5. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.

6. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.

7. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY GOVERNING AUTHORITIES.

8. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.

9. ALL EXISTING STRUCTURES, FENCING, TREES, AND ETC., WITHIN CONSTRUCTION AREA SHALL BE REMOVED AND DISPOSED OF OFF SITE. ANY BURNING ON SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.

10. CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.

11. CONTRACTOR SHALL IMPLEMENT THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THIS PROJECT.

STORMWATER NOTES

1. STORMWATER METAL PIPE WILL NOT BE ALLOWED ON THIS PROJECT EXCEPT AS NOTED OTHERWISE ON PLANS.

2. ALL DRAINAGE DETAILS ARE TO BE PASCO COUNTY'S CURRENT STANDARDS OR WHERE THE COUNTY HAS NO STANDARD, FDOT CURRENT STANDARDS SHALL BE USED. THIS INCLUDES, BUT IS NOT LIMITED TO: INLETS, MANHOLES, ENDWALLS, FLARED END SECTIONS, ETC. NON-STANDARD DRAINAGE DETAILS (IF ANY) ARE SHOWN ON DETAIL SHEETS IN THE PLANS.

3. BASE AND BACKFILL MATERIALS SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIALS REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. MATERIAL CONTAMINATED WITH DELETERIOUS SUBSTANCES DURING EXCAVATION SHALL NOT BE USED.

4. THE AREA OF THE TRENCH ABOVE THE PIPE ZONE AND BELOW THE PAVEMENT BASE COURSE MUST BE BACKFILLED AND COMPACTED IN LAYERS NOT EXCEEDING TWELVE INCHES, EXCEPT THAT THE LAST TWO LIFTS SHALL NOT EXCEED EIGHT INCHES PER LIFT.

5. USE LBR 40 (OR BETTER) BACK-FILL MATERIAL IN TOP 24 INCHES OF TRENCH.

SWFWMD PERMITTED DRAWINGS MAY 2010

SWFWMD Received NOV -3 2009 BRO-REG

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION

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LIC. NO. 0000446

David W. Deslet
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OCT 29 2009

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

GENERAL NOTES

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R2
OF__

JOB NO. L04101

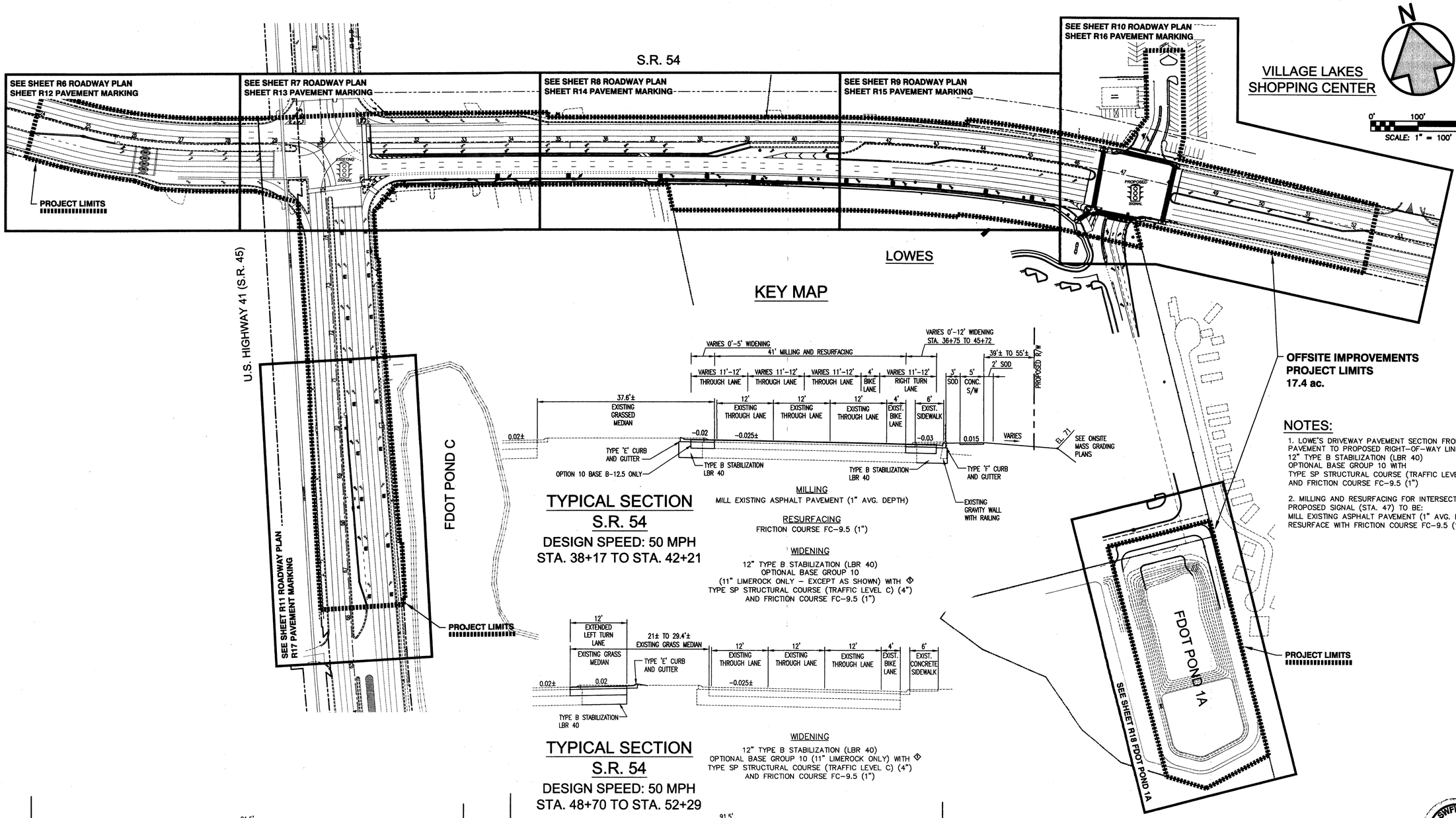
MAY 21 2009

.23 2009

C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101gn Land O Lakes Offsite.dwg, Layout R2 General Notes

Date: 12/08/08 Drawing: L04101gn Land O Lakes Offsite.dwg

A-864



TYPICAL SECTION
S.R. 54
DESIGN SPEED: 50 MPH
STA. 38+17 TO STA. 42+21

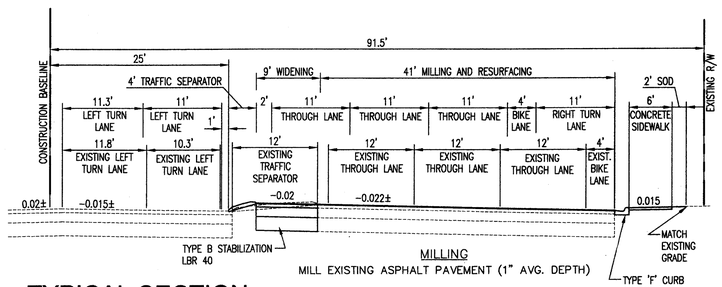
MILLING
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

RESURFACING
FRICTION COURSE FC-9.5 (1")

WIDENING
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 10
(11" LIMEROCK ONLY – EXCEPT AS SHOWN) WITH ◇
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) (4")
AND FRICTION COURSE FC-9.5 (1")

TYPICAL SECTION
S.R. 54
DESIGN SPEED: 50 MPH
STA. 48+70 TO STA. 52+29

WIDENING
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 10 (11" LIMEROCK ONLY) WITH ◇
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) (4")
AND FRICTION COURSE FC-9.5 (1")

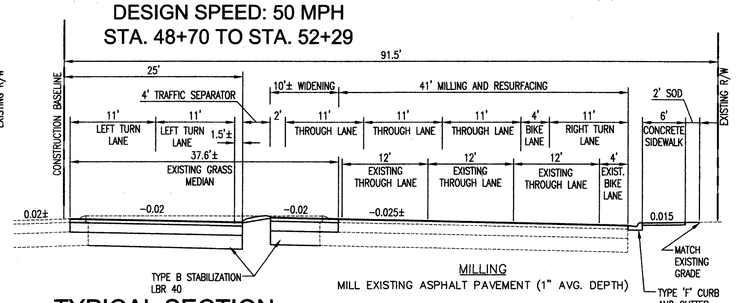


TYPICAL SECTION
S.R. 54
DESIGN SPEED: 50 MPH
STA. 31+22 TO STA. 34+76

MILLING
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

RESURFACING
FRICTION COURSE FC-9.5 (1")

WIDENING
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 10 (11" LIMEROCK ONLY) WITH ◇
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) (4")
AND FRICTION COURSE FC-9.5 (1")

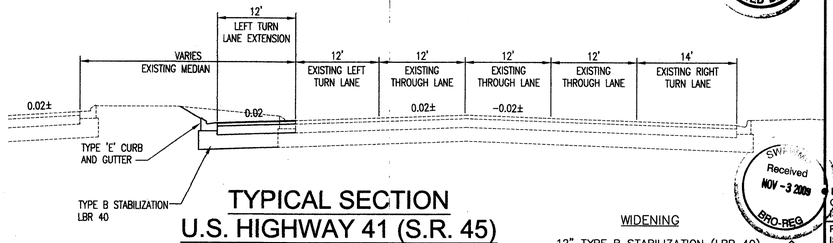


TYPICAL SECTION
S.R. 54
DESIGN SPEED: 50 MPH
STA. 34+76 TO STA. 38+17

MILLING
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)

RESURFACING
FRICTION COURSE FC-9.5 (1")

WIDENING
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 10 (11" LIMEROCK ONLY) WITH ◇
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) (4")
AND FRICTION COURSE FC-9.5 (1")



TYPICAL SECTION
U.S. HIGHWAY 41 (S.R. 45)
DESIGN SPEED: 55 MPH
STA. 66+22 TO STA. 70+26

WIDENING
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 12 (12½" LIMEROCK ONLY) WITH ◇
TYPE SP STRUCTURAL COURSE (3")
AND FRICTION COURSE FC-9.5 (1")
BASE GROUP 12 LIMITED TO ABC-3 (7½")

NOTES:
1. LOWE'S DRIVEWAY PAVEMENT SECTION FROM EXISTING PAVEMENT TO PROPOSED RIGHT-OF-WAY LINE TO BE:
12" TYPE B STABILIZATION (LBR 40)
OPTIONAL BASE GROUP 10 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL C) (4")
AND FRICTION COURSE FC-9.5 (1")

2. MILLING AND RESURFACING FOR INTERSECTION OF PROPOSED SIGNAL (STA. 47) TO BE:
MILL EXISTING ASPHALT PAVEMENT (1" AVG. DEPTH)
RESURFACE WITH FRICTION COURSE FC-9.5 (1")

SWFWMD PERMITTED DRAWING MAY 2010

SWFWMD Received NOV -3 2009 BRO-REG

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HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/05/08	1	CHANGE BASE TO LIMEROCK

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LINCKS & ASSOCIATES, INC.
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LIC. NO. EB0004648
David W. Ditslear
P.E. No. 24760

OCT 29 2009

LOWE'S
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336.658.4000 (V) 336.658.3257 (F)

KEY MAP
TYPICAL SECTION
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R3
OF _

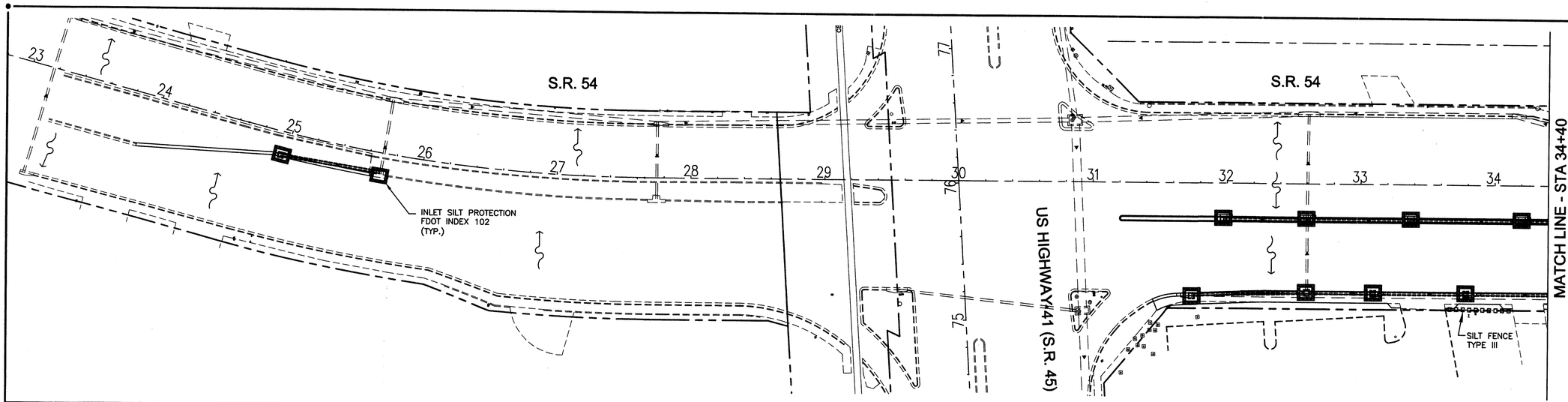
JOB NO. L04104

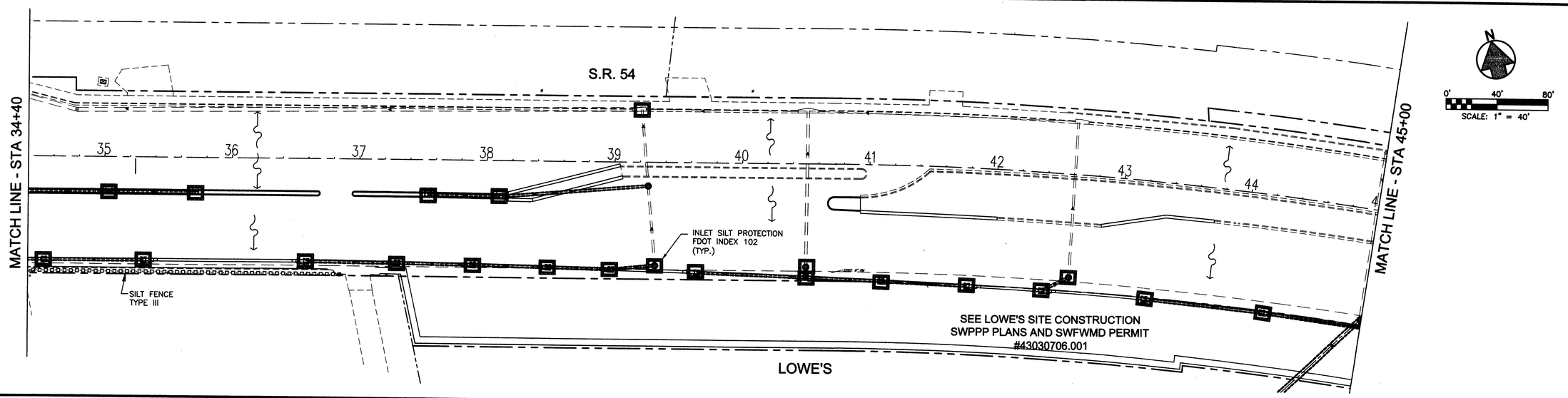
MAY 21 2009

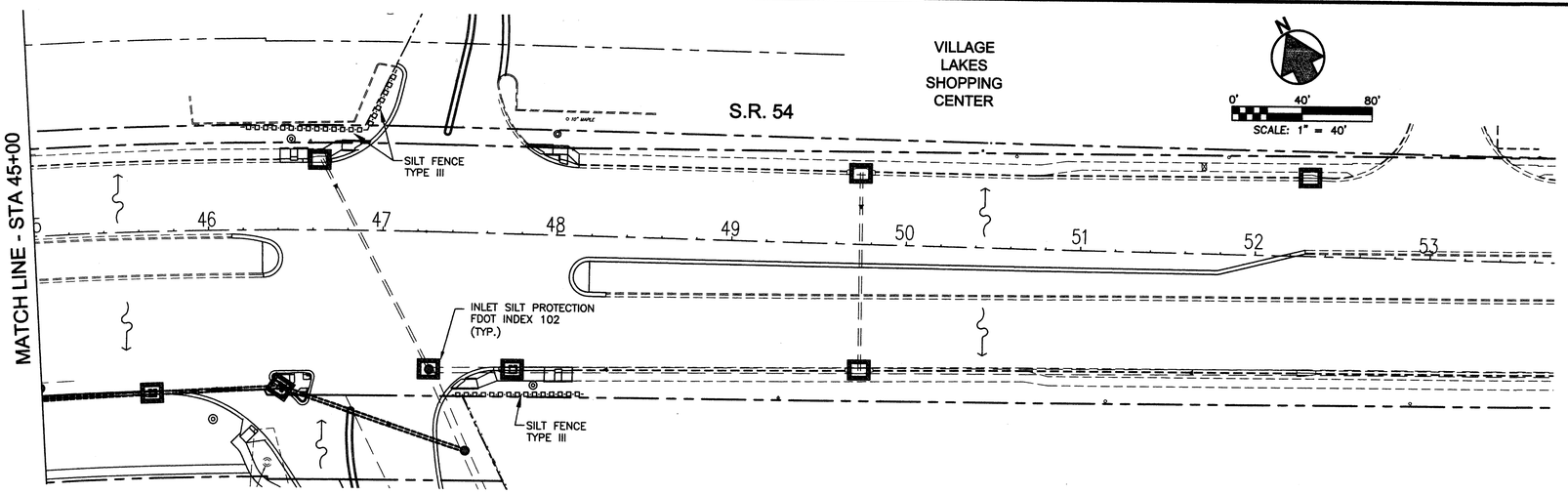
C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101S Land O Lakes Offsite.dwg, Layout:R3 Key Map

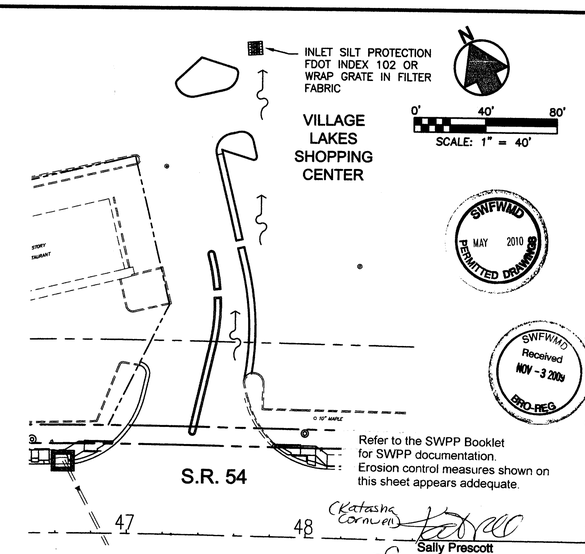
Date: 12/08/08 Drawing: L04101S Land O Lakes Offsite.dwg

A-865









Refer to the SWPP Booklet for SWPP documentation. Erosion control measures shown on this sheet appears addequate.

Katasha Cornwell

Sally Prescott
Florida Dept. of Transportation

Date: 05/20/09

Drawing: L04101S Land O Lakes Offsite.dwg

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans\2009\L04101 Land O Lakes Offsite to Don 03-05-09\L04101S Land O Lakes Offsite.dwg, Layout R4 SR54 SWPPP

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION

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David W. Dessiet
PE No. 24768
MAY 31, 2009
STATE OF FLORIDA

LOWE'S
ENGINEERING AND CONSTRUCTION
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336.658.4000 (V) 336.658.3257 (F)

S.R. 54
SWPPP

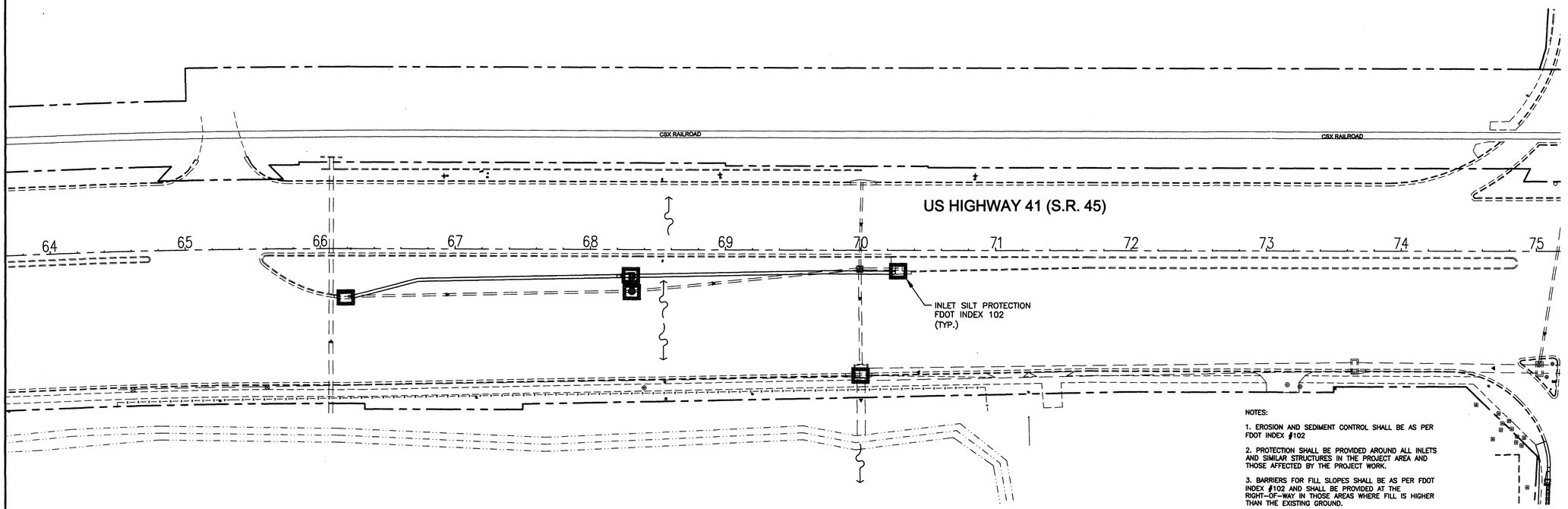
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:

DRAWING NUMBER: R4
OF —

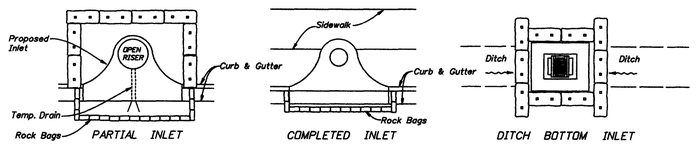
JOB NO. L04104



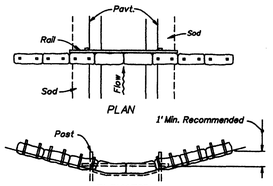
0' 40' 80'
SCALE: 1" = 40'

NOTES:

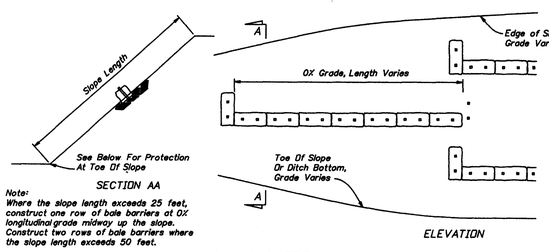
1. EROSION AND SEDIMENT CONTROL SHALL BE AS PER FDOT INDEX #102
2. PROTECTION SHALL BE PROVIDED AROUND ALL INLETS AND SIMILAR STRUCTURES IN THE PROJECT AREA AND THOSE AFFECTED BY THE PROJECT WORK.
3. BARRIERS FOR FILL SLOPES SHALL BE AS PER FDOT INDEX #102 AND SHALL BE PROVIDED AT THE RIGHT-OF-WAY IN THOSE AREAS WHERE FILL IS HIGHER THAN THE EXISTING GROUND.
4. DITCH PROTECTION SHALL BE PROVIDED BY TYPE IV SILT FENCES IN AREAS OF INTERMITTENT FLOW. SEE FDOT INDEX #102.
5. ALL EROSION CONTROL MEASURES SHALL BE REMOVED UPON PROJECT ACCEPTANCE BY THE EOR.



PROTECTION AROUND INLETS OR SIMILAR STRUCTURES

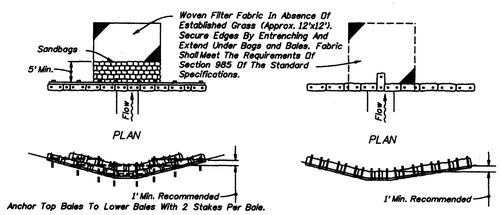


SYNTHETIC BALES OR BALE TYPE BARRIERS FOR PAVED DITCHES

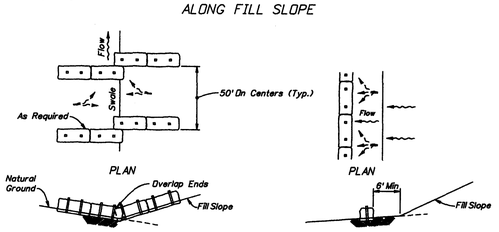


Note:
Where the slope length exceeds 25 feet, construct one row of bale barriers at 0X longitudinal grade midway up the slope. Construct two rows of bale barriers where the slope length exceeds 50 feet.

ALONG FILL SLOPE



SYNTHETIC BALES OR BALE TYPE BARRIERS FOR UNPAVED DITCHES

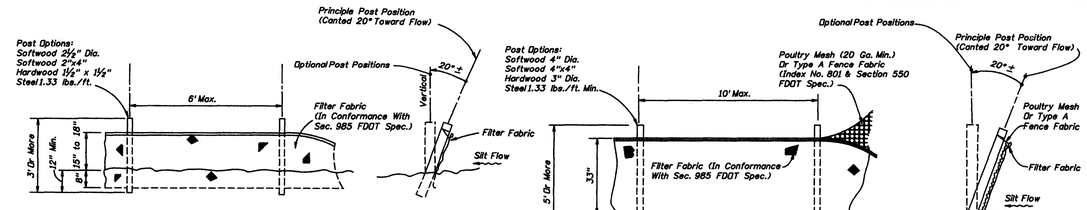


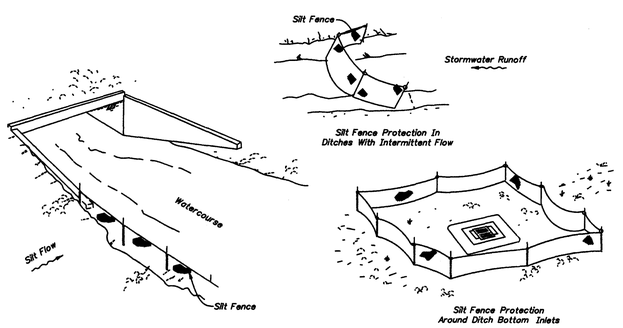
AT TOE OF SLOPE
BARRIERS FOR FILL SLOPES

NOTES FOR SYNTHETIC BALES OR BALE TYPE BARRIERS

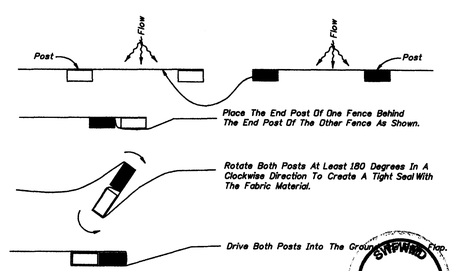
1. Type I and II Synthetic Barrier should be spaced in accordance with Chart 1, Sheet 1.
2. Bales shall be trenched 3" to 4" and anchored with 2-1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together.
5. Where used in conjunction with silt fence, bales shall be placed on the upstream side of the fence.
6. Bales to be paid for under the contract unit price for Synthetic Bales, LF. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sandbags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

2008 FDOT Design Standards
TEMPORARY EROSION AND SEDIMENT CONTROL
Last Revision 07/01/07 | Sheet No. 2 of 3 | Index No. 102





SILT FENCE APPLICATIONS



PLAN VIEW
JOINING TWO SILT FENCES

NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travellanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0X longitudinal grade to avoid channelizing runoff along the length of the fence.
5. Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).

SWFWMD PERMITTED DRAWINGS MAY 2010

SWFWMD Received NOV - 3 2009

2008 FDOT Design Standards
TEMPORARY EROSION AND SEDIMENT CONTROL
Last Revision 07/01/07 | Sheet No. 3 of 3 | Index No. 102

Sally Prescott
Florida Dept. of Transportation

Date: 05/20/09 Drawing: L04101S Land O Lakes Offsite.dwg

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2009\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R5 US41 SWPPP

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION

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David W. Deslet
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DAVID W. DESLET
24760
REGISTERED
PROFESSIONAL ENGINEER

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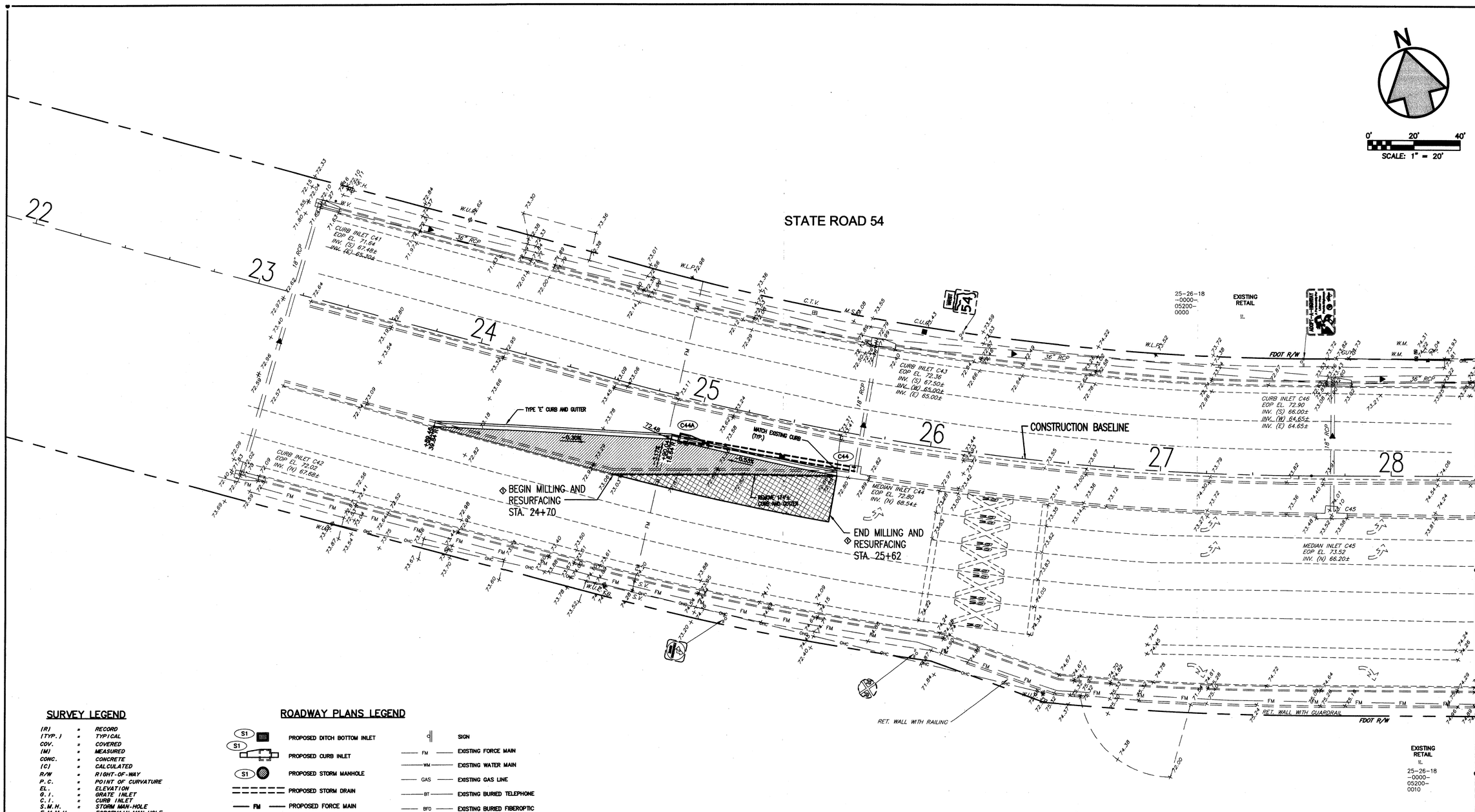
US HIGHWAY 41 (S.R. 45)
SWPPP
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No.: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R5 OF _
JOB NO. L04104



N

0' 20' 40'

SCALE: 1" = 20'

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	GTE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT. DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C44A	PROPOSED	24+95.27	17.38'	R	P STRUCTURE ALT 'A', TYPE '5' CURB INLET TOP	72.38	W	68.69									FDOT INDEX 200, 211
C44	MODIFIED				TYPE '7' CURB INLET	72.67	N	68.54							68.54		

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
C44A:C44	75	RCP	1	18	18	0.20

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV - 3 2009 ENG. REQ.

MAY 21 2009

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS

DATE		DESCRIPTION
10/9/09	1	ADD MILLED PAVEMENT

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CA NO. 26000408

David W. Dessiet
PE No. 34760

OCT 29 2009

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

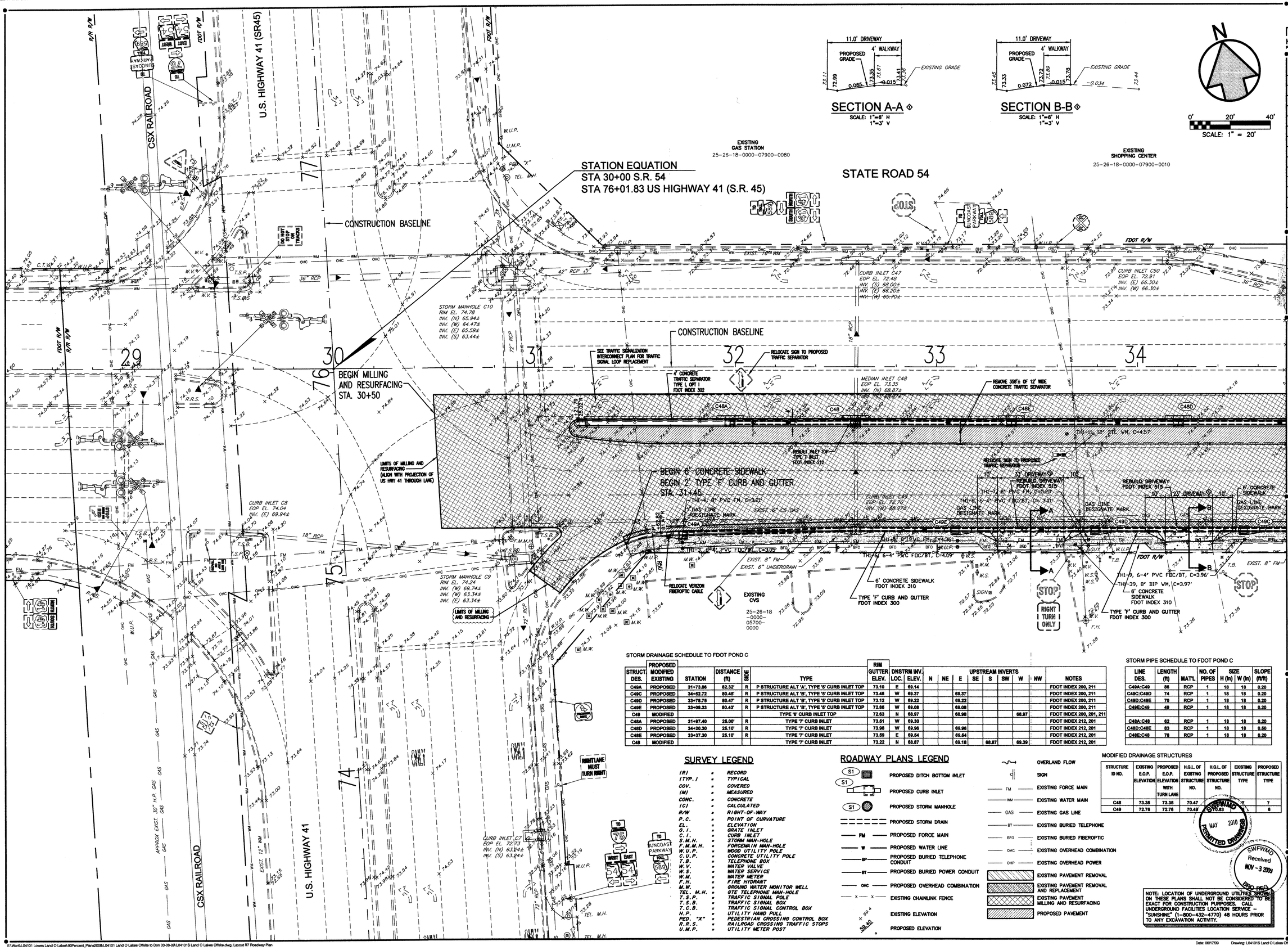
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R6
OF _

JOB NO. L04101

C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101S Land O Lakes Offsite.dwg, Layout R6 Roadway Plan

Date: 12/08/08 Drawing: L04101S Land O Lakes Offsite.dwg

A-868



STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C49A	PROPOSED	31+73.86	82.32'	R	P STRUCTURE ALT 'A', TYPE '6' CURB INLET TOP	73.10	E	69.14									FDOT INDEX 200, 211
C49C	PROPOSED	34+62.72	80.48'	R	P STRUCTURE ALT 'B', TYPE '6' CURB INLET TOP	73.46	W	69.37			69.37						FDOT INDEX 200, 211
C49D	PROPOSED	33+78.75	80.47'	R	P STRUCTURE ALT 'B', TYPE '6' CURB INLET TOP	73.12	W	69.22			69.22						FDOT INDEX 200, 211
C49E	PROPOSED	33+09.33	80.43'	R	P STRUCTURE ALT 'B', TYPE '6' CURB INLET TOP	72.86	W	69.08			69.08						FDOT INDEX 200, 211
C49	MODIFIED				TYPE '6' CURB INLET TOP	72.63	N	68.97			68.98				68.97		FDOT INDEX 200, 201, 211
C48A	PROPOSED	31+97.40	26.00'	R	TYPE '7' CURB INLET	73.61	W	69.30									FDOT INDEX 212, 201
C48D	PROPOSED	34+20.30	28.10'	R	TYPE '7' CURB INLET	73.98	W	69.96			69.96						FDOT INDEX 212, 201
C48E	PROPOSED	33+37.30	28.10'	R	TYPE '7' CURB INLET	73.89	E	69.64			69.64						FDOT INDEX 212, 201
C48	MODIFIED				TYPE '7' CURB INLET	73.22	N	68.87			69.18		68.87		69.39		FDOT INDEX 212, 201

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
C49A-C49	86	RCP	1	18	18	0.20
C49C-C49D	74	RCP	1	18	18	0.20
C49D-C49E	70	RCP	1	18	18	0.20
C49E-C49	49	RCP	1	18	18	0.20
C48A-C48	62	RCP	1	18	18	0.20
C48D-C48E	83	RCP	1	18	18	0.60
C48E-C48	78	RCP	1	18	18	0.20

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
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P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	GTE TELEPHONE MAN-HOLE
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ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
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- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C48	73.35	73.35	70.47	7	7	7
C49	72.76	72.76	70.49	6	6	6

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

SNFWMD PERMITTED DRAINAGE MAY 2010

SNFWMD Received NOV - 3 2009 RPO REG

JUN 17 2009

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R7 Roadway Plan

Date: 06/17/09 Drawing: L04101S Land O Lakes Offsite.dwg

JOB NO. L04101

A-869

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28659

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
120909	1	ADD DRAINAGE DETAILS

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LINCKS & ASSOCIATES, INC.
ENGINEERS PLANNERS
10500 N. DALE MABRY HIGHWAY
TAMPA, FLORIDA 33618
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David W. Deslet
P.E.No. 24780
OCT 29, 2009

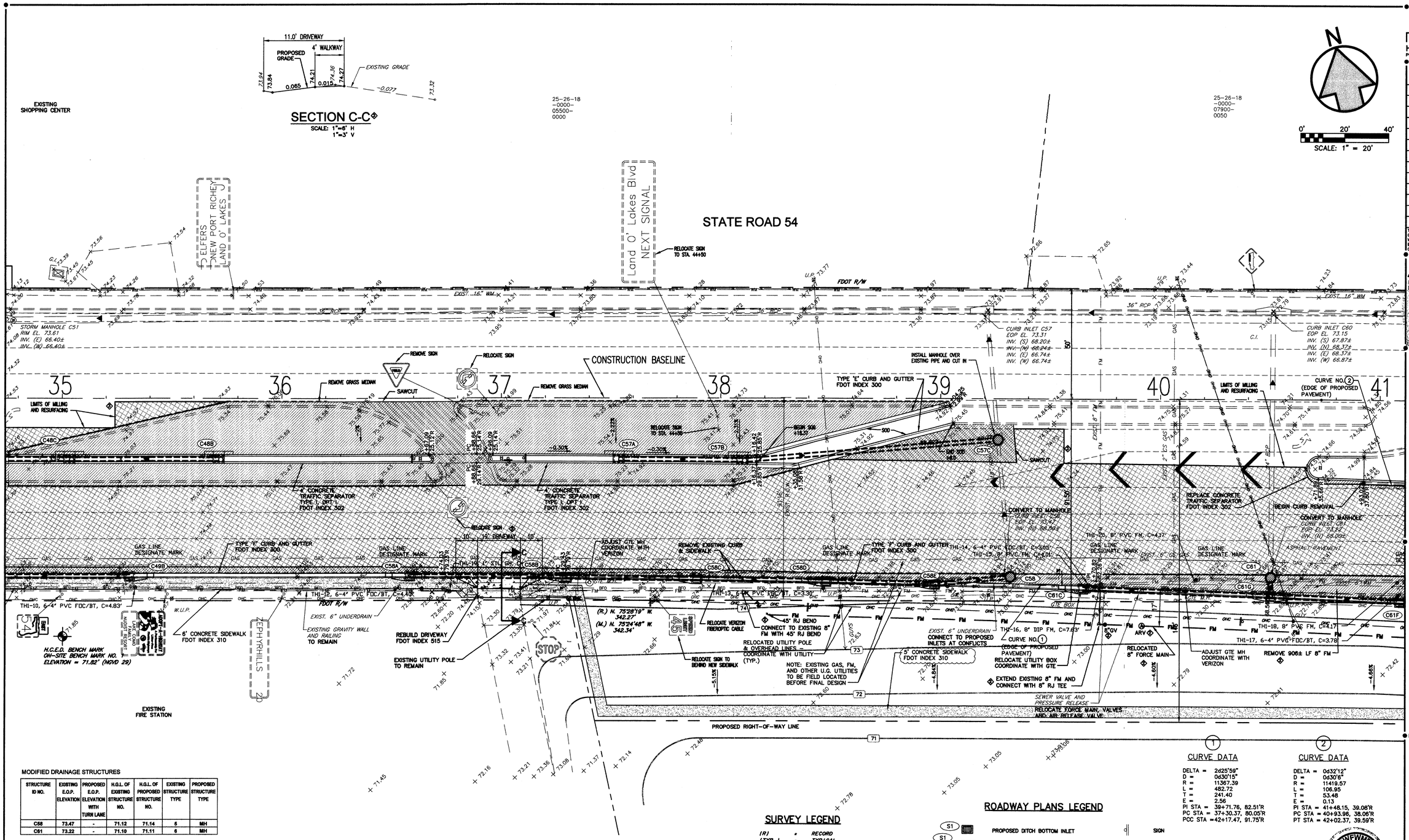
LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No.: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R7
OF _



MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C58	73.47	-	71.12	71.14	5	MH
C61	73.22	-	71.10	71.11	6	MH

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT. DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C49B	PROPOSED	35+30.80	80.40'	R	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.73	W	69.82									FDOT INDEX 200, 211
C48B	PROPOSED	36+71.30	25.10'	R	TYPE '7' CURB INLET	74.47	W	70.26									FDOT INDEX 212, 201
C48C	PROPOSED	36+03.30	26.10'	R	TYPE '7' CURB INLET	74.22	W	70.13				70.13					FDOT INDEX 212, 201
C58A	PROPOSED	◇ 36+58.34	80.47'	R	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.91	E	69.70									FDOT INDEX 200, 211
C58B	PROPOSED	◇ 37+29.78	81.06'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	73.72	E	69.56								69.56	FDOT INDEX 200, 211
C58C	PROPOSED	◇ 37+89.10	81.81'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	73.63	E	69.44								69.44	FDOT INDEX 200, 211
C58D	PROPOSED	◇ 38+48.03	82.86'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	73.49	E	69.32								69.32	FDOT INDEX 200, 211
C58E	PROPOSED	◇ 38+97.27	84.00'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	73.41	E	69.22								69.22	FDOT INDEX 200, 211
C58	MODIFIED	◇ 39+31.70	80.56'	R	TYPE 7 MANHOLE TOP, ALT B	73.43	N	68.50								69.16	FDOT INDEX 201
C57A	PROPOSED	◇ 37+63.46	26.30'	R	TYPE '7' CURB INLET	74.32	E	70.11									FDOT INDEX 212, 201
C57B	PROPOSED	◇ 38+09.90	26.74'	R	TYPE '7' CURB INLET	74.16	E	70.00								70.00	FDOT INDEX 212, 201
C57C	PROPOSED	◇ 39+26.12	18.49'	R	TYPE 7 MANHOLE TOP, ALT B	74.88	N	68.35					68.35			69.77	FDOT INDEX 201
C61C	PROPOSED	39+64.76	86.86'	R	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.13	E	68.92									FDOT INDEX 200, 211
C61F	PROPOSED	41+10.31	91.03'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	72.91	W	68.68			68.68						FDOT INDEX 200, 211
C61G	PROPOSED	40+60.28	88.86'	R	J STRUCTURE, TYPE 'S' CURB INLET TOP	72.84	N	68.56			68.56					68.75	FDOT INDEX 200, 211
C61	MODIFIED			R	TYPE 7 MANHOLE TOP, ALT B	73.18	S	68.00					68.64				FDOT INDEX 201

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
C49B:C49C	78	RCP	1	18	18	0.20
C48B:C48C	66	RCP	1	18	18	0.20
C48C:C58D	83	RCP	1	18	18	0.20
C58A:C58B	72	RCP	1	18	18	0.20
C58B:C58C	59	RCP	1	18	18	0.20
C58C:C58D	59	RCP	1	18	18	0.20
C58D:C58E	49	RCP	1	18	18	0.20
C58E:C58	35	RCP	1	18	18	0.20
C58:C57C	63	RCP	1	18	18	0.24
C57A:C57B	67	RCP	1	18	18	0.20
C57B:C57C	114	RCP	1	18	18	0.20
C61C:C61G	86	RCP	1	18	18	0.20
C61F:C61G	59	RCP	1	18	18	0.20
C61G:C61	8	RCP	1	18	18	0.20

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	9TE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- FM — PROPOSED FORCE MAIN
- W — PROPOSED WATER LINE
- SP — PROPOSED BURIED TELEPHONE CONDUIT
- ST — PROPOSED BURIED POWER CONDUIT
- OHC — PROPOSED OVERHEAD COMBINATION
- X — X — EXISTING CHAINLINK FENCE
- 59.4 / 59.80 — PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- FM — EXISTING FORCE MAIN
- WM — EXISTING WATER MAIN
- GAS — EXISTING GAS LINE
- BT — EXISTING BURIED TELEPHONE
- BFO — EXISTING BURIED FIBEROPTIC
- OHC — EXISTING OVERHEAD COMBINATION
- OHP — EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

CURVE DATA (1)

DELTA = 2d25'59"
D = 0d30'15"
R = 11367.39
L = 482.72
T = 241.40
E = 2.56
PI STA = 39+71.76, 82.51'R
PC STA = 37+30.37, 80.05'R
PCC STA = 42+17.47, 91.75'R

CURVE DATA (2)

DELTA = 0d32'12"
D = 0d30'6"
R = 11419.57
L = 106.95
T = 53.48
E = 0.13
PI STA = 41+48.15, 39.08'R
PC STA = 40+93.96, 38.06'R
PT STA = 42+02.37, 39.59'R

SWFWMD PERMITTED DRAWINGS MAY 2010

SWFWMD Received NOV -3 2009 BRO-REG

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

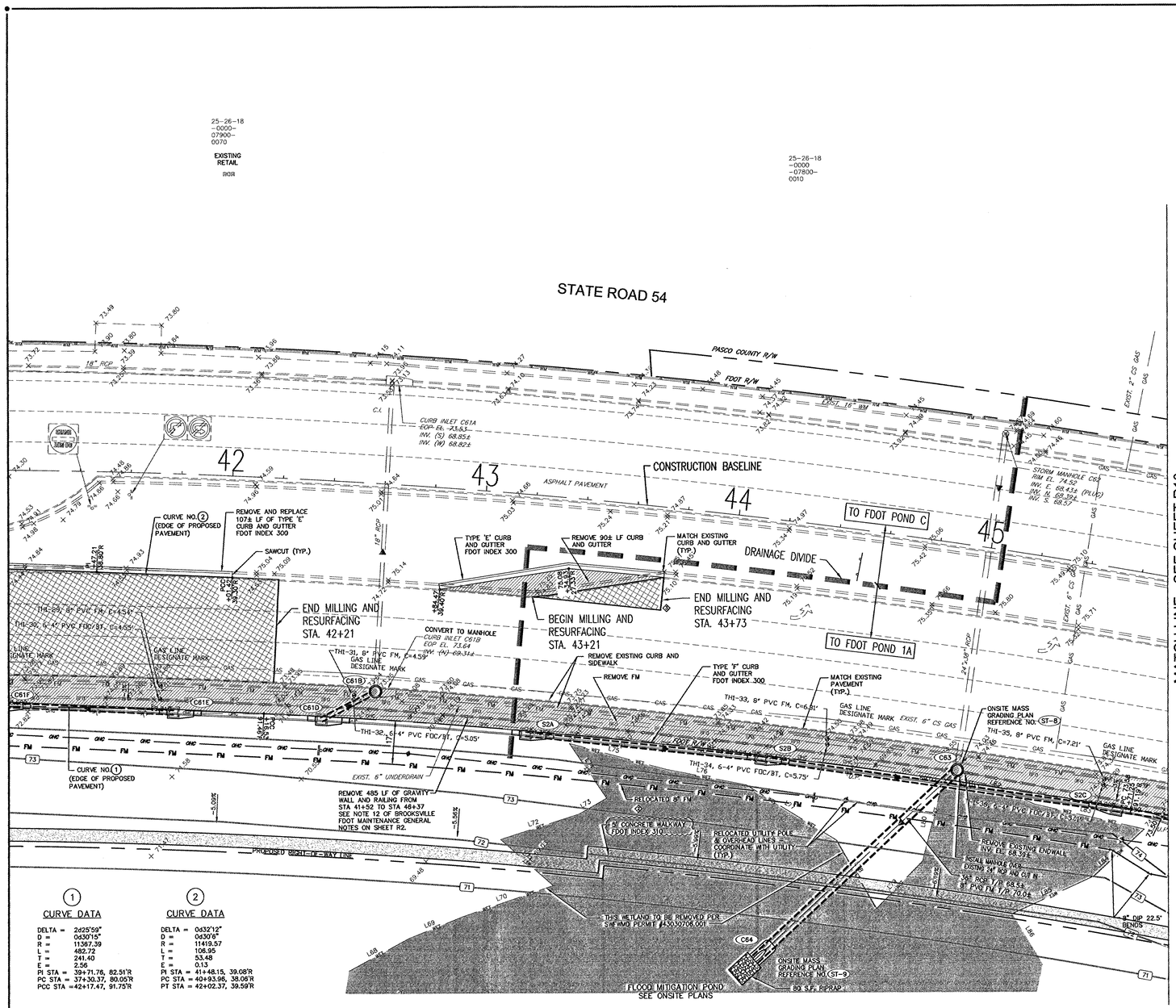
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R8
OF _

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R8 Roadway Plan

Date: 05/20/09 Drawing: L04101S Land O Lakes Offsite.dwg

JOB NO. L04101

A-870



1 CURVE DATA

DELTA = 2d25'59"
D = 0d30'15"
R = 11367.39
L = 492.72
T = 241.40
E = 2.56
PI STA = 39+71.76, 82.51'R
PC STA = 37+30.37, 90.05'R
PCC STA =42+17.47, 91.75'R

2 CURVE DATA

DELTA = 0d32'12"
D = 0d30'6"
R = 11419.57
L = 106.95
T = 53.48
E = 0.13
PI STA = 41+48.15, 39.08'R
PC STA = 40+93.96, 38.06'R
PT STA = 42+02.37, 39.59'R

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	ONSTRM INV. LOC.	ONSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C61E	PROPOSED	41+79.74	92.45'	R	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.02	W	68.81									FDOT INDEX 200, 211
C61F	PROPOSED	41+10.31	91.03'	R	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	72.91	W	68.68				68.68					FDOT INDEX 200, 211
C61D	PROPOSED	42+40.11	92.69'	R	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.11	E	69.40									FDOT INDEX 200, 211
C61B	MODIFIED				TYPE 7 MANHOLE TOP, ALT B	73.60	N	69.31								69.35	FDOT INDEX 201
C63	PROPOSED	44+99.23	87.11'	R	TYPE 'J' MANHOLE, ALT B, TYPE 7 TOP	73.86	SW	66.04 (3)	68.39								FDOT INDEX 200, 201
C64	PROPOSED	44+27.73	171.00'	R	CROSS DRAIN MITERED END SECTION	64.82 (3)										64.82 (3)	FDOT INDEX 272

STORM DRAINAGE SCHEDULE TO FDOT POND 1A

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	ONSTRM INV. LOC.	ONSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
S2A	PROPOSED	43+23.40	92.83'	R	P STRUCTURE, TYPE 'S' CURB INLET TOP	73.36	SE	69.35									FDOT INDEX 200, 211
S2B	PROPOSED	44+19.75	92.92'	R	P STRUCTURE, TYPE 'S' CURB INLET TOP	73.59	SE	69.17								69.17	FDOT INDEX 200, 211
S2C	PROPOSED	42+65.57	92.46'	R	P STRUCTURE, TYPE 'S' CURB INLET TOP	73.48	SE	68.88								68.88	FDOT INDEX 200, 211

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
C61E:C61F	67	RCP	1	18	18	0.20
C61D:C61B	24	RCP	1	18	18	0.20
C63:C64	108	RCP	1	36 (3)	36 (3)	0.20

STORM PIPE SCHEDULE TO FDOT POND 1A

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
S2A:S2B	93	RCP	1	18	18	0.20
S2B:S2C	141	RCP	1	18	18	0.20
S2C:S2D	74	RCP	1	18	18	0.20

MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C61B	73.64	-	71.25	71.18	5	MH
C63	-	-	-	-	ENDWALL	MH

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	GTE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

SWFWMD PERMITTED DRAWING MAY 2010

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

N

0' 20' 40'
SCALE: 1" = 20'

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
06/30/08	1	INCREASED CURVE DATA
11/20/08	2	REPLACE FM
02/02/09	3	SQUARE OFF PAVEMENT

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LINCKS & ASSOCIATES, INC. ENGINEERS PLANNERS
1000 WEST LAUREL STREET TAMPA, FLORIDA 33607 PH/FX (813) 289-0778 LIC. NO. EB0000636
Timothy David Lincks, P.E. No. 24350 LICENSE STATE OF FLORIDA

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: VMR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R9 OF __

ONE CALL OF FLORIDA, INC. SUNSHINE STATE ONE-CALL OF FLORIDA, INC.

JOB NO. L04101

FILE COPY RECORD Date: 02/25/10 Drawing: L04101S Land O Lakes Offsite.dwg 44015567.003

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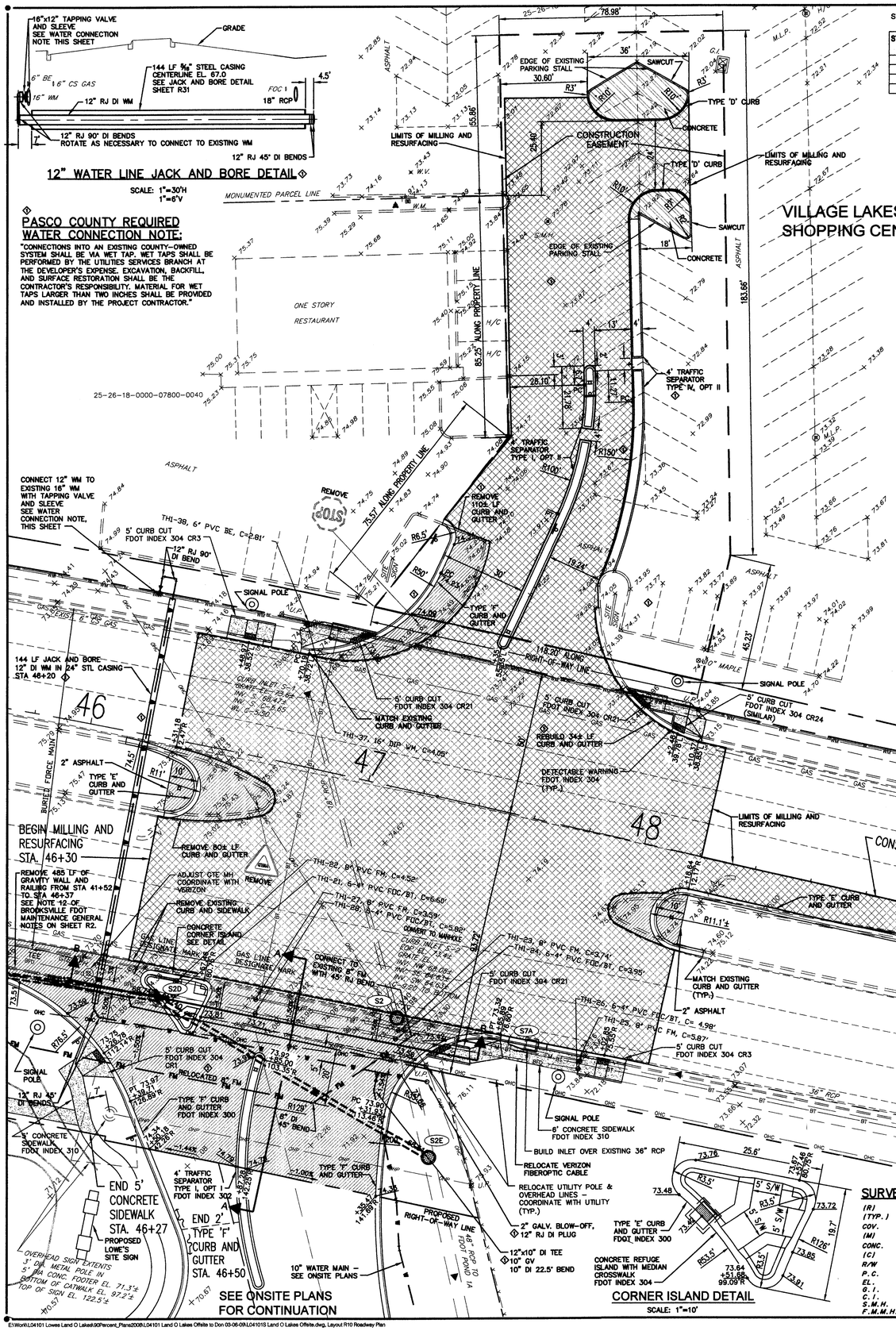
A-871



STORM DRAINAGE SCHEDULE TO FDOT POND 1A

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
S7A	PROPOSED	47+76.83	77.64'	R	J STRUCTURE, TYPE 'E' CURB INLET TOP	73.21	NW	64.74				64.74					FDOT INDEX 200, 211
S2	MODIFIED				TYPE 7 MANHOLE TOP, ALT B	73.38	S	64.64	66.06			64.64					FDOT INDEX 201
S2D	PROPOSED	46+41.83	89.30'	R	P STRUCTURE ALT 'B', TYPE 'P' CURB INLET TOP	73.30	SE	68.74								68.74	FDOT INDEX 200, 214
S2E	PROPOSED	45+00.24	85.80'	R	TYPE 'J' MANHOLE, ALT B, TYPE 7 TOP	75.00	S	64.66	64.56							68.61	FDOT INDEX 200, 201

STORM PIPE SCHEDULE TO FDOT POND 1A

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
S2D:S2E	111	RCP	1	18	18	0.20

MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
S2	73.40	-	70.66	70.33	5	MH

SURVEY LEGEND

(R)	=	RECORD					
(TYP.)	=	TYPICAL					
COV.	=	COVERED	W.U.P.	=	WOOD UTILITY POLE		
(M)	=	MEASURED	C.U.P.	=	CONCRETE UTILITY POLE		
CONC.	=	CONCRETE	T.B.	=	TELEPHONE BOX		
(C)	=	CALCULATED	W.V.	=	WATER VALVE		
R/W	=	RIGHT-OF-WAY	W.S.	=	WATER SERVICE		
P.C.	=	POINT OF CURVATURE	W.M.	=	WATER METER		
EL.	=	ELEVATION	F.H.	=	FIRE HYDRANT		
G.I.	=	GRATE INLET	M.W.	=	GROUND WATER MONITOR WELL		
C.I.	=	CURB INLET	TEL. M.H.	=	GTE TELEPHONE MAN-HOLE	H.P.	= UTILITY HAND PULL
S.M.H.	=	STORM MAN-HOLE	T.S.P.	=	TRAFFIC SIGNAL POLE	PED. "X"	= PEDESTRIAN CROSSING CONTROL BOX
F.M.M.H.	=	FORCEMAIN MAN-HOLE	T.S.B.	=	TRAFFIC SIGNAL BOX	R.R.S.	= RAILROAD CROSSING TRAFFIC STOPS
			T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX	U.M.P.	= UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

SWFWMD PERMITTED DRAWINGS MAY 2010

SWFWMD Received NOV -3 2009 BRO-REG

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
PRE-BID SET ISSUE DATE
POST BID SET ISSUE DATE

DATE		DESCRIPTION
11/05/08	1	REVISED PER SWFWMD RAI #2 SET, REVISE VILLAGE LAKES ENTRANCE
12/09/08	2	SIGNAL OFF PAVEMENT, REVISE DRIVEWAY GRADES AND MILLING & RESURFACING LIMITS

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ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

DAVIS & ASSOCIATES, INC. ENGINEERING CERTIFICATE OF AUTHORIZATION #3000 5000 CENTRAL AVENUE TAMPA, FLORIDA 33603 PH. (813) 289-0040 LIC. NO. 00003548
David W. Davis, P.E. No. 24780
OCT 29 2009

ROADWAY PLAN

LOWE'S OF LAND O' LAKES PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

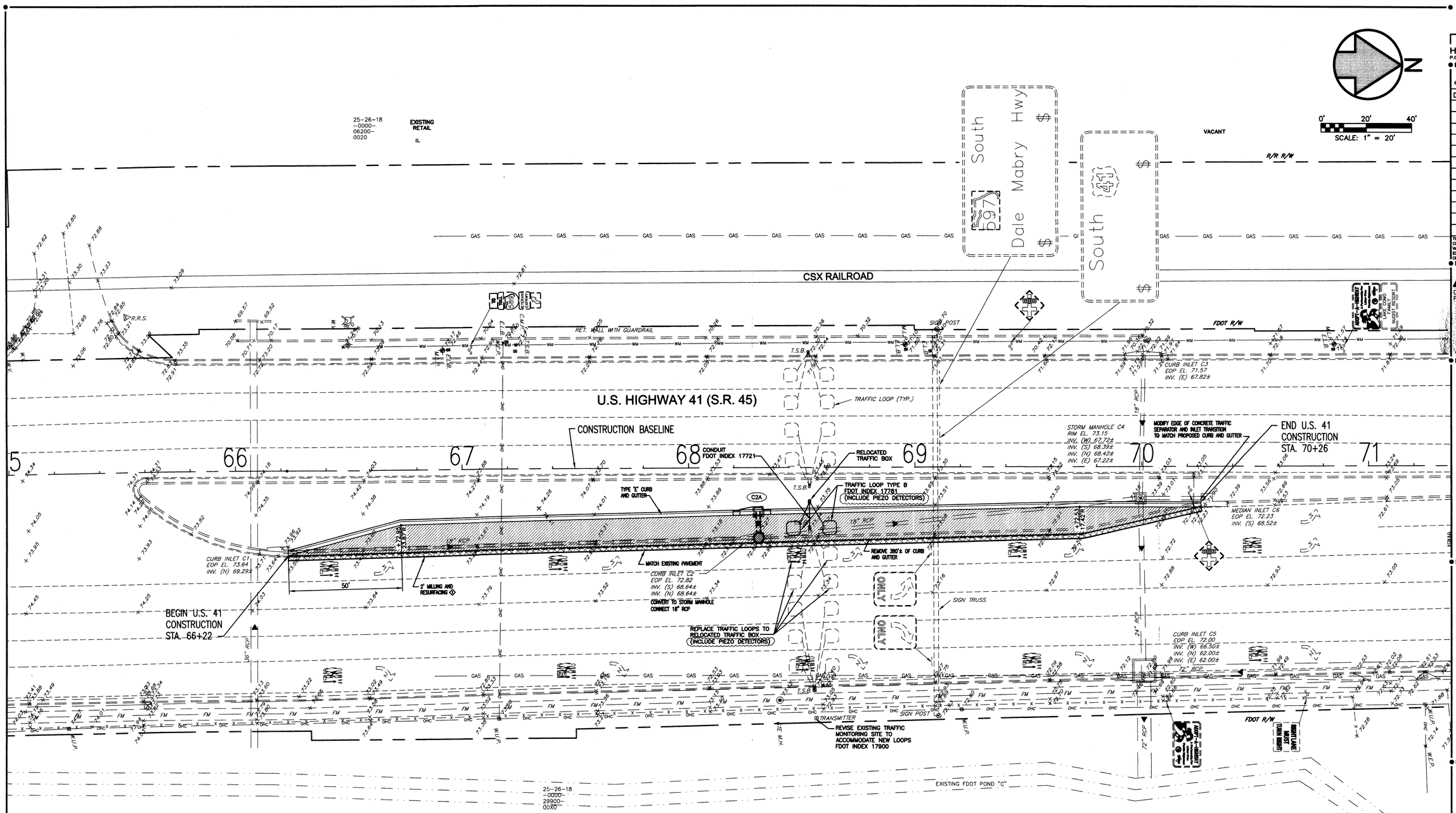
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R10
OF __

JOB NO. L04101

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans\2009\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R10 Roadway Plan

Date: 05/20/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-872



MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C2	72.82	-	70.27	70.26	5	MH

STORM DRAINAGE SCHEDULE

STRUCT. DES.	PROPOSED/ EXISTING	TYPE	RIM/ GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C1	EXISTING	P STRUCTURE ALT 'A', TYPE '5' CURB INLET TOP	73.51	N	69.29									
C2A	PROPOSED	P STRUCTURE ALT 'B', TYPE '5' CURB INLET TOP	72.46	E	68.69									FDOT INDEX 200, 211
C2	MODIFIED	TYPE 'J' MANHOLE, ALT A, TYPE 7 TOP	72.79	N	68.64					68.64		68.67		FDOT INDEX 200, 201

STORM PIPE SCHEDULE

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SLOPE (ft/ft)
				18	18	0.30
C2A:C2	11	RCP	1	18	18	0.20

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	GTE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
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- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE - "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

SWFWMD Received NOV -3 2009 BRO-REG

SWFWMD PERMITTED DRAWINGS MAY 2010

JUN 17 2009

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
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MICKLE & ASSOCIATES, INC. ENGINEERS / PLANNERS
5529 WEST LAUREL STREET TAMPA, FLORIDA 33607
PH. (813) 289-0040
LIC. NO. 0000466

David W. Deslet
PE No. 34760
OCT 29 2009

REVISIONS PRE-BID SET ISSUE DATE	POST BID SET ISSUE DATE	
DATE		DESCRIPTION
09/09/09	1	ADDED 3" MILLING AND RESURFACING

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ROADWAY PLAN

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No.: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

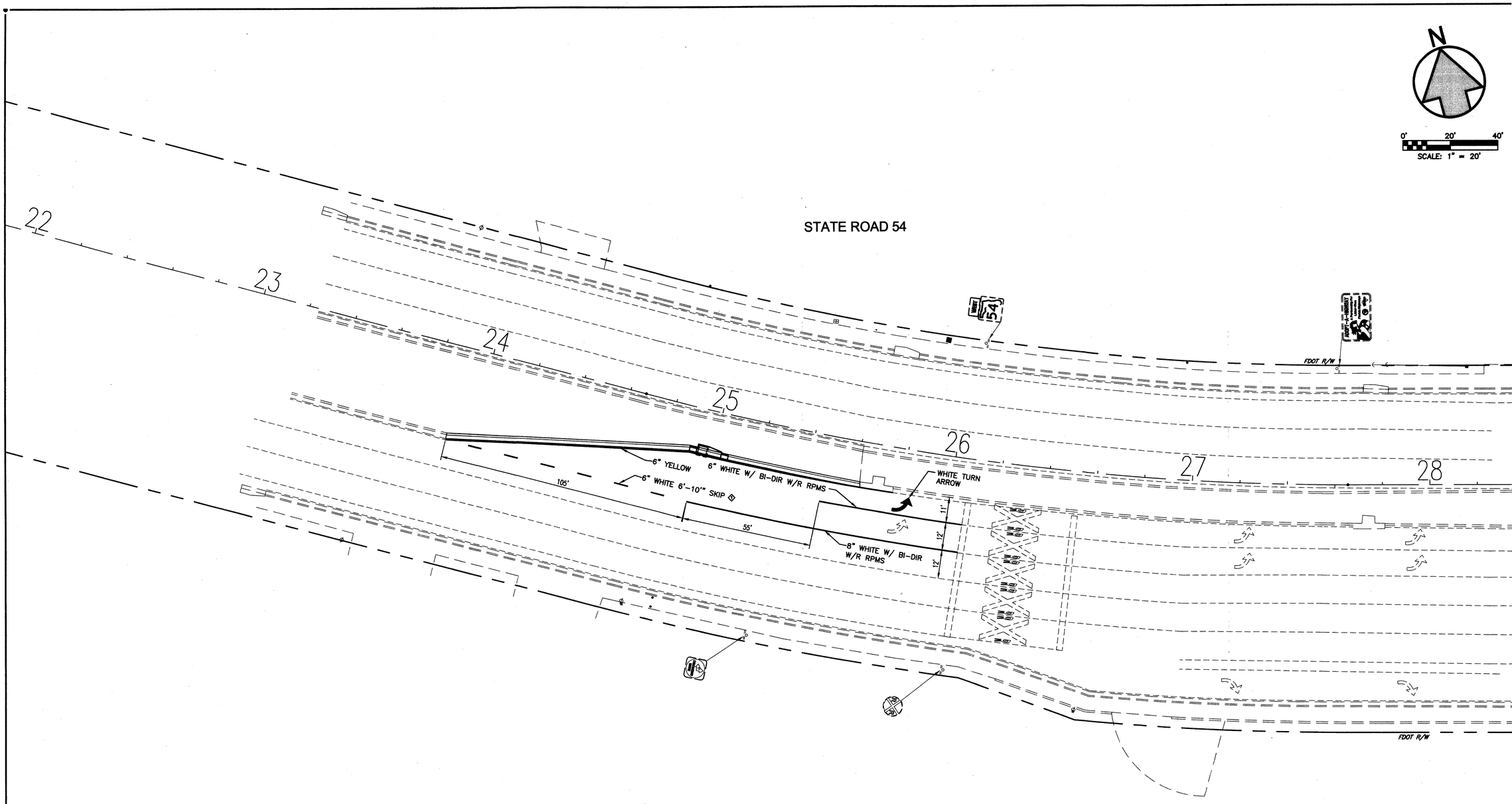
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R11
OF_

JOB NO. L04101

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2009\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R11 Roadway Plan

Date: 06/17/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-873



N

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/8/09	1	ADDITIONAL SIGNAGE

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LINCKS & ASSOCIATES, INC.
ENGINEERS PLANNERS
1920 WEST DALRAL STREET
TAMPA, FLORIDA 33607
(813) 289-0778
LIC. NO. EB0000635

David W. Deslet
PE No. 24760
OCT 23 2009

NOTES:
1. ALL TRAFFIC STRIPES AND MARKINGS ARE TO BE LEAD-FREE NON-SOLVENT BASED THERMOPLASTIC. THE PERMITTEE SHALL FURNISH THE DEPARTMENT WITH THE MANUFACTURER'S CERTIFICATION THAT THE THERMOPLASTIC IS "LEAD FREE."

2. PAVEMENT MARKING AS PER FDOT INDEX 17346

3. REFLECTIVE PAVEMENT MARKERS AS PER FDOT INDEX 17302

4. TRAFFIC SIGNS AS PER FDOT INDEX 11200, 11300, 11860, 17302, 17246, 17355.

POSTED: 45 MPH
DESIGN: 50 MPH

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV - 3 2009 REG. PRO.

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING & SIGNAGE

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R12
OF _

JOB NO. L04101

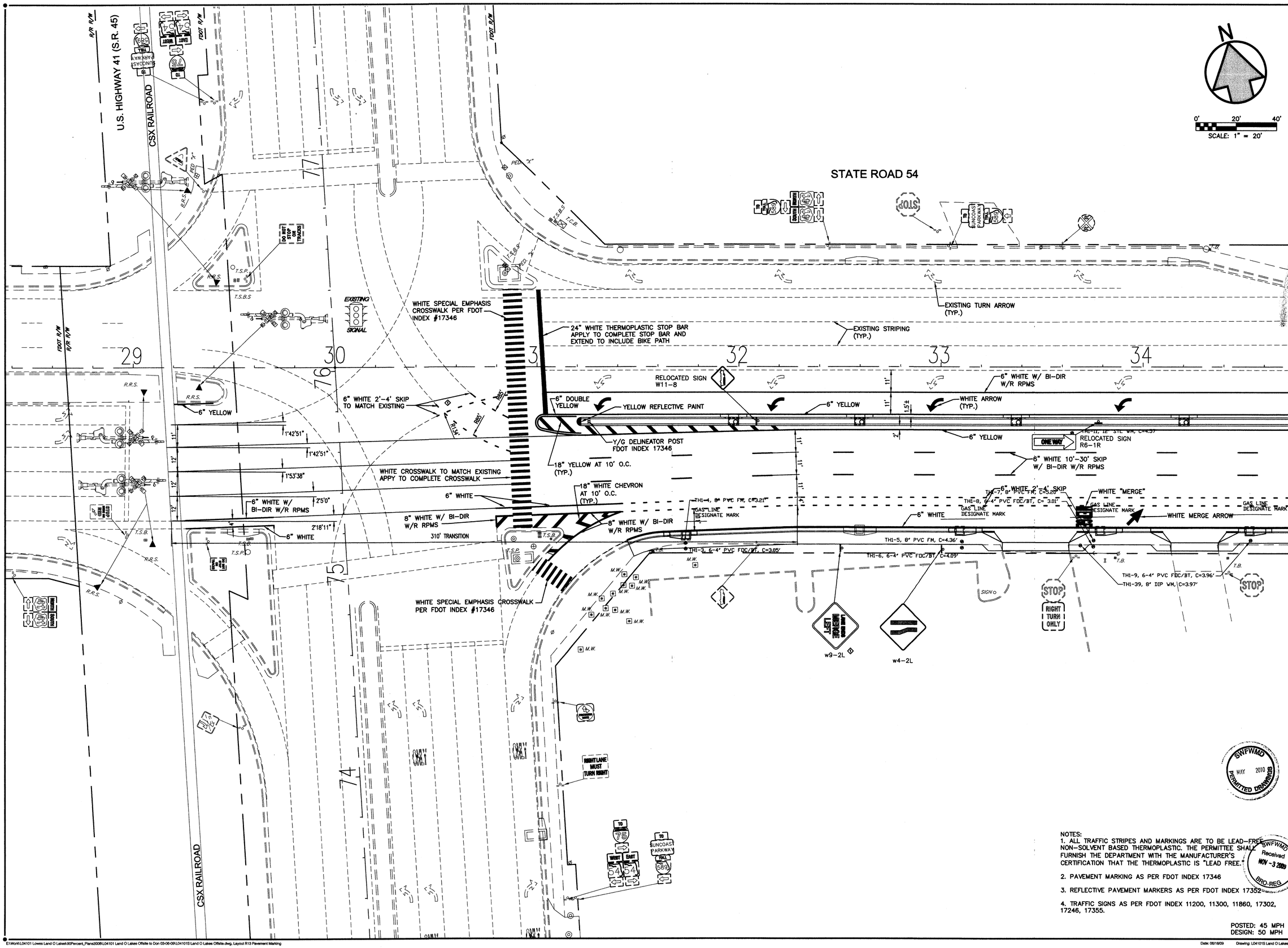
MAY 21 2009

MAR 23 2009

C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101S Land O Lakes Offsite.dwg, Layout R12 Pavement Marking

Date: 12/08/08 Drawing: L04101S Land O Lakes Offsite.dwg

A-874



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2. PAVEMENT MARKING AS PER FDOT INDEX 17346
3. REFLECTIVE PAVEMENT MARKERS AS PER FDOT INDEX 17352
4. TRAFFIC SIGNS AS PER FDOT INDEX 11200, 11300, 11860, 17302, 17246, 17355.

POSTED: 45 MPH
DESIGN: 50 MPH

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV -3 2009 BRO-REG

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION
12/06/08	ADD BIDS, REVISE PAVEMENT MARKING

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LINCKS & ASSOCIATES, INC. ENGINEERS PLANNERS
David W. Deslet
PE No. 24760
OCT 29 2009

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING & SIGNAGE

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R13
OF __

JOB NO. L04101

JUN 17 2009

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R13 Pavement Marking

Date: 06/18/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-875

STATE ROAD 54

ELFERS
NEW PORT RICHEY
LAND O' LAKES

N

0' 20' 40'
SCALE: 1" = 20'

35 36 37 38 39 40 41

15' 55' 105'

6" WHITE W/ BI-DIR W/R RPMS

Y/G DELINEATOR POST

YELLOW REFLECTIVE PAINT

WHITE TURN ARROW (TYP.)

6" YELLOW

6" WHITE 6'-10' SKIP

RELOCATED R3-2 SIGN

OFFICIAL USE ONLY

FTP-65-06

11'

Y/G DELINEATOR POST
18" YELLOW 45° ANGLE 10' O.C.

"DO NOT BLOCK DRIVEWAY" SIGN

DO NOT BLOCK DRIVEWAY

WHITE "MERGE"

6" WHITE 2'-4' SKIP

WHITE MERGE ARROW

6" WHITE

BICYCLE LANE MARKINGS

6" WHITE W/ BI-DIR W/R RPMS

+81.47
23.39°R

+33.05
33.75°R

18" WHITE CHEVRON AT EXISTING SPACING (TYP.)

8" WHITE

WHITE REFLECTIVE PAINT

6" WHITE 10'-30' SKIP W/ BI-DIR W/R RPMS

Y/G DELINEATOR POST FDOT INDEX 17346

WHITE "ONLY" (TYP.)

WHITE TURN ARROW (TYP.)

ONLY

EPHYRHILLS

REFER TO SIGNALIZATION PLAN BY COASTAL ENGINEERING FOR FIRE STATION SIGNAL

STOP

SPEED LIMIT 45

RELOCATED R2-1 SIGN

RIGHT LANE MUST TURN RIGHT

R3-7R

FIRE STATION #23

SWFWMD
MAY 2010
PERMITTED DRAWINGS

NOTES:
1. ALL TRAFFIC STRIPES AND MARKINGS ARE TO BE LEAD-FREE, NON-SOLVENT BASED THERMOPLASTIC. THE PERMITTEE SHALL FURNISH THE DEPARTMENT WITH THE MANUFACTURER'S CERTIFICATION THAT THE THERMOPLASTIC IS "LEAD FREE."

2. PAVEMENT MARKING AS PER FDOT INDEX 17346

3. REFLECTIVE PAVEMENT MARKERS AS PER FDOT INDEX 17352

4. TRAFFIC SIGNS AS PER FDOT INDEX 11200, 11300, 11860, 17302, 17246, 17355.

POSTED: 45 MPH
DESIGN: 50 MPH

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
PRE-BID SET ISSUE DATE ◇ POST BID SET ISSUE DATE △

DATE		DESCRIPTION
12/09/09	1	10/19/2010 TOT/TOT/PBT 4'-0" SOP

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LINCKS & ASSOCIATES, INC.
ENGINEERS PLANNERS
David W. Deslet
PE No.: 24760

OCT 20 2009

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING & SIGNAGE

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R14
OF __

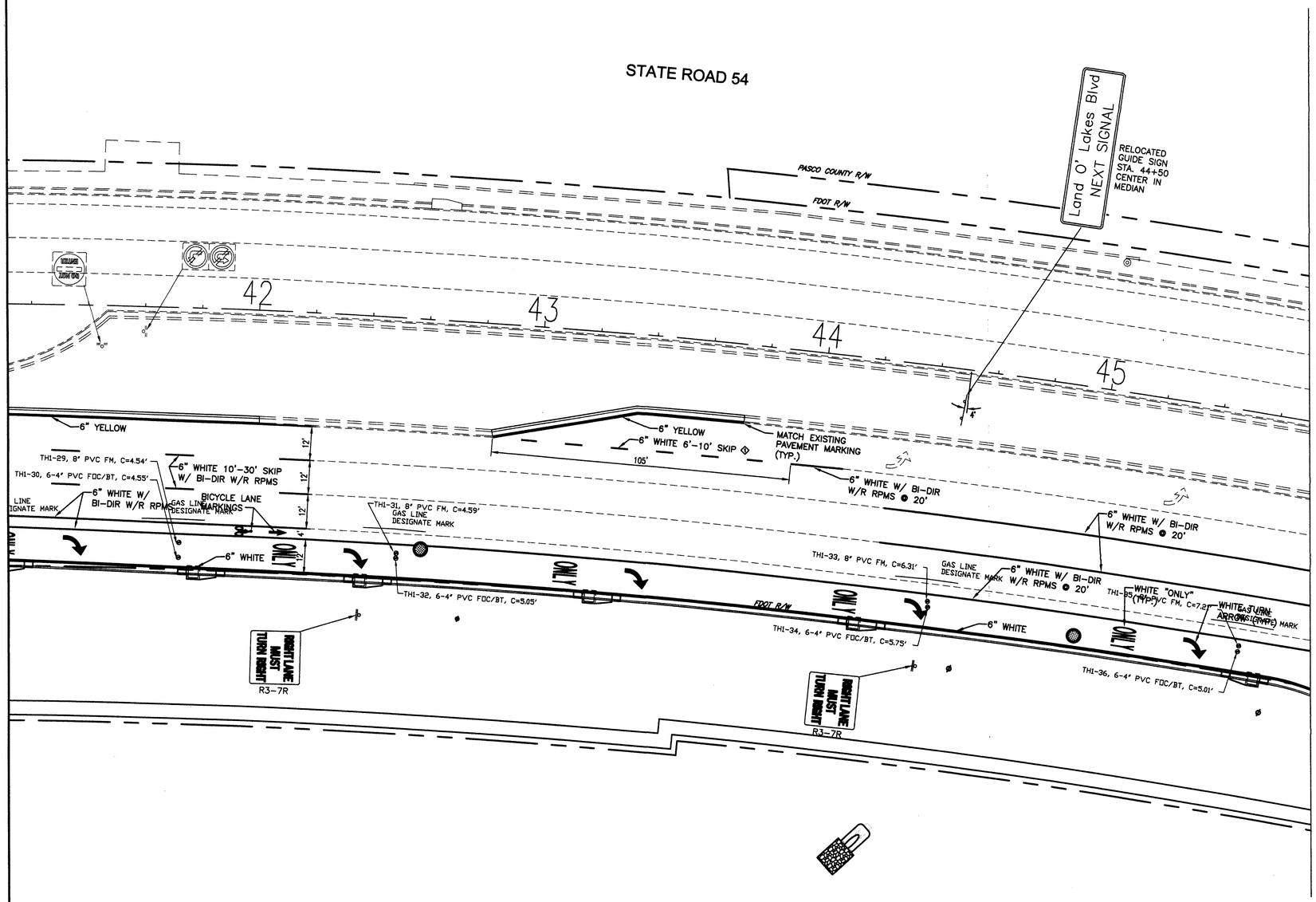
SWFWMD Received NOV - 3 2009

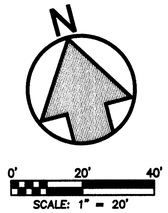
JOB NO: L04101

C:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R14 Pavement Marking

Date: 04/23/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-876





NOTES:
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2. PAVEMENT MARKING AS PER FDOT INDEX 17346

3. REFLECTIVE PAVEMENT MARKERS AS PER FDOT INDEX 17352

4. TRAFFIC SIGNS AS PER FDOT INDEX 11200, 11300, 11860, 17302, 17246, 17355.

POSTED: 45 MPH
DESIGN: 50 MPH

SWFWMD MAY 2010 PERMITTED DRAWINGS

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/09/08	1	ADD 6" ID SKIP

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LINCKS & ASSOCIATES, INC. ENGINEERS PLANNERS
4203 WEST LAUREL STREET
TAMPA, FLORIDA 33607
PH. (813) 289-0266
LIC. NO. 00026486

David W. Desilet
PE No. 24760
OCT 29, 2009

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING & SIGNAGE

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R15 OF __

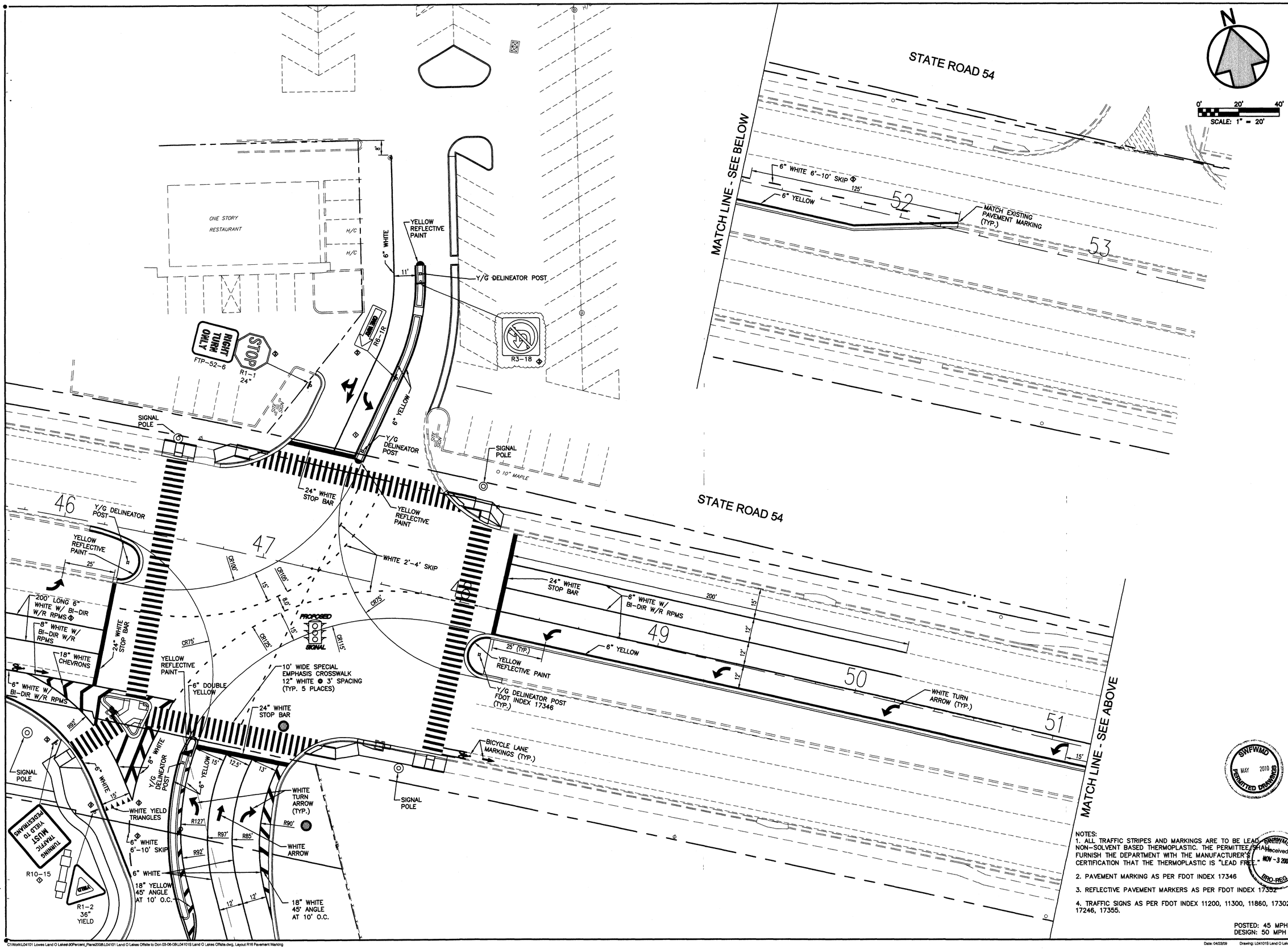
SWFWMD Received NOV -3 2009

JOB NO. L04101

C:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R15 Pavement Marking

Date: 04/24/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-877



NOTES:
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POSTED: 45 MPH
DESIGN: 50 MPH

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV - 3 2009 BRO-REG

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
11/20/08	1	REVISE VILLAGE LAKES ENTRANCE, REVISE EASTBOUND RIGHT TURN
12/09/08	2	ADD SIGNS, 6'-10' SKIP, 200' LONG 6" WHITE
04/23/09	3	REV. SIGN FROM R3-2 & R3-4 TO R3-18

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LINCKS & ASSOCIATES, INC. ENGINEERS PLANNERS
5000 WEST LAUREL STREET
TAMPA, FLORIDA 33607
PH: (813) 289-0080
LIC. NO. 00000458

David W. Deslet
PE No. 24760
OCT 29 2009

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING & SIGNAGE

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

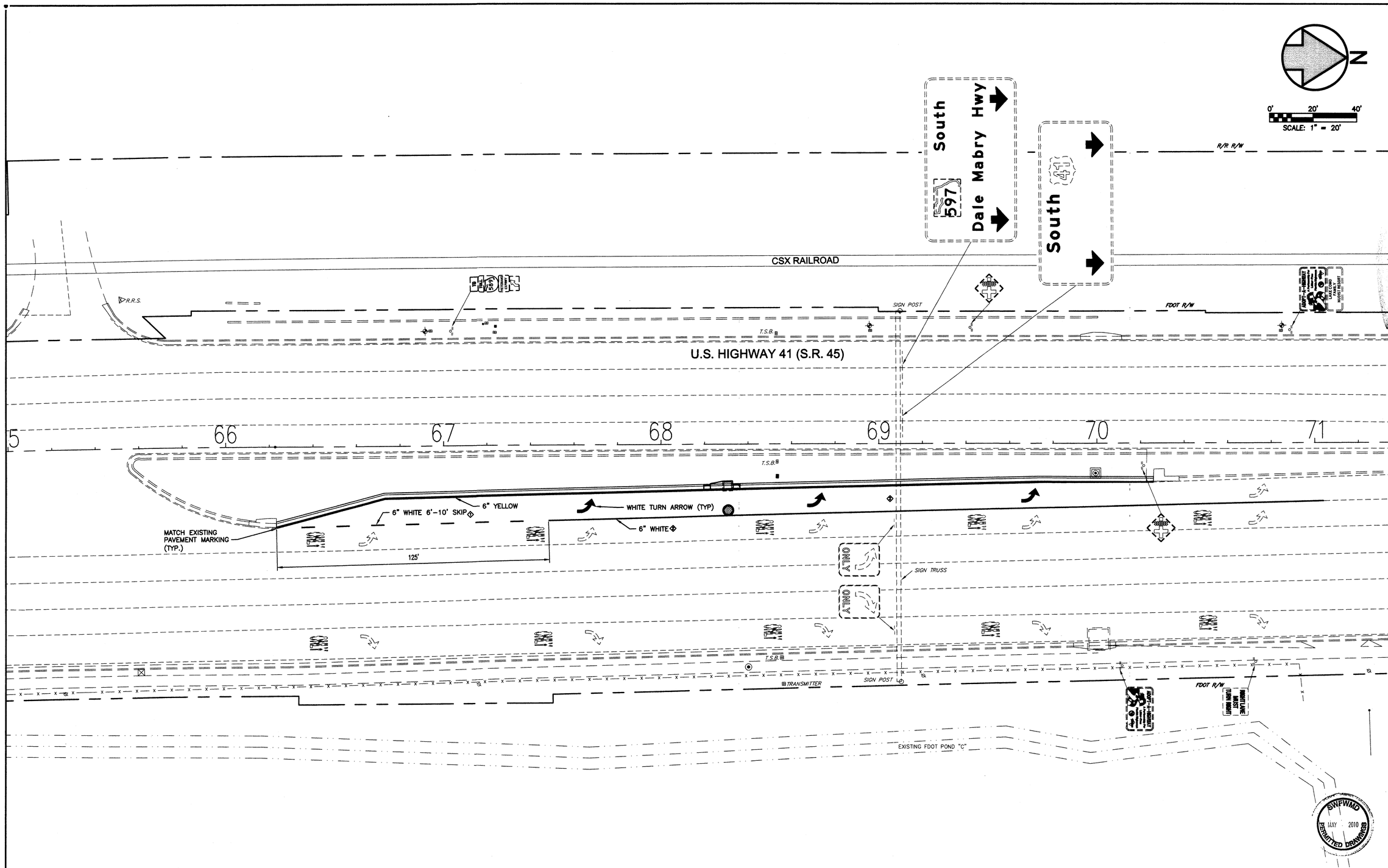
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R16 OF __

JOB NO. L04101

C:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2008\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout R16 Pavement Marking

Date: 04/23/09 Drawing: L04101S Land O Lakes Offsite.dwg

A-878



NOTES:
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3. REFLECTIVE PAVEMENT MARKERS AS PER FDOT INDEX 17352

4. TRAFFIC SIGNS AS PER FDOT INDEX 11200, 11300, 11860, 17302, 17246, 17355.

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV -3 2009 BRO REG

POSTED: 50 MPH
DESIGN: 55 MPH

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
PRE-BID SET ISSUE DATE
POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/06/08	1	ADD 6"-10' SKIP
03/23/09	2	ADD 6" WHITE, REMOVE LEFT TURN SIGN

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LINCKS & ASSOCIATES, INC. ENGINEERS PLANNERS
1025 WEST LAUREL STREET
TAMPA, FLORIDA 33607
PH. (813) 289-0030
LIC. NO. EB0004439
David W. Deslet
PE No. 24760
OCT 29 2009

LOWE'S ENGINEERING AND CONSTRUCTION
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336.658.4000 (V) 336.658.3257 (F)

PAVEMENT MARKING

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

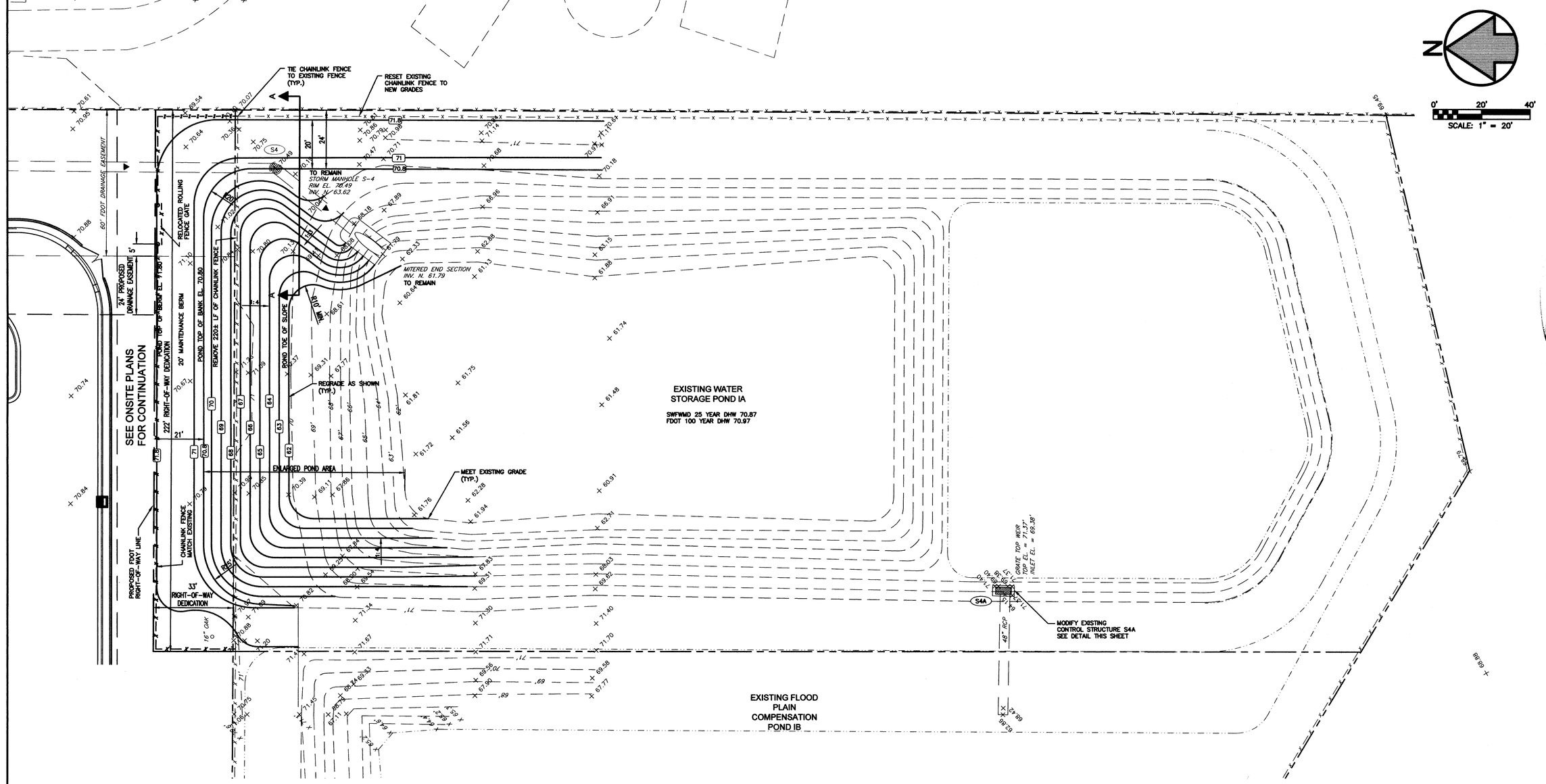
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER:
R17
OF _

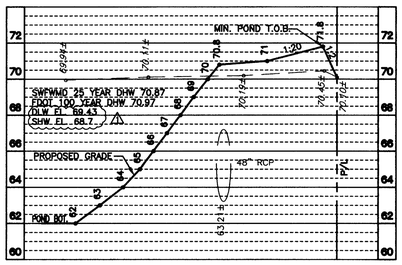
C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101S Land O Lakes Offsite.dwg, Layout R17 Pavement Marking

Date: 03/23/09 Drawing: L04101S Land O Lakes Offsite.dwg

JOB NO. L04101

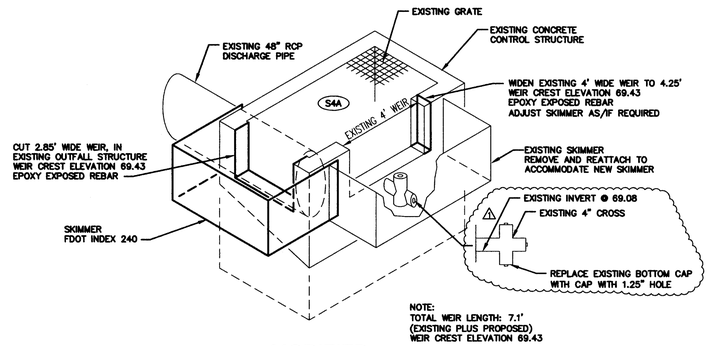
A-879





SECTION A-A

SCALE: HORIZ: 1"=20'
VERT: 1"=4'



NOTE:
TOTAL WEIR LENGTH: 7.1'
(EXISTING PLUS PROPOSED)
WEIR CREST ELEVATION 69.43

MODIFIED CONTROL STRUCTURE S4A DETAIL

NTS

0' 20' 40'
SCALE: 1" = 20'

LOWE'S
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REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION
11/02/09	Per SWFWMD RAI #1 Added Dim. Added CL# 1 SW Dim. (Section A-A)

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200 SOUTH TYRON STREET, SUITE 800
CHARLOTTE, NORTH CAROLINA 28202
PH: 704.350.1681
LIC NO: C-0843
David W. Dessler
PE No.: 24760

NOV 02 2009

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV - 3 2009 BRO-REG

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.

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FDOT Pond 1A

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

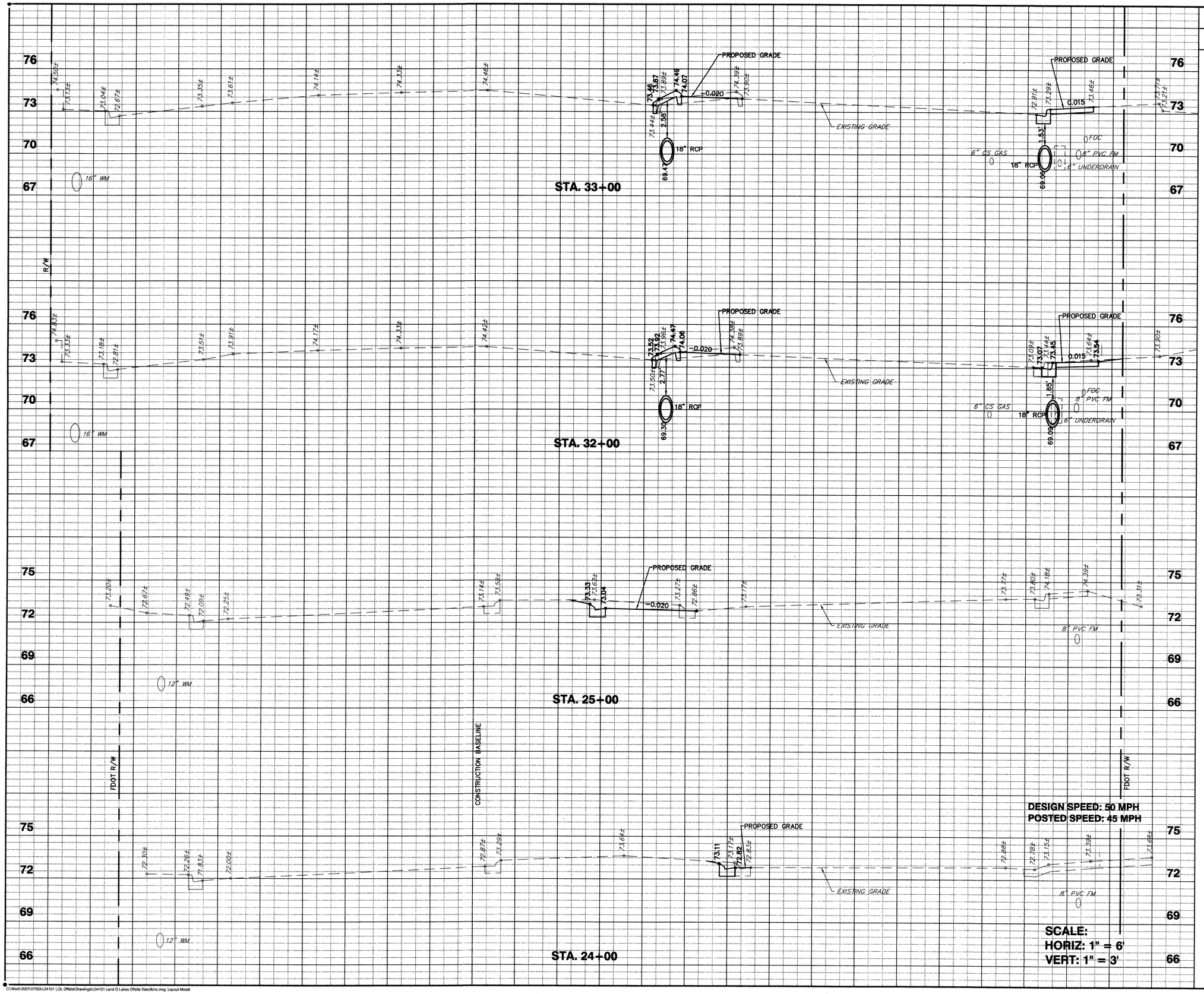
PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R18
OF _

JOB NO. L04101

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2009\L04101 Land O Lakes Offsite to Don 03-05-09\L04101S Land O Lakes Offsite.dwg, Layout R18 FDOT Pond 1A

Date: 11/02/09 Drawing: L04101S Land O Lakes Offsite.dwg



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REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/06/08	1	ADC DIMENSIONS AND SLOPES

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David W. Desilet
PE No: 24760
OCT 29 2009

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336.658.4000 (V) 336.658.3257 (F)

SR 54 CROSS SECTIONS
STA. 24+00 25+00 32+00 33+00
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R19
OF __

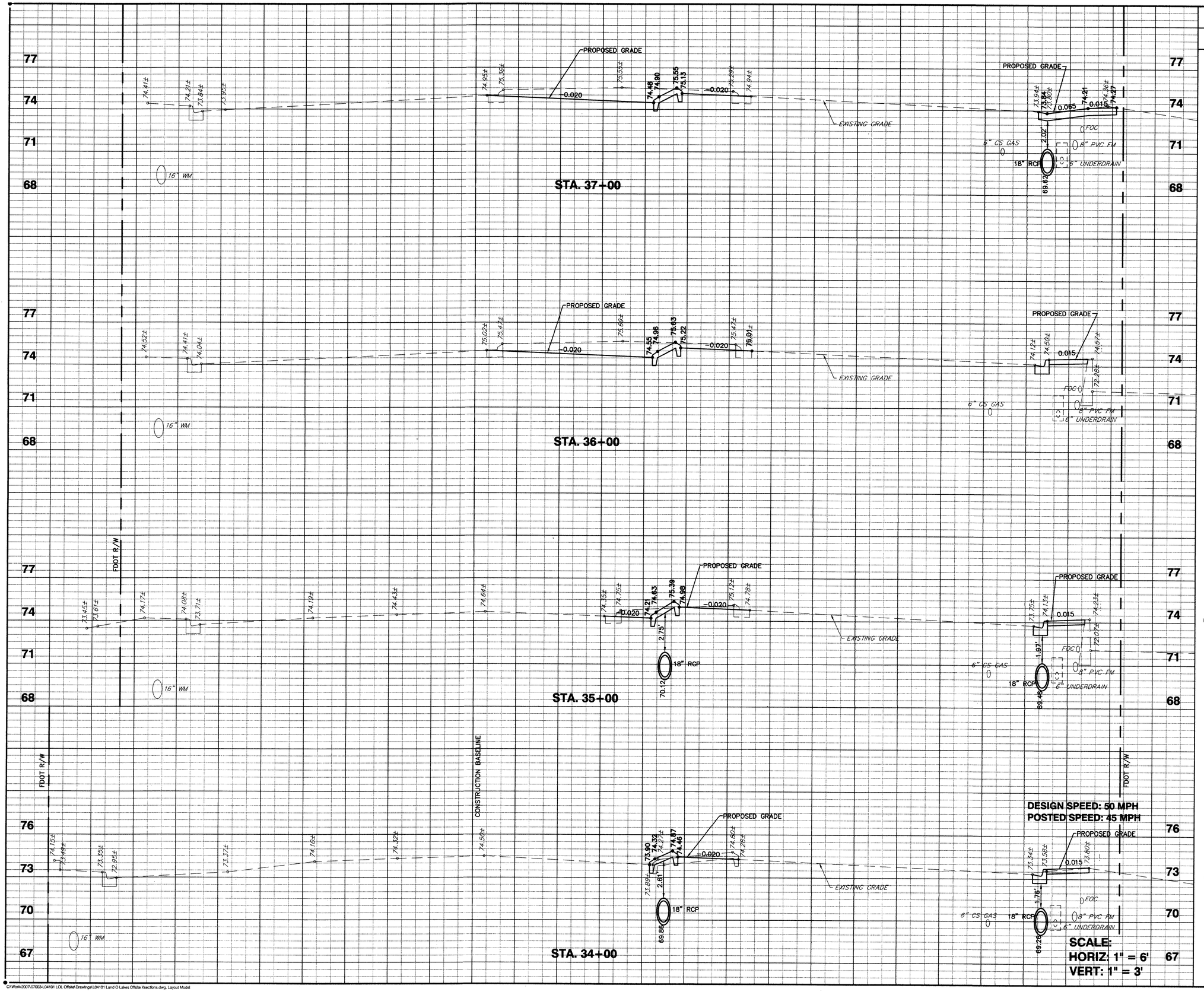
SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV - 3 2009 BRO-REG

C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101 Land O Lakes Offsite Xsections.dwg, Layout Model

Date: 12/08/08 Drawing: L04101 Land O Lakes Offsite Xsections.dwg JOB NO. L04104

A-881



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REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION
ISSUE	◇ ADDENDUM NO. 1

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5023 WEST LAUREL STREET
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PH (813) 282-1505
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David W. Desilet
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SR 54 CROSS SECTIONS
STA. 34+00 TO STA. 37+00
LOWE'S OF
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PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL
ISSUE DATE: 07/25/08
PERMIT SET
ISSUE DATE:
CONSTRUCTION SET
ISSUE DATE:
DRAWING NUMBER:
R20
OF _

SWFWMD
MAY 2010
PERMITTED DRAWINGS

SWFWMD
Received
NOV - 3 2009
BRD-REG

MAR 23 2009

MAY 21 2009

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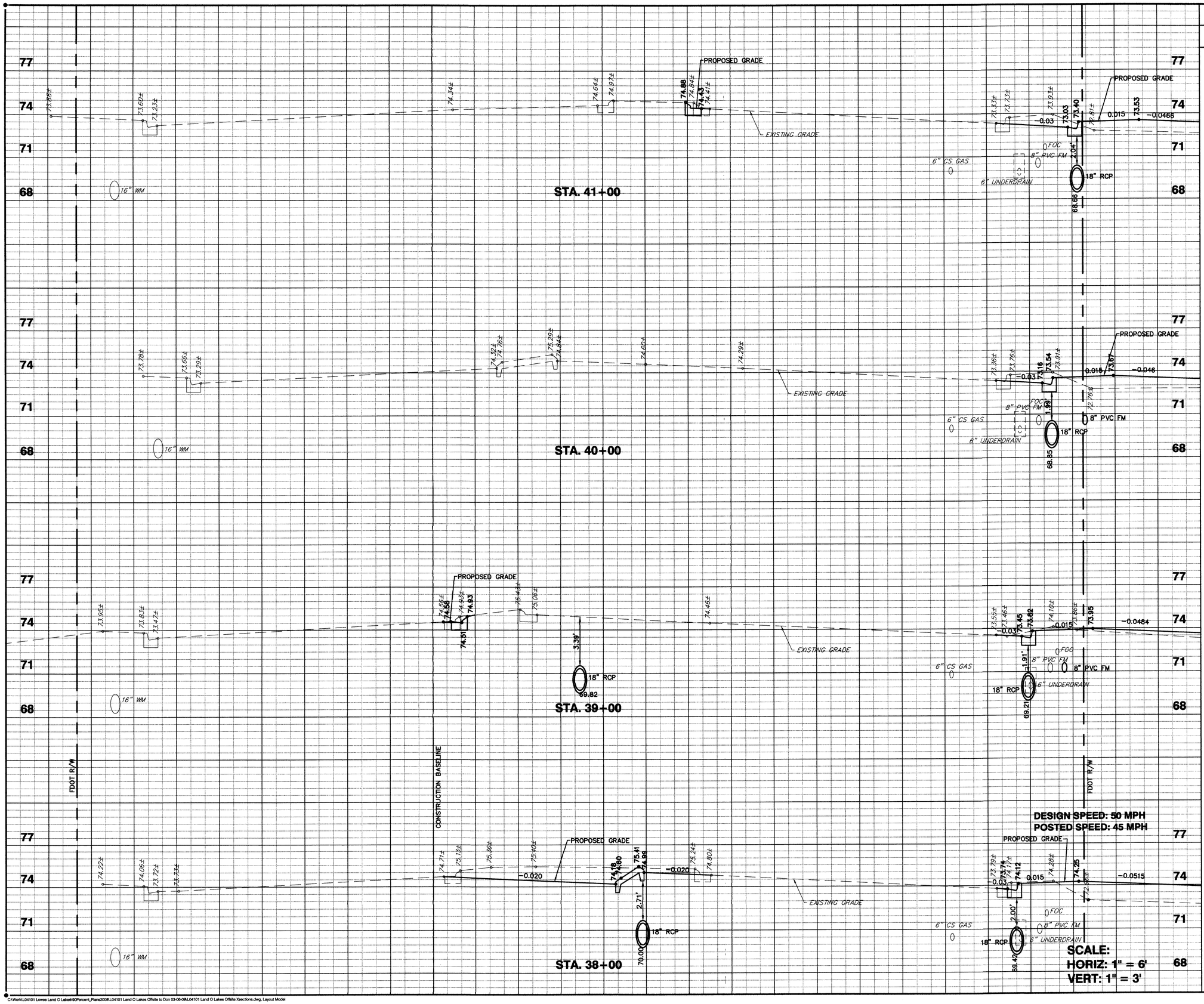
Date: 12/08/08 Drawing: L04101 Land O Lakes Offsite Xsections.dwg JOB NO. L04104

A-882



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MAY 21 2009

APR 24 2009

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REVISIONS
PRE-BID SET ISSUE DATE | POST BID SET ISSUE DATE

DATE		DESCRIPTION
120909	1	ADD DRAINAGE AND SLOPES

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ENGINEERING PLANNERS
1 | 5965 WEST LAUREL STREET
TAMPA, FLORIDA 33607
PH. (813) 289-0039
LC. NO. EB0003849

David W. Deslet
PE No. 24760

OCT 29 2009

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SR 54 CROSS SECTIONS
STA. 38+00 TO STA. 41+00

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No.: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL
ISSUE DATE: 07/25/08
PERMIT SET
ISSUE DATE:
CONSTRUCTION SET
ISSUE DATE:
DRAWING NUMBER:
R21
OF _

JOB NO. L04104

Date: 04/23/09 Drawing: L04101 Land O Lakes Offsite Xsections.dwg

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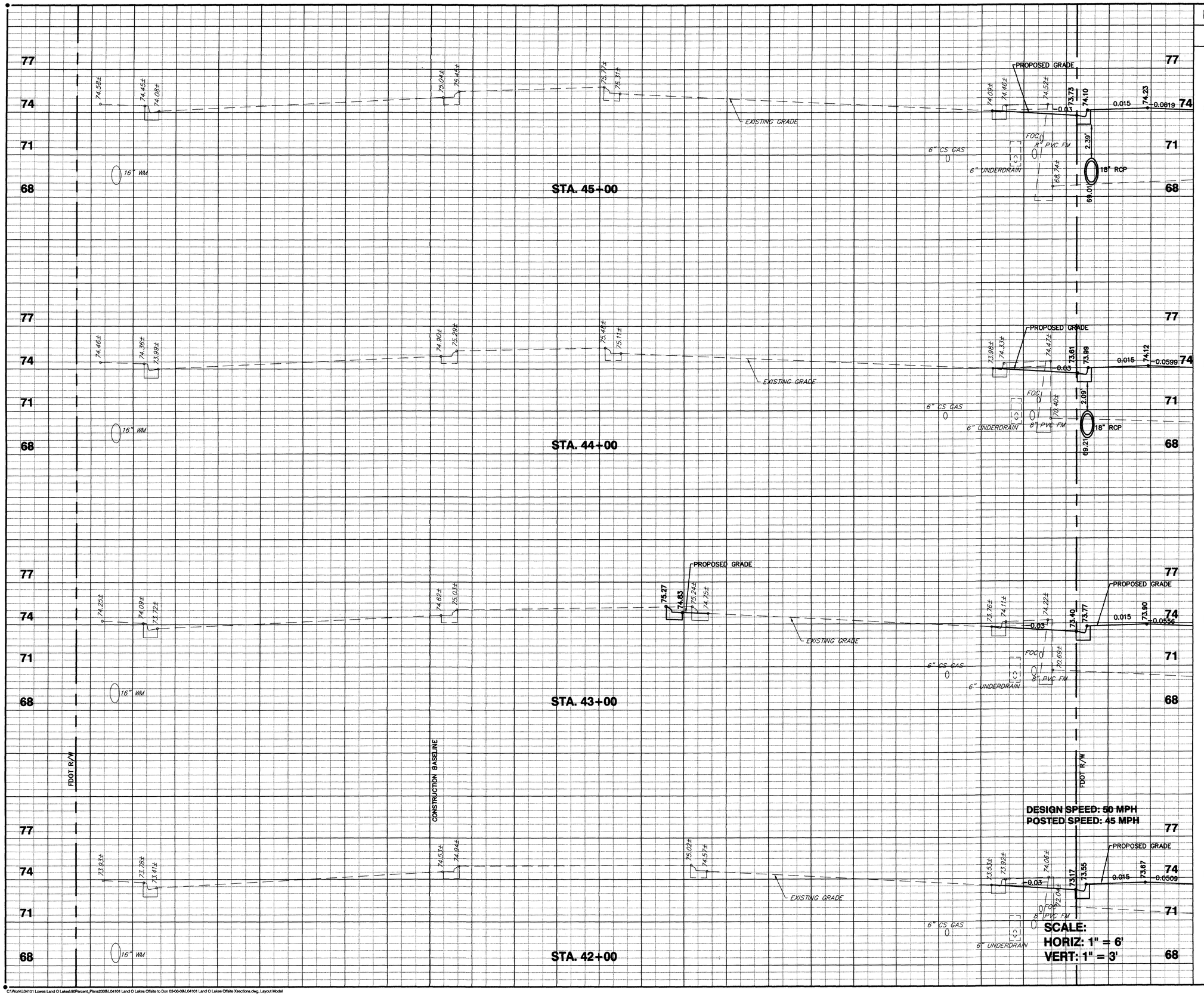
A-883



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REVISIONS
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DATE	DESCRIPTION
12/09/09	ADD DIMENSIONS AND SLOPES

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OCT 29 2009

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SR 54 CROSS SECTIONS
STA. 42+00 TO STA. 45+00

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

SWFWMD MAY 2010 PERMITTED DRAWINGS

SWFWMD Received NOV 3 2009 BRO REG

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER:
R22
OF __

MAY 21 2009
APR 24 2009

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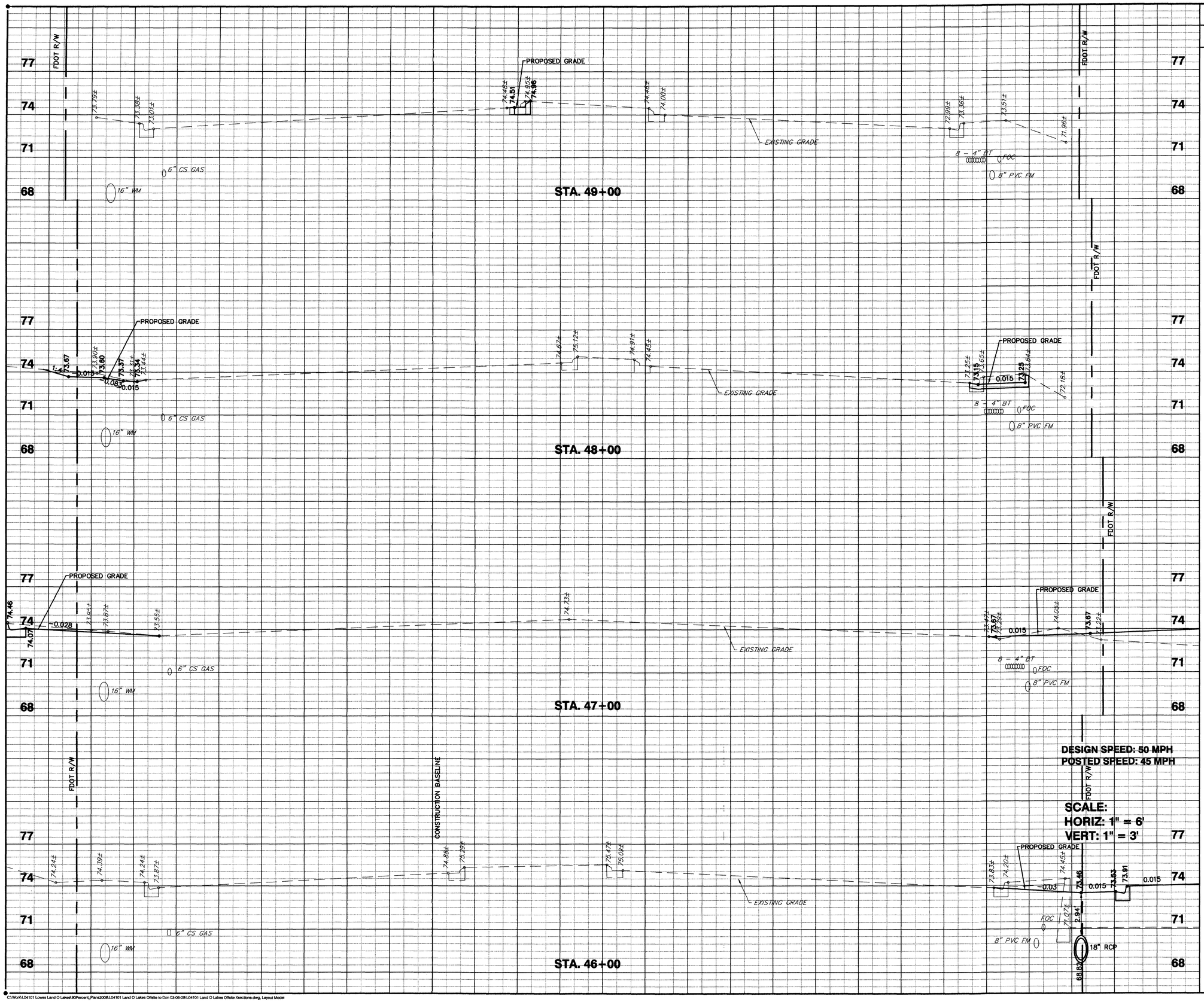
Date: 04/23/09 Drawing: L04101 Land O Lakes Offsite Xsections.dwg JOB NO. L04104

A-884



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REVISIONS
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DATE		DESCRIPTION
12/09/08	1	ADD TURNAROUND AND SCOPES

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RE No.: 24760

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SR. 54 CROSS SECTIONS
STA. 46+00 TO STA. 49+00

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ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R23 OF __

JOB NO. L04104

APR 24 2009

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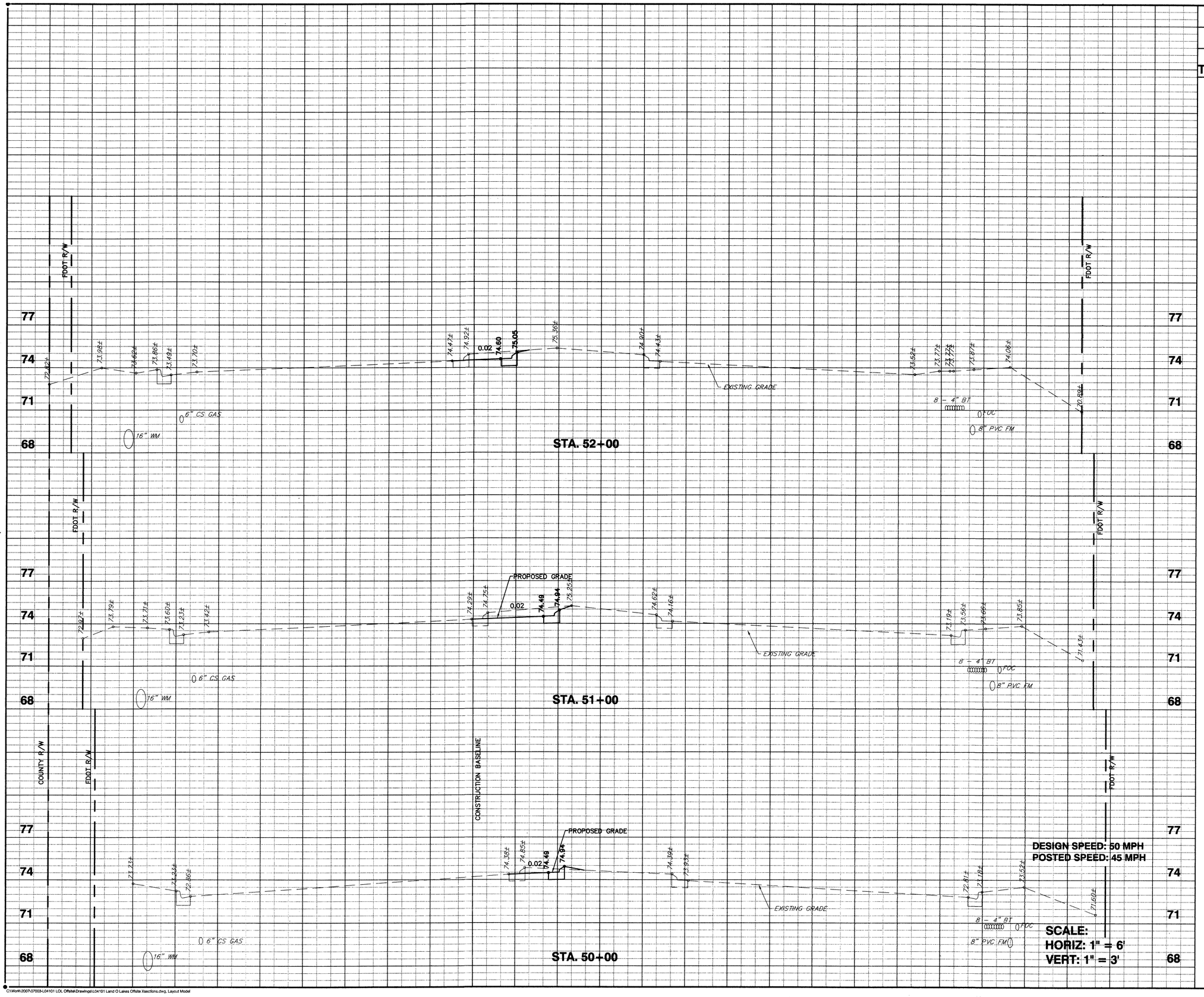
Date: 04/23/09 Drawing: L04101 Land O Lakes Offsite Xsections.dwg

A-885



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REVISIONS
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PE No. 24760

OCT 29 2008

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SR 54 CROSS SECTIONS
STA. 50+00 TO STA. 52+00

LOWE'S OF
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ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R24 OF __

JOB NO. L04104

MAY 21 2009

MAR 23 2009

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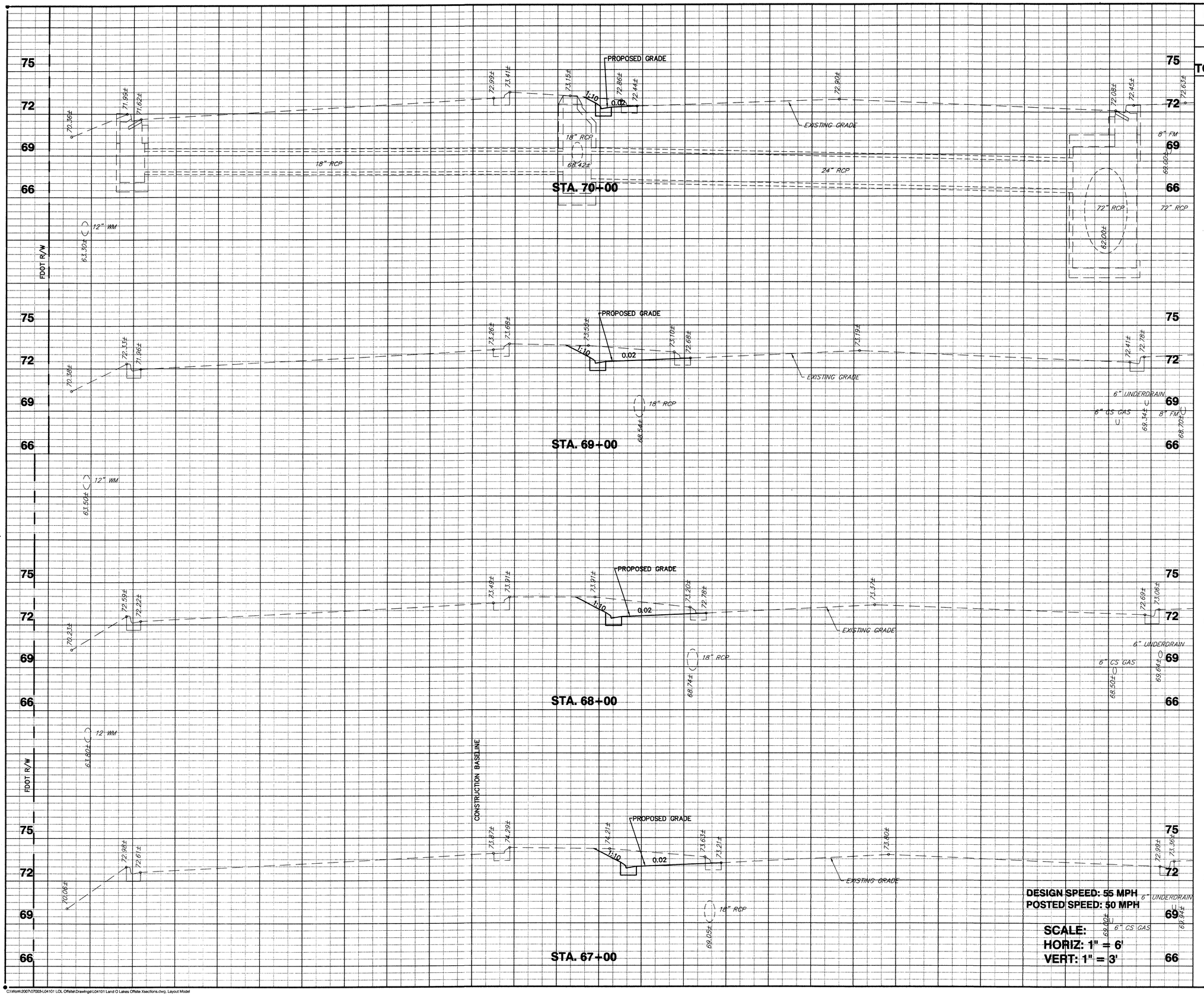
Date: 12/08/08 Drawing: L04101 Land O Lakes Offsite Xsections.dwg

A-886



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DESIGN SPEED: 55 MPH
POSTED SPEED: 50 MPH

SCALE:
HORIZ: 1" = 6'
VERT: 1" = 3'

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REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

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1625 HIMT DAVIS DRIVE
PUNTA GORDA, FLORIDA 33950
PH. (941) 639-2324
LIC. NO. EB 0005626
David W. Oeslle
PE No. 24760

OCT 29 2009

SWFWMD PERMITTED DRAWINGS 28 MAY 2010

SWFWMD Received NOV - 3 2009 BRO-REG

LOWE'S ENGINEERING AND CONSTRUCTION

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US 41 (SR 45) CROSS SECTIONS
STA. 67+00 TO STA. 70+00

LOWE'S OF
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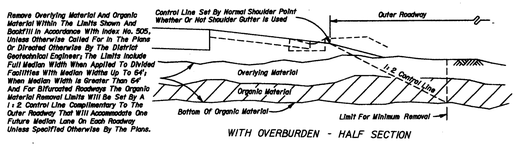
PASCO COUNTY, FLORIDA

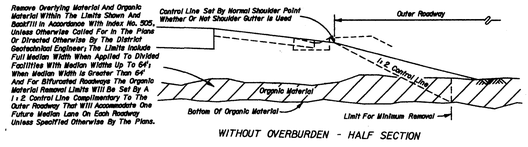
PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R25
OF —

JOB NO. L04104

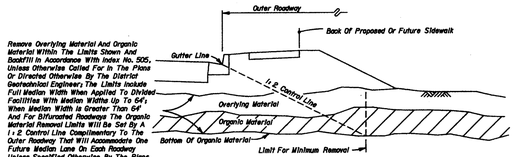


WITH OVERBURDEN - HALF SECTION

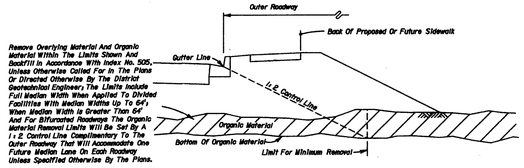


WITHOUT OVERBURDEN - HALF SECTION

IN RURAL CONSTRUCTION



WITH OVERBURDEN - HALF SECTION



WITHOUT OVERBURDEN - HALF SECTION

IN URBAN CONSTRUCTION

REMOVAL OF ORGANIC MATERIAL

GENERAL NOTES

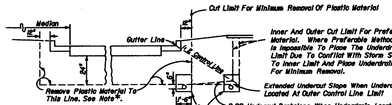
1. All details shown on this Index for removal of organic and plastic materials apply unless otherwise shown on the plans.
2. Utilization of excavated materials shall be in accordance with Index No. 505.
3. Where organic or plastic material is undercut, backfill shall be made of suitable material in accordance with Index No. 505, unless otherwise shown on the plans.
4. The term "Plastic Material" used in this Index in conjunction with removal of plastic soil is as defined under soil classifications for Plastic (P) and High Plastic (H) on Index No. 505.
5. The term "Organic Material" as used on this Index is defined as any soil which has an average organic content greater than five (5.0) percent, or an individual organic content test result which exceeds seven (7.0) percent. Organic material shall be removed as shown on this Index and the plans unless directed otherwise by the District Geotechnical Engineer.

   Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
6. The normal depth of side ditches shall be 3.5' below the shoulder point except in special cases.
7. In municipal areas, where underdrain is to be constructed beneath the proposed pavement, the grade of the underdrain filter material will not extend above the bottom of the stabilized section of the subgrade. Gradation of the filter material shall conform to FDOT specifications. Minimum grade on underdrain pipe shall be 0.2%.
8. See Index No. 506 for miscellaneous earthwork details.

DESIGN NOTES

1. At locations where organic material or other soft soil deposits persists to such depth that removal is impractical, the construction of a geosynthetic foundation over these soils should be considered. The Engineer of Record should request guidance from the District Geotechnical Engineer and make a geosynthetic foundation design in accordance with Index No. 501 when pursuing geosynthetic alternates.
2. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated specify in the plans the limits of removal of organic and plastic materials necessary to accommodate anticipated widening.

2006 FDOT Design Standards	Last Revision	Sheet No.
REMOVAL OF ORGANIC AND PLASTIC MATERIAL	02	1 of 2
	Index No.	500

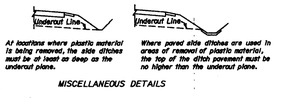


HALF SECTION

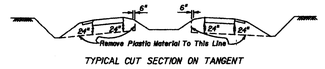
NOTES: Refer to roadway cross sections to determine whether minimum or preferable removal is used.

*Where frequency of median breaks indicates that it is impractical to leave plastic material in the median, the designer may elect to indicate total removal of this material. If during construction it becomes apparent, due to normal required construction procedures, that it is impractical to leave the plastic material in the median, total removal of this material shall be approved by the Engineer.

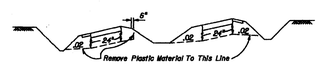
REMOVAL OF PLASTIC MATERIAL AND LOCATION OF UNDERDRAIN IN URBAN CONSTRUCTION



MISCELLANEOUS DETAILS

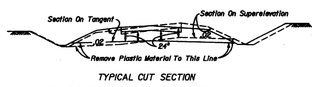


TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON SUPERELEVATION

REMOVAL OF PLASTIC MATERIAL ON INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS



TYPICAL CUT SECTION

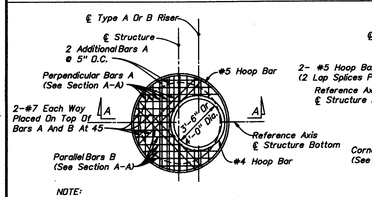
Note: When this detail is applied to minor collectors and local facilities, the undercut may be reduced to 6".

REMOVAL OF PLASTIC MATERIAL ON DIVIDED FREEWAYS, ARTERIALS AND MAJOR COLLECTORS HAVING FLUSH MEDIANS, AND, ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS

REMOVAL OF PLASTIC MATERIAL

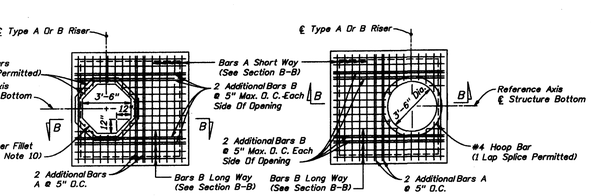
Note: For GENERAL NOTES see Sheet 1.

2006 FDOT Design Standards	Last Revision	Sheet No.
REMOVAL OF ORGANIC AND PLASTIC MATERIAL	00	2 of 2
	Index No.	500



NOTE: Not Applicable For Type A, B, C, D & E Ditch Bottom Inlets Or Type S & V Gutter Inlets. See Index Nos. 220, 221, 230, 231 & 232.

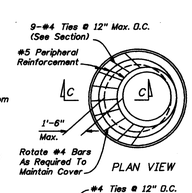
TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE A)

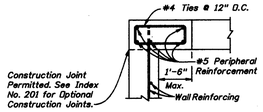


SQUARE OPENING WITH CORNER FILLETS

ROUND RISER OPENING

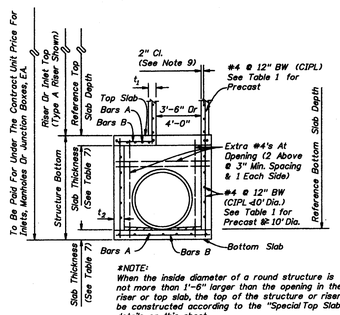
TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE B)





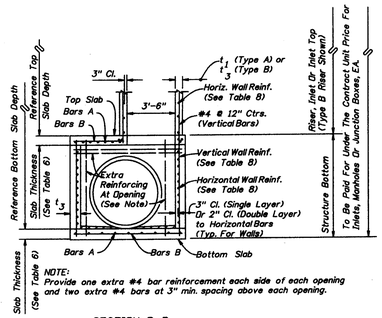
SECTION C-C

SPECIAL TOP SLAB*



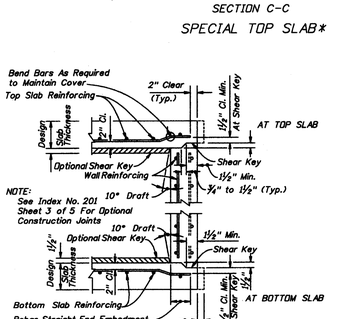
*NOTE: When the inside diameter of a round structure is not more than 1'-6" larger than the opening in the riser or top slab, the top of the structure or riser shall be constructed according to the "Special Top Slab" details on this sheet.

SECTION A-A (ALTERNATE A)



NOTE: Provide one extra #4 bar reinforcement each side of each opening and two extra #4 bars at 3" min. spacing above each opening.

SECTION B-B (ALTERNATE B)



TYPICAL SLAB TO WALL DETAILS FOR PRECAST STRUCTURES

2006 FDOT Design Standards	Last Revision	Sheet No.
STRUCTURES BOTTOMS TYPE J AND P	07/01/07	1 of 5
	Index No.	205

ROUND STRUCTURE BOTTOMS (ALTERNATE A) & ROUND RISERS-TABLE 1

Wall Thickness (t_1 & t_2) and Vertical & Horizontal Areas of Reinforcement (A_s)

Type	Structure / Riser Diameter (feet)	Cast-In-Place Items Class II Concrete t_1 Riser (inches)	t_2 Bottom (inches)	A_s	Precast Items Class II Concrete t_1 Riser (inches)	t_2 Bottom (inches)	A_s	ASTM C478 t_1 or t_2 (inches)	A_s ###
P	3'-6"	6	8	0.20	6	8	0.20	4##	0.105
P	4'-0"	6	8	0.20	6	8	0.20	5##	0.120
J	5'-0"	–	8	0.20	–	8	0.20	6##	0.150
J	6'-0"	–	8	0.20	–	8	0.20	6	0.180
J	7'-0"	–	8	0.20	–	8	0.20	7	0.210
J	8'-0"	–	8	0.20	–	8	0.24	8	0.240
J	10'-0"	–	10	0.40##	–	10	0.40##	10	0.300
J	12'-0"	–	10	0.40##	–	12	0.40##	12	0.360

TABLE 1 NOTES:
##Provide 0.20 sq. in.²/ft. at each face, 12" max. bar spacing.
#Modified minimum wall thickness.
###Min. total circumferential reinforcement for continuous steel hoops:
A_s=0.50 sq. in. for riser section height equal or less than 2'-0" (2 hoop min.)
A_s=0.75 sq. in. for riser section height more than 2'-0" up to 4'-0" (3 hoop min.)
Areas of reinforcing for precast items are based on Grade 60 reinforcing.
No reduction in the area of reinforcement is allowed for welded wire fabric in Table 1.
Area of vertical reinforcing may be reduced in accordance with ASTM C478.

SQUARE & RECTANGULAR STRUCTURES (ALTERNATE B) - TABLE 2

Type	Wall Length (feet)	Max. Depth (feet)	Wall Thickness (t_3) CIPL (in.)	Precast (in.)
P	≤3'-6"	40	6 Riser & Bottom	6
J	4'-0"	40	8	6
J	5'-0"	22	—	6
J	6'-0"	15	—	6
J	5'-0" to 9'-0"	40	8	8
J	10'-0"	26	8	8
J	≥10'-0"	40	10	10

TABLE 2 NOTES: See Table 8 for Reinforcing Schedule.

GENERAL NOTES

1. Standard structure bottoms 4'-0" diameter and smaller (Alt. A) and 3'-6" square (Alt. B) are designated Type P. Larger standard structure bottoms are designated Type J. Risers are permitted for all structures. Round risers are designated Type A, square risers are designated Type B.
2. Walls of circular structures (Alt. A) constructed in place may be of brick or reinforced concrete. Precast and rectangular structures (Alt. B) shall be constructed of reinforced concrete only.
3. Wall thickness and reinforcement are for either reinforced cast-in-place or precast concrete units except that precast circular units may be furnished with walls in accordance with ASTM C478 (see modified wall thicknesses in Table 1).
4. Top and bottom slab thickness and reinforcement are for precast and cast-in-place construction. All concrete shall be of Class II concrete, except use Class IV concrete when shown in the Plans, for special applications of structures located in extremely aggressive environments. Concrete as specified in ASTM C478 (4000 psi) may be used in lieu of Class II concrete for precast items manufactured in accordance with Specifications Section 449.
5. All reinforcement shown is ASTM A615/A615M Grade 60 steel, deformed bar. Equivalent area Grade 40 steel or equivalent area ASTM A185 (smooth) or ASTM A497 (deformed) welded wire fabric may be substituted according to Index No. 201, unless otherwise noted.
6. Alt. A or Alt. B structure bottoms may be used in conjunction with curb inlet tops Types 1, 2, 3, 4, 5, 6, 9, and 10, and any manhole or junction box unless otherwise shown in the plans or other standard drawings. Alt. B structure bottoms may be used in conjunction with curb inlet Types 7 & 8, or any ditch bottom inlet unless otherwise shown in the plans or other standard drawings.
7. Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and storm sewer pipes.
8. Except when ACI hooks are specifically required, reinforcement in top and bottom slab shall be straight embedment.
9. All reinforcement must have 2" minimum cover except for 3'-6" diameter precast circular units manufactured under ASTM C478, keyed construction joints, and pipe openings must all have 1½" minimum cover, unless otherwise shown. Additional bars used to restrain hole formers for precast structures may be left flush with the hole surface. Cut or bend reinforcement at pipe openings to maintain cover. Exposed ends of reinforcing at precast pipe openings and grouted joints must be removed to 1" below the concrete surface and sealed with a Type F epoxy in accordance with Specification Section 926. Horizontal steel in rectangular structures shall be lapped a minimum of 30 bar diameters or by standard hooks at corners.
10. The corner fillets shown are necessary for rectangular structures used with circular risers and inlet throats and when used on skew with rectangular risers, inlets and inlet throats. Fillets will be required in the top slab of the Alt. A structure bottoms when used with the Alt. B risers. Each fillet shall be reinforced with two #5 bars.
11. Inlet walls, throats, risers or manhole tops shall be secured to structures as shown on Index No. 201 (Sheet 3 of 5) Optional Construction Joints.
12. Structures with depths over 14' below the mean high water table are to be checked for flotation by the designer of the drainage project.
13. Units larger than specified standards may be substituted at the contractor's option when these units will not cause or increase the severity of utility conflicts. Such larger units shall be furnished at no additional cost to the Department. Larger Alt. A units cannot replace Alt. B units without approval of the Engineer. This note applies to this Index only.
14. For manhole and junction box tops, for frames and covers, and, for supplementary details see Index No. 201.
15. Type J structure bottoms must have a minimum 6'-0" wall height when possible, for maintenance access.

SWFWMD MAY 2010 PERMITTED DRAWINGS

2006 FDOT Design Standards	Last Revision	Sheet No.
STRUCTURE BOTTOMS TYPE J AND P	07/01/07	2 of 5
	Index No.	205

SWFWMD Received NOV - 3 2009 BRO-REG

NOTE: FDOT'S DESIGN STANDARDS TAKE PRECEDENCE OVER STANDARDS SHOWN.

LOWE'S HOME CENTERS, INC. P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS

◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE		DESCRIPTION
12/08/08	1	ADDENDUM

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David W. Dendel PE No. 24760 OCT 20 2009

LOWE'S ENGINEERING AND CONSTRUCTION

HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659 336.658.4000 (V) 336.658.3257 (F)

DETAILS

LOWE'S OF LAND O' LAKES PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08

PERMIT SET ISSUE DATE:

CONSTRUCTION SET ISSUE DATE:

DRAWING NUMBER: R26 OF _

JOB NO. L04104

MAY 21 2009

MAR 23 2009

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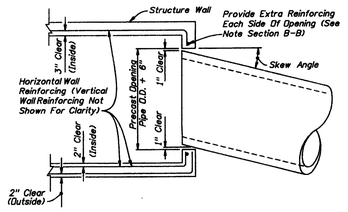
Date: 12/08/08 Drawing: L04101d Land O Lakes Offsite.dwg

A-888

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE				
PIPE SIZE	RECTANGULAR Side Dimension (L) Single Pipe Per Side	RECTANGULAR Side Dimension (L) Note Number	ROUND Diameter (D) Single Pipe or α=180°	ROUND Diameter (D) 2 to 4 Pipes α=90°
18"	3'-6"		3'-6"	4'-0"
24"	3'-6"		3'-6"	5'-0"
30"	3'-6"/4'-0"	2	4'-0"	6'-0"
36"	4'-0"/5'-0"	3	5'-0"	7'-0"
42"	5'-0"		6'-0"	7'-0"
48"	6'-0"		6'-0"	8'-0"
54"	6'-0"		7'-0"	10'-0"
60"	7'-0"		7'-0"	10'-0"
66"	7'-0"/8'-0"	4	8'-0"	12'-0"
72"	8'-0"		8'-0"	12'-0"
78"	9'-0"		10'-0"	12'-0"
84"	9'-0"		12'-0"	N/A

TABLE 3 NOTES:
1. For Round Structures sizes with variable angles between pipes and variable pipe sizes, refer to the FDOT Storm Drain Handbook.
2. For 3'-6" Precast Square Structure Bottoms, 30" Pipes with similar invert elevations are not permitted in adjacent walls. Use 4'-0" Side Dimensions when 30" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".
3. For 4'-0" Precast Square Structure Bottoms, 36" Pipes with similar invert elevations are not permitted in adjacent walls. Use 5'-0" Side Dimensions when 36" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".
4. For 7'-0" Precast Square Structure Bottoms, 66" Pipes with similar invert elevations are not permitted in adjacent walls. Use 8'-0" Side Dimensions when 66" pipe openings are required on adjacent walls and the difference in flow lines is less than 4'-0".



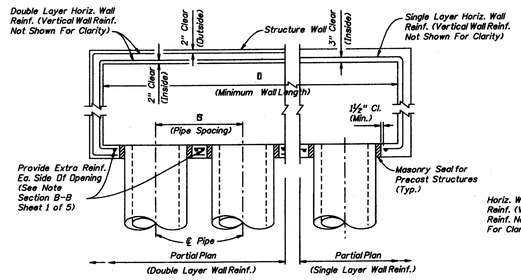
MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS
PLAN VIEW

TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS													
	WALL THICKNESS	PIPE SIZE 18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM SKEW ANGLE	8"	19°	17°	16°	16°	15°	14°	14°	13°	13°	13°	12°	12°
	8"	21°	20°	18°	17°	17°	16°	15°	15°	14°	14°	13°	13°

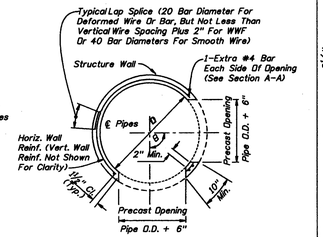
TABLE 5 NOTES:
These values are based on 2" clearance for precast structures. Larger skews are possible for Cast-In-Place Structures or elliptical pipe openings when approved by the Engineer.

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS				
PIPE SIZE	PIPE SPACING (S)	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES 2	3	4
18"	2'-10"	6'-0"	8'-6"	11'-0"
24"	3'-6"	6'-6"	10'-0"	13'-6"
30"	4'-3"	8'-0"	12'-0"	16'-6"
36"	5'-1"	9'-6"	14'-6"	19'-6"
42"	6'-0"	11'-0"	17'-0"	–
48"	6'-9"	12'-6"	19'-0"	–
54"	7'-8"	14'-0"	–	–
60"	8'-6"	15'-0"	–	–
66"	9'-0"	16'-6"	–	–
72"	10'-0"	18'-0"	–	–
78"	10'-9"	19'-0"	–	–
84"	11'-8"	20'-6"	–	–

TABLE 4 NOTES:
1. Minimum wall lengths based on precast structures, using concrete pipe with maximum skew angles per Table 5.
2. Wall lengths exceeding 20'-0" require special designs.

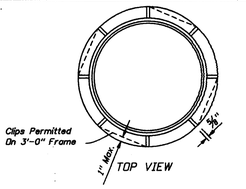


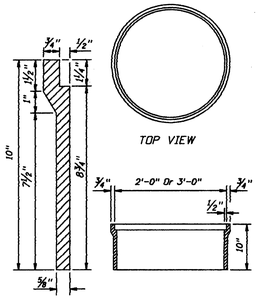
MULTIPLE PARALLEL PIPE CONNECTIONS DETAIL
PLAN VIEW

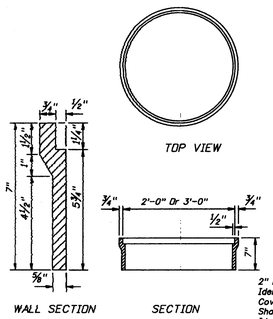


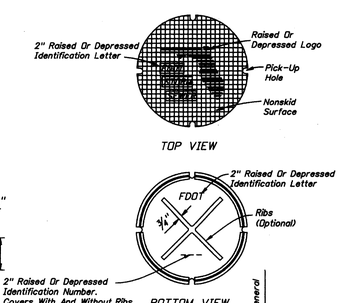
PRECAST ROUND STRUCTURES WITH MULTIPLE PIPE CONNECTIONS

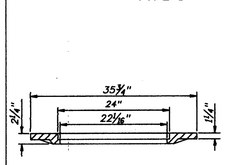
STRUCTURE SIZES FOR PIPE CONNECTIONS

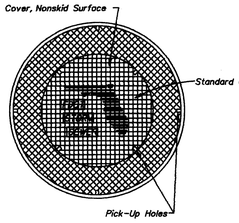










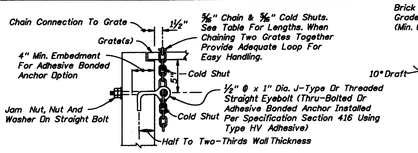


CAST IRON FRAMES

NOTES (FRAMES, AND COVER)
1. The standard cover is to be used for all frames Types I, II, III and the 2-piece cover, and is the replacement cover for all previous frames with 1½" deep seats (traffic type). The 185 lb. cover (nontraffic type), 1984 Roadway and Traffic Design Standards Index No. 201, is the replacement cover for existing frames with 1½" deep seats. Installation of frame with 1½" deep seats is not permitted.
2. Use the 2'-0" cover, unless the 2-piece cover is called for in the plans, except at inlets and manholes with sump bottoms use the 2-piece cover when the sump depth exceeds 2', unless otherwise noted.

DESIGNER NOTE:
Consider using the 2-piece cover where depths exceed 5' and manual entry may be required for cleaning. Clearly note the requirement for a 2-piece cover, on the Drainage Structure sheets in the plans.

WEIGHT OF CASTINGS						
Frame Type	2' OPENING Frame	2' OPENING Cover (Std.)	3' OPENING Frame	3' OPENING 2-Piece Cover Inside	3' OPENING 2-Piece Cover Outside	3' OPENING 2-Piece Cover Total
I	155 Lbs.	190 Lbs.	220 Lbs.	190 Lbs.	220 Lbs.	410 Lbs.
II	145 Lbs.	190 Lbs.	255 Lbs.	190 Lbs.	220 Lbs.	410 Lbs.
III	90 Lbs.	190 Lbs.	180 Lbs.	190 Lbs.	220 Lbs.	410 Lbs.

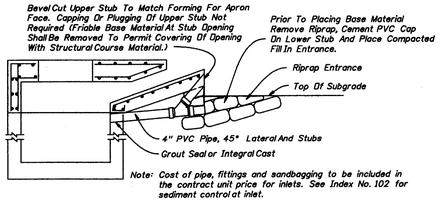


NOTE: When Alternate "G" grate is specified, the chain, bolt, nuts, washer and cold shuts shall be galvanized in accordance with Section 425 of the Standard Specifications.

Cost of eyebolt and chain to be included in the contract unit price for inlets.

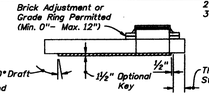
EYEBOLT AND CHAIN REQUIREMENTS				
Index Number	Inlet Type	Eye-Bolts	Length Of Chain	Handling & Remarks
217	(MB) 1	1	4'-0"	Slide & Spin
	(MB) 2	1	4'-0"	Slide & Spin
	(MB) 3	2	2 @ 4'-0"	Slide & Spin
	(MB) 4	2	2 @ 4'-0"	Slide & Spin
	(MB) 5	2	2 @ 4'-0"	Slide & Spin
218	(BW)	1	3'-8"	Slide Or Slide & Spin
219	(BW, RGD)	1	4'-0"	Slide & Spin
220	S	1	4'-0"	Slide & Spin
221	V	1	4'-0"	Slide & Spin
230	A	1	3'-0"	Slide
231	B	1	5'-0"	Slide & Spin
232	C	1	2'-6"	Slide & Spin
	D	1	2'-6"	Slide & Spin
	E	2	2 @ 2'-6"	Slide & Spin
	H	2	2 @ 2'-6"	Flip Ctr. Grate and Slide & Spin Single Free Grate
			1 or 2 @ 1'-6"	Ctr. Grate(s) Chained To One End Grate
233	F	1	3'-6"	Flip Or Slide & Spin
	G	1	6'-0"	Slide
			2'-0"	Lifting Loop
234	J	1	4'-0"	Slide & Spin

EYEBOLT AND CHAIN FOR LOCKING GRATES TO INLETS

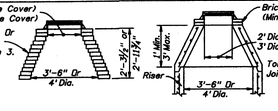


Note: Cost of pipe, fittings and sandbagging to be included in the contract unit price for inlets. See Index No. 102 for sediment control at inlet.

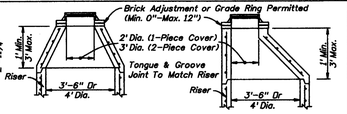
TEMPORARY DRAINS FOR SUBGRADE AND BASE



SECTION
Note: See Slab Designs Index No. 200.
TYPE 7



BRICK OR CONCRETE



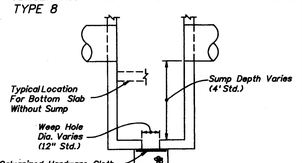
PRECAST CONCENTRIC CONE
TYPE 8

PRECAST ECCENTRIC CONE

MANHOLE TOPS

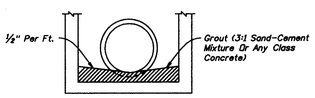
NOTES (TOPS)
1. Manhole top Type 7 slabs shall be of Class II concrete. Concrete as specified in ASTM C478 may be used for precast units: see General Note No. 3.
2. Manhole top Type 7 slabs may be of cast-in-place or precast construction. The optional key is for precast tops and in lieu of dowels. Frame and slab openings are to be omitted when top is used over a junction box.
3. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.
4. Manhole tops shall be secured to structures by optional construction joints as shown on Sheet 3 of 4.
5. Frames can be adjusted a maximum 12" height with brick or precast ASTM C478 grade rings.
6. Substitution of manhole top Type 8 for manhole top Type 7 is allowed provided that minimum dimensions shown above are not reduced.
7. Substitution of Manhole top Type 7 for Type 8 is allowed if the minimum thickness (h) above pipe opening cannot be maintained with manhole top Type 8.

DESIGN NOTES
1. Manhole top Type 8 should be specified in the plans when depths shown above can be maintained.



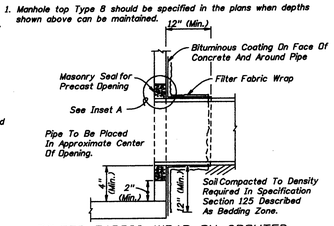
NOTE: Sump bottom appropriate for all manhole and inlet types. Sumps are to be constructed in inlet and manholes connected to French Drains unless excluded in the plans. At other locations, sump is to be constructed only where called for in the plans. Weep holes to be constructed in sump bottom only where called for in the plans. Cost of sump bottom and weep hole to be included in the contract unit price for inlet or manhole.

SUMP BOTTOM

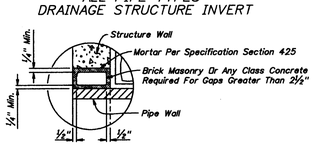


FOR ALL STRUCTURES UNLESS EXCLUDED BY SPECIAL DETAIL

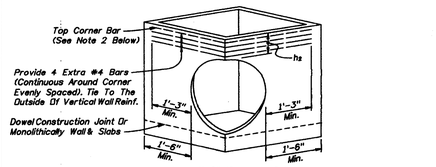
ALL PIPE TYPES
DRAINAGE STRUCTURE INVERT



FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT



INSET A

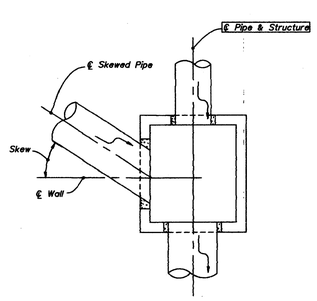


DESIGNER NOTE: Rectangular structures with corner openings are not recommended. Use round structure bottoms when possible.

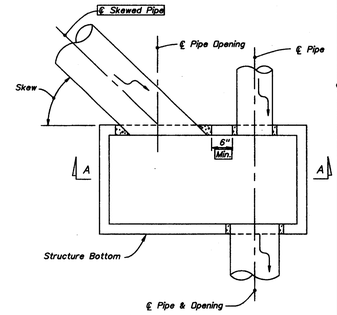
PICTORIAL VIEW

NOTE: 1. h_s may be less than 1'-0" when approved by the Engineer or when a minimum 1'-0" deep segment, 8" slab or curb inlet is provided above the corner opening.
2. For inlet segments at finish grade elevation substitute a #8 Bar for the top corner bar when h_s is less than 2'-0".
3. Rectangular structures with corner openings must be approved by the Engineer.

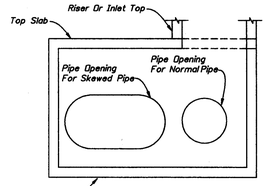
RECTANGULAR SEGMENT WITH PIPE OPENING AT CORNER



PLAN VIEW FOR SKEWS ≤ 45°
(Not Centered)



PLAN VIEW FOR SKEWS > 45°
(Not Centered)



SECTION AA
(Pipes Not Shown For Clarity)

DETAILS FOR SKEWED PIPES IN RECTANGULAR STRUCTURES

SWFWMD PERMITTED DRAWINGS 2010

SWFWMD Received NOV -3 2009 BRO-REG

NOTE:
FDOT'S DESIGN STANDARDS TAKE PRECEDENCE OVER STANDARDS SHOWN.

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
PRE-BID SET ISSUE DATE | POST BID SET ISSUE DATE

DATE	DESCRIPTION
120509	1 02/27/2010

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OCT 29 2009

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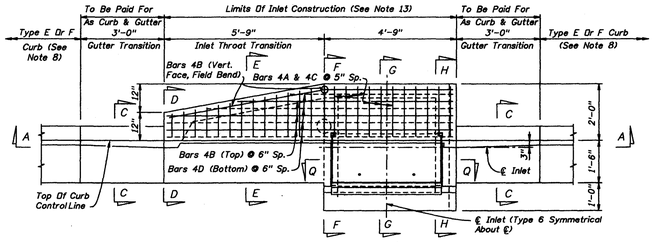
DETAILS
LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No.: L04101 | DRAWN BY: | CHECKED BY:

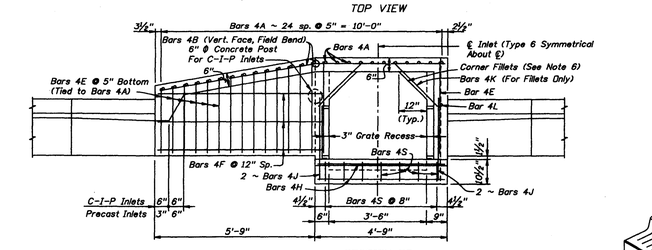
ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R27
OF _

JOB NO. L04104

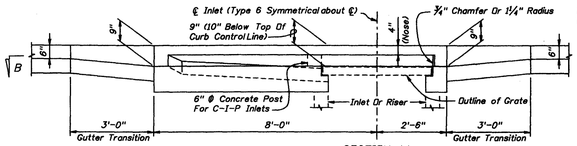
MAY 21 2009
MAR 23 2009



TOP VIEW



SECTION BB

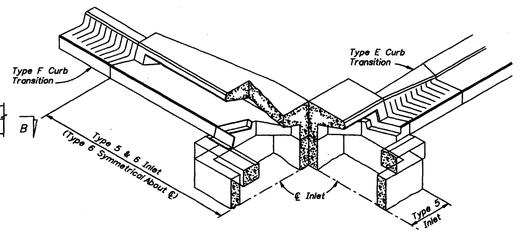


SECTION AA
(At ℄ Inlet)

INLET TYPE 5
(Curb Inlet Type 6 Symmetrical With Left Half)

GENERAL NOTES

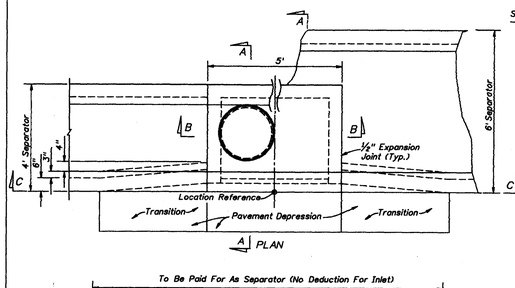
1. The finished grade and slope of the inlet tops are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. For inlets constructed on a curve, refer to the plans to determine the radius, and modify the inlet details accordingly. Bend steel when necessary.
3. All reinforcing steel to be Grade 60 bars with 1¼" minimum cover unless otherwise shown, see Sheet 4 for equivalent area Welded Wire Reinforcement details.
4. Inlet tops shall be either cast-in-place or precast concrete. Precast units shall conform to the dimensions shown or in accordance with approved shop drawing's. Request for shop drawing approval shall be directed to the State Drainage Engineer.
5. Concrete meeting the requirements of ASTM C478 (4,000 psi) may be used in lieu of Class II concrete for precast units, manufactured in plants which meet the requirements of Section 449 of the Specifications.
6. Corner fillets are required at inlet opening for precast units or C-I-P units used in conjunction with circular inlet bottoms or skewed rectangular inlet boxes. Finish top of fillets flush with drain throat bottom and match slope.
7. For inlet bottoms see Index No. 200. Inlet bottoms 4' and larger are to be used with 3'-6" riser.
8. These inlet tops are designed for use with standard curb and gutter Type E and Type F. Locate inlet outside of pedestrian crosswalks. For Type E curb, transition the shape of the curb over the gutter transition length to match the face of the inlet (Type F).
9. See Index No. 201 for supplemental details.
10. All steel used for frame and grate shall meet the requirements of ASTM A36/A36M.
11. Either cast iron grates or steel grates may be used.
12. When Alternate "G" grate is specified in the plans either the cast iron grate and galvanized steel frame or the the galvanized steel grate and frame must be used. Grates are to be grouted in accordance with the grouting detail shown on Sheet 5, in lieu of tack welding.
13. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type _), Each.

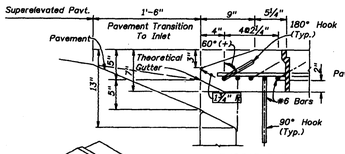


SKETCH SHOWING FRAME SEAT AND THROAT RECESS

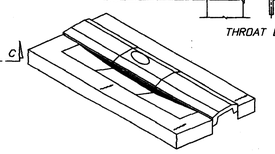
REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJH	Added Grade 60 to Note 3. Section BB & 6" ϕ Concrete Post for C-I-P Inlets. Changed Note 5 to Class II Concrete, Notes 6 & 8, Bars A, C and E to #4's, and End Wall thickness. Deleted Tag Modification for Type E Curb.			

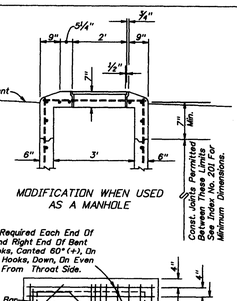
2008 Interim Design Standard	Interim Date	Sheet No.
CURB INLET TOPS TYPES 5 & 6	01/01/08	1 of 5
	Index No.	211



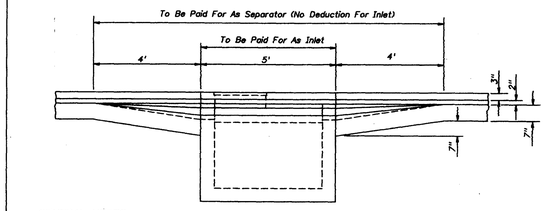


THROAT DETAIL





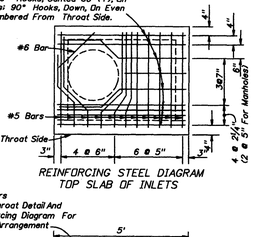
MODIFICATION WHEN USED AS A MANHOLE



HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0' – 6'	A12	0.20	12"	8"
6' – 10'	A6	0.20	6"	5"
10' – 13'	A4	0.20	4"	3"
10' – 15'	B5.5	0.24	5½"	5"

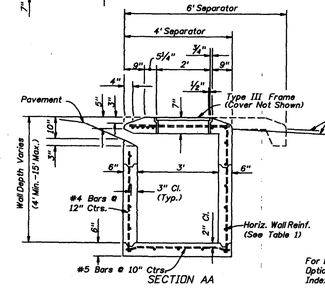
#6 Bars ACI Std. Hooks Required Each End Of Straight Bars And Right End Of Bent Bars: 180° Hooks, Canted 60°(+), On Odd Bars: 90° Hooks, Down, On Even Bars Numbered From Throat Side.



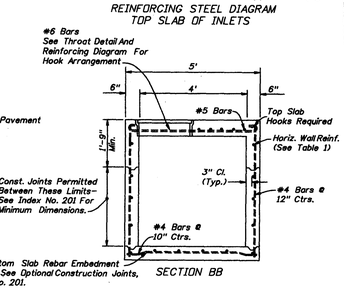
REINFORCING STEEL DIAGRAM TOP SLAB OF INLETS

GENERAL NOTES

1. This inlet is used in Traffic Separators Types I and II; or, in separators constructed with Curbs Types A, B and E and sidewalk paving, which cannot accommodate Inlets Types 1, 2, 3, 4, 5, or 6. Use of this Inlet on through traffic side of the separator is not permitted in medians with Curb Types A and B. Locate inlet outside of designated pedestrian travel way.
2. All reinforcing to be Grade 60 bars with 2" min. cover unless otherwise shown. See Index No. 201 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe when necessary. Bars to clear pipe by ½"
3. Recommended maximum pipe sizes are 24" longitudinal and 30" transverse. For larger pipe, inlets with Alt. B bottoms, Index No. 200 are recommended.
4. For supplementary details see Index No. 201.
5. All dimensions are for both precast and cast-in-place inlets unless otherwise shown.
6. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type 7), Each.



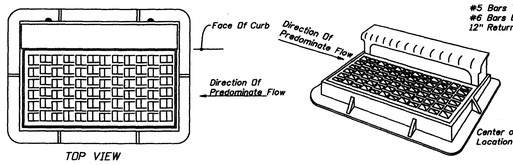
SECTION AA



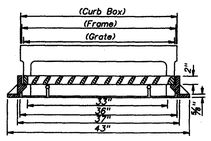
For Bottom Slab Rebar Embedment Options See Optional Construction Joints, Index No. 201.

SECTION BB

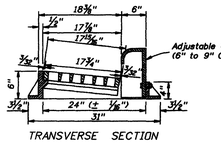
2008 FDOT Design Standards	Last Revision	Sheet No.
CURB INLET TYPE 7	07/01/08	1 of 1
	Index No.	212



TOP VIEW

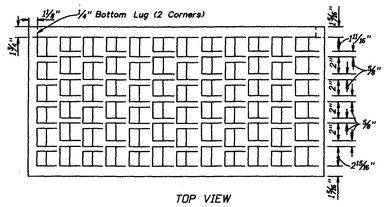


LONGITUDINAL SECTION

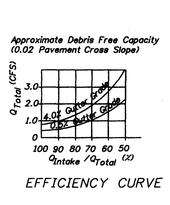


TRANSVERSE SECTION

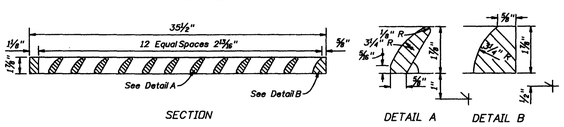
FRAME AND GRATE



TOP VIEW



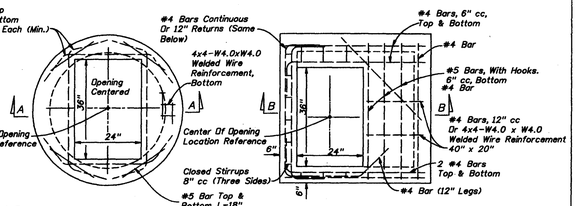
EFFICIENCY CURVE



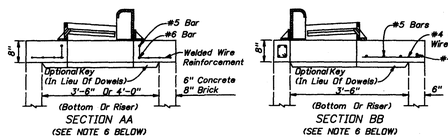
SECTION

DETAIL A DETAIL B

GRATE DETAIL



TOP VIEW TOP VIEW



SECTION AA (SEE NOTE 6 BELOW)

SECTION BB (SEE NOTE 6 BELOW)

TOP SLABS

GENERAL NOTES

1. This inlet is primarily intended for locations with light to moderate flows where right of way does not permit the use of throated Curb Inlets Types 1 through 6. The typical application is on curb returns to city streets. The inlet grate is suitable for pedestrian and bicycle traffic.
2. This inlet to be located outside of curb ramp area in vertical faced curbs such as Curb and Gutter Type F. Grate shall be oriented with vanes directed toward predominate flow.
3. For structure bottoms see Index No. 200. For supplemental details see Index No. 201.
4. All steel in slab tops shall have 1¼" minimum cover unless otherwise shown. Tops shall be either cast-in-place or precast concrete.
5. For Alternate B applications, top slab openings shall be placed such that 2 edges of inlet frame will be located directly above bottom wall or riser wall.
6. When used on a structure with dimensions larger than those detailed above and risers are not applied, the top slab shall be constructed using Index No. 200 with the slab opening adjusted to 24"x36". The "Special Top Slab" on Index No. 200 is not permitted.
7. Frame may be adjusted with one to six courses of brick.
8. Cast iron frame grate and hood to be U.S. Foundry 5130-6016, Neenah Foundry R-3067-L, or approved equal. Inlet and grate detail shown is Neenah R-3067-L. Vaned grates with approximately equal openings will be permitted that satisfy AASHTO HS-20 loading. Grates shall be reversible, right or left.

2008 FDOT Design Standards	Last Revision	Sheet No.
CURB INLET TOP TYPE 9	07/01/08	1 of 1
	Index No.	214

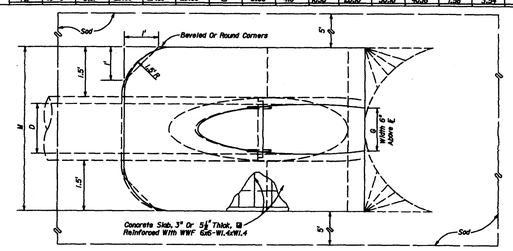
DIMENSIONS AND QUANTITIES

	D	X	A	B	C	E	F	G	H □	M Single Pipe	M Double Pipe	M Triple Pipe	M Quad. Pipe	N	5½" CONCRETE SLAB (CY) ☑ Single Pipe	5½" CONCRETE SLAB (CY) ☑ Double Pipe	5½" CONCRETE SLAB (CY) ☑ Triple Pipe	5½" CONCRETE SLAB (CY) ☑ Quad. Pipe	SODDING (SQ. YDS.) Single Pipe	SODDING (SQ. YDS.) Double Pipe	SODDING (SQ. YDS.) Triple Pipe	SODDING (SQ. YDS.) Quad. Pipe
1:6 Slope	18"	2'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	2'-9"	4'-6"	7'-8"	9'-7"	12'-10"	16'-0"	1.0'	0.38	0.52	0.77	0.96	21	26	37	50
	24"	2'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	3'-4"	4'-6"	7'-10"	9'-9"	13'-0"	16'-2"	1.0'	0.44	0.65	0.87	1.08	22	28	38	51
	30"	3'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	3'-10"	4'-6"	8'-0"	9'-11"	13'-2"	16'-4"	1.0'	0.52	0.83	1.07	1.28	24	29	39	53
	36"	3'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	4'-4"	4'-6"	8'-2"	10'-1"	13'-4"	16'-6"	1.0'	0.60	1.02	1.30	1.61	25	31	40	55
	42"	3'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	4'-10"	4'-6"	8'-4"	10'-3"	13'-6"	16'-8"	1.0'	0.68	1.20	1.61	1.95	26	32	42	57
	48"	3'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	5'-4"	4'-6"	8'-6"	10'-5"	13'-8"	16'-10"	1.0'	0.82	1.40	1.85	2.30	28	34	44	59
	54"	4'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	5'-10"	4'-6"	8'-8"	10'-7"	13'-10"	17'-0"	1.0'	0.92	1.60	2.10	2.62	29	35	45	61
	60"	4'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	6'-4"	4'-6"	8'-10"	10'-9"	14'-0"	17'-2"	1.0'	1.02	1.80	2.36	2.94	30	37	47	64
	66"	4'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	6'-10"	4'-6"	9'-0"	10'-11"	14'-2"	17'-4"	1.0'	1.12	2.04	2.63	3.24	32	39	50	68
	72"	4'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	7'-4"	4'-6"	9'-2"	11'-1"	14'-4"	17'-6"	1.0'	1.22	2.22	2.89	3.56	33	41	53	72
	78"	5'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	7'-10"	4'-6"	9'-4"	11'-3"	14'-6"	17'-8"	1.0'	1.32	2.40	3.15	3.88	35	43	56	76
	84"	5'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	8'-4"	4'-6"	9'-6"	11'-5"	14'-8"	17'-10"	1.0'	1.42	2.58	3.41	4.20	36	45	59	80
	90"	5'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	8'-10"	4'-6"	9'-8"	11'-7"	14'-10"	18'-0"	1.0'	1.52	2.76	3.67	4.52	38	48	63	86
	96"	5'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	9'-4"	4'-6"	9'-10"	11'-9"	15'-0"	18'-2"	1.0'	1.62	2.94	3.93	4.84	40	52	68	92
1:4 Slope	18"	2'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	4'-0"	4'-6"	7'-9"	9'-8"	12'-11"	16'-2"	1.0'	0.38	0.52	0.77	0.96	21	26	37	50
	24"	2'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	4'-7"	4'-6"	7'-11"	9'-10"	13'-1"	16'-4"	1.0'	0.44	0.65	0.87	1.08	22	28	38	51
	30"	3'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	5'-2"	4'-6"	8'-1"	10'-0"	13'-3"	16'-6"	1.0'	0.52	0.83	1.07	1.28	24	29	39	53
	36"	3'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	5'-9"	4'-6"	8'-3"	10'-2"	13'-5"	16'-8"	1.0'	0.60	1.02	1.30	1.61	25	31	40	55
	42"	3'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	6'-4"	4'-6"	8'-5"	10'-4"	13'-7"	16'-10"	1.0'	0.68	1.20	1.61	1.95	26	32	42	57
	48"	3'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	6'-11"	4'-6"	8'-7"	10'-6"	13'-9"	17'-0"	1.0'	0.82	1.40	1.85	2.30	28	34	44	59
	54"	4'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	7'-6"	4'-6"	8'-9"	10'-8"	13'-11"	17'-2"	1.0'	0.92	1.60	2.10	2.62	29	35	45	61
	60"	4'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	8'-1"	4'-6"	8'-11"	10'-10"	14'-1"	17'-4"	1.0'	1.02	1.80	2.36	2.94	30	37	47	64
	66"	4'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	8'-8"	4'-6"	9'-1"	11'-0"	14'-3"	17'-6"	1.0'	1.12	2.04	2.63	3.24	32	39	50	68
	72"	4'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	9'-3"	4'-6"	9'-3"	11'-2"	14'-5"	17'-8"	1.0'	1.22	2.22	2.89	3.56	33	41	53	72
	78"	5'-1"	3'-8"	4'-0"	2'-0"	9"	1'-6"	9'-10"	4'-6"	9'-5"	11'-4"	14'-7"	17'-10"	1.0'	1.32	2.40	3.15	3.88	35	43	56	76
	84"	5'-4"	3'-8"	4'-0"	2'-0"	9"	1'-6"	10'-5"	4'-6"	9'-7"	11'-6"	14'-9"	18'-0"	1.0'	1.42	2.58	3.41	4.20	36	45	59	80
	90"	5'-7"	3'-8"	4'-0"	2'-0"	9"	1'-6"	11'-0"	4'-6"	9'-9"	11'-8"	14'-11"	18'-2"	1.0'	1.52	2.76	3.67	4.52	38	48	63	86
	96"	5'-10"	3'-8"	4'-0"	2'-0"	9"	1'-6"	11'-7"	4'-6"	9'-11"	11'-10"	15'-1"	18'-4"	1.0'	1.62	2.94	3.93	4.84	40	52	68	92

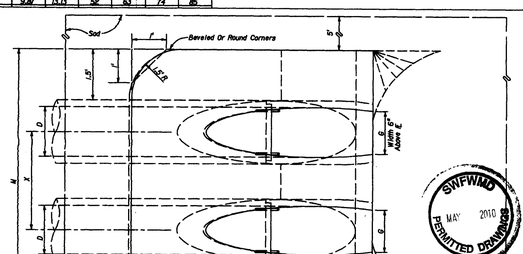
☑ See General Note No. 3. See Sheet 5 Of 6 For 3" Slab Quantities

□ Values shown for estimating pipe quantities and are for information only.

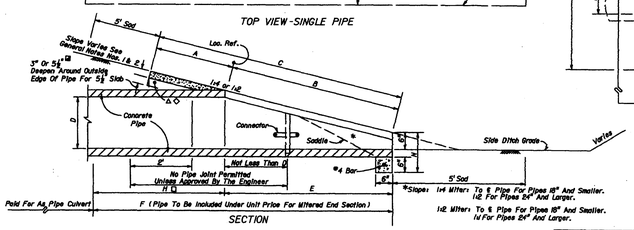
B E
△ 6.46' △ 6.25' Dimensions permitted to allow use of 8' standard pipe lengths.
◇ 10.40' ◇ 10.10' Dimensions permitted to allow use of 12' standard pipe lengths.
△◇ Concrete slab shall be deepened to form bridge across crown of pipe. See section below.



TOP VIEW-SINGLE PIPE



TOP VIEW-MULTIPLE PIPE



SECTION

NOTE: See sheet 6 for details and notes.

2008 FDOT Design Standards	Last Revision	Sheet No.
CROSS DRAIN MITERED END SECTION SINGLE AND MULTIPLE ROUND CONCRETE PIPE	02	1 of 6
	Index No.	274

NOTE:
FDOT'S DESIGN STANDARDS TAKE PRECEDENCE OVER STANDARDS SHOWN.

SWFWMD Received NOV -3 2009 BRO-REG.

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION
12/09/09	ROOTNOTE

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OCT 29 2009

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DETAILS
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R28 OF _

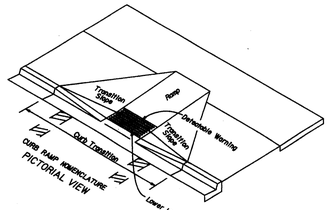
SWFWMD MAY 2010 PERMITTED DRAWINGS

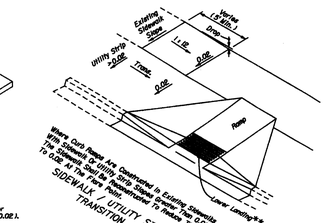
JOB NO. L04104

MAY 21 2009
MAR 23 2009

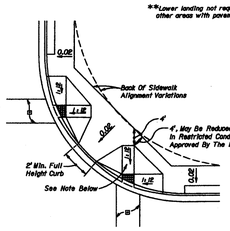
C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101d Land O Lakes Offsite.dwg, Layout R28
Date: 12/08/08 Drawing: L04101d Land O Lakes Offsite.dwg

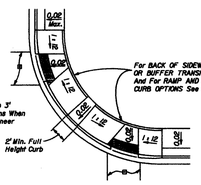
A-890



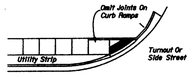


**Lower landing not required at driveways, parking lots, or other areas with pavement cross-slopes less than 2% (0.02).





Note: A portion of one or both ramps may extend outside the return.



LINEAR SIDEWALK RAMPS

Note: When crosswalk markings are required, ramp runs must fall within crosswalk limits and where practical, be parallel with the projected crosswalk alignment. The bottom of the ramp beyond the curb line shall have a clear space 48" minimum within the markings of a marked crosswalk. If no crosswalk markings are present, the bottom of the ramp beyond the curb ramp shall have a clear space 48" minimum outside active traffic lanes.

■ Crosswalk widths and configuration vary; must conform to Index No. 17344 and 17346.

GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed at all street intersections and at turnouts that have curbed returns. Partial curb returns shall extend to the limit prescribed by Index No. 304 to accommodate curb ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 3.
2. The location and orientation of curb ramps shall be as shown in the plans.
3. Curb ramp running slopes at unrestrained sites shall not be steeper than 1 : 12 and cross slope shall be 0.02 or flatter. Transition slopes shall not be steeper than 1 :12.

   When altering existing pedestrian facilities where existing development precludes the accommodation of a ramp slope of 1 : 12, a running slope between 1 : 12 and 1 : 10 is permitted for a rise of 6" maximum and a running slope of between 1 : 10 and 1 : 8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.

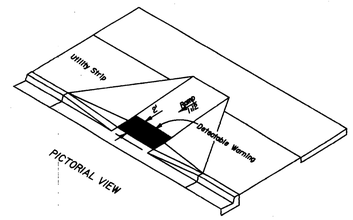
   Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.
4. If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1 : 12. Ramps with curb returns may be used at locations where other improvements provide guidance cues to those that portion of curb perpendicular to the sidewalk. Improvements for guidance are not required at curb ramps for linear pedestrian traffic.
5. Curb ramp detectable warning surfaces shall extend the full width of the ramp and 24" from the back of curb. Detectable warning surfaces shall be constructed in accordance with Specification 527. See Sheet 6 of 6 for detectable warning layouts. Transition slopes are not to have detectable warnings.
6. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long. For details of Concrete Sidewalk See Index 310.
7. Alpha-numeric identifications are for reference (plans, permits, etc.).
8. Public sidewalk curb ramps are to be paid for as follows:

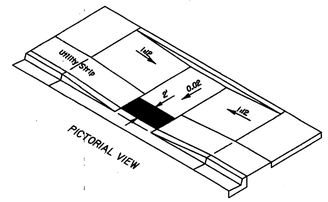
   Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (___ Thick), ST. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type ___), LF or Curb and Gutter Conc., (Type ___), LF.

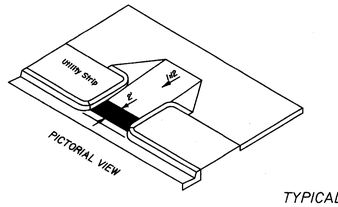
   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.
9. Acceptance Criteria For Detectable Warnings:
   (a) The ramp detectable warning surface shall be complete and uniform in color and texture
   (b) 80% of the individual truncated domes must comply with the design criteria
   (c) There may be no more than 4 non-complying domes in any one square foot of surface
   (d) No two adjacent domes may be non-compliant
   (e) Surface may not deviate more than 0.05" from a true plane
10. All sidewalk surfaces, ramp surfaces, and landings with a cross slope shown in this Index to be 0.02E shall be 0.02E maximum. All ramp surfaces and ramp transition slopes with a cross slope shown in this Index to be 1:12E shall be 1:12E maximum.

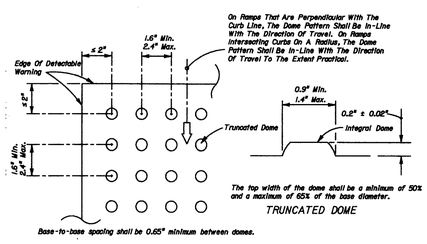
TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

2006 FDOT Design Standards	Last Revision 07/01/07	Sheet No. 1 of 6
PUBLIC SIDEWALK CURB RAMPS	Index No. 304	



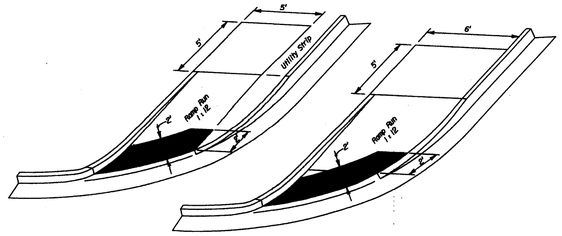


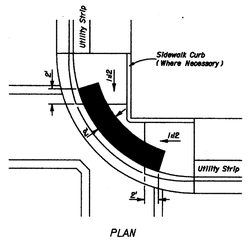




All Sidewalk Curb Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 24 Inches (610 mm) From The Back Of Curb.

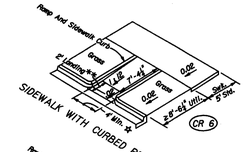
CURB RAMP DETECTABLE WARNING DETAIL



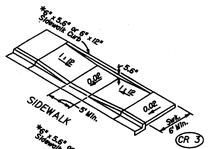


TYPICAL PLACEMENT OF DETECTABLE WARNING ON CURB RAMPS

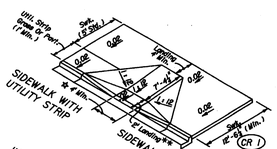
2006 FDOT Design Standards	Last Revision 07/01/07	Sheet No. 6 of 6
PUBLIC SIDEWALK CURB RAMPS	Index No. 304	



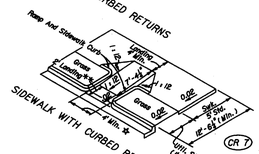
SIDEWALK WITH CURBED RETURNS



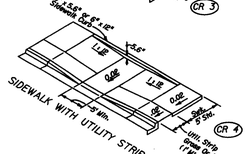
SIDEWALK



SIDEWALK WITH UTILITY STRIP



SIDEWALK WITH CURBED RETURNS



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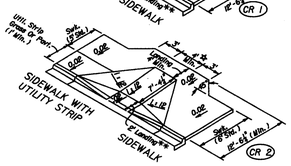
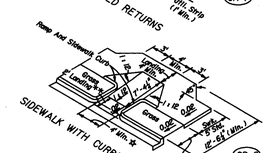
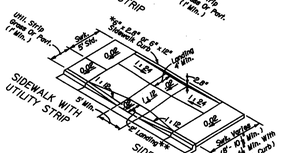


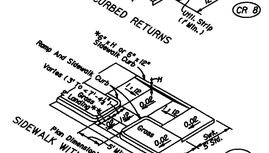
SIDEWALK WITH UTILITY STRIP



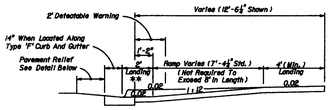
SIDEWALK WITH CURBED RETURNS



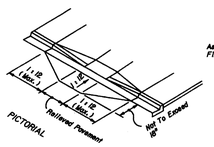
SIDEWALK WITH UTILITY STRIP

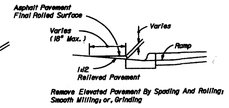


SIDEWALK WITH CURBED RETURNS



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION





PAVEMENT RELIEF AT LIP OF CURB

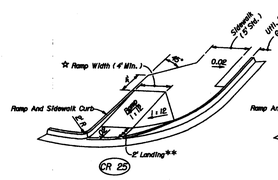
* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

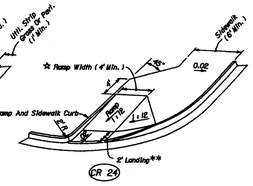
☆ Ramp Widths For Curb Ramps CR 1, CR 2, CR 5, CR 7, And CR 8 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

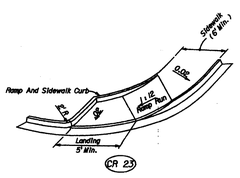
**Lower landing not required at driveways, parking lots, or other areas with pavement cross-slopes less than 2% (0.02).

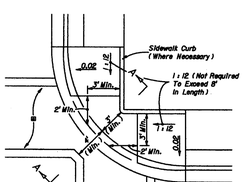
DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

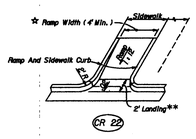
2006 FDOT Design Standards	Last Revision 07/01/07	Sheet No. 2 of 6
PUBLIC SIDEWALK CURB RAMPS	Index No. 304	

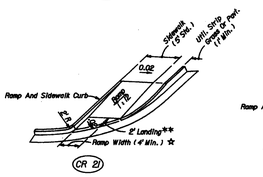


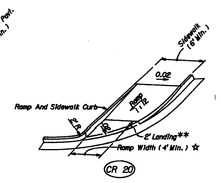




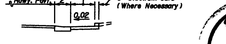


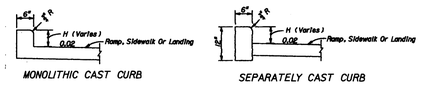




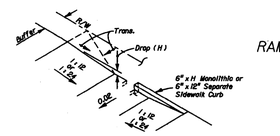


DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC





RAMP AND SIDEWALK CURB OPTIONS



Construct Sidewalk Curb In Absence Of Adequate Buffer, Maintainable Surface Contour, Abutting Structure, Or When Called For In The Plans Or Standards

BACK OF SIDEWALK CURB OR BUFFER TRANSITION

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK COMBINED CORNER RAMPS UNDER CONDITIONS OF INFEASIBILITY

☆ Ramp Widths For Curb Ramps CR 20, CR 21, CR 22, CR 24, and CR 25 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

**Lower landing not required at driveways, parking lots, or other areas with pavement cross-slopes less than 2% (0.02).

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PUBLIC SIDEWALK CURB RAMPS	Index No. 304	

◊ NOTE:
FDOT'S DESIGN STANDARDS TAKE PRECEDENCE OVER STANDARDS SHOWN.

SWFWMD Received NOV -3 2009 Permitted Drawings

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE
△ POST BID SET ISSUE DATE

DATE	DESCRIPTION
120608	◇ ADDENDA

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David W. Deslet
PE No. 24760
OCT 29 2009

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

DETAILS
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R29
OF __
JOB NO. L04104

MAY 21 2009
MAR 25 2009

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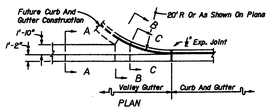
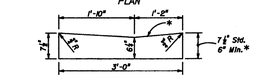
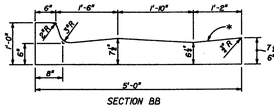
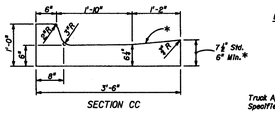
Date: 12/08/08 Drawing: C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101d Land O Lakes Offsite.dwg

A-891









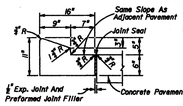
VALLEY GUTTER

* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

☑ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

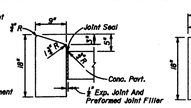
Note: For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see diagram right. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see diagram right.

CONCRETE CURB AND GUTTER

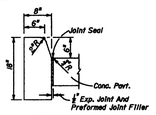


TYPE A

For details depicting usage adjacent to flexible pavement, see diagram right.



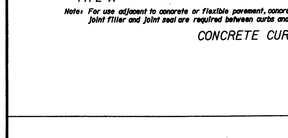
TYPE B



TYPE D

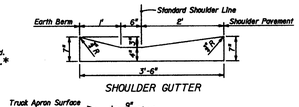
Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see diagram right.

CONCRETE CURB

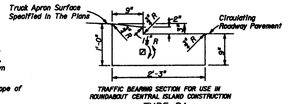


Note: To be paid for as parent curb.

DROP CURB



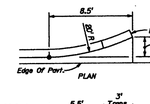
SHOULDER GUTTER

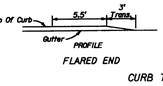


TRAFFIC BEARING SECTION FOR USE IN ROUNDABOUT CENTRAL ISLAND CONSTRUCTION

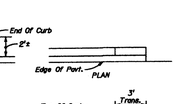
TYPE RA

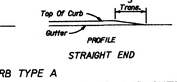
CONCRETE CURB AND GUTTER





FLARED END

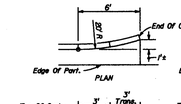


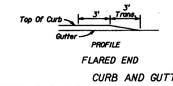


STRAIGHT END

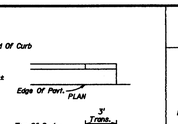
CURB TYPE A

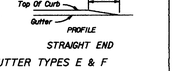
CURB AND GUTTER ENDINGS





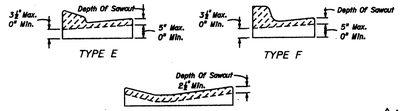
FLARED END





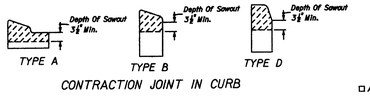
STRAIGHT END

CURB AND GUTTER TYPES E & F

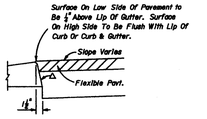


Sawcuts should be avoided within valley gutter and within curb and gutter endings.

CONTRACTION JOINT IN CURB AND GUTTER

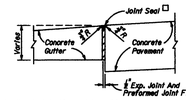


CONTRACTION JOINT IN CURB



△ Applies to both high and low sides of pavement, low side shown. Applies to shoulder gutter only where adjoining traffic lanes.

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT

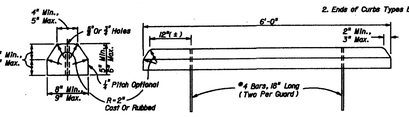


□ Applies to both high and low sides of pavement, low side shown.

EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT



ASPHALTIC CONCRETE CURB



CONCRETE BUMPER GUARD

GENERAL NOTES

1. For curb, gutter and curb & gutter provide ½"- 1" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the standard specifications.
2. Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

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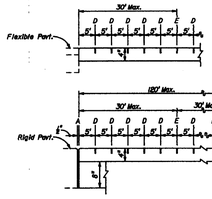
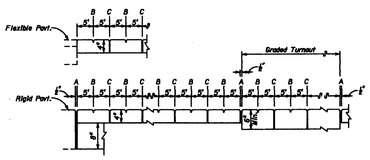
CURB & CURB AND GUTTER		Index No. 300





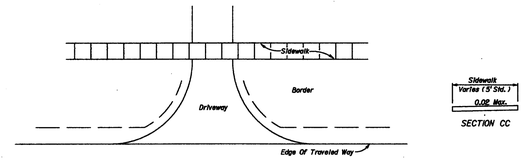
JOINT LEGEND

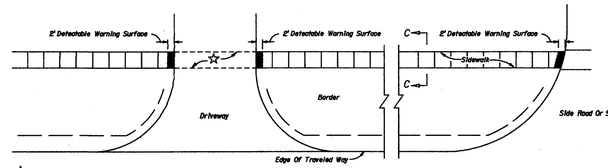
A- ½" Expansion Joints (Preformed Joint Filler)
B- ½" Dummy Joints, Tooled
C- ½" Formed Open Joints
D- ⅜" Saw Cut Joints, ¼" Deep (96 Hour) Max. 5' Centers
E- ⅜" Saw Cut Joints, ¼" Deep (42 Hour) Max. 30' Centers
F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications.
2. Sidewalks adjoining driveways 24' and wider, right in-right out composite driveways and side roads and streets shall have a detectable warning surface that extends the full width of the sidewalk and 24" (600 mm) from the edge of driveways and edge of side roads and streets. Detectable warning surfaces shall conform to the requirements described in the General Notes on Index No. 304.

   For sidewalks continuous through driveways, detectable warning surfaces are not required.
3. For turnouts see Index No. 515.
4. Construct sidewalks with 1" thick Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Picket Railing or Pipe Guiderail shown in the plans. See Sheet 1 for details.
5. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (____ Thick), SY.





☆ When driveway is new construction, reconstruction, or altered, cross slope within this area shall not exceed 0.02. Existing driveways that are not being altered may be left as they are.

PLAN

CONCRETE SIDEWALK FOR UNCURBED ROADWAYS

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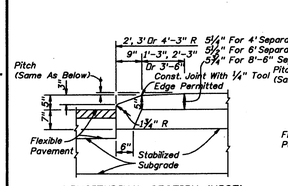
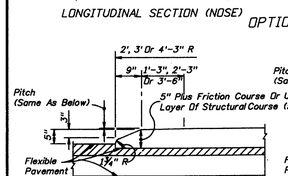
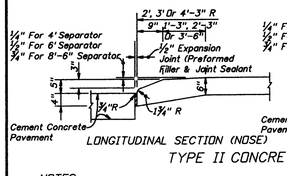
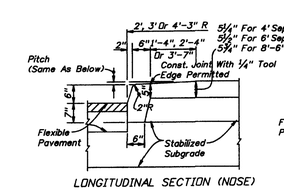
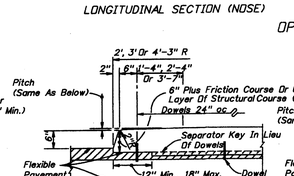
CONCRETE SIDEWALK		Index No. 310

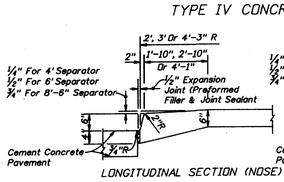










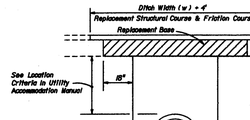


NOTES

1. Separators Type I and IV are to be used with flexible pavement. Separators Types II and V are to be used with rigid pavement.
2. Either Option I or Option II may be used for Types I and IV separators except when a specific option is called for in the plans.
3. For all separators provide ⅛"- ½" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.
4. Separators having widths of 4', 6' or 8'-6" shall be paid for under the contract unit price for Concrete Traffic Separator (Type_) ('_' Wide) LF. Separators having widths other than 4', 6' or 8'-6" shall be detailed in the plans as special separators and paid for under the contract unit price for Concrete Traffic Separator (Special) SY.

ROADWAY INSTALLATIONS

2008 FDOT Design Standards	Last Revision 07/01/07	Sheet No. 1 of 4
TRAFFIC SEPARATORS		Index No. 302



FLEXIBLE PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

Pavement shall be mechanically sawed.

The replacement asphalt shall match the existing structural and friction courses for type and thickness.

The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy (See Index No. 514).

BACKFILL

COMPACTED AND STABILIZED FILL OPTION

Backfill material shall be placed in accordance with Section 125 of the Standard Specifications.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

* FLOWABLE FILL OPTION

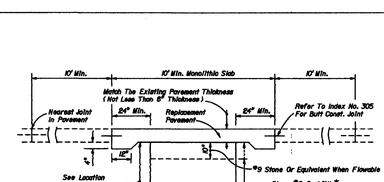
If compaction can not be achieved through normal mechanical methods then flowable fill may be used.

Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the existing base course.



RIGID PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

High early strength cement concrete (3000 psi) meeting the requirements of Standard Specification 346 shall be used for rigid pavement replacement.

Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours. (See Index No. 305)

GRANULAR BACKFILL

Any edgedrain system that is removed shall be replaced with the same type materials. Any edgedrain system that is damaged shall be repaired with methods approved by the Engineer.

Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index No. 505.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

* FLOWABLE FILL OPTION

If mechanical compaction can not be achieved through normal mechanical methods then flowable fill may be used.

Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the stone layer.

SWFWMD PERMITTED DRAWINGS MAY 2010

GENERAL NOTES

1. The details provided in this standard Index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 505) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to prevent pavement settlement.
3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
4. Method of construction must be approved by the Engineer.
5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapsulate the special granular material.
6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.

   Existing broken and seated pavements shall be treated as flexible pavements.
7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential.
9. Excavatable flowable fill is to be used when the flowable fill option is selected.
10. When approved by the Engineer, in lieu of the pavement and base, non-excavatable flowable fill may be used for manhole stabilization and ring and cover adjustments. Excavatable flowable fill shall not be used within the limits of the pavement and base.

SWFWMD Received NOV - 3 2009 BRO-REG

FLEXIBLE PAVEMENT CUT

RIGID PAVEMENT CUT

TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

2008 FDOT Design Standards	Last Revision 04	Sheet No. 1 of 3
MISCELLANEOUS UTILITY DETAILS		Index No. 307

◊ NOTE:
FDOT'S DESIGN STANDARDS TAKE PRECEDENCE OVER STANDARDS SHOWN.

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE
△ POST BID SET ISSUE DATE

DATE	DESCRIPTION
12/05/08	◇ REVISE

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OCT 29, 2009

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DETAILS
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R30
OF __

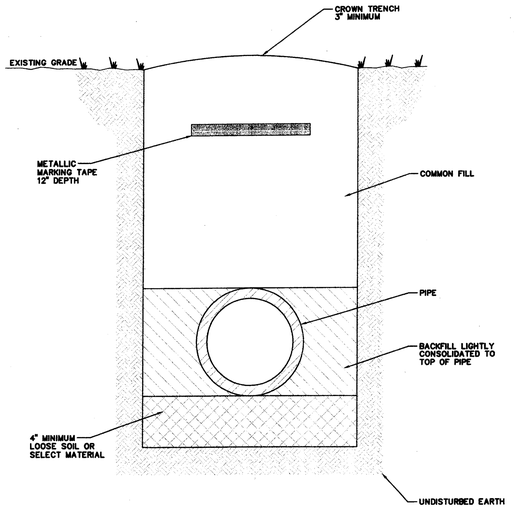
JOB NO. L04104

MAY 21 2009
MAR 23 2009

C:\Work\2007\07003-L04101 LOL Offsite\Drawings\L04101d Land O Lakes Offsite.dwg, Layout R30

Date: 12/05/08 Drawing: L04101d Land O Lakes Offsite.dwg

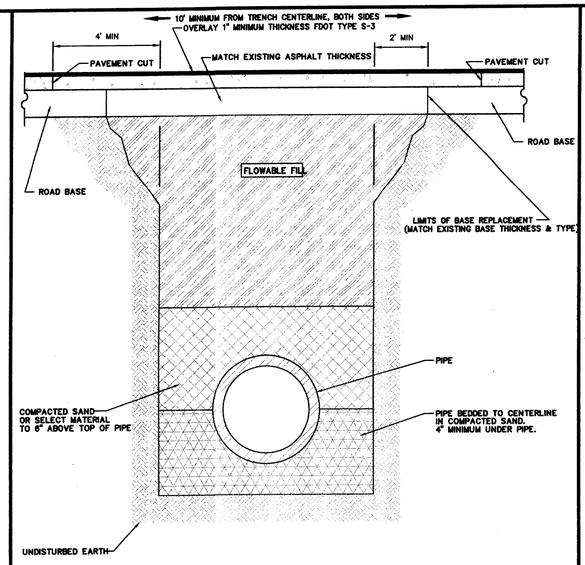
A-892



NOTES: -LOOSE SOIL OR SELECT MATERIAL IS NATIVE SOIL EXCAVATED FROM THE TRENCH FREE OF ROCKS AND FOREIGN MATERIAL.
-COMMON FILL TO BE PLACED AND COMPACTED IN 12" LAYERS. ROLLING EQUIPMENT SHALL NOT BE USED FOR COMPACTION UNTIL A MINIMUM OF 18" OF COMMON FILL HAS BEEN PLACED AND COMPACTED OVER THE PIPE. THREE FEET OF FILL SHALL BE PLACED BEFORE A HYDROHAMMER MAY BE USED FOR COMPACTION.

NTS

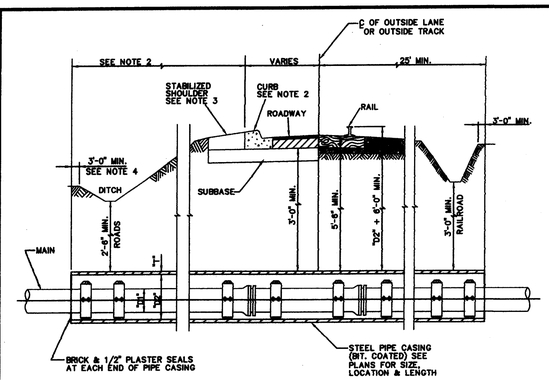
CREATED 02/24/03	PIPE LAYING CONDITIONS	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	STANDARD UNPAVED AREAS	
	PASCO COUNTY UTILITIES	DETAIL 32



NOTE: -SELECT MATERIAL IS NATIVE SOIL EXCAVATED FROM THE TRENCH FREE OF ROCKS AND FOREIGN MATERIAL.
-COMPACTION TO TOP OF PILE IS TO BE APPROXIMATELY 90% STANDARD PROCTOR, AASHTO T-99.
-EXISTING CONCRETE/ASPHALT PAVEMENT SURFACE AND BASE TO BE CUT SQUARE WITH CONCRETE SAW.

NTS

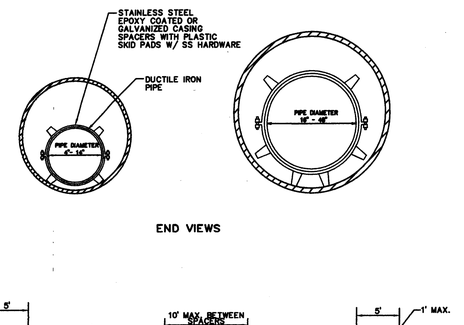
CREATED 03/06/03	PIPE LAYING CONDITIONS	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	FLOWABLE FILL BACKFILL STANDARD EXISTING PAVED AREAS & ROADWAYS	
	PASCO COUNTY UTILITIES	DETAIL 33



NOTE: 1. VERTICAL DIMENSIONS ARE TYPICAL FOR MAINS.
2. CASINGS SHALL TERMINATE 8' MINIMUM BEYOND EDGE OF PAVEMENT.
3. CASINGS SHALL HAVE 30" MINIMUM COVER UNDER DITCH BOTTOMS AND 36" ELSEWHERE.
4. GRAVITY SEWERS SHALL BE PROPERLY ANCHORED TO PREVENT FLOATATION WITH SPACERS ADJUSTED TO PROVIDE THE SLOPE REQUIRED.
5. SEE SECTION B.2 FOR CASING SIZE.

CARRIER PIPE (INCHES)	CASING PIPE (INCHES)	CASING WALL THICKNESS (INCHES)
4	12	1/4
6	16	1/4
8	16	1/4
10	24	1/4
12	24	5/16
16	30	5/16
20	36	3/8
24	42	3/8
30	48	3/8
36	54	3/8
42	60	1/2
48	66	1/2
		1/2

CREATED 02/24/03	JACK & BORE	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	DETAIL	
	PASCO COUNTY UTILITIES	DETAIL 35



NOTE:
- CARRIER PIPE FOR WATER & REUSE MAINS SHALL BE CEMENT MORTAR LINED D.I.P.
- CARRIER PIPE FOR SEWER/FORCE MAINS SHALL BE GLASS FLAKE EPOXY (PROTECTO 401) OR POLYETHYLENE LINED D.I.P.
- CARRIER PIPE TO BE COLOR CODED WITH PAINT STRIPES:
  WATER - BLUE
  REUSE - PURPLE
  SEWER - GREEN
- CASING SHALL EXTEND 8' MINIMUM BEYOND EDGE OF PAVEMENT.

CREATED 02/24/03	JACK & BORE	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	CARRIER DETAIL	
	PASCO COUNTY UTILITIES	DETAIL 30

PIPE RESTRAINT LENGTHS IN FEET COMMON FITTINGS

WATER MAINS - TEST PRESSURE 150 PSI

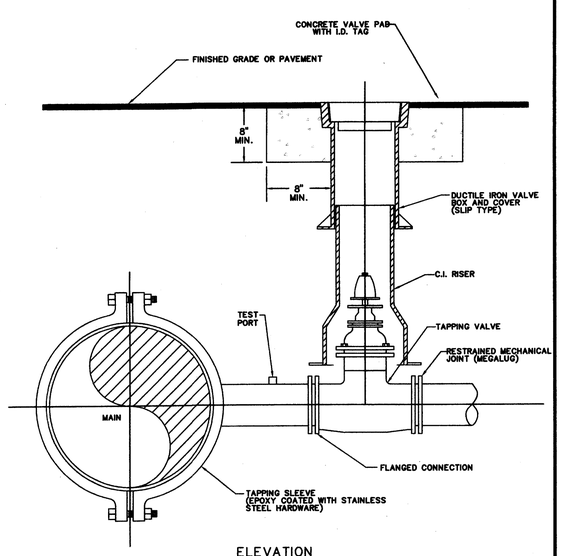
PIPE SIZE	FITTING TYPE 11-1/4°	22-1/2°	45°	90°	DEAD END
4"	2'	4'	8'	20'	45'
6"	3'	6'	12'	28'	63'
8"	4'	7'	15'	36'	82'
10"	4'	9'	18'	43'	98'
12"	5'	10'	21'	50'	116'
16"	6'	13'	26'	63'	148'
20"	7'	15'	31'	76'	179'
24"	9'	17'	36'	87'	208'

FORCE MAINS - TEST PRESSURE 100 PSI

PIPE SIZE	FITTING TYPE 11-1/4°	22-1/2°	45°	90°	DEAD END
4"	1'	3'	6'	13'	30'
6"	2'	4'	8'	19'	42'
8"	2'	5'	10'	24'	55'
10"	3'	6'	12'	29'	66'
12"	3'	7'	14'	34'	77'
16"	4'	8'	18'	42'	99'
20"	5'	10'	21'	50'	119'
24"	6'	11'	24'	58'	139'

RESTRAINT LENGTHS ARE MEASURED FROM THE CENTER LINE OF THE FITTING ALONG THE PIPE IN BOTH DIRECTIONS (EXCEPT DEAD ENDS).

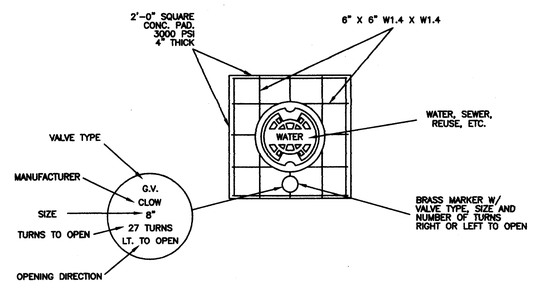
CREATED 02/24/03	RESTRAINED JOINT TABLE	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	COMMON FITTINGS	
	PASCO COUNTY UTILITIES	DETAIL 28



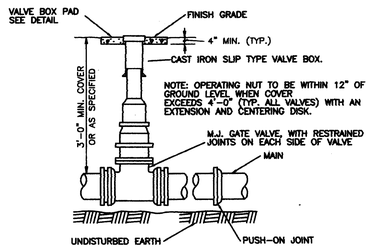
ELEVATION

NOTES:
- SADDLE CONNECTION WILL BE TESTED TO 150 PSI PRIOR TO TAPPING MAIN.
- MECHANICAL JOINTS/UNDERGROUND PIPING SHALL BE RESTRAINED AS SPECIFIED BY COUNTY/ENGINEER.
- VALVE EXTENSION ROD SHALL BE UTILIZED, AS NECESSARY, SO THAT VALVE OPERATING NUT IS A MAXIMUM OF 3' BELOW GRADE.

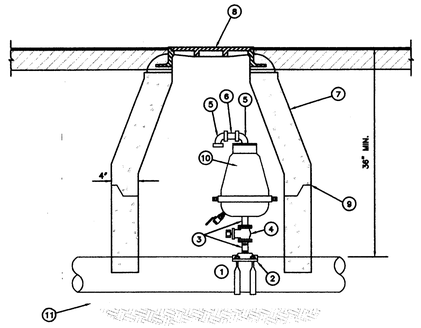
CREATED 02/24/03	WATER, REUSE, AND FORCE MAIN	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	TAPPING DETAIL W/ VALVE LOCATION	
	PASCO COUNTY UTILITIES	DETAIL 34



TYPICAL CONCRETE VALVE PAD



CREATED 02/24/03	VALVE BOX DETAIL	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	SLIP TYPE	
	PASCO COUNTY UTILITIES	DETAIL 27



ITEM	QUANT.	DESCRIPTION
1	*	4" & LARGER PIPE, D.I. OR PVC (DR-18)
2	1	2" (TAP) SADDLE, SERVICE (SEE NOTE)
3	2	2" x 2" NIPPLE, S.S.
4	1	2" BALL VALVE, S.S.
5	2	1/2" x 90° ELBOW, PVC
6	1	1/2" x 6" NIPPLE, PVC
7	1	PRECAST MANHOLE CONE, DOG HOUSE STYLE
8	1	24" DIA. CAST IRON/DUCTILE IRON MANHOLE RING & COVER - 24" MARKED SEWER ARV
9	*	SEALER (RAM-NEK)
10	1	AIR RELEASE VALVE (ARI MODEL S-025)
11	*	GRAVEL BED

NOTE: - 4" SADDLE TO BE BRASS FULL SUPPORT TYPE
- 6" AND LARGER SADDLES TO BE DOUBLE STRAP DUCTILE IRON
- MANHOLE STRUCTURE TO INCLUDE NECESSARY FOOTING TO ACCOMMODATE TRAFFIC CONDITIONS
- MANHOLE STRUCTURE INTERIOR TO BE COAL TAR EPOXY LINED
- THE VALVE SHALL BE OFFSET IN MANHOLE FOR MAINTENANCE PURPOSES

CREATED 02/24/03	AIR RELEASE VALVE UNDERGROUND (FORCE MAINS)	PROVIDED FOR INFORMATIONAL PURPOSES ONLY. NO MODIFICATIONS WITHOUT WRITTEN PCU APPROVAL
REVISED	TRAFFIC STYLE	
	PASCO COUNTY UTILITIES	DETAIL 8

SWFWMD PERMITTED DRAWINGS 2010

SWFWMD Received NOV - 3 2009 BRO-REG

MAY 21 2009

MAR 23 2009

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION

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David W. Dasilel
PE No. 24760
OCT 29 2009

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DETAILS
LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: L04101 | DRAWN BY: | CHECKED BY:

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:

DRAWING NUMBER: R31
OF _

JOB NO. L04104

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Date: 12/08/08 Drawing: L04101d Land O Lakes Offsite.dwg

A-893

CONNECT 12" WM TO EXISTING 16" WM WITH TAPPING VALVE AND SLEEVE PROVIDE TEMP. SERVICE JUMPER CONNECTION SEE SHEET CS25 SEE WATER CONNECTION NOTE, THIS SHEET ③

12" RJ 90° DI BEND

PASCO COUNTY R/W

FDOT R/W

SIGNAL POLE

118.20' ALONG RIGHT-OF-WAY LINE

SIGNAL POLE

EXIST. 6" CS GAS

144 LF JACK AND BORE
12" DI WM IN 24" STL CASING
STA 46+20 ①

CURB INLET S-1
~~GRATE EL. 73.6±~~
INV. S. 68.47±
INV. S. C-5.65
WL C-5.50

6" PVC BE EL. 71.69
16" DIP WM EL. 70.44

46 47 48

REFER TO R10 FOR ROADWAY CONSTRUCTION PLAN

BURIED FM

ADJUST GTE MH COORDINATE WITH VERIZON

CONVERT TO MANHOLE
CURB INLET S-2
EOP EL. 73.4±
GRATE EL.
INV. NW 68.08±
INV. SE 64.63±
INV. SW 64.63±
C-9.20 TO BOTTOM

8" PVC FM EL. 69.55
6-4" PVC FOC/BT EL. 67.60

8" PVC FM EL. 70.42
6-4" PVC FOC/BT EL. 68.23
CONNECT TO EXISTING 8" FM WITH 45° RJ BEND

8" PVC FM EL. 69.97
6-4" PVC FOC/BT EL. 70.04

6-4" PVC FOC/BT EL. 68.79
8" PVC FM EL. 67.80

8" PVC FM EL. 67.04
6-4" PVC FOC/BT EL. 69.21

12" PVC WM T/P 66.9
18" RCP B/P 68.40

RELOCATED 8" FM

8" DI 45° BEND

8" PVC FM T/P 66.85
18" RCP B/P 68.35

12" PVC WM T/P 70.6
8" PVC FM T/P 69.1

10" PVC WM T/P 66.8
18" RCP B/P 68.30

PROPOSED RIGHT-OF-WAY LINE

8" DI -22-1/2° BEND

12" RJ 45° DI BENDS

SIGNAL POLE

6' CONCRETE SIDEWALK FDOT INDEX 310

BUILD INLET OVER EXISTING 36" RCP

RELOCATE VERIZON FIBEROPTIC CABLE

RELOCATE UTILITY POLE & OVERHEAD LINES – COORDINATE WITH UTILITY (TYP.)

② 2" GALV. BLOW-OFF,
① 12" RJ DI PLUG (T/P EL. 70.50)

③ 12" PVC WM B/P 69.6±
48" RCP T/P 69.1±

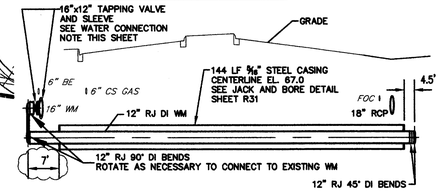
12"x10" DI TEE
① 10" GV
10" DI 22.5° BEND

10" WATER MAIN – SEE ONSITE PLANS

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

NOTE: LOCATION OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS SHALL NOT BE CONSIDERED TO BE EXACT FOR CONSTRUCTION PURPOSES. CALL UNDERGROUND FACILITIES LOCATION SERVICE – "SUNSHINE" (1-800-432-4770) 48 HOURS PRIOR TO ANY EXCAVATION ACTIVITY.



12" WATER LINE JACK AND BORE DETAIL ◈

SCALE: 1"=30'H 1"=6'V

◈ PASCO COUNTY REQUIRED WATER CONNECTION NOTE:

"CONNECTIONS INTO AN EXISTING COUNTY-OWNED SYSTEM SHALL BE VIA WET TAP. WET TAPS SHALL BE PERFORMED BY THE UTILITIES SERVICES BRANCH AT THE DEVELOPER'S EXPENSE. EXCAVATION, BACKFILL, AND SURFACE RESTORATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. MATERIAL FOR WET TAPS LARGER THAN TWO INCHES SHALL BE PROVIDED AND INSTALLED BY THE PROJECT CONTRACTOR."

SCALE: 1" = 10'

SWFWMD MAY 2010 PERMITTED DRAINAGE

SWFWMD Received NOV -3 2009 BRO-REG

MAY 21 2009

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRE-BID SET ISSUE DATE △ POST BID SET ISSUE DATE

DATE	DESCRIPTION
	①
12/08/08	② EQUIVE OFF PAVEMENT, REVISE DRIVEWAY SYNCES, AND MILLING & RESURFACING LIMITS
05/20/09	③ REV. CONNECTION POINT, ADDED CROSSING DATA

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OCT 26 2009

LOWE'S ENGINEERING AND CONSTRUCTION
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OFFSITE UTILITY PLAN

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

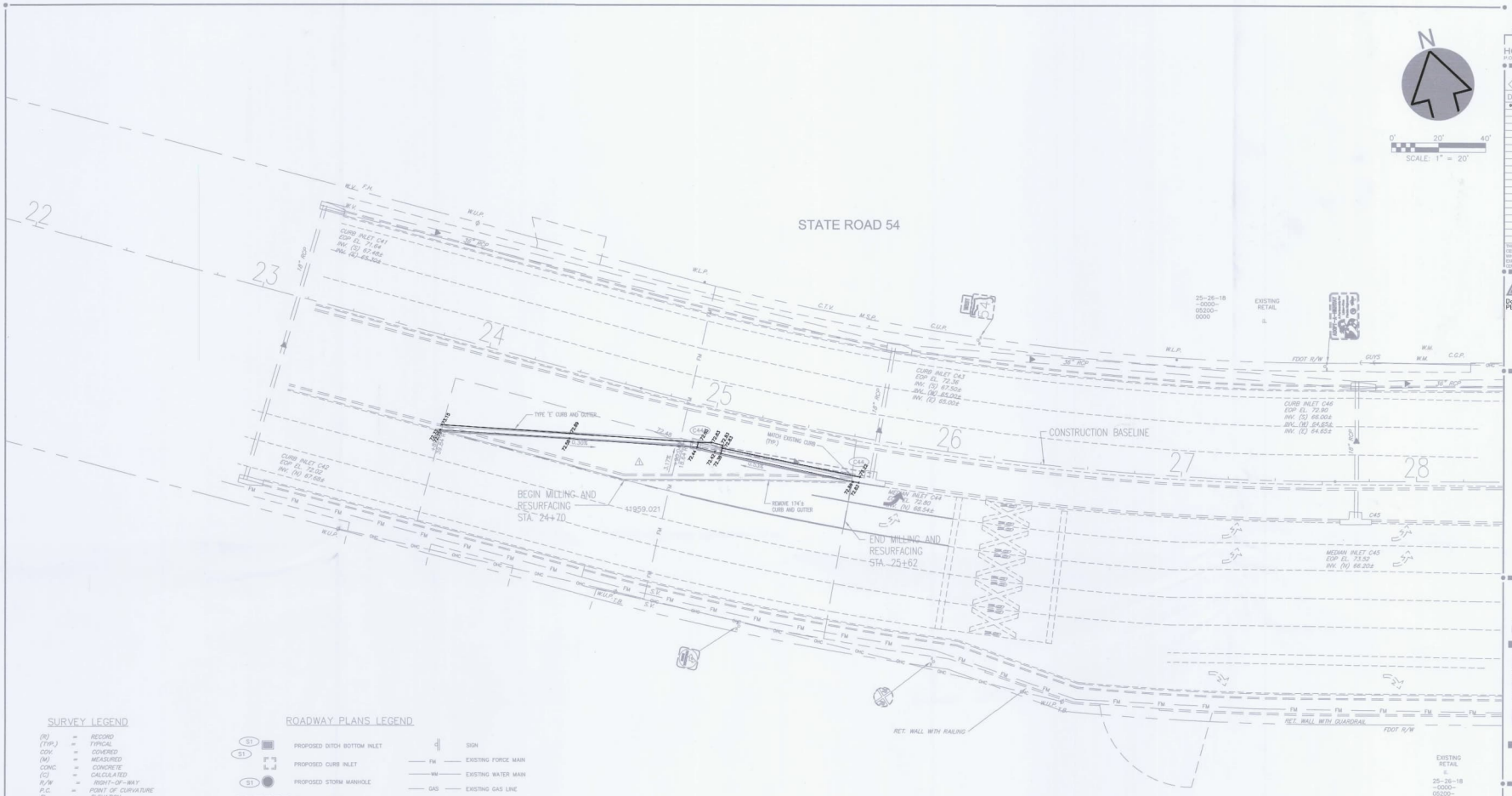
PROJECT No: L04101 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R32
OF __

JOB NO. L04101

Date: 05/21/09 Drawing: L04101S Land O Lakes Offsite.dwg

E:\Work\L04101 Lowes Land O Lakes\90Percent_Plans2009\L04101 Land O Lakes Offsite to Don 03-06-09\L04101S Land O Lakes Offsite.dwg, Layout:R32 Offsite Utility Plan



N

0' 20' 40'
SCALE: 1" = 20'

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	SITE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- FM — PROPOSED FORCE MAIN
- W — PROPOSED WATER LINE
- BT — PROPOSED BURIED TELEPHONE CONDUIT
- BT — PROPOSED BURIED POWER CONDUIT
- OHC — PROPOSED OVERHEAD COMBINATION
- X — X — EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- FM — EXISTING FORCE MAIN
- WM — EXISTING WATER MAIN
- GAS — EXISTING GAS LINE
- BT — EXISTING BURIED TELEPHONE
- BFO — EXISTING BURIED FIBEROPTIC
- OHC — EXISTING OVERHEAD COMBINATION
- OHP — EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED/MODIFIED EXISTING	STATION	DISTANCE (ft)	SW	TYPE	RIM ELEV.	GUTTER LOC	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
						72.44		68.59									
C44A	PROPOSED	24+95.27	17.38'	R	P STRUCTURE ALT 'A' TYPE 'E' CURB INLET TGT	72.38	W	68.69									FDOT INDEX 200, 211
C44	MODIFIED	TYPE 'E' CURB INLET			TOP OF MANHOLE ELEV.= 73.32	72.67	N	68.54							68.54		
								68.47									

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE (H)W	(W)	SLOPE (ft/ft)
G44A/C44	63	RCP	1	18	18	0.19

RECORD SURVEY OF ROADWAY PLAN

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

Robert D. Huss — Signature Date
Professional Surveyor and Mapper
Florida Certificate #5203
Haven Land Surveys, LLC
Florida Business License Number LB 7745
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293-0209 Fax (863) 293-0850

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

ROBERT D. HUSS — STATE OF FLORIDA — NO. 5203 — PROFESSIONAL SURVEYOR AND MAPPER

4401953 7.003
67020
FOR
Southwest Florida Water Management District
FEB 01 2016
Received
TAMPA RSB

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS

DATE	DESCRIPTION
01/15/2016	Revised Sigma Titles

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David W. Deslet
PE No.24760

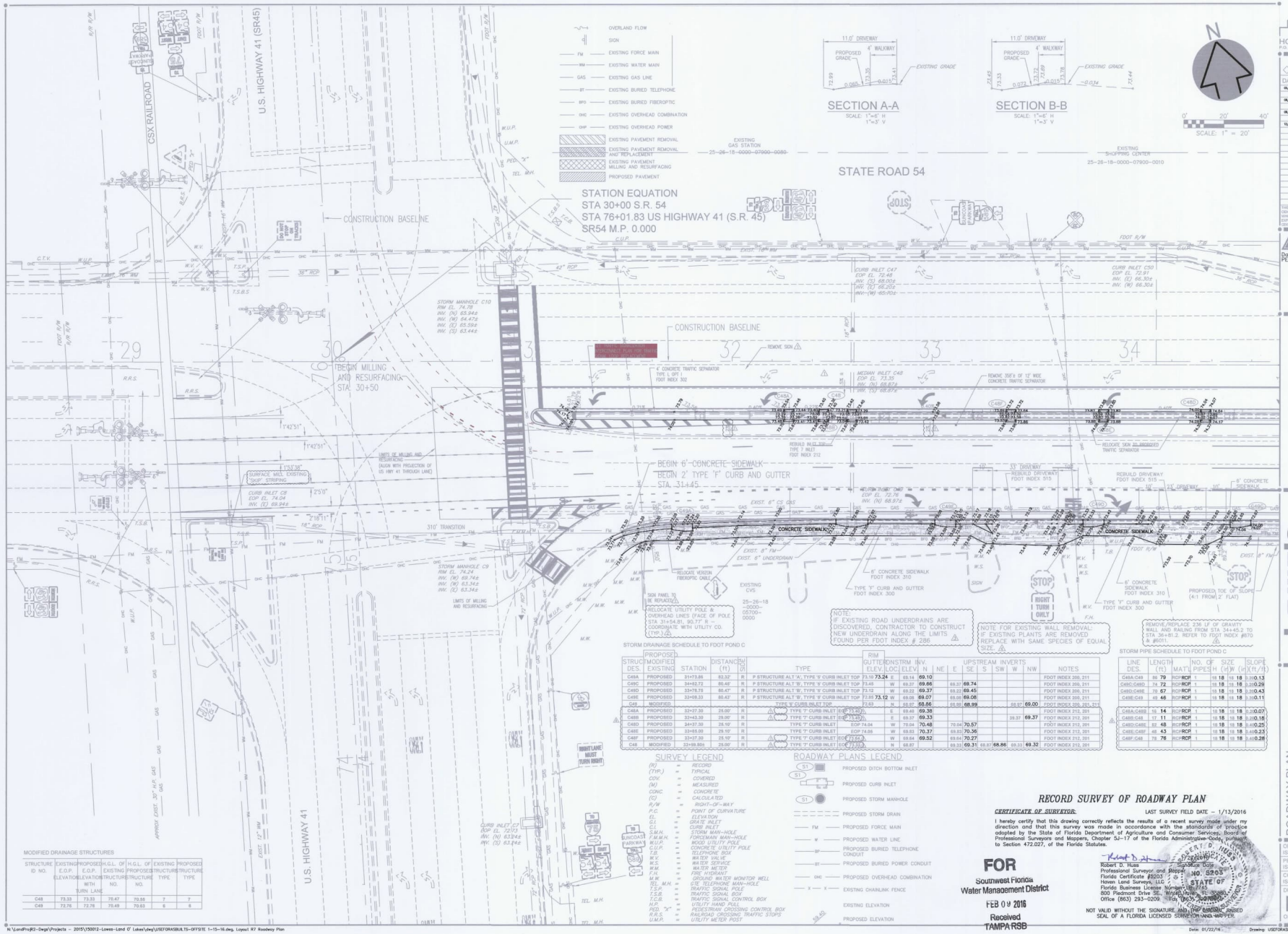
LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST-EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN
LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No. 13118 | DRAWN BY: WEB | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R6 OF

N:\LandProj\2-Dwgs\Projects – 2015\150012-Lowes-Land O' Lakes\dwg\USEFORASBUILTS-OFFSITE 1-15-16.dwg, Layout: R6 Roadway Plan
Date: 01/22/16
Drawing: USEFORASBUILTS-OFFSITE 1-15-16.dwg, Layout: R6 Roadway Plan
13118

A-895



NOTE:
IF EXISTING ROAD UNDERDRAINS ARE DISCOVERED, CONTRACTOR TO CONSTRUCT NEW UNDERDRAIN ALONG THE LIMITS FOUND PER FDOT INDEX # 286

NOTE FOR EXISTING WALL REMOVAL: IF EXISTING PLANTS ARE REMOVED REPLACE WITH SAME SPECIES OF EQUAL SIZE.

REMOVE/REPLACE 236 LF OF GRAVITY WALL AND RAILING FROM STA 34+45.2 TO STA 36+81.2. REFER TO FDOT INDEX #870 & #6011.

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV.	LOC	ONSTRM ELEV	INV. N	INV. NE	UPSTREAM INVERTS E	SE	S	SW	W	NW	NOTES
C45A	PROPOSED	31+73.86	82.32'	R	P STRUCTURE ALT 'A', TYPE 'B' CURB INLET TOP	73.10	73.24	E	69.14	69.10							FDOT INDEX 200, 211
C49C	PROPOSED	34+62.72	80.45'	R	P STRUCTURE ALT 'B', TYPE 'B' CURB INLET TOP	73.45		W	69.37	69.66		69.37	69.74				FDOT INDEX 200, 211
C49D	PROPOSED	33+76.75	80.47'	R	P STRUCTURE ALT 'B', TYPE 'B' CURB INLET TOP	73.12		W	69.22	69.37		69.22	69.45				FDOT INDEX 200, 211
C49E	PROPOSED	33+08.33	80.43'	R	P STRUCTURE ALT 'B', TYPE 'B' CURB INLET TOP	72.85	73.12	W	69.08	69.07		69.08	69.08				FDOT INDEX 200, 211
C49	MODIFIED				TYPE 'B' CURB INLET TOP	72.63		N	68.87	68.86		68.86	68.99			68.87	69.00	FDOT INDEX 200, 201, 211
C48A	PROPOSED	32+27.30	25.00'	R	TYPE 'F' CURB INLET EOP	73.40		E	69.40	69.38							FDOT INDEX 212, 201
C48B	PROPOSED	32+43.30	29.00'	R	TYPE 'F' CURB INLET EOP	73.40		E	69.37	69.33						39.37	69.37	FDOT INDEX 212, 201
C48D	PROPOSED	34+37.30	25.10'	R	TYPE 'F' CURB INLET EOP	74.04		W	70.04	70.48		70.04	70.57				FDOT INDEX 212, 201
C48E	PROPOSED	33+85.00	29.10'	R	TYPE 'F' CURB INLET EOP	74.06		W	69.83	70.37		69.83	70.36				FDOT INDEX 212, 201
C48F	PROPOSED	33+37.30	25.10'	R	TYPE 'F' CURB INLET EOP	73.64		W	69.64	69.52		69.64	70.27				FDOT INDEX 212, 201
C48	MODIFIED	32+59.80±	25.00'	R	TYPE 'F' CURB INLET EOP	73.50		N	68.87			69.33	69.31	68.87	68.86	69.33	69.32	FDOT INDEX 212, 201

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H	SIZE W	SIZE (in)	SLOPE (ft/ft)
C48A-C49	86 79	RCP	RCP 1	18	18	18	0.20 0.13
C49C-C48D	74 72	RCP	RCP 1	18	18	18	0.20 0.28
C49D-C49E	70 67	RCP	RCP 1	18	18	18	0.20 0.43
C49E-C49	49 46	RCP	RCP 1	18	18	18	0.20 0.11
C48A-C48B	16 14	RCP	RCP 1	18	18	18	0.20 0.07
C48B-C48	17 11	RCP	RCP 1	18	18	18	0.20 0.18
C48D-C48E	52 48	RCP	RCP 1	18	18	18	0.40 0.25
C48E-C48F	48 43	RCP	RCP 1	18	18	18	0.40 0.23
C48F-C48	78 76	RCP	RCP 1	18	18	18	0.40 0.28

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
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F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
TEL. M.H.	=	GTE TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND PULL
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

S1	PROPOSED DITCH BOTTOM INLET
S1	PROPOSED CURB INLET
S1	PROPOSED STORM MANHOLE
	PROPOSED STORM DRAIN
FM	PROPOSED FORCE MAIN
W	PROPOSED WATER LINE
BP	PROPOSED BURIED TELEPHONE CONDUIT
BT	PROPOSED BURIED POWER CONDUIT
OHC	PROPOSED OVERHEAD COMBINATION
X — X	EXISTING CHAINLINK FENCE
	EXISTING ELEVATION
59.40	PROPOSED ELEVATION

MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C48	73.33	73.33	70.47	70.55	7	7
C49	72.76	72.76	70.49	70.63	6	6

RECORD SURVEY OF ROADWAY PLAN

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

Robert D. Huss
Professional Surveyor and Mapper
Florida Certificate #5203
Haven Land Surveys, LLC
Florida Business License Number: 8-7745
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293-0209 Fax (863) 293-0209

Signature Date
ROBERT D. HUSS
NO. 5203
STATE OF FLORIDA
PROFESSIONAL SURVEYOR AND MAPPER

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FOR
Southwest Florida
Water Management District
FEB 09 2016
Received
TAMPA RSB

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28659

REVISIONS
PRE-BID SET ISSUE DATE — POST BID SET ISSUE DATE

DATE	DESCRIPTION
09/09/2014	FDOT COMMENTS – SUPPLY NEW PAVEMENT TO MATCHING STRIPING SET-IN SIGN (FDOT SIGNAL REPLACE WITH SIGN PANEL)
09/11/2014	ADDED SIDE WAY WELDCAST (STD 30+50.00) ADDED DRAINAGE WALL WELDCAST (STD 30+45.00)
09/04/2014	REVISION OF STORE STRIPE @ ISLAND ADDED UNDERDRAIN NOTE
12/02/2014	SURFACE ADD AND DRAINAGE STRUCTURES CONC. CURB, CURB, CURB, CONC. CURB, SIDEWALK PROPOSED BY LOWES WALL

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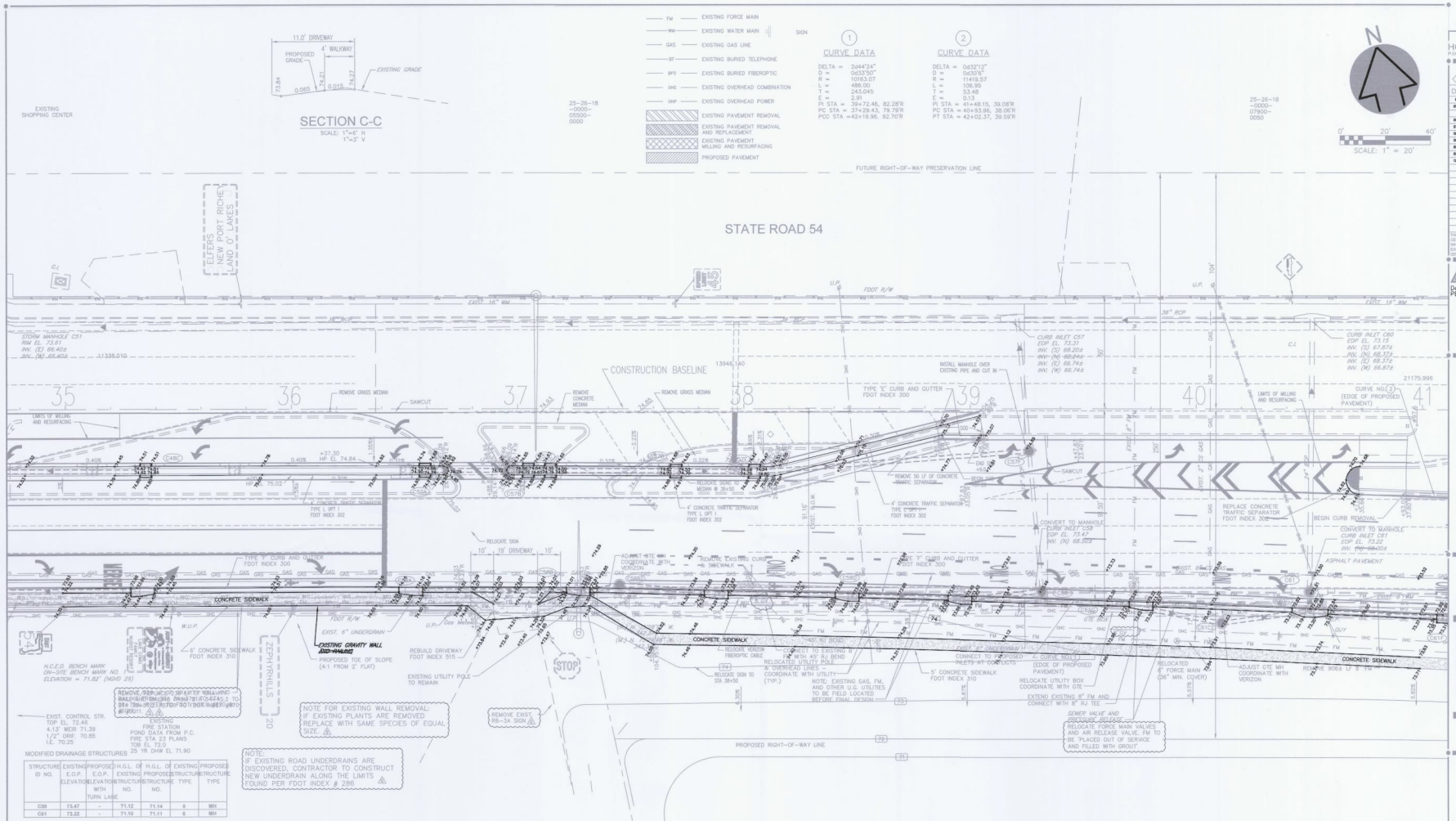
ROADWAY PLAN
LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No. 13118 DRAWN BY: WLR CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R7
OF —

N:\LandProj\R2-Dwgs\Projects - 2015\150012-Lowes-Land O' Lakes\dwg\USEFORASBUILTS-OFFSITE 1-15-16.dwg, Layout R7 Roadway Plan

Date: 01/22/16 Drawing: USEFORASBUILTS-OFFSITE 1-15-16.dwg



MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C58	73.47	-	71.12	71.14	5	MH
C61	73.24	-	71.10	71.11	6	MH

STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED MODIFIED EXISTING	STATION	DISTANCE (ft)	SIDE	TYPE	RIM GUTTER ELEV	DISTRM LOC	INV. ELEV	N	UPSTREAM INVERTS NE	E	SE	S	SW	W	NW	NOTES
C48B	PROPOSED	39+30.80	80.40'	R	P STRUCTURE ALT 'A', TYPE 'E' CURB INLET TOP	73.73/73.99	W	69.52	69.81								FDOT INDEX 200, 211
C48C	PROPOSED	39+37.36	28.10'	R	TYPE 'F' CURB INLET EOP 74.44		W	70.44	70.70								FDOT INDEX 212, 201
C58A	PROPOSED	36+68.34	89.47'	R	P STRUCTURE ALT 'A', TYPE 'E' CURB INLET TOP	73.91 74.14	E	69.70	70.09								FDOT INDEX 200, 211
C58B	PROPOSED	37+28.78	91.06'	R	P STRUCTURE ALT 'B', TYPE 'E' CURB INLET TOP	73.72 73.93	E	69.98	69.98					69.98	69.96		FDOT INDEX 200, 211
C59B2	PROPOSED	37+45.08	77.90'	R	TYPE 7 MANHOLE TOP, ALT B	73.87 73.96	E	69.93	69.81					69.93	69.83		FDOT INDEX 201
C59C	PROPOSED	37+95.10	91.60'	R	P STRUCTURE ALT 'B', TYPE 'E' CURB INLET TOP	73.63 73.85	E	69.44	69.53					69.44	69.54	FDOT INDEX 200, 211	
C59D	PROPOSED	38+46.03	82.50'	R	P STRUCTURE ALT 'B', TYPE 'E' CURB INLET TOP	73.46 73.69	E	69.32	69.38					69.32	69.44	FDOT INDEX 200, 211	
C59E	PROPOSED	39+97.27	92.12'	R	P STRUCTURE ALT 'B', TYPE 'E' CURB INLET TOP	73.41 73.75	E	69.22	69.25					69.22	69.25	FDOT INDEX 200, 211	
C59	MODIFIED	39+91.70	49.96'	R	TYPE 7 MANHOLE TOP, ALT B	73.43	N	68.50						69.15	69.22	FDOT INDEX 201	
C57A	PROPOSED	36+60.00	29.12'	R	TYPE 'F' CURB INLET	EOP 74.84	E	70.84	71.10								FDOT INDEX 212, 201
C57B	PROPOSED	37+05.00	28.10'	R	TYPE 'F' CURB INLET	EOP 74.76	E	70.64	71.00					70.64	71.01	FDOT INDEX 212, 201	
C57C	PROPOSED	37+15.00	25.19'	R	TYPE 'F' CURB INLET	EOP 74.59	E	70.59	70.89					70.59	70.98	FDOT INDEX 212, 201	
C57D	PROPOSED	37+69.00	25.41'	R	TYPE 'F' CURB INLET EOP 74.43		E	70.42	70.63					70.42	70.76	FDOT INDEX 212, 201	
C57E	PROPOSED	38+05.00	25.74'	R	TYPE 'F' CURB INLET EOP 74.34		E	70.30	70.53	FDOT INDEX 212, 201				70.30	70.53	FDOT INDEX 212, 201	
C57F	PROPOSED	39+25.12	18.49'	R	TYPE 7 MANHOLE TOP, ALT B	74.89 74.89	N	68.35	68.36			68.35	68.36	69.77	69.82	FDOT INDEX 201	
C61C	PROPOSED	39+91.70	68.00'	R	P STRUCTURE ALT 'A', TYPE 'F' CURB INLET TOP	74.21	E	69.55	69.21								FDOT INDEX 200, 211
C61C2	PROPOSED	40+11.41	54.60'	R	TYPE 7 MANHOLE TOP, ALT B	73.63	E	68.83						68.83		FDOT INDEX 201	
C61F	PROPOSED	40+10.00	61.70'	R	P STRUCTURE ALT 'B', TYPE 'F' CURB INLET TOP	72.28 72.91	W	68.68			68.68					FDOT INDEX 200, 211	
C61G	PROPOSED	40+60.28	66.58'	R	J STRUCTURE, TYPE 'V' CURB INLET TOP,ALT	72.65	N	68.56	68.74		68.56	68.88		68.78	69.00	FDOT INDEX 200, 211	
C61	MODIFIED			R	TYPE 7 MANHOLE TOP, ALT B	73.18	S	68.00	68.74				68.54	68.77		FDOT INDEX 201	

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MAT	NO. OF PIPES	SIZE (H)	SIZE (W)	SLOPE (H)	SLOPE (V)
C48B-C48C	78.78	RCP	RCP	1	18	18	0.00
C48C-C48D	83.96	RCP	RCP	1	18	18	0.00	0.14
C58A-C58B	72.71	RCP	RCP	1	18	18	0.00	0.18
C58B-C58C	18.7	RCP	RCP	1	18	18	0.00	2.11
C59B2-C59C	44.45	RCP	RCP	1	18	18	0.00	0.64
C59C-C59D	89.56	RCP	RCP	1	18	18	0.00	0.16
C59D-C59E	49.48	RCP	RCP	1	18	18	0.00	0.27
C59E-C59	39.32	RCP	RCP	1	18	18	0.00	0.09
C59-C57F	83	RCP	RCP	1	18	18	0.00	0.21
C57A-C57B	48.43	RCP	RCP	1	18	18	0.00	0.40	0.27
C57B-C57C	10.6	RCP	RCP	1	18	18	0.00	0.40	0.33
C57C-C57D	54.52	RCP	RCP	1	18	18	0.00	0.30	0.25
C57D-C57E	37.32	RCP	RCP	1	18	18	0.00	0.38	0.31
C57E-C57F	118.119	RCP	RCP	1	18	18	0.00	0.53
C61C-C61C2	47.30	RCP	RCP	1	18	18	0.00	0.23
C61C2-C61G	39.37	RCP	RCP	1	18	18	0.00	0.16
C61F-C61G	59.56	RCP	RCP	1	18	18	0.00	0.14
C61G-C61	6	RCP	RCP	1	18	18	0.00	0.50

SURVEY LEGEND

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PED. "X" = PEDESTRIAN CROSSING CONTROL BOX
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U.M.P. = UTILITY METER POST

ROADWAY PLANS LEGEND

PROPOSED DITCH BOTTOM INLET
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PROPOSED STORM DRAIN
PROPOSED FORCE MAIN
PROPOSED WATER LINE
PROPOSED BURIED TELEPHONE CONDUIT
PROPOSED BURIED POWER CONDUIT
PROPOSED OVERHEAD COMBINATION
EXISTING CHAINLINK FENCE
EXISTING ELEVATION
PROPOSED ELEVATION
OVERLAND FLOW

RECORD SURVEY OF ROADWAY PLAN

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

Robert D. Huss
Signature/Date
Professional Surveyor and Mapper
Florida Certificate #2023
Haven Land Surveys, LLC
Florida Business License Number LB 7740
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293-0209 Fax (863) 293-0210

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FOR
Southwest Florida
Water Management District

FEB 09 2016
Received
TAMPA RSB

Date: 01/23/16 Drawing: USEFORASBUILTS-OFTSTS (8063-183-1) 13118

LOWE'S
HOME CENTERS, INC.
P.O. BOX 1111 N. WILKESBORO, NC 28697

REVISIONS

DATE	DESCRIPTION
02/04/14	UPDATE PLAN FOR FIRE STATION ACCESS
05/05/2014	TOOK COMMENTS - SLOPE NEW PARKING AREA TO 2% MAX. CHANGE SLOPE OF NEW SIDEWALK TO 2% MAX. CHANGE SLOPE OF NEW DRIVEWAY SIDE SIDEWALK TO 2% MAX. CHANGE SLOPE OF NEW DRIVEWAY TO 2% MAX.
06/23/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
07/10/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
08/11/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
08/04/2014	SHARP COMMENTS - SEE SAM MARKS
08/11/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
08/15/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
08/18/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.
12/22/2014	ADDED NOTE TO REMOVE EXISTING WALL AND REPLACE WITH SAME SPECIES OF EQUAL SIZE.

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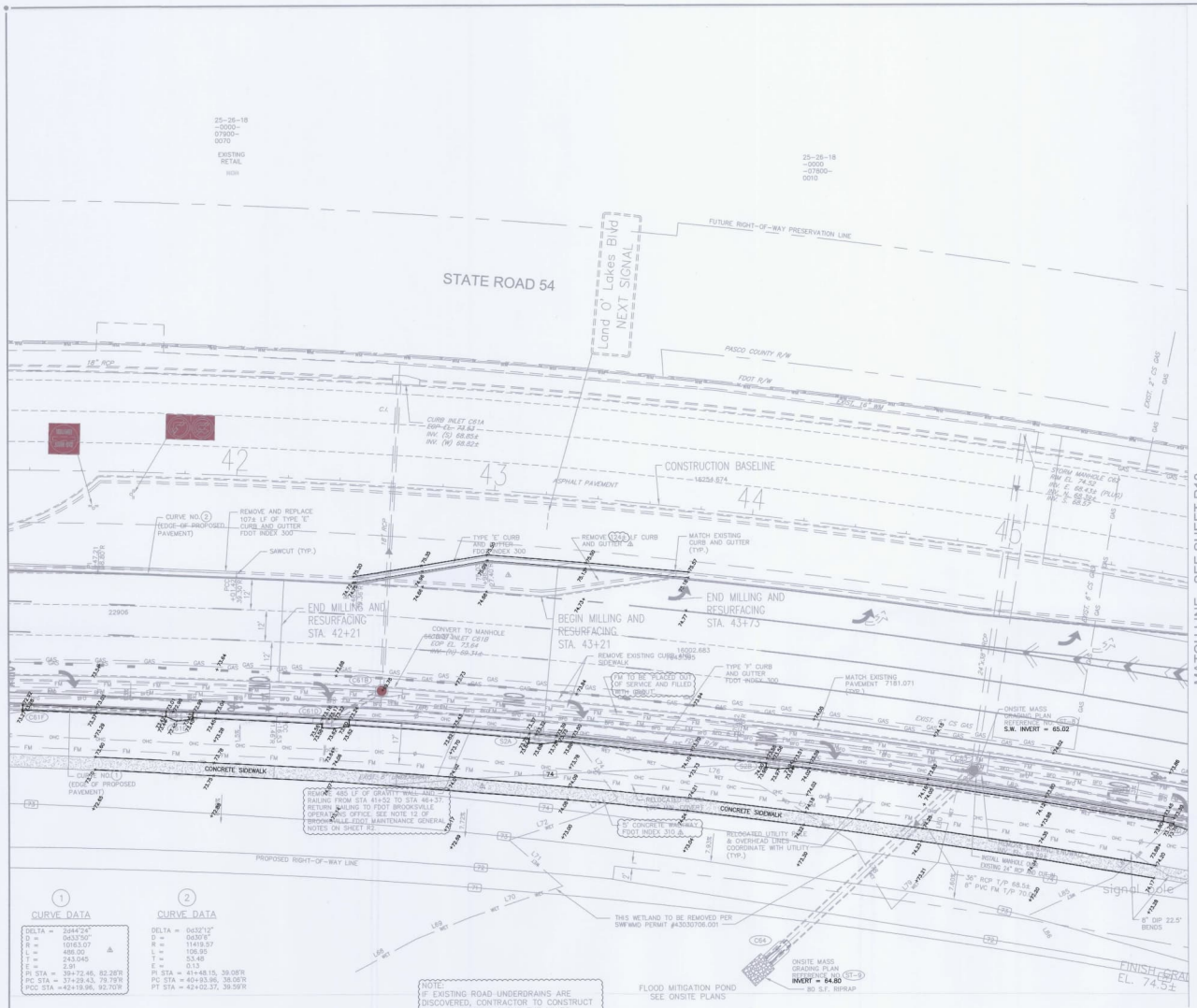
LINDER & ASSOCIATES, INC.
ENGINEERS
David W. Deslier
PE No.24760

LOWE'S
ENGINEERING AND CONSTRUCTION
HWY 268 EAST EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN

LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No. 13118 DRAWN BY: WLR CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R8
OF –



STORM DRAINAGE SCHEDULE TO FDOT POND C

STRUCT DES.	PROPOSED/ MODIFIED/ EXISTING	STATION	DISTANCE (ft)	SW (ft)		TYPE	RIM ELEV.	GUTTER LOC.	CONSTRM ELEV.	INV. LOC.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C61E	PROPOSED	41+79.74	67.49'	4.0	R	P STRUCTURE ALT 'A', TYPE 'E' CURB INLET TOP	73.32	SW	72.98	W	68.81							69.08	FDOT INDEX 200, 211
C61F	PROPOSED	41+13.20	67.76'	4.0	R	P STRUCTURE ALT 'B', TYPE 'E' CURB INLET TOP	73.40	SW	72.91	W	68.68					68.68	69.01		FDOT INDEX 200, 211
C61D	PROPOSED	42+46.11	63.98'	4.0	R	P STRUCTURE ALT 'A', TYPE 'E' CURB INLET TOP	73.67	SW	73.17	E	68.46	69.79							FDOT INDEX 200, 211
C61B	MODIFIED					TYPE 7 MANHOLE TOP, ALT B	73.60		69.76	W	69.31	69.32						69.35	69.76 FDOT INDEX 201
C63	PROPOSED	44+99.23	87.11'	R		TYPE 'J' MANHOLE, ALT B, TYPE T TOP	73.88	SW	73.88	SW	65.04	65.39							FDOT INDEX 200, 201
C64	PROPOSED	44+27.73	171.09'	R		CROSS DRAIN MITERED END SECTION	64.82											64.82	FDOT INDEX 272

STORM DRAINAGE SCHEDULE TO FDOT POND 1A

STRUCT DES.	PROPOSED/ MODIFIED/ EXISTING	STATION	DISTANCE (ft)	SW (ft)		TYPE	RIM ELEV.	GUTTER LOC.	CONSTRM ELEV.	INV. LOC.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
S2A	PROPOSED	43+23.40	44.12'	4.0	R	P STRUCTURE, TYPE 'E' CURB INLET TOP	73.32	SE	73.32	SE	69.35	69.60							FDOT INDEX 200, 211
S2B	PROPOSED	44+19.75	44.12'	4.0	R	P STRUCTURE, TYPE 'E' CURB INLET TOP	73.39	SE	73.56	SE	69.17	69.38						69.45	69.17 FDOT INDEX 200, 211
S2C	PROPOSED	42+68.40	32.60'	4.0	R	P STRUCTURE, TYPE 'E' CURB INLET TOP	73.35	SE	73.35	SE	68.84	69.01						69.06	68.84 FDOT INDEX 200, 211

STORM PIPE SCHEDULE TO FDOT POND C

LINE DES.	LENGTH (ft)	MATL	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SIZE R (in)	SLOPE (ft/ft)
C61E-C61F	67	64 RCP	RCP	1	18	18	0.00 0.11
C61D-C61B	24	23 RCP	RCP	1	18	18	0.00 0.13
C63-C64	108	RCP		1	36	36	0.20

STORM PIPE SCHEDULE TO FDOT POND 1A

LINE DES.	LENGTH (ft)	MATL	NO. OF PIPES	SIZE H (in)	SIZE W (in)	SIZE R (in)	SLOPE (ft/ft)
S2A-S2B	93	91 RCP	RCP	1	18	18	0.00 0.16
S2B-S2C	163	162 RCP	RCP	1	18	18	0.00 0.18
S2C-S2D	52	50 RCP	RCP	1	18	18	0.00 0.16

MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION	EXISTING H.G.L. OF STRUCTURE WITH TURN LANE	PROPOSED H.G.L. OF STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C61B	73.64	-	71.25	71.18	S	MH
C63	-	-	-	-	ENDWALL	MH

SURVEY LEGEND

(R)	=	RECORD
(TYP.)	=	TYPICAL
COV.	=	COVERED
(M)	=	MEASURED
CONC.	=	CONCRETE
(C)	=	CALCULATED
R/W	=	RIGHT-OF-WAY
P.C.	=	POINT OF CURVATURE
EL.	=	ELEVATION
G.I.	=	GRATE INLET
C.I.	=	CURB INLET
S.M.H.	=	STORM MAN-HOLE
F.M.M.H.	=	FORCEMAIN MAN-HOLE
W.U.P.	=	WOOD UTILITY POLE
C.U.P.	=	CONCRETE UTILITY POLE
T.B.	=	TELEPHONE BOX
W.V.	=	WATER VALVE
W.S.	=	WATER SERVICE
W.M.	=	WATER METER
F.H.	=	FIRE HYDRANT
M.W.	=	GROUND WATER MONITOR WELL
T.E. M.H.	=	OT TELEPHONE MAN-HOLE
T.S.P.	=	TRAFFIC SIGNAL POLE
T.S.B.	=	TRAFFIC SIGNAL BOX
T.C.B.	=	TRAFFIC SIGNAL CONTROL BOX
H.P.	=	UTILITY HAND POLE
PED. "X"	=	PEDESTRIAN CROSSING CONTROL BOX
R.R.S.	=	RAILROAD CROSSING TRAFFIC STOPS
U.M.P.	=	UTILITY METER POST

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

RECORD SURVEY OF ROADWAY PLAN

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

Robert D. Huss — 1/22/2016

Robert D. Huss — Signature Date
Professional Surveyor and Mapper
Florida Certificate #5203
Haven Land Surveys, LLC
Florida Business License Number LB 7745
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293-0209 Fax (863) 293-0809

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FOR
Southwest Florida Water Management District
~~FEB 0 9 2016~~
Received
TAMPA RSB

LOWE'S HOME CENTERS, INC.
P.O. BOX 1111, N. WILKESBORO, NC 28656

REVISIONS
◇ PRELIMINARY ISSUE DATE △ FOR PERMIT ISSUE DATE

DATE	DESCRIPTION
02/04/14	ADDED SIGNAL CONDITIONS TO SHEET R1
01/01/2014	ADDED "CURB INLET" TO SHEET R1
01/31/2014	REVISED ROADWAY PLANS, CLEAR & GRUB, AND DRAINAGE PLANS
08/04/2014	ADDED RESTORATION NOTE
10/01/2014	ADDED "AT 3RD STREET SE FROM 4" TO 12" AS PLANS OUT OF SCALE, FILED W/ SWFWMD

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LAUCKS & ASSOCIATES, INC. ENGINEERS & SURVEYORS
8955 BENT OAKRD.
TAMPA, FLORIDA 33647
PH. (813) 886-0606
LIC. NO. 0000446E
David W. Desilet
PE No.24760

LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

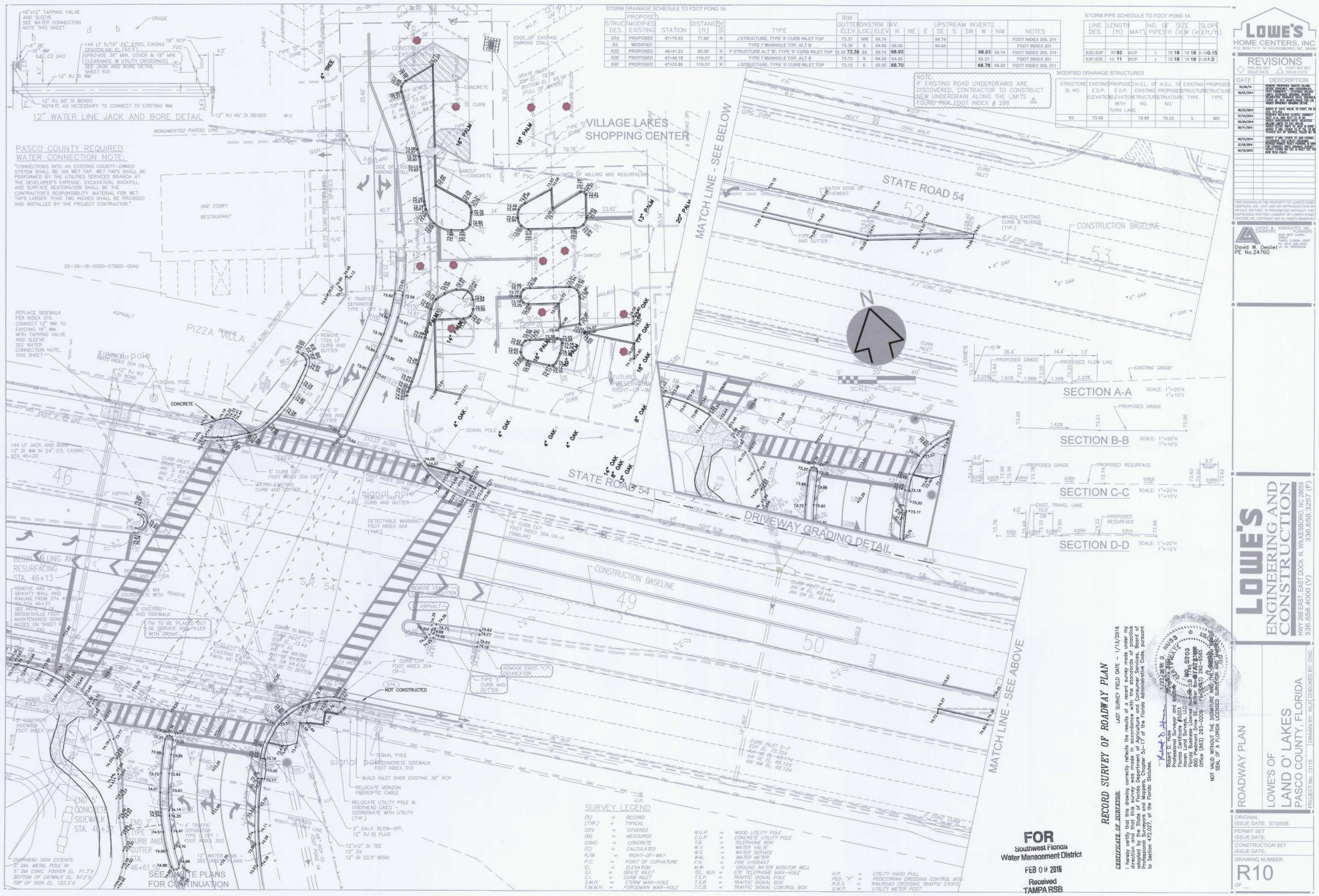
ROADWAY PLAN
LOWES OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No. 13118 | DRAWN BY: WLR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R9 OF _

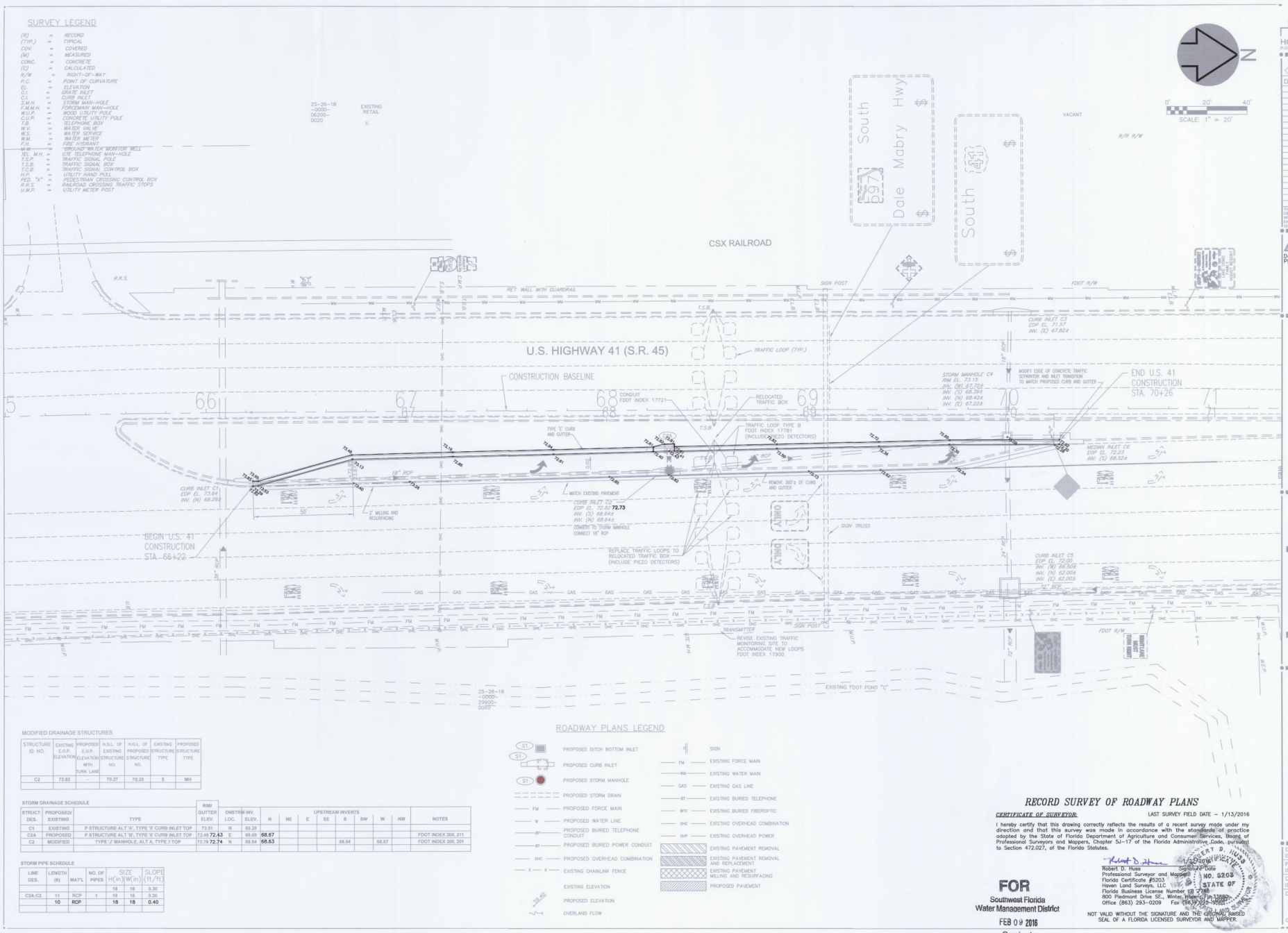
Date: 01/22/16 Drawing: USEFORASBUILTS-OFFSITE 1-15-16.dwg

N:\LandProj\R2-Dwgs\Projects - 2015\13012-Lowes-Land o' Lakes\dwg\USEFORASBUILTS-OFFSITE 1-15-16.dwg, Layout R9 Roadway Plan

A-898


12" WATER LINE JACK AND BORE DETAIL
PASCO COUNTY REQUIRED WATER CONNECTION NOTE:
"CONNECTIONS INTO AN EXISTING COUNTY-OWNED SYSTEM SHALL BE VIA WET TAP. WET TAPS SHALL BE PERFORMED BY THE UTILITIES SERVICES BRANCH AT THE DEVELOPER'S EXPENSE. EXCAVATION, BACKFILL, AND SURFACE RESTORATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. MATERIAL FOR WET TAPS LARGER THAN TWO INCHES SHALL BE PROVIDED AND INSTALLED BY THE PROJECT CONTRACTOR."
VILLAGE LAKES SHOPPING CENTER
STATE ROAD 54
MATCH LINE - SEE BELOW
MATCH LINE - SEE ABOVE
CONSTRUCTION BASELINE
DRIVEWAY GRADING DETAIL
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
NOT CONSTRUCTED
SURVEY LEGEND
RECORD SURVEY OF ROADWAY PLAN
FOR
Southwest Florida Water Management District
FEB 09 2016
Received
TAMPA RSB
LOWE'S HOME CENTERS, INC
P.O. BOX 1111 N. WILKESBORO, NC 28656
REVISIONS
LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOOK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)
ROADWAY PLAN
LOWE'S OF LAND O' LAKES
PASCO COUNTY, FLORIDA
ORIGINAL ISSUE DATE: 07/25/06
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R10

A-899



MODIFIED DRAINAGE STRUCTURES

STRUCTURE ID NO.	EXISTING E.O.P. ELEVATION	PROPOSED E.O.P. ELEVATION WITH TURN LANE	H.G.L. OF EXISTING STRUCTURE NO.	H.G.L. OF PROPOSED STRUCTURE NO.	EXISTING STRUCTURE TYPE	PROPOSED STRUCTURE TYPE
C2	72.82	-	70.27	70.25	S	MH

STORM DRAINAGE SCHEDULE

STRUCT. DES.	PROPOSED/ EXISTING	TYPE	RIM/ GUTTER ELEV.	DNSTRM INV. LOC.	DNSTRM INV. ELEV.	UPSTREAM INVERTS N	NE	E	SE	S	SW	W	NW	NOTES
C1	EXISTING	P STRUCTURE ALT 'A', TYPE 'S' CURB INLET TOP	73.97	N	69.29									
C2A	PROPOSED	P STRUCTURE ALT 'B', TYPE 'S' CURB INLET TOP	72.46 **72.43**	E	69.69	**68.67**								FDOT INDEX 200, 211
C2	MODIFIED	TYPE 'J' MANHOLE, ALT A, TYPE 7 TOP	73.79 **72.74**	N	68.64	**68.63**				68.64		68.67		FDOT INDEX 200, 201

STORM PIPE SCHEDULE

LINE DES.	LENGTH (ft)	MAT'L	NO. OF PIPES	SIZE H(in)	SIZE W(in)	SLOPE (ft/ft)
				18	18	0.30
C2A-C2	11	RCP	1	18	18	0.20
	10	RCP		18	18	0.40

ROADWAY PLANS LEGEND

- PROPOSED DITCH BOTTOM INLET
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAIN
- PROPOSED FORCE MAIN
- PROPOSED WATER LINE
- PROPOSED BURIED TELEPHONE CONDUIT
- PROPOSED BURIED POWER CONDUIT
- PROPOSED OVERHEAD COMBINATION
- EXISTING CHAINLINK FENCE
- EXISTING ELEVATION
- PROPOSED ELEVATION
- OVERLAND FLOW
- SIGN
- EXISTING FORCE MAIN
- EXISTING WATER MAIN
- EXISTING GAS LINE
- EXISTING BURIED TELEPHONE
- EXISTING BURIED FIBEROPTIC
- EXISTING OVERHEAD COMBINATION
- EXISTING OVERHEAD POWER
- EXISTING PAVEMENT REMOVAL
- EXISTING PAVEMENT REMOVAL AND REPLACEMENT
- EXISTING PAVEMENT MILLING AND RESURFACING
- PROPOSED PAVEMENT

RECORD SURVEY OF ROADWAY PLANS

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J-17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

1/29/2016
Robert D. Huss Signature Date
Professional Surveyor and Mapper
Florida Certificate #5203
Haven Land Surveys, LLC
Florida Business License Number 6B 7748
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293-0209 Fax (863) 293-0958

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

STATE OF FLORIDA ROBERT D. HUSS NO. 5203 PROFESSIONAL SURVEYOR AND MAPPER

FOR
Southwest Florida Water Management District
FEB 09 2016
Received TAMPA RSB

LOWE'S HOME CENTERS, INC
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
◇ PRELIM SET ISSUE DATE △ FOR PERMIT ISSUE DATE

DATE	DESCRIPTION

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8555 WEST LAUREL DRIVE
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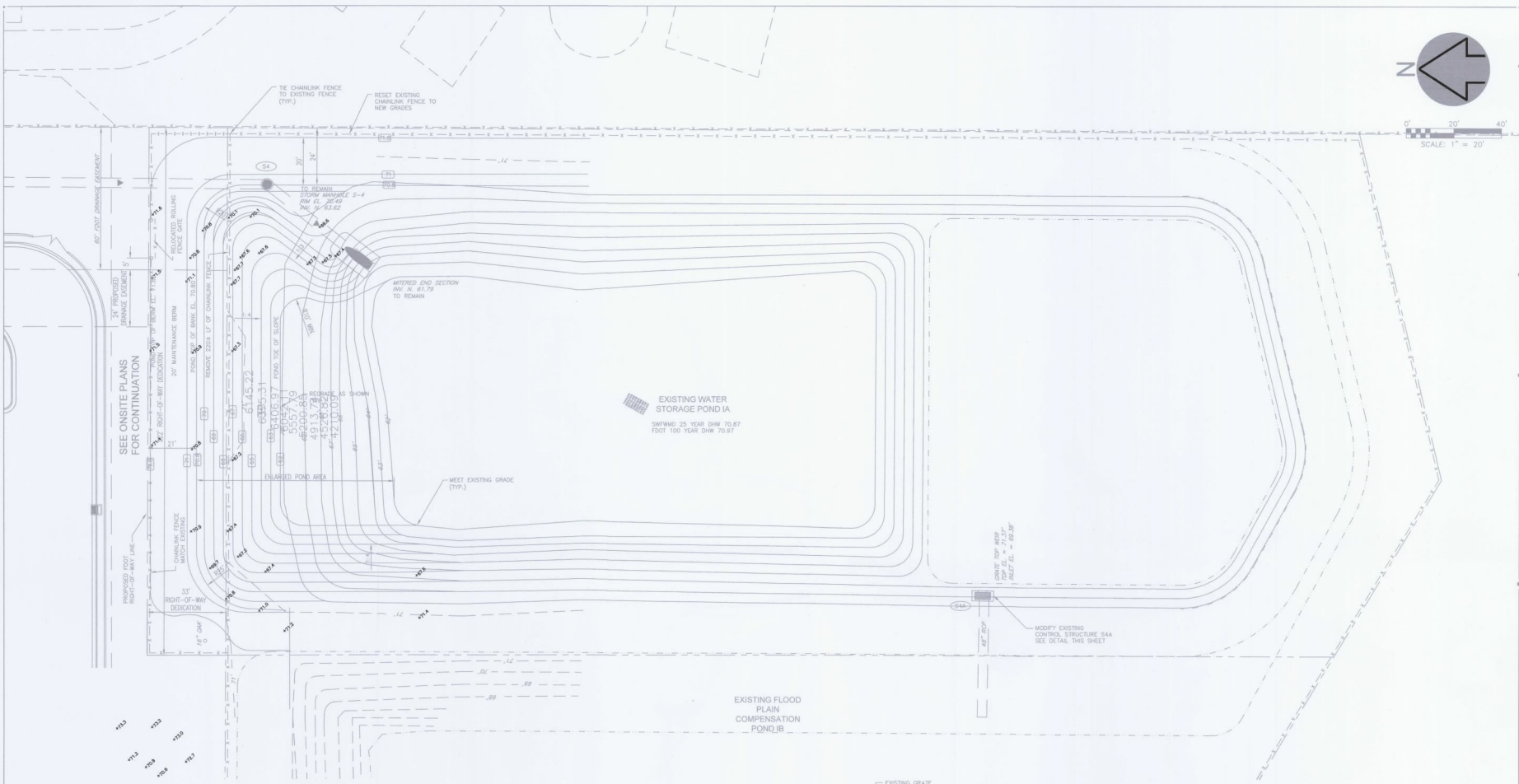
FAX (813) 396-1028
C.O.A. NO. 00004438
David W. Deslet PE No.24760

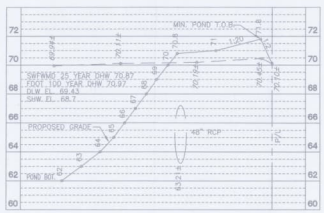
LOWE'S ENGINEERING AND CONSTRUCTION
HWY 268 EAST, EAST DOCK N. WILKESBORO, NC 28659
336.658.4000 (V) 336.658.3257 (F)

ROADWAY PLAN
LOWES OF LAND O' LAKES
PASCO COUNTY, FLORIDA
PROJECT No. 13118 DRAWN BY: VLM CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R11
OF

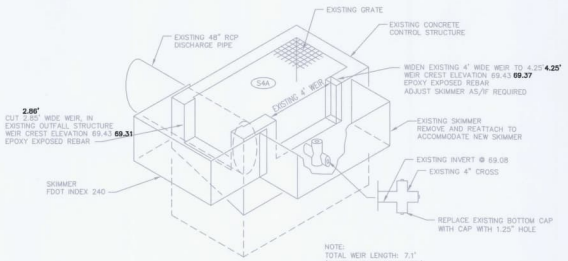
A-900





SECTION A-A

SCALE: HORIZ: 1"=20'
VERT: 1"=4'



MODIFIED CONTROL STRUCTURE S4A DETAIL

NTS

RECORD SURVEY OF FDOT POND

CERTIFICATE OF SURVEYOR: LAST SURVEY FIELD DATE – 1/13/2016

I hereby certify that this drawing correctly reflects the results of a recent survey made under my direction and that this survey was made in accordance with the standards of practice adopted by the State of Florida Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, Chapter 5J–17 of the Florida Administrative Code, pursuant to Section 472.027, of the Florida Statutes.

1/22/2016
Robert D. Huss Signature Date
Professional Surveyor and Mapper
Florida Certificate #5203
Haven Land Surveys, LLC
Florida Business License Number: LB 3245
800 Piedmont Drive SE., Winter Haven, FL 33880
Office (863) 293–0209 Fax (863) 299-2665

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

ROBERT D. HUSS CERTIFICATE NO. 5203 STATE OF FLORIDA REGISTERED LAND SURVEYOR

FOR
Southwest Florida Water Management District

FEB 09 2016
Received
TAMPA RSB

LOWE'S
HOME CENTERS, INC
P.O. BOX 1111 N. WILKESBORO, NC 28656

REVISIONS
PRE-BID SET ISSUE DATE | POST BID SET ISSUE DATE

DATE	DESCRIPTION

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PH. (813) 206-1029
FAX (813) 206-1028
LC. NO. 0000443
David W. Deslat
PE No.24760

LOWE'S
ENGINEERING AND CONSTRUCTION
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336.658.4000 (V) 336.658.3257 (F)

FDOT Pond 1A

LOWE'S OF
LAND O' LAKES
PASCO COUNTY, FLORIDA

PROJECT No: 13118 | DRAWN BY: MKR | CHECKED BY: DWD

ORIGINAL ISSUE DATE: 07/25/08
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: R18
OF –

A-901

FDOT-STATE ROAD 54 EAST OF U.S. 41
TO CYPRESS CREEK
(PERMIT#43-19567-0)

COMPONENTS OF CONTRACT PLAN SET

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS
STRUCTURE PLANS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2 - 7	SUMMARY OF PAY ITEMS
8	BOX CULVERT DATA
9 - 11	TYPICAL SECTIONS
12 - 13	SUMMARY OF QUANTITIES
14 - 31	SUMMARY OF DRAINAGE STRUCTURES
32 - 55	PLAN-PROFILE SHEETS
56 - 58	BACK OF SIDEWALK PROFILES
59 - 72	SPECIAL SIDEWALK PROFILES
73	CURB RETURN PROFILES
74 - 84	INTERSECTION DETAILS
85 - 106	DRAINAGE STRUCTURES
107 - 119	DETENTION AREA SHEETS
120 - 123	SPECIAL DETAILS
124	ROADWAY SOIL SURVEY
125 - 127	MUCK PROBE SHEETS
128 - 205	CROSS SECTION SHEETS
206 - 234	DETENTION AREA CROSS SECTION SHEETS
235 - 267	TRAFFIC CONTROL SHEETS
268 - 291	UTILITY ADJUSTMENT SHEETS
292 - 293	BOARDWALK STANDARDS
294 - 302	DRIVEWAY PROFILES
303 - 304	STORMWATER POLLUTION PREVENTION SHEETS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
ROADWAY AND TRAFFIC DESIGN STANDARDS
DATED JANUARY 1998, AND
STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION DATED 1998,
AS AMENDED BY CONTRACT DOCUMENTS

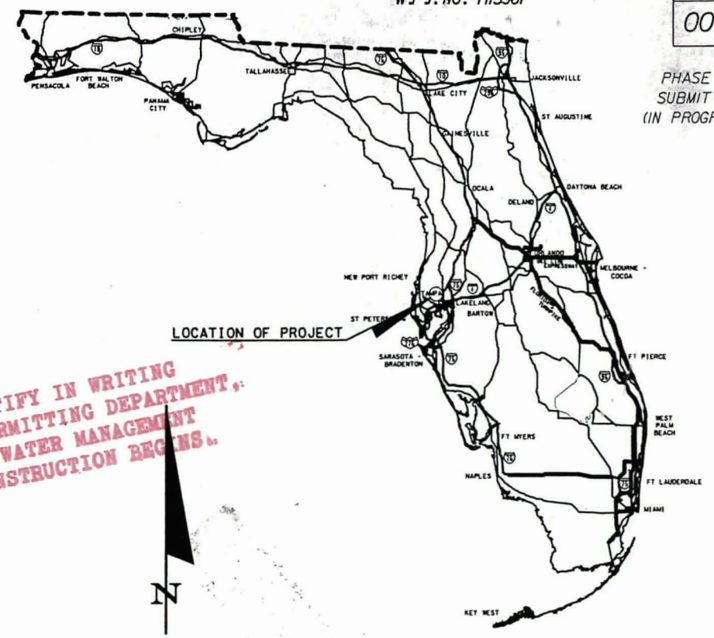
REVISIONS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

W.P.I. NO. 7115981

FISCAL YEAR	SHEET NO.
00	1

PHASE IV SUBMITTAL (IN PROGRESS)

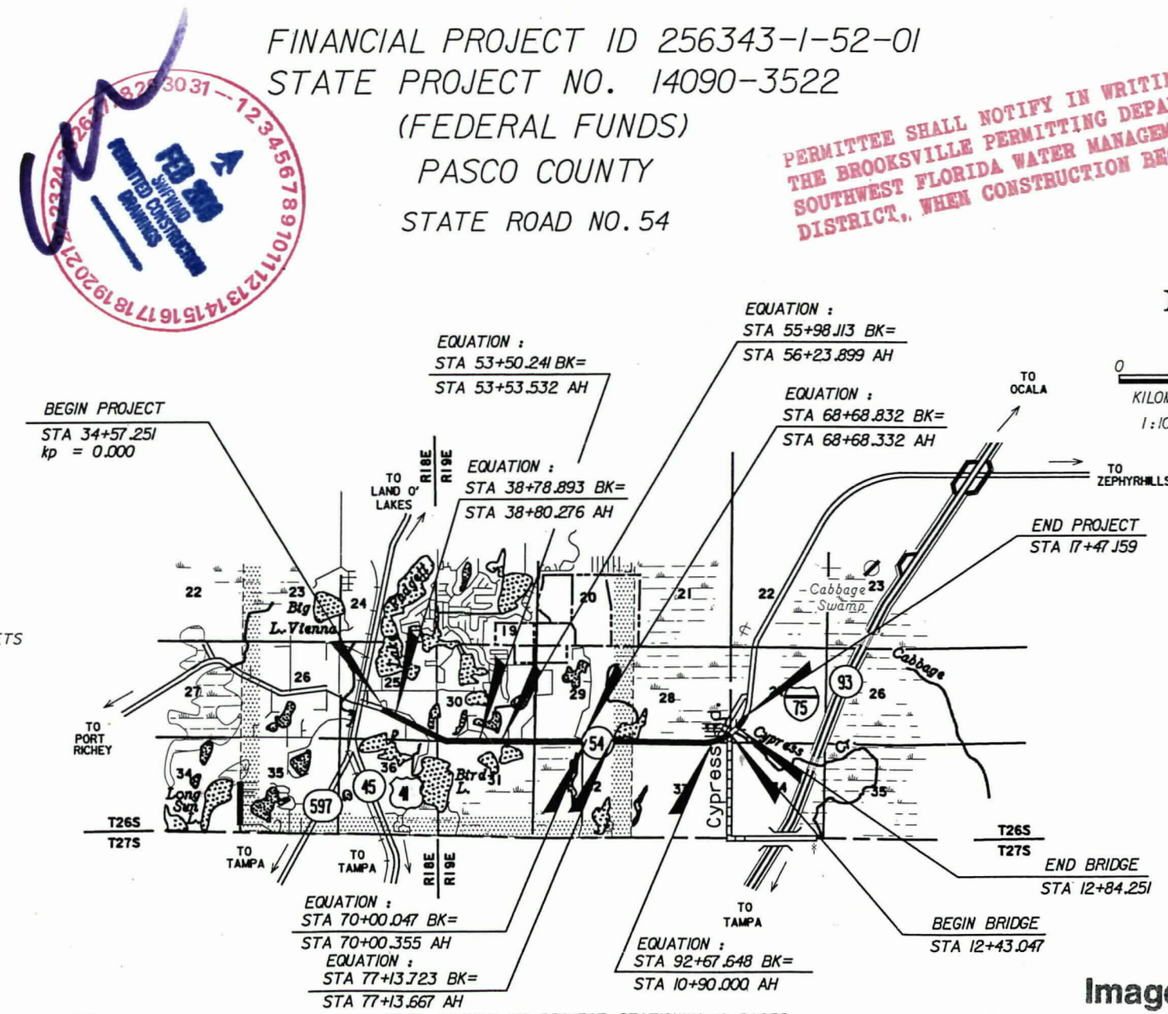


LOCATION OF PROJECT

CONTRACT PLANS

FINANCIAL PROJECT ID 256343-1-52-01
STATE PROJECT NO. 14090-3522
(FEDERAL FUNDS)
PASCO COUNTY
STATE ROAD NO. 54

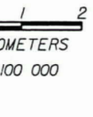
PERMITTEE SHALL NOTIFY IN WRITING THE BROOKSVILLE PERMITTING DEPARTMENT, SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, WHEN CONSTRUCTION BEGINS.



NOTE: LENGTH OF PROJECT STATIONING IS BASED ON CENTERLINE OF CONSTRUCTION.

LENGTH OF PROJECT	METERS
ROADWAY	6396.140
BRIDGES	41.204
NET LENGTH OF PROJ.	6437.344
EXCEPTIONS	-
GROSS LENGTH OF PROJ.	6437.344

FDOT PROJECT MANAGER : MARGARET W. SMITH, P.E.



ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:

JEFFREY D. TRIM, P.E.
WADE - TRIM
4919 MEMORIAL HIGHWAY
SUITE 200
TAMPA, FLORIDA 33634

PLANS PREPARED BY

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

VENDOR NO. 59-2417170
ENGINEER OF RECORD:
JEFFREY D. TRIM, P.E.

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED BY REPRODUCTION

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Imaged As Is

NOTE: THIS IS A METRIC UNIT PROJECT

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

8/25/99

ROADWAY PLANS
ENGINEER OF RECORD: JEFFREY D. TRIM
P.E. NO.: 42106

39

FILE OF
4319567·00
RECORD

SPN 14090-3522

PHASE IV SUBMITTAL (WORK IN PROGRESS)

PLOT FILE: C:\CADNET\QUEUES\MSHP5000\Nkegard01.prf
PLOT DATE: Wed Aug 25 10:46:34 1999 DESIGN FILE: p:\rd12027\Nkegard01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

November 24, 1998

NOTES TO REVIEWERS

This resubmittal of the Phase III plans is to address items that were not clear or did not show up on the original submittal. This includes right-of-way lines, jurisdictional lines, utility adjustments, and additional roadway and pond soils information.

The plans have addressed a few of the original comments. We plan on meeting individually with each reviewer to clarify some comments and responses prior to the Phase IV submittal.

General

The Phase III Roadway, Signing and Marking, and Signal Plans were prepared by Wade-Trim. The drainage design on the plans was completed by Andy Padgett of FDOT District 7 and John Stone of Post, Buckley, Schuh and Jernigan.

The U.S. 41 project to the west was designed by Berryman & Henigar (SPN 14010-3518) and is under construction. The project included intersection widening at S.R. 54. The construction plans show matching the proposed construction for the U.S. 41 and S.R 54 intersection.

The S.R. 54 project to the east was designed by Belswinger, Hoch and Associates (SPN 14091-3501) and involved the widening of S.R. 54 and the new construction of S.R. 56. The construction plans show matching the proposed reconstruction of S.R. 54 to the ast.

Right-of-Way

The right-of-way maps are being revised for a couple of parcels by FDOT 7 Surveying and Mapping (Duane Milk). Other than these areas, the roadway right-of-way matches the right-of-way maps.

Any questions on this project may be addressed to:

Jeff Trim	Project Manager	882.8366
Mark Gillette	Project Engineer	882.8366
Andy Padgett	Drainage Engineer	975.6632

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
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40

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

NOTES TO REVIEWERS

PLOT DATE: Wed Aug 25 10:46:47 1999 DESIGN FILE: p:\fdt2027\plannote.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plannote.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	2

1 10/03/98
CES0154

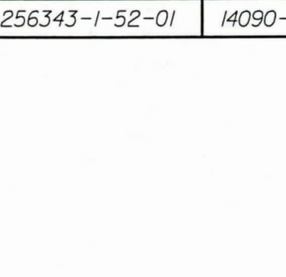
CESPJ15-4
PAGE 01 OF 01

MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

SUMMARY OF BRIDGE PAY ITEMS

ALT	S# P# C#	ITEM NUMBER	ITEM	UN	256343 1 52 01 IT BR • 14001 2 FA PART	QUANTITY TOTAL
1	2400- 2- 4	*CONCRETE CLASS II	(SUPERSTRUCTURE)	M3	122.800	122.800
1	2400- 4- 5	*CONCRETE CLASS IV	(SUBSTRUCTURE)	M3	67.200	67.200
1	2400- 7-	*BRIDGE FLOOR GROOVING		M2	670.000	670.000
2	2400-147-	*COMPOSITE NEOPRENE PADS		•M3	.080	.080
2	2400-148- 1	*TRAFFIC RAILING	(F81)(BARRIER)	MI	82.400	82.400
1	2415- 1- 4	*REINFORCING STEEL	(SUPERSTRUCTURE)	KG	11662.000	11662.000
1	2415- 1- 5	*REINFORCING STEEL	(SUBSTRUCTURE)	KG	4200.000	4200.000
1	2450- 1-002	*PRESTRESSED BEAMS	(F81)(TYPE III)	•MI	243.700	243.700
1	2455- 3- 2	*PILING FURNISHED	(PRESTRESSED CONCRETE)(455MM SQ	•MI	231.000	231.000
1	2455- 3- 4	*PILING FURNISHED	(PRESTRESSED CONCRETE)(610MM SQ	•MI	85.000	85.000
1	2455- 4- 2	*PILING DRIVEN	(PRESTRESSED CONCRETE)(455MM SQ)	MI	231.000	231.000
1	2455- 4- 4	*PILING DRIVEN	(PRESTRESSED CONCRETE)(610MM SQ)	MI	85.000	85.000
1	2455- 17- 2	*PILE SPLICES	(455MM)	•EA	1.600	1.600
1	2455- 17- 4	*PILE SPLICES	(610MM)	•EA	.600	.600
1	2455-137-	*TEST LOAD (DYNAMIC)		EA	3.000	3.000
1	2455-140- 12	*TEST PILES FURNISHED	(455MM SQ)	MI	43.000	43.000
1	2455-140- 14	*TEST PILES FURNISHED	(610MM SQ)	MI	22.000	22.000
1	2455-141- 12	*TEST PILES DRIVEN	(455MM SQ)	MI	43.000	43.000
1	2455-141- 14	*TEST PILES DRIVEN	(610MM SQ)	MI	22.000	22.000
1	2460- 7- 4	*EXPANSION JOINT SEAL	(STRIP ELASTOMERIC)	•MI	25.200	25.200

NOTE: • IDENTIFIES ITEMS NORMALLY REQUIRING SHOP DRAWINGS - CONTRACTOR SHALL DETERMINE OTHER ITEMS REQUIRING SHOP DRAWINGS.



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REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\CESSR001.prf
PLOT DATE: Wed Aug 25 10:47:24 1999 DESIGN FILE: p:\fdt2027\CESSR001.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	3

1 10/03/98 CES0152

CESPJ15-2
PAGE 01 OF 03

MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

ALT	SP	C	NUMBER	ITEM	UN	256343152 01 IT	FA PART				QUANTITY TOTAL
1	2	101-	1-	MOBILIZATION	LS		1.000				1.000
1	2	102-	1-	MAINTENANCE OF TRAFFIC	LS		1.000				1.000
1	2	102-	3-	COMMERCIAL MATERIAL FOR DRIVEWAY MAINTENANCE	M3		181.000				181.000
3	2	102-	10-	OFF-DUTY LAW ENFORCEMENT OFFICER	HR		64.000				64.000
2	2	102-	70- 11	BARRIER WALL (TEMP) (F81)(STANDARD)(CONCRETE)	MI		120.000				120.000
2	2	102-	70- 21	BARRIER WALL (TEMP) (REL)(STANDARD)(CONCRETE)	MI		120.000				120.000
2	2	102-	74- 1	BARRICADE (TEMPORARY)(TYPES I,II,VP & DRUM)	ED		1.000				1.000
2	2	102-	74- 2	BARRICADE (TEMPORARY)(TYPE III) (1800MM)	ED		1.000				1.000
3	2	102-	75- 1	SIGNS CONSTRUCTION (TEMP-POST MOUNTED) (< 0.8 M2)	ED		1.000				1.000
2	2	102-	77-	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)	ED		1.000				1.000
2	2	102-	78-	MARKER PAVT REFLECTIVE (TEMPORARY)	EA		3523.000				3523.000
2	2	102-	79-	LIGHTS(TEMP-BARR. WALL MOUNT)(TYPE C STEADY BURN)	ED		1.000				1.000
4	2	102-	89- 3	IMPACT ATTEN VEHIC (TEMP)(INDEX 415 OPTION)	LO		2.000				2.000
2	2	102-	96-	SIGNS TEMPORARY REGULATORY (POST-MOUNTED)	ED		1.000				1.000
3	2	102-	911- 1	PAVT MARKING REMOVABLE (WHITE/BLACK)(SKIP)	MI		212.500				212.500
3	2	102-	911- 2	PAVT MARKING REMOVABLE (WHITE/BLACK)(SOLID)	MI		3480.600				3480.600
3	2	102-	911- 3	PAVT MARKING REMOVABLE (WHITE/BLACK)(OTHER)	M2		118.000				118.000
3	2	102-	912- 1	PAVT MARKING REMOVABLE (YELLOW) (SKIP)	MI		6.300				6.300
3	2	102-	912- 2	PAVT MARKING REMOVABLE (YELLOW) (SOLID)	MI		3773.200				3773.200
3	2	102-	912- 3	PAVT MARKING REMOVABLE (YELLOW) (OTHER)	M2		191.600				191.600
1	2	104-	1-	ARTIFICIAL COVERINGS	M2		2917.000				2917.000
1	2	104-	4-	MOWING	HA		7.300				7.300
2	2	104-	10- 1	HAY OR STRAW BALE (450MM X 450MM X 900MM)	EA		3128.000				3128.000
1	2	104-	11-	TURBIDITY BARRIER FLOATING	MI		41.000				41.000
1	2	104-	12-	TURBIDITY BARRIER STAKED	MI		2610.000				2610.000
1	2	104-	13- 1	SILT FENCE STAKED (TYPE III)	MI		16252.000				16252.000
6	2	104-	15-	SOIL TRACKING PREVENTION DEVICE	EA		8.000				8.000
1	2	105-	70-	TRAINEE MANHOURS	HR		6000.000				6000.000
2	2	109-	71- 3	FIELD OFFICE (84 M2)	DA		1.000				1.000
1	2	110-	1- 1	CLEARING AND GRUBBING	LS		1.000				1.000
1	2	110-	3-	STRUCTURE REMOVAL OF EXISTING	LS		1.000				1.000
1	2	110-	4-	PAVEMENT REMOVAL OF EXISTING CONCRETE	M2		275.200				275.200
2	2	110-	7- 1	MAILBOX (F81) (SINGLE)	EA		40.000				40.000
2	2	110-	86-	DELIVERY OF SALVAGEABLE MATERIAL TO FDOT	LS		1.000				1.000
3	2	120-	1-	EXCAVATION REGULAR	M3		295951.000				295951.000
2	2	120-	7-	EARTHWORK SUBSOIL	M3		35851.000				35851.000
1	2	160-	4-	STABILIZATION TYPE B	M2		210670.000				210670.000
1	2	162-	2-	TOPSOIL	M2		13698.000				13698.000
1	2	285-701-		BASE OPTIONAL (BASE GROUP MI)	M2		22325.000				22325.000
1	2	285-710-		BASE OPTIONAL (BASE GROUP MIO)	M2		177109.000				177109.000
1	2	300-	1- 3	BITUMINOUS MATERIAL (TACK COAT)	LI		77375.000				77375.000
1	2	327-	70-020	MILLING EXISTING ASPHALT PAVT (20MM AVG DEPTH)	M2		6992.000				6992.000
3	2	331-	72-030	ASPHALTIC CONCRETE TYPE S(30MM)	M2		18194.000				18194.000
3	2	331-	72-090	ASPHALTIC CONCRETE TYPE S(90MM)	M2		134244.000				134244.000
2	2	337-	7- 2	ASPH CONC FRICTION COURSE (INC RUBBER)(34KG FC-2)	MT		518.300				518.300
1	2	339-	1-	ASPHALT PAVEMENT MISCELLANEOUS	MT		58.800				58.800
1	2	360-	1-	APPROACH SLABS CONCRETE	EA		2.000				2.000
1	2	400-	1- 2	CONCRETE CLASS I (ENDWALLS)	M3		36.900				36.900
1	2	400-	1- 11	CONCRETE CLASS I (RETAINING WALLS)	M3		208.500				208.500
1	2	400-	1- 15	CONCRETE CLASS I (MISCELLANEOUS)	M3		5.000				5.000

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

FILE OF 4319567.00 RECORD

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Southwest Florida Water Management District SEP 21 1999 REG-BRO

42

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

PLOT FILE: G:\CADNET\QUEUES\MSHP5000N.CESSRD02.prf
PLOT DATE: Wed Aug 25 10:47:29 1999 DESIGN FILE: p:\fdt2027\CESSRD02.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	4

CONTRACT ITEMS CONTINUED MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

SUMMARY OF ROADWAY PAY ITEMS

ALT	SP	ITEM NUMBER	ITEM		UNIT	25634315201 FA PART			QUANTITY TOTAL
1		2400- 4- 1	CONCRETE CLASS IV	(CULVERTS)	M3	157.000			157.000
1		2415- 1- 1	REINFORCING STEEL	(ROADWAY)	KG	8676.000			8676.000
1		2425- 1-351	INLETS (CURB) (TYPE P-5)	(<3M)	EA	12.000			12.000
1		2425- 1-361	INLETS (CURB) (TYPE P-6)	(<3M)	EA	4.000			4.000
1		2425- 1-451	INLETS (CURB) (TYPE J-5)	(<3M)	EA	3.000			3.000
1		2425- 1-461	INLETS (CURB) (TYPE J-6)	(<3M)	EA	3.000			3.000
1		2425- 1-521	INLETS (DT BOT) (TYPE C)	(<3M)	EA	7.000			7.000
1		2425- 1-523	INLETS (DT BOT) (TYPE C)	(J BOTTOM, <3M)	EA	2.000			2.000
1		2425- 1-531	INLETS (DT BOT) (TYPE C MODIFIED)	(<3M)	EA	3.000			3.000
1		2425- 1-541	INLETS (DT BOT) (TYPE D)	(<3M)	EA	25.000			25.000
1		2425- 1-543	INLETS (DT BOT) (TYPE D)	(J BOTTOM, <3M)	EA	4.000			4.000
1		2425- 1-551	INLETS (DT BOT) (TYPE E)	(<3M)	EA	2.000			2.000
1		2425- 1-581	INLETS (DT BOT) (TYPE H)	(<3M)	EA	1.000			1.000
1		2425- 1-701	INLETS (GUTTER) (TYPE S)	(<3M)	EA	15.000			15.000
1		2425- 1-703	INLETS (GUTTER) (TYPE S)	(J BOTTOM, <3M)	EA	7.000			7.000
1		2425- 2- 41	MANHOLES (P-7)	(<3M)	EA	12.000			12.000
1		2425- 2- 42	MANHOLES (P-7)	(>3M)	EA	3.000			3.000
1		2425- 2- 61	MANHOLES (P-8)	(<3M)	EA	5.000			5.000
1		2425- 2- 71	MANHOLES (J-7)	(<3M)	EA	8.000			8.000
1		2425- 2- 91	MANHOLES (J-8)	(<3M)	EA	7.000			7.000
1		2430-982-229	MITERED END SECTION (CONC PIPE ROUND)	(600MM CD)	EA	2.000			2.000
1		2470- 1-	TREATED TIMBER STRUCTURAL		M3	287.100			287.100
1		2514- 71- 3	PLASTIC FILTER FABRIC	(RIPRAP)	M2	793.000			793.000
1		2515- 1- 2	PIPE HANDRAIL	(ALUMINUM)	MI	252.800			252.800
1		2520- 1- 1	CURB & GUTTER CONCRETE	(TYPE E)	MI	3022.900			3022.900
1		2520- 1- 2	CURB & GUTTER CONCRETE	(TYPE F)	MI	1811.000			1811.000
1		2520- 2- 3	CURB CONCRETE	(TYPE D)	MI	5.800			5.800
1		2520- 6-	GUTTER SHOULDER CONCRETE		MI	2256.700			2256.700
1		2522- 1-	SIDEWALK CONCRETE	(100MM)	M2	13584.000			13584.000
1		2522- 2-	SIDEWALK CONCRETE	(150MM THICK)	M2	340.000			340.000
1		2524- 1- 19	DITCH PAVEMENT CONCRETE	(75MM THICK)(REINFORCD)	M2	130.000			130.000
1		2530- 3- 3	RIPRAP (RUBBLE)	(BANK AND SHORE)	MT	1337.200			1337.200
1		2530- 3- 4	RIPRAP (RUBBLE)	(DITCH LINING)	MT	43.900			43.900
1		2536- 1- 1	GUARDRAIL	(ROADWAY)	MI	1512.600			1512.600
1		2536- 1- 2	GUARDRAIL	(BRIDGE)	MI	270.500			270.500
1		2536- 8-	GUARDRAIL BRIDGE ANCHORAGE ASSEMBLY (F81)		EA	4.000			4.000
2		2536- 73-	GUARDRAIL REMOVAL		MI	22.800			22.800
4		2536- 85- 1	GUARDRAIL END ANCHORAGE ASSEMBLY TYPE II		EA	8.000			8.000
4		2536- 85- 6	GUARDRAIL END ANCHORAGE ASSEMBLY ET 2000		EA	8.000			8.000
1		2550- 1- 1	FENCING, TYPE A	(1.5M HEIGHT)	MI	3165.000			3165.000
1		2550- 3- 1	FENCE CORNER POST ASSM	(TYPE A)	EA	73.000			73.000
1		2550- 4- 1	FENCE PULL AND END POST ASSM (TYPE A)		EA	37.000			37.000
1		2550- 75-062	FENCE GATE (TYPE A)	(DOUBLE 3M)(6M OPENING)	EA	3.000			3.000
1		2570- 2-	SEEDING AND MULCHING		M2	203739.000			203739.000
1		2570- 3-	SEED GRASS	(PERMANENT TYPE)	KG	1834.000			1834.000
1		2570- 4-	MULCH MATERIAL		MT	183.300			183.300
1		2570- 5-	FERTILIZER		MT	30.700			30.700
1		2570- 9-	WATER FOR GRASSING		KL	1534.000			1534.000
1		2570- 10-	SEED GRASS	(QUICK-GROWING TYPE)	KG	449.000			449.000
1		2575- 1-	SODDING		M2	103261.000			103261.000

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

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Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

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Wade-Trim
4919 Memorial Highway
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(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	5

I 10/03/98 CESPJ15-2
CES0152 PAGE 03 OF 03

CONTRACT ITEMS CONTINUED MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

SUMMARY OF ROADWAY PAY ITEMS

A L T	S P C	ITEM NUMBER	ITEM	UN IT	25634315201 FA PART				QUANTITY TOTAL
	1	2710- 6-	DIRECTIONAL ARROW (PAINTED)	EA	488.000				488.000
	1	2710- 7-	PAVEMENT MESSAGE, PAINTED	EA	3.000				3.000
	1	2710- 21-	TRAFFIC STRIPE SKIP (WHITE/BLACK/BLUE)	GK	15.585				15.585
	3	2710- 23- 61	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 150MM)	NK	52.178				52.178
	3	2710- 23- 81	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 200MM)	NK	1.186				1.186
	3	2710- 24- 61	TRAFFIC STRIPE SOLID (YELLOW) (150MM)	NK	44.411				44.411
	3	2710- 25-121	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 300MM)	MI	318.500				318.500
	3	2710- 25-181	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 450MM)	MI	234.300				234.300
	3	2710- 25-241	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 600MM)	MI	412.500				412.500
	3	2710- 26-181	TRAFFIC STRIPE SOLID (YELLOW) (450MM)	MI	978.800				978.800
	1	2710- 27-	TRAFFIC STRIPE SKIP (WHITE/BLACK/BLUE)	MI	1414.400				1414.400
	3	2710- 28-	TRAFFIC STRIPE SKIP (YELLOW)	MI	1331.500				1331.500
	1	2710- 29-	REFLECTIVE PAINT (ISLAND NOSE)(WHITE)	M2	8.400				8.400
	1	2710- 30-	REFLECTIVE PAINT (ISLAND NOSE)(YELLOW)	M2	343.700				343.700
AA	1	2430- 11-225	PIPE CONC CULV (CLASS II)(FBI) (450MM SS)	MI	1312.800				1312.800
AA	1	2430- 11-229	PIPE CONC CULV (CLASS II)(FBI) (600MM SS)	MI	1121.300				1121.300
AA	1	2430- 11-233	PIPE CONC CULV (CLASS II)(FBI) (750MM SS)	MI	1063.400				1063.400
AA	1	2430- 11-238	PIPE CONC CULV (CLASS II)(FBI) (900MM SS)	MI	1110.300				1110.300
AA	1	2430- 11-240	PIPE CONC CULV (CLASS II)(FBI) (1050MM SS)	MI	376.500				376.500
AA	1	2430- 11-241	PIPE CONC CULV (CLASS II)(FBI) (1200MM SS)	MI	424.100				424.100
AA	1	2430- 11-243	PIPE CONC CULV (CLASS II)(FBI) (1500MM SS)	MI	202.300				202.300
AA	1	2430- 12-225	PIPE CONC CULV (CLASS II)(FBI) (450MM CD)	MI	95.000				95.000
AA	1	2430- 12-233	PIPE CONC CULV (CLASS II)(FBI) (750MM CD)	MI	127.400				127.400
AA	1	2430- 14-225	PIPE CONC CULV (CLASS II)(FBI) (450MM SD)	MI	187.800				187.800
AA	1	2430- 14-229	PIPE CONC CULV (CLASS II)(FBI) (600MM SD)	MI	141.300				141.300
AA	1	2430- 14-233	PIPE CONC CULV (CLASS II)(FBI) (750MM SD)	MI	51.900				51.900
AA	1	2430-141-009	PIPE ELLIP CONC CULV(CLSS HE II)(975X1535MM SS)	MI	29.900				29.900
AA	1	2430-142-004	PIPE ELLIP CONC CULV(CLSS HE II)(610X 960MM CD)	MI	57.600				57.600
AA	1	2430-144-002	PIPE ELLIP CONC CULV(CLSS HE II)(365X 575MM SD)	MI	17.000				17.000
AA	1	2430-982-225	MITERED END SECTION (CONC PIPE ROUND) (450MM CD)	EA	5.000				5.000
AA	1	2430-982-233	MITERED END SECTION (CONC PIPE ROUND) (750MM CD)	EA	2.000				2.000
AA	1	2430-984-225	MITERED END SECTION (CONC PIPE ROUND) (450MM SD)	EA	24.000				24.000
AA	1	2430-984-229	MITERED END SECTION (CONC PIPE ROUND) (600MM SD)	EA	14.000				14.000
AA	1	2430-984-233	MITERED END SECTION (CONC PIPE ROUND) (750MM SD)	EA	6.000				6.000
AA	1	2430-984-402	MITERED END SECTION(ELLIP PIPE)(365MMX 575MM SD)	EA	2.000				2.000
AA	1	2430-985-229	MITERED END SECTION (CONC PIPE ROUND) (600MM BO)	EA	2.000				2.000
AA	1	2430-985-233	MITERED END SECTION (CONC PIPE ROUND) (750MM BO)	EA	4.000				4.000
AA	1	2430-985-238	MITERED END SECTION (CONC PIPE ROUND) (900MM BO)	EA	3.000				3.000
AA	1	2430-985-240	MITERED END SECTION (CONC PIPE ROUND) (1050MM BO)	EA	4.000				4.000
AA	1	2430-985-241	MITERED END SECTION (CONC PIPE ROUND) (1200MM BO)	EA	1.000				1.000
AA	1	2430-985-243	MITERED END SECTION (CONC PIPE ROUND) (1500MM BO)	EA	1.000				1.000
AA	1	2430-985-409	MITERED END SECTION(ELLIP PIPE)(975MMX1535MM BO)	EA	2.000				2.000

NOTE: • IDENTIFIES ITEMS NORMALLY REQUIRING SHOP DRAWINGS - CONTRACTOR SHALL DETERMINE OTHER ITEMS REQUIRING SHOP DRAWINGS.

