SR 400 (I-4) Project Development and Environment (PD&E) Study

FM No.: 201210-2-22-01

Pond Siting Report

Segment 5: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line)

Polk County, Florida (16320)

November 2016

HNTB Corporation
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Professional Engineer Certificate

I hereby certify that I am a registered professional engineer in the State of Florida practicing with HNTB Corporation, Inc., a corporation authorized to operate as an engineering business, EB#6500, by the State of Florida, Department of Professional Regulation, Board of Professional Engineers, and that I have reviewed or approved the evaluation, findings, opinions, conclusions, or technical advice hereby reported for SR 400 (I-4) Project Development and Environment Study for the Florida Department of Transportation in Polk County, Florida.

This Pond Siting Report (PSR) includes a summary of data collection efforts, calculations, and an overall drainage review prepared for the conceptual analyses for the SR 400 (I-4) widening and extension from west of SR 25/US27 to west of CR 532 (Polk/Osceola County Line) in Polk County.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgments and experience. This document is for planning purposes only and is not to replace any effort required for final design.

SIGNATURE: _____

NAME: Sanam Rai, P.E.

FIRM: HNTB Corporation

P.E. No.: 69089

DATE: November 2016

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1.0 Summary of Project

The Florida Department of Transportation (FDOT) is conducting an update/reevaluation for the Project Development and Environment (PD&E) studies for the extension of proposed express lanes for State Road 400 (SR 400)/Interstate 4 (I-4). The project limits in the original PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents associated with these PD&E studies include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [Financial Project Number (FPN) 201210 (December 1998)] and from CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) [FPN 242526 and 242483 (December 1999)] and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 (Beachline Expressway) to SR 472 [FPN 242486, 242592 and 242703 (2002)].

The project limits of the current SR 400 (I-4) PD&E reevaluation, herein referred to as I-4 Beyond the Ultimate (BtU) PD&E Reevaluation Study, include a total of approximately 43 miles of roadway sections east and west of the 21-mile, I-4 Ultimate project. The I-4 Ultimate project consists of reconstruction, to include new express lanes, for the section of I-4 which extends from west of SR 435 (Kirkman Road) to east of SR 434, and began construction in early 2015. The current I-4 BtU project has been divided into the following five segments:

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway - Osceola County (92130) and Orange County (75280)
- Segment 2: SR 400 (I-4) from West of SR 528 Beachline Expressway to West of SR 435 Kirkman Road - Orange County (75280)
- Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15-600/US 17-92 (Seminole/Volusia County Line) - Seminole County (77160)
- Segment 4: SR 400 (I-4) from East of SR 15-600/US 17-92 (Seminole/Volusia County Line) to ½ Mile East of SR 472 - Volusia County (79110)
- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) Polk County (16320)

This pond siting report was prepared for Segment 5 of the SR 400 (I-4) BtU PD&E Reevaluation Study and contains detailed engineering information that fulfills the purpose and need for the SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) PD&E study. The scope condition for the pond siting report is to determine each basin with two pond alternatives. Basins where we could utilize existing ponds, and eliminate right-of-way cost, were used as the recommended alternative.

The project will be divided into nine (9) drainage basins and nineteen (19) potential pond sites were identified and evaluated for the treatment and attenuation of project runoff. It is the intent of this report to identify and evaluate, in detail, potential pond sites for this purpose in order to ultimately determine the most advantageous location for each pond. The tables below list the recommended pond alternatives.

Table 1 - Summary of Recommended Pond Sites

Basin Designation	Recommended Alternative
500	Pond 500
501	Ponds 501A, 501B & 501C
502	Pond 502
503A	503A
503B	Ponds 503B, 503C & 503D
504	Pond 504
505	Regional Pond 1 & 2
506	Pond 506
100	Pond 100 (Segment 1)

Table 2 - Summary of Recommended FPC Pond Sites

Basin Designation	Recommended Alternative
505	FPC 500D
506	FPC 506

Table 3 - Summary of Existing Pond Names and Associated Projects*

Basin Name	Pond Alternative Name	Existing Stormwater Facilities	Reason For New Stormwater Facility
500	Pond 500	Pond A & Pond 9-A1 (US 27/I-4 Interchange Polk County: Sect. 9 FPID No. 201204-1-52-01)	–
501	Pond 501A	Pond B1 & Pond 9-B1 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
501	Pond 501B	Pond B2 & Pond 9-B2 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
501	Pond 501C	Pond B3 & Pond 9-B3 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01	–
502	Pond 502	Pond SW (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
503A	Pond 503A	Pond C1 & Pond 9-C1 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01	–

Basin Name	Pond Alternative Name	Existing Stormwater Facilities	Reason For New Alternative
503B	Pond 503B	Pond C2 & Pond 9-C2 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
503B	Pond 503C	Pond C3 & Pond 9-C3 (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
503B	Pond 503D	–	Added to accommodate for proposed alignment.
504	Pond 504	Pond D (US 27/I-4 Interchange Polk County: Sect. 9, FPID No. 201204-1, 2-52-01)	–
505	Regional Ponds	–	Added alternative to accommodate for proposed alignment.
505	Pond 505 A3	–	Added alternative to accommodate for proposed alignment.
505	Pond 505 B2	–	Added alternative to accommodate for proposed alignment.
506	Pond 506	–	Added alternative to accommodate for proposed alignment.
100	*Pond 100	Pond 7-7 (I-4 Widening, Section 7) Pond 57.6 & Pond 57.8 (Section 1 FONSI-1999)	Modified pond due to proposed alignment.
FPC 500	FPC 500C	–	Added alternative to accommodate for floodplain impacts.
FPC 500	FPC 500D	–	Added alternative to accommodate for floodplain impacts.
FPC 506	FPC 506	–	Added alternative to accommodate for floodplain impacts.

Existing ponds were renamed for naming consistency with the proposed basins – Table 3 depicts these changes.
*Pond 100 is accounted for in Segment 1 of the I-4 PD&E Study.

1.1 Description of Proposed Action

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 BtU concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties. The concept design proposes the addition of two new express lanes in each direction, resulting in a total of ten dedicated lanes. The project limits for the segment analyzed in this report are within an approximate 4.5-mile segment of I-4 which extends from west of SR 25/US 27 to west of CR 532 (Polk/Osceola County Line), from Milepost (MP) 27.145 to MP 31.607 in Polk County (herein referred to as I-4 Segment 5) as shown in Figure 1. Although, the interstate is a designated east-west corridor, the alignment follows a southwest to northeast orientation through the limits of Segment 5. The study area in this section from west of SR 25/US 27 to west of CR 532 includes only one interchange at US 27.

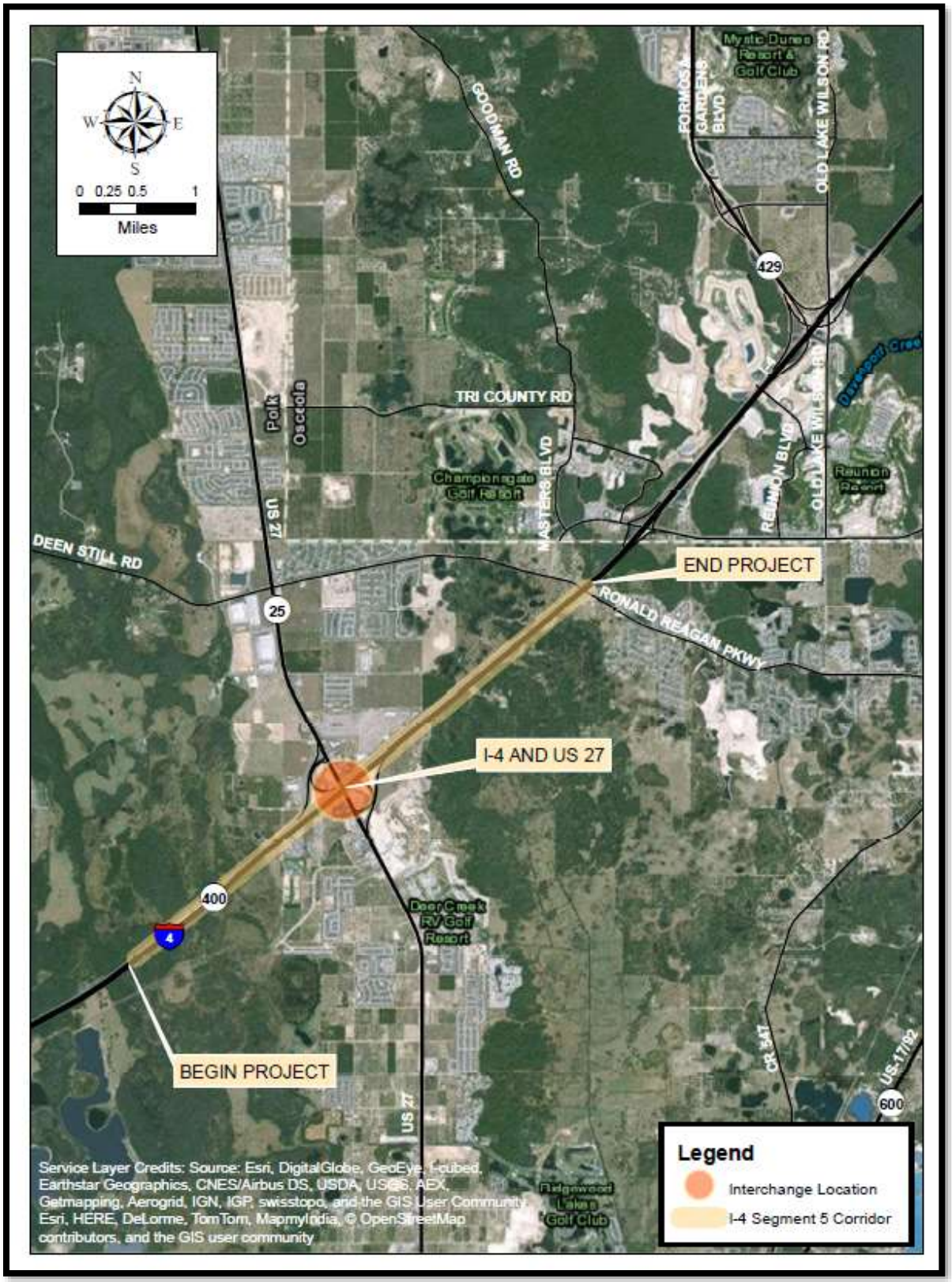


Figure 1 – Project Location Map

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway. Generally, the typical section will be consistent throughout Segment 5 and will have three 12-foot general use travel lanes (GUL) with 12-foot inside and outside shoulders and two 12-foot express lanes with 10-foot inside (median) and 12-foot outside shoulders in each direction. A two-foot barrier wall between the adjacent shoulders will separate the express lanes from the general use lanes. The typical section includes a 44-foot transit envelope in the median within a minimum 300 foot right of way (ROW). Refer to Figure 1.2 and Figures 2.1-2.6 of the Preliminary Engineering Report (PER) for an illustration of the existing typical sections and proposed mainline typical section for I-4 Segment 5.

The project is located within Sections 12 and 13 of Township 26 South, Range 26 East and Sections 4, 5, 7, 8, 18 of Township 26 South, Range 27 East and Sections 23 and 24 of Township 26 South, Range 26 East. A reproduction of the USGS quadrangle map for the project vicinity is shown in Figure 2.

1.2 Purpose and Need

The proposed improvements to I-4 include widening the existing six (6) lane divided urban interstate to a ten (10) lane divided highway in order to improve traffic operations, enhance connectivity and improve mobility by providing travel choices to the motoring public. I-4 is an east-west limited access freeway which links the west and east coasts of Florida, from I-275 in Tampa to I-95 in Daytona Beach. I-4 spans across six (6) counties in Central Florida, traversing many cities including Lakeland, Orlando, Altamonte Springs, Sanford and DeLand. I-4 is a critical component of Florida's Strategic Intermodal System (SIS) which links seaports, rail, airports and other intermodal facilities. This aspect of I-4's significance is evidenced through connectivity provided by major junctions with I-275 and I-75 in the Tampa Bay area, SR 429 (Daniel Webster Western Beltway), SR 417 (Southern Connector/Central Florida Greeneway/Seminole Expressway), SR 528 (Martin Andersen Beachline Expressway), SR 91 (Florida's Turnpike), SR 408 (Spessard Lindsay Holland East-West Expressway) in Central Florida and I-95 on the east coast.

I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960's, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances. Today, the highway serves as the primary link between hotel/resort complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area.

Growth in Central Florida over the past decades has made it difficult for the transportation system to accommodate travel demand. Traffic congestion and crash incidents have resulted in major delays on the Interstate as well as other arterials surrounding the corridor. Increased congestion levels are experienced outside of the typical morning and afternoon rush-hour periods, affecting mobility levels for more hours of the

Figure 2 – USGS Quadrangle Map

day and impacting other non-commuter/non-weekday travel. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

Projections of future population and employment in the region indicate that travel demand will continue to increase well into the future. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time in both the morning and evening peak periods. Due to these congested conditions, user travel times will continue to increase, the movement of goods through the urban area will be slower, and the deliveries of goods within the urban area will be forced to other times throughout the day. The need for improvements to I-4 is illustrated by the important transportation roles I-4 serves to the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors, and commuters can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.

2.0 Design Criteria

The design of stormwater management facilities for this project is governed by the rules and criteria set forth by the South West Florida Water Management District (SWFWMD) and the FDOT. These criteria were drawn from the 2013 SWFWMD ERP Applicant's Handbook Volume II and the 2015 FDOT Drainage Manual.

Water Quality and Pond Recovery

- Wet detention
    - Treatment –1" of runoff from the contributing area (ERP Volume II, Part IV, Section 4.1.a.1)
        - The maximum treatment volume is 18 inches above the control elevation.
        - All treatment volume shall be discharged in no less than 120 hours.
        - Only that volume which drains below the overflow elevation within 36 hours may be counted as part of the volume available for water quantity storage (ERP Volume II, Part IV, Section 4.1.a.6)
    - Recovery - Maximum discharge of one-half the treatment volume within 60 hours (ERP Volume II, Part IV, Section 4.1.a.4)
- Dry retention
    - Treatment – Runoff from the first 1" of rainfall or runoff from the first ½"of rainfall for projects or project sub-units with drainage areas less than 100 acres (ERP Volume II, Part IV, Section 4.1.c.1)
    - Recovery – Discharge and recovery of total treatment volume within 72 hours (ERP Volume II, Part IV, Section 4.5)

Water Quantity

- Open Basin – Limits the post-development peak discharge rate to the pre-development peak discharge rate for the 25-year / 24-hour storm event. (ERP Volume II, Part III, Section 3.1.b)
- Closed Basin (without an outfall) – The pond must be sized to retain the entire runoff from the post-development condition for the 100-year / 24 hour storm event. (ERP Volume II, Part III Section 3.1.d)

Pond Design (FDOT, Section 5.4.4.2)

- Ponds shall be designed to provide a minimum 20-foot of horizontal clearance between the top edge of the normal pool elevation and the right-of-way line. Maintenance berm shall be at least 15-feet with a slope of 1:8 or flatter.
- Corners of ponds shall be rounded to provide an acceptable turning radius for maintenance equipment (30-foot minimum inside radius).
- At least 1-foot of freeboard is required above the maximum design stage of the pond below the front of the maintenance berm.

3.0 Existing Drainage Conditions

3.1 Land Uses

Existing Land Use

The existing land use map was created using information from FDOT 2012 parcel tax data records compiled by the Florida Geographic Data Library (FGDL). The existing land use along the I-4 Segment 5 corridor varies with a mixture of uses. The southern portion of the corridor near the I-4 and US 27 interchange is characterized primarily by retail/office use. Other existing land uses along the corridor consist of vacant nonresidential parcels, agricultural use and acreage not zoned for agriculture. The existing land uses along the project corridor are shown in Figure 3.

Future Land Use

The future land use map was created using FGDL future land use data from the adopted comprehensive plan amendments for each municipality within the project's limits. Future land use along the I-4 Segment 5 corridor also varies with a mixture of uses. The southern portion of the corridor near the I-4 and US 27 interchange is designated as Regional Activity Center. The remainder of the corridor, to the north of the US 27 interchange is planned for medium density residential use interspersed with preservation areas. At the very north end of the corridor, the area on the west side of I-4 and north of CR 54 (Ronald Reagan Parkway) is designated for future Employment Center use. The future land uses along the corridor are shown in Figure 4.

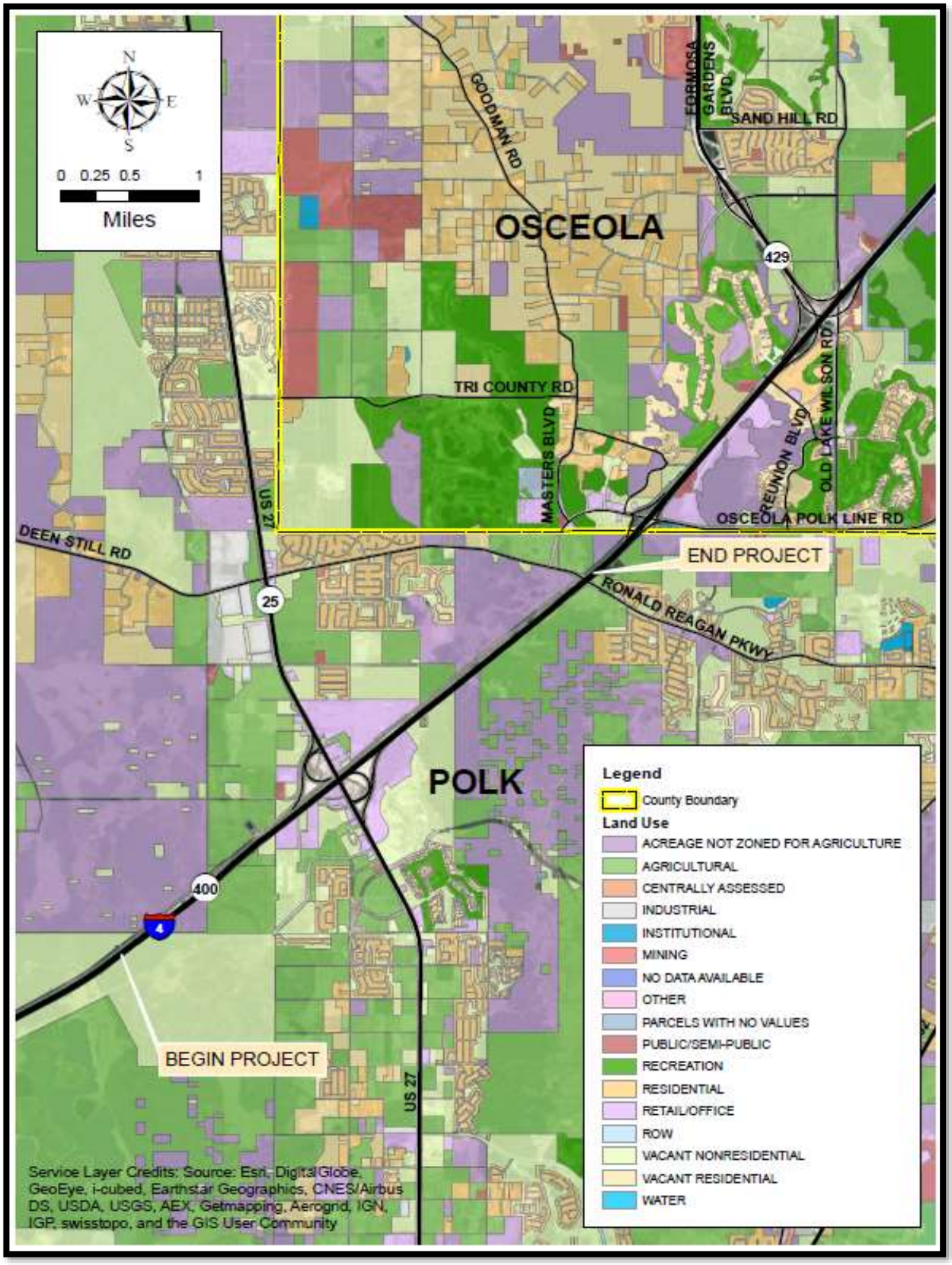


Figure 3 – Existing Land Use Map

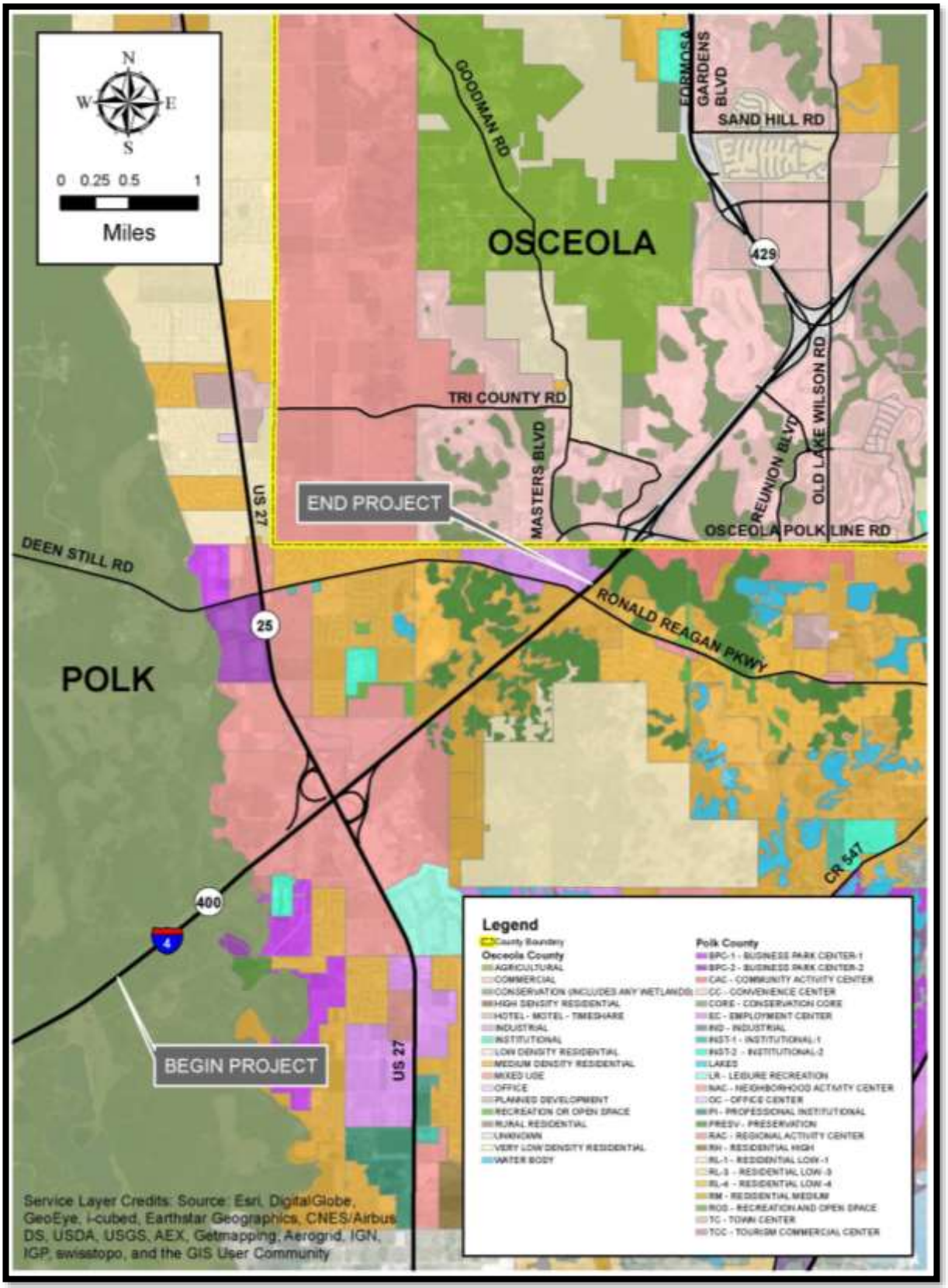


Figure 4 – Future Land Use Map

3.2 Soil Conditions

The Soil Survey of Polk County, Florida (1990), published by the United States Department of Agriculture (USDA) National Resources Conservation Service (NRCS), has been reviewed for the project vicinity. There are fourteen (14) mapped soil types located in the project area. Table 4 lists these soil types and their hydrologic properties. The soil survey map for the project is illustrated in Figure 5.

Table 4 - NRCS Soil Survey Information

Soil Type	Hydrologic Soil Group
Adamsville fine sand (31)	A/D
Eaton mucky fine sand (6)	C/D
Candler sands (3,4)	A
Basinger mucky fine sands (36)	A/D
Felda fine sand (42)	A/D
Immokalee sand (21)	B/D
Placid and Myakka fine sands (25)	A/D
Pomello fine sand (22)	A
Pomona fine sand (7)	A/D
Samsula muck (13)	A/D
Smyrna and Myakka fine sands (17)	A/D
Tavares fine sands (15)	A
Urban Land (16)	N/A

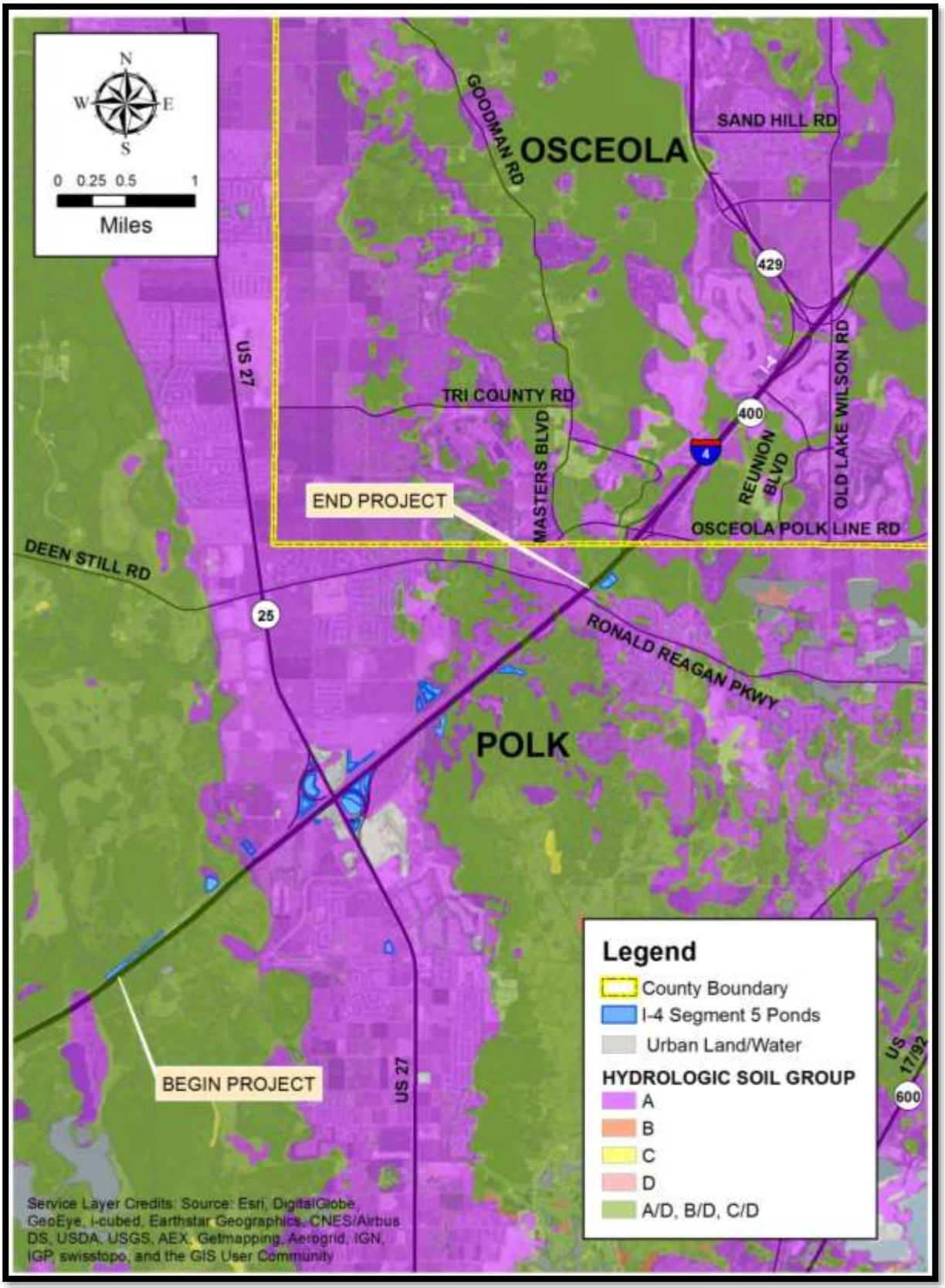


Figure 5 – Soil Survey Map

3.3 Existing Roadway Drainage Systems

The project corridor is located in the Southwest Florida Water Management District. The project is separated into nine (9) drainage basins. Typically, the basins consist of the pond site and the full right-of-way. With the exception of Basin 100, the existing ponds were all designed in 1988 NAVD datum. Segment 5 consists of both open and closed basins. The project lies within two (2) primary basins: The Ocklawaha Basin and the Kissimmee River Basin. The area southwest of US 27 is located within the Big Creek Reach Basin which ultimately discharges to the Ocklawaha River. The area northeast of US 27 is located within the Horse (Horseshoe) Creek Basin and Basin 100 is located within Davenport Creek, all of which are verified impaired WBID's. The Horse Creek Basin and Davenport Creek ultimately discharge to the Kissimmee River Basin. Big Creek is located within the Big Reach Basin and is a verified impaired WBID (WBID No.1406) for medium levels of dissolved oxygen. Horseshoe Creek (WBID No. 1436) and Davenport Creek (WBID No. 3170K) are impaired for fecal coliform. Information pertaining to cross drains can be found under separate cover in the Location Hydraulics Report (LHR) 2016. None of the basins discharge to an Outstanding Florida Water (OFW).

3.3.1 Basin 500

Basin 500 begins at Station 433+00 and continues eastward toward the US 27 overpass at Station 465+40. Basin 500 consists of the pond site, the full right-of-way and a portion of the US 27 to WB I-4 GUL Ramp. The basin is located within the Big Creek Reach River basin. The stormwater runoff from the roadway is collected by roadside and median ditches with westerly flow patterns that flow to the existing pond (Pond A in SWFWMD Permit No. 44-011896.024 (Mod) and Pond-9A1 in Permit No. 44-011896.029). Pond-9A1 was built with the US 27/I-4 Interchange project under FPID 201204-1-52-01. The existing plans were designed in 1988 NAVD. The existing pond is located adjacent to the west side of the I-4 corridor from Station 437+44 to 440+59. The pond soils are classified in Hydrologic Soil Group A. The existing pond was designed as a wet detention pond and accommodates the ultimate widening of I-4. The seasonal high elevation of the pond was based on the permitted pond design (Permit No. 44-011896.024). The pond was designed such that the runoff enters through the east side of the pond and discharges to the Green Swamp via a system of roadside ditches. The Green Swamp is part of the Big Creek Reach Basin, ultimately discharging to the Ocklawaha River Basin, which is an open basin. Basin 500 is not within the 100-year flood zone.

3.3.2 Basin 501 (Existing NW Basin & Basin A)

Basin 501 begins at Station 465+40 and continues northeast to the highpoint at Station 474+00 and consists of pavement and open areas associated with the proposed right-of-way. Basin 501 consists of three (3) interconnected-infield ponds, I-4 and the north portion of US 27. The flow pattern is typically from east to west along the I-4 corridor and from north to south along US 27. The stormwater runoff from the roadway is collected by roadside and median ditches that flow to three (3) existing interconnected ponds (Ponds B1, B2 and B3 in Permit No. 44-011896.024 (Mod), Ponds 9-B1, 9-B2 and 9-B3 in Permit No. 44-011896.029). Ponds 9-B1, 9-B2 and 9-B3 were built with the US 27/I-4 Interchange project under FPID 201204-1-52-01. The existing plans were designed in 1988 NAVD. The existing ponds are located within the west quadrant of the US 27/I-4 interchange from Station 461+00 to 476+50. The pond soils are classified in Hydrologic Soil Group A. The existing ponds were designed as dry retention ponds and

accommodate the ultimate widening of I-4. The existing ponds are interconnected via existing stormsewer pipes. The ponds were designed and permitted to retain the total post development runoff from the 100-year/24-hour storm event, and therefore is considered to be a closed basin. Basin 501 is not within the 100 year flood zone.

3.3.3 Basin 502 (Existing SW Basin)

The proposed I-4 widening does not impact this basin. Runoff from existing Basin SW flows to existing Pond SW (SWFWMD Permit No. 44-011896.029), herein referred to as Pond 502. Pond 502 was designed as a dry retention pond built with the US 27/I-4 Interchange project under FPID 201204-1-52-01 and therefore is included in this report for the purpose of maintaining consistency with the naming convention with the rest of the ponds. For basin limits and pond design information, please refer to the existing permits located in Appendix E.

3.3.4 Basin 503

Basin 503 begins north of Home Run Boulevard at Station 49+26.00 and continues north to Station 56+14.00 along SR 25/ US 27 and from Station 474+00 to Station 520+53 along I-4. Basin 503 consists of two sub-basins: 503A and 503B. Basin 503A consists of SR 25/US 27 and the infield area south of Frontage Road (Station 56+14). The flow pattern is typically from south to north along SR25/US27. The stormwater runoff from the roadway is collected by a series of inlets that flow to an existing pond (Pond C1 in SWFWMD Permit No. 44-011896.024 (Mod), Pond 9-C1 in Permit No. 44-011896.029). Pond C1 is located within the infield area along SR 25/US 27 from Station 51+50 to 55+50. Pond C1 outfalls to Pond C2 through an existing stormsewer pipe. Basin 503B consists of SR 25/US 27 from Frontage Road to the I-4 bridge, the infield areas and I-4 from Station 474+00 to 520+53. Typically the flow pattern is from west to east along the I-4 roadside and median ditches. Stormwater runoff is conveyed through a series of roadside ditches and culverts from the existing ramps that flow to the existing ponds (Pond C2 and Pond C3 in Permit No. 44-011896.024 (Mod), Pond 9-C2 and Pond 9-C3 in SWFWMD Permit No. 44-011896.029). Ponds 9-C2 and 9-C3 were built with the US 27/I-4 Interchange project under FPID 201204-1-52-01. The existing plans were designed in 1988 NAVD. Pond C2 is located north of Pond C1 in the east quadrant of the US 27/I-4 Interchange from Station 480+00 to 485+50. Pond C3 is located adjacent to I-4 eastbound from Station 484+00 to 493+00. The pond soils are classified in Hydrologic Soil Group A. Ponds C2 and C3 are interconnected via an existing stormsewer pipe. Pond C3 discharges to the east through an existing stormsewer pipe to a ditch and ultimately is conveyed to Horse Creek, which is part of the Kissimmee River Basin, which is an open basin. Basin 503 is not within the 100 year flood zone.

3.3.5 Basin 504 (Existing Basin D)

Basin 504 begins from Station 10+00 and continues northwest along SR 25/US 27 to Station 49+26. Runoff from existing basin D typically flows from north to south along SR 25/ US 27 into existing Pond D (SWFWMD Permit No. 44-011896.029), herein referred to as Pond 504. Pond 504 was designed as a dry retention pond built with the US 27/I-4 Interchange project under FPID 201204-1-52-01. The pond was designed to retain the total post development runoff from the 100-year/24-hour storm event, and therefore is considered a closed basin. Basin 504 is not within the 100 year flood zone.

3.3.6 Basin 505

Basin 505 begins at Station 520+53 and continues northeast to Station 590+00. The basin is located within the Horse Creek Basin. Basin 505 typically flows from west to east along the I-4 corridor. The stormwater runoff from the roadway was originally collected by roadside ditches and cross drains that flowed to an existing pond (Pond E in SWFWMD Permit No 44-011896.024). Pond E was later eliminated due to environmental constraints (Permit No. 44-011896.024) and a portion of the basin was redirected to the existing interchange ponds (Ponds C2 and C3 in SWFWMD Permit No. 44-011896.024 (Mod), Ponds 9-C2 and 9-C3 in SWFWMD Permit No. 44-011896.029). A portion of the original basin (Basin E) drainage area is not directed to a formal treatment or attenuation facility. Basin 505 is an open basin that discharges to adjacent wetlands that discharge to the Horse Creek Basin, ultimately discharging to the Kissimmmee River Basin. Basin 505 is located within the 100 year flood zone. Impacts will be accommodated within a separate proposed pond.

3.3.7 Basin 506

Basin 506 begins at Station 365+50 and continues northeast to Station 435+00. The basin is located within the Ocklawaha River Basin. The storm water runoff is collected by roadside ditches and cross drains that flow to existing ponds (Pond 6-8, 6-9, 6-10, 6-11A, 6-11B in SWFWMD (Permit No. 43011896.032) all of which are located within the right of way. The existing ponds were designed as wet detention ponds built with the I-4 (SR 400) Segment 6 Widening project under FPID 201201-1. The pond soils are classified in Hydrologic Soil Group A/D. Basin 506 is an open basin that discharges to adjacent wetlands. Basin 506 is located within the 100 year flood zone. Impacts will be accommodated within a separate proposed pond.

3.3.8 Basin 100 (From Segment 1)

Basin 100 extends from Sta. 590+00 and continues to the Osceola/Polk County line at Sta. 622+00. Basin 100 consists of the pond site and full right of way. This project was originally permitted through SWFWMD (Permit No. 43011896.027). The existing plans were originally designed in 1929 NGVD. Stormwater runoff is collected by a storm sewer system and drains to the existing wet detention pond (Pond 7-7 in Permit No. 43011896.027). Existing Pond 7-7 provides treatment and attenuation and is linked to its receiving wetland, WL-7RS; via a drop structure that is comprised of a sizable weir and multiple-pipe outfall. Pond 7-7 was designed to hold the SWFWMD 100-year/24-hour storm runoff well below the top of the pond embankment. The pond discharges to the adjacent wetlands that ultimately discharge to the Reedy Creek Swamp via Davenport Creek. Davenport Creek ultimately discharges to the Kissimmee River, which is an open basin. The existing pond is located from Sta. 607+50 to Sta. 614+50. The pond soils are classified in Hydrologic Soil Group A/D.

3.4 Floodplains/Floodways

The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Rate Maps (FIRM) for Polk County. According to FEMA Map Numbers 12105C0100F, 12105C0125F and 12105C0225F, portions within the project limits are located within Zone A of the 100-year floodplain. Based on the FEMA floodplain lines, the roadway widening will impact the floodplain on both sides of the roadway. There are

no regulatory floodways within the project corridor. For flood plain locations, refer to Drainage Maps in Appendix A. The FEMA Flood Insurance Rate Map for the project is shown in Figure 6.

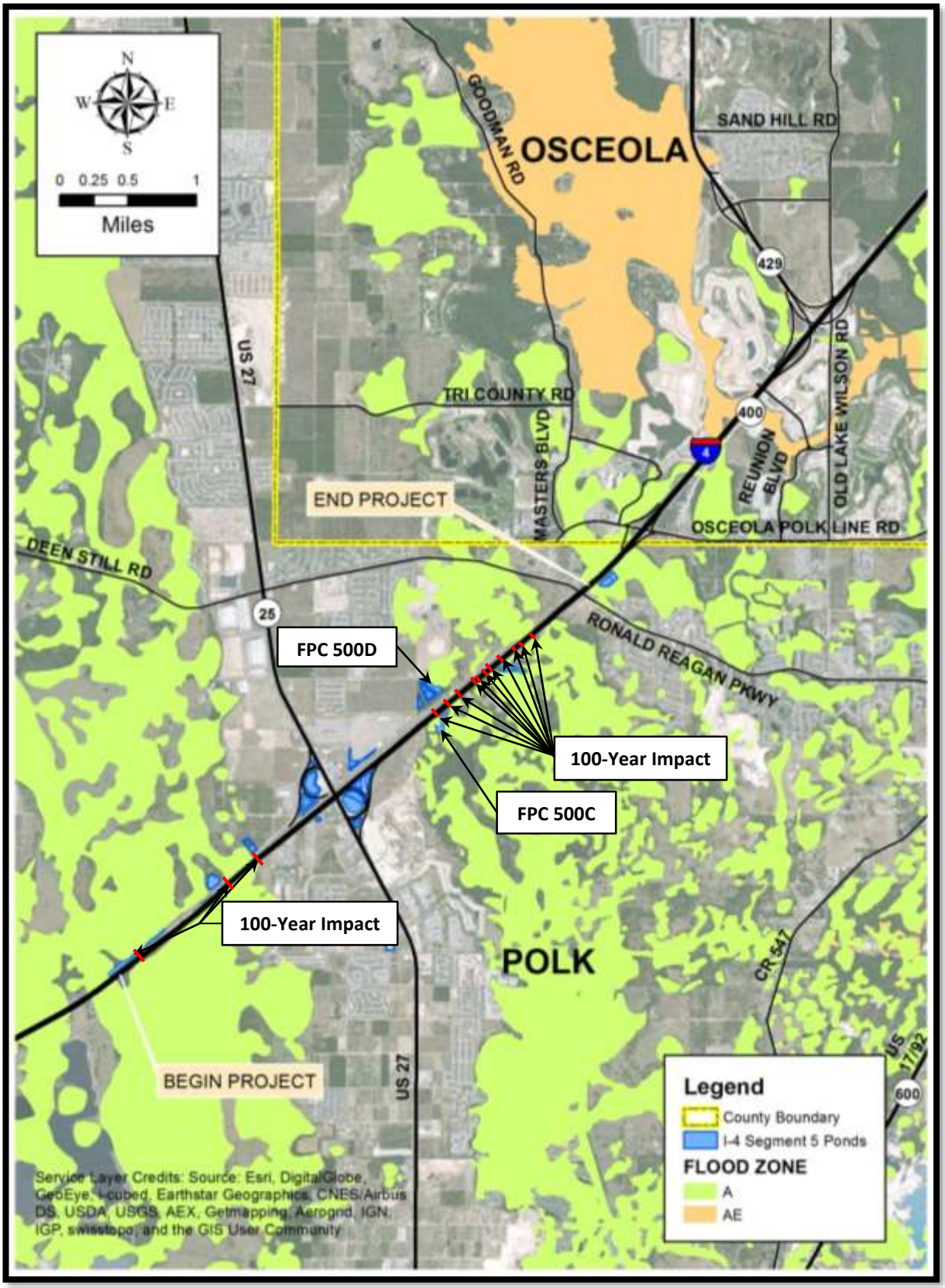


Figure 6 – FEMA Flood Insurance Map

4.0 Proposed Drainage Conditions/Stormwater Ponds

4.1 Overview

This project will make significant improvements to the water quality along the roadway corridor. The stormwater runoff from both the new and existing impervious areas will be treated in existing and proposed stormwater facilities. The stormwater runoff will be collected by storm sewer systems and roadside ditches. The water quality treatment and attenuation will be achieved through the expansion and construction of infield and offsite ponds, some of which will require acquisition of additional right-of-way.

The stormwater will be routed to existing and proposed stormwater ponds. Existing permitted ponds that are being impacted as a result of the proposed improvements, will require a permit modification in the design phase of the project. There are a total of nine (9) basins within the project limits. In areas with poor soils and high water table, only wet detention ponds were considered. The methodology used in determining the pond size is based on a stacking volumetric comparison for each basin based on the controlling storm event. Ponds were sized based on the assumption that most of the offsite runoff would be drained through separate systems. For a majority of the ponds, the location of where the proposed basins begin and end is the same as the existing condition. The location of the outfall in the proposed condition is the same as the existing.

The project lies within two (2) primary basins: The Ocklawaha Basin and the Kissimmee River Basin. The area southwest of US 27 is located within the Big Creek Reach Basin which ultimately discharges to the Ocklawaha River. The area northeast of US 27 is located within the Horse (Horseshoe) Creek Basin and Basin 100 is located within Davenport Creek, all of which are verified impaired WBID's. The Horse Creek Basin and Davenport Creek ultimately discharge to the Kissimmee River Basin. Big Creek is located within the Big Reach Basin and is a verified impaired WBID (WBID No.1406) for medium levels of dissolved oxygen. Horseshoe Creek (WBID No. 1436) and Davenport Creek (WBID No. 3170K) are impaired for fecal coliform. Information pertaining to cross drains can be found under separate cover in the (LHR) March 2016 (LHR).

4.2 Methodology of Pond Determinators

Based on the available information, only the hydraulically feasible and environmentally permittable alternative pond sites are considered. Cost is considered as a major component when determining pond alternatives. Alternative pond sites are analyzed and evaluated for the following parameters:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, seasonal high water table (SHWT), stormwater conveyance feasibility, allowable hydraulic grade line (HGL), and basin outfalls.
- Cultural resource impacts
- Environmental resource impacts, including wetlands and threatened or endangered species
- Potential for hazardous materials and contamination
- Floodplain impacts
- Potential for impacts to major utilities
- Estimated right-of-way acquisition cost
- Property owner input (On properties where the property owner requested a meeting)

- Conservation lands

4.3 Pond Alternatives

4.3.1 Basin 500

Basin 500 begins at Station 433+00 and continues eastward toward the US 27 overpass at Station 465+40. Basin 500 consists of the pond site and the full right-of-way which includes a 44-foot rail/transit corridor, and a portion of the US 27 Ramp. The basin is located within the Big Creek Reach Basin. The stormwater runoff from the roadway will be collected by storm sewer systems that discharge to the pond. Pond 500 was designed such that the offsite runoff will be drained through a separate bypass system. There is only one (1) alternative for this basin, since modifying the existing pond will be adequate for proposed improvements. No additional right-of-way will be needed.

4.3.1.1 Pond 500

Pond 500 is an existing pond (Pond A in SWFWMD Permit No. 44-011896.024 (Mod) and Pond 9-A1 in SWFWMD Permit No. 44-011896.029). The pond will need to be reduced in size and regraded as a result of the proposed roadway alignment. The pond is located adjacent to the west side of the I-4 corridor from Station 437+44 to 440+59. The pond soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over this pond site; however, there are no known occurrences. An active gopher tortoise burrow was observed along the fence at the northwest corner of this pond site, which will be relocated prior to site manipulation in the vicinity of the burrow. Additional details on the sand skink survey and impacts made to the gopher tortoise for this pond can be found under separate cover in the Endangered Species Biological Assessment (ESBA) March 2016. The pond will be designed as a wet detention pond and will continue to discharge into the Green Swamp, part of the Ocklawaha River Basin, which is an open basin. Since Pond 500 is an existing pond that will require minimum modifications, **Pond 500 is the recommended alternative for this basin.**

4.3.2 Basin 501

Basin 501 begins at Station 465+40 and continues northeast to the highpoint at Station 474+00. Basin 501 consists of three interconnected infield ponds, a 44-foot rail/transit corridor, I-4 and portions of US 27 north of I-4. The basin is a closed basin with no outfall. The stormwater runoff from the roadway will be collected by storm sewer systems that discharge to the ponds. There is only one (1) alternative for this basin, since modifying the existing ponds will be adequate for proposed improvements. No additional right-of-way will be necessary.

4.3.2.1 Ponds 501A, 501B & 501C

Ponds 501A, 501B and 501C are existing dry retention ponds (Ponds B1, B2 and B3 in SWFWMD Permit No. 44-011896.024 (Mod), Ponds 9-B1, 9-B2 and 9-B3 in SWFWMD Permit No. 44-011896.029) interconnected via existing stormsewer pipes. The ponds are located within the west quadrant of the US 27/I-4 interchange. Pond 501A will be regraded and reduced in size to accommodate the proposed I-4 ultimate mainline alignment. Pond 501B will be regraded and modified to accommodate the proposed ramp alignment. Pond 501C will be shifted to the

southwest to accommodate the proposed US 27 alignment. The pond's soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over these pond sites; however, there are no known occurrences. An active gopher tortoise burrow was observed within the pond site of Pond 501C and will be relocated prior to site manipulation in the vicinity of the burrow Additional details on the sand skink survey and the impacts made to the gopher tortoise for this pond can be found under separate cover in the March 2016 (ESBA). The ponds are located within a closed basin and were permitted and designed as dry retention ponds which hold the entire post development runoff from the 100-year/24-hour storm event. Since Ponds 501A, 501B and 501C are all existing ponds that can be utilized with modifications; no additional right-of-way will be required. **Ponds 501A, 501B and 501C are the recommended alternatives for this basin.**

4.3.3 Basin 502 (Existing SW Basin)

The proposed I-4 widening does not impact this basin. Runoff from existing Basin SW flows to existing Pond SW (SWFWMD Permit No. 44-011896.029), herein referred to as Pond 502. Pond 502 was designed as a dry retention pond built with the US 27/I-4 Interchange project under FPID 201204-1-52-01 and therefore is included in this report for the purpose of maintaining consistency with the naming convention of the rest of the ponds. For basin limits and pond design information, please refer to the existing permits located in Appendix E. **Pond 502 is the recommended alternative.**

4.3.4 Basin 503A & 503B

Basin 503 consists of two (2) sub-basins. Basin 503A begins at the highpoint at Station 49+26 and continues north along SR 25/US 27 to Station 56+14. Basin 503B begins from Station 474+00 and continues northeast along I-4 to Station 520+53 along I-4. Basin 503A consists of SR25/US27, the infield pond and the full right-of-way. Basin 503B consists of the I-4 corridor, three (3) infield pond sites and the section of SR 25/US 27 north of the bridge. Basin 503 is located within the Kissimmee River Basin, which is an open basin. The stormwater runoff from the roadway will be collected by roadside ditches and storm sewer systems that discharge to the ponds. There is only one (1) alternative for this basin, since the existing ponds will be modified and/or expanded for proposed improvements. No additional right-of-way will be necessary.

4.3.4.1 Ponds 503A, 503B, 503C & 503D

Ponds 503A, 503B and 503C are existing ponds (Ponds C1, C2 and C3 in SWFWMD Permit No. 44-011896.024 (Mod) and Ponds 9-C1, 9-C2 and 9-C3 in SWFWMD Permit No. 44-011896.029) located within the east quadrant of the US 27/I-4 Interchange. Pond 503B and Pond 503C provide additional compensation treatment as a result of the proposed roadway impacts to the existing Richie Brothers' ponds (SWFWMD Permit No. 43022407.003). Pond 503A will be reduced and regraded to accommodate the proposed US 27 and ramp alignment. Pond 503B will be expanded to utilize the full infield area. Existing pond C3 will be split into two newly proposed ponds (Pond 506C and Pond 503D) as a result of the proposed ramp alignment. The pond soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over portions of these pond sites; however, there are no known occurrences. Additional details on the sand skink survey can be found under separate cover in the March 2016 (ESBA). The ponds will be designed as dry

retention ponds. The ponds are interconnected and will continue to discharge east to Horse Creek via stormsewer systems and roadside ditches. The ponds are located within an open basin that ultimately discharges to the Kissimmee River Basin. Since Ponds 503A, 503B and 503C are existing ponds that can be utilized with modification and no additional right-of-way is required, **Ponds 503A, 503B, 503C and 503D are the recommended alternatives.**

4.3.5 Basin 504 (Existing Basin D)

Basin 504 begins from Station 10+00 and continues northwest along SR 25/US 27 to Station 46+00 eastbound and to Station 49+26 westbound. The basin consists of the pond site, the full right-of-way and some offsite areas. The basin is a closed basin. The stormwater runoff from the roadway will be collected by storm sewer systems that discharge to the pond. There is only one (1) alternative for this basin, since the existing pond is adequate for the proposed improvements. No additional right-of-way will be needed.

4.3.5.1 Pond 504

Pond 504 is an existing pond (Pond D in SWFWMD Permit No. 44-011896.029). Although more impervious area will be added to the pond in the proposed condition, no modifications to the pond are necessary. The pond was built with the US 27/I-4 Interchange project under FPID No. 201204-1-52-01. The existing plans were designed in 1988 NAVD. Pond 504 is designed as a dry retention pond built with the US 27/I-4 Interchange and is located adjacent to Heller Brothers Boulevard. The pond soils are classified in Hydrologic Soil Group A. Pond 504 is located within a closed basin and was permitted and designed as a dry retention pond which holds the entire post development runoff from the 100-year/24-hour storm event. Several active gopher tortoise burrows were observed within this pond site. No relocation of the burrows will be necessary since there are no proposed modifications being made to this pond. Additional details on impacts made to the gopher tortoise for this pond can be found under separate cover in the March 2016 (ESBA). **Pond 504 is the recommended alternative.**

4.3.6 Basin 505

Basin 505 begins at Station 520+53 and continues northeast to Station 590+00. The basin consists of the pond site and the full right-of-way, which includes a 44-foot rail/transit corridor. This section is located within the Kissimmee River Basin. The portions of this basin that were not previously directed to a formal treatment and attenuation facility will be treated and attenuated by a proposed retention pond. The stormwater runoff from the roadway will be collected by roadside ditches and storm sewer systems that discharge to the pond. The ponds were designed such that the offsite runoff will be drained through a separate bypass system. There are two (2) alternatives for this basin, which requires two (2) proposed ponds that are located outside of the existing right-of-way.

4.3.6.1 Regional Pond 1 & Regional Pond 2

The first alternative is to utilize a regional pond that will provide treatment for the I-4 mainline as well as a portion of the future Grandview Parkway. The pond is located west of I-4 from Station 522+00 to 532+50. Polk County Grandview Parkway divides the regional pond into two (2) ponds that will be interconnected by a culvert. The regional ponds will collect runoff from the full I-4 corridor and includes 3.08 acres of future impervious area from Grandview Parkway. The pond

soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over portions of the pond sites; however, due to circumstances some portions of the ponds were not surveyed. Since appropriate skink soils and habitat are present at this site, it is assumed to have areas of skink soils on these pond sites. As a result, 4.7 acres of sand skink mitigation will need to be provided at an approved USFWS sand skink conservation bank for Regional Pond 1 and 1.66 acres for Regional Pond 2. Additional details on the sand skink survey can be found under separate cover in the March 2016 ESBA. The ponds will be designed as wet detention ponds that will discharge northeast to adjacent wetlands and will ultimately discharge to Horse Creek, which is part of the Kissimmee River Basin. Additional right-of-way will be required for the regional ponds with an acquisition of one (1) parcel (Refer to Table 6 for parcel acquisition acreage). Since the Regional ponds can be used as joint use ponds, this will eliminate the need for an additional stormwater facility to treat Polk County Grandview Parkway. Therefore, **Regional ponds 1 and 2 are the recommended alternative.**

4.3.6.2 Ponds 505 A3 & 505 B2

The second alternative consists of two (2) ponds, Ponds 505 A3 and 505 B2. Pond 505 A3 is a new pond alternative located outside of the FDOT right-of-way. Pond 505 A3 is designed as a wet detention pond that is located west of I-4 from Station 528+00 to 532+50. Pond 505 A3 will collect the runoff from the rail/transit corridor and the west side of the I-4 mainline to the right-of-way. The pond will discharge to the adjacent wetlands that discharge to Horse Creek, ultimately discharging to the Kissimmee River Basin. The pond soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over portions of this pond site; however, there are no known occurrences. Additional details on the sand skink survey can be found under separate cover in the March 2016 ESBA. Additional right-of-way will be required for Pond 505 A3 with an acquisition of one (1) parcel (Refer to Table 6 for parcel acquisition acreage).

Pond 505 B2 is a new pond alternative. The pond is designed as a wet detention pond that is located on the east side of the roadway from Station 556+00 to 563+00. Pond 505 B2 will collect the runoff from the east side of the I-4 mainline to the right-of-way and will discharge to the adjacent wetlands. The pond will ultimately discharge to Horse Creek, which is part of the Kissimmee River Basin. The pond soils are classified in Hydrologic Soil Groups A and A/D. Mapped sand skink soils are present over portions of this pond site. Tracks were observed under the cover boards outside of the pond right-of-way; however, there are no known occurrences within the pond right-of-way. Active gopher tortoise burrows were observed within this proposed pond site. The burrows will be relocated prior to site manipulation in the vicinity of the burrow. Additional information on the sand skink survey and the impacts made to the gopher tortoise can be found under separate cover in the March 2016 ESBA. Additional right-of-way will be required for Pond 505 B2 with an acquisition of one (1) parcel; refer to Table 6 for parcel acquisition acreage. Wetlands will be impacted as a result of this proposed pond, Refer to Table 7 for wetland impact acreage. Additional details, regarding the wetlands and relevant factors for this pond can be found under separate cover in March 2016 Wetland Evaluation Report (WER).

4.3.7 Basin 506

Basin 506 begins at Station 365+50 and continues northeast to Station 435+00. The basin consists of the pond site and the full right-of-way, which includes a 44-foot rail/transit corridor. This section is located within the Ocklawaha River Basin, which is an open basin. The stormwater runoff from the roadway will be collected by roadside ditches and storm sewer systems that discharge to the pond. There is only one (1) alternative for this basin, which requires one (1) pond that is located outside of the FDOT right-of-way.

4.3.7.1 Pond 506

Pond 506 is a proposed pond that will collect runoff from the full I-4 right-of-way. Pond 506 is designed as a wet detention pond and is located west of I-4 from Station 416+00 to 422+00. The pond will outfall to adjacent wetlands that discharge to the Big Creek Reach Basin, which ultimately discharges to the Ocklawaha River Basin. The pond soils are classified in Hydrologic Soil Group A/D. Additional right-of-way will be required for Pond 506 with an acquisition of two (2) parcels (Refer to Table 6 for parcel acquisition acreage). Surface water SW-1W will be impacted as a result of this proposed pond (refer to Table 7 for impact acreage). Additional details, regarding the surface waters and relevant factors for this pond can be found under separate cover in the March 2016 Wetland Evaluation Report (WER). Since this basin is surrounded by wetlands and the 100 year floodplain, there is only one feasible alternative for this basin. **Therefore, Pond 506 is the recommended alternative.**

4.3.8 Basin 100 (From Segment 1)

Basin 100 begins just south of CR54 at Station 590+00 and continues northeast to the Osceola/Polk County line at Station 622+00. This section is part of the Kissimmee River Basin, which is an open basin. The basin consists of the full right-of-way and the pond site. The stormwater runoff from the roadway will be collected by roadside ditches and storm sewer systems that discharge to the pond. Pond 100 was designed such that the offsite runoff will be drained through a separate bypass system. There is only one alternative for this basin, since expanding the existing pond is adequate for the proposed improvements.

4.3.8.1 Pond 100

Pond 100 is an existing pond (Pond 7-7 in Permit No. 43011896.027) that will be expanded and reconfigured to accommodate the new ramp alignment. Pond 100 is located from Station 607+50 to 614+50 and will collect runoff from I-4 and a portion of the eastbound and westbound GUL ramps. Pond 100 lies within the FDOT's existing right-of-way; therefore, no additional right-of-way is required for this pond. The basin soils are classified in Hydrologic Soil Group A/D. The pond will be designed as wet detention pond that will continue to discharge to the adjacent wetlands that discharge to the Davenport Creek Basin, ultimately discharging to the Kissimmee River Basin. According to ESBA, there is a high likelihood for wild life occurrence on this pond site. Additional details, regarding the ranking process and relevant factors for this pond can be found under separate cover in the March 2016 (ESBA). **Pond 100 is the recommended alternative.**

4.4 Floodplains/Floodways

4.4.1 Basin 505

The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Rate Maps (FIRM) for Polk County. A portion of Basin 505 is located within Zone A of the 100-year floodplain. Based on the FEMA floodplain lines, the roadway widening will impact the floodplain on both sides of the roadway. The widening of the westbound lanes will impact the floodplain from Stations 559+46 to 567+68, 535+60 to 537+41 and 565+61 to 566+70. The widening of the eastbound lanes will impact the floodplain from Stations 559+46 to 567+68, 535+60 to 537+41 and 565+61 to 566+70. The floodplain elevation is approximately 120 feet NAVD (SWFWMD Permit No. 43011896.027). Basin 505 accounts for 13.20 ac-ft of floodplain impacts. There are two (2) alternatives for the floodplain compensation in this basin.

4.4.1.1 FPC 500C

The first alternative is floodplain compensation pond FPC 500C. FPC 500C will impact one parcel for a total right-of-way take of 5.89 acres from the 133.13 acre parcel. The right-of-way take includes a 50-foot wide access to the pond. FPC 500C is located approximately 180 feet east of I-4 from Station 523+00 to 530+00. The pond provides 14.51 ac-ft. of compensation volume. The pond soils are classified in Hydrologic Soil Group A. Due to circumstances, sand skink surveys were not completed for this pond; however, appropriate skink soils and habitat is present at this site and therefore is assumed to have areas of skink soils on this pond site. As a result, 4.5 acres of sand skink mitigation will need to be provided at an approved USFWS sand skink conservation bank. Additional details regarding the sand skink survey can be found under separate cover in the March 2016 ESBA. No signs of contamination were observed for this site and therefore, this site was given a low risk rating. Additional details, regarding the risk-ranking process and relevant factors, can be found under separate cover in the March 2016 Contamination Screening Evaluation Report (CSER). Wetlands will be impacted as a result of this proposed pond; refer to Table 7 for wetland impact acreage. Additional details, regarding the wetlands and relevant factors, for this pond can be found under separate cover in the March 2016 (WER). Five prehistoric ceramic artifacts were recovered from three shovel tests within this pond site as well as one archaeological occurrence. Additional details locating and identifying archaeological resources within this pond site can be found under separate cover in the March 2016 Cultural Resource Assessment Survey (CRAS).

4.4.1.2 FPC 500D

The second alternative is pond FPC 500D. FPC 500D will impact one parcel for a total right-of-way take of 4.24 acres from the 30.04 acre parcel. FPC 500D is located approximately 230 feet west of I-4 from Station 532+50 to 536+00. The pond provides 13.45 ac-ft. of compensation volume. The pond soils are classified in Hydrologic Soil Group A. Mapped sand skink soils are present over portions of this pond site. It was determined to be an occupied sand skink habitat just east of FPC 500D. Due to circumstances, there are portions of the site that were not surveyed. Since appropriate skink soils and habitat is present at this site, it is assumed to have areas of skink soils on this pond site. As a result, 0.076 acres of sand skink mitigation will need to be provided at an approved USFWS sand skink conservation bank. Additional details regarding the sand skink survey

can be found under separate cover in the March 2016 ESBA. The pond site may potentially contain contamination from EDB because there is an indication that this site was used for citrus production. However, no signs of contamination were observed at this site. This site was given a medium risk rating due to the presence of fallow citrus trees. Additional details, regarding the risk-ranking process and relevant factors, can be found under separate cover in March 2016 CSER. Floodplain compensation Pond FPC 500D has the least amount of impacts. **Therefore, Pond FPC 500D is the recommended alternative.**

4.4.2 Basin 506

A portion of Basin 506 is located within Zone A of the 100-year floodplain. Based on the FEMA floodplain lines, the roadway widening will impact the floodplain on both sides of the roadway. The widening of the westbound lanes will impact the floodplain from Stations 393+00 to 398+69 and 424+00 to 433+00. The widening of the eastbound lanes will impact the floodplain from Stations 390+90 to 399+38.50 and 421+73 to 433+00. The floodplain elevation is approximately 130 feet NAVD (SWFWMD Permit No. 43011896.032). Basin 506 accounts for 5.45 ac-ft of floodplain impacts.

4.4.2.1 FPC 506

FPC 506 is located from the beginning of the project at Station 365+00 to Station 393+00 and lies adjacent to I-4 westbound. The pond provides 5.68 ac-ft of compensation volume. There is only one (1) alternative for the floodplain compensation within this basin. No additional right-of-way will be needed since Pond FPC 506 is within the FDOT right-of-way. The pond soils are classified in Hydrologic Soil Group A. No sand skink soils occur within this proposed pond site and therefore no skink survey is required. Since the pond occurs over wetland areas, it could be subject to foraging by wood storks and other wading birds. Therefore, there is a high likelihood for wildlife occurrence on this proposed pond site. Additional details regarding threatened or endangered species can be found under separate cover in the March 2016 ESBA. No signs of contamination were observed for this site and therefore this site was given a low risk rating for contamination Additional details, regarding the risk-ranking process and contamination areas can be found under separate cover in the March 2016 CSER. Wetlands and surface waters will be impacted as a result of this proposed pond; refer to Table 7 for wetland and surface water impact acreages. Additional details, regarding the wetlands and relevant factors for this pond can be found under separate cover in the March 2016 WER). **Pond FPC 506 is the recommended alternative.**

5.0 Conclusion

The Pond Alternative Matrices (Tables 5-7) show a summary of the engineering data and analysis, as well as the wetland and floodplain impact and cost analysis. The stormwater management facility construction costs will include cost of installed drainage structures, drainage pipes and outfalls, clearing & grubbing, earthwork excavation and grading, berm construction, erosion protection, fencing, access accommodations, and sodding. The cost evaluation also includes costs associated with wetland impacts and costs associated with the mitigation of endangered species. The costs associated with parcel acquisition for each alternative evaluated, the estimated cost of land and any impacted improvements, administrative costs and legal fees are not included within this cost. The existing ponds that are currently treating the I-4

will be used as the recommended alternative to reduce cost to right-of-way. For existing ponds that are being impacted by the proposed alignment, they will be modified accordingly. Ponds will be enlarged to accommodate for the increase in impervious area when applicable. They will be reduced in size in instances when impacted by proposed ramps and/or the proposed mainline alignment. The costs associated with modifying the existing ponds will be accounted for in the Pond Alternative Matrices. The recommended pond sites are shown in Tables 1 and 2.

Table 5 – Pond Engineering Data & Analysis

Pond	Location	Soil Names & Hydrologic Groups	Estimated SHWT El. (ft)	Lowest Edge of Roadway (ft)	Outfall Location	Roadway Drainage Area (ac)	Method of Treatment	Required Treatment & Attenuation Volume (ac-ft)	Provided Treatment & Attenuation Volume (ac-ft)	Required Add. Pond Area Including Access (ac)	Total Parcel Available (ac)
500	Station 437+44 to 440+59 FDOT Property	Candler & Tavares (A)	128.61	135.00	Green Swamp	36.74	Wet Detention	9.73	9.79	N/A	N/A
501A	Station 463+00 to 470+00 FDOT Property	Candler (A)	132.20	142.50	No Outfall	92.95	Dry Retention	49.32	53.07	N/A	N/A
501B	Station 72+00 to 79+00 (US 27) FDOT Property										
501C	Station 82+50 to 84+00 (US 27) FDOT Property										
502	Station 465+00 to 467+00 FDOT Property	Candler (A) & Urban	See Appendix E	See Appendix E	See Appendix E	See Appendix E	Dry Retention	See Appendix E	See Appendix E	N/A	N/A
503A	Station 52+00 to 55+00 (US 27) FDOT Property	Candler (A) & Urban	157.70	187.00	Horse Creek	6.24	Dry Retention	1.65	2.09	N/A	N/A
503B	Station 57+00 to 66+00 (US 27) FDOT Property	Candler (A)	143.70	152.00	Horse Creek	81.89	Dry Retention	44.72	48.96	N/A	N/A
503C	Station 487+00 to 489+00 FDOT Property										
503D	Station 490+00 to 494+00 FDOT Property										
504	Heller Brothers Blvd FDOT Property	Candler (A)	142.50	170.00	No Outfall	37.51	Dry Retention	18.87	18.87	N/A	N/A
Regional Ponds 1 & 2	Station 522+00 to 532+50 Parcel No. 27-26-08-000000-033000	Candler & Taveres (A)	115.00	120.00	Wetlands	69.78	Wet Detention	21.48	23.08	10.79	30.04
505 A3	Station 555+00 to 532+50 Parcel No. 27-26-08-000000-033000	Candler & Taveres (A)	115.00	120.00	Adjacent Wetlands	31.81	Wet Detention	10.90	11.66	4.64	30.04
505 B2	Station 556+00 to 563+00 Parcel No. 27-26-05-000000-021010	Taveres (A), Smyrna and Myakka (A/D) & Basinger mucky (A/D)	115.00	120.00	Adjacent Wetland	29.26	Wet Detention	9.53	10.70	6.10	74.24
506	Station 416+00 to 422+00 Parcel No. 26-26-1300-00000-23010	Smyrna and Myakka (A/D) & Adamsville (A/D)	129.00	132.00	Adjacent Wetland	68.43	Wet Detention	8.31	8.89	1.70	1.70

Pond	Location	Soil Names & Hydrologic Groups	Estimated SHWT El. (ft)	Lowest Edge of Roadway (ft)	Outfall Location	Roadway Drainage Area (ac)	Method of Treatment	Required Treatment & Attenuation Volume (ac-ft)	Provided Treatment & Attenuation Volume (ac-ft)	Required Add. Pond Area Including Access (ac)	Total Parcel Available (ac)
	Parcel No. Unknown									0.37	Unknown
	Parcel No. 26-26-1348-85000-10010									4.00	64.94
100	Station 607+50 to 614+50 FDOT Property	Smyrna (A/D) & Myakka (A/D)	113.8	117.0	Adjacent Wetlands	31.22	Wet Detention	7.67	7.67	N/A	N/A

Table 6 – Floodplain Compensation Pond Engineering Data & Analysis

FPC Pond	Location	Soil Names & Hydrologic Groups	Estimated SHWT El. (ft)	100 YR Floodplain Elevation (ft)	Required Compensation (ac-ft)	Storage Provided (ac-ft)	Required Add. Pond Area Including Access (ac)	Total Parcel Available (ac)
500C	Station 523+00 to 530+00 Parcel No. 27-26-08-000000-033010	Candler, Tavares & Pomello (A)	115.00	120.00	13.20	14.51	5.89	133.13
500D	Station 532+50 to 536+00 Parcel No. 27-26-08-000000-033000	Candler and Taveres (A)	115.00	120.00	13.20	13.45	4.24	30.04
506	Station 365+00 to 393+00 FDOT Property	Eaton muck, Pomona, Samsula muck, Smyrna and Myakka, Immokalee & Felda (A/D)	129.00	130.00	5.45	5.68	N/A	N/A

Table 7 – Pond and Floodplain Compensation Pond Impact & Cost Analysis

Pond	Existing Land Use	Threatened or Endangered Species Impacts**	Hazardous Materials & Contamination Potential***	Major Utility Conflict Potential (Y/N)	Floodplain Impacts (ac-ft)	Wetland & Surface Water Impacts (ac)	Total Pond Cost	Rankings
500	Parcels With No Values	High	Medium	N	0.00	0.00	$79,792	1
501A	Parcels With No Values	Moderate	Medium	N	0.00	0.00	$86,202	1
501B	Parcels With No Values	Moderate	Medium	N	0.00	0.00	$148,976	1
501C	Parcels With No Values	Moderate	Low	Y	0.00	0.00	$104,364	1
502	Parcels With No Values	Low	Medium	N	0.00	0.00	*$0.00	1

Pond	Existing Land Use	Threatened or Endangered Species Impacts**	Hazardous Materials & Contamination Potential***	Major Utility Conflict Potential (Y/N)	Floodplain Impacts (ac-ft)	Wetland & Surface Water Impacts (ac)		Total Pond Cost	Rankings
503A	Parcels With No Values	Low	Medium	N	0.00	0.00		$87,161	1
503B	Parcels With No Values	Low	Medium	N	0.00	0.00		$1,063,188	1
503C	Parcels With No Value	Low	Medium	N	0.00	0.00		$29,224	1
503D	Parcels With No Value	Low	Medium	N	0.00	0.00		$32,276	1
504	Vacant Nonresidential	High	Medium	N	0.00	0.00		*$0.00	1
Regional Ponds 1 & 2	Timber and Agricultural Wastes	Moderate	Medium	N	0.00	0.00		$1,980,019	1
505 A3	Acreage Not Zoned For Agriculture	Moderate	Medium	N	0.00	0.00		$559,111	2
505 B2	Acreage Not Zoned For Agriculture	High	Low	N	0.00	0.76	0.00	$991,185	2
506	Native and Improved Pasture	Moderate	Medium	N	0.00	0.37	0.20	$684,568	1
100	Industrial	High	Low	N	6.06	3.63	0.00	$784,919	1
FPC 500C	Agricultural	High	Low	N	0.00	0.98	0.00	$687,467	2
FPC 500D	Agricultural	Moderate	Medium	N	0.00	0.00		$291,447	1
FPC 506	Parcels With No Value	High	Low	N	0.00	0.37	0.20	$382,560	1

*Since there are no proposed changes to this pond, the total pond cost is $0

**Refer to the Endangered Species Biological Assessment (ESBA) provided by Stantec for more detailed information on Threatened or Endangered Species Impacts and their associated rankings.

*** Refer to the Contamination Screening Evaluation Report (CSER) provided by Stantec for more detailed information on Hazardous Materials & Contamination Potential areas and their associated rankings.

APPENDIX A –

DRAINAGE MAPS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

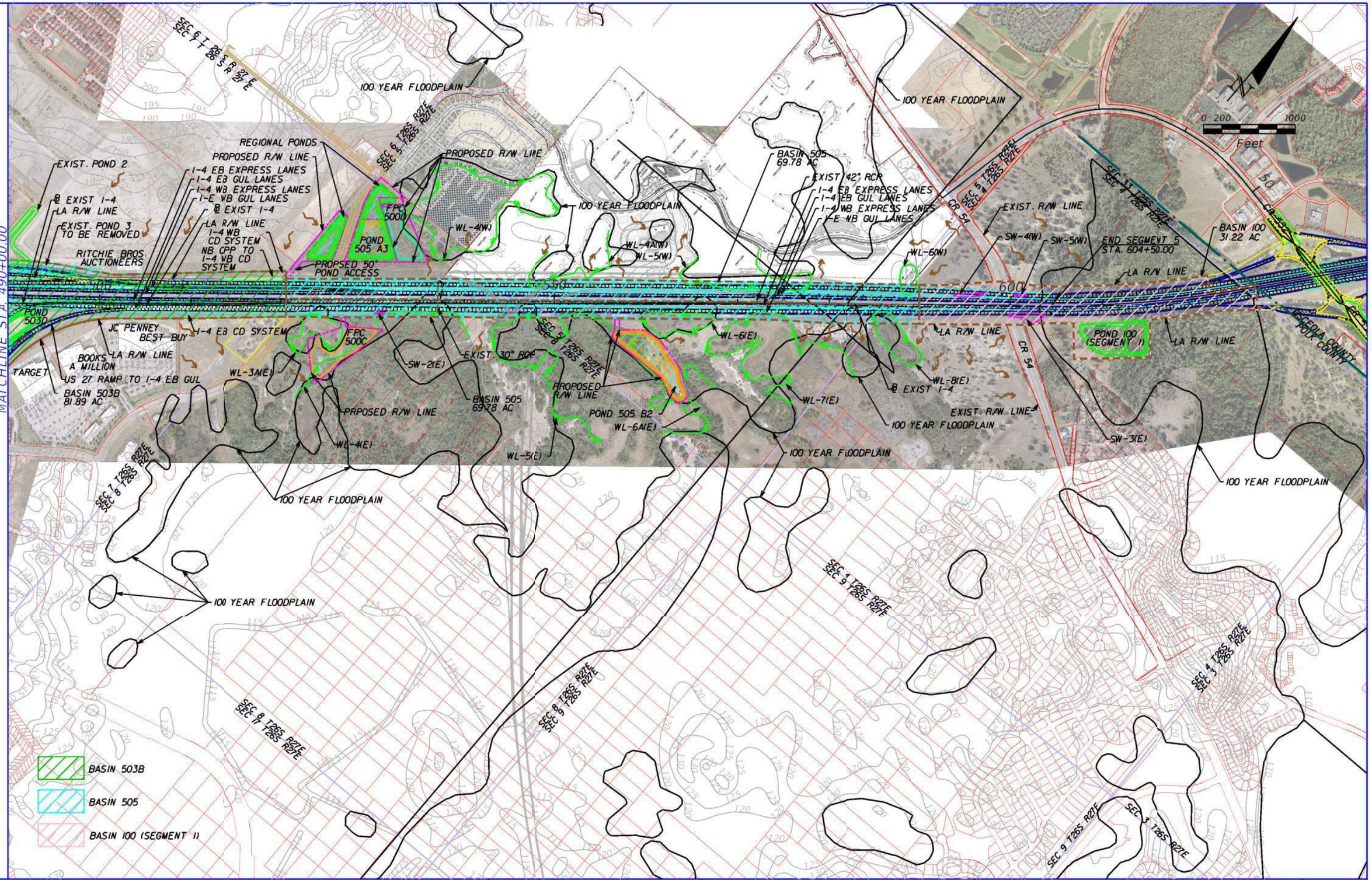
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO. A-1

planrdOA 16.5x10.6 (in.) 1:1000
MODEL:
SHEET SIZE:
PLOT SCALE:
Color_FDOTPDF.pltcfg
FDOT_text-glow.tbl
PRINT DRIVER:
PEN TABLE:
lphillip 2/19/2016 11:09:05 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\432100 2201\Segment 5\drainage\DRMPRD502.DGN



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY DRAINAGE MAP SEGMENT 5

SHEET NO. A-2

MODEL: planrdOB
SHEET SIZE: 16.5x10.6 (in.)
PLOT SCALE: 1:1000
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lphillip 2/19/2016 11:09:30 AM U:\Jobs\59219 - 14 SAMR\TECHPROD\432100 2201\Segment 5\drainage\DRMPRD502.DGN

MODEL: planrd01a
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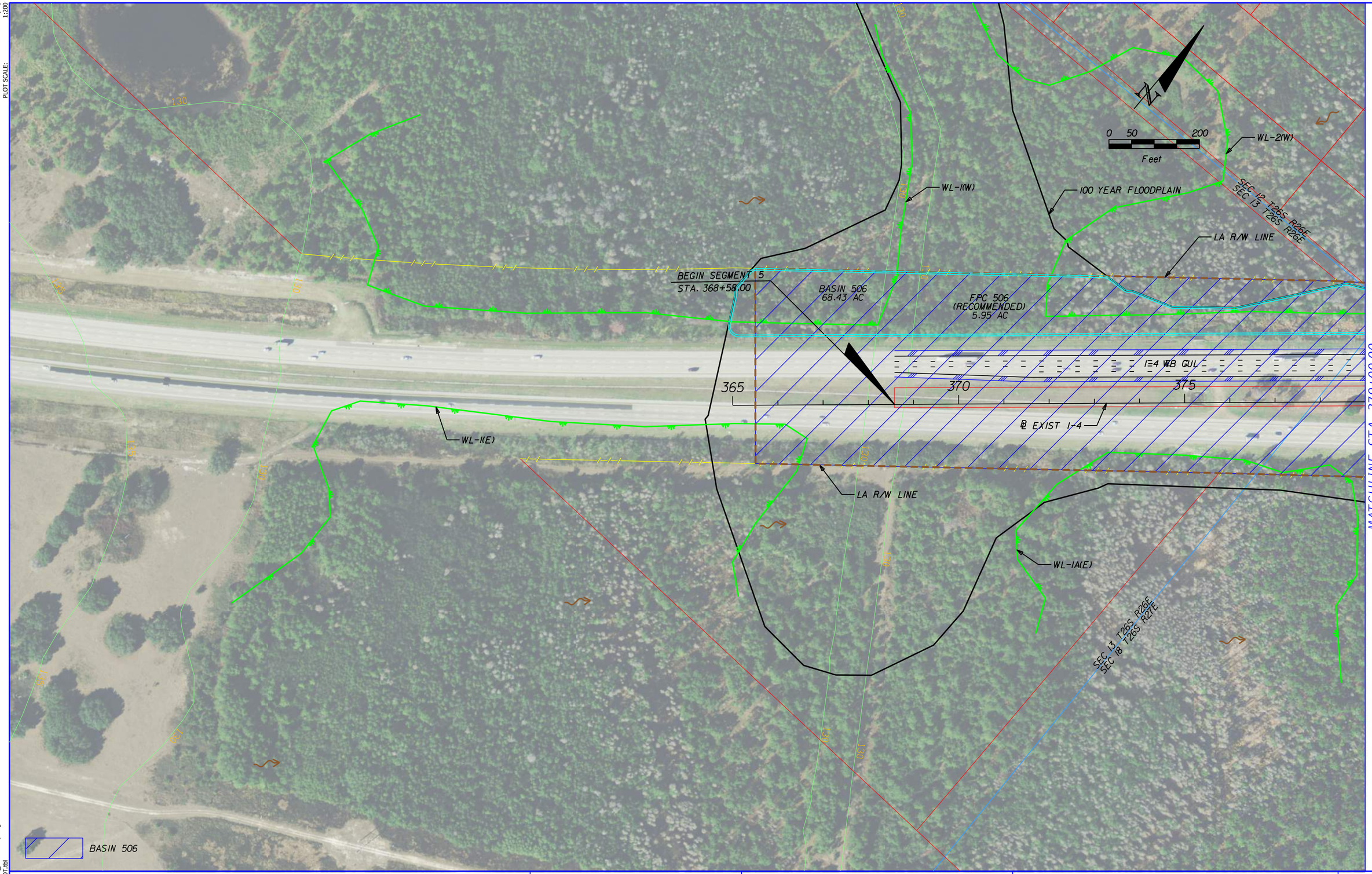
PLOT SCALE: 1:200



Color_FDOTPDF.pltcfg
FDOT.tbl
PRINT DRIVER:
PEN TABLE:

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO. A-3

lphillip 2/19/2016 11:10:19 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

plandr01b
16.5x10.6 (in.)
1:200

MODEL:
SHEET SIZE:
PLOT SCALE:

MATCHLINE STA. 379+00.00

MATCHLINE STA. 409+00.00

SEC 13 T26S R26E
SEC 18 T26S R27E

0 50 200
Feet

WL-2(W)

100 YEAR FLOODPLAIN

LA R/W LINE

SW-1(W)

BASIN 506
68.43 AC

WL-2(W)

FPC 506
(RECOMMENDED)
5.95 AC

I-4 WB GUL

I-4 WB EXPRESS LANE

380 385 390 395 400 405

℄ EXIST I-4

SW-1(E)

I-4 EB GUL

LA R/W LINE

WL-2(E)

100 YEAR FLOODPLAIN

WL-2A(E)

SEC 12 T26S R26E
SEC 13 T26S R26E

BASIN 506

Cdot_FDOTPDF.pltcfg
FDOT.tbl

PRINT DRIVER:
PEN TABLE:

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO.
A-4

lphillip 2/19/2016 11:10:35 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

MODEL: plandr01c
SHEET SIZE: 16.5x10.6 (in.)
PLOT SCALE: 1:200

MATCHLINE STA. 409+00.00

MATCHLINE STA. 439+00.00

100 YEAR FLOODPLAIN

PARCEL ID: UNKNOWN
AREA TAKEN: 16,255 SF

WL-2(W)

100 YEAR FLOODPLAIN

PARCEL ID: 26-26-13-4885-0001-0010
AREA TAKEN: 174,224 SF

WL-3(W)

POND 506
(RECOMMENDED)
5.35 AC

PARCEL ID: 26-26-13-0000-0002-3010
AREA TAKEN: 74,052 SF

WL-2(W)

LA R/W LINE

SW-1A(W)

I-4 WB GUL

I-4 WB EXPRESS LANE

I-4 EB EXPRESS LANE

I-4 EB GUL

410 415 420 425 430 435

WL-3(E)

℄ EXIST I-4

WL-2A(E)

100 YEAR FLOODPLAIN

BASIN 506
68.43 AC

LA R/W LINE

BASIN 500
36.74 AC

PARCEL ID: 26-26-13-4885-0001-0050
AREA TAKEN: 31,232 SF

PARCEL ID: 26-26-13-4885-0001-0010
AREA TAKEN: 1,600 SF

POND 500
(RECOMMENDED)
3.94 AC

0 50 200
Feet

BASIN 506

BASIN 500

Color_FDOTPDF.pltcfg
FDOT.tbl
PRINT DRIVER:
PEN TABLE:

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO.
A-5

lphillip 2/19/2016 11:10:36 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

MODEL: planrd01
SHEET SIZE: 16.5x10.6 (in.)
PLOT SCALE: 1:200

MATCHLINE STA. 439+00.00

MATCHLINE STA. 468+00.00

13

14

12

SEC 12 T 26 S R 26 E
SEC 7 T 26 S R 27 E

POND 500 (RECOMMENDED) 3.94 AC

PROPOSED LA R/W LINE

PARCEL ID: 26-26-13-4885-0001-0050
AREA TAKEN: 31,232 SF

PARCEL ID: ROADWAY
AREA TAKEN: 1,083 SF

PARCEL ID: 27-26-18-0000-0003-3020
AREA TAKEN: 13,198 SF

BASIN 501
92.95 AC

US 27 TO WB I-4 GUL

0 50 200
Feet

POND 501A (RECOMMENDED)
4.86 AC

I-4 WB GUL

I-4 WB EXPRESS LANE

℄ EXIST I-4

I-4 EB EXPRESS LANE

I-4 EB GUL

LA R/W LINE

BASIN 500
36.74 AC

THEMEWORLD RV RESORT

ORLANDO SW/ FORT SUMMIT KOA

POND 502 (RECOMMENDED)

SEC 13 T 26 S R 26 E
SEC 18 T 26 S R 27 E

BASIN 500

BASIN 501

Color_FDOTPDF.pltcfg
FDOT.tbl
PRINT DRIVER:
PEN TABLE:

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY DRAINAGE MAP SEGMENT 5

SHEET NO. A-6

lphillip 2/19/2016 11:10:53 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

MATCHLINE STA. 468+00.00

POND 501B (RECOMMENDED) 8.91 AC

BASIN 501 92.95 AC

HOME SUITES

SUNOCO GAS STATION

EXIST. R/W LINE

END PROP. LA R/W

PARCEL ID: 27-26-07-7012-6100-0030 AREA TAKEN: 46,566 SF

HOLIDAY INN EXPRESS

I-4 WB GUL RAMP TO US 27

END LA R/W

PROPOSED LA R/W LINE

PARCEL ID: 27-26-07-7012-6100-0040 AREA TAKEN: 73,320 SF

PARCEL ID: 27-26-07-7012-6100-0010 AREA TAKEN: 1,742 SF

PARCEL ID: 27-26-07-7012-6100-0050 AREA TAKEN: 6,586 SF

EXISTING POND 2 2.94 AC

PARCEL ID: 27-26-07-0000-0001-2030 AREA TAKEN: 168,157 SF

EXISTING POND 3 TO BE REMOVED

I-4 WB EXPRESS LANE TO US 27

SIDEWALK

COMFORT INN & SUITES

LA R/W LINE

POND 501A (RECOMMENDED) 4.86 AC

I-4 WB GUL

I-4 WB EXPRESS LANE

℄ EXIST US 27

℄ EXIST I-4

I-4 EB EXPRESS LANE

I-4 EB GUL

BASIN 503 81.89 AC

US 27 RAMP TO I-4 EB EXPRESS LANE

LA R/W LINE

END LA R/W

QUALITY INN

POND 503C (RECOMMENDED) 2.47 AC

POND 503D (RECOMMENDED) 2.85 AC

I-4 EB GUL RAMP TO US 27

MARATHON GAS

SEC 7 T26S R27E
SEC 18 T26S R27E

SHELL GAS STATION

EXIST. R/W LINE

POND 503B (RECOMMENDED) 12.35 AC

US 27 RAMP TO I-4 EB GUL

LA R/W LINE

DAYS INN

BOOKS A MILLION

TARGET

BOB EVANS

BASIN 501

BASIN 503

0 50 200 Feet

MATCHLINE STA. 498+00.00

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY DRAINAGE MAP SEGMENT 5

SHEET NO. A-7

MATCHLINE STA. 498+00.00

MATCHLINE STA. 528+00.00

0 50 200
Feet

EXISTING POND 3
TO BE REMOVED

RITCHIE BROS.
AUCTIONEERS

PARCEL ID: 27-26-07-0000-0001-2030
AREA TAKEN: 168,157 SF

PROPOSED LA R/W LINE

LA R/W LINE

PARCEL ID: 27-26-08-0000-0003-3000
AREA TAKEN: 469,988 SF

REGIONAL POND 1
(RECOMMENDED)
2.20 AC

REGIONAL
POND 2
5.85 AC

BASIN 503
81.89 AC

I-4 WB GUL

I-4 WB EXPRESS LANE TO US 27

I-4 WB EXPRESS LANE

I-4 EB EXPRESS LANE

US 27 TO I-4 EB EXPRESS LANE

I-4 EB GUL

BASIN 505
69.78 AC

JC PENNEY

BEST BUY

LA R/W LINE

℄ EXIST I-4

BASIN 505
69.78 AC

PARCEL ID: 27-26-08-0000-0003-3010
AREA TAKEN: 256,356 SF

SEC 7 T26S R27E
SEC 8 T26S R27E

100 YEAR FLOODPLAIN

GRANDVIEW PARKWAY

WL-3A(E)

FPC 500C
(ALTERNATIVE)
3.39 AC

PROPOSED R/W LINE

WL-4(E)

100 YEAR FLOODPLAIN

BASIN 503

BASIN 505

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO.
A-8

MODEL: plandr04
SHEET SIZE: 16.5x10.6 (in.)
PLOT SCALE: 1:200

SEC 7 T26S R27E

REGIONAL POND 2
(RECOMMENDED)
5.85 AC

POND 505 A3
(ALTERNATIVE)
3.84 AC

5

FPC 500D
(RECOMMENDED)
3.08 AC

SEC 5 T26S R27E
SEC 8 T26S R27E

PARCEL ID: 27-26-08-0000-0003-3000
AREA TAKEN: 184,652 SF

WL-4(W)

PARCEL ID: 27-26-08-0000-0003-3000
AREA TAKEN: 202,184 SF

WETLAND

22

100 YEAR FLOODPLAIN

BASIN 505
69.78 AC

I-4 WB GUL

EXISTING 30" RCP

I-4 WB EXPRESS LANE

I-4 EB EXPRESS LANE

I-4 EB GUL

℄ EXIST I-4

530 535 540 545 550 555

MATCHLINE STA. 528+00.00

MATCHLINE STA. 558+00.00

6

0 50 200
Feet

WETLAND

100 YEAR FLOODPLAIN

WL-4A(W)

LA R/W LINE

SW-2(E)

FPC 500C
(ALTERNATIVE)
3.39 AC

PROPOSED R/W LINE

PARCEL ID: 27-26-08-0000-0003-3010
AREA TAKEN: 256,356 SF

8

WL-4(E)

20

21

PARCEL ID: 27-26-05-0000-0002-1010
AREA TAKEN: 265,764 SF

POND
505 B2
(ALTERNATIVE)
4.87 AC

WL-5(E)

BASIN 505

Cdot_FDOTPDF.pltcfg
FDOT.tbl

PRINT DRIVER:
PEN TABLE:

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO.
A-9

lphillip 2/19/2016 11:11:35 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

MATCHLINE STA. 558+00.00

MATCHLINE STA. 588+00.00

WETLAND

WETLAND

MEADOWS BLVD

PHASE 1 RESIDENTIAL

POND 4

6

7

24

WL-5(W)

L=1081.28'
R=99115.94'

L=1081.28'
R=99115.94'

WL-6(W)

BASIN 505
69.78 AC

LA R/W LINE

I-4 WB GUL

EXISTING 42" RCP

I-4 WB EXPRESS LANE

560 565 570 575 580 585

℄ EXIST I-4

I-4 EB EXPRESS LANE

I-4 EB GUL

LA R/W LINE

WL-6(E)

100 YEAR FLOODPLAIN

WL-7(E)

PROPOSED R/W LINE

PARCEL ID: 27-26-05-0000-0002-1010
AREA TAKEN: 265,764 SF

POND 505 B2
(ALTERNATIVE)
4.87 AC

WL-6A(E)

WL-5(E)

100 YEAR FLOODPLAIN

SEC 5 T26S R27E

BASIN 505

WL-8(E)

SEC 5 T26S R27E
SEC 5 T26S R27E

100 YEAR FLOODPLAIN

0 50 200
Feet

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO. A-10

PRINT DRIVER: Color_FDOTPDF.pltcfg
PEN TABLE: FDOT.tbl

lphillip 2/19/2016 11:12:03 AM U:\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 5\drainage\DRMPRD501.DGN

planrd06
16.5x10.6 (in.)
1:200
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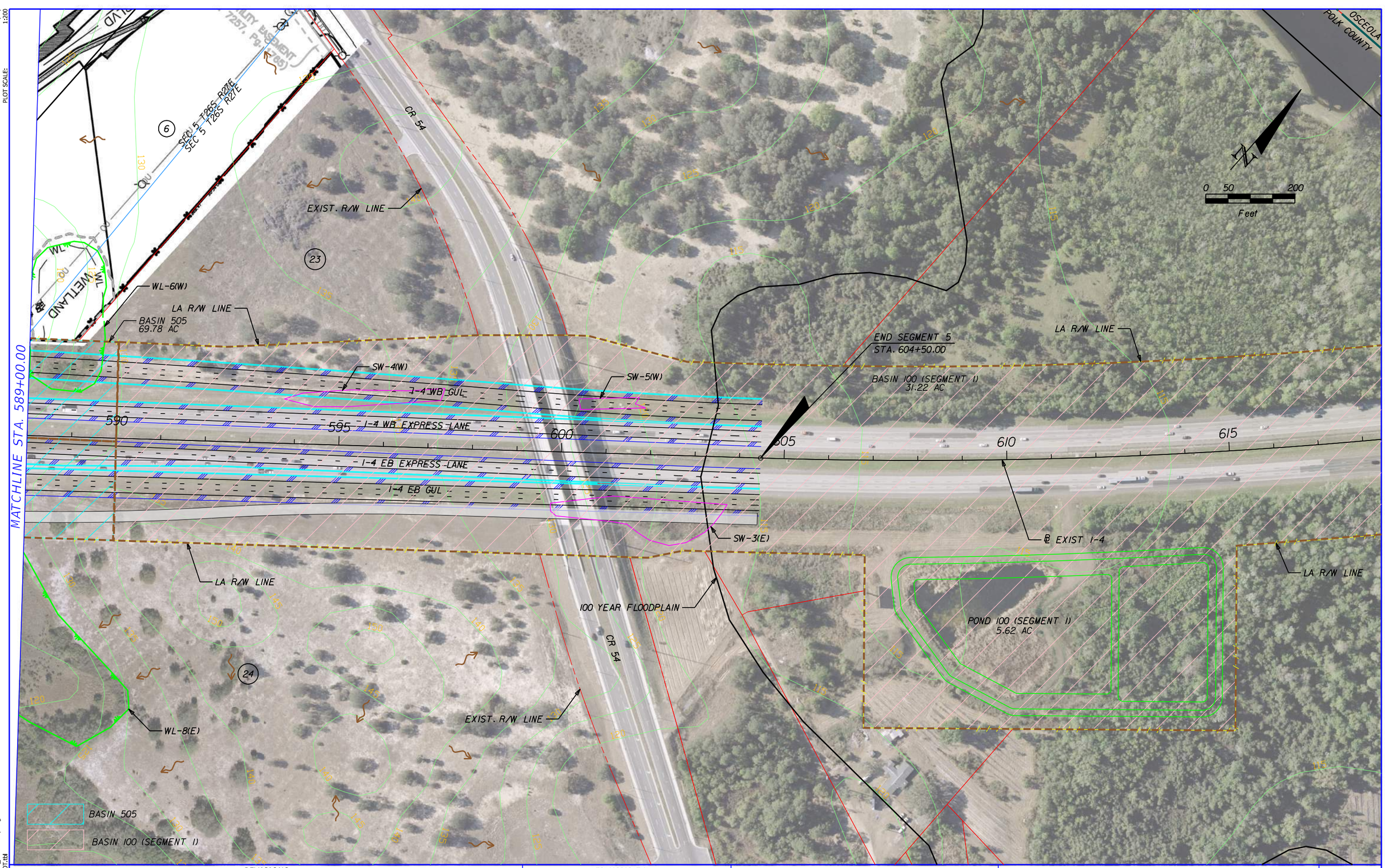
SHEET SIZE:
PLOT SCALE:



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

HNTB CORPORATION
610 CRESCENT EXECUTIVE CT
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT. OF AUTH. NO. 6500

ENGINEER OF RECORD: SANAM RAI, P.E.
FL. REGISTRATION NO. 69089

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	POLK	201210-2-22-01

I-4 PD&E STUDY
DRAINAGE MAP
SEGMENT 5

SHEET NO.
A-11

Color_FDOTPDF.pltcfg
FDOT.tbl
PRINT DRIVER:
PEN TABLE:

APPENDIX B –

BASIN CALCULATIONS

HNTB

		date:
made by:	SR	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 1

BASIN NAME: 100 (Pond 7-7 in SWFWMD Permit No. 43011896.027)
POND NAME: 100

STATION LIMITS: From: 590+00
To: 622+00

Roadway Length: 3200 ft
R/W Width: 425 ft

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	3	36 ft
Guardrail	5 ft	0	0 ft
Inside Shoulder	10 ft	1	10 ft
Outside Shoulder	10 ft	1	10 ft
	Total Impervious Width:		56 ft

Additional Impervious: 0.24 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 4.35 ac
Pervious Roadway Area: 26.87 ac
Total Roadway Area: 31.22 ac

Pond Area:

Pervious Pond Area: 1.07 ac
Water Surface Area: 4.55 ac
Total Pond Area: 5.62 ac

Total Area:

Impervious Area: 4.35 ac
Pervious Area: 27.94 ac
Water Surface Area: 4.55 ac
Total Area: 36.84 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	4.35 ac	426.7
Water Area	---	100	4.55 ac	455.0
Open Land (Grass cover 50% - 75%)	A	39	8.38 ac	326.9
Open Land (Grass cover 50% - 75%)	A/D	84	19.56 ac	1642.7
		Total:	36.84 ac	2851.3

CN = Total CN * Area / Total Area = **77.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 2.92 in

Precipitation (P) = 12.9 in (for 50yr/72hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **9.95 in**

HNTB

		date:
made by:	SR	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 1

BASIN NAME: 100 (Pond 7-7 in SWFWMD Permit No. 43011896.027)
POND NAME: 100

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	12	144 ft
Wall	2 ft	4	8 ft
Shoulder	12 ft	4	48 ft
Shoulder	10 ft	4	40 ft
	Total Impervious Width:		240 ft

Additional Impervious: 0.57 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 18.20 ac
Pervious Roadway Area: 13.02 ac
Total Roadway Area: 31.22 ac

Pond Area:

Pervious Pond Area: 1.07 ac
Water Surface Area: 4.55 ac
Total Pond Area: 5.62 ac

Total Area:

Impervious Area: 18.20 ac
Pervious Area: 14.09 ac
Water Surface Area: 4.55 ac
Total Area: 36.84 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	18.20 ac	1783.7
Water Area	---	100	4.55 ac	455.0
Rail Corridor (Gravel)	A/D	91	3.74 ac	340.1
Open Land (Grass cover 50% - 75%)	A	39	4.23 ac	164.9
Open Land (Grass cover 50% - 75%)	A/D	84	6.13 ac	514.6
		Total:	36.84 ac	3258.2

CN = Total CN * Area / Total Area = **88.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 1.31 in

Precipitation (P) = 12.9 in (for 50yr/72hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **11.45 in**

HNTB

		date:
made by:	SR	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 1

BASIN NAME: 100 (Pond 7-7 in SWFWMD Permit No. 43011896.027)
POND NAME: 100

POND SIZING : WET DETENTION POND (OPEN BASIN) - SFWMD

Required Treatment Volume:

2.5" over New Impervious Area = 2.88 ac-ft
1" over Total Area = 3.07 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 3.07 ac-ft

Required Attenuation Volume:

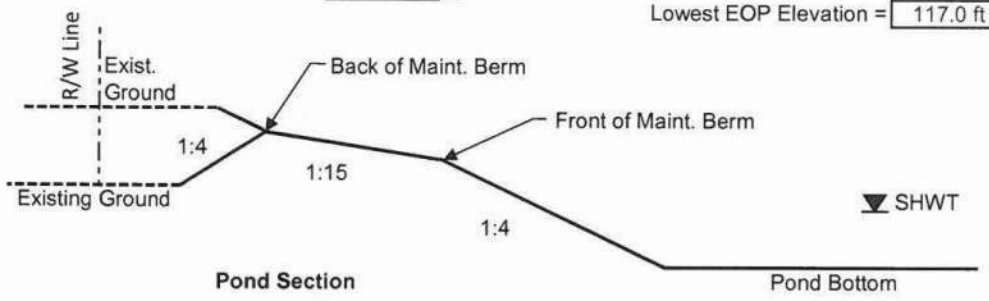
Total Runoff: Q_{pre} = 9.95 in
Q_{post} = 11.45 in
ΔQ = 1.50 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 4.60 ac-ft

---

Maintenance Area Width = 15.0 ft @ 1:15
Pond Tie-In Width = 480.0 ft @ 1:4

Existing Ground Elevation = 117.5 ft
Initial Water Elevation = 113.8 ft
Lowest EOP Elevation = 117.0 ft



Pond Section

POND 100 (SEGMENT 1)

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
117.50	Back of Maintenance Berm	5.62 ac			18.15 ac-ft
116.50	Front of Maintenance Berm	4.95 ac			12.87 ac-ft
115.00	---	4.76 ac			5.59 ac-ft
113.80	Initial Water Elevation	4.55 ac			0.00 ac-ft
107.80	Pond Bottom	3.63 ac			

Required Treatment Volume: 3.07 ac-ft
Top El. Of Treatment Volume: 114.46
Required Treat. Vol. + Atten.: 7.67 ac-ft
Top El. Of Treat. Vol. + Atten.: 115.43

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 500
POND NAME: 500 (Pond A in Permit No. 44-011896.024)

STATION LIMITS: From: 433+00
To: 465+40

Roadway Length: 3240 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	4	48 ft
Inside Shoulder	10 ft	2	20 ft
Outside Shoulder	10 ft	2	20 ft
	Total Impervious Width:		88 ft

Additional Impervious: 1.10 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 7.65 ac
Pervious Roadway Area: 29.09 ac
Total Roadway Area: 36.74 ac

Pond Area:

Pervious Pond Area: 1.55 ac
Water Surface Area: 2.39 ac
Total Pond Area: 3.94 ac

Total Area:

Impervious Area: 7.65 ac
Pervious Area: 30.64 ac
Water Surface Area: 2.39 ac
Total Area: 40.68 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	7.65 ac	749.3
Water Area	---	100	2.39 ac	239.0
Open Land (Grass cover 50% - 75%)	A/D & B/D	84	0.53 ac	44.8
Open Land (Grass cover 50% - 75%)	A	49	30.11 ac	1475.4
		Total:	40.68 ac	2508.5

CN = Total CN * Area / Total Area = **61.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 6.22 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.77 in**

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 500
POND NAME: 500 (Pond A in Permit No. 44-011896.024)

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	10	120 ft
Wall	2 ft	2	4 ft
Shoulder	12 ft	5	60 ft
Shoulder	10 ft	2	20 ft
	Total Impervious Width:		204 ft

Additional Impervious: 4.87 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 20.04 ac
Pervious Roadway Area: 16.70 ac
Total Roadway Area: 36.74 ac

Pond Area:

Pervious Pond Area: 1.55 ac
Water Surface Area: 2.39 ac
Total Pond Area: 3.94 ac

Total Area:

Impervious Area: 20.04 ac
Pervious Area: 18.25 ac
Water Surface Area: 2.39 ac
Total Area: 40.68 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	20.04 ac	1964.3
Water Area	---	100	2.39 ac	239.0
Open Land (Grass cover 50% - 75%)	A/D & B/D	84	1.24 ac	103.9
Rail Corridor (Gravel)	A/D & B/D	91	0.27 ac	24.3
Rail Corridor (Gravel)	A	76	3.01 ac	228.5
Open Land (Grass cover 50% - 75%)	A	49	13.74 ac	673.1
		Total:	40.68 ac	3233.0

CN = Total CN * Area / Total Area = **79.5**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 2.58 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **4.64 in**

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 500
POND NAME: 500 (Pond A in Permit No. 44-011896.024)

POND SIZING : WET DETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 3.39 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 3.39 ac-ft

Required Attenuation Volume:

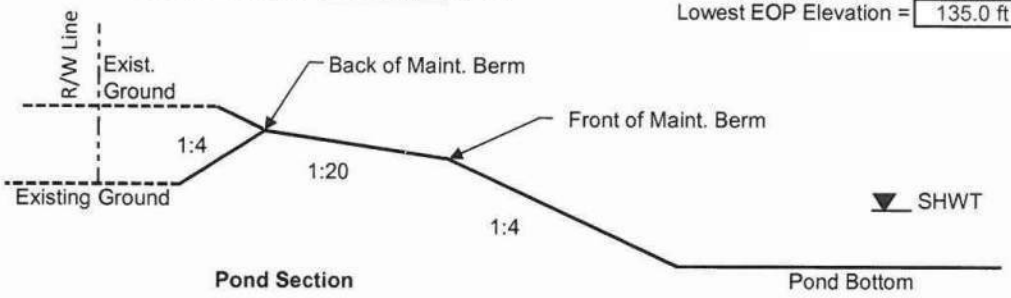
Total Runoff:
Q_{pre} = 2.77 in
Q_{post} = 4.64 in
ΔQ = 1.87 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 6.34 ac-ft

---

Maintenance Area Width = 20.0 ft @ 1:20
Pond Tie-In Width = 33.2 ft @ 1:4

Existing Ground Elevation = 140.00 ft
Seasonal High El.= 128.61 ft
Lowest EOP Elevation = 135.0 ft



Pond Section

POND 500

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
134.19	Back of Maintenance Berm	3.94 ac			16.46 ac-ft
133.20	Front of Maintenance Berm	3.21 ac			12.92 ac-ft
132.20	---	3.06 ac			9.79 ac-ft
128.61	Initial Water Elevation	2.39 ac			0.00 ac-ft
122.70	Pond Bottom	1.17 ac			

Required Treatment Volume: 3.39 ac-ft
Required Treat. Vol. + Atten.: 9.73 ac-ft
Top El. Of Treatment Volume: 129.85
Top El. Of Treat. Vol. + Atten.: 132.06

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	2-Oct-14
checked by:	BJS	2-Oct-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 501
POND NAME: 501A, 501B & 501C (Pond B1, B2 & B3 in Permit No. 011896.024)

STATION LIMITS: From: 465+40 To: 474+00
Roadway Length: 860 ft
R/W Width: VARIES

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	10	120 ft
Wall	2 ft	0	0 ft
Shoulder	12 ft	3	36 ft
Shoulder	10 ft	1	10 ft
	Total Impervious Width:		166 ft

Additional Impervious (ramps, turn lanes, etc.): 31.33 ac

Impervious Roadway Area: 34.61 ac
Pervious Roadway Area: 58.34 ac
Total Roadway Area: 92.95 ac

Pond Area:

Pervious Pond Area: 8.04 ac
Water Surface Area: 6.21 ac (At the Treatment Volume Stage)
Total Pond Area: 14.25 ac

Total Area:

Impervious Area: 34.61 ac
Pervious Area: 66.38 ac
Water Surface Area: 6.21 ac
Total Area: 107.20 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	34.61 ac	3391.5
Water Area	---	100	6.21 ac	621.0
Open Land (Grass cover 50% - 75%)	A	49	65.51 ac	3210.2
Gravel Transit Corridor	A	76	0.87 ac	66.0
		Total:	107.20 ac	7288.7

CN = Total CN * Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 4.71 in

Precipitation (P) = 9.5 in (for 100yr/24 hr storm event)
(From Permit No. 011896.024)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.52 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	2-Oct-14
checked by:	BJS	2-Oct-14

HNTB job #: 59219

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 501
POND NAME: 501A, 501B & 501C (Pond B1, B2 & B3 in Permit No. 011896.024)

POND SIZING : DRY RETENTION POND (CLOSED BASIN) - SWFWMD (NO OUTFALL)

Required Treatment Volume:

1" over Total Area = 8.93 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 8.93 ac-ft

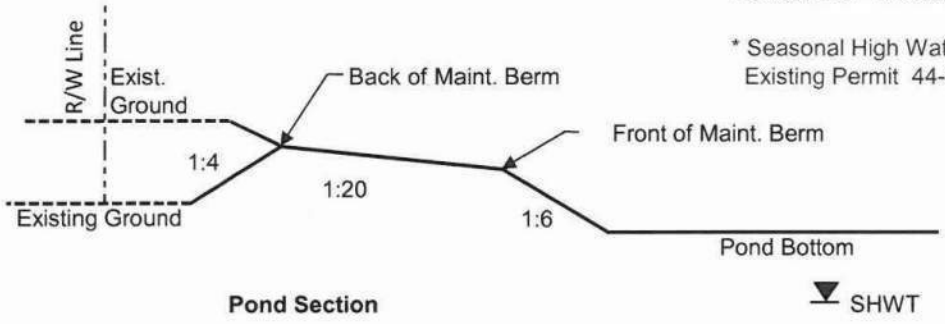
Required Attenuation Volume:

Total Runoff: Q_{post} = 5.52 in

Attenuation V_{req} = ΔQ/12 x Total Area = 49.32 ac-ft

Maintenance Area Width =	20.0 ft	@ 1:20	Existing Ground Elevation =	155.0 ft
Pond Tie-In Width =	28.8 ft	@ 1:4	Seasonal High Water Elevation* =	132.2 ft
			Lowest EOP Elevation =	142.5 ft

* Seasonal High Water El. From Existing Permit 44-011896.024.



Pond Section

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	2-Oct-14
checked by:	BJS	2-Oct-14

HNTB job #: 59219

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 501
POND NAME: 501A, 501B & 501C (Pond B1, B2 & B3 in Permit No. 011896.024)

POND 501A

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
150.30	Back of Maintenance Berm	4.86 ac			36.47 ac-ft
148.90	Front of Maintenance Berm	4.03 ac			30.25 ac-ft
143.70		2.77 ac			12.57 ac-ft
142.50	---	2.50 ac			9.41 ac-ft
142.00	---	2.39 ac			8.19 ac-ft
140.30		2.02 ac			4.44 ac-ft
137.80	Pond Bottom	1.53 ac			0.00 ac-ft

POND 501B

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
142.50	Back of Maintenance Berm	8.91 ac			42.67 ac-ft
142.00	---	8.35 ac			38.36 ac-ft
140.30	Front of Maintenance Berm	7.79 ac			24.64 ac-ft
137.80	---	6.99 ac			6.17 ac-ft
137.70	---	6.96 ac			5.47 ac-ft
136.90	Pond Bottom	6.71 ac			0.00 ac-ft

POND 501C

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
143.70	Back of Maintenance Berm	0.48 ac			1.39 ac-ft
142.50		0.37 ac			0.88 ac-ft
142.00	Front of Maintenance Berm	0.27 ac			0.72 ac-ft
140.30		0.18 ac			0.34 ac-ft
137.80	---	0.08 ac			0.01 ac-ft
137.70	Pond Bottom	0.08 ac			0.00 ac-ft

POND 501A +POND 501B + POND 501C

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
150.30	Back of Maintenance Berm	4.86 ac			87.24 ac-ft
148.90		4.03 ac			81.02 ac-ft
143.70	Front of Maintenance Berm	3.25 ac			62.09 ac-ft
142.50	---	11.78 ac			53.07 ac-ft
142.00	---	11.01 ac			47.37 ac-ft
140.30		9.99 ac			29.52 ac-ft
137.80		8.60 ac			6.28 ac-ft
137.70		7.04 ac			5.50 ac-ft
136.90	Pond Bottom	6.71 ac			0.00 ac-ft

Required Treatment Volume: 8.93 ac-ft
Top El. Of Treatment Volume: 137.88
Required Treat. Vol. + Atten.: 49.32 ac-ft
Top El. Of Treat. Vol. + Atten.: 142.17

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503A
POND NAME: 503A (Pond C1 in Permit No. 44-011896.024)

STATION LIMITS: From: 049+26
To: 056+28

Roadway Length: 703 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area: **(SR 25/US 27)**

Description	Width	Quantity	Total Width
Travel Lane	12 ft	6	72 ft
Inside Shoulder	4 ft	2	8 ft
Outside Shoulder	4 ft	2	8 ft
	Total Impervious Width:		88 ft

Additional Impervious: 0.75 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 2.17 ac
Pervious Roadway Area: 4.07 ac
Total Roadway Area: 6.24 ac

Pond Area:

Pervious Pond Area: 1.56 ac
Water Surface Area: 0.00 ac
Total Pond Area: 1.56 ac

Total Area:

Impervious Area: 2.17 ac
Pervious Area: 5.63 ac
Water Surface Area: 0.00 ac
Total Area: 7.80 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	2.17 ac	212.6
Water Area	---	100	0.00 ac	0.0
Open Land (Grass cover 50% - 75%)	A	49	5.63 ac	275.9
		Total:	7.80 ac	488.5

CN = Total CN * Area / Total Area = **62.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 5.97 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.86 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503A
POND NAME: 503A (Pond C1 in Permit No. 44-011896.024)

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	9	108 ft
Wall	2 ft	5	10 ft
Shoulder	6 ft	2	12 ft
Shoulder	8 ft	1	8 ft
Shoulder	10 ft	2	20 ft
Bike Lane	4 ft	1	4 ft
	Total Impervious Width:		162 ft

Additional Impervious: 0.93 ac

(ramps, turn lanes, etc.)
Impervious Roadway Area: 3.54 ac
Pervious Roadway Area: 2.70 ac
Total Roadway Area: 6.24 ac

Pond Area:

Pervious Pond Area: 0.63 ac
Water Surface Area: 0.93 ac (At the Treatment Volume Stage)
Total Pond Area: 1.56 ac

Total Area:

Impervious Area: 3.54 ac
Pervious Area: 3.33 ac
Water Surface Area: 0.93 ac
Total Area: 7.80 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	3.54 ac	347.2
Water Area	---	100	0.93 ac	93.0
Open Land (Grass cover 50% - 75%)	A	49	3.33 ac	163.0
		Total:	7.80 ac	603.3

CN = Total CN * Area / Total Area = **77.3**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 2.93 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **4.40 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503A
POND NAME: 503A (Pond C1 in Permit No. 44-011896.024)

POND SIZING : DRY RETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 0.65 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 0.65 ac-ft

Required Attenuation Volume:

Total Runoff:
Q_{pre} = 2.86 in
Q_{post} = 4.40 in
ΔQ = 1.54 in

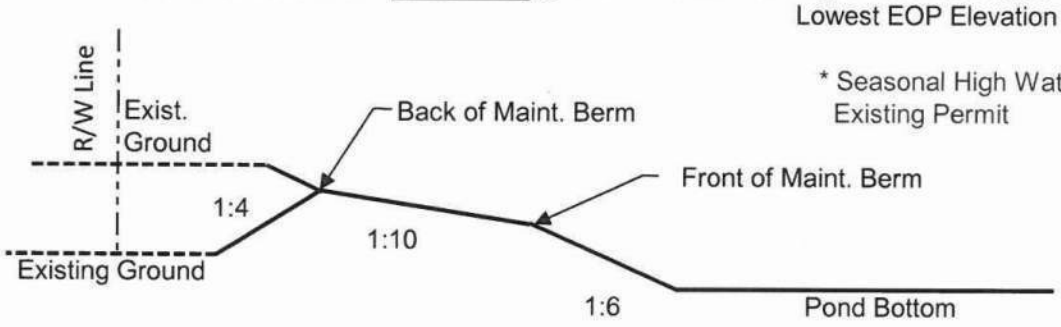
Attenuation V_{req} = $\Delta Q/12$ x Total Area = 1.00 ac-ft

---

Maintenance Area Width = 20.0 ft @ 1:10
Pond Tie-In Width = 44.4 ft @ 1:4

Existing Ground Elevation = 185.0 ft
Seasonal High Water Elevation* = 157.7 ft
Lowest EOP Elevation = 187.0 ft

* Seasonal High Water El. From Existing Permit



Pond Section

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
176.40	Back of Maintenance Berm	1.56 ac			6.00 ac-ft
174.30	Front of Maintenance Berm	1.13 ac			3.18 ac-ft
173.30	---	1.05 ac			2.09 ac-ft
172.30	---	0.97 ac			1.08 ac-ft
171.13	Pond Bottom	0.87 ac			0.00 ac-ft

Required Treatment Volume: 0.65 ac-ft
Top El. Of Treatment Volume: 171.84

Required Treat. Vol. + Atten.: 1.65 ac-ft
Top El. Of Treat. Vol. + Atten.: 172.87

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	6-Oct-14
checked by:	BJS	6-Oct-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503B
POND NAME: 503B, 503C & 503D (Pond C2 & C3 in Permit No. 44-011896.024)

STATION LIMITS: From: 474+00 To: 520+53
Roadway Length: 4653 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	4	48 ft
Inside Shoulder	10 ft	2	20 ft
Outside Shoulder	10 ft	2	20 ft
	Total Impervious Width:		88 ft

Additional Impervious: 10.39 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 19.79 ac
Pervious Roadway Area: 62.10 ac
Total Roadway Area: 81.89 ac

Pond Area:

Pervious Pond Area: 17.67 ac
Water Surface Area: 0.00 ac
Total Pond Area: 17.67 ac

Total Area:

Impervious Area: 19.79 ac
Pervious Area: 79.77 ac
Water Surface Area: 0.00 ac
Total Area: 99.56 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	19.79 ac	1939.5
Water Area	---	100	0.00 ac	0.0
Open Land (Grass cover 50% - 75%)	A	49	79.77 ac	3908.7
		Total:	99.56 ac	5848.2

CN = Total CN * Area / Total Area = **58.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 7.02 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.48 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	6-Oct-14
checked by:	BJS	6-Oct-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503B
POND NAME: 503B, 503C & 503D (Pond C2 & C3 in Permit No. 44-011896.024)

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	12	144 ft
Wall	2 ft	2	4 ft
Shoulder	10 ft	4	40 ft
Shoulder	12 ft	4	48 ft
	Total Impervious Width:		236 ft

Additional Impervious: 22.85 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 48.06 ac
Pervious Roadway Area: 33.83 ac
Total Roadway Area: 81.89 ac

Pond Area:

Pervious Pond Area: 3.80 ac
Water Surface Area: 13.87 ac (At the Treatment Volume Stage)
Total Pond Area: 17.67 ac

Total Area:

Impervious Area: 48.06 ac
Pervious Area: 37.63 ac
Water Surface Area: 13.87 ac
Total Area: 99.56 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	48.06 ac	4709.9
Water Area	---	100	13.87 ac	1387.0
Open Land (Grass cover 50% - 75%)	A	49.00	33.34 ac	1633.65
Gravel Rail Corridor	A	76	4.29 ac	326.0
		Total:	99.56 ac	8056.6

CN = Total CN * Area / Total Area = **80.9**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 2.36 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **4.80 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	6-Oct-14
checked by:	BJS	6-Oct-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503B
POND NAME: 503B, 503C & 503D (Pond C2 & C3 in Permit No. 44-011896.024)

POND SIZING : DRY RETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 8.30 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 8.30 ac-ft

Required Compensation Treatment = 17.21 ac-ft (Offsite Pond Impacts)

Total Runoff:
Q_{pre} = 2.48 in
Q_{post} = 4.80 in
ΔQ = 2.32 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 19.21 ac-ft

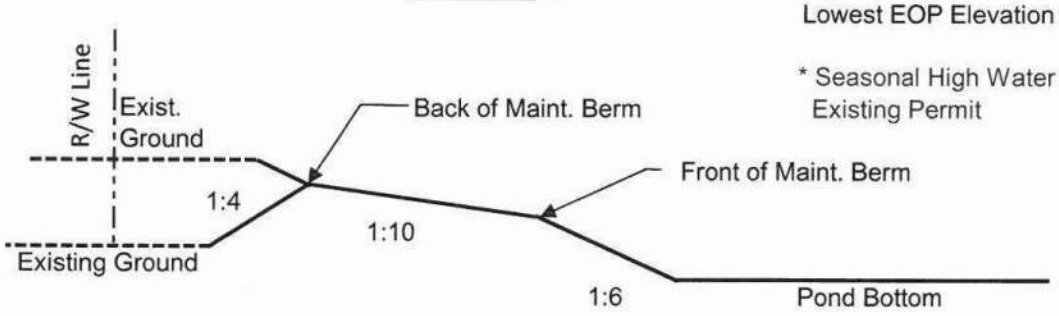
---

Required Compensation

Maintenance Area Width =	20.0 ft	@ 1:10	
Pond Tie-In Width =	40.4 ft	@ 1:4	

Existing Ground Elevation =	160.0 ft
Seasonal High Water Elevation* =	143.7 ft
Lowest EOP Elevation =	152.0 ft

* Seasonal High Water El. From Existing Permit



Pond Section

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	6-Oct-14
checked by:	BJS	6-Oct-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 503B
POND NAME: 503B, 503C & 503D (Pond C2 & C3 in Permit No. 44-011896.024)

POND 503B

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
152.40	Back of Maintenance Berm	12.35 ac			60.08 ac-ft
151.40	Front of Maintenance Berm	11.46 ac			48.17 ac-ft
150.40	---	11.22 ac			36.83 ac-ft
149.40	---	10.99 ac			25.73 ac-ft
147.00	Pond Bottom	10.45 ac			0.00 ac-ft

POND 503C

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
152.40	Back of Maintenance Berm	2.47 ac			9.90 ac-ft
151.40	Front of Maintenance Berm	2.00 ac			7.66 ac-ft
150.40	---	1.88 ac			5.72 ac-ft
149.40	---	1.76 ac			3.90 ac-ft
147.00	Pond Bottom	1.49 ac			0.00 ac-ft

POND 503D

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
152.40	Back of Maintenance Berm	2.85 ac			11.18 ac-ft
151.40	Front of Maintenance Berm	2.28 ac			8.62 ac-ft
150.40	---	2.13 ac			6.41 ac-ft
149.40	---	1.98 ac			4.36 ac-ft
147.00	Pond Bottom	1.65 ac			0.00 ac-ft

POND 503B + POND 503C + POND 503D

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
152.40	Back of Maintenance Berm	17.67 ac			81.15 ac-ft
151.40	Front of Maintenance Berm	15.74 ac			64.45 ac-ft
150.40	---	15.23 ac			48.96 ac-ft
149.40	---	14.73 ac			33.98 ac-ft
147.00	Pond Bottom	13.59 ac			0.00 ac-ft

Required Treatment Volume: 8.30 ac-ft
Required Treat. Vol. + Atten.: 44.72 ac-ft
Top El. Of Treatment Volume: 147.59
Top El. Of Treat. Vol. + Atten.: 150.12

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	SR	11-Feb-16
checked by:	BJS	11-Feb-16
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 1

Required Treatment Volume:

Ritchie Bros. Auction Facility Expansion

Existing Pond 2 Volume

(SWFWMD Permit Application No. 43022407.003)

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
154.00	Top of Bank	4.14 ac	315.0 ft	100.0 ft	30.78 ac-ft
153.50	Weir Elevation	4.02 ac	311.0 ft	96.0 ft	28.74 ac-ft
144.00	Bottom Elevation	2.03 ac	235.0 ft	20.0 ft	0.00 ac-ft

*Elevations in NAVD 88.

Reduced Pond 2 Volume

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
154.00	Top of Bank	2.94 ac	315.0 ft	100.0 ft	20.26 ac-ft
153.50	Weir Elevation	2.84 ac	311.0 ft	96.0 ft	18.81 ac-ft
144.00	Bottom Elevation	1.12 ac	235.0 ft	20.0 ft	0.00 ac-ft

*Elevations in NAVD 88.

Existing Pond 3 Volume

(SWFWMD Permit Application No. 43022407.003)

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
154.00	Top of Bank	1.33 ac	315.0 ft	100.0 ft	7.94 ac-ft
153.50	Weir Elevation	1.27 ac	311.0 ft	96.0 ft	7.29 ac-ft
144.00	Bottom Elevation	0.26 ac	235.0 ft	20.0 ft	0.00 ac-ft

*Elevations in NAVD 88.

Reduced Pond 3 Volume

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
154.00	Top of Bank	0.00 ac	315.0 ft	100.0 ft	0.00 ac-ft
153.50	Weir Elevation	0.00 ac	311.0 ft	96.0 ft	0.00 ac-ft
144.00	Bottom Elevation	0.00 ac	235.0 ft	20.0 ft	0.00 ac-ft

*Elevations in NAVD 88.

Required Compensation Treatment Volume= 17.21 ac-ft

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	2-Oct-14
checked by:	BJS	2-Oct-14

HNTB job #: 59219

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 504
POND NAME: 504 (Pond D in Permit No. 011896.024)

STATION LIMITS: From: 010+00
To: 046+00

Roadway Length: 3600 ft
R/W Width: VARIES

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	10	120 ft
Wall	2 ft	0	0 ft
Shoulder	12 ft	3	36 ft
Shoulder	10 ft	1	10 ft
	Total Impervious Width:		166 ft

Additional Impervious: 4.54 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 18.26 ac
Pervious Roadway Area: 19.25 ac
Total Roadway Area: 37.51 ac

Pond Area:

Pervious Pond Area: 1.68 ac
Water Surface Area: 1.83 ac (At the Treatment Volume Stage)
Total Pond Area: 3.51 ac

Total Area:

Impervious Area: 18.26 ac
Pervious Area: 20.93 ac
Water Surface Area: 1.83 ac
Total Area: 41.02 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	18.26 ac	1789.4
Water Area	---	100	1.83 ac	183.0
Open Land (Grass cover 50% - 75%)	A	39	20.93 ac	816.3
		Total:	41.02 ac	2788.7

CN = Total CN * Area / Total Area = **68.0**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 4.71 in

Precipitation (P) = 9.5 in (for 100yr/24 hr storm event)
(From Permit No. 011896.024)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.52 in**

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	LDP	2-Oct-14
checked by:	BJS	2-Oct-14

HNTB job #: 59219

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 504
POND NAME: 504 (Pond D in Permit No. 011896.024)

POND SIZING : DRY RETENTION POND (CLOSED BASIN) - SWFWMD (NO OUTFALL)

Required Treatment Volume:

1" over Total Area = 3.42 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 3.42 ac-ft

Required Attenuation Volume:

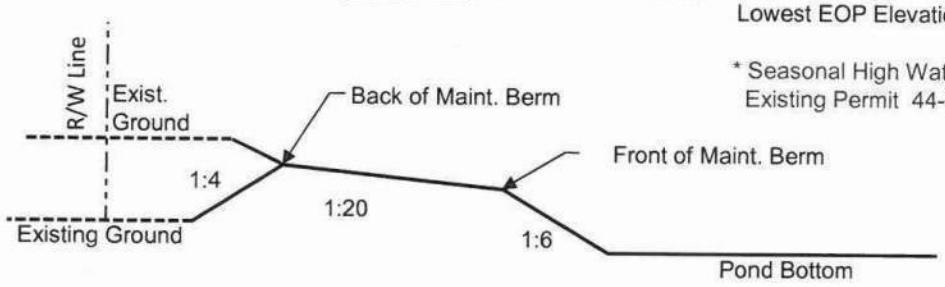
Total Runoff: Q_{post} = 5.52 in

Attenuation V_{req} = ΔQ/12 x Total Area = 18.87 ac-ft

Maintenance Area Width = 20.0 ft @ 1:20
Pond Tie-In Width = 22.4 ft @ 1:4

Existing Ground Elevation = 167.5 ft
Seasonal High Water Elevation* = 142.5 ft
Lowest EOP Elevation = 170.0 ft

* Seasonal High Water El. From Existing Permit 44-011896.024.



Pond Section

Pond 504

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
170.60	Back of Maintenance Berm	3.51 ac			25.76 ac-ft
169.62	Front of Maintenance Berm	2.84 ac			22.64 ac-ft
167.32		2.55 ac			16.45 ac-ft
164.04	---	2.16 ac			8.72 ac-ft
159.45	Pond Bottom	1.64 ac			0.00 ac-ft

Required Treatment Volume: 3.42 ac-ft
Top El. Of Treatment Volume: 161.09
Required Treat. Vol. + Atten.: 18.87 ac-ft
Top El. Of Treat. Vol. + Atten.: 168.22

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505
POND NAME: REGIONAL POND 1 & 2

STATION LIMITS: From: 520+53
To: 590+00

Roadway Length: 6947 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	4	48 ft
Inside Shoulder	10 ft	2	20 ft
Outside Shoulder	10 ft	2	20 ft
	Total Impervious Width:		88 ft

Additional Impervious: 0.00 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 14.03 ac
Pervious Roadway Area: 55.75 ac
Total Roadway Area: 69.78 ac

Pond Area:

Pervious Pond Area: 8.05 ac
Water Surface Area: 0.00 ac
Total Pond Area: 8.05 ac

Total Area:

Impervious Area: 14.03 ac
Pervious Area: 63.80 ac
Water Surface Area: 0.00 ac
Total Area: 77.83 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	14.03 ac	1375.4
Water Area	---	100	0.00 ac	0.0
Open Land (Grass cover 50% - 75%)	A/D	84	6.38 ac	535.9
Open Land (Grass cover 50% - 75%)	A	49	57.42 ac	2813.5
		Total:	77.83 ac	4724.8

CN = Total CN * Area / Total Area = **60.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 6.47 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.67 in**

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505
POND NAME: REGIONAL POND 1 & 2

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	12	144 ft
Wall	2 ft	6	12 ft
Shoulder	12 ft	5	60 ft
Shoulder	10 ft	3	30 ft
	Total Impervious Width:		246 ft

Additional Impervious: 3.08 ac **(Grandview Parkway)**
(ramps, turn lanes, etc.)

Impervious Roadway Area: 42.31 ac
Pervious Roadway Area: 27.47 ac
Total Roadway Area: 69.78 ac

Pond Area:

Pervious Pond Area: 2.93 ac
Water Surface Area: 5.12 ac
Total Pond Area: 8.05 ac

Total Area:

Impervious Area: 42.31 ac
Pervious Area: 30.40 ac
Water Surface Area: 5.12 ac
Total Area: 77.83 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	42.31 ac	4146.6
Water Area	---	100	5.12 ac	512.2
Rail Corridor (Gravel)	A	76	6.32 ac	480.0
Rail Corridor (Gravel)	A/D	91	0.70 ac	63.9
Open Land (Grass cover 50% - 75%)	A	49	21.04 ac	1031.1
Open Land (Grass cover 50% - 75%)	A/D	84	2.34 ac	196.4
		Total:	77.83 ac	6430.2

CN = Total CN * Area / Total Area = **82.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 2.10 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **4.98 in**

HNTB

		date:
made by:	LDP	1-Sep-15
checked by:	BJS	1-Sep-15
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505
POND NAME: REGIONAL POND 1 & 2

POND SIZING : WET DETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 6.49 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 6.49 ac-ft

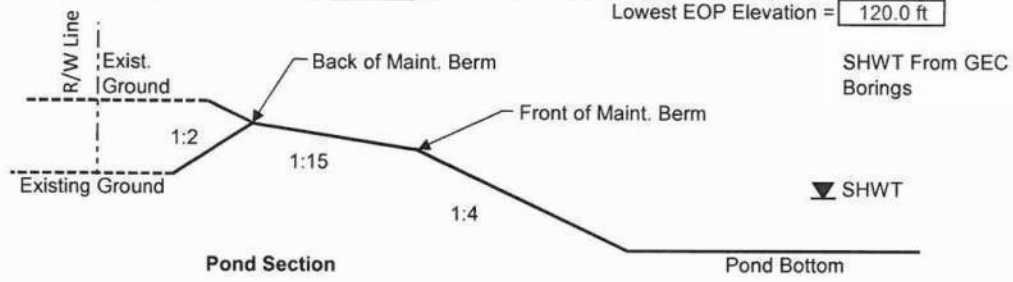
Required Attenuation Volume:

Total Runoff:
Q_{pre} = 2.67 in
Q_{post} = 4.98 in
ΔQ = 2.31 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 15.00 ac-ft

---

Maintenance Area Width = 15.0 ft @ 1:15
Pond Tie-In Width = 18.0 ft @ 1:2
Existing Ground Elevation = 125.0 ft
Seasonal High Water Elevation = 115.0 ft
Lowest EOP Elevation = 120.0 ft



Pond Section

REGIONAL POND 1

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
121.00	Back of Maintenance Berm	2.20 ac			9.14 ac-ft
120.00	Front of Maintenance Berm	1.73 ac			7.17 ac-ft
119.00	---	1.61 ac			5.50 ac-ft
115.00	Initial Water Elevation	1.15 ac			0.00 ac-ft
100.00	Pond Bottom	0.63 ac			

REGIONAL POND 2

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
121.00	Back of Maintenance Berm	5.85 ac			27.94 ac-ft
120.00	Front of Maintenance Berm	5.03 ac			22.50 ac-ft
119.00	---	4.81 ac			17.58 ac-ft
115.00	Initial Water Elevation	3.98 ac			0.00 ac-ft
100.00	Pond Bottom	2.99 ac			

REGIONAL POND 1 & REGIONAL POND 2

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
121.00	Back of Maintenance Berm	8.05 ac			37.08 ac-ft
120.00	Front of Maintenance Berm	6.76 ac			29.67 ac-ft
119.00	---	6.42 ac			23.08 ac-ft
115.00	Initial Water Elevation	5.12 ac			0.00 ac-ft
100.00	Pond Bottom	3.62 ac			

Required Treatment Volume: 6.49 ac-ft
Required Treat. Vol. + Atten.: 21.48 ac-ft
Top El. Of Treatment Volume: 116.12
Top El. Of Treat. Vol. + Atten.: 118.72

HNTB

		date:
made by:	LDP	4-Sep-14
checked by:	BJS	4-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Westbound)
POND NAME: 505 A3

STATION LIMITS: From: 520+53
To: 590+00

Roadway Length: 6947 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	2	24 ft
Inside Shoulder	10 ft	1	10 ft
Outside Shoulder	10 ft	1	10 ft
	Total Impervious Width:		44 ft

Additional Impervious: 0.00 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 7.02 ac
Pervious Roadway Area: 24.79 ac
Total Roadway Area: 31.81 ac

Pond Area:

Pervious Pond Area: 3.84 ac
Water Surface Area: 0.00 ac
Total Pond Area: 3.84 ac

Total Area:

Impervious Area: 7.02 ac
Pervious Area: 28.63 ac
Water Surface Area: 0.00 ac
Total Area: 35.65 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	7.02 ac	687.7
Water Area	---	100	0.00 ac	0.0
Open Land (Grass cover 50% - 75%)	A/D	84	3.98 ac	334.3
Open Land (Grass cover 50% - 75%)	A	49	24.65 ac	1208.0
		Total:	35.65 ac	2230.0

CN = Total CN * Area / Total Area = **62.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 5.99 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.86 in**

HNTB

		date:
made by:	LDP	4-Sep-14
checked by:	BJS	4-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Westbound)
POND NAME: 505 A3

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	6	72 ft
Wall	2 ft	3	6 ft
Shoulder	12 ft	2	24 ft
Shoulder	10 ft	2	20 ft
	Total Impervious Width:		122 ft

Additional Impervious: 0.00 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 19.46 ac
Pervious Roadway Area: 12.35 ac
Total Roadway Area: 31.81 ac

Pond Area:

Pervious Pond Area: 1.19 ac
Water Surface Area: 2.65 ac
Total Pond Area: 3.84 ac

Total Area:

Impervious Area: 19.46 ac
Pervious Area: 13.54 ac
Water Surface Area: 2.65 ac
Total Area: 35.65 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	19.46 ac	1906.8
Water Area	---	100	2.65 ac	265.0
Rail Corridor (Gravel)	A	76	6.18 ac	469.7
Rail Corridor (Gravel)	A/D	91	0.57 ac	51.9
Open Land (Grass cover 50% - 75%)	A	49	4.24 ac	207.9
Open Land (Grass cover 50% -75%)	A/D	84	2.55 ac	214.2
		Total:	35.65 ac	3115.4

CN = Total CN * Area / Total Area = **87.4**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 1.44 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.52 in**

HNTB

		date:
made by:	LDP	4-Sep-14
checked by:	BJS	4-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Westbound)
POND NAME: 505 A3

POND SIZING : WET DETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 2.97 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 2.97 ac-ft

Required Attenuation Volume:

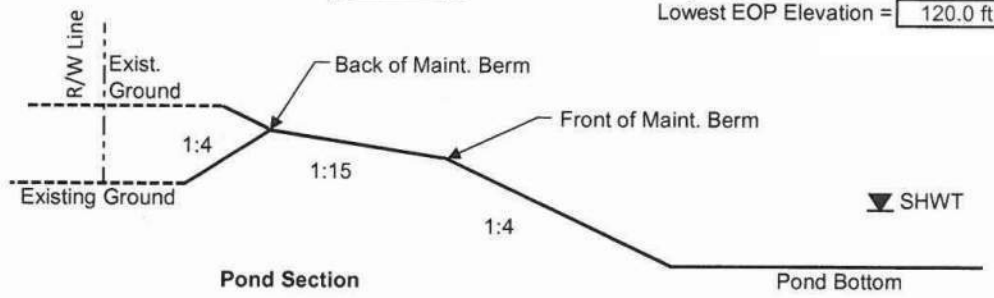
Total Runoff:
Q_{pre} = 2.86 in
Q_{post} = 5.52 in
ΔQ = 2.67 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 7.93 ac-ft

---

Maintenance Area Width = 15.0 ft @ 1:15
Pond Tie-In Width = 14.0 ft @ 1:4

Existing Ground Elevation = 122.0 ft
Seasonal High Water Elevation = 115.0 ft
Lowest EOP Elevation = 120.0 ft



Pond Section

POND 505A3

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
121.00	Back of Maintenance Berm	3.84 ac			18.48 ac-ft
120.00	Front of Maintenance Berm	3.31 ac			14.91 ac-ft
119.00	---	3.18 ac			11.66 ac-ft
115.00	Initial Water Elevation	2.65 ac			0.00 ac-ft
110.00	Pond Bottom	1.08 ac			

Required Treatment Volume: 2.97 ac-ft
Required Treat. Vol. + Atten.: 10.90 ac-ft
Top El. Of Treatment Volume: 116.02
Top El. Of Treat. Vol. + Atten.: 118.74

HNTB

		date:
made by:	LDP	2-Sep-14
checked by:	BJS	2-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Eastbound)
POND NAME: 505 B2

STATION LIMITS: From: 520+53
To: 590+00

Roadway Length: 6947 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	2	24 ft
Guardrail	5 ft	0	0 ft
Inside Shoulder	10 ft	1	10 ft
Outside Shoulder	10 ft	1	10 ft
	Total Impervious Width:		44 ft

Additional Impervious (ramps, turn lanes, etc.): 0.00 ac

Impervious Roadway Area: 7.02 ac
Pervious Roadway Area: 22.24 ac
Total Roadway Area: 29.26 ac

Pond Area:

Pervious Pond Area: 4.87 ac
Water Surface Area: 0.00 ac
Total Pond Area: 4.87 ac

Total Area:

Impervious Area: 7.02 ac
Pervious Area: 27.11 ac
Water Surface Area: 0.00 ac
Total Area: 34.13 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	7.02 ac	687.7
Water Area	---	100	0.00 ac	0.0
Open Land (Grass cover 50% - 75%)	A/D	84	3.42 ac	287.3
Open Land (Grass cover 50% - 75%)	A	49	23.69 ac	1160.9
		Total:	34.13 ac	2135.9

CN = Total CN * Area / Total Area = **62.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 5.98 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **2.86 in**

HNTB

		date:
made by:	LDP	2-Sep-14
checked by:	BJS	2-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Eastbound)
POND NAME: 505 B2

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	6	72 ft
Wall	2 ft	3	6 ft
Shoulder	12 ft	3	36 ft
Shoulder	10 ft	1	10 ft
	Total Impervious Width:		124 ft

Additional Impervious (ramps, turn lanes, etc.): 0.00 ac

Impervious Roadway Area: 19.78 ac
Pervious Roadway Area: 9.48 ac
Total Roadway Area: 29.26 ac

Pond Area:

Pervious Pond Area: 1.61 ac
Water Surface Area: 3.26 ac
Total Pond Area: 4.87 ac

Total Area:

Impervious Area: 19.78 ac
Pervious Area: 11.09 ac
Water Surface Area: 3.26 ac
Total Area: 34.13 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	19.78 ac	1938.0
Water Area	---	100	3.26 ac	326.0
Open Land (Grass cover 50% - 75%)	A	49	8.79 ac	430.9
Open Land (Grass cover 50% -75%)	A/D	84	2.30 ac	193.2
		Total:	34.13 ac	2888.1

CN = Total CN * Area / Total Area = **84.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 1.82 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.21 in**

HNTB

		date:
made by:	LDP	2-Sep-14
checked by:	BJS	2-Sep-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 505 (Eastbound)
POND NAME: 505 B2

POND SIZING : WET DETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 2.84 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 2.84 ac-ft

Required Attenuation Volume:

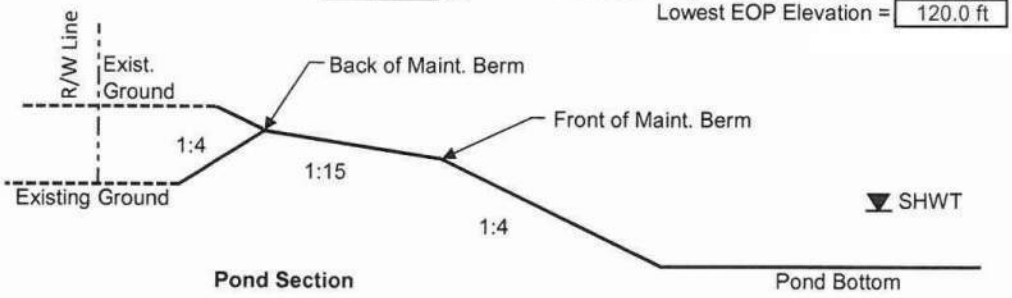
Total Runoff:
Q_{pre} = 2.86 in
Q_{post} = 5.21 in
ΔQ = 2.35 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 6.69 ac-ft

---

Maintenance Area Width = 15.0 ft @ 1:15
Pond Tie-In Width = 10.0 ft @ 1:4

Existing Ground Elevation = 120.0 ft
d Seasonal High Water Elevation = 115.0 ft
Lowest EOP Elevation = 120.0 ft



Pond Section

POND 505B2

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
120.00	Back of Maintenance Berm	4.87 ac			19.14 ac-ft
119.00	Front of Maintenance Berm	4.07 ac			14.67 ac-ft
118.00	---	3.87 ac			10.70 ac-ft
115.00	Initial Water Elevation	3.26 ac			0.00 ac-ft
100.00	Pond Bottom	0.73 ac			

Required Treatment Volume: 2.84 ac-ft
Required Treat. Vol. + Atten.: 9.53 ac-ft
Top El. Of Treatment Volume: 115.80
Top El. Of Treat. Vol. + Atten.: 117.71

HNTB

		date:
made by:	LDP	11-Feb-16
checked by:	BJS	11-Feb-16
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 506
POND NAME: 506

STATION LIMITS: From: 365+50
To: 435+00

Roadway Length: 6950 ft
R/W Width: Varies

EXISTING CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	4	48 ft
Inside Shoulder	10 ft	2	20 ft
Outside Shoulder	10 ft	2	20 ft
		Total Impervious Width:	88 ft

Additional Impervious: 0.00 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 14.04 ac
Pervious Roadway Area: 54.39 ac
Total Roadway Area: 68.43 ac

Pond Area:

Pervious Pond Area: 1.06 ac
Water Surface Area: 4.29 ac
Total Pond Area: 5.35 ac

Total Area:

Impervious Area: 14.04 ac
Pervious Area: 55.45 ac
Water Surface Area: 4.29 ac
Total Area: 73.78 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	14.04 ac	1376.0
Water Area	---	100	4.29 ac	429.0
Open Land (Grass cover 50% - 75%)	A/D & B/D	84	55.45 ac	4657.8
		Total:	73.78 ac	6462.7

CN = Total CN * Area / Total Area = **87.6**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 1.42 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.55 in**

HNTB

		date:
made by:	LDP	11-Feb-16
checked by:	BJS	11-Feb-16
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 506
POND NAME: 506

PROPOSED CONDITION

Roadway Area:

Description	Width	Quantity	Total Width
Travel Lane	12 ft	8	96 ft
Shoulder	12 ft	2	24 ft
Shoulder	10 ft	2	20 ft
	Total Impervious Width:		140 ft

Additional Impervious: 4.34 ac
(ramps, turn lanes, etc.)