SWFWMD PERMITTED CONSTRUCTION DRAWINGS FEB 2000

FILE OF 4319567.00 RECORD

Southwest Florida Water Management District SEP 21 1999 REG-BRO

Imaged As Is 44

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

PLOT DATE: Wed Aug 25 10:47:37 1999 DESIGN FILE: p:\fdt2027\CESSR004.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\CESSR004.prF

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	6

1 10/03/98
CES0152

CESPJ15-2
PAGE 01 OF 01

MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

SUMMARY OF SIGNING PAY ITEMS

ALT	S P C	ITEM NUMBER	ITEM	UN IT	256343152 01 FA PART			QUANTITY TOTAL
1	*	2700- 40- 1	SIGN SINGLE POST (< 1.25)	AS	82.000			82.000
1	*	2700- 46- 11	SIGN EXISTING (REMOVAL) (SINGLE POST)	AS	1.000			1.000
1	*	2700- 46- 21	SIGN EXISTING (RELOCATE) (SINGLE POST)	AS	2.000			2.000
3	*	2705- 10- 11	MARKER OBJECT (POST MOUNTED) (TYPE 1)	EA	18.000			18.000
3	*	2705- 10- 13	MARKER OBJECT (POST MOUNTED) (TYPE 3)	EA	4.000			4.000
3	*	2705- 71-	DELINEATOR TUBULAR (FLEXIBLE)	EA	28.000			28.000
2	*	2706- 3-	RETRO-REFLECTIVE PAVEMENT MARKERS	EA	2419.000			2419.000
1	*	2710- 6-	DIRECTIONAL ARROW (PAINTED)	EA	216.000			216.000
1	*	2710- 7-	PAVEMENT MESSAGE, PAINTED	EA	2.000			2.000
1	*	2710- 21-	TRAFFIC STRIPE SKIP (WHITE/BLACK/BLUE)	GK	15.585			15.585
3	*	2710- 23- 61	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 150MM)	NK	19.106			19.106
3	*	2710- 23- 81	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 200MM)	NK	1.186			1.186
3	*	2710- 24- 61	TRAFFIC STRIPE SOLID (YELLOW) (150MM)	NK	13.281			13.281
3	*	2710- 25-121	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 300MM)	MI	318.500			318.500
3	*	2710- 25-181	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 450MM)	MI	184.400			184.400
3	*	2710- 25-241	TRAFFIC STRIPE SOLID (WHITE/BLACK/BLUE 600MM)	MI	252.200			252.200
3	*	2710- 26-181	TRAFFIC STRIPE SOLID (YELLOW) (450MM)	MI	73.100			73.100
1	*	2710- 27-	TRAFFIC STRIPE SKIP (WHITE/BLACK/BLUE)	MI	802.800			802.800
3	*	2710- 28-	TRAFFIC STRIPE SKIP (YELLOW)	MI	720.200			720.200
1	*	2710- 29-	REFLECTIVE PAINT (ISLAND NOSE)(WHITE)	M2	8.400			8.400
1	*	2710- 30-	REFLECTIVE PAINT (ISLAND NOSE)(YELLOW)	M2	343.700			343.700
1	*	2711- 7-	PAVEMENT MARKING(THERMOPLASTIC)(REMOVAL)	M2	68.200			68.200

NOTE: • IDENTIFIES ITEMS NORMALLY REQUIRING SHOP DRAWINGS - CONTRACTOR SHALL DETERMINE OTHER ITEMS REQUIRING SHOP DRAWINGS.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

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45

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

PLOT DATE: Wed Aug 25 10:47:41 1999 DESIGN FILE: p:\fdt2027\CESSR005.dgn PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\CESSR005.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	7

1 10/03/98
CES0152

CESPJ15-2
PAGE 01 OF 01

MANDIST: 07 COUNTY: 14 SECTION: 090 256343-1-52-01

SUMMARY OF SIGNAL PAY ITEMS

ALT	SP	ITEM NUMBER	ITEM	UN	256343152 01 IT	FA PART			QUANTITY TOTAL
1		2620- 1-	GROUNDING (FURNISH & INSTALL)	• MI		75.000			75.000
1		2630- 1- 12	CONDUIT (FURNISH & INSTALL)(UNDERGROUND)	• MI		613.000			613.000
1		2632- 7- 1	CABLE (SIGNAL) (FURNISH & INSTALL	• PI		1.000			1.000
1		2634- 4-112	SPAN WIRE ASSEMBLY (F&I)(2 WIRE) (DIAGONAL	• PI		1.000			1.000
1		2634- 5- 1	INSULATOR FIBERGLASS (FURNISH & INSTALL)	• MI		3.000			3.000
1		2635- 1- 11	PULL & JUNCTION BOXES (F&I) (PULL BOX	• EA		10.000			10.000
1		2639- 1- 12	ELECTRICAL POWER SERVICE (OVERHEAD)	AS		1.000			1.000
1		2639- 2- 1	ELECTRICAL SERVICE WIRE (F&I)	MI		48.000			48.000
1		2642-112- 13	STRAIN POLE STEEL(F&I W/FOUNDATION)(13M SPECIAL)	• EA		2.000			2.000
1		2650- 1-131	SIGNAL TRAFFIC, 305MM STD(F&I) (3 SECT 1 WAY	• AS		14.000			14.000
1		2653-111-	SIGNAL PEDESTRIAN (F&I)(305MM INCANDESCENT)	• AS		4.000			4.000
1		2653-112-	SIGNAL PEDESTRIAN (F&I)(305MM INCANDESCENT)	• AS		2.000			2.000
1		2659-101-	SIGNAL HEAD AUXILARIES (BACK PLATE)	• EA		7.000			7.000
1		2659-106-	SIGNAL HEAD AUXILARIES (TUNNEL VISOR)	• EA		42.000			42.000
1		2659-107-	SIGNAL HEAD AUXILARIES (ALUMINUM PEDESTAL)	• EA		2.000			2.000
1		2660- 1-109	LOOP DETECTOR INDUCTIVE (F&I) (TYPE 9	• EA		8.000			8.000
1		2660- 2-101	LOOP ASSEMBLY (F&I) (TYPE A	• AS		4.000			4.000
1		2660- 2-102	LOOP ASSEMBLY (F&I) (TYPE B	• AS		4.000			4.000
1		2660- 2-106	LOOP ASSEMBLY (F&I) (TYPE F	• AS		6.000			6.000
5		2660- 4- 4	LOOP MATERIAL (AWG #14 LEAD-IN CABLE)	• MI		216.000			216.000
5		2660- 70-122	LOOP SPEED CLAS ASSEM(F&I)(2 LOOP PER LN)(2 LANE	• AS		2.000			2.000
2		2661- 70-114	SENSOR PIEZO AXLE(F&I) (1 SENSOR PER LN) (4 LANE	• AS		1.000			1.000
1		2665- 13-	DETECTOR PEDESTRIAN(F&I)(DETECTOR WITH SIGN ONLY	• EA		8.000			8.000
1		2668- 13-	DETECTOR CABINET (F&I)(TYPE III)(800X500X350	• EA		1.000			1.000
1		2670-113- 05	CNTRL ASSEM ACT SS F&I(D-4-4,T.B.C.)	• AS		1.000			1.000
1		2690- 10-	SIGNAL HEAD TRAFFIC ASSEMBLY REMOVAL	EA		8.000			8.000
1		2690- 30-	POLE REMOVAL	EA		4.000			4.000
1		2690- 50-	CNTRL ASSEM REMOVE	EA		1.000			1.000
1		2690- 80-	SPAN WIRE ASSEMBLY REMOVE	EA		1.000			1.000
1		2690- 90-	CONDUIT & CABLING REMOVAL	PI		1.000			1.000
1		2690-100-	SIGNAL EQUIPMENT MISCELLANEOUS REMOVAL	PI		1.000			1.000
1		2700- 48- 18	SIGN PANEL (F&I) (1.75 OR LESS)	EA		8.000			8.000
1		2700- 48- 60	SIGN PANEL (REMOVE)	EA		1.000			1.000

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FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567.00
RECORD

Imaged As Is

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District
46

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF PAY ITEMS

PLOT DATE: Wed Aug 25 10:47:44 1999 DESIGN FILE: p:\fdot2027\CESSR006.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\CESSR006.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	8

1/ 9/98 FLORIDA DEPARTMENT OF TRANSPORTATION 16:43:41

BOX CULVERT AND WINGWALL DESIGN VERSION NO. 2.43
METRIC OUTPUT

PROJECT NUMBER : FDT2027-01 LOCATION DESCRIPTION temp: STRUTURE 40A @ STA 44+89.793
ENVIRONMENT : MODERATELY AGGRESSIVE, USE CLASS IV CONCRETE

MATERIAL PROPERTIES

STEEL YIELD STRENGTH - 414. MPa
CONCRETE 28 DAY STREN.- 38000. kPa
DESIGN F'C - 23442. kPa

CONCRETE COVER FOR REINFORCING BARS

BARREL EXT. COVER: TOP SL.- 75 mm ; BOT. SL.- 75 mm ;WALL- 75 mm
BARREL INT. COVER:ALL LOC.- 75 mm
WINGWALL :ALL LOC.- 75 mm

PROPERTIES OF ELEMENTS

BARREL :NO. OF BARREL(S) - 1; SPAN- 1.219 m ; HEIGHT - 2.134 m ;DEPTH OF FILL - 2.438 m
LENGTH AT BOX CENTER LINE - 71.018 m ; LEFT SIDE SKEW ANGLE - 0 DEGREE; WIDTH - 1.727 m
RIGHT SIDE SKEW ANGLE - 0 DEGREE; WIDTH - 1.727 m
THKNSS.:TOP SL. - 230 mm ; BOTTOM SL. - 230 mm ;EXT. WALL - 255 mm ; INT. WALL - 0 mm

WINGWALL:NO. OF WINGWALL(S) BOTH LEFT AND RIGHT SIDES NO. OF HEADWALL(S) BOTH LEFT AND RIGHT SIDES

TOP BEVEL - 150 mm ; SIDE BEVEL - 150 mm ;
WALL HEIGHT - 2.667 m ; FOOTING WIDTH - 1.753 m ; HEEL DIMENSION - 1.041 m ;
TOE DIMENSION - 455 mm ; WALL THICKNESS - 255 mm ; FOOTING THICKNESS - 230 mm ;
TOE PRESSURE - 56415. Pa

SKEW ANGLE : LEFT FRONT - 0 DEGREE; LEFT BACK - 180 DEGREE;
RIGHT FRONT - 0 DEGREE; RIGHT BACK - 180 DEGREE.
LENGTH - 4.877 m * (0 mm **); FRONT TIP HEIGHT - 2.667 m
WALL - 3.241 m3 ; FOOTING - 2.442 m3;
TOTAL - 5.682 m3

TOTAL WINGWALL LENGTH WITH BARREL WIDTH : LEFT - 11.481 m ; RIGHT - 11.481 m

CONCRETE QUANTITIES

BARREL : POUR 1 (BOTTOM SLAB) - .421 m3/m ; POUR 2 (WALLS) - 1.032 m3/m ; POUR 3 (TOP SLAB) - .423 m3/m
POUR 4 (HEADWALL(S)) - .401 m3 TOTAL (EXCLUDE HEADWALL) - 1.876 m3/m

WINGWALL: POUR 1 (FOOTING***) - 10.428 m3; POUR 2 (WALLS) - 12.962 m3; TOTAL - 23.390 m3

TOTAL CONCRETE QUANTITIES

BARREL - 133.640 m3; WINGWALL - 23.390 m3; TOTAL - 157.030 m3

* SKEWED WINGWALL LENGTH MEASURED ON CENTER LINE FROM CONSTRUCTION JOINT
** DISTANCE FROM OUTSIDE EDGE OF BARREL EXTERIOR WALL TO CONSTRUCTION JOINT ON CENTER LINE OF WINGWALL
*** INCLUDE TOE AND KEY AT BARREL ENDS
ENVIRONMENT : MODERATELY AGGRESSIVE, USE CLASS IV CONCRETE

STEEL QUANTITIES AND BAR SCHEDULE

BARREL QUANTITIES:

LOCATION	BAR	NUMBER SETS	METRIC SIZE	SPACING (mm)	TYPE	LENGTH (m)	QUANTITY (kg)	B LENGTH (mm)	C LENGTH (mm)	D LENGTH (mm)
TOP SLAB	A100	350	10M	200	1	1.570	433			
BOT SLAB	A200	466	10M	150	1	1.570	576			
CORNER (TOP)	A1	373	10M	190	11	3.150	923	1570	790	790
CORNER (BOTTOM)	A2	373	10M	190	11	3.150	923	1570	790	790
EXTERIOR WALL (INSIDE)	B1	746	10M	190	1	2.440	1429			
EXTERIOR WALL (OUTSIDE)	B2	746	10M	190	1	1.880	1101			
LONGITUDINAL	C1	259 (7)	10M	340	1	10.570	2150			
HEADWALL BOTH SIDES	G1	4 (1)	10M	SEE INDEX	1	1.630	4			
HEADWALL BOTH SIDES	P	12	10M	300	11	.970	9	280	380	300

PER METER BARREL STEEL QUANTITY 105. kg/m
TOTAL BARREL STEEL QUANTITY 7551 kg

WINGWALL QUANTITIES: METRIC OUTPUT

LOCATION	BAR	NUMBER SETS	SIZE	SPACING (mm)	TYPE	LENGTH (m)	QUANTY (kg)	B LENGTH (mm)	C LENGTH (mm)
STEM	F	80	15M	240	10	3.280	412	530	2740
STEM	J	80	10M	240	1	2.740	172		
STEM	K	48	10M	460	1	4.720	178		
FOOTING	KF	16	10M	SEE INDEX	1	4.720	60		
FOOTING	L	84	10M	240	1	1.600	105		
FOOTING LEFT SIDE	M1	2 (1)	10M	SEE INDEX	1	11.330	18		
FOOTING RIGHT SIDE	M2	2 (1)	10M	SEE INDEX	1	11.330	18		
STEM TO BARREL DOWELS	N **	36	20M	300	10	1.830	154	910	910
FOOTING SPILLWAY	R	12	10M	300	1	.860	8		

PER METER WINGWALL STEEL QUANTITY 50. kg/m
TOTAL WINGWALL STEEL QUANTITY 1124 kg

* LENGTH IS THE SUM OF BAR LENGTH AT BEGINNING/TOP AND ENDING/BOTTOM OF WINGWALL, NUMBER OF BAR IS THE AMOUNT REQUIRED FOR THIS SUMMATION OF LENGTH. B AND C LENGTH IS FOR THE FIRST BAR OF WINGWALL CLOSE TO THE JOINT OF WINGWALL AND BARREL.
** FOR SKEWED WINGS BEND BARS N TO ACCOMMODATE SKEW, PROVIDE FOR 925 mm OF BAR IN THE WINGWALL AND HEADWALL.

***** SPLICE LENGTHS CHART *****

BAR	SIZE	SPLICE LENGTH
A200	10M	510
B1	10M	510
C1	10M	580

TOTAL STEEL QUANTITIES

BARREL	7552 kg
WINGWALL	1124 kg
TOTAL	8676 kg

***** LOAD FACTOR DESIGN ***** STRESSES AT CRITICAL SECTIONS *****

***** MAX. AS / B / D - .012

MOMENT KIP-FT	* A.F. KIP	* SHR KIP	* PO KIP	* MU K-FT	* MB K-FT	* PB KIP	* AS SQIN	* V.S. KSI	* MA K-FT	* V.A. PSI
***** M - 1 T - 10.00 IN EXT WALL										
LT -2.9	4.1	1.7	261.9	6.8	26.9	79.2	.24	27.9	7.8	129.4
MID 1.2	3.1	.2	261.9	6.8	26.9	79.2	.24	3.5	7.6	126.3
MID- -2.0	4.1	.2	261.9	6.8	26.9	79.2	.24	3.5	7.8	125.6
RT -2.2	4.1	1.4	261.9	6.8	26.9	79.2	.24	22.2	7.8	129.6
***** M - 2 T - 9.00 IN TOP SLAB										
LT -1.3	1.7	2.7	235.8	5.2	22.1	70.5	.22	48.0	5.6	139.2
MID 3.6	.1	.1	235.8	5.2	22.1	70.5	.22	.9	5.2	124.9
RT -1.3	1.7	2.7	235.8	5.2	22.1	70.5	.22	48.0	5.6	139.2
***** M - 4 T - 9.00 IN BOT SLAB										
LT -1.6	2.3	3.4	235.8	5.2	22.1	70.5	.22	61.4	5.7	139.4
MID 4.5	-.3	.0	237.1	5.9	22.2	68.8	.25	.1	5.9	124.8
RT -1.6	2.3	3.4	235.8	5.2	22.1	70.5	.22	61.4	5.7	139.4

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS
Southwest Florida Wate... SEP 21 1999 REG-BRO Management...
FILE OF 4319567.00
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47

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

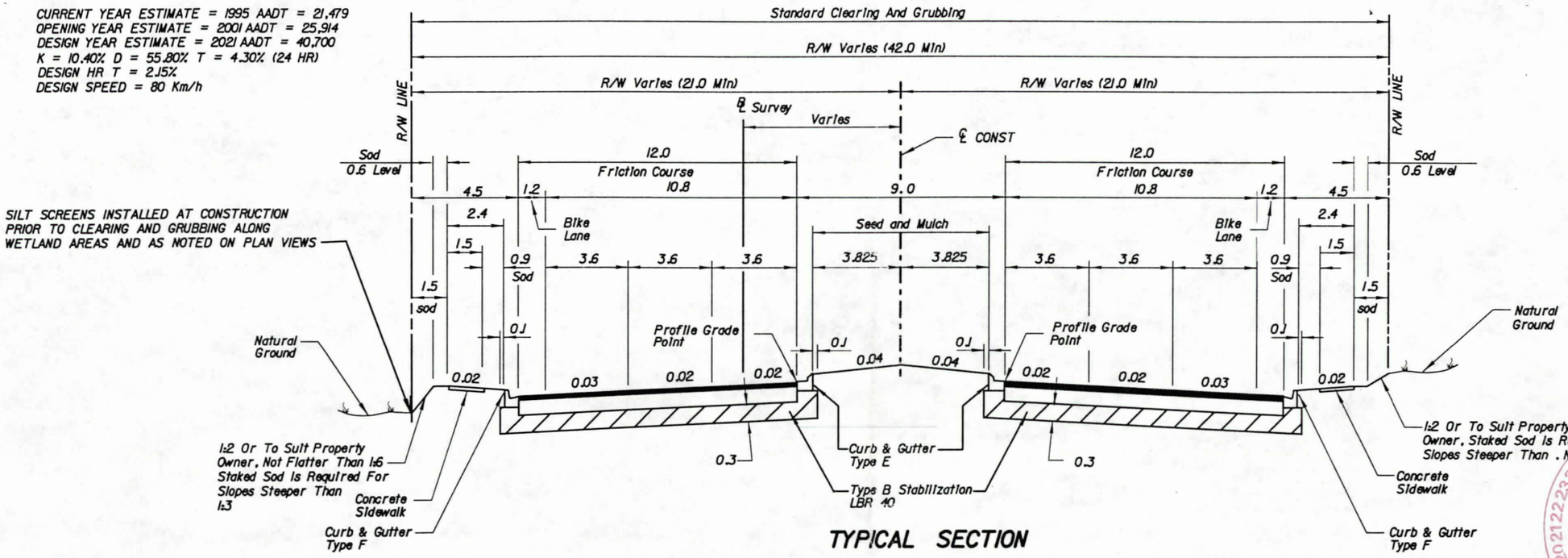
BOX CULVERT DATA

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\BXCLRD01.prF
PLOT DATE: Wed Aug 25 10:47:20 1999 DESIGN FILE: p:\fdt2027\BXCLRD01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	9

TRAFFIC DATA

CURRENT YEAR ESTIMATE = 1995 AADT = 21,479
OPENING YEAR ESTIMATE = 2001 AADT = 25,914
DESIGN YEAR ESTIMATE = 2021 AADT = 40,700
K = 10.40% D = 55.80% T = 4.30% (24 HR)
DESIGN HR T = 2.15%
DESIGN SPEED = 80 Km/h



SILT SCREENS INSTALLED AT CONSTRUCTION PRIOR TO CLEARING AND GRUBBING ALONG WETLAND AREAS AND AS NOTED ON PLAN VIEWS

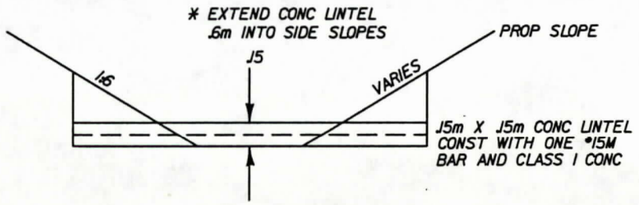
TYPICAL SECTION
SR 54
STA 34+57.251 TO STA 42+50.000 STA 32+60.000 TO STA 34+57.251

NEW CONSTRUCTION

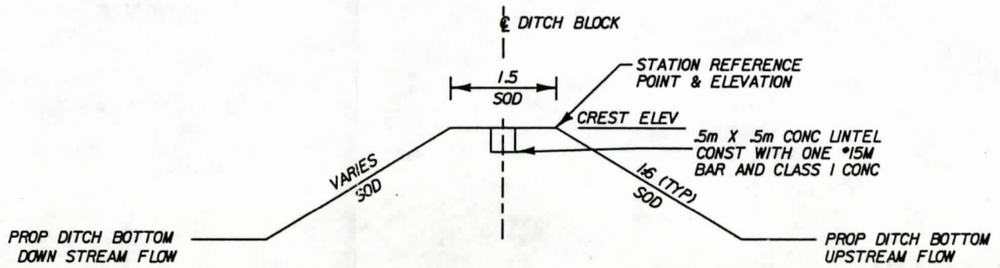
OPTIONAL BASE GROUP 10 AND TYPE S STRUCTURAL COURSE (90 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)

MILLING AND RESURFACING

MILL EXISTING ASPHALT PAVEMENT (20 mm AVE DEPTH) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)



DITCH BLOCK
NTS



PROFILE OF DITCH BLOCK
NTS

SUMMARY OF DITCH BLOCKS			
SIDE	STATION	CREST ELEV	FILL (C.Y.)
LT	75+95	22.00	
RT	76+27	22.00	
RT	76+74	21.80	
LT	77+34	23.00	
LT	80+75	22.50	

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT Received NOV 30 1999 RRD - TAMPA

FILE OF 4319567.00 RECORD

Southwest Florida Water Management District DEC 1 1999 REG-BRO

Imaged As Is

JEFFREY D. TRIM CERTIFICATE No. 42108 STATE OF FLORIDA REGISTERED ENGINEER

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

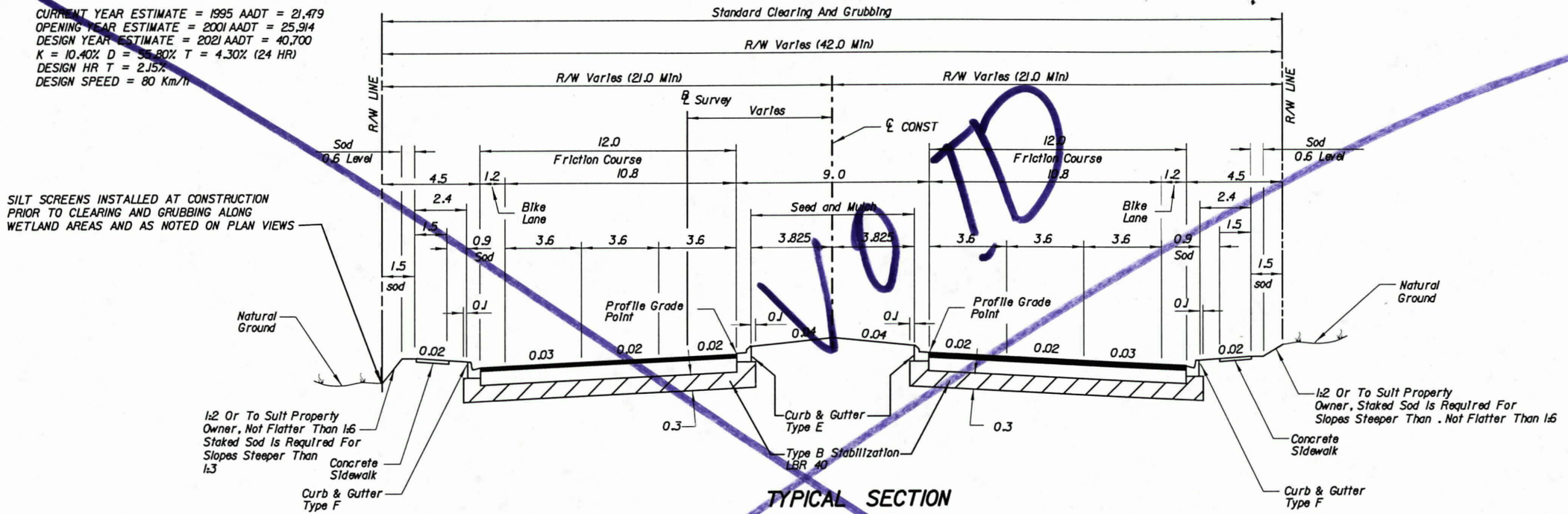
TYPICAL SECTION

PLOT DATE: Mon Nov 29 16:18:16 1999 DESIGN FILE: p:\fdt2027\tgsrd02.dgn
PLOT FILE: p:\fdt2027\tgsrd02.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	9

TRAFFIC DATA

CURRENT YEAR ESTIMATE = 1995 AADT = 21,479
OPENING YEAR ESTIMATE = 2001 AADT = 25,914
DESIGN YEAR ESTIMATE = 2021 AADT = 40,700
K = 10.40% D = 55.80% T = 4.30% (24 HR)
DESIGN HR T = 2.15%
DESIGN SPEED = 80 Km/h



VOID

TYPICAL SECTION
SR 54

STA 34+57.251 TO STA 42+50.000

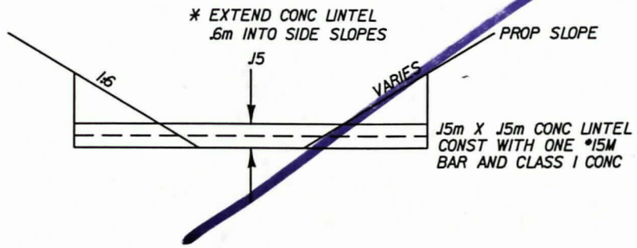
NEW CONSTRUCTION

OPTIONAL BASE GROUP 10 AND TYPE S STRUCTURAL COURSE (90 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)

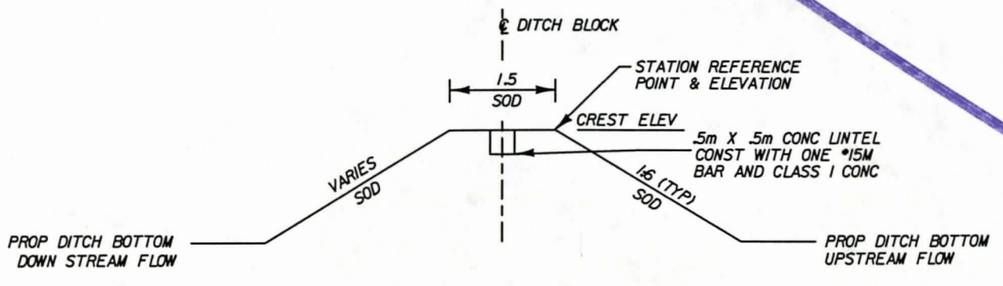
STA 32+60.000 TO STA 34+57.251

MILLING AND RESURFACING

MILL EXISTING ASPHALT PAVEMENT (20 mm AVE DEPTH) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)



DITCH BLOCK
NTS



PROFILE OF DITCH BLOCK
NTS

SUMMARY OF DITCH BLOCKS			
SIDE	STATION	CREST ELEV	FILL (C.Y.)
LT	75+95	22.00	
RT	76+27	22.00	
RT	76+74	21.80	
LT	77+34	23.00	

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Imaged As Is

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

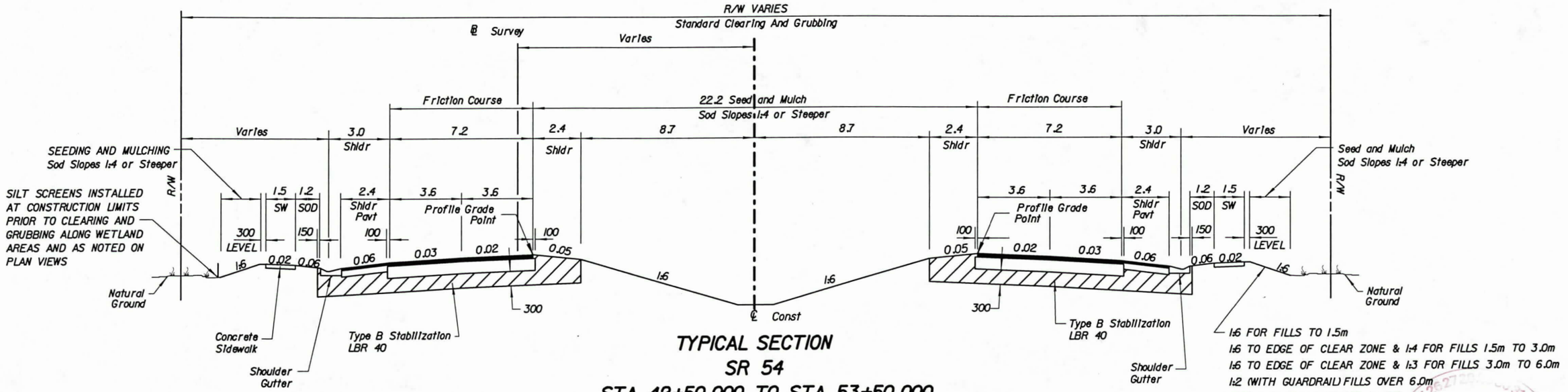
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\typsec02.prf
PLOT DATE: Wed Aug 25 10:47:48 1999 DESIGN FILE: p:\fdt2027\typsec02.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	10



TYPICAL SECTION
SR 54
STA 42+50.000 TO STA 53+50.000

TRAFFIC DATA

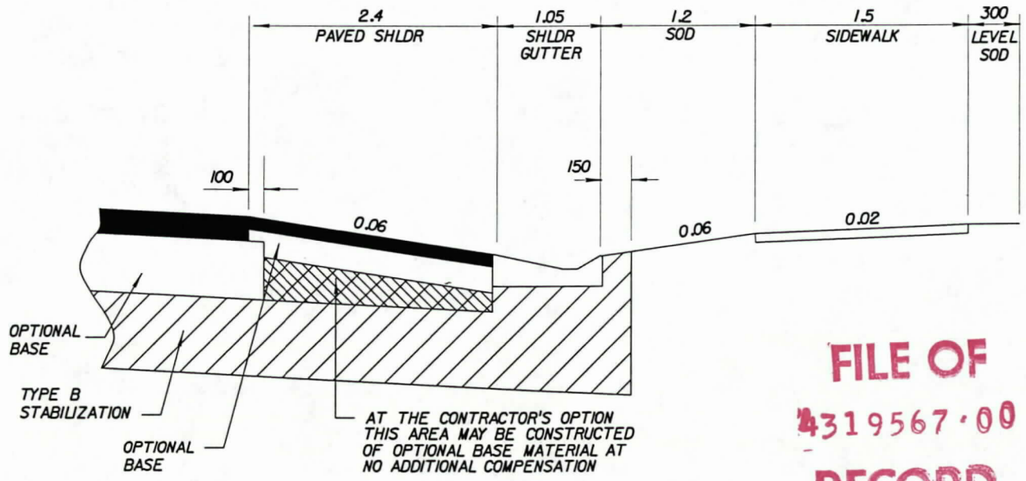
CURRENT YEAR ESTIMATE = 1995 AADT = 21,479
OPENING YEAR ESTIMATE = 2001 AADT = 25,914
DESIGN YEAR ESTIMATE = 2021 AADT = 40,700
K = 10.40% D = 55.80% T = 4.30% (24 HR)
DESIGN HR T = 2.15%
DESIGN SPEED = 100 Km/h

NEW CONSTRUCTION

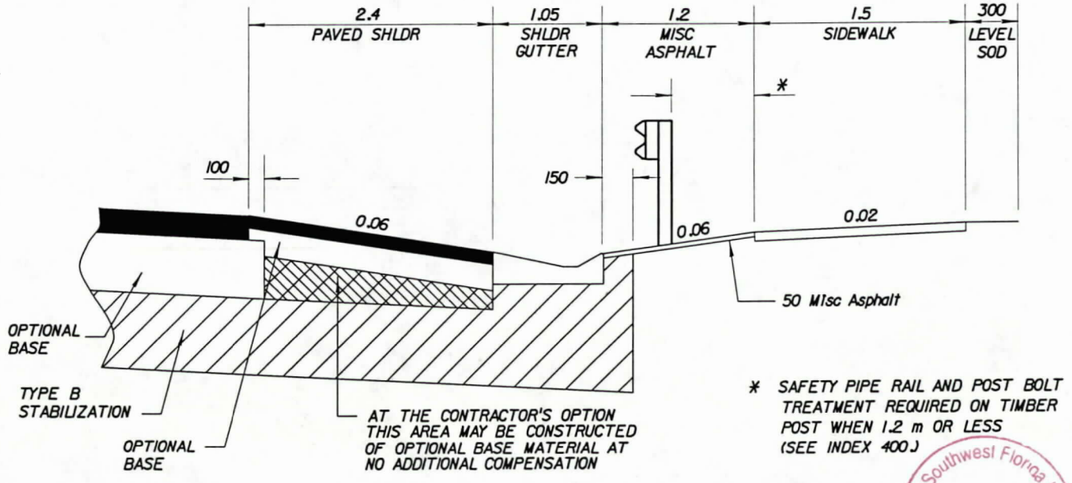
OPTIONAL BASE GROUP 10 AND TYPE S STRUCTURAL COURSE (90 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 1 AND TYPE S STRUCTURAL COURSE (30 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)



SHOULDER PAVEMENT DETAIL
N.T.S.



* SAFETY PIPE RAIL AND POST BOLT TREATMENT REQUIRED ON TIMBER POST WHEN 1.2 m OR LESS (SEE INDEX 400)

GUARDRAIL DETAIL
N.T.S.

FILE OF
4319567.00
RECORD

Southwest Florida Wate
SEP 21 1999
REG-BRO

49

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

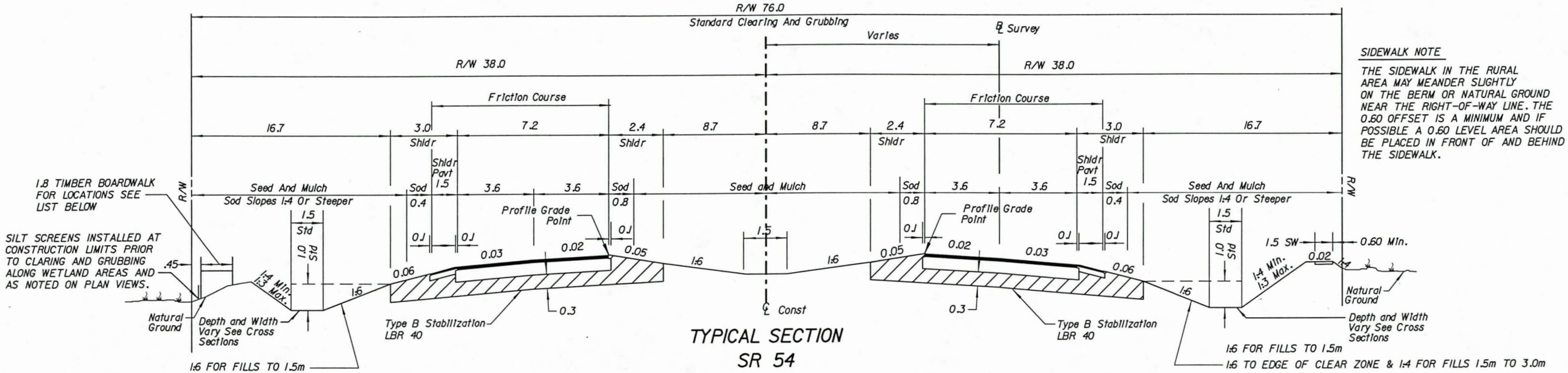
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION

PLOT DATE: Wed Aug 25 10:47:53 1999 DESIGN FILE: p:\fdot2027\typsec05.dgn PLOT FILES: C:\CADNET\QUEUES\MSHF5000N\typsec05.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	11



TYPICAL SECTION
SR 54
STA 53+35.000 TO STA 17+47.159

SIDEWALK NOTE

THE SIDEWALK IN THE RURAL AREA MAY MEANDER SLIGHTLY ON THE BERM OR NATURAL GROUND NEAR THE RIGHT-OF-WAY LINE. THE 0.60 OFFSET IS A MINIMUM AND IF POSSIBLE A 0.60 LEVEL AREA SHOULD BE PLACED IN FRONT OF AND BEHIND THE SIDEWALK.

NEW CONSTRUCTION

OPTIONAL BASE GROUP 10 AND TYPE S STRUCTURAL COURSE (90 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)

SHOULDER PAVEMENT

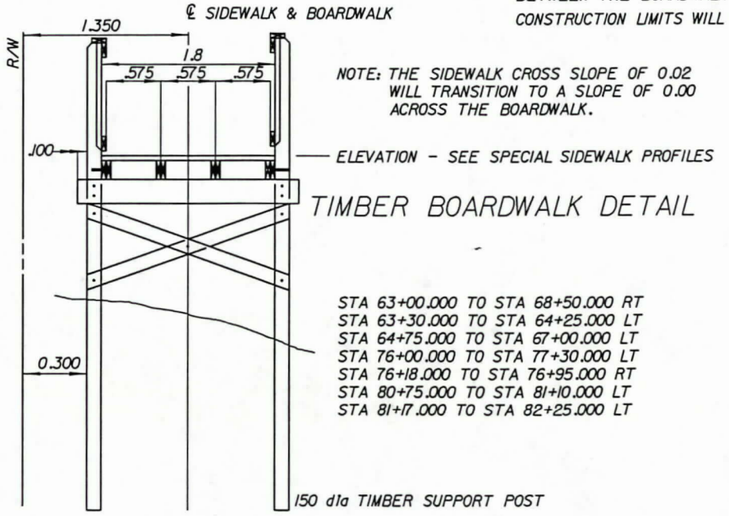
OPTIONAL BASE GROUP 1 AND TYPE S STRUCTURAL COURSE (30 mm) AND FRICTION COURSE FC-2 (15 mm) (RUBBER)

TRAFFIC DATA

CURRENT YEAR ESTIMATE = 1995 AADT = 21,479
OPENING YEAR ESTIMATE = 2001 AADT = 25,914
DESIGN YEAR ESTIMATE = 2021 AADT = 40,700
K = 10.40% D = 55.80% T = 4.30% (24 HR)
DESIGN HR T = 2.15%
DESIGN SPEED = 100 Km/h

BOARDWALK NOTE

CLEARING OF TREES THROUGH WETLANDS 9, 10, 11, 36, 37 (STATIONS 63-69) WILL BE LIMITED TO A WIDTH OF 3.1m (10 FT.) FOR CONSTRUCTING THE BOARDWALK. VEGETATION BETWEEN THE BOARDWALK AND ROADWAY SLOPE CONSTRUCTION LIMITS WILL BE PRESERVED.



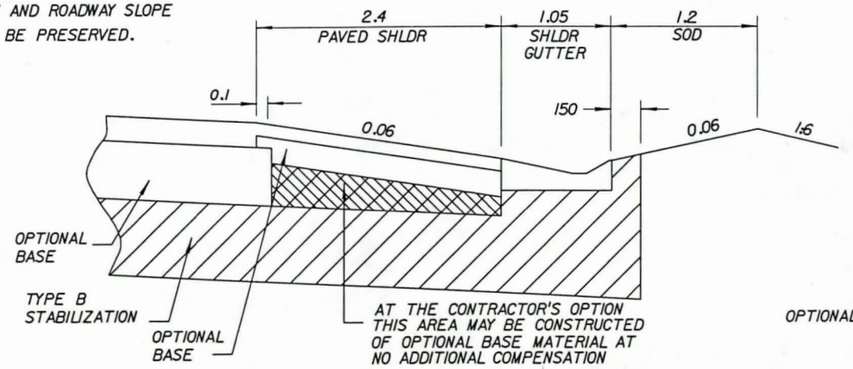
NOTE: THE SIDEWALK CROSS SLOPE OF 0.02 WILL TRANSITION TO A SLOPE OF 0.00 ACROSS THE BOARDWALK.

ELEVATION - SEE SPECIAL SIDEWALK PROFILES

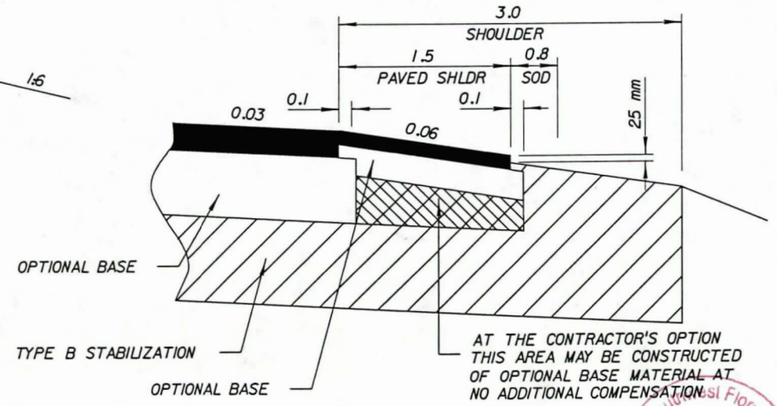
TIMBER BOARDWALK DETAIL

STA 63+00.000 TO STA 68+50.000 RT
STA 63+30.000 TO STA 64+25.000 LT
STA 64+75.000 TO STA 67+00.000 LT
STA 76+00.000 TO STA 77+30.000 LT
STA 76+18.000 TO STA 76+95.000 RT
STA 80+75.000 TO STA 81+10.000 LT
STA 81+17.000 TO STA 82+25.000 LT

NOTE: FOR DETAILS SEE TIMBER BOARDWALK SHEETS



SHOULDER GUTTER DETAIL WITHOUT GUARDRAIL



SHOULDER PAVEMENT DETAIL

FILE OF
4319567.00
RECORD

FEB 2000
SHEWARD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRO
Southwest Florida Water Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION 50

PLOT DATE: Wed Aug 25 10:47:57 1999 DESIGN FILE: p:\fdt2027\typsr-d01.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\typsr-d01.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	12

SUMMARY OF FENCING TYPE A

FORM 625-000-27
ROADWAY DESIGN 03-94

LOCATION STA. TO STA.	SIDE	FENCE TYPE A M P	FENCE TYPE A M F	CORNER POST ASSEMBLY EA P	CORNER POST ASSEMBLY EA F	PULL & END POST ASSEM. EA P	PULL & END POST ASSEM. EA F	REMARKS	FIELD BOOK REFERENCE
POND 1A & 1B		588		8		7			
POND 2A & 2B		1289		35		14			
POND 4A & 4B		724		20		9			
POND 4C		564		10		7			
TOTAL:		3165		73		37			

SUMMARY OF GUARDRAIL

FORM 625-000-25
ROADWAY DESIGN 03-94

LOCATION STA. TO STA.	SIDE	GUARDRAIL M P	GUARDRAIL M F	END ANCHORAGE TYPE II EA P	END ANCHORAGE TYPE II EA F	END ANCHORAGE TYPE ET2000 EA P	END ANCHORAGE TYPE ET2000 EA F	BRIDGE P	BRIDGE F	FIELD BOOK REFERENCE
ROADWAY										
42+50.000 TO 47+11.010	L	461.01		1		1				
44+80.000 TO 47+80.990	R	300.99		1		1				
47+30.000 TO 47+68.100	L	38.10		1		1				
48+08.230 TO 48+54.000	L	45.77		1		1				
48+67.400 TO 48+71.210	L	3.81		1		1				
48+82.600 TO 50+61.670	L	179.07		1		1				
49+05.000 TO 52+36.472	R	300.99		1		1				
50+71.100 TO 52+63.712	L	192.61		1		1				
ROADWAY TOTAL		1512.6		8		8				
BRIDGE										
11+60.513 TO 12+40.523	MED	80.01						1		
12+13.853 TO 12+40.523	R	26.67						1		
12+86.629 TO 13+51.399	R	64.77						1		
12+90.705 TO 13+89.765	MED	99.06						1		
BRIDGE TOTAL		270.5						4		

SUMMARY OF GUARDRAIL REMOVAL

FORM 625-000-25
ROADWAY DESIGN 03-94

LOCATION STA. TO STA.	SIDE	GUARDRAIL M P	GUARDRAIL M F	END ANCHORAGE TYPE II EA P	END ANCHORAGE TYPE II EA F	END ANCHORAGE TYPE MELT EA P	END ANCHORAGE TYPE MELT EA F	FIELD BOOK REFERENCE
12+90.652 TO 13+13.444	L	22.8						

STRUCTURE NO.	STATION	DESIGN FLOOD 2% PROB. DISCHARGE	DESIGN FLOOD 50 YR FREQ. STAGE	BASE FLOOD 1% PROB. DISCHARGE	BASE FLOOD 100 YR FREQ. STAGE	OVERTOPPING FLOOD DISCHARGE	OVERTOPPING FLOOD STAGE	OVERTOPPING FLOOD PROB. %	OVERTOPPING FLOOD FREQ. YR.	GREATEST FLOOD DISCHARGE	GREATEST FLOOD STAGE	GREATEST FLOOD PROB. %	GREATEST FLOOD FREQ. YR.
	42+90	0.345	21.05	0.388	21.08					0.513	21.23	0.2	500
	44+90	6.796	21.16	7.674	21.22					10.619	21.43	0.2	500
	55+12	0.671	21.06	0.756	21.06					1.286	21.06	0.2	500
	76+50	2.509	23.43	2.775	23.86	2.509	23.43	2.0	50				

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 of antecedent conditions, urbanization, channelization, and land use. Users of this data are cautioned against the assumption of precision which can not be attained. Discharges are in M3/S and stages are in M, NGVD, 1929.

DEFINITIONS:

DESIGN FLOOD: The flood selected by FDOT to be utilized to assure a standard level of hydraulic performance

BASE FLOOD: The flood having a 1% chance of being exceeded in any year. (100 yr. frequency)

OVERTOPPING FLOOD: The flood where flow occurs (A) over the highway (B) over a watershed divide or (C) thru emergency relief structures.

GREATEST FLOOD: The most severe flood which can be predicted where overtopping is not practicable, normally one with a 0.2% chance of being exceeded in any year. (500 yr. frequency)

FILE OF 4319567·00 RECORD

SUMMARY OF EARTHWORK

FORM 625-000-28
ROADWAY DESIGN 03-94

DESCRIPTION	P M3	F M3
CLASSIFIED ROADWAY EXCAVATION		
ROADWAY EXCAVATION, A-2-4, A-3 MATERIAL (SUITABLE)	100550	
ROADWAY EXCAVATION, A-8 MATERIAL (MUCK)	76	
EXCAVATION FROM LATERAL DITCHES	0	
DETENTION POND EXCAVATION	195072	
UNCLASSIFIED ROADWAY EXCAVATION		
LIVINGSTON ROAD EXCAVATION	253	
TOTAL ROADWAY EXCAVATION (RDWY & DT)	295951	
EMBANKMENT	184732	
SUBSOIL EXCAVATION, A-2-4, A-3 MATERIAL (SUITABLE)	20266	
SUBSOIL EXCAVATION, A-7, A-2-6, A-2-7 MATERIAL (PLASTIC)	159	
SUBSOIL EXCAVATION, A-8 MATERIAL (MUCK)	15425	
TOTAL SUBSOIL EXCAVATION	35851	

1. EARTHWORK HAS BEEN CALCULATED USING THE LIMEROCK BASE OPTION. IF ANOTHER OPTION IS CONSTRUCTED, THERE SHALL BE NO REVISION TO THE EARTHWORK QUANTITIES FOR WHICH PAYMENT IS MADE BY PLAN QUANTITY.
2. EMBANKMENT IS FILL IN PLACE WITH NO SHRINKAGE APPLIED.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District SEP 21 1999 REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES 51

A-916

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumqr-d01.prf
PLOT DATE: Wed Aug 25 10:48:12 1999 DESIGN FILE: p:\fdt2027\sumqr-d01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	13

FORM 625-000-30 ROADWAY DESIGN 07-94

SUMMARY OF SIDEDRAIN & MITERED END SECTIONS

	LOCATION STA. TO STA.	SIDE	PIPE LENGTH (MI) 450mm	MES (EA)	600mm	MES (EA)	750mm	MES (EA)	365 X 575	MES (EA)
P	49+06 TO 49+19	LT	6.7	2						
F										
P	54+16 TO 54+40	RT			17.9	2				
F										
P	55+72 TO 55+87	LT					7.0	2		
F										
P	56+45 TO 56+65	LT					11.2	2		
F										
P	56+39 TO 56+69	RT			22.8	2				
F										
P	57+83 TO 58+06	RT			16.1	2				
F										
P	60+78 TO 61+00	RT	16.5	2						
F										
P	61+68 TO 62+12	RT			37.7	2				
F										
P	67+66 TO 68+11	LT					33.7	2		
F										
P	68+79 TO 68+89	RT	8.7	2						
F										
P	69+16 TO 69+30	RT	12.5	2						
F										
P	70+04 TO 70+18	RT			7.3	2				
F										
P	71+24 TO 71+60	RT			29.6	2				
F										
P	73+45 TO 73+65	RT							17.0	2
F										
P	77+46 TO 77+73	RT	21.7	2						
F										
P	78+34 TO 78+62	RT	22.5	2						
F										
P	83+02 TO 83+45	RT	37.5	2						
F										
P	86+78 TO 87+00	LT	16.5	2						
F										
P	89+00 TO 89+17	LT	11.7	2						
F										
P	89+55 TO 89+68	LT	8.0	2						
F										
P	90+42 TO 90+60	LT			10.7	2				
F										
P	29+39 TO 29+70 (LIVINGSTON RD)	LT	25.5	2						
F										
	TOTAL		187.8	22	141.3	14	51.9	6	17.0	2

SUMMARY OF SODDING

FORM 625-000-29 ROADWAY DESIGN 03-94

LOCATION STA. TO STA.	SIDE	P L	P W	P M2	F L	F W	F M2	FIELD BOOK REFERENCE
ROADWAY *							96503	
DRAINAGE STRUCTURES							1256	
SIDEDRAINS								
(450 PIPE)							192	
(600 PIPE)							128	
(750 PIPE)							70	
(365X575 PIPE)							16	
TOTAL							98344	

* REFER TO COMPUTATION BOOK FOR DETAILED LIST.

FORM 625-000-34 ROADWAY DESIGN 05-98

SUMMARY OF GRAVITY WALL & STEEL PIPE HANDRAIL

LOCATION STA. TO STA.	SIDE	CLASS I CONCRETE M3	STEEL HANDRAIL M**	REMARKS	FIELD BOOK REFERENCE
34+57.251 TO 35+17.155	RT	55.7	60.5		
37+36.000 TO 37+77.000	RT	24.7	41.6		
38+66.176 TO 38+84.500	RT	13.6	18.9		
39+00.000 TO 39+43.000	LT	44.5	43.6		
40+40.000 TO 40+80.000	LT	35.4	40.6		
40+95.000 TO 41+42.000	LT	34.6	47.6		
TOTAL		208.5	252.8		

** THE LENGTH OF STEEL PIPE HANDRAIL REFLECTS AN ADDITIONAL 600 mm ADDED TO THE LENGTH OF GRAVITY WALL.

FILE OF
4319567·00
RECORD

PAY ITEM FOOTNOTES

2102- 1- INCLUDES APPROXIMATELY 9708.2 M2 OF TEMPORARY PAVEMENT.

2104- 10- 1 BASED ON REPLACEMENT EVERY 3 MONTHS.

2104- 13- 1 BASED ON REPLACEMENT EVERY 12 MONTHS.

2110- 3- ALL SALVAGEABLE MATERIAL, AS DETERMINED BY THE ENGINEER, IS TO BE STOCKPILED WITHIN THE RIGHT-OF-WAY FOR REMOVAL BY D.O.T. FORCES.

2110- 86- ALL SALVAGEABLE MATERIAL DESIGNATED TO BE DELIVERED BY THE CONTRACTOR TO:

DADE CITY MAINTENANCE YARD
36339 S.R. 52
DADE CITY, FL 33525-8324
M.S.7-1260
(352) 521-1444

2400- 1-15 INCLUDES 5 M3 FOR MISCELLANEOUS CONSTRUCTION, AS DIRECTED BY THE PROJECT ENGINEER.

2536- 73- EXISTING GUARDRAIL TO BE DISMANTLED AND STOCKPILED WITHIN THE RIGHT-OF-WAY IN AREAS DESIGNATED BY THE ENGINEER FOR REMOVAL BY D.O.T. MAINTENANCE FORCES.

2570- 2- INCLUDES APPROXIMATELY 9702 M2 SEEDING AND MULCHING FOR TEMPORARY GRASSING.

2570- 3- INCLUDES APPROXIMATELY 88 KG GRASS SEED FOR TEMPORARY GRASSING.

2570- 4- INCLUDES APPROXIMATELY 8.7 MT MULCH MATERIAL FOR TEMPORARY GRASSING.

2570- 5- INCLUDES APPROXIMATELY 1.5 MT FERTILIZER FOR TEMPORARY GRASSING.

2570- 9- INCLUDES APPROXIMATELY 73 KL WATER FOR TEMPORARY GRASSING.

2570- 10- INCLUDES APPROXIMATELY 22 M2 GRASS SEED (QUICK GROWING) FOR TEMPORARY GRASSING.

2575- 1- INCLUDES APPROXIMATELY 4917 M2 SODDING FOR TEMPORARY GRASSING. WHERE SOD SLOPES ARE 2:1 OR STEEPER SOD SHALL BE PEGGED IN ACCORDANCE WITH SECTION 575 OF THE STANDARD SPECIFICATIONS.

2570- 5- BASED ON 2 APPLICATIONS.

2710- THE TOTALS SHOWN ON THE SUMMARY OF ROADWAY PAY ITEMS INCLUDE THE QUANTITIES FOR PAVEMENT MARKINGS USED FOR TRAFFIC CONTROL PAVEMENT MARKINGS (AS SHOWN IN THE ROADWAY PLANS) AND FOR FINAL PAVEMENT MARKINGS (AS SHOWN ON THE SIGNING AND PAVEMENT MARKING PLANS.)

FEB 2000 SIGNING PERMITTED CONSTRUCTION DRAWINGS
SEP 21 1999 Southwest Florida Water Management District REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES 52

PLOT DATE: Wed Aug 25 10:48:19 1999 DESIGN FILE: p:\fdt2027\sumqrd02.dgn PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\sumqrd02.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE			REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION								SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535							
P	S-1	35+06	INLET, PIPE	1	450	39.8				39.8										1																										
F																																															
P	S-2	35+25	INLET, PIPE	1	1200	106.9									106.9			1																													
F																																															
P	S-3	28+73	MH, PIPE	1	1200	109.7									109.7							1																					32.0							
F																																															
P	S-4	27+63	MH, PIPE, MES	1	1200	6.4									6.4							1																											
F																																															
P	S-5	35+95	INLET, PIPE	1	450	4.0				4.0																	1																					
F																																															
P	S-6	36+00	INLET, PIPE	1	450	32.8				32.8											1																											
F																																															
P	S-7	36+00	INLET, PIPE	1	900	73.2							73.2						1																													
F																																															
P	S-8	36+60	INLET, PIPE	1	450	17.5				17.5																	1																					
F																																															
P	S-9	36+78	INLET, PIPE	1	450	32.3				32.3										1																												
F																																															
P	S-10	36+78	INLET, PIPE	1	900	77.2							77.2					1																													
F																																															
P	S-11	38+00	INLET, PIPE	1	450	32.3				32.3											1																											
F																																															
P	S-12	38+00	INLET, PIPE	1	900	121.2							121.2						1																													
F																																															
P	S-12A	38+94	MH, PIPE	1	600	35.0					35.0													1																							
F																																															
P	S-12B	38+30	MH, PIPE, MES	1	600	8.3					8.3													1											1								23.0						CD, 1:4
F																																															
P	S-13	38+40	INLET, PIPE	1	450	8.0				8.0																	1																					BOS, MOD
F																																															
P	S-14	38+50	INLET, PIPE	1	450	32.3				32.3										1																												ALT A, 1600 DIA.
F																																															
P	S-15	38+50	INLET, PIPE	1	750	47.7						47.7								1																												
F																																															
P	S-16	39+33	INLET, PIPE	1	450	5.0				5.0																	1																		5.0						
F																																															
P	S-17	39+33	INLET, PIPE	1	600	32.7					32.7									1																												
F																																															
P	S-18	39+33	INLET, PIPE	1	750	83.0						83.0								1																												
F																																															
P	S-19	39+94	INLET, PIPE	1	600	60.0					60.0									1																												
F																																															
P	S-20	40+00	INLET, PIPE	1	450	24.2				24.2											1																											
F																																															
P	S-21	40+25	MH, PIPE	1	450	35.7				35.7														1																							
F																																															
P	S-22	40+33	INLET, PIPE	1	600	66.0					66.0									1																												
F																																															
P	S-23	40+80	MH, PIPE	1	450	53.8				53.8														1																							
F																																															
P	S-23A	40+80	EW	1	450	3.2				3.2																																	33.0	1.19					
F																																															
P	S-24	41+00	MH, PIPE	1	600	73.9					73.9													1																							
F																																															
P	S-25	41+75	INLET, PIPE	1	600	72.9					72.9								1																												
F																																															
TOTALS	P PLAN QUANTITY						0.0	0.0	0.0	320.9	348.8	130.7	271.6	0.0	223.0	0.0	0.0	3	2	8	3	2	0	5	0	0	4	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	93.0	1.2	0.0	0.0	0.0		
	F FINAL QUANTITY																																														

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr001.prf

PLOT DATE: Wed Aug 25 10:48:31 1999 DESIGN FILE: ps\fdt2027\SUMDR001.dgn

FINANCIAL PROJECT ID: 256343-1-52-01

STATE PROJ. NO.: 14090-3522 | SHEET NO.: 14

FILE OF
4319567.00
RECORD

FEB 2000
SIGNED
FOR PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-RRO
Management District

53

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE A
SHT 1 OF 6

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE			REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION									FINANCIAL PROJECT ID 256343-1-52-01	STATE PROJ. NO. 14090-3522	SHEET NO. 15
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-26	41+75	INLET, PIPE	1	450	32.7				32.7										1																											
F																																														
P	S-27	42+40	INLET, PIPE	1	450	34.9				34.9											1																											
F																																														
P	S-28	42+50	INLET, PIPE	1	750	29.5						29.5									1																											
F																																														
P	S-28A	42+51	INLET, PIPE	1	450	1.5				1.5																						1														
F																																														
P	S-29	42+80	INLET, PIPE	1	900	38.5							38.5																				1														ALT B, 1524X1524
F																																														
P	S-29A	42+90	EW, PIPE	1	750	65.0						65.0																															52.0	2.49					CD
F																																														
P	S-30	42+80	INLET, PIPE	1	450	35.7				35.7																						1														
F																																														
P	S-30A	42+90	MES	1	450																														1							26.0						CD, 1:4
F																																														
P	S-31	43+20	INLET, PIPE	1	900	78.5							78.5																				1														ALT B, 1050X1800
F																																														
P	S-32	44+00	INLET, PIPE	1	450	20.8				20.8																						1														
F																																														
P	S-33	44+00	INLET, PIPE	1	450	18.9				18.9																1																	5.0						
F																																														
P	S-34	44+00	INLET, PIPE	1	1200	19.8									19.8																		1														ALT B, 2100X1800
F																																														
P	S-34A	30+41	MH, PIPE	1	1200	107.2									107.2								1																								ALT B, 2400X1050
F																																														
P	S-34B	31+36	MH, PIPE	1	1200	13.0									13.0								1																								ALT B, 2400X1050
F																																														
P	S-35	31+58	MES	1	1200																																1					34.0						BO, 1:4
F																																														
P	S-36	33+07	INLET, PIPE	1	900	69.9							69.9															1															5.0						MOD
F																																														
P	S-37	33+69	MES	1	900																																					28.0						BO, 1:4
F																																														
P	S-38	NOT USED		1																																											
F																																														
P	S-38A	44+80	MH, PIPE	1	900	79.1							79.1										1																										1500 DIA.
F																																														
P	S-38B	45+00	MH, PIPE	1	750	18.5						18.5											1																										1500 DIA., ALT A
F																																														
P	S-38C	45+27	INLET, PIPE	1	750	26.5						26.5																				1														
F																																														
P	S-38D	46+07	INLET, PIPE	1	750	79.1						79.1																				1														
F																																														
P	S-39A	45+34	MH, INLET, MES	1	600	3.5					3.5														1										1							20.0						1:2
F																																														
P	S-39B	45+89	MH, PIPE	1	600	53.9					53.9														1																								
F																																														
P	S-39C	46+87	INLET, PIPE	1	600	96.9					96.9																				1														
F																																														
P	S-39D	47+67	INLET, PIPE	1	450	78.6				78.6																						1														
F																																														
P	S-39E	47+78	INLET, PIPE	1	450	42.9				42.9																						1														
F																																														
P	S-40	44+80	INLET, PIPE	1	450	79.1				79.1																																	5.0						
F																																														
TOTALS P PLAN QUANTITY							0.0	65.0	0.0	345.1	154.3	153.6	266.0	0.0	140.0	0.0	0.0	0	0	1	2	0	4	0	0	2	2	0	1	0	0	0	8	3	1	1	0	1	0	1	0	0	176.0	2.49	0.0	0.0	0.0	6.9	
F FINAL QUANTITY																																														

FILE OF
4319567.00
RECORD

FEB 2000
SUPERSEDED
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
Management District
REG-BRO

54

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE A
SHT 2 OF 6

PLOT DATE: Wed Aug 25 10:48:34 1999 DESIGN FILE: p:\fdt2027\sumdr-d02.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr-d02.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE 450	CROSSDRAIN PIPE 750	CROSSDRAIN PIPE 610 X 960	REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II 450	600	750	900	1050	1200	1500	975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	<3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-40A	44+90	HW, CBC	1	1.22x2.13	124.0									124.0																																		CD
F																																															
P	S-40B	44+90	HW	1																																											CD
F																																														
P	S-41	49+50	ENDWALL, PIPE	1	750	5.1						5.1																														26.0	2.49					
F																																														
P	S-42	49+50	INLET, PIPE	1	750	18.4						18.4																						1														
F																																														
P	S-42A	49+50	INLET, PIPE	1	750	22.5						22.5																														5.0						
F																																														
P	S-42B	49+50	INLET, PIPE, ENDWALL	1	750	5.4						5.4																						1									26.0	2.49					
F																																														
P	S-43	NOT USED		1																																											
F																																														
P	S-43A	50+24	INLET, PIPE	1	450	18.6				18.6																								1														
F																																														
P	S-43B	50+24	INLET, PIPE		450	21.7				21.7																															5.0						
F																																														
P	S-43C	50+24	INLET, PIPE	1	900	72.9							72.9																							1													ALT B, 1050X1500
F																																														
P	S-44	50+98	INLET, PIPE	1	900	72.9							72.9																							1													ALT B, 1050X1500
F																																														
P	S-44A	50+98	INLET, PIPE	1	450	41.3				41.3																								1														
F																																														
P	S-45	51+72	INLET, PIPE	1	750	72.9							72.9																							1													ALT B, 1050X1500
F																																														
P	S-45A	51+72	INLET, PIPE	1	900	41.3				41.3																								1														
F																																														
P	S-45B	51+66	MES, PIPE, MES	1	450	59.0						59.0																										2										(2) CD, 1:2
F																																														
P	S-46	52+46	INLET, PIPE	1	900	59.2							59.2																							1													ALT B, 1050X1500
F																																														
P	S-46A	52+46	INLET, PIPE	1	450	42.7				42.7																								1														
F																																														
P	S-47	53+06	MH, PIPE	1	900	30.5							30.5											1																									ALT A, 1500 DIA.
F																																														
P	S-48	53+36	MH, PIPE	1	1500	161.3										161.3								1																									ALT B, 1500X2100
F																																														
P	S-48A	54+21	MH, PIPE	1	1050	83.0								83.0										1																									ALT B, 1050X1500
F																																														
P	S-49	31+78	MH, PIPE	1	1500	41.0										41.0								1																									ALT B, 1050X1500
F																																														
P	S-49A	32+09	MES	1	1500																																						1		39.0				3.1	
F																																														
P	S-49B	33+41	INLET, PIPE, MES	1	900	53.0							53.0																	1										1							
F																																														
P	S-50	55+00	INLET, PIPE	1	1050	78.0								78.0																	1																ALT B, 1050X1500
F																																														
P	S-51	55+00	INLET, PIPE	1	450	28.1				28.1																					1																
F																																														
P	S-52	55+30	INLET, PIPE	1	750	28.9						28.9																			1																
F																																														
P	S-53	55+00	INLET, PIPE	1	600	30.0					30.0																				1																
F																																														
P	S-54	55+15	INLET, PIPE	1	900	63.5							63.5																	1																
F																																														
TOTALS	P PLAN QUANTITY						0.0	0.0	0.0	193.7	30.0	139.3	424.9	161.0	124.0	202.3	0.0	0	0	0	0	4	0	0	0	0	0	1	0	4	1	2	0	6	4	0	2	0	1	0	0	1	0	133.0	5.0	0.0	0.0	0.0	3.1	
	F FINAL QUANTITY																																													

FINANCIAL PROJECT ID: 256343-1-52-01

STATE PROJ. NO.: 14090-3522 | SHEET NO.: 16

FILE OF
431956-1-00
RECORD

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE A
SHT 3 OF 6

55

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr-d03.pr-f
PLOT DATE: Wed Aug 25 10:48:44 1999 DESIGN FILE: p:\fdt2027\SUMDRD03.dgn

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE 450	CROSSDRAIN PIPE 750	CROSSDRAIN PIPE 610 X 960	REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II 450	600	750	900	1050	1200	1500	975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	<3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-55	55+30	INLET, PIPE	1	750	13.8						13.8																1														5.0						
F																																																	
P	S-55A	55+15	MH, PIPE, EW	1	900	9.1							9.1																															64.0	3.46					ALT B, 1500X2100
F																																																
P	S-56	61+30	INLET, PIPE	1	600	32.5					32.5											1						1														5.0						
F																																																
P	S-57	61+30	INLET, PIPE	1	600	53.6					53.6																			1														5.0						
F																																																
P	S-58	61+75	INLET, PIPE	1	900	124.0							124.0																	1														5.0						
F																																																
P	S-58A	61+87	EW, PIPE	1	600	1.7					1.7																																42.0	1.71						
F																																																
P	S-59	61+87	MH, PIPE	1	600	111.5					111.5													1																										
F																																																
P	S-60	63+00	WES, PIPE	1	900	34.3							34.3																															23.0					4.6	BO, 1:4
F																																																
P	S-60A	31+80	INLET, PIPE, WES	1	600	18.5					18.5																			1									1											MOD.
F																																																
P	S-61	63+00	MH, PIPE	1	600	112.7					112.7											1																												CON. STR. ALT A, 1050X1500
F																																																
P	S-62	63+00	INLET, PIPE	1	900	5.5							5.5																				1													5.0						ALT B, 1050X1500
F																																																
P	S-63	63+75	MH, PIPE	1	600	74.1					74.1													1																										
F																																																
P	S-63A	64+13	ENDWALL	1	600																																							42.0	1.71						
F																																																
P	S-64	64+50	INLET, PIPE	1	600	74.1					74.1																										1													
F																																																
P	S-65	65+05	EW, PIPE	1	750	31.2		31.2																																			39.0	2.49					CD
F																																																
P	S-66	65+05	INLET, PIPE	1	750	31.2		31.2																								1													5.0						CD
F																																																
P	S-66A	65+05	EW	1	750																																							39.0	2.49					CD
F																																																
P	S-67	67+05	INLET, PIPE	1	450	27.9				27.9																		1														16.0	0.84					DOUBLE TRANS SLOT
F																																																
P	S-68	67+05	INLET, PIPE	1	750	19.2						19.2																			1													12.0	0.70					SINGLE TRANS SLOT
F																																																
P	S-69	67+05	WES	1	750																																							26.0					6.2	BO, 1:4
F																																																
P	S-69A	31+63	INLET, PIPE, WES	1	600	30.5					30.5																			1									1											9.0	MOD, 1:4
F																																																
P	S-70	NOT USED																																															
F																																																
P	S-71	69+50	INLET, PIPE, WES	1	750	28.2						28.2																				1								1											CD, 1:4
F																																																
P	S-72	69+50	INLET, PIPE	1	600	26.9					26.9																			1														5.0						
F																																																
P	S-73	69+90	INLET, PIPE	1	600	39.1					39.1																			1														5.0						
F																																																
P	S-74	NOT USED																																															
F																																																
P	S-75	NOT USED																																															
F																																																
P	S-76	30+28	INLET, PIPE	1	1200	115.5										115.5														1														5.0						ALT B, 2100X2100
F																																																
TOTALS	P PLAN QUANTITY						0.0	62.4	0.0	27.9	575.2	61.2	172.9	0.0	115.5	0.0	0.0	0	0	0	0	2	0	2	0	0	0	0	0	8	2	3	0	1	0	0	2	2	1	0	0	0	0	343.0	13.40	0.0	0.0	0.0	26.0	56
	F FINAL QUANTITY																																															

FINANCIAL PROJECT ID: 256343-1-52-01 | STATE PROJ. NO.: 14090-3522 | SHEET NO.: 17

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE A
SHT 4 OF 6

FILE OF
4319567-00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO
FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

PLOT DATE: Wed Aug 25 10:48:41 1999 DESIGN FILE: p:\fdt2027\SUMDR004.dgn PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\sumdr-d04.pr-F

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE			REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION								SOD	CLASS I CONC	FINANCIAL PROJECT ID: 256343-1-52-01	STATE PROJ. NO.: 14090-3522	SHEET NO.: 18	
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535			CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-76A	75+15	INLET, PIPE	1	1200	78.0									78.0												1														5.0						ALT B, 1050X2100
F																																															
P	S-77	31+49	MH, PIPE	1	1200	71.9									71.9									1																							ALT B, 1050X2100
F																																															
P	S-78	32+17	MH, PIPE	1	1200	17.7									17.7									1																							ALT B, 1500X2100
F																																															
P	S-78A	32+39	MES	1	1200																																		1						27.0					BO, 1:2
F																																															
P	S-79	75+90	INLET, PIPE	1	600	28.1					28.1																	1																5.0					
F																																															
P	S-80	75+90	INLET, PIPE	1	750	26.0						26.0																		1														5.0					ALT B, 1500X2100
F																																															
P	S-81	75+90	INLET, PIPE	1	1200	72.9									72.9												1																5.0					ALT B, 1500X2100
F																																															
P	S-82	76+49	EW	1	610X960																																						52.0	2.02				CD
F																																															
P	S-83	76+49	EW, PIPE	1	610X960	57.6																																					52.0	2.02				CD
F																																															
P	S-84	76+20	MH, PIPE	1	750	28.8						28.8											1																									
F																																															
P	S-85	77+40	INLET, PIPE	1	450	29.1				29.1																	1																5.0					
F																																															
P	S-86	77+10	INLET, PIPE	1	600	18.8					18.8																1																5.0					
F																																															
P	S-87	77+10	INLET, PIPE	1	450	30.9				30.9																			1														5.0					
F																																															
P	S-88	77+10	MH, PIPE	1	750	88.4						88.4														1																						
F																																															
P	S-89	34+11	INLET, PIPE	1	900	14.4							14.4															1														5.0					MOD
F																																															
P	S-90	34+32	MES	1	900																																			1						23.0					BO, 1:2
F																																															
P	S-91	34+34	MES, PIPE	1	975X1535	29.9											29.9																									1		32.0					BO, 1:4
F																																															
P	S-92	34+10	MES	1	975X1535																																				1		32.0					BO, 1:4
F																																															
P	S-93	80+70	MES, PIPE	1	450	27.2				27.2																											1						21.0					SD, 1:4
F																																															
P	S-94	81+00	MH, PIPE	1	450	89.0				89.0																1																						
F																																															
P	S-95	81+90	MH, PIPE	1	450	19.5				19.5																1																						
F																																															
P	S-96	82+10	MES	1	450																																			1						21.0					SD, 1:4
F																																															
P	S-97	84+85	INLET, PIPE	1	750	28.7						28.7																		1														5.0					
F																																															
P	S-98	84+85	INLET, PIPE	1	750	29.5						29.5																			1												5.0					
F																																															
P	S-99	84+85	MH, PIPE	1	1050	89.4								89.4									1																				6.0					1500X1800
F																																															
P	S-99A	84+77	INLET, PIPE	1	600	8.0					8.0																	1																						
F																																															
P	S-99B	84+93	INLET, PIPE	1	600	8.0					8.0																	1																						
F																																															
P	S-100	31+20	MH, PIPE	1	1050	52.1								52.1									1																									
F																																															
TOTALS	P PLAN QUANTITY						0.0	0.0	57.6	195.7	62.9	201.4	14.4	141.5	240.5	0.0	29.9	0	0	0	0	0	3	0	2	3	2	2	6	0	2	0	0	0	2	0	0	1	0	1	0	2	316.0	4.04	0.0	0.0	0.0	0.0	
	F FINAL QUANTITY																																														

FILE OF
4319567.00
RECORD

FEB 2000
SIGNING AND PAVEMENT MARKING PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG BRO
Management Office

57

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE A
SHT 5 OF 6

PLOT DATE: Wed Aug 25 10:48:47 1999 DESIGN FILE: ps\fdt2027\SUMDRD05.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N.sumdr d05.prr f

STATE PROJ. NO. 14090-3522 | SHEET NO. 19

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE 450	CROSSDRAIN PIPE 750	CROSSDRAIN PIPE 610 X 960	REINFORCED CONCRETE PIPE (STORM SEWER) CLASS II 450	600	750	900	1050	1200	1500	975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	>3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1575	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-101	31+75	MES	1	1050																															1						25.0						BO, 1:4
F																																															
P	S-102	33+50	MES, PIPE	1	750	39.0						39.0																									1						26.0						1:4
F																																															
P	S-103	33+62	MES	1	750																															1						26.0					6.9	BO, 1:4
F																																															
P	S-104	33+08	PIPE, MES	1	600	17.7					17.7																1														5.0						MOD
F																																															
P	S-105	33+30	MES	1	600																																1						23.0					6.9	BO, 1:4
F																																															
P	S-106	88+15	INLET, PIPE, MES	1	450	43.4				43.4																	1								1						26.0						CD, 1:4
F																																															
P	S-107	88+75	MES, PIPE, MES	1	450	40.5				40.5																									2						42.0						(2) CD, 1:4
F																																															
P	S-108	89+70	MES, PIPE, MES	1	450	54.5				54.5																									2						42.0						(2) CD, 1:4
F																																															
P	S-109	92+50	INLET, PIPE	1	750	76.5						76.5																		1												12.0						TRAV. SLOTS (SINGLE)
F																																															
P	S-110	11+00	INLET, PIPE	1	600	37.0					37.0																				1										12.0						TRAV. SLOTS (SINGLE)
F																																															
P	S-111	11+50	INLET, PIPE	1	750	80.3						80.3																			1										12.0						ALT B, 1800X1800
F																																															
P	S-112	29+18	MH, PIPE	1	750	76.5						76.5														1																						
F																																															
P	S-113	28+35	MH, PIPE	1	750	26.0						26.0														1																						
F																																															
P	S-114	30+39	MES	1	750																																1						26.0						BO, 1:4
F																																															
P	S-115	30+95	INLET, PIPE	1	600	67.0					67.0															1																						MOD
F																																															
P	S-115A	31+63	MH, PIPE	1	600	58.4					58.4													1																						
F																																															
P	S-116	32+19	MES	1	600																																1						23.0					3.1	BO, 1:4
F																																															
P	S-117	30+30	JB PARTIAL	1	381																			1																						PARTIAL JUNCTION BOX
F																																															
P	S-118	30+30	JB PARTIAL	1	381																			1																						PARTIAL JUNCTION BOX
F																																															
P	S-119	30+39	INLET, PIPE	1	450	9.0				9.0											1																										
F																																															
P	S-120	30+60	INLET, PIPE	1	450	1.0				1.0											1																										
F																																															
P	S-121	30+60	JB PARTIAL		381																			1																						PARTIAL JUNCTION BOX
F																																															
P	S-122	31+06	INLET, PIPE		450	1.0				1.0											1																										
F																																															
P	S-123	31+06	JB PARTIAL		381																			1																						PARTIAL JUNCTION BOX
F																																															
P	S-45C	51+66	INLET																																1												ALT B, 1050X1500
F																																															
P																																															
F																																															
P																																															
F																																															
TOTALS			P PLAN QUANTITY				0	0	0	149.4	180.1	298.3	0	0	0	0	0	0	0	3	0	0	0	5	3	0	2	0	1	1	1	0	0	0	5	2	3	0	1	0	0	0	300.0	0.0	0.0	0.0	0.0	16.9	
			F FINAL QUANTITY																																												
GRAND TOTAL			P PLAN QUANTITY																																												
			F FINAL QUANTITY																																												

FILE OF
4319567:00
RECORD

FEB 2000
SUBMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REC-BRO
Management Dist

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES 58

ALTERNATE A SHT 6 OF 6

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr-d06.prf

PLOT DATE: Wed Aug 25 10:48:52 1999 DESIGN FILE: pw\fdot2027\SUMDRD06.dgn

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE		ERCP CLASS HE III	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION												STATE PROJ. NO. 14090-3522	SHEET NO. 20
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-1	35+06	INLET, PIPE	1	450	39.8				39.8										1																									
F																																														
P	S-2	35+25	INLET, PIPE	1	1200	106.9									106.9			1																												ALT B, 1800X2100
F																																														
P	S-3	28+73	MH, PIPE	1	1200	109.7									109.7							1																						32.0					ALT B, 1800X2100, 1:4, BO
F																																														
P	S-4	27+63	MH, PIPE, MES	1	1200	6.4									6.4							1																		1							ALT B, 1800X2100, 1:4, BO
F																																														
P	S-5	35+95	INLET, PIPE	1	450	4.0				4.0																	1																			BOS, MOD
F																																														
P	S-6	36+00	INLET, PIPE	1	450	32.8				32.8											1																										ALT B
F																																														
P	S-7	36+00	INLET, PIPE	1	900	73.2							73.2						1																												ALT B, 1500X1800
F																																														
P	S-8	36+60	INLET, PIPE	1	450	17.5				17.5																	1																			BOS, MOD
F																																														
P	S-9	36+78	INLET, PIPE	1	450	32.3				32.3											1																										
F																																														
P	S-10	36+78	INLET, PIPE	1	900	77.2							77.2					1																												ALT B, 1050X1800
F																																														
P	S-11	38+00	INLET, PIPE	1	450	32.3				32.3											1																										
F																																														
P	S-12	38+00	INLET, PIPE	1	900	121.2							121.2						1																												ALT B, 1050X1800
F																																														
P	S-12A	38+94	MH, PIPE	1	600	35.0					35.0													1																								
F																																														
P	S-12B	38+30	MH, PIPE, MES	1	600	8.3					8.3													1																1				23.0					CD, 1:4
F																																														
P	S-13	38+40	INLET, PIPE	1	450	8.0				8.0																	1																			BOS, MOD
F																																														
P	S-14	38+50	INLET, PIPE	1	450	32.3				32.3											1																										ALT A, 1600 DIA.
F																																														
P	S-15	38+50	INLET, PIPE	1	750	47.7						47.7									1																										
F																																														
P	S-16	39+33	INLET, PIPE	1	450	5.0				5.0																	1																	5.0					
F																																														
P	S-17	39+33	INLET, PIPE	1	600	32.7					32.7										1																										
F																																														
P	S-18	39+33	INLET, PIPE	1	750	83.0						83.0									1																										
F																																														
P	S-19	39+94	INLET, PIPE	1	600	60.0					60.0										1																										
F																																														
P	S-20	40+00	INLET, PIPE	1	450	24.2				24.2												1																										
F																																														
P	S-21	40+25	MH, PIPE	1	450	35.7				35.7														1																								
F																																														
P	S-22	40+33	INLET, PIPE	1	600	66.0					66.0										1																										
F																																														
P	S-23	40+80	MH, PIPE	1	450	53.8				53.8														1																								
F																																														
P	S-23A	40+80	EW	1	450	3.2				3.2																																	33.0	1.19				
F																																														
P	S-24	41+00	MH, PIPE	1	600	73.9					73.9													1																								
F																																														
P	S-25	41+75	INLET, PIPE	1	600	72.9					72.9																																				
F																																														
TOTALS	P PLAN QUANTITY / F FINAL QUANTITY						0.0	0.0	0.0	320.9	348.8	130.7	271.6	0.0	223.0	0.0	0.0	3	2	8	3	2	0	5	0	0	4	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	93.0	1.2	0.0	0.0	0.0	

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr-d07.prf

PLOT DATE: Wed Aug 25 10:48:55 1999 DESIGN FILE: p:\fdt2027\SUMDR007.dgn

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4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

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QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE		ERCP CLASS HE II	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION										STATE PROJ. NO. 14090-3522	SHEET NO. 21
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-26	41+75	INLET, PIPE	1	450	32.7				32.7										1																									
F																																													
P	S-27	42+40	INLET, PIPE	1	450	34.9				34.9											1																									
F																																													
P	S-28	42+50	INLET, PIPE	1	750	29.5						29.5									1																									
F																																													
P	S-28A	42+51	INLET, PIPE	1	450	1.5				1.5																						1													
F																																													
P	S-29	42+80	INLET, PIPE	1	900	38.5							38.5																				1												ALT B, 1524X1524
F																																													
P	S-29A	42+90	EW, PIPE	1	750	65.0						65.0																														52.0	2.49				CD
F																																													
P	S-30	42+80	INLET, PIPE	1	450	35.7				35.7																						1													
F																																													
P	S-30A	42+90	MES	1	450																													1								26.0					CD, 1:4
F																																													
P	S-31	43+20	INLET, PIPE	1	900	78.5							78.5																				1												ALT B, 1050X1800
F																																													
P	S-32	44+00	INLET, PIPE	1	450	20.8				20.8																						1													
F																																													
P	S-33	44+00	INLET, PIPE	1	450	18.9				18.9																	1															5.0					
F																																													
P	S-34	44+00	INLET, PIPE	1	1200	19.8									19.8																		1												ALT B, 2100X1800
F																																													
P	S-34A	30+41	MH, PIPE	1	1200	107.2									107.2									1																					ALT B, 2400X1050
F																																													
P	S-34B	31+36	MH, PIPE	1	1200	13.0									13.0									1																					ALT B, 2400X1050
F																																													
P	S-35	31+58	MES	1	1200																																	1			34.0					BO, 1:4
F																																													
P	S-36	33+07	INLET, PIPE	1	900	69.9							69.9															1													5.0					MOD
F																																													
P	S-37	33+69	MES	1	900																																				28.0					BO, 1:4
F																																													
P	S-38	NOT USED		1																																									
F																																													
P	S-38A	44+80	MH, PIPE	1	900	79.1							79.1										1																								1500 DIA.
F																																													
P	S-38B	45+00	MH, PIPE	1	750	18.5						18.5											1																								1500 DIA., ALT A
F																																													
P	S-38C	45+27	INLET, PIPE	1	750	26.5						26.5																				1													
F																																													
P	S-38D	46+07	INLET, PIPE	1	750	79.1						79.1																				1													
F																																													
P	S-39A	45+34	MH, INLET, MES	1	600	3.5					3.5																1							1								20.0					1:2
F																																													
P	S-39B	45+89	MH, PIPE	1	600	53.9					53.9																1																			
F																																													
P	S-39C	46+87	INLET, PIPE	1	600	96.9					96.9																						1													
F																																													
P	S-39D	47+67	INLET, PIPE	1	450	78.6				78.6																						1													
F																																													
P	S-39E	47+78	INLET, PIPE	1	450	42.9				42.9																						1													
F																																													
P	S-40	44+80	INLET, PIPE	1	450	79.1				79.1																															5.0					
F																																													
	TOTALS P PLAN QUANTITY						0.0	65.0	0.0	345.1	154.3	153.6	266.0	0.0	140.0	0.0	0.0	0	0	1	2	0	4	0	0	2	2	0	1	0	0	0	8	3	1	1	0	1	0	1	0	0	176.0	2.49	0.0	0.0	0.0	6.9	
	F FINAL QUANTITY																																												

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FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRO
Management Unit

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE B
SHT 2 OF 6

PLOT DATE: Wed Aug 25 10:49:00 1999 DESIGN FILE: p:\fdt2027\SUMDR008.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr008.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE		ERCP CLASS HE II	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE								CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION										STATE PROJ. NO.	SHEET NO.
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-40A	44+90	HW, CBC	1	1.22x2.13	124.0									124.0																															CD
F																																														
P	S-40B	44+90	HW	1																																										CD
F																																														
P	S-41	49+50	ENDWALL, PIPE	1	750	5.1						5.1																															26.0	2.49					
F																																															
P	S-42	49+50	INLET, PIPE	1	750	18.4						18.4																					1																
F																																															
P	S-42A	49+50	INLET, PIPE	1	750	22.5						22.5																															5.0						
F																																															
P	S-42B	49+50	INLET, PIPE, ENDWALL	1	750	5.4						5.4																					1										26.0	2.49					
F																																															
P	S-43	NOT USED		1																																											
F																																															
P	S-43A	50+24	INLET, PIPE	1	450	18.6				18.6																							1																
F																																															
P	S-43B	50+24	INLET, PIPE		450	21.7				21.7																																5.0						
F																																															
P	S-43C	50+24	INLET, PIPE	1	900	72.9							72.9																						1														ALT B, 1050X1500
F																																															
P	S-44	50+98	INLET, PIPE	1	900	72.9							72.9																						1														ALT B, 1050X1500
F																																															
P	S-44A	50+98	INLET, PIPE	1	450	41.3				41.3																							1																
F																																															
P	S-45	51+72	INLET, PIPE	1	750	72.9							72.9																						1														ALT B, 1050X1500
F																																															
P	S-45A	51+72	INLET, PIPE	1	900	41.3				41.3																							1																
F																																															
P	S-45B	51+66	MES, PIPE, MES	1	450	59.0						59.0																							2														(2) CD, 1:2
F																																															
P	S-46	52+46	INLET, PIPE	1	900	59.2							59.2																						1														ALT B, 1050X1500
F																																															
P	S-46A	52+46	INLET, PIPE	1	450	42.7				42.7																							1																
F																																															
P	S-47	53+06	MH, PIPE	1	900	30.5							30.5											1																										ALT A, 1500 DIA.
F																																															
P	S-48	53+36	MH, PIPE	1	1500	161.3										161.3								1																										ALT B, 1500X2100
F																																															
P	S-48A	54+21	MH, PIPE	1	1050	83.0								83.0										1																										ALT B, 1050X1500
F																																															
P	S-49	31+78	MH, PIPE	1	1500	41.0										41.0								1																										ALT B, 1050X1500
F																																															
P	S-49A	32+09	MES	1	1500																																							1		39.0				3.1	BO, 1:4
F																																															
P	S-49B	33+41	INLET, PIPE, MES	1	900	53.0							53.0																																					
F																																															
P	S-50	55+00	INLET, PIPE	1	1050	78.0								78.0																															5.0						ALT B, 1050X1500
F																																															
P	S-51	55+00	INLET, PIPE	1	450	28.1				28.1																																			5.0						
F																																															
P	S-52	55+30	INLET, PIPE	1	750	28.9						28.9																																	5.0						
F																																															
P	S-53	55+00	INLET, PIPE	1	600	30.0					30.0																																	5.0						
F																																															
P	S-54	55+15	INLET, PIPE	1	900	63.5							63.5																															12.0						SINGLE TRANS SLOT
F																																															
TOTALS	P PLAN QUANTITY						0.0	0.0	0.0	193.7	30.0	139.3	424.9	161.0	124.0	202.3	0.0	0	0	0	0	4	0	0	0	0	1	0	4	1	2	0	6	4	0	2	0	1	0	0	1	0	133.0	5.0	0.0	0.0	0.0	3.1	
	F FINAL QUANTITY																																														

FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE B
SHT 3 OF 6

PLOT DATE: Wed Aug 25 10:43:04 1999 DESIGN FILE: p:\fdt2027\SUMDR0B9.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP50000N.sumdr-d09.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE		ERCP CLASS HE III	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE							
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535
P	S-55	55+30	INLET, PIPE	1	750	13.8						13.8					
F																	
P	S-55A	55+15	MH, PIPE, EW	1	900	9.1							9.1				
F																	
P	S-56	61+30	INLET, PIPE	1	600	32.5					32.5						
F																	
P	S-57	61+30	INLET, PIPE	1	600	53.6					53.6						
F																	
P	S-58	61+75	INLET, PIPE	1	900	124.0							124.0				
F																	
P	S-58A	61+87	EW, PIPE	1	600	1.7					1.7						
F																	
P	S-59	61+87	MH, PIPE	1	600	111.5					111.5						
F																	
P	S-60	63+00	MES, PIPE	1	900	34.3							34.3				
F																	
P	S-60A	31+80	INLET, PIPE, MES	1	600	18.5					18.5						
F																	
P	S-61	63+00	MH, PIPE	1	600	112.7					112.7						
F																	
P	S-62	63+00	INLET, PIPE	1	900	5.5							5.5				
F																	
P	S-63	63+75	MH, PIPE	1	600	74.1					74.1						
F																	
P	S-63A	64+13	ENDWALL	1	600												
F																	
P	S-64	64+50	INLET, PIPE	1	600	74.1					74.1						
F																	
P	S-65	65+05	EW, PIPE	1	750	31.2		31.2									
F																	
P	S-66	65+05	INLET, PIPE	1	750	31.2		31.2									
F																	
P	S-66A	65+05	EW	1	750												
F																	
P	S-67	67+05	INLET, PIPE	1	450	27.9				27.9							
F																	
P	S-68	67+05	INLET, PIPE	1	750	19.2						19.2					
F																	
P	S-69	67+05	MES	1	750												
F																	
P	S-69A	31+63	INLET, PIPE, MES	1	600	30.5					30.5						
F																	
P	S-70	NOT USED															
F																	
P	S-71	69+50	INLET, PIPE, MES	1	750	28.2						28.2					
F																	
P	S-72	69+50	INLET, PIPE	1	600	26.9					26.9						
F																	
P	S-73	69+90	INLET, PIPE	1	600	39.1					39.1						
F																	
P	S-74	NOT USED															
F																	
P	S-75	NOT USED															
F																	
P	S-76	30+28	INLET, PIPE	1	1200	115.5									115.5		
F																	
TOTALS	P PLAN QUANTITY						0.0	62.4	0.0	27.9	575.2	61.2	172.9	0.0	115.5	0.0	0.0
	F FINAL QUANTITY																

QUANTITY	CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS	
	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ
P												1					
F																	
P																	
F																	
P					1							1					
F																	
P												1					
F																	
P												1					
F																	
P																	
F							1										
P																	
F																	
P					1												
F																	
P													1				
F																	
P							1										
F																	
P																	
F																	
P																1	
F																	
P																	
F																	
P												1					
F																	
P														1			
F																	
P													

STATE PROJ. NO. 14090-3522 | SHEET NO. 24

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE 450	ALUMINUM STEEL CROSSDRAIN PIPE 16 GAUGE 750	ERCP CLASS HE II 610 X 960	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE 450	600	750	900	1050	1200	1500	975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	>3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	2100	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-76A	75+15	INLET, PIPE	1	1200	78.0									78.0												1														5.0						ALT B, 1050X2100
F																																																	
P	S-77	31+49	MH, PIPE	1	1200	71.9									71.9									1																									ALT B, 1050X2100
F																																																
P	S-78	32+17	MH, PIPE	1	1200	17.7									17.7									1																									ALT B, 1500X2100
F																																																
P	S-78A	32+39	MES	1	1200																																												BO, 1:2
F																																																
P	S-79	75+90	INLET, PIPE	1	600	28.1					28.1																		1														5.0						
F																																																
P	S-80	75+90	INLET, PIPE	1	750	26.0						26.0																			1												5.0						ALT B, 1500X2100
F																																															
P	S-81	75+90	INLET, PIPE	1	1200	72.9									72.9												1														5.0						ALT B, 1500X2100
F																																															
P	S-82	76+49	EW	1	610X960																																												52.0	2.02					CD
F																																																
P	S-83	76+49	EW, PIPE	1	610X960	57.6																																										52.0	2.02					CD
F																																																
P	S-84	76+20	MH, PIPE	1	750	28.8						28.8											1																												
F																																																
P	S-85	77+40	INLET, PIPE	1	450	29.1				29.1																		1														5.0						
F																																																
P	S-86	77+10	INLET, PIPE	1	600	18.8					18.8																	1														5.0						
F																																																
P	S-87	77+10	INLET, PIPE	1	450	30.9				30.9																				1												5.0						
F																																																
P	S-88	77+10	MH, PIPE	1	750	88.4						88.4																									1												
F																																																
P	S-89	34+11	INLET, PIPE	1	900	14.4							14.4																	1												5.0						MOD
F																																																
P	S-90	34+32	MES	1	900																																													23.0						BO, 1:2
F																																																
P	S-91	34+34	MES, PIPE	1	975X1535	29.9											29.9																															32.0						BO, 1:4
F																																																
P	S-92	34+10	MES	1	975X1535																																												32.0						BO, 1:4
F																																																
P	S-93	80+70	MES, PIPE	1	450	27.2				27.2																																						21.0						SD, 1:4
F																																																
P	S-94	81+00	MH, PIPE	1	450	89.0				89.0																									1																
F																																																
P	S-95	81+90	MH, PIPE	1	450	19.5				19.5																									1																
F																																																
P	S-96	82+10	MES	1	450																																													21.0						SD, 1:4
F																																																
P	S-97	84+85	INLET, PIPE	1	750	28.7						28.7																																					5.0						
F																																																
P	S-98	84+85	INLET, PIPE	1	750	29.5						29.5																																					5.0						
F																																																
P	S-99	84+85	MH, PIPE	1	1050	89.4								89.4									1																									6.0						1500X1800
F																																															
P	S-99A	84+77	INLET, PIPE	1	600	8.0					8.0																																								
F																																																
P	S-99B	84+93	INLET, PIPE	1	600	8.0					8.0																																								
F																																																
P	S-100	31+20	MH, PIPE	1	1050	52.1								52.1									1																												
F																																																
TOTALS	P PLAN QUANTITY						0.0	0.0	57.6	195.7	62.9	201.4	14.4	141.5	240.5	0.0	29.9	0	0	0	0	0	3	0	2	3	2	2	6	0	2	0	0	0	2	0	0	1	0	1	0	2	316.0	4.04	0.0	0.0	0.0	0.0	
	F FINAL QUANTITY																																															

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PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE B
SHT 5 OF 6

PLOT DATE: Wed Aug 25 11:19:42 1999 DESIGN FILE: p:\fdt2027\SUMDR01l.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr-d1l.prf

STATE PROJ. NO. 14090-3522 | SHEET NO. 25

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE 450	CROSSDRAIN PIPE 750	CROSSDRAIN PIPE 610 X 960	ALUMINIZED PIPE (STORM SEWER) 16 GAUGE 450	600	750	900	1050	1200	1500	975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	>3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1575	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-101	31+75	MES	1	1050																																			25.0						BO, 1:4
F																																														
P	S-102	33+50	MES, PIPE	1	750	39.0						39.0																									1						26.0						1:4
F																																														
P	S-103	33+62	MES	1	750																																1						26.0					6.9	BO, 1:4
F																																														
P	S-104	33+08	PIPE, MES	1	600	17.7					17.7																	1															5.0						MOD
F																																														
P	S-105	33+30	MES	1	600																															1						23.0					6.9	BO, 1:4
F																																														
P	S-106	88+15	INLET, PIPE, MES	1	450	43.4				43.4																	1								1							26.0						CD, 1:4
F																																														
P	S-107	88+75	MES, PIPE, MES	1	450	40.5				40.5																									2							42.0						(2) CD, 1:4
F																																														
P	S-108	89+70	MES, PIPE, MES	1	450	54.5				54.5																									2							42.0						(2) CD, 1:4
F																																														
P	S-109	92+50	INLET, PIPE	1	750	76.5						76.5																	1														12.0						TRAV. SLOTS (SINGLE)
F																																														
P	S-110	11+00	INLET, PIPE	1	600	37.0					37.0																					1										12.0						TRAV. SLOTS (SINGLE)
F																																														
P	S-111	11+50	INLET, PIPE	1	750	80.3						80.3																			1										12.0						ALT B, 1800X1800
F																																														
P	S-112	29+18	MH, PIPE	1	750	76.5						76.5														1																							
F																																														
P	S-113	28+35	MH, PIPE	1	750	26.0						26.0														1																							
F																																														
P	S-114	30+39	MES	1	750																																1						26.0						BO, 1:4
F																																														
P	S-115	30+95	INLET, PIPE	1	600	67.0					67.0															1																							MOD
F																																														
P	S-115A	31+63	MH, PIPE	1	600	58.4					58.4														1																							
F																																														
P	S-116	32+19	MES	1	600																																	1						23.0					3.1	BO, 1:4
F																																														
P	S-117	30+30	JB PARTIAL	1	381																				1																							PARTIAL JUNCTION BOX
F																																														
P	S-118	30+30	JB PARTIAL	1	381																				1																							PARTIAL JUNCTION BOX
F																																														
P	S-119	30+39	INLET, PIPE	1	450	9.0				9.0										1																													
F																																														
P	S-120	30+60	INLET, PIPE	1	450	1.0				1.0										1																													
F																																														
P	S-121	30+60	JB PARTIAL		381																				1																							PARTIAL JUNCTION BOX
F																																														
P	S-122	31+06	INLET, PIPE		450	1.0				1.0										1																													
F																																														
P	S-123	31+06	JB PARTIAL		381																				1																							PARTIAL JUNCTION BOX
F																																														
P	S-45C	51+66	INLET																																	1											ALT B, 1050X1500
F																																														
P																																														
F																																														
P																																														
F																																														
TOTALS			P PLAN QUANTITY				0	0	0	149.4	180.1	298.3	0	0	0	0	0	0	0	3	0	0	0	5	3	0	2	0	1	1	1	0	0	0	5	2	3	0	1	0	0	0	300.0	0.0	0.0	0.0	0.0	16.9	
			F FINAL QUANTITY																																												
GRAND TOTAL			P PLAN QUANTITY																																												
			F FINAL QUANTITY																																												

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4319567.00
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FEB 2000
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PERMITTED CONSTRUCTION DRAWINGS

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE B
SHT 6 OF 6

PLOT DATE: Wed Aug 25 11:19:46 1999 DESIGN FILE: p:\Yrdt2027\SUMDR012.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr012.prf

QUANTITY	STR NO	STATION	DESCRIPTION -	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE		ERCP CLASS HE II	ALUMINIZED STEEL PIPE (STORM SEWER) 14 GAUGE							RCP CLASS HE II	CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION											STATE PROJ. NO. 14090-3522	SHEET NO. 2b
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	R/PRAP RUBBLE	REMARKS
P	S-1	35+06	INLET, PIPE	1	450	39.8				39.8										1																										
F																																														
P	S-2	35+25	INLET, PIPE	1	1200	106.9									106.9			1																												ALT B, 1800X2100
F																																														
P	S-3	28+73	MH, PIPE	1	1200	109.7									109.7							1																					32.0					ALT B, 1800X2100, 1:4, BO
F																																														
P	S-4	27+63	MH, PIPE, MES	1	1200	6.4									6.4							1																		1						ALT B, 1800X2100, 1:4, BO
F																																														
P	S-5	35+95	INLET, PIPE	1	450	4.0				4.0																	1																			BOS, MOD
F																																														
P	S-6	36+00	INLET, PIPE	1	450	32.8				32.8											1																										ALT B
F																																														
P	S-7	36+00	INLET, PIPE	1	900	73.2							73.2						1																												ALT B, 1500X1800
F																																														
P	S-8	36+60	INLET, PIPE	1	450	17.5				17.5																	1																			BOS, MOD
F																																														
P	S-9	36+78	INLET, PIPE	1	450	32.3				32.3											1																										
F																																														
P	S-10	36+78	INLET, PIPE	1	900	77.2							77.2					1																												ALT B, 1050X1800
F																																														
P	S-11	38+00	INLET, PIPE	1	450	32.3				32.3											1																										
F																																														
P	S-12	38+00	INLET, PIPE	1	900	121.2							121.2						1																												ALT B, 1050X1800
F																																														
P	S-12A	38+94	MH, PIPE	1	600	35.0					35.0													1																						
F																																														
P	S-12B	38+30	MH, PIPE, MES	1	600	8.3					8.3													1											1								23.0					CD, 1:4
F																																														
P	S-13	38+40	INLET, PIPE	1	450	8.0				8.0																	1																			BOS, MOD
F																																														
P	S-14	38+50	INLET, PIPE	1	450	32.3				32.3											1																										ALT A, 1600 DIA.
F																																														
P	S-15	38+50	INLET, PIPE	1	750	47.7						47.7									1																										
F																																														
P	S-16	39+33	INLET, PIPE	1	450	5.0				5.0																	1																5.0					
F																																														
P	S-17	39+33	INLET, PIPE	1	600	32.7					32.7										1																										
F																																														
P	S-18	39+33	INLET, PIPE	1	750	83.0						83.0									1																										
F																																														
P	S-19	39+94	INLET, PIPE	1	600	60.0					60.0										1																										
F																																														
P	S-20	40+00	INLET, PIPE	1	450	24.2				24.2												1																										
F																																														
P	S-21	40+25	MH, PIPE	1	450	35.7				35.7														1																						
F																																														
P	S-22	40+33	INLET, PIPE	1	600	66.0					66.0										1																										
F																																														
P	S-23	40+80	MH, PIPE	1	450	53.8				53.8														1																						
F																																														
P	S-23A	40+80	EW	1	450	3.2				3.2																																33.0	1.19				
F																																														
P	S-24	41+00	MH, PIPE	1	600	73.9					73.9													1																						
F																																														
P	S-25	41+75	INLET, PIPE	1	600	72.9					72.9							1																												
F																																														
TOTALS	P PLAN QUANTITY						0.0	0.0	0.0	320.9	348.8	130.7	271.6	0.0	223.0	0.0	0.0	3	2	8	3	2	0	5	0	0	4	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	93.0	1.2	0.0	0.0	0.0		
	F FINAL QUANTITY																																													

REVISIONS

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PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

65

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4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 1 OF 6

PLOT DATE: Wed Aug 25 11:19:50 1999 DESIGN FILE: p:\fdt2027\SUMDR013.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr013.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE		ERCP CLASS HE II	ALUMINIZED STEEL PIPE (STORM SEWER) CLASS II 14 GAUGE							RCP CLASS HE II	CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION												STATE PROJ. NO. 14090-3522	SHEET NO. 27
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-26	41+75	INLET, PIPE	1	450	32.7				32.7										1																											
F																																																
P	S-27	42+40	INLET, PIPE	1	450	34.9				34.9											1																											
F																																																
P	S-28	42+50	INLET, PIPE	1	750	29.5						29.5									1																											
F																																																
P	S-28A	42+51	INLET, PIPE	1	450	1.5				1.5																						1															
F																																																
P	S-29	42+80	INLET, PIPE	1	900	38.5							38.5																				1														ALT B, 1524X1524
F																																																
P	S-29A	42+90	EW, PIPE	1	750	65.0						65.0																																	52.0	2.49					CD
F																																																
P	S-30	42+80	INLET, PIPE	1	450	35.7				35.7																						1															
F																																																
P	S-30A	42+90	MES	1	450																														1									26.0						CD, 1:4
F																																																
P	S-31	43+20	INLET, PIPE	1	900	78.5							78.5																				1														ALT B, 1050X1800
F																																																
P	S-32	44+00	INLET, PIPE	1	450	20.8				20.8																						1															
F																																																
P	S-33	44+00	INLET, PIPE	1	450	18.9				18.9																1																	5.0						
F																																																
P	S-34	44+00	INLET, PIPE	1	1200	19.8									19.8																	1														ALT B, 2100X1800
F																																																
P	S-34A	30+41	MH, PIPE	1	1200	107.2									107.2								1																								ALT B, 2400X1050
F																																																
P	S-34B	31+36	MH, PIPE	1	1200	13.0									13.0								1																								ALT B, 2400X1050
F																																																
P	S-35	31+58	MES	1	1200																																	1					34.0						BO, 1:4
F																																																
P	S-36	33+07	INLET, PIPE	1	900	69.9							69.9																1															5.0						MOD
F																																																
P	S-37	33+69	MES	1	900																																						28.0						BO, 1:4
F																																																
P	S-38	NOT USED		1																																												
F																																																
P	S-38A	44+80	MH, PIPE	1	900	79.1							79.1										1																										1500 DIA.
F																																																
P	S-38B	45+00	MH, PIPE	1	750	18.5						18.5											1																										1500 DIA., ALT A
F																																																
P	S-38C	45+27	INLET, PIPE	1	750	26.5						26.5																				1															
F																																																
P	S-38D	46+07	INLET, PIPE	1	750	79.1						79.1																				1															
F																																																
P	S-39A	45+34	MH, INLET, MES	1	600	3.5					3.5														1									1									20.0						1:2
F																																																
P	S-39B	45+89	MH, PIPE	1	600	53.9					53.9														1																								
F																																																
P	S-39C	46+87	INLET, PIPE	1	600	96.9					96.9																				1															
F																																																
P	S-39D	47+67	INLET, PIPE	1	450	78.6				78.6																						1															
F																																																
P	S-39E	47+78	INLET, PIPE	1	450	42.9				42.9																						1															
F																																																
P	S-40	44+80	INLET, PIPE	1	450	79.1				79.1																																	5.0						
F																																																
TOTALS	P PLAN QUANTITY						0.0	65.0	0.0	345.1	154.3	153.6	266.0	0.0	140.0	0.0	0.0	0	0	1	2	0	4	0	0	2	2	0	1	0	0	0	8	3	1	1	0	1	0	1	0	0	176.0	2.49	0.0	0.0	0.0	6.9	
	F FINAL QUANTITY																																														

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Southwest Florida Water Management District
SEP 21 1999
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 2 OF 6

PLOT DATE: Wed Aug 25 11:19:55 1999 DESIGN FILE: p:\fdt2027\SUMDR014.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\sumdr014.prf

STATE PROJ. NO. 14090-3522 | SHEET NO. 28

QUANTITY	STR NO	STATION	DESCRIPTION -	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE 450	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE 750	ERCP CLASS HE II 610 X 960	ALUMINIZED STEEL PIPE (STORM SEWER) 14 GAUGE 450	600	750	900	1050	1200	1500	RCP CLASS HE II 975 X 1535	CURB INLETS <3M J5	<3M J6	<3M P5	<3M P6	MANHOLES <3M J7	<3M J8	<3M P7	>3M P7	<3M P8	DITCH BOTTOM INLETS <3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	GUTTER INLETS <3M S	<3M SJ	MITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-40A	44+90	HW, CBC	1	1.22x2.13	124.0									124.0																														CD
F																																													
P	S-40B	44+90	HW	1																																									CD
F																																													
P	S-41	49+50	ENDWALL, PIPE	1	750	5.1						5.1																												26.0	2.49					
F																																													
P	S-42	49+50	INLET, PIPE	1	750	18.4						18.4																					1														
F																																													
P	S-42A	49+50	INLET, PIPE	1	750	22.5						22.5																												5.0						
F																																													
P	S-42B	49+50	INLET, PIPE, ENDWALL	1	750	5.4						5.4																					1								26.0	2.49					
F																																													
P	S-43	NOT USED		1																																									
F																																													
P	S-43A	50+24	INLET, PIPE	1	450	18.6				18.6																							1														
F																																													
P	S-43B	50+24	INLET, PIPE		450	21.7				21.7																														5.0						
F																																													
P	S-43C	50+24	INLET, PIPE	1	900	72.9							72.9																									1									ALT B, 1050X1500
F																																													
P	S-44	50+98	INLET, PIPE	1	900	72.9							72.9																									1									ALT B, 1050X1500
F																																													
P	S-44A	50+98	INLET, PIPE	1	450	41.3				41.3																							1														
F																																													
P	S-45	51+72	INLET, PIPE	1	750	72.9							72.9																									1									ALT B, 1050X1500
F																																													
P	S-45A	51+72	INLET, PIPE	1	900	41.3				41.3																							1														
F																																													
P	S-45B	51+66	MES, PIPE, MES	1	450	59.0						59.0																										2								(2) CD, 1:2
F																																													
P	S-46	52+46	INLET, PIPE	1	900	59.2							59.2																									1									ALT B, 1050X1500
F																																													
P	S-46A	52+46	INLET, PIPE	1	450	42.7				42.7																							1														
F																																													
P	S-47	53+06	MH, PIPE	1	900	30.5							30.5											1																					ALT A, 1500 DIA.
F																																												
P	S-48	53+36	MH, PIPE	1	1500	161.3										161.3								1																					ALT B, 1500X2100
F																																													
P	S-48A	54+21	MH, PIPE	1	1050	83.0								83.0										1																					ALT B, 1050X1500
F																																													
P	S-49	31+78	MH, PIPE	1	1500	41.0										41.0								1																					ALT B, 1050X1500
F																																													
P	S-49A	32+09	MES	1	1500																																								1	39.0				3.1	BO, 1:4
F																																													
P	S-49B	33+41	INLET, PIPE, MES	1	900	53.0							53.0																					1														
F																																													
P	S-50	55+00	INLET, PIPE	1	1050	78.0								78.0																1											5.0					ALT B, 1050X1500
F																																													
P	S-51	55+00	INLET, PIPE	1	450	28.1				28.1																				1											5.0					
F																																													
P	S-52	55+30	INLET, PIPE	1	750	28.9						28.9																		1											5.0					
F																																													
P	S-53	55+00	INLET, PIPE	1	600	30.0					30.0																			1											5.0					
F																																													
P	S-54	55+15	INLET, PIPE	1	900	63.5							63.5																	1											12.0					SINGLE TRANS SLOT
F																																													
TOTALS	P PLAN QUANTITY						0.0	0.0	0.0	193.7	30.0	139.3	424.9	161.0	124.0	202.3	0.0	0	0	0	0	4	0	0	0	0	1	0	4	1	2	0	6	4	0	2	0	1	0	0	1	0	133.0	5.0	0.0	0.0	0.0	3.1	
	F FINAL QUANTITY																																												

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Southwest Florida Water
SEP 21 1999
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Tampa, Florida 33634
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FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 3 OF 6

PLOT DATE: Wed Aug 25 11:19:59 1999 DESIGN FILE: p:\Yfd2027\SUMDR015.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP50000N\sumdr-d15.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE		ERCP CLASS HE II	ALUMINIZED STEEL PIPE (STORM SEWER) 14 GAUGE							RCP CLASS HE II	CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION								SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535							
P	S-55	55+30	INLET, PIPE	1	750	13.8						13.8															1														5.0						
F																																																
P	S-55A	55+15	MH, PIPE, EW	1	900	9.1							9.1																														64.0	3.46					ALT B, 1500X2100
F																																															
P	S-56	61+30	INLET, PIPE	1	600	32.5					32.5											1						1														5.0						
F																																																
P	S-57	61+30	INLET, PIPE	1	600	53.6					53.6																	1														5.0						
F																																																
P	S-58	61+75	INLET, PIPE	1	900	124.0							124.0															1														5.0						
F																																																
P	S-58A	61+87	EW, PIPE	1	600	1.7					1.7																															42.0	1.71					
F																																																
P	S-59	61+87	MH, PIPE	1	600	111.5					111.5													1																								
F																																																
P	S-60	63+00	MES, PIPE	1	900	34.3							34.3																													1					4.6	BO, 1:4
F																																															
P	S-60A	31+80	INLET, PIPE, MES	1	600	18.5					18.5																	1								1											MOD.
F																																															
P	S-61	63+00	MH, PIPE	1	600	112.7					112.7											1																									CON. STR. ALT A, 1050X1500
F																																															
P	S-62	63+00	INLET, PIPE	1	900	5.5							5.5																	1												5.0						ALT B, 1050X1500
F																																															
P	S-63	63+75	MH, PIPE	1	600	74.1					74.1													1																								
F																																															
P	S-63A	64+13	ENDWALL	1	600																																					42.0	1.71					
F																																																
P	S-64	64+50	INLET, PIPE	1	600	74.1					74.1																								1												
F																																																
P	S-65	65+05	EW, PIPE	1	750	31.2		31.2																																	39.0	2.49					CD
F																																																
P	S-66	65+05	INLET, PIPE	1	750	31.2		31.2																						1											5.0						CD
F																																																
P	S-66A	65+05	EW	1	750																																					39.0	2.49					CD
F																																																
P	S-67	67+05	INLET, PIPE	1	450	27.9				27.9																		1														16.0	0.84					DOUBLE TRANS SLOT
F																																																
P	S-68	67+05	INLET, PIPE	1	750	19.2						19.2																		1												12.0	0.70					SINGLE TRANS SLOT
F																																																
P	S-69	67+05	MES	1	750																																					26.0					6.2	BO, 1:4
F																																																
P	S-69A	31+63	INLET, PIPE, MES	1	600	30.5					30.5																			1								1										9.0	MOD, 1:4
F																																																
P	S-70	NOT USED																																															
F																																																
P	S-71	69+50	INLET, PIPE, MES	1	750	28.2						28.2																		1								1										6.2	CD, 1:4
F																																																
P	S-72	69+50	INLET, PIPE	1	600	26.9					26.9																			1												5.0						
F																																																
P	S-73	69+90	INLET, PIPE	1	600	39.1					39.1																			1												5.0						
F																																																
P	S-74	NOT USED																																															
F																																																
P	S-75	NOT USED																																															
F																																																
P	S-76	30+28	INLET, PIPE	1	1200	115.5										115.5													1												5.0						ALT B, 2100X2100
F																																															
TOTALS	P PLAN QUANTITY						0.0	62.4	0.0	27.9	575.2	61.2	172.9	0.0	115.5	0.0	0.0	0	0	0	0	2	0	2	0	0	0	0	8	2	3	0	1	0	0	2	2	1	0	0	0	0	343.0	13.40	0.0	0.0	0.0	26.0	
	F FINAL QUANTITY																																														

STATE PROJ. NO. 14090-3522 SHEET NO. 29

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Southwest Florida Water
SEP 21 1999
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FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 4 OF 6

PLOT DATE: Wed Aug 25 11:20:03 1999 DESIGN FILE: p:\fdt2027\SUMDR016.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr016.prf

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	ALUMINIZED STEEL CROSSDRAIN PIPE 14 GAUGE		ERCP CLASS HE II	ALUMINIZED STEEL PIPE (STORM SEWER) 14 GAUGE							RCP CLASS HE II	CURB INLETS				MANHOLES					DITCH BOTTOM INLETS						GUTTER INLETS		MITERED END SECTION										STATE PROJ. NO.	SHEET NO.
							450	750	610 X 960	450	600	750	900	1050	1200	1500	975 X 1535	<3M J5	<3M J6	<3M P5	<3M P6	<3M J7	<3M J8	<3M P7	>3M P7	<3M P8	<3M C	<3M CJ	<3M D	<3M DJ	<3M E	<3M H	<3M S	<3M SJ	450	600	750	900	1050	1200	1500	975 X 1535	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	14090-3522	30
																																													REMARKS
P	S-76A	75+15	INLET, PIPE	1	1200	78.0									78.0												1														5.0						ALT B, 1050X2100
F																																														
P	S-77	31+49	MH, PIPE	1	1200	71.9									71.9									1																							ALT B, 1050X2100
F																																														
P	S-78	32+17	MH, PIPE	1	1200	17.7									17.7									1																							ALT B, 1500X2100
F																																														
P	S-78A	32+39	MES	1	1200																																			1						27.0						BO, 1:2
F																																														
P	S-79	75+90	INLET, PIPE	1	600	28.1					28.1																	1														5.0						
F																																														
P	S-80	75+90	INLET, PIPE	1	750	26.0						26.0																			1											5.0						ALT B, 1500X2100
F																																														
P	S-81	75+90	INLET, PIPE	1	1200	72.9									72.9												1														5.0						ALT B, 1500X2100
F																																														
P	S-82	76+49	EW	1	610X960																																					52.0	2.02					CD
F																																														
P	S-83	76+49	EW, PIPE	1	610X960	57.6																																				52.0	2.02					CD
F																																														
P	S-84	76+20	MH, PIPE	1	750	28.8						28.8											1																									
F																																														
P	S-85	77+40	INLET, PIPE	1	450	29.1				29.1																1														5.0						
F																																														
P	S-86	77+10	INLET, PIPE	1	600	18.8					18.8															1														5.0						
F																																														
P	S-87	77+10	INLET, PIPE	1	450	30.9				30.9																	1												5.0						
F																																														
P	S-88	77+10	MH, PIPE	1	750	88.4						88.4														1																					
F																																														
P	S-89	34+11	INLET, PIPE	1	900	14.4							14.4														1														5.0						MOD
F																																														
P	S-90	34+32	MES	1	900																																				1						23.0						BO, 1:2
F																																														
P	S-91	34+34	MES, PIPE	1	975X1535	29.9											29.9																									1						32.0						BO, 1:4
F																																														
P	S-92	34+10	MES	1	975X1535																																				1						32.0						BO, 1:4
F																																														
P	S-93	80+70	MES, PIPE	1	450	27.2				27.2																															1						21.0						SD, 1:4
F																																														
P	S-94	81+00	MH, PIPE	1	450	89.0				89.0																1																							
F																																														
P	S-95	81+90	MH, PIPE	1	450	19.5				19.5																1																							
F																																														
P	S-96	82+10	MES	1	450																																				1						21.0						SD, 1:4
F																																														
P	S-97	84+85	INLET, PIPE	1	750	28.7						28.7																		1											5.0						
F																																														
P	S-98	84+85	INLET, PIPE	1	750	29.5						29.5																			1											5.0						
F																																														
P	S-99	84+85	MH, PIPE	1	1050	89.4								89.4									1																		6.0						1500X1800
F																																														
P	S-99A	84+77	INLET, PIPE	1	600	8.0					8.0																		1											5.0						
F																																														
P	S-99B	84+93	INLET, PIPE	1	600	8.0					8.0																		1											5.0						
F																																														
P	S-100	31+20	MH, PIPE	1	1050	52.1								52.1									1																							ALT B, 1500X1800
F																																														
TOTALS	P PLAN QUANTITY						0.0	0.0	57.6	195.7	62.9	201.4	14.4	141.5	240.5	0.0	29.9	0	0	0	0	0	3	0	2	3	2	2	6	0	2	0	0	0	2	0	0	1	0	1	0	2	316.0	4.04	0.0	0.0	0.0	0.0	69
	F FINAL QUANTITY																																													

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4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8566 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 5 OF 6

PLOT DATE: Wed Aug 25 11:20:07 1999 DESIGN FILE: p:\Yrd2027\SUMDR017.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\sumdr017.prf

STATE PROJ. NO. 14090-3522 | SHEET NO. 31

QUANTITY	STR NO	STATION	DESCRIPTION	BARRELS	SIZE (MM)	LENGTH (M)	CROSSDRAIN PIPE 450	CROSSDRAIN PIPE 750	CROSSDRAIN PIPE 610 X 960	ALUMINIZED STEEL PIPE (STORM SEWER) 14 GAUGE 450	600	750	900	1050	1200	1500	975 X 1535
P	S-101	31+75	MES	1	1050												
F																	
P	S-102	33+50	MES, PIPE	1	750	39.0						39.0					
F																	
P	S-103	33+62	MES	1	750												
F																	
P	S-104	33+08	PIPE, MES	1	600	17.7					17.7						
F																	
P	S-105	33+30	MES	1	600												
F																	
P	S-106	88+15	INLET, PIPE, MES	1	450	43.4				43.4							
F																	
P	S-107	88+75	MES, PIPE, MES	1	450	40.5				40.5							
F																	
P	S-108	89+70	MES, PIPE, MES	1	450	54.5				54.5							
F																	
P	S-109	92+50	INLET, PIPE	1	750	76.5						76.5					
F																	
P	S-110	11+00	INLET, PIPE	1	600	37.0					37.0						
F																	
P	S-111	11+50	INLET, PIPE	1	750	80.3						80.3					
F																	
P	S-112	29+18	MH, PIPE	1	750	76.5						76.5					
F																	
P	S-113	28+35	MH, PIPE	1	750	26.0						26.0					
F																	
P	S-114	30+39	MES	1	750												
F																	
P	S-115	30+95	INLET, PIPE	1	600	67.0					67.0						
F																	
P	S-115A	31+63	MH, PIPE	1	600	58.4					58.4						
F																	
P	S-116	32+19	MES	1	600												
F																	
P	S-117	30+30	JB PARTIAL	1	381												
F																	
P	S-118	30+30	JB PARTIAL	1	381												
F																	
P	S-119	30+39	INLET, PIPE	1	450	9.0				9.0							
F																	
P	S-120	30+60	INLET, PIPE	1	450	1.0				1.0							
F																	
P	S-121	30+60	JB PARTIAL		381												
F																	
P	S-122	31+06	INLET, PIPE		450	1.0				1.0							
F																	
P	S-123	31+06	JB PARTIAL		381												
F																	
P	S-45C	51+66	INLET														
F																	
P																	
F																	
P																	
F																	
TOTALS			P PLAN QUANTITY				0	0	0	149.4	180.1	298.3	0	0	0	0	0
			F FINAL QUANTITY														
GRAND TOTAL			P PLAN QUANTITY														
			F FINAL QUANTITY														

QUANTITY	STR NO	CURB INLETS <3M J5	CURB INLETS <3M J6	CURB INLETS <3M P5	CURB INLETS <3M P6	MANHOLES <3M J7	MANHOLES <3M J8	MANHOLES <3M P7	MANHOLES >3M P7	MANHOLES <3M P8	DITCH BOTTOM INLETS <3M C	DITCH BOTTOM INLETS <3M CJ	DITCH BOTTOM INLETS <3M D	DITCH BOTTOM INLETS <3M DJ	DITCH BOTTOM INLETS <3M E	DITCH BOTTOM INLETS <3M H	GUTTER INLETS <3M S	GUTTER INLETS <3M SJ
P	S-101																	
F																		
P	S-102																	
F																		
P	S-103																	
F																		
P	S-104										1							
F																		
P	S-105																	
F																		
P	S-106										1							
F																		
P	S-107																	
F																		
P	S-108																	
F																		
P	S-109												1					
F																		
P	S-110														1			
F																		
P	S-111													1				
F																		
P	S-112								1									
F																		
P	S-113								1									
F																		
P	S-114																	
F																		
P	S-115								1									
F																		
P	S-115A							1										
F																		
P	S-116																	
F																		
P	S-117							1										
F																		
P	S-118							1										
F																		
P	S-119				1													
F																		
P	S-120				1													
F																		
P	S-121							1										
F																		
P	S-122				1													
F																		
P	S-123							1										
F																		
P	S-45C																1	
F																		
P																		
F																		
P																		
F																		
TOTALS		0	0	3	0	0	0	5	3	0	2	0	1	1	1	0	0	0
GRAND TOTAL																		

QUANTITY	STR NO	WITERED END SECTION 450	600	750	900	1050	1200	1500	975 X 1575	SOD	CLASS I CONC	CLASS IV CONC	CLASS V CONC	REINF STEEL	RIPRAP RUBBLE	REMARKS
P	S-101					1				25.0						BO, 1:4
F																
P	S-102			1						26.0						1:4
F																
P	S-103			1						26.0					6.9	BO, 1:4
F																
P	S-104									5.0						MOD
F																
P	S-105		1							23.0					6.9	BO, 1:4
F																
P	S-106	1								26.0						CD, 1:4
F																
P	S-107	2								42.0						(2) CD, 1:4
F																
P	S-108	2								42.0						(2) CD, 1:4
F																
P	S-109									12.0						TRAV. SLOTS (SINGLE)
F																
P	S-110									12.0						TRAV. SLOTS (SINGLE)
F																
P	S-111									12.0						ALT B, 1800X1800
F																
P	S-112															
F																
P	S-113															
F																
P	S-114			1						26.0						BO, 1:4
F																
P	S-115															MOD
F																
P	S-115A															
F																
P	S-116		1							23.0					3.1	BO, 1:4
F																
P	S-117															PARTIAL JUNCTION BOX
F																
P	S-118															PARTIAL JUNCTION BOX
F																
P	S-119															
F																
P	S-120															
F																
P	S-121															PARTIAL JUNCTION BOX
F																
P	S-122															
F																
P	S-123															PARTIAL JUNCTION BOX
F																
P	S-45C															ALT B, 1050X1500
F																
P																
F																
P																
F																
TOTALS		1	1	3	0	1	0	0	0	300.0	0.0	0.0	0.0	0.0	16.9	
GRAND TOTAL																

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4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
HEG-BRO

70

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Imaged As Is

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

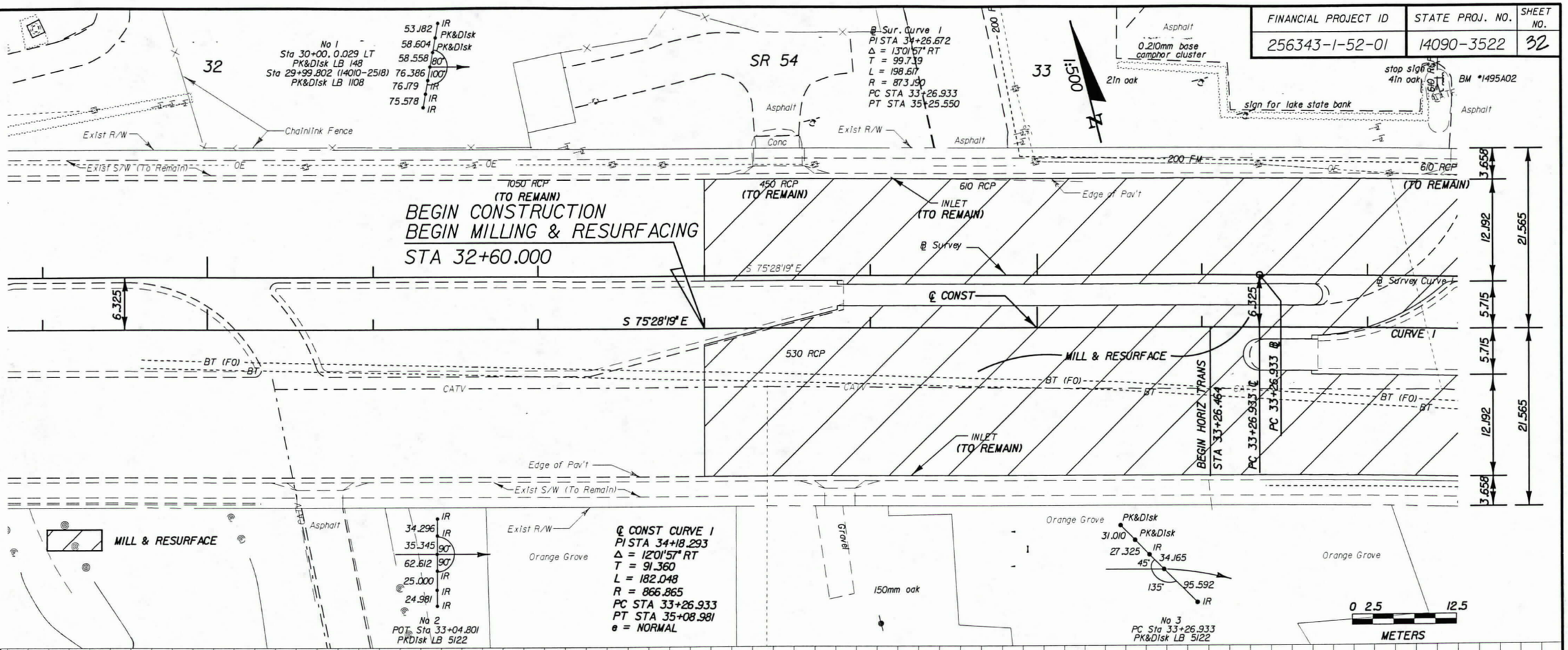
FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

ALTERNATE C
SHT 6 OF 6

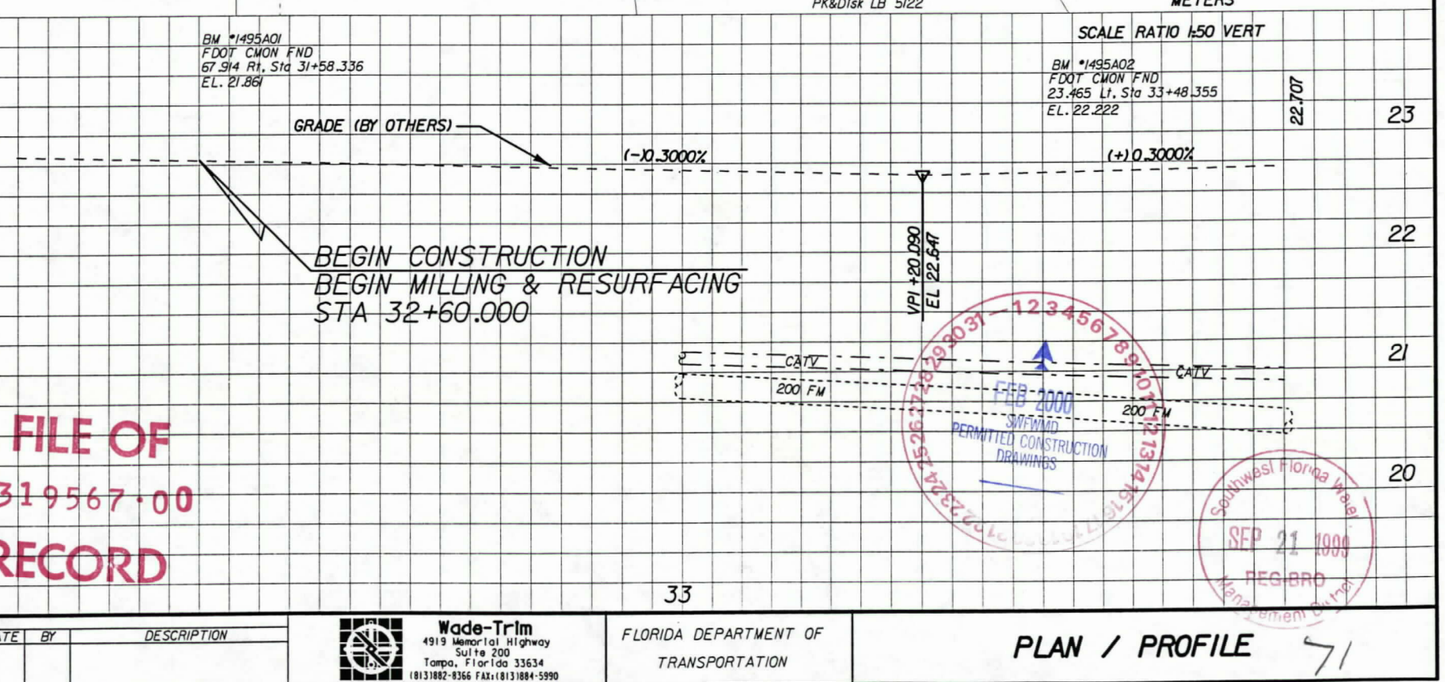
PLOT DATE: Wed Aug 25 11:20:11 1999 DESIGN FILE: pstYrd:2027\SUMDRD18.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N1\sumdrd18.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	32



GENERAL NOTES

1. BUILDINGS TO BE REMOVED BY OTHERS, UNLESS OTHERWISE NOTED.
2. EXISTING DRAINAGE STRUCTURES WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED.
3. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE PROJECT ENGINEER SHOULD NOTIFY THE DISTRICT LOCATION SURVEYOR WITHOUT DELAY BY TELEPHONE.
4. THE PORTION OF THIS ROADWAY SURVEY THAT LIES WITHIN THE LIMITS OF THE CONTROL SURVEY SPN 14090-1522 HAS BEARINGS AND COORDINATES BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM N.A.D. 83, ADJUSTMENT OF 1990. SAID COORDINATES AND BEARINGS BEING DERIVED FROM GEODETIC CONTROL POINTS: "INSPECT HCED" AND "14 91 B 29."
5. THE PORTION OF THIS ROADWAY SURVEY THAT LIES WITHIN THE LIMITS OF THE CONTROL SURVEY SPN 14504-1501 HAS BEARINGS AND COORDINATES BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, N.A.D. 27. SAID COORDINATES, DISTANCES AND STATION VALUES HAVE BEEN CONVERTED FROM "FEET" TO "METERS" BY THE CONVERSION FACTOR SHOWN IN NOTE 6.
6. CONVERSIONS OF DISTANCES REFERRED TO IN NOTE 5 HAVE BEEN BASED UPON THE U.S. SURVEY FOOT.
   ENGLISH TO METRIC- (0.3048006I) x FEET = METERS
   METRIC TO ENGLISH- (3.28083333) x METERS = FEET



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4319567.00
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FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REGIONAL
Management Area

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

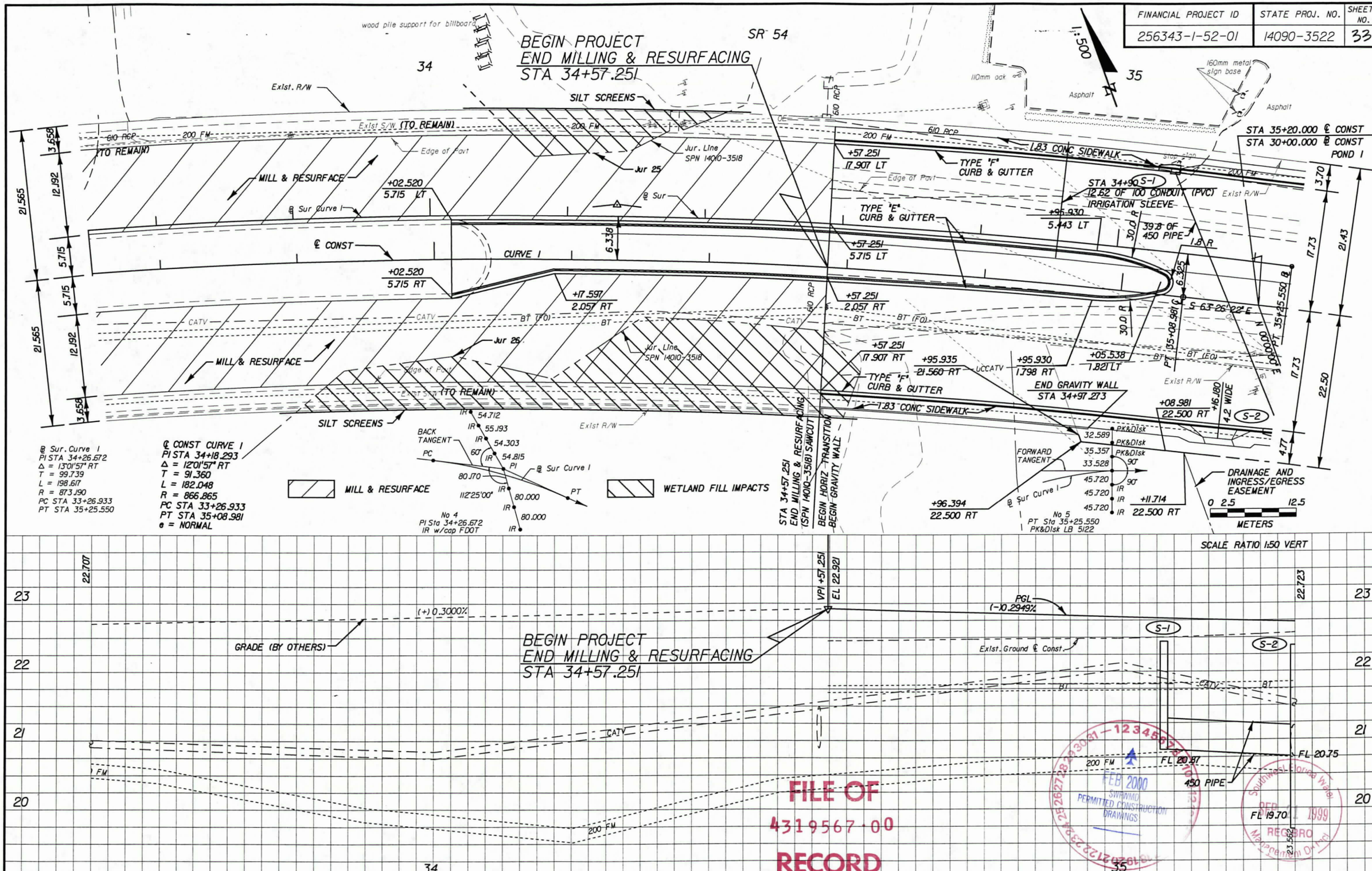
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 71

PLOT FILE: C:\CADNET\QUEUES\MS#P5000N\plprrd02.prf
PLOT DATE: Wed Aug 25 10:49:13 1999 DESIGN FILE: p:\fdt2027\PLPRR002.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	33



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

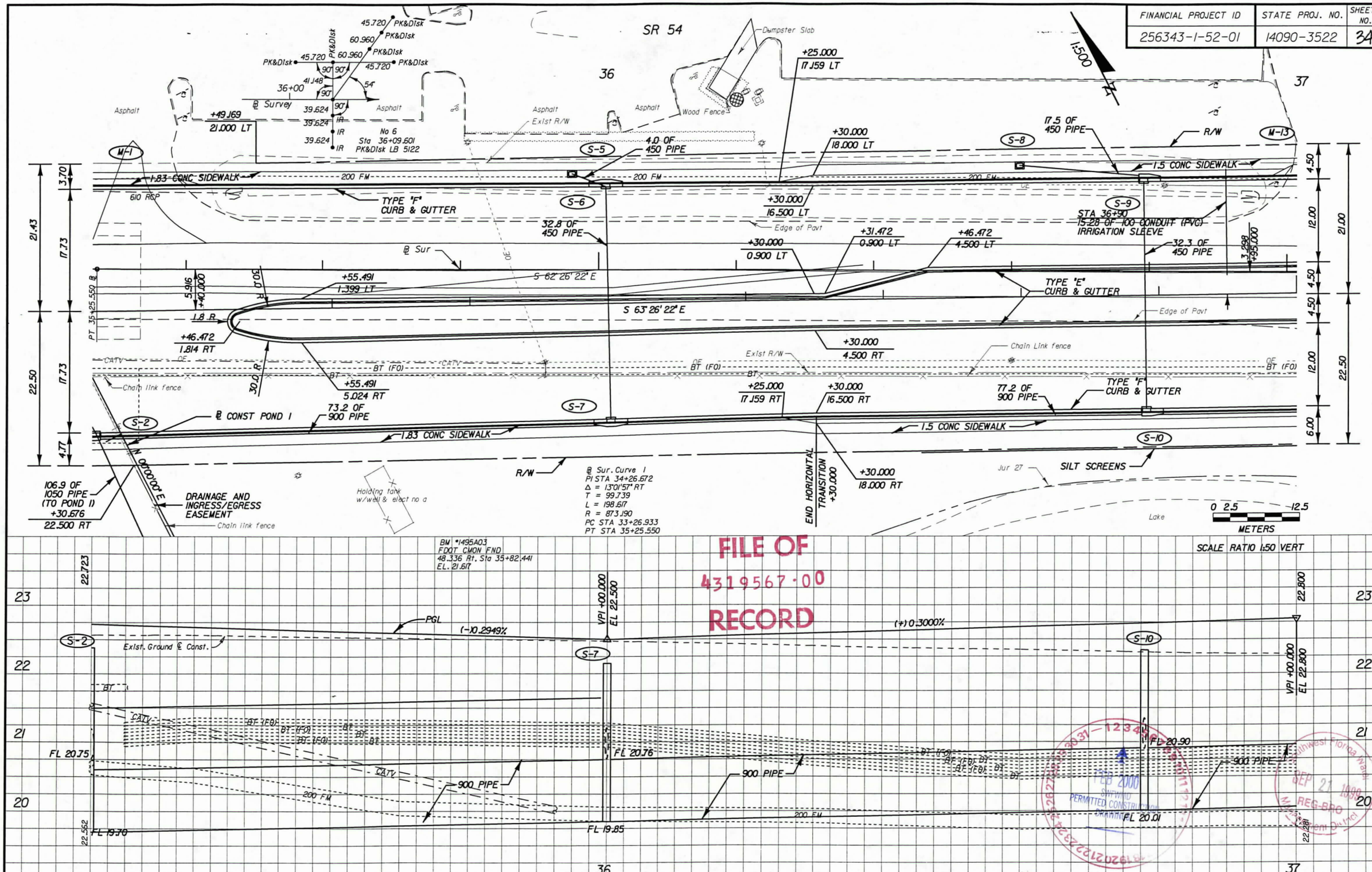
PLAN / PROFILE 72

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB03.prf

PLOT DATE: Wed Aug 25 10:49:55 1999 DESIGN FILE: p:\fdt2027\PLPRRD03.dgn

A-937

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	34



FILE OF
4319567-00
RECORD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 73

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB04.prf

PLOT DATE: Wed Aug 25 10:49:51 1999 DESIGN FILE: p:\fdt2027\PLPRRD04.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	35

WETLAND FILL IMPACTS

SR 54

37

38

1:500

Asphalt

+23.737
21.000 LT

+57.679
20.409 LT

+57.538
21.000 LT

S-11

S-13

S-14

R/W

1.5 CONC SIDEWALK

M-13

200 FM

OE

610 RCP

TYPE 'F'
CURB & GUTTER

+89.412
3.500 LT

32.3 OF
450 PIPE

8.0 OF
450 PIPE

Exist R/W

STA 38+22
19.0 OF 100 CONDUIT (PVC)
IRRIGATION SLEEVE

TO BE
REMOVED

+5.053
0.900 LT

Edge of Pavt

+71.792
13.3 WIDE

0.56
+70.000

2.774
+20.000

28.0 R

1.0 R

S 62°26'22" E

℄ Sur

S 63°26'22" E

℄ CONST

3.0 R

TYPE 'E'
CURB & GUTTER

+80.566
4.500 RT

+46.547
0.900 RT

+31.547
4.500 RT

BEGIN GRAVITY WALL
STA 38+66.176

Jur 28

Chain Link fence

Exist R/W

Picnic Bench &
Barbeque Slab

+83.887
13.3 WIDE

23.0 R

23.0 CR

+93.305
3.500 RT

Edge of Pavt

BT (FO)

121.2 OF
900 PIPE

S-12

TO BE
REMOVED

41.7 OF
750 PIPE

TYPE 'F'
CURB & GUTTER

BEGIN GRAVITY WALL
STA 37+36.000

1.5 CONC SIDEWALK

Asphalt

S-12B

S-15

+66.820
21.000 RT

+35.429
21.000 RT

+35.402
22.500 RT

SILT SCREENS

Jur 27

R/W

END GRAVITY WALL
STA 37+77.000

+90.237
21.000 RT

(TO REMAIN)
610 RCP

S-12A

M-13

35.0 OF
600 PIPE

+09.722
22.000 RT

+90.220
22.000 RT

Chain link fence
around propane tank

+29.573
25.000 RT

8.3 OF
600 PIPE

+35.587
30.000 RT

+39.675
25.000 RT

+39.587
30.000 RT

SILT SCREENS

+68.803
25.000 RT

0 2.5 12.5
METERS

SCALE RATIO 1:50 VERT.

BM #1495A04
FDOT CMON FND
43.106 Rt, Sta 37+51.187
EL. 22.647

22.800

(-) 0.3000%

VPI +00.000
EL 22.800

Exist. Ground ℄ Const.

S-12

VPI +00.000
EL 22.500

PGL

(+) 0.3000%

S-15

22.726

DHW EL = 21.12

900 PIPE

FL 20.76

FL 20.26

750 PIPE

FL 20.86

FL 20.36

750 PIPE

600 WM

400 FM

200 FM

22.281

21.902

23

22

21

20

37

38

FILE OF
4319567.00
RECORD

SEP 21 1999
REG-BR

PERMITTED CONSTRUCTION
DRAWINGS

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 74

A-939

PLOT FILE: C:\CADNET\QUEUES\MSHPS000N.PLPRMB05.prf

PLOT DATE: Wed Aug 25 10:58:02 1999 DESIGN FILE: p:\fdot2027\PLPRRD05.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	36

SR 54

KNIGHT ROAD

OSPREY LANE

℄ STATION EQUATION
STA 38+78.893 BK =
℄ & ℄ STA 38+80.276 AH

STA 38+97
16.15 OF 100 CONDUIT (PVC)
IRRIGATION SLEEVE

PI 38+78.893 ℄
Δ = 0°00'00" RT

℄ SURVEY

No 7
Sta 39+14.402
PK&Dlsk LB 5122

℄ SUR & ℄ CONST

TYPE "E" CURB & GUTTER

TYPE "F" CURB & GUTTER

CURB RAMP (CR21)

RETURN NO 1

RETURN NO 2

1.5 CONC SIDEWALK

BEGIN GRAVITY WALL
STA 39+00.000

END GRAVITY WALL
STA 38+84.500

END GRAVITY WALL
STA 39+43.000
STA 39+50.306 ℄ SUR & ℄ CONST
STA 30+00.000 ℄ Survey Osprey Lane

BEGIN GRAVITY WALL
STA 40+40.000

60.0 OF 600 PIPE
5.0 OF 450 PIPE
83.0 OF 750 PIPE
32.7 OF 600 PIPE
35.7 OF 450 PIPE
24.2 OF 450 PIPE

S 62°26'22" E
N 11°34'05" E
99°59'33"

+35.000 21.000 LT
+35.000 24.000 LT
+43.349 22.000 LT
+43.606 21.000 LT
+31.000 24.000 LT
+31.000 21.000 LT
+94.688 4.500 LT
+25.862 4.500 LT
+32.930 1.800 LT
+78.305 0.900 RT
+25.862 0.900 RT
+34.952 16.500 RT EL 22.401
+43.604 21.000 RT
+72.032 5.593 LT EL 21.852
+44.567 5.589 LT EL 21.660
+99.942 22.000 LT
+10.217 35.054 LT EL 21.550
+09.812 30.291 LT EL 21.854
+94.881 16.500 LT EL 22.227
+78.919 0.900 LT
+69.005 2.700 RT
+17.037 34.503 LT EL 21.550
+16.893 32.709 LT EL 21.601
+27.101 22.000 LT
+40.000 22.000 LT
+40.000 21.000 LT
+31.844 16.500 LT EL 22.308
+67.060 21.000 RT
+75.686 16.500 RT EL 22.285
+64.414 27.349 RT
+67.844 4.890 RT
+44.567 4.529 RT EL 21.660
+26.910 21.000 RT
+27.110 22.500 RT

15.0 R
30.0 R
7.8 R
23.0 CR

Asphalt
Exist Pond
Exist R/W
Edge of Pavt
Lift Station
600 WM
300 WM
610 RCP
457 RCP
200 FM
400 FM
OE
BT (EOP)
BT (FD)
BT (TP)
9.4' WIDE
7.2' WIDE

46.634 IR
44.806 IR
45.720 IR
38.710
69°30'00"
48.768
33.528
33.528
48.768
48.768
48.768

0 2.5 12.5
METERS

SCALE RATIO 1:50 VERT.

BM #1495A05
FDOT CMON FND
48.768 Rt. Sta 40+31.503
EL 21.827

FILE OF
4319567-00
RECORD

VPI +00.000 EL 22.800
VPI +00.000 EL 22.500

(+) 0.3000%
(-) 0.3000%
(+) 0.3000%

22.726
22.550
22.902
21.935

FE 20.53
FL 20.79
FL 21.00
FL 20.92
FL 20.82

750 PIPE
450 PIPE
450 PIPE
450 PIPE
600 PIPE

Exist. Ground ℄ Const.

PGL

PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
REG BRO
21 1999

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

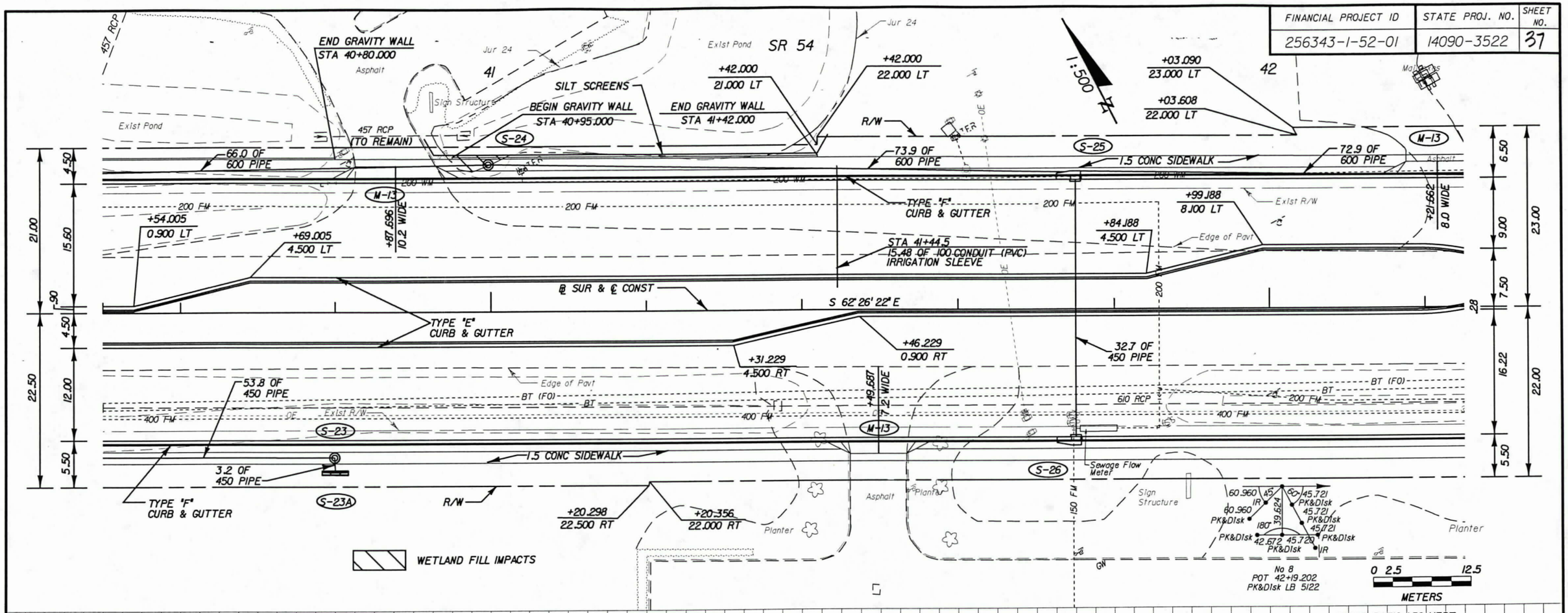
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 75

A-940

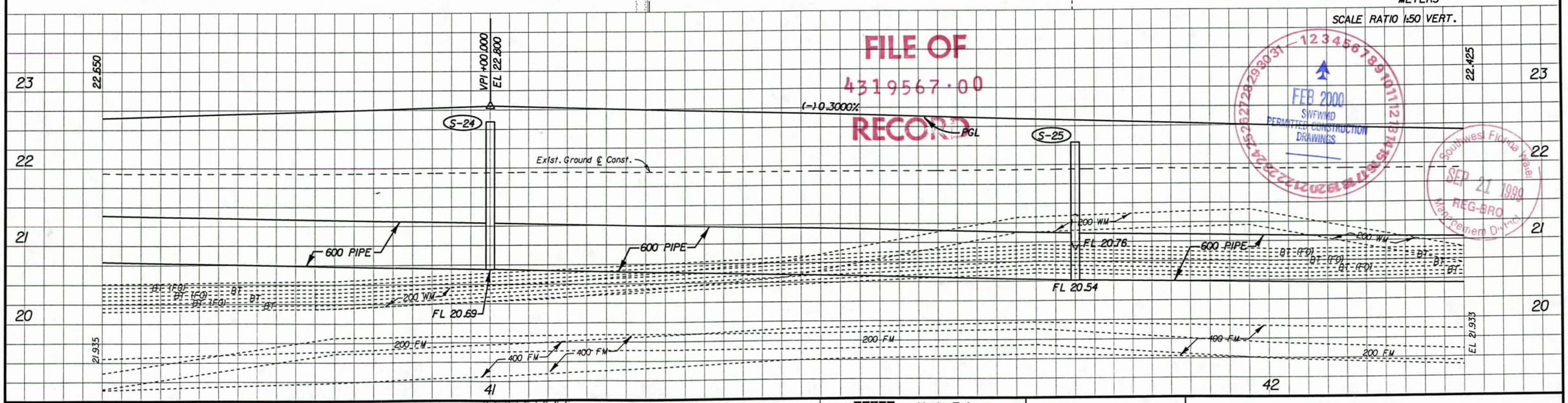
PLOT DATE: Wed Aug 25 10:54:02 1999 DESIGN FILE: p:\fdot2027\PLPRR006.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHPS000N\plprrd06.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	37



WETLAND FILL IMPACTS

SCALE RATIO 1:50 VERT.



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 76

A-941

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRM807.prf
PLOT DATE: Wed Aug 25 10:50:14 1999 DESIGN FILE: p:\fdot2027\PLPRR007.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	38

SR 54

BOUNDARY BETWEEN JUR 23 & JUR 22

SILT SCREENS

R/W

1.5 CONC SIDEWALK

2.4 PAVED SHLDR

℄ Const Pond 2A & 2B +97.262 30.000 LT

STA 44+00.000 ℄ CONST

STA 30+00.000 ℄ Const Pond 2A & 2B

N 26°57'38" E

PROP EOP

Exist R/W

Edge of Pvt

℄ CONST

S 63° 02' 02" E

S 62° 26' 22" E

℄ SUR

2.4 SHLDR

BEGIN GUARDRAIL & SHLDR GUTTER LT. STA 42+50.000

BEGIN SHLDR GUTTER RT. STA 42+80.000

PI 42+81.503 ℄ Δ=00°35'40" LT

BEGIN HORIZ & PGL TRANS LT RDWY +68.248

BEGIN HORIZ & PGL TRANS RT RDWY +81.503

+41.173 23.000 LT

+37.767 29.548 LT

+68.284 15.300 LT

+72.909 38.000 RT

+81.503 38.000 RT

+47.678 22.000 RT

FLARED END SECTION

END ANCHORAGE TYPE II

1.5 OF 450 PIPE

29.5 OF 750 PIPE

38.5 OF 900 PIPE

35.7 OF 450 PIPE

65.0 OF 750 PIPE

34.9 OF 450 PIPE

78.5 OF 900 PIPE

18.9 OF 450 PIPE

19.8 OF 1200 PIPE

20.8 OF 450 PIPE

1.5 PAVED SHLDR

1.5 CONC SIDEWALK

CURB RAMP (CR21)

SEE INTERSECTION DETAILS

DAIQUIRI LANE

Asphalt

WETLAND FILL IMPACTS

0 2.5 12.5 METERS

SCALE RATIO 1:50 VERT

SUPER TRANS RT RDWY

BM #495A06
FDOT CMON FND
45.956 Lt. Sta 42+31.240
EL 20.430

Exist. Ground ℄ Const

(-) 0.3000%

(+) 0.2000%

(-) 0.3333%

(-) 0.5380%

(+) 0.0000%

PGL

SPECIAL DITCH MEDIAN

VPI +50.000 EL 22.350

VPI +57.500 EL 22.525

VPI +00.000 EL 22.400

DPI MEDIAN +90.000 EL. 22.20

DPI MEDIAN +50.000 EL. 22.00

DPI LT +50.000 EL 20.35

DPI MEDIAN +00.000 EL 21.80

DHW = 21.00

600 PIPE

750 PIPE

900 PIPE

FL 20.67

FL 20.61

FL 20.41

FL 20.37

FL 20.32

FL 20.22 (S-34) W

FL 19.90 (S-33) N

FL 19.83 (S-34) S

FL 18.53 (S-34) N&E

FL 19.38

FILE OF
4319567-00
RECORD

SEP 21 1999

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
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Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

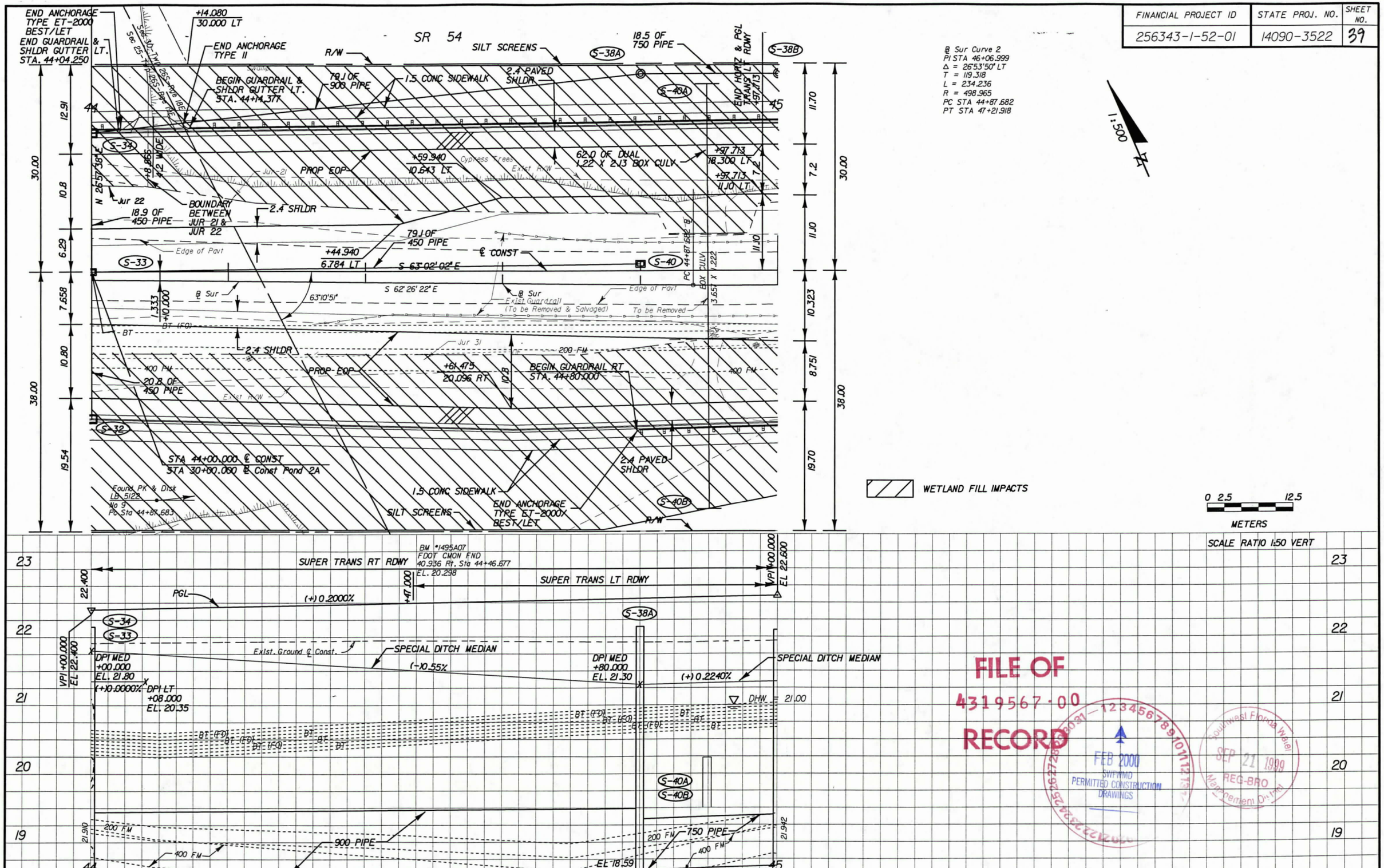
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 77

PLOT FILE: C:\CADNET\QUEUES\MSHPE600N\PLPRR608.prf

PLOT DATE: Wed Aug 25 10:50:33 1999 DESIGN FILE: p:\fdt2027\PLPRR008.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	39



FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 78

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plprMB09.prf

PLOT DATE: Wed Aug 25 10:50:36 1999 DESIGN FILE: p:\fdt2027\PLPRRD09.dgn

A-943

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	40

℄ CONST CURVE 2A
PI STA 46+19.727
Δ = 26°18'10" LT
T = 84.115
L = 165.265
R = 360.000
PC STA 45+35.612
PT STA 47+00.877
e = 0.100

℄ Sur Curve 2
PI STA 46+06.999
Δ = 26°53'50" LT
T = 119.318
L = 234.236
R = 498.965
PC STA 44+87.682
PT STA 47+21.918

STA 45+39.596 ℄ Sur=
STA 45+39.517 ℄ CONST

SR 54

CAMP INDIANHEAD RD

SEE INTERSECTION DETAILS

+04.127
6.2 WIDE

+19.265
3.6 WIDE

BEGIN GUARDRAIL & SHLDR GUTTER (LT), STA. 47+30.000

END ANCHORAGE TYPE II
78.6 OF 450 PIPE

END ANCHORAGE TYPE ET-2000/ BEST/LET

+70.891
27.000 LT
BM *1495A08

BEGIN GUARDRAIL & SHLDR GUTTER (LT) STA. 48+08.280
FLARED END SECTION
END ANCHORAGE TYPE II
1.5 CONC SIDEWALK

+01.373
26.000 LT

END GUARDRAIL LT STA. 47+68.100

26.5 OF 750 PIPE
3.5 OF 600 PIPE
SILT SCREENS
53.9 OF 600 PIPE
+83.972
27.000 LT
2.4 PAVED SHLDR
SILT SCREENS
96.9 OF 600 PIPE
1.5 CONC SIDEWALK
+00.877
27.000 LT
SHLDR GUTTER

45
46
47
48

Cypress Trees
Swamp
Barbed Wire
Heavy weedline
Jur 19
Jur 21
Jur 31
Jur 32
Exist R/W
Edge of Pavt
Dirt Drive
Barbed Wire Fence

S-38B
S-38C
S-38D
S-39A
S-39B
S-39C
S-39D
S-39E

2.4 SHLDR
457 RCP
79.1 OF 750 PIPE
PROP EOP
℄ Sur Curve 2
℄ CONST
CURVE 2A
END GUARDRAIL & SHLDER GUTTER (LT) STA. 47+11.010
+83.358
11.100 RT
+98.358
7.500 RT
PROP EOP
2.4 PAVED SHLDR
SHLDR GUTTER
R/W
451 RCP
42.9 OF 450 PIPE
+88.697
14.0 WIDE
FLARED END SECTION
+23.158
30.908 RT
1.5 CONC SIDEWALK
END ANCHORAGE TYPE II
BEGIN SHLDR GUTTER STA. 47+97.990
END GUARDRAIL & SHLDR GUTTER STA. 47+80.990

S 63°02'02" E
S 89°20'12" E

+29.159
38.000 RT
Twp 26S
Rge 18E
Sec 30
Sec 31
END HORIZ & VERT CURVE TRANS RT RDWY +29.158
SILT SCREENS
+47.185
33.008 RT
+37.673
37.945 RT

37.971 IR
37.971 90° IR
37.646 90° IR
37.399 IR
38.036 IR
No 10
PI Sta 46+06.999
IR w/cap FDOT

WETLAND FILL IMPACTS

32.004 IR
31.242 IR
31.242 IR
38.576 IR
36.576 IR
36.576 IR
135°
45°
No 11
PT Sta 47+21.918
PK&Disk LB 5122

25.298 IR
23.464 IR
27.438 IR
61.423 IR
30.477 IR
30.785 IR
No 12
Sta 48+28.804
PK&Disk LB 5122

0 5 25
METERS

30.00
11.70
7.20
11.10
2.15
10.323
38.00
8.75
19.70
45+35.612
PC
2.15
+00.000
7.70
10.80
7.50
11.10
17.20
12.65
26.00
30.95
2.4 SHLDR

1000'

SCALE RATIO 1:100 VERT

BM *1495A08
FDOT CMON FND
28.804 Lt. Sta 47+43.643
El 22.016

SUPER TRANS RT RDWY
SUPER TRANS LT RDWY
FULL SUPER RT RDWY
FULL SUPER LT RDWY
22.600
21.900
+72.000
+88.000
+71.000
+87.000
+12.000
VPI +00.000
El 22.600
(-) 0.2000%
(+) 0.2240%
PGL
SPECIAL DITCH MEDIAN
DPT MED
+30.000
EL. 21.86
Exist. Ground ℄ Const.
BT (FO)
BT
750 PIPE
600 PIPE
450 PIPE
200 FM
400 FM
FL 19.44 (WES)
EL 18.65
EL 19.47
EL 19.60
EL 18.73
FL 19.52
EL 19.65
FL 19.61
FL 19.81
FL 20.05
FL 20.18
21.942
21.775

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

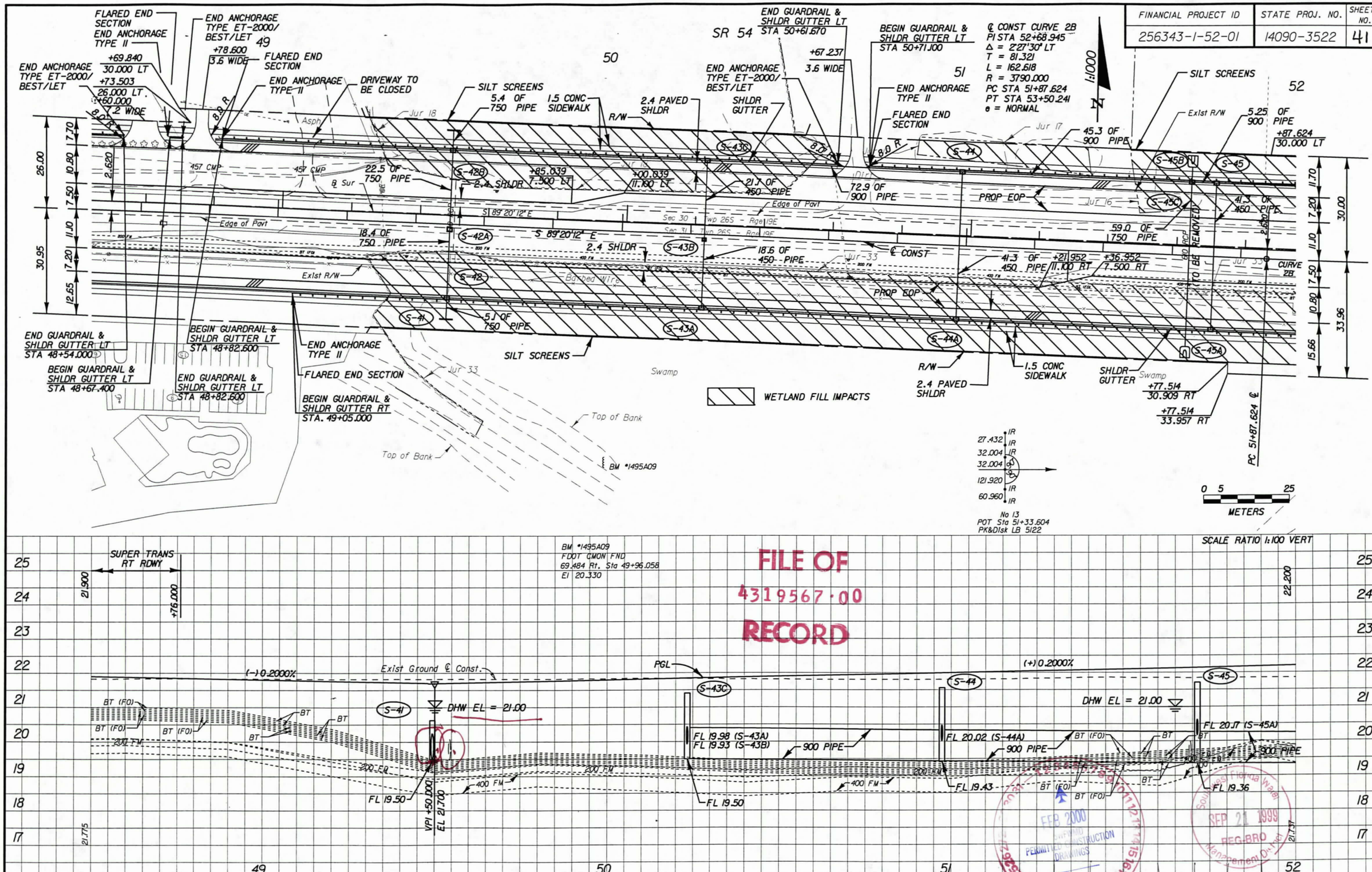
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 79

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRab10.prf
PLOT DATE: Wed Aug 25 10:50:52 1999 DESIGN FILE: p:\fdt2027\PLPRR010.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	41



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

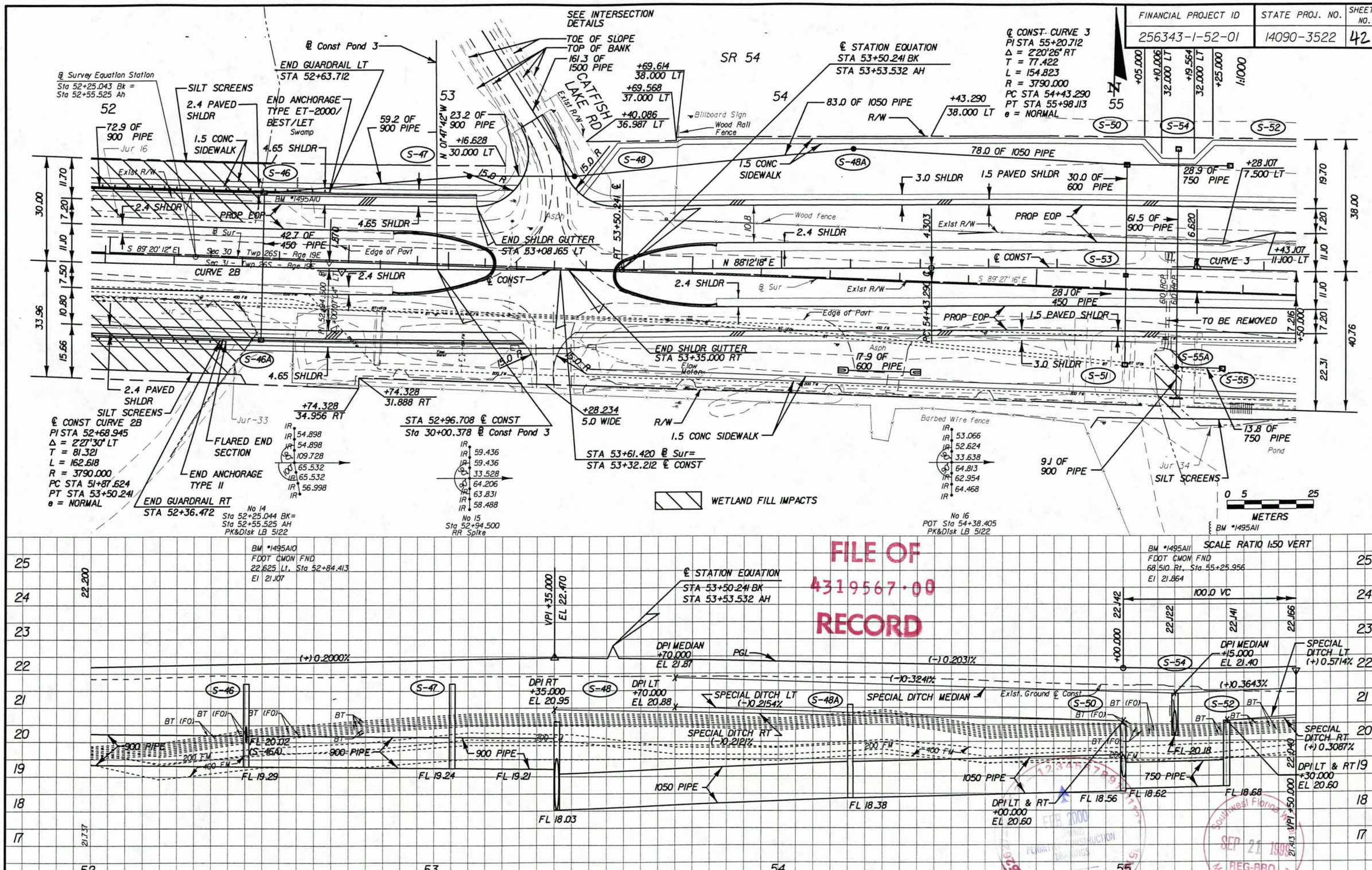
80

A-945

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB11.prf

PLOT DATE: Wed Aug 25 10:50:50 1999 DESIGN FILE: p:\fdt2027\PLPRR011.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	42



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

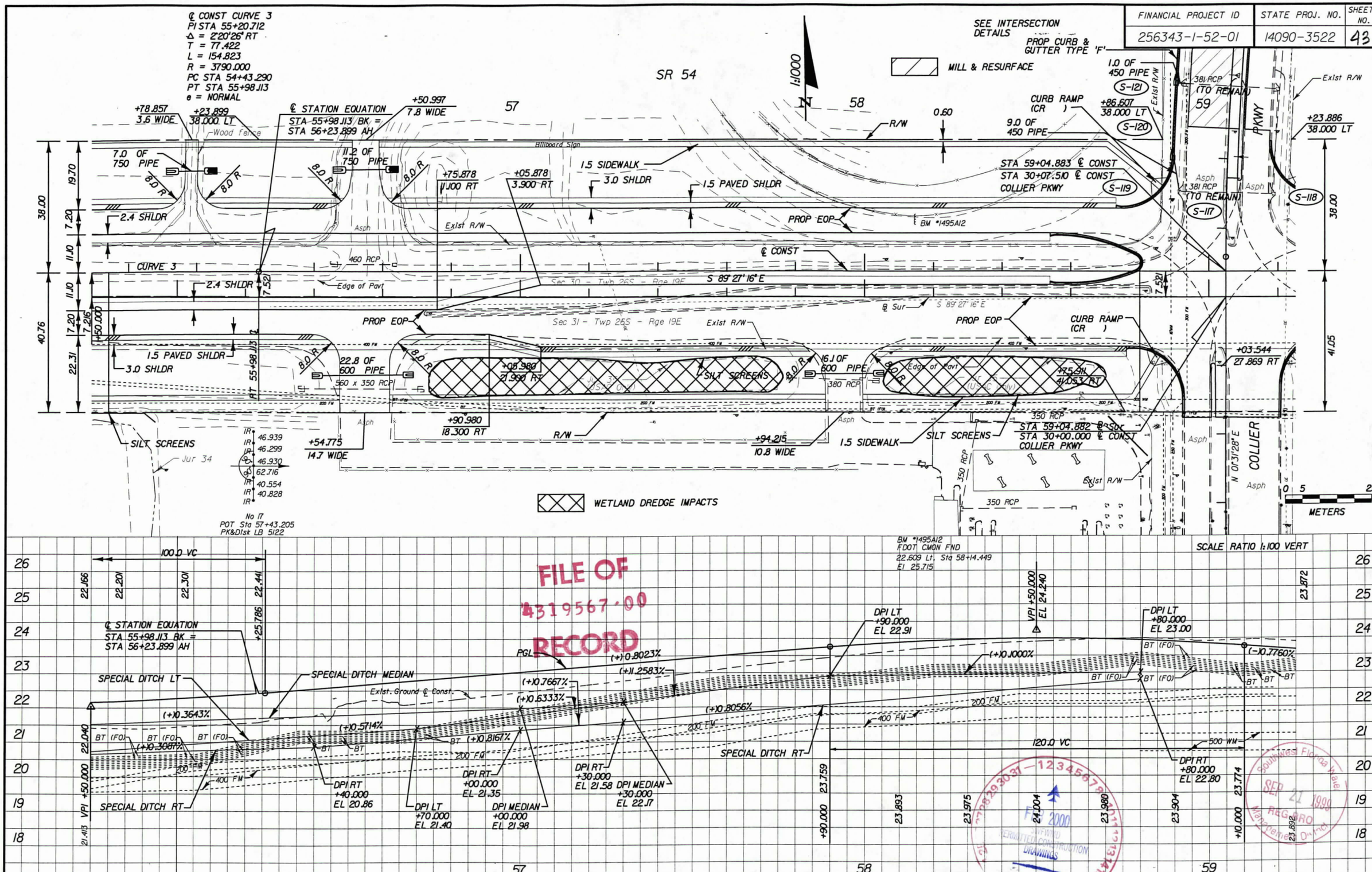
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

81

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	43



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

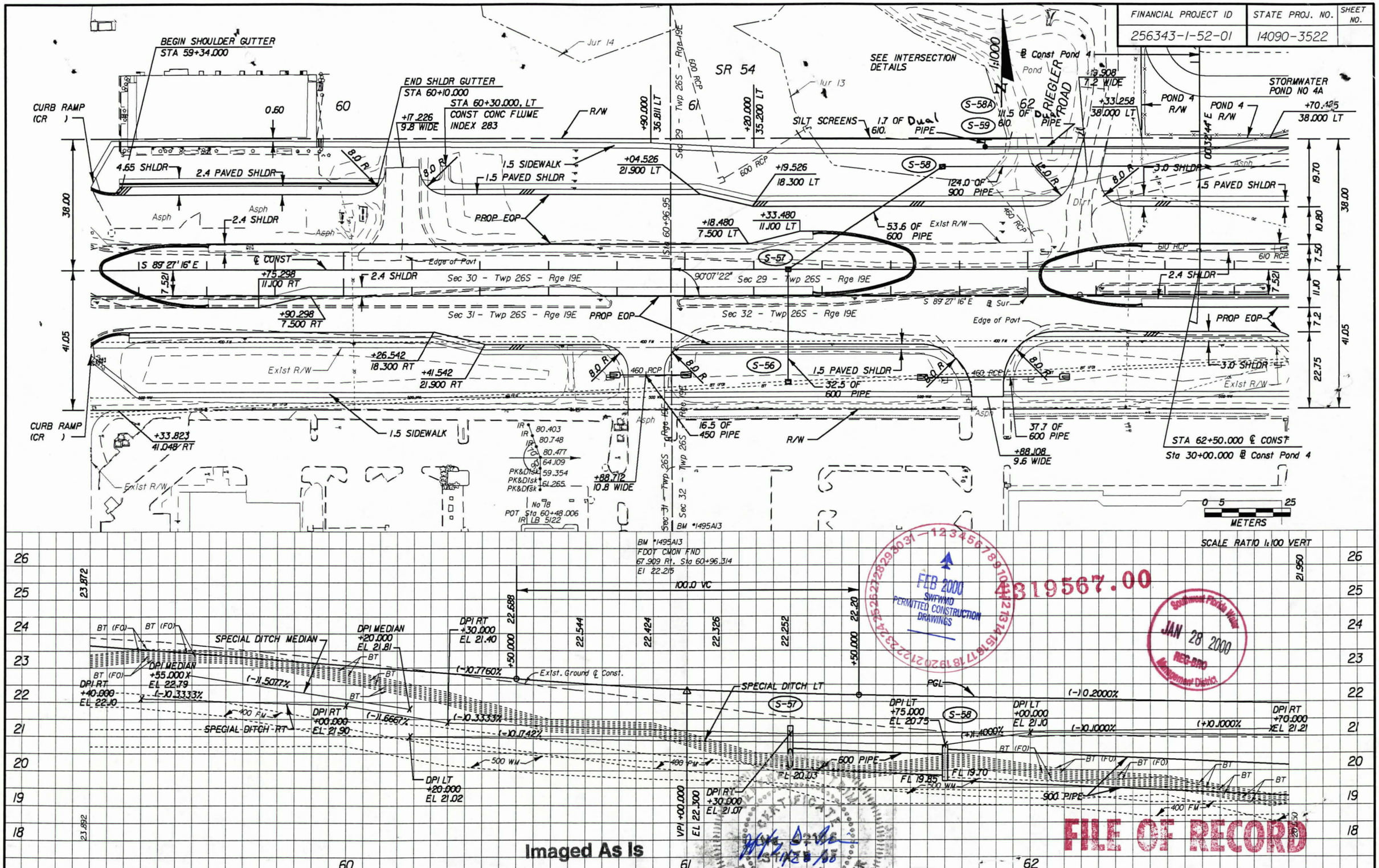
82

A-947

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB13.prf

PLOT DATE: Wed Aug 25 10:51:25 1999 DESIGN FILE: p:\fdt2027\PLPRRD13.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813) 882-8366 FAX: (813) 884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 83

PLOT DATE: Fri Jan 28 09:01:05 2000 DESIGN FILE: p:\fdt2027\plprrd14.dgn

PLOT FILE: p:\fdt2027\plprrd14.prf

A-948

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	44

BEGIN SHOULDER GUTTER STA 59+34.000
END SHLDR GUTTER STA 60+10.000
STA 60+30.000, LT CONST CONC FLUME INDEX 283
CURB RAMP (CR)
0.60
4.65 SHLDR
2.4 PAVED SHLDR
2.4 SHLDR
1.5 SIDEWALK
1.5 PAVED SHLDR
PROP EOP
Asph
Dirt
Jur 14
Jur 13
SR 54
WETLAND FILL IMPACTS
SEE INTERSECTION DETAILS
SILT SCREENS
1.7 OF 610 X 960 PIPE
111.5 OF 610 X 960 PIPE
124.0 OF 900 PIPE
53.6 OF 600 PIPE
16.5 OF 450 PIPE
32.5 OF 600 PIPE
37.7 OF 600 PIPE
RIEGLER ROAD
Const Pond 4
Pond
POND 4 R/W
STORMWATER POND NO 4A
3.0 SHLDR
1.5 PAVED SHLDR
2.4 SHLDR
3.0 SHLDR
PROP EOP
Exist R/W
1.5 SIDEWALK
R/W
Edge of Pavt
Edge of Pav
Sec 29 - Twp 26S - Rge 19E
Sec 30 - Twp 26S - Rge 19E
Sec 31 - Twp 26S - Rge 19E
Sec 32 - Twp 26S - Rge 19E
Sec 31 - Twp 26S - Rge 19E
Sec 32 - Twp 26S - Rge 19E
90°07'22"
S 89°27'16" E
S 89°27'16" E
00°32'44" E
Sta 60+96.95
600 RCP
460 RCP
610 RCP
S-56
S-57
S-58
S-58A
S-59
+90.298 7.500 RT
+75.298 11.100 RT
+26.542 18.300 RT
+41.542 21.900 RT
+33.823 41.048 RT
+17.226 9.8 WIDE
+90.000 36.811 LT
+20.000 35.200 LT
+04.526 21.900 LT
+19.526 18.300 LT
+18.480 7.500 LT
+33.480 11.100 LT
+19.908 7.2 WIDE
+33.258 38.000 LT
+70.425 38.000 LT
+88.712 10.8 WIDE
+88.108 9.6 WIDE
STA 62+50.000 ℄ CONST
Sta 30+00.000 ℄ Const Pond 4
IR 80.403
IR 80.748
IR 80.477
64.109
59.354
61.265
PK&Disk
No 18
POT Sta 60+48.006
IR LB 5122
BM *1495A13
FDOT CMON FND
67.909 Rt, Sta 60+96.314
El 22.215
38.00
41.05
19.70
10.80
7.50
11.10
7.2
22.75
7.52
0 5 25
METERS
SCALE RATIO 1:100 VERT

100.0 VC
+50.000 22.688
22.544
22.424
22.326
22.252
+50.000 22.20
VPI +00.000 EL 22.300
23.872
23.892
21.950
20.950
Existing Ground ℄ Const.
SPECIAL DITCH MEDIAN
SPECIAL DITCH RT
SPECIAL DITCH LT
DPI MEDIAN +20.000 EL 21.81
DPI MEDIAN +55.000 X EL 22.79
DPI RT +40.000 EL 22.10
DPI RT +00.000 EL 21.90
DPI RT +30.000 EL 21.40
DPI LT +20.000 EL 21.02
DPI LT +75.000 EL 20.75
DPI LT +00.000 EL 21.10
DPI RT +70.000 EL 21.21
DPI RT +30.000 EL 21.07
(-)0.7760%
(-)11.5077%
(-)0.3333%
(-)11.6667%
(-)17.42%
(-)0.2000%
(+)1.4000%
(-)0.1000%
(+)0.1000%
400 FM
500 WM
600 PIPE
900 PIPE
FL 20.03
FL 19.85
FL 19.70
BT (FO)
BT
PGL
S-57
S-58

60 61 62

FILE OF
4319567-00
RECORD

Florida DOT
SEP 23 1999
REG-BRO

V0.0

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

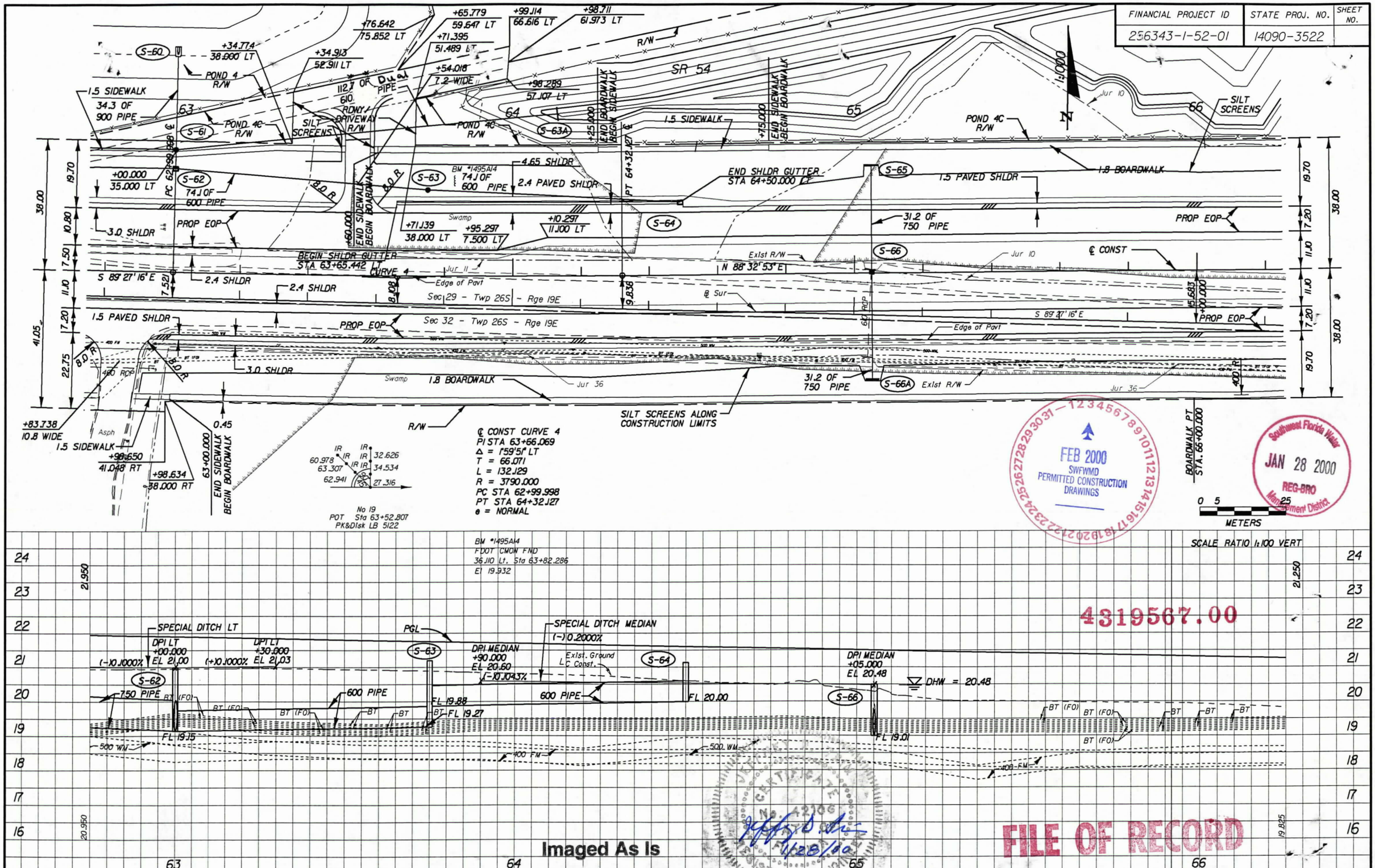
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

84

PLOT DATE: Wed Aug 25 10:51:24 1999 DESIGN FILE: p:\fdt2027\PLPRR014.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\PLPRRB14.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



4319567.00

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District JAN 28 2000 REG-BRO

Imaged As Is

FILE OF RECORD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

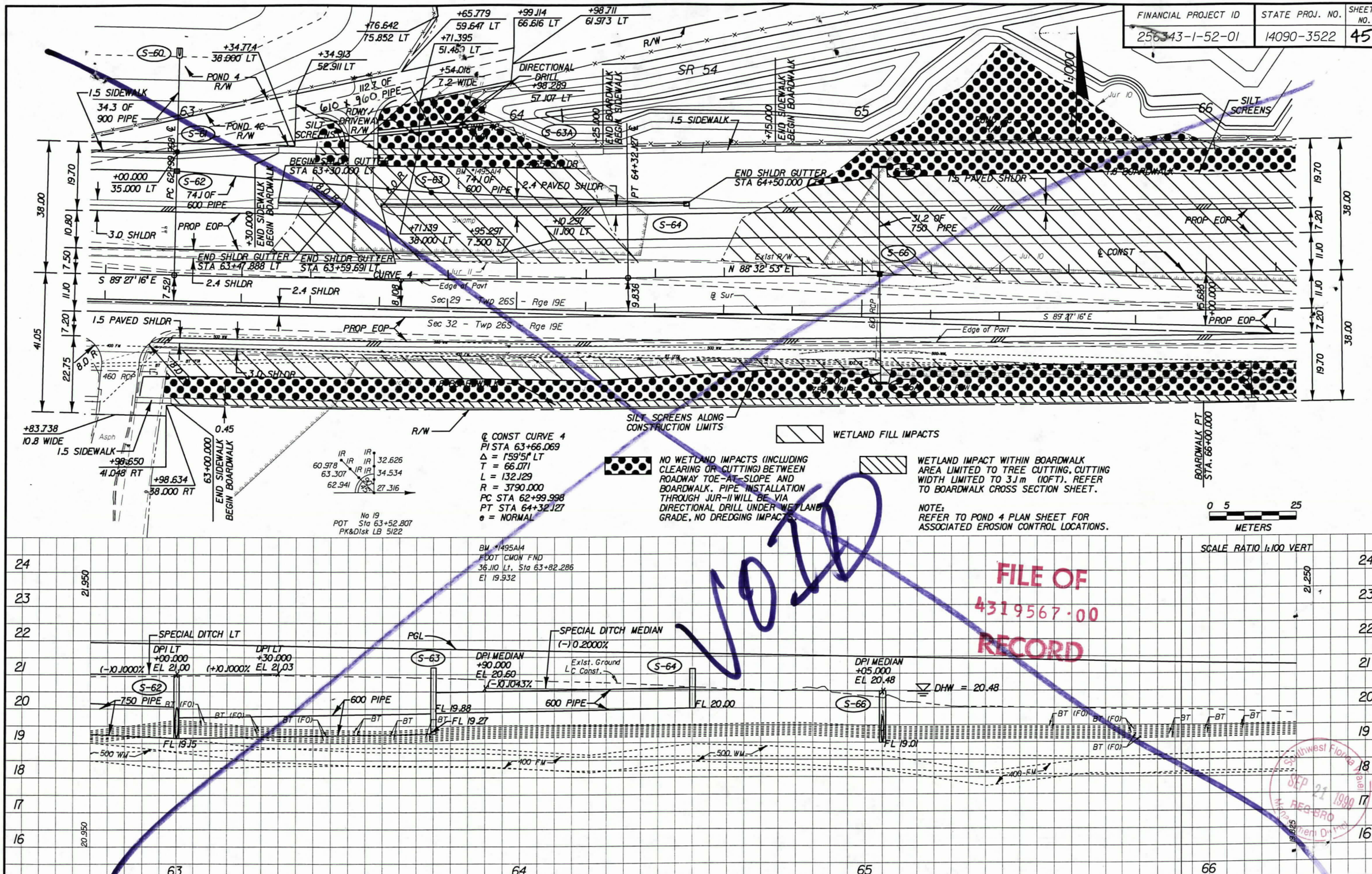
PLAN / PROFILE

84

PLOT DATE: Fri Jan 28 09:02:59 2000 DESIGN FILE: p:\fdt2027\PLPRRD15.dgn

PLOT FILE: p:\fdt2027\plprrd15.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	45



VOID

FILE OF 4319567.00 RECORD

Southwest Florida Water Management District SEP 21 1999 REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

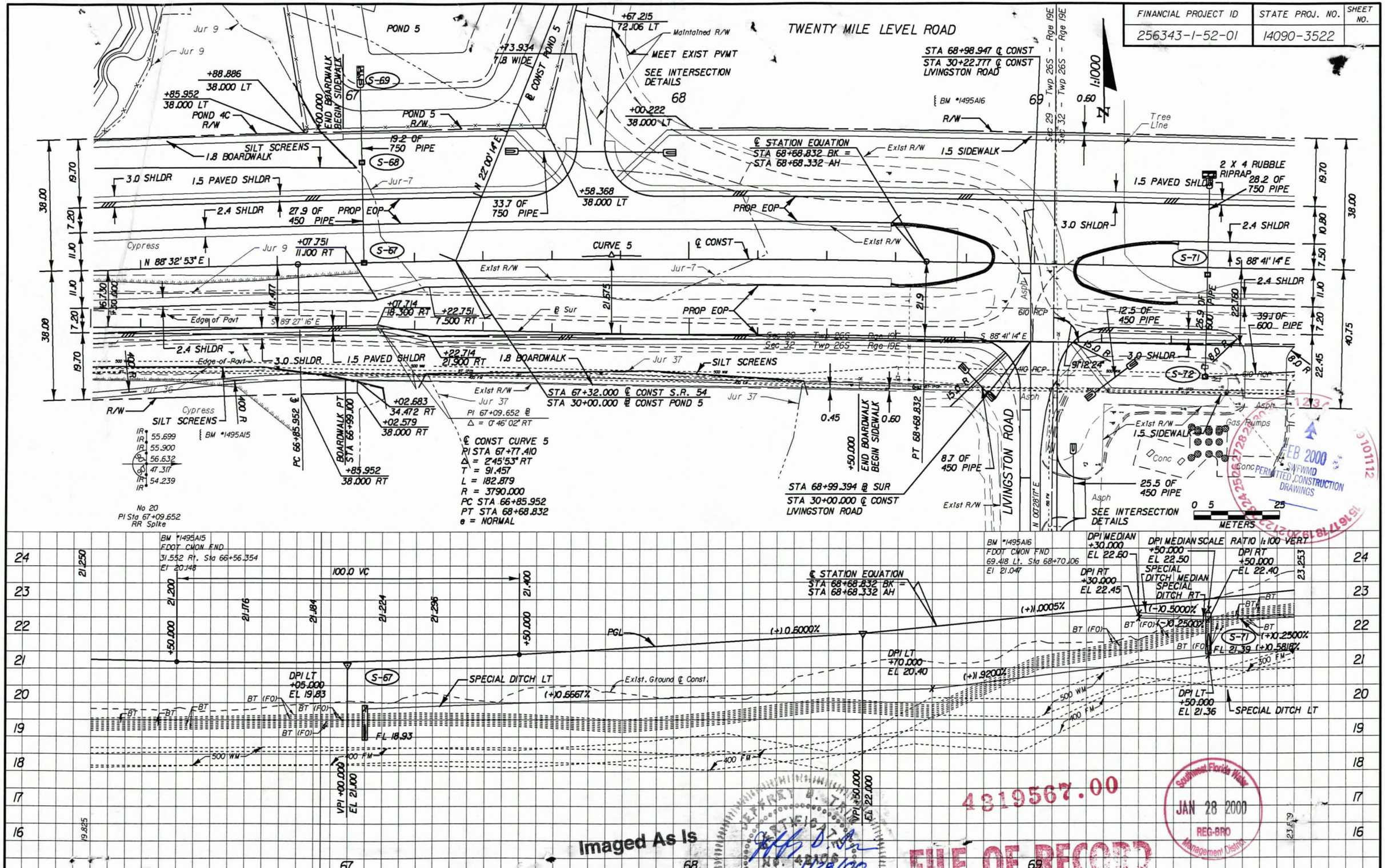
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Aug 25 10:53:12 1999 DESIGN FILE: p:\fdt2027\PLPRR015.dgn

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB15.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX: (813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 85

PLOT DATE: Fri Jan 28 09:14:54 2000 DESIGN FILE: p:\fdt2027\PLPRRD16.dgn
PLOT FILE: p:\fdt2027\PLPRRD16.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	46

TWENTY MILE LEVEL ROAD

STA 68+98.947 ℄ CONST
STA 30+22.777 ℄ CONST
LIVINGSTON ROAD

WETLAND FILL IMPACTS
WETLAND DREDGE IMPACTS

NO WETLAND IMPACTS (INCLUDING CLEARING OR CUTTING) BETWEEN ROADWAY TOE-AT-SLOPE AND BOARDWALK.

WETLAND IMPACT WITHIN BOARDWALK AREA LIMITED TO TREE CUTTING. CUTTING WIDTH LIMITED TO 30 (10FT). REFER TO BOARDWALK CROSS SECTION SHEET.

SEE INTERSECTION DETAILS

1:1000

0 5 25
METERS

STA 67+32.000 ℄ CONST S.R. 54
STA 30+00.000 ℄ CONST POND 5

℄ CONST CURVE 5
PI STA 67+77.410
Δ = 2°45'53" RT
T = 91.457
L = 182.879
R = 3790.000
PC STA 66+85.952
PT STA 68+68.832
e = NORMAL

STA 68+99.394 ℄ SUR
STA 30+00.000 ℄ CONST
LIVINGSTON ROAD

℄ STATION EQUATION
STA 68+68.832 BK =
STA 68+68.332 AH

BM #1495A15
FDOT CMON FND
31.552 Rt. Sta 66+56.354
El 20.148

BM #1495A16
FDOT CMON FND
69.418 Lt, Sta 68+70.106
El 21.047

No 20
PI Sta 67+09.652
RR Spike

DPI MEDIAN +30.000 EL 22.60
DPI MEDIAN SCALE +50.000 EL 22.50 RATIO 1:100 VERT
DPI RT +50.000 EL 22.40
DPI RT +30.000 EL 22.45
SPECIAL DITCH MEDIAN
SPECIAL DITCH RT
DPI LT +05.000 EL 19.65
DPI LT +70.000 EL 20.20
DPI LT +50.000 EL 21.36
SPECIAL DITCH LT
Exist. Ground ℄ Const.
PGL
VPI +00.000 EL 21.00
VPI +50.000 EL 22.000
FL 18.93
FL 21.39
100.0 VC
(+)0.6000%
(+)0.2242%
(+)0.4500%
(+)0.0005%
(-)0.5000%
(-)0.2500%
(+)0.2500%
(+)0.5818%

FILE OF
4319567.00
RECORD

SEP 21 1999
REC'D FDOT
Northwest Florida Region
Transportation District

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Aug 25 10:52:18 1999 DESIGN FILE: p:\fdot2027\PLPRROB16.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP50000N\PLPRMB16.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	47

SR 54

℄ STATION EQUATION
STA 70+00.047 BK =
STA 70+00.355 AH

SILT SCREENS
Jur 6

+35.154
38.000 LT

+35.154
41.000 LT

+85.154
41.000 LT

+85.154
38.000 LT

WETLAND FILL IMPACTS

R/W

70 71 72 73

1:1000

PI STA 70+09.047 BK ℄ Const
Δ = 00°46'29" LT

+91.522
7.500 LT

Tree Line

0.60

1.5 SIDEWALK

1.5 PAVED SHLDR

3.0 SHLDR

2.4 SHLDR

PROP EOP

℄ CONST

+06.522
11.00 LT

+43.919
11.00 LT

+67.168
1.800 LT

+14.979
1.800 RT

5.0 R

300 WM

S 88°41'14" E

S 89°27'43" E

+80.168
11.00 RT

+95.168
7.500 RT

+43.919
7.500 RT

Exist R/W

Edge of Pavt

℄ Sur

Sec 29 - Twp 26S - Rge 19E

Sec 32 - Twp 26S - Rge 19E

S-73

8.0 R

15.0 R

460 RCP

610 RCP

305 RCP

+86.726
21.900 RT

PI 70+00.201 B
Δ = 00°46'29" LT

+05.955
4.5 WIDE

+40.892
7.4 WIDE

0.60
BM *1495A17

29.6 OF
600 PIPE

SEE INTERSECTION DETAILS

No 21
PI Sta 70+00.201
RR Spike

No 22
POT Sta 72+67.209
PK&Disk LB 5122

19.70
10.80
7.50
11.10
7.20
22.45
40.75
38.00
22.760
22.76

0 5 25
METERS

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SCALE RATIO 1:100 VERT

BM *1495A17
FDOT CMON FND
21.89l Rt. Sta 70+75.126
El 24.940

23.253
23.829
25.248
25.492

SPECIAL DITCH MEDIAN
(+)0.1435%
(+)0.2500%
(+)0.5818%
(+)0.7667%
(+)0.5748%
(+)1.0005%
(+)0.1000%
(+)0.7222%
(+)1.8625%
(-)1.0000%

PGL
Exist. Ground ℄ Const.

DPI RT
+90.000
EL 22.50

DPI MEDIAN
+20.000
EL 22.60

DPI LT
+30.000
EL 21.82

SPECIAL DITCH LT

DPI RT
+10.000
EL 23.42

DPI RT
+70.000
EL 23.48

SPECIAL DITCH RT

DPI MEDIAN
+00.000
EL. 24.35

DPI MEDIAN
+50.000
EL 25.00

VPI +50.000
EL 26.000

DPI LT
+50.000
EL 25.29

SPECIAL DITCH MEDIAN

DPI LT
+60.000
EL 24.55

DPI RT
+50.000
EL 24.97

DPI LT
+20.000
EL 23.95

160.0 VC

25.200
25.375
25.500
25.575

BT
BT (FO)
300 FM
500 WM

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 27 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

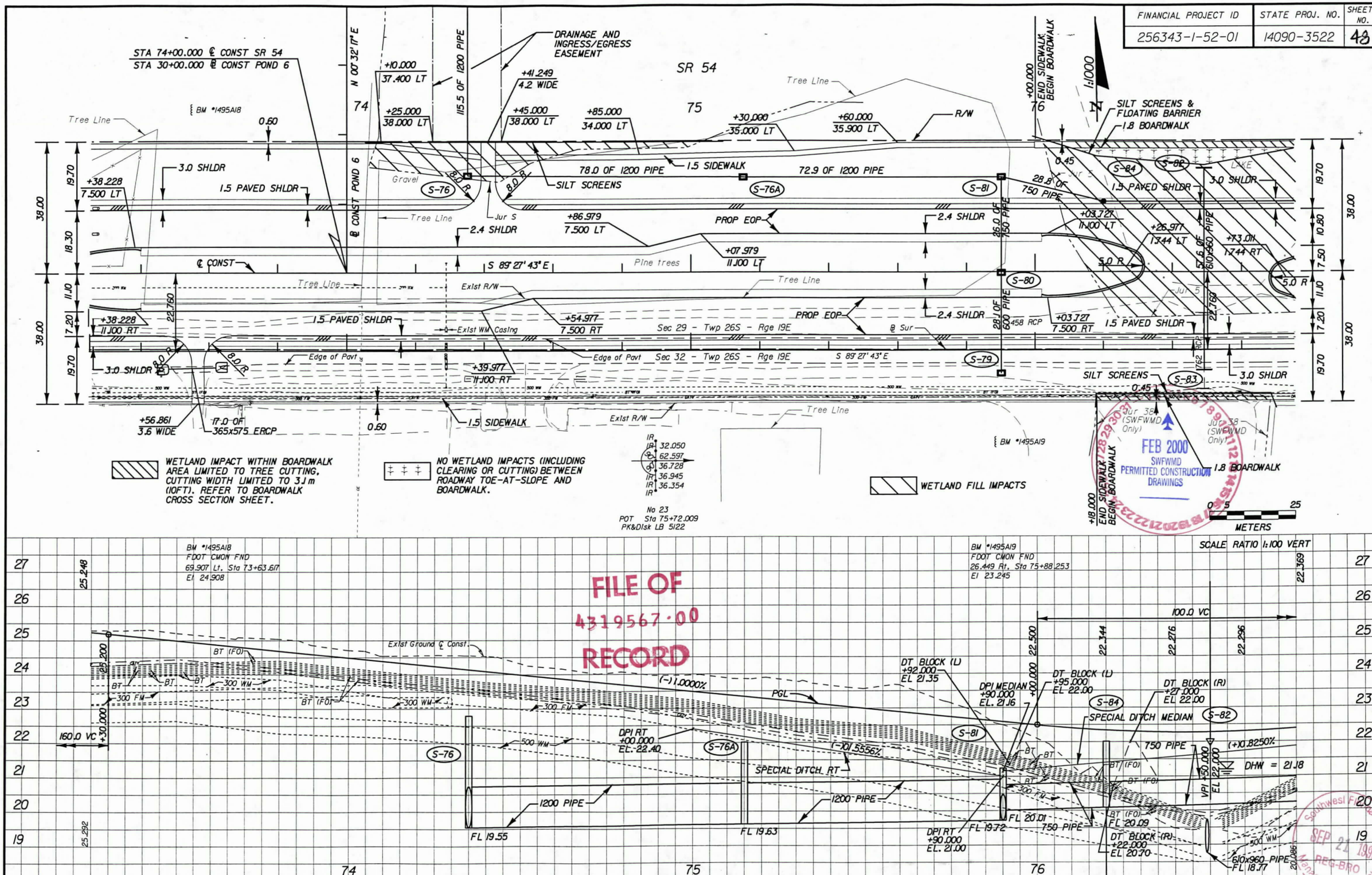
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 84

PLOT DATE: Wed Aug 25 10:52:27 1999 DESIGN FILE: p:\fdot2027\PLPRR017.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP50000\PLPRM017.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	48



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

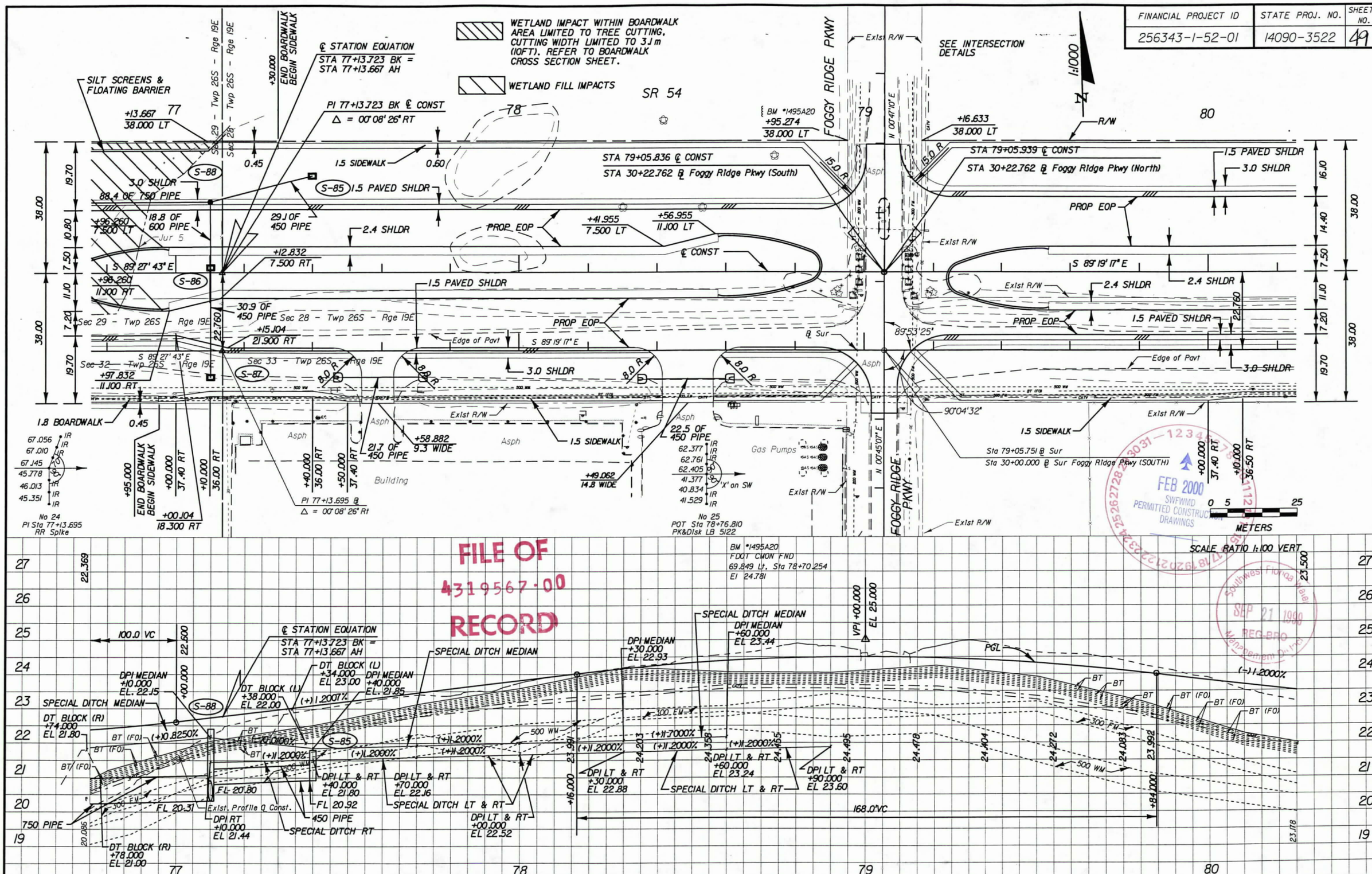
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 87

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB18.prf

PLOT DATE: Wed Aug 25 10:52:28 1999 DESIGN FILE: p:\fdt2027\PLPRRD18.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	49



FILE OF 4319567-00 RECORD

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999 Southwest Florida Water Management District REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

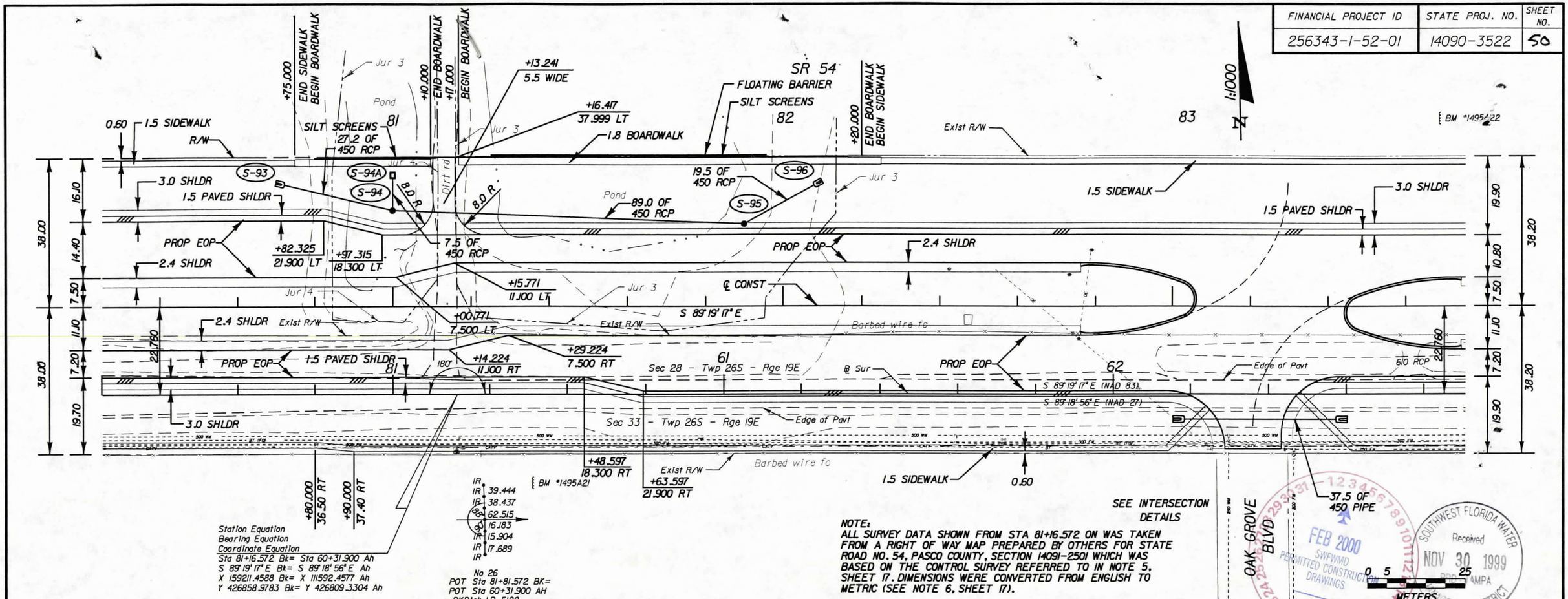
FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 88

PLOT DATE: Wed Aug 25 10:52:58 1999 DESIGN FILE: p:\fdt2027\PLPRR019.dgn

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB19.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	50



NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

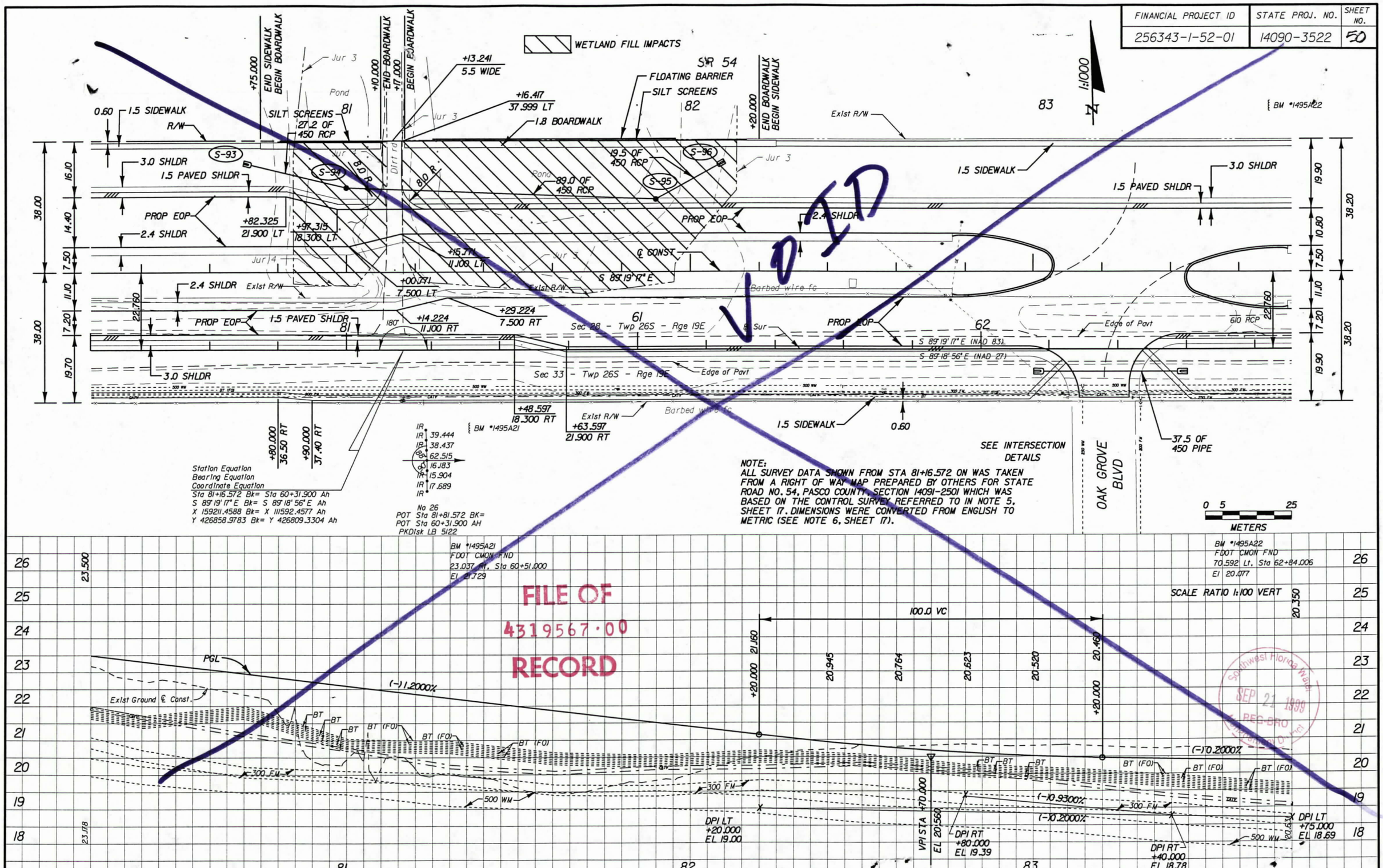
FLORIDA DEPARTMENT OF TRANSPORTATION

89 PLAN / PROFILE 11/30/99

PLOT FILE: p:\fdt2027\plprrd20.prf
PLOT DATE: Mon Nov 29 16:39:56 1999 DESIGN FILE: p:\fdt2027\PLPRRD20.dgn

A-957

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	50



NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

VOID

FILE OF 4319567·00 RECORD

Southwest Florida Water SEP 21 1999 REC-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

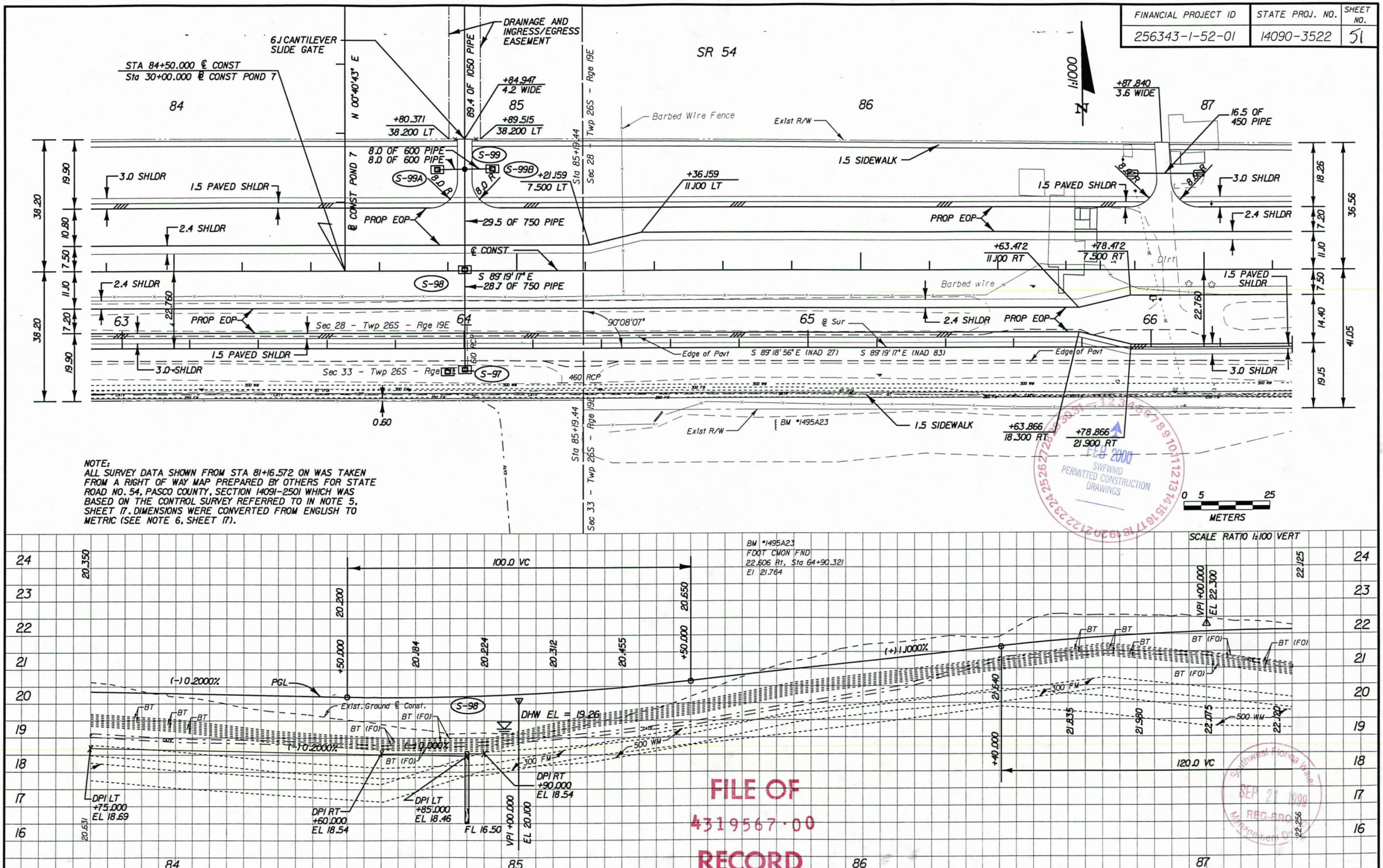
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Aug 25 10:53:02 1999 DESIGN FILE: p:\fdt2027\PLPRRD20.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB20.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	51



NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-RRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 90

PLOT DATE: Wed Aug 25 11:03:59 1999 DESIGN FILE: p:\fdt2027\PLPRRD21.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plprrd21.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	52

NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

SEE INTERSECTION DETAILS

SEE INTERSECTION DETAILS

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
Southwest Florida Water Management District
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 91

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plprrd22.prf
PLOT DATE: Wed Aug 25 11:04:13 1999 DESIGN FILE: pw\fdt2027\PLPRRD22.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	53

(FIELD)
℄ CONST CURVE 6
PI STA 91+52.806
△= 22°50'22" LT
T = 117.975
L = 232.818
R = 584.055
PC STA 90+34.831
PCC STA 92+67.648
e = 0.080

BHA ℄ CURVE CL54-I
(SPN 14504-3501)
PI STA 10+60.865
△= 40°08'25" LT
T = 319.024
L = 611.736
R = 873.188
PC STA 7+41.841
PT STA 13+53.577
e = 0.070

Cypress Creek Rd
℄ Survey Curve
PI STA 30+40.270
△ = 6°08'11" LT
T = 90.017
L = 162.619
R = 152.403
PC STA 29+50.253
PT STA 31+12.872

SEE INTERSECTION DETAILS

NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

WETLAND FILL IMPACTS

(FIELD)
℄ CONST CURVE 7
PI STA 12+22.799
△= 17°17'42" LT
T = 132.799
L = 263.577
R = 873.188
PCC STA 10+90.000
PT STA 13+53.577
e = 0.062

SR 54

92 OLD CYPRESS CREEK ROAD

CYPRESS CREEK ROAD

℄ STATION EQUATION
STA 92+67.648 BK =
STA 10+90.000 AH

℄ STATION EQUATION
STA 92+65.648 BK =
STA 10+90.000 AH

+85.406
11.100 LT

Chainlink fence

3.0 SHLDR
1.5 PAVED SHLDR
2.4 SHLDR
PROP EOP
℄ CONST CURVE 6
+24.296
7.500 RT
BHA ℄ CURVE CL54-I
+09.296
11.100 RT
3.0 SHLDR
1.5 PAVED SHLDR

Exist R/W
PT 31+12.872
CURVE CL55B
PCC 92+67.648 ℄
PGL LT
PGL RT
37.0 OF 600 PIPE
S-110
S-109
S-111
S-124
S-125
S-126
S-112

BEGIN GUARDRAIL MED
STA 11+60.513
END ANCHORAGE TYPE ET-2000/ BEST/LET
+59.373
7.500 LT

Exist Pavt (TO REMAIN)
BEGIN BRIDGE (RT)
STA 12+43.047
℄ CONST & BHA ℄
CURVE 7 GUARDRAIL WITH MISC ASPH PAVT
1.5 PAVED SHLDR
PROP EOP
Exist Gr (TO REMAIN)
MATCH EXIST PAVT (LT)
STA 11+60.000
EL 19.337
+58.249
21.900 LT
BM #1495A26
STA 10+50.00 (TO REMAIN)
Exist R/W
Sec 28 - Twp 26S - Rge 19E
Sec 27 - Twp 26S - Rge 19E
Jur 1

42.97
35.70
24.67
17.40
18.30
11.10
7.20
7.2
30.41
48.77
10.80
11.10
7.50
18.30

(NAD 27)
℄ Sur Curve 3
PI STA 75+04.944
△ = 85°22'10" LT
T = 536.885
L = 867.356
R = 582.127
PC STA 69+68.059
PT STA 78+35.415

℄ Sur
℄ Sur Curve 3
+97.131
18.300 RT
+12.131
21.900 RT
Exist R/W
177 OF 600 PIPE
Sec 28 - Twp 26S - Rge 19E
Sec 32 - Twp 26S - Rge 19E
STA 72+29.303 ℄ Survey S.R. 54 =
STA 30+00.000 ℄ Survey Cypress Creek Rd
12.0 OF 600 PIPE
60 RCP
76.5 OF 750 PIPE
457 RCP
80.3 OF 750 PIPE
762 RCP
6r 10' 32"
3.0 SHLDR
GUARDRAIL WITH MISC ASPH PAVT
Jur 1
BRIDGE #140126
SILT SCREENS
END ANCHORAGE TYPE ET-2000/ BEST/LET
BEGIN GUARDRAIL RT
STA 12+13.853
STA 11+49.895 ℄ CONST =
STA 30+00.000 ℄ CONST TO POND 8
STA 12+41.529 ℄ Survey S.R. 54 =
STA 29+69.388 ℄ CONST POND 8A
STA 11+23.959 ℄ CONST
STA 30+27.692 ℄ Survey Cypress Creek Rd

1:000
0 5 25
METERS

SCALE RATIO 1:100 VERT

PGL RT
(-)0.2000%
Exist. Ground ℄ Const.
VPI +00.000
EL 21.100
21.150 (RT)
21.098 (LT)
(-)10.4831%
(-)11.2284%
SPECIAL DITCH LT
BT (FO)
BT
(-)10.5947%
+60.000
20.363 (LT)
20.946
20.786
20.594
21.071
500 WM
120.0 VC (LT)
19.531
19.504
19.305
19.194
19.141
19.165
+27.718
100.0 VC (LT)
VPI +00.000
EL 18.917 (LT)
DPI LT
+00.000
EL 17.32
750 PIPE
FL 16.57
FL 16.22
FL 16.15
+50.000
+05.000
20.271
Imaged As Is
FULL SUPER RT RDWY
FULL SUPER LT RDWY
SUPER TRANS RT RDWY
SUPER TRANS LT RDWY
EXISTING FULL SUPER LT RDWY
91
92
11
12

BM #1495A26
FDOT "CMON FND
68.343 Lt. Sta 72+69.105
El 16.237
MATCH EXISTING PVMT (LT)
STA 11+60.000
EL 19.337
BEGIN BRIDGE (RT)
STA 12+43.047
PGL (RT)
(-)0.2000%
(+)0.7000%
BY OTHERS (LT)
(+)0.7000%
VPI +50.000
20.000 (RT)
19.267 (LT)
VPI +50.000
EL 20.000 (RT)
19.267 (LT)
19.800
14.696

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Received
NOV 30 1999
RBB TAMPA
SWFWMD PERMITTED CONSTRUCTION DRAWINGS

FILE OF RECORD
431956700

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

REVISIONS

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

92 PLAN / PROFILE 11/30/99

PLOT FILE: p:\fdt2027\plprrd23.prf
PLOT DATE: Mon Nov 29 16:19:48 1999 DESIGN FILE: p:\fdt2027\plprrd23.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	53

(FIELD)
℄ CONST CURVE 6
PI STA 91+52.806
Δ= 22°50'22" LT
T = 117.975
L = 232.818
R = 584.055
PC STA 90+34.831
PCC STA 92+67.648
e = 0.080

BHA ℄ CURVE CL54-1
(SPN 14504-3501)
PI STA 10+60.865
Δ= 40°08'25" LT
T = 319.024
L = 611.736
R = 873.188
PC STA 7+41.841
PT STA 13+53.577
e = 0.070

Cypress Creek Rd
℄ Survey Curve
PI STA 30+40.270
Δ = 61°08'11" LT
T = 90.017
L = 162.619
R = 152.403
PC STA 29+50.253
PT STA 31+12.872

SEE INTERSECTION DETAILS

NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

WETLAND FILL IMPACTS

(FIELD)
℄ CONST CURVE 7
PI STA 12+22.799
Δ= 17°17'42" LT
T = 132.799
L = 263.577
R = 873.188
PCC STA 10+90.000
PT STA 13+53.577
e = 0.062

SR 54

92 OLD CYPRESS CREEK ROAD

CYPRESS CREEK ROAD

℄ STATION EQUATION
STA 92+67.648 BK =
STA 10+90.000 AH

℄ STATION EQUATION
STA 92+65.648 BK =
STA 10+90.000 AH

BW #1495A26
FDOT "CMON FND
68.343 Lt, Sta 72+69.105
El 16.237

MATCH EXISTING PVMT (LT)
STA 11+60.000
EL 19.337

MATCH EXIST PAVT (LT)
STA 11+60.000
EL 19.337

BEGIN BRIDGE (RT)
STA 12+43.047

BEGIN GUARDRAIL MED
STA 11+60.513

BEGIN GUARDRAIL RT
STA 12+13.853

END ANCHORAGE
TYPE: ET-2000/
BEST/LET

℄ CONST & BHA ℄
CURVE 7 GUARDRAIL WITH MISC ASPH PAVT
1.5 PAVED SHLDR
PROP EOP
3.0 SHLDR

BRIDGE #140126

SILT SCREENS

Exist R/W
Exist Gr (TO REMAIN)
Exist Pavt (TO REMAIN)
Chainlink Fence
2.4 SHLDR
PGL LT
PGL RT
PROP EOP
3.0 SHLDR
1.5 PAVED SHLDR
BHA ℄ CURVE CL54-1
℄ CONST CURVE 6
+85.406 11.100 LT
+24.296 7.500 RT
+09.296 11.100 RT
+97.131 18.300 RT
+12.131 21.900 RT
+58.249 21.900 LT
+59.373 7.500 LT
35.70
17.40
18.30
11.10
42.97
7.20
24.67
25.566
30.41
48.77
10.80
7.50
11.10
7.2
18.30

37.0 OF 600 PIPE
177 OF 600 PIPE
76.5 OF 750 PIPE
80.3 OF 750 PIPE
12.0 OF 600 PIPE
600 RCP
457 RCP
762 RCP
61' 10' 32"

Sec 28 - Twp 26S - Rge 19E
Sec 27 - Twp 26S - Rge 19E
Sec 28 - Twp 26S - Rge 19E

STA 72+29.303 ℄ Survey S.R. 54 =
STA 30+00.000 ℄ Survey Cypress Creek Rd

STA 72+41.529 ℄ Survey S.R. 54 =
STA 29+69.388 ℄ CONST POND 8A

STA 11+49.895 ℄ CONST =
STA 30+00.000 ℄ CONST TO POND 8

STA 11+23.959 ℄ CONST
STA 30+27.692 ℄ Survey Cypress Creek Rd

(NAD 27)
℄ Sur Curve 3
PI STA 75+04.944
Δ= 85°22'10" LT
T = 536.885
L = 867.356
R = 582.127
PC STA 69+68.059
PT STA 78+35.415

℄ Sur
℄ Sur Curve 3

0 5 25
METERS

SCALE RATIO 1:100 VERT

100.0 VC (LT)
120.0 VC (LT)
(-)0.2000%
(-)0.4831%
(+)1.2284%
(-)0.5947%
(+)0.7000%
(+)0.7000%
VPI +00.000
EL 18.917 (LT)
VPI +50.000
20.000 (RT)
19.267 (LT)
VPI +00.000
EL 21.100
VPI +50.000
EL 20.000 (RT)
DPI LT
+00.000
EL 17.32
FL 16.57
FL 16.22
FL 16.15
750 PIPE
500 WM
Exist. Ground ℄ Const.
SPECIAL DITCH LT
BT (FO)
BT
PGL (RT)
BY OTHERS (LT)
21.150 (RT)
21.098 (LT)
21.071
20.946
20.788
20.592
20.363 (LT)
19.531
19.504
19.305
19.194
19.141
19.165
19.287 (LT)
19.800
14.696
20.271
+27.718
+60.000
+50.000
+05.000

FULL SUPER RT RDWY
FULL SUPER LT RDWY
SUPER TRANS RT RDWY
SUPER TRANS LT RDWY
EXISTING FULL SUPER LT RDWY
FULL SUPER RT RDWY

Imaged As Is

FILE

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RECEIVED
NOV 30 1999
BRD - TAMPA

4319567.00

Southwest Florida Water Management District
RECEIVED
DEC 1 1999
REGULATORY

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Imaged As Is

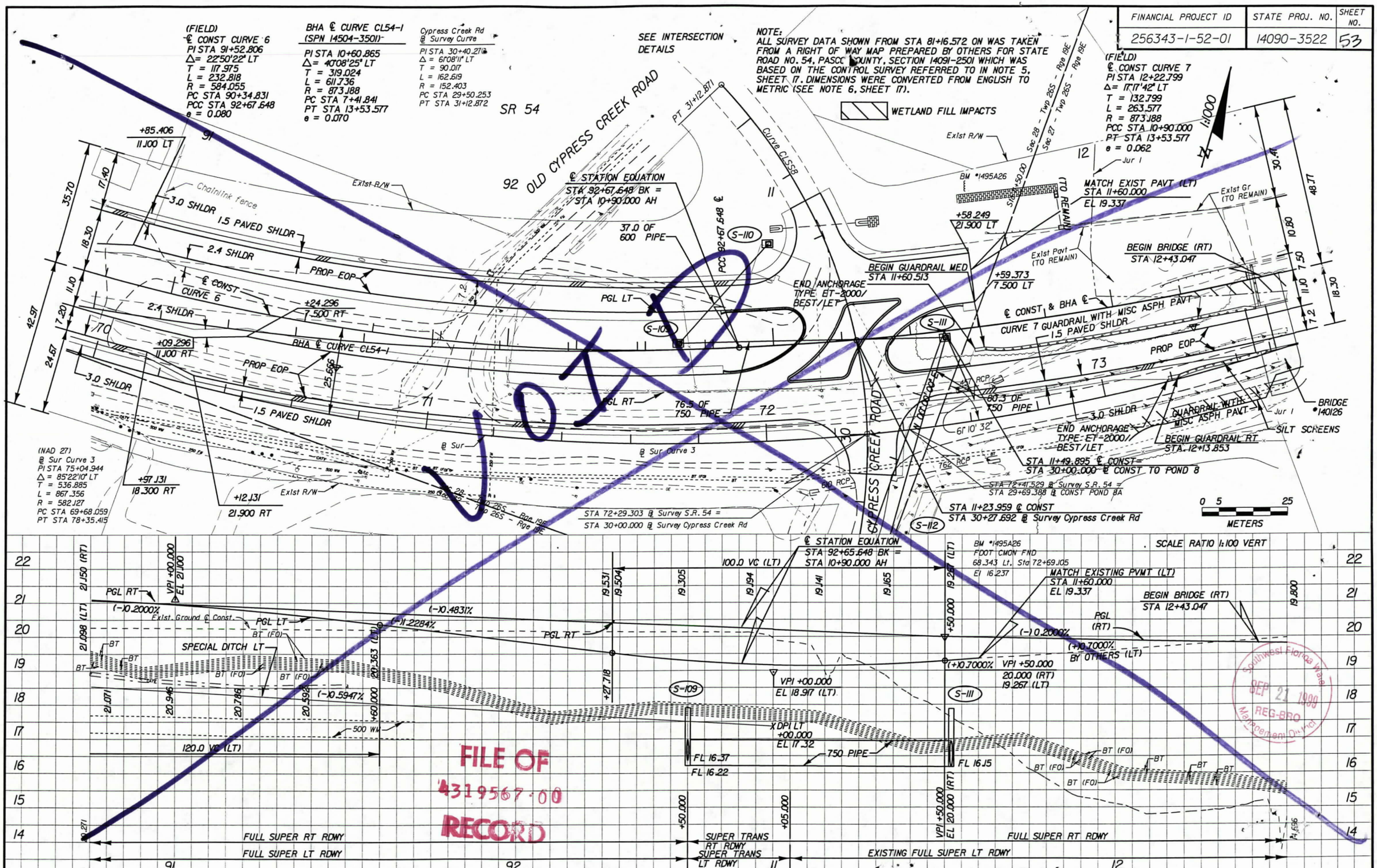
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Nov 24 12:57:42 1999 DESIGN FILE: p:\fdt2827\plprrd23.dgn
PLOT FILE: p:\fdt2027\plprrd23.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	53



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Aug 25 10:53:17 1999 DESIGN FILE: p:\fdt2027\PLPRRD23.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\PLPRMB23.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	54

SR 54

Exist R/W

13 14 15 16

Exist R/W

1:1000

IR 30.480 IR 30.480 90° N 05°18'54" E 30.480 90° 30.480 IR

No 28
PT Sta 78+35.415
PKDisk LB 2168

END ANCHORAGE TYPE II

FLARED END SECTION

END GUARDRAIL RT
STA 13+51.399

END BRIDGE (RT)
STA 12+84.251

REMOVE EXIST. GUARDRAIL

SAWCUT EXISTING PAVT

+90.652
7.378

+53.577
11.100

PT 13+53.577 ℄ & BHA ℄ (FIELD)

Existing Bridge No. 140120

Creek

Jur I

Jur

48.77 30.41 10.80 7.50 11.10 7.20 18.30

CURVE 7

74 75 76

2.4 SHLDR

GUARDRAIL W/ MISC ASPH PAVT

8.576

+09.327
8.700 LT

BRIDGE NO. 140126

Cypress

3.0 SHLDR

GUARDRAIL WITH MISC ASPH PAVT

FLARED END SECTION

END ANCHORAGE TYPE II

80 R

78.0 R

+78.018
3.2 WIDE

END GUARDRAIL MED
STA. 13+89.765

STA 75+10.072 ℄ SUR=
STA 13+98.452 ℄ CONST

BM #1495A27

1.5 PAVED SHLDR

3.0 SHLDR

(TO REMAIN)

Exist Pavt (TO REMAIN)

Edge of Pavt

PAVT WIDENING

PROP EOP

℄ Survey

℄ Sur Curve 3

℄ CONST & BHA ℄

N 50°32'39" E (FIELD)

N 50°32'39" E (NAD 27)

Exist Pavt (TO BE REMOVED)

N 50°32'01" E (FIELD)

N 50°32'39" E (NAD 27)

2.4 SHLDR

Exist Edge of Pavt

PROP EOP

45.72 11.10 11.10 7.20 19.80 38.10

PI 15+24.016
Δ = 00°00'32" LT
(FIELD)

(FIELD)
℄ CONST CURVE 7
PI STA 12+22.799
Δ= 17°17'42" LT
T = 132.799
L = 263.577
R = 873.188
PC STA 10+90.000
PT STA 13+53.577
e = 0.062

(NAD 27)
℄ Sur Curve 3
PI STA 75+04.944
Δ = 85°22'10" LT
T = 536.885
L = 867.356
R = 582.127
PC STA 69+68.059
PT STA 78+35.415

BHA ℄ CURVE CL54-1
(SPN 14504-3501)
PI STA 10+60.865
Δ= 40°08'25" LT
T = 319.024
L = 611.736
R = 873.188
PC STA 7+41.841
PT STA 13+53.577
e = 0.070

NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

0 5 25
METERS

SCALE RATIO 1:100 VERT

END BRIDGE (RT)
STA 12+84.251

BRIDGE NO. 140126

(-) 0.2000%

BM #1495A27
FDOT CMON FND
68.343 Lt. Sta 75+58.517
El 19.166

PGL (RT)

(-) 0.1264%

19.800

VPI STA +50.000
EL 19.600

19.284

19.332

Exist Ground ℄ Const.

BT (FO) BT

DHW EL = 17.01

EL 14.696

+25.000 +35.289 +26.729 +70.000

FULL SUPER RT RDWY
EXISTING FULL SUPER LT RDWY
SUPER TRANS RT RDWY
EXISTING SUPER TRANS LT RDWY

13 14 15 16

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE 93

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT Received NOV 30 1999 REGULATORY/WPA

FILE

4319567 00

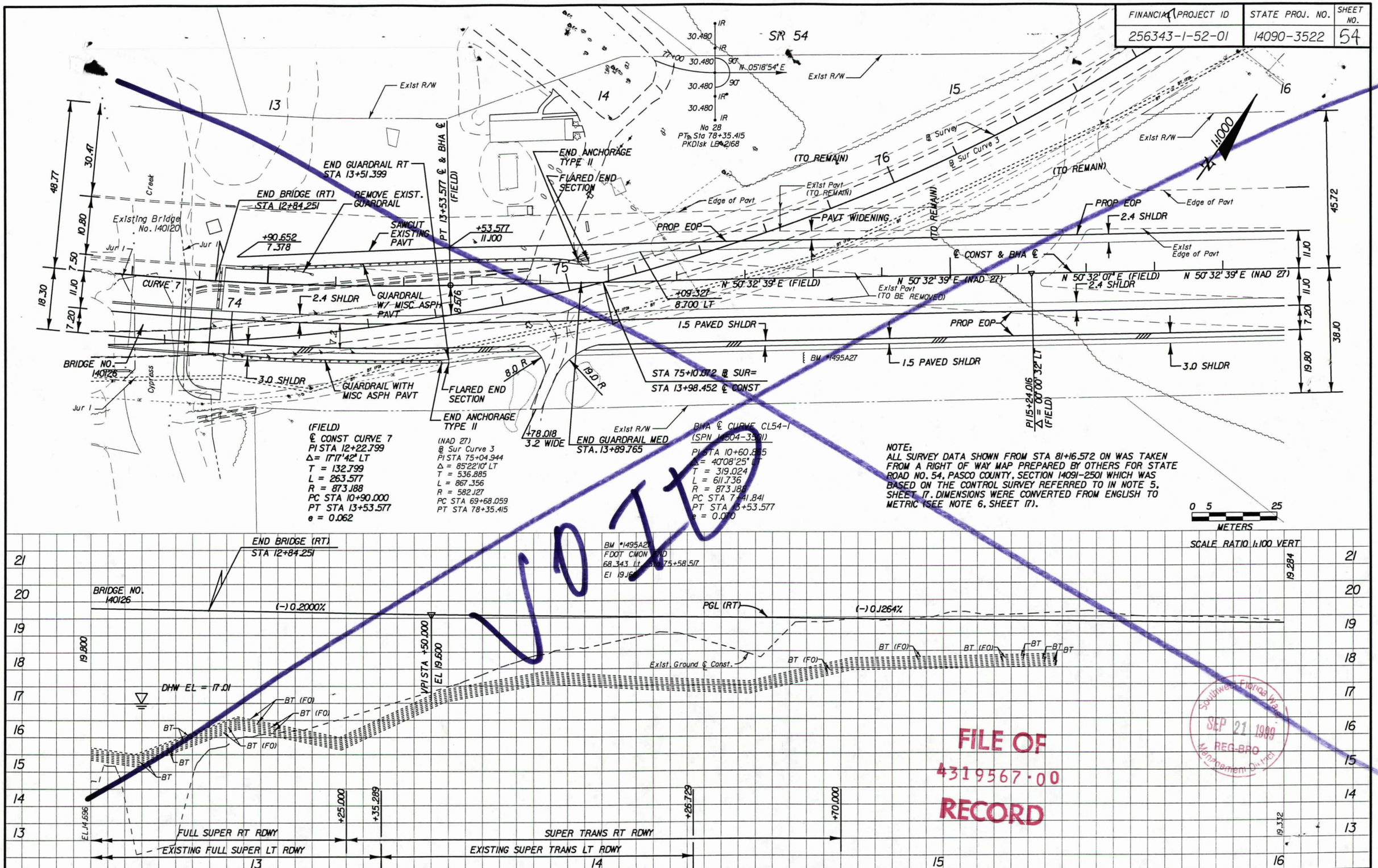
FEB 2000 AMENDMENT PERMITTED CONSTRUCTION DRAWINGS

Mitigation Area REG PRO 1999 DEP Southwest Florida

PLOT FILE: p:\fdot2027\plprrd24.prf

PLOT DATE: Mon Oct 11 10:47:05 1999 DESIGN FILE: p:\fdot2027\PLPRRD24.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	54



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

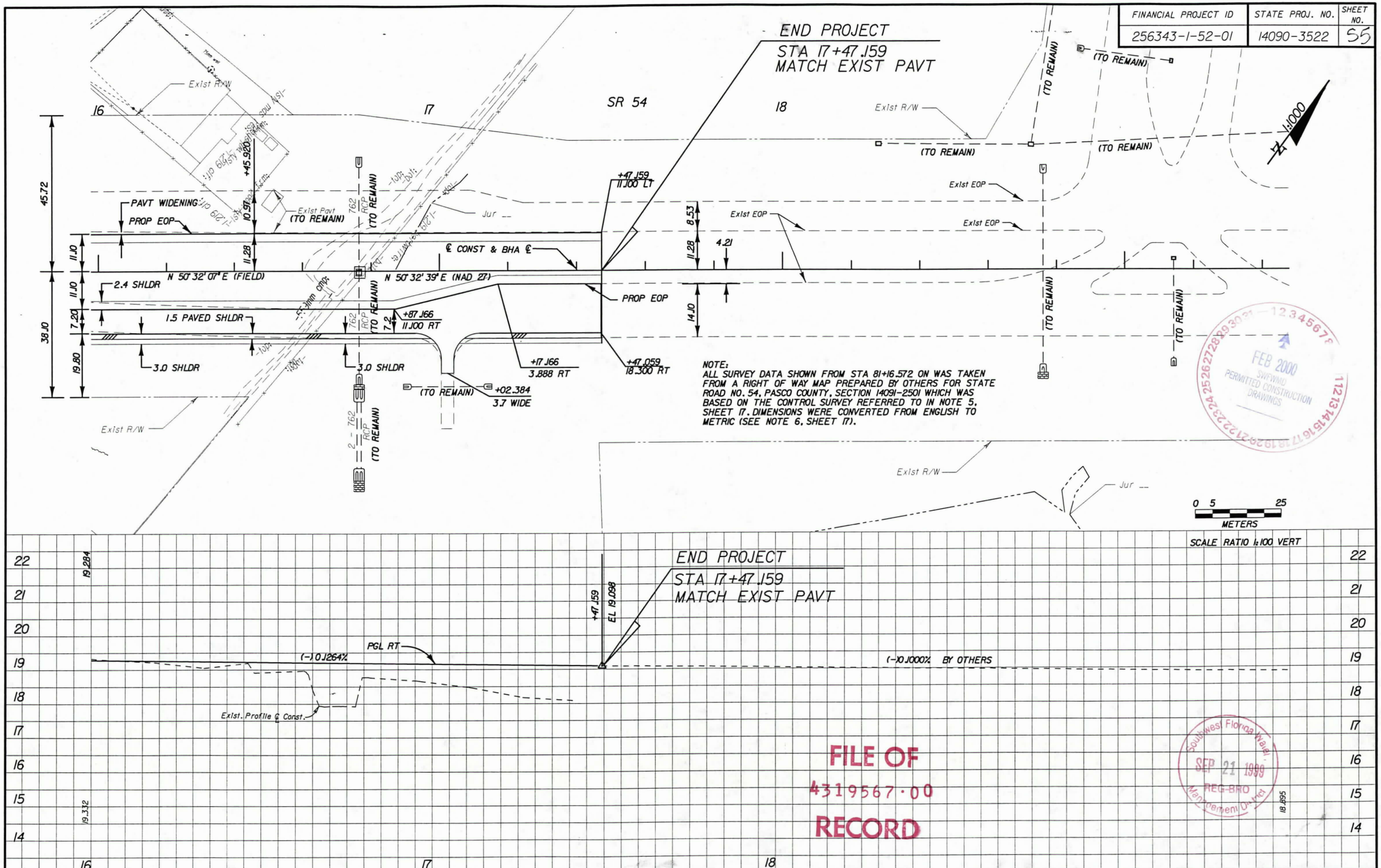
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN / PROFILE

PLOT DATE: Wed Aug 25 11:04:37 1999 DESIGN FILE: p:\fdt2027\PLPRRD24.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plprrd24.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	55



NOTE:
ALL SURVEY DATA SHOWN FROM STA 81+16.572 ON WAS TAKEN FROM A RIGHT OF WAY MAP PREPARED BY OTHERS FOR STATE ROAD NO. 54, PASCO COUNTY, SECTION 14091-2501 WHICH WAS BASED ON THE CONTROL SURVEY REFERRED TO IN NOTE 5, SHEET 17. DIMENSIONS WERE CONVERTED FROM ENGLISH TO METRIC (SEE NOTE 6, SHEET 17).

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

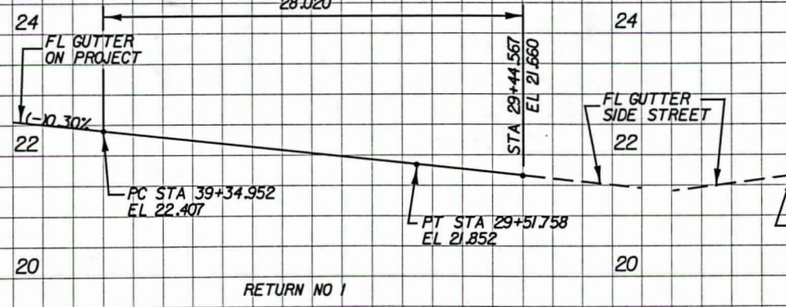
FLORIDA DEPARTMENT OF TRANSPORTATION

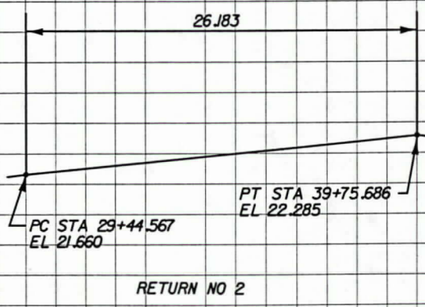
PLAN / PROFILE 94

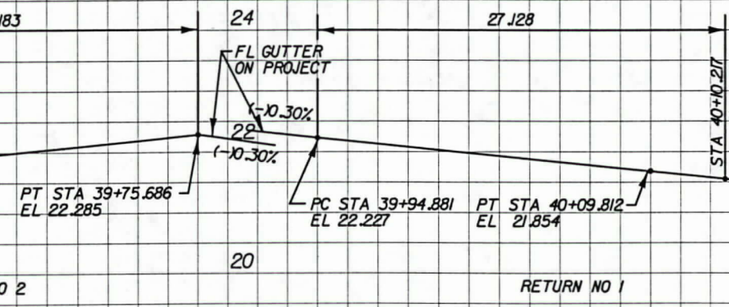
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\plprrd25.prf
PLOT DATE: Wed Aug 25 11:04:52 1999 DESIGN FILE: p:\fdt2027\PLPRRD25.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	73

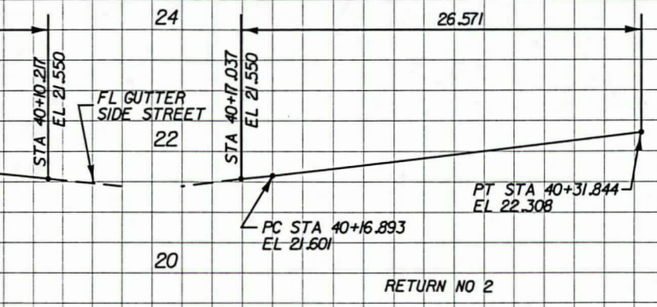
OSPREY LANE



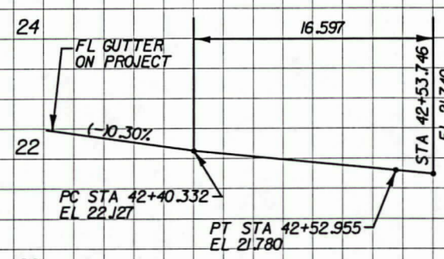


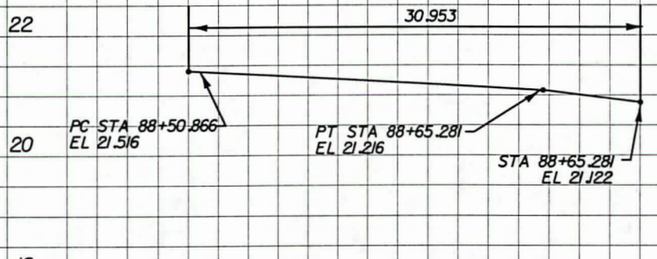


KNIGHT ROAD



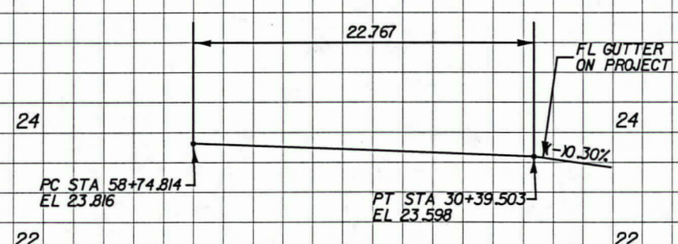
DAQUIRI LANE

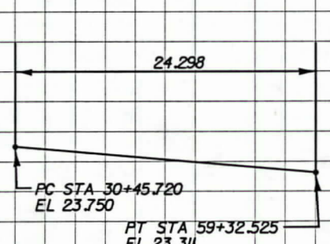




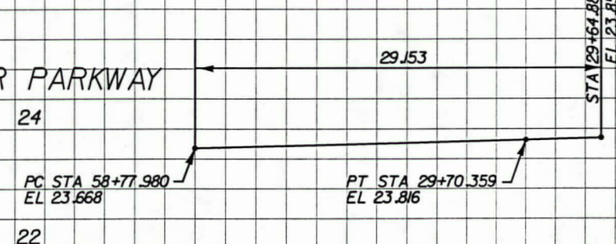
CARPENTER'S RUN

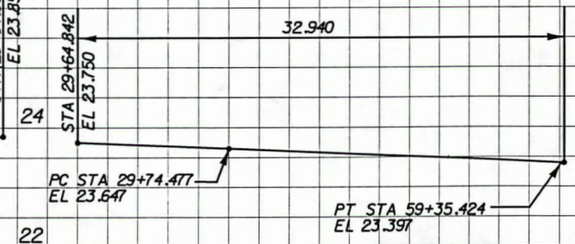






COLLIER PARKWAY





FILE OF
4319567.00
RECORD

Scale Ratio: 1:400 Horiz.
1:100 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CURB RETURN PROFILES 95

PLOT FILE: C:\CADNET\QUEUES\MSHP50000N\intor-d01.prf
PLOT DATE: Wed Aug 25 10:50:30 1999 DESIGN FILE: ps\Vfdt2027\intor-d01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	74

SR 54

1:500

R/W

42

+19.188
8.100 LT

50.0 R

+31.229
3.600 LT

TYPE 'E'
CURB & GUTTER

1.8 R

℄ CONST

S 62°26'22" E

+19.188
+0.900 RT

50.0 R

TYPE 'E'
CURB & GUTTER

43

+85.050
4.843 LT

50.0 R

+72.940
0.000

3.0 R

S 63°02'02" E

℄ CONST

S 62°26'22" E

℄ Sur

23.0 CR

50.0 R

PI 42+81.503
14Δ=00°35'40" LT

+84.050
4.569 RT

TYPE 'E'
CURB & GUTTER

+40.332
16.500 RT

15.0 R

+81.503
15.300 RT

RETURN 1

Exist R/W

+54.572
26.390 RT

R/W

DAIQUIRI LANE

DAIQUIRI LANE

POINT	STATION	OFFSET	ELEVATION
1	42+40.332	16.500	22.127
2	42+45.240	17.332	22.010
3	42+49.608	19.718	21.900
4	42+52.955	23.401	21.780
5	42+53.746	24.789	21.740
6	42+61.631	40.250	21.370
7	42+68.087	37.017	21.340
8	42+68.874	36.543	21.350
9	42+66.583	31.736	21.490
10	42+66.593	26.778	21.620
11	42+68.880	22.198	21.760
12	42+72.226	18.514	21.890
13	42+76.593	16.127	22.030
14	42+81.501	15.300	22.161

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 9e

FILE OF
4319567·00
RECORD

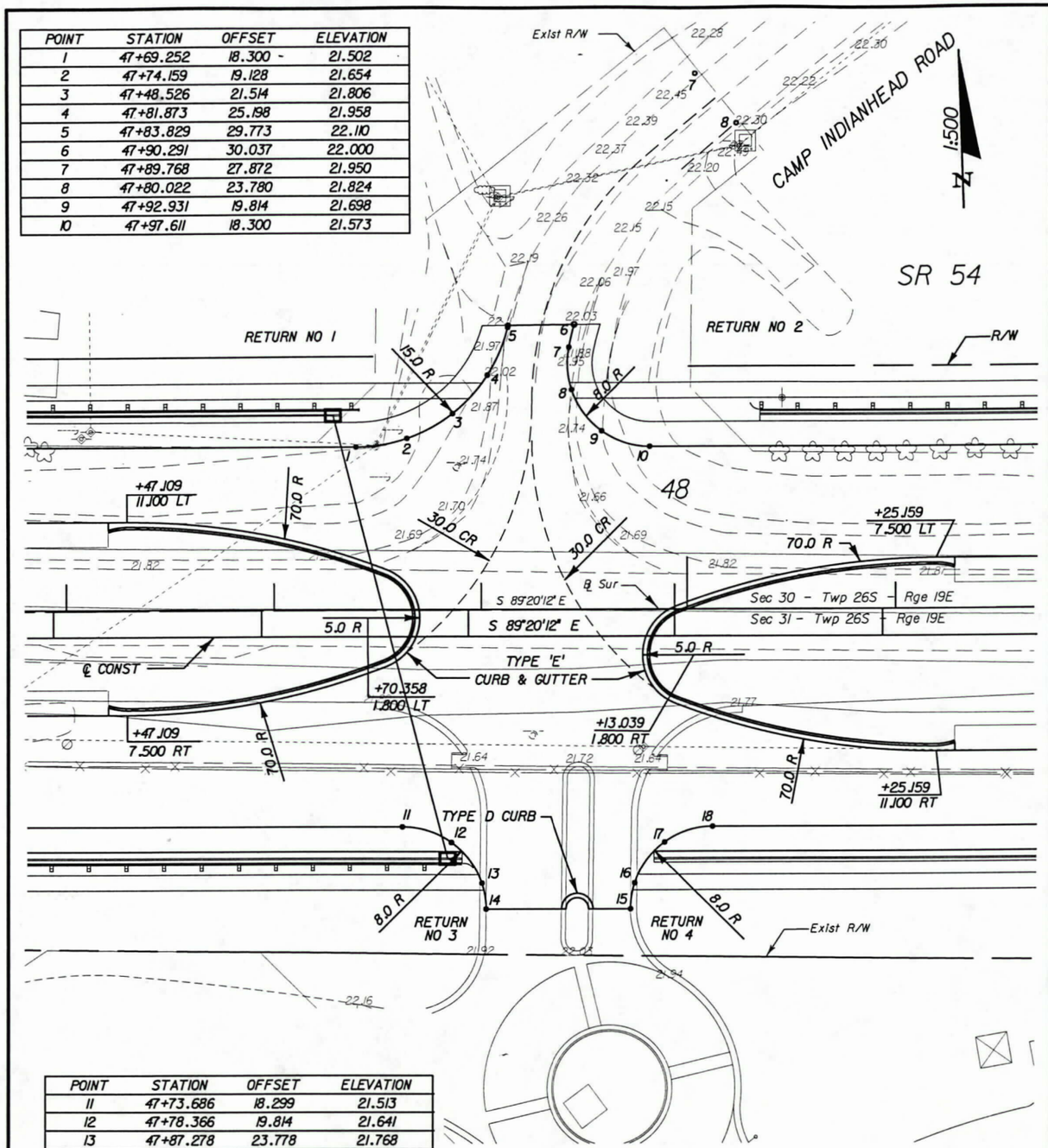
FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWING

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\intdrdl2.prf
PLOT DATE: Wed Aug 25 10:53:41 1999 DESIGN FILE: p:\fdot2027\INTDRDL2.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	75

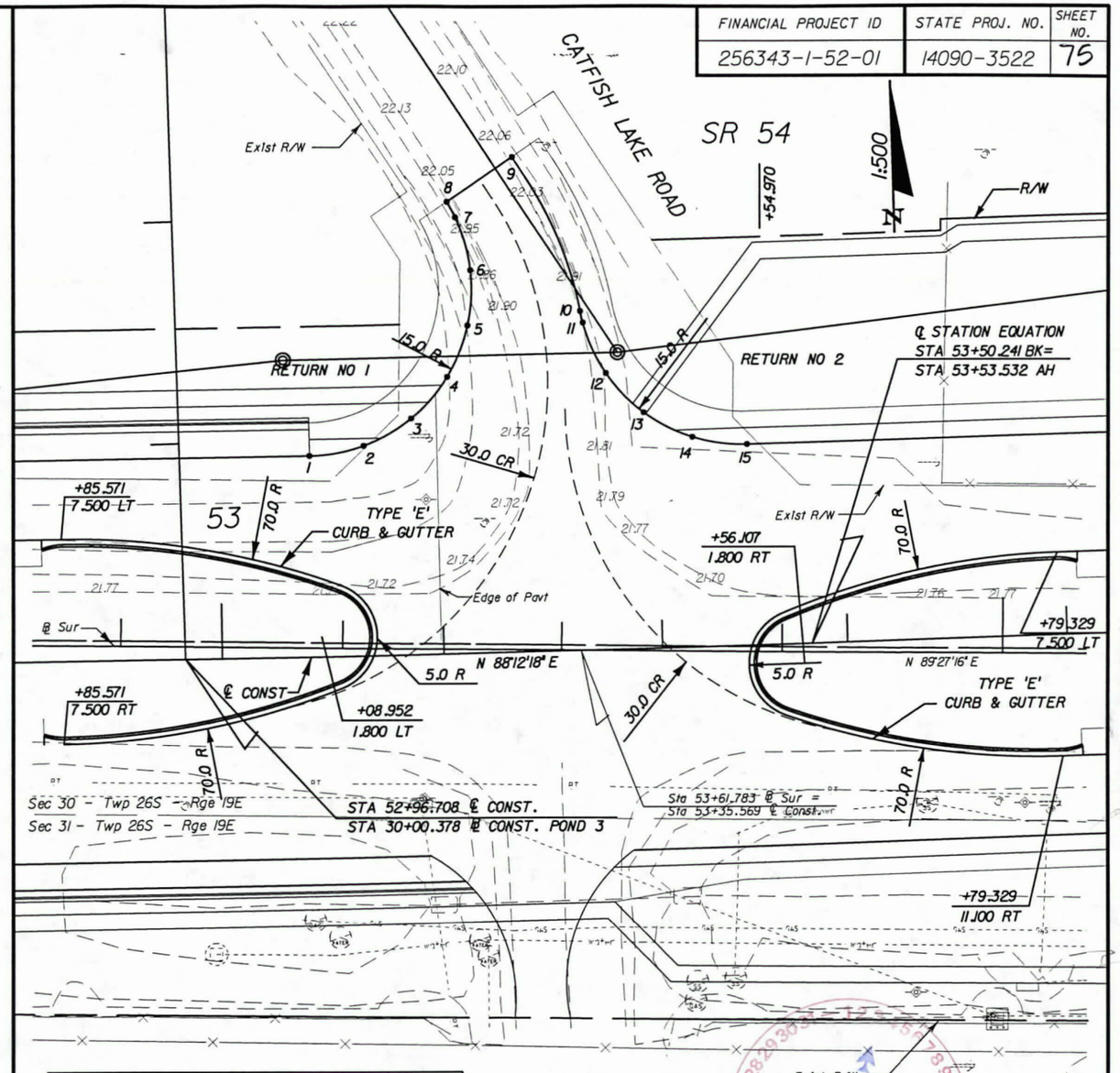
POINT	STATION	OFFSET	ELEVATION
1	47+69.252	18.300	21.502
2	47+74.159	19.128	21.654
3	47+48.526	21.514	21.806
4	47+81.873	25.198	21.958
5	47+83.829	29.773	22.110
6	47+90.291	30.037	22.000
7	47+89.768	27.872	21.950
8	47+80.022	23.780	21.824
9	47+92.931	19.814	21.698
10	47+97.611	18.300	21.573



POINT	STATION	OFFSET	ELEVATION
11	47+73.686	18.299	21.513
12	47+78.366	19.814	21.641
13	47+87.278	23.778	21.768
14	47+81.686	26.299	21.834
15	47+95.707	26.301	21.858
16	47+96.117	23.779	21.800
17	47+99.026	19.813	21.687
18	48+03.709	18.300	21.574

NOTE: THIS TURNOUT IS AFFECTED BY SUPERELEVATION.

CAMP INDIANHEAD ROAD



POINT	STATION	OFFSET	ELEVATION
1	53+08.136	18.300	22.236
2	53+13.186	19.124	22.199
3	53+17.548	21.502	22.163
4	53+20.742	25.176	22.126
5	53+22.689	29.545	22.090
6	53+23.174	34.707	22.053
7	53+21.928	39.374	22.017
8	53+20.995	40.907	22.005
9	53+27.196	44.993	22.049
10	53+33.018	30.772	22.139
11	53+33.045	29.736	22.146
12	53+35.262	25.168	22.175
13	53+38.519	21.496	22.205
14	53+43.200	19.266	22.234
15	53+47.974	18.299	22.264

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRO
Southwest Florida Water Management District

CATFISH LAKE ROAD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

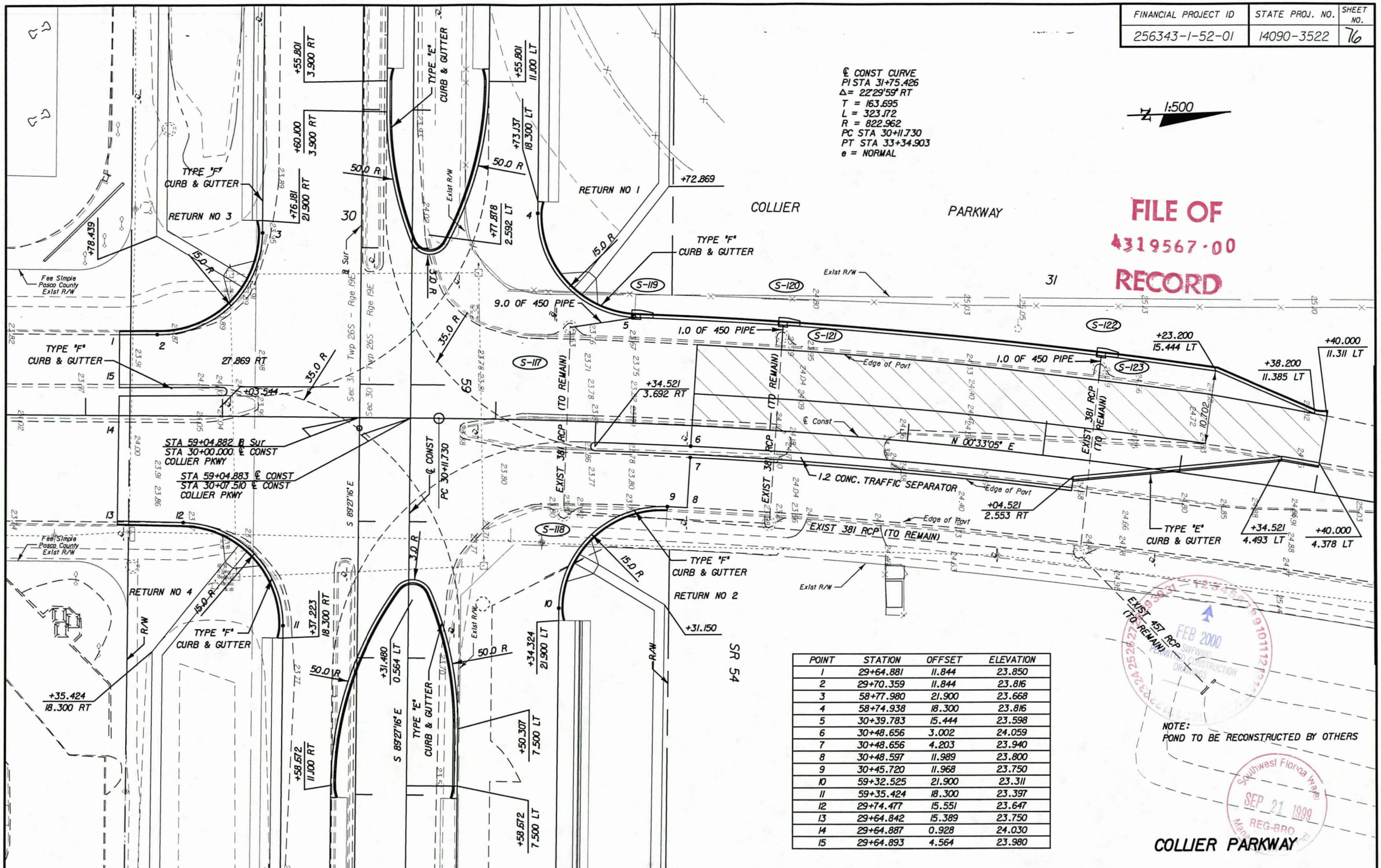
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 97

PLOT DATE: Wed Aug 25 10:53:48 1999 [DESIGN FILE: ps\fdt2027\untdrd06.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\untdrd06.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	76



POINT	STATION	OFFSET	ELEVATION
1	29+64.881	11.844	23.850
2	29+70.359	11.844	23.816
3	58+77.980	21.900	23.668
4	58+74.938	18.300	23.816
5	30+39.783	15.444	23.598
6	30+48.656	3.002	24.059
7	30+48.656	4.203	23.940
8	30+48.597	11.989	23.800
9	30+45.720	11.968	23.750
10	59+32.525	21.900	23.311
11	59+35.424	18.300	23.397
12	29+74.477	15.551	23.647
13	29+64.842	15.389	23.750
14	29+64.887	0.928	24.030
15	29+64.893	4.564	23.980

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

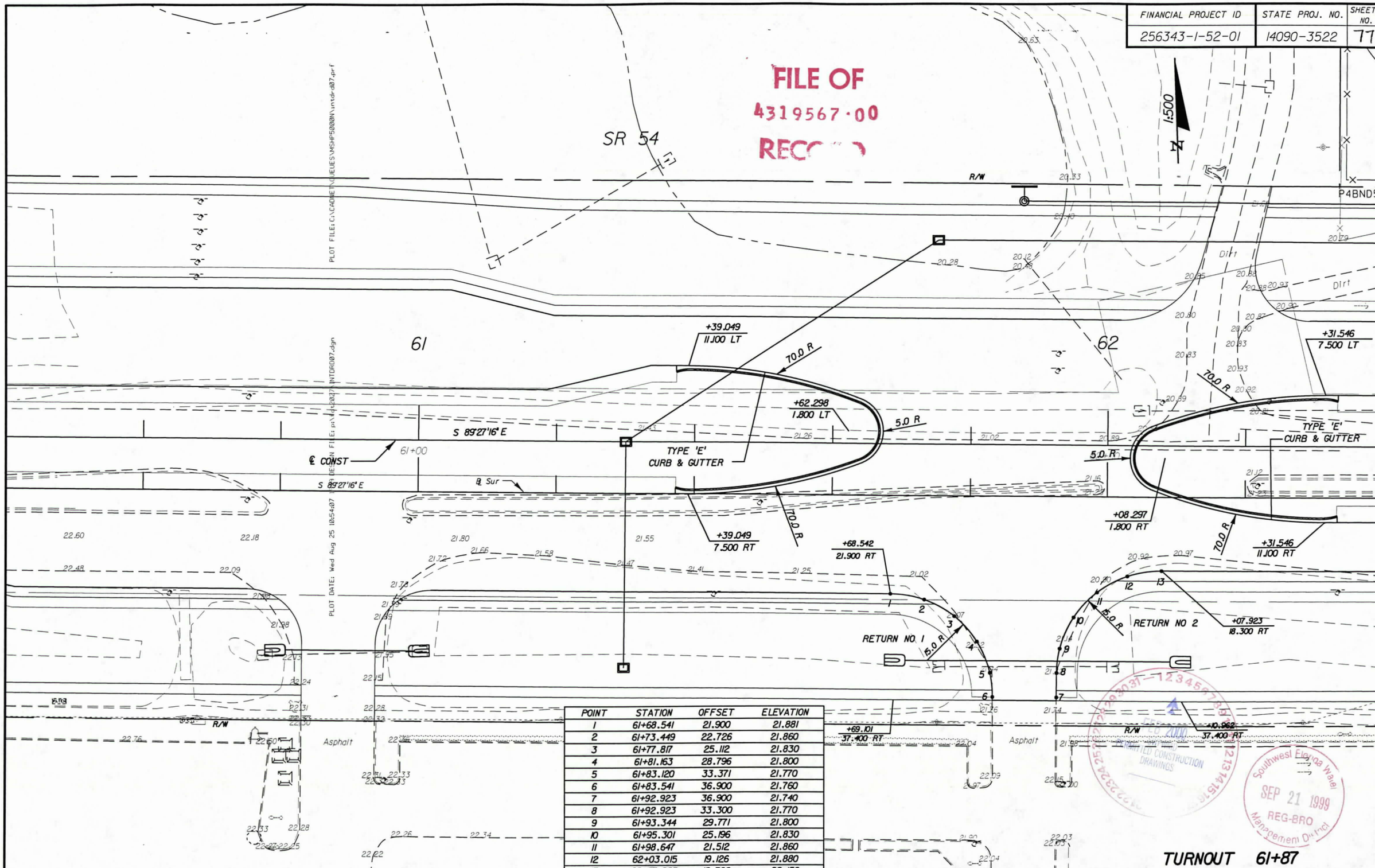
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 98

PLOT DATE: Wed Aug 25 13:28:29 1999 DESIGN FILE: p:\fdt2027\INTDRD01.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\intdrd01.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	77



POINT	STATION	OFFSET	ELEVATION
1	61+68.541	21.900	21.881
2	61+73.449	22.726	21.860
3	61+77.817	25.112	21.830
4	61+81.163	28.796	21.800
5	61+83.120	33.371	21.770
6	61+83.541	36.900	21.760
7	61+92.923	36.900	21.740
8	61+92.923	33.300	21.770
9	61+93.344	29.771	21.800
10	61+95.301	25.196	21.830
11	61+98.647	21.512	21.860
12	62+03.015	19.126	21.880
13	62+07.923	18.300	22.150

TURNOUT 61+87

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS
Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 99

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	78

POINT	STATION	OFFSET	ELEVATION
1	67+52.589	18.300	21.236
2	67+57.415	19.130	21.200
3	67+61.754	21.525	21.160
4	67+65.069	25.218	21.120
5	67+66.992	29.804	21.080
6	67+67.363	32.201	21.040
7	67+70.128	67.486	20.820
8	67+77.739	66.882	20.770
9	67+75.520	34.308	21.340
10	67+75.890	29.801	21.400
11	67+77.816	25.218	21.468
12	67+81.131	21.524	21.520
13	67+85.470	19.130	21.580
14	67+90.404	18.300	21.462

1:500

SR 54

R/W

+49.878

+93.733

RETURN NO 1

RETURN NO 2

5.0 R

20.45

20.82

20.98

20.98

29.94

21.06

20.84

20.93

JUR. 7

℄ CONST

STA 67+32.000 ℄ CONST S.R. 54
STA 30+00.000 ℄ CONST POND 5

S 88°41'14" E

℄ Sur

TWENTY MILE LEVEL ROAD

FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS
68

Southwest Florida Water
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8566 FAX:(813)884-5990

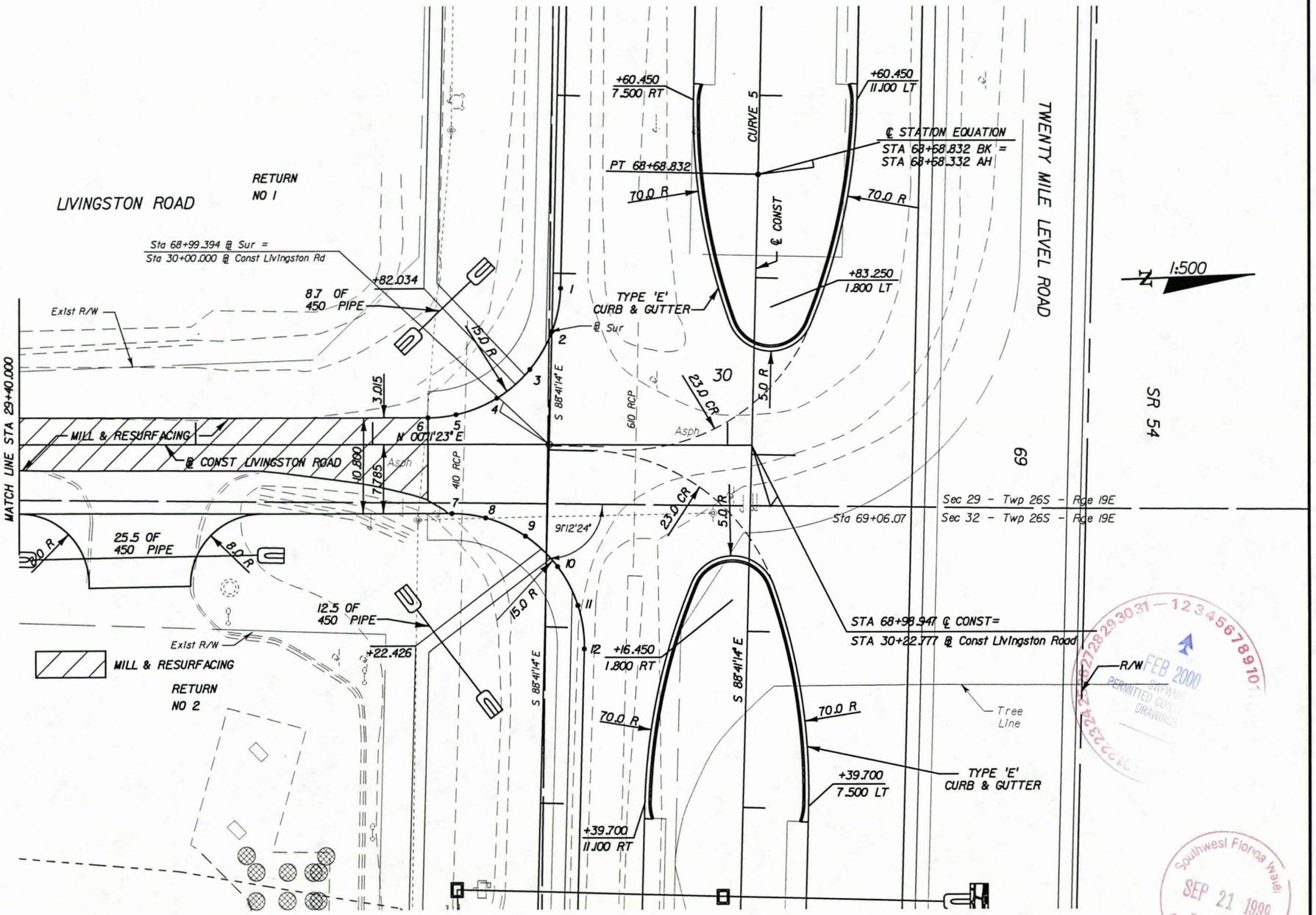
FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 100

A-972

PLOT DATE: Wed Aug 25 10:54:40 1999 DESIGN FILE: p:\fdt2027\INTORD10.dgn PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\intdrd10.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	79



POINT	STATION	OFFSET	ELEVATION
1	68+81.683	21.907	22.034
2	68+86.590	22.734	22.075
3	68+90.952	25.139	22.117
4	68+94.290	28.830	22.158
5	68+96.237	33.410	22.199
6	68+96.647	36.606	22.225
7	69+07.389	33.600	22.362
8	69+07.807	29.771	22.392
9	69+09.763	25.195	22.431
10	69+13.110	21.511	22.470
11	69+17.478	19.125	22.509
12	69+22.386	18.299	22.548

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4319567-00
RECORD

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PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

LIVINGSTON ROAD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

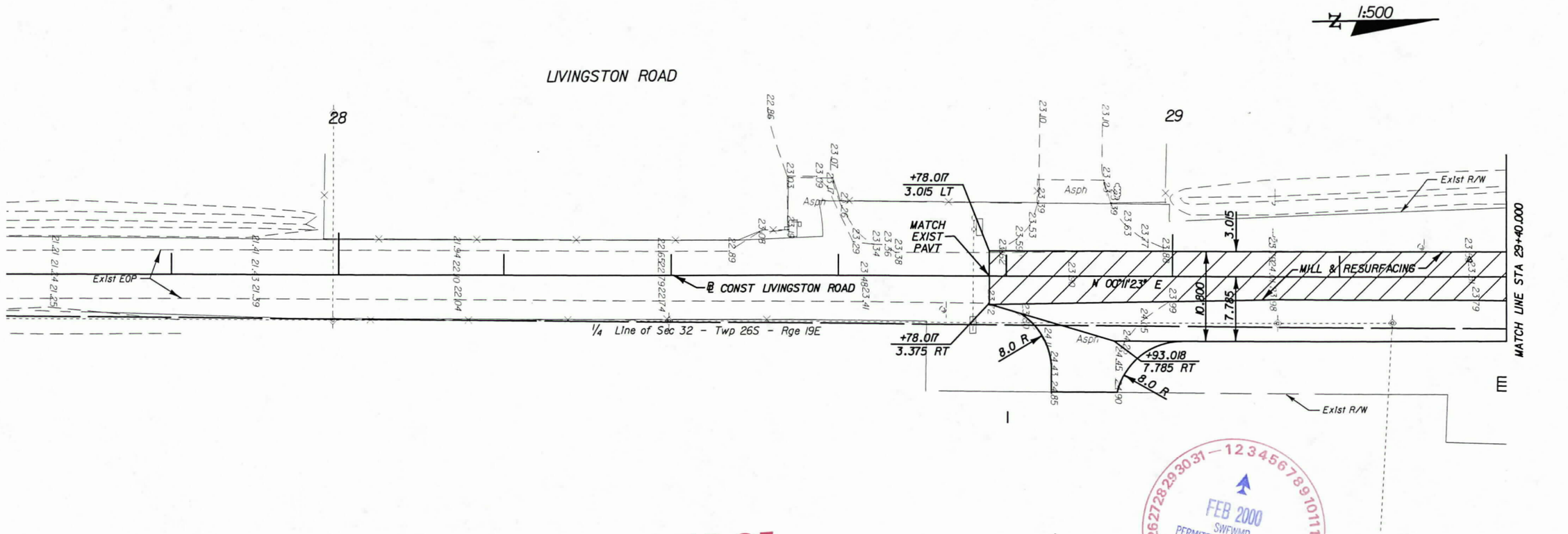
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 101

A-973

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	80



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

LIVINGSTON ROAD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 102

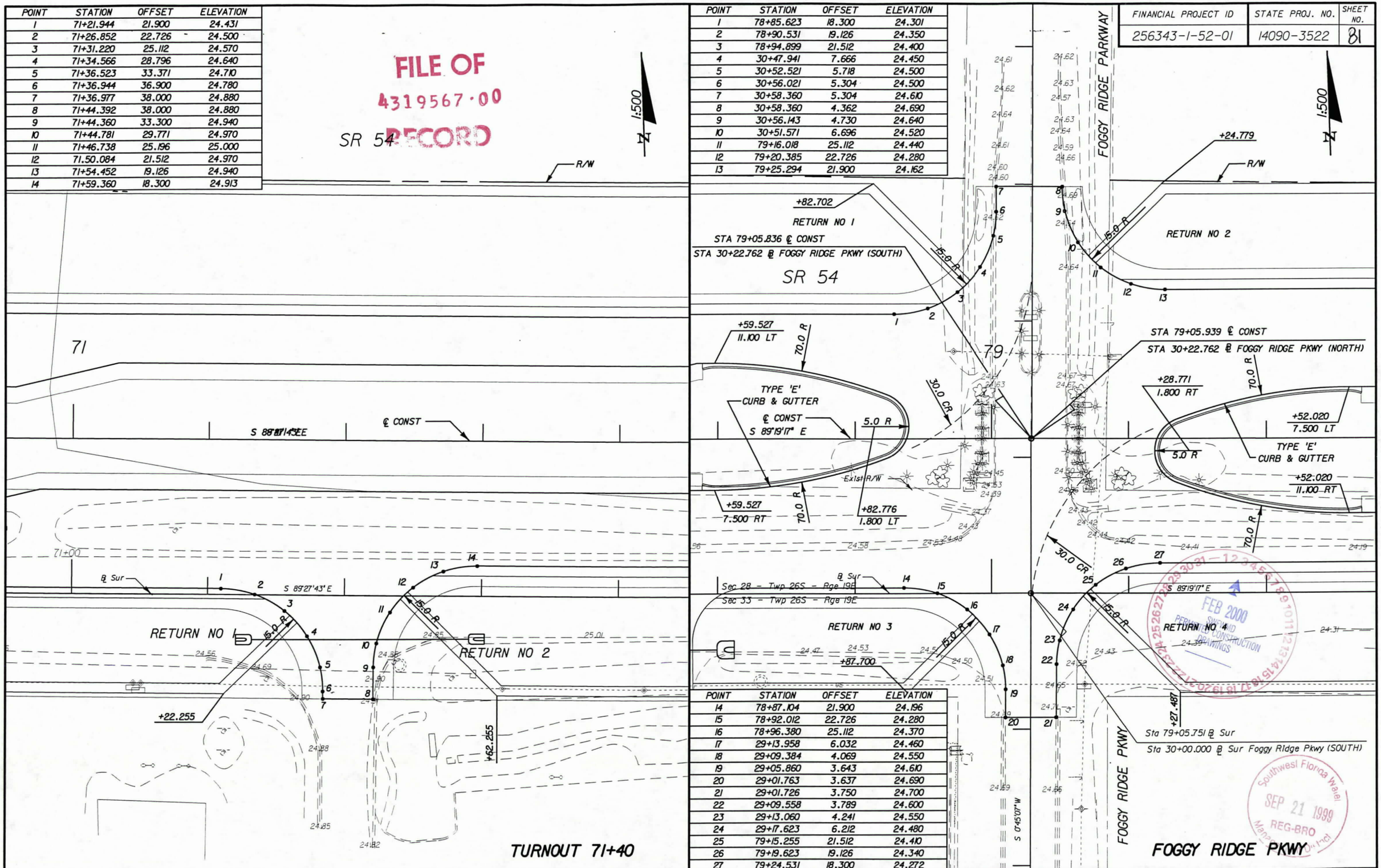
PLOT DATE: Wed Aug 25 10:54:21 1999 DESIGN FILE: p:\fdot2027\INTDR004.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	81

POINT	STATION	OFFSET	ELEVATION
1	71+21.944	21.900	24.431
2	71+26.852	22.726	24.500
3	71+31.220	25.112	24.570
4	71+34.566	28.796	24.640
5	71+36.523	33.371	24.710
6	71+36.944	36.900	24.780
7	71+36.977	38.000	24.880
8	71+44.392	38.000	24.880
9	71+44.360	33.300	24.940
10	71+44.781	29.771	24.970
11	71+46.738	25.196	25.000
12	71.50.084	21.512	24.970
13	71+54.452	19.126	24.940
14	71+59.360	18.300	24.913

FILE OF
4319567·00
RECORD

POINT	STATION	OFFSET	ELEVATION
1	78+85.623	18.300	24.301
2	78+90.531	19.126	24.350
3	78+94.899	21.512	24.400
4	30+47.941	7.666	24.450
5	30+52.521	5.718	24.500
6	30+56.021	5.304	24.500
7	30+58.360	5.304	24.610
8	30+58.360	4.362	24.690
9	30+56.143	4.730	24.640
10	30+51.571	6.696	24.520
11	79+16.018	25.112	24.440
12	79+20.385	22.726	24.280
13	79+25.294	21.900	24.162



POINT	STATION	OFFSET	ELEVATION
14	78+87.104	21.900	24.196
15	78+92.012	22.726	24.280
16	78+96.380	25.112	24.370
17	29+13.958	6.032	24.460
18	29+09.384	4.069	24.550
19	29+05.860	3.643	24.610
20	29+01.763	3.637	24.690
21	29+01.726	3.750	24.700
22	29+09.558	3.789	24.600
23	29+13.060	4.241	24.550
24	29+17.623	6.212	24.480
25	79+15.255	21.512	24.410
26	79+19.623	19.126	24.340
27	79+24.531	18.300	24.272

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Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

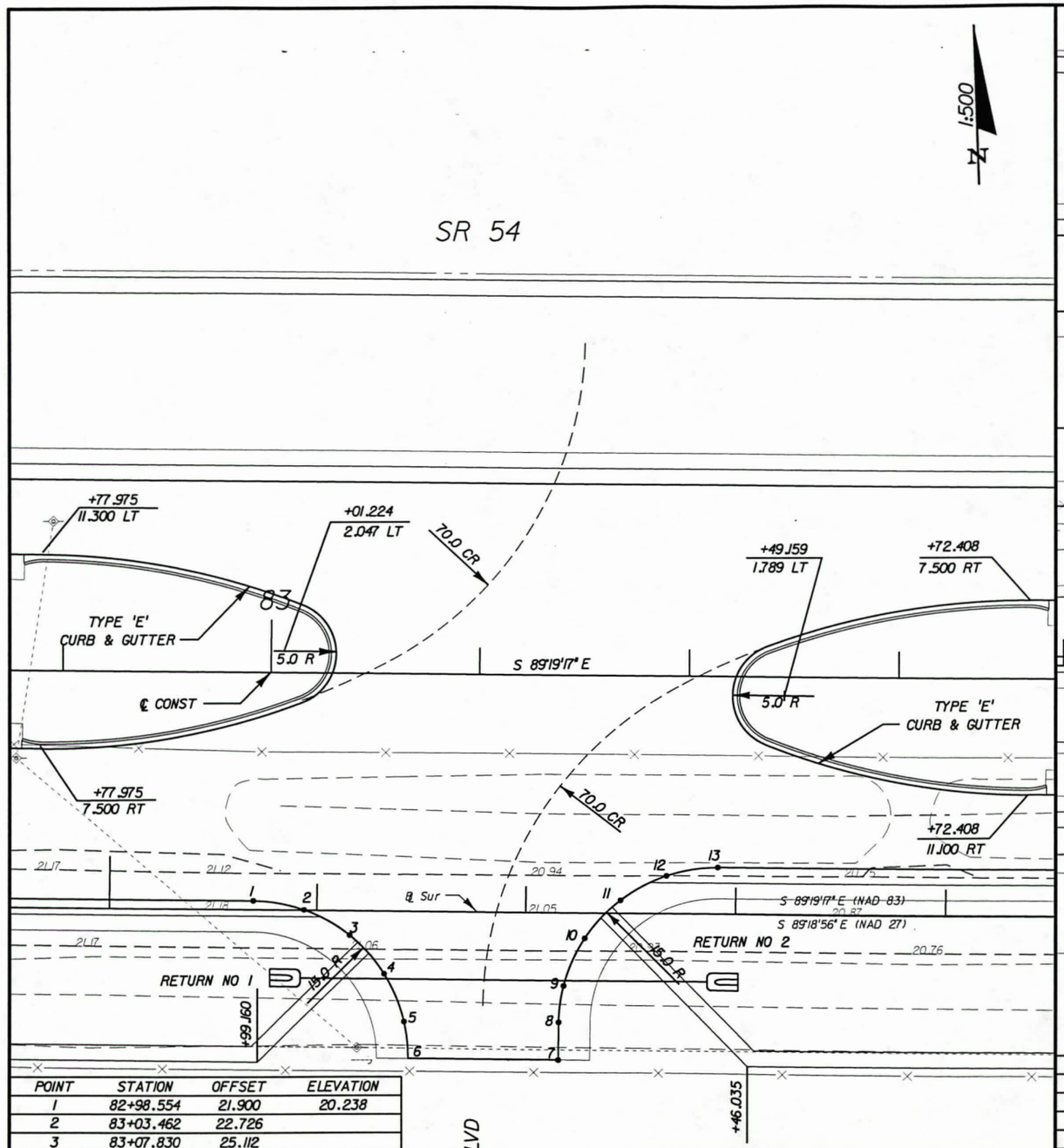
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 103

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\intdrd05.prf
PLOT DATE: Wed Aug 25 10:54:51 1999 DESIGN FILE: p:\fdt2027\INTDRD05.dgn

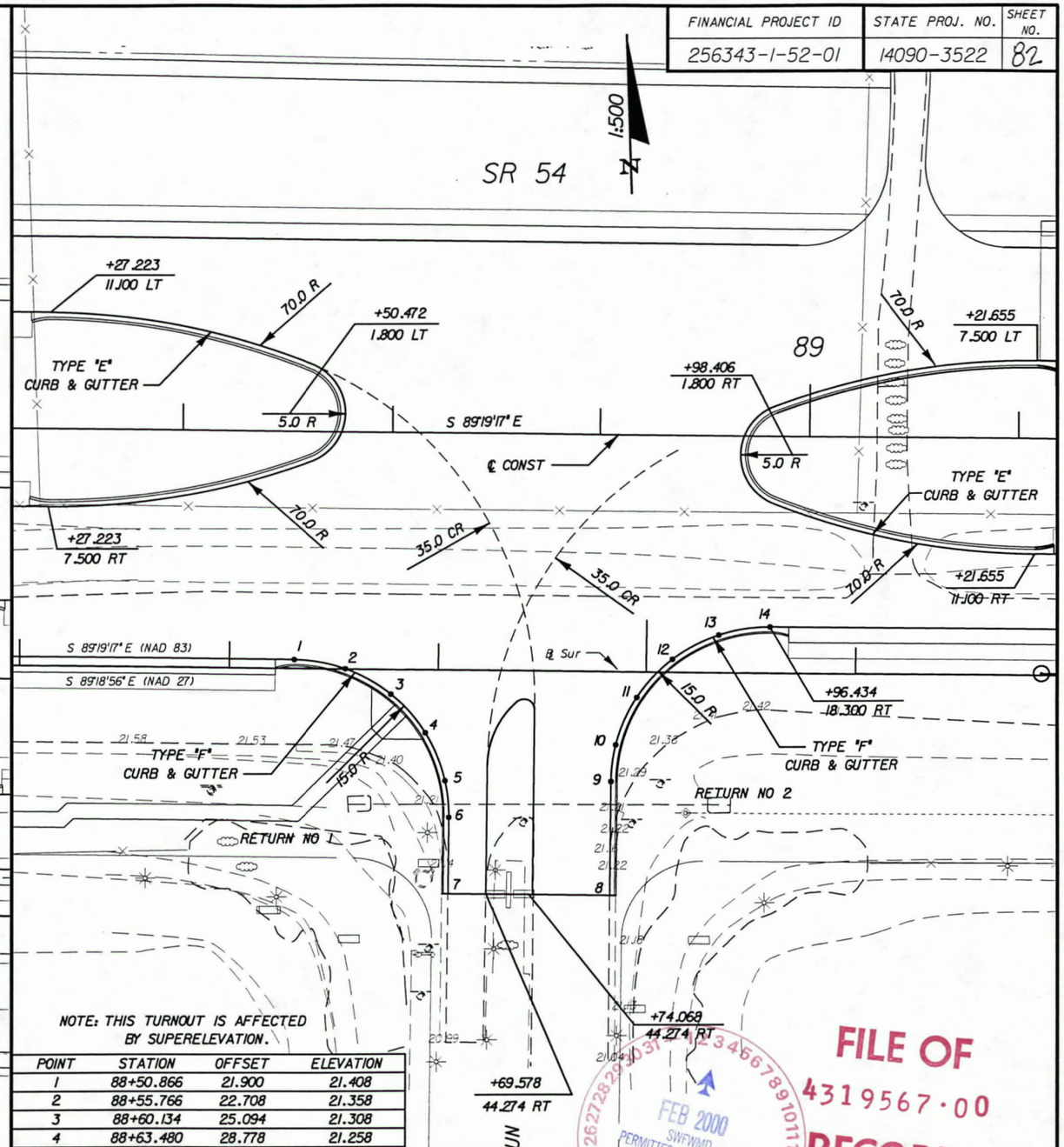
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	82



POINT	STATION	OFFSET	ELEVATION
1	82+98.554	21.900	20.238
2	83+03.462	22.726	
3	83+07.830	25.112	
4	83+41.290	28.796	
5	83+43.247	33.371	
6	83+43.668	36.900	
7	83+27.951	36.900	
8	83+27.951	33.300	
9	83+28.372	29.771	
10	83+30.329	25.196	
11	83+33.675	21.512	
12	83+38.043	19.126	
13	83+42.951	18.300	20.234

NOTE: CURB RETURNS TO BE GRADED UPON PHASE IV SUBMITTAL.

OAK GROVE BLVD



NOTE: THIS TURNOUT IS AFFECTED BY SUPERELEVATION.

POINT	STATION	OFFSET	ELEVATION
1	88+50.866	21.900	21.408
2	88+55.766	22.708	21.358
3	88+60.134	25.094	21.308
4	88+63.480	28.778	21.258
5	88+65.432	33.353	21.208
6	88+65.858	36.900	21.174
7	88+65.858	44.274	21.100
8	88+81.452	44.274	21.200
9	88+81.452	33.300	21.245
10	88+82.029	29.081	21.258
11	88+83.807	25.177	21.277
12	88+87.153	21.493	21.296
13	88+91.521	19.107	21.315
14	88+96.434	18.300	21.334

CARPENTER'S RUN

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RECORD

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SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRO
Management Dist

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 104

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\xrtdr-d08.prf
PLOT DATE: Wed Aug 25 10:54:58 1999 DESIGN FILE: ps\fdot2027\INTORD08.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	83

POINT	STATION	OFFSET	ELEVATION
14	11+47.504	18.300	20.517
15	11+42.590	19.136	20.549
16	11+38.303	21.553	20.580
17	30+02.084	10.232	20.612
18	29+99.096	8.648	20.644
19	29+99.713	8.531	20.650
20	29+88.046	8.506	20.707
21	29+88.046	4.906	20.439
22	29+93.369	5.742	20.550
23	29+97.984	7.991	20.661
24	11+14.202	25.147	20.771
25	11+09.894	22.733	20.882
26	11+04.975	21.900	20.993

POINT	STATION	OFFSET	ELEVATION
1	10+93.379	18.303	18.657
2	10+98.366	19.124	18.518
3	11+02.831	21.481	18.379
4	11+06.293	25.127	18.240
5	30+61.186	7.916	18.102
6	30+65.762	5.697	17.963
7	30+71.030	4.898	17.824
8	30+71.030	4.857	18.019
9	30+59.125	4.854	18.177
10	30+55.491	5.382	18.230
11	11+27.091	25.075	18.296
12	11+31.468	22.720	18.362
13	11+36.406	21.900	18.428

℄ STATION EQUATION
STA 92+67.648 BK=
STA 10+90.000 AH

+64.487
7.500 RT

+64.487
11.100 LT

TYPE 'E'
CURB & GUTTER

1:500

RETURN
NO 3

RETURN
NO 1

℄ CONST
TO POND 8

+04.979
10.100 RT

+03.648
5.100 LT

30.0 R
1.0 R
15.0 R
36.0 R
6.0 R
883.613 R
3.0 R
36.0 CR
862.653 R

+20.244
8.100 RT

+24.151
8.100 LT

STA 72+92.303 ℄ SUR SR 54
STA 30+00.000 ℄ SUR CYPRESS CREEK ROAD

STA 72+41.529 ℄ SUR
STA 89+69.388 ℄ CONST TO POND 8

RETURN
NO 4

RETURN
NO 2

+39.705
5.100 RT

+38.271
10.100 LT

℄ SUR

TYPE 'E'
CURB & GUTTER

℄ CONST

+55.728
11.100 RT

+55.728
7.500 LT

STA 11+23.959 ℄ CONST SR 54
STA 30+27.692 ℄ SUR CYPRESS CREEK ROAD

STA 11+49.895 ℄ SUR
STA 30+00.000 ℄ CONST TO POND 8

℄ SUR
CYPRESS CREEK RD

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4319567.00
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SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

CYPRESS CREEK ROAD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

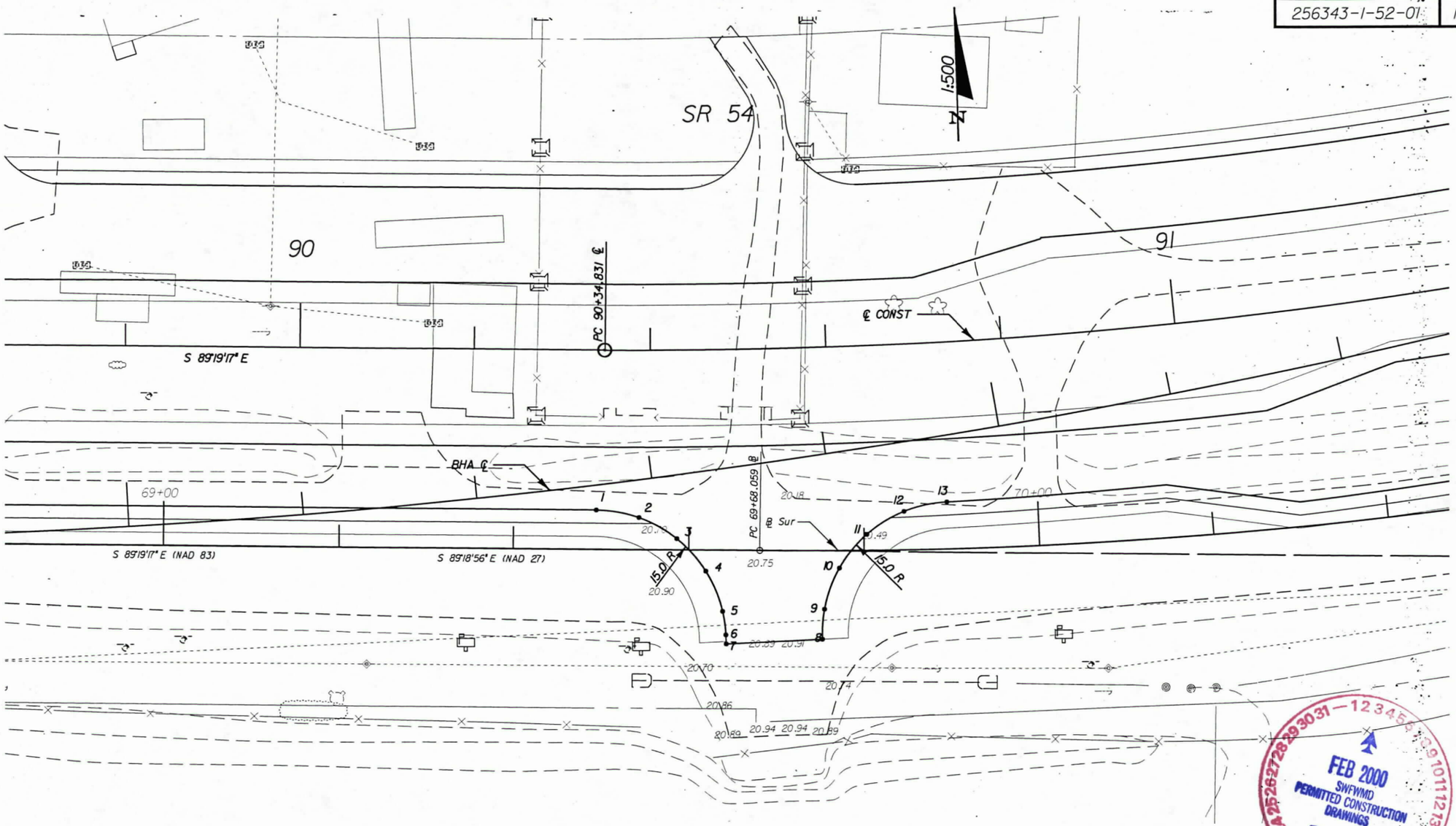
FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 105

A-977

PLOT DATE: Wed Aug 25 10:55:06 1999 DESIGN FILE: p:\fdot2027\INTORD09.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\intdrd09.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	84



NOTE: THIS TURNOUT IS AFFECTED BY SUPERELEVATION.

POINT	STATION	OFFSET	ELEVATION
1	90+34.037	18.300	21.632
2	90+39.633	19.137	21.450
3	90+43.070	21.566	21.270
4	90+46.229	25.303	21.090
5	90+48.008	29.918	21.910
6	90+48.329	32.606	20.830
7	90+48.362	33.639	20.800
8	90+58.734	33.362	20.800
9	90+59.055	29.945	20.920
10	90+60.825	25.327	21.100
11	90+63.977	21.583	21.280
12	90+68.170	19.146	21.460
13	90+73.247	18.300	21.635

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Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

TURNOUT 90+50

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

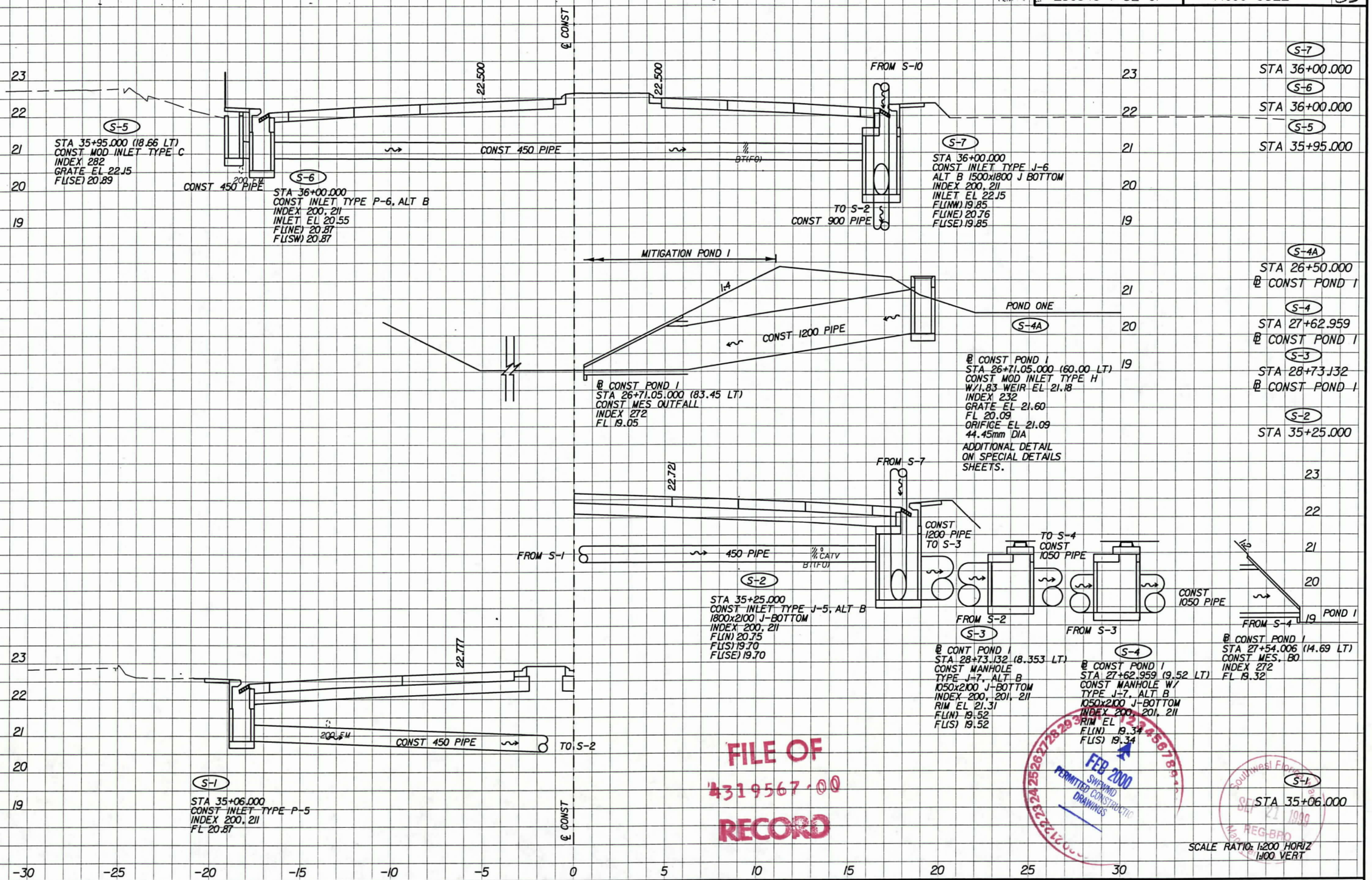
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

INTERSECTION DETAIL 106

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\vntdrdl3.prf
PLOT DATE: Wed Aug 25 10:55:26 1999 DESIGN FILE: pw\fdt2027\vntdrdl3.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	85



S-7
STA 36+00.000
S-6
STA 36+00.000
S-5
STA 35+95.000
S-4A
STA 26+50.000
℄ CONST POND 1
S-4
STA 27+62.959
℄ CONST POND 1
S-3
STA 28+73.132
℄ CONST POND 1
S-2
STA 35+25.000
S-1
STA 35+06.000

SCALE RATIO: 1:200 HORIZ
1:100 VERT

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4319567-00
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SWFWMD
PERMITTED CONSTRUCTIC
DRAWINGS

SEP 21 1999
REGISTERED

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

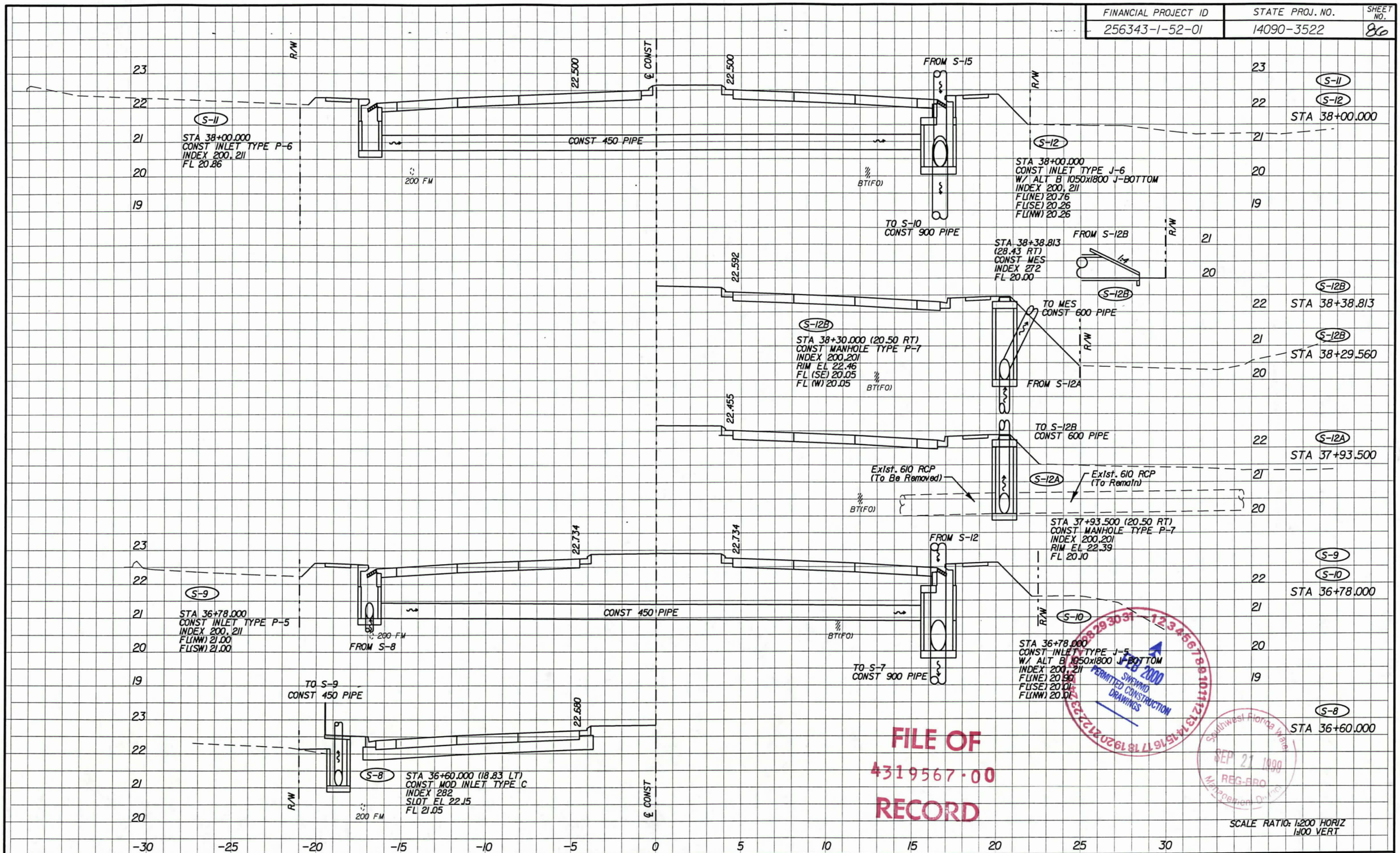
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 107

PLOT FILE: G:\CADNET\QUEUES\MSHPS0080\drstr01.prf
PLOT DATE: Wed Aug 25 10:56:58 1999 DESIGN FILE: p:\fdt2027\drstr01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	86



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

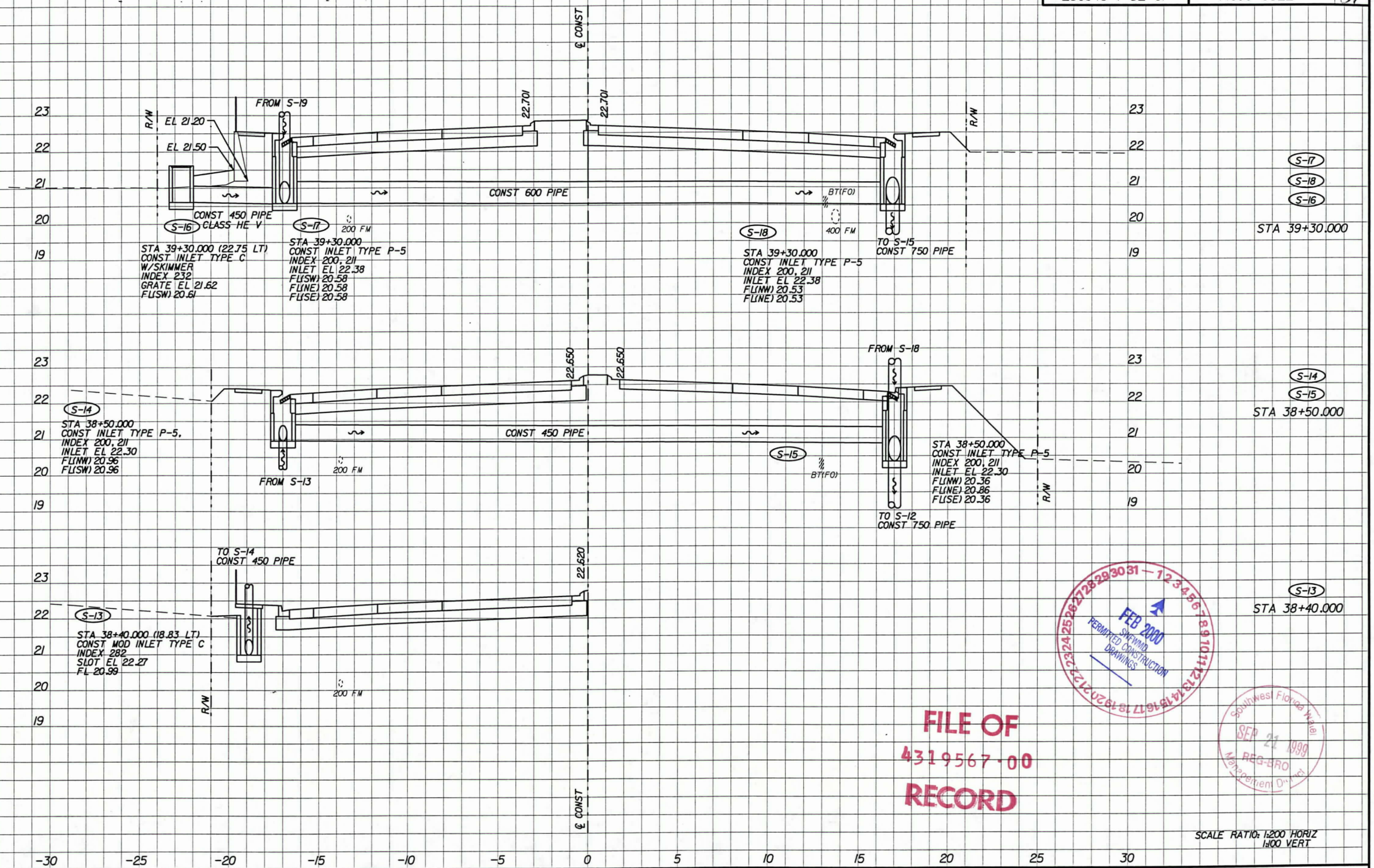
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

108

PLOT DATE: Wed Aug 25 10:57:03 1999 DESIGN FILE: p:\fdt2027\drstrd02.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd02.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	87



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4319567-00
RECORD

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SEP 21 1999
REG-BRO

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

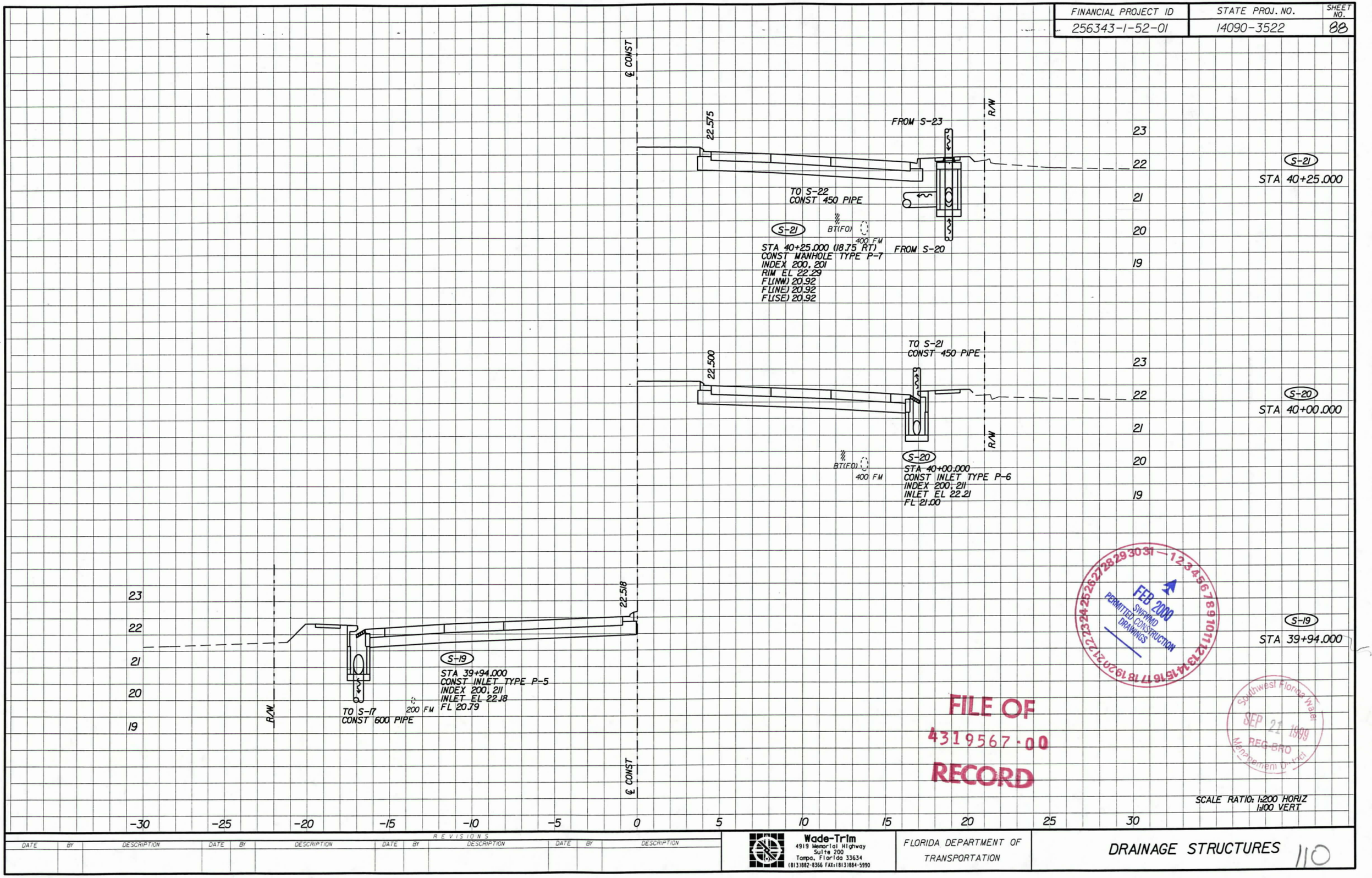
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 109

PLOT DATE: Wed Aug 25 10:57:07 1999 DESIGN FILE: p:\fdt2027\drstrd03.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd03.prf

A-981

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	88



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4319567-00
RECORD

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

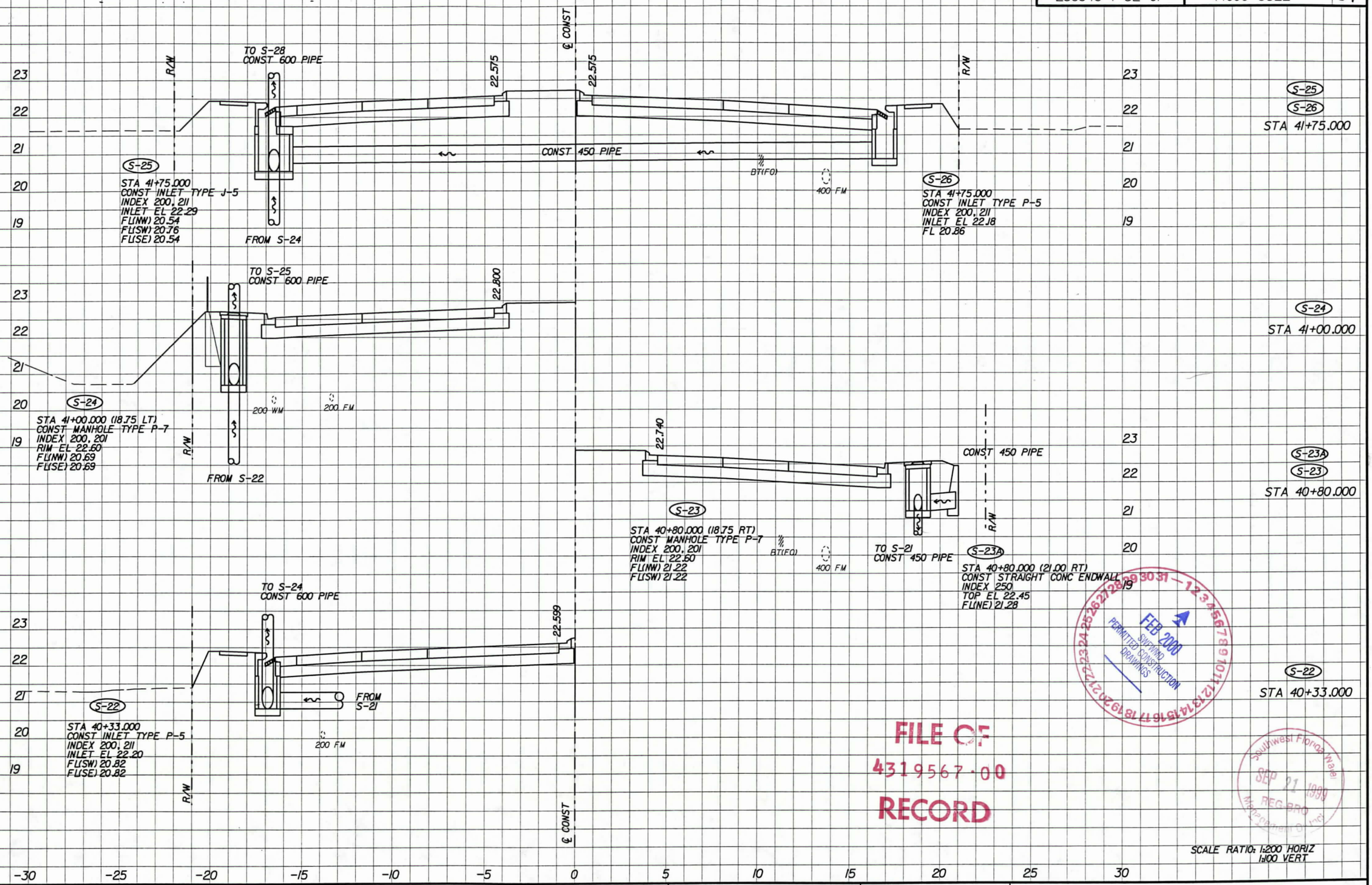
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 110

PLOT DATE: Wed Aug 25 10:57:11 1999 DESIGN FILE: p:\fdot2027\dr+sv-d04.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drsvrd04.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	89



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DRAWINGS

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4319567.00
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Southwest Florida Water
SEP 21 1999
REG. BRO.
Management District

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

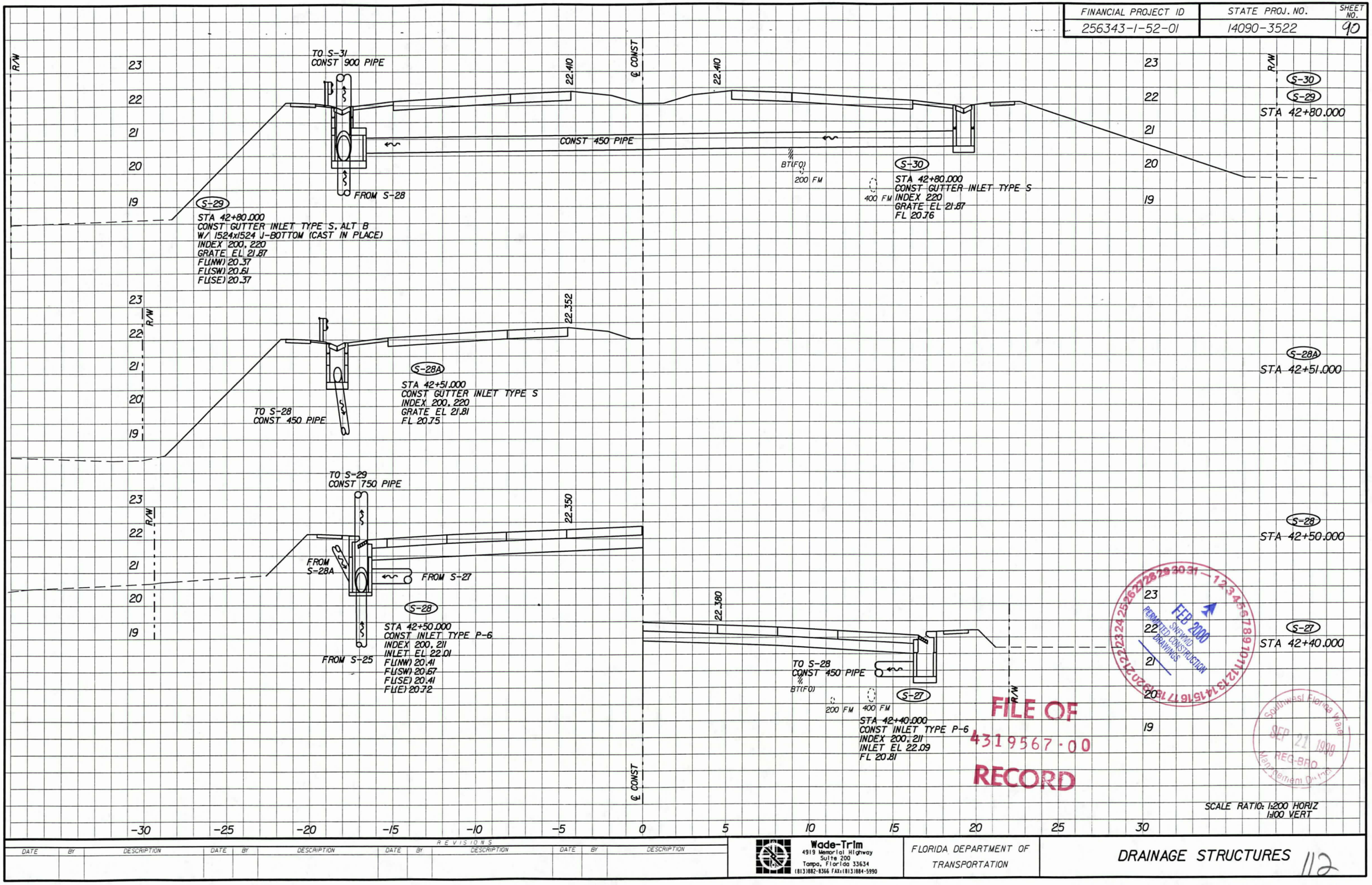
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

111

PLOT DATE: Wed Aug 25 10:57:15 1999 DESIGN FILE: p:\fdt2027\drstrd05.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\drstrd05.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	90



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PERMITTED CONSTRUCTION DRAWINGS
SWFWMD

Southwest Florida Water Management District
SEP 21 1999
REC-BRO

FILE OF
4319567.00
RECORD

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 112

PLOT DATE: Wed Aug 25 10:57:21 1999 DESIGN FILE: p:\fdt2027\dr-str-d06.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\dr-str-d06.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	91

S-38A
STA 44+80.000 (28.50 LT)
CONST MANHOLE TYPE J-8
W/ 1500 DIA J-BOTTOM
INDEX 200, 201
RIM EL 20.66
FL(NW) 18.59
FL(NE) 18.59

FROM S-38B

TO S-34
CONST 900 PIPE

S-40
STA 44+80.000 (1.00 LT)
CONST INLET TYPE C
INDEX 232
GRATE EL 21.35
FL (NW) 20.09

TO S-33
CONST 450 PIPE

S-36
@ CONST POND 2B
STA 33+07.398 (25.39 LT)
CONST MOD INLET TYPE D
W/ 1.22 WEIR EL 20.79
INDEX 232
GRATE EL 21.40
FL 19.70
51.8 ORIFICE EL 20.67
ADDITIONAL DETAIL ON
SPECIAL DETAIL SHEETS

TO S-37
CONST 900 PIPE
POND 2A

FROM S-36
POND 2B

S-37
@ CONST POND 2B
STA 33+69.648 (8.03 RT)
CONST MES
INDEX 272
FL 19.41

FROM S-38A

POND 2A
3x3 RUBBLE
RIPRAP

FROM S-34B

S-35
@ CONST POND 2A
STA 31+57.862 (46.83 LT)
CONST MES, BO
INDEX 272
FL 18.36

TO S-35
CONST 1200 PIPE

TO S-34B
CONST 1200 PIPE

FROM S-34

S-34B
STA 31+36.413 (48.33 LT)
CONST MH TYPE J-8
W/ ALT B 2400x1050 J-BOTT
INDEX 200, 201
RIM EL 21.41
FL(S) 18.39
FL(N) 18.39

S-34A
STA 30+41.392 (0.123 LT)
CONST MH TYPE J-8
W/ ALT B 2400x1050 J-BOTT
INDEX 201, 200
RIM EL 21.51
FL(S) 18.50
FL(N) 18.50

FROM S-40

CONST 450 PIPE

S-34
STA 44+00.000
CONST GUTTER INLET TYPE S
ALT B W/ 2100x1800 J-BOTTOM
INDEX 200, 220
FL(NW) 20.22
FL(SW) 19.83
FL(NE) 18.54
FL(SE) 18.54

TO S-34A
CONST 1200 PIPE

FROM S-31

S-33
STA 44+00.000 (0.00)
CONST DBI TYPE C
INDEX 232
GRATE EL 21.61
FL(NE) 19.90
FL(SW) 20.48
FL(SE) 19.90

S-32
STA 44+00.000
CONST GUTTER INLET TYPE S
INDEX 220
GRATE EL 22.03
FL(NE) 20.54

S-31
STA 43+20.000
CONST GUTTER INLET TYPE S
ALT B W/ 1050x1800 J-BOTTOM
INDEX 220
GRATE EL 22.05
FL(NW) 20.32
FL(SE) 20.32

TO S-34
CONST 900 PIPE

FROM S-29

S-29A
STA 42+90.000 (29.70 LT)
CONST STRAIGHT CONC ENDWALL
INDEX 250
FL 19.00

900 PIPE
FL 20.36

S-30A
STA 42+90.000 (32.00 RT)
CONST CD MES
INDEX 272
FL 19.75

CONST 750 PIPE

S-40
S-38A
STA 44+80.000
S-37
STA 33+69.648
@ CONST POND 2B
S-36
STA 33+07.398
@ CONST POND 2A
S-35
STA 31+57.862
S-34B
STA 31+36.413
S-34A
STA 30+41.392
S-34
S-33
S-32
STA 44+00.000
S-31
STA 43+20.000
S-30A
S-29A
STA 42+90.000

SCALE RATIO: 1:200 HORIZ
1:100 VERT

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Southwest Florida Water Management District
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FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 113

PLOT FILE: C:\CADNET\DUEUES\MSHP5000N\drstr087.prf
PLOT DATE: Wed Aug 25 11:41:03 1999 DESIGN FILE: p:\fdot2027\DRSTR087.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	92

R/W

FROM S-39B

22.532

0.466

℄ CONST

S-39A STA 45+34.000 (23.70 LT)
CONST MANHOLE TYPE P-8
INDEX 200, 201
RIM EL 22.10
F(NE) 19.47
F(SE) 19.47

CONST 600 PIPE

STA 45+34.000 (29.87LT)
CONST MES
INDEX 272
FL 19.44

℄ Sur

21.896

0.996

FROM S-38D

22.546

S-38C STA 45+27.000
CONST GUTTER INLET TYPE S
INDEX 220
GRATE EL 21.80
F(NW) 18.73
F(SE) 19.60

21.900

TO S-38B
CONST 750 PIPE

2.115

FROM S-38C

22.600

S-38B
STA 45+00.000 (28.50 LT)
CONST MANHOLE TYPE J-8
W/ 1500 DIA J-BOTTOM ALT A
INDEX 200, 201
RIM EL 20.69
F(NW) 18.65
F(SE) 18.65

21.930

TO S-38A
CONST 750 PIPE

2.157

22.600

22.580

BTI(E.O.)

CONST 1.22 X 2.13 BOX CULVERT

200 FM

400 FM

S-40A STA 44+89.793 (27.00 LT)
CONST 1.22 X 2.13 BOX CULVERT
W/ WINGWALL
INDEX 290
FL 19.58

TO S-38A
CONST 750 PIPE

℄ CONST

℄ Sur

21.923

S-40B STA 44+89.793 (34.76 RT)
CONST 1.22 X 2.13 BOX CULVERT
W/ WINGWALL
INDEX 290
FL 19.32

R/W

S-39A
STA 45+34.000

S-38C
STA 45+27.000

S-38B
STA 45+00.000

S-40A
S-40B
STA 44+89.793

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Southwest Florida Water
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Management District

SCALE RATIO: 1:200 HORIZ
1:100 VERT

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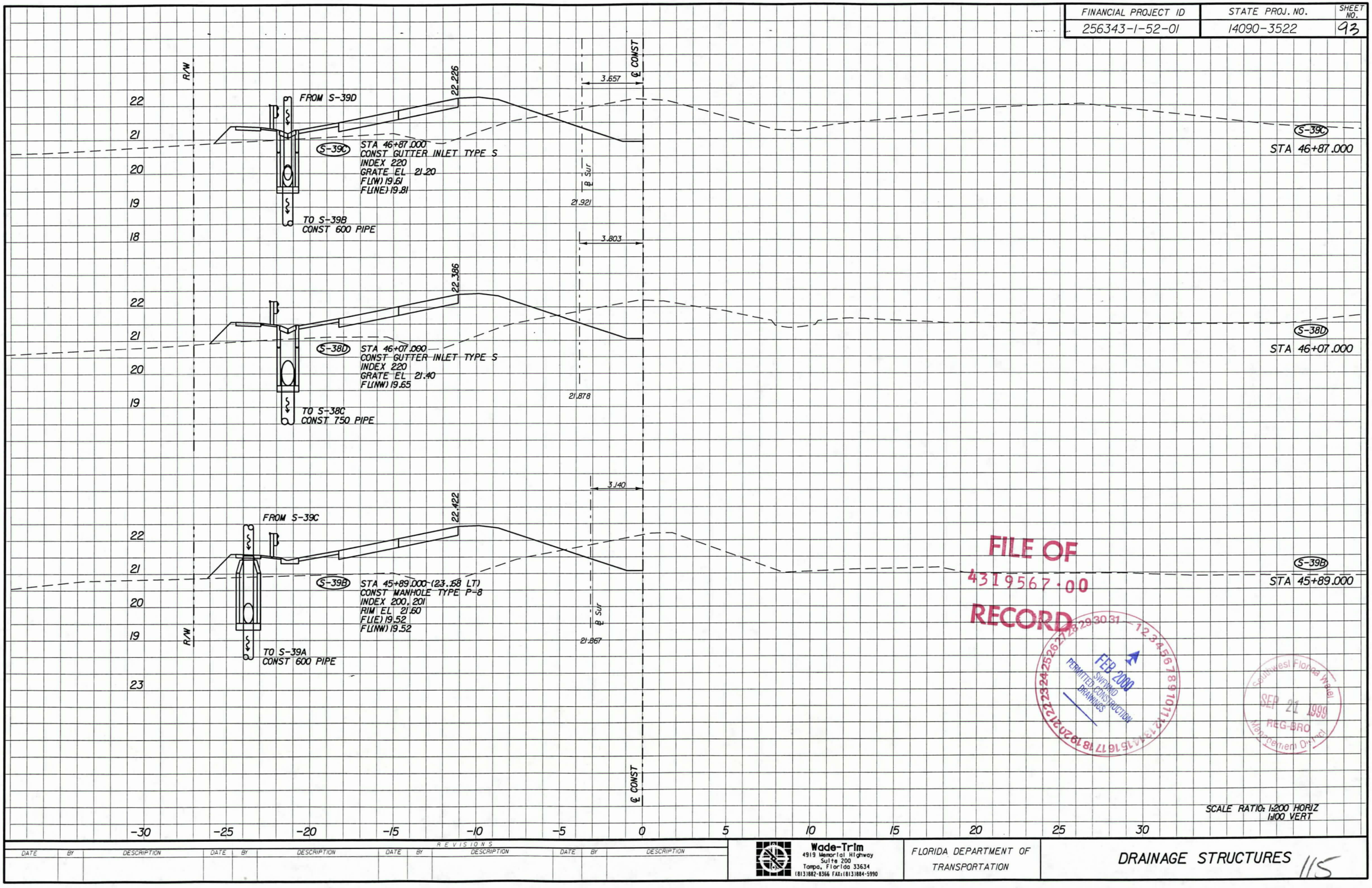
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 114

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\dr-str-d08.prf
PLOT DATE: Wed Aug 25 11:01:08 1999 DESIGN FILE: p:\fdot2027\dr-str-d08.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	93



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SCALE RATIO: 1:200 HORIZ
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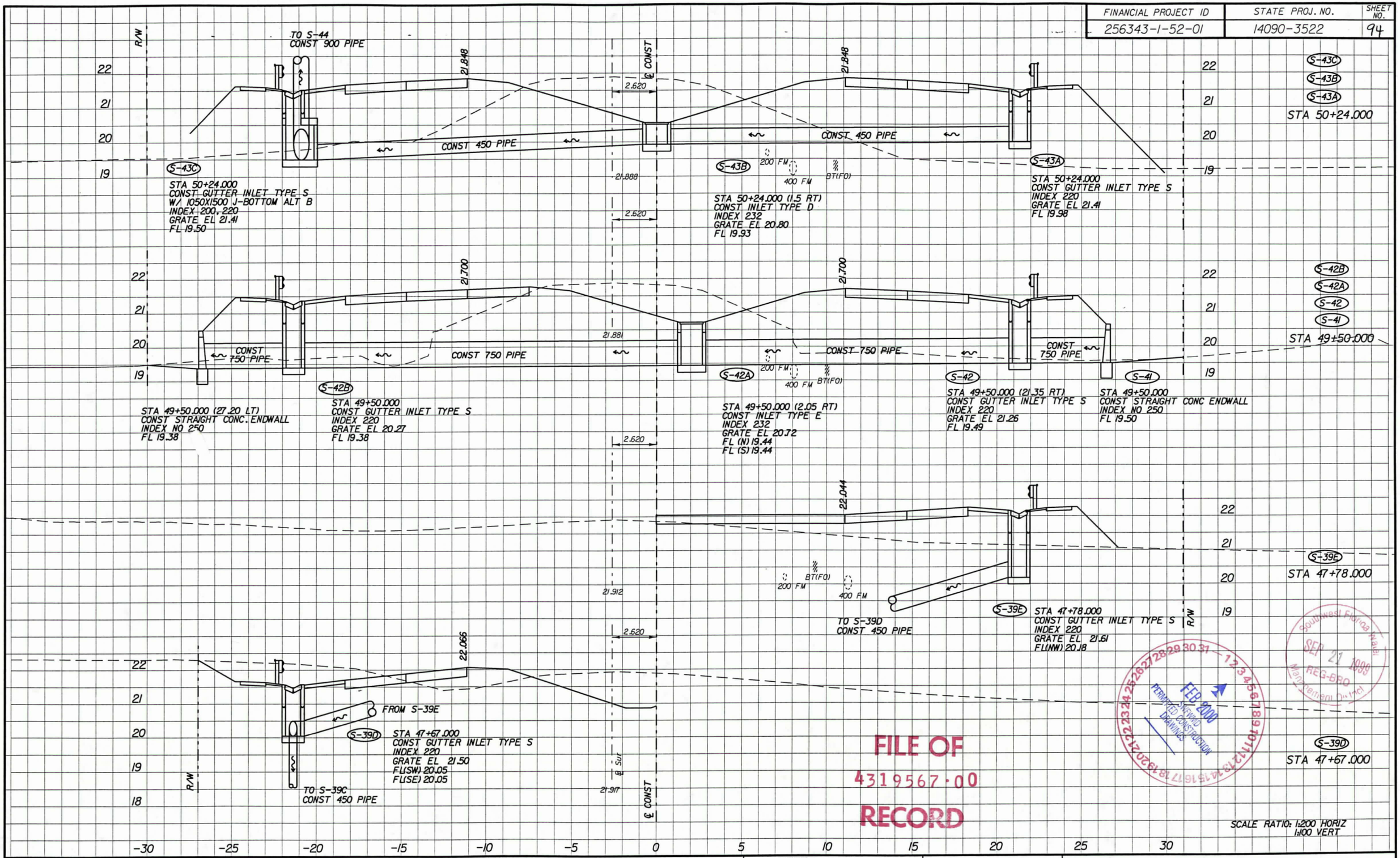
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 115

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstr09.pcf
PLOT DATE: Wed Aug 25 11:01:22 1999 DESIGN FILE: p:\fdt2027\drstr09.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	94



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SCALE RATIO: 1:200 HORIZ
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FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 116

PLOT DATE: Wed Aug 25 11:01:28 1999 DESIGN FILE: p:\fdot2027\DRSTR010.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5008N\drstr010.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	95

TO S-48
CONST 900 PIPE

STA 53+06.000 (27.00 LT)
CONST MANHOLE TYPE J-7
W/ 1500 DIA J-BOTTOM, ALT A
INDEX NO 200, 201
RIM EL 21.81
FL(SW) 19.24
FL(NE) 19.24

FROM S-46

TO S-47
CONST 900 PIPE

STA 52+46.000
CONST GUTTER INLET TYPE S
W/ 1050 X 1500 J-BOTTOM, ALT B
INDEX 200, 220
GRATE EL 21.85
FL(NW) 19.29
FL(NE) 19.29
FL(SW) 20.02

FROM S-45

CONST 450 PIPE

200 FM
400 FM
BT(FO)

STA 52+46.000
CONST GUTTER INLET TYPE S
INDEX NO 220
GRATE EL 21.85
FL 20.13

STA 53+06.000

STA 52+46.000

TO S-46
CONST 900 PIPE

STA 51+72.000
CONST GUTTER INLET TYPE S
W/ 1050 X 1500 J-BOTTOM, ALT B
INDEX 200, 220
GRATE EL 21.71
FL(NW) 19.36
FL(E) 19.36
FL(S) 20.17

FROM S-45C

CONST 450 PIPE

200 FM
400 FM
BT(FO)

STA 51+72.000
CONST GUTTER INLET TYPE S
INDEX NO 220
GRATE EL 21.71
FL 20.28

STA 51+72.000

TO S-45
CONST 900 PIPE

STA 51+66.000 (29.50' LT)
21 CONST MES (1:2)
INDEX NO. 272
FL 19.50

STA 51+66.000
CONST GUTTER INLET TYPE S
W/ 1050 X 1500 J-BOTTOM, ALT B
INDEX 200, 220
GRATE EL 21.64
FL(E&W) 19.39

FROM S-44

TO S-45C
CONST 900 PIPE

CONST 750 PIPE

200 FM
400 FM
BT(FO)

STA 51+66.000 (29.50 RT)
CONST MES (1:2)
INDEX NO. 272
FL 19.40

STA 51+66.000

STA 50+98.000
CONST GUTTER INLET TYPE S
W/ 1050 X 1500 J-BOTTOM, ALT B
INDEX 200, 220
GRATE EL 21.56
FL(W) 19.43
FL(S) 20.02

FROM S-43C

CONST 450 PIPE

200 FM
400 FM
BT(FO)

STA 50+98.000
CONST GUTTER INLET TYPE S
INDEX 220
GRATE EL 21.56
FL(W) 20.13

STA 51+20.000

22.412
22.292
22.144
21.996
21.933
21.932
21.921
21.872
0.856
2.571
2.620
2.620
℄ CONST
℄ Sur

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Southwest Florida Water

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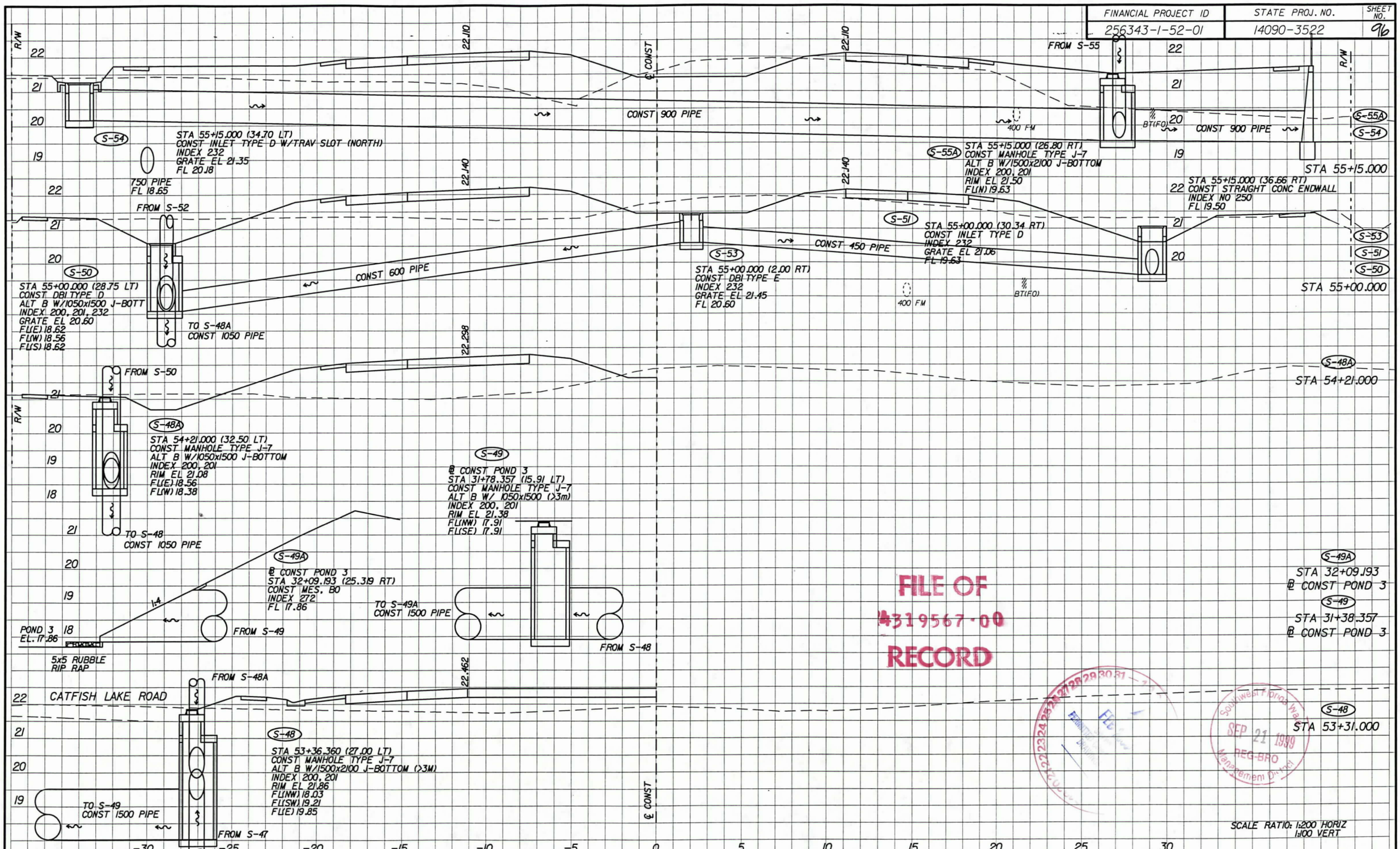
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

117

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd11.prf
PLOT DATE: Wed Aug 25 11:01:27 1999 DESIGN FILE: p:\fdot2027\DRSTR01.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	96



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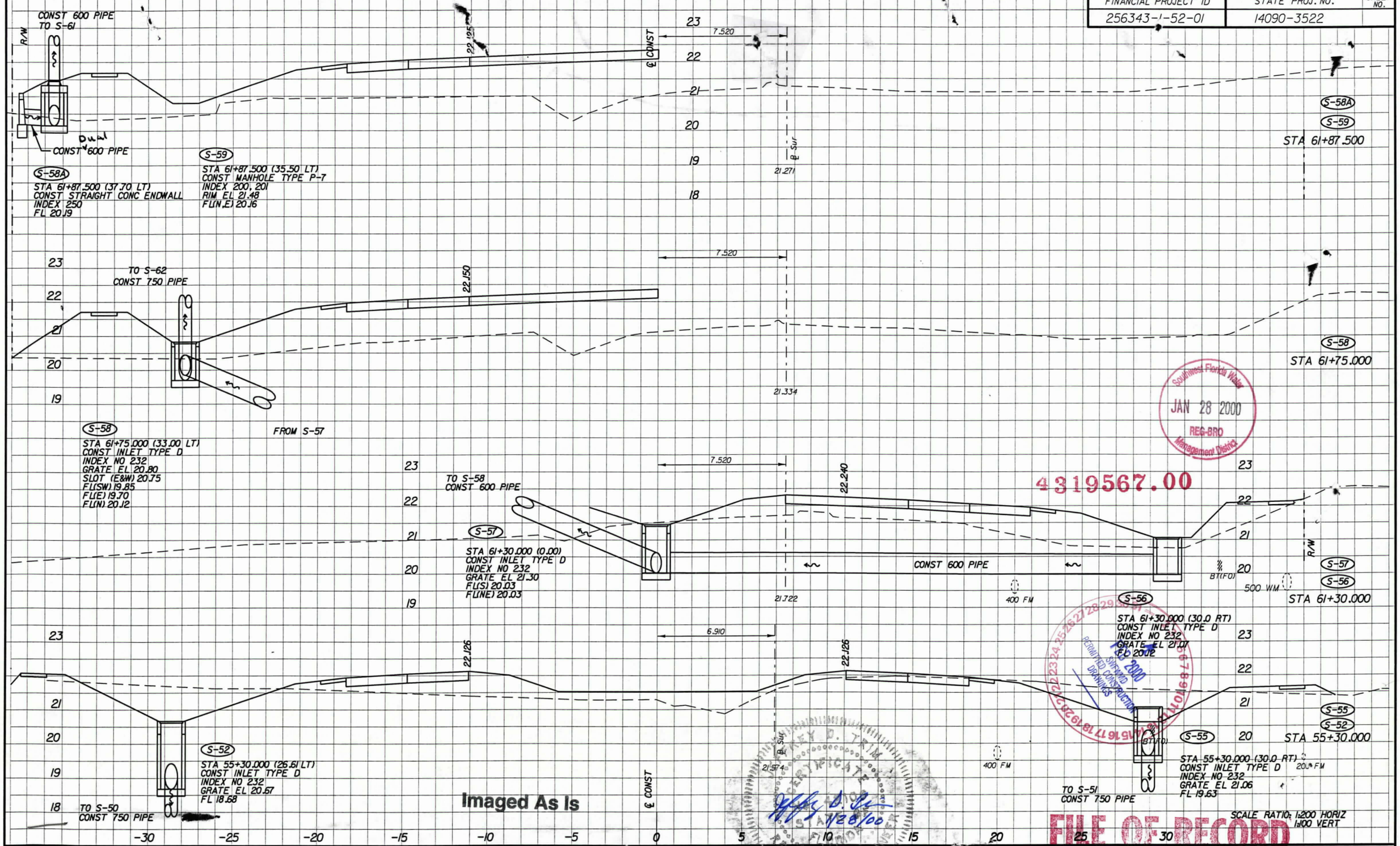
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 118

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd12.prf

PLOT DATE: Wed Aug 25 11:01:36 1999 DESIGN FILE: p:\fdt2027\DRSTRD12.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



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REG-BRO

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FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 119

PLOT FILE: ps\fdt2027\drstrdl3.prf
PLOT FILE: ps\fdt2027\drstrdl3.dgn
PLOT DATE: Wed Jan 26 17:02:52 2000 DESIGN FILE: ps\fdt2027\drstrdl3.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	97

CONST 600 x 96D RCP
TO S-61

R/W

CONST 600 x 96D RCP

S-58A
STA 61+87.500 (37.70 LT)
CONST STRAIGHT CONC ENDWALL
INDEX 250
FL 20.19

S-59
STA 61+87.500 (35.50 LT)
CONST MANHOLE TYPE P-7
INDEX 200, 201
RIM EL 21.48
FL(W,E) 20.16

22.725

℄ CONST

7.520

℄ Sur

21.271

S-58A
S-59
STA 61+87.500

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TO S-62
CONST 750 PIPE

22.150

7.520

21.334

S-58
STA 61+75.000

S-58
STA 61+75.000 (33.00 LT)
CONST INLET TYPE D
INDEX NO 232
GRATE EL 20.80
SLOT (E&W) 20.75
FL(SW) 19.85
FL(E) 19.70
FL(N) 20.12

FROM S-57

TO S-58
CONST 600 PIPE

S-57
STA 61+30.000 (0.00)
CONST INLET TYPE D
INDEX NO 232
GRATE EL 21.30
FL(S) 20.03
FL(NE) 20.03

7.520

22.240

CONST 600 PIPE

400 FM

21.722

S-56
STA 61+30.000 (30.0 RT)
CONST INLET TYPE D
INDEX NO 232
GRATE EL 21.07
FL 20.12

S-57
S-56
STA 61+30.000

6.910

℄ Sur

21.974

400 FM

S-52
STA 55+30.000 (26.61 LT)
CONST INLET TYPE D
INDEX NO 232
GRATE EL 20.67
FL 18.68

TO S-50
CONST 750 PIPE

℄ CONST

S-55
STA 55+30.000 (30.0 RT)
CONST INLET TYPE D
INDEX NO 232
GRATE EL 21.06
FL 19.63

TO S-51
CONST 750 PIPE

S-55
S-52
STA 55+30.000

SCALE RATIO: 1:200 HORIZ
1:100 VERT

-30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30

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FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrdl3.prf
DATE: Wed Aug 25 11:01:42 1999 DESIGN FILE: pwVrd4202\DRSTRDI3.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

S-64
STA 64+50.000

S-63A
STA 64+13.000

S-63
STA 63+75.000

S-60A
STA 31+79.265
℄ CONST POND 4

S-60
STA 30+65.355
℄ CONST POND 4

S-61
S-62
STA 63+00.000

S-64
STA 64+50.000 (21.39 LT)
CONST GUTTER INLET TYPE S
INDEX NO 200,220
GRATE EL 21.15
FL 20.00

TO S-63
CONST 600 PIPE

POND R/W

S-63A
STA 64+13.000 (48.00 LT)
CONST STRAIGHT CONC. ENDWALL
INDEX NO 250
FL 19.90

FROM S-61

FROM S-64

S-63
STA 63+75.000 (24.97 LT)
CONST MANHOLE TYPE P-7
INDEX 200,201
RIM EL 21.96
FL(E) 19.88
FL(W) 19.27

TO S-62
CONST 600 PIPE
Dual

MITIGATION POND 4

POND FOUR
EL 18.51

CONST 600 PIPE

℄ CONST POND 4
STA 31+99.575 (6.37 RT)
CONST MES.
INDEX 272
FL 18.51

TO S-63A
CONST 600 PIPE
Dual

FROM S-63

CONST 900 PIPE

CONST 900 PIPE

POND 4
EL 18.30

4x4 RUBBLE RIPRAP

S-60
℄ CONST POND 4
STA 30+65.355 (50.003 RT)
CONST MES.
INDEX 272
FL 19.08

S-61
STA 63+00.000 (35.50 LT)
CONST MANHOLE W/
1050X1500 J-BOTTOM, ALT B
INDEX NO 200,201
RIM EL 21.35
FL(NE) 19.93
FL(W) 19.93
FL(N&S) 19.12

FROM S-59

FROM S-58

S-62
STA 63+00.000 (30.00 LT)
CONST INLET TYPE D w/
1050X1500 J-BOTTOM
INDEX NO 232
GRATE EL 21.00
FL(W) 19.55
FL(N,E) 19.15

℄ CONST POND 4
STA 31+79.265 (6.510 RT)
CONST MOD INLET TYPE D
INDEX 232
GRATE EL 21.40
FL 18.80
ADDITIONAL DETAILS
ON SHEET NO.123

POND FOUR
EL 19.50

Southwest Florida Water Management District
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JEFFREY D. TRIM
CERTIFICATE
STATE OF FLORIDA
1/28/00

SCALE RATIO: 1:200 HORIZ
1:100 VERT

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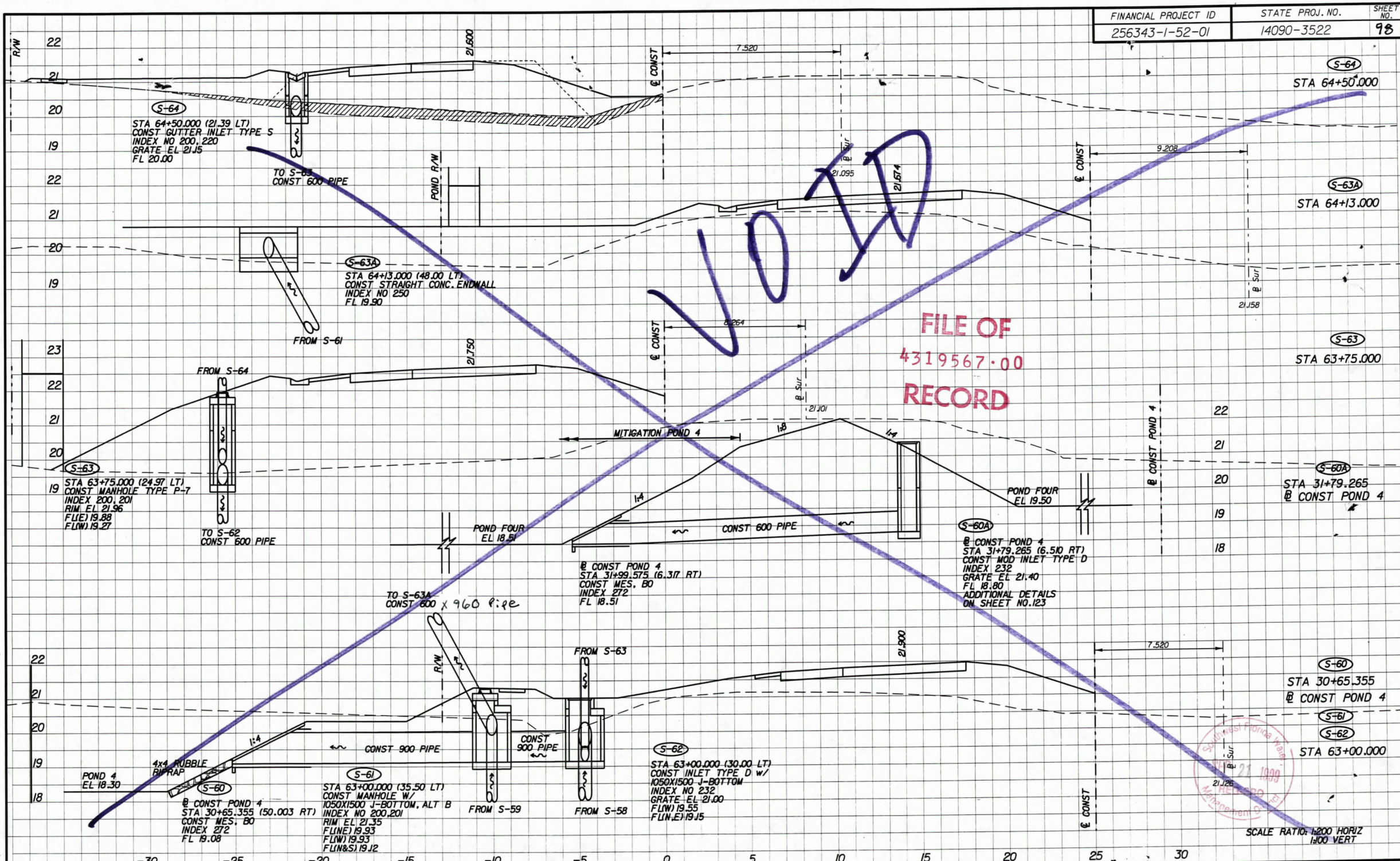
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 120

PLOT FILE: p:\fdot2027\drstrd14.prf
PLOT DATE: Wed Jan 26 17:03:23 2000 DESIGN FILE: p:\fdot2027\DRSTRD14.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	98



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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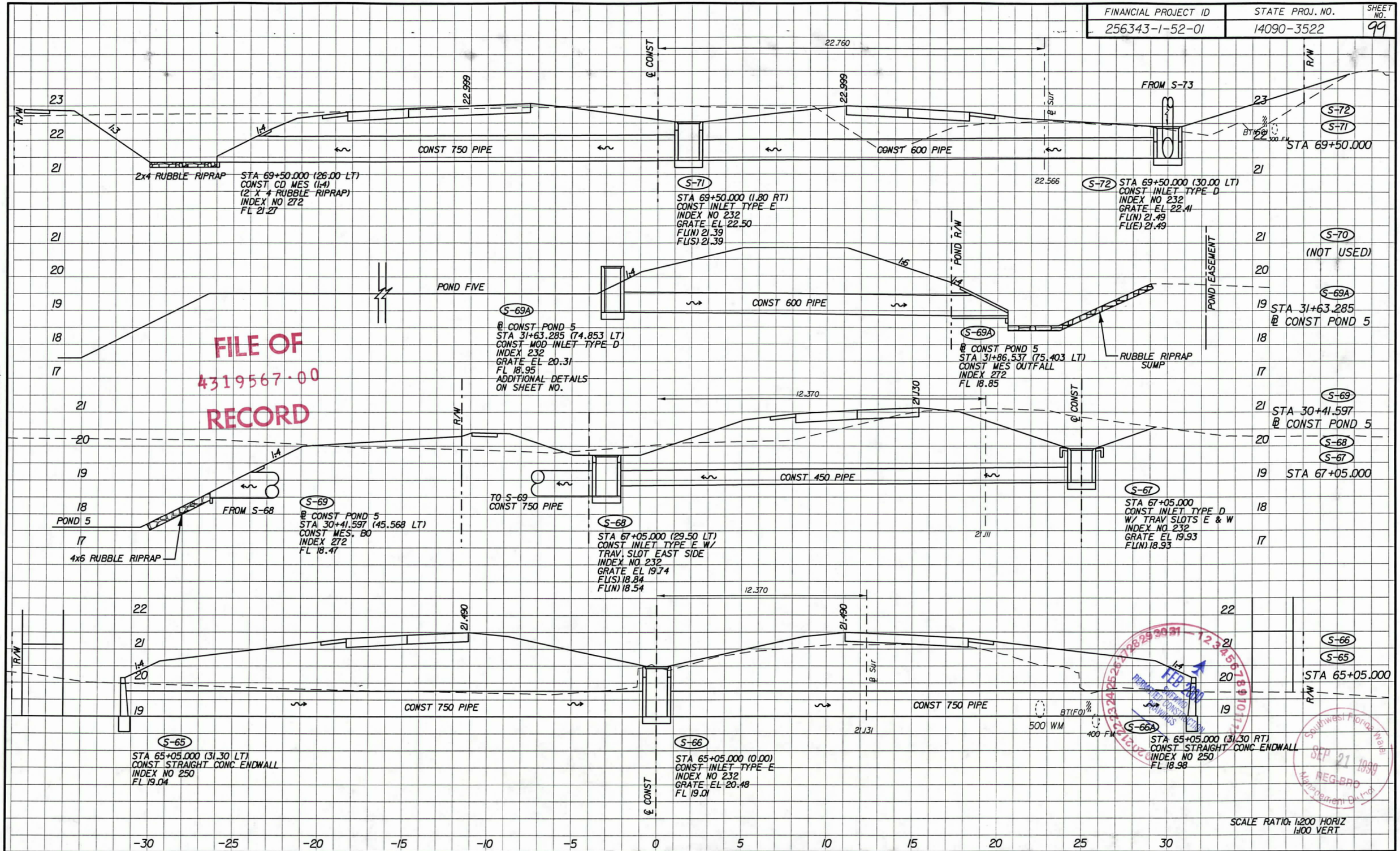
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

PLOT DATE: Wed Sep 15 13:20:34 1999 DESIGN FILE: p:\fdt2027\DRSTRD14.dgn
PLOT FILE: p:\fdt2027\drstrd14.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	99



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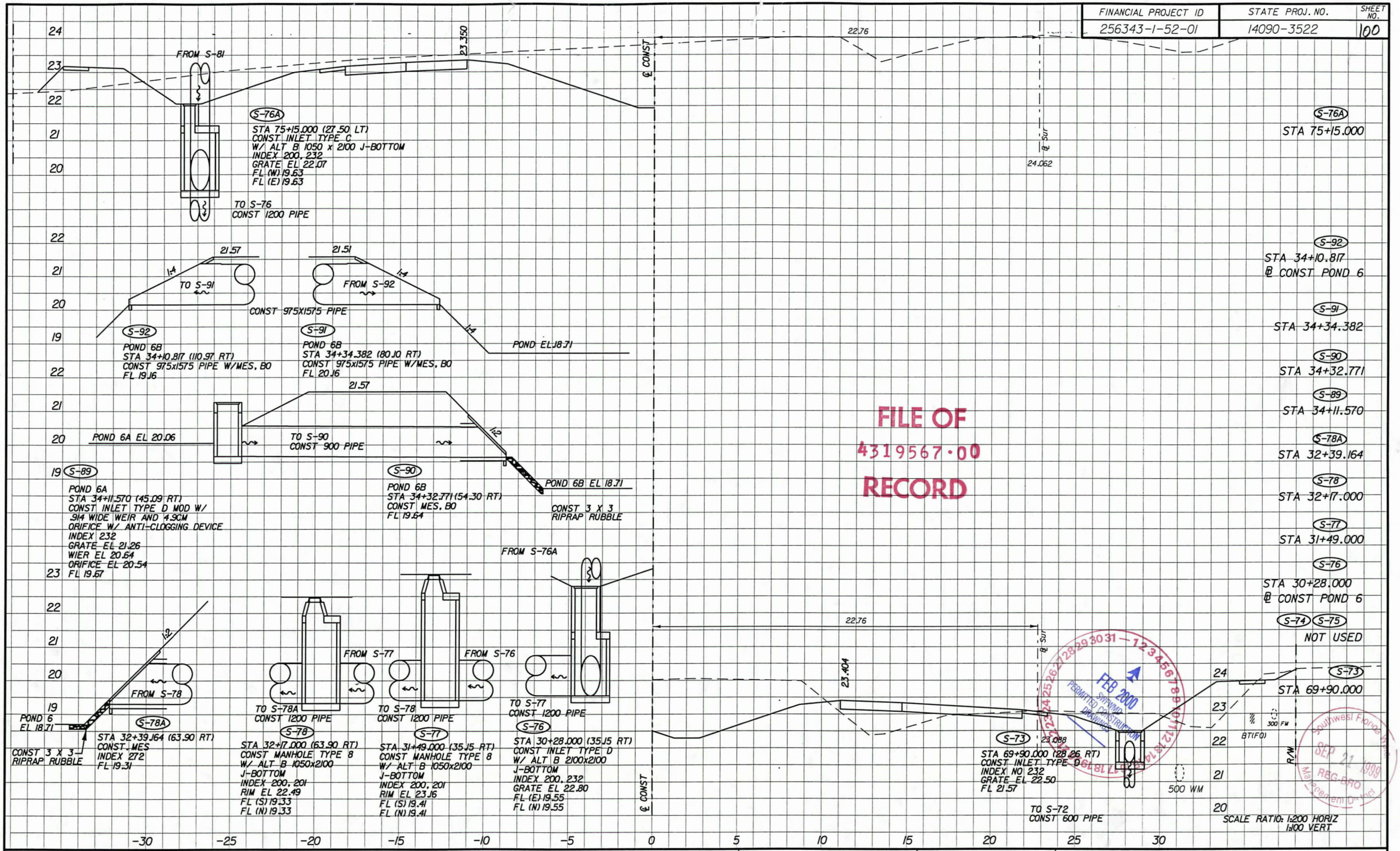
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

121

PLOT DATE: Wed Aug 25 11:01:53 1999 DESIGN FILE: p:\fdt2027\DRSTRD15.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd15.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	100



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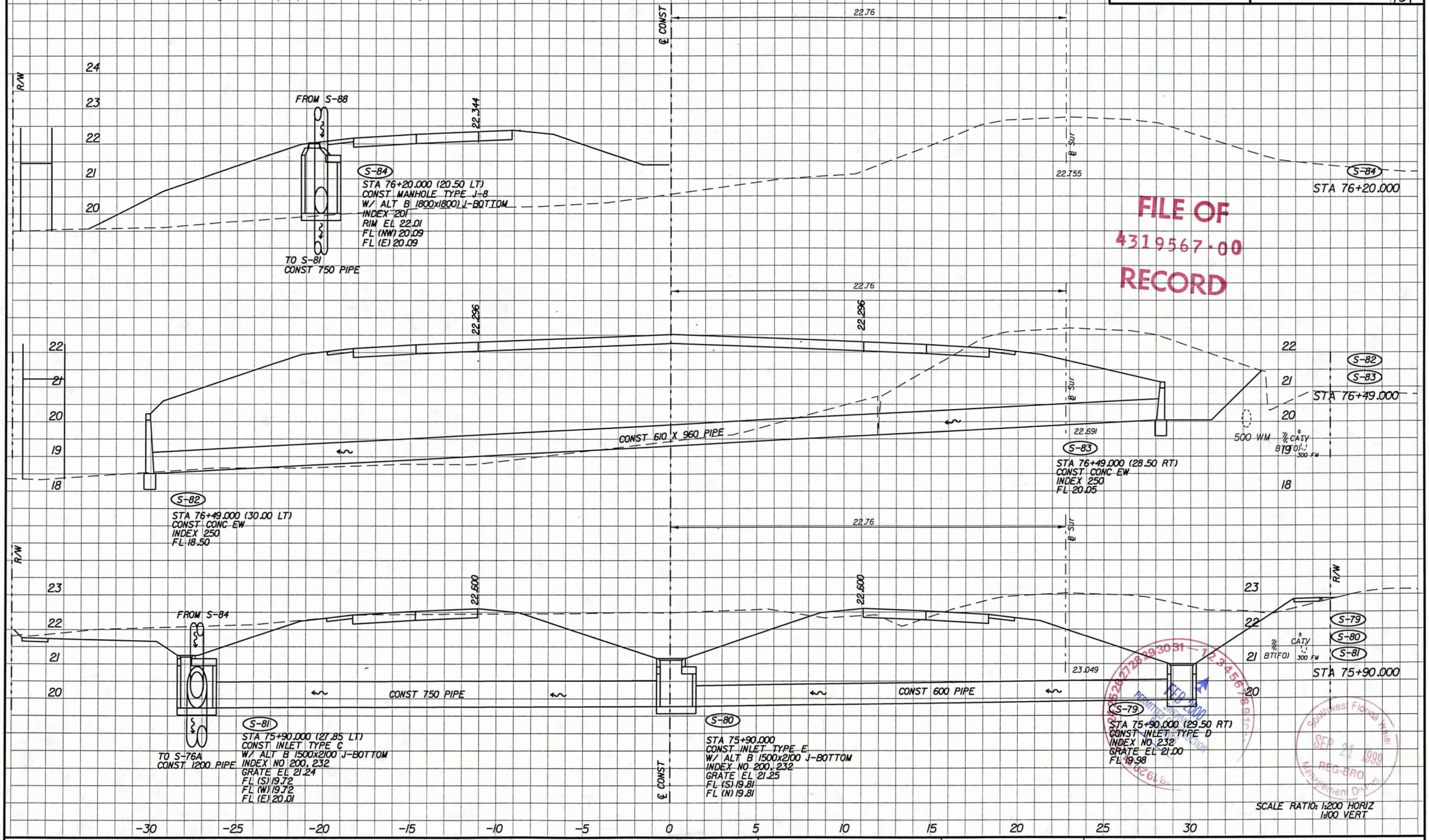
DRAINAGE STRUCTURES 122

PLOT DATE: Wed Aug 25 11:01:58 1999 DESIGN FILE: p:\fdot2027\DRSTRD16.dgn
PLOT FILE: C:\CADNET\DJE\DES\MSHPS000N\drstrd16.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	101



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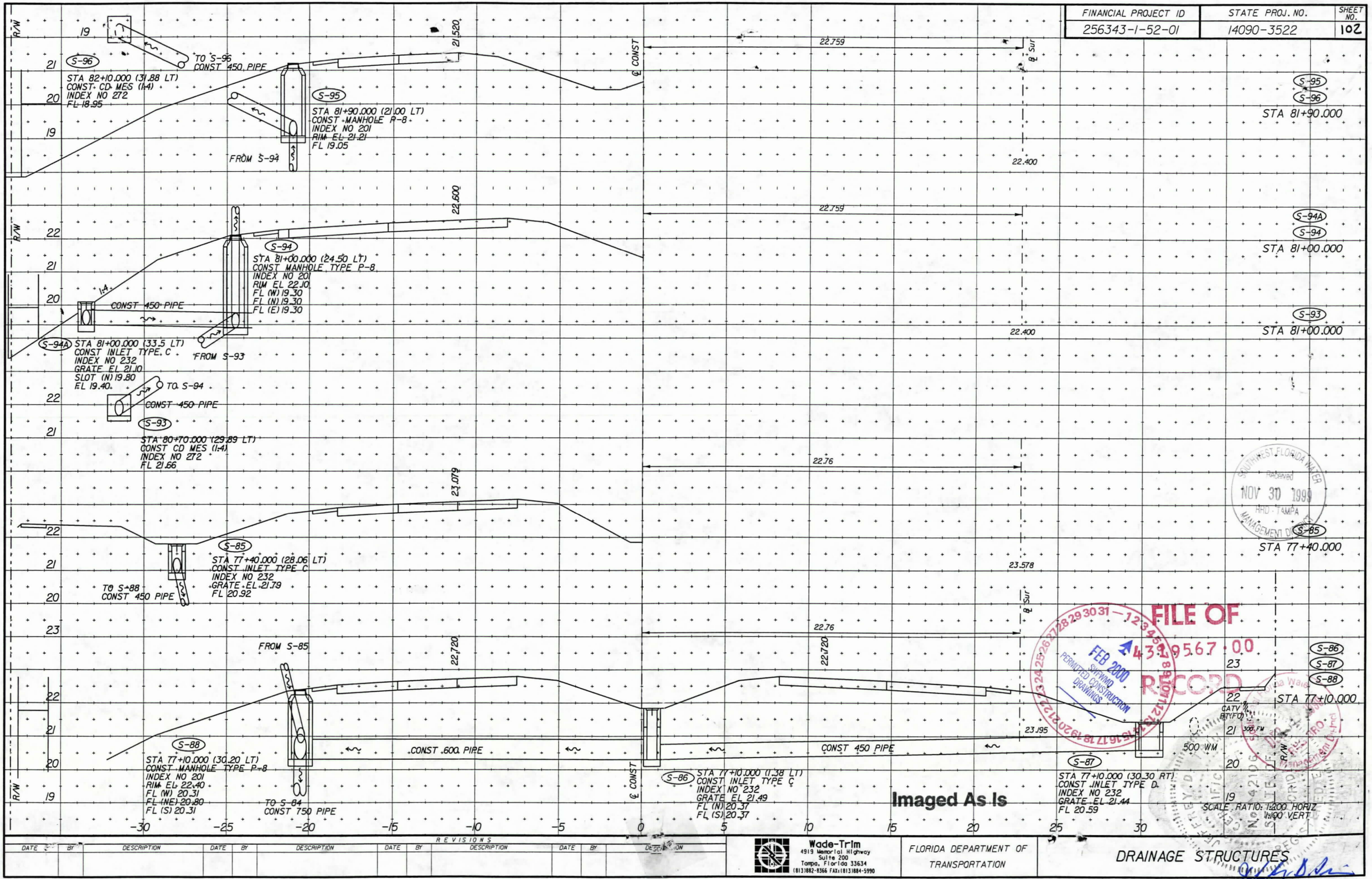
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 123

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd17.prf
PLOT DATE: Wed Aug 25 11:02:03 1999 DESIGN FILE: p:\fdt2027\DRSTRD17.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	102



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PERMITTED CONSTRUCTION
DRAWINGS

Imaged As Is

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

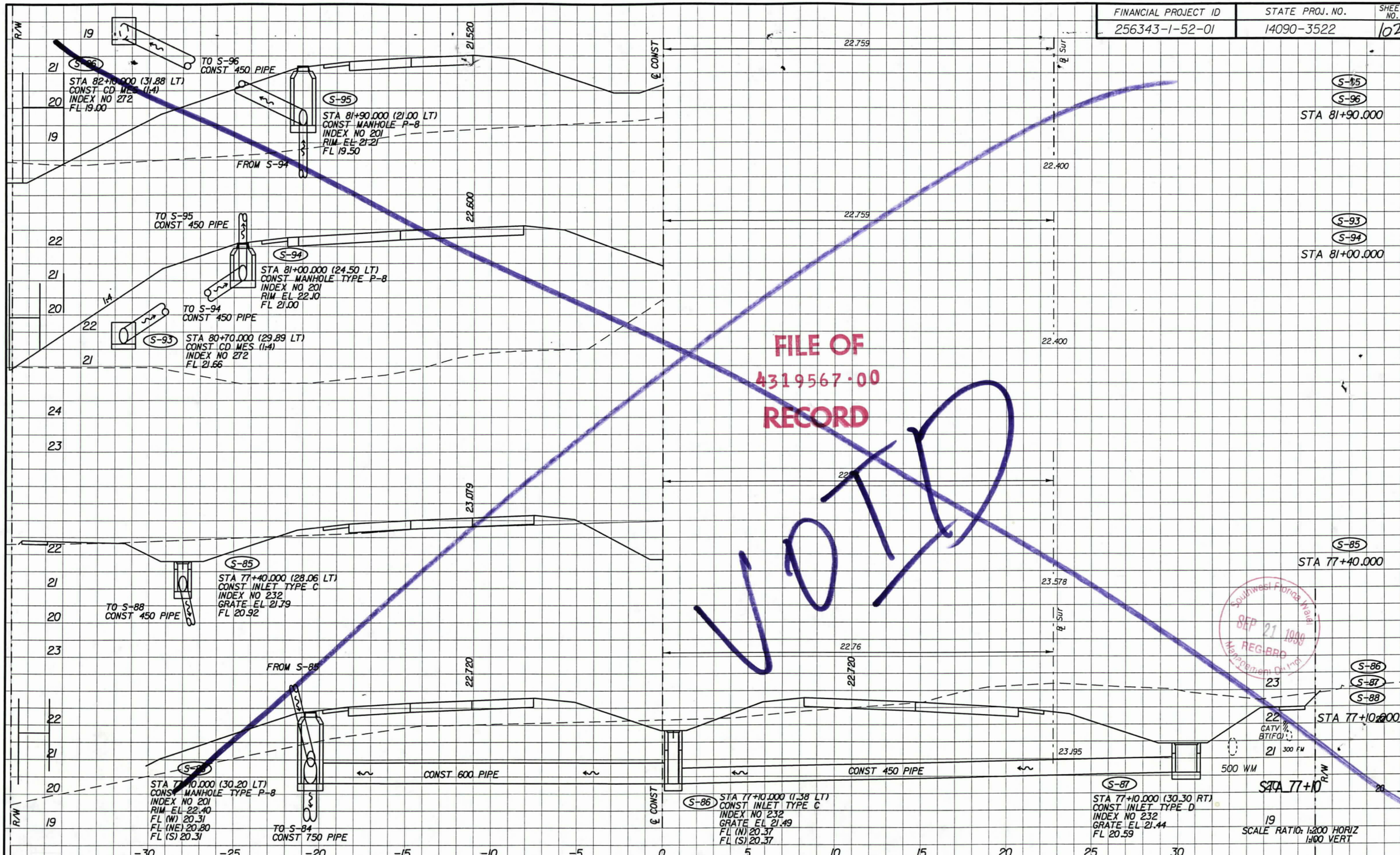
DRAINAGE STRUCTURES

SCALE: RATIO: 1:200 HORIZ
1:100 VERT

11/30/99

PLOT FILE: p:\fdt2027\dr-str-dl8a.prf
PLOT DATE: Mon Nov 29 16:27:52 1999 DESIGN FILE: p:\fdt2027\dr-str-dl8a.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	102



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

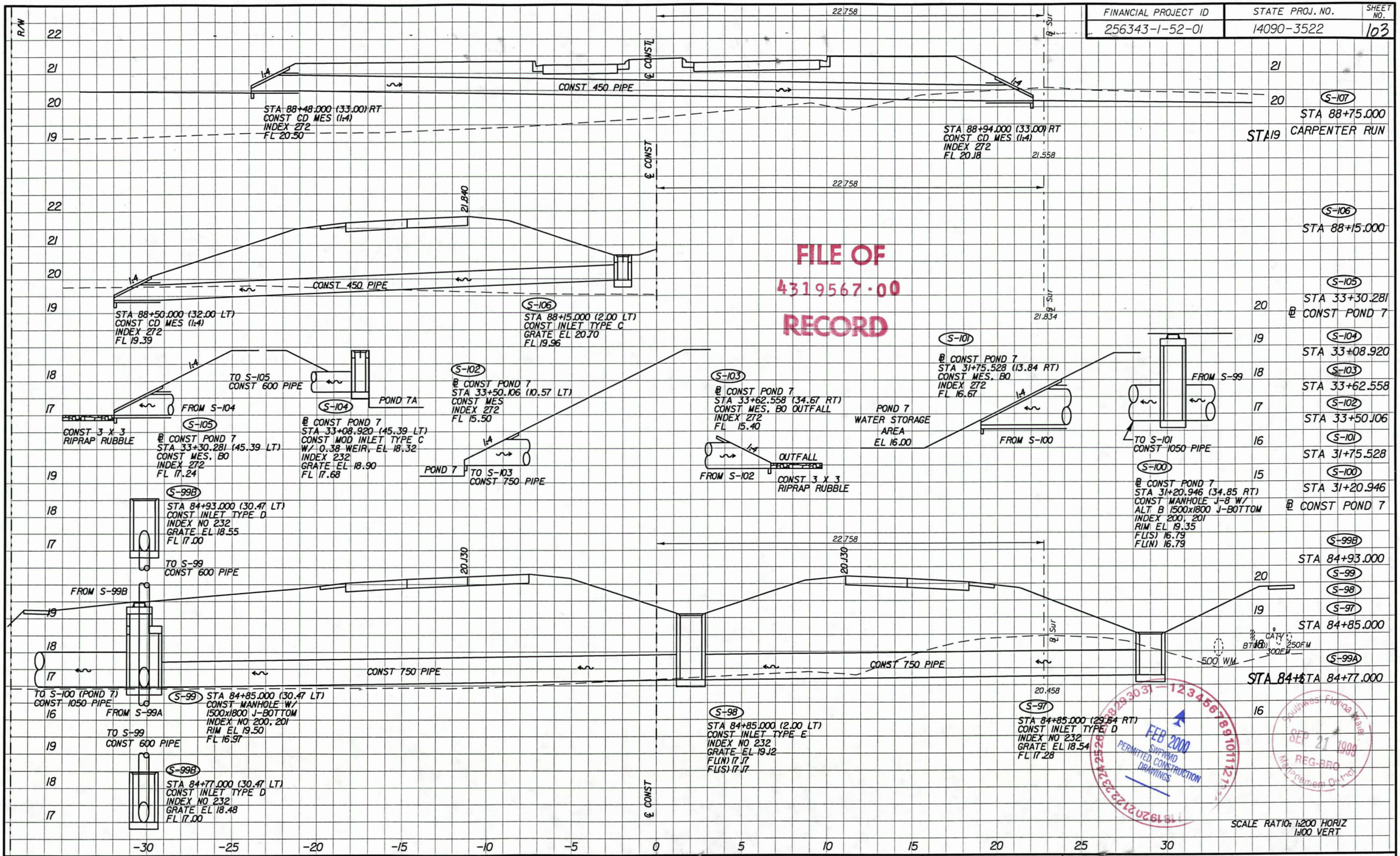
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

PLOT DATE: Wed Aug 25 11:02:09 1999 DESIGN FILE: p:\fdt2027\drstrd18.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrd18.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	103



FILE OF
4319567.00
RECORD

SWFWMD
FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

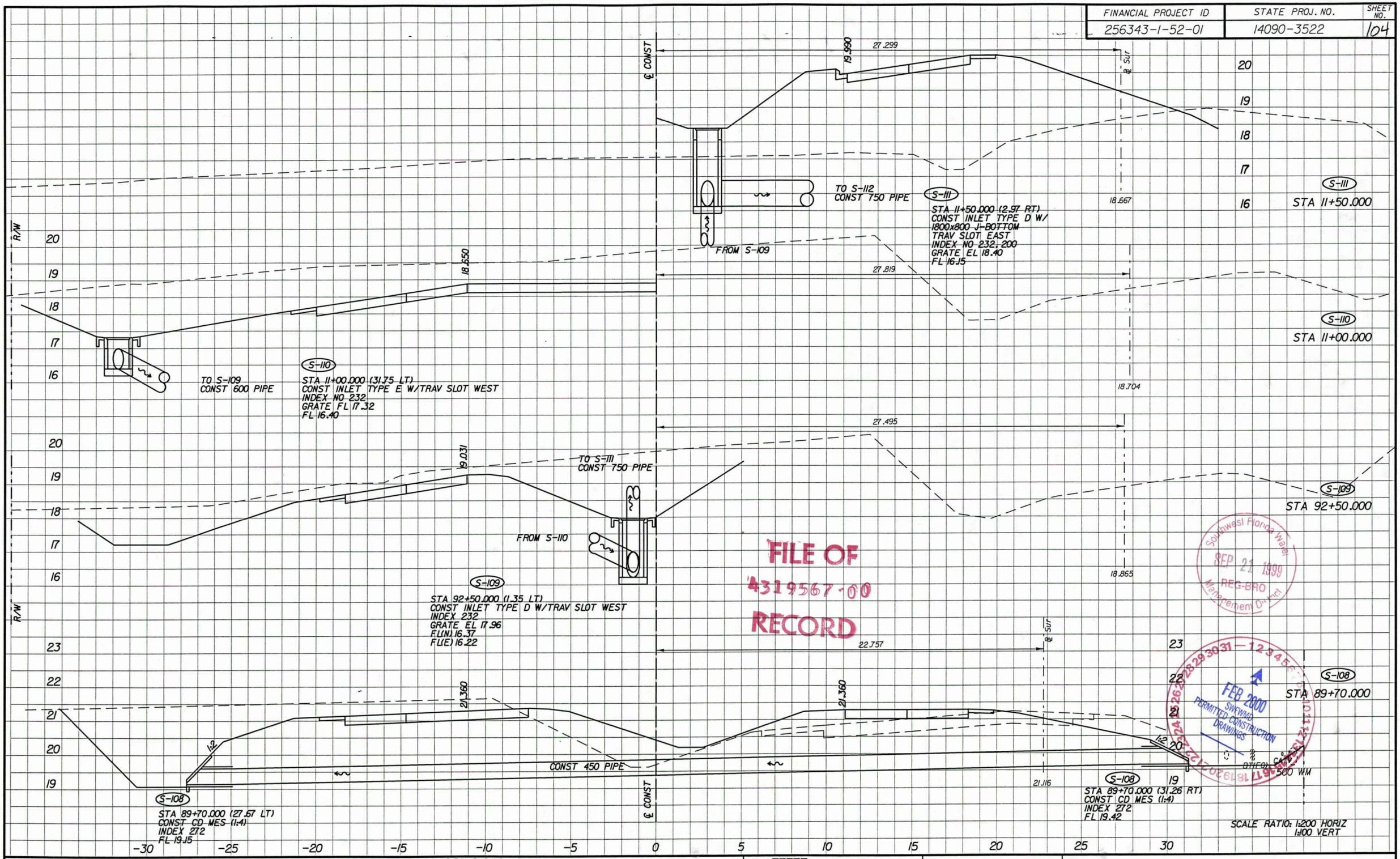
FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 125

A-1000

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\drstrdl9.prf
PLOT DATE: Wed Aug 25 11:02:15 1999 DESIGN FILE: pw:\fdt2027\drstrdl9.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	104



FILE OF
4319567-00
RECORD

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
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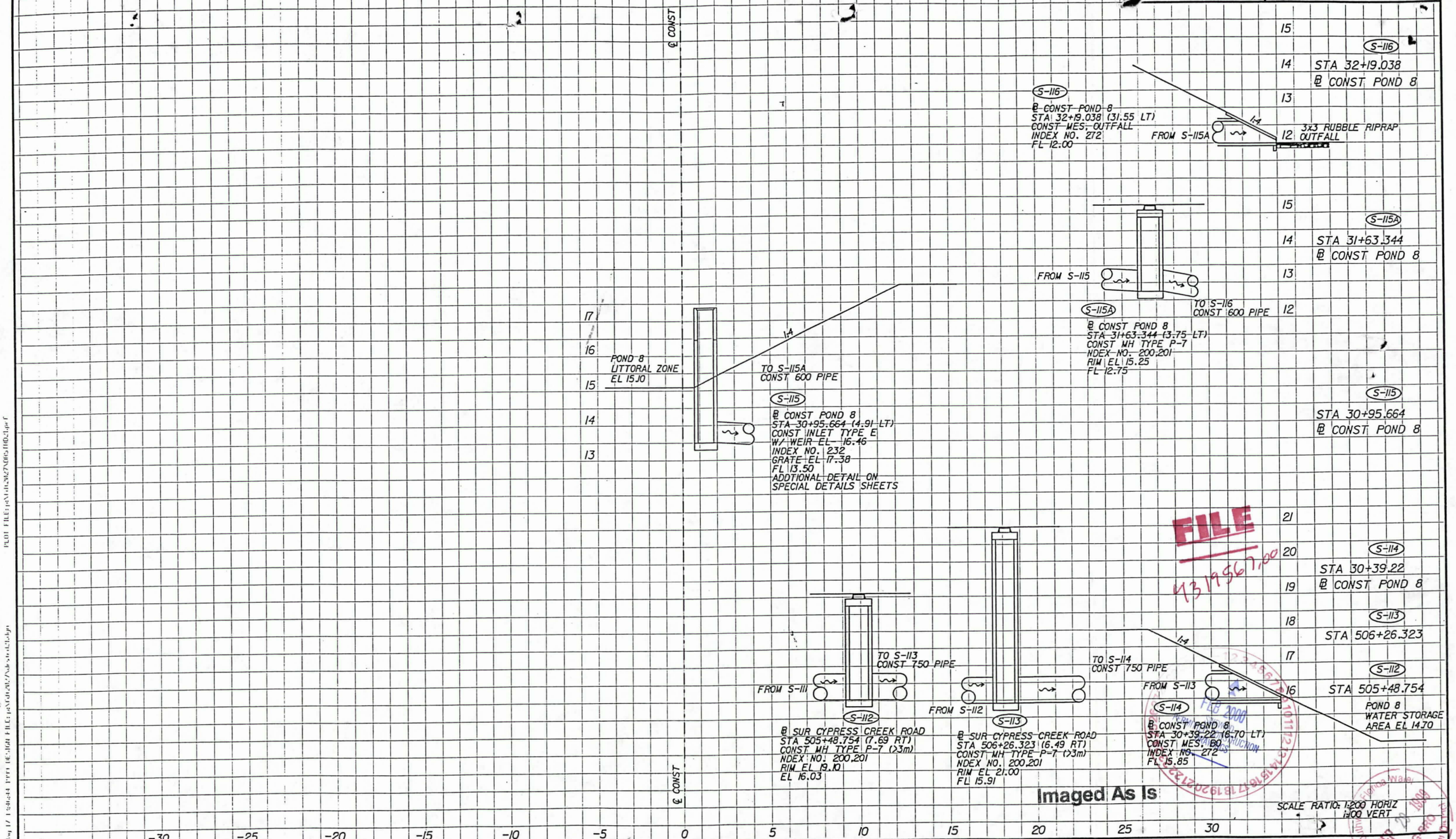
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 126

PLOT DATE: Wed Aug 25 11:02:20 1999 DESIGN FILE: p:\fdt2027\drstrd20.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\drstrd20.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

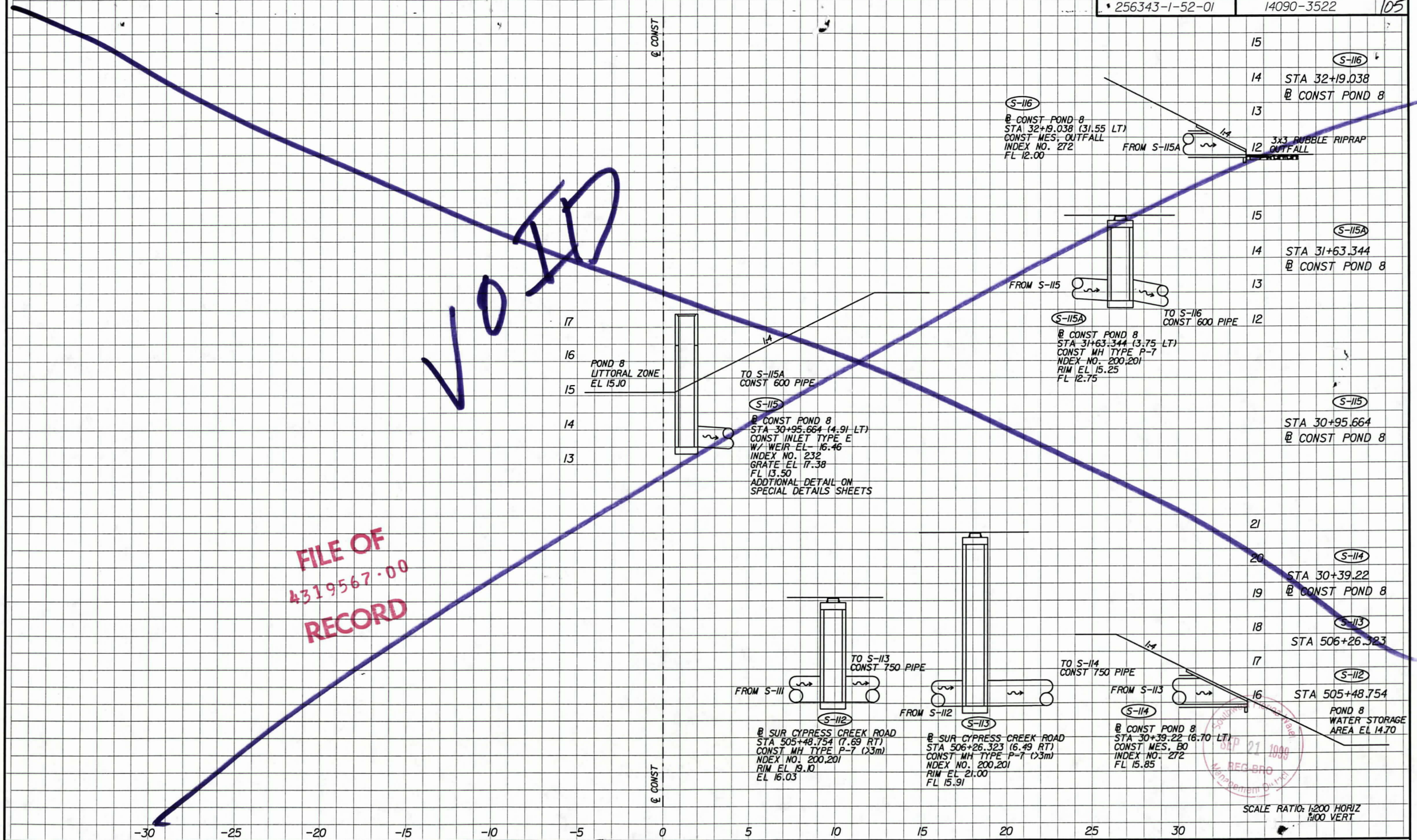
127

DRAINAGE STRUCTURES

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	105

VOID

FILE OF
4319567.00
RECORD



SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

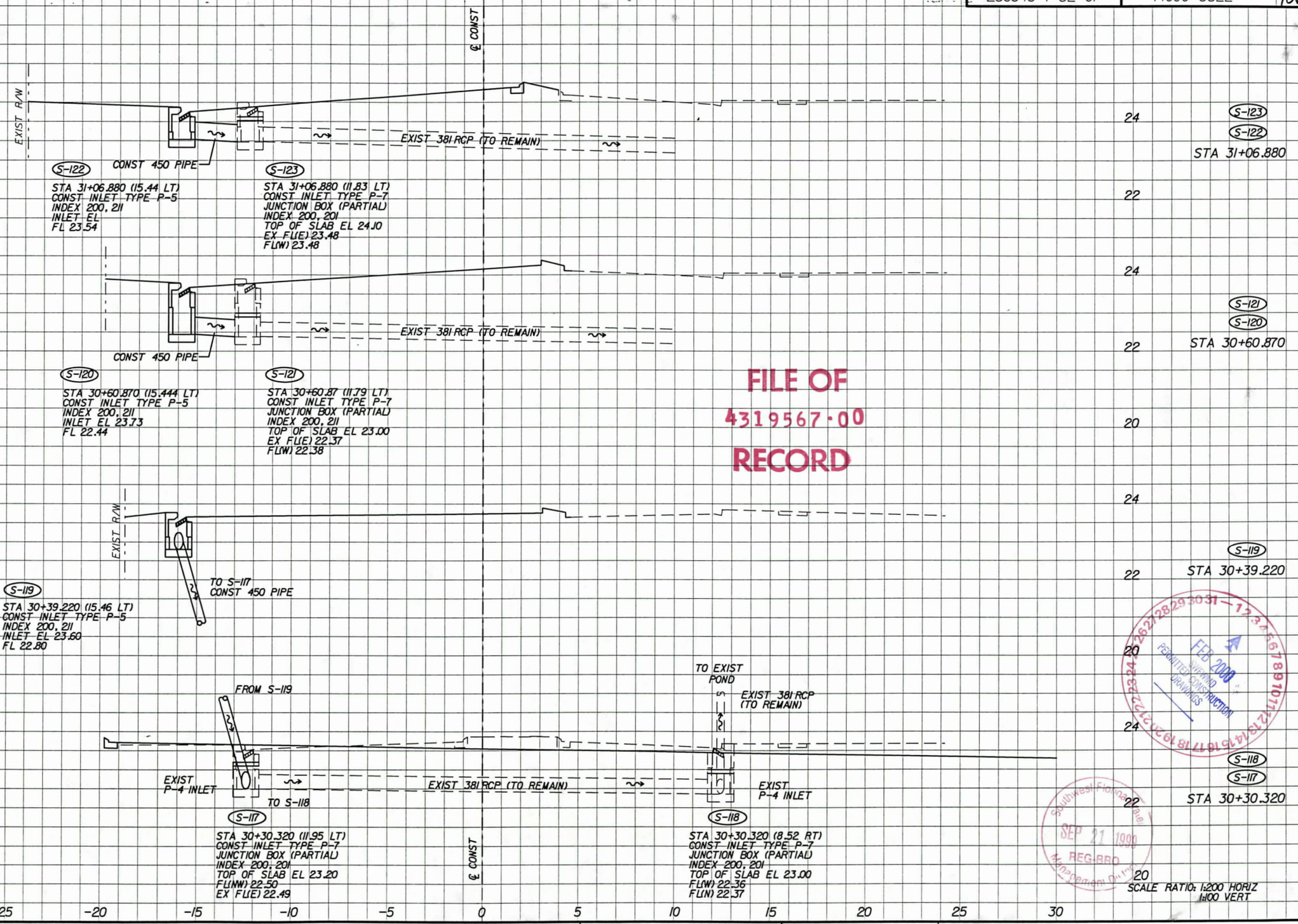
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

PLOT DATE: Wed Aug 25 11:02:25 1999 DESIGN FILE: pw:\fdot2027\drstrd21.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\drstrd21.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	106



S-123
S-122
STA 31+06.880

S-121
S-120
STA 30+60.870

S-119
STA 30+39.220

S-118
S-117
STA 30+30.320

SCALE RATIO: 1:200 HORIZ
1:100 VERT

FILE OF
4319567.00
RECORD

FED 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

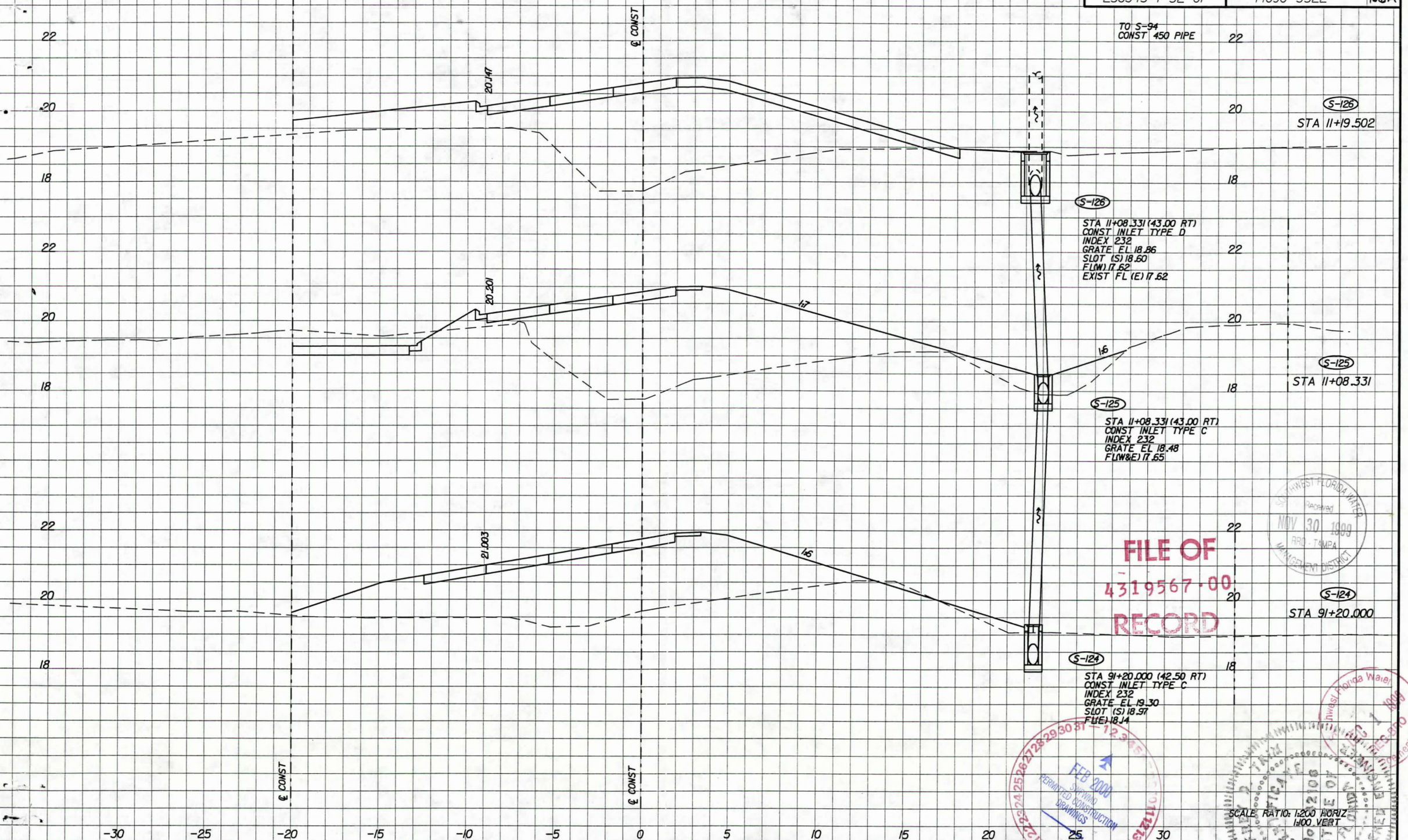
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES 126

PLOT DATE: Wed Aug 25 11:02:30 1999 DESIGN FILE: p:\fdot2027\drstr-d22.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHPS000N-drstr-d22.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	106A



FILE OF
4319567.00
RECORD

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Received
NOV 30 1999
RRD - TAMPA

SCALE RATIO: 1:200 HORIZ
1:100 VERT

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE STRUCTURES

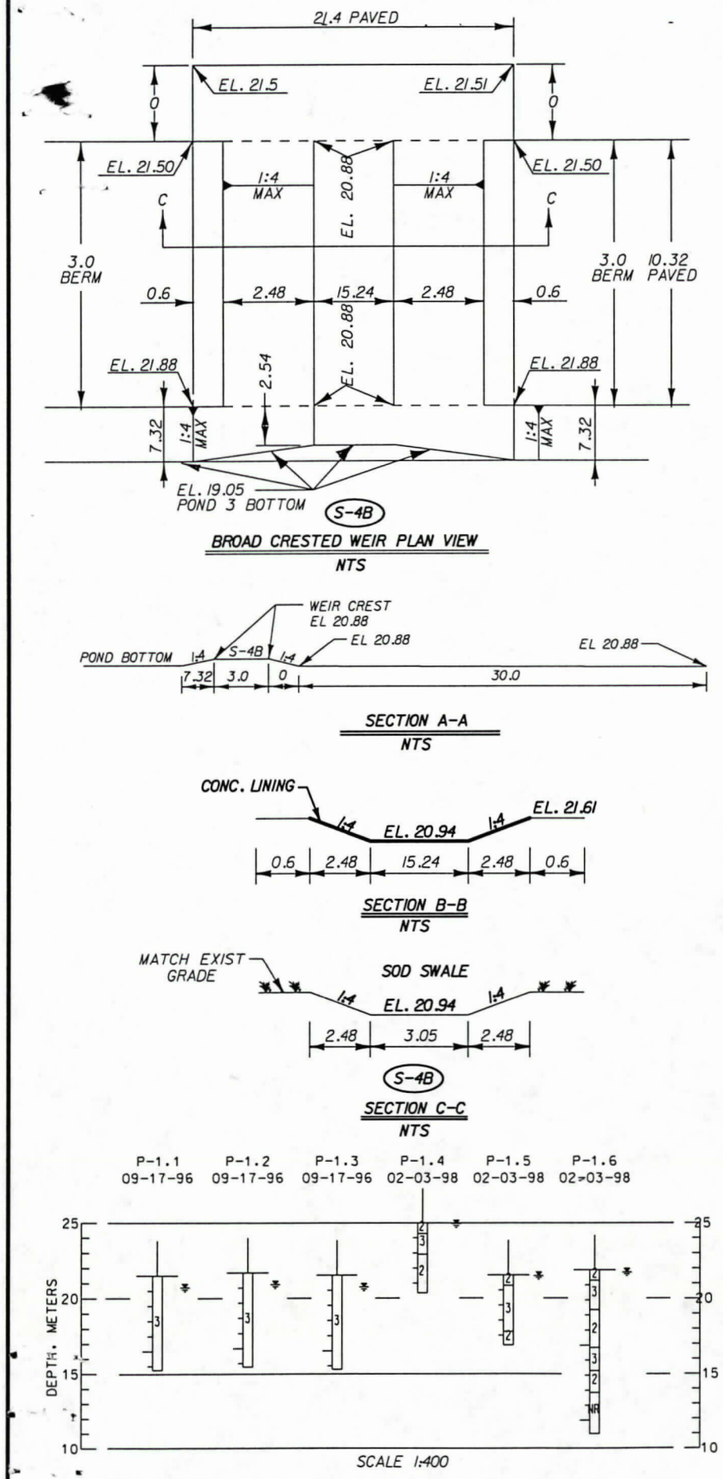
Imaged As Is 152

11/30/99

A-1005

PLOT DATE: Mon Nov 29 16:17:23 1999 DESIGN FILE: ps\fdt2027\dr-str-d23.dgn
PLOT FILE: ps\fdt2027\dr-str-d23.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	167

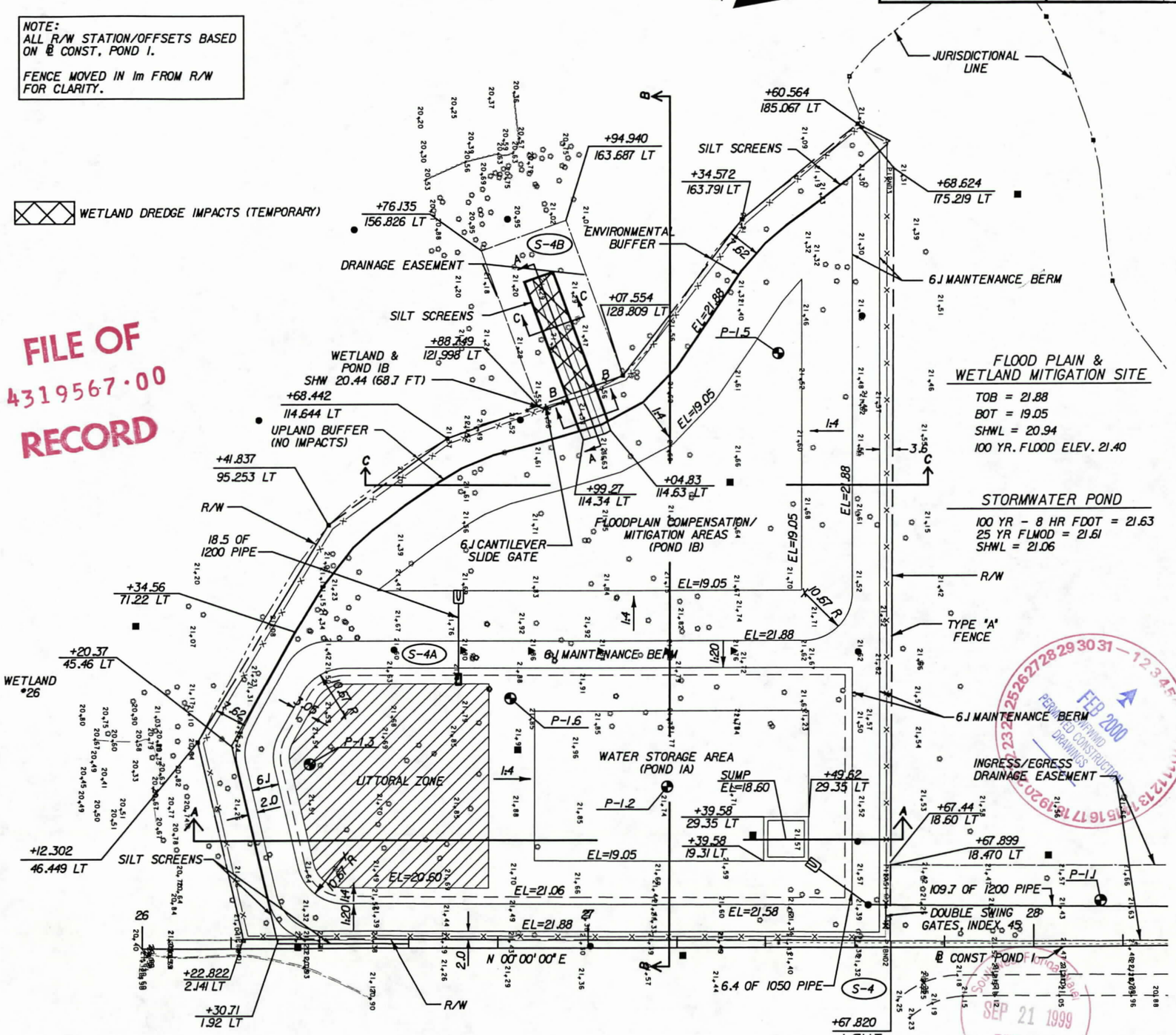


NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST. POND 1.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

WETLAND DREDGE IMPACTS (TEMPORARY)

FILE OF 4319567·00 RECORD



FEB 2000 PERMITTED CONSTRUCTION DRAWINGS
SEP 21 1999 REG-BRO Management District

Imaged As Is 153

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

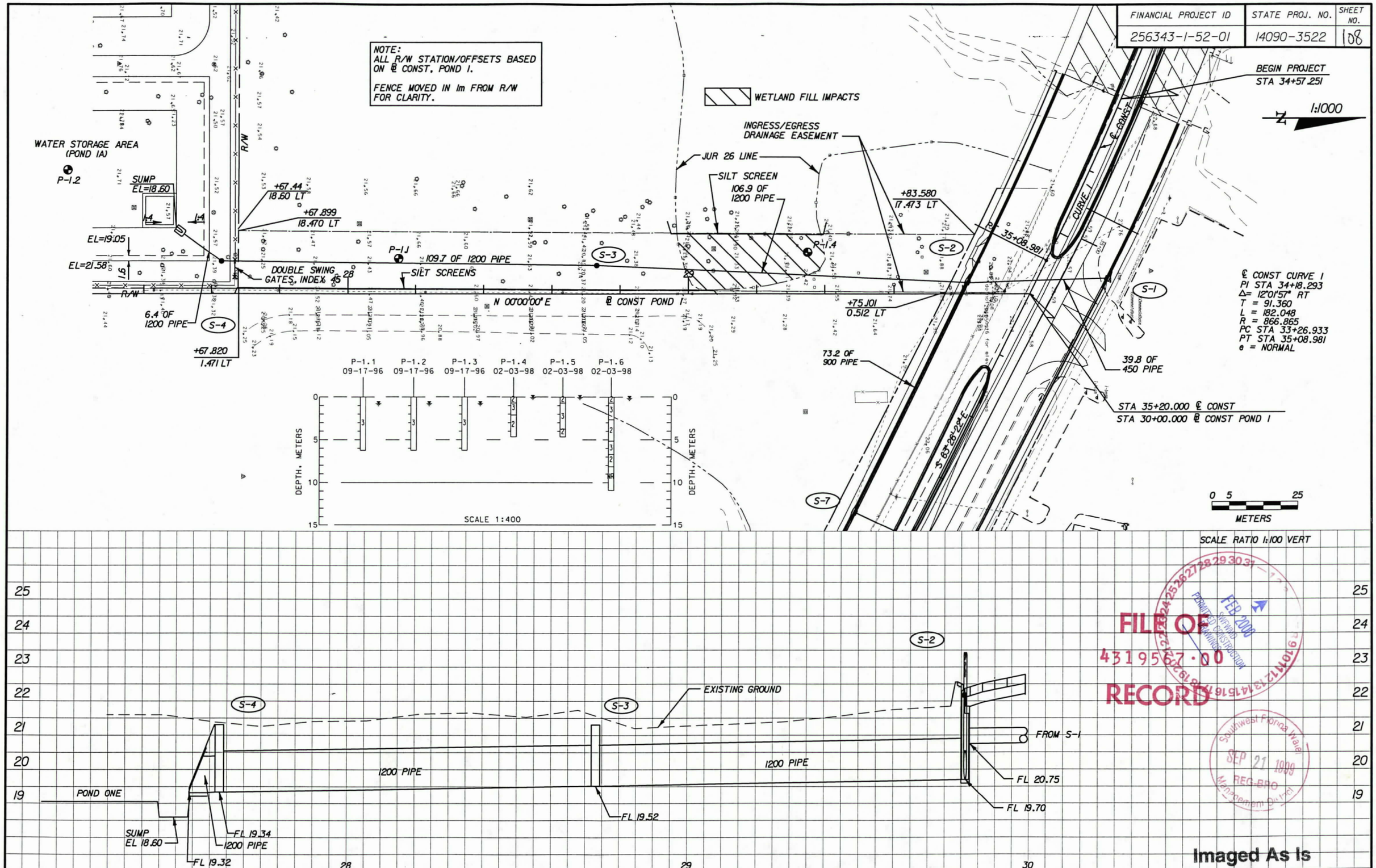
FLORIDA DEPARTMENT OF TRANSPORTATION

PONDS 1A & 1B STORMWATER & MITIGATION AREA

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\detaMB01.prf

PLOT DATE: Wed Aug 25 10:57:46 1999 DESIGN FILE: p:\fdt2027\DETAR001.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	108



FILE OF RECORD
4319567.00
FEB 2000
SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Imaged As Is

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

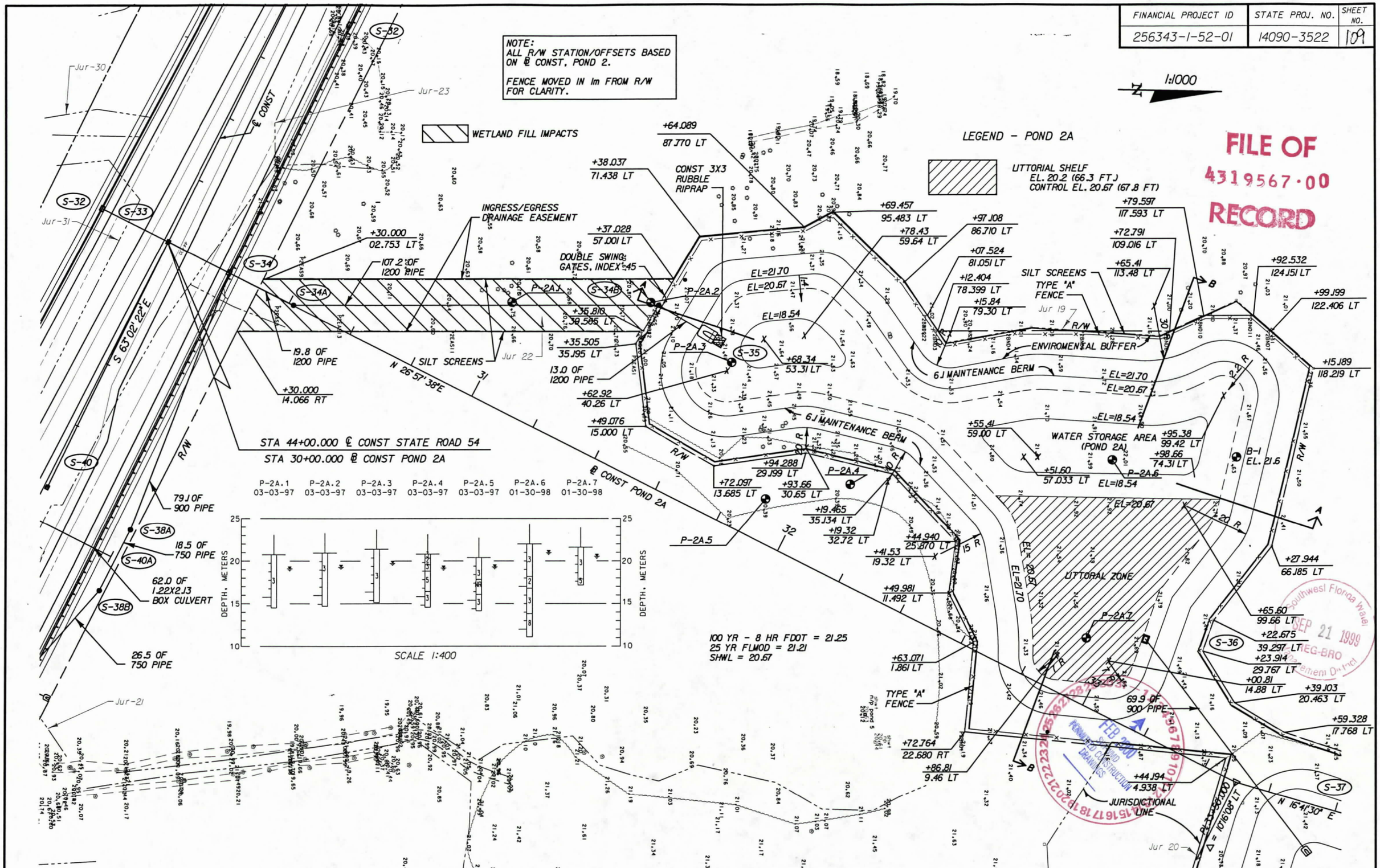
154

POND ONE
SPECIAL DETAIL

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\SPDTMB01.prf
PLOT DATE: Wed Aug 25 11:18:57 1999 DESIGN FILE: p:\fdt2027\SPDTR001.dgn

A-1007

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	109



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Imaged As Is

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

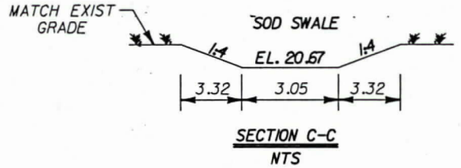
155

POND 2A
STORMWATER AREA

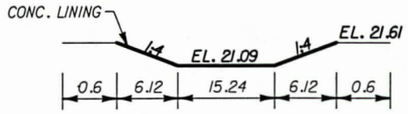
A-1008

PLOT DATE: Wed Aug 25 10:58:27 1999 DESIGN FILE: p:\fdt2027\DETARD2A.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\DETAMB2A.prf

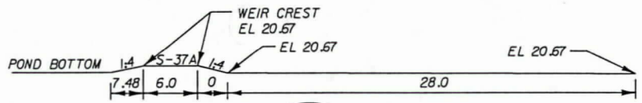
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	110



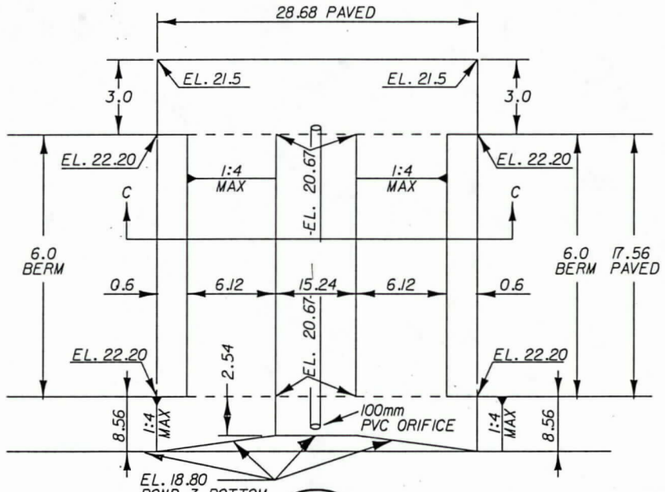
SECTION C-C
NTS



SECTION B-B
NTS

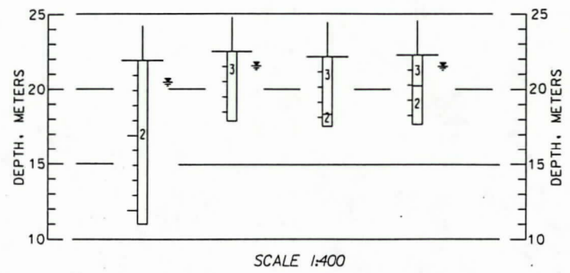


S-37A
SECTION A-A
NTS

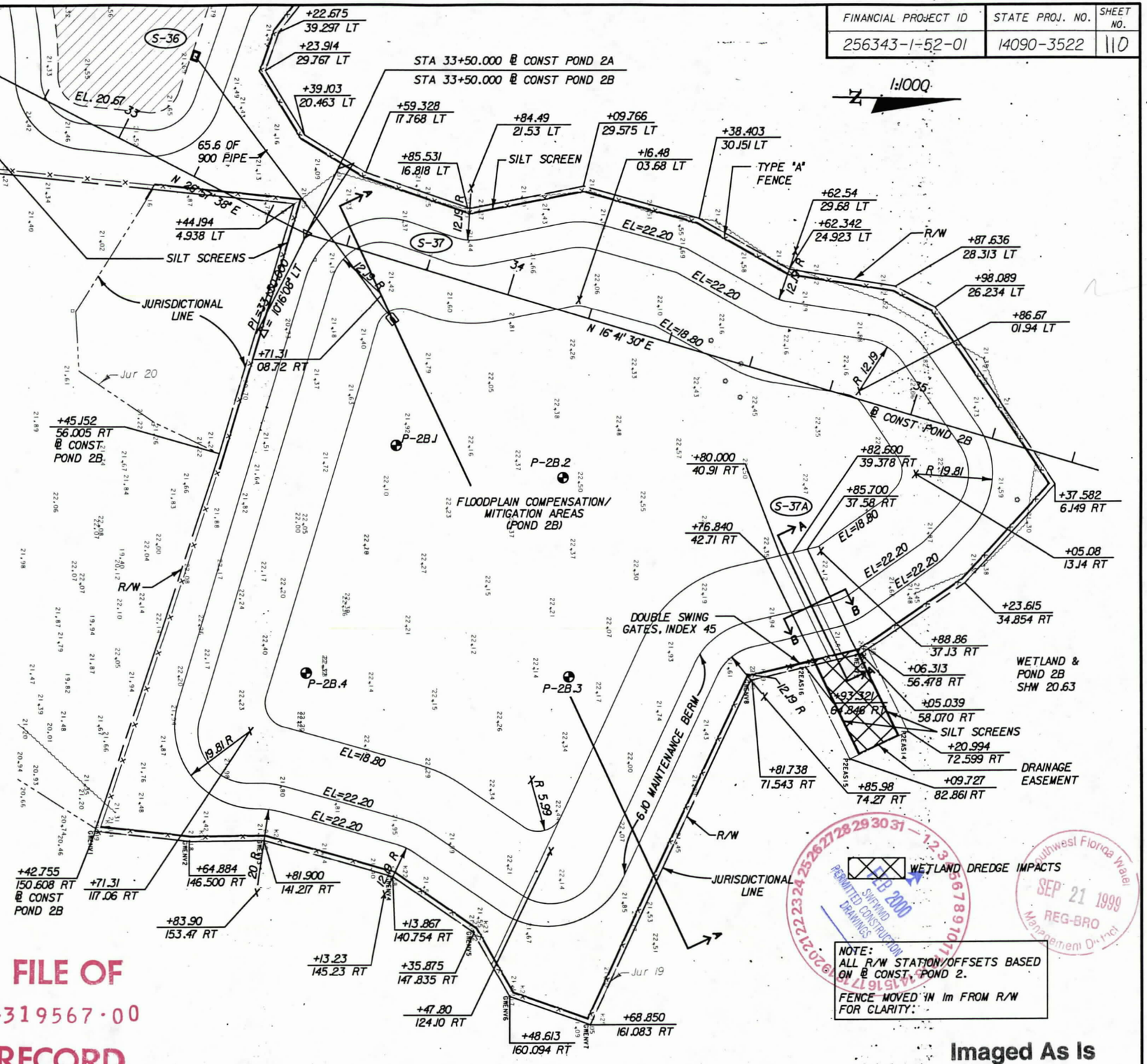


BROAD CRESTED WEIR PLAN VIEW
NTS

P-2B-1	P-2B-2	P-2B-3	P-2B-4
01-30-98	01-30-98	01-30-98	01-30-98



SCALE 1:400



FILE OF
4319567·00
RECORD

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FEB 2000
PERMITTED CONSTRUCTION DRAWINGS
SWFWMD

SEP 21 1999
REG-BRO
Southwest Florida Water Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

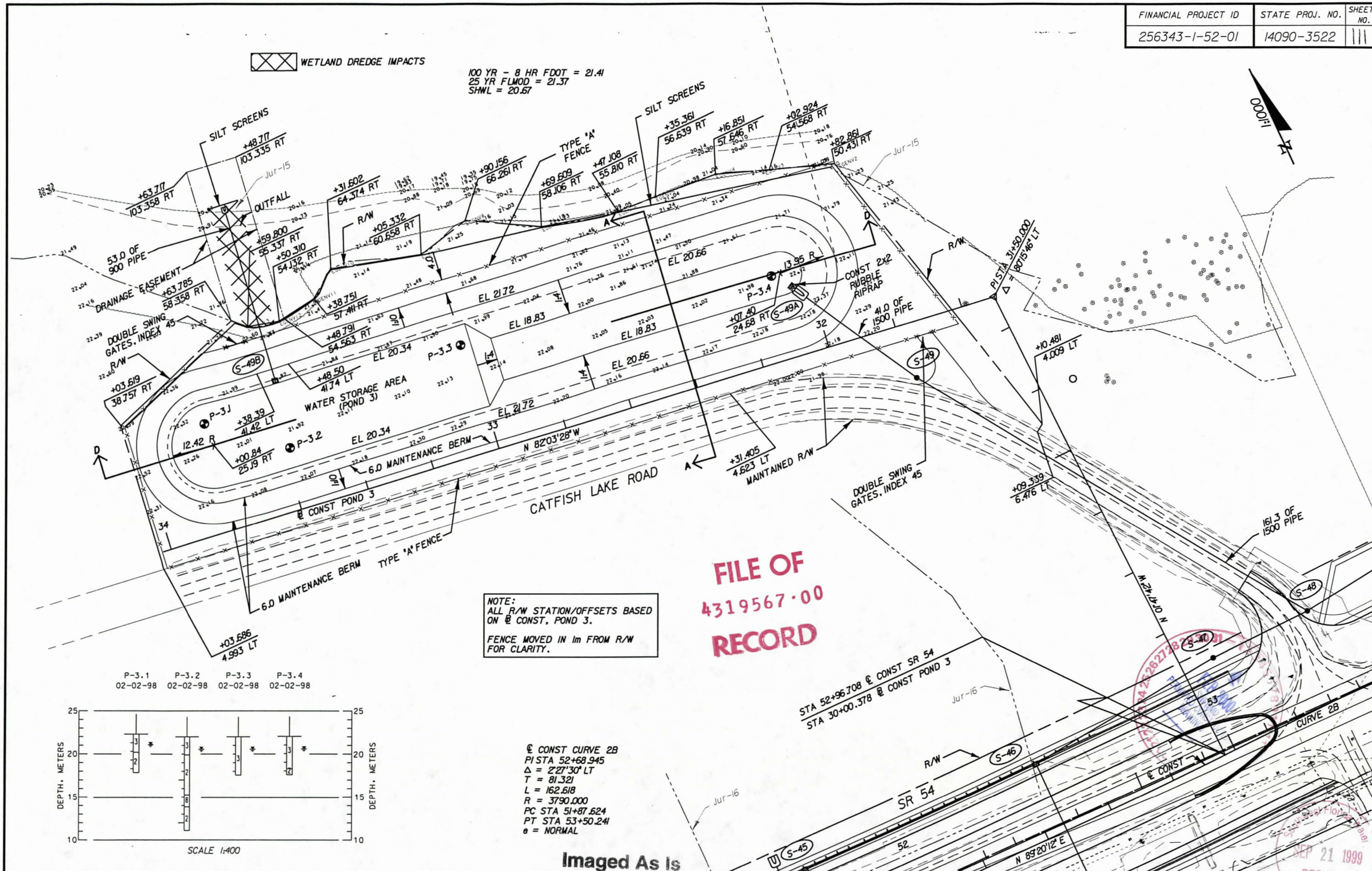
FLORIDA DEPARTMENT OF TRANSPORTATION

156

POND 2B FLOODPLAIN

PLOT FILE: C:\CADNET\QUEUES\MSHP60000N\DETAIL02B.prf
PLOT DATE: Wed Aug 25 10:58:47 1999 DESIGN FILE: pw\fdot2027\DETAR02B.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	111



NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST. POND 3.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

℄ CONST CURVE 2B
PI STA 52+68.945
Δ = 2°27'30" LT
T = 81.321
L = 162.618
R = 3790.000
PC STA 51+87.624
PT STA 53+50.241
e = NORMAL

FILE OF 4319567·00 RECORD

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REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

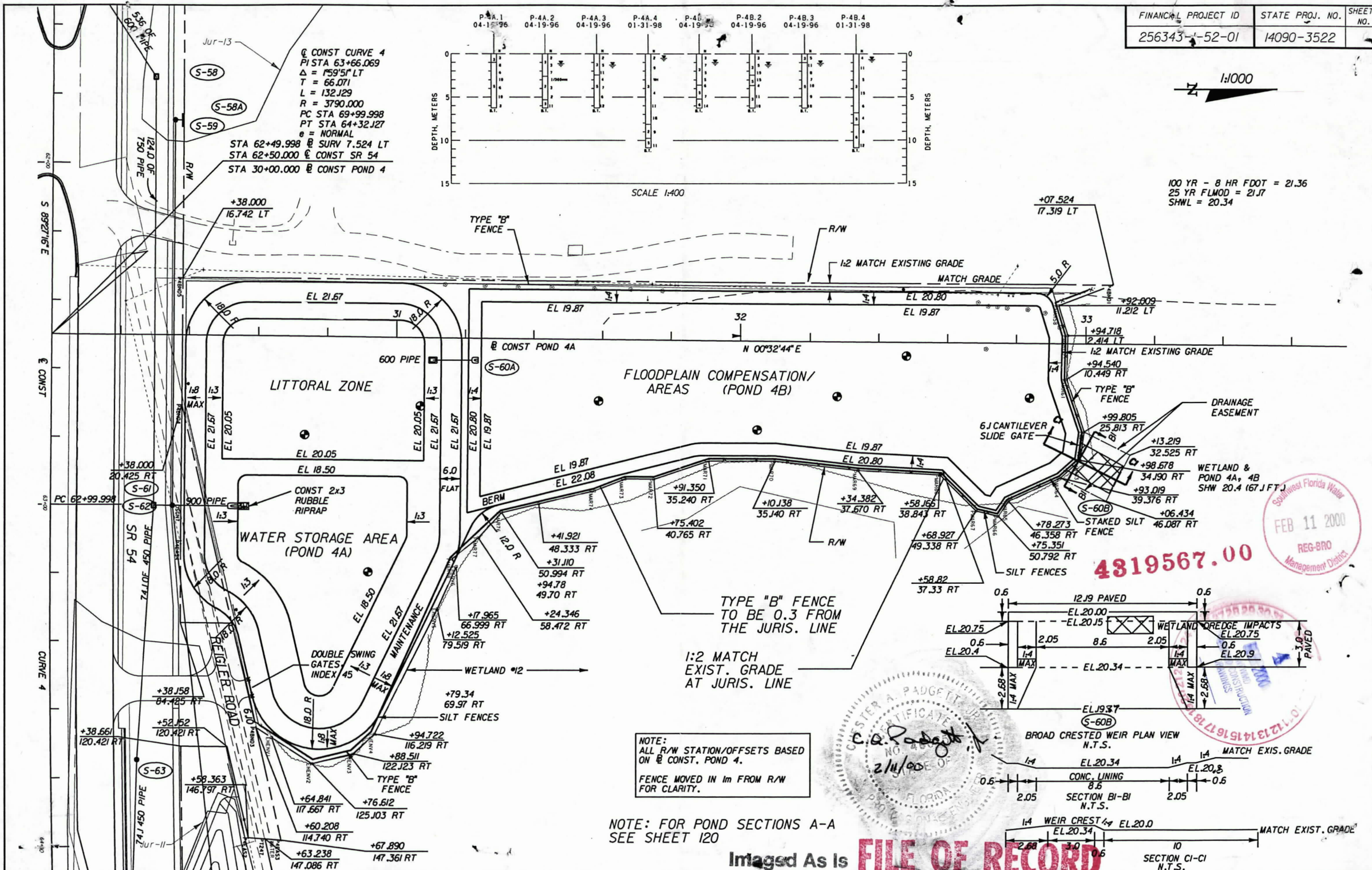
157

POND 3
STORMWATER AREA

SEP 21 1999
REG BRO
Management Division

PLOT DATE: Wed Aug 25 10:57:30 1999 DESIGN FILE: p:\fdt2027\DETAR003.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\DETAMB03.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

WADE-TRIM
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

158

PONDS 4A & 4B STORMWATER & FLOODPLAIN

2/10/00 2:24:19 PM \\TPNCDB1\PLOT\0\7Roadway.gcf C:\e\tmp\tmp\DETARD04.prf

A-1011

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

1:1000

P-4A.1 04-19-96 | P-4A.2 04-19-96 | P-4A.3 04-19-96 | P-4A.4 01-31-98 | P-4B.1 04-19-96 | P-4B.2 04-19-96 | P-4B.3 04-19-96 | P-4B.4 01-31-98

DEPTH, METERS 0 5 10 15

SCALE 1:400

℄ CONST CURVE 4
PI STA 63+66.069
Δ = 159'51" LT
T = 66.071
L = 132.129
R = 3790.000
PC STA 69+99.998
PT STA 64+32.127
e = NORMAL

STA 62+50.000 ℄ CONST SR 54
STA 30+00.000 ℄ CONST POND 4

100 YR - 8 HR FDOT = 21.29
25 YR FLMOD = 21.17
SHWL = 20.34

S 89°27'16" E

N 00°32'44" E

SR 54

℄ CONST

CURVE 4

BEIGLER ROAD

Jur-13

Jur-11

S-58 | S-58A | S-59 | S-60 | S-60A | S-60B | S-61 | S-62 | S-63

536 OF 600 PIPE

124 OF 750 PIPE

74 OF 450 PIPE

74 OF 450 PIPE

26.8 OF 900 PIPE

18.5 OF 600 PIPE

PC 62+99.998

+38.000 16.748 LT
+71.07 02.81 RT
TYPE "A" FENCE
+97.58 07.22 LT
+07.524 17.319 LT
+86.50 6.87 LT
+92.009 11.212 LT
+94.718 2.414 LT
+94.540 10.449 RT
+99.805 25.813 RT
+13.219 32.525 RT
+98.578 34.190 RT
+93.019 39.376 RT
+06.434 46.087 RT
+78.273 46.358 RT
+75.351 50.792 RT
+58.82 37.33 RT
+84.55 10.17 RT
+02.71 3.99 RT
+76.01 10.11 RT
+71.16 12.07 RT
+02.72 28.14 RT
+38.000 20.425 RT
+38.000 50.003 RT
+53.070 84.425 RT
+38.158 84.425 RT
+52.152 120.421 RT
+38.561 120.421 RT
+58.363 146.797 RT
+76.05 63.17 RT
+84.59 59.95 RT
+16.685 64.789 RT
+58.050 44.346 RT
+41.921 48.333 RT
+31.110 50.994 RT
+94.78 49.70 RT
+24.346 58.472 RT
+17.965 66.999 RT
+12.525 79.519 RT
+79.34 69.97 RT
+94.722 116.219 RT
+88.511 122.123 RT
+64.841 117.667 RT
+76.612 125.103 RT
+60.208 114.740 RT
+67.890 147.361 RT
+63.238 147.086 RT
+91.350 35.240 RT
+10.138 35.140 RT
+34.382 37.670 RT
+58.166 38.843 RT
+68.927 49.338 RT
+97.92 28.66 RT
+75.402 40.765 RT
+66.871 40.781 RT

EL 22.05 | EL 20.34 | EL 18.30 | EL 21.30 | EL 19.5 | EL 18.51 | EL 21.00 | MATCH GRADE

18.0 R | 5.0 R TYP. | 6.0 R | 12.0 R

1:4 | 1:2 | 4 W

P-4A.1 | P-4A.2 | P-4A.3 | P-4A.4 | P-4B.1 | P-4B.2 | P-4B.3 | P-4B.4

WATER STORAGE AREA (POND 4A) CONST 2x3 RUBBLE RIPRAP

℄ CONST POND 4A LITTORAL ZONE

FLOODPLAIN COMPENSATION/ AREAS (POND 4B)

6J CANTILEVER SLIDE GATE

DRAINAGE EASEMENT

WETLAND & POND 4A, 4B SHW 20.4 (67.1 FT.)

STAKED SILT FENCE

SILT SCREENS

WETLAND #12

DOUBLE SWING GATES, INDEX 451

UPLAND BUFFER (NO IMPACTS)

TYPE "A" FENCE

MAINTENANCE BERM

R/W

1:2 MATCH EXISTING GRADE

NOTE: ALL R/W STATION/OFFSET'S ARE BASED ON ℄ CONST. POND 4

NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST. POND 4.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

Southwest Florida Water
JAN 28 2000
REG-BRO
Management District

4319567.00

12.9 PAVED | 0.6 | EL.20.00 | EL.20.15 | 8.6 | 2.05 | 1:4 MAX | EL.20.75 | EL.20.4 | EL.20.9 | EL.20.34 | EL.19.73 | 3.0 PAVED | 2.68

BROAD CRESTED WEIR PLAN VIEW
N.T.S.

1:4 | EL.20.34 | CONC. LINING 8.6 | EL.20.9 | 0.6 | 2.05 | MATCH EXIS. GRADE

SECTION B-B
N.T.S.

WEIR CREST EL 20.0 | EL.20.34 | 2.68 | 3.0 | 0.6 | 10 | MATCH EXIST. GRADE

SECTION C-C
N.T.S.

Imaged As Is

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CERTIFIED TRUE COPY
S 1/28/00

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
5919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-0366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

POND 4A & 4B STORMWATER & FLOODPLAIN

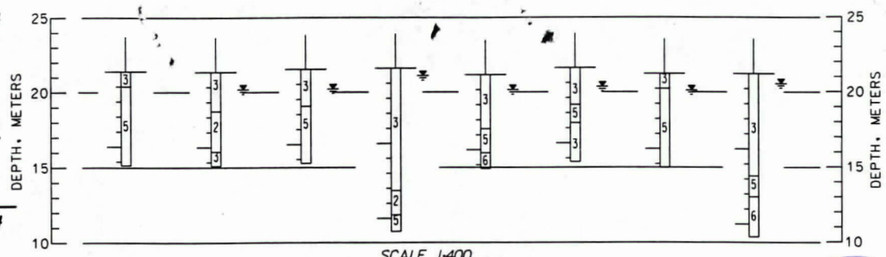
PLOT DATE: Wed Jan 26 11:37:05 2000 DESIGN FILE: p:\fdt2027\DETAR004.dgn
PLOT FILE: p:\fdt2027\detard04.prf

A-1012

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	112

1:1000

P-4A.1 04-19-96 | P-4A.2 04-19-96 | P-4A.3 04-19-96 | P-4A.4 01-31-98 | P-4B.1 04-19-96 | P-4B.2 04-19-96 | P-4B.3 04-19-96 | P-4B.4 01-31-98



℄ CONST CURVE 4
PI STA 63+66.069
Δ = 1°59'51" LT
T = 66.071
L = 132.129
R = 3790.000
PC STA 69+99.998
PT STA 64+32.127
e = NORMAL

STA 62+50.000 ℄ CONST SR 54
STA 30+00.000 ℄ CONST POND 4

100 YR - 8 HR FDOT = 21.29
25 YR FLMOD = 21.17
SHWL = 20.34

VOID

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NOTE: ALL R/W STATION/OFFSET'S ARE BASED ON ℄ CONST. POND 4

NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST. POND 4.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

BROAD CRESTED WEIR PLAN VIEW
N.T.S.

SECTION B-B
N.T.S.

SECTION C-C
N.T.S.

Southwest Florida Water Management District
SEP 21 1999
RECEIVED

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

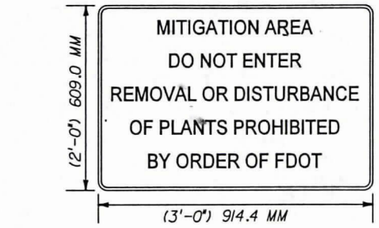
FLORIDA DEPARTMENT OF TRANSPORTATION

POND 4
STORMWATER & FLOODPLAIN

PLOT DATE: Wed Sep 15 15:35:13 1999 DESIGN FILE: p:\fdt2027\detar004.dgn
PLOT FILE: p:\fdt2027\detar004.prf

A-1013

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	113



WIDTH 3'-0" (914.4MM)
HEIGHT 2'-0" (609.0MM)
BORDER WIDTH ½" (12.7MM)
BORDER RADII 1 1/3"

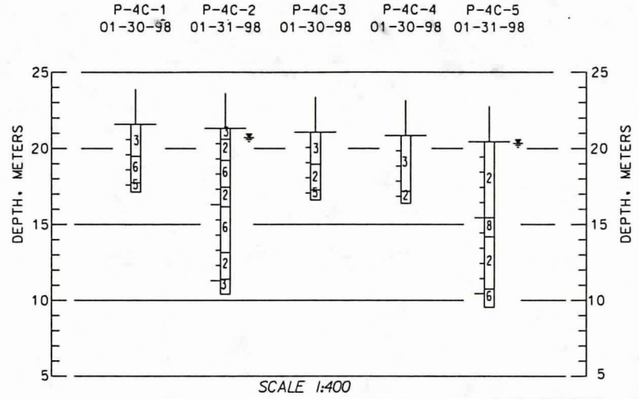
BACKGROUND
COLOR GREEN

LEGEND & BORDER
TYPE SERIES B
COLOR WHITE
QUANT. REQ'D. 4

NOTES:

1. SIGNS TO BE MANUFACTURED & ERECTED IN ACCORDANCE WITH INDEX 11860 AND RELATED INDEXES.
2. THE 16 REQUIRED SIGNS ARE TO BE PAID FOR UNDER PAY ITEMS NUMBER 700-40-1. THE QUANTITY IS INCLUDED IN THE SIGNING & PAVEMENT MARKING PLANS.

SIGNS ARE TO BE PLACE AS SHOWN ON PLAN VIEW AT POND 4C.



℄ CONST CURVE 4
PI STA 63+66.069
△ = 159'51" LT
T = 66.071
L = 132.129
R = 3790.000
PC STA 69+99.998
PT STA 64+32.127
e = NORMAL

℄ CONST CURVE 5
PI STA 67+77.410
△ = 2°45'53" RT
T = 91.457
L = 182.879
R = 3790.000
PC STA 66+85.952
PT STA 68+68.832
e = NORMAL

1:1000

POND 4C NOTES:

1. CONSTRUCTION BOUNDARY WILL BE STAKED & SILT SCREENS INSTALLED IN THE FIELD PRIOR TO EARTHWORK ACTIVITY.
2. NO CONSTRUCTION ACTIVITY OR EQUIPMENT IS ALLOWED UNDER FIVE PRESERVED TREES, OR WITHIN UPLAND BUFFER ADJACENT TO WETLANDS 9, 10, AND 11.
3. HAND REMOVAL (NO HERBCIDE) OF AIR POTATO IS ALLOWED UNDER EACH TREE PER CONTRACTOR'S NOTES.
4. THE FINAL GRADE ELEVATIONS OF POND 4C INCLUDE A MINIMUM 0.15 M DEPTH (6 In) OF ORGANIC MUCK TRANSFERRED FROM THE PROPOSED ROADWAY FILL IMPACTS OF WETLANDS 9, 10, 11. PLEASE CONTACT FDOT ENV. PM (975-6784) PRIOR TO COMMENCEMENT OF CLEARING & GRUBBING.

NOTE:
ALL R/W STATION/OFFSETS ARE BASED ON ℄ CONST. SR 54.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

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Southwest Florida Water Management District
SEP 21 1999
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Wade-Trim
4914 Memorial Highway
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Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

159

POND 4C
FLOODPLAIN AREA

PLOT DATE: Wed Aug 25 10:59:03 1999 DESIGN FILE: n:\fdot2027\DETAIL\04C.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP50000N\DETAIL04C.prf

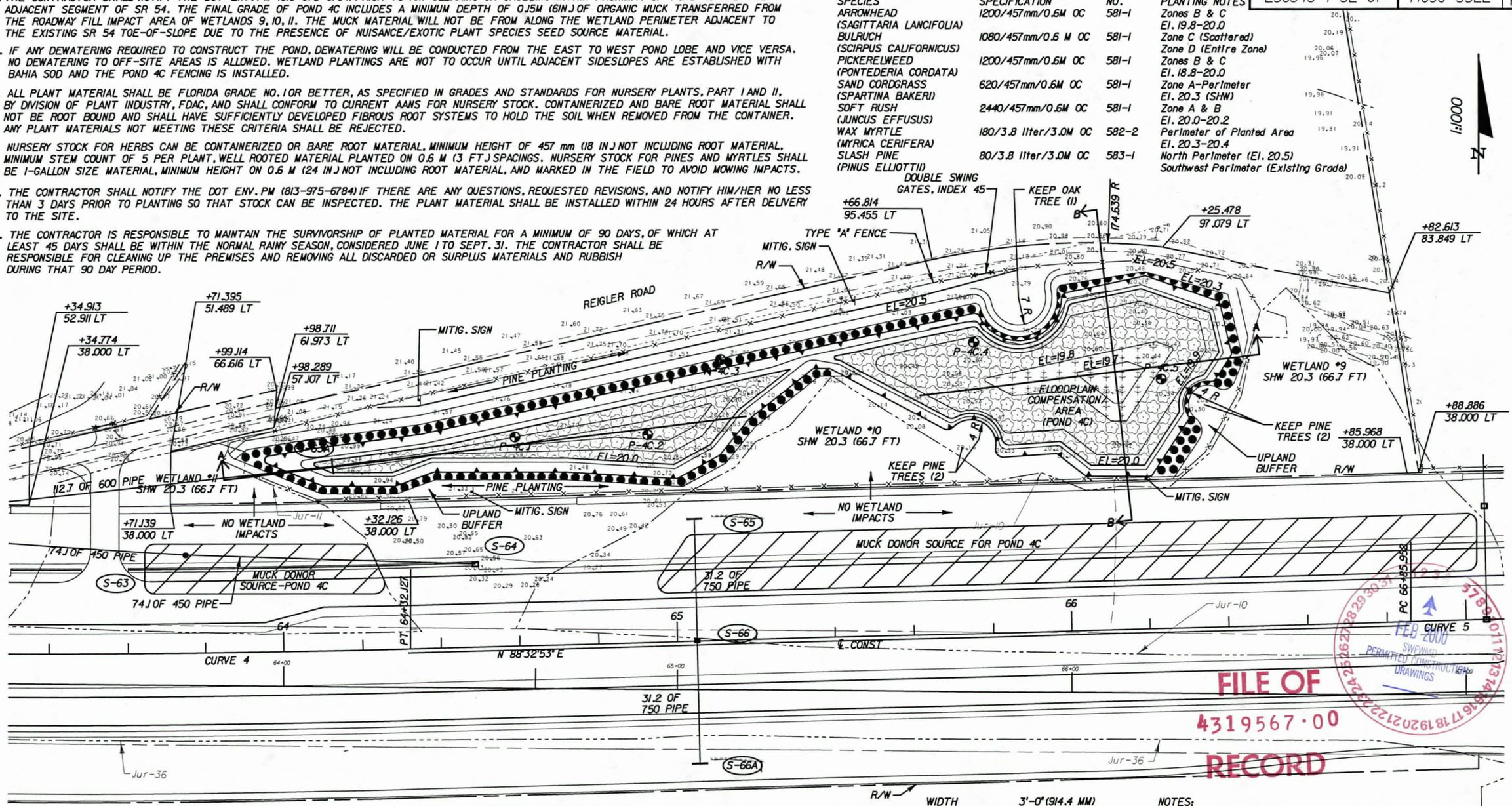
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	114

POND 4C CONTRACTOR NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE DOT ENV. PM (813-975-6784) PRIOR TO ANY CLEARING OR GRUBBING WITHIN PROXIMITY OF POND 4C AND THE ADJACENT SEGMENT OF SR 54. THE FINAL GRADE OF POND 4C INCLUDES A MINIMUM DEPTH OF 0.15M (6IN.) OF ORGANIC MUCK TRANSFERRED FROM THE ROADWAY FILL IMPACT AREA OF WETLANDS 9, 10, 11. THE MUCK MATERIAL WILL NOT BE FROM ALONG THE WETLAND PERIMETER ADJACENT TO THE EXISTING SR 54 TOE-OF-SLOPE DUE TO THE PRESENCE OF NUISANCE/EXOTIC PLANT SPECIES SEED SOURCE MATERIAL.
2. IF ANY DEWATERING REQUIRED TO CONSTRUCT THE POND, DEWATERING WILL BE CONDUCTED FROM THE EAST TO WEST POND LOBE AND VICE VERSA. NO DEWATERING TO OFF-SITE AREAS IS ALLOWED. WETLAND PLANTINGS ARE NOT TO OCCUR UNTIL ADJACENT SIDESLOPES ARE ESTABLISHED WITH BAHIA SOD AND THE POND 4C FENCING IS INSTALLED.
3. ALL PLANT MATERIAL SHALL BE FLORIDA GRADE NO. 1 OR BETTER, AS SPECIFIED IN GRADES AND STANDARDS FOR NURSERY PLANTS, PART I AND II, BY DIVISION OF PLANT INDUSTRY, FDAC, AND SHALL CONFORM TO CURRENT AANS FOR NURSERY STOCK. CONTAINERIZED AND BARE ROOT MATERIAL SHALL NOT BE ROOT BOUND AND SHALL HAVE SUFFICIENTLY DEVELOPED FIBROUS ROOT SYSTEMS TO HOLD THE SOIL WHEN REMOVED FROM THE CONTAINER. ANY PLANT MATERIALS NOT MEETING THESE CRITERIA SHALL BE REJECTED.
4. NURSERY STOCK FOR HERBS CAN BE CONTAINERIZED OR BARE ROOT MATERIAL, MINIMUM HEIGHT OF 457 mm (18 IN.) NOT INCLUDING ROOT MATERIAL, MINIMUM STEM COUNT OF 5 PER PLANT, WELL ROOTED MATERIAL PLANTED ON 0.6 M (3 FT.) SPACINGS. NURSERY STOCK FOR PINES AND MYRTLES SHALL BE 1-GALLON SIZE MATERIAL, MINIMUM HEIGHT ON 0.6 M (24 IN.) NOT INCLUDING ROOT MATERIAL, AND MARKED IN THE FIELD TO AVOID MOWING IMPACTS.
5. THE CONTRACTOR SHALL NOTIFY THE DOT ENV. PM (813-975-6784) IF THERE ARE ANY QUESTIONS, REQUESTED REVISIONS, AND NOTIFY HIM/HER NO LESS THAN 3 DAYS PRIOR TO PLANTING SO THAT STOCK CAN BE INSPECTED. THE PLANT MATERIAL SHALL BE INSTALLED WITHIN 24 HOURS AFTER DELIVERY TO THE SITE.
6. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE SURVIVORSHIP OF PLANTED MATERIAL FOR A MINIMUM OF 90 DAYS, OF WHICH AT LEAST 45 DAYS SHALL BE WITHIN THE NORMAL RAINY SEASON, CONSIDERED JUNE 1 TO SEPT. 31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP THE PREMISES AND REMOVING ALL DISCARDED OR SURPLUS MATERIALS AND RUBBISH DURING THAT 90 DAY PERIOD.

PLANTINGS FOR POND 4C

SPECIES	QUANTITY/SIZE SPECIFICATION	PAY ITEM NO.	PLANTING NOTES
ARROWHEAD (SAGITTARIA LANCIFOLIA)	1200/457mm/0.6M OC	581-1	Zones B & C El. 19.8-20.0
BULRUCH (SCIRPUS CALIFORNICUS)	1080/457mm/0.6 M OC	581-1	Zone C (Scattered) Zone D (Entire Zone)
PICKERELWEED (PONTEDERIA CORDATA)	1200/457mm/0.6M OC	581-1	Zones B & C El. 18.8-20.0
SAND CORDGRASS (SPARTINA BAKERI)	620/457mm/0.6M OC	581-1	Zone A-Perimeter El. 20.3 (SHW)
SOFT RUSH (JUNCUS EFFUSUS)	2440/457mm/0.6M OC	581-1	Zone A & B El. 20.0-20.2
WAX MYRTLE (MYRICA CERIFERA)	180/3.8 liter/3.0M OC	582-2	Perimeter of Planted Area El. 20.3-20.4
SLASH PINE (PINUS ELLIOTTII)	80/3.8 liter/3.0M OC	583-1	North Perimeter (El. 20.5) Southwest Perimeter (Existing Grade)



POND 4C NOTES:

1. CONSTRUCTION BOUNDARY WILL BE STAKED & SILT SCREENS INSTALLED IN THE FIELD PRIOR TO EARTHWORK ACTIVITY.
2. NO CONSTRUCTION ACTIVITY OR EQUIPMENT IS ALLOWED UNDER FIVE PRESERVED TREES, OR WITHIN UPLAND BUFFER ADJACENT TO WETLANDS 9, 10, AND 11.
3. HAND REMOVAL (NO HERBCIDE) OF AIR POTATO IS ALLOWED UNDER EACH TREE PER CONTRACTOR'S NOTES.

NOTE:
ALL R/W STATION/OFFSETS ARE BASED ON ℄ CONST. SR 54.

ZONES - METERS TO FEET

- ZONE A - 20.3-66.6, 20.2-66.3
- ZONE B - 20.1-65.9, 20.0-65.6
- ZONE C - 19.9-65.3, 19.8-65.0
- ZONE D - 19.7-64.6

2'-0" 609.0 MM

MITIGATION AREA
DO NOT ENTER
REMOVAL OR DISTURBANCE OF PLANTS PROHIBITED BY ORDER OF FDOT

3'-0" 914.4 MM

WIDTH	3'-0" (914.4 MM)
HEIGHT	2'-0" (609.0 MM)
BORDER WIDTH	1/2" (12.7 MM)
BORDER RADII	1 1/3"
BACKGROUND	
COLOR	GREEN
LEGEND & BORDER	
TYPE	SERIES B
COLOR	WHITE
QUANT. REQ'D.	*4

NOTES:

1. SIGNS TO BE MANUFACTURED & ERECTED IN ACCORDANCE WITH INDEX 11860 AND RELATED INDEXES.
2. THE 16 REQ'D. SIGNS ARE TO BE PAID FOR UNDER PAY ITEMS NUMBER 700-40-1, THE QUANTITY IS INCLUDED IN THE SIGNING & PAVEMENT MARKING PLANS.

SIGNS ARE TO BE PLACE AS SHOWN ON PLAN VIEW AT POND 4C.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

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SEP 21 1999 REG-BRO Management District

REVISIONS											
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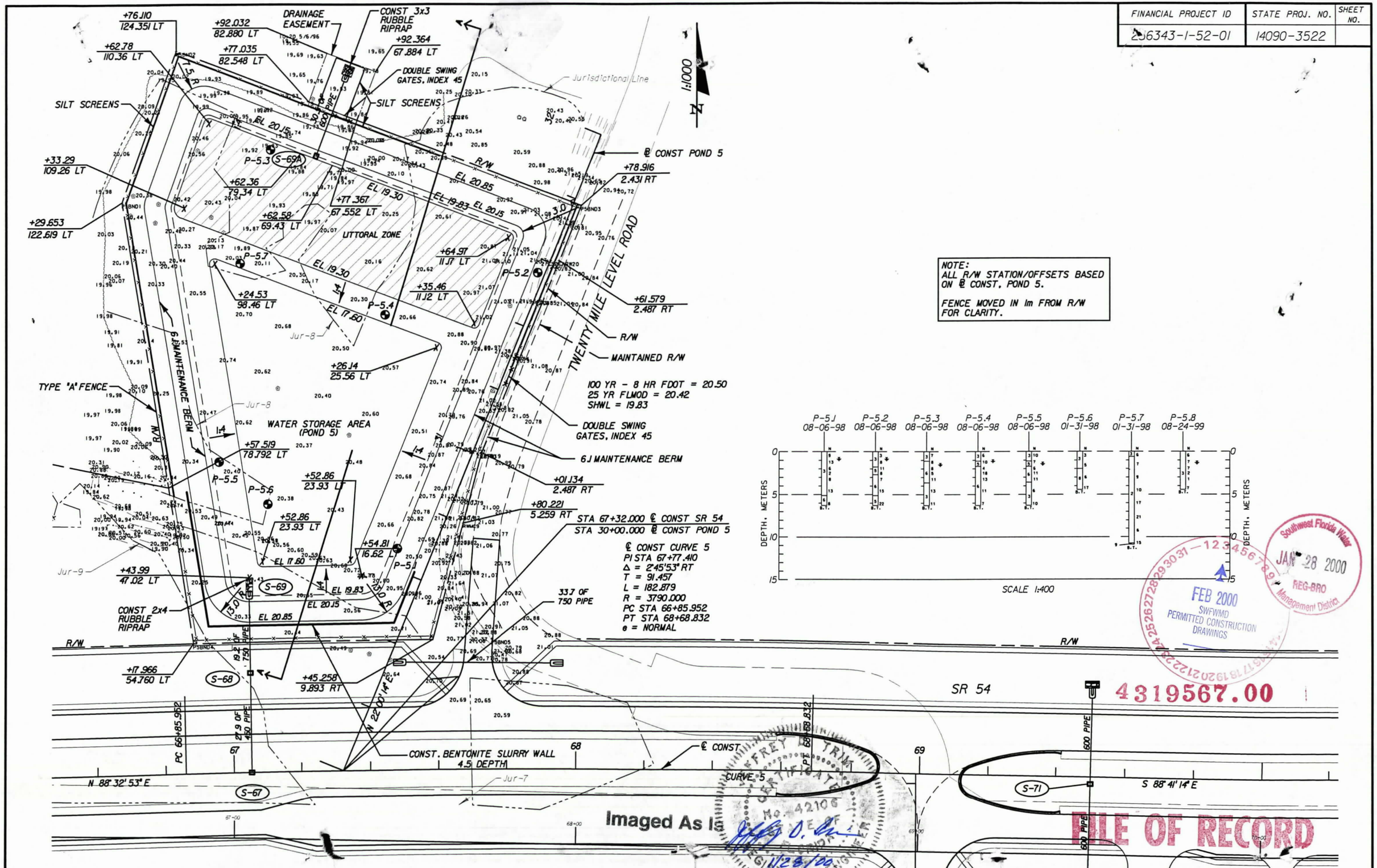
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

POND 4C FLOODPLAIN AREA - PLANTINGS

PLOT DATE: Wed Aug 25 10:59:24 1999 DESIGN FILE: p:\fdot2027\DETAIL\D40.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\detaMB4d.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST, POND 5.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

Southwest Florida Water Management District
JAN 28 2000
REG-BRO
FEB 2000
SWFWMD PERMITTED CONSTRUCTION DRAWINGS

4319567.00

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

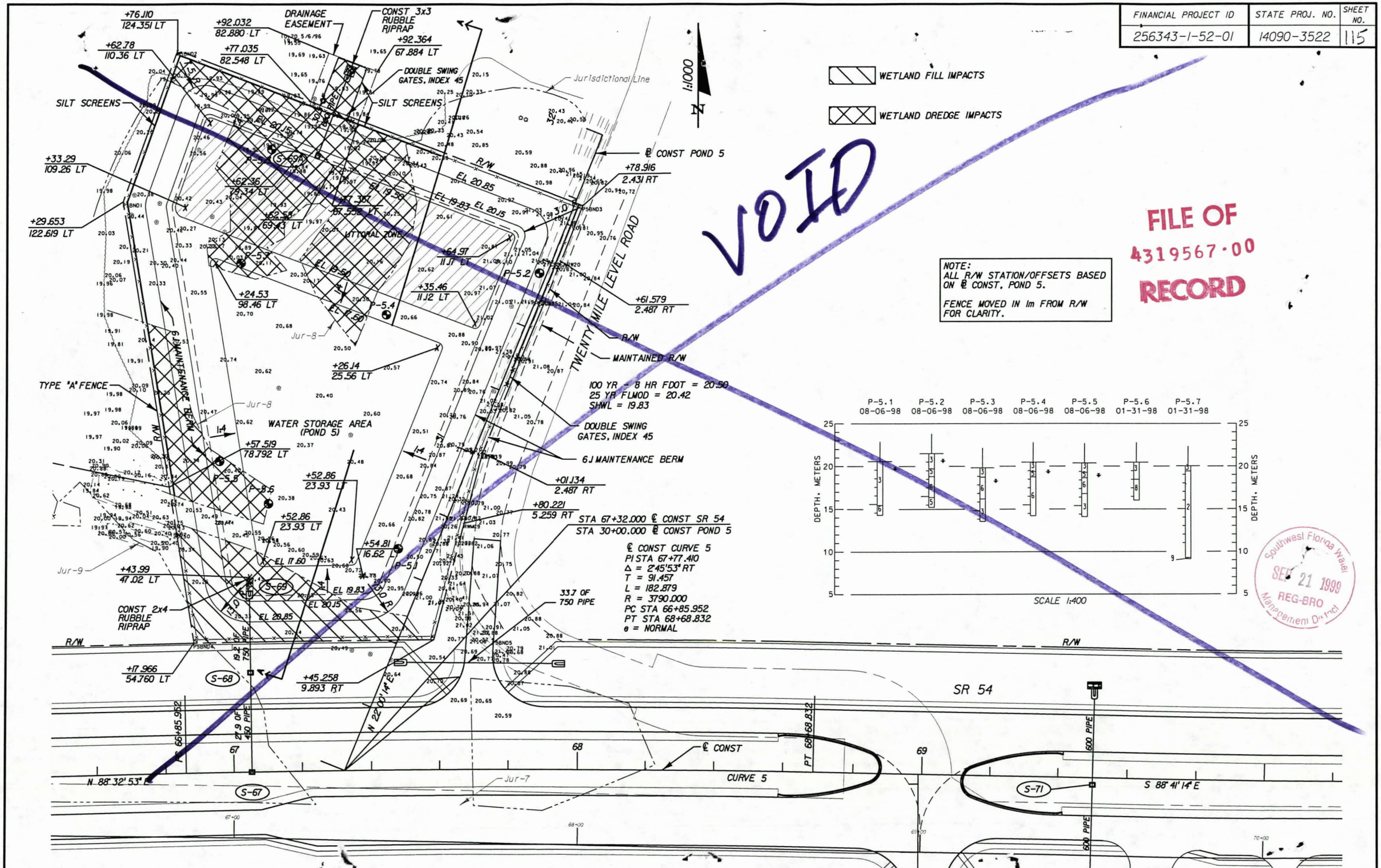
161

POND 5
STORMWATER AREA

PLOT DATE: Wed Jan 26 15:04:38 2000 DESIGN FILE: p:\fdt2027\DETARD05.dgn
PLOT FILE: p:\fdt2027\detard05.prf

A-1016

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	115



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

POND 5
STORMWATER AREA

PLOT DATE: Wed Aug 25 10:58:25 1999 DESIGN FILE: p:\fdt2027\DETAR005.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\DETAMB05.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	116

1:1000

N 00° 32' 17" E

N 47° 57' 37" E

@ CONST POND 6

PI 33+0.000
Δ = 47°25'20" RT

+17.738
12.271 RT

+34.823
37.993 RT

+09.452
91.967 RT

+06.000
48.700 RT

+49.440
25.000 RT

115.5 OF
1200 PIPE

71.9 OF
1200 PIPE

+53.440
45.000 RT

INGRESS / ENGRESS
DRAINAGE EASEMENT

JURISDICTIONAL LINE

+59.500
54.250 RT

DOUBLE SWING
GATE, INDEX 45

+93.500
72.500 RT

+14.000
79.250 RT

17.7 OF
1200 PIPE

+33.000
86.500 RT

+51.000
95.601 RT

+61.941
102.726 RT

SILT SCREENS

+86.334
97.978 RT

+07.278
71.975 RT

+14.553
97.994 RT

+05.142
110.336 RT

10 WIDE
DRAINAGE EASEMENT

+13.094
116.399 RT

+23.661
97.999 RT

+26.826
98.391 RT

29.9 OF
975 X 1535 PIPE

+33.678
36.169 RT

+46.359
62.272 RT

WATER STORAGE AREA
(POND 6A)
EL 18.71

LITTORAL ZONE

FLOODPLAIN STORAGE AREA
(POND 6B)
EL 18.71

+05.918
35.029 RT

14.4 OF
900 PIPE

+36.401
34.549 RT

+37.836
73.551 RT

+90.724
106.302 RT

+86.204
79.550 RT

+08.668
108.204 RT

+84.521
33.789 RT

+05.148

12.19 R
TYP

8.07 R
TYP

18.29 R
TYP

EL 22.33
EL 21.57
EL 20.54

R/W

6.1 MAINTENANCE BERM

TYPE "A" FENCE

S-77 S-78 S-78A S-89 S-90 S-91 S-92

P-6.1 P-6.2 P-6.3 P-6.4 P-6.5 P-6.6 P-6.7

NOTE:
ALL R/W STATION/OFFSETS BASED ON @ CONST. POND 6.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

WETLAND FILL IMPACTS

100 YR - 8 HR FDOT = 21.34
25 YR FLWOD = 21.22
SHWL = 20.54

	P-6.1	P-6.2	P-6.3	P-6.4	P-6.5	P-6.6	P-6.7	P-6.8	P-6.9
	02-04-98	02-04-98	02-05-98	02-04-98	02-05-98	02-04-98	02-04-98	02-04-98	02-04-98

DEPTH, METERS 25 20 15 10

SCALE 1:400

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4319567.00
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FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8566 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

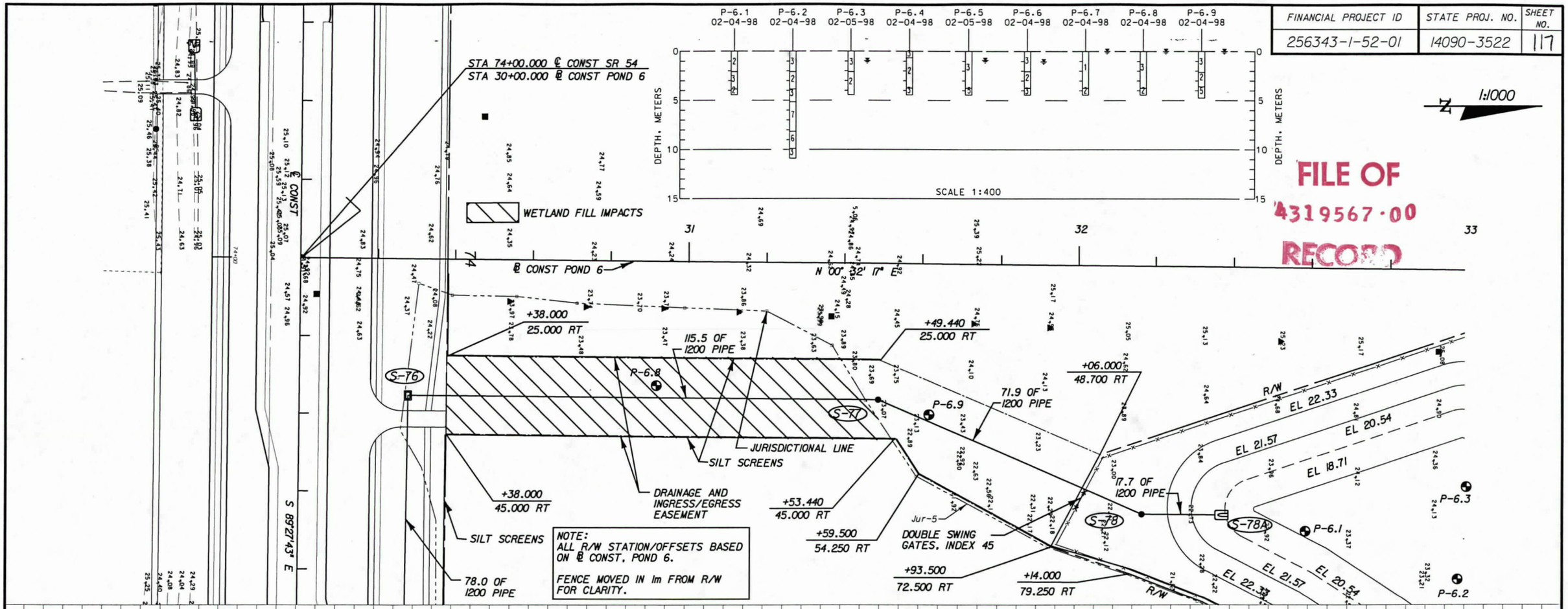
PONDS 6A & 6B
STORMWATER & FLOODPLAIN AREA

162

A-1018

PLOT FILE: G:\CADNET\QUEUES\MSHP50008\DETAIL006.plt
PLOT DATE: Wed Aug 25 10:58:07 1999 DESIGN FILE: p:\fdot2027\DETAR006.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	117



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SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS											
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FLORIDA DEPARTMENT OF TRANSPORTATION

POND SIX SPECIAL DETAIL

163

A-1019

PLOT FILE: C:\CADNET\DUELES\MSHP5000N\SPDTMB02.prf
PLOT DATE: Wed Aug 25 11:19:00 1999 DESIGN FILE: p:\fdt2027\SPDTRD02.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	118

NOTE:
ALL R/W STATION/OFFSETS BASED ON ℄ CONST. POND 7.

FENCE MOVED IN 1m FROM R/W FOR CLARITY.

100 YR - 24 HR FDOT = 18.63
25 YR FLMOD = 18.43
SHWL = 17.83

WETLAND FILL IMPACTS

1:1000

SR 54

Exist R/W

S 89°19'17" E

N 00°40'43" E

℄ CONST

SILT SCREENS

+82.110 70.656 LT
+91.775 62.657 LT
+09.641 66.509 LT
+00.355 56.888 LT
+21.868 70.816 LT
+32.017 77.881 LT
+54.811 80.176 LT
+77.174 76.852 LT
+90.601 72.287 LT
+01.095 68.588 LT
+18.041 64.907 LT
+36.929 61.969 LT
+56.227 60.886 LT
+79.253 56.917 LT

CONST 3X3 RUBBLE RIPRAP

+44.81 39.06 LT
+63.17 45.10 LT
+63.54 13.41 LT

PLANT MYRTLES

WATER STORAGE AREA (POND 7B) EL 15.51

+40.18 38.49 LT
+46.79 12.14 LT
+52.38 14.92 LT
+53.49 08.78 LT
+59.050 03.463 RT
+58.576 3.723 RT
+79.289 5.706 LT

SUMP EL 15.20

+40.48 12.38 LT

WATER STORAGE AREA (POND 7A) EL 16.00

LITTORAL ZONE

17.7 OF 600 PIPE

EL 18.90
EL 17.83

+04.02 02.70 LT
+65.20 53.16 LT
+03.54 43.05 LT
+54.33 51.29 LT
+77.70 38.92 LT
+77.70 12.89 RT
+55.09 11.98 RT
+65.98 12.65 RT
+57.443 15.742 RT
+38.202 30.371 RT
+20.116 30.368 RT
+21.844 39.511 RT
+57.598 25.502 RT
+57.702 32.060 RT
+62.342 30.830 RT
+15.595 24.892 RT
+45.12 13.18 LT
+33.903 17.226 RT
+47.90 05.94 LT
+50.320 8.241 RT
+58.813 39.937 RT
+38.202 39.515 RT

89.4 OF 1050 PIPE
52.1 OF 1050 PIPE
29.5 OF 760 PIPE
159.0 OF 760 PIPE

INGRESS / EGRESS DRAINAGE EASEMENT
DOUBLE SWING GATE, INDEX 45
STA 84+50.000 ℄ CONST SR 54
STA 30+00.000 ℄ CONST POND 7
DOUBLE SWING GATE, INDEX 45

8.1 CANTILEVER SLIDE GATE

6.1 MAINTENANCE BERM

TYPE 'A' FENCE

15' X 35' EASEMENT

CONST 3X3 RUBBLE RIPRAP

P-7.1 P-7.2 P-7.3 P-7.4 P-7.5 P-7.6 P-7.7 P-7.8 P-7.9
06-07-96 06-07-96 06-07-96 06-07-96 06-07-96 06-07-96 02-03-98 02-03-98 02-02-98

DEPTH, METERS

FEB 2000
SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

FILE OF
4319567.00
RECORD
164

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE SAME SIX CONTRACTOR NOTES SPECIFIED FOR POND 4C.
2. HERB PLANTINGS FOR POND 7A INCLUDE THE LITTORAL ZONE AND THE SAME GRADE ELEVATION (EL. 17.22) AROUND THE PERIMETER OF THE WATER STORAGE AREA.
3. HERB PLANTINGS FOR POND 7B INCLUDE THE BOTTOM GRADE ELEVATION(EL. 15.51).
4. MYRTLES WILL BE PLACED ON 1.5M, (5 FT) SPACINGS ALONG THE NORTHERN R/W FENCELINE. ADDITIONAL MYRTLES WILL BE PLANTED ON ALTERNATING SPACINGS WITH RED MAPLE AND BALD CYPRESS ON 3.0M (10 FT) SPACINGS ALONG THE SEASONAL HIGH WATER CONTOUR (17.83M) FOR POND 7A; WITH MAPLE THROUGHOUT THE BOTTOM GRADE OF POND 7B.
5. SLASH PINE WILL HAVE ALTERNATING PLANTINGS WITH LIVE OAK, 3.0M (10 FT) SPACINGS, BETWEEN SLOPE ELEVATIONS 18.9 AND 19.2 ON POND 7A, AND 17.6 AND 19.7 ON POND 7B.

PLANTINGS FOR POND 7A

SPECIES	QUAN/SIZE SPECS	PAY ITEM NO.	PLANTING NOTES
ARROWHEAD (SAGITTARIA LANCIFOLIA)	1400/457mm/0.6M OC	581-1	EL. 17.22 LIT. ZONE& PERIM. WATER STORAGE
BULRUSH (SCIRPUS CALIFORNICUS	1000/457mm/0.6M OC	581-1	EL. 17.22 LIT. ZONE & PERIM. WATER STORAGE
PICKERELWEED (PONTEDERIA CORDATA)	2000/457mm/0.6M OC	581-1	EL. 17.22 LIT. ZONE & PERIM. WATER STORAGE
SOFT RUSH (JUNCUS EFFUSUS)	940/457mm/3.0M OC	581-1	EL. 17.3-17.8-PERIMETER OR LIT. ZONE & WATER STOR.
WAX MYRTLE (MYRICA CERIFERA)	80/3.8 liter/3.0M OC	582-2	EL. 17.83-PERIMETER OF LIT. ZONE & WATER STOR.
RED MAPLE (ACER RUBRUM)	50/3.8 liter/3.0M OC	583-1	EL. 17.7-PERIMETER OF LIT. ZONE & WATER STOR.
BALD CYPRESS (TAXODIUM DISTICHUM)	50/3.8 liter/3.0M OC	583-1	EL. 17.4-PERIMETER OF LIT. ZONE & WATER STOR.

PLANTINGS FOR POND 7A

SPECIES	QUAN./SIZE SPECS.	PAY ITEM NO.	PLANTING NOTES
SAND CORDGRASS (SPARTINA BAKERI)	980/457mm/0.6M OC	581-1	EL. 15.51-BOTTOM GRADE
RED MAPLE (ACER RUBRUM)	30/3.8 liter/3.0M OC	583-1	EL. 17.7-BOTTOM GRADE
WAX MYRTLE (MYRICA CERIFERA)	30/3.8 liter/ 3.0M OC	582-2	EL. 17.7-BOTTOM GRADE
LAUREL OAK (QUERCUS LAURIFOLIA)	30/3.8 liter/3.0M OC	582-2	EL. 17.7-BOTTOM GRADE

SIDESLOPE PLANTINGS

SPECIES	QUAN./SIZE SPECS.	PAY ITEM NO.	PLANTING NOTES
SLASH PINE (PINUS ELLIOTTII)	70/3.8 liter/3.0M OC	583-1	SEE NOTE *5.
LIVE OAK (QUERCUS VIRGINIANA)	70/3.8 liter/3.0M OC	583-1	SEE NOTE *5.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

REVISIONS

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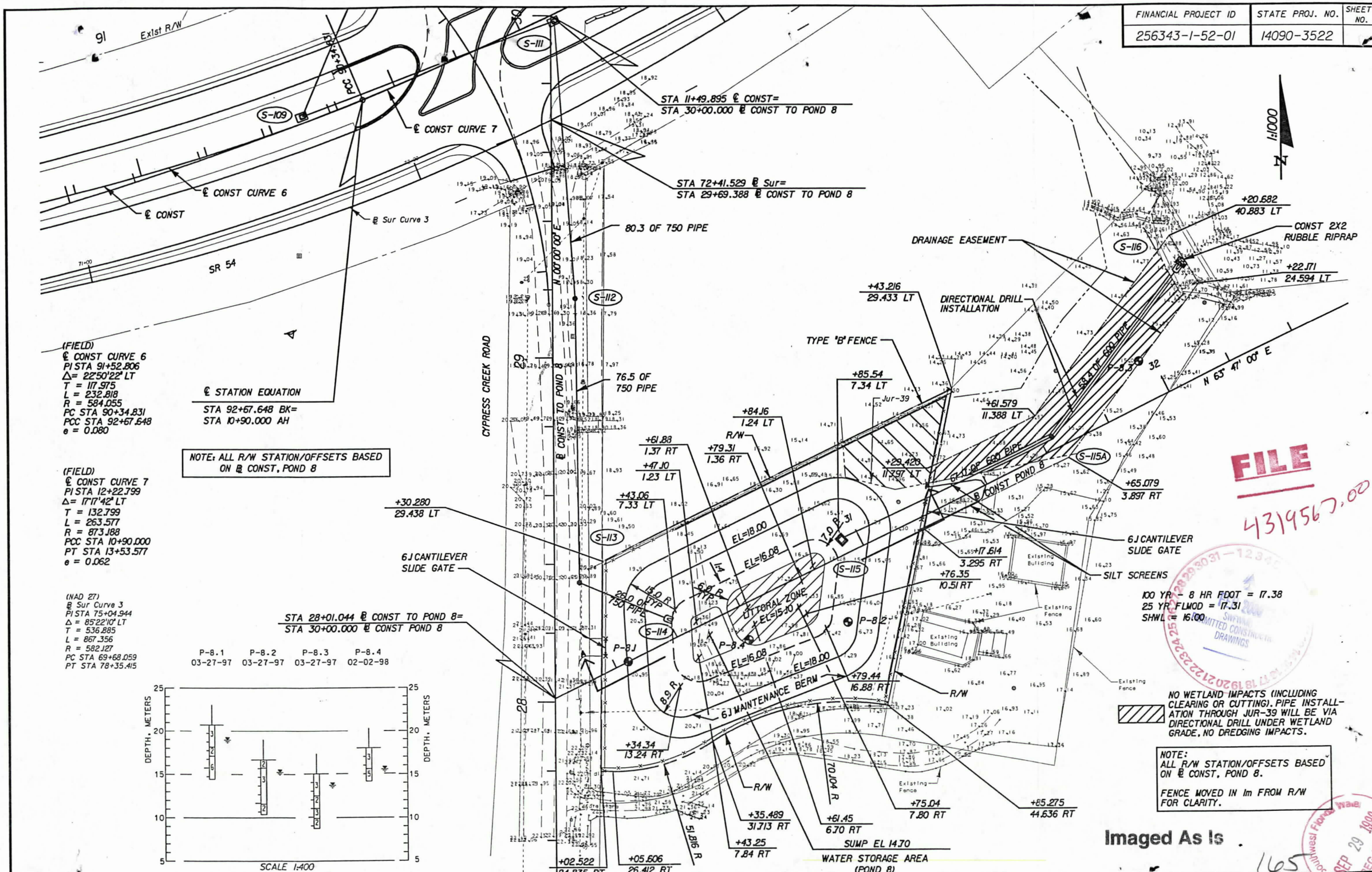
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

PONDS 7A & 7B
STORMWATER & FLOODPLAIN AREA

PLOT FILE: C:\CADNET\DUEUES\MSHP50000\DETAmb07.prF
PLOT DATE: Wed Aug 25 10:57:44 1999 DESIGN FILE: p:\fdt2027\DETAR007.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	



REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

POND 8 STORMWATER AREA

PLOT DATE: Thu Jun 10 13:54:51 1999 DESIGN FILE: p:\fdt2027\DETAR008.dgn PLOT FILE: p:\fdt2027\DETAM008.prf

A-1021

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
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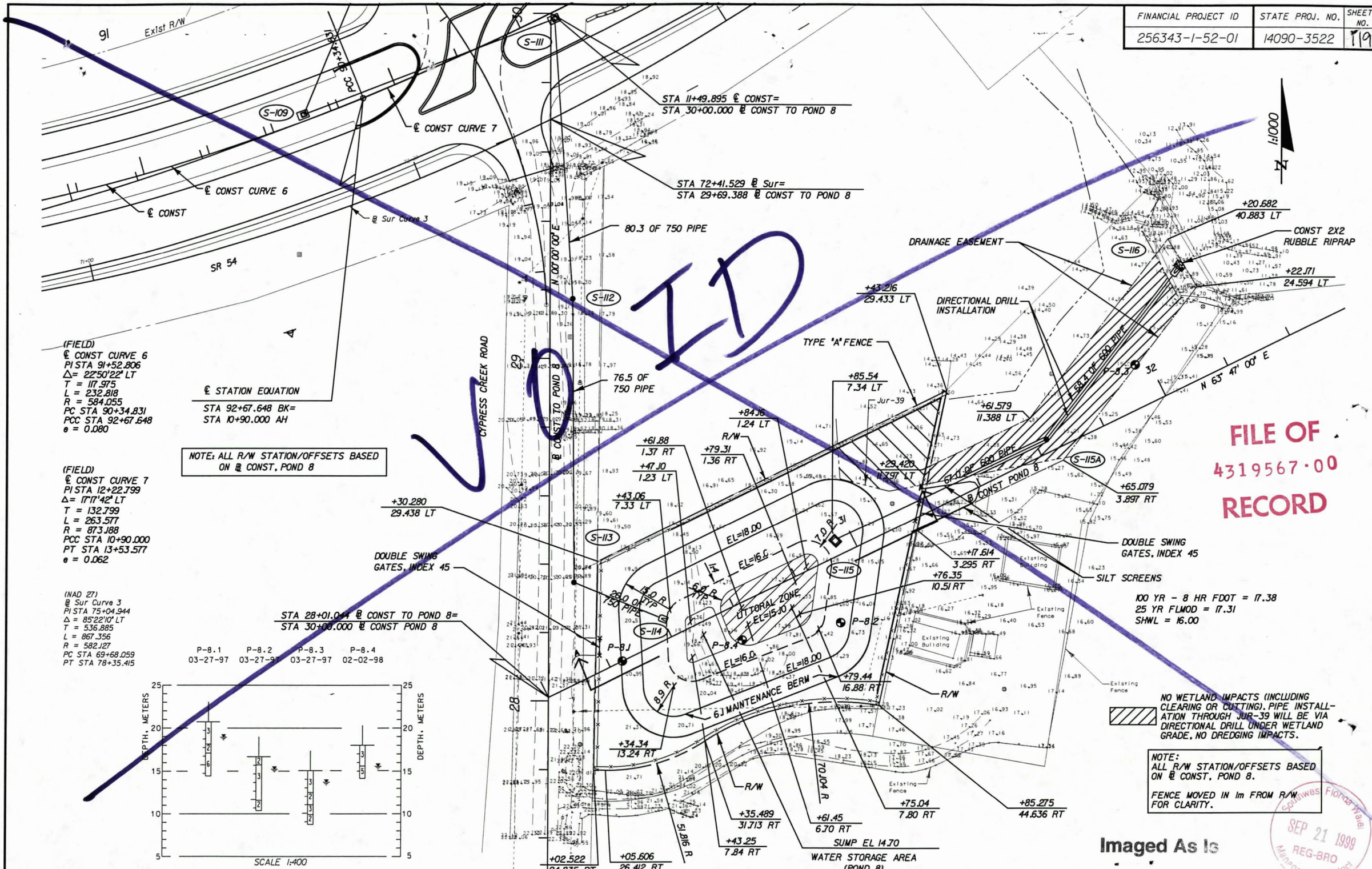

FILE OF
4319567·00
RECORD

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Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

POND 8
STORMWATER AREA

PLOT DATE: Wed Aug 25 10:58:34 1999 DESIGN FILE: p:\fdt2027\DETAR008.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\DETAM808.prf

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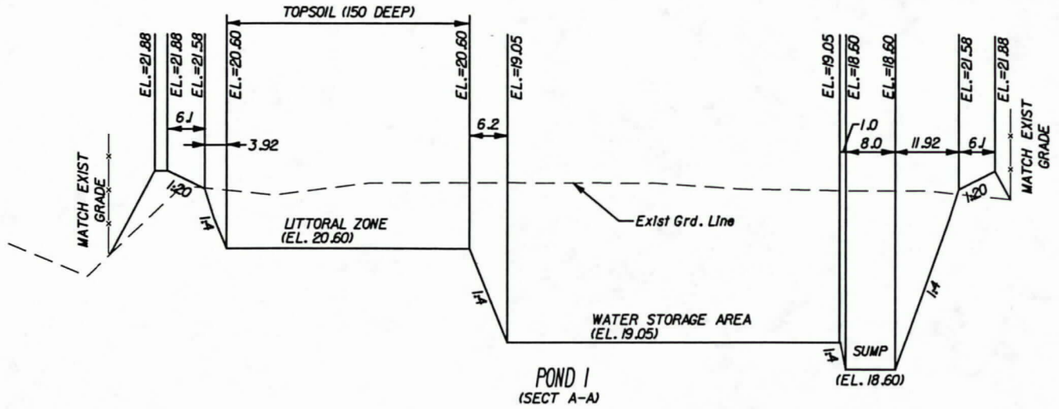
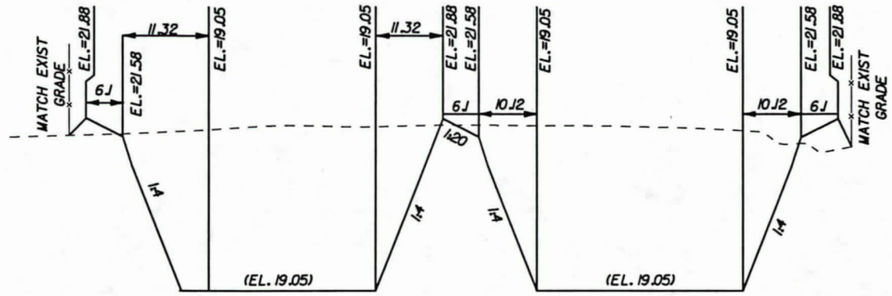
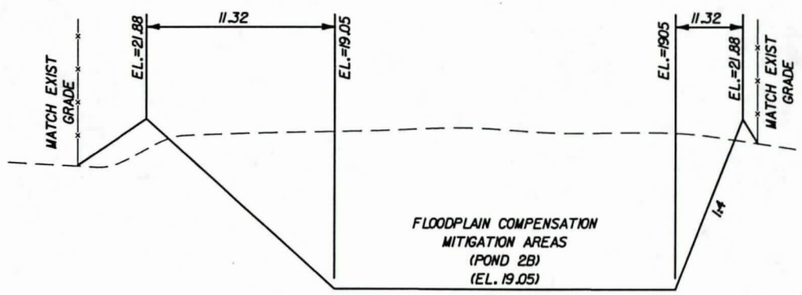


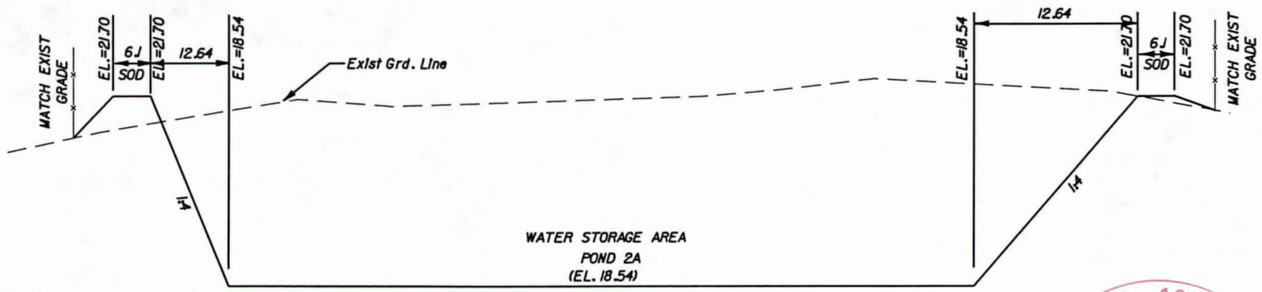
POND 1
(SECT A-A)



POND 1
(SECT B-B)



POND 1
(SECT C-C)



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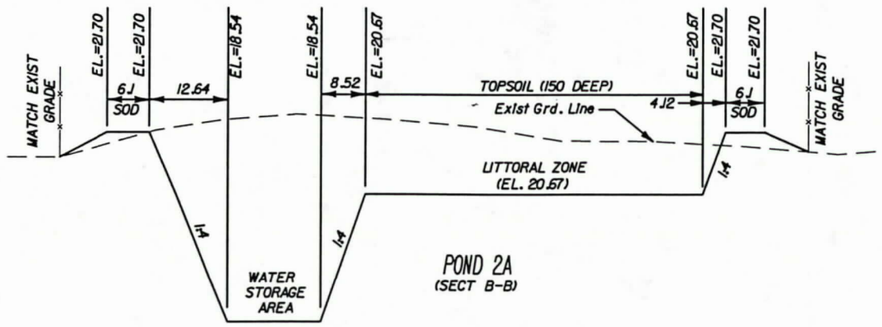
(SECT A-A)



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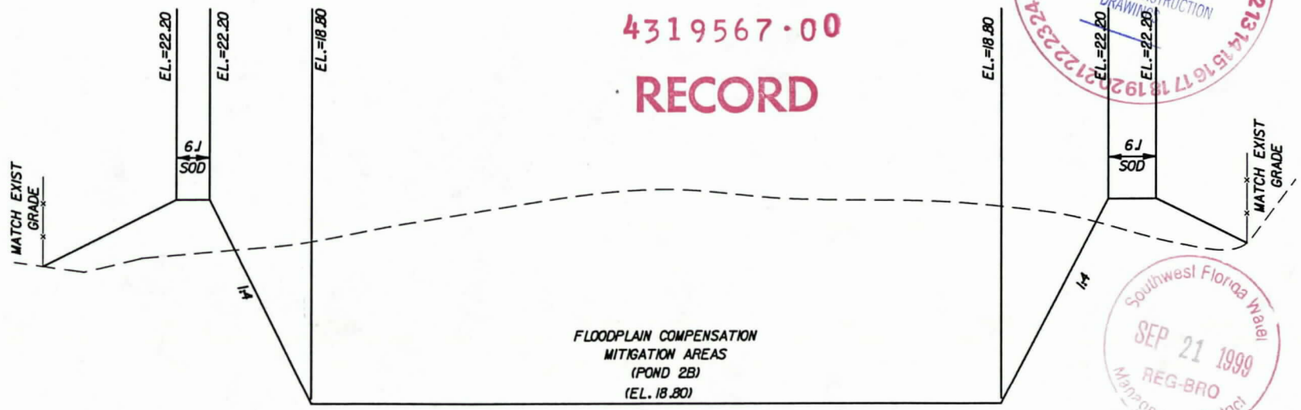
(SECT B-B)



POND 2B
(SECT A-A)

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWING

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

SCALE: 1:1000 HORIZONTAL
1:200 VERTICAL

Imaged As Is 166

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

PLOT DATE: Wed Aug 25 11:19:16 1999 DESIGN FILE: P:\FDOT2027\SPDTR003.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\spdtr-d03.prf

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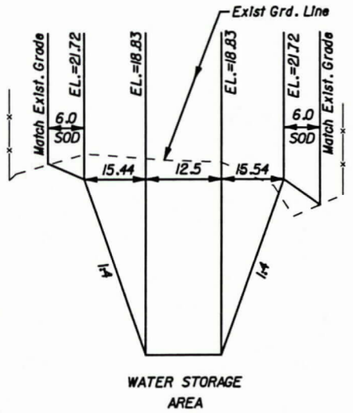

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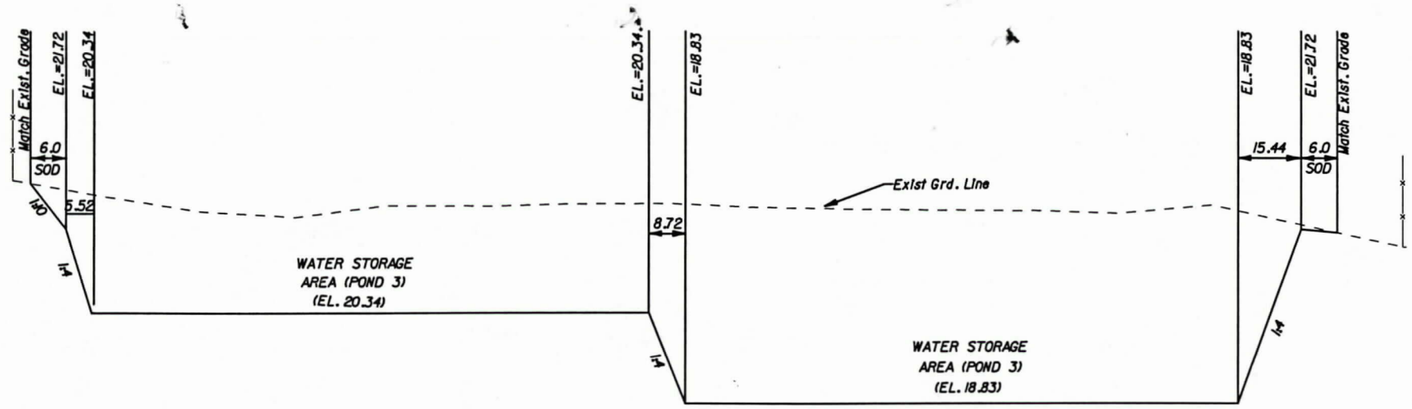
(SECT A-A)



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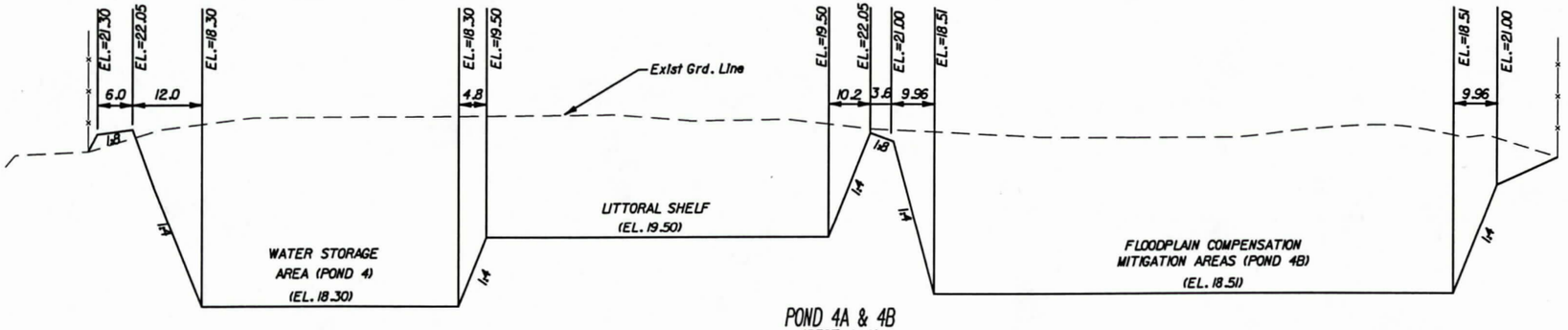
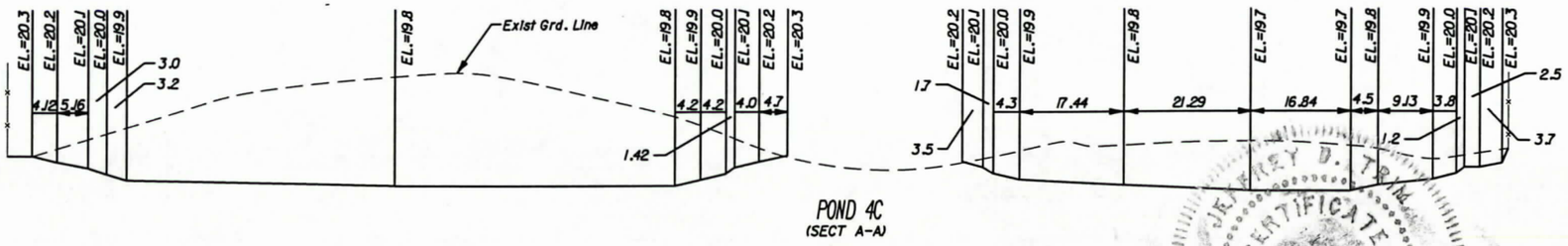
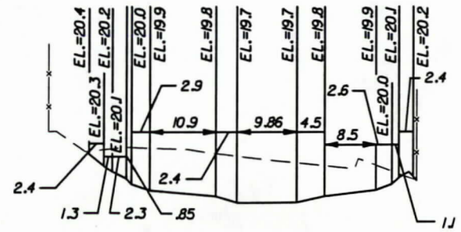
(SECT D-D)



POND 4A & 4B
(SECT A-A)



POND 4C
(SECT A-A)



POND 4C
(SECT B-B)

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
JAN 28 2000
REG-BRO
Management District

4319567.00

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FILE OF RECORD
167

SCALE: 1:200 HORIZONTAL
1:200 VERTICAL

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

PLOT DATE: Wed Jan 26 15:08:03 2000 DESIGN FILE: p:\fdt2027\spdtd04.dgn PLOT FILE: p:\fdt2027\spdtd04.prf

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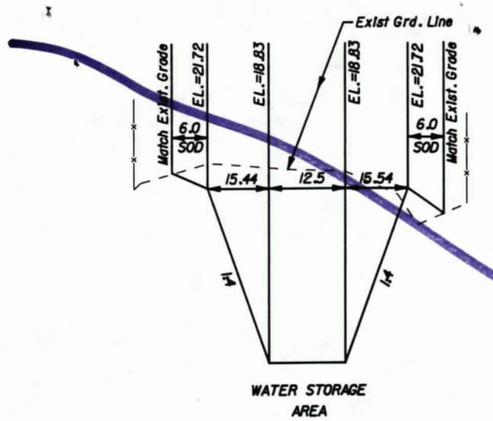

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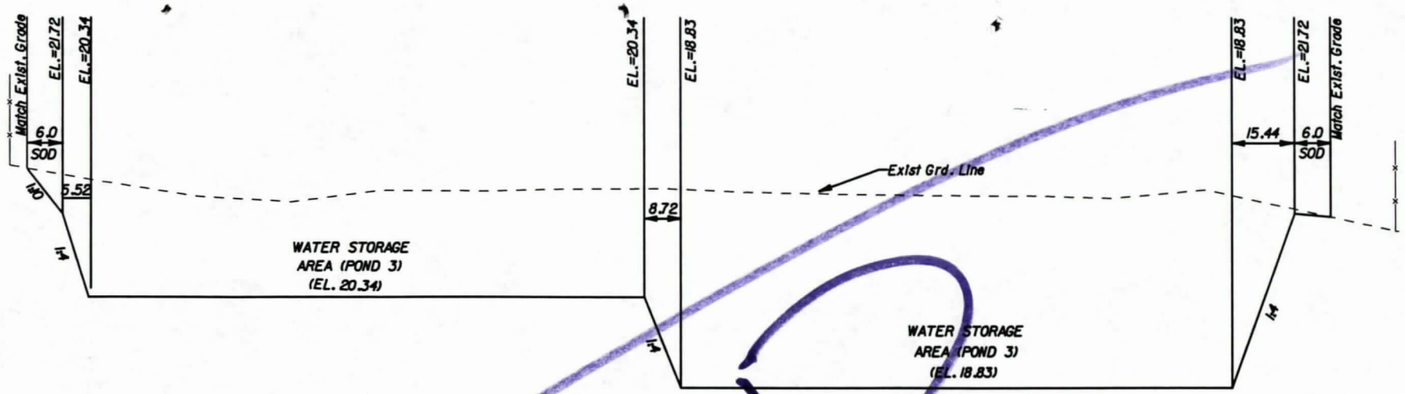
(SECT A-A)



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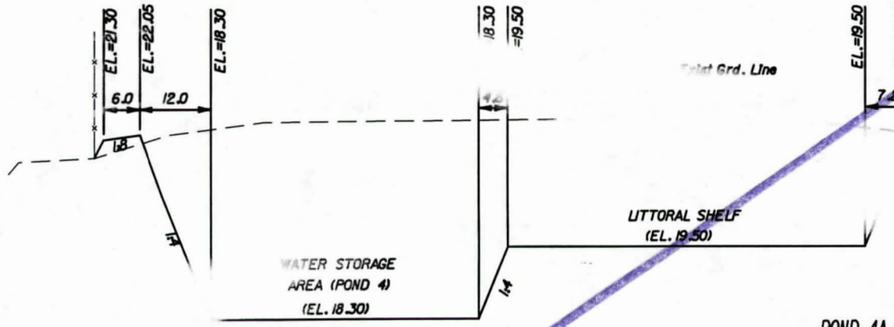
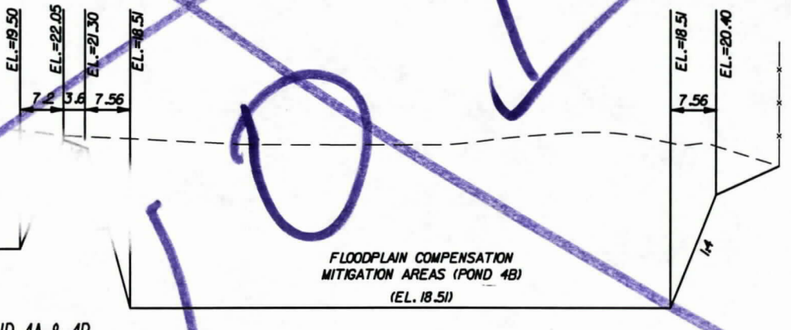
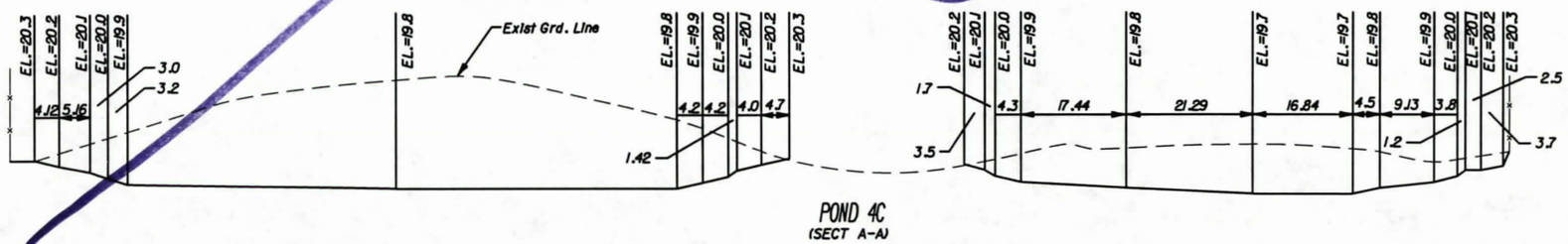
(SECT D-D)





POND 4A & 4B
(SECT A-A)



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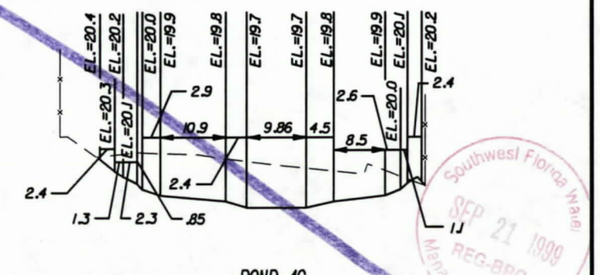

POND 4C
(SECT B-B)

SCALE: 1:400 HORIZONTAL
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FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REC-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

PLOT FILE: ps\fdt2027 spdtr804.prf
PLOT DATE: Wed Sep 15 15:54:55 1999 DESIGN FILE: ps\fdt2027\spdtr804.dgn

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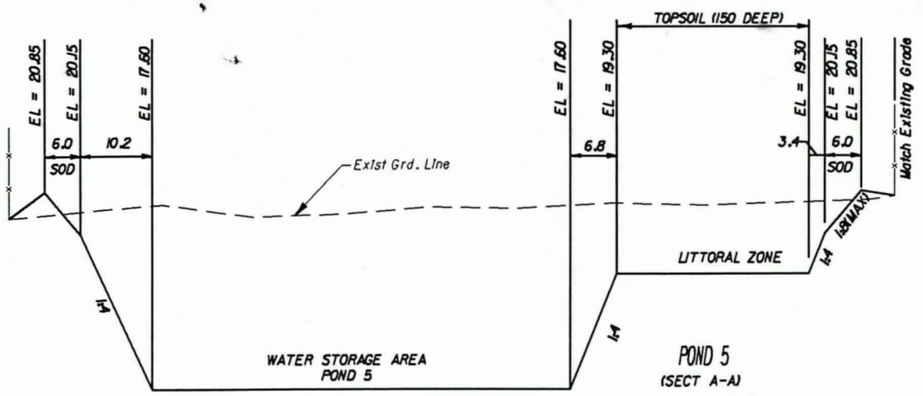

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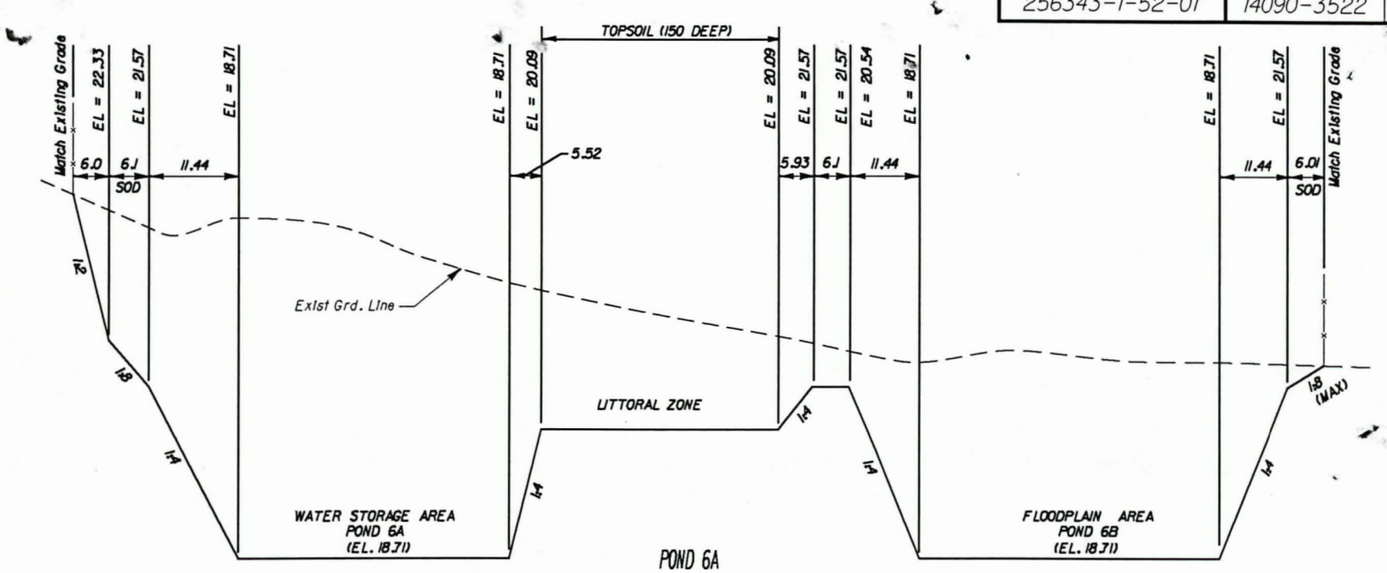
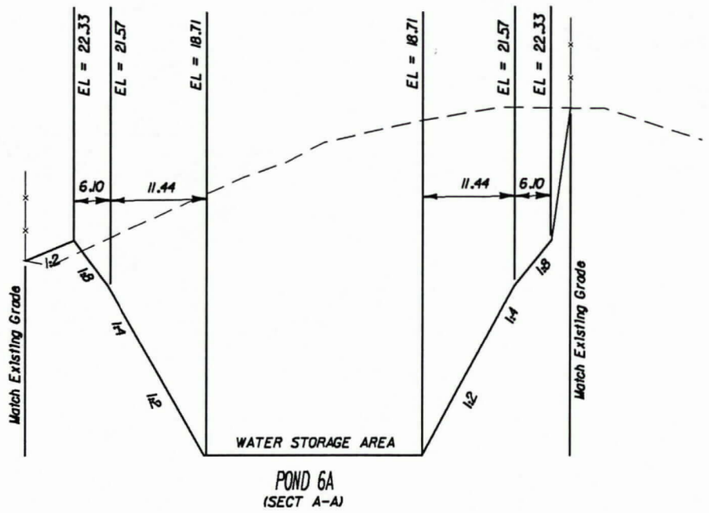
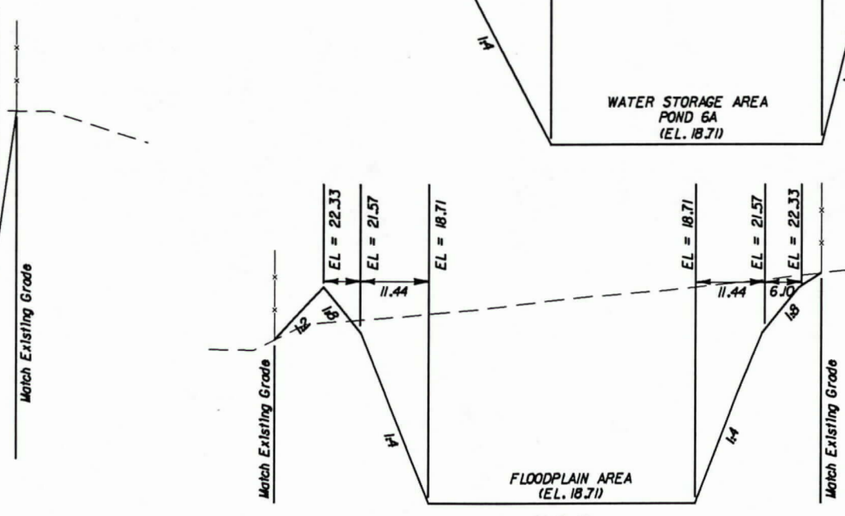
(SECT A-A)



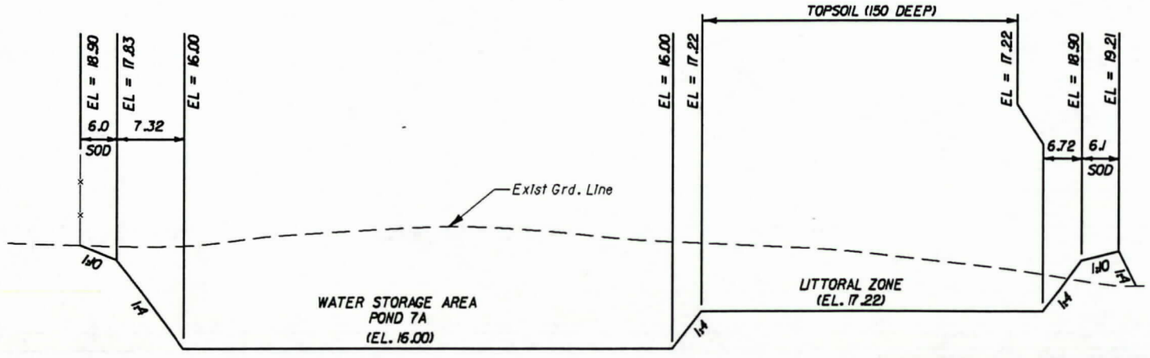
POND 6A
(SECT C-C)



POND 6A
(SECT A-A)



POND 6B
(SECT B-B)



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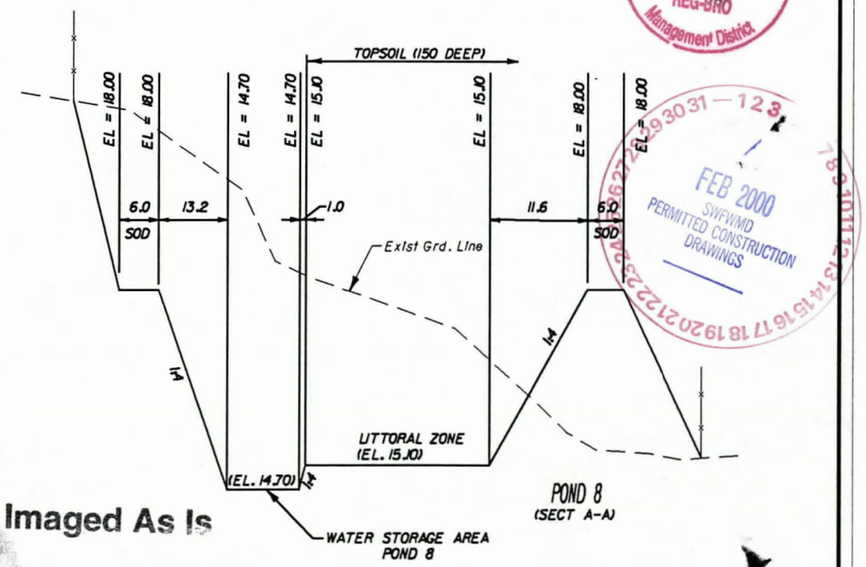
(SECT A-A)



POND 8
(SECT A-A)

4319567.00

Southwest Florida Water Management District
JAN 28 2000
REG-BRO

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

JEFFREY D. TRIM
CERTIFICATE
No. 42106
STATE OF
REGISTERED ENGINEER
1/28/00

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FILE OF RECORD

SCALE: 1"=1000' HORIZONTAL
1"=200' VERTICAL

168

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

A-1026

PLOT DATE: Fri Jan 28 08:58:16 2000 DESIGN FILE: p:\fdt2027\SPDTR005.dgn
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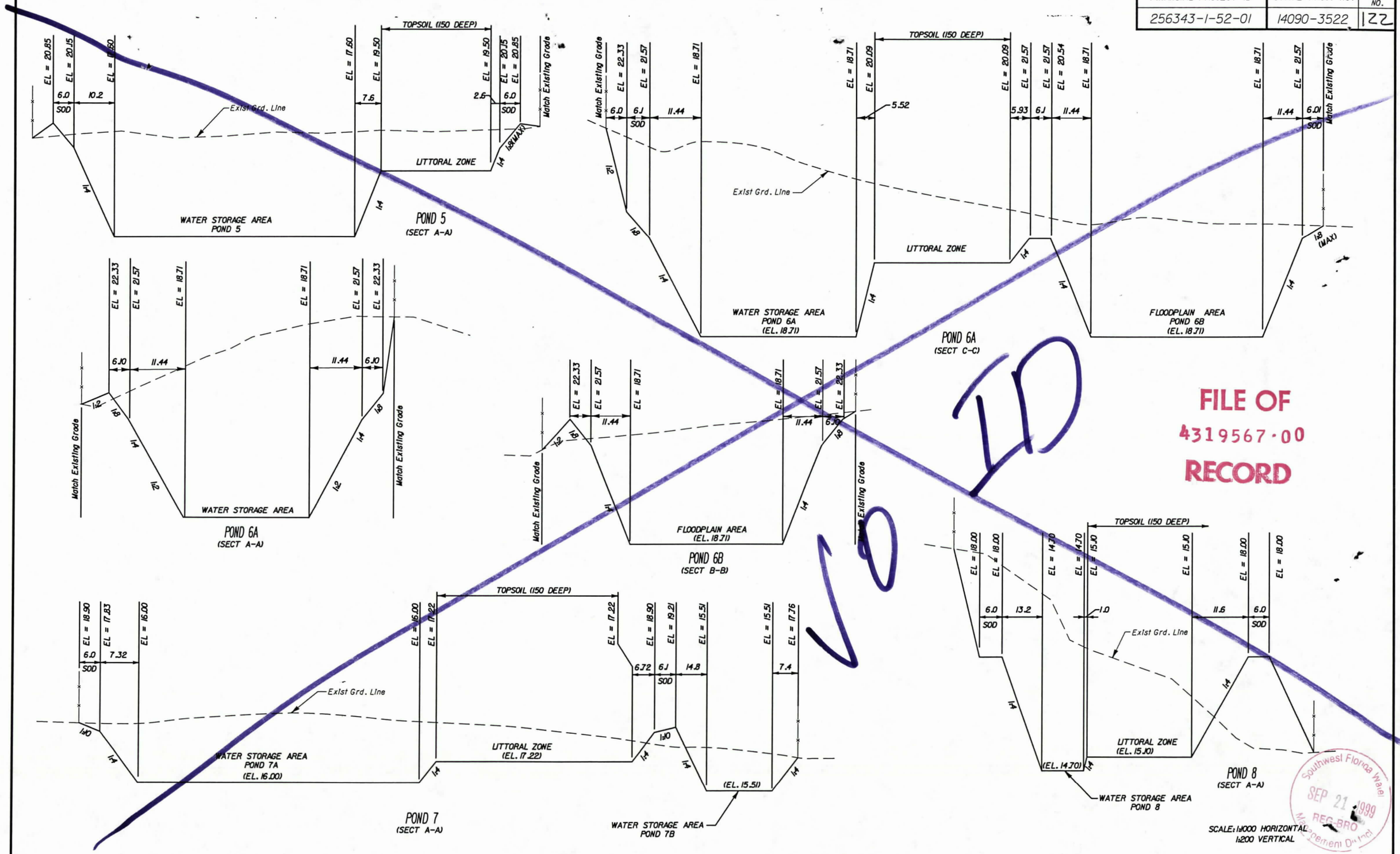


FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REC-BRO

SCALE: 1:1000 HORIZONTAL
1:200 VERTICAL

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

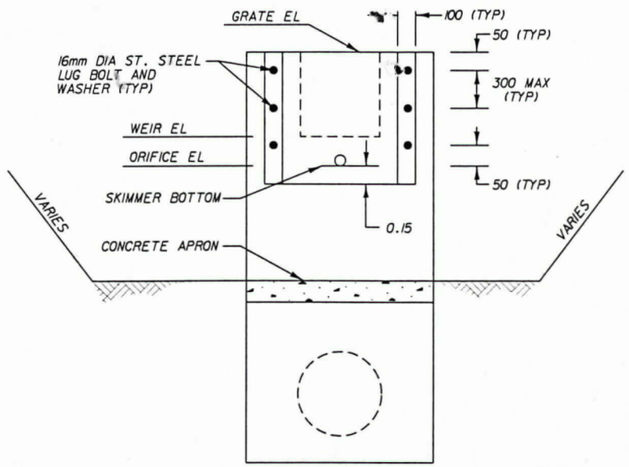
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

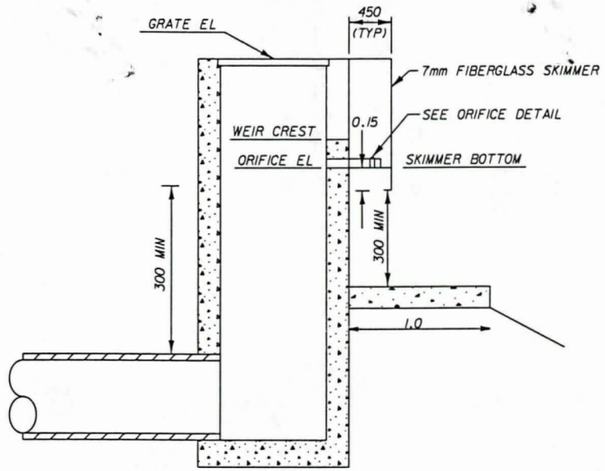
SPECIAL DETAILS

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\spdtrd05.prf
PLOT DATE: Wed Aug 25 11:54:24 1999 DESIGN FILE: p:\fdt2027\SPDTRD05.dgn

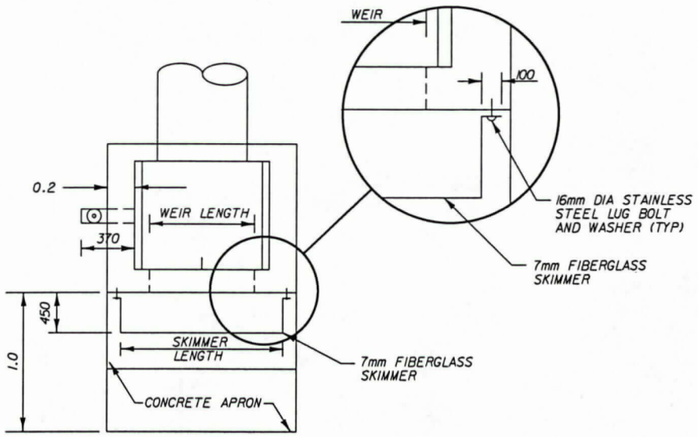
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	5



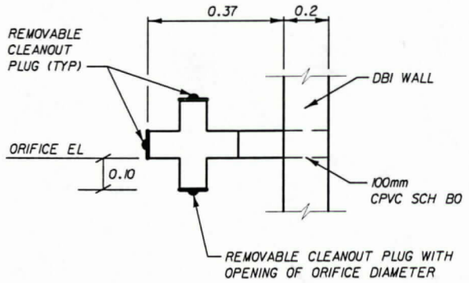
ELEVATION VIEW



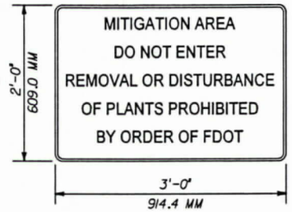
SECTIONAL VIEW



PLAN VIEW



ORIFICE DETAIL



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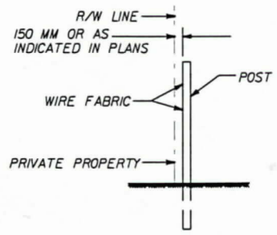
HEIGHT	2'-0" (609.0MM)	COLOR	GREEN
BORDER WIDTH	1/2" (12.7MM)	LEGEND & BORDER	
BORDER RADII	1 1/3"	TYPE	SERIES B
		COLOR	WHITE
		QUANT. REQ'D.	16

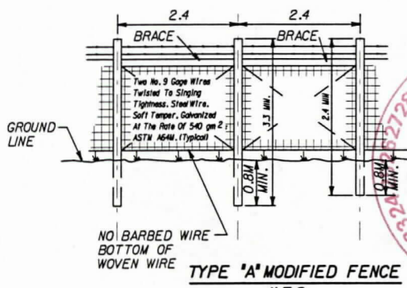
NOTES:

1. SIGNS TO BE MANUFACTURED & ERECTED IN ACCORDANCE WITH INDEX 11860 AND RELATED INDEXES.
2. THE 16 REQUIRED SIGNS ARE TO BE PAID FOR UNDER PAY ITEMS NUMBER 700-40-1. THE QUANTITY IS INCLUDED IN THE SIGNING & PAVEMENT MARKING PLANS.

SIGNS ARE TO BE PLACE AS SHOWN ON PLANS



FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS
N.T.S.



TYPE 'A' MODIFIED FENCE
N.T.S.

STRUCTURE NO.	STATION/ OFFSET	DBI TYPE	GRATE ELEV	WEIR ELEV TOP	WEIR ELEV BOTTOM	WEIR LENGTH (mm)	BLEED DOWN ORFICE DIA (mm)	BLEED DOWN ORIFICE ELEV	SWALE BOTTOM ELEV	DBI FL ELEV	PIPE DIAMETER (mm)	PIPE LENGTH	MES (FDOT INDEX 232) STATION/ OFFSET	MES FL ELEV	SKIMMER LENGTH (mm)	SKIMMER BOTTOM ELEV	BERM ELEV (MIN)
S-4A	26+71.050 (60.00 LT)	D	21.80	21.80	21.18	1220	34.35	21.06		20.09	1200	18.5	26+71.050 (83.45 LT)	19.05	1655	20.91	21.88
S-36	33+07.398 (25.39 LT)	D	21.24	21.24	20.82	1220	35.64	20.67		19.70	900	65.6	33+69.648 (8.03 RT)	19.60	1655	20.50	21.70
S-49B	33+56.000 (40.00 RT)	C	21.43	21.43	20.82	1220	38.1	20.66		20.18	900	53.0	33+56.000 (87.00 RT)	20.15	1524	20.52	21.72
S-60A	31+79.265 (6.510 RT)	D	21.40	21.40	20.49	229	50.8	20.34		20.17	750	21.0	31+99.575 (6.317 RT)	20.00	838	20.15	21.30
S-69A	31+63.285 (74.853 LT)	D	20.55	20.55	19.38	508	63.5	19.72		19.42	600	30.5	31+86.537 (76.403 LT)	19.25	1220	19.68	20.85
S-89	34+11.570 (55.09 RT)	D	21.34	21.34	20.67	610	37.49	20.54		20.00	900	14.4	34+32.771 (54.31 RT)	19.90	1220	20.40	21.57
S-104	33+08.920 (45.39 LT)	C	18.63	18.63	18.06	380	57.15	17.83		16.50	450	62.0	33+30.281 (45.64 LT)	15.25	991	17.69	18.90
S-115	30+95.664 (4.91 LT)	E	17.22	17.22	16.46	450	29.2	16.00		13.50	600	125.4	32+19.038 (31.55 LT)	12.00	1220	15.85	18.00

NOTES:

1. COST OF WEIR, BAFFLE, SCREEN, AND OTHER APPURTENANCES TO BE INCLUDED IN COST OF STRUCTURE.
2. STEEL GRATES ARE TO BE USED ON ALL OUTFALL STRUCTURES.
3. SEE DRAINAGE STRUCTURE SHEETS FOR ADDITIONAL DETAILS.
4. SEE TABLE ON THIS SHEET FOR W (WEIR WIDTHS) D (ORIFICE DIAMETER), AND W_b (BAFFLE WIDTH).

SWFWMD JAN 31 2000 PERMITTED CONSTRUCTION DRAWINGS
Southwest Florida Water Management District JAN 28 2000 REG-BRO
4319567.00
FILE OF RECORD
Imaged As Is

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

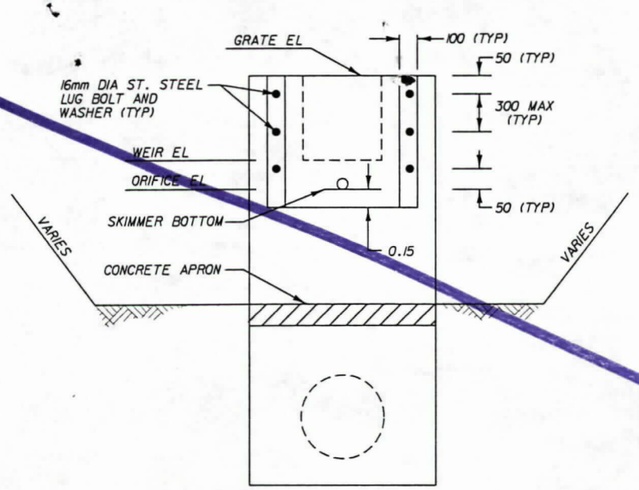
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX#(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

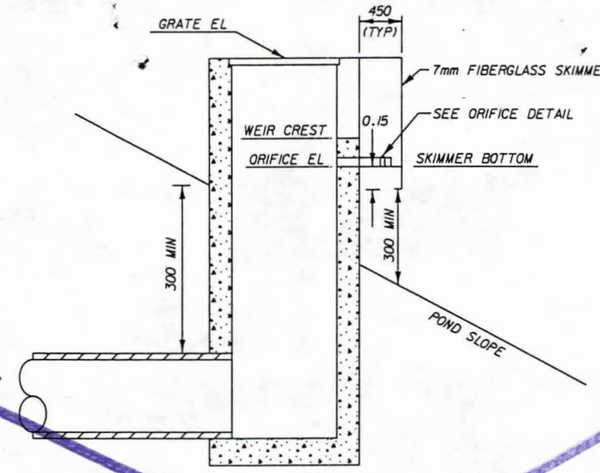
SPECIAL DETAILS

PLOT FILE: p:\fdt2027\spdtrd6a.prf
PLOT DATE: Wed Jan 26 15:18:13 2000 DESIGN FILE: P:\FDT2027\SPDTRD6A.dgn

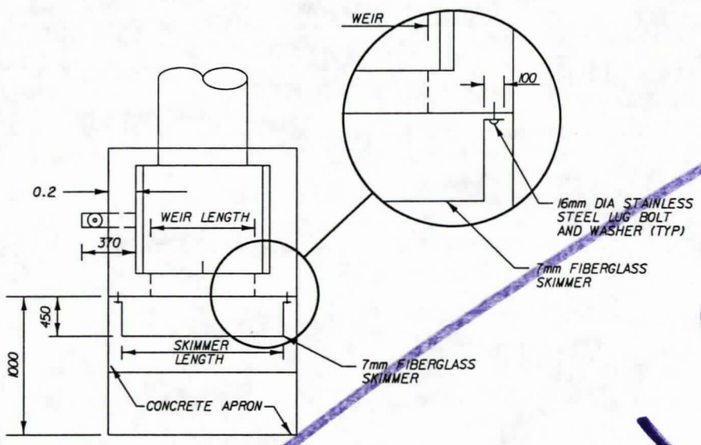
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	123



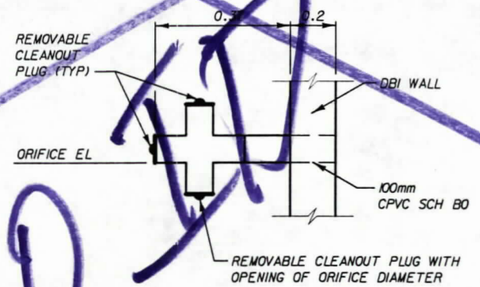
ELEVATION VIEW



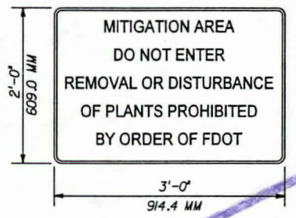
SECTIONAL VIEW



PLAN VIEW



ORIFICE DETAIL



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HEIGHT 2'-0" (609.0MM)
BORDER WIDTH 1/2" (12.7MM)
BORDER RADII 1 1/3"

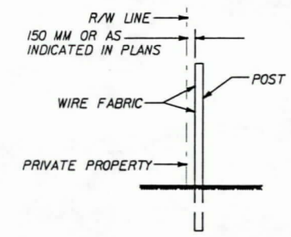
BACKGROUND
COLOR GREEN

LEGEND & BORDER
TYPE SERIES B
COLOR WHITE
QUANT. REQ'D. 16

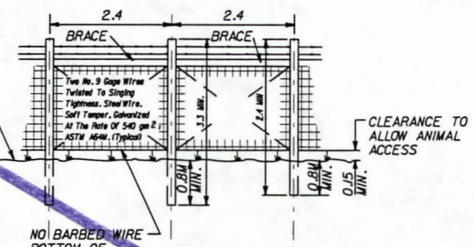
NOTES:

1. SIGNS TO BE MANUFACTURED & ERECTED IN ACCORDANCE WITH INDEX 11860 AND RELATED INDEXES.
2. THE 16 REQUIRED SIGNS ARE TO BE PAID FOR UNDER PAY ITEMS NUMBER 700-40-1. THE QUANTITY IS INCLUDED IN THE SIGNING & PAVEMENT MARKING PLANS.

SIGNS ARE TO BE PLACE AS SHOWN ON PLANS



FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS
N.T.S.



TYPE 'A' MODIFIED FENCE
N.T.S.

STRUCTURE NO.	STATION/ OFFSET	DBI TYPE	GRATE ELEV	WEIR ELEV TOP	WEIR ELEV BOTTOM	WEIR LENGTH (mm)	BLEED DOWN ORIFICE DIA (mm)	BLEED DOWN ORIFICE ELEV	SWALE BOTTOM ELEV	DBI FL ELEV	PIPE DIAMETER (mm)	PIPE LENGTH	MES (FDOT INDEX 232) STATION/ OFFSET	MES FL ELEV	SKIMMER LENGTH (mm)	SKIMMER BOTTOM ELEV	BERM ELEV (MIN)
S-4A	25+71.050 (60.00 Lt)	D	21.80	21.80	21.18	1220	34.35	21.06		20.09	1200	18.5	26+71.050 (83.45 Lt)	19.05	1655	20.91	21.88
S-36	33+07.398 (25.39 Lt)	D	21.24	21.24	20.82	1220	35.64	20.67		19.70	900	65.6	33+69.648 (8.03 Rt)	19.60	1655	20.50	21.70
S-49B	33+56.000 (40.00 Rt)	C	21.43	21.43	20.82	1220	38.1	20.66		20.18	900	53.0	33+56.000 (87.00 Rt)	20.15	1524	20.52	21.72
S-60A	31+79.265 (6.510 Rt)	D	21.40	21.40	20.49	229	50.8	20.34		20.17	750	21.0	31+99.575 (6.317 Rt)	20.00	838	20.15	21.30
S-69A	31+63.285 (74.853 Lt)	D	20.55	20.55	19.98	508	63.5	19.83		19.42	600	30.5	31+86.537 (75.403 Lt)	19.25	1220	19.68	20.85
S-89	34+11.570 (55.09 Rt)	D	21.34	21.34	20.57	610	37.49	20.54		20.00	900	14.4	34+32.771 (54.31 Rt)	19.90	1220	20.40	21.57
S-104	33+08.920 (45.39 Lt)	C	18.63	18.63	18.06	380	57.15	17.83		16.50	450	62.0	33+30.287 (45.64 Lt)	15.25	991	17.69	18.90
S-115	30+95.664 (4.91 Lt)	E	17.22	17.22	16.46	450	29.2	16.00		13.50	600	125.4	32+19.038 (31.55 Lt)	12.00	1220	15.85	18.00

NOTES:

1. COST OF WEIR, BAFFLE, SCREEN, AND OTHER APPURTENANCES TO BE INCLUDED IN COST OF STRUCTURE.
2. STEEL GRATES ARE TO BE USED ON ALL OUTFALL STRUCTURES.
3. SEE DRAINAGE STRUCTURE SHEETS FOR ADDITIONAL DETAILS.
4. SEE TABLE ON THIS SHEET FOR W (WEIR WIDTH), D (ORIFICE DIAMETER), AND W_b (BAFFLE WIDTH).

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Received
NOV 30 1999
RRD - TAMPA

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
DEC 1 1999
REG-BRO

FILE OF
4319567.00
RECORD

Imaged As Is

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

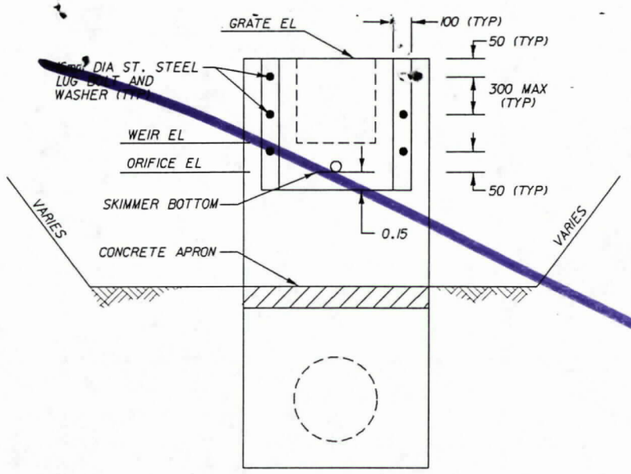
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

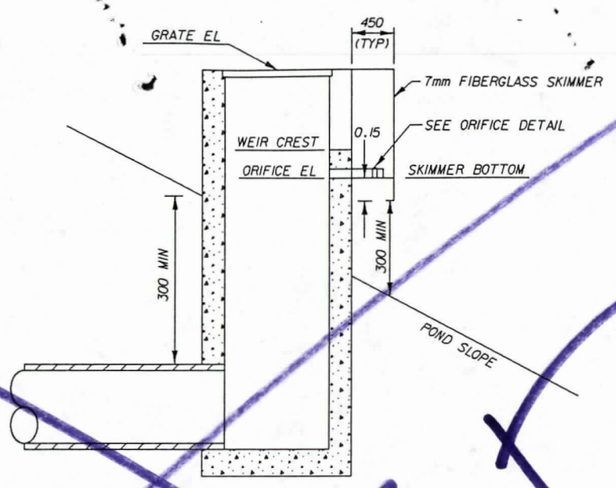
SPECIAL DETAILS

PLOT FILE: p:\fdt2027\spdtr06a.prf
PLOT DATE: Mon Nov 29 16:35:10 1999 DESIGN FILE: P:\FDT2027\SPDTR06A.dgn

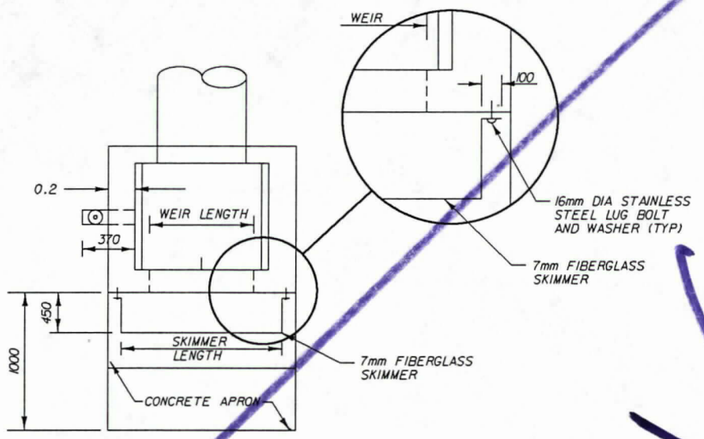
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	123



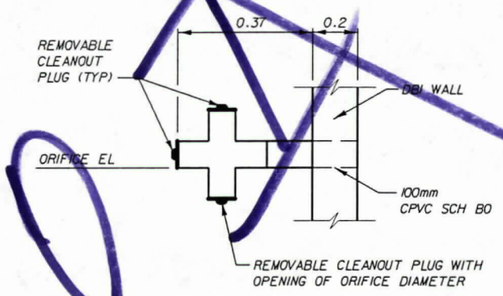
ELEVATION VIEW



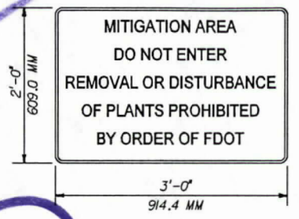
SECTIONAL VIEW



PLAN VIEW



ORIFICE DETAIL



WIDTH 3'-0" (914.4MM)
HEIGHT 2'-0" (609.0MM)
BORDER WIDTH 1/2" (12.7MM)
BORDER RADII 1 1/3"

BACKGROUND
COLOR GREEN

LEGEND & BORDER
TYPE SERIES B
COLOR WHITE
QUANT. REQ'D. 16

NOTES:

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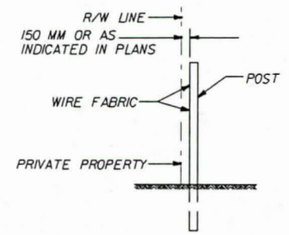
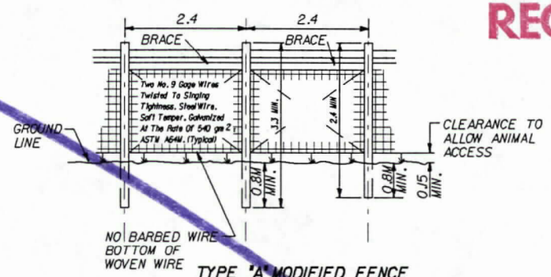


FENCE POSITION AT LOCATIONS WITHOUT FRONTAGE ROADS
N.T.S.



TYPE "A" MODIFIED FENCE
N.T.S.

STRUCTURE NO.	STATION/ OFFSET	DBI TYPE	GRATE ELEV	WEIR ELEV		WEIR LENGTH (mm)	BLEED DOWN		SWALE BOTTOM ELEV	DBI FL ELEV	PIPE DIAMETER (mm)	PIPE LENGTH	MES (FDOT INDEX 232)	MES FL ELEV	SKIMMER LENGTH (mm)	SKIMMER BOTTOM ELEV	BERM ELEV (MIN)
				TOP	BOTTOM		ORFICE DIA (mm)	ORFICE ELEV					STATION/ OFFSET				
S-4A	26+71.050 (60.00 Lt)	D	21.80	21.80	21.18	1220	34.35	21.06		20.09	1200	18.5	26+71.050 (83.45 Lt)	19.05	1655	20.91	21.88
S-[illegible]	33+07.398 (25.39 Lt)	D	21.24	21.24	20.82	1220	35.64	20.57		19.70	900	65.5	33+69.648 (8.03 Rt)	19.50	1655	20.50	21.70
S-49B	33+56.000 (40.00 Rt)	C	21.43	21.43	20.82	1220	38.1	20.66		20.18	900	53.0	33+56.000 (87.00 Rt)	20.15	1524	20.52	21.72
S-60A	31+79.265 (6.510 Rt)	D	21.40	21.40	20.49	229	50.8	20.34		20.17	750	21.0	31+99.575 (6.317 Rt)	20.00	838	20.15	21.30
S-69A	31+63.285 (74.853 Lt)	D	20.55	20.55	19.98	508	63.5	19.83		19.42	600	30.5	31+86.537 (75.403 Lt)	19.25	1220	19.68	20.85
S-89	34+11.570 (55.09 Rt)	D	21.34	21.34	20.64	610	49.02	20.54		20.00	900	14.4	34+32.771 (54.31 Rt)	19.90	1220	20.40	21.57
S-104	33+08.920 (45.39 Lt)	C	18.63	18.63	18.06	380	57.15	17.83		17.68	600	17.7	33+30.287 (45.64 Lt)	17.60	991	17.69	18.90
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4. SEE TABLE ON THIS SHEET FOR W (WEIR WIDTHS) D (ORIFICE DIAMETER), AND W_D (BAFFLE WIDTH).

FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL DETAILS

PLOT DATE: Wed Aug 25 13:54:45 1999 DESIGN FILE: P:\FDT2027\SPDTRD06A.dgn
PLOT FILE: p:\fdt2027\SPDTRD06A.prf

A-1030

STATE PROJECT NO.	SHEET NO.
14090-3522	124

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH

DATE OF SURVEY: 4/94 TO 5/94
SURVEY MADE BY: LAW ENGINEERING, INC.
SUBMITTED BY: LAW ENGINEERING, INC.

DISTRICT: SEVENTH
ROAD NO.: S.R. 54
COUNTY: PASCO

PROJECT NO. : 14090-1522

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA.: 30+00 SURVEY ENDS STA.: 96+00

STRATUM NO.	ORGANIC CONTENT: NO. OF TESTS	ORGANIC CONTENT: % ORGANIC	ORGANIC CONTENT: MOISTURE CONTENT	SIEVE ANALYSIS RESULTS % PASS: NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	ATTERBERG LIMITS (%): NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	CORROSION TEST RESULTS: NO. OF TESTS	RESISTIVITY Ohms cm³	CHLORIDE ppm	SO_4 ppm	pH
1	4	--	--	4	74.3-96.8	72-94.2	61-91.5	30.4-82.3	5.9-14.7	--	--	--	(FILL)	MIXED SAND WITH ROCK FRAGMENTS	1	93,000	<10	<40	7.9
2	8	--	16.2-24	8	100	99.3-100	98.7-99.6	87.7-93.5	12.1-14.7	4	19-26	1.1-9.7	(A-2-4)	SILTY FINE SAND	1	48,000	<10	<40	8.2
3	6	--	4.8-26.2	6	98.7-100	98-98.8	93.8-97.7	81.3-89.7	3.9-8.7	--	--	--	(A-3)	FINE SAND	1	57,000	<10	<40	6.9
4	4	9.9-45.7	37.5-250.5	2	96.8-100	86.2-94.3	78.4-90.8	57.1-73.7	3.1-6.9	--	--	--	(A-8)	ORGANICALLY STAINED SILT OR SAND WITH DECAYING VEGETATION	1	93000	<10	<40	6.5
5	3	--	14.3-18.7	3	98.3 100	77.6 96.6-100	49.8 93.9-97.3	26.3 81.2-93.3	19.7-34.4	3	27-39	17-22	(A-2-6)	CLAYEY FINE SAND	1	15,000	<10	<40	5.6
6	4	--	15.8-23.3	4	99.2-100	91.4-97.4	81.6-95.4	68.8-89.3	36-53.1	4	44-89	23-68	(A-7)	SANDY CLAY OR CLAY	2	79,000-84,000	<10	<40	5.0-5.2
7	2	--	27.4-33	2	100	71.7-94.6	55.3-81.3	39.6-59.9	27.8-29.3	2	115-122	84-90	(A-2-7)	CLAYEY FINE SAND	1	120,000	<10	<40	5.0

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE MAKE FINAL CHECK AFTER GRADING.

▽ = WATER TABLE ENCOUNTERED

The material from Strata numbers 1,2 and 3 appears satisfactory for use in the embankment when utilized in accordance with Index 505.

The material from Stratum number 4 is muck A-8/material and shall be removed.

The material from Statum number 5 is plastic material and shall be removed in accordance with index 500. It may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for shorter distances.

The material from Strata numbers 6 and 7 is highly plastic material and shall be removed in accordance with index 500. It may be used within the project limits as indicated in index 505 only when excavated within the project limits and is not to be used when obtained from outside the project limits.

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Imaged As Is 170

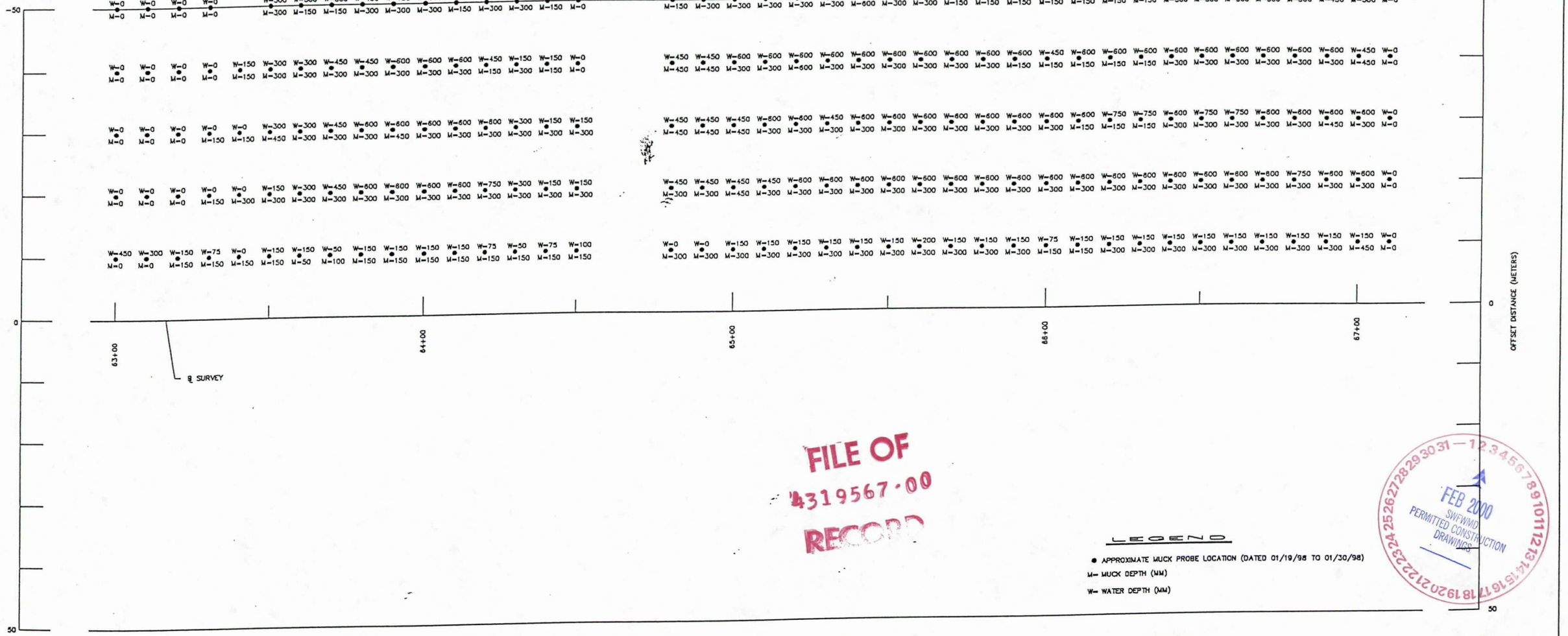
REVISIONS: DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	SYH	12/95	DRAWN BY	AJS	12/95
CHECKED BY	JCP	12/95	CHECKED BY	SYH	12/95
SUPERVISED BY	CJR				

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY:
DATE:

ROADWAY SOIL SURVEY

FED. ROAD DIV. NO.	STATE	PROJECT NO.	TOTAL SHTS.	SHEET NO.
	FLA	14090-1522		125



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Not Sealed
Imaged As Is
171

REVISIONS					
Date	By	Description	Date	By	Description

	Names	Dates
Drawn by	JFW	02/98
Checked by	DRS	02/98
Designed by	DRS	02/98
Checked by	BJM	02/98

ENGINEER OF RECORD:
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES
4919 West Laurel Street
Tampa, Florida 33607

LOGO:
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

SEAL:

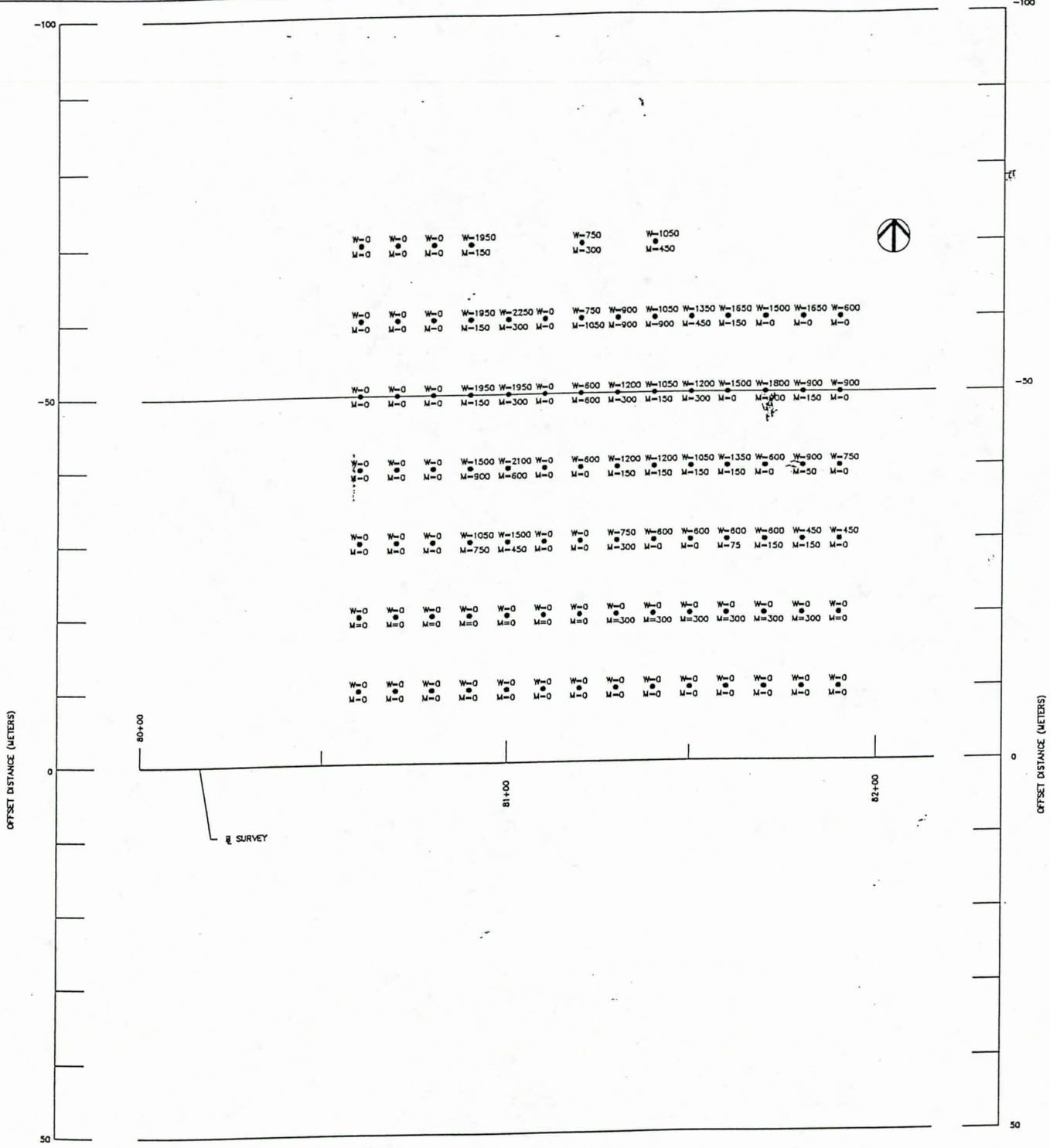
FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
SR-54	PASCO	14090-1522

SHEET TITLE: REPORT OF MUCK PROBE
Drawing No.: 2056844M
PROJECT NAME: STATE ROAD 54
Index No.:

A-1032

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
	FLA	14090-1522		126



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

LEGEND

● APPROXIMATE MUCK PROBE LOCATION (DATED 11/03/97 TO 11/07/97)
M= MUCK DEPTH (MM)
W= WATER DEPTH (MM)

Not Sealed **Imaged As Is** 172

REVISIONS					
Date	By	Description	Date	By	Description

	Names	Dates
Drawn by	JFW	12/97
Checked by	DRS	12/97
Designed by	DRS	12/97
Checked by	BJM	12/97

ENGINEER OF RECORD:
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ENGINEERING AND ENVIRONMENTAL SERVICES
4919 West Laurel Street
Tampa, Florida 33607

LOGO:
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

SEAL:

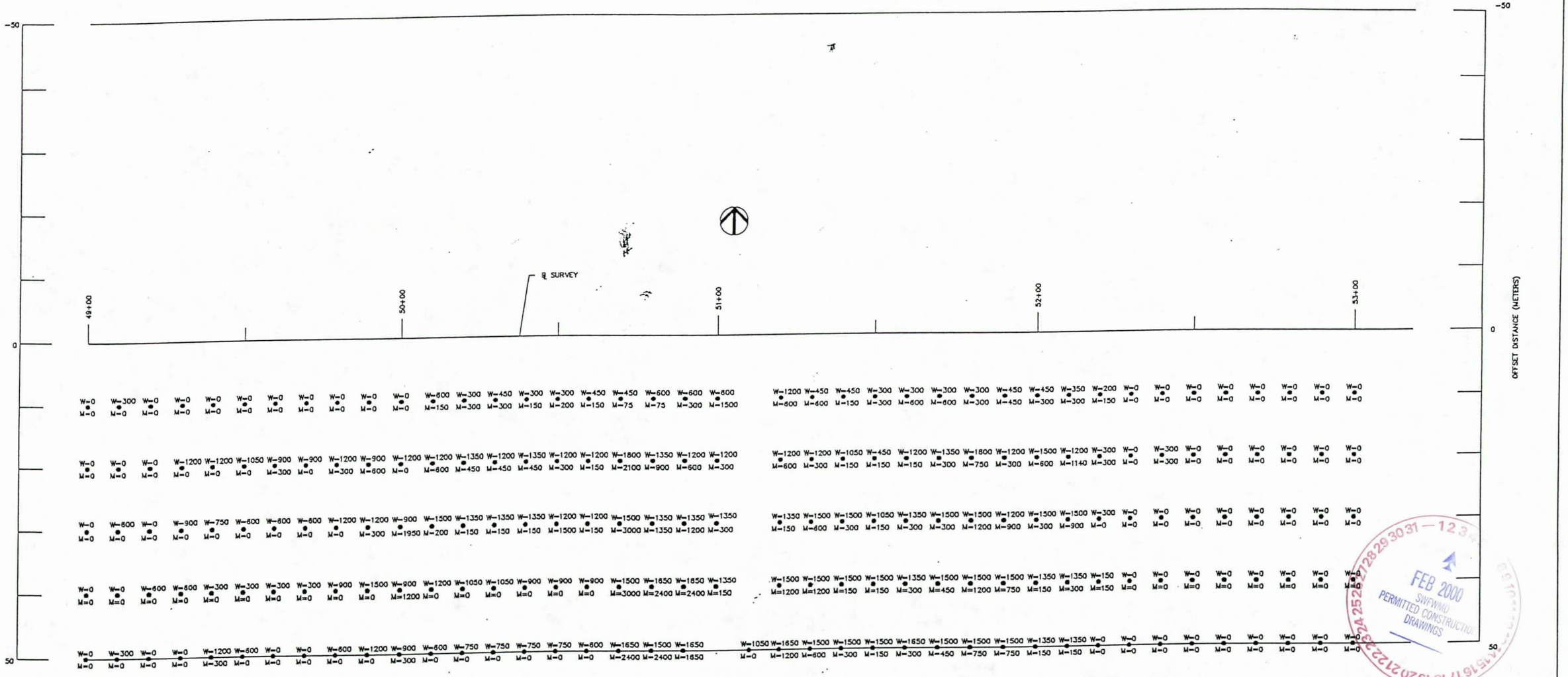
FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
SR-54	PASCO	14090-1522

SHEET TITLE: REPORT OF MUCK PROBE
Drawing No.: 2056844M
PROJECT NAME: STATE ROAD 54
Index No.:

A-1033

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
	FLA	14090-1522		127



LEGEND

● APPROXIMATE MUCK PROBE LOCATION (DATED 11/03/97 TO 11/07/97)

M= MUCK DEPTH (MM)

W= WATER DEPTH (MM)

FILE OF
4319567.00
RECORD

Not Sealed

Imaged As Is

173

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999 REG-BRO Southwest Florida Water Management District

REVISIONS					
Date	By	Description	Date	By	Description

	Names	Dates
Drawn by	JFW	12/97
Checked by	DRS	12/97
Designed by	DRS	12/97
Checked by	BJM	12/97

ENGINEER OF RECORD:
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES
4919 West Laurel Street
Tampa, Florida 33607

LOGO:
LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

SEAL:

FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.
SR-54	PASCO	14090-1522

SHEET TITLE: REPORT OF MUCK PROBE

PROJECT NAME: STATE ROAD 54

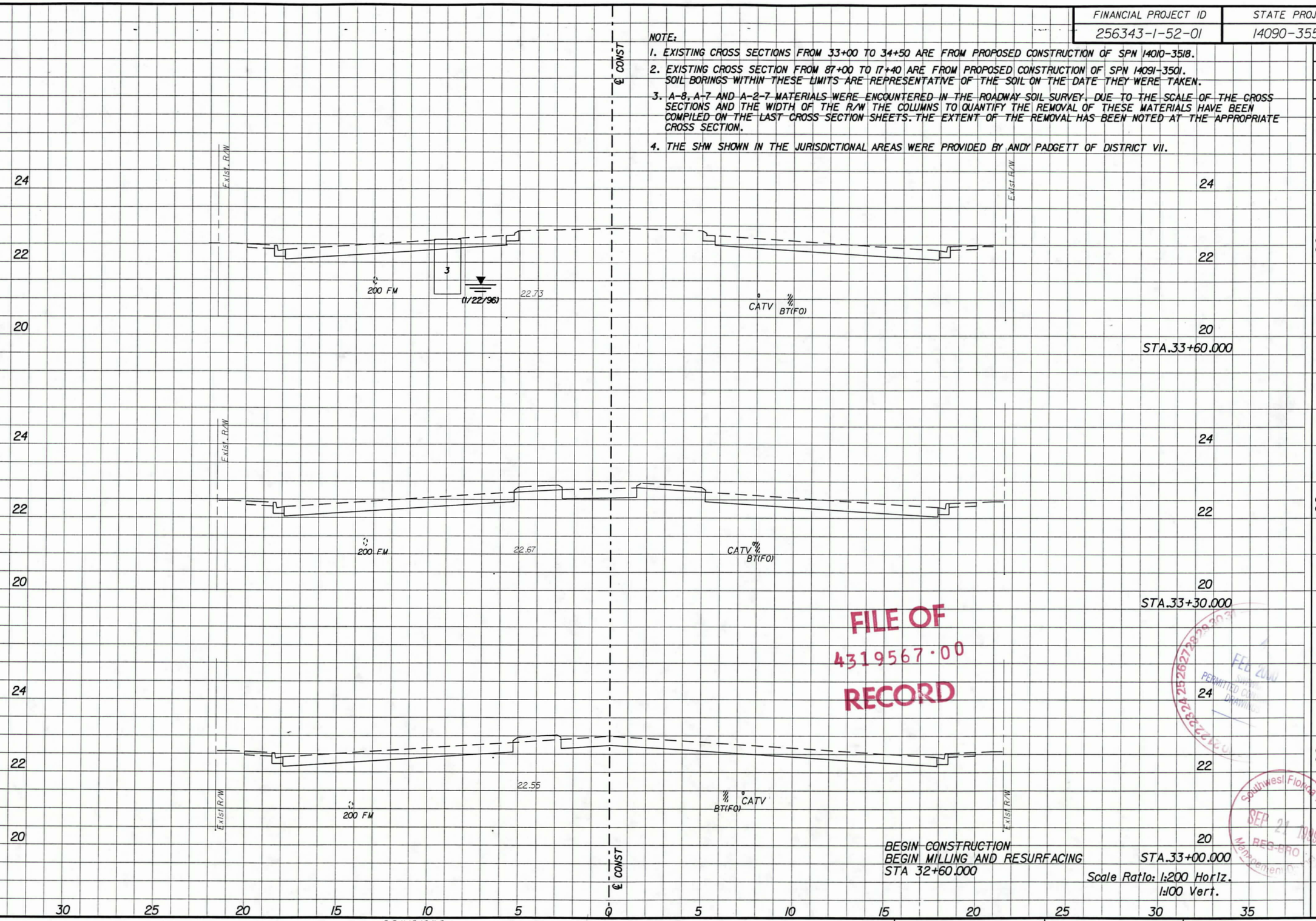
Drawing No. 2056844M

Index No.

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	128

NOTE:

1. EXISTING CROSS SECTIONS FROM 33+00 TO 34+50 ARE FROM PROPOSED CONSTRUCTION OF SPN 14010-3518.
2. EXISTING CROSS SECTION FROM 87+00 TO 17+40 ARE FROM PROPOSED CONSTRUCTION OF SPN 14091-3501. SOIL BORINGS WITHIN THESE LIMITS ARE REPRESENTATIVE OF THE SOIL ON THE DATE THEY WERE TAKEN.
3. A-8, A-7 AND A-2-7 MATERIALS WERE ENCOUNTERED IN THE ROADWAY SOIL SURVEY. DUE TO THE SCALE OF THE CROSS SECTIONS AND THE WIDTH OF THE R/W THE COLUMNS TO QUANTIFY THE REMOVAL OF THESE MATERIALS HAVE BEEN COMPILED ON THE LAST CROSS SECTION SHEETS. THE EXTENT OF THE REMOVAL HAS BEEN NOTED AT THE APPROPRIATE CROSS SECTION.
4. THE SHW SHOWN IN THE JURISDICTIONAL AREAS WERE PROVIDED BY ANDY PADGETT OF DISTRICT VII.



BEGIN CONSTRUCTION
BEGIN MILLING AND RESURFACING
STA 32+60.000

Scale Ratio: 1:200 Horiz.
1:100 Vert.