Impervious Roadway Area: 26.68 ac
Pervious Roadway Area: 41.75 ac
Total Roadway Area: 68.43 ac

Pond Area:

Pervious Pond Area: 1.06 ac
Water Surface Area: 4.29 ac
Total Pond Area: 5.35 ac

Total Area:

Impervious Area: 26.68 ac
Pervious Area: 42.81 ac
Water Surface Area: 4.29 ac
Total Area: 73.78 ac

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious Area	---	98	26.68 ac	2614.3
Water Area	---	100	4.29 ac	429.0
Open Land (Grass cover 50% - 75%)	A/D, B/D & C/D	84	35.79 ac	3006.6
Rail Corridor (Gravel)	A/D, B/D & C/D	91	7.02 ac	638.8
		Total:	73.78 ac	6688.8

CN = Total CN * Area / Total Area = **90.7**

Runoff:

Soil Capacity (S) = $\frac{1000}{CN} - 10$ = 1.03 in

Precipitation (P) = 7.0 in (for 25yr/24hr storm event)

Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$ = **5.90 in**

HNTB

		date:
made by:	LDP	11-Feb-16
checked by:	BJS	11-Feb-16
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

BASIN NAME: 506
POND NAME: 506

POND SIZING : WET DETENTION POND (OPEN BASIN) - SWFWMD

Required Treatment Volume:

1" over Total Area = 6.15 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 6.15 ac-ft

Required Attenuation Volume:

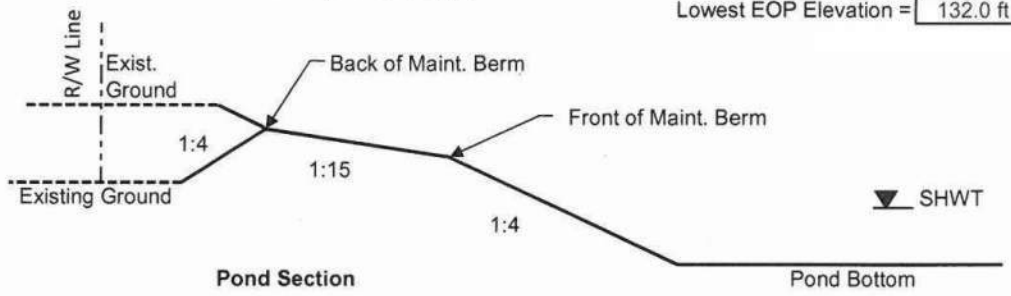
Total Runoff:
Q_{pre} = 5.55 in
Q_{post} = 5.90 in
ΔQ = 0.35 in

Attenuation V_{req} = $\Delta Q/12$ x Total Area = 2.16 ac-ft

---

Maintenance Area Width = 15.0 ft @ 1:15
Pond Tie-In Width = 22.0 ft @ 1:4

Existing Ground Elevation = 130.00 ft
Seasonal High El.= 129.00 ft
Lowest EOP Elevation = 132.0 ft



Pond Section

POND 506

Elevation	Description	Area	Dimensions		Storage
			Length	Width	
133.00	Back of Maintenance Berm	5.35 ac			18.62 ac-ft
132.00	Front of Maintenance Berm	4.75 ac			13.57 ac-ft
131.00	---	4.60 ac			8.89 ac-ft
129.00	Initial Water Elevation	4.29 ac			0.00 ac-ft
126.00	Pond Bottom	3.85 ac			

Required Treatment Volume: 6.15 ac-ft
Required Treat. Vol. + Atten.: 8.31 ac-ft
Top El. Of Treatment Volume: 130.38
Top El. Of Treat. Vol. + Atten.: 130.87

APPENDIX C –

FLOODPLAIN CALCULATIONS

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	SR	13-May-14
checked by:	BJS	13-May-14
HNTB job #:	59219	

PROJECT: **I-4 PD&E - SEGMENT 5**

POND NAME: **FPC 500C**

FLOODPLAIN COMPENSATION CALCULATIONS

EASTBOUND AND WESTBOUND ROADWAY:

Station Limits: Sta. 522+71 to 525+14, Sta. 533+53 to 538+76, Sta. 546+00 to 548+10, Sta. 551+90 to 554+06, Sta. 559+46 to 567+68, Sta. 535+60 to 537+41, Sta. 565+61 to 566+70

Roadway Length: Varies

Roadway Width: Varies

Area: 6.60 ac

100 YR Floodplain Elevation: 120.00 ft (From Permit # 43011896.027)
Ave. Existing Ground Elevation: 118.0 ft
Elevation Difference: 2.0 ft

Required Compensation = Roadway Length * Roadway Width * Elevation Difference: 13.20 ac-ft

---

Total Roadway Required Compensation: 13.20 ac-ft

REQUIRED COMPENSATION

Required Roadway Compensation: 13.20 ac-ft

Total Required Compensation: 13.20 ac-ft

PROPOSED FLOODPLAIN POND:

FPC 500C
100 YR Floodplain Elevation: 120.00 ft Seasonal High Water Elevation: 115.0 ft
Existing Ground Elevation: 125 - 120 ft

Elevation	Area	Storage
120.00	3.39 ac	14.51 ac-ft
119.00	3.19 ac	11.22 ac-ft
118.00	3.00 ac	8.12 ac-ft
117.00	2.80 ac	5.22 ac-ft
116.00	2.61 ac	2.52 ac-ft
115.00	2.42 ac	0.00 ac-ft

Total Storage Provided by FPC Ponds: 14.51 ac-ft

Total Compensation Needed: 13.20 ac-ft

Additional Storage Provided: 1.31 ac-ft

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	SR	13-May-14
checked by:	BJS	13-May-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

POND NAME: **FPC 500D**

FLOODPLAIN COMPENSATION CALCULATIONS

EASTBOUND AND WESTBOUND ROADWAY:

Station Limits: Sta. 522+71 to 525+14, Sta. 533+53 to 538+76, Sta. 546+00 to 548+10, Sta. 551+90 to 554+06, Sta. 559+46 to 567+68, Sta. 535+60 to 537+41, Sta. 565+61 to 566+70

Roadway Length: Varies

Roadway Width: Varies

Area: 6.60 ac

100 YR Floodplain Elevation: 120.00 ft (From Permit # 43011896.027)
Ave. Existing Ground Elevation: 118.0 ft
Elevation Difference: 2.0 ft

Required Compensation = Roadway Length * Roadway Width * Elevation Difference: 13.20 ac-ft

---

Total Roadway Required Compensation: 13.20 ac-ft

REQUIRED COMPENSATION

Required Roadway Compensation: 13.20 ac-ft

Total Required Compensation: 13.20 ac-ft

PROPOSED FLOODPLAIN POND:

FPC 500D
100 YR Floodplain Elevation: 120.00 ft Seasonal High Water Elevation: 115.0 ft
Existing Ground Elevation: 130 - 120 ft

Elevation	Area	Storage
120.00	3.08 ac	13.45 ac-ft
119.00	2.92 ac	10.45 ac-ft
118.00	2.76 ac	7.61 ac-ft
117.00	2.61 ac	4.92 ac-ft
116.00	2.46 ac	2.39 ac-ft
115.00	2.31 ac	0.00 ac-ft

Total Storage Provided by FPC Ponds: 13.45 ac-ft

Total Compensation Needed: 13.20 ac-ft

Additional Storage Provided: 0.25 ac-ft

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

		date:
made by:	SR	13-May-14
checked by:	BJS	13-May-14
HNTB job #:	59219	

PROJECT: I-4 PD&E - SEGMENT 5

POND NAME: **FPC 506**

FLOODPLAIN COMPENSATION CALCULATIONS

WESTBOUND ROADWAY:

Station Limits: Sta. 390+90 to Sta. 399+38.50 and Sta. 421+73 to Sta. 433+00

Roadway Length: Varies

Roadway Width: Varies

Area: 10.90 ac

100 YR Floodplain Elevation: 130.00 ft (From SWFWMD Permit # 43011896.032)
Ave. Existing Ground Elevation: 129.5 ft
Elevation Difference: 0.5 ft

Required Compensation = Roadway Length * Roadway Width * Elevation Difference: 5.45 ac-ft

---

Total Roadway Required Compensation: 5.45 ac-ft

REQUIRED COMPENSATION

Required Roadway Compensation: 5.45 ac-ft

Total Required Compensation: 5.45 ac-ft

PROPOSED FLOODPLAIN POND:

FPC 506
100 YR Floodplain Elevation: 130.00 ft Seasonal High Water Elevation: 129.0 ft
Existing Ground Elevation: 132 - 129 ft

Elevation	Area	Storage
130.00	5.95 ac	5.68 ac-ft
129.00	5.41 ac	0.00 ac-ft

Total Storage Provided by FPC Ponds: 5.68 ac-ft

Total Compensation Needed: 5.45 ac-ft

Additional Storage Provided: 0.23 ac-ft

APPENDIX D –

CORRESPONDENCE

Jairo Rodriguez

From: Sanam Rai
Sent: Tuesday, August 05, 2014 8:44 AM
To: 'Jeremy Golloway'
Cc: jose.ortiz@dot.state.fl.us; Luz Phillip; Efren.Rivera@dot.state.fl.us; Barry Switzer; 'Dave Jackson'
Subject: RE: I-4 Segment 1 CrossDrain Information

Jeremy,

Thank you for your prompt feedback.

The project is currently in a Project Development and Environmental (PD&E) Study phase. I am not aware of the schedule for the design phase of the project.

Please visit the following website for more information regarding all segments of the I-4 PD&E project:
http://i4express.com/

Thanks,

Sanam

From: Jeremy Golloway [mailto:jeremy.golloway@tmeenterprises.com]
Sent: Monday, August 04, 2014 10:10 PM
To: Sanam Rai
Cc: jose.ortiz@dot.state.fl.us; Luz Phillip; Efren.Rivera@dot.state.fl.us; Barry Switzer; 'Dave Jackson'
Subject: RE: I-4 Segment 1 CrossDrain Information

Sanam,

Thank you for the information you provided. To the best of my knowledge, I am not aware of any issues concerning the cross drains you referenced. When is this project slated to start ? Please let me know if you need any additional information. Thanks.

Jeremy Golloway
Regional Operations Manager - Florida
Office – (407) 730-2232
Cell – (407) 625-8812
Fax – (407) 704-7642
Email – Jeremy.golloway@tmeenterprises.com

TME ENTERPRISES
INCORPORATED
RIGHT OF WAY MAINTENANCE

Jairo Rodriguez

From: Sanam Rai
Sent: Tuesday, August 05, 2014 8:35 AM
To: 'Ortiz, Jose'
Cc: Rivera, Efren
Subject: RE: I-4 Segment 1 CrossDrain Information

Jose, thank you for the Straight Line Diagram. We do have them included in the Location Hydraulics Report.

Sanam

From: Ortiz, Jose [mailto:Jose.Ortiz@dot.state.fl.us]
Sent: Monday, August 04, 2014 5:22 PM
To: Sanam Rai
Cc: Rivera, Efren
Subject: RE: I-4 Segment 1 CrossDrain Information

Hi Sanam,

Please refer to the attached Straight Line Diagram of Road Inventory to identify and verify each of the cross drains within the corridor and locate milepost in your PG&E report.

If you have any questions call me.

Thanks,

Jose M. Ortiz, PE
Permits Manager
D5 - Orlando Operations Center
Office: (407) 384-4600 & 384-4603
Email: jose.ortiz@dot.state.fl.us

From: Sanam Rai [mailto:sarai@HNTB.com]
Sent: Monday, August 04, 2014 2:20 PM
To: Ortiz, Jose
Cc: Luz Phillip
Subject: I-4 Segment 1 CrossDrain Information

Jose,

Thanks for taking my call earlier regarding the I-4 segment 1 crossdrains. I understand that TME Enterprises is contracted to maintain the crossdrains along I-4. I will coordinate with them as well.

Do you know of any issues (flooding, scour, sedimentation) with any of the crossdrains along segment 1 of the I-4 PD&E project?

Thank you,

Sanam

Sanam Rai, PE
Project Engineer - Drainage

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

Tel (407) 805-0355
Direct (407) 547-3025
Fax (407) 805-0227
www.hntb.com

From: Sanam Rai [mailto:sarai@HNTB.com]
Sent: Monday, August 04, 2014 2:53 PM
To: 'jeremy.golloway@tmeenterprises.com'
Cc: jose.ortiz@dot.state.fl.us; Luz Phillip; Efren.Rivera@dot.state.fl.us; Barry Switzer
Subject: I-4 Segment 1 CrossDrain Information

Jeremy,

I am sending you this email regarding the I-4 PD&E segment 1 (from west of CR 532 to west of SR 528) cross drains. I have included a project location map for reference.

I contacted Jose Ortiz at the FDOT maintenance office. He mentioned that TME Enterprises is contracted to maintain the cross drains along I-4 and you are the person of contact.

I am coordinating with you to find out any issues (flooding, scour, sedimentation) with the cross drains along segment 1 of the I-4 PD&E project. There are a total of 15 cross drains we have identified within the segment. I have included the draft Location Hydraulics Report (LHR) for your reference. It includes the existing cross drain information (culvert size, culvert type, culvert length).

Please feel free to call me if you like.

Thank you,

Sanam

Sanam Rai, PE
Project Engineer - Drainage

HNTB Corporation
610 Crescent Executive Court, Suite 400
Lake Mary, FL 32746

Tel (407) 805-0355
Direct (407) 547-3025
Fax (407) 805-0227
www.hntb.com

APPENDIX E –

EXISTING PERMITS

Permit No. 43011896.027

I-4 (SR 400) Segment 7 Widening
From East of US 27 to Osceola County Line

VOLUME I

Responses to Request for Additional Information

Environmental Resource Permit Application and Support Documentation

Submitted to the

Southwest Florida Water Management District

Bartow Office

Florida Department of Transportation District One

December 2002

INTERSTATE 4

I-4 (SR 400) Segment 7 Widening

from East of US 27 to the Osceola County Line

FPID/Project Number: 20120-1

Hubbard Construction Company | Jacobs Civil Inc.

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Jacobs Civil Inc. located at 18302 Highwoods Preserve Parkway, Highwoods Plaza, Suite 200, Tampa Florida 33647 (Federal ID No. 43-162-1641). Jacobs Civil Inc. is a corporation authorized to operate as an Engineering Business by the State of Florida Department of Business and Professional Regulation, Board of Professional Engineers (Engineering Business No. CA6572). I further certify that I have been in responsible charge of the preparation and production of this document, and have prepared or approved the analyses, calculations, evaluations, findings, opinions, conclusions, and/or technical advice herein reported.

PROJECT:	**DOT - I-4 Widening, Section 7**
OWNER:	**Florida Department of Transportation – District One**
FINANCIAL PROJECT ID NUMBER:	**201204-1**
LOCATION:	**Polk Co., Fl.**
PROJECT LIMITS:	**US 27 to the Osceola Co. line**
REPORT:	**Responses to ERP Request for Additional Information (12/23/02)**

This report includes a narrative containing specific responses to 18 comments developed by the SWFWMD during the review of the ERP Application Documentation for this project, as well as the referenced revised tables, spreadsheets and stormwater model input/output.

I acknowledge that the procedures and references used to develop the results contained in this report are standards to the professional practice of drainage engineering and planning as applied through professional judgment and experience.

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
EBN 6572

NAME: William J. Veon Jr., P.E.

FLORIDA REGISTRATION NUMBER: 35650

SIGNATURE:

DATE: 12/23/02

DOT – I-4 WIDENING, SECTION 7

Responses to the Southwest Florida Water Management District's Request for Additional Information (RAI), dated December 20, 2002

Application Number:	**43011896.027**
Applicant:	**Florida Department of Transportation, District One**
Authorized Agent:	**William J. Veon, Jr., P.E.**
Design/Build Team:	**Hubbard Construction/Jacobs Civil Inc.**

ENVIRONMENTAL CONSIDERATIONS:

1. Please clarify the acreage of wetland impact (temporary and/or permanent) that will be mitigated off-site pursuant to Florida Statute 373.4137. Be advised that the temporary impacts proposed may be restored on-site or mitigated off-site. Refer to Section E, Part B.3., of the ERP application.

   Response:

   Only the permanent wetland impacts (1.673 acres) are intended to be mitigated per Florida Statute 373.4137.

2. If wetland restoration is proposed for temporary impacts, please submit a restoration plan to provide reasonable assurance that the wetland functions will be restored in a timely manner. Refer to Section E, Part B.3., of the ERP application.

   Response:

   The temporary wetland impacts identified for this project are associated with providing 12'-wide work zones along the toes of fill slopes, clearing 10'-wide tracts along the r/w boundaries for the construction of fences, and connecting Historic Basin Storage (HBS) compensation areas to the HBS impact areas. No land alteration of any great significance, however, is expected. Therefore, formal wetland restoration for the estimated 3.359 acres of temporary impacts is not proposed. Rather, natural recruitment process will be relied upon to reestablish the wetland vegetation and functions in these areas. Note that the total temporary wetland impact area has increased from the original 3.251 acres, due to the inclusion of HBS compensation in this submittal. A revised Table One of Section E of the ERP application is included at the Response 2 tab of this volume of the RAI Response Documentation.

PLANS:

3. Please provide revised certified construction drawings (plan-view and cross-sectional views) that clearly identify and differentiate the areas of all proposed permanent and temporary wetland impacts. Refer to Section E, Part C.7., of the ERP application

Response:

The permanent and temporary wetland impact areas identified on the Proposed Conditions Drainage Areas sheets have been added to the revised signed and sealed Permit Plans sheets. The revised Permit Plans now also include the proposed roadway cross-sections on which wetland and right-of-way boundary lines are depicted. The permanent impacts are represented in the cross-sections as the fill areas within the wetlands; and the temporary wetland impact areas will then generally be to widths of 12' from these toes of fill slope, and to widths of 10' from the r/w boundary lines. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

4. FP & HBS mitigation areas on "Proposed Condition Drainage Areas" plans (within Volume #2 of 3 of the supporting documentation) do NOT match FP & HBS cross section sheets in numerous locations. Please address this item by one of the following two (2) options:

   A. Correct the "Floodplain Mitigation" hatching on the "Proposed Condition Drainage Areas" plan sheets to match the cross section sheets, or

   B. Remove the "Floodplain Mitigation" hatching from the "Proposed Condition Drainage Areas" plan sheets, and place a note on each plan sheet to refer to the FP & HBS hatching on the cross section sheets for the locations of the "Floodplain Mitigation" areas.

Response:

The Floodplain Mitigation hatching has been removed from the Proposed Conditions Drainage Areas sheets to avoid confusion with the good information contained on the Floodplain Impacts/Compensation Cross Sections sheets. The proposed roadway cross-section sheets have now been included in the revised Permit Plans, so a reference note on the revised Permit Plans' plan sheets referring to documents outside of the Permit Plans set will not be necessary. The proposed roadway cross-section sheets contain the same cross-section information as do the Floodplain Impacts/Compensation Cross Sections sheets, save for the hatching of impact and compensation areas. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

5. The "Permit Plans" (sheets #1 through #30 within Volume #2 of 3 of the supporting documentation) do NOT indicate the locations and details of the FP & HBS compensation areas. Please explain how the contractor will construct these compensation areas, and add the appropriate notes to the "Permit Plans" to reference the appropriate supporting drawings.

Response:

As indicated in the response above, the roadway cross-section sheets are now included in the revised Permit Plans set. The contractor will construct the Floodplain and HBS mitigation areas (which are merely areas of excavation) as the proposed roadway cross-sections are constructed. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

6. The note on cross section sheet #52 states that no FP compensation is taken below the proposed weir crest elevation of 119.5' NGVD29. However, the note on sheet #5 of the "Proposed Condition Drainage Areas" plan states that FP compensation takes place above 119.10' NGVD29. Please make the appropriate correction.

Response:

Floodplain Mitigation notes have been removed from the Proposed Conditions Drainage Areas sheets to avoid confusion with the good information contained on the Floodplain Impacts/Compensation Cross Sections sheets. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

7. From the cross section sheets, it appears that Historic Basin Storage (HBS) impacts [static storage below the upland Seasonal High Ground Water Table (SHGWT) or wetland Seasonal High Water Level (SHWL)] occur at the following station locations:

Left roadway embankment:

2081	2102	2103	2104	2105	2106
2107	2108	2109	2145	2146	2149
2150	2151	2152	2153		

Median:

Response:

A new spreadsheet has been created for the calculation of the HBS impacts and compensation. Refer to the Response 7 tab of this volume of the RAI Response Documentation.

E. Summarize the HBS impact / compensation volumes on the Excel© summary sheet.

Response:

A new spreadsheet has been created for the calculation of the HBS impacts and compensation. Refer to the Response 7 tab of this volume of the RAI Response Documentation.

8. Please correct / add the hatching pattern(s) for:

A. "Impacts (fill)" on cross section sheets #30 through #34 (stations 2137 through 2154 – left roadway embankment).

B. "Impacts (fill)" on cross section 2137 – right roadway embankment.

C. "Impacts (fill)" on cross section 2077 – left roadway embankment.

Response:

The hatching (for fill) was correctly depicted for the cross-sections at these stations in the CADD file, and the associated floodplain impact volumes were properly accounted for in the original spreadsheet calculations. However, a plotting problem apparently occurred, and the corresponding cross-section sheets were originally plotted with "compensation" hatching or what appears to be compensation hatching. The corrected cross-section plots are contained in Vol. 2, "Revised Permit Plans", of the RAI Response Documentation. Notes have been added in some cases for clarity. Also note that cross-sections 2150 through 2154 (left roadway embankment) are "cut" sections, and the compensation hatching for these cross-sections is correct.

9. Please provide base line stationing on Figures #2, #5 and #7 (within Volume #1 of 3 of the supporting documentation).

Response:

Baseline stationing data has been added to revised Figures 2, 5 and 7, for better reference of the various features of the maps with respect to the locations of proposed facilities. Refer to the Response 9 tab of this volume of the RAI Response Documentation for Figures 5 and 7. Figure 2 is included as a *.pdf file on the enclosed CD discussed below.

10. Due to the large drawing scale on Figures #2, #4 and #6 (within Volume #1 of 3 of the supporting documentation), District staff can not adequately review the detailed information on these 11" x 17" drawings.

A. Please provide a smaller scale drawing(s) on larger paper (24" x 36" minimum). Several drawings may be needed for Figures #4 and #6.

B. Please ensure that the base line stationing is clearly visible on these Figures.

As an option to the above two items, electronic copies of these figures can be submitted in Adobe© pdf or AutoCAD© dwg or dxf formats. If so submitted, please ensure that the base line stationing layers are visible on these Figures. District staff will then be able to "zoom in" on areas that are too small in scale to review on the current 11" x 17" hardcopy drawings.

Response:

Adobe *.pdf files have been created for Figures 2, 4 and 6. A CD containing these files has been enclosed, for your use, behind the front cover of this volume of the RAI Response Documentation. The size of the text for every twentieth station number (every 2000') along the base line has been increased for further clarity. Figure 7 has also been included on this CD. Note that the legends for the Figures were affected by the file conversion. Please refer to the original Figure legends as needed.

11. Due to the large scale on the 11" x 17" drawings, it is difficult to read the existing flood plain elevation estimates of 120' NGVD29 and 115' NGVD29 on the "Existing Condition Drainage Areas" plans and the "Proposed Condition Drainage Areas" plans. To facilitate accurate review by District staff, please increase the line weight thickness of the 120' and 115' contours on these drawings.

Response:

The line-weight thicknesses for the 120' and 115' floodplain-elevation-contours depicted on the Existing and Proposed Conditions Drainage Areas

sheets have been increased, and the background contours have been lightened for more clarity of the floodplain-elevation-contours. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

12. The stationing on Figure #3 (FEMA Flood Plain Map within Volume #1 of 3 of the supporting documentation) is inconsistent with the other Figures and supporting drawings. Please make the appropriate corrections.

Response:

More appropriate baseline stationing has been added to revised Figure 3. Refer to the Response 12 tab of this volume of the RAI Response Documentation.

13. Please supply the following (missing) cross sections (with the appropriate hatch patterns) that are included in the Excel© spreadsheet computations:

Left roadway embankment:

2051	2052	2053	2054	2055	2056
2057	2058	2059	2060	2083	2084
2085	2086	2087	2088	2089	2090
2091	2092	2125	2126		

Median:

2073	2074	2075	2076	2077	2078
2139	2140	2141			

Right roadway embankment:

2051	2052	2053	2054	2055	2056
2057	2058	2088	2089	2090	2127
2128	2129	2130	2131		

Underlined stations above show impacts and / or compensation on the Excel©spreadsheets.

If both the cross sections (noted above) and the corresponding cell(s) in the Excel© spreadsheet show zero impact / compensation, then the spreadsheet cells can be deleted (optional) and the cross section(s) in question does not have to be submitted.

Response:

Most of the cross-sections identified above have zero impact and zero compensation, and the corresponding stations have been omitted from the revised floodplain impacts/compensation spreadsheets. Refer to the Response 13 tab of this volume of the RAI Response Documentation. The remaining cross-sections were inadvertently omitted from the original submittal, but are included herein as Floodplain Impacts/Compensation Cross Section sheets 23, 56A, 63A, 63B, and 74. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation.

14. Please make the appropriate corrections for the following cross sections that do NOT agree with the Excel© spreadsheet computations:

Left roadway embankment:

2102 2150 2151 2152 2153 2154

2158

Median:

2080 2091 2092 2093

Right roadway embankment:

2120 2122

Response:

Appropriate corrections have been made to the floodplain impacts/compensation calculations spreadsheets, and revised spreadsheets are provided herein. Refer to the Response 13 tab of this volume of the RAI Response Documentation. Note that the cross-sections at Sta 2150 through 2154 (left roadway embankment) are cut sections, and the identified compensation volumes are correct. Also, there is no floodplain impact at Sta 2158 (left roadway embankment), and the cross-section has been corrected.

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15. Please provide three complete sets of the construction drawings with each sheet certified by a Florida Registered engineer in accordance with Section 471.025(1) Florida Statute and Section 1.5.b of the District's "Basis of Review". The cover sheet/index page of all supporting reports will also need to be certified by a Florida Registered engineer.

Response:

Four (4) copies (per your transmittal letter) of the RAI Response Documents have been provided, each containing a full set of signed and sealed Permit Plans. Refer to Vol. 2, "Revised Permit Plans", of the RAI Response Documentation. A set of 8-1/2"x 11" Permit Plans is also included at the Response 15 tab of this volume of the RAI Response Documentation.

DRAINAGE INFORMATION:

16. Please clarify the discrepancies with the ADICPR flood routing data and the construction plans for the outfall control structures for DTAS 7-2 and DTAS 7-3. The computations indicate an invert elevation for weir W-2B as 121.0 feet, while the construction plans indicate 120.8 feet. The weir invert (W-3A) of 120.05 feet in the computations is different than 102.01 feet on the plan. Also, provide sheet 20 of 21 of the ADICPR flood routing calculations. This sheet was omitted from the submittal. Refer to Section E, Part E, 1, g, of the Environmental Resource Permit Application.

Response:

The weir crest elevations for W-2B and W-3A were set higher in the original ADICPR calculations in order to determine the respective 100-year DHW's for DTAS 7-2 and DTAS 7-3, without overtopping these weirs. Then the actual W-2B and W-3A weir crest elevations were established in the Permit Plans as the elevations of the associated 100-year DHW's. These weirs are intended to discharge only during storms greater than the 100-year storm. However, in order to avoid any confusion, the ADICPR 25-year and 100-year runs have been redone with the W-2B and W-3A weir crest elevations matching those indicated on the Permit Plans. There were no changes to the model results. Refer to the Response 16 tab of this volume of the RAI Response Documentation. The missing sheet 21 of 22 is also included in this revised data.

17. The project photographs (Appendix C of Volume 1 of 3 of the supporting documentation) are very good. However, elevations (NGVD29) are NOT included on the photo inventory table in this appendix, or the subsequent photograph sheets.

Please supplement this photo inventory table (or provide a new table) listing existing structure elevations (NGVD29) throughout the length of the project.

As discussed during the pre-application meetings with District staff, the following information will be utilized to support the estimated 100 – year flood plain elevations of 120' NGVD29 and 115' NGVD29:

- Stain line elevations of existing structures (i.e. cross drains, headwalls, mitered end sections, pilings, etc.).
- Wetland Seasonal High Water Level (SHWL) elevations.
- Upland soil Seasonal High Ground Water Table (SHGWT) elevations.
- Existing topographic contour line elevations adjacent to the FIRM Zone "A" delineations.

Response:

A table containing all of the surveyed stain line data for Segment 7 was inadvertently omitted from the original submittal, but is included herein. Refer to the Response 17 tab of this volume of the RAI Response Documentation.

OPERATION AND MAINTENANCE AND LEGAL DOCUMENTATION:

18. Appendix A (within Volume #1 of 3 of the supporting documentation) contains a letter dated 10/07/02 from Ed Ponce, P.E. (FDOT, District #1). This letter addresses future median improvements by the Florida High Speed Rail Authority for Sections 4, 5 & 6 of I – 4 within Polk County. Therefore, the letter will NOT be accepted for this project.

    Please provide a similar letter from FDOT that addresses this project, or (as an option) addresses all of the pending I – 4 design / build projects within Polk County.

    Response:

    A revised letter from FDOT that covers future median improvement issues for Sections 6, 7 and 9 is included herein. Refer to the Response 18 tab of this volume of the RAI Response Documentation.

TABLE ONE: **PROJECT WETLAND AND O[illegible] SURFACE WATER SUMMARY**

WL & SW ID	WL & SW TYPE	WL & SW SIZE*	WL & SW NOT IMPACTED	TEMPORARY WL & SW IMPACTS			PERMANENT WL & SW IMPACTS			MITIGATION AREA ID
				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
7AS	PFO	0								
7AaS	PSS	0.925	0.570	PSS	0.274	C	PSS	0.081	F	F.S. 373.4137
7CM	PSS	0.050	0.050		0			0		
7DS	PFO	0.851	0.435	PFO	0.300	C	PFO	0.116	F	F.S. 373.4137
7EM	PSS	0.412	0.398	PSS	0.010	C	PSS	0.004	F	F.S. 373.4137
7FN	PEM	0.236	0.154	PEM	0.053	C	PEM	0.029	F	F.S. 373.4137
7GS	PEM	1.09	0.572	PEM	0.376	C	PEM	0.142	F	F.S. 373.4137
7HN	PEM	2.50	1.431	PEM	0.586	C	PEM	0.483	F	F.S. 373.4137
7IM	PSS	0.262	0.211	PSS	0.049	C	PSS	0.002	F	F.S 373.4137
PROJECT TOTALS:										

Comments: *WL & SW size represents the acreage within the right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
Wetland Type: from an established wetland classification system
Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other
Multiple entries per cell not allowed, except in the "Mitigation ID" column. If more than one impact is proposed in a given area, indicate the final impact.

TABLE ONE (Continued): **PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY**

WL & SW ID	WL & SW TYPE	WL & SW SIZE*	WL & SW NOT IMPACTED	TEMPORARY WL & SW IMPACTS			PERMANENT WL & SW IMPACTS			MITIGATION AREA ID
				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
7JS	PSS	0.423	0.238	PSS	0.154	C	PSS	0.031	F	F.S. 373.4137
7KM	PSS	0.604	0.537	PSS	0.054	C	PSS	0.013	F	F.S. 373.4137
7MS	PEM	0.513	0.367	PEM	0.095	C	PEM	0.051	F	F.S. 373.4137
7NN	PEM	0.234	0.190	PEM	0.040	C	PEM	0.004	F	F.S. 373.4137
7PN	PFO	5.11	4.035	PFO	0.748	C	PFO	0.327	F	F.S. 373.4137
7RS	PFO	7.855	6.845	PFO	0.620	C	PFO	0.390	F	F.S. 373.4137
7SN										
PROJECT TOTALS:		21.065	16.033		3.359			1.673		

Comments: *WL & SW size represents the acreage within the right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
Wetland Type: from an established wetland classification system
Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other
Multiple entries per cell not allowed, except in the "Mitigation ID" column. If more than one impact is proposed in a given area, indicate the final impact.

TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2053	0.0			0.0					
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0		120.0	116.9	WL-7AS
2056	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2056	0.0			0.0					
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0		120.0	117.2	WL-7AaS
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		0.0	0				
2073	0.0	0		0.0	0				
2074	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2074	0.0			0.0					
2075	0.0	0		0.0	0				
2076	0.0	0		0.0	0				
2077	0.0	0		0.0	0				
2078	0.0	0		0.0	0				
2079	0.0	0		0.0	0				
2080	0.0	0		0.0	0				
2081	0.0	0		0.0	0				
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	1.0	50		0.0	0		120.0	117.5	WL-7DS
2085	0.0	50		6.0	300				
2086	0.0	0		0.0	300				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	0.0	0		10.9	545				
Sub-sum		**100**	**100**		**1145**	**1145**			

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TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2091	0.0			10.9					
2092	0.0	0		19.3	1510				
2093	0.4	20		0.0	965				
2094	1.0	70		0.0	0				
2095	5.3	315		0.0	0				
2096	0.4	285		0.0	0				
2097	0.0	20		0.0	0				
2098	0.0	0		0.0	0		120.0	117.6	WL-7GS
2099	0.4	20		0.0	0				
2100	0.0	20		0.0	0				
2101	0.0	0		0.0	0				
2102	0.0	0		0.0	0				
2103	0.0	0		0.0	0				
Sub-sum		**750**	**850**		**2475**	**3620**			
2103	0.0			0.0					
2104	0.0	0		0.0	0				
2105	0.0	0		0.0	0				
2106	0.0	0		0.0	0				
2107	0.0	0		0.0	0				
2108	0.0	0		0.0	0				
2109	0.0	0		0.0	0				
2110	0.0	0		0.0	0		120.0	117.0	WL-7JS
2111	0.0	0		0.0	0				
2112	0.0	0		0.0	0				
2113	0.0	0		0.0	0				
2114	0.0	0		0.0	0				
2115	0.0	0		0.0	0				
Sub-sum		**0**	**850**		**0**	**3620**			
2115	0.0			0.0					
2116	0.0	0		0.0	0				
2117	0.0	0		0.0	0				
2118	0.0	0		0.0	0				
2119	9.0	450		0.0	0				
2120	0.0	450		15.5	775		120.0	117.8	WL-7MS
2121	0.0	0		0.0	775				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**900**	**1750**		**1550**	**5170**			

TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0					
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0		115.0	113.8	WL-7RS
2144	0.0	0		1.9	95				
2145	0.0	0		1.8	185				
2146	0.3	15		0.0	90				
2147	0.0	15		0.0	0				
2148	0.0	0		0.0	0				
2149	0.3	15		0.0	0				
2150	0.0	15		0.0	0				
2151	0.3	15		0.0	0				
2152	0.0	15		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**90**	**90**		**370**	**370**			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2051	0.0			0.0			120.0	116.9	WL-7CM
2052	0.0	0		0.0	0				
2053	0.0	0		0.0	0				
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0				
2056	0.0	0		0.0	0				
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0				
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
Sub-sum		0	0		0	0			
2071	0.0			0.0			120.0		N/A
2072	0.0	0		0.0	0				
Sub-sum		0	0		0	0			
2079	0.0	0		0.0	0		120.0	117.5	WL-7EM
2080	0.0	0		0.0	0				
2081	0.0	0		0.0	0				
Sub-sum		0	0		0	0			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2081	0.0			0.0			120.0		N/A
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	0.0	0		0.0	0				
2085	0.0	0		0.0	0				
2086	0.0	0		0.0	0				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	0.0	0		0.0	0				
2092	0.0	0		0.0	0				
2093	0.0	0		0.0	0				
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
Sub-sum		0	0		0	0			
2095	0.0			0.0			120.0	117.6	WL-7IM
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		0.0	0				
2099	0.0	0		0.0	0				
2100	0.0	0		0.0	0				
Sub-sum		0	0		0	0			
2100	0.0			0.0			120.0		N/A
2101	0.0	0		0.0	0				
2102	0.0	0		0.0	0				
2103	0.0	0		0.0	0				
2104	0.0	0		0.0	0				
Sub-sum		0	0		0	0			
2104	0.0			0.0			120.0	117.0	WL-7KM
2105	0.0	0		0.0	0				
2106	0.0	0		0.0	0				
2107	0.0	0		0.0	0				
Sub-sum		0	0		0	0			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

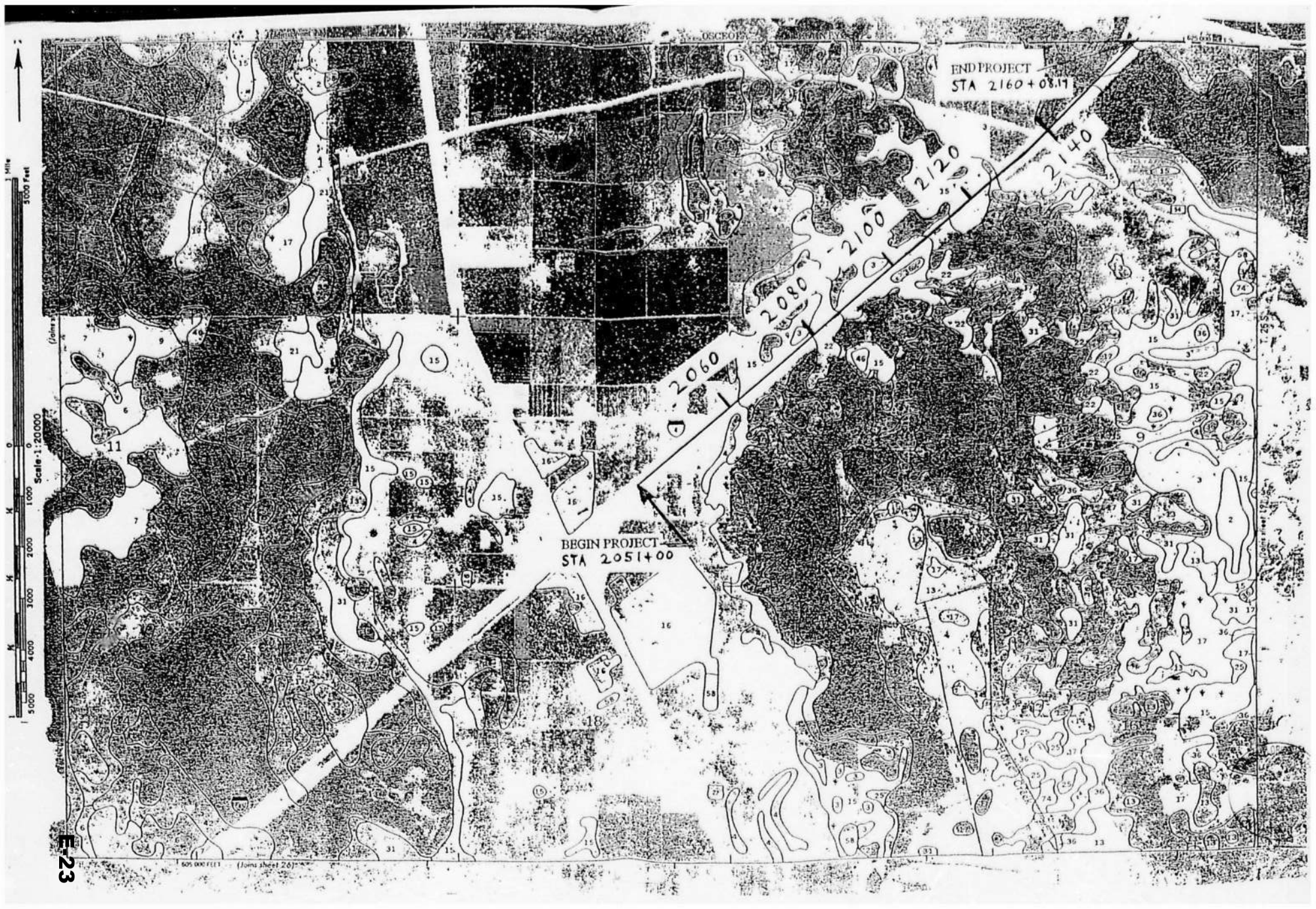
MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0				
2144	0.0	0		0.0	0				
2145	0.5	25		0.0	0				
2146	4.5	250		0.0	0				
2147	0.0	225		0.0	0				
2148	0.5	25		4.3	215				
2149	0.0	25		4.7	450				
2150	0.0	0		0.0	235				
2151	0.0	0		0.0	0				
2152	0.0	0		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		550	550		900	900			

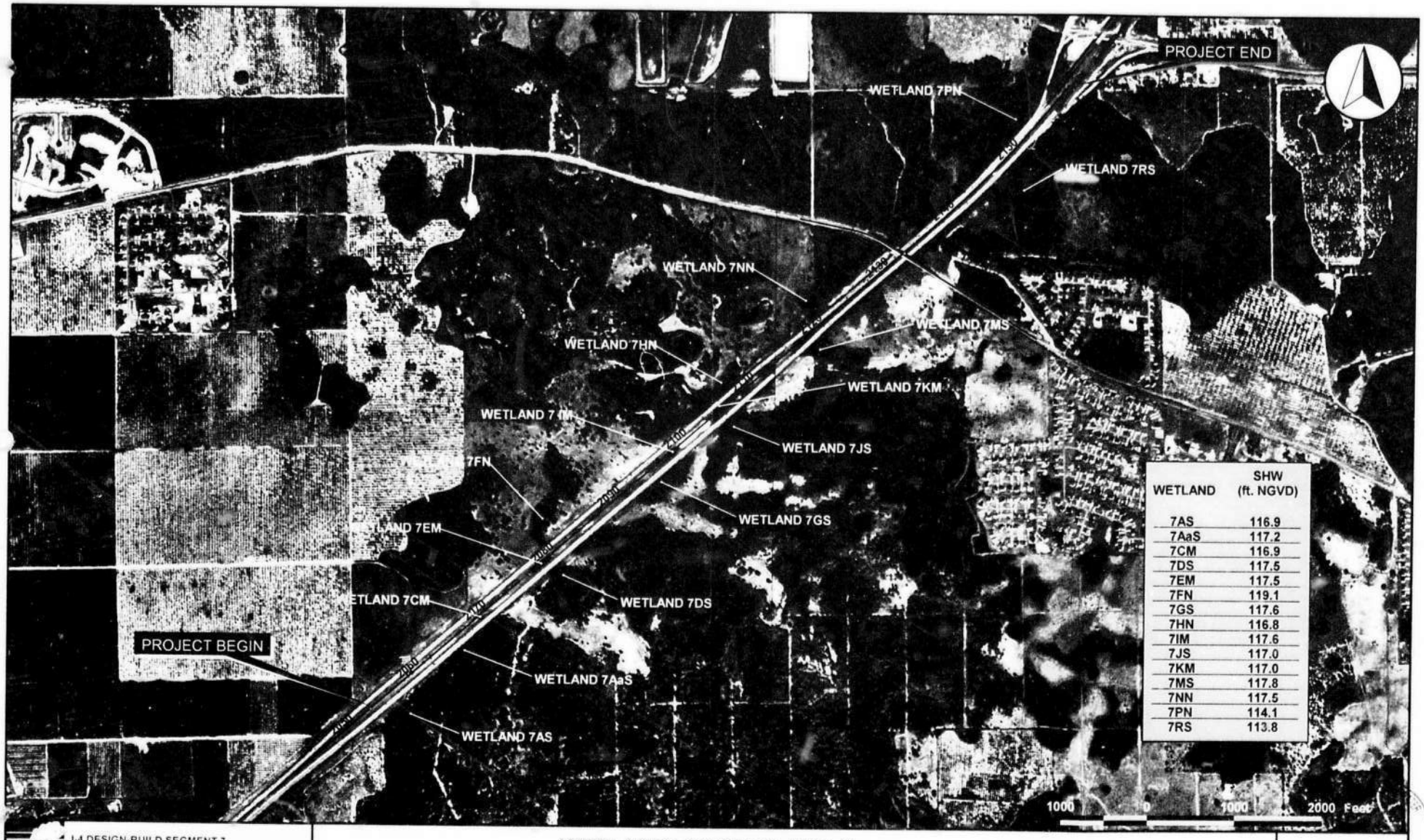
TABLE I.8 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2061	0.0			0.0			120.0	113.8	WL-7AaS
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0				
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		0.0	0				
2073	0.0	0		0.0	0				
2074	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2074	0.0			0.0			120.0	119.1	WL-7FN
2075	0.0	0		0.0	0				
2076	0.0	0		0.0	0				
2077	0.0	0		0.0	0				
2078	0.0	0		0.0	0				
2079	0.0	0		13.0	650				
2080	0.0	0		13.5	1325				
2081	8.6	430		0.0	675				
2082	0.0	430		0.0	0				
Sub-sum		**860**	**860**		**2650**	**2650**			
2093	0.0			0.0			120	116.8	WL-7HN
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		29.1	1455				
2099	0.0	0		13.6	2135				
2100	0.0	0		25.4	1950				
2101	0.0	0		24.1	2475				
2102	9.7	485		0.0	1205				
2103	21.2	1545		0.0	0				
2104	11.9	1655		0.0	0				
2105	15.5	1370		0.0	0				
2106	12.2	1385		0.0	0				
2107	9.0	1060		0.0	0				
2108	6.8	790		0.0	0				
2109	2.2	450		0.0	0				
Sub-sum		**8740**	**9600**		**9220**	**11870**			
2109	2.2			0.0			120.0	117.5	WL-7NN
2110	0.0	110		0.0	0				
2111	0.0	0		0.0	0				
2112	0.0	0		0.0	0				
2113	0.0	0		0.0	0				
2114	0.0	0		0.0	0				
2115	0.0	0		0.0	0				
2116	0.0	0		0.0	0				
2117	0.0	0		0.0	0				
2118	0.0	0		0.0	0				
2119	0.0	0		0.0	0				
2120	0.0	0		0.0	0				
2121	0.0	0		0.0	0				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**110**	**9710**		**0**	**11870**			

TABLE I.8 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0			115.0	114.1	WL-7PN
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0				
2144	0.0	0		0.0	0				
2145	0.7	35		0.0	0				
2146	1.4	105		0.0	0				
2147	0.0	70		0.0	0				
2148	0.0	0		0.0	0				
2149	1.7	85		0.0	0				
2150	0.0	85		5.2	260				
2151	0.0	0		3.1	415				
2152	0.0	0		6.3	470				
2153	0.0	0		1.4	385				
2154	0.0	0		0.0	70				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		380	380		1600	1600			


END PROJECT
STA 2160+08.17
2140
2120
2100
2080
2060
BEGIN PROJECT
STA 2051+00
Scale-1:20000
1 Mile
5000 Feet



WETLAND	SHW (ft. NGVD)
7AS	116.9
7AaS	117.2
7CM	116.9
7DS	117.5
7EM	117.5
7FN	119.1
7GS	117.6
7HN	116.8
7IM	117.6
7JS	117.0
7KM	117.0
7MS	117.8
7NN	117.5
7PN	114.1
7RS	113.8

I-4 DESIGN-BUILD SEGMENT 7
EAST OF US 27 TO OSCEOLA COUNTY LINE
SEA Project No. 02.527

WETLAND LOCATION MAP & SEASONAL HIGH WATER ELEVATIONS

Figure 7


NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
POLK COUNTY,
FLORIDA
AND INCORPORATED AREAS
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
POLK COUNTY
EFFECTIVE DATE:
DECEMBER 20, 2000
Federal Emergency Management Agency
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
End Project
Sta. 2160+08.17
Begin Project
Sta. 2051+00.00
Osceola County
Unincorporated Areas
120189
BFE =106
2160
2140
2120
2080
2060
2040
WL 7AS
WL 7AS
ZONE X
ZONE A
BARRY ROAD
CENTRAL GROVE ROAD
SMALL GROVE ROAD
HARRELL ROAD
SAWHILL ROAD
WAVERLY BARN ROAD 4
DEEN STILL ROAD
LOUGHMAN ROAD
HILLSIDE AVE
PINETOP TRL
PARK AVE
OAK DR
PALM DR
ORANGE AVE
FLORIDA AVE
OVERWITE DR
WAVERLY BARN RD 4
DUNSTON RD
WHEELER ROAD
R 28 E
R 27 E
T 26 S

TABLE I.1 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION SUMMARY

SUMMARY

West Basin (120' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Vol. (CF)	Encroachment Vol. (Acre-ft)	Compensation Vol. (Acre-ft)
Right side	25182	109701	0.58	2.52
Median	13340	19070	0.31	0.44
Left side	40070	88685	0.92	2.04
Sub_total	**78592**	**217456**	**1.80**	**4.99**

East Basin (115' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Accumulated Vol. (CF)	Encroachment Accumulated Vol. (Acre-ft)	Compensation Accumulated Vol. (Acre-ft)
Right side	34336	52104	0.79	1.20
Median	14920	860	0.34	0.02
Left side	2280	14210	0.05	0.33
Sub_total	**51536**	**67174**	**1.18**	**1.54**

Total	**130128**	**284630**	**2.99**	**6.53**

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2053	0.0			0.0			120.0	116.9	WL-7AS
2054	0.0	0		22.0	1100				
2055	0.0	0		42.6	3230				
2056	0.0	0		53.1	4785				
Sub-sum		**0**	**0**		**9115**	**9115**			
2056	0.0			53.1			120.0	117.2	WL-7AaS
2057	0.0	0		3.8	2845				
2058	0.0	0		35.7	1975				
2059	3.1	155		49.8	4275				
2060	3.2	315		60.0	5490				
2061	4.0	360		41.1	5055				
2062	4.9	445		82.5	6180				
2063	3.7	430		77.1	7980				
2064	2.3	300		0.0	3855				
2065	0.4	135		0.0	0				
2066	3.6	200		0.0	0				
2067	18.8	1120		0.0	0				
2068	23.7	2125		0.0	0				
2069	14.5	1910		0.0	0				
2070	0.0	725		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		17.6	880				
2073	0.0	0		14.5	1605				
2074	0.0	0		8.6	1155				
Sub-sum		**8220**	**8220**		**41295**	**50410**			
2074	0.0			8.6			120.0	117.5	WL-7DS
2075	0.0	0		14.5	1155				
2076	0.0	0		27.0	2075				
2077	0.3	15		38.8	3287.5				
2078	0.1	20		77.2	5795.5				
2079	4.1	210		41.2	5918				
2080	6.8	545		0.0	2060				
2081	0.0	341		9.0	450				
2082	0.0	1		9.0	900				
2083	11.1	555		0.0	450				
2084	17.4	1425		0.0	0				
2085	0.1	875		12.7	635				
2086	3.4	175		0.0	635				
2087	3.9	365		0.0	0				
2088	0.0	195		16.5	825				
2089	0.0	0		9.0	1275				
2090	0.0	0		3.5	625				
2091	0.0	0		80.7	4210				
Sub-sum		**4722**	**12942**		**30296**	**80706**			

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2091	0.0			80.7			120.0	117.6	WL-7GS
2092	0.0	0		77.5	7910				
2093	9.4	470		0.0	3875				
2094	12.2	1080		0.0	0				
2095	15.0	1360		0.0	0				
2096	9.1	1205		0.0	0				
2097	7.6	835		0.0	0				
2098	4.8	620		0.0	0				
2099	8.4	660		0.0	0				
2100	1.8	510		4.9	245				
2101	0.0	90		4.4	465				
2102	0.0	0		6.6	550				
2103	0.0	0		9.0	780				
Sub-sum		**6830**	**19772**		**13825**	**94531**			
2103	0.0			9.0			120.0	117.0	WL-7JS
2104	0.8	40		10.0	950				
2105	8.7	475		0.0	500				
2106	12.8	1075		0.0	0				
2107	9.0	1090		0.0	0				
2108	0.0	450		24.5	1225				
2109	0.0	0		17.2	2085				
2110	0.0	0		14.9	1605				
2111	0.0	0		12.7	1380				
2112	0.0	0		10.6	1165				
2113	0.0	0		8.6	960				
2114	0.0	0		6.7	765				
2115	0.0	0		4.9	580				
Sub-sum		**3130**	**22902**		**11215**	**105746**			
2115	0.0			4.9			120.0	117.8	WL-7MS
2116	0.0	0		3.2	405				
2117	0.0	0		1.6	240				
2118	5.2	260		0.0	80				
2119	15.2	1020		0.0	0				
2120	2.4	880		32.3	1615				
2121	0.0	120		0.0	1615				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**2280**	**25182**		**3955**	**109701**			

TABLE 2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0					
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		3.4	170				
2134	0.0	0		37.2	2030				
2135	0.0	0		95.5	6635				
2136	0.0	0		93.6	9455				
2137	0.1	5		11.8	5270				
2138	3.7	190		10.2	1100				
2139	4.3	400		10.4	1030				
2140	4.8	455		3.0	670				
2141	4.2	450		8.3	565				
2142	3.8	400		6.2	725				
2143	2.4	310		6.2	620		115.0	113.8	WL-7RS
2144	0.1	125		3.9	505				
2145	1.0	55		1.9	290				
2146	1.8	140		0.0	95				
2147	0.0	90		0.0	0				
2148	0.0	0		0.0	0				
2149	1.5	75		0.0	0				
2150	2.4	195		0.0	0				
2151	1.0	170		0.0	0				
2152	0.0	50		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Pond 7-7		31226			22944				
Sub-sum		**34336**	**34336**		**52104**	**52104**			

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland

Pond 7-7 floodplain impacts calculated from measured areas (via CADD) along contours and outside toe-of-slope

Measured area for contour =	115	1.067 ac	
Measured total area for contour =	114	0.231 ac	
Incremental impact vol. =			28270 cf
Measured area for contour =	114	0.166 ac	
Toe of slope @	113.3	0 ac	
Incremental impact vol. =			2531 cf
Measured area for contour =	114	0.065 ac	
Toe of slope @	113.7	0 ac	
Incremental impact vol. =			425 cf
Total impact vol. =			31226 cf

Pond 7-7 floodplain compensation calculated from volume between 25yr-24hr Peak Stage (DHW) and Floodplain (BFE):

BFE =	115.00 ft		
25yr-24hr Peak Stage (DHW) =	114.70 ft		
depth=	0.30 ft		
*Pond Area @ DHW Stage 114.70 =		75852 sf	
*Pond Area @ BFE Stage 115.00 =		77105 sf	
*Average Pond Area =		76479 sf	
Compensatory Storage within Pond 7-7 =			22944 cf

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2051	0.0			0.0			120.0	116.9	WL-7CM
2052	0.0	0		0.0	0				
2053	0.0	0		0.0	0				
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0				
2056	0.0	0		0.0	0				
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.1	5		0.0	0				
2066	1.4	75		0.0	0				
2067	7.6	450		0.0	0				
2068	37.9	2275		0.0	0				
2069	30.2	3405		0.0	0				
2070	0.0	1510		0.0	0				
2071	0.0	0		0.0	0				
Sub-sum		**7720**	**7720**		**0**	**0**			
2071	0.0			0.0			120.0		N/A
2072	0.0	0		0.0	0				
Sub-sum		**0**	**7720**		**0**	**0**			
2079	0.0	0		0.0	0		120.0	117.5	WL-7EM
2080	1.4	70		0.0	0				
2081	0.0	70		0.0	0				
Sub-sum		**140**	**7860**		**0**	**0**			

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2081	0.0			0.0			120.0		N/A
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	0.0	0		0.0	0				
2085	0.0	0		0.0	0				
2086	0.0	0		0.0	0				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	22.6	1130		0.0	0				
2092	14.9	1875		0.0	0				
2093	1.2	805		0.0	0				
2094	0.0	60		0.0	0				
2095	0.0	0		0.0	0				
Sub-sum		**3870**	**11730**		**0**	**0**			
2095	0.0			0.0			120.0	117.6	WL-7IM
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		0.0	0				
2099	3.1	155		0.0	0				
2100	11.3	720		20.0	1000				
Sub-sum		**875**	**12605**		**1000**	**1000**			
2100	11.3			20.0			120.0		N/A
2101	0.0	565		41.9	3095				
2102	0.0	0		42.8	4235				
2103	0.0	0		43.1	4295				
2104	0.0	0		42.9	4300				
Sub-sum		**565**	**13170**		**15925**	**16925**			
2104	0.0			42.9			120.0	117.0	WL-7KM
2105	0.0	0		0.0	2145				
2106	1.7	85		0.0	0				
2107	0.0	85		0.0	0				
Sub-sum		**170**	**13340**		**2145**	**19070**			

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN										
Encroachment				Compensation						
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2131	0.0	0		0.0	0		115.0	114.1	WL-7RS
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.4	20		0.0	0				
2136	1.3	85		0.0	0				
2137	2.3	180		0.0	0				
2138	3.8	305		0.0	0				
2139	6.0	490		0.0	0				
2140	3.8	490		0.0	0				
2141	6.7	525		0.0	0				
2142	7.4	705		0.0	0				
2143	9.8	860		0.0	0				
2144	10.0	990		0.0	0				
2145	14.7	1235		0.0	0				
2146	22.8	1875		0.0	0				
2147	0.0	1140		0.0	0				
2148	3.8	190		2.7	135				
2149	0.7	225		5.9	430				
2150	10.4	555		0.0	295				
2151	6.8	860		0.0	0				
2152	11.2	900		0.0	0				
2153	8.6	990		0.0	0				
2154	10.0	930		0.0	0				
2155	8.4	920		0.0	0				
2156	0.3	435		0.0	0				
2157	0.0	15		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**14920**	**14920**		**860**	**860**			

TABLE I.4 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Station	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2061	0.0			0.0			120.0	113.8	WL-7AaS
2062	0.0	0		0.0	0				
2063	0.0	0		0.5	26.5				
2064	0.0	0		2.5	149				
2065	0.0	0		5.0	371				
2066	0.0	0		8.0	648.5				
2067	0.0	0		11.6	978.5				
2068	0.0	0		15.7	1362.5				
2069	0.0	0		20.8	1824				
2070	0.0	0		0.0	1040				
2071	0.0	0		27.9	1395				
2072	0.0	0		17.6	2275				
2073	0.0	0		14.5	1605				
2074	0.0	0		6.1	1030				
Sub-sum		**0**	**0**		**12705**	**12705**			
2074	0.0			6.1			120.0	119.1	WL-7FN
2075	0.0	0		7.6	685				
2076	0.0	0		9.2	840				
2077	0.8	40		10.8	997.5				
2078	0.0	40		12.6	1167.5				
2079	0.0	0		16.7	1465				
2080	0.0	0		5.0	1085				
2081	13.2	660		0.0	250				
2082	0.0	660		0.0	0				
Sub-sum		**1400**	**1400**		**6490**	**19195**			
2093	0.0			0.0			120	116.8	WL-7HN
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
2096	0.0	0		3.6	180				
2097	0.0	0		10.8	720				
2098	0.0	0		133.3	7205				
2099	0.0	0		84.0	10865				
2100	0.0	0		107.9	9595				
2101	0.0	0		66.8	8735				
2102	32.8	1640		0.0	3340				
2103	65.3	4905		0.0	0				
2104	57.2	6125		0.0	0				
2105	49.1	5315		0.0	0				
2106	50.5	4980		0.0	0				
2107	52.2	5135		0.0	0				
2108	50.8	5150		0.0	0				
2109	24.6	3770		0.0	0				
Sub-sum		**37020**	**38420**		**40640**	**59835**			
2109	24.6			0.0			120.0	117.5	WL-7NN
2110	4.2	1440		0.0	0				
2111	0.0	210		24.3	1215				
2112	0.0	0		24.3	2430				
2113	0.0	0		24.3	2430				
2114	0.0	0		24.3	2430				
2115	0.0	0		24.3	2430				
2116	0.0	0		24.3	2430				
2117	0.0	0		24.3	2430				
2118	0.0	0		24.3	2430				
2119	0.0	0		24.3	2430				
2120	0.0	0		24.3	2430				
2121	0.0	0		45.5	3490				
2122	0.0	0		0.0	2275				
2123	0.0	0		0.0	0				
Sub-sum		**1650**	**40070**		**28850**	**88685**			

TABLE I.4 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0					
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		23.3	1165				
2134	0.0	0		20.9	2210				
2135	0.0	0		20.9	2090				
2136	0.6	30		26.2	2355				
2137	0.6	60		30.5	2835				
2138	0.5	55		9.4	1995				
2139	0.8	65		0.0	470				
2140	1.4	110		0.0	0				
2141	1.4	140		0.0	0				
2142	1.9	165		0.0	0		115.0	114.1	WL-7PN
2143	2.5	220		0.0	0				
2144	3.5	300		0.0	0				
2145	3.8	365		0.0	0				
2146	3.1	345		0.0	0				
2147	0.0	155		0.0	0				
2148	0.5	25		0.0	0				
2149	2.2	135		0.0	0				
2150	0.0	110		1.8	90				
2151	0.0	0		1.1	145				
2152	0.0	0		2.0	155				
2153	0.0	0		3.6	280				
2154	0.0	0		2.4	300				
2155	0.0	0		0.0	120				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**2280**	**2280**		**14210**	**14210**			

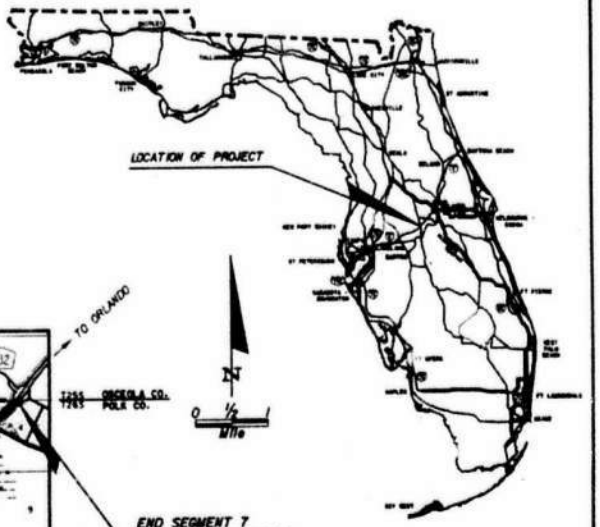
COMPONENTS OF CONTRACT PLANS SET
DRAINAGE PLANS

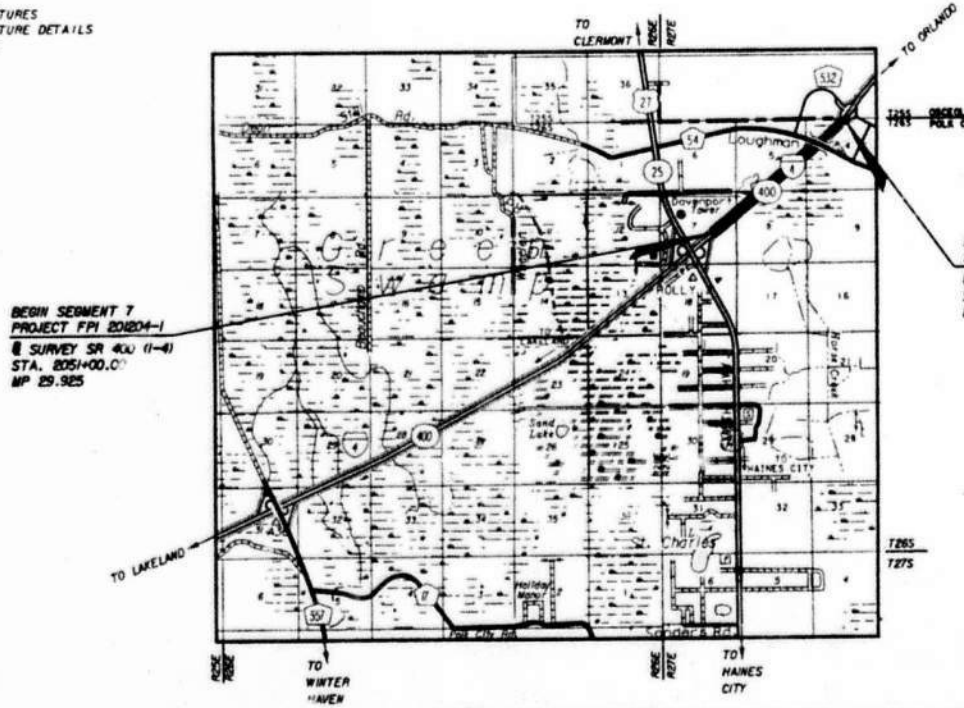
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
CONTRACT PLANS

FINANCIAL PROJECT ID 201204-1-52-01
POLK COUNTY (16110)
STATE ROAD NO. 400 (I-4)
SEGMENT 7

INDEX OF DRAINAGE PLANS

SHEET NO	SHEET DESCRIPTION
1	KEY SHEET
2-4	TYPICAL SECTIONS
5	GENERAL NOTES
6	PROJECT LAYOUT
7-18	PLAN SHEETS
19-25	PROFILE SHEETS
26-29	DRAINAGE STRUCTURES
30-31	DRAINAGE STRUCTURE DETAILS
32-96	CROSS SECTIONS





BEGIN SEGMENT 7
PROJECT FPI 201204-1
℄ SURVEY SR 400 (I-4)
STA. 2051+00.00
MP 29.925

END SEGMENT 7
PROJECT FPI 201204-1
℄ SURVEY SR 400 (I-4)
STA. 2160+08.17 Bk =
MP 31.991

ENVIRONMENTAL
RESOURCE PERMIT PLANS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS DATED JANUARY 2000, AND STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2000, AS AMENDED BY CONTRACT DOCUMENTS.