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		0		0
0.0		0.0		0.0	
	0		0		0
0.0		0.0		0.0	
	0		0		0
0.0		0.0		0.0	

FILE OF
4319567·00
RECORD

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

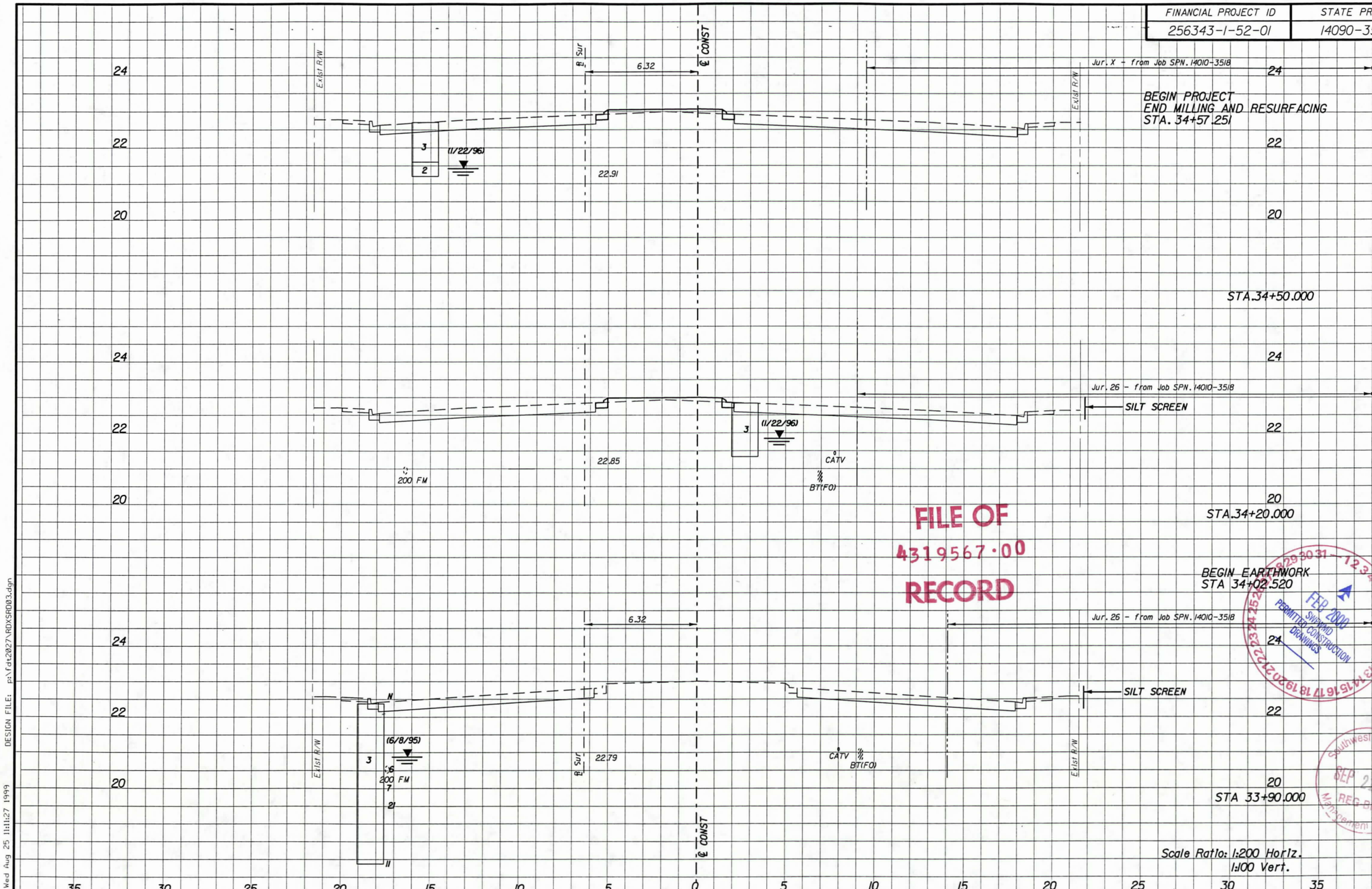
CROSS SECTION

PLOT DATE: Wed Aug 25 11:11:24 1999 DESIGN FILE: p:\fdt2027\rdxsrd02.dgn

174

A-1035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	129



A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	0		50		327
0.0		0.2		0.6	
	0		6		18
0.0		0.2		0.6	
	0		2		5
0.0		0.0		0.0	
	0		0		0
0.0		0.0		0.0	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG BRD
Management District

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

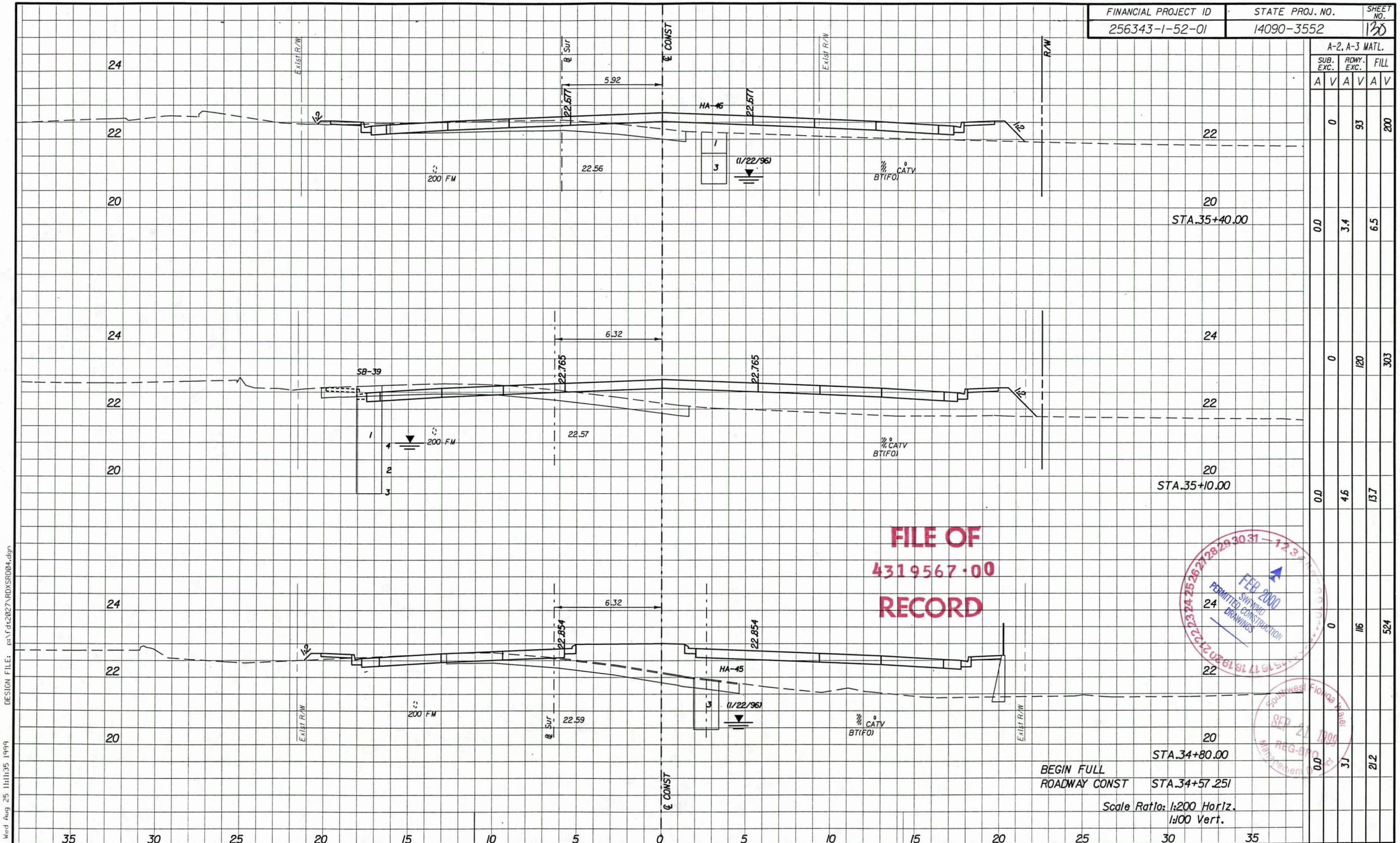
CROSS SECTION

175

PLOT DATE: Wed Aug 25 11:11:27 1999 DESIGN FILE: p:\fdt2027\RDXSRD03.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	130

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		93		200
0.0		3.4		6.5	
	0		120		303
0.0		3.1		21.2	
	0		116		524
0.0		4.6		13.7	



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRC
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

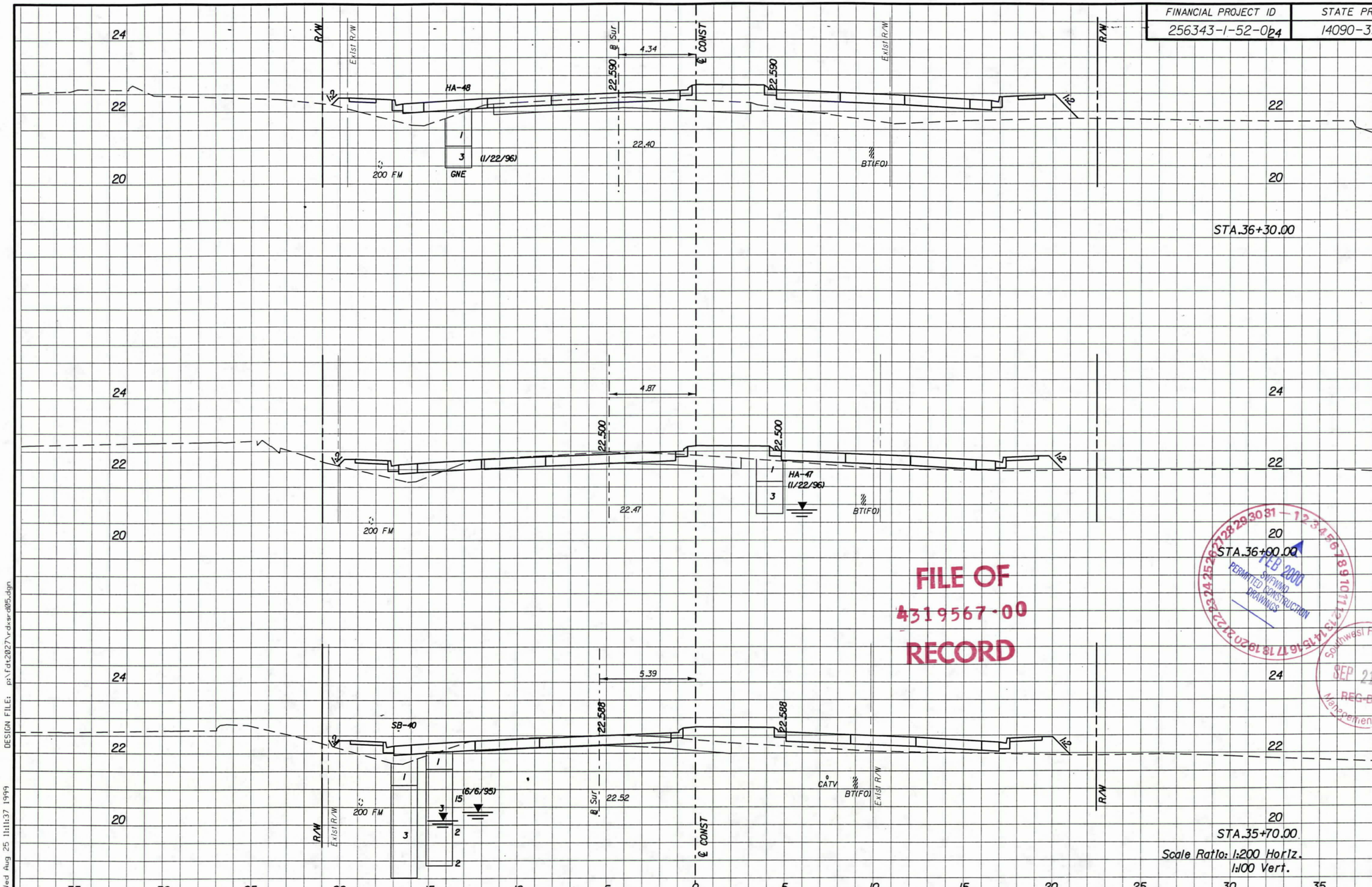
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
176

PLOT DATE: Wed Aug 25 11:11:35 1999 DESIGN FILE: p:\fdt2027\RDXSR004.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	131



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		78		525
0.0		2.6		12.0	
	0		78		254
0.0		2.6		4.9	
	0		81		176
0.0		2.8		6.8	

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District SEP 21 1999 REG-BRO

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

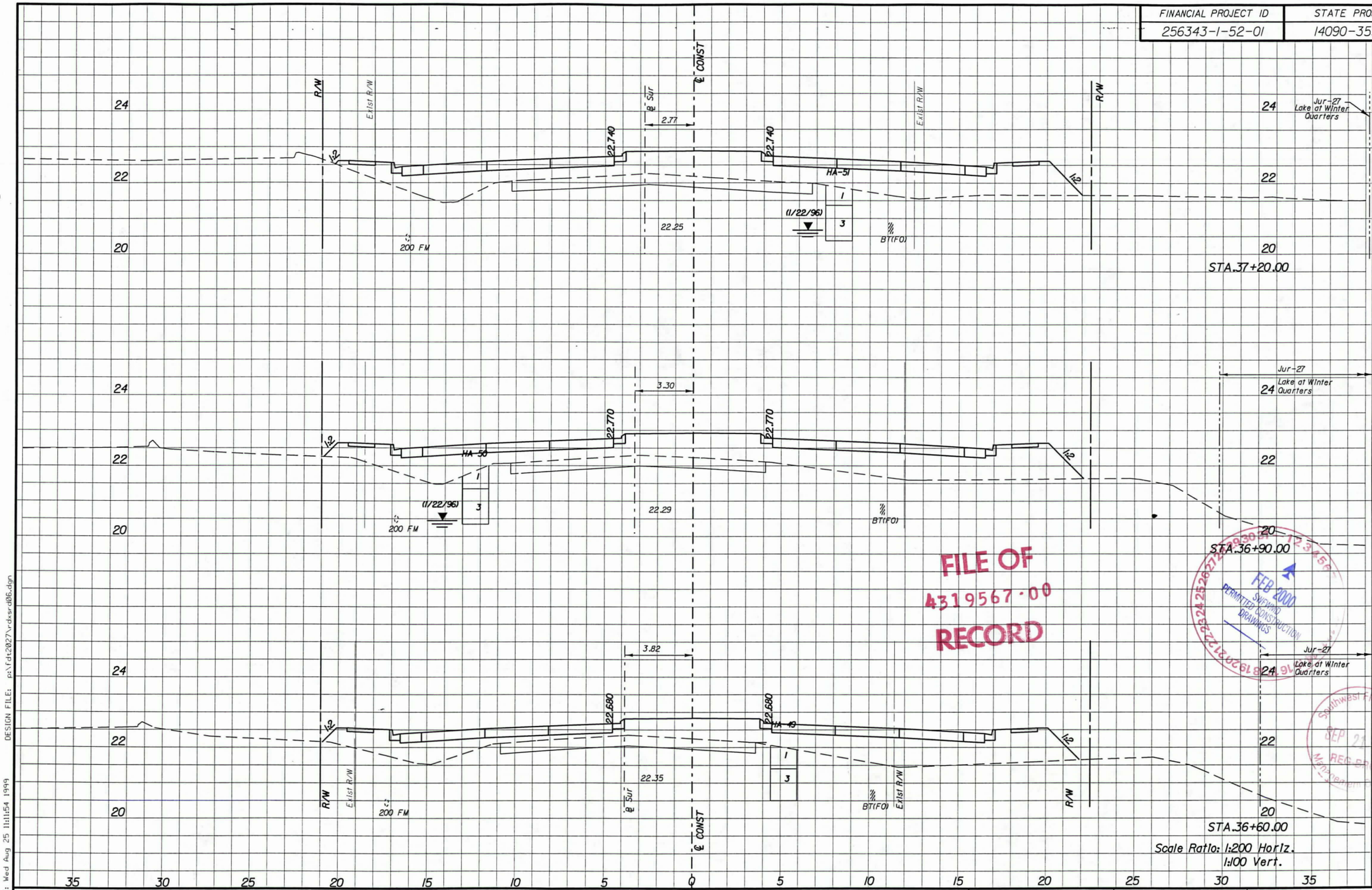
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
177

PLOT DATE: Wed Aug 25 11:11:37 1999 DESIGN FILE: p:\fdt2027\rdxsrd05.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	13L



	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
24		0		89		666
22						
20	0.0		2.6		24.7	
24		0		78		756
22						
20	0.0		2.6		25.7	
24		0		78		731
22						
20	0.0		2.6		23.0	

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4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
RECEIVED

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

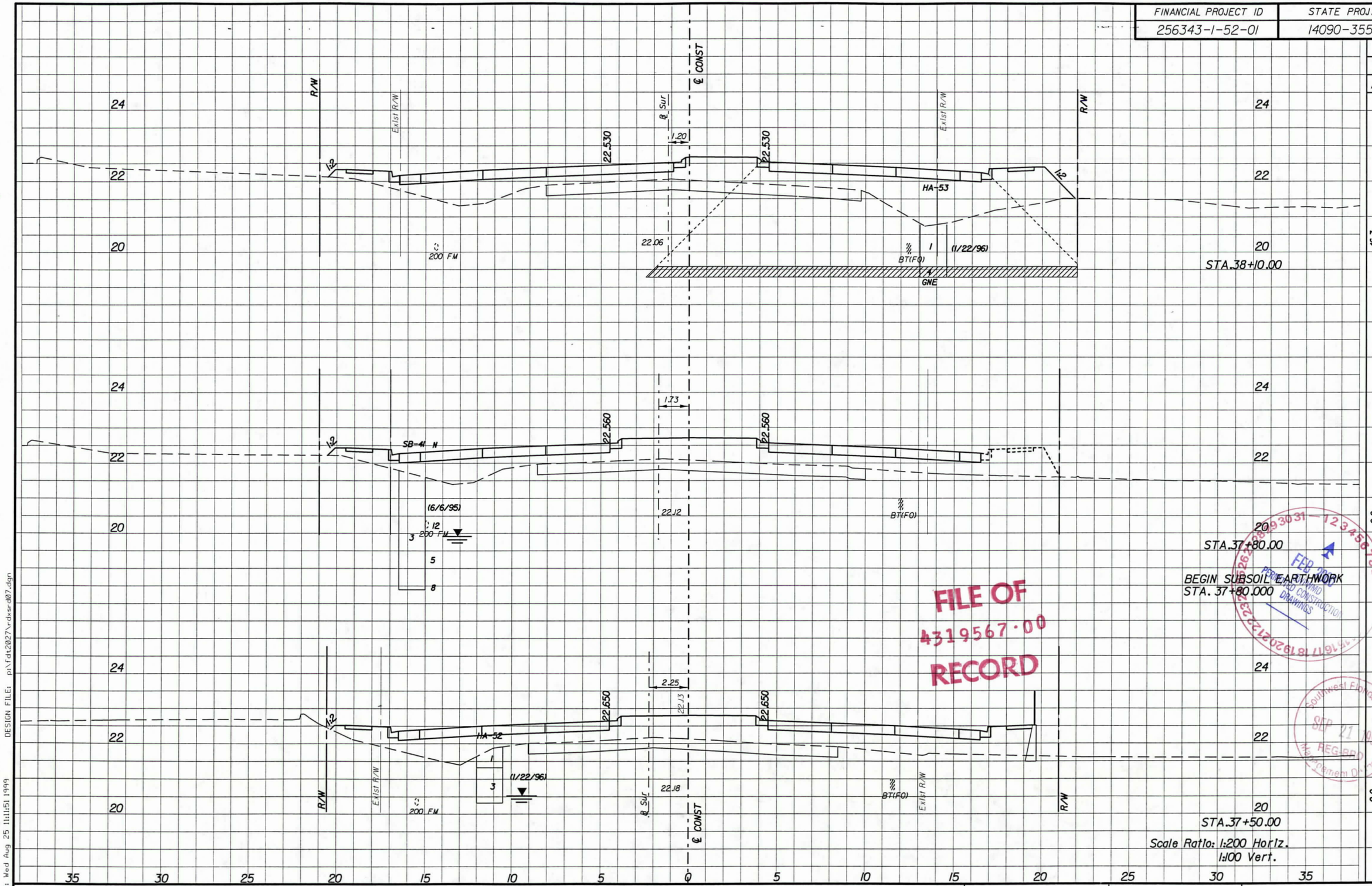
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

128

DESIGN FILE: o:\fdt2027\rdksrd06.dgn
PLOT DATE: Wed Aug 25 11:11:54 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	133



A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	695		99		795
46.3		3.3		24.5	
	695		99		650
0.0		3.3		18.8	
	0		99		578
0.0		3.3		19.7	

FILE OF
4319567·00
RECORD

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRD
Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

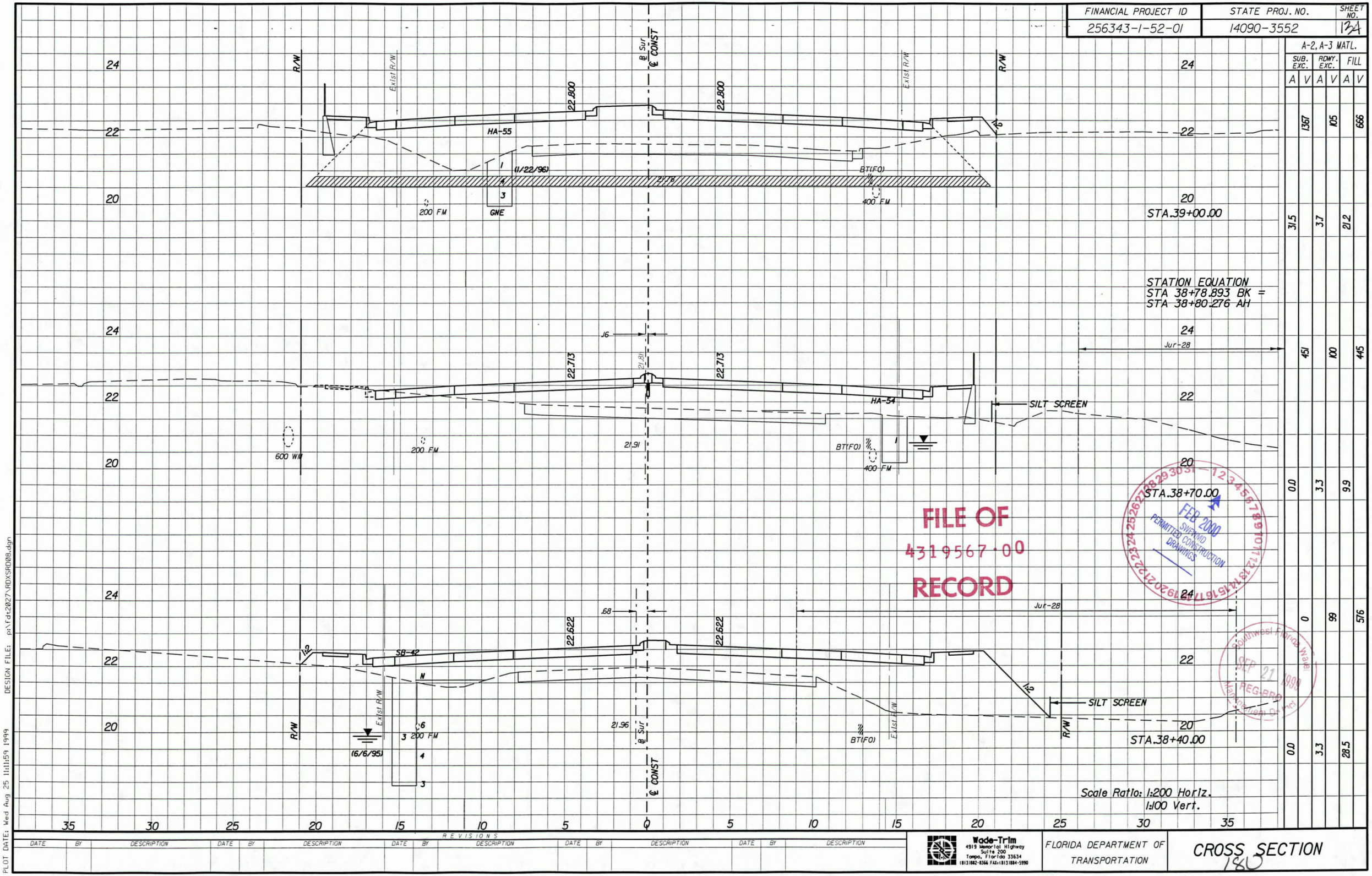
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
179

PLOT DATE: Wed Aug 25 11:11:51 1999 DESIGN FILE: p:\fdt2027\rdxsrd07.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	124



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	1367		105		666
31.5		3.7		21.2	
	451		100		445
	0.0		3.3		9.9
	0		99		576
	0.0		3.3		28.5

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

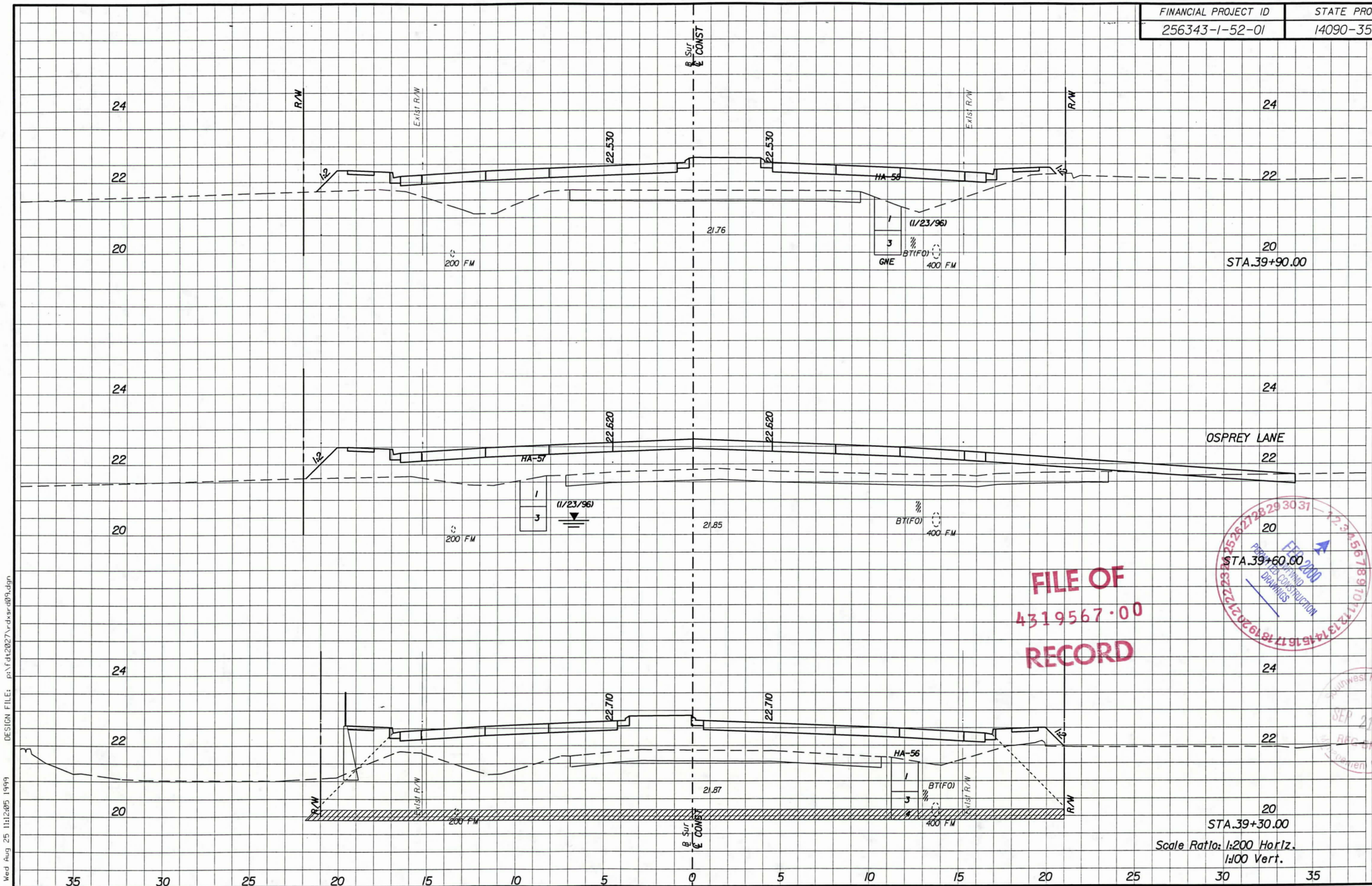
180

DESIGN FILE: p:\fdot2027\ROXSR08.dgn

PLOT DATE: Wed Aug 25 11:11:59 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	35

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		87		416
0.0		2.9		14.5	
	0		129		432
0.0		5.7		14.3	
	894		135		561
59.6		3.3		23.1	



FILE OF
4319567.00
RECORD

FEB 2000
PREPARED FOR CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REC'D

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

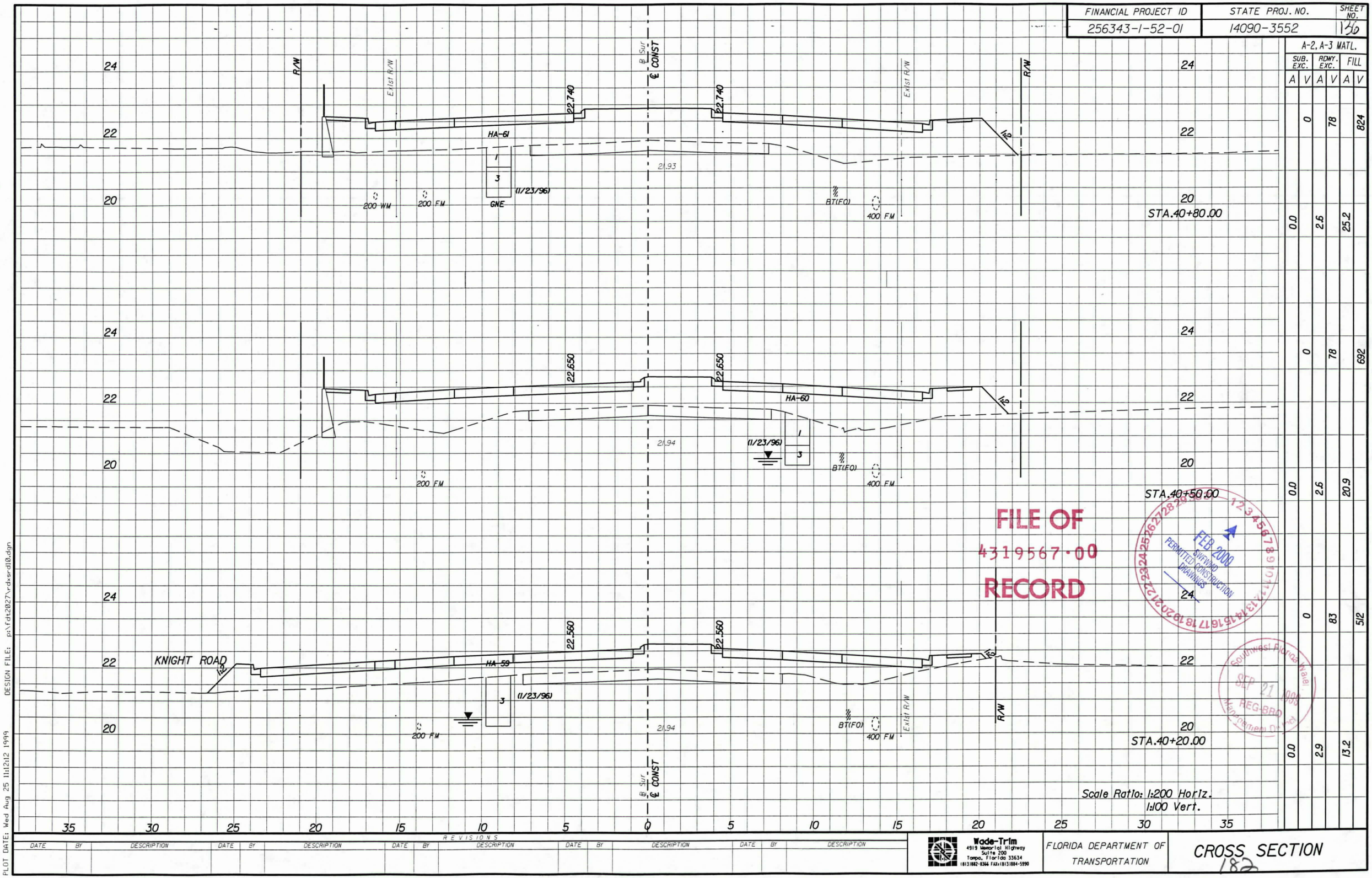
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION (8)

PLOT DATE: Wed Aug 25 11:12:05 1999 DESIGN FILE: p:\fdt2027\rdsrd09.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	136

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	2.6	78	25.2	824
0.0	0	2.6	78	20.9	692
0.0	0	2.6	83	13.2	512
0.0	0	2.9	83	13.2	512



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
HEG-BRD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

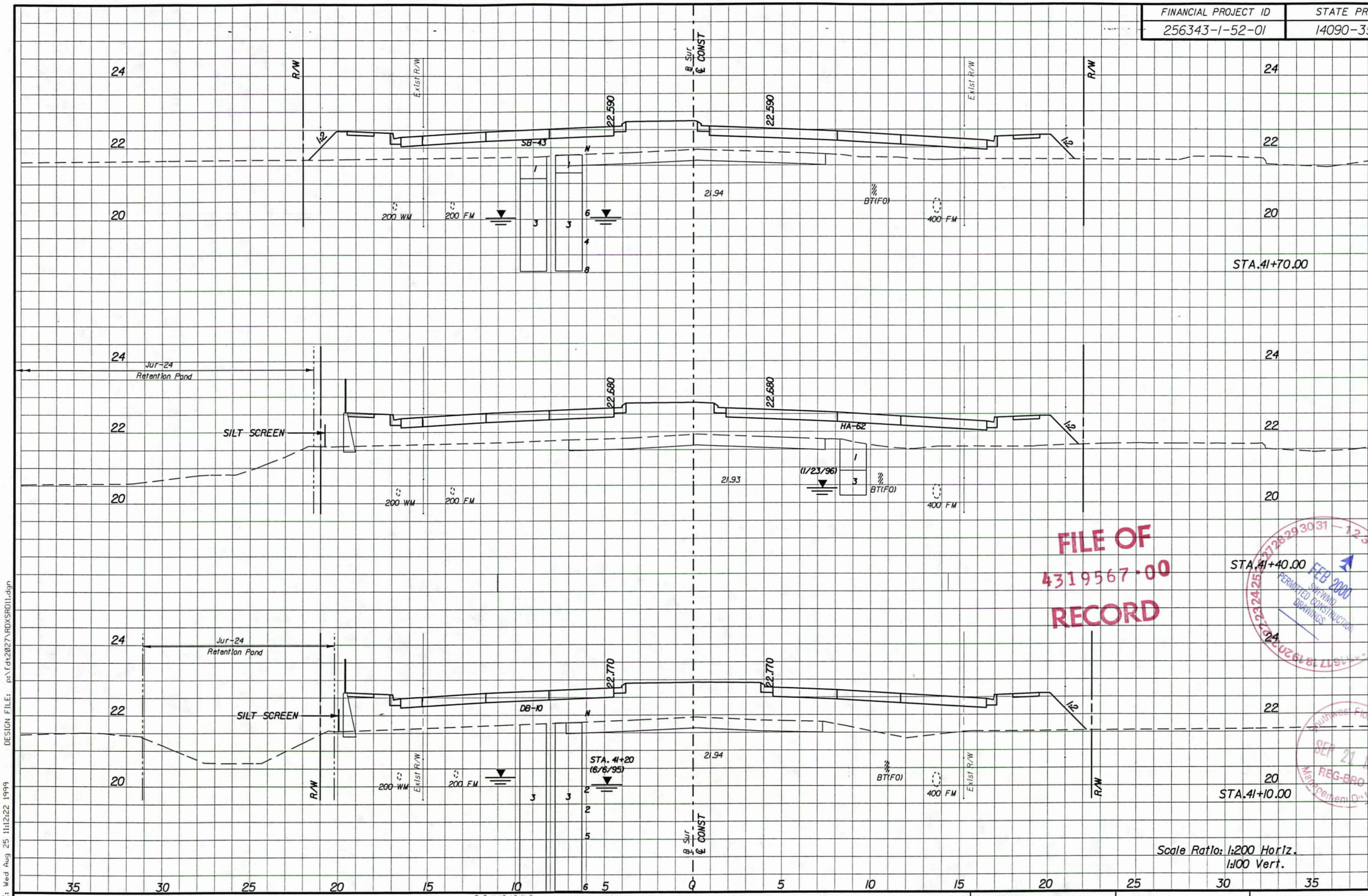
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION
182

PLOT DATE: Wed Aug 25 11:12:12 1999 DESIGN FILE: p:\fdt2027\rdxsrd10.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	137



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		81		473
0.0		2.6		11.3	
	0		78		426
0.0		2.6		11.1	
	0		78		702
0.0		2.6		29.7	

FILE OF
4319567.00
RECORD

FEB 2000
SHOWING PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-ERO

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8566 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

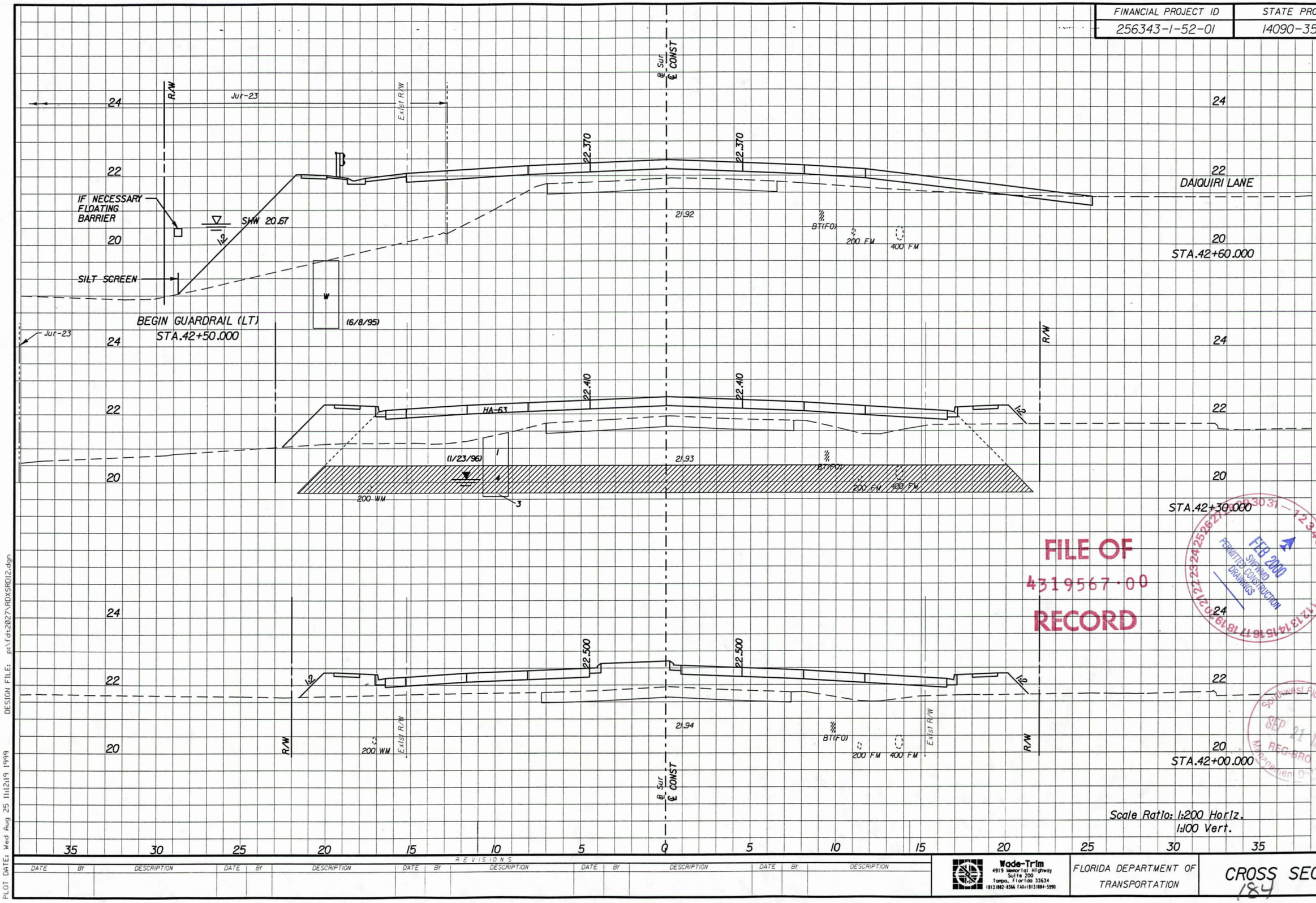
CROSS SECTION

183

PLOT DATE: Wed Aug 25 11:12:22 1999 DESIGN FILE: p:\fdt2027\RDXSRD11.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	139

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	53		9		1689
0.0		0.6		39.8	
	659		51		936
43.9		2.8		22.6	
	659		84		642
0.0		2.8		20.2	



REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

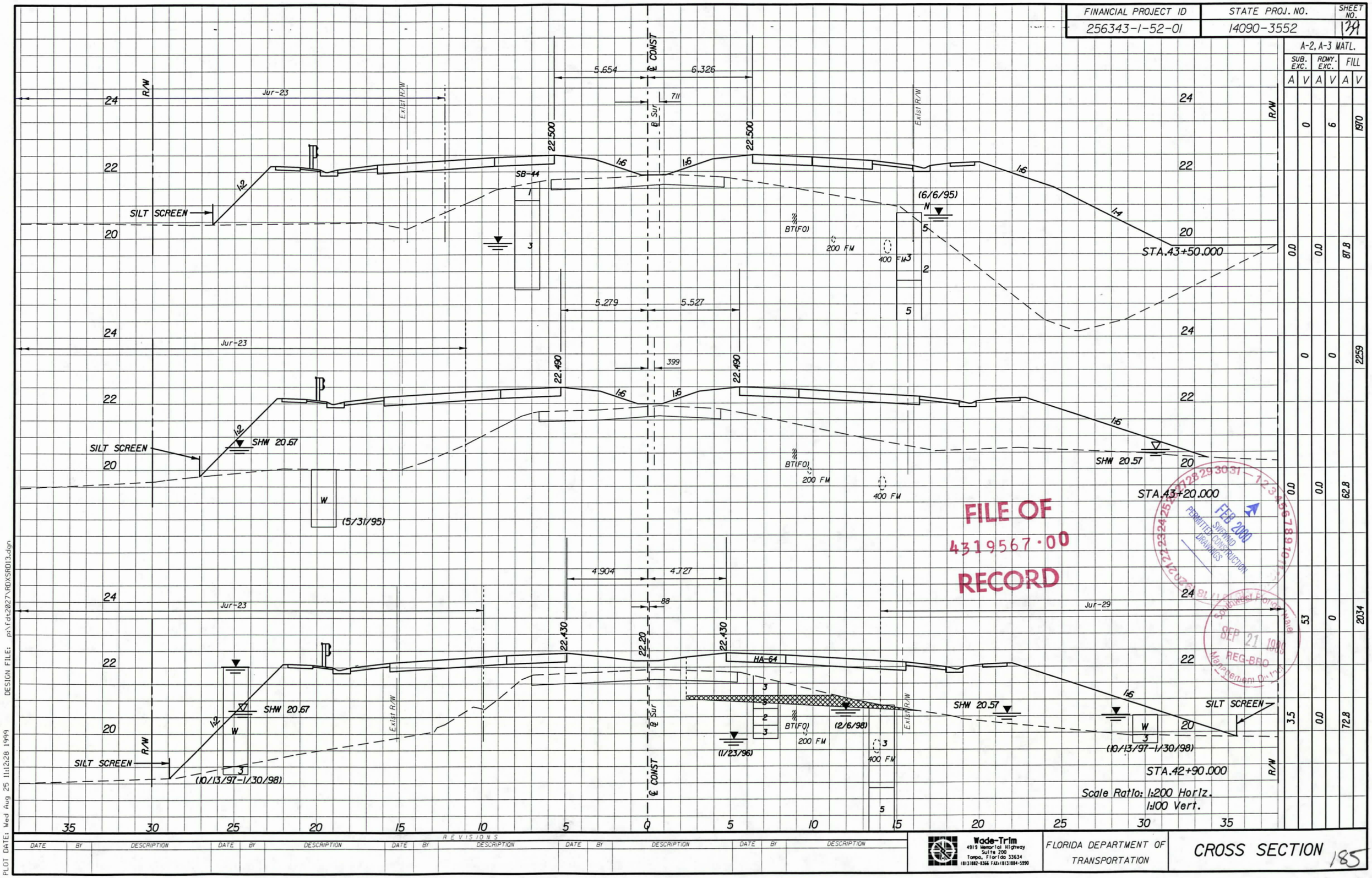
CROSS SECTION

(184)

PLOT DATE: Wed Aug 25 11:12:19 1999 DESIGN FILE: p:\fd12027\RDXSRD12.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	179

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		6		1970
0.0		0.0		87.8	
	0		0		2259
0.0		0.0		62.8	
	53		0		2034
3.5		0.0		72.8	



REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

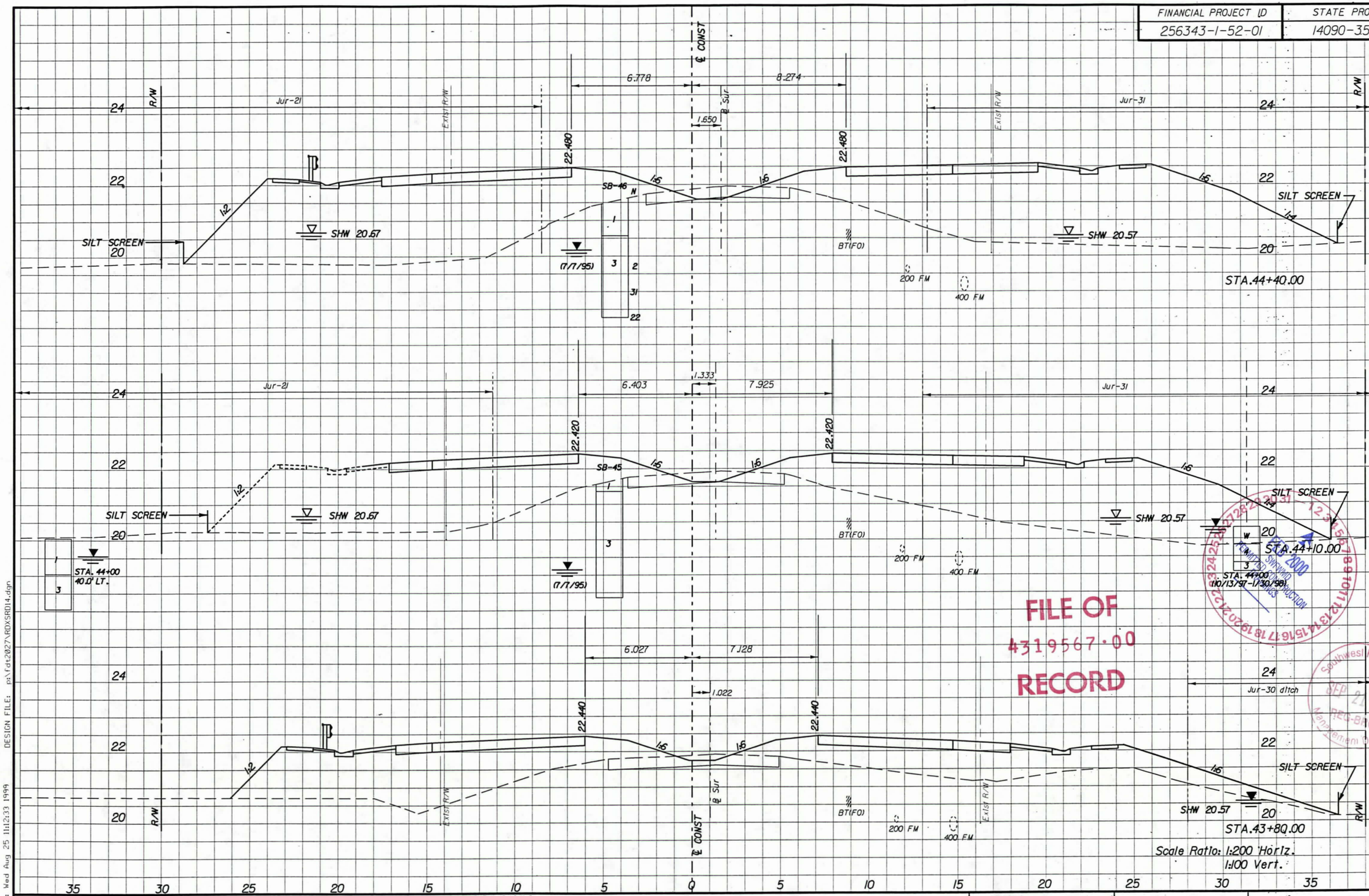
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 185

PLOT DATE: Wed Aug 25 11:12:28 1999 DESIGN FILE: p:\fdot2027\ROXSRD13.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	140



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		54		2964
0.0		1.0		91.2	
	0		27		2501
0.0		0.8		75.5	
	0		18		1785
0.0		0.4		43.5	

FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REC-BRO

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

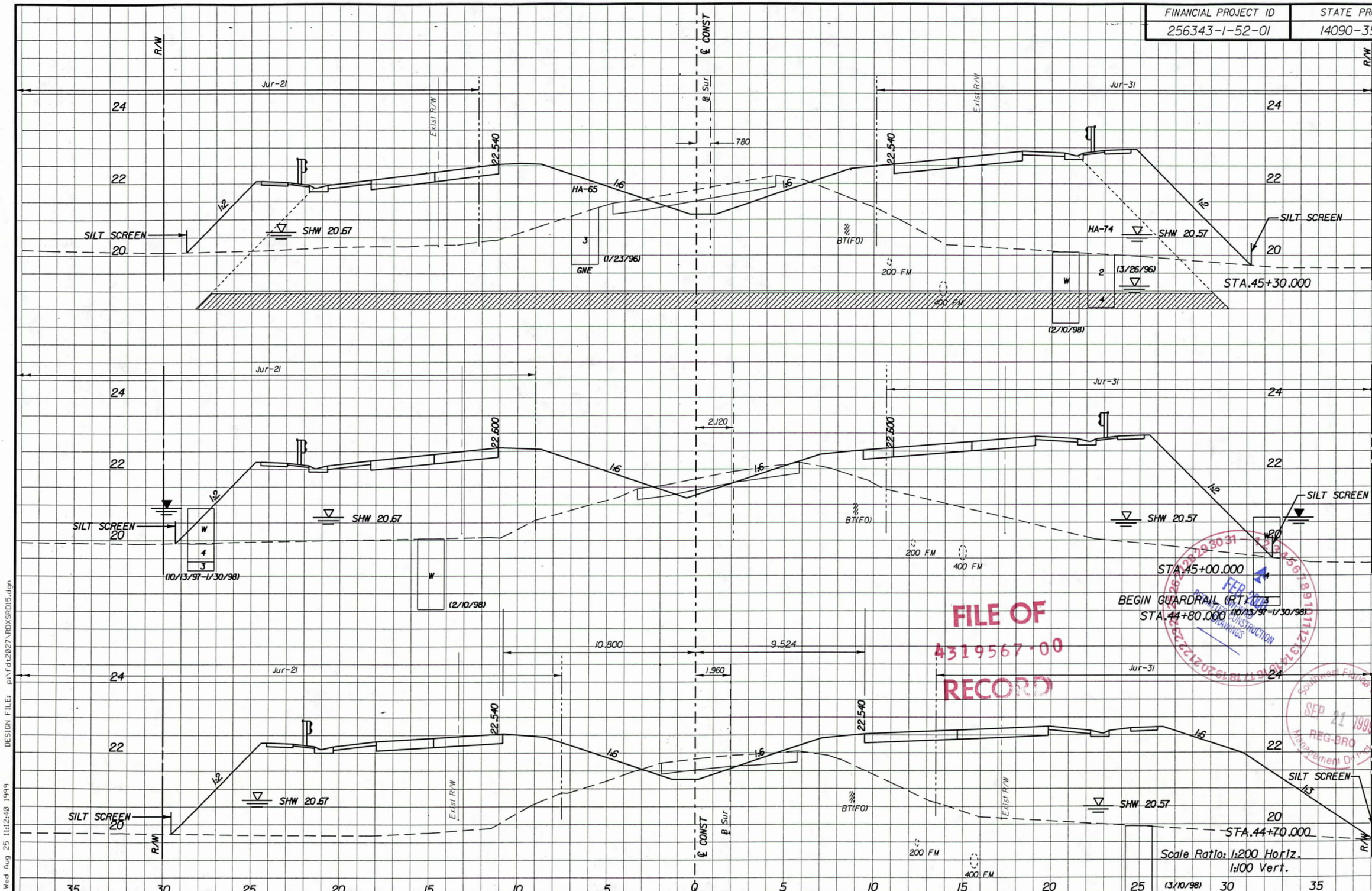
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 186

PLOT DATE: Wed Aug 25 11:12:33 1999 DESIGN FILE: p:\fdt2027\RDXSRD14.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	141



FILE OF
4319567-00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	3024		158		2139
100.4		4.6		82.4	
	1506		120		2565
0.0		3.4		88.6	
	0		90		2925
0.0		2.6		106.4	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

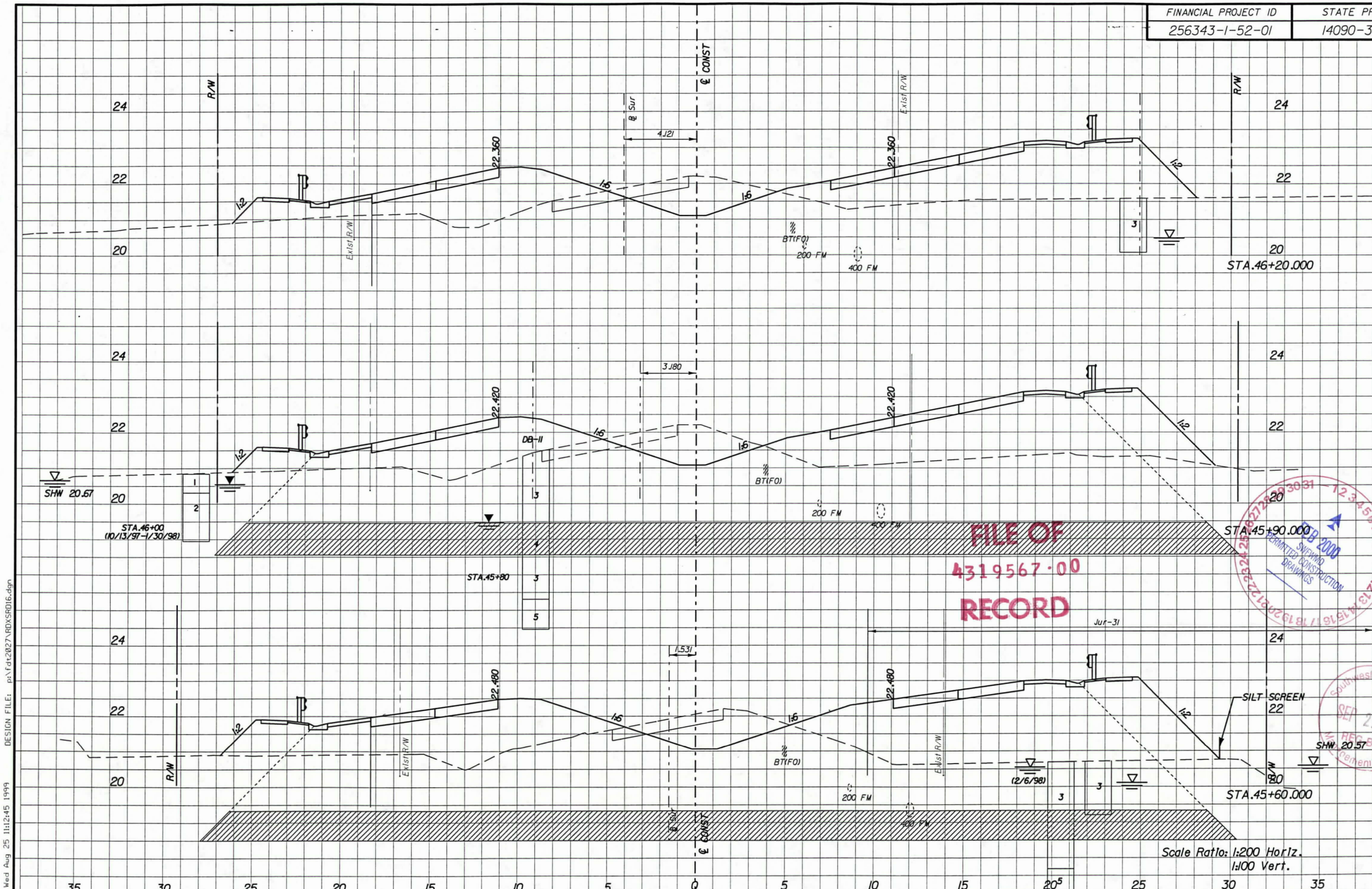
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 187

PLOT DATE: Wed Aug 25 11:12:40 1999 DESIGN FILE: p:\fdt2027\RDXSRD15.dgn

A-1048

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	142



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		174		1112
0.0		6.0		37.3	
	1574		177		1224
104.9		5.8		44.3	
	3092		176		1568
101.2		5.9		60.2	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

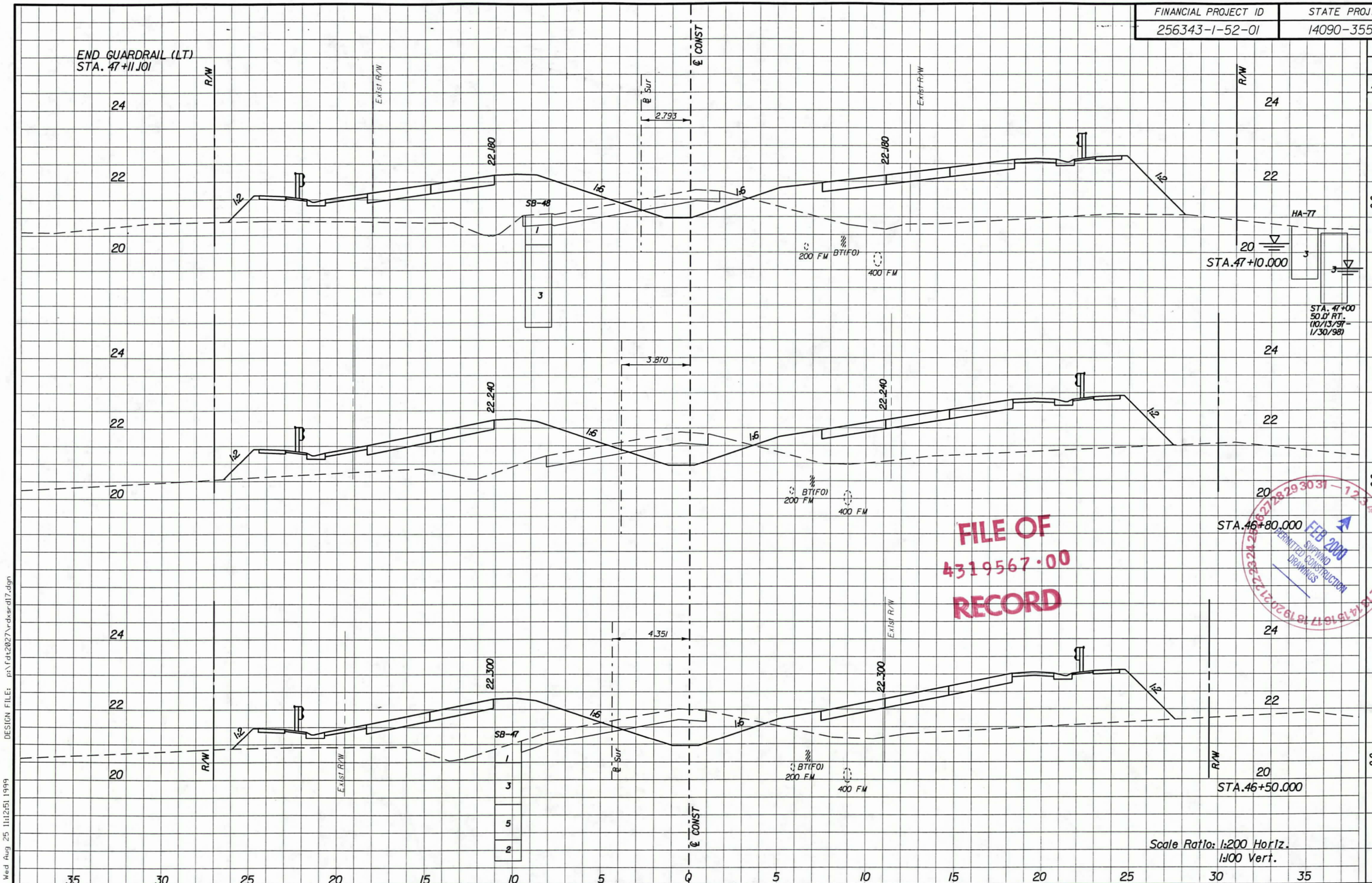
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 188

PLOT DATE: Wed Aug 25 11:12:45 1999 DESIGN FILE: p:\fdt2027\RDXSRD16.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	143

END GUARDRAIL (LT)
STA. 47+11.01



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		195		1037
0.0		3.3		44.9	
	0		117		1265
0.0		4.5		39.4	
	0		152		1143
0.0		5.6		36.8	

FILE OF
4319567.00
RECORD

FEB 2000
SURVEYED
PERMITTED CONSTRUCTION
DRAWINGS

Scale Ratio: 1:200 Horiz.
1:100 Vert.

PLOT DATE: Wed Aug 25 11:12:51 1999 DESIGN FILE: p:\fdt2027\rdxsrd17.dgn

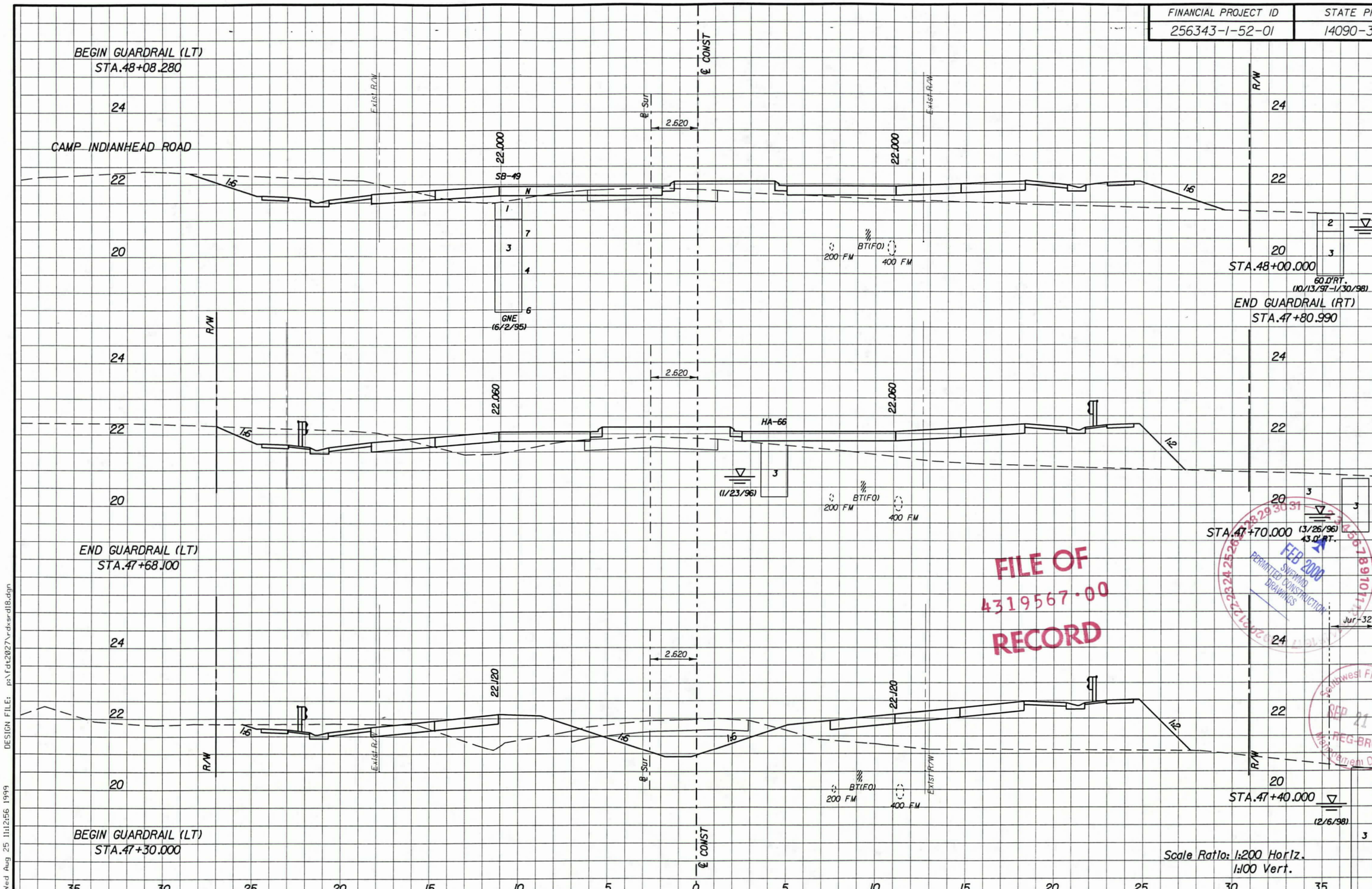
REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 189

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	144



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		390		167
0.0		8.0		8.1	
	0		203		393
0.0		5.5		18.1	
	0		228		635
0.0		9.7		24.2	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Tampa, Florida 33634
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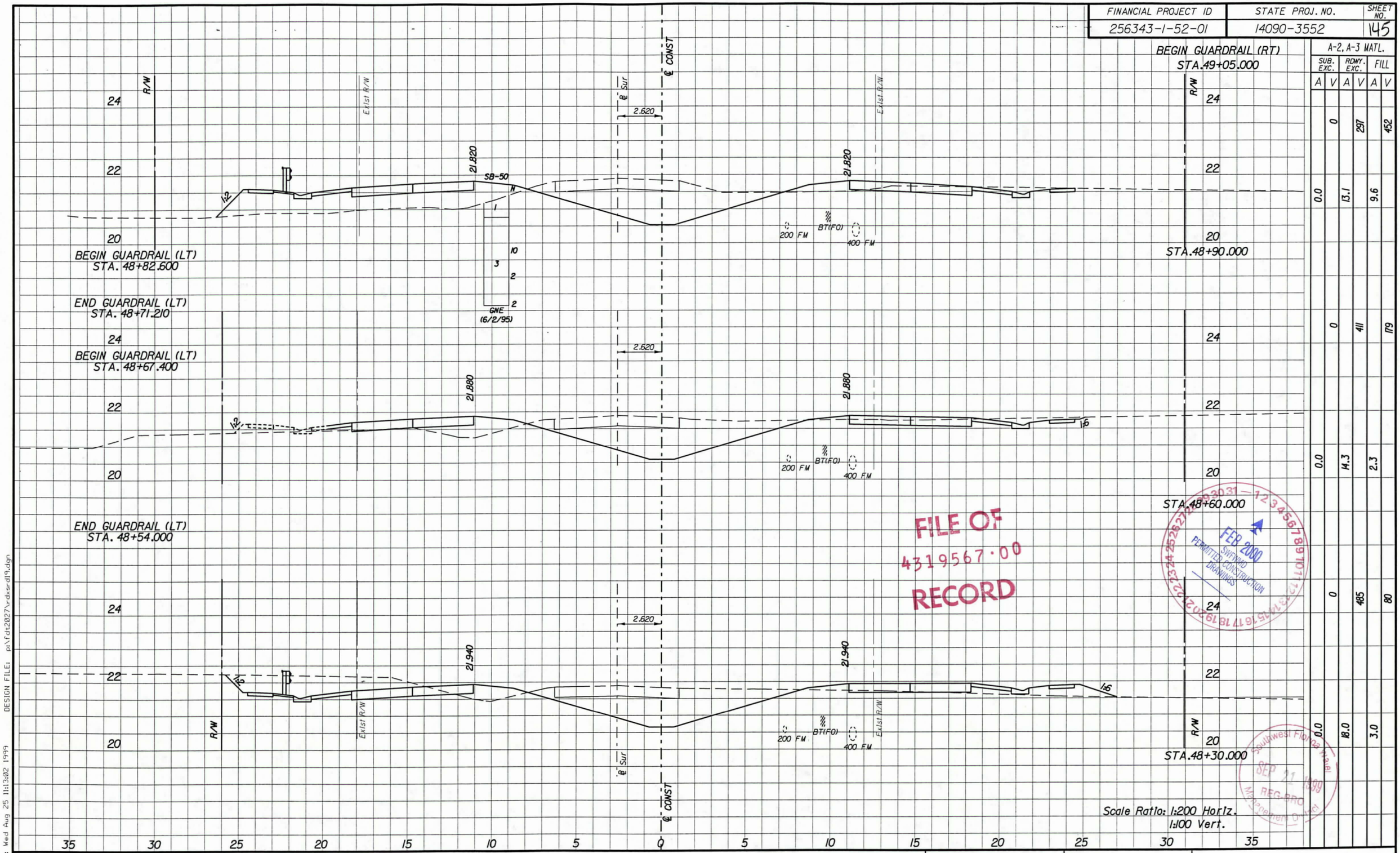
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 190

PLOT DATE: Wed Aug 25 11:12:56 1999 DESIGN FILE: p:\fdt2027\rdxsrd18.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	145



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		297		452
0.0		13.1		9.6	
	0		411		179
0.0		14.3		2.3	
	0		485		80
0.0		18.0		3.0	

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 11 1999
REG-PRO
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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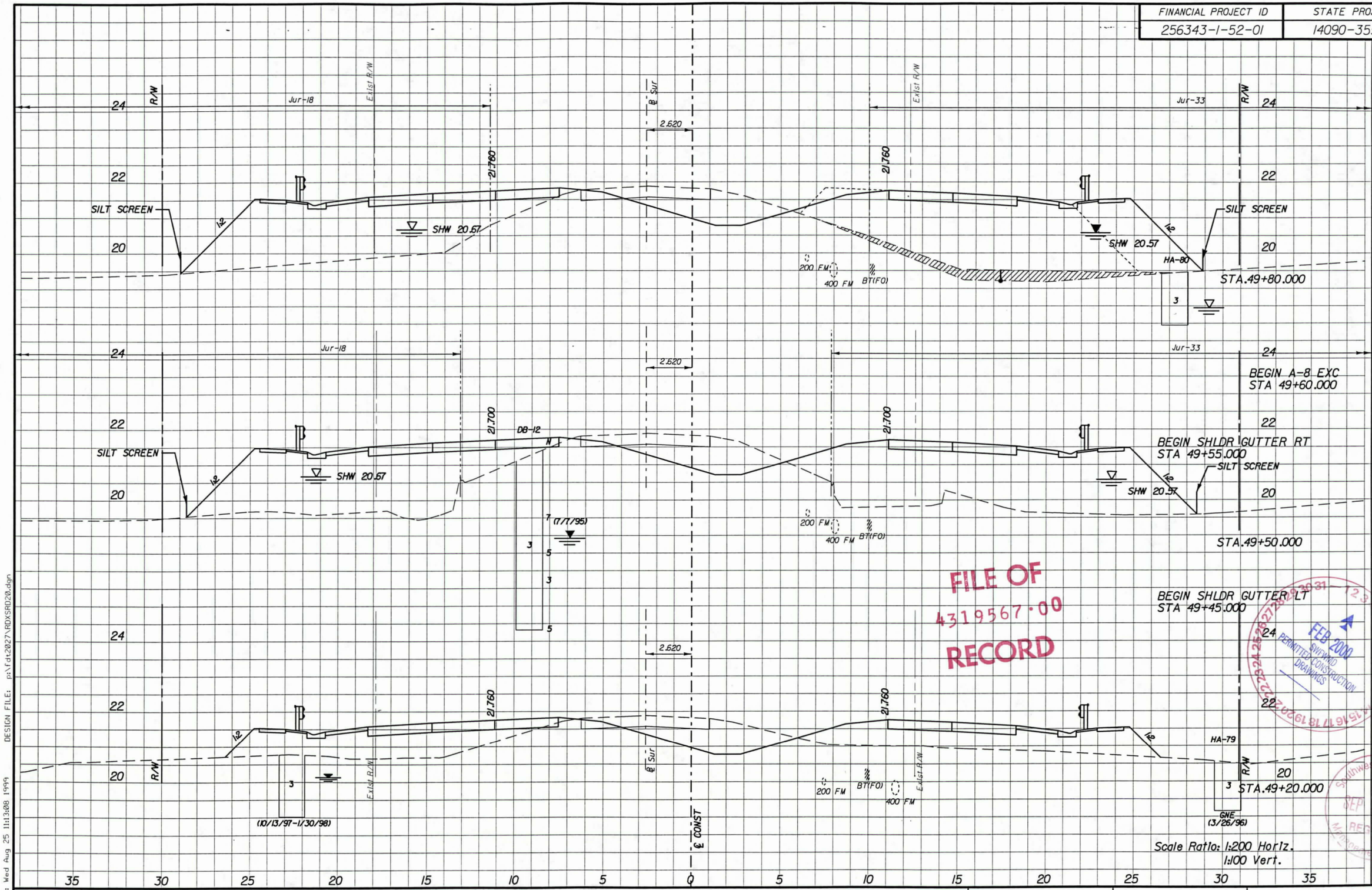
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 191

PLOT DATE: Wed Aug 25 11:13:02 1999 DESIGN FILE: p:\fdt2027\rdxsrd19.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	140

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0			252	1823
0.0		6.4		58.3	
	0			203	1140
0.0		7.1		57.7	
	0			207	1173
0.0		6.7		20.5	



FILE OF
4319567.00
RECORD

FEB 2000
SWITCHED TO PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
RECEIVED

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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Tampa, Florida 33634
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FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 192

PLOT DATE: Wed Aug 25 11:13:08 1999 DESIGN FILE: p:\fdt2027\RDXSR020.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	147

BEGIN GUARDRAIL (LT)
STA. 50+71.00

END GUARDRAIL (LT)
STA. 50+61.670

SILT SCREEN
STA.50+70.000

SILT SCREEN
STA.50+40.000

SILT SCREEN
STA.50+10.000

Scale Ratio: 1:200 Horiz.
1:100 Vert.

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	8.9	267	41.6	1460
0.0	0	9.6	278	58.6	1503
0.0	0	10.4	300	63.2	1827

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REGULATORY

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 193

PLOT DATE: Wed Aug 25 11:13:13 1999 DESIGN FILE: p:\fdt2027\RDXSR021.dgn

A-1054

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	148

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	4.5	125	76.2	2351
0.0	0	15.3		20.6	
0.0	0	5.7		61.2	
0.0	0	2.9		17.4	
0.0	0	8.9		55.7	

R/W
Jur-16
Exist R/W
℄ Sur
2.520
℄ CONST
22.120
SILT SCREEN
1:2
SHW 20.67
24
22
20
18
Jur-33
SHW 20.57
200 FM
400 FM
BT(FO)
W
4
3
(12/10/98)
STA. 51+60.000
Jur-17
ditch
1:6
22.060
SB-53
N
W
4
3
STA. 51+20
(10/13/97-1/30/98)
28
(6/8/98)
2
12
STA. 51+30.000
22.000
STA. 51+00.000
Scale Ratio: 1:200 Horiz.
1:100 Vert.
35 30 25 20 15 10 5 0 5 10 15 20 25 30 35

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water Management District
SEP 27 1999
RECEIVED
Resource Regulation Dept.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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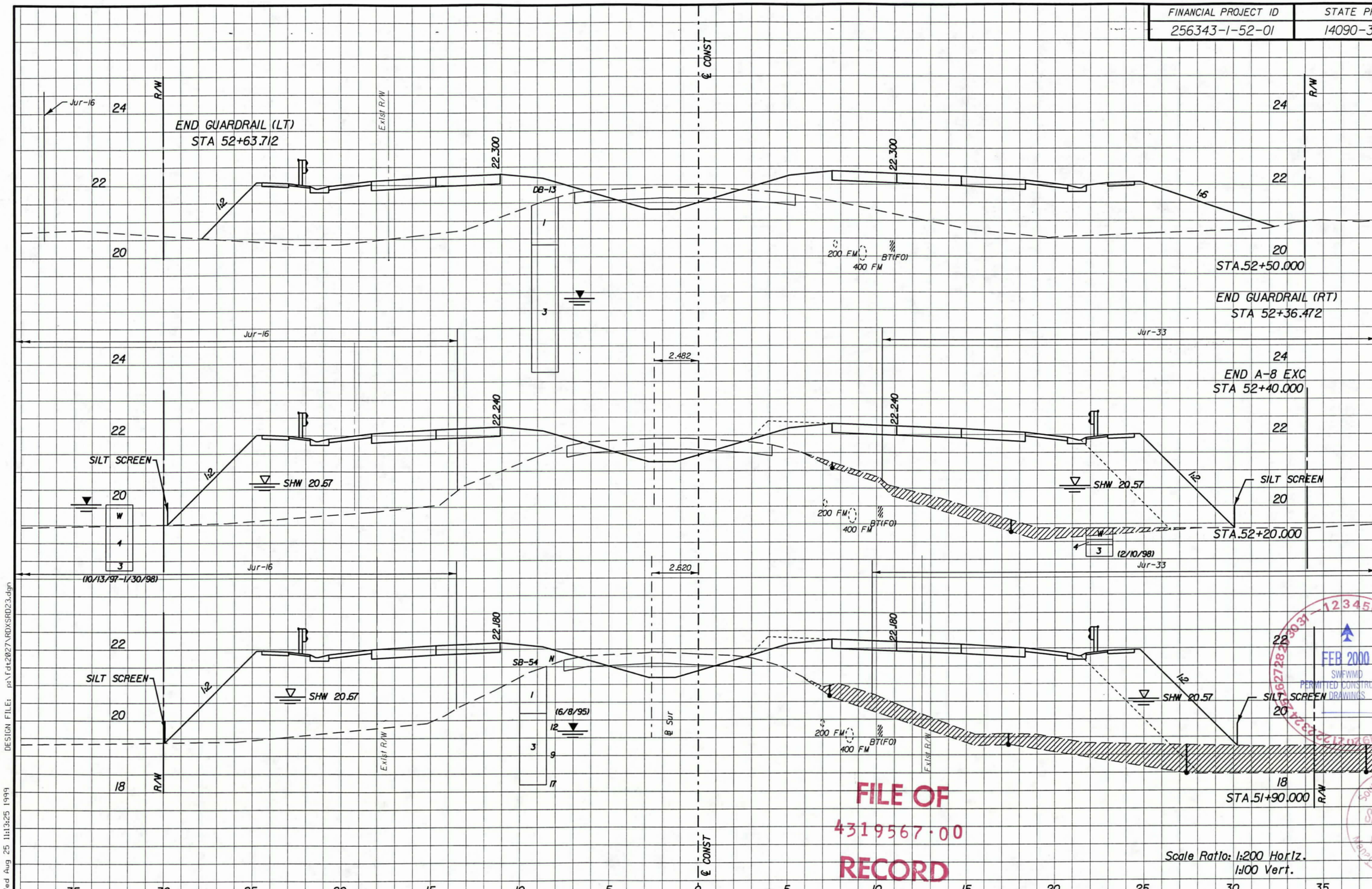
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 194

DESIGN FILE: p:\fdt2027\RDXSR022.dgn
PLOT DATE: Wed Aug 25 11:13:19 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	149



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		80		1196
0.0		3.2		52.0	
	0		101		1947
0.0		3.5		77.8	
	0		110		2375
0.0		3.8		80.5	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Suite 200
Tampa, Florida 33634
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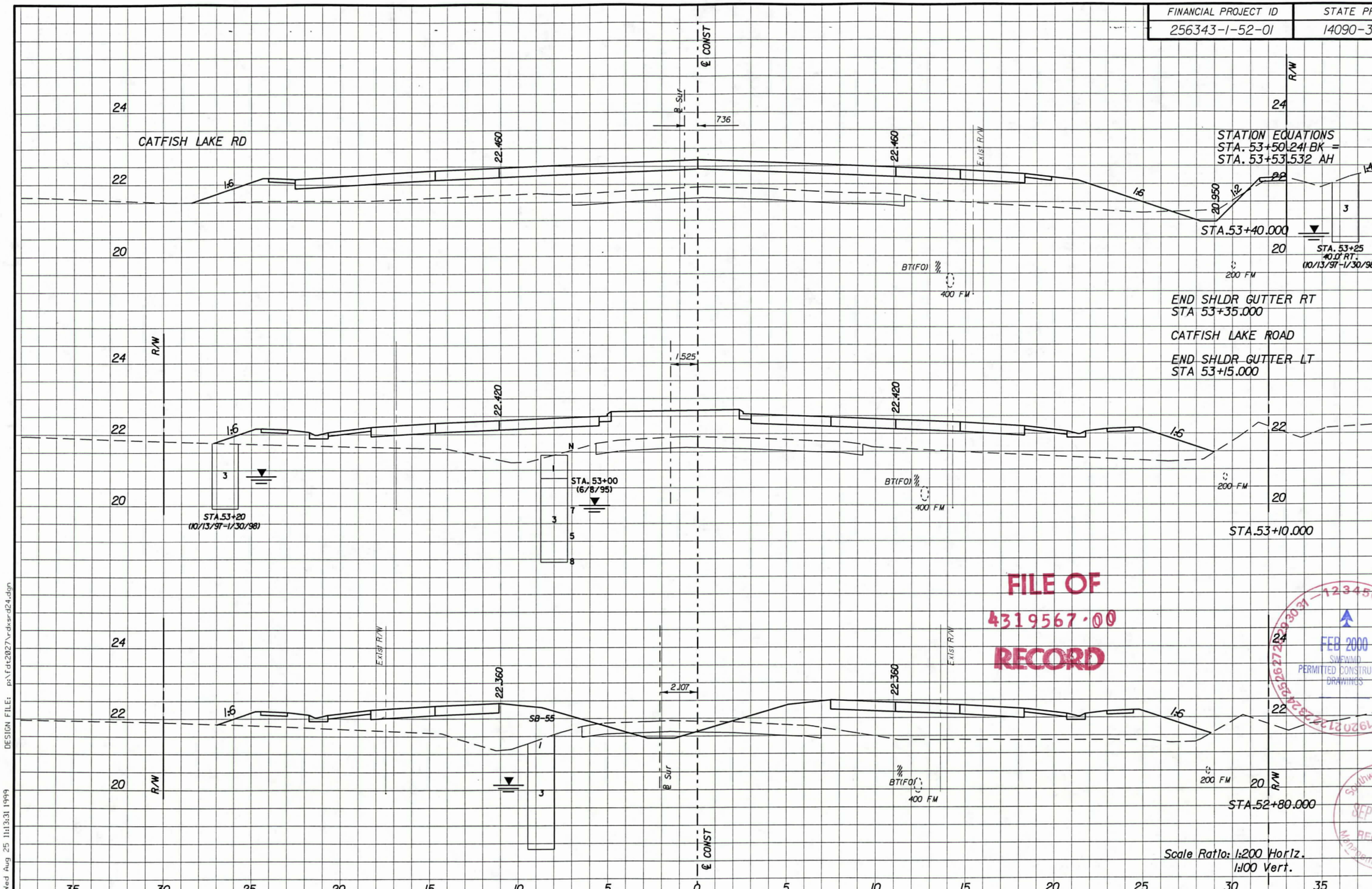
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 195

PLOT DATE: Wed Aug 25 11:13:25 1999 DESIGN FILE: p:\fdt2027\RDXSRD23.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	150



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRD
Management District

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		27		805
0.0		0.0		29.9	
	0		35		831
0.0		2.3		25.5	
	0		66		798
0.0		2.1		27.7	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
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Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

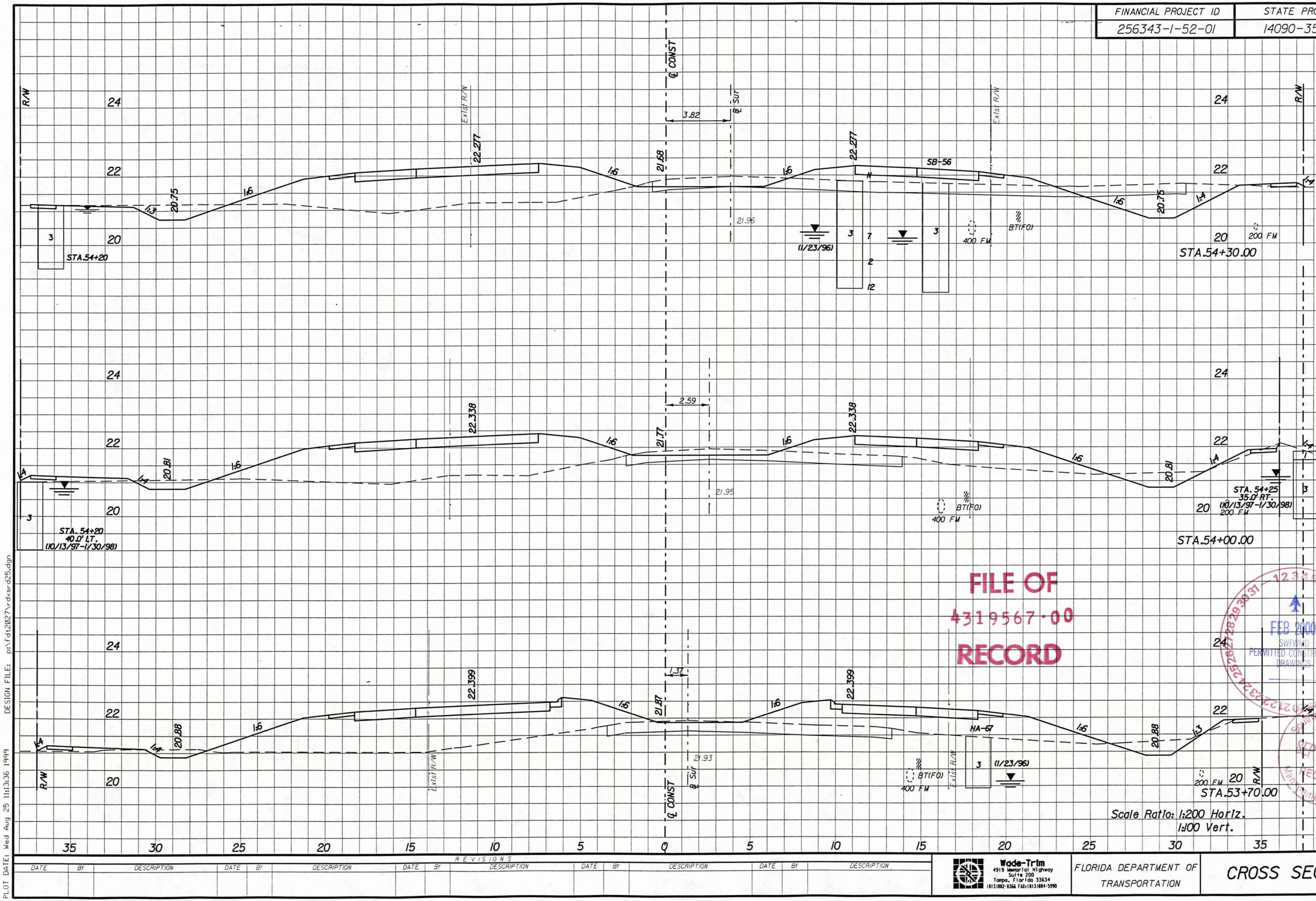
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 196

DESIGN FILE: p:\fdt2027\rdxsrd24.dgn

PLOT DATE: Wed Aug 25 11:13:31 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	151



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		423		645
0.0		20.8		22.1	
	0		369		747
0.0		3.8		27.7	
	0		87		872
0.0		2.0		30.4	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BPO
Southwest Florida Water Management District

DESIGN FILE: p:\fdt2027\rdxsrd25.dgn

PLOT DATE: Wed Aug 25 11:13:36 1999

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Suite 200
Tampa, Florida 33634
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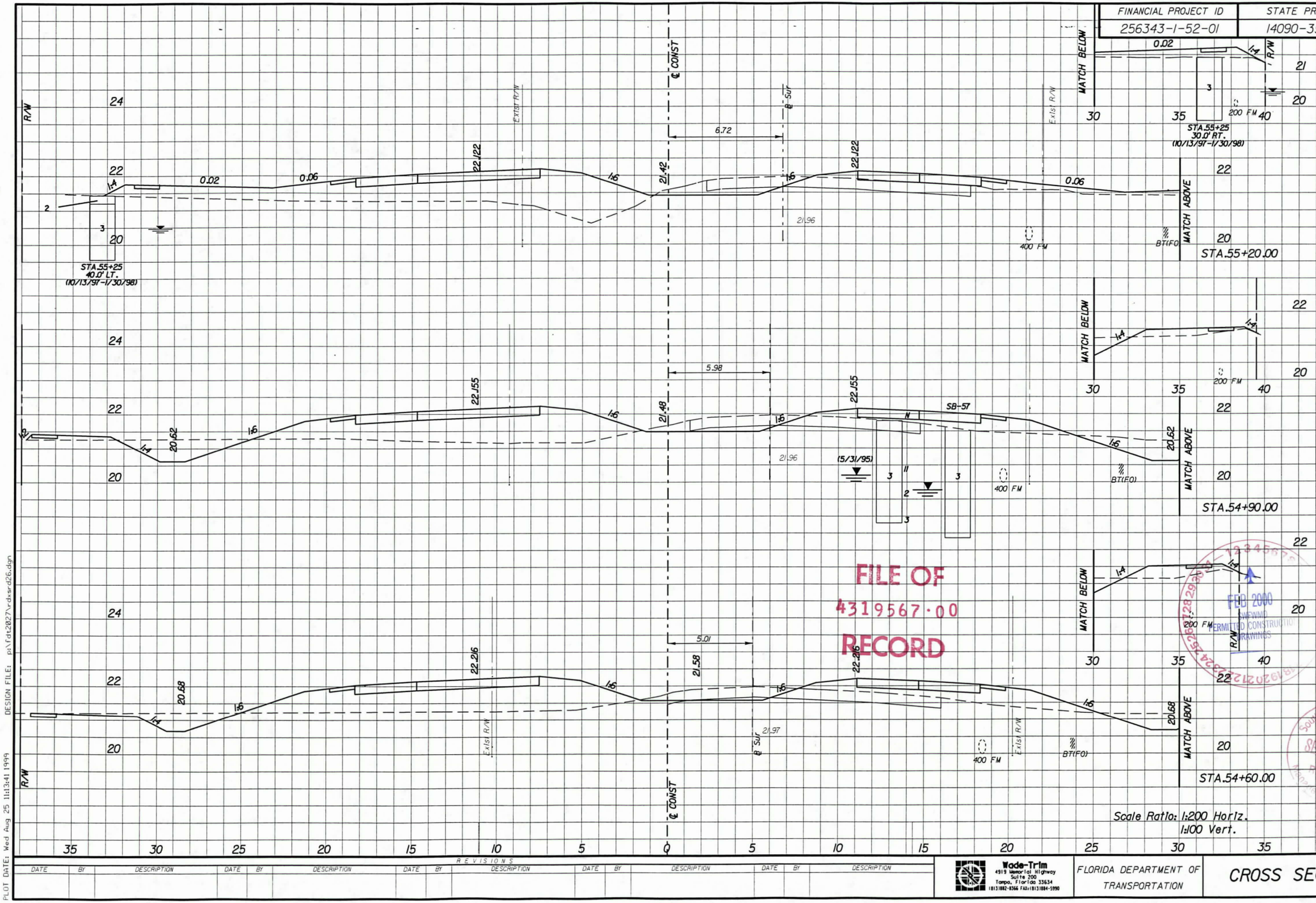
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 197

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	152



A-2, A-3 MATL.					
SUB. EXC.		ROWY. EXC.		FILL	
A	V	A	V	A	V
	0		347		482
0.0		4.2		23.0	
	0		209		624
0.0		9.7		18.5	
	0		257		593
0.0		7.4		20.9	

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 27 1999
SouthWest Florida Water Management District
Brooksville, Florida

DESIGN FILE: p:\fdt2027\rdxsrd26.dgn
PLOT DATE: Wed Aug 25 11:13:41 1999

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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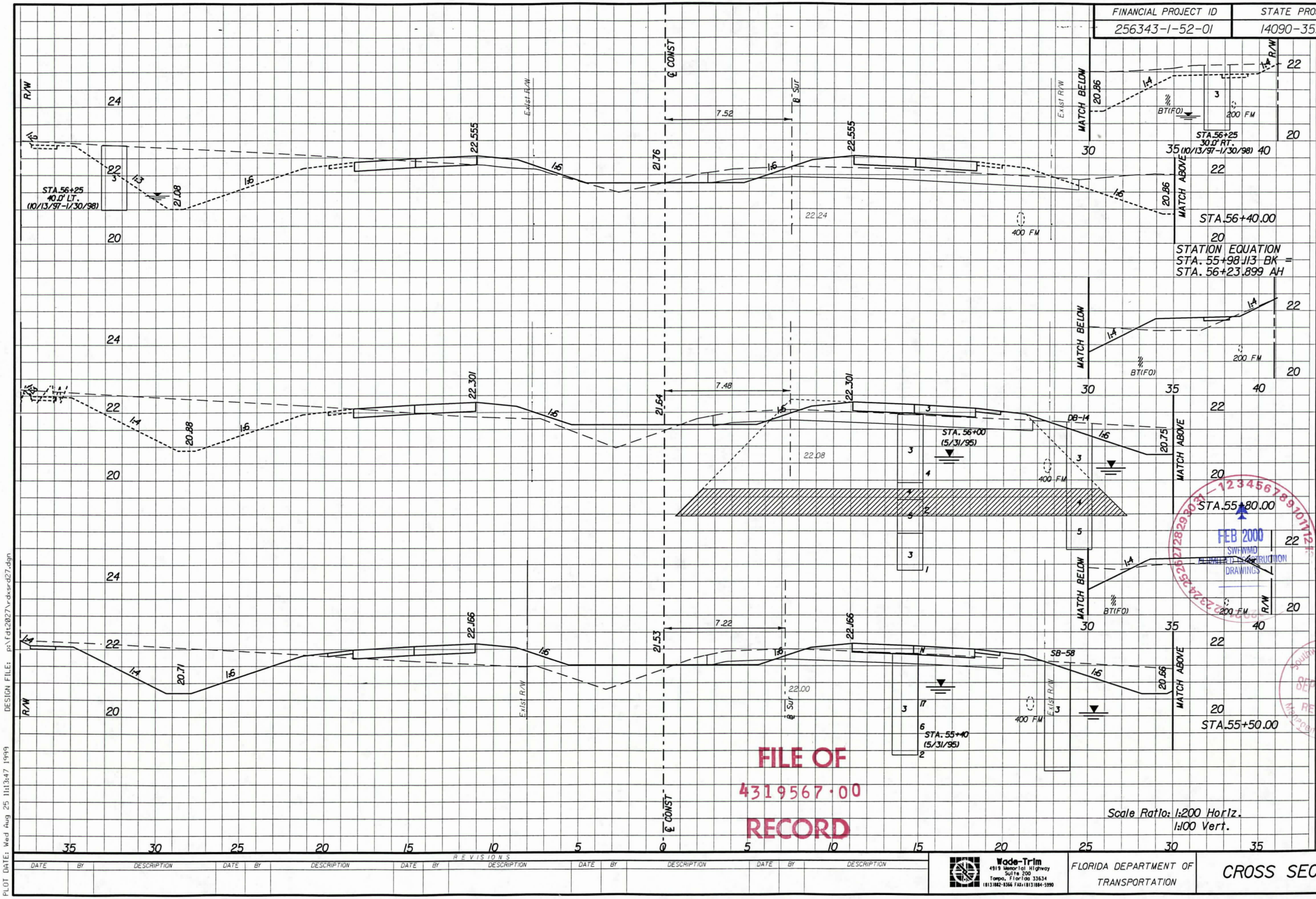
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 198

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	153

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	29.5	924	5.1	324
	895		878		221
	785		611		254
0.0	52.3	18.9	218	9.1	7.8



REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
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Suite 200
Tampa, Florida 33634
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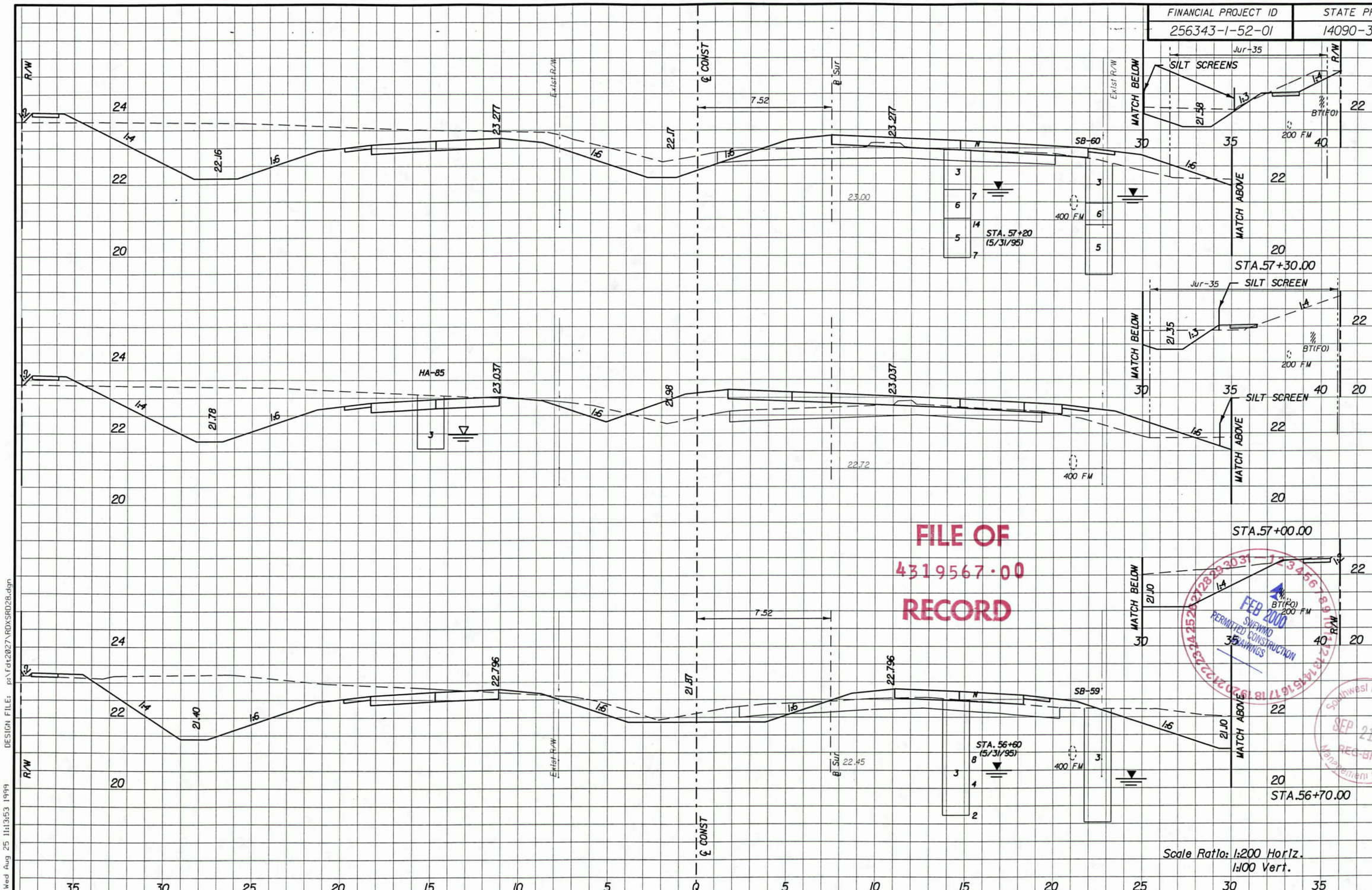
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 199

DESIGN FILE: p:\fdt2027\rds\srd27.dgn

PLOT DATE: Wed Aug 25 11:13:47 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	154



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REC-BRO
Management District

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		948		99
0.0		29.5		4.1	
	0		804		150
0.0		24.1		5.9	
	0		843		336
0.0		32.1		16.5	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
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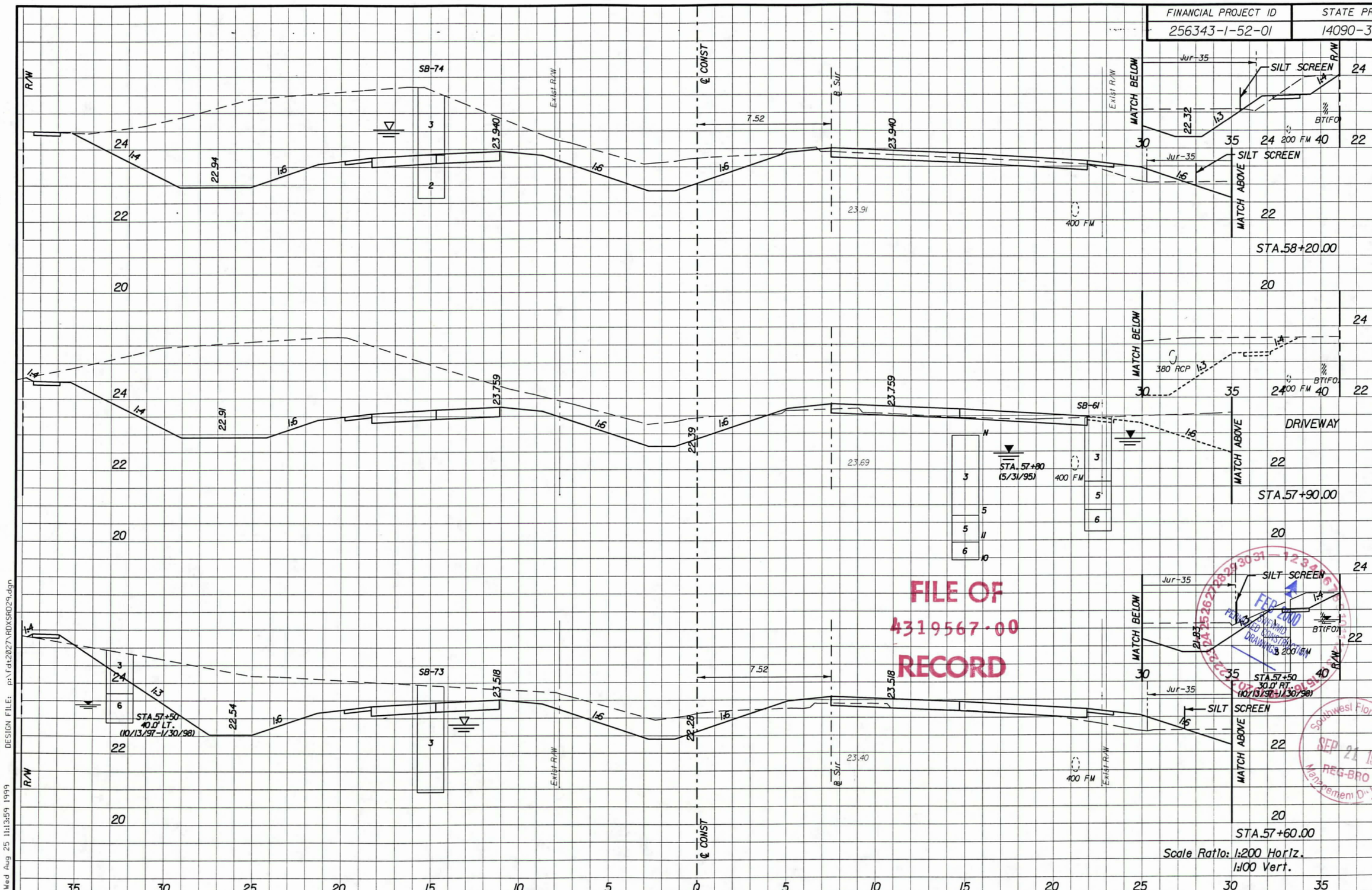
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 200

PLOT DATE: Wed Aug 25 11:13:53 1999 DESIGN FILE: p:\fdt2027\RDXSRD28.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	155



FILE OF 4319567·00 RECORD

FEB 2000 SIDEWIND PERIMETER CONSTRUCTION DRAWINGS
Southwest Florida Water Management District SEP 21 1999 REG-BRO

A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	0		1632		56
0.0		54.3		1.4	
	0		1769		26
0.0		63.6		0.3	
	0		1460		42
0.0		33.7		2.5	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Suite 200
Tampa, Florida 33634
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FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 201

PLOT DATE: Wed Aug 25 11:13:59 1999 DESIGN FILE: p:\fdt2027\RDXSRD29.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	50

BEGIN TRANSITION FROM G & G TO SHLDR GUTTER LT

COLLIER PKWY
STA.59+10.00

STA.58+80.00

STA.58+60
(10/13/97-1/30/98)

STA.58+50.00

STA. 58+40
(5/31/95)

(5/31/95)

(10/13/97-1/30/98)

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	17.6	699	0.0	15
0.0	0	7.95	23		
0.0	0	35.4	1.5		
0.0	0	54.5	2.3		
	0	13.9	57		

Scale Ratio: 1:200 Horiz.
1:100 Vert.

FILE OF
#319567-00
RECORD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 202

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

FEB 2000

PLOT DATE: Wed Aug 25 11:14:04 1999 DESIGN FILE: p:\fdt2027\rdxsrd30.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	157

END SHLDR GUTTER LT
STA 60+20.000

STA.60+00.00

STA.59+70.00

STA.59+40.00

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	31.2	726	2.7	47
0.0	0	27.8	885	2.3	75
0.0	0	29.0	852	1.0	50

Scale Ratio: 1:200 Horiz.
1:100 Vert.

FILE OF
4319567.00
RECORD

FEB 2000
PERMITTED CONSTRUCTION
SHOWN ON DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management Dist.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 203

PLOT DATE: Wed Aug 25 11:14:10 1999
DESIGN FILE: p:\fdt2027\rdsxsrd31.dgn

A-1064

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	158

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
STA.60+90.00	0.0	0	8.7	192	23.8	1023
STA.60+60.00	0.0	0	5.1	207	15.4	588
STA.60+30.00	0.0	0	17.2	335	0.4	237

Scale Ratio: 1:200 Horiz.
1:100 Vert.

FILE OF
4319567.00
RECORD

FEB 2000
SIGNED AND DATED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRC

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

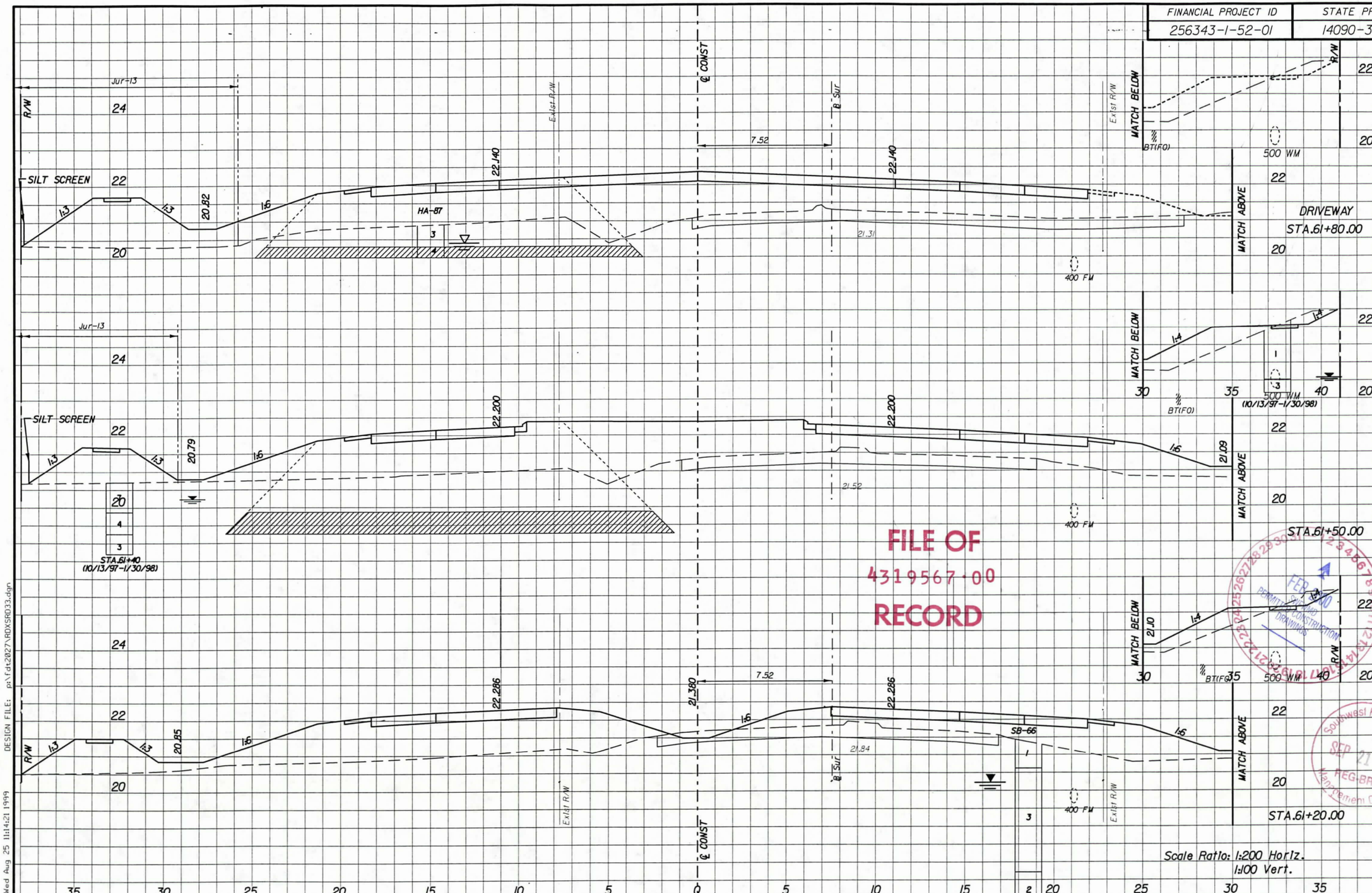
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 204

PLOT DATE: Wed Aug 25 11:14:15 1999
DESIGN FILE: p:\fdt2027\rdsxsd32.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	159



FILE OF
4319567-00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	174		141		1716
11.6		5.2		57.1	
	572		143		1709
26.5		4.3		56.8	
	398		126		1518
0.0		4.1		44.4	

DESIGN FILE: p:\fdt2027\ROXSRD33.dgn

PLOT DATE: Wed Aug 25 11:14:21 1999

REVISIONS

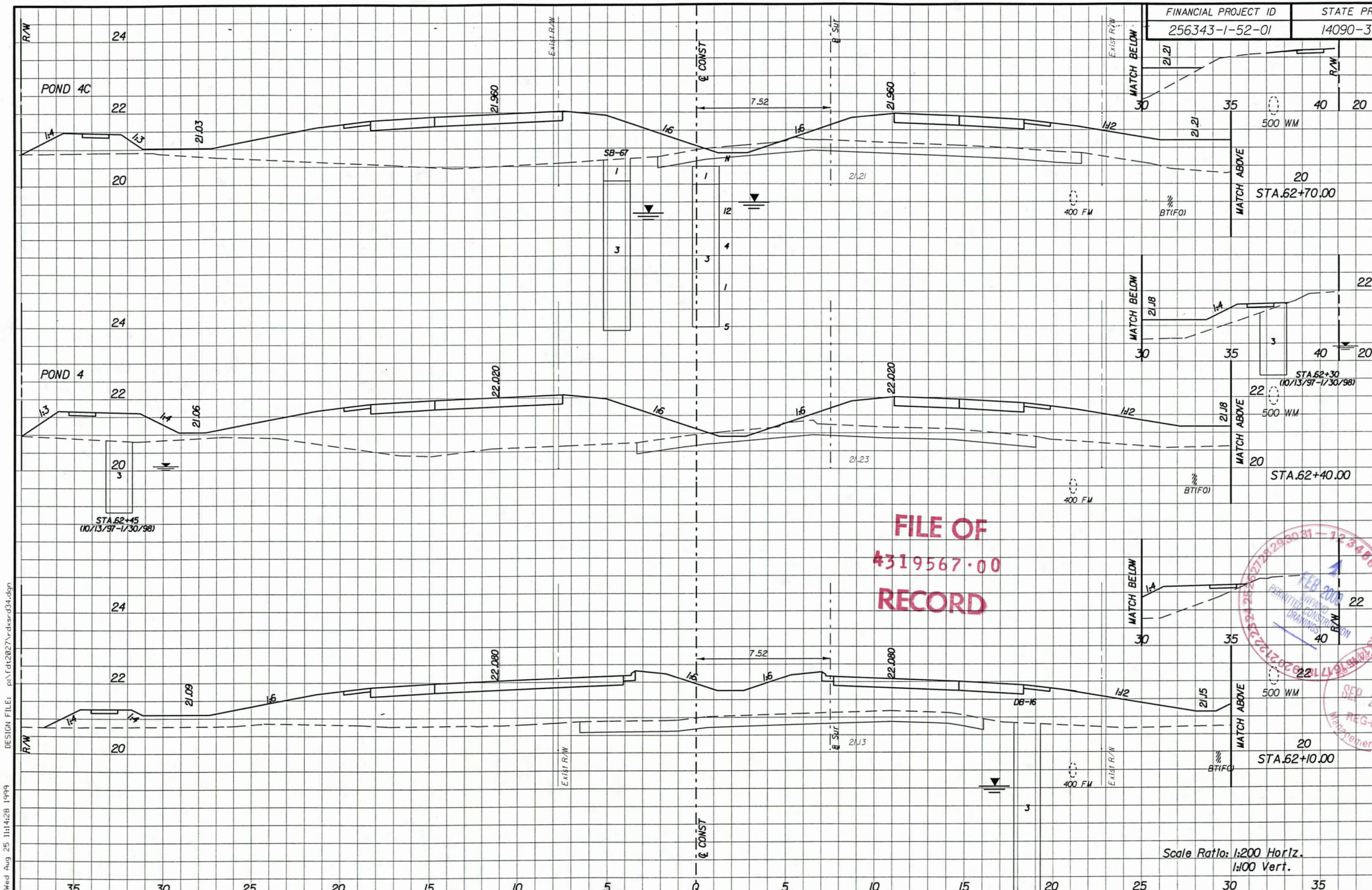
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 205

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	160



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	4.4	116	48.2	1418
0.0	0	4.1	128	52.4	1509
0.0	0	4.2	125	57.3	1646

FILE OF
4319567·00
RECORD

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999 REG-BRO Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

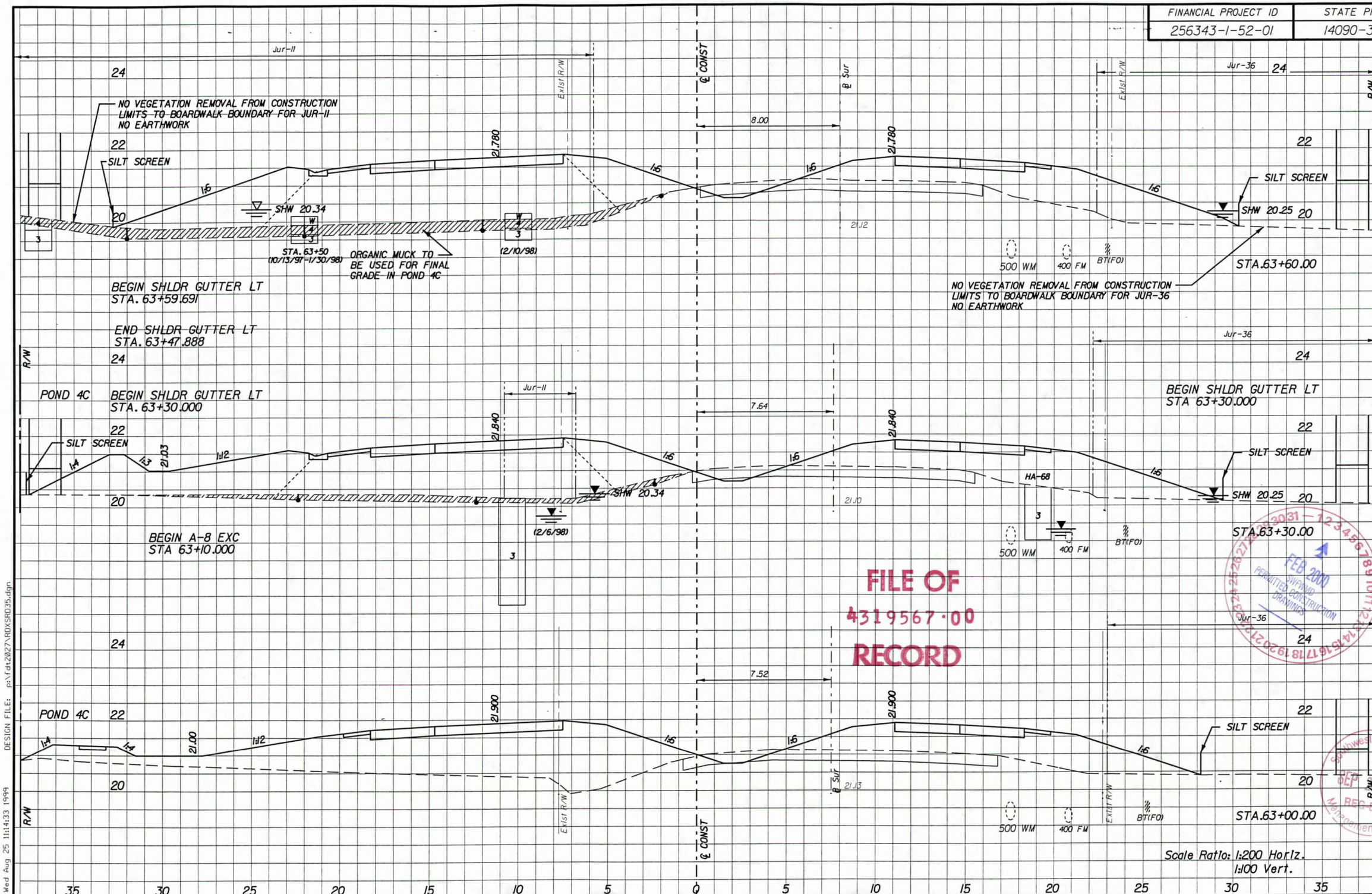
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 206

DESIGN FILE: p:\fdt2027\rdxsrd34.dgn

PLOT DATE: Wed Aug 25 11:14:28 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	1/21



FILE OF 4319567·00 RECORD

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District SEP 1999 REG BRD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	192		95		1692
0.0		3.1		54.0	
	0		92		1583
0.0		3.0		51.5	
	0		95		1467
0.0		3.3		46.3	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

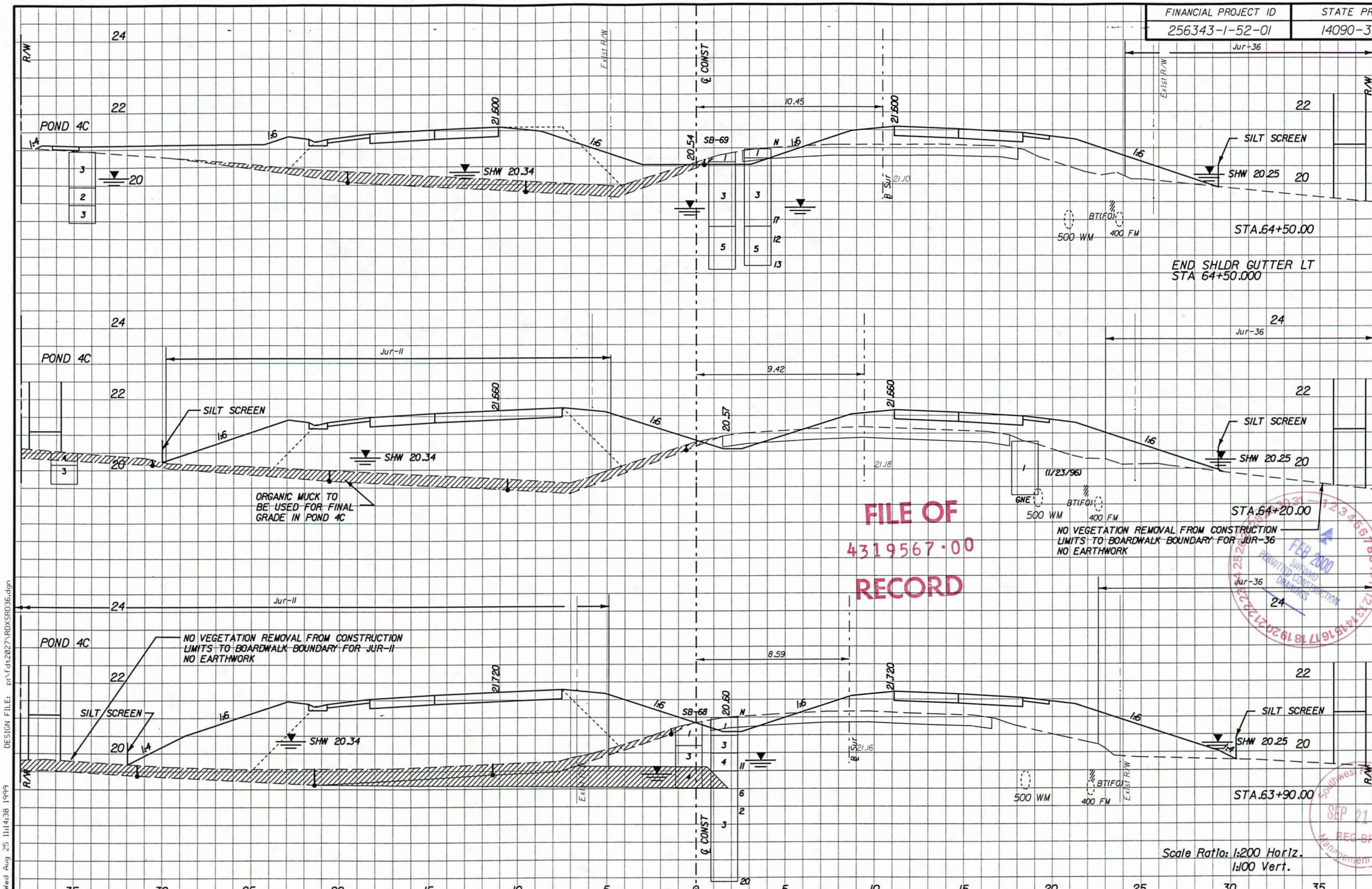
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 207

PLOT DATE: Wed Aug 25 11:14:33 1999 DESIGN FILE: p:\fdt2027\RDXSRD35.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	162



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		108		903
0.0		3.5		34.8	
	0		102		1229
0.0		3.3		47.1	
	192		98		1589
12.8		3.2		58.8	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

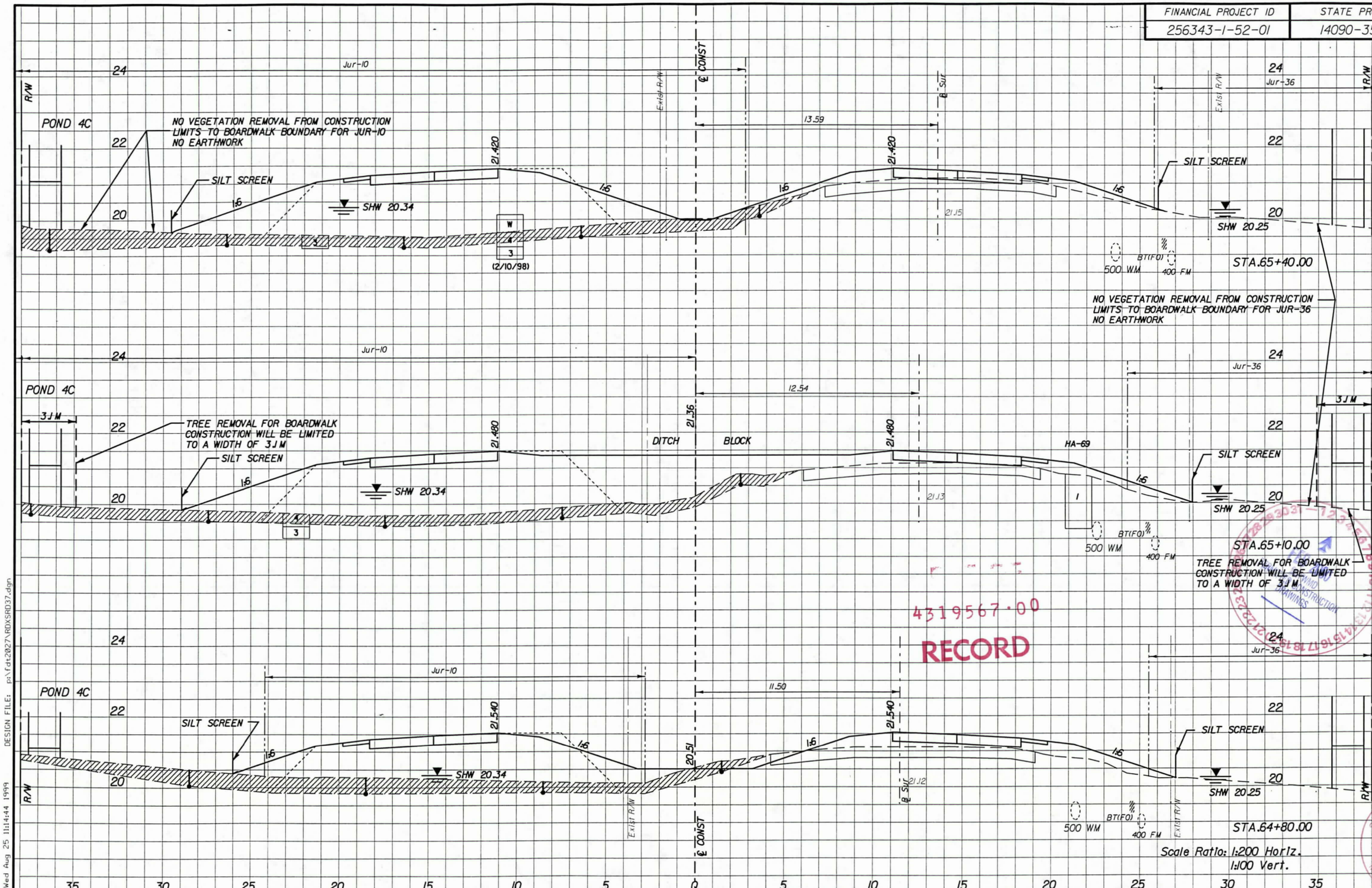
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 208

PLOT DATE: Wed Aug 25 11:14:38 1999 DESIGN FILE: p:\fdt2027\RDXSRD36.dgn

A-1069

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	163



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		66		1035
0.0		2.4		35.9	
	0		72		1208
0.0		2.4		44.6	
	0		92		1050
0.0		3.7		25.4	

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

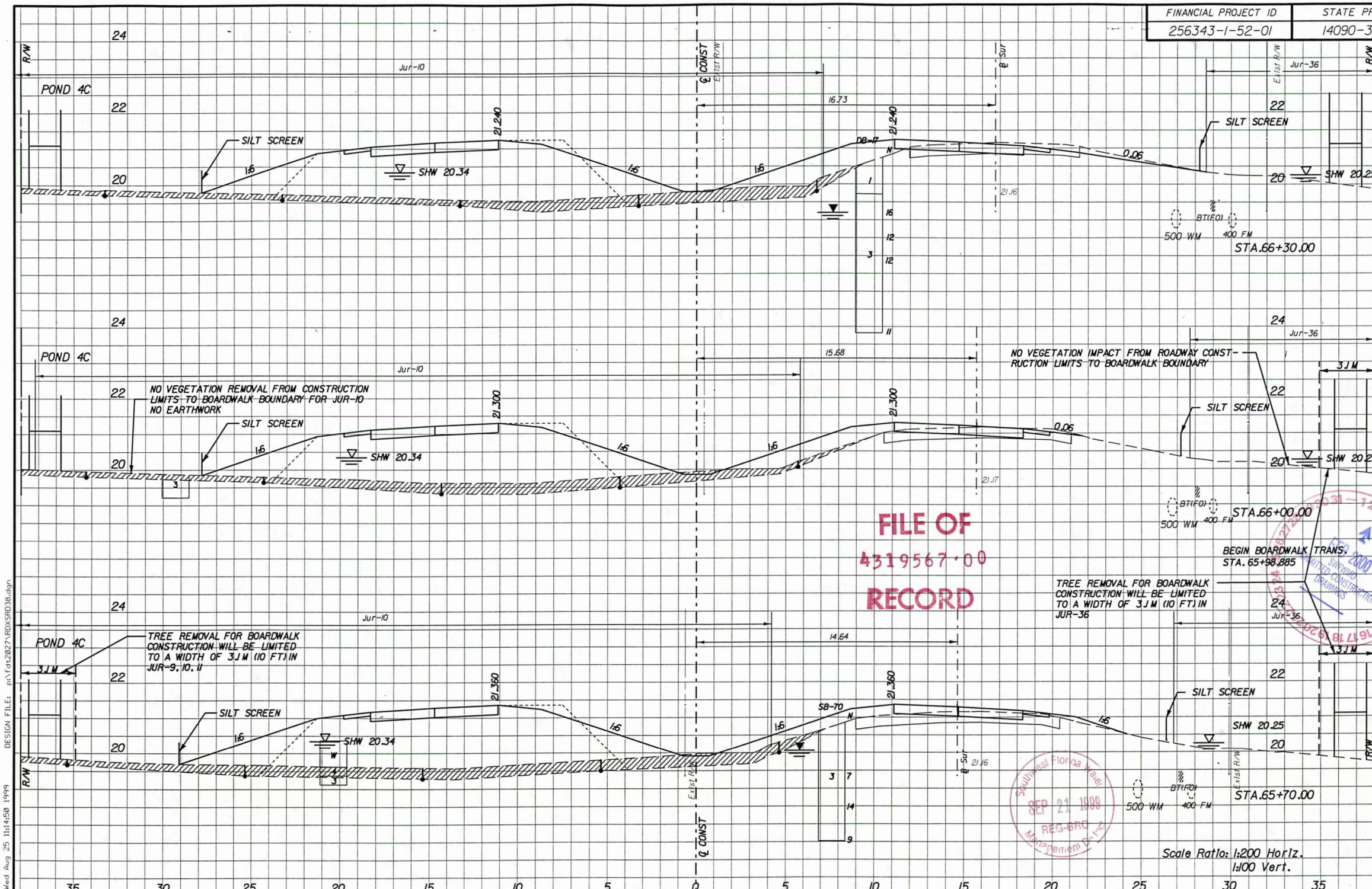
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 209

PLOT DATE: Wed Aug 25 11:14:44 1999 DESIGN FILE: p:\fdt2027\RDXSRD37.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	164



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		63		1037
0.0		2.1		32.3	
	0		62		945
0.0		2.0		30.7	
	0		60		957
0.0		2.0		33.1	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

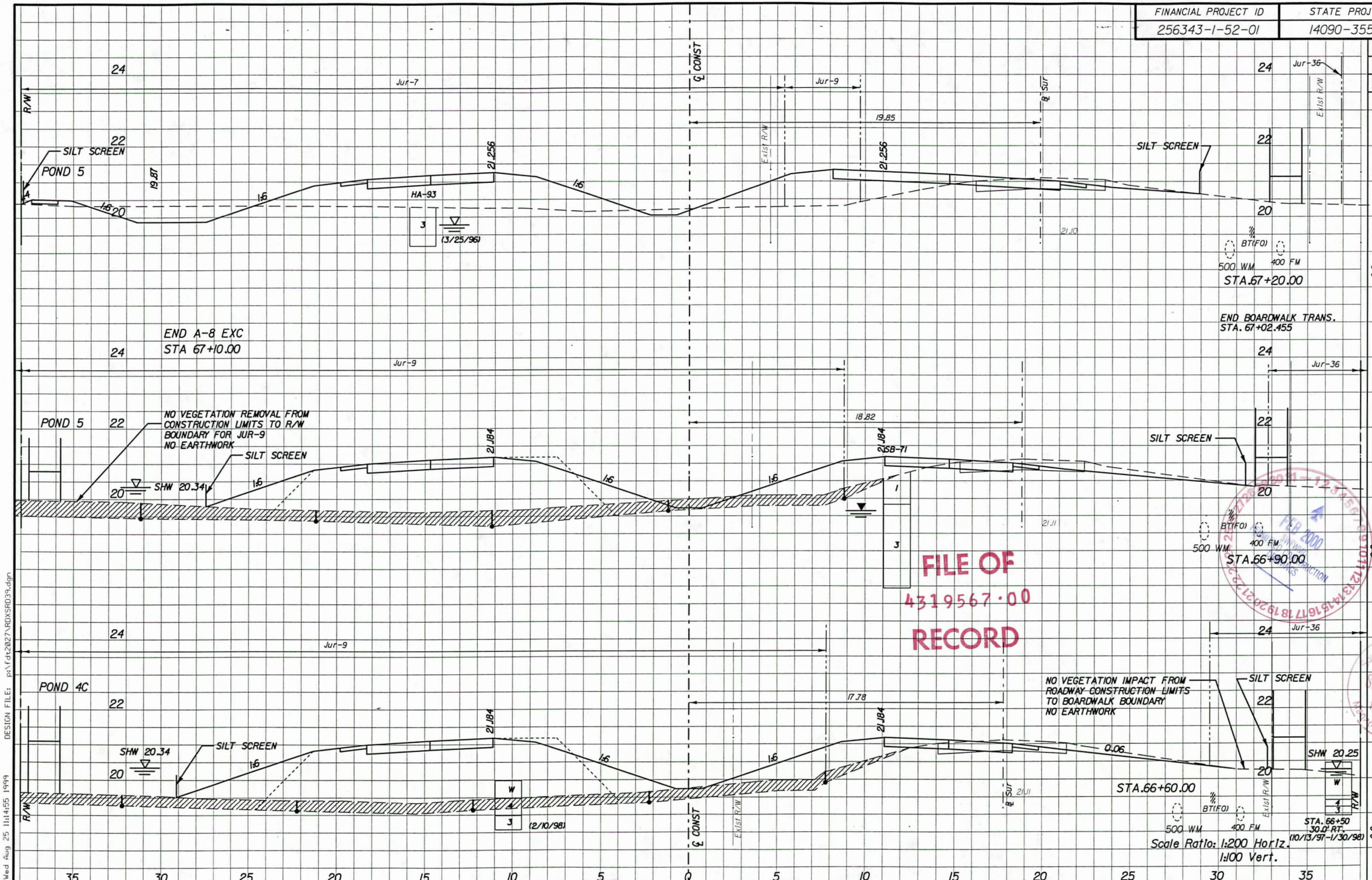
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 210

PLOT DATE: Wed Aug 25 11:14:50 1999 DESIGN FILE: p:\fdt2027\RDXSRD38.dgn

A-1071

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	165



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		180		657
0.0		5.1		20.1	
	0		123		734
0.0		3.1		28.8	
	0		78		984
0.0		2.1		36.8	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

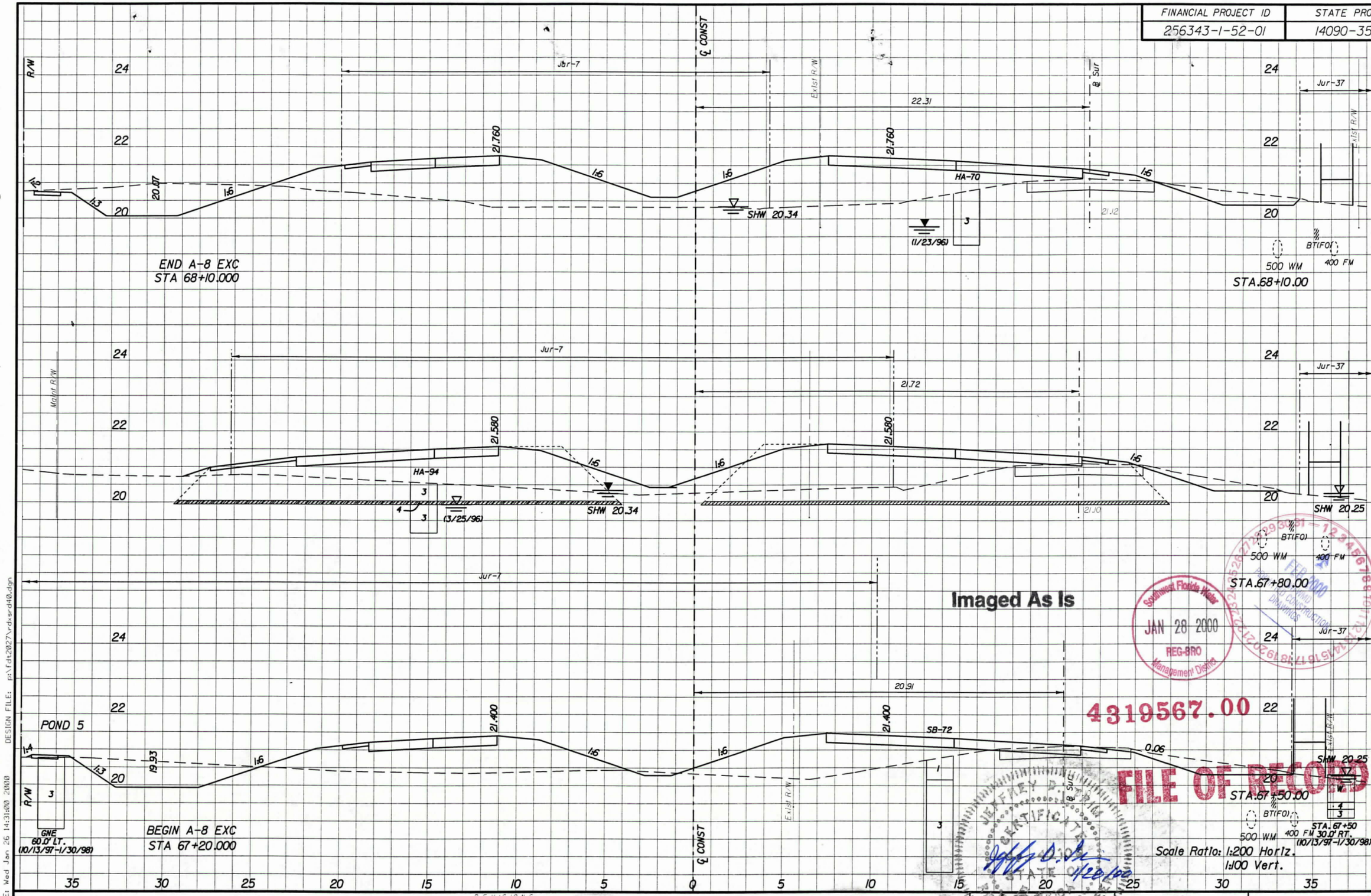
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 211

PLOT DATE: Wed Aug 25 11:14:55 1999 DESIGN FILE: p:\fdt2027\RDXSRD39.dgn

A-1072

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	



A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	0		219		927
0.0		7.8		36.0	
	416		137		992
27.7		1.3		30.1	
	416		123		807
0.0		6.9		23.7	

Southwest Florida Water Management District
JAN 28 2000
REG-BRO

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

4319567.00

FILE OF RECORD

JEFFREY D. TRIM
CERTIFICATE
STATE OF FLORIDA
1/28/00

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

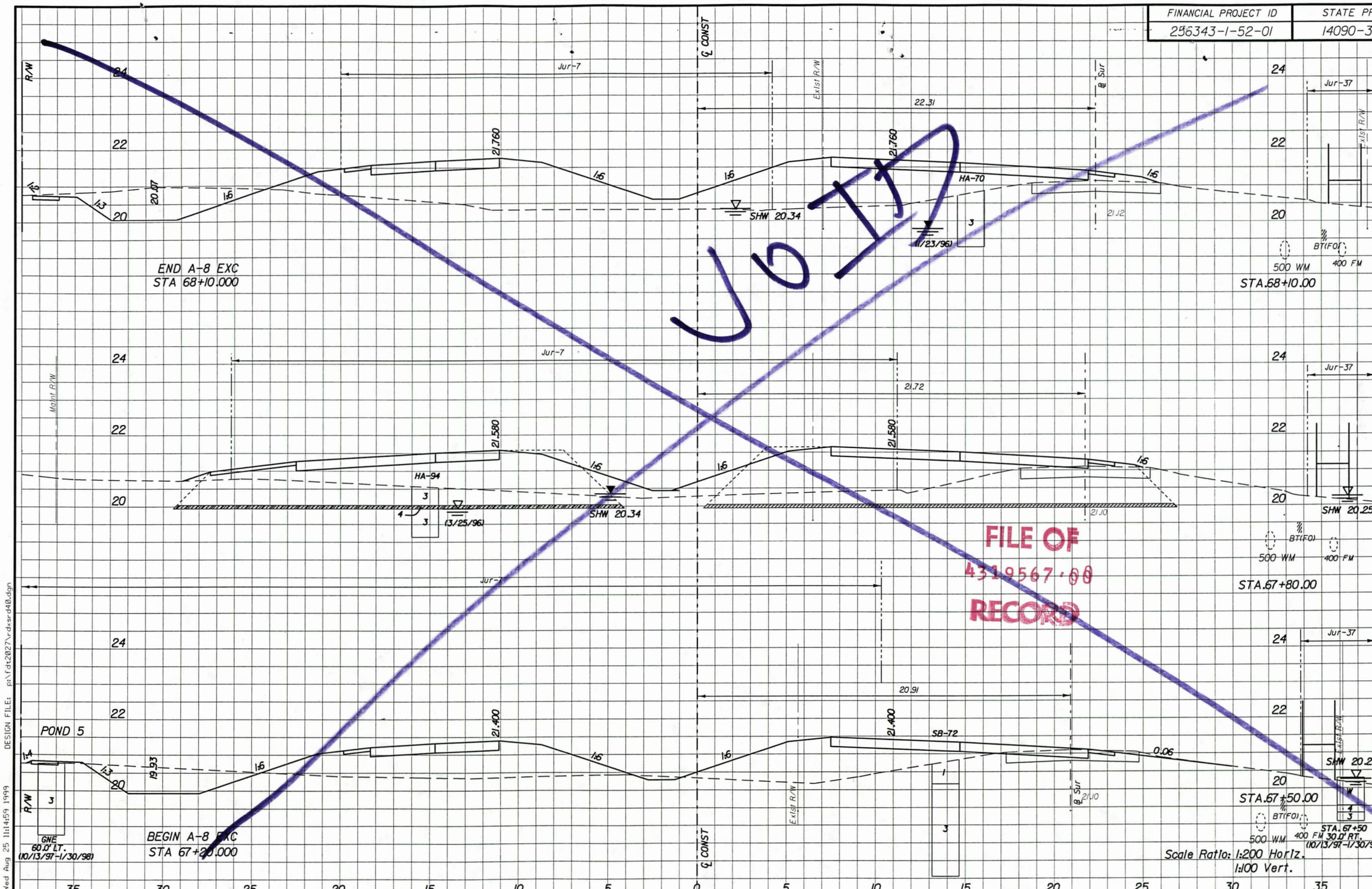
Wade-Trim
4918 Memorial Highway
Suite 200
Tampa, Florida 33634
(813) 882-8366 FAX (813) 881-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 212

PLOT DATE: Wed Jan 26 14:31:00 2000 DESIGN FILE: p:\fdt2027\rdxsrd40.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	166



A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	0		219		927
0.0		7.8		36.0	
	416		137		992
27.7		1.3		30.1	
	416		123		807
0.0		6.9		23.7	

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

PLOT DATE: Wed Aug 25 11:14:59 1999 DESIGN FILE: p:\fdt2027\rdxsrd40.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
500 WM STA.69+00.00		0		255		845
	0.0		3.4		29.2	
500 WM STA.68+70.00		0		141		876
	0.0		6.0		29.2	
STA.68+50 (10/13/97-1/30/98)		0		195		839
	0.0		6.8		25.8	
500 WM STA.68+40.00						

LIVINGSTON ROAD

STATION EQUATION
STA 68+68.832 BK =
STA 68+68.332 AH

Scale Ratio: 1:200 Horiz.
1:100 Vert.

Imaged As Is

FILE OF RECORD
4319567.00

Southwest Florida Water Management District
JAN 28 2000
REG-BRO

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

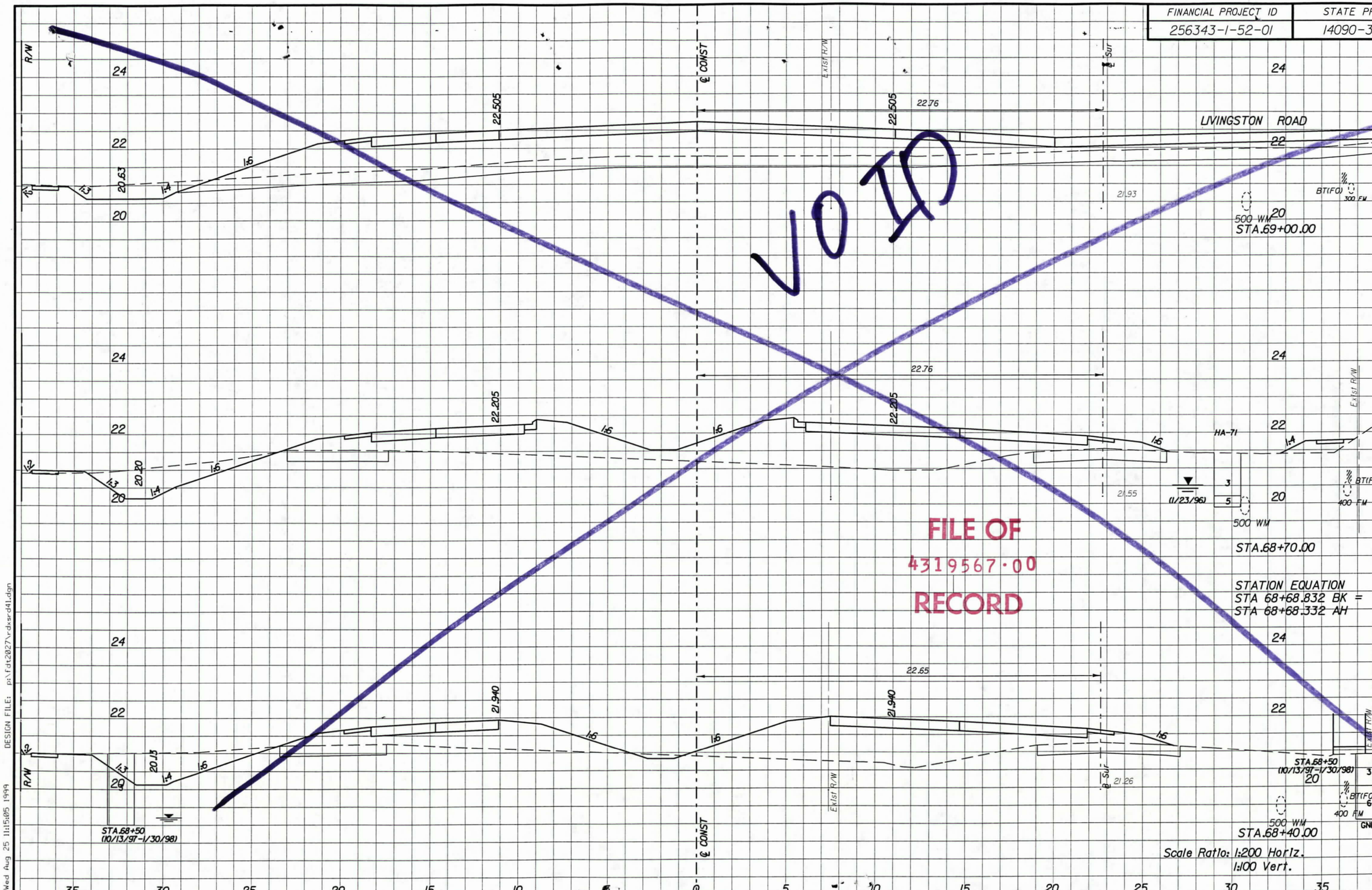
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-1366 FAX(813)884-3990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 213

PLOT DATE: Wed Jan 26 14:52:10 2000 DESIGN FILE: p:\fdt2027\rdxsrd41.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	167



VOID

FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		255		845
0.0		3.4		29.2	
	0		141		876
0.0		6.0		29.2	
	0		195		839
0.0		6.8		25.8	

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

PLOT DATE: Wed Aug 25 11:15:05 1999 DESIGN FILE: p:\fdt2027\rdxsrd41.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	168

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	56.1	1208	6.7	209
0.0	0	1277		170	
0.0	0	29.0		4.6	
	0	639		47.6	
0.0		13.6		27.1	

STATION EQUATION
STA 70+00.047 BK=
STA 70+00.355 AH

STA.69+90.00

STA.69+60.00

STA.69+30.00

Scale Ratio: 1:200 Horiz.
1:100 Vert.

FILE OF
4319567.00
RECORD

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

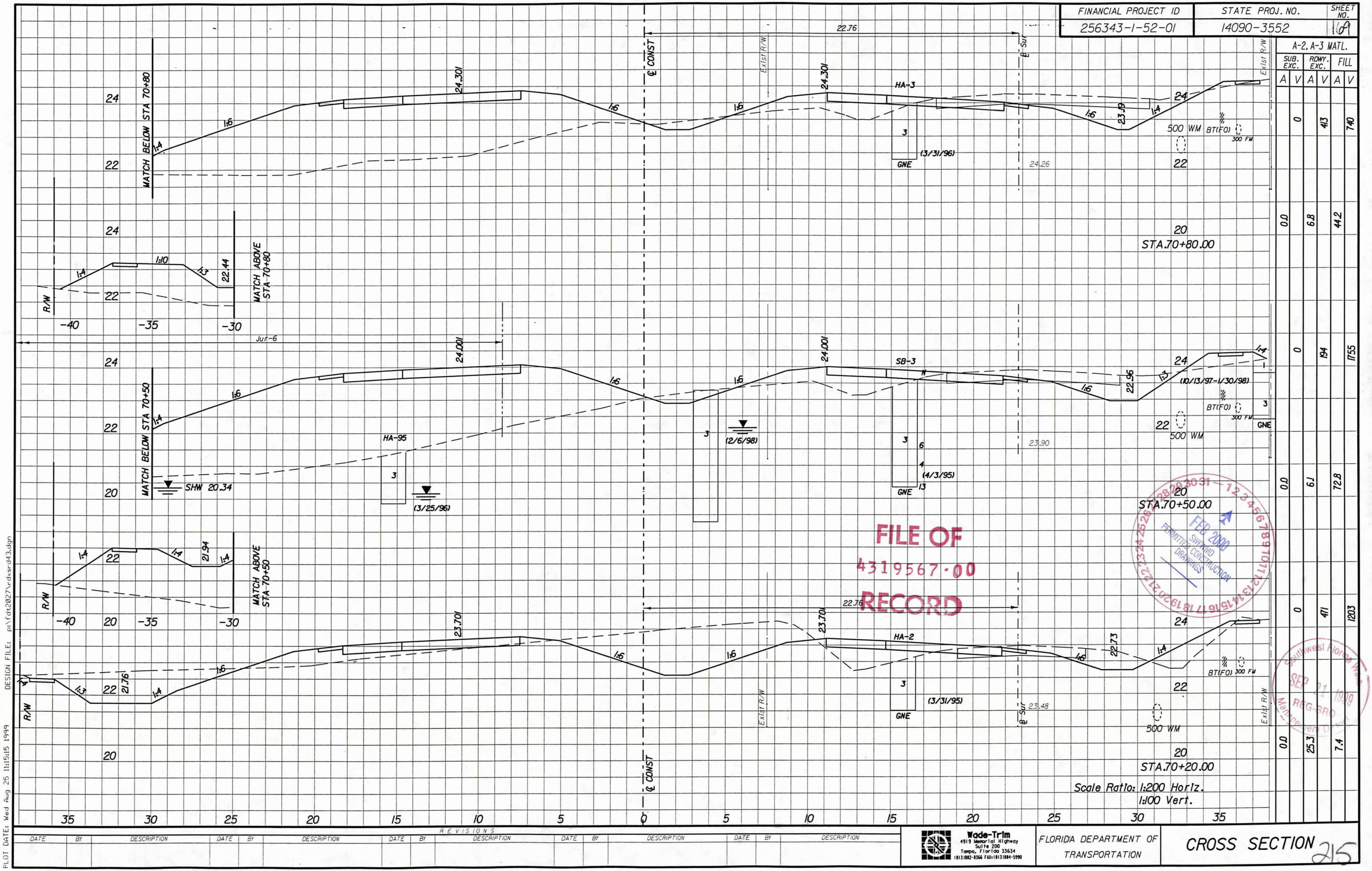
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 214

PLOT DATE: Wed Aug 25 11:15:11 1999 DESIGN FILE: p:\fdt2027\rdxsrd42.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	16

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
STA.70+80.00		0		413		740
	0.0		6.8		44.2	
STA.70+50.00		0		194		1755
	0.0		6.1		72.8	
		0		411		1203
STA.70+20.00	0.0		25.3		7.4	



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRD

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

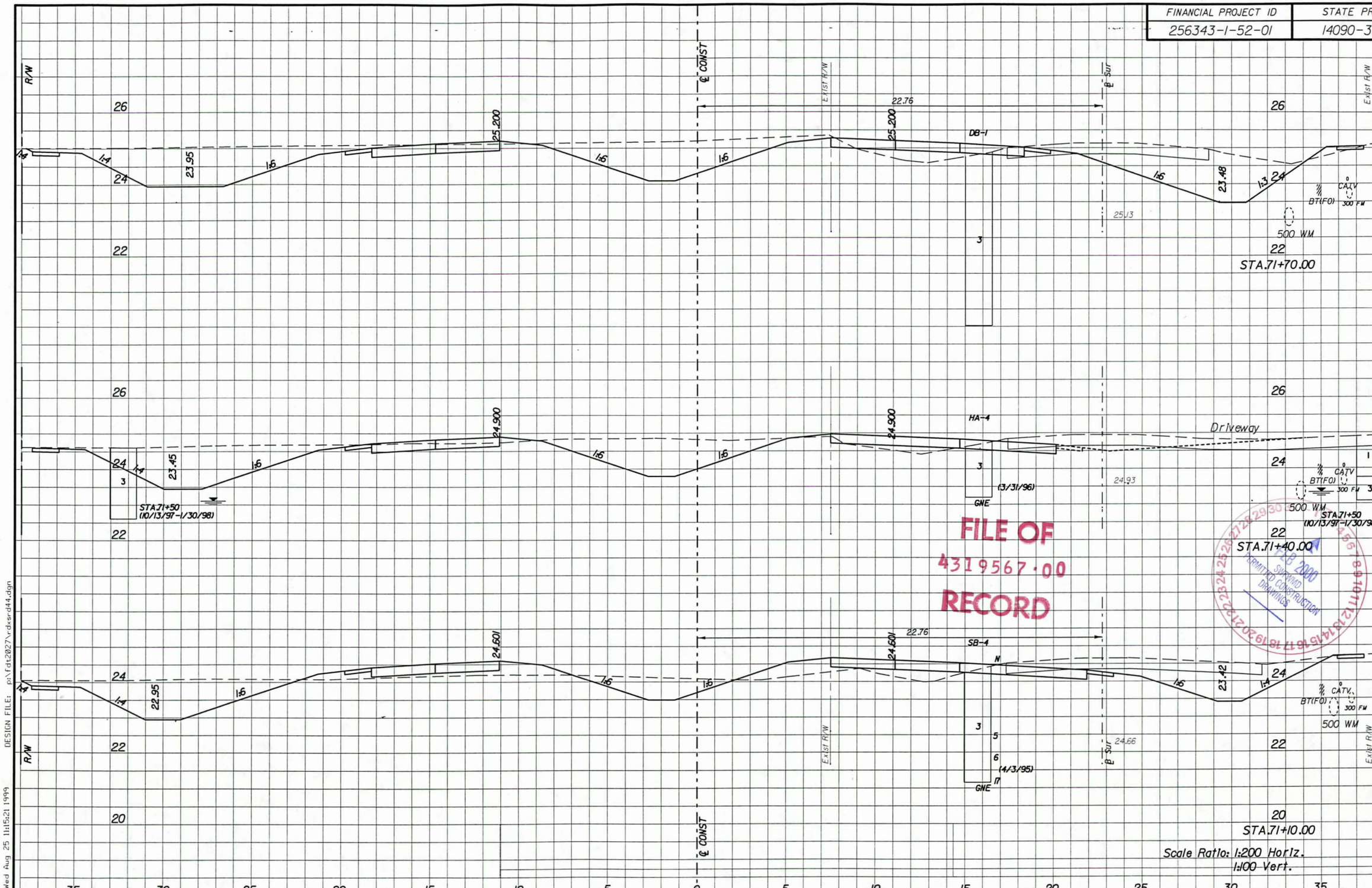
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 25

PLOT DATE: Wed Aug 25 11:15:15 1999
DESIGN FILE: p:\fdt2027\rdxsr043.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	170



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		827		83
0.0		31.6		1.5	
	0		756		35
0.0		18.8		0.8	
	0		593		89
0.0		20.7		5.1	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

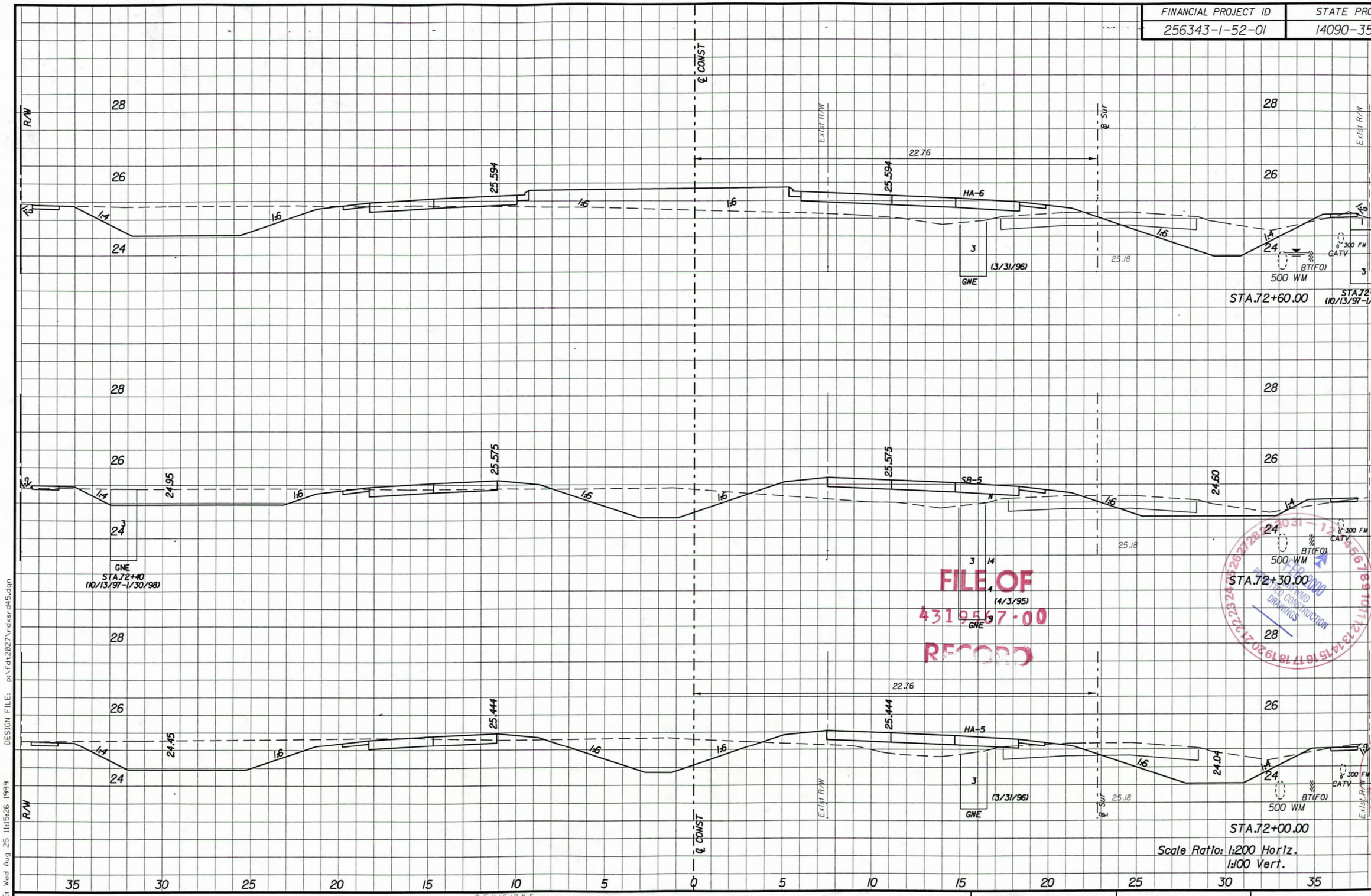
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 216

PLOT DATE: Wed Aug 25 11:15:21 1999 DESIGN FILE: p:\fdt2027\rdxsrd44.dgn

A-1079

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	171



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		420		273
0.0		17.8		8.5	
	0		488		380
0.0		14.7		16.8	
	0		573		312
0.0		23.5		4.0	

FILE OF
4319567-00
RECORD

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REGISTRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

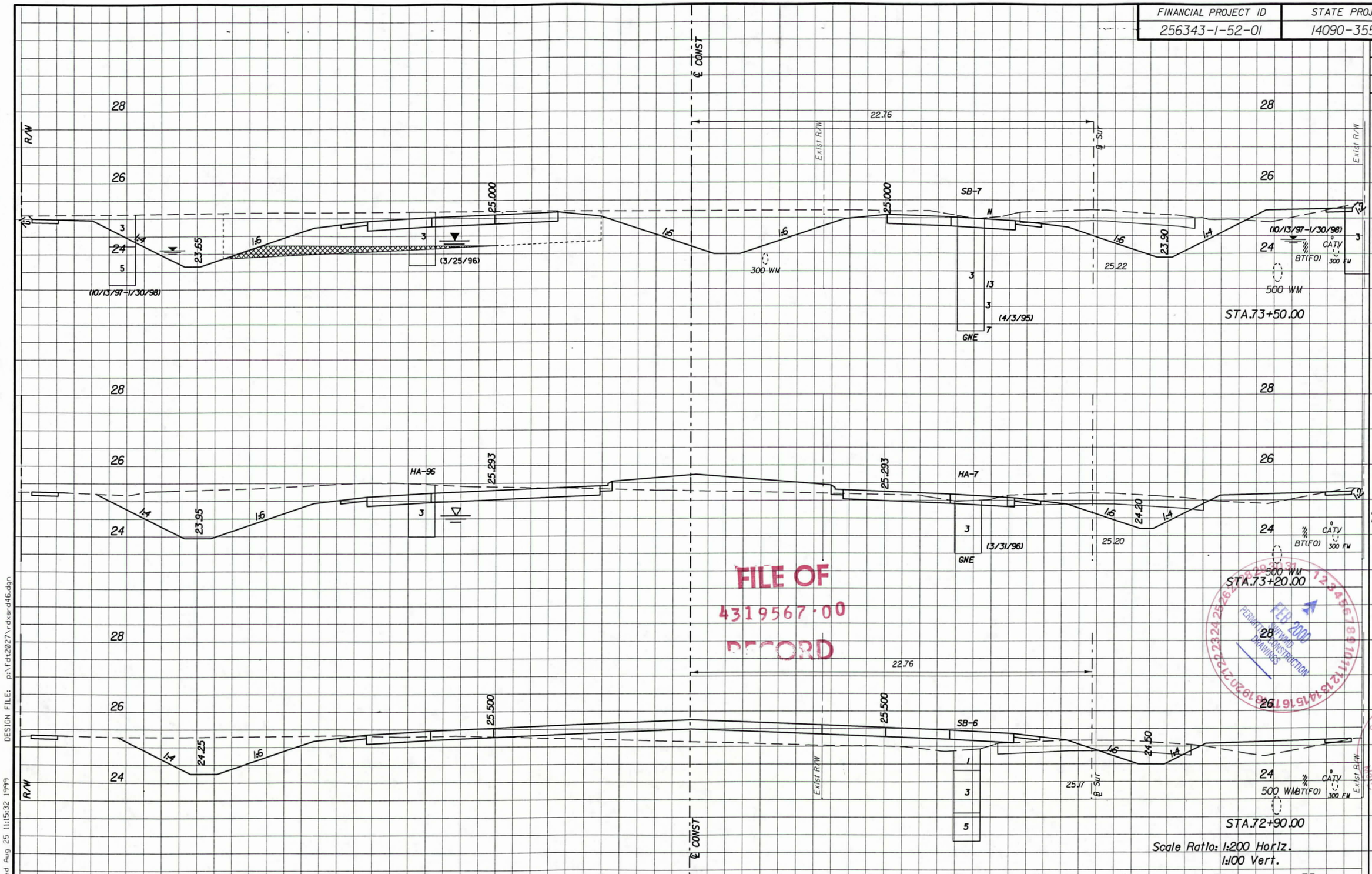
CROSS SECTION 217

PLOT DATE: Wed Aug 25 11:15:26 1999 DESIGN FILE: p:\fdt2027\rdxsrd45.dgn

A-1080

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	172

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
341	22.7	1188	337	14	0.9
341	0.0	785	10.2	96	9.7
	0		18.6		5.5
	0.0		432		228



FILE OF
4319567.00
RECORD

FEB 2000
PERMITTING AND CONSTRUCTION DRAWINGS

SEP 21 1999
RECORD

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

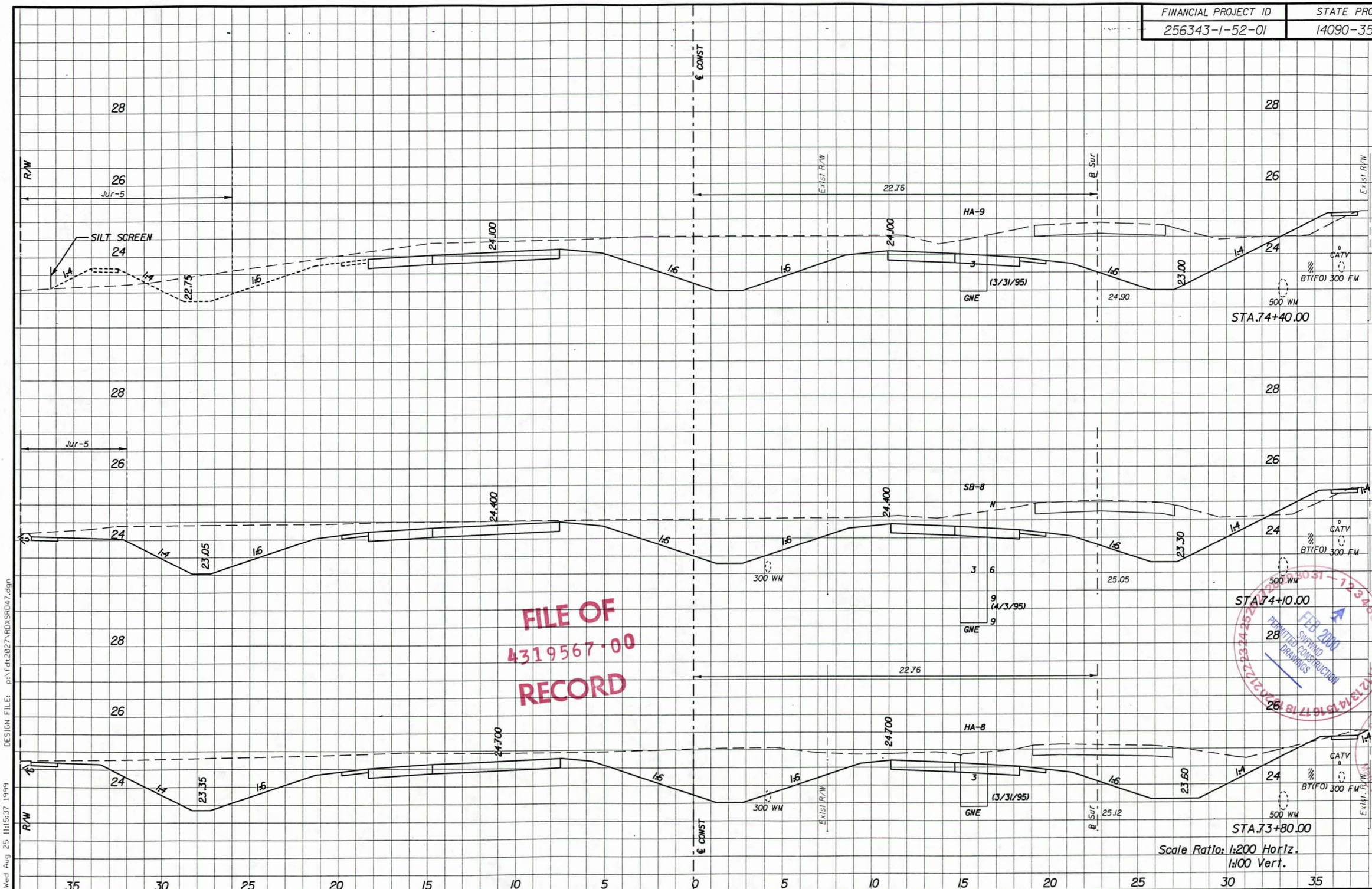
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 218

PLOT DATE: Wed Aug 25 11:15:32 1999 DESIGN FILE: p:\fdt2027\rd\srd46.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	173

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0	0	43.2	1146	2.4	108
0.0	0	44.1	1310	0.9	50
0.0	0	45.5	1344	0.0	14



FILE OF
4319567-00
RECORD

FEB 2000
SUSPEND
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRG
Southwest Florida Water Management District

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

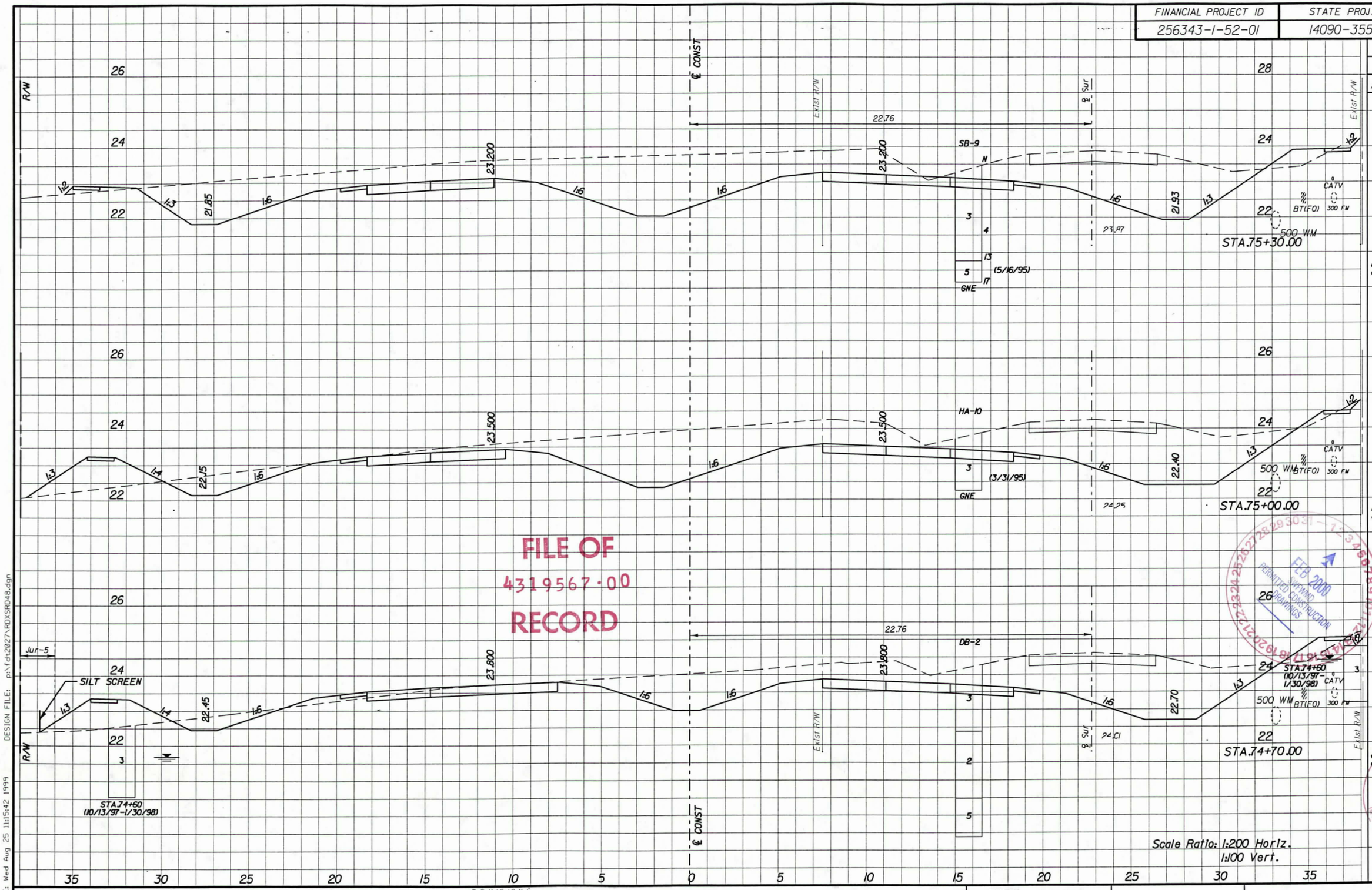
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 219

PLOT DATE: Wed Aug 25 11:15:37 1999 DESIGN FILE: p:\fdt2027\ROXSR047.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	174

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		1761		30
0.0		58.9		1.3	
	0		1547		84
0.0		44.2		4.3	
	0		1161		137
0.0		33.2		4.8	



FILE OF
4319567·00
RECORD

FEB 2000
SIGNED
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRD
Management District

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

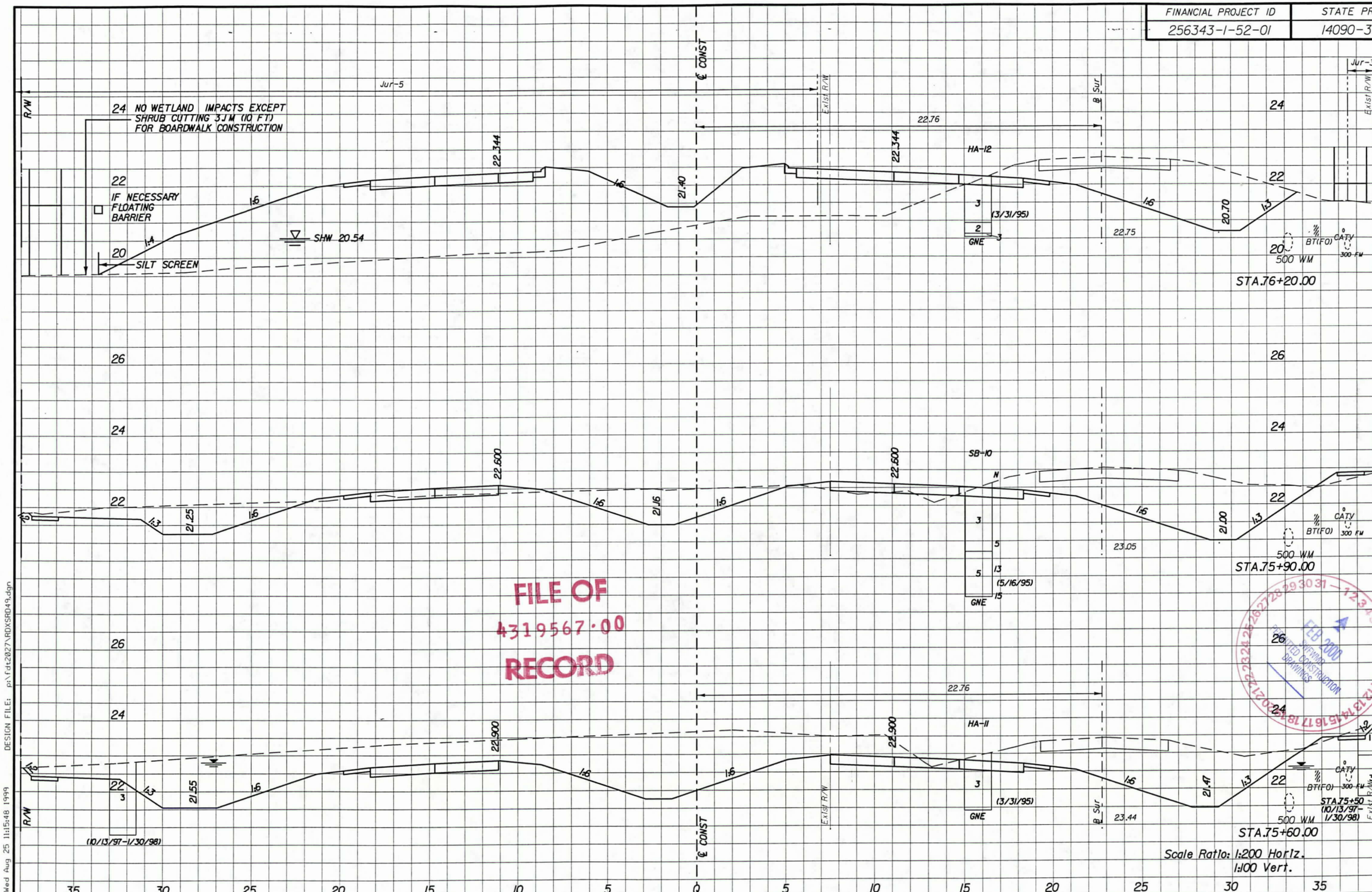
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 220

PLOT DATE: Wed Aug 25 11:15:42 1999 DESIGN FILE: p:\fdt2027\RDXSR048.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	175



FILE OF 4319567·00 RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	416		443		2789
0.0		16.6		65.2	
	0		728		993
0.0		31.9		1.0	
	0		1356		26
0.0		58.5		0.7	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 221

PLOT DATE: Wed Aug 25 11:15:48 1999 DESIGN FILE: p:\fdt2027\RDXSRD49.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	176

STATION EQUATION
STA. 77+13.723 BK = 24
STA. 77+13.667 AH

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
		0		667	320
0.0		19.3		18.7	
		0		410	1646
0.0		8.0		91.0	
		46		3/4	31/76
27.7		12.9		120.7	

NO WETLAND IMPACTS EXCEPT SHRUB CUTTING FOR BOARDWALK CONSTRUCTION

FILE OF
4319567·00
RECORD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

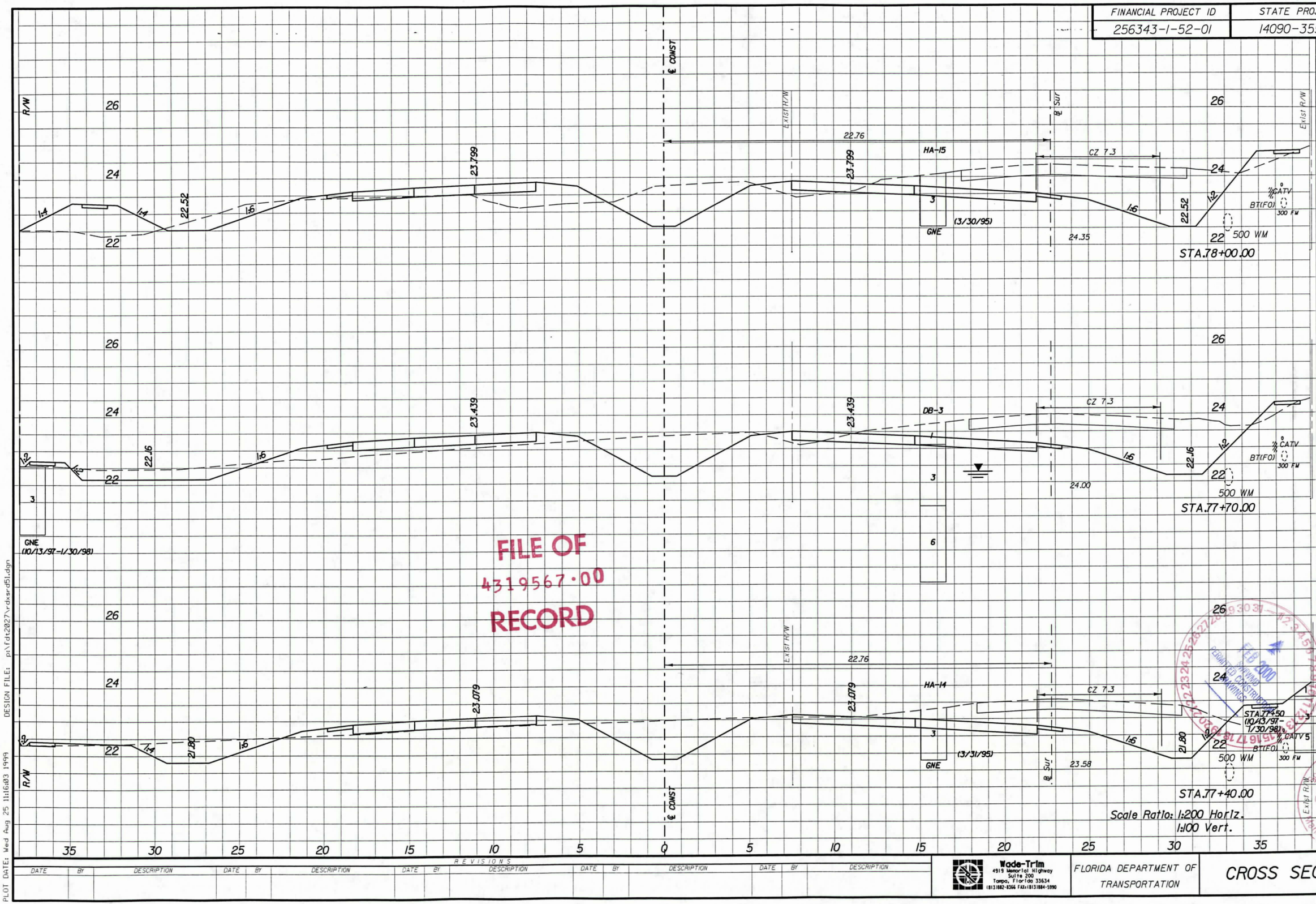
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 222

DESIGN FILE: p:\fdt2027\RDXSRD50.dgn
PLOT DATE: Wed Aug 25 11:15:54 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	177



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		833		167
0.0		25.1		9.3	
	0		797		206
0.0		28.0		4.4	
	0		797		105
0.0		25.1		2.6	

FILE OF
4319567.00
RECORD

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

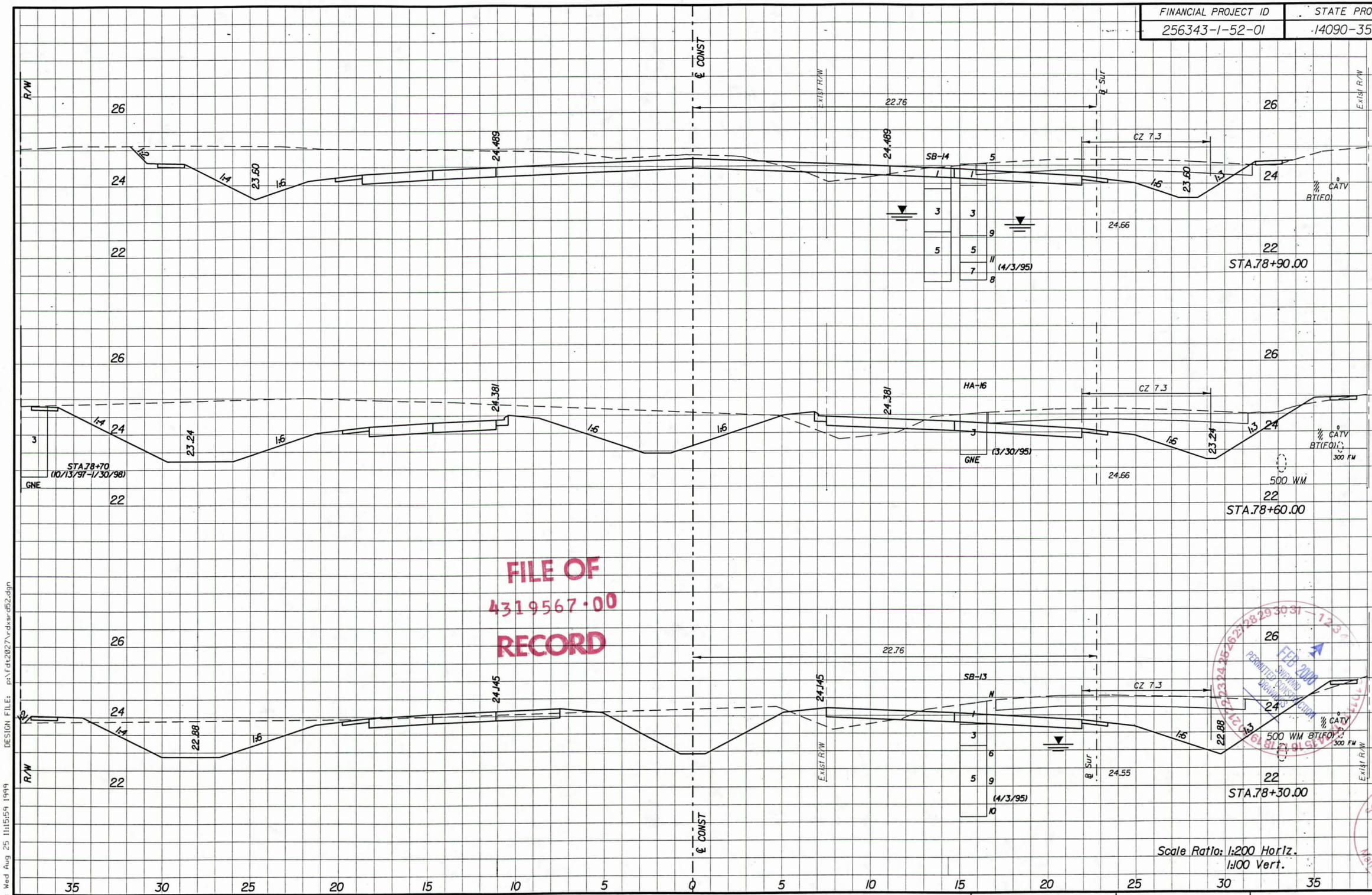
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 23

PLOT DATE: Wed Aug 25 11:16:03 1999 DESIGN FILE: p:\fdt2027\rdxsrd51.dgn

SEP 21 1999 REG-BRO

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	178



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		717		15
0.0		25.6		0.6	
	0		1085		36
0.0		46.7		1.8	
	0		1157		54
0.0		30.4		1.8	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

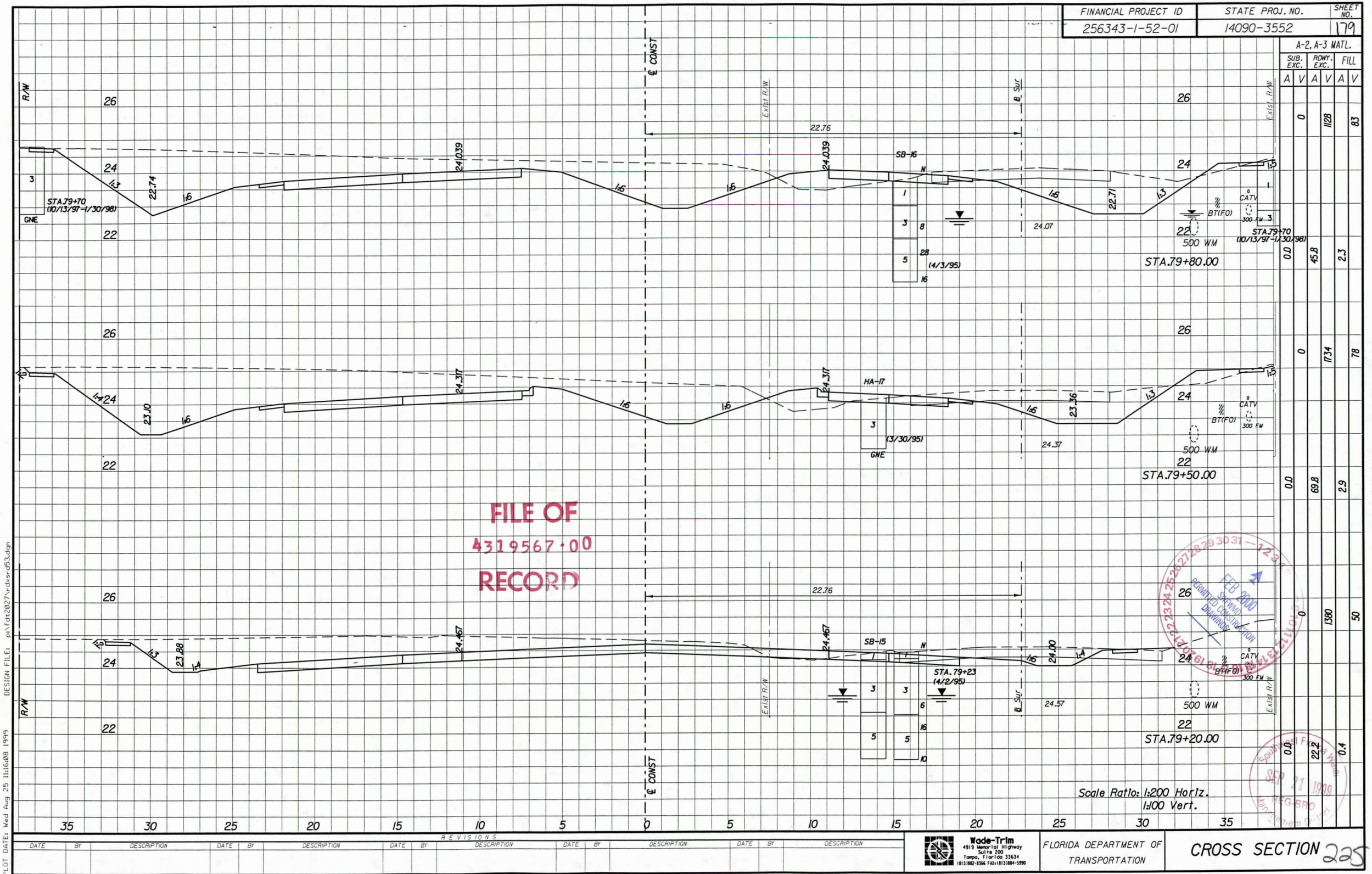
CROSS SECTION 224

PLOT DATE: Wed Aug 25 11:15:59 1999 DESIGN FILE: p:\fdt2027\rdxsrd52.dgn

A-1087

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	179

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0		1128			83
0.0		45.8		2.3	
0		1734			78
0.0		69.8		2.9	
0		1380			50
0.0		22.2		0.4	



FILE OF
4319567·00
RECORD

FEB 2000
SKETCHES
PERMITTED CONSTRUCTION
DRAWINGS

REVISIONS													
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

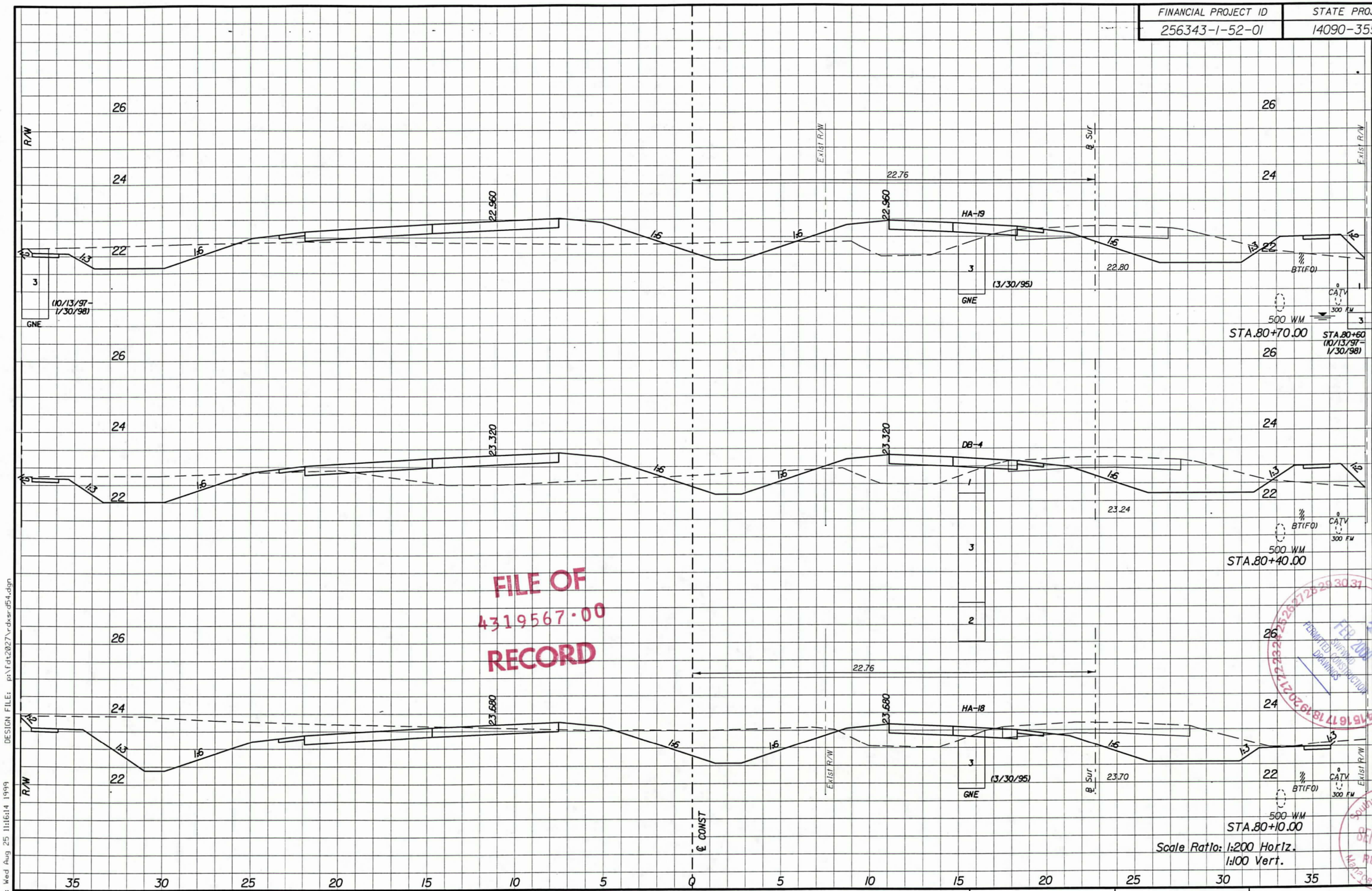
CROSS SECTION 225

Scale Ratio: 1:200 Horiz.
1:100 Vert.

PLOT DATE: Wed Aug 25 11:16:08 1999 DESIGN FILE: p:\fdt2027\rdxsrd53.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	80

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		306		2142
0.0		13.9		13.5	
	0		449		401
	0		681		246
0.0		29.4		3.2	



FILE OF
4319567·00
RECORD

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

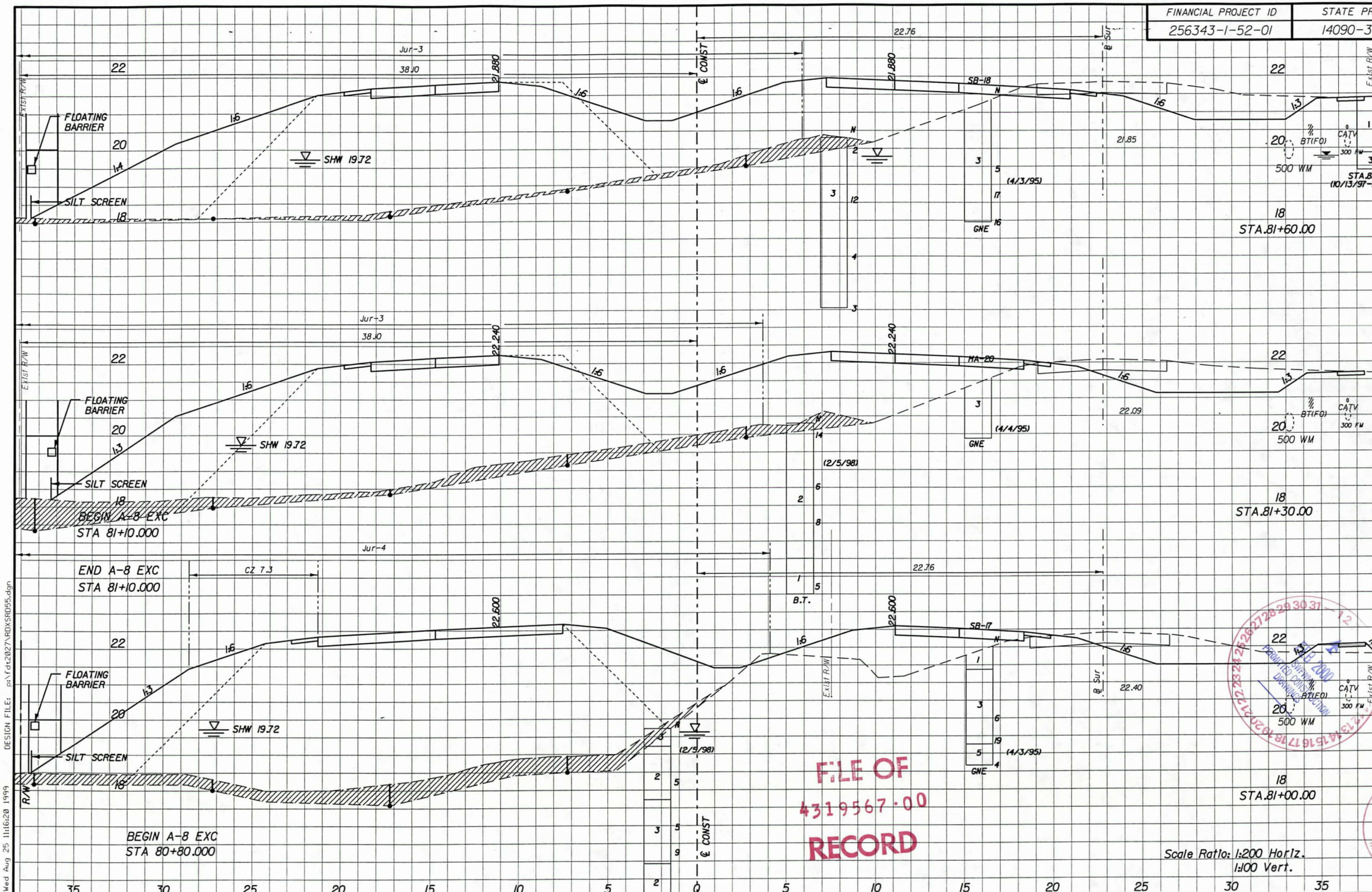
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 226

SEP 21 1999
REG-BRD

PLOT DATE: Wed Aug 25 11:16:14 1999 DESIGN FILE: p:\fdt2027\rdwsrdf54.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	181



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		239		2640
0.0		7.7		108.5	
	0		240		3294
0.0		8.3		111.1	
	0		222		3606
0.0		6.5		129.3	

FILE OF
4319567·00
RECORD

SEP 21 1999
REG-BRO
Southwest Florida
Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

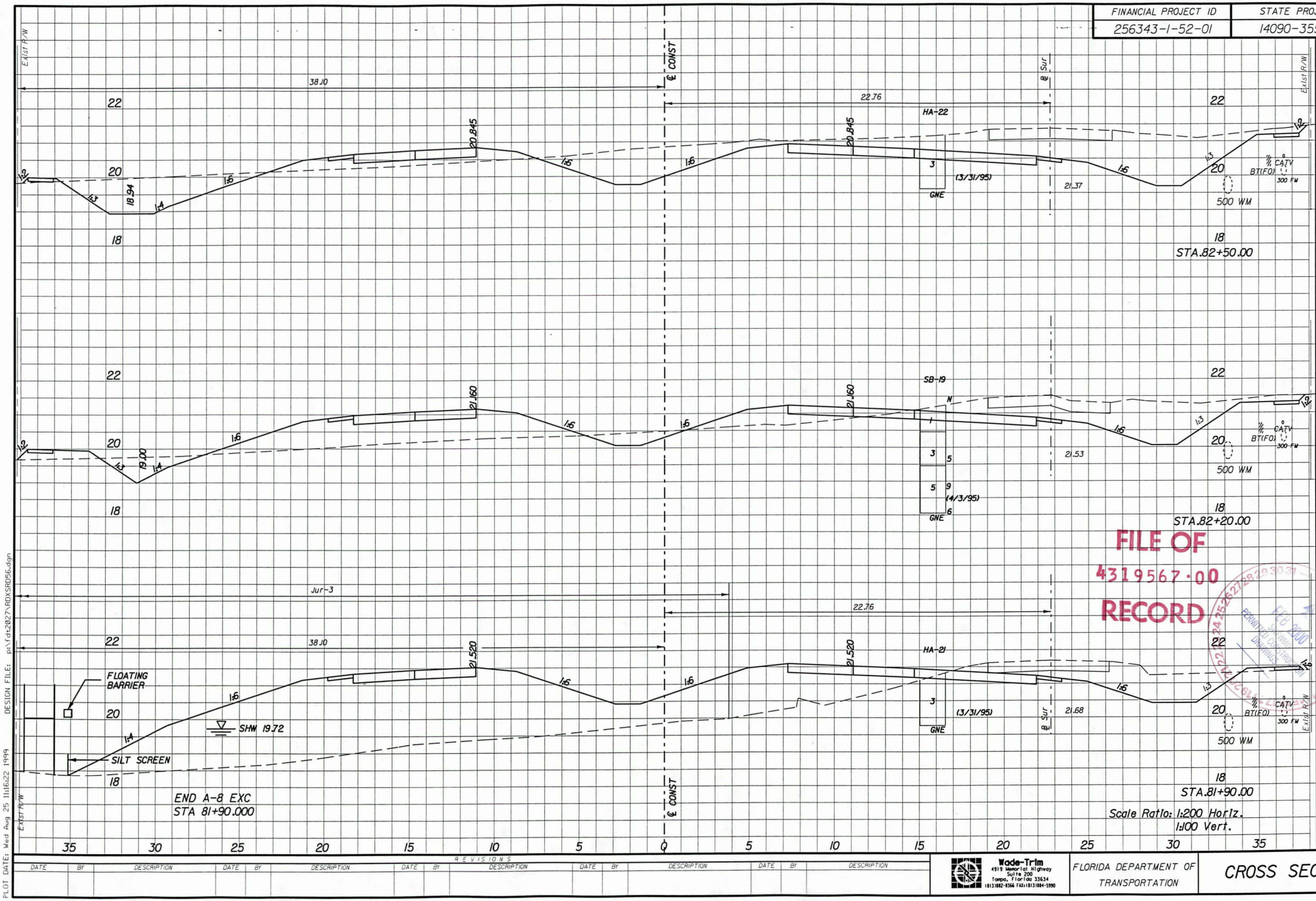
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 227

PLOT DATE: Wed Aug 25 11:16:20 1999 DESIGN FILE: p:\fdt2027\RDXSRD55.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	142



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		978		90
0.0		34.2		3.2	
	0		750		296
0.0		15.8		16.5	
	0		360		1260
0.0		8.2		67.5	

FILE OF
4319567.00
RECORD
FEC 2000
PERMITTED CONSTRUCTION DRAWINGS
Southwest Florida Water
SEP 21 1999
FEC-BRO
Permitting Branch

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

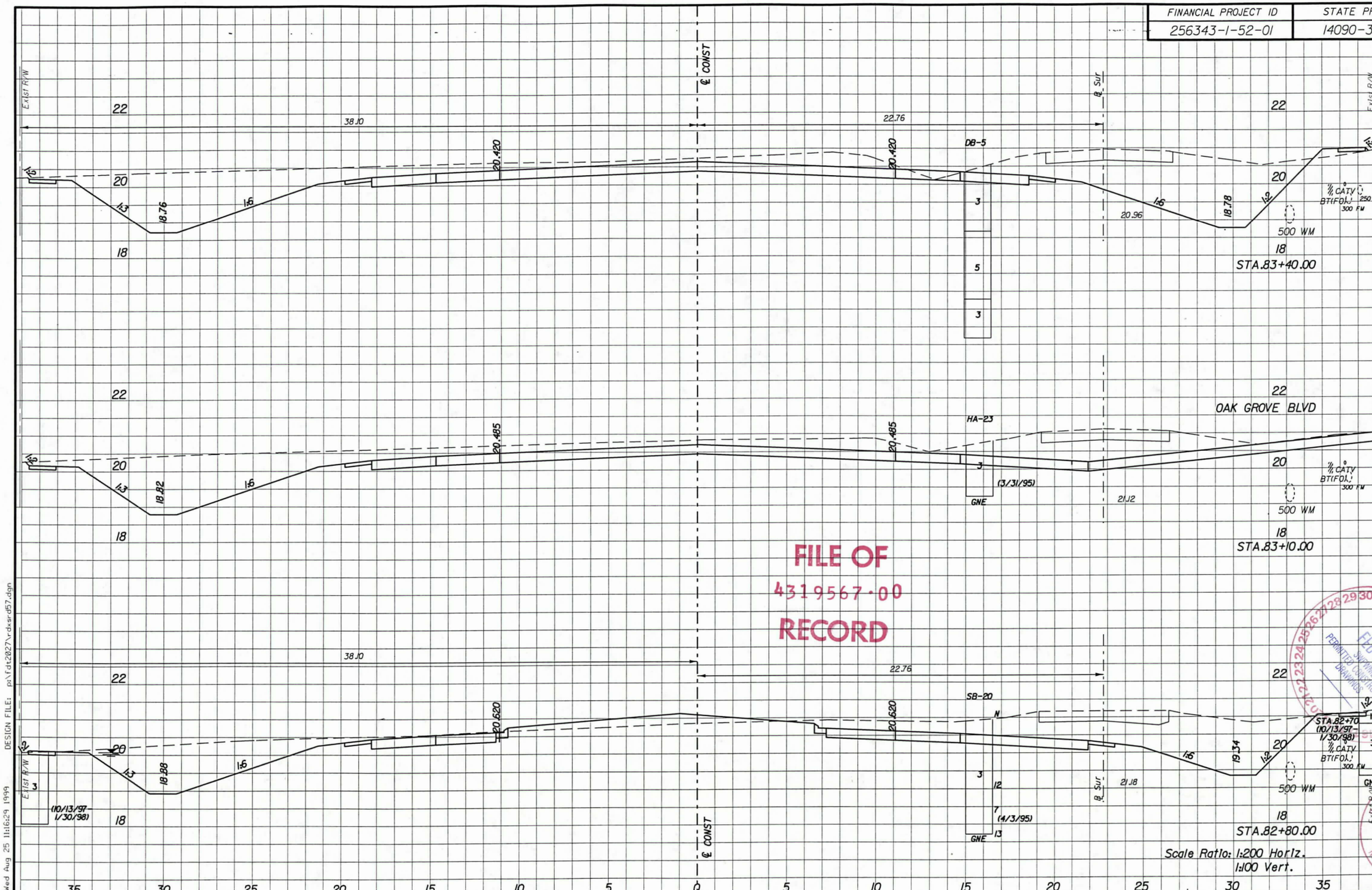
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 228

Scale Ratio: 1:200 Horiz.
1:100 Vert.

DESIGN FILE: p:\fdot2027\RDXSR056.dgn
PLOT DATE: Wed Aug 25 11:16:22 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	183



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		1169		33
0.0		41.8		0.3	
	0		1052		5
0.0		28.3		0.0	
	0		890		42
0.0		31.0		2.8	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

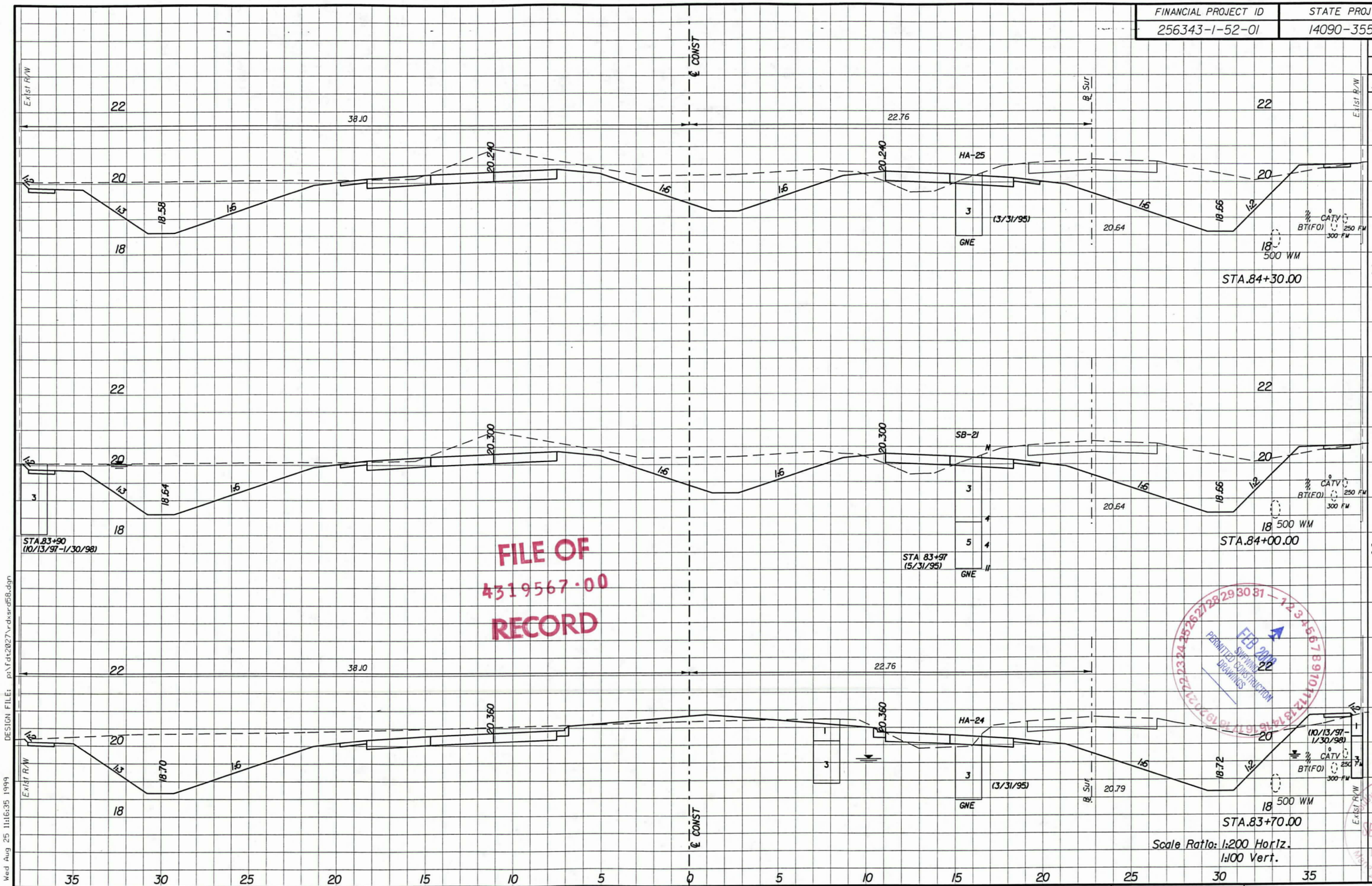
CROSS SECTION 229

PLOT DATE: Wed Aug 25 11:16:29 1999 DESIGN FILE: p:\fdt2027\rdxsrd57.dgn

A-1092

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	184

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		938		285
0.0		40.2		1.2	
	0		1206		36
0.0		40.2		1.2	
	0		1145		41
0.0		36.2		1.9	



FILE OF
4319567.00
RECORD

FEB 2008
SUPERSEDED
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

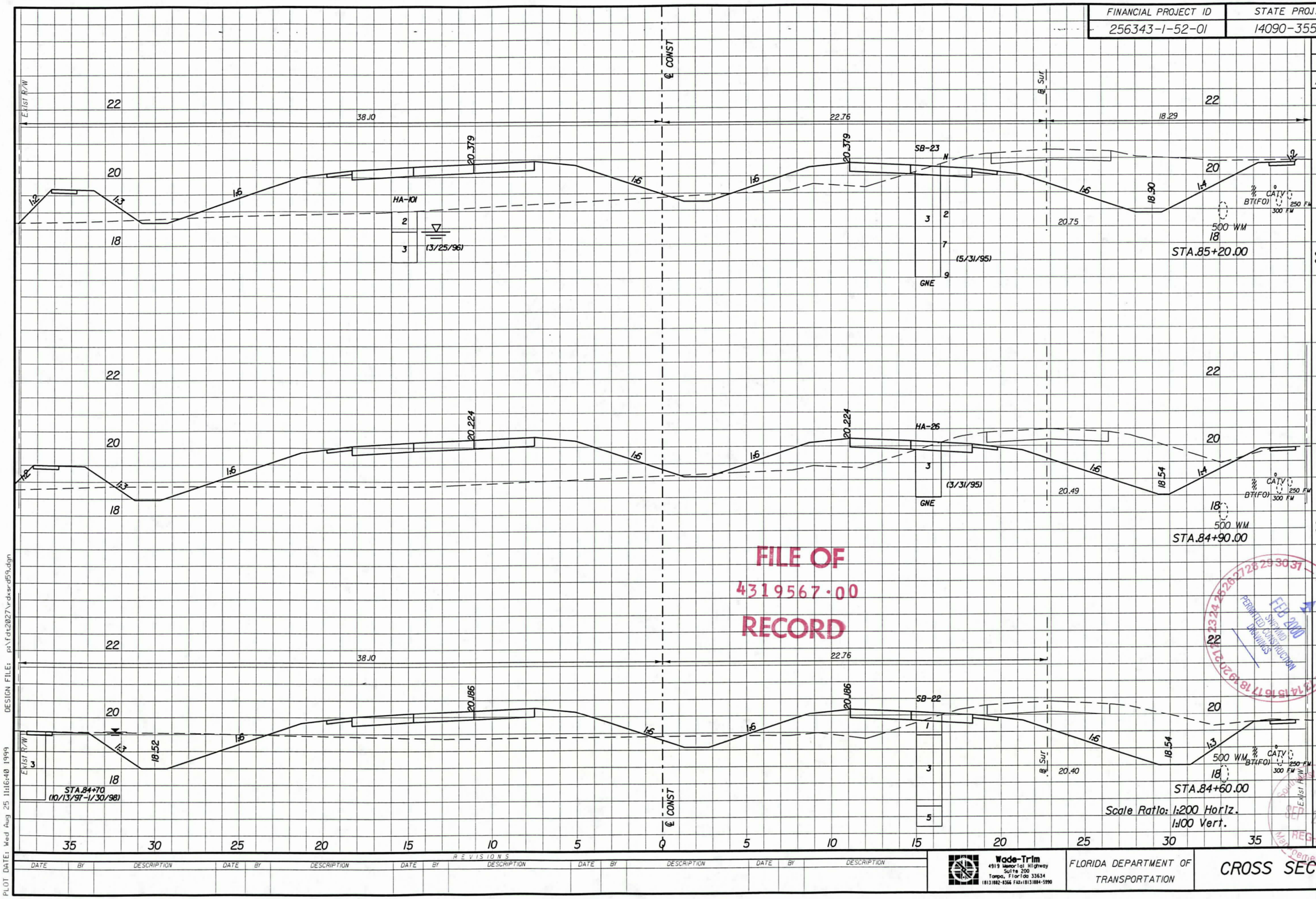
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 230

PLOT DATE: Wed Aug 25 11:16:35 1999 DESIGN FILE: p:\fdot2027\rdsrd58.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	185

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		699		587
0.0		17.6		32.3	
	0		491		947
0.0		15.1		30.8	
	0		561		729
0.0		22.3		17.8	



FILE OF
4319567·00
RECORD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

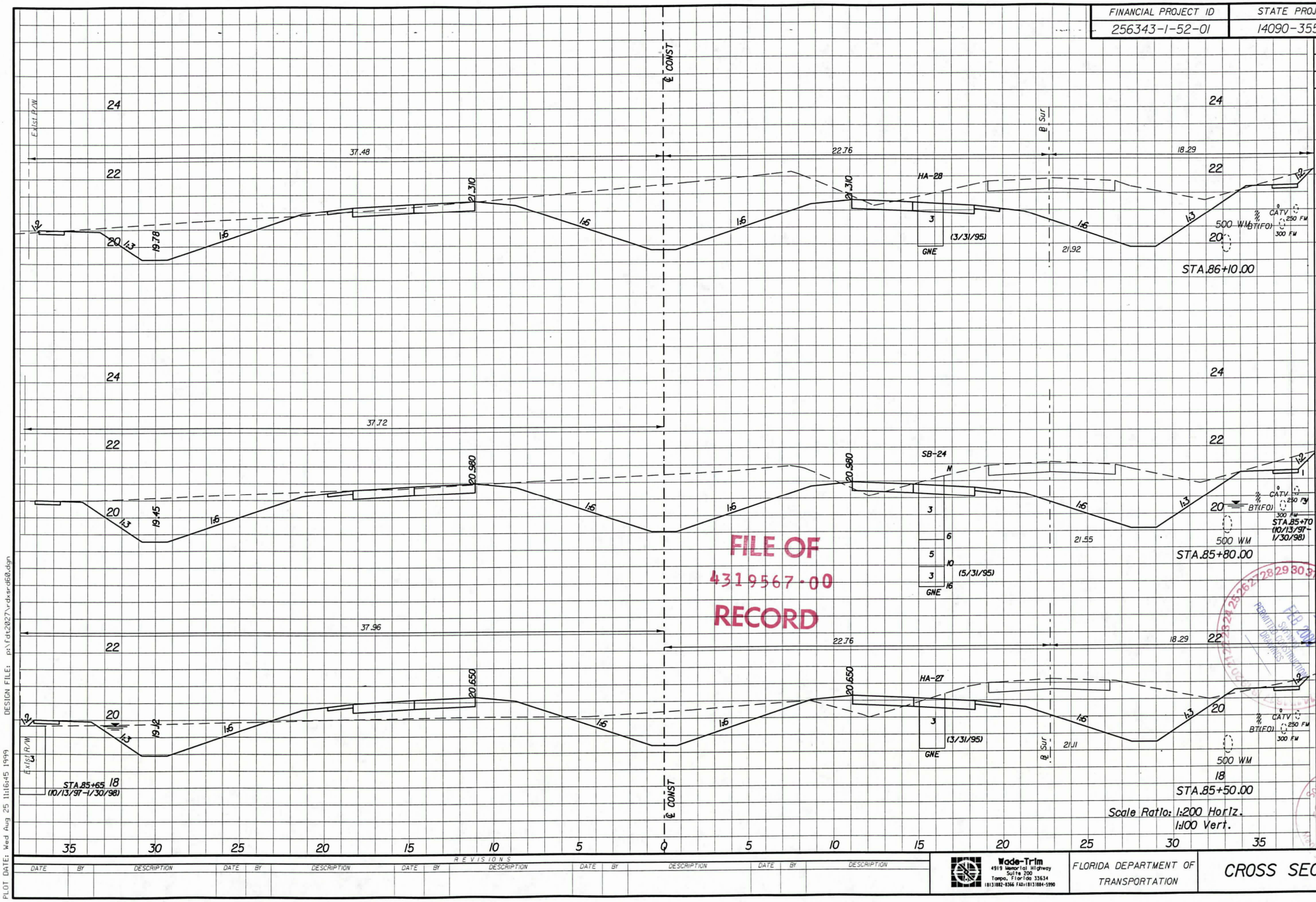
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 231

PLOT DATE: Wed Aug 25 11:16:40 1999 DESIGN FILE: p:\fdot2027\rdsrd59.dgn

FED 2000 STANDARD CONSTRUCTION DRAWINGS
PERMITTED CONSTRUCTION DRAWINGS
SEP 21 1999
REG-BRO

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	146



FILE OF
4319567-00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		1472		14
0.0		49.9		0.1	
	0		1466		3
0.0		47.8		0.1	
	0		1152		104
0.0		29.0		6.8	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

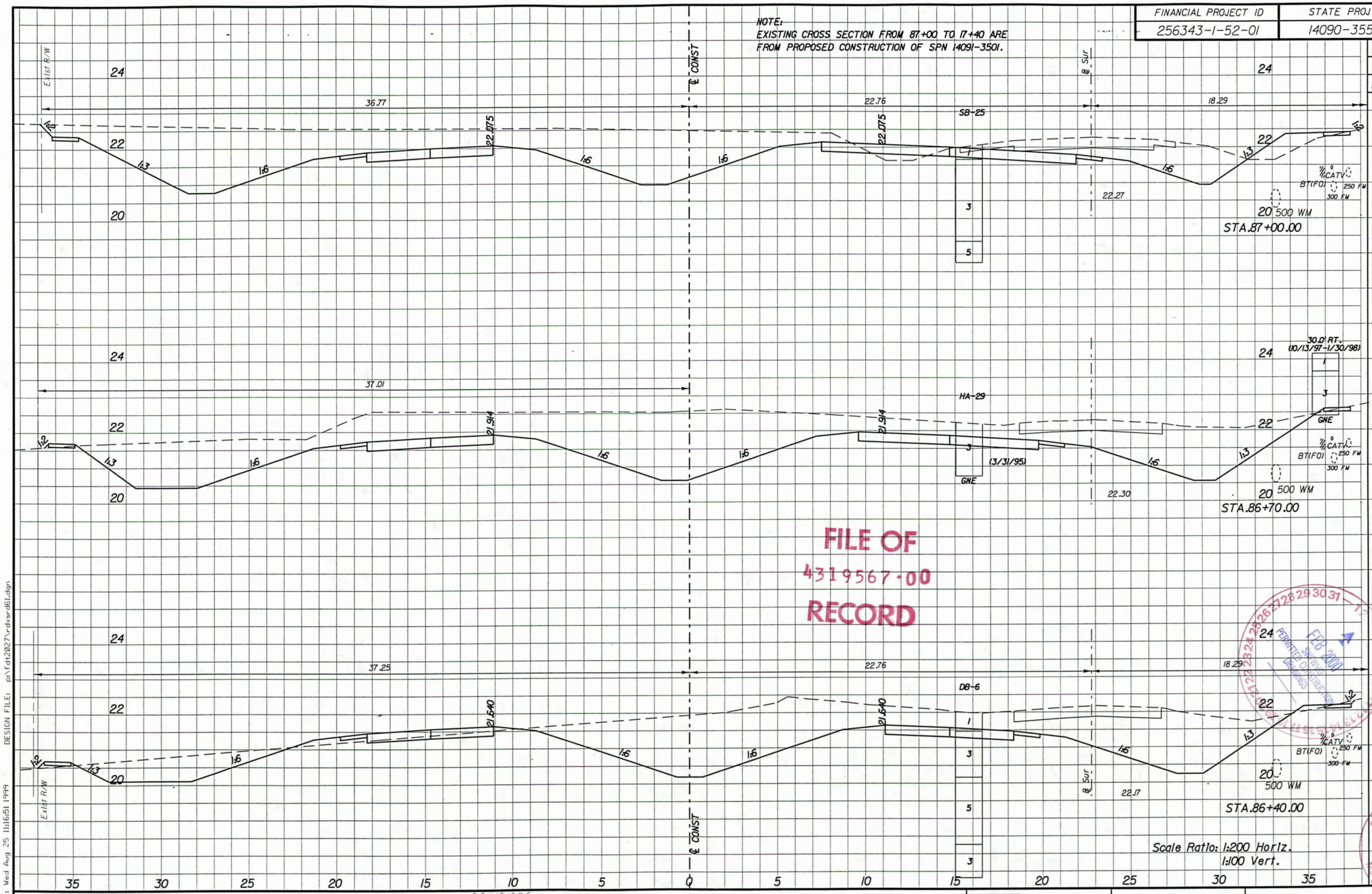
CROSS SECTION 232

PLOT DATE: Wed Aug 25 11:16:45 1999 DESIGN FILE: p:\fdt2027\rdxsrd60.dgn

A-1095

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	187

NOTE:
EXISTING CROSS SECTION FROM 87+00 TO 17+40 ARE FROM PROPOSED CONSTRUCTION OF SPN 14091-3501.



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		1223		59
0.0		491		2.2	
	0		1674		33
0.0		62.5		0.0	
	0		1651		12
0.0		48.2		0.8	

FILE OF
4319567.00
RECORD

FEB 2000
SW Area
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1998
REG-ERC

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

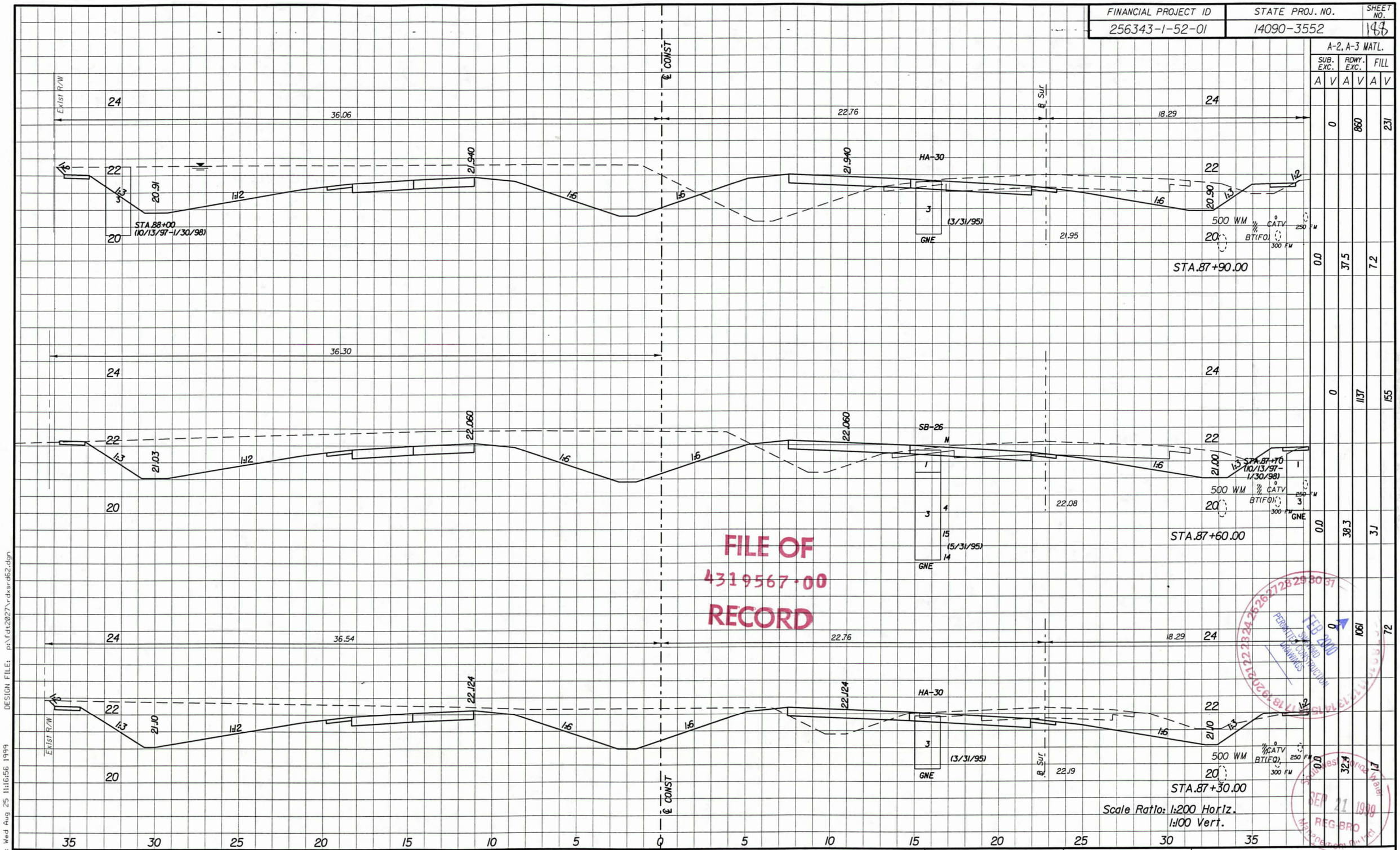
CROSS SECTION 233

PLOT DATE: Wed Aug 25 11:16:51 1999 DESIGN FILE: p:\fdot2027\rdxsrd61.dgn

A-1096

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	156

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
STA.87+90.00	0.0	0	37.5	860	7.2	231
STA.87+60.00	0.0	0	38.3	1137	3.1	155
STA.87+30.00	0.0	0	32.4	1061	1.7	72



FILE OF
4319567-00
RECORD

FEB 2000

SEP 21 1999

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

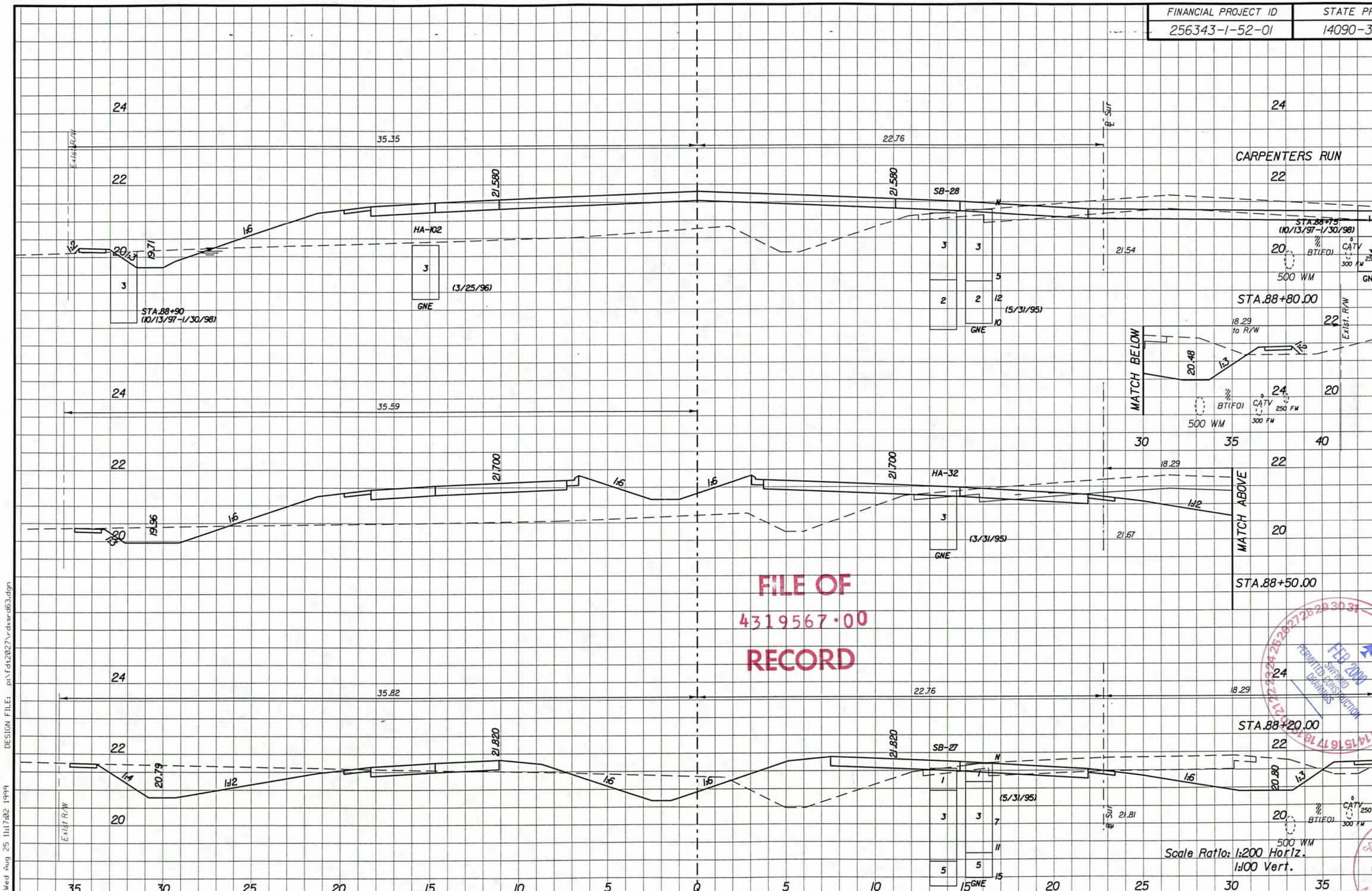
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 234

PLOT DATE: Wed Aug 25 11:16:56 1999 DESIGN FILE: p:\fd2027\rdsrd62.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	189



FILE OF
4319567·00
RECORD

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		353		743
0.0		2.9		31.6	
	0		251		905
0.0		13.8		28.7	
	0		504		554
0.0		19.8		8.2	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 235

PLOT DATE: Wed Aug 25 11:17:02 1999 DESIGN FILE: p:\fdt2027\rdxsrd63.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	190

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
STA.89+60 (10/13/97-1/30/98)		0		863		483
STA.89+70.00	0.0		37.8		9.9	
		0		1119		249
STA.89+40.00	0.0		36.8		6.7	
		0		861		369
STA.89+10.00	0.0		20.6		11.9	

Ex1st R/W

24 — 35.5 — 22.76 — 18.29

22

20

MATCH BELOW — 1:4 — 19.57 — 1:3 — 18.29 — 235 FM BT(FO) — CATV — GNE — 500 WM

MATCH ABOVE

1:2 — 20 — 19.15 — 1:3 — 1:6 — 21.360 — 1:6 — 1:6 — 21.360 — HA-34 — 3 — (4/4/95) — GNE — 1:10 — 21.12

MATCH BELOW — 19.87 — 1:3 — BT(FO) — CATV — 250 FM — 500 WM — 18.29 — Ex1st. R/W — 18.29 to R/W

1:2 — 3 — 20 — STA.89+50 (10/13/97-1/30/98) — 19.21 — 1:3 — 1:6 — 21.420 — 1:6 — 1:6 — 21.420 — DB-7 — 3 — 5 — 21.27

MATCH ABOVE

FILE OF
4319567·00
RECORD

1:2 — 20 — 19.46 — 1:4 — 1:6 — 21.480 — 1:6 — 1:6 — 21.480 — HA-33 — 3 — (3/25/96) — GNE — 20.08 — 1:3 — CATV 250 FM — BT(FO) — 21.42 — ℄ Sur

Scale Ratio: 1:200 Horiz.
1:100 Vert. 500 WM

35 30 25 20 15 10 5 0 5 10 15 20 25 30 35

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

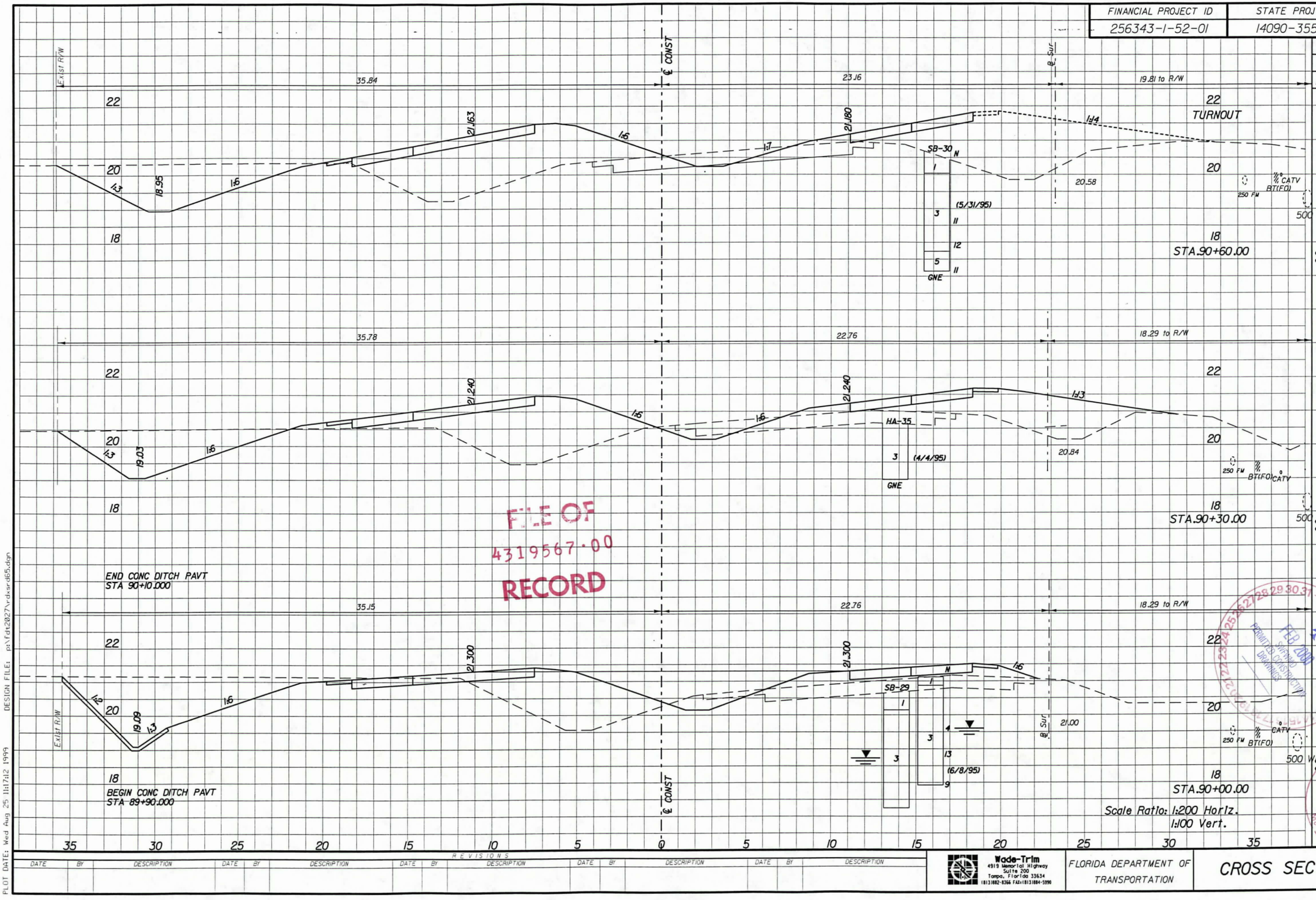
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 236

PLOT DATE: Wed Aug 25 11:17:07 1999 DESIGN FILE: p:\fdt2027\rdsrd64.dgn

RECEIVED SEP 21 1999 PERMITTED CONSTRUCTION DRAWINGS

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	191



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		594		1311
0.0		19.8		43.7	
	0		512		1071
0.0		14.3		27.7	
	0		510		750
0.0		19.7		22.3	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

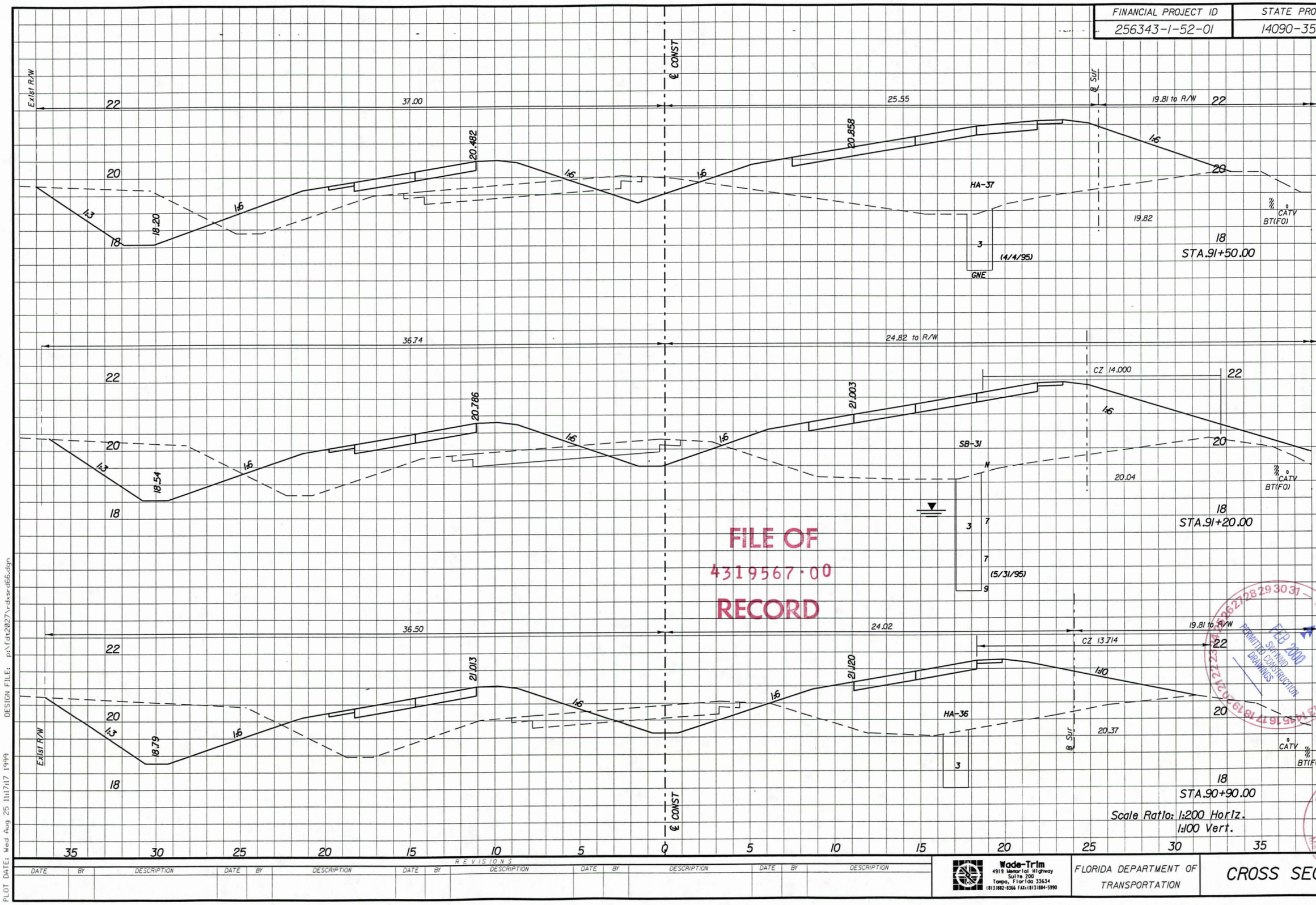
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 237

PLOT DATE: Wed Aug 25 11:17:12 1999 DESIGN FILE: p:\fdt2027\rdxsrd65.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	192

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
HA-37		0		408		1623
SB-31		0		468		1589
HA-36	0.0		15.3		536	
	0.0		15.9		52.1	
	0.0		19.8		43.7	
						1437



FILE OF
4319567.00
RECORD

FED 2000
SIGNED
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 238

PLOT DATE: Wed Aug 25 11:17:17 1999 DESIGN FILE: p:\fdt2027\rdxsrd66.dgn

A-1101

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	193

STATION EQUATION
STA 92+67.648 BK =
STA 10+90.000 AH

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
DB-8		0		431		3021
SB-32	0.0		10.3		66.3	
HA-38		0		360		1773
GNE	0.0		11.9		54.4	
		0		384		1595

FILE OF
4319567.00
RECORD

FEB 2000
PERMITTED SIGNED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

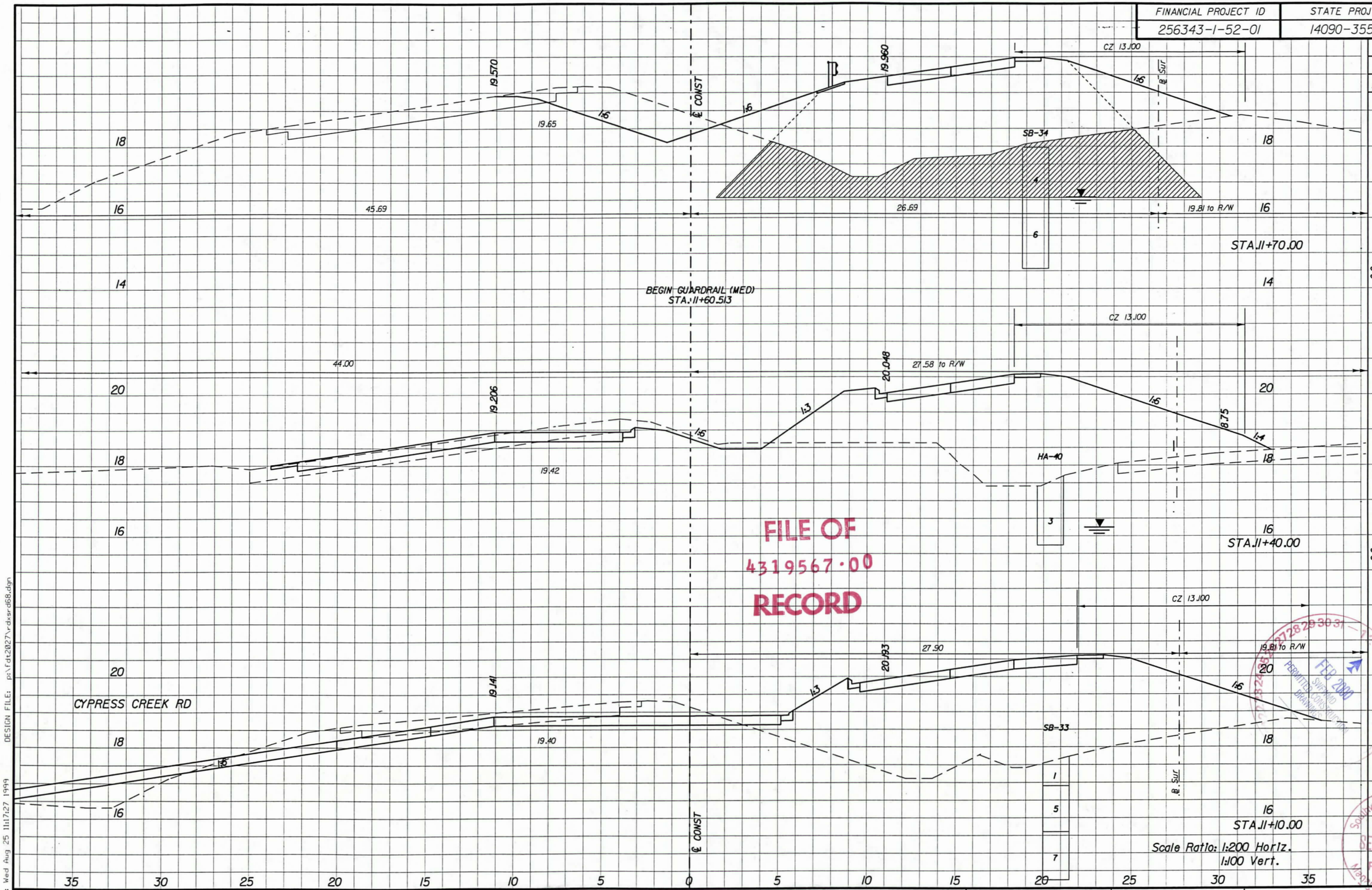
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 239

PLOT DATE: Wed Aug 25 11:17:22 1999
DESIGN FILE: p:\fdt2027\rdwsrd67.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	194



A-2, A-3 MATL.

SUB. EXC. A	SUB. EXC. V	RDWY. EXC. A	RDWY. EXC. V	FILL A	FILL V
	0		135		1443
0.0		9.0		47.0	
	0		215		1452
0.0		5.3		49.8	
	0		197		1655
0.0		7.8		60.5	

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 240

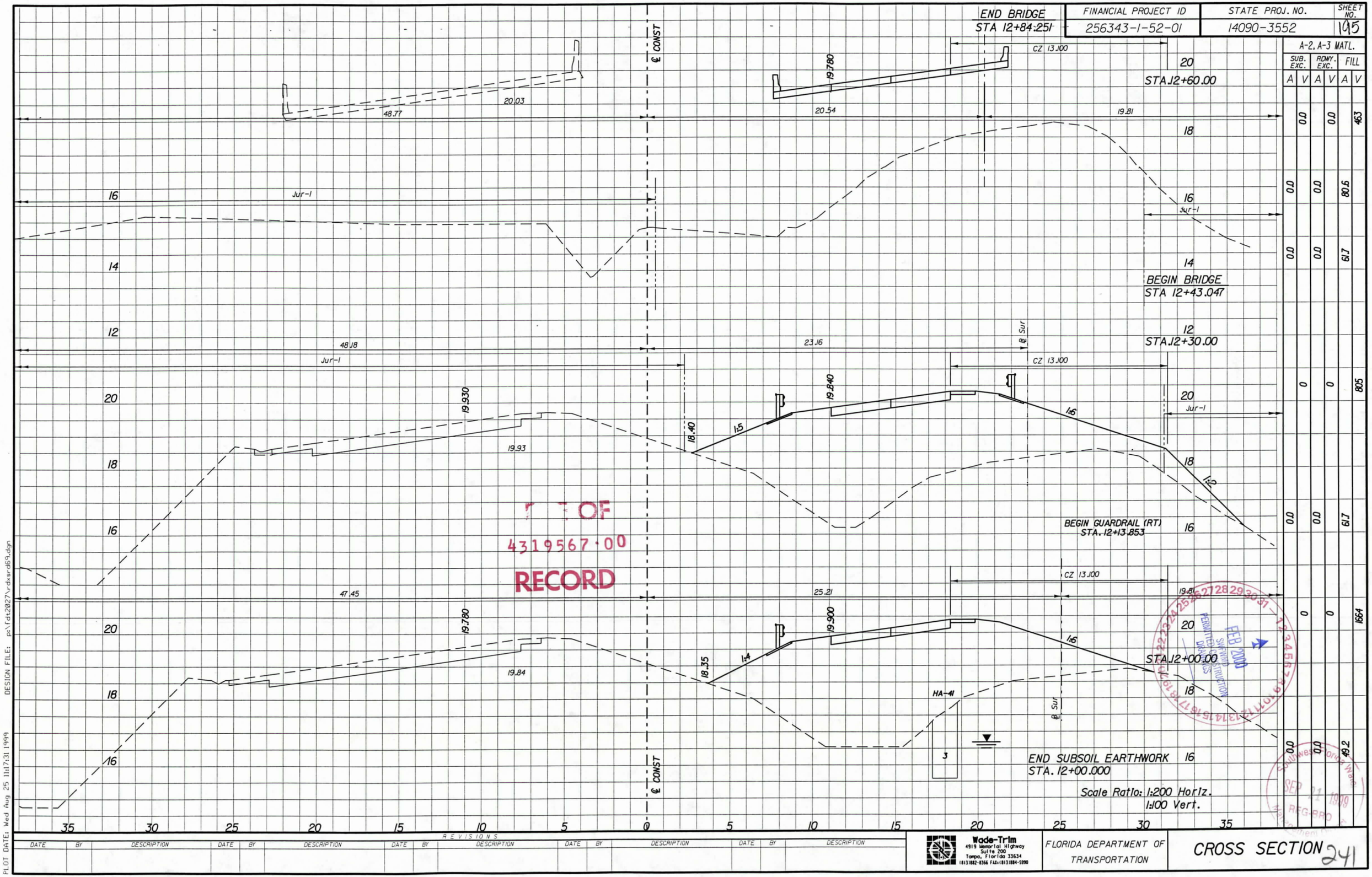
PLOT DATE: Wed Aug 25 11:17:27 1999 DESIGN FILE: p:\fdt2027\rdxsrd68.dgn

A-1103

END BRIDGE
STA 12+84.251

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	195

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0		0.0			463
0.0		0.0			80.6
0.0		0.0			61.7
	0		0		805
0.0		0.0			61.7
	0		0		1664
0.0		0.0			49.2



T OF
4319567.00
RECORD

FEB 2001
PERMITTED CONSTRUCTION DRAWINGS
SEP 21 1999
REG-PRO

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

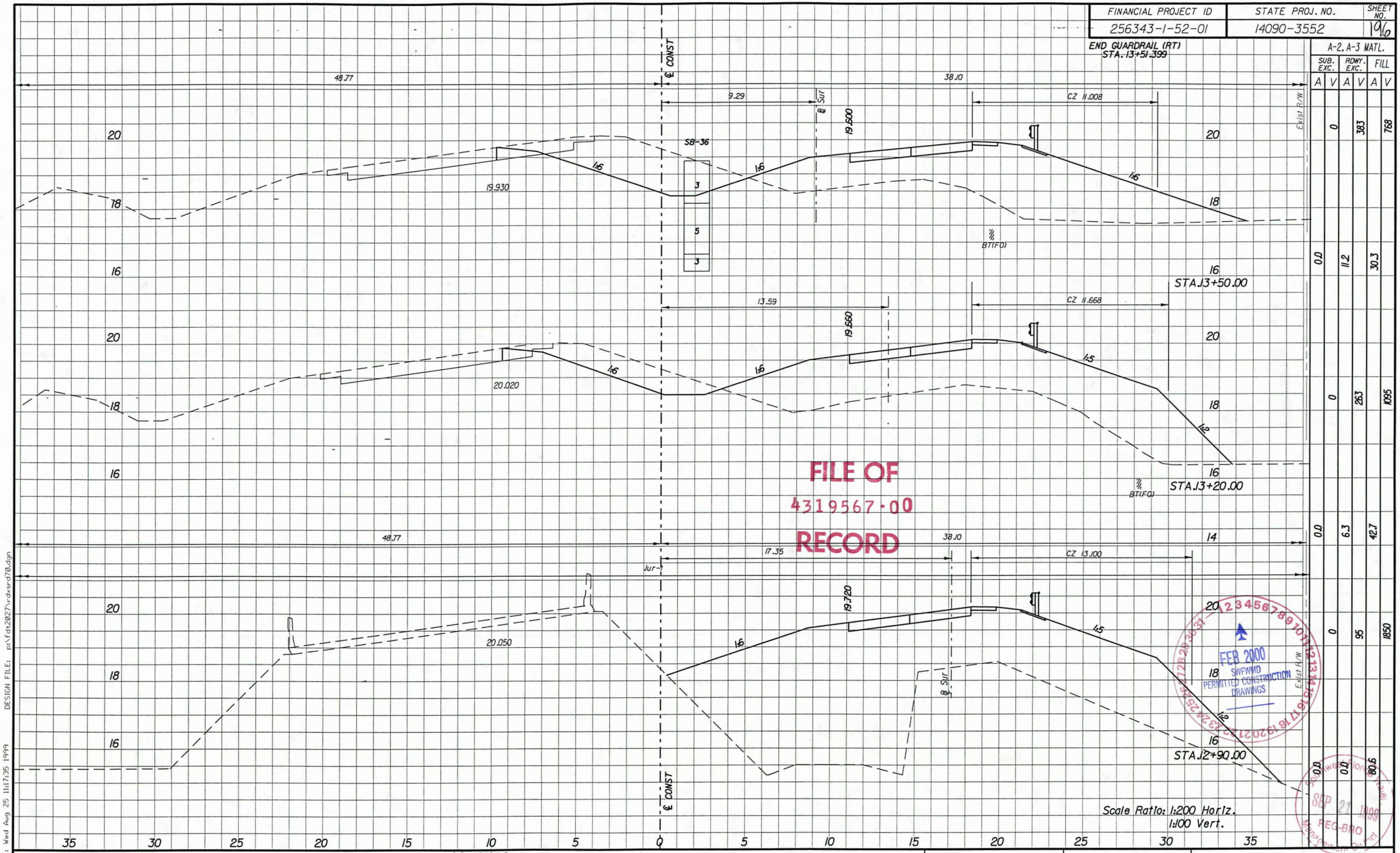
CROSS SECTION 241

PLOT DATE: Wed Aug 25 11:17:31 1999 DESIGN FILE: p:\fdt2027\rdxsrd69.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	19/0

END GUARDRAIL (RT)
STA. 13+51.399

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
		0		383	768
0.0		11.2		30.3	
0		263			1095
0.0		6.3		42.7	
0		95			1850
0.0		0.0		80.6	



FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 27 1999
FEG-BRO

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

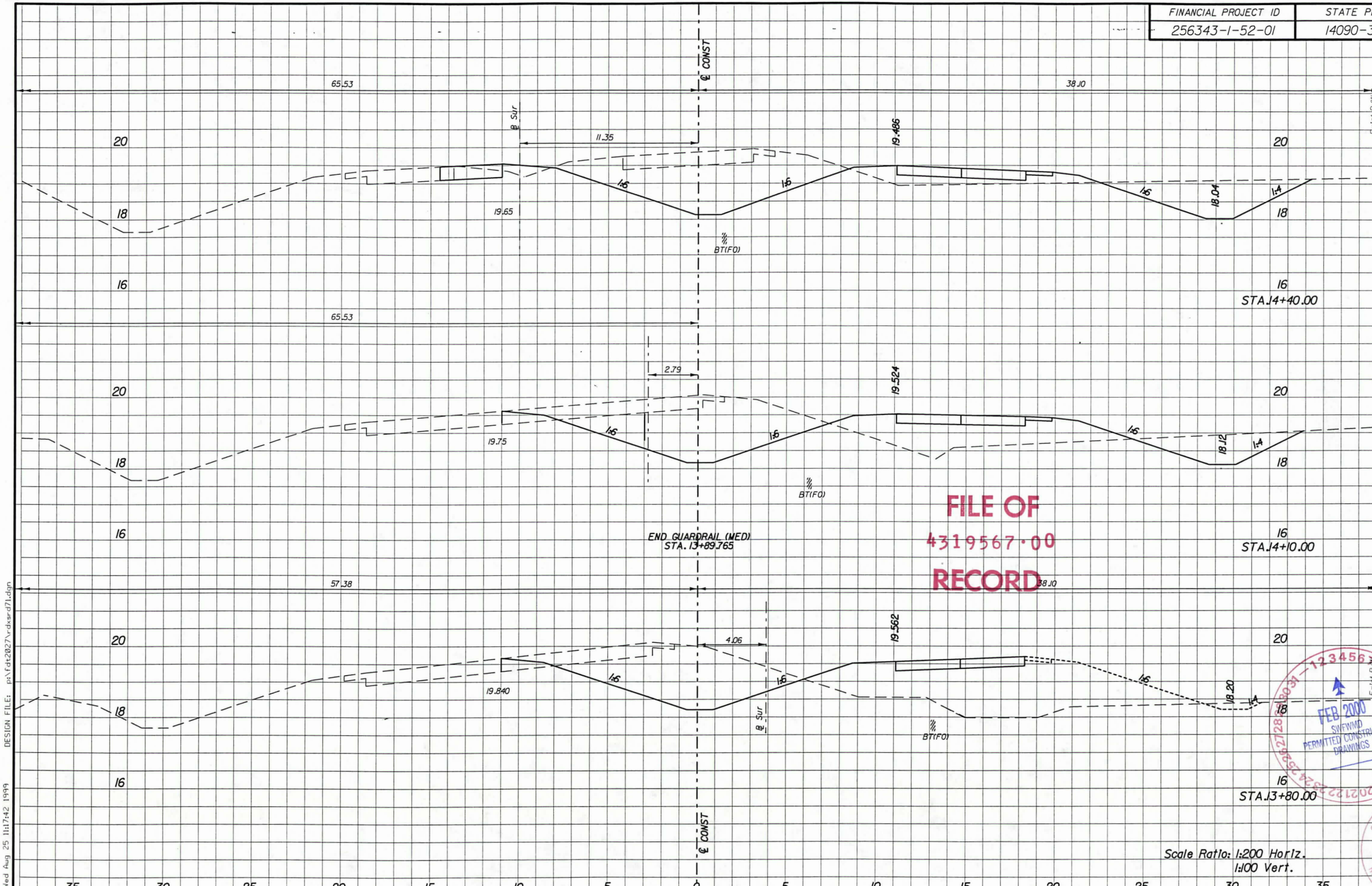
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 242

PLOT DATE: Wed Aug 25 11:17:35 1999 DESIGN FILE: p:\fdt2027\rdxsrd70.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	197



A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		719		90
0.0		21.7		3.4	
	0		618		195
0.0		19.5		9.6	
	0		507		458
0.0		14.3		20.9	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRD
Management District

DESIGN FILE: p:\fdt2027\rdxsrd71.dgn

PLOT DATE: Wed Aug 25 11:17:42 1999

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 243

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	198

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		639		87
0.0		23.5		3.1	
	0		714		104
0.0		24.1		3.8	
	0		755		96
0.0		26.2		2.6	

(INTO EXISTING S.R. 54 R/W)

℄ CONST

38.10

(48.17 TO ℄)

Exist R/W

20

19.372

1:6

1:6

1:6

17.79

1:4

18

BT(FO)

19.47

16

STA.15+30.00

65.53

℄ Sur

33.92

19.410

1:6

1:6

1:6

17.87

1:4

BT(FO)

22

21.69

38.10

19.448

1:6

1:6

1:6

17.95

1:4

19.56

BT(FO)

STA.14+70.00

STA.15+00.00

Scale Ratio: 1:200 Horiz.
1:100 Vert.

35 30 25 20 15 10 5 0 5 10 15 20 25 30 35

FILE OF
4319567.00
RECORD

FEB 2000
SHEWMAKE
PERMITTED CONSTRUCTION
DRAWINGS

SEP 27 2000
REG-ENG

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

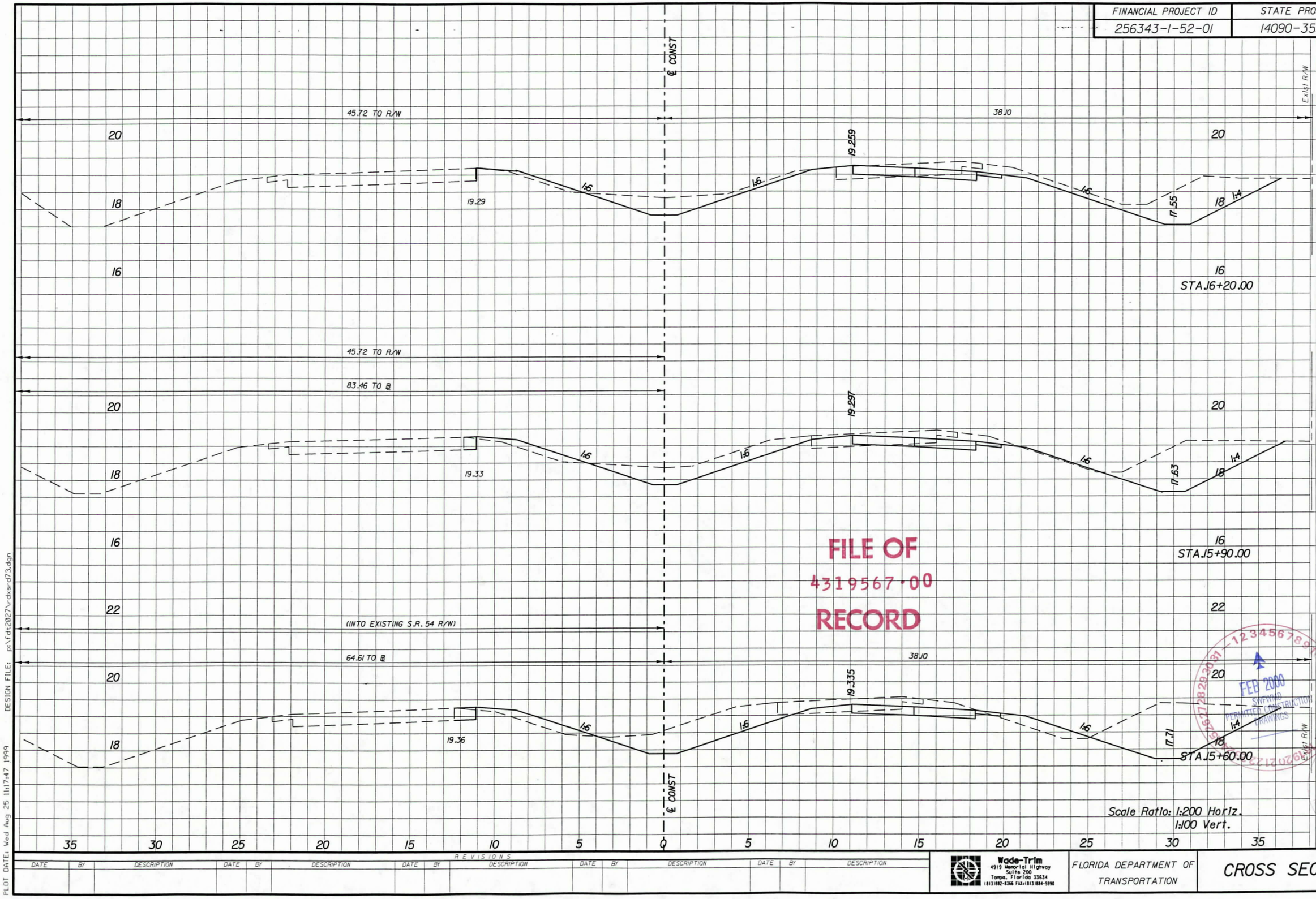
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 244

PLOT DATE: Wed Aug 25 11:17:40 1999 DESIGN FILE: p:\fdot2027\rdsrd72.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	199



Scale Ratio: 1:200 Horiz.
1:100 Vert.

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
	0		360		24
0.0		13.2		0.6	
	0		413		29
0.0		14.3		1.3	
	0		501		60
0.0		19.1		2.7	

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-ERC
Management District

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

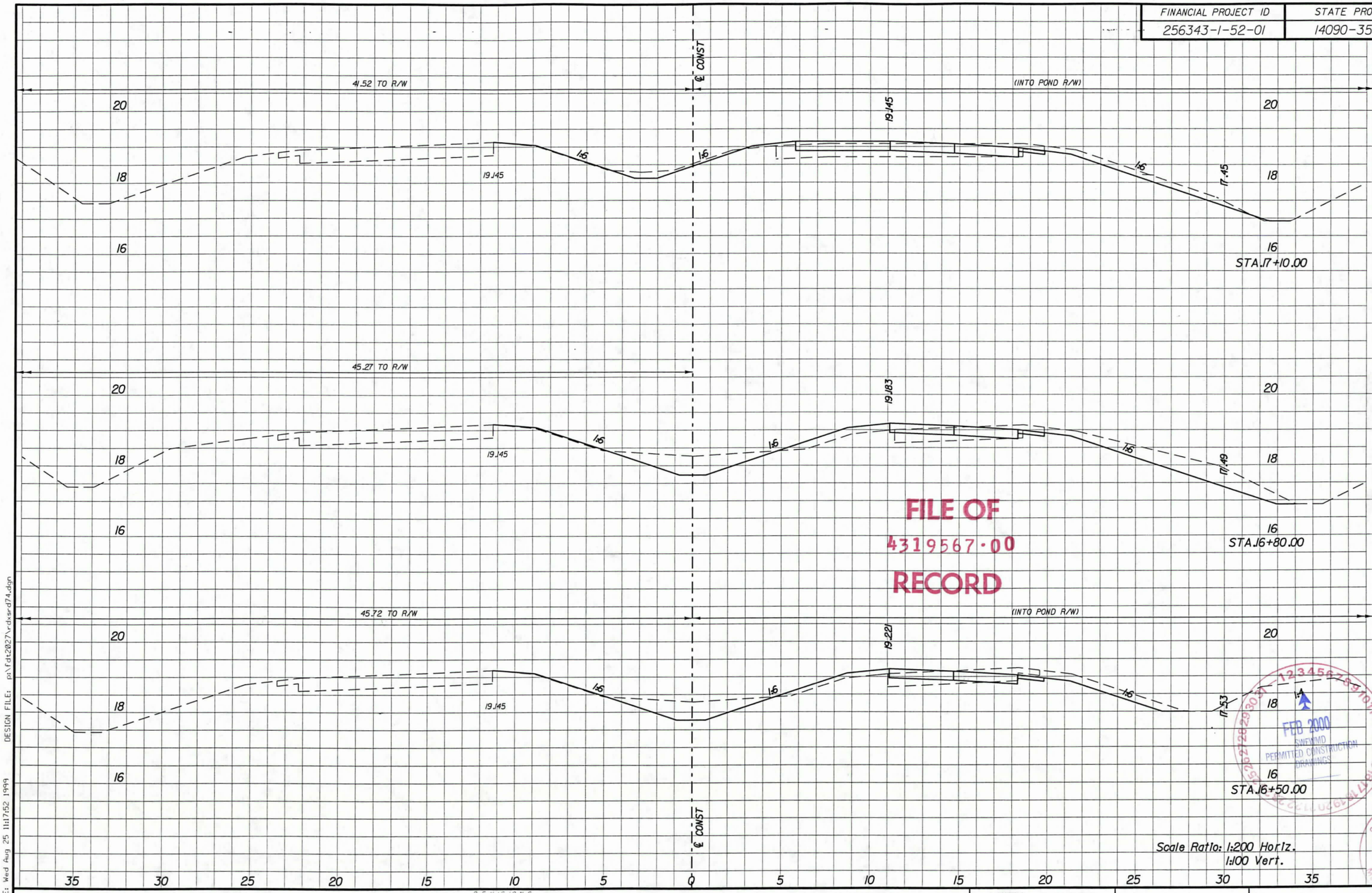
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 245

PLOT DATE: Wed Aug 25 11:17:47 1999 DESIGN FILE: p:\fdt2027\rdxsrd73.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	200

	A-2, A-3 MATL.					
	SUB. EXC.		RDWY. EXC.		FILL	
	A	V	A	V	A	V
STA.17+10.00	0.0	0	5.1	96	2.2	56
STA.16+80.00	0.0	0	19.8	8.1	8.9	3.7
STA.16+50.00	0.0	0	28.4	10.8	10.1	7.1



FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
REGULATORY REVIEW

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS												
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

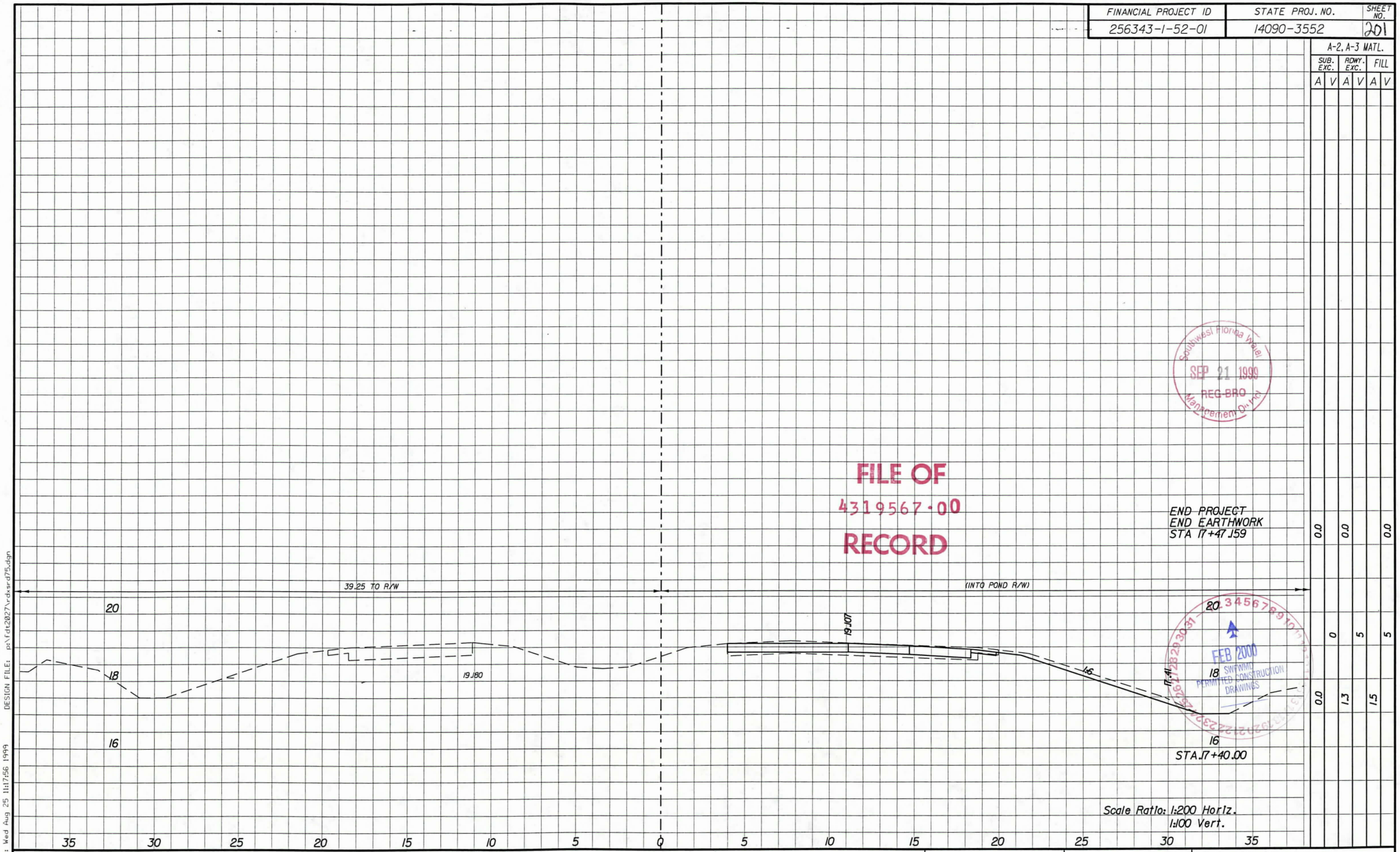
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 24

PLOT DATE: Wed Aug 25 11:17:52 1999 DESIGN FILE: p:\fdt2027\dgn\rd74.dgn

A-1109

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	201



FILE OF
4319567-00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

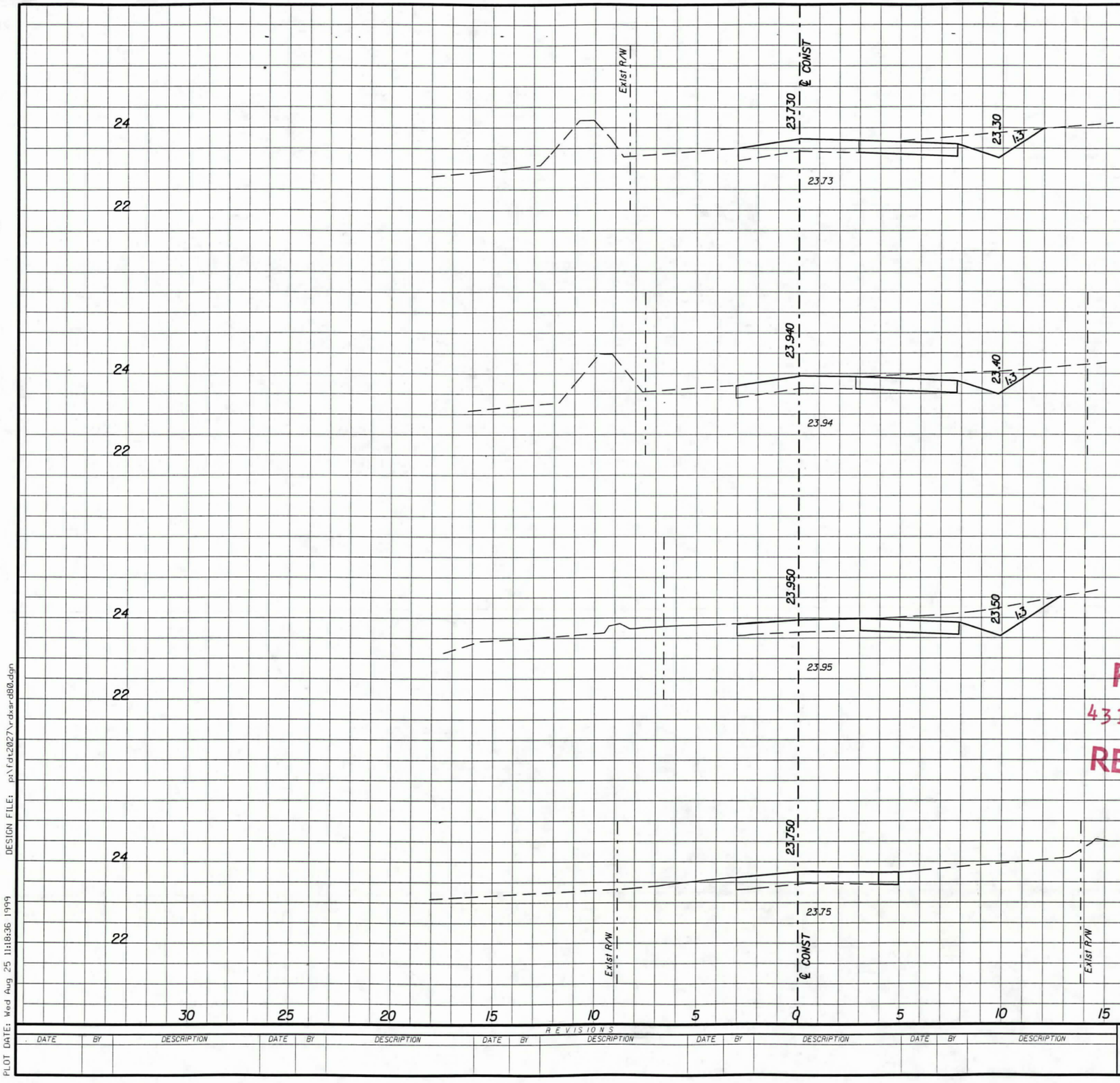
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 247

PLOT DATE: Wed Aug 25 11:17:56 1999 DESIGN FILE: p:\fdt2027\rdxsrd75.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	202



UNCLASSIFIED MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0		3.3		0.0	
	0		68		0
0.0		3.5		0.0	
	0		74		0
0.0		3.9		0.0	
	0		50		0
0.0		1.1		0.0	
	0		1		0
0.0		0.0		0.0	

Southwest Florida Water Management District
SEP 21 1999
REG-BAC
FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 248

PLOT DATE: Wed Aug 25 11:18:36 1999 DESIGN FILE: p:\fdi2027\rdsard80.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	203



UNCLASSIFIED MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		7		0
0.0		1.4		0.0	
	0		17		0
0.0		0.3		0.0	
	0		36		0

FILE OF
4319567-00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

SWFWMD
FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 29

PLOT DATE: Wed Aug 25 11:18:40 1999 DESIGN FILE: p:\fdt2027\rdxsrd81.dgn

A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL							A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL							A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL						
SUB. EXC.		RDWY. EXC.		FILL			SUB. EXC.		RDWY. EXC.		FILL			SUB. EXC.		RDWY. EXC.		FILL		
A	V	A	V	A	V		A	V	A	V	A	V		A	V	A	V	A	V	
0.0		0.0		0.0		STA. 46+20.000							NOTE: SEE CROSS SECTION SHEETS FOR THE OVERBURDEN VOLUMES.							
	753		0		0															
50.2		0.0		0.0		STA. 45+90.000	0.0		0.0		0.0		STA. 62+10.000							
	1461		0		0			96		0		0								
47.2		0.0		0.0		STA. 45+60.000	6.4		0.0		0.0		STA. 61+80.000							
	1086		0		0			317		0		0								
25.2		0.0		0.0		STA. 45+30.000	14.7		0.0		0.0		STA. 61+50.000	0.0		0.0		0.0		STA. 68+10.000
	378		0		0			221		0		0			78		0		0	
0.0		0.0		0.0		STA. 45+00.000	0.0		0.0		0.0		STA. 61+20.000	5.2		0.0		0.0		STA. 67+80.000
															78		0		0	
														0.0		0.0		0.0		STA. 67+50.000
															0		0		0	
0.0		0.0		0.0		STA. 43+20.000	0.0		0.0		0.0		STA. 56+40.000	0.0		0.0		0.0		STA. 67+20.000
	0		0		42			342		0		0			35		4		0	
0.0		0.0		2.8		STA. 42+90.000	20.0		0.0		0.0		STA. 55+80.000	6.9		0.8		0.0		STA. 66+90.000
	0		0		42			300		0		0			197		12		0	
0.0		0.0		0.0		STA. 42+60.000	0.0		0.0		0.0		STA. 55+50.000	6.2		0.0		0.0		STA. 66+60.000
	501		0		0										153		0		0	
33.4		0.0		0.0		STA. 42+30.000								4.0		0.0		0.0		STA. 66+30.000
	501		0		0										140		2		0	
0.0		0.0		0.0		STA. 42+00.000	0.0		0.0		0.0		STA. 52+40.000	5.3		0.1		0.0		STA 66+00.000
								48		0		0			170		3		0	
							4.8		0.0		0.0		STA. 52+20.000	6.0		0.1		0.0		STA. 65+70.000
								207		0		0			182		2		0	
0.0		0.0		0.0		STA. 39+60.000	9.0		0.0		0.0		STA. 51+90.000	6.1		0.0		0.0		STA. 65+40.000
	194		0		0			224		0		0			180		0		0	
12.9		0.0		0.0		STA. 39+30.000	5.9		0.0		0.0		STA. 51+60.000	5.9		0.0		0.0		STA. 65+10.000
	378		0		0			233		5		0			198		9		0	
12.3		0.0		0.0		STA. 39+00.000	9.6		0.3		0.0		STA. 51+30.000	7.3		0.6		0.0		STA. 64+80.000
	176		0		0			388		11		0			192		9		0	
0.0		0.0		0.0		STA. 38+70.000	12.9		0.4		0.0		STA. 51+00.000	5.5		0.0		0.0		STA. 64+50.000
								762		6		0			173		0		0	
							37.9		0.0		0.0		STA. 50+70.000	6.0		0.0		0.0		STA. 64+20.000
								690		3		0			318		0		0	
0.0		0.0		0.0		STA. 38+40.000	8.1		0.2		0.0		STA. 50+40.000	15.2		0.0		0.0		STA. 63+90.000
	111		0		0			222		8		0			318		0		0	
7.4		0.0		0.0		STA. 38+10.000	6.7		0.3		0.0		STA. 50+10.000	6.0		0.0		0.0		STA. 63+60.000
	111		0		0			143		5		0			137		0		0	
0.0		0.0		0.0		STA. 37+80.000	2.8		0.0		0.0		STA. 49+80.000	3.1		0.0		0.0		STA. 63+30.000
								28		0		0			47		0		0	
						BEGIN SUBSOIL EARTHWORK	0.0		0.0		0.0		STA. 49+50.000	0.0		0.0		0.0		STA. 63+00.000

FINANCIAL PROJECT ID: 256343-1-52-01
STATE PROJ. NO.: 14090-3522
SHEET NO.: 204

FILE OF
4319567-00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-SRO

FEB 2000
SUBMIT PERMITTED CONSTRUCTION DRAWINGS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 250

PLOT DATE: Wed Aug 25 11:18:24 1999
DESIGN FILE: p:\fdt2027\rdsrd77.dgn

A-1113

A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL						
SUB. EXC.		RDWY. EXC.		FILL		
A	V	A	V	A	V	
						END SUBSOIL EARTHWORK
0.0		0.0		0.0		STA. 12+00.000
	350		0		0	
23.3		0.0		0.0		STA. 11+70.000
	350		0		0	
0.0		0.0		0.0		STA. 11+40.000
0.0		0.0		0.0		STA. 81+90.000
	27		0		0	
2.7		0.0		0.0		STA. 81+60.000
	138		0		0	
6.5		0.0		0.0		STA. 81+30.000
	284		0		0	
12.4		0.0		0.0		STA. 81+00.000
	62		0		0	
0.0		0.0		0.0		STA. 80+70.000
0.0		0.0		0.0		STA. 76+80.000
	903		0		0	
60.2		0.0		0.0		STA. 76+50.000
	903		0		0	
0.0		0.0		0.0		STA. 76+20.000
0.0		0.0		0.0		STA. 73+80.000
	0		0		38	
0.0		0.0		2.5		STA. 73+50.000
	0		0		38	
0.0		0.0		0.0		STA. 73+20.000

A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V

A-7 MATERIAL A-8 MATERIAL A-2-6, A-2-7 MATERIAL					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	205

FILE OF
4319567.00
RECORD

SEP 21 1999
REG-BRO
Southwest Florida Water Management District

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

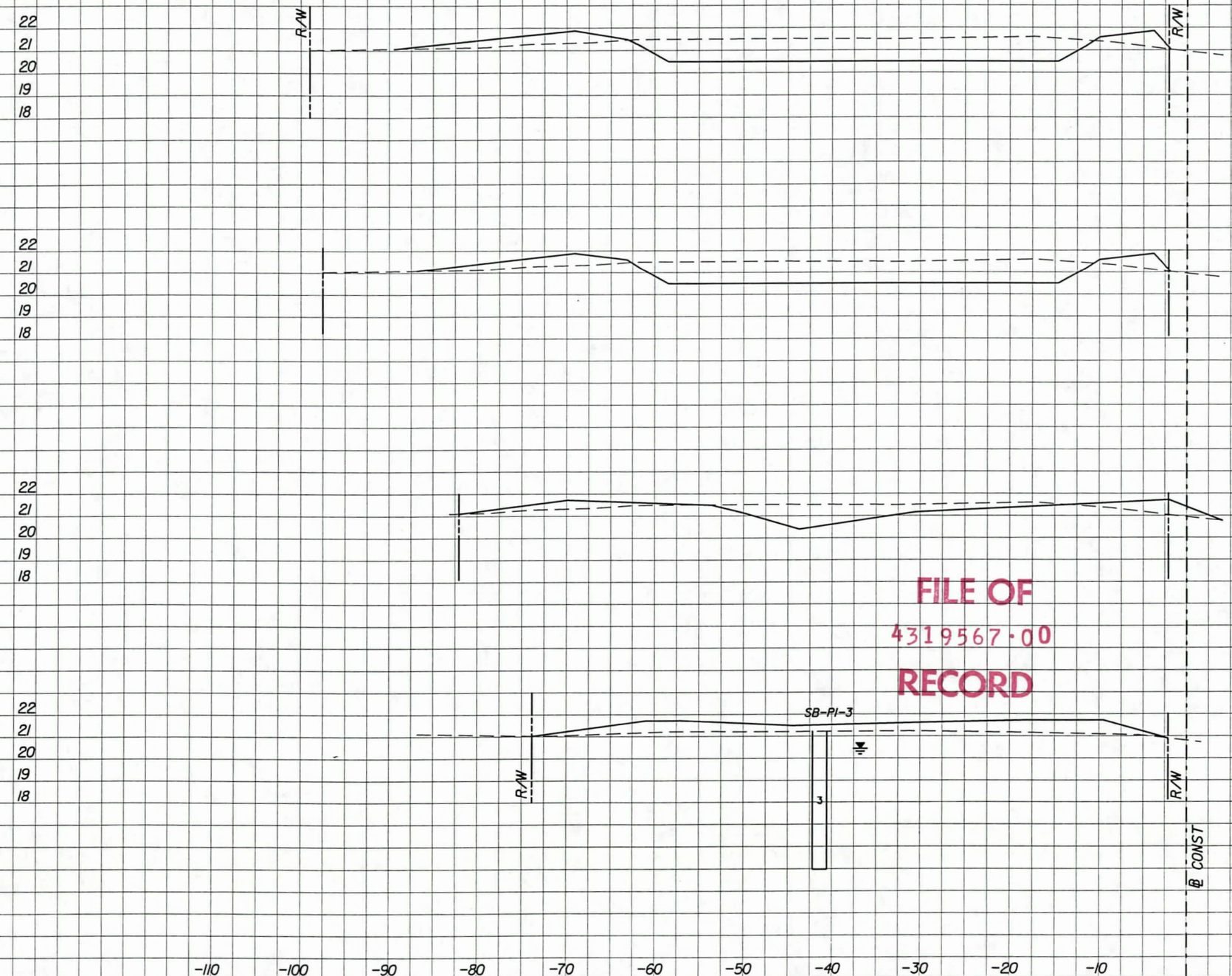
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 251

DESIGN FILE: p:\fdt2027\rdsrd78.dgn
PLOT DATE: Wed Aug 25 11:18:28 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	206



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		63.3		8.8	
	0		113		22
0.0		49.2		13.2	
	0		380		120
0.0		19.9		8.6	
	0		60		110
0.0		0.0		28.1	
	0		0		112
0.0		0.0			

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4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REGIBRO

FEB 2000
Inspection Approved

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

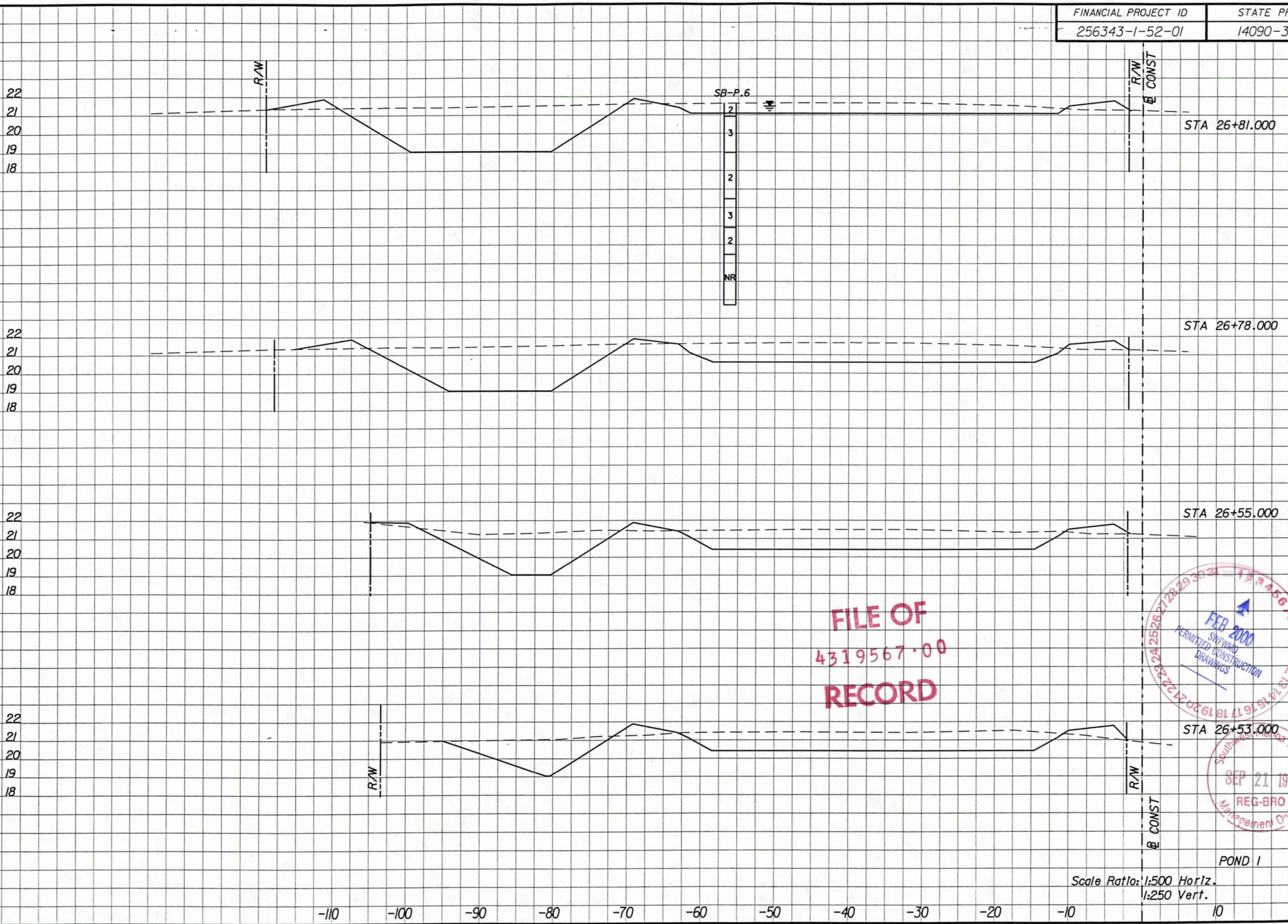
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

252

PLOT DATE: Wed Aug 25 11:04:41 1999 DESIGN FILE: p:\fdc2027\rdxsp101.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp101.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	207



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		3.9		157.8	
	0		144		242
0.0		92.1		3.7	
	0		189		91
0.0		66.1		4.2	
	0		132		13
0.0		65.4		8.7	
	0		386		53

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

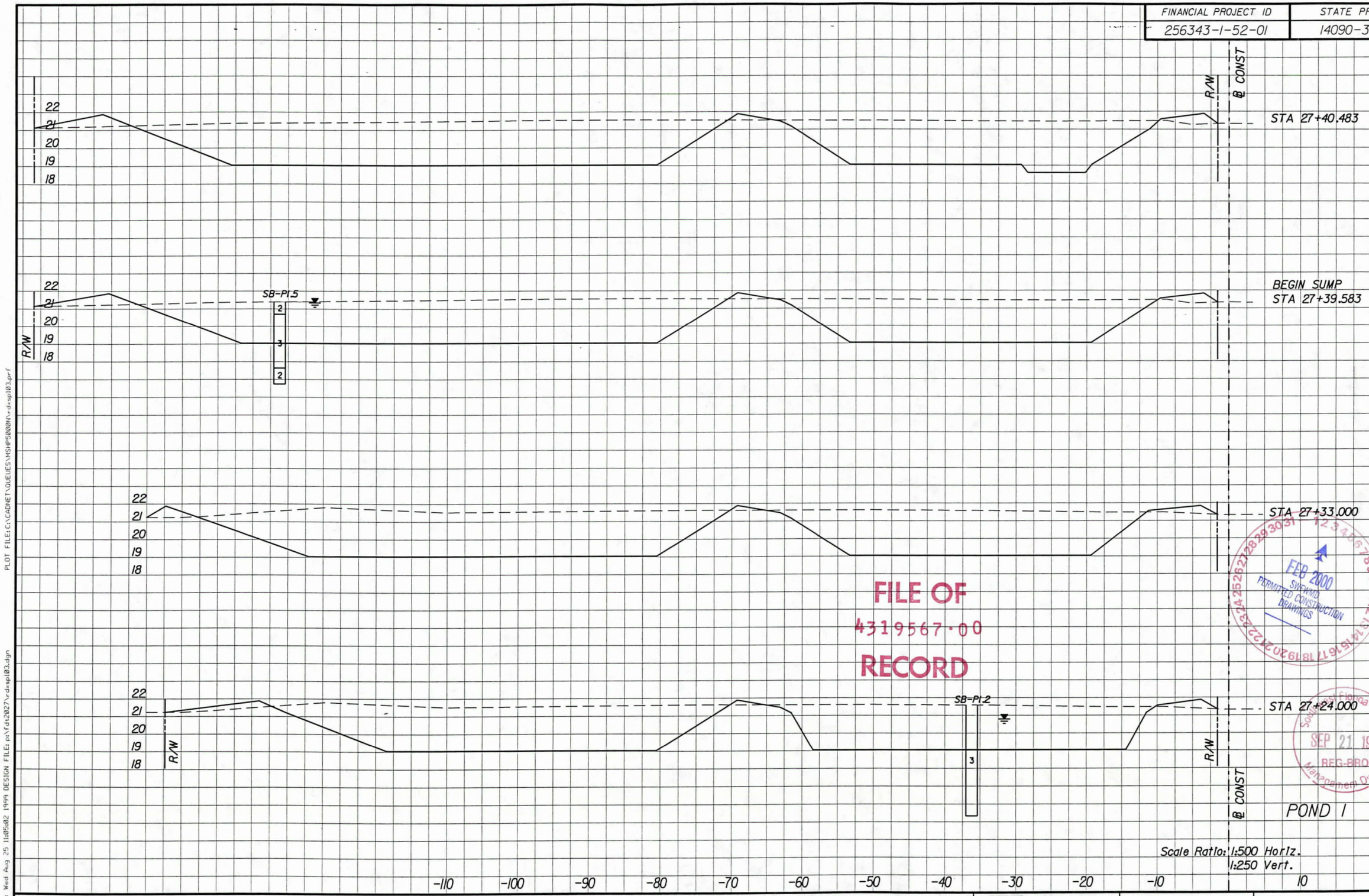
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 263

PLOT DATE: Wed Aug 25 11:04:54 1999 DESIGN FILE: p:\fdot2027\rdsp102.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdsp102.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	203



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		191.9		3.0	
	0		190		10
0.0		187.5		16.7	
	0		2095		113
0.0		193.4		3.8	
	0		1698		36
0.0		184.0		4.1	
	0		4040		3481

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRO
Management Dist.

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

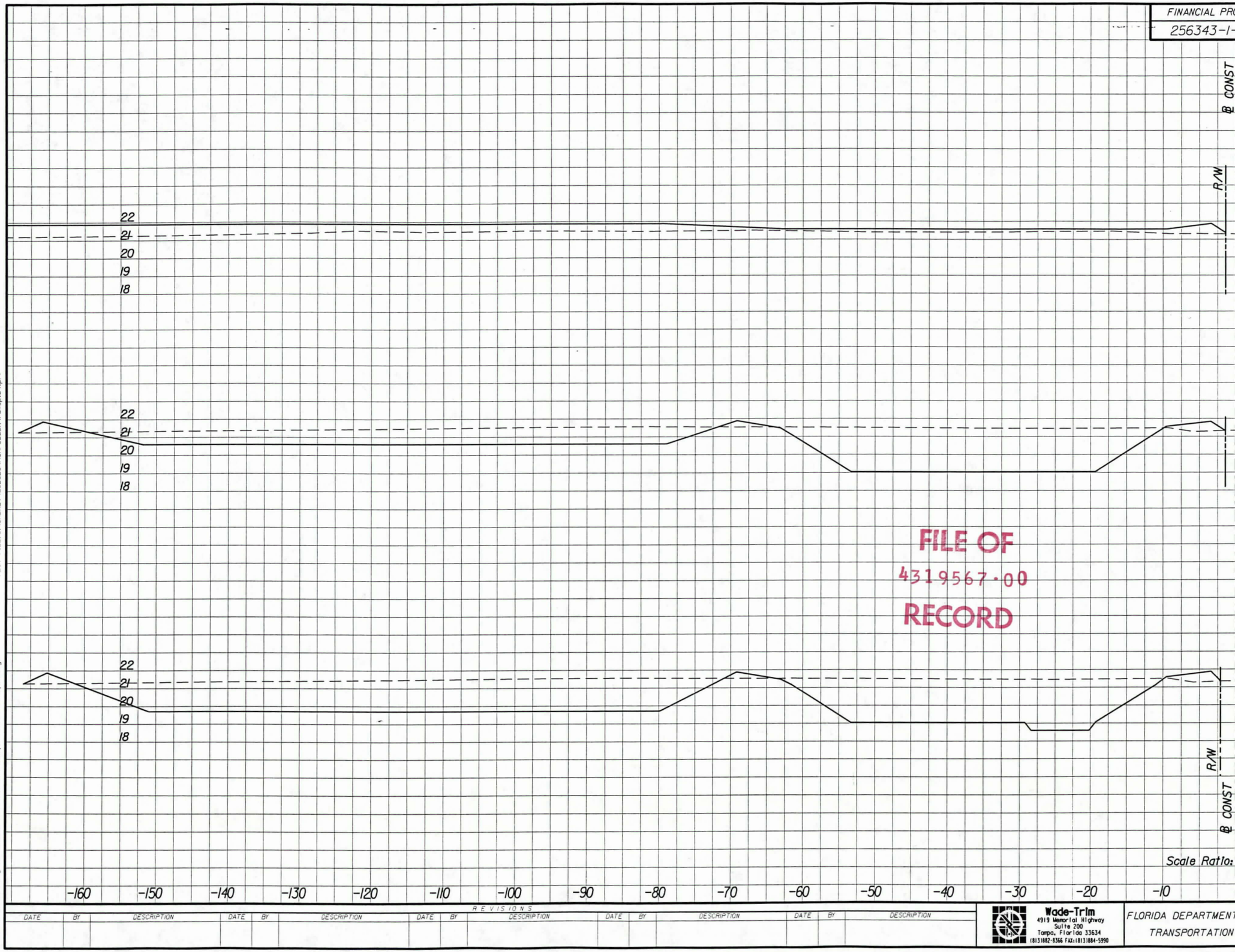
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 254

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N1\rd+sp103.prf
PLOT DATE: Wed Aug 25 11:05:02 1999 DESIGN FILE: ps\fdt2027\rd+sp103.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	209



A-2-4, A-3, A-2-6, A-7-6, A-5					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		176		17
0.0		58.8		5.6	
	0		626		22
0.0		191.7		3.0	
	0		194		3
0.0		196.0		3.0	
	0		1552		24

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

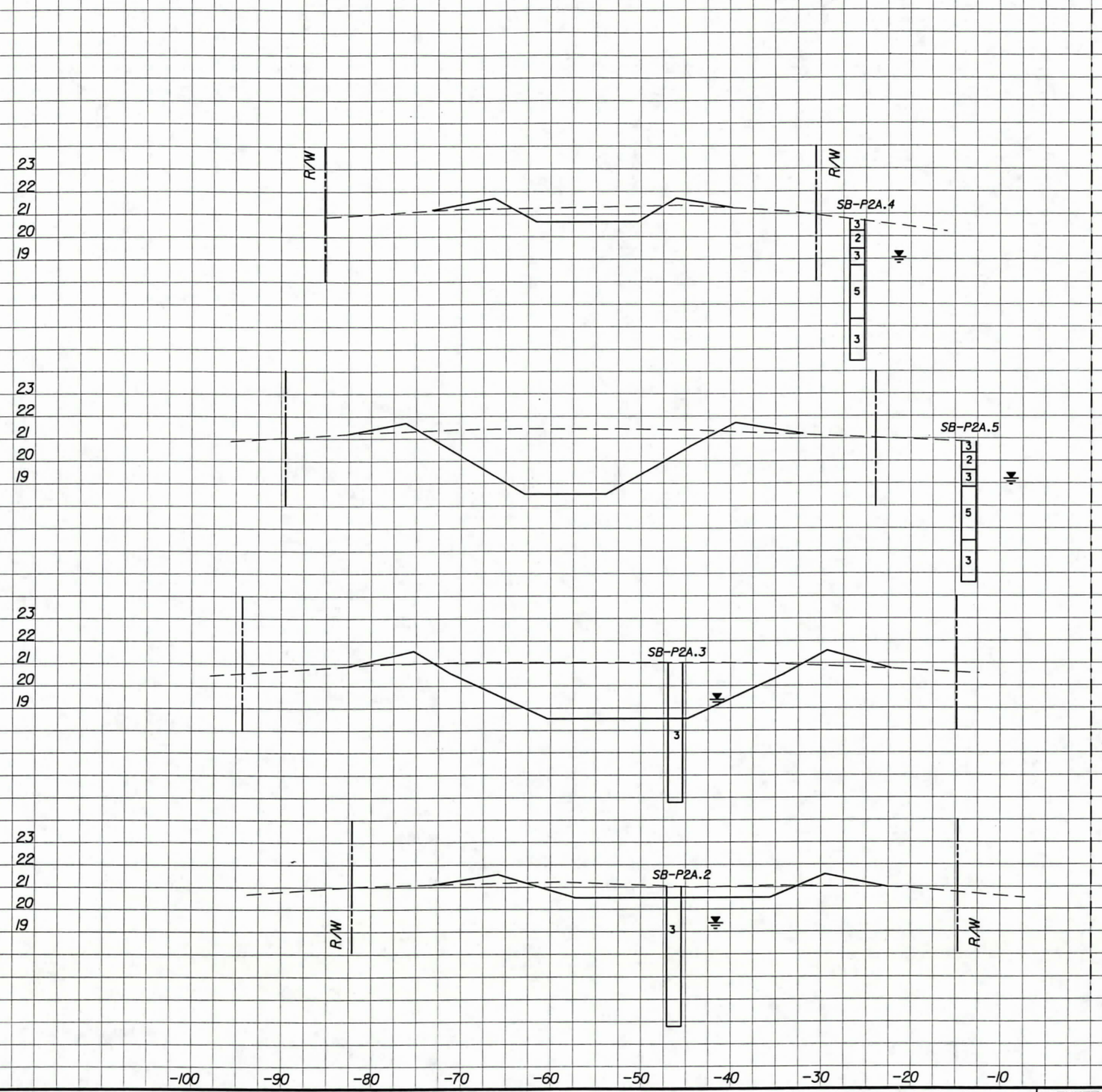
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 255

PLOT FILE: C:\CADNET\QUEUES\MSHP5000NT.rd+sp104.prf
PLOT DATE: Wed Aug 25 11:05:06 1999 DESIGN FILE: p:\fdt2027\rdxsp104.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	210



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		32.1		1.9	
	0		1134		44
0.0		75.9		2.3	
	0		1226		62
0.0		87.5		6.0	
	0		765		80
0.0		14.5		4.7	
	0		87		28
0.0		0.0		0.0	

POND 2A

Scale Ratio: 1:500 Horiz.
1:250 Vert.

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

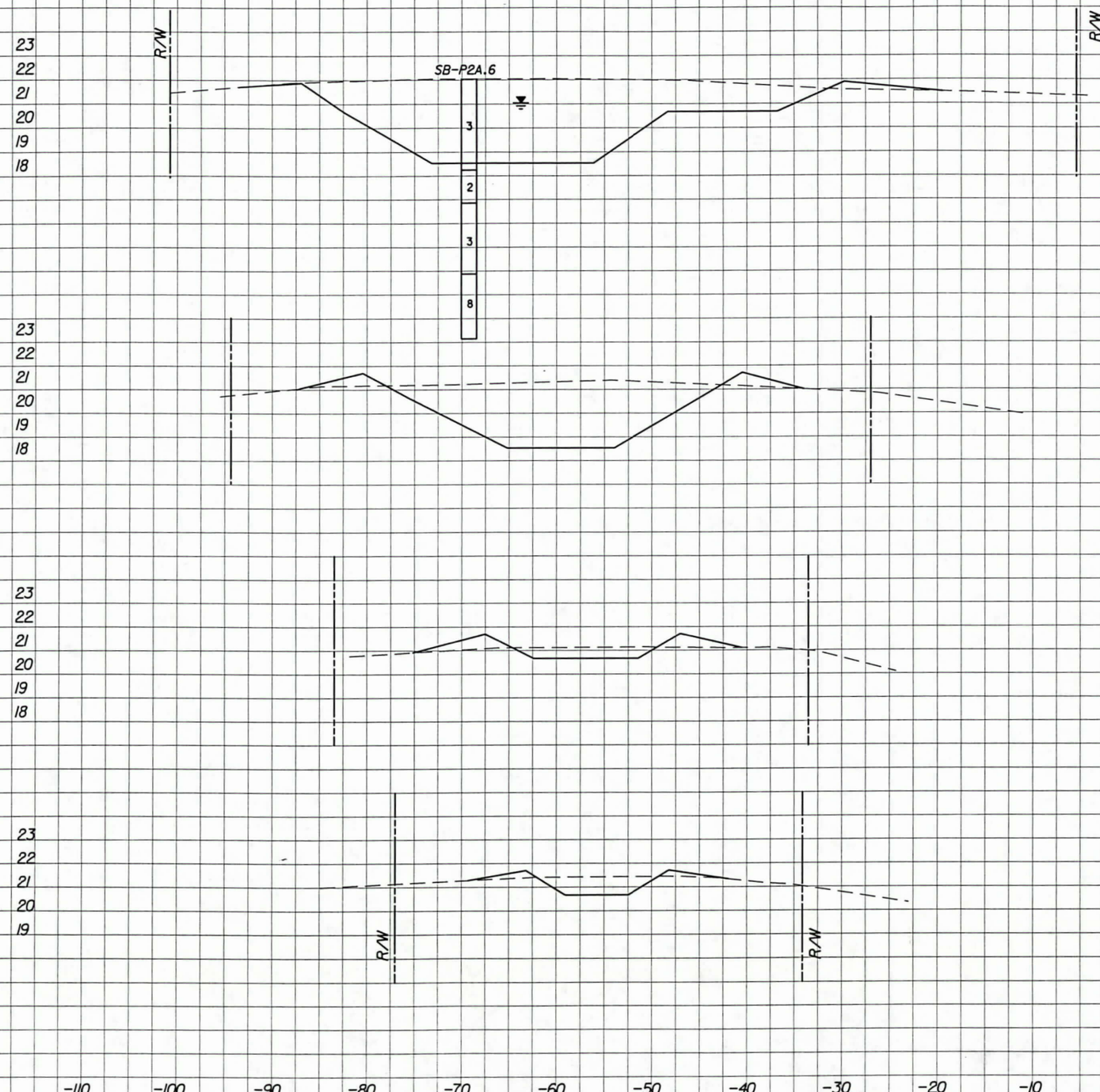
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 256

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp201.prf
PLOT DATE: Wed Aug 25 11:05:10 1999 DESIGN FILE: p:\fdt2027\rdxsp201.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	21



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		128.2		1.9	
	0		1593		20
0.0		84.2		0.8	
	0		1018		23
0.0		28.9		1.8	
	0		242		36
0.0		11.4		4.2	
	0		196		27

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRO
Southwest Florida Water Management District

POND 2A

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 257

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rd+sp202.prf
PLOT DATE: Wed Aug 25 11:05:14 1999 DESIGN FILE: p:\fdt2027\rdxsp202.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	212

END POND 2A
STA 33+20.000

STA 33+05.000

STA 32+90.000

STA 32+75.000

SB-P2A7

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		905		5
0.0		120.7		0.7	
	0		2407		16
0.0		200.2		1.4	
	0		2866		34
0.0		155.2		3.1	
	0		2126		38

Scale Ratio: 1:500 Horiz.
1:250 Vert.

FILE OF
#319567-00
RECORD

FEB 2000
SHERWOOD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

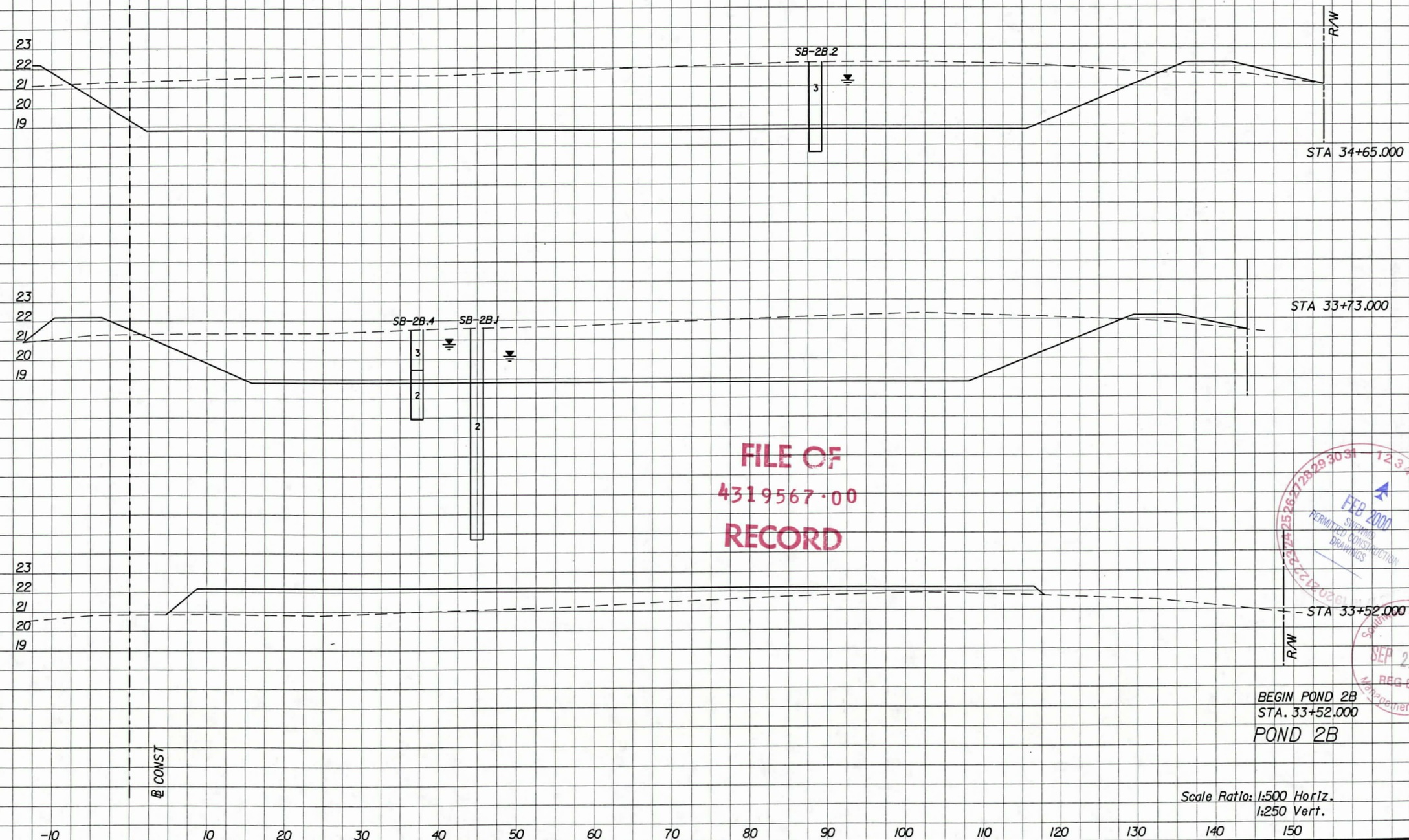
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 258

PLOT DATE: Wed Aug 25 11:05:19 1999 DESIGN FILE: ps\fdt2027\rdsp203.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdsp203.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	213

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		258.2		1.8	
	0		10090		150
0.0		180.5		4.7	
0.0	0	142.0	2419	6.4	83
0.0	0	0.0	284	0.0	13



FILE OF
4319567·00
RECORD

FEB 2000
SYSTEMS
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG ENG

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 259

Scale Ratio: 1:500 Horiz.
1:250 Vert.

PLOT DATE: Wed Aug 25 11:09:54 1999 DESIGN FILE: p:\rd1x2027\xdx\sp204.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHF5002N\rdxsp204.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	214

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		603		7
0.0		54.8		0.6	
	0		1736		33
0.0		138.1		3.1	
	0		3786		110
0.0		177.4		6.1	
	0		3302		151
0.0		262.8		14.0	
	0		8076		245

END POND 2B
STA 35+23.000

STA 35+2.000

STA 34+65.000

℄ CONST

℄ CONST

R/W

SB-P2B.3

23
22
21
20
19

-20 -10 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

FILE OF
4319567.00
RECORD

FEB 2000
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

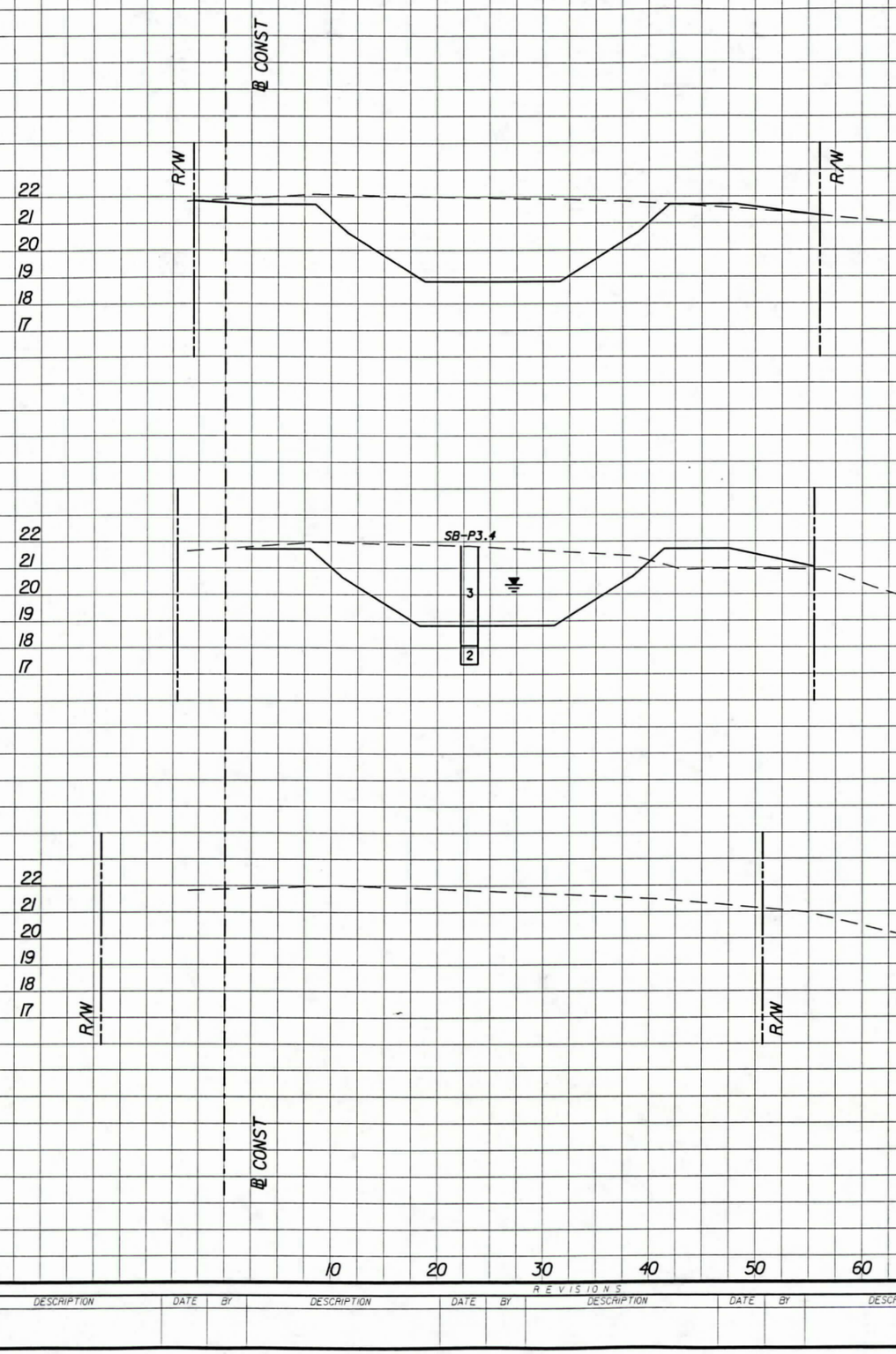
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 200

PLOT FILE: c:\CADNET\QUEUES\MSHP5000N\r-dxsp205.prf
PLOT DATE: Wed Aug 25 11:09:58 1999 DESIGN FILE: ps:\fdt2027\r-dxsp205.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	215



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		86.0		0.0	
	0		3444		44
0.0		78.0		2.1	
	0		897		24
0.0		0.0		0.0	

FILE OF
4319567·00
RECORD

FEB 2000
SHOWING
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

POND 3

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

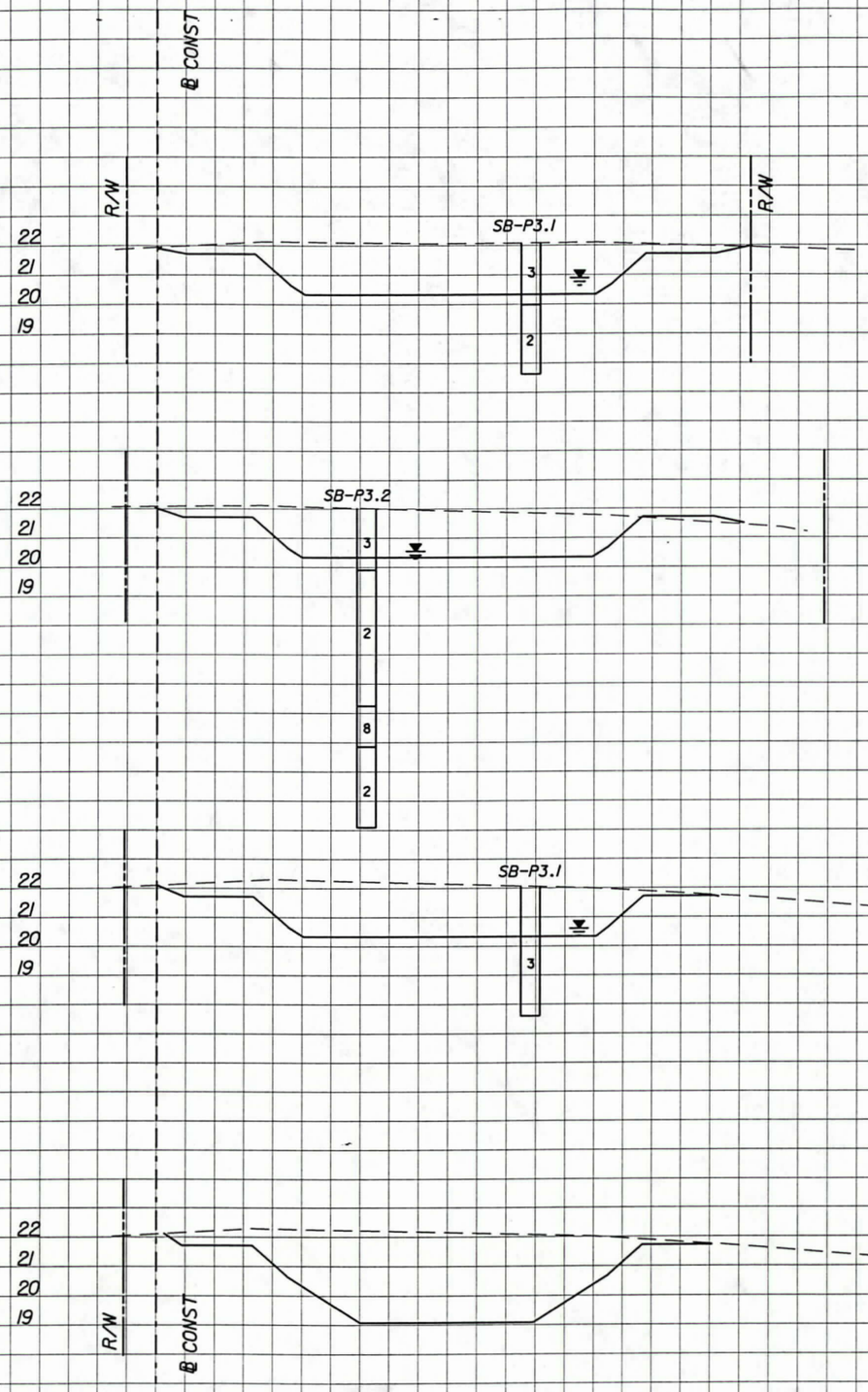
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 261

PLOT DATE: Wed Aug 25 11:10:02 1999 DESIGN FILE: p:\fdt2027\rdxsp301.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp301.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	216



END POND 3
STA 34+02.000

STA 33+79.000

STA 33+39.000

STA 33+00.000

STA 32+94.000

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		643		0
0.0		55.9		0.0	
	0		2096		0
0.0		48.9		0.0	
	0		235		0
0.0		60.6		0.0	
	0		362		0
0.0		59.9		0.0	
	0		3283		0

FILE OF
4319567·00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG ERO
Management District

POND 3

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

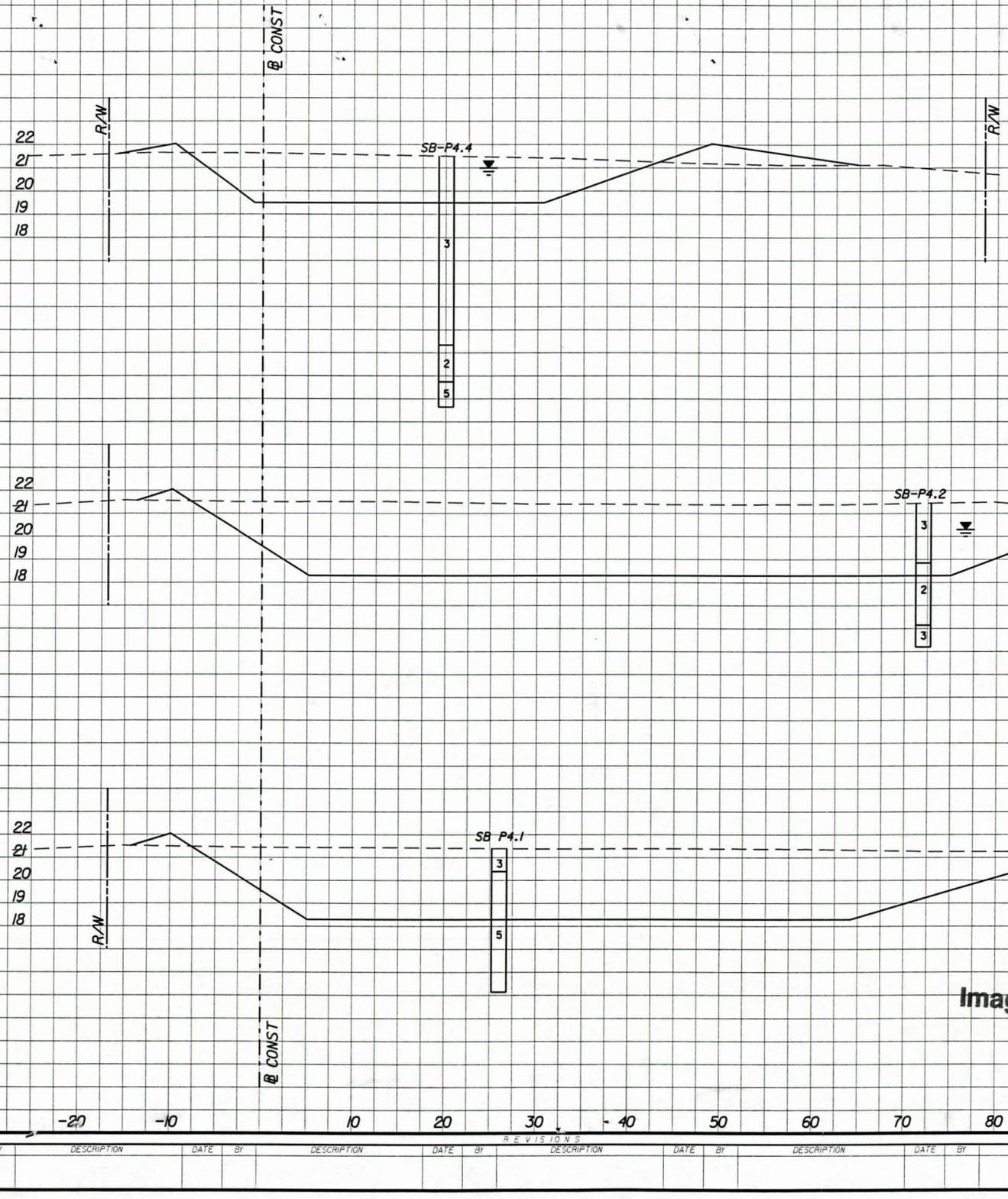
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 262

PLOT DATE: Wed Aug 25 11:10:06 1999 DESIGN FILE: p:\fdot2027\rdksp302.dgn
PLOT FILE: c:\CADNET\QUEUES\MSHP5000N\rdksp302.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		83.6		10.3	
	0		60.8		28.9
0.0		270.4		6.7	
	0		203.4		62
0.0		238.2		8.9	
	0		250.1		93
0.0		0.0		0.0	



END POND 4A
STA 31+13.000

STA 30+79.000

4319567.00
STA 30+71.000

BEGIN POND 4A
STA 30+50.000

POND 4A

Scale Ratio: 1:500 Horiz.
1:250 Vert.

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
JAN 28 2000
REG-BRO
Management District

FILE OF RECORD

Imaged As Is

JEFFREY D. TRIM
CERTIFICATE
53210
STATE OF FLORIDA
1/28/00

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-9366 FAX:(813)884-5990

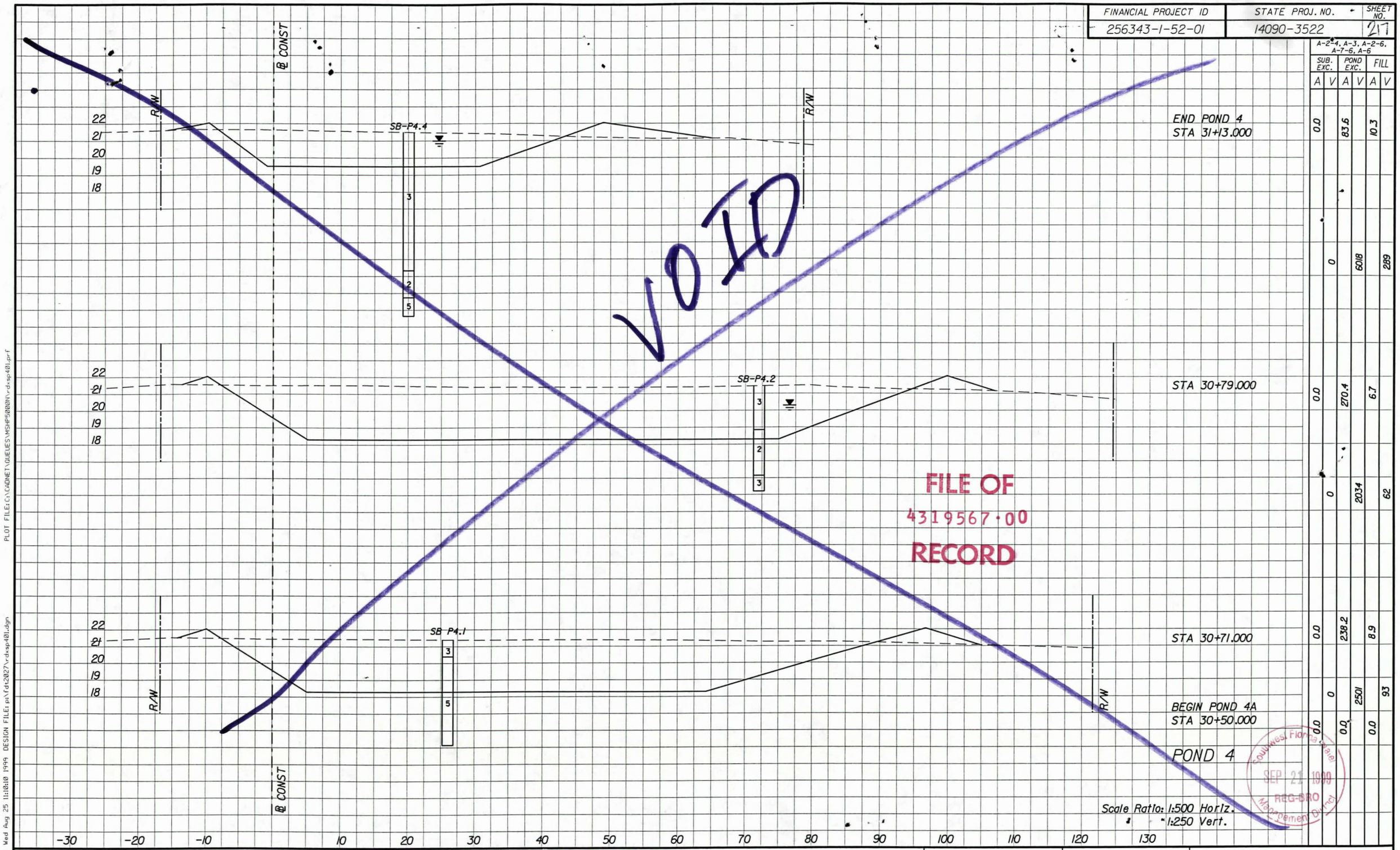
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 262

PLOT DATE: Wed Jan 26 15:21:23 2000 DESIGN FILE: p:\fdt2027\rd-sp401.dgn
PLOT FILE: p:\fdt2027\rd-sp401.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	21

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		83.6		10.3	
	0		6018		289
0.0		270.4		6.7	
	0		2034		62
0.0		238.2		8.9	
	0		2501		93
0.0		0.0		0.0	



VOID

FILE OF
4319567·00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REC-BRO

REVISIONS													
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

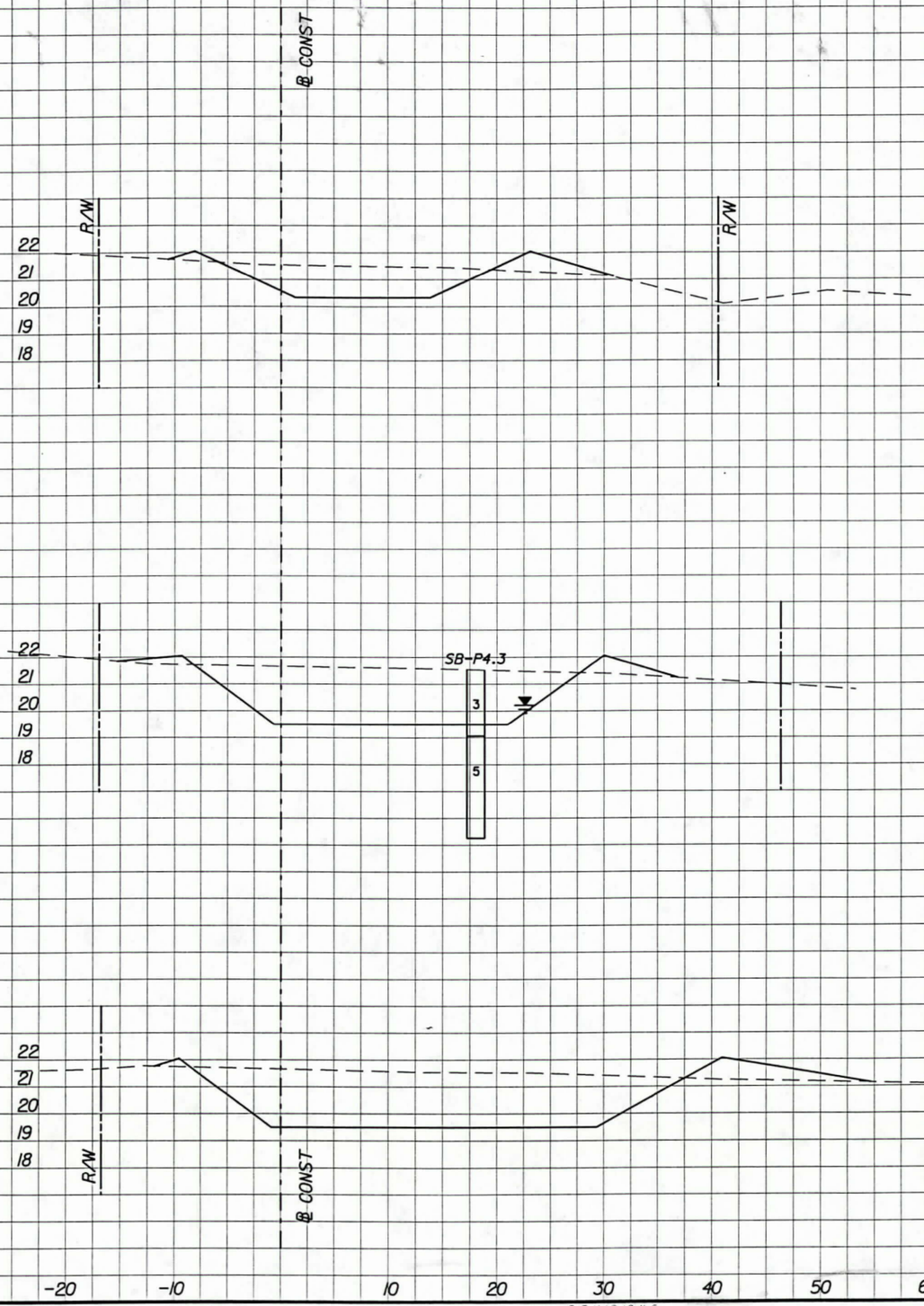
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

PLOT DATE: Wed Aug 25 11:10:10 1999 DESIGN FILE: p:\fdt2027\rdsp401.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000W\rdsp401.prf

A-1127

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	218



END POND 4A
STA 31+76.000

STA 31+50.000

STA 31+18.000

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0	0	21.8	1063	5.2	124
0.0	0	60.0	2208	4.3	186
0.0	0	78.0	404	7.3	44

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRD
Management District

POND 4A

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

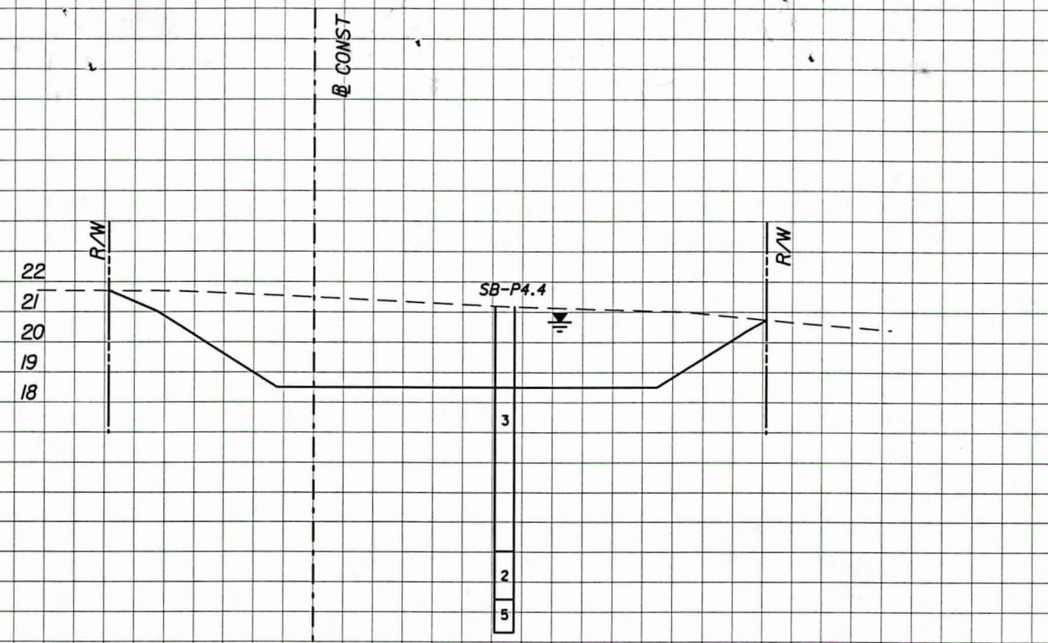
CROSS SECTION 264

A-1128

PLOT FILE: C:\CADNET\DUEUES\MSHP5000N\rdxsp402.prf
PLOT DATE: Wed Aug 25 11:10:14 1999 DESIGN FILE: p:\fdot2027\rdxsp402.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.*		POND EXC.		FILL	
A	V	A	V	A	V
0.0		127.2		0.0	
	0		2926		0
0.0		118.5		0.0	
	0		1800		11
0.0		25.6		0.0	
	0		1585		34



FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
JAN 28 2000
REG-BRO
Management District

FILE OF RECORD
4319567.00

Imaged As Is

POND 4B

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

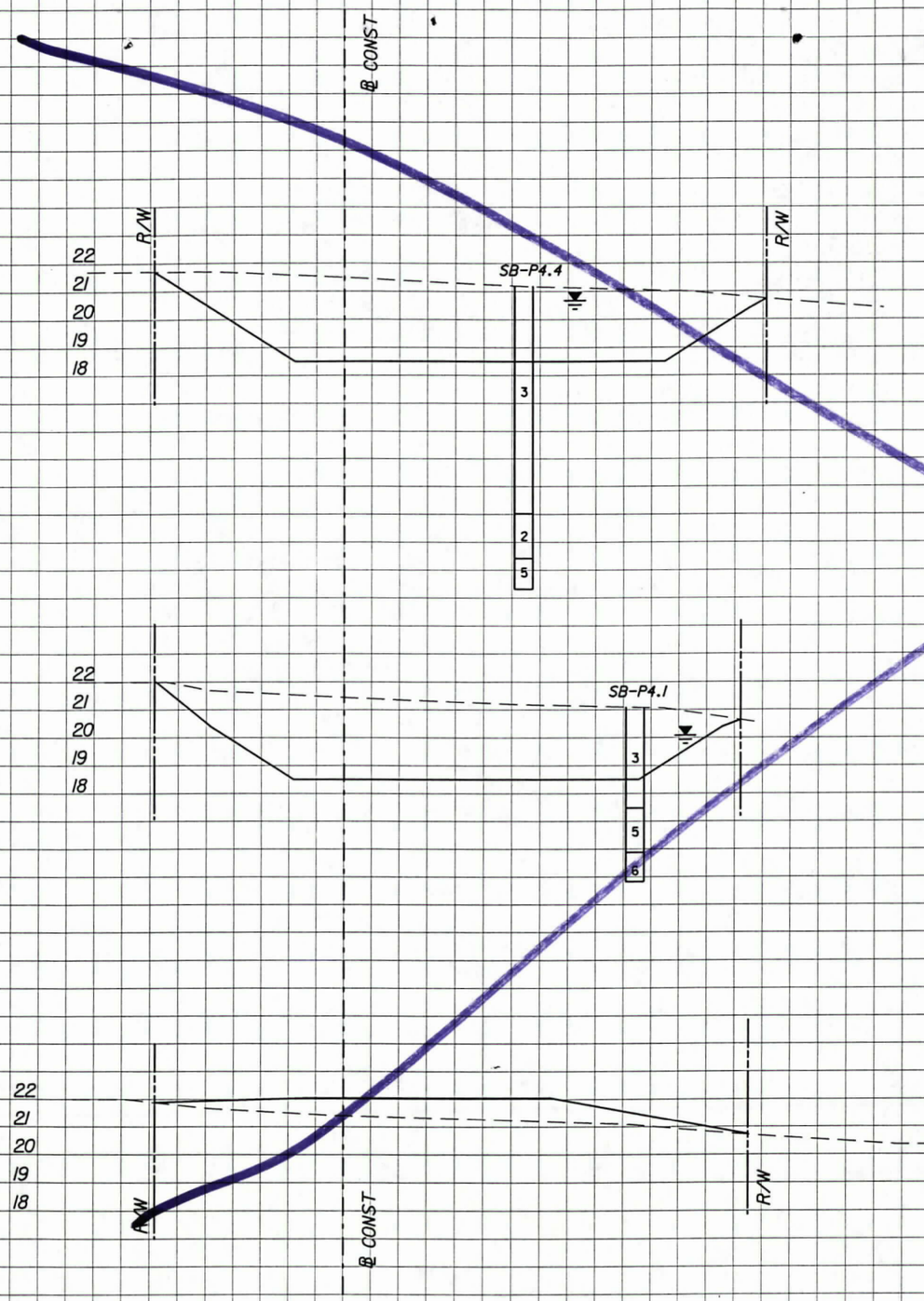
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 265

PLOT FILE: p:\fdx2027\rdwsp403.prf
PLOT DATE: Wed Jan 26 16:43:35 2000 DESIGN FILE: p:\fdx2027\rdwsp403.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	219



FILE OF
4319567-00
RECORD

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

POND 4B

Scale Ratio: 1:500 Horiz.
1:250 Vert.

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0	0	127.2	2826	0.0	0
0.0	0	118.5	1800	0.0	11
0.0	0	25.6	1585	0.0	34

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

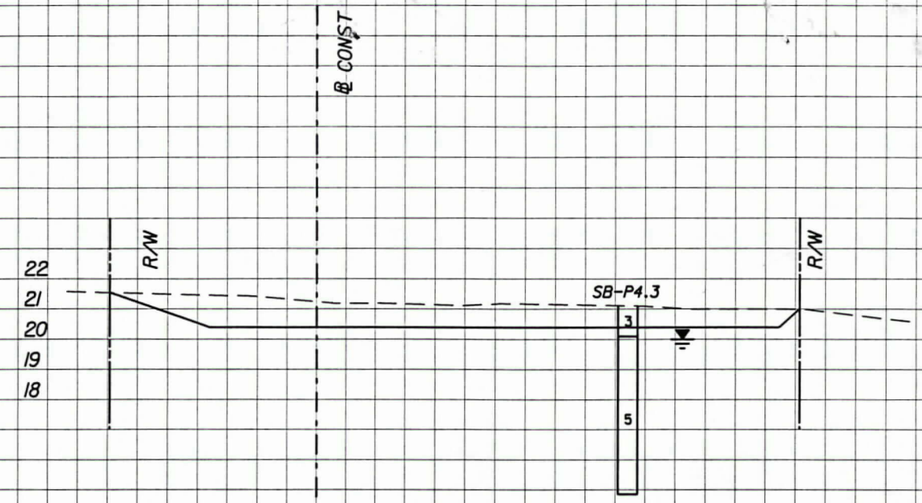
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

PLOT FILE: C:\CADNET\QUEUES\MSHPS00N\rd+sp403.prf
PLOT DATE: Wed Aug 25 11:10:17 1999 DESIGN FILE: pt\fd12027\rdxsp403.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	

A-2-4, A-3, A-2-6, A-7-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		144		0
0.0		41.1		0.0	
	0		145		0
0.0		152.3		0.0	
	0		1817		0
0.0		90.0		0.0	
	0		2606		0

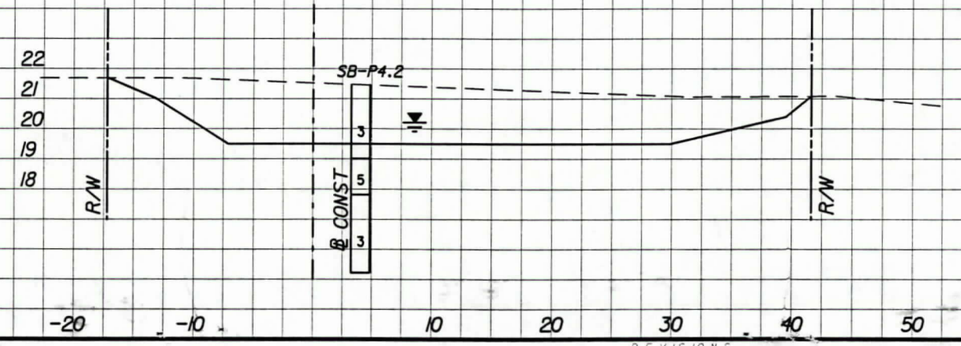


END MITIGATION POND
STA 32+98.000

STA 32+91.000



STA 32+76.000



STA 32+61.000

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
JAN 28 2000
REG-BRO

FILE OF RECORD
219567.00

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TIFFANY D. TRIK
CERTIFICATE
No 42106
STATE OF FLORIDA
9/28/00

POND 4B

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 2606

A-1131

PLOT FILE: p:\fdt2027\rd\sp404.prf
PLOT DATE: Wed Jan 26 16:53:25 2000 DESIGN FILE: p:\fdt2027\rd\sp404.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	220

A-2-4, A-3, A-2-6, A-7-5, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		144		0
0.0		41.1		0.0	
	0		1451		0
0.0		152.3		0.0	
	0		1817		0
0.0		90.0		0.0	
	0		2606		0

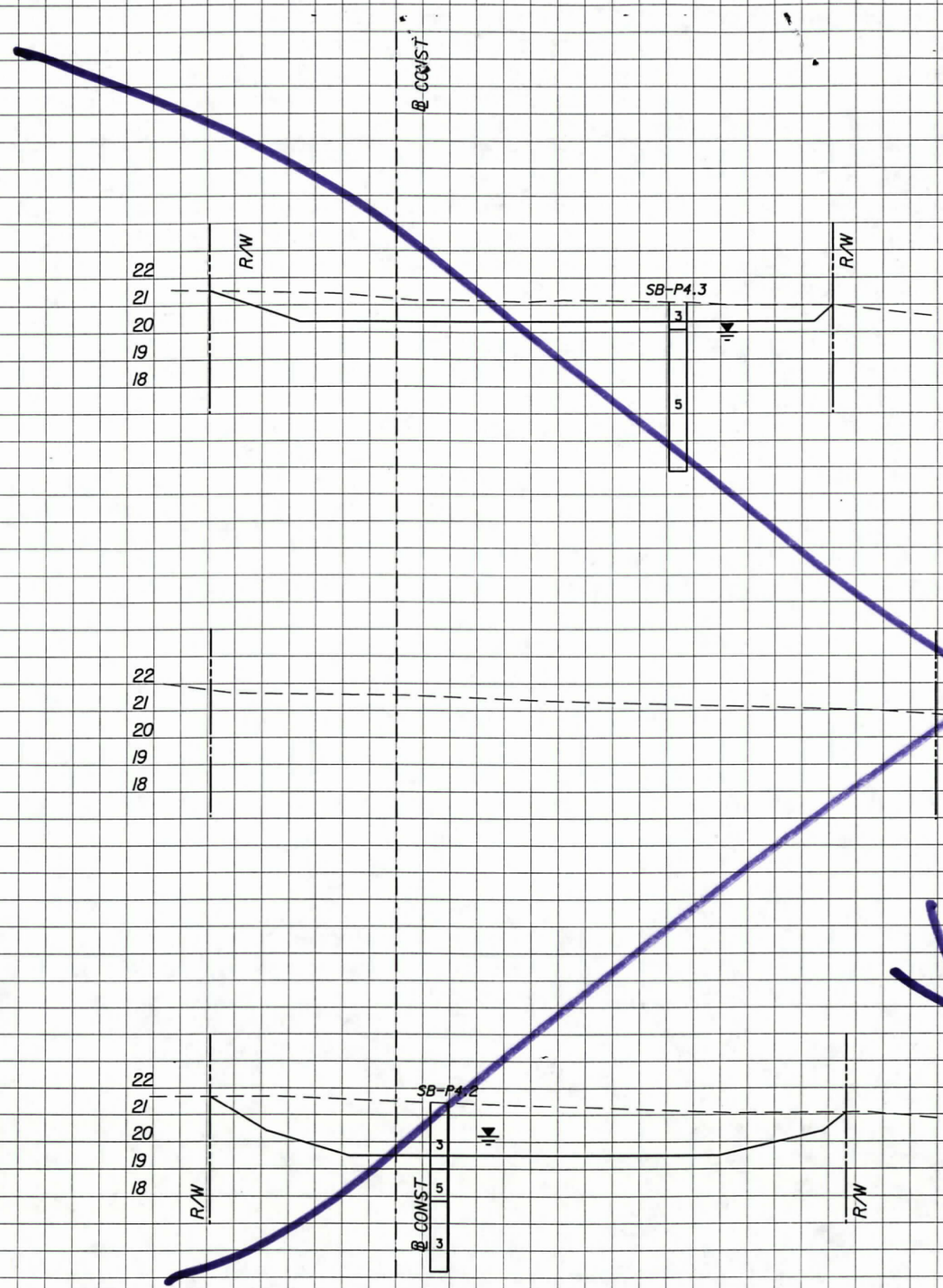
END MITIGATION POND
STA 32+98.000

STA 32+91.000

STA 32+76.000

STA 32+61.000

POND 4B



VOID

FILE OF
4319567-00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRC

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

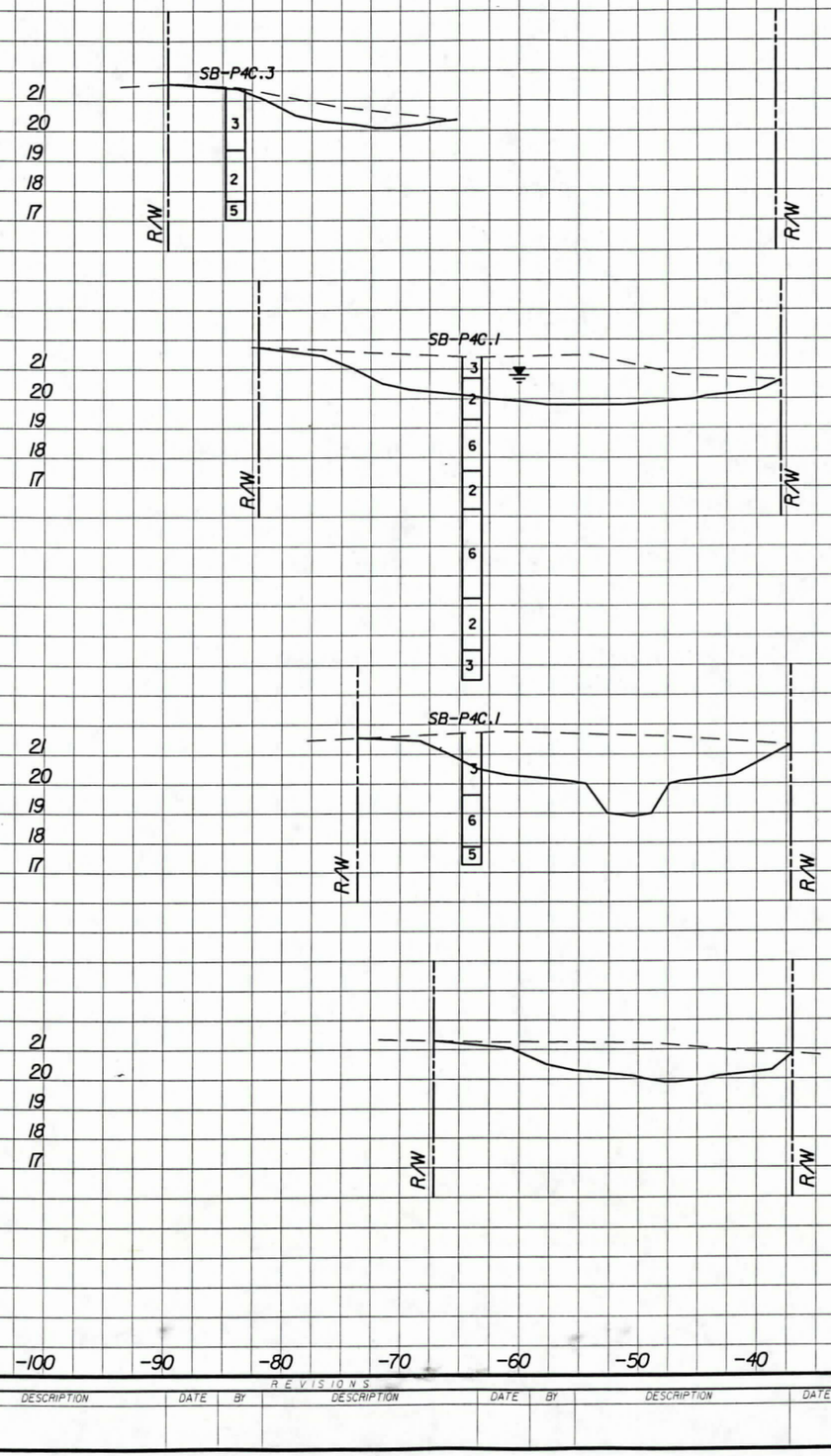
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp404.prf
PLOT DATE: Wed Aug 25 11:10:21 1999 DESIGN FILE: p:\Yfdt2027\rdxsp404.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	221



	A-2-4, A-3, A-2-6, A-7-6, A-6					
	SUB. EXC.		POND EXC.		FILL	
	A	V	A	V	A	V
STA 65+34.000	0.0		7.4		0.0	
		0		870		0
STA 64+99.000	0.0		42.3		0.0	
		0		1738		0
STA 64+59.000	0.0		44.6		0.0	
		0		1025		0
STA 64+28.000	0.0		21.5		0.0	
		0		452		0
BEGIN POND 4C STA 63+86.000	0.0		0.0		0.0	

℄ CONST

℄ CONST

FILE OF
4319567·00
RECORD

FEB 2000
SYNWARD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRD
Management District

POND 4C

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

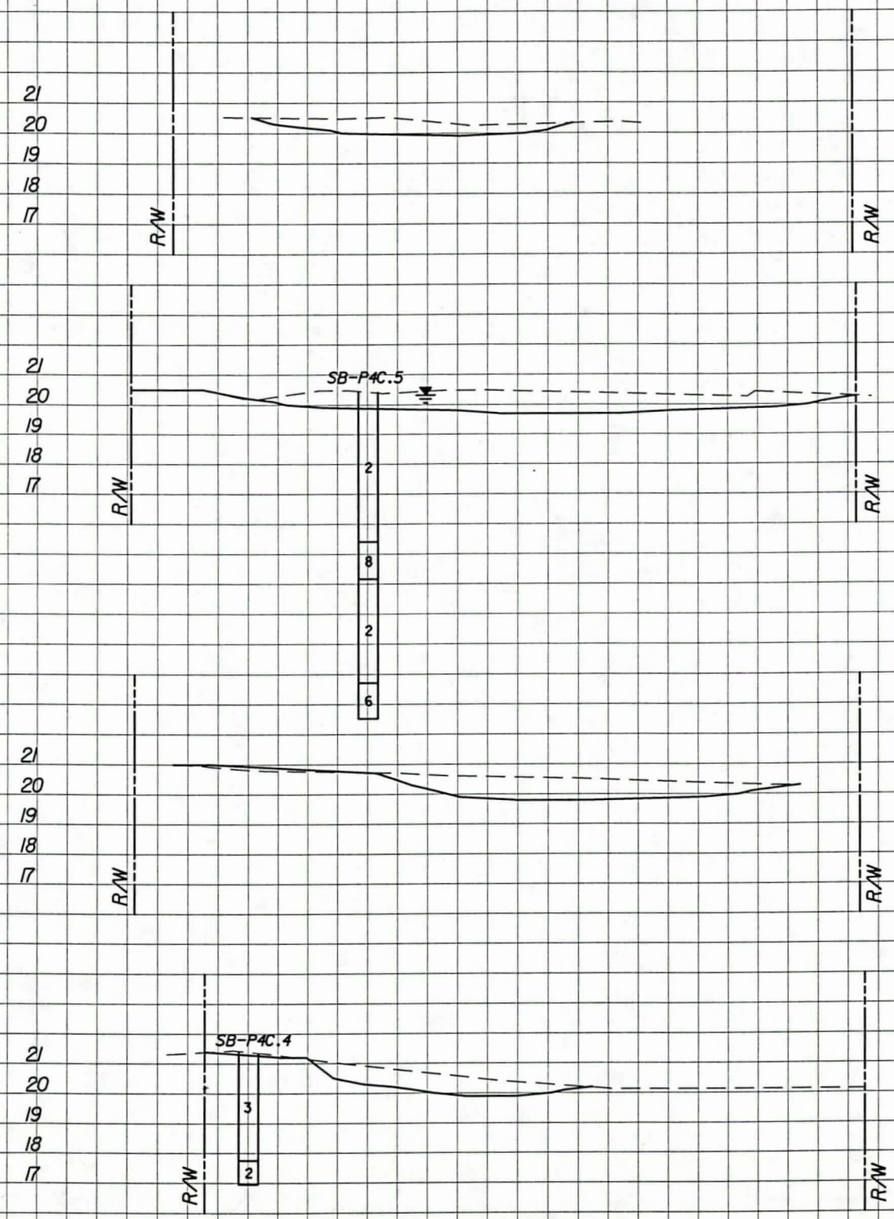
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 267

PLOT FILE: c:\CADNET\QUEUES\MSHP5000N\rd-sp4c1.prf
PLOT DATE: Wed Aug 25 11:10:26 1999 DESIGN FILE: p:\fdot2027\rd\sp4c1.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	222

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		51		0
0.0		9.2		0.0	
	0		411		1.2
0.0		26.5		0.1	
	0		559		15
0.0		18.2		1.1	
	0		508		19
0.0		11.7		0.0	
	0		181		0



℄ CONST

END MITIGATION AREA
STA 66+46.000

STA 66+35.000

STA 66+12.000

STA 65+87.000

STA 65+53.000

FILE OF
4319567.00
RECORD

FEB 2000
SHIFTMID
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRD

POND 4C

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

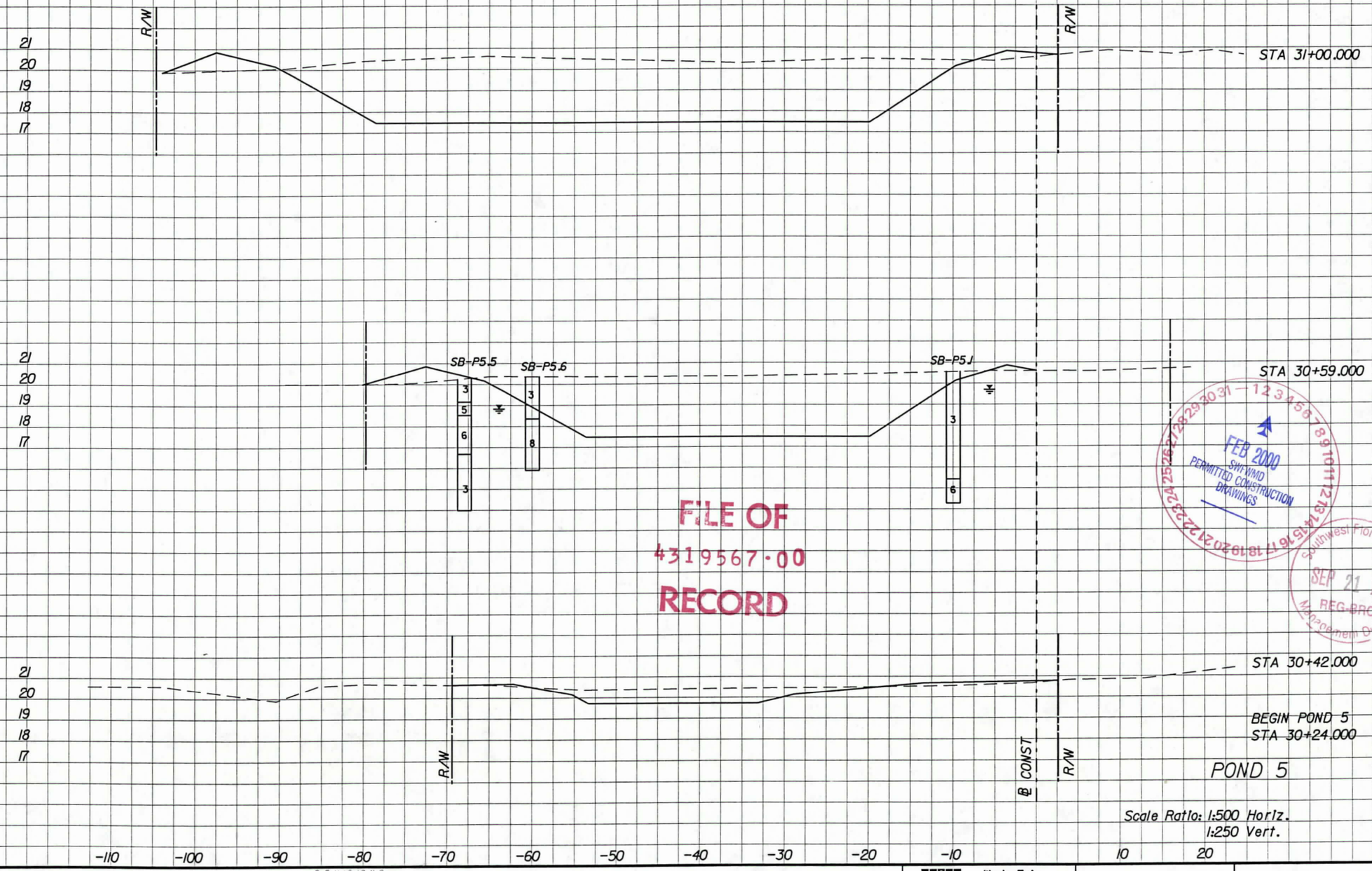
CROSS SECTION

2108

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rd-sp4c2.prf
PLOT DATE: Wed Aug 25 11:18:31 1999 DESIGN FILE: p:\fdot2027\rd-sp4c2.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	223

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		208.2		8.5	
	0		1162		289
0.0		336.3		5.6	
	0		3023		70
0.0		19.4		2.6	
	0		175		23
0.0		0.0		0.0	



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

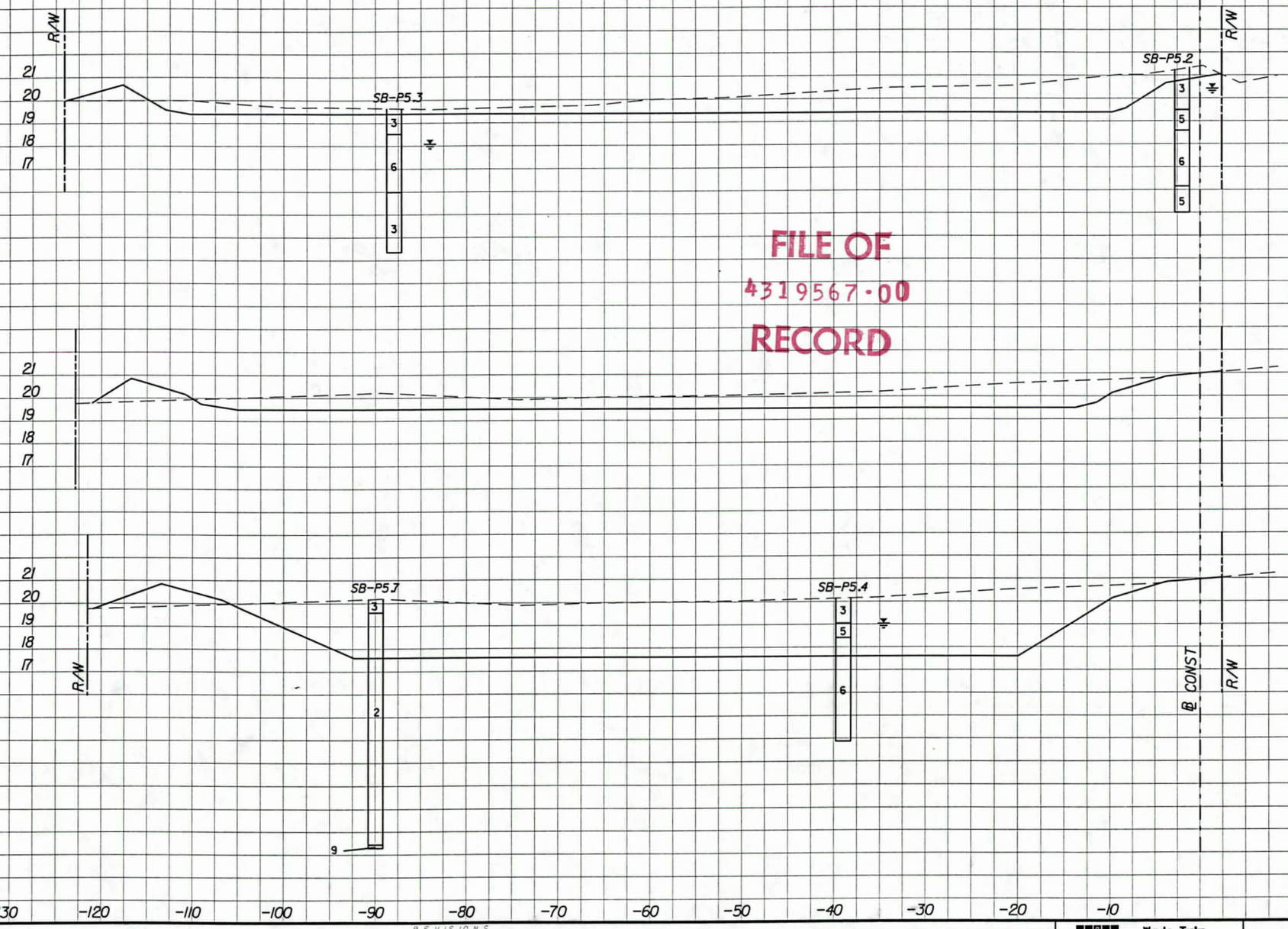
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 207

PLOT DATE: Wed Aug 25 11:10:36 1999 DESIGN FILE: p:\fd-2027\vd-sp501.dgn
PLOT RULE: C:\CADNET\QUEUES\MSHP5002N1\vd-sp501.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	224



END POND 5
STA 31+67.000

END LITTORAL ZONE
STA 31+66.000

BEGIN LITTORAL ZONE
STA 31+34.000

END STORMWATER POND
STA 31+28.000

	A-2-4, A-3, A-2-6, A-7-6, A-6					
	SUB. EXC.		POND EXC.		FILL	
	A	V	A	V	A	V
	0.0		0.0		0.0	
		0		39		2
	0.0		78.2		3.1	
		0		2326		146
	0.0		67.2		6.0	
		0		858		41
	0.0		218.8		7.8	
		0		5978		228

FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

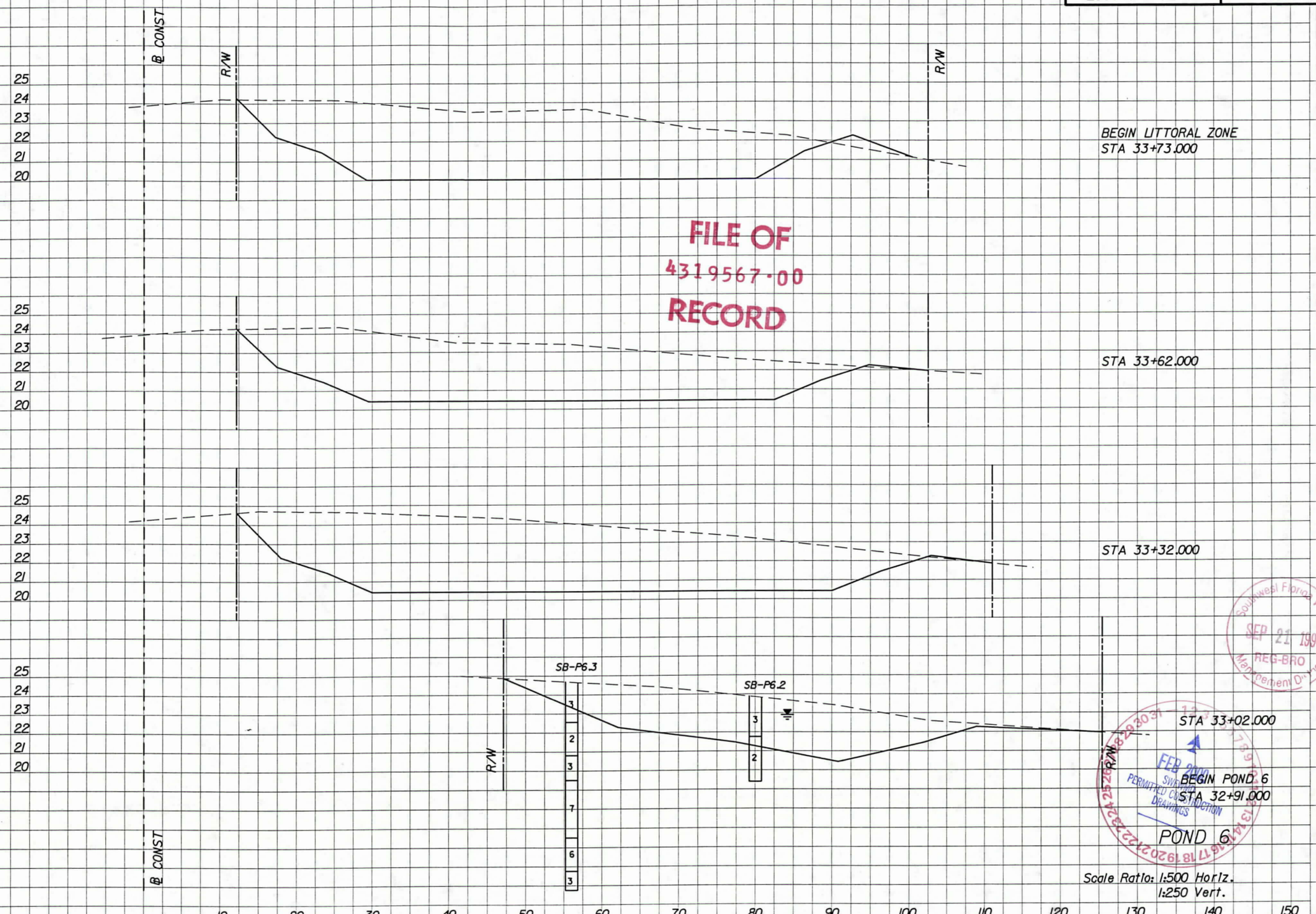
CROSS SECTION

270

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp502.prf
PLOT DATE: Wed Aug 25 11:10:36 1999 DESIGN FILE: p:\fdt2027\rdxsp502.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	225

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		218.3		3.3	
	0		2301		21
0.0		200.1		0.5	
	0		6948		14
0.0		262.9		0.4	
	0		5730		6
0.0		119.1		0.0	
	0		655		0
0.0		0.0		0.0	



FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

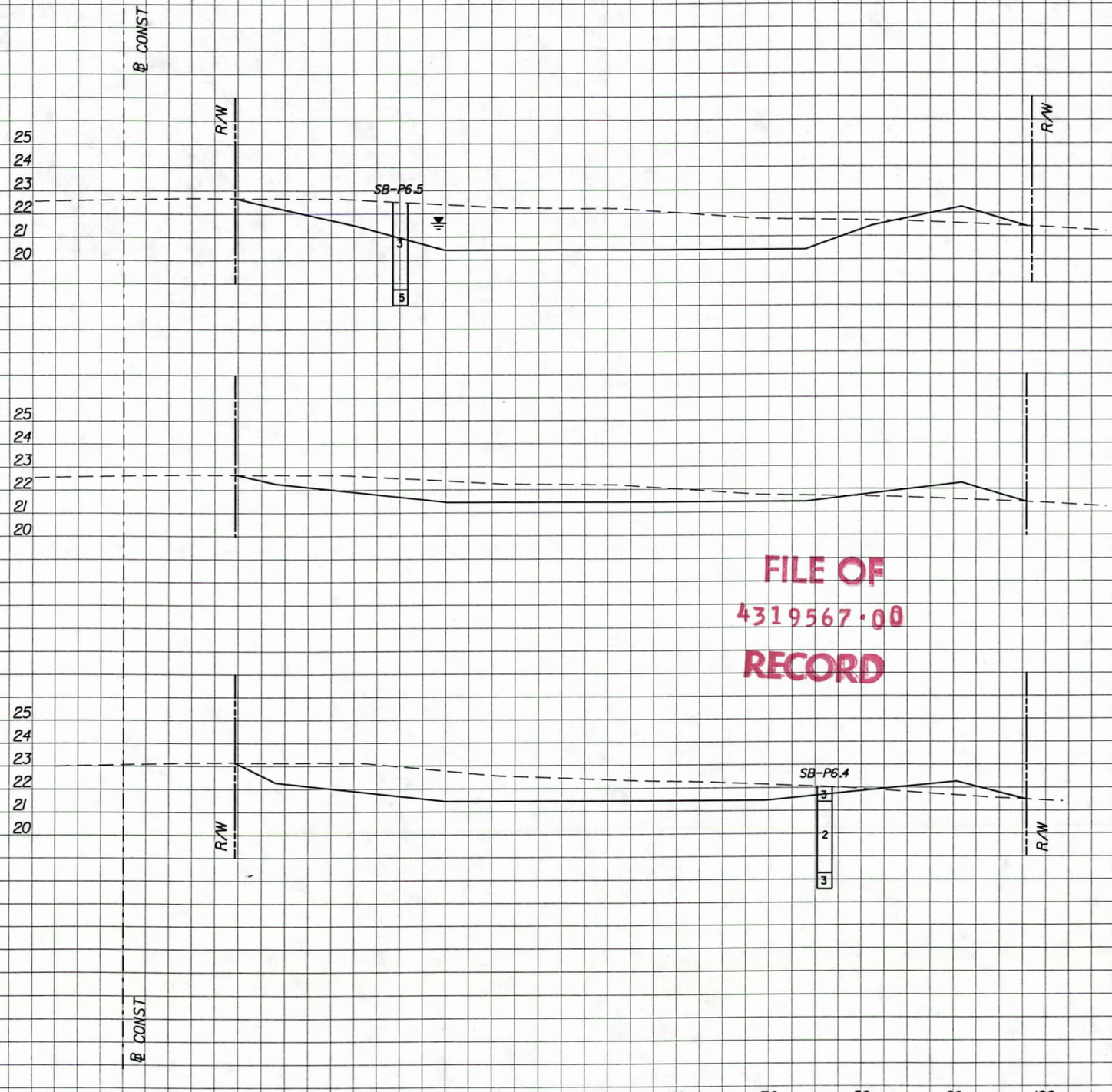
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

271

PLOT DATE: Wed Aug 25 11:10:43 1999 DESIGN FILE: p:\fdx2027\r-dx\sp601.dgn
PLOT FILE: G:\CADNET\QUEUES\MSHP5000N\r-dx\sp601.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	226



STA 34+28.000

BEGIN FLOODPLAIN POND
STA 34+24.000

END STORMWATER POND
STA 34+19.000

END LITTORAL ZONE
STA 34+12.000

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		92.4		5.1	
	0		262		24
0.0		38.6		6.7	
	0		248		29
0.0		60.5		5.0	
	0		6412		191

POND 6

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

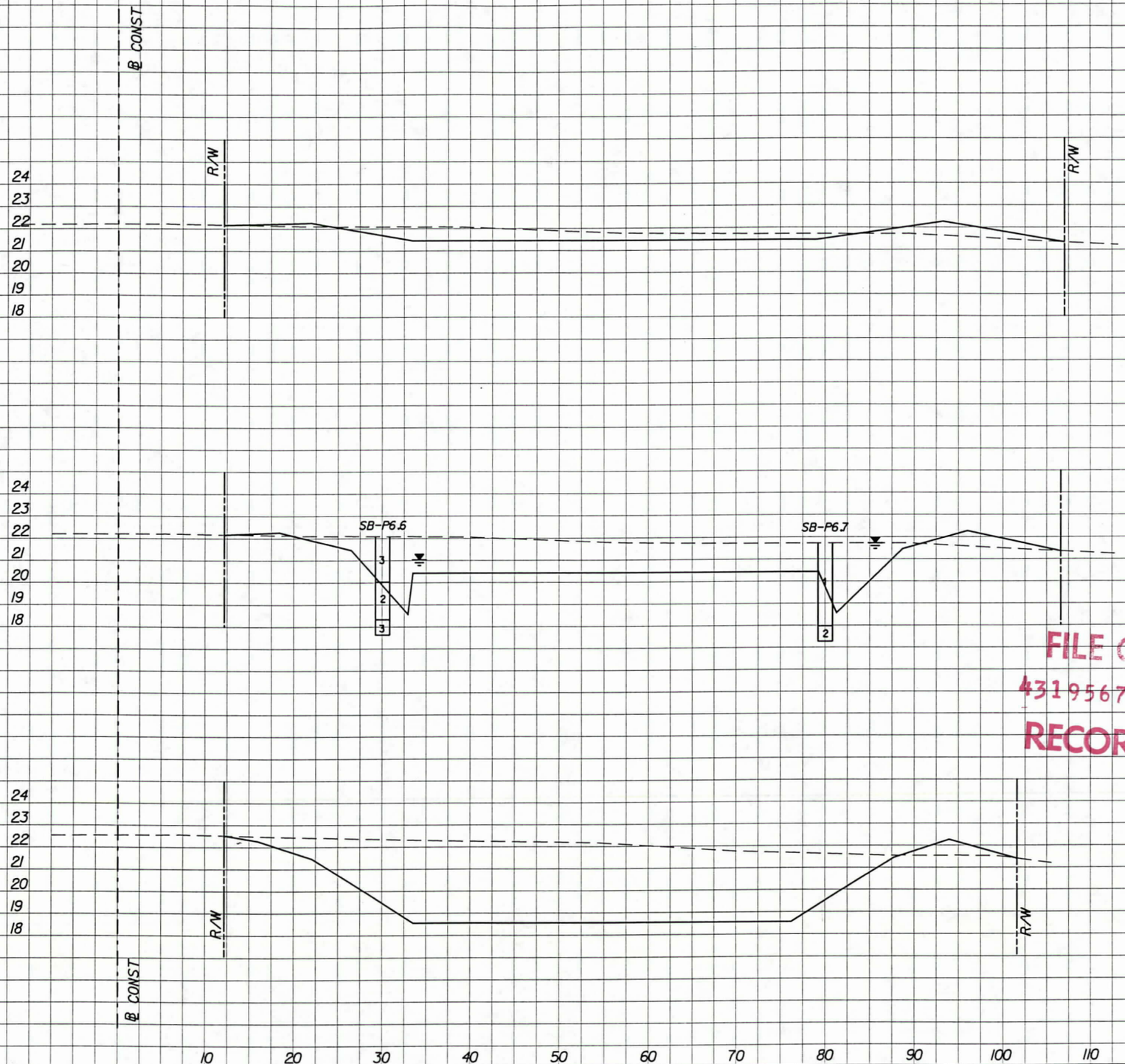
CROSS SECTION

272

PLOT DATE: Wed Aug 25 11:10:47 1999 DESIGN FILE: p:\fdt2027\r-d\sp602.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\r-d\sp602.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	227

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		21		8
0.0		21.4		8.2	
	0		241		28
0.0		99.1		6.0	
	0		6103		213
0.0		198.6		4.4	
	0		3638		178



END FLOODPLAIN POND
STA 35+00.000

STA 34+98.000

STA 34+94.000

STA 34+53.000

FILE C:
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-ERO
Management District

POND 6

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

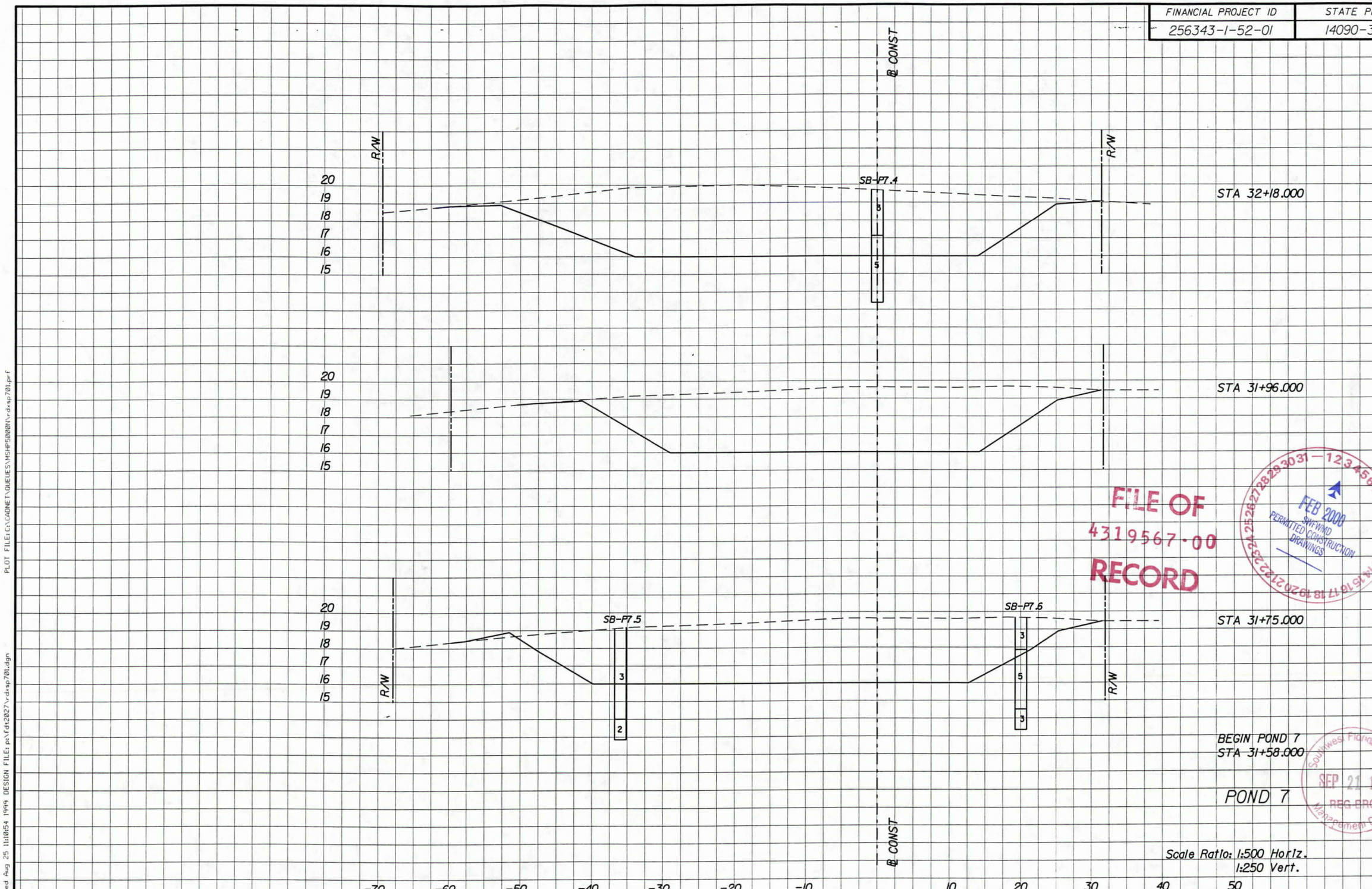
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 273

PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp603.prf
PLOT DATE: Wed Aug 25 11:18:49 1999 DESIGN FILE: p:\fdot2027\rdxsp603.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	229



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		242.2		0.0	
	0		4857		0
0.0		199.3		0.0	
	0		4488		9
0.0		228.1		0.9	
	0		1939		8
0.0		0.0		0.0	

FILE OF
4319567-00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water
SEP 21 1999
REG ERO
Management District

REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

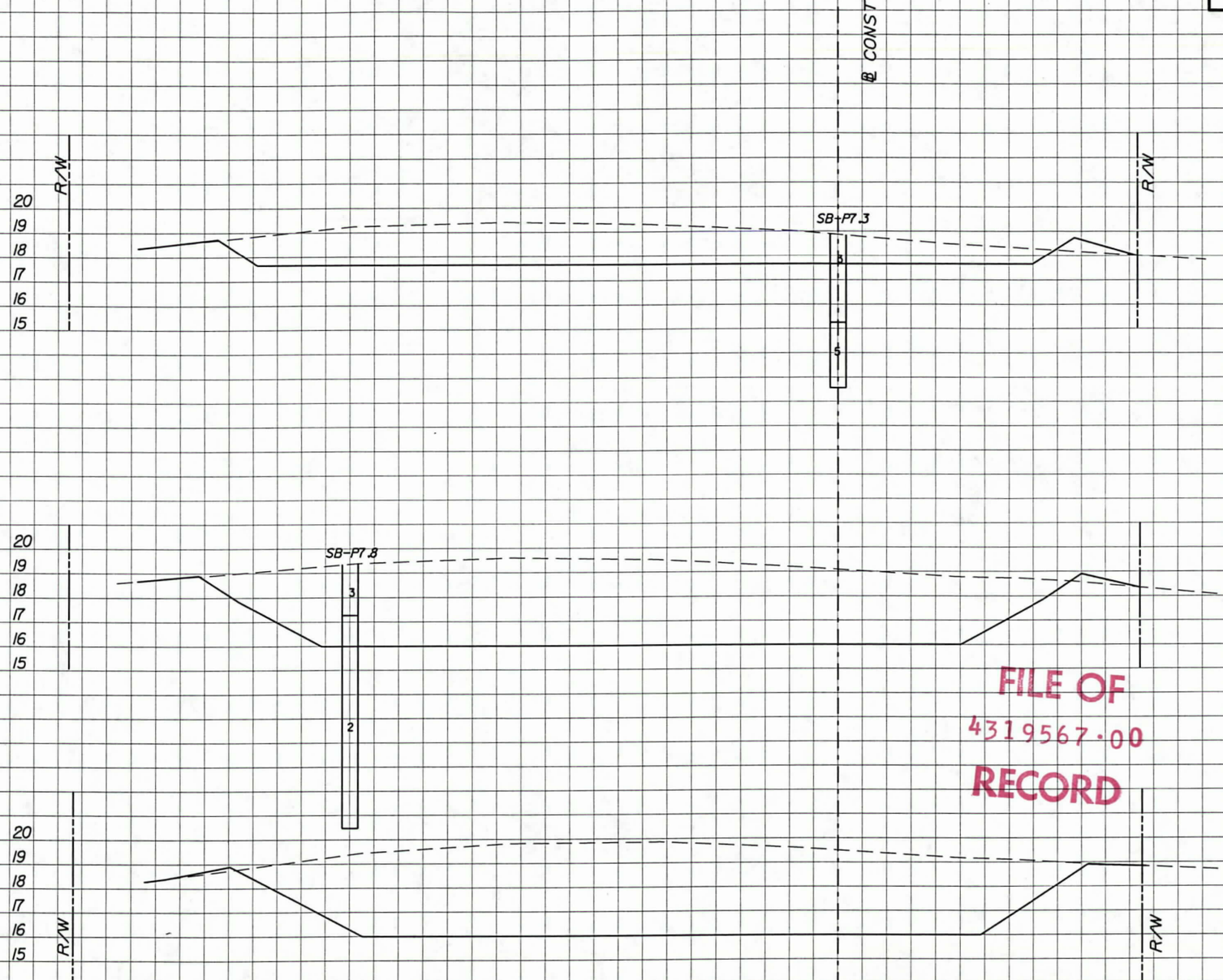
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 274

PLOT DATE: Wed Aug 25 11:10:54 1999 DESIGN FILE: p:\fdt2027\rdxsp701.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp701.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	29



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		113.4		2.4	
	0		1109		11
0.0		256.4		1.3	
	0		4997		18
0.0		269.6		0.6	
	0		5118		6

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

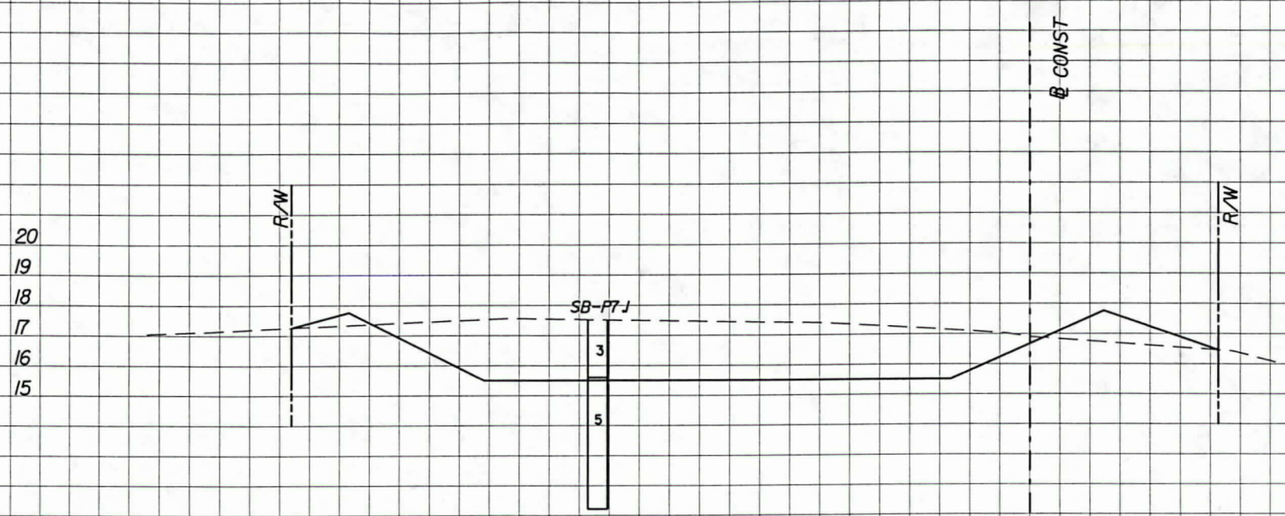
Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 275

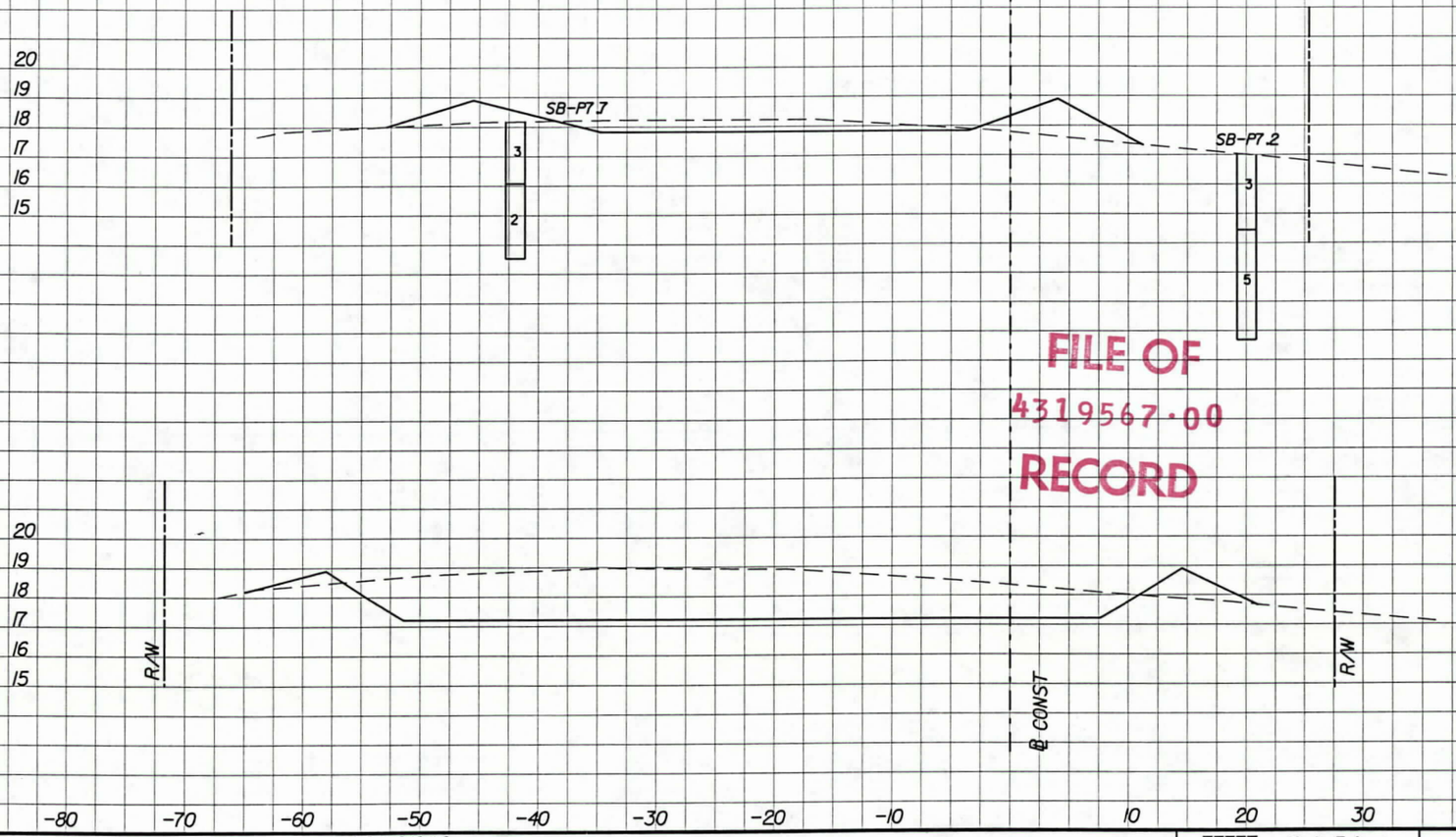
PLOT DATE: Wed Aug 25 11:10:58 1999 DESIGN FILE: p:\fdt2027\rdsp702.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP500MN>d+sp702.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	220



STA 33+40.000

END STORMWATER POND
BEGIN FLOODPLAIN
MITIGATION AREA
STA 33+22.000



END UTTORAL ZONE
STA 33+12.000

STA 32+92.000

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		96.5		19.5	
	0		1505		477
0.0		11.0		14.6	
	0		1051		214
0.0		94.1		6.8	
	0		3009		133

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

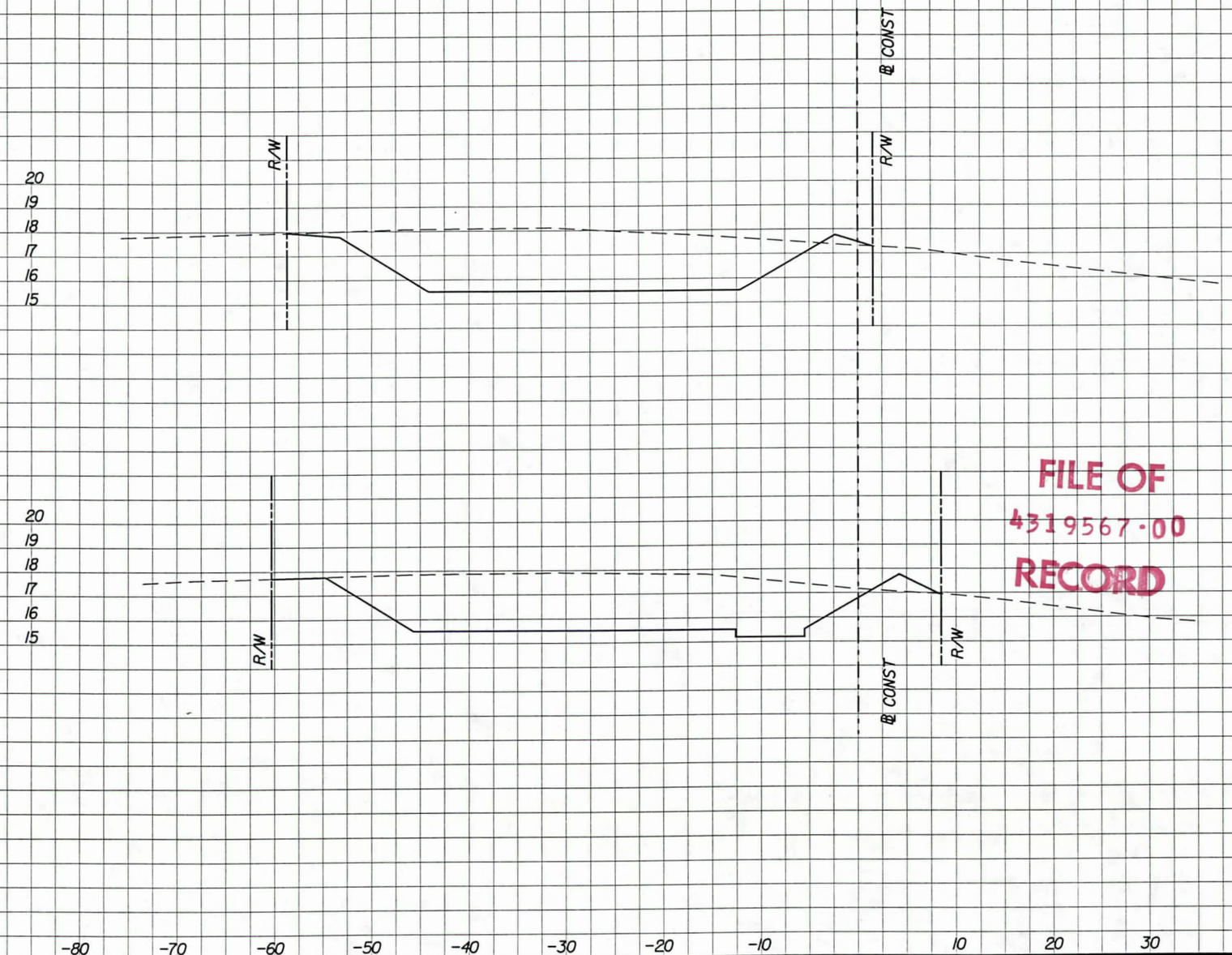
CROSS SECTION

276

A-1142

PLOT DATE: Wed Aug 25 11:11:03 1999 DESIGN FILE: p:\fdt2027\rdxsp703.dgn
PLOT FILE: c:\CADNET\QUEUES\MSHF1002RN\rdxsp703.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	231



	A-2-4, A-3, A-2-6, A-7-6, A-6					
	SUB. EXC.		POND EXC.		FILL	
	A	V	A	V	A	V
END FLOODPLAIN MITIGATION AREA STA 33+72.000	0.0		0.0		0.0	
		0		416		59
STA 33+63.000	0.0		92.5		13.1	
END SUMP STA 33+53.000		0		1281		196
STA 33+50.000	0.0		104.5		17.0	
BEGIN SUMP STA 33+46.000		0		1005		183

FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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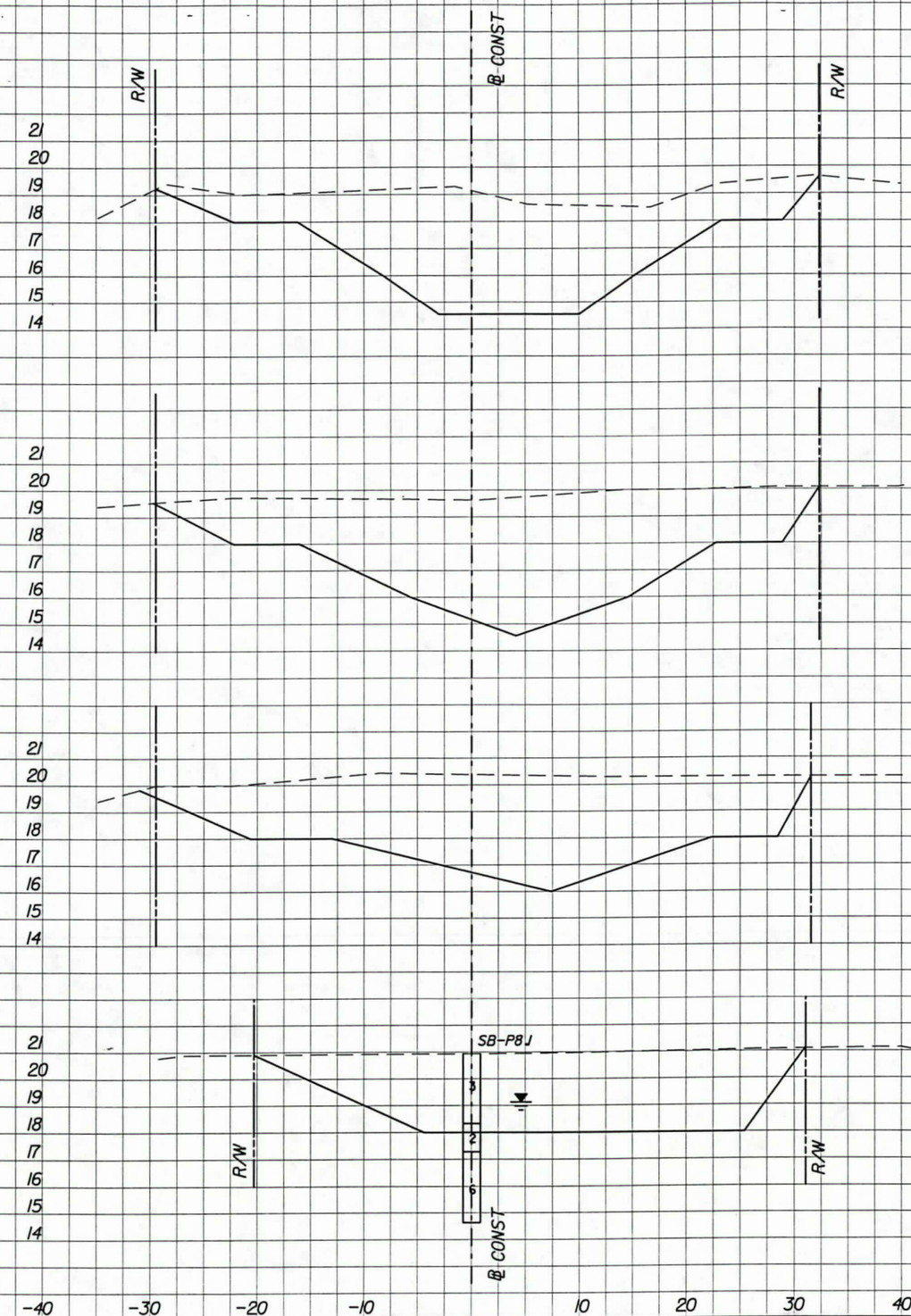
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

277

PLOT DATE: Wed Aug 25 11:11:07 1999 DESIGN FILE: p:\fdt2027\r-d\sp704.dgn
PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\r-d\sp704.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	232



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		147.4		0.0	
	0		972		0
0.0		176.7		0.0	
	0		1022		0
0.0		163.8		0.0	
	0		1566		0
0.0		121.0		0.0	
0.0	0	363		0.0	0

FILE OF
4319567.00
RECORD

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SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

POND 8

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

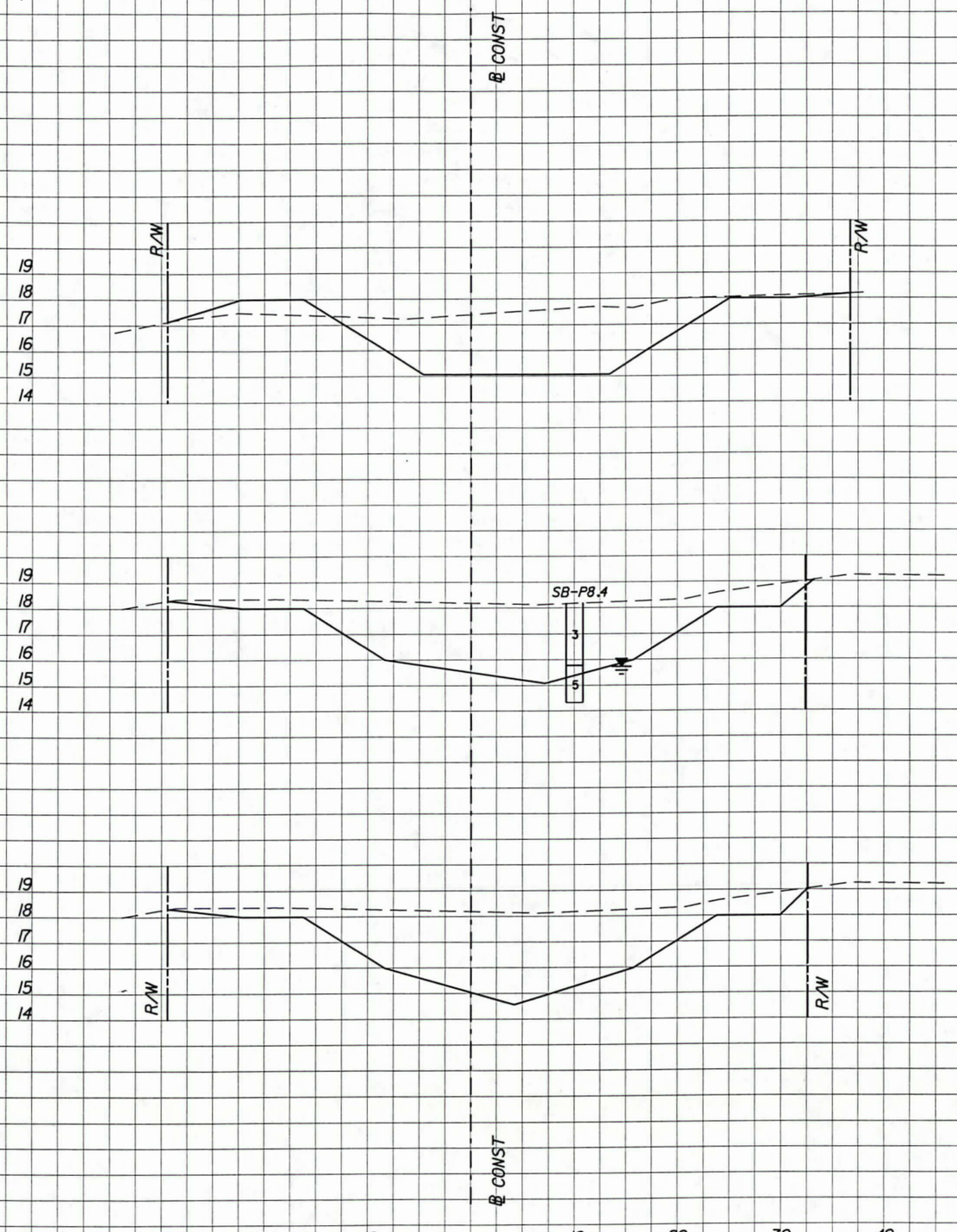
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION 278

PLOT DATE: Wed Aug 25 11:11:12 1999 DESIGN FILE: p:\fdot2027\rdxsp801.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp801.prf

A-1144

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	233



A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		69.9		5.9	
	0		1238		44
0.0		95.1		0.0	
	0		98		0
0.0		101		0.0	
	0		746		0

FILE OF
4319567-00
RECORD

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

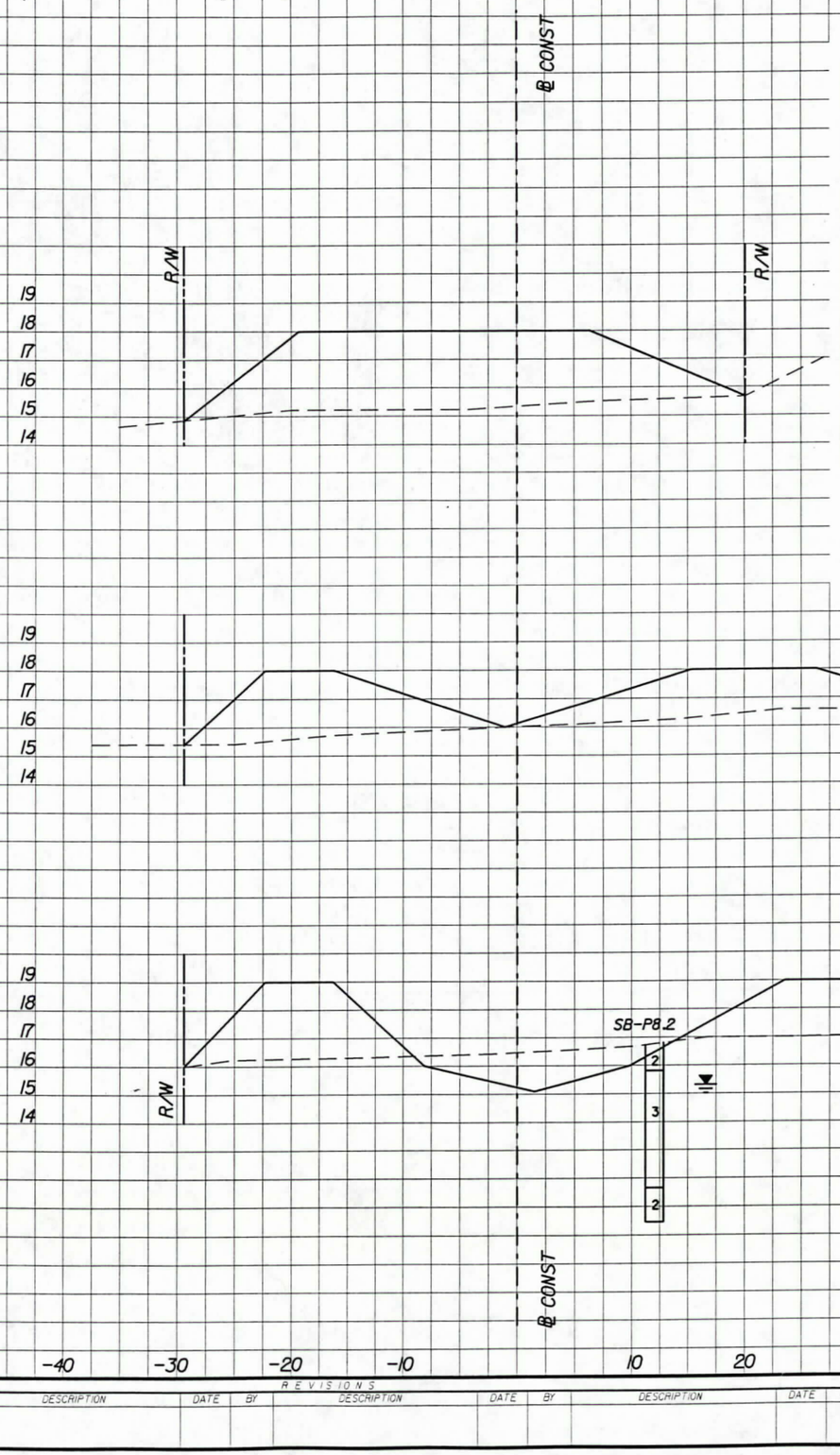
271

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

PLOT DATE: Wed Aug 25 11:11:16 1999 DESIGN FILE: p:\fdt2027\rd\sp802.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rd_sp802.prf

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3522	234



SUMMARY OF EARTHWORK

FORM 625-000-28
ROADWAY DESIGN 03-94

DESCRIPTION	P M3	F M3
CLASSIFIED ROADWAY EXCAVATION		
ROADWAY EXCAVATION, A-2-4, A-3 MATERIAL (SUITABLE)	100550	
ROADWAY EXCAVATION, A-8 MATERIAL (MUCK)	76	
EXCAVATION FROM LATERAL DITCHES	0	
DETENTION POND EXCAVATION	195072	
UNCLASSIFIED ROADWAY EXCAVATION		
LIVINGSTON ROAD EXCAVATION	253	
TOTAL ROADWAY EXCAVATION (RDWY & DT)	**295951**	
EMBANKMENT	184732	
SUBSOIL EXCAVATION, A-2-4, A-3 MATERIAL (SUITABLE)	20266	
SUBSOIL EXCAVATION, A-7, A-2-6, A-2-7 MATERIAL (PLASTIC)	159	
SUBSOIL EXCAVATION, A-8 MATERIAL (MUCK)	15425	
TOTAL SUBSOIL EXCAVATION	**35851**	

1. EARTHWORK HAS BEEN CALCULATED USING THE LIMEROCK BASE OPTION. IF ANOTHER OPTION IS CONSTRUCTED, THERE SHALL BE NO REVISION TO THE EARTHWORK QUANTITIES FOR WHICH PAYMENT IS MADE BY PLAN QUANTITY.
2. EMBANKMENT IS FILL IN PLACE WITH NO SHRINKAGE APPLIED.

END POND 8
STA 31+10.000

STA 31+04.000

STA 30+91.000

END LITTORAL ZONE
STA 30+85.000

A-2-4, A-3, A-2-6, A-7-6, A-6					
SUB. EXC.		POND EXC.		FILL	
A	V	A	V	A	V
0.0		0.0		0.0	
	0		0		302
0.0		0.0		100.5	
	0		0		1171
0.0		0.0		79.6	
	0		0		457
0.0		18.6		72.7	
	0		56		590
	0		664		

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SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567.00
RECORD

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

Scale Ratio: 1:500 Horiz.
1:250 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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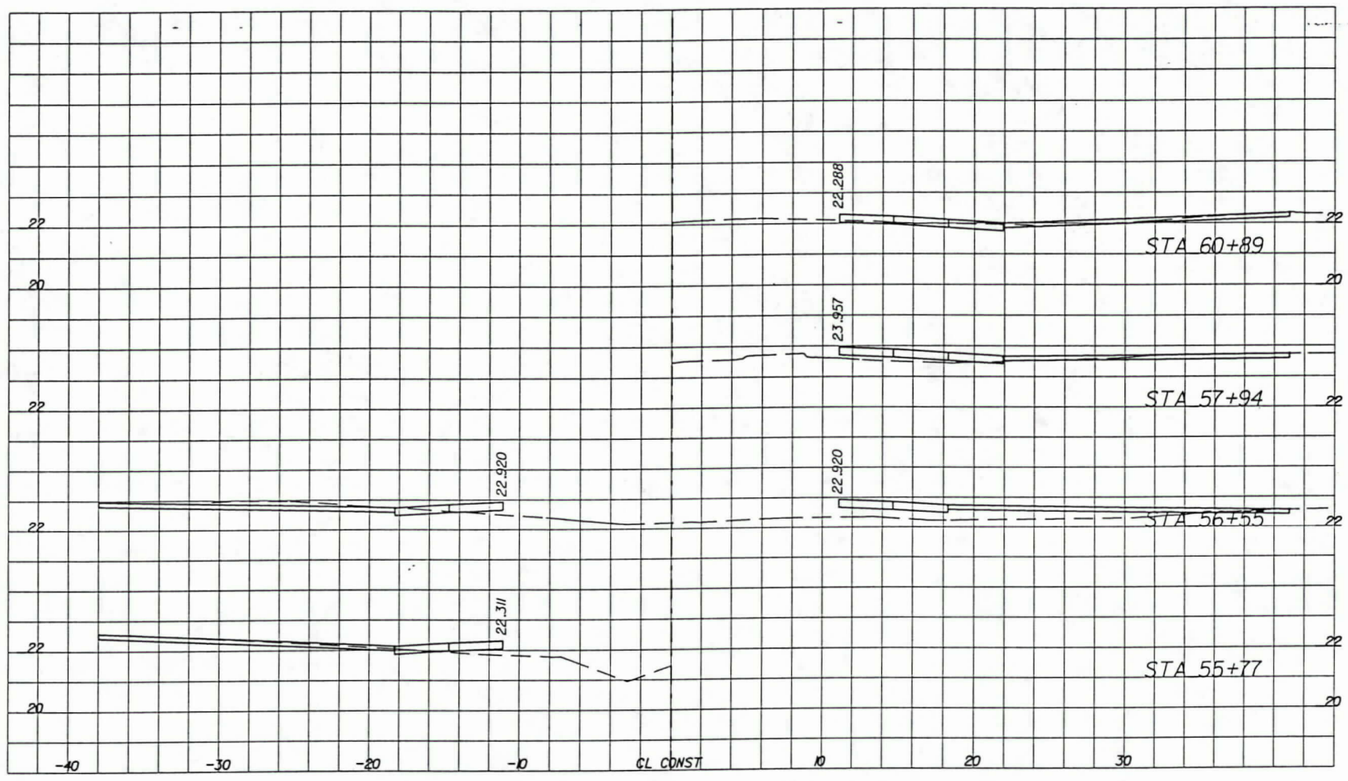
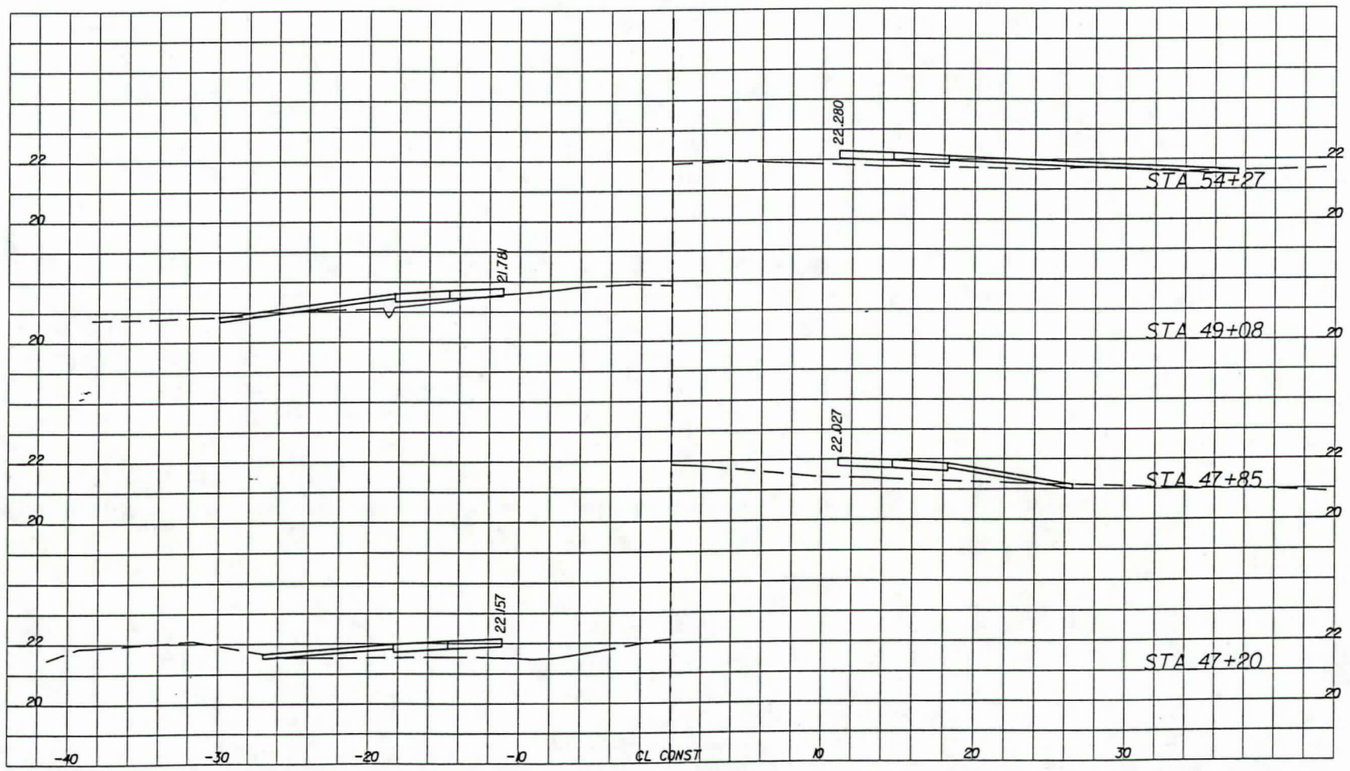
FLORIDA DEPARTMENT OF TRANSPORTATION

CROSS SECTION

280

PLOT DATE: Wed Aug 25 11:11:20 1999 DESIGN FILE: p:\fdt2027\rdxsp803.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP5000N\rdxsp803.prf





PLOT DATE: Fri May 21 11:03:57 1999 DESIGN FILE: p:\fdt2027\engineer\drurals101.dgn PLOT FILE: C:\CADNET\QUEUES\MSHP50008N\drurals101.prf

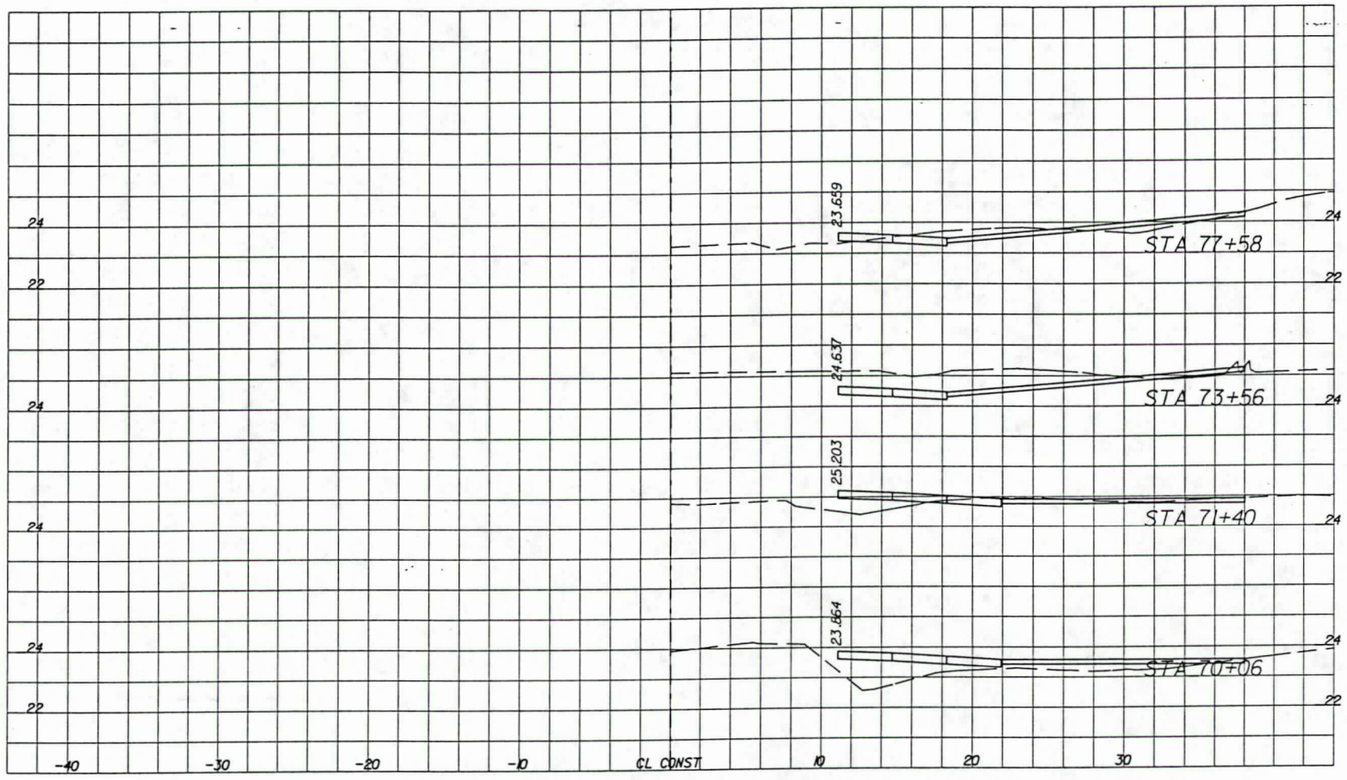
FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

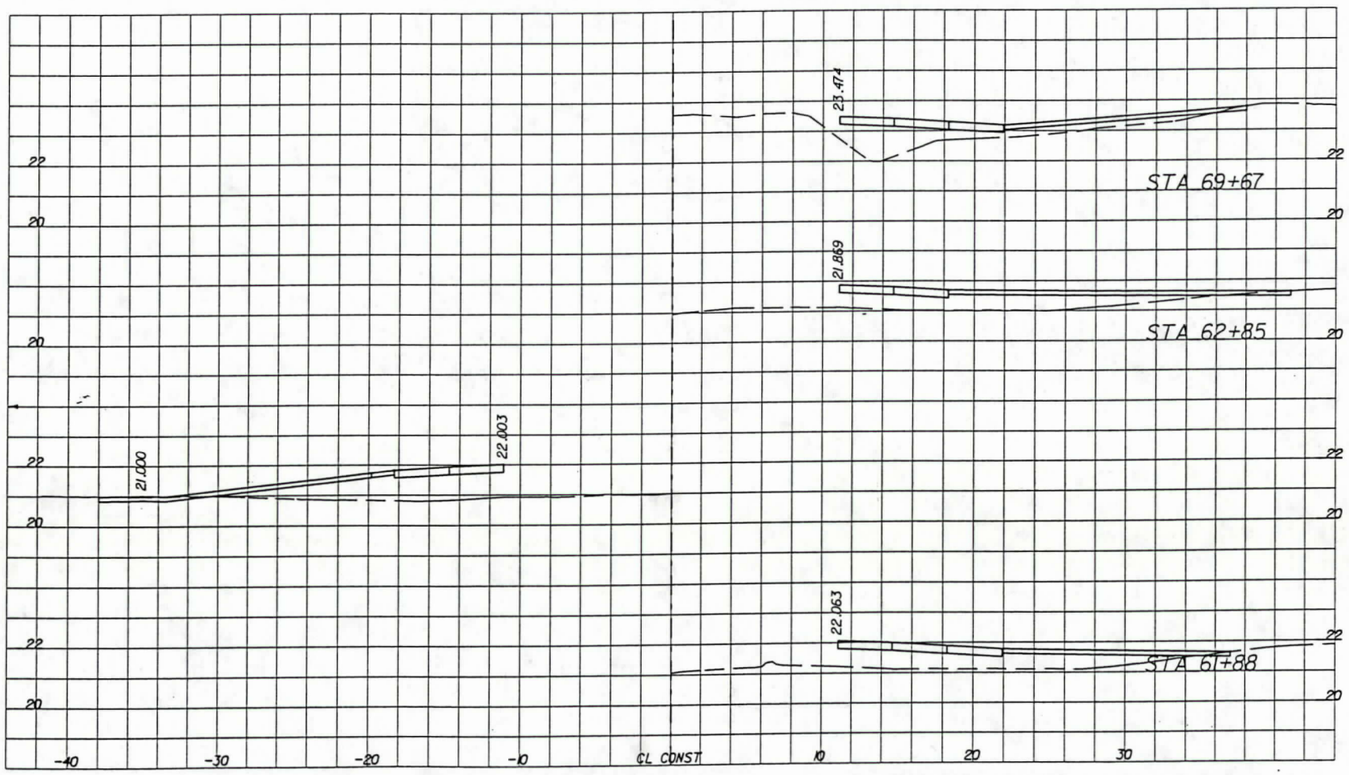
Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

FILE OF
4319567.00
RECORD

SCALE: HORIZ = 1:400
VERT = 1:200

Imaged As Is





PLOT DATE: Fri May 21 11:04:55 1999 DESIGN FILE: p:\fdt2027\engineer\drurou102.dgn PLOT FILE: C:\CADNET\QUEUES\HSHPS0000N\drurou102.prf

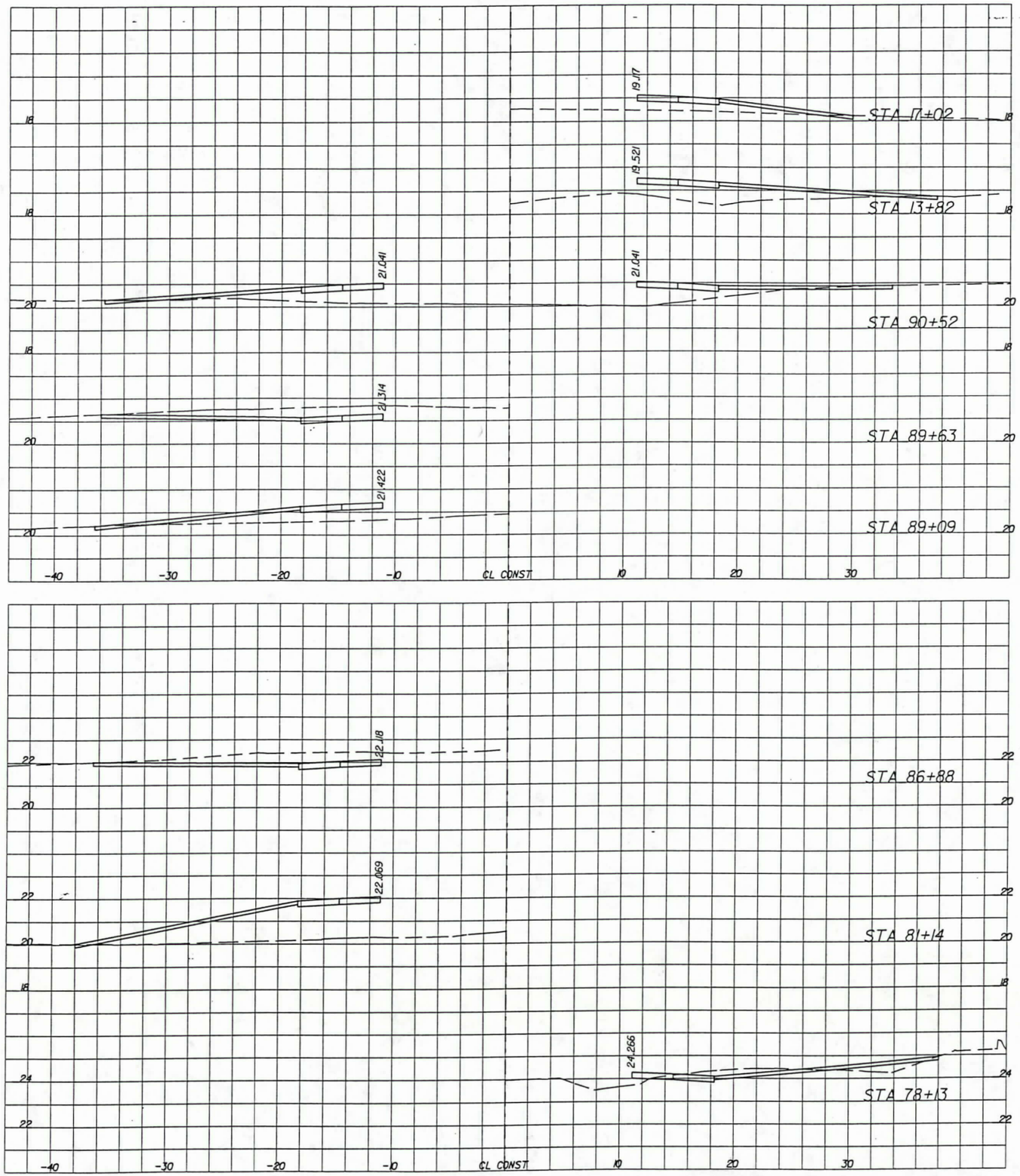
FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

FILE OF
4319567.00
RECORD

SCALE: HORIZ = 1:400
VERT = 1:200

Imaged As Is



PLOT DATE: Fri May 21 10:58:18 1999 DESIGN FILE: p:\7dt2027\engineer\durura103.dgn PLOT FILE: C:\CADNET\QUEUES\HSHP5000N\durura103.prf

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

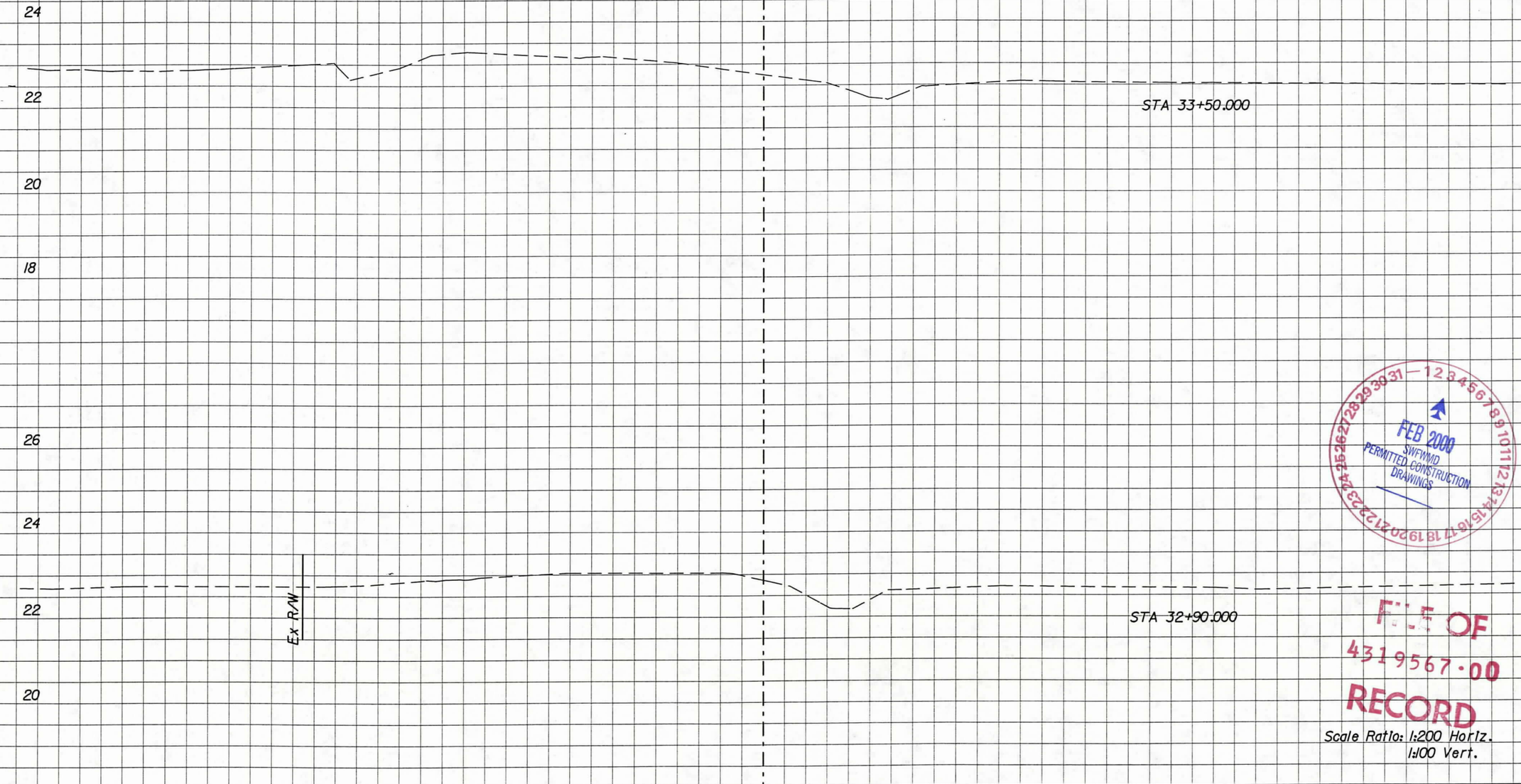
FILE OF
4319567.00
RECORD

SCALE: HORIZ = 1:400
VERT = 1:200

Imaged As Is

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	297

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

SEP 21 1999
REG-BRD
Southwest Florida Water Management District

FILE OF
4319567.00
RECORD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

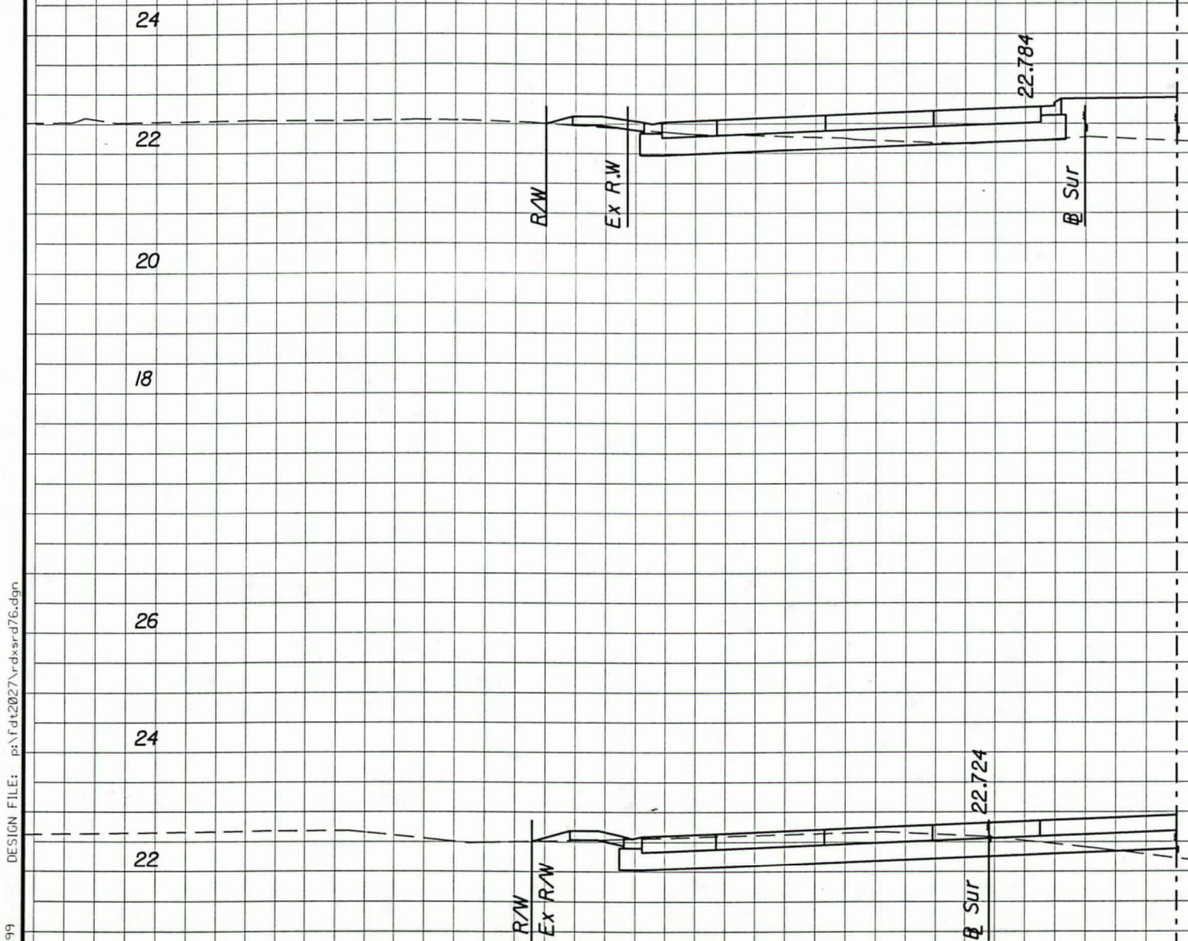
FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY 284 CROSS SECTION

PLOT DATE: Wed Aug 25 11:18:00 1999 DESIGN FILE: p:\fdt2027\rdxsrd76.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	298

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District
SEP 21 1999
REG-BRO

FILE OF
4319567.00
RECORD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

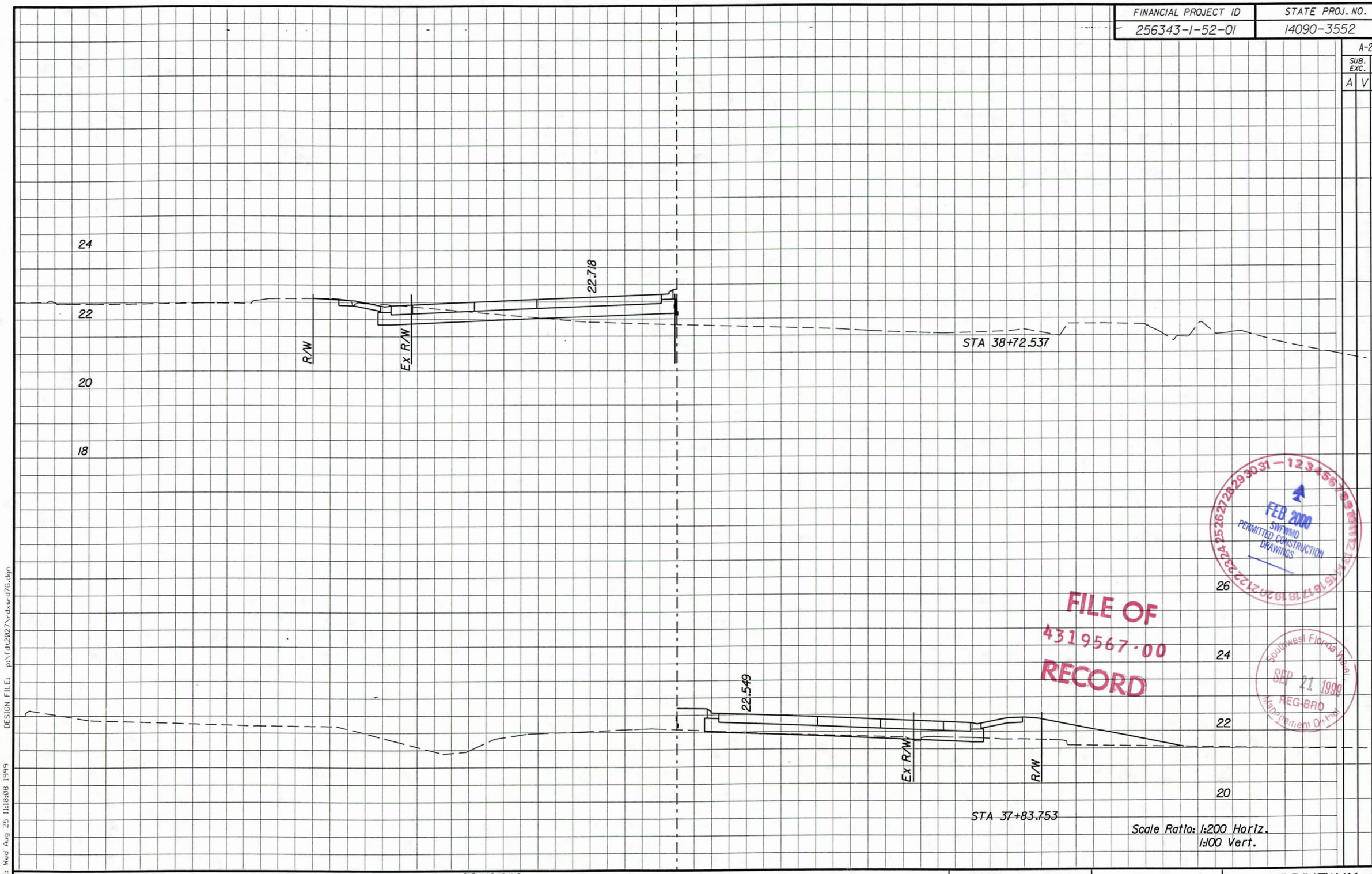
FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY CROSS SECTION 285

PLOT DATE: Wed Aug 25 11:18:04 1999 DESIGN FILE: p:\fdt2027\rdsrd76.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	299

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



FEB 2000
SWFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567.00
RECORD

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Wade-Trim
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Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

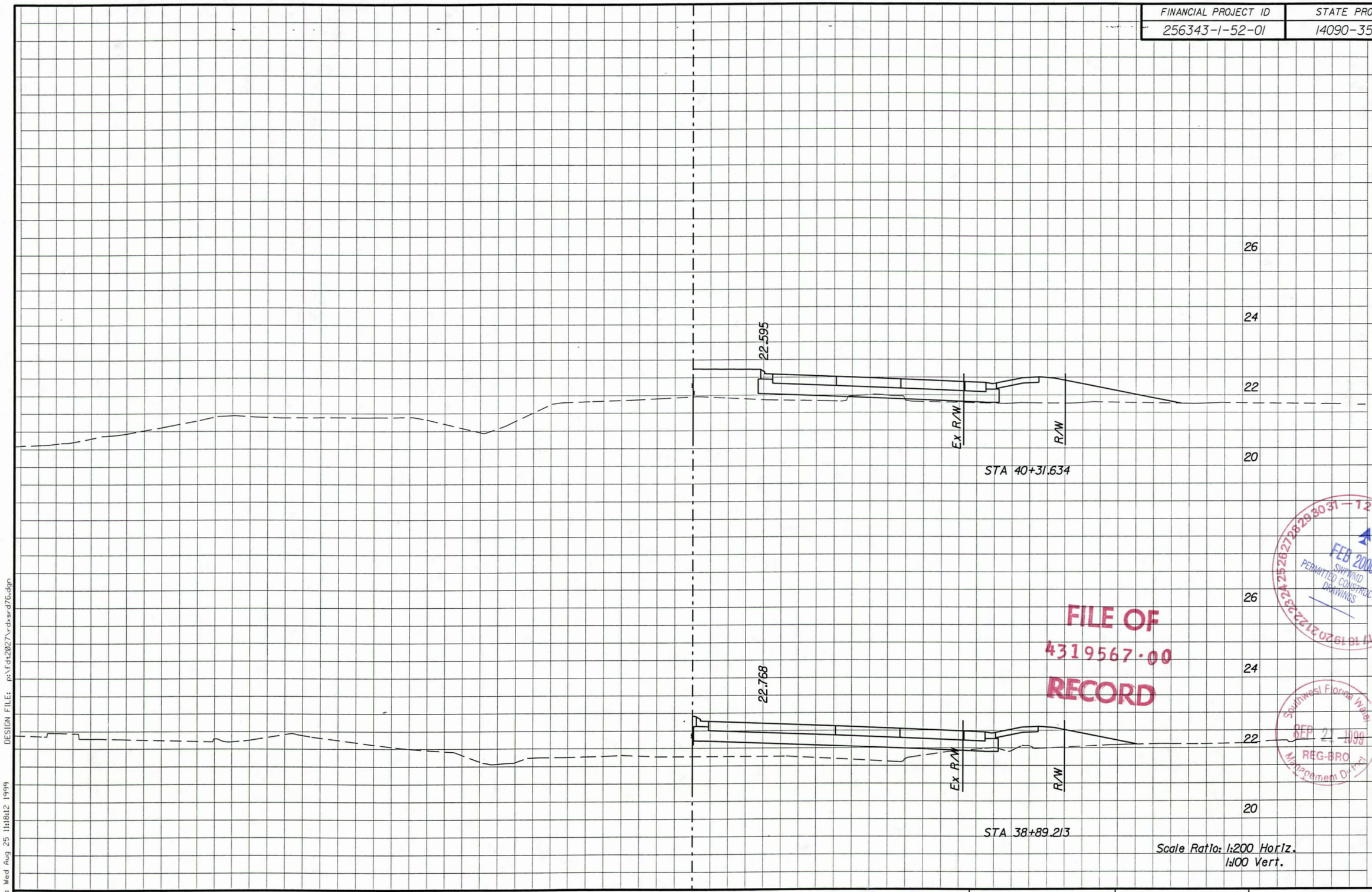
FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY 2&6 CROSS SECTION

PLOT DATE: Wed Aug 25 11:18:08 1999
DESIGN FILE: p:\fdt2027\rdsxsd76.dgn

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	207

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



FILE OF
4319567.00
RECORD

FEB 2000
SWFWMD
PERMITTED CONSTRUCTION
DRAWINGS

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

DESIGN FILE: p:\fdt2027\rdxsrd76.dgn
PLOT DATE: Wed Aug 25 11:18:12 1999

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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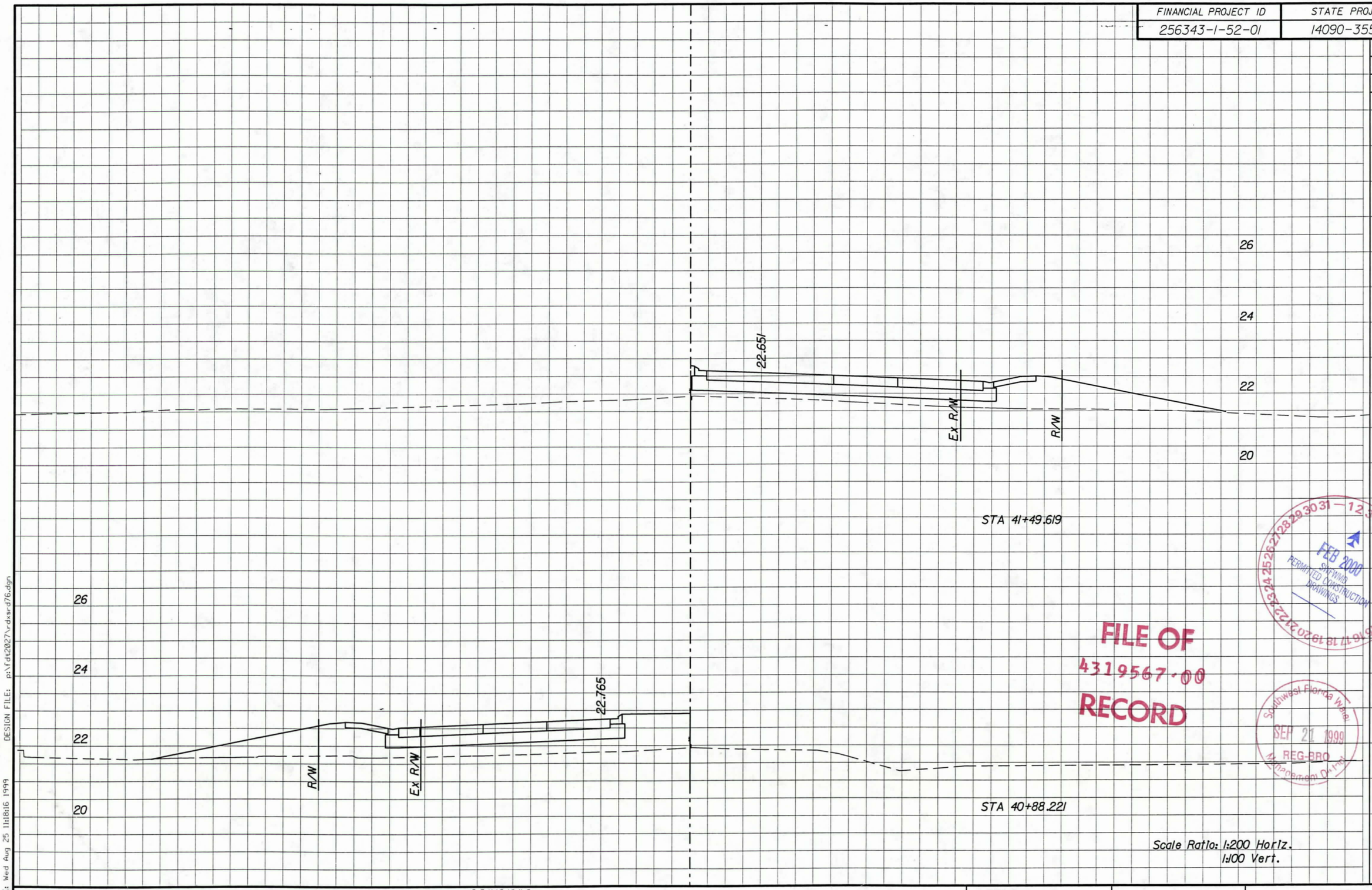
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY 207 CROSS SECTION

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	301

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



FEB 2000
SUFWMD
PERMITTED CONSTRUCTION DRAWINGS

FILE OF
4319567-00
RECORD

Southwest Florida Water
SEP 21 1999
REG-BRO
Management District

Scale Ratio: 1:200 Horiz.
1:100 Vert.

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

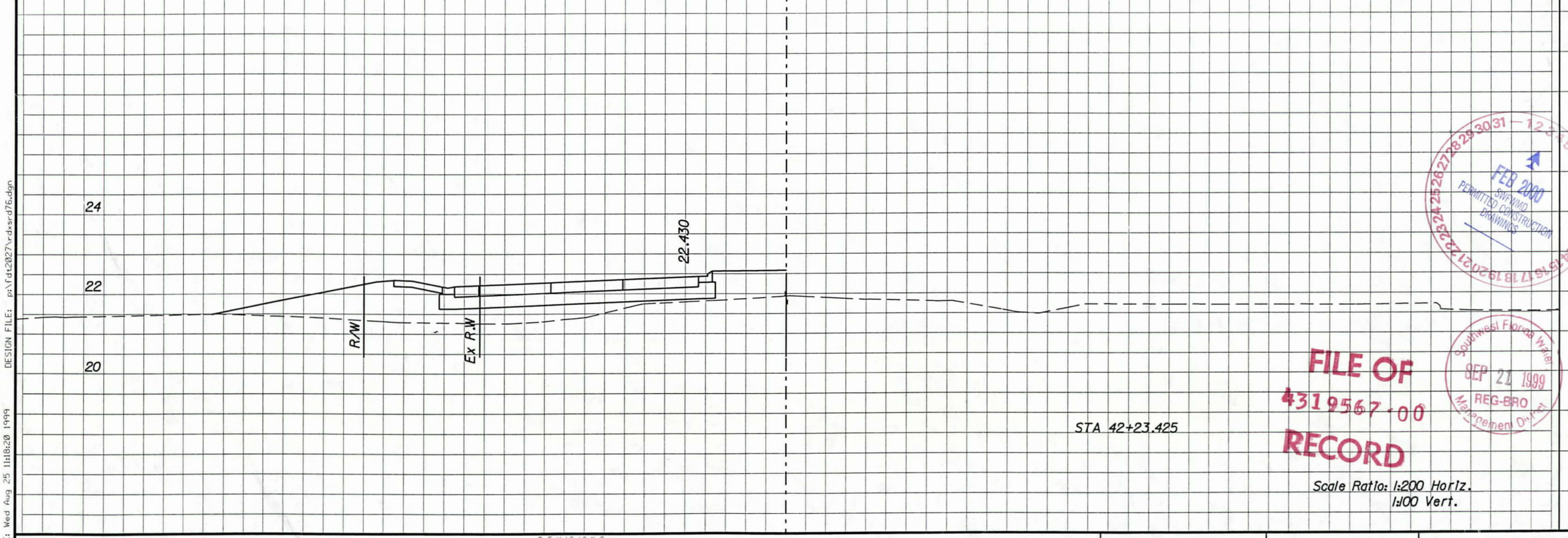
FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY 288 CROSS SECTION

DESIGN FILE: p:\fdt2027\rdxsrd76.dgn
PLOT DATE: Wed Aug 25 11:18:16 1999

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.
256343-1-52-01	14090-3552	302

A-2, A-3 MATL.					
SUB. EXC.		RDWY. EXC.		FILL	
A	V	A	V	A	V



STA 42+23.425

FILE OF
4319567-00
RECORD

Scale Ratio: 1:200 Horiz.
1:100 Vert.

FEB 2000
SHIPWIND
PERMITTED CONSTRUCTION
DRAWINGS

SEP 21 1999
REG-BRO

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Wade-Trim
4919 Memorial Highway
Suite 200
Tampa, Florida 33634
(813)882-8366 FAX:(813)884-5990

FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY 289 CROSS SECTION

DESIGN FILE: p:\fdt2027\rdxsrd76.dgn
PLOT DATE: Wed Aug 25 11:18:20 1999

STATE PROJ NO.	SHEET NO.
14090-3522	303

1. SITE DESCRIPTION

1.A. CONSTRUCTION ACTIVITY:

THIS SECTION OF SR 54 IS LOCATED IN PASCO COUNTY. THE PROJECT BEGINS EAST OF SR 45 AND ENDS EAST OF CYPRESS CREEK. THE TOTAL PROJECT LENGTH IS 6.441 KM OR 4.00 MILES. THE PROJECT INCLUDES MILLING AND RESURFACING FROM STATION 32+60 TO STATION 34+57.521 AND ROADWAY RECONSTRUCTION FOR THE REMAINDER OF THE PROJECT.

1.B. MAJOR SOIL DISTURBING ACTIVITIES:

MAJOR SOIL DISTURBING ACTIVITIES INCLUDE CLEARING AND GRUBBING FOR ROADWAY RECONSTRUCTION. POND CONSTRUCTION AND DRAINAGE IMPROVEMENTS. THE ROADWAY AND DRAINAGE IMPROVEMENTS WILL BE CONSTRUCTED IN PHASES TO LIMIT THE EXPOSED SOIL ON THE PROJECT.

1.C. AREA ESTIMATES:

THE TOTAL AREA TO BE DISTURBED IS 54.14 HECTARES (133.8 ACRES). THE TOTAL AREA OF DISTURBED SOIL WAS DERIVED FROM THE TYPICAL SECTIONS AND THE POND DETAILS IN THE CONSTRUCTION PLANS. THE PROJECT WILL BE CONSTRUCTED IN INCREMENTS SUCH AS EXCAVATION. DRAINAGE IMPROVEMENTS AND ROADWAY CONSTRUCTION TO MINIMIZE DISTURBED SOIL.

IF THE DISTURBED SOIL IS GREATER THAN 4 HECTARES (10 ACRES). A TEMPORARY OR PERMANENT SEDIMENT BASIN PROVIDING 250 CUBIC METERS (3600 CF) OF STORAGE PER HECTARE DRAINED. OR EQUIVALENT CONTROL MEASURES. SHALL BE PROVIDED UNTIL THE FINAL STABILIZATION OF THE SITE. IT SHALL BE THE INTENT OF THE CONTRACTOR TO HAVE LESS THAN 4 HECTARES (10 ACRES) OF DISTURBED SOIL IN THE PROJECT AREA AT ANY TIME WHICH DOES NOT DRAIN TO A STORMWATER TREATMENT FACILITY.

1.D. RUNOFF DATA:

CURRENT RUNOFF COEFFICIENT: 0.40
POST CONSTRUCTION RUNOFF COEFFICIENT: 0.55
RUNOFF COEFFICIENTS WILL VARY BETWEEN 0.40 AND 0.55 DURING CONSTRUCTION.

1.E. SITE MAP:

THE CONSTRUCTION PLANS ARE BEING USED AS THE SITE MAPS.

APPROXIMATE SLOPES - THE SLOPES OF THE SITE ARE SHOWN IN THE CROSS SECTIONS AND THE PLAN / PROFILE SHEETS OF THE CONSTRUCTION PLANS.

AREAS OF SOIL DISTURBANCE - THE AREAS TO BE DISTURBED ARE INDICATED ON THE PLAN AND PROFILE AND THE CROSS SECTIONS.

1.F. NAME OF RECEIVING WATERS:

WATER IS COLLECTED BY THE ADJACENT ROADSIDE DITCHES AND ONSITE STORMSEWER SYSTEMS AND DIRECTED TO ONE OF THE EIGHT STORMWATER MANAGEMENT FACILITIES. THE OUTFALL FROM THE STORMWATER MANAGEMENT FACILITIES IS EVENTUALLY DIRECTED TO CYPRESS CREEK. A TRIBUTARY OF THE HILLSBOROUGH RIVER. THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT UNAUTHORIZED MATERIALS FROM ENTERING THE WATERWAY.

1.G. WETLAND IMPACTS:

WETLAND IMPACTS ON THIS PROJECT ARE LIMITED TO THE AREAS DESCRIBED IN THE SWFWMD ENVIRONMENTAL RESOURCES PERMIT (PENDING) FOR THE PROJECT.

2. CONTROLS NARRATIVE-SEQUENCE OF ACTIVITIES AND IMPLEMENTATION OF EROSION CONTROL MEASURES:

ALL ITEMS REPRESENTED IN THE FOLLOWING DISCUSSION ARE TREATED IN DETAIL IN THE CONSTRUCTION PLAN SET. SUPPLEMENTED BY THE "FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" (1996) AND THE "FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS" (1996). ALL CONSTRUCTION REQUIREMENTS WILL BE IMPLEMENTED BY THE ENGINEER IN A MANNER APPROPRIATE TO ENVIRONMENTALLY SENSITIVE CONSTRUCTION PRACTICES.

THE CONTRACTOR WILL BE REQUIRED TO PREPARE A SITE SPECIFIC EROSION CONTROL PLAN ALONG WITH A SPECIFIC CONSTRUCTION SCHEDULE FOR IMPLEMENTATION. THE CONTRACTOR WILL BE REQUIRED TO MODIFY THE PLAN OF MATERIALS TO ADAPT TO SEASONAL VARIATIONS. THE ENGINEER IS RESPONSIBLE FOR DETERMINING IF ADDITIONAL CONTROLS ARE REQUIRED AND TO ASSIST AND OBTAIN DEPLOYMENT SCHEDULES FOR THE IMPLEMENTATION OF ALL ADDITIONAL EROSION CONTROL DEVICES FROM THE CONTRACTOR. APPLICABLE EROSION CONTROL DEVICES AND IMPLEMENTATION PROCEDURES ARE SUPPLIED IN THE FDOT STANDARD INDEXES 100 THROUGH 105.

2.A. EROSION AND SEDIMENT CONTROLS:

2.A.(1) STABILIZATION PRACTICES TO BE IMPLEMENTED:

DURING CONSTRUCTION, THE CONTRACTOR WILL PROVIDE TEMPORARY STABILIZATION AS SOON AS PRACTICAL. BUT IN NO CASE SHALL THE TIME BE GREATER THAN SEVEN CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED. FOR AREAS WHICH HAVE BEEN CLEARED AND NOT REWORKED. THE ENTIRE DISTURBED PORTION OF THE PROJECT WILL BE STABILIZED UPON COMPLETION. STABILIZATION PRACTICES INCLUDE SEEDING. SODDING OR PLANTING.

EXCESS DIRT SHALL BE REMOVED DAILY. THE CONTRACTOR WILL PROVIDE POLLUTION CONTROL BY IMPLEMENTING DUST CONTROL WITH ROADWAY SWEEPERS DURING THE DUST GENERATING ACTIVITIES SUCH AS EXCAVATION AND MILLING OPERATIONS.

2.A.(2) STRUCTURAL PRACTICES INCLUDE:

SILT FENCES
HAY BALES
ROCK BEDDING AT CONSTRUCTION EXITS

SILT FENCE LOCATIONS:

SILT FENCE WILL BE USED ALONG THE LENGTH OF THE PROJECT WHERE THE EXISTING GROUND SLOPES AWAY FROM THE RIGHT OF WAY OR WHERE THERE IS POTENTIAL FOR SEDIMENT TO BE DIRECTED OFFSITE. SILT FENCE LOCATIONS ARE SHOWN IN THE TABLES IN THE STORMWATER PREVENTION POLLUTION PLANS.

HAY BALE LOCATIONS:

STAKED HAY BALES USED AS DITCH BLOCKS SHALL BE INSTALLED AT A MINIMUM 76 METER INTERVALS.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE PROVIDED FOR BOTH ON-SITE AND OFF-SITE LOCATIONS OF STOCKPILED OR EXCAVATED MATERIAL. STABILIZED CONSTRUCTION ENTRANCES WILL BE REQUIRED AT ALL EIGHT DETENTION AREA LOCATIONS.

ALL OTHER EROSION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS.

2.B. DESCRIPTION OF STORMWATER MANAGEMENT:

THE STORMWATER WILL BE CONVEYED THRU ROADSIDE DITCHES AND ONSITE STORMSEWERS TO ONE OF EIGHT PERMANENT STORMWATER MANAGEMENT FACILITIES (TREATMENT AND ATTENUATION PONDS).

2.C. OTHER CONTROLS:

2.C.(1) WASTE DISPOSAL:

THE CONTRACTOR WILL PROVIDE LITTER CONTROL AND COLLECTION WITHIN THE PROJECT BOUNDARIES DURING CONSTRUCTION ACTIVITIES. ALL FERTILIZER HYDROCARBON. OR OTHER CHEMICAL CONTAINERS SHALL BE DISPOSED OF BY THE CONTRACTOR ACCORDING TO EPA'S STANDARD PRACTICES AS DETAILED BY THE MANUFACTURER. NO SOLID MATERIALS INCLUDING BUILDING AND CONSTRUCTION MATERIALS SHALL BE DISCHARGED TO WETLANDS OR BURIED ON SITE.

2.C.(2) OFF SITE VEHICLE TRACKING:

OFF SITE TRACKING WILL BE CONTROLLED BY THE FOLLOWING METHODS:
LOADED HAUL TRUCKS ARE TO BE COVERED BY A TARPAULIN.
EXCESS DIRT ON ROAD WILL BE REMOVED DAILY.
STABILIZED CONSTRUCTION ENTRANCE (SEE FDOT INDEX NO. 106)

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING AND MAINTAINING STABILIZED CONSTRUCTION ENTRANCES WHERE ENTRANCES OR EXITS ONTO A PUBLIC ROAD OCCUR. EITHER FOR ON SITE AND OFF SITE LOCATIONS. THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR MODIFYING THE SYSTEM OR PROCEDURES AS NEEDED.

2.C.(3) SANITARY WASTE:

ALL SANITARY WASTE WILL BE COLLECTED FROM PORTABLE UNITS BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR AS REQUIRED BY STATE REGULATIONS.

2.C.(4) FERTILIZERS AND PESTICIDES:

FERTILIZERS AND SOIL STERILIZERS WILL BE USED ON THIS PROJECT IN ACCORDANCE WITH THE "FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION". SECTION 982. AT THE DISCRETION OF THE CONTRACTOR WITH COORDINATION OF THE PROJECT ENGINEER.

2.C.(5) NON STORMWATER DISCHARGE (INCLUDING SPILL REPORTING):

THE CONTRACTOR WILL PROVIDE THE FDOT WITH AN EROSION CONTROL PLAN THAT WILL INCLUDE SPILL REPORTING AND RESPONSE. IF CONTAMINATED OIL OR GROUNDWATER IS ENCOUNTERED. CONTACT NAHID ARASTEH. DISTRICT HAZARDOUS MATERIALS COORDINATOR AT (813) 975-6450.

2.C.(6) PERMITS:

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT PERMIT (PENDING).

3. MAINTENANCE

THE CONTRACTOR WILL BE RESPONSIBLE FOR DAILY INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES THROUGHOUT THE CONSTRUCTION PHASE OF THE PROJECT AND REPAIRS OF EROSION CONTROL DEVICES. AND REMOVAL OF EROSION AND SEDIMENT CONTROL DEVICES AFTER THE NOTICE OF TERMINATION. MAINTENANCE SHALL BE CONSTRUCTED IN ACCORDANCE WITH "FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".

THE FOLLOWING PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS:

THE CONTRACTOR SHALL MAINTAIN RAIN GAUGES ON THE PROJECT SITE AND RECORD WEEKLY RAINFALL. ALL CONTROL MEASURES WILL BE MAINTAINED DAILY BY THE CONTRACTOR.

ALL DEVICES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY. IT WILL BE INITIATED WITHIN A 24 HOURS OF REPORT.

STRUCTURAL PRACTICES CONTROLS:

BUILT-UP SEDIMENT WILL BE REMOVED FROM SILT FENCE AND STAKED TURBIDITY BARRIERS WHEN IT HAS REACHED ONE THIRD THE HEIGHT OF THE FENCE.

TEMPORARY AND PERMANENT SEEDING WILL BE INSPECTED FOR BARE SPOTS WASHOUTS. AND HEALTHY GROWTH.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED TO PREVENT CLOGGING OF ROCK BEDDING WHICH MAY IMPEDE THE USEFULNESS OF THE STRUCTURE.

HAY BALES SHALL BE REPLACED EVERY 3 MONTHS OR WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

MAINTENANCE AND REPAIR REQUIRED FOR THE CONTROL AND ABATEMENT OF EROSION AND WATER POLLUTION SHALL BE INCLUDED IN THE COST OF PAY ITEMS 2104-10. 2104-11. 2104-12. 2104-13. AND 2104-15.

4. INSPECTION

THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR COMPLETING THE WEEKLY INSPECTION REPORT FORM AND SUBMISSION OF THE FORM TO THE FDOT CENTRAL OFFICE ON A MONTHLY BASIS. PLEASE NOTE THAT THIS FORM MUST BE COMPLETED AFTER ANY 6MM RAINFALL EVENT. IT IS THE PROJECT ENGINEER'S RESPONSIBILITY TO MAINTAIN CONTRACTOR INSTALLED RAIN GAUGES ON THE PROJECT SITE AND RECORD WEEKLY RAINFALL. THE FOLLOWING ITEMS NEED TO BE INSPECTED:

- POINTS OF DISCHARGE TO WATERS OF THE UNITED STATES.
- POINTS OF DISCHARGE TO MUNICIPAL SEPARATE STORM SEWER SYSTEMS.
- DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN STABILIZED.
- AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROLS.
- STORMWATER MANAGEMENT CONTROLS.
- LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE.

WHERE SITES HAVE BEEN PERMANENTLY STABILIZED. INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EACH MONTH. MAINTENANCE AND INSPECTIONS OF THE CONTROL AND ABATEMENT OF EROSION AND WATER POLLUTION SHALL BE INCLUDED IN THE COST OF PAY ITEMS 2104-10. 2104-11. 2104-12. 2104-13. AND 2104-15 WHEN APPLICABLE.

5. EROSION CONTROL DEVICE QUANTITIES

ITEM	UNIT	PAY ITEM NO.	QUANTITY
MOWING	HA	2104-4	
HAY OR STRAW BALED	EA	2104- 10	3 128
SILT FENCE STAKED	M	2104- 13	16 252
SOIL TRACKING PREVENTION DEVICE	EA	2104-15	8
SODDING (TEMPORARY)	M2	2575-1 -1	

TEMPORARY SODDING IS TO BE PAID FOR UNDER THE PAY ITEM FOR PERMANENT SODDING

(1) QUANTITIES FOR BALED HAY OR STRAW AND STAKED SILT FENCE HAVE BEEN INCREASED TO ACCOUNT FOR REPLACEMENT BASED ON A TWO YEAR CONSTRUCTION DURATION. REPLACEMENT SHALL OCCUR EVERY 3 MONTHS FOR HAY BALES AND EVERY 12 MONTHS FOR STAKED SILT FENCE.

(2) THE QUANTITY FOR STPD (8) IS THE MINIMUM EXPECTED BASED ON THE NUMBER OF PONDS. ADDITIONAL STPD'S WILL BE REQUIRED AT OTHER CONSTRUCTION ENTRANCES / EXITS PER SECTION 2A.

6. DEWATERING

THE CONTRACTOR IS REQUIRED TO OBTAIN ALL DEWATERING PERMITS AS REQUIRED BY STATE AGENCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES THAT REQUIRE DEWATERING. SEE SWFWMD RULE 40D-2- CONSUMPTION USE OF WATER AND RULE 40D-3- REGULATION OF WELLS FOR SPECIFIC REQUIREMENTS FOR DEWATERING.

ALL SCHEDULING CONFLICTS AND COSTS INCURRED BY THE CONTRACTOR TO COMPLY WITH THE DEWATERING PERMITTING PRICES WILL BE INCIDENTAL COSTS ASSOCIATED WITH THE PAY ITEMS FOR INSTALLATION OF THE FEATURE WHICH REQUIRES THE DISCHARGE OF THE GROUND WATER.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS
Southwest Florida Water Management District SEP 21 1999 REG-BRO
Imaged As Is
4319567.00
RECORD

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION

STORMWATER POLLUTION PREVENTION PLAN

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289A

STATE PROJ NO.	SHEET NO.
14090-3522	289

SUMMARY OF STAKED SILT FENCE

STATION	OFF	TO	STATION	OFF	QUANTITY	REMARKS
35+30	21.3 RT		37+77	20.6 RT	247	
37+91	20.6 RT		38+84	20.6 RT	93	
38+81	20.6 LT		40+03	20.6 LT	122	
40+03	20.6 LT		40+09	35.0 LT	13	15 M RAD.
40+18	35.0 LT		40+24	20.6 LT	15	15 M RAD.
40+24	20.6 LT		40+80	20.6 LT	62	
40+95	20.6 LT		42+17	20.6 LT	122	
41+55	20.6 RT		42+47	20.6 RT	92	
42+47	20.6 RT		42+52	25.0 RT	10	15 M RAD.
42+27	20.6 LT		42+44	20.6 LT	17	
42+44	20.6 LT		42+62	38.5 LT	25	ON ANGLE
42+62	38.5 LT		45+30	37.5 LT	268	
45+30	37.5 LT		47+37	37.5 LT	165	ON CURVE
42+62	36.0 RT		42+62	26.0 RT	10	
42+62	26.0 RT		42+91	37.5 RT	23	ON ANGLE
42+91	37.5 RT		45+30	37.5 RT	239	
45+30	37.5 RT		48+25	37.5 RT	314	ON CURVE
48+08	37.5 LT		50+69	37.5 LT	261	
49+20	37.5 RT		52+50	37.5 RT	330	
54+80	37.5 RT		56+60	37.5 RT	154	STA EQ.
60+00	37.5 LT		62+35	37.5 LT	235	
63+00	37.5 RT		68+86	37.5 RT	586	
63+30	37.5 LT		66+90	37.5 LT	360	
76+00	37.5 LT		77+30	37.5 LT	130	
80+75	37.5 LT		81+10	37.5 LT	35	
81+17	37.5 LT		82+25	37.5 LT	108	
89+75	40.0 RT		90+35	40.0 RT	60	
90+35	40.0 RT		92+66	40.0 RT	245	ON CURVE
10+88	40.0 RT		11+20	40.0 RT	30	
11+36	35.0 RT		12+55	35.0 RT	125	
12+55	35.0 RT		12+55	CL	35	ON CURVE
12+73	CL		12+73	40.0 RT	40	
12+73	40.0 RT		13+15	40.0 RT	42	
POND 1						
32+33	181.2 RT		33+79	45.5 RT	202	FOLLOWS TOB
33+69	1.9 RT		33+79	45.5 RT	45	
32+33	1.4 RT		33+69	1.9 RT	136	
32+33	1.4 RT		32+33	71.2 RT	70	
30+45	17.0 RT		31+10	17.0 RT	65	
POND 2A						
TOTAL PERIMETER ALONG MAINTENANCE BERM					550	
POND 2B						
TOTAL PERIMETER ALONG MAINTENANCE BERM AND ALONG EASEMENT LINE AT S-39					630	
POND 3						
32+00	47.0 RT		33+55	47.0 RT	155	
33+55	47.0 RT		33+55	94.0 RT	47	
33+55	94.0 RT		33+63	94.0 RT	8	
33+63	94.0 RT		33+63	47.0 RT	47	
33+63	47.0 RT		33+81	47.0 RT	18	
POND 4						
30+48	69.0 RT		30+77	107.0 RT	50	FOLLOWS TOB
30+77	107.0 RT		31+90	28.0 RT	150	FOLLOWS TOB
31+91	33.76 RT		32+90	11.9 LT	170	FOLLOWS TOB
POND 5						
30+20	53.0 LT		31+23	121.0 LT	141	
31+23	121.0 LT		31+77	120.0 LT	54	
31+77	120.0 LT		31+79	3.0 RT	123	
31+92	77.0 LT		31+92	91.0 LT	14	AT OUTFALL
POND 6						
AT MES S-92					10	
32+00	76.0 RT		35+04	108.0 RT	225	FOLLOWS TOS
35+04	108.0 RT		35+04	13.0 RT	95	FOLLOWS TOS
31+58	45.0 LT		33+32	55.0 LT	187	FOLLOWS TOB
POND 7						
31+65	53.0 LT		33+30	56.0 LT	195	FOLLOWS TOB
POND 8						
30+80	26.0 LT		31+13	7.0 RT	60	FOLLOWS TOB
30+85	44.0 RT		31+13	7.0 RT	46	
SWALE OUTFALL					20	
			TOTAL		8 126	

NOTE: LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER.

FEB 2000 SWFWMD PERMITTED CONSTRUCTION DRAWINGS

Southwest Florida Water Management District SEP 21 1999 REG-BRO

FILE OF 4319567.00 RECORD

Imaged As Is

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION

STORMWATER POLLUTION PREVENTION PLAN 289B

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SR 54 E OF SUNCOAST PKWY TO W OF US 41
(PERMIT#43-16251-18)

Drainage Design Documentation

State Road 54 – Phase 1B & 2 – 100% Submittal
From East of the Suncoast Parkway to West of US 41 (SR 45)

Financial Project ID No. 256339-2-52-01

PASCO COUNTY

PREPARED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT 7

May 2015

Executive Summary

The purpose of this report is to describe the drainage design associated with the widening of SR 54 from east of the Suncoast Parkway (MP 3.860) to west of US 41 (SR 45) (MP 7.936), in Pasco County. The widening will expand SR 54 from a four-lane divided facility to a six-lane divided rural principal arterial. Sidewalk will also be added on both sides. The drainage design documented herein was developed in accordance with the current Environmental Resource Permit (ERP) which allows for the 6-lane widening and associated proposed improvements of approximately 4.076 miles of SR 54. This widening was contracted by the Florida Department of Transportation, District Seven as a design/build project.

Construction of the roadway widening is already permitted pursuant to two ERP's which have been previously issued by the Southwest Florida Water Management District (SWFWMD) for this facility. These permits are described as follows.

1. Environmental Resource Permit #4316251.000: This original widening permit was issued on June 29, 1999 for the four-laning of SR 54. The original permit allowed for the construction of the roadside linear stormwater facilities which were designed to accommodate a future widening to six lanes. The four-lane widening and linear ponds have been constructed and are reflected as the existing condition in the design-build project plans.

2. Environmental Resource Permit Modification #4316251.011: The ERP modification issued for the construction activities associated with the six-lane widening of SR 54 is dated May 15, 2009. Its expiration date was extended from May 15, 2014 to August 4, 2016. This permit modification was pursued by the Department simply to demonstrate to the Water Management District that the proposed widening was to be done in accordance with the original permit. The proposed widening of this design-build project is proposed to follow, as closely as possible, to the work identified in this permit.

The design-build project proposes to widen the existing facility to the median and utilize the existing, permitted roadside linear ponds for stormwater management. Ten foot shoulders (five foot paved) with 6% cross slope will be re-established to the outside. Beyond the shoulders, 1:4 side slopes will be utilized to transition down to the linear pond bottoms. The design-build project will also introduce 5' sidewalks on both sides of the roadway. The sidewalks were not considered part of the previous permits and will be introduced as part of the design/build project's permit modification.

The alignment of the proposed sidewalk has been located pursuant to the results of the project's Sidewalk Matrix Evaluation, which were concurred with by the FDOT. Typically, the sidewalk is located at the back of right-of-way wherever practicable. Note, though the placement of sidewalk adjacent to the right-of-way causes encroachment into the linear ponds, the 1:4 front slope off of the roadway shoulder provides sufficient cut into the existing roadside to mitigate for the impacts to the pond volume. Overall, there should be no net storage loss within the roadside ponds as a result the sidewalk construction.

Pursuant to the pre-application meeting with SWFWMD, it will be necessary to demonstrate that the sidewalk construction does not decrease the storage within the linear stormwater facilities. Otherwise, SWFWMD did not have any other concerns or issues related to the proposed work. By itself, the sidewalk construction would be considered an exempt activity by the District.

All ponds and floodplain compensation sites have already been designed and constructed to accommodate the improvements reflected in the six lane typical section. The linear stormwater management facilities provide wet detention water quality treatment in accordance with the current Environmental Resource Permit. The same applies to the water quantity attenuation. The proposed drainage conveyance design have been developed using the criteria, minimum standards and guidelines provided by the latest Florida Department of Transportation's Drainage Manual and associated design handbooks.

The Environmental Resource Permit Modification application will propose to treat a total treatment area of 63.79 acres, which includes a surplus 3.37 acft (40.42 acres) of treatment within the existing roadside ponds. The surplus treatment was achieved as a result of the regrading of the front slopes (1:4) and the back slopes (1:3), while still maintaining all of the permitted NWL and most of the DLW elevations of the existing ponds. Of the 22 existing control structures, only nine will require replacement with new structures. All other existing control structures are proposed to remain, as is, or will be modified in place.

The original permit for this project designed all existing stormwater management facilities in accordance with the requirements of the Southwest Florida Water Management District (SWFWMD), as well as, Chapter 14-86, F.A.C. For the purposes of this modification, only the SWFWMD 25-year/24-hour storm event was analyzed. The results were then compared back to the previous calculations to confirm the results were reasonable and similar. The use of SWFWMD rainfall amounts and the SCS Type II Florida Modified rainfall distribution is consistent with current SWFWMD permit and the concept plans. The allowable discharges established in the original permit were used as the basis for the proposed discharges and are summarized below.

SWFWMD 25-YEAR/24 HOUR DESIGN STORM

ALLOWABLE PEAK FLOW		PROPOSED PEAK FLOW		
BASIN	Q (cfs)	NODE	Q (cfs)	Q (cfs)
A1	73.00	TW1N	40.15	73.19
		TW1S	33.04	
A2	58.60	TW2N	5.49	20.45
		TW2S	14.96	
A3	65.23	TW3N	38.18	50.20
		TW3S	12.02	
B1	109.00	WB1	42.80	42.80
B2				
B3	16.00	WB3	12.86	12.86
C1	47.03	TW	20.63	20.63
C2	60.73	TWN	30.28	43.55
		TWS	13.27	
D1	63.00	WD	22.53	22.53
D2				
E1	69.00	WE1	16.73	16.73
E2	40.00	WE2	39.24	39.24

Design tailwaters often influence the linear pond design high waters. For five of the linear ponds (P2A3, P10B2, P12B2, P13B2 and P14B2), the tailwaters exceed the top of bank / elevation at the existing right-of-way and overflow into the ponds. This condition was discussed in person with Daniel Lauricello, FDOT District Drainage Engineer, on April 22, 2015. It was agreed that we would set top of banks to a minimum 0.25' above the linear pond 25-year/24-hour design high water, even if it was tailwater-driven.

Note: This document is a living document intended to support all of the phases of construction plan development. Those phases include the initial construction plan phase, Phase 1, which identified the limits of clearing and grubbing (Phase 1a - Early Works) and the roadway widening to the inside (Phase 1b – Widening). Also included are calculations relevant to the Phase 1b Revision 1 plans which includes the addition of three U-turns. Phase 2 includes the work associated with the rebuilding of the shoulders, regrading of the roadside pond and sidewalk construction.

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1.0 General Project Information

1.1 Introduction

The purpose of this report is to describe the drainage design associated with the widening of SR 54 from east of the Suncoast Parkway (MP 3.860) to west of US 41 (SR 45) (MP 7.936), in Pasco County. The widening will expand SR 54 from a four-lane divided facility to a six-lane divided rural principal arterial. Sidewalk will also be added on both sides. The drainage design documented herein was developed in accordance with the current Environmental Resource Permit which allows for the 6-lane widening and with the intent of meeting the applicable federal, state and local stormwater management / drainage design requirements for the proposed improvements of approximately 4.076 miles of SR 54. This widening was contracted by the Florida Department of Transportation, District Seven as a design/build project.

Note: This document is a living document intended to support all of the phases of construction plan development. Those phases include the initial construction plan phase, Phase 1, which identified the limits of clearing and grubbing (Phase 1a - Early Works) and the roadway widening to the inside (Phase 1b – Widening). Also included are calculations relevant to the Phase 1b Revision 1 plans which includes the addition of three U-turns. Phase 2 includes the work associated with the rebuilding of the shoulders, regrading of the roadside pond and sidewalk construction.

1.2 Project Location

This SR 54 improvement project is located in Pasco County, Florida. The project limits extend along State Road 50 from east of the Suncoast Parkway (MP 3.860) to west of US 41 (SR 45) (MP 7.936) for a total of 4.076 miles.

The project's physical location can be found in the vicinity of these geographic areas.

- Sections 26 - 30; Township 26S, Range 18E

Please refer to Figure 1 - Project Location Map in Appendix A.

1.3 Project Description

The project proposes to widen the existing 4-lane rural roadway facility to a 6-lane rural roadway with 12' travel lanes and 10' shoulders. Widening for the six lanes is to take place in the median and includes a 12' inside stabilized shoulder. Ten foot shoulders (five foot paved) with 6% cross slope will be re-established to the outside. Beyond the shoulders, 1:4 side slopes will be utilized to transition down to the existing linear ponds adjacent to the roadway. In terms of stormwater management, the goal is to utilize the existing, permitted roadside linear ponds for stormwater management.

The project will also add 5' sidewalks on both sides of the roadway. The sidewalks were not considered part of the previous permits and will be introduced as part of the project's permit modification. The alignment of the proposed sidewalk is located pursuant to the results of the

project's Sidewalk Matrix Evaluation, which were concurred with by the FDOT. Typically, the sidewalk is located at the back of right-of-way wherever practicable. Note, though the placement of sidewalk adjacent to the right-of-way causes encroachment into the linear ponds, the 1:4 front slope off of the roadway shoulder provides sufficient cut into the existing roadside to mitigate for the impacts to the pond volume. Overall, there is no net storage loss within the roadside ponds as a result the sidewalk construction.

Construction of the roadway widening is already permitted pursuant to two ERP's which have been previously issued by the Southwest Florida Water Management District (SWFWMD) for this facility. These permits are described as follows.

3. Environmental Resource Permit #4316251.000: This original widening permit was issued on June 29, 1999 for the four-laning of SR 54. The original permit allowed for the construction of the roadside linear stormwater facilities which were designed to accommodate a future widening to six lanes. The four-lane widening and linear ponds have been constructed and are reflected as the existing condition in the design-build project plans.

4. Environmental Resource Permit Modification #4316251.011: The ERP modification issued for the construction activities associated with the six-lane widening of SR 54 is dated May 15, 2009. Its expiration date was extended from May 15, 2014 to August 4, 2016. This permit modification was pursued by the Department simply to demonstrate to the Water Management District that the proposed widening was to be done in accordance with the original permit. The proposed widening of this design-build project is proposed to follow, as closely as possible, to the work identified in this permit.

1.4 Watershed Description

The project corridor is located within the Pinellas - Anclote River Watershed which is part of the Coastal Pinellas County Planning Unit, Group 5. The Water Body Identification (WBID) numbers assigned by the Florida Department of Environmental Protection (FDEP) within the project limits and their respective impairment status are as follows.

- WBID #1458: Sandy Branch - Not Impaired
- WBID #1456: South Branch Anclote River – Not Impaired
- WBID #1463P: South Branch Anclote River – Not Impaired

It is important to note that these basins are not impaired; nor are they Outstanding Florida Waters (OFW's). This information was confirmed through their website at http://ca.dep.state.fl.us/mapdirect/?focus=none. The Figure 2 - Watershed Map for the project is provided in Appendix A.

1.5 Soils Information

The Natural Resource Conservation Service (NRCS) Soil Survey for Pasco County, Florida indicates mostly poorly drained sandy soils. The table below shows the soil types and the characteristics of the soils encountered. See Figure 3 - Soils Map provided in Appendix A.

Soil Symbol	Soil Name	Hydrologic Group	Depth to Seasonal High Ground Water
Pasco County, Florida			
5	Myakka fine sand	A/D	1.0’
6	Tavares fine sand	A	5.0’
8	Sellers mucky loamy find sand	A/D	0.0’
11	Adamsville fine sand	A/D	1.5’ – 2.0’
21	Smyrna fine sand	A/D	1.0’
22	Basinger fine sand	A/D	0.0’ – 0.5’
23	Basinger fine sand	A/D	0.0’
26	Narcoossee fine sand	B	3.0’
28	Pits		
42	Pomello fine sands	A	3.0’
46	Cassia fine sands	A/D	2.0’
52	Samsula muck	A/D	0’

1.6 Floodplain

The project’s original permit provided floodplain mitigation for the entire SR 54 right-of-way. As a result, since all work is proposed within the existing right-of-way, no encroachment shall occur as a result of the proposed activity. The latest FEMA Flood Insurance Rate Maps were issued on September 26, 2014; reference Panel Nos. 12101C0383F, 12101C0384F and 12101C0403F.

Copies of the latest floodplain maps are provided within Appendix A; see Figure 4 – FEMA Map.

1.7 Field Reviews and Coordination

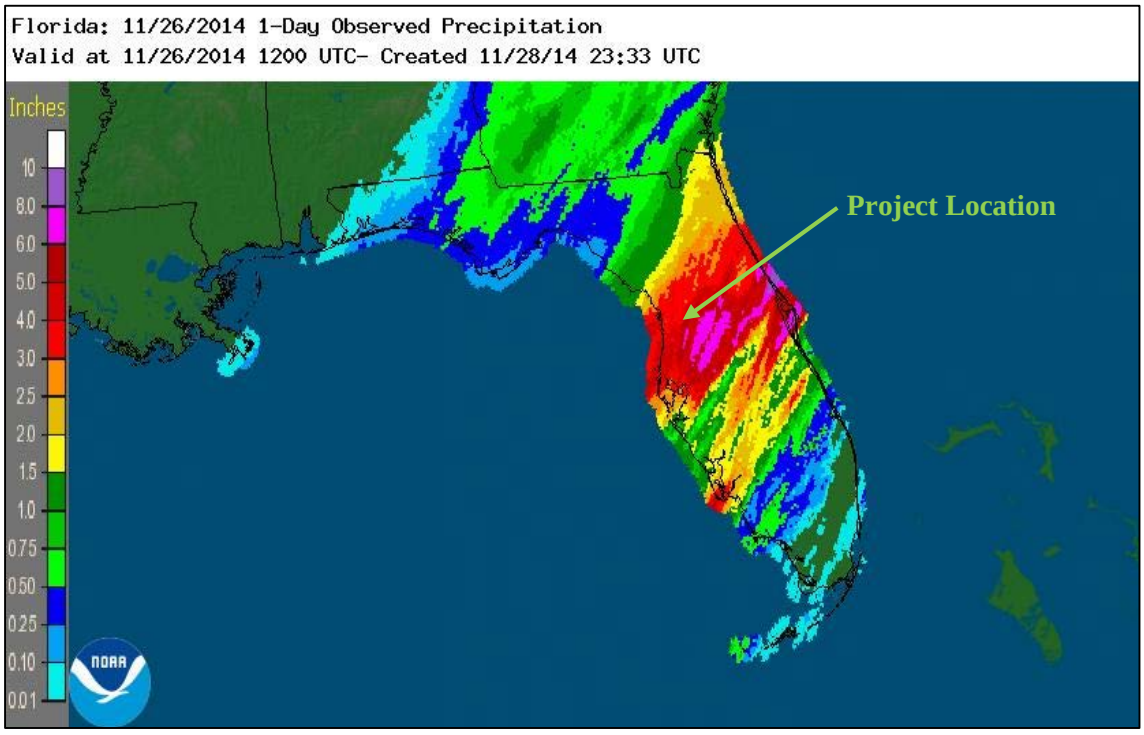
Several coordination meetings and follow up phone calls and emails were conducted in order to confirm design methods and approaches to the project. A rain event field review was also conducted. The following provides brief summary of those coordination efforts.

Drainage Design Kickoff Meeting: A Drainage Design Kickoff Meeting was held on October 8, 2014. Those present in the meeting included Christina Boulnois (FDOT - PM), Daniel Lauricello (FDOT - District Drainage Engineer), Richard Griffin (FDOT - Assistant District Drainage Engineer), Al Stewart (FDOT – GEC) and Bob Liddle (FDOT – Construction PM). Also in attendance were representatives from Jones Adams & Associates (Bill Adams, Lisa Propps and Kate Morgan – CEI) and Pepper Contracting (Kurt Keith and Doug Lack). The purpose of the meeting was to discuss the drainage scope of work, confirm drainage design criteria and address the approach of work. This meeting was held immediately following the overall Project Kickoff Meeting. It was understood by all that the roadside linear ponds were already designed and permitted to accommodate the proposed widening. The only thing new to consider is to add the sidewalk and regrade

the linear ponds such that there is no net loss of treatment or attenuation storage. In conclusion, someone commented that this the project is essentially "a sidewalk job with some widening". It was asked that we investigate the history of standing water in the areas surrounding the project and to also review the integrity of the existing 4' x 5' CBC cross drain. A copy of the meeting minutes is provided in Appendix C of this report.

SWFWMD Pre-Application Meeting: The Pre-Application Meeting with SWFWMD was conducted at the Brooksville Service Office on October 16, 2014. This meeting was held with Monte Ritter (SWFWMD – Engineer), David Sauskojas (SWFWMD – Environmental), Ginger Creighton (FDOT – District Environmental Permits Coordinator), Lisa Propps (Jones Adams & Associates – CEI) and Doug Lack (Pepper Contracting). This meeting was arranged to inform the Water Management District of the FDOT's intention to perform the widening work that had already been permitted. It was agreed that the addition of the sidewalk and the regrading of the linear ponds would warrant a minor modification (short form) to the permit. In essence, all that is needed to be demonstrated is that there is no net loss to the treatment or attenuation storage within the linear ponds. No new pond modeling would be required as long as no net loss can be demonstrated. SWFWMD did not have any other concerns or issues related to the proposed work. By itself, the sidewalk construction would be considered an exempt activity by the District. A copy of the meeting minutes is provided in Appendix B.

Rain Event – Field Review: According to a local network weather report broadcast, the New Port Richey area received approximately 6" of rainfall on November 26, 2014. This estimate was confirmed through the NOAA website's observed precipitation graphic below.



As a result, a field visit was conducted on the same day, at the end of the event to review the drainage conditions. The water stages within the roadside ponds appeared to be lower than what would be expected following a 6" storm event. The event, which lasted between 16 and 18 hours was equivalent to approximately a 5-year "plus" storm event. Despite the magnitude of the storm event and the above average precipitation to date in 2014 (12" – 15" above normal), most all water levels were either at or below their respective weir elevations. The following are some field observations.

A. Roadway Drainage: Only at the Oakstead Blvd intersection (Sta 1903+00) was standing water observed in the vicinity of the travel lanes. This information was passed on to the roadway designer and, as a result, the intersection grading associated with the widening has been addressed in the Phase 1B design plans. Reference the Special Details Sheets in the construction plan set.



B. Roadside Ponds – P2A2: Most all of the linear pond water levels were high enough that there was discharge through the water quality bleed down structure. Several of those bleed down structures appeared to be clogged and in need of maintenance. The photo below shows standing water behind the control structure (existing structure #43 / Pond P2A2) and very little flow through the bleed down orifice in the bottom right part of the control structure. The clogging will be addressed in the Phase 2 plans.



C. Roadside Ponds – P5A3: Many of the ponds were discharging over their attenuation weirs. Stain lines on some of the skimmers and controls structures indicated that the water levels may have receded anywhere between 4" and 8" since the peak of the rain event. Below is a picture of existing structure #52 / Pond P5A3. All elements of the control structure appear to be functioning properly.



D. High Sustained Tailwaters: During the Drainage Design Kickoff Meeting, the consultant was asked to investigate the high tailwater conditions within the project limits. It was observed that, in the easternmost portion of the corridor and even some basins on the north side, stages within the receiving waters appear to control the stages within the linear ponds. In many cases, the pond control structures were inundated and had little to no water flowing over them because the water stages on either side of the control structure were almost equalized. Review of downstream conditions show that standing water exists beyond the right-of-way and that this condition is simply indicative of the large, flat topography and the associated floodplain. FDOT Maintenance was contacted for more information relating to the high tailwaters witnessed. It was confirmed through the Maintenance Office that despite numerous investigations conducted by both the FDOT and Pasco County, no blockage / constrictions could be identified as the cause for these conditions. In summary, it was explained that the vast floodplain is simply the natural condition. Below are photographs of two control structures experiencing high tailwaters; Pond P1A3 /

Existing Structure #53 west of Ballantrae Blvd. and Pond P7D2 / Existing Structure #130) east of Oakstead Blvd. Documentation of the coordination with the FDOT Maintenance Department is included in Appendix C.





E. No Tailwater Influence: In the western part of the project, tailwaters appeared to have less influence on some of the pond stages. Some ponds had been able to recede to below overflow levels in less than 24 hours after the rain event. The photo below was taken of a ditch block located just east of Meadowbrook between Ponds P4A1 (left) and P1A2 (right). The debris line indicates how high the water reached on the A2 side and how much it had receded. By comparison, the water level was much lower on the A1 side.



F. Cross Drains: Some cross drains in the east part of the project, were either mostly or entirely submerged. This observation is consistent with statements made by FDOT Maintenance and substantiates / supports the design stages which are shown in the Drainage Maps profile and Flood Data Table, as well as, the area's designated floodplain. The photos show a single 30" RCP (Existing Structure #74) and dual 30" pipes (Existing Structure #79).





FDOT Maintenance: Two phone calls were conducted with Joellyn Guthrie (FDOT – Maintenance, Brooksville) for two purposes; to identify any drainage concerns such as those expressed at our drainage kickoff meeting, and, to research the pavement repair over the existing 4' x 5' CBC near Station 1779+25.

A. As a result of frequent calls by local residents and property owners, both FDOT Maintenance and Pasco County have conducted numerous field reviews of the surrounding areas. Both agencies have concluded there is no blockage, restriction or identifiable cause that create the extended standing water condition in the adjacent basins. In summary, the adjacent lands are predominantly wetlands, very flat and, thus, has an expansive floodplain which drains slowly. Ms. Guthrie was unable to make any recommendations that would improve the existing condition.

B. Ms. Guthrie researched their records regarding the repair activity over the existing CBC. She explained that the proper compaction was not accomplished over the box culvert when it was previously widened. As a result, the pavement had settled. Maintenance milled the pavement, exposing the limerock and found no evidence that the box culvert had any joint failures or leaks. As a result, no further repairs were required and maintenance simply replaced the pavement overtop. In summary, there were no concerns of drainage issues at this location.

Issues Outside Project Limits: Review of the project survey indicated that some of the existing pond tops of banks west of the beginning of the project were below their respective permitted elevations. These ponds are identified as P1A1 and P5A1. This information was provided to Mr. Daniel Lauricello (FDOT D7 District Drainage Engineer).

1.8 Reference and Resource Information

Existing Studies / Plans / Reports:

- S. R. 54 from the N. Suncoast Parkway to U.S. 41 Design Hydraulics Report, Volumes 1 and 2, April 1997 (SWFWMD file copy)
- S. R. 54 from the N. Suncoast Parkway to U.S. 41 Design Hydraulics Report, Volumes 1 and 2, March 1999 (FDOT file copy)
- S.R. 54 from Suncoast Pkwy to west of US 41 Drainage Design Documentation, March 2009 (SWFWMD file copy)
- S.R. 54 from Suncoast Pkwy to west of US 41 Contract Plans, March 2009 (SWFWMD file copy)
- FDOT Drainage Complaint Inventory, September 2004

Technical Reference and Regulation Material:

- Drainage Manual, State of Florida Department of Transportation, January 2014

- Drainage Handbook, Stormwater Management Facility, State of Florida Department of Transportation, January 2004
- Drainage Handbook, Storm Drains, State of Florida Department of Transportation, February 2012
- Erosion and Sediment Control Designer and Reviewer Manual, State of Florida Department of Transportation, July 2013
- Design Guidance: Hydroplaning Risk Analysis, State of Florida Department of Transportation, May 2014
- Statewide Environmental Resource Permit Handbook, Volume I, Florida Department of Environmental Protection & Southwest Florida Water Management District, October 2013
- Environmental Resource Permit Applicant's Handbook, Volume II, Southwest Florida Water Management District, October 2013
- Environmental Resource Permit Applicant's Handbook, Volume II, Part B - Basis of Review, Southwest Florida Water Management District, December 2011

Maps & Surveys:

- Project-specific aerials
- Project-specific survey
- FEMA Flood Insurance Rate Map, Panel No. 12101C0383F, 12101C0384F and 12101C0403F, September 26, 2014
- Project-specific geotechnical investigation
- SWFWMD aerial / topographic maps
- 2004-2008 Florida Division of Emergency Management Topographic LiDAR Mapping

Websites:

- Pasco County Property Appraiser: http://www.appraiser.pascogov.com/
- Southwest Florida Water Management District: http://www.swfwmd.state.fl.us/permits/
- Florida Department of Transportation, Roadway Design, Drainage: http://www.dot.state.fl.us/rddesign/Drainage/Default.shtm
- Florida Department of Environmental Protection Map Direct Gateway: http://ca.dep.state.fl.us/mapdirect/gateway.jsp

- Federal Emergency Management Agency – Flood Map Service: https://msc.fema.gov/portal

- United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/

2.0 Existing Drainage Characteristics

The project lies in the Pinellas-Anclote River Basin in Pasco County. From west to east, the project passes through three water basins; Sandy Branch (WBID 1458), South Branch (WBID 1456) and Lake Linda (WBID 1463P). These basins are not designated as impaired or as Outstanding Florida Waters. Refer to the FDEP Watershed Map provided in Appendix A.

The limits of the project extend through five previously established sub-basins; Basins A – E. All of the existing ponds were named according to the sub basin name and are referred to on the Drainage Maps for this project as they were, originally.

Stormwater Management: Roadside linear ponds exist throughout the project limits and were constructed pursuant to the original Environmental Resource Permit (ERP) #4316251.00 which was issued in June 1999. These ponds were built when the facility was widened to four-lanes while designed to accommodate a future six-lanes. Subsequently, a permit modification to the original ERP was issued for the widening from four lanes to six lanes and was then extended through August 2016. These existing ponds were designed to provide for wet detention treatment (1" over the impervious) and attenuation in accordance with both SWFWMD (25-year/24-hour) and FDOT (100-year/critical duration) design requirements at the time of the permit issuance.

Floodplain: The latest Flood Insurance Rate Maps were made effective in September 2014. The maps indicate extensive floodplain throughout the project limits and typically terminates at the SR 54 right-of-way. The original permit mitigated for all floodplain within the project right-of-way, cup for cup, within floodplain compensation sites located outside the roadway right-of-way. Therefore, floodplain impacts and mitigation are not a concern with this project.

Cross Drains: Typical flow patterns are from north to south via twelve cross drains ranging from a single 24" pipe to dual 48" pipes. There is also one concrete box culvert cross drain, a 5' x 4' concrete box. All of the existing cross drains have been constructed to accommodate the six-lane widening. No culvert / cross drain extensions are needed.

It was noted in the Drainage Design Kickoff Meeting that the pavement across the entire length of the 5' x 4' CBC had been replaced and that it was in poor condition. Subsequently, FDOT Maintenance was contacted to inquire of the history of the pavement repair. In summary, there are no drainage concerns associated with the box culvert. It is believed that the materials beneath the existing pavement was not properly compacted. FDOT Maintenance made this conclusion after they had removed the existing pavement and exposed the base material for inspection. Documentation is provided in Appendix C.

In conclusion, all of the stormwater management infrastructure (water quality, water quantity, floodplain, cross drains) was constructed in anticipation of this proposed six-lane widening.

3.0 Proposed Drainage Design

The purpose of this section is to describe the drainage design approach to effectively collect and manage stormwater runoff for the proposed roadway improvements.

3.1 Stormwater Management Design Approach

All existing ponds and floodplain compensation sites have been designed and constructed to accommodate the improvements reflected in the proposed six-lane typical section. Stormwater management for this project was designed to meet the current Environmental Resource Permit (ERP) requirements regulated by the Southwest Florida Water Management District (SWFWMD) as well as those requirements of the Florida Department of Transportation (FDOT), critical storm/critical duration analysis (Chapter 14.86, F.A.C.).

Note: This document is intended to support the initial construction plan phase, Phase 1, which includes the clearing and grubbing of the median (Phase 1a - Early Works), and the roadway widening to the inside (Phase 1b – Widening), as well as, the rebuilding of the shoulders, roadside pond regrading and sidewalks.

3.2 Proposed Six-Lane Typical Section

The proposed typical section is a divided six-lane rural section. The proposed six-lane typical section is comprised of three 12-foot travel lanes with a 12' stabilized inside shoulder and a 10' outside shoulder (5' paved) in each direction. Five foot sidewalks are also proposed in each direction.

3.3 Design Criteria and Approach

Rural Drainage System: Roadway runoff from the rural typical section will be collected in existing roadside linear ponds.

Median Ditch Design: The median ditches are design for the 10-year/10-minute storm event (7.4"/hour). The median ditch design flow rates were calculated conservatively in two ways.

A. Runoff Coefficient: The design runoff rate was calculated using a runoff coefficient (C) equal to 0.9 for the grassed median, the stabilized shoulders and the pavement.

B. Sag Inlets: The design flow rate calculated to estimate depth of flow in the median ditch for DBI's in sags was based on the entire drainage basin area draining to the inlet rather than dividing it into the two areas on either side of the inlet.

Using these conservative flow rates, depth of flow within the median ditches were calculated. In the event that the calculated median ditch depth of flow encroached upon the low edge of shoulder elevation, actual flow rates were calculated and used to establish the actual depth of flow in the median ditch. In summary, all depth of flow calculations indicate that no median ditch design high waters extend into the shoulder areas.

Note, median ditch grading was challenging due to the super-elevation at structure S-402, Station 1912+00. In this location, the depth of flow cannot exceed 0.6' without encroaching onto the inside shoulder and the maximum ditch bottom width can only be 3.5'. In addition, because the longitudinal grade is extremely flat, the steepest median ditch slope that can be constructed is only 0.1%. As a result, concrete ditch pavement is proposed in the median at this location to assure a more effective ditch drainage system.

Storm Sewer Design: The storm sewer systems have been designed for a minimum 3-year design storm event. In the event that the storm sewer was tied to a drainage ditch, a 10-year design storm event was used to match the criteria for the ditch design. Minor losses were included in all of the storm sewer tabulations as required in the project scope of services. The spread at each inlet is calculated based on a 4"/hour rainfall intensity.

Like the median ditch design, a conservative approach was used initially for both the storm sewer design and the spread.

A. Spread: The design flow rate calculated to estimate the spread at inlets in sags was based on the entire drainage basin area draining to the inlet rather than dividing it into the two areas on either side of the inlet.

B. Tailwater: The design tailwater for all storm sewer tabulations is the receiving linear pond's 25-year design high water, unless otherwise noted on the storm tabulation sheet.

In the event the conservative spread exceeded the allowable for inlets in a sag condition, then the design flow rates would be calculated for each side of the sag inlet and the actual spread from each direction was calculated. It should be noted that the 25-year design tailwater worked for all storm sewer systems.

The mainline design speed is 60 mph and will be posted at 55 mph. According to the Spread Standards in the Drainage Manual, no encroachment into the travel lane is allowed for design speeds greater than 55 mph. The asterisk in Spread Standards Table 2-1 indicates that this rule applies to "travel, turn, or auxiliary lanes adjacent to barrier wall or curb, in normal or super elevated sections.

However, permission to use the spread criteria applicable to a 55 mph design speed was granted by the Department when calculating spread for left turn lanes, only. The reduced design speed allows for a gutter spread which still keeps 8' of the turn lane clear. Justification for this request was based on the fact that for a design speed of 60 mph, the entry speed into a left turn lane would be 52 mph (see Design Standards, Index #301). Using this criteria, the project spread analysis shows all inlets are acceptable. Record of coordination regarding the grading, drainage and spread for the left turn lanes is provided in Appendix C.

Water Quality Treatment: The history of water quality treatment is provided in the following.

A. The original permit in 1999 (#4316251.00) included water quality treatment of the existing two lanes, the two new proposed lanes, the two future lanes and all of the associated directly connected impervious area. Wet detention treatment of 1" of runoff from the impervious area was the proposed method. The roadside stormwater

management facilities were then constructed accordingly for the future (now proposed) condition. The total impervious area proposed to be treated was equal to 61.33 acres.

B. The SWFWMD permit currently in effect (#44016251.011) had initially planned to build the six lanes in accordance with the original permit. However, during the pre-application meeting on July 25, 2007, the consultant was directed to modify the previously permitted stormwater facilities in order to provide treatment for several other impervious items. As a result, the water quality treatment volume was increased over what was previously required, permitted and accommodated for in construction. The current permit proposes to treat 74.75 acres (a 13.42 acre increase). As a result, all of the existing control structures would have to be replaced with new structures to accommodate the increased water quality treatment volume which included the runoff from the following items.
   - Paved shoulders
   - Turn lanes and median openings constructed by adjacent developers (even exempt activities)
   - Other miscellaneous impervious areas

Now, however, the Water Management District has confirmed that, for the proposed widening, the current rule only requires the treatment of only the four new travel lanes. Knowing this provided the designer with the flexibility to provide only the required treatment in the event the sidewalk construction significantly reduced the available storage within the roadside stormwater management facility. However, the proposed design will not take advantage of the reduced treatment opportunity. Instead, all 22 stormwater management facilities are proposed to provide surplus treatment above and beyond the current SWFWMD permitting requirements. The Environmental Resource Permit Modification application will propose to treat a total treatment area of 63.79 acres, which includes a surplus 3.37 acft (40.42 acres) of treatment within the existing roadside ponds. The table on the following page summarizes the original permit, the required and the proposed water quality treatment areas and volumes.

The surplus treatment was achieved as a result of the regrading of the front slopes (1:4) and the back slopes (1:3), while still maintaining all of the permitted NWL and most of the DLW elevations of the existing ponds. Of the 22 existing control structures, only nine will require replacement with new structures. All other structures are proposed to remain, as is, or will be modified in place. Water quality treatment calculations are located within Appendix M.

Treatment Volume Comparison									
	Original Permit #4316251.00, 6/29/99		Required (4-lanes)		Proposed			Surplus Treatment	
Pond ID	DCIA (ac)	Volume (acft)	Impervious (ac)	Volume (acft)	Impervious (ac)	Volume (acft)	Comment	Impervious (ac)	Volume (acft)
P1A1	3.13	0.26	1.15	0.10	4.80	0.40	Mod ex. Struct	3.65	0.30
P5A1	3.49	0.29	1.04	0.09	2.88	0.24	Keep ex. Struct	1.84	0.15
P1A2	1.42	0.12	0.50	0.04	0.84	0.07	Mod ex. Struct	0.34	0.03
P2A2	1.23	0.10	0.46	0.04	0.72	0.06	New Struct	0.26	0.02
P3A2	1.35	0.11	0.50	0.04	0.96	0.08	New Struct	0.46	0.04
P1A3	2.43	0.20	1.01	0.08	1.80	0.15	Keep ex. Struct	0.80	0.07
P5A3	2.96	0.25	1.25	0.10	1.56	0.13	New Struct	0.31	0.03
P5B1	1.05	0.09	0.55	0.05	0.84	0.07	Mod ex. Struct	0.29	0.02
P7B1	1.26	0.11	0.47	0.04	0.96	0.08	Mod ex. Struct	0.49	0.04
P8B1	0.61	0.05	0.31	0.03	1.44	0.12	Keep ex. Struct	1.13	0.09
P10B2	1.10	0.09	0.50	0.04	0.84	0.07	New Struct	0.34	0.03
P12B2	5.35	0.45	2.58	0.21	5.28	0.44	New Struct	2.70	0.23
P2C1	9.16	0.76	2.18	0.18	16.44	1.37	Keep ex. Struct	14.26	1.19
P2C2	1.59	0.13	0.74	0.06	1.08	0.09	New Struct	0.34	0.03
P3C2	1.84	0.15	1.21	0.10	1.92	0.16	New Struct	0.71	0.06
P4C2	1.81	0.15	0.58	0.05	0.84	0.07	New Struct	0.26	0.02
P3D1	1.21	0.10	0.43	0.04	1.08	0.09	Keep ex. Struct	0.65	0.05
P4D1	4.78	0.40	1.63	0.14	4.44	0.37	Mod ex. Struct	2.81	0.23
P7D2	2.54	0.21	0.94	0.08	2.64	0.22	Keep ex. Struct	1.70	0.14
P7E1	7.97	0.66	2.87	0.24	8.88	0.74	Keep ex. Struct	6.01	0.50
P13E2	2.50	0.21	1.06	0.09	1.68	0.14	Mod ex. Struct	0.62	0.05
P14E2	2.55	0.21	1.46	0.12	1.92	0.16	New Struct	0.46	0.04
	61.33		***23.42***		***63.79***			***40.42***	***3.37***

Water Quantity Attenuation: According to Section 5.2.1 of FDOT Drainage Manual, the design of stormwater management systems for the Department shall comply with the water quality, rate and quantity requirements of Section 334.044(15), F.S., Chapter 14-86, F.A.C only in closed basins or areas subject to historical flooding. The original permit for this project designed all existing stormwater management facilities in accordance with Chapter 14-86, F.A.C. as well as the requirements of the Southwest Florida Water Management District (SWFWMD). For the purposes of this modification, only the SWFWMD 25-year/24-hour storm event was analyzed. The results were then compared back to the previous calculations to confirm the results were reasonable and similar. The use of SWFWMD rainfall amounts and the SCS Type II Florida Modified rainfall distribution is consistent with current SWFWMD permit. The allowable discharges established in the original permit were used as the basis for the proposed discharges and are summarized below.

SWFWMD 25-YEAR/24 HOUR DESIGN STORM

ALLOWABLE PEAK FLOW		PROPOSED PEAK FLOW		
BASIN	Q (cfs)	NODE	Q (cfs)	Q (cfs)
A1	73.00	TW1N	40.15	73.19
		TW1S	33.04	
A2	58.60	TW2N	5.49	20.45
		TW2S	14.96	
A3	65.23	TW3N	38.18	50.20
		TW3S	12.02	
B1	109.00	WB1	42.80	42.80
B2				
B3	16.00	WB3	12.86	12.86
C1	47.03	TW	20.63	20.63
C2	60.73	TWN	30.28	43.55
		TWS	13.27	
D1	63.00	WD	22.53	22.53
D2				
E1	69.00	WE1	16.73	16.73
E2	40.00	WE2	39.24	39.24

- Drainage Areas: All new drainage areas were measured based upon the proposed 6-lane widening plans which include any new development which have occurred within the project limits that may have not been reflected in the previous SR 54 permits.

- Drainage Curve Numbers: All new curve numbers were calculated based on the areas of the different land uses proposed under the 6-lane widened condition.

- Stage/Storage: New values for the linear ponds' stage/storage values were measured based on the new grading created by the widening, the shoulder reconstruction and the sidewalk footprint. In most cases, the storage within the roadside ponds were able to be increased. This was made possible due to the 1:4 front slopes and the 1:3 back slopes,

outside the clear zone.

- Normal Water Levels (NWL): No changes are proposed to the original and current permitted NWL's. Note that the original NWL's were converted from metric units to English units and then from NGVD29 to NAVD88. The datum shift equation, according to Vertcon is as follows: NAVD88 = NGVD29 + 0.827'.

- Design Low Water (DLW) / Initial Stage: Of the 22 control structures which exist within the project, only 9 will be replaced. For these 9 structures, the DLW elevation will be modified from the original permit (see Treatment Volume Comparison Table on previous page). The other 13 control structures will be allowed to remain either as is or with some minor modification. For these structures, no change to the DLW elevation is proposed. Bleed down orifices will be adjusted to meet the drawdown requirements for wet detention systems. All initial stages used for stormwater modeling have been set at the DLW.

- Top of Bank: The goal of setting the top of bank for the linear ponds was to provide a minimum freeboard of 0.5 ft. above the 25-year/24-hour design high water, in accordance with the current FDOT Drainage Manual. In some cases, the freeboard may be higher due to the elevation at the right-of-way and the profile of the proposed sidewalk. At a minimum, the top of bank elevation was set at 0.25' above the design high water. See discussion regarding "Tailwaters" for more information.

- Tailwaters: The tailwaters were obtained from the "Floodplain / Tailwater Stage Determination" table established in the original permit. The stage / time relationship for the tailwaters during a 24-hour design storm event assumed the tailwater to begin at seasonal high water at time zero and increasing to its peak at hour 15. The peak is maintained to hour 18 and then allowed to recede back to seasonal high water by hour 48. This stage / time relationship produces conservatively high design high waters within the linear ponds since it was developed to peak at almost the same time that the 24-hour storm event peaks. Tailwaters from the original documentation were converted from NGVD29 to NAVD88. Supporting documentation and summary tables comparing the two datums are provided in Appendix E.

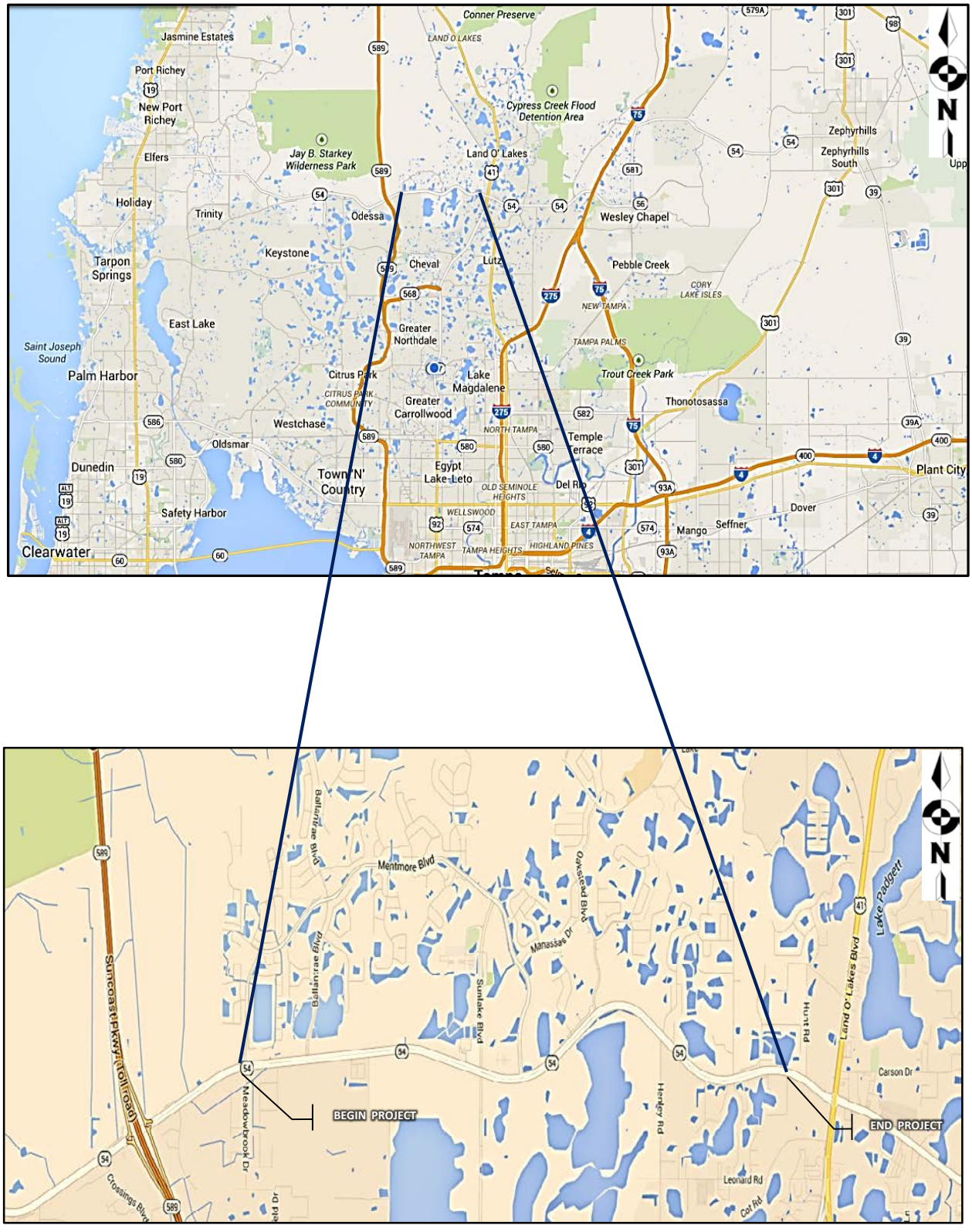
  Design tailwaters often influence the linear pond design high waters. For five of the linear ponds (P2A3, P10B2, P12B2, P13B2 and P14B2), the tailwaters exceed the top of bank / elevation at the existing right-of-way and overflow into the ponds. This condition was discussed in person with Daniel Lauricello, FDOT District Drainage Engineer, on April 22, 2015. It was agreed that we would set top of banks to a minimum 0.25' above the linear pond 25-year/24-hour design high water, even if it was tailwater-driven.

- Design High Waters: A summary table of the design high waters, tops of bank and freeboard is provided on the following page.

	Original Permit #4316251.00, 6/29/99				Proposed Design 2015			
POND ID	1999 25-YR DHW (FT-NGVD29)	1999 25-YR DHW (FT-NAVD88)	TOP OF BANK (FT-NAVD88)	1999 FREEBOARD (FT-NAVD88)	PROPOSED DHW (FT-NAVD88)	TOP OF BANK (FT-NAVD88)	PROPOSED FREEBOARD (FT-NAVD88)	LOWEST TOP OF BANK LOCATION
P1A1	54.48	53.65	54.9	1.29	54.39	53.2 (Exist)	Not in project	
P2A1	55.39	54.56	56.6	2.02	55.77	56.2	0.43	
P3A1	56.26	55.43	57.2	1.81	56.10	57.3	1.18	S/W 1769+00
P4A1	56.48	55.65	56.9	1.26	56.19	56.2	0.01	Back of ditch 1773+00
P5A1	53.90	53.07	54.9	1.87	54.11	54.0 (Exist)	Not in project	
P6A1	55.60	54.77	56.1	1.32	55.81	56.1	0.29	S/W @ 1763+00
P7A1	56.27	55.44	55.9	0.49	56.06	56.5	0.44	S/W near Driveway 1764+80
P8A1	56.34	55.51	55.9	0.42	56.25	56.8	0.55	S/W near Driveway 1766+80
P1A2	57.18	56.35	56.6	0.23	56.20	56.7	0.50	R/W 1774+00
P2A2	57.11	56.28	56.6	0.30	56.36	56.8	0.44	S/W entire ditch
P3A2	57.25	56.42	56.6	0.16	56.30	56.8	0.50	S/W entire ditch
P1A3	58.32	57.49	58.2	0.74	57.95	58.5	0.55	NW corner 1790+70
P2A3	58.45	57.62	58.2	0.61	57.95	58.2	0.25	TW = 57.94; S/W 1794+00
P3A3	58.81	57.98	60.2	2.21	58.35	59.7	1.34	S/W 1806+00
P4A3	59.14	58.31	60.9	2.54	58.74	60.3	1.59	S/W 1808+00
P5A3	58.59	57.76	58.2	0.47	56.71	58.9	2.19	S/W entire Ditch
P5AA3	58.59	57.76	58.2	0.47	57.47	58.9	1.43	S/W entire Ditch
P5BA3	58.59	57.76	58.2	0.47	58.14	58.9	0.76	S/W entire Ditch
P6A3	58.73	57.90	60.5	2.62	58.20	60.1	1.90	S/W near Driveway 1805+40
P7A3	58.78	57.95	60.1	2.12	58.22	59.8	1.58	S/W @ 1807+48
P1B1	60.66	59.83	60.5	0.67	60.42	60.7	0.28	S/W 1809+00 to 1813+00
P3B1	60.92	60.09	60.4	0.31	60.17	60.7	0.53	S/W entire Ditch 1811+00 - 1814+00
P4B1	60.64	59.81	60.9	1.09	60.40	60.7	0.30	S/W entire ditch
P5B1	60.59	59.76	60.8	1.04	60.19	60.7	0.51	R/W @ 1818+00
P7B1	60.89	60.06	60.4	0.34	60.16	60.7	0.54	S/W entire Ditch
P8B1	60.84	60.01	60.8	0.79	60.17	60.7	0.53	S/W entire Ditch
P10B2	60.70	59.87	60.1	0.23	60.14	60.4	0.26	TW = 60.14; S/W entire ditch
P12B2	60.71	59.88	59.8	-0.08	60.17	59.8	-0.37	TW = 60.14; S/W entire ditch
P13B2	60.71	59.88	60.1	0.22	60.17	60.0	-0.17	TW = 60.14; S/W @ 1839+00
P14B2	60.71	59.88	60.0	0.12	60.17	59.3	-0.87	TW = 60.14; S/W @ 1844+00
P1C1	60.81	59.98	61.5	1.53				
P2C1	61.05	60.22	61.5	1.29	60.52	61.0	0.48	R/W @ 1858+60
P3C1	61.14	60.31	62.7	2.34				
P1C2	63.21	62.38	63.5	1.09	62.04	63.1	1.06	S/W near Driveway 1882+10
P2C2	62.95	62.12	62.5	0.37	61.85	62.8	0.95	S/W entire ditch
P3C2	63.03	62.20	62.5	0.29	62.24	62.8	0.56	S/W entire ditch
P4C2	63.32	62.49	63.2	0.66	63.04	63.3	0.26	TW = 63.04; S/W entire ditch
P5C2	63.49	62.66	63.5	0.81	63.04	63.6	0.56	TW = 63.04; S/W entire ditch
P3D1	64.98	64.15	65.0	0.85	63.13	65.1	1.97	S/W entire ditch
P4D1	64.85	64.02	64.3	0.28	63.90	64.6	0.70	S/W entire ditch
P7D2	64.50	63.67	64.3	0.63	63.73	64.0	0.27	R/W using contours
P8D2	65.25	64.42	67.0	2.58	64.36	64.9	0.54	S/W @ 1921+65
P9D2	67.79	66.96	68.0	1.04	64.77	67.7	2.93	S/W @ 1925+00
P10D2	68.37	67.54	67.9	0.36	64.79	67.8	3.01	S/W @ 1928+20
P6D2					66.20	67.8	1.60	S/W near Driveway 1925+80
P7E1	67.25	66.42	69.0	2.58	66.28	66.8	0.52	S/W near Driveway 1943+60
P10E1	67.15	66.32	67.0	0.68	66.18	66.6	0.42	S/W near Driveway 1943+77
P12E1	66.97	66.14	67.0	0.86	66.02	66.9	0.88	S/W @ 1949+00
P13E2	68.03	67.20	66.5	-0.70	65.81	66.4	0.59	S/W @ 1958+70
P15E2	68.42	67.59	68.0	0.41	66.49	68.0	1.51	S/W entire ditch
P16E2	68.53	67.70	70.0	2.30	66.80	68.6	1.80	S/W @ driveway 1970+79
P18E2	68.63	67.80	70.0	2.20	67.04	68.2	1.16	EOP @ 1975+00 XS
P19E2	68.69	67.86	68.0	0.14	67.19	67.4	0.21	Contour @ Driveway 1977+70

Exhibits: Project Location Map, Watershed Map, Soils Map, FEMA Map, Drainage Diagram

Figure 1 - Project Location Map



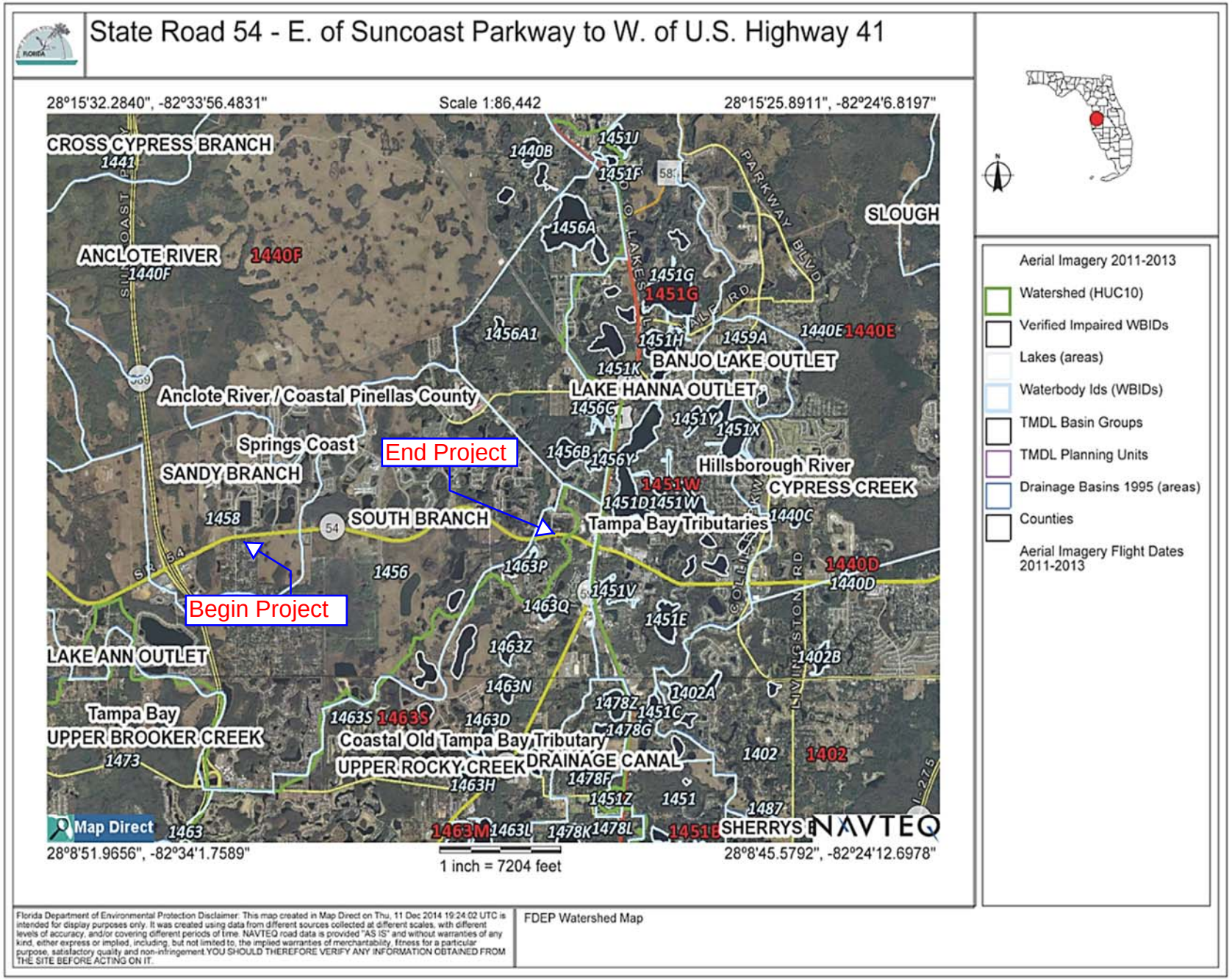


Figure 2 - Watershed Map

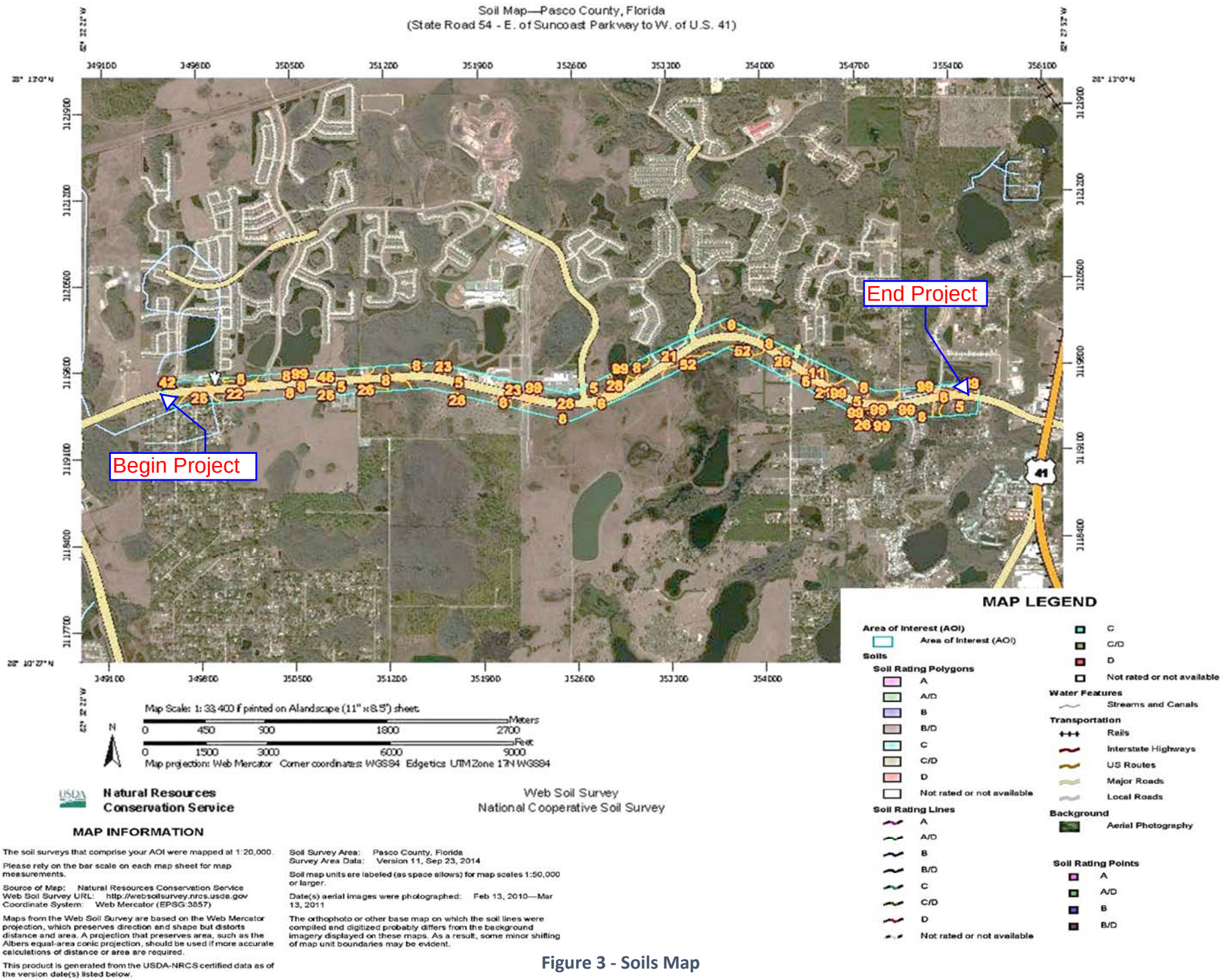


Figure 3 - Soils Map

Figure 3 - Soils Map

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	A/D	145.3	42.9%
6	Tavares sand, 0 to 5 percent slopes	A	4.8	1.4%
8	Sellers mucky loamy fine sand	A/D	45.9	13.6%
11	Adamsville fine sand, 0 to 2 percent slopes	A/D	7.0	2.1%
21	Smyrna fine sand	A/D	50.4	14.9%
22	Basinger fine sand	A/D	8.7	2.6%
23	Basinger fine sand, depressional, 0 to 1 percent slopes	A/D	5.2	1.5%
26	Narcoossee fine sand	B	50.3	14.9%
28	Pits		1.3	0.4%
42	Pomello fine sand, 0 to 5 percent slopes	A	0.1	0.0%
46	Cassia fine sand, 0 to 5 percent slopes	A/D	3.1	0.9%
52	Samsula muck	A/D	7.5	2.2%
99	Water		8.8	2.6%
Totals for Area of Interest			**338.4**	**100.0%**

Depth to Water Table

Depth to Water Table— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
5	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	31	145.3	42.9%
6	Tavares sand, 0 to 5 percent slopes	145	4.8	1.4%
8	Sellers mucky loamy fine sand	0	45.9	13.6%
11	Adamsville fine sand, 0 to 2 percent slopes	51	7.0	2.1%
21	Smyrna fine sand	31	50.4	14.9%
22	Basinger fine sand	7	8.7	2.6%
23	Basinger fine sand, depressional, 0 to 1 percent slopes	0	5.2	1.5%
26	Narcoossee fine sand	84	50.3	14.9%
28	Pits	>200	1.3	0.4%
42	Pomello fine sand, 0 to 5 percent slopes	84	0.1	0.0%
46	Cassia fine sand, 0 to 5 percent slopes	59	3.1	0.9%
52	Samsula muck	0	7.5	2.2%
99	Water	>200	8.8	2.6%
Totals for Area of Interest			**338.4**	**100.0%**

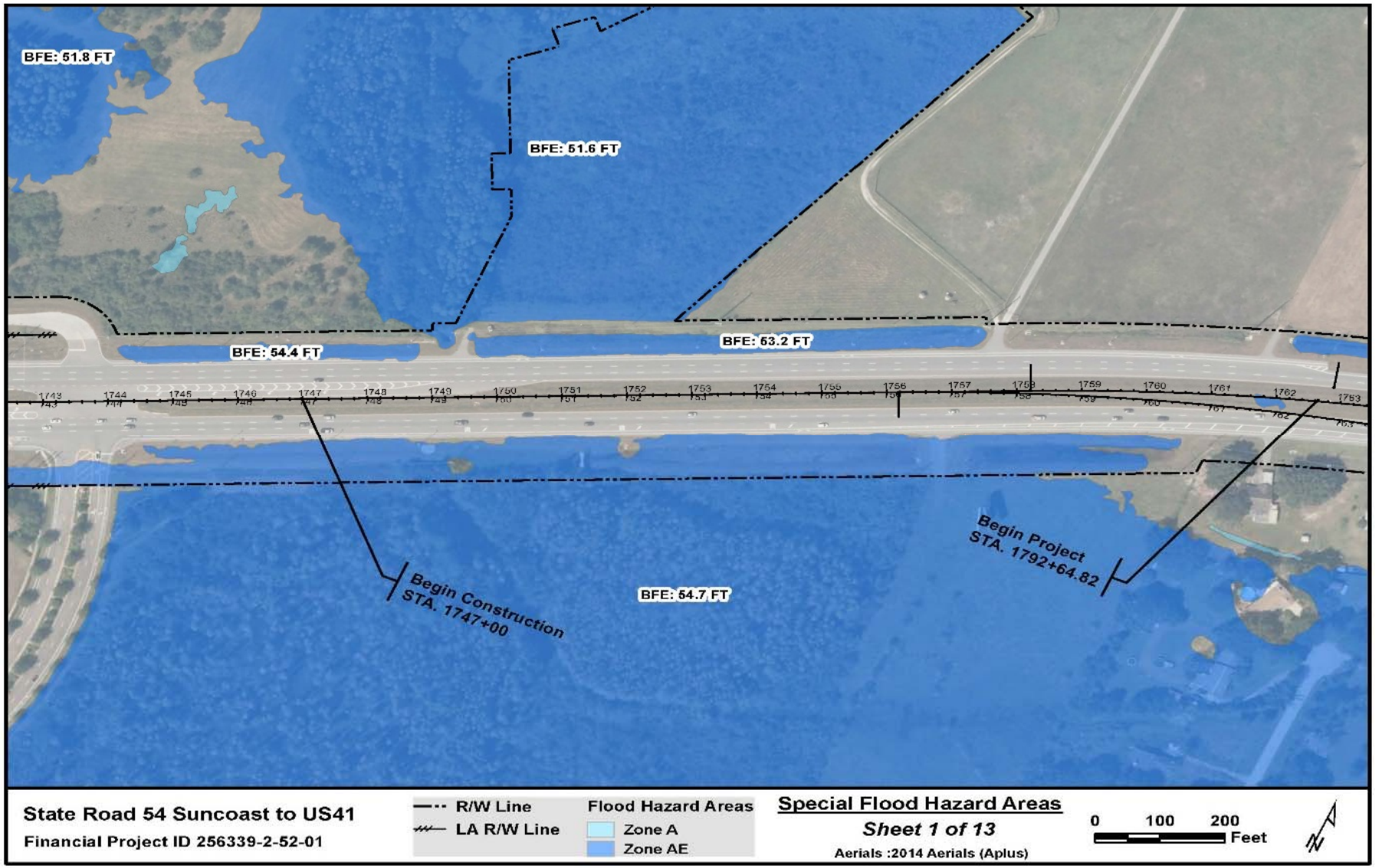


Figure 4A - FEMA Map

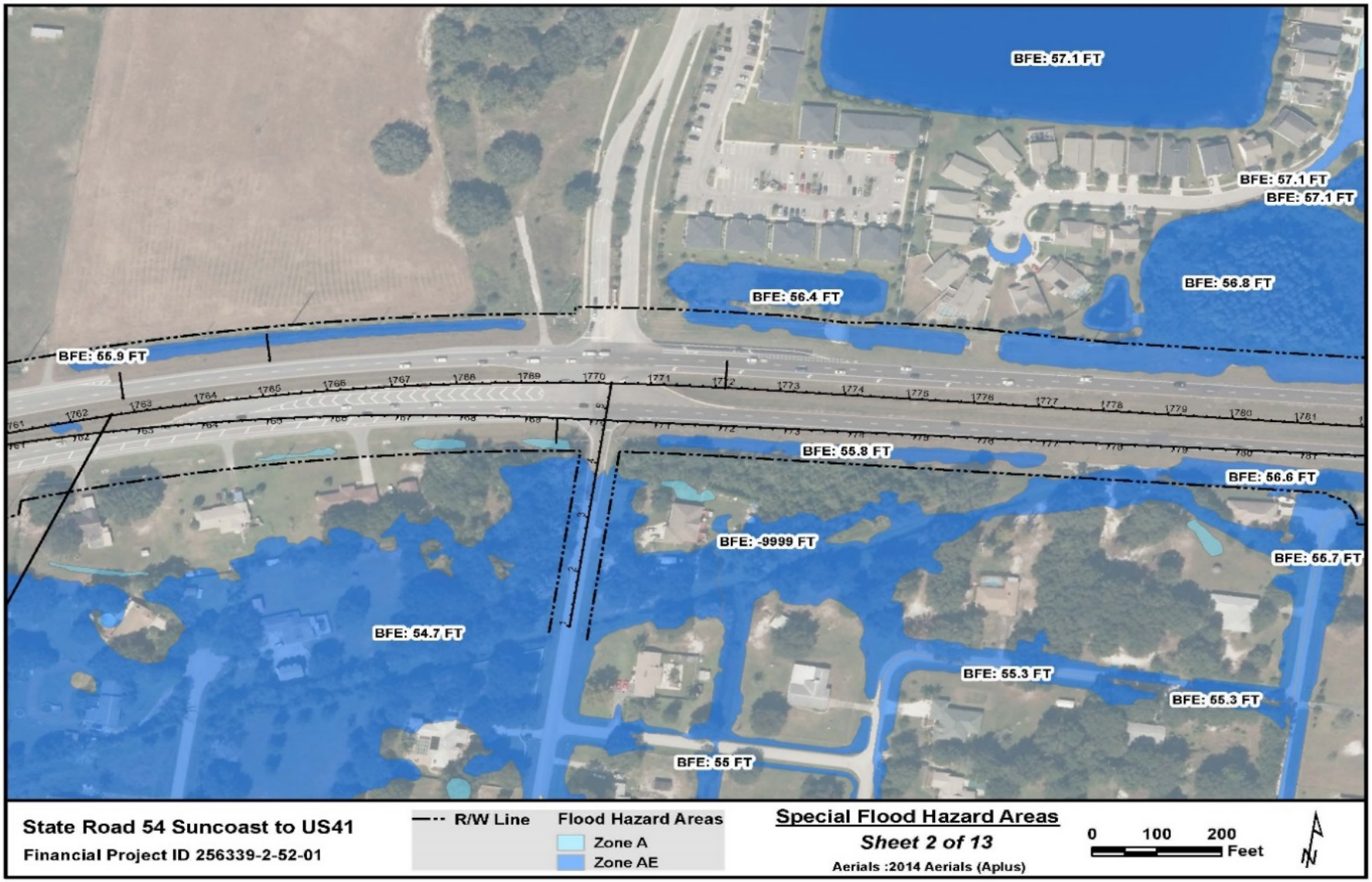


Figure 4B - FEMA Map

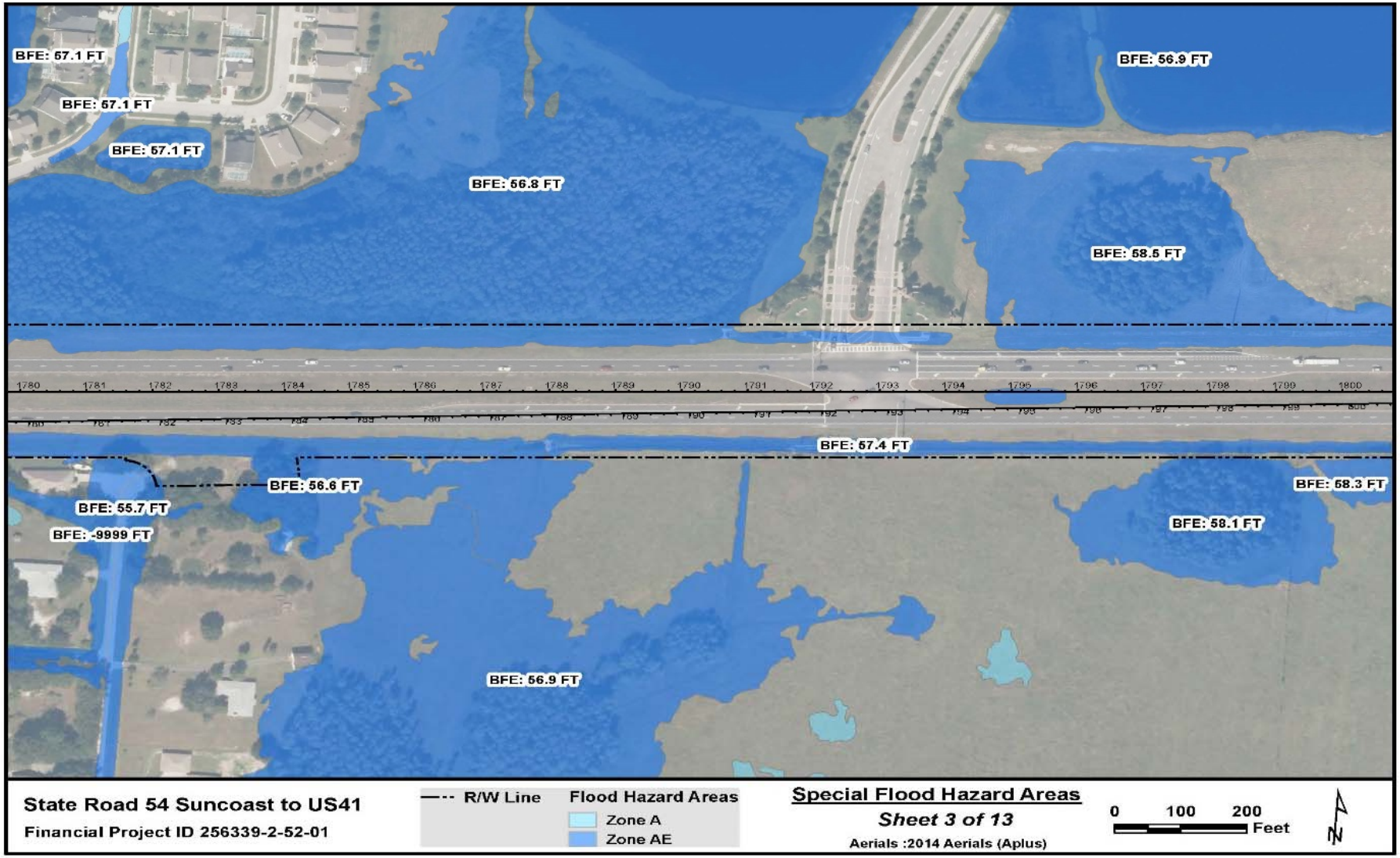


Figure 4C - FEMA Map

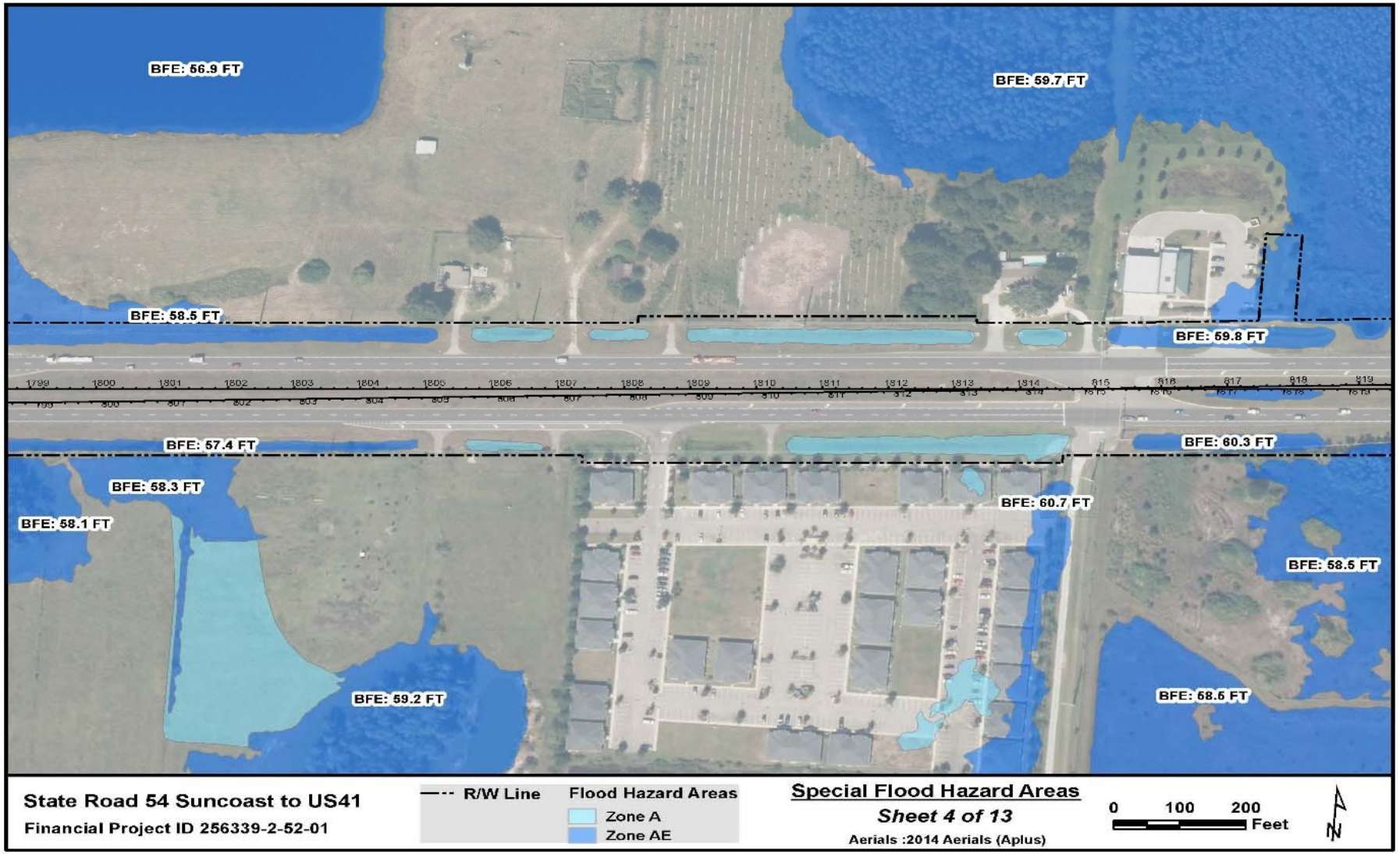


Figure 4D - FEMA Map



Figure 4E - FEMA Map

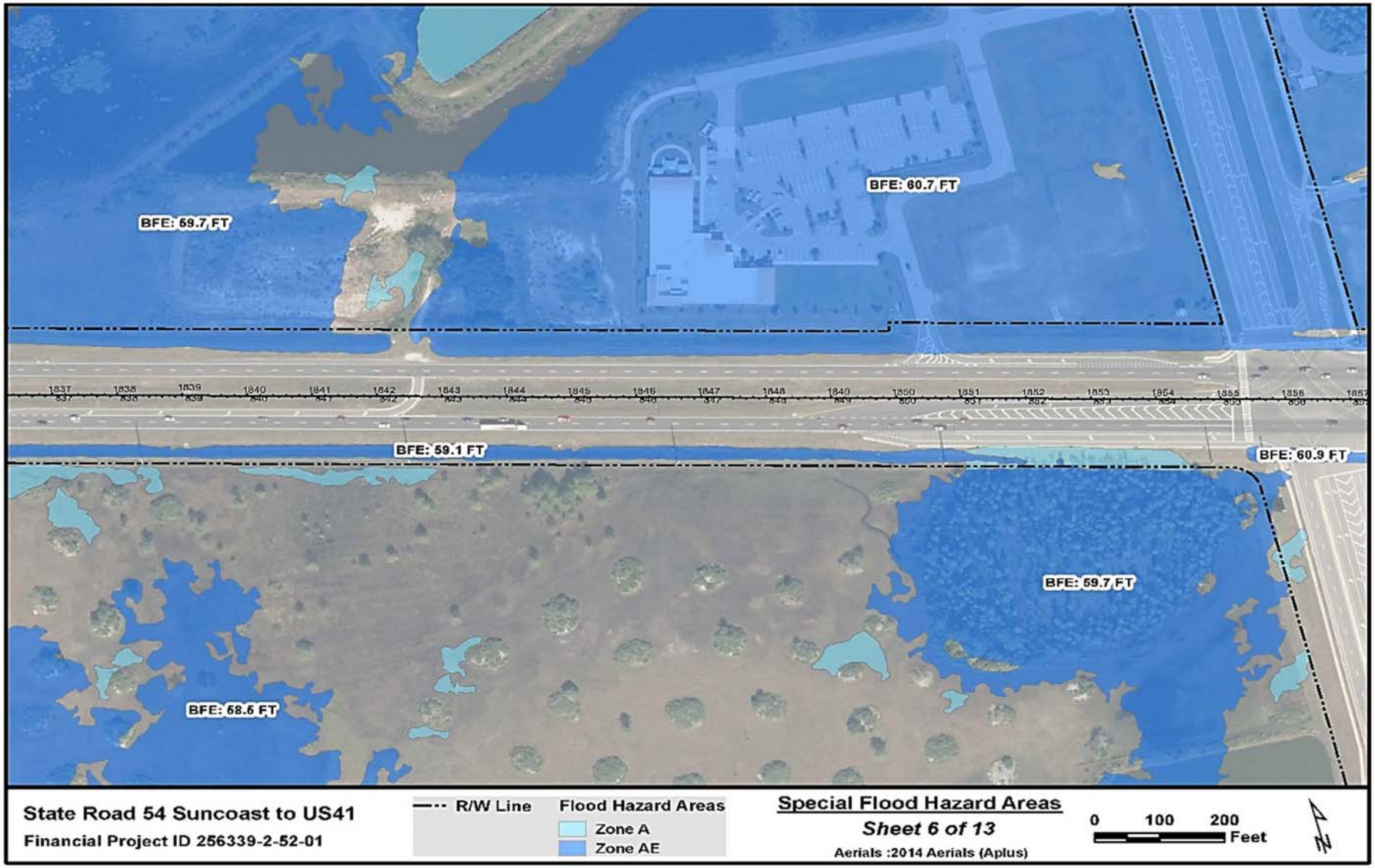


Figure 4F - FEMA Map

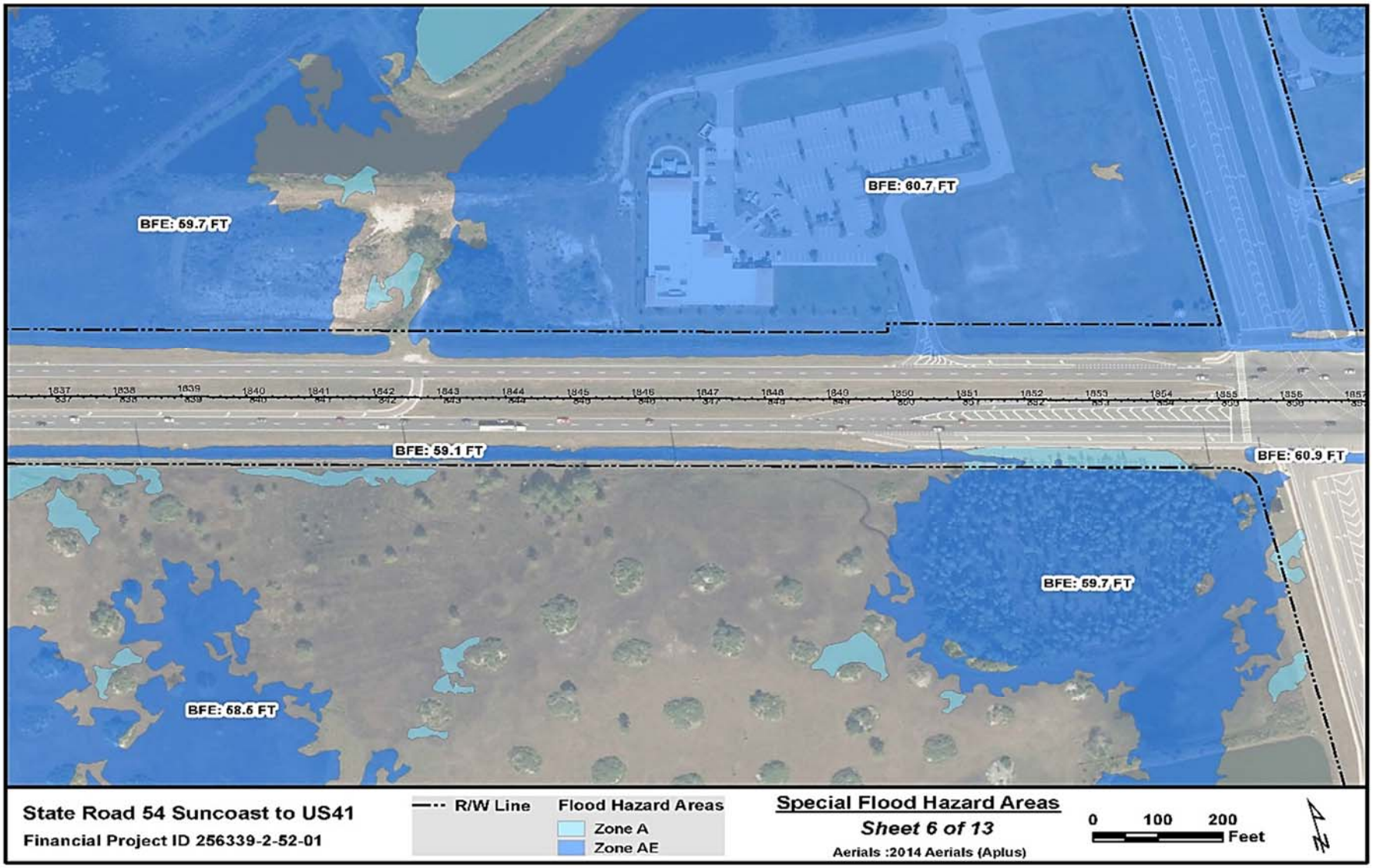


Figure 4G - FEMA Map

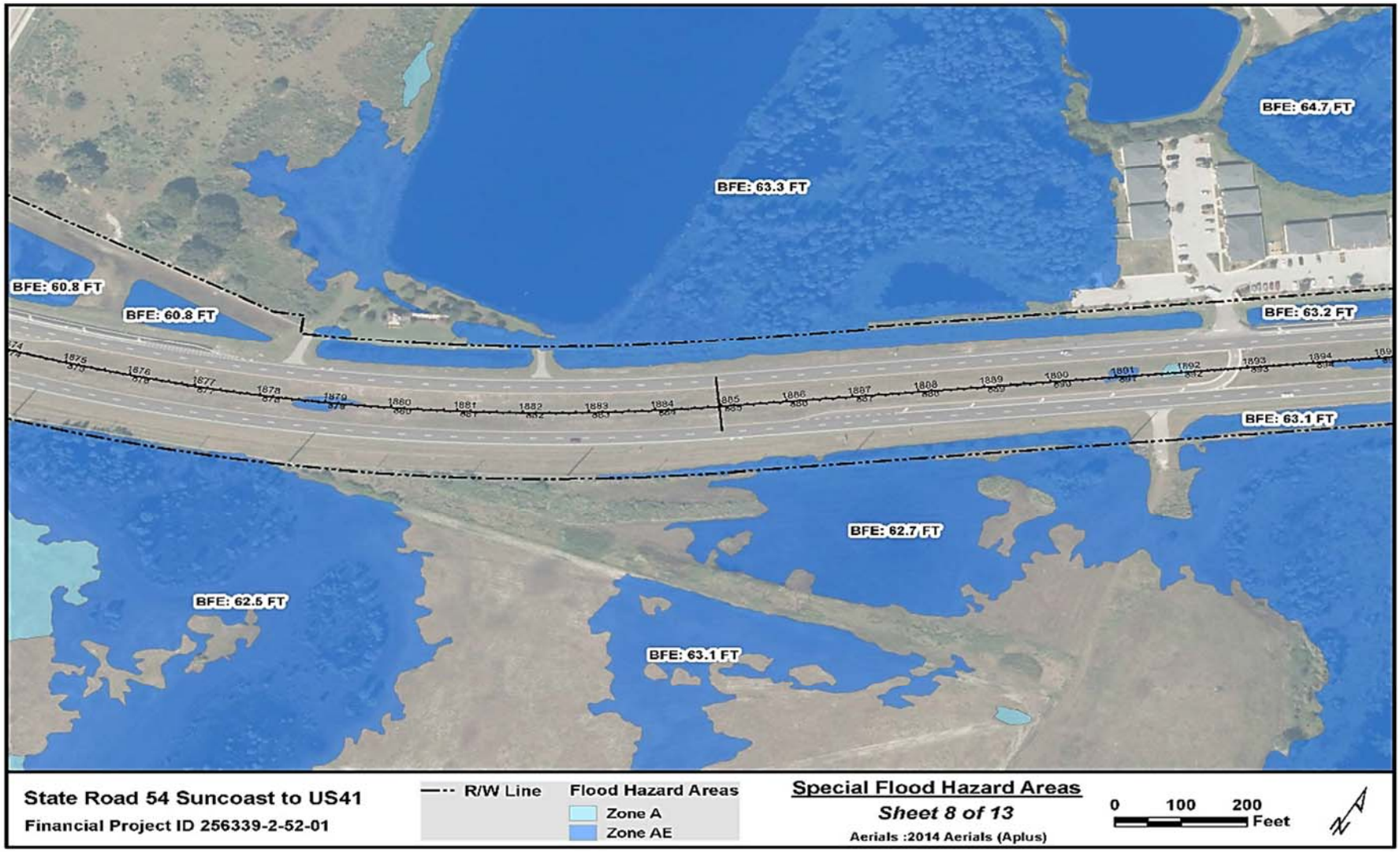


Figure 4H - FEMA Map

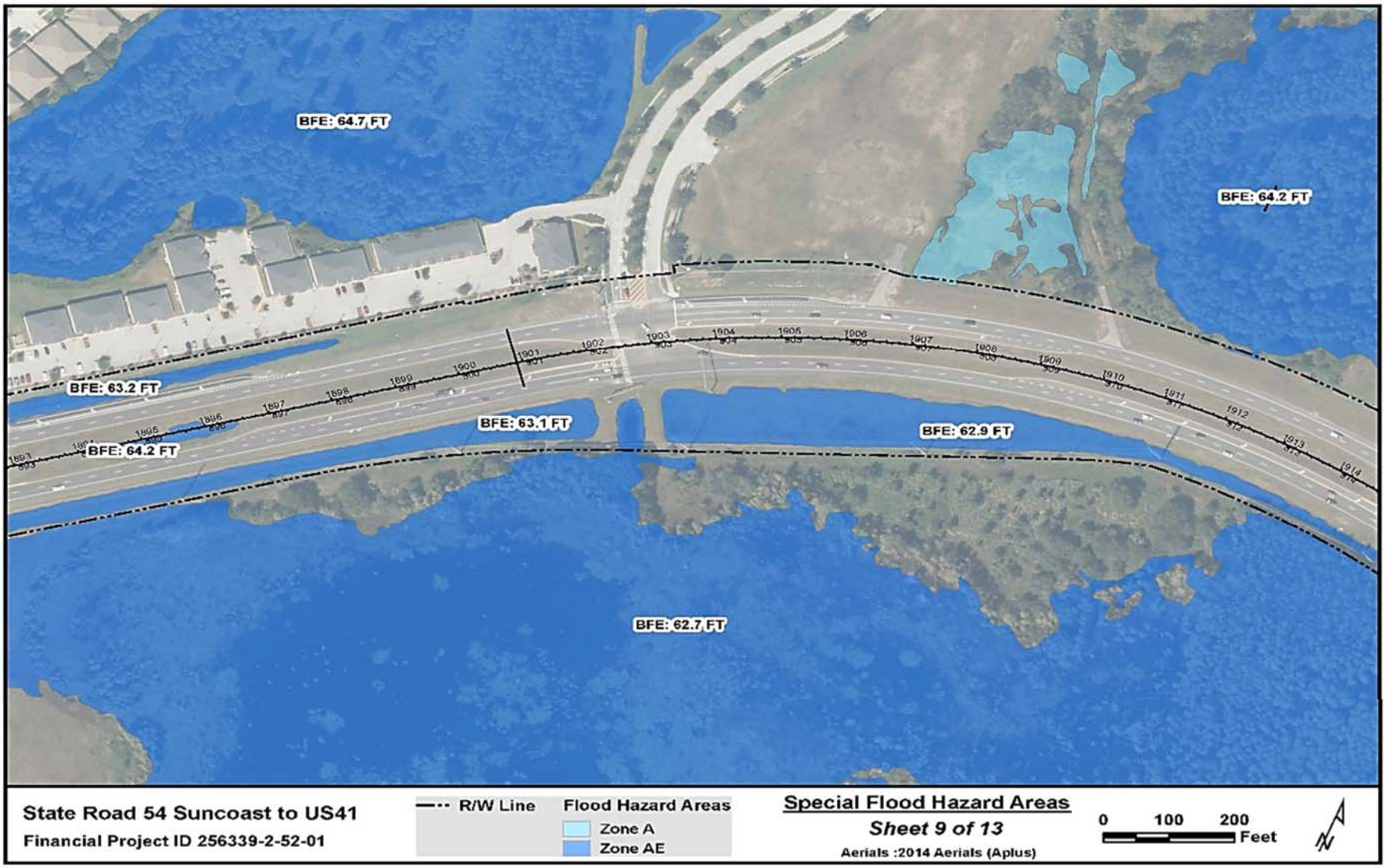


Figure 4i - FEMA Map

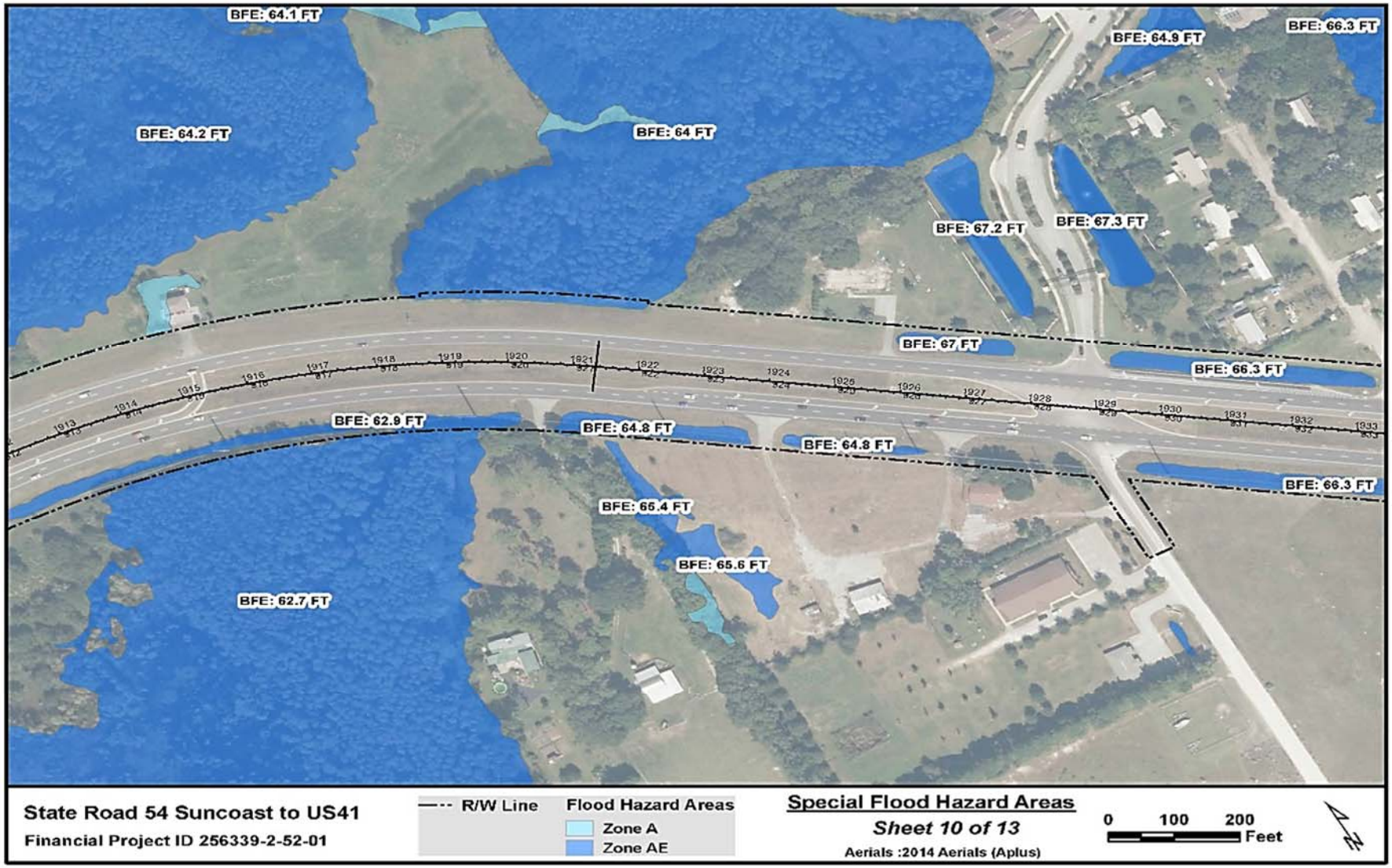


Figure 4J - FEMA Map

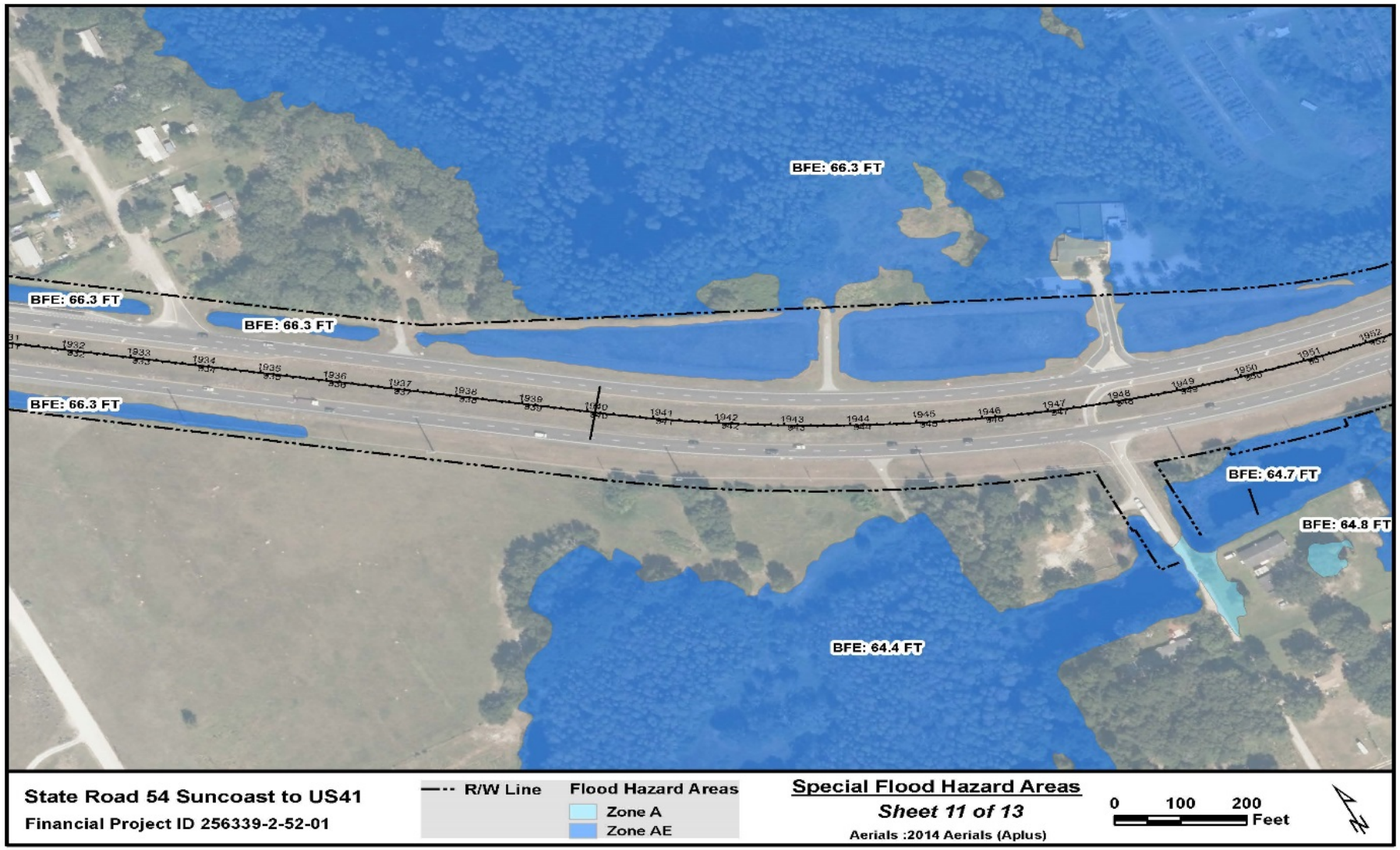


Figure 4K - FEMA Map

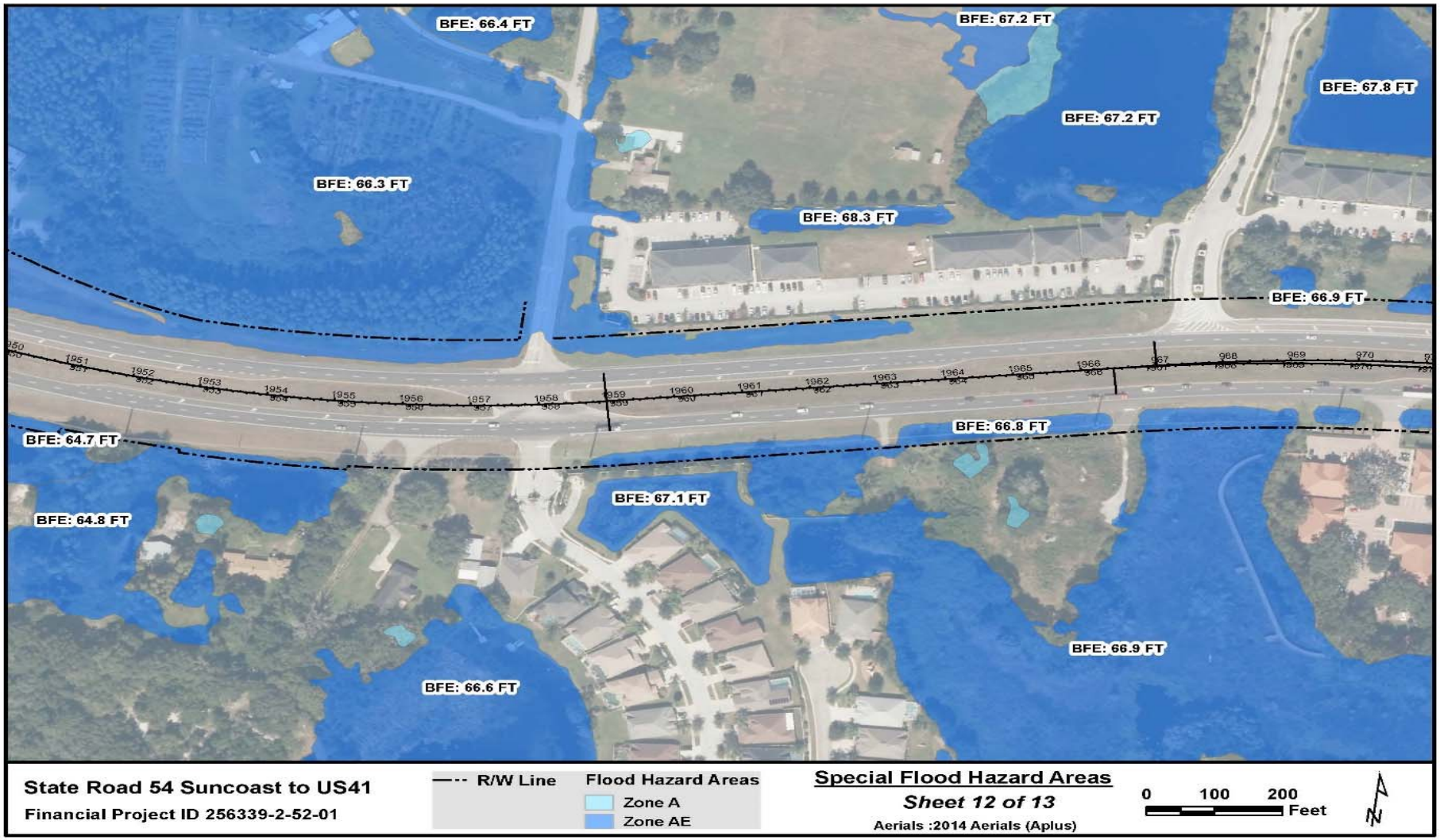


Figure 4L - FEMA Map

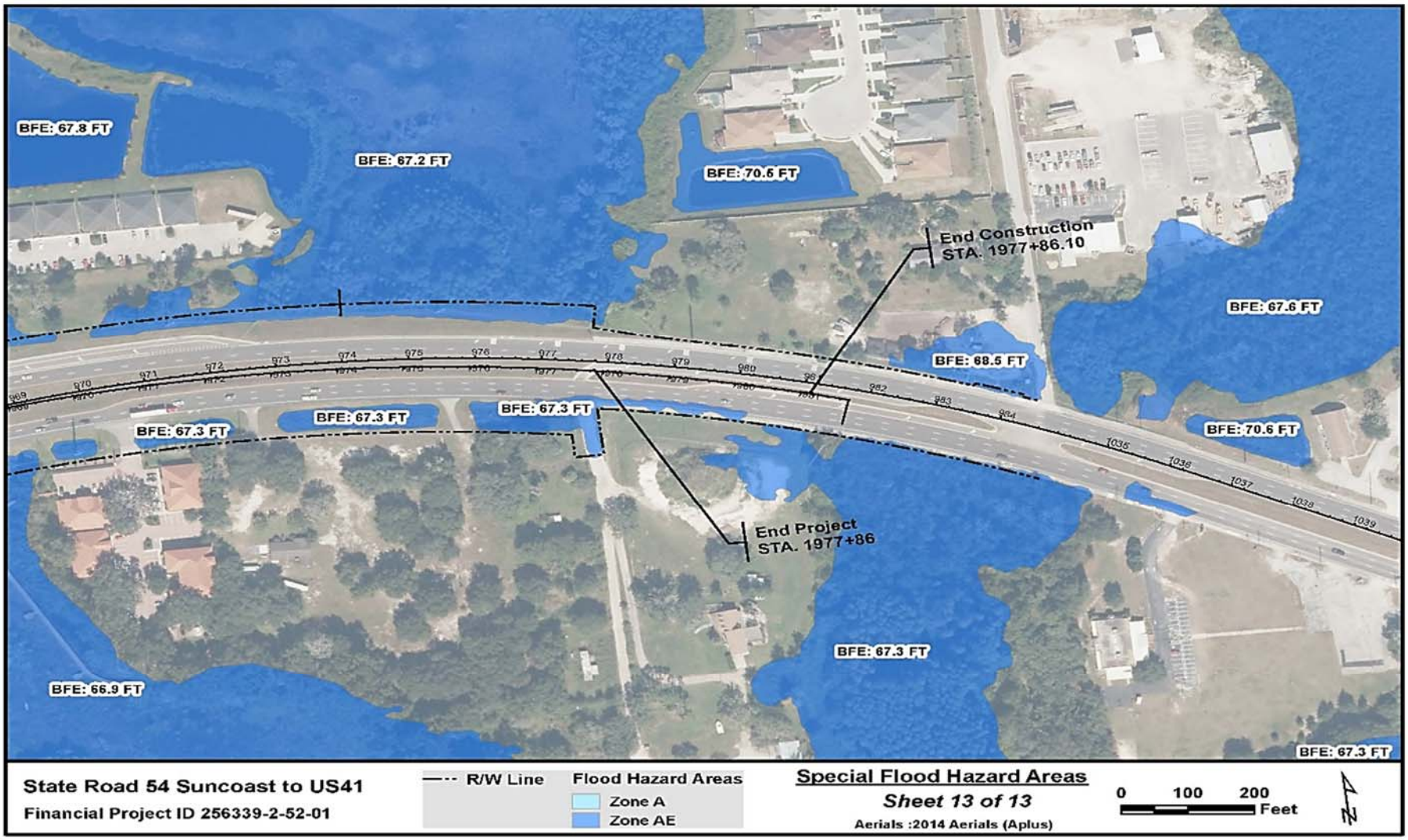
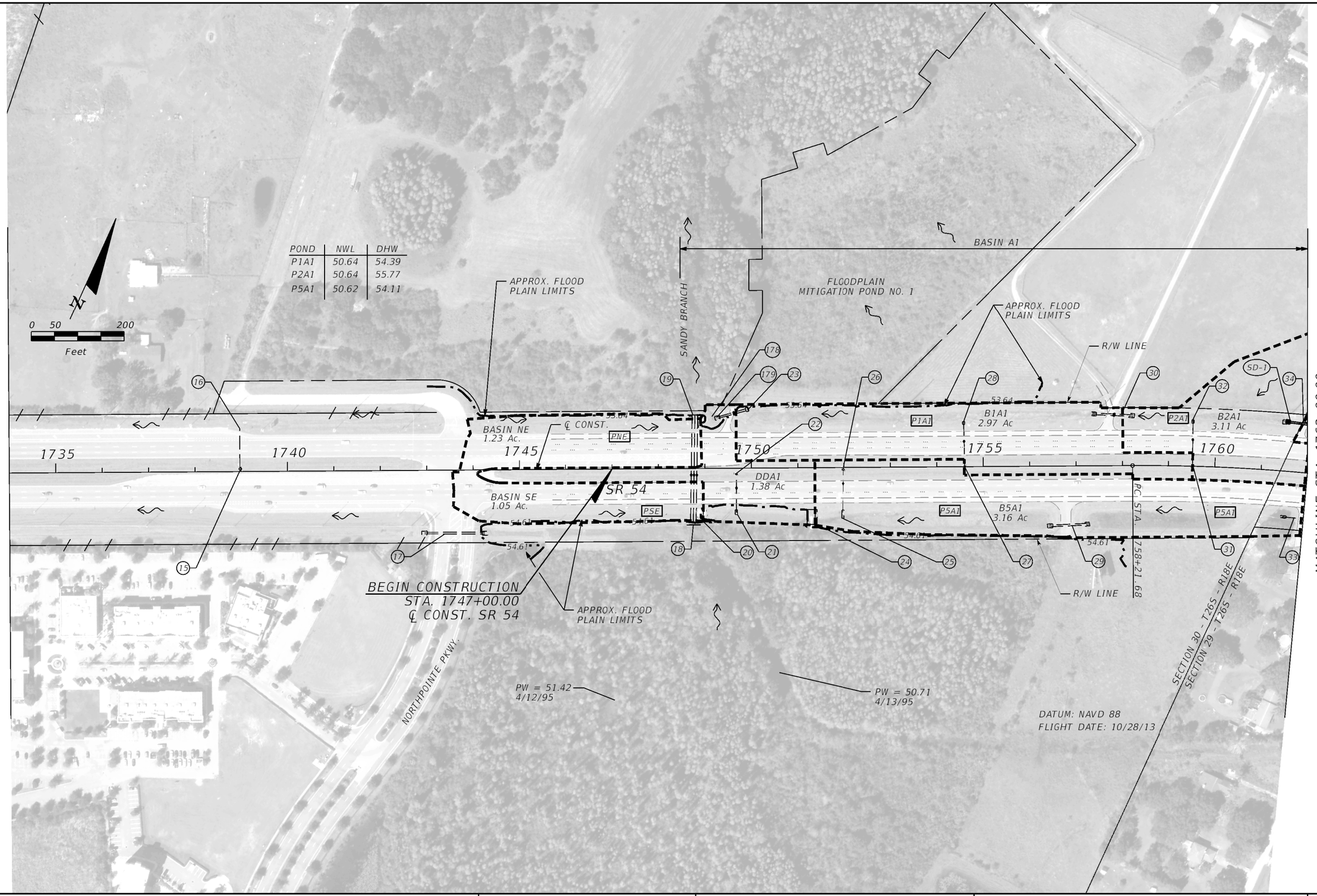


Figure 4M - FEMA Map



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (1)

SHEET NO. 1

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A 1201

BASIN A1

BASIN A2

BASIN A3

SECTION 29

BEGIN PROJECT
STA. 1762+64.82
℄ CONST. SR 54

MEADOWBROOK DR.

BUTTERFLY LANDING DR.

APPROX. FLOOD
PLAIN LIMITS

R/W LINE

℄ CONST.

B3A1
6.53 Ac

B4A1
3.33 Ac

B1A2
2.43 Ac

PW = 50.87
4/5/95

DDA3
2.75 Ac

B7A1
0.64 Ac

B8A1
1.13 Ac

B2A2
2.05 Ac

PT STA. 1772+14.40

M1A2
0.83 AC

SR 54

B3A2
2.11 Ac

M1A3
0.29 AC

B6A1
0.78 Ac

R/W LINE

APPROX. FLOOD
PLAIN LIMITS

PW = 50.44
4/3/95

RAINTREE RD.

RIVERSTONE DR.

APPROX. FLOOD
PLAIN LIMITS

MATCHLINE STA. 1762+00.00

MATCHLINE STA. 1790+00.00

N

0 50 200
Feet

STR. #	AREA (Ac)
S-113	0.20
S-114	0.20
S-115	0.19
S-116	0.25
S-120	0.17
S-121	0.06
S-122	0.10
S-123	0.08
S-124	0.38
S-125	0.07
S-126	0.21
S-127	0.81
S-131	0.13
S-133	0.10

POND	NWL	DHW
P3A1	50.64	56.10
P4A1	50.64	56.19
P6A1	50.62	55.81
P7A1	50.62	56.06
P8A1	50.62	56.25
P1A2	55.14	56.20
P2A2	55.14	56.36
P3A2	55.15	56.30
P5A3	55.14	56.71

DATUM: NAVD 88
SECTION 29 - T26S - R18E
FLIGHT DATE: 10/28/13

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (2)

SHEET NO. 2

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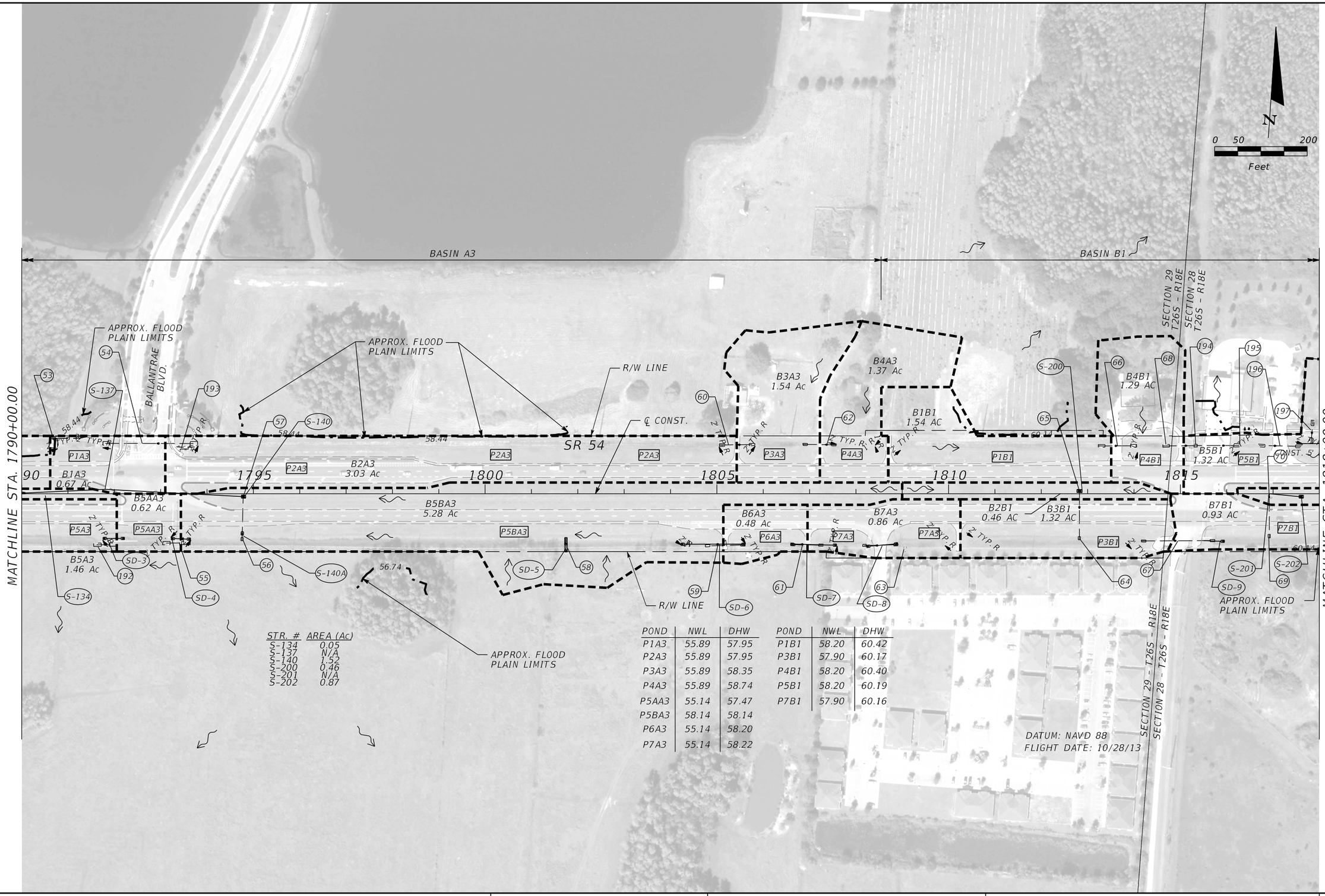


STR. #	AREA (Ac)
S-134	0.05
S-137	N/A
S-140	1.52
S-200	0.46
S-201	N/A
S-202	0.87

POND	NWL	DHW
P1A3	55.89	57.95
P2A3	55.89	57.95
P3A3	55.89	58.35
P4A3	55.89	58.74
P5AA3	55.14	57.47
P5BA3	58.14	58.14
P6A3	55.14	58.20
P7A3	55.14	58.22

POND	NWL	DHW
P1B1	58.20	60.42
P3B1	57.90	60.17
P4B1	58.20	60.40
P5B1	58.20	60.19
P7B1	57.90	60.16

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

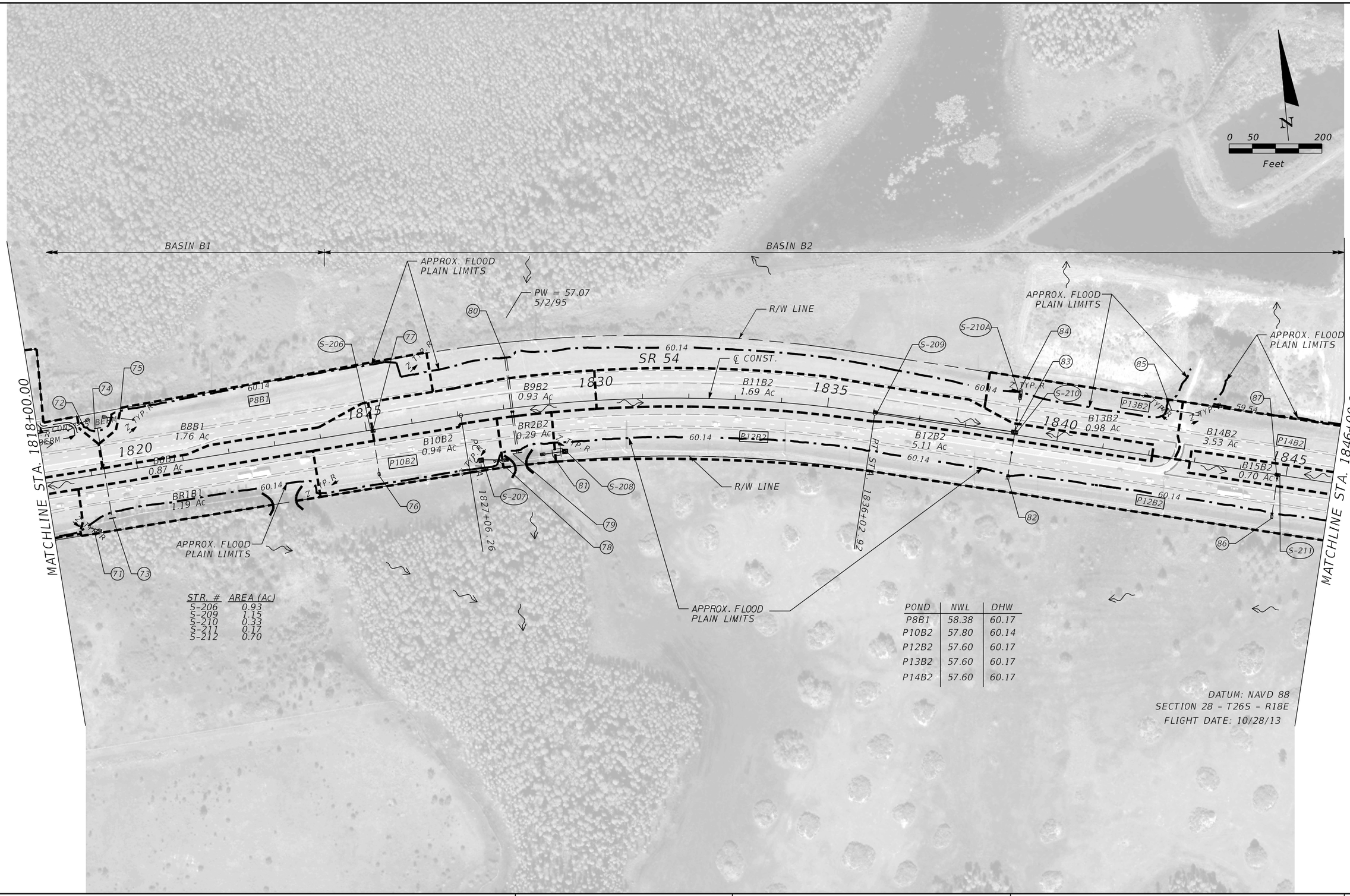
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (3)

SHEET NO. 3

$USER$ $DATE$ $TIME$ $FILE$

A 1203



STR. #	AREA (Ac)
S-206	0.93
S-209	1.15
S-210	0.33
S-211	0.17
S-212	0.70

POND	NWL	DHW
P8B1	58.38	60.17
P10B2	57.80	60.14
P12B2	57.60	60.17
P13B2	57.60	60.17
P14B2	57.60	60.17

DATUM: NAVD 88
SECTION 28 - T26S - R18E
FLIGHT DATE: 10/28/13

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

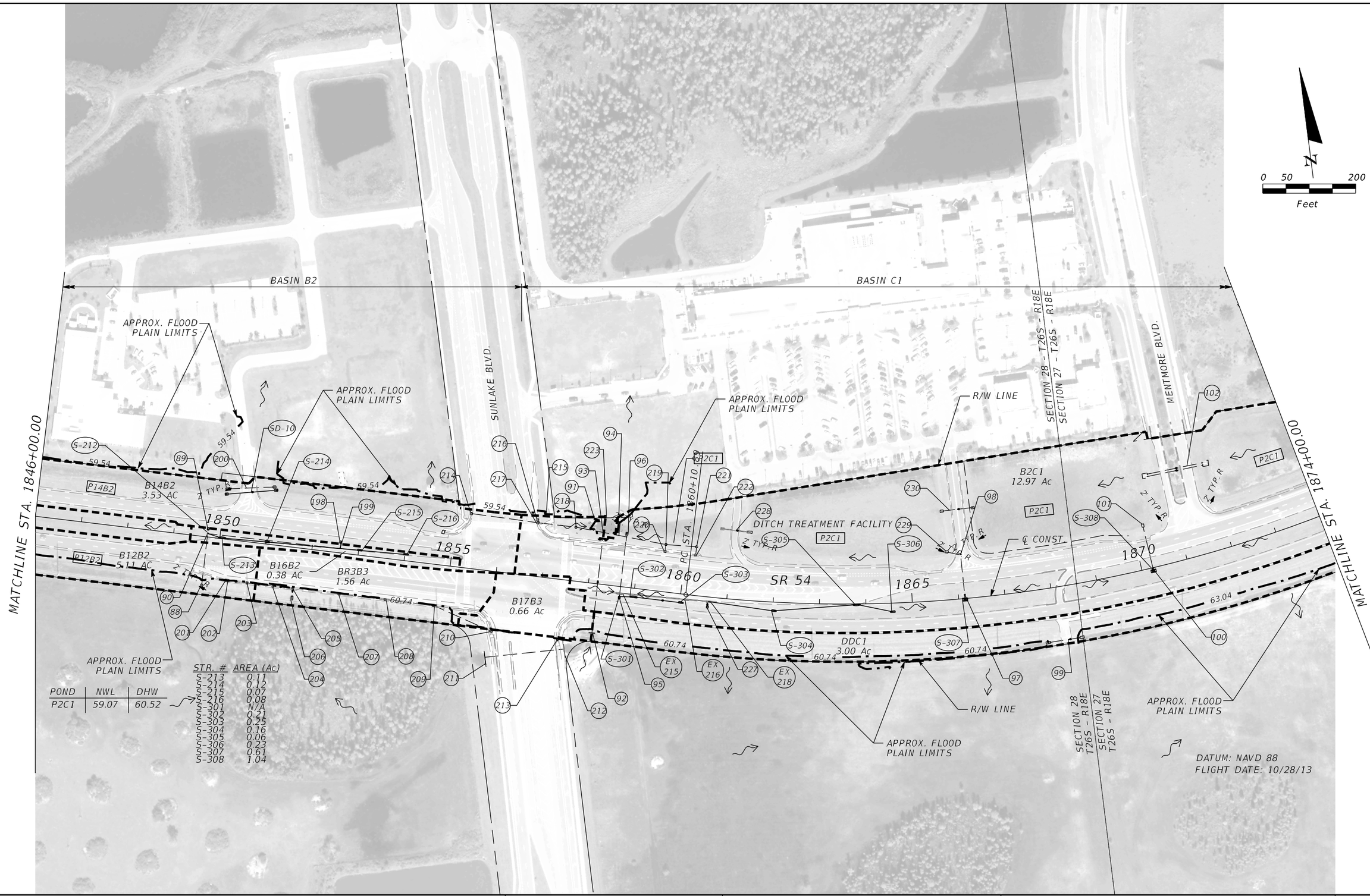
MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (4)

SHEET NO. 4



POND	NWL	DHW
P2C1	59.07	60.52

STR. #	AREA (Ac)
S-213	0.11
S-214	0.12
S-215	0.07
S-216	0.08
S-301	N/A
S-302	0.21
S-303	0.25
S-304	0.16
S-305	0.06
S-306	0.23
S-307	0.61
S-308	1.04

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (5)

SHEET NO. 5

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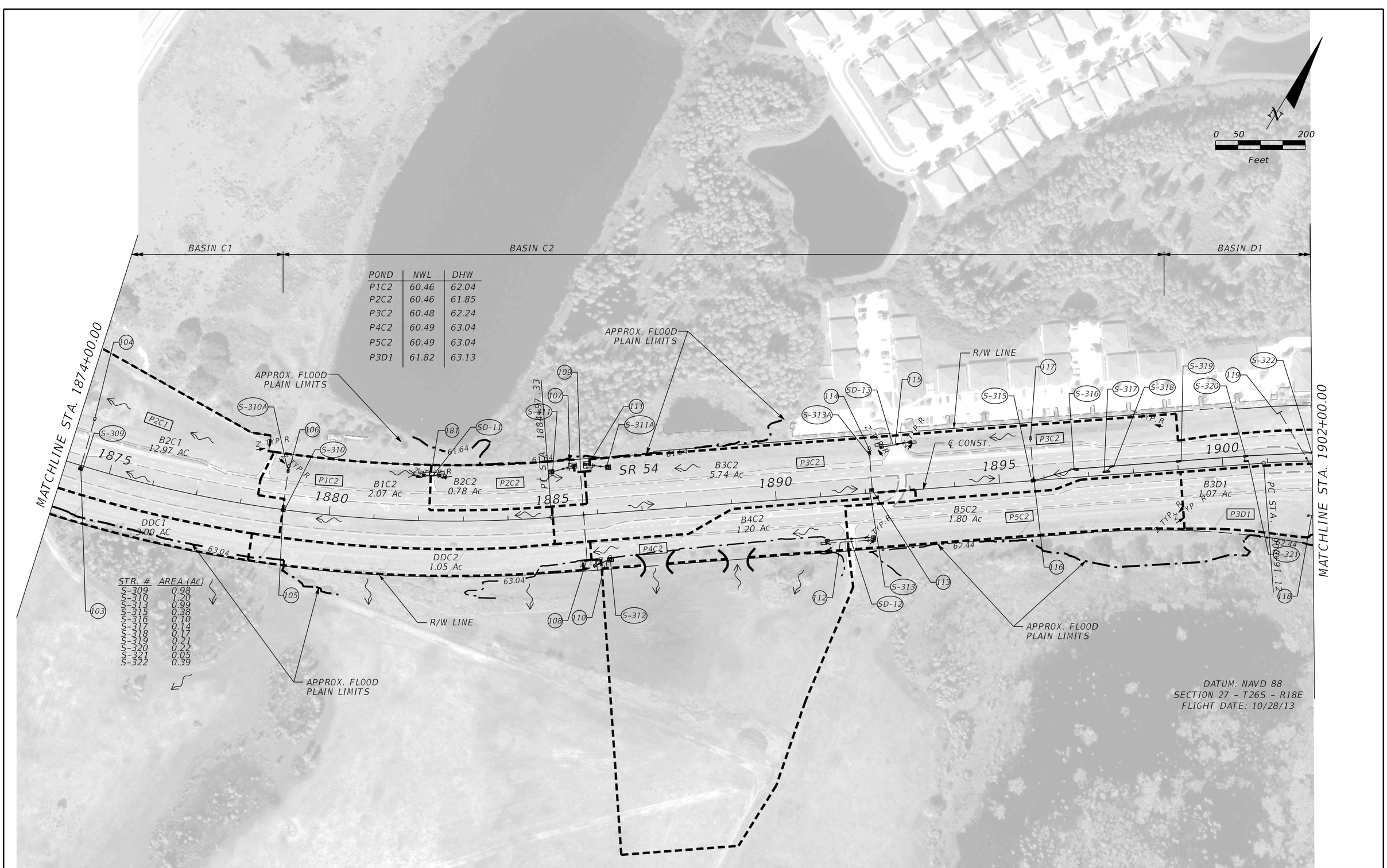


POND	NWL	DHW
P1C2	60.46	62.04
P2C2	60.46	61.85
P3C2	60.48	62.24
P4C2	60.49	63.04
P5C2	60.49	63.04
P3D1	61.82	63.13

STR. #	AREA (Ac)
S-309	0.98
S-310	1.20
S-313	0.99
S-315	0.38
S-316	0.10
S-317	0.14
S-318	0.17
S-319	0.21
S-320	0.22
S-321	0.05
S-322	0.39

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

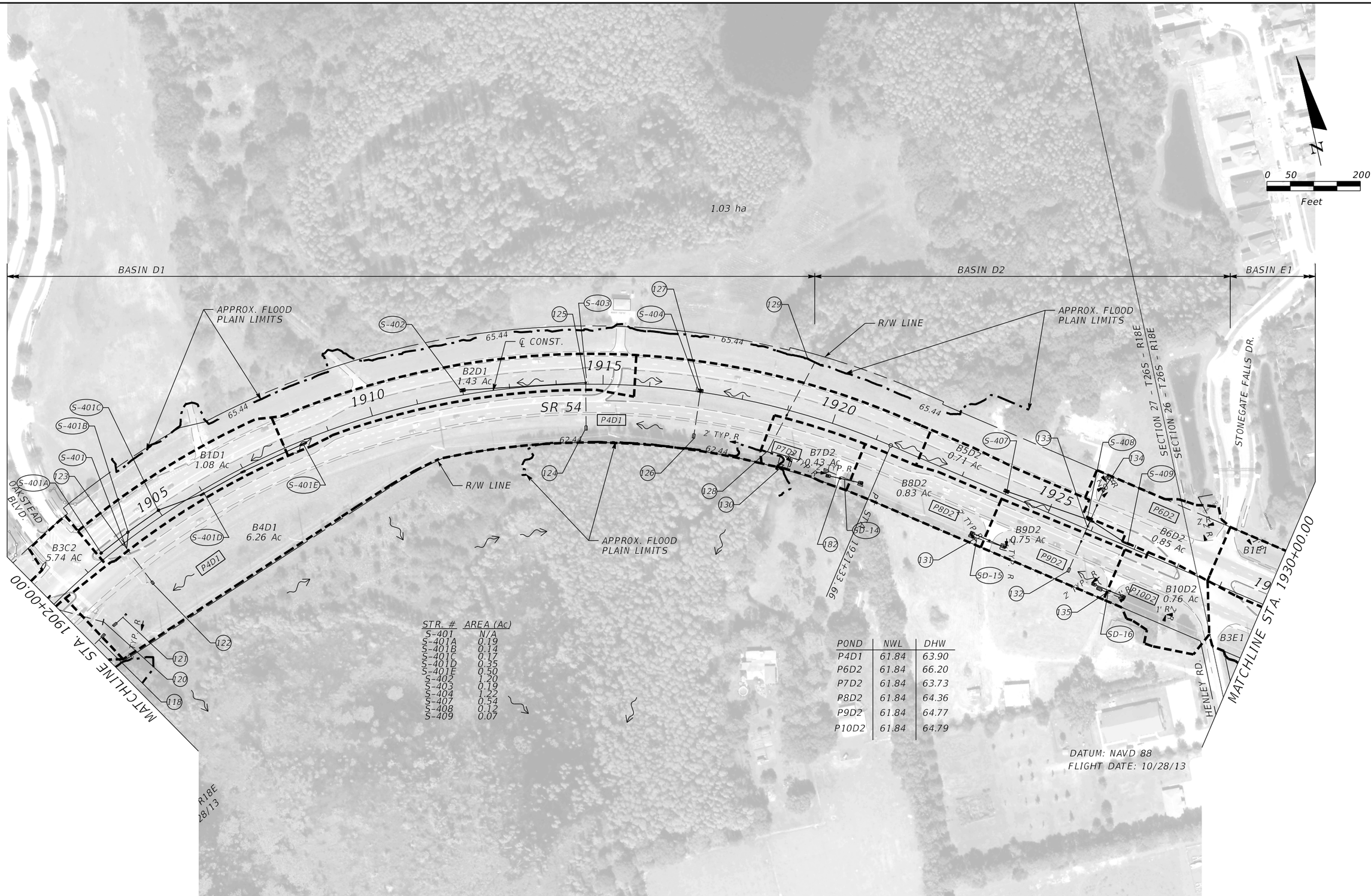
MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (6)

SHEET NO. 6



STR. #	AREA (Ac)
S-401	N/A
S-401A	0.19
S-401B	0.14
S-401C	0.17
S-401D	0.35
S-401E	0.50
S-402	1.20
S-403	0.19
S-404	1.22
S-407	0.54
S-408	0.12
S-409	0.07

POND	NWL	DHW
P4D1	61.84	63.90
P6D2	61.84	66.20
P7D2	61.84	63.73
P8D2	61.84	64.36
P9D2	61.84	64.77
P10D2	61.84	64.79

DATUM: NAVD 88
FLIGHT DATE: 10/28/13

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (7)

SHEET NO. 7

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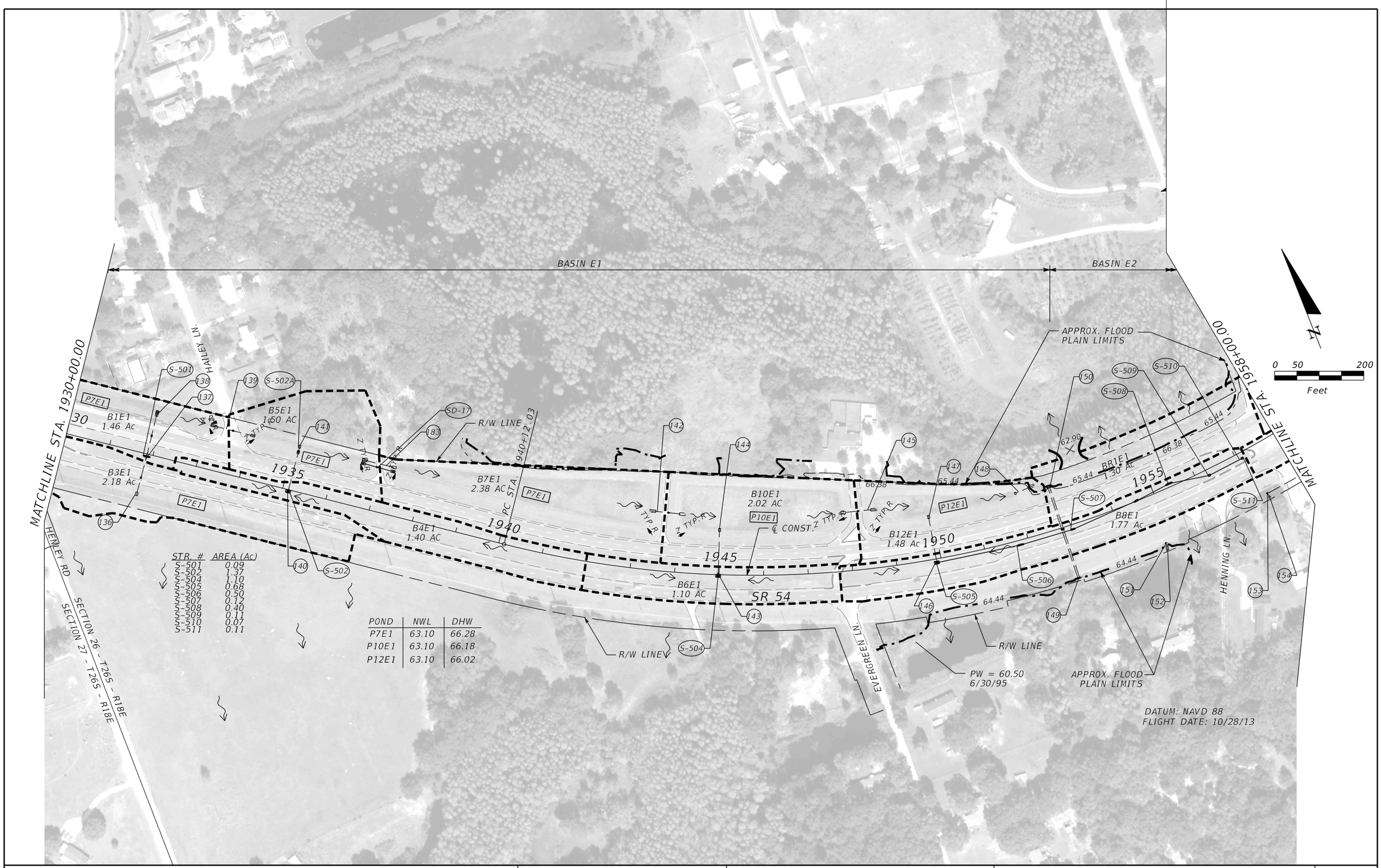

STR. #	AREA (Ac)
S-501	0.09
S-502	1.37
S-504	1.10
S-505	0.68
S-506	0.50
S-507	0.12
S-508	0.40
S-509	0.11
S-510	0.07
S-511	0.11

POND	NWL	DHW
P7E1	63.10	66.28
P10E1	63.10	66.18
P12E1	63.10	66.02

DATUM: NAVD 88
FLIGHT DATE: 10/28/13

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (8)

SHEET NO. 8

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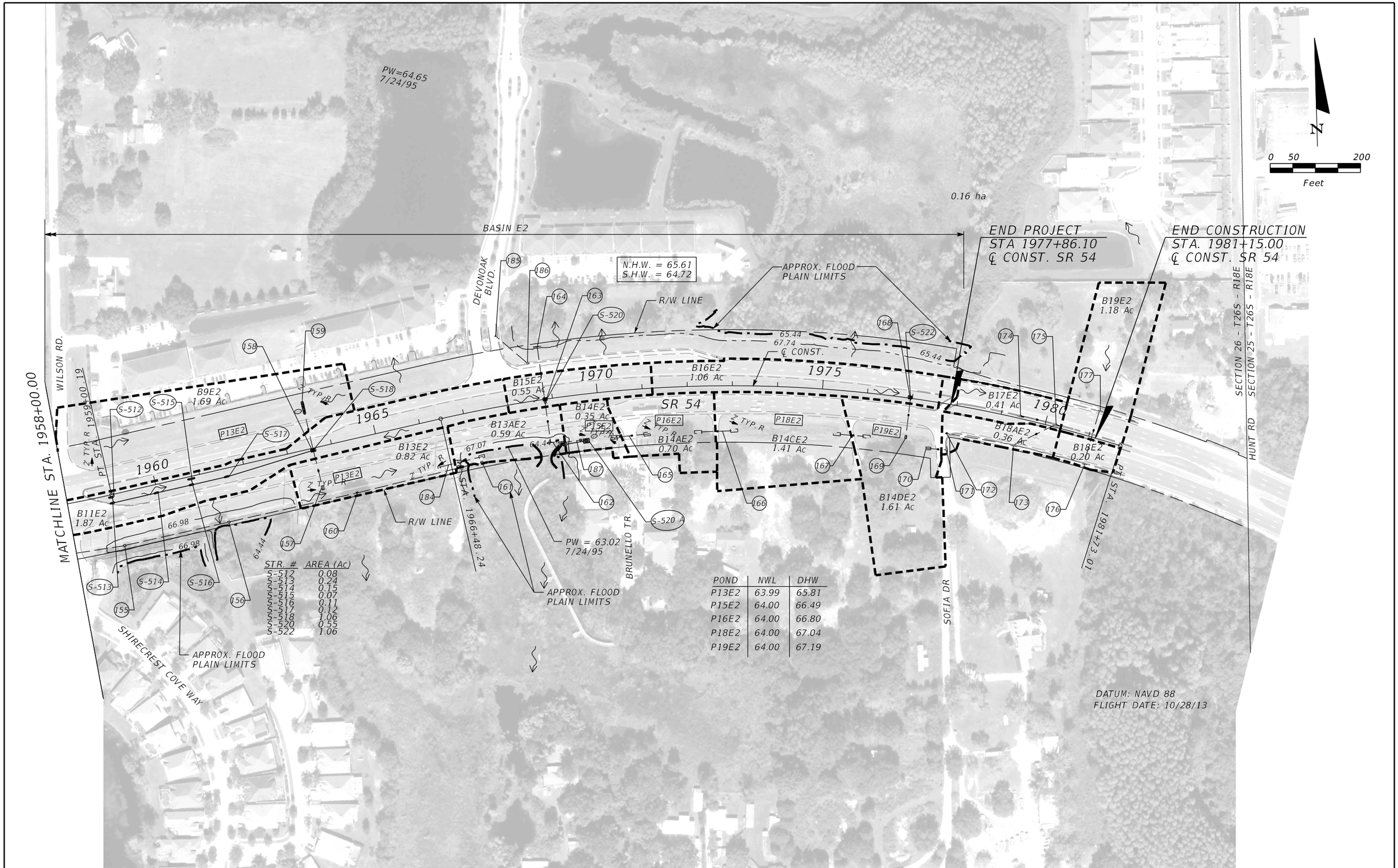


STR. #	AREA (Ac)
S-512	0.08
S-513	0.24
S-514	0.15
S-515	0.07
S-516	0.11
S-517	0.12
S-518	1.06
S-520	0.55
S-522	1.06

POND	NWL	DHW
P13E2	63.99	65.81
P15E2	64.00	66.49
P16E2	64.00	66.80
P18E2	64.00	67.04
P19E2	64.00	67.19

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE DIAGRAM (9)

SHEET NO. 9

STRUCTURE NO.	STATION	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD				GREATEST FLOOD			
		2% PROB.	50 YR.FREQ.	1% PROB.	100 YR.FREQ.								
		DISCHARGE	STAGE	DISCHARGE	STAGE	DISCHARGE	STAGE	PROB. %	FREQ. YR.	DISCHARGE	STAGE	PROB. %	FREQ. YR.
10 & 11	–	–	–	–	–	–	–	–	–	–	–	–	–
18 & 19	1748+77	–	–	–	–	–	–	–	–	–	–	–	–
44 & 45 & 46	1779+25	108.7	56.3	127.4	57.4	–	–	–	–	166.1	57.1	0.2	500
49 & 50	1787+68	9.7	56.6	10.0	57.6	8.1	56.5	14	7.1	–	–	–	–
73 & 74	1819+29	31.5	60.0	37.9	61.3	–	–	–	–	52.8	59.9	0.2	500
79 & 80	1828+18	58.6	60.0	69.9	61.3	–	–	–	–	102.2	62.6	0.2	500
92 & 93	1858+19	27.9	61.0	28.8	61.9	25.2	60.8	12	8.3	–	–	–	–
108 & 109	1885+69	24.7	62.9	27.8	63.9	–	–	–	–	36.0	65.8	0.2	500
119 & 120	1901+91	25.3	63.7	25.6	64.6	18.0	64.5	20	5	–	–	–	–

STRUCTURE NO.	STATION	DESIGN FLOOD		BASE FLOOD		OVERTOPPING FLOOD				GREATEST FLOOD			
		2% PROB.	50 YR.FREQ.	1% PROB.	100 YR.FREQ.								
		DISCHARGE	STAGE	DISCHARGE	STAGE	DISCHARGE	STAGE	PROB. %	FREQ. YR.	DISCHARGE	STAGE	PROB. %	FREQ. YR.
128 & 129	1919+03	147.7	63.9	175.1	65.4	–	–	–	–	232.5	65.5	0.2	500
149 & 150	1952+80	77.1	65.9	90.6	67.4	–	–	–	–	126.0	68.0	0.2	500
162, 163 & 164	1968+83	86.2	67.6	95.0	68.5	66.0	68.3	10	10	–	–	–	–

FLOOD DATA OBTAINED FROM SR 54 SPN 14570 AND SWFWMD PERMIT #44016251.011.
THERE ARE NO CROSS DRAIN ENTENSIONS PROPOSED FOR THIS PROJECT.

DEFINITIONS

DESIGN FLOOD: THE FLOOD SELECTED BY THE F.D.O.T. TO BE UTILIZED TO ASSURE A STANDARD LEVEL OF HYDRAULIC PERFORMANCE.

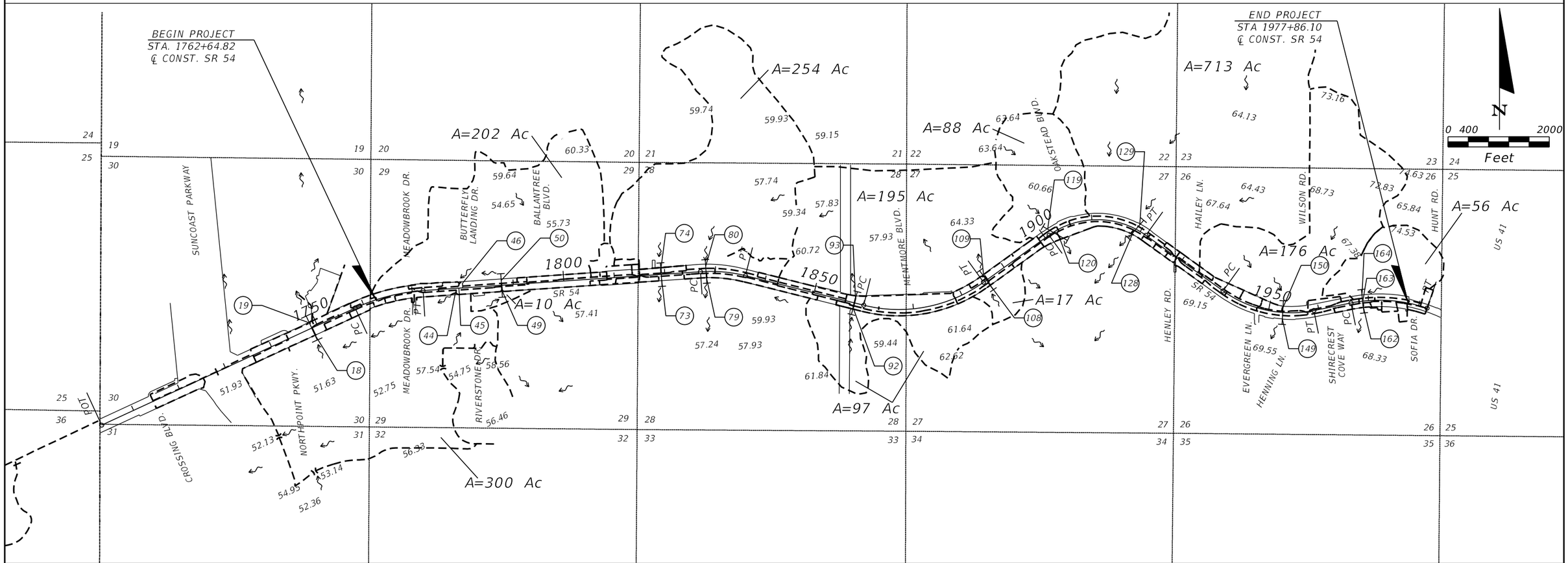
BASE FLOOD: THE FLOOD HAVING A 1% CHANCE OF BEING EXCEEDED IN ANY YEAR (100 YEAR FREQUENCY).

OVERTOPPING FLOOD: THE FLOOD WHERE FLOW OCCURS (A) OVER THE HIGHWAY (B) OVER A WATERSHED DIVIDE OR (C) THROUGH EMERGENCY RELIEF STRUCTURES.

GREATEST FLOOD: THE MOST SEVERE FLOOD WHICH CAN BE PREDICTED WHERE OVERTOPPING IS NOT PRACTICAL, NORMALLY ONE WITH A 0.2% CHANCE OF BEING EXCEEDED IN ANY YEAR (500 YEAR FREQUENCY).

NOTE

THE HYDRAULIC DATA IS SHOWN FOR INFORMATIONAL PURPOSES ONLY, TO INDICATE THE FLOOD DISCHARGES AND WATER SURFACE ELEVATIONS WHICK 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 OF ANTECEDENT CONDITIONS, URBANIZATION, CHANNELIZATION AND LAND USE. USERS OF THIS DATA ARE CAUTIONED AGAINST THE ASSUMPTION OG PRECISION WHICH CAN NOT BE ATTAINED. DISCHARGES ARE IN CUBIC FEET PER SECOND AND STAGES ARE IN FEET, NAVD 1988.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

SUPPLEMENTAL DRAINAGE MAP

SHEET NO. 11

Permit Documentation

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.		O or C	P1A1[2]	O	P5A1[3]	O	P1A2	O	
POND DATA	POND BOTTOM ELEVATION		50.00		50.43		54.60		
	SEASONAL HIGH WATER ELEVATION		50.64		50.62		55.14		
	CONTROL DEVICE ELEVATION		50.64		50.62		55.14		
	DESIGN LOW WATER ELEVATION		51.60		51.18		55.45		
	WEIR INVERT ELEVATION		51.60		51.18		55.45		
	DESIGN HIGH WATER ELEVATION		54.39		54.11		56.20		
	TOP OF BANK ELEVATION		53.20[1]		54.00[1]		56.70		
	AREA @ TOP OF BANK [Ac.]		0.68		1.24		0.47		
	VOLUME @ DHW [Ac.-Ft.]		2.32		2.59		0.37		
	VOLUME @ TOP OF BANK [Ac.-Ft.]		2.81		2.89		0.59		
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH [FT.]	3.67 (2)		0.00 (V NOTCH WEIR)		2.00		
		PREDEVELOPED [CFS]	40.15[4]		33.04[5]		5.49[6]		
		POSTDEVELOPED [CFS]	73.00[7]		73.00[7]		58.60[8]		
	100YR/24HR RETENTION VOLUMES	PROVIDED [Ac.-Ft.]	N/A		N/A		N/A		
		REQUIRED [Ac.-Ft.]	N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]	OFW? Y or N	0.47	N	0.56	N	0.32	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]		0.14		0.13		0.06		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]		0.40		0.24		0.07		
	METHOD OF TREATMENT		MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE		ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS		ORIFICE 1.38 DIAMETER		ORIFICE 1.50 DIAMETER		ORIFICE 1.00 DIAMETER		
	RECOVERY TIME [HRS]		>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN		ENCROACMENT [Ac.-Ft.]	N/A		N/A		N/A		N/A
		COMPENSATION [Ac.-Ft.]	N/A		N/A		N/A		N/A
		COMPENSATION TYPE	N/A		N/A		N/A		N/A
		ENCROACHMENT RESULT [Feet]	N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P1A1 P2A1 P3A1 and P4A1
- [3]Includes ponds P5A1 P6A1 P7A1 and P8A1
- [4]Discharge rate entering TW1N
- [5]Discharge rate entering TW1S
- [6]Discharge rate entering TW2N
- [7]Discharge rate for basin A1
- [8]Discharge rate for basin A2

SWFWMD ENGINEERING WORKSHEET

Permit No.:

Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.		O or C		P2A2	O	P3A2	O	P1A3[2]	O	
POND DATA		POND BOTTOM ELEVATION		54.60		54.20		55.40		
		SEASONAL HIGH WATER ELEVATION		55.14		55.15		55.89		
		CONTROL DEVICE ELEVATION		55.14		55.15		55.89		
		DESIGN LOW WATER ELEVATION		55.51		55.35		56.70		
		WEIR INVERT ELEVATION		55.51		55.35		56.70		
		DESIGN HIGH WATER ELEVATION		56.36		56.30		57.95		
		TOP OF BANK ELEVATION		56.80		56.80		58.20[1]		
		AREA @ TOP OF BANK [Ac.]		0.53		0.70		0.74		
		VOLUME @ DHW [Ac.-Ft.]		0.51		0.63		0.92		
		VOLUME @ TOP OF BANK [Ac.-Ft.]		0.73		0.96		1.32		
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH [FT.]		0.00 (V NOTCH WEIR)		0.00 (V NOTCH WEIR)		3.00		
		PREDEVELOPED [CFS]		14.96[3]		14.96[3]		38.18[4]		
		POSTDEVELOPED [CFS]		58.60[5]		58.60[5]		65.23[6]		
	100YR/24HR RETENTION VOLUMES	PROVIDED [Ac.-Ft.]		N/A		N/A		N/A		
		REQUIRED [Ac.-Ft.]		N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]	OFW? Y or N		0.37	N	0.48	N	0.32	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.06		0.06		0.13		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.06		0.08		0.15		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			V NOTCH		V NOTCH		ORIFICE		
	CONTROL DEVICE DIMENSIONS			127°		138°		ORIFICE 1.25 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN		ENCROACMENT [Ac.-Ft.]		N/A		N/A		N/A		N/A
		COMPENSATION [Ac.-Ft.]		N/A		N/A		N/A		N/A
		COMPENSATION TYPE		N/A		N/A		N/A		N/A
		ENCROACHMENT RESULT [Feet]		N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P1A3 P2A3 P3A3 and P4A3
- [3]Discharge rate from TW2S
- [4]Discharge rate from TW3N
- [5]Discharge rate for basin A2
- [6]Discharge rate for basin A3

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.			O or C	P5A3[2]	O	P5B1[3]	O	P7B1[4]	O	
POND DATA			POND BOTTOM ELEVATION	54.60		57.70		57.40		
			SEASONAL HIGH WATER ELEVATION	55.14		58.20		57.90		
			CONTROL DEVICE ELEVATION	55.14		58.20		57.90		
			DESIGN LOW WATER ELEVATION	56.31		58.50		58.40		
			WEIR INVERT ELEVATION	56.31		58.50		58.40		
			DESIGN HIGH WATER ELEVATION	56.71		60.19		60.16		
			TOP OF BANK ELEVATION	58.90[1]		60.70[1]		60.70[1]		
			AREA @ TOP OF BANK [Ac.]	1.52		0.50		0.69		
			VOLUME @ DHW [Ac.-Ft.]	1.87		0.77		1.13		
			VOLUME @ TOP OF BANK [Ac.-Ft.]	3.56		0.93		1.49		
QUANTITY	25YR/24HR DISCHARGE RATES		WEIR WIDTH [FT.]	3.5		2.00		2.00		
			PREDEVELOPED [CFS]	12.00[5]		42.96[6]		42.96[6]		
			POSTDEVELOPED [CFS]	65.23[7]		109.00[8]		109.00[8]		
	100YR/24HR RETENTION VOLUMES		PROVIDED [Ac.-Ft.]	N/A		N/A		N/A		
			REQUIRED [Ac.-Ft.]	N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]		OFW? Y or N	0.43	N	0.27	N	0.40	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.16		0.07		0.06		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.13		0.07		0.08		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			ORIFICE 0.88 DIAMETER		ORIFICE 0.75 DIAMETER		ORIFICE 0.75 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN			ENCROACMENT [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION TYPE	N/A		N/A		N/A		N/A
			ENCROACHMENT RESULT [Feet]	N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P5A3 P5AA3 P5BA3 P6A3 and P7A3
- [3]Includes ponds P5B1 P1B1 and P4B1
- [4]Includes ponds P3B1 and P7B1
- [5]Discharge rate from TW3S
- [6]Discharge rate from WB1
- [7]Discharge rate for basin A3
- [8]Discharge rate for basins B1 and B2

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.			O or C	P8B1	O	P10B2	O	P12B2[2]	O	
POND DATA			POND BOTTOM ELEVATION	57.80		57.30		57.10		
			SEASONAL HIGH WATER ELEVATION	58.38		57.80		57.60		
			CONTROL DEVICE ELEVATION	58.38		57.80		57.60		
			DESIGN LOW WATER ELEVATION	58.65		58.40		58.00		
			WEIR INVERT ELEVATION	58.65		58.40		58.00		
			DESIGN HIGH WATER ELEVATION	60.15		60.14		60.17		
			TOP OF BANK ELEVATION	60.70		60.40		59.30[1]		
			AREA @ TOP OF BANK [Ac.]	0.70		0.25		2.48		
			VOLUME @ DHW [Ac.-Ft.]	0.96		0.42		5.25		
			VOLUME @ TOP OF BANK [Ac.-Ft.]	1.32		0.48		4.07		
QUANTITY	25YR/24HR DISCHARGE RATES		WEIR WIDTH [FT.]	3.00		3.00		3.00		
			PREDEVELOPED [CFS]	42.96[3]		42.96[3]		42.96[3]		
			POSTDEVELOPED [CFS]	109.00[4]		109.00[4]		109.00[4]		
	100YR/24HR RETENTION VOLUMES		PROVIDED [Ac.-Ft.]	N/A		N/A		N/A		
			REQUIRED [Ac.-Ft.]	N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]		OFW? Y or N	0.47	N	0.15	N	1.53	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.04		0.06		0.32		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.12		0.07		0.44		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			ORIFICE 0.50 DIAMETER		ORIFICE 0.67 DIAMETER		ORIFICE 2.05 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN			ENCROACMENT [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION TYPE	N/A		N/A		N/A		N/A
			ENCROACHMENT RESULT [Feet]	N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P12B2 P13B2 and P14B2
- [3]Discharge rate from WB1
- [4]Discharge rate for basins B1 and B2

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.		O or C		P2C1	O	P2C2[2]	O	P3C2	O	
POND DATA		POND BOTTOM ELEVATION		58.50		59.90		59.90		
		SEASONAL HIGH WATER ELEVATION		59.70		60.46		60.48		
		CONTROL DEVICE ELEVATION		59.70		60.46		60.48		
		DESIGN LOW WATER ELEVATION		59.35		61.14		60.89		
		WEIR INVERT ELEVATION		59.35		61.14		60.89		
		DESIGN HIGH WATER ELEVATION		60.52		61.85		62.24		
		TOP OF BANK ELEVATION		61.0		62.80[1]		62.80		
		AREA @ TOP OF BANK [Ac.]		5.57		0.44		0.66		
		VOLUME @ DHW [Ac.-Ft.]		7.40		0.39		0.52		
		VOLUME @ TOP OF BANK [Ac.-Ft.]		10.03		0.78		1.07		
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH [FT.]		0.00		3.83		4.08		
		PREDEVELOPED [CFS]		20.62[3]		30.25[4]		30.25[4]		
		POSTDEVELOPED [CFS]		47.03[5]		60.73[6]		60.73[6]		
	100YR/24HR RETENTION VOLUMES	PROVIDED [Ac.-Ft.]		N/A		N/A		N/A		
		REQUIRED [Ac.-Ft.]		N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]	OFW? Y or N		4.93	N	0.23	N	0.35	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.27		0.09		0.15		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			1.37		0.09		0.16		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			ORIFICE 3.00 DIAMETER		ORIFICE 0.79 DIAMETER		ORIFICIE 1.00 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN		ENCROACMENT [Ac.-Ft.]		N/A		N/A		N/A		N/A
		COMPENSATION [Ac.-Ft.]		N/A		N/A		N/A		N/A
		COMPENSATION TYPE		N/A		N/A		N/A		N/A
		ENCROACHMENT RESULT [Feet]		N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P1C2 and P2C2
- [3]Discharge rate from TW
- [4]Discharge rate from TWN
- [5]Discharge rate for basin C1
- [6]Discharge rate for basin C2

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.			O or C	P4C2[2]	O	P3D1	O	P4D1	O	
POND DATA			POND BOTTOM ELEVATION	59.90		61.30		61.30		
			SEASONAL HIGH WATER ELEVATION	60.49		61.82		61.84		
			CONTROL DEVICE ELEVATION	60.49		61.82		61.84		
			DESIGN LOW WATER ELEVATION	61.34		62.11		62.12		
			WEIR INVERT ELEVATION	61.34		62.11		62.12		
			DESIGN HIGH WATER ELEVATION	63.04		63.18		64.08		
			TOP OF BANK ELEVATION	63.30[1]		65.10		64.60		
			AREA @ TOP OF BANK [Ac.]	0.93		0.50		2.33		
			VOLUME @ DHW [Ac.-Ft.]	1.47		0.46		4.12		
			VOLUME @ TOP OF BANK [Ac.-Ft.]	1.87		1.31		5.28		
QUANTITY	25YR/24HR DISCHARGE RATES		WEIR WIDTH [FT.]	3.83		0.50		1.17		
			PREDEVELOPED [CFS]	13.29[3]		18.47[4]		18.47[4]		
			POSTDEVELOPED [CFS]	60.73[5]		63.00[6]		63.00[6]		
	100YR/24HR RETENTION VOLUMES		PROVIDED [Ac.-Ft.]	N/A		N/A		N/A		
			REQUIRED [Ac.-Ft.]	N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]		OFW? Y or N	0.15	N	0.32	N	1.57	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.07		0.02		0.37		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.07		0.09		0.24		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			ORIFICE 0.66 DIAMETER		ORIFICE 0.75 DIAMETER		ORIFICE 1.75 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN			ENCROACMENT [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION [Ac.-Ft.]	N/A		N/A		N/A		N/A
			COMPENSATION TYPE	N/A		N/A		N/A		N/A
			ENCROACHMENT RESULT [Feet]	N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P4C2 and P5C2
- [3]Discharge rate from TWS
- [4]Discharge rate from WD
- [5]Discharge rate for basin C2
- [6]Discharge rate for basins D1 and D2

SWFWMD ENGINEERING WORKSHEET

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.			O or C	P7D2[2]	O	P7E1[3]	O	P13E2[4]	O	
POND DATA	POND BOTTOM ELEVATION			61.30		63.70		63.40		
	SEASONAL HIGH WATER ELEVATION			61.84		63.10		63.99		
	CONTROL DEVICE ELEVATION			61.84		63.10		63.99		
	DESIGN LOW WATER ELEVATION			63.15		63.50		65.12		
	WEIR INVERT ELEVATION			63.15		63.50		65.12		
	DESIGN HIGH WATER ELEVATION			63.73		66.28		65.81		
	TOP OF BANK ELEVATION			64.00[1]		66.60[1]		66.40		
	AREA @ TOP OF BANK [Ac.]			0.84		3.52		0.67		
	VOLUME @ DHW [Ac.-Ft.]			0.64		8.11		0.82		
	VOLUME @ TOP OF BANK [Ac.-Ft.]			1.91		9.94		1.19		
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH [FT.]		9.50		1.50		3.50		
		PREDEVELOPED [CFS]		18.47[5]		16.73[6]		39.20[7]		
		POSTDEVELOPED [CFS]		63.00[8]		69.00[9]		40.00[10]		
	100YR/24HR RETENTION VOLUMES	PROVIDED [Ac.-Ft.]		N/A		N/A		N/A		
		REQUIRED [Ac.-Ft.]		N/A		N/A		N/A		
QUALITY	TREATMENT AREA [Ac.]	OFW?	Y or N	0.24	N	2.11	N	0.38	N	
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.12		0.36		0.13		
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.22		0.74		0.14		
	METHOD OF TREATMENT			MAN MADE WET DETENTION		MAN MADE WET DETENTION		MAN MADE WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			ORIFICE 1.00 DIAMETER		ORIFICE 2.25 DIAMETER		ORIFICE 0.87 DIAMETER		
	RECOVERY TIME [HRS]			>60 HOURS		>60 HOURS		>60 HOURS		
100 YEAR FLOODPLAIN	ENCROACMENT [Ac.-Ft.]			N/A		N/A		N/A		N/A
	COMPENSATION [Ac.-Ft.]			N/A		N/A		N/A		N/A
	COMPENSATION TYPE			N/A		N/A		N/A		N/A
	ENCROACHMENT RESULT [Feet]			N/A		N/A		N/A		N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Inlcudes ponds P7D2 P8D2 P9D2 and P10D2
- [3]Includes ponds P7E1 P10E1 and P12E1
- [4]Includes ponds P9E2 and P13E2
- [5]Discharge rate from WD
- [6]Discharge rate from WE1
- [7]Discharge rate from WE2
- [8]Discharge rate for basins D1 and D2
- [9]Discharge rate for basin E1
- [10]Discharge rate for basin E2

Permit No.:
Permit Name: FDOT SR 54 from East of Suncoast Parkway to West of US 41

BASIN No. – POND No.		O or C		P15E2[2]	O				
POND DATA		POND BOTTOM ELEVATION		63.50					
		SEASONAL HIGH WATER ELEVATION		64.00					
		CONTROL DEVICE ELEVATION		64.00					
		DESIGN LOW WATER ELEVATION		64.90					
		WEIR INVERT ELEVATION		64.90					
		DESIGN HIGH WATER ELEVATION		66.49					
		TOP OF BANK ELEVATION		67.40[1]					
		AREA @ TOP OF BANK [Ac.]		0.69					
		VOLUME @ DHW [Ac.-Ft.]		1.10					
		VOLUME @ TOP OF BANK [Ac.-Ft.]		1.74					
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH [FT.]		4.00					
		PREDEVELOPED [CFS]		39.20[3]					
		POSTDEVELOPED [CFS]		40.00[4]					
	100YR/24HR RETENTION VOLUMES	PROVIDED [Ac.-Ft.]		N/A					
		REQUIRED [Ac.-Ft.]		N/A					
QUALITY	TREATMENT AREA [Ac.]	OFW? Y or N		0.27	N				
	TREATMENT VOLUME REQUIRED [Ac.-Ft.]			0.16					
	TREATMENT VOLUME PROVIDED [Ac.-Ft.]			0.16					
	METHOD OF TREATMENT			MAN MADE WET DETENTION					
	CONTROL DEVICE TYPE			ORIFICE					
	CONTROL DEVICE DIMENSIONS			ORIFICE 0.94 DIAMETER					
	RECOVERY TIME [HRS]			>60 HOURS					
100 YEAR FLOODPLAIN		ENCROACMENT [Ac.-Ft.]		N/A					N/A
		COMPENSATION [Ac.-Ft.]		N/A					N/A
		COMPENSATION TYPE		N/A					N/A
		ENCROACHMENT RESULT [Feet]		N/A					N/A

Comments:

- [1]Lowest top of bank elevation from the pond system
- [2]Includes ponds P15E2 P16E2 P18E2 and P19E2
- [3]Discharge rate from WE2
- [4]Discharge rate for basin E2

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Record of Telephone Conversation

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Project Name	**Date of Meeting**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	February 10, 2015
Purpose of Meeting	**Time**
Permitting Discussion	4:00 pm
Participants	**Copied**
SWFWMD: Monte Ritter **ICON Consultant Group:** Michael Mills	**FDOT:** Christina Boulnois, Daniel Lauricello, Ginger Creighton **Analytic Eng:** Al Stewart **Johnson-Adams:** Bill Adams, Lisa Propps **Pepper Contracting:** Doug Lack **ICON:** John Kilgore, Bill Cogan

I spoke with Monte Ritter this afternoon to discuss the evolution of the permitting of SR 54 that was discovered while reviewing the permit history of this project. The specific subject pertained to the water quality treatment.