ENGINEER OF RECORD:
Jacobs Civil Inc.
6302 Hillsborough Preserve Parkway
Suite 200
Tampa, FL 33647
Tel. (813) 877-5434
EB# 6572

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION

REVISIONS

WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	10,908.11	2.066
BRIDGES	0.00	0.000
NET LENGTH OF PROJECT	10,908.11	2.066
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	10,908.11	2.066

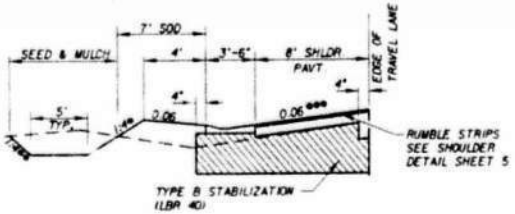
KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

DRAINAGE PLANS
ENGINEER OF RECORD: WILLIAM J. VEON, JR., P.E.
P.E. NO.: 35650

PERMIT PLANS

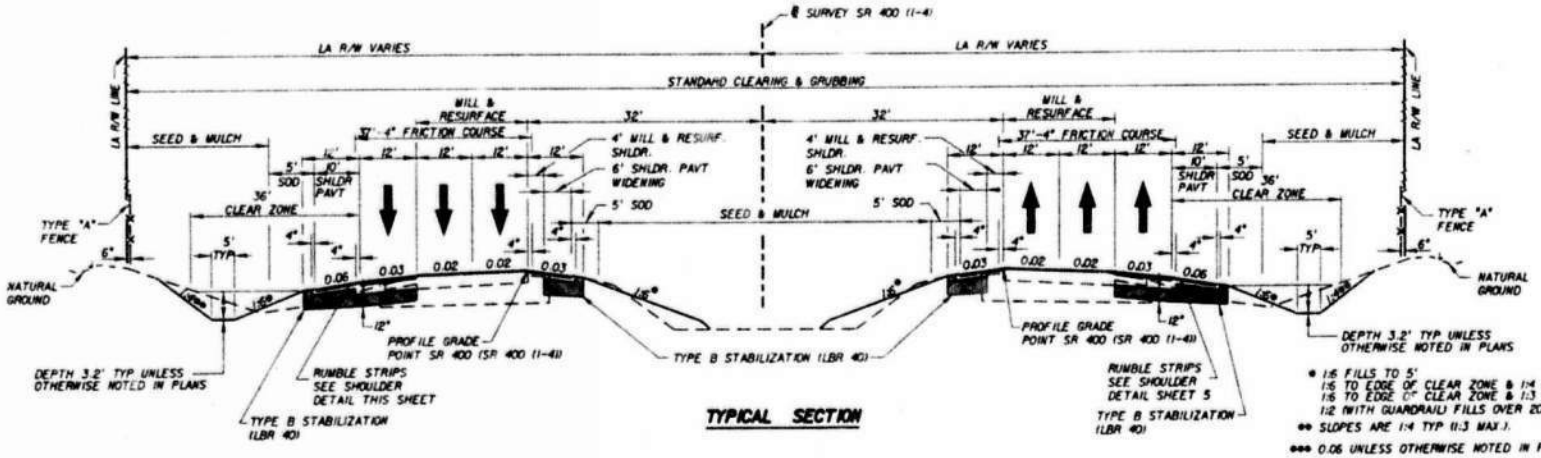
FISCAL YEAR	SHEET NO.
02	01

FDOT PROJECT MANAGER:



SHOULDER GUTTER SECTION

STA 2051+00.00 (LT.) TO STA 2068+07.80 (LT.)
STA 2078+93.00 (LT.) TO STA 2104+00.00 (LT.)



TYPICAL SECTION

* 1:6 FILLS TO 5'
1:5 TO EDGE OF CLEAR ZONE & 1:4 FILLS 5' TO 10'
1:6 TO EDGE OF CLEAR ZONE & 1:3 FILLS 10' TO 20'
1:2 (WITH GUARDRAIL) FILLS OVER 20'

** SLOPES ARE 1:4 TYP (1:3 MAX.).

*** 0.06 UNLESS OTHERWISE NOTED IN PLANS

NOTES:

1. EXISTING FENCE TO BE REMOVED AND REPLACED THROUGHOUT THE PROJECT.
2. THE MILLING DEPTH NOTED IS BASED ON CORE BORINGS THAT SHOW AN AVERAGE THICKNESS OF EXISTING PAVEMENT ON THE MAINLINE AT 5 INCHES AND ON THE SHOULDERS AT 1.5 INCHES. ADJUSTMENT MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, TO AVOID EXPOSING THE MAINLINE'S EXISTING BASE AT THE DIRECTION OF THE ENGINEER, PRIMING OF EXPOSED BASE MAY BE REQUIRED.
3. THE TOP LIFT OF STRUCTURAL COURSE IN TRAVEL LANES SHALL INCLUDE A MODIFIED BINDER.

SR 400 (I-4) TRAFFIC DATA

ESTIMATED DESIGN YEAR SECTION 6= 2015 AADT = 108,434
ESTIMATED DESIGN YEAR SECTION 7= 2015 AADT = 106,885
K = 10/ D = 55/ T = 12/ (24 HOUR)
DESIGN HOUR T = 14/
DESIGN SPEED = 70 MPH

PAVEMENT DESIGN

MAINLINE WIDENING

OPTIONAL BASE GROUP 12 WITH TYPE SP STRUCTURAL COURSE (TRAFFIC E) (500 lb/sy min.) AND FC-5 (80 lb/sy) (RUBBER)

MILL & RESURFACE MAINLINE

MILL EXISTING PAVEMENT 1" MINIMUM PLACE TYPE SP STRUCTURAL COURSE (TRAFFIC E) (200 lb/sy min.) AND FC-5 (80 lb/sy) (RUBBER)

SHOULDER CONSTRUCTION

OPTIONAL BASE GROUP 4 WITH TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 lb/sy)

WILLIAM J. VEON JR., P.E.
P.E. NO. 39680
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

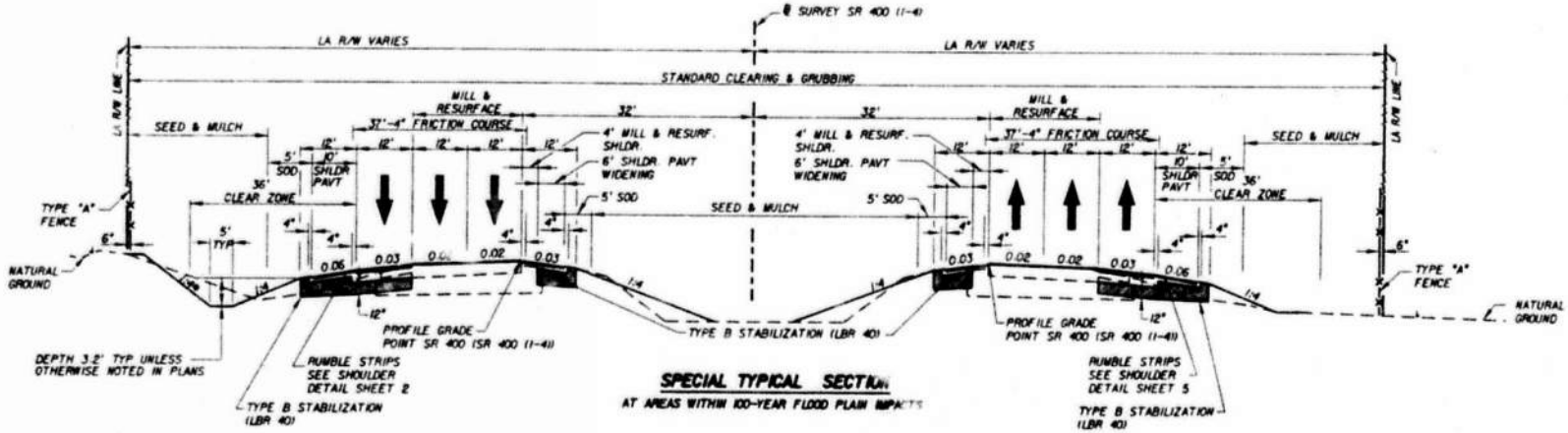
Jacobs Civil Inc.
6300 Hazeltine Preserve Parkway
Orlando, Florida 32829
Tel: (407) 207-2404
EB 0872

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120A-1

I-4 MAINLINE TYPICAL SECTIONS SEGMENT 7

SHEET NO. 2



SPECIAL TYPICAL SECTION

AT AREAS WITHIN 100-YEAR FLOOD PLAIN IMPACTS

SR 400 (I-4) TRAFFIC DATA

ESTIMATED DESIGN YEAR SECTION 6= 2015 AADT = 108,434
ESTIMATED DESIGN YEAR SECTION 7= 2015 AADT = 106,685
K = 10/ D = 55/ T = 12/ (24 HOUR)
DESIGN HOUR T = 14/
DESIGN SPEED = 70 MPH

NOTES:

1. EXISTING FENCE TO BE REMOVED AND REPLACED THROUGHOUT THE PROJECT.
2. THE MILLING DEPTH NOTED IS BASED ON CORE BORINGS THAT SHOW AN AVERAGE THICKNESS OF EXISTING PAVEMENT ON THE MAINLINE AT 5 INCHES AND ON THE SHOULDERS AT 1.5 INCHES. ADJUSTMENT MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, TO AVOID EXPOSING THE MAINLINE EXISTING BASE. AT THE DIRECTION OF THE ENGINEER, PRIMING OF EXPOSED BASE MAY BE REQUIRED.
3. THE TOP LIFT OF STRUCTURAL COURSE IN TRAVEL LANES SHALL INCLUDE A MODIFIED BINDER.

PAVEMENT DESIGN

MAINLINE WIDENING

OPTIONAL BASE GROUP 12 WITH TYPE SP STRUCTURAL COURSE (TRAFFIC E) (500 lb/sy min.) AND FC-5 (80 lb/sy) (RUBBER)

MILL & RESURFACE MAINLINE

MILL EXISTING PAVEMENT 1" MINIMUM
PLACE TYPE SP STRUCTURAL COURSE (TRAFFIC E) (200 lb/sy min.) AND FC-5 (80 lb/sy) (RUBBER)

SHOULDER CONSTRUCTION

OPTIONAL BASE GROUP 4 WITH TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 lb/sy)

WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/02

PERMIT PLANS

REVISIONS					
NO.	BY	DESCRIPTION	DATE	BY	DESCRIPTION

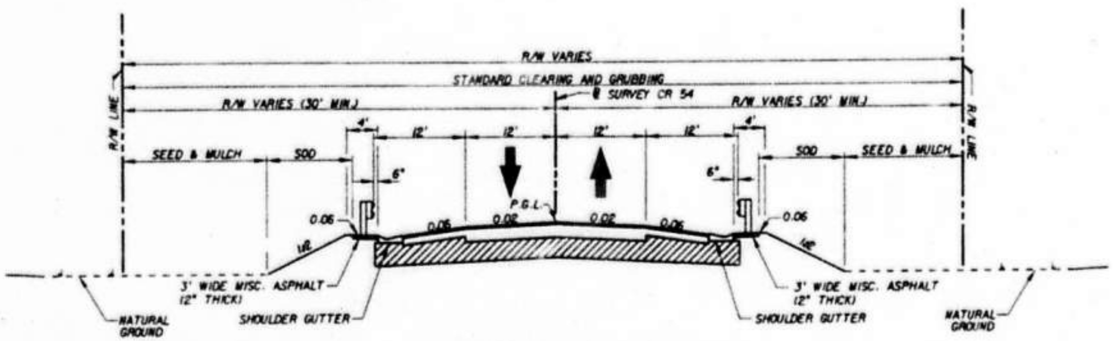
Jacobs Civil Inc.
6300 Hillcroft Freeway Parkway
Houston, TX 77072
TEL (713) 977-2434
FAX

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 MAINLINE TYPICAL SECTIONS SEGMENT 7

SHEET NO. 3



CR 54 TYPICAL SECTION

DESIGN SPEED 60 MPH
STA 35+00.00 TO STA 39+51.14
STA 43+48.14 TO STA 49+00.00

PAVEMENT DESIGN

NEW CONSTRUCTION

OPTIONAL BASE GROUP 3 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 lb/sy)

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 1 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 lb/sy)

WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

CR 54 TYPICAL SECTION SEGMENT 7

SHEET NO. 4

GENERAL NOTES:

1. THE BENCH MARK DATUM IS 1929 NGVD. SEE PROFILE SHEETS FOR BENCH MARK DESCRIPTIONS.
2. EXISTING DRAINAGE STRUCTURES WITHIN CONSTRUCTION LIMITS SHALL REMAIN UNLESS OTHERWISE NOTED.
3. THE LOCATIONS OF UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY.
4. UTILITY OWNERS:

COMPANY	CONTACT	TELEPHONE NUMBERS
VERIZON FLORIDA, INC.	RICHARD BAHR	1-863-682-7836
CENTRAL FLORIDA GAS	FRED DELOACH	1-863-224-4063
TIME WARNER GAS	RANDY LYLE	1-863-293-8636
FLORIDA POWER	CHARLES SANCRANTI	1-863-678-4550
BROADWING COMMUNICATIONS	RANDALL TRUMAN	1-407-859-6265
POLK COUNTY UTILITIES	WILLIAM CRAWFORD	1-863-534-5936
ORLANDO UTILITIES	ALONIS WILLIS	1-407-348-4181

5. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO PROTECTED. IF A CORNER IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE ENGINEER SHOULD NOTIFY THE DISTRICT LOCATION SURVEYOR, WITHOUT DELAY, BY TELEPHONE.
6. THE CONTRACTOR IS TO SUPPLY A SITE SPECIFIC EROSION CONTROL PLAN FOR DEPARTMENT APPROVAL PRIOR TO BEGINNING WORK.
7. ANY ASPHALT OR MILLED MATERIAL SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
8. EXISTING RIGHT-OF-WAY MARKERS & FDOT BENCH MARKS ARE TO BE PROTECTED DURING CONSTRUCTION. ANY DAMAGED MARKERS ARE TO BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
9. THE CONTRACTOR IS TO REMOVE ALL EROSION CONTROL ITEMS (SILT FENCE, HAY BALES, ETC.) AND SURVEY STAKES WHEN CONSTRUCTION IS COMPLETED.
10. ALL SOD MATERIALS SHALL BE SUBJECT TO INSPECTION BY THE DEPARTMENT PRIOR TO PLACEMENT. ANY SOD WITH NOXIOUS WEEDS AND GRASSES, INCLUDING TROPICAL SODA APPLE SHALL BE REJECTED FOR USE ON THE PROJECT.
11. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER, PRIOR TO INCORPORATION INTO THE PROJECT, A CERTIFICATION FROM THE FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES DIVISION OF PLANT INDUSTRY STATING THAT THE SOD, HAY, STRAW AND MULCH MATERIALS ARE FREE OF NOXIOUS WEEDS, INCLUDING TROPICAL SODA APPLE.
12. CONCRETE DEBRIS AND MILLED MATERIAL SHALL NOT BE SPREAD ON THE EXISTING GRASSED SHOULDER AREAS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE ASPECTS OF THE PROJECT FROM THE FIRST DAY OF CONSTRUCTION (AFTER MOBILIZATION) UNTIL THE PROJECT IS ACCEPTED BY FDOT MAINTENANCE.
14. THE EASTERN INDIGO SNAKE (DRYMARCHON CORAIS COUPERI) COULD BE PRESENT IN THE PROJECT AREA. IN ORDER TO MINIMIZE HARM TO THIS SPECIES, THE FOLLOWING PROTECTION MEASURES WILL BE TAKEN:
    a. EASTERN INDIGO SNAKE EDUCATIONAL INFORMATION, AS CONTAINED IN THE APPROVED FDOT DISTRICT ONE EDUCATIONAL PLAN WILL BE PROVIDED TO CONSTRUCTION EMPLOYEES PRIOR TO THE INITIATION OF ANY LAND CLEARING, CONSTRUCTION, OR GOPHER TORTOISE RELOCATION ACTIVITIES.
    b. ALL CONSTRUCTION ACTIVITIES SHALL CEASE IN THE IMMEDIATE VICINITY IF ANY LIVE EASTERN INDIGO SNAKES ARE FOUND WITHIN THE PROJECT AREA. WORK MAY RESUME AFTER THE SNAKE OR SNAKES ARE ALLOWED TO LEAVE THE AREA ON THEIR OWN.
    c. LOCATION OF LIVE SIGHTINGS SHALL BE REPORTED TO THE USFWS VERO BEACH FIELD OFFICE AT (561) 562-3909.
    d. IF A DEAD EASTERN INDIGO SNAKE IS FOUND ON THE PROJECT SITE, THE SNAKE SHALL BE FROZEN AS SOON AS POSSIBLE AND THE VERO BEACH FIELD OFFICE SHALL BE NOTIFIED IMMEDIATELY FOR FURTHER INSTRUCTIONS.
15. THE CONTRACTOR SHALL NOTIFY UTILITY OWNERS AT SUNSHINE STATE ONE CALL OF FLORIDA, INC. (1-800-432-4770) 48 HOURS IN ADVANCE OF BEGINNING CONSTRUCTION.
16. ALL TEMPORARY PAVING TO BE MAINTAINED BY THE CONTRACTOR AS LONG AS IT IS NEEDED FOR MAINTENANCE OF TRAFFIC PURPOSES. COST TO BE INCLUDED IN PAY ITEM 102-1.
17. ALL REMOVAL OF PAVEMENT MARKINGS SHALL BE DONE BY A METHOD THAT PRODUCES THE SAME RESULTS IN THE SAME MANNER AS HYDRO-BLASTING.
18. ALL SOD SHALL BE OVER-SEEDED AT THE DIRECTION OF THE ENGINEER. THE COST OF OVER-SEEDING SHALL BE INCLUDED IN THE COST OF THE SOD.

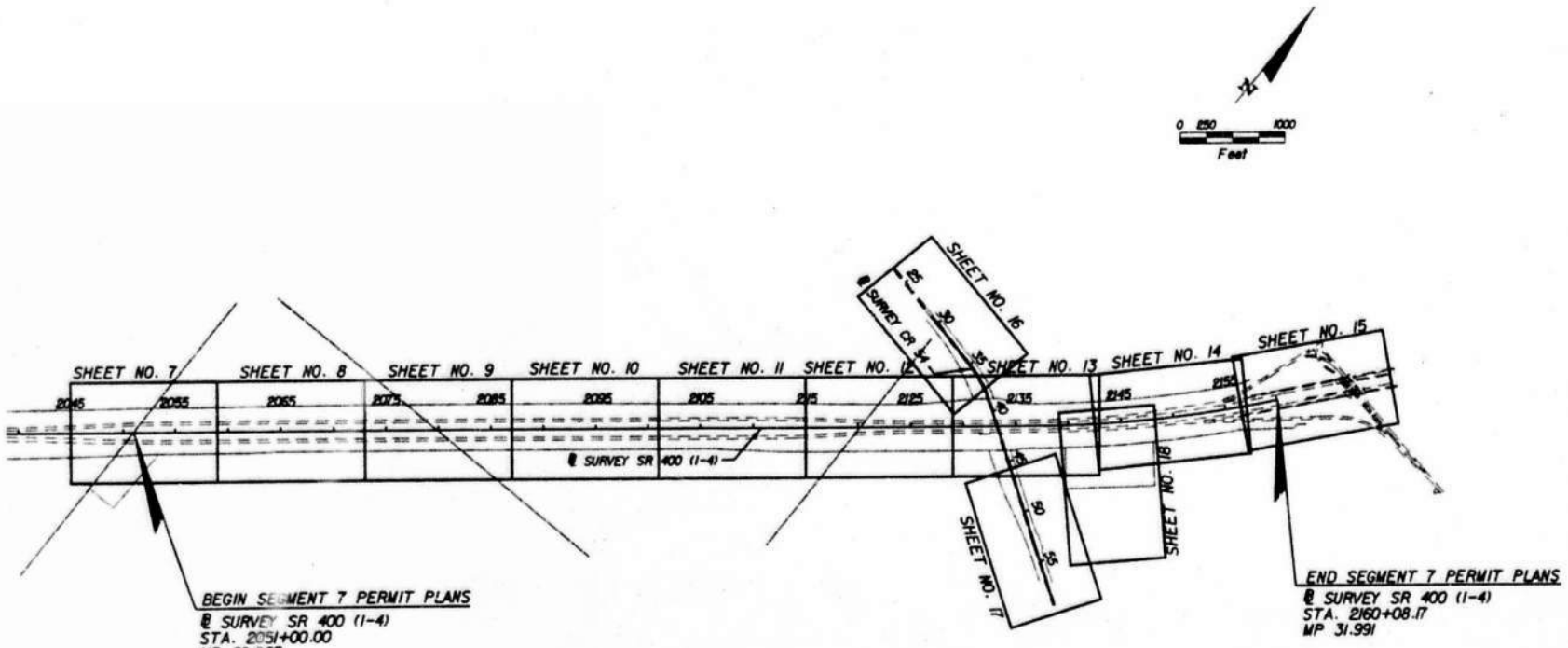
WILLIAM VEOH JR., P.E.
P.E. NO. 39650
12/23/02

PERMIT PLANS

REVISIONS						
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Jacobs Civil Inc.
4530 Highwoods Preserve Parkway
Highwoods Preserve Suite 200
Tampa, FL 33624
Tel. (813) 287-3434
FAX 6071

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			GENERAL NOTES SEGMENT 7	SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT		
SR 400	POLK	201204-1		5



WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Suite 200
Tampa, FL 33610
Tel. 813/87-3434
EB 6571

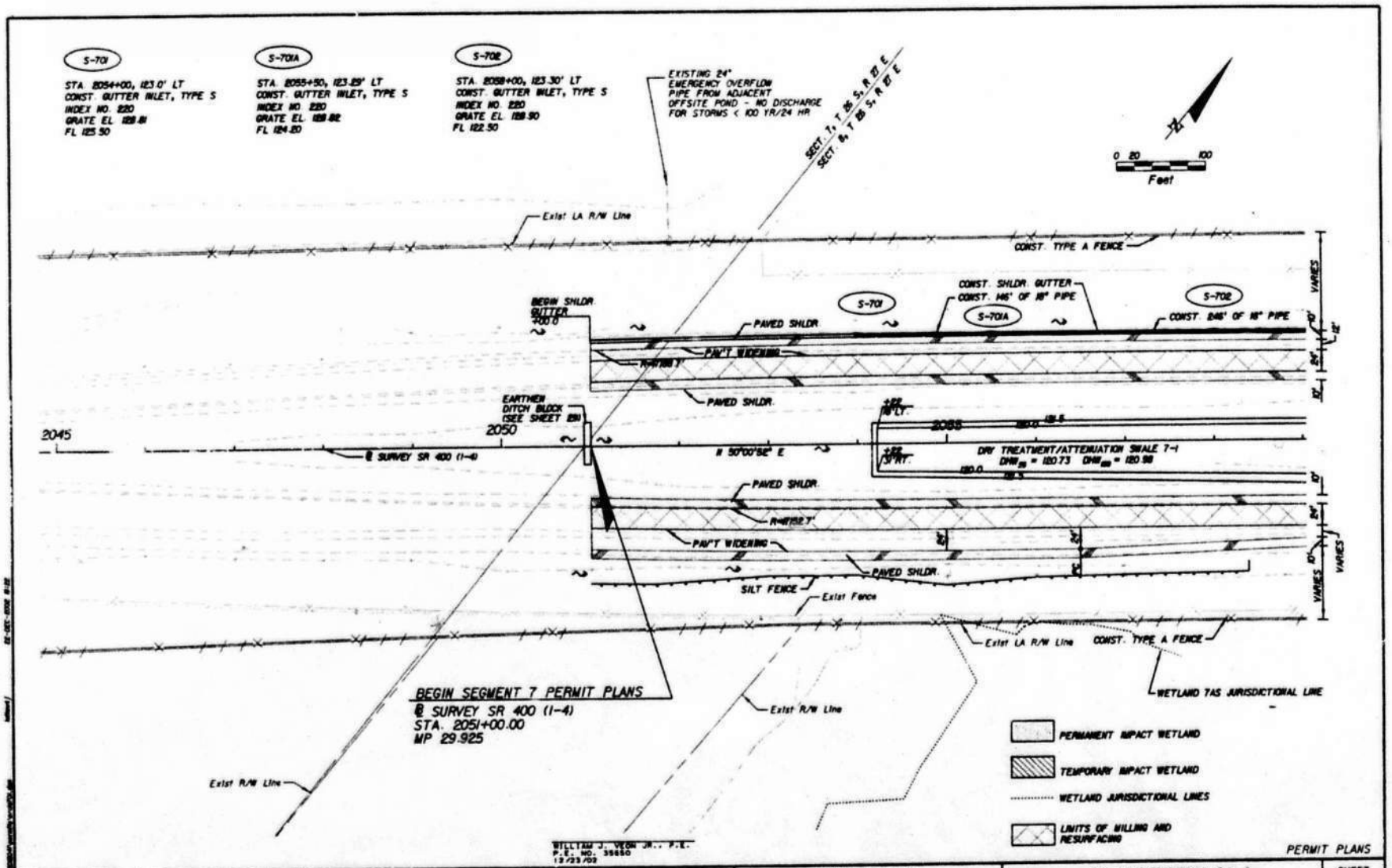
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PROJECT LAYOUT
I-4 (SEGMENT 7)

SHEET NO. 6

330 E-41



WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/09

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

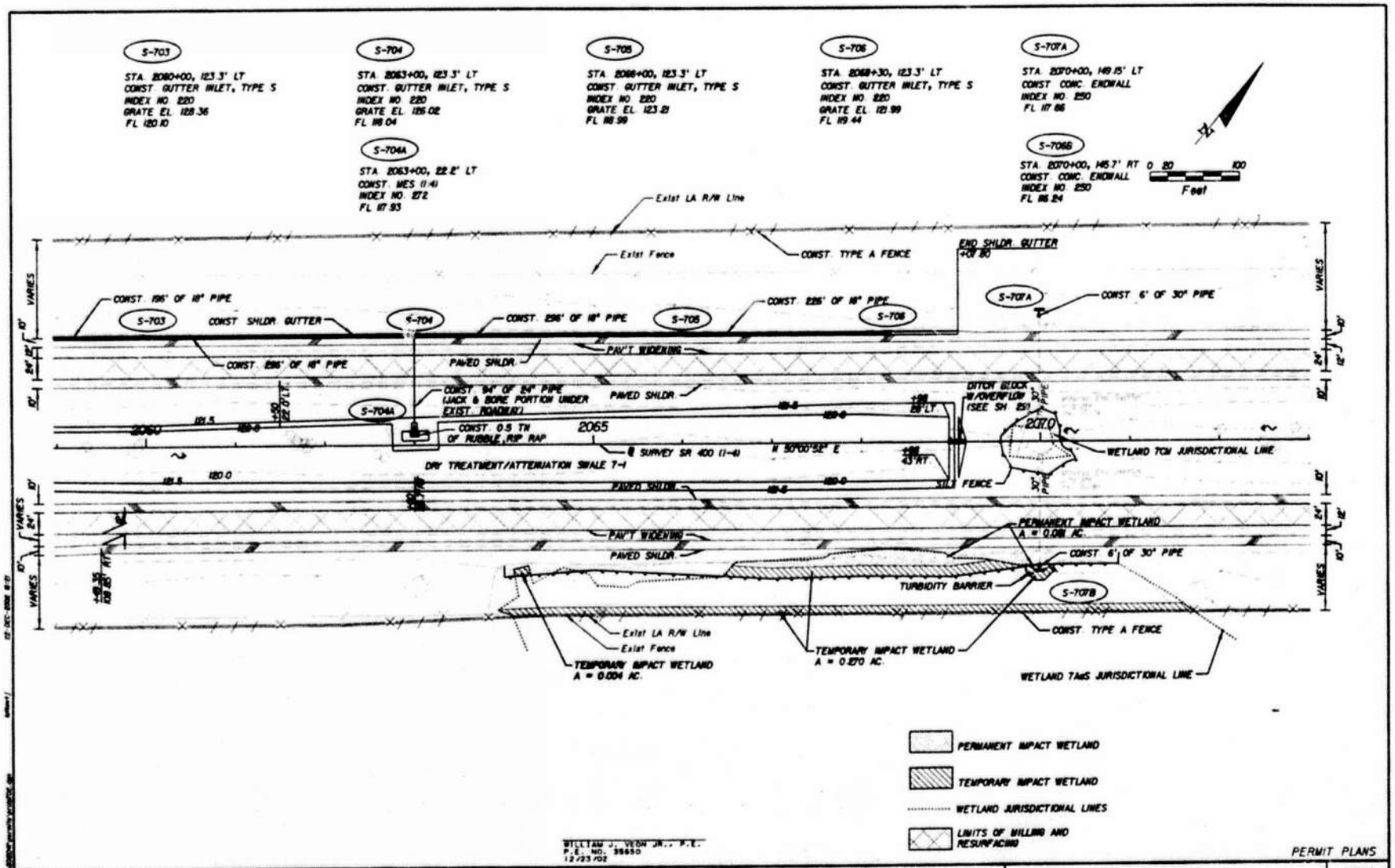
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (1)
BEGIN CONSTRUCTION SEGMENT 7 TO STA 2069+00

SHEET NO. 7

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed
DEC 30 2009
ERP
SWFWMD
PROJECTS & DATA



WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/02

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highlands Preserve Parkway, Suite 800
Tampa, FL 33647
Tel. (813) 971-3434
FAX 6972

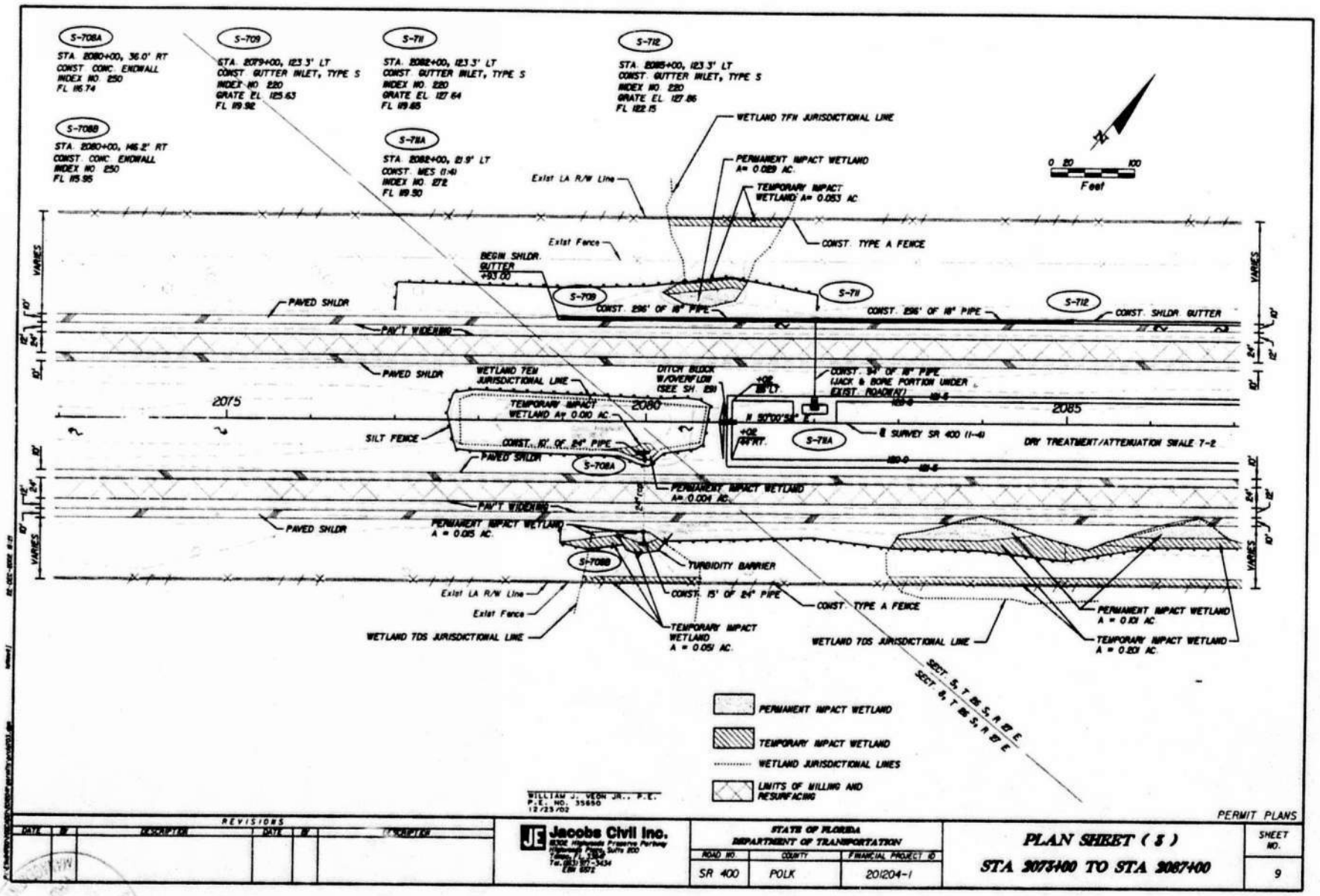
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

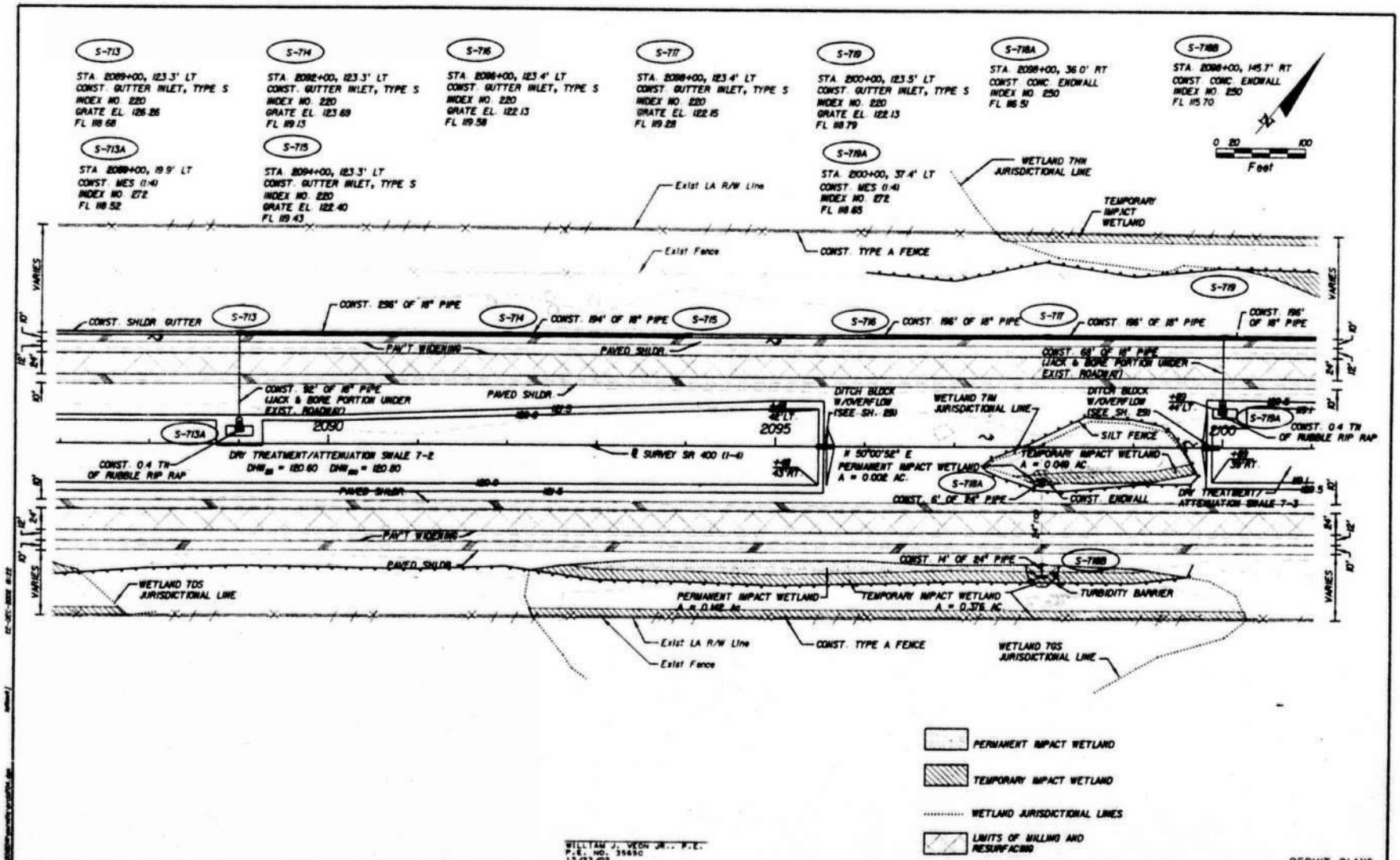
PLAN SHEET (2)
STA 2059+00 TO STA 2073+00

SHEET NO. 8

332


S-708A
STA. 2080+00, 36.0' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 116.74
S-708B
STA. 2080+00, 146.2' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 115.95
S-709
STA. 2079+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 125.63
FL 119.92
S-711
STA. 2082+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 127.64
FL 119.65
S-711A
STA. 2082+00, 121.9' LT
CONST. MES (1:4)
INDEX NO. 272
FL 119.50
S-712
STA. 2085+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 127.86
FL 122.15
WETLAND 7FH JURISDICTIONAL LINE
PERMANENT IMPACT WETLAND
A= 0.029 AC.
TEMPORARY IMPACT
WETLAND A= 0.053 AC.
Exist LA R/W Line
Exist Fence
CONST. TYPE A FENCE
BEGIN SHLDR. GUTTER +93.00
PAVED SHLDR
PAV'T WIDENING
CONST. 296' OF 18" PIPE
CONST. SHLDR GUTTER
WETLAND 7EN JURISDICTIONAL LINE
DITCH BLOCK W/OVERFLOW (SEE SH. 29)
TEMPORARY IMPACT WETLAND A= 0.010 AC.
CONST. 94' OF 18" PIPE (JACK & BORE PORTION UNDER EXIST. ROADWAY)
2075
2080
2085
N 90°00'54" E
℄ SURVEY SR 400 (I-4)
DRY TREATMENT/ATTENUATION SWALE 7-2
SILT FENCE
CONST. 10' OF 24" PIPE
PERMANENT IMPACT WETLAND
A= 0.004 AC.
PERMANENT IMPACT WETLAND
A = 0.015 AC.
TURBIDITY BARRIER
CONST. 15' OF 24" PIPE
TEMPORARY IMPACT WETLAND
A = 0.051 AC.
WETLAND 7DS JURISDICTIONAL LINE
PERMANENT IMPACT WETLAND
A = 0.101 AC.
TEMPORARY IMPACT WETLAND
A = 0.201 AC.
VARIES
SECT 5, T 28 S, R 27 E
SECT 8, T 28 S, R 27 E
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
WETLAND JURISDICTIONAL LINES
LIMITS OF MILLING AND RESURFACING
0 20 100
Feet
WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02
PERMIT PLANS
REVISIONS
DATE | BY | DESCRIPTION
Jacobs Civil Inc.
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
ROAD NO. | COUNTY | FINANCIAL PROJECT ID
SR 400 | POLK | 201204-1
PLAN SHEET (8)
STA 2073+00 TO STA 2087+00
SHEET NO. 9

333



WILLIAM J. VEON JR., P.E.
P.E. NO. 39690
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

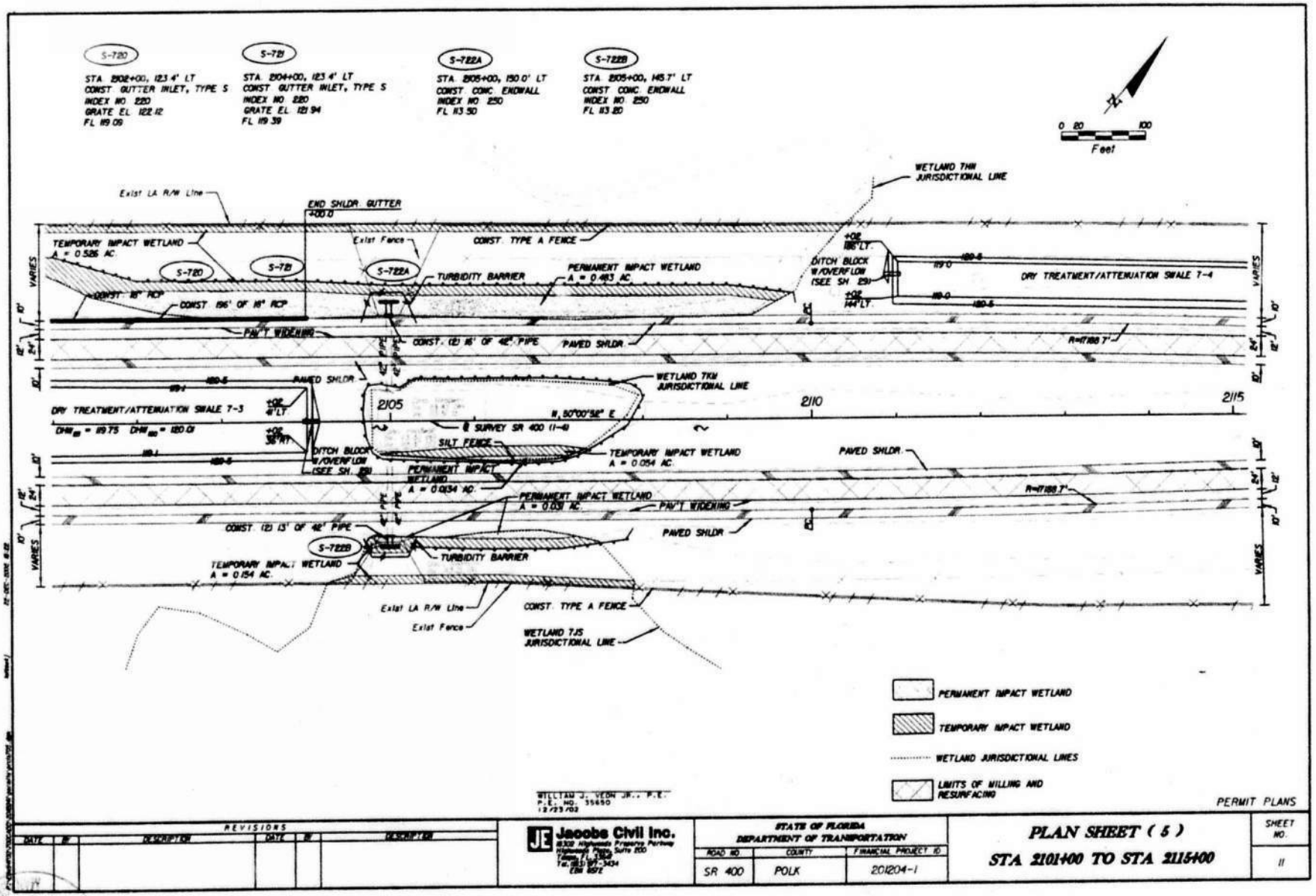
Jacobs Civil Inc.
4308 Highwoods Preserve Parkway
Suite 320
Tampa, FL 33610
Tel. (813) 397-3434
EB# 6972

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (4)
STA 2087+00 TO STA 2101+00

SHEET NO. 10

334



WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Preserve, Suite 150
Tampa, FL 33610
Tel. (813) 972-3434
EB# 1972

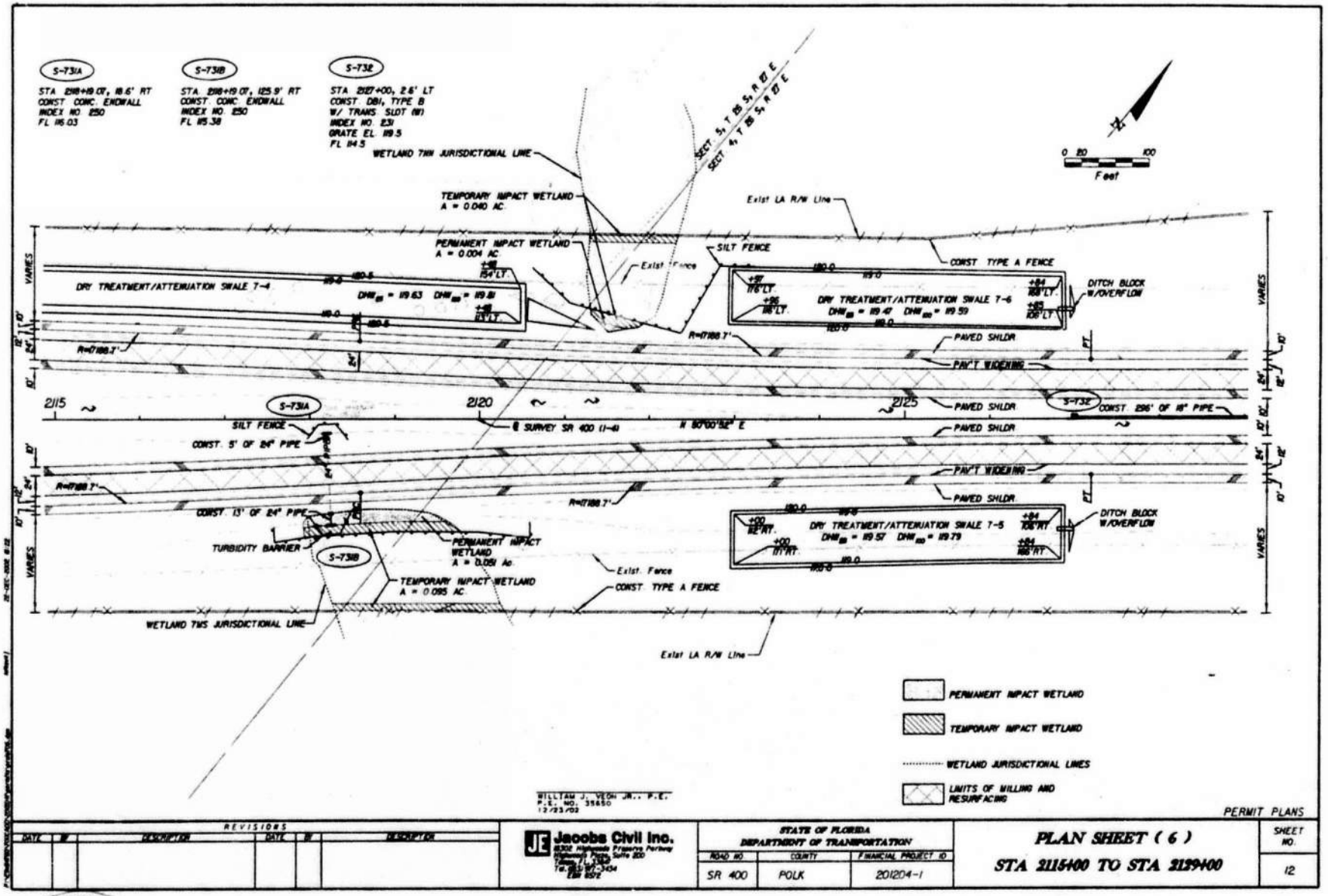
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (5)

STA 2101400 TO STA 2115400

SHEET NO. 11



WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

PERMIT PLANS

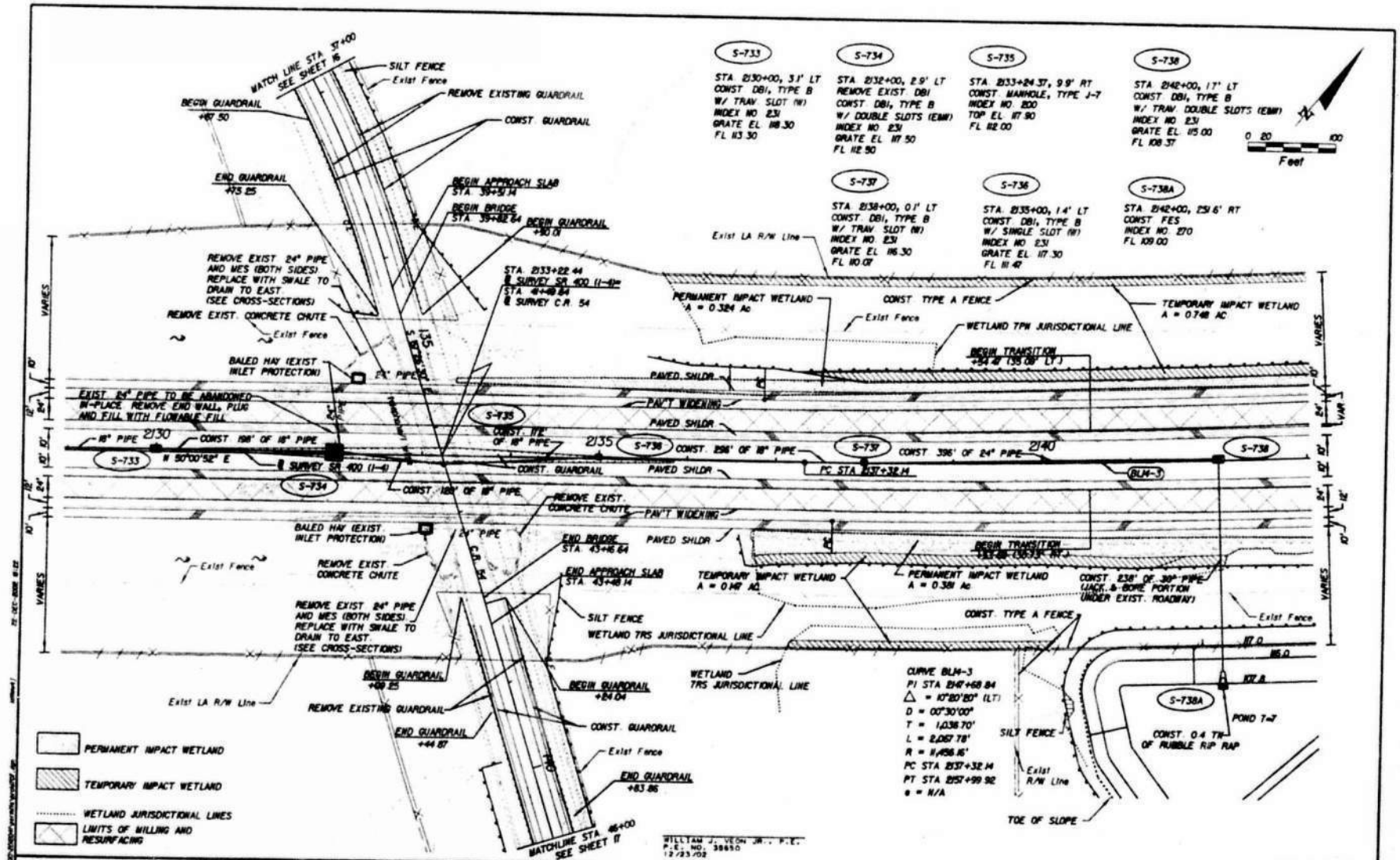
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods I, Suite 200
Tampa, FL 33610
Tel. (813) 977-3454
EB# 1572

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120A-1

PLAN SHEET (6)
STA 2115400 TO STA 2129400

SHEET NO. 12



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

WILLIAM J. VEACH JR., P.E. P.E. NO. 39650 12/23/02

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PERMIT PLANS

PLAN SHEET (7)

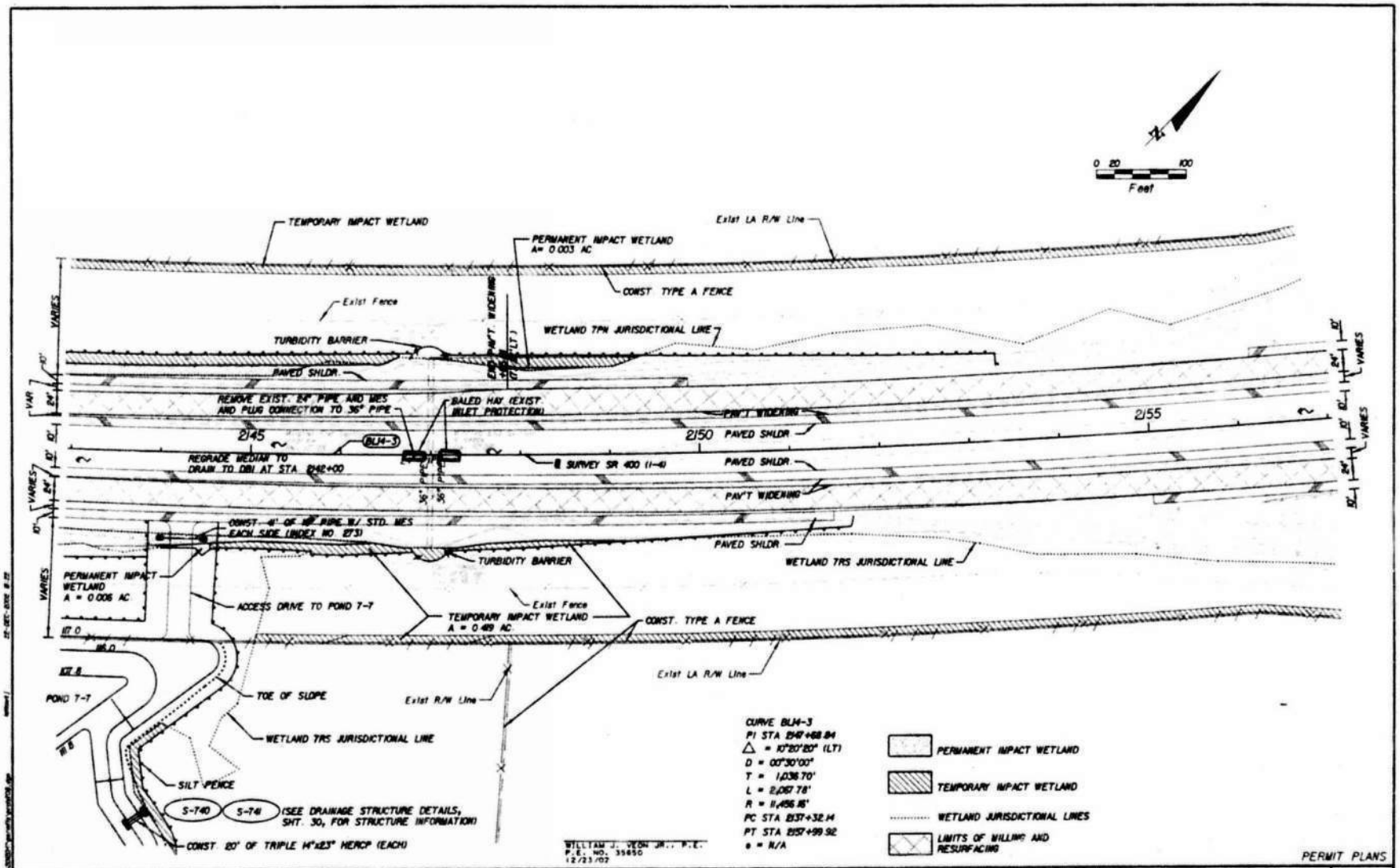
STA 2139+00 TO STA 2143+00

SHEET NO. 13

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT Approved

E-48

337



WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/07

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6300 Hazeltine Preserve Parkway
Hillsborough County, Suite 200
Tampa, FL 33647
Tel. (813) 871-3434
FAX 6072

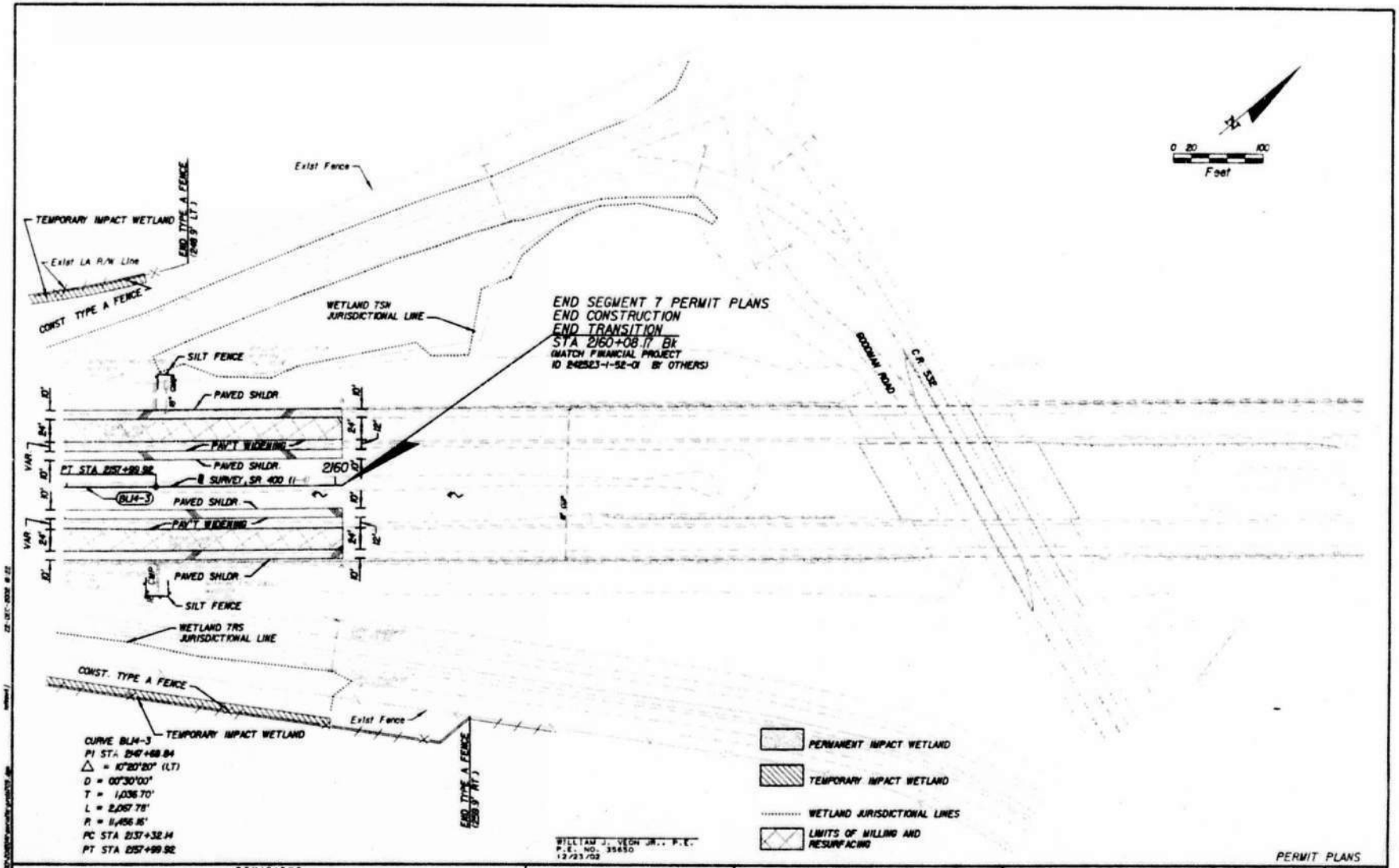
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (8)

STA 2143+00 TO STA 2157+00

SHEET NO. 14



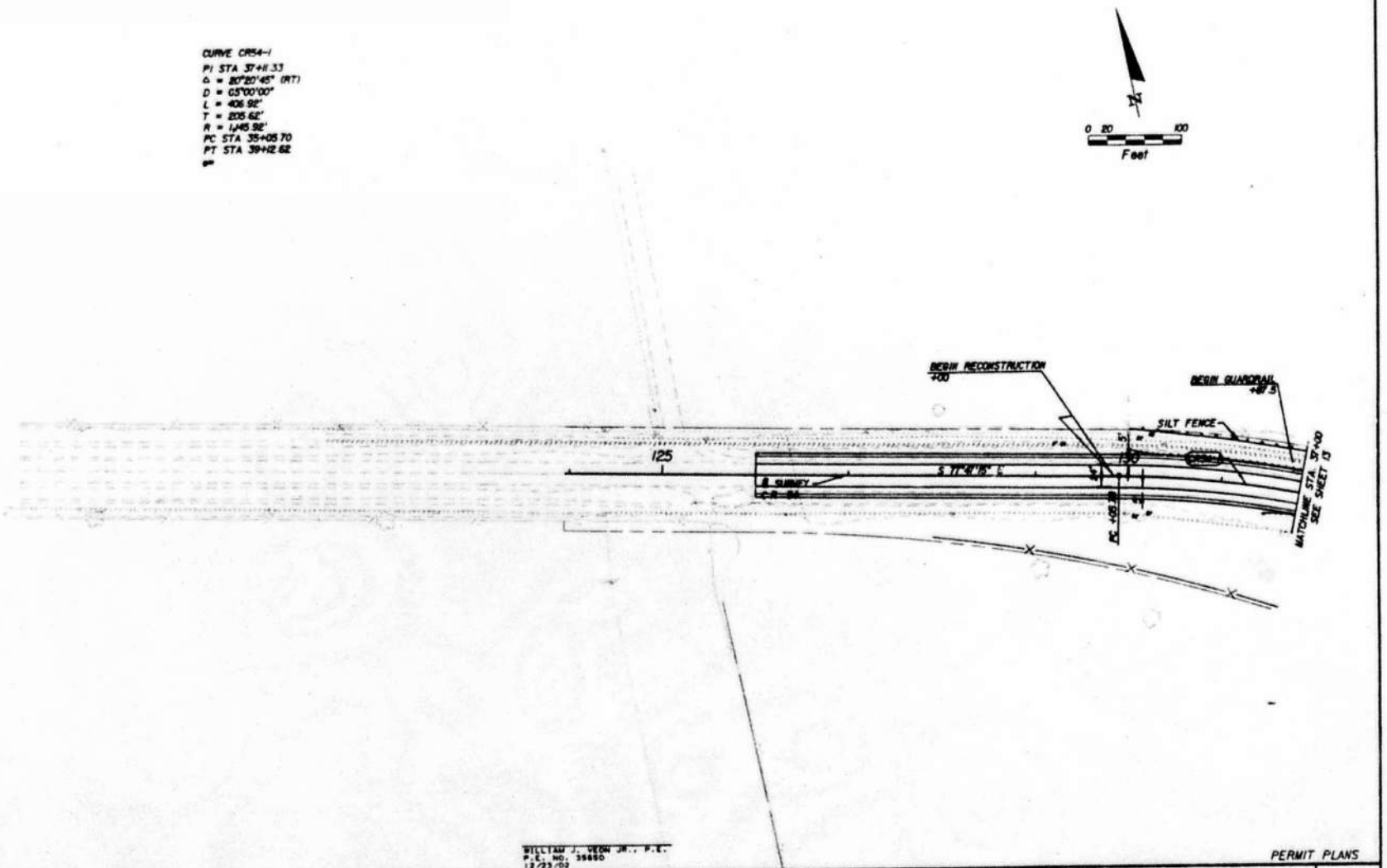
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8308 Highwoods Preserve Parkway
Highwoods Preserve, Suite 200
Tampa, FL 33610
Tel. (813) 972-3434
EB# 6572

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PLAN SHEET (9) STA 2157+00 TO END CONSTRUCTION SEGMENT 7	SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
SR 400	POLK	201204-1		15

339

CURVE CR54-1
PI STA 37+18.33
Δ = 80°20'45" (RT)
D = 05°00'00"
L = 406.92'
T = 235.62'
R = 1145.92'
PC STA 35+05.70
PT STA 39+12.62



WILLIAM J. DEON JR., P.E.
P.E. NO. 39690
12/23/02

PERMIT PLANS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Highwoods Preserve Parkway
Suite 200
Tel. (813) 977-3434
Fax 9572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