- The original permit in 1999 (#4316251.00) addressed the water quality treatment and attenuation for the 6-lane section. The project proposed to treat the existing two lanes, the two new proposed lanes, the two future lanes and the associated directly connected impervious area.

- The current SWFWMD permit (#44016251.011) had initially proposed to build the six lanes in accordance with the original permit. However, during the pre-application meeting, the consultant was directed to modify the previously permitted stormwater facilities in order to provide treatment for the additional following items.
    - Paved shoulders
    - Turn lanes and median openings constructed by adjacent developers (exempt activities)
    - Other miscellaneous impervious areas

Subsequent to our telephone conversation, Monte concurred by email on February 11, 2015 that paved shoulders, turn lanes (less than 0.25 miles), median openings and sidewalks are all exempt from water quality treatment, as well as, water quantity attenuation. This is not to say that the project would be exempt from ALL permitting. Since the project proposes impacts & reconfigurations to stormwater management facilities, a permit modification would be required. However, the treatment and attenuation of the exempt impervious areas would not be required.

As a result, our proposed permit modification will exempt these items from its water quality treatment calculations, thereby, reducing the required water quality treatment requirements for this project from the current permit. Also note, the current rule would require the treatment of only the new impervious surface (four-lanes). However, wherever practicable, our permit modification will propose to provide water quality treatment for all six-lanes.

Mike Mills

From: Monte Ritter <Monte.Ritter@swfwmd.state.fl.us>
Sent: Wednesday, February 11, 2015 9:25 AM
To: Mike Mills
Cc: Dave Kramer
Subject: RE: #44016251.011 / SR 54 - E. of Suncoast Parkway to W. of US 41 / Water Quality Treatment

Mike,

Your notes indicate paved shoulders, turn lanes (less than 0.25 miles), median openings and sidewalks are all exempt from water quality treatment. Note that we also consider these impervious areas exempt from water quantity attenuation.

One other thing we discussed, but isn't in your notes, is that the grading (cut or fill) beneath these impervious areas may not be exempt if it impacts wetlands/surface waters and/or storage and conveyance capabilities. In other words, a permit may be required to grade an area in preparation for the future construction of exempt impervious areas, but a permit would not be required (and neither would treatment and attenuation) for the construction of the exempt impervious areas.

Hope this helps.

Monte G. Ritter, P.E.
Chief Professional Engineer
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604
352-796-7211 x 4351
800-423-1476 x 4351 (Florida only)
Monte.Ritter@swfwmd.state.fl.us



From: Mike Mills [mailto:mmills@iconconsultantgroup.com]
Sent: Tuesday, February 10, 2015 7:31 PM
To: Monte Ritter
Subject: #44016251.011 / SR 54 - E. of Suncoast Parkway to W. of US 41 / Water Quality Treatment

Hey Monte!

Please see the attached draft of the record of our telephone conversation today. With your ok, I will forward to others identified to be copied. If you have any comments or revisions, please let me know.

Thanks!!!

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 401601

Date:	10/16/2014
Time:	2:00
Project Name:	FDOT SR54 Design Build
Attendees:	Monte Ritter, David Sauskojus; Virginia Creighton, Doug Lack, Ryan Horstman, Lisa Propps, Mike Mills mmills@iconconsultantgroup.com

County:	Pasco	**Sec/Twp/Rge:**	26, 27, 28, 29, 30/26/18
Total Land Acreage:		**Project Acreage:**	acres

Prior On-Site/Off-Site Permit Activity:

- 16251.000 and 16251.011

Project Overview:

- SR 54 sidewalk addition on both sides from east of Suncoast Parkway to west of US 41. Project will modify 16251.011. Project will include minor linear pond modifications and possibly one modification to a control structure. In no case will the pond volume be reduced and the one control structure modification will not change control device dimensions.

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.)

- Project will entail no additional wetland/sw impact other than previously permitted.

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

- Watersheds – Anclote East. No new impacts to the existing floodplain is proposed.
- WBIDs 1458, 1456, 1463S. Not impaired as of 10/16/14.
- Open basin

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

- Demonstrate proposed water quantity modifications are consistent with previous permit.

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

Demonstrate water quality modifications are consistent with previous permit.

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

- N/A

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

- The permit must be issued to entity that owns or controls the property.
- Provide appropriate O&M instructions.
- Provide detailed construction surface water management plan.
- Provide proof of publication of notice of receipt of application in newspaper within 30 days of submittal pursuant to Rules 40D-1.603(2), (11), and (13), F.A.C.

Application Type and Fee Required:

- SWERP Individual Minor Modification– Can use Modification Short Form - $0.00.

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

-

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Meeting Notes

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Project Name	**Date of Meeting**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	October 16, 2014
Purpose of Meeting	**Time**
SWFWMD Pre-Application Meeting	2:00 pm
Participants	
FDOT: Ginger Creighton **SWFWMD:** Monte Ritter, David Sauskojas **Jones Adam & Associates**: Lisa Propps (CEI)	**Pepper Contracting:** Doug Lack **ICON Consultant Group:** Michael Mills

The SWFWMD Pre-Application Meeting for this project was held on October 16, 2014 at 2:00 pm. This meeting was conducted at the SWFWMD – Brooksville Service Office. The following subjects were discussed.

1. **Permitting:**
    a. Historic Permit: The original permit in 1999 (#4316251.00) addressed the water quality treatment and attenuation for the 6-lane section.
    b. Current Permit: The current SWFWMD permit (#44016251.011) supports the concept plans for the construction of the 6-lane section and is therefore sufficient to allow the contractor to begin construction. The first phase of construction is work associated with the new lanes which are proposed in the existing median. The expiration date for the current permit is August 4, 2016 and is therefore not an issue.
    c. Proposed Permit Modification: The permit modification will involve the addition of sidewalk to the project.

2. **Drainage Design**
    a. Roadside Stormwater Management Facilities: Because the FDOT was willing to approve a variation for 1:4 front slopes and 1:2 back slopes outside the clear zone, storage volume within the roadside stormwater facilities should be easily accomplished. The approach to the design will be to closely mimic the drainage design already approved in support of the concept plans.
    b. Floodplain: No new impacts to the existing floodplain is anticipated.

3. **Erosion Control Plans**
    a. SWPPP: As required on all FDOT projects, a SWPPP has already been prepared.
    b. Erosion Control Plans:
        i. Phase I Construction: Includes all work within the median; clearing/grubbing, drainage, roadway widening. Erosion Control Plans have already been prepared.
        ii. Phase II Construction: Includes all work to the outside; shoulder work, roadside pond regarding, drainage and sidewalk. Erosion Control Plans to be submitted with the proposed permit modification.

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
On the World Wide Web at *WaterMatters.org*

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Vacant
Hernando or Marion

Blake C. Guillory
Executive Director

April 12, 2013

Sally A. Prescott
Florida Department of Transportation
11201 North McKinley Drive
Tampa, FL 33612

Subject: **Confirmation of Permit Extension Via Section 252.363, F.S., and Executive Order Nos. 12-140, 12-192, 12-217 and 12-199**

Project Name:	FDOT – SR 54 from West of Suncoast Parkway to West of U.S. 41
Permit No.:	44016251.011
County:	Pasco
Notification Received:	December 17, 2012

Dear Ms. Prescott:

We are in receipt of a notification to rely on the use of the provisions of Section 252.363, F.S., and Executive Order Nos. 12-140, 12-192, 12-217 and 12-199 to extend the duration of the above permit. Executive Order No. 12-140 established a state of emergency in the aftermath of Tropical Storm Debby that was extended by Executive Order Nos. 12-192 and 12-217. Executive Order No. 12-199 established a state of emergency in the aftermath of Hurricane Isaac. Pursuant to these four Executive Orders, the District was under a continuous state of emergency that expired on October 24, 2012. As a result, your permit will be extended for the 121 day period of the state of emergency as well as the two six-month periods provided for in Section 252.363, F.S. In accordance with the provisions of the legislation and executive orders, the expiration date of the permit is changed as follows:

Original Expiration Date:	May 15, 2014
Expiration Date after SB 2156 and EO Nos. 11-128, 11-172 and 11-202 Extensions:	April 5, 2015
New Expiration Date after Section 252.363, F.S., and EO Nos. 12-140, 12-192, 12-217 and 12-199:	**August 4, 2016**

All dates contained in the terms and conditions of the permit pertaining to deadlines, such as for commencing or completing construction, completing any mitigation, and submitting reports for the activity authorized by the permit are modified in recognition of, and relative to, the new expiration date. You are advised that the legislation requires that, "If the permit or other authorization for a phased construction project is extended, the commencement and completion dates for any required mitigation are extended such that the mitigation activities occur in the same timeframe relative to the phase as originally permitted."

In accordance with the legislation, the permitted activity will continue to be governed by the rules in effect at the time the permit was issued.

This extension does not:

1. Otherwise change any other terms or conditions of the permit.
2. Affect the expiration date of any associated state-owned submerged lands lease or easement that was executed for the activities authorized in the permit. It also does not change any terms or conditions contained in the lease or easement, such as deadlines for submittal of any required lease fees.
3. Affect the water quality certification determination under Section 401, Public Law 92-500, 33 U.S.C. Section 1341 made as part of the permit.
4. Affect the coastal zone consistency concurrence determination made under Florida's Coastal Zone Management Program in Section 307 of the Coastal Zone Management Act and 15 CFR 930, Subpart D originally contained in the permit.
5. Affect the expiration date of any state, federal, or local permit, license, or authorization related to this permit, specifically including any federal permit under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899.

If you have questions concerning this matter, please contact Yolanda Velazquez, Regulatory Support Bureau, ext. 2003.

Sincerely,

Michelle K. Hopkins

Michelle K. Hopkins, P.E.
Environmental Resource Permit Bureau Chief
Regulation Division

MKH:yvv
cc: File of Record
Andrea E. Zelman, Fowler White Boggs

FOWLER WHITE BOGGS
Attorneys at Law
Est 1943

Andrea E. Zelman
Direct Dial: 813-222-3335
Direct Fax: 813-384-2844
azelman@fowlerwhite.com

December 14 , 2012

Southwest Florida
Water Management District
DEC 17 2012
Received
TAMPA RSB

Southwest Florida Water Management District
Agency Clerk
2379 Broad Street
Brooksville, Florida 34604-6899

Re: Notice of Extension of Time
SWFWMD No. 44016251.011/62831
FDOT-SR 54 From W of Suncoast Parkway to W of US 41

Dear Sir/Madam:

On behalf of NNP Bexley, LTD., the Developer of the above-referenced project, this letter shall serve to notify the Southwest Florida Water Management District (SWFWMD) of the Developer's intent to extend the effective date of the above-referenced permit pursuant to §252.263(1), Florida Statutes, which provides that the Governor's declaration of a state of emergency tolls the period remaining to exercise rights under a permit or other authorization for the duration of the emergency order plus an additional 6 months.

Specifically, we are exercising the tolling period and extension of time granted by Governor Scott's Executive Order No. 12-140(June 25, 2012) which declared a state of emergency as a result of Tropical Storm Debby. That order was to expire on August 24, 2012, but by Executive Order 12-192(August 20, 2012), it was extended by another 30 days from the date of the order in certain counties, including Hillsborough, and then by another five(5) days by Executive Order 12-217. Therefore, the Tropical Debby tolling period expired on September 24, 2012.

In addition, on August 25, 2012, Governor Scott issued Executive Order No. 12-199, declaring a state of emergency as a result of Tropical Storm Isaac. That order expired on October 24, 2012.

Section 252.363(1)(a) of the Florida Statutes provides that the Governor's declaration of a state of emergency tolls the period remaining to exercise rights under a permit or other authorization for the duration of the emergency order plus an additional 6 months. Therefore, Order No. 12-140, as extended by No. 12-192 and No. 12-217, tolled the period by 60 days (90 days from June 25 to September 24, less a 30-day overlap with the tolling period of 12-199), plus another 6 months.

IMAGED

Further, the Tropical Storm Isaac order, No. 12-199, extends the tolling period by another 60 days, plus another 6 months thereafter .

Per §252.263(1)(b), we are required to notify you of our intent to exercise the tolling and extension granted by Order No. 12-140, as extended by 12-192, by no later than December 23, 2012. Likewise, we are required to notify you of our intent to exercise the tolling and extension granted by Order No. 12-199 by no later than January 22, 2013. Please consider this letter to be our notice of intent to exercise the sum total of the tolling and extension periods under all of the above-referenced orders. By our calculations, this will extend the effective date of the permit from April 5, 2015[1] to August 2, 2016. [2] If our dates do not match yours, please so advise and extend to the appropriate date.

Please provide acknowledgement of your receipt of this letter and the revised date by December 28, 2012. Should you have any questions regarding this extension, please do not hesitate to contact me at your earliest convenience.

Sincerely,

FOWLER WHITE BOGGS P.A.

Andrea E. Zelman

cc: SWFWMD- Tampa Office
Rick Harcrow, Newland Communities
Tom Griggs, Newland Communities
Tim Plate, Heidt Design

45115537v1

Southwest Florida
Water Management District
DEC 17 2012
Received
TAMPA RSB

[1] This date includes all previous extensions granted up to and including that provided by HB 7207(2011)and Executive Orders Nos. 11-128, 11-172 and 11-202, per our notice letter of December 30, 2011 and your confirmation letter of January 19, 2012.
[2] Calculations based on 60 days plus 6 months per 12-140, 12-192 and 12-217, and another 60 days plus 6 months for 12-199.

Southwest Florida
Water Management District

2379 Broad Street Brooksville Florida 34604 6899
(352) 796 7211 or 1 800 423 1476 (FL only)
TDD only 1 800 231 6103 (FL only)
On the Internet at WaterMatters org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow Florida 33830-7700
(863) 534-1448 or
1 800-492 7862 (FL only)

Lecanto Service Office
Suite 226
3600 West Sovereign Path
Lecanto Florida 34461 8070
(352) 527 8131

Sarasota Service Office
6750 Fruitville Road
Sarasota Florida 34240 9711
(941) 377 3722 or
1 800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa Florida 33637 6759
(813) 985-7481 or
1 800-836-0797 (FL only)

Neil Combee Chair Polk
Todd Pressman Vice Chair Pinellas
Jennifer E Closshey Secretary Hillsborough
Ronald E Oakley Treasurer Pasco
Bryan K Beswick DeSoto
Patricia M Glass Manatee
Hugh M Gramling Hillsborough
Albert G Joerger Sarasota
Sallie Parks Pinellas
Maritza Rovira Forino Hillsborough
H Paul Senft, Jr Polk
Douglas B Tharp Sumter
Judith C Whitehead Hernando

David L Moore Executive Director
William S Bilenky General Counsel

May 15 2009

Sally A Prescott
Florida Department of Transportation
11201 North McKinley Drive
Tampa FL 33612-6456

Subject **Final Agency Action Transmittal Letter**
ERP General Construction
Permit No 44016251 011
Project Name FDOT - SR 54 From W of Suncoast Parkway to W of US 41
County Pasco
Sec/Twp/Rge 26 27 28,29,30/26S/18E

Dear Ms Prescott

This letter constitutes notice of Final Agency Action for **approval** of the permit referenced above Final approval is contingent upon no objection to the District s action being received by the District within the time frames described below

You or any person whose substantial interests are affected by the District's action regarding a permit may request an administrative hearing in accordance with Sections 120 569 and 120 57 Florida Statutes (F S) and Chapter 28-106 Florida Administrative Code (F A C) of the Uniform Rules of Procedure *A request for hearing must (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action or proposed action (2) state all material facts disputed by the person requesting the hearing or state that there are no disputed facts and (3) otherwise comply with Chapter 28-106 F A C* Copies of Sections 28-106 201 and 28-106 301 F A C are enclosed for your reference A request for hearing must be filed with (received by) the Agency Clerk of the District at the District's Brooksville address within 21 days of receipt of this notice Receipt is deemed to be the fifth day after the date on which this notice is deposited in the United States mail Failure to file a request for hearing within this time period shall constitute a waiver of any right you or such person may have to request a hearing under Sections 120 569 and 120 57 F S Mediation pursuant to Section 120 573 F S to settle an administrative dispute regarding the District s action in this matter is not available prior to the filing of a request for hearing

Enclosed is a Noticing Packet that provides information regarding the District Rule 40D-1 1010 F A C which addresses the notification of persons whose substantial interests may be affected by the District's action in this matter The packet contains guidelines on how to provide notice of the District s action and a notice that you may use

The enclosed approved construction plans are part of the permit and construction must be in accordance with these plans

30% P t-C W t m

If you have questions concerning the permit please contact Robert J Dowling at the Brooksville Service Office extension 4739 For assistance with environmental concerns, please contact Barry D Billets extension 4371

Sincerely

Henry Robert Lue P E Director
Brooksville Regulation Department

HRL RJD BDB mef
Enclosures Approved Permit w/Conditions Attached
Approved Construction Drawings
Statement of Completion
Notice of Authorization to Commence Construction
Noticing Packet (42 00-039)
Sections 28-106 201 and 28-106 301, F A C
cc/enc File of Record 44016251 011
C Bradley Carver P E HDR Engineering Inc
US Army Corps of Engineers

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
GENERAL CONSTRUCTION
PERMIT NO 44016251 011

Expiration Date May 15, 2014 PERMIT ISSUE DATE May 15 2009

This permit is issued under the provisions of Chapter 373 Florida Statutes (F S), and the Rules contained in Chapters 40D-4 and 40 Florida Administrative Code, (F A C) The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings plans specifications, and other documents attached hereto and kept on file at the Southwest Florida Water Management District (District) Unless otherwise stated by permit specific condition permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act 33 U S C 1341 All construction operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit

PROJECT NAME	FDOT - SR 54 From W of Suncoast Parkway to W of US 41
GRANTED TO	Florida Department of Transportation 11201 North McKinley Drive Tampa FL 33612-6456

ABSTRACT This permit is for the modification of an existing surface water management system constructed under Environmental Resource Permit No 43016251 000 and for the construction of additional stormwater management facilities to serve a 4 98-mile road project This project involves the widening and resurfacing of State Road 54 and the addition of multi-use pedestrian paths from west of the Suncoast Parkway to west of US Highway 41 in Pasco County The existing stormwater system was designed to accept the widening for this section of road however additional stormwater ponds will be constructed and the existing stormwater ponds will be modified to accommodate for the addition of turn lanes and multi-use pedestrian paths Information regarding the surface water management system and wetlands is contained within the tables below

OP & MAINT ENTITY	Florida Department of Transportation
COUNTY	Pasco
SEC/TWP/RGE	26 27 28 29 30/26S/18E
TOTAL ACRES OWNED OR UNDER CONTROL	165 82
PROJECT SIZE	165 82 Acres
LAND USE	Road Project
DATE APPLICATION FILED	August 20, 2008
AMENDED DATE	N/A

I Water Quantity/Quality

POND NO	AREA ACRES @ TOP OF BANK	TREATMENT TYPE
IIID54PD	0 52	Man Made Wet Detention
IIIC54PD	0 74	Man Made Wet Detention
PSE	0 26	On-Line Retention
PNE	0 23	On-Line Retention
P1A1	2 01	Man Made Wet Detention
P5A1	2 42	Man Made Wet Detention
P2A2	0 60	Man Made Wet Detention
P3A2	0 78	Man Made Wet Detention
P1A2	0 58	Man Made Wet Detention
P1A3	1 11	Man Made Wet Detention
P5A3	1 42	Man Made Wet Detention
P5B1	1 79	Man Made Wet Detention
P7B1	0 74	Man Made Wet Detention
P8B1	0 65	Man Made Wet Detention
P10B2	0 43	Man Made Wet Detention
P12B2	4 13	Man Made Wet Detention
P17B3	0 27	Man Made Wet Detention
P2C1	5 88	Man Made Wet Detention
P2C2	0 41	Man Made Wet Detention
P3C2	0 78	Man Made Wet Detention
P4C2	0 84	Man Made Wet Detention
P3D1	0 39	Man Made Wet Detention
P4D1	2 20	Man Made Wet Detention
P7D2	0 64	Man Made Wet Detention
P12E1	2 70	Man Made Wet Detention
P13E2	0 65	Man Made Wet Detention
P15E2	0 70	Man Made Wet Detention
TOTAL	33 87	

A mixing zone is not required
A variance is not required

II 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*	Encroachment Result**(feet)
0 19	0 19	**EE** [X]	Depth [N/A]

***Codes** [X] for the type or method of compensation provided are as follows
EE = **E**quivalent **E**xcavation to offset project filling per Section 4 4 of the District's Basis of Review
MI = **M**inimal **I**mpact based on modeling of existing stages vs post-project encroachment
N/A = **N**ot **A**pplicable

****Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims **MI** type of compensation

III Environmental Considerations

Wetland/Other Surface Water Information **Count of Wetlands 1**

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss
SW - Floodplain Mitigation	0 28	0 00	0 28	0 00	0 00	0 00
Total	0 28	0 00	0 28	0 00	0 00	0 00

*** For impacts that do not require mitigation, their functional loss is not included**

Wetland/Other Surface Water Comments There is 0 28 acre of surface water within Floodplain Mitigation Pond No 1 Project construction will result in 0 28 acre of permanent impact to 0 28 acre of the Floodplain Mitigation Pond

Mitigation Comments The 0 28 acre of permanent impact to the Floodplain Mitigation Pond is considered to be a de minimus effect to fish and wildlife and no habitat mitigation is required

SPECIFIC CONDITIONS

1 If the ownership of the project area covered by the subject permit is divided with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate pursuant to Section 40D-1 6105 F A C In such situations each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums

2 Unless specified otherwise herein two copies of all information and reports required by this permit shall be submitted to

Brooksville Regulation Department
Southwest Florida Water Management District
2379 Broad Street
Brooksville FL 34604-6899

The permit number title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted

3 The Permittee shall retain the design engineer or other professional engineer registered in Florida to conduct on-site observations of construction and assist with the as-built certification requirements of this project The Permittee shall inform the District in writing of the name address and phone number of the professional engineer so employed This information shall be submitted prior to construction

4 Within 30 days after completion of construction of the permitted activity the Permittee shall submit to the Brooksville Service Office a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1 659 F A C and signed dated and sealed as-built drawings The as-built drawings shall identify any deviations from the approved construction drawings

5 The District reserves the right upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives by allowing the installation and operation of testing and monitoring equipment and by allowing other assistance measures as needed on site

6 The following boundaries as shown on the approved construction drawings shall be clearly delineated on the site prior to initial clearing or grading activities

surface water areas
limits of approved surface water impacts

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel

7 All surface water boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District

8 The operation and maintenance entity shall submit inspection reports in the form required by the District in accordance with the following schedule

For systems utilizing retention or wet detention the inspections shall be performed two (2) years after operation is authorized and every two (2) years thereafter

9 The removal of littoral shelf vegetation (including cattails) from wet detention ponds is prohibited unless otherwise approved by the District Removal includes dredging the application of herbicide, cutting, and the introduction of grass carp Any questions regarding authorized activities within the wet detention ponds shall be addressed to the District's Surface Water Regulation Manager Brooksville Service Office

10 If limestone bedrock is encountered during construction of the surface water management system the District must be notified and construction in the affected area shall cease

11 The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery

12 The District upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts Such barriers or other measures should control discharges erosion and sediment transport during construction and thereafter The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed The Permittee must provide any remedial measures that are needed

13 This permit is issued based upon the design prepared by the Permittee s consultant If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4 301 and 40D-4 302 F A C have not been met, upon written notice by the District the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system and/or mitigation areas

14 If prehistoric or historic artifacts such as pottery or ceramics, stone tools or metal implements dugout canoes or any other physical remains that could be associated with Native American cultures or early colonial or American settlement are encountered at any time within the project site area the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries The Permittee, or other designee, should contact the Florida Department of State Division of Historical Resources Review and Compliance Section at (850) 245-6333 or (800) 847-7278 as well as the appropriate permitting agency office Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources In the event that unmarked human remains are encountered during permitted activities all work shall stop immediately and the proper authorities notified in accordance within Section 872 05 Florida Statutes

GENERAL CONDITIONS

1 The general conditions attached hereto as Exhibit 'A" are hereby incorporated into this permit by reference and the Permittee shall comply with them

Authorized Signature

HENRY ROBERT LUE, P E , DIRECTOR
BROOKSVILLE REGULATION DEPARTMENT

EXHIBIT "A"

1 All activities shall be implemented as set forth in the plans specifications and performance criteria as approved by this permit Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit

2 This permit or a copy thereof complete with all conditions attachments exhibits and modifications shall be kept at the work site of the permitted activity The complete permit shall be available for review at the work site upon request by District staff The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit

3 For general permits authorizing incidental site activities, the following limiting general conditions shall also apply

a If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit the site must be restored by the permittee within 90 days after notification by the District Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause In addition the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable but in no case more than 7 days after notification by the District

b The incidental site activities are commenced at the permittee's own risk The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit

4 Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards Temporary erosion control shall be implemented prior to and during construction and permanent control measures shall be completed within 7 days of any construction activity Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established Thereafter the permittee shall be responsible for the removal of the barriers The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources

5 Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U S Environmental Protection Agency If water quality data are required the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume discharged from the property or into surface waters of the state

6 District staff must be notified in advance of any proposed construction dewatering If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2 F A C

7 Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased

8 Off-site discharges during construction and development shall be made only through the facilities authorized by this permit Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages Stages may be subject to operating schedules satisfactory to the District

9 The permittee shall complete construction of all aspects of the surface water management system including wetland compensation (grading mulching planting) water quality treatment features and discharge control facilities prior to beneficial occupancy or use of the development being served by this system

10 The following shall be properly abandoned and/or removed in accordance with the applicable regulations

a Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor
b Any existing septic tanks on site shall be abandoned at the beginning of construction
c Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction

11 All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection to increase the efficiency of transport application and use to decrease waste to minimize unnatural runoff from the property and to minimize dewatering of offsite property

12 At least 48 hours prior to commencement of activity authorized by this permit the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date

13 Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity

14 Within 30 days after completion of construction of the permitted activity the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1 F A C Additionally if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted

15 This permit is valid only for the specific processes operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application Any substantial deviation from the approved drawings exhibits specifications or permit conditions including construction within the total land area but outside the approved project area(s) may constitute grounds for revocation or enforcement action by the District unless a modification has been applied for and approved Examples of substantial deviations include excavation of ponds ditches or sump areas deeper than shown on the approved plans

16 The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein the District determines the system to be in compliance with the permitted plans and the entity approved by the District accepts responsibility for operation and maintenance of the system The permit may not be transferred to the operation and maintenance entity approved by the District until the operation phase of the permit becomes effective Following inspection and approval of the permitted system by the District the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District if different from the permittee Until a transfer is approved by the District the permittee shall be liable for compliance with the terms of the permit

17 Should any other regulatory agency require changes to the permitted system the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required

18 This permit does not eliminate the necessity to obtain any required federal state local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit

19 This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40 F A C

20 The permittee shall hold and save the District harmless from any and all damages claims or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system

21 Any delineation of the extent of a wetland or other surface water submitted as part of the permit application including plans or other supporting documentation shall not be considered binding unless a specific condition of this permit or a formal determination under section 373 421(2), F S provides otherwise

22 The permittee shall notify the District in writing within 30 days of any sale conveyance or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4 351, F A C The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer

23 Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter inspect sample and test the system to insure conformity with District rules regulations and conditions of the permits

24 If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State Division of Historical Resources

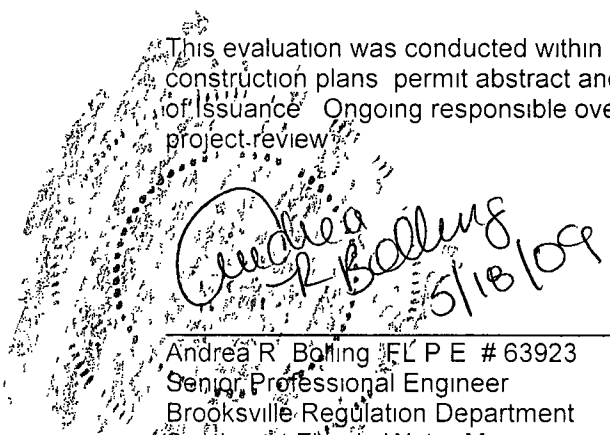
25 The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate

PROFESSIONAL CERTIFICATION*
FOR THE ENGINEERING EVALUATION REPORT

MSSW/ERP Permit Number	44016251 011
Date Application Received	August 20 2008
Permittee s Name	Florida Department of Transportation
Address	11201 North McKinley Drive Tampa FL 33612-6456
Project Name	FDOT - SR 54 From W of Suncoast Parkway to W of US 41
Project Description	Road Project
Project Size	165 82 Acres
Activity	Construction
Section(s)/Township/Range	26 27 28 29 30/26S/18E

I HEREBY CERTIFY that the engineering features described in the referenced application to construct and/or operate a surface water management system associated with the indicated project have been evaluated regarding provision of reasonable assurance of compliance with Part IV Chapter 373 Florida Statutes and Chapters 40D-4 40D-40 or 40D-400 Florida Administrative Code (F A C) as applicable I have not evaluated and do not make any certifications as to other aspects of the proposal

This evaluation was conducted within limited time frames and focused on a summary review of the construction plans permit abstract and conditions and District rule requirements relative to the Conditions of Issuance Ongoing responsible oversight by degreed engineering staff was provided during the detailed project review



_____(Seal)

Andrea R Bolling FL P E # 63923
Senior Professional Engineer
Brooksville Regulation Department
Southwest Florida Water Management District
2379 Broad Street Brooksville FL 34604-6899

* When required by Subsection 61G15-26 001(1) F A C a professional engineer s seal signature and date (i e 'Professional Certification') means that the work indicated has been conducted under the responsible supervision direction or control of a person licensed by the State to practice engineering who by authority of their license is required to have some specialized knowledge of engineering Professional Certification is not a guaranty or warranty of fitness or suitability either explicit or implied

CERTIFICATE OF MAILING

I hereby certify that a copy of the FAA letter on Application No 44016251 011 was mailed by United States Mail to the below listed parties this 9/18/09

FAA Expiration Date 10/13/09

Permittee/Owner	*Engineer/Consultant*	*USACOE*
Sally A Prescott Florida Department of Transportation 11201 North McKinley Drive Tampa FL 33612 6456	C Bradley Carver P E HDR Engineering Inc 5426 Bay Center Drive Suite 400 Tampa FL 33609-3444	US Army Corps of Engineers Tampa Regulatory Office 10117 Princess Palm Drive Suite 120 Tampa FL 33610

Required Noticing (w/ Letter & Copy of the Permit)	See USACOE address above, if applicable
Documents sent by Regular US Mail to Permittee/Consultant	FAA Transmittal Letter Approved Permit with Conditions Attached Sections 28-106 201 and 28-106 301 F A C Noticing Packet Approved Construction Drawings (Permittee only) Statement of Completion (Permittee only) Notice of Authorization (Permittee only)
Documents sent by Regular US Mail to FAA Requestors and others	FAA Transmittal Letter Approved Permit with Conditions Attached Sections 28-106 201 and 28-106 301 F A C

() ERP - Eminent Domain Property Owners (EPOs) **mailed regular U S Mail** (see list)
() WRP - Adjacent Waterfront Property Owners (AWPOs) **if requested**

Administrative Section
Brooksville Regulation Department

CertofMailing frm 07/30/99 (Rev 01/07/02)

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ERP Wetlands/Other Surface Waters Permit Worksheet

Project Name FDOT-SR 54 W OF SUNCOAST TO W OF US 41 **Permit Number** 44016251 011

Wetland/Other Surface Water Information **Count 1**

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
SW - Floodplain Mitigati	0 28	0 00	0 28	0 00	0 00	0 00
Total	0 28	0 00	0 28	0 00	0 00	0 00

*** For impacts that do not require mitigation, their functional loss is not included**

Wetland/Other Surface Water Comments

There is 0 28 acre of surface water Floodplain Mitigation Pond No 1 within the project Project construction will result in 0 28 acre of permanent impact to 0 28 acre of the Floodplain Mitigation Pond

Mitigation Comments

The 0 28 acre of permanent impact to the Floodplain Mitigation Pond is considered to be a de minimus effect to fish and wildlife and no habitat mitigation is required

ERP SUMMARY
Project Name: FDOT-SR54 From West of Suncoast Parkway to West of US41
Permit No.: 44016251.011

This permit is for the modification of an existing surface water management system constructed under Environmental Resource Permit No. 43016251.000 and for the construction of additional stormwater management facilities to serve a 4.98-mile road project. This project involves the widening and resurfacing of State Road 54, and the addition of multi use pedestrian paths from west of the Suncoast Parkway to west of US Highway 41 in Pasco County. The existing stormwater system was designed to accept the widening for this section of road; however, additional stormwater ponds will be constructed and the existing stormwater ponds will be modified to accommodate for the addition of turn lanes and multi-use pedestrian paths.

The project is located within a hydrologically open drainage basin. Consistent with Chapter 40D-4, F.A.C., water quantity requirements, the principal design storm was based on a 25-year, 24-hour rainfall event of 9.0 inches, for peak discharge attenuation. The project engineer used the SCS Type II Florida-modified rainfall distribution and a unit hydrograph shape factor of 323 to generate flood hydrographs for the individual basins. Allowable discharges for the project were established as pre-development peak rates of runoff leaving the site. The ponds will be equipped with discharge structures which have been sized to attenuate post-development peak discharges from the 25-year, 24-hour rainfall design storm. The existing floodplain Mitigation Pond-1 will be partially filled, resulting in 0.19 acre-feet of 100-year floodplain encroachment. This loss will be mitigated by the excess floodplain compensation previously permitted. This is consistent with the requirements of the Basis of Review, Chapter 4, Section 4.4.

Compliance with Chapter 40D-4, F.A.C., water quality requirements are assured, as the wet detention systems will treat 1-inch of runoff from its directly connected impervious areas contributing to the system. The discharge structures will be equipped with bleed-down orifices which have been sized to insure that no more than half of the treatment volume is discharged in less than 60 hours. The on-line retention ponds have been sized to retain and infiltrate 1/2-inch of runoff from its contributing watersheds in no longer than 72 hours. The discharge structures will be equipped with skimmers to ensure that oils, greases and floating pollutants are not discharged into down gradient receiving waters.

There is 0.28 acre of surface water within Floodplain Mitigation Pond No. 1. Project construction will result in 0.28 acre of permanent impact to 0.28 acre of the Floodplain Mitigation Pond.

The 0.28 acre of permanent impact to the Floodplain Mitigation Pond is considered to be a de minimus effect to fish and wildlife and no habitat mitigation is required.

No adverse on-site/off-site water quantity and quality impacts are expected as a result of the proposed development.

The surface water management system will be maintained and operated by the Permittee.

No objections to this permit application have been filed at the District office to date.

FILE OF RECORD

ERP ABSTRACT
Project Name: FDOT-SR54 From West of Suncoast Parkway to West of US41
Permit No.: 44016251.011

This permit is for the modification of an existing surface water management system constructed under Environmental Resource Permit No. 43016251.000 and for the construction of additional stormwater management facilities to serve a 4.98 mile road project. This project involves the widening and resurfacing of State Road 54, and the addition of multi use pedestrian paths from west of the Suncoast Parkway to west of US Highway 41 in Pasco County. The existing stormwater system was designed to accept the widening for this section of road; however additional stormwater ponds will be constructed and the existing stormwater ponds will be modified to accommodate for the addition of turn lanes and multi-use pedestrian paths. Information regarding the surface water management system and wetlands is contained within the tables below.

DRAFT

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34609-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
World Wide Web: http://www.swfwmd.state.fl.us

An Equal Opportunity Employer

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(941) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Venice Service Office
115 Corporation Way
Venice, Florida 34292-3524
(941) 486-1212 or
1-800-320-3503 (FL only)
SUNCOM 526-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

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John K. Renke, III
New Port Richey
Pamela Stinnette-Taylor
Tampa

E. D. "Sonny" Vergara
Executive Director
Gene A. Heath
Assistant Executive Director
Edward B. Helvenston
General Counsel

June 29, 1999

District 7 Design Department
JUL 6 1999

William B. Pearce, P.E.
Florida Department of Transportation
11201 N McKinley Drive
Tampa, FL 33612-6403

Subject: **Final Agency Action Transmittal Letter**
Permit No. 4316251.00
Project Name: FDOT - SR 54, Meadowbrook Drive to US 41 (SPN 14570-1521; WPI 7115977)
County: Pasco
Sec/Twp/Rge: 25, 26, 27, 28, 29, 30/26S/17E

Dear Mr. Pearce:

The permit referenced above was **approved** by the District Governing Board subject to all terms and conditions set forth in the permit. Acceptance of the permit includes agreement that the District may periodically review the permit and conduct site inspections.

The enclosed approved construction plans are part of the permit, and construction must be in accordance with these plans.

If you have questions concerning the permit, please contact David Z. Sua, P.E., at the Brooksville Service Office, extension 4375. For assistance with environmental concerns, please contact David K. Sauskojus, extension 4370.

Sincerely,

Adeline Wood

Adeline Wood
Supervisor
Records and Data Department

AW:DZS:mjs
Enclosures: Approved Permit w/Conditions
Approved Construction Drawing(s)
Statement of Completion
Notice of Authorization
cc: File of Record
Larry Clegg, P.E., Dames & Moore, Inc.
Donald D. Conn, Esq., Tampa Bay Water
Lee Wm. Atkinson, Tew, Zinober, Barnes, Zimmet & Unice
Gerald Figurski, Figurski & Harrill
Richard Voakes, City of St. Petersburg
Kim Streeter, City of St. Petersburg

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Protecting Your Water Resources

A-1243

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 4316251.00

EXPIRATION DATE: June 29, 2004

PERMIT ISSUE DATE: June 29, 1999

This permit, issued under the provisions of Chapter 373, Florida Statutes and Florida Administrative Code Rule 40D-4 authorizes the Permittee to perform the work outlined herein and shown by the application, approved drawing(s), plans, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Florida Administrative Code and the conditions of this permit.

PROJECT NAME: FDOT - SR 54, Meadowbrook Drive to US 41
(SPN 14570-1521; WPI 7115977)

GRANTED TO: Florida Department of Transportation
11201 N McKinley Drive
Tampa, FL 33612-6403

ABSTRACT: This permit is for construction of a new surface water management system to serve a 4.4 mile road project. The project involves reconstruction of SR 54 from a two lane facility to a divided four lane roadway, between Meadowbrook Drive and US Highway 41, in Pasco County. Information regarding the surface water management system, 100-year floodplain, and wetlands is contained within the tables below.

OP. & MAINT. ENTITY: Florida Department of Transportation

PROPERTY LOCATION: Pasco County

SEC/TWP/RGE: 25, 26, 27, 28, 29, 30/26S/17E

TOTAL ACRES OWNED: 163.36

PROJECT SIZE: 163.36 Acres

LAND USE: Road Project

DATE APPLICATION FILED: February 6, 1997

AMENDED DATE: July 21, 1998

I. Water Quantity/Quality

POND #	AREA ACRES @ T.O.B.	TREATMENT TYPE
P1A1	1.05	Wet Detention
P2A1	0.29	N/A
P31A	0.79	N/A
P4A1	0.29	N/A
P5A1	1.66	N/A
P6A1	0.27	N/A
P7A1	0.18	N/A
P8A1	0.35	N/A
P1A2	0.50	Wet Detention
P2A2	0.56	Wet Detention
P3A2	0.81	Wet Detention
P1A3	0.33	Wet Detention
P2A3	0.81	N/A
P3A3	0.15	N/A
P4A3	0.10	N/A
P5A3	1.34	Wet Detention
P6A3	0.18	N/A
P7A3	0.26	N/A
P1B1	0.37	N/A
P3B1	0.34	N/A
P4B1	0.10	N/A
P5B1	0.29	Wet Detention
P7B1	0.28	Wet Detention
P8B1	0.39	Wet Detention
P10B2	0.29	Wet Detention
P12B2	1.93	Wet Detention
P13B2	0.38	N/A
P14B2	1.26	N/A
P17B3	0.22	Wet Detention
P1C1	0.14	Wet Detention
P2C1	6.50	Wet Detention
P3C1	0.50	N/A
P1C2	0.35	Wet Detention
P2C2	0.22	Wet Detention
P3C2	0.73	Wet Detention
P4C2	0.44	Wet Detention
P5C2	0.43	N/A
P3D1	0.60	Wet Detention

POND #	AREA ACRES @ T.O.B.	TREATMENT TYPE
P4D1	2.53	Wet Detention
P7D2	0.16	Wet Detention
P8D2	0.25	N/A
P9D2	0.20	N/A
P10D2	0.13	N/A
P7E1	1.66	Wet Detention
P10E1	1.16	Wet Detention
P12E1	0.52	Wet Detention
P13E2	0.36	Wet Detention
P14E2	0.18	Wet Detention
P15E2	0.12	Wet Detention
P16E2	0.17	N/A
P18E2	0.27	N/A
P19E2	0.24	N/A
Pond 1	8.93	No Treatment-Floodplain Mitigation Area
Pond 2	17.86	No Treatment-Floodplain Mitigation Area
TOTAL	60.42	

Mixing Zone required: YES ( ) NO (X)
Variance required: YES ( ) NO (X)

II. 100-Year Floodplain

Encroachment (ac-ft):	Compensation (ac-ft):
31.76 (1)	37.05 (2)

(1) Encroachment - This total encroachment volume includes 9.59 acre-feet of encroachment between STA 228+25 and STA 246+75 and 22.17 acre-feet between STA 247+00 and STA 261+00.

The encroachment volume of 22.17 acre-feet includes 20.74 acre-feet of fill between seasonal high and the 100-year flood elevation and 1.43 acre-feet of fill below seasonal high.

(2) Compensation - This total compensatory storage volume includes 20.72 acre-feet above seasonal high in Pond 2, 11.32 acre-feet above seasonal high in Pond 1, 1.18 acre-feet of total ditch storage below seasonal high, 0.46 acre-feet of storage below seasonal high in Pond 2, and 3.37 acre-feet of total ditch detention storage credit.

III. Environmental Considerations

Wetland Information:

WETLAND #	TOTAL AC.	NOT IMPACTED AC.	TEMPORARILY DISTURBED AC.	PERMANENTLY DESTROYED AC.
26	0.14	0.00	0.14	0.00
27	0.15	0.00	0.00	0.15
28	0.48	0.00	0.00	0.48
31	0.30	0.00	0.00	0.30
32	4.38	2.33	0.39	1.66
33	0.01	0.01	0.00	0.00
34	0.10	0.10	0.00	0.00
36	0.29	0.00	0.00	0.29
40	0.68	0.00	0.00	0.68
42	0.58	0.00	0.00	0.58
43	0.04	0.00	0.00	0.04
44	0.41	0.00	0.00	0.41
46	0.35	0.00	0.00	0.35
47	0.25	0.00	0.00	0.25
48	0.55	0.00	0.00	0.55
49	1.20	0.00	0.00	1.20
51	0.05	0.00	0.00	0.05
TOTAL	9.96	2.44	0.53	6.99

Mitigation Information:

AREA #	CREATED/ RESTORED AC.	UPLAND PRESERVED AC.	ENHANCED WETLANDS AC.	WETLANDS PRESERVED AC.	MISC. MIT. AC.
Ancloste Parcel	2.52	0.00	0.00	0.00	80.00
TOTAL	2.52	0.00	0.00	0.00	80.00
NET CHANGE	-4.47		OTHER MITIGATION TOTAL		80.00

Comments: This project contains 9.96 acres of wetlands. Project construction will result in the filling of 6.99 acres of forested and non-forested wetlands. To mitigate for these impacts the Permittee is relying upon the provision in Section 373.4137, Florida Statutes. This project has been included within the Florida Department of Transportation Mitigation Plan, dated December 15, 1998, developed by the Southwest Florida Water Management District. To offset wetland impacts due to this project's construction, approximately 2.52 acres of freshwater marsh will be constructed within an existing borrow pit, in addition to the preservation of 80.00 acres of high quality wetlands and uplands contiguous to the Anclote River.

Conservation easement required: YES ( ) NO (X)

SPECIFIC CONDITIONS

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each landowner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. The discharges from this system shall meet state water quality standards as set forth in Chapter 62-302 and Rule 62-4.242, F.A.C., for class waters equivalent to the receiving waters.

3. All construction is prohibited within the permitted project area until the Permittee acquires legal ownership or legal control over all rights-of-way required to build the project's surface water management system, as depicted on the permitted construction drawings.

4. The Permittee, the Florida Department of Transportation (FDOT), shall submit to the District a site specific plan for erosion and sediment control best management practices, pursuant to Section 104, FDOT Standard Specifications for Road and Bridge Construction. The Permittee shall submit this plan and receive District approval prior to construction commencement.

5. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.

6. The construction of all wetland impacts and wetland mitigation shall be supervised by a qualified environmental scientist/specialist/consultant. The Permittee shall identify, in writing, the environmental professional retained for construction oversight prior to initial clearing and grading activities.

7. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:

   (X) wetland preservation
   ( ) wetland buffers;
   ( ) upland preservation;
   (X) limits of approved wetland impacts;
   ( ) construction access for (list mitigation sites).

   The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

8. If limestone bedrock is encountered during construction of the surface water management system, the District must be notified and construction in the affected area shall cease.

9. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Brooksville Service Office a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.

10. Rights-of-way and easement locations necessary to construct, operate and maintain all facilities, which constitute the permitted surface water management system, shall be shown on the final right-of-way map recorded in the County Public Records. Documentation of this right-of-way map recording shall be submitted to the District with the Statement of Completion and Request for Transfer to Operation Entity Form. The right-of-way map shall include the locations and limits of the following:

( ) all wetlands
( ) wetland buffers
( ) upland preservation easements
( ) upland buffers for water quality treatment
( ) 100-yr floodplain areas
(X) floodplain compensation areas

11. The removal of littoral shelf vegetation (including cattails) from wet detention ponds is prohibited unless otherwise approved by the District. Removal includes dredging, the application of herbicide, cutting, and the introduction of grass carp. Any questions regarding authorized activities within the wet detention ponds shall be addressed to the District's Surface Water Regulation Manager, Brooksville Service Office.

12. The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

13. The operation and maintenance entity shall submit inspection reports in the form required by the District, in accordance with the following schedule.

( ) For systems utilizing effluent filtration or exfiltration, the inspections shall be performed 18 months after operation is authorized and every 18 months thereafter.

(X) For systems utilizing retention or wet detention, the inspections shall be performed two (2) years after operation is authorized and every two (2) years thereafter.

( ) For systems utilizing effluent filtration or exfiltration and retention or wet detention, the inspections shall be performed 18 months after operation is authorized and every 18 months thereafter.

14. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

15. Construction shall not commence until a mitigation project that offsets permitted impacts is approved and funds to construct that mitigation project are appropriated by the Legislature.

16. Refer to GENERAL CONDITION No. 15 herein.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

Authorized Signature

EXHIBIT "A"

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

4. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume discharged from the property or into surface waters of the state.

5. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the district as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

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6. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

7. Off site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

8. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

9. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

   a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
   b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
   c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

10. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

11. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.

12. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

13. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

14. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

15. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

16. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.

17. This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.

18. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.

19. The permittee is hereby advised that Section 253.77, F.S., states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.

21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.

23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.

24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.

25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

AS-BUILT DRAWINGS AND INFORMATION CHECKLIST

Following is a list of information that should be verified and submitted by the engineer in support of the Statement of Completion.

1. The registered professional engineer shall certify that:

   a. At the time of final inspection, the surface water management system has been completed substantially in accordance with the permitted construction plans and information. Any minor deviations from the permitting plans and specifications will not prevent the system from functioning in compliance with the requirements of Chapters 40D-4, 40D-40, and 40D-45, F.A.C. The registered professional engineer shall provide two copies of signed, dated and sealed as-built drawings to the District to confirm the certification; or

   b. At the time of final inspection, the system has not been completed in substantial conformance with the permitted construction plans and information. The registered professional engineer shall explain in writing, and with confirming depiction on the as-built drawings, the substantial deviations from the permitted construction plans and specifications, and provide two copies of the signed, dated and sealed as-built drawings to the District to support the certification. In this case, the professional engineer shall complete, but not sign and seal, the Statement of Completion.

2. The certification shall be based upon on-site observation of construction (scheduled and conducted by the professional engineer or by a project representative under direct supervision) and review of as-built drawings for the purpose of determing if the work was completed in accordance with original permitted construction plans, information and specifications.

3. The as-built drawings shall be based on the District permitted construction drawings revised to reflect any changes made during construction. Both the original design and condition must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawings. All surveyed dimensions and elevations required shall be verified and signed, dated and sealed by a Florida registered surveyor or engineer.

   The following information, at a minimum, shall be verified on the as-built drawings:

   a. **Discharge structures** - dimensions and elevations of all, including weirs, orifices, gates, pumps, pipes, and oil and grease skimmers;

   b. **Side bank and underdrain filters, or exfiltration trenches** - locations, dimensions and elevations of all, including cleanouts, pipes, connections to control structures and points of discharge to receiving water.

   c. **Storage areas for treatment and attenuation** - dimensions, elevations, contours or cross-sections of all, sufficient to determine stage-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems;

d. **System grading** - dimensions, elevations, contours, final grades or cross-sections to determine contributing drainage areas, flow directions and conveyance of runoff to the system discharge point(s);

e. **Conveyance** - dimensions, elevations, contours, final grades or cross-sections of systems utilized to divert off-site runoff around or through the new system;

f. **Water levels** - existing water elevation(s) and the date determined;

g. **Benchmark(s)** - location and description (minimum of one per major water control structure); and

h. **Wetland compensation or restoration areas** - Show the plan view of all areas, depicting a spatial distribution of plantings conducted by zone (if plantings are required by permit), with a list showing all species planted in each zone, numbers of each species, sizes, date(s) planted and identification of source of material; also provide the dimensions, elevations, contours and representative cross-sections depicting the construction.

4. Submit the final subdivision plat or other legal documents, recorded in the county public records, showing dedicated rights-of-way, easement locations and special use areas that are reserved for water management purposes and continuing operation and maintenance.

5. Additional information should be shown on the as-built drawings or otherwise provided as needed to verify and support the Statement of Completion (Example: homeowners association final documents and other items required by permitting conditions).

STATEMENT OF COMPLETION AND REQUEST FOR TRANSFER TO OPERATION ENTITY

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

2379 BROAD STREET • BROOKSVILLE, FL 34609-6899
(904) 796-7211 OR FLORIDA WATS 1 (800) 423-1476

Within 30 days after completion of construction of the surface water management system, the owner or authorized agent must submit the original plus one copy of this form and two complete sets of certified as-built drawings for the surface water management system structures and appurtenances. Upon receipt, this Statement of Completion will be reviewed and the system may be inspected for compliance with the approved permit and as-built drawings. The operation phase of this permit is effective when the Statement of Completion for is signed by an authorized District representative.

---

1. SURFACE WATER MANAGEMENT SYSTEM INFORMATION:

Permit No.: _____ **County:** _____

Project Name: _____

Permittee: _____

Address: _____

City, State, Zip: _____

Telephone: (___) _____

2. I HEREBY CERTIFY THAT (please choose accurately and initial only one box):

_____ **A.** **At the time of final inspection, the surface water management system was completed substantially in accordance with the permitted construction plans and information. Any minor deviations from the permitting plans and specifications will not prevent the system from functioning in compliance with the requirements of Chapters 40D-4, and 40D-40, or 40D-45, F.A.C. (The as-built drawings and information submitted to the District shall confirm this certification.)**

_____ **B.** **At the time of final inspection, the system was not completed in substantial conformance with the permitted construction plans and information. (The registered professional engineer shall explain in writing, and with confirming depiction on the as-built specification. In this case, the professional engineer shall complete, but not sign and seal, the Statement of Completion.)**

This certification shall be verified by TWO COPIES of attached "as-built" drawings (as-built drawings must be signed, dated and sealed by a Registered Professional Engineer or Land Surveyor, as required by State Law).

By: _____
Signature of Engineer of Record

_____
Name *(please type)* **FL P.E. No.**

•AFFIX SEAL•

_____
Company Name

Date: _____

_____
Company Address

Phone:(___) _____

_____
City, State, Zip

44.00-20HC (11/98)

3. **NOTIFICATION OF COMPLETION:** The District is hereby notified that construction of the surface water management system is completed, and the Permittee requests that the surface water management permit be transferred to the legal entity (individual owner or corporate) responsible for operation and maintenance (O&M) as named in Section 4. An authorized agent must submit a letter of authorization from the permittee authorizing him or her to execute this Notification.

By: _____

Signature of Permittee or Authorized Agent

_____

Name and Title *(please type)*

_____

Permit Number

_____

Company Name

_____

Company Address

_____

City, State, Zip

4. **AGREEMENT FOR SYSTEM OPERATION AND MAINTENANCE RESPONSIBILITY:** The below-named legal entity responsible for O&M agrees to operate and maintain the surface water management system in compliance with all permit conditions and the provisions of Chapter 40D-4, and 40D-40 or 40D-45, Florida Administrative Code (F.A.C.). An authorized agent must submit a letter of authorization from the owner or other legal entity authorizing him or her to execute this agreement.

By: _____

Signature of Representative of Acceptable O&M Entity or Authorized Agent

_____

Name of Owner or Other Acceptable Legal Entity for O&M

_____

Name and Title *(please type)*

_____

Address

_____

Permit Number

_____

City, State, Zip

_____

Phone

Date

RESPONSIBILITY FOR OPERATION AND MAINTENANCE MAY BE TRANSFERRED TO ANOTHER ENTITY ONLY UPON WRITTEN NOTICE AND APPROVAL BY THE DISTRICT IN ACCORDANCE WITH RULE 40D-4.351, F.A.C.

AGENCY USE ONLY

OPERATION AUTHORIZATION: Based upon the certification by the Engineer of Record in Section 2. and the notice of completion in Section 3., the responsibility for operation and maintenance of the system is transferred to the legal entity named in section 4., and the operation phase of this permit is effective on the date indicated below.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

_____

Authorized District Representative

Name and Title

_____

Date

Permit Number

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

NOTICE OF
AUTHORIZATION
TO COMMENCE CONSTRUCTION

FDOT - SR 54, Meadowbrook Drive to US 41 (SPN 14570-1521; WPI 7115977)

PROJECT NAME

Road Project

PROJECT TYPE

Pasco

COUNTY

25, 26, 27, 28, 29, 30/26S/17E

SEC(s)/TWP(s)/RGE(s)

Florida Department of Transportation

PERMITTEE

Application No.: 4316251.00

DATE ISSUED: June 29, 1999

BJ Jarvis
Issuing Authority

THIS NOTICE SHOULD BE CONSPICUOUSLY
DISPLAYED AT THE SITE OF WORK

(10/92)

A-1259

Correspondence & Miscellaneous Documentation

Record of Meeting

ICON CONSULTANT GROUP INCORPORATED
…the symbol in engineering & planning solutions…

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Project Name	**Date of Meeting**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	April 22, 2015
Purpose of Meeting	**Time**
Top of Bank Elevations for Linear Ponds	
Participants	**Copied**
FDOT: Daniel Lauricello **ICON Consultant Group:** Michael Mills, David Tyler	**File**

A brief meeting was held with Daniel Lauricello to discuss the freeboard for the linear ponds on SR 54.

1. The Drainage Manual requires 0.5' of freeboard above the DHW for linear ponds.
2. In some cases, tailwaters control the pond DHW's and may also flow over the right of way line into the linear ponds.
3. If a berm were to be placed on the right-of-way line above the tailwater elevation, there could be the perception that the FDOT is blocking offsite drainage.

Pursuant to our discussion, it was agreed that a minimum 0.25' freeboard will be provided for the linear ponds.

ICON
CONSULTANT GROUP
INCORPORATED
…the symbol in engineering & planning solutions…

Memorandum

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618-4422
813 962 8689 Tel

To: Daniel M. Lauricello, P.E. (FDOT)

cc:

From: David Tyler, P.E.

Date: February 19, 2015

Project / Project No.: SR 54 – E. of Suncoast Parkway to W. of US 41 / 256339-2

Subject: Maintenance of the Pond Banks

Review of recent survey for the SR 54 design build project has shown that some of the existing pond banks are lower than the permitted pond bank elevations. The ponds within the limits of the project will be corrected with the design build job. However, two ponds west of and outside the project limits (pond P1A1 and P5A1) receive discharge from this job and are in need of repair. The pond bank elevation varies along these ponds and dips below the permitted elevation in several areas. Review of the permit (ERP 16251.13) indicates that the design high water is higher than the existing pond bank at these two ponds.

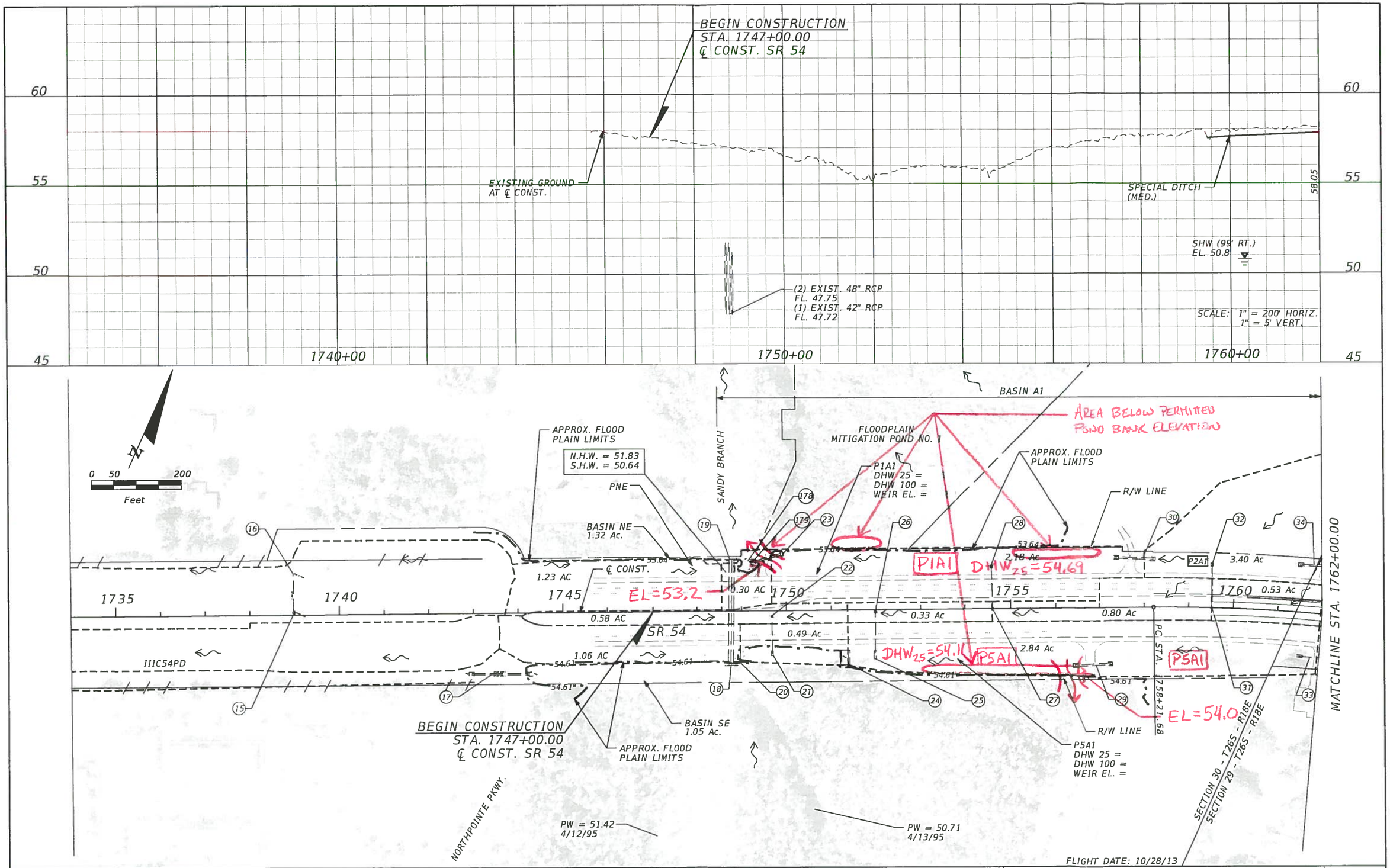
Pond P1A1 – The permitted pond bank elevation is 55.2. A low point in the pond bank behind the control structure at elevation 53.2 will allow the design storm event to overtop at Station 1749+80 left. The pond bank is also below the permitted elevation between Stations 1751+00 and 1752+00 left and again between Stations 1755+00 and 1757+00 left.

Pond P5A1 – The permitted pond bank elevation is 54.7. A low point in the pond bank at elevation 54.0 near Station 1756+40 right will overtop and discharge outside the right-of-way during the design storm event. The pond bank is also below the permitted elevation between Stations 1753+00 and 1756+60 right.

Please see the summary table below and an attached drainage map indicating the approximate areas where the pond bank is out of compliance with the permit.

Pond	Top of Pond Bank Elevation		SWFWMD DHW_{25} (ERP 16251.13)
	Permitted (ERP 16251.13) ft (NAVD)	Existing Pond Bank Low Point ft (NAVD)	ft (NAVD)
P1A1	55.2	53.2	54.69
P5A1	54.7	54.0	54.11

To correct this condition and bring the ponds back into compliance with the permit, we are requesting that these pond banks be reestablished to the permitted pond bank elevations.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL E. MILLS, P.E.
P.E. LICENSE NUMBER 43359
ICON CONSULTANT GROUP, INC.
10006 N. DALE MABRY HWY, SUITE 201
TAMPA, FL 33618
CERTIFICATE OF AUTHORIZATION NO. 8320

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
54	PASCO	256339-2-52-01

DRAINAGE MAP (1)

SHEET NO. 2

$USER$ $DATE$ $TIME$ $FILE$

A-1263

Record of Telephone Conversation

ICON CONSULTANT GROUP INCORPORATED
…the symbol in engineering & planning solutions…

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

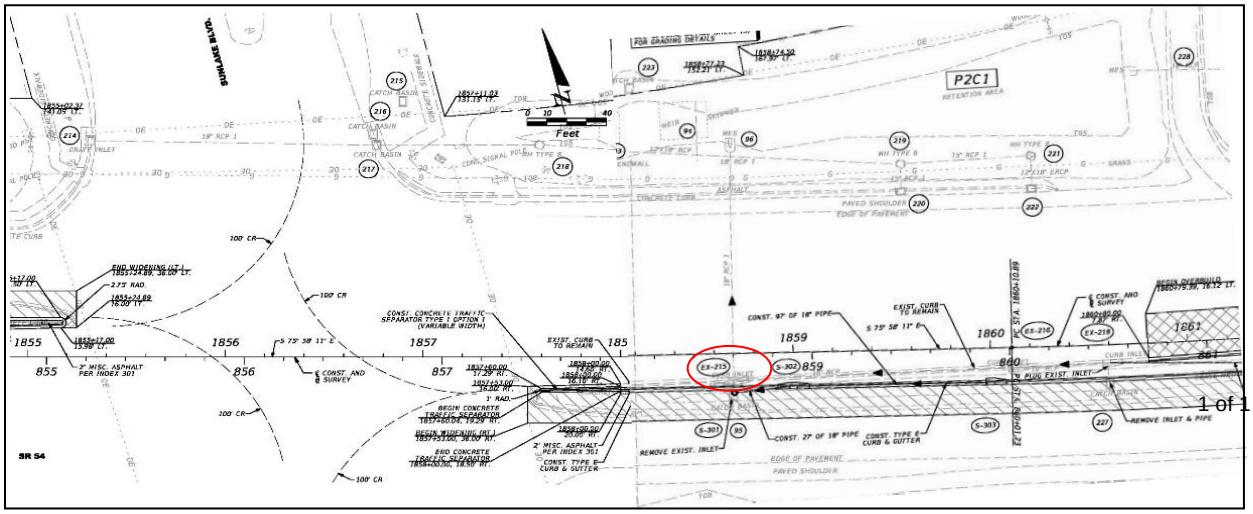
Project Name	**Date of Meeting**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	February 2, 2015
Purpose of Meeting	**Time**
Spread at Existing Inlets Within Milling & Resurfacing Limits	
Participants	**Copied**
FDOT: Daniel Lauricello **ICON Consultant Group:** Michael Mills	**FDOT:** Christina Boulnois **Analytic Eng:** Al Stewart **Johnson-Adams:** Bill Adams, Lisa Propps **Pepper Contracting:** Doug Lack **ICON:** John Kilgore, Bill Cogan

I spoke with Daniel Lauricello and corresponded by email regarding the spread we had calculated at the existing inlet located in the WB to SB left turn lane at the Sunlake Blvd intersection. The composite roadway plan sheet below shows EX-215, an existing Type 6 inlet, where there is no widening proposed; only milling and resurfacing. The allowable spread in the existing left turn lane based on a 55 mph design speed is equal to 5.5' (1.5' gutter plus 4' in the travel lane). The calculated spread at this inlet is 6.07'; 0.57' greater than the allowable.

Pursuant to coordination with Mr. Lauricello, it is our understanding that the need to meet the spread requirements in the left turn lane can be handled as it would be for a milling and resurfacing project. As a result, this memo has been prepared to confirm the following items.

1. This is an existing condition that will not be altered in the proposed condition.
2. No additional runoff is proposed to be added to this inlet.
3. The runoff coefficient will not changed.
4. There will be no change in the longitudinal gutter grade.
5. Accident data confirms there has been no history of accidents due to spread (standing water) within this turn lane.
6. The concept plans did not propose any new inlets or improvements in this location.

As a result, no changes will be made to either the grading or drainage in this part of the project.



A-1264

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Meeting Notes

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Project Name	**Date of Meetings and Coordination**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	Coordination Occurred Between January 16 and January 22, 2015
Purpose of Meeting	**Time**
Intersection Grading, Drainage and Spread in Super Elevated Sections	
Participants	
FDOT: Daniel Lauricello, Christina Boulnois, Richard Moss, Alan Urbonas **Analytic Engineering**: Al Stewart (FDOT – GEC) – by speaker phone	**Jones Adam & Associates**: Bill Adams, Lisa Propps, Kate Morgan (CEI) **Pepper Contracting:** Kurt Keith, Doug Lack **ICON Consultant Group:** Michael Mills, John Kilgore, Bill Cogan

Design coordination meetings and emails took place between January 16 and January 22, 2015. In this timeframe, much was discussed regarding the grading of three intersections located in super-elevated curves; Wilson/Shire Crest Cove, Meadowbrook and Oakstead. Challenges with grading, collecting drainage and issues relating to spread were all discussed in great detail. The following subjects were discussed.

1. **Phase 1B 90% Plan Submittal:**
    a. Intersection Grading and Drainage: The plans submitted included a traffic separator between the thru lanes and the offset left turn lanes at the three subject locations. The separator was used to collect stormwater runoff from opposing cross slopes of the thru lanes and left turn lanes and provided a place for inlets to be constructed to drain the runoff. The areas of primary concern are those offset turn lanes located along the low side of super elevated curves. Issues related to this design included the placement of a separator in the vicinity of the travel lanes and its potential impact to those trying to access the turn lane from a side street / driveway.
    b. Spread: The design speed of 60 mph requires all gutter spread to be kept entirely out of any travel lane. A note related to the Spreads Standards in the FDOT Drainage Manual indicates that this rule applies to "travel, turn or auxiliary lanes adjacent to barrier wall or curb, in normal or super elevated sections." Because of the offset left, the curb would be located immediately adjacent to the left turn lane thereby only providing room for 1-1/2' of gutter spread.

2. **Resolution for Implementation Into the 100% Plan Submittal:**
    a. Intersection Grading and Drainage: It was agreed by all that, unless the Department wanted to pursue reconstructing these intersections, unconventional means would be needed to collect and convey stormwater runoff from these intersections. The separator was not desirable for safety and access management reasons. And trench drain was seen to be inevitably unreliable. It was concluded then that shoulder gutter and Type S inlets would be utilized within the offset / gore area in place of the traffic separator. An email

from the District Drainage Engineer confirmed this allowance. It also included a detail of a "mirrored" shoulder gutter to be constructed.

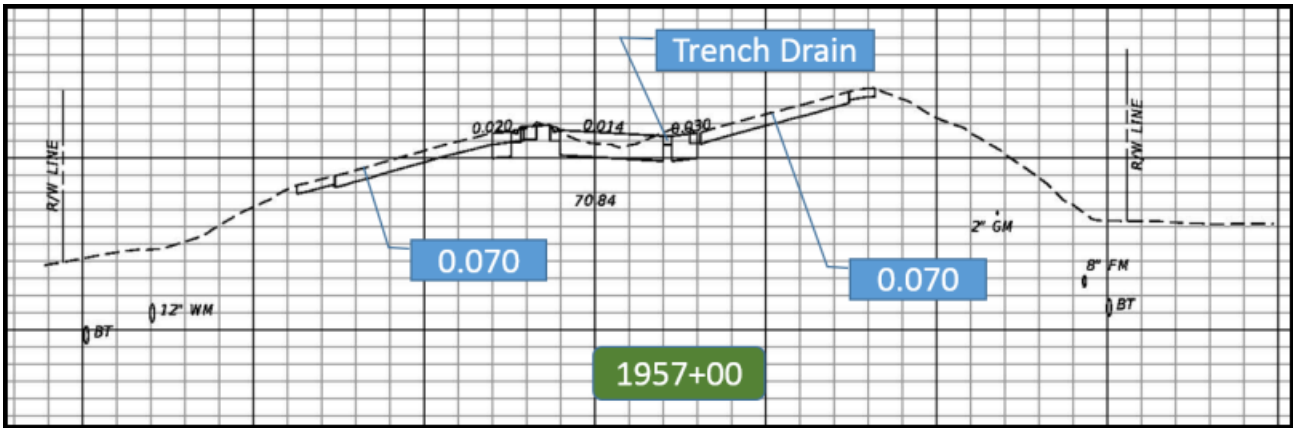
b. Spread: The District Drainage Engineer verbally agreed to allow the spread criteria for the left turn lanes applicable to a 55 mph design speed rather than 60 mph. Justification for this was based on information provided on Index 301 of the FDOT Design Standards. A reference table in Index 301 indicates that a vehicle would be traveling 52 mph at the time it enters completely into the left turn lane coming off of a facility with a 60 mph design speed. As a result, the proposed design should provide 8' clear from spread within the turn lane.

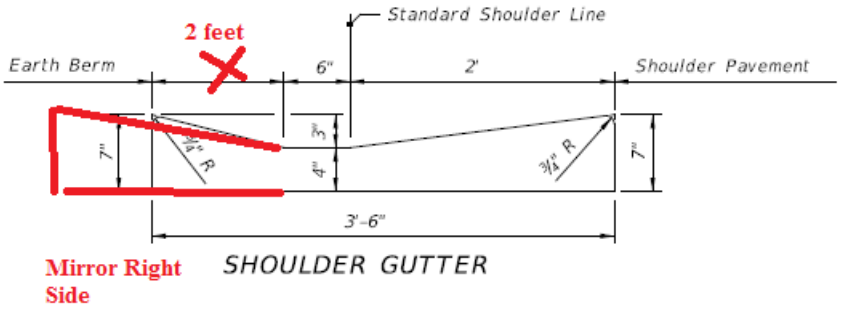
Mike Mills

From: Lauricello, Daniel <Daniel.Lauricello@dot.state.fl.us>
Sent: Monday, January 26, 2015 12:22 PM
To: Boulnois, Christina
Cc: Al Stewart; Urbonas, Allan; Moss, Richard
Subject: 256339-2-52-01: SR 54

Christina,

For the Meadowbrook, Wilson, and Oakstead intersections the Design Build team may utilize a modified shoulder gutter (see below) with shoulder gutter inlets provided the design team provides spread calculations which demonstrates the spread is maintained within the gore area between the through lane and the turn lane. The gore areas should be striped and have reflectors which clearly delineate the gore area. To be clear, this is project and site specific direction and shall not be considered as an approved design on other projects.





Thanks,

Daniel M. Lauricello, P.E.
District Drainage Engineer - District VII

FDOT
State of Florida

ICON
CONSULTANT GROUP
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Telephone Memoranda

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Spoke With: Joellyn Guthrie (FDOT Maintenance - Brooksville)

Telephone No: 352-848-2600

cc: Doug Lack (Pepper Construction) John Kilgore (ICON)

From: Mike Mills

Meeting Date: January 7, 2015

Project / Project No.: SR 54 – E. of Suncoast Parkway to W. of US 41 / 256339-2

Purpose: Maintenance Activities Involving Roadway and Drainage

Joellyn Guthrie and I spoke twice this morning regarding the SR 54 roadway widening project referenced above. The purpose of our conversations were to identify any maintenance issues that could be addressed/resolved as part of the widening work proposed.

In regards to drainage, Ms. Guthrie confirmed what we already knew; there's a lot of standing water in the surrounding areas, as substantiated by the amount of existing wetlands and floodplain within the project limits. As a result of frequent calls by local residents and property owners, both FDOT Maintenance and Pasco County have conducted several field reviews of the surrounding areas. Both agencies concluded that they could find no blockage or identifiable cause that create the extended standing water condition in the adjacent basins. ICON witnessed this standing water condition following the 5" – 6" storm event that occurred Thanksgiving week, 2014 and had made the same observation. Ms. Guthrie concurred that it's unlikely there's anything we can do with our project that can resolve the standing water issues.

The existing pavement is in good condition except for the portion over the existing 4' x 5' concrete box culvert near Station 1779+25. Ms. Guthrie researched their records regarding this repair activity and explained that the proper compaction was not accomplished over the box culvert when it was previously widened. As a result, the pavement had settled. Maintenance milled the pavement, exposing the limerock and found no evidence that the box culvert may have joint failures or leaks. As a result, no further repairs were required and maintenance simply replaced the pavement overtop. In summary, there were no concerns of drainage issues at this location.

Mike Mills

From: Mike Mills
Sent: Thursday, December 11, 2014 1:09 AM
To: Lauricello, Daniel
Cc: John Kilgore
Subject: 256339-2 / SR 54 - E. of Suncoast Parkway to W. of US 41 Design-Build / Spread Standards

Hi Daniel!

I am finally following up with you from our meeting a couple of weeks ago. Recall, I had explained to you that we were designing the storm sewer for the SR 54 design-build project and were having challenges with spread next to left turn lanes where the mainline design speed is 60 mph / posted 55 mph.

According to the Spread Standards in the Drainage Manual, no encroachment is allowed for design speeds greater than 55 mph. The asterisk indicates that this applies to "travel, turn, or auxiliary lanes adjacent to barrier wall or curb, in normal or super elevated sections." See below.

Topic No. 625-040-002
Drainage Manual

Effective: January 2014

3.9 Spread Standards

3.9.1 Spread for Permanent Construction

The spread resulting from a rainfall intensity of 4.0 inches per hour shall be limited as follows.

Typical Section Condition	Design Speed (mph)	Spread Criteria*
Parking Lane or Full Width Shoulders	All	No encroachment
All Other	Design speed ≤ 45	Keep ½ of lane clear
	45 < Design Speed ≤ 55	Keep 8' of lane clear
	Design Speed > 55	No encroachment

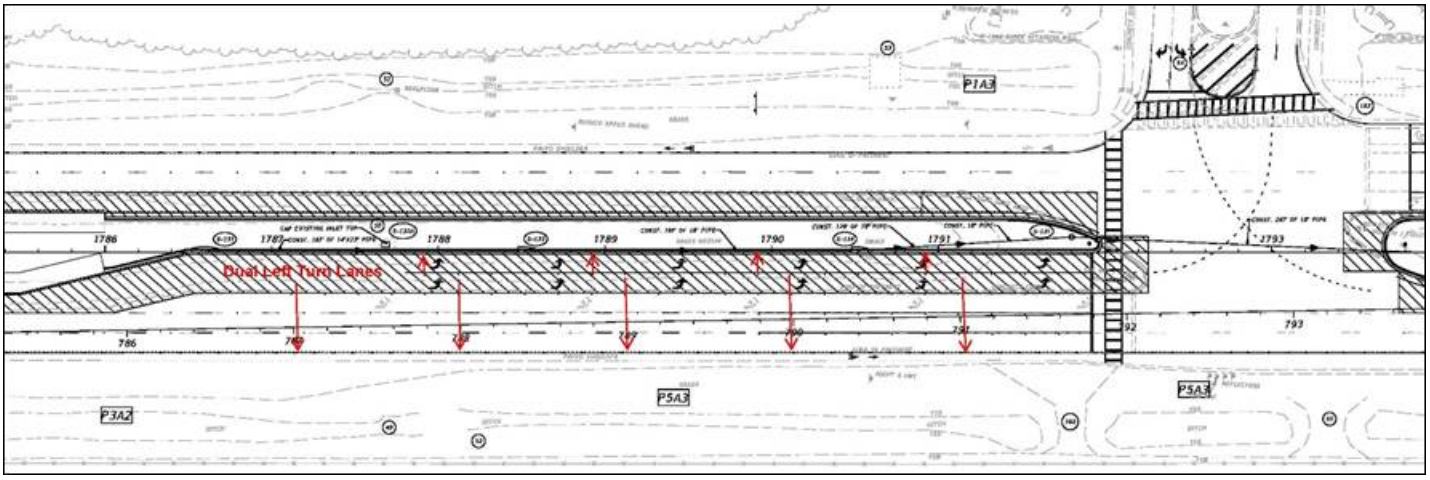
* The criteria in this column apply to travel, turn, or auxiliary lanes adjacent to barrier wall or curb, in normal or super elevated sections.

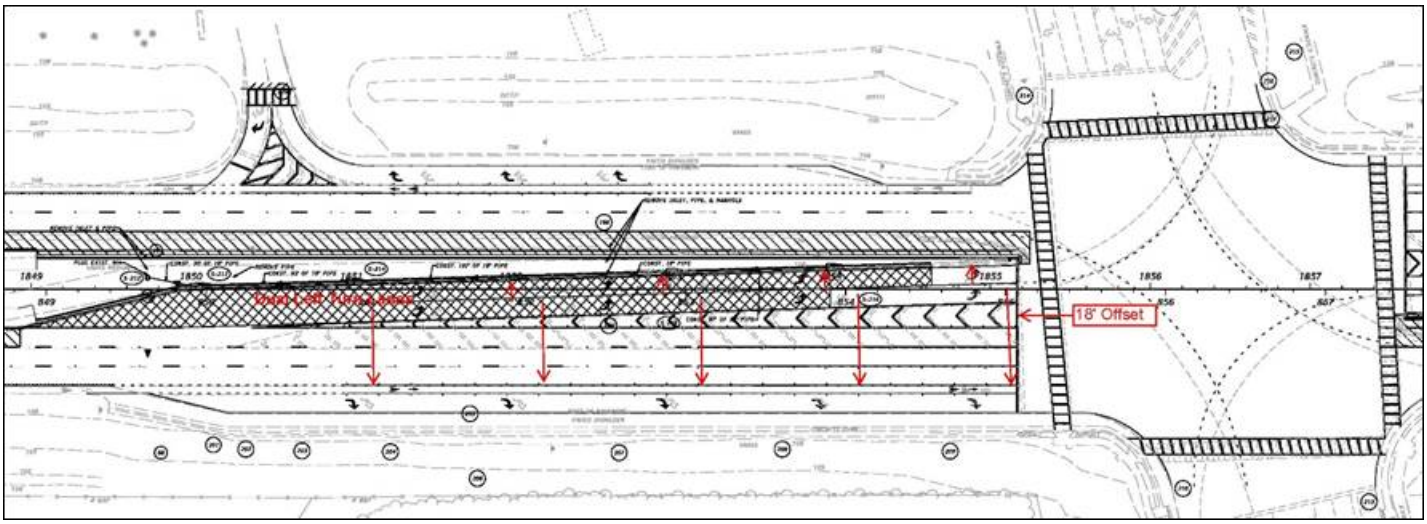
However, we would like to request permission to use the spread criteria for 45 mph design speed when calculating spread for left turn lanes, only.

Justification for this request is as follows.

1. Motorists entering left turn lanes must decrease their speed in order to make their turn. It is not unreasonable to believe that vehicles in a left turn lane have decelerated from 55 mph to 45 mph by the time their vehicle is entirely within the left turn lane.
2. In all cases, only the left turn lane adjacent to the curb is sloped towards the curb. All other lanes such as travel lanes, dual left turn lanes or offsets are sloped to the outside away from the curb (see below). Consequently, vehicles traveling at the design speeds on the main thru lanes are located safely away from any spread.

3. A vehicle turning left can still maneuver around the spread without traveling into the through lane because the left turn lanes either have an offset area (12' – 18') or a second left turn lane.
4. No spread encroachment into the main travel lanes is proposed.
5. To meet the spread criteria for design speeds greater than 55 mph would require trench drain along the entire length of the turn lane. Type F curb adjacent to the turn lane only provides for 1.5' of spread before the runoff encroaches upon the left turn lane. It has been our experience that trench drain is prone to silting and clogging, is a continual maintenance issue and is, therefore, recommended as a last resort.
6. Even though the left turn lane closest to the curb is the only lane sloped towards the curb, a full depth 5' wide paved shoulder would have to be added between the turn lane and the curb to assure the spread does not encroach into the left turn lane. The need for the 5' shoulder is based on an inlet spacing of 100'. This would be a significant cost increase and would not be feasible in some areas due to limited median width.





If you'd like to discuss this further, please do not hesitate to contact me at this office. I look forward to your reply!

Mike

Michael E. Mills, P.E.
ICON Consultant Group, Inc.
10006 N. Dale Mabry Highway, Suite 201
Tampa, Florida 33618
813.962.8689
813.335.6640
mmills@iconconsultantgroup.com

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INCORPORATED
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Meeting Notes

10006 N. Dale Mabry Hwy
Suite 201
Tampa, FL 33618
813 962 8689 Tel
813 963 1610 Fax

Project Name	**Date of Meeting**
State Road 54 Design/Build from E. of Suncoast Parkway to W. of US 41 (FPN 256339-2)	October 8, 2014
Purpose of Meeting	**Time**
Drainage Design Kickoff Meeting	11:00 am
Participants	
FDOT: Daniel Lauricello, Christina Boulnois, Richard Griffin, Robert Liddle **Analytic Engineering**: Al Stewart (FDOT – GEC)	**Jones Adam & Associates**: Bill Adams, Lisa Propps, Kate Morgan (CEI) **Pepper Contracting:** Kurt Keith, Doug Lack **ICON Consultant Group:** Michael Mills, John Kilgore

The Drainage Design Kickoff Meeting for this project was held on October 8, 2014 at 11:00 am, immediately following the Design/Build Kickoff Meeting. These two meetings were conducted at the Florida Department of Transportation District Seven Office. The following subjects were discussed.

1. **Permitting:**
    a. Historic Permit: The original permit in 1999 (#4316251.00) addressed the water quality treatment and attenuation for the 6-lane section.
    b. Current Permit: The current SWFWMD permit (#44016251.011) supports the concept plans for the construction of the 6-lane section and is therefore sufficient to allow the contractor to begin construction. The first phase of construction, as discussed in the Design Kickoff Meeting, is work associated with the new lanes which are proposed in the existing median. The expiration date for the current permit is August 4, 2016 and is therefore not an issue.
    c. Proposed Permit Modification: The permit modification will involve the addition of sidewalk to the project. A pre-application meeting will be scheduled to discuss the permit requirements for the sidewalk. It was noted that, in previous pre-application meetings, SWFWMD recognized the addition of sidewalk as being exempt, even when they impact roadside stormwater management facilities. This will be confirmed at the meeting which is now scheduled for October 16, 2014 at 2:00 in the SWFWMD Brooksville Office.

2. **Flood Investigation:**
    a. Scope of Services: The RFP had identified one flood investigation (#1406032008408) within the project limits; an existing drainage system that had a tendency for clogging. It was recommended that a concrete pad be added surrounding a particular ditch bottom inlet identified in the flood investigation to prevent vegetation from growing up around it. This will be researched and a final recommendation will be implemented.
    b. Follow Up: It was suggested that District Seven's data base be reviewed for any other drainage complaints within the project limits. The scope also points out that FDOT Maintenance and Drainage Connection Permits should also be researched.

3. **Existing Cross Drains and Storm Sewers:**
    a. Scope of Services: It was pointed out that the design/build firm should confirm that any existing drainage to remain has adequate capacity and is structurally sound. It was pointed out that some pavement patching had occurred over one of the existing cross drains and should be researched further.
    b. Evaluation: It was agreed that visual inspection of cross drains is appropriate and that video inspection would not be required unless there was clear evidence of an existing deficiency in an existing cross drain or storm sewer. In the event video inspection would be needed it was debated whether or not FDOT would perform that work or if it would be left to the design/build team. This decision will be made if and when the need arises.

4. **Drainage Design**
    a. Storm Sewer: Spread was mentioned as a particular concern, especially in the super elevated areas. It was agreed that achieving acceptable gutter profiles and spread would be accomplished.
    b. Roadside Ditches: Design high waters for ditches designed for conveyance would be calculated.
    c. Optional Materials: The latest Culvert Service Life Estimator program will be used to support the culvert materials proposed by the contractor.
    d. Roadside Stormwater Management Facilities: Because the FDOT was willing to approve a variation for 1:4 front slopes and 1:2 back slopes outside the clear zone, storage volume within the roadside stormwater facilities should be easily accomplished. The approach to the design will be to closely mimic the drainage design already approved in support of the concept plans.

5. **Sidewalk Matrix Meeting**
    a. Attendees: It was agreed that an FDOT drainage representative(s) will be present at the sidewalk matrix meeting.
    b. Meeting Date: This meeting has been scheduled for October 21, 2014 at 11:00 at the District Seven Office.

DRAINAGE COMPLAINT INVENTORY SHEET

SECTION I, LOCATION

County- Pasco

Coordinates: N E

State Road- SR 54 Suncoast to US 41

Location- Linda Lake / Cambridge Cove Subdivision

Road Description- Under construction (10/03) 4 lane rural

9-01-04 Field Review (Construction Completed)

Section/Township/Range- S26 T26 R18E

SECTION II, PROBLEM DESCRIPTION

Complaint Contact & Date: Call from David Sua SWFWMD. David received a call from a local resident, Jimmy Elmore. Mr. Elmore is concerned because the FDOT contractor has quit pumping from Linda Lake and the lake levels will rise...

Problem: Possible increase in stage in Linda Lake.

Frequency- Not known, but due to the significant amount of recent rain fall, the CEI has been pumping to artificially keep water levels low.

Estimated High Water- Not Known

History of Problem- SR 54 is under construction as is the Cambridge Cove Subdivision. The CEI was pumping out of the Cambridge Cove pond into our system to keep lake levels down. The pumping was discontinued and a property owner on the lake, Jimmy Elmore, is concerned.

9-01-04 / This issue was discussed again with the CEI Joe Chou. The pumping was being done while the SR 54 drainage system was being constructed and Joe was under the impression that the flooding was due to the drainage system not being completed. The water level was below previously noted flood stages on this date; Joe had noted that water was up to the adjacent dock during construction and the water is now 2 to 2.5 feet lower than the dock. Note Huuricane Charley was on 8-12-04.

Note: A field review was done by Jennifer Ray on 9-15-04 following hurricane Ivan, at that time the water elevation in Linda Lake was near the elevation of the dock mentioned above. The water was flowing out of the lake through the Cambridge Cove pond and control structures. The assumption was that the water was approximately 2 foot higher than on 9-1-04; over elevation 68.0.

Outfall Description- The outfall from Linda Lake is possibly through the Cambridge Cove pond, but the grate elevation of this structure is set at 69.7 feet. From the pond the system outfalls through the Cambridge Cove floodplain compensation site to the large wetland to the east. The wetland is connected to the north by a 1050mm crossdrain (S-67). The north system ultimately connects back around to the south west through a twin 750 crossdrain and control structure (S-63). In addition to the main system there is a system of inlets and pipes running west from the wetland near station 295+-. This system has an inlet adjacent to the large wetland set at the original pop-off elevation of the ditch. The 450 pipes in this system mimic the 450 and 375 mm sidedrain pipes on the existing road.

9-1-04 Field review showed Linda Lake being drawn down through the Cambridge Cove pond. The Flow was slightly over the bottom of the CS-2 slot and at the top of the CS-1 slot in Cambridge Cove's pond structures. These structures are designed to have a slot elevation of 65.97. Additionally, a review of the Cambridge Cove's outfall structure into Linda Lake showed a water elevation of 4 to 6 inches above the grate. The Grate was designed at elevation 65.8. Assuming that the structures were built as designed, this would make the water elevation in the lake and pond to be somewhere between 66 and 66.5.

Persons Interviewed and Attended Field Review- I meet in the office with CEI Joe Choa to discuss the issues with Linda Lake and pumping, September 2003. Because of pressure from residents around Lake Linda the lake was being pumped to keep levels down.

SECTION III, PROBLEM ANALYSIS

Responsible Entity for Maintenance of Outfall- The outfall for Linda Lake seems to be through the Cambridge cove pond to a Cambridge Cove Floodplain site connected to the wetland east of the development. The existing Lake system was not analyzed but SWFWMD aerials and Cambridge Cove topographic survey seem to suggest that the existing pop-off elevations may be lower than the grate for the Cambridge Cove outfall.

9-01-04 The SWFWMD topo maps show the pop-off to be between elevation 67 and 68. The slots in the Cambridge cove pond were set at elevation 65.97; the smallest slot is in CS-1 and it is 4" high by 12" wide. The grate elevations are set at 69.

Previous Efforts to Remedy- NA

SECTION IV. PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

As of this date (10/16/03) there has been no determination of the cause of the problem on Linda Lake. It should be noted that there was near record rainfall in June and twice the average rainfall in August. We are currently waiting on input from David Sau. Based on the information in the Cambridge Cove plans and calculations the Cambridge cove system was not modeled to include peak flows out of Linda Lake. The FDOT floodplain modeling assumed no connection between Linda Lake and the east wetland based on SWFWMD contours. The FDOT floodplain model showed a peak DHW 100 year elevation of 67.95 and SWFWMD aerials showed a ground elevation near 68 feet.

The FDOT plans did provide an offsite system which mimicked the existing wetland pop-offs and the existing side drains. In addition the FDOT plans provided for extension and upsizing of cross drains where calculations dictated.

Structure S-81 was set at the pop-off elevation of the wetland at station 292+50, this wetland was filled in the construction for the Cambridge Cove site.

Following hurricane Ivan and the field review of 9-15-04 the drainage department did some simple modeling of the Linda Lake basin. In summary: the 100 year SWFWMD modeling showed no outflow from the lake, while the FDOT critical duration model showed outflow.

RECOMMENDATIONS:

Waiting David Sau's review of the problem – Do not feel that the increase in lake levels was caused by the FDOT's design or construction.

BACKUP CORRESPONDENCE:

David.Sua@swfwmd.state.fl.us
10/07/2003 05:18 PM AST

To: megan.arasteh@dot.state.fl.us
cc:
bcc:
Subject: SR 54 (Lake Linda Flooding Concerns)

Megan:

Jimmy Elmore called me to say that Joe Chow had removed the pump he was using to move water from the lake and prevent flooding of Mr. Elmore's propoerty. Mr. Elmore is now very concerned that the water will start staging too high, and he has now lost some magnolia trees. Until the gravity system along SR 54 is completed, it does not appear prudent to remove the pump. I will have our Tom Hackney visit the site tomorrow to see if the FDOT gravity system is now in place. He will also check water levels in the area for comparison to see if Mr. Elmore's situation is worsening. Please have one of your site supervisors take a look into this situation. Note: I have not had time to review the documents (drawings and calculations) sent by Robert Griffin, to date. But I will, hopefully this week.

David Z Sua, P.E.

Senior Professional Engineer

Brooksville Regulation Department

Southwest Florida Water Management District

2379 Broad Street(US Highway 41 South)

Brooksville, FL 34604-6899

Telephone/Email Contacts

(800) 423 - 1476 Ext. 4375 (Office Toll Free)

(352) 796 - 7211 Ext. 4375 (Regular Office)

(352) 754 - 6882 (Fax)



S-83

Median Ditch Calculations

SR 54 from E. of Suncoast Parkway to W. of US 41
Ditch Calculations

FPID: 256339-2-32-01
Date: 5-May-15
By: BCC
Checked: JDS

DWN= Down station of DBI
Rainfall Intensity = 7.40 in/hr UP= Up station of DBI

Note: For sag inlets, the spread is initially evaluated using the entire contributing area. When spread is in question, the areas were distributed to each inlet throat respectively.
Note: For calcs, the C value is conservatively assumed to be 0.9. When depth of flow is in question, a weighted C was calculated

Inlet	Type	Station	Area (ac)	Runoff Coefficient C (assumed)	Segment Flow Rate (cfs)	% Pervious Area	% Impervious Area	Weighted C Value (calculated)	New Segment Flow Rate (cfs)	Y-allowable (ft)	Y-actual (ft)	Notes
S-127	DBI	1779+25	0.81	0.90	5.39	N/A	N/A	N/A		1.64	0.53	
S-140	DBI-C	1794+77.89	1.52	0.90	10.12	100%	0%	0.20	2.25	0.79	0.48	
S-200	DBI-C	1812+82.44	0.55	0.90	3.66	N/A	N/A	N/A		1.20	0.82	
S-202	DBI-C	1817+60	0.89	0.90	5.93	90%	10%	0.28	1.84	1.00	0.66	
S-206	DBI-C	1825+13.08	0.93	0.90	6.19	N/A	N/A	N/A		1.50	0.64	
S-209	DBI-C	1836+05	1.15	0.90	7.66	N/A	N/A	N/A		1.32	0.76	
S-210	DBI-C	1839+07.41	0.70	0.90	4.66	N/A	N/A	N/A		0.89	0.89	
S-211	DBI-C	1844+81.59	0.70	0.90	4.66	N/A	N/A	N/A		1.47	0.61	
S-307	DBI-C	1866+13.67	0.61	0.90	4.06	N/A	N/A	N/A		1.90	0.69	
S-308 DWN	DBI-C	1870+24.23	0.38	0.90	2.55	36.8%	63.2%	0.67	1.90	0.50	0.42	
S-308 UP	DBI-C	1870+24.23	0.66	0.90	4.38	36.8%	63.2%	0.67	3.26	0.50	0.46	
S-309	DBI-C	1874+34.59	0.98	0.90	6.53	47.7%	52.3%	0.64	4.64	0.72	0.66	

Note: For sag inlets, the spread is initially evaluated using the entire contributing area. When spread is in question, the areas were distributed to each inlet throat respectively.

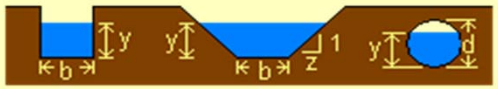
Note: For calcs, the C value is conservatively assumed to be 0.9. When depth of flow is in question, a weighted C was calculated

Inlet	Type	Station	Area (ac)	Runoff Coefficient C (assumed)	Segment Flow Rate (cfs)	% Pervious Area	% Impervious Area	Weighted C Value (calculated)	New Segment Flow Rate (cfs)	Y-allowable (ft)	Y-actual (ft)	Notes
S-310	DBI-C	1878+95.97	1.20	0.90	7.99	N/A	N/A	N/A		1.40	0.83	
S-313	DBI-C	1892+15.28	0.99	0.90	6.59	66%	34%	0.52	3.81	1.35	0.76	
S-315	DBI-C	1895+76.47	0.38	0.90	2.53	N/A	N/A	N/A		1.55	0.35	
S-401	DBI-C	1903+96.91	1.07	0.90	7.13	N/A	N/A	N/A		1.84	0.76	
S-402 DWN	DBI-C	1912+00	0.47	0.95	3.30	N/A	N/A	N/A		0.65	0.48	Concrete Ditch Bottom used
S-402 UP	DBI-C	1912+00	0.47	0.95	3.30	N/A	N/A	N/A		0.65	0.48	Concrete Ditch Bottom used
S-404	DBI-C	1917+09	1.22	0.90	8.13	N/A	N/A	N/A		1.70	0.82	
S-407 DWN	DBI-C	1924+00	0.36	0.90	2.40	44.70	55.30	0.66	1.76	0.64	0.47	
S-407 UP	DBI-C	1924+00	0.18	0.90	1.20	44.70	55.30	0.66	0.88	0.64	0.32	
S-502 DWN	DBI-C	1935+13.35	0.36	0.90	2.39	N/A	N/A	N/A		1.54	0.72	
S-502 UP	DBI-C	1935+13.35	1.01	0.90	6.74	N/A	N/A	N/A		1.54	1.15	
S-504 DWN	DBI-C	1944+97.90	0.61	0.90	4.08	N/A	N/A	N/A		1.16	0.71	
S-504 UP	DBI-C	1944+97.90	0.49	0.90	3.24	N/A	N/A	N/A		1.16	0.63	
S-505 DWN	DBI-C	1949+89.24	0.41	0.90	2.64	N/A	N/A	N/A		0.87	0.44	
S-505 UP	DBI-C	1949+89.24	0.27	0.90	1.88	N/A	N/A	N/A		0.87	0.37	
S-518 DWN	DBI-C	1963+57.52	0.32	0.90	2.13	N/A	N/A	N/A		0.96	0.48	
S-518 UP	DBI-C	1963+57.52	0.74	0.90	4.90	N/A	N/A	N/A		0.96	0.74	
S-520	DBI-C	1968+83.81	0.55	0.90	3.66	N/A	N/A	N/A		2.77	0.43	
S-522	DBI-C	1976+95.89	1.06	0.90	7.10	38.80	61.20	0.69	5.46	0.94	0.79	

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**12.90**	feet
Depth of Water	"y"	=	**0.53**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



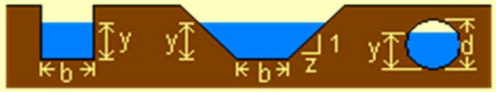
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.84	13.9600	0.4898	**4.71**	**0.69**
Trapezoid	8.52	19.3477	0.4405	**5.46**	**0.64**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**3.37**	feet
Depth of Water	"y" =	**0.48**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0045**	feet per foot
Manning's	"n" =	**0.060**	



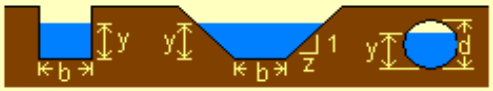
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	1.62	4.3300	0.3736	**1.39**	**0.86**
Trapezoid	3.00	9.2095	0.3258	**2.36**	**0.79**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**4.00**	feet
Depth of Water	"y"	=	**0.82**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



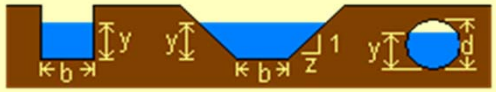
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.28	5.6400	0.5816	**1.79**	**0.55**
Trapezoid	7.31	13.9757	0.5234	**3.72**	**0.51**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**2.48**	feet
Depth of Water	"y" =	**0.66**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0010**	feet per foot
Manning's	"n" =	**0.060**	



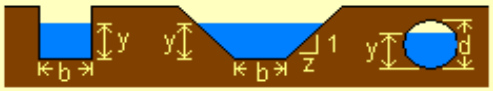
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	1.64	3.8000	0.4307	**0.73**	**0.45**
Trapezoid	4.25	10.5092	0.4044	**1.82**	**0.43**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**10.30**	feet
Depth of Water	"y"	=	**0.64**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



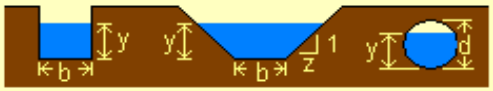
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.59	11.5800	0.5693	**5.02**	**0.76**
Trapezoid	9.05	18.0859	0.5004	**6.32**	**0.70**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**9.00**	feet
Depth of Water	"y"	=	**0.76**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



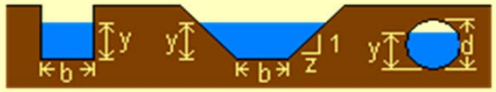
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.84	10.5200	0.6502	**5.69**	**0.83**
Trapezoid	10.31	18.2458	0.5648	**7.80**	**0.76**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**5.00**	feet
Depth of Water	"y" =	**0.89**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0009**	feet per foot
Manning's	"n" =	**0.060**	



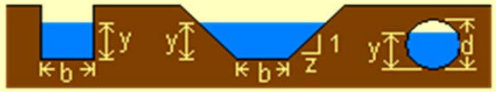
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.45	6.7800	0.6563	**2.50**	**0.56**
Trapezoid	9.20	15.8273	0.5814	**4.76**	**0.52**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**13.00**	feet
Depth of Water	"y" =	**0.61**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0009**	feet per foot
Manning's	"n" =	**0.060**	



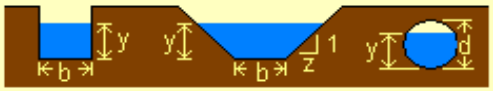
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	7.93	14.2200	0.5577	**3.99**	**0.50**
Trapezoid	10.16	20.4210	0.4977	**4.74**	**0.47**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**7.10**	feet
Depth of Water	"y"	=	**0.69**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0012**	feet per foot
Manning's	"n"	=	**0.060**	



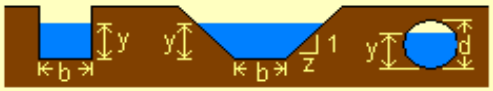
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.90	8.4800	0.5777	**2.92**	**0.60**
Trapezoid	7.76	15.4942	0.5005	**4.19**	**0.54**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**9.70**	feet
Depth of Water	"y"	=	**0.42**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



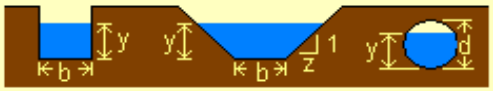
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.07	10.5400	0.3865	**1.69**	**0.42**
Trapezoid	5.13	14.8095	0.3466	**1.98**	**0.39**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**9.70**	feet
Depth of Water	"y"	=	**0.46**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



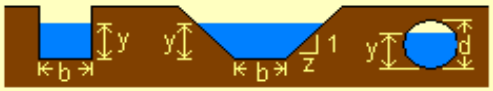
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.46	10.6200	0.4202	**2.77**	**0.62**
Trapezoid	5.73	15.2961	0.3747	**3.30**	**0.58**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**8.10**	feet
Depth of Water	"y"	=	**0.66**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0015**	feet per foot
Manning's	"n"	=	**0.060**	



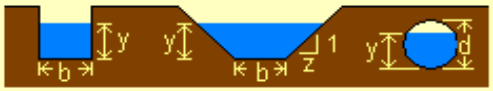
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	5.35	9.4200	0.5675	**3.52**	**0.66**
Trapezoid	7.96	16.1292	0.4935	**4.77**	**0.60**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**7.50**	feet
Depth of Water	"y"	=	**0.83**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



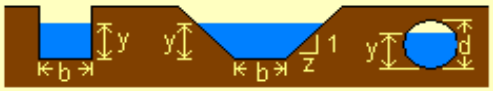
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.23	9.1600	0.6796	**5.33**	**0.86**
Trapezoid	10.36	17.5974	0.5886	**8.06**	**0.78**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**3.10**	feet
Depth of Water	"y"	=	**0.76**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



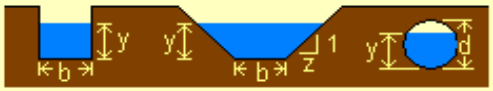
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.36	4.6200	0.5100	**1.67**	**0.71**
Trapezoid	5.82	12.3458	0.4715	**3.91**	**0.67**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**11.22**	feet
Depth of Water	"y"	=	**0.35**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0026**	feet per foot
Manning's	"n"	=	**0.060**	



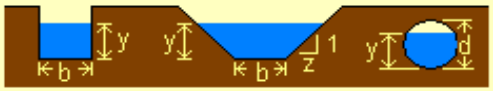
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.93	11.9200	0.3294	**2.37**	**0.60**
Trapezoid	4.66	15.4779	0.3012	**2.65**	**0.57**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**8.02**	feet
Depth of Water	"y"	=	**0.76**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



Rectangle Trapezoid Circle

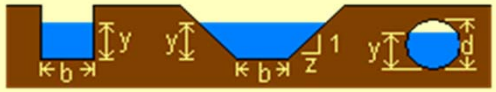
Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.10	9.5400	0.6389	**5.01**	**0.82**
Trapezoid	9.56	17.2658	0.5537	**7.14**	**0.75**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

S-402 DOWN STATION

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**3.50**	feet
Depth of Water	"y" =	**0.48**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0010**	feet per foot
Manning's	"n" =	**0.020**	



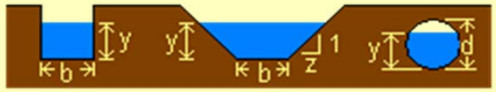
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	1.68	4.4600	0.3767	**2.06**	**1.23**
Trapezoid	3.06	9.3395	0.3279	**3.42**	**1.12**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**3.50**	feet
Depth of Water	"y" =	**0.48**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0010**	feet per foot
Manning's	"n" =	**0.020**	



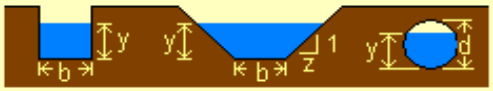
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	1.68	4.4600	0.3767	**2.06**	**1.23**
Trapezoid	3.06	9.3395	0.3279	**3.42**	**1.12**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**5.86**	feet
Depth of Water	"y"	=	**0.82**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0031**	feet per foot
Manning's	"n"	=	**0.060**	



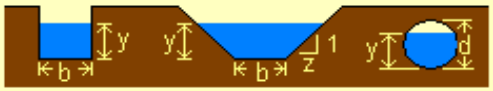
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.81	7.5000	0.6407	**4.92**	**1.02**
Trapezoid	8.84	15.8357	0.5582	**8.26**	**0.93**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**6.70**	feet
Depth of Water	"y"	=	**0.47**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



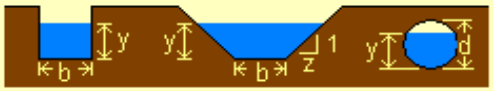
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.15	7.6400	0.4122	**1.37**	**0.43**
Trapezoid	4.47	12.4178	0.3603	**1.77**	**0.40**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**6.70**	feet
Depth of Water	"y" =	**0.32**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0010**	feet per foot
Manning's	"n" =	**0.060**	



Rectangle Trapezoid Circle

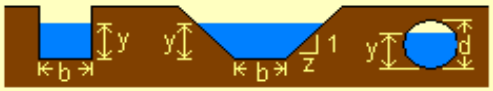
Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.14	7.3400	0.2921	**0.74**	**0.34**
Trapezoid	2.76	10.5930	0.2604	**0.88**	**0.32**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

S-502 DOWN STATION

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**3.00**	feet
Depth of Water	"y"	=	**0.72**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



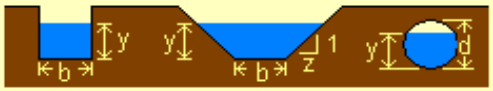
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.16	4.4400	0.4865	**1.05**	**0.48**
Trapezoid	5.27	11.7592	0.4482	**2.42**	**0.46**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**3.00**	feet
Depth of Water	"y"	=	**1.15**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



Rectangle Trapezoid Circle

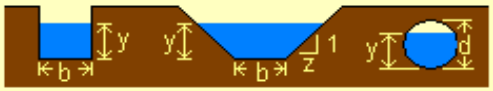
Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.45	5.3000	0.6509	**2.03**	**0.59**
Trapezoid	11.39	16.9904	0.6701	**6.83**	**0.60**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

S-504 DOWN STATION

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**4.55**	feet
Depth of Water	"y"	=	**0.71**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



Rectangle Trapezoid Circle

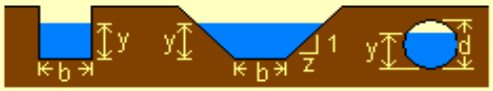
Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.23	5.9700	0.5411	**2.38**	**0.74**
Trapezoid	6.26	13.1875	0.4743	**4.21**	**0.67**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

S-504 UP STATION

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**4.55**	feet
Depth of Water	"y"	=	**0.63**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



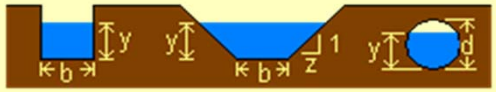
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.87	5.8100	0.4934	**1.98**	**0.69**
Trapezoid	5.25	12.2143	0.4297	**3.31**	**0.63**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**7.87**	feet
Depth of Water	"y" =	**0.44**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0022**	feet per foot
Manning's	"n" =	**0.060**	



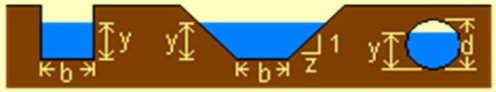
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.46	8.7500	0.3957	**2.17**	**0.63**
Trapezoid	4.62	13.2228	0.3497	**2.67**	**0.58**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b" =	**7.87**	feet
Depth of Water	"y" =	**0.37**	feet
Left Side Slope	"z" =	**6**	to 1
Right Side Slope	"z" =	**6**	to 1
Diameter	"d" =	**0.00**	feet
Slope	"s" =	**0.0022**	feet per foot
Manning's	"n" =	**0.060**	



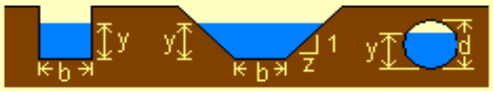
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.91	8.6100	0.3382	**1.64**	**0.56**
Trapezoid	3.73	12.3712	0.3018	**1.95**	**0.52**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**8.54**	feet
Depth of Water	"y"	=	**0.48**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



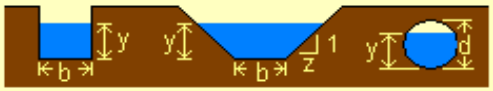
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	4.10	9.5000	0.4315	**1.83**	**0.45**
Trapezoid	5.48	14.3795	0.3812	**2.26**	**0.41**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**8.54**	feet
Depth of Water	"y"	=	**0.74**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0010**	feet per foot
Manning's	"n"	=	**0.060**	



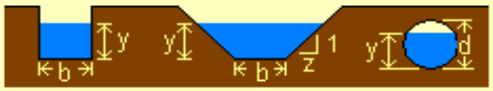
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	6.32	10.0200	0.6307	**3.64**	**0.58**
Trapezoid	9.61	17.5425	0.5475	**5.04**	**0.52**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**6.82**	feet
Depth of Water	"y"	=	**0.43**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0060**	feet per foot
Manning's	"n"	=	**0.060**	



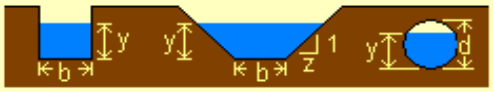
Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	2.93	7.6800	0.3818	**2.96**	**1.01**
Trapezoid	4.04	12.0512	0.3354	**3.74**	**0.93**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Blue Numbers	= Input data
Red Numbers	= Answers

Geometric Elements of Channel Sections

Bottom Width	"b"	=	**5.00**	feet
Depth of Water	"y"	=	**0.79**	feet
Left Side Slope	"z"	=	**6**	to 1
Right Side Slope	"z"	=	**6**	to 1
Diameter	"d"	=	**0.00**	feet
Slope	"s"	=	**0.0020**	feet per foot
Manning's	"n"	=	**0.060**	



Rectangle Trapezoid Circle

Section	Area (sq. ft.)	Wetted Perimeter (feet)	Hydraulic Radius (feet)	Channel Conveyance (cfs)	Velocity (ft/sec)
Rectangle	3.95	6.5800	0.6003	**3.11**	**0.79**
Trapezoid	7.69	14.6108	0.5266	**5.56**	**0.72**
Circle	#DIV/0!	#DIV/0!	#DIV/0!	**#DIV/0!**	**#DIV/0!**

Storm Sewer Tabulations, Spread & Tailwaters

The yellow highlighted longitudinal slopes do not meet the minimum 0.3% grade required.
Gutter Pan values are interpolated see plans for proposed grades and elevations.

SR 54 Gutter Profiles

Station	Elevation		Gutter Profile		GUTTER PAN (LT)		
	Lt	Rt	Lt	Rt	ELEV	INC/DEC	PROF
1764+00.00	58.85	59.60			58.60	-0.125	
1765+00.00	59.14	59.48	0.290%	-0.120%	58.90	-0.1131	0.30%
1766+00.00	59.28	59.65	0.140%	0.170%	59.09	-0.06548	0.19%
1767+00.00	59.46	59.92	0.180%	0.270%	59.32	-0.01786	0.23%
1768+00.00	59.71	60.12	0.250%	0.200%	59.61	0.029762	0.30%
1769+00.00	59.86	60.49	0.150%	0.370%	59.81	0.077381	0.20%
1769+25.00	60.00		0.560%		60.00	0.125	0.75%
1770+00.00	60.04						
1771+00.00	59.85		-0.190%				
1771+20.00	59.79		-0.300%				
1772+00.00	59.49		-0.360%				
1773+00.00	59.72		0.230%				

0.25 0.000476 0.047619

					GUTTER PAN (LT)		
					ELEV	INC/DEC	PROF
1771+00.00	60.30				60.18	0	
1771+20.00	60.08		-1.100%		59.96	0	-1.10%
1772+00.00	59.53		-0.687%		59.41	0	-0.69%
1773+00.00	59.37		-0.160%		59.20	-0.042	-0.20%
1774+00.00	59.05		-0.320%		58.93	0	-0.28%
1775+00.00	59.33		0.280%		59.21	0	0.28%
1776+00.00	59.56		0.230%		59.44	0	0.23%
1777+00.00	59.31		-0.250%		59.19	0	-0.25%
1777+70.00	59.10		-0.300%		58.98	0	-0.30%
1778+00.00	59.15		0.167%		59.03	0	0.17%
1778+66.67							

					GUTTER PAN (RT)		
					ELEV	INC/DEC	PROF
1786+60.00		60.73			60.48	-0.125	
1787+00.00		60.82		0.225%	60.59	-0.11	0.26%
1788+00.00		60.87		0.050%	60.79	0.042	0.20%
1789+00.00		61.11		0.240%	60.99	0	0.20%
1790+00.00		61.30		0.190%	61.18	0	0.19%
1791+00.00		61.51		0.210%	61.39	0	0.21%
1792+00.00		62.15		0.640%	62.03	0	0.64%

					GUTTER PAN (RT)		
					ELEV	INC/DEC	PROF
1849+50.00		64.45			64.33	0	
1850+00.00		64.30		-0.300%	64.05	-0.125	-0.55%
1851+00.00		64.44		0.140%	64.23	-0.084	0.18%
1852+00.00		64.74		0.300%	64.53	-0.084	0.30%

1853+00.00		64.81		0.070%			64.73	0.042	0.20%	
1854+00.00		64.94		0.130%			64.93	0.112	0.20%	
1855+00.00		65.44		0.500%			65.43	0.112	0.50%	
1855+17.00		65.52		0.471%			65.52	0.125	0.55%	
1858+00.00	65.98	66.04					GUTTER PAN (LT)			
1859+00.00	65.80	65.91	-0.180%	-0.130%			ELEV	INC/DEC	PROF	
1860+00.00	66.12	66.06	0.320%	0.150%			66.00	0		
1861+00.00	66.76	66.28	0.640%	0.220%			66.64	0	0.64%	
1862+00.00	66.87	66.42	0.110%	0.140%			66.87	0.125	0.23%	
1863+00.00	66.74	66.44	-0.130%	0.020%			66.62	0	-0.26%	
1863+80.00	66.60		-0.175%				66.35	-0.125	-0.33%	
1864+00.00	66.65	66.28	0.250%	-0.160%						
1864+60.00		66.18		-0.167%						
1864+70.00	66.40		-0.357%							
1896+30.00	67.04									
1897+00.00	67.37	67.50	0.471%							
1898+00.00	67.68	67.81	0.310%	0.310%						
1899+00.00	68.05	68.28	0.370%	0.470%			GUTTER PAN (LT)			
1900+00.00	68.30	68.83	0.250%	0.550%			ELEV	INC/DEC	PROF	
1900+50.00	68.53	69.02	0.460%	0.380%			68.41	0		
1901+00.00	68.91	69.23	0.760%	0.420%			68.66	-0.125	0.51%	
1902+00.00	68.99	69.79	0.080%	0.560%			68.87	0	0.20%	
1903+00.00	69.69		0.700%							
1903+40.00	69.90	70.23								
1904+00.00	70.16	70.32	0.433%	0.150%						
1905+00.00	69.95	69.60	-0.210%	-0.720%						
1906+00.00	70.24	69.40	0.290%	-0.200%						
1907+00.00		69.19		-0.210%						
1908+00.00		68.93		-0.260%						
1908+40.00		68.88		-0.138%						
1909+00.00		69.43		0.925%						
1909+50.00		70.11		1.360%						
							GUTTER PAN (LT)			
							ELEV	INC/DEC	PROF	
1925+00.00	70.62	71.17					70.62	0.125		
1925+90.00	70.60		0.037%				70.35	-0.125	-0.30%	
1926+00.00	70.58	70.97	-0.200%	-0.200%						
1926+80.00		70.86		-0.137%						
1927+00.00	70.85	70.93	0.270%	0.350%			70.73	0	0.34%	
1927+30.00		70.98		0.177%						
1928+00.00	70.61	71.01	-0.240%	0.039%						

GUTTER PAN (RT)		
ELEV	INC/DEC	PROF
66.04	0.125	
65.66	-0.125	-0.38%
65.89	-0.042	0.23%
66.20	0.042	0.30%
66.17	0.125	-0.03%
66.44	0.125	0.27%
66.20	0.0497	-0.24%
66.06	0	-0.25%

66.17 AHEAD AND 66.42 BACK

GUTTER PAN (RT)		
ELEV	INC/DEC	PROF
70.11	0	
70.20	0	0.15%
69.48	0	-0.72%
69.28	0	-0.20%
69.07	0	-0.21%
68.81	0	-0.26%
68.63	-0.125	-0.45%
69.31	0	1.13%
69.99	0	1.36%

GUTTER PAN (RT)		
ELEV	INC/DEC	PROF
	0	
70.85	0	
70.61	-0.125	-0.29%
70.73	-0.075	0.60%
70.86	0	0.43%

1930+00.00	70.68					
1931+00.00	70.15		-0.530%			
1932+00.00	69.96		-0.190%			
1951+30.00		71.45				
1952+00.00		70.90		-0.786%		
1953+00.00		71.36		0.460%		
1953+70.00		71.60		0.343%		
1954+00.00		71.49		-0.367%		
1955+00.00		71.12		-0.370%		
1955+30.00		71.00		-0.400%		
1955+40.00		71.10		1.000%		
1956+00.00		71.29		0.317%		
1956+48.00		71.46		0.354%		
1957+00.00		71.54		0.154%		
1957+20.00		71.55		0.050%		
1957+44.00		71.39		-0.667%		
1955+40.00		71.68				
1956+00.00		71.56		-0.200%		
1956+48.00		71.46		-0.208%		
1957+00.00		71.29		-0.327%		
1957+20.00		71.20		-0.450%		
1959+00.00	70.81	70.22				
1960+00.00	70.31	69.88	-0.500%	-0.340%		
1960+80.00		69.70		-0.225%		
1961+00.00	69.92	69.87	-0.390%	0.850%		
1961+60.00		69.74		-0.217%		

slope gutter away from curb to drain across through lanes

SR 54 from E. of Suncoast Parkway to W. of US 41
Spread Calculations

FPID: 256339-2-32-01
Date: 5-May-15
By: BCC
Checked: MEM
Gutter "n" Value = 0.02
Runoff C Value = 1.00
Rainfall Intensity = 4.00 in/hr
Allowable Spread = Refer to "Allowable Spread" column

Inlet Type = Curb Inlet
Inlet capacities (see Roadway and Traffic Design Standards)
Inlet Capacity, Type 5 = 3.10 cfs
Inlet Capacity, Type 6 = 7.50 cfs
Inlet Capacity, Type 7/8 = 4.40 cfs
Inlet Capacity, Type 9 = 0.50 cfs

Note: For sag inlets, the spread is initially evaluated using the entire contributing area, when spread is in question, the areas were distributed to each inlet throat respectively.

Inlet	Type	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Bypassed Flow Rate, from last inlet (cfs)	Intercepted Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)	Bypassed Flow Rate, to next inlet (cfs)	Downstream Structure
S-113	P-5	1764+50	0.15	0.003000	0.08	0.61	0.00	0.61	0.61	5.50	3.15	1.52		
													0.00	
S-114	P-5	1766+00	0.15	0.002300	0.068	0.61	0.00	0.61	0.61	5.50	3.67	1.32		
													0.00	
S-115	P-5	1767+50	0.15	0.002900	0.056	0.60	0.00	0.60	0.60	5.50	3.96	1.37		
													0.00	
S-116	P-5	1769+00	0.25	0.007600	0.044	1.00	0.00	1.00	1.00	5.50	4.65	2.11		
													0.00	
EX-108	P-6	1764+50	0.03	0.001200	0.02	0.12	0.00	0.12	0.12	7.50	4.86	0.51		
													0.00	
EX-108	P-6	1764+50	0.09	0.001700	0.02	0.36	0.00	0.36	0.36	7.50	6.87	0.76		
													0.00	
EX-109	P-5	1766+00	0.09	0.002700	0.02	0.36	0.00	0.36	0.36	7.50	6.30	0.91		
													0.00	
EX-110A	P-5	1767+50	0.11	0.002500	0.02	0.44	0.00	0.44	0.44	7.50	6.89	0.93		
													0.00	
S-123	P-5	1773+00	0.04	0.0021	0.02	0.17	0.00	0.17	0.17	6.50	4.96	0.68		
													0.00	
S-124	P-6	1774+00	0.15	0.0027	0.03	0.59	0.00	0.59	0.59	6.50	5.90	1.14		
													0.00	SAG
S-124	P-6	1774+00	0.12	0.0028	0.03	0.47	0.00	0.47	0.47	6.50	5.37	1.09		
													0.00	SAG
S-125	P-5	1775+08	0.05	0.0023	0.019	0.21	0.00	0.21	0.21	6.50	5.44	0.73		

Note: For sag inlets, the spread is initially evaluated using the entire contributing area, when spread is in question, the areas were distributed to each inlet throat respectively.

Inlet	Type	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Bypassed Flow Rate, from last inlet (cfs)	Intercepted Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)	Bypassed Flow Rate, to next inlet (cfs)	Downstream Structure
													0.00	
S-126	P-6	1777+70	0.10	0.003	0.02	0.41	0.00	0.41	0.41	6.50	6.49	0.98		
													0.00	SAG
S-126	P-6	1777+70	0.04	0.00167	0.02	0.15	0.00	0.15	0.15	6.50	4.91	0.60		
													0.00	SAG
S-131	P-6	1786+60	0.06	0.00275	0.02	0.22	0.00	0.22	0.22	5.50	5.24	0.81		
													0.00	SAG
S-131	P-6	1786+60	0.03	0.0008	0.02	0.12	0.00	0.12	0.12	5.50	5.27	0.44		
													0.00	SAG
S-133	P-5	1788+50	0.05	0.002	0.02	0.21	0.00	0.21	0.21	5.50	5.46	0.71		
													0.00	
S-134	P-5	1790+00	0.05	0.0021	0.02	0.21	0.00	0.21	0.21	5.50	5.41	0.72		
													0.00	
S-213	P-6	1850+05	0.03	0.00181	0.02	0.14	0.00	0.14	0.14	5.50	4.74	0.61		
													0.00	SAG
S-213	P-6	1850+05	0.02	0.003	0.02	0.07	0.00	0.07	0.07	5.50	3.34	0.63		
													0.00	SAG
S-214	P-5	1851+00	0.08	0.003	0.025	0.31	0.00	0.31	0.31	5.50	5.05	0.96		
													0.00	
S-215	P-5	1853+00	0.06	0.002	0.025	0.24	0.00	0.24	0.24	5.50	4.95	0.77		
													0.00	
S-216	P-5	1854+00	0.08	0.005	0.02	0.30	0.00	0.30	0.30	5.50	5.27	1.10		
													0.00	
S-302	P-6	1859+00	0.10	0.0038	0.058	0.40	0.00	0.40	0.40	5.50	3.16	1.38		
													0.00	SAG
S-302	P-6	1859+00	0.11	0.0023	0.058	0.44	0.00	0.44	0.44	5.50	3.59	1.17		
													0.00	SAG
S-303	P-5	1860+00	0.22	0.0031	0.058	0.86	0.00	0.86	0.86	5.50	4.37	1.55		
													0.00	
S-304	P-5	1862+00	0.11	0.0027	0.058	0.43	0.00	0.43	0.43	5.50	3.47	1.24		
													0.00	
S-306	P-5	1864+60	0.19	0.0023	0.058	0.78	0.00	0.78	0.78	5.50	4.45	1.35		
													0.00	

Note: For sag inlets, the spread is initially evaluated using the entire contributing area, when spread is in question, the areas were distributed to each inlet throat respectively.

Inlet	Type	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Bypassed Flow Rate, from last inlet (cfs)	Intercepted Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)	Bypassed Flow Rate, to next inlet (cfs)	Downstream Structure
EX-215	P-6	1858+70	0.07	0.0018	0.02	0.27	0.00	0.27	0.27	5.50	6.07	0.72		
													0.00	SAG
EX-215	P-6	1858+70	0.09	0.0032	0.02	0.34	0.00	0.34	0.34	5.50	5.98	0.95		
													0.00	SAG
EX-216	P-5	1860+10	0.03	0.0064	0.02	0.12	0.00	0.12	0.12	5.50	3.55	0.95		
													0.00	
EX-218	P-5	1860+60	0.07	0.0064	0.02	0.28	0.00	0.28	0.28	5.50	4.88	1.18		
													0.00	
S-305	P-6	1863+80	0.04	0.0033	0.02	0.16	0.00	0.16	0.16	5.50	4.48	0.80		
													0.00	SAG
S-305	P-6	1863+80	0.02	0.001	0.02	0.08	0.00	0.08	0.08	5.50	4.32	0.43		
													0.00	SAG
S-316	P-5	1896+70	0.10	0.0047	0.05	0.38	0.00	0.38	0.38	5.50	3.27	1.43		
													0.00	
S-318	P-5	1897+50	0.15	0.0031	0.05	0.59	0.00	0.59	0.59	5.50	4.15	1.36		
													0.00	
S-319	P-5	1899+00	0.18	0.0025	0.05	0.71	0.00	0.71	0.71	5.50	4.64	1.32		
													0.00	
S-320	P-5	1900+50	0.19	0.005	0.061	0.75	0.00	0.75	0.75	5.50	3.67	1.82		
													0.00	
S-322	P-5	1902+00	0.37	0.007	0.085	1.48	0.00	1.48	1.48	5.50	3.62	2.66		
													0.00	
S-317	P-6	1897+40	0.11	0.0031	0.02	0.43	0.00	0.43	0.43	5.50	6.54	1.00		
													0.00	SAG
S-317	P-6	1897+40	0.04	0.001	0.02	0.14	0.00	0.14	0.14	5.50	5.33	0.49		
													0.00	SAG
S-321	P-5	1900+50	0.05	0.0042	0.02	0.20	0.00	0.20	0.20	5.50	4.65	0.92		
													0.00	
S-401D	P-5	1906+00	0.11	0.002	0.048	0.44	0.00	0.44	0.44	5.50	4.15	1.06		
													0.00	
S-401E	P-5	1907+00	0.23	0.0021	0.048	0.92	0.00	0.92	0.92	5.50	5.43	1.30		
													0.00	
S-401F	P-6	1908+40	0.31	0.0045	0.048	1.24	0.00	1.24	1.24	5.50	5.26	1.87		
													0.00	SAG
S-401F	P-6	1908+40	0.19	0.0113	0.048	0.76	0.00	0.76	0.76	5.50	3.69	2.33		
													0.00	SAG

Note: For sag inlets, the spread is initially evaluated using the entire contributing area, when spread is in question, the areas were distributed to each inlet throat respectively.

Inlet	Type	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Bypassed Flow Rate, from last inlet (cfs)	Intercepted Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)	Bypassed Flow Rate, to next inlet (cfs)	Downstream Structure
S-408	P-6	1925+90	0.06	0.003	0.05	0.24	0.00	0.24	0.24	4.00	3.01	1.08		
													0.00	SAG
S-408	P-6	1925+90	0.02	0.00346	0.05	0.09	0.00	0.09	0.09	4.00	2.03	0.89		
													0.00	SAG
S-409	P-6	1926+80	0.05	0.003	0.02	0.20	0.00	0.20	0.20	5.50	4.95	0.81		
													0.00	SAG
S-409	P-6	1926+80	0.02	0.0048	0.0136	0.08	0.00	0.08	0.08	5.50	4.10	0.70		
													0.00	SAG
S-501	P-6	1931+86.50	0.04	0.0019	0.02	0.16	0.00	0.16	0.16	5.50	4.96	0.65		
													0.00	SAG
S-501	P-6	1931+86.50	0.02	0.001	0.02	0.09	0.00	0.09	0.09	5.50	4.55	0.44		
													0.00	SAG
S-506	P-6	1951+80	0.06	0.00786	0.07	0.25	0.00	0.25	0.25	5.50	2.06	1.70		
													0.00	SAG
S-506	P-6	1951+80	0.16	0.0046	0.07	0.65	0.00	0.65	0.65	5.50	3.24	1.76		
													0.00	SAG
S-507	P-5	1953+00	0.09	0.00343	0.03	0.37	0.00	0.37	0.37	5.50	4.70	1.10		
													0.00	
S-507A	P-5	1954+60	0.13	0.0037	0.03	0.52	0.00	0.52	0.52	5.50	5.29	1.24		
													0.00	
S-508	P-6	1955+40	0.14	0.004	0.03	0.56	0.00	0.56	0.56	5.50	5.34	1.30		
													0.00	SAG
S-508	P-6	1955+40	0.04	0.00317	0.03	0.17	0.00	0.17	0.17	5.50	3.56	0.88		
													0.00	SAG
S-512	P-5	1959+00	0.08	0.005	0.02	0.32	0.00	0.32	0.32	5.50	5.37	1.11		
													0.00	
S-513	P-5	1959+00	0.24	0.0034	0.05	0.96	0.00	0.96	0.96	5.50	4.91	1.59		
													0.00	
S-514	P-5	1960+00	0.13	0.0034	0.05	0.51	0.00	0.51	0.51	5.50	3.87	1.36		
													0.00	
S-515	P-6	1960+80	0.05	0.0039	0.02	0.20	0.00	0.20	0.20	5.50	4.72	0.90		
													0.00	
S-515	P-6	1960+80	0.02	0.001	0.02	0.08	0.00	0.08	0.08	5.50	4.32	0.43		
													0.00	
S-516	P-5	1960+80	0.09	0.00225	0.05	0.36	0.00	0.36	0.36	5.50	3.67	1.07		
													0.00	

Note: For sag inlets, the spread is initially evaluated using the entire contributing area, when spread is in question, the areas were distributed to each inlet throat respectively.

Inlet	Type	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Bypassed Flow Rate, from last inlet (cfs)	Intercepted Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)	Bypassed Flow Rate, to next inlet (cfs)	Downstream Structure
S-517	P-5	1961+60	0.09	0.00217	0.05	0.37	0.00	0.37	0.37	5.50	3.72	1.06		
													0.00	

SR 54 from E. of Suncoast Parkway to W. of US 41
Shoulder Gutter Spread Calculations
Composite V-Shape Triangular Gutter Sections

FPID: 256339-2-32-01
Date: 5-May-15
By: BCC
Checked: MEM
Runoff C Value = 1.00
Rainfall Intensity = 4.00 in/hr
Allowable Spread = Varies [1]

Composite Slope, Right (Sx2),(Constant) = 0.111 ft/ft
Inlet Type = Shoulder Gutter Inlet (Index 220)
Inlet Capacity = 4.00 cfs (see Roadway and Traffic Design Standards)
Gutter "n" Value = 0.0160

Note
Spread is not allowed outside the 4.5' gutter.

Inlet	Station	Composite Area (C*A) (ac)	Longitudinal Slope, S (ft/ft)	Shoulder Slope, Left Sx1	Composite Slope, Left Sx1	Cross Slope, Sx (ft/ft)	Segment Flow Rate (cfs)	Intercepted Flow Rate (cfs)	Bypassed Flow Rate (cfs)	Design Flow Rate, Q (cfs)	Allowable Spread, T (ft)	Design Spread, T (ft)	Velocity in Gutter, V (fps)
S-121	1771+28	0.17	0.003	0.020	0.111	0.0556	0.68			0.68	4.50	4.14	1.43
								0.68	0.00				
S-122	1772+00	0.13	0.0036	0.070	0.111	0.0556	0.52			0.52	4.50	3.61	1.43
								0.52	0.00				
S-122	1772+00	0.12	0.0023	0.070	0.111	0.0556	0.48			0.48	4.50	3.82	1.19
								0.48	0.00				
S-401A	1903+48	0.19	0.0043	0.020	0.111	0.0556	0.76			0.76	4.50	4.03	1.68
								0.76	0.00				
S-401B	1904+20	0.05	0.0021	0.020	0.111	0.0556	0.20			0.20	4.50	2.80	0.92
								0.20	0.00				
S-401C	1905+00	0.14	0.0021	0.070	0.111	0.0556	0.56			0.56	4.50	4.11	1.19
								0.56	0.00				
S-401C	1905+00	0.17	0.0029	0.070	0.111	0.0556	0.68			0.68	4.50	4.16	1.41
								0.68	0.00				
S-509	1956+30	0.11	0.00208	0.026	0.111	0.0556	0.44			0.44	4.50	3.76	1.12
								0.44	0.00				
S-510	1957+12.50	0.17	0.00327	0.020	0.111	0.0556	0.68			0.68	4.50	4.07	1.48
								0.68	0.00				

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **BLLNTRAE** Designed by **KW** Date: 5/14/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/14/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 3 / MANNINGS n: 0.0120 / TAILW EL (ft): 58.14
CL054			**S-131**			0.08	0.08	0.08										58.28	58.28	0.00		14.00	0.003	0.32		
				P-6	187.00	0.05	0.05	0.01	10.00	1.56	6.60	0.09	0.00	**0.57**	0.00	60.73	**2.45**	58.37	58.07		1		0.160		4.43	
178660	1.25	Lt.	S-133			0.00	0.00	0.00					0.00					57.20	56.90	0.30		23.00	0.160	2.52		
CL054			**S-133**			0.05	0.13	0.05										58.28	58.27	0.01		18.00	0.007	0.49		
				P-5	147.00	0.03	0.08	0.01	11.56	1.23	6.20	0.14	0.00	**0.86**	0.00	61.00	**2.72**	58.40	58.10		1		0.204		5.14	
178850	1.25	Lt.	S-134			0.00	0.00	0.00					0.00					56.90	56.60	0.30		18.00	0.150	2.91		
CL054			**S-134**			0.05	0.18	0.05										58.27	58.25	0.02		18.00	0.012	0.65		
				P-5	177.18	0.03	0.11	0.01	12.78	1.48	5.92	0.19	0.00	**1.14**	0.00	61.30	**3.03**	58.10	57.80		1		0.169		4.68	
179000	1.25	Lt.	S-137			0.00	0.00	0.00					0.00					56.60	56.30	0.30		18.00	0.150	2.65		
CL054			**S-137**			0.00	0.18	0.00										58.25	58.22	0.03		18.00	0.010	0.62		
				MH-8	295.90	0.00	0.11	0.00	14.26	2.47	5.64	0.19	0.00	**1.09**	0.00	62.15	**3.90**	57.80	57.10		1		0.237		5.53	
179180	9.30	Lt.	S-140			0.00	0.00	0.00					0.00					56.30	55.60	0.70		18.00	0.150	3.13		
CL054			**S-140**			0.00	0.18	0.00										58.22	58.17	0.05		18.00	0.067	1.29		
				DBI-C	76.94	1.62	1.73	0.24	16.73	0.00	5.23	0.44	0.00	**2.28**	0.02	61.00	**2.78**	57.10	56.91		1		0.247		5.65	
179478	6.20	Rt.	S-140A			0.00	0.00	0.00					0.00					55.60	55.41	0.19		18.00	0.150	3.20		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **MDWBRK E** Designed by **KW** Date: 5/14/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/14/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-121**			0.17	0.17	0.16										57.21	57.20	0.01		18.00	0.009	0.60		ZONE: 6
				GUT-S	70.26	0.00	0.00	0.00	10.00	0.59	6.60	0.16	0.00	**1.07**	0.00	59.40	**2.19**	57.35	57.20		1		0.213		5.26	FREQ. (Yrs): 3
1771+27.50	14.09	Lt.	S-122			0.00	0.00	0.00					0.00					55.85	55.70	0.15		18.00	0.150	2.98		MANNINGS n: 0.0120
CL054			**S-122**			0.23	0.40	0.22										56.98	56.91	0.07		18.00	0.066	1.40		
				GUT-S	99.49	0.02	0.02	0.00	10.59	0.83	6.44	0.38	0.00	**2.47**	0.02	59.11	**2.13**	57.20	56.90		1		0.302		6.25	
1772+00	13.81	Lt.	S-123			0.00	0.00	0.00					0.00					55.70	55.40	0.30		18.00	0.150	3.54		TAILW EL (ft): 56.20
CL054			**S-123**			0.04	0.44	0.04										56.91	56.84	0.07		18.00	0.076	1.50		
				P-5	97.00	0.02	0.04	0.00	11.41	0.81	6.23	0.43	0.00	**2.65**	0.02	59.37	**2.46**	56.90	56.70		1		0.206		5.17	
1773+00	7.25	Rt.	S-124			0.00	0.00	0.00					0.00					55.40	55.20	0.20		18.00	0.150	2.92		
CL054			**S-124**			0.27	0.71	0.26										56.84	56.65	0.19		18.00	0.177	2.37		
				P-6	105.00	0.05	0.09	0.01	12.22	0.74	6.05	0.69	0.00	**4.19**	0.04	59.05	**2.21**	56.70	56.50		1		0.190		4.97	
1774+00	7.25	Rt.	S-125			0.00	0.00	0.00					0.00					55.20	55.00	0.20		18.00	0.150	2.81		
CL054			**S-125**			0.05	0.89	0.05										56.65	56.33	0.32		18.00	0.296	2.94		
				P-5	107.96	0.02	0.19	0.00	12.96	0.00	5.89	0.88	0.00	**5.20**	0.09	59.32	**2.67**	56.45	56.25		1		0.185		4.90	
1775+08	7.25	Rt.	S-125A			0.00	0.00	0.00					0.00					54.95	54.75	0.20		18.00	0.150	2.77		
CL054			**S-126**			0.13	0.13	0.12										56.67	56.65	0.02		18.00	0.007	0.52		
				P-6	259.00	0.08	0.08	0.02	10.00	2.16	6.60	0.14	0.00	**0.92**	0.00	59.10	**2.43**	56.90	56.50		1		0.154		4.47	
1777+70	7.25	Rt.	S-125			0.00	0.00	0.00					0.00					55.40	55.00	0.40		18.00	0.150	2.53		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **MDWBRK W** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**EX-108**			0.12	1.02	0.11										57.48	56.94	0.54		18.00	0.324	3.25		ZONE: 6
				P-6	168.08	0.00	0.14	0.00	13.56	0.86	5.77	1.00	0.00	**5.75**	0.12	59.25	**1.77**	56.00	55.70		1		0.178		4.81	FREQ. (Yrs): 3
1764+50	3.37	Lt.	EX-35			0.00	0.00	0.00					0.00					54.50	54.20	0.30		18.00	0.150	2.72		MANNINGS n: 0.0120
CL054			**EX-109**			0.09	0.75	0.09										57.77	57.48	0.28		18.00	0.192	2.47		
				P-5	147.14	0.00	0.09	0.00	12.57	0.99	5.97	0.73	0.00	**4.36**	0.07	59.78	**2.01**	56.30	56.00		1		0.204		5.14	
1766+00	4.11	Lt.	EX-108			0.00	0.00	0.00					0.00					54.80	54.50	0.30		18.00	0.150	2.91		TAILW EL (ft): 56.10
CL054			**EX-110A**			0.11	0.51	0.10										57.91	57.77	0.15		18.00	0.099	1.74		
				P-5	147.16	0.00	0.04	0.00	11.34	1.23	6.25	0.49	0.00	**3.08**	0.04	60.05	**2.14**	56.50	56.30		1		0.136		4.20	
1767+50	4.53	Lt.	EX-109			0.00	0.00	0.00					0.00					55.00	54.80	0.20		18.00	0.150	2.37		
CL054			**EX-35**			0.25	1.27	0.24										56.94	56.36	0.58		18.00	0.608	4.05		
				DBI-C	95.90	0.28	0.42	0.04	14.42	0.00	5.61	1.28	0.00	**7.16**	0.20	57.60	**0.66**	55.79	55.59		1		0.209		5.20	
1762+79.52	1.00	Lt.	EX-36			0.00	0.00	0.00					0.00					54.29	54.09	0.20		18.00	0.150	2.94		
CL054			**S-113**			0.15	0.15	0.14										57.48	57.48	0.00		18.00	0.008	0.57		
				P-5	15.40	0.05	0.05	0.01	10.00	0.13	6.60	0.15	0.00	**1.01**	0.00	59.01	**1.53**	56.10	56.00		1		0.649		9.17	
1764+50	21.77	Lt.	EX-108			0.00	0.00	0.00					0.00					54.60	54.50	0.10		18.00	0.150	5.19		
CL054			**S-114**			0.15	0.15	0.14										57.77	57.77	0.00		18.00	0.008	0.57		
				P-5	14.02	0.05	0.05	0.01	10.00	0.12	6.60	0.15	0.00	**1.01**	0.00	59.28	**1.51**	56.40	56.30		1		0.713		9.61	
1766+00	21.13	Lt.	EX-109			0.00	0.00	0.00					0.00					54.90	54.80	0.10		18.00	0.150	5.44		
CL054			**S-115**			0.15	0.40	0.14										57.94	57.91	0.03		18.00	0.227	1.38		
				P-5	13.05	0.04	0.04	0.01	11.23	0.11	6.28	0.39	0.00	**2.44**	0.02	59.58	**1.64**	56.70	56.50		1		1.533		14.09	
1767+50	20.58	Lt.	EX-110A			0.00	0.00	0.00					0.00					55.20	55.00	0.20		18.00	0.150	7.97		
CL054			**S-116**			0.25	0.25	0.24										57.97	57.94	0.03		18.00	0.019	0.89		
				P-5	147.79	0.00	0.00	0.00	10.00	1.23	6.60	0.24	0.00	**1.57**	0.00	59.87	**1.90**	57.30	56.70		1		0.406		7.25	
1769+00	19.98	Lt.	S-115			0.00	0.00	0.00					0.00					55.80	55.20	0.60		18.00	0.150	4.10		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **OAKSTEDW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# BR / L S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-315**			0.38	1.56	0.36										63.45	62.61	0.84		18.00	0.869	4.85		ZONE: 6
				DBI-C	97.10	0.00	0.10	0.00	13.88	0.00	5.71	1.50	0.00	**8.57**	0.29	65.20	**1.75**	62.70	62.48		1		0.227		5.42	FREQ. (Yrs): 3
189576	0.00	Rt.	EX-117			0.00	0.00	0.00					0.00					61.20	60.98	0.22		18.00	0.150	3.07		MANNINGS n: 0.0120
CL054			**S-316**			0.10	1.18	0.10										64.36	63.45	0.91		18.00	0.975	7.35		TAILW EL (ft): 62.24
				P-5	93.35	0.00	0.10	0.00	13.67	0.21	5.75	1.14	0.00	**6.56**	0.50	67.16	**2.80**	64.60	63.40		1		1.285		12.90	
189670	18.75	Lt.	S-315			0.00	0.00	0.00					0.00					63.10	61.90	1.20		18.00	0.150	7.30		
CL054			**S-317**			0.12	0.12	0.11										64.95	64.95	0.00		18.00	0.005	0.44		
				P-6	12.24	0.02	0.02	0.00	10.00	0.10	6.60	0.12	0.00	**0.78**	0.00	67.55	**2.60**	65.00	64.90		1		0.817		10.29	
189740	7.25	Lt.	S-318			0.00	0.00	0.00					0.00					63.50	63.40	0.10		18.00	0.150	5.82		
CL054			**S-318**			0.15	1.08	0.14										64.95	64.60	0.35		18.00	0.454	3.44		
				P-5	77.00	0.02	0.10	0.00	13.30	0.37	5.82	1.05	0.00	**6.09**	0.13	67.50	**2.55**	64.90	64.60		1		0.390		7.10	
189750	18.75	Lt.	S-316			0.00	0.00	0.00					0.00					63.40	63.10	0.30		18.00	0.150	4.02		
CL054			**S-319**			0.18	0.81	0.17										65.26	64.95	0.31		18.00	0.208	2.66		
				P-5	147.00	0.03	0.06	0.01	12.38	0.92	6.01	0.78	0.00	**4.70**	0.05	68.05	**2.79**	65.40	64.90		1		0.340		6.64	
189900	18.75	Lt.	S-318			0.00	0.00	0.00					0.00					63.90	63.40	0.50		18.00	0.150	3.76		
CL054			**S-320**			0.19	0.63	0.18										65.61	65.40	0.21		18.00	0.145	2.15		
				P-5	147.00	0.03	0.03	0.01	11.24	1.14	6.28	0.60	0.00	**3.79**	0.05	68.53	**2.92**	66.00	65.40		1		0.408		7.27	
190050	18.75	Lt.	S-319			0.00	0.00	0.00					0.00					64.50	63.90	0.60		18.00	0.150	4.11		
CL054			**S-321**			0.05	0.05	0.05										66.00	66.00	0.00		18.00	0.001	0.18		
				P-5	8.50	0.00	0.00	0.00	10.00	0.07	6.60	0.05	0.00	**0.31**	0.00	69.02	**3.02**	66.10	66.00		1		1.176		12.34	
190050	7.25	Lt.	S-320			0.00	0.00	0.00					0.00					64.60	64.50	0.10		18.00	0.150	6.98		
CL054			**S-322**			0.39	0.39	0.37										66.07	66.00	0.07		18.00	0.046	1.38		
				P-5	148.21	0.00	0.00	0.00	10.00	1.24	6.60	0.37	0.00	**2.45**	0.00	68.99	**2.92**	66.40	66.00		1		0.270		5.91	
190200	18.75	Lt.	S-320			0.00	0.00	0.00					0.00					64.90	64.50	0.40		18.00	0.150	3.35		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **OAKSTEDE** Designed by **KW** Date: 5/ 5/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: Date: 5/ 5/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 3 / MANNINGS n: 0.0120 / TAILW EL (ft): 64.08
CL054			**S-401**			0.00	1.21	0.00										64.77	64.32	0.46		18.00	0.533	3.90		
				MH-8	85.76	0.00	0.13	0.00	13.06	0.00	5.87	1.18	0.00	**6.90**	0.14	70.82	**6.05**	63.55	62.84		1		0.828		10.35	
190397	13.75	Rt.	EX-122			0.00	0.00	0.00					0.00					62.05	61.34	0.71		18.00	0.150	5.86		
CL054			**S-401A**			0.13	0.13	0.12										65.32	65.31	0.00		18.00	0.005	0.47		
				GUT-S	71.11	0.01	0.01	0.00	10.00	0.59	6.60	0.13	0.00	**0.83**	0.00	69.58	**4.26**	65.30	65.10		1		0.281		6.03	
190347	13.75	Lt.	S-401B			0.00	0.00	0.00					0.00					63.80	63.60	0.20		18.00	0.150	3.42		
CL054			**S-401B**			0.05	1.21	0.05										65.31	65.00	0.31		18.00	0.949	3.92		
				GUT-S	33.10	0.00	0.13	0.00	12.92	0.14	5.90	1.18	0.00	**6.93**	0.19	69.88	**4.57**	65.10	65.00		1		0.302		6.25	
190420	13.75	Lt.	S-401			0.00	0.00	0.00					0.00					63.60	63.50	0.10		18.00	0.150	3.54		
CL054			**S-401C**			0.31	1.03	0.29										65.64	65.31	0.32		18.00	0.415	3.39		
				GUT-S	78.16	0.00	0.12	0.00	12.53	0.38	5.98	1.00	0.00	**5.99**	0.11	69.57	**3.93**	65.30	65.10		1		0.256		5.76	
190500	13.75	Lt.	S-401B			0.00	0.00	0.00					0.00					63.80	63.60	0.20		18.00	0.150	3.26		
CL054			**S-401D**			0.08	0.72	0.08										65.84	65.64	0.20		18.00	0.202	2.46		
				P-5	99.61	0.03	0.12	0.01	11.86	0.68	6.13	0.71	0.00	**4.34**	0.06	69.40	**3.56**	65.50	65.30		1		0.201		5.10	
190600	7.25	Rt.	S-401C			0.00	0.00	0.00					0.00					64.00	63.80	0.20		18.00	0.150	2.89		
CL054			**S-401E**			0.21	0.64	0.20										65.99	65.84	0.15		18.00	0.160	2.23		
				P-5	96.54	0.02	0.09	0.00	11.14	0.72	6.30	0.63	0.00	**3.94**	0.04	69.19	**3.20**	65.70	65.50		1		0.207		5.18	
190700	7.25	Rt.	S-401D			0.00	0.00	0.00					0.00					64.20	64.00	0.20		18.00	0.150	2.93		
CL054			**S-401F**			0.43	0.43	0.41										66.08	65.99	0.08		18.00	0.060	1.58		
				P-6	136.34	0.07	0.07	0.01	10.00	1.14	6.60	0.42	0.00	**2.79**	0.00	68.88	**2.80**	66.10	65.70		1		0.293		6.16	
190840	7.25	Rt.	S-401E			0.00	0.00	0.00					0.00					64.60	64.20	0.40		18.00	0.150	3.49		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **STONEGAT** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 3 / MANNINGS n: 0.0120 / TAILW EL (ft): 64.77
CL054			**S-407**			0.54	0.54	0.51										67.76	67.46	0.30		18.00	0.160	2.83		
				DBI-C	187.94	0.00	0.00	0.00	10.00	1.11	6.60	0.51	0.00	**3.39**	0.00	69.90	**2.14**	68.30	68.00		1		0.160		4.55	
192400	7.30	Lt.	S-408			0.00	0.00	0.00					0.00					66.80	66.50	0.30		18.00	0.150	2.57		
CL054			**S-408**			0.08	0.69	0.08										66.02	65.61	0.41		24.00	0.342	3.27		System DHW 63.8; Assume
				P-6	118.76	0.04	0.04	0.01	11.11	0.00	6.31	0.66	0.00	**4.18**	0.17	70.58	**4.56**	67.00	66.76		1		0.202		11.02	TW 6" above ditch bottom
192590	20.25	Lt.	EX-132			0.00	0.00	0.00					0.00					65.00	64.76	0.24		24.00	0.102	3.51		
CL054			**S-409**			0.07	0.07	0.07										67.06	66.76	0.30		18.00	0.340	2.13		
				P-6	88.24	0.00	0.00	0.00	10.00	0.69	6.60	0.07	0.00	**0.44**	0.00	70.88	**3.82**	68.30	68.00		1		0.340		6.63	
192680	5.25	Lt.	S-408			0.00	0.00	0.00					0.00					66.80	66.50	0.30		18.00	0.150	3.75		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **SUNLAKEE** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**EX-215**			0.16	1.05	0.15										61.13	60.68	0.45		18.00	0.341	3.24		ZONE: 6
				P-6	130.64	0.00	0.12	0.00	14.41	0.00	5.61	1.02	0.00	**5.73**	0.11	65.82	**4.69**	60.90	59.02		1		1.439		13.65	FREQ. (Yrs): 3
185870	14.44	Rt.	EX-96			0.00	0.00	0.00					0.00					59.40	57.52	1.88		18.00	0.150	7.72		MANNINGS n: 0.0120
CL054			**EX-216**			0.03	0.46	0.03										61.22	61.13	0.09		18.00	0.067	1.50		
				P-5	138.03	0.00	0.09	0.00	13.26	1.15	5.83	0.45	0.00	**2.65**	0.02	66.19	**4.97**	61.30	60.90		1		0.290		6.13	
186011	11.80	Rt.	EX-215			0.00	0.00	0.00					0.00					59.80	59.40	0.40		18.00	0.150	3.47		TAILW EL (ft): 60.52
CL054			**EX-218**			0.07	0.43	0.07										61.35	61.31	0.04		18.00	0.083	1.43		
				P-5	46.24	0.00	0.09	0.00	12.87	0.39	5.91	0.43	0.00	**2.52**	0.02	66.44	**5.09**	61.53	61.31		1		0.476		7.85	
186060	9.42	Rt.	EX-216			0.00	0.00	0.00					0.00					60.03	59.81	0.22		18.00	0.150	4.44		
CL054			**S-301**			0.00	0.43	0.00										61.16	61.13	0.03		18.00	0.720	1.49		
				MH-8	4.14	0.00	0.03	0.00	10.93	0.03	6.35	0.41	0.00	**2.63**	0.03	66.02	**4.86**	61.00	60.90		1		2.415		17.69	
185870	21.58	Rt.	EX-215			0.00	0.00	0.00					0.00					59.50	59.40	0.10		18.00	0.150	10.01		
CL054			**S-302**			0.21	0.43	0.20										62.55	62.34	0.20		18.00	0.751	3.66		
				P-6	27.13	0.00	0.03	0.00	10.81	0.12	6.38	0.41	0.00	**2.65**	0.10	65.91	**3.36**	63.30	63.20		1		0.369		6.91	
185900	18.75	Rt.	S-301			0.00	0.00	0.00					0.00					61.80	61.70	0.10		18.00	0.150	3.91		
CL054			**S-303**			0.22	0.22	0.21										63.32	63.30	0.02		18.00	0.016	0.80		
				P-5	97.00	0.03	0.03	0.01	10.00	0.81	6.60	0.21	0.00	**1.42**	0.00	66.06	**2.74**	63.50	63.30		1		0.206		5.17	
186000	18.75	Rt.	S-302			0.00	0.00	0.00					0.00					62.00	61.80	0.20		18.00	0.150	2.92		
CL054			**S-304**			0.11	0.36	0.10										62.10	61.62	0.48		18.00	0.347	3.18		
				P-5	137.98	0.02	0.09	0.00	12.15	0.72	6.06	0.36	0.00	**2.18**	0.08	66.42	**4.32**	62.90	62.50		1		0.290		6.13	
186200	18.75	Rt.	EX-218			0.00	0.00	0.00					0.00					61.40	61.00	0.40		18.00	0.150	3.47		
CL054			**S-305**			0.06	0.25	0.06										62.94	62.90	0.04		18.00	0.024	0.91		
				P-6	178.43	0.00	0.07	0.00	10.66	1.49	6.42	0.25	0.00	**1.62**	0.01	66.55	**3.61**	63.20	62.90		1		0.168		4.67	
186380	1.54	Rt.	S-304			0.00	0.00	0.00					0.00					61.70	61.40	0.30		18.00	0.150	2.64		
CL054			**S-306**			0.19	0.19	0.18										63.21	63.20	0.01		18.00	0.013	0.73		
				P-5	79.10	0.07	0.07	0.01	10.00	0.66	6.60	0.19	0.00	**1.28**	0.00	66.18	**2.97**	63.50	63.20		1		0.379		7.01	
186460	18.75	Rt.	S-305			0.00	0.00	0.00					0.00					62.00	61.70	0.30		18.00	0.150	3.97		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **SUNLAKEW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-212**			0.00	0.25	0.00										60.21	60.18	0.03		18.00	0.026	0.87		ZONE: 6
				MH-8	112.26	0.00	0.13	0.00	13.38	0.00	5.80	0.26	0.00	**1.53**	0.01	64.77	**4.56**	59.84	59.31		1		0.472		7.82	FREQ. (Yrs): 3
184973	7.16	Lt.	EX-88			0.00	0.00	0.00					0.00					58.34	57.81	0.53		18.00	0.150	4.42		MANNINGS n: 0.0120
CL054			**S-213**			0.04	0.25	0.04										60.66	60.49	0.17		18.00	0.586	3.06		
				P-6	29.47	0.07	0.13	0.01	13.22	0.16	5.84	0.26	0.00	**1.54**	0.07	64.33	**3.67**	61.60	61.50		1		0.339		6.63	
185005	1.68	Lt.	S-212			0.00	0.00	0.00					0.00					60.10	60.00	0.10		18.00	0.150	3.75		TAILW EL (ft): 60.17
CL054			**S-214**			0.07	0.21	0.07										61.62	61.60	0.02		18.00	0.017	0.72		
				P-5	92.04	0.05	0.06	0.01	12.45	0.77	6.00	0.21	0.00	**1.27**	0.00	64.44	**2.82**	61.80	61.60		1		0.217		5.30	
185100	4.55	Lt.	S-213			0.00	0.00	0.00					0.00					60.30	60.10	0.20		18.00	0.150	3.00		
CL054			**S-215**			0.06	0.14	0.06										61.81	61.80	0.01		18.00	0.007	0.49		
				P-5	197.09	0.01	0.01	0.00	10.81	1.64	6.38	0.14	0.00	**0.86**	0.00	64.81	**3.00**	62.10	61.80		1		0.152		4.44	
185300	10.61	Lt.	S-214			0.00	0.00	0.00					0.00					60.60	60.30	0.30		18.00	0.150	2.51		
CL054			**S-216**			0.08	0.08	0.08										62.10	62.10	0.00		18.00	0.002	0.28		
				P-5	97.05	0.00	0.00	0.00	10.00	0.81	6.60	0.08	0.00	**0.50**	0.00	64.93	**2.83**	62.30	62.10		1		0.206		5.17	
185400	13.64	Lt.	S-215			0.00	0.00	0.00					0.00					60.80	60.60	0.20		18.00	0.150	2.92		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **WILSONE** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-512**			0.08	0.08	0.08										67.60	67.60	0.00		18.00	0.002	0.28		ZONE: 6
				P-5	10.50	0.00	0.00	0.00	10.00	0.09	6.60	0.08	0.00	**0.50**	0.00	70.81	**3.21**	67.70	67.60		1		0.952		11.10	FREQ. (Yrs): 3
195900	5.25	Rt.	S-513			0.00	0.00	0.00					0.00					66.20	66.10	0.10		18.00	0.150	6.28		MANNINGS n: 0.0120
CL054			**S-513**			0.24	0.32	0.23										67.45	67.40	0.05		18.00	0.047	1.13		
				P-5	97.00	0.00	0.00	0.00	10.09	0.81	6.58	0.30	0.00	**2.00**	0.02	70.22	**2.77**	67.60	67.40		1		0.206		5.17	
195900	18.75	Rt.	S-514			0.00	0.00	0.00					0.00					66.10	65.90	0.20		18.00	0.150	2.92		TAILW EL (ft): 65.81
CL054			**S-514**			0.13	0.45	0.12										67.26	67.20	0.06		18.00	0.083	1.55		
				P-5	77.00	0.02	0.02	0.00	10.90	0.64	6.36	0.43	0.00	**2.74**	0.02	69.94	**2.68**	67.40	67.20		1		0.260		5.80	
196000	18.75	Rt.	S-516			0.00	0.00	0.00					0.00					65.90	65.70	0.20		18.00	0.150	3.28		
CL054			**S-515**			0.07	0.07	0.07										67.20	67.20	0.00		18.00	0.001	0.25		
				P-6	10.50	0.00	0.00	0.00	10.00	0.09	6.60	0.07	0.00	**0.44**	0.00	70.02	**2.82**	67.40	67.20		1		1.905		15.70	
196080	5.25	Rt.	S-516			0.00	0.00	0.00					0.00					65.90	65.70	0.20		18.00	0.150	8.89		
CL054			**S-516**			0.09	0.61	0.09										66.93	66.80	0.13		18.00	0.163	2.06		
				P-5	77.00	0.02	0.04	0.00	11.54	0.62	6.20	0.59	0.00	**3.64**	0.05	69.70	**2.77**	67.20	66.80		1		0.519		8.20	
196080	18.75	Rt.	S-517			0.00	0.00	0.00					0.00					65.70	65.30	0.40		18.00	0.150	4.64		
CL054			**S-517**			0.09	0.70	0.09										66.80	66.50	0.30		18.00	0.152	2.33		
				P-5	196.00	0.03	0.07	0.01	12.16	1.40	6.06	0.68	0.00	**4.11**	0.04	69.74	**2.94**	66.80	66.50		1		0.153		4.45	
196160	18.75	Rt.	S-518			0.00	0.00	0.00					0.00					65.30	65.00	0.30		18.00	0.150	2.52		
CL054			**S-518**			1.06	1.76	1.01										66.20	65.96	0.24		24.00	0.275	3.10		
				DBI-C	88.97	0.00	0.07	0.00	13.56	0.00	5.77	1.69	0.00	**9.72**	0.10	68.90	**2.70**	66.07	65.51		1		0.629		19.44	
196358	4.64	Rt.	EX-157			0.00	0.00	0.00					0.00					64.07	63.51	0.56		24.00	0.102	6.19		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **WILSONW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-505**			0.65	1.53	0.62										67.16	66.35	0.81		18.00	0.757	4.60		ZONE: 6
				DBI-C	106.80	0.00	0.21	0.00	15.42	0.00	5.44	1.50	0.00	**8.13**	0.26	70.10	**2.94**	65.27	64.12		1		1.077		11.81	FREQ. (Yrs): 3
194989	8.30	Rt.	EX-147			0.00	0.00	0.00					0.00					63.77	62.62	1.15		18.00	0.150	6.68		MANNINGS n: 0.0120
CL054			**S-506**			0.22	0.88	0.21										68.02	67.60	0.42		18.00	0.221	2.80		TAILW EL (ft): 66.02
				P-6	189.25	0.08	0.21	0.02	14.29	1.13	5.63	0.88	0.00	**4.94**	0.06	70.88	**2.86**	67.90	67.60		1		0.159		4.53	
195180	10.75	Rt.	S-505			0.00	0.00	0.00					0.00					66.40	66.10	0.30		18.00	0.150	2.56		
CL054			**S-507**			0.09	0.66	0.09										68.18	68.02	0.17		18.00	0.141	2.14		
				P-5	117.55	0.03	0.13	0.01	13.38	0.91	5.80	0.65	0.00	**3.79**	0.04	71.37	**3.19**	68.10	67.90		1		0.170		4.69	
195300	10.75	Rt.	S-506			0.00	0.00	0.00					0.00					66.60	66.40	0.20		18.00	0.150	2.66		
CL054			**S-507A**			0.13	0.57	0.12										68.36	68.18	0.17		18.00	0.108	1.93		
				P-5	157.73	0.04	0.10	0.01	12.06	1.31	6.08	0.56	0.00	**3.41**	0.03	71.25	**2.89**	68.40	68.10		1		0.190		4.96	
195460.00	0.78	Lt.	S-507			0.00	0.00	0.00					0.00					66.90	66.60	0.30		18.00	0.150	2.81		
CL054			**S-508**			0.17	0.44	0.16										68.46	68.40	0.06		18.00	0.083	1.52		
				P-6	77.12	0.05	0.06	0.01	11.42	0.64	6.23	0.43	0.00	**2.68**	0.02	71.16	**2.70**	68.60	68.40		1		0.259		5.79	
195540	7.25	Lt.	S-507A			0.00	0.00	0.00					0.00					67.10	66.90	0.20		18.00	0.150	3.28		
CL054			**S-509**			0.11	0.27	0.10										68.63	68.60	0.03		18.00	0.030	0.94		
				GUT-S	89.79	0.00	0.01	0.00	10.67	0.75	6.42	0.26	0.00	**1.66**	0.01	71.12	**2.49**	68.80	68.60		1		0.223		5.37	
195630	13.75	Rt.	S-508			0.00	0.00	0.00					0.00					67.30	67.10	0.20		18.00	0.150	3.04		
CL054			**S-510**			0.16	0.16	0.15										68.81	68.80	0.01		18.00	0.008	0.58		
				GUT-S	80.49	0.01	0.01	0.00	10.00	0.67	6.60	0.15	0.00	**1.02**	0.00	70.85	**2.04**	69.00	68.80		1		0.248		5.67	
195712.50	13.75	Rt.	S-509			0.00	0.00	0.00					0.00					67.50	67.30	0.20		18.00	0.150	3.21		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **BLLNTRAE** Designed by **KW** Date: 5/14/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/14/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 58.14
CL054			**S-131**			0.08	0.08	0.08										58.33	58.33	0.01		14.00	0.003	0.37		
				P-6	187.00	0.05	0.05	0.01	10.00	1.56	7.47	0.09	0.00	**0.64**	0.00	60.73	**2.40**	58.37	58.07		1		0.160		4.43	
178660	1.25	Lt.	S-133			0.00	0.00	0.00					0.00					57.20	56.90	0.30		23.00	0.160	2.52		
CL054			**S-133**			0.05	0.13	0.05										58.33	58.31	0.01		18.00	0.009	0.56		
				P-5	147.00	0.03	0.08	0.01	11.56	1.23	7.07	0.14	0.00	**0.99**	0.00	61.00	**2.67**	58.40	58.10		1		0.204		5.14	
178850	1.25	Lt.	S-134			0.00	0.00	0.00					0.00					56.90	56.60	0.30		18.00	0.150	2.91		
CL054			**S-134**			0.05	0.18	0.05										58.31	58.29	0.03		18.00	0.016	0.74		
				P-5	177.18	0.03	0.11	0.01	12.78	1.48	6.80	0.19	0.00	**1.31**	0.00	61.30	**2.99**	58.10	57.80		1		0.169		4.68	
179000	1.25	Lt.	S-137			0.00	0.00	0.00					0.00					56.60	56.30	0.30		18.00	0.150	2.65		
CL054			**S-137**			0.00	0.18	0.00										58.29	58.25	0.04		18.00	0.014	0.71		
				MH-8	295.90	0.00	0.11	0.00	14.26	2.47	6.52	0.19	0.00	**1.26**	0.00	62.15	**3.86**	57.80	57.10		1		0.237		5.53	
179180	9.30	Lt.	S-140			0.00	0.00	0.00					0.00					56.30	55.60	0.70		18.00	0.150	3.13		
CL054			**S-140**			0.00	0.18	0.00										58.25	58.18	0.07		18.00	0.091	1.51		
				DBI-C	76.94	1.62	1.73	0.24	16.73	0.00	6.10	0.44	0.00	**2.66**	0.03	61.00	**2.75**	57.10	56.91		1		0.247		5.65	
179478	6.20	Rt.	S-140A			0.00	0.00	0.00					0.00					55.60	55.41	0.19		18.00	0.150	3.20		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **MDWBRK E** Designed by **KW** Date: 5/14/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/14/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 56.20
CL054			**S-121**			0.17	0.17	0.16										57.24	57.23	0.01		18.00	0.011	0.68		
				GUT-S	70.26	0.00	0.00	0.00	10.00	0.59	7.47	0.16	0.00	**1.21**	0.00	59.40	**2.16**	57.35	57.20		1		0.213		5.26	
1771+27.50	14.09	Lt.	S-122			0.00	0.00	0.00					0.00					55.85	55.70	0.15		18.00	0.150	2.98		
CL054			**S-122**			0.23	0.40	0.22										57.23	57.14	0.08		18.00	0.085	1.59		
				GUT-S	99.49	0.02	0.02	0.00	10.59	0.83	7.31	0.38	0.00	**2.81**	0.02	59.11	**1.88**	57.20	56.90		1		0.302		6.25	
1772+00	13.81	Lt.	S-123			0.00	0.00	0.00					0.00					55.70	55.40	0.30		18.00	0.150	3.54		
CL054			**S-123**			0.04	0.44	0.04										57.14	57.05	0.10		18.00	0.099	1.71		
				P-5	97.00	0.02	0.04	0.00	11.41	0.81	7.11	0.43	0.00	**3.03**	0.03	59.37	**2.23**	56.90	56.70		1		0.206		5.17	
1773+00	7.25	Rt.	S-124			0.00	0.00	0.00					0.00					55.40	55.20	0.20		18.00	0.150	2.92		
CL054			**S-124**			0.27	0.71	0.26										57.05	56.80	0.24		18.00	0.232	2.71		
				P-6	105.00	0.05	0.09	0.01	12.22	0.65	6.92	0.69	0.00	**4.79**	0.06	59.05	**2.00**	56.70	56.50		1		0.190		4.97	
1774+00	7.25	Rt.	S-125			0.00	0.00	0.00					0.00					55.20	55.00	0.20		18.00	0.150	2.81		
CL054			**S-125**			0.05	0.89	0.05										56.80	56.38	0.42		18.00	0.394	3.39		
				P-5	107.96	0.02	0.19	0.00	12.87	0.00	6.79	0.88	0.00	**6.00**	0.13	59.32	**2.52**	56.45	56.25		1		0.185		4.90	
1775+08	7.25	Rt.	S-125A			0.00	0.00	0.00					0.00					54.95	54.75	0.20		18.00	0.150	2.77		
CL054			**S-126**			0.13	0.13	0.12										56.83	56.80	0.02		18.00	0.008	0.59		
				P-6	259.00	0.08	0.08	0.02	10.00	2.16	7.47	0.14	0.00	**1.04**	0.00	59.10	**2.27**	56.90	56.50		1		0.154		4.47	
1777+70	7.25	Rt.	S-125			0.00	0.00	0.00					0.00					55.40	55.00	0.40		18.00	0.150	2.53		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **MDWBRK W** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**EX-108**			0.12	1.02	0.11										57.97	57.24	0.73		18.00	0.434	3.76		ZONE: 6
				P-6	168.08	0.00	0.14	0.00	13.43	0.74	6.67	1.00	0.00	**6.65**	0.15	59.25	**1.28**	56.00	55.70		1		0.178		4.81	FREQ. (Yrs): 10
1764+50	3.37	Lt.	EX-35			0.00	0.00	0.00					0.00					54.50	54.20	0.30		18.00	0.150	2.72		MANNINGS n: 0.0120
CL054			**EX-109**			0.09	0.75	0.09										58.34	57.97	0.37		18.00	0.253	2.83		
				P-5	147.14	0.00	0.09	0.00	12.57	0.87	6.85	0.73	0.00	**5.00**	0.09	59.78	**1.44**	56.30	56.00		1		0.204		5.14	TAILW EL (ft): 56.10
1766+00	4.11	Lt.	EX-108			0.00	0.00	0.00					0.00					54.80	54.50	0.30		18.00	0.150	2.91		
CL054			**EX-110A**			0.11	0.51	0.10										58.53	58.34	0.19		18.00	0.128	1.99		
				P-5	147.16	0.00	0.04	0.00	11.34	1.23	7.12	0.49	0.00	**3.51**	0.05	60.05	**1.52**	56.50	56.30		1		0.136		4.20	
1767+50	4.53	Lt.	EX-109			0.00	0.00	0.00					0.00					55.00	54.80	0.20		18.00	0.150	2.37		
CL054			**EX-35**			0.25	1.27	0.24										57.24	56.45	0.79		18.00	0.825	4.72		
				DBI-C	95.90	0.28	0.42	0.04	14.18	0.00	6.53	1.28	0.00	**8.34**	0.28	57.60	**0.36**	55.79	55.59		1		0.209		5.20	
1762+79.52	1.00	Lt.	EX-36			0.00	0.00	0.00					0.00					54.29	54.09	0.20		18.00	0.150	2.94		
CL054			**S-113**			0.15	0.15	0.14										57.97	57.97	0.00		18.00	0.010	0.64		
				P-5	15.40	0.05	0.05	0.01	10.00	0.13	7.47	0.15	0.00	**1.14**	0.00	59.01	**1.04**	56.10	56.00		1		0.649		9.17	
1764+50	21.77	Lt.	EX-108			0.00	0.00	0.00					0.00					54.60	54.50	0.10		18.00	0.150	5.19		
CL054			**S-114**			0.15	0.15	0.14										58.34	58.34	0.00		18.00	0.010	0.64		
				P-5	14.02	0.05	0.05	0.01	10.00	0.12	7.47	0.15	0.00	**1.14**	0.00	59.28	**0.94**	56.40	56.30		1		0.713		9.61	
1766+00	21.13	Lt.	EX-109			0.00	0.00	0.00					0.00					54.90	54.80	0.10		18.00	0.150	5.44		
CL054			**S-115**			0.15	0.40	0.14										58.57	58.53	0.04		18.00	0.294	1.57		
				P-5	13.05	0.04	0.04	0.01	11.23	0.11	7.15	0.39	0.00	**2.77**	0.03	59.58	**1.01**	56.70	56.50		1		1.533		14.09	
1767+50	20.58	Lt.	EX-110A			0.00	0.00	0.00					0.00					55.20	55.00	0.20		18.00	0.150	7.97		
CL054			**S-116**			0.25	0.25	0.24										58.60	58.57	0.04		18.00	0.024	1.00		
				P-5	147.79	0.00	0.00	0.00	10.00	1.23	7.47	0.24	0.00	**1.77**	0.00	59.87	**1.27**	57.30	56.70		1		0.406		7.25	
1769+00	19.98	Lt.	S-115			0.00	0.00	0.00					0.00					55.80	55.20	0.60		18.00	0.150	4.10		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Automated Storm sewer Analysis & Design (ASAD), copyright 1992-2007, Hiteshew Engineering Systems, Inc. Ph: (352) 383-4191
Portions of ASAD were developed by Kenneth J. Leeming, P.E. at International Engineering Consultants, Inc.

T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **OAKSTEDW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-315**			0.38	1.56	0.36										63.87	62.73	1.13		18.00	1.168	5.62		ZONE: 6
				DBI-C	97.10	0.00	0.10	0.00	13.72	0.00	6.62	1.50	0.00	**9.94**	0.39	65.20	**1.33**	62.70	62.48		1		0.227		5.42	FREQ. (Yrs): 10
189576	0.00	Rt.	EX-117			0.00	0.00	0.00					0.00					61.20	60.98	0.22		18.00	0.150	3.07		MANNINGS n: 0.0120
CL054			**S-316**			0.10	1.18	0.10										64.46	63.87	0.59		18.00	0.636	4.32		TAILW EL (ft): 62.24
				P-5	93.35	0.00	0.10	0.00	13.36	0.36	6.69	1.14	0.00	**7.63**	0.17	67.16	**2.70**	64.60	63.40		1		1.285		12.90	
189670	18.75	Lt.	S-315			0.00	0.00	0.00					0.00					63.10	61.90	1.20		18.00	0.150	7.30		
CL054			**S-317**			0.12	0.12	0.11										65.07	65.07	0.00		18.00	0.006	0.50		
				P-6	12.24	0.02	0.02	0.00	10.00	0.10	7.47	0.12	0.00	**0.88**	0.00	67.55	**2.48**	65.00	64.90		1		0.817		10.29	
189740	7.25	Lt.	S-318			0.00	0.00	0.00					0.00					63.50	63.40	0.10		18.00	0.150	5.82		
CL054			**S-318**			0.15	1.08	0.14										65.07	64.60	0.47		18.00	0.611	4.00		
				P-5	77.00	0.02	0.10	0.00	13.04	0.32	6.75	1.05	0.00	**7.06**	0.17	67.50	**2.43**	64.90	64.60		1		0.390		7.10	
189750	18.75	Lt.	S-316			0.00	0.00	0.00					0.00					63.40	63.10	0.30		18.00	0.150	4.02		
CL054			**S-319**			0.18	0.81	0.17										65.48	65.07	0.40		18.00	0.275	3.06		
				P-5	147.00	0.03	0.06	0.01	12.24	0.80	6.92	0.78	0.00	**5.41**	0.07	68.05	**2.57**	65.40	64.90		1		0.340		6.64	
189900	18.75	Lt.	S-318			0.00	0.00	0.00					0.00					63.90	63.40	0.50		18.00	0.150	3.76		
CL054			**S-320**			0.19	0.63	0.18										65.75	65.48	0.28		18.00	0.189	2.45		
				P-5	147.00	0.03	0.03	0.01	11.24	1.00	7.15	0.60	0.00	**4.32**	0.07	68.53	**2.78**	66.00	65.40		1		0.408		7.27	
190050	18.75	Lt.	S-319			0.00	0.00	0.00					0.00					64.50	63.90	0.60		18.00	0.150	4.11		
CL054			**S-321**			0.05	0.05	0.05										66.00	66.00	0.00		18.00	0.001	0.20		
				P-5	8.50	0.00	0.00	0.00	10.00	0.07	7.47	0.05	0.00	**0.35**	0.00	69.02	**3.02**	66.10	66.00		1		1.176		12.34	
190050	7.25	Lt.	S-320			0.00	0.00	0.00					0.00					64.60	64.50	0.10		18.00	0.150	6.98		
CL054			**S-322**			0.39	0.39	0.37										66.09	66.00	0.09		18.00	0.059	1.57		
				P-5	148.21	0.00	0.00	0.00	10.00	1.24	7.47	0.37	0.00	**2.77**	0.00	68.99	**2.90**	66.40	66.00		1		0.270		5.91	
190200	18.75	Lt.	S-320			0.00	0.00	0.00					0.00					64.90	64.50	0.40		18.00	0.150	3.35		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **OAKSTEDE** Designed by **KW** Date: 5/ 5/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: Date: 5/ 5/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	AREAS (Ac) TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	HYDRAULIC GRADE FLOWLINE LOWER (ft.)	HYDRAULIC GRADE FLOWLINE FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-401**			0.00	1.21	0.00										65.01	64.40	0.61		18.00	0.715	4.52		ZONE: 6
				MH-8	85.76	0.00	0.13	0.00	12.81	0.00	6.80	1.18	0.00	**7.99**	0.19	70.82	**5.81**	63.55	62.84		1		0.828		10.35	FREQ. (Yrs): 10
190397	13.75	Rt.	EX-122			0.00	0.00	0.00					0.00					62.05	61.34	0.71		18.00	0.150	5.86		MANNINGS n: 0.0120
CL054			**S-401A**			0.13	0.13	0.12										65.44	65.43	0.00		18.00	0.007	0.53		
				GUT-S	71.11	0.01	0.01	0.00	10.00	0.59	7.47	0.13	0.00	**0.94**	0.00	69.58	**4.14**	65.30	65.10		1		0.281		6.03	
190347	13.75	Lt.	S-401B			0.00	0.00	0.00					0.00					63.80	63.60	0.20		18.00	0.150	3.42		TAILW EL (ft): 64.08
CL054			**S-401B**			0.05	1.21	0.05										65.43	65.01	0.42		18.00	1.271	4.54		
				GUT-S	33.10	0.00	0.13	0.00	12.69	0.12	6.82	1.18	0.00	**8.02**	0.26	69.88	**4.45**	65.10	65.00		1		0.302		6.25	
190420	13.75	Lt.	S-401			0.00	0.00	0.00					0.00					63.60	63.50	0.10		18.00	0.150	3.54		
CL054			**S-401C**			0.31	1.03	0.29										65.86	65.43	0.43		18.00	0.551	3.91		
				GUT-S	78.16	0.00	0.12	0.00	12.36	0.33	6.89	1.00	0.00	**6.91**	0.14	69.57	**3.71**	65.30	65.10		1		0.256		5.76	
190500	13.75	Lt.	S-401B			0.00	0.00	0.00					0.00					63.80	63.60	0.20		18.00	0.150	3.26		
CL054			**S-401D**			0.08	0.72	0.08										66.13	65.86	0.26		18.00	0.265	2.81		
				P-5	99.61	0.03	0.12	0.01	11.77	0.59	7.02	0.71	0.00	**4.97**	0.07	69.40	**3.27**	65.50	65.30		1		0.201		5.10	
190600	7.25	Rt.	S-401C			0.00	0.00	0.00					0.00					64.00	63.80	0.20		18.00	0.150	2.89		
CL054			**S-401E**			0.21	0.64	0.20										66.33	66.13	0.20		18.00	0.208	2.54		
				P-5	96.54	0.02	0.09	0.00	11.14	0.63	7.17	0.63	0.00	**4.49**	0.05	69.19	**2.86**	65.70	65.50		1		0.207		5.18	
190700	7.25	Rt.	S-401D			0.00	0.00	0.00					0.00					64.20	64.00	0.20		18.00	0.150	2.93		
CL054			**S-401F**			0.43	0.43	0.41										66.43	66.33	0.10		18.00	0.077	1.79		
				P-6	136.34	0.07	0.07	0.01	10.00	1.14	7.47	0.42	0.00	**3.16**	0.00	68.88	**2.45**	66.10	65.70		1		0.293		6.16	
190840	7.25	Rt.	S-401E			0.00	0.00	0.00					0.00					64.60	64.20	0.40		18.00	0.150	3.49		

Units: ENGLISH

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **STONEGAT** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-407**			0.54	0.54	0.51										67.85	67.55	0.30		18.00	0.160	2.89		ZONE: 6
				DBI-C	187.94	0.00	0.00	0.00	10.00	1.08	7.47	0.51	0.00	**3.83**	0.00	69.90	**2.05**	68.30	68.00		1		0.160		4.55	FREQ. (Yrs): 10
192400	7.30	Lt.	S-408			0.00	0.00	0.00					0.00					66.80	66.50	0.30		18.00	0.150	2.57		MANNINGS n: 0.0120
CL054			**S-408**			0.08	0.69	0.08										66.10	65.68	0.42		24.00	0.352	3.39		System DHW 63.8; Assume
				P-6	118.76	0.04	0.04	0.01	11.08	0.00	7.19	0.66	0.00	**4.77**	0.18	70.58	**4.48**	67.00	66.76		1		0.202		11.02	TW 6" above ditch bottom
192590	20.25	Lt.	EX-132			0.00	0.00	0.00					0.00					65.00	64.76	0.24		24.00	0.102	3.51		TAILW EL (ft): 64.77
CL054			**S-409**			0.07	0.07	0.07										67.08	66.78	0.30		18.00	0.340	2.23		
				P-6	88.24	0.00	0.00	0.00	10.00	0.66	7.47	0.07	0.00	**0.50**	0.00	70.88	**3.80**	68.30	68.00		1		0.340		6.63	
192680	5.25	Lt.	S-408			0.00	0.00	0.00					0.00					66.80	66.50	0.30		18.00	0.150	3.75		

Units: ENGLISH

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **SUNLAKEE** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**EX-215**			0.16	1.05	0.15										61.34	60.74	0.60		18.00	0.457	3.75		ZONE: 6
				P-6	130.64	0.00	0.12	0.00	14.38	0.00	6.49	1.02	0.00	**6.63**	0.15	65.82	**4.48**	60.90	59.02		1		1.439		13.65	FREQ. (Yrs): 10
185870	14.44	Rt.	EX-96			0.00	0.00	0.00					0.00					59.40	57.52	1.88		18.00	0.150	7.72		MANNINGS n: 0.0120
CL054			**EX-216**			0.03	0.46	0.03										61.46	61.34	0.12		18.00	0.089	1.73		
				P-5	138.03	0.00	0.09	0.00	13.23	1.15	6.71	0.45	0.00	**3.05**	0.02	66.19	**4.73**	61.30	60.90		1		0.290		6.13	
186011	11.80	Rt.	EX-215			0.00	0.00	0.00					0.00					59.80	59.40	0.40		18.00	0.150	3.47		TAILW EL (ft): 60.52
CL054			**EX-218**			0.07	0.43	0.07										61.51	61.46	0.05		18.00	0.110	1.64		
				P-5	46.24	0.00	0.09	0.00	12.84	0.39	6.79	0.43	0.00	**2.90**	0.02	66.44	**4.93**	61.53	61.31		1		0.476		7.85	
186060	9.42	Rt.	EX-216			0.00	0.00	0.00					0.00					60.03	59.81	0.22		18.00	0.150	4.44		
CL054			**S-301**			0.00	0.43	0.00										61.37	61.34	0.04		18.00	0.932	1.69		
				MH-8	4.14	0.00	0.03	0.00	10.93	0.03	7.23	0.41	0.00	**2.99**	0.04	66.02	**4.65**	61.00	60.90		1		2.415		17.69	
185870	21.58	Rt.	EX-215			0.00	0.00	0.00					0.00					59.50	59.40	0.10		18.00	0.150	10.01		
CL054			**S-302**			0.21	0.43	0.20										62.60	62.39	0.21		18.00	0.778	3.78		
				P-6	27.13	0.00	0.03	0.00	10.81	0.12	7.26	0.41	0.00	**3.01**	0.11	65.91	**3.31**	63.30	63.20		1		0.369		6.91	
185900	18.75	Rt.	S-301			0.00	0.00	0.00					0.00					61.80	61.70	0.10		18.00	0.150	3.91		
CL054			**S-303**			0.22	0.22	0.21										63.32	63.30	0.02		18.00	0.020	0.91		
				P-5	97.00	0.03	0.03	0.01	10.00	0.81	7.47	0.21	0.00	**1.61**	0.00	66.06	**2.74**	63.50	63.30		1		0.206		5.17	
186000	18.75	Rt.	S-302			0.00	0.00	0.00					0.00					62.00	61.80	0.20		18.00	0.150	2.92		
CL054			**S-304**			0.11	0.36	0.10										62.15	61.67	0.48		18.00	0.351	3.30		
				P-5	137.98	0.02	0.09	0.00	12.15	0.70	6.94	0.36	0.00	**2.50**	0.08	66.42	**4.27**	62.90	62.50		1		0.290		6.13	
186200	18.75	Rt.	EX-218			0.00	0.00	0.00					0.00					61.40	61.00	0.40		18.00	0.150	3.47		
CL054			**S-305**			0.06	0.25	0.06										62.95	62.90	0.05		18.00	0.031	1.04		
				P-6	178.43	0.00	0.07	0.00	10.66	1.49	7.29	0.25	0.00	**1.83**	0.01	66.55	**3.60**	63.20	62.90		1		0.168		4.67	
186380	1.54	Rt.	S-304			0.00	0.00	0.00					0.00					61.70	61.40	0.30		18.00	0.150	2.64		
CL054			**S-306**			0.19	0.19	0.18										63.21	63.20	0.01		18.00	0.016	0.82		
				P-5	79.10	0.07	0.07	0.01	10.00	0.66	7.47	0.19	0.00	**1.45**	0.00	66.18	**2.97**	63.50	63.20		1		0.379		7.01	
186460	18.75	Rt.	S-305			0.00	0.00	0.00					0.00					62.00	61.70	0.30		18.00	0.150	3.97		

Units: ENGLISH

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T60v3FDOT.RPT 7/10/2008

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **SUNLAKEW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL054			**S-212**			0.00	0.25	0.00										60.22	60.19	0.04		18.00	0.035	1.00		ZONE: 6
				MH-8	112.26	0.00	0.13	0.00	13.37	0.00	6.68	0.26	0.00	**1.76**	0.01	64.77	**4.55**	59.84	59.31		1		0.472		7.82	FREQ. (Yrs): 10
184973	7.16	Lt.	EX-88			0.00	0.00	0.00					0.00					58.34	57.81	0.53		18.00	0.150	4.42		MANNINGS n: 0.0120
CL054			**S-213**			0.04	0.25	0.04										60.71	60.53	0.18		18.00	0.608	3.19		
				P-6	29.47	0.07	0.13	0.01	13.22	0.15	6.71	0.26	0.00	**1.77**	0.08	64.33	**3.62**	61.60	61.50		1		0.339		6.63	
185005	1.68	Lt.	S-212			0.00	0.00	0.00					0.00					60.10	60.00	0.10		18.00	0.150	3.75		TAILW EL (ft): 60.17
CL054			**S-214**			0.07	0.21	0.07										61.62	61.60	0.02		18.00	0.022	0.82		
				P-5	92.04	0.05	0.06	0.01	12.45	0.77	6.87	0.21	0.00	**1.45**	0.01	64.44	**2.82**	61.80	61.60		1		0.217		5.30	
185100	4.55	Lt.	S-213			0.00	0.00	0.00					0.00					60.30	60.10	0.20		18.00	0.150	3.00		
CL054			**S-215**			0.06	0.14	0.06										61.82	61.80	0.02		18.00	0.009	0.55		
				P-5	197.09	0.01	0.01	0.00	10.81	1.64	7.26	0.14	0.00	**0.98**	0.00	64.81	**2.99**	62.10	61.80		1		0.152		4.44	
185300	10.61	Lt.	S-214			0.00	0.00	0.00					0.00					60.60	60.30	0.30		18.00	0.150	2.51		
CL054			**S-216**			0.08	0.08	0.08										62.10	62.10	0.00		18.00	0.002	0.32		
				P-5	97.05	0.00	0.00	0.00	10.00	0.81	7.47	0.08	0.00	**0.57**	0.00	64.93	**2.83**	62.30	62.10		1		0.206		5.17	
185400	13.64	Lt.	S-215			0.00	0.00	0.00					0.00					60.80	60.60	0.20		18.00	0.150	2.92		

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **WILSONE** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 65.81
CL054			**S-512**			0.08	0.08	0.08										67.60	67.60	0.00		18.00	0.002	0.32		
				P-5	10.50	0.00	0.00	0.00	10.00	0.09	7.47	0.08	0.00	**0.57**	0.00	70.81	**3.21**	67.70	67.60		1		0.952		11.10	
195900	5.25	Rt.	S-513			0.00	0.00	0.00					0.00					66.20	66.10	0.10		18.00	0.150	6.28		
CL054			**S-513**			0.24	0.32	0.23										67.46	67.40	0.06		18.00	0.061	1.28		
				P-5	97.00	0.00	0.00	0.00	10.09	0.81	7.44	0.30	0.00	**2.26**	0.02	70.22	**2.76**	67.60	67.40		1		0.206		5.17	
195900	18.75	Rt.	S-514			0.00	0.00	0.00					0.00					66.10	65.90	0.20		18.00	0.150	2.92		
CL054			**S-514**			0.13	0.45	0.12										67.28	67.20	0.08		18.00	0.107	1.77		
				P-5	77.00	0.02	0.02	0.00	10.90	0.64	7.23	0.43	0.00	**3.12**	0.02	69.94	**2.66**	67.40	67.20		1		0.260		5.80	
196000	18.75	Rt.	S-516			0.00	0.00	0.00					0.00					65.90	65.70	0.20		18.00	0.150	3.28		
CL054			**S-515**			0.07	0.07	0.07										67.20	67.20	0.00		18.00	0.002	0.28		
				P-6	10.50	0.00	0.00	0.00	10.00	0.09	7.47	0.07	0.00	**0.50**	0.00	70.02	**2.82**	67.40	67.20		1		1.905		15.70	
196080	5.25	Rt.	S-516			0.00	0.00	0.00					0.00					65.90	65.70	0.20		18.00	0.150	8.89		
CL054			**S-516**			0.09	0.61	0.09										67.06	66.89	0.16		18.00	0.212	2.35		
				P-5	77.00	0.02	0.04	0.00	11.54	0.55	7.08	0.59	0.00	**4.16**	0.06	69.70	**2.64**	67.20	66.80		1		0.519		8.20	
196080	18.75	Rt.	S-517			0.00	0.00	0.00					0.00					65.70	65.30	0.40		18.00	0.150	4.64		
CL054			**S-517**			0.09	0.70	0.09										66.89	66.50	0.39		18.00	0.201	2.67		
				P-5	196.00	0.03	0.07	0.01	12.08	1.22	6.95	0.68	0.00	**4.72**	0.06	69.74	**2.85**	66.80	66.50		1		0.153		4.45	
196160	18.75	Rt.	S-518			0.00	0.00	0.00					0.00					65.30	65.00	0.30		18.00	0.150	2.52		
CL054			**S-518**			1.06	1.76	1.01										66.34	66.01	0.33		24.00	0.370	3.59		
				DBI-C	88.97	0.00	0.07	0.00	13.31	0.00	6.70	1.69	0.00	**11.29**	0.14	68.90	**2.56**	66.07	65.51		1		0.629		19.44	
196358	4.64	Rt.	EX-157			0.00	0.00	0.00					0.00					64.07	63.51	0.56		24.00	0.102	6.19		

Units: ENGLISH

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FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **25633923201** County: **Pasco** Network: **WILSONW** Designed by **KW** Date: 5/ 4/2015
Description: **SR 54 Suncoast to 441** Organization **ICON CONSULTANT GROUP, INC.** State Road: **SR 54** Checked by: **MM** Date: 5/ 4/2015

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.20 / C= 0.00 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / L / S	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. / MIN.	ACTUAL VEL. / PHYS. / VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS ZONE: 6 / FREQ. (Yrs): 10 / MANNINGS n: 0.0120 / TAILW EL (ft): 66.02
CL054			**S-505**			0.65	1.53	0.62										67.59	66.47	1.11		18.00	1.043	5.40		
				DBI-C	106.80	0.00	0.21	0.00	15.01	0.00	6.38	1.50	0.00	**9.54**	0.36	70.10	**2.51**	65.27	64.12		1		1.077		11.81	
194989	8.30	Rt.	EX-147			0.00	0.00	0.00					0.00					63.77	62.62	1.15		18.00	0.150	6.68		
CL054			**S-506**			0.22	0.88	0.21										68.17	67.60	0.57		18.00	0.299	3.26		
				P-6	189.25	0.08	0.21	0.02	14.04	0.97	6.56	0.88	0.00	**5.76**	0.08	70.88	**2.71**	67.90	67.60		1		0.159		4.53	
195180	10.75	Rt.	S-505			0.00	0.00	0.00					0.00					66.40	66.10	0.30		18.00	0.150	2.56		
CL054			**S-507**			0.09	0.66	0.09										68.39	68.17	0.22		18.00	0.189	2.48		
				P-5	117.55	0.03	0.13	0.01	13.25	0.79	6.71	0.65	0.00	**4.38**	0.05	71.37	**2.98**	68.10	67.90		1		0.170		4.69	
195300	10.75	Rt.	S-506			0.00	0.00	0.00					0.00					66.60	66.40	0.20		18.00	0.150	2.66		
CL054			**S-507A**			0.13	0.57	0.12										68.61	68.39	0.22		18.00	0.142	2.21		
				P-5	157.73	0.04	0.10	0.01	12.06	1.19	6.96	0.56	0.00	**3.91**	0.04	71.25	**2.64**	68.40	68.10		1		0.190		4.96	
195460.00	0.78	Lt.	S-507			0.00	0.00	0.00					0.00					66.90	66.60	0.30		18.00	0.150	2.81		
CL054			**S-508**			0.17	0.44	0.16										68.70	68.61	0.08		18.00	0.108	1.73		
				P-6	77.12	0.05	0.06	0.01	11.42	0.64	7.11	0.43	0.00	**3.06**	0.03	71.16	**2.46**	68.60	68.40		1		0.259		5.79	
195540	7.25	Lt.	S-507A			0.00	0.00	0.00					0.00					67.10	66.90	0.20		18.00	0.150	3.28		
CL054			**S-509**			0.11	0.27	0.10										68.73	68.70	0.04		18.00	0.039	1.07		
				GUT-S	89.79	0.00	0.01	0.00	10.67	0.75	7.29	0.26	0.00	**1.88**	0.01	71.12	**2.39**	68.80	68.60		1		0.223		5.37	
195630	13.75	Rt.	S-508			0.00	0.00	0.00					0.00					67.30	67.10	0.20		18.00	0.150	3.04		
CL054			**S-510**			0.16	0.16	0.15										68.81	68.80	0.01		18.00	0.010	0.65		
				GUT-S	80.49	0.01	0.01	0.00	10.00	0.67	7.47	0.15	0.00	**1.15**	0.00	70.85	**2.04**	69.00	68.80		1		0.248		5.67	
195712.50	13.75	Rt.	S-509			0.00	0.00	0.00					0.00					67.50	67.30	0.20		18.00	0.150	3.21		

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TAILWATER SUMMARY

Permit 4316251.00		2015 Routing Analysis	
Basin A1		Basin A1	
Node TWN-25		Node TW1N	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
51.50	0.00	50.64	0.00
52.00	8.00	51.14	8.00
54.00	15.00	53.14	15.00
54.00	18.00	53.14	18.00
51.50	48.00	50.64	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin A1		Basin A1	
Node TWS-25		Node TW1S	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
51.50	0.00	50.64	0.00
52.00	8.00	51.14	8.00
54.97	15.00	54.11	15.00
54.97	18.00	54.11	18.00
51.50	48.00	50.64	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin A2		Basin A2	
Node TWN-25		Node TW2N	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
56.00	0.00	55.14	0.00
56.20	8.00	55.34	8.00
56.92	15.00	56.06	15.00
56.92	18.00	56.06	18.00
51.50	48.00	50.64	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin A2		Basin A2	
Node TWS-25		Node TW2S	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
56.00	0.00	55.14	0.00
56.20	8.00	55.34	8.00
57.00	15.00	56.14	15.00
57.00	18.00	56.14	18.00
56.00	48.00	55.14	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin A3		Basin A3	
Node TWN-25		Node TW3N	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
56.00	0.00	55.14	0.00
56.50	8.00	55.64	8.00
58.80	15.00	57.94	15.00
58.80	18.00	57.94	18.00
56.00	48.00	55.14	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin A3		Basin A3	
Node TWS-25		Node TW3S	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
56.00	0.00	55.14	0.00
56.20	8.00	55.34	8.00
57.10	15.00	56.24	15.00
57.10	18.00	56.24	18.00
56.00	48.00	55.14	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin B1 & B2		Basin B1 & B2	
Node WB1		Node WB1	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
58.00	0.00	57.14	0.00
58.50	8.00	57.64	8.00
61.00	15.00	60.14	15.00
61.00	18.00	60.14	18.00
58.00	48.00	57.14	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin B3		Basin B3	
Node WB3		Node WB3	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
60.40	0.00	59.54	0.00
60.90	8.00	60.04	8.00
61.60	15.00	60.74	15.00
61.60	18.00	60.74	18.00
60.40	48.00	59.54	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin C1		Basin C1	
Node TW-25		Node TW	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
60.00	0.00	59.14	0.00
60.10	8.00	59.24	8.00
60.40	15.00	59.54	15.00
60.40	18.00	59.54	18.00
60.00	48.00	59.14	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin C2		Basin C2	
Node TW-25		Node TWN	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
61.35	0.00	60.49	0.00
61.50	8.00	60.64	8.00
62.00	15.00	61.14	15.00
62.00	18.00	61.14	18.00
61.35	48.00	60.49	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin C2		Basin C2	
Node TWS-25		Node TWS	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
61.35	0.00	60.49	0.00
62.00	8.00	61.14	8.00
63.90	15.00	63.04	15.00
63.90	18.00	63.04	18.00
61.35	48.00	60.49	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin D1 & D2		Basin D1 & D2	
Node WD1		Node WD	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
62.70	0.00	61.84	0.00
63.30	15.00	62.44	15.00
63.30	18.00	62.44	18.00
62.70	48.00	61.84	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin E1		Basin E1	
Node WE1		Node WE1	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
63.98	0.00	63.12	0.00
66.30	15.00	65.44	15.00
66.30	18.00	65.44	18.00
63.98	48.00	63.12	48.00

Permit 4316251.00		2015 Routing Analysis	
Basin E2		Basin E2	
Node WE2		Node WE2	
NGVD 29		NAVD 88	
Stage	Hour	Stage	Hour
64.87	0.00	64.01	0.00
65.30	15.00	64.44	15.00
65.30	18.00	64.44	18.00
64.87	48.00	64.01	48.00

A1

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
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BASIN A1, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P7A1-100	AREA	55.440	.000	.000	.000	55.440	.120
						56.760	.180
P8A1-25	AREA	55.440	.000	.000	.000	55.440	.200
						56.760	.350
P8A1-100	AREA	55.440	.000	.000	.000	55.440	.200
						56.760	.350
TWS-25	TIME	51.500	.000	.000	.000	51.500	.000
						52.000	8.000
						54.970	15.000
						54.970	18.000
						51.500	48.000
TWS-100	TIME	51.500	.000	.000	.000	51.500	.000
						52.000	8.000
						55.470	15.000
						55.470	18.000
						51.500	48.000
TWN-25	TIME	51.500	.000	.000	.000	51.500	.000
						52.000	8.000
						54.000	15.000
						54.000	18.000
						51.500	48.000
TWN-100	TIME	51.500	.000	.000	.000	51.500	.000
						52.000	8.000
						54.500	15.000
						54.500	18.000
						51.500	48.000

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A2

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BASIN A2, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P1A2-25	AREA	56.300	.000	.000	.000	56.100	.350
						57.410	.500
P1A2-100	AREA	56.300	.000	.000	.000	56.100	.350
						57.410	.500
P2A2-25	AREA	56.350	.000	.000	.000	56.100	.340
						57.410	.560
P2A2-100	AREA	56.350	.000	.000	.000	56.100	.340
						57.410	.560
P3A2-25	AREA	56.200	.000	.000	.000	56.100	.560
						57.410	.810
P3A2-100	AREA	56.200	.000	.000	.000	56.100	.560
						57.410	.810
TWN-25	TIME	56.000	.000	.000	.000	56.000	.000
						56.200	8.000
						56.920	15.000
						56.920	18.000
						56.000	48.000
TWN-100	TIME	56.000	.000	.000	.000	56.000	.000
						56.300	8.000
						57.370	15.000
						57.370	18.000
						56.000	48.000
TWS-25	TIME	56.000	.000	.000	.000	56.000	.000
						56.200	8.000
						57.000	15.000
						57.000	18.000
						56.000	48.000
TWS-100	TIME	56.000	.000	.000	.000	56.000	.000
						56.300	8.000
						57.500	15.000
						57.500	18.000
						56.000	48.000

A3

Advanced Interconnected Channel & Pond Routing (adICPR Ver 1.40)
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BASIN A3, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P7A3-100	AREA	57.260	.000	.000	.000	57.020	.028
						60.900	.260
TWN-25	TIME	56.000	.000	.000	.000	56.000	.000
						56.500	8.000
						58.800	15.000
						58.800	18.000
						56.000	48.000
TWN-100	TIME	56.000	.000	.000	.000	56.000	.000
						56.800	8.000
						59.300	15.000
						59.300	18.000
						56.000	48.000
TWS-25	TIME	56.000	.000	.000	.000	56.000	.000
						56.200	8.000
						57.100	15.000
						57.100	18.000
						56.000	48.000
TWS-100	TIME	56.000	.000	.000	.000	56.000	.000
						56.300	8.000
						57.600	15.000
						57.600	18.000
						56.000	48.000

B1 & B2

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SR54 EAST BASIN B - PROPOSED CONDITIONS 100YR-8HR FDOT
FEB 17, 1999

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P12B2	AREA	58.290	.000	.000	.000	58.000	.220
						58.400	.330
						59.400	.640
P14B2	AREA	58.290	.000	.000	.000	57.500	.150
						58.000	.240
						59.700	.700
						60.700	1.130
P17B3	AREA	60.560	.000	.000	.000	60.400	.060
						62.000	.140
						63.000	.220
WB1	TIME	58.000	.000	.000	.000	58.000	.000
						58.500	8.000
						61.000	15.000
						61.000	18.000
						58.000	48.000
WB2	TIME	58.000	.000	.000	.000	58.000	.000
						58.500	8.000
						61.000	15.000
						61.000	18.000
						58.000	48.000
WB3	TIME	60.400	.000	.000	.000	60.400	.000
						60.900	8.000
						61.600	15.000
						61.600	18.000
						60.400	48.000

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A-1346

C1

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BASIN C1, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR. (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P1C1-25	AREA	60.200	.000	.000	.000	60.040	.058
						62.340	.144
P1C1-100	AREA	60.200	.000	.000	.000	60.040	.058
						62.340	.144
P2C1-25	AREA	60.170	.000	.000	.000	60.040	5.646
						62.340	6.497
P2C1-100	AREA	60.170	.000	.000	.000	60.040	5.646
						62.340	6.497
P3C1-25	AREA	61.840	.000	.000	.000	61.840	.378
						63.480	.495
P3C1-100	AREA	61.840	.000	.000	.000	61.840	.378
						63.480	.495
TW-25	TIME	60.000	.000	.000	.000	60.000	.000
						60.100	8.000
						60.400	15.000
						60.400	18.000
						60.000	48.000
TW-100	TIME	60.000	.000	.000	.000	60.000	.000
						60.100	8.000
						60.400	15.000
						60.400	18.000
						60.000	48.000

Pc-13

480

C2-N

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BASIN C2, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
TWN-25	TIME	61.350	.000	.000	.000	61.350	.000
						61.500	8.000
						62.000	15.000
						62.000	18.000
						61.350	48.000
TWN-100	TIME	61.350	.000	.000	.000	61.350	.000
						61.700	8.000
						62.500	15.000
						62.500	18.000
						61.350	48.000

C2-S

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BASIN C2, PROPOSED CONDITION, SWFWMD (25-YR, 100-YR EVENTS)
06/10/97

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/ (ac/hr/af)
P1C2-25	AREA	62.000	.000	.000	.000	61.350	.130
						64.300	.350
P1C2-100	AREA	62.000	.000	.000	.000	61.350	:130
						64.300	.350
P2C2-25	AREA	62.000	.000	.000	.000	61.350	.080
						63.320	.220
P2C2-100	AREA	62.000	.000	.000	.000	61.350	.080
						63.320	.220
P3C2-25	AREA	61.730	.000	.000	.000	61.350	.222
						63.320	.732
P3C2-100	AREA	61.730	.000	.000	.000	61.350	.222
						63.320	.732
P4C2-25	AREA	62.200	.000	.000	.000	61.350	.160
						63.980	.444
P4C2-100	AREA	62.200	.000	.000	.000	61.350	.160
						63.980	
P5C2-25	AREA	62.340	.000	.000	.000	62.340	.200
						64.300	.430
P5C2-100	AREA	62.340	.000	.000	.000	62.340	.200
						64.300	.430
TWS-25	TIME	61.350	.000	.000	.000	61.350	.000
						62.000	8.000
						63.900	15.000
						63.900	18.000
						61.350	48.000
TWS-100	TIME	61.350	.000	.000	.000	61.350	.000
						62.000	8.000
						63.900	15.000
						63.900	18.000
						61.350	48.000

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D1 & D2

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25YR/24HR MODEL FOR BASIN D (FUTURE CONDITIONS)
1/17/97 (REVISED 11/5/97)

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P3D1	AREA	62.780	.000	.000	.000	62.700	.320
						65.000	.470
						65.900	.600
P4D1	AREA	62.860	.000	.000	.000	62.700	1.420
						65.000	2.220
						65.900	2.530
P7D2	AREA	63.970	.000	.000	.000	62.200	.043
						62.700	.050
						64.000	.103
						65.600	.164
P8D2	AREA	63.970	.000	.000	.000	62.200	.041
						62.700	.048
						64.000	.104
						65.600	.176
						67.300	.253
P9D2	AREA	65.600	.000	.000	.000	65.600	.135
						67.300	.200
P10D2	AREA	65.600	.000	.000	.000	65.600	.088
						67.300	.126
WD1	TIME	62.700	.000	.000	.000	62.700	.000
						63.300	15.000
						63.300	18.000
						62.700	48.000
WD2	TIME	62.700	.000	.000	.000	62.700	.000
						63.300	15.000
						63.300	18.000
						62.700	48.000

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020

150

E1 & E2

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25YR/24HR MODEL FOR BASIN E (FUTURE CONDITIONS)
1/14/97 (REVISED 11/05/97)

NODE NAME	NODE TYPE	INI STAGE (ft)	X-COOR (ft)	Y-COOR (ft)	LENGTH (ft)	STAGE (ft)	AR/TM/STR (ac/hr/af)
P18E2	AREA	65.650	.000	.000	.000	63.870	.050
						64.370	.055
						64.870	.058
						65.620	.102
						67.260	.186
						68.570	.268
P19E2	AREA	65.650	.000	.000	.000	63.870	.058
						64.370	.061
						64.870	.064
						65.620	.098
						67.260	.168
						68.570	.240
WE1	TIME	63.980	.000	.000	.000	63.980	.000
						66.300	15.000
						66.300	18.000
						63.980	48.000
WE2	TIME	64.870	.000	.000	.000	64.870	.000
						65.300	15.000
						65.300	18.000
						64.870	48.000

Culvert Service Life Estimator

M E M O R A N D U M

FLORIDA DEPARTMENT OF TRANSPORTATION
District Seven Drainage Design - MS 7-800 - (813) 975-6162

DATE: May 14, 2013

TO: Design Consultants, Design Project Managers, Resident Construction Engineers, and In-house Designers

FROM: Megan Arasteh P.E., District Drainage Engineer

CC: Ronald Chin P.E., District Design Engineer

SUBJECT: **Recommended Notes for the Optional Pipe Material Plan Sheet**

This memorandum includes the recommended optional material notes to provide consistency for all construction plans. Guidance for the selection of optional pipe materials is included in the latest Florida Department of Transportation (FDOT) Drainage Manual and Optional Pipe Material Handbook. The selection of allowable pipe types shall be based on the site specific project environmental test data and the Culvert Service Life Estimator program.

The latest FDOT Drainage Manual, Optional Pipe Material Handbook and the Culvert Service Life Estimator program can be found at the following location:

the FDOT Drainage Manual, Appendix E

http://www.dot.state.fl.us/rddesign/Hydraulics/ManualsandHandbooks.shtm

In order to achieve uniformity in plan presentation, the following guidelines and notes are to be included in the Optional Pipe Material Sheet for all projects currently under design.

1. The Contractor may use any of the optional pipe materials tabulated for a given structure or pipe size. Only the material options tabulated shall be used. The optional pipe materials tabulated shall meet ~~Index 205~~ minimum and maximum fill cover requirements. The following conditions shall apply when the following optional pipe materials have been included in the optional pipe table:

   a. The minimum HDPE pipe class shall be class II (up to and including 60-inch)
   b. When Spiral Ribbed Aluminized Steel Pipe is shown on the optional pipe material table, it shall only be allowed with the newly developed hugger band with 5 annular corrugations which provides a water tight joint.
   c. The "plotted" pipe option as referenced in notes 2, 3, and 4 is shown on the optional pipe material table.

2. Adjustment to the bid quantities, prices and payment will not be allowed due to increase or decrease in structure size, shape, length, width, depth or accessory construction necessary to accommodate the use of an optional pipe material other than the "plotted" option; likewise there will be no added or reduced compensation for structure alterations required to relieve utility conflicts which arise from the use of an optional material other than the "plotted" option.

3. Adjustment to the bid quantities, prices and payment will not be allowed due to increased or decreased excavation, bedding, borrow, backfilling, compaction, special installation requirements or disposal of excess materials due to use of any of the pipe optional materials. Likewise, adjustment in the quantities, prices and payment will not be allowed due to differences in end treatment size or types, pipe length, alternate jointing and connecting materials, saddles, cradles, filter fabrics, shoring or similar features due to the use of an optional material other than the "plotted" option.

4. If adjustments are required due to plan errors or omissions or authorized field changes, the "plotted" material and not the material elected by the Contractor would be used to establish new pay quantities.

5. The Contractor shall notify the Department in writing, on or before the Preconstruction Conference, as to which optional pipe materials are chosen for the project. Once identified, the Contractor may not change pipe material selected without the approval of the Project Administrator.

6. A2000 PVC (ASTM F 949) pipe is not allowed for pipe diameters exceeding 36-inch. PVC shall not be used in areas exposed to direct sunlight for extended periods of time, such as above ground, unshaded installations, endwalls, and mitered end sections. Additional requirements are as follows:
   a. PVC pipe shall be manufactured from PVC compound having no less than 1.0 part of Titanium Dioxide per 100 parts of PVC resin, by weight.
   b. PVC pipe shall be installed within 2 years from the date of manufacture. Pipe more than 2 years of age may not be used unless it can be demonstrated to the satisfaction of the Engineer that the pipe has been adequately protected from direct exposure to sunlight.

7. Water tight joints shall be required for all pipe connections; pipe to pipe and pipe to structure. In the event of a leak, hydrostatic calculations shall be submitted by the contractor which demonstrates that the joints are water tight per FDOT Standard Specifications. Field measurement of the ground water elevation shall be required at the location of the leak to perform the required calculations.

8. All precast storm sewer manholes and inlets shall be provided with resilient connectors as specified in Chapter 942-3 of the FDOT Standard Specifications for Road and Bridge Construction. It is the responsibility of the contractor to communicate the type of pipe chosen and the type of resilient connector to be used, to the precastor, prior to the fabrication of any applicable structures. It is recommended that the contractor includes the type of resilient connectors and any required pipe adaptors for each structure in the drainage structure shop drawing submittal.

   Masonry sealing of pipe connections will be allowed where the pipe to structure connections meet any of the conditions listed below. The contractor shall submit the supporting documentation which provides the justification for elimination of the resilient connectors to the Project Administrator. The Project Administrator will advise the District Drainage Engineer of all instances that a masonry seal is used. The exceptions where resilient connectors will not be required are as follow:
   a. The interface angle of connection between the structure and pipe is greater than 15 degrees, in either the horizontal or vertical direction.
   b. The structure and all connections which fall outside the 1:2 roadway template control line as per Index 505 of FDOT Design Standard.
   c. The remaining beam height of the single precast unit, from the top of that segment to the existing crown of pipe chosen, is less than 8 inches.
   d. Where elliptical pipes are specified on the plans.

9. Pipe material type installed on the projects shall be indicated on the as-built drawings by the construction representative.

10. The contractor shall only use one type of pipe materials on pipe runs between structures.

11. Dissimilar materials shall be constructed in accordance with the Standard Indexes.

12. The wall thickness included in the table is the minimum wall thickness required for corrosion purpose and to meet the required service life of the steel casing. Greater wall thicknesses are required for the structural loadings associated with the jacking of the casing. The cost of additional pipe thickness required for jacking shall be included in the cost of the pipe.

Sample Summary table to accompany the optional pipe general notes

The table shall include item numbers 1, 2, &3 as shown on Attachment A.

ATTACHMENT A

OPTIONAL PIPE EXCEPTIONS	SIZE (Inches)	MATERIAL	PLOTTED	AS BUILT	REMARKS
					1. NOTE THE PLOTTED PIPE OPTION FOR EACH PIPE SIZE.
S-1068, S-417, S-419	18"	SRCP CLASS II	X		
SRCP CLASS II ONLY		A2000 PVCP			2. LIST THE EXCEPTIONS.
		SRASP, 16 GA.			
		SRAP, 16 GA.			
		NRCP CLASS II			
					3. SPECIFY THE OPTIONAL PIPE MATERIAL FOR THE EXCEPTION.
					1. NOTE THE PLOTTED PIPE OPTION FOR EACH PIPE SIZE.
S-120, S-208, S-209	24"	SRCP CLASS II	X		
SRCP CLASS II ONLY		A2000 PVCP			2. LIST THE EXCEPTIONS.
		SRASP, 16 GA.			
		SRAP, 16 GA.			
		NRCP CLASS II			
					3. SPECIFY THE OPTIONAL PIPE MATERIAL FOR THE EXCEPTION.

Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

This Program is developed by the Florida Department of Transportation Corrosion Research Laboratory to calculate the approximate service life of culverts corresponding to environmental parameters. Given these parameters, the program will list the performance of the most commonly used culverts in descending order. This program is intended for use as an environmental durability estimator ONLY. It is the designer's responsibility to choose the proper culvert to meet all structural and hydraulic requirements. If you have any questions or suggestions regarding the use of this program, please contact Rick Jenkins, P.E. at the Roadway Design Office - Drainage, Email: rick.jenkins@dot.state.fl.us

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

This Program is developed by the Florida Department of Transportation Corrosion Research Laboratory to calculate the approximate service life of culverts corresponding to environmental parameters. Given these parameters, the program will list the performance of the most commonly used culverts in descending order. This program is intended for use as an environmental durability estimator ONLY. It is the designer's responsibility to choose the proper culvert to meet all structural and hydraulic requirements. If you have any questions or suggestions regarding the use of this program, please contact Rick Jenkins, P.E. at the Roadway Design Office - Drainage, Email: rick.jenkins@dot.state.fl.us

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

This Program is developed by the Florida Department of Transportation Corrosion Research Laboratory to calculate the approximate service life of culverts corresponding to environmental parameters. Given these parameters, the program will list the performance of the most commonly used culverts in descending order. This program is intended for use as an environmental durability estimator ONLY. It is the designer's responsibility to choose the proper culvert to meet all structural and hydraulic requirements. If you have any questions or suggestions regarding the use of this program, please contact Rick Jenkins, P.E. at the Roadway Design Office - Drainage, Email: rick.jenkins@dot.state.fl.us

Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
2) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	42.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	310	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	157	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	12

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	235	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	114	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	219	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	12

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	235	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	114	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	219	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	12

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	235	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	114	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	219	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	12

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	235	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	114	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	219	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	42.00	Chlorides	15
		Sulfates	12

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	294	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	114	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	219	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.8
Manning's n Value	0.012	Resistivity	11000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	12

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	149	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			1
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	219	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	42.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	306	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	156	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			1
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	260	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	127	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	280	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

This Program is developed by the Florida Department of Transportation Corrosion Research Laboratory to calculate the approximate service life of culverts corresponding to environmental parameters. Given these parameters, the program will list the performance of the most commonly used culverts in descending order. This program is intended for use as an environmental durability estimator ONLY. It is the designer's responsibility to choose the proper culvert to meet all structural and hydraulic requirements. If you have any questions or suggestions regarding the use of this program, please contact Rick Jenkins, P.E. at the Roadway Design Office - Drainage, Email: rick.jenkins@dot.state.fl.us

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	260	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	127	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	280	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	260	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	127	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	280	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	260	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	127	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	280	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	42.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	324	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	127	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	280	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	7.3
Manning's n Value	0.012	Resistivity	20000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	166	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(NRCP)UNAVAILABLE in this size	364	Fail		
(SRSP)SRSP CANNOT be used	280	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		
(PVC)UNAVAILABLE in this size		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.0
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	336	Pass		
(RCP) Steel-Reinforced Concrete	336	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	278	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	107	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(CSP/SRSP)SRSP CANNOT be used	97	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.0
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	278	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	107	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(CSP/SRSP)SRSP CANNOT be used	97	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	6
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	278	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	107	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(CSP/SRSP)SRSP CANNOT be used	97	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.0
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	278	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	107	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(CSP/SRSP)SRSP CANNOT be used	97	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	6.0
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	42.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	347	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	107	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(CSP/SRSP)SRSP CANNOT be used	97	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.0
Manning's n Value	0.012	Resistivity	31000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	139	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(CSP/SRSP)SRSP CANNOT be used	97	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	18.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	112	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	24.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	30.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	112	Fail		
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	36.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	112	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	42.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	329	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	112	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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2) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 22, 2015

Design Life (Years)	100	pH	6.9
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	48.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	161	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	112	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	18.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	291	Pass		
(RCP) Steel-Reinforced Concrete	291	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	129	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	291	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	24.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	333	Pass		
(RCP) Steel-Reinforced Concrete	333	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	129	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	291	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	30.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	129	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	291	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	36.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	263	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	129	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	291	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	18000
Diameter (inches)	42.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	319	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	125	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	268	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.5
Manning's n Value	0.012	Resistivity	22000
Diameter (inches)	48.00	Chlorides	45
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	168	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(NRCP)UNAVAILABLE in this size	364	Fail		
(SRSP)SRSP CANNOT be used	291	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		
(PVC)UNAVAILABLE in this size		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	18.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(RCP) Steel-Reinforced Concrete	337	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	24.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	30.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	248	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	36.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	248	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	42.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	310	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	121	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.7
Manning's n Value	0.012	Resistivity	15000
Diameter (inches)	48.00	Chlorides	30
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	157	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	248	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	18.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	253	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	262	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	24.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	253	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	30.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	253	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	262	Fail		
(HDPE)CANNOT be used		Fail		
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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	36.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	253	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	262	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

1) Special Installation required. Refer to AASHTO Standard Specifications for Highway Bridges or ASTM B788-88 and manufacturer's recommendations.
2) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	42.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	316	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	124	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	262	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	7.6
Manning's n Value	0.012	Resistivity	17000
Diameter (inches)	48.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	161	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	262	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	8.0
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	18.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	8.0
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	24.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date May 15, 2015

Design Life (Years)	100	pH	8
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	30.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment		
(RCP) Steel-Reinforced Concrete	360	Pass		
(NRCP) Non-Reinforced Concrete	360	Pass		
(RCP) Steel-Reinforced Concrete	360	Pass		
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass		
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass		
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass		
(HDPE) High Density Polyethylene, Cl. II	100	Pass		[1]
(SRSP)SRSP CANNOT be used	242	Fail		
(HDPE)CANNOT be used		Fail		
(PPP)CANNOT be used		Fail		

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Florida Department of Transportation

Corrosion Research Laboratory

Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	8.0
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	36.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(NRCP) Non-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 16 GA.	245	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass			
(PVC) Polyvinyl Chloride, ASTM F-949	100	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			

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Culvert Service Life Estimator

Date Jan 23, 2015

Design Life (Years)	100	pH	8.0
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	42.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 14 GA.	306	Pass			1
(SRASP) Aluminized Steel - Spiral Rib, 16 GA.	120	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			2
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

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Date Jan 23, 2015

Design Life (Years)	100	pH	8.0
Manning's n Value	0.012	Resistivity	14000
Diameter (inches)	48.00	Chlorides	15
		Sulfates	2.4

Type of Culvert	Service Life	Enviroment			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRAP) Aluminum - Spiral Rib, 12 GA.	360	Pass			
(RCP) Steel-Reinforced Concrete	360	Pass			
(SRASP) Aluminized Steel - Spiral Rib, 14 GA.	156	Pass			
(HDPE) High Density Polyethylene, Cl. II	100	Pass			[1]
(NRCP)UNAVAILABLE in this size	364	Fail			
(SRSP)SRSP CANNOT be used	242	Fail			
(HDPE)CANNOT be used		Fail			
(PPP)CANNOT be used		Fail			
(PVC)UNAVAILABLE in this size		Fail			

1) Class II HDPE pipe, accepted under the interim specification, may not be used in the following locations: 1. The Florida Keys

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Comments & Responses

Submittal Report

Financial Project:	256339-2-52-01	Submittal Type:	PLANS
Submittal Phase:	PHASE II	Submittal Staff Type:	CONSULTANT
Received Date:	3/16/2015	Response Due Date:	4/10/2015
Grace Period:	0	District:	SEVENTH
Status:	OPEN	Create Date:	3/16/2015
Create User Id:	PM704MA	Last Update:	3/17/2015
		Last Update User Id:	PM704MA

Description:

256339-2 Phase II 90% Plans - SR 54 From East of Suncoast Parkway to W. of US 41(SR45)- Low Bid Design-Build

Assignments:

Name	Assignment	Due Date	Status	Comments
BRUCE HASBROUCK	LEAD REVIEWER	4/3/2015	ACTIVE	

No	Status	Current Holder	Reference	Categories
91	COMMENT SUBMITTED FOR RESPONSE	Michael Mills		CONSTRUCTION

Created By	Created On	Version	Delegate For
BRUCE HASBROUCK	4/2/2015	1	

The Erosion Control Plans should indicate Sediment Containment Systems or other measures to address the treatment of discharged water that will accumulate during construction of the linear ponds.

A sediment containment system consisting of a dual layer of turbidity barrier located at the outfall of each pond cell, as well as, at the pond systems final outfall is proposed. Please refer to erosion control plan sheets.

Name	Assignment	Due Date	Status	Comments
Deborah Knighton	REVIEWER	4/3/2015	ACTIVE	

No	Status	Current Holder	Reference	Categories
3	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (5) Sheet	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

The width of P3A1 is not sufficient at Station 1769 to accommodate the triple MES. Per Index 273, the triple MES for a 24" pipe is 12.33', subtract the 1.5' on each side to the pipe and you would need a pond bottom that is 9.33' wide to not block the pipe opening. The cross sections show the bottom width at 6.47'. Consider a transition detail to steepen the side slope and widen the ditch at the MES to accommodate the triple pipes.

The back slope will be steepened using a 1:2 slope at the MES, which will provide a ditch bottom width of 10.54' to accommodate the proposed 24” triple MES. Additionally, the proposed MES will be centered on the pond bottom. See revised roadway plan (5).

No	Status	Current Holder	Reference	Categories
4	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	General Comment	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

Concrete collars are called for in numerous locations in the plans where concrete jackets are the appropriate choice. Many locations where concrete collars are called out, the proposed pipe deflects horizontally and/or vertically, and concrete jackets can accommodate those deflections. Refer to Index 280 for the appropriate situations for concrete collars vs. concrete jackets.

The concrete collar call outs will be updated to concrete jacket where appropriate in accordance with index 280.

No	Status	Current Holder	Reference	Categories
5	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (5) Sheet	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

There is a pipe deflection of more than 10 degrees proposed with one of the pipes where a triple collar is called for near station 1769+90. Consider a manhole or DBI H (as a junction box) to accommodate the triple 24" pipes in lieu of the concrete collar called for. Otherwise, if a concrete jacket is utilized, means for preventing intrusion of wet concrete through the joint gap during construction will need to be considered.

Structure S-119 was rotated and relocated in order to decrease the pipe's angle of deflection while still maintaining a 1.5' clearance from the adjacent 24" pipe. The new pipe deflection angle is 4.10 degrees. See roadway plan sheet (5) included with the next submittal.

No	Status	Current Holder	Reference	Categories
6	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	General Comment	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

Several MES's in the plans were drawn skewed to the pipe: S-136, S-138, S-143, S-207, S-208. MES's are an extension of the pipe, therefore they are drawn in line with the pipe. This comment is for information only. A written response is not required.

The drawings will be revised to align the MES cell with the pipes.

No	Status	Current Holder	Reference	Categories
7	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (10)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

Riprap is proposed at only one location in the plans, at S-140B. As concrete pavement is being proposed at several other locations, and it is easier to maintain than riprap, consider concrete pavement in lieu of the riprap for S-140B. This comment is for information only. No written response is required.

Concrete ditch pavement will be considered in lieu of riprap for S-140B.

No	Status	Current Holder	Reference	Categories
9	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Sheet 22	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

The Summary of Drainage Structures has the following issues:

1. Sod and concrete pavement quantities are missing.
2. There are unused columns that can be deleted.
3. The note for S-140B has formatting issues and starts out on the wrong row.
4. There is a C inlet and there are C MFY (modify) inlets combined into the same column. Usually these are quantified separately.
5. The D inlets are all D MFY inlets and should be noted accordingly.
6. Concrete Collars should be Concrete Jackets.
7. The MES's should be differentiated between SD and CD.
8. CD MES's should have the slope specified.
9. If riprap is to be used for S-140B, it should be quantified.
10. The 30" MES for S-520A needs to be quantified.

Issues 1-10 will be addressed accordingly:
1. Sod and concrete pavement quantities will be included in updated summary of drainage structures.
2. Unnecessary and unused columns from the summary of drainage structures will be deleted.
3. The note, S-140B, will be updated and formatted properly.
4. C inlets and C-modified inlets will have their own columns in the summary of drainage structures.
5. A D-modified column will be added to the summary of drainage structures and the current D column will be removed.
6. Concrete collar note will be replaced with concrete jacket note.
7. All proposed MES's will be differentiated between SD and CD.
8. All proposed CD MES's will have its slope specified.
9. Riprap will not be used for S-140B instead concrete ditch pavement is proposed.
10. The 30" MES for S-520A will be quantified.

No	Status	Current Holder	Reference	Categories
10	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

Drainage structure sections are being shown for numerous existing control structures. They are being noted to construct partial inlets. This is inappropriate and not necessary. The existing inlets are merely being modified. The drainage structure sections do not provide useful, constructible information in these instances. The information needed to modify the structures should be noted on the Drainage Details sheets. This comment is for information only. A written response is not required.

Drainage structure sections for existing control structures are being shown to assist the contractor in identifying the location of existing control structures to be modified. According to the FDOT Basis of Estimates 425 INLETS "Partial" is to be used when an existing structure is to be modified. The information necessary to modify the existing control structures is provided in the revised Summary of Existing Control Structures to be Modified table, found on the Drainage Details sheets.

No	Status	Current Holder	Reference	Categories
11	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

There are numerous sections cut at existing ditch block weirs with no modifications being shown on the Drainage Structure sheets. There is one with a modification of the ditch block shown at Station 1773+80. These would be more appropriate on a drainage detail sheet. This comment is for information only. A written response is not required.

Acknowledged.

No	Status	Current Holder	Reference	Categories
12	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

The drainage structure sections make reference to Drainage Details sheets numbers 173 and 174. These details are on sheets 163 and 164.

New drainage detail sheets are being added for each of the control structrues. All the Drainage Structure section sheet references will be updated.

No	Status	Current Holder	Reference	Categories
13	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Map (9) Sheet	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

S-520A callout is missing from the drainage map.

A callout for S-520A will be added to the drainage map.

No	Status	Current Holder	Reference	Categories
14	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Sheets 163 and 164	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/27/2015	1	

The following issues were noted on the Drainage Details Control Structures sheets:

1. There is an * shown in the weir length column, but no * note on the sheet, both sheets 163 and 164.
2. Sheet No. 174 is noted on sheet 163 under the summary table, it should be Sheet 164.
3. Control Structure Note 1. notes "Type (Modified)", it should be "Type (Modify)". Modified is for back of sidewalk inlets.
4. The concrete pavement is insufficiently detailed on sheet 163. Need to label it in the section view, note the depth, whether reinforced or not and type if reinforced.
5. In the remarks column on sheet 163, it notes to see the "Weir Details". There are no sheets labeled weir details. Perhaps Sheet 165 should be noted.
6. The "summary of existing control structures to be modified" table does not provide sufficient information to modify the weirs. It is unclear if the weir elevation and weir length columns are noting the existing or proposed elevations. There is a lot of unnecessary columns on the table with respect to existing information. Columns noting both the existing and the proposed weir elevation, length, and heights would be most useful. Consider deleting columns that provide information not needed for construction. One remark notes to "Modify Weir", how? Another notes "Modify weir length and invert elevation..." does it mean pipe invert or weir elevation? The table is confusing.

Comments 1-6 will be addressed accordingly:
1. The * will be removed from the table as it's not needed.
2. The summary table for proposed control structure will be replaced by individual control structure detail sheets. All references in the drainage structure sheets will be updated accordingly.
3. Control structure note 1 will be changed to say "type (modify)".
4. The summary table for the proposed control structures will be replaced by individual control structure detail sheets. The concrete pavement will be detailed and shall state the type of concrete and whether or not it's reinforced. In addition, there will be different views depicting the limits of the concrete.
5. The summary table for proposed control structure will be replaced by individual control structure detail sheets. Any special weir details will be shown on the control structure detail sheet.
6. The "summary of existing control structures to be modified" table will be revised to eliminate unnecessary data and make clear the proposed changes to the control structures.

No	Status	Current Holder	Reference	Categories

No	Status	Current Holder	Reference	Categories
15	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

Please provide time of concentration calculations for the basins modeled with a TC greater than 10 minutes, i.e. B2A2 etc. If obtained from the previous permit documentation, it would be helpful to provide a summary table of the TC's (>10), noting where they came from, in Appendixes H through L.

The time of concentration calculations were obtained from the previous permit. A summary table will be added to the design documentation.

No	Status	Current Holder	Reference	Categories
16	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Maps	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

The summary of existing drainage structures sheet is missing from the Drainage Maps in the Phase II plans, please include.

The summary of existing drainage structures sheet was omitted in error and will be included in the plan set for the next submittal.

No	Status	Current Holder	Reference	Categories
18	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Maps and	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

There are drainage divides drawn across the right of way line area on both the Drainage Maps and the Drainage Diagrams included in the Drainage Design Documentation where it appears offsite area should be included in the pond basin. Please revisit P4A1 (both sides of Meadowbrook Drive), B3A2 (only Drainage Map shows offsite), and B19E2.

Also, there are two drainage divide lines for the south side of the basin drawn west of the begin construction. One is on the right of way, and the other is through the middle of the ditch. It appears it should be one or the other. Please correct.

B4A1:
The offsite areas on either side of Meadowbrook Drive contributing to P4A1 are included in the pond basin. The Drainage Maps graphics will be updated to make this apparent.
B3A2:
The dashed-dot line type near Basin B3A2 indicates the approximate flood plain limits and is not a basin boundary. A callout will be added to the Drainage Map to make the approximate flood plain limits apparent.
B19E2:
The offsite contributing area is included in the pond basin. The Drainage Maps graphics will be updated to make this apparent.
Drainage divide lines:
Drainage divides outside of the project limits that do not contribute to the projects' outfall will be removed from the drainage maps.

No	Status	Current Holder	Reference	Categories
19	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	ICPR Models	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

As most of the side drain pipes are going from pond to pond rather than free flowing ditches, the exit losses for the pipes should be considered in the ICPR models. Currently all exit losses have been set at zero. Please revisit.

The side drain pipes between pond cells generally act as equalizer pipes with minimal velocity change and, therefore, minimal exit loss. However, the application of exit losses will be revisited.

No	Status	Current Holder	Reference	Categories
20	COMMENT SUBMITTED FOR RESPONSE	Michael Mills		DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

When a grate is present on a control structure, typically the distance between the weir elevation and the grate elevation minus two inches for the grate is entered as the vertical rise for the Vertical Mavis rectangular weir. The vertical weirs for the drop structures have been modeled with a vertical rise of 999. There are existing DBI's which involve flow through the grate, ie. existing structure 23. Please revise for all DBI's, proposed and existing, that have grates below the design high water elevation.

The ICPR input for the vertical rise of the control structure weirs will be revisited.

No	Status	Current Holder	Reference	Categories
21	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/30/2015	1	

Please provide a drainage structure section for S-125A, S-140A, S-140B, S-202A, S-210A, S-310A, S-501A, S-502A, and S-518A.

Sufficient details for the pipe length adjustments and MES placement are found on the roadway plan sheets fro construction of these MESs. Additional drainage structure sections are not necessary.

No	Status	Current Holder	Reference	Categories
23	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

There is an S-130 shown on the drainage map associated with existing pipe 48, yet it is not shown anywhere else in the plans. This comment is for information only. No written response is required.

The S-130 callout will be removed from the drainage maps.

No	Status	Current Holder	Reference	Categories
25	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Appendix A	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The figures in Appendix A, 2 through 4, are too small of a scale to be of much use, and are hardly readable. You may get a similar comment from the SWFWMD. This comment is for information only. No written response is required.

Figures will be revised to be more readable.

No	Status	Current Holder	Reference	Categories
26	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Page 1-5 Drainage Doc	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The drainage documentation indicates that the clogged orifices in the existing control structures will be addressed in the Phase II plans. No mention of cleaning the clogged orifices were noted in the plans. Please address in the plans accordingly.

A note will be added to the general notes sheet to instruct the contractor that all clogged orifices are to be cleaned.

No	Status	Current Holder	Reference	Categories
27	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Doc Section 3	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The page numbers at the bottom of the page have reverted back to "i, ii, iii,..." in Section 3.0 of the report.

The page numbers in the report will be corrected.

No	Status	Current Holder	Reference	Categories
28	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Doc Section 3	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The report mentions only eight of the 22 existing control structures will require replacement with new structures, however nine are proposed in the Phase II plans. This comment is for information only. No written response is required.

There are 9 new control structures. The report will be corrected.

No	Status	Current Holder	Reference	Categories
29	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Basin A ICPR model	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The following comments pertain to the Basin A ICPR model:

1. Node P1A2 is controlled by ex 48. The plans indicate the weir elevation is 55.45, yet the initial stage has been set to 55.35. This is inconsistent with the approach for the other nodes which set the initial stage at the weir elevation (when it is controlling).
2. Node P1A3 uses a first stage elevation of 55.89, yet the plans indicate the orifice elevation is 55.90 for ex 53 which controls for this node. This also affects P2A3, and P3A3.
3. Node P2A1 is controlled by ex 30, which has a flow line elevation of 53.17 (lowest of 2), yet the initial stage and first stage were both set at 53.10. R2A1 averaged the flow line elevations for ex 30 at 35.20. Node P3A1, and P4A1 are also controlled by ex 30.
4. Node P4A3 uses a first stage elevation of 55.89, yet the first stage is controlled by ex 62 which has a flow line elevation of 56.36.
5. Node P5A1 uses a fist stage elevation of 50.62, yet it is controlled by the orifice for ex 24 which is noted at 50.64.
6. Node P6A1 uses a first stage and initial stage elevation of 53.63, yet it is controlled by ex 33 which has a flow line elevation of 54.09.
7. Node P6A3, has an initial stage of 56.10 controlled by S-141, not clear why 55.14 is used for the first stage.
8. P7A1 uses 54.10 for the first and initial stage, yet it is controlled by ex 37, which has a flow line elevation 54.44.
9. P7A3 uses initial and first stage elevations lower than the controlling elevation of 56.1, the flow line of S-142.
10. Node P8A1 uses initial and first stage elevation 54.58, which is lower than the controlling elevation 55.29, the flow line for ex 38.
11. R3A1 notes a downstream flow line elevation of 53.8, yet 53.7 is shown in the plans for S-112.
12. R1A2 shows a span for the vertical weir of 36 inches at elevation 55.35, yet 24 inches at 55.45 are shown on sheet 164 for ex 48.

Addressing these modeling nuances may or may not affect the peak stages in the ponds. Most are node input issues, and are controlled by the links which were for the most part input correctly. The models will be rechecked for the next submittal. Note that the existing structure data used to check the model came from the Phase IB plans, as the existing structure data was not included in the Phase II plans. A written response is optional.

Thank you, the model input parameters will be reviewed and any inconsistencies will be addressed for the next submittal.

No	Status	Current Holder	Reference	Categories
30	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Diagram (5)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

There is a drainage area on the north side just east of Sunlake Blvd. that does not have a drainage area or basin name on the Drainage Diagram. This area is included in B2C1 on the Drainage Map in the plans, yet a flow arrow shows it conveying to the cross drain area. Please clarify.

The basin boundary for Basin B2C1 is shown correctly on the Drainage Map. The basin boundaries on the drainage diagram will be corrected.

No	Status	Current Holder	Reference	Categories
31	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Pond P4B1	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

Pond P4B1 is a short pond that conveys to ex 68 which has a flow line elevation of 57.81. The node data shows the first stage with any area at elevation 60.0. The cross section at Station 1814 shows a width of approximately 32 feet at elevation 59.70 just west of the pond bottom (up a slope). The plans show the bottom is approximately 20 feet wide. Can the bottom be lowered to meet the existing flow line to elevation 57.8?

The pond bottom is proposed at elevation 57.8 to match the MES invert elevation at the outfall. The stage storage input in the model will be updated to match the construction plans for node P4B1. An additional cross section will be added to clearly show the pond bottom width and elevation.

No	Status	Current Holder	Reference	Categories
32	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	General Comment	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The ponds need more information to construct other than just the cross sections. Please provide summary tables, details, sections, etc. sufficient to provide the following information:

1. Pond bottom elevation.
2. Side slopes.
3. Radius length, station, and offset.
4. Pond NWL and DHW (also include on Drainage Maps).
5. Pond low (over-topping) top of bank elevation.

Adequate details for the construction of the roadside linear ponds are shown in the plans, roadway cross sections and the roadway typical section.

1. Pond bottom elevations are shown on the roadway cross sections. Additional cross sections will be added to the plans for locations where the roadway cross sections do not adequately show the pond bottom elevation.
2. Side slopes are typical and can be found in the roadway typical sections. The plan sheets and the cross section sheets indicate deviations from the typical side slopes in specific areas.
3. Pond geometry is dictated by the roadway, sidewalk, and driveway locations which are detailed in the plan set. Typical pond radius lengths will be added to the roadway plan sheets.
4. Pond NWL and DHW levels are shown in the roadway cross sections for each pond. Per PPM this information is not required on the drainage maps.
5. The roadway and sidewalk profile define the top of bank elevations for the majority of the ponds. The roadway, sidewalk and pond bank elevations are specified in the cross section sheets.

No	Status	Current Holder	Reference	Categories
33	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (5)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The MES for ex 40 and the pond bottom for P4A1 are outside of the right of way. Is this an issue? Should the MES be relocated to within the right of way?

No work outside the right-of-way is proposed. No modification to MES ex 40 or the pond bottom for P4A1 is proposed.

No	Status	Current Holder	Reference	Categories
34	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (8) and	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The proposed bottom of P1A3 does not line up with the existing weir structure ex 53. A review of the cross section at 1791+00 shows a proposed berm on the backside. The sidewalk is on the front slope. Why does there need to be a proposed berm? It is causing the pond bottom to shift out of alignment with the existing weir, and it appears to be at the same elevation as the existing berm. Please revisit.

The proposed berm will be revised to ensure the ditch bottom will line up with the existing weir structure.

No	Status	Current Holder	Reference	Categories
35	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	ACCESS MANAGEMENT

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

In the tables summarizing pond stage areas, located behind the CN calculations in Appendixes H through L, please revise the first column header to Proposed or Revised Pond in lieu of "ICON POND".

The first column header will be revised to say Proposed Revised Pond in lieu of ICON POND.

No	Status	Current Holder	Reference	Categories
36	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Pond P6D2	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

There are two separate P10D2's shown on the plans, drainage map and drainage diagram. One should be labeled P6D2 to correspond with basin B6D2. The modeling routes this basin directly to P9D2. It should route to a node for the storage area associated with basin B6D2 (P6D2) and route via a link modeling ex 134 to ex 132 into P9D2 in order to be able to check the peak stages compared to the permitted/existing condition in P6D2.

The northern most swale will be relabeled P6D2 to correspond with the basin B6D2. A link and node will be incorporated in the model for the cross drain between ex 134 and ex 132. The plans, drainage map and drainage diagram will be revised accordingly.

No	Status	Current Holder	Reference	Categories
37	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

Where does the tailwater elevation of 55.14 for TW2N, TW3N, and TW3S come from? The drainage maps show SHW elevations of 54.62 and 54.91 on the north side and no SHW's noted on the south (D/S) side. One of the ponds in the system, P2A3, is noted as having a tailwater elevation that exceeds the top of bank. Perhaps the tailwater assumption needs to be revisited?

The tailwater curves were obtained from the “Floodplain / Tailwater Stage Determination” table established in the original permit ERP# 4316251.00. The peak of the tailwater curve is what controls the high water levels seen at pond P2A3. Adjusting the SHW or the lowest point on the tailwater curve will have no significant effect on the DHW of P2A3.

No	Status	Current Holder	Reference	Categories
38	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

Where does tailwater elevation of 55.14 for WB1 come from? The drainage maps show a SHW elevation of 58.23 at the outfall, upstream side, for P5B1 and P8B1, more than three feet higher. Please revisit.

The tailwater curves were obtained from the “Floodplain / Tailwater Stage Determination” table established in the original permit ERP# 4316251.00. The SHW elevations shown on the drainage maps will be revised to reference the original permit values.

No	Status	Current Holder	Reference	Categories
39	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

It would be helpful to include a summary table in the drainage documentation of all your tailwater assumptions and the source. Also include an explanation of where the timing and elevations came from for the peak elevations modeled in the time/stage nodes for the tailwater conditions in your write-up. For instance, a DHW of 57.2 is noted on the Drainage Map at the upstream end of ex 51, a NHW of 55.21 is noted for the wetland, but TW2N uses a peak stage of 56.06 and TW3N uses 57.94, yet both go to the same wetland system upstream of ex 51. The numbers should make sense. Where did the DHW elevations for the cross drains come from, and did the analysis consider pop off elevations which would limit the maximum peak stages? What are the 100-year floodplain elevations (can't read your exhibits)? Those would be helpful if shown on the drainage maps.

The source, an explanation of the timing and elevations used for the tailwaters are discussed under “Tailwaters” in Section 3.3 Design Criteria and approach of the Drainage Design Documentation. The tailwater curves were obtained from the “Floodplain / Tailwater Stage Determination” table established in the original permit ERP# 4316251.00.

As noted on the Supplemental Drainage Map no cross drain extensions are proposed for this project and the flood data was obtained from SR 54 SPN 14570 and the original permit ERP# 44016251.011.

The 100-year floodplain exhibits will be plotted at a larger scale to make them more readable.

No	Status	Current Holder	Reference	Categories
40	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The drainage maps show a P4A1 on both sides of a ditch block. It appears from the plans that this is incorrect. To the east of the ditch block should be labeled P1A2.

The labeling on the Drainage Map will be corrected to read P1A2 east of the ditch block.

No	Status	Current Holder	Reference	Categories
41	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	3/31/2015	1	

The DHW noted on the drainage map at ex 50 should be 57.5 per the flood data table.

The drainage map will be revised to match the flood data table.

No	Status	Current Holder	Reference	Categories
42	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Basin B6D2/ Pond	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

The cross sections 1926 and 1927 left show the pond area labeled as P10D2 with a DHW elevation of 64.87, yet this DHW is below the bottom of the pond. This area actually conveys to P9D2.

This swale will be relabeled P6D2 to correspond with the basin B6D2. A link and node will be incorporated in the model for P6D2. The plans, drainage map and drainage diagram will be revised accordingly.

No	Status	Current Holder	Reference	Categories
43	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Summary of Existing	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

Several existing control structures were noted to be missing their upstream pipe flow line elevations on the Summary of Existing Drainage Structures, i.e. ex 118 and ex 121, etc. Also, the DBI type (i.e. C, D, H, etc.) is not noted. Please review and remedy.

The Summary of Existing Drainage Structures presents all available surveyed data for the existing structures throughout the project. In instances were survey data was unavailable, asbuilts were used to determine existing structure conditions. This information was reviewed and determined to be sufficient for design and permitting.

No	Status	Current Holder	Reference	Categories
44	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Basin E ICPR Model	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

Ponds P7E1, P10E1, and P12E1 as modeled are controlled by ex 148. However, ex 148 discharges to an area controlled by ex 150, which has a higher weir elevation. A breach to the north is shown on the drainage map, however no elevation is noted. No SHW elevations are shown for this area on the drainage map. The weir for ex 150, set at 65.95, is higher than the elevation range set for tailwater node WE1. Please revisit.

No changes are proposed to control structure ex 148. The historic drainage patterns remain unaltered from the original permitted condition. The breach to the north occurs at elevation 62.9, which is below the control elevation of the pond system. The breach elevation information will be added to the Drainage Maps.

No	Status	Current Holder	Reference	Categories
45	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	ICPR	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

It appears that many of the existing pipe lengths in the models were derived from what the surveyor drew in the topo, rather than the center to center or MES openings that should be utilized to determine the pipe lengths, i.e. ex 165, 166, 167, etc. Please revisit.

The pipe lengths for existing pipes used in the model were based on surveyed information and is sufficient for the purpose of design and permitting. Minor variances in pipe length resulting from different measurement methods will not significantly affect the design stages in the ponds.

No	Status	Current Holder	Reference	Categories
46	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Basin D ICPR Model	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

Some existing control structure data in the models could not be verified due to missing information on the Summary of Existing Drainage Structures.

In the Basin D model, R3D1 (ex 118) is one. The vertical weir is modeled to have a rise of 6 inches, and an elevation of 62.11. The summary indicates the weir elevation is 62.12 and does not show the weir height.

Also in the Basin D model, R7D2 (ex 130) is modeled with a weir elevation of 9.58, yet 9.50 is noted in the Summary of Existing Drainage Structures for ex 130.

The Summary of Existing Drainage Structures presents all available surveyed data for the existing structures throughout the project. In instances were survey data was unavailable, asbuilts were used to determine existing structure conditions. The source of the input data for all existing control structures that were included in the ICPR modeling is documented in detail on the ICPR model Input sheets included with the drainage documentation.

R3D1: Information on the vertical weir rise of 6" for R3D1 was obtained from the asbuilt plans for S-49 as noted in the ICPR input documentation. The 0.01' elevation difference between the surveyed data and the asbuilt data was determined to be insignificant.

R7D2: The weir R7D2 is modeled with a weir elevation of 63.15 as shown on the survey (ex 130) and the asbuilt (S-53) and noted in the ICPR input documentation. The weir width is recorded as 9.5' on the survey and 9.58' on the asbuilt data. The width of 9.58' from the asbuilt was used in the modeling since it was recorded at a greater accuracy of two decimal places verses the survey at a single decimal place.

No	Status	Current Holder	Reference	Categories
47	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Basin E ICPR Model	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

No warning elevation was provided for Node P19E2.

A warning elevation will be added to Node P19E2.

No	Status	Current Holder	Reference	Categories
48	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	ICPR Models	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

How were the warning elevations established? It was noted that five linear ponds have tailwaters that exceed the top of bank, which would mean that their DHW's would be even higher and go over the top of bank as well, yet two of these ponds, P2A3 and P10B2, do not exceed the warning elevation. Warning elevations should be set at low top of bank elevations wherever unwanted breaching could occur.

Warning stages will be reviewed and updated.

No	Status	Current Holder	Reference	Categories
49	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Special Profiles for SW	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

As most of the sidewalk for this project is located adjacent to the right of way line, it would be more relevant to show the existing ground at the right of way line (left and right accordingly) on the special profiles in lieu of the existing ground at the centerline of construction. Flow arrows showing if flow is coming toward or away from the right of way would also be relevant.

The special profiles for sidewalk are provided for construction support. These are not intended to Back of Sidewalk profiles for drainage purposes. The existing ground profile at the R/W line will be evaluated and we will determine whether these can be added to these special profiles.

No	Status	Current Holder	Reference	Categories
50	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	General	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

The proposed sidewalk elevations, as best can be judged from the cross sections and the drainage maps, appear to be creating new blockages of offsite flow behind the following ponds/locations: P6A1, P3A2, P5A3, P5AA3, P5BA3 (multiple locations other than where S-140B is located), P3B1, P4B1, and P4C2. Please ensure that offsite runoff will be conveyed to outfalls without causing an increase in adverse impacts to adjacent property owners.

Sidewalk elevations will be reviewed to ensure that offsite runoff will be conveyed to outfalls without causing an increase in adverse impacts to adjacent property owners.

No	Status	Current Holder	Reference	Categories
51	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

The following statement near the end of section three of the report is incorrect/misleading and should be revised: "However, the proposed design will not take advantage of the reduced treatment opportunity. Instead, all 22 stormwater management facilities are proposed to provided surplus treatment." In the Treatment Volume Comparison Table, the surplus treatment volume was calculated by subtracting the proposed volume from the required (4-lanes) volume, thereby taking advantage of the reduced treatment opportunity. If you subtract the proposed volume from the original permit volume, only three out of 22 ponds exceeded the original permit volumes. Therefore in fact, the project is reducing the treatment volume capacity provided in the original permit by adding sidewalks.

The statement in the report regarding surplus treatment being provided is in reference to the current SWFWMD treatment requirements, not the original permit. The project will be providing surplus treatment above and beyond the current SWFWMD permitting requirements. The report will be reworded so this is clear to the reader.

No	Status	Current Holder	Reference	Categories
52	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

Please update storm tabs to use current DHW elevations for the starting tailwater, and adjust the lengths for pipes going to S-140A and S-125A. Also update the summary at the end of the report for Basin E. Some of the DHW elevations were slightly different.

The report and storm tabs will be updated to be consistent with the Phase II plans.

No	Status	Current Holder	Reference	Categories
53	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Appendix E	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

The yellow highlighted area in the SR 54 Gutter Profiles tables have some longitudinal slopes equal to and greater than 0.3%. Please delete yellow highlighted cells that are empty. There are some cells that have slopes less than 0.3% that are not highlighted. Please revise the tables accordingly.

Please ensure that the spread calculations match the longitudinal and cross slope data in the SR 54 Gutter Profiles tables. The first inlets checked, S-113 through S-116, do not match. The station ranges for the existing inlets EX-108 through EX-110A note N/A for the cross slope RT in the gutter profile tables, should the tables note 0.02? Please revise accordingly.

The SR 54 Gutter Profiles table will be modified to provide more clarity. We will review and ensure that the slopes shown in the table match those in the spread calcs.

No	Status	Current Holder	Reference	Categories

No	Status	Current Holder	Reference	Categories
54	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Shoulder Gutter Spread	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

The Shoulder Gutter Spread Calculations spreadsheet is a bit confusing. There are slopes in the Shoulder Slope, Left Sx1 column that don't match the plans (Phase 1B, S-509), the composite Slope, Left Sx1 should be different for those with 0.07 cross slope compared to those with 0.02 cross slope, and the statement that Sx2 is constant at 0.111 seems to be incorrect when the right cross slope is not 0.02 for S-509. Please revisit and clarify. An exhibit showing the cross slope composite components would be helpful as this is not a standard use for shoulder gutter.

The spread calculations for the shoulder gutter inlets was set up to keep all the drainage flow within the shoulder gutter. This was due to some inlets having a negative slope right which would send water to other inlets. Keeping the flow only in the shoulder gutter is where the composite slopes of .111 comes from. The shoulder gutter on this project is a 4'6" wide modified shoulder gutter. With the 3" depth this would calculate to a composite slope of .111 for each side. Also with the flow being contained only in the shoulder gutter the shoulder slope left Sx1 does not apply to the calculations but we will review and revise as necessary.

No	Status	Current Holder	Reference	Categories
55	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Special Detail Sheet (1)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/1/2015	1	

When reviewing the shoulder gutter spread calculations, it was noticed that the turn lane cross slope transitions from 2% to flat in a distance of approximately 10 feet just east of S-122. This distance seems too short. Please verify with roadway design experts that the transition distance meets FDOT criteria. This comment is for information only. No written response is required.

We will review the cross slope transition and adjust if needed.

No	Status	Current Holder	Reference	Categories
83	COMMENT AGREED WITH		test	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/2/2015	1	

test, do not reply. No written response required.

John Kilgore	4/3/2015	1	

Comment Agreed & Closed

No	Status	Current Holder	Reference	Categories
134	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (28)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/3/2015	1	

The existing cross drain ex 119 to ex 120 is noted to flow north to south. The same cross drain is noted as S-48 on the As-built plans, which shows a previous cross drain conveyed under the old SR 50 alignment to the right of way line to the south. The drainage structure section for S-48 shows a berm at the right of way, where the corresponding cross section 275+00 does not. Those plans are unclear as to whether or not if the existing cross drain under the old SR 50 alignment was shortened or removed. The Phase II plans show a TOB in the topo across the right of way line, which may have been constructed in error due to the S-48 drainage structure section in the previous plans. How does discharge through the existing cross drain from ex 120 continue south? Can the sidewalk continue straight there across the berm, and a new pipe be proposed under the berm to discharge the water to the south? Or should the existing berm noted as TOB in the plan view be removed between ex 118 and ex 121 to allow the water to continue south?

Although a TOB callout appears on the topo in plan, further review of the project's surveyed elevation data down stream of ex 120 does not indicate a berm exists within the right-of-way. This area is sumped and matches existing grade at the right-of-way. As shown on the plans, the sidewalk was routed around the exising sump to avoid obstructing discharge from ex 120.

No	Status	Current Holder	Reference	Categories
135	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (37)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/3/2015	1	

The sidewalk behind ex 148 may need to shift east. The pond bottom appears to be shifted too far from the existing control structure, most likely due to the slope down from the sidewalk. Please reassess and ensure that the slope does not bury the control structure.

The sidewalk and or slopes will be evaluated and/or adjusted to avoid relocating the existing control structure.

No	Status	Current Holder	Reference	Categories
136	COMMENT SUBMITTED FOR RESPONSE	Michael Mills	Roadway Plan (40)	DRAINAGE

Created By	Created On	Version	Delegate For
Deborah Knighton	4/3/2015	1	

Please review the slope down from the proposed sidewalk in the vicinity of ex 184. This control structure appears it may possibly need to be relocated away from the slope.

The sidewalk and or slopes will be evaluated and/or adjusted to avoid relocating the existing control structure.

JOSE GONZALEZ LEAD REVIEWER 4/3/2015 ACTIVE

No	Status	Current Holder	Reference	Categories
24	COMMENT SUBMITTED FOR RESPONSE	Michelle Schofner	LDAR	LIGHTING/ELECTRICAL

Created By	Created On	Version	Delegate For
JOSE GONZALEZ	3/31/2015	1	

The lighting calculations for the intersection do not appear to show the actual layout with the point to point values, please provide. Also since the calculations for SR 54 are typical section calculations for six lanes, the intersection calculations should also include the turn lanes up to the end of taper where the roadway layout goes back to six lanes.

No	Status	Current Holder	Reference	Categories
103	COMMENT SUBMITTED FOR RESPONSE	Michelle Schofner	LDAR	LIGHTING/ELECTRICAL

Created By	Created On	Version	Delegate For
JOSE GONZALEZ	4/3/2015	1	

The Intersections Visual Output table "STATISTICS" Max/Min & Avg/Min ratio results should meet the lighting criteria requirements established in FDOT PPM Vol. 1, table 7.3.1, please revise.

Please revise west side signal head for movement 8 (SB right turn lane) to 5-section head to have right turn overlap during EB left turn phase (Phase 1). Also, add a note indicating that to omit SB right turn overlap during SB phase when Pedestrian phase P8 is activated. Change SOP diagram to show SB right turn as permissive (dotted line) during pedestrian phase P8.

No	Status	Current Holder	Reference	Categories
100	COMMENT SUBMITTED FOR RESPONSE	Michelle Schofner	T-7	SIGNALIZATION

Created By	Created On	Version	Delegate For
Madhu Madaram	4/3/2015	1	

Show future signal head on north side span (over Oakstead Blvd.)

No	Status	Current Holder	Reference	Categories
101	COMMENT SUBMITTED FOR RESPONSE	Michelle Schofner	Gen.	SIGNALIZATION

Created By	Created On	Version	Delegate For
Madhu Madaram	4/3/2015	1	

Fiber Optic Splicing details sheets are missing.

No	Status	Current Holder	Reference	Categories
102	COMMENT SUBMITTED FOR RESPONSE	Michelle Schofner	Gen.	SIGNALIZATION

Created By	Created On	Version	Delegate For
Madhu Madaram	4/3/2015	1	

Ethernet Switch item is missing at each controller cabinet for signal communication system.

Susan Moore LEAD REVIEWER 4/3/2015 ACTIVE

No	Status	Current Holder	Reference	Categories
1	COMMENT SUBMITTED FOR RESPONSE	Michael Mills		MAINTENANCE

Created By	Created On	Version	Delegate For
Susan Moore	3/17/2015	1	

The drainage design report indicates that eight of the 22 existing control structures will require replacement with new structures. Detail of Control Structures sheets 164 and 165 are the existing to be modified ?
Sheet 163 indicates a 6" offset between the center of any proposed orifice pipe and the weir opening. Is this applicable to those existing structures to be modified on sheet 164 ? It appears there may be a conflict at some locations.

The table on old sheet 163 is replaced with individual detail sheets for each of the 9 new control structures, one control structure detail per sheet. Since each of the new control structures are fully detailed individually, the general requirement to provide a 6” offset between the center of the orifice and the weir opening has been removed from the plans. All the existing control structures to be modified will be reviewed to ensure that no conflict exists between the orifice and the weir.

Thomas Quinn LEAD REVIEWER 4/3/2015 ACTIVE

No	Status	Current Holder	Reference	Categories
119	COMMENT SUBMITTED FOR RESPONSE	WILLIAM COGAN	14	ROADWAY

Created By	Created On	Version	Delegate For
Thomas Quinn	4/3/2015	1	

Typical Section (3) - Please add "Meadowbook Drive" under Typical Section 3 heading. Show correct limits for Standard Clearing & Grubbing; they should not include milling & resurfacing areas.

Submittal Report

Financial Project:	256339-2-52-01	Submital Type:	PLANS
Submittal Phase:	OTHER	Submital Staff Type:	CONSULTANT
Recieved Date:	12/15/2014	Response Due Date:	1/14/2015
Grace Period:	0	District:	SEVENTH
Status:	OPEN	Create Date:	12/15/2014
Create User Id:	PM704MA	Last Update:	12/23/2014
		Last Update User Id:	PM704CB

Description:

256339-2 Phase IB 90% Plans - SR 54 From E. of Suncoast Parkway to W. of US 41(SR 45) - Low Bid Design-Build

Threads:

No	Status	Current Holder	Reference	Categories
12	RESPONSE ACCEPTED		Drainage Map (1)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The line for the floodplain limits is missing near the right of way line at Station 1745 RT, and the arrow for the callout has overshot the floodplain line drawn where it heads offsite.

Created By	Created On	Version	Delegate For
Michael Mills	1/12/2015	1	

The floodplain limits and the label line will be corrected.

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
13	COMMENT AGREED WITH		Drainage Maps	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please show the basin divides for the contributing areas to all proposed inlets on the Drainage Maps.

Created By	Created On	Version	Delegate For
Michael Mills	1/12/2015	1	

Drainage Maps will be reviewed and basin divides provided wherever missing.

No	Status	Current Holder	Reference	Categories
14	RESPONSE ACCEPTED		Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For

Alphonse Stewart	12/27/2014	1

There are three basins in the vicinity of Meadowbrook Drive that don't have flow arrows shown. Please add.

Michael Mills	1/12/2015	1

Flow arrows will be added to the three basins indicated by the reviewer.

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
15	RESPONSE ACCEPTED		Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The Drainage Maps show a divide through the middle of P4A1, is this correct?

Michael Mills	1/12/2015	1

The P4A1 label to the right of the divide should be removed. There is a ditch block that can be seen on the aerial which separates P4A1 from P1A2 to the east. The divide should be located over the top of the ditch block.

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
16	RESPONSE ACCEPTED		Drainage Maps	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Several ponds shown on the Drainage Maps do not have their DHW elevations noted, i.e. P3A1 and P4A1, therefore it was difficult to compare starting tailwater elevations to the

Michael Mills	1/12/2015	1

The drainage maps provided for review were specific to the work proposed in the median and not for the ponds to the outside. This information will be provided when the Phase 2 plans are submitted.

Alphonse Stewart	1/14/2015	1

It is understood that the plans were specific for work proposed in the median. However, since several of the median drainage systems outfall into the ponds to the outside, the comment was that the assumption of tailwater elevations for the some of the median storm drain systems could not be readily verified. If pond stages provided at a later date indicate problems with the median drainage systems (i.e. higher hydraulic gradient elevations than what are shown in the current calculations) it could result in requests to modify all or parts of the newly constructed drainage system. As long as the Design-Build Team understands this point, this comment is accepted.

No	Status	Current Holder	Reference	Categories
17	RESPONSE ACCEPTED		Drainage Map (2)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The structure callouts in the Drainage Map profile for EX 188, EX 189, and EX 190 are not consistent with the numbers shown on the plan view between Stations 1765 and 1768.

Michael Mills	1/12/2015	1

Profile structures numbers will be corrected to match the plan view.

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
18	RESPONSE ACCEPTED		Drainage Maps (2) and	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

There are callouts for S-130 and S-405 shown in the plan view of the Drainage Map that appear to be obsolete.

Michael Mills	1/12/2015	1

Actually, these will be structure numbers for the Phase 2 plan set. Sorry for the confusion. They will be removed from the Phase 1B plan set.

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
19	RESPONSE ACCEPTED		Drainage Map (3)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Instead of showing "???" as the area for S-201, consider "N/A".

Michael Mills	1/12/2015	1

We will either use "N/A" or "0.00 acres". ***N/A was used***

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
20	RESPONSE ACCEPTED		Drainage Map (4)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

S-212 shows 0.70 acres contributing area, however it is a manhole. Should it show "N/A"?

Michael Mills	1/12/2015	1

S-212 should be deleted on this sheet (Drainage Map 4) and relocated to Drainage Map 5. The correct acreage should be "0.00 acres".

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
21	RESPONSE ACCEPTED		Drainage Map (5)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The structure call outs in the Drainage Map profile for EX 224, EX 225, and EX 226 are not consistent with the numbers shown on the plan view.

Michael Mills	1/13/2015	1

Profile callouts will be corrected.

Alphonse Stewart	1/14/2015	1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
22	RESPONSE ACCEPTED		Drainage Map (7)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The FL elevation for S-404 on the Drainage Map profile appears to be incorrect. FL 62.4 is shown on the roadway profile and the drainage structure section.

Michael Mills	1/12/2015	1	
The flow line callout will be checked and corrected and made to be consistent throughout the plan set.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
23	RESPONSE ACCEPTED		Drainage Map (7)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
Please show the line for the Special Gutter Grade (LT) on the Drainage Map profile between S-407 and S-408.			
Michael Mills	1/12/2015	1	
Special gutter grade, lt, will be added the to profile.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
24	RESPONSE ACCEPTED		Drainage Map (8)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
Please label the Special Ditch (Med.) on the Drainage Map profile in the vicinity of Station 1950+00.			
Michael Mills	1/12/2015	1	
Special median ditch will be added to profile.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
25	RESPONSE ACCEPTED		Drainage Maps	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
Laterals need not be shown per the PPM on the Drainage Map profiles, however there are some that are shown and labeled, and some that are not labeled. Please be consistent.			
Michael Mills	1/12/2015	1	
Lateral profiles will be removed.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
26	RESPONSE ACCEPTED		Supplemental Drainage	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
Please note the drainage areas on the Supplemental Drainage Map, and add flow arrows and spot elevations at popover locations.			
Michael Mills	1/12/2015	1	
Drainage areas, more flow arrows and spot elevations will be added.			
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
27	RESPONSE ACCEPTED		N/A	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

An Optional Pipe Materials sheet was not included in the plans. Please include.

Michael Mills	1/14/2015	1	

Contractor is using RCP. Therefore, this sheet was not included.

Alphonse Stewart	1/15/2015	1	

Acceptance of the response is given only to keep the process moving and does not indicate approval. Approval of deviations from the RFP will be required from the Department.

Michael Mills	1/26/2015	1	

Optional Materials Sheet will be provide with the plans.

Alphonse Stewart	1/28/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
28	RESPONSE ACCEPTED		Drainage Structures (7)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The pipe from S-131 to S-133 appears on the drainage structure sections that it could conflict with the median inlet to be capped, S-132A. Please show the ellipse for the pipe from S-131 to S-133 on the section for S-132A, and evaluate the pipe and structure thicknesses to ensure there will not be a conflict. S-132A appears to be drawn with an incorrect width. The top may need to be cut off and capped at a lower elevation.

Michael Mills	1/12/2015	1	

The potential for conflict will be investigated and depicted in the drainage structure for S-132A. The detail will also be checked and corrected if necessary. ***It appears there will be no conflict.***

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
29	RESPONSE ACCEPTED		Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

On the plan views, the median inlets appear to be drawn as traversable slotted inlets. Should they be called out as traversable slots on the drainage structure section notes?

Michael Mills	1/12/2015	1	

The drainage structure section callouts indicate either "double slot" or "single slot". ***"Traversable slots" were added to the callouts.***

Alphonse Stewart	1/15/2015	1	

Acceptance of the response is given only to keep the process moving and does not indicate approval. Approval of deviations from the RFP will be required from the Department.

Drainage Structure notes for ditch bottom inlets, when slots are present, typically identify those which are traversable as part of the note and those which are not traversable call out the proposed slope depth or elevation.

No	Status	Current Holder	Reference	Categories
30	RESPONSE ACCEPTED		Roadway Plan (31)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The special ditch (med) note at Station 1915+08.41 should indicate "end" not "begin".

Michael Mills	1/12/2015	1	

This callout on the roadway plan sheet 31 will be changed, as noted.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
31	RESPONSE ACCEPTED		Roadway Profile (3)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The special ditch (med.) profile calculates to a 0.2% slope between 1759+50 and 1760+00, not 0.18% as noted.

John Kilgore	1/8/2015	1	

We will adjust the profile grade to be consistent.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
32	RESPONSE ACCEPTED		Roadway Profile (4)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

EX-188, EX-189, and EX-190 are labeled as EX-108, EX-109, and EX-110A elsewhere in the plans. Please remedy the inconsistency.

John Kilgore	1/8/2015	1	

We will review and edit to make sure the callouts are consistent throughout the plans. ***EX 108, 109 and 110A are correct.***

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
33	RESPONSE ACCEPTED		Roadway Profile sheets	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please show all relevant SHW elevations along the roadway profile and all DHW elevations at the cross drains on the Roadway Profile sheets.

Michael Mills	1/12/2015	1	

SHW & DHW elevations will be shown on the profile sheets.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
34	RESPONSE ACCEPTED		Roadway Profile (13)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

At 1817+60, the DPI note should indicate +60, not +57.31.

John Kilgore 1/8/2015 1

The DPI station will be adjusted accordingly.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
35	RESPONSE ACCEPTED		Roadway Profile (17)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

From Station 1838 to 1839 the special ditch profile calculates to be 0.30%, not 0.40%.

John Kilgore 1/8/2015 1

The profile grade will be corrected.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
36	RESPONSE ACCEPTED		Roadway Profile (17)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

From Station 1839+07.41 to 1840, the special ditch profile calculates to be 0.11%, not 0.10%.

John Kilgore 1/8/2015 1

The profile grade will be corrected.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
37	RESPONSE ACCEPTED		Roadway Profile (32)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

From Station 1925 to 1925+90 the special gutter grade calculates to 0.400%, not 0.391%.

John Kilgore 1/8/2015 1

The profile grade will be corrected.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
38	RESPONSE ACCEPTED		Roadway Profile (33)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The "Const. 18" Pipe" note is missing for the pipe from S-409 to S-408.

John Kilgore 1/8/2015 1

This will be added.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
39	RESPONSE ACCEPTED		Roadway Profile (42)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

From Station 1977 to 1977+09.46 the special ditch profile calculates to be 4.23%, not 1.06%.

John Kilgore	1/8/2015	1	

The profile grade will be corrected.

Alphonse Stewart	1/14/2015	1	

The response is accepted but it is also noted that the special ditch discharges into proposed inlet S-522 and the existing 18-inch pipe which are not shown in either the Drainage

No	Status	Current Holder	Reference	Categories
40	RESPONSE ACCEPTED		Special Detail Sheet(s)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please show the structure numbers for the proposed inlets on the Special Detail Sheets.

John Kilgore	1/8/2015	1	

The drainage structure numbers will be added to the Special Detail Sheets.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
41	RESPONSE ACCEPTED		Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The slot bottoms do not appear to be drawn on any of the drainage structure sections for inlets with slots.

Michael Mills	1/13/2015	1	

The slots are not included in the standard FDOT cell for DBI's with traversable slots. Therefore, it will not be drawn. ***"Traversable Slots" have been added to the callouts.***

Alphonse Stewart	1/14/2015	1	

Usually the individual notes for the applicable ditch bottom inlets indicate whether the inlets have traversable slots or not. This has not been done with this set of plans May consider adding a note on the first Drainage Structure Sheet saying something to the effect of "Unless otherwise noted, slotted ditch bottom inlets shall have traversable slots."

No	Status	Current Holder	Reference	Categories
42	RESPONSE ACCEPTED		Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Is it necessary to call out Index 200 for the partial DBI's shown in the drainage structure sections?

John Kilgore	1/14/2015	1	

Index 200 provides additional details to the contractor that may prove useful.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories

No	Status	Current Holder	Reference	Categories
43	RESPONSE ACCEPTED		Drainage Structures (6)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

For S-127, is adjusting the inlet top feasible/constructible? Should a "Partial" be specified instead? Also, are measurements available to specify which inlet type the existing inlet is?

Created By	Created On	Version	Delegate For
Michael Mills	1/12/2015	1	

Details such as this have been coordinated with the contractor. Conventionally, it should probably be called a partial structure, so the callout will be changed. The original plans will be reviewed to determine the type of existing inlet. ***The existing structure is a Type C DBI.***

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
44	RESPONSE ACCEPTED		Drainage Structures (12)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

For S-212, the not "Exist Inlet to be Plugged" should say "Exist MH to be Plugged" and the inlet and pipe from the inlet to the manhole are called out to be removed.

Created By	Created On	Version	Delegate For
John Kilgore	1/8/2015	1	

We will revise the note to indicate Existing MH to be Plugged.

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
45	RESPONSE ACCEPTED		Drainage Structures (12)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

For the partial manhole S-212, should a Manhole top type (i.e. 7 or 8) be specified?

Created By	Created On	Version	Delegate For
John Kilgore	1/8/2015	1	

The manhole top type will be provided. ***Type 8 is specified.***

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
46	RESPONSE ACCEPTED		Drainage Structures (16)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

In the drainage structure section for EX-218, consider showing the existing pipe and inlet to be removed and the proposed plug.

Created By	Created On	Version	Delegate For
John Kilgore	1/8/2015	1	

The existing pipe and inlet to be removed and the proposed plugged inlet will be shown.

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
47	RESPONSE ACCEPTED		Drainage Structures (22)	DRAINAGE

Created By	Created On	Version	Delegate For

Alphonse Stewart	12/27/2014	1	
The EOP elevation is noted in the structure notes for S-319, but it is not shown above the pavement section.			
John Kilgore	1/8/2015	1	
This will be corrected.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
48	RESPONSE ACCEPTED		Drainage Structures (25)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
Instead of capping the inlet S-403, please consider a manhole top, or replacing the existing inlet with a manhole, as there is a 90 degree turn in the pipes at this location.			
Michael Mills	1/13/2015	1	
A manhole will be considered. ***Manhole was added.***			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
49	RESPONSE ACCEPTED		Drainage Structures (26)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
To the left of S-408 on the drainage structure section, the proposed 18" pipe needs a "Const. 18" Pipe" note.			
John Kilgore	1/8/2015	1	
This will be provided.			
Alphonse Stewart	1/14/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
50	RESPONSE ACCEPTED		Drainage Design	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	
On Page 1-4, Section 1.7.A. in the Drainage Design Documentation, please be specific as to which area of the median opening the ponding occurred, and what was done to fix it.			
Michael Mills	1/13/2015	1	
A photograph was provided showing the location of the ponding at Oakstead Blvd. Further written description can be provided along with a Station (1902+00 - 1903+00). Widening is to occur to the median. Grading details for this intersection was included in the plan set (see sheet 112).			
Alphonse Stewart	1/15/2015	1	
Response Accepted & Comment Closed			

No	Status	Current Holder	Reference	Categories
51	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please revisit the area(s) contributing to S-402. On the Drainage Map, 1.20 acres is indicated. In the Ditch Bottom Calcs, 0.38 + 0.66 is indicated, which sums up to 1.04. Please remedy the inconsistency.

Michael Mills 1/13/2015 1

The drainage area for both the calcs and the drainage map will be checked and corrected accordingly. ***Ditch calcs were revised to match the drainage map.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
52	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please revisit the area(s) contributing to S-505. On the Drainage Map, 0.68 acres is indicated. In the Ditch Bottom Calcs, 0.39 + 0.28 is indicated, which sums up to 0.67. Please remedy the inconsistency.

Michael Mills 1/13/2015 1

This inconsistency will be corrected, as appropriate. ***Ditch calcs were revised to match the drainage map.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
53	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

In the Ditch Bottom Calcs, there appears to be a copy/paste error for the station for S-401. The Drainage Structures sheet indicates it is at Station 1903+96.91.

Michael Mills 1/13/2015 1

The station callout in the calculations will be corrected. ***The drainage structure sheet station is correct.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
54	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

In the Ditch Bottom Calcs, there appears to be a copy/paste error for the station for S-502 UP. The Drainage Structures sheet indicates it is at Station 1935+13.35.

Michael Mills 1/13/2015 1

The station callout will be corrected. ***The drainage structure sheet station is correct.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
56	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Minor comments, the offsets for the existing inlets in the storm tabs for EX-108, EX-109, and EX-110A do not match the plans, and the downstream structure noted for EX-35 should be P3A1, not P1A1.

Michael Mills 1/13/2015 1

Offsets and downstream structures will be checked and revised, as appropriate. ***Offsets adjusted to match drainage structure details. Existing structure number will be referenced.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
57	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please provide contributing area basin maps (or show on the Drainage Maps) to show the basin divides and contributing areas for all existing and proposed inlets documented in the storm tabs.

Michael Mills 1/13/2015 1

This will be provided on the Drainage Maps.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
58	RESPONSE ACCEPTED		Drainage Structures (4)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The drainage structure sections for S-120 and S-121 are indicating theoretical gutter elevations for the Type 8 inlets, where S-122 and S-123 are indicating EOP elevations for the Type 8 inlets. Please be consistent, and remedy the EOP vs gutter elevations shown in the storm tabs.

Michael Mills 1/13/2015 1

Theoretical gutter grades will be provided for all Type 8 structures per Index 213. Regarding the storm tabs, use of EOP or theoretical gutter grades should be acceptable for the "inlet elevation" column on the storm tabs. In all cases, there is more than sufficient freeboard (2'+) at each inlet. ***All Type 8 inlets have been removed from the plans.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
59	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The pipe length for S-125 to P4A1 at 118.15 is longer than what measures on the plan sheet. Please revisit this pipe length for the storm tabs.

Michael Mills 1/13/2015 1

The pipe length will be checked and revised, if appropriate. ***The pipe length was reduced.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
60	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The storm tabs for S-140 indicate a contributing area of 1.64, however 1.62 is shown on the Drainage Map and Ditch Bottom calcs.

Michael Mills	1/13/2015	1	

This discrepancy will be checked and corrected. ***Storm tabs were corrected to match drainage map.***

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
61	RESPONSE ACCEPTED		Summary of Existing	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

There are several structures indicated with unknown invert elevations in the Summary of Existing Drainage Structures, yet for example, existing MES 96 is noted to have an invert elevation of 58.50 in the storm tabs. If inverts are known, please revise the Summary accordingly.

Michael Mills	1/13/2015	1	

The existing structures without known invert elevations will be checked to see if surveyed information is required for the design. If so, additional survey information will be obtained. Otherwise, they will be left as is or omitted. ***Unknown information was surveyed and was added to the Summary of Existing Drainage Structures.***

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
62	RESPONSE ACCEPTED		Drainage Map (6) and	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The storm tabs indicate that S-315 conveys to P3C2, however the starting tailwater elevation at 62.48 is slightly higher than the DHW25 for P3C2 noted on the Drainage Map. Should it be identified as another pond, as there is a side drain pipe between the two areas labeled as P3C2?

Michael Mills	1/13/2015	1	

The tailwater specified on the storm tab sheet is 62.34 which is the DHW. However, the crown of pipe is 62.48. So the storm tab assumed the tailwater at the crown of pipe.

Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
63	RESPONSE ACCEPTED		Drainage Map (7) and	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The DHW25 is not noted on the Drainage Map for P9D2, therefore could not compare the starting tailwater in the storm tab for the outfall from S-408.

Michael Mills	1/13/2015	1	

All DHW water information was obtained from the permit documents provided with the RFP and from the SWFWMD permit archives. These items can be provided with the 100% submittal.

Alphonse Stewart	1/14/2015	1	

Please refer to Page 35 of 48 of the RFP which states, "All calculations shall require District Drainage Engineer approval to ensure the drainage design meets all Department criteria. The drainage documentation shall not reference any previously prepared design documentation or existing permit information as substituting support for the Project design. All pertinent information from any previously prepared information by others shall be incorporated into the corresponding sections of the Project design documentation. An attachment of entire previously prepared documents will not be accepted." Note that this response is rejected to remind the Design Engineer of the Designer's responsibility as per the RFP.

Michael Mills 1/26/2015 1

The Phase 1B plans do not include any work within the adjacent linear ponds. As a result, the assumption had been made that those calculations permitted by SWFWMD for the FDOT would be used as the best available information until the sidewalks were finalized and the designs of the linear ponds were reassessed. The reassessment of the linear ponds will occur as part of the Phase 2 plans. As well, updates to the storm sewer tailwaters will be done with the Phase 2 plans, as appropriate.

Disregarding the previous design/permitting reference information as suggested by the RFP could in essence require the entire project to be redesigned and repermitted in accordance with current standards (impaired waters, new floodplain) and would inevitably require right-of-way. Our intention has always been to preserve the integrity of the existing permit so as not to create an entirely new design. This was discussed at our drainage design kickoff meeting and SWFWMD pre-application meeting. Right-of-way is not desirable and everyone was agreeable to the permitting approach which does make use of information and calculations which had been previously approved/permitted. ICON is aware of the responsibilities as engineer of record and will perform ethically and in accordance with FBPE codes of conduct, while recognizing who our ultimate client and owner is. We will work with the District Design Engineer to make certain he is made aware of all issues that may arise as a result of our assessment of the existing drainage infrastructure and will work together to develop solutions, if necessary.

Alphonse Stewart 1/28/2015 1

The response is accepted but the just to clarify, the language in the RFP does not suggest disregarding the previous design/permitting reference information. The language is intended to ensure that if the Design-Build firm uses the previous design/permitting reference information in part or in whole as basis for the design, that due diligence is performed in verifying that the results, assumptions, conclusions, conditions, and data used in the original design are applicable to the current project. The extent of that verification is up to the EOR, however, as stated in the RFP, simply copying and including that previously prepared documentation by itself (with no indication of verification) could be problematic. As the Design-Build firm has indicated it is aware of its responsibilities as engineer of record, the response is accepted.

No	Status	Current Holder	Reference	Categories
64	RESPONSE ACCEPTED		Drainage Map (8) and DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The Drainage Map indicates the area for S-505 is 0.68, the storm tab 0.65. For S-506, the Drainage Map indicates 0.50, the storm tab 0.30. Please resolve inconsistencies, including those areas also shown in the spread calculations.

Michael Mills 1/13/2015 1

These discrepancies will be checked and corrected, as appropriate. ***S505 - storm tabs revised to match drainage map. S506 - drainage map revised to match storm tab.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
65	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The storm tab indicates the pipe length from S-505 to the pond is 93.32 feet, which seems to be the length from the MES to the concrete collar. Please use the length of pipe from MES to the inlet in the storm tab.

Michael Mills 1/13/2015 1

The pipe length will be checked and revised, as appropriate. ***The pipe length was increased.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
66	RESPONSE ACCEPTED		Drainage Structures (30)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Please revisit the theoretical gutter/edge of pavement elevation for S-510 on the Drainage Structures sheet. In the notes 71.25 is indicated, whereas above the section 71.10 is indicated.

Created By	Created On	Version	Delegate For
Michael Mills	1/13/2015	1	

The section provides an edge of pavement grade which is different from the theoretical gutter grade. The difference will be checked to make sure they are correct. ***All Type 8 structures have been eliminated.***

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
67	RESPONSE ACCEPTED		Drainage Structures	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

For several P-8 inlets, the Theoretical Gutter Elevation is noted above the section. Per the PPM Volume 2 Chapter 14, edge of pavement elevations are to be shown at each curb and gutter inlet in the sections. The profile grade line elevation is also to be shown above the PGL point on the section, if different than the edge of pavement elevation at the inlet.

Created By	Created On	Version	Delegate For
John Kilgore	1/8/2015	1	

The drainage structures will be updated to show the edge of pavement elevations and the profile grade elevations. ***All Type 8 structures have been eliminated.***

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
68	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The drainage area for S-518 is 1.06 on the ditch bottom calcs and drainage map, however 1.14 is shown on the storm tab. Please remedy inconsistency.

Created By	Created On	Version	Delegate For
Michael Mills	1/13/2015	1	

This discrepancy will be checked and corrected, as appropriate. ***The storm tab was revised to 1.06.***

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/14/2015	1	

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
69	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Are there ICPR models of the systems that connect from one pond to the other via cross drains? For example, the storm tab at S-518 ignores the upstream pipe from P13E2 on the north side. If this system was modeled, the more accurate way to set up the storm tab would be for it to end at S-518, and the starting tailwater would be from the ICPR model at S-518. Or if the upstream pond DHW25 is known, iterated what the HGL would be at S-518. There are similar situations other than this one. Please check that the storm tabs are not under/overestimating the HGL elevation at the structures midway on the cross drains where the flow from one side of the cross drain is being ignored in the storm tabs.

Created By	Created On	Version	Delegate For
Michael Mills	1/13/2015	1	

Yes, there are ICPR models that were permitted that connect the individual ponds. As suggested, the storm tabs will be revised by making the storm sewer tabulation end at the last structure rather than the interconnection of the ponds.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
70	RESPONSE ACCEPTED		Drainage Structures (3)	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

The drainage structure sections for S-120 and S-121, to the right of the inlets is drawn flat, however the special detail sheets and he spread calculations indicate these areas should slope towards the inlets at a 2% slope.

John Kilgore 1/8/2015 1

The drainage structure sections will be corrected accordingly to show the slope towards the inlets. ***S120 was a Type 8 structure. This area has been regraded and all Type 8's have been eliminated.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
71	RESPONSE ACCEPTED		DDD	DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	12/27/2014	1	

Need confirmation from FDOT that spread into the left turn lanes will be allowed for this project.

Michael Mills 1/13/2015 1

Upon concluding the response to review comments, we will assess what revisions are to be made, make the appropriate corrections and then follow up with the Department to conclude what spread will be allowed for the left turn lanes. ***The Department has agreed to allow the use of the design speed of 55 mph for the spread on left turn lanes.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
102	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/5/2015	1	

Please add Summary of Drainage Structure Sheets to the plans. These sheets are required as per the RFP.

John Kilgore 1/12/2015 1

These sheets will be added to the plans.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
103	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/5/2015	1	

Please identify the proposed pipe culvert material to be installed for the project in Phase 1B and provide the Culvert Service Life Estimator Analysis to support the use of the proposed pipe culvert material. Note that the RFP requires the CSLE analysis and also requires the Optional Culvert Materials Sheet in the plans.

Michael Mills 1/13/2015 1

The contractor proposes to use RCP. Therefore no culvert service life estimations were performed.

Alphonse Stewart 1/15/2015 1

Acceptance of the response is given only to keep the process moving and does not indicate approval. Approval of deviations from the RFP will be required from the Department.

The RFP requires that the CSLE be used. Approval of the Department will be required to not include with the calculations.

Michael Mills 1/26/2015 1

Culvert service life calculations will be performed and the Optional Materials sheet will be included in the plan set.

Alphonse Stewart 1/28/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
104	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/5/2015	1	

The RFP requires inclusion of minor losses in the hydraulic gradient calculations for all storm drain systems.

Michael Mills 1/13/2015 1

Our storm sewer designs were done conservatively by using the pond DHW's (not 3-year tailwaters) and by maintaining a minimum one foot of freeboard for all drainage structures. If minor loses are "required", then we can revise our calculations accordingly. However, please note that all storm sewer systems are less than 10 structures and many pipes are not flowing at capacity. Therefore, including minor losses will not produce a higher hydraulic gradient. In fact, we anticipate that all of the hydraulic gradients calculated will decrease as a result of this requirement.

Alphonse Stewart 1/15/2015 1

Acceptance of the response is given only to keep the process moving and does not indicate approval. Approval of deviations from the RFP will be required from the Department.

Michael Mills 1/26/2015 1

Storm tabulations will be revised to include minor losses.

Alphonse Stewart 1/28/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
105	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/5/2015	1	

Storm Tabs show a Design Frequency of 10 years for some of the storm drain systems and 3 years for other systems. Please clarify.

Michael Mills 1/13/2015 1

Frequencies will be revised to 3 year. ***To be consistent with the ditch design criteria, the 10-year analysis was done for storm sewer systems which incorporate ditch drainage. Both 3-year and 10-year storm tabulations will be provided.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
106	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/5/2015	1	

Section 1.7.C. on Page 1-5 of the Drainage Design Documentation says of the field review after the November 25, 2014 storm event, "Many of the ponds were discharging over their attenuation weirs. Stain lines on some of the skimmers and control structures indicated that the water levels may have receded anywhere between 4" and 8" since the peak of the rain event." Section 1.7.D mentions that "stages within the receiving waters appeared to control the stages within the linear ponds." Please include in the documentation discussion of a comparison between the estimated observed peak stages and predicted design high water elevations of the linear ponds and also a comparison of how observed stages within the receiving waters compares to tailwater conditions used in the design calculations. Also, the Drainage Design Documentation references a 6-inch rainfall for the New Port Richey Area on November 25, 2014. Were there any recorded rainfall depths that occurred closer to the project area?

Michael Mills 1/13/2015 1

The purpose of describing the time in which it took for water levels to receed was to demonstrate that in some areas, tailwaters were not holding pond stages up and in some cases they were. This narrative will be expanded accordingly and will also include comparison of the observed peaks versus the predicted design stages within the ponds. Rainfall records will be retrieved for the 100% submittal to provide some validity to the narrative.

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
107	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/6/2015	1	

Sheet 110: The special edge of pavement grade on the south side of the proposed traffic separator between Stations 1771+20.00 and 1772+10.00 is 0.2% which is less than the required 0.3%. Has a Design Variation been obtained? What is the proposed grade along the north side of the proposed separator?

John Kilgore 1/14/2015 1

The use of the proposed traffic separator vs other options will be discussed at the design meeting on January 15, 2015 at 10 am at the District office. We request that FDOT design representatives be available to discuss the grades and spread so that a resolution can be obtained. ***The traffic separator has been replaced with a shoulder gutter and shoulder gutter inlets. Regrading of the intersections were performed to the maximum extent feasible and gutter profiles were added wherever necessary to provide proper drainage and to meet spread for a 55 mph design speed within the left turn lane. No spread encroachment is proposed within the thru lanes in accordance with their 60 mph design speed.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

No	Status	Current Holder	Reference	Categories
108	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/6/2015	1	

The spread calculations for S-120, S-122, and S-123 show the allowable spread as 8.00 feet and respective design spread widths of 6.69' 6.97' and 7.79' at the three inlets. The width of pavement between the traffic separator and the adjacent through lane appears to be approximately 6' which means the allowable spread width is less than 8' and also indicates potential encroachment into the thru lane which violates spread standards. Please clarify.

Michael Mills 1/13/2015 1

The left turn lane is offset and so is the separator from the thru lane. The separator is actually located 8' from the edge of travel lane which is equal to the allowable spread. To conclude, there is no spread within the travel lane. ***The traffic separator has been replaced with a shoulder gutter and shoulder gutter inlets. Regrading of the intersections were performed to the maximum extent feasible and gutter profiles were added wherever necessary to provide proper drainage and to meet spread for a 55 mph design speed within the left turn lane. No spread encroachment is proposed within the thru lanes in accordance with their 60 mph design speed.***

Alphonse Stewart 1/15/2015 1

Acceptance of the response is given only to keep the process moving and does not indicate approval. The proposed traffic separators and associated issues including drainage are to be discussed further with the Department.

No	Status	Current Holder	Reference	Categories
109	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/6/2015	1	

Sheet 105: The Special Gutter Grade Traffic Separator (LT) slopes away (at -0.222%) from S-508, which is a Sag inlet. Also is a Design Variation required because the proposed profile grade is less than 0.3%? Please clarify.

John Kilgore	1/12/2015	1

The special gutter grade shown is for the traffic separator. The sag inlet (S-508) is not on the traffic separator (on the inside of the turn lane). ***The traffic separator has been replaced with a shoulder gutter and shoulder gutter inlets. Regrading of the intersections were performed to the maximum extent feasible and gutter profiles were added wherever necessary to provide proper drainage and to meet spread for a 55 mph design speed within the left turn lane. No spread encroachment is proposed within the thru lanes in accordance with their 60 mph design speed.***

Alphonse Stewart	1/15/2015	1

Acceptance of the response is given only to keep the process moving and does not indicate approval. The proposed traffic separators and associated issues including drainage are to be discussed further with the Department.

No	Status	Current Holder	Reference	Categories
110	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/6/2015	1	

Sheets 63, 105, and 253: No elevations or profile grades are called out for the proposed traffic separator RT of the base line of survey. The cross sections do not call out the edge of pavement elevations either. There was no special grading sheet for this intersection either. There does not appear to be enough information in the plans to verify that the area will drain properly.

John Kilgore	1/12/2015	1

Sheet 114 provides the grading required for this separator. Proposed grades will be added to the cross sections for the proposed separator. ***The traffic separator has been replaced with a shoulder gutter and shoulder gutter inlets. Regrading of the intersections were performed to the maximum extent feasible and gutter profiles were added wherever necessary to provide proper drainage and to meet spread for a 55 mph design speed within the left turn lane. No spread encroachment is proposed within the thru lanes in accordance with their 60 mph design speed.***

Alphonse Stewart	1/15/2015	1

Acceptance of the response is given only to keep the process moving and does not indicate approval. The proposed traffic separators and associated issues including drainage are to be discussed further with the Department.

No	Status	Current Holder	Reference	Categories
111	RESPONSE ACCEPTED			DRAINAGE

Created By	Created On	Version	Delegate For
Alphonse Stewart	1/6/2015	1	

It is our understanding that the Design-Build firm was to submit additional information to the Department for all the locations where the spread criteria proposed for the turn lanes is different from the requirements of the spread criteria in the Drainage Manual. This information was to assist the Department with evaluation of the Design-Build firm's request. Please advise as to when this information will be submitted to the Department.