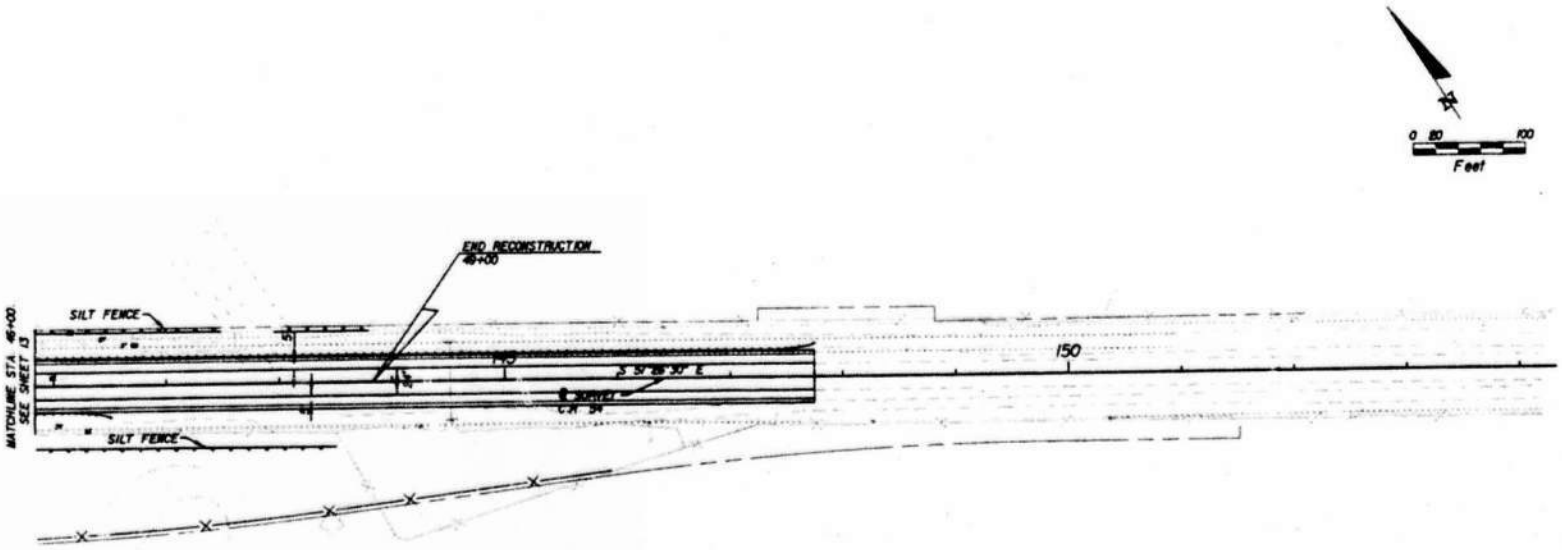
PLAN SHEET (10)
C.R. 54

SHEET NO. 16

Approved
SWFWMD
SURFACE WATER MANAGEMENT DISTRICT

340

E-51



WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/02

PERMIT PLANS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Suite 200
Tampa, FL 33610
Tel. (813) 87-3434
EB 597

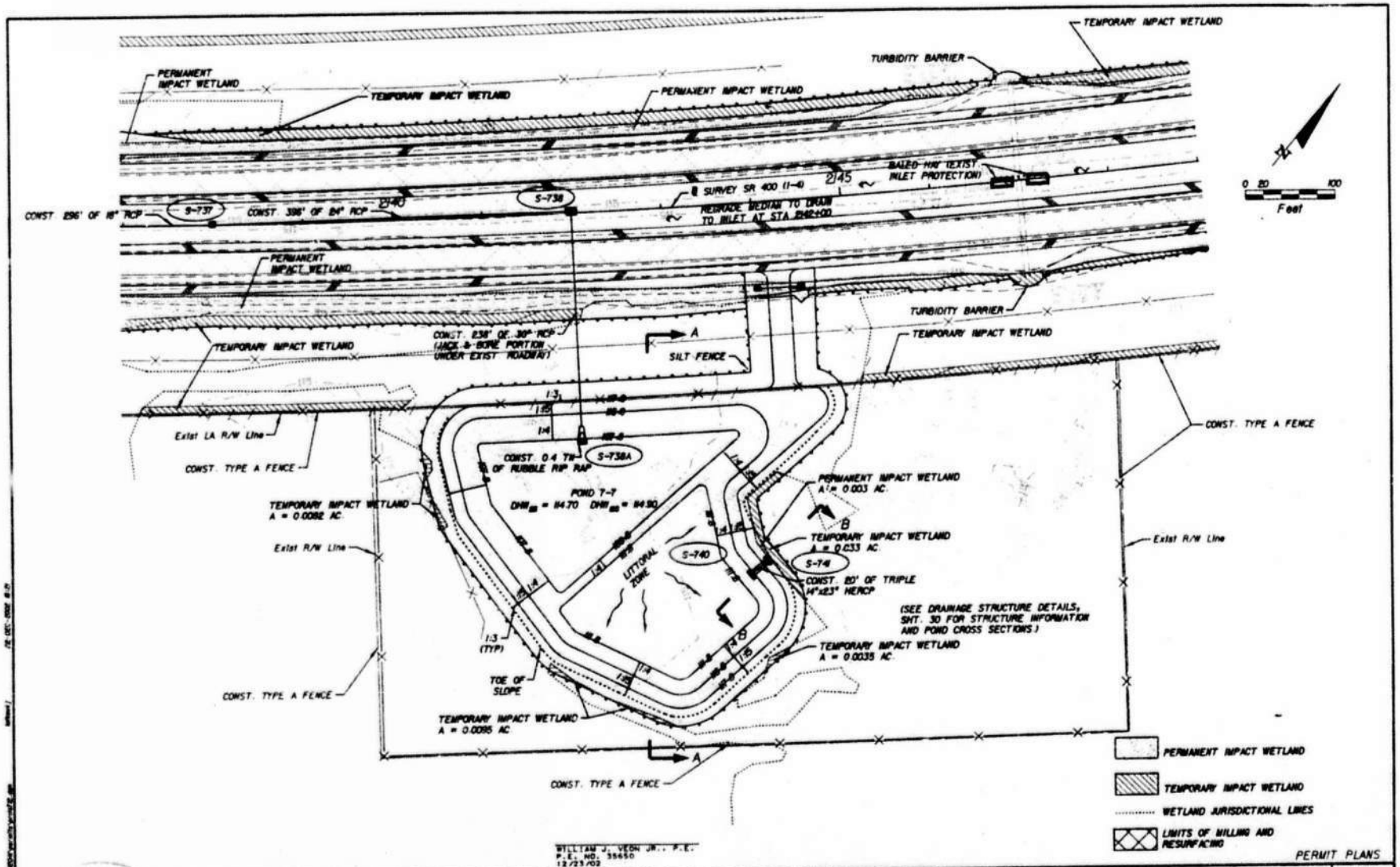
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (II)
C.R. 54

SHEET NO. 17

341



WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

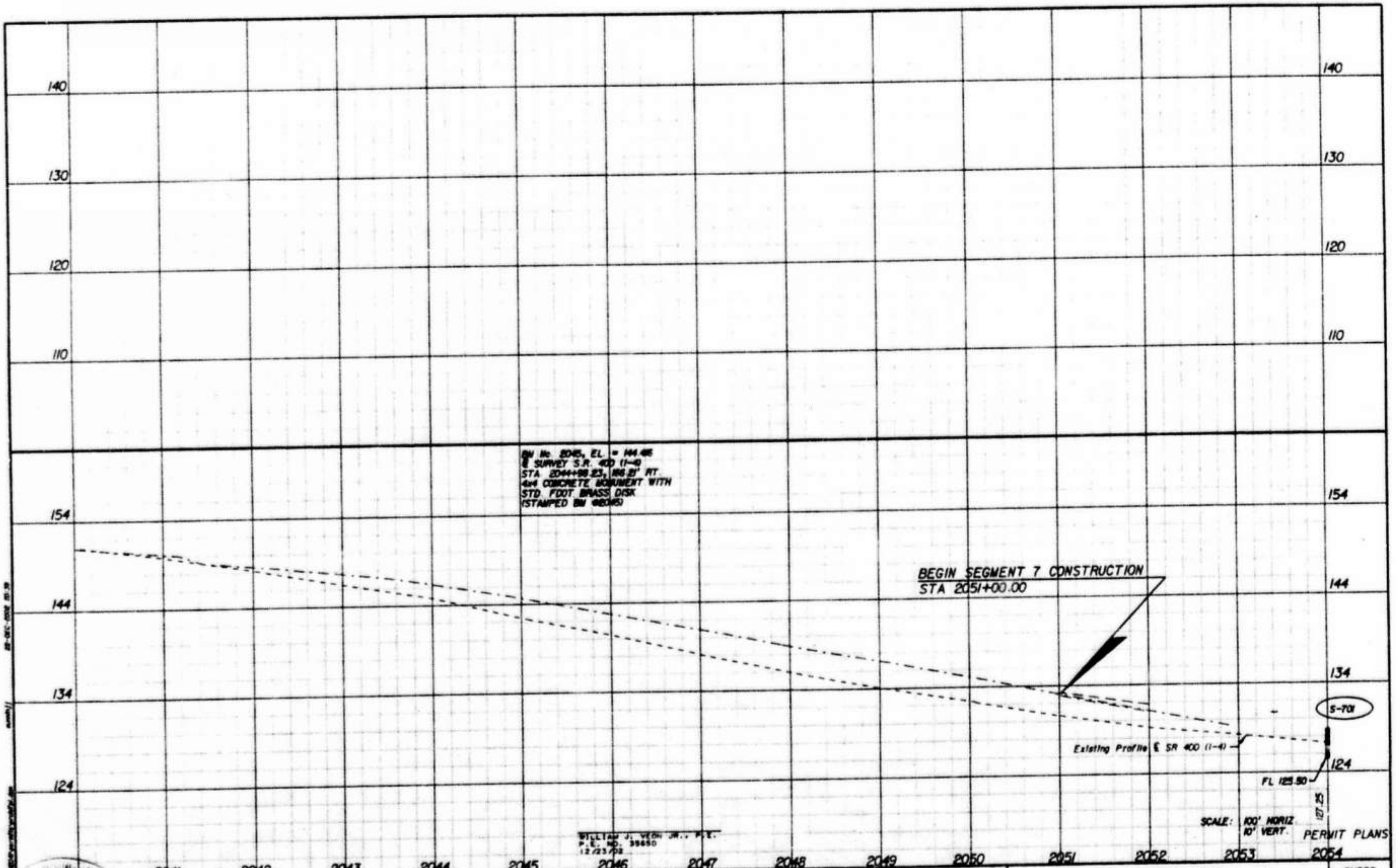
Jacobs Civil Inc.
8300 Hillsboro Parkway, Suite 200
Tampa, FL 33637
Tel. (813) 977-3454
Fax 6972

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120A-1

PLAN SHEET (12)
POND 7-7

SHEET NO. 18



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

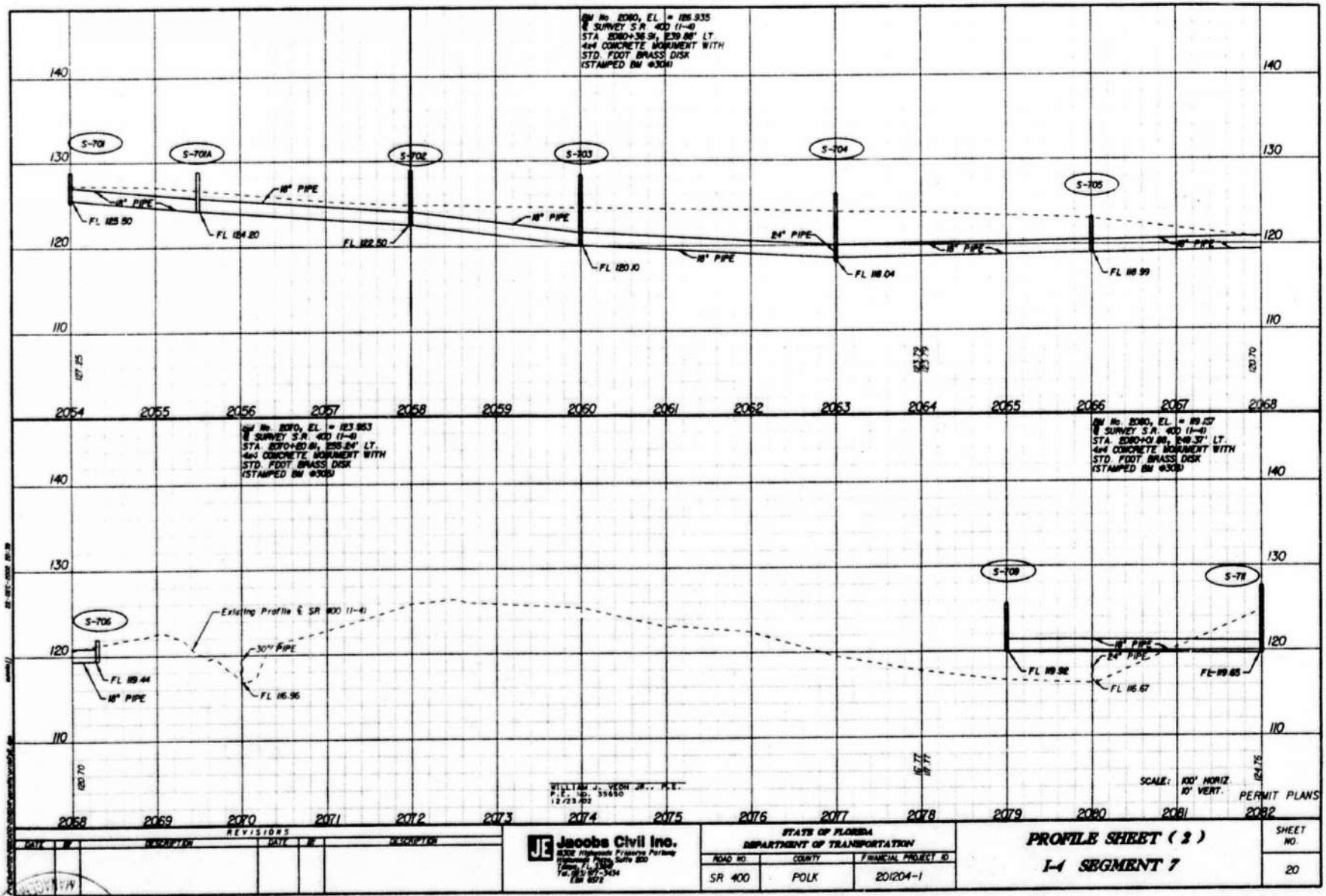
PROFILE SHEET (1)

I-4 SEGMENT 7

SHEET NO. 19

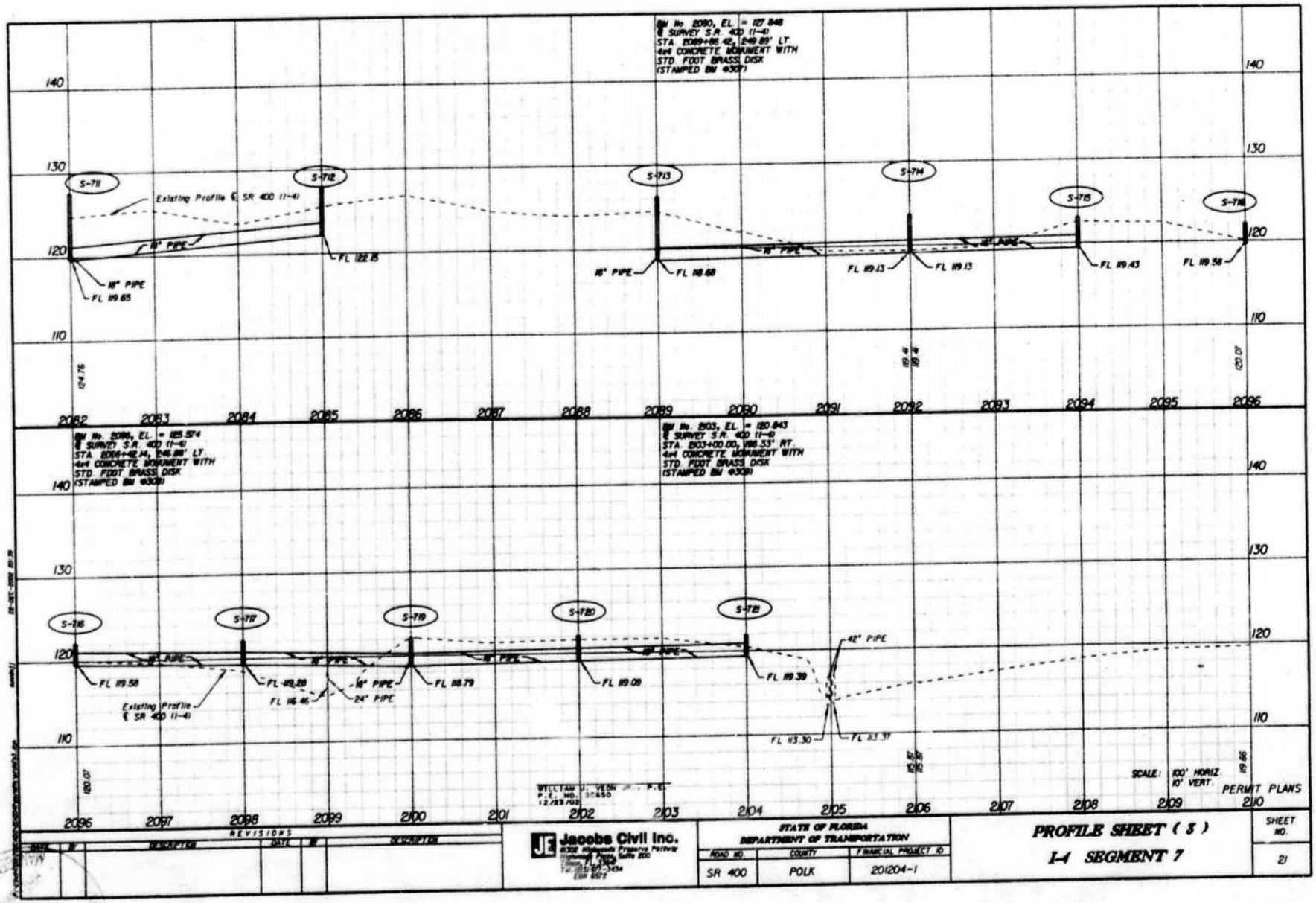
E-54

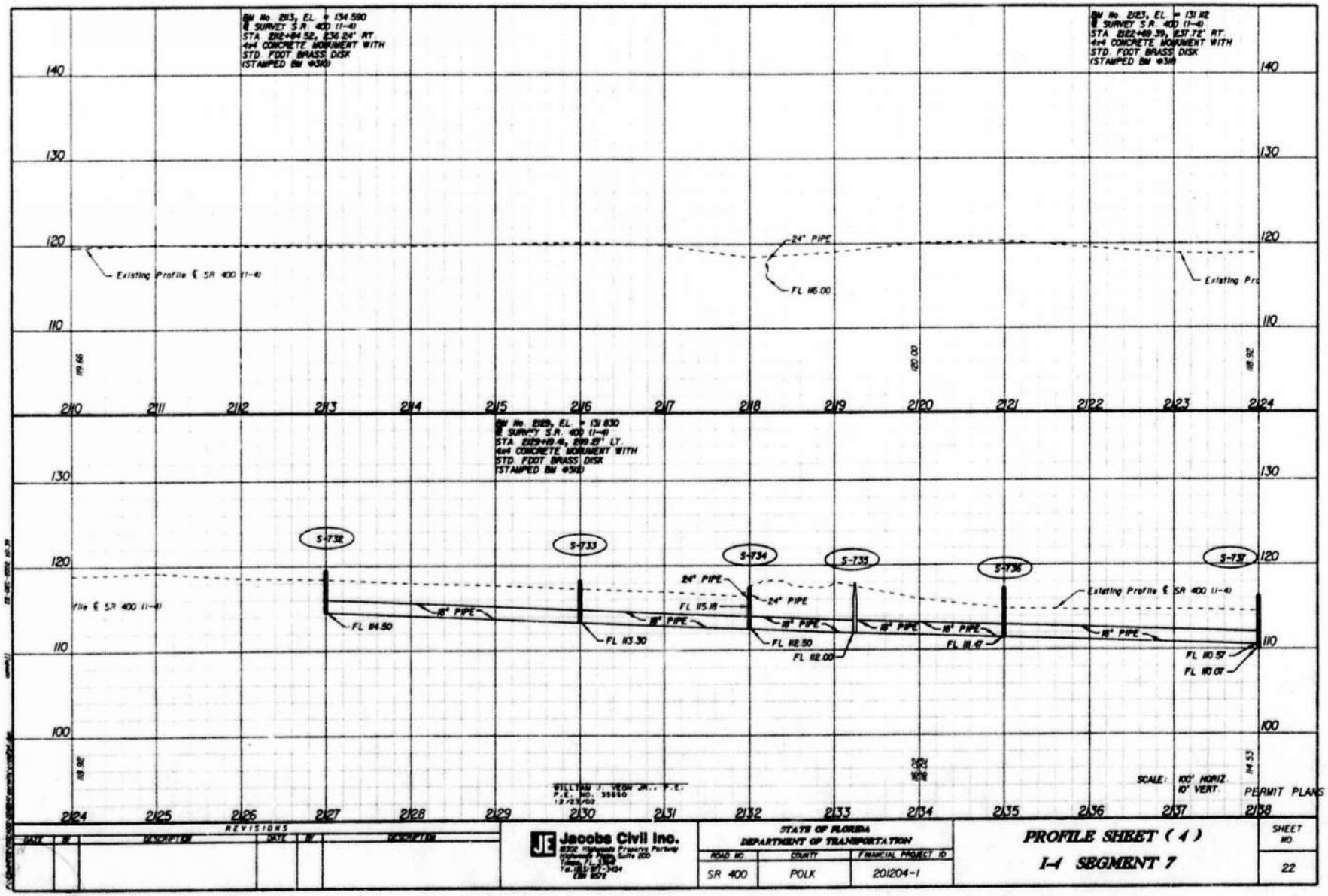
343

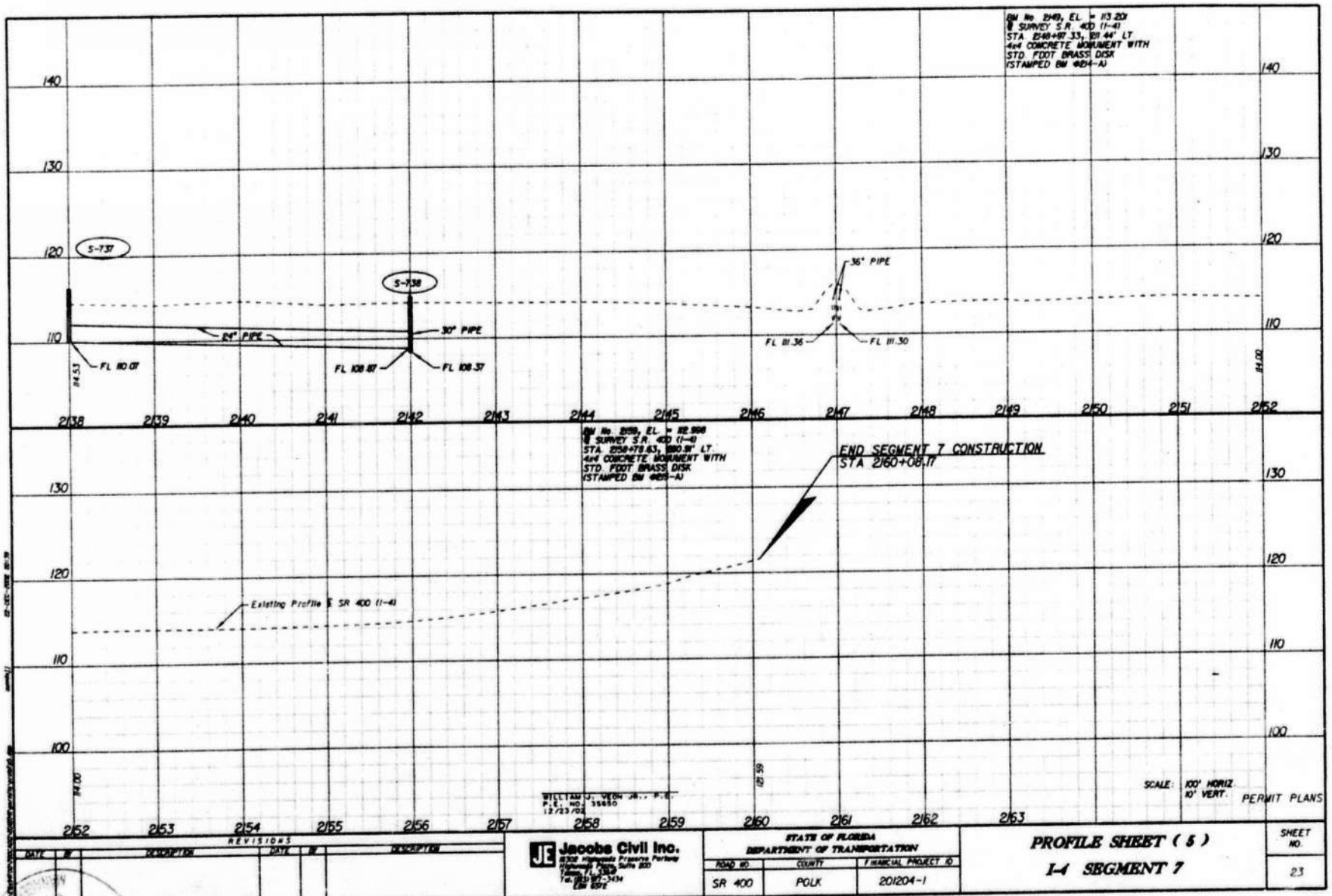

BM No. 2080, EL. = 186.935
℄ SURVEY S.R. 400 (I-4)
STA. 2080+36.39, 1239.88' LT.
4x4 CONCRETE MONUMENT WITH
STD. FDOT BRASS DISK
(STAMPED BM #3014)
S-701
S-701A
S-702
S-703
S-704
S-705
18" PIPE
FL 125.50
FL 124.20
FL 122.50
FL 120.10
24" PIPE
FL 118.04
FL 118.99
BM No. 2080, EL. = 183.953
℄ SURVEY S.R. 400 (I-4)
STA. 2070+60.81, 1255.24' LT.
4x4 CONCRETE MONUMENT WITH
STD. FDOT BRASS DISK
(STAMPED BM #3015)
BM No. 2080, EL. = 119.137
℄ SURVEY S.R. 400 (I-4)
STA. 2080+01.86, 1249.37' LT.
4x4 CONCRETE MONUMENT WITH
STD. FDOT BRASS DISK
(STAMPED BM #3013)
S-706
Existing Profile ℄ SR 400 (I-4)
30" PIPE
FL 119.44
18" PIPE
FL 116.96
S-709
S-711
FL 119.92
FL 116.67
FL 119.65
WILLIAM J. VEOH JR., P.E.
P.E. NO. 39650
12/23/02
SCALE: 100' HORIZ.
10' VERT.
PERMIT PLANS
REVISIONS
DATE
BY
DESCRIPTION
Jacobs Civil Inc.
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
ROAD NO.
COUNTY
FINANCIAL PROJECT ID
SR 400
POLK
201204-1
PROFILE SHEET (2)
I-4 SEGMENT 7
SHEET NO.
20

E-55

344







REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

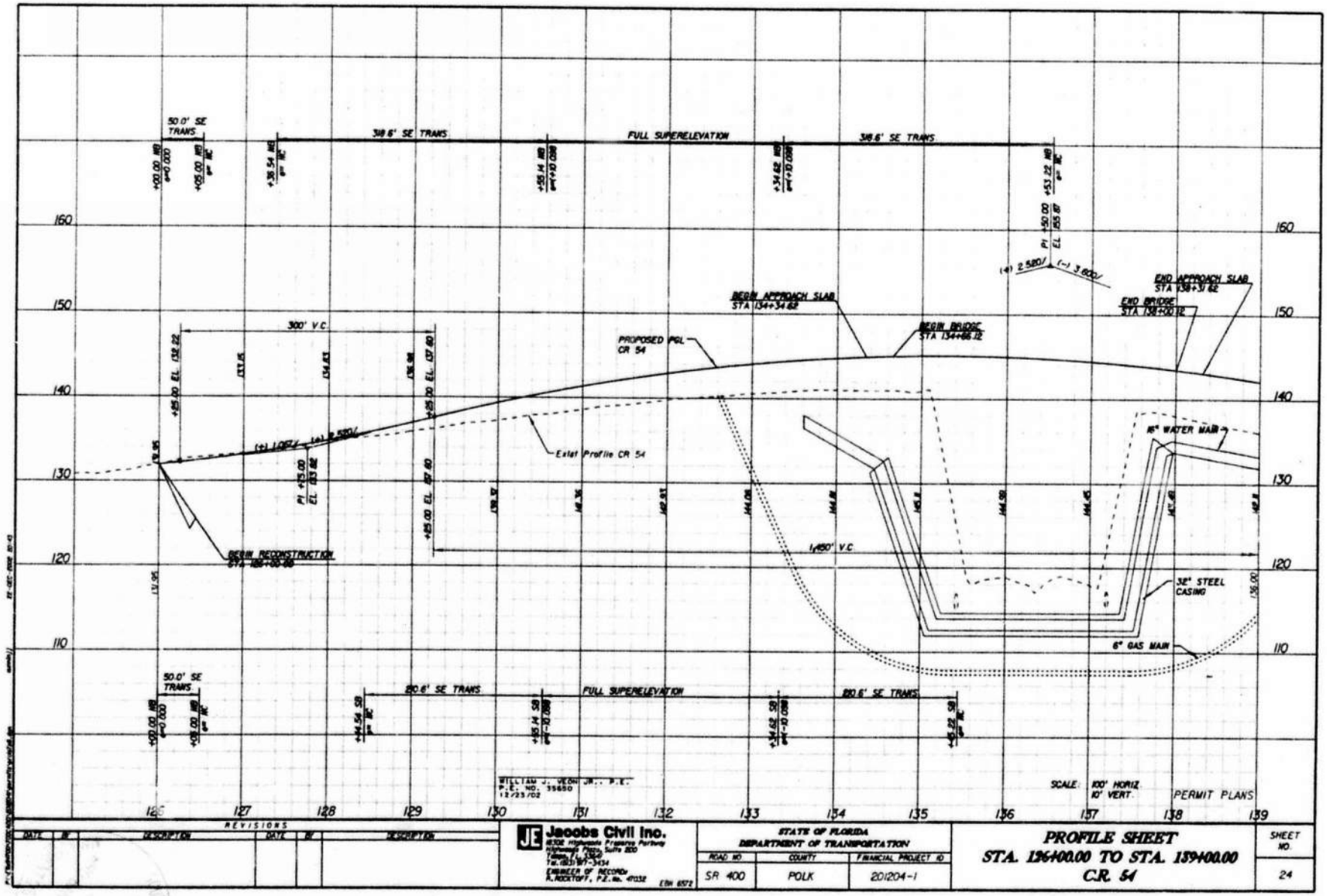
Jacobs Civil Inc.
8300 Hidden Pines Parkway
Tampa, FL 33637
Tel. (813) 972-3434
EB# 0042

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PROFILE SHEET (5)
I-4 SEGMENT 7

SHEET NO. 23



WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

SCALE: 100' HORIZ.
10' VERT.

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

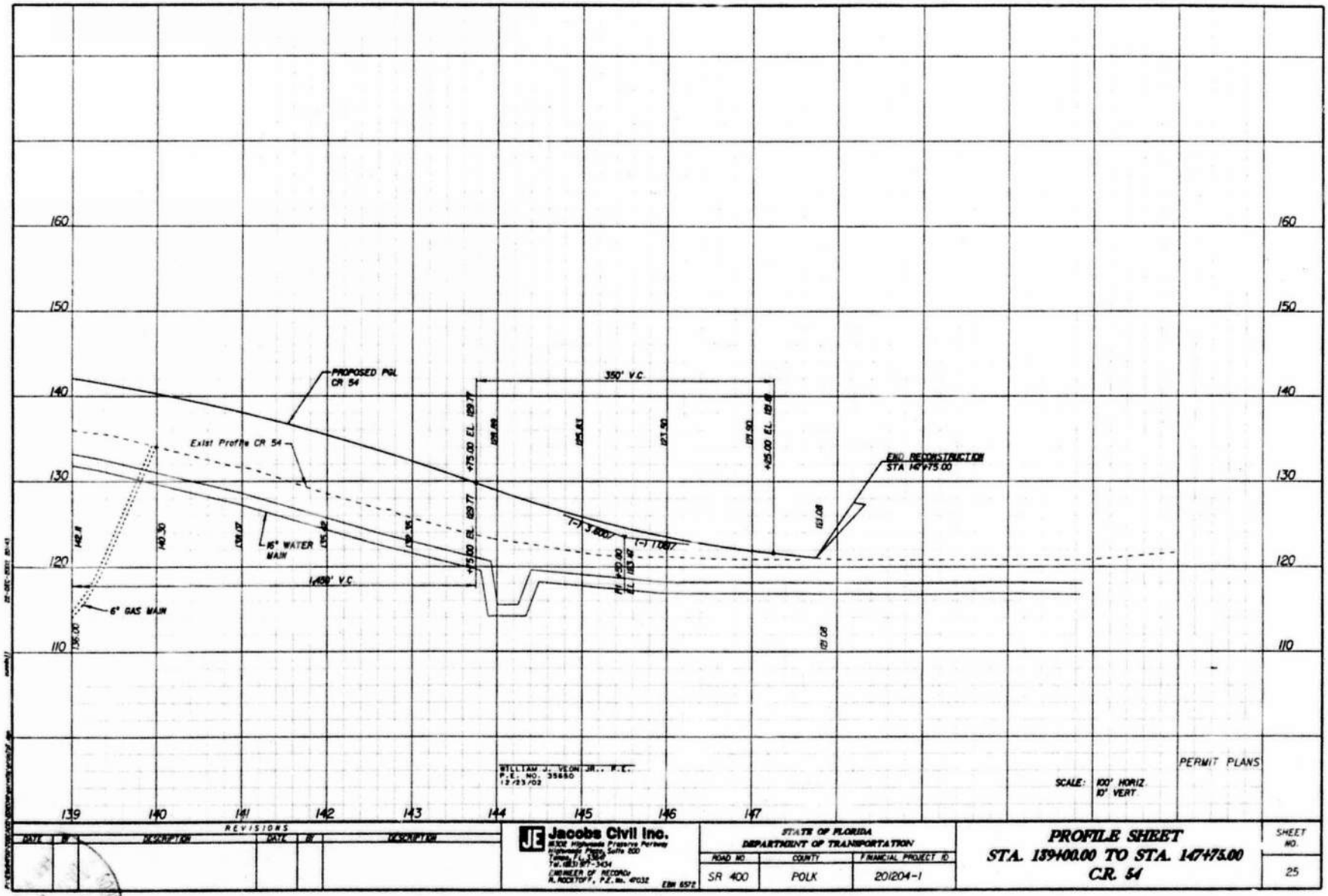
Jacobs Civil Inc.
6130E Highlands Progress Parkway
Hillsborough Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 971-3434
ENGINEER OF RECORD
R. ROSKTOFF, P.E. No. 49332
EB# 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PROFILE SHEET
STA. 126+00.00 TO STA. 139+00.00
CR. 54

SHEET NO. 24



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

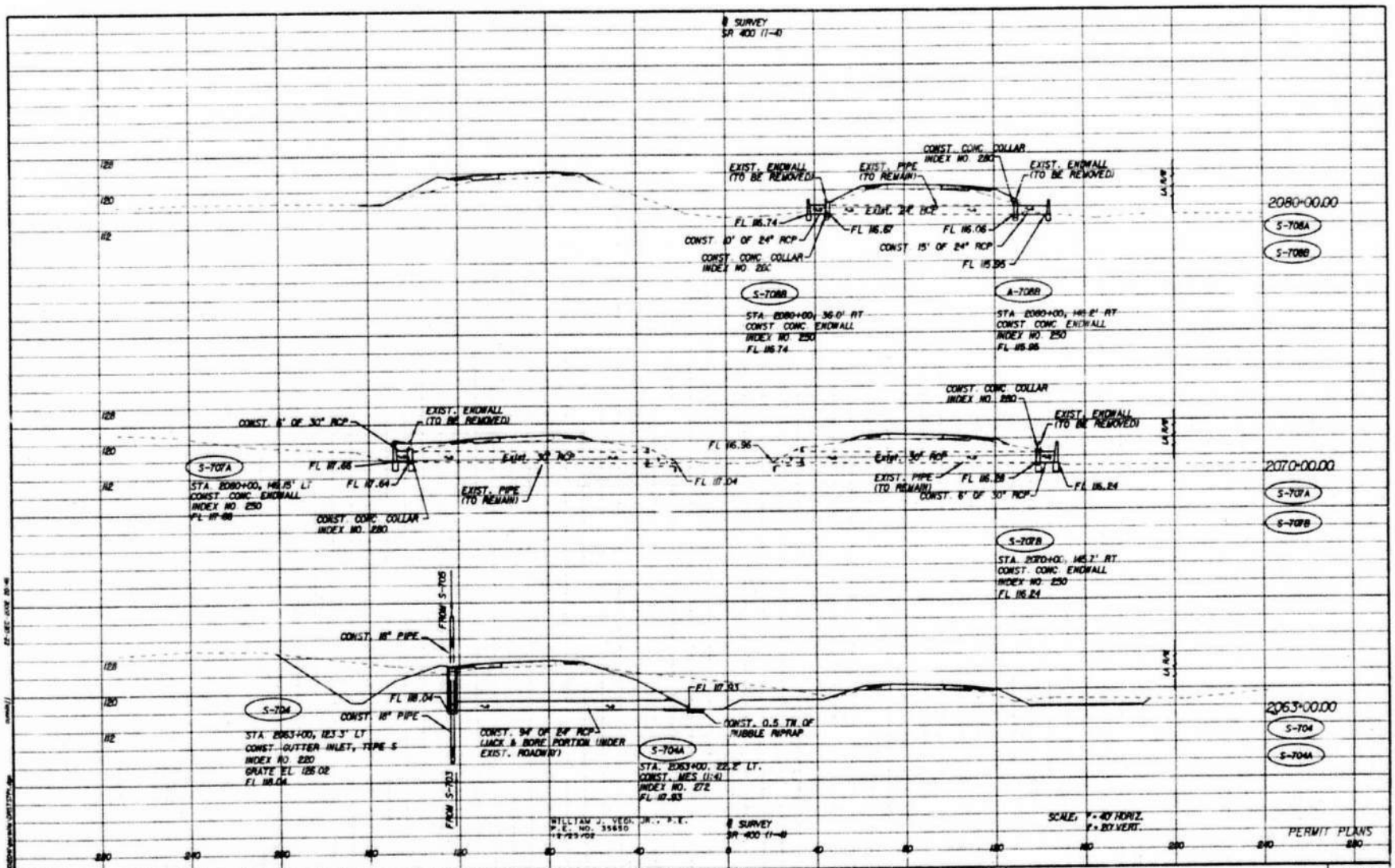
Jacobs Civil Inc.
8302 Highlands Preserve Parkway
Fishermen's Plaza Suite 200
Tampa, FL 33635
Tel. (813) 977-3434
(MEMBER OF RECORD)
A. ROSTOFF, P.E. No. 47032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PROFILE SHEET
STA. 139+00.00 TO STA. 147+75.00
CR. 54

SHEET NO. 25



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

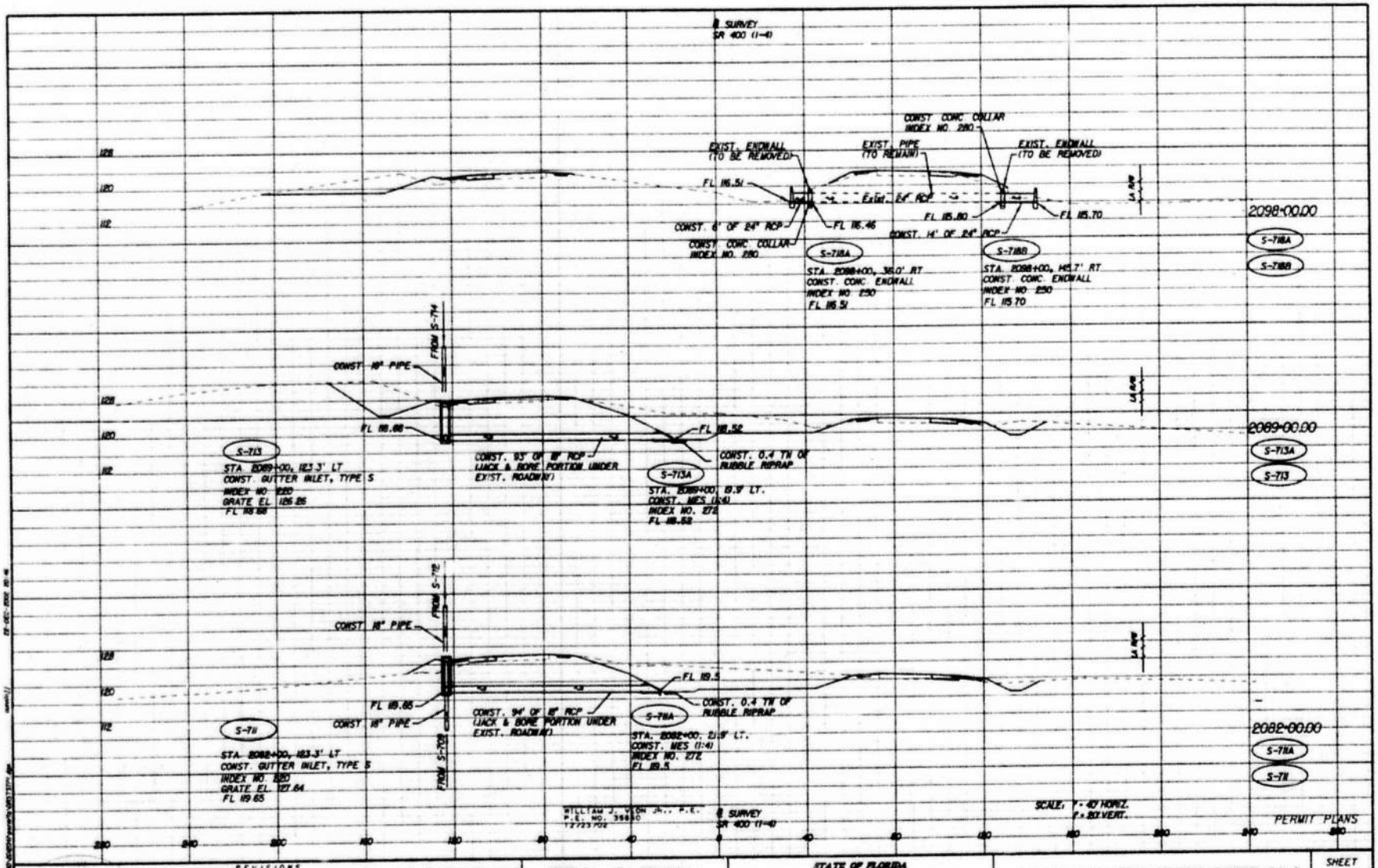
Jacobs Civil Inc.
11301 Corporate Blvd., Suite 100
Orlando, FL 32817
Tel. (407) 251-1177
Fax (407) 251-3454
EB 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

DRAINAGE STRUCTURE SHEET (1)
I-4 SEGMENT 7

SHEET NO. 26



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

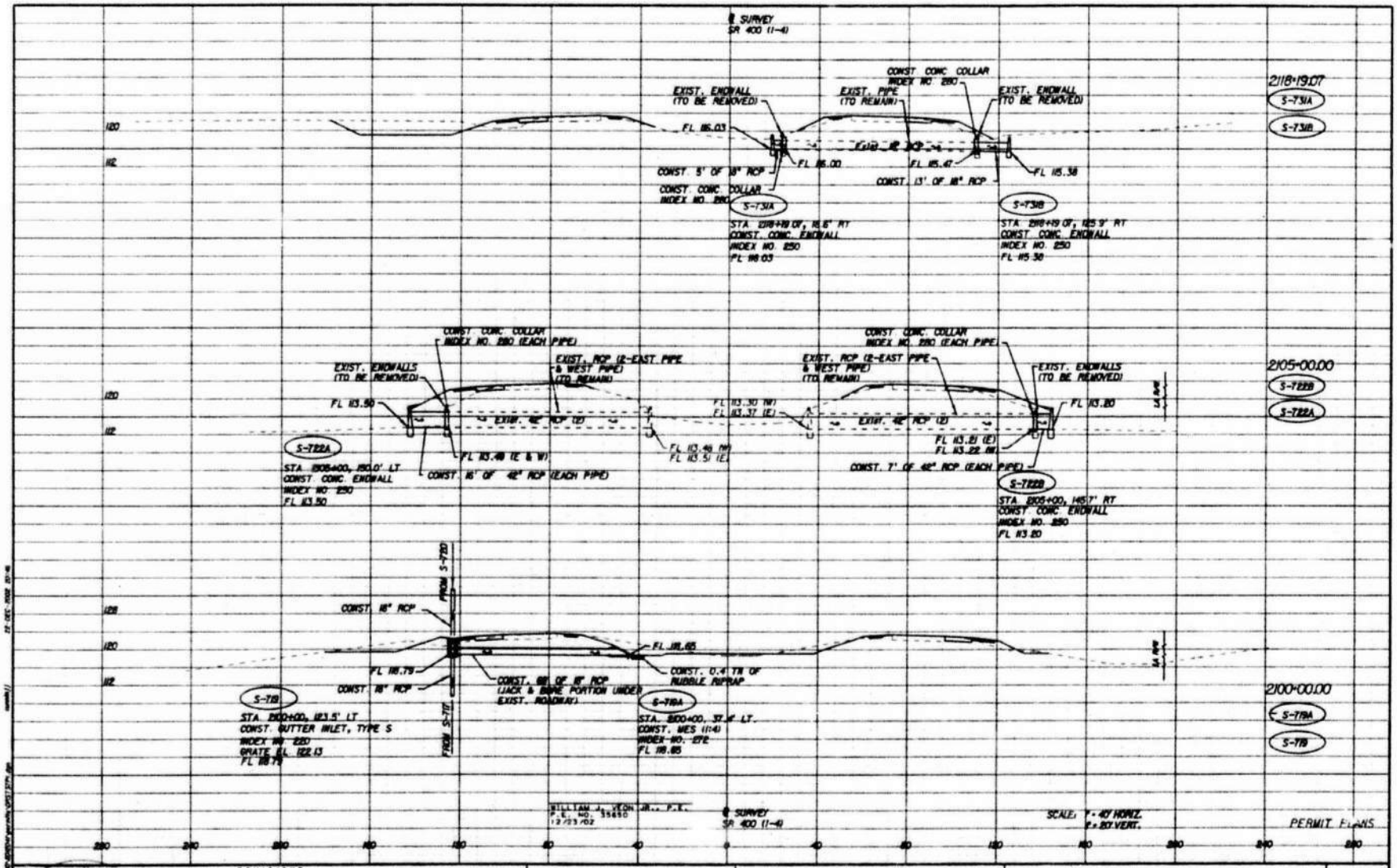
Jacobs Civil Inc.
8300 Highlands Parkway
Suite 200
Tel: (813) 971-3434
Fax: 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

DRAINAGE STRUCTURE SHEET (2)
I-4 SEGMENT 7

SHEET NO. 27



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

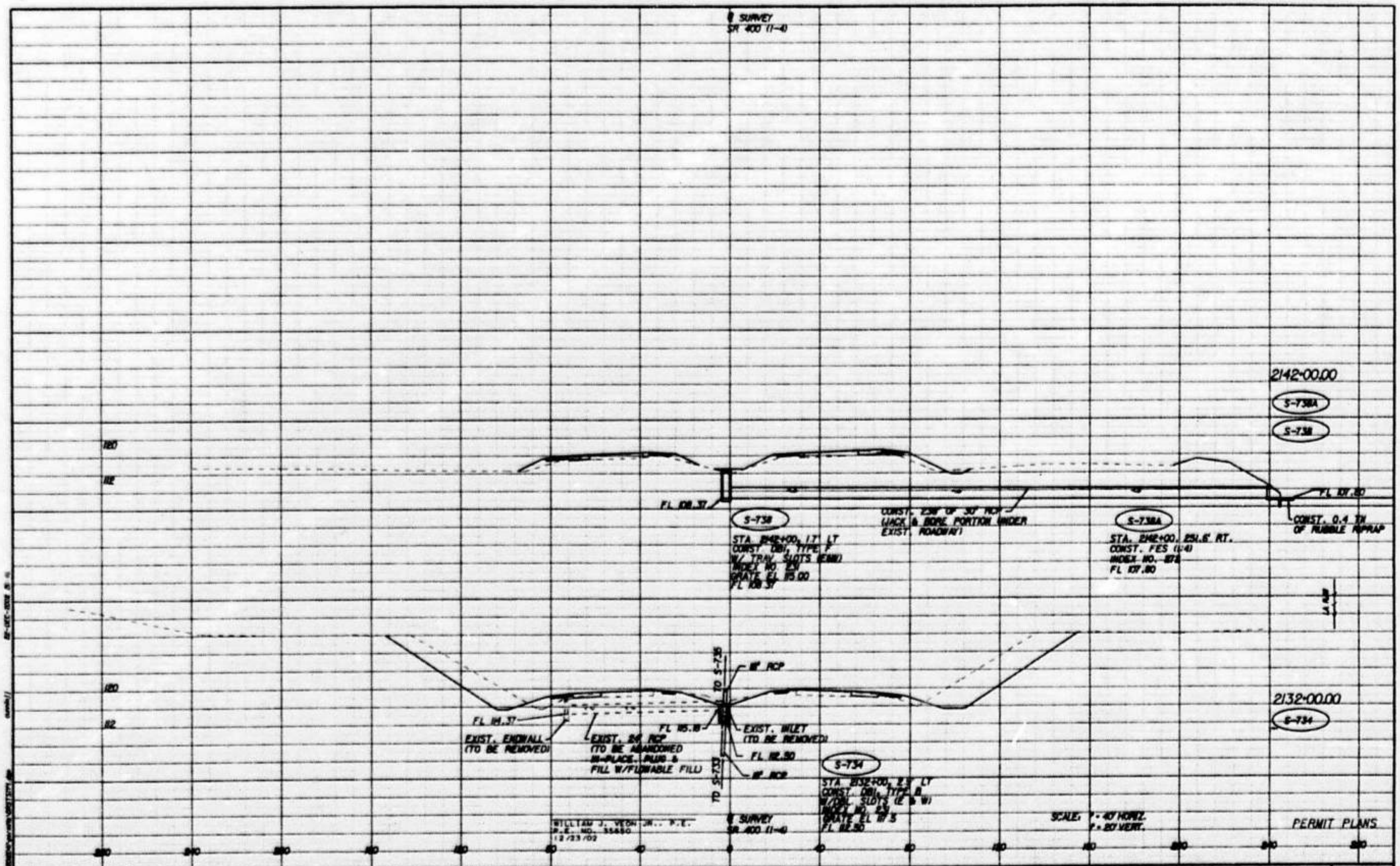
Jacobs Civil Inc.
11300 Highlands Preserve Parkway
Highlands Preserve Suite 200
Tampa, FL 33619
Tel. (813) 897-3434
EB# 1672

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

DRAINAGE STRUCTURE SHEET (3)
I-4 SEGMENT 7

SHEET NO. 28



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

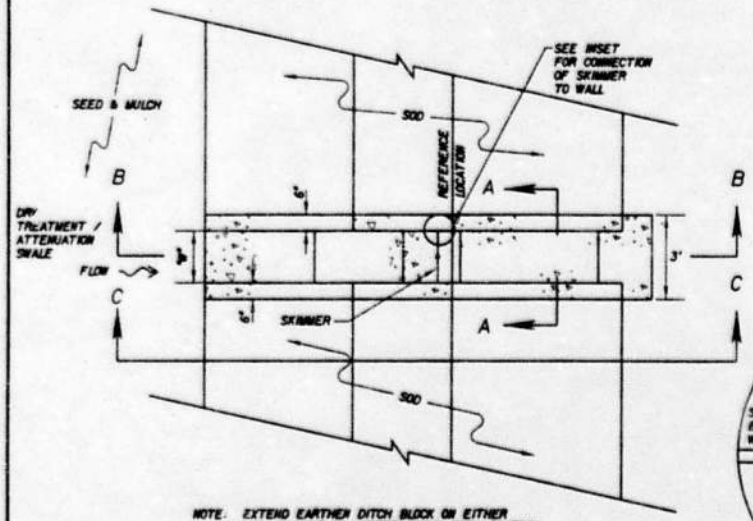
DRAINAGE STRUCTURE SHEET (4)

I-4 SEGMENT 7

SHEET NO. 29

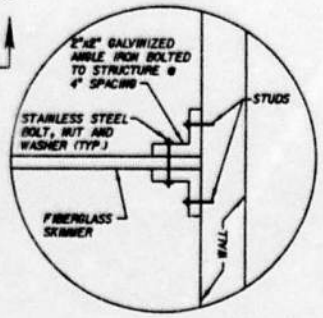
E-64

353



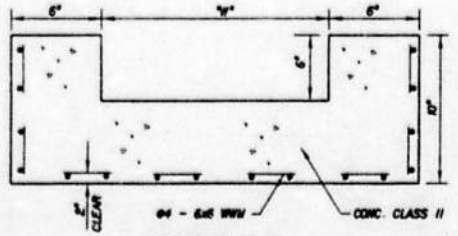
NOTE: EXTEND EARTHEN DITCH BLOCK ON EITHER SIDE OF WEIR TO INTERSECTIONS WITH ROADWAY CUT/FILL SLOPES. (SEE CROSS SECTIONS)

PLAN VIEW
NTS

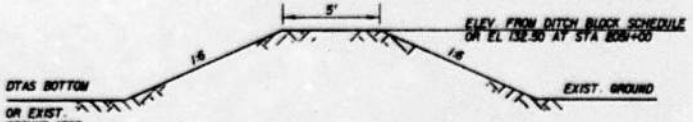


INSET
NTS

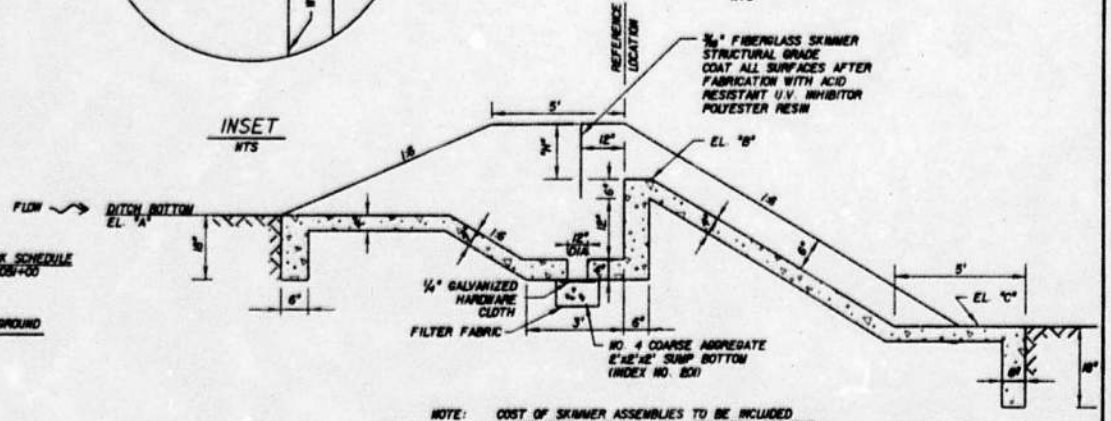
DITCH BLOCK SCHEDULE							
DITCH BLOCK NO.	STATION @ REFERENCE LOCATION	OFFSET FROM ℄ TO ℄ WEIR (FT)	ELEVATION (FT.) "A"	ELEVATION (FT.) "B"	ELEVATION (FT.) "C"	DISTANCE "W" INCHES	DISTANCE "H" INCHES
W-1	2089+00	25.0 RT	120.00	120.50	118.00	24	12
W-2A	2091+00	0.0	120.00	120.40	120.00	24	13.2
W-2B	2095+50	0.0	120.00	120.80	120.00	24	8.4
W-3A	2099+90	0.0	119.10	120.01	118.00	24	5.9
W-3B	2104+00	0.0	119.10	119.50	119.00	24	12
W-4	2111+00	170.0 LT	119.00	119.50	119.00	24	12
W-5	2117+00	130.0 RT	119.00	119.40	118.50	24	7.2
W-6	2127+00	130.0 LT	119.00	119.40	118.50	24	7.2



SECTION A-A
NTS



SECTION C-C
NTS



NOTE: COST OF SKIMMER ASSEMBLIES TO BE INCLUDED IN THE COST OF THE CLASS II CONCRETE FOR THE DITCH BLOCK - CONTROL STRUCTURE.

SECTION B-B
NTS

WILLIAM J. VEON JR., P.E.
P.E. NO. 39650
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
15302 Highwoods Preserve Parkway
Highwoods Preserve Suite 200
Tampa, FL 33618
Tel. (813) 977-3454
EBN 8572

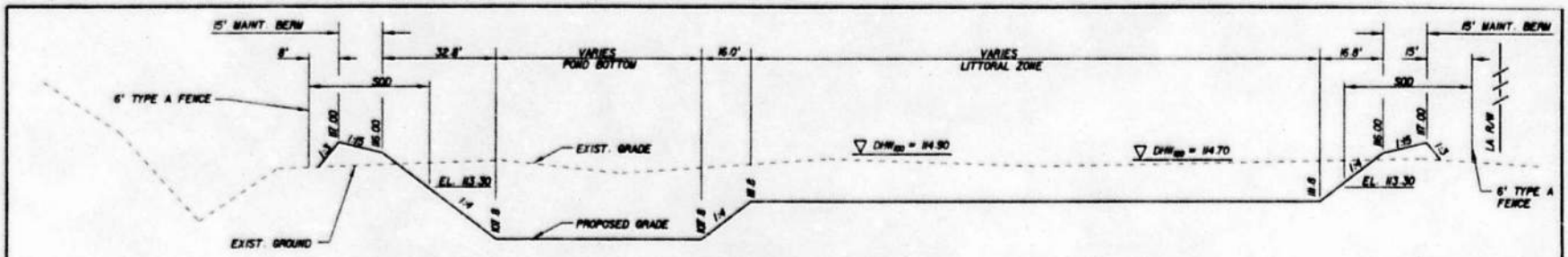
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

DRAINAGE STRUCTURE DETAILS DRY TREATMENT / ATTENUATION SWALES

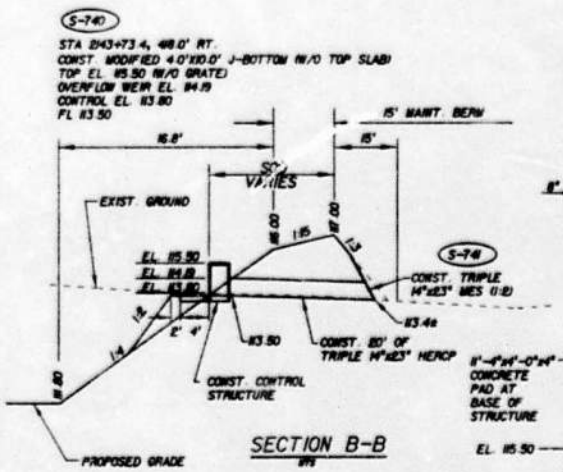
SHEET NO. 30

E-65

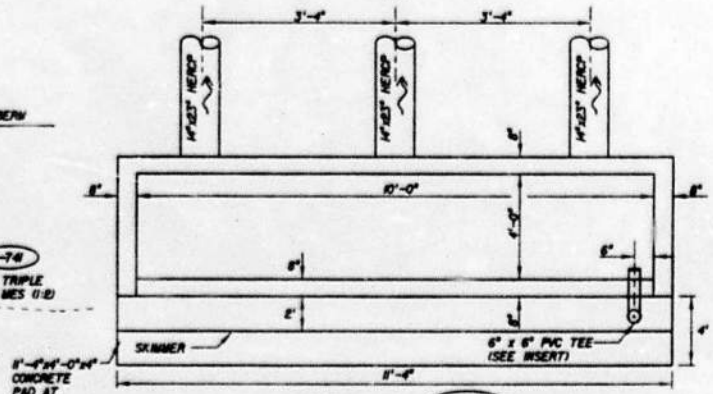
354



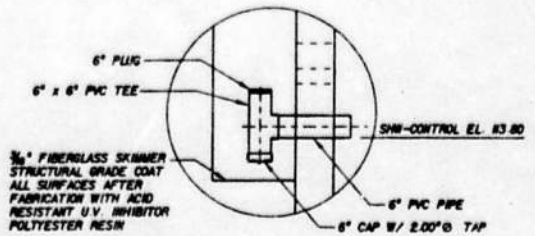
DETENTION POND SECTION A-A



SECTION B-B



PLAN VIEW (S-740)



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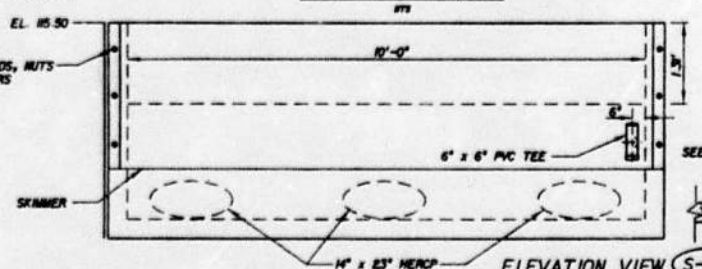
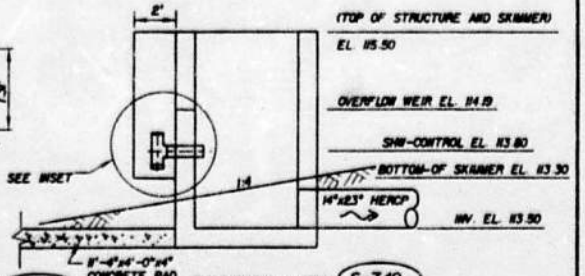


ELEVATION VIEW (S-740)



SECTION VIEW (S-740)

WILLIAM J. VEON JR., P.E.
P.E. NO. 35650
12/23/02

PERMIT PLANS

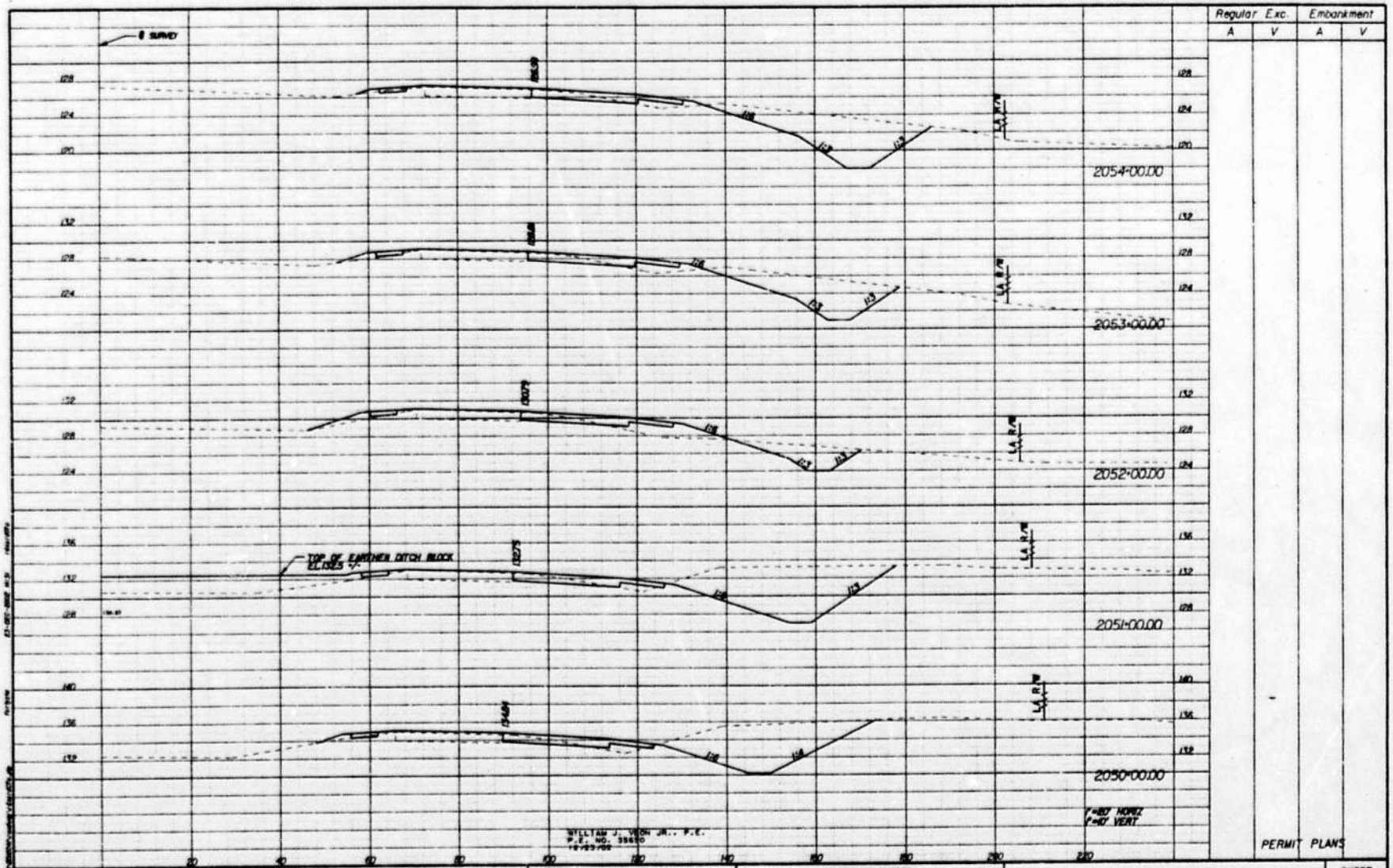
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6300 Hazeltine Preserve Parkway
Chuluota, FL 32766
Tel. (407) 977-3434
EB 6017

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

DRAINAGE STRUCTURE DETAILS
POND 7-7

SHEET NO. 31



REVISIONS

NO.	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6300 Hillsdale Property Parkway
Orlando, FL 32822
Tel: (407) 647-3434
ENGINEER OF RECORD:
A. ROSTOFF, P.E. No. 47032
EB# 6972