Michael Mills	1/13/2015	1

We decided to wait to address all the review comments and make the revisions before we make any conclusions regarding the final design. Follow up with the Department will be done once we've made the conclusion that no further changes to the roadway/grading design is planned. ***The traffic separator has been replaced with a shoulder gutter and shoulder gutter inlets. Regrading of the intersections were performed to the maximum extent feasible and gutter profiles were added wherever necessary to provide proper drainage and to meet spread for a 55 mph design speed within the left turn lane. No spread encroachment is proposed within the thru lanes in accordance with their 60 mph design speed.***

Alphonse Stewart 1/14/2015 1

Response Accepted & Comment Closed

Basin A – Pond Calculations

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
NE	TRAVEL LANE	N/A	98	0.4	39.20
	OTHER IMPERVIOUS	N/A	98	0.41	40.18
	PERVIOUS	C	74	0.42	31.08
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			1.23	110.46

WEIGHTED CN	89.8

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
SE	TRAVEL LANE	N/A	98	0.29	28.42
	OTHER IMPERVIOUS	N/A	98	0.32	31.36
	PERVIOUS	C	74	0.44	32.56
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			1.05	92.34

WEIGHTED CN	87.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
DDA1	TRAVEL LANE	N/A	98	0.19	18.62
	OTHER IMPERVIOUS	N/A	98	0.63	61.74
	PERVIOUS	C	74	0.56	41.44
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			1.38	121.80

WEIGHTED CN	88.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1A1	TRAVEL LANE	N/A	98	0.814	79.77
	OTHER IMPERVIOUS	N/A	98	0.326	31.95
	PERVIOUS	C	74	1.59	117.66
	STORAGE BASIN	N/A	100	0.24	24.00
	OFFSITE	C	74	0	0.00
	TOTAL			2.97	253.38

WEIGHTED CN	85.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5A1	TRAVEL LANE	N/A	98	0.86	84.28
	OTHER IMPERVIOUS	N/A	98	0.79	77.42
	PERVIOUS	C	74	0.91	67.34
	STORAGE BASIN	N/A	100	0.6	60.00
	OFFSITE	C	74	0	0.00
	TOTAL			3.16	289.04

WEIGHTED CN	91.5

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2A1	TRAVEL LANE	N/A	98	0.21	20.58
	OTHER IMPERVIOUS	N/A	98	0.1	9.80
	PERVIOUS	C	74	0.74	54.76
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE (GOOD PASTURE)	C	74	2.06	152.44
	TOTAL			3.11	237.58

WEIGHTED CN	76.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3A1	TRAVEL LANE	N/A	98	0.7	68.60
	OTHER IMPERVIOUS	N/A	98	0.6	58.80
	PERVIOUS	C	74	1.35	99.90
	STORAGE BASIN	N/A	100	0.09	9.00
	OFFSITE (GOOD PASTURE)	C	74	3.79	280.46
	TOTAL			6.53	516.76

WEIGHTED CN	79.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B6A1	TRAVEL LANE	N/A	98	0.2	19.60
	OTHER IMPERVIOUS	N/A	98	0.1	9.80
	PERVIOUS	C	74	0.21	15.54
	STORAGE BASIN	N/A	100	0.03	3.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.24	17.76
	TOTAL			0.78	65.70

WEIGHTED CN	84.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B7A1	TRAVEL LANE	N/A	98	0.17	16.66
	OTHER IMPERVIOUS	N/A	98	0.12	11.76
	PERVIOUS	C	74	0.16	11.84
	STORAGE BASIN	N/A	100	0.03	3.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.16	11.84
	TOTAL			0.64	55.10

WEIGHTED CN	86.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B8A1	TRAVEL LANE	N/A	98	0.32	31.36
	OTHER IMPERVIOUS	N/A	98	0.37	36.26
	PERVIOUS	C	74	0.24	17.76
	STORAGE BASIN	N/A	100	0.04	4.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.16	11.84
	TOTAL			1.13	101.22

WEIGHTED CN	89.6

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4A1	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0.36	35.28
	PERVIOUS	C	74	0.33	24.42
	STORAGE BASIN	N/A	100	0.09	9.00
	OFFSITE (GOOD PASTURE)	C	74	2.55	188.70
	TOTAL			3.33	257.40

WEIGHTED CN	77.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2A2	TRAVEL LANE	N/A	98	0.69	67.62
	OTHER IMPERVIOUS	N/A	98	0.41	40.18
	PERVIOUS	C	74	0.6	44.40
	STORAGE BASIN	N/A	100	0.31	31.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.04	2.96
	TOTAL			2.05	186.16

WEIGHTED CN	90.8

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1A2	TRAVEL LANE	N/A	98	0.74	72.52
	OTHER IMPERVIOUS	N/A	98	0.79	77.42
	PERVIOUS	C	74	0.64	47.36
	STORAGE BASIN	N/A	100	0.26	26.00
	OFFSITE	C	74	0	0.00
	TOTAL			2.43	223.30

WEIGHTED CN	91.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3A2	TRAVEL LANE	N/A	98	0.75	73.50
	OTHER IMPERVIOUS	N/A	98	0.25	24.50
	PERVIOUS	C	74	0.76	56.24
	STORAGE BASIN	N/A	100	0.35	35.00
	OFFSITE	C	74	0	0.00
	TOTAL			2.11	189.24

WEIGHTED CN	89.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
M1A2	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0	0.00
	PERVIOUS	C	74	0.83	61.42
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			0.83	61.42

WEIGHTED CN	74.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
DDA3	TRAVEL LANE	N/A	98	0.94	92.12
	OTHER IMPERVIOUS	N/A	98	0.43	42.14
	PERVIOUS	C	74	1.38	102.12
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			2.75	236.38

WEIGHTED CN	86.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
M1A3	TRAVEL LANE	N/A	98		0.00
	OTHER IMPERVIOUS	N/A	98	0.18	17.64
	PERVIOUS	C	74	0.11	8.14
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C	74	0	0.00
	TOTAL			0.29	25.78

WEIGHTED CN	88.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1A3	TRAVEL LANE	N/A	98	0.21	20.58
	OTHER IMPERVIOUS	N/A	98	0.29	28.42
	PERVIOUS	C	74	0.14	10.36
	STORAGE BASIN	N/A	100	0.03	3.00
	OFFSITE	C	74	0	0.00
	TOTAL			0.67	62.36

WEIGHTED CN	93.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2A3	TRAVEL LANE	N/A	98	1.02	99.96
	OTHER IMPERVIOUS	N/A	98	0.69	67.62
	PERVIOUS	C	74	1.15	85.10
	STORAGE BASIN	N/A	100	0.14	14.00
	OFFSITE	C	74	0	0.00
	TOTAL			3.00	266.68

WEIGHTED CN	88.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3A3	TRAVEL LANE	N/A	98	0.15	14.70
	OTHER IMPERVIOUS	N/A	98	0.05	5.29
	PERVIOUS	C	74	0.20	14.80
	STORAGE BASIN	N/A	100	0.01	0.60
	OFFSITE (RESIDENTIAL 20% IMPERVIOUS)	D	84	1.13	94.92
	TOTAL			1.54	130.31

WEIGHTED CN	84.6

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4A3	TRAVEL LANE	N/A	98	0.12	11.76
	OTHER IMPERVIOUS	N/A	98	0.04	4.02
	PERVIOUS	C	74	0.18	13.32
	STORAGE BASIN	N/A	100	0.01	0.90
	OFFSITE (RESIDENTIAL 20% IMPERVIOUS)	D	84	1.02	85.68
	TOTAL			1.37	115.68

WEIGHTED CN	84.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5A3	TRAVEL LANE	N/A	98	0.36	35.28
	OTHER IMPERVIOUS	N/A	98	0.25	24.50
	PERVIOUS	C	74	0.46	34.04
	STORAGE BASIN	N/A	100	0.07	7.00
	OFFSITE (GOOD PASTURE)	D	80	0	0.00
	TOTAL			1.14	100.82

WEIGHTED CN	88.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5AA3	TRAVEL LANE	N/A	98	0.11	10.78
	OTHER IMPERVIOUS	N/A	98	0.13	12.74
	PERVIOUS	C	74	0.14	10.36
	STORAGE BASIN	N/A	100	0.02	2.00
	OFFSITE (GOOD PASTURE)	D	80	0	0.00
	TOTAL			0.40	35.88

WEIGHTED CN	89.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5BA3	TRAVEL LANE	N/A	98	0.97	95.06
	OTHER IMPERVIOUS	N/A	98	0.35	34.30
	PERVIOUS	C	74	2.79	206.46
	STORAGE BASIN	N/A	100	0.12	12.00
	OFFSITE (GOOD PASTURE)	D	80	0.65	52.00
	TOTAL			4.88	399.82

WEIGHTED CN	81.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B6A3	TRAVEL LANE	N/A	98	0.15	14.70
	OTHER IMPERVIOUS	N/A	98	0.1098	10.76
	PERVIOUS	C	74	0.16	11.84
	STORAGE BASIN	N/A	100	0.0002	0.02
	OFFSITE (GOOD PASTURE)	D	79	0.06	4.74
	TOTAL			0.48	42.06

WEIGHTED CN	87.6

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B7A3	TRAVEL LANE	N/A	98	0.27	26.46
	OTHER IMPERVIOUS	N/A	98	0.23	22.54
	PERVIOUS	C	74	0.31	22.94
	STORAGE BASIN	N/A	100	0.042	4.20
	OFFSITE (GOOD PASTURE)	D	79	0.008	0.63
	TOTAL			0.86	76.77

WEIGHTED CN	89.3

	PROPOSED REVISED POND		STAGE (FT)	AREA (AC)	STORAGE (AC-FT)	REQUIRED WATER QUALITY TREATMENT VOLUME (ACFT)	REQUIRED TOP OF TREATMENT ELEV (FT)	PROPOSED TOP OF TREATMENT ELEV (FT)	PROPOSED AREA AT TOP OF TREATMENT (AC)	PROPOSED VOLUME OF TREATMENT (ACFT)
INTERCONNECTED	***P1A1***	NWL	50.64	0.35						
	(TREATMENT	PERMIT DLW	51.60	0.47	0.40	0.14	51.02	51.60	0.47	0.40
	BASIN)		54.07	0.79	1.95			keep ex. str.		
			54.7	0.87	2.47					
	P2A1		53.1	0.00						
			54.00	0.06	0.03					
			55.93	0.16	0.24					
			56.55	0.19	0.34					
	P3A1		54.1	0.11						
			58.00	0.56	1.31					
			58.4	0.60	1.54					
	P4A1		54.14	0.00						
			54.20	0.09	0.00					
			56	0.17	0.24					
			56.5	0.19	0.33					
			56.7	0.20	0.37					
INTERCONNECTED	***P5A1***	NWL	50.62	0.31						
	(TREATMENT	PERMIT DLW	51.18	0.56	0.24	0.13	50.96	51.17	0.56	0.24
	BASIN)		53	0.85	1.53			keep ex. str.		
			54.08	1.03	2.54					
			54.7	1.14	3.22					
	P6A1		53.63	0.00						
			54.58	0.04	0.02					
			56.01	0.08	0.10					
	P7A1		54.1	0.02						
			54.58	0.03	0.01					
			55.58	0.06	0.06					
			56.2	0.07	0.10					
	P8A1		54.58	0.05						
			56.08	0.10	0.11					
			56.7	0.13	0.18					

	P1A2	NWL	55.14	0.30							
		PERMIT DLW	55.45	0.33	0.10	0.06	55.33	55.35	0.32	0.07
			56.13	0.39	0.34			modify ex. str.		
			56.5	0.44	0.50					
	P2A2	NWL	55.14	0.35							
		PERMIT DLW	55.51	0.39	0.14	0.06	55.30	55.30	0.37	0.06
			56.28	0.48	0.47			new ctrl. str.		
			56.9	0.54	0.79					
	P3A2	NWL	55.14	0.46							
		PERMIT DLW	55.35	0.49	0.10	0.06	55.27	55.30	0.48	0.08
			56.28	0.62	0.62			new ctrl. str.		
			56.9	0.71	1.03					
EQUALIZED	P1A3	NWL	55.89	0.04						
		PERMIT DLW	56.70	0.05	0.04					
			58.38	0.09	0.15					
			59	0.11	0.22					
	P2A3	NWL	55.89	0.18						
		PERMIT DLW	56.70	0.27	0.18					
			58.2	0.45	0.72					
	P3A3	NWL	55.89	0.01						
		PERMIT DLW	56.70	0.03	0.02					
			60.16	0.12	0.28					
	P4A3	NWL	55.89	0.00						
		PERMIT DLW	56.70	0.02	0.01					
			60.82	0.10	0.26					
	P1A3 TOTAL	NWL	55.89	0.23						
	(COMPOSITE)	PERMIT DLW	56.70	0.37	0.24	0.13	56.36	56.43	0.32	0.15
								keep ex. str.		

EQUALIZED	P5A3	NWL	55.14	0.11							
		PERMIT DLW	56.31	0.18	0.17						
			58.58	0.37	0.79						
	P5AA3	NWL	55.14	0.03							
		PERMIT DLW	56.31	0.05	0.05						
			58.58	0.11	0.23						
	P5BA3	NWL	55.14	0.18							
		PERMIT DLW	56.31	0.39	0.33						
			58.58	0.70	1.57						
	P6A3	NWL	55.14	0.00							
		PERMIT DLW	56.31	0.00	0.00						
		DHW	57.94	0.02	0.02						
			60.49	0.08	0.15						
	P7A3	NWL	55.14	0.00							
		PERMIT DLW	56.31	0.05	0.03						
			60.04	0.20	0.50						
	P5A3 TOTAL	NWL	55.14	0.32							
	(COMPOSITE)	PERMIT DLW	56.31	0.67	0.58	0.16	55.46	55.50	0.43	#NAME?	
								new ctrl. str.			

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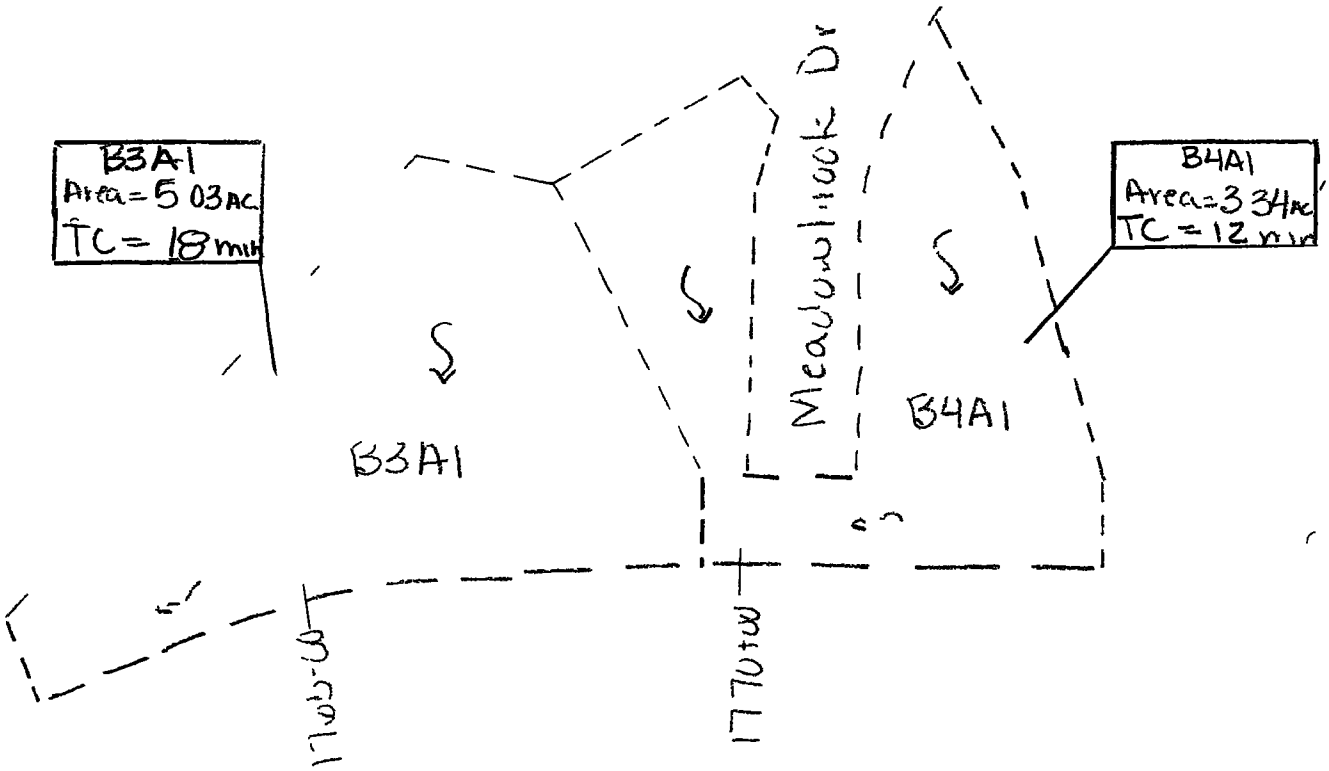
Project	SR 54	Computed AEW	Date 10/1/08
Subject	TC Calculations	Checked	Date
Task		Page	of
Job #	5[illegible].8	No	



Basin B3A1

Area = 5.03 Ac
Flow Length = 660'
Avg. Slope = 0.475%
Velocity (fpm) = 37
TC (min) = 17.87
≈ 18 min

Basin B4A1

Area = 3.34 Ac
Flow Length = 450
Avg Slope = 0.5%
Velocity (fpm) = 37.5
TC (min) = 12 min

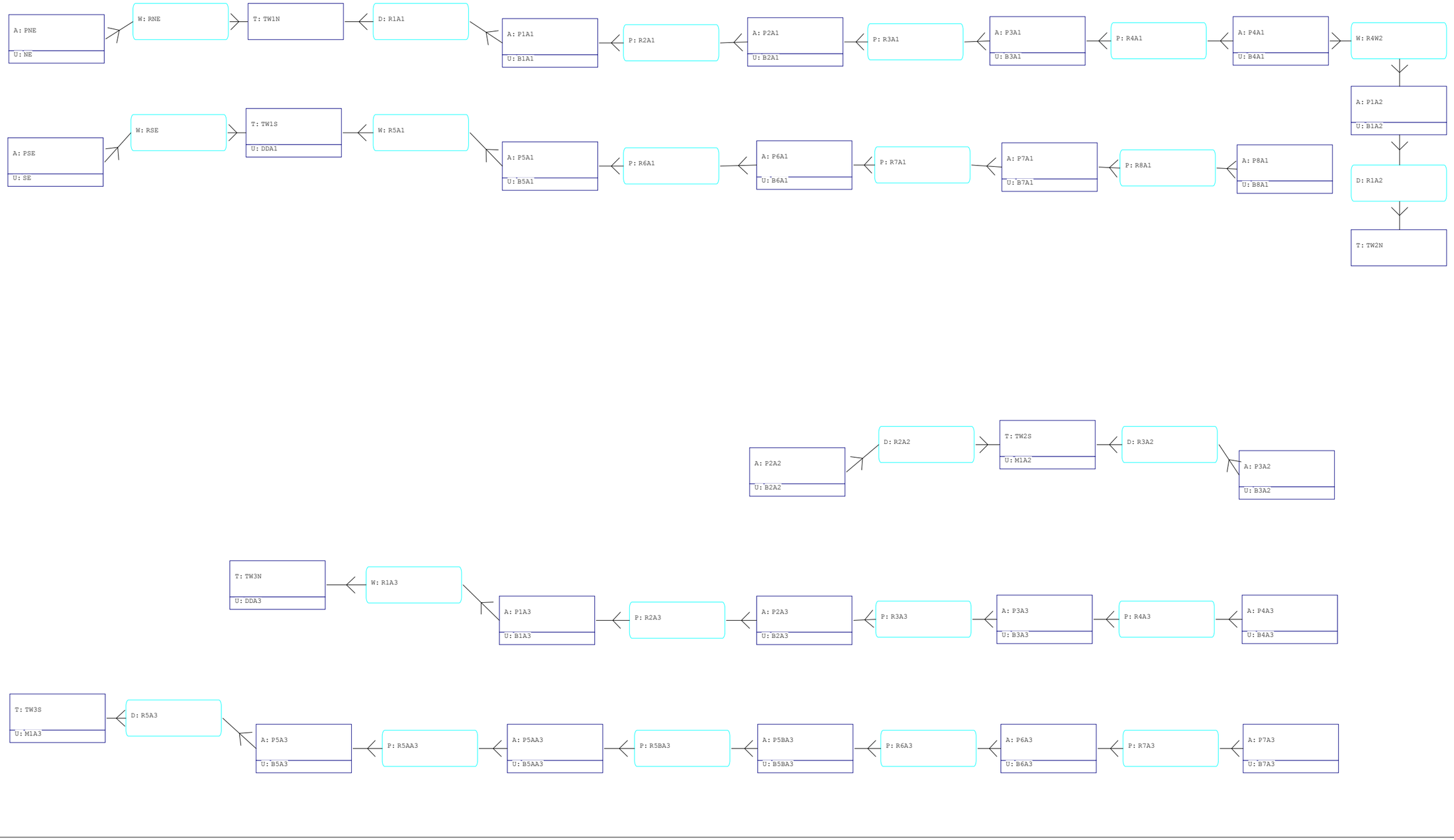
Time of Concentration Calculations from SWFWMD ERP# 44016251.011

SR 54 Basin A
Post-Development

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



3/2/2015,5:00:04 PM
Node Diagram

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

==========
==== Basins ==========
==========

Name: B1A1 Node: P1A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.970 Time Shift(hrs): 0.00
Curve Number: 85.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B1A2 Node: P1A2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.430 Time Shift(hrs): 0.00
Curve Number: 91.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B1A3 Node: P1A3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.670 Time Shift(hrs): 0.00
Curve Number: 93.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2A1 Node: P2A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 3.110 Time Shift(hrs): 0.00
Curve Number: 76.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2A2 Node: P2A2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.050 Time Shift(hrs): 0.00
Curve Number: 90.80 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2A3 Node: P2A3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0

Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 3.000
Curve Number: 88.90
DCIA(%): 0.00
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B3A1
Group: BASE
Node: P3A1
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 6.530
Curve Number: 79.10
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 18.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B3A2
Group: BASE
Node: P3A2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 2.110
Curve Number: 89.70
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B3A3
Group: BASE
Node: P3A3
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.540
Curve Number: 84.60
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B4A1
Group: BASE
Node: P4A1
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 3.330
Curve Number: 77.30
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 12.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B4A3
Group: BASE
Node: P4A3
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.370
Curve Number: 84.40
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B5A1 Node: P5A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 3.160 Time Shift(hrs): 0.00
Curve Number: 91.50 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5A3 Node: P5A3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.140 Time Shift(hrs): 0.00
Curve Number: 88.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5AA3 Node: P5AA3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.400 Time Shift(hrs): 0.00
Curve Number: 89.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5BA3 Node: P5BA3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 4.880 Time Shift(hrs): 0.00
Curve Number: 81.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B6A1 Node: P6A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.780 Time Shift(hrs): 0.00
Curve Number: 84.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B6A3 Node: P6A3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.480 Time Shift(hrs): 0.00
Curve Number: 87.60 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B7A1 Node: P7A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.640 Time Shift(hrs): 0.00
Curve Number: 86.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B7A3 Node: P7A3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.860 Time Shift(hrs): 0.00
Curve Number: 89.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B8A1 Node: P8A1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.130 Time Shift(hrs): 0.00
Curve Number: 89.60 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: DDA1 Node: TW1S Status: Onsite
Group: TW25 Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.380 Time Shift(hrs): 0.00
Curve Number: 88.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: DDA3 Node: TW3N Status: Onsite
Group: TW25 Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.750 Time Shift(hrs): 0.00
Curve Number: 86.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: M1A2 Node: TW2S Status: Onsite
Group: TW25 Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00

Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.830 Time Shift(hrs): 0.00
Curve Number: 74.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: M1A3 Node: TW3S Status: Onsite
Group: TW25 Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.290 Time Shift(hrs): 0.00
Curve Number: 88.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: NE Node: PNE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.230 Time Shift(hrs): 0.00
Curve Number: 89.80 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: SE Node: PSE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.050 Time Shift(hrs): 0.00
Curve Number: 87.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ==========
==========

Name: P1A1 Base Flow(cfs): 0.000 Init Stage(ft): 51.600
Group: BASE Warn Stage(ft): 54.600
Type: Stage/Area

Stage(ft)	Area(ac)
50.640	0.3500
51.600	0.4700
54.070	0.7900
54.700	0.8700

Name: P1A2 Base Flow(cfs): 0.000 Init Stage(ft): 55.350
Group: BASE Warn Stage(ft): 56.700
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.3000

55.450	0.3300
56.130	0.3900
56.500	0.4400

Name: P1A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.430
Group: BASE Warn Stage(ft): 58.500
Type: Stage/Area

Stage(ft)	Area(ac)
55.890	0.0400
56.700	0.0500
58.380	0.0900
59.000	0.1100

Name: P2A1 Base Flow(cfs): 0.000 Init Stage(ft): 53.200
Group: BASE Warn Stage(ft): 56.200
Type: Stage/Area

Stage(ft)	Area(ac)
53.100	0.0010
54.000	0.0570
55.930	0.1600
56.550	0.1900

Name: P2A2 Base Flow(cfs): 0.000 Init Stage(ft): 55.300
Group: BASE Warn Stage(ft): 56.800
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.3500
55.510	0.3900
56.280	0.4800
56.900	0.5400

Name: P2A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.430
Group: BASE Warn Stage(ft): 58.200
Type: Stage/Area

Stage(ft)	Area(ac)
55.890	0.1800
56.700	0.2700
58.200	0.4500

Name: P3A1 Base Flow(cfs): 0.000 Init Stage(ft): 53.700
Group: BASE Warn Stage(ft): 57.300
Type: Stage/Area

Stage(ft)	Area(ac)
53.300	0.0010
54.100	0.1100
58.000	0.5600
58.400	0.6000

Name: P3A2 Base Flow(cfs): 0.000 Init Stage(ft): 55.300
Group: BASE Warn Stage(ft): 56.800
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.4600
55.350	0.4900
56.280	0.6200
56.900	0.7100

Name: P3A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.430
Group: BASE Warn Stage(ft): 59.700
Type: Stage/Area

Stage(ft)	Area(ac)
55.890	0.0100
56.700	0.0300
60.160	0.1200

Name: P4A1 Base Flow(cfs): 0.000 Init Stage(ft): 54.090
Group: BASE Warn Stage(ft): 56.200
Type: Stage/Area

Stage(ft)	Area(ac)
54.090	0.0010
54.200	0.0900
56.000	0.1700
56.500	0.1900
56.700	0.2000

Name: P4A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.430
Group: BASE Warn Stage(ft): 60.300
Type: Stage/Area

Stage(ft)	Area(ac)
55.890	0.0010
56.700	0.0200
60.820	0.1000

Name: P5A1 Base Flow(cfs): 0.000 Init Stage(ft): 51.170
Group: BASE Warn Stage(ft): 54.600
Type: Stage/Area

Stage(ft)	Area(ac)
50.620	0.3100
51.180	0.5600
53.000	0.8500
54.080	1.0300
54.700	1.1400

Name: P5A3 Base Flow(cfs): 0.000 Init Stage(ft): 55.500
Group: BASE Warn Stage(ft): 58.900
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.1100
56.310	0.1800
58.580	0.3700

Name: P5AA3 Base Flow(cfs): 0.000 Init Stage(ft): 55.500
Group: BASE Warn Stage(ft): 58.900
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.0300
56.310	0.0500
58.580	0.1100

Name: P5BA3 Base Flow(cfs): 0.000 Init Stage(ft): 55.500
Group: BASE Warn Stage(ft): 58.900
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.1800
56.310	0.3900
58.580	0.7000

Name: P6A1 Base Flow(cfs): 0.000 Init Stage(ft): 54.090
Group: BASE Warn Stage(ft): 56.100
Type: Stage/Area

Stage(ft)	Area(ac)
53.630	0.0010
54.580	0.0400
56.010	0.0800

Name: P6A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.100
Group: BASE Warn Stage(ft): 60.100
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.0000
56.310	0.0000
57.940	0.0200
60.490	0.0800

Name: P7A1 Base Flow(cfs): 0.000 Init Stage(ft): 54.440
Group: BASE Warn Stage(ft): 56.500
Type: Stage/Area

Stage(ft)	Area(ac)
54.100	0.0220
54.580	0.0330
55.580	0.0550
56.200	0.0700

Name: P7A3 Base Flow(cfs): 0.000 Init Stage(ft): 56.100
Group: BASE Warn Stage(ft): 59.800
Type: Stage/Area

Stage(ft)	Area(ac)
55.140	0.0000
56.310	0.0500
60.040	0.2000

Name: P8A1 Base Flow(cfs): 0.000 Init Stage(ft): 55.290
Group: BASE Warn Stage(ft): 56.800
Type: Stage/Area

Stage(ft)	Area(ac)
54.580	0.0500
56.080	0.1000
56.700	0.1300

Name: PNE Base Flow(cfs): 0.000 Init Stage(ft): 54.100
Group: BASE Warn Stage(ft): 55.000
Type: Stage/Area

SWFWMD ERP # 44016251.013

Stage(ft)	Area(ac)
54.100	0.1800
54.380	0.1900
55.000	0.2200

Name: PSE Base Flow(cfs): 0.000 Init Stage(ft): 53.840
Group: BASE Warn Stage(ft): 55.000
Type: Stage/Area

SWFWMD ERP # 44016251.013

Stage(ft)	Area(ac)
53.840	0.1700
55.000	0.2900

Name: TW1N Base Flow(cfs): 0.000 Init Stage(ft): 50.640
Group: TW25 Warn Stage(ft): 53.140
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	50.640
8.00	51.140
15.00	53.140
18.00	53.140
60.00	50.640

Name: TW1S Base Flow(cfs): 0.000 Init Stage(ft): 50.640
Group: TW25 Warn Stage(ft): 54.110
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	50.640
8.00	51.140
15.00	54.110
18.00	54.110
60.00	50.640

Name: TW2N Base Flow(cfs): 0.000 Init Stage(ft): 55.140
Group: TW25 Warn Stage(ft): 56.060
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	55.140
8.00	55.340
15.00	56.060
18.00	56.060
60.00	55.140

Name: TW2S Base Flow(cfs): 0.000 Init Stage(ft): 55.140
Group: TW25 Warn Stage(ft): 56.140
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	55.140
8.00	55.340
15.00	56.140
18.00	56.140
60.00	55.140

Name: TW3N Base Flow(cfs): 0.000 Init Stage(ft): 55.140
Group: TW25 Warn Stage(ft): 57.940
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	55.140
8.00	55.640
15.00	57.940
18.00	57.940
60.00	55.140

Name: TW3S Base Flow(cfs): 0.000 Init Stage(ft): 55.140
Group: TW25 Warn Stage(ft): 56.240
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	55.140
8.00	55.340
15.00	56.240
18.00	56.240
60.00	55.140

==========
==== Pipes ==========
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Name: R2A1 From Node: P2A1 Length(ft): 89.00
Group: BASE To Node: P1A1 Count: 2

	UPSTREAM	DOWNSTREAM		
			Friction Equation:	Average Conveyance
			Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	24.00	24.00	Entrance Loss Coef:	0.70
Rise(in):	24.00	24.00	Exit Loss Coef:	1.00
Invert(ft):	53.200	50.200	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert and pipe length per survey

Name:	R2A3	From Node:	P2A3
Group:	BASE	To Node:	P1A3

Length(ft):	195.00			
Count:	1			
			Friction Equation:	Average Conveyance
			Solution Algorithm:	Automatic
Geometry:	Horz Ellipse	Horz Ellipse	Flow:	Both
Span(in):	53.00	53.00	Entrance Loss Coef:	0.70
Rise(in):	34.00	34.00	Exit Loss Coef:	1.00
Invert(ft):	54.530	54.860	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

invert and pipe length per survey

Name:	R3A1	From Node:	P3A1
Group:	BASE	To Node:	P2A1

Length(ft):	64.00			
Count:	2			
			Friction Equation:	Average Conveyance
			Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	30.00	30.00	Entrance Loss Coef:	0.70
Rise(in):	30.00	30.00	Exit Loss Coef:	1.00
Invert(ft):	53.700	53.200	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Sidedrain @ ~STA 1762 LT (Per As-Built Plans, 2012)
pipe invert and pipe size updated per as-builts

Name:	R3A3	From Node:	P3A3
Group:	BASE	To Node:	P2A3

Length(ft):	76.00			
Count:	1			
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic

Geometry:	Circular	Circular	Flow:	Both
Span(in):	24.00	24.00	Entrance Loss Coef:	0.70
Rise(in):	24.00	24.00	Exit Loss Coef:	1.00
Invert(ft):	55.500	55.410	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R4A1	From Node: P4A1	Length(ft):	253.00
Group:	BASE	To Node: P3A1	Count:	3
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	24.00	24.00	Entrance Loss Coef:	0.70
Rise(in):	24.00	24.00	Exit Loss Coef:	1.00
Invert(ft):	54.090	53.900	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

U/S invert per survey
the two sets of triple culverts will be continuous in the proposed conditon

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Name:	R4A3	From Node: P4A3	Length(ft):	71.00
Group:	BASE	To Node: P3A3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.70
Rise(in):	18.00	18.00	Exit Loss Coef:	1.00
Invert(ft):	56.360	55.380	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

size, invert and pipe length per survey

Name:	R5AA3	From Node: P5AA3	Length(ft):	35.00
Group:	BASE	To Node: P5A3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.70
Rise(in):	18.00	18.00	Exit Loss Coef:	1.00
Invert(ft):	54.600	54.500	Bend Loss Coef:	0.00

Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R5BA3	From Node: P5BA3	Length(ft): 32.00
Group:	BASE	To Node: P5AA3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.70
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	54.600	54.500	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R6A1	From Node: P6A1	Length(ft): 85.00
Group:	BASE	To Node: P5A1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	24.00	24.00	Entrance Loss Coef: 0.70
Rise(in):	24.00	24.00	Exit Loss Coef: 1.00
Invert(ft):	54.090	53.110	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert and pipe length per survey

Name:	R6A3	From Node: P6A3	Length(ft): 128.00
Group:	BASE	To Node: P5BA3	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.70
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	56.100	54.900	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R7A1	From Node: P7A1	Length(ft):	98.00
Group:	BASE	To Node: P6A1	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Horz Ellipse	Horz Ellipse	Flow:	Both
Span(in):	30.00	30.00	Entrance Loss Coef:	0.70
Rise(in):	19.00	19.00	Exit Loss Coef:	1.00
Invert(ft):	54.440	54.360	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

pipe invert, size and length per survey

Name:	R7A3	From Node: P7A3	Length(ft):	90.00
Group:	BASE	To Node: P6A3	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.70
Rise(in):	18.00	18.00	Exit Loss Coef:	1.00
Invert(ft):	56.100	55.900	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R8A1	From Node: P8A1	Length(ft):	82.00
Group:	BASE	To Node: P7A1	Count:	1
			Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Automatic
Geometry:	Horz Ellipse	Horz Ellipse	Flow:	Both
Span(in):	30.00	30.00	Entrance Loss Coef:	0.70
Rise(in):	19.00	19.00	Exit Loss Coef:	1.00
Invert(ft):	55.290	54.450	Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description:

Horizontal Ellipse Concrete: Square edge with headwall

invert and pipe length per survey

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==== Drop Structures ==========
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Name:	R1A1	From Node:	P1A1	Length(ft):	63.00
Group:	TW25	To Node:	TW1N	Count:	2

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	24.00	24.00	Solution Algorithm:	Automatic
Rise(in):	24.00	24.00	Flow:	Both
Invert(ft):	48.110	47.840	Entrance Loss Coef:	0.500
Manning's N:	0.012000	0.012000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-101 (Per As-Built Plans, 2012)
weir invert, U/S pipe invert and pipe length updated per survey
modified weir span from 30" to 44"

*** Weir 1 of 2 for Drop Structure R1A1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	44.00	Invert(ft):	51.600
Rise(in):	35.20	Control Elev(ft):	51.600

*** Weir 2 of 2 for Drop Structure R1A1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	54.700
Rise(in):	79.00	Control Elev(ft):	54.700

Name:	R1A2	From Node:	P1A2	Length(ft):	39.00
Group:	TW25	To Node:	TW2N	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	24.00	24.00	Solution Algorithm:	Automatic
Rise(in):	24.00	24.00	Flow:	Both
Invert(ft):	52.900	52.820	Entrance Loss Coef:	0.500
Manning's N:	0.012000	0.012000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-111 (Per As-Built Plans, 2012)
weir invert, pipe invert and pipe length updated per survey

modified weir invert from elevation 55.45 to elevation 55.35
modified weir span from 10" to 24"

*** Weir 1 of 2 for Drop Structure R1A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	55.350
Rise(in):	5.80	Control Elev(ft):	55.350

*** Weir 2 of 2 for Drop Structure R1A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	56.000
Rise(in):	37.00	Control Elev(ft):	56.000

Name:	R2A2	From Node:	P2A2
Group:	TW25	To Node:	TW2S
Length(ft):	33.00		
Count:	1		

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	18.00	18.00	Solution Algorithm:	Automatic
Rise(in):	18.00	18.00	Flow:	Both
Invert(ft):	52.100	52.000	Entrance Loss Coef:	0.500
Manning's N:	0.012000	0.012000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R2A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	55.300
Rise(in):	6.40	Control Elev(ft):	55.300

*** Weir 2 of 2 for Drop Structure R2A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	56.000
Rise(in):	37.00	Control Elev(ft):	56.000

Name:	R3A2	From Node:	P3A2
Group:	TW25	To Node:	TW2S
Length(ft):	26.00		
Count:	1		

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	18.00	18.00	Solution Algorithm:	Automatic
Rise(in):	18.00	18.00	Flow:	Both
			Entrance Loss Coef:	0.500

Invert(ft):	52.200	52.000	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R3A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	55.300
Rise(in):	6.40	Control Elev(ft):	55.300

*** Weir 2 of 2 for Drop Structure R3A2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	56.000
Rise(in):	37.00	Control Elev(ft):	56.000

Name:	R5A3	From Node: P5A3	Length(ft): 39.00
Group:	TW25	To Node: TW3S	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	24.00	24.00	Solution Algorithm:	Automatic
Rise(in):	24.00	24.00	Flow:	Both
Invert(ft):	54.100	54.000	Entrance Loss Coef:	0.500
Manning's N:	0.012000	0.012000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R5A3 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	42.00	Invert(ft):	55.500
Rise(in):	20.80	Control Elev(ft):	55.500

*** Weir 2 of 2 for Drop Structure R5A3 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	57.400
Rise(in):	49.00	Control Elev(ft):	57.400

```
================================================================================
==== Weirs =====================================================================
================================================================================

         Name: R1A3                From Node: P1A3
        Group: TW25                  To Node: TW3N
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 3.00
       Left Side Slope(h/v): 3.00
      Right Side Slope(h/v): 6.00
                  Invert(ft): 56.430
      Control Elevation(ft): 56.430
     Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 3.000
     Orifice Discharge Coef: 0.600

invert and bottom width information from survey
weir side slopes from ERP 4316251.00


--------------------------------------------------------------------------------------------------------
         Name: R4W2                From Node: P4A1
        Group: BASE                  To Node: P1A2
         Flow: Both                    Count: 1
         Type: Vertical: Fread      Geometry: Trapezoidal

            Bottom Width(ft): 19.00
       Left Side Slope(h/v): 4.00
      Right Side Slope(h/v): 4.00
                  Invert(ft): 55.680
      Control Elevation(ft): 55.680
     Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600

Ditch Block Detail (Per As-Built Plans, 2012)
no survey data available
revised weir bottom width from 25' to 19'

--------------------------------------------------------------------------------------------------------
         Name: R5A1                From Node: P5A1
        Group: TW25                  To Node: TW1S
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 0.00
       Left Side Slope(h/v): 6.00
      Right Side Slope(h/v): 3.00
                  Invert(ft): 51.170
      Control Elevation(ft): 51.170
     Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600

S-102 (Per As-Built Plans, 2012)
weir invert updated per survey



--------------------------------------------------------------------------------------------------------
         Name: RNE                 From Node: PNE
```

```
        Group: TW25                 To Node: TW1N
         Flow: Both                   Count: 1
         Type: Vertical: Fread     Geometry: Trapezoidal

            Bottom Width(ft): 4.00
       Left Side Slope(h/v): 6.00
      Right Side Slope(h/v): 3.00
                  Invert(ft): 54.110
      Control Elevation(ft): 54.110
     Struct Opening Dim(ft): 9999.00
                                       TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.000
     Orifice Discharge Coef: 0.600

S-016 (Per As-Built Plans, 2012)
no survey data available

-------------------------------------------------------------------------------------------------
         Name: RSE                 From Node: PSE
        Group: TW25                  To Node: TW1S
         Flow: Both                   Count: 1
         Type: Vertical: Fread     Geometry: Trapezoidal

            Bottom Width(ft): 17.60
       Left Side Slope(h/v): 6.00
      Right Side Slope(h/v): 3.00
                  Invert(ft): 53.870
      Control Elevation(ft): 53.870
     Struct Opening Dim(ft): 9999.00
                                       TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.000
     Orifice Discharge Coef: 0.600

S-017 (Per As-Built Plans, 2012)
no survey data available

=================================================================================================
==== Hydrology Simulations ======================================================================
=================================================================================================

         Name: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin A\FLMOD.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 9.00

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           30.00
17.000          5.00
60.000          30.00

=================================================================================================
==== Routing Simulations ========================================================================
=================================================================================================

         Name: flmod               Hydrology Sim: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin A\flmod.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 60.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 60.0000
        Boundary Stages:                         Boundary Flows:
```

Time(hrs)	Print Inc(min)
9.000	60.000
12.000	15.000
13.000	5.000
24.000	60.000
60.000	180.000

Group	Run
BASE	Yes
TW25	Yes

SR 54 Basin A
Post-Development

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
FLMOD	B1A1	BASE	12.04	15.977	7.221	77852.754
FLMOD	B1A2	BASE	12.02	13.925	8.026	70794.700
FLMOD	B1A3	BASE	12.02	3.871	8.171	19873.596
FLMOD	B2A1	BASE	12.04	14.713	6.128	69176.439
FLMOD	B2A2	BASE	12.02	11.649	7.892	58729.381
FLMOD	B2A3	BASE	12.02	16.768	7.661	83426.796
FLMOD	B3A1	BASE	12.12	26.115	6.460	153132.959
FLMOD	B3A2	BASE	12.02	11.880	7.758	59423.221
FLMOD	B3A3	BASE	12.04	8.217	7.136	39889.080
FLMOD	B4A1	BASE	12.05	15.128	6.239	75411.062
FLMOD	B4A3	BASE	12.04	7.292	7.111	35363.929
FLMOD	B5A1	BASE	12.02	18.055	7.977	91505.019
FLMOD	B5A3	BASE	12.02	6.341	7.600	31449.951
FLMOD	B5AA3	BASE	12.02	2.252	7.758	11265.065
FLMOD	B5BA3	BASE	12.04	25.148	6.804	120536.851
FLMOD	B6A1	BASE	12.04	4.142	7.087	20064.841
FLMOD	B6A3	BASE	12.02	2.649	7.502	13072.031
FLMOD	B7A1	BASE	12.02	3.475	7.319	17003.678
FLMOD	B7A3	BASE	12.02	4.825	7.710	24067.823
FLMOD	B8A1	BASE	12.02	6.356	7.746	31773.867
FLMOD	DDA1	TW25	12.02	7.669	7.588	38009.906
FLMOD	DDA3	TW25	12.02	14.913	7.307	72940.627
FLMOD	M1A2	TW25	12.04	3.759	5.831	17569.624
FLMOD	M1A3	TW25	12.02	1.621	7.661	8064.590
FLMOD	NE	BASE	12.02	6.931	7.770	34694.433
FLMOD	SE	BASE	12.02	5.812	7.539	28734.605

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
P1A1	BASE	flmod	12.68	54.391	54.600	0.0048	36194	11.93	59.434	12.61	37.051
P1A2	BASE	flmod	12.35	56.198	56.700	-0.0017	17388	12.13	8.166	12.34	5.492
P1A3	BASE	flmod	15.61	57.949	58.500	0.0050	3495	12.18	25.609	12.20	25.523
P2A1	BASE	flmod	12.37	55.770	56.200	0.0050	6629	12.08	46.370	11.93	45.335
P2A2	BASE	flmod	12.32	56.362	56.800	0.0014	21256	12.00	11.477	12.29	6.534
P2A3	BASE	flmod	15.22	57.948	58.200	0.0027	18308	12.07	26.846	12.21	22.844
P3A1	BASE	flmod	12.35	56.101	57.300	0.0046	14938	12.06	43.040	12.11	32.587
P3A2	BASE	flmod	12.36	56.300	56.800	0.0013	27131	12.00	11.700	12.33	5.975
P3A3	BASE	flmod	12.19	58.345	59.700	0.0049	3177	12.08	12.783	12.15	11.395
P4A1	BASE	flmod	12.34	56.194	56.200	0.0044	7781	12.08	14.817	12.09	11.634
P4A3	BASE	flmod	12.19	58.738	60.300	0.0050	2598	12.00	7.164	12.20	5.316
P5A1	BASE	flmod	15.15	54.113	54.600	0.0032	45205	12.08	26.381	12.15	21.081
P5A3	BASE	flmod	12.37	56.709	58.900	0.0018	9297	12.08	12.465	12.35	11.100
P5AA3	BASE	flmod	12.57	57.470	58.900	0.0029	3516	12.33	8.557	12.73	8.474
P5BA3	BASE	flmod	12.64	58.137	58.900	0.0040	27862	12.00	27.981	12.78	7.867
P6A1	BASE	flmod	12.23	55.814	56.100	0.0034	3366	12.09	10.992	12.22	10.371
P6A3	BASE	flmod	12.61	58.199	60.100	-0.0046	1145	11.92	4.021	11.91	3.635
P7A1	BASE	flmod	12.21	56.058	56.500	-0.0041	3021	12.08	8.661	12.20	7.574
P7A3	BASE	flmod	12.62	58.221	59.800	0.0030	5528	12.00	4.751	11.91	1.756
P8A1	BASE	flmod	12.12	56.254	56.800	0.0022	4824	12.00	6.260	12.12	5.462
PNE	BASE	flmod	12.11	54.605	55.000	0.0012	8751	12.00	6.826	12.11	6.030
PSE	BASE	flmod	15.07	54.111	55.000	0.0012	8627	12.00	5.720	12.08	5.442
TW1N	TW25	flmod	15.00	53.140	53.140	0.0020	0	12.47	40.146	0.00	0.000
TW1S	TW25	flmod	15.00	54.110	54.110	0.0029	0	12.09	33.043	0.00	0.000
TW2N	TW25	flmod	15.00	56.060	56.060	0.0007	0	12.34	5.492	0.00	0.000
TW2S	TW25	flmod	15.00	56.140	56.140	0.0008	0	12.23	14.959	0.00	0.000
TW3N	TW25	flmod	15.00	57.940	57.940	0.0022	0	12.08	38.178	0.00	0.000
TW3S	TW25	flmod	15.00	56.240	56.240	0.0009	0	12.27	12.022	0.00	0.000

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Basin B – Pond Calculations

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3B1	TRAVEL LANE	N/A	98	0.38	37.24
	OTHER IMPERVIOUS	N/A	98	0.24	23.52
	PERVIOUS	C	74	0.48	35.52
	STORAGE BASIN	N/A	100	0.22	22.00
	OFFSITE	C		0	0.00
	TOTAL			1.32	118.28

WEIGHTED CN	89.6

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1B1	TRAVEL LANE	N/A	98	0.39	38.22
	OTHER IMPERVIOUS	N/A	98	0.16	15.68
	PERVIOUS	C	74	0.48	35.52
	STORAGE BASIN	N/A	100	0.14	14.00
	OFFSITE (GOOD PASTURE)	D	80	0.37	29.60
	TOTAL			1.54	133.02

WEIGHTED CN	86.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2B1	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0	0.00
	PERVIOUS	C	74	0.46	34.04
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.46	34.04

WEIGHTED CN	74.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4B1	TRAVEL LANE	N/A	98	0.13	12.74
	OTHER IMPERVIOUS	N/A	98	0.13	13.13
	PERVIOUS	C	74	0.12	8.95
	STORAGE BASIN	N/A	100	0.02	1.50
	OFFSITE (RESIDENTIAL 20% IMPERVIOUS)	D	84	0.89	74.76
	TOTAL			1.29	111.09

WEIGHTED CN	86.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5B1	TRAVEL LANE	N/A	98	0.3	29.40
	OTHER IMPERVIOUS	N/A	98	0.39	38.22
	PERVIOUS	C	74	0.35	25.90
	STORAGE BASIN	N/A	100	0.07	7.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.21	16.80
	TOTAL			1.32	117.32

WEIGHTED CN	88.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B8B1	TRAVEL LANE	N/A	98	0.47	46.06
	OTHER IMPERVIOUS	N/A	98	0.18	17.64
	PERVIOUS	C	74	0.73	54.02
	STORAGE BASIN	N/A	100	0.38	38.00
	OFFSITE	C		0	0.00
	TOTAL			1.76	155.72

WEIGHTED CN	88.5

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B7B1	TRAVEL LANE	N/A	98	0.32	31.36
	OTHER IMPERVIOUS	N/A	98	0.27	26.46
	PERVIOUS	C	74	0.23	17.02
	STORAGE BASIN	N/A	100	0.11	11.00
	OFFSITE	C		0	0.00
	TOTAL			0.93	85.84

WEIGHTED CN	92.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B6B1	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0.05	4.90
	PERVIOUS	C	74	0.85	62.90
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.9	67.80

WEIGHTED CN	75.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
BR1B1	TRAVEL LANE	N/A	98	0.43	42.14
	OTHER IMPERVIOUS	N/A	98	0.108	10.58
	PERVIOUS	C	74	0.652	48.25
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.19	100.97

WEIGHTED CN	84.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B10B2	TRAVEL LANE	N/A	98	0.33	32.34
	OTHER IMPERVIOUS	N/A	98	0.1	9.80
	PERVIOUS	C	74	0.42	31.08
	STORAGE BASIN	N/A	100	0.09	9.00
	OFFSITE	C		0	0.00
	TOTAL			0.94	82.22

WEIGHTED CN	87.5

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
BR2B2	TRAVEL LANE	N/A	98	0.096	9.41
	OTHER IMPERVIOUS	N/A	98	0.044	4.31
	PERVIOUS	C	74	0.15	11.10
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.29	24.82

WEIGHTED CN	85.6

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B9B2	TRAVEL LANE	N/A	98	0.413	40.47
	OTHER IMPERVIOUS	N/A	98	0.067	6.57
	PERVIOUS	C	74	0.45	33.30
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.93	80.34

WEIGHTED CN	86.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B11B2	TRAVEL LANE	N/A	98	0.66	64.68
	OTHER IMPERVIOUS	N/A	98	0.2	19.60
	PERVIOUS	C	74	0.83	61.42
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.69	145.70

WEIGHTED CN	86.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B12B2	TRAVEL LANE	N/A	98	1.7	166.60
	OTHER IMPERVIOUS	N/A	98	0.69	67.62
	PERVIOUS	C	74	1.99	147.26
	STORAGE BASIN	N/A	100	0.73	73.00
	OFFSITE	C		0	0.00
	TOTAL			5.11	454.48

WEIGHTED CN	88.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B13B2	TRAVEL LANE	N/A	98	0.35	34.30
	OTHER IMPERVIOUS	N/A	98	0.11	10.78
	PERVIOUS	C	74	0.39	28.86
	STORAGE BASIN	N/A	100	0.13	13.00
	OFFSITE	C		0	0.00
	TOTAL			0.98	86.94

WEIGHTED CN	88.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B14B2	TRAVEL LANE	N/A	98	1.14	111.72
	OTHER IMPERVIOUS	N/A	98	0.6	58.80
	PERVIOUS	C	74	1.53	113.22
	STORAGE BASIN	N/A	100	0.26	26.00
	OFFSITE	C		0	0.00
	TOTAL			3.53	309.74

WEIGHTED CN	87.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B15B2	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0	0.00
	PERVIOUS	C	74	0.7	51.80
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.7	51.80

WEIGHTED CN	74.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B16B2	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0.24	23.52
	PERVIOUS	C	74	0.14	10.36
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.38	33.88

WEIGHTED CN	89.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
BR3B3	TRAVEL LANE	N/A	98	0.54	52.92
	OTHER IMPERVIOUS	N/A	98	0.73	71.54
	PERVIOUS	C	74	0.29	21.46
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.56	145.92

WEIGHTED CN	93.5

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B17B3	TRAVEL LANE	N/A	98	0.19	18.62
	OTHER IMPERVIIOUS	N/A	98	0.375	36.75
	PERVIOUS	C	74	0.095	7.03
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.66	62.40

WEIGHTED CN	94.5

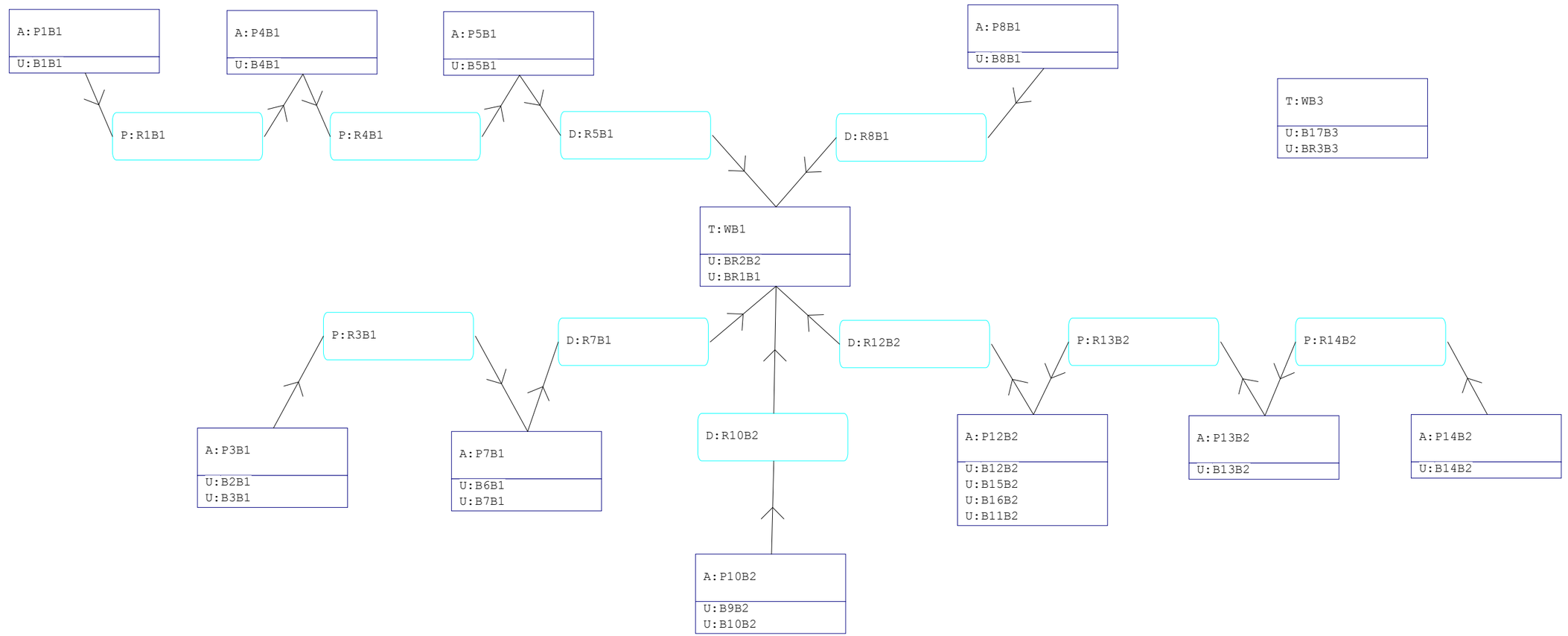
	PROPOSED REVISED POND		STAGE (FT)	AREA (AC)	STORAGE (AC-FT)	REQUIRED WATER QUALITY TREATMENT VOLUME (ACFT)	REQUIRED TOP OF TREATMENT ELEV (FT)	PROPOSED TOP OF TREATMENT ELEV (FT)	PROPOSED AREA AT TOP OF TREATMENT (AC)	PROPOSED VOLUME OF TREATMENT (ACFT)
EQUALIZED										
	P5B1	NWL	58.20	0.06						
		PERMIT DLW	58.50	0.07	0.02					
			60.00	0.10	0.15					
	P1B1	NWL	58.20	0.17						
		PERMIT DLW	58.50	0.20	0.06					
			58.63	0.21	0.08					
			60.00	0.29	0.42					
	P4B1	NWL	58.20	0.00						
		PERMIT DLW	58.50	0.00	0.00					
			60.00	0.04	0.03					
		DHW	60.25	0.04	0.04					
	TOTAL P5B1	NWL	58.20	0.23						
	(COMPOSITE)	PERMIT DLW	58.50	0.27	0.07	0.07	58.48	58.50	0.27	0.07
								modify ex. str.		
EQUALIZED	P3B1	NWL	57.90	0.26						
		PERMIT DLW	58.40	0.29	0.14					
			58.78	0.31	0.25					
			60.50	0.43	0.89					
	P7B1	NWL	57.90	0.12						
		PERMIT DLW	58.40	0.14	0.07					
			58.78	0.16	0.12					
			60.50	0.24	0.47					
	TOTAL P7B1	NWL	57.90	0.38						
	(COMPOSITE)	PERMIT DLW	58.40	0.43	0.20	0.06	58.05	58.10	0.40	0.08
								modify ex. str.		
	P8B1	NWL	58.38	0.44						
		DLW(WEIR)	58.65	0.47	0.12	0.04	58.47	58.65	0.47	0.12
			60.5	0.68	1.19			keep ex. str.		
	P10B2	NWL	57.80	0.12						
		PERMIT DLW	58.40	0.15	0.08	0.06	58.24	58.30	0.15	0.07
								new ctrl. str.		

EQUALIZED	P12B2	NWL	57.60	0.91							
		PERMIT DLW	58.00	1.04	0.39						
			59.00	1.38	1.60						
			60.00	1.73	3.16						
	P13B2	NWL	57.60	0.15							
		PERMIT DLW	58.00	0.17	0.06						
			58.14	0.18	0.09						
			59.54	0.26	0.40						
			60.54	0.32	0.69						
	P14B2	NWL	57.60	0.32							
		PERMIT DLW	58.00	0.37	0.14						
			58.39	0.42	0.29						
			58.70	0.46	0.43						
			60.00	0.62	1.13						
	TOTAL P12B2	NWL	57.60	1.38							
	(COMPOSITE)	PERMIT DLW	58.00	1.58	0.59	0.32	57.82	57.90	1.53	0.44	
								new ctrl. str.			

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



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Node Diagram

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

==========
==== Basins ==========
==========

Name: B10B2 Node: P10B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.940 Time Shift(hrs): 0.00
Curve Number: 87.50 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B11B2 Node: P12B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.690 Time Shift(hrs): 0.00
Curve Number: 86.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B12B2 Node: P12B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 5.110 Time Shift(hrs): 0.00
Curve Number: 88.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B13B2 Node: P13B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.980 Time Shift(hrs): 0.00
Curve Number: 88.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B14B2 Node: P14B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 3.530 Time Shift(hrs): 0.00
Curve Number: 87.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B15B2 Node: P12B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0

Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.700
Curve Number: 74.00
DCIA(%): 0.00
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B16B2
Group: BASE
Node: P12B2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.380
Curve Number: 89.20
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B17B3
Group: BASE
Node: WB3
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.660
Curve Number: 94.50
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B1B1
Group: BASE
Node: P1B1
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.540
Curve Number: 86.40
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B2B1
Group: BASE
Node: P3B1
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.460
Curve Number: 74.00
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B3B1
Group: BASE
Node: P3B1
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.320
Curve Number: 89.60
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B4B1 Node: P4B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.290 Time Shift(hrs): 0.00
Curve Number: 86.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5B1 Node: P5B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.320 Time Shift(hrs): 0.00
Curve Number: 88.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B6B1 Node: P7B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.900 Time Shift(hrs): 0.00
Curve Number: 75.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B7B1 Node: P7B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.930 Time Shift(hrs): 0.00
Curve Number: 92.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B8B1 Node: P8B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.760 Time Shift(hrs): 0.00
Curve Number: 88.50 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B9B2 Node: P10B2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.930 Time Shift(hrs): 0.00
Curve Number: 86.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: BR1B1 Node: WB1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.190 Time Shift(hrs): 0.00
Curve Number: 84.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: BR2B2 Node: WB1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.290 Time Shift(hrs): 0.00
Curve Number: 85.60 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: BR3B3 Node: WB3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.560 Time Shift(hrs): 0.00
Curve Number: 93.50 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ==========
==========

Name: P10B2 Base Flow(cfs): 0.000 Init Stage(ft): 58.300
Group: BASE Warn Stage(ft): 60.400
Type: Stage/Area

Stage(ft)	Area(ac)
57.800	0.1200
58.400	0.1500

Name: P12B2 Base Flow(cfs): 0.000 Init Stage(ft): 57.900
Group: BASE Warn Stage(ft): 59.800
Type: Stage/Area

Stage(ft)	Area(ac)
57.600	0.9100
58.000	1.0400
59.000	1.3800
60.000	1.7300

Name: P13B2 Base Flow(cfs): 0.000 Init Stage(ft): 57.900
Group: BASE Warn Stage(ft): 60.000

Type: Stage/Area

Stage(ft)	Area(ac)
57.600	0.1500
58.000	0.1700
58.140	0.1800
59.540	0.2600
60.540	0.3200

Name: P14B2 Base Flow(cfs): 0.000 Init Stage(ft): 57.900
Group: BASE Warn Stage(ft): 59.300
Type: Stage/Area

Stage(ft)	Area(ac)
57.600	0.3200
58.000	0.3700
58.390	0.4200
58.700	0.4600
60.000	0.6200

Name: P1B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.500
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
58.200	0.1700
58.500	0.2000
58.630	0.2100
60.000	0.2900

Name: P3B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.100
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
57.900	0.2600
58.400	0.2900
58.780	0.3100
60.500	0.4300

Name: P4B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.500
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
57.700	0.0220
58.000	0.0260
59.000	0.0400
60.000	0.0570

Name: P5B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.500
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
58.200	0.0600
58.500	0.0700
60.000	0.1000

Name: P7B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.100
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
57.900	0.1200
58.400	0.1400
58.780	0.1600
60.500	0.2400

Name: P8B1 Base Flow(cfs): 0.000 Init Stage(ft): 58.650
Group: BASE Warn Stage(ft): 60.700
Type: Stage/Area

Stage(ft)	Area(ac)
58.380	0.4400
58.650	0.4700
60.500	0.6800

Name: WB1 Base Flow(cfs): 0.000 Init Stage(ft): 57.140
Group: TW Warn Stage(ft): 60.140
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	57.140
8.00	57.640
15.00	60.140
18.00	60.140
48.00	57.140

Name: WB3 Base Flow(cfs): 0.000 Init Stage(ft): 59.540
Group: TW Warn Stage(ft): 60.740
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	59.540
8.00	60.040
15.00	60.740
18.00	60.740
48.00	59.540

==========
==== Pipes ====
==========

Name: R13B2 From Node: P13B2 Length(ft): 175.00
Group: BASE To Node: P12B2 Count: 1
Friction Equation: Average Conveyance
UPSTREAM DOWNSTREAM Solution Algorithm: Automatic
Geometry: Circular Circular Flow: Both

Span(in):	30.00	30.00	Entrance Loss Coef: 0.70
Rise(in):	30.00	30.00	Exit Loss Coef: 1.00
Invert(ft):	57.900	57.900	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R14B2	From Node: P14B2	Length(ft): 81.00
Group:	BASE	To Node: P13B2	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	30.00	30.00	Entrance Loss Coef: 0.70
Rise(in):	30.00	30.00	Exit Loss Coef: 1.00
Invert(ft):	57.890	57.830	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R1B1	From Node: P1B1	Length(ft): 82.00
Group:	BASE	To Node: P4B1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	30.00	30.00	Entrance Loss Coef: 0.70
Rise(in):	30.00	30.00	Exit Loss Coef: 1.00
Invert(ft):	57.870	57.730	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R3B1	From Node: P3B1	Length(ft): 170.00
Group:	BASE	To Node: P7B1	Count: 1
			Friction Equation: Average Conveyance
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Automatic
Geometry:	Circular	Circular	Flow: Both
Span(in):	18.00	18.00	Entrance Loss Coef: 0.70
Rise(in):	18.00	18.00	Exit Loss Coef: 1.00
Invert(ft):	57.700	57.400	Bend Loss Coef: 0.00
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn

```
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None



Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

-----------------------------------------------------------------------------------------------------
         Name: R4B1                From Node: P4B1              Length(ft): 164.00
        Group: BASE                  To Node: P5B1                   Count: 1
                                                         Friction Equation: Average Conveyance
              UPSTREAM       DOWNSTREAM                 Solution Algorithm: Automatic
     Geometry: Circular       Circular                                Flow: Both
     Span(in): 30.00          24.00                     Entrance Loss Coef: 0.70
     Rise(in): 30.00          24.00                         Exit Loss Coef: 1.00
   Invert(ft): 57.810         57.900                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                         Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                      Stabilizer Option: None



Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

=====================================================================================
==== Drop Structures ===============================================================
=====================================================================================

         Name: R10B2               From Node: P10B2             Length(ft): 49.00
        Group: BASE                  To Node: WB1                    Count: 1

              UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Circular       Circular                  Solution Algorithm: Automatic
     Span(in): 24.00          24.00                                   Flow: Both
     Rise(in): 24.00          24.00                     Entrance Loss Coef: 0.500
   Invert(ft): 56.000         55.900                        Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                         Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                           Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 2 for Drop Structure R10B2 ***
                                                                                TABLE
                 Count: 1                      Bottom Clip(in): 0.000
                  Type: Vertical: Mavis           Top Clip(in): 0.000
                  Flow: Both                    Weir Disc Coef: 3.000
              Geometry: Rectangular           Orifice Disc Coef: 0.600

              Span(in): 36.00                       Invert(ft): 58.300
              Rise(in): 20.80                 Control Elev(ft): 58.300

*** Weir 2 of 2 for Drop Structure R10B2 ***
                                                                                TABLE
                 Count: 1                      Bottom Clip(in): 0.000
                  Type: Horizontal                Top Clip(in): 0.000
                  Flow: Both                    Weir Disc Coef: 3.200
```

```
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 37.00                      Invert(ft): 60.200
              Rise(in): 49.00                Control Elev(ft): 60.200


-------------------------------------------------------------------------------------------------
         Name: R12B2              From Node: P12B2             Length(ft): 43.00
        Group: BASE                 To Node: WB1                   Count: 1

               UPSTREAM       DOWNSTREAM               Friction Equation: Average Conveyance
     Geometry: Circular       Circular                 Solution Algorithm: Automatic
     Span(in): 24.00          24.00                                Flow: Both
     Rise(in): 24.00          24.00                    Entrance Loss Coef: 0.500
   Invert(ft): 56.000         55.900                       Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                         Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 2 for Drop Structure R12B2 ***
                                                                                    TABLE
                  Count: 1                     Bottom Clip(in): 0.000
                   Type: Vertical: Mavis          Top Clip(in): 0.000
                   Flow: Both                  Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 36.00                      Invert(ft): 57.900
              Rise(in): 25.60                Control Elev(ft): 57.900

*** Weir 2 of 2 for Drop Structure R12B2 ***
                                                                                    TABLE
                  Count: 1                     Bottom Clip(in): 0.000
                   Type: Horizontal               Top Clip(in): 0.000
                   Flow: Both                  Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 37.00                      Invert(ft): 60.200
              Rise(in): 49.00                Control Elev(ft): 60.200


-------------------------------------------------------------------------------------------------
         Name: R5B1               From Node: P5B1              Length(ft): 51.00
        Group: BASE                 To Node: WB1                   Count: 1

               UPSTREAM       DOWNSTREAM               Friction Equation: Average Conveyance
     Geometry: Circular       Circular                 Solution Algorithm: Automatic
     Span(in): 24.00          24.00                                Flow: Both
     Rise(in): 24.00          24.00                    Entrance Loss Coef: 0.500
   Invert(ft): 55.100         54.930                       Exit Loss Coef: 1.000
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                         Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-20 (Per As-Built Plans, 2004)
weir span, top of box, pipe length and D/S pipe invert per survey
modify weir invert from elevation 58.73 to elevation 58.50
modify weir width from 15" to 24"

*** Weir 1 of 2 for Drop Structure R5B1 ***
                                                                                    TABLE
```

```
                Count: 1                      Bottom Clip(in): 0.000
                 Type: Vertical: Mavis           Top Clip(in): 0.000
                 Flow: Both                   Weir Disc Coef: 3.200
             Geometry: Rectangular          Orifice Disc Coef: 0.600

             Span(in): 24.00                       Invert(ft): 58.500
             Rise(in): 22.25                  Control Elev(ft): 58.500

*** Weir 2 of 2 for Drop Structure R5B1 ***
                                                                    TABLE
                Count: 1                      Bottom Clip(in): 0.000
                 Type: Horizontal                Top Clip(in): 0.000
                 Flow: Both                   Weir Disc Coef: 3.200
             Geometry: Rectangular          Orifice Disc Coef: 0.600

             Span(in): 24.00                       Invert(ft): 60.520
             Rise(in): 37.00                  Control Elev(ft): 60.520


-------------------------------------------------------------------------------------------------
        Name: R7B1               From Node: P7B1              Length(ft): 48.00
       Group: BASE                 To Node: WB1                   Count: 1

             UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
    Geometry: Circular      Circular                 Solution Algorithm: Automatic
    Span(in): 18.00         18.00                                 Flow: Both
    Rise(in): 18.00         18.00                   Entrance Loss Coef: 0.500
  Invert(ft): 55.100        54.910                      Exit Loss Coef: 1.000
 Manning's N: 0.012000      0.012000                  Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000         0.000                      Inlet Ctrl Spec: Use dn
Bot Clip(in): 0.000         0.000                        Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-19 (Per As-Built Plans, 2004)
weir span, top of box, pipe length and D/S pipe invert per survey
modify weir invert from elevation 58.78 to elevation 58.10 and remove the top of the weir
modify weir width from 12" to 24"


*** Weir 1 of 2 for Drop Structure R7B1 ***
                                                                    TABLE
                Count: 1                      Bottom Clip(in): 0.000
                 Type: Vertical: Mavis           Top Clip(in): 0.000
                 Flow: Both                   Weir Disc Coef: 3.200
             Geometry: Rectangular          Orifice Disc Coef: 0.600

             Span(in): 24.00                       Invert(ft): 58.100
             Rise(in): 30.20                  Control Elev(ft): 58.100

*** Weir 2 of 2 for Drop Structure R7B1 ***
                                                                    TABLE
                Count: 1                      Bottom Clip(in): 0.000
                 Type: Horizontal                Top Clip(in): 0.000
                 Flow: Both                   Weir Disc Coef: 3.200
             Geometry: Rectangular          Orifice Disc Coef: 0.600

             Span(in): 24.00                       Invert(ft): 60.780
             Rise(in): 37.00                  Control Elev(ft): 60.780


-------------------------------------------------------------------------------------------------
        Name: R8B1               From Node: P8B1              Length(ft): 65.00
       Group: BASE                 To Node: WB1                   Count: 1

             UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
    Geometry: Circular      Circular                 Solution Algorithm: Automatic
    Span(in): 18.00         18.00                                 Flow: Both
    Rise(in): 18.00         18.00                   Entrance Loss Coef: 0.500
  Invert(ft): 56.300        54.940                      Exit Loss Coef: 1.000
```

```
  Manning's N: 0.012000       0.012000                  Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                      Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                        Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-22 (Per As-Built Plans, 2004)
weir and pipe D/S invert info per survey

*** Weir 1 of 2 for Drop Structure R8B1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Vertical: Mavis           Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.000
               Geometry: Rectangular          Orifice Disc Coef: 0.600

               Span(in): 6.00                        Invert(ft): 58.650
               Rise(in): 24.40                 Control Elev(ft): 58.650

*** Weir 2 of 2 for Drop Structure R8B1 ***
                                                                                TABLE
                  Count: 1                      Bottom Clip(in): 0.000
                   Type: Horizontal                Top Clip(in): 0.000
                   Flow: Both                   Weir Disc Coef: 3.200
               Geometry: Rectangular          Orifice Disc Coef: 0.600

               Span(in): 24.00                       Invert(ft): 60.850
               Rise(in): 37.00                 Control Elev(ft): 60.850


================================================================================
==== Hydrology Simulations ====================================================
================================================================================

         Name: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin B\FLMOD.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 9.00

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           30.00
17.000          1.00
60.000          30.00

================================================================================
==== Routing Simulations ======================================================
================================================================================

         Name: flmod              Hydrology Sim: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin B\flmod.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                     End Time(hrs): 60.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 60.0000
       Boundary Stages:                         Boundary Flows:



Time(hrs)       Print Inc(min)
--------------- ---------------
10.000          60.000
14.000          2.000
```

19.000	30.000
60.000	180.000

Group	Run
BASE	Yes
TW	Yes

SR 54 Basin B
Post-Development

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
FLMOD	B10B2	BASE	12.02	5.182	7.490	25557.744
FLMOD	B11B2	BASE	12.02	9.185	7.331	44975.337
FLMOD	B12B2	BASE	12.02	28.561	7.661	142103.642
FLMOD	B13B2	BASE	12.02	5.467	7.636	27166.037
FLMOD	B14B2	BASE	12.02	19.498	7.515	96290.282
FLMOD	B15B2	BASE	12.04	3.170	5.831	14817.755
FLMOD	B16B2	BASE	12.02	2.130	7.697	10617.816
FLMOD	B17B3	BASE	12.02	3.844	8.341	19983.190
FLMOD	B1B1	BASE	12.02	8.389	7.356	41120.105
FLMOD	B2B1	BASE	12.04	2.083	5.831	9737.382
FLMOD	B3B1	BASE	12.02	7.425	7.746	37116.375
FLMOD	B4B1	BASE	12.02	7.003	7.319	34273.039
FLMOD	B5B1	BASE	12.02	7.378	7.661	36707.790
FLMOD	B6B1	BASE	12.04	4.175	5.992	19575.622
FLMOD	B7B1	BASE	12.02	5.344	8.074	27258.177
FLMOD	B8B1	BASE	12.02	9.799	7.612	48632.211
FLMOD	B9B2	BASE	12.02	5.066	7.356	24832.271
FLMOD	BR1B1	BASE	12.04	6.372	7.172	30982.048
FLMOD	BR2B2	BASE	12.04	1.565	7.258	7640.422
FLMOD	BR3B3	BASE	12.02	9.034	8.220	46547.361

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Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
P10B2	BASE	flmod	15.07	60.141	60.400	0.0039	10327	12.03	10.243	12.14	7.725
P12B2	BASE	flmod	16.65	60.166	59.800	0.0043	78024	12.03	46.047	12.52	12.886
P13B2	BASE	flmod	16.65	60.168	60.000	0.0049	13146	12.07	9.984	12.47	5.281
P14B2	BASE	flmod	16.65	60.169	59.300	0.0050	27968	12.03	19.487	12.27	4.997
P1B1	BASE	flmod	12.39	60.416	60.700	0.0050	13696	12.03	8.386	12.67	4.692
P3B1	BASE	flmod	16.11	60.165	60.700	0.0042	17718	12.03	9.496	12.76	2.981
P4B1	BASE	flmod	12.38	60.396	60.700	-0.0050	2791	12.30	7.013	12.48	7.072
P5B1	BASE	flmod	12.34	60.192	60.700	0.0050	4532	12.07	11.594	12.32	10.717
P7B1	BASE	flmod	16.09	60.161	60.700	0.0041	9774	12.05	10.030	12.33	6.624
P8B1	BASE	flmod	17.96	60.168	60.700	0.0024	27981	12.03	9.792	12.61	1.433
WB1	TW	flmod	15.00	60.140	60.140	0.0038	0	12.25	42.804	0.00	0.000
WB3	TW	flmod	15.00	60.740	60.740	0.0011	0	12.03	12.860	0.00	0.000

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Basin C – Pond Calculations

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2C1	TRAVEL LANE	N/A	98	3.25	318.50
	OTHER IMPERVIOUS	N/A	98	3.21	314.58
	PERVIOUS	C	74	3.41	252.34
	STORAGE BASIN	N/A	100	4.83	483.00
	OFFSITE	C		0	0.00
	TOTAL			14.70	1368.42

WEIGHTED CN	93.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
DDC1	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0.41	40.18
	PERVIOUS	C	74	2.59	191.66
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			3	231.84

WEIGHTED CN	77.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1C2	TRAVEL LANE	N/A	98	0.82	80.36
	OTHER IMPERVIOUS	N/A	98	0.06	5.88
	PERVIOUS	C	74	1.13	83.62
	STORAGE BASIN	N/A	100	0.06	6.00
	OFFSITE	C		0	0.00
	TOTAL			2.07	175.86

WEIGHTED CN	85.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2C2	TRAVEL LANE	N/A	98	0.29	28.42
	OTHER IMPERVIOUS	N/A	98	0.09	8.82
	PERVIOUS	C	74	0.34	25.16
	STORAGE BASIN	N/A	100	0.06	6.00
	OFFSITE	C		0	0.00
	TOTAL			0.78	68.40

WEIGHTED CN	87.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3C2	TRAVEL LANE	N/A	98	1.81	177.38
	OTHER IMPERVIOUS	N/A	98	1.75	171.50
	PERVIOUS	C	74	1.99	147.26
	STORAGE BASIN	N/A	100	0.19	19.00
	OFFSITE	C		0	0.00
	TOTAL			5.74	515.14

WEIGHTED CN	89.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4C2	TRAVEL LANE	N/A	98	0.25	24.50
	OTHER IMPERVIOUS	N/A	98	0.25	24.50
	PERVIOUS	C	74	0.63	46.62
	STORAGE BASIN	N/A	100	0.07	7.00
	OFFSITE (GOOD PASTURE)	C	74	0	0.00
	TOTAL			1.2	102.62

WEIGHTED CN	85.5

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5C2	TRAVEL LANE	N/A	98	0.62	60.76
	OTHER IMPERVIOUS	N/A	98	0.34	33.32
	PERVIOUS	C	74	0.69	51.06
	STORAGE BASIN	N/A	100	0.15	15.00
	OFFSITE	C		0	0.00
	TOTAL			1.8	160.14

WEIGHTED CN	89.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
DDC2	TRAVEL LANE	N/A	98	0	0.00
	OTHER IMPERVIOUS	N/A	98	0.13	12.74
	PERVIOUS	C	74	0.92	68.08
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.05	80.82

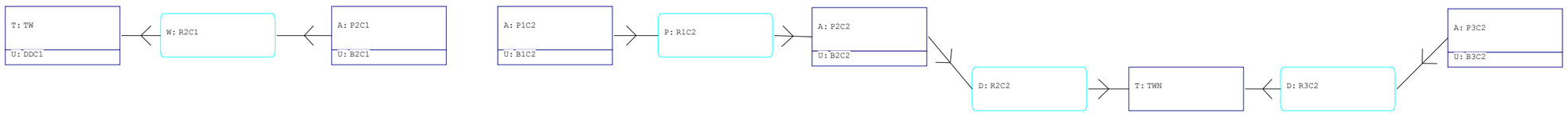
WEIGHTED CN	77.0

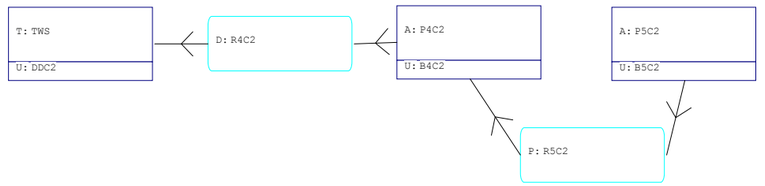
	PROPOSED REVISED POND		STAGE (FT)	AREA (AC)	STORAGE (AC-FT)	REQUIRED WATER QUALITY TREATMENT VOLUME (ACFT)	REQUIRED TOP OF TREATMENT ELEV (FT)	PROPOSED TOP OF TREATMENT ELEV (FT)	PROPOSED AREA AT TOP OF TREATMENT (AC)	PROPOSED VOLUME OF TREATMENT (ACFT)
	P2C1	NWL	59.07	4.83						
		PERMIT DLW	59.35	4.93	1.37	0.27	59.13	59.35	4.93	1.37
			61.48	5.76	12.76			keep ex. str.		
EQUALIZED	P1C2	NWL	60.46	0.10						
		PERMIT DLW	61.14	0.14	0.08					
			63.28	0.27	0.52					
	P2C2	NWL	60.46	0.08						
		PERMIT DLW	61.14	0.11	0.06					
			62.26	0.16	0.22					
	Total P2C2	NWL	60.46	0.18						
	(COMPOSITE)	PERMIT DLW	61.14	0.25	0.15	0.09	60.88	60.90	0.23	0.09
			62.26	0.43	0.53			new ctrl. str.		
	P3C2	NWL	60.48	0.26						
		PERMIT DLW	60.89	0.33	0.12	0.15	60.99	61.00	0.35	0.16
			62.50	0.61	0.88			new ctrl. str.		
EQUALIZED	P4C2	NWL	60.49	0.11						
		PERMIT DLW	61.34	0.18	0.12					
			61.66							
			62.50							
			63.00	0.32	0.54					
	P5C2	NWL	60.49	0.21						
		PERMIT DLW	61.34	0.31	0.22					
			63.00	0.51	0.90					
	TOTAL P4C2	NWL	60.49	0.11						
	(COMPOSITE)	PERMIT DLW	61.34	0.18	0.12	0.07	60.97	61.00	0.15	0.07
								new ctrl. str.		

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench





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Node Diagram

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==========
==== Basins ==========
==========

Name: B1C2 Node: P1C2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.070 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2C1 Node: P2C1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 14.700 Time Shift(hrs): 0.00
Curve Number: 93.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2C2 Node: P2C2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.780 Time Shift(hrs): 0.00
Curve Number: 87.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B3C2 Node: P3C2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 5.740 Time Shift(hrs): 0.00
Curve Number: 89.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B4C2 Node: P4C2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.200 Time Shift(hrs): 0.00
Curve Number: 85.50 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5C2 Node: P5C2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.800 Time Shift(hrs): 0.00
Curve Number: 89.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: DDC1 Node: TW Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 3.000 Time Shift(hrs): 0.00
Curve Number: 77.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: DDC2 Node: TWS Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.050 Time Shift(hrs): 0.00
Curve Number: 77.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ==========
==========

Name: P1C2 Base Flow(cfs): 0.000 Init Stage(ft): 60.900
Group: BASE Warn Stage(ft): 63.100
Type: Stage/Area

Stage(ft)	Area(ac)
60.460	0.1000
61.140	0.1400
63.280	0.2700

Name: P2C1 Base Flow(cfs): 0.000 Init Stage(ft): 59.350
Group: BASE Warn Stage(ft): 61.000
Type: Stage/Area

Stage(ft)	Area(ac)
59.070	4.8300
59.350	4.9300
61.480	5.7600

Name: P2C2 Base Flow(cfs): 0.000 Init Stage(ft): 60.900
Group: BASE Warn Stage(ft): 62.800
Type: Stage/Area

Stage(ft)	Area(ac)

60.460	0.0800
61.140	0.1100
62.260	0.1600

Name: P3C2 Base Flow(cfs): 0.000 Init Stage(ft): 61.000
Group: BASE Warn Stage(ft): 62.800
Type: Stage/Area

Stage(ft)	Area(ac)
60.480	0.2600
60.890	0.3300
62.500	0.6100

Name: P4C2 Base Flow(cfs): 0.000 Init Stage(ft): 61.000
Group: BASE Warn Stage(ft): 63.300
Type: Stage/Area

Stage(ft)	Area(ac)
60.490	0.1100
61.340	0.1800
63.000	0.3200

Name: P5C2 Base Flow(cfs): 0.000 Init Stage(ft): 61.000
Group: BASE Warn Stage(ft): 63.600
Type: Stage/Area

Stage(ft)	Area(ac)
60.490	0.2100
61.340	0.3100
63.000	0.5100

Name: TW Base Flow(cfs): 0.000 Init Stage(ft): 59.140
Group: BASE Warn Stage(ft): 59.540
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	59.140
8.00	59.240
15.00	59.540
18.00	59.540
48.00	59.140

Name: TWN Base Flow(cfs): 0.000 Init Stage(ft): 60.490
Group: BASE Warn Stage(ft): 61.140
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	60.490
8.00	60.640
15.00	61.140
18.00	61.140
48.00	60.490

```
--------------------------------------------------------------------------------
      Name: TWS                Base Flow(cfs): 0.000          Init Stage(ft): 60.490
     Group: BASE                                              Warn Stage(ft): 63.040
      Type: Time/Stage

SWFWMD ERP # 43016251.000

      Time(hrs)       Stage(ft)
--------------- ---------------
           0.00          60.490
           8.00          61.140
          15.00          63.040
          18.00          63.040
          48.00          60.490

================================================================================
==== Pipes =====================================================================
================================================================================

         Name: R1C2               From Node: P1C2              Length(ft): 30.00
        Group: BASE                 To Node: P2C2                   Count: 1
                                                      Friction Equation: Average Conveyance
               UPSTREAM       DOWNSTREAM              Solution Algorithm: Automatic
     Geometry: Circular       Circular                          Flow: Both
     Span(in): 24.00          24.00                   Entrance Loss Coef: 0.70
     Rise(in): 24.00          24.00                       Exit Loss Coef: 1.00
   Invert(ft): 59.900         59.800                      Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope


--------------------------------------------------------------------------------
         Name: R5C2               From Node: P5C2              Length(ft): 99.00
        Group: BASE                 To Node: P4C2                   Count: 1
                                                      Friction Equation: Average Conveyance
               UPSTREAM       DOWNSTREAM              Solution Algorithm: Automatic
     Geometry: Circular       Circular                          Flow: Both
     Span(in): 24.00          24.00                   Entrance Loss Coef: 0.70
     Rise(in): 24.00          24.00                       Exit Loss Coef: 1.00
   Invert(ft): 59.900         59.800                      Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope


================================================================================
==== Drop Structures ===========================================================
================================================================================

         Name: R2C2               From Node: P2C2              Length(ft): 46.00
        Group: BASE                 To Node: TWN                    Count: 1

               UPSTREAM       DOWNSTREAM              Friction Equation: Average Conveyance
     Geometry: Circular       Circular                Solution Algorithm: Automatic
```

Span(in):	30.00	30.00	Flow: Both
Rise(in):	30.00	30.00	Entrance Loss Coef: 0.500
Invert(ft):	58.500	57.900	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R2C2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	46.00	Invert(ft):	60.900
Rise(in):	10.00	Control Elev(ft):	60.900

*** Weir 2 of 2 for Drop Structure R2C2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	61.900
Rise(in):	49.00	Control Elev(ft):	61.900

Name:	R3C2	From Node: P3C2	Length(ft): 44.00
Group:	BASE	To Node: TWN	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Average Conveyance
Span(in):	24.00	24.00	Solution Algorithm:	Automatic
Rise(in):	24.00	24.00	Flow:	Both
Invert(ft):	58.000	57.900	Entrance Loss Coef:	0.500
Manning's N:	0.012000	0.012000	Exit Loss Coef:	1.000
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 1 for Drop Structure R3C2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	61.000
Rise(in):	49.00	Control Elev(ft):	61.000

Name:	R4C2	From Node: P4C2	Length(ft): 33.00
Group:	BASE	To Node: TWS	Count: 1

UPSTREAM	DOWNSTREAM		
		Friction Equation:	Average Conveyance

Geometry:	Circular	Circular	Solution Algorithm: Automatic
Span(in):	30.00	30.00	Flow: Both
Rise(in):	30.00	30.00	Entrance Loss Coef: 0.500
Invert(ft):	59.600	59.500	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R4C2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	46.00	Invert(ft):	61.000
Rise(in):	23.20	Control Elev(ft):	61.000

*** Weir 2 of 2 for Drop Structure R4C2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	63.100
Rise(in):	49.00	Control Elev(ft):	63.100

==========
==== Weirs ==========
==========

Name:	R2C1	From Node:	P2C1
Group:	BASE	To Node:	TW
Flow:	Both	Count:	1
Type:	Vertical: Mavis	Geometry:	Trapezoidal
Bottom Width(ft):	0.00		
Left Side Slope(h/v):	6.00		
Right Side Slope(h/v):	3.00		
Invert(ft):	59.350		
Control Elevation(ft):	59.350		
Struct Opening Dim(ft):	9999.00		

TABLE

Bottom Clip(ft):	0.000
Top Clip(ft):	0.000
Weir Discharge Coef:	2.600
Orifice Discharge Coef:	0.600

invert per survey
geometry from ERP 4316251.00

==========
==== Hydrology Simulations ==========
==========

Name:	FLMOD
Filename:	F:\Projects\25633923201_ICPR\Proposed\Basin C\FLMOD.R32
Override Defaults:	Yes
Storm Duration(hrs):	24.00
Rainfall File:	Flmod
Rainfall Amount(in):	9.00

Time(hrs)	Print Inc(min)
8.000	30.00
17.000	2.00
60.000	30.00

==========
==== Routing Simulations ==========
==========

Name: flmod Hydrology Sim: FLMOD
Filename: F:\Projects\25633923201_ICPR\Proposed\Basin C\flmod.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: Boundary Flows:

Time(hrs)	Print Inc(min)
9.000	60.000
17.000	5.000
24.000	60.000

Group	Run
BASE	Yes
TW	Yes

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
FLMOD	B1C2	BASE	12.04	11.097	7.185	53985.124
FLMOD	B2C1	BASE	12.02	84.923	8.171	436032.625
FLMOD	B2C2	BASE	12.02	4.308	7.515	21276.606
FLMOD	B3C2	BASE	12.02	32.317	7.758	161653.690
FLMOD	B4C2	BASE	12.04	6.470	7.246	31562.252
FLMOD	B5C2	BASE	12.02	10.070	7.673	50135.701
FLMOD	DDC1	BASE	12.04	14.412	6.239	67937.894
FLMOD	DDC2	BASE	12.04	5.019	6.202	23637.333

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Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
P1C2	BASE	flmod	12.20	62.040	63.100	0.0050	8481	12.03	11.092	12.19	7.838
P2C1	BASE	flmod	12.78	60.522	61.000	0.0031	234652	12.03	84.804	12.78	13.813
P2C2	BASE	flmod	12.21	61.845	62.800	0.0043	6165	12.07	11.587	12.21	10.800
P3C2	BASE	flmod	12.29	62.241	62.800	0.0050	24608	12.03	32.285	12.28	19.533
P4C2	BASE	flmod	15.23	63.041	63.300	0.0050	14096	12.07	10.664	12.19	8.938
P5C2	BASE	flmod	15.23	63.042	63.600	0.0050	22443	12.03	10.061	12.32	5.256
TW	BASE	flmod	15.00	59.540	59.540	0.0007	0	12.07	20.630	0.00	0.000
TWN	BASE	flmod	15.00	61.140	61.140	0.0012	0	12.24	30.284	0.00	0.000
TWS	BASE	flmod	15.00	63.040	63.040	0.0045	0	12.07	13.269	0.00	0.000

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Basin D – Pond Calculations

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3D1	TRAVEL LANE	N/A	98	0.26	25.48
	OTHER IMPERVIOUS	N/A	98	0.21	20.58
	PERVIOUS	C	74	0.33	24.42
	STORAGE BASIN	N/A	100	0.27	27.00
	OFFSITE	C		0	0.00
	TOTAL			1.07	97.48

WEIGHTED CN	91.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4D1	TRAVEL LANE	N/A	98	1.88	184.24
	OTHER IMPERVIOUS	N/A	98	1.15	112.70
	PERVIOUS	C	74	1.9	140.60
	STORAGE BASIN	N/A	100	1.33	133.00
	OFFSITE	C		0	0.00
	TOTAL			6.26	570.54

WEIGHTED CN	91.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1D1	TRAVEL LANE	N/A	98	0.38	37.24
	OTHER IMPERVIOUS	N/A	98	0.45	44.10
	PERVIOUS	C	74	0.25	18.50
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.08	99.84

WEIGHTED CN	92.4

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B2D1	TRAVEL LANE	N/A	98	0.55	53.90
	OTHER IMPERVIOUS	N/A	98	0.69	67.62
	PERVIOUS	C	74	0.19	14.06
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.43	135.58

WEIGHTED CN	94.8

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B7D2	TRAVEL LANE	N/A	98	0.15	14.70
	OTHER IMPERVIOUS	N/A	98	0.08	7.84
	PERVIOUS	C	74	0.18	13.32
	STORAGE BASIN	N/A	100	0.02	2.00
	OFFSITE	C		0	0.00
	TOTAL			0.43	37.86

WEIGHTED CN	88.0

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B8D2	TRAVEL LANE	N/A	98	0.28	27.44
	OTHER IMPERVIOUS	N/A	98	0.18	17.64
	PERVIOUS	C	74	0.34	25.16
	STORAGE BASIN	N/A	100	0.03	3.00
	OFFSITE	C		0	0.00
	TOTAL			0.83	73.24

WEIGHTED CN	88.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B9D2	TRAVEL LANE	N/A	98	0.24	23.52
	OTHER IMPERVIOUS	N/A	98	0.19	18.62
	PERVIOUS	C	74	0.31	22.94
	STORAGE BASIN	N/A	100	0.01	1.00
	OFFSITE	C		0	0.00
	TOTAL			0.75	66.08

WEIGHTED CN	88.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5D2	TRAVEL LANE	N/A	98	0.31	30.38
	OTHER IMPERVIOUS	N/A	98	0.25	24.50
	PERVIOUS	C	74	0.15	11.10
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.71	65.98

WEIGHTED CN	92.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B6D2	TRAVEL LANE	N/A	98	0.25	24.50
	OTHER IMPERVIOUS	N/A	98	0.24	23.52
	PERVIOUS	C	74	0.16	11.84
	STORAGE BASIN	N/A	100	0.15	15.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.05	4.00
	TOTAL			0.85	78.86

WEIGHTED CN	92.8

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B10D2	TRAVEL LANE	N/A	98	0.18	17.64
	OTHER IMPERVIOUS	N/A	98	0.05	4.90
	PERVIOUS	C	74	0.38	28.12
	STORAGE BASIN	N/A	100	0.01	1.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.14	10.36
	TOTAL			0.76	62.02

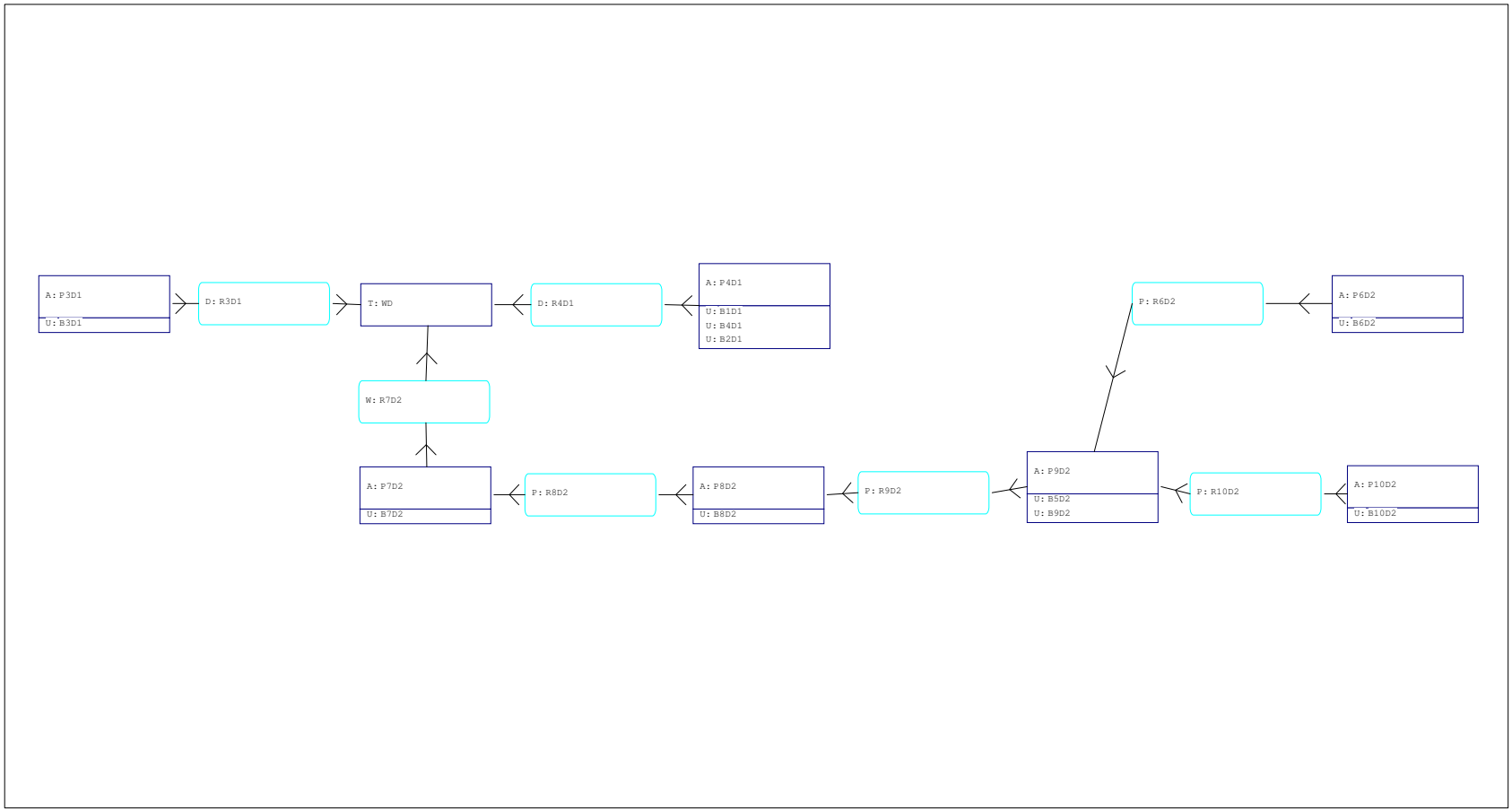
WEIGHTED CN	81.6

	PROPOSED REVISED POND		STAGE (FT)	AREA (AC)	STORAGE (AC-FT)	REQUIRED WATER QUALITY TREATMENT VOLUME (ACFT)	REQUIRED TOP OF TREATMENT ELEV (FT)	PROPOSED TOP OF TREATMENT ELEV (FT)	PROPOSED AREA AT TOP OF TREATMENT (AC)	PROPOSED VOLUME OF TREATMENT (ACFT)
	P3D1	NWL	61.82	0.30						
		PERMIT DLW	62.11	0.32	0.09	0.02	61.88	62.11	0.32	0.09
			64	0.43	0.80			keep ex. str.		
	P4D1	NWL	61.84	1.55						
		PERMIT DLW	62.14	1.58	0.47	0.24	61.99	62.08	1.57	0.37
			64	2.16	3.95			modify ex. str.		
	P6D2		65.18	0.00		Conveyance Ditch Only				
			65.5	0.03	0.00					
			65.9	0.06	0.02					
			66.2	0.14	0.05					
EQUALIZED	P7D2	NWL	61.84	0.02						
		PERMIT DLW	63.15	0.04	0.04					
			64	0.06	0.08					
	P8D2	NWL	61.84	0.05						
		PERMIT DLW	63.15	0.10	0.10					
			66	0.22	0.55					
	P9D2	NWL	61.84	0.02						
		PERMIT DLW	63.15	0.06	0.05					
			64.74	0.12	0.19					
			67	0.20	0.55					
	P10D2	NWL	61.84	0.01						
		PERMIT DLW	63.15	0.04	0.03					
			64.74	0.07	0.12					
			67	0.31	0.55					
	TOTAL P7D2	NWL	61.84	0.10						
	(COMPOSITE)	PERMIT DLW	63.15	0.24	0.22	0.12	62.55	63.15	0.24	0.22
								keep ex. str.		

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



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Node Diagram

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==========
==== Basins ==========
==========

Name: B10D2 Node: P10D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.760 Time Shift(hrs): 0.00
Curve Number: 81.60 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B1D1 Node: P4D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.080 Time Shift(hrs): 0.00
Curve Number: 92.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B2D1 Node: P4D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.430 Time Shift(hrs): 0.00
Curve Number: 94.80 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B3D1 Node: P3D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.070 Time Shift(hrs): 0.00
Curve Number: 91.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B4D1 Node: P4D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 6.260 Time Shift(hrs): 0.00
Curve Number: 91.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5D2 Node: P9D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.710 Time Shift(hrs): 0.00
Curve Number: 92.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B6D2 Node: P6D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.850 Time Shift(hrs): 0.00
Curve Number: 92.80 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B7D2 Node: P7D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.430 Time Shift(hrs): 0.00
Curve Number: 88.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B8D2 Node: P8D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.830 Time Shift(hrs): 0.00
Curve Number: 88.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B9D2 Node: P9D2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.750 Time Shift(hrs): 0.00
Curve Number: 88.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ==========
==========

Name: P10D2 Base Flow(cfs): 0.000 Init Stage(ft): 63.150
Group: BASE Warn Stage(ft): 67.800
Type: Stage/Area

Stage(ft)	Area(ac)
61.840	0.0100
63.150	0.0400
64.740	0.0700
67.000	0.3100

Name: P3D1 Base Flow(cfs): 0.000 Init Stage(ft): 62.110
Group: BASE Warn Stage(ft): 65.100
Type: Stage/Area

Stage(ft)	Area(ac)
61.820	0.3000
62.110	0.3200
64.000	0.4300

Name: P4D1 Base Flow(cfs): 0.000 Init Stage(ft): 62.080
Group: BASE Warn Stage(ft): 64.600
Type: Stage/Area

Stage(ft)	Area(ac)
61.840	1.5500
62.140	1.5800
64.000	2.1600

Name: P6D2 Base Flow(cfs): 0.000 Init Stage(ft): 65.180
Group: BASE Warn Stage(ft): 67.800
Type: Stage/Area

Stage(ft)	Area(ac)
65.180	0.0010
65.500	0.0270
65.900	0.0640
66.200	0.1390

Name: P7D2 Base Flow(cfs): 0.000 Init Stage(ft): 63.150
Group: BASE Warn Stage(ft): 64.000
Type: Stage/Area

Stage(ft)	Area(ac)
61.840	0.0200
63.150	0.0400
64.000	0.0600

Name: P8D2 Base Flow(cfs): 0.000 Init Stage(ft): 63.150
Group: BASE Warn Stage(ft): 64.900
Type: Stage/Area

Stage(ft)	Area(ac)
61.840	0.0500
63.150	0.1000
66.000	0.2200

```
------------------------------------------------------------------------------------------
      Name: P9D2                Base Flow(cfs): 0.000          Init Stage(ft): 63.150
     Group: BASE                                              Warn Stage(ft): 67.700
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         61.840          0.0200
         63.150          0.0600
         64.740          0.1200
         67.000          0.2000

------------------------------------------------------------------------------------------
      Name: WD                  Base Flow(cfs): 0.000          Init Stage(ft): 61.840
     Group: TW                                                Warn Stage(ft): 62.440
      Type: Time/Stage

SWFWMD ERP # 43016251.000

      Time(hrs)       Stage(ft)
--------------- ---------------
           0.00          61.840
          15.00          62.440
          18.00          62.440
          48.00          61.840

==========================================================================================
==== Pipes ===============================================================================
==========================================================================================

         Name: R10D2               From Node: P10D2             Length(ft): 63.00
        Group: BASE                  To Node: P9D2                  Count: 1
                                                        Friction Equation: Average Conveyance
               UPSTREAM       DOWNSTREAM               Solution Algorithm: Automatic
     Geometry: Circular       Circular                             Flow: Both
     Span(in): 24.00          24.00                   Entrance Loss Coef: 0.70
     Rise(in): 24.00          24.00                       Exit Loss Coef: 1.00
   Invert(ft): 61.300         61.200                      Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


------------------------------------------------------------------------------------------
         Name: R6D2                From Node: P6D2              Length(ft): 195.00
        Group: BASE                  To Node: P9D2                  Count: 1
                                                        Friction Equation: Average Conveyance
               UPSTREAM       DOWNSTREAM               Solution Algorithm: Automatic
     Geometry: Circular       Circular                             Flow: Both
     Span(in): 24.00          24.00                   Entrance Loss Coef: 0.70
     Rise(in): 24.00          24.00                       Exit Loss Coef: 1.00
   Invert(ft): 65.180         64.760                      Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall
```

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R8D2	From Node:	P8D2	Length(ft):	67.00
Group:	BASE	To Node:	P7D2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.70
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	61.300	61.200		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	R9D2	From Node:	P9D2	Length(ft):	68.00
Group:	BASE	To Node:	P8D2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.70
Rise(in):	24.00	24.00		Exit Loss Coef:	1.00
Invert(ft):	61.300	61.200		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

==========
==== Drop Structures ==========
==========

Name:	R3D1	From Node:	P3D1	Length(ft):	40.00
Group:	BASE	To Node:	WD	Count:	1
	UPSTREAM	DOWNSTREAM		Friction Equation:	Average Conveyance
Geometry:	Circular	Circular		Solution Algorithm:	Automatic
Span(in):	18.00	18.00		Flow:	Both
Rise(in):	18.00	18.00		Entrance Loss Coef:	0.500
Invert(ft):	61.040	60.760		Exit Loss Coef:	1.000
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

S-49 (Per As-Built Plans, 2004)

*** Weir 1 of 2 for Drop Structure R3D1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	6.00	Invert(ft):	62.110
Rise(in):	34.60	Control Elev(ft):	62.110

*** Weir 2 of 2 for Drop Structure R3D1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	65.160
Rise(in):	37.00	Control Elev(ft):	65.160

Name:	R4D1	From Node:	P4D1
Group:	BASE	To Node:	WD
Length(ft):	34.00		
Count:	1		

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	61.040	60.760
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Friction Equation:	Average Conveyance
Solution Algorithm:	Automatic
Flow:	Both
Entrance Loss Coef:	0.500
Exit Loss Coef:	1.000
Outlet Ctrl Spec:	Use dc or tw
Inlet Ctrl Spec:	Use dn
Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-50 (Per As-Built Plans, 2004)
modify weir span from 6" to 14"

*** Weir 1 of 2 for Drop Structure R4D1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	14.00	Invert(ft):	62.080
Rise(in):	25.96	Control Elev(ft):	62.080

*** Weir 2 of 2 for Drop Structure R4D1 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	24.00	Invert(ft):	64.410
Rise(in):	37.00	Control Elev(ft):	64.410

==========
==== Weirs ==========
==========

```
         Name: R7D2                From Node: P7D2
        Group: BASE                  To Node: WD
         Flow: Both                   Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 9.58
       Left Side Slope(h/v): 6.00
      Right Side Slope(h/v): 3.00
                  Invert(ft): 63.150
       Control Elevation(ft): 63.150
     Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600

S-53 (Per As-Built Plans, 2004) & survey

================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin D\FLMOD.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 9.00

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           30.00
15.000          24.00
60.000          30.00

================================================================================
==== Routing Simulations =======================================================
================================================================================

         Name: flmod               Hydrology Sim: FLMOD
     Filename: F:\Projects\25633923201_ICPR\Proposed\Basin D\flmod.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 0.100
        Start Time(hrs): 0.000                    End Time(hrs): 60.00
     Min Calc Time(sec): 1.0000               Max Calc Time(sec): 5.0000
        Boundary Stages:                         Boundary Flows:



Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           30.000
20.000          5.000
60.000          30.000

Group           Run
--------------- -----
BASE            Yes
TW              Yes
```

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
FLMOD	B10D2	BASE	12.04	3.900	6.768	18670.499
FLMOD	B1D1	BASE	12.02	6.211	8.086	31702.228
FLMOD	B2D1	BASE	12.02	8.340	8.377	43485.296
FLMOD	B3D1	BASE	12.02	6.095	7.929	30795.518
FLMOD	B4D1	BASE	12.02	35.658	7.929	180168.168
FLMOD	B5D2	BASE	12.02	4.096	8.147	20997.585
FLMOD	B6D2	BASE	12.02	4.901	8.135	25100.539
FLMOD	B7D2	BASE	12.02	2.382	7.551	11786.549
FLMOD	B8D2	BASE	12.02	4.608	7.576	22824.284
FLMOD	B9D2	BASE	12.02	4.160	7.563	20591.146

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
P10D2	BASE	flmod	12.31	64.790	67.800	0.0042	3286	12.00	3.823	12.42	2.346
P3D1	BASE	flmod	12.67	63.125	65.100	0.0016	16512	12.00	6.005	12.66	1.526
P4D1	BASE	flmod	12.83	63.896	64.600	0.0027	92670	12.00	49.478	12.80	7.709
P6D2	BASE	flmod	12.17	66.204	67.800	0.0017	6289	12.00	4.831	12.17	3.695
P7D2	BASE	flmod	12.27	63.727	64.000	0.0009	2337	12.26	14.294	12.27	14.288
P8D2	BASE	flmod	12.32	64.358	64.900	0.0027	6578	12.11	13.869	12.34	12.911
P9D2	BASE	flmod	12.30	64.772	67.700	0.0041	5469	12.00	12.933	12.26	10.464
WD	TW	flmod	15.00	62.440	62.440	0.0001	0	12.38	22.529	0.00	0.000

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Basin E – Pond Calculations

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B1E1	TRAVEL LANE	N/A	98	0.4	39.20
	OTHER IMPERVIOUS	N/A	98	0.58	56.84
	PERVIOUS	C	74	0.45	33.30
	STORAGE BASIN	N/A	100	0.03	3.00
	OFFSITE	C		0	0.00
	TOTAL			1.46	132.34
			WEIGHTED CN		90.6

P7E1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B3E1	TRAVEL LANE	N/A	98	0.66	64.68
	OTHER IMPERVIOUS	N/A	98	0.39	38.22
	PERVIOUS	C	74	0.86	63.64
	STORAGE BASIN	N/A	100	0.1	10.00
	OFFSITE (GRASS COVER > 75%)	C	74	0.17	12.58
	TOTAL			2.18	189.12
			WEIGHTED CN		86.8

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B5E1	TRAVEL LANE	N/A	98	0.28	27.44
	OTHER IMPERVIOUS	N/A	98	0.19	18.62
	PERVIOUS	C	74	0.35	25.90
	STORAGE BASIN	N/A	100	0.02	2.00
	OFFSITE (OPEN SPACE > 75%)	C	74	0.66	48.84
	TOTAL			1.5	122.80
			WEIGHTED CN		81.9

P7E1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B4E1	TRAVEL LANE	N/A	98	0.42	41.16
	OTHER IMPERVIOUS	N/A	98	0.52	50.96
	PERVIOUS	C	74	0.46	34.04
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.4	126.16
			WEIGHTED CN		90.1

P7E1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B7E1	TRAVEL LANE	N/A	98	0.53	51.94
	OTHER IMPERVIOUS	N/A	98	0.23	22.54
	PERVIOUS	C	74	0.82	60.68
	STORAGE BASIN	N/A	100	0.8	80.00
	OFFSITE	C		0	0.00
	TOTAL			2.38	215.16

WEIGHTED CN	90.4

P10E1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B10E1	TRAVEL LANE	N/A	98	0.38	37.24
	OTHER IMPERVIOUS	N/A	98	0.24	23.52
	PERVIOUS	C	74	0.6	44.40
	STORAGE BASIN	N/A	100	0.8	80.00
	OFFSITE	C		0	0.00
	TOTAL			2.02	185.16

WEIGHTED CN	91.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B6E1	TRAVEL LANE	N/A	98	0.48	47.04
	OTHER IMPERVIOUS	N/A	98	0.3	29.40
	PERVIOUS	C	74	0.32	23.68
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.1	100.12

WEIGHTED CN	91.0

P12E1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B12E1	TRAVEL LANE	N/A	98	0.36	35.28
	OTHER IMPERVIOUS	N/A	98	0.26	25.48
	PERVIOUS	C	74	0.57	42.18
	STORAGE BASIN	N/A	100	0.29	29.00
	OFFSITE	C		0	0.00
	TOTAL			1.48	131.94

WEIGHTED CN	89.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B8E1	TRAVEL LANE	N/A	98	0.78	76.44
	OTHER IMPERVIOUS	N/A	98	0.67	65.66
	PERVIOUS	C	74	0.32	23.68
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.77	165.78

WEIGHTED CN	93.7

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
BR1E1	TRAVEL LANE	N/A	98	0.42	41.16
	OTHER IMPERVIOUS	N/A	98	0.28	27.44
	PERVIOUS	C	74	0.6	44.40
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.3	113.00

WEIGHTED CN	86.9

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B9E2	TRAVEL LANE	N/A	98	0.47	46.06
	OTHER IMPERVIOUS	N/A	98	0.37	36.26
	PERVIOUS	C	74	0.7	51.80
	STORAGE BASIN	N/A	100	0.15	15.00
	OFFSITE	C		0	0.00
	TOTAL			1.69	149.12

WEIGHTED CN	88.2

P13E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B11E2	TRAVEL LANE	N/A	98	0.81	79.38
	OTHER IMPERVIOUS	N/A	98	0.69	67.62
	PERVIOUS	C	74	0.37	27.38
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.87	174.38

WEIGHTED CN	93.3

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B13E2	TRAVEL LANE	N/A	98	0.3	29.40
	OTHER IMPERVIOUS	N/A	98	0.13	12.74
	PERVIOUS	C	74	0.3	22.20
	STORAGE BASIN	N/A	100	0.09	9.00
	OFFSITE	C		0	0.00
	TOTAL			0.82	73.34
			WEIGHTED CN		89.4

P13E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B13AE2	TRAVEL LANE	N/A	98	0.21	20.58
	OTHER IMPERVIOUS	N/A	98	0.14	13.72
	PERVIOUS	C	74	0.24	17.76
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.59	52.06
			WEIGHTED CN		88.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B14E2	TRAVEL LANE	N/A	98	0.1	9.80
	OTHER IMPERVIOUS	N/A	98	0.08	7.84
	PERVIOUS	C	74	0.13	9.62
	STORAGE BASIN	N/A	100	0.02	2.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.02	1.60
	TOTAL			0.35	30.86
			WEIGHTED CN		88.2

P15E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B14AE2	TRAVEL LANE	N/A	98	0.18	17.64
	OTHER IMPERVIOUS	N/A	98	0.13	12.74
	PERVIOUS	C	74	0.19	14.06
	STORAGE BASIN	N/A	100	0.02	2.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.18	14.40
	TOTAL			0.7	60.84
			WEIGHTED CN		86.9

P16E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B14CE2	TRAVEL LANE	N/A	98	0.24	23.52
	OTHER IMPERVIOUS	N/A	98	0.14	13.72
	PERVIOUS	C	74	0.32	23.68
	STORAGE BASIN	N/A	100	0.06	6.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.65	52.00
	TOTAL			1.41	118.92
			WEIGHTED CN		84.3

P18E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B14DE2	TRAVEL LANE	N/A	98	0.21	20.58
	OTHER IMPERVIOUS	N/A	98	0.16	15.68
	PERVIOUS	C	74	0.2	14.80
	STORAGE BASIN	N/A	100	0.05	5.00
	OFFSITE (GRASS COVER > 75 %)	D	80	0.99	79.20
	TOTAL			1.61	135.26
			WEIGHTED CN		84.0

P19E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B15E2	TRAVEL LANE	N/A	98	0.27	26.46
	OTHER IMPERVIOUS	N/A	98	0.12	11.76
	PERVIOUS	C	74	0.16	11.84
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.55	50.06
			WEIGHTED CN		91.0

P15E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B16E2	TRAVEL LANE	N/A	98	0.53	51.94
	OTHER IMPERVIOUS	N/A	98	0.27	26.46
	PERVIOUS	C	74	0.26	19.24
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			1.06	97.64
			WEIGHTED CN		92.1

P16E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B17E2	TRAVEL LANE	N/A	98	0.2	19.60
	OTHER IMPERVIOUS	N/A	98	0.11	10.78
	PERVIOUS	C	74	0.1	7.40
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.41	37.78

WEIGHTED CN	92.1

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B18AE2	TRAVEL LANE	N/A	98	0.21	20.58
	OTHER IMPERVIOUS	N/A	98	0.12	11.76
	PERVIOUS	C	74	0.02	1.48
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE (GRASS COVER > 75%)	D	80	0.01	0.80
	TOTAL			0.36	34.62

WEIGHTED CN	96.2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B18E2	TRAVEL LANE	N/A	98	0.12	11.76
	OTHER IMPERVIOUS	N/A	98	0.08	7.84
	PERVIOUS	C	74	0	0.00
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE	C		0	0.00
	TOTAL			0.2	19.60

WEIGHTED CN	98.0

P19E2

BASIN	LAND USE	HSG	CN	AREA (AC)	CNxAREA
B19E2	TRAVEL LANE	N/A	98	0.12	11.76
	OTHER IMPERVIOUS	N/A	98	0.08	7.84
	PERVIOUS	C	74	0.05	3.70
	STORAGE BASIN	N/A	100	0	0.00
	OFFSITE (GRASS COVER > 75%)	D	84	0.93	78.12
	TOTAL			1.18	101.42

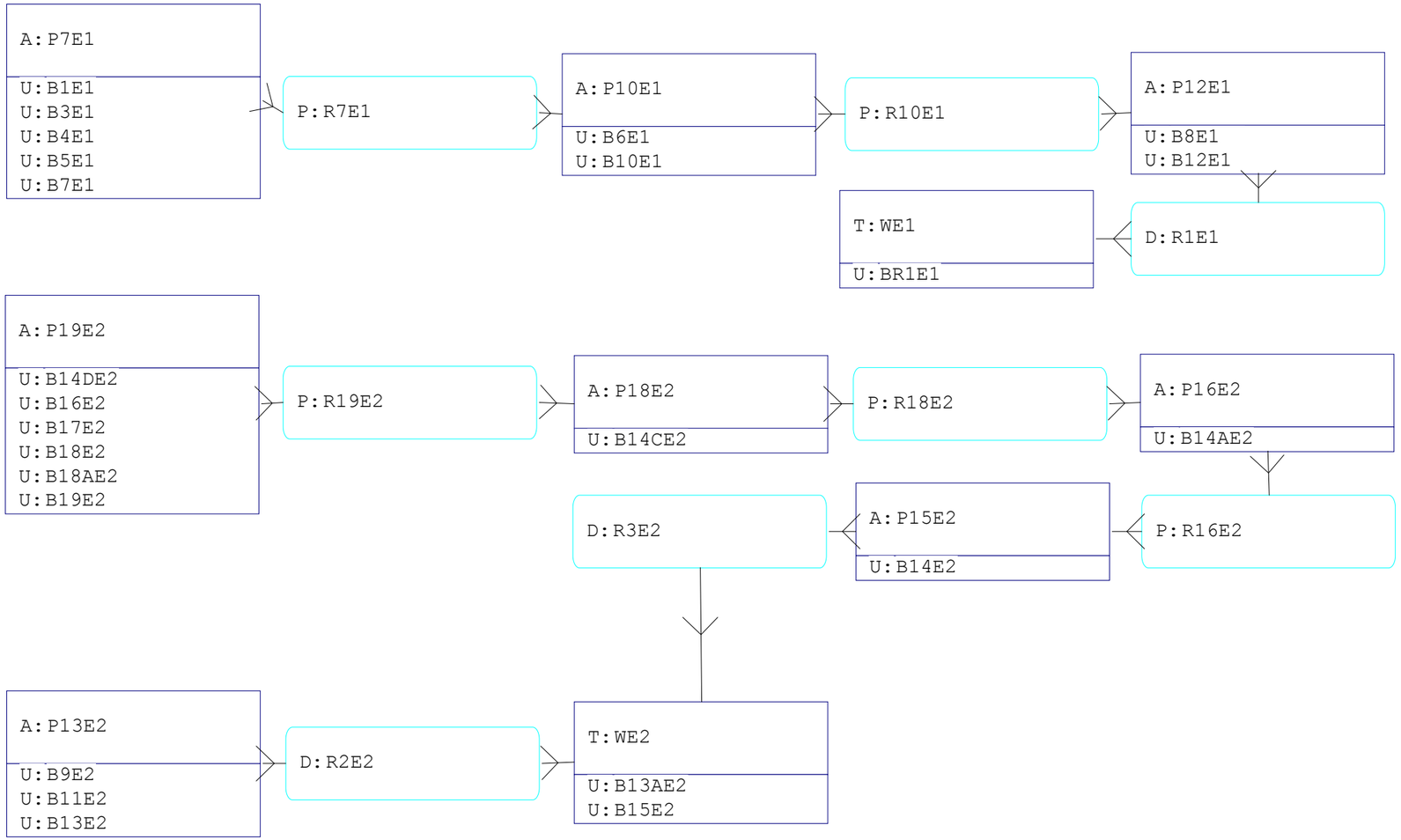
WEIGHTED CN	85.9

	PROPOSED REVISED POND		STAGE (FT)	AREA (AC)	STORAGE (AC-FT)	REQUIRED WATER QUALITY TREATMENT VOLUME (ACFT)	REQUIRED TOP OF TREATMENT ELEV (FT)	PROPOSED TOP OF TREATMENT ELEV (FT)	PROPOSED AREA AT TOP OF TREATMENT (AC)	PROPOSED VOLUME OF TREATMENT (ACFT)
EQUALIZED	P7E1	NWL	63.10	0.85						
		PERMIT DLW	63.50	0.90	0.35					
			66.00	1.60	3.48					
	P10E1	NWL	63.10	0.84						
		PERMIT DLW	63.50	0.87	0.34					
			66.00	1.08	2.78					
			66.75	1.14	3.61					
	P12E1	NWL	63.10	0.32						
		PERMIT DLW	63.50	0.34	0.13					
			66.00	0.51	1.20					
	TOTAL P7E1	NWL	63.10	2.01						
	(COMPOSITE)	PERMIT DLW	63.50	2.12	0.83	0.36	63.27	63.46	2.11	0.74
								keep ex. str.		
	P9E2	NWL	63.99	0.32						
	&	PERMIT DLW	65.12	0.48	0.45	0.13	64.32	64.40	0.38	0.14
	P13E2		66.00	0.61	0.93			modify ex. str.		
EQUALIZED	P15E2	NWL	64.00	0.03						
		PERMIT DLW	64.90	0.04	0.03					
			67.80	0.10	0.23					
	P16E2	NWL	64.00	0.03						
		PERMIT DLW	64.90	0.04	0.03					
			68.00	0.12	0.28					
	P18E2	NWL	64.00	0.08						
		PERMIT DLW	64.90	0.12	0.09					
			68.00	0.26	0.68					
	P19E2	NWL	64.00	0.07						
		PERMIT DLW	64.90	0.09	0.07					
			66.00	0.13	0.19					
	TOTAL P15E2	NWL	64.00	0.21						
	(COMPOSITE)	PERMIT DLW	64.90	0.29	0.23	0.16	64.64	64.65	0.27	0.16
								modify ex. str.		

Nodes
A Stage/Area
V Stage/Volume
T Time/Stage
M Manhole

Basins
O Overland Flow
U SCS Unit CN
S SBUH CN
Y SCS Unit GA
Z SBUH GA

Links
P Pipe
W Weir
C Channel
D Drop Structure
B Bridge
R Rating Curve
H Breach
E Percolation
F Filter
X Exfil Trench



3/4/2015,2:23:33 PM
Node Diagram

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

==========
==== Basins ==========
==========

Name: B10E1 Node: P10E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.020 Time Shift(hrs): 0.00
Curve Number: 91.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B11E2 Node: P13E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.870 Time Shift(hrs): 0.00
Curve Number: 93.30 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B12E1 Node: P12E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.480 Time Shift(hrs): 0.00
Curve Number: 89.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B13AE2 Node: WE2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.590 Time Shift(hrs): 0.00
Curve Number: 88.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B13E2 Node: P13E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.820 Time Shift(hrs): 0.00
Curve Number: 89.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B14AE2 Node: P16E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0

Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.700
Curve Number: 86.90
DCIA(%): 0.00
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B14CE2
Group: BASE
Node: P18E2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.410
Curve Number: 84.30
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B14DE2
Group: BASE
Node: P19E2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.610
Curve Number: 84.00
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B14E2
Group: BASE
Node: P15E2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.350
Curve Number: 88.20
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B15E2
Group: BASE
Node: WE2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 0.550
Curve Number: 91.00
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B16E2
Group: BASE
Node: P19E2
Type: SCS Unit Hydrograph CN
Status: Onsite

Unit Hydrograph: Uh323
Rainfall File: Flmod
Rainfall Amount(in): 9.000
Area(ac): 1.060
Curve Number: 92.10
DCIA(%): 0.00
Peaking Factor: 323.0
Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00
Max Allowable Q(cfs): 999999.000

Name: B17E2 Node: P19E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.410 Time Shift(hrs): 0.00
Curve Number: 92.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B18AE2 Node: P19E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.360 Time Shift(hrs): 0.00
Curve Number: 96.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B18E2 Node: P19E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 0.200 Time Shift(hrs): 0.00
Curve Number: 98.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B19E2 Node: P19E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.180 Time Shift(hrs): 0.00
Curve Number: 85.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B1E1 Node: P7E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.460 Time Shift(hrs): 0.00
Curve Number: 90.60 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B3E1 Node: P7E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.180 Time Shift(hrs): 0.00
Curve Number: 86.80 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B4E1 Node: P7E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.400 Time Shift(hrs): 0.00
Curve Number: 90.10 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B5E1 Node: P7E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.500 Time Shift(hrs): 0.00
Curve Number: 81.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B6E1 Node: P10E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.100 Time Shift(hrs): 0.00
Curve Number: 91.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B7E1 Node: P7E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 2.380 Time Shift(hrs): 0.00
Curve Number: 90.40 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B8E1 Node: P12E1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.770 Time Shift(hrs): 0.00
Curve Number: 93.70 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: B9E2 Node: P13E2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00

Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.690 Time Shift(hrs): 0.00
Curve Number: 88.20 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: BR1E1 Node: WE1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Flmod Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.000 Time of Conc(min): 10.00
Area(ac): 1.300 Time Shift(hrs): 0.00
Curve Number: 86.90 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ==========
==========

Name: P10E1 Base Flow(cfs): 0.000 Init Stage(ft): 63.460
Group: BASE Warn Stage(ft): 66.600
Type: Stage/Area

Stage(ft)	Area(ac)
63.100	0.8400
63.500	0.8700
66.000	1.0800
66.750	1.1400

Name: P12E1 Base Flow(cfs): 0.000 Init Stage(ft): 63.460
Group: BASE Warn Stage(ft): 66.900
Type: Stage/Area

Stage(ft)	Area(ac)
63.100	0.3200
63.500	0.3400
66.000	0.5100

Name: P13E2 Base Flow(cfs): 0.000 Init Stage(ft): 64.400
Group: BASE Warn Stage(ft): 66.400
Type: Stage/Area

Stage(ft)	Area(ac)
63.990	0.3200
65.120	0.4800
66.000	0.6100

Name: P15E2 Base Flow(cfs): 0.000 Init Stage(ft): 64.650
Group: BASE Warn Stage(ft): 68.000
Type: Stage/Area

Stage(ft)	Area(ac)
64.000	0.0300
64.900	0.0400

67.800	0.1000

Name: P16E2 Base Flow(cfs): 0.000 Init Stage(ft): 64.650
Group: BASE Warn Stage(ft): 68.600
Type: Stage/Area

Stage(ft)	Area(ac)
64.000	0.0300
64.900	0.0400
68.000	0.1200

Name: P18E2 Base Flow(cfs): 0.000 Init Stage(ft): 64.650
Group: BASE Warn Stage(ft): 68.200
Type: Stage/Area

Stage(ft)	Area(ac)
64.000	0.0800
64.900	0.1200
68.000	0.2600

Name: P19E2 Base Flow(cfs): 0.000 Init Stage(ft): 64.650
Group: BASE Warn Stage(ft): 67.400
Type: Stage/Area

Stage(ft)	Area(ac)
64.000	0.0700
64.900	0.0900
66.000	0.1300

Name: P7E1 Base Flow(cfs): 0.000 Init Stage(ft): 63.460
Group: BASE Warn Stage(ft): 66.800
Type: Stage/Area

Stage(ft)	Area(ac)
63.100	0.8500
63.500	0.9000
66.000	1.6000

Name: WE1 Base Flow(cfs): 0.000 Init Stage(ft): 63.120
Group: TW Warn Stage(ft): 65.440
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	63.120
15.00	65.440
18.00	65.440
48.00	63.120

Name: WE2 Base Flow(cfs): 0.000 Init Stage(ft): 64.010
Group: TW Warn Stage(ft): 64.440
Type: Time/Stage

SWFWMD ERP # 43016251.000

Time(hrs)	Stage(ft)
0.00	64.010
15.00	64.440
18.00	64.440
48.00	64.010

==========
==== Pipes ==========
==========

Name:	R10E1	From Node:	P10E1	Length(ft):	86.00
Group:	BASE	To Node:	P12E1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	30.00	30.00		Entrance Loss Coef:	0.70
Rise(in):	30.00	30.00		Exit Loss Coef:	1.00
Invert(ft):	62.520	62.440		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R16E2	From Node:	P16E2	Length(ft):	88.00
Group:	BASE	To Node:	P15E2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	36.00	36.00		Entrance Loss Coef:	0.70
Rise(in):	36.00	36.00		Exit Loss Coef:	1.00
Invert(ft):	63.730	63.590		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R18E2	From Node:	P18E2	Length(ft):	69.00
Group:	BASE	To Node:	P16E2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	36.00	36.00		Entrance Loss Coef:	0.70
Rise(in):	36.00	36.00		Exit Loss Coef:	1.00
Invert(ft):	63.430	63.430		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R19E2	From Node:	P19E2	Length(ft):	56.00
Group:	BASE	To Node:	P18E2	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	36.00	36.00		Entrance Loss Coef:	0.70
Rise(in):	36.00	36.00		Exit Loss Coef:	1.00
Invert(ft):	63.750	63.590		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

Name:	R7E1	From Node:	P7E1	Length(ft):	81.00
Group:	BASE	To Node:	P10E1	Count:	1
				Friction Equation:	Average Conveyance
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Automatic
Geometry:	Circular	Circular		Flow:	Both
Span(in):	30.00	30.00		Entrance Loss Coef:	0.70
Rise(in):	30.00	30.00		Exit Loss Coef:	1.00
Invert(ft):	62.540	62.450		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

invert, size and pipe length per survey

==========

==== Drop Structures ==========

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Name:	R1E1	From Node:	P12E1	Length(ft):	45.00
Group:	BASE	To Node:	WE1	Count:	1
	UPSTREAM	DOWNSTREAM		Friction Equation:	Average Conveyance
Geometry:	Circular	Circular		Solution Algorithm:	Automatic
Span(in):	30.00	30.00		Flow:	Both
Rise(in):	30.00	30.00		Entrance Loss Coef:	0.500
Invert(ft):	62.840	62.490		Exit Loss Coef:	1.000
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-62 (Per As-Built Plans, 2004)
weir, top of box and U/S pipe invert per survey

*** Weir 1 of 2 for Drop Structure R1E1 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	18.00	Invert(ft):	63.460
Rise(in):	48.00	Control Elev(ft):	63.460

*** Weir 2 of 2 for Drop Structure R1E1 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	67.630
Rise(in):	49.00	Control Elev(ft):	67.630

Name:	R2E2	From Node: P13E2	Length(ft): 100.00
Group:	BASE	To Node: WE2	Count: 1

	UPSTREAM	DOWNSTREAM		
			Friction Equation:	Average Conveyance
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	36.00	36.00	Flow:	Both
Rise(in):	36.00	36.00	Entrance Loss Coef:	0.500
Invert(ft):	63.590	63.240	Exit Loss Coef:	1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000	Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

S-68 (Per As-Built Plans, 2004)
top of box, pipe length and U/S & D/S pipe invert per survey
modify weir invert from elevation 65.18 to elevation 64.40

*** Weir 1 of 2 for Drop Structure R2E2 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	42.00	Invert(ft):	64.400
Rise(in):	21.40	Control Elev(ft):	64.400

*** Weir 2 of 2 for Drop Structure R2E2 ***

			TABLE
Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	67.630
Rise(in):	49.00	Control Elev(ft):	67.630

Name:	R3E2	From Node: P15E2	Length(ft): 44.00
Group:	BASE	To Node: WE2	Count: 1

	UPSTREAM	DOWNSTREAM		
			Friction Equation:	Average Conveyance
Geometry:	Circular	Circular	Solution Algorithm:	Automatic

Span(in):	30.00	30.00	Flow: Both
Rise(in):	30.00	30.00	Entrance Loss Coef: 0.500
Invert(ft):	63.200	62.800	Exit Loss Coef: 1.000
Manning's N:	0.012000	0.012000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dn
Bot Clip(in):	0.000	0.000	Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 2 for Drop Structure R3E2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	48.00	Invert(ft):	64.650
Rise(in):	16.00	Control Elev(ft):	64.650

*** Weir 2 of 2 for Drop Structure R3E2 ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	37.00	Invert(ft):	66.700
Rise(in):	49.00	Control Elev(ft):	66.700

==========
==== Hydrology Simulations ====
==========

Name: Flmod
Filename: F:\Projects\25633923201_ICPR\Proposed\Basin E\ Flmod.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Flmod
Rainfall Amount(in): 9.00

Time(hrs)	Print Inc(min)
8.000	30.00
15.000	24.00
60.000	30.00

==========
==== Routing Simulations ====
==========

Name: Flmod Hydrology Sim: Flmod
Filename: F:\Projects\25633923201_ICPR\Proposed\Basin E\Flmod.I32

Execute:	Yes	Restart: No	Patch: No
Alternative:	No		
Max Delta Z(ft):	1.00	Delta Z Factor:	0.00500
Time Step Optimizer:	0.100		
Start Time(hrs):	0.000	End Time(hrs):	60.00
Min Calc Time(sec):	1.0000	Max Calc Time(sec):	5.0000
Boundary Stages:		Boundary Flows:	

Time(hrs)	Print Inc(min)

8.000	30.000
20.000	5.000
60.000	30.000

Group	Run
BASE	Yes
TW	Yes

SR 54 Basin E
Post-Developed

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
Flmod	B10E1	BASE	12.02	11.559	8.002	58671.838
Flmod	B11E2	BASE	12.02	10.816	8.196	55632.648
Flmod	B12E1	BASE	12.02	8.287	7.685	41288.147
Flmod	B13AE2	BASE	12.02	3.275	7.576	16224.491
Flmod	B13E2	BASE	12.02	4.604	7.722	22984.645
Flmod	B14AE2	BASE	12.02	3.834	7.417	18846.194
Flmod	B14CE2	BASE	12.04	7.496	7.099	36333.759
Flmod	B14DE2	BASE	12.04	8.528	7.062	41272.682
Flmod	B14E2	BASE	12.02	1.943	7.576	9624.698
Flmod	B15E2	BASE	12.02	3.130	7.916	15805.205
Flmod	B16E2	BASE	12.02	6.083	8.050	30975.061
Flmod	B17E2	BASE	12.02	2.353	8.050	11980.920
Flmod	B18AE2	BASE	12.02	2.112	8.546	11168.407
Flmod	B18E2	BASE	12.02	1.180	8.763	6362.216
Flmod	B19E2	BASE	12.02	6.392	7.295	31245.782
Flmod	B1E1	BASE	12.02	8.283	7.868	41697.889
Flmod	B3E1	BASE	12.02	11.928	7.405	58595.763
Flmod	B4E1	BASE	12.02	7.910	7.807	39675.160
Flmod	B5E1	BASE	12.04	7.730	6.804	37050.262
Flmod	B6E1	BASE	12.02	6.261	7.916	31610.410
Flmod	B7E1	BASE	12.02	13.480	7.843	67763.111
Flmod	B8E1	BASE	12.02	10.263	8.244	52969.022
Flmod	B9E2	BASE	12.02	9.382	7.576	46473.543
Flmod	BR1E1	BASE	12.02	7.121	7.417	35000.074

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
P10E1	BASE	Flmod	12.91	66.183	66.600	0.0022	47693	12.00	25.622	13.10	10.510
P12E1	BASE	Flmod	12.75	66.023	66.900	0.0021	22290	12.00	19.687	12.68	13.539
P13E2	BASE	Flmod	12.32	65.812	66.400	0.0026	25364	12.00	24.438	12.32	13.568
P15E2	BASE	Flmod	12.36	66.488	68.000	0.0032	3211	12.19	22.406	12.36	21.958
P16E2	BASE	Flmod	12.34	66.798	68.600	0.0039	3898	12.14	22.488	12.28	21.146
P18E2	BASE	Flmod	12.32	67.039	68.200	0.0045	9445	12.02	25.733	12.19	19.552
P19E2	BASE	Flmod	12.29	67.191	67.400	0.0050	7554	12.00	26.227	12.04	18.636
P7E1	BASE	Flmod	12.79	66.280	66.800	0.0025	73111	12.00	48.552	12.26	9.214
WE1	TW	Flmod	15.00	65.440	65.440	0.0002	0	12.21	16.727	0.00	0.000
WE2	TW	Flmod	15.00	64.440	64.440	0.0000	0	12.26	39.240	0.00	0.000

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Water Quality Treatment Calculations

Treatment Volume Comparison									
	Original Permit #4316251.00,		Required (4-lanes)		Proposed			Surplus Treatment	
Pond ID	DCIA (ac)	Volume (acft)	Impervious (ac)	Volume (acft)	Impervious (ac)	Volume (acft)	Comment	Impervious (ac)	Volume (acft)
P1A1	3.13	0.26	1.15	0.10	4.80	0.40	Mod ex. Struct	3.65	0.30
P5A1	3.49	0.29	1.04	0.09	2.88	0.24	Keep ex. Struct	1.84	0.15
P1A2	1.42	0.12	0.50	0.04	0.84	0.07	Mod ex. Struct	0.34	0.03
P2A2	1.23	0.10	0.46	0.04	0.72	0.06	New struct	0.26	0.02
P3A2	1.35	0.11	0.50	0.04	0.96	0.08	New struct	0.46	0.04
P1A3	2.43	0.20	1.01	0.08	1.80	0.15	Keep ex. Struct	0.80	0.07
P5A3	2.96	0.25	1.25	0.10	1.56	0.13	New struct	0.31	0.03
P5B1	1.05	0.09	0.55	0.05	0.84	0.07	Mod ex. Struct	0.29	0.02
P7B1	1.26	0.11	0.47	0.04	0.96	0.08	Mod ex. Struct	0.49	0.04
P8B1	0.61	0.05	0.31	0.03	1.44	0.12	Keep ex. Struct	1.13	0.09
P10B2	1.10	0.09	0.50	0.04	0.84	0.07	New struct	0.34	0.03
P12B2	5.35	0.45	2.58	0.21	5.23	0.44	New struct	2.65	0.23
P2C1	9.16	0.76	2.18	0.18	16.44	1.37	Keep ex. Struct	14.26	1.19
P2C2	1.59	0.13	0.74	0.06	1.08	0.09	New struct	0.34	0.03
P3C2	1.84	0.15	1.21	0.10	1.92	0.16	New struct	0.71	0.06
P4C2	1.81	0.15	0.58	0.05	0.84	0.07	New struct	0.26	0.02
P3D1	1.21	0.10	0.43	0.04	1.08	0.09	Keep ex. Struct	0.65	0.05
P4D1	4.78	0.40	1.63	0.14	4.44	0.37	Mod ex. Struct	2.81	0.23
P7D2	2.54	0.21	0.94	0.08	2.64	0.22	Keep ex. Struct	1.70	0.14
P7E1	7.97	0.66	2.87	0.24	8.88	0.74	Keep ex. Struct	6.01	0.50
P13E2	2.50	0.21	1.06	0.09	1.68	0.14	Mod ex. Struct	0.62	0.05
P15E2	2.55	0.21	1.46	0.12	1.92	0.16	New struct	0.46	0.04
	61.33		***23.42***		***63.79***			***40.37***	***3.37***

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P1A2*

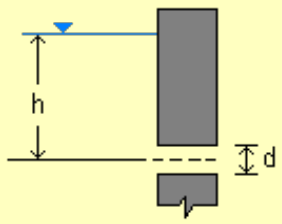
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	**0.84**	Acres				
DER Elev. =	**55.35**	Feet	DER Area =	**14,619**	Sq. Ft. - top elevation of treatment volume	
NWL =	**55.14**	Feet	NWL Area =	**13,270**	Sq. Ft. - bottom elevation of treatment volume	
Runoff =	**1.0**	Inches (OFW ?)		**3,053**	Cu.Ft. of available treatent volume	
Head (h) =	**0.18**	Feet h = DER Elev. - (NWL + ½d)				
Required Volume =	**3,049**	Cu.Ft. or				
	0.07	Ac.Ft.				

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	**0.87**	Inches
Orifice Area (a) =	0.0041	Sq.Ft.
C Value =	**0.60**	Coefficient of discharge
½ Vol.Time =	**60.01**	Hours
Total Time =	**165.79**	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	**#NUM!**	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
55.35		0.18	0.01					
	0.00			0.01	27	0.88		27
55.35		0.18	0.01				0.88	
	0.00			0.01	27	0.88		53
55.35		0.18	0.01				1.75	
	0.00			0.01	27	0.88		80
55.35		0.18	0.01				2.64	
	0.00			0.01	27	0.89		107
55.35		0.18	0.01				3.52	
	0.00			0.01	27	0.89		133
55.34		0.17	0.01				4.41	
	0.00			0.01	27	0.89		160
55.34		0.17	0.01				5.31	
	0.00			0.01	27	0.90		187
55.34		0.17	0.01				6.21	
	0.00			0.01	27	0.90		213
55.34		0.17	0.01				7.11	
	0.00			0.01	27	0.91		240
55.34		0.17	0.01				8.02	
	0.00			0.01	27	0.91		266
55.34		0.16	0.01				8.93	
	0.00			0.01	27	0.92		293

55.33		0.16	0.01				9.84	
	0.00			0.01	26	0.92		319
55.33		0.16	0.01				10.76	
	0.00			0.01	26	0.92		346
55.33		0.16	0.01				11.69	
	0.00			0.01	26	0.93		372
55.33		0.16	0.01				12.62	
	0.00			0.01	26	0.93		398
55.33		0.16	0.01				13.55	
	0.00			0.01	26	0.94		425
55.32		0.15	0.01				14.49	
	0.00			0.01	26	0.94		451
55.32		0.15	0.01				15.44	
	0.00			0.01	26	0.95		478
55.32		0.15	0.01				16.38	
	0.00			0.01	26	0.95		504
55.32		0.15	0.01				17.34	
	0.00			0.01	26	0.96		530
55.32		0.15	0.01				18.30	
	0.00			0.01	26	0.96		557
55.32		0.14	0.01				19.26	
	0.00			0.01	26	0.97		583
55.31		0.14	0.01				20.23	
	0.00			0.01	26	0.98		609
55.31		0.14	0.01				21.21	
	0.00			0.01	26	0.98		635
55.31		0.14	0.01				22.19	
	0.00			0.01	26	0.99		662
55.31		0.14	0.01				23.17	
	0.00			0.01	26	0.99		688
55.31		0.14	0.01				24.16	
	0.00			0.01	26	1.00		714
55.30		0.13	0.01				25.16	
	0.00			0.01	26	1.00		740
55.30		0.13	0.01				26.17	
	0.00			0.01	26	1.01		766
55.30		0.13	0.01				27.18	
	0.00			0.01	26	1.02		792
55.30		0.13	0.01				28.19	
	0.00			0.01	26	1.02		818
55.30		0.13	0.01				29.22	
	0.00			0.01	26	1.03		844
55.30		0.12	0.01				30.25	
	0.00			0.01	26	1.04		871
55.29		0.12	0.01				31.28	
	0.00			0.01	26	1.04		897
55.29		0.12	0.01				32.33	
	0.00			0.01	26	1.05		923
55.29		0.12	0.01				33.38	
	0.00			0.01	26	1.06		949
55.29		0.12	0.01				34.44	
	0.00			0.01	26	1.07		975
55.29		0.12	0.01				35.50	
	0.00			0.01	26	1.07		1,001
55.28		0.11	0.01				36.58	
	0.00			0.01	26	1.08		1,026
55.28		0.11	0.01				37.66	
	0.00			0.01	26	1.09		1,052
55.28		0.11	0.01				38.75	
	0.00			0.01	26	1.10		1,078

55.28		0.11	0.01				39.84	
	0.00			0.01	26	1.11		1,104
55.28		0.11	0.01				40.95	
	0.00			0.01	26	1.11		1,130
55.28		0.10	0.01				42.06	
	0.00			0.01	26	1.12		1,156
55.27		0.10	0.01				43.19	
	0.00			0.01	26	1.13		1,182
55.27		0.10	0.01				44.32	
	0.00			0.01	26	1.14		1,207
55.27		0.10	0.01				45.46	
	0.00			0.01	26	1.15		1,233
55.27		0.10	0.01				46.61	
	0.00			0.01	26	1.16		1,259
55.27		0.10	0.01				47.77	
	0.00			0.01	26	1.17		1,285
55.26		0.09	0.01				48.95	
	0.00			0.01	26	1.18		1,310
55.26		0.09	0.01				50.13	
	0.00			0.01	26	1.19		1,336
55.26		0.09	0.01				51.32	
	0.00			0.01	26	1.20		1,362
55.26		0.09	0.01				52.53	
	0.00			0.01	26	1.22		1,387
55.26		0.09	0.01				53.74	
	0.00			0.01	26	1.23		1,413
55.26		0.08	0.01				54.97	
	0.00			0.01	26	1.24		1,439
55.25		0.08	0.01				56.21	
	0.00			0.01	26	1.25		1,464
55.25		0.08	0.01				57.47	
	0.00			0.01	26	1.27		1,490
55.25		0.08	0.01				58.73	
	0.00			0.01	26	1.28		1,515
55.25		0.08	0.01				60.01	
	0.00			0.01	26	1.30		1,541
55.25		0.07	0.01				61.31	
	0.00			0.01	26	1.31		1,566
55.24		0.07	0.01				62.62	
	0.00			0.01	25	1.33		1,592
55.24		0.07	0.01				63.95	
	0.00			0.01	25	1.34		1,617
55.24		0.07	0.01				65.29	
	0.00			0.01	25	1.36		1,643
55.24		0.07	0.01				66.65	
	0.00			0.01	25	1.38		1,668
55.24		0.07	0.01				68.02	
	0.00			0.01	25	1.39		1,694
55.24		0.06	0.01				69.41	
	0.00			0.00	25	1.41		1,719
55.23		0.06	0.00				70.83	
	0.00			0.00	25	1.43		1,744
55.23		0.06	0.00				72.26	
	0.00			0.00	25	1.45		1,770
55.23		0.06	0.00				73.71	
	0.00			0.00	25	1.47		1,795
55.23		0.06	0.00				75.19	
	0.00			0.00	25	1.50		1,820
55.23		0.05	0.00				76.69	
	0.00			0.00	25	1.52		1,846

55.22		0.05	0.00				78.21	
	0.00			0.00	25	1.55		1,871
55.22		0.05	0.00				79.75	
	0.00			0.00	25	1.57		1,896
55.22		0.05	0.00				81.33	
	0.00			0.00	25	1.60		1,921
55.22		0.05	0.00				82.93	
	0.00			0.00	25	1.63		1,946
55.22		0.05	0.00				84.56	
	0.00			0.00	25	1.66		1,972
55.22		0.04	0.00				86.22	
	0.00			0.00	25	1.70		1,997
55.21		0.04	0.00				87.92	
	0.00			0.00	25	1.73		2,022
55.21		0.04	0.00				89.65	
	0.00			0.00	25	1.77		2,047
55.21		0.04	0.00				91.42	
	0.00			0.00	25	1.81		2,072
55.21		0.04	0.00				93.23	
	0.00			0.00	25	1.86		2,097
55.21		0.03	0.00				95.09	
	0.00			0.00	25	1.90		2,122
55.20		0.03	0.00				97.00	
	0.00			0.00	25	1.96		2,147
55.20		0.03	0.00				98.95	
	0.00			0.00	25	2.01		2,172
55.20		0.03	0.00				100.97	
	0.00			0.00	25	2.08		2,197
55.20		0.03	0.00				103.04	
	0.00			0.00	25	2.14		2,222
55.20		0.03	0.00				105.19	
	0.00			0.00	25	2.22		2,247
55.20		0.02	0.00				107.41	
	0.00			0.00	25	2.31		2,272
55.19		0.02	0.00				109.71	
	0.00			0.00	25	2.40		2,297
55.19		0.02	0.00				112.11	
	0.00			0.00	25	2.51		2,322
55.19		0.02	0.00				114.63	
	0.00			0.00	25	2.64		2,347
55.19		0.02	0.00				117.27	
	0.00			0.00	25	2.79		2,372
55.19		0.01	0.00				120.05	
	0.00			0.00	25	2.97		2,397
55.18		0.01	0.00				123.02	
	0.00			0.00	25	3.18		2,421
55.18		0.01	0.00				126.20	
	0.00			0.00	25	3.46		2,446
55.18		0.01	0.00				129.66	
	0.00			0.00	25	3.82		2,471
55.18		0.01	0.00				133.48	
	0.00			0.00	25	4.34		2,496
55.18		0.01	0.00				137.82	
	0.00			0.00	25	5.14		2,520
55.17		0.00	0.00				142.96	
	0.00			0.00	25	6.69		2,545
55.17		0.00	0.00				149.65	
	0.00			0.00	25	16.14		2,570
55.17		0.00	0.00				165.79	
55.14								3,055

Blue Numbers	= Input data
Red Numbers	= Answers

V-notch Verification Calculations

P2A2

Pond surface area =	16,117	square feet at DLW	Mixing Volume = 2,509 cubic feet
Pond surface area =	15,246	square feet at SHW	
Notch angle (θ) =	127.0	degrees	
Time =	60.9	hours to bleed down to within 0.04' of apex	

Head (feet)	Q (cfs)	Volume (cf)	Inc. Hours	Total Hours	Total Volume	Volume Ac.-Ft.
0.16	0.051					
		24.47	0.13	0.13	24.47	0.00
0.16	0.050					
		24.46	0.14	0.27	48.93	0.00
0.16	0.049					
		24.44	0.14	0.41	73.37	0.00
0.16	0.048					
		24.42	0.14	0.55	97.79	0.00
0.15	0.047					
		24.41	0.15	0.69	122.20	0.00
0.15	0.045					
		24.39	0.15	0.84	146.59	0.00
0.15	0.044					
		24.37	0.15	1.00	170.96	0.00
0.15	0.043					
		24.36	0.16	1.15	195.32	0.00
0.15	0.042					
		24.34	0.16	1.31	219.66	0.01
0.15	0.041					
		24.32	0.16	1.48	243.98	0.01
0.14	0.040					
		24.31	0.17	1.65	268.28	0.01
0.14	0.039					
		24.29	0.17	1.82	292.57	0.01
0.14	0.038					
		24.27	0.18	2.00	316.84	0.01
0.14	0.037					
		24.26	0.18	2.18	341.10	0.01
0.14	0.036					
		24.24	0.19	2.37	365.34	0.01
0.14	0.035					
		24.22	0.19	2.56	389.56	0.01
0.14	0.034					
		24.21	0.20	2.76	413.77	0.01
0.13	0.033					
		24.19	0.20	2.96	437.95	0.01
0.13	0.032					
		24.17	0.21	3.17	462.13	0.01
0.13	0.031					
		24.15	0.21	3.38	486.28	0.01
0.13	0.030					
		24.14	0.22	3.60	510.42	0.01
0.13	0.029					
		24.12	0.23	3.83	534.54	0.01
0.13	0.029					
		24.10	0.23	4.07	558.65	0.01
0.13	0.028					
		24.09	0.24	4.31	582.73	0.01
0.12	0.027					
		24.07	0.25	4.56	606.80	0.01
0.12	0.026					
		24.05	0.26	4.81	630.86	0.01
0.12	0.025					
		24.04	0.26	5.08	654.90	0.02
0.12	0.024					
		24.02	0.27	5.35	678.92	0.02
0.12	0.024					
		24.00	0.28	5.63	702.92	0.02
0.12	0.023					
		23.99	0.29	5.92	726.91	0.02
0.11	0.022					
		23.97	0.30	6.22	750.88	0.02
0.11	0.021					
		23.95	0.31	6.53	774.83	0.02

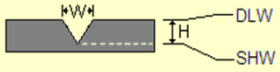
V-notch Weir Equation

$Q = C \tan(\theta/2) H^{5/2}$



V-notch angle calculation

C assumed to be = 2.5 for v-notch weirs



Notch Width (W) =	0.64	feet
Notch Height (H) =	0.16	feet
Notch angle (θ) =	127.0	degrees

0.11	0.021					
		23.94	0.32	6.85	798.77	0.02
0.11	0.020					
		23.92	0.33	7.18	822.69	0.02
0.11	0.019					
		23.90	0.34	7.52	846.60	0.02
0.11	0.019					
		23.89	0.35	7.88	870.48	0.02
0.11	0.018					
		23.87	0.37	8.25	894.35	0.02
0.10	0.017					
		23.85	0.38	8.63	918.21	0.02
0.10	0.017					
		23.84	0.39	9.02	942.04	0.02
0.10	0.016					
		23.82	0.41	9.43	965.86	0.02
0.10	0.016					
		23.80	0.43	9.86	989.67	0.02
0.10	0.015					
		23.79	0.44	10.30	1,013.45	0.02
0.10	0.014					
		23.77	0.46	10.76	1,037.22	0.02
0.09	0.014					
		23.75	0.48	11.23	1,060.98	0.02
0.09	0.013					
		23.74	0.50	11.73	1,084.71	0.02
0.09	0.013					
		23.72	0.52	12.25	1,108.43	0.03
0.09	0.012					
		23.70	0.54	12.78	1,132.13	0.03
0.09	0.012					
		23.69	0.56	13.35	1,155.82	0.03
0.09	0.011					
		23.67	0.59	13.93	1,179.49	0.03
0.09	0.011					
		23.65	0.61	14.54	1,203.14	0.03
0.08	0.010					
		23.64	0.64	15.18	1,226.78	0.03
0.08	0.010					
		23.62	0.67	15.85	1,250.40	0.03
0.08	0.009					
		23.60	0.70	16.55	1,274.00	0.03
0.08	0.009					
		23.59	0.73	17.28	1,297.58	0.03
0.08	0.009					
		23.57	0.77	18.05	1,321.15	0.03
0.08	0.008					
		23.55	0.81	18.86	1,344.71	0.03
0.07	0.008					
		23.54	0.85	19.71	1,368.24	0.03
0.07	0.007					
		23.52	0.89	20.60	1,391.76	0.03
0.07	0.007					
		23.50	0.94	21.54	1,415.26	0.03
0.07	0.007					
		23.49	0.99	22.53	1,438.75	0.03
0.07	0.006					
		23.47	1.04	23.58	1,462.21	0.03
0.07	0.006					
		23.45	1.10	24.68	1,485.67	0.03
0.07	0.006					
		23.43	1.17	25.85	1,509.10	0.03
0.06	0.005					
		23.42	1.24	27.08	1,532.52	0.04
0.06	0.005					
		23.40	1.31	28.40	1,555.92	0.04
0.06	0.005					
		23.38	1.39	29.79	1,579.30	0.04
0.06	0.004					
		23.37	1.48	31.28	1,602.67	0.04
0.06	0.004					
		23.35	1.58	32.86	1,626.02	0.04
0.06	0.004					
		23.33	1.69	34.54	1,649.36	0.04
0.06	0.004					
		23.32	1.81	36.35	1,672.68	0.04
0.05	0.003					
		23.30	1.93	38.28	1,695.98	0.04
0.05	0.003					

		23.28	2.08	40.36	1,719.26	0.04
0.05	0.003					
		23.27	2.23	42.59	1,742.53	0.04
0.05	0.003					
		23.25	2.41	45.00	1,765.78	0.04
0.05	0.002					
		23.23	2.60	47.61	1,789.01	0.04
0.05	0.002					
		23.22	2.82	50.43	1,812.23	0.04
0.04	0.002					
		23.20	3.07	53.50	1,835.43	0.04
0.04	0.002					
		23.18	3.34	56.84	1,858.61	0.04
0.04	0.002					
		23.17	4.01	60.85	1,881.78	0.04

Blue Numbers	= Input data
Red Numbers	= Answers

V-notch Verification Calculations

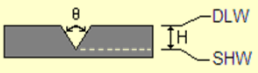
P3A2

Pond surface area =	20,909	square feet at DLW	Mixing Volume =	3,071 cubic feet
Pond surface area =	20,038	square feet at SHW		
Notch angle (θ) =	138.0	degrees		
Time =	60.6	hours to bleed down to within 0.04' of apex		

Head (feet)	Q (cfs)	Volume (cf)	Inc. Hours	Total Hours	Total Volume	Volume Ac.-Ft.
0.15	0.057					
		29.11	0.14	0.14	29.11	0.00
0.15	0.055					
		29.09	0.15	0.29	58.20	0.00
0.15	0.054					
		29.08	0.15	0.44	87.27	0.00
0.15	0.053					
		29.06	0.15	0.59	116.33	0.00
0.14	0.052					
		29.04	0.16	0.75	145.38	0.00
0.14	0.050					
		29.03	0.16	0.91	174.41	0.00
0.14	0.049					
		29.01	0.16	1.07	203.42	0.00
0.14	0.048					
		29.00	0.17	1.24	232.42	0.01
0.14	0.047					
		28.98	0.17	1.41	261.40	0.01
0.14	0.046					
		28.97	0.18	1.59	290.37	0.01
0.14	0.044					
		28.95	0.18	1.77	319.32	0.01
0.13	0.043					
		28.94	0.19	1.95	348.26	0.01
0.13	0.042					
		28.92	0.19	2.14	377.18	0.01
0.13	0.041					
		28.91	0.20	2.34	406.09	0.01
0.13	0.040					
		28.89	0.20	2.54	434.98	0.01
0.13	0.039					
		28.88	0.21	2.74	463.86	0.01
0.13	0.038					
		28.86	0.21	2.95	492.72	0.01
0.13	0.037					
		28.85	0.22	3.17	521.56	0.01
0.12	0.036					
		28.83	0.22	3.39	550.39	0.01
0.12	0.035					
		28.81	0.23	3.62	579.21	0.01
0.12	0.034					
		28.80	0.24	3.86	608.00	0.01
0.12	0.033					
		28.78	0.24	4.10	636.79	0.01
0.12	0.032					
		28.77	0.25	4.35	665.56	0.02
0.12	0.031					
		28.75	0.26	4.61	694.31	0.02
0.12	0.030					
		28.74	0.26	4.87	723.05	0.02
0.12	0.029					
		28.72	0.27	5.14	751.77	0.02
0.11	0.028					
		28.71	0.28	5.42	780.48	0.02
0.11	0.028					
		28.69	0.29	5.71	809.17	0.02
0.11	0.027					
		28.68	0.30	6.01	837.84	0.02
0.11	0.026					
		28.66	0.31	6.32	866.51	0.02
0.11	0.025					
		28.65	0.32	6.63	895.15	0.02
0.11	0.024					
		28.63	0.33	6.96	923.78	0.02
0.11	0.024					
		28.61	0.34	7.30	952.40	0.02
0.10	0.023					
		28.60	0.35	7.65	981.00	0.02
0.10	0.022					

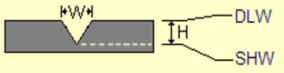
V-notch Weir Equation

$Q = C \tan(\theta/2) H^{5/2}$



V-notch angle calculation

C assumed to be = 2.5 for v-notch weirs



Notch Width (W) =	0.78	feet
Notch Height (H) =	0.15	feet
Notch angle (θ) =	138.0	degrees

		28.58	0.36	8.01	1,009.58	0.02
0.10	0.021					
		28.57	0.37	8.38	1,038.15	0.02
0.10	0.021					
		28.55	0.39	8.77	1,066.70	0.02
0.10	0.020					
		28.54	0.40	9.17	1,095.24	0.03
0.10	0.019					
		28.52	0.41	9.58	1,123.76	0.03
0.10	0.018					
		28.51	0.43	10.01	1,152.27	0.03
0.09	0.018					
		28.49	0.44	10.46	1,180.76	0.03
0.09	0.017					
		28.48	0.46	10.92	1,209.24	0.03
0.09	0.017					
		28.46	0.48	11.40	1,237.70	0.03
0.09	0.016					
		28.45	0.50	11.90	1,266.15	0.03
0.09	0.015					
		28.43	0.52	12.41	1,294.58	0.03
0.09	0.015					
		28.42	0.54	12.95	1,322.99	0.03
0.09	0.014					
		28.40	0.56	13.51	1,351.39	0.03
0.08	0.014					
		28.38	0.58	14.09	1,379.78	0.03
0.08	0.013					
		28.37	0.61	14.70	1,408.15	0.03
0.08	0.012					
		28.35	0.63	15.33	1,436.50	0.03
0.08	0.012					
		28.34	0.66	15.99	1,464.84	0.03
0.08	0.011					
		28.32	0.69	16.68	1,493.16	0.03
0.08	0.011					
		28.31	0.72	17.40	1,521.47	0.03
0.08	0.010					
		28.29	0.75	18.15	1,549.76	0.04
0.07	0.010					
		28.28	0.79	18.94	1,578.04	0.04
0.07	0.010					
		28.26	0.83	19.77	1,606.30	0.04
0.07	0.009					
		28.25	0.87	20.63	1,634.55	0.04
0.07	0.009					
		28.23	0.91	21.54	1,662.78	0.04
0.07	0.008					
		28.22	0.95	22.49	1,690.99	0.04
0.07	0.008					
		28.20	1.00	23.50	1,719.19	0.04
0.07	0.007					
		28.19	1.06	24.55	1,747.38	0.04
0.07	0.007					
		28.17	1.11	25.67	1,775.55	0.04
0.06	0.007					
		28.15	1.17	26.84	1,803.70	0.04
0.06	0.006					
		28.14	1.24	28.08	1,831.84	0.04
0.06	0.006					
		28.12	1.31	29.39	1,859.97	0.04
0.06	0.006					
		28.11	1.39	30.78	1,888.07	0.04
0.06	0.005					
		28.09	1.47	32.25	1,916.17	0.04
0.06	0.005					
		28.08	1.56	33.82	1,944.25	0.04
0.06	0.005					
		28.06	1.66	35.48	1,972.31	0.05
0.05	0.004					
		28.05	1.77	37.25	2,000.35	0.05
0.05	0.004					
		28.03	1.89	39.14	2,028.39	0.05
0.05	0.004					
		28.02	2.02	41.16	2,056.40	0.05
0.05	0.004					
		28.00	2.16	43.33	2,084.40	0.05
0.05	0.003					
		27.99	2.32	45.65	2,112.39	0.05
0.05	0.003					
		27.97	2.50	48.14	2,140.36	0.05
0.05	0.003					
		27.95	2.69	50.83	2,168.31	0.05

0.04	0.003					
		27.94	2.91	53.74	2,196.25	0.05
0.04	0.002					
		27.92	3.15	56.88	2,224.18	0.05
0.04	0.002					
		27.91	3.72	60.60	2,252.09	0.05

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P5A3*

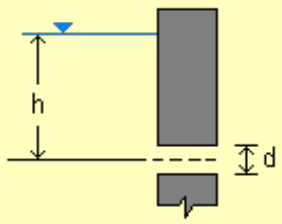
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	**1.56**	Acres				
DER Elev. =	**55.50**	Feet	DER Area =	**18,630**	Sq. Ft. - top elevation of treatment volume	
NWL =	**55.14**	Feet	NWL Area =	**13,939**	Sq. Ft. - bottom elevation of treatment volume	
Runoff =	**1.0**	Inches (OFW ?)		**5,842**	Cu.Ft. of available treatent volume	
Head (h) =	**0.32**	Feet h = DER Elev. - (NWL + ½d)				
Required Volume =	**5,663**	Cu.Ft. or				
	0.13	Ac.Ft.				

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	**1.01**	Inches
Orifice Area (a) =	0.0056	Sq.Ft.
C Value =	**0.60**	Coefficient of discharge
½ Vol.Time =	**60.09**	Hours
Total Time =	**185.87**	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	**#NUM!**	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
55.50		0.32	0.02					
	0.00			0.02	59	1.09		59
55.50		0.31	0.02				1.09	
	0.00			0.01	59	1.09		118
55.49		0.31	0.01				2.18	
	0.00			0.01	59	1.10		177
55.49		0.31	0.01				3.28	
	0.00			0.01	59	1.10		236
55.49		0.31	0.01				4.38	
	0.00			0.01	59	1.10		295
55.48		0.30	0.01				5.49	
	0.00			0.01	59	1.11		353
55.48		0.30	0.01				6.59	
	0.00			0.01	58	1.11		411
55.48		0.30	0.01				7.70	
	0.00			0.01	58	1.11		470
55.47		0.29	0.01				8.82	
	0.00			0.01	58	1.12		528
55.47		0.29	0.01				9.93	
	0.00			0.01	58	1.12		586
55.47		0.29	0.01				11.05	
	0.00			0.01	58	1.12		644

55.47		0.28	0.01				12.18	
	0.00			0.01	58	1.13		701
55.46		0.28	0.01				13.31	
	0.00			0.01	58	1.13		759
55.46		0.28	0.01				14.44	
	0.00			0.01	57	1.14		816
55.46		0.27	0.01				15.58	
	0.00			0.01	57	1.14		874
55.45		0.27	0.01				16.72	
	0.00			0.01	57	1.14		931
55.45		0.27	0.01				17.86	
	0.00			0.01	57	1.15		988
55.45		0.26	0.01				19.01	
	0.00			0.01	57	1.15		1,045
55.44		0.26	0.01				20.16	
	0.00			0.01	57	1.16		1,102
55.44		0.26	0.01				21.32	
	0.00			0.01	57	1.16		1,158
55.44		0.25	0.01				22.48	
	0.00			0.01	57	1.17		1,215
55.43		0.25	0.01				23.65	
	0.00			0.01	56	1.17		1,271
55.43		0.25	0.01				24.82	
	0.00			0.01	56	1.18		1,328
55.43		0.24	0.01				26.00	
	0.00			0.01	56	1.18		1,384
55.42		0.24	0.01				27.18	
	0.00			0.01	56	1.19		1,440
55.42		0.24	0.01				28.36	
	0.00			0.01	56	1.19		1,496
55.42		0.24	0.01				29.55	
	0.00			0.01	56	1.20		1,552
55.41		0.23	0.01				30.75	
	0.00			0.01	56	1.20		1,607
55.41		0.23	0.01				31.95	
	0.00			0.01	56	1.21		1,663
55.41		0.23	0.01				33.16	
	0.00			0.01	55	1.21		1,718
55.40		0.22	0.01				34.37	
	0.00			0.01	55	1.22		1,773
55.40		0.22	0.01				35.59	
	0.00			0.01	55	1.22		1,829
55.40		0.22	0.01				36.82	
	0.00			0.01	55	1.23		1,884
55.40		0.21	0.01				38.05	
	0.00			0.01	55	1.24		1,938
55.39		0.21	0.01				39.28	
	0.00			0.01	55	1.24		1,993
55.39		0.21	0.01				40.53	
	0.00			0.01	55	1.25		2,048
55.39		0.20	0.01				41.78	
	0.00			0.01	54	1.26		2,102
55.38		0.20	0.01				43.03	
	0.00			0.01	54	1.26		2,157
55.38		0.20	0.01				44.30	
	0.00			0.01	54	1.27		2,211
55.38		0.19	0.01				45.57	
	0.00			0.01	54	1.28		2,265
55.37		0.19	0.01				46.85	
	0.00			0.01	54	1.29		2,319

55.37		0.19	0.01				48.13	
	0.00			0.01	54	1.29		2,373
55.37		0.18	0.01				49.43	
	0.00			0.01	54	1.30		2,426
55.36		0.18	0.01				50.73	
	0.00			0.01	54	1.31		2,480
55.36		0.18	0.01				52.04	
	0.00			0.01	53	1.32		2,533
55.36		0.17	0.01				53.36	
	0.00			0.01	53	1.33		2,587
55.35		0.17	0.01				54.69	
	0.00			0.01	53	1.34		2,640
55.35		0.17	0.01				56.02	
	0.00			0.01	53	1.35		2,693
55.35		0.17	0.01				57.37	
	0.00			0.01	53	1.36		2,746
55.34		0.16	0.01				58.72	
	0.00			0.01	53	1.37		2,798
55.34		0.16	0.01				60.09	
	0.00			0.01	53	1.38		2,851
55.34		0.16	0.01				61.47	
	0.00			0.01	53	1.39		2,904
55.33		0.15	0.01				62.85	
	0.00			0.01	52	1.40		2,956
55.33		0.15	0.01				64.25	
	0.00			0.01	52	1.41		3,008
55.33		0.15	0.01				65.66	
	0.00			0.01	52	1.42		3,060
55.33		0.14	0.01				67.08	
	0.00			0.01	52	1.43		3,112
55.32		0.14	0.01				68.51	
	0.00			0.01	52	1.45		3,164
55.32		0.14	0.01				69.96	
	0.00			0.01	52	1.46		3,216
55.32		0.13	0.01				71.42	
	0.00			0.01	52	1.47		3,267
55.31		0.13	0.01				72.89	
	0.00			0.01	51	1.49		3,319
55.31		0.13	0.01				74.38	
	0.00			0.01	51	1.50		3,370
55.31		0.12	0.01				75.88	
	0.00			0.01	51	1.52		3,422
55.30		0.12	0.01				77.40	
	0.00			0.01	51	1.53		3,473
55.30		0.12	0.01				78.93	
	0.00			0.01	51	1.55		3,524
55.30		0.11	0.01				80.48	
	0.00			0.01	51	1.57		3,574
55.29		0.11	0.01				82.05	
	0.00			0.01	51	1.59		3,625
55.29		0.11	0.01				83.64	
	0.00			0.01	51	1.61		3,676
55.29		0.10	0.01				85.25	
	0.00			0.01	50	1.63		3,726
55.28		0.10	0.01				86.87	
	0.00			0.01	50	1.65		3,776
55.28		0.10	0.01				88.52	
	0.00			0.01	50	1.67		3,826
55.28		0.10	0.01				90.19	
	0.00			0.01	50	1.69		3,877

55.27		0.09	0.01				91.89	
	0.00			0.01	50	1.72		3,926
55.27		0.09	0.01				93.61	
	0.00			0.01	50	1.75		3,976
55.27		0.09	0.01				95.35	
	0.00			0.01	50	1.77		4,026
55.26		0.08	0.01				97.12	
	0.00			0.01	50	1.80		4,075
55.26		0.08	0.01				98.93	
	0.00			0.01	49	1.83		4,125
55.26		0.08	0.01				100.76	
	0.00			0.01	49	1.87		4,174
55.26		0.07	0.01				102.63	
	0.00			0.01	49	1.90		4,223
55.25		0.07	0.01				104.54	
	0.00			0.01	49	1.94		4,272
55.25		0.07	0.01				106.48	
	0.00			0.01	49	1.98		4,321
55.25		0.06	0.01				108.46	
	0.00			0.01	49	2.03		4,370
55.24		0.06	0.01				110.49	
	0.00			0.01	49	2.08		4,418
55.24		0.06	0.01				112.57	
	0.00			0.01	48	2.13		4,467
55.24		0.05	0.01				114.70	
	0.00			0.01	48	2.19		4,515
55.23		0.05	0.01				116.89	
	0.00			0.01	48	2.25		4,563
55.23		0.05	0.01				119.14	
	0.00			0.01	48	2.32		4,611
55.23		0.04	0.01				121.46	
	0.00			0.01	48	2.40		4,659
55.22		0.04	0.01				123.87	
	0.00			0.01	48	2.49		4,707
55.22		0.04	0.01				126.35	
	0.00			0.01	48	2.59		4,755
55.22		0.03	0.01				128.94	
	0.00			0.00	48	2.70		4,802
55.21		0.03	0.00				131.64	
	0.00			0.00	47	2.83		4,850
55.21		0.03	0.00				134.47	
	0.00			0.00	47	2.98		4,897
55.21		0.03	0.00				137.45	
	0.00			0.00	47	3.17		4,944
55.20		0.02	0.00				140.62	
	0.00			0.00	47	3.40		4,991
55.20		0.02	0.00				144.02	
	0.00			0.00	47	3.68		5,038
55.20		0.02	0.00				147.70	
	0.00			0.00	47	4.06		5,085
55.19		0.01	0.00				151.76	
	0.00			0.00	47	4.60		5,132
55.19		0.01	0.00				156.36	
	0.00			0.00	47	5.44		5,178
55.19		0.01	0.00				161.80	
	0.00			0.00	46	7.07		5,225
55.19		0.00	0.00				168.86	
	0.00			0.00	46	17.01		5,271
55.18		0.00	0.00				185.87	
55.14								5,869

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P5B1*

A.
B.
C.
D.
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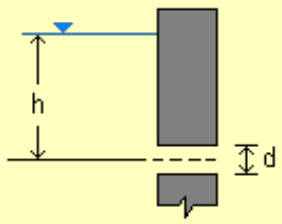
A. SITE INFORMATION

Site Ac. =	**0.84**	Acres				
DER Elev. =	**58.50**	Feet	DER Area =	**11,761**	Sq. Ft. - top elevation of treatment volume	
NWL =	**58.20**	Feet	NWL Area =	**10,019**	Sq. Ft. - bottom elevation of treatment volume	
Runoff =	**1.0**	Inches (OFW ?)		**3,264**	Cu.Ft. of available treatent volume	
Head (h) =	**0.27**	Feet h = DER Elev. - (NWL + ½d)				
Required Volume =	**3,049**	Cu.Ft. or				
	0.07	Ac.Ft.				

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	**0.78**	Inches
Orifice Area (a) =	0.0033	Sq.Ft.
C Value =	**0.60**	Coefficient of discharge
½ Vol.Time =	**60.60**	Hours
Total Time =	**195.63**	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	**#NUM!**	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
58.50		0.27	0.01					
	0.00			0.01	31	1.07		31
58.50		0.27	0.01				1.07	
	0.00			0.01	31	1.08		63
58.49		0.26	0.01				2.15	
	0.00			0.01	31	1.08		94
58.49		0.26	0.01				3.23	
	0.00			0.01	31	1.09		126
58.49		0.26	0.01				4.32	
	0.00			0.01	31	1.09		157
58.49		0.25	0.01				5.41	
	0.00			0.01	31	1.09		188
58.48		0.25	0.01				6.50	
	0.00			0.01	31	1.10		219
58.48		0.25	0.01				7.60	
	0.00			0.01	31	1.10		251
58.48		0.25	0.01				8.71	
	0.00			0.01	31	1.11		282
58.48		0.24	0.01				9.81	
	0.00			0.01	31	1.11		313
58.47		0.24	0.01				10.93	
	0.00			0.01	31	1.12		344

58.47		0.24	0.01				12.04	
	0.00			0.01	31	1.12		375
58.47		0.24	0.01				13.17	
	0.00			0.01	31	1.13		406
58.47		0.23	0.01				14.29	
	0.00			0.01	31	1.13		437
58.46		0.23	0.01				15.42	
	0.00			0.01	31	1.14		468
58.46		0.23	0.01				16.56	
	0.00			0.01	31	1.14		498
58.46		0.22	0.01				17.70	
	0.00			0.01	31	1.15		529
58.45		0.22	0.01				18.85	
	0.00			0.01	31	1.15		560
58.45		0.22	0.01				20.00	
	0.00			0.01	31	1.16		591
58.45		0.22	0.01				21.16	
	0.00			0.01	31	1.16		621
58.45		0.21	0.01				22.33	
	0.00			0.01	31	1.17		652
58.44		0.21	0.01				23.50	
	0.00			0.01	31	1.18		683
58.44		0.21	0.01				24.67	
	0.00			0.01	31	1.18		713
58.44		0.21	0.01				25.85	
	0.00			0.01	31	1.19		744
58.44		0.20	0.01				27.04	
	0.00			0.01	30	1.19		774
58.43		0.20	0.01				28.23	
	0.00			0.01	30	1.20		805
58.43		0.20	0.01				29.43	
	0.00			0.01	30	1.21		835
58.43		0.20	0.01				30.64	
	0.00			0.01	30	1.21		865
58.43		0.19	0.01				31.85	
	0.00			0.01	30	1.22		896
58.42		0.19	0.01				33.07	
	0.00			0.01	30	1.23		926
58.42		0.19	0.01				34.30	
	0.00			0.01	30	1.23		956
58.42		0.18	0.01				35.53	
	0.00			0.01	30	1.24		986
58.41		0.18	0.01				36.78	
	0.00			0.01	30	1.25		1,017
58.41		0.18	0.01				38.03	
	0.00			0.01	30	1.26		1,047
58.41		0.18	0.01				39.28	
	0.00			0.01	30	1.26		1,077
58.41		0.17	0.01				40.55	
	0.00			0.01	30	1.27		1,107
58.40		0.17	0.01				41.82	
	0.00			0.01	30	1.28		1,137
58.40		0.17	0.01				43.10	
	0.00			0.01	30	1.29		1,167
58.40		0.17	0.01				44.39	
	0.00			0.01	30	1.30		1,197
58.40		0.16	0.01				45.69	
	0.00			0.01	30	1.31		1,226
58.39		0.16	0.01				46.99	
	0.00			0.01	30	1.32		1,256

58.39		0.16	0.01				48.31	
	0.00			0.01	30	1.33		1,286
58.39		0.16	0.01				49.63	
	0.00			0.01	30	1.33		1,316
58.38		0.15	0.01				50.97	
	0.00			0.01	30	1.34		1,345
58.38		0.15	0.01				52.31	
	0.00			0.01	30	1.35		1,375
58.38		0.15	0.01				53.67	
	0.00			0.01	30	1.37		1,405
58.38		0.14	0.01				55.03	
	0.00			0.01	30	1.38		1,434
58.37		0.14	0.01				56.41	
	0.00			0.01	30	1.39		1,464
58.37		0.14	0.01				57.80	
	0.00			0.01	29	1.40		1,493
58.37		0.14	0.01				59.19	
	0.00			0.01	29	1.41		1,523
58.37		0.13	0.01				60.60	
	0.00			0.01	29	1.42		1,552
58.36		0.13	0.01				62.03	
	0.00			0.01	29	1.44		1,582
58.36		0.13	0.01				63.46	
	0.00			0.01	29	1.45		1,611
58.36		0.13	0.01				64.91	
	0.00			0.01	29	1.46		1,640
58.36		0.12	0.01				66.37	
	0.00			0.01	29	1.48		1,669
58.35		0.12	0.01				67.85	
	0.00			0.01	29	1.49		1,699
58.35		0.12	0.01				69.34	
	0.00			0.01	29	1.50		1,728
58.35		0.12	0.01				70.84	
	0.00			0.01	29	1.52		1,757
58.34		0.11	0.01				72.36	
	0.00			0.01	29	1.54		1,786
58.34		0.11	0.01				73.90	
	0.00			0.01	29	1.55		1,815
58.34		0.11	0.01				75.45	
	0.00			0.01	29	1.57		1,844
58.34		0.10	0.01				77.02	
	0.00			0.01	29	1.59		1,873
58.33		0.10	0.01				78.61	
	0.00			0.00	29	1.61		1,902
58.33		0.10	0.00				80.22	
	0.00			0.00	29	1.63		1,931
58.33		0.10	0.00				81.84	
	0.00			0.00	29	1.65		1,959
58.33		0.09	0.00				83.49	
	0.00			0.00	29	1.67		1,988
58.32		0.09	0.00				85.16	
	0.00			0.00	29	1.69		2,017
58.32		0.09	0.00				86.85	
	0.00			0.00	29	1.71		2,046
58.32		0.09	0.00				88.56	
	0.00			0.00	29	1.74		2,074
58.32		0.08	0.00				90.30	
	0.00			0.00	29	1.76		2,103
58.31		0.08	0.00				92.06	
	0.00			0.00	29	1.79		2,132

58.31		0.08	0.00				93.85	
	0.00			0.00	29	1.82		2,160
58.31		0.07	0.00				95.67	
	0.00			0.00	28	1.85		2,189
58.30		0.07	0.00				97.52	
	0.00			0.00	28	1.88		2,217
58.30		0.07	0.00				99.41	
	0.00			0.00	28	1.92		2,246
58.30		0.07	0.00				101.32	
	0.00			0.00	28	1.95		2,274
58.30		0.06	0.00				103.27	
	0.00			0.00	28	1.99		2,302
58.29		0.06	0.00				105.26	
	0.00			0.00	28	2.03		2,331
58.29		0.06	0.00				107.29	
	0.00			0.00	28	2.07		2,359
58.29		0.06	0.00				109.37	
	0.00			0.00	28	2.12		2,387
58.29		0.05	0.00				111.49	
	0.00			0.00	28	2.17		2,415
58.28		0.05	0.00				113.66	
	0.00			0.00	28	2.23		2,443
58.28		0.05	0.00				115.88	
	0.00			0.00	28	2.29		2,471
58.28		0.05	0.00				118.17	
	0.00			0.00	28	2.35		2,499
58.28		0.04	0.00				120.52	
	0.00			0.00	28	2.42		2,527
58.27		0.04	0.00				122.94	
	0.00			0.00	28	2.50		2,555
58.27		0.04	0.00				125.44	
	0.00			0.00	28	2.59		2,583
58.27		0.03	0.00				128.03	
	0.00			0.00	28	2.68		2,611
58.26		0.03	0.00				130.71	
	0.00			0.00	28	2.79		2,639
58.26		0.03	0.00				133.51	
	0.00			0.00	28	2.92		2,667
58.26		0.03	0.00				136.43	
	0.00			0.00	28	3.07		2,695
58.26		0.02	0.00				139.49	
	0.00			0.00	28	3.24		2,722
58.25		0.02	0.00				142.73	
	0.00			0.00	28	3.44		2,750
58.25		0.02	0.00				146.17	
	0.00			0.00	28	3.69		2,778
58.25		0.02	0.00				149.86	
	0.00			0.00	28	4.01		2,805
58.25		0.01	0.00				153.87	
	0.00			0.00	28	4.43		2,833
58.24		0.01	0.00				158.30	
	0.00			0.00	28	5.02		2,860
58.24		0.01	0.00				163.32	
	0.00			0.00	27	5.94		2,888
58.24		0.01	0.00				169.26	
	0.00			0.00	27	7.73		2,915
58.23		0.00	0.00				176.99	
	0.00			0.00	27	18.64		2,943
58.23		0.00	0.00				195.63	
58.20								3,269

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P7B1*

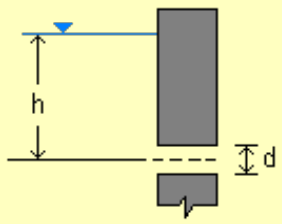
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	**0.96**	Acres				
DER Elev. =	**58.10**	Feet	DER Area =	**17,424**	Sq. Ft. - top elevation of treatment volume	
NWL =	**57.90**	Feet	NWL Area =	**16,553**	Sq. Ft. - bottom elevation of treatment volume	
Runoff =	**1.0**	Inches (OFW ?)		**3,550**	Cu.Ft. of available treatent volume	
Head (h) =	**0.17**	Feet h = DER Elev. - (NWL + ½d)				
Required Volume =	**3,485**	Cu.Ft. or				
	0.08	Ac.Ft.				

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	**0.94**	Inches
Orifice Area (a) =	0.0048	Sq.Ft.
C Value =	**0.60**	Coefficient of discharge
½ Vol.Time =	**61.05**	Hours
Total Time =	**167.31**	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	**#NUM!**	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
58.10		0.17	0.01					
	0.00			0.01	30	0.86		30
58.10		0.17	0.01				0.86	
	0.00			0.01	30	0.87		59
58.10		0.17	0.01				1.73	
	0.00			0.01	30	0.87		89
58.10		0.16	0.01				2.60	
	0.00			0.01	30	0.87		118
58.10		0.16	0.01				3.47	
	0.00			0.01	30	0.88		148
58.10		0.16	0.01				4.35	
	0.00			0.01	30	0.88		177
58.09		0.16	0.01				5.23	
	0.00			0.01	30	0.89		207
58.09		0.16	0.01				6.12	
	0.00			0.01	30	0.89		236
58.09		0.16	0.01				7.01	
	0.00			0.01	29	0.90		266
58.09		0.15	0.01				7.90	
	0.00			0.01	29	0.90		295
58.09		0.15	0.01				8.80	
	0.00			0.01	29	0.90		325

58.09		0.15	0.01				9.71	
	0.00			0.01	29	0.91		354
58.08		0.15	0.01				10.62	
	0.00			0.01	29	0.91		384
58.08		0.15	0.01				11.53	
	0.00			0.01	29	0.92		413
58.08		0.15	0.01				12.45	
	0.00			0.01	29	0.92		443
58.08		0.14	0.01				13.38	
	0.00			0.01	29	0.93		472
58.08		0.14	0.01				14.31	
	0.00			0.01	29	0.93		501
58.08		0.14	0.01				15.24	
	0.00			0.01	29	0.94		531
58.07		0.14	0.01				16.18	
	0.00			0.01	29	0.95		560
58.07		0.14	0.01				17.12	
	0.00			0.01	29	0.95		589
58.07		0.14	0.01				18.08	
	0.00			0.01	29	0.96		619
58.07		0.13	0.01				19.03	
	0.00			0.01	29	0.96		648
58.07		0.13	0.01				19.99	
	0.00			0.01	29	0.97		677
58.06		0.13	0.01				20.96	
	0.00			0.01	29	0.97		707
58.06		0.13	0.01				21.93	
	0.00			0.01	29	0.98		736
58.06		0.13	0.01				22.91	
	0.00			0.01	29	0.99		765
58.06		0.13	0.01				23.90	
	0.00			0.01	29	0.99		795
58.06		0.12	0.01				24.89	
	0.00			0.01	29	1.00		824
58.06		0.12	0.01				25.89	
	0.00			0.01	29	1.00		853
58.05		0.12	0.01				26.89	
	0.00			0.01	29	1.01		882
58.05		0.12	0.01				27.91	
	0.00			0.01	29	1.02		912
58.05		0.12	0.01				28.92	
	0.00			0.01	29	1.03		941
58.05		0.12	0.01				29.95	
	0.00			0.01	29	1.03		970
58.05		0.11	0.01				30.98	
	0.00			0.01	29	1.04		999
58.05		0.11	0.01				32.02	
	0.00			0.01	29	1.05		1,028
58.04		0.11	0.01				33.07	
	0.00			0.01	29	1.06		1,058
58.04		0.11	0.01				34.12	
	0.00			0.01	29	1.06		1,087
58.04		0.11	0.01				35.19	
	0.00			0.01	29	1.07		1,116
58.04		0.11	0.01				36.26	
	0.00			0.01	29	1.08		1,145
58.04		0.10	0.01				37.34	
	0.00			0.01	29	1.09		1,174
58.04		0.10	0.01				38.42	
	0.00			0.01	29	1.10		1,203

58.03		0.10	0.01				39.52	
	0.00			0.01	29	1.11		1,232
58.03		0.10	0.01				40.63	
	0.00			0.01	29	1.11		1,261
58.03		0.10	0.01				41.74	
	0.00			0.01	29	1.12		1,291
58.03		0.10	0.01				42.86	
	0.00			0.01	29	1.13		1,320
58.03		0.09	0.01				44.00	
	0.00			0.01	29	1.14		1,349
58.03		0.09	0.01				45.14	
	0.00			0.01	29	1.15		1,378
58.02		0.09	0.01				46.29	
	0.00			0.01	29	1.16		1,407
58.02		0.09	0.01				47.46	
	0.00			0.01	29	1.17		1,436
58.02		0.09	0.01				48.63	
	0.00			0.01	29	1.19		1,465
58.02		0.08	0.01				49.82	
	0.00			0.01	29	1.20		1,494
58.02		0.08	0.01				51.01	
	0.00			0.01	29	1.21		1,523
58.02		0.08	0.01				52.22	
	0.00			0.01	29	1.22		1,552
58.01		0.08	0.01				53.44	
	0.00			0.01	29	1.23		1,581
58.01		0.08	0.01				54.68	
	0.00			0.01	29	1.25		1,610
58.01		0.08	0.01				55.92	
	0.00			0.01	29	1.26		1,638
58.01		0.07	0.01				57.18	
	0.00			0.01	29	1.27		1,667
58.01		0.07	0.01				58.46	
	0.00			0.01	29	1.29		1,696
58.01		0.07	0.01				59.74	
	0.00			0.01	29	1.30		1,725
58.00		0.07	0.01				61.05	
	0.00			0.01	29	1.32		1,754
58.00		0.07	0.01				62.37	
	0.00			0.01	29	1.33		1,783
58.00		0.07	0.01				63.70	
	0.00			0.01	29	1.35		1,812
58.00		0.06	0.01				65.05	
	0.00			0.01	29	1.37		1,841
58.00		0.06	0.01				66.42	
	0.00			0.01	29	1.39		1,869
58.00		0.06	0.01				67.81	
	0.00			0.01	29	1.41		1,898
57.99		0.06	0.01				69.21	
	0.00			0.01	29	1.42		1,927
57.99		0.06	0.01				70.64	
	0.00			0.01	29	1.45		1,956
57.99		0.06	0.01				72.08	
	0.00			0.01	29	1.47		1,985
57.99		0.05	0.01				73.55	
	0.00			0.01	29	1.49		2,014
57.99		0.05	0.01				75.04	
	0.00			0.01	29	1.51		2,042
57.99		0.05	0.01				76.55	
	0.00			0.01	29	1.54		2,071

57.98		0.05	0.01				78.09	
	0.00			0.01	29	1.56		2,100
57.98		0.05	0.01				79.65	
	0.00			0.01	29	1.59		2,128
57.98		0.05	0.00				81.24	
	0.00			0.00	29	1.62		2,157
57.98		0.04	0.00				82.86	
	0.00			0.00	29	1.65		2,186
57.98		0.04	0.00				84.52	
	0.00			0.00	29	1.68		2,215
57.97		0.04	0.00				86.20	
	0.00			0.00	29	1.72		2,243
57.97		0.04	0.00				87.92	
	0.00			0.00	29	1.76		2,272
57.97		0.04	0.00				89.67	
	0.00			0.00	29	1.80		2,301
57.97		0.04	0.00				91.47	
	0.00			0.00	29	1.84		2,329
57.97		0.03	0.00				93.31	
	0.00			0.00	29	1.88		2,358
57.97		0.03	0.00				95.19	
	0.00			0.00	29	1.93		2,387
57.96		0.03	0.00				97.12	
	0.00			0.00	29	1.99		2,415
57.96		0.03	0.00				99.11	
	0.00			0.00	29	2.05		2,444
57.96		0.03	0.00				101.16	
	0.00			0.00	29	2.11		2,472
57.96		0.03	0.00				103.27	
	0.00			0.00	29	2.18		2,501
57.96		0.02	0.00				105.45	
	0.00			0.00	29	2.26		2,529
57.96		0.02	0.00				107.70	
	0.00			0.00	29	2.35		2,558
57.95		0.02	0.00				110.05	
	0.00			0.00	29	2.45		2,587
57.95		0.02	0.00				112.50	
	0.00			0.00	29	2.56		2,615
57.95		0.02	0.00				115.05	
	0.00			0.00	29	2.69		2,644
57.95		0.02	0.00				117.74	
	0.00			0.00	29	2.84		2,672
57.95		0.01	0.00				120.58	
	0.00			0.00	28	3.02		2,701
57.95		0.01	0.00				123.61	
	0.00			0.00	28	3.25		2,729
57.94		0.01	0.00				126.85	
	0.00			0.00	28	3.53		2,758
57.94		0.01	0.00				130.38	
	0.00			0.00	28	3.90		2,786
57.94		0.01	0.00				134.29	
	0.00			0.00	28	4.43		2,814
57.94		0.01	0.00				138.71	
	0.00			0.00	28	5.25		2,843
57.94		0.00	0.00				143.96	
	0.00			0.00	28	6.84		2,871
57.94		0.00	0.00				150.80	
	0.00			0.00	28	16.50		2,900
57.93		0.00	0.00				167.31	
57.90								3,551

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P10B2*

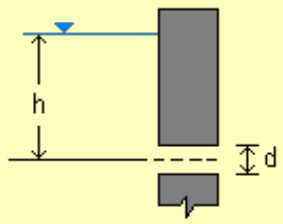
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	0.84	Acres			
DER Elev. =	58.30	Feet	DER Area =	6,816	Sq. Ft. - top elevation of treatment volume
NWL =	57.80	Feet	NWL Area =	5,227	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		3,056	Cu.Ft. of available treatent volume
Head (h) =	0.48	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	3,049	Cu.Ft. or			
	0.07	Ac.Ft.			

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	0.67	Inches
Orifice Area (a) =	0.0024	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	60.09	Hours
Total Time =	190.40	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
58.30		0.48	0.01					
	0.00			0.01	33	1.12		33
58.30		0.48	0.01				1.12	
	0.00			0.01	33	1.12		65
58.29		0.47	0.01				2.23	
	0.00			0.01	33	1.12		98
58.29		0.47	0.01				3.36	
	0.00			0.01	33	1.13		131
58.28		0.46	0.01				4.48	
	0.00			0.01	32	1.13		163
58.28		0.46	0.01				5.61	
	0.00			0.01	32	1.13		195
58.28		0.45	0.01				6.74	
	0.00			0.01	32	1.14		228
58.27		0.45	0.01				7.88	
	0.00			0.01	32	1.14		260
58.27		0.44	0.01				9.02	
	0.00			0.01	32	1.14		292
58.26		0.44	0.01				10.16	
	0.00			0.01	32	1.15		324
58.26		0.43	0.01				11.31	
	0.00			0.01	32	1.15		356

58.25		0.43	0.01				12.46	
	0.00			0.01	32	1.15		388
58.25		0.42	0.01				13.61	
	0.00			0.01	32	1.16		420
58.24		0.42	0.01				14.77	
	0.00			0.01	32	1.16		452
58.24		0.41	0.01				15.93	
	0.00			0.01	32	1.17		484
58.23		0.41	0.01				17.10	
	0.00			0.01	32	1.17		515
58.23		0.40	0.01				18.27	
	0.00			0.01	32	1.18		547
58.22		0.40	0.01				19.45	
	0.00			0.01	32	1.18		579
58.22		0.39	0.01				20.63	
	0.00			0.01	31	1.18		610
58.21		0.39	0.01				21.81	
	0.00			0.01	31	1.19		642
58.21		0.38	0.01				23.00	
	0.00			0.01	31	1.19		673
58.20		0.38	0.01				24.19	
	0.00			0.01	31	1.20		704
58.20		0.38	0.01				25.39	
	0.00			0.01	31	1.20		735
58.19		0.37	0.01				26.59	
	0.00			0.01	31	1.21		766
58.19		0.37	0.01				27.80	
	0.00			0.01	31	1.21		797
58.18		0.36	0.01				29.01	
	0.00			0.01	31	1.22		828
58.18		0.36	0.01				30.23	
	0.00			0.01	31	1.22		859
58.17		0.35	0.01				31.46	
	0.00			0.01	31	1.23		890
58.17		0.35	0.01				32.69	
	0.00			0.01	31	1.24		921
58.16		0.34	0.01				33.92	
	0.00			0.01	31	1.24		952
58.16		0.34	0.01				35.16	
	0.00			0.01	31	1.25		982
58.15		0.33	0.01				36.41	
	0.00			0.01	31	1.25		1,013
58.15		0.33	0.01				37.67	
	0.00			0.01	30	1.26		1,043
58.15		0.32	0.01				38.92	
	0.00			0.01	30	1.27		1,074
58.14		0.32	0.01				40.19	
	0.00			0.01	30	1.27		1,104
58.14		0.31	0.01				41.46	
	0.00			0.01	30	1.28		1,134
58.13		0.31	0.01				42.74	
	0.00			0.01	30	1.29		1,164
58.13		0.30	0.01				44.03	
	0.00			0.01	30	1.29		1,194
58.12		0.30	0.01				45.32	
	0.00			0.01	30	1.30		1,224
58.12		0.29	0.01				46.63	
	0.00			0.01	30	1.31		1,254
58.11		0.29	0.01				47.93	
	0.00			0.01	30	1.32		1,284

58.11		0.28	0.01				49.25	
	0.00			0.01	30	1.32		1,314
58.10		0.28	0.01				50.57	
	0.00			0.01	30	1.33		1,344
58.10		0.27	0.01				51.91	
	0.00			0.01	30	1.34		1,374
58.09		0.27	0.01				53.25	
	0.00			0.01	30	1.35		1,403
58.09		0.26	0.01				54.60	
	0.00			0.01	30	1.36		1,433
58.08		0.26	0.01				55.96	
	0.00			0.01	29	1.37		1,462
58.08		0.25	0.01				57.33	
	0.00			0.01	29	1.38		1,492
58.07		0.25	0.01				58.71	
	0.00			0.01	29	1.39		1,521
58.07		0.25	0.01				60.09	
	0.00			0.01	29	1.40		1,550
58.06		0.24	0.01				61.49	
	0.00			0.01	29	1.41		1,579
58.06		0.24	0.01				62.90	
	0.00			0.01	29	1.42		1,608
58.05		0.23	0.01				64.32	
	0.00			0.01	29	1.43		1,637
58.05		0.23	0.01				65.75	
	0.00			0.01	29	1.44		1,666
58.04		0.22	0.01				67.19	
	0.00			0.01	29	1.46		1,695
58.04		0.22	0.01				68.65	
	0.00			0.01	29	1.47		1,724
58.03		0.21	0.01				70.12	
	0.00			0.01	29	1.48		1,753
58.03		0.21	0.01				71.60	
	0.00			0.01	29	1.49		1,782
58.02		0.20	0.01				73.09	
	0.00			0.01	29	1.51		1,810
58.02		0.20	0.01				74.60	
	0.00			0.01	29	1.52		1,839
58.02		0.19	0.01				76.12	
	0.00			0.01	28	1.54		1,867
58.01		0.19	0.01				77.66	
	0.00			0.01	28	1.55		1,896
58.01		0.18	0.01				79.22	
	0.00			0.01	28	1.57		1,924
58.00		0.18	0.00				80.79	
	0.00			0.00	28	1.59		1,952
58.00		0.17	0.00				82.38	
	0.00			0.00	28	1.61		1,980
57.99		0.17	0.00				83.98	
	0.00			0.00	28	1.63		2,008
57.99		0.16	0.00				85.61	
	0.00			0.00	28	1.65		2,036
57.98		0.16	0.00				87.25	
	0.00			0.00	28	1.67		2,064
57.98		0.15	0.00				88.92	
	0.00			0.00	28	1.69		2,092
57.97		0.15	0.00				90.61	
	0.00			0.00	28	1.71		2,120
57.97		0.14	0.00				92.32	
	0.00			0.00	28	1.74		2,148

57.96		0.14	0.00				94.06	
	0.00			0.00	28	1.76		2,176
57.96		0.13	0.00				95.82	
	0.00			0.00	28	1.79		2,203
57.95		0.13	0.00				97.60	
	0.00			0.00	28	1.82		2,231
57.95		0.13	0.00				99.42	
	0.00			0.00	27	1.85		2,258
57.94		0.12	0.00				101.27	
	0.00			0.00	27	1.88		2,285
57.94		0.12	0.00				103.15	
	0.00			0.00	27	1.91		2,313
57.93		0.11	0.00				105.06	
	0.00			0.00	27	1.95		2,340
57.93		0.11	0.00				107.02	
	0.00			0.00	27	1.99		2,367
57.92		0.10	0.00				109.01	
	0.00			0.00	27	2.03		2,394
57.92		0.10	0.00				111.04	
	0.00			0.00	27	2.08		2,421
57.91		0.09	0.00				113.12	
	0.00			0.00	27	2.13		2,448
57.91		0.09	0.00				115.25	
	0.00			0.00	27	2.18		2,475
57.90		0.08	0.00				117.43	
	0.00			0.00	27	2.24		2,502
57.90		0.08	0.00				119.68	
	0.00			0.00	27	2.31		2,529
57.90		0.07	0.00				121.98	
	0.00			0.00	27	2.38		2,555
57.89		0.07	0.00				124.36	
	0.00			0.00	27	2.46		2,582
57.89		0.06	0.00				126.82	
	0.00			0.00	27	2.55		2,609
57.88		0.06	0.00				129.37	
	0.00			0.00	26	2.65		2,635
57.88		0.05	0.00				132.03	
	0.00			0.00	26	2.77		2,661
57.87		0.05	0.00				134.79	
	0.00			0.00	26	2.90		2,688
57.87		0.04	0.00				137.69	
	0.00			0.00	26	3.06		2,714
57.86		0.04	0.00				140.75	
	0.00			0.00	26	3.25		2,740
57.86		0.03	0.00				144.00	
	0.00			0.00	26	3.48		2,766
57.85		0.03	0.00				147.48	
	0.00			0.00	26	3.77		2,792
57.85		0.02	0.00				151.26	
	0.00			0.00	26	4.16		2,818
57.84		0.02	0.00				155.42	
	0.00			0.00	26	4.71		2,844
57.84		0.01	0.00				160.13	
	0.00			0.00	26	5.57		2,870
57.83		0.01	0.00				165.71	
	0.00			0.00	26	7.25		2,896
57.83		0.00	0.00				172.95	
	0.00			0.00	26	17.44		2,921
57.82		0.00	0.00				190.40	
57.80								3,069

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations

P12B2

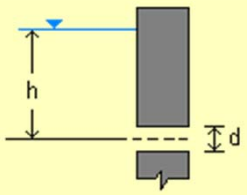
A.
B.
C.
D.
E.
F.
G.

A. **SITE INFORMATION**

Site Ac. =	5.23	Acres			
DER Elev. =	57.90	Feet	DER Area =	66,647	Sq. Ft. - top elevation of treatment volume
NWL =	57.60	Feet	NWL Area =	60,113	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		19,006	Cu.Ft. of available treatent volume
Head (h) =	0.21	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	18,985	Cu.Ft. or			
	0.44	Ac.Ft.			

B. **VERTICAL CIRCULAR ORIFICE FLOW**

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	2.05	Inches
Orifice Area (a) =	0.0229	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	64.39	Hours
Total Time =	148.06	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
57.90		0.21	0.05					
	0.00			0.05	143	0.78		143
57.90		0.21	0.05				0.78	
	0.00			0.05	143	0.78		286
57.90		0.21	0.05				1.56	
	0.00			0.05	143	0.78		429
57.89		0.21	0.05				2.34	
	0.00			0.05	143	0.79		571
57.89		0.21	0.05				3.13	
	0.00			0.05	143	0.79		714
57.89		0.20	0.05				3.92	
	0.00			0.05	142	0.80		856
57.89		0.20	0.05				4.72	
	0.00			0.05	142	0.80		998
57.88		0.20	0.05				5.52	
	0.00			0.05	142	0.80		1,141
57.88		0.20	0.05				6.32	
	0.00			0.05	142	0.81		1,283
57.88		0.20	0.05				7.13	
	0.00			0.05	142	0.81		1,425
57.88		0.19	0.05				7.94	
	0.00			0.05	142	0.81		1,567
57.88		0.19	0.05				8.75	
	0.00			0.05	142	0.82		1,709

57.87		0.19	0.05				9.57	
	0.00			0.05	142	0.82		1,850
57.87		0.19	0.05				10.39	
	0.00			0.05	142	0.83		1,992
57.87		0.18	0.05				11.22	
	0.00			0.05	142	0.83		2,134
57.87		0.18	0.05				12.05	
	0.00			0.05	141	0.84		2,275
57.87		0.18	0.05				12.89	
	0.00			0.05	141	0.84		2,416
57.86		0.18	0.05				13.73	
	0.00			0.05	141	0.84		2,558
57.86		0.18	0.05				14.57	
	0.00			0.05	141	0.85		2,699
57.86		0.17	0.05				15.42	
	0.00			0.05	141	0.85		2,840
57.86		0.17	0.05				16.27	
	0.00			0.05	141	0.86		2,981
57.85		0.17	0.05				17.13	
	0.00			0.05	141	0.86		3,122
57.85		0.17	0.05				17.99	
	0.00			0.05	141	0.87		3,262
57.85		0.17	0.04				18.86	
	0.00			0.04	141	0.87		3,403
57.85		0.16	0.04				19.74	
	0.00			0.04	141	0.88		3,544
57.85		0.16	0.04				20.61	
	0.00			0.04	140	0.88		3,684
57.84		0.16	0.04				21.50	
	0.00			0.04	140	0.89		3,824
57.84		0.16	0.04				22.39	
	0.00			0.04	140	0.89		3,965
57.84		0.15	0.04				23.28	
	0.00			0.04	140	0.90		4,105
57.84		0.15	0.04				24.18	
	0.00			0.04	140	0.91		4,245
57.84		0.15	0.04				25.09	
	0.00			0.04	140	0.91		4,385
57.83		0.15	0.04				26.00	
	0.00			0.04	140	0.92		4,525
57.83		0.15	0.04				26.91	
	0.00			0.04	140	0.92		4,664
57.83		0.14	0.04				27.84	
	0.00			0.04	140	0.93		4,804
57.83		0.14	0.04				28.77	
	0.00			0.04	140	0.94		4,944
57.82		0.14	0.04				29.70	
	0.00			0.04	139	0.94		5,083
57.82		0.14	0.04				30.65	
	0.00			0.04	139	0.95		5,223
57.82		0.14	0.04				31.60	
	0.00			0.04	139	0.96		5,362
57.82		0.13	0.04				32.55	
	0.00			0.04	139	0.96		5,501
57.82		0.13	0.04				33.52	
	0.00			0.04	139	0.97		5,640
57.81		0.13	0.04				34.49	
	0.00			0.04	139	0.98		5,779
57.81		0.13	0.04				35.46	
	0.00			0.04	139	0.99		5,918
57.81		0.12	0.04				36.45	
	0.00			0.04	139	0.99		6,057
57.81		0.12	0.04				37.44	

	0.00			0.04	139	1.00		6,195
57.81		0.12	0.04				38.44	
	0.00			0.04	139	1.01		6,334
57.80		0.12	0.04				39.45	
	0.00			0.04	138	1.02		6,472
57.80		0.12	0.04				40.47	
	0.00			0.04	138	1.03		6,611
57.80		0.11	0.04				41.50	
	0.00			0.04	138	1.04		6,749
57.80		0.11	0.04				42.54	
	0.00			0.04	138	1.05		6,887
57.79		0.11	0.04				43.58	
	0.00			0.04	138	1.05		7,025
57.79		0.11	0.04				44.64	
	0.00			0.04	138	1.06		7,163
57.79		0.11	0.04				45.70	
	0.00			0.04	138	1.07		7,301
57.79		0.10	0.04				46.77	
	0.00			0.04	138	1.09		7,439
57.79		0.10	0.04				47.86	
	0.00			0.03	138	1.10		7,577
57.78		0.10	0.03				48.96	
	0.00			0.03	138	1.11		7,714
57.78		0.10	0.03				50.06	
	0.00			0.03	137	1.12		7,852
57.78		0.09	0.03				51.18	
	0.00			0.03	137	1.13		7,989
57.78		0.09	0.03				52.31	
	0.00			0.03	137	1.14		8,126
57.78		0.09	0.03				53.46	
	0.00			0.03	137	1.16		8,263
57.77		0.09	0.03				54.61	
	0.00			0.03	137	1.17		8,400
57.77		0.09	0.03				55.78	
	0.00			0.03	137	1.18		8,537
57.77		0.08	0.03				56.96	
	0.00			0.03	137	1.20		8,674
57.77		0.08	0.03				58.16	
	0.00			0.03	137	1.21		8,811
57.76		0.08	0.03				59.37	
	0.00			0.03	137	1.23		8,948
57.76		0.08	0.03				60.60	
	0.00			0.03	137	1.24		9,084
57.76		0.08	0.03				61.85	
	0.00			0.03	136	1.26		9,221
57.76		0.07	0.03				63.11	
	0.00			0.03	136	1.28		9,357
57.76		0.07	0.03				64.39	
	0.00			0.03	136	1.30		9,494
57.75		0.07	0.03				65.69	
	0.00			0.03	136	1.32		9,630
57.75		0.07	0.03				67.00	
	0.00			0.03	136	1.34		9,766
57.75		0.06	0.03				68.34	
	0.00			0.03	136	1.36		9,902
57.75		0.06	0.03				69.70	
	0.00			0.03	136	1.38		10,038
57.75		0.06	0.03				71.08	
	0.00			0.03	136	1.41		10,173
57.74		0.06	0.03				72.49	
	0.00			0.03	136	1.43		10,309
57.74		0.06	0.03				73.92	
	0.00			0.03	136	1.46		10,445

57.74		0.05	0.03				75.38	
	0.00			0.03	135	1.49		10,580
57.74		0.05	0.03				76.86	
	0.00			0.02	135	1.52		10,716
57.73		0.05	0.02				78.38	
	0.00			0.02	135	1.55		10,851
57.73		0.05	0.02				79.93	
	0.00			0.02	135	1.58		10,986
57.73		0.05	0.02				81.51	
	0.00			0.02	135	1.62		11,121
57.73		0.04	0.02				83.13	
	0.00			0.02	135	1.66		11,256
57.73		0.04	0.02				84.79	
	0.00			0.02	135	1.70		11,391
57.72		0.04	0.02				86.49	
	0.00			0.02	135	1.75		11,526
57.72		0.04	0.02				88.24	
	0.00			0.02	135	1.80		11,661
57.72		0.03	0.02				90.04	
	0.00			0.02	135	1.86		11,795
57.72		0.03	0.02				91.90	
	0.00			0.02	134	1.92		11,930
57.72		0.03	0.02				93.82	
	0.00			0.02	134	1.99		12,064
57.71		0.03	0.02				95.80	
	0.00			0.02	134	2.06		12,198
57.71		0.03	0.02				97.86	
	0.00			0.02	134	2.15		12,333
57.71		0.02	0.02				100.01	
	0.00			0.02	134	2.25		12,467
57.71		0.02	0.02				102.26	
	0.00			0.02	134	2.36		12,601
57.70		0.02	0.02				104.62	
	0.00			0.01	134	2.49		12,735
57.70		0.02	0.01				107.12	
	0.00			0.01	134	2.65		12,868
57.70		0.02	0.01				109.77	
	0.00			0.01	134	2.85		13,002
57.70		0.01	0.01				112.62	
	0.00			0.01	134	3.10		13,136
57.70		0.01	0.01				115.71	
	0.00			0.01	134	3.42		13,269
57.69		0.01	0.01				119.14	
	0.00			0.01	133	3.88		13,403
57.69		0.01	0.01				123.02	
	0.00			0.01	133	4.60		13,536
57.69		0.00	0.01				127.62	
	0.00			0.01	133	5.99		13,669
57.69		0.00	0.01				133.61	
	0.00			0.00	133	14.45		13,802
57.69		0.00	0.00				148.06	
57.60								19,019

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P2C2*

A.
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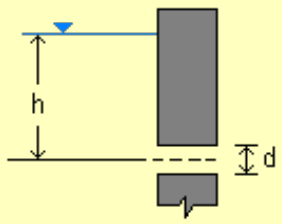
A. SITE INFORMATION

Site Ac. =	**1.08**	Acres				
DER Elev. =	**60.90**	Feet	DER Area =	**9,814**	Sq. Ft. - top elevation of treatment volume	
NWL =	**60.46**	Feet	NWL Area =	**7,841**	Sq. Ft. - bottom elevation of treatment volume	
Runoff =	**1.0**	Inches (OFW ?)		**3,955**	Cu.Ft. of available treatent volume	
Head (h) =	**0.42**	Feet h = DER Elev. - (NWL + ½d)				
Required Volume =	**3,920**	Cu.Ft. or				
	0.09	Ac.Ft.				

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	**0.79**	Inches
Orifice Area (a) =	0.0034	Sq.Ft.
C Value =	**0.60**	Coefficient of discharge
½ Vol.Time =	**60.09**	Hours
Total Time =	**189.17**	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	**#NUM!**	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
60.90		0.42	0.01					
	0.00			0.01	41	1.08		41
60.90		0.41	0.01				1.08	
	0.00			0.01	41	1.08		82
60.90		0.41	0.01				2.16	
	0.00			0.01	41	1.09		122
60.89		0.40	0.01				3.25	
	0.00			0.01	41	1.09		163
60.89		0.40	0.01				4.34	
	0.00			0.01	41	1.09		203
60.88		0.40	0.01				5.44	
	0.00			0.01	40	1.10		244
60.88		0.39	0.01				6.53	
	0.00			0.01	40	1.10		284
60.87		0.39	0.01				7.64	
	0.00			0.01	40	1.11		324
60.87		0.38	0.01				8.74	
	0.00			0.01	40	1.11		365
60.87		0.38	0.01				9.85	
	0.00			0.01	40	1.11		405
60.86		0.37	0.01				10.97	
	0.00			0.01	40	1.12		445

60.86		0.37	0.01				12.08	
	0.00			0.01	40	1.12		485
60.85		0.37	0.01				13.21	
	0.00			0.01	40	1.13		525
60.85		0.36	0.01				14.33	
	0.00			0.01	40	1.13		564
60.85		0.36	0.01				15.46	
	0.00			0.01	40	1.14		604
60.84		0.35	0.01				16.60	
	0.00			0.01	40	1.14		644
60.84		0.35	0.01				17.74	
	0.00			0.01	40	1.14		683
60.83		0.35	0.01				18.88	
	0.00			0.01	40	1.15		723
60.83		0.34	0.01				20.03	
	0.00			0.01	39	1.15		762
60.82		0.34	0.01				21.18	
	0.00			0.01	39	1.16		802
60.82		0.33	0.01				22.34	
	0.00			0.01	39	1.16		841
60.82		0.33	0.01				23.51	
	0.00			0.01	39	1.17		880
60.81		0.32	0.01				24.68	
	0.00			0.01	39	1.17		919
60.81		0.32	0.01				25.85	
	0.00			0.01	39	1.18		959
60.80		0.32	0.01				27.03	
	0.00			0.01	39	1.19		998
60.80		0.31	0.01				28.21	
	0.00			0.01	39	1.19		1,036
60.80		0.31	0.01				29.41	
	0.00			0.01	39	1.20		1,075
60.79		0.30	0.01				30.60	
	0.00			0.01	39	1.20		1,114
60.79		0.30	0.01				31.80	
	0.00			0.01	39	1.21		1,153
60.78		0.30	0.01				33.01	
	0.00			0.01	39	1.21		1,191
60.78		0.29	0.01				34.23	
	0.00			0.01	39	1.22		1,230
60.77		0.29	0.01				35.45	
	0.00			0.01	38	1.23		1,268
60.77		0.28	0.01				36.68	
	0.00			0.01	38	1.23		1,307
60.77		0.28	0.01				37.91	
	0.00			0.01	38	1.24		1,345
60.76		0.27	0.01				39.15	
	0.00			0.01	38	1.25		1,383
60.76		0.27	0.01				40.40	
	0.00			0.01	38	1.25		1,422
60.75		0.27	0.01				41.65	
	0.00			0.01	38	1.26		1,460
60.75		0.26	0.01				42.91	
	0.00			0.01	38	1.27		1,498
60.75		0.26	0.01				44.18	
	0.00			0.01	38	1.28		1,536
60.74		0.25	0.01				45.46	
	0.00			0.01	38	1.29		1,573
60.74		0.25	0.01				46.75	
	0.00			0.01	38	1.29		1,611

60.73		0.25	0.01				48.04	
	0.00			0.01	38	1.30		1,649
60.73		0.24	0.01				49.34	
	0.00			0.01	38	1.31		1,687
60.73		0.24	0.01				50.65	
	0.00			0.01	38	1.32		1,724
60.72		0.23	0.01				51.97	
	0.00			0.01	37	1.33		1,762
60.72		0.23	0.01				53.30	
	0.00			0.01	37	1.34		1,799
60.71		0.22	0.01				54.64	
	0.00			0.01	37	1.35		1,836
60.71		0.22	0.01				55.99	
	0.00			0.01	37	1.36		1,874
60.70		0.22	0.01				57.35	
	0.00			0.01	37	1.37		1,911
60.70		0.21	0.01				58.72	
	0.00			0.01	37	1.38		1,948
60.70		0.21	0.01				60.09	
	0.00			0.01	37	1.39		1,985
60.69		0.20	0.01				61.48	
	0.00			0.01	37	1.40		2,022
60.69		0.20	0.01				62.89	
	0.00			0.01	37	1.41		2,059
60.68		0.20	0.01				64.30	
	0.00			0.01	37	1.43		2,096
60.68		0.19	0.01				65.72	
	0.00			0.01	37	1.44		2,132
60.68		0.19	0.01				67.16	
	0.00			0.01	37	1.45		2,169
60.67		0.18	0.01				68.61	
	0.00			0.01	37	1.46		2,206
60.67		0.18	0.01				70.08	
	0.00			0.01	37	1.48		2,242
60.66		0.17	0.01				71.56	
	0.00			0.01	36	1.49		2,279
60.66		0.17	0.01				73.05	
	0.00			0.01	36	1.51		2,315
60.65		0.17	0.01				74.56	
	0.00			0.01	36	1.52		2,351
60.65		0.16	0.01				76.08	
	0.00			0.01	36	1.54		2,387
60.65		0.16	0.01				77.62	
	0.00			0.01	36	1.56		2,424
60.64		0.15	0.01				79.18	
	0.00			0.01	36	1.58		2,460
60.64		0.15	0.01				80.76	
	0.00			0.01	36	1.59		2,496
60.63		0.15	0.01				82.35	
	0.00			0.01	36	1.61		2,531
60.63		0.14	0.01				83.97	
	0.00			0.01	36	1.63		2,567
60.63		0.14	0.01				85.60	
	0.00			0.01	36	1.66		2,603
60.62		0.13	0.01				87.26	
	0.00			0.01	36	1.68		2,639
60.62		0.13	0.01				88.94	
	0.00			0.01	36	1.70		2,674
60.61		0.12	0.01				90.64	
	0.00			0.01	36	1.73		2,710

60.61		0.12	0.01				92.37	
	0.00			0.01	35	1.75		2,745
60.60		0.12	0.01				94.12	
	0.00			0.01	35	1.78		2,781
60.60		0.11	0.01				95.90	
	0.00			0.01	35	1.81		2,816
60.60		0.11	0.01				97.71	
	0.00			0.01	35	1.84		2,851
60.59		0.10	0.01				99.56	
	0.00			0.01	35	1.88		2,886
60.59		0.10	0.01				101.43	
	0.00			0.01	35	1.91		2,921
60.58		0.10	0.01				103.34	
	0.00			0.00	35	1.95		2,957
60.58		0.09	0.00				105.29	
	0.00			0.00	35	1.99		2,991
60.58		0.09	0.00				107.28	
	0.00			0.00	35	2.03		3,026
60.57		0.08	0.00				109.31	
	0.00			0.00	35	2.08		3,061
60.57		0.08	0.00				111.39	
	0.00			0.00	35	2.13		3,096
60.56		0.07	0.00				113.52	
	0.00			0.00	35	2.19		3,130
60.56		0.07	0.00				115.71	
	0.00			0.00	35	2.25		3,165
60.55		0.07	0.00				117.95	
	0.00			0.00	34	2.31		3,199
60.55		0.06	0.00				120.27	
	0.00			0.00	34	2.39		3,234
60.55		0.06	0.00				122.65	
	0.00			0.00	34	2.47		3,268
60.54		0.05	0.00				125.12	
	0.00			0.00	34	2.56		3,302
60.54		0.05	0.00				127.68	
	0.00			0.00	34	2.66		3,337
60.53		0.05	0.00				130.34	
	0.00			0.00	34	2.78		3,371
60.53		0.04	0.00				133.12	
	0.00			0.00	34	2.92		3,405
60.53		0.04	0.00				136.04	
	0.00			0.00	34	3.08		3,439
60.52		0.03	0.00				139.11	
	0.00			0.00	34	3.27		3,473
60.52		0.03	0.00				142.38	
	0.00			0.00	34	3.50		3,506
60.51		0.02	0.00				145.88	
	0.00			0.00	34	3.80		3,540
60.51		0.02	0.00				149.68	
	0.00			0.00	34	4.19		3,574
60.50		0.02	0.00				153.88	
	0.00			0.00	34	4.75		3,607
60.50		0.01	0.00				158.63	
	0.00			0.00	33	5.62		3,641
60.50		0.01	0.00				164.25	
	0.00			0.00	33	7.31		3,674
60.49		0.00	0.00				171.56	
	0.00			0.00	33	17.61		3,707
60.49		0.00	0.00				189.17	
60.46								3,967

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P3C2*

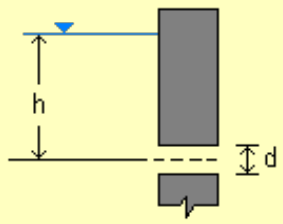
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	1.92	Acres			
DER Elev. =	61.00	Feet	DER Area =	15,193	Sq. Ft. - top elevation of treatment volume
NWL =	60.48	Feet	NWL Area =	11,326	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		6,989	Cu.Ft. of available treatent volume
Head (h) =	0.49	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	6,970	Cu.Ft. or			
	0.16	Ac.Ft.			

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	1.00	Inches
Orifice Area (a) =	0.0055	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	60.29	Hours
Total Time =	189.65	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
61.00		0.49	0.02					
	0.00			0.02	74	1.12		74
61.00		0.48	0.02				1.12	
	0.00			0.02	74	1.13		148
60.99		0.48	0.02				2.25	
	0.00			0.02	74	1.13		221
60.99		0.47	0.02				3.38	
	0.00			0.02	73	1.13		295
60.98		0.47	0.02				4.51	
	0.00			0.02	73	1.14		368
60.98		0.46	0.02				5.65	
	0.00			0.02	73	1.14		441
60.97		0.46	0.02				6.79	
	0.00			0.02	73	1.14		514
60.97		0.45	0.02				7.93	
	0.00			0.02	73	1.15		587
60.97		0.45	0.02				9.08	
	0.00			0.02	73	1.15		659
60.96		0.44	0.02				10.23	
	0.00			0.02	72	1.15		732
60.96		0.44	0.02				11.38	
	0.00			0.02	72	1.16		804

60.95		0.43	0.02				12.54	
	0.00			0.02	72	1.16		876
60.95		0.43	0.02				13.70	
	0.00			0.02	72	1.16		948
60.94		0.42	0.02				14.86	
	0.00			0.02	72	1.17		1,020
60.94		0.42	0.02				16.03	
	0.00			0.02	72	1.17		1,091
60.93		0.41	0.02				17.20	
	0.00			0.02	71	1.18		1,163
60.93		0.41	0.02				18.38	
	0.00			0.02	71	1.18		1,234
60.92		0.40	0.02				19.56	
	0.00			0.02	71	1.18		1,305
60.92		0.40	0.02				20.74	
	0.00			0.02	71	1.19		1,376
60.91		0.39	0.02				21.93	
	0.00			0.02	71	1.19		1,446
60.91		0.39	0.02				23.13	
	0.00			0.02	71	1.20		1,517
60.90		0.38	0.02				24.33	
	0.00			0.02	70	1.20		1,587
60.90		0.38	0.02				25.53	
	0.00			0.02	70	1.21		1,657
60.89		0.38	0.02				26.74	
	0.00			0.02	70	1.21		1,727
60.89		0.37	0.02				27.95	
	0.00			0.02	70	1.22		1,797
60.88		0.37	0.02				29.17	
	0.00			0.02	70	1.22		1,867
60.88		0.36	0.02				30.39	
	0.00			0.02	69	1.23		1,936
60.87		0.36	0.02				31.62	
	0.00			0.02	69	1.23		2,006
60.87		0.35	0.02				32.85	
	0.00			0.02	69	1.24		2,075
60.86		0.35	0.02				34.09	
	0.00			0.02	69	1.24		2,144
60.86		0.34	0.02				35.33	
	0.00			0.02	69	1.25		2,213
60.85		0.34	0.02				36.58	
	0.00			0.02	69	1.26		2,281
60.85		0.33	0.02				37.84	
	0.00			0.02	68	1.26		2,350
60.84		0.33	0.02				39.10	
	0.00			0.01	68	1.27		2,418
60.84		0.32	0.01				40.37	
	0.00			0.01	68	1.28		2,486
60.83		0.32	0.01				41.65	
	0.00			0.01	68	1.28		2,554
60.83		0.31	0.01				42.93	
	0.00			0.01	68	1.29		2,622
60.82		0.31	0.01				44.22	
	0.00			0.01	68	1.30		2,689
60.82		0.30	0.01				45.51	
	0.00			0.01	67	1.30		2,757
60.81		0.30	0.01				46.82	
	0.00			0.01	67	1.31		2,824
60.81		0.29	0.01				48.13	
	0.00			0.01	67	1.32		2,891

60.80		0.29	0.01				49.44	
	0.00			0.01	67	1.33		2,958
60.80		0.28	0.01				50.77	
	0.00			0.01	67	1.33		3,025
60.79		0.28	0.01				52.10	
	0.00			0.01	67	1.34		3,091
60.79		0.27	0.01				53.44	
	0.00			0.01	66	1.35		3,158
60.78		0.27	0.01				54.79	
	0.00			0.01	66	1.36		3,224
60.78		0.26	0.01				56.15	
	0.00			0.01	66	1.37		3,290
60.77		0.26	0.01				57.52	
	0.00			0.01	66	1.38		3,356
60.77		0.25	0.01				58.90	
	0.00			0.01	66	1.39		3,422
60.77		0.25	0.01				60.29	
	0.00			0.01	66	1.40		3,487
60.76		0.24	0.01				61.68	
	0.00			0.01	65	1.41		3,553
60.76		0.24	0.01				63.09	
	0.00			0.01	65	1.42		3,618
60.75		0.23	0.01				64.51	
	0.00			0.01	65	1.43		3,683
60.75		0.23	0.01				65.94	
	0.00			0.01	65	1.44		3,748
60.74		0.22	0.01				67.38	
	0.00			0.01	65	1.45		3,812
60.74		0.22	0.01				68.83	
	0.00			0.01	65	1.47		3,877
60.73		0.21	0.01				70.30	
	0.00			0.01	64	1.48		3,941
60.73		0.21	0.01				71.78	
	0.00			0.01	64	1.49		4,005
60.72		0.20	0.01				73.27	
	0.00			0.01	64	1.50		4,069
60.72		0.20	0.01				74.77	
	0.00			0.01	64	1.52		4,133
60.71		0.19	0.01				76.29	
	0.00			0.01	64	1.53		4,197
60.71		0.19	0.01				77.83	
	0.00			0.01	63	1.55		4,260
60.70		0.19	0.01				79.38	
	0.00			0.01	63	1.57		4,323
60.70		0.18	0.01				80.94	
	0.00			0.01	63	1.58		4,387
60.69		0.18	0.01				82.52	
	0.00			0.01	63	1.60		4,450
60.69		0.17	0.01				84.13	
	0.00			0.01	63	1.62		4,512
60.68		0.17	0.01				85.75	
	0.00			0.01	63	1.64		4,575
60.68		0.16	0.01				87.38	
	0.00			0.01	62	1.66		4,637
60.67		0.16	0.01				89.04	
	0.00			0.01	62	1.68		4,700
60.67		0.15	0.01				90.72	
	0.00			0.01	62	1.70		4,762
60.66		0.15	0.01				92.43	
	0.00			0.01	62	1.73		4,824

60.66		0.14	0.01				94.16	
	0.00			0.01	62	1.75		4,885
60.65		0.14	0.01				95.91	
	0.00			0.01	62	1.78		4,947
60.65		0.13	0.01				97.69	
	0.00			0.01	61	1.81		5,008
60.64		0.13	0.01				99.50	
	0.00			0.01	61	1.84		5,070
60.64		0.12	0.01				101.33	
	0.00			0.01	61	1.87		5,131
60.63		0.12	0.01				103.20	
	0.00			0.01	61	1.90		5,192
60.63		0.11	0.01				105.11	
	0.00			0.01	61	1.94		5,252
60.62		0.11	0.01				107.05	
	0.00			0.01	61	1.98		5,313
60.62		0.10	0.01				109.02	
	0.00			0.01	60	2.02		5,373
60.61		0.10	0.01				111.04	
	0.00			0.01	60	2.07		5,433
60.61		0.09	0.01				113.11	
	0.00			0.01	60	2.11		5,493
60.60		0.09	0.01				115.23	
	0.00			0.01	60	2.17		5,553
60.60		0.08	0.01				117.39	
	0.00			0.01	60	2.23		5,613
60.59		0.08	0.01				119.62	
	0.00			0.01	60	2.29		5,672
60.59		0.07	0.01				121.91	
	0.00			0.01	59	2.36		5,732
60.58		0.07	0.01				124.27	
	0.00			0.01	59	2.44		5,791
60.58		0.06	0.01				126.71	
	0.00			0.01	59	2.53		5,850
60.58		0.06	0.01				129.24	
	0.00			0.01	59	2.63		5,909
60.57		0.05	0.01				131.87	
	0.00			0.01	59	2.74		5,967
60.57		0.05	0.01				134.61	
	0.00			0.01	58	2.88		6,026
60.56		0.04	0.01				137.49	
	0.00			0.01	58	3.03		6,084
60.56		0.04	0.01				140.52	
	0.00			0.01	58	3.22		6,142
60.55		0.03	0.00				143.74	
	0.00			0.00	58	3.45		6,200
60.55		0.03	0.00				147.19	
	0.00			0.00	58	3.74		6,258
60.54		0.02	0.00				150.93	
	0.00			0.00	58	4.12		6,316
60.54		0.02	0.00				155.05	
	0.00			0.00	57	4.67		6,373
60.53		0.01	0.00				159.71	
	0.00			0.00	57	5.52		6,431
60.53		0.01	0.00				165.23	
	0.00			0.00	57	7.17		6,488
60.52		0.00	0.00				172.40	
	0.00			0.00	57	17.25		6,545
60.52		0.00	0.00				189.65	
60.48								7,023

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P4C2*

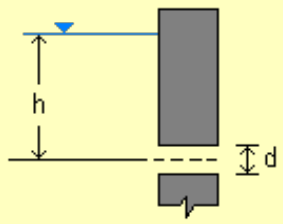
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	0.84	Acres			
DER Elev. =	61.00	Feet	DER Area =	6,921	Sq. Ft. - top elevation of treatment volume
NWL =	60.49	Feet	NWL Area =	4,892	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		3,050	Cu.Ft. of available treatent volume
Head (h) =	0.49	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	3,049	Cu.Ft. or			
	0.07	Ac.Ft.			

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	0.66	Inches
Orifice Area (a) =	0.0023	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	60.66	Hours
Total Time =	195.44	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
61.00		0.49	0.01					
	0.00			0.01	34	1.20		34
61.00		0.49	0.01				1.20	
	0.00			0.01	34	1.20		68
60.99		0.48	0.01				2.40	
	0.00			0.01	34	1.20		102
60.99		0.48	0.01				3.60	
	0.00			0.01	34	1.21		135
60.98		0.47	0.01				4.81	
	0.00			0.01	34	1.21		169
60.98		0.47	0.01				6.02	
	0.00			0.01	34	1.21		203
60.97		0.46	0.01				7.23	
	0.00			0.01	33	1.22		236
60.97		0.46	0.01				8.44	
	0.00			0.01	33	1.22		269
60.96		0.45	0.01				9.66	
	0.00			0.01	33	1.22		302
60.96		0.45	0.01				10.88	
	0.00			0.01	33	1.22		336
60.95		0.44	0.01				12.11	
	0.00			0.01	33	1.23		369

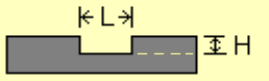
60.95		0.44	0.01				13.34	
	0.00			0.01	33	1.23		402
60.94		0.43	0.01				14.57	
	0.00			0.01	33	1.24		434
60.94		0.43	0.01				15.80	
	0.00			0.01	33	1.24		467
60.94		0.42	0.01				17.04	
	0.00			0.01	33	1.24		500
60.93		0.42	0.01				18.29	
	0.00			0.01	33	1.25		533
60.93		0.41	0.01				19.53	
	0.00			0.01	32	1.25		565
60.92		0.41	0.01				20.78	
	0.00			0.01	32	1.25		597
60.92		0.40	0.01				22.04	
	0.00			0.01	32	1.26		630
60.91		0.40	0.01				23.29	
	0.00			0.01	32	1.26		662
60.91		0.39	0.01				24.56	
	0.00			0.01	32	1.27		694
60.90		0.39	0.01				25.82	
	0.00			0.01	32	1.27		726
60.90		0.38	0.01				27.09	
	0.00			0.01	32	1.28		758
60.89		0.38	0.01				28.37	
	0.00			0.01	32	1.28		790
60.89		0.37	0.01				29.65	
	0.00			0.01	32	1.28		822
60.88		0.37	0.01				30.93	
	0.00			0.01	32	1.29		853
60.88		0.36	0.01				32.22	
	0.00			0.01	32	1.29		885
60.87		0.36	0.01				33.51	
	0.00			0.01	31	1.30		916
60.87		0.35	0.01				34.81	
	0.00			0.01	31	1.30		948
60.86		0.35	0.01				36.12	
	0.00			0.01	31	1.31		979
60.86		0.34	0.01				37.43	
	0.00			0.01	31	1.31		1,010
60.85		0.34	0.01				38.74	
	0.00			0.01	31	1.32		1,041
60.85		0.33	0.01				40.06	
	0.00			0.01	31	1.33		1,072
60.84		0.33	0.01				41.39	
	0.00			0.01	31	1.33		1,103
60.84		0.32	0.01				42.72	
	0.00			0.01	31	1.34		1,134
60.83		0.32	0.01				44.06	
	0.00			0.01	31	1.34		1,164
60.83		0.31	0.01				45.40	
	0.00			0.01	31	1.35		1,195
60.82		0.31	0.01				46.75	
	0.00			0.01	31	1.36		1,226
60.82		0.30	0.01				48.11	
	0.00			0.01	30	1.36		1,256
60.81		0.30	0.01				49.48	
	0.00			0.01	30	1.37		1,286
60.81		0.30	0.01				50.85	
	0.00			0.01	30	1.38		1,317

60.80		0.29	0.01				52.23	
	0.00			0.01	30	1.39		1,347
60.80		0.29	0.01				53.61	
	0.00			0.01	30	1.39		1,377
60.79		0.28	0.01				55.00	
	0.00			0.01	30	1.40		1,407
60.79		0.28	0.01				56.41	
	0.00			0.01	30	1.41		1,437
60.78		0.27	0.01				57.82	
	0.00			0.01	30	1.42		1,466
60.78		0.27	0.01				59.23	
	0.00			0.01	30	1.43		1,496
60.77		0.26	0.01				60.66	
	0.00			0.01	30	1.44		1,526
60.77		0.26	0.01				62.10	
	0.00			0.01	29	1.44		1,555
60.76		0.25	0.01				63.54	
	0.00			0.01	29	1.45		1,585
60.76		0.25	0.01				65.00	
	0.00			0.01	29	1.46		1,614
60.75		0.24	0.01				66.46	
	0.00			0.01	29	1.47		1,643
60.75		0.24	0.01				67.93	
	0.00			0.01	29	1.49		1,672
60.74		0.23	0.01				69.42	
	0.00			0.01	29	1.50		1,701
60.74		0.23	0.01				70.92	
	0.00			0.01	29	1.51		1,730
60.73		0.22	0.01				72.42	
	0.00			0.01	29	1.52		1,759
60.73		0.22	0.01				73.94	
	0.00			0.01	29	1.53		1,788
60.72		0.21	0.01				75.48	
	0.00			0.01	29	1.55		1,816
60.72		0.21	0.01				77.02	
	0.00			0.01	29	1.56		1,845
60.71		0.20	0.01				78.58	
	0.00			0.01	28	1.57		1,873
60.71		0.20	0.00				80.15	
	0.00			0.00	28	1.59		1,902
60.70		0.19	0.00				81.74	
	0.00			0.00	28	1.60		1,930
60.70		0.19	0.00				83.34	
	0.00			0.00	28	1.62		1,958
60.69		0.18	0.00				84.96	
	0.00			0.00	28	1.63		1,986
60.69		0.18	0.00				86.60	
	0.00			0.00	28	1.65		2,014
60.68		0.17	0.00				88.25	
	0.00			0.00	28	1.67		2,042
60.68		0.17	0.00				89.92	
	0.00			0.00	28	1.69		2,070
60.67		0.16	0.00				91.61	
	0.00			0.00	28	1.71		2,098
60.67		0.16	0.00				93.32	
	0.00			0.00	28	1.73		2,125
60.66		0.15	0.00				95.05	
	0.00			0.00	28	1.75		2,153
60.66		0.15	0.00				96.80	
	0.00			0.00	27	1.78		2,180

60.65		0.14	0.00				98.58	
	0.00			0.00	27	1.80		2,208
60.65		0.14	0.00				100.38	
	0.00			0.00	27	1.83		2,235
60.65		0.13	0.00				102.20	
	0.00			0.00	27	1.85		2,262
60.64		0.13	0.00				104.06	
	0.00			0.00	27	1.88		2,289
60.64		0.12	0.00				105.94	
	0.00			0.00	27	1.92		2,316
60.63		0.12	0.00				107.86	
	0.00			0.00	27	1.95		2,343
60.63		0.11	0.00				109.81	
	0.00			0.00	27	1.98		2,370
60.62		0.11	0.00				111.79	
	0.00			0.00	27	2.02		2,396
60.62		0.10	0.00				113.81	
	0.00			0.00	27	2.07		2,423
60.61		0.10	0.00				115.88	
	0.00			0.00	26	2.11		2,450
60.61		0.09	0.00				117.99	
	0.00			0.00	26	2.16		2,476
60.60		0.09	0.00				120.15	
	0.00			0.00	26	2.21		2,502
60.60		0.08	0.00				122.36	
	0.00			0.00	26	2.27		2,528
60.59		0.08	0.00				124.63	
	0.00			0.00	26	2.33		2,555
60.59		0.07	0.00				126.96	
	0.00			0.00	26	2.40		2,581
60.58		0.07	0.00				129.37	
	0.00			0.00	26	2.48		2,607
60.58		0.06	0.00				131.85	
	0.00			0.00	26	2.57		2,632
60.57		0.06	0.00				134.42	
	0.00			0.00	26	2.67		2,658
60.57		0.05	0.00				137.09	
	0.00			0.00	26	2.78		2,684
60.56		0.05	0.00				139.87	
	0.00			0.00	26	2.92		2,709
60.56		0.04	0.00				142.79	
	0.00			0.00	25	3.07		2,735
60.55		0.04	0.00				145.86	
	0.00			0.00	25	3.26		2,760
60.55		0.03	0.00				149.12	
	0.00			0.00	25	3.49		2,785
60.54		0.03	0.00				152.61	
	0.00			0.00	25	3.78		2,811
60.54		0.02	0.00				156.39	
	0.00			0.00	25	4.17		2,836
60.53		0.02	0.00				160.56	
	0.00			0.00	25	4.71		2,861
60.53		0.01	0.00				165.27	
	0.00			0.00	25	5.57		2,886
60.52		0.01	0.00				170.83	
	0.00			0.00	25	7.23		2,910
60.52		0.00	0.00				178.06	
	0.00			0.00	25	17.38		2,935
60.51		0.00	0.00				195.44	
60.49								3,070

Blue Numbers	= Input data
Red Numbers	= Answers

Weir Notch Bleed Down Calculations *P4D1*



Pond surface area at SHW =	**66,647**	square feet
Pond surface area at NWL =	**60,113**	square feet
Notch height (H) =	**0.30**	feet
Notch width (L) =	**0.16**	feet
Notch invert elevation =	**57.60**	feet

Horizontal Broad Crested Weir Equation

$Q = C\ L\ H^{3/2}$

Coefficient of discharge is calculated from table 5-3 on page 5-40 in the sixth edition of Brater and King's Handbook of Hydraulics and is based on a 6" weir crest width.

½ volume time =	**60.3**	hours
Total time =	**258.5**	hours
36 hour bleeddown elevation =	**57.80**	feet

----- Total drawdown time ignores the last half inch of depth over the weir crest.

Total H (ft)	Increm. H (ft)	Flow Q (cfs)	Average Q (cfs)	Delta Volume (cf)	Cum. Volume (cf)	Delta Hours	Cum. Hours	Coeff.of Discharge	Surface Area (sf)
0.30		0.07						2.85	66,647
	0.00		0.072	200	200	0.8			
0.30		0.07					0.8	2.85	66,582
	0.00		0.071	200	399	0.8			
0.29		0.07					1.5	2.85	66,516
	0.00		0.070	199	599	0.8			
0.29		0.07					2.3	2.85	66,451
	0.00		0.069	199	798	0.8			
0.29		0.07					3.1	2.85	66,386
	0.00		0.068	199	997	0.8			
0.29		0.07					4.0	2.85	66,320
	0.00		0.067	199	1,196	0.8			
0.28		0.07					4.8	2.85	66,255
	0.00		0.066	199	1,395	0.8			
0.28		0.06					5.6	2.84	66,190
	0.00		0.064	198	1,593	0.9			
0.28		0.06					6.5	2.84	66,124
	0.00		0.063	198	1,792	0.9			
0.27		0.06					7.4	2.84	66,059
	0.00		0.062	198	1,990	0.9			
0.27		0.06					8.2	2.84	65,994
	0.00		0.061	198	2,187	0.9			
0.27		0.06					9.1	2.84	65,928
	0.00		0.060	198	2,385	0.9			
0.26		0.06					10.1	2.84	65,863
	0.00		0.059	197	2,583	0.9			
0.26		0.06					11.0	2.84	65,798
	0.00		0.058	197	2,780	0.9			
0.26		0.06					11.9	2.83	65,732
	0.00		0.057	197	2,977	1.0			
0.26		0.06					12.9	2.83	65,667
	0.00		0.056	197	3,174	1.0			
0.25		0.06					13.9	2.83	65,602
	0.00		0.055	197	3,371	1.0			
0.25		0.05					14.9	2.82	65,536
	0.00		0.054	197	3,567	1.0			
0.25		0.05					15.9	2.82	65,471
	0.00		0.053	196	3,763	1.0			
0.24		0.05					16.9	2.82	65,406
	0.00		0.052	196	3,960	1.0			
0.24		0.05					18.0	2.82	65,340
	0.00		0.051	196	4,156	1.1			
0.24		0.05					19.0	2.82	65,275
	0.00		0.050	196	4,351	1.1			
0.23		0.05					20.1	2.82	65,210
	0.00		0.049	196	4,547	1.1			
0.23		0.05					21.2	2.82	65,144
	0.00		0.048	195	4,742	1.1			
0.23		0.05					22.4	2.81	65,079
	0.00		0.047	195	4,937	1.2			
0.23		0.05					23.5	2.81	65,014
	0.00		0.046	195	5,132	1.2			
0.22		0.05					24.7	2.81	64,948
	0.00		0.045	195	5,327	1.2			
0.22		0.04					25.9	2.81	64,883
	0.00		0.044	195	5,522	1.2			
0.22		0.04					27.1	2.81	64,817
	0.00		0.043	194	5,716	1.2			
0.21		0.04					28.4	2.81	64,752
	0.00		0.042	194	5,910	1.3			

Increm. Area	
65.34	square feet

0.21		0.04					29.6	2.80	64,687		
	0.00		0.041	194	6,104	1.3					
0.21		0.04					30.9	2.80	64,621		
	0.00		0.040	194	6,298	1.3					
0.20		0.04					32.3	2.80	64,556		
	0.00		0.040	194	6,491	1.4					
0.20		0.04					33.6	2.80	64,491		
	0.00		0.039	193	6,685	1.4					
0.20		0.04					35.0	2.80	64,425		
	0.00		0.038	193	6,878	1.4					
0.20		0.04					36.4	2.80	64,360		0.2
	0.00		0.037	193	7,071	1.5					
0.19		0.04					37.9	2.80	64,295		0.2
	0.00		0.036	193	7,264	1.5					
0.19		0.04					39.4	2.80	64,229		0.2
	0.00		0.035	193	7,456	1.5					
0.19		0.03					40.9	2.80	64,164		0.2
	0.00		0.034	192	7,649	1.6					
0.18		0.03					42.4	2.80	64,099		0.2
	0.00		0.034	192	7,841	1.6					
0.18		0.03					44.0	2.80	64,033		0.2
	0.00		0.033	192	8,033	1.6					
0.18		0.03					45.7	2.80	63,968		0.2
	0.00		0.032	192	8,225	1.7					
0.17		0.03					47.3	2.80	63,903		0.2
	0.00		0.031	192	8,416	1.7					
0.17		0.03					49.0	2.80	63,837		0.2
	0.00		0.030	191	8,608	1.8					
0.17		0.03					50.8	2.80	63,772		0.2
	0.00		0.029	191	8,799	1.8					
0.17		0.03					52.6	2.80	63,707		0.2
	0.00		0.029	191	8,990	1.8					
0.16		0.03					54.4	2.80	63,641		0.2
	0.00		0.028	191	9,181	1.9					
0.16		0.03					56.3	2.80	63,576		0.2
	0.00		0.027	191	9,371	2.0					
0.16		0.03					58.3	2.80	63,511		0.2
	0.00		0.026	190	9,562	2.0					
0.15		0.03					60.3	2.80	63,445	60.3	0.2
	0.00		0.026	190	9,752	2.1					
0.15		0.03					62.4	2.80	63,380	62.4	0.2
	0.00		0.025	190	9,942	2.1					
0.15		0.02					64.5	2.80	63,315	64.5	0.1
	0.00		0.024	190	10,132	2.2					
0.14		0.02					66.7	2.80	63,249	66.7	0.1
	0.00		0.023	190	10,322	2.3					
0.14		0.02					68.9	2.80	63,184	68.9	0.1
	0.00		0.023	189	10,511	2.3					
0.14		0.02					71.3	2.80	63,119	71.3	0.1
	0.00		0.022	189	10,700	2.4					
0.14		0.02					73.7	2.80	63,053	73.7	0.1
	0.00		0.021	189	10,889	2.5					
0.13		0.02					76.2	2.80	62,988	76.2	0.1
	0.00		0.020	189	11,078	2.6					
0.13		0.02					78.7	2.80	62,923	78.7	0.1
	0.00		0.020	189	11,267	2.7					
0.13		0.02					81.4	2.80	62,857	81.4	0.1
	0.00		0.019	188	11,455	2.7					
0.12		0.02					84.1	2.80	62,792	84.1	0.1
	0.00		0.018	188	11,644	2.8					
0.12		0.02					87.0	2.80	62,727	87.0	0.1
	0.00		0.018	188	11,832	3.0					
0.12		0.02					89.9	2.80	62,661	89.9	0.1
	0.00		0.017	188	12,020	3.1					
0.11		0.02					93.0	2.80	62,596	93.0	0.1
	0.00		0.016	188	12,207	3.2					
0.11		0.02					96.2	2.80	62,531	96.2	0.1
	0.00		0.016	187	12,395	3.3					
0.11		0.02					99.5	2.80	62,465	99.5	0.1
	0.00		0.015	187	12,582	3.4					
0.11		0.01					102.9	2.80	62,400	102.9	0.1
	0.00		0.014	187	12,769	3.6					
0.10		0.01					106.5	2.80	62,335		0.1
	0.00		0.014	187	12,956	3.8					
0.10		0.01					110.3	2.80	62,269		0.1
	0.00		0.013	187	13,143	3.9					
0.10		0.01					114.2	2.80	62,204		0.1
	0.00		0.013	187	13,329	4.1					
0.09		0.01					118.3	2.80	62,139		0.1

	0.00		0.012	186	13,516	4.3					
0.09		0.01					122.6	2.80	62,073		0.1
	0.00		0.011	186	13,702	4.5					
0.09		0.01					127.1	2.80	62,008		0.1
	0.00		0.011	186	13,888	4.8					
0.08		0.01					131.9	2.80	61,943		0.1
	0.00		0.010	186	14,073	5.0					
0.08		0.01					136.9	2.80	61,877		0.1
	0.00		0.010	186	14,259	5.3					
0.08		0.01					142.2	2.80	61,812		0.1
	0.00		0.009	185	14,444	5.6					
0.07		0.01					147.8	2.80	61,747		0.1
	0.00		0.009	185	14,629	5.9					
0.07		0.01					153.8	2.80	61,681		0.1
	0.00		0.008	185	14,814	6.3					
0.07		0.01					160.1	2.80	61,616		0.1
	0.00		0.008	185	14,999	6.7					
0.07		0.01					166.8	2.80	61,550		0.1
	0.00		0.007	185	15,184	7.2					
0.06		0.01					174.0	2.80	61,485		0.1
	0.00		0.007	184	15,368	7.7					
0.06		0.01					181.8	2.80	61,420		0.1
	0.00		0.006	184	15,552	8.3					
0.06		0.01					190.1	2.80	61,354		0.1
	0.00		0.006	184	15,736	9.0					
0.05		0.01					199.1	2.80	61,289		0.1
	0.00		0.005	184	15,920	9.8					
0.05		0.00					208.9	2.80	61,224		0.1
	0.00		0.005	184	16,103	10.7					
0.05		0.00					219.5	2.80	61,158		0.0
	0.00		0.004	183	16,287	11.7					
0.04		0.00					231.2	2.80	61,093		0.0
	0.00		0.004	183	16,470	12.9					
0.04		0.00					244.2	2.80	61,028		0.0
	0.00		0.004	183	16,653	14.4					
0.04		0.00					258.5	2.80	60,962	258.5	0.0
	0.00		0.003	183	16,836	16.1					
0.04		0.00					274.6	2.80	60,897	274.6	0.0
	0.00		0.003	183	17,018	18.2					
0.03		0.00					292.8	2.80	60,832	292.8	0.0
	0.00		0.002	182	17,201	20.9					
0.03		0.00					313.7	2.80	60,766	313.7	0.0
	0.00		0.002	182	17,383	24.2					
0.03		0.00					337.9	2.80	60,701	337.9	0.0
	0.00		0.002	182	17,565	28.6					
0.02		0.00					366.5	2.80	60,636	366.5	0.0
	0.00		0.001	182	17,747	34.4					
0.02		0.00					400.9	2.80	60,570	400.9	0.02
	0.00		0.001	182	17,928	42.6					
0.02		0.00					443.5	2.80	60,505	443.5	0.02
	0.00		0.001	181	18,110	54.6					
0.01		0.00					498.1	2.80	60,440	498.1	0.01
	0.00		0.001	181	18,291	73.6					
0.01		0.00					571.7	2.80	60,374	571.7	0.01
	0.00		0.000	181	18,472	106.9					
0.01		0.00					678.6	2.80	60,309	678.6	0.01
	0.00		0.000	181	18,653	175.6					
0.01		0.00					854.1	2.80	60,244	854.1	0.01
	0.00		0.000	181	18,834	367.6					
0.00		0.00					1221.7	2.80	60,178	1,221.7	0.00
	0.00		0.000	180	19,014	1405.7					
0.00		0.00					2627.4	2.80	60,113	2,627.4	0.00

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations *P13E2*

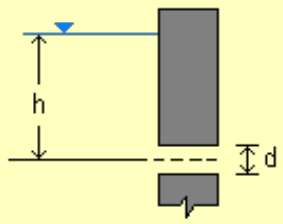
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	1.68	Acres			
DER Elev. =	64.40	Feet	DER Area =	16,468	Sq. Ft. - top elevation of treatment volume
NWL =	63.99	Feet	NWL Area =	13,939	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		6,226	Cu.Ft. of available treatent volume
Head (h) =	0.37	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	6,098	Cu.Ft. or			
	0.14	Ac.Ft.			

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	1.02	Inches
Orifice Area (a) =	0.0056	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	60.62	Hours
Total Time =	186.42	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
64.40		0.37	0.02					
	0.00			0.02	61	1.03		61
64.40		0.36	0.02				1.03	
	0.00			0.02	60	1.03		121
64.39		0.36	0.02				2.06	
	0.00			0.02	60	1.03		181
64.39		0.36	0.02				3.09	
	0.00			0.02	60	1.04		242
64.39		0.35	0.02				4.13	
	0.00			0.02	60	1.04		302
64.38		0.35	0.02				5.17	
	0.00			0.02	60	1.05		362
64.38		0.35	0.02				6.22	
	0.00			0.02	60	1.05		422
64.37		0.34	0.02				7.27	
	0.00			0.02	60	1.06		482
64.37		0.34	0.02				8.33	
	0.00			0.02	60	1.06		542
64.37		0.33	0.02				9.39	
	0.00			0.02	60	1.06		601
64.36		0.33	0.02				10.45	
	0.00			0.02	60	1.07		661

64.36		0.33	0.02				11.52	
	0.00			0.02	60	1.07		721
64.36		0.32	0.02				12.59	
	0.00			0.02	60	1.08		780
64.35		0.32	0.02				13.67	
	0.00			0.02	59	1.08		840
64.35		0.32	0.02				14.75	
	0.00			0.02	59	1.09		899
64.34		0.31	0.02				15.84	
	0.00			0.02	59	1.09		958
64.34		0.31	0.02				16.93	
	0.00			0.01	59	1.10		1,017
64.34		0.31	0.01				18.03	
	0.00			0.01	59	1.10		1,077
64.33		0.30	0.01				19.13	
	0.00			0.01	59	1.11		1,136
64.33		0.30	0.01				20.24	
	0.00			0.01	59	1.11		1,195
64.33		0.29	0.01				21.35	
	0.00			0.01	59	1.12		1,253
64.32		0.29	0.01				22.47	
	0.00			0.01	59	1.12		1,312
64.32		0.29	0.01				23.59	
	0.00			0.01	59	1.13		1,371
64.32		0.28	0.01				24.72	
	0.00			0.01	59	1.13		1,430
64.31		0.28	0.01				25.85	
	0.00			0.01	59	1.14		1,488
64.31		0.28	0.01				26.99	
	0.00			0.01	58	1.15		1,546
64.30		0.27	0.01				28.14	
	0.00			0.01	58	1.15		1,605
64.30		0.27	0.01				29.29	
	0.00			0.01	58	1.16		1,663
64.30		0.26	0.01				30.45	
	0.00			0.01	58	1.17		1,721
64.29		0.26	0.01				31.62	
	0.00			0.01	58	1.17		1,779
64.29		0.26	0.01				32.79	
	0.00			0.01	58	1.18		1,838
64.29		0.25	0.01				33.97	
	0.00			0.01	58	1.19		1,895
64.28		0.25	0.01				35.15	
	0.00			0.01	58	1.19		1,953
64.28		0.25	0.01				36.34	
	0.00			0.01	58	1.20		2,011
64.27		0.24	0.01				37.54	
	0.00			0.01	58	1.21		2,069
64.27		0.24	0.01				38.75	
	0.00			0.01	58	1.21		2,126
64.27		0.24	0.01				39.97	
	0.00			0.01	58	1.22		2,184
64.26		0.23	0.01				41.19	
	0.00			0.01	57	1.23		2,241
64.26		0.23	0.01				42.42	
	0.00			0.01	57	1.24		2,299
64.26		0.22	0.01				43.66	
	0.00			0.01	57	1.25		2,356
64.25		0.22	0.01				44.91	
	0.00			0.01	57	1.26		2,413

64.25		0.22	0.01				46.16	
	0.00			0.01	57	1.26		2,470
64.25		0.21	0.01				47.43	
	0.00			0.01	57	1.27		2,527
64.24		0.21	0.01				48.70	
	0.00			0.01	57	1.28		2,584
64.24		0.21	0.01				49.98	
	0.00			0.01	57	1.29		2,641
64.23		0.20	0.01				51.28	
	0.00			0.01	57	1.30		2,698
64.23		0.20	0.01				52.58	
	0.00			0.01	57	1.31		2,755
64.23		0.19	0.01				53.89	
	0.00			0.01	57	1.32		2,811
64.22		0.19	0.01				55.21	
	0.00			0.01	57	1.33		2,868
64.22		0.19	0.01				56.55	
	0.00			0.01	56	1.35		2,924
64.22		0.18	0.01				57.89	
	0.00			0.01	56	1.36		2,981
64.21		0.18	0.01				59.25	
	0.00			0.01	56	1.37		3,037
64.21		0.18	0.01				60.62	
	0.00			0.01	56	1.38		3,093
64.21		0.17	0.01				62.00	
	0.00			0.01	56	1.39		3,150
64.20		0.17	0.01				63.39	
	0.00			0.01	56	1.41		3,206
64.20		0.17	0.01				64.80	
	0.00			0.01	56	1.42		3,262
64.19		0.16	0.01				66.22	
	0.00			0.01	56	1.43		3,317
64.19		0.16	0.01				67.66	
	0.00			0.01	56	1.45		3,373
64.19		0.15	0.01				69.11	
	0.00			0.01	56	1.46		3,429
64.18		0.15	0.01				70.57	
	0.00			0.01	56	1.48		3,485
64.18		0.15	0.01				72.05	
	0.00			0.01	56	1.50		3,540
64.18		0.14	0.01				73.55	
	0.00			0.01	55	1.51		3,596
64.17		0.14	0.01				75.06	
	0.00			0.01	55	1.53		3,651
64.17		0.14	0.01				76.59	
	0.00			0.01	55	1.55		3,706
64.16		0.13	0.01				78.14	
	0.00			0.01	55	1.57		3,762
64.16		0.13	0.01				79.71	
	0.00			0.01	55	1.59		3,817
64.16		0.13	0.01				81.30	
	0.00			0.01	55	1.61		3,872
64.15		0.12	0.01				82.91	
	0.00			0.01	55	1.63		3,927
64.15		0.12	0.01				84.55	
	0.00			0.01	55	1.66		3,982
64.15		0.11	0.01				86.20	
	0.00			0.01	55	1.68		4,036
64.14		0.11	0.01				87.88	
	0.00			0.01	55	1.71		4,091

64.14		0.11	0.01				89.59	
	0.00			0.01	55	1.73		4,146
64.14		0.10	0.01				91.32	
	0.00			0.01	55	1.76		4,200
64.13		0.10	0.01				93.08	
	0.00			0.01	54	1.79		4,255
64.13		0.10	0.01				94.88	
	0.00			0.01	54	1.82		4,309
64.12		0.09	0.01				96.70	
	0.00			0.01	54	1.86		4,364
64.12		0.09	0.01				98.56	
	0.00			0.01	54	1.89		4,418
64.12		0.08	0.01				100.45	
	0.00			0.01	54	1.93		4,472
64.11		0.08	0.01				102.39	
	0.00			0.01	54	1.97		4,526
64.11		0.08	0.01				104.36	
	0.00			0.01	54	2.02		4,580
64.11		0.07	0.01				106.38	
	0.00			0.01	54	2.07		4,634
64.10		0.07	0.01				108.45	
	0.00			0.01	54	2.12		4,688
64.10		0.07	0.01				110.57	
	0.00			0.01	54	2.18		4,742
64.09		0.06	0.01				112.74	
	0.00			0.01	54	2.24		4,795
64.09		0.06	0.01				114.98	
	0.00			0.01	54	2.30		4,849
64.09		0.06	0.01				117.28	
	0.00			0.01	53	2.38		4,902
64.08		0.05	0.01				119.66	
	0.00			0.01	53	2.46		4,956
64.08		0.05	0.01				122.12	
	0.00			0.01	53	2.55		5,009
64.08		0.04	0.01				124.68	
	0.00			0.01	53	2.66		5,062
64.07		0.04	0.01				127.34	
	0.00			0.01	53	2.78		5,115
64.07		0.04	0.01				130.12	
	0.00			0.01	53	2.92		5,169
64.07		0.03	0.00				133.03	
	0.00			0.00	53	3.08		5,222
64.06		0.03	0.00				136.11	
	0.00			0.00	53	3.27		5,274
64.06		0.03	0.00				139.39	
	0.00			0.00	53	3.51		5,327
64.05		0.02	0.00				142.90	
	0.00			0.00	53	3.81		5,380
64.05		0.02	0.00				146.71	
	0.00			0.00	53	4.21		5,433
64.05		0.01	0.00				150.92	
	0.00			0.00	53	4.77		5,485
64.04		0.01	0.00				155.69	
	0.00			0.00	53	5.65		5,538
64.04		0.01	0.00				161.34	
	0.00			0.00	52	7.35		5,590
64.04		0.00	0.00				168.69	
	0.00			0.00	52	17.72		5,643
64.03		0.00	0.00				186.42	
63.99								6,238

Blue Numbers	= Input data
Red Numbers	= Answers

Orifice Bleeddown Calculations

P14E2

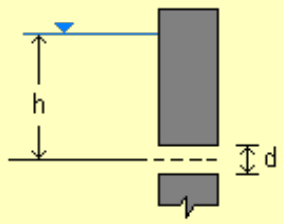
A.
B.
C.
D.
E.
F.
G.

A. SITE INFORMATION

Site Ac. =	1.92	Acres			
DER Elev. =	64.65	Feet	DER Area =	12,664	Sq. Ft. - top elevation of treatment volume
NWL =	64.00	Feet	NWL Area =	9,148	Sq. Ft. - bottom elevation of treatment volume
Runoff =	1.0	Inches (OFW ?)		7,156	Cu.Ft. of available treatent volume
Head (h) =	0.62	Feet h = DER Elev. - (NWL + ½d)			
Required Volume =	6,970	Cu.Ft. or			
	0.16	Ac.Ft.			

B. VERTICAL CIRCULAR ORIFICE FLOW

$Q = C\ a\ (2\ g\ h)^{½}$



Diameter (d) =	0.94	Inches
Orifice Area (a) =	0.0048	Sq.Ft.
C Value =	0.60	Coefficient of discharge
½ Vol.Time =	60.77	Hours
Total Time =	197.57	Hours to the centroid elevation
36 Hour Bleeddown Elev. =	#NUM!	Feet

Head Elevation	Increm. h (Ft.)	Total h (Ft.)	Flow Q	Q Avg.	Delta Volume	Delta Hours	Cum. Hours	Cum. Volume
64.65		0.62	0.02					
	0.01			0.02	78	1.19		78
64.65		0.61	0.02				1.19	
	0.01			0.02	78	1.20		157
64.64		0.61	0.02				2.39	
	0.01			0.02	78	1.20		235
64.64		0.60	0.02				3.59	
	0.01			0.02	78	1.20		312
64.63		0.60	0.02				4.80	
	0.01			0.02	78	1.21		390
64.62		0.59	0.02				6.00	
	0.01			0.02	77	1.21		467
64.62		0.58	0.02				7.22	
	0.01			0.02	77	1.21		544
64.61		0.58	0.02				8.43	
	0.01			0.02	77	1.22		621
64.60		0.57	0.02				9.65	
	0.01			0.02	77	1.22		698
64.60		0.56	0.02				10.87	
	0.01			0.02	77	1.22		775
64.59		0.56	0.02				12.09	
	0.01			0.02	76	1.23		851

64.59		0.55	0.02				13.32	
	0.01			0.02	76	1.23		927
64.58		0.55	0.02				14.55	
	0.01			0.02	76	1.23		1,003
64.57		0.54	0.02				15.78	
	0.01			0.02	76	1.24		1,079
64.57		0.53	0.02				17.02	
	0.01			0.02	76	1.24		1,155
64.56		0.53	0.02				18.26	
	0.01			0.02	75	1.25		1,230
64.55		0.52	0.02				19.51	
	0.01			0.02	75	1.25		1,305
64.55		0.51	0.02				20.76	
	0.01			0.02	75	1.25		1,380
64.54		0.51	0.02				22.01	
	0.01			0.02	75	1.26		1,455
64.54		0.50	0.02				23.27	
	0.01			0.02	75	1.26		1,529
64.53		0.50	0.02				24.54	
	0.01			0.02	74	1.27		1,604
64.52		0.49	0.02				25.80	
	0.01			0.02	74	1.27		1,678
64.52		0.48	0.02				27.08	
	0.01			0.02	74	1.28		1,752
64.51		0.48	0.02				28.35	
	0.01			0.02	74	1.28		1,825
64.51		0.47	0.02				29.64	
	0.01			0.02	74	1.29		1,899
64.50		0.46	0.02				30.92	
	0.01			0.02	73	1.29		1,972
64.49		0.46	0.02				32.21	
	0.01			0.02	73	1.30		2,045
64.49		0.45	0.02				33.51	
	0.01			0.02	73	1.30		2,118
64.48		0.45	0.02				34.81	
	0.01			0.02	73	1.31		2,191
64.47		0.44	0.02				36.12	
	0.01			0.02	73	1.31		2,264
64.47		0.43	0.02				37.43	
	0.01			0.02	72	1.32		2,336
64.46		0.43	0.02				38.75	
	0.01			0.02	72	1.32		2,408
64.46		0.42	0.02				40.08	
	0.01			0.02	72	1.33		2,480
64.45		0.42	0.01				41.41	
	0.01			0.01	72	1.34		2,552
64.44		0.41	0.01				42.74	
	0.01			0.01	71	1.34		2,623
64.44		0.40	0.01				44.09	
	0.01			0.01	71	1.35		2,694
64.43		0.40	0.01				45.44	
	0.01			0.01	71	1.36		2,765
64.42		0.39	0.01				46.79	
	0.01			0.01	71	1.36		2,836
64.42		0.38	0.01				48.16	
	0.01			0.01	71	1.37		2,907
64.41		0.38	0.01				49.53	
	0.01			0.01	70	1.38		2,977
64.41		0.37	0.01				50.90	
	0.01			0.01	70	1.39		3,048

64.40		0.37	0.01				52.29	
	0.01			0.01	70	1.39		3,118
64.39		0.36	0.01				53.68	
	0.01			0.01	70	1.40		3,188
64.39		0.35	0.01				55.08	
	0.01			0.01	70	1.41		3,257
64.38		0.35	0.01				56.49	
	0.01			0.01	69	1.42		3,327
64.38		0.34	0.01				57.91	
	0.01			0.01	69	1.43		3,396
64.37		0.33	0.01				59.34	
	0.01			0.01	69	1.44		3,465
64.36		0.33	0.01				60.77	
	0.01			0.01	69	1.44		3,534
64.36		0.32	0.01				62.22	
	0.01			0.01	69	1.45		3,603
64.35		0.32	0.01				63.67	
	0.01			0.01	68	1.46		3,671
64.34		0.31	0.01				65.14	
	0.01			0.01	68	1.47		3,739
64.34		0.30	0.01				66.61	
	0.01			0.01	68	1.49		3,807
64.33		0.30	0.01				68.10	
	0.01			0.01	68	1.50		3,875
64.33		0.29	0.01				69.59	
	0.01			0.01	68	1.51		3,943
64.32		0.29	0.01				71.10	
	0.01			0.01	67	1.52		4,010
64.31		0.28	0.01				72.62	
	0.01			0.01	67	1.53		4,078
64.31		0.27	0.01				74.16	
	0.01			0.01	67	1.55		4,145
64.30		0.27	0.01				75.70	
	0.01			0.01	67	1.56		4,211
64.29		0.26	0.01				77.26	
	0.01			0.01	67	1.57		4,278
64.29		0.25	0.01				78.83	
	0.01			0.01	66	1.59		4,344
64.28		0.25	0.01				80.42	
	0.01			0.01	66	1.60		4,411
64.28		0.24	0.01				82.02	
	0.01			0.01	66	1.62		4,477
64.27		0.24	0.01				83.64	
	0.01			0.01	66	1.63		4,542
64.26		0.23	0.01				85.27	
	0.01			0.01	66	1.65		4,608
64.26		0.22	0.01				86.92	
	0.01			0.01	65	1.67		4,673
64.25		0.22	0.01				88.59	
	0.01			0.01	65	1.69		4,739
64.24		0.21	0.01				90.28	
	0.01			0.01	65	1.71		4,804
64.24		0.20	0.01				91.99	
	0.01			0.01	65	1.73		4,868
64.23		0.20	0.01				93.72	
	0.01			0.01	65	1.75		4,933
64.23		0.19	0.01				95.47	
	0.01			0.01	64	1.77		4,997
64.22		0.19	0.01				97.24	
	0.01			0.01	64	1.80		5,062

64.21		0.18	0.01				99.04	
	0.01			0.01	64	1.82		5,126
64.21		0.17	0.01				100.86	
	0.01			0.01	64	1.85		5,189
64.20		0.17	0.01				102.71	
	0.01			0.01	64	1.88		5,253
64.20		0.16	0.01				104.59	
	0.01			0.01	63	1.91		5,316
64.19		0.15	0.01				106.49	
	0.01			0.01	63	1.94		5,380
64.18		0.15	0.01				108.43	
	0.01			0.01	63	1.98		5,443
64.18		0.14	0.01				110.41	
	0.01			0.01	63	2.01		5,505
64.17		0.14	0.01				112.42	
	0.01			0.01	63	2.05		5,568
64.16		0.13	0.01				114.47	
	0.01			0.01	62	2.09		5,630
64.16		0.12	0.01				116.57	
	0.01			0.01	62	2.14		5,692
64.15		0.12	0.01				118.71	
	0.01			0.01	62	2.19		5,754
64.15		0.11	0.01				120.90	
	0.01			0.01	62	2.24		5,816
64.14		0.11	0.01				123.14	
	0.01			0.01	62	2.30		5,878
64.13		0.10	0.01				125.45	
	0.01			0.01	61	2.37		5,939
64.13		0.09	0.01				127.82	
	0.01			0.01	61	2.44		6,000
64.12		0.09	0.01				130.26	
	0.01			0.01	61	2.52		6,061
64.11		0.08	0.01				132.78	
	0.01			0.01	61	2.61		6,122
64.11		0.07	0.01				135.39	
	0.01			0.01	61	2.71		6,182
64.10		0.07	0.01				138.11	
	0.01			0.01	60	2.83		6,243
64.10		0.06	0.01				140.94	
	0.01			0.01	60	2.97		6,303
64.09		0.06	0.01				143.91	
	0.01			0.01	60	3.13		6,363
64.08		0.05	0.01				147.03	
	0.01			0.01	60	3.32		6,422
64.08		0.04	0.00				150.35	
	0.01			0.00	60	3.55		6,482
64.07		0.04	0.00				153.90	
	0.01			0.00	59	3.85		6,541
64.07		0.03	0.00				157.75	
	0.01			0.00	59	4.24		6,600
64.06		0.02	0.00				162.00	
	0.01			0.00	59	4.80		6,659
64.05		0.02	0.00				166.80	
	0.01			0.00	59	5.67		6,718
64.05		0.01	0.00				172.47	
	0.01			0.00	59	7.37		6,777
64.04		0.01	0.00				179.84	
	0.01			0.00	58	17.73		6,835
64.03		0.00	0.00				197.57	
64.00								7,197

LIVANO AT SUNLAKE
(PERMIT#43-34153-4)

STORMWATER CALCULATIONS FOR

Livano at Sunlake
Pasco County, FL

July 12, 2022

Prepared for:

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Prepared by:

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Date: 2022.07.12 10:11:53 -04'00'

Engineer:
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Fla. Reg. No 74709

This item has been digitally signed and sealed by Kevin K. Albrecht, PE on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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1. PROJECT INTRODUCTION AND DATA COLLECTION

1.1. Introduction

The Livano at Sunlake project consists of a roughly 12-acre multi-use development, in Pasco County, FL. More specifically, the proposed project is located on the south side of State Road 54, on the east side of Henley Road, as shown on **Figure 1.** This report will address the data collected, pre- and post-development H&H analysis, and show design of the proposed Stormwater Management System to meet the current SWFWMD Environmental Resource Permitting (ERP) criteria.

1.2. Affected Waterbodies

The project is within South Branch Anclote River (WBID 1459), which is not classified as impaired.

1.3. Existing Topographic Conditions

Topographic data used for this analysis is based on LiDAR data collected from SWFWMD as well as project specific topographic survey, as shown on the permit plan set. All elevation data referenced for this project is based on the **North American Vertical Datum of 1988 (NAVD 1988).** The site generally slopes from the northwest to the south east with elevations ranging from elevation 66.0 to 70.0.

1.4. Existing Drainage Basins

Based on topographic survey, the existing drainage basins were delineated to encompass the project limits. As shown on **Appendix A**, the existing conditions H&H analysis focuses on a ~23-acre drainage area. The drainage area was subdivided into three (3) sub-basins. The following offers a summary of each drainage basin.

- Pre Basin 1 – 10.4-acre basin that discharges to the wetland southeast of the site.
- Pre Basin 2 – 1.2-acre basin that discharges to the wetland southeast of the site.
- Pre Basin 3 – 1.4-acre basin that discharges to the wetland southeast of the site.

1.5. Soil Coverage

The soil coverage used for this analysis is based on the USDA/NRCS SSURGO database. As shown on **Figure 2**, the Hydrologic Soil Group (HSG) for the existing site has been classified as HSG A and A/D.

1.6. Land Coverage

The land cover used for this analysis was delineated using the most recent aerial imagery (**Appendix A**) which shows the site is classified as open land. **Table 1** provides a breakdown of the land cover and HSG type for the existing drainage basins.

Table 1: Existing Land Cover/Soil Breakdown (acres)

Basin	Pre Basin 1		Pre Basin 2		Pre Basin 3		Total
HSG	A	A/D	A	A/D	A	A/D	
OPEN_LAND	8.0	2.4	-	1.2	0.4	1.0	13.0
TOTAL	**8.0**	**2.4**	**-**	**1.2**	**0.4**	**1.0**	**13.0**

2. EXISTING CONDITIONS HYDROLOGIC AND HYDRAULIC ANALYSIS

2.1. Hydrologic and Hydraulic Model Delineation

The Interconnected Channel and Pond Routing Version 4 model (ICPR v.4) was used to establish the existing hydrologic and hydraulic conditions within the study area and to simulate the existing and proposed runoff rates and volumes.

The hydrologic parameters were developed to simulate the runoff component, which includes land use, and soils characteristics specific to the Curve Number (CN) hydrologic method and TR-55 time of concentration methodology. These parameters were incorporated in the ICPR v4 model input database.

2.2. Curve Number (CN) Values

Table 2 provided the CN values and impervious percentages used for the existing analysis which are generally based on TR-55.

Table 2: CN/Impervious Lookup Table

LAND COVER	HSG A	HSG A/D	Impervious	DCIA
OPEN LAND	39	80	0	0
POND	39	80	98	98
DEVELOPED	39	80	85	85

2.3. Time of Concentration Calculations

Table 3 provided the Tc calculations for each sub-basin.

Table 3: Tc Calculations

		Pre Basin 1	Pre Basin 2	Pre Basin 3
Overland (Sheet) Flow	Flow Length (Ft)	100	100	100
	Upstream Elev.	70	67.8	70.5
	Downstream Elev.	68.9	67.2	68
	Manning's Roughness Coefficient	0.15	0.15	0.15
	Two year, 24 Hour Rainfall (in)	4.5	4.5	4.5
	Land Slope (Ft/Ft)	0.011	0.006	0.025
	Incremental Time (mins)	10.49	13.37	7.56
Shallow Concentrated Flow	Upstream Elev.	68.9	67.2	68
	Downstream Elev.	66.1	65	65.1
	Flow length (Ft)	820	150	520
	Land Slope (Ft/Ft)	0.003	0.015	0.006
	Average Velocity	0.94	1.95	1.20
	Incremental Time (mins)	14.50	1.28	7.19
	Total Time of Concentration (mins)	**24.99**	**14.65**	**14.75**

2.4. Existing Conditions Results

The existing hydrologic conditions were simulated for the 10, 25, and 100-year/24-hour design storm outlined in **Table 4.** The project design will use the 25-year design storm to estimate existing peak discharge rates to identify potential impacts based on the post-development system. **Table 5** provides the resulting existing peak discharge rate. **Appendix C** provides the detailed existing model input and output.

Table 4: Design Storm Rainfall Depths

Return Frequency (year)	Duration (hour)	Rainfall Depth (in)	Purpose
10	24	7.0	Storm Collection System Sizing
25	24	8.5	Peak Discharge Match
100	24	12.0	Pond Top of Bank Setting

Table 5: Existing Peak Discharge (CFS) Summary

Name	25-year/ 24-hour
Outfall	16.83

3. PROPOSED CONDITIONS HYDROLOGIC AND HYDRAULIC ANALYSIS

3.1. Introduction

The proposed conditions Stormwater Management System will consist of one (1) wet detention pond. This system's design is based on SWFWMD ERP requirements. More specifically, the system is designed to:

- limit proposed off-site peak discharge rates to less than the existing peak discharge rates for the 25-year storm
- provide retention of 1.0-inch of runoff and
- provide recovery of no more than ½ of the detention volume within 60-hours.
- provide recovery of the entire detention volume in no less than 120-hours.
- Utilize the 36-hour bleed-down stage for design storm simulations.

3.2. Proposed Conditions H&H Model Delineation

The proposed hydrologic analysis utilized the same methods as the existing analysis with updated delineation (**Appendix B**). The land cover was updated to account for the proposed development. **Table 6** provides a breakdown of the land cover for the proposed project drainage basins. The same CN lookup table used for the existing analysis was used for the proposed analysis.

Table 6: Proposed Land Cover Breakdown (Acres)

Basin	Post Basin 1		Post Basin 1		Post Basin 3		Total
	A	A/D	A	A/D	A	A/D	
DEVELOPED	8.0	2.4	-	-	-	-	**10.4**
POND	-	-	-	1.2	-	-	**1.2**
OPEN LAND	-	-	-	-	0.4	1.0	**1.4**
TOTAL	**8.0**	**2.4**	**-**	**1.2**	**0.4**	**1.0**	**13.0**

3.3. Pond Storage/Treatment Volume Summary

Table 7 provides a detailed breakdown of each pond storage capacity as well as the provided treatment volume and recovery of the treatment volume. **Appendix D** provides the input and results report for the treatment recovery model.

Table 7: Pond Storage Summary

Pond 100				
Stage	**Area (acres)**	**Incremental Volume (ac-ft)**	**Total Volume (ac-ft)**	**Notes**
57.2	0.19	-	0	Pond Bottom
58.2	0.22	0.21	0.21	
59.2	0.26	0.24	0.45	
60.2	0.3	0.28	0.73	
61.2	0.34	0.32	1.05	
61.2	0.34	0.00	1.05	Littoral Bottom
62.2	0.46	0.40	1.45	
63.2	0.58	0.52	1.97	
63.2	0.58	0.00	0.00	Control Elevation
64	0.66	0.50	0.50	
64.7	0.73	0.49	0.98	Overflow Elevation
65	0.76	0.22	1.21	
66	0.87	0.82	2.02	
67	0.98	0.93	2.95	
68	1.09	1.04	3.98	
68.5	1.15	0.56	4.54	Top of Bank

Treatment Calculations		
Basin Area	11.60	acres
Required Treatment Depth	1	in
Required Treatment Volume	0.97	ac-ft
Provided Treatment Volume	0.98	ac-ft
Provided Treatment Depth	1.02	in
1/2 Treatment Volume	0.49	ac-ft
Volume at 60 hours	0.48	ac-ft
Stage at 36-hour Bleed-down	64.31	Ft
Percentage Littoral	41.4%	%

3.4. Model Tailwater Elevations

The proposed H&H model utilized the same tailwater conditions (location and values) for the existing on-site wetland as previously approved ERP 34153.003 (3/22/2018). The time-stage values for the 25-year and 100-year storm are based on the Anclote River Watershed Model.

3.5. Design Storm Results

The proposed H&H model inputs and results are provided as **Appendix D. Table 8** shows peak stages in the proposed pond for the 10, 25, and 100-year design storm. The proposed stormwater management system was designed to attenuate stormwater runoff such that the off-site peak discharge rate is less than the existing rate. **Tables 9** provides the resulting off-site peak discharge comparison, based on the existing condition model.