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

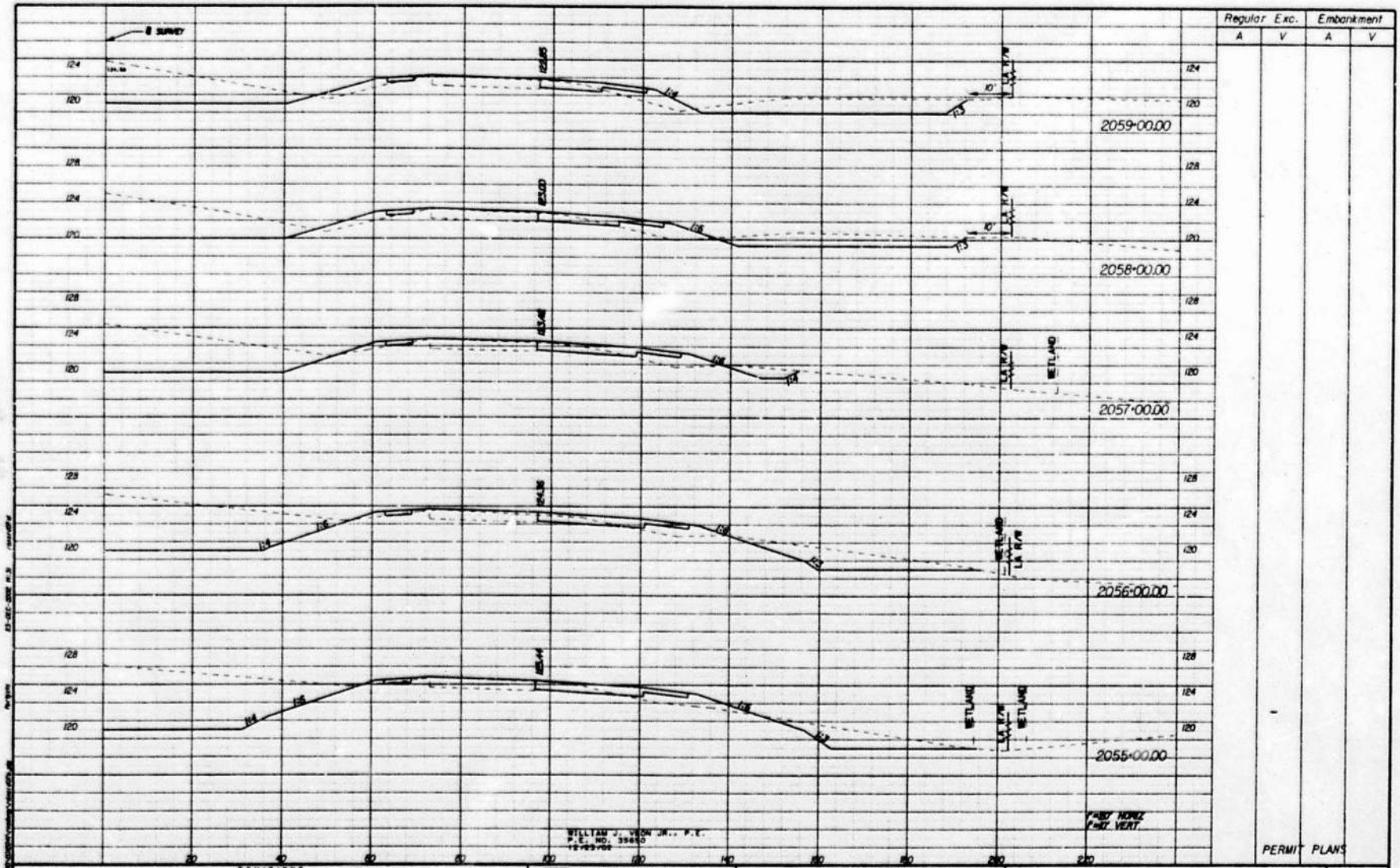
SHEET NO.
32

WILLIAM J. VEON JR., P.E.
P.E. NO. 39600
10-29-02

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Examined

E-67

356



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

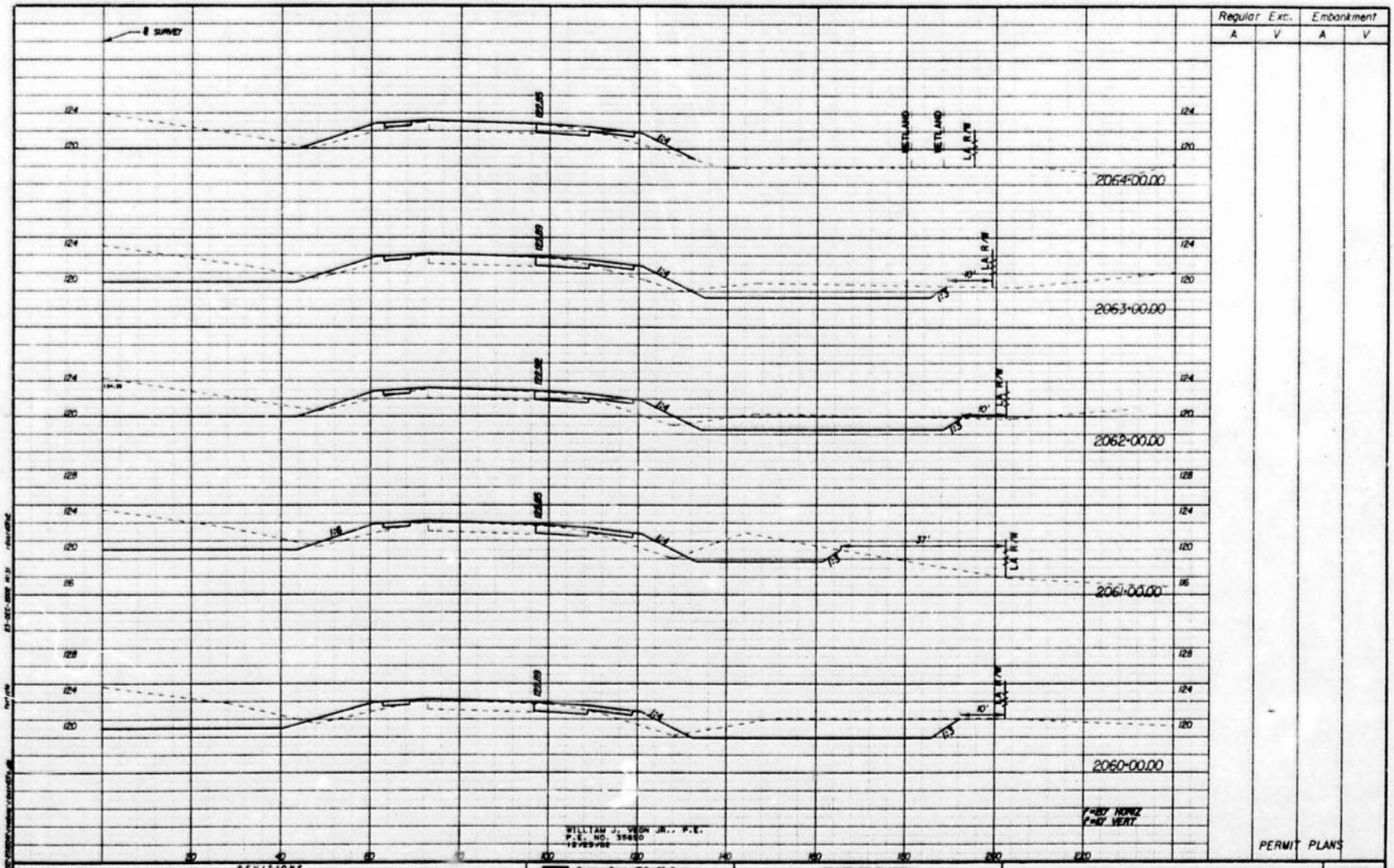
Jacobs Civil Inc.
8100 Highlands Parkway, Suite 200
Orlando, FL 32819
Tel. (863) 647-3434
ENGINEER OF RECORD
R. ROSTOFF, P.E. No. 49032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
33



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Hidden Creek Parkway
Suite 850
Tampa, FL 33619
Tel. (813) 899-3434
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 49032
EB# 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

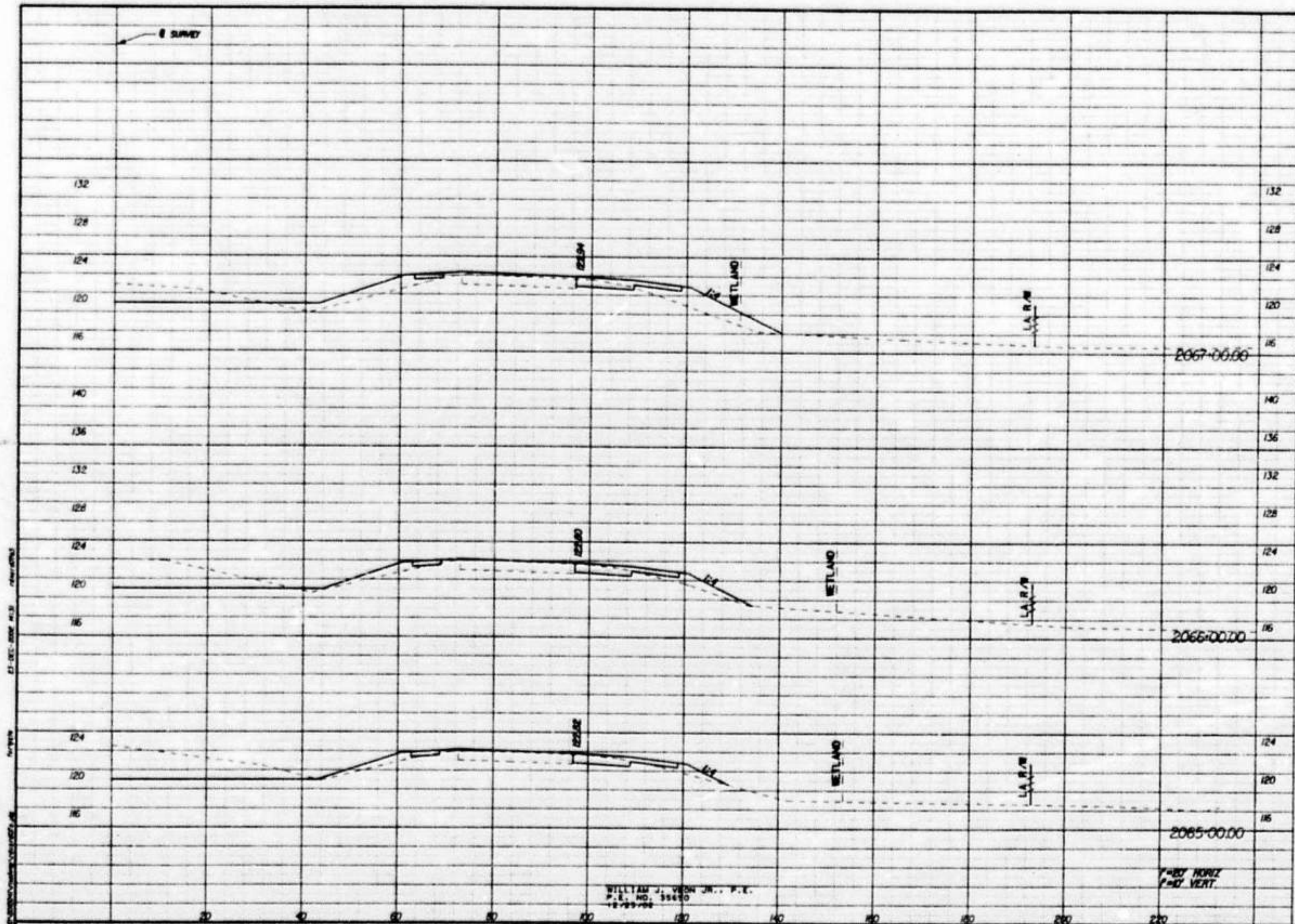
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
34

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed

E-69

358



Regular Exc.		Embankment	
A	V	A	V

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 41032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

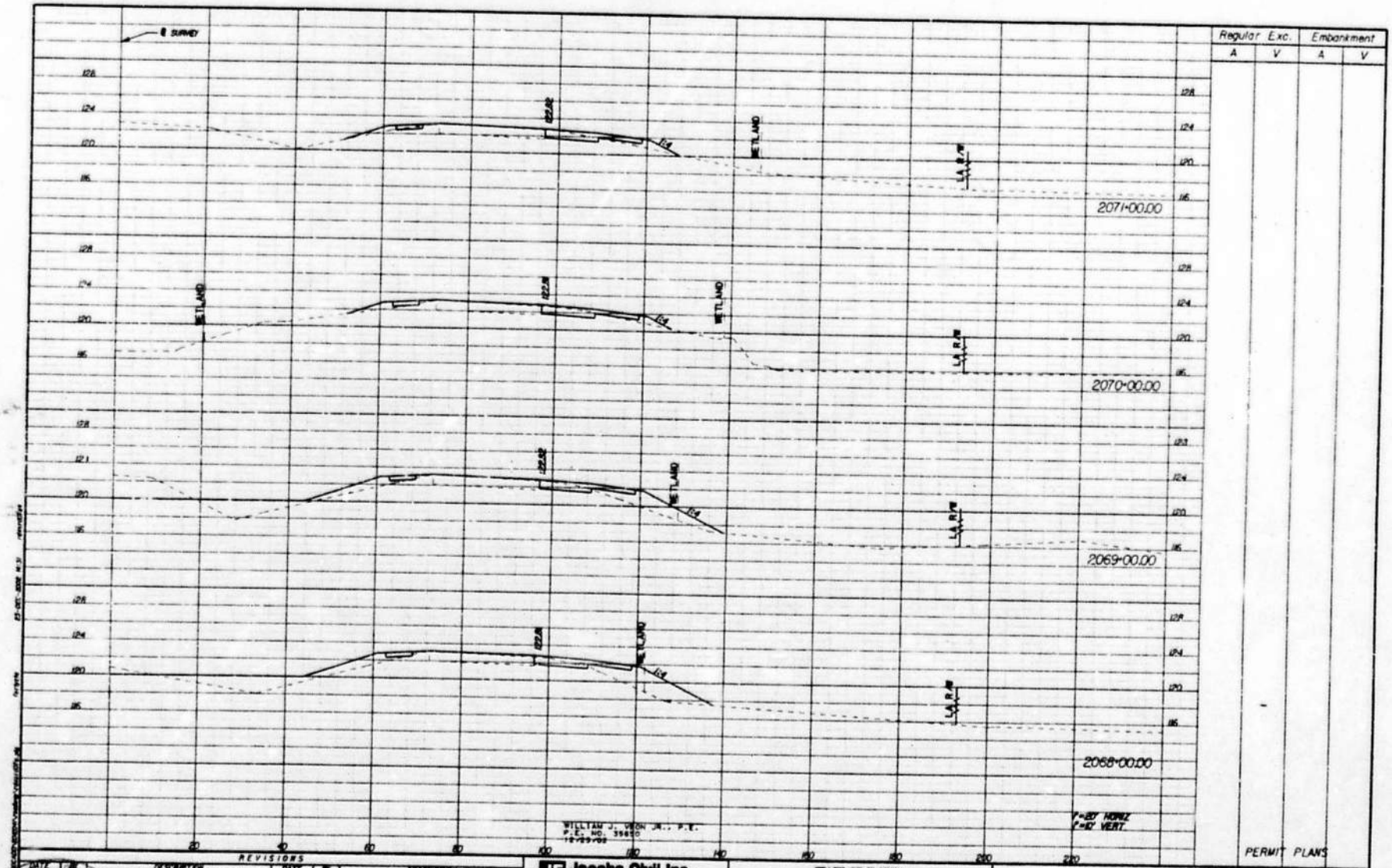
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 35

E-70

359



WILLIAM J. VIRON JR., P.E.
P.E. NO. 39650
10-29-02

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6300 Hillsboro Preserve Parkway
Suite 200
Tampa, FL 33634
Tel. (813) 887-3454
ENGINEER OF RECORD
A. ROSTOFF, P.E. No. 41032
EB# 1672

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

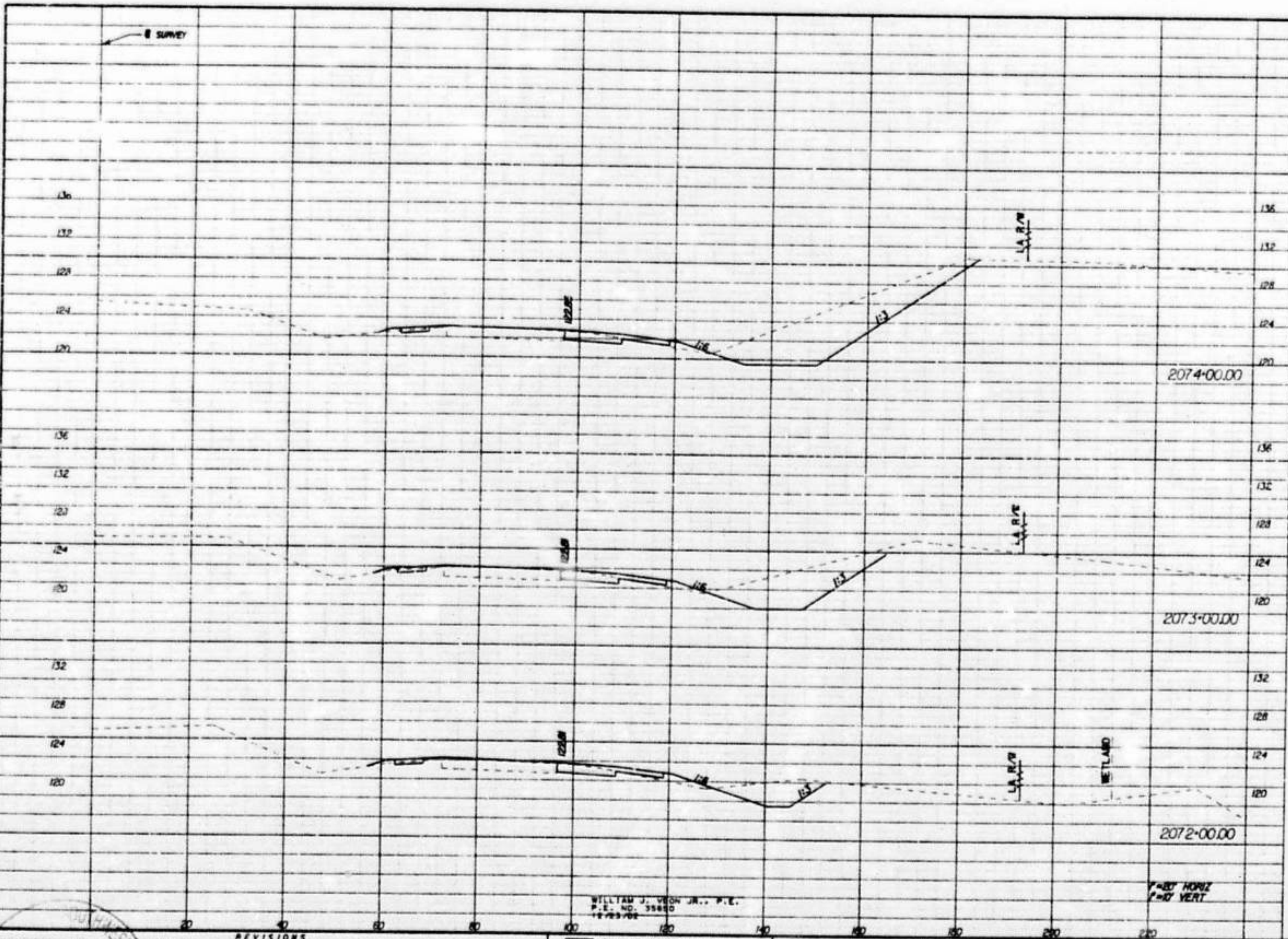
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 36

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RECEIVED
DEC 30 2002
RECORDS & DATA
ARR
S.W.F.W.M.D.

E-71

360



Regular Exc.		Embankment	
A	V	A	V

PERMIT PLANS

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

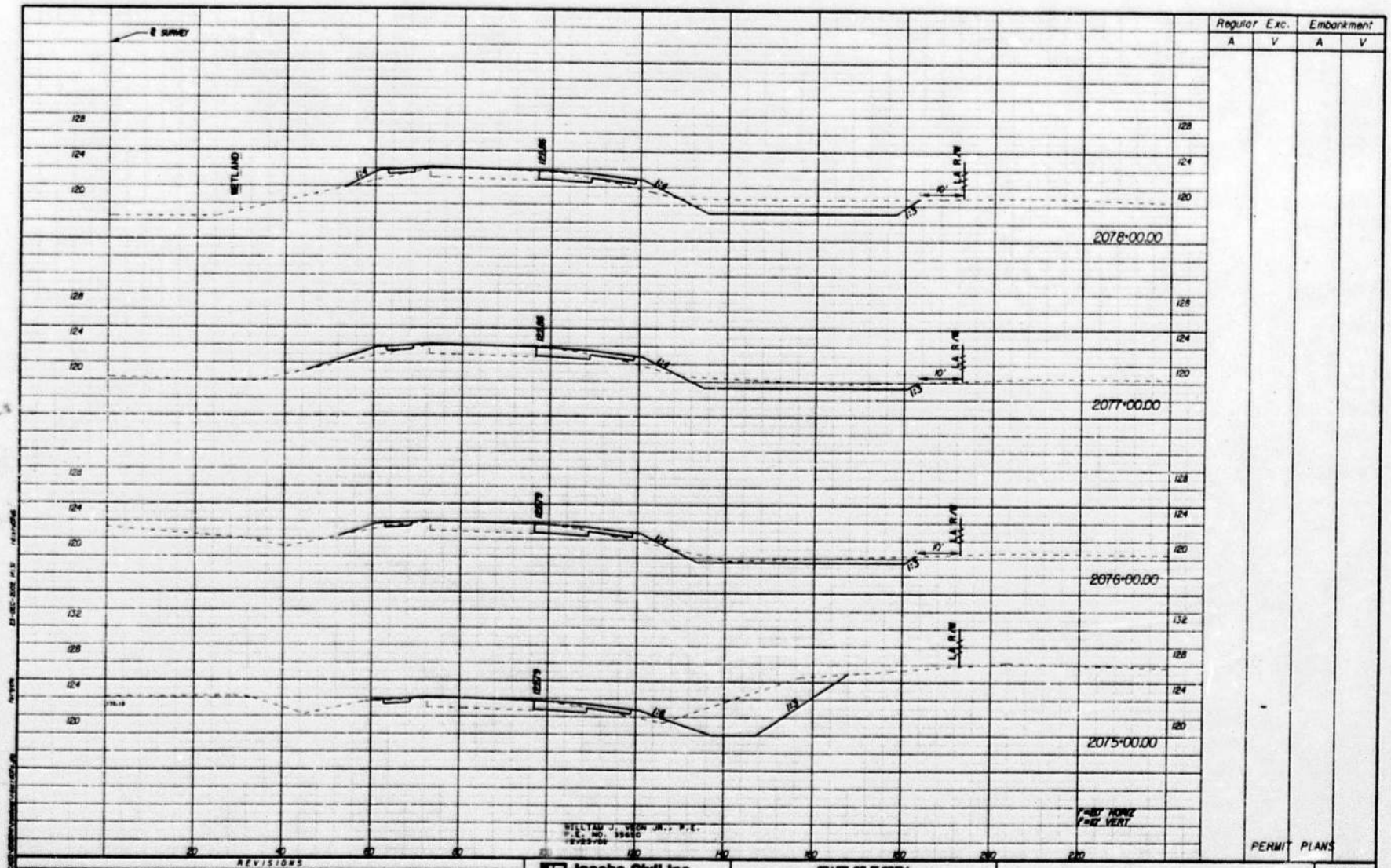
Jacobs Civil Inc.
8302 Highwoods Preserve Parkway, Suite 200, Tampa, FL
Tel. (813) 817-3434
ENGINEER OF RECORD: R. ROCKTOFF, P.E. No. 47032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 37



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

WILLIAM J. VEON JR., P.E.
P.E. NO. 39610

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

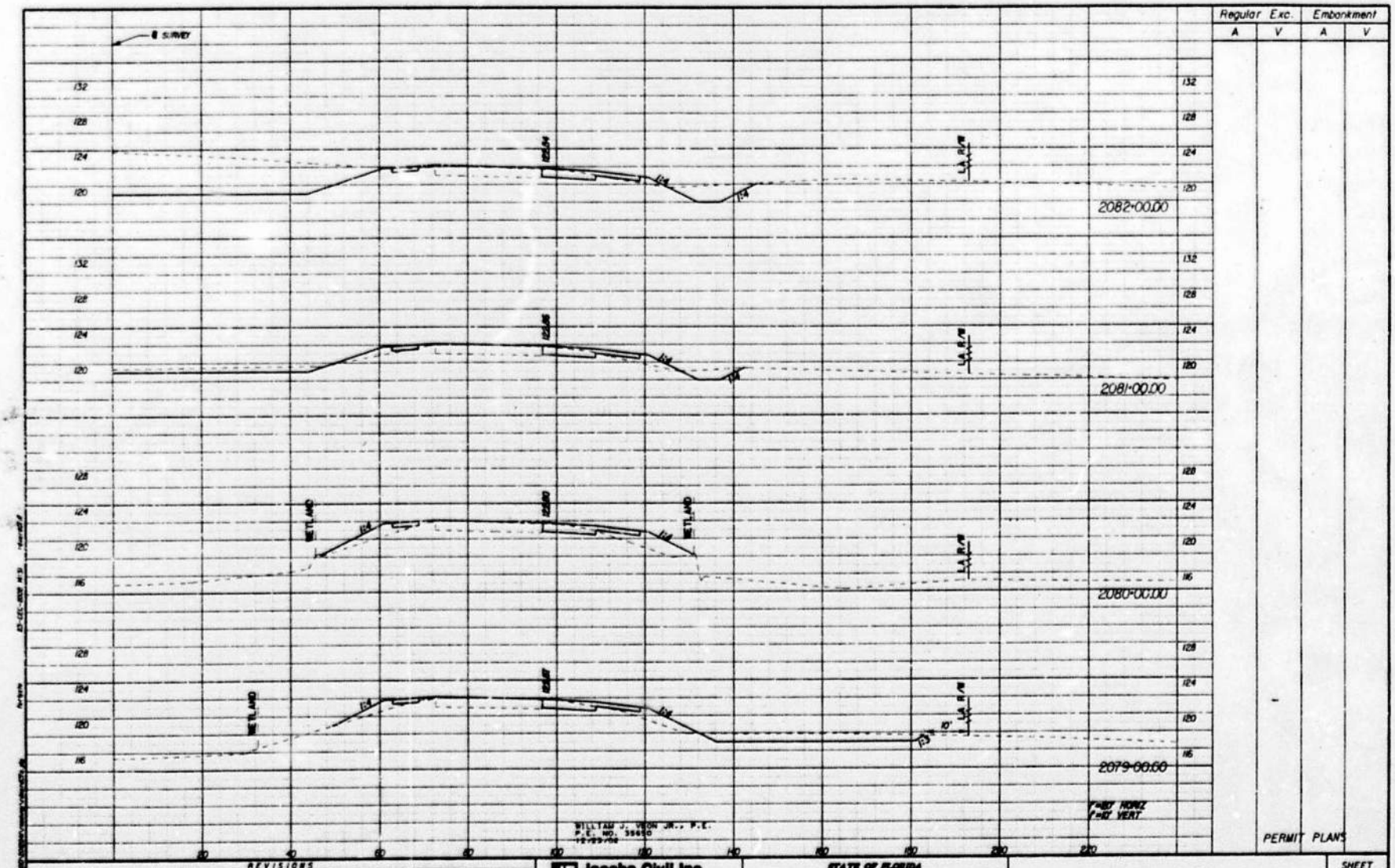
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 38

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed
HEAD QUARTERS

E-73

362



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

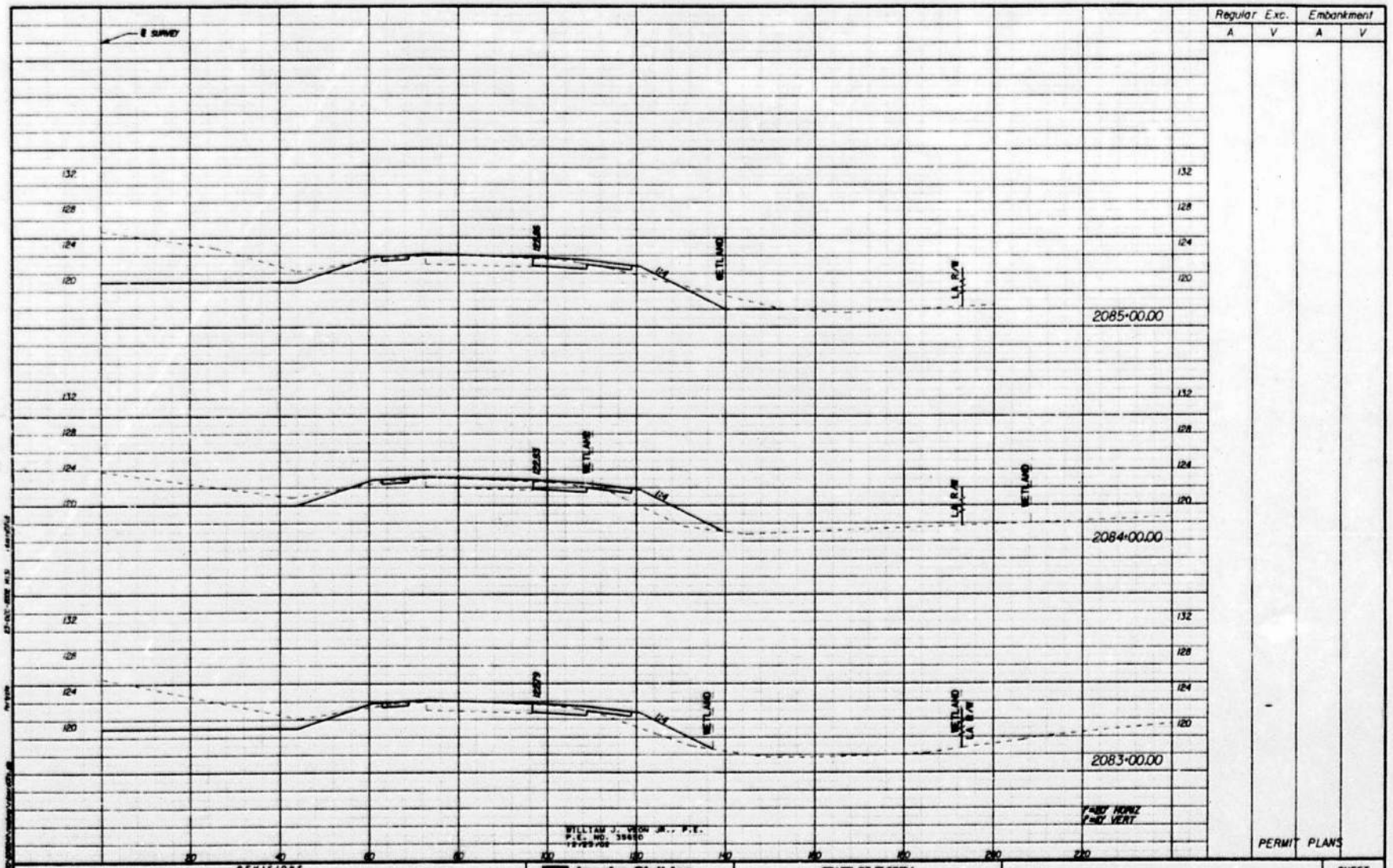
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 39



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Hillsboro Preserve Parkway
Suite 300
Tampa, FL 33637
Tel. 813 971-3404
ENGINEER OF RECORD
K. RICKTOFT, P.E. No. 49032
EB# 8571

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

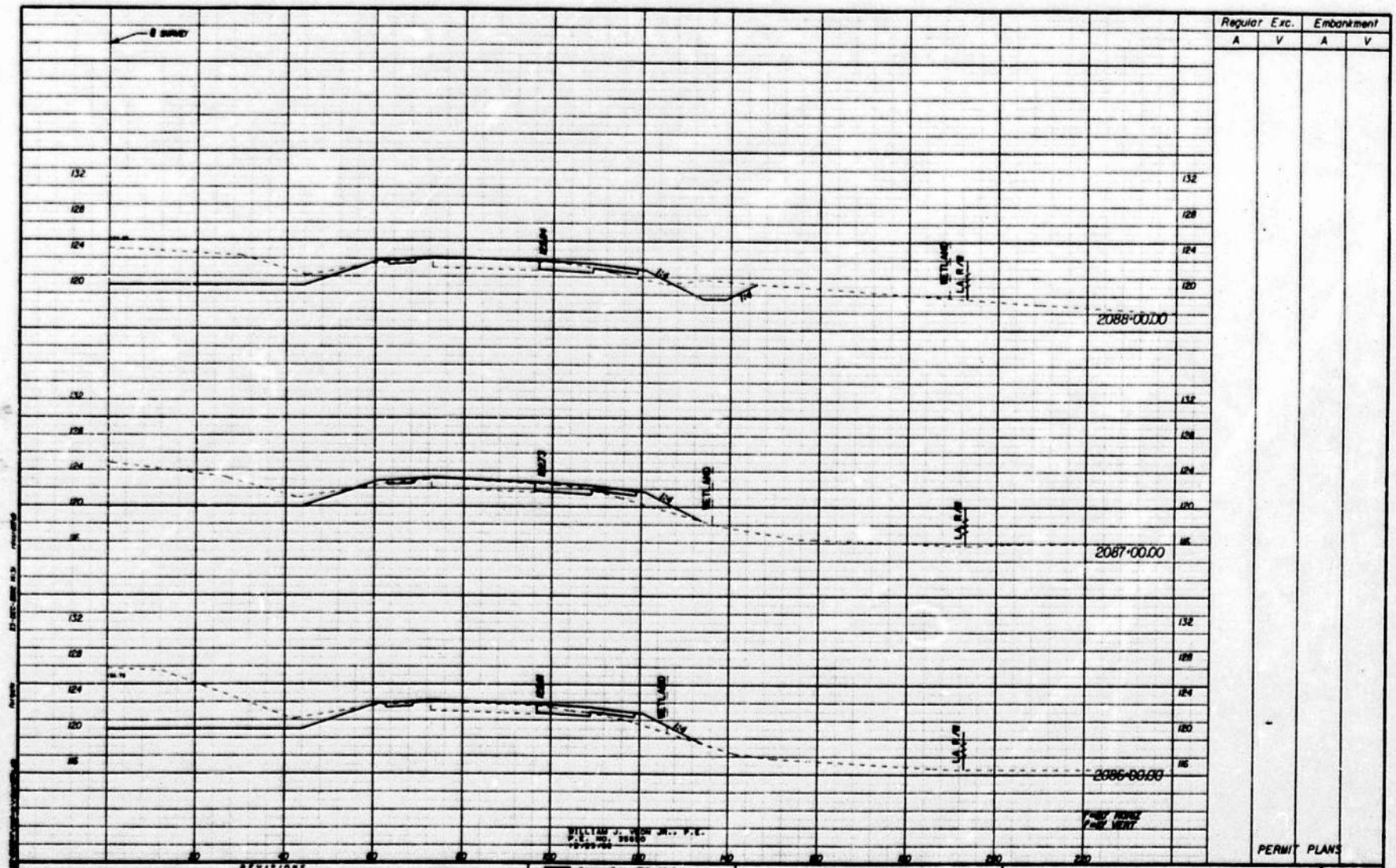
SHEET NO. 40

WILLIAM J. VRON JR., P.E.
P.E. NO. 39690
12/29/08

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
MAY 08 2009
REVIEWED

E-75

364



REVISIONS

NO.	DESCRIPTION	NO.	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

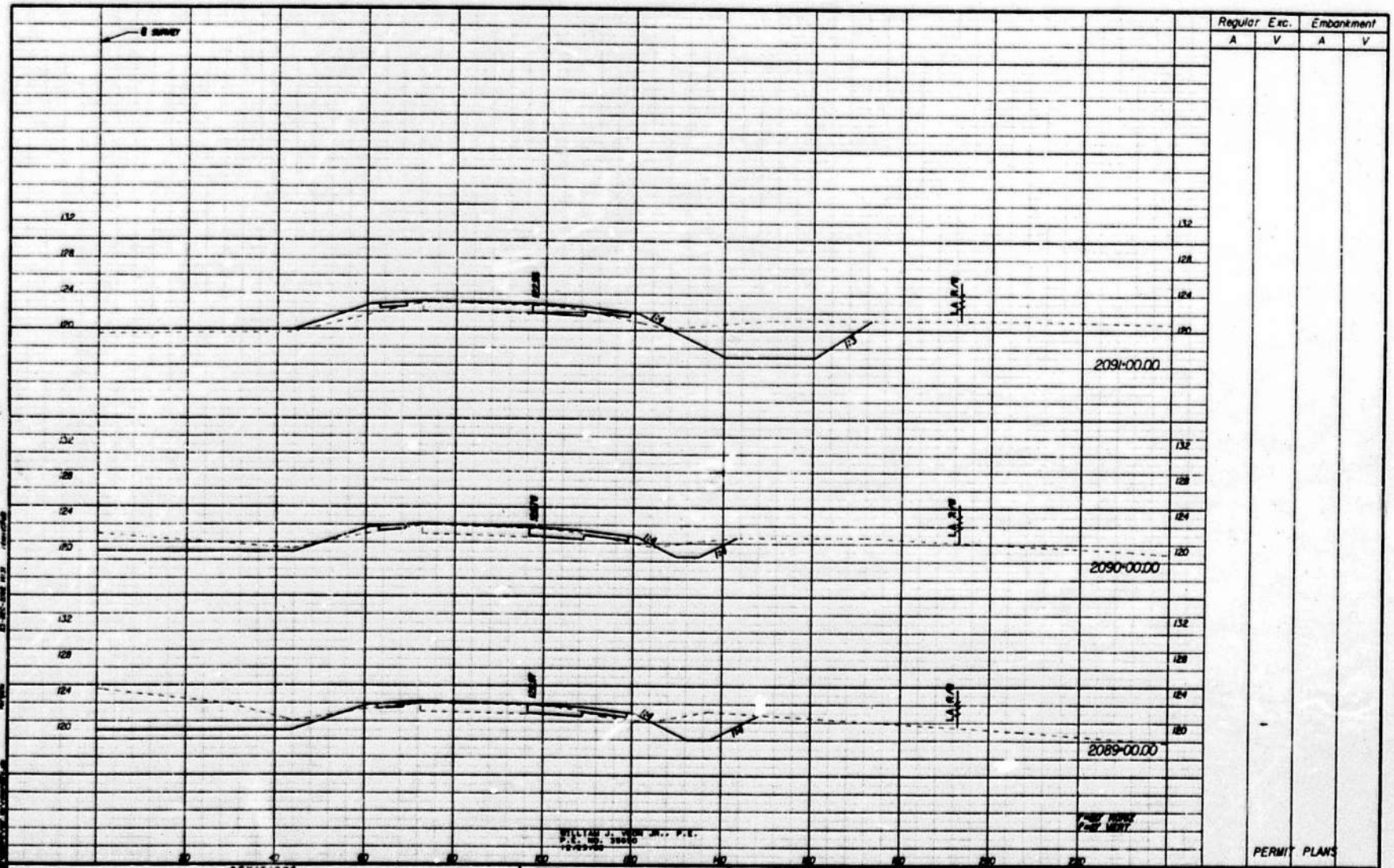
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 41

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

E-76

345



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

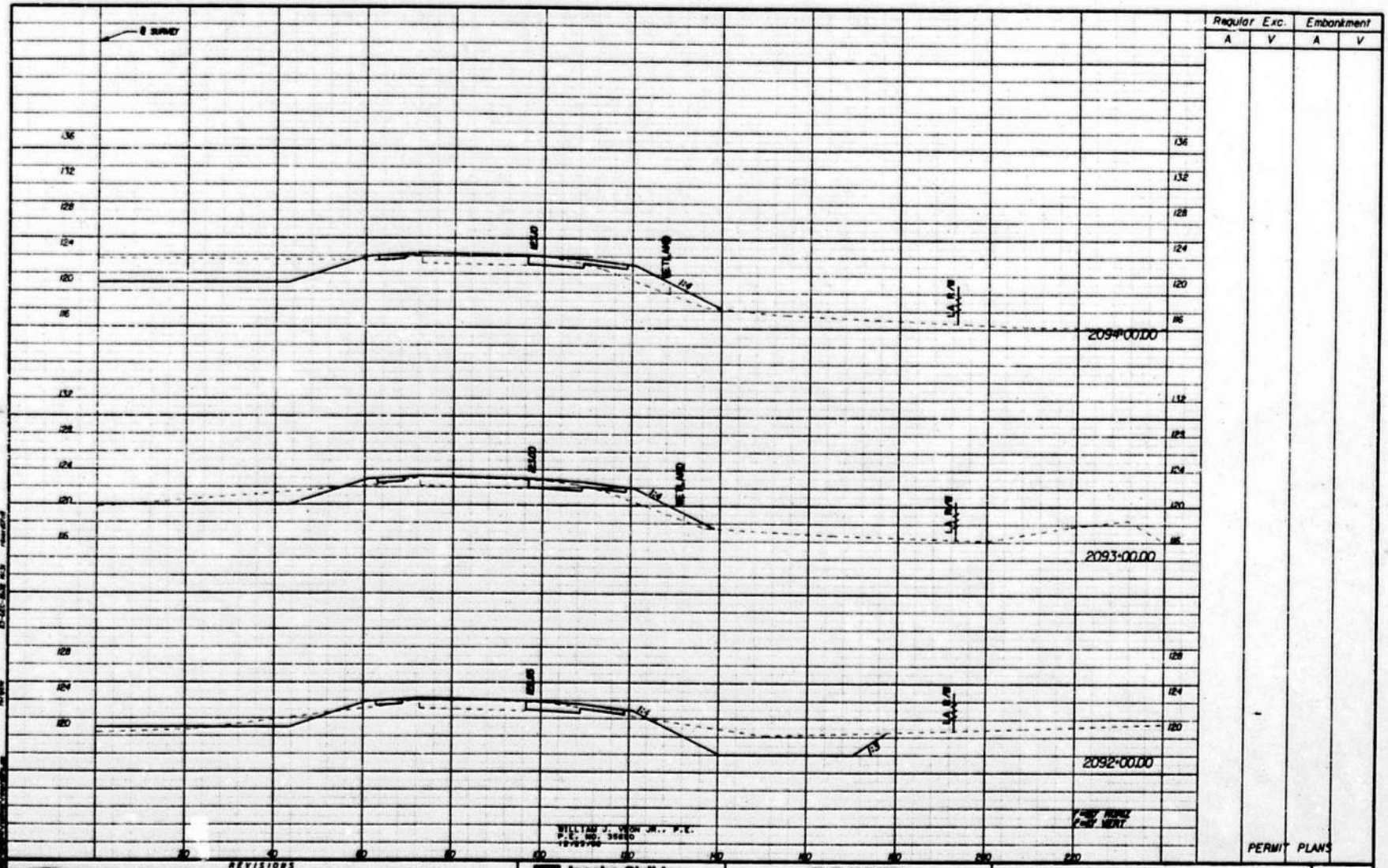
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 42

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

E-77

366



REVISIONS

DATE	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

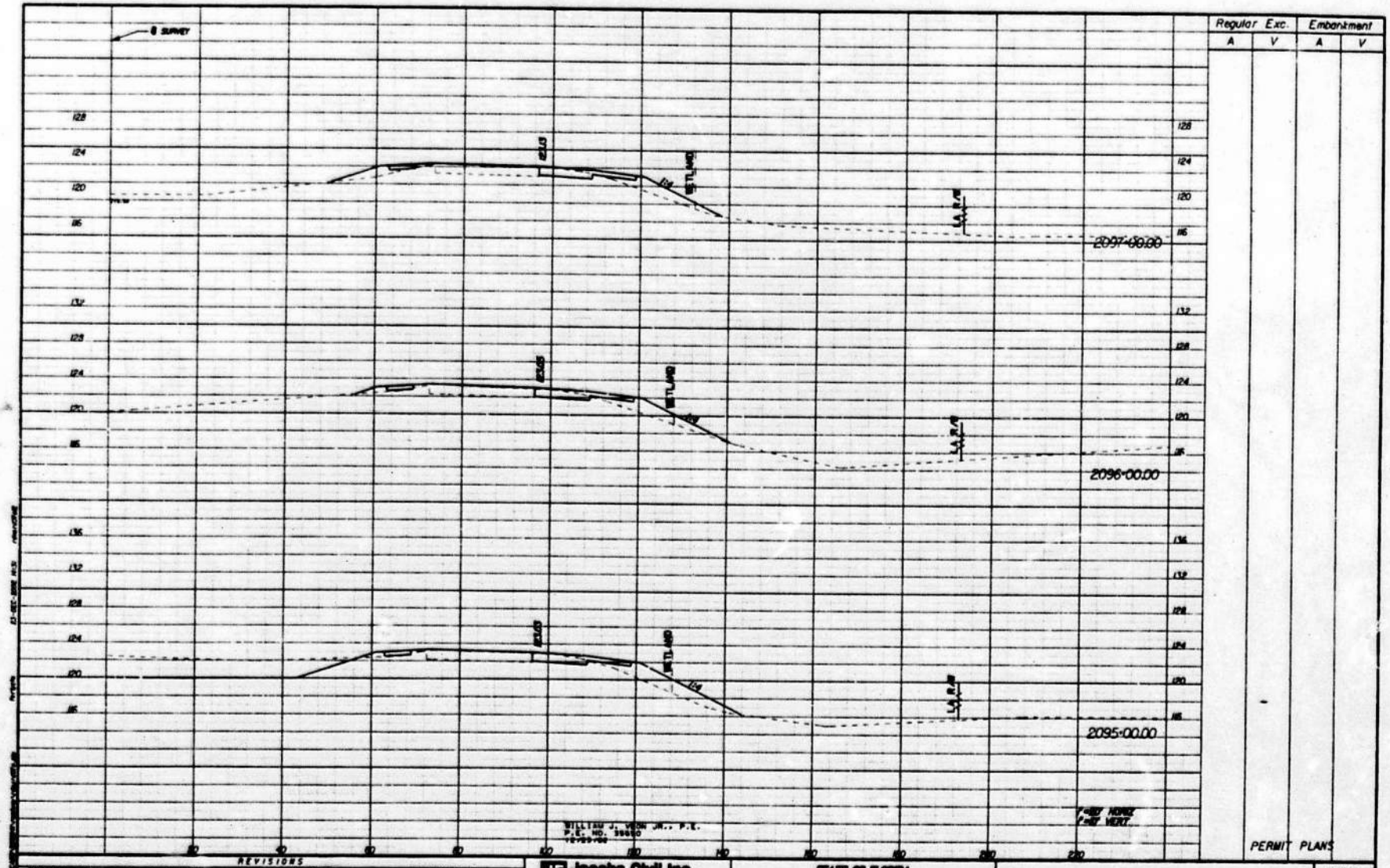
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
43

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed
BY: D. BURTON



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

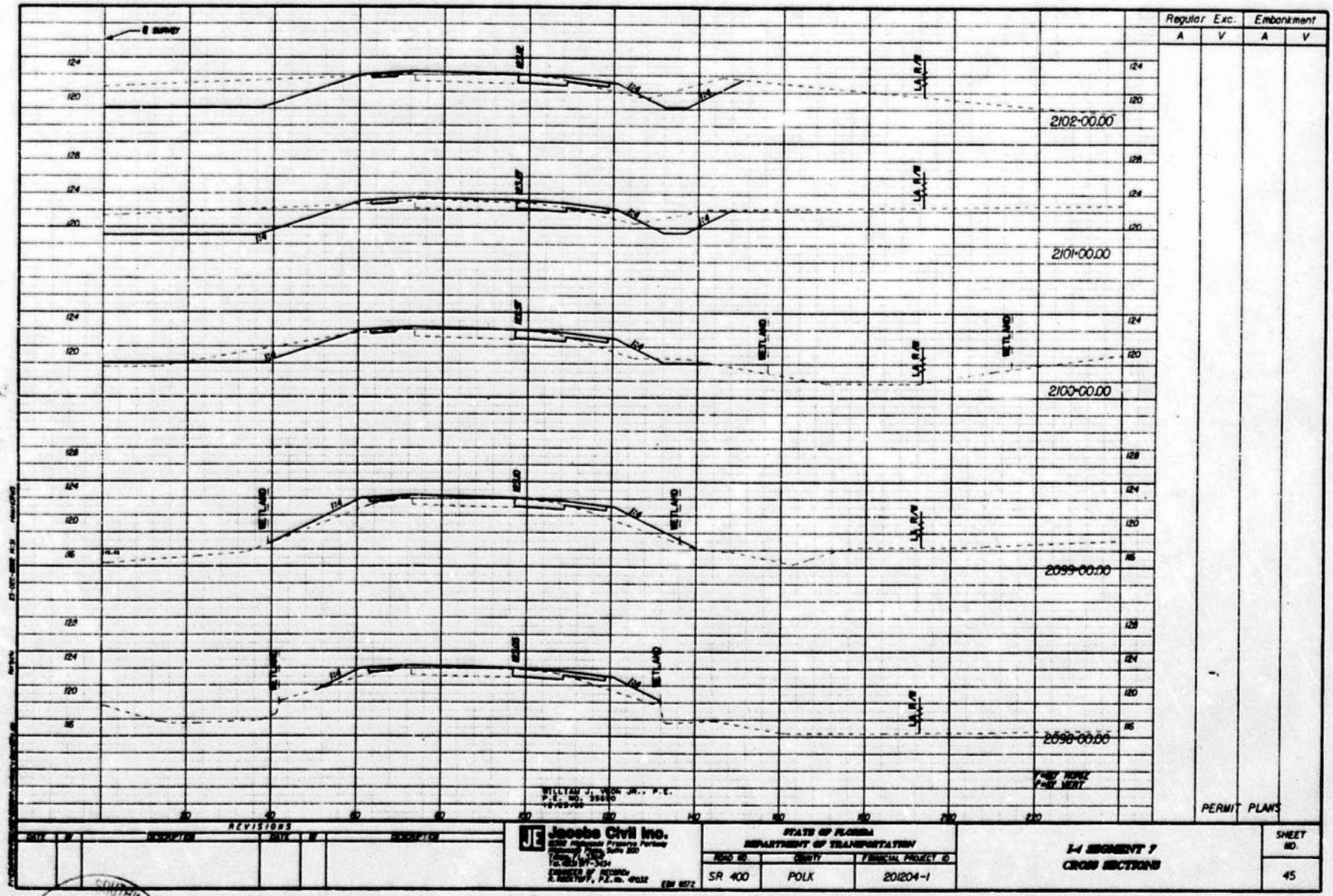
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 44



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

WILLIAM J. UNION JR., P.E.
P.E. NO. 39880

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

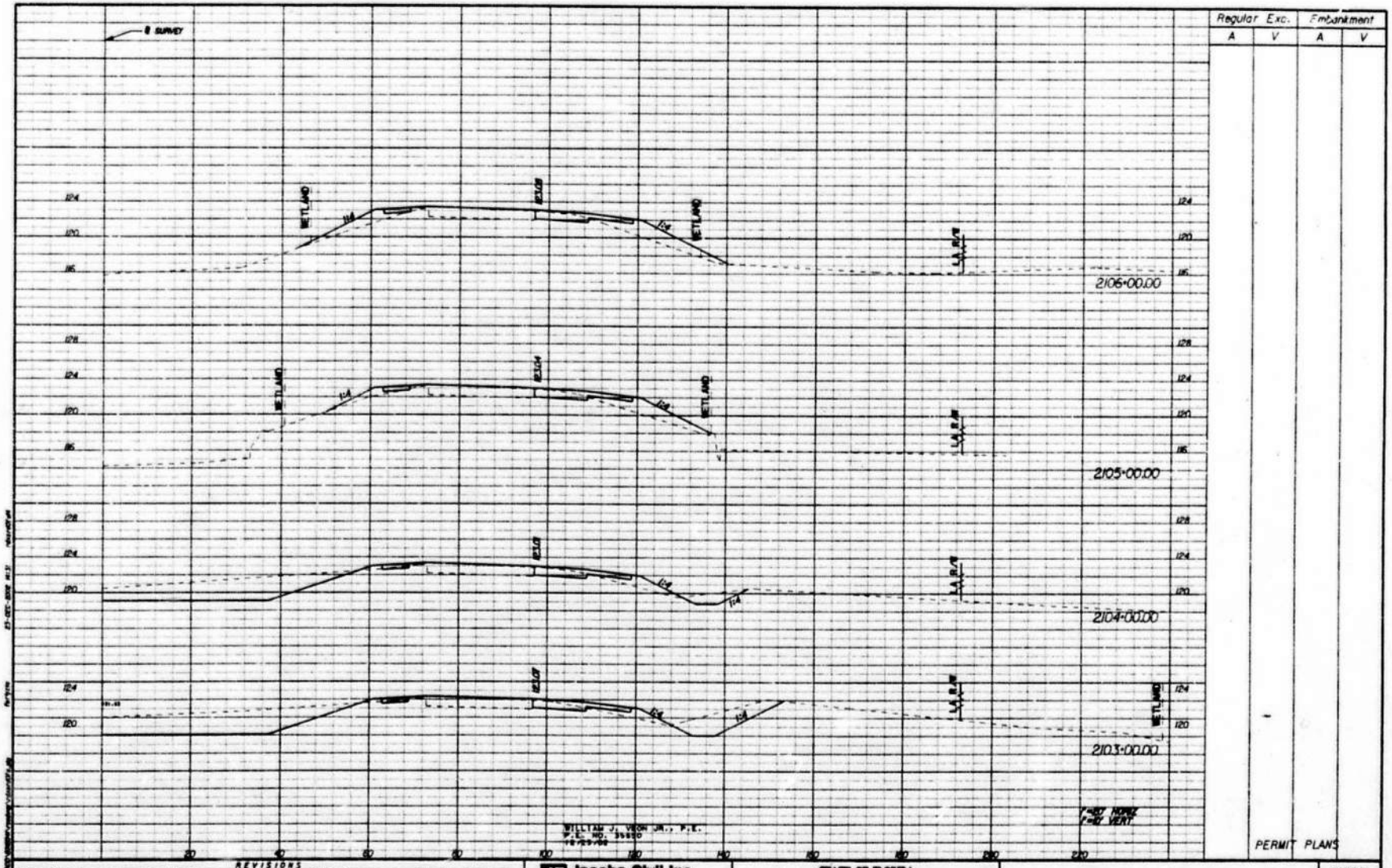
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
SR 400	POLK	201204-1	45

I-4 SEGMENT 7
CROSS SECTIONS

SOUTHEAST FLORIDA

E-80

369



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

WILLIAM J. VROOM JR., P.E.
P.E. NO. 39550
10/29/08

Jacobs Civil Inc.
8520E Highlands Preserve Parkway
Highland Suite 200
Tampa, FL 33610
Tel. (813) 971-3434
ENGINEER OF RECORD
R. ROSKOFF, P.E. No. 47032
EB# 6576

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

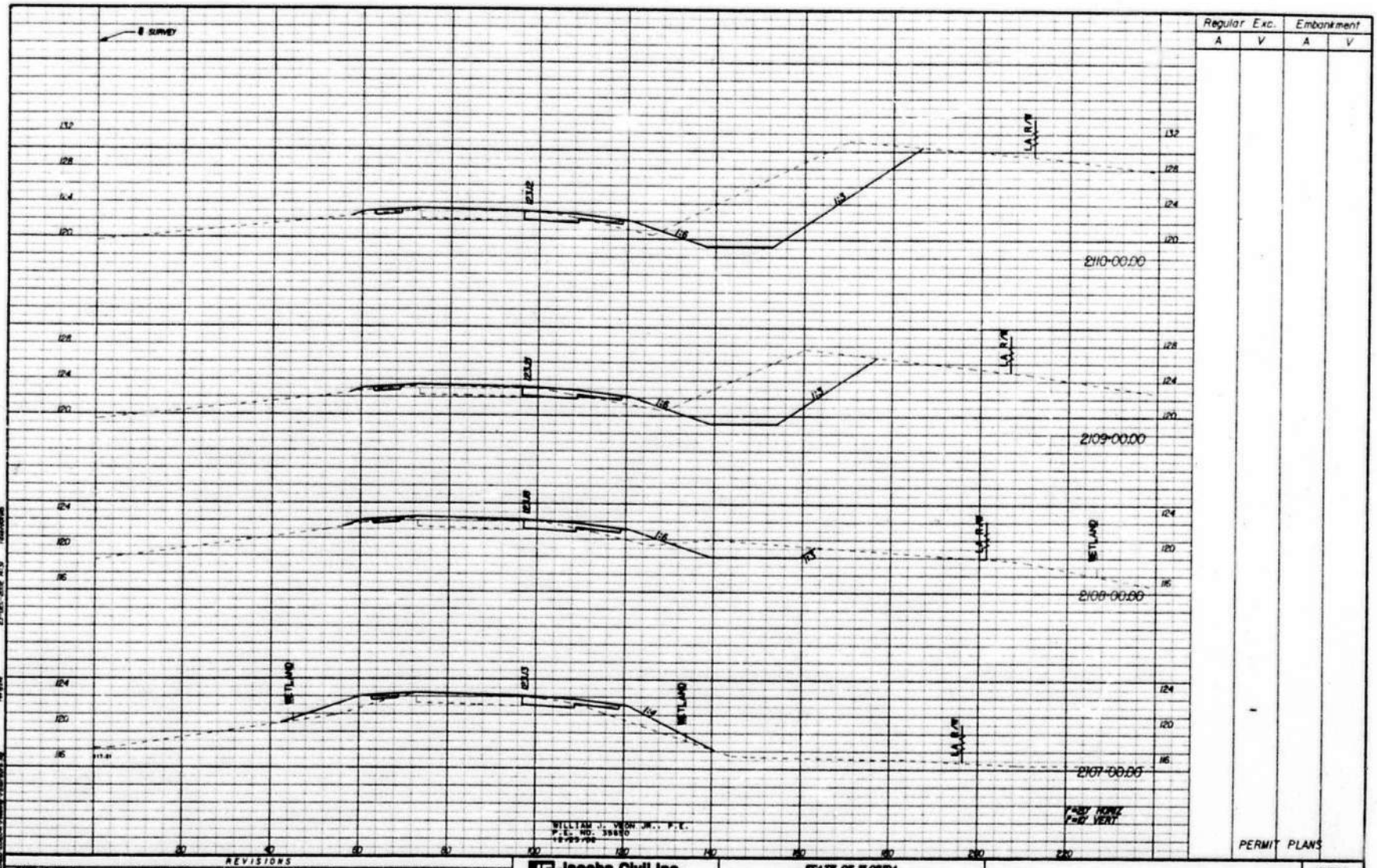
I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 46

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

E-81

370



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Highwoods Preserve Parkway
Highwoods Preserve, Suite 200
Tampa, FL 33610
Tel. (813) 917-3434
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 49032
EBN 6572

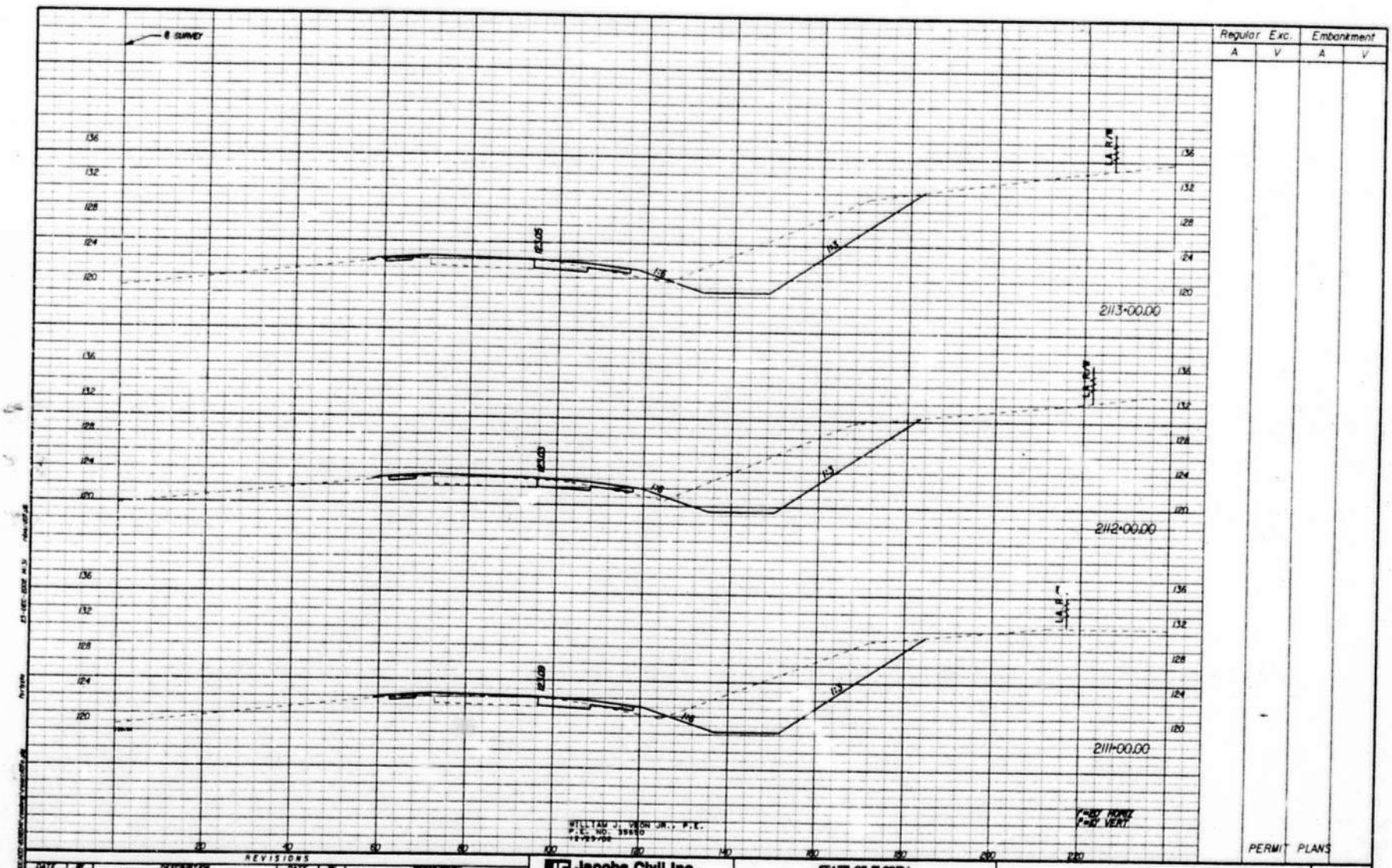
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
47

371



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Highlands Property Parkway
Highlands Ranch, Suite 200
Tampa, FL
Tel. 813-97-3434
ENGINEER OF RECORD:
R. RICKTOFF, P.E. No. 47032
EB# 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 48

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

WILLIAM J. VEON JR., P.E.
P.E. NO. 39870

Jacobs Civil Inc.
8302 Highlands Preserve Parkway
Suite 200
Tampa, FL 33647
TEL (813) 971-3434
ENGINEER OF RECORD:
K. Kestner, P.E. No. 49032
EB# 6572

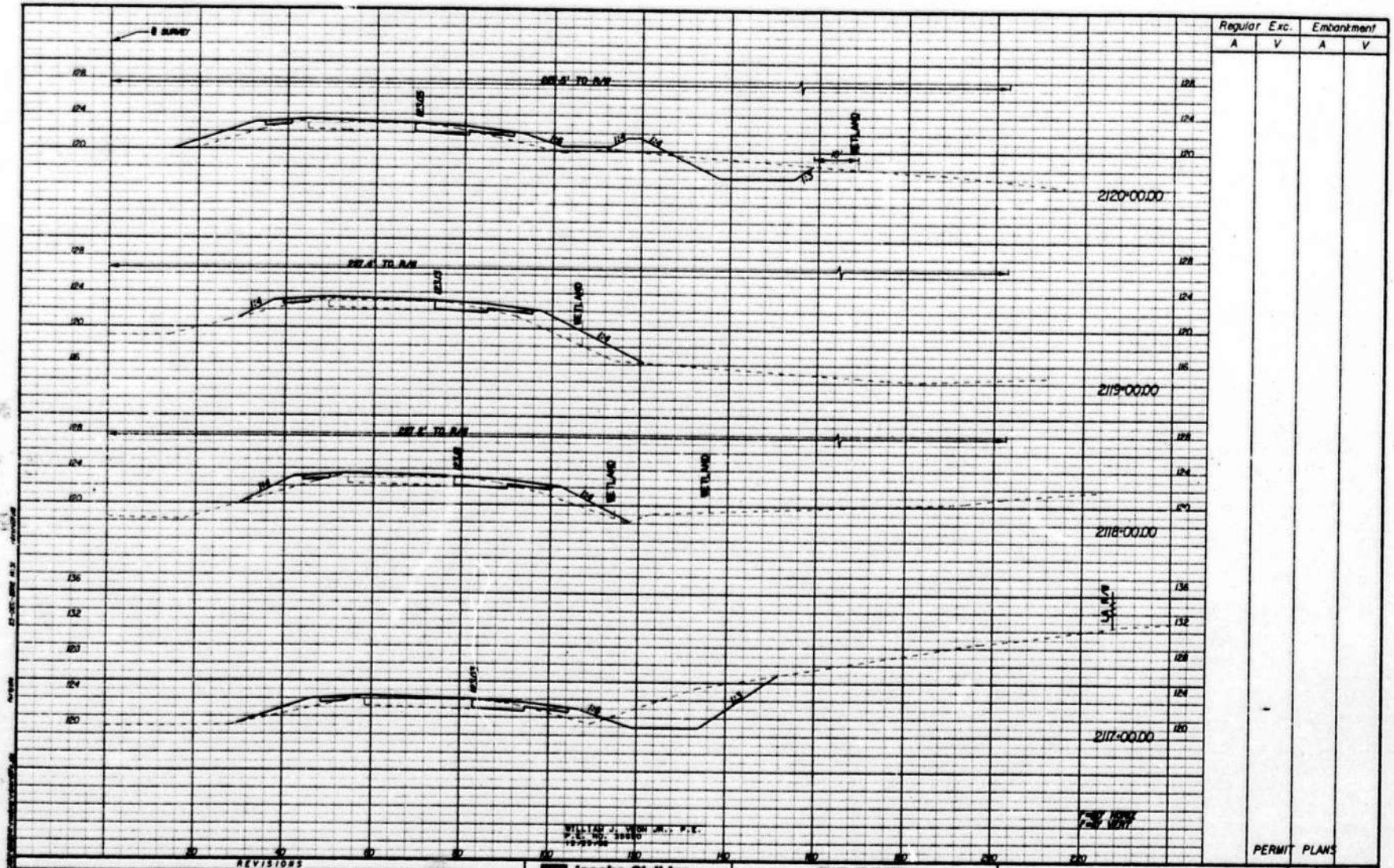
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 49

373



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

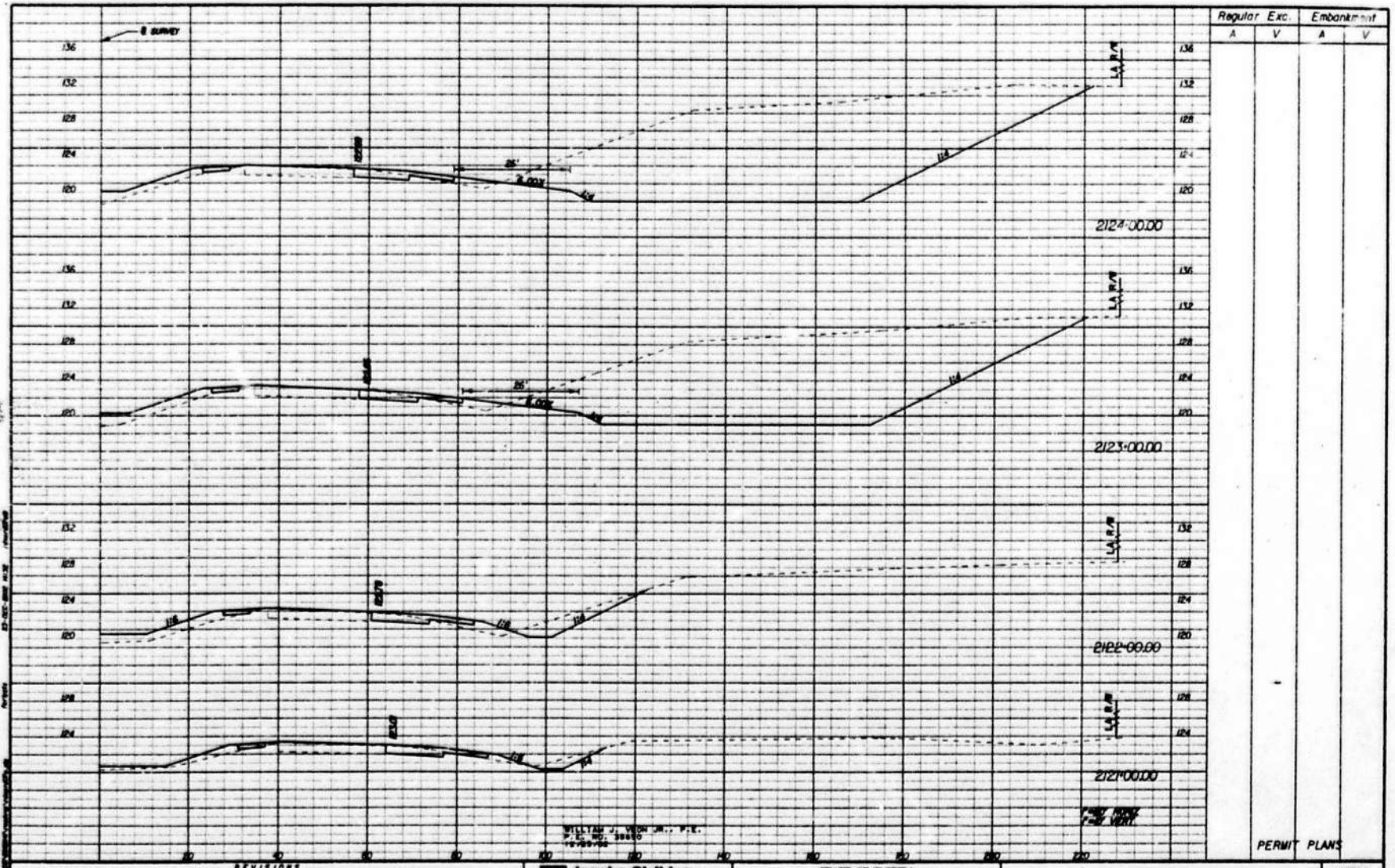
SHEET NO. 50

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT Reviewed DEC 30 2002 ARR

SWFWMD RECORDS & DATA

E-85

374



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

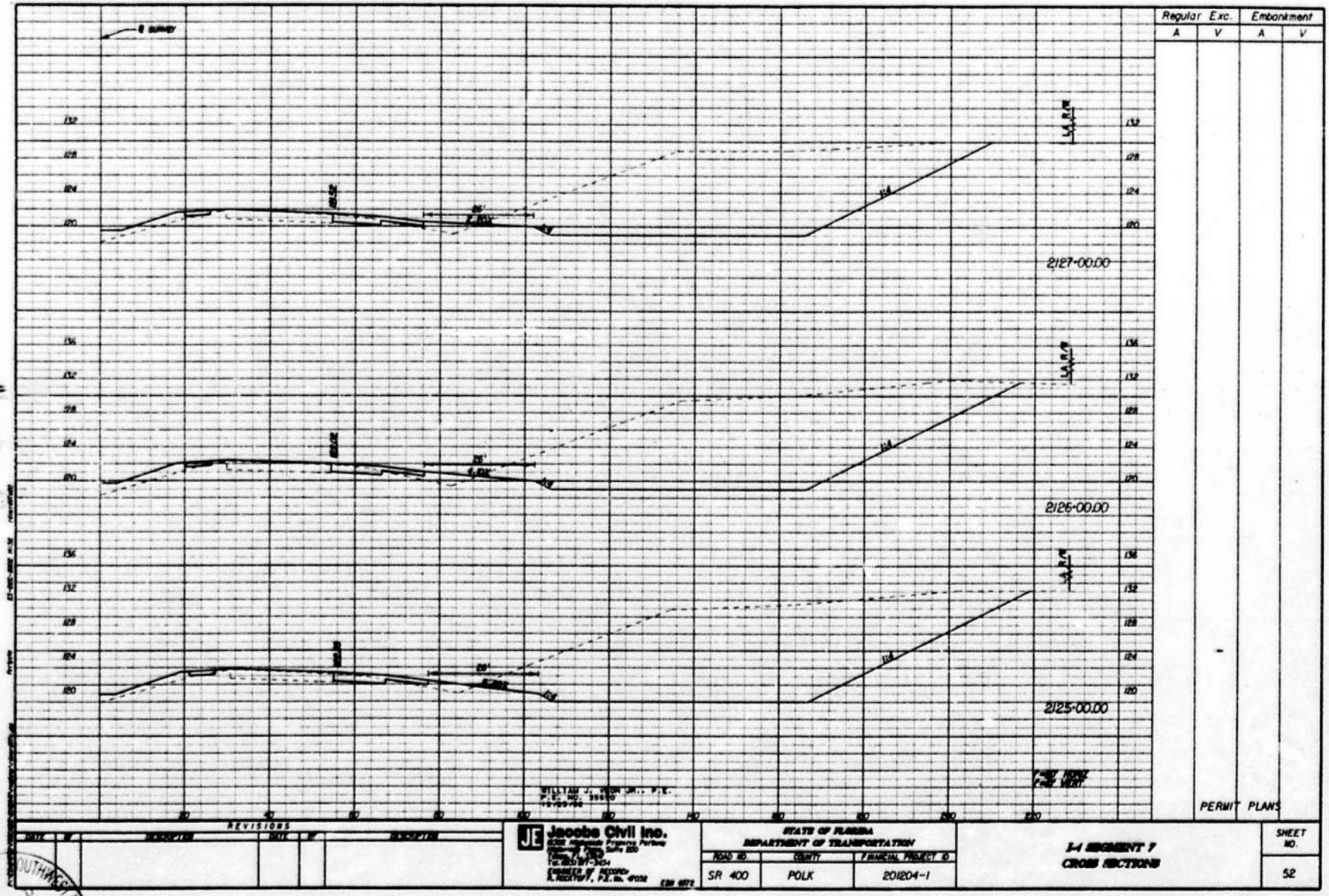
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD ID	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 51