Table 8: Proposed Pond Design Storm Peak Stages (ft NAVD88)

Design Storm	Pond	FDOT Swale	Site Inlet
Top of Bank	68.5	68.5	-
10-YR/24-HR	67.51	66.16	67.54
25-YR/24-HR	68.01	66.19	68.05
100-YR/24-HR	68.55	66.26	69.06

Table 9: Off-Site Design Storm Peak Discharge Rate Comparison

	25Y Peak Discharge (CFS)		
Node	Pre	Post	Diff
Outfall	16.83	16.78	-0.05

Figure 1: Project Location

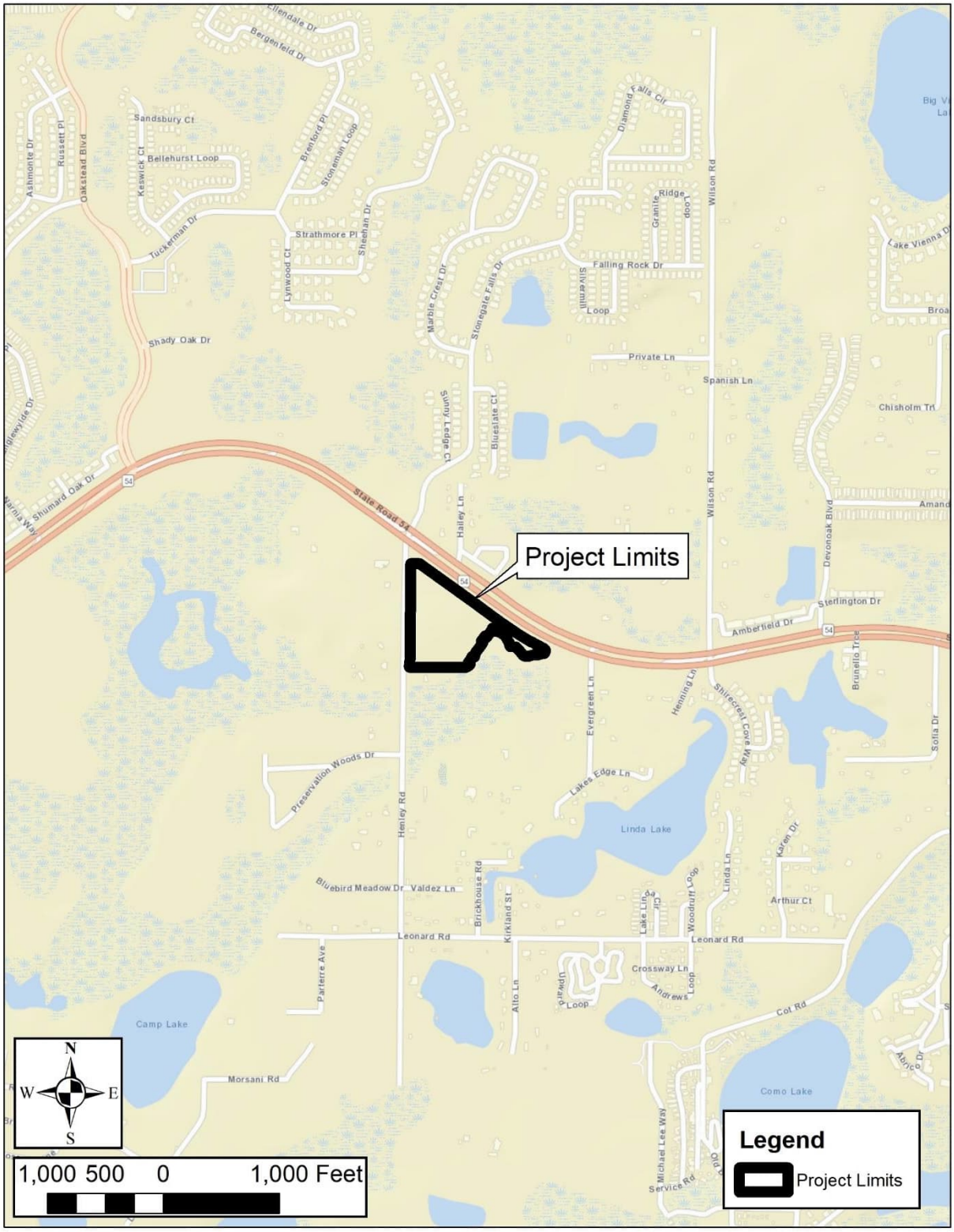
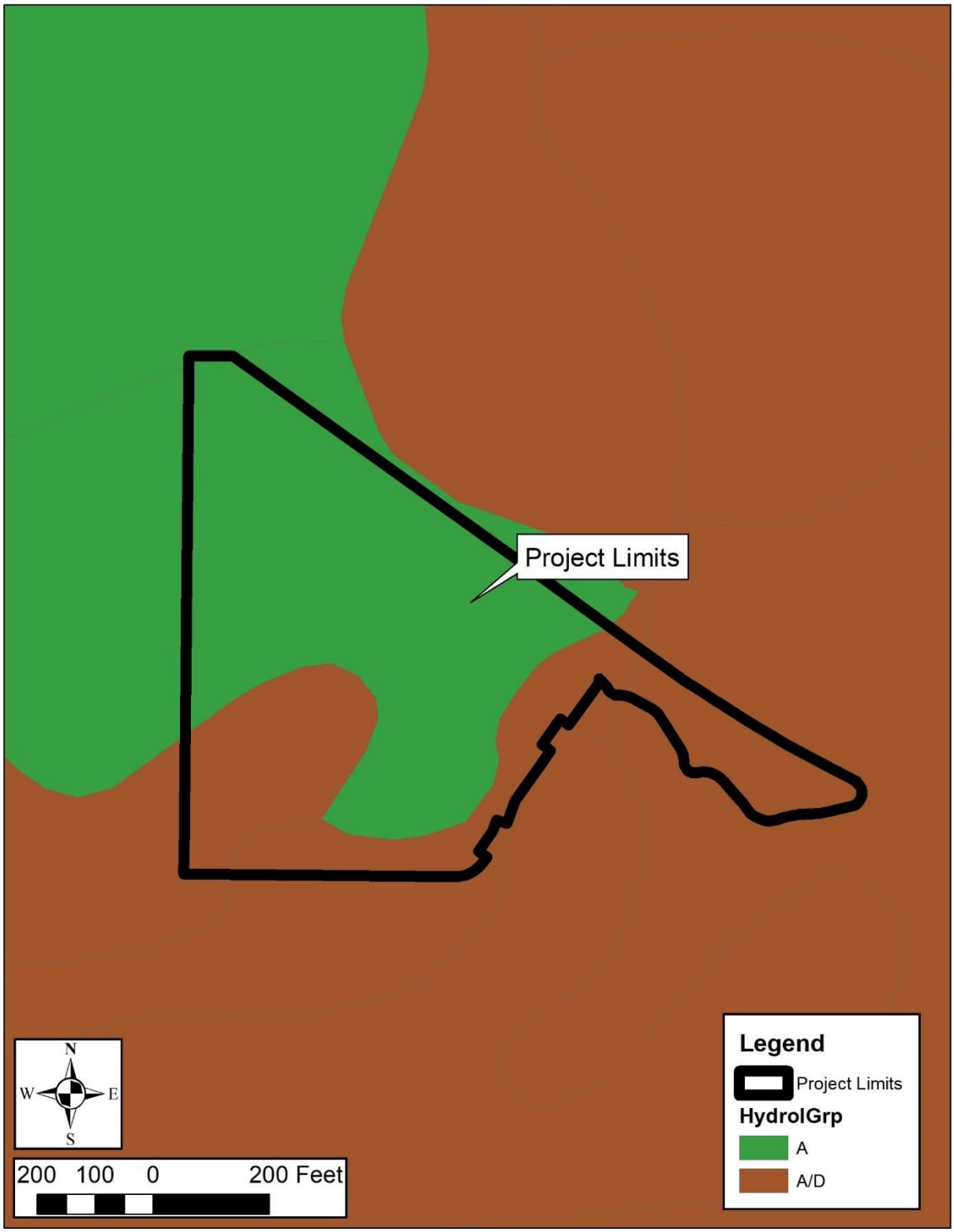
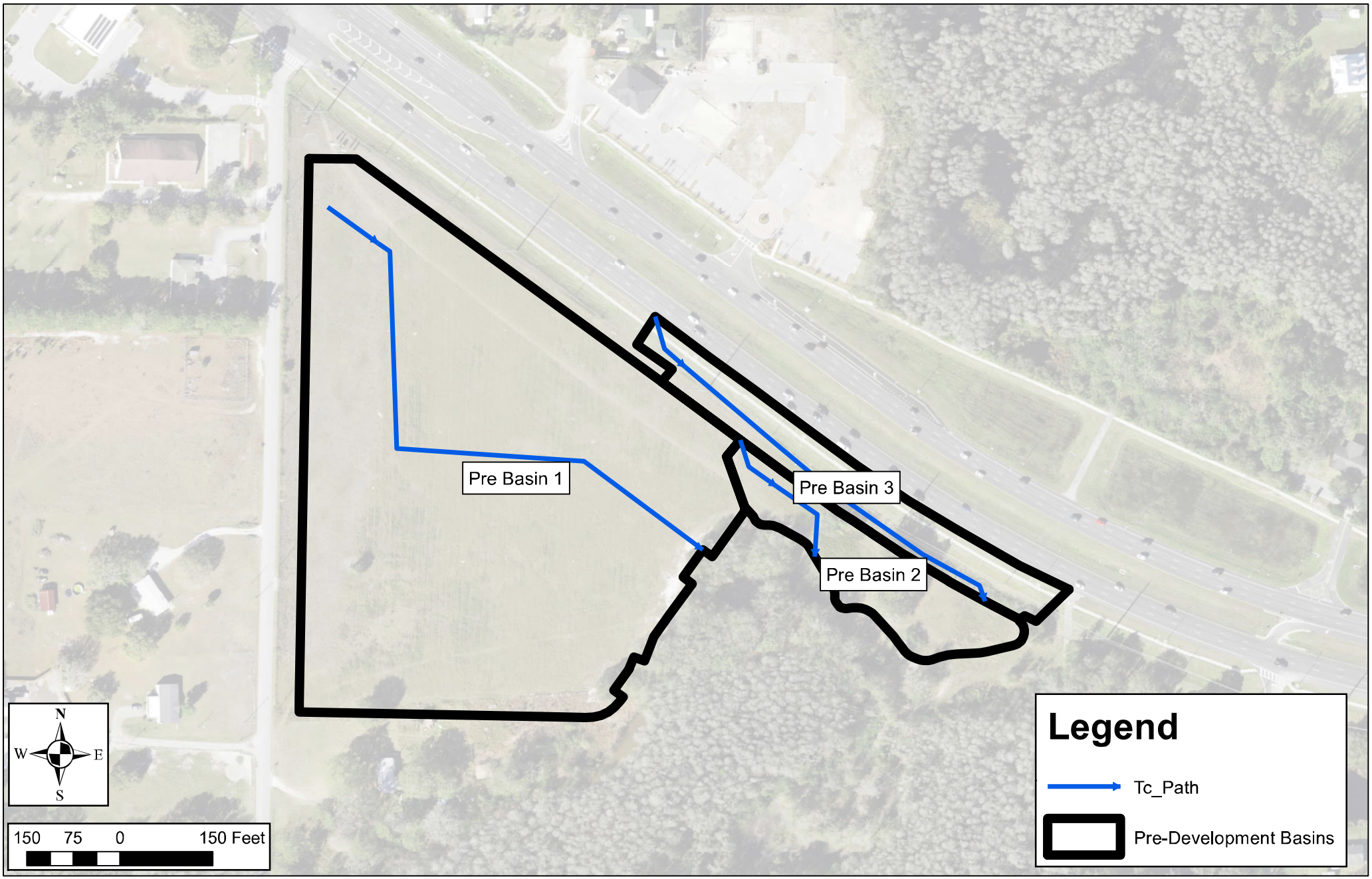


Figure 2: Soils



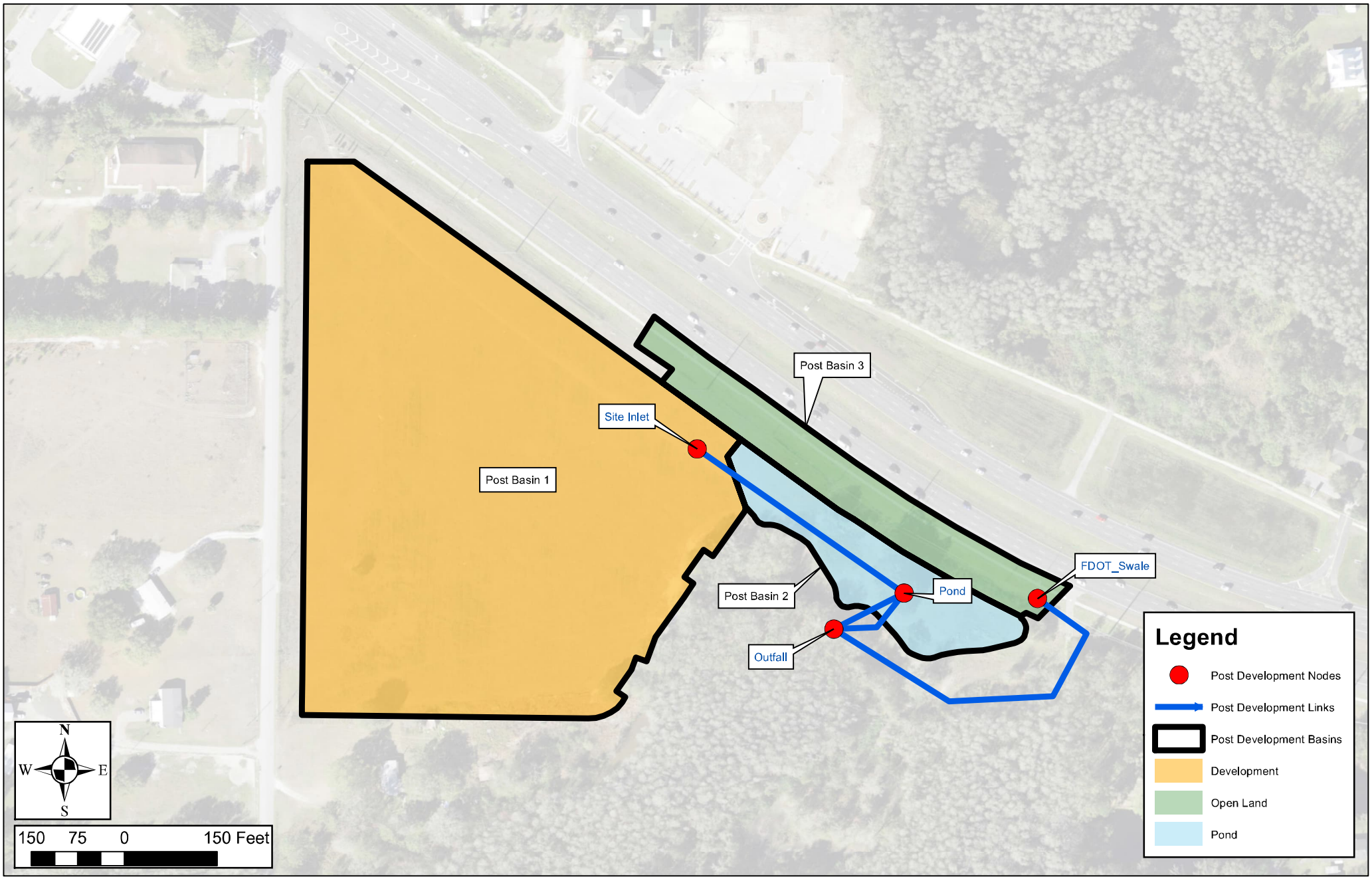
Appendix A:

Existing H&H Model Delineation


Pre Basin 1
Pre Basin 3
Pre Basin 2
N
W
E
S
150 75 0 150 Feet
Legend
Tc_Path
Pre-Development Basins

Appendix B:

Proposed H&H Model Delineation


Post Basin 3
Site Inlet
Post Basin 1
FDOT_Swale
Post Basin 2
Pond
Outfall
N
W
E
S
150 75 0 150 Feet
Legend
Post Development Nodes
Post Development Links
Post Development Basins
Development
Open Land
Pond

Appendix C:
Existing H&H Model Input/
Output Report

Simulation: 25-year24-hour

Scenario: Existing
Run Date/Time: 7/8/2022 10:52:53 AM
Program Version: ICPR4 4.07.06

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	100.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: 25y
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: IMP
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	8.50 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Manual Basin: Pre Basin 1

Scenario:	Existing
Node:	Outfall
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	25.0000 min
Max Allowable Q:	0.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH256
Peaking Factor:	256.0
Area:	10.4000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.4000	Open Land	A/D			
8.0000	Open Land	A			

Comment:

Manual Basin Runoff Summary [Existing]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Pre Basin 1	25-year24-hour	9.71	12.3000	8.50	2.41	10.4000	48.6	0.00	0.00

Manual Basin: Pre Basin 2

Scenario: Existing
Node: Outfall
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 15.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 1.2000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2000	Open Land	A/D			

Comment:

Manual Basin Runoff Summary [Existing]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Pre Basin 2	25-year24-hour	4.28	12.1000	8.50	6.00	1.2000	79.2	0.00	0.00

Manual Basin: Pre Basin 3

Scenario: Existing
Node: Outfall
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 15.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 1.4000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient	Reference ET

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0000	Open Land	A/D			
0.4000	Open Land	A			

Comment:

Manual Basin Runoff Summary [Existing]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Pre Basin 3	25-year24-hour	3.75	12.1000	8.50	4.67	1.4000	68.1	0.00	0.00

Node: Outfall

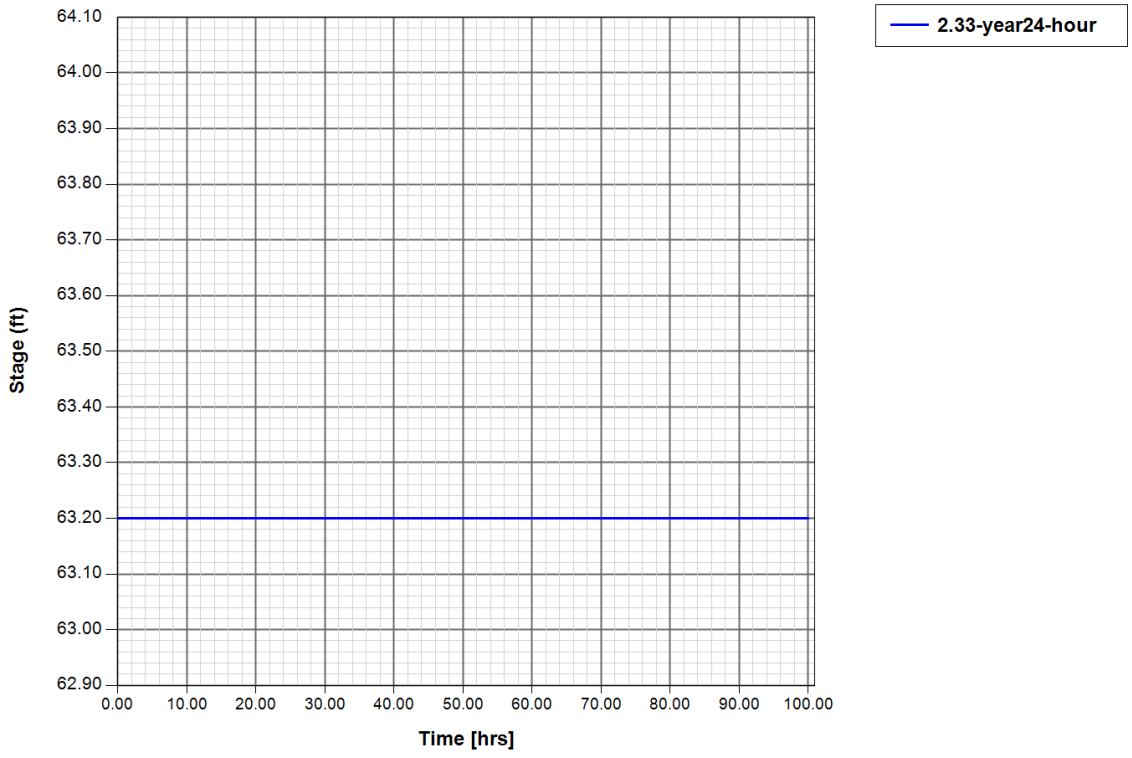
Scenario: Existing
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 63.20 ft
Warning Stage: 63.20 ft
Boundary Stage: Wetland

Comment:

Node Max Conditions [Existing]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Outfall	2.33-year24-hour	63.20	63.20	0.0000	6.58	0.00	0

Stage [Node: Outfall]



Impervious: IMP [Set]

Land Cover Zone	% Impervious	% DCIA	% Direct	Ia Impervious [in]	Ia Pervious [in]
Development	85.00	85.00	0.00	0.100	0.100
Open Land	0.00	0.00	0.00	0.100	0.100
Pond	98.00	98.00	0.00	0.100	0.100

Curve Number: CN [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Development	A	39.0
Development	A/D	80.0
Open Land	A	39.0
Open Land	A/D	80.0
Pond	A	39.0
Pond	A/D	80.0

Appendix D:
Proposed H&H Model Input/ Output Report

Simulation: 10-year24-hour

Scenario: Proposed
Run Date/Time: 7/8/2022 11:03:16 AM
Program Version: ICPR4 4.07.06

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	100.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: 10y
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: IMP
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	7.00 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100-year24-hour

Scenario:	Proposed
Run Date/Time:	7/8/2022 11:03:20 AM
Program Version:	ICPR4 4.07.06

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	100.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: 100y
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: IMP
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 12.00 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 25-year24-hour

Scenario: Proposed
Run Date/Time: 7/8/2022 11:03:29 AM
Program Version: ICPR4 4.07.06

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	100.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: 25y
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: IMP
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	8.50 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: Bleeddown

Scenario:	Proposed
Run Date/Time:	7/8/2022 11:12:28 AM
Program Version:	ICPR4 4.07.06

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	120.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: 2y
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: IMP
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: No Rainfall
OF Region Rain Opt: No Rainfall
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Manual Basin: Post Basin 1

Scenario: Proposed
Node: Site Inlet
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 10.4000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.4000	Development	A/D			
8.0000	Development	A			

Comment:

Manual Basin Runoff Summary [Proposed]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Post Basin 1	10-year24-hour	38.48	12.0500	7.00	6.10	10.4000	92.5	85.00	85.00
Post Basin 1	100-year24-hour	68.19	12.0500	12.00	10.79	10.4000	90.3	85.00	85.00
Post Basin 1	25-year24-hour	47.25	12.0500	8.50	7.49	10.4000	91.7	85.00	85.00
Post Basin 1	Bleeddown	0.00	0.0000	0.00	0.00	10.4000	N/A	85.00	85.00

Manual Basin: Post Basin 2

Scenario: Proposed
Node: Pond
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 1.2000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2000	Pond	A/D			

Comment:

Manual Basin Runoff Summary [Proposed]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Post Basin 2	10-year24-hour	5.01	12.0500	7.00	6.85	1.2000	98.8	98.00	98.00
Post Basin 2	100-year24-hour	8.61	12.0500	12.00	11.84	1.2000	98.8	98.00	98.00
Post Basin 2	25-year24-hour	6.09	12.0500	8.50	8.34	1.2000	98.8	98.00	98.00
Post Basin 2	Bleeddown	0.00	0.0000	0.00	0.00	1.2000	N/A	98.00	98.00

Manual Basin: Post Basin 3

Scenario: Proposed
Node: FDOT_Swale
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 15.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0
Area: 1.4000 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0000	Open Land	A/D			
0.4000	Open Land	A			

Comment:

Manual Basin Runoff Summary [Proposed]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Post Basin 3	10-year24-hour	2.81	12.1000	7.00	3.50	1.4000	68.8	0.00	0.00
Post Basin 3	100-year24-hour	6.09	12.1000	12.00	7.58	1.4000	66.8	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
Post Basin 3	25-year24-hour	3.75	12.1000	8.50	4.67	1.4000	68.1	0.00	0.00
Post Basin 3	Bleeddown	0.00	0.0000	0.00	0.00	1.4000	N/A	0.00	0.00

Node: FDOT_Swale

Scenario: Proposed
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 63.20 ft
Warning Stage: 68.00 ft

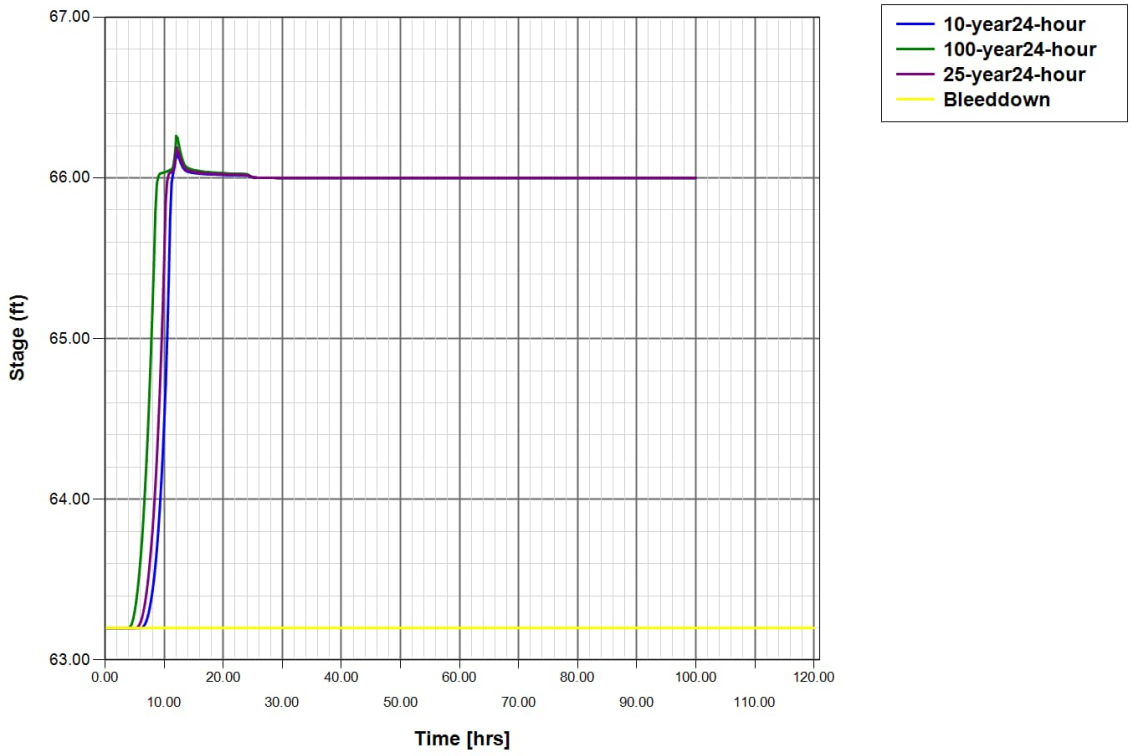
Stage [ft]	Area [ac]	Area [ft2]
63.20	0.0100	436
65.90	0.0100	436
66.00	0.1000	4356
68.00	0.1000	4356

Comment:

Node Max Conditions [Proposed]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
FDOT_Swale	10-year24-hour	68.00	66.16	0.0010	2.81	2.74	4356
FDOT_Swale	100-year24-hour	68.00	66.26	0.0010	6.09	6.00	4356
FDOT_Swale	25-year24-hour	68.00	66.19	0.0010	3.75	3.68	4356
FDOT_Swale	Bleeddown	68.00	63.20	0.0000	0.00	0.00	436

Stage [Node: FDOT_Swale]



Node: Outfall

Scenario:	Proposed
Type:	Time/Stage
Base Flow:	0.00 cfs
Initial Stage:	63.20 ft
Warning Stage:	63.20 ft
Boundary Stage:	Wetland

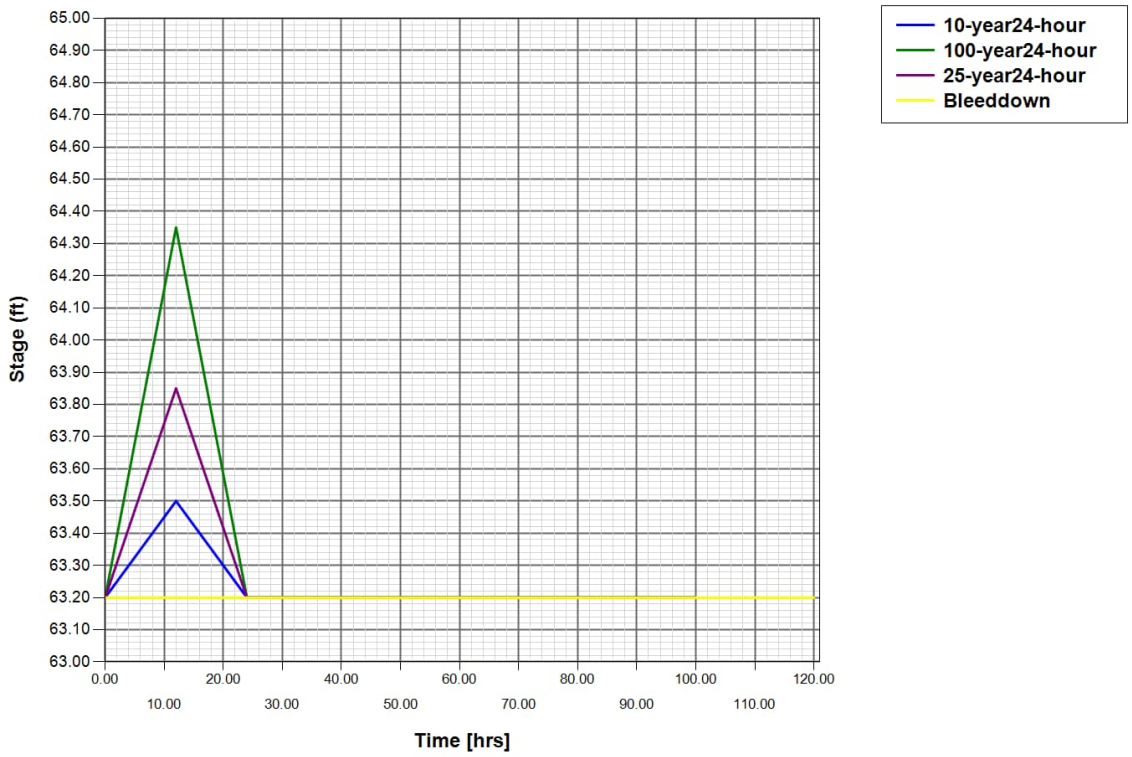
Comment:

Node Max Conditions [Proposed]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Outfall	10-year24-hour	63.20	63.50	0.0002	13.13	0.00	0

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Outfall	100-year24-hour	63.20	64.35	0.0008	55.98	0.01	0
Outfall	25-year24-hour	63.20	63.85	0.0005	16.78	0.00	0
Outfall	Bleeddown	63.20	63.20	0.0000	0.11	0.00	0

Stage [Node: Outfall]



Node: Pond

Scenario: Proposed
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 64.70 ft
Warning Stage: 68.50 ft

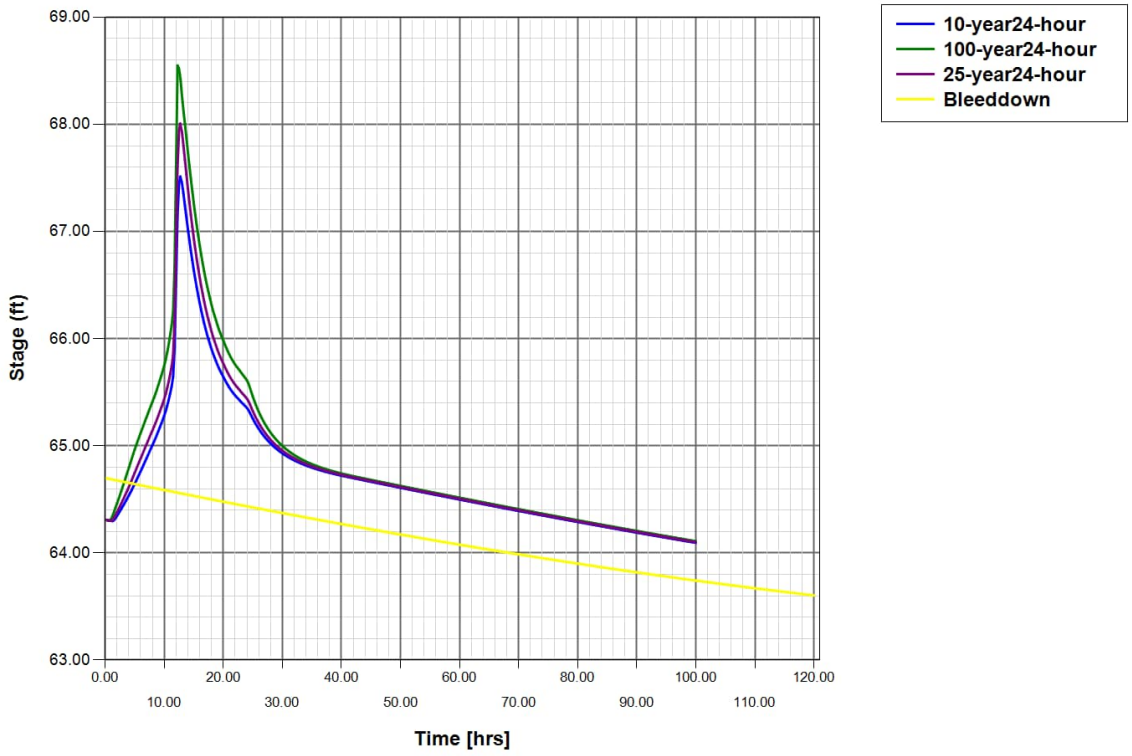
Stage [ft]	Area [ac]	Area [ft2]
57.20	0.1900	8276
58.20	0.2200	9583
59.20	0.2600	11326
60.20	0.3000	13068
61.20	0.3400	14810
62.20	0.4600	20038
63.20	0.5800	25265
64.00	0.6600	28750
64.70	0.7300	31799
65.00	0.7600	33106
66.00	0.8700	37897
67.00	0.9800	42689
68.00	1.0900	47480
68.50	1.1500	50094

Comment: Treatment = 64.7
NWL = 63.2
36-hr = 64.31

Node Max Conditions [Proposed]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Pond	10-year24-hour	68.50	67.51	0.0010	41.57	11.49	45161
Pond	100-year24-hour	68.50	68.55	-0.0010	73.61	50.78	50107
Pond	25-year24-hour	68.50	68.01	0.0010	51.04	14.57	47535
Pond	Bleeddown	68.50	64.70	-0.0001	0.01	0.11	32412

Stage [Node: Pond]



Node: Site Inlet

Scenario: Proposed
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 64.70 ft
Warning Stage: 68.50 ft

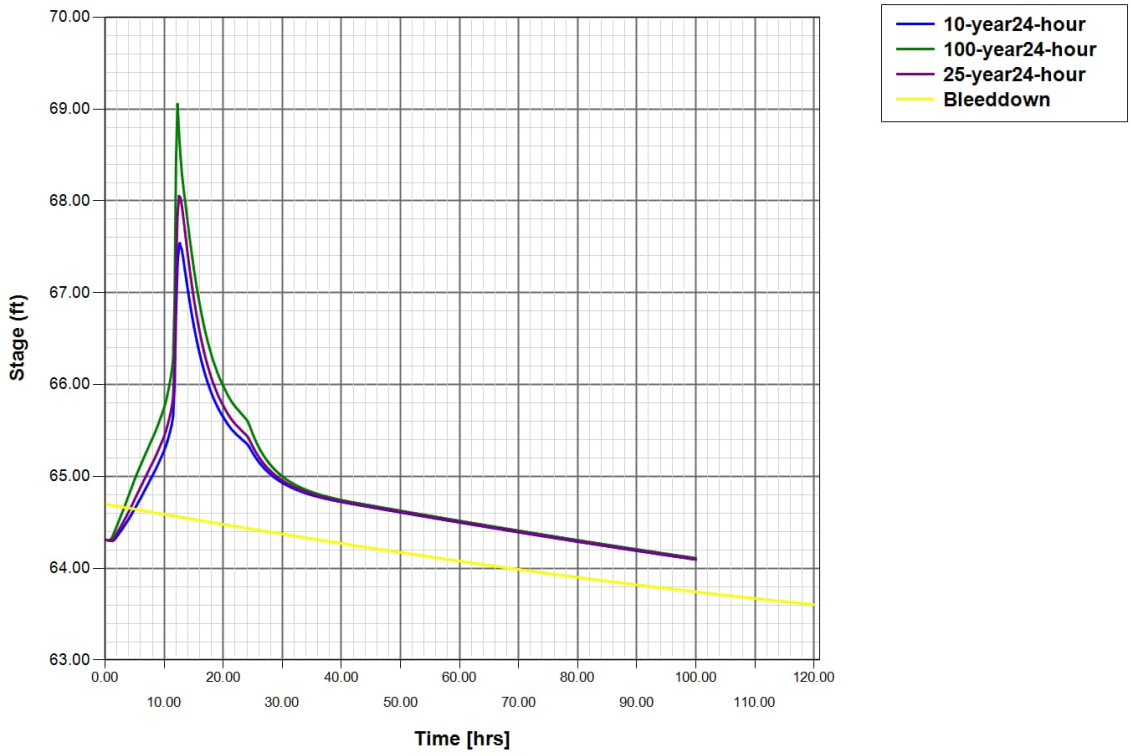
Stage [ft]	Area [ac]	Area [ft2]
0.00	0.0500	2178
9999.00	0.0500	2178

Comment:

Node Max Conditions [Proposed]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Site Inlet	10-year24-hour	68.50	67.54	0.0010	38.48	36.57	2834
Site Inlet	100-year24-hour	68.50	69.06	-0.0010	68.19	65.04	2834
Site Inlet	25-year24-hour	68.50	68.05	0.0010	47.25	44.97	2834
Site Inlet	Bleeddown	68.50	64.70	-0.0001	0.00	0.01	2833

Stage [Node: Site Inlet]



Pipe Link: Connection Pipe		Upstream		Downstream	
Scenario:	Proposed	Invert:	63.20 ft	Invert:	62.50 ft
From Node:	Site Inlet	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Pond	Geometry: Circular		Geometry: Circular	
Link Count:	2	Max Depth:	3.00 ft	Max Depth:	3.00 ft
Flow Direction:	Both	Bottom Clip			

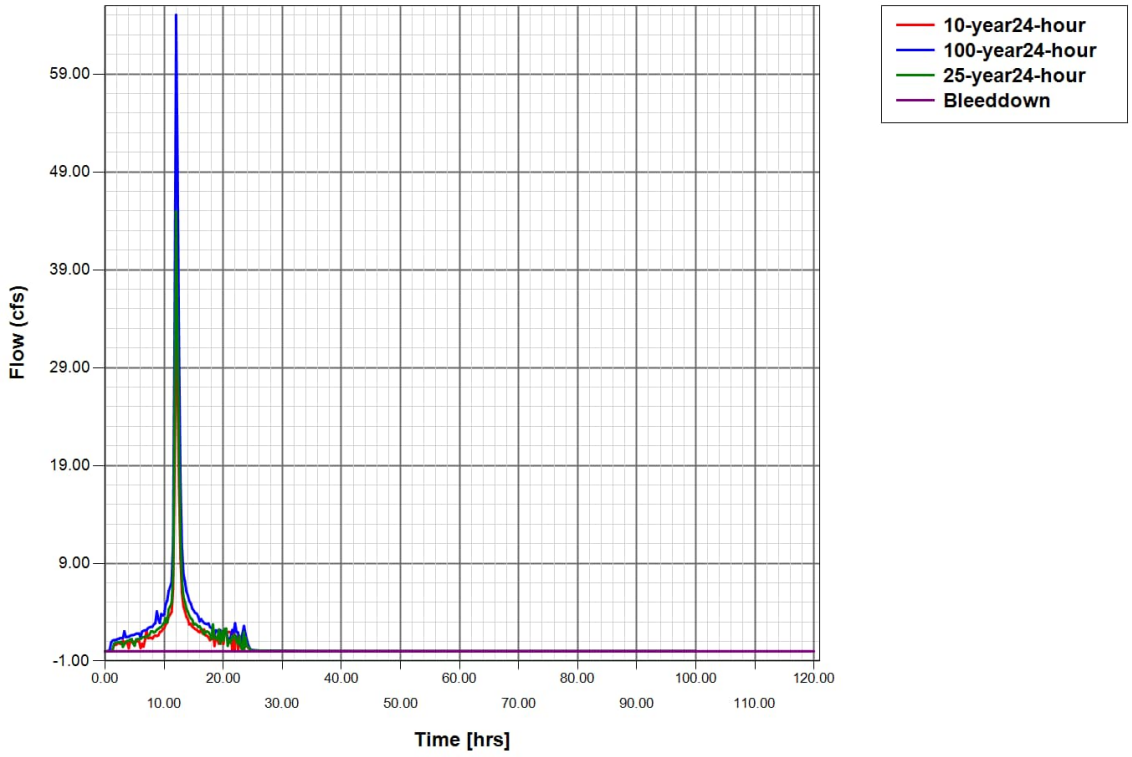
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	220.00 ft	Op Table:		Op Table:	
FHWA Code:	1	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	1.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Link Min/Max Conditions [Proposed]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
Connection Pipe	10-year24-hour	36.57	0.00	2.07	2.59	2.59	2.59
Connection Pipe	100-year24-hour	65.04	0.00	-3.02	4.60	4.60	4.60
Connection Pipe	25-year24-hour	44.97	0.00	-2.11	3.18	3.18	3.18
Connection Pipe	Bleeddown	0.01	0.00	0.00	0.00	0.00	0.00

Link Flow: Connection Pipe [Proposed]



Drop Structure Link: FDOT_ByPass		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed	Invert:	64.00 ft	Invert:	63.00 ft
From Node:	FDOT_Swale	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Outfall	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Split	Default:	0.00 ft	Default:	0.00 ft
Pipe Count:	1	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	200.00 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	1	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Pipe Comment:					

Weir Component

Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Horizontal
Geometry Type:	Rectangular
Invert:	66.00 ft
Control Elevation:	66.00 ft
Max Depth:	3.00 ft
Max Width:	4.00 ft
Fillet:	0.00 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

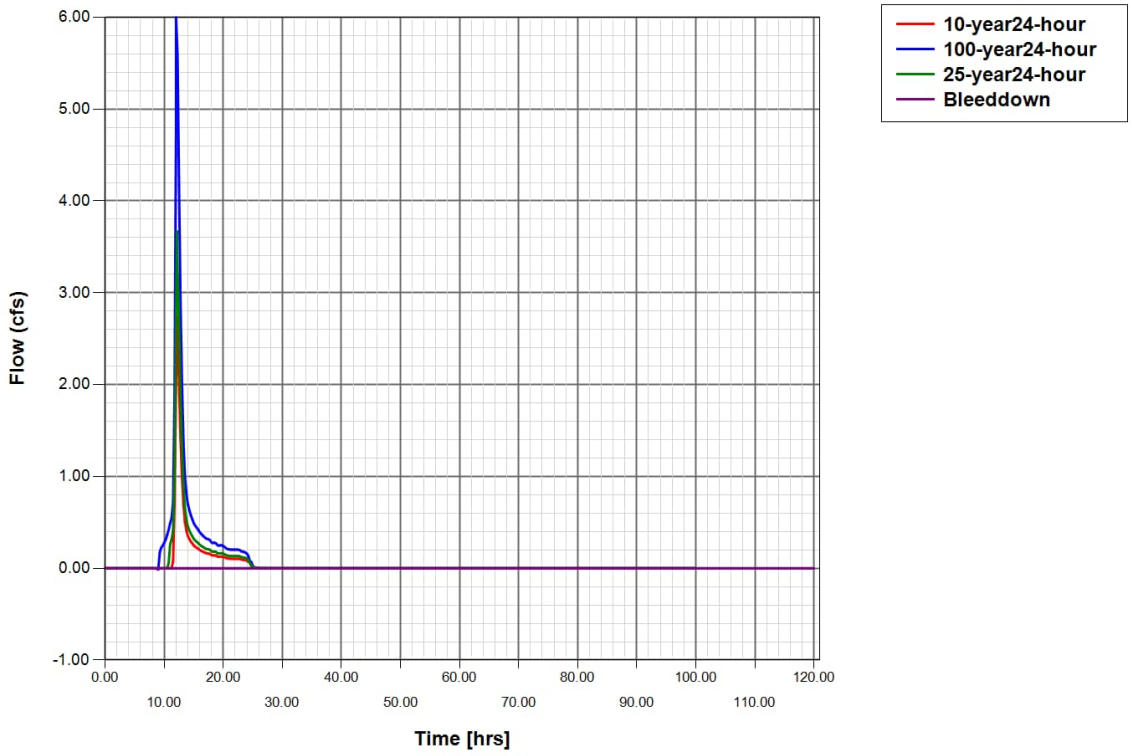
Weir Comment:

Drop Structure Comment:

Link Min/Max Conditions [Proposed]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
FDOT_ByPass - Pipe	10-year24-hour	2.74	0.00	0.01	2.52	4.12	3.32
FDOT_ByPass - Weir: 1	10-year24-hour	2.74	0.00	0.00	1.26	1.26	1.26
FDOT_ByPass - Pipe	100-year24-hour	6.00	-0.01	0.01	3.42	3.61	3.51
FDOT_ByPass - Weir: 1	100-year24-hour	6.00	0.00	0.00	1.64	1.64	1.64
FDOT_ByPass - Pipe	25-year24-hour	3.67	0.00	0.01	2.76	3.42	3.09
FDOT_ByPass - Weir: 1	25-year24-hour	3.68	0.00	0.00	1.39	1.39	1.39
FDOT_ByPass - Pipe	Bleeddown	0.00	0.00	0.00	0.00	0.00	0.00
FDOT_ByPass - Weir: 1	Bleeddown	0.00	0.00	0.00	0.00	0.00	0.00

Link Flow: FDOT_ByPass [Proposed]



Drop Structure Link: Outfall Structure		Upstream Pipe		Downstream Pipe	
Scenario:	Proposed	Invert:	63.20 ft	Invert:	63.00 ft
From Node:	Pond	Manning's N:	0.0120	Manning's N:	0.0120
To Node:	Outfall	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Split	Default:	0.00 ft	Default:	0.00 ft
Pipe Count:	2	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	100.00 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	1	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	1.00	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Pipe Comment:					

Weir Component

Weir:	1
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Circular
Invert:	63.20 ft
Control Elevation:	63.20 ft
Max Depth:	0.16 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Weir Component

Weir:	2
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Sharp Crested Vertical
Geometry Type:	Rectangular
Invert:	64.70 ft
Control Elevation:	64.70 ft
Max Depth:	3.40 ft
Max Width:	0.75 ft
Fillet:	0.00 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Weir Component

Weir:	3
Weir Count:	1
Weir Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Horizontal
Geometry Type:	Rectangular
Invert:	68.10 ft
Control Elevation:	68.10 ft
Max Depth:	3.00 ft
Max Width:	6.50 ft
Fillet:	0.00 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment: Type H (2-grate)

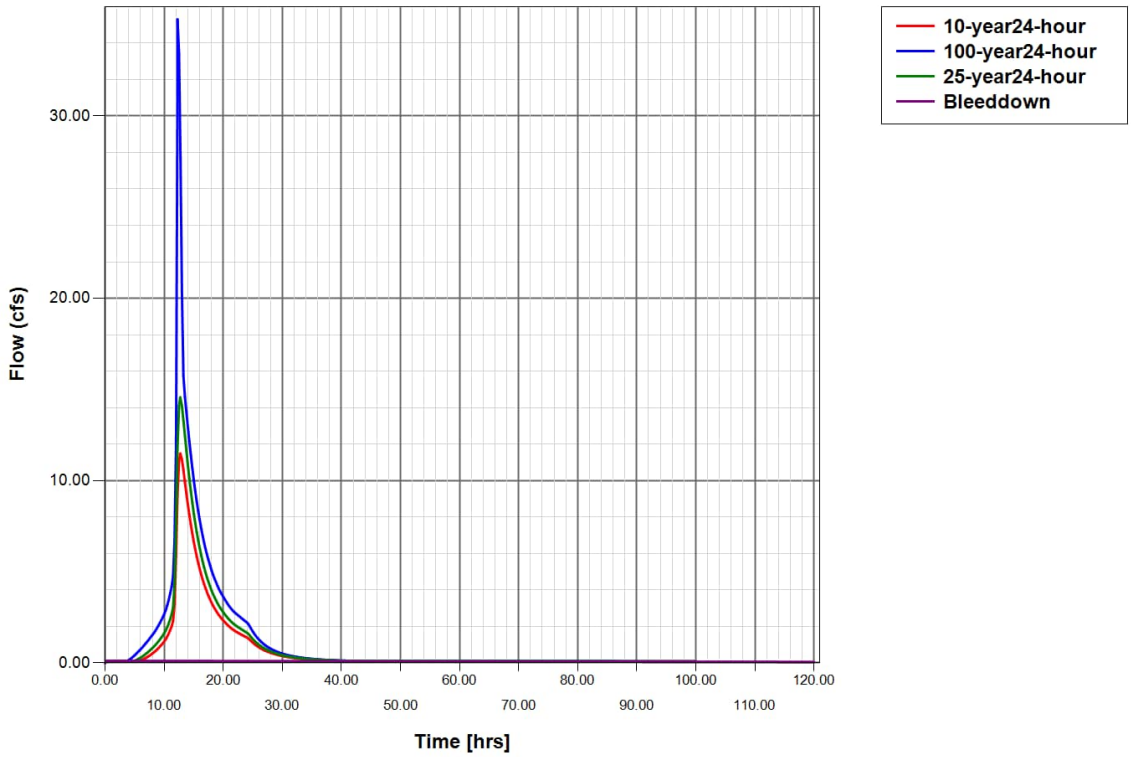
Drop Structure Comment:

Link Min/Max Conditions [Proposed]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
Outfall Structure - Pipe	10-year24-hour	11.49	0.00	-0.04	2.50	4.53	3.51
Outfall Structure - Weir: 1	10-year24-hour	0.16	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Weir: 2	10-year24-hour	11.32	0.00	0.01	5.37	5.37	5.37
Outfall Structure - Weir: 3	10-year24-hour	0.00	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Pipe	100-year24-hour	35.30	0.00	0.11	5.62	6.93	6.27
Outfall Structure - Weir: 1	100-year24-hour	0.17	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Weir: 2	100-year24-hour	16.83	0.00	0.01	6.60	6.60	6.60
Outfall Structure - Weir: 3	100-year24-hour	18.33	0.00	0.02	2.15	2.15	2.15
Outfall Structure - Pipe	25-year24-hour	14.57	0.00	0.05	2.71	4.88	3.80
Outfall Structure - Weir: 1	25-year24-hour	0.17	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Weir: 2	25-year24-hour	14.40	0.00	0.01	5.80	5.80	5.80
Outfall Structure - Weir: 3	25-year24-hour	0.00	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Pipe	Bleeddown	0.11	0.00	0.00	0.88	0.34	0.60
Outfall Structure - Weir: 1	Bleeddown	0.11	0.00	0.00	0.00	0.00	0.00
Outfall Structure - Weir: 2	Bleeddown	0.00	0.00	0.00	0.00	0.00	0.00
Outfall	Bleeddown	0.00	0.00	0.00	0.00	0.00	0.00

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
Structure - Weir: 3							

Link Flow: Outfall Structure [Proposed]



Weir Link: Pond_Overflow

Scenario:	Proposed
From Node:	Pond
To Node:	Outfall
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Rectangular
Invert:	68.50 ft
Control Elevation:	68.50 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	2.800

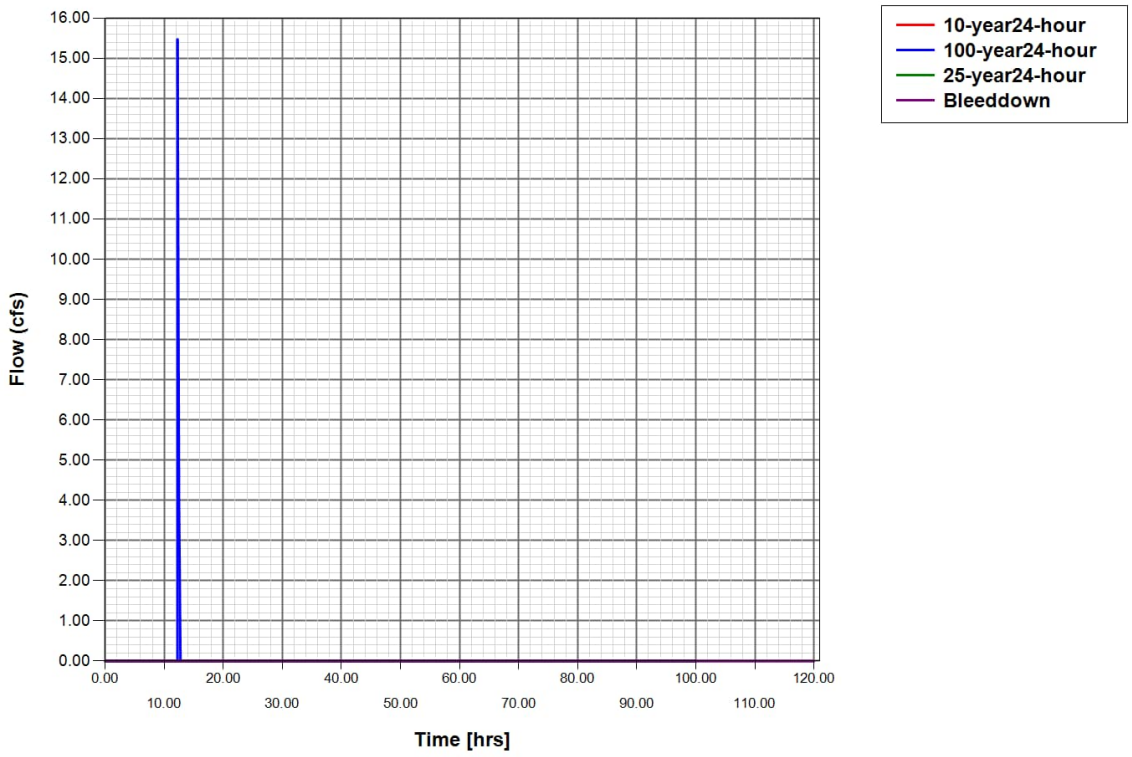
Max Depth:	9999.00 ft		
Max Width:	500.00 ft	Weir Table:	
Fillet:	0.00 ft	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Proposed]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
Pond_Overflow	10-year24-hour	0.00	0.00	0.00	0.00	0.00	0.00
Pond_Overflow	100-year24-hour	15.47	0.00	0.07	0.00	0.00	0.00
Pond_Overflow	25-year24-hour	0.00	0.00	0.00	0.00	0.00	0.00
Pond_Overflow	Bleeddown	0.00	0.00	0.00	0.00	0.00	0.00

Link Flow: Pond_Overflow [Proposed]



Impervious: IMP [Set]

Land Cover Zone	% Impervious	% DCIA	% Direct	Ia Impervious [in]	Ia Pervious [in]
Development	85.00	85.00	0.00	0.100	0.100
Open Land	0.00	0.00	0.00	0.100	0.100
Pond	98.00	98.00	0.00	0.100	0.100

Curve Number: CN [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Development	A	39.0
Development	A/D	80.0
Open Land	A	39.0
Open Land	A/D	80.0
Pond	A	39.0
Pond	A/D	80.0

APPENDIX B

CONTAMINATION SCREENING EVALUATION REPORT

CONTAMINATION TECHNICAL MEMORANDUM

SR 45 (US 41) at SR 54

Limits of Project: SR 45 (US 41) at SR 54 from S. of Intersection to N. of the Intersection

Pasco County, Florida

Financial Management Number: 419182-1-22-01, 419182-2-32-01

July 2024

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

Memo

To: Rick Langlass, PE
Senior Transportation Development Engineer
RS&H

July 2024

From: Collin Duncan
Staff Geologist
Tierra

Michael Bair, ASP, LEP
Chief Scientist
Tierra

Re: Contamination Technical Memorandum

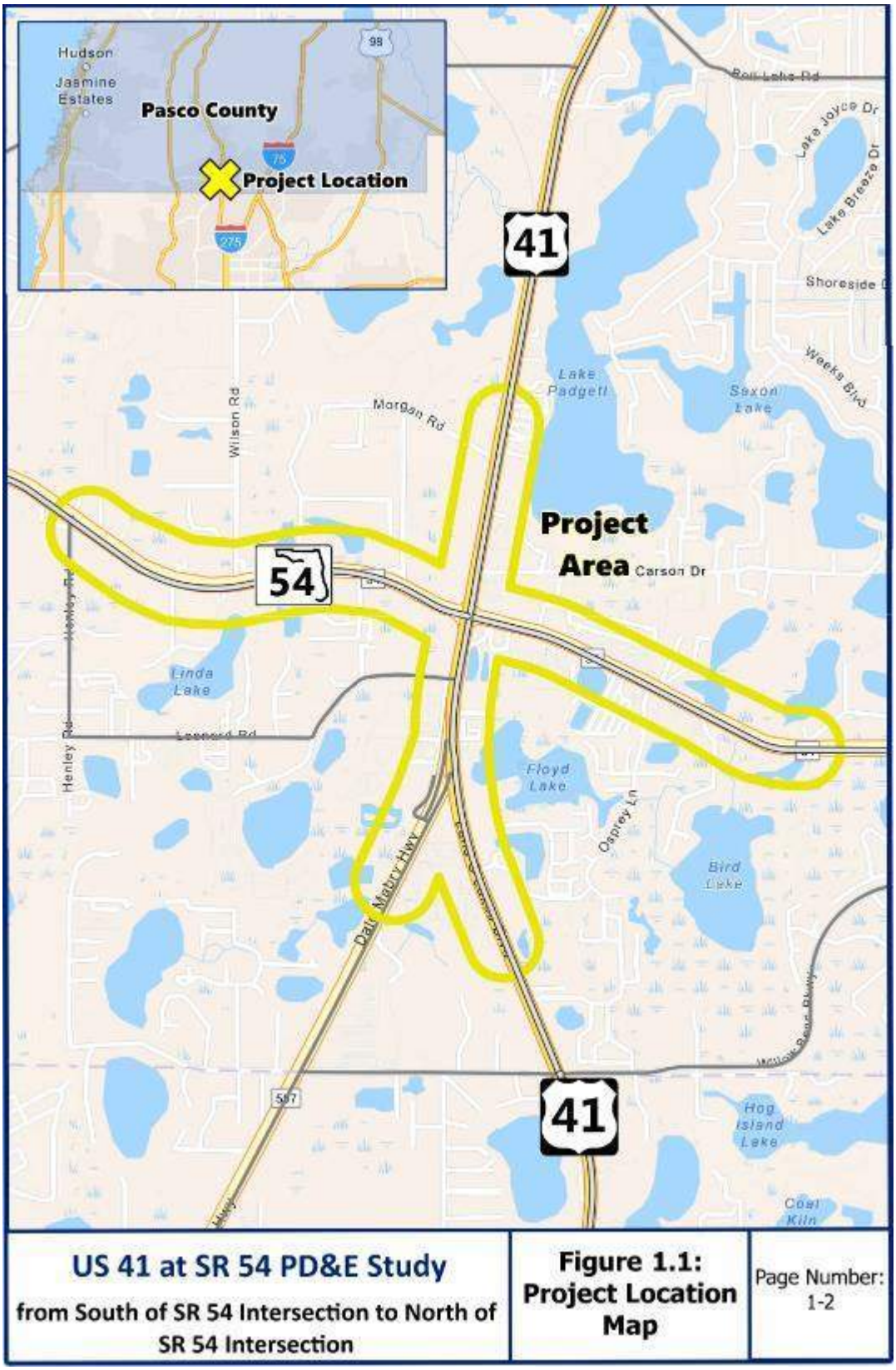
For: SR 45 (US 41) at SR 54 from S. of Intersection to N. of Intersection
Pasco County, Florida
FPID: 419182-1-22-01, 419182-2-32-01
Tierra Project No.: 6511-11-537A

The purpose of this Contamination Technical Memorandum (Tech Memo) is to identify contamination sites within or adjacent to the study area. Contamination can have a significant impact on the project and therefore the early identification of contaminant involvement will provide valuable input to assist in the proposed roadway improvements.

Project Description

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate capacity and operational improvements at the intersection of State Road 45/U.S. Highway 41 (SR 45/US 41) and State Road 54 (SR 54) in Pasco County, Florida. Each roadway is a six-lane divided facility intersecting at-grade with a box span traffic signal. US 41 is a major north-south arterial that provides access to Tampa, Lutz, Land O' Lakes, and Brooksville. SR 54 is a major east-west arterial that connects US 19 near New Port Richey to the west and US 301 in Zephyrhills to the east.

The length of the project is approximately 1.5 miles along US 41, with limits on SR 54 from approximately 1.2 miles east and 1.2 miles west of the intersection, including a 0.3-mile section of Dale Mabry Highway (SR 597). This intersection is located in the Land O' Lakes area of unincorporated Pasco County, Florida, as shown in **Figure 1.1**. This intersection is under the jurisdiction of FDOT.


Hudson
Jasmine Estates
Pasco County
Project Location
98
75
275
41
54
Project Area
Carson Dr
Morgan Rd
Wilson Rd
Lake Padgett
Saxon Lake
Weeks Blvd
Lake Joyce Dr
Lake Breeze Dr
Shoreside
Linda Lake
Leonard Rd
Henley Rd
Floyd Lake
Ospley Ln
Bird Lake
Dale Mabry Hwy
597
Hog Island Lake
Coal Kiln
US 41 at SR 54 PD&E Study
from South of SR 54 Intersection to North of SR 54 Intersection
Figure 1.1: Project Location Map
Page Number: 1-2

Contamination History

During the PD&E phase, a Contamination Screening Evaluation Report (CSER) was completed (April 2015) and included the evaluation of four Alternatives – Alternative 1, Alternative 2, Alternative 3, and Alternative 4 – from north and south of the SR 45 and SR 54 intersection (SR 45 and SR 597) as well as to the east and west. Alternatives 1, 2, and 4 were discarded, and Alternative 3 was re-numbered into Alternatives 3A and 3C. A total of 24 contamination sites were identified and evaluated in the 2015 CSER (4 No sites, 10 Low, 5 Medium, and 4 High). A Feasibility Study dated September 2021 was conducted to re-evaluate the contamination sites identified in the 2015 CSER with the addition of supplemental research for three build alternatives, associated drainage sites, and the no build alternative. The Feasibility Study included the re-evaluation of contamination sites assigned a Medium and High risk rating (seven contamination sites) and the evaluation of one newly identified contamination site. Contamination sites previously assigned a risk rating of No or Low in the 2015 CSER were not included in the Feasibility Study.

This Contamination Tech Memo includes the re-evaluation for all previously identified contamination sites in the PD&E CSER completed in April 2015 and the Feasibility Study completed in September 2021. Five newly identified contamination sites were also evaluated in this Tech Memo (30 total contamination sites). These five new contamination sites were identified within the study area during desktop/regulatory review. Additionally, 19 preferred drainage sites were evaluated and assigned risk ratings. This update is necessary to address both previous and newly identified contamination and drainage sites within the study area.

Current Methodology

The methodology employed for this contamination screening included the following tasks:

- Provided a re-evaluation for one Build Alternative and drainage sites using data from the 2015 PD&E CSER and 2021 Feasibility Study;
- Conducted desktop research using Florida Department of Environmental Protection's (FDEP's) MapDirect database for each identified contamination site within the study area;
- A site contamination map (**Appendix A**) was generated to illustrate the locations of the contamination sites within the study area. The study area is defined as the existing and proposed right-of-way (ROW) of US 41 (1.5 miles), SR 54 (2.4 miles), Dale Mabry (0.3 miles), and preferred drainage sites as well as the 500 foot search buffer;
- Provide supplemental research using the FDEP's OCULUS database (**Appendix B**),;
- Review previous reports aerial photographs, United States Geological Survey (USGS) topographic maps, and Google Earth Aerial Imagery, when necessary; and
- Adjust risk ratings, as necessary, based on updated contamination information, proposed changes to roadway alignment, and preferred drainage sites.

Risk ratings were assigned for each contamination and pond site after evaluating the findings produced by the previously mentioned methodologies. The rating system defined in the FDOT PD&E Manual is divided into four categories of risk which express the degree of concern for contamination problems. The four degrees of risk ratings are No, Low, Medium, and High and are defined as follows:

- No Risk Site: a review of available information on the property and a review of the conceptual or design plans indicates there is no potential contamination impact to the project. It is possible that contaminants have been handled on the property. However, findings indicate that contamination impacts are not expected.
- Low Risk Site: a review of available information indicates that past or current activities on the property have an ongoing contamination issue; the site has a hazardous waste generator identification number, or the site stores, handles, or manufactures hazardous materials. However, based on the review of conceptual or design plans and/or findings from the screening process, it is not likely that there would be any contamination impacts to the project.
- Medium Risk Site: after a review of conceptual or design plans and findings from a Level I evaluation, a potential contamination impact to the project has been identified. If there is insufficient information (such as regulatory records or site historical documents) to make a determination as to the potential for contamination impact, and there is reasonable suspicion that contamination may exist, the property should be rated at least as a "Medium." Properties used historically

as gasoline stations and which have not been evaluated or assessed by regulatory agencies, sites with abandoned in place underground petroleum storage tanks, or currently operating gasoline stations should receive this Rating.

- High Risk Site: after a review of all available information and conceptual or design plans, there is appropriate analytical data that shows contamination will substantially impact construction activities, have implications to ROW acquisition, or have other potential transfer of contamination related liability.

Project Impacts

Based on the methodologies performed, 30 contamination sites were identified within the study area. Risk ratings for the 30 contamination sites are provided in **Table 1**. Risk ratings for the 19 preferred drainage sites are discussed in **Table 2**. The location of each contamination site/pond is presented in **Appendix A**. Regulatory and supplemental research files are presented in **Appendix B**.

Table 1 – Risk Ratings for Contamination Sites

Site No.	Site Name	PD&E Risk Rating (2015)	Feasibility Study (2021)	Technical Memorandum Risk Rating (2024)	Comments
1	**Guaranteed Water Treatment Co.** 2914 Land O' Lakes Blvd, 21349 & 21316 Paoli Dr FAC ID: 10011852520	No	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of No. This site was not evaluated in the Feasibility Study (2021). No subsequent information was identified. This former facility was adjoining east of US 41 ROW. Contamination impacts are not anticipated due to the lack of reported discharges; therefore, this site retains an assigned risk rating of No.
2	**Stevens Pools, S&S Pool Chemicals** 2734 US 41 FAC ID: 10038250665	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). No subsequent information was identified. This facility is within and adjoining east of the proposed US 41 ROW. Contamination impacts are not anticipated due to the lack of reported discharges; therefore, this site retains an assigned risk rating of Low.
3	**Former Bobs Filtered Oil Company** 2700 US 41 FAC ID: 8841173	**High**	**High**	**High**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of High due to unresolved contamination impacts from a reported discharge dated March 15, 1991. This site was re-evaluated in a Feasibility Study (2021) and maintained a risk rating of High. This former facility was within and adjoining east of proposed US 41 ROW. A Template Site Assessment Report dated November 3, 2022, provided a Groundwater Plume Map depicting plumes for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), naphthalene, and 2-methylnapthalene within both the current and proposed US 41 ROWs. A Change Order dated June 21, 2024, indicated that assessment and cleanup tasks are on-going. Given the unresolved nature of the 1991 discharge, contamination impacts within the current and proposed US 41 ROWs, this site retains an assigned risk rating of **High**.
4*	**Ferris Farms** 2607 US 41 North FAC ID: 8942927	**Medium**	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Medium. This site was not re-evaluated in the Feasibility Study (2021). A Site Location Map from a Remedial Monitoring Report dated July 12, 2005, depicted this site five miles north of the nearest US 41 project limits. Contamination impacts are not anticipated given the separation distance. This site is reassigned a risk rating of No.

Table 1 – Risk Ratings for Contamination Sites

Site No.	Site Name	PD&E Risk Rating (2015)	Feasibility Study (2021)	Technical Memorandum Risk Rating (2024)	Comments
5	**Cox Lumber / Williams Brothers** 21033 SR 54 FAC ID: 8519968	**Medium**	**Medium**	**Medium**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Medium due to the historical use of petroleum products and its proximity to the study area. Regulatory reports indicated that diesel and gasoline Underground Storage Tanks (USTs) were in operation 130 feet northeast of the nearest SR 54 ROW. One discharge was reported in 1988 and was issued a No Further Action Status (NFA) in 1993. The former USTs were removed in 1996. This site was re-evaluated in the Feasibility Study (2021) and maintained a risk rating of Medium. This site is located within the northwest proposed ROW intersection of US 41 and SR 54. No subsequent files were provided after 2003. Tierra emailed the FDEP on June 28, 2024, asking if any additional files were available after 2003. Tierra received a response on July 1, 2024, no files after 2003 were available/provided. Given the facility is within and adjoining the proposed ROWs of SR 54 and US 41 and historical petroleum usage, this site retains the assigned risk rating of Medium.
6	**BRW Contracting** 2522 Hunt Road FAC ID: 9811975	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). The nearest structure at this facility is 170 feet north of the nearest proposed SR 54 ROW. No reported discharges are associated with this facility. A Florida Department of Health letter dated November 6, 2023, found this facility in compliance with the department's storage tank rules and regulations. Contamination impacts are not anticipated given the lack of reported discharges. This site retains an assigned risk rating of Low.
7	**Liberty Cleaners / HR & Patel** 2412 US 41 FAC ID: 9801755 EPA Emissions Permit #1010368	Low	-	**Medium**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). The FDEP's Storage Tanks & Contamination Monitoring database (STCM) stated one tetrachloroethylene (PCE) Aboveground Storage Tank (AST) is in service. This facility was not identified in the FDEP's Drycleaning Solvent Cleanup Program Priority Ranking List. Although no reported discharges are associated with this drycleaner facility, the drycleaner is 160 feet northeast of the nearest proposed SR 54 ROW and potential impacts are anticipated. Given the close proximity of the drycleaners to the nearest proposed SR 54 ROW, this site is assigned an elevated risk rating of **Medium**.
8	**Tire Kingdom #6158** 2127 Brinson Rd FAC ID: 1007989380	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). This facility is 90 feet west of the nearest US 41 ROW. No relevant subsequent regulatory information was provided. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of Low.
9	**Diamond Auto Works** 1704 US 41 North FAC ID: 1001023711	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). This facility is adjoining east of the proposed US 41 ROW. No subsequent regulatory files were provided. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of Low.

Table 1 – Risk Ratings for Contamination Sites					
Site No.	**Site Name**	**PD&E Risk Rating (2015)**	**Feasibility Study (2021)**	**Technical Memorandum Risk Rating (2024)**	**Comments**
10	**Tire Plus LLC #5037** 1621 US 41 North FAC ID: 100700258	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). This facility is adjoining east of the proposed US 41 ROW and 280 feet south of the nearest Dale Mabry ROW. No subsequent regulatory files were found. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of Low.
11	**Lutz Land O' Lakes Auto Body, EnviroLab** 1641 US 41 North FAC ID: 1001112009	No	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of No. This site was not evaluated in the Feasibility Study (2021). This facility is adjoining east of the proposed US 41 ROW and 130 feet southeast of the nearest Dale Mabry ROW. No subsequent regulatory files were found. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of No.
12	**CEMEX** 1714 Dale Mabry Hwy FAC ID: 8736685, 1001023711	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). This facility is within and adjoining east of proposed Dale Mabry ROW and 90 feet west of proposed US 41 ROW. An FDEP Storage Tanks Closure Site Inspection report dated September 16, 2015, stated the remaining AST discussed in the 2015 PD&E CSER met closure requirements and was removed June 22, 2015. No relevant subsequent files were provided. Contamination impacts are not anticipated. This site retains an assigned risk rating of Low.
13	**Top Cat Marine** 1635 Dale Mabry Hwy FAC ID: 1000703370	No	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of No. This site was not evaluated in the Feasibility Study (2021). This facility is 170 feet south of the nearest Dale Mabry ROW project limits. No subsequent regulatory files were provided. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of No.
14	**Walmart Super Center** 1575 US 41 FAC ID: 9816107, 1012177707	No	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of No. This site was not evaluated in the Feasibility Study (2021). No subsequent regulatory files were provided. The FDEP's STCM database identified one 2,000 gallon diesel AST in service at this facility. The AST was observed 570 feet south of the nearest Dale Mabry project limits using Google Earth Aerial Imagery dated March 13, 2024. No discharges are associated with this facility. A retail gas station (Walmart Fuel Station #988) also exists on the same parcel property. The retail gas station and USTs are 740 feet south of the nearest Dale Mabry project limits and are not considered a contamination risk. There are no reported discharges associated with the retail gas station. Given the separation distances and lack of reported discharges, this site retains an assigned risk rating of No.
15	**SS Studios** 1720 US 41 North FAC ID: 1000502798	No	-	No	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of No. This site was not evaluated in the Feasibility Study (2021). This facility is adjoining east of US 41 ROW. The AST in service for an emergency generator is 150 feet south of proposed SR 54 ROW. No subsequent regulatory files were provided. Contamination impacts are not anticipated due to the lack of reported discharges. This site retains an assigned risk rating of No.

Table 1 – Risk Ratings for Contamination Sites					
Site No.	**Site Name**	**PD&E Risk Rating (2015)**	**Feasibility Study (2021)**	**Technical Memorandum Risk Rating (2024)**	**Comments**
16	**Morton Plant North Bay** 21808 SR 54 FAC ID: 9201130	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. One historical discharge dated June 1998 is associated with this facility and was issued an NFA in January 2001 after the completion of remedial tasks. This site was not evaluated in the Feasibility Study (2021). This facility is within and adjoining south of the proposed SR 54 ROW. A Florida Department of Health Letter dated November 3, 2022, found this facility in compliance with the FDEP's storage tank rules and regulations. Contamination impacts are not anticipated given the lack of additional reported discharges. This site retains an assigned risk rating of Low.
17	**7-Eleven Food Store #32714** 2400 US 41 FAC ID: 9800845	**Medium**	**Medium**	**Medium**	This site was first identified in the PD&E CSER (2015) and assigned a Medium risk rating since it's an active retail gas in close proximity to the study area. One discharge dated June 2006 is associated with this facility and was issued an NFA in October 2008. This site was re-evaluated in a Feasibility Study (2021) and maintained a risk rating of Medium. This site is located within the northeast quadrant of US 41 and SR 54 proposed ROW. A Compliance Letter dated November 28, 2023, found this facility in compliance with the FDEP's storage tanks rules and regulations. No additional reported discharges have been identified. Contamination impacts are anticipated given the active status of the site within and adjoining proposed ROW. This site retains a risk rating of **Medium**.
18	**FDOT (Former Handy Way)** 2400 US 41 FAC ID: 8514970	**Medium**	**Medium**	**Medium**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Medium due to the proximity of the former retail station within the study area. This facility was a former retail station that was likely condemned as part of the expansion of US 41 in 1997. One reported discharge was associated with this facility and was issued a Site Rehabilitation Completion Order (SRCO) in October 2005. This site was re-evaluated in a Feasibility Study (2021) and maintained a risk rating of Medium. This site was located at the northeast quadrant of the US 41 and SR 54 intersection within the current and proposed ROWs. No subsequent regulatory files were provided. Contamination impacts are anticipated given the former UST farm and retail facility existed within both proposed and current ROWs. This site retains an assigned risk rating of **Medium**.
19	**Former Majik Market** 2322 US 41 FAC ID: 8520049	**High**	**High**	**High**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of High due to unresolved contamination impacts from a July 1988 discharge at the former retail gas station. Unresolved groundwater contamination is limited to a concrete traffic island located in the southeast corner of the US 41 and SR 54 intersection. This site was re-evaluated in the Feasibility Study (2021) and maintained a risk rating of High. This site is located within the southeast quadrant of US 41 and SR 54 proposed ROW. An Annual Natural Attenuation Monitoring (NAM) Report dated February 9, 2024, depicted unresolved groundwater contamination impacts (naphthalene, benzene, ethylbenzene, 1 and 2-methylnaphthalene) within both the existing and proposed ROWs for US 41 and SR 54. Contamination impacts are anticipated given the on-going remedial/assessment tasks at this site. This site retains a risk rating of **High**.

Table 1 – Risk Ratings for Contamination Sites					
Site No.	**Site Name**	**PD&E Risk Rating (2015)**	**Feasibility Study (2021)**	**Technical Memorandum Risk Rating (2024)**	**Comments**
20	**Pasco County Sheriff Substation** 21300 SR 54 FAC ID: 8630206	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. One reported discharge dated October 1988 is associated with this facility and was issued an SRCO in September 2001. This site was not evaluated in the Feasibility Study (2021). This facility is 160 feet south of the proposed SR 54 ROW. No subsequent files were provided. Contamination impacts are not anticipated given the lack of open reported discharges. This site retains a risk rating of Low.
21	**SR 54 & Osprey Spill** FAC ID: Spill 17275	Low	-	Low	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Low. This site was not evaluated in the Feasibility Study (2021). No subsequent information was provided. Contamination impacts are not anticipated. This site retains an assigned risk rating of Low.
22	**Starrs Kountry Kitchen** 1908 US 41 FAC ID: 8626610	**Medium**	**Medium**	**Medium**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of Medium due to the proximity of the former retail gas station and the study area. This site was re-evaluated in a Feasibility Study (2021) and maintained a risk rating of Medium due to the former USTs having operated within the former US 41 ROW. Two discharges are associated with this former retail gas station: May 1991 and December 1996. The former USTs were removed in December 1996. Both discharges were issued an SRCO in March 2006. This site was within and adjoining east of proposed US 41 ROW. No additional relevant files were provided. Residual contamination impacts are anticipated given the former retail gas station operated within both existing and proposed ROWs. This site retains an assigned risk rating of **Medium**.
23	**Perfect Gasoline** 1616 Dale Mabry Hwy FAC ID: 8943105	**High**	-	**High**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of High due to the facility's proximity to the study area as an active retail gas station. One discharge reported in 1988 was issued an SRCO January 17, 2013. This site was not re-evaluated in the Feasibility Study (2021). This site is located 290 feet south of the nearest proposed SR 597 ROW and 80 feet east of the nearest US 41 ROW. A FDEP Storage Tank Facility Routine Compliance Site Inspection Report dated November 6, 2023, found this site out of compliance with the departments rules and regulations. Contamination impacts are anticipated given the active retail gas station is within 500 feet of the nearest study area boundaries. This site retains a risk rating of **High**.
24	**CSX Railroad** Parallel west of US 41 Within SR 54 Within Dale Mabry	**High**	**High**	**High**	This site was first identified in the PD&E CSER (2015) and was assigned a risk rating of High. This site was re-evaluated in a Feasibility Study (2021) and maintained a risk rating of High. This site runs parallel to the west of US 41 ROW and crosses existing and proposed SR 54 ROW just west of US 41. The rail road corridor also crosses the northern limits of Dale Mabry ROW. Railroad corridors are associated with arsenic from herbicide applications and petroleum products from railroad ties and leaking diesel locomotive engines. Contamination impacts are anticipated. Given the proximity of the railroad within existing and proposed ROWs of SR 54, Dale Mabry, and US 41, this site retains a risk rating of **High**.

Table 1 – Risk Ratings for Contamination Sites					
Site No.	**Site Name**	**PD&E Risk Rating (2015)**	**Feasibility Study (2021)**	**Technical Memorandum Risk Rating (2024)**	**Comments**
25**	**Former Real Cleaners** 21511 Village Lakes Shopping Center Drive FAC ID: 9601225, ERIC_5247	-	**High**	**High**	This site was first identified in the Feasibility Study (2021) as a former drycleaners facility that operated from July 1987 to November 1995 and was assigned a risk rating of High due to unresolved groundwater contamination impacts near the rear of the building. This site is located within a shopping center 210 feet north of the nearest proposed SR 54 ROW. No further assessment or cleanup tasks have been performed to determine contaminant location and concentrations. Contamination impacts are anticipated given the proximity of the unresolved groundwater impacts. Given the unresolved groundwater contamination impacts, proximity to the nearest proposed SR 54 ROW, this site retains the assigned risk rating of **High**.
26***	**Meineke Car Care Center** 2632 US 41	-	-	**Medium**	This site was first identified in this re-evaluation (2024) within and adjoining east of proposed US 41 ROW using Google Earth Aerial and Streetview imagery. Streetview imagery dated November 2018 and November 2023 showed one hydraulic lift within the proposed US 41 ROW. Five other hydraulic lifts were also observed adjoining the proposed US 41 ROW. No relevant regulatory files were provided on the FDEP's Map Direct database due to the lack of reported discharge. Given the proximity of the hydraulic lifts to the proposed US 41 ROW, and the unknown potential for contamination impacts, this site is assigned a risk rating of **Medium**.
27***	**Denham Substation** 21315 SR 54 FAC ID: ERIC_9690	-	-	Low	This site was first identified in this re-evaluation (2024) during regulatory research on the FDEP's Map Direct database. This site is adjoining north of both current and proposed ROWs for SR 54. A Substation Assessment and Remedial Action Plan dated August 1, 2008 identified a discharge of mineral oil/dielectric fluid was discovered December 31, 2003, on the ground and equipment pads. Cleanup activities established no soil or groundwater impacts were identified during the December 2007 and March 2008 field events. The report recommended the issuance of an NFA. An FDEP Letter dated October 10, 2012, stated no additional action was necessary. Contamination impacts are not anticipated given the lack of open reported discharges. This facility is assigned a risk rating of Low.
28***	**Lowes #2238 Land O Lakes** 21500 SR 54 FAC ID: 9814455	-	-	Low	This site was first identified in this re-evaluation (2024) during regulatory research on the FDEP's Map Direct database. The FDEP's STCM database listed one 1,500 gallon diesel AST in service for an emergency generator. A FDEP Storage Tank Facility Routine Inspection Report dated September 12, 2022, listed this facility in compliance with the FDEP's storage tank rules and regulations. Google Earth Aerial Imagery dated March 13. 2024, depicted the AST 530 feet southwest of the nearest proposed SR 54 ROW. Contamination impacts are not anticipated given the lack of reported discharges and separation distance of the known potential contamination source area and the study area. This site is assigned a risk rating of Low.

Table 1 – Risk Ratings for Contamination Sites

Site No.	Site Name	PD&E Risk Rating (2015)	Feasibility Study (2021)	Technical Memorandum Risk Rating (2024)	Comments
29***	**Under Car Muffler & Brake Inc.** 2127 Brinson Road (Incorrectly listed as 101 Lake Francisco Plaza) FAC ID: 9103022	-	-	No	This site was first identified in this re-evaluation (2024) during regulatory research on the FDEP's Map Direct database. This facility is listed with an incorrect address (101 Lake Francisco Plaza). A FDEP Inspection Report dated September 29, 1993, listed this facility with the same street address as Tire Kingdom #6158 (Site 8) located at 2127 Brinson Road. Email correspondence dated February 16, 2000, stated no regulatory information regarding the 101 Lake Francisco Plaza was found or exists. Contamination impacts at 101 Lake Francisco Plaza are not anticipated given the lack of reported discharges. This site is assigned a risk rating of Low.
30***	**Former Liberty Cleaners** 2116 US 41 North FAC ID: 9501028	-	-	**Medium**	This site was first identified in this re-evaluation (2024) during regulatory research on the FDEP's Map Direct database. An FDEP Facility Location Map dated April 2009, provided the address and coordinates of the Former Liberty Cleaners facility adjoining east at 2116 US 41 North. This facility was not identified in the FDEP's Drycleaning Solvent Cleanup Program Priority Ranking List. No closure files were provided. Google Earth Aerial Imagery depicted a structure in 1995 at this address. This structure was no longer depicted and the general area was redeveloped into a low wet area with little to no changes observed from 1999 to 2024. Tierra emailed the FDEP on June 28, 2024, regarding the data gap. The FDEP responded July 1, 2024, and no additional relevant files were provided. Contamination impacts are anticipated given the historical land use as a drycleaner. Given the lack of closure assessment, and the unknown potential groundwater impacts, this site is assigned a risk rating of **Medium**.

- Site was not evaluated
** Site was elimated due to excessive seperation disctance from the Study Area*
*** Site was not identified in PD&E CSER (2015); Site assigned a number as part of the Feasibility Study (2021)*
**** Site was not identified in the PD&E CSER (2015) or Feasibility Study (2021), Site assigned a number as part of this re-evaluation (2024)*

This Tech Memo provides risk ratings for the 19 preferred drainage sites within the study area. The risk ratings for the 19 preferred drainage sites are provided below. A brief summary of the contamination sites identified in **Table 1** are provided below when necessary. Each preferred drainage site is illustrated in **Appendix A**.

Table 2 – Risk Ratings for Preferred Drainage Sites

Preferred Drainage Site Name	Risk Rating	Comments
Alt. 2 Pond 1A (2)	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of this preferred drainage site. However, the 500 foot search buffer captures a portion of the west adjoining parcel where Former Real Cleaners (Site 25) is located. Site 25 is 820 feet west of the preferred drainage site and was a former drycleaning facility. Potential contamination impacts are anticipated given the unresolved groundwater impacts that exist 820 feet west of this drainage site towards the rear of the building. The limits of contamination remain unknown due to no further assessment or cleanup tasks being performed at this site. Google Earth Aerial Imagery depicted the preferred drainage site as shopping strip and paved parking lot from 1995 to 2024 with little to no changes. Given the unknown groundwater contamination impacts associated with the former drycleaners, this drainage site is assigned a risk rating of **Medium**.

Table 2 – Risk Ratings for Preferred Drainage Sites

Preferred Drainage Site Name	Risk Rating	Comments
FPC 1A B2	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of this preferred drainage site. However, the 500 foot search buffer captures a portion of the west adjoining parcel where Former Real Cleaners (Site 25) is located. Site 25 is 740 feet west of the preferred drainage site and was a former drycleaning facility. Potential contamination impacts are anticipated given the unresolved groundwater impacts that exist 740 feet west of this drainage site towards the rear of the building. The limits of contamination remain unknown due to no further assessment or cleanup tasks being performed at this site. Google Earth Aerial Imagery depicted this drainage site as shopping strip and paved parking lot from 1995 to 2024 with little to no changes. Given the unknown groundwater contamination impacts associated with the former drycleaners, this drainage site is assigned a risk rating of **Medium**.
Alt. 1 Pond 2A (1)	No	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within this preferred drainage site or the 500 foot search buffer. Google Earth Aerial Imagery depicted woods and grassy fields within and adjoining the preferred drainage site from 1995 to 1999. Two manmade low wet areas were depicted from 2002 to 2024 with little to no changes along the northern and southern portions of the preferred drainage site. Given the lack of contamination concerns, this drainage site is assigned a risk rating of No.
FPC 2A A1	No	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within this preferred drainage site or the 500 foot search buffer. Google Earth Aerial Imagery depicted woods and grassy fields within and adjoining the preferred drainage site from 1995 to 2024 with little to no changes. A manmade low wet area was depicted adjoining north of the preferred drainage site in 2002 with little to no changes observed to 2024. Given the lack of contamination concerns and the undeveloped nature of this drainage site, this drainage site is assigned a risk rating of No.
Alt. 3 Pond B3	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are Diamond Auto Works (Site 9), Lutz Land O' Lakes Auto Body, EnviroLab (Site 11), CEMEX (Site 12), CSX Railroad (Site 24), and Under Car Muffler & Brake Inc. (Site 29). Potential contamination impacts are not anticipated from any of the listed contamination sites due to the separation distance of known contamination source areas exceeding 500 feet of the preferred drainage site and the lack of open reported discharges. Google earth Aerial Imagery depicted six structures (presumably residential) from 1995 to 2022 within the preferred drainage site. Demolition activities were depicted in 2023 within the preferred drainage site. Exposed earthwork/soil was depicted in 2024 within the preferred drainage site. Given the separation distances of the nearby contamination sites and the lack of reported discharges, this drainage site is assigned a risk rating of Low.
FPC B1	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are CEMEX (Site 12), Starrs Kountry Kitchen (Site 22), CSX Railroad (Site 24), and Under Car Muffler & Brake Inc. (Site 29). Potential contamination impacts are not anticipated from three of the four contamination sites due to separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site and the lack of open reported discharges. Site 24 is 35 feet west of the nearest portion of the preferred drainage site. Potential contamination impacts are anticipated due to the proximity of the railroad to this drainage site. Google Earth Aerial Imagery depicted this woods, grassy fields, and a small slither of Brinson Road intersecting near the southern and central area of the preferred drainage site from 1999 to 1995. Grass was depicted and the small slither of Brinson Road was no longer within the drainage site due to redevelopment with little to no changes from 2002 to 2024. Given the proximity of the active railroad, this drainage site is assigned a risk rating of **Medium**.
Pond C1 FPC	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are Tire Kingdom #6158 (Site 8), CSX Railroad (Site 24), Lowes #2238 Land O Lakes (Site 28), and Former Liberty Cleaners (Site 30). Potential contamination impacts are not anticipated from any of the contamination sites due to separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site and the lack of open reported discharges. Google Earth Aerial Imagery depicted several small structures (presumably residential/trailers) and a road within the preferred drainage site in 1995. All residential structures were removed after 1995. A road, woods and grassy field were depicted from 1999 to 2024. Given the lack of contamination concerns, this drainage site is assigned a risk rating of Low.

Table 2 – Risk Ratings for Preferred Drainage Sites		
Preferred Drainage Site Name	**Risk Rating**	**Comments**
Alt. 1 Pond C (1)	**High**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of this drainage site are Cox Lumber / Williams Brothers (Site 5), Tire Kingdom #6158 (Site 8), 7-Eleven Food Store #32714 (Site 17), FDOT / Former Handy Way (Site18), Former Majik Market (Site 19), Pasco County Sheriff Substation (Site 20), CSX Railroad (Site 24), Denham Substation (Site 27), Lowes #2238 Land O Lakes (Site 28), and Former Liberty Cleaners (Site 30). Potential contamination impacts are not anticipated at six of the listed contamination sites due to separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site and the lack of contamination concerns. Site 17 is located 300 feet north of the preferred drainage site north of SR 54. Contamination impacts are anticipated given the active status of a retail gas station within 500 feet of this preferred drainage site. Site 18 is located 300 feet north of the preferred drainage site north of SR 54. Contamination impacts are anticipated given the former retail gas station existed within 500 feet of this preferred drainage site. Site 19 is within and adjoining the northwestern portion of the preferred drainage site and has unresolved petroleum related impacts (plume 220 feet northwest). Contamination impacts are anticipated given the unresolved contamination issues that exist within and adjoining this preferred drainage site. Site 30 is within and adjoining west of the preferred drainage site. Contamination impacts are anticipated given the former drycleaning facility operated within the preferred drainage site and the lack of closure documentation. Google Earth Aerial Review depicted multiple structures throughout the preferred drainage site in 1995. Low wet areas were depicted throughout the south and central portions of the preferred drainage site with little to no changes from 1999 to 2024. The structures within and adjoining the northern portion of the preferred drainage site were depicted from 1995 to 2024 with little to no changes. Given the unresolved petroleum impacts 220 feet northwest of the preferred drainage site, the proximity of both active and former retail gas stations 300 feet north, and the former drycleaning facility that existed within the south western portion of this drainage site, this drainage site is assigned a risk rating of **High**.
Alt. 1 Pond C (1)A	**High**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are Cox Lumber / Williams Brothers (Site 5), Liberty Cleaners / HR & Patel (Site 7), 7-Eleven Food Store #32714 (Site 17), FDOT / Former Handy Way (Site18), Former Majik Market (Site 19), Pasco County Sheriff Substation (Site 20), CSX Railroad (Site 24), Denham Substation (Site 27), and Lowes #2238 Land O Lakes (Site 28). Potential contamination impacts are not anticipated at five of the listed contamination sites due to separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site and the lack of contamination concerns. Site 7 is 50 feet east of the southeastern portion of the preferred drainage site. Potential contamination impacts are anticipated given the active status of this drycleaning facility within 500 feet of the preferred drainage site. Site 17 is an active retail gas station within and adjoining the southwestern portion of the preferred drainage site. Potential contamination impacts are anticipated. Site 18 was a former retail gas station within and adjoining southwest of the preferred drainage site. Potential contamination impacts are anticipated. Site 19 is a former retail gas station 160 feet south of the preferred drainage site with unresolved contamination issues. The petroleum plume associated with this site is 200 feet southwest of the preferred drainage site. Potential contamination impacts are anticipated. Google Earth Aerial Imagery depicted a paved parking lot, restaurant, and retail gas station within and adjoining the preferred drainage site with little to no changes from 1995 to 2024. Given the proximities of retail gas stations (active and former), a drycleaners facility, and unresolved contamination impacts within 500 feet of this drainage site, this drainage site is assigned a risk rating of **High**.
Alt. 1 Pond C (1)B	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are Cox Lumber / Williams Brothers (Site 5), Liberty Cleaners / HR & Patel (Site 7), 7-Eleven Food Store #32714 (Site 17), FDOT / Former Handy Way (Site18), and CSX Railroad (Site 24). Potential contamination impacts are not anticipated at two of the listed contamination sites due to the separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site. Site 7 is 450 feet southeast of the preferred drainage site. Potential contamination impacts are anticipated given the active status of a drycleaning facility within 500 feet of the preferred drainage site. Site 17 is 330 feet south of the preferred drainage site. Potential contamination impacts are anticipated due to the proximity of an active retail gas station within 500 feet of the preferred drainage site. Site 18 was 330 feet south of the preferred drainage site. Potential contamination impacts are anticipated given the former retail gas station existed within 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted a structure within the western portion and a paved parking lot throughout the preferred drainage site from 1995 to 2009. Woods/grass were depicted within the western portion with no changes to the paved parking lots from 2012 to 2024. Given the historical existence of a former structure within the western portion of the preferred drainage site, the proximities of an active drycleaning facility, and the proximities of an active and former retail gas stations within 500 feet, this drainage site is assigned a risk rating of **Medium**.

Table 2 – Risk Ratings for Preferred Drainage Sites

Preferred Drainage Site Name	Risk Rating	Comments
FPC C A1	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites within 500 feet of the preferred drainage site are Former Real Cleaners (Site 25), and Lowes #2238 Land O Lakes (Site 28). Potential contamination impacts are not anticipated at Site 28 due to the separation distance from known contamination source areas exceeding 500 feet of the preferred drainage site. Site 25 is 160 feet northeast of this drainage site. Potential contamination impacts are anticipated given the unresolved groundwater impacts that exist 240 feet northeast of this drainage site towards the rear of the former drycleaners. The limits of contamination remain unknown due to no further assessment or cleanup tasks being performed at this site. Google Earth Aerial Review depicted woods/grass within and adjoining the western portion of the preferred drainage site, a paved parking lot within the center and adjoining north and south of the preferred drainage site, and a portion of the former Pizza Villa restaurant within and adjoining the eastern portion of the preferred drainage site from 1999 to 2024. Given the existence unresolved contamination impacts at the former drycleaning facility (Site 25) within 500 feet of this drainage site, this drainage site is assigned a risk rating of **Medium**.
Alt. 1 Pond P1E1	**Medium**	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of this preferred drainage site. Google Earth Aerial Imagery depicted woods/grass, two small structures (presumably trailers) within the north central portion of the preferred drainage site, and a road/trail adjoining north in 1995. The two structures were not depicted after 1995. Woods/grass were depicted within and adjoining from 1999 to 2007. A construction staging/storage area consisting of stock piled soil was depicted within and adjoining the south central portion of the preferred drainage site from 2010 to 2015. Woods/grass was depicted from 2016 to 2018. An additional construction staging/storage area with stock piled soil within and adjoining the southern portion of the preferred drainage site from 2019 to 2024. Given the historical usage of a construction storage/staging area, and the stock piling of soil within and adjoining this drainage site, this drainage site is assigned a risk rating of **Medium**.
FPC E1 B1	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted woods/grass within the preferred drainage site, low wet/ponded water adjoining south, and a small structure adjoining north of the preferred drainage site from 1995 to 1999. The small structure was not depicted after 1999. Little to no changes were depicted from 1999 to 2024. Given the lack of contamination concerns within the drainage site and within 500 feet, this drainage site is assigned a risk rating of Low.
FPC E1 A2	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted woods/grass within and adjoining the preferred drainage site, and a small structure (presumably storage associated with a structure 40 feet east offsite) from 1995 to 2024. An unpaved parking lot was depicted within and adjoining the western portion of the preferred drainage site from 2006 to 2019. Grass was depicted within and adjoining the western portion from 2020 to 2021. Exposed soil was depicted within and adjoining the western portion of the preferred drainage site from 2022 to 2024. Given the lack of reported discharges, this drainage site is assigned a risk rating of Low.
Alt. 1 Pond P1E2	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted woods/grass within, two small structures (presumed residence and storage) within and adjoining the western central portion, and one small structure (presumed residence) within and adjoining the eastern central portion of the preferred drainage site from 1995 to 2023. A storage/hauling yard and trailers were depicted throughout the preferred drainage site from 2010 to 2024. The foundation of the small structure was depicted within and adjoining west of the preferred drainage site. A staging/storage yard was depicted offsite adjoining west from 2005 to 2007. A business center was depicted adjoining west of the preferred drainage site from 2010 to 2024 with little to no changes. Given the lack of reported discharges, this drainage site is assigned a risk rating of Low.
FPC E2 C1	No	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). No contamination sites were identified within 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted woods/grass, and low wet areas within the preferred drainage site from 1995 to 2024. Given the lack of contamination concerns identified with the drainage site and within 500 feet, this drainage site is assigned a risk rating of No.

Table 2 – Risk Ratings for Preferred Drainage Sites

Preferred Drainage Site Name	Risk Rating	Comments
FPC E2 D1	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites located within 500 feet of the preferred drainage site are Cox Lumber / Williams Brothers (Site 5) and BRW Contracting (Site 6). Although the 500 foot search buffer for the preferred drainage site captures a small portion of the property parcels both contamination sites are located on, potential contamination impacts are not anticipated given the separation distances of known contamination source areas exceeding 500 feet of the preferred drainage site. Google Earth Aerial Imagery depicted woods/grass within the preferred drainage site from 1995 to 2006. A nursery/sod farm and one structure were depicted within and adjoining east of the drainage site from 2006 to 2024. A citrus grove was depicted adjoining north of the preferred drainage site from 1995 to 2006. Ponded water and residential neighborhood were depicted adjoining north of the preferred drainage site with little to no changes from 2007 to 2024. Contamination impacts associated with the former citrus groves are not anticipated given the mixing and blending of soils conducted during construction activities. Given the lack of contamination concerns, this drainage site is assigned a risk rating of Low.
FPC E2 E1	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites located within 500 feet of the preferred drainage site are Cox Lumber / Williams Brothers (Site 5) and BRW Contracting (Site 6). Although the 500 foot search buffer for the preferred drainage site captures a portion of the property parcels both sites are located on, potential contamination impacts are not anticipated given the separation distances of known contamination source areas exceeding 500 feet of this preferred drainage site and the lack of reported open discharges. Google Earth Aerial Imagery depicted three structures (presumably two residential and one storage) and woods/grass within and adjoining the preferred drainage site from 1995 to 2024. A nursery/sod farm was depicted within and adjoining west of the preferred drainage site from 2006 to 2024. A citrus grove was depicted offsite adjoining north of the preferred drainage site from 1995 to 2006. A residential neighborhood was depicted adjoining north of the preferred drainage site with little to no changes from 2007 to 2024. Contamination impacts associated with the former citrus groves are not anticipated given the mixing and blending of soils conducted during construction activities. Given the lack of contamination concerns, this drainage site is assigned a risk rating of Low.
FPC E2 F1	Low	This preferred drainage site was not previously evaluated in either the PD&E CSER (2015) or Feasibility Study (2021). The contamination sites located within 500 feet of the preferred drainage site are Cox Lumber / Williams Brothers (Site 5) and BRW Contracting (Site 6). Although the 500 foot search buffer for the preferred drainage site captures a portion of the property parcels both sites are located on, potential contamination impacts are not anticipated given the separation distances of known contamination source areas exceeding 500 feet of this preferred drainage site and the lack of reported open discharges. Google Earth Aerial Imagery depicted two structures and paved parking lot within the central areas of the preferred drainage site, and woods/grass within and adjoining the south portion of the preferred drainage site from 1995 to 2024. Given the lack of contamination concerns, this drainage site is assigned a risk rating of Low.

Conclusions and Recommendations

Based on the results of this Contamination Tech Memo, risk ratings were assigned in accordance with the FDOT contamination rating system. The 30 sites considered as part of this Contamination Tech Memo have resulted in the assignment of 7 No, 11 Low, 7 Medium, and 5 High risk ratings. No additional action is recommended for the sites that are assigned a risk rating of No or Low. The sites that received a Medium or High risk rating (Sites: 3, 5, 7, 17, 18, 19, 22, 23, 24, 25, 26, and 30) should be reviewed once final construction plans are available to determine if additional action is necessary.

The 19 preferred drainage sites considered as part of this Contamination Tech Memo have resulted in the assignment of 3 No, 8 Low, 6 Medium, and 2 High risk ratings. No additional action is recommended for the preferred drainage sites that are assigned a risk rating of No or Low. The preferred drainage sites that received a Medium or High risk rating (8 in total) should be reviewed once final construction plans are available to determine if additional action is necessary.

Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring ROW and/or proceeding with roadway construction. Contamination reports older than one year should be updated with current information. If the design is altered or changed in any way, this report should be reviewed and modified, as necessary.

Respectfully Submitted,



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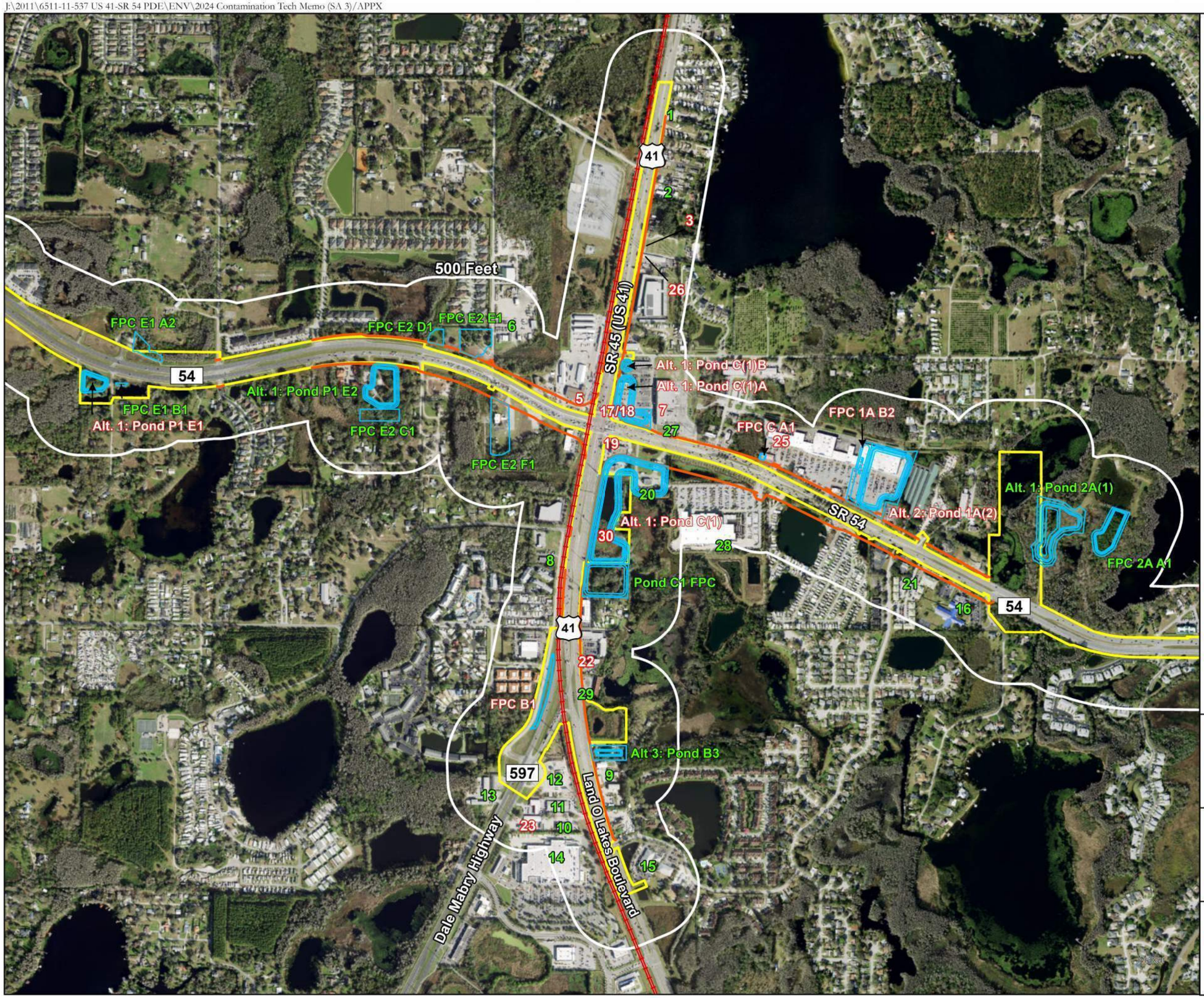
Appendices

Appendix A – Contamination Site Map

J:\2011\6511-11-537 US 41-SR 54 PDE\ENV\2024 Contamination Tech Memo (SA 3)/APPX



900 450 0 900

1 Inch = 900 Feet

Legend

- Map ID — No/Low Rated Sites
- Map ID — Medium/High Rated Sites
- Existing ROW
- Proposed ROW
- Preferred Drainage Site
- Railroad Corridor (Map ID 24: High)

Map ID 4: Not Depicted Due to Distance from Project Area

SR 45 (US 41) at SR 54
Pasco County, Florida
FPID No.: 419182-1-22-01, 419182-2-32-01
Tierra Project No.: 6511-11-537A

Contamination Site Map

TIERRA
GEOTECHNICAL • MATERIALS
ENVIRONMENTAL • ENGINEERING

Sheet No.
1

Appendix B – Supplemental Information

Site 3 –

Former Bobs Filtered Oil Company

CHANGED: ORDER NO. C35235

Issued on Friday, June 21, 2024 EDT
Created on Friday, June 21, 2024 EDT by Anansa Johnson (Contracts) on behalf of Cassandra Ruselink (Contracts)

SUPPLIER:
FRS Environmental Remediation, Inc.
5911 Breckenridge Pkwy
Tampa, FL 33610
United States
Phone: +1 813-623-1557
Fax: +1 813-623-2307
Contact: John Alford

TOTAL AMOUNT
$125,887.94000 USD

SHIP TO:
DEP-PETROLEUM RESTORATION PROGRAM
2600 BLAIR STONE RD
BMC RM 420 MS 4575
TALLAHASSEE, FL 32399
United States

BILL TO:
DEP-PETROLEUM RESTORATION PROGRAM
2600 BLAIR STONE RD
BMC RM 420 MS 4575
TALLAHASSEE, FL 32399
United States

DELIVER TO:
Cassandra Ruselink

Organization Code:
Description: PETROLEUM TANKS CLEANUP
Expansion Opt:
Description:
Object Code:
Description: ENGINEERING SERVICES - ENVIRONMENTAL
Transaction Fee Exempt?: No
Transaction Fee Exempt Reason:

VersionNumber: 2
PUI:
ID: 3701
Name: 3701 - FDEP Contracts
PO Start Date: Tuesday, March 19, 2024 GMT
PO End Date: Thursday, March 6, 2025 GMT
Site Code:
ID: 370000-12
Name: 12
Encumber Funds: Yes
Entity Description: Department of Environmental Protection

LINE ITEM DETAILS (1 LINE ITEM)

NO.	ACTION	DESCRIPTION	PART NUMBER	QTY	NEED-BY DATE	UNIT PRICE	AMOUNT	ORDER CONFIRMATION STATUS
1	Modified	**Contractor has been selected to perform ...**		125,887.94 Dollar	-	$1.00000 USD	$125,887.94000 USD	Unconfirmed

Full Description: Contractor has been selected to perform Remedial Action Construction & Operation and Maintenance (RAC/O&M) at BOBS FILTERED OIL COMPANY, 2700 LAND O LAKES BLVD, LAND O LAKES, Pasco County, Florida, FAC ID 518841173. Attachment A, Scope of Work, attached to the purchase order (PO) describes the work to be completed by the Contractor. All work shall be performed in accordance with the terms of the Agency Term Contract (ATC). The PRP reference number for this

project is 753-263C.

Attached hereto and made a part of this PO is Attachment B - Schedule of Pay Items and Other Related Documents. Pay Items are at or below the negotiated maximum rates included in the ATC. Contractor must submit the appropriate completed documents from Attachment B to the Site Manager with each deliverable, as instructed. Upon completion and approval of all work under this PO, Contractor shall submit a signed Release of Claims document, along with the final invoice. Contractor must include Subcontractor Utilization Report form, included as a tab on Attachment B, with each invoice.

The Department will retain 5% of the total amount of each payment made. Contractor may submit a request for release of retainage upon completion, and DEP approval of, all work performed under this PO.

The Department will evaluate the Contractor as specified in the Agency Term Contract.

The Contractor agrees to perform the services described in the PO in accordance with the terms of its ATC (as those terms may have been amended) which are in effect on date of issuance of the PO. The applicable ATC terms are available at the following URL: https://facts.fldfs.com/Search/ContractDetail.aspx?AgencyId=370000&ContractId=GC753

Req. Line No.: 1
Requester: Cassandra Ruselink (Contracts)
PR No.: PR456680-V2
Method of Procurement: J - Agency ITN [s 287.057(1) (c), F.S.]
Shipping Method: Best Way
Solicitation #: 2014004C
State Contract ID:
Prime Vendor:
incoTerm:

TOTAL AMOUNT
$125,887.94000 USD

Changes

- ERP Order ContentLength changed from 1205125 to 355376
- ERP Order Total ordered changed from $166,016.59000 USD to $125,887.94000 USD
- ERP Order Time Created changed from Tue, 19 Mar, 2024 to Fri, 21 Jun, 2024
- ERP Order ReEncryptDate changed from Tue, 19 Mar, 2024 to (no value)
- ERP Order ReEncryptDate changed from Tue, 19 Mar, 2024 to (no value)
- ERP Order ReEncryptDate changed from Tue, 19 Mar, 2024 to (no value)
- ERP Order ReEncryptDate changed from Tue, 19 Mar, 2024 to (no value)
- ERP Order Date changed from Thu, 14 Mar, 2024 to Fri, 14 Jun, 2024
- ERP Order PO End Date changed from Mon, 6 Jan, 2025 to Thu, 6 Mar, 2025
- ERP Order Filename changed from Attachment_B-SPI-518841173-RAC_OM.zip to CO1-PO-C35235-TK2_4-POS-518841173.pdf
- ERP Order Extension changed from zip to pdf
- ERP Order ContentType changed from application/x-zip-compressed to application/pdf
- ERP Order Attachments 5 changed from (no value) to Attachment_B-Revision1-SPI-518841173-RAC_OM.zip
- Line Item [BaseId 2430687033619 AAAAAE9jXwPLkT v0n4auj7.8t] was deleted
- Line Item 1, Quantity changed from 166,016.59 to 125,887.94

COMMENTS

- Anansa Johnson (Contracts), 02/28/2024:
  The following attachments are attached hereto and made a part of this Purchase Order:

  Attachment A – Scope of Work
  Attachment B – Schedule of Pay Items & Other Related Documents

  Note:
  No new Purchase Orders or Task Assignments shall be issued or executed after renewal term. However, the Restated Contract shall continue in effect up to twelve months after expiration of the renewal term for completion of any Purchase Order or Task Assignment issued/executed during the renewal term. Purchase Orders or Task Assignments, completion of which that extends beyond the renewal term shall continue to be subject to change, as appropriate. (Anansa Johnson (Contracts), Wednesday, February 28, 2024 EST)
- Destiny Perkins (Contracts), 03/19/2024:
  This work is associated with the attached cost-share/co-payment Agreement. The Department will only compensate you for the Department's share of the cleanup, pursuant to this Agreement. Therefore, you must make arrangements with the Participant/Applicant to that Agreement to receive payment for the remaining balance of your payment. You may not reduce the Applicant/Participants cost-share/co-payment. Contact information is in this Agreement. If the Applicant/Participant does not timely compensate you, please immediately inform the site manager.

  Note: Attachment B language appearing in upper right-hand corner titled "Without Handling Fee" is used by the program to identify the total cost less the 6% handling and MFMP fee on reimbursable items. This information is only used as a check point for PRP staff. The total PO amount for the project is the amount appearing in the "FDEP Cost" section at the bottom middle of the spreadsheet.

  Contractor has provided the DEP with quotes for some of the activities for this project. The terms and conditions of the DEP Agency Term Contract (ATC) apply to and control all work performed by the Contractor, and DEP does not accept, agree to, or incorporate any other terms and conditions. Any terms and conditions negotiated between the Contractor and any subcontractors or suppliers that seek to supplement, or are in conflict with the ATC, are not binding on or apply to the Contractor and DEP's contractual relationship. The Contractor bears the risk that additional terms and conditions negotiated between it and the subcontractors or suppliers will delay, interfere with or frustrate its performance under the ATC. (Destiny Perkins (Contracts), Tuesday, March 19, 2024 EDT)
- Anansa Johnson (Contracts), 06/14/2024:
  Change Order (CO) #1, Task #2_4 (referred to as " CO1-PO-C35235-TK2_4-POS-518841173," below) is attached hereto and made part of this Purchase Order (PO) to increase the PO amount by $1,375.50 (new PO total $125,887.94), and changes the existing task (TK) deliverable due dates and Period of Service (POS) End Date as follows:

  Task #2 is changed to 09/05/2024
  Task #3 is changed to 10/07/2024
  Task #4 is changed to 01/07/2024

  PO End Date is changed to 03/06/2025

  Attachment B Revision 1 is attached hereto and made a part of this PO to replace Attachment B in its entirety.

  It is understood that should the due date for a deliverable fall on a weekend or State observed holiday, the due date will be recognized as the next State business day.

  All other terms and conditions of the PO remain unchanged. (Anansa Johnson (Contracts), Friday, June 14, 2024 EDT)

ATTACHMENTS

- ATTACHMENT by **Anansa Johnson (Contracts)** on *Wednesday, February 28, 2024 at 12:15 PM*
  Attachment_A-SOW-518841173-RAC_OM.pdf (605749 bytes)
- ATTACHMENT by **Anansa Johnson (Contracts)** on *Wednesday, February 28, 2024 at 12:15 PM*
  518841173_PCPP Agreement_11.04.2021.pdf (805022 bytes)
- ATTACHMENT by **Anansa Johnson (Contracts)** on *Thursday, March 14, 2024 at 12:47 PM*
  Quotes+-+518841173.pdf (548966 bytes)

- ATTACHMENT by **Anansa Johnson (Contracts)** on *Friday, June 14, 2024 at 2:35 PM*
  CO1-PO-C35235-TK2_4-POS-518841173.pdf (355376 bytes)
- ATTACHMENT by **Anansa Johnson (Contracts)** on *Friday, June 14, 2024 at 2:35 PM*
  Attachment_B-Revision1-SPI-518841173-RAC_OM.zip (1204748 bytes)

TERMS AND CONDITIONS OF PURCHASE

Purchase Order Terms & Conditions

http://dms.myflorida.com/mfmp_PO_TC

Request for Change - Authorization for Change in Scope of Work

9-Digit Facility ID #:	518841173	**Ref #:**	753-263C	**PO #:**	C35235
Facility Name:	BOBS FILTERED OIL COMPANY	**FDEP Cost Share %:**	100.0%	**CO #:**	1
Site Manager Name:	CASSANDRA RUSELINK	**Cost Savings:**	25.0%	**CO Type:**	Regular
Site Manager Phone:	(727)275-6465	**Contract #:**	GC753	**Contractor Phone:**	813-623-1557 ext 14817
Site Manager Email:	Cassandra.Ruselink@flhealth.gov	**Contractor:**	FRS ENVIRONMENTAL REMEDIATION, INC. DBA MONTROSE ENVI		

This is an authorization for the costs associated with the change in quantities of services being provided and/or deliverable due dates. In order for these costs to be paid, these changes must be processed through a change order to the purchase requisition and a revised Purchase Order issued by MFMP prior to initiating work.

Description of Change and Justification: Include complete description of who, what, where, when, how and why.

Montrose requests to move the installation of the well near MW-15 from Task 2 to Task 3 due to offsite access constraints that need to be addressed. Montrose also requests to extend the due date of Tasks 2, Task 3, Task 4 and the POS End Date to allow for adequate time to perform construction, startup, O&M, and reporting activities.

TASK	PAY ITEM	DESCRIPTION	UNIT OF MEASURE	PAY ITEM PRICE	QUANTITY	EXTENDED PRICE
2	5-9.	HSA or MR Boring, > 6 to 10 inch diameter, < 50 foot total depth	Per Foot	$34.50	-12	$ (414.00)
2	6-2.a.	Well Installation - 2 inch diameter (vertical)	Per Foot	$38.80	-12	$ (465.60)
3	5-9.	HSA or MR Boring, > 6 to 10 inch diameter, < 50 foot total depth	Per Foot	$34.50	12	$ 414.00
3	6-2.a.	Well Installation - 2 inch diameter (vertical)	Per Foot	$38.80	12	$ 465.60
3	3-1.	Mobilization, Light Duty Vehicle (car or 1/2 ton truck) - ≤ 100 miles each way	Per Round Trip	$599.00	1	$ 599.00
3	3-9.a.	Drill Rig and Support Vehicles Mobilization (hollow stem auger, mud rotary or sonic) - ≤ 100 miles each way	Per Round Trip	$1,235.00	1	$ 1,235.00

Request for Change - Authorization for Change in Scope of Work

9-Digit Facility ID #: 518841173 **Ref #:** 753-263C **PO #:** C35235

Facility Name: BOBS FILTERED OIL COMPANY **FDEP Cost Share %:** 100.0% **CO #:** 1

*For reimbursable pay items the cost listed is a "not to exceed" amount. Fees will be reimbursed for the pay item based on the actual invoice. Please note, the unit of measure for these items will be displayed as dollars for invoicing purposes. Please refer to the Scope of Work for additional description of these items.

Task	Deliverable Name	Previous Due Date	New Due Date	Change Order Subtotals
2	RA Interim Report	6/5/2024	9/5/2024	$ (879.60)
3	Remedial Action Startup Report	8/6/2024	10/7/2024	$ 2,713.60
4	Quarterly O&M Report	11/7/2024	1/7/2024	$ -
	Period of Service:	1/6/2025	3/6/2025	**$ 1,375.50**
		Previous End Date	**New End Date**	**Total Authorized Cost**

(Cost Savings: 25%; FDEP Share: 100%)

Contractor Representative: Katie Young (Print Name) — Katie Young (Signature) — 5/23/2024 (Date)

FDEP Site Manager: CASSANDRA RUSELINK (Print Name) — Cassandra Ruselink (Signature) — 06/06/2024 (Date)

Administrative Reviewer: Kelcie Walsingham (Print Name) — Kelcie Walsingham (Signature) — 6/11/2024 (Date)

Technical Approval (optional)**:**

Cost Center Approval (optional)**:**

Petroleum Contamination Site Response Action Services
SCHEDULE OF PAY ITEMS INVOICE RATE SHEET

Facility Name: BOBS FILTERED OIL COMPANY
7-Digit Facility ID #: 8841173
County: 51
Region: Central
Site Manager Name: CASSANDRA RUSELINK
Site Manager Phone: (727)275-6465
Site Manager Email: Cassandra.Ruselink@flhealth.gov

Contractor: FRS ENVIRONMENTAL REMEDIATION, INC. DBA MONTROSE ENVIRONMENT
CID #: 01147
Contract #: GC753
SPI ID #: 31628
PO #:
Retainage %: 5%
FDEP Cost Share %: 100%
Total Extended Cost: $ 167,850.59
Without Handling Fee: $ 167,849.99
Download Date: 1/31/24 13:05
Assginment Type: SHARE
Cost Savings: 25.0%
Transition Agreement: ○ Yes ◉ No

			PO Rate Sheet			Previously Invoiced	This Invoice		Balance
PAY ITEM	DESCRIPTION	UNIT OF MEASURE	UNITS	NEGOTIATED ITEM PRICE	TOTAL EXTENDED PRICE	UNITS	UNITS	EXTENDED PRICE	UNITS
Task 1									
1-2.a.	Site Health & Safety Plan for Continued Work (no cost to FDEP)	Per Site	1	$ -	$ -	0	0	$ -	1
3-1.	Mobilization, Light Duty Vehicle (car or 1/2 ton truck) - ≤ 100 miles each way	Per Round Trip	3	$ 599.00	$ 1,797.00	0	0	$ -	3
20-6.	Scientist/Technical Specialist (Key)	Per Hour	3	$ 97.00	$ 291.00	0	0	$ -	3
		RETAINAGE			$ 78.30	$ -		$ -	$ 78.30
		SUBTOTAL			$ 2,088.00	$ -		$ -	$ 2,088.00
Task 2									
1-4.	Permit Fees (actual fee only, cost to obtain permit is included in applicable pay items)	Reimbursable*	500	$ 1.00	$ 500.00	0	0	$ -	500
1-5.	Off-Site Property Access Agreement	Per Agreement	1	$ 459.00	$ 459.00	0	0	$ -	1
1-7.	6% Handling Fee for Cost Reimbursable Items	% Surcharge	18999.47	$ 0.06	$ 1,139.97	0	0	$ -	18999.47
3-1.	Mobilization, Light Duty Vehicle (car or 1/2 ton truck) - ≤ 100 miles each way	Per Round Trip	3	$ 599.00	$ 1,797.00	0	0	$ -	3
3-3.	Heavy Duty/Stakebed Truck (3/4 ton +) - ≤ 100 miles each way	Per Round Trip	3	$ 675.00	$ 2,025.00	0	0	$ -	3
3-5.	Work Trailer - ≤ 100 miles each way	Per Round Trip	2	$ 191.00	$ 382.00	0	0	$ -	2
3-9.a.	Drill Rig and Support Vehicles Mobilization (hollow stem auger, mud rotary or sonic) - ≤ 100 miles each way	Per Round Trip	1	$ 1,235.00	$ 1,235.00	0	0	$ -	1
3-17.	Mini Excavator/Loader (BobcatTM) Mobilization - ≤ 100 miles each way	Per Round Trip	1	$ 270.00	$ 270.00	0	0	$ -	1
5-1.a.1.	Split Spoon Sampling – 2 foot (during boring) < 50 feet	Per Spoon	40	$ 39.90	$ 1,596.00	0	0	$ -	40
5-9.	HSA or MR Boring, > 6 to 10 inch diameter, < 50 foot total depth	Per Foot	152	$ 34.50	$ 5,244.00	0	0	$ -	152
6-2.a.	Well Installation - 2 inch diameter (vertical)	Per Foot	152	$ 38.80	$ 5,897.60	0	0	$ -	152
6-2.b.	Well Installation - 2 inch diameter (horizontal, by trenching, not directional drilling)	Per Foot	75	$ 58.00	$ 4,350.00	0	0	$ -	75
8-6.	Soil/Sediment Sample Collection	Per Sample	1	$ 59.00	$ 59.00	0	0	$ -	1
9-2.	Soil, BTEX + MTBE (EPA 8021 or EPA 8260)	Per Sample	1	$ 58.00	$ 58.00	0	0	$ -	1
9-8.	Soil, Total Recoverable Petroleum Hydrocarbons (FL-PRO)	Per Sample	1	$ 88.00	$ 88.00	0	0	$ -	1
9-11.	Soil, Arsenic (EPA 6010 or EPA 6020)	Per Sample	1	$ 14.50	$ 14.50	0	0	$ -	1
9-12.	Soil, Cadmium (EPA 6010 or EPA 6020)	Per Sample	1	$ 14.50	$ 14.50	0	0	$ -	1
9-13.	Soil, Chromium (EPA 6010 or EPA 6020)	Per Sample	1	$ 14.50	$ 14.50	0	0	$ -	1
9-14.	Soil, Lead (EPA 6010 or EPA 6020)	Per Sample	1	$ 14.50	$ 14.50	0	0	$ -	1
12-6.	Transport and Disposal of Petroleum Impacted Soil (includes drum)	Per Drum	9	$ 208.40	$ 1,875.60	0	0	$ -	9
12-7.	Transport Petroleum Impacted Soil (bulk) ≤ 100 miles	Per Ton	19	$ 24.30	$ 461.70	0	0	$ -	19
12-9.	Disposal of Petroleum Impacted Soil at a Landfill (bulk) ≤ 450 tons	Per Ton	19	$ 37.80	$ 718.20	0	0	$ -	19
12-17.	Delivery, Pick Up and Rental of 20 Cubic Yard Roll-Off Container	Per Week	1	$ 1,160.00	$ 1,160.00	0	0	$ -	1
12-18.	Additional Rental of 20 Cubic Yard Roll-Off Container	Per Week	1	$ 270.00	$ 270.00	0	0	$ -	1
13-5.	Crushed Lime Rock Cover - 2 inch thickness	Per Square Foot	2142	$ 2.95	$ 6,318.90	0	0	$ -	2142
15-1.a.	Trenching and Installation of 1-10 Plumbing (and Electrical) Lines in Trench	Per Linear Foot of Trench	155	$ 114.45	$ 17,739.75	0	0	$ -	155

Petroleum Contamination Site Response Action Services
SCHEDULE OF PAY ITEMS INVOICE RATE SHEET

			PO Rate Sheet			Previously Invoiced	This Invoice		Balance
PAY ITEM	DESCRIPTION	UNIT OF MEASURE	UNITS	NEGOTIATED ITEM PRICE	TOTAL EXTENDED PRICE	UNITS	UNITS	EXTENDED PRICE	UNITS
15-1.b.	Trenching and Installation of 11 - 20 Lines	Per Linear Foot of Trench	30	$ 129.50	$ 3,885.00	0	0	$ -	30
15-3.	Plumbing and Electrical Materials/Equipment Installed in Trench (If FDEP authorizes, submit quote(s) with Change Order)	Reimbursable*	2724.23	$ 1.00	$ 2,724.23	0	0	$ -	2724.23
15-8.	Utility Drop	Reimbursable*	3897.24	$ 1.00	$ 3,897.24	0	0	$ -	3897.24
15-9.	Utility Connection	Reimbursable*	11878	$ 1.00	$ 11,878.00	0	0	$ -	11878
19-24.	Remedial Action Interim Report	Per Report	1	$ 739.00	$ 739.00	0	0	$ -	1
		RETAINAGE			$ 2,880.98	$ -		$ -	$ 2,880.98
		SUBTOTAL			$ 76,826.19	$ -		$ -	$ 76,826.19
Task 3									
3-1.	Mobilization, Light Duty Vehicle (car or 1/2 ton truck) - ≤ 100 miles each way	Per Round Trip	4	$ 599.00	$ 2,396.00	0	0	$ -	4
3-9.a.	Drill Rig and Support Vehicles Mobilization (hollow stem auger, mud rotary or sonic) - ≤ 100 miles each way	Per Round Trip	1	$ 1,235.00	$ 1,235.00	0	0	$ -	1
5-9.	HSA or MR Boring, > 6 to 10 inch diameter, < 50 foot total depth	Per Foot	12	$ 34.50	$ 414.00	0	0	$ -	12
6-2.a.	Well Installation - 2 inch diameter (vertical)	Per Foot	12	$ 38.80	$ 465.60	0	0	$ -	12
8-1.	Monitoring Well Sampling with Water Level, ≤ 100 foot depth	Per Well	6	$ 275.40	$ 1,652.40	0	0	$ -	6
8-11.	Electronic Data Deliverables (EDD)	Per Sampling Event	1	$ 73.00	$ 73.00	0	0	$ -	1
9-27.	Water, BTEX + MTBE (EPA 602, EPA 624, EPA 8021 or EPA 8260)	Per Sample	8	$ 57.00	$ 456.00	0	0	$ -	8
9-30.	Water, Polycyclic Aromatic Hydrocarbons, including 1-methylnaphthalene + 2-methylnaphthalene (EPA 610 [HPLC], EPA 625, EPA 8270 or EPA 8310)	Per Sample	8	$ 113.00	$ 904.00	0	0	$ -	8
9-68.	Air, Total Petroleum Hydrocarbons (EPA Method 18 or TO-3)	Per Sample	9	$ 118.00	$ 1,062.00	0	0	$ -	9
15-4.b.	System Installation/Integration/Startup - 1 Technology Component - 11-20 Recovery/Treatment Points	Per Startup	1	$ 20,250.00	$ 20,250.00	0	0	$ -	1
15-5.	System Installation/Integration/Startup – Addition of 1 Technology Component	Per Additional Tech Component	1	$ 2,592.00	$ 2,592.00	0	0	$ -	1
19-19.	Remedial Action Startup Report	Per Report	1	$ 3,180.00	$ 3,180.00	0	0	$ -	1
21-6.b.	P.E. Project Oversight for Remediation System Integration and Startup - Medium System	Per System	1	$ 2,265.00	$ 2,265.00	0	0	$ -	1
21-29.	P.E. Review, Evaluation and Certification of As-Built Drawings (P.E. sealed red lined modifications)	Per Set of Drawings	1	$ 388.00	$ 388.00	0	0	$ -	1
		RETAINAGE			$ 1,399.99	$ -		$ -	$ 1,399.99
		SUBTOTAL			$ 37,333.00	$ -		$ -	$ 37,333.00
Task 4									
1-7.	6% Handling Fee for Cost Reimbursable Items	% Surcharge	3600	$ 0.06	$ 216.00	0	0	$ -	3600
3-1.	Mobilization, Light Duty Vehicle (car or 1/2 ton truck) - ≤ 100 miles each way	Per Round Trip	4	$ 599.00	$ 2,396.00	0	0	$ -	4
8-1.	Monitoring Well Sampling with Water Level, ≤ 100 foot depth	Per Well	6	$ 275.40	$ 1,652.40	0	0	$ -	6
8-11.	Electronic Data Deliverables (EDD)	Per Sampling Event	1	$ 73.00	$ 73.00	0	0	$ -	1
9-27.	Water, BTEX + MTBE (EPA 602, EPA 624, EPA 8021 or EPA 8260)	Per Sample	8	$ 57.00	$ 456.00	0	0	$ -	8
9-30.	Water, Polycyclic Aromatic Hydrocarbons, including 1-methylnaphthalene + 2-methylnaphthalene (EPA 610 [HPLC], EPA 625, EPA 8270 or EPA 8310)	Per Sample	8	$ 113.00	$ 904.00	0	0	$ -	8
9-68.	Air, Total Petroleum Hydrocarbons (EPA Method 18 or TO-3)	Per Sample	15	$ 118.00	$ 1,770.00	0	0	$ -	15
17-2.	System O&M Package - Medium	Per Month	3	$ 3,345.00	$ 10,035.00	0	0	$ -	3
18-20.	AS/SVE System - Medium - Long Term > 6 mos.	Per Month	3	$ 5,940.00	$ 17,820.00	0	0	$ -	3
18-36.	Carbon Off Gas Treatment - Add On - Medium - Short Term ≤ 6 mos.	Per Month	3	$ 777.00	$ 2,331.00	0	0	$ -	3
19-21.	Operation & Maintenance Report, Quarterly or Non-Annual	Per Report	1	$ 2,210.00	$ 2,210.00	0	0	$ -	1

Petroleum Contamination Site Response Action Services
SCHEDULE OF PAY ITEMS INVOICE RATE SHEET

			PO Rate Sheet			Previously Invoiced	This Invoice		Balance
PAY ITEM	DESCRIPTION	UNIT OF MEASURE	UNITS	NEGOTIATED ITEM PRICE	TOTAL EXTENDED PRICE	UNITS	UNITS	EXTENDED PRICE	UNITS
21-8.	P.E. Project Oversight for Remediation System Operation and Maintenance	Per Month	3	$ 380.00	$ 1,140.00	0	0	$ -	3
22-1.	POWER BILL (ESTIMATED AT $1200/MONTH or 12000 total kWh x $.10 = $1200)	Reimbursable*	3600	$ 1.00	$ 3,600.00	0	0	$ -	3600
23-1.	Contingent Funding - Allowance only to be used as offset for field change orders	NOT BILLABLE	7000	$ 1.00	$ 7,000.00	n/a	n/a	n/a	7000
		RETAINAGE			$ 1,935.13	$ -		$ -	$ 1,935.13
		SUBTOTAL			$ 51,603.40	$ -		$ -	$ 51,603.40
		TOTAL COST			$ 167,850.59	$ -		$ -	$ 167,850.59
Version: CS3.0				**Total Cost Less Savings:**	**$ 125,887.94**	**$ -**		**$ -**	**$ 125,887.94**
				Owner Cost Share:	$ -	$ -		$ -	$ -
				FDEP Cost Share:	$ 125,887.94	$ -		$ -	$ 125,887.94
				Retainage:	$ 6,294.40	$ -		$ -	$ 6,294.40
				FDEP Less Retainage:	$ 119,593.54	$ -		$ -	$ 119,593.54

Site Manager Approval: _____

Print Name

_____

Signature

_____

Date of Review Letter

November 3, 2022

Cassandra Laviani
Florida Department of Health
Pinellas County
8751 Ulmerton Road
Largo, Florida 33771

RE: Supplemental Site Assessment Report
Bobs Filtered Oil Company
2700 Lan O Lakes Blvd.
Land O Lakes, Pasco County, Florida
FDEP Facility ID #51/8841173

Dear Ms. Laviani:

FRS Environmental Remediation, Inc., dba Montrose Environmental Solutions (Montrose) has completed interim site assessment activities at the above referenced facility. Pertinent site features are depicted on Figure 1.

SITE HISTORY

The Bobs Filtered Oil Company facility is located at 2700 Land O Lakes Blvd. Land O Lakes, Florida. The facility contains four 4,000-gallon unregulated Above ground Storage Tanks (ASTs). A Discharge Reporting Form (DRF) was filed for a March 15, 1991 discharge when a liquid detector indicated a release had occurred. Analytical groundwater results confirmed the discharge. The cause and quantity of the discharge were listed as unknown in the DRF. Assessment began in 1993 and was performed through 2012. Based on the most recent assessment data, one soil boring contains concentrations above Cleanup Target Levels. Groundwater contamination is also present at the site above Cleanup Target Levels.

FIELD ACTIVITIES

Monitoring Well Installation and Construction

On October 24, 2022, one shallow groundwater monitoring well (MW-16) was installed at the location shown on Figure 1. The monitoring well was installed to a total depth of 12 feet bls and constructed with two feet of 2-inch diameter schedule 40 PVC well riser and ten feet of 2-inch diameter factory slotted well screen. After installation, the wells were purged onto an impervious surface until free of visible fines and completed flush to grade with a traffic rated manhole and a concrete well pad. A copy

of the field notes, soil boring log, and well construction and development log are included with Appendix A.

Monitoring Well Sampling

On October 27, 2022, Montrose personnel mobilized to the site and collected groundwater samples from monitoring wells MW-1, MW-2, MW-3R, MW-8D, MW-9, MW-11R, MW-13R, MW-14, MW-15, and MW-16. All sampling procedures were performed in accordance with the Department of Environmental Protection's Standard Operating Procedures for Groundwater Sampling (DEP-SOP-001/01, FS, 2200). All groundwater samples were collected using a peristaltic pump into laboratory supplied containers, placed on ice in a storage cooler, and transported to a certified lab for analysis. The groundwater samples were laboratory analyzed in accordance with one or more of the following: EPA Method 8260 for BTEX/MTBE, EPA Method 8270 for PAHs, and FL-PRO for TRPH. Field notes, groundwater sampling logs, and equipment calibration logs are included in Appendix A.

Groundwater Analytical Results

Groundwater analytical results from the October 27, 2022 sampling event indicated that the samples collected from MW-1, MW-3R, MW-11R, and MW-15 contained petroleum constituent concentrations above applicable Groundwater Cleanup Target Levels (GCTLs). MW-11R also contained concentrations above Natural Attenuation Default Concentrations (NADCs). All other concentrations and concentrations in all other monitoring wells sampled were below GCTLs and/or laboratory Method Detection Limits (MDLs). Analytical results are summarized on Table 1 and are illustrated on Figure 2. A copy of the laboratory analytical report and chain of custody are included in Appendix B.

Water Table Measurements and Groundwater Flow

Montrose personnel collected depth-to-water measurements prior to groundwater sampling activities. The depth-to-water measurements and groundwater elevation calculations are summarized in Table 2. Based on the current data, groundwater flow in the surficial aquifer was generally to the west-southwest. A groundwater contour map is included as Figure 3.

CONCLUSIONS & RECOMMENDATIONS

Based on groundwater analytical results, the following conclusions and recommendations can be made regarding this site at this time:

- Groundwater impacts were identified above GCTLs and/or NADCs in the samples collected from MW-1, MW-3R, MW-11R, and MW-15.
- The groundwater plume is delineated vertically and horizontally to the north, south, and east reasonably delineated to the west. Additionally, access could not be gained on the Duke Energy property to install a further downgradient well.

- Based on the current data, Montrose recommends proceeding with task 3 (pre-RAO teleconference) of the current purchase order.

If you have any questions or comments, please contact this office at (813) 623-1557.

Sincerely,

Travis Both

Travis Both, P.G.
Project Manager
FL License No. 3004
Date: 11/3/2022



FIGURES

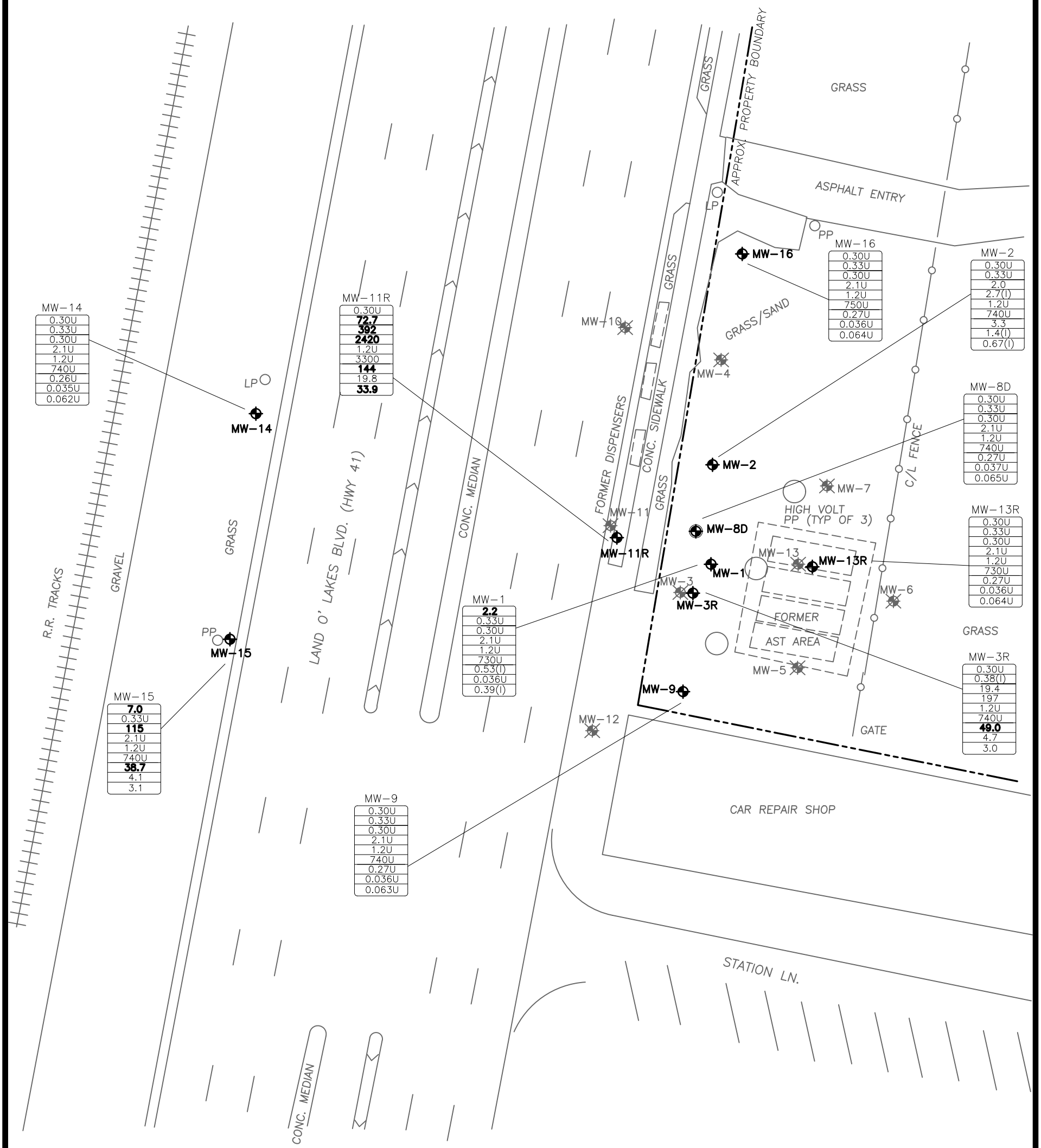
Florida Office
Environmental Solutions
120 E. Dr. MLK Jr. Blvd.
Tampa, FL 33603

T: 813.623.1557
F: 813.623.6320
info@montrose-env.com
www.montrose-env.com

Global Headquarters
1 Park Plaza
Suite 1000
Irvine, CA 92614

T: 949.988.3500
F: 949.988.3514
info@montrose-env.com
www.montrose-env.com

FIGURE 2
GROUNDWATER ANALYICAL SUMMARY MAP (10-27-22)
BOB'S FILTERED OIL COMPANY
COCOA, FLORIDA



FDEP FAC. #51/8841173
2700 LAND O' LAKES BLVD., LAND O' LAKES, FL.

LEGEND

- MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- ABANDONED/DESTROYED WELL LOCATION

BENZENE (ug/L)	**1.6**
TOLUENE (ug/L)	0.30U
ETHYLBENZENE (ug/L)	1.6U
TOTAL XYLENES (ug/L)	0.71U
MTBE (ug/L)	2.1U
TRPH (ug/L)	730U
NAPHTHALENE (ug/L)	1.3(I)
1-METHYLNAPHTHALENE (ug/L)	0.19U
2-METHYLNAPHTHALENE (ug/L)	1.2(I)

(I) = ANALYTE DETECTED BELOW QUANTITATION LIMITS
U = ANALYTE NOT DETECTED ABOVE METHOD DETECTION LIMITS
NA = NOT ANALYZED
BOLD DATA INDICATES GCTL EXCEEDANCE

N
0 30
SCALE (FEET)

MONTROSE ENVIRONMENTAL

TABLES

Florida Office
Environmental Solutions
120 E. Dr. MLK Jr. Blvd.
Tampa, FL 33603

T: 813.623.1557
F: 813.623.6320
info@montrose-env.com
www.montrose-env.com

Global Headquarters
1 Park Plaza
Suite 1000
Irvine, CA 92614

T: 949.988.3500
F: 949.988.3514
info@montrose-env.com
www.montrose-env.com

TABLE 1: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY

Facility Name: Bobs Filtered Oil Company
Facility ID#: 51/8841173

Analytical Results = ug/L
NA = Not Analyzed
I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U = Compound was analyzed but not detected
J = Estimated Result

Sample Location	Date	Benzene	Ethylbenzene	MTBE	Toluene	Total Xylenes	Lead	EDB	FL-PRO TRPH	Naphthalene	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
GCTLs		**1**	**30**	**20**	**40**	**20**	**15**	**0.02**	**5000**	**14**	**28**	**28**	**20**	**210**	**2100**	**0.05**	**0.2**	**0.05**	**210**	**0.5**	**4.8**	**0.005**	**280**	**280**	**0.05**	**210**	**210**
NADCs		**100**	**300**	**200**	**400**	**200**	**150**	**2**	**50000**	**140**	**280**	**280**	**200**	**2100**	**21000**	**5**	**20**	**5**	**2100**	**50**	**480**	**0.5**	**2800**	**2800**	**5**	**2100**	**2100**
MW-1	3/16/2022	**1.6**	0.30 U	1.6 U	0.71 U	2.1 U			730 U	1.3 I	0.19 U	1.2 I	0.019 U	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.017 U	0.024 U	0.019 U	0.032 U
	10/27/2022	**2.2**	0.30 U	1.2 U	0.33 U	2.1 U			730 U	0.53 I	0.036 U	0.39 I	0.018 U	0.029 U	0.019 U	0.019 U	0.020 U	0.025 U	0.022 U	0.023 U	0.025 U	0.024 U	0.017 U	0.016 U	0.023 U	0.018 U	0.030 U
MW-2	3/16/2022	0.30 U	**40.5**	1.6 U	0.71 U	**101**			2100	**67.9**	18.6	**30.0**	0.081 I	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.033 I	0.024 U	0.019 U	0.032 U
	10/27/2022	0.30 U	2.0	1.2 U	0.33 U	2.7 I			740 U	3.3	1.4 I	0.67 I	0.018 U	0.029 U	0.019 U	0.019 U	0.020 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.017 U	0.016 U	0.022 U	0.018 U	0.030 U
MW-3R	3/16/2022	0.30 U	**253**	1.6 U	2.6	**1450**			3900	**263**	**29.0**	**55.9**	0.062 I	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.038 I	0.024 U	0.024 I	0.032 U
	10/27/2022	0.30 U	19.4	1.2 U	0.38 I	**197**			2000	**49.0**	4.7	3.0	0.039 I	0.029 U	0.019 U	0.019 U	0.020 U	0.026 U	0.022 U	0.023 U	0.025 U	0.024 U	0.017 U	0.031 I	0.023 U	0.018 U	0.030 U
MW-8D	3/16/2022	0.30 U	0.30 I	1.6 U	0.71 U	2.1 U			740 U	0.31 I	0.19 U	0.17 U	0.019 U	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.017 U	0.024 U	0.019 U	0.032 U
	10/27/2022	0.30 U	0.30 U	1.2 U	0.33 U	2.1 U			740 U	0.27 U	0.037 U	0.065 U	0.018 U	0.029 U	0.019 U	0.019 U	0.020 U	0.026 U	0.022 I	0.023 U	0.025 U	0.024 U	0.017 U	0.016 U	0.023 U	0.018 U	0.030 U
MW-9	3/16/2022	0.30 U	0.30 U	1.6 U	0.71 U	2.1 U			740 U	0.29 U	0.19 U	0.17 U	0.78	0.031 U	0.16 I	0.061 I	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.24 I	0.74	0.024 U	0.21 I	0.23 I
	10/27/2022	0.30 U	0.30 U	1.2 U	0.33 U	2.1 U			740 U	0.27 U	0.036 U	0.063 U	0.018 U	0.029 U	0.018 U	0.018 U	0.019 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.017 U	0.016 U	0.022 U	0.018 U	0.030 U
MW-11R	3/16/2022	0.30 U	**1280**	1.6 U	**234**	**6000**			**5900**	**382**	**30.6**	**56.0**	0.081 I	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.048 I	0.024 U	0.030 I	0.032 U
	10/27/2022	0.30 U	**392**	1.2 U	**72.7**	**2420**			3300	**144**	19.8	**33.9**	0.072 I	0.029 U	0.019 U	0.019 U	0.020 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.017 U	0.032 I	0.022 U	0.018 U	0.030 U
MW-13R	3/16/2022						4.6 U	0.0078 U																			
	3/30/2022	0.30 U	0.30 U	1.6 U	0.71 U	2.1 U	4.6 U	0.0078 U	720 U	0.29 U	0.19 U	0.17 U	0.019 U	0.031 U	0.20 U	0.020 U	0.021 U	0.027 U	0023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.017 U	0.024 U	0.019 U	0.032 U
	10/27/2022	0.30 U	0.30 U	1.2 U	0.33 U	2.1 U			730 U	0.27 U	0.036 U	0.064 U	0.018 U	0.029 U	0.021 I	0.019 U	0.020 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.017 U	0.016 U	0.022 U	0.018 U	0.030 U
MW-14	3/16/2022	0.30 U	0.54 I	1.6 U	0.71 U	2.1 U			730 U	0.29 U	0.19 U	0.17 U	0.019 U	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.017 U	0.024 U	0.019 U	0.032 U
	10/27/2022	0.30 U	0.30 U	1.2 U	0.33 U	2.1 U			740 U	0.26 U	0.035 U	0.062 U	0.017 U	0.028 U	0.018 U	0.018 U	0.019 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.016 U	0.016 U	0.022 U	0.017 U	0.029 U
MW-15	3/16/2022	**24.0**	**410**	1.6 U	0.71 U	5.6			1500	**79.0**	7.3	5.0	0.022 I	0.031 U	0.020 U	0.020 U	0.021 U	0.027 U	0.023 U	0.024 U	0.026 U	0.025 U	0.018 U	0.017 U	0.024 U	0.019 U	0.032 U
	10/27/2022	**7.0**	**115**	1.2 U	0.33 U	2.1 U			740 U	**38.7**	4.1	3.1	0.018 U	0.029 U	0.019 U	0.019 U	0.020 U	0.025 U	0.021 U	0.022 U	0.024 U	0.023 U	0.017 U	0.016 U	0.022 U	0.018 U	0.030 U
MW-16	10/27/2022	0.30 U	0.30 U	1.2 U	0.33 U	2.1 U			750 U	0.27 U	0.036 U	0.064 U	0.018 U	0.029 U	0.019 U	0.019 U	0.020 U	0.025 U	0.022 U	0.023 U	0.024 U	0.023 U	0.017 U	0.016 U	0.023 U	0.018 U	0.030 U

Site 4 –

Ferris Farms

ECT
Environmental Consulting & Technology, Inc.

RECEIVED
DEPARTMENT OF
ENVIRONMENTAL PROTECTION
05 JUL 13 AM 11:59
BUREAU OF PETROLEUM
STORAGE SYSTEMS
TEAM 3

July 12, 2005
ECT No. 041009-0100

Mr. Robert Brown
Petroleum Cleanup Section 3
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Fourth Quarter Post Remedial Monitoring Report
Ferris Farms
7419 U.S. Highway 41 North (A.K.A. 7427 Land O' Lakes Blvd.)
Land O' Lakes, Florida
FDEP Facility Identification No. 518942927
Work Order No. 2005-93-W05429

Dear Mr. Brown:

Environmental Consulting & Technology, Inc. (ECT), is pleased to submit this report summarizing the fourth quarter of post remedial monitoring (PRM) event two of the referenced work order, at the referenced facility. The limited scope remedial action plan modification (LSRAPM) was approved in Florida Department of Environmental Protection (FDEP) correspondence dated February 22, 2002. The remediation system consists of a mobile biosparge treatment system and four sparge wells. The system was started up in April 2003. System startup, operation and maintenance and PRM were summarized in subsequent letter reports.

The fourth quarter of PRM was conducted under the referenced work order on February 18, 2005, and included the following tasks:

- Measurement of ground water elevation data for existing wells onsite.
- Collection of representative ground water samples from existing ground water monitoring wells IMW-2R, MW-3R, MW-10R, MW-11, and MW-12R for U.S. Environmental Protection Agency (EPA) Methods 8021B and 8310 parameters.
- Post sampling operation of mobile treatment system to check system condition.
- Preparation of a quarterly natural attenuation PRM report summarizing activities conducted under the referenced work order.

Appendix A contains copies of the referenced work order and any associated verbal change orders. Figure 1 presents the site location map. Figure 2 presents the existing site map.

3701 Northwest
98th Street
Gainesville, FL
32606

(352)
332-0444

FAX(352)
332-6722

An Equal Opportunity/ Affirmative Action Employer

M:\acad\041009\Location.dwg

Jun 27, 2005 - 9:30am by jroberts

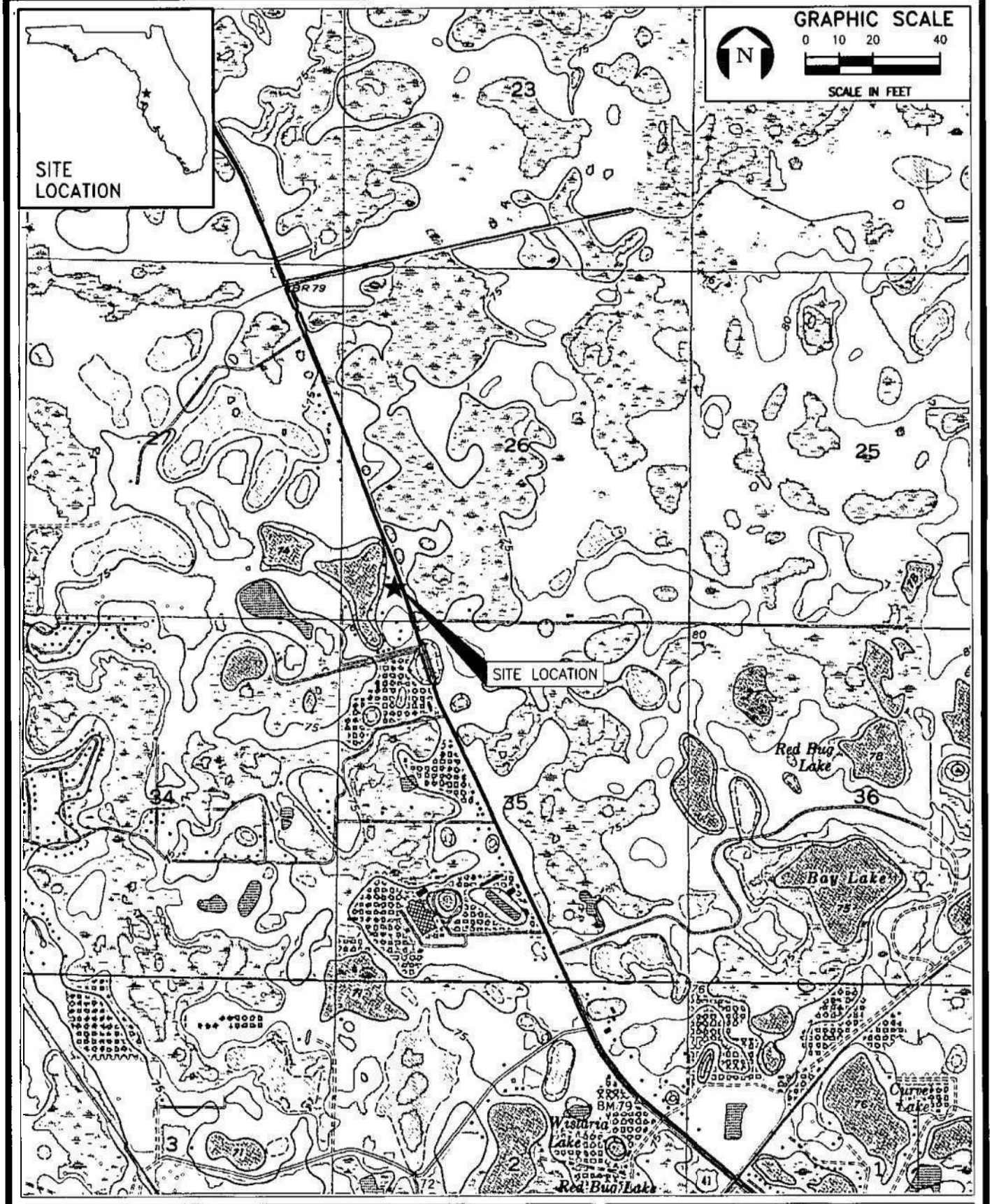


FIGURE 1.

SITE LOCATION MAP

FERRIS FARMS

Sources: USGS Quad: Ehren, FL, 1988; ECT, 2004.

ECT

Environmental Consulting & Technology, Inc.

Site 6 –

BRW Contracting

SENT VIA EMAIL NOVEMBER 6, 2023

TAMMY BLANKENSHIP TAMMY@BRWCONTRACTING.ORG
BRW CONTRACTING INC
2522 HUNT RD
LAND O LAKES, FL 34638

Re: CHAPTER(S) 62-761/762, F.A.C., RETURN TO COMPLIANCE LETTER
PINELLAS COUNTY – REGULATED STORAGE TANKS
BRW CONTRACTING INC
2522 HUNT RD LAND O LAKES PASCO
DEP FACILITY ID# 51/9811975

Dear Mrs. Blankenship:

The Florida Department of Health in Pinellas County on behalf of the Florida Department of Environmental Protection (FDEP), personnel cited a Non-Compliance issue at the above-referenced facility on January 27, 2022. Based on the records received on November 3, 2023, the facility was determined to have returned to compliance with the Department's Storage Tank rules and regulations.

The Department appreciates your efforts to maintain this facility in compliance with state and federal rules. Should you have any questions or comments, please contact me at (727) 485-1817, and/or via my e-mail at **George.Juaristic@flhealth.gov**.

Sincerely,

George K. Juaristic
Environmental Specialist II
Pollutant Storage Tank Program

Site 7 –

Liberty Cleaners / HR & Patel

FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

Drycleaning Facility or Wholesale Supply Facility

Submission Receipt

10/01/2020

Account Owner: DILIP PATEL HR & PATEL INC

STCM ID: 48910

Dear **DILIP PATEL HR & PATEL INC**,

Your request for a copy of your Drycleaning Certificate is complete and a copy of your Certificate is attached.

If you have any questions or need further assistance, please contact Drycleaning Registration by e-mail at TankRegistration@dep.state.fl.us or by phone at (850) 245-8839.

Please retain a copy of this confirmation for your records.

Sincerely,

Drycleaning Registration

Florida Department of Environmental Protection

Registration Form

Drycleaning Facilities and Wholesale Supply Facilities

DEP Form: DC 1

Form Title: Drycleaning Facility\Wholesale Supply Facility Registration Form

Revised Form: 1/24/18

(FDEP Use Only)

1. **Registration Type:** New Registration ☐ Revision ☑ **Facility ID#** _____
2. **Facility Type:** Drycleaning Facility ☐ Wholesale Supply Facility ☐
3. **Facility Status:** Active ☐ Closed ☐ Dry Drop Off ☐

DATE facility CLOSED or changed status to Dry Drop Off: _____

DATE facility began operation: _____

4. **FACILITY Name:** _____

Address: _____

City, County, Zip: _____

Contact Person: _____ Telephone: _____

5. **OPERATOR Name:** _____

Address: _____

City, State, Zip: _____

Operator Signature: _____ Date: _____

Telephone: _____ E-mail (if available): _____

6. **OWNER / COMPANY Name:** DILIP PATEL HR & PATEL INC

CONTACT Name: _____

Address: 2412 LAND O LAKES BLVD

City, State, Zip: LAND O LAKES, FL, 34639

Owner Signature: *Dilip Patel* Date: 10/01/2020

Telephone: (813) 949-3454 Email (if available): DPATEL58@HOTMAIL.COM

Federal Employer Identification Number (FEIN) of Owner: 59-3539322

7. **REAL PROPERTY OWNER Name:** _____

Address: _____

City, State, Zip: _____

Property Owner Signature: _____ Date: _____

Contact Person: _____ Telephone: _____

E-mail (if available): _____

8. **Solvents Currently Used or Sold (check all appropriate):**

Perchloroethylene (PCE, PERC): ☐ (2)	Petroleum (DF2000, Mineral Spirits, Stoddard Solvent): ☐ (4)
GreenEarth: ☐ (5)	Other (Specify): ☐ _____ (6)

* If Necessary - attach a copy of any Notice Letter(s) for Joint Registration (Form DC 2).
E-mail: TankRegistration@dep.state.fl.us or **Mail**: Florida Department of Environmental Protection, Drycleaning Registration MS#4525, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

***** RETAIN A COPY FOR YOUR RECORDS *****

Instructions for Drycleaning Facility \ Wholesale Supply Facility

Registration Form

Section 376.303, Florida Statutes, requires joint registration by the operator, owner, and real property owner of drycleaning and wholesale supply facilities. Submittal of the completed Registration Form (Form DC 1) and payment of a $100 initial registration fee is required for all new drycleaner and wholesale supply facilities.

Changes or revisions to a current registration may be provided through submittal of a revised registration form. There is no fee associated with revising a current registration.

NEW FACILITIES should submit the registration form (Form DC 1) to the department 45 days prior to the facility opening. Once the registration form is received the Department will send an invoice for the initial $100 registration fee. Upon payment of the initial registration fee the department will issue the certificate of registration. This certificate of registration will be necessary to purchase drycleaning solvents.

The Registration Form may be mailed or e-mailed to the department at:
E-mail: tankregistration@dep.state.fl.us
Mail: Florida Department of Environmental Protection
Drycleaning Registration MS#4525
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Definitions for Registration Form (Form DC 1)

Registration Type: Check the appropriate box to indicate a NEW REGISTRATION or a REVISION of previous registration.

Facility Type: Check the appropriate box according to the following definitions:

Drycleaning Facility - A commercial establishment that operates for the primary purpose of drycleaning clothing and other fabrics using a process that involves any use of drycleaning solvents (see definition for drycleaning solvents below). Drycleaning facilities include laundry facilities that use drycleaning solvents as part of their cleaning process. Drycleaning facilities do not include uniform rental companies, linen supply companies, hospitals, hotels, or resorts. Dry drop-off facilities are not required to register.

Wholesale Supply Facility - A commercial establishment that supplies drycleaning solvents (see definition for drycleaning solvents below) to drycleaning facilities.

Drycleaning Solvents - Any and all non-aqueous solvent(s) used in the cleaning of clothing or other fabrics, including perchloroethylene and petroleum-based solvents.

Facility Information: Provide the name, physical address of the drycleaning facility or wholesale supply facility, contact person, phone number, and e-mail if available.

OPERATOR – the person operating the drycleaning facility or wholesale supply facility, whether by lease, contract, or other form of agreement. The OPERATOR must sign and date on the line provided.

OWNER / COMPANY Name - the person or entity owning a drycleaning facility or wholesale supply facility. Owner must include their 9-digit Federal Employer Identification Number. The OWNER must sign and date on the line provided.

REAL PROPERTY OWNER - the individual or entity that is vested with ownership, dominion, or legal or rightful title to the real property, or which has a ground lease interest in the real property, on which a drycleaning facility or wholesale supply facility is or has ever been located. The REAL PROPERTY OWNER must sign and date on the line provided.

Solvents Currently used or sold: Check the appropriate box(es) to indicate the solvent(s) currently being used or sold at this facility location.

Notice Letter(s) for Joint Registration: In the event that the owner, operator, or real property owner are unable to obtain the joint signatures as required by s. 376.303, F.S., then the owner, operator, or real property owner shall forward a copy of the Registration Form (Form DC1) and Notice Letter for Joint Registration (Form DC2) to each non-signing party by certified mail. The owner, operator, or real property owner shall submit to the Department a completed Registration Form (Form DC1) with the signatures then available, a copy of each Notice Letter for Joint Registration (Form DC2) and a copy of the return receipt for each Notice Letter.

REVISED Registrations may be mailed to the address provided above or e-mailed to the following:
E-MAIL: tankregistration@dep.state.fl.us

Questions on Drycleaning Solvent Cleanup Program: (850) 245-8705
Questions on Drycleaner Registration: (850) 245-8839

Site 12 –

CEMEX

Florida Department of Environmental Protection

Twin Towers Office Bldg. 2600 Blair Stone Road. Tallahassee, Florida 32399-

Division of Waste Management
Bureau of Petroleum Storage Systems

Storage Tank Facility Closure Site Inspection Report

Facility Information:

Facility ID: 8736685 County: PASCO

Inspection Date: 06/16/2015

Facility Type: C -Fuel user/Non-retail

Facility Name: CEMEX - LAND O' LAKES READY MIX
1714 N DALE MABRY HWY
LUTZ, FL 33549

Of Inspected ASTs: 1
USTs: 0
Mineral Acid Tanks: 0

Latitude: 28° 10' 58.3752"

Longitude: 82° 28' 1.6968"

LL Method: DPHO

Inspection Result:

Result : In Compliance

Description: Facility is In Compliance.

Financial Responsibility

Financial Responsibility: SELF-INSURANCE - LETTER FROM CHIEF FINANCIAL OFFICER

Effective Date: 04/15/2015 Expiration Date: 04/14/2016

Signatures:

TKPNPH - PINELLAS COUNTY HEALTH DEPARTMENT

Storage Tank Program Office

(727) 538-7277

Storage Tank Program Office Phone Number

George K. Juaristic
INSPECTOR NAME



INSPECTOR SIGNATURE

Jason Jones
REPRESENTATIVE NAME



REPRESENTATIVE SIGNATURE

Facility ID: 8736685

Owners of UST facilities are reminded that the Federal Energy Policy Act of 2005 requires Operator Training at all facilities by August 8, 2012. For further information please visit: http://www.dep.state.fl.us/waste/categories/tanks/pages/op_train.htm

Reviewed Records

Record Category	Record Type	From Date	To Date	Reviewed Record Comment
Two Years	Monthly Maint. Visual Examinations and Results	09/04/2014	06/03/2015	conducted at least once every 35 days with no problems noted
Two Years	Certificate of Financial Responsiblity	04/15/2015	04/14/2016	Self Insured

Site Visit Comments

06/16/2015

GKJ_
Site Visit Conducted By: George Juaristic
Representative Onsite: Jason Jones and Gator, CEMEX
Report Delivery Method: will email to Jason Jones

Inspection Type: Closure
Closure Inspection Covers: FDEP Tank ID #3 10,000-gallon d/w AST

Records Review:
Placard: on display; expires 6/30/2015

COFR:
Insurer: Self Insured Ready Mix USA, LLC
Date of Coverage: 4/15/2015 to 4/14/2016

Release Detection Method:
Monthly Maintenance Visual Examination: tank exterior, piping, tank interstice
Dates Checked: 09/04/2014 to 6/30/2015

Inspection Notes:
Reportedly, the tank was pumped out by Cliff Berry, Inc. and delivered to Cliff Berry, Inc in Tampa. Approximately 750-gallons of PCW were removed from the tank on 10/3/2013. The tank was visually inspected through the emergency vent. It was found to be clean and dry. The tank will be removed from site and delivered to FAC ID 9800785, 2975 S Lecanto Hwy, Lecanto, FL 34461. Jason Jones will notify this office once the tank is removed. The waste manifest and pictures are attached.

06/29/2015

GKJ_
Site Visit Conducted By: George Juaristic
Representative Onsite: none

Notes:
Arrived onsite and observed that the tank has been removed. Citrus County was notified that the AST is being delivered to the Lecanto plant.

Inspection Comments

Facility ID: 8736685

Inspection Comments

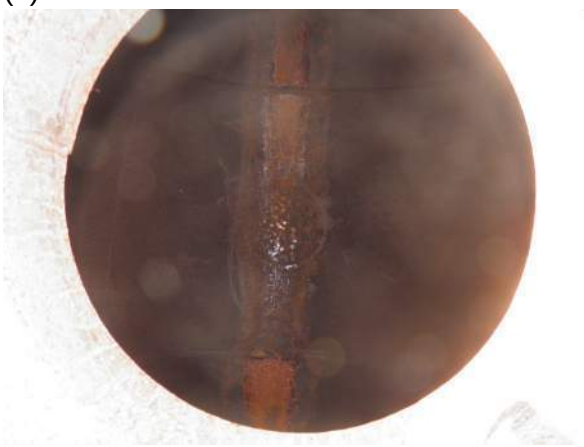
06/23/2015

22JUN2015.GKJ_Updated STRF submitted to tankregistration@dep.state.fl.us. Tank 3 status is now 'removed from site'.

Inspection Photos

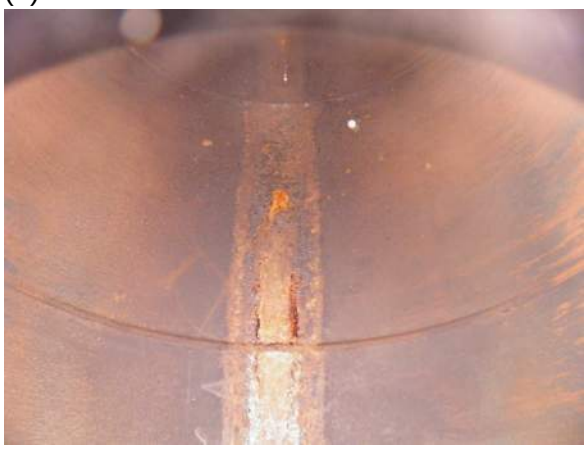
Added Date 06/29/2015

16JUN2015.GKJ_AST inspected through emer. vent (1)



Added Date 06/29/2015

16JUN2015.GKJ_AST inspected through emer. vent (2)



Added Date 06/29/2015

16JUN2015.GKJ_AST inspected through emer. vent (3)



Site 16 –

Morton Plant North bay

SENT VIA E-MAIL NOVEMBER 3, 2022

JIM TORTI JIM.TORTI@BAYCARE.ORG
BAYCARE
21808 HWY 54
LUTZ, FL 33549

Re: CHAPTER(S) 62-761/762, F.A.C., IN-COMPLIANCE LETTER
PINELLAS/PASCO COUNTY – REGULATED STORAGE TANK
MORTON PLT NORTH BAY RECOVERY CTR
21808 HWY 54 LUTZ **PASCO**
DEP FACILITY ID# 51/ 9201130

Dear Mr. Torti:

A storage tank routine compliance inspection and file review was conducted at the above noted facility September 12, 2022, by the Florida Department of Health in Pinellas County (FDOH-Pinellas), on behalf of the Florida Department of Environmental Protection (Department). Based on the information provided during the inspection, the facility was determined to be in compliance with the Department's storage tank rules and regulations. A copy of the inspection report is attached for your records.

The Department appreciates your efforts to maintain this facility in compliance with state and federal rules. Should you have any questions or comments, please contact George Juaristic at (727) 485-1817, and/or via my e-mail at **George.Juaristic@flhealth.gov**.

Sincerely,

George K. Juaristic
Environmental Specialist II
Pollutant Storage Tank Program

Site 17 –

7-Eleven Food Store #32714

SENT VIA E-MAIL **NOVEMBER 28, 2023**

DAVID PETERSEN DAVID.PETERSEN@7-11.COM
7-ELEVEN INC
PO BOX 711
DALLAS, TX 75221-711

Re: CHAPTER(S) 62-761/762, F.A.C., IN-COMPLIANCE LETTER
PINELLAS/PASCO COUNTY – REGULATED STORAGE TANKS
7-ELEVEN STORE #32714
2400 LAND O LAKES BLVD LAND O LAKES **PASCO**
DEP FACILITY ID# 51 / 9800845

Dear Mr. Petersen:

A storage tank routine compliance inspection and file review was conducted at the above noted facilities on November 13, 2023, by the Florida Department of Health in Pinellas County (FDOH-Pinellas), on behalf of the Florida Department of Environmental Protection (Department). Based on the information provided during the inspections, the facilities were determined to be in compliance with the Department's storage tank rules and regulations. A copy of the inspection report is attached for your records.

The Department appreciates your efforts to maintain this facility in compliance with state and federal rules. Should you have any questions or comments, please contact George Juaristic at (727) 485-1817, and/or via my e-mail at **George.Juaristic@flhealth.gov**.

Sincerely,

George K. Juaristic
Environmental Specialist II
Pollutant Storage Tank Program

EC: JOHN MEYER JOHN.MEYER@7-11.COM

Site 19 –

Former Majik Market

February 9, 2024

Mr. Scott Lashbrook.
Storage Tank Compliance & Petroleum Restoration Programs
Florida Department of Health - Pinellas County
8751 Ulmerton Road, Suite 2000
Largo, Florida 33771
Email: scott.lashbrook2@flhealth.gov

RE: Annual Natural Attenuation Monitoring Report
Majik Market #7394
2322 Land O' Lakes Boulevard
Lutz, Pasco County
FDEP Facility ID No.: 51/8520049
Eligible Discharge Date: (EDI)
Site Priority Score: 85
Purchase Order No.: C27133, Task #2
HCR Project No.: 123585.25.31

Dear Mr. Lashbrook:

Handex Consulting & Remediation - Southeast, LLC (HCR) is pleased to provide you with this Quarterly Natural Attenuation Monitoring (NAM) Report summarizing groundwater sampling for the above referenced site. The site plan depicting the locations of monitoring wells and known facilities onsite is included as **Figure 1**.

The site is located in the southwest quarter of Section 25, Township 26, and Range 18, in Pasco County, Florida. The facility currently operates as a CVS pharmacy but was formerly occupied by three 8,000-gallon underground storage tanks (USTs).

The USTs were reportedly installed at the site in 1985. Initially two of the tanks containing unleaded gasoline while the third tank containing leaded gasoline. In the fall of 1989, the tank used to store leaded gasoline was converted to store premium unleaded gasoline. The three USTs were removed from the site in December 1996.

HISTORICAL SITE ASSESSMENT SUMMARY

On July 20, 1988, a Discharge Notification Form (DNF) was filed for the site based on lab analysis of groundwater samples collected from onsite monitoring wells. A request was made on the same date (July 20, 1988) to enter the site into the EDI program. In an October 13, 1988 letter from the Department of Environmental Regulation, the discharge

was determined to be eligible for the EDI program. Under the former state reimbursement program, the site was initially assigned a rank of 36 out of 78 based on a score of 41.

The following is a summary of the historical assessment activities completed at the site by others:

- In April 1995 and October 1996, a Contamination Assessment Report (CAR) and CAR addendum were submitted for the site by others. These reports identified soil and groundwater impacts onsite.
- In February 1997, a UST/Source Removal Report was submitted detailing the removal of the tank system and subsequent soil sampling.
- Based on a road widening project, a report was submitted in April 1998 which summarized the excavation of approximately 285 tons of petroleum impacted soil and the treatment of approximately 1.1 million gallons of groundwater.
- Reports related to Remedial Action Plans were submitted between October 1998 and May 1999.
- From 1999 to 2003 multiple groundwater monitoring events were performed.

The following is a summary of the historical assessment activities completed at the site by Handex:

- Beginning with the field activities detailed in a General Site Assessment Report dated June 30, 2003, Handex began assessing the site.
- Various groundwater sampling events and well installations were conducted from 2003 to 2005.
- Between 2006 and 2011, a series of episodic sparge events followed by Post Active Remedial Monitoring (PARM) were completed.
- Since 2011, PARM and NAM has been completed at the site through the issuance of a series of work and purchase orders.

Under Purchase Order (PO) B299A0 issued to HCR on February 27, 2018, HCR conducted three semi-annual groundwater sampling events of monitoring wells MW-4, MW-5, and TW-1 in May 2018, November 2018, and May 2019. The three wells were sampled for BTEX/MTBE and PAHs during all three sampling events. TW-1 was not sampled in November 2018 due to sediment in the well. TW-1 was redeveloped on April 26, 2019 and subsequently sampled in May 2019. Concentrations in MW-4 were within GCTLs during all three semi-annual sampling events. Concentrations of ethylbenzene in MW-5 exceeded the GCTL during the November 2018 and May 2019 sampling events. Concentrations of naphthalene in MW-5 exceeded the GCTL during all three sampling events. Concentrations of dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene in MW-5 exceeded the GCTLs during the May 2019 sampling event. Concentrations of benzene in TW-1 exceeded the GCTL during the May 2018 and May 2019 sampling events. The

ethylbenzene concentration in TW-1 exceeded the GCTL during the May 2019 sampling event. Concentrations of naphthalene in TW-1 exceeded the GCTL during the May 2018 and May 2019 sampling events.

The FDEP issued PO #B69FC3 on February 5, 2020 to HCR to conduct three semi-annual groundwater sampling events. HCR collected groundwater samples from MW-4, MW-5, and TW-1 on July 8, 2020 (Task #2), January 5, 2021 (Task #3), and June 30, 2021 (Task #4). The three wells were sampled for BTEX/MTBE and PAHs during all three sampling events. MW-5 exceeded the GCTL for naphthalene (but was within the NADC) during the Task #4 sampling event. TW-1 exceeded the GCTL (but was within the NADC) for BTEX and PAH constituents during all three sampling events and exceeded the NADC for naphthalene during the Task #4 sampling event.

The FDEP issued PO #B9E07F on September 24, 2021 to HCR to conduct semi-annual groundwater sampling activities. On January 26, 2022, HCR mobilized to the site and collected Task #2 groundwater samples from monitoring wells MW-1, MW-3, MW-4, MW-5, and TW-1. MW-1 exceeded the GCTL for naphthalene but was within the NADC. TW-1 exceeded the GCTL (but was within the NADC) for BTEX and PAH constituents and exceeded the NADC for naphthalene. On July 13, 2022, HCR mobilized to the site and collected Task #3 groundwater samples from monitoring wells MW-1, MW-4, MW-5, and TW-1. TW-1 exceeded the GCTL (but was within the NADC) for benzene and ethylbenzene.

The FDEP issued PO # C27133 on September 12, 2023 to HCR to conduct three semi-annual groundwater sampling events.

The following summarizes Task #2 groundwater sampling activities conducted under the current PO.

GROUNDWATER SAMPLING

On December 13 and December 14, 2023 HCR mobilized to the site to conduct groundwater sampling activities. Due to scheduling of the maintenance-of-traffic (MOT) set-up, MW-1 and TW-1 were sampling on December 13, 2023 during daylight hours and MW-5 was sampled on December 14, 2023 during night-time hours.

HCR secured a general use permit from the Florida Department of Transportation (FDOT) for MOT set-up along Land O' Lakes Boulevard (US 41) for sampling of MW-5. As per the FDOT general use permit, MOT set-up along US 41 is allowed only during night-time hours. MOT was provided by Bob's Barricades. The FDOT general use permit is provided in **Appendix A**.

Groundwater sampling procedures were performed as outlined in FS-2200 of the FDEP Standard Operating Procedure (SOP) manual. Monitoring wells were purged by pumping until groundwater parameters (pH, temperature, conductivity, dissolved oxygen, and turbidity) stabilized or until five monitoring well volumes had been removed.

Groundwater samples were packed on ice and sent to Advanced Environmental Laboratories, Inc (AEL) for analysis. The collected groundwater samples from TW-1 were analyzed by Environmental Protection Agency (EPA) Method 8260 for benzene, toluene, ethylbenzene, total xylenes, and methyl tert-butyl ether (BTEX/MTBE) and EPA Method 8270 for polycyclic aromatic hydrocarbons (PAHs). The collected groundwater samples from MW-1 were analyzed by EPA Method 8270 PAHs. The collected groundwater samples from MW-5 were analyzed by EPA Method 8260 BTEX/MTBE.

Prior to groundwater sampling activities on December 13, 2023, depth-to-water (DTW) measurements were collected from monitoring wells MW-1 and TW-1 and additional monitoring wells MW-2 and MW-6. The DTW measurement from MW-5 was collected December 14, 2023, prior to sampling of the well. DTW measurements varied between 6.21 and 7.42 feet below top of casing (TOC). A summary of current and historical water level data is presented in **Table 1.**

The DTW measurements recorded on December 13, and December 14, 2023 were used with TOC elevation data to estimate relative water table elevations and infer the groundwater flow within the shallow aquifer. Groundwater flow within the shallow aquifer was assessed to be toward the west. A groundwater elevation contour map constructed from data collected on December 13, and December 14, 2023 is presented as **Figure 2.**

Analytical results were compared to Chapter 62-777 Florida Administrative Code (FAC) Groundwater Cleanup Target Levels (GCTLs) and Natural Attenuation Default-Concentrations (NADCs). The concentration of naphthalene in MW-1 exceeded its GCTL but was within its NADC. The concentration of ethylbenzene in MW-5 exceeded its GCTL but was within its NADC. The concentrations of benzene, ethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene exceeded GTCLs, but were within NADCs. The concentration of Naphthalene in TW-1 its NADC.

- MW-1
    - The concentration of naphthalene (59 micrograms per liter [µg/L]) exceeded its GCTL (14 µg/L) but were within its NADC (140 µg/L).
- MW-5
    - The concentration of ethylbenzene (49 µg/L) exceeded its GCTL (30 µg/L) but was within its NADC (300 µg/L).

- TW-1
    - The concentration of benzene (8.5 µg/L) exceeded its GCTL (1 µg/L) but was within its NADC (100 µg/L).
    - The concentration of ethylbenzene (92 µg/L) exceeded its GCTL (30 µg/L) but was within its NADC (300 µg/L).
    - The concentrations of naphthalene (190 µg/L) exceeded its GCTL and NADC.
    - The concentration of 1-methylnaphthalene (34 µg/L) exceeded its GCTL (28 µg/L) but was within its NADC (280 µg/L).
    - The concentration of 2-methylnaphthalene (38 µg/L) exceeded its GCTL (28 µg/L) but was within its NADC (280 µg/L).

Groundwater analytical results are summarized in **Tables 2A** and **2B** and illustrated on **Figures 3A** and **3B**. Field notes, groundwater sampling logs, and calibrations logs are provided in **Appendix B**. A copy of the laboratory analytical report along with chain-of-custody (COC) is provided in **Appendix C**.

SUMMARY & RECOMMENDATIONS

Summary

Groundwater samples were collected from MW-1 and TW-1 on December 13, 2023 and from MW-5 on December 14, 2023. The concentration of naphthalene in MW-1 exceeded its GCTL but was within its NADC. The concentration of ethylbenzene in MW-5 exceeded its GCTL but was within its NADC. Concentrations of benzene, ethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene in TW-1 exceeded their respective GCTLs but were within their respective NADCs. The concentration of naphthalene in TW-1 exceeded its NADC.

Recommendations

HCR offers the following recommendations:

- MW-1 – Continued NAM sampling for PAHs.
- MW-5 – Continue NAM sampling for BTEX/MTBE. Additionally, due to the constant heavy traffic within the US highway 41 roadway and the location of the well within a narrow concrete median of US Highway 41, the FDOT is requiring MOT setup during night-time hours.
- TW-1 – Continued NAM sampling for BTEX/MTBE and PAHs.

According to the FDOT, a new general use permit will be needed for each groundwater sampling event for groundwater sampling activities associated with well MW-5.

HCR appreciates the opportunity to provide these services to the Florida Department of Environmental Protection. Should you have any questions or comments concerning this report, please contact the undersigned at your convenience at (813) 906-2994 or msolomon@handexmail.com.

Respectfully submitted,
HANDEX CONSULTING & REMEDIATION, LLC.

Prepared By:



Bradley Atkinson
Staff Scientist

Reviewed By:

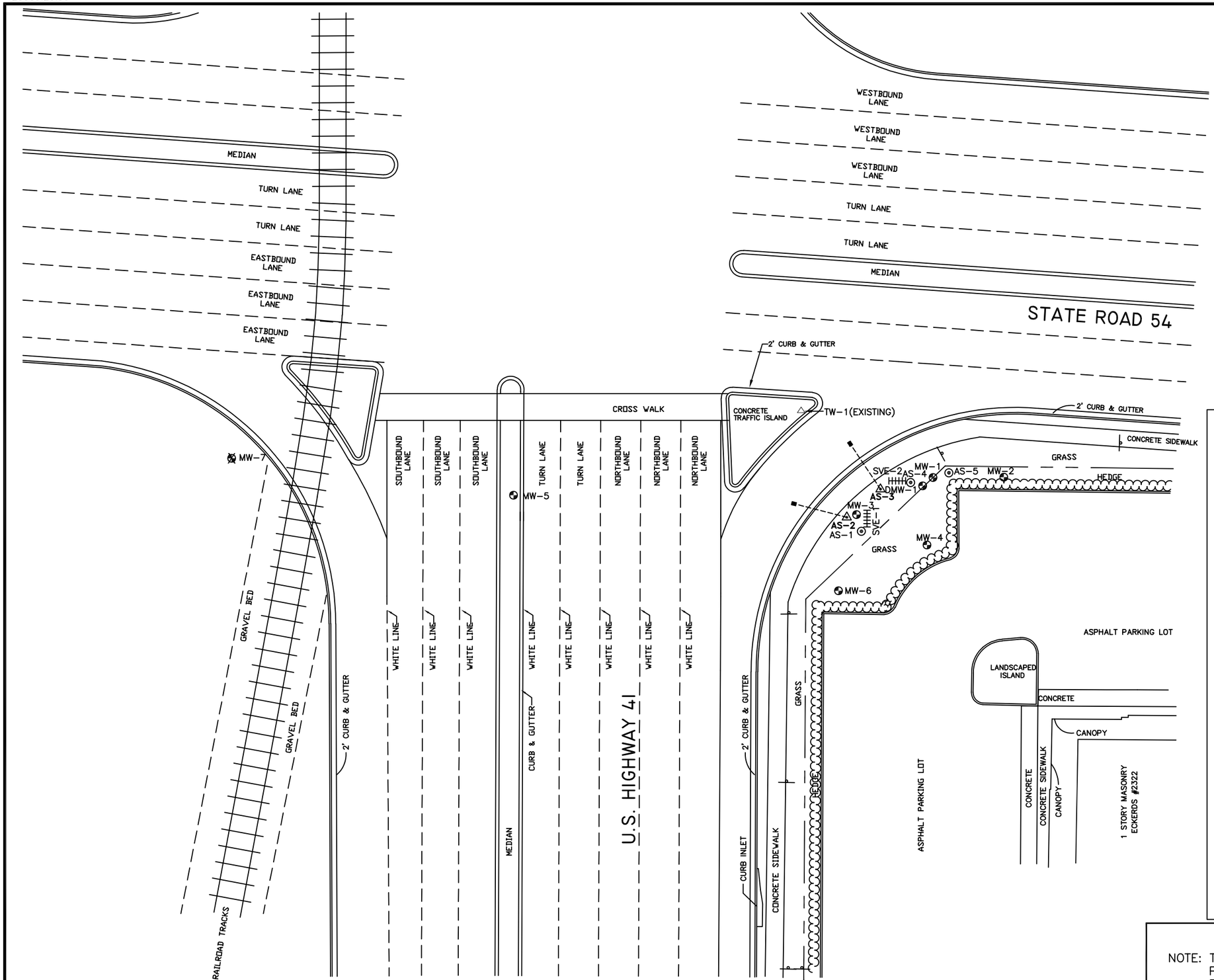


Marty Solomon
Project Manager

cc: Kevin Furlong – kevinf@dresnerfoundation.org
Jeff Johnson – jeffj@cornerpropertymgmt.com

FIGURES

HCR
HANDEX CONSULTING
& REMEDIATION, LLC



N

0 15 30

SCALE: 1"=30'

LEGEND

- △ – TEMPORARY MONITORING WELL
- ⊙ – MONITORING WELL "D" DENOTES DEEP WELL
- ⊗ – ABANDONED/DESTROYED MONITORING WELL
- ⊙ – AIR SPARGE WELL
- ■--△ – ANGLED WELL
- HHH – HORIZONTAL SOIL VAPOR EXTRACTION WELL
- NL – NOT LOCATED

NOTE: THE BASE MAP IS BASED ON A SPECIFIC PURPOSE SURVEY BY THOMAS J. MONAWECK, P.S.M. DATED APRIL 4, 2003.

FIGURE 1
SITE PLAN

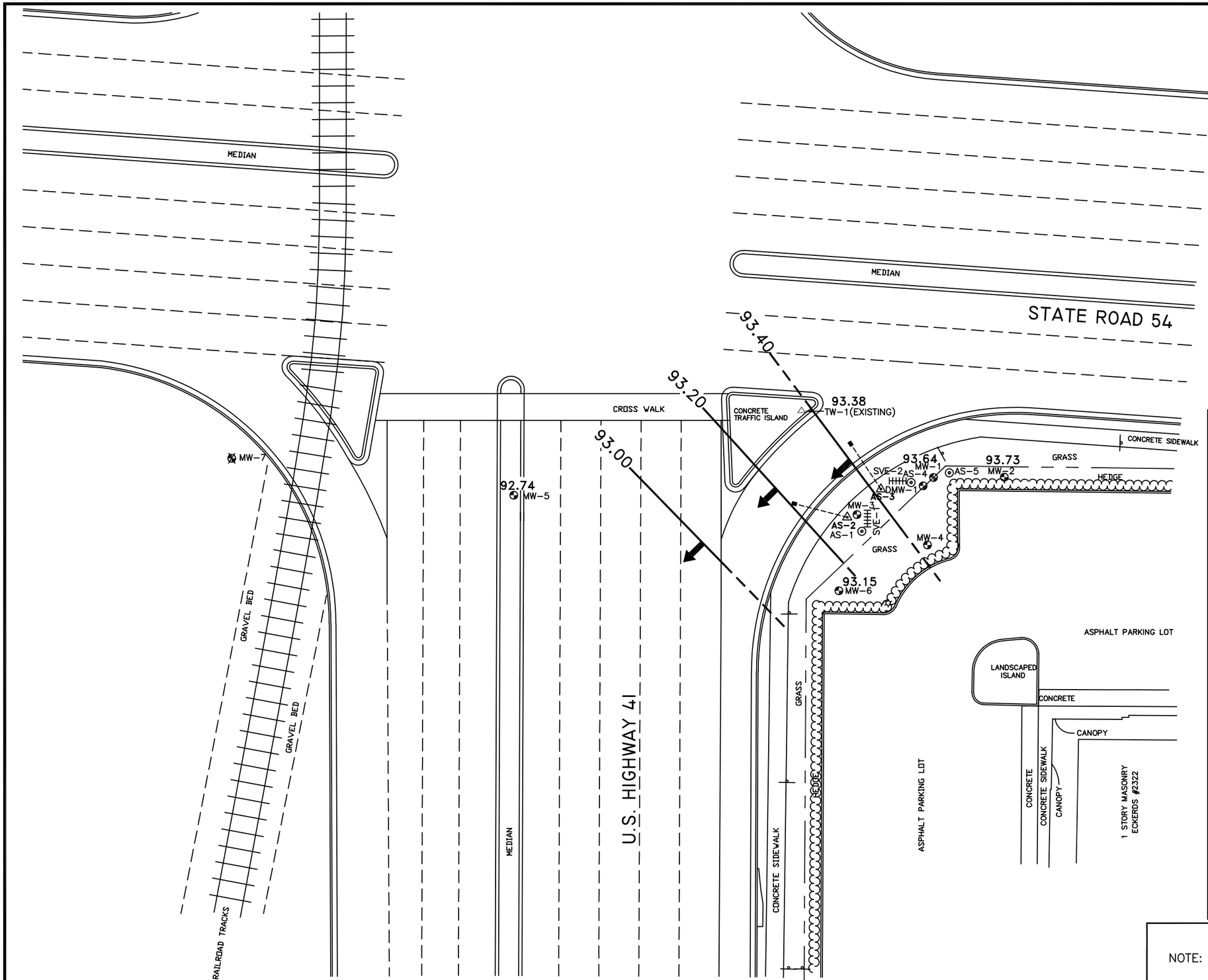
FORMER MAJIK MARKET# 7394
FDEP FAC ID #51/8520049
2322 U.S. HIGHWAY 41
LAND O'LAKES, FLORIDA
2-8-24

1202 Tech Boulevard, Suite 204
Tampa, Florida 33619
Telephone: (813) 626-4646
Fax: (813) 626-1898
Certificate of Authorization# 26812

HCR
HANDEX CONSULTING & REMEDIATION, LLC

123585.20.30

TPA X:\CADDATA\HANDEX\DWG\MAJIK MARKET7394\REMED ACTION RPT\123585 SP1.DWG



LEGEND

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- ⊙ – AIR SPARGE WELL
- ▪--△ – ANGLED WELL
- HHH – HORIZONTAL SOIL VAPOR EXTRACTION WELL
- NL – NOT LOCATED

94.75 – GROUNDWATER ELEVATION IN FEET

94.50 – GROUNDWATER ELEVATION CONTOUR, DASHED WHERE INFERRED

➡ – APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NM – NOT MEASURED

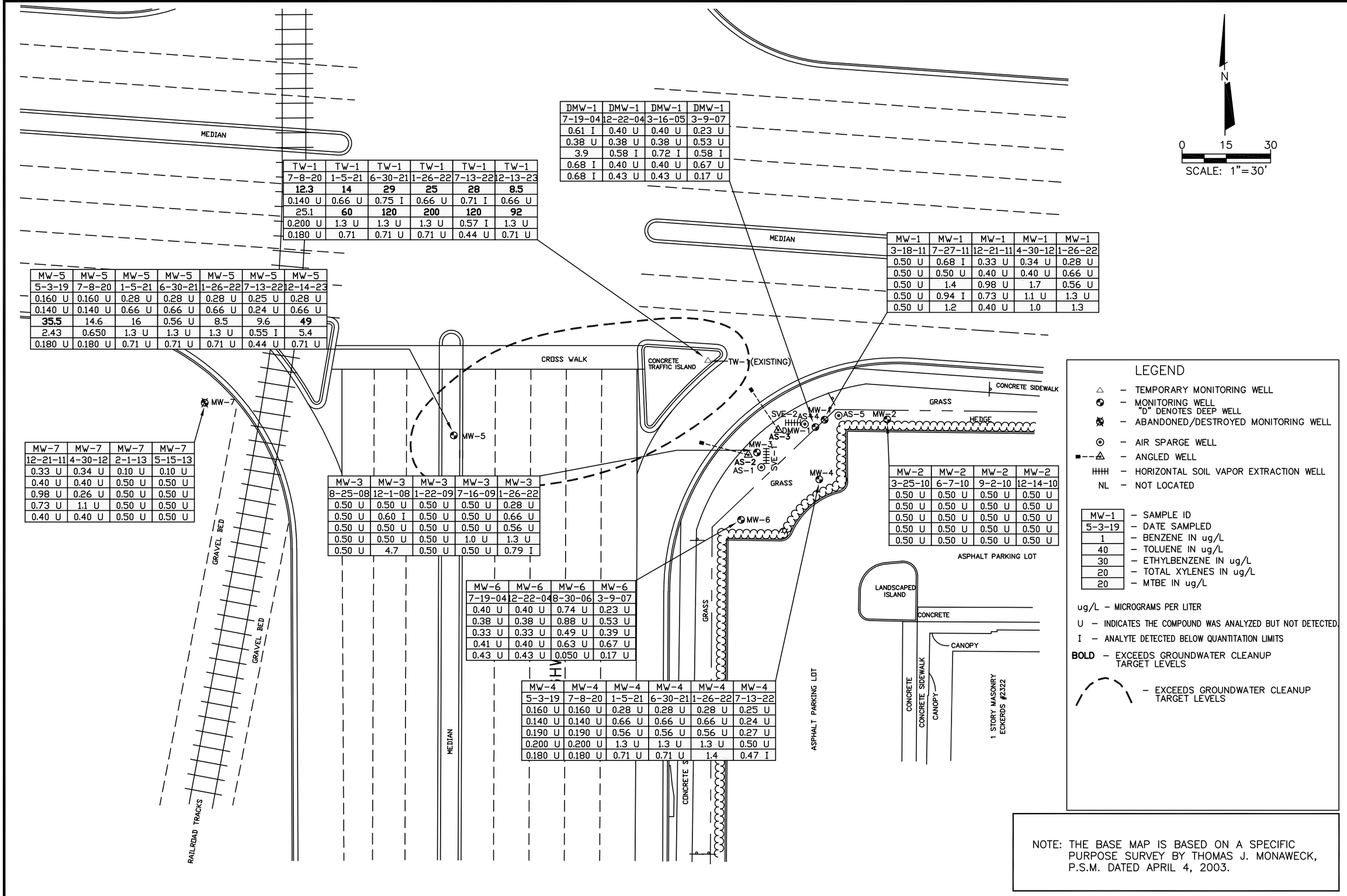
NOTE: THE BASE MAP IS BASED ON A SPECIFIC PURPOSE SURVEY BY THOMAS J. MONAWECK, P.S.M. DATED APRIL 4, 2003.

FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP
DECEMBER 13 & 14, 2023

FORMER MAJIK MARKET# 7394
FDEP FAC ID #51/8520049
2322 U.S. HIGHWAY 41
LAND O'LAKES, FLORIDA
2-8-24

1202 Tech Boulevard, Suite 204
Tampa, Florida 33619
Telephone: (813) 626-4646
Fax: (813) 626-1898
Certificate of Authorization# 26812

HCR HANDEX CONSULTING & REMEDIATION, LLC



TW-1	TW-1	TW-1	TW-1	TW-1	TW-1
7-8-20	1-5-21	6-30-21	1-26-22	7-13-22	12-13-23
12.3	**14**	**29**	**25**	**28**	**8.5**
0.140 U	0.66 U	0.75 I	0.66 U	0.71 I	0.66 U
25.1	**60**	**120**	**200**	**120**	**92**
0.200 U	1.3 U	1.3 U	1.3 U	0.57 I	1.3 U
0.180 U	0.71	0.71 U	0.71 U	0.44 U	0.71 U

DMW-1	DMW-1	DMW-1	DMW-1
7-19-04	12-22-04	3-16-05	3-9-07
0.61 I	0.40 U	0.40 U	0.23 U
0.38 U	0.38 U	0.38 U	0.53 U
3.9	0.58 I	0.72 I	0.58 I
0.68 I	0.40 U	0.40 U	0.67 U
0.68 I	0.43 U	0.43 U	0.17 U

MW-1	MW-1	MW-1	MW-1	MW-1
3-18-11	7-27-11	12-21-11	4-30-12	1-26-22
0.50 U	0.68 I	0.33 U	0.34 U	0.28 U
0.50 U	0.50 U	0.40 U	0.40 U	0.66 U
0.50 U	1.4	0.98 U	1.7	0.56 U
0.50 U	0.94 I	0.73 U	1.1 U	1.3 U
0.50 U	1.2	0.40 U	1.0	1.3

MW-5	MW-5	MW-5	MW-5	MW-5	MW-5	MW-5
5-3-19	7-8-20	1-5-21	6-30-21	1-26-22	7-13-22	12-14-23
0.160 U	0.160 U	0.28 U	0.28 U	0.28 U	0.25 U	0.28 U
0.140 U	0.140 U	0.66 U	0.66 U	0.66 U	0.24 U	0.66 U
35.5	14.6	16	0.56 U	8.5	9.6	**49**
2.43	0.650	1.3 U	1.3 U	1.3 U	0.55 I	5.4
0.180 U	0.180 U	0.71 U	0.71 U	0.71 U	0.44 U	0.71 U

MW-7	MW-7	MW-7	MW-7
12-21-11	4-30-12	2-1-13	5-15-13
0.33 U	0.34 U	0.10 U	0.10 U
0.40 U	0.40 U	0.50 U	0.50 U
0.98 U	0.26 U	0.50 U	0.50 U
0.73 U	1.1 U	0.50 U	0.50 U
0.40 U	0.40 U	0.50 U	0.50 U

MW-3	MW-3	MW-3	MW-3	MW-3
8-25-08	12-1-08	1-22-09	7-16-09	1-26-22
0.50 U	0.50 U	0.50 U	0.50 U	0.28 U
0.50 U	0.60 I	0.50 U	0.50 U	0.66 U
0.50 U	0.50 U	0.50 U	0.50 U	0.56 U
0.50 U	0.50 U	0.50 U	1.0 U	1.3 U
0.50 U	4.7	0.50 U	0.50 U	0.79 I

MW-6	MW-6	MW-6	MW-6
7-19-04	12-22-04	8-30-06	3-9-07
0.40 U	0.40 U	0.74 U	0.23 U
0.38 U	0.38 U	0.88 U	0.53 U
0.33 U	0.33 U	0.49 U	0.39 U
0.41 U	0.40 U	0.63 U	0.67 U
0.43 U	0.43 U	0.050 U	0.17 U

MW-4	MW-4	MW-4	MW-4	MW-4	MW-4
5-3-19	7-8-20	1-5-21	6-30-21	1-26-22	7-13-22
0.160 U	0.160 U	0.28 U	0.28 U	0.28 U	0.25 U
0.140 U	0.140 U	0.66 U	0.66 U	0.66 U	0.24 U
0.190 U	0.190 U	0.56 U	0.56 U	0.56 U	0.27 U
0.200 U	0.200 U	1.3 U	1.3 U	1.3 U	0.50 U
0.180 U	0.180 U	0.71 U	0.71 U	1.4	0.47 I

MW-2	MW-2	MW-2	MW-2
3-25-10	6-7-10	9-2-10	12-14-10
0.50 U	0.50 U	0.50 U	0.50 U
0.50 U	0.50 U	0.50 U	0.50 U
0.50 U	0.50 U	0.50 U	0.50 U
0.50 U	0.50 U	0.50 U	0.50 U
0.50 U	0.50 U	0.50 U	0.50 U

N

0 15 30

SCALE: 1"=30'

LEGEND

- △ – TEMPORARY MONITORING WELL
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- ⊙ – AIR SPARGE WELL
- ▪--△ – ANGLED WELL
- HHH – HORIZONTAL SOIL VAPOR EXTRACTION WELL
- NL – NOT LOCATED

MW-1	– SAMPLE ID
5-3-19	– DATE SAMPLED
1	– BENZENE IN ug/L
40	– TOLUENE IN ug/L
30	– ETHYLBENZENE IN ug/L
20	– TOTAL XYLENES IN ug/L
20	– MTBE IN ug/L

ug/L – MICROGRAMS PER LITER

U – INDICATES THE COMPOUND WAS ANALYZED BUT NOT DETECTED.

I – ANALYTE DETECTED BELOW QUANTITATION LIMITS

BOLD – EXCEEDS GROUNDWATER CLEANUP TARGET LEVELS

– EXCEEDS GROUNDWATER CLEANUP TARGET LEVELS

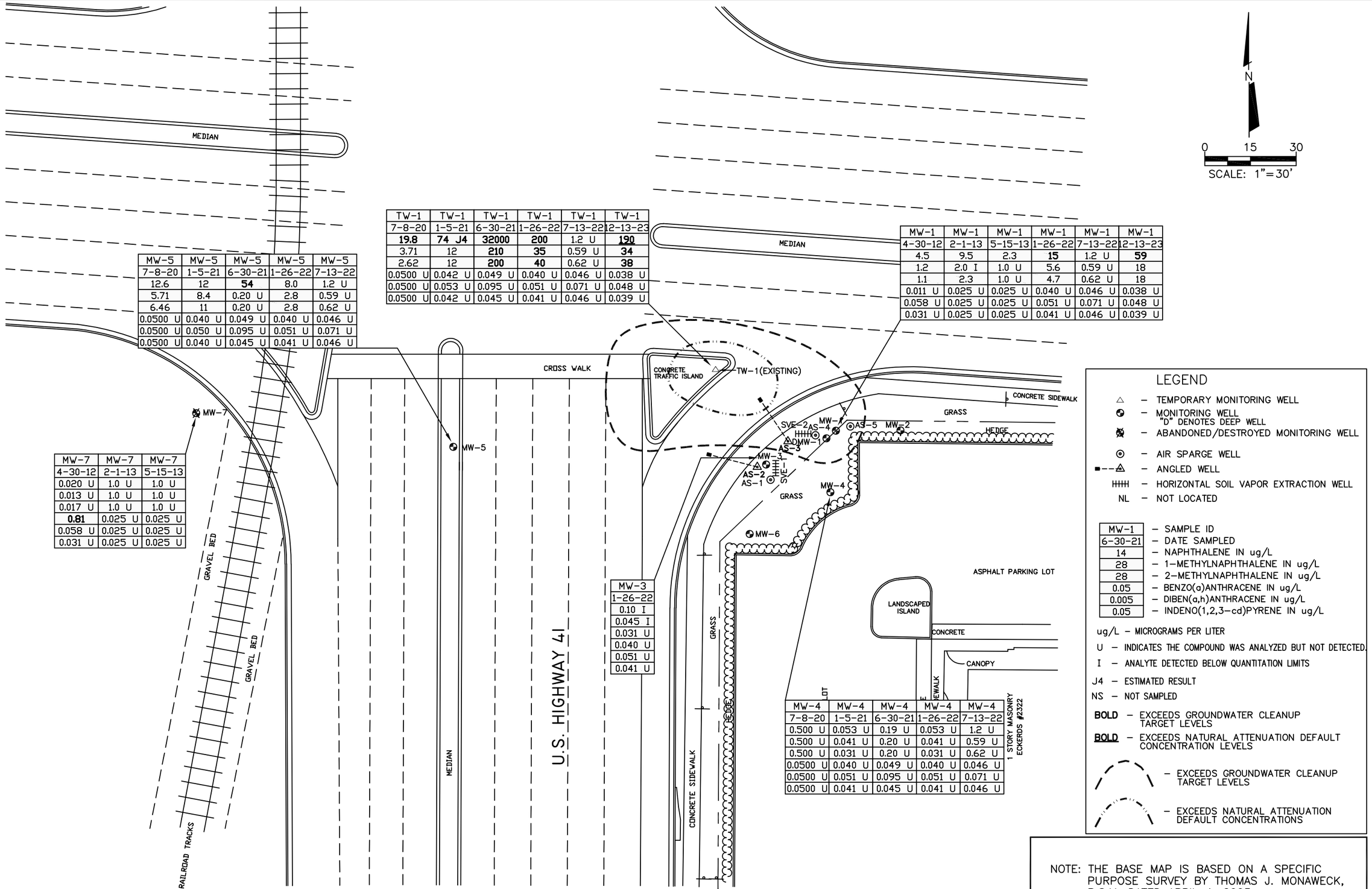
NOTE: THE BASE MAP IS BASED ON A SPECIFIC PURPOSE SURVEY BY THOMAS J. MONAWECK, P.S.M. DATED APRIL 4, 2003.

FIGURE 3A
GROUNDWATER ANALYTICAL SUMMARY
(BTEX/MTBE)

FORMER MAJIK MARKET# 7394
FDEP FAC ID #51/8520049
2322 U.S. HIGHWAY 41
LAND O'LAKES, FLORIDA

2-8-24

HCR HANDEX CONSULTING & REMEDIATION, LLC
1202 Tech Boulevard, Suite 204
Tampa, Florida 33619
Telephone: (813) 626-4646
Fax: (813) 626-1898
Certificate of Authorization# 26812



MW-5	MW-5	MW-5	MW-5	MW-5
7-8-20	1-5-21	6-30-21	1-26-22	7-13-22
12.6	12	**54**	8.0	1.2 U
5.71	8.4	0.20 U	2.8	0.59 U
6.46	11	0.20 U	2.8	0.62 U
0.0500 U	0.040 U	0.049 U	0.040 U	0.046 U
0.0500 U	0.050 U	0.095 U	0.051 U	0.071 U
0.0500 U	0.040 U	0.045 U	0.041 U	0.046 U

TW-1	TW-1	TW-1	TW-1	TW-1	TW-1
7-8-20	1-5-21	6-30-21	1-26-22	7-13-22	12-13-23
19.8	**74 J4**	**32000**	**200**	1.2 U	**190**
3.71	12	**210**	**35**	0.59 U	**34**
2.62	12	**200**	**40**	0.62 U	**38**
0.0500 U	0.042 U	0.049 U	0.040 U	0.046 U	0.038 U
0.0500 U	0.053 U	0.095 U	0.051 U	0.071 U	0.048 U
0.0500 U	0.042 U	0.045 U	0.041 U	0.046 U	0.039 U

MW-1	MW-1	MW-1	MW-1	MW-1	MW-1
4-30-12	2-1-13	5-15-13	1-26-22	7-13-22	12-13-23
4.5	9.5	2.3	**15**	1.2 U	**59**
1.2	2.0 I	1.0 U	5.6	0.59 U	18
1.1	2.3	1.0 U	4.7	0.62 U	18
0.011 U	0.025 U	0.025 U	0.040 U	0.046 U	0.038 U
0.058 U	0.025 U	0.025 U	0.051 U	0.071 U	0.048 U
0.031 U	0.025 U	0.025 U	0.041 U	0.046 U	0.039 U

MW-7	MW-7	MW-7
4-30-12	2-1-13	5-15-13
0.020 U	1.0 U	1.0 U
0.013 U	1.0 U	1.0 U
0.017 U	1.0 U	1.0 U
0.81	0.025 U	0.025 U
0.058 U	0.025 U	0.025 U
0.031 U	0.025 U	0.025 U

MW-3
1-26-22
0.10 I
0.045 I
0.031 U
0.040 U
0.051 U
0.041 U

MW-4	MW-4	MW-4	MW-4	MW-4
7-8-20	1-5-21	6-30-21	1-26-22	7-13-22
0.500 U	0.053 U	0.19 U	0.053 U	1.2 U
0.500 U	0.041 U	0.20 U	0.041 U	0.59 U
0.500 U	0.031 U	0.20 U	0.031 U	0.62 U
0.0500 U	0.040 U	0.049 U	0.040 U	0.046 U
0.0500 U	0.051 U	0.095 U	0.051 U	0.071 U
0.0500 U	0.041 U	0.045 U	0.041 U	0.046 U

LEGEND

- △ – TEMPORARY MONITORING WELL
- ⊕ – MONITORING WELL "D" DENOTES DEEP WELL
- ⊗ – ABANDONED/DESTROYED MONITORING WELL
- ⊙ – AIR SPARGE WELL
- ■--△ – ANGLED WELL
- HHH – HORIZONTAL SOIL VAPOR EXTRACTION WELL
- NL – NOT LOCATED

MW-1	– SAMPLE ID
6-30-21	– DATE SAMPLED
14	– NAPHTHALENE IN ug/L
28	– 1-METHYLNAPHTHALENE IN ug/L
28	– 2-METHYLNAPHTHALENE IN ug/L
0.05	– BENZO(a)ANTHRACENE IN ug/L
0.005	– DIBEN(a,h)ANTHRACENE IN ug/L
0.05	– INDENO(1,2,3-cd)PYRENE IN ug/L

ug/L – MICROGRAMS PER LITER

U – INDICATES THE COMPOUND WAS ANALYZED BUT NOT DETECTED.

I – ANALYTE DETECTED BELOW QUANTITATION LIMITS

J4 – ESTIMATED RESULT

NS – NOT SAMPLED

BOLD – EXCEEDS GROUNDWATER CLEANUP TARGET LEVELS

BOLD – EXCEEDS NATURAL ATTENUATION DEFAULT CONCENTRATION LEVELS

– EXCEEDS GROUNDWATER CLEANUP TARGET LEVELS

– EXCEEDS NATURAL ATTENUATION DEFAULT CONCENTRATIONS

NOTE: THE BASE MAP IS BASED ON A SPECIFIC PURPOSE SURVEY BY THOMAS J. MONAWECK, P.S.M. DATED APRIL 4, 2003.

FIGURE 3B
GROUNDWATER ANALYTICAL SUMMARY
(PAHs)

FORMER MAJIK MARKET# 7394
FDEP FAC ID #51/8520049
2322 U.S. HIGHWAY 41
LAND O'LAKES, FLORIDA
2-8-24

1202 Tech Boulevard, Suite 204
Tampa, Florida 33619
Telephone: (813) 626-4646
Fax: (813) 626-1898
Certificate of Authorization# 26812

HCR
HANDEX CONSULTING & REMEDIATION, LLC

Site 23 –

Perfect Gasoline

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road, Tallahassee, Florida, 32399-2400
Division of Waste Management
Petroleum Storage Systems
Storage Tank Facility Routine Compliance Site Inspection Report

Facility Information:

Facility ID: 8943105 County: PASCO Inspection Date:11/06/2023
Facility Type: A - Retail Station
Facility Name: PERFECT GASOLINE INC # of inspected ASTs: 0
1616 DALE MABRY HWY N USTs: 1
LUTZ, FL 33549-3011 Mineral Acid Tanks: 0
Latitude: 28° 10' 51.8948"
Longitude: 82° 28' 3.411"
LL Method: DPHO

Inspection Result:

Result: Major Out of Compliance

Signatures:

TKPNPH - PINELLAS COUNTY HEALTH DEPARTMENT (727) 538-7277

Storage Tank Program Office and Phone Number

George K. Juaristic

Inspector Name

GKJ

Inspector Signature
Principal Inspector

PINELLAS COUNTY HEALTH DEPARTMENT

David Gilmore

Representative Name

No Signature

Representative Signature

REAL ESTATE EQUITY PARTNERS THREE

Owners of UST facilities are reminded that the Federal Energy Policy Act of 2005 and 40 CFR 280 Subpart J requires Operator Training at all facilities by October 13, 2018. For further information please visit: https://floridadep.gov/waste/permitting-compliance-assistance/content/underground-storage-tank-operator-training

Financial Responsibility: Overdue

Financial Responsibility: INSURANCE

Insurance Carrier: ACE AMERICAN INSURANCE COMPANY

Effective Date: 12/29/2020 Expiration Date: 12/29/2021

Findings:

Class A Owner Training Certificates are present.
Class B Maintenance Training Certificates are present.
Class C Operator Training Certificates are present.

Overdue System Tests

Type	Date Completed	Results	Reviewed	Next Due Date	Comment
Annual Operability - Line Leak Detector			12/15/2021	12/13/2022	MLLDs
Annual Operability - Overfill Protection			12/15/2021	12/13/2022	Flow shut-off valves
Annual Operability - Release Detection			12/15/2021	12/13/2022	Liquid sensor and TLS 350
Breach of Integrity Test			05/16/2019	04/27/2022	Piping/STP sumps and UDCs
Integrity Test - Single-walled Spill Bucket			12/15/2021	12/13/2022	SW SCUs

Violations:

Type: Violation
Significance: Minor
Rule: 62-761.710(1), 62-761.710(2), 62-761.710(2)(a), 62-761.710(2)(b), 62-761.710(2)(c), 62-761.710(2)(d), 62-761.710(3), 62-761.710(3)(a), 62-761.710(3)(b), 62-761.710(3)(c), 62-761.710(3)(d), 62-761.710(3)(e), 62-761.710(3)(f), 62-761.710(3)(g), 62-761.710(3)(h), 62-761.710(3)(i)
Violation Text: Improper maintenance of records. Records requiring to be maintained for 3 years or for the life of the system not kept by facility. Records not provided within 5 business days.
Explanation: No records provided at time of inspection.
Corrective Action: Provide requested records.

Type: Violation
Significance: Minor
Rule: 62-761.430(4), 62-761.430(5)
Violation Text: Incident investigation not completed within 14 days, and/or no DRF or written confirmation received at the end of the 14-day investigation period.
Explanation: The tank interstice was manually stuck-contained 95" of water.
Corrective Action: Investigate the water in the tank interstice. Requires an integrity test of the tank.

Type: Violation
Significance: Minor
Rule: 62-761.500(7)(c), 62-761.500(7)(c)1, 62-761.500(7)(c)2, 62-761.500(7)(d)
Violation Text: Primary overfill protection not provided, registered, or tested as required.
Explanation: Annual operability testing of the overfill protection and release detection devices were due by 12/2022, and annually thereafter.
Corrective Action: Provide the 2022 annual operability test results.

Type: Violation
Significance: SNC-A
Rule: 62-761.420(2)
Violation Text: No financial responsibility instrument or expired instrument for > 180 days.
Explanation: No proof of financial responsibility. Gave facility 10-days to provide proof of financial responsibility. Last policy reviewed, expired 12/29/2021.
Corrective Action: Provide current proof of financial responsibility and proof that there has been insurance

since 12/29/2021.

Type:	Violation
Significance:	SNC-B
Rule:	62-761.700(1), 62-761.700(1)(a), 62-761.700(1)(a)1, 62-761.700(1)(a)2
Violation Text:	Not repaired or isolated component or piping which has not caused a discharge or release.
Explanation:	The tank interstice contained 95" of water.
Corrective Action:	Investigate the source of liquid in the tank interstice, and repair/replace if necessary.

Type:	Violation
Significance:	Minor
Rule:	62-761.100(3)
Violation Text:	No reasonable access provided.
Explanation:	The spill buckets and STP sumps were full of PCW-unable to inspect storage tank components.
Corrective Action:	Remove and properly dispose of the PCW in the spill buckets and STP sumps. Schedule a re-inspection so that the storage tank components can be properly inspected.

Type:	Violation
Significance:	Minor
Rule:	62-761.400(4), 62-761.400(4)(a), 62-761.400(4)(b), 62-761.400(4)(c), 62-761.400(4)(d), 62-761.400(4)(e), 62-761.400(4)(f)
Violation Text:	Registration fees not paid (not receiving fuel).
Explanation:	Registration expired on 6/31/2022.
Corrective Action:	Bring the registration current and display the placard in plain view at the facility.

Type:	Violation
Significance:	Minor
Rule:	62-761.350(1), 62-761.350(1)(c), 62-761.350(1)(d), 62-761.350(3)(b)2, 62-761.350(5)(a), 62-761.350(5)(b), 62-761.350(5)(c), 62-761.350(7)
Violation Text:	Operator Training records not available.
Explanation:	Operator Training records not available.
Corrective Action:	Owners or operators shall identify and designate for each in-service underground storage tank system facility, including unmanned facilities, at least one named individual for each class of operator – Class A, Class B, and Class C. Provide at least one named individual for each class of operator

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Type:	Violation
Significance:	Minor
Rule:	62-761.700(1)(d)
Violation Text:	Integrity test not completed before being placed into operation or service.
Explanation:	The tank interstice contained 95" of liquid.
Corrective Action:	Take the tank out-of-service until the tank is tested for integrity, and passes.

Type:	Violation
Significance:	SNC-B
Rule:	62-761.600(1)(d), 62-761.600(1)(e), 62-761.600(1)(g)
Violation Text:	Release detection not tested or visually inspected once a month or problems found during the visual inspections not recorded.

Explanation:	No release detection records provided.
Corrective Action:	Provide the release detection records from 1/2022 to present.

Type:	Violation
Significance:	SNC-B
Rule:	62-761.500(6)(b)
Violation Text:	Piping sumps not installed to allow for release detection.
Explanation:	Piping sumps are full of PCW. Unable to monitor double-walled piping interstice in sump.
Corrective Action:	Remove and properly dispose of PCW in sumps to allow monitoring of the double-walled piping interstice.

Type:	Violation
Significance:	Minor
Rule:	62-761.600(4)
Violation Text:	Release detection devices not tested annually.
Explanation:	Annual operability testing of the overfill protection and release detection devices were due by 12/2022, and annually thereafter.
Corrective Action:	Provide the 2022 annual operability test results.

Type:	Violation
Significance:	Minor
Rule:	62-761.700(3)(b), 62-761.700(3)(b)1, 62-761.700(3)(b)2
Violation Text:	Spill containment, dispenser liners, and piping sumps not accessible. Water or regulated substances not removed.
Explanation:	All three spill buckets and STP sumps were full of PCW.
Corrective Action:	Remove and properly dispose of the PCW in the spill buckets and STP sumps.

Site Visit Comments

11/06/2023
GKJ_
Site Visit Conducted By: George Juaristic
Representative Onsite:
*Received no response from notification of inspection email to listed facility contact. Store was closed upon arrival but store lessee was onsite. He stated that he is leasing the store and hopes to open up in the next couple of months. He provided permission to inspect the storage tank system.

Routine Compliance Inspection Covers FDEP Tank ID:
1A: 20,000-gallon DW UST compartmented-containing regular gas (RUL), premium gas (PUL), and vehicular diesel (DSL)

Site Visit Comments:
Fills Marked per API 1637: Spill bucket lids are painted.

Overfill Protection: Unable to verify fills are equipped with flow shut-off valves, due to excessive petroleum contact water (PCW) in the spill containment unit (SCU).

SCU: OPW 1C Series spill buckets. All three were filled with PCW.
*(1) Remove and properly dispose of the PCW in the SCUs.
*(2) Provide access to the storage tank components by removing the liquid.

Secondary Containment: The tank interstice was manually stuck-contained 95" of water.

*(3) Remove and properly dispose of the water in the tank interstice.
*(4) Investigate the water in the tank interstice. Requires an integrity test of the tank.

STP/Piping Sump: Unable to inspect the sumps-all three full of PCW.
*(5) Remove and properly dispose of the PCW in the STP sumps.
*(6) Provide access to the storage tank components by removing the liquid.

Dispensers: Six under dispenser containments (UDCs) dry. Shear valves anchored properly.

Release Detection Device: None, interstitial sensor removed.

Inspection Comments

11/16/2023
Records Review:
*No records provided at the time of inspection. Provide the following requested records.

Placard: Registration expired on 6/31/2022.
*(7) Bring the registration current and display the placard in plain view at the facility.

Financial Responsibility: None provided.
*(8) Last policy reviewed, expired 12/29/2021. Provide current proof of financial responsibility and proof that there has been insurance since 12/29/2021.

Release Detection: No monthly visual inspections provided.
*(9) Provide monthly release detection records from January 2022 to present.

Tests: No test records provided.
*(10) Annual operability testing of the overfill protection and release detection devices were due by 12/2022, and annually thereafter. Provide the 2022 annual operability test results.
*(11) Integrity testing of the SW spill buckets was due by December 12/2022, and annually thereafter. Provide the missing 2022 integrity test results.
*(12) Integrity testing of the STP sumps and under dispenser containments was due by 4/2022, and every 36-months thereafter. Provide the missing integrity test results.

Property owner listed as:
REAL ESTATE EQUITY PARTNERS
THREE LLC
PO BOX 1469
PORT RICHEY, FL 34673-1469

Corporate filing search lists the registered name as:
GILMORE, DAVID CESQ.
7916 Evolutions Way
Suite 210
Trinity, FL 34655

Report will be mailed to property owner and registered agent name.
11/16/2023
11/6/2023_Store lessee provided the email address paradise_petroleum@yahoo.com. I requested that he send the missing records. An email was sent on 11/6/2023 to remind him to send the missing records. As of 11/16/2023, this office has received no response.

Facility will be referred to the DEP-SW District for enforcement due to no proof of financial responsibility.

Inspection Photos

Added Date 11/15/2023

PUL STP sump full of PCW



Added Date 11/15/2023

PUL SCU full of PCW



Added Date 11/15/2023

RUL SCU full of PCW



Added Date 11/15/2023

RUL STP sump full of PCW



Added Date 11/15/2023

DSL SCU full of PCW



Added Date 11/15/2023

DSL STP sump full of PCW



Added Date 11/15/2023

PUL primary tanks contain ~1-2" of product



Added Date 11/15/2023

Tank interstice contains 95" of water



Added Date 11/15/2023

DSL primary tank contains 9" product



Added Date 11/15/2023

RUL primary tank contains 12" of product



Site 27 –

Denham Substation

Florida Department of Environmental Protection

Southwest District
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926
Telephone: 813-632-7600

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

October 10, 2012

By Electronic Mail
Betty.Carter@pgnmail.com

Ms. Betty Carter
Environmental Coordinator
Progress Energy Florida, Inc.
275 West Ponkon Road
Apopka, FL 32712

Review of Substation Assessment and Remedial Action Plan Reports –
Southwest District
Progress Energy Florida, Inc.

Dear Ms. Carter:

The S&ME submittal of the Southwest District "Substation Assessment and Remedial Action Plan Reports" listed in enclosure 1 have been received and reviewed.

Based on the results documented in the reports, the Department has determined the requirements of the Department approved Substation Assessment and Remedial Action Plan (SARAP) have been met. Additional action will not be required at this time. Please note that meeting the requirements of SARAP is not equivalent to a full Chapter 62-780, F.A.C. Site Assessment and the sites will not be issued a formal No Further Action or Site Rehabilitation Completion Order. Also, this letter does not certify that the entire property is clean. The Department reserves the right to initiate appropriate actions for these properties under Chapter 62-780, F.A.C., if contamination is discovered in the future.

Contact Jim Dregne at james.dregne@dep.state.fl.us or at (813) 632-7600 extension 410, if you have any questions concerning this letter.

Sincerely,

Susan J. Pelz, P.E.
Waste Program Administrator
Southwest District

Enclosure as

cc: William Preston, Esq., Bill@wprestonpa.com
Steve White, Stephen.White@pgnmail.com
Laura Koch, Laura.Koch@pgnmail.com
Jonathan E. Hull, jhull@smeinc.com
Bruce Nocita, bnocita@smeinc.com
Mark Stuckey, P.E. Program & Technical Support Section, BWC
Jim Dregne, James.Dregne@dep.state.fl.us

PROGRESS ENERGY FLORIDA
SUBSTATION ASSESSMENT AND REMEDIAL ACTION PLAN APPROVED REPORTS
SOUTHWEST DISTRICT

as of October 10, 2012

#	SUBSTATION NAME	COUNTY	REPORT DATE	ACTION DATES	RECEIVED DATE
1	Frostproof	Polk	1/16/2008	2/13-15/2006	2/11/2008
2	North Bartow	Polk	1/16/2008	2/8-9/2006	2/11/2008
3	South Bartow	Polk	1/16/2008	12/22/2005	2/11/2008
4	Thirty-Second St	Pinellas	1/16/2008	2/9-10/2006	2/11/2008
5	Tiger Bay	Polk	1/16/2008	10/4/2005	2/11/2008
6	Noralyn #2	Polk	1/16/2008	2/9-10/2006	2/11/2008
7	Beverly Hills	Citrus	4/23/2008	10/22/2007	5/7/2008
8	Little Payne Creek #1	Polk	4/22/2008	5/30-6/5 2007	5/7/2008
9	Bushnell	Sumter	6/27/2008	12/6/2007	7/15/2008
10	County Oaks	Polk	6/25/2008	10/24/2006	7/15/2008
11	Cypresswood	Polk	6/27/2008	10/30/2006	7/15/2008
12	Daco	Polk	6/27/2008	6/6/2007	7/15/2008
13	Davenport	Polk	6/27/2008	12/4/2007	7/15/2008
14	Dundee	Polk	6/27/2008	10/31/2006	7/15/2008
15	Fort Green #8	Hardee	6/26/2008	12/5/2007	7/15/2008
16	Homossassa	Citrus	6/23/2008	10/17/2007	7/15/2008
17	Horse Creek	Hardee	6/25/2008	12/7/2007	7/15/2008
18	North Fort Meade	Polk	6/27/2008	8/14-15/2007	7/15/2008
19	Pembroke	Polk	6/27/2008	11/21-26/2007	7/15/2008
20	Westridge	Polk	6/26/2008	11/21/2007	7/15/2008
21	Wildwood City	Sumter	6/27/2008	12/5/2007	7/15/2008
22	Bayview	Pinellas	8/1/2008	1/3-9/2008	8/11/2008
23	Denham	Pasco	8/1/2008	12/19/2007 & 3/27/2008	8/11/2008
24	East Lake Wales	Polk	8/1/2008	3/20/2007	8/11/2008
25	Oakhurst	Pinellas	8/8/2008	8/18-25/2005	8/11/2008
26	Whidden Creek #1	Polk	8/8/2008	10/23/2006	8/11/2008
27	Zephyrhills	Pasco	8/8/2008	12/19/2007 & 3/31/2008	8/11/2008
28	Bayboro	Pinellas	10/21/2008	2/27-3/6/2006	10/28/2008
29	Clearwater	Pinellas	10/21/2008	8/29-9/28/2005	10/28/2008
30	Highlands	Pinellas	8/15/2008	2/8/2006	10/28/2008
31	Lake Wales	Polk	10/21/2008	3/20-5/29/2007	10/28/2008
32	Crooked Lake	Polk	11/20/2008	10/23-24/2006	12/3/2008
33	Crystal River South	Citrus	11/20/2008	10/15-17/2007	12/3/2008
34	Fort Green #3	Hardee	1/5/2009	1/22-3/15/2007	1/14/2009
35	40th Street	Pinellas	1/5/2009	2/9-10/2006	1/14/2009
36	GE Pinellas	Pinellas	1/5/2009	6/23 & 7/7/2008	1/14/2009
37	Brooker Creek	Pinellas	3/12/2009	8/6-7/2008	3/20/2009
38	Elfers	Pasco	3/12/2009	8/15-27/2006	3/20/2009
39	Floral City	Citrus	3/12/2009	10/23/2007-7/17/2008	3/20/2009
40	Kathleen	Polk	3/12/2009	8/11-9/10/2008	3/20/2009
41	Crystal River East	Citrus	5/6/2009	10/16-25/2007	5/28/2009
42	Hines Energy Complex	Polk	5/6/2009	2/20/2006-12/4/2008	5/28/2009
43	South Fort Meade	Polk	5/6/2009	7/31-8/5/2008	5/28/2009
44	Vinoy	Pinellas	5/6/2009	8/16-26/2005	5/28/2009
45	Wauchula	Hardee	5/15/2009	7/30/2008	5/28/2009
46	Adams	Marion	6/15/2009	1/27-3/18/2009	6/26/2009
47	Dunnellon Town	Citrus	6/15/2009	1/29/2009	6/26/2009

SUBSTATION ASSESSMENT AND REMEDIAL ACTION PLAN APPROVED REPORTS (cont)

#	SUBSTATION NAME	COUNTY	REPORT DATE	ACTION DATES	RECEIVED DATE
48	Gateway	Pinellas	8/21/2009	2/3-5/2009	9/2/2009
49	Citrusville	Polk	10/28/2009	3/8/2007	11/9/2009
50	Tri City	Pinellas	10/29/2009	1/14-15/2008	11/9/2009
51	Walsingham	Pinellas	9/21/2009	1/14-15/2008	9/2/2009
52	West Davenport	Polk	1/20/2010	2/5-11 & 7/23/2008	2/8/2010
53	Brooksville Rock	Hernando	9/29/2010	7/6-7/7/2009	10/13/2010
54	New Port Richey	Pasco	9/22/2010	6/30-7/6/2009	10/13/2010
55	Camps Section 7 Mine	Hernando	9/29/2010	2/25-3/4/2009	10/13/2010
56	Trilby	Pasco	9/22/2010	6/9-6/11/2009	10/13/2010
57	Circle Square	Marion	9/29/2010	9/8-9/10/2009	10/13/2010
58	Barnum City	Polk	10/6/2010	12/12/2007-9/17/2008	11/12/2010
59	Belleair	Pinellas	11/2/2010	8/24/2009-12/2/2009	11/12/2010
60	Sand Mountain	Polk	11/2/2010	3/21/2007-9/3/2008	11/12/2010
61	Seven Springs	Pasco	10/26/2010	7/22/2009-9/11/2009	11/12/2010
62	Sixteenth Street	Pinellas	11/1/2010	7/7-7/20/2009	11/12/2010
63	Higgins Plant	Pinellas	11/9/2010	1/15-5/7/2010	11/15/2010
64	Hudson	Pasco	11/5/2010	9/1-9/2/2009	11/15/2010
65	Brooksville	Hernando	12/6/2010	6/23-11/6/2009	12/16/2010
66	Curlew	Pinellas	1/5/2011	2/17-5/7/2010	1/12/2011
67	Twin County Ranch	Citrus	1/5/2011	8/4-8/21/2008	1/12/2011
68	Ulmerton West	Pinellas	1/5/2011	12/1/2008-5/24/2010	1/12/2011
69	Griffin	Polk	1/7/2011	11/6-13/06,5/28-6/2/10	1/24/2011
70	Little Payne Creek #2	Polk	3/25/2011	11/23/2010	4/11/2011
71	Haines City	Polk	4/4/2011	1/15-3/19/2007	4/18/2011
72	Alderman	Pinellas	8/8/2011	2/14-2/21/06, 4/16-5/2/07 7/7/06, 4/23/07, 5/18/07	8/15/2011
73	Crossroads	Pinellas	8/8/2011	8/9/2005-2/26/2008	8/15/2011
74	Fort Meade	Polk	8/8/2011	9/13/-10/12/2006 8/10/2007, 6/8-6/8/2010	8/15/2011
75	Agricola #4	Polk	8/9/2011	8/15/2007-7/21/2008, 10/18/2010	10/17/2011
76	Inglis Mining	Citrus	11/29/2011	10/18-19/2007	12/8/2011
77	Rockland	Polk	1/19/2012	6/30/2009	2/2/2012
78	Pilsbury	Pinellas	2/14/2012	3/4-5/2/2006, 9/10/2009	2/27/2012
79	Maximo	Pinellas	2/15/2012	8/2-8/10/05, 4/18-4/27/07	2/27/2012
80	Starkey Road	Pinellas	3/8/2012	4/28/2010	3/16/2012
81	Inverness	Citrus	3/17/2012	9/15-???	3/26/2012
82	Largo	Pinellas	3/21/2012	9/25-12/6/05, 9/4-11/3/09 1/6, 3/26, 5/24/2010	4/6/2012
83	Vandolah	Hardee	5/3/2012	11/4-11/19/08, 10/18/2010	5/10/2012
84	Central Plaza	Pinellas	5/15/2012	2/13/2006, 3/26-3/29/2007 8/4-8/5/2008	5/18/2012
85	Clear Springs East	Polk	7/30/2012	1/30/2009	8/9/2012
86	Northeast	Pinellas	7/31/2012	12/6/05-5/4/06, 5/28/2008 1/13/2009	8/9/2012

QORE

PROPERTY SCIENCES

Prepared for:

Florida Department of Environmental Protection
Southwest District
13051 N Telecom Parkway
Temple Terrace, Florida 33637-0926

Prepared by:

QORE, Inc.
1211 Tech Blvd.
Suite 200
Tampa, Florida 33619

Substation Assessment and Remedial Action Plan Report
Denham Substation
Pasco County
Progress Energy Florida

August 1, 2008
QORE Project No. 27-420156GB

QORE
PROPERTY SCIENCES

August 1, 2008

Florida Department of Environmental Protection
Southwest District
13051 N Telecom Parkway
Temple Terrace, Florida 33637-0926

Attention: Waste Program Administrator

Re: Substation Assessment and Remedial Action Plan Report
for Progress Energy Florida
Denham Substation
Pasco County
FDEP Southwest District
OCD-WCU 07-0266
QORE Project No. 27-420156GB

Dear Sir/Madam:

QORE, Inc. (QORE) is pleased to submit this report on assessment and remedial actions for the Progress Energy Florida (PEF) Denham Substation. This report was prepared according to the December 2003 Substation Assessment and Remedial Action Plan (SARAP) and February 2006 SARAP Addendum. The report contains descriptions of remedial actions, soil quality sampling procedures, field screening results, and laboratory analytical results used and compiled during remediation of the Denham Substation.

Project Background

According to a Consent Order between the Florida Department of Environmental Protection (FDEP) and PEF, PEF inspected all its Florida substations to identify discharges of mineral oil dielectric fluid to the ground and to equipment pads. Discharges to pads and the ground were identified at approximately 275 PEF substations. The Consent Order directs PEF to remediate soil and ground water, as necessary, that had been impacted in excess of applicable FDEP approved standards or target levels by mineral oil dielectric fluid from electrical equipment according to the SARAP taking into account Risk-Based Corrective Action concepts or principles as they may be applicable to any PEF substations. The **December 31, 2003 Substation Inspection Form** for the Denham Substation indicates one discharge to an equipment pad and ground. Upon arrival at the substation, QORE personnel identified an additional discharge to pad and ground that was not on the original inspection form.

Substation Assessment and Remedial Action – General Procedures

Assessment and remedial action activities were conducted in accordance with the SARAP. The general protocols for these activities, which apply to this site and all other substation assessment and remediation activities, are summarized below. Site-specific procedures and results are presented separately for each equipment area with a release.

1. PCB Screening
   a. Mineral oil – The PCB content of the leaking equipment is verified by the manufacturer's information or other equipment label. If PCB content is not available for a piece of leaking equipment, additional testing is warranted and the procedures are identified on a site-specific basis.
   b. Soil – Two samples are collected from the most visibly mineral oil impacted soil at each oil-filled piece of equipment and screened onsite utilizing the Dexsil Clor-N-Soil test. A negative result indicates that the soil contains less than 50 parts per million (ppm) PCBs. If the result is positive for PCBs, retest the soil using a second Clor-N-Soil test.
   c. The results of these tests are recorded on the **Substation Remediation Form.**

2. Lead in Soil Screening – A single composite surface soil sample is collected for lead screening from stained areas associated with an individual piece of equipment. Three screening tests are conducted for each composite sample using the Lead Check Soil Test by Hybrivet Systems to confirm the results are <400 ppm for lead. The results of these tests are recorded on the **Substation Remediation Form.**

3. Mineral Oil-Impacted Soil Screening - After visibly impacted soil and/or rock is removed, plus an additional appropriate buffer on the side walls and bottom, a Dexsil Petroflag screening kit is used to confirm removal of soil containing mineral oil dielectric fluid above the leachability Soil Cleanup Target Level (SCTL, Table II, Chapter 62-777, FAC) for Total Recoverable Petroleum Hydrocarbons (TRPH) of 340 milligrams per kilogram. A composite soil sample is collected at each of four sidewalls and the excavation bottom for a total of five composite samples. Each composite sample is collected from soil most heavily impacted by mineral oil.

   In cases where impacted soil cannot be removed due to structures or other types of obstructions, sampling and analysis is conducted to establish alternative SCTLs. After onsite screening of TRPH using PetroFlag, an additional sample is collected from the most impacted area for laboratory analysis for TRPH using the FL PRO Method and for TRPH speciation using the Massachusetts Department of Environmental Protection (MADEP) Method. The results of the FL PRO analysis is used to verify that the soil sample contains elevated concentrations of TRPH. The MADEP results are compared to the alternative SCTLs presented in Table C-9, Chapter 62-777, FAC. The results of these tests are recorded as pass/fail on the **Substation Remediation Form.**

4. Pad Cleaning – Releases to a concrete pad may be small, and completely contained on the pad, or large enough that mineral oil flows to the edge of the pad and onto the adjacent ground surface. Small stains are cleaned with ECP-99, a cleaner and degreaser that is a proprietary mixture of bacteria, water and nutrients. This product is non-toxic, non-corrosive, and 100% biodegradable. The stain is treated with the cleaner and rinsed with a small amount of water. The liquid is removed with sorbent material which is disposed properly or with impacted soil if excavation is conducted elsewhere at the site.

Larger releases that have also impacted the adjacent ground surface are cleaned with West Penetone Power Cleaner 155, a liquid alkaline, biodegradable degreaser. Typically a few liters of Penetone are used to clean a pad. After saturating the stained area with the cleaning solution the stain is scrubbed with a wire brush, and then allowed to sit for a few minutes. The fluid is then rinsed with water into a previously delineated area of stained soil so that when the soil is excavated, the solution containing the material from the pad is also removed.

Clean-up Activities and Results

Each equipment unit that was identified on the **Substation Inspection Form** (Appendix A) as having a stain is assessed using the field screening methods described above. Excavation of impacted soil was guided by the PetroFlag results, and excavation continued until the results were less than 340 ppm, or the excavation could not proceed due to structures or other obstructions. Assessment and remediation activities are discussed for each equipment unit, with field support data (**Substation Remediation Form, Field Memorandum Form, PetroFlag Data Sheet, Site Sketch, and Photographs**) presented in Appendices B and C. The Denham Substation had two equipment areas with two leaks that were assessed and remediated: CB0444F, power outlet from CT cables; Transformer T00770F, main tank drain. **Substation Remediation Forms** for each of these units are attached, and contain a summary of the field activities and results. Also attached is an aerial photograph showing the substation location (Plate 1) and a layout of the Denham Substation, with locations of the equipment units (Plate 2). If available, a three-line diagram of the site is included in Appendix A. Information shown on the individual equipment site sketches may include: latitude/longitude, excavation extents, PetroFlag sample locations and results, and if collected, the location of TRPH and MADEP soil samples. PCB and lead soil screening samples were collected from the stained areas, generally located toward the center of the excavation area, before excavation proceeded. Site sketches showing the final abatement areas are shown at the end of the corresponding appendix.

CB0444F, Power Outlet from CT Cables (Appendix B)

1. Clean-up Activities – Assessment/Clean-up Strategies for Soil, as applicable and necessary.
   a. Not applicable – no soil was impacted by mineral oil at this site.

2. Clean-up activities – Assessment/Clean-up Strategies for Ground Water, as applicable and necessary.
   a. Not applicable – no soil was impacted by mineral oil at this site.

3. The original inspection form listed this discharge to pad and ground. However, upon arrival, no discharge to the ground was observed. A PetroFlag test was conducted to confirm the observation. The results were <340ppm therefore no excavation was required. Pad cleaning was conducted in accordance with the procedures outlined above. No pre-abatement inspection photos are available for this leak.

Transformer T00770F, Main Tank Drain (Appendix C)

1. Clean-up Activities – Assessment/Clean-up Strategies for Soil, as applicable and necessary. No pre-abatement photograph is available for this piece of equipment. It was not leaking at the time of the initial inspection.

a. The extent of visible surface staining was delineated. Soil samples were field screened for PCBs and lead in accordance with the procedures outlined above. PCB results were <50 ppm and lead results were <400 ppm.
b. The affected soil and rock plus an additional appropriate buffer from the side wall and bottom of the affected area were excavated.
c. A Dexsil PetroFlag screening kit was utilized to confirm the removal of soil containing mineral oil dielectric fluid above the residential Soil Cleanup Target Level (SCTL) for TRPH of 340 mg/kg as described in Table II, Chapter 62-777, F.A.C. A composite sample was collected from each sidewall and bottom of the excavation. All sample results were recorded on the attached **PetroFlag Field Data Sheet** and are included in this report.
d. Once the excavation was complete the overall dimensions of the excavation were recorded on the **Field Memorandum Form** and attached **Site Sketch**. A **Completed excavation photograph** is attached and included in this report.
e. Excavated soil was placed in appropriate containers (e.g. 55-gallon drum or roll-off container) or on plastic sheeting and covered to prevent contact with rainfall and storm water runoff.
f. Excavated soil was managed in accordance with Substation Waste Management (Disposal) Plan. A copy of the **Laboratory's Report of Results** (Appendix D), the **Generator's Copy of the Waste Manifest** (Appendix E), and the **Certificate of Treatment** (Appendix F) are attached in this report. Once the excavation was complete the area was restored to its original configuration via backfilling with the approved clean fill and rock as necessary. Field personnel estimate the volume (in cubic yards) of soil removed during excavation. The field estimate takes into account the general dimensions of an excavation and assumes uniformity and straight sides, which are not always the case. Therefore, this estimate can differ from the amount of soil treated as shown on the **Certificate of Treatment,** which is usually in tons. Other factors that contribute to a discrepancy between the estimated and treated volumes are 1) non-soil material that is sometimes included with the disposal material; 2) variation in soil densities that affect the conversion from cubic yards to tons; and, 3) large, complicated excavations are difficult to estimate.

2. Impacts at this piece of equipment included the pad and the soil adjacent to the pad surface. Therefore, prior to completing the soil excavation, the pad surface was cleaned. Pad cleaning was conducted in accordance with the procedures outlined above.

3. Clean-up activities – Assessment/Clean-up Strategies for Ground Water, as applicable and necessary.

   Oil-affected soil (soil with a TRPH concentration above 340 mg/Kg, the leachability-based target cleanup level for TRPH in Table II, Chapter 62-777, FAC) was not identified at or below the water table, nor was a sheen observed on the water table; therefore, ground water sampling was not required.

Summary and Recommendation

The following remediation activities, as necessary, were undertaken and completed on December 19, 2007 and March 27, 2008 for the Denham Substation with respect to the above-referenced tasks:

- Two stained areas on two equipment pads were cleaned;

- The PCB test results for composite soil samples collected at the Denham Substation were <50 ppm;
- The lead test results for composite soil samples collected at the Denham Substation were <400 ppm;
- Ground water was not impacted by mineral oil; therefore, no ground water quality samples were collected;
- The field estimate for volume of excavated soil was approximately 0.3 cubic yards. The Certificate of Treatment from Clark Environmental indicates that three 55-gallon drums of soil were treated;
- One composite soil sample was submitted to STL Tampa for pre-burn analysis; and,
- Excavated soil was thermally treated at Clark Environmental of Mulberry, Florida.

Based on the results of the assessment and remedial activities described in this report, all mineral oil discharges identified during the substation inspection have been rehabilitated to applicable cleanup target levels. Accordingly, PEF recommends unconditional No Further Action (NFA) for this site. If the Department agrees, please provide written concurrence of this NFA recommendation.

****

We trust this report addresses the requirements of the SARAP with respect to the above-referenced PEF substation. If you have any questions, please call either of the undersigned at (813) 623-6646.

Yours very truly,

QORE, Inc.

Bruce W. Nodiff, P.G.
Senior Consultant

Jonathan E. Hull, P.G.
Senior Principal Consultant

Attachments

CC: Mr. Mark Stuckey, P.G., FDEP—Tallahassee
Mr. Steve White, Progress Energy-SARAP Team Lead
Ms. Betty Carter, Progress Energy- Environmental Coordinator
Ms. Laura Koch, Progress Energy- Environmental Specialist

Plate 1 - Site Location
Plate 2 - Site Layout

Appendices

Appendix A - Substation Inspection Form
Appendix B - CB0444F, Power Outlet from CT Cables
Appendix C - Transformer T00770F, Main Tank Drain
Appendix D - Laboratory Analytical Report
Appendix E - Waste Manifest
Appendix F - Certificate of Treatment

PLATES

PLATE 1. SITE LOCATION

Denham Substation

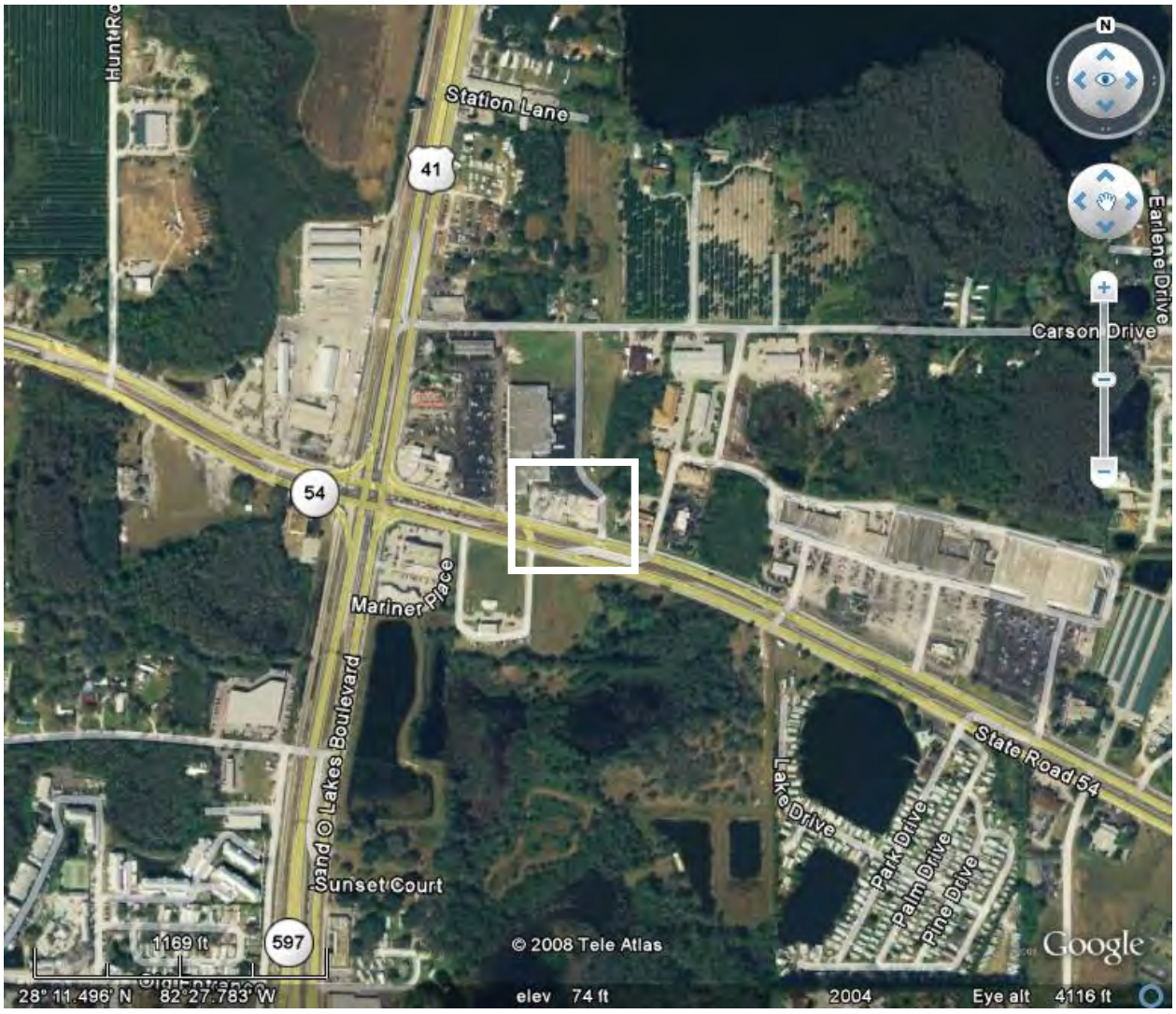


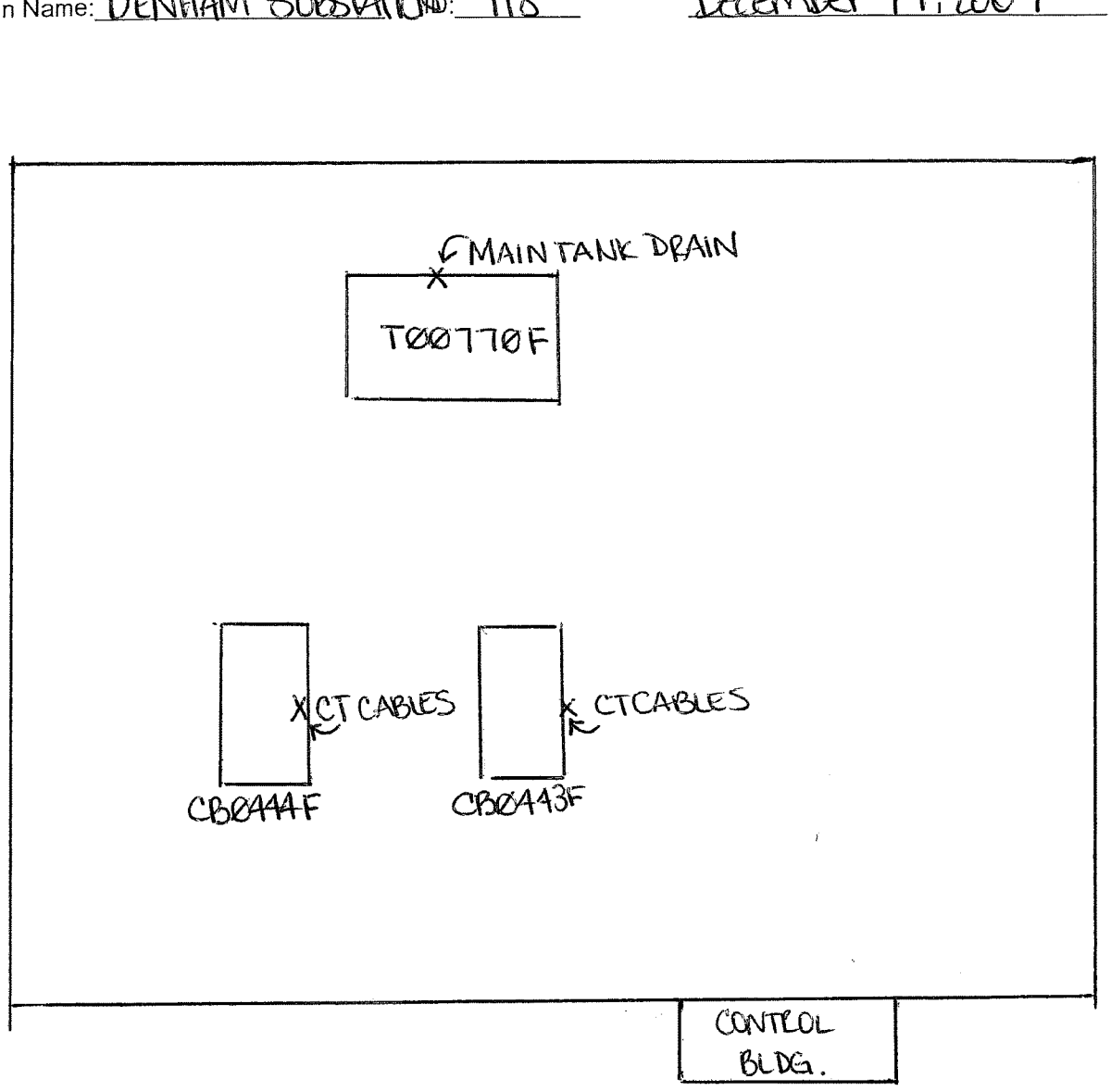
PLATE 2

Progress Energy

Substation Site Layout Sketch

Site Layout Sketch: Show general layout of substation: location of all equipment (transformers, circuit breakers etc.) that are listed on the Substation Inspection Form with leaks to pad and/or ground. Include the location of the control house, if there is one. Show the nearest road if possible.

Substation Name: DENHAM SUBSTATION Substation No: 118 Date: December 19, 2007



Note: Leaking equipment name from Site Inspection Form

APPENDIX A

SUBSTATION INSPECTION FORM

Progress Energy

Substation Inspection Form

10:30-10:45

Inspection Date: 12/31/07	Inspector(s) Name(s): NORM ANDINO – BILL MORGAN	Affiliation: QORE – PEF
Substation Name: DENHAM	Substation Location (Address): 21315 SR54	
Ops Center: SUN COAST	Area: PASCO	☒ Distribution ☐ Transmission
Potable Well(s) Visible Onsite / Nearby: ☐ Onsite ☐ Nearby	Description of Well(s): ☐ Public ☐ Private ☐ Unknown	Comments:
Waters of State Adjacent to Site?: ☐ Yes ☒ No	SPCC Oil Containment Onsite?: ☒ Yes ☐ No	
Populated Areas Adjacent to Site: ☒ Residences ☐ School / Daycare ☐ Playground / Park ☒ Other ☐ NA	Describe: RETAIL	
Wetlands Adjacent to Site?: ☐ Yes ☒ No	Storm Drain Adjacent to Site?: ☐ Yes ☒ No	

Mineral Oil Discharge Data

Total Number of Visible Discharges (stains on concrete pads, soil, rock, etc.): (2)

Leaking Equipment Name	Leak Description / Location	Est. Oil Capacity of Equipment (Gal.)	Lat / Lon of Leak	Duration (if known)	Discharge to Pad?	Discharge to Ground?	Length X Width of Stained Area (FtxFt)	Photo	Rapid Response Action Taken
Example: X253 Breaker	*Compressor leak in panel*	*< 1*	*27° 49.230' 82°38.010'*	*Unk*	*No*	*Yes*	*1 x 4*	*X*	*Placed AP in cabinet to absorb oil*
CB0444F	POWER OUTLET FROM CT CABLES	285	28 11.494 82 27.827	1	Y	Y	1X2	Y	FLAC
CB0443F	1	285	28 11.494 82 27.827		N	N	—	Y	1
T0077OF	MAIN TANK DRAIN				Y	Y	1X2		
new leak observed by abatement crew	12/19/07								

Legend:

AP = Absorbent Pad

APPENDIX B

CB0444F

POWER OUTLET FROM CT CABLES

Progress Energy

Substation Remediation Form

Substation Name	DENHAM SUBSTATION				
Substation Location (Address)	21315 SR54				
Substation Maint. Shop	SEVEN SPRINGS	Area	COASTAL	County	PASCO
Crew Leader Name(s)	LORI TANNER / M. CRAWFORD-GORE				
Excavation Contractor	SWS	Treatment/Disposal Location	BARTOW, FL		

Remediation Summary

Leaking Equipment Name*	CB0444F		
Leak Description / Location(s)*	POWER OUTLET FROM CT CABLES		
Latitude*:	28°11.474	Longitude*:	82°27.822
Start Date	December 19, 2007	Completion Date	December 19, 2007

Discharge to Pad: ☑ Yes ☐ No	Pad Cleaned: ☑ Yes ☐ No ☐ NA
Discharge to Ground: ☐ Yes ☑ No	PCBs < 50 ppm in oil? ☑ Yes ☐ No
PCBs in oil determination method: PCB label or nameplate ☑ Lab results ☐	PCBs < 50 ppm in soil? ☐ Yes ☐ No ☑ NA (Clor-N-Soil)
Lead in soil results negative (<400 ppm)? Test 1 - ☐ Yes ☐ No ☑ NA Test 2 - ☐ Yes ☐ No ☑ NA Test 3 - ☐ Yes ☐ No ☑ NA	Was mineral oil-affected soil detected with a TRPH concentration above 340 mg/kg at or below the water table? ☐ Yes ☐ No ☑ NA
Was a sheen observed on the water table? ☐ Yes ☐ No ☑ NA	Ground water constituent detected above GCTL (See attached lab report)? ☐ Yes ☐ No ☑ NA
Visibly stained soil remains: ☐ Yes ☑ No If yes, reason:_____	Sidewalls and Bottom <340 ppm? ☐ Yes ☐ No ☑ NA
MADEP sample collected? ☐ Yes ☑ No If yes: ☐ Pass ☐ Fail	Deviation Required: ☐ Yes ☑ No
Excavation Dimensions (l x w x h): NA	Estimated Soil Volume Excavated: NA cy

Notes:

ORIGINAL INSPECTION FORM LISTED THIS DISCHARGE TO PAD AND GROUND. UPON ARRIVAL, NO DISCHARGE TO THE GROUND WAS OBSERVED. PETROFLAG TEST WAS RUN TO CONFIRM OBSERVATION. RESULTS CAME BACK <340ppm.

* - From Substation Inspection Form

QORE™
PROPERTY SCIENCES

SARAP FIELD MEMORANDUM FORM

Route To: Jon Hull - Tampa
From: LORI TANNER
Subject PEF Substation Remediation
Substation Name DENHAM SUBSTATION
Address: 21315 SR 54
Area: COASTAL
Subst. Maint. Shop: SEVENSPRINGS
Project Number: 27-420156GB

Date: December 19, 2007
Latitude*: 28.11.474
Longitude*: 82.27.822
Page: 1 of 1

Leaking Equipment Name*: CB0444F

Leak Description / Locations*: POWER OUTLET FROM CT CABLES

Daily Log:

Time	Notes
10:45	JOB BRIEFING AND SITE ASSESSMENT
	PAD WAS CLEANED. SOIL SAMPLE READING RESULTS
	WERE < 340ppm, ACTUAL READING WAS 67 PPM.
	THEREFORE NO EXCAVATION IS REQUIRED.

Note: * - From Substation Inspection Form

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 12/19/2007	Site Name: Denham
Operator: Lori Tanner	Equip. Name*: CB 0444F
Calibration Time: 11:30:00 AM	Leak Description*: Power Outlet from CT Cable
Calibration Temperature 24.0 C	Latitude*: 28.1915666666667
Substation ID	Longitude: -82.4637

No.	Sample ID	Weight	Time	Reading (ppm)	DF[1]	RF[1]	Actual (ppm)	Comments
1	-BL-	—	11:30	Ø	1	10	Ø	Blank
2	-Cal-	—	11:30	1000	1	10	1000	Cal
3	CB0444	10.0	11:30	67	1	10	67	Surface

E[4] or EEEE refer to the instrument readout when the upper detection limit of the PetroFlag instrument is exceeded

1DF = Dilution Factor, e.g. for 5 gram soil sample DF=10g/5g = 2, and actual concentration equals reading time DF (reading [ppm] x DF = actual concentration).

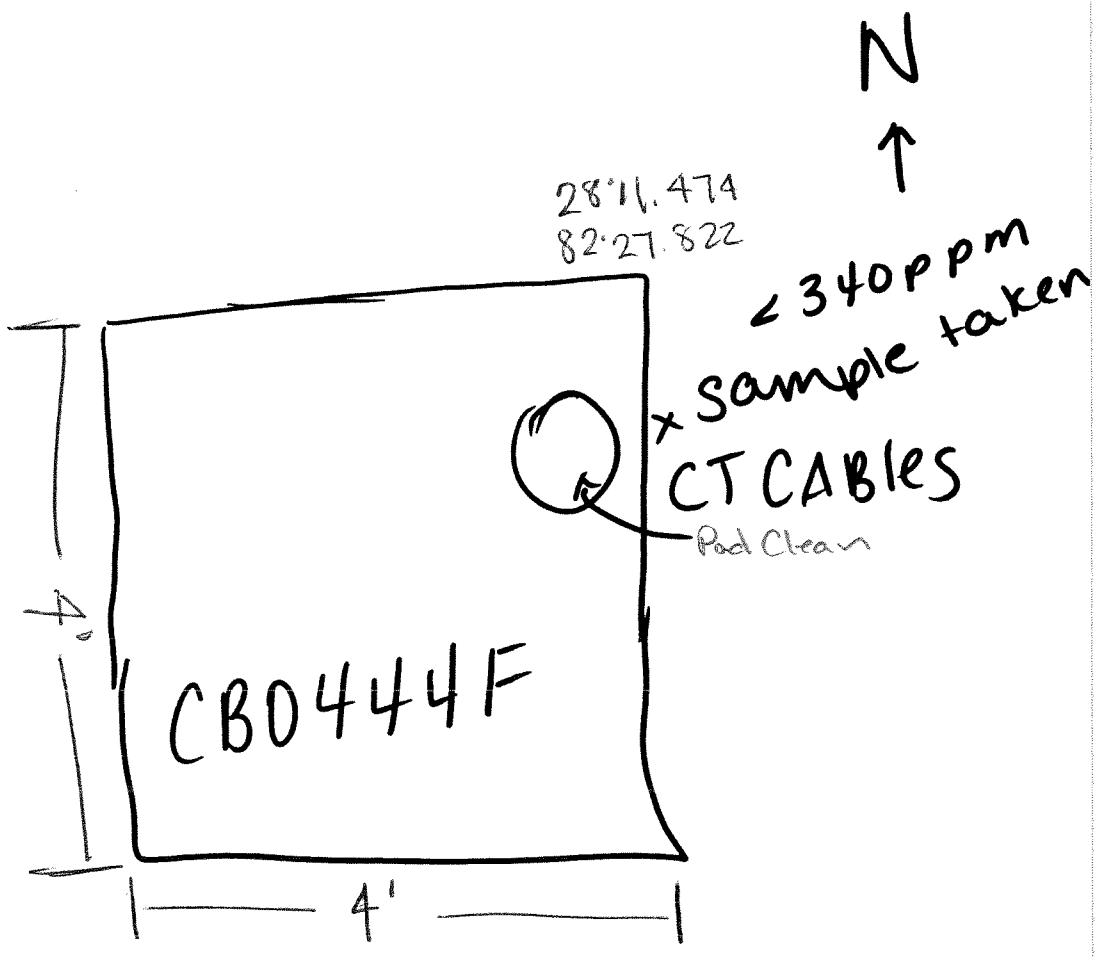
2RF = Response Factor, selected for the hydrocarbon contamination at the site. 10 is the correct response factor for mineral oil.

* - From Substation Inspection Form

Progress Energy
Substation Remediation Site Sketch

Site Sketch: (Show excavation details, dimensions, equipment, north arrow, and final soil sample locations. Label the stained area with the substation name, equipment name and leak description / location exactly as shown on the inspection form.)

Substation Name	Substation ID	Leaking Equipment Name
Denham		CB 0444F



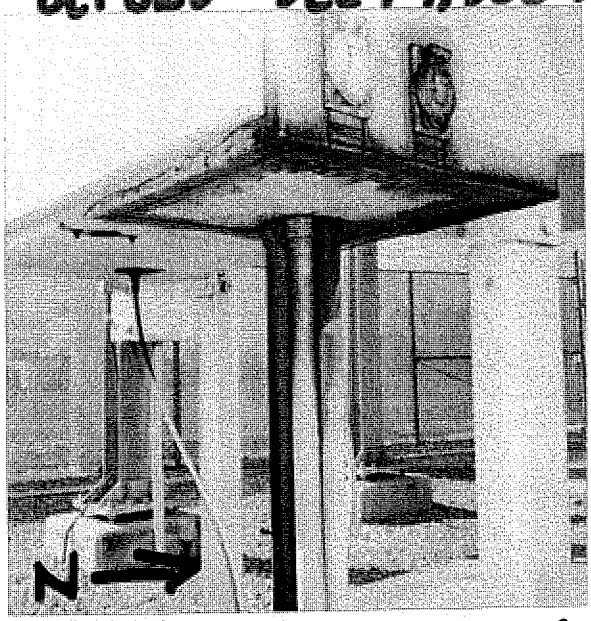
* NOT TO SCALE

Photo Log By: L. Tanner Substation Name: Denham

Equipment Name: CB0444F Leak Description: Power Outlet f/CT cables

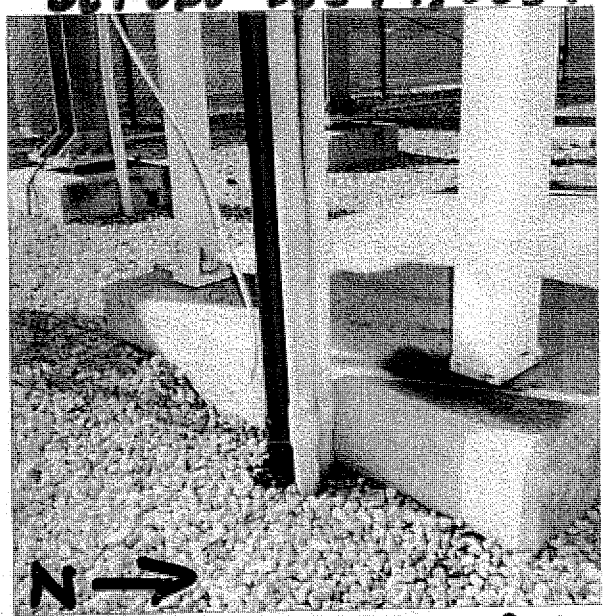
Substation ID: 118

BEFORE DEC 19, 2007



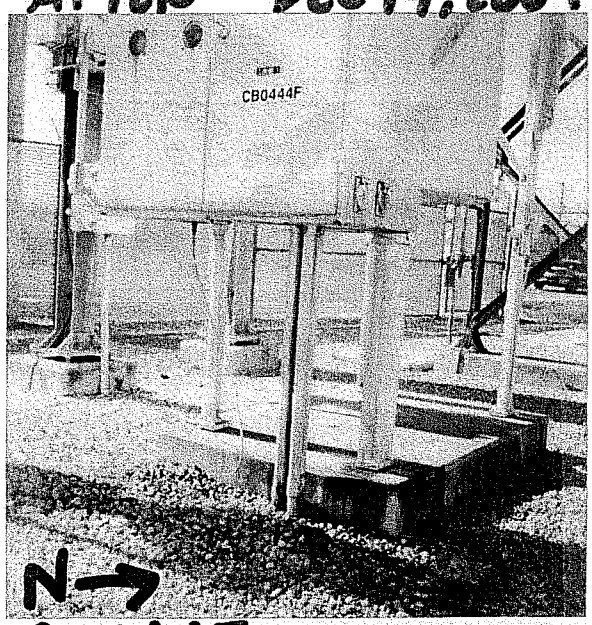
CB0444F Power Outlet
Denham f/CT Cables

BEFORE DEC 19, 2007



CB0444F Power Outlet
Denham f/CT Cables

AFTER DEC 19, 2007



CB0444F Power Outlet
Denham f/CT Cables

APPENDIX C

TRANSFORMER T00770F

MAIN TANK DRAIN

Progress Energy

Substation Remediation Form

Substation Name	DENHAM SUBSTATION				
Substation Location (Address)	21315 SR 54				
Substation Maint. Shop	SEVEN SPRINGS	Area	COASTAL	County	PASCO
Crew Leader Name(s)	LORI TANNER / M. CRAWFORD-MOORE				
Excavation Contractor	SWS	Treatment/Disposal Location	BARTOW, FL		

Remediation Summary

Leaking Equipment Name*	TRANSFORMER T00770F
Leak Description / Location(s)*	MAIN TANK DRAIN
Latitude*: 28° 11.501	Longitude*: 82° 27.819
Start Date: MARCH 27, 2008	Completion Date: MARCH 27, 2008
Discharge to Pad: ☑ Yes ☐ No	Pad Cleaned: ☑ Yes ☐ No ☐ NA
Discharge to Ground: ☑ Yes ☐ No	PCBs < 50 ppm in oil? ☑ Yes ☐ No
PCBs in oil determination method: PCB label or nameplate ☑ Lab results ☐	PCBs < 50 ppm in soil? ☑ Yes ☐ No ☐ NA (Clor-N-Soil)
Lead in soil results negative (<400 ppm)? Test 1 - ☑ Yes ☐ No ☐ NA; Test 2 - ☑ Yes ☐ No ☐ NA; Test 3 - ☑ Yes ☐ No ☐ NA	Was mineral oil-affected soil detected with a TRPH concentration above 340 mg/kg at or below the water table? ☐ Yes ☐ No ☑ NA
Was a sheen observed on the water table? ☐ Yes ☐ No ☑ NA	Ground water constituent detected above GCTL (See attached lab report)? ☐ Yes ☐ No ☑ NA
Visibly stained soil remains: ☐ Yes ☑ No If yes, reason:_____	Sidewalls and Bottom <340 ppm? ☑ Yes ☐ No ☐ NA
MADEP sample collected? ☐ Yes ☑ No If yes: ☐ Pass ☐ Fail	Deviation Required: ☐ Yes ☑ No
Excavation Dimensions (l x w x h): 4 x 1½ x 1½	Estimated Soil Volume Excavated: ~.3 cy

Notes:

* - From Substation Inspection Form

QORE™
PROPERTY SCIENCES

SARAP FIELD MEMORANDUM FORM

Route To: Jon Hull - Tampa
From: M. CRAWFORD
Subject PEF Substation Remediation
Substation Name DENHAM
Address: 21315 SR 54
Area: COASTAL
Subst. Maint. Shop: SEVEN SPRINGS
Project Number: 27-420151.GB

Date: MARCH 27, 2008
Latitude*: 28°11.501
Longitude*: 82°27.819
Page: 1 of 1

Leaking Equipment Name*: TRANSFORMER T00T10F

Leak Description / Locations*: MAIN TANK DRAIN

Daily Log:

Time	Notes
0630	START TIME
0800	CREW BROUGHT DRUMS FROM SHOP WITH 2-3 CY BACKFILL. WILL ATTEMPT HAND DIG.
1015	CLEAN HOLE 4'x1½'x1½'
1105	PRE BURN COLLECTED
1230	MOBE TO ZEPHYRHILLS - DROP OFF EQUIP.

Note: * - From Substation Inspection Form

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 3/27/08

Operator: Marina Crawford

Calibration Time: _____

Calibration Temperature: _____

Substation Name: DENHAM

Equip. Name*: T#9775

Leak Location*: Main Tank Drain

Latitude/Longitude is listed on daily field form.

No.	Sample ID	Wt. (grams)	Time	Reading (ppm)	DF1	RF2	Actual (ppm)	Comments
	Blank	---		0	--	10	0	Daily calibration
	Standard	--		1000	--	10	1000	Daily calibration
1	N-1	10.0	1033	259		10	259	
2	E-1	"	1034	271		10	271	
3	W-1	"	1035	266		10	266	
4	S-1	"	"	"	"	10	Pad	"
5	B-1	"	1040	181		10	181	
6						10		
7						10		
8						10		
9						10		
10						10		
11						10		
12						10		

Notes * - From Substation Inspection Form

E^4 or EEEE refers to the instrument read-out when the uper detection limit of the PetroFlag instrument is exceeded

[1]DF = Dilution Factor, e.g. for 5 gram soil sample DF=10g/5g = 2, and actual concentration equals reading times DF (reading [ppm] x DF = actual concentration).

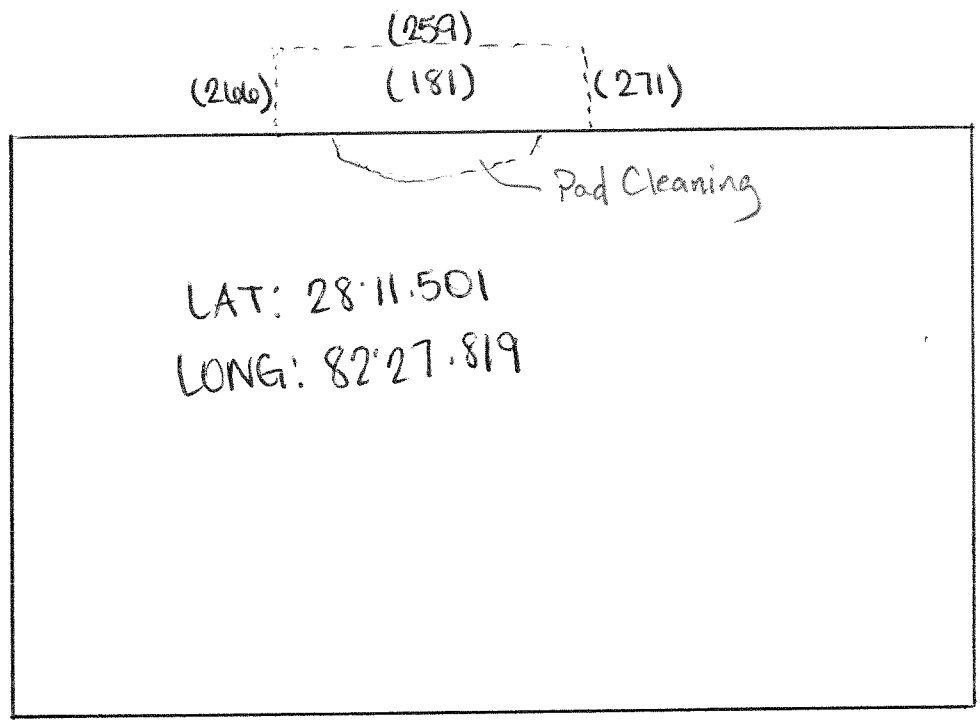
[2]RF = Response Factor, selected for the hydrocarbon comtamination at the site

Progress Energy
Substation Remediation Site Sketch

Site Sketch: (Show excavation details, dimensions, equipment, north arrow, and final soil sample locations. Label the stained area with the substation name, equipment name and leak description / location exactly as shown on the inspection form.)

Substation Name: DENHAM SUBSTATION Substation ID: 118

Leaking Equipment Name*: TRANSFORMER TR0770F



- SOUTHERN WALL IS CONCRETE PAD.

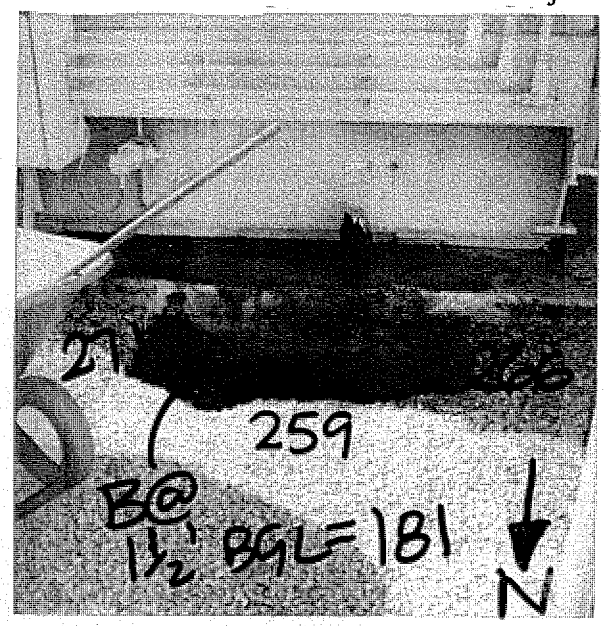
0' 4'
APPROX. SCALE

Note: * - Leaking equipment name from Site Inspection Form

Photo Log By: M. CRAWFORD Substation Name: DENHAM SUBSTATION

Equipment Name: T0077QF Leak Description: MAIN TANK DRAIN

Substation ID: Ø118



3-27-08 DENHAM SUB
T0077QF BANK 1 CLEAN

NA

NA

APPENDIX D

LABORATORY ANALYTICAL REPORT

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

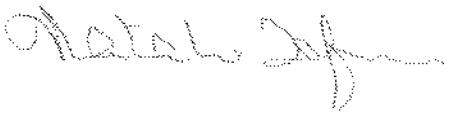
ANALYTICAL REPORT

Job Number: 660-21973-1

Job Description: Denham Subst

For:
QORE Property Science
1211 Tech Boulevard
Suite 200
Tampa, FL 33619

Attention: Mr. Jon Hull



Natalie Tafuni
Project Manager I
natalie.tafuni@testamericainc.com
04/15/2008

cc: Bridget Hristovski
Beth Kenning

Methods: FDEP, DOH Certification #: E84282, E81005 These test results meet all the requirements of NELAC unless specified in the case narrative. All questions regarding this test report should be directed to the TestAmerica Project Manager who signed this test report. The estimated uncertainty associated with these reported results is available upon request. The results contained in this test report relate only to these samples included herein.

Job Narrative
660-J21973-1

Comments
No additional comments.

Receipt
All samples were received in good condition within temperature requirements.

8260B
Surrogate recovery for the following sample(s) were outside control limits: Denham Substation Pre Burn Sample #1 Grab (660-21973-2). Evidence of matrix interference is present; re-analysis was performed with same results.

FLPRO
The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 660-59841 were outside control limits. The data are flagged with a J3 qualifier.

EXECUTIVE SUMMARY - Detections

Client: QORE Property Science Job Number: 660-21973-1

Lab Sample ID / Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
660-21973-1	**DENHAM SUBSTATION PRE BURN SAMPLE #1 COMPOSITE**					
C8-C40		110	J3	11	mg/Kg	FL-PRO
Cadmium		0.58		0.55	mg/Kg	6010B
Chromium		3.1		1.1	mg/Kg	6010B
Lead		43		0.55	mg/Kg	6010B
Percent Solids		90		0.10	%	PercentMoisture
Percent Moisture		9.8		0.10	%	PercentMoisture
660-21973-2	**DENHAM SUBSTATION PRE BURN SAMPLE #1 GRAB**					
Percent Solids		77		0.10	%	PercentMoisture
Percent Moisture		23		0.10	%	PercentMoisture

METHOD SUMMARY

Client: QORE Property Science

Job Number: 660-21973-1

Description	Lab Location	Method	Preparation Method
Matrix Solid			
Volatile Organic Compounds by GC/MS	TAL TAM	SW846 8260B	
Closed System Purge & Trap/Laboratory Preservation	TAL TAM		SW846 5035
Florida Method for Determination of Petroleum Range Organics by GC/FID	TAL TAM	FL-DEP FL-PRO	
Automated Soxhlet Extraction	TAL TAM		SW846 3541
Inductively Coupled Plasma - Atomic Emission Spectrometry	TAL TAM	SW846 6010B	
Acid Digestion of Sediments, Sludges, and Soils	TAL TAM		SW846 3050B
Extractable Organic Halides (EOX) in Solids	TAL SAV	SW846 9023	

Lab References:

TAL SAV = TestAmerica Savannah

TAL TAM = TestAmerica Tampa

Method References:

FL-DEP = State Of Florida Department Of Environmental Protection, Florida Administrative Code.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: QORE Property Science

Job Number: 660-21973-1

Method	Analyst	Analyst ID
SW846 8260B	Perez, Julian	JP
FL-DEP FL-PRO	Ortiz, Raymond	RO
SW846 6010B	Fox, Greg	GF
SW846 9023	Nelson, Christopher	CN
EPA PercentMoisture	Volz, Charles	CV

SAMPLE SUMMARY

Client: QORE Property Science

Job Number: 660-21973-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
660-21973-1	Denham Substation Pre Burn Sample #1 Composite	Solid	03/27/2008 1105	03/29/2008 1100
660-21973-2	Denham Substation Pre Burn Sample #1 Grab	Solid	03/27/2008 1105	03/29/2008 1100

SAMPLE RESULTS

Client: QORE Property Science | Job Number: 660-21973-1

Client Sample ID: **Denham Substation Pre Burn Sample #1 Grab**

Lab Sample ID: 660-21973-2 | Date Sampled: 03/27/2008 1105
Client Matrix: Solid | % Moisture: 22.8 | Date Received: 03/29/2008 1100

8260B Volatile Organic Compounds by GC/MS

Method: 8260B | Analysis Batch: 660-59982 | Instrument ID: BVMF GC/MS
Preparation: 5035 | Prep Batch: 660-59983 | Lab File ID: 1FD0312.D
Dilution: 1.0 | Initial Weight/Volume: 6.87 g
Date Analyzed: 04/03/2008 1307 | Final Weight/Volume: 5 g
Date Prepared: 04/03/2008 2044

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	PQL
Dichlorobromomethane		2.4	U	2.4	4.7
Bromoform		2.0	U	2.0	4.7
Bromomethane		3.4	U	3.4	9.4
Carbon tetrachloride		2.4	U	2.4	4.7
Chlorobenzene		2.4	U	2.4	4.7
Chloroethane		2.1	U	2.1	9.4
2-Chloroethyl vinyl ether		19	U	19	47
Chloroform		2.4	U	2.4	4.7
Chloromethane		2.4	U	2.4	9.4
Chlorodibromomethane		2.4	U	2.4	4.7
1,2-Dichlorobenzene		2.4	U	2.4	4.7
1,3-Dichlorobenzene		2.4	U	2.4	4.7
1,4-Dichlorobenzene		2.4	U	2.4	4.7
Dichlorodifluoromethane		2.3	U	2.3	9.4
1,1-Dichloroethane		2.4	U	2.4	4.7
1,2-Dichloroethane		2.4	U	2.4	4.7
cis-1,2-Dichloroethene		2.4	U	2.4	4.7
trans-1,2-Dichloroethene		2.4	U	2.4	4.7
1,2-Dichloropropane		2.4	U	2.4	4.7
cis-1,3-Dichloropropene		1.9	U	1.9	4.7
trans-1,3-Dichloropropene		2.0	U	2.0	4.7
Methylene Chloride		3.8	U	3.8	4.7
1,1,2,2-Tetrachloroethane		3.2	U	3.2	4.7
Tetrachloroethene		2.8	U	2.8	4.7
1,1,1-Trichloroethane		2.0	U	2.0	4.7
1,1,2-Trichloroethane		2.4	U	2.4	4.7
Trichloroethene		2.0	U	2.0	4.7
Trichlorofluoromethane		2.6	U	2.6	9.4
Vinyl chloride		2.4	U	2.4	9.4
1,1-Dichloroethene		2.1	U	2.1	4.7

Surrogate	%Rec		Acceptance Limits
4-Bromofluorobenzene	45	J1	63 - 135
Dibromofluoromethane	68		58 - 142
Toluene-d8 (Surr)	63	J1	64 - 136

Client: QORE Property Science | Job Number: 660-21973-1

Client Sample ID: **Denham Substation Pre Burn Sample #1 Composite**

Lab Sample ID: 660-21973-1 | Date Sampled: 03/27/2008 1105
Client Matrix: Solid | % Moisture: 9.8 | Date Received: 03/29/2008 1100

FL-PRO Florida Method for Determination of Petroleum Range Organics by GC/FID

Method: FL-PRO | Analysis Batch: 660-59841 | Instrument ID: Agilent 6890 FID
Preparation: 3541 | Prep Batch: 660-59699 | Lab File ID: 1D02L012.D
Dilution: 1.0 | Initial Weight/Volume: 30.00 g
Date Analyzed: 04/02/2008 1214 | Final Weight/Volume: 2 mL
Date Prepared: 04/01/2008 0750 | Injection Volume: 2 uL
Column ID: PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	PQL
C8-C40		110	J3	5.5	11

Surrogate	%Rec	Acceptance Limits
o-Terphenyl	88	15 - 154

Client: QORE Property Science

Job Number: 660-21973-1

Client Sample ID: Denham Substation Pre Burn Sample #1 Composite

Lab Sample ID:	660-21973-1	Date Sampled:	03/27/2008 1105
Client Matrix:	Solid % Moisture: 9.8	Date Received:	03/29/2008 1100

6010B Inductively Coupled Plasma - Atomic Emission Spectrometry

Method:	6010B	Analysis Batch: 660-59708	Instrument ID: TJA ICP
Preparation:	3050B	Prep Batch: 660-59696	Lab File ID: 8D01B
Dilution:	1.0		Initial Weight/Volume: 1.0 g
Date Analyzed:	04/01/2008 1118		Final Weight/Volume: 50 mL
Date Prepared:	04/01/2008 0703		

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	PQL
Arsenic		0.26	U	0.26	0.55
Cadmium		0.58		0.096	0.55
Chromium		3.1		0.19	1.1
Lead		43		0.17	0.55

General Chemistry

Client Sample ID: Denham Substation Pre Burn Sample #1 Composite

Lab Sample ID: 660-21973-1 Date Sampled: 03/27/2008 1105
Client Matrix: Solid % Moisture: 9.8 Date Received: 03/29/2008 1100

Analyte	Result	Qual	Units	MDL	PQL	Dil	Method
Halogens, Extractable Organic	6.3	U	mg/Kg	6.3	11	1.0	9023
Anly Batch: 680-101912	Date Analyzed 04/01/2008 1000					DryWt Corrected: Y	

Analyte	Result	Qual	Units	PQL	PQL	Dil	Method
Percent Solids	90		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 660-59767	Date Analyzed 04/01/2008 1530						
Percent Moisture	9.8		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 660-59767	Date Analyzed 04/01/2008 1530						

Client Sample ID: Denham Substation Pre Burn Sample #1 Grab

Lab Sample ID: 660-21973-2 Date Sampled: 03/27/2008 1105
Client Matrix: Solid Date Received: 03/29/2008 1100

Analyte	Result	Qual	Units	PQL	PQL	Dil	Method
Percent Solids	77		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 660-59728	Date Analyzed 04/01/2008 0952						
Percent Moisture	23		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 660-59728	Date Analyzed 04/01/2008 0952						

DATA REPORTING QUALIFIERS

Client: QORE Property Science Job Number: 660-21973-1

Lab Section	Qualifier	Description
GC/MS VOA		
	J1	Estimated value; value may not be accurate. Surrogate recovery outside of criteria.
	U	Indicates that the compound was analyzed for but not detected.
GC Semi VOA		
	J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
	U	Indicates that the compound was analyzed for but not detected.
Metals		
	U	Indicates that the compound was analyzed for but not detected.
General Chemistry		
	U	Indicates that the compound was analyzed for but not detected.

QUALITY CONTROL RESULTS

Client: QORE Property Science

Job Number: 660-21973-1

Surrogate Recovery Report

8260B Volatile Organic Compounds by GC/MS

Client Matrix: Solid

Lab Sample ID	Client Sample ID	BFB %Rec	DBFM %Rec	TOL %Rec
660-21973-2	Denham Substation Pre Burn Sample #1 Grab	45J1	68	63J1
MB 660-59982/3		100	108	98
LCS 660-59982/1		99	100	95
LCSD 660-59982/2		98	105	98

Surrogate	Acceptance Limits
BFB = 4-Bromofluorobenzene	63-135
DBFM = Dibromofluoromethane	58-142
TOL = Toluene-d8 (Surr)	64-136

Client: QORE Property Science Job Number: 660-21973-1

Surrogate Recovery Report

FL-PRO Florida Method for Determination of Petroleum Range Organics by GC/FID

Client Matrix: Solid

Lab Sample ID	Client Sample ID	OTPH %Rec
660-21973-1	Denham Substation Pre Burn Sample #1 Composite	88
MB 660-59699/1-A		99
LCS 660-59699/2-A		90
LCSD 660-59699/3-A		89
660-21973-1 MS	Denham Substation Pre Burn Sample #1 Composite MS	60
660-21973-1 MSD	Denham Substation Pre Burn Sample #1 Composite MSD	85

Surrogate	Acceptance Limits
OTPH = o-Terphenyl	15-154

Client: QORE Property Science

Job Number: 660-21973-1

Method Blank - Batch: 660-59982

Method: 8260B
Preparation: N/A

Lab Sample ID: MB 660-59982/3
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/03/2008 0945
Date Prepared: N/A

Analysis Batch: 660-59982
Prep Batch: N/A
Units: ug/Kg

Instrument ID: BVMF GC/MS
Lab File ID: 1FD0308.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

Analyte	Result	Qual	MDL	PQL
Dichlorobromomethane	2.5	U	2.5	5.0
Bromoform	2.1	U	2.1	5.0
Bromomethane	3.6	U	3.6	10
Carbon tetrachloride	2.5	U	2.5	5.0
Chlorobenzene	2.5	U	2.5	5.0
Chloroethane	2.2	U	2.2	10
2-Chloroethyl vinyl ether	20	U	20	50
Chloroform	2.5	U	2.5	5.0
Chloromethane	2.5	U	2.5	10
Chlorodibromomethane	2.5	U	2.5	5.0
1,2-Dichlorobenzene	2.5	U	2.5	5.0
1,3-Dichlorobenzene	2.5	U	2.5	5.0
1,4-Dichlorobenzene	2.5	U	2.5	5.0
Dichlorodifluoromethane	2.4	U	2.4	10
1,1-Dichloroethane	2.5	U	2.5	5.0
1,2-Dichloroethane	2.5	U	2.5	5.0
cis-1,2-Dichloroethene	2.5	U	2.5	5.0
trans-1,2-Dichloroethene	2.5	U	2.5	5.0
1,2-Dichloropropane	2.5	U	2.5	5.0
cis-1,3-Dichloropropene	2.0	U	2.0	5.0
trans-1,3-Dichloropropene	2.1	U	2.1	5.0
Methylene Chloride	4.0	U	4.0	5.0
1,1,2,2-Tetrachloroethane	3.4	U	3.4	5.0
Tetrachloroethene	3.0	U	3.0	5.0
1,1,1-Trichloroethane	2.1	U	2.1	5.0
1,1,2-Trichloroethane	2.5	U	2.5	5.0
Trichloroethene	2.1	U	2.1	5.0
Trichlorofluoromethane	2.8	U	2.8	10
Vinyl chloride	2.5	U	2.5	10
1,1-Dichloroethene	2.2	U	2.2	5.0

Surrogate	% Rec	Acceptance Limits
4-Bromofluorobenzene	100	63 - 135
Dibromofluoromethane	108	58 - 142
Toluene-d8 (Surr)	98	64 - 136

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: QORE Property Science

Job Number: 660-21973-1

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 660-59982

Method: 8260B
Preparation: N/A

LCS Lab Sample ID: LCS 660-59982/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/03/2008 0845
Date Prepared: N/A

Analysis Batch: 660-59982
Prep Batch: N/A
Units: ug/Kg

Instrument ID: BVMF GC/MS
Lab File ID: 1FD0306.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

LCSD Lab Sample ID: LCSD 660-59982/2
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/03/2008 0922
Date Prepared: N/A

Analysis Batch: 660-59982
Prep Batch: N/A
Units: ug/Kg

Instrument ID: BVMF GC/MS
Lab File ID: 1FD0307.D
Initial Weight/Volume: 5 g
Final Weight/Volume: 5 mL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Chlorobenzene	105	103	66 - 135	2	34		
Trichloroethene	98	101	51 - 146	3	34		
1,1-Dichloroethene	99	103	40 - 164	4	46		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: QORE Property Science

Job Number: 660-21973-1

Method Blank - Batch: 660-59699

Method: FL-PRO
Preparation: 3541

Lab Sample ID: MB 660-59699/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/02/2008 1119
Date Prepared: 04/01/2008 0750

Analysis Batch: 660-59841
Prep Batch: 660-59699
Units: mg/Kg

Instrument ID: Agilent 6890 FID
Lab File ID: 1D02L006.D
Initial Weight/Volume: 30.00 g
Final Weight/Volume: 2 mL
Injection Volume: 2 uL

Analyte	Result	Qual	MDL	PQL
C8-C40	5.0	U	5.0	10

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	99	15 - 154

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 660-59699

Method: FL-PRO
Preparation: 3541

LCS Lab Sample ID: LCS 660-59699/2-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/02/2008 1125
Date Prepared: 04/01/2008 0750

Analysis Batch: 660-59841
Prep Batch: 660-59699
Units: mg/Kg

Instrument ID: Agilent 6890 FID
Lab File ID: 1D02L007.D
Initial Weight/Volume: 30.00 g
Final Weight/Volume: 2 mL
Injection Volume: 2 uL

LCSD Lab Sample ID: LCSD 660-59699/3-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/02/2008 1132
Date Prepared: 04/01/2008 0750

Analysis Batch: 660-59841
Prep Batch: 660-59699
Units: mg/Kg

Instrument ID: Agilent 6890 FID
Lab File ID: 1D02L008.D
Initial Weight/Volume: 30.00 g
Final Weight/Volume: 2 mL
Injection Volume: 2 uL

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C8-C40	77	78	63 - 153	1	25		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: QORE Property Science

Job Number: 660-21973-1

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 660-59699

Method: FL-PRO
Preparation: 3541

MS Lab Sample ID:	660-21973-1	Analysis Batch:	660-59841	Instrument ID:	Agilent 6890 FID
Client Matrix:	Solid	Prep Batch:	660-59699	Lab File ID:	1D02L013.D
Dilution:	1.0			Initial Weight/Volume:	30.00 g
Date Analyzed:	04/02/2008 1221			Final Weight/Volume:	2 mL
Date Prepared:	04/01/2008 0750			Injection Volume:	2 uL

MSD Lab Sample ID:	660-21973-1	Analysis Batch:	660-59841	Instrument ID:	Agilent 6890 FID
Client Matrix:	Solid	Prep Batch:	660-59699	Lab File ID:	1D02L014.D
Dilution:	1.0			Initial Weight/Volume:	30.00 g
Date Analyzed:	04/02/2008 1227			Final Weight/Volume:	2 mL
Date Prepared:	04/01/2008 0750			Injection Volume:	2 uL

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C8-C40	647	229	62 - 204	76	25	J3	J3

Calculations are performed before rounding to avoid round-off errors in calculated results.

Method Blank - Batch: 660-59696

Method: 6010B
Preparation: 3050B

Lab Sample ID: MB 660-59696/1-A
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/01/2008 0951
Date Prepared: 04/01/2008 0703

Analysis Batch: 660-59708
Prep Batch: 660-59696
Units: mg/Kg

Instrument ID: TJA ICP
Lab File ID: 8D01B
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	PQL
Arsenic	0.23	U	0.23	0.50
Cadmium	0.087	U	0.087	0.50
Chromium	0.17	U	0.17	1.0
Lead	0.15	U	0.15	0.50

Lab Control Spike/
Lab Control Spike Duplicate Recovery Report - Batch: 660-59696

Method: 6010B
Preparation: 3050B

LCS Lab Sample ID: LCS 660-59696/2-A ^5
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/01/2008 0956
Date Prepared: 04/01/2008 0703

Analysis Batch: 660-59708
Prep Batch: 660-59696
Units: mg/Kg

Instrument ID: TJA ICP
Lab File ID: 8D01B
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 50 mL

LCSD Lab Sample ID: LCSD 660-59696/3-A ^5
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/01/2008 1001
Date Prepared: 04/01/2008 0703

Analysis Batch: 660-59708
Prep Batch: 660-59696
Units: mg/Kg

Instrument ID: TJA ICP
Lab File ID: 8D01B
Initial Weight/Volume: 1.0 g
Final Weight/Volume: 50 mL

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Arsenic	97	98	75 - 125	1	20		
Cadmium	101	102	75 - 125	1	20		
Chromium	105	106	75 - 125	1	20		
Lead	102	104	75 - 125	1	20		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Client: QORE Property Science

Job Number: 660-21973-1

Method Blank - Batch: 680-101912

Method: 9023
Preparation: N/A

Lab Sample ID: MB 680-101912/1
Client Matrix: Solid
Dilution: 1.0
Date Analyzed: 04/01/2008 1000
Date Prepared: N/A

Analysis Batch: 680-101912
Prep Batch: N/A
Units: mg/Kg

Instrument ID: No Equipment Assigned
Lab File ID: N/A
Initial Weight/Volume: 2 g
Final Weight/Volume: 10 mL

Analyte	Result	Qual	MDL	PQL
Halogens, Extractable Organic	5.7	U	5.7	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

TestAmerica

TestAmerica Tampa
6712 Benjamin Rd, Suite 100
Tampa, FL 33634
www.testamericainc.com
Phone: (813) 885 7427
Fax: (813) 885 7049

Alternate Laboratory Name/Location:
Phone:
Fax:

PROJECT REFERENCE	PROJECT NO.	PROJECT LOCATION
DENHAM SUBST.	27420156-GB	FL
TESTAMERICA (LAB) PROJECT MANAGER	P.O. NUMBER	CONTRACT NO.
CLIENT (SITE) PM	CLIENT PHONE	CLIENT FAX
MARINA CRAWFORD		
CLIENT NAME	CLIENT EMAIL	
QORE	JHULL@QORE.NET	
CLIENT ADDRESS	MCRAWFORD@QORE.NET	
ON FILE		
COMPANY CONTRACTING THIS WORK (if applicable)	SAMPLER'S SIGNATURE	

PAGE 1 OF 1

STANDARD REPORT DELIVERY ●
DATE DUE Reg Turn
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE:

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	MATRIX TYPE: AQUEOUS (WATER)	MATRIX TYPE: SOLID OR SEMISOLID	MATRIX TYPE: AIR	MATRIX TYPE: NONAQUEOUS LIQUID (OIL, SOLVENT...)	REQUIRED ANALYSES: RCRA 4	TDX	FL PRO	TOT. VOL HALO CARBONS	REMARKS
3-27-08	1105	DENHAM SUBSTATION	C		✓			1	1	2		SOIL HAS GRAVEL
		PRE-BURN SAMPLE #1	G		✓						4	IN IT → EXTRA
												FL-PRO JAR
												SUBMITTED.

NUMBER OF CONTAINERS SUBMITTED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
			Marina Crawford	3-29-08	1100			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
				3-29-08	1100			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL LOG NO.	LABORATORY REMARKS:
					21973	4°C cooler temp

FS0030.12.20.08.2 Original - Return to Laboratory with Sample(s)

Login Sample Receipt Check List

Client: QORE Property Science

Job Number: 660-21973-1

Login Number: 21973
List Source: TestAmerica Tampa
Creator: Volz, Charles
List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Login Sample Receipt Check List

Client: QORE Property Science

Job Number: 660-21973-1

Login Number: 21973
Creator: Conner, Keaton
List Number: 1

List Source: TestAmerica Savannah
List Creation: 04/01/08 10:15 AM

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	

APPENDIX E

WASTE MANIFEST

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone 8008528878	4. Waste Tracking Number PSS0711263

5. Generator's Name and Mailing Address PROGRESS ENERGY 2501 25TH STREET N SR-17 ST PETE FL 33713

Generator's Site Address (if different than mailing address) DENHAM SUBSTATION 21315 SR54 LUTZ FL

Generator's Phone: 727 893 9243

6. Transporter 1 Company Name SWS FIRST Response — U.S. EPA ID Number FLR000122796

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address CLARK ENVIRONMENTAL 755 RAPAIRE INDUSTRIAL PKWY MULBERRY FL 33060 — U.S. EPA ID Number FLD984206003

Facility's Phone: 863 425 4884

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. NON RCRA REGULATED Industrial Solid waste	3	DM	165	GL
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information MINERAL OIL IMPACTED SOIL

TRK 4508

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Paul D. McClintock (AS AGENT) — Signature: [signature] — Month 06 Day 06 Year 08

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Matt Blaszkiewicz — Signature: [signature] — Month 06 Day 13 Year 08

Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materiels covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

APPENDIX F

CERTIFICATE OF TREATMENT

Invoice #38988

CERTIFICATE OF TREATMENT

This is to certify that Clark Environmental, Inc. received Three 55 gallon drums of Non-Regulated Industrial Waste material from:

GENERATOR: **PROGRESS ENERGY-DENHAM SUSTATION**
21315 S.R. 54
LUTZ, FLORIDA

ON: **JUNE 13, 2008**

and that said material has been processed by Thermal Treatment as certified by post burn analytical numbers CP3278, CP3279, CP3280, CP3284 AND CP3285. All work is performed to meet and exceed all EPA and DEP Guidelines.

July 01, 2008

James W. Clark, Vice President
General Manager, Industrial Waste Services Division

Clark ENVIRONMENTAL

Site 28 –

Lowes #2238 Land O Lakes

Florida Department of Environmental Protection
Twin Towers Office Bldg. 2600 Blair Stone Road, Tallahassee, Florida, 32399-2400
Division of Waste Management
Petroleum Storage Systems
Storage Tank Facility Routine Compliance Site Inspection Report

Facility Information:

Facility ID: 9814455 County: PASCO Inspection Date:09/12/2022
Facility Type: C - Fuel user/Non-retail
Facility Name: LOWES #2238 LAND O LAKES # of inspected ASTs: 1
21500 ST RD #54 USTs: 0
LUTZ, FL 33549 Mineral Acid Tanks: 0
Latitude: 28° 11' 21.9491"
Longitude: 82° 27' 43.9184"
LL Method: DPHO

Inspection Result:

Result: In Compliance

Signatures:

TKPNPH - PINELLAS COUNTY HEALTH DEPARTMENT (727) 538-7277

Storage Tank Program Office and Phone Number

George K. Juaristic	Dan
Inspector Name	**Representative Name**
GKJ	No Signature
Inspector Signature	**Representative Signature**
Principal Inspector	**Manager**
PINELLAS COUNTY HEALTH DEPARTMENT	**LOWES**

Owners of UST facilities are reminded that the Federal Energy Policy Act of 2005 and 40 CFR 280 Subpart J requires Operator Training at all facilities by October 13, 2018. For further information please visit: https://floridadep.gov/waste/permitting-compliance-assistance/content/underground-storage-tank-operator-training

Financial Responsibility:

Financial Responsibility: SURETY BOND

Insurance Carrier:

Effective Date: 04/05/2020 Expiration Date: 04/05/2023

To Be Completed System Tests

Type	Date Completed	Results	Reviewed	Next Due Date	Comment
Annual Operability - Overfill Protection			09/12/2022	08/31/2023	Krueger liquid level gauge
Annual Operability - Release Detection			09/12/2022	08/31/2023	Rupture basin float switch and Kohler Monitoring panel

Completed System Tests

Type	Date Completed	Results	Reviewed	Next Due Date	Comment
Annual Operability - Overfill Protection	08/31/2022	Passed	09/12/2022	08/25/2022	Krueger liquid level gauge tested by Palazzo Brothers Electric
Annual Operability - Overfill Protection	08/25/2021	Passed	09/12/2022	01/07/2021	Krueger liquid level gauge tested by Palazzo Brothers Electric
Annual Operability - Release Detection	08/31/2022	Passed	09/12/2022	08/25/2022	Rupture basin float switch and Kohler Monitoring panel tested by Palazzo Brothers Electric
Annual Operability - Release Detection	08/25/2021	Passed	09/12/2022	01/07/2021	Rupture basin float switch and Kohler Monitoring panel tested by Palazzo Brothers Electric
Annual Operability Test	01/07/2021	Passed	03/05/2020	12/16/2020	Release Detection Device: Rupture basin sensor and Kohler Monitoring panel tested by Palazzo Brothers Electric
Annual Operability Test	01/07/2021	Passed	03/05/2020	12/16/2020	Overfill Protection Devices: Krueger liquid level gauge tested by Palazzo Brothers Electric
Annual Operability Test	12/16/2019	Passed	03/05/2020	09/24/2019	Overfill Protection Devices: Krueger liquid level gauge tested by Power Secure.
Annual Operability Test	12/16/2019	Passed	03/05/2020	09/24/2019	Release Detection Device: Rupture basin sensor and Kohler Monitoring panel tested by Power Secure.
Annual Operability Test	09/24/2018	Passed	03/05/2020	01/11/2019	Overfill Protection Devices: Krueger liquid level gauge tested by USA-SVC.
Annual Operability Test	09/24/2018	Passed	03/05/2020	01/11/2019	Release Detection Device: Rupture basin sensor and Kohler Monitoring panel tested by USA-SVC.
Annual Operability Test	01/31/2018	Passed	05/23/2017	01/11/2018	Overfill Protection Devices: Krueger liquid level gauge tested by USA-SVC.
Annual Operability Test	01/31/2018	Passed	05/23/2017	09/01/2017	Release Detection Device: Rupture basin sensor and Kohler Monitoring panel tested by USA-SVC.

Reviewed Records

Record Category	Record type	From Date	To Date	Reviewed Record Comment
Three Years	Monthly Maint. Visual Examinations and Results	03/22/2021	09/06/2022	Monthly visual inspections of the "Generator, Piping, Fuel Fill Cover, Alarms, Tank, and Tank Fuel Level Gauge", conducted at least once every 35 days. No incidents documented for the dates checked.
Three Years	Certificate of Financial Responsiblity	09/12/2022	09/12/2022	Surety Bond from Travelers Casual and Surety Co. Part E and P Financial Responsibility forms

Site Visit Comments

09/12/2022
GKJ_
Site Visit Conducted By: George Juaristic
Representative Onsite: Dan, Store Manager

Routine Compliance Inspection Covers FDEP Tank ID:
001: 1,500-gallon DW AST containing Diesel for an emergency generator

Site Visit Comments:
Fills Marked per API 1637: Label at the fill-"Diesel Fuel Only".

Overfill Protection: Tank is equipped with a Krueger liquid level gauge and high liquid level float switch and audible alarm.

Spill Containment Unit: Top-mounted spill bucket was dry and clean.

Tank Exterior: Sub-based steel AST appears to be in decent condition.

Secondary Containment: Rupture basin assumed dry due to the lack of alarm on the Kohler monitoring panel. Also monitored by a Kohler annunciator outside the electric room.

Piping: Minimal supply and return hoses, that slope back to the tank. No A/S valve required.

Inspection Comments

09/12/2022
Records Review:
Placard: On display at Customer Service; expires 6/30/2023.

Financial Responsibility: Surety Bond from Travelers Casual and Surety Co. Part E and P Financial Responsibility forms; 4/5/2022 to 4/5/2023.

Release Detection: See Reviewed Records section.

Tests: See System Tests section.

Report will be emailed to Shepherd, Eric [Eric.M.Shepherd@lowes.com].

Inspection Photos

Added Date 09/12/2022

Remote annunciator outside electric room



Added Date 09/12/2022

FDEP Tank ID 001



Added Date 09/12/2022

S&R hoses



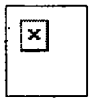
Added Date 09/12/2022

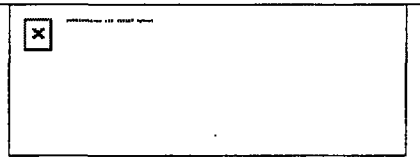
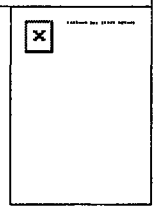
Kohler monitoring panel-no alarms



Site 29 –

Under Car Muffler & Brake Inc.



DATA ENTERED
FEB 16 '00
BY AS



Results for
City =
Name =
Facility id = **9103022**

Facility ID#: 9103022
Facility Name: UNDER CAR MUFFLER & BRAKE INC
Address: 101 LAKE FRANCISCO PLAZA
City: LAND O' LAKES State: FL Zip:
County: PASCO District: SWD Facility Registered: 04-OCT-91
Fac Code/Type: A/ Retail Station Fac Stat: OPEN Last Update: 10-MAY-95
Owner Name: CASTROL OIL CO

Tank #	Contents	Tank Size	Status	Installed	Place	Fee	Const	Pipe	Mon.
1	New/Lube Oil	550	In Service	02/1988	ABOVE	N	C	A	M

Return to Storage Tank Form
Return to Home Page

Contact Donna Gorton,
gorton_d@dep.state.fl.us

RECEIVED
00 FEB 15 PM 2:14
SURFACE WATER REGULATION

Under Car Muffler & Brake; Pasco County, Facility ID#9103022

Castrol does not have a customer name Under Car Muffler & Brake. When I looked for this facility in a telephone directory, I couldn't find a listing for them or any other service station at that address. I did not fill out a a Storage Tank Registration Form for this facility since I do not know if they even exist. Castrol requests that you remove these tanks from our storage tank account.

I'm sure you will have questions regarding this request or that you will have additional instructions for me to make these changes. I can be reached at 973-633-2295.

Thank you for your assistance.

Sincerely,

MaryBeth Krupa
Environmental Specialist

RECEIVED
O.E.P.
00 FEB 15 PM 2:13
STORAGE TANK
REGULATION

DER FORM 761-01-91

C

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLLUTANT STORAGE TANK SYSTEM
INSPECTION REPORT FORM - COVER PAGE

PRINTED: 09/29/93

FACILITY ID #: 299103022 (519103022) COUNTY: PASCO
FACILITY NAME: UNDER CAR MUFFLER & BRAKE INC
FACILITY LOCATION: 101 LAKE FRANCISCO PLAZA, LAND O LAKES
FACILITY CONTACT: UNDER CAR MUFFLER & BRAKE INC PHONE: ( ) -
OWNER: CASTROL OIL CO PHONE: (904) 781-4661
OWNER ADDRESS: PO BOX 6220, JACKSONVILLE, FL, 32205-0000
OWNER CONTACT: WILLIAM C KELLOG OWNER CHANGE DATE: 10/04/91
LATITUDE:28-24-44 LONGITUDE:82-19-55 FAC TYPE: RETAIL STATION
LAST UST COMPLIANCE DATE:00/00/00 LAST AST COMPLIANCE DATE:07/31/92
CONTAMINATION DATA AVAILABLE: NONE

TANK #	SIZE	CONTENT	INSTALL DATE	UNDER OR ABOVE	TANK TYPE	INTEGRAL PIPING	MONITORING SYSTEM	TANK STAT
1	550	O	02/88	A	C	A	M	U

2127 Brinson Rd (Tire Kingdom)

INSPECTION TYPE (CHOOSE ONE)
- [X] ROUTINE
- [ ] INSTALL
- [ ] ABANDONED
- [ ] DISCHARGE
- [ ] CLOSURE
- [ ] REINSPECT

SITE INFORMATION (ALL THAT APPLY)
- [ ] NEAR PUB WELL
- [ ] CONTAMINATED
- [ ] COMPLAINT
- [ ] ACID TANKS
- [ ] REPAIRED
- [ ] UPGRADED
- [X] UST & AST
- [ ] HAZARD MAT

DER DISTRICT OR LOCAL PROGRAM: PACPOL

INSPECTOR NAME (PRINT) OTTO GEORGI CONTACT NAME (PRINT)

INSPECTOR'S SIGNATURE & DATE 9-29-93 CONTACT'S SIGNATURE & DATE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLLUTANT STORAGE TANK SYSTEM
INSPECTION REPORT FORM - COVER PAGE

PRINTED: 09/29/93

FACILITY ID #: 299103022 COUNTY: PASCO
FACILITY NAME: UNDER CAR MUFFLER & BRAKE INC
FACILITY LOCATION: 101 LAKE FRANCISCO PLAZA, LAND O LAKES
FACILITY CONTACT: UNDER CAR MUFFLER & BRAKE INC PHONE: ( ) -

COMMENTS: THE STORAGE TANK REGISTRATION FORM HAS BEEN CORRECTED TO REFLECT THE TANK SIZE AT 550 GAL. THE TANK IS NON REGULATED.

Name UNDER CAR MUFFLER
Facility ID # 519 013 022
Date 9-29-93

ABOVEGROUND STORAGE TANK COMPLIANCE INSPECTION FORM

			Yes	No	Unk	N/A
I.	REGISTRATION/NOTIFICATION: Comments: THE STORAGE TANK REGISTRATION # 519 013 022 AND # 299 103 022 ARE ISSUED TO THE SAME FACILITY					
1.	Facility has registered all applicable tanks on site; 17-762.400 NON REGULATED TANK	1.		X		
2.	Current registration placard is properly displayed; 17-762.410(4)	2.				X
	Proper notification has been made for the following; 17-762.450:					
3.	Abandonment and closure (30 days prior); (1) (a)	3.				X
4.	Change of ownership (30 days after); (1) (b)	4.				X
5.	Retrofitting, replacement or upgrading; (10 days prior); (1) (c)	5.				X
6.	Change of tank status (in service/out-of-service); (1) (d)	6.				X
7.	Change of facility status (e.g. substances stored); (1) (e)	7.				X
8.	Change of method of financial responsibility (within 30 days); (2)	8.				X
9.	The facility owner/operator notified D.E.R. of internal tank inspection 24 hrs prior to the test; (3)	9.				X
10.	Loss of greater than 100 gallons on an impervious surface or 500 gallons inside secondary containment within one working day; .450(4)	10.				X
II.	RECORD KEEPING: Comments:					
11.	All records were maintained for two (2) years and were available for inspection within five (5) working days; 17-762.710	11.				X
12.	Some but not all records were maintained for two (2) years and were available for inspection within five (5) working days; 17-762.710	12.				X
III.	REPORTING/DISCHARGE RESPONSE/REPAIRS: Comments:					
	Proper reporting requirements met for the following: 17-762.460					
13.	Integral piping tightness test failure within 10 days; (1)	13.				X
14.	Pollutant discharge exceeding 25 gallons on a pervious surface; (2)	14.				X
15.	Positive response of a release detection device within one working day; (3)	15.				X
	The owner or the operator of the system which has discharged has:					
16.	Taken it out-of-service; 17-762.700 (1), had it repaired or replaced; .700, or properly closed it; .800	16.				X
17.	Removed any regulated substances from the system; 17-762.820 (1)	17.				X
18.	Tightness tested all repaired components before placing them back in service; 17-762.700 (5) & (6)	18.				X
19.	Begun initial corrective actions for a release; 17-762.820 (2)	19.				X
IV.	INVENTORY REQUIREMENTS FOR TANKS IN CONTACT WITH SOIL: Comments:					
20.	All inventory requirements maintained in accordance with 17-762.720 (1)	20.				X
21.	Some, but not all inventory requirements maintained in accordance with 17-762.720 (1)	21.				X

Name:
Facility ID # 519 013 022
Date: 9-29-93

ABOVEGROUND STORAGE TANK COMPLIANCE INSPECTION FORM

			Yes	No	Unk	N/A
V.	PERFORMANCE STANDARDS/REPAIRS/CATHODIC PROTECTION: Comments:					
	Storage tank criteria 17-762.500					
22.	Meets construction upgrading schedule; .510 and .520	22.				X
23.	Meets applicable storage tank standards; (1), (2) & (3)	23.				X
24.	Tank has secondary containment system; .500 (6)	24.				X
25.	Tank equipped with overfill protection ; (3) (f) 1-4, (g)	25.				X
	Piping criteria					
26.	Meets new piping standards with secondary containment; .500 (4) & .600 (4)	26.				X
27.	Meets construction upgrading schedule; 17-762.510 (3), & 520 (2)	27.				X
	Repairs to storage tank systems; 17-762. 700					
28.	Failed storage tank system component properly repaired; (1)-(4)	28.				X
29.	Tightness testing of the repaired component prior to being brought back into service; (5)	29.				X
	Cathodic Protection; 17-762.730					
30.	Cathodic protection system for tank and piping provides continuous protection; (1)-(4)	30.				X
	Secondary containment; 17-762.500					
31.	Does containment area have sufficient volume; .500 (6) (a) (2)	31.				X
32.	Is the containment area made out of impervious material in accordance with Chapter 17-762, F.A.C., requirements; (6) (a) (1)	32.				X
33.	Is the containment area equipped with drainage system or protected from accumulation of rain; (6) (a) (3)	33.				X
34.	Hydrant pits equipped with spill prevention equipment; (5)	34.				X
VI.	RELEASE DETECTION/MONITOR WELLS: Comments:					
35.	Facility has an approved release-detection system; 17-762.600 & 17-762.860	35.				X
36.	Monitoring wells properly designed, constructed and installed; 17-762.640 or 17-762.600 (6)	36.				X
37.	Interstitial monitoring adequate to detect a release from integral piping; 17-762.600 (4) & (5)	37.				X
VII.	OUT-OF-SERVICE STATUS Comments:					
38.	Are the corrosion protection devices properly maintained; 17-762.800 (1) (a)	38.				X
39.	Is the vent line and other ancillary equipment properly secured and maintained; (1) (b)	39.				X
40.	Tests performed to insure the integrity of out-of-service system prior to being returned to service; (1) (c)	40.				X
VIII.	VARIANCE Comments:					
41.	Has the facility applied for an Alternate Procedure; 17-762.850 (1)	41.				X
IX.	OTHER Comments:					
42.	Any other violations noted during inspection (Explain in comments)	42.				X

DER Form 762-01-91 (2 pages)

INSPECTOR COPY

Site 30 –

Former Liberty Cleaners

YORK
1310 Cross Creek Circle
Suite B
Tallahassee, Fl 32301-3728

Petroleum Cleanup Program
Division of Waste Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Facility Locations - Comparison of DEP and DOH Data

Distance between DOH and DEP locations (ft. 1408.84

DEP Data

DEP Facility ID: 9501028

DESCRIPTION: Drycleaner
STATUS: CLOSED
NAME: LIBERTY CLEANERS
ADDRESS1: 2116 HWY 41 N
CITY: LUTZ
ZIP5: 33549
COUNTY: PASCO
OPERATOR: DAVID ARNOLD

DEP Longitude: -82.46603047222
DEP Latitude: 28.188674777778
DEP location method: DPHO
NREQ_count: 0
Collection Date: 6/5/2006
Reference: HARN

Facility Cleanup Status:
Status Effective Date:

LAST_PBC_Report:
LAST_SR_Report:
LAST_RAP_Report:
LAST_SA_Report:
_LAST_PBC_Report:
LAST_RA_Report:
Number_discharges:
CURRENT_SCORE:

4/23/2009

DOH Data

DIVISION OF Environmental Health

DOH Facility ID: 9501028

Facility Name: liberty cleaners
STREET: 2412 land o lakes blvd
CITY: LUTZ
ZIPCODE: 33549
Type of Facility: PETROLEUM

DOH Longitude: -82.46411
DOH Latitude: 28.192143
DOH location method: GPS
DOH GPS Date: 10/4/2005

Selection Criteria

Fac_ID: 9501028
correct latitude: 0
correct longitude: 0
Vehicular Spill: ☐
Deliverable completed: ☑

DOH CORRECT: ☐
DEP CORRECT: ☐
OTHER CORRECT: ☐
NO CORRECT: ☑
Incorrect Facility ID: ☐
Selection Based on OCULUS Documents: ☐
Insufficient OCULUS Documentation: ☑
Selection Based on Address: ☐

Review Status

No documents in OCULUS. Agencies conflict on location and address- unable to determine exact site location.

Are any Locations in Gulf?:

Pasco County

DOH_facilities.shp

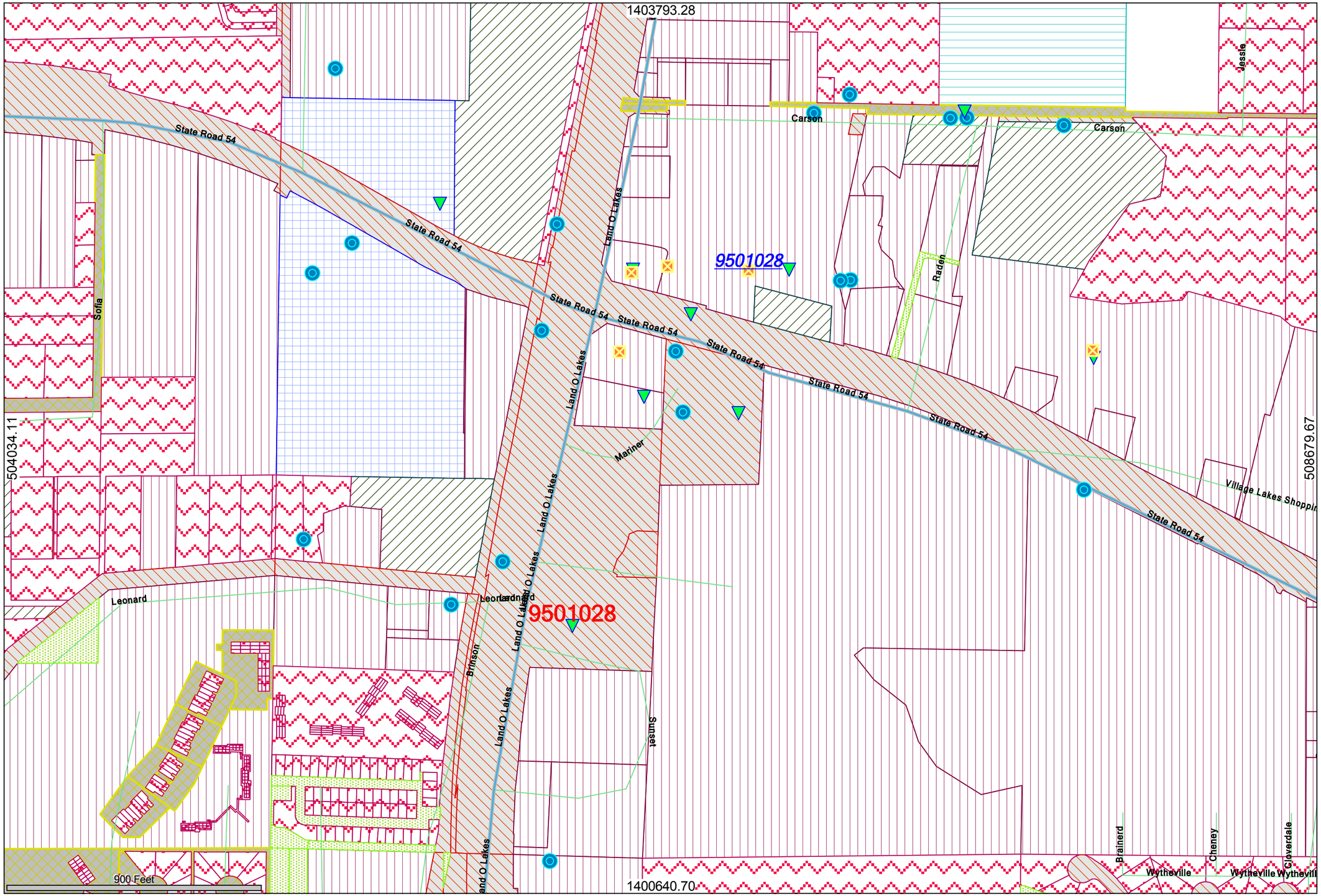
STCMfacilites.shp

roads06.shp

- Interstate
- Local
- Primary
- Secondary
- Special/cloverleaf/roun
- Trail
- Walkway/Alley

Pasco.shp

- Agricultural
- Commercial
- Government
- Industrial
- Institutional
- Miscellaneous
- Residential
- Unknown



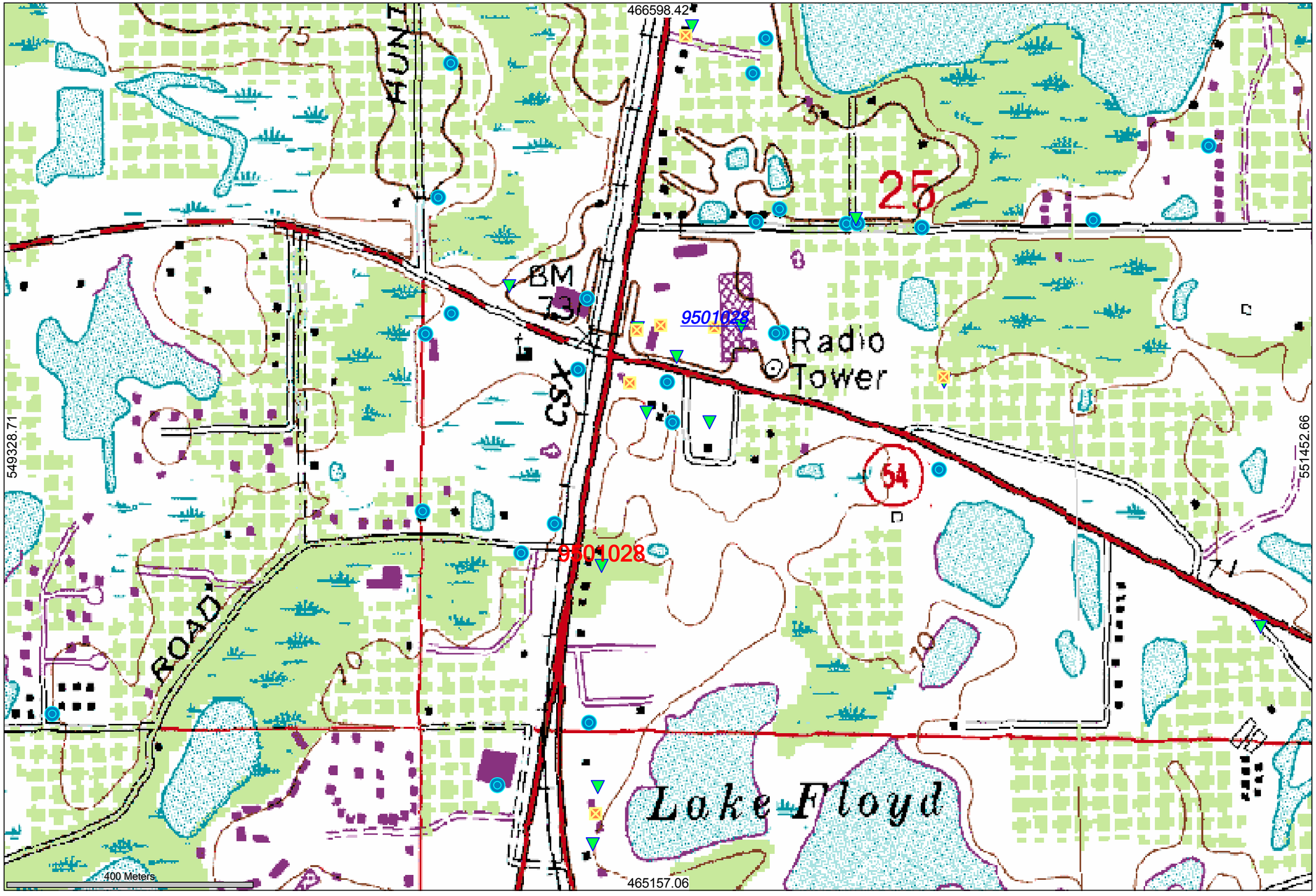
Scale 1:4000

Map Units: Feet

Date: 4/23/2009

View 1

- dohfacs.shp
- stcmfacs.shp
- wells.shp
- quads.shp



Scale 1:6000

Map Units: Meters

Date: 4/23/2009

Search Results

Storage Tanks
0 total

Storage Tanks_Restricted (0)

Result/Page 5 Sort Facility-Site ID Refresh Add to Favorites Showing Result(s)1 to 0

Operations View Select Turn Previewer on Pages:

No documents found


Hunt Rd
Carson Dr
2412 Land O Lakes Blvd, FL 34639
DOH 28.192143, -82.46411
Sofia Dr
Raden Dr
Woodward Rd
54
Mariner Pl
State Rd 54
2116 US-41, Lutz, FL 33549
Leonard Rd
DEP 28.188674777778, -82.46603047222
Quail Ct
45
Sunset Ct
41
Brinson Rd
Dale Mabry Hwy
Paradise Lakes
937 ft
Old Entrance
Pond Dr
© 2009 Tele Atlas
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©2009 Google
Imagery Date: 2004
lat 28.190606° lon -82.465635° elev 69 ft
Eye alt 3305 ft

APPENDIX C

POND QUANTITIES

Pond Quantities				
Pay Item Number	Pond	Pay Item Description	Unit of Measure	Quantity
0120 1		REGULAR EXCAVATION	CY	
	SMF 2A			83,103
	SMF 2B			88,378
	SMF 2C			93,105
	SMF 3A			5,163
	SMF 3B			3,453
	SMF 3C			6,421
	SMF 5A			12,181
	SMF 5B			11,939
	SMF 5C			11,842
	SMF 6A			3,130
	SMF 6B			3,662
	SMF 6C			2,823
	SMF 7A			28,685
	SMF 7B			47,367
	SMF 7C			48,432
	SMF 8A			24,216
	SMF 8B			12,568
	SMF 8C			10,309
120-6		Embankment	CY	
	SMF 2A			106,286
	SMF 2B			114,240
	SMF 2C			125,550
	SMF 3A			4,856
	SMF 3B			2,775
	SMF 3C			5,776
	SMF 5A			29,669
	SMF 5B			27,281
	SMF 5C			27,346
	SMF 6A			6,179
	SMF 6B			6,034
	SMF 6C			4,646
	SMF 7A			25,862
	SMF 7B			37,494
	SMF 7C			34,106
	SMF 8A			32,202
	SMF 8B			19,925
	SMF 8C			14,827
110-1-A		Clearing And Grubbing	AC	
	SMF 2A			11.75
	SMF 2B			13.01

	SMF 2C			5.29
	SMF 3A			0.96
	SMF 3B			0.69
	SMF 3C			1.09
	SMF 5A			2.75
	SMF 5B			2.82
	SMF 5C			2.86
	SMF 6A			1.02
	SMF 6B			0.61
	SMF 6C			0.45
	SMF 7A			4.15
	SMF 7B			5.72
	SMF 7C			5.00
	SMF 8A			4.59
	SMF 8B			3.22
	SMF 8C			2.14
0570-1-2		PERFORMANCE TURF, SOD	AC	
	SMF 2A			18.02
	SMF 2B			18.60
	SMF 2C			20.82
	SMF 3A			1.27
	SMF 3B			0.95
	SMF 3C			1.53
	SMF 5A			4.19
	SMF 5B			4.28
	SMF 5C			4.37
	SMF 6A			1.56
	SMF 6B			0.95
	SMF 6C			0.73
	SMF 7A			6.29
	SMF 7B			9.24
	SMF 7C			8.40
	SMF 8A			5.84
	SMF 8B			4.22
	SMF 8C			3.30
430-175-136		PIPE CULVERT OPTIONAL MATERIAL, ROUND, 36" SD	LF	
	SMF 2A			582
	SMF 2B			696
	SMF 2C			370
	SMF 3A			416
	SMF 3B			777
	SMF 3C			100
	SMF 5A			228
	SMF 5B			178
	SMF 5C			216

	SMF 6A			*266*
	SMF 6B			*40*
	SMF 6C			*111*
	SMF 7A			*2497*
	SMF 7B			*2090*
	SMF 7C			*1333*
	SMF 8A			*400*
	SMF 8B			*64*
	SMF 8C			*100*