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

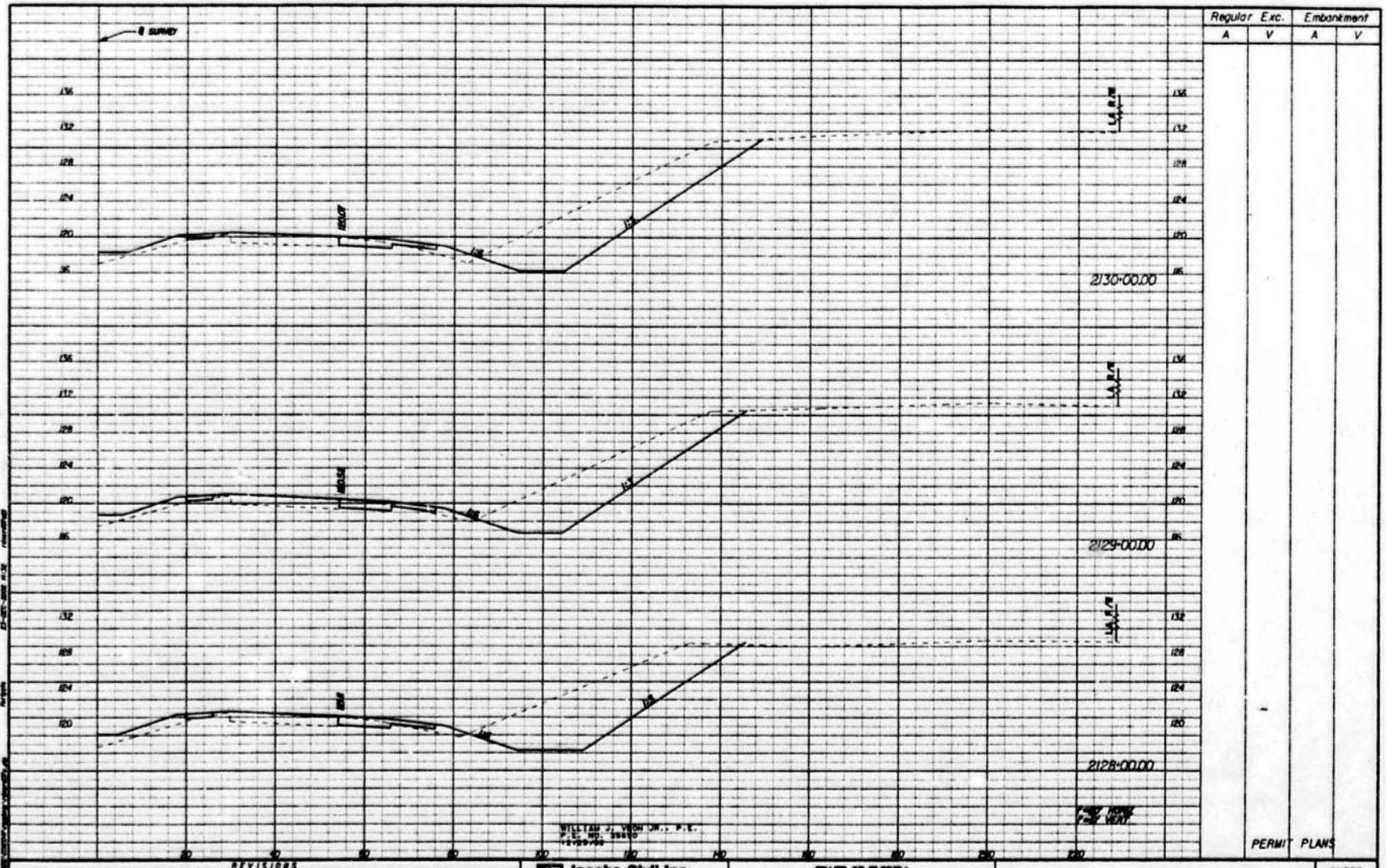
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
52

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

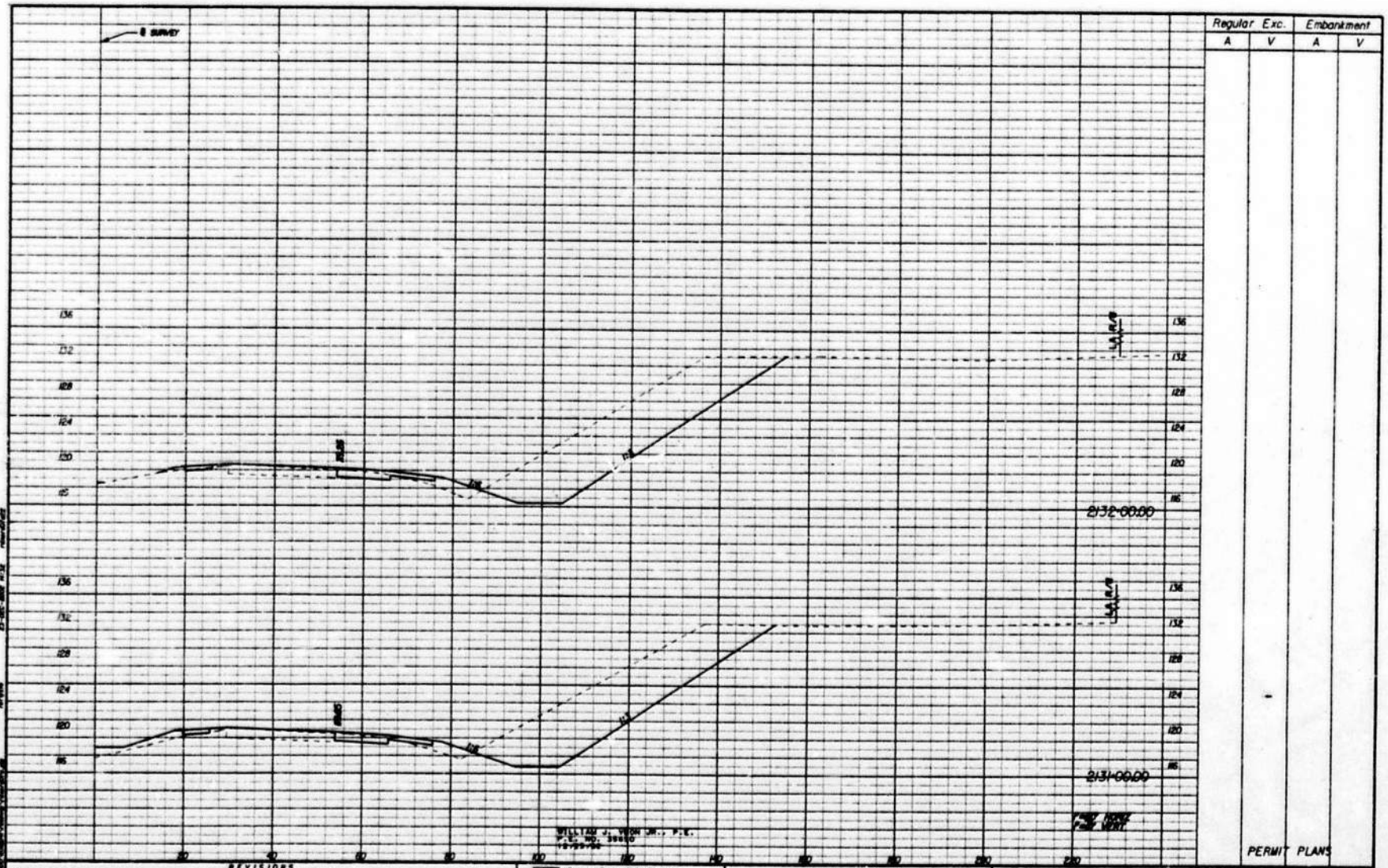
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 53



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

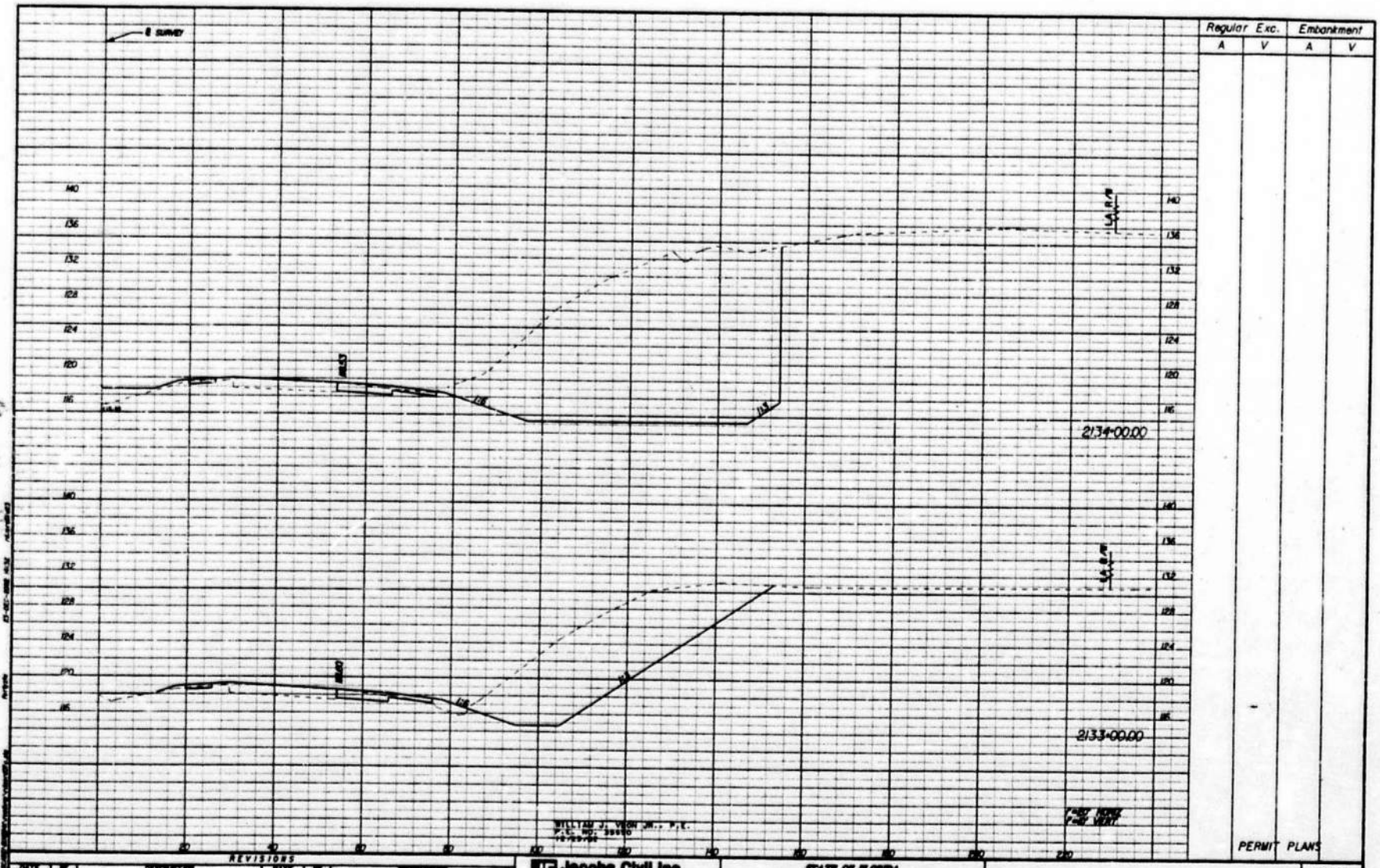
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD ID	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO.
54



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

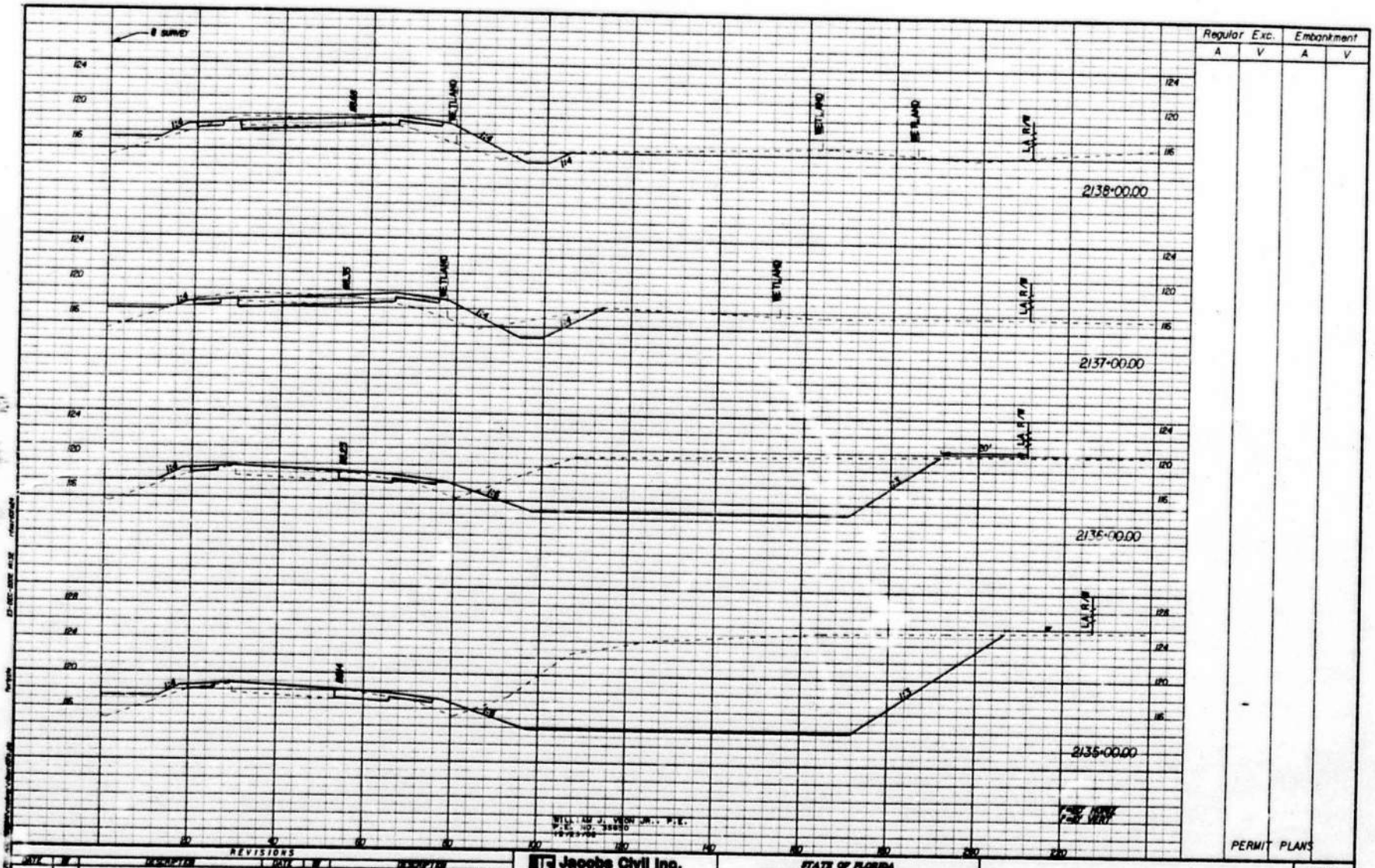
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 55



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 56

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Highwoods Preserve Parkway
Tampa, FL 33610
Tel: (813) 971-3434

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 57

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

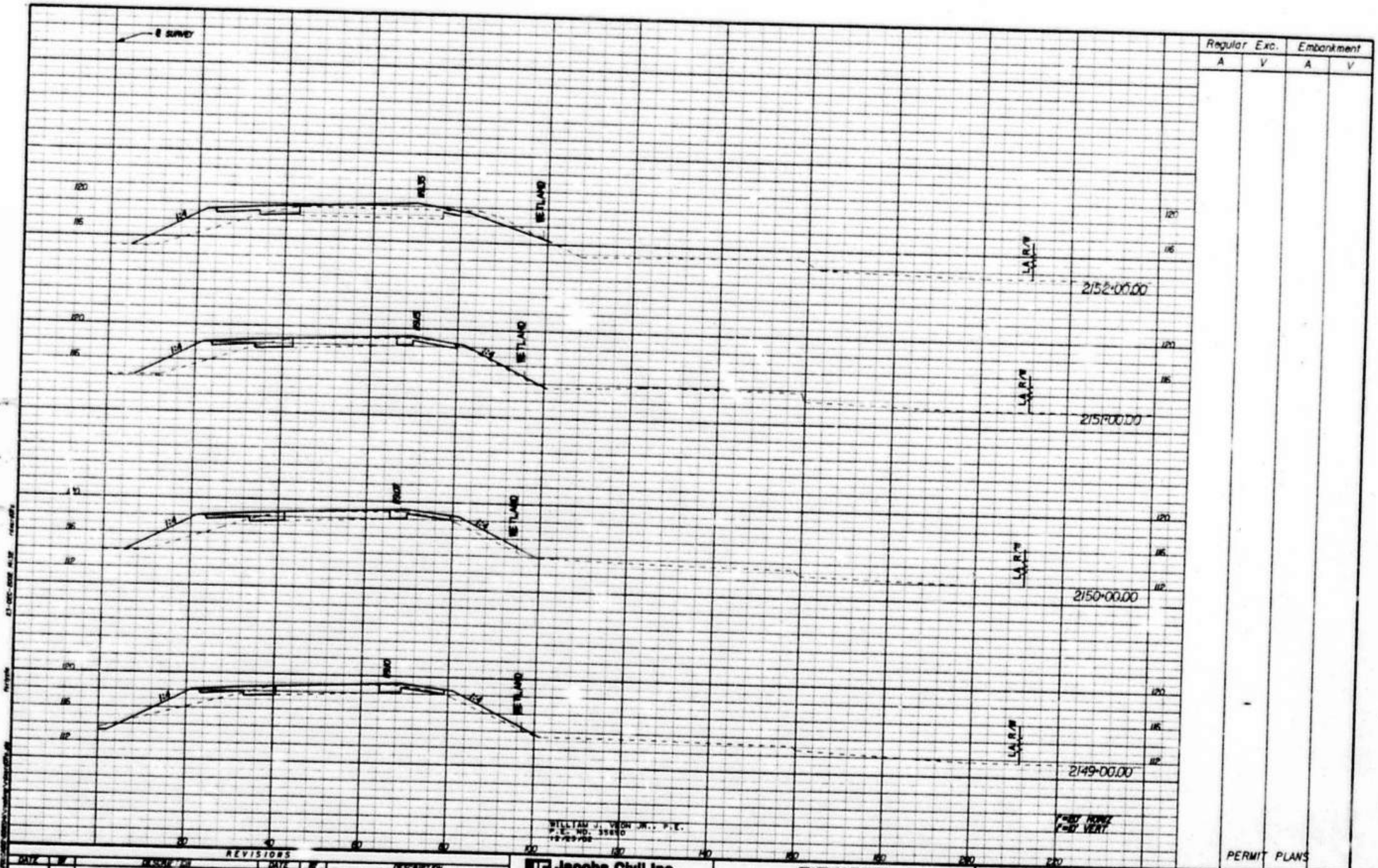
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120[illegible]

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 58

E-93

382



WILLIAM J. VEON JR., P.E.
P.E. NO. 35850

REVISIONS	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
Tampa, FL
ENGINEER OF RECORD:
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

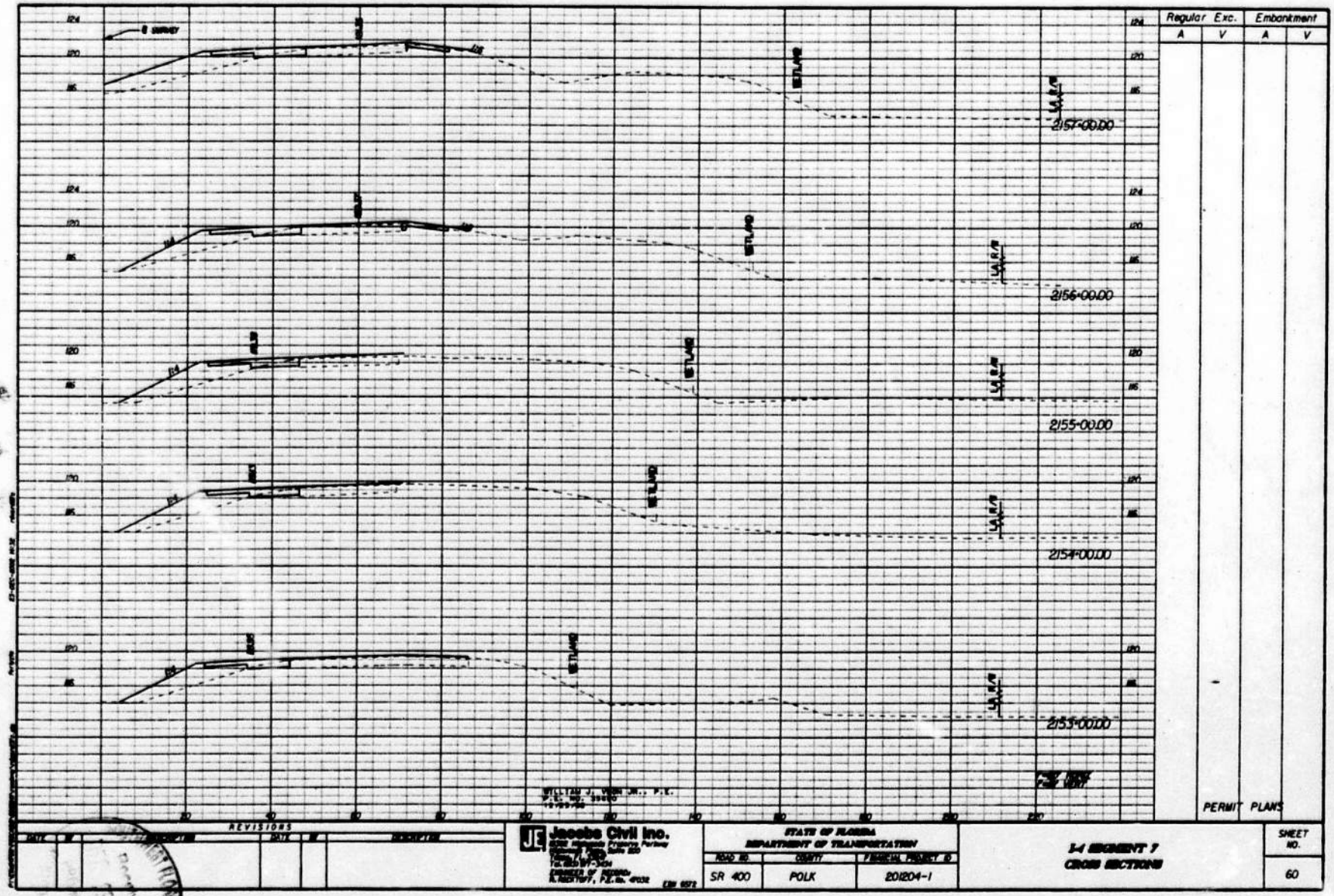
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 59

E-94

383



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

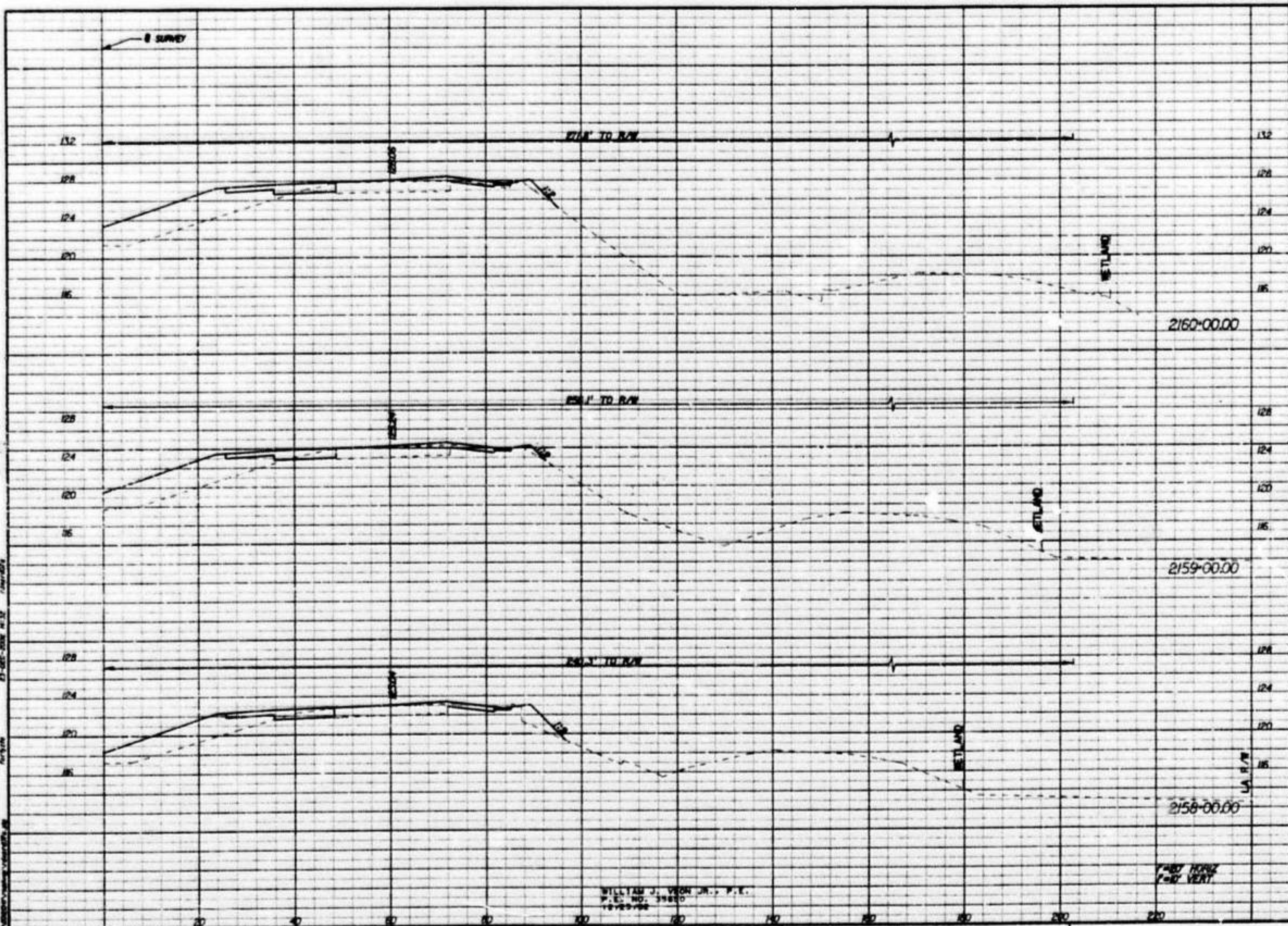
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 60



Regular Exc.		Embankment	
A	V	A	V

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

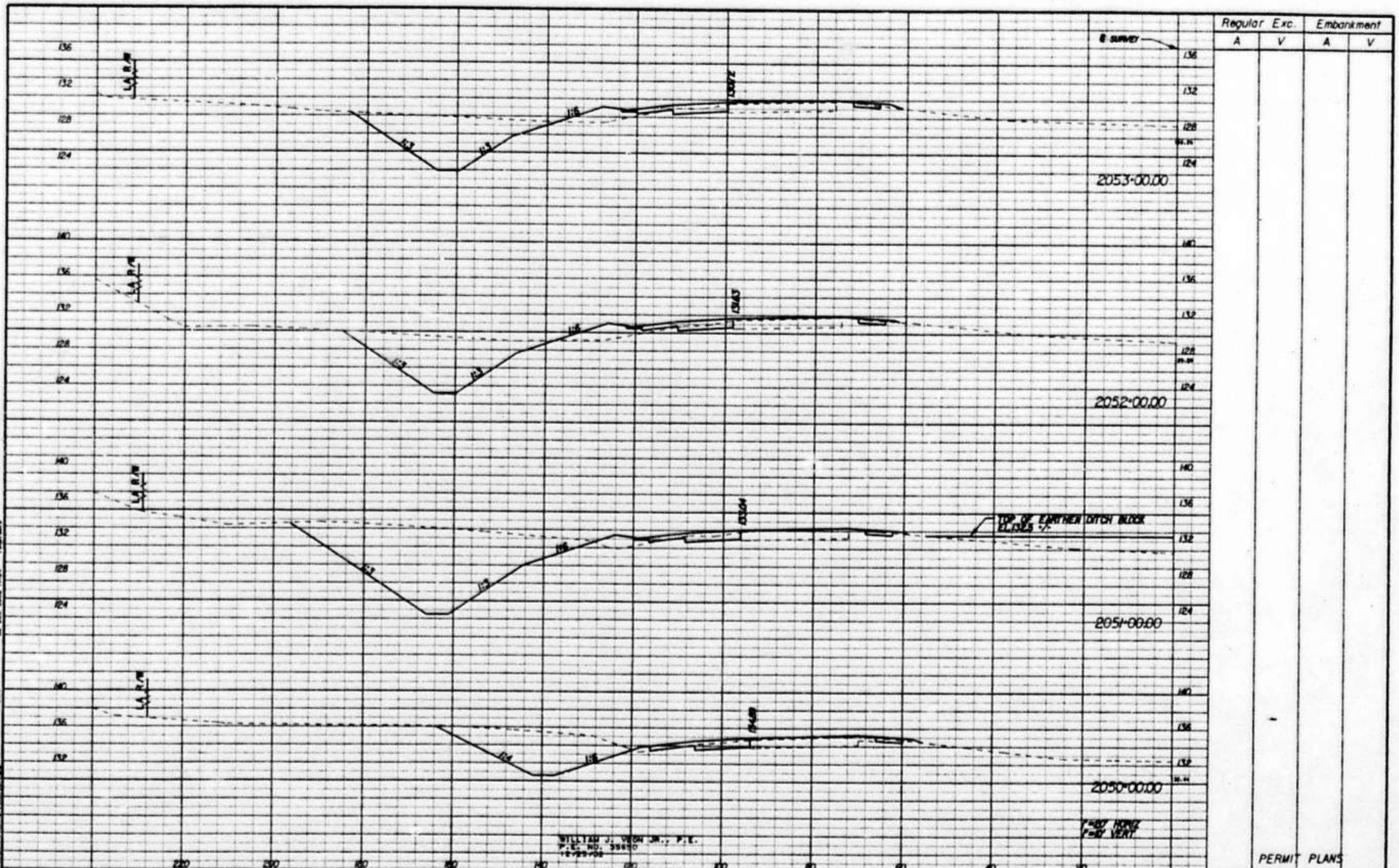
Jacobs Civil Inc.
8302 HWY Preserve Parkway
Suite 200
Tampa, FL 33647
Tel.(813) 977-3434
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 47032
EDM 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SEGMENT 7
CROSS SECTIONS

SHEET NO. 61



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

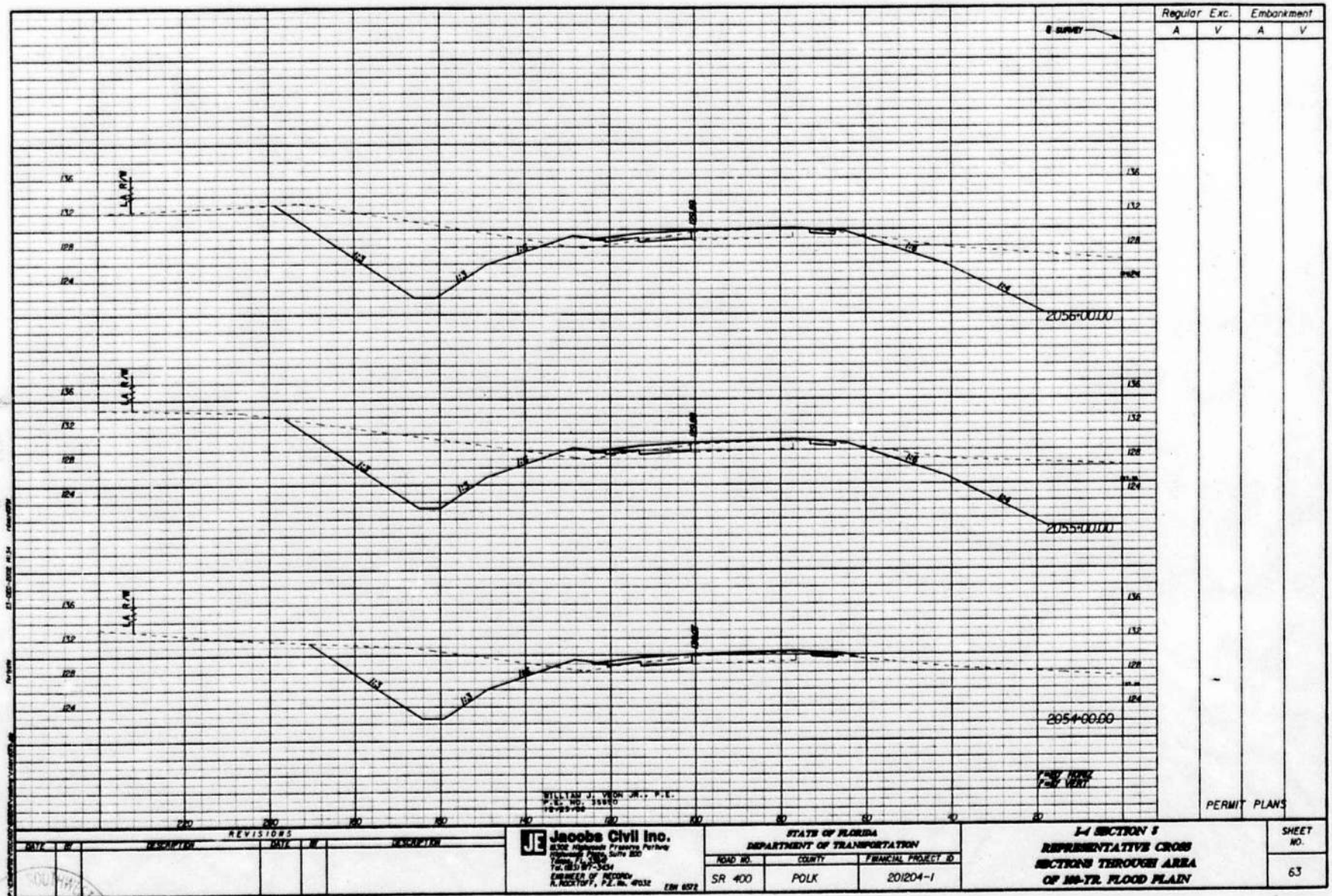
Jacobs Civil Inc.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 62

E-97
386



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

WILLIAM J. VEON JR., P.E.
P.E. NO. 39910
10-29-08

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

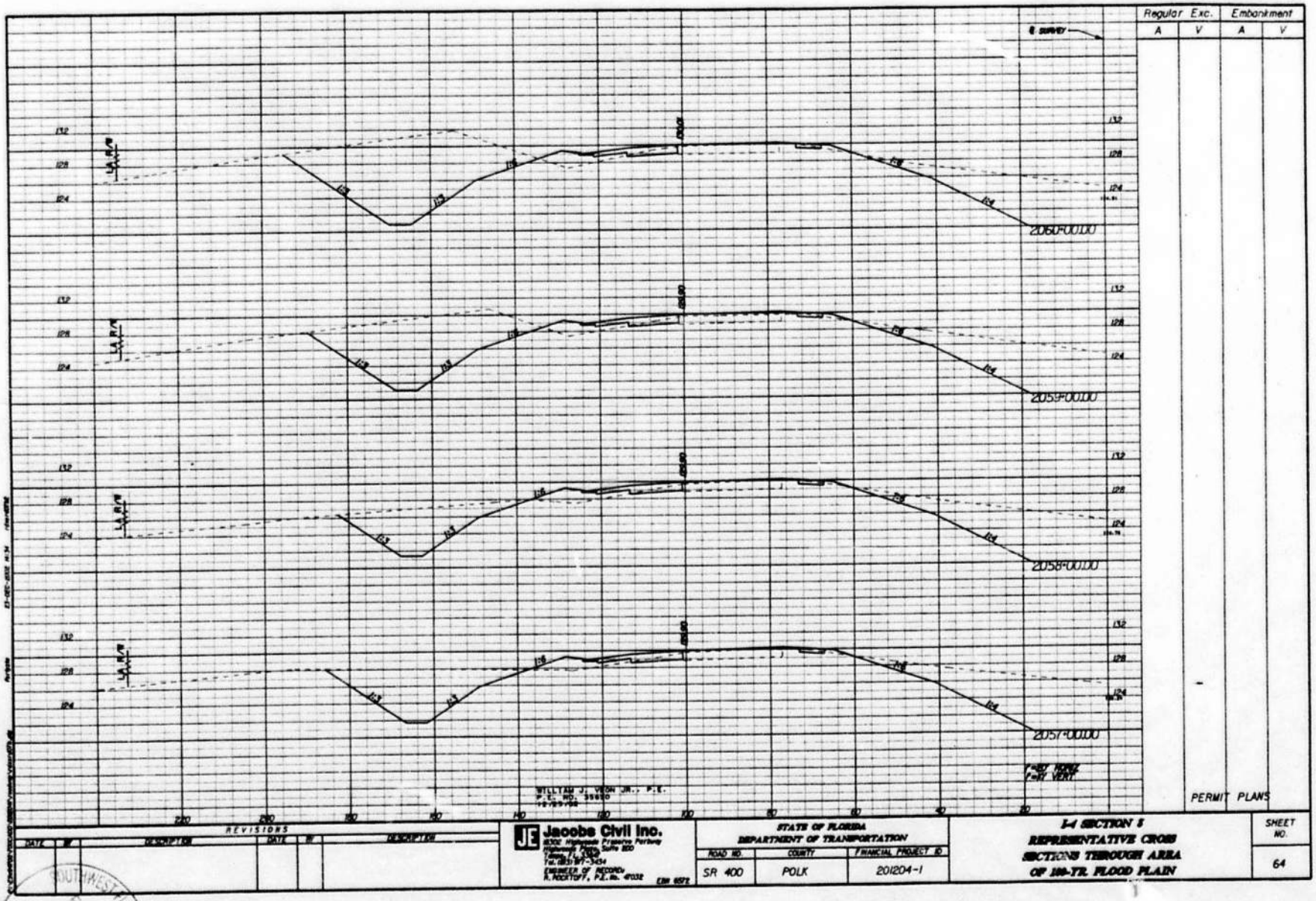
I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 63

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Brooksville, Florida
HEAD QUARTERS

E-98

387



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

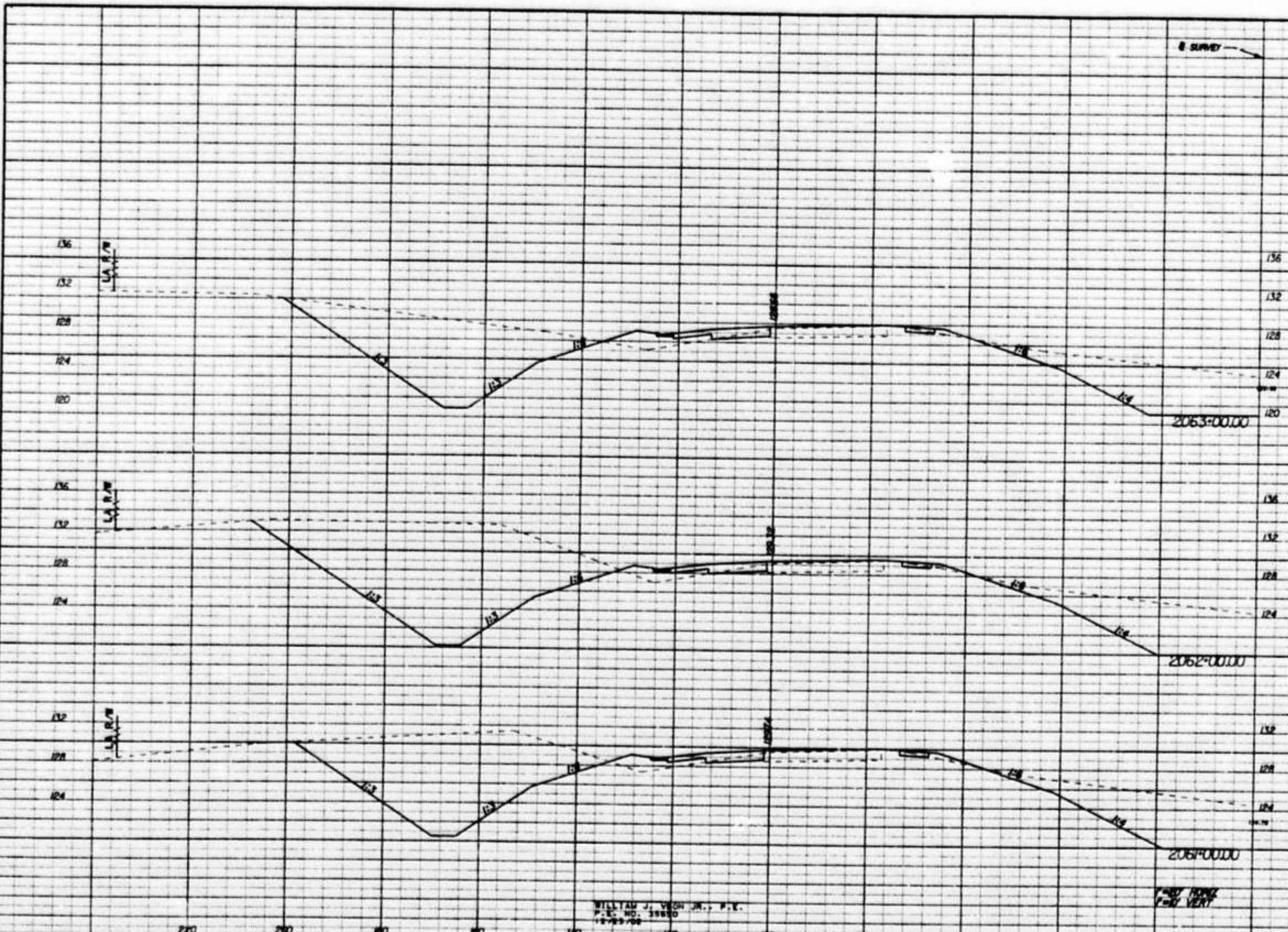
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 64

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT



Regular Exc.		Embankment	
A	V	A	V

PERMIT PLANS

WILLIAM J. VEON JR., P.E.
P.E. NO. 39850

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
ENGINEER OF RECORD:
EB# 6572

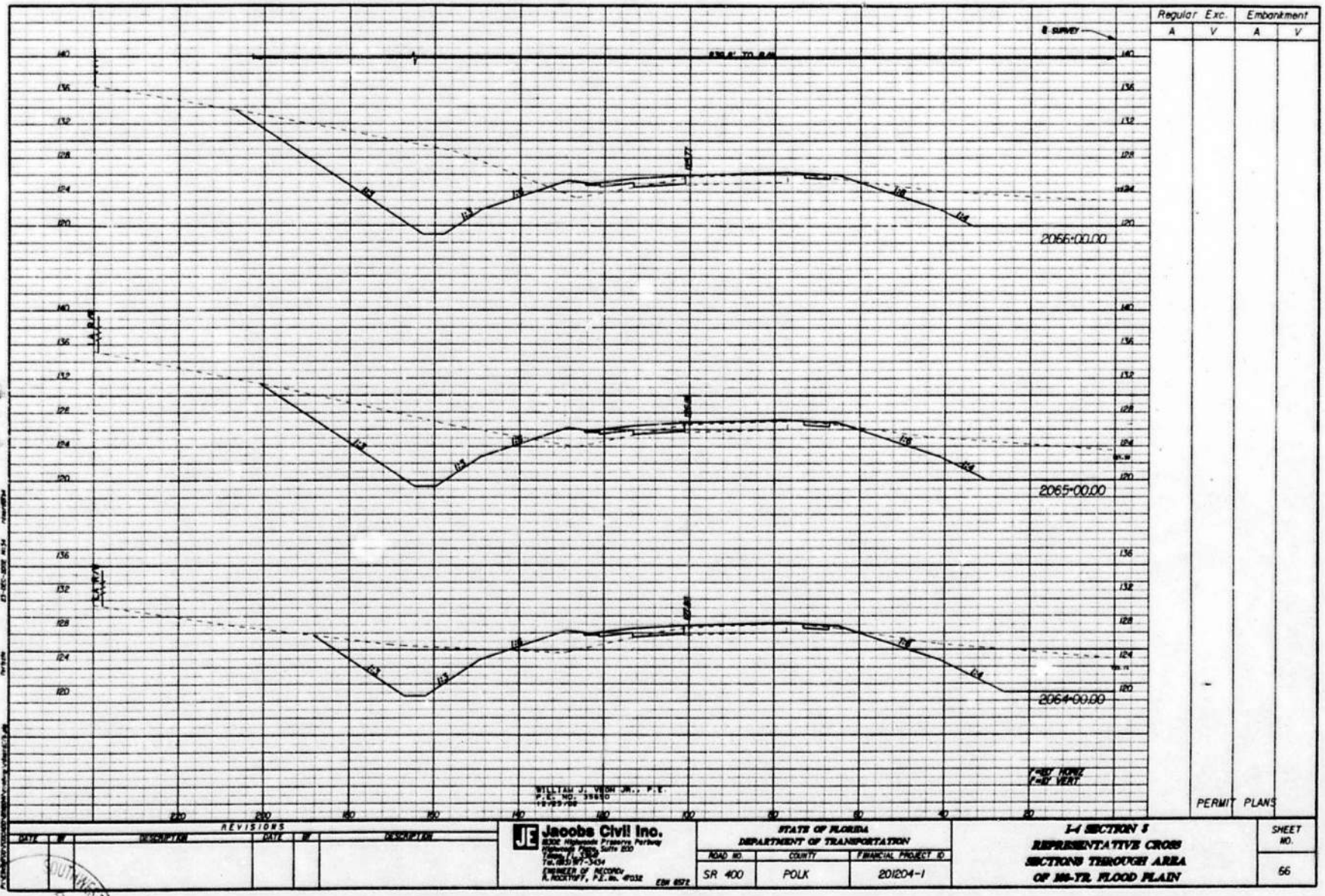
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 65

E-100
384



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highlands Preserve Parkway
Suite 200
Tel. (813) 977-3434
ENGINEER OF RECORD
EB# 6521

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

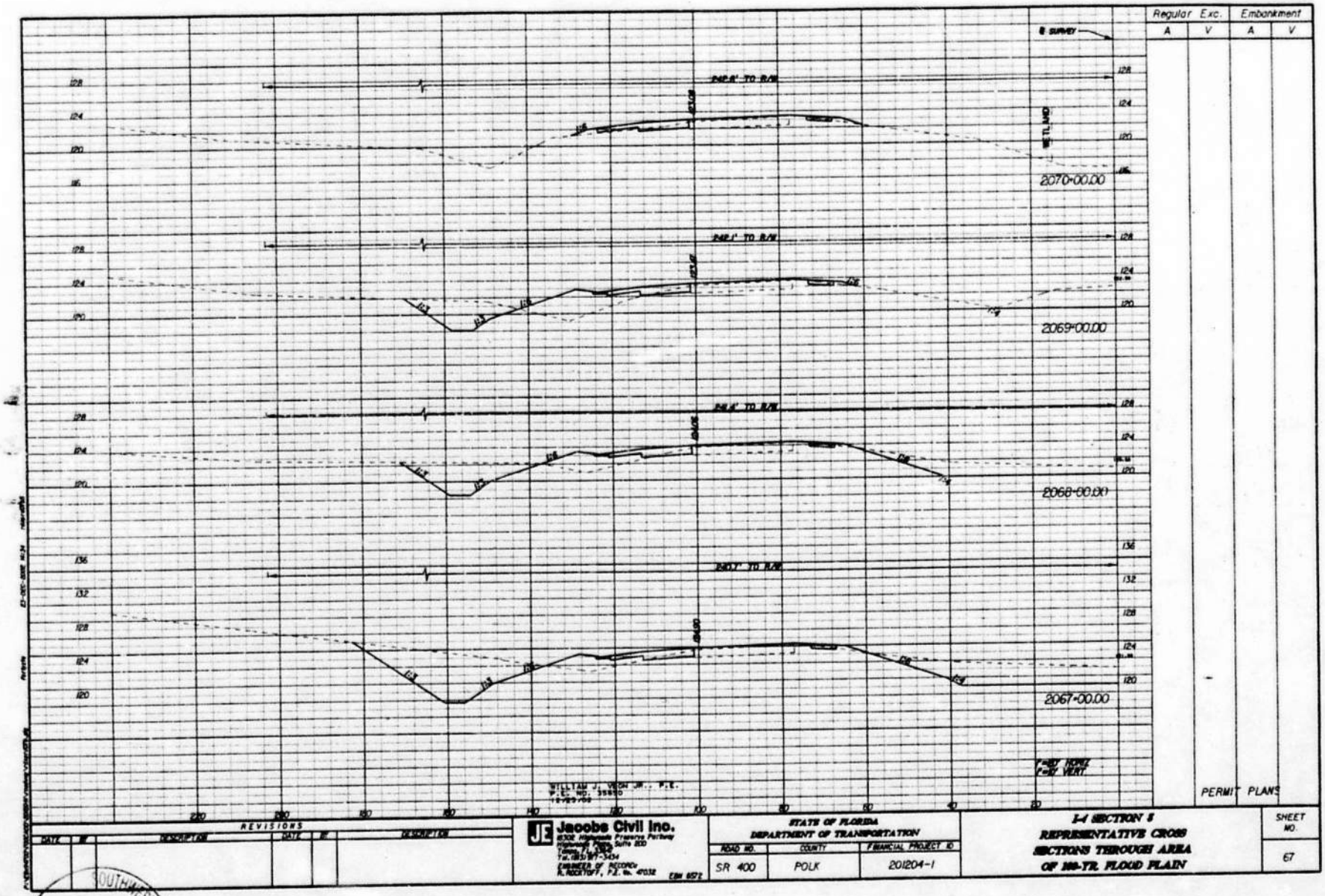
I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 66

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
REVIEWED
HEC-EAHTON

E-101

390



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6300 Hoffman Preserve Parkway
Lakewood Ranch, Florida 34202
Tel. (813) 917-3434
ENGINEER OF RECORD
R. ROCKTOFF, P.E. No. 47032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

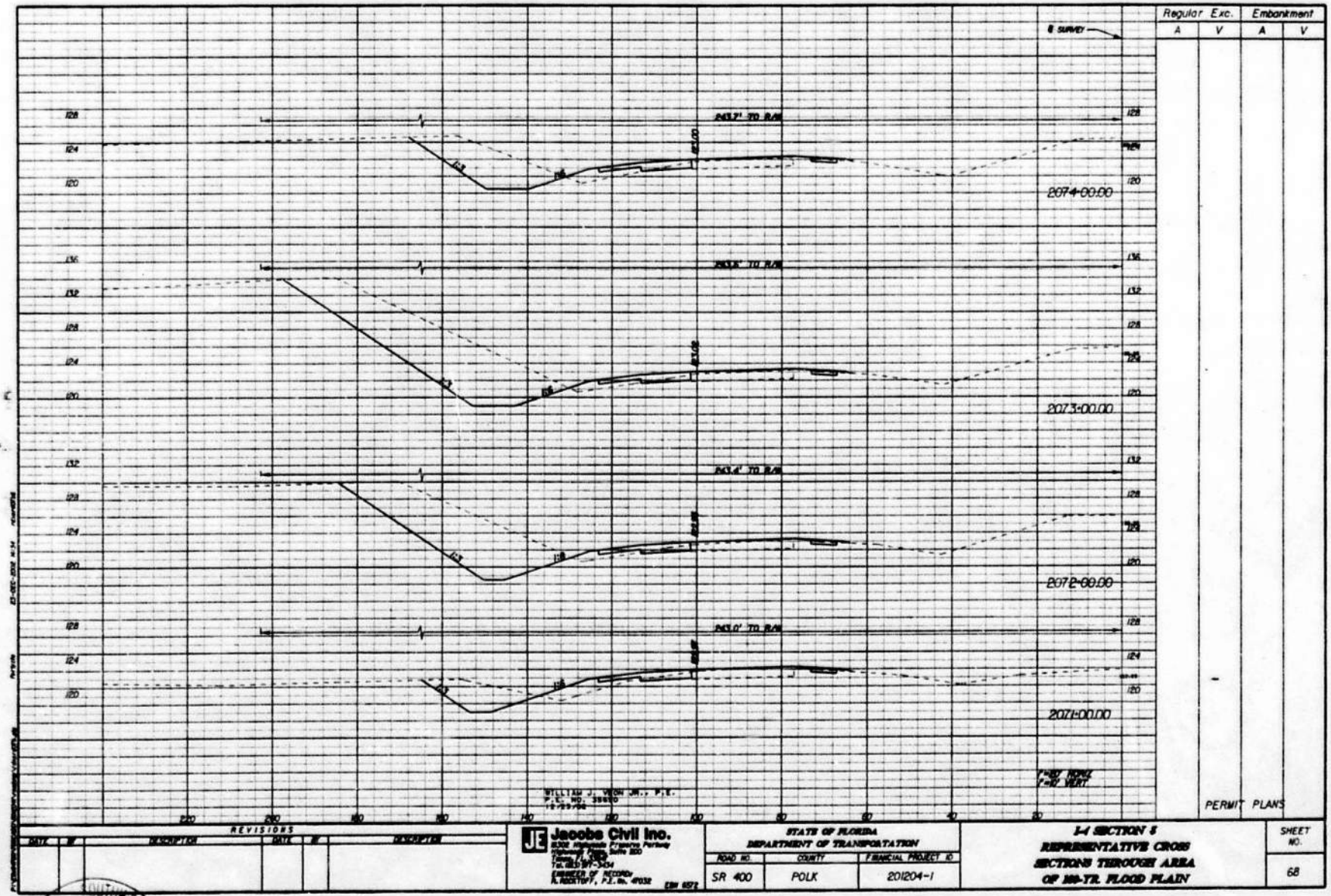
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 67

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed
PHILBARTON

E-102
391



WILLIAM J. VEON JR., P.E.
P.E. NO. 39870

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

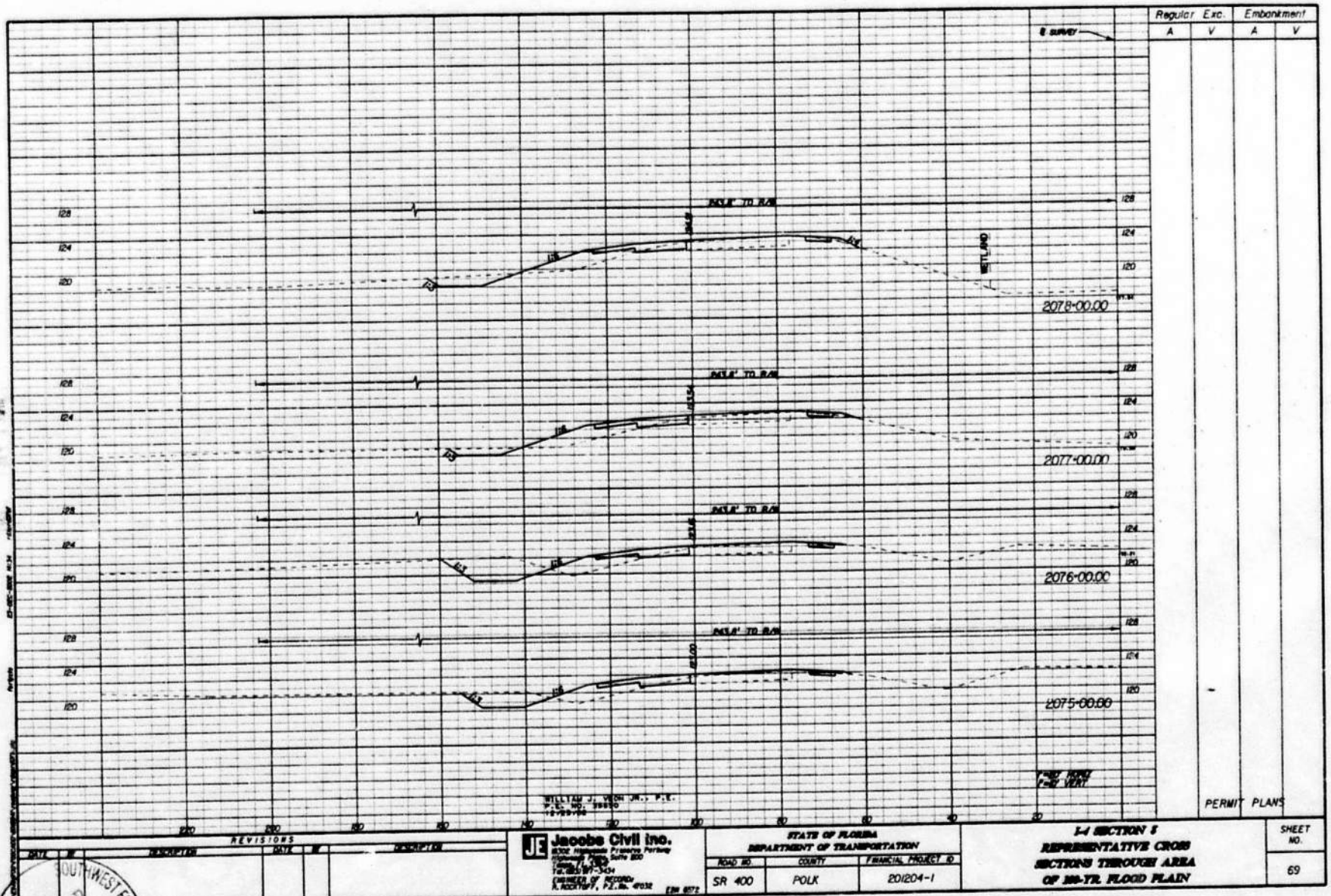
Jacobs Civil Inc.
EB 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 68



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

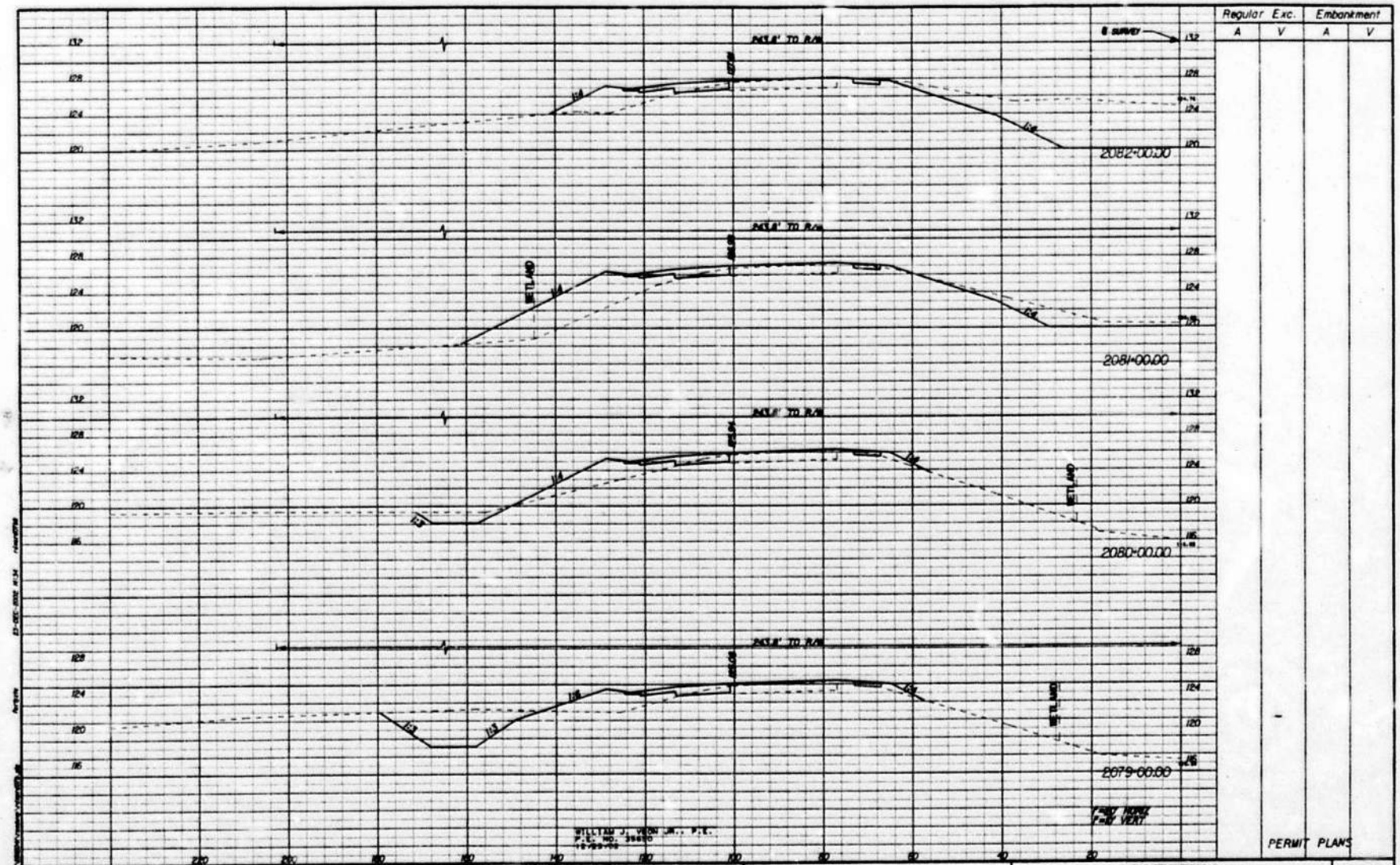
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 69

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Received
DEC 30 2002
BRANCH
RECORDS & DATA

E-104
393



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8300 Highwoods Preserve Parkway
Suite 200
Tel. 813/971-3434
ENGINEER OF RECORD: K. Rockhoff, P.E. No. 49032 EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

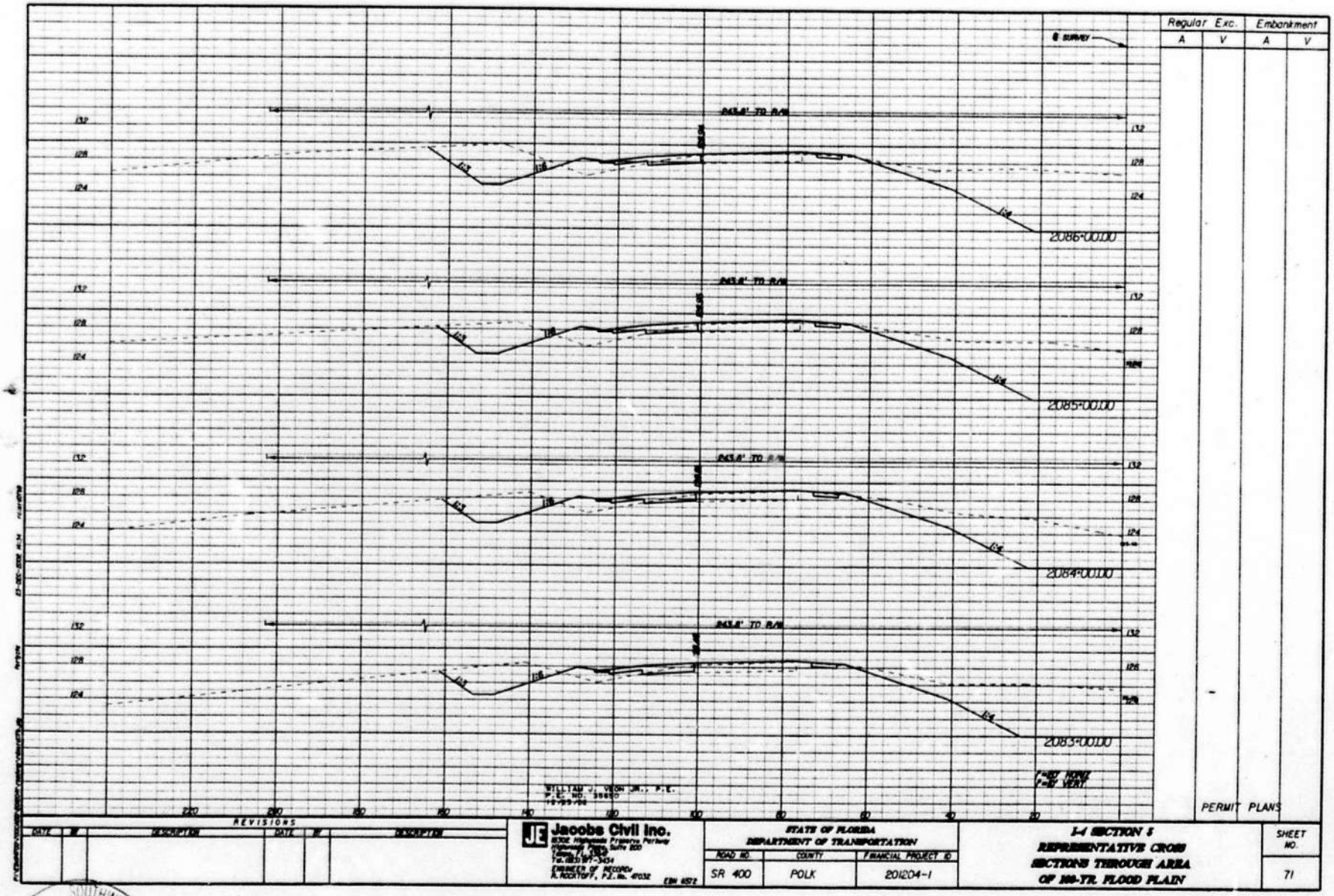
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 70

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Approved
BROOKSVILLE

E-105
394



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

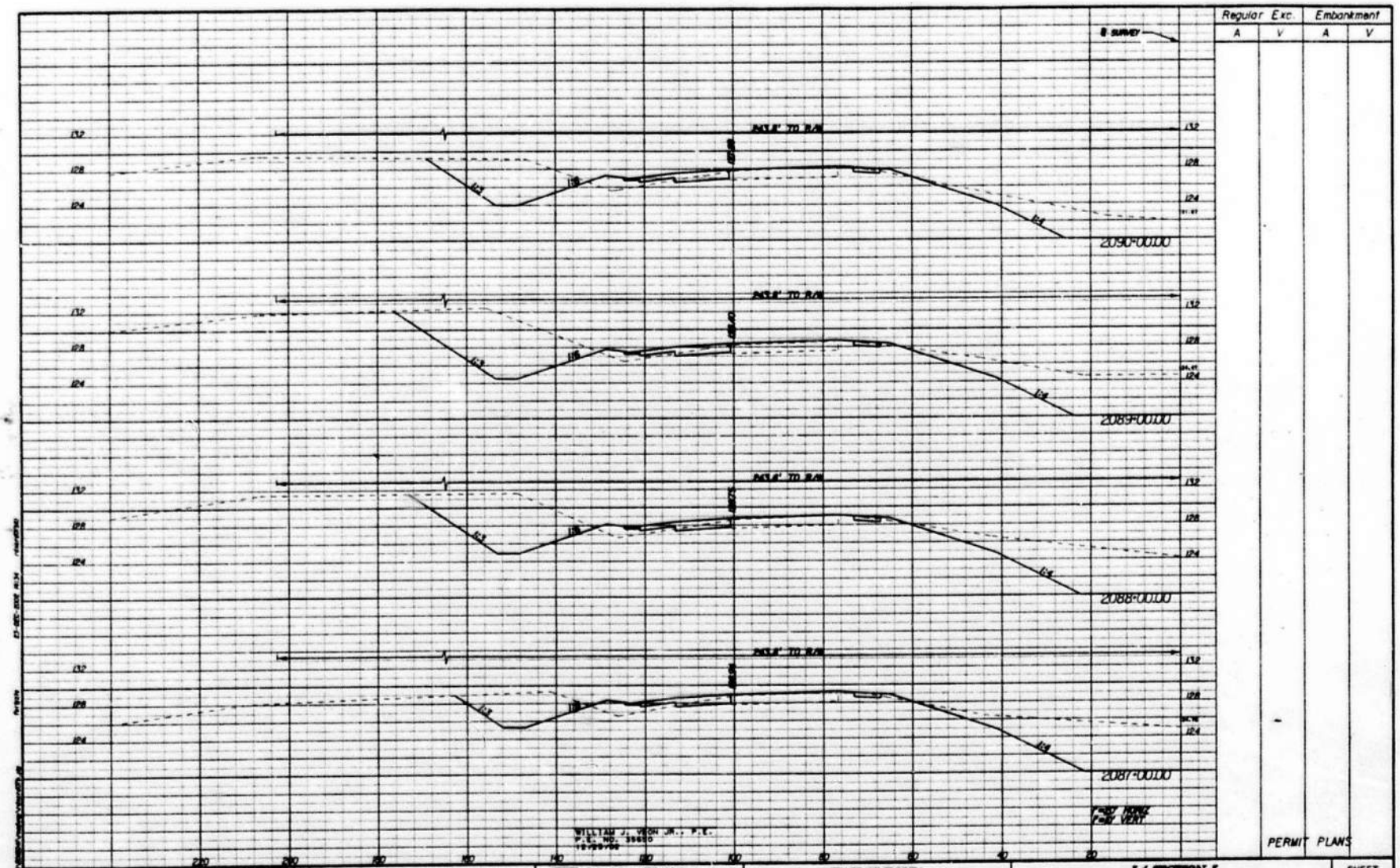
Jacobs Civil Inc.
8300 Highwoods Preserve Parkway
Suite 200
Tampa, FL 33610
Tel. (813) 347-3434
ENGINEER OF RECORD
R. ROCKTOFF, P.E. No. 49032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 71



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6302 Hillsdale Property Parkway
Orlando, FL 32819
Suite 200
Tel. (813) 971-3434
ENGINEER OF RECORD:
R. ROOTOFF, P.E. No. 49032
EB# 6571

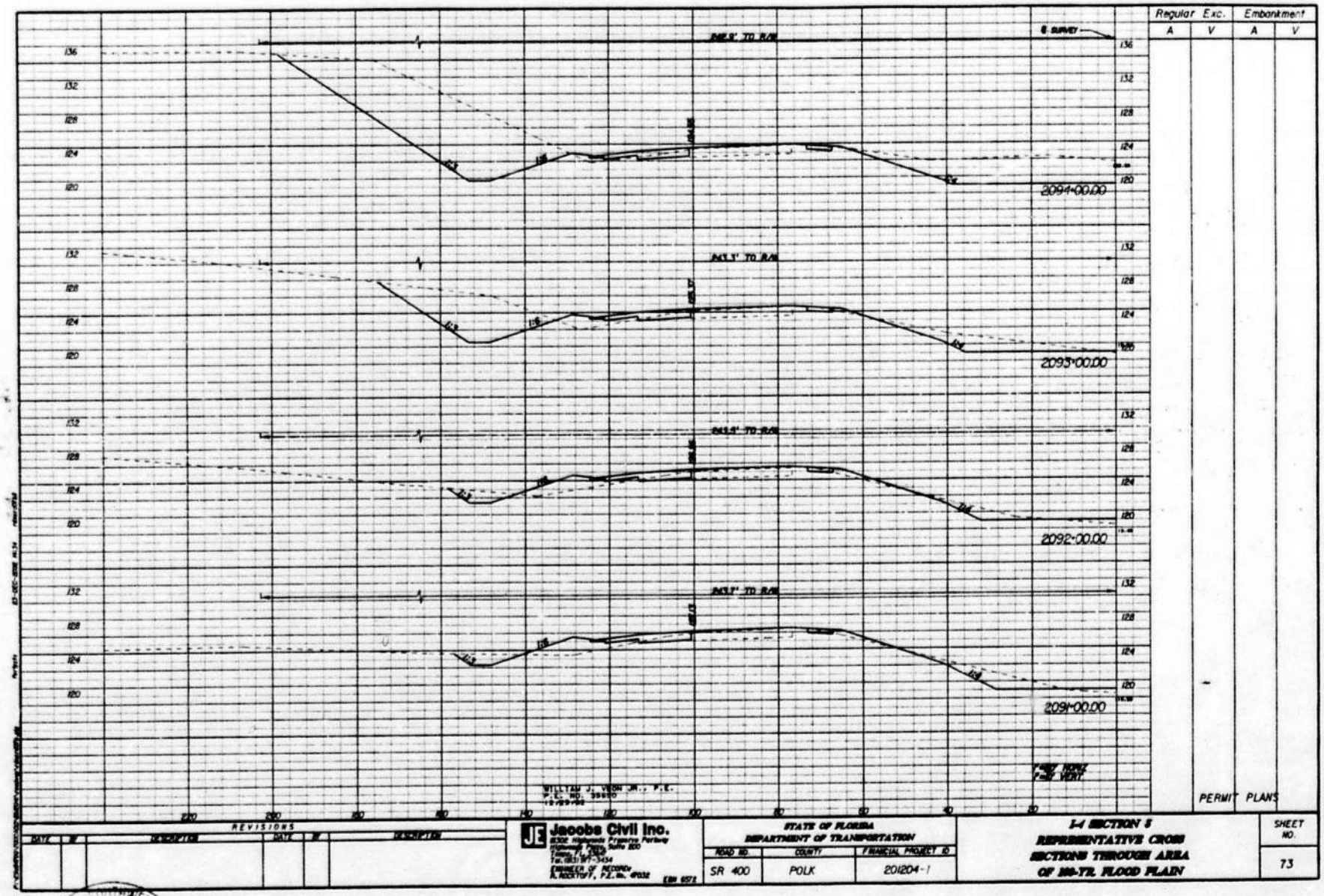
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 72

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Approved
29
TAMPA BAY



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

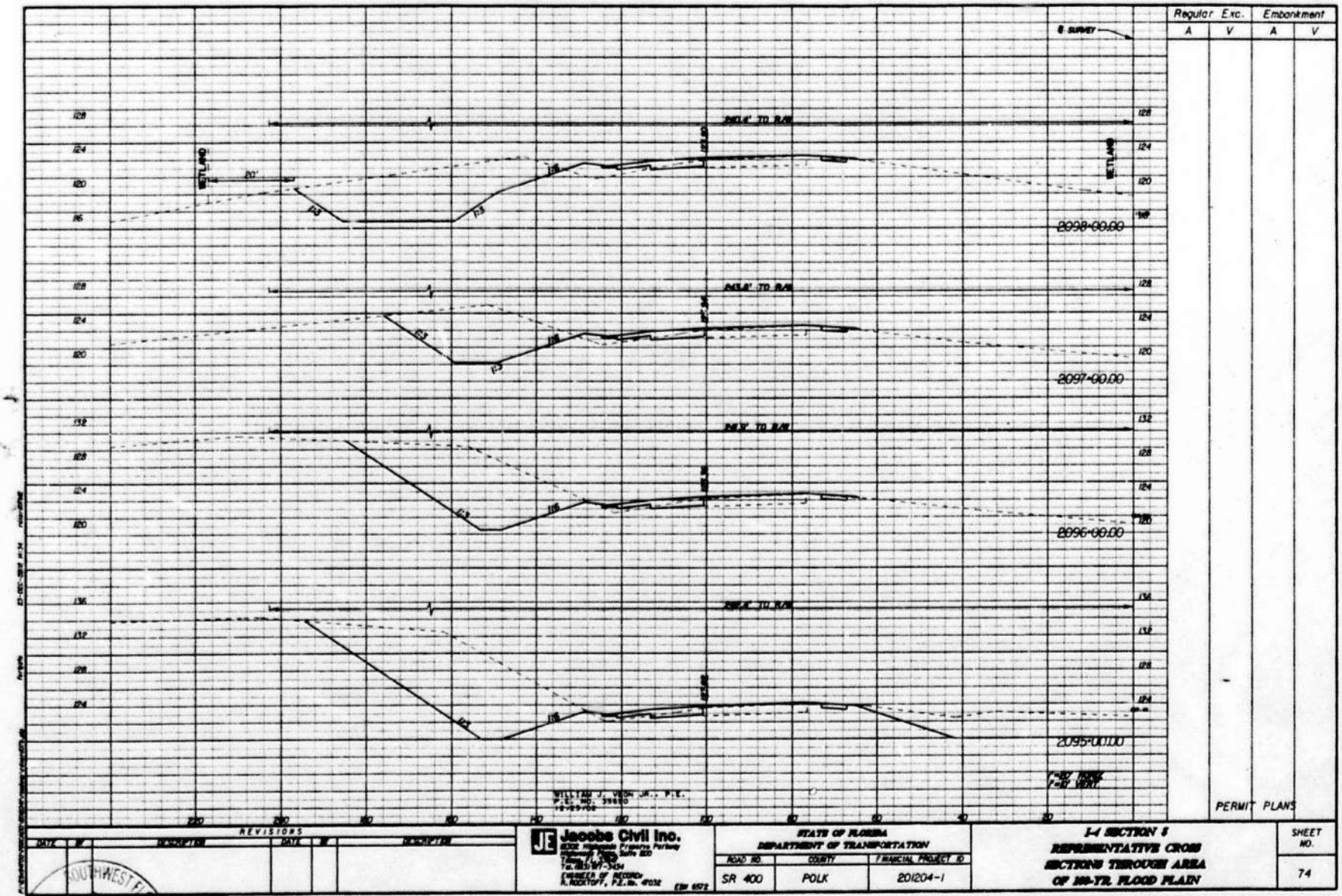
Jacobs Civil Inc.
6300 Hollywood Pkwy Suite 200
Tampa, FL 33634
Tel. (813) 367-3434
ENGINEER OF RECORD
K. ROCKOFF, P.E. No. 49032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 73



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

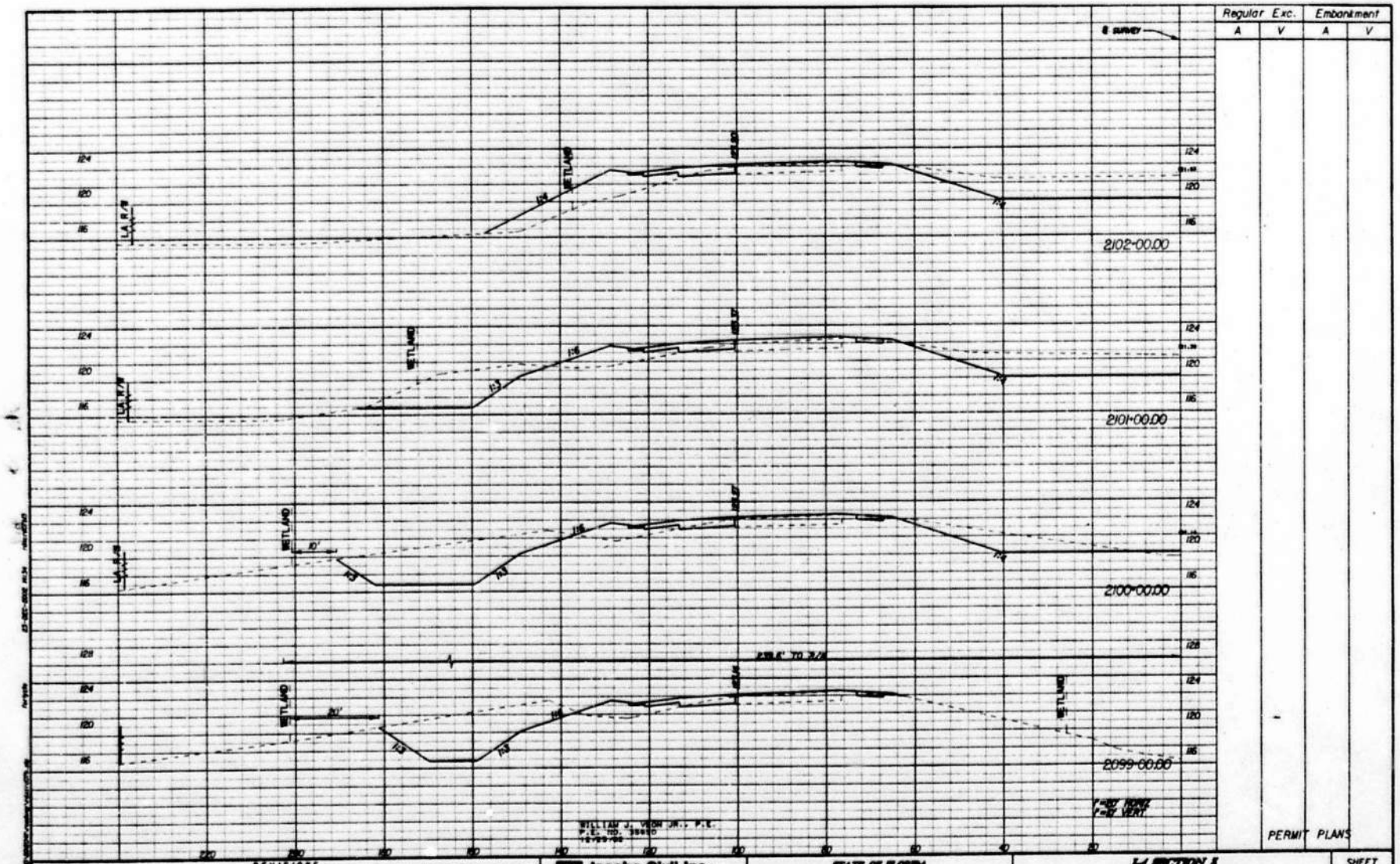
WILLIAM J. VECH JR., P.E.
P.E. NO. 39680
10-29-102

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 74



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

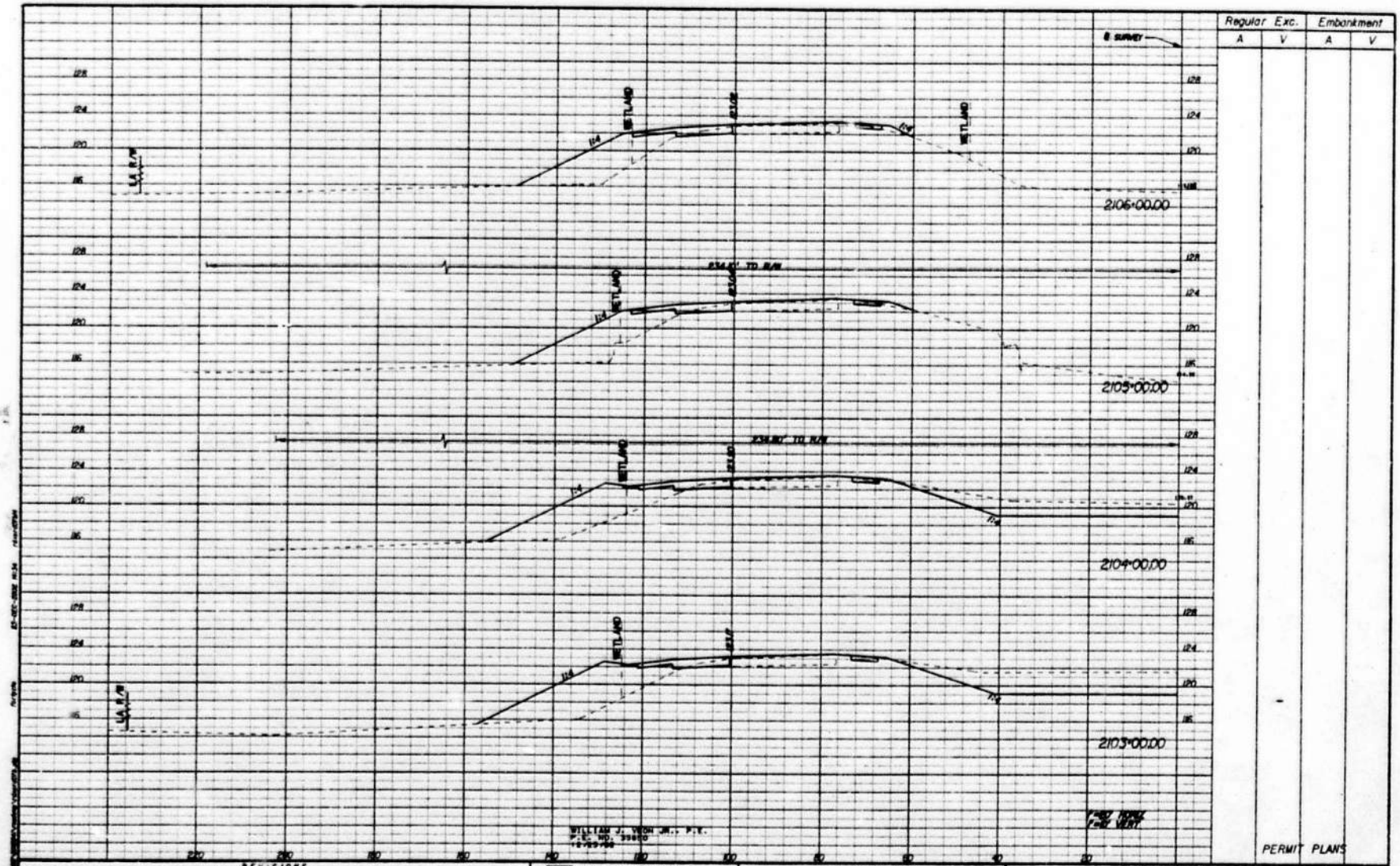
I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 75

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Reviewed
HNU-BARTON

E-110

399



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

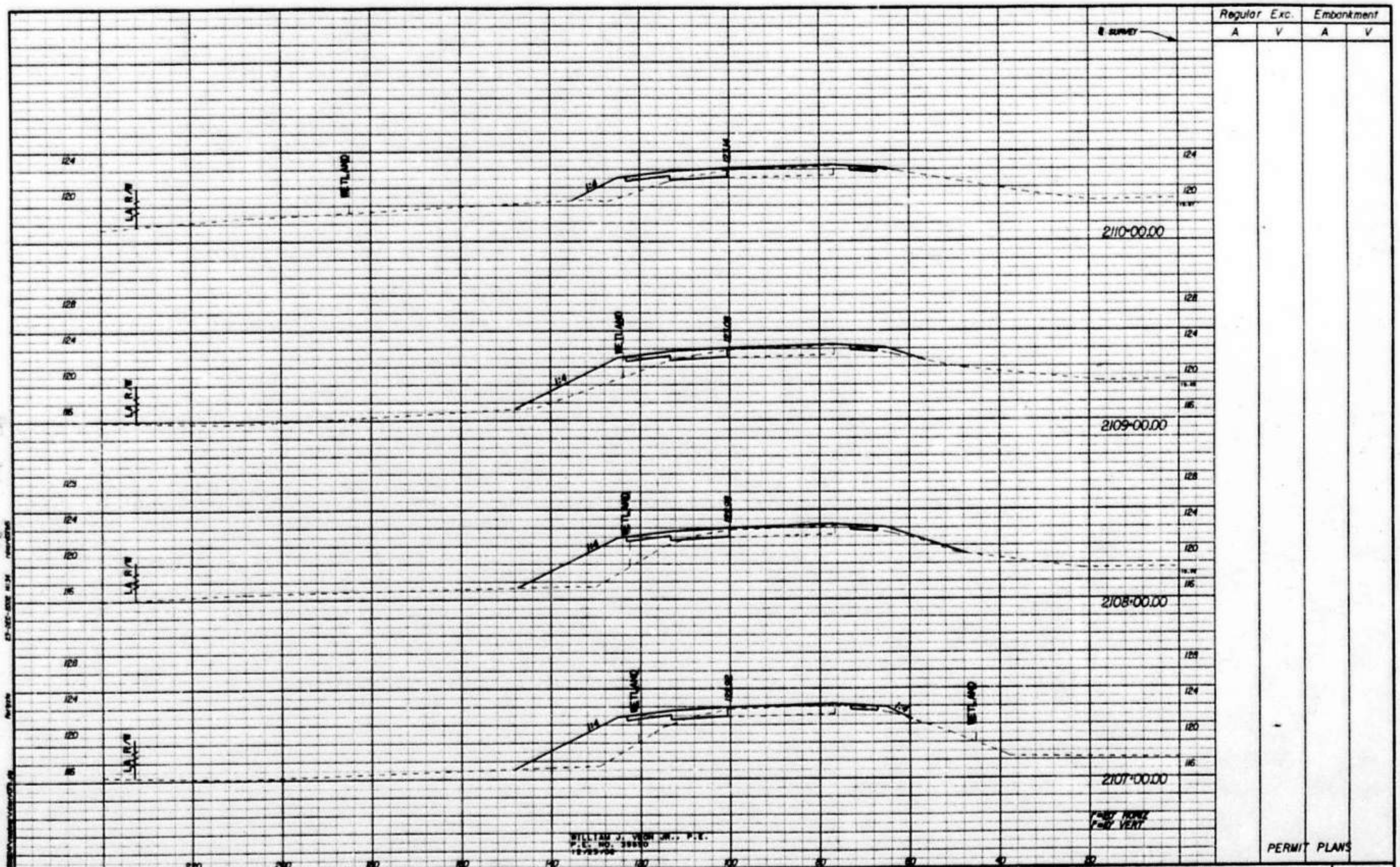
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 76



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

ENGINEER OF RECORD: R. ROCKTOFF, P.E. No. 41032

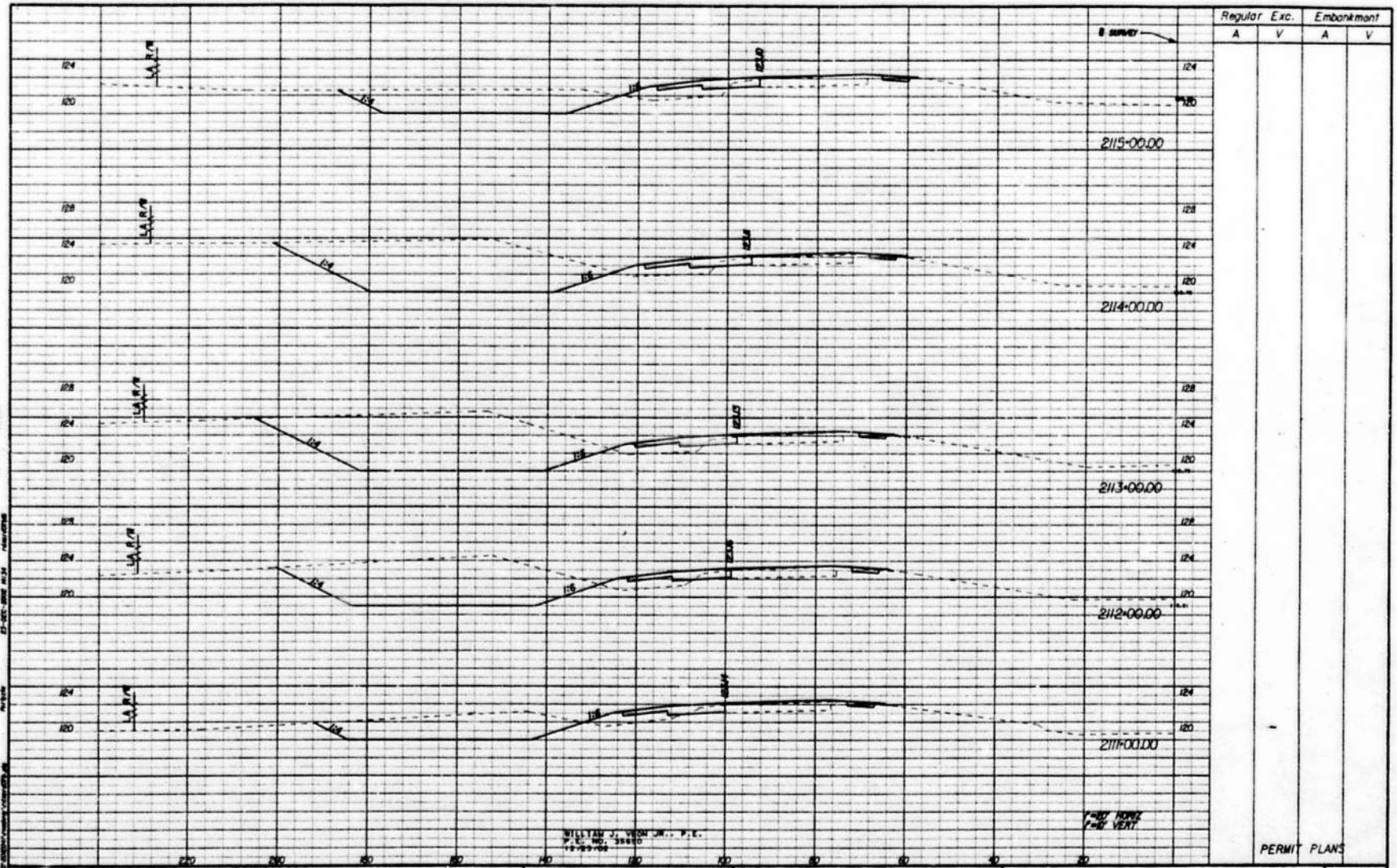
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 77

E-112

401



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

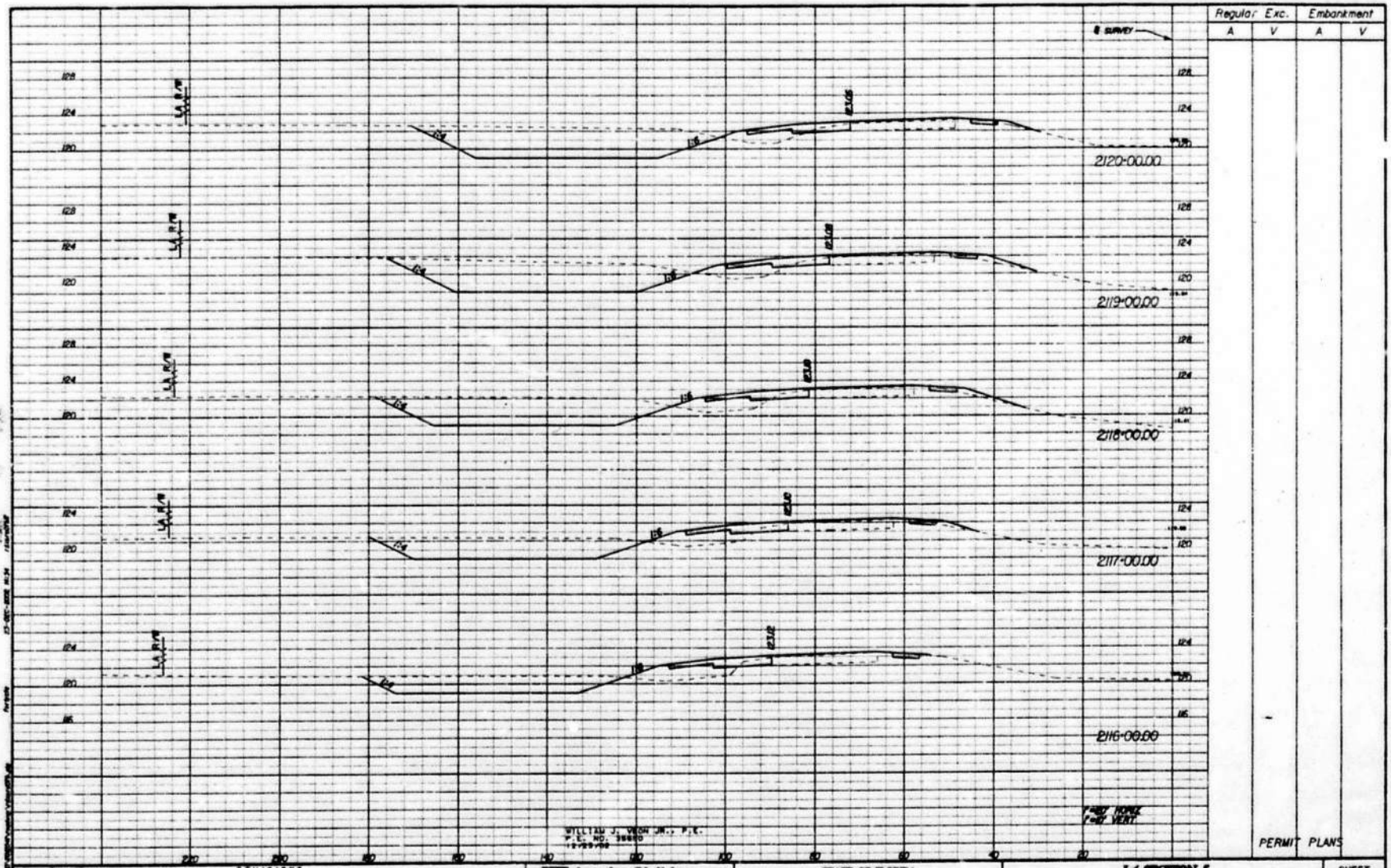
Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Preserve Parkway Suite 200
Tampa, FL 33610
Tel. (813) 971-3434
ENGINEER OF RECORD
K. Rockhoff, P.E. No. 49132
EB# 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
78



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

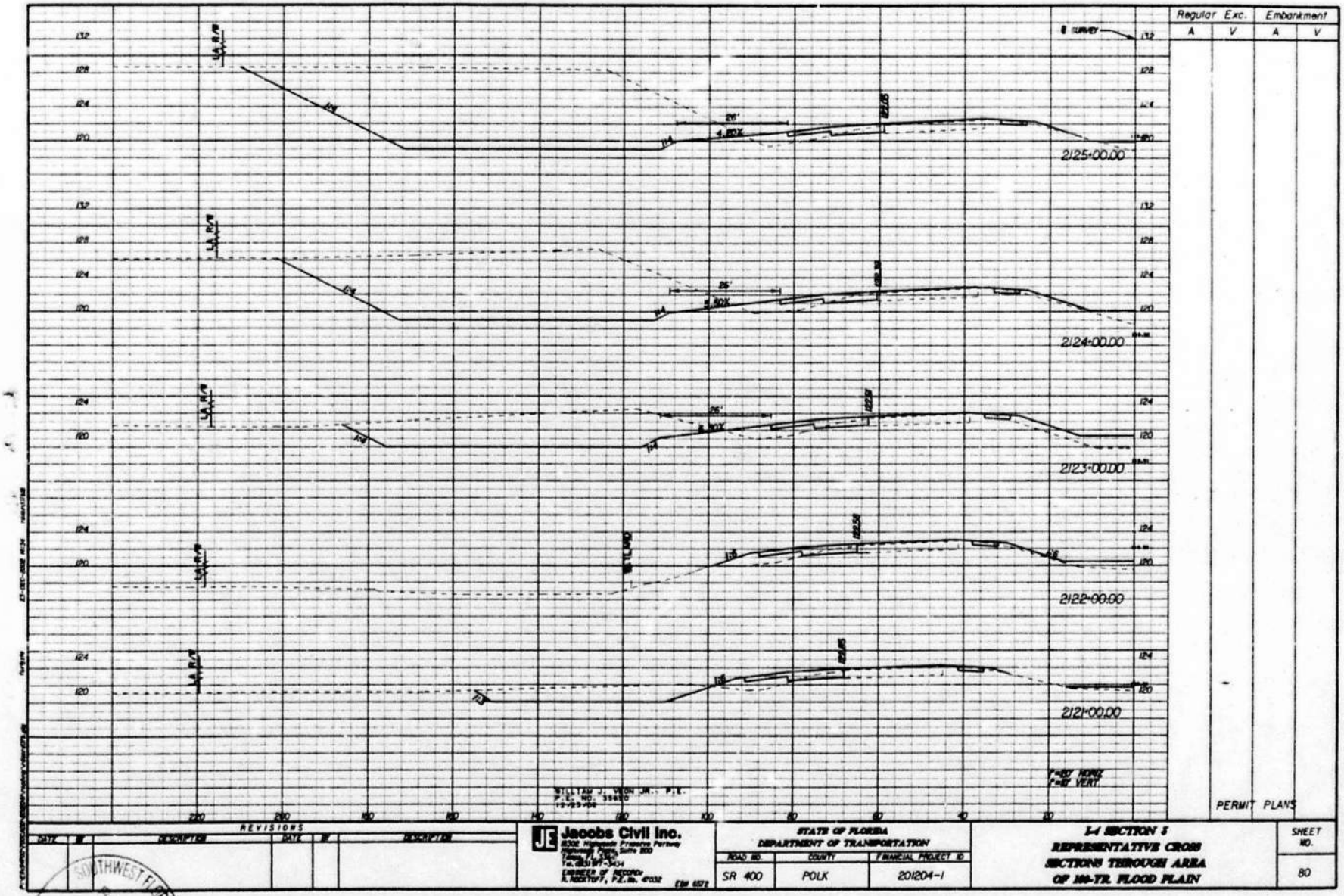
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 79



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
6308 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 971-3434
ENGINEER OF RECORD
K. RECTOR, P.E. No. 41032
EB# 6572

WILLIAM J. VEON JR., P.E.
P.E. NO. 39810

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

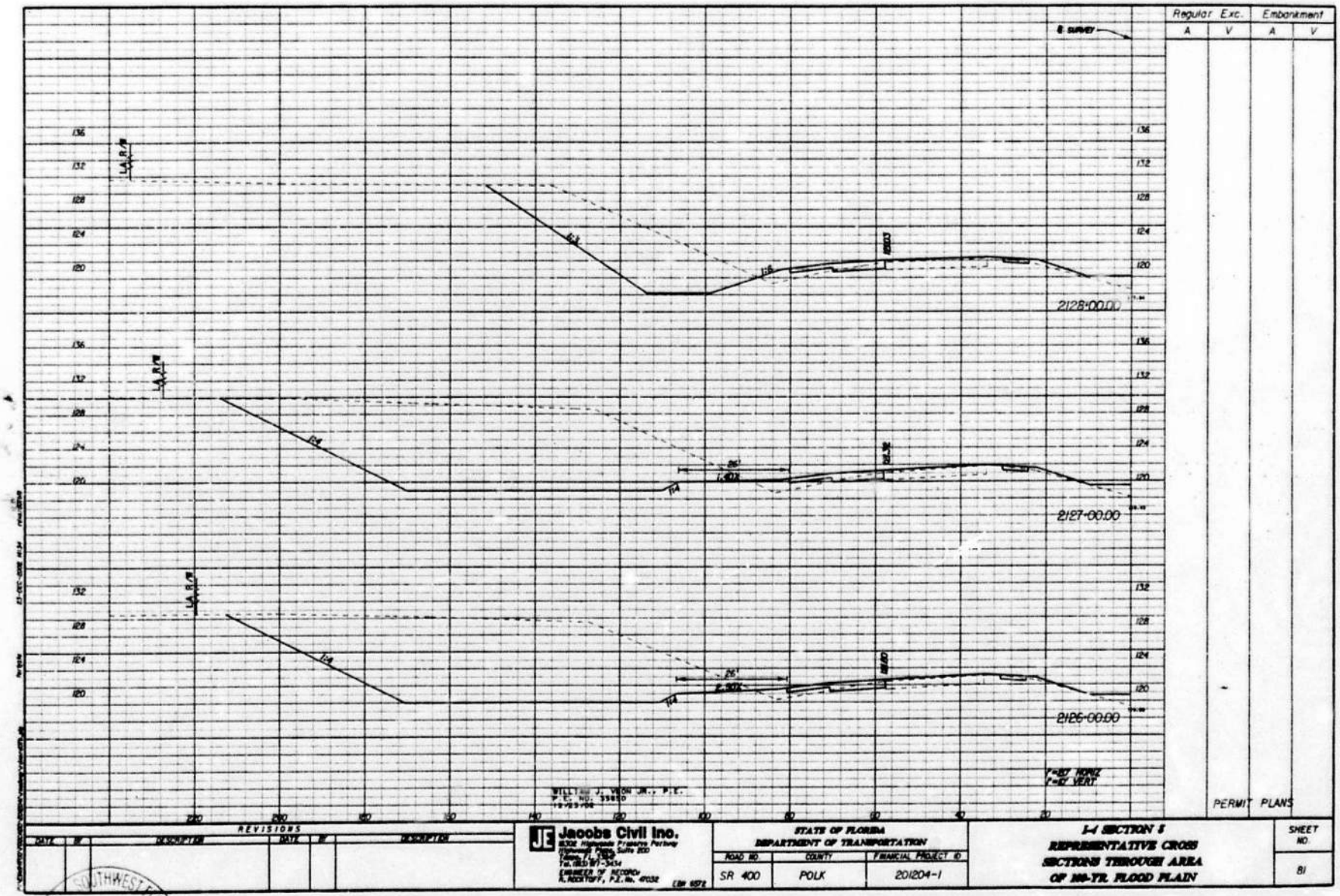
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 80

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RECEIVED
MAR 2012
TAMPA

E-115
404



REVISIONS

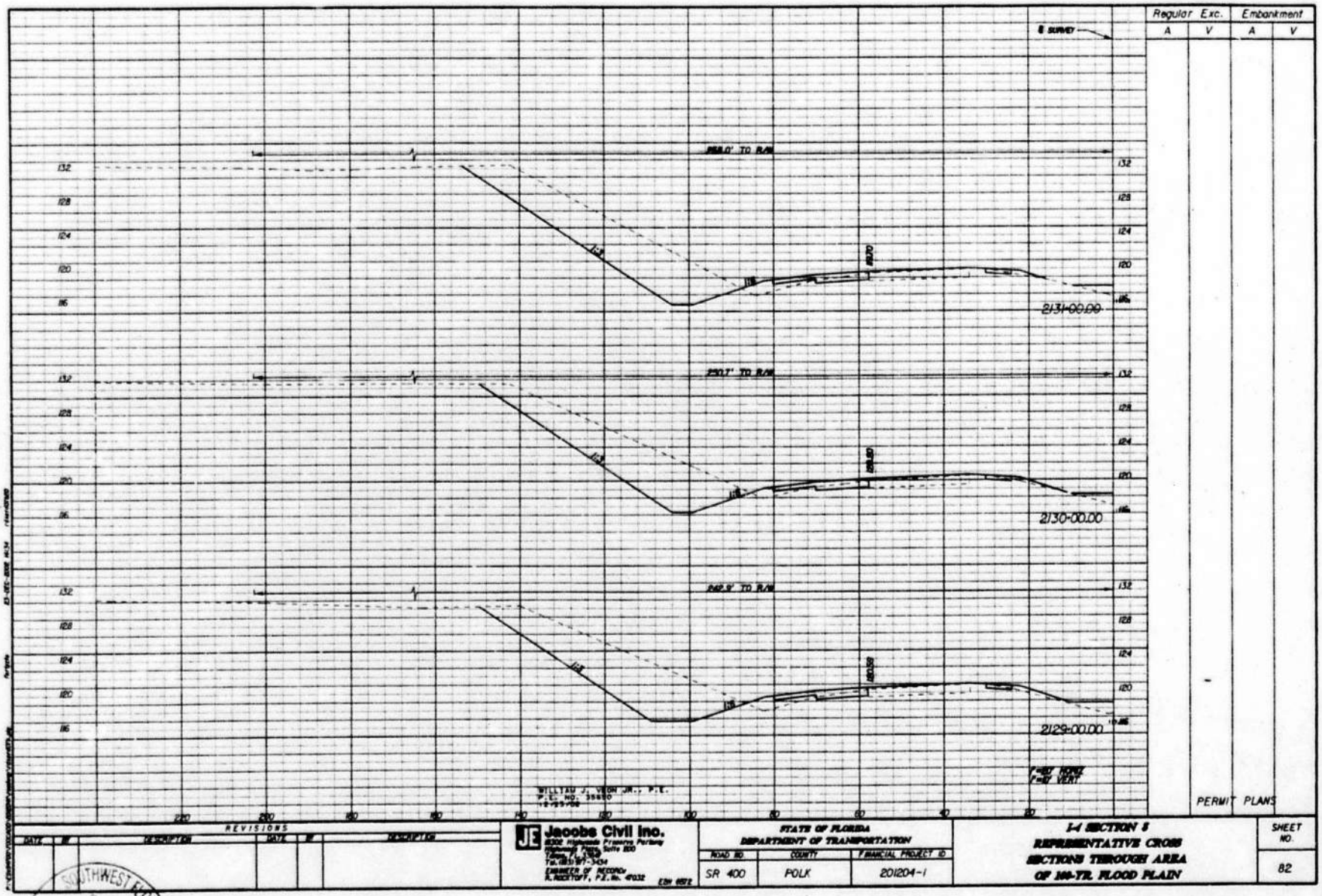
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8008 Highlands Preserve Parkway
Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
ENGINEER OF RECORD:
K. ROCKTOFF, P.E. No. 47032
EB 1572

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 81



WILLIAM J. VEON JR., P.E.
P.E. NO. 35600

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

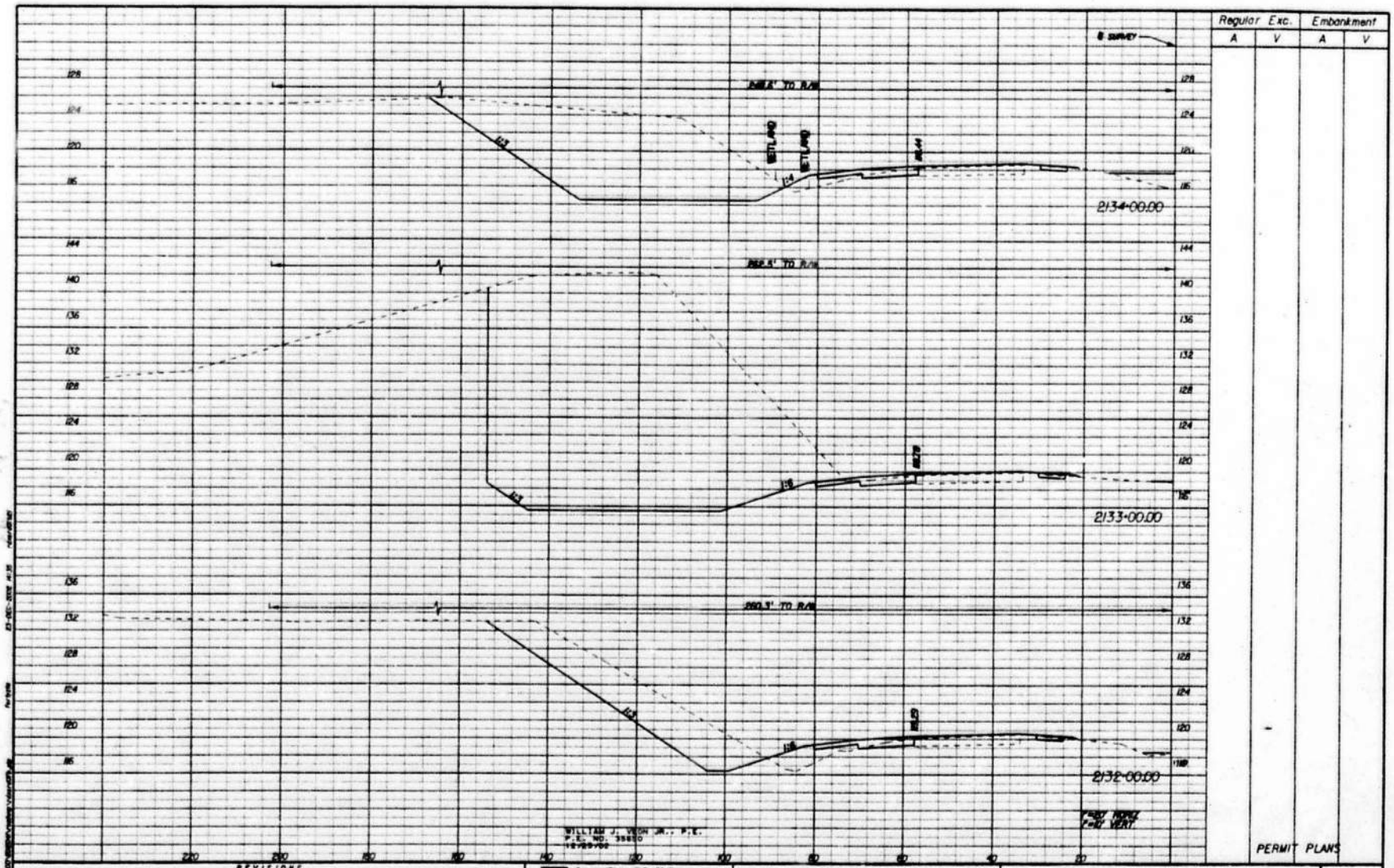
Jacobs Civil Inc.
2002 Highlands Parkway Parkway Suite 200
Tel. (813) 971-3434
ENGINEER OF RECORD
K. RICHTOFF, P.E. No. 49032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 82



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Property Parkway
Tampa, FL 33634
Tel: (813) 891-3434
ENGINEER OF RECORD:
A. ROCKTOFF, P.E. No. 41032
EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

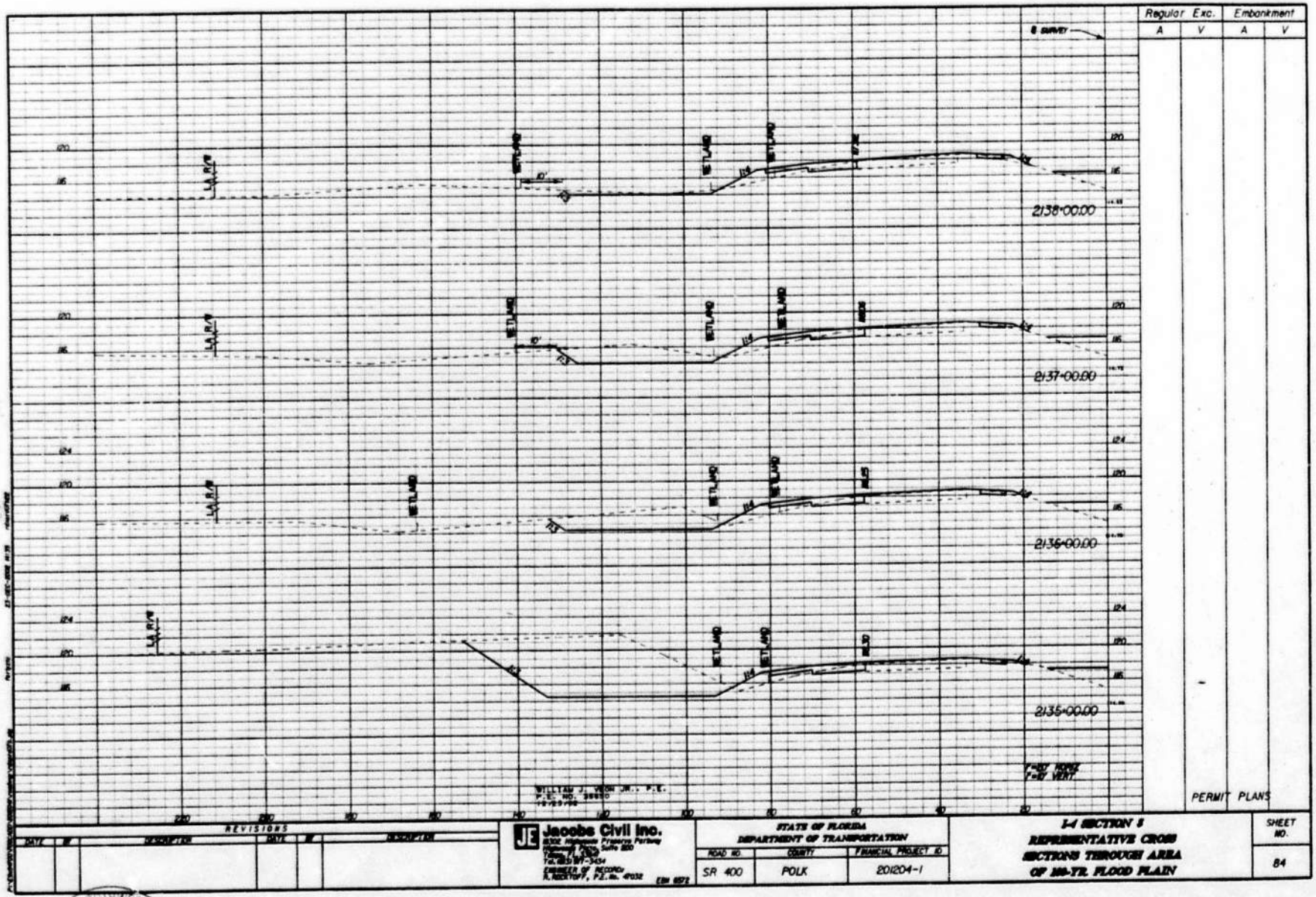
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
83

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Approved
BY
DATE

E-118
407



WILLIAM J. VIGH JR., P.E.
P.E. NO. 39810
10/29/08

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

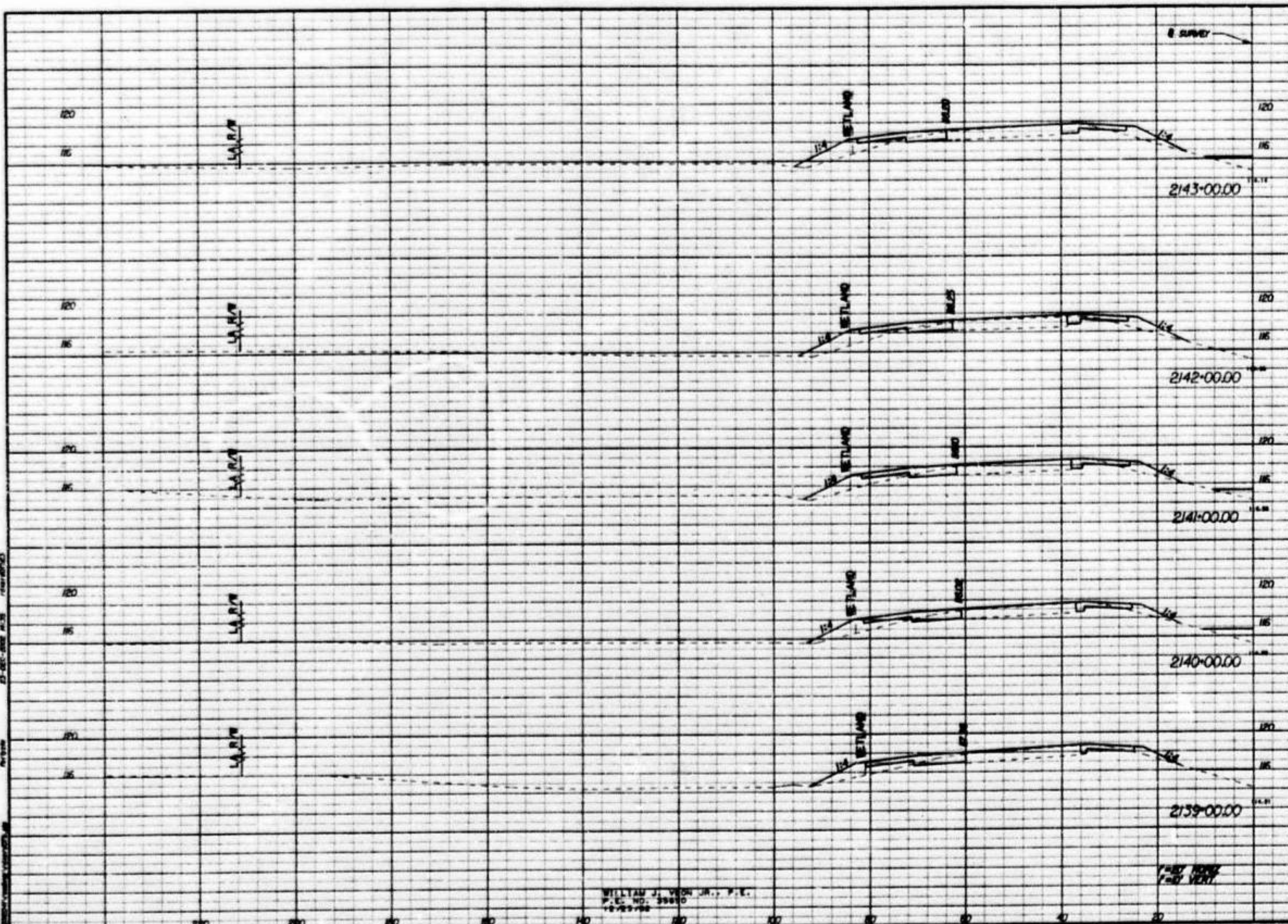
Jacobs Civil Inc.
6300 Hollywood Preserve Parkway
Tampa, FL 33634
Tel: (813) 881-3434
ENGINEER OF RECORD
R. RECKTORF, P.E. No. 49032
EB# 8972

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 8
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
84



Regular Exc.		Embankment	
A	V	A	V

PERMIT PLANS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

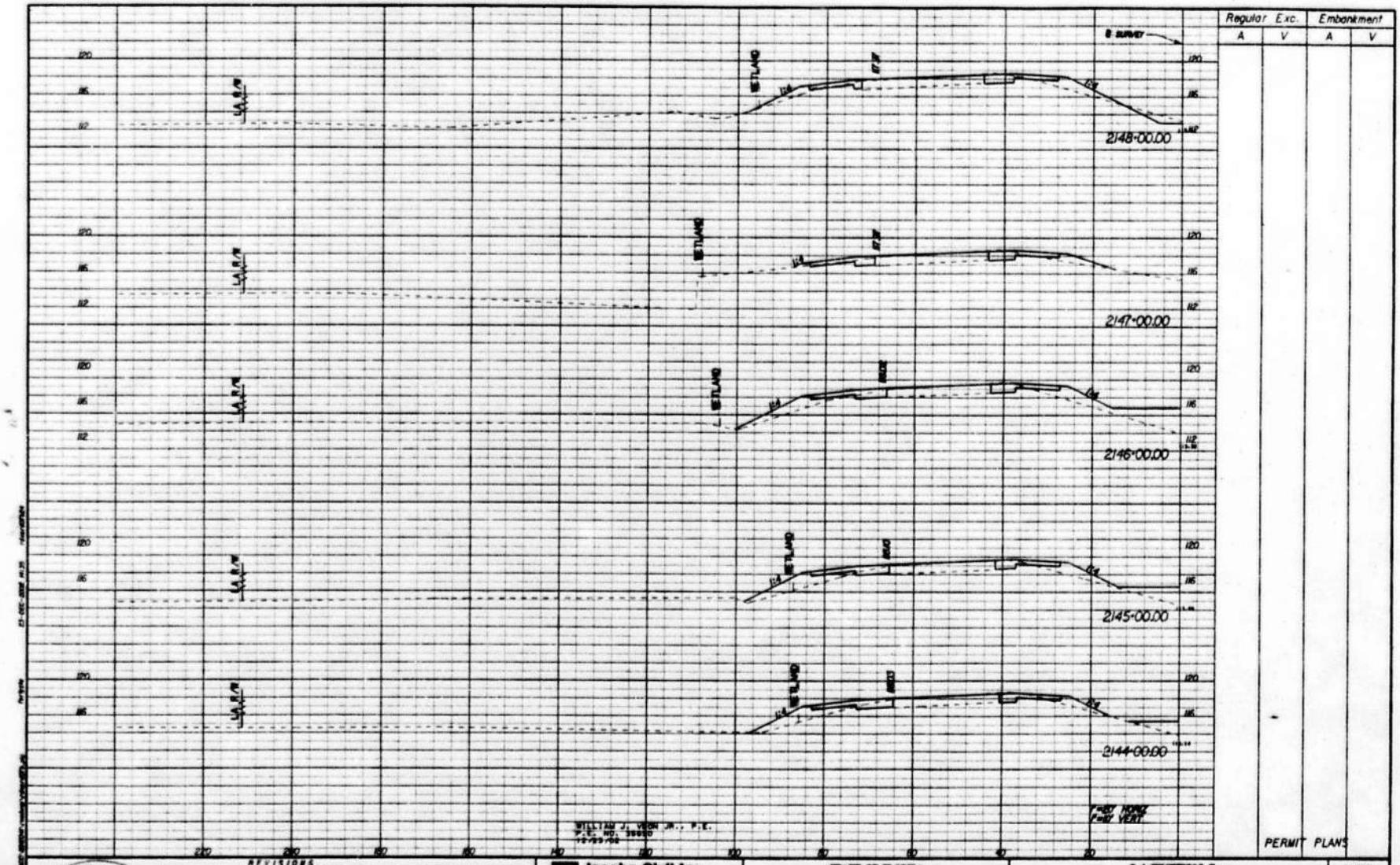
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS
SECTIONS THROUGH AREA
OF 100-YR. FLOOD PLAIN

SHEET NO. 85

E-120

409



WILLIAM J. VIRON JR., P.E.
P.E. NO. 39000
12/29/06

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		

Jacobs Civil Inc.
8930 Hillsdale Freeway Parkway
Suite 200
Tampa, FLORIDA
Tel. (813) 917-3454
ENGINEER OF RECORD
R. ROCKTOFF, P.E. No. 41032 EB# 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
86

Reviewed
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
PHIL BARTON

E-121

410

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

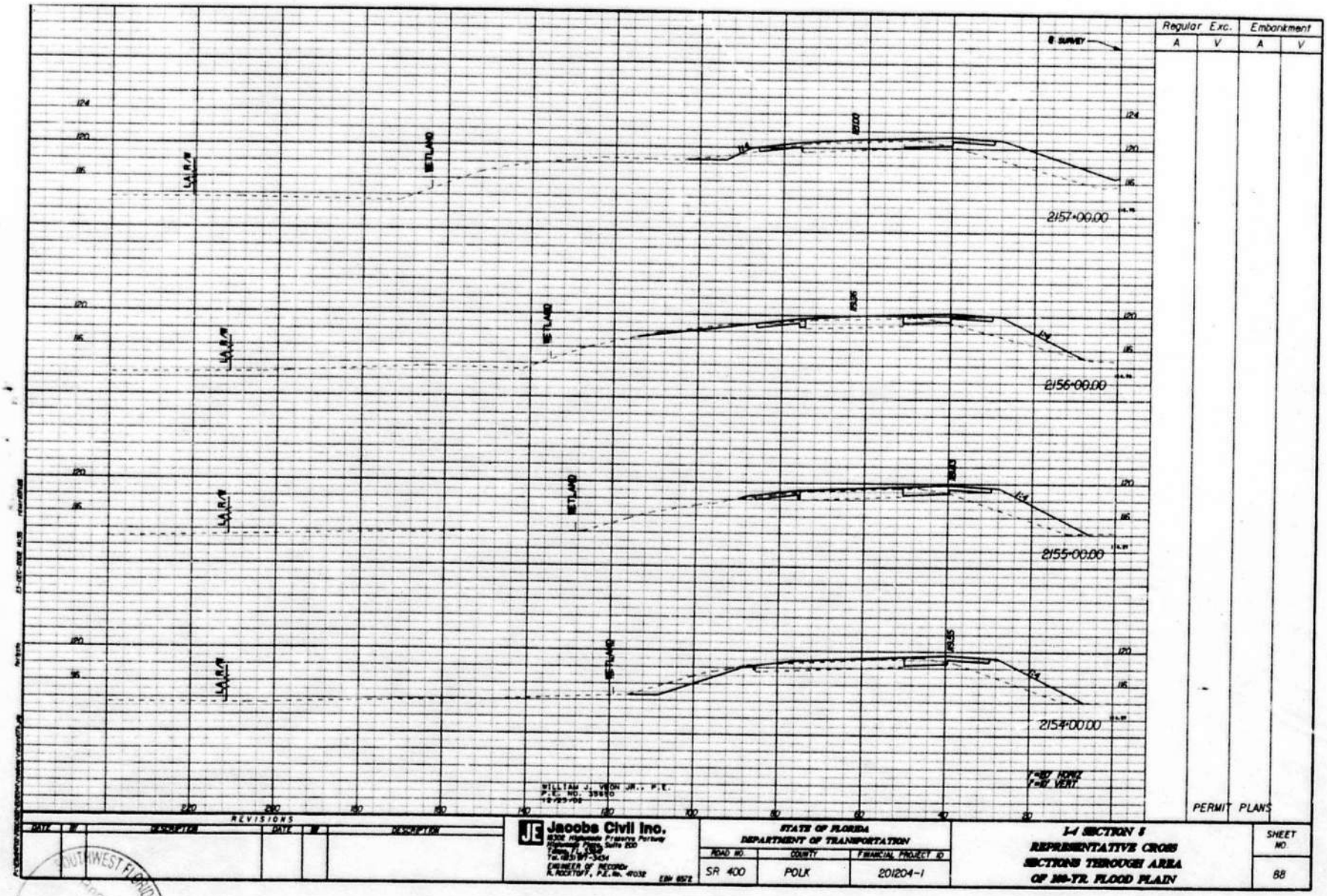
Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO. 87



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
4300 Highlands Pkwy Parkway
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Tallahassee, FL 32312
P.H. (850) 599-3434
ENGINEER OF RECORD
R. ROCKTUFF, P.E. No. 41032
EB# 8572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

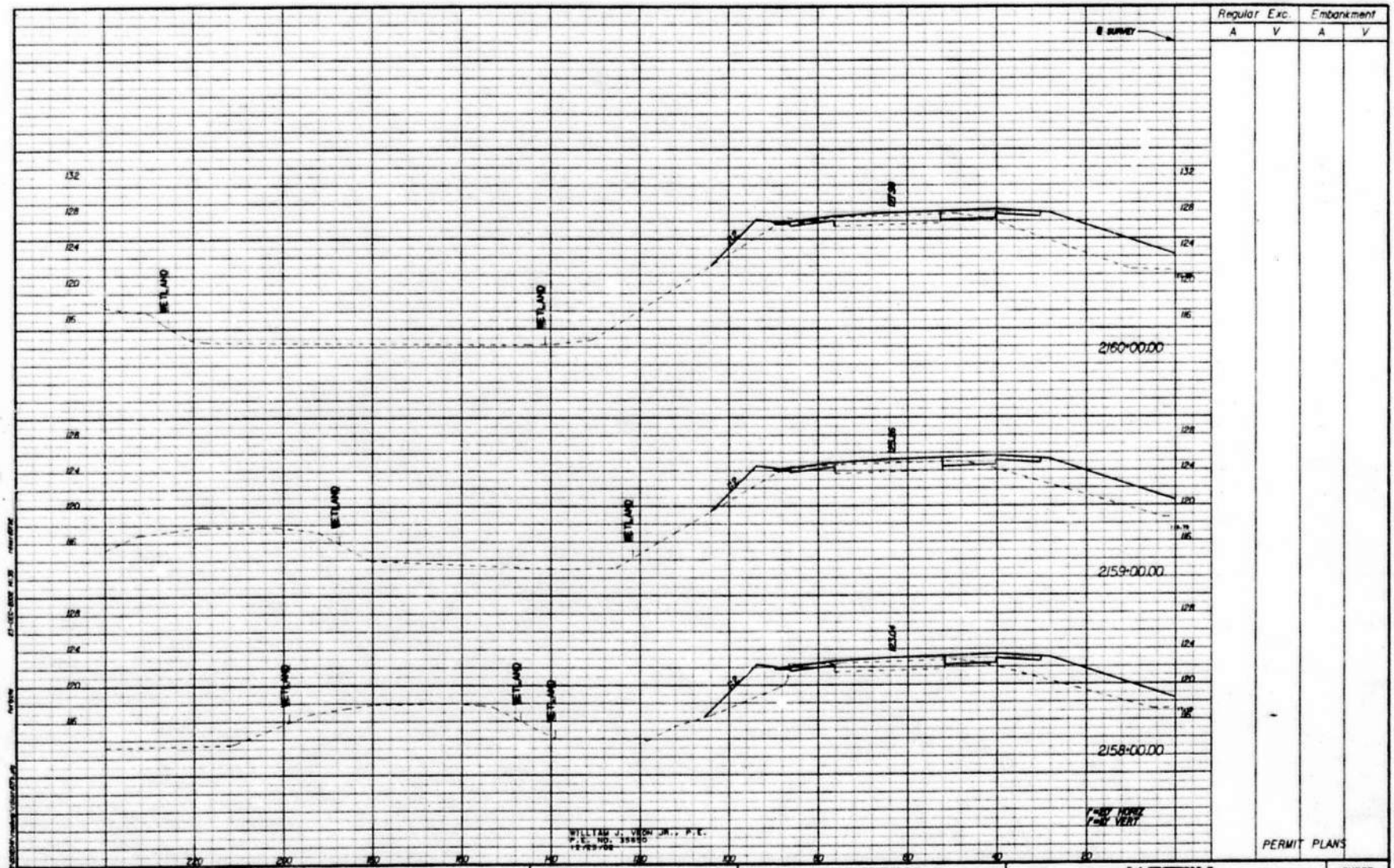
I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
88

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Approved
PERMIT DISTRICT

E-123

412



WILLIAM J. VEON JR., P.E.
P.E. NO. 39870

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

I-4 SECTION 5
REPRESENTATIVE CROSS SECTIONS THROUGH AREA OF 100-YR. FLOOD PLAIN

SHEET NO.
89

TABLE B.3 Revised Node Maximum Comparison Report, SWFMWD 25-year 24-hour

********** Node Maximum Comparisons **********

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 25YR 24HR FLMOD

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: WL-7AASX	Group: PREDEV								
M025Y24H	0.00	117.20	120.00	0.0000	0.00	12.47	11.29	0.00	0.00
*** Node Name: WL-7AS-X	Group: PREDEV								
M025Y24H	0.00	116.90	120.00	0.0000	0.00	12.08	1.96	0.00	0.00
*** Node Name: WL-7DS-X	Group: PREDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.15	7.45	0.00	0.00
*** Node Name: WL-7FN-X	Group: PREDEV								
M025Y24H	0.00	119.10	120.00	0.0000	0.00	12.15	3.67	0.00	0.00
*** Node Name: WL-7GS-X	Group: PREDEV								
M025Y24H	0.00	117.60	120.00	0.0000	0.00	12.33	6.44	0.00	0.00
*** Node Name: WL-7JS-X	Group: PREDEV								
M025Y24H	0.00	117.00	120.00	0.0000	0.00	12.30	13.88	0.00	0.00
*** Node Name: WL-7MS-X	Group: PREDEV								
M025Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	2.89	0.00	0.00
*** Node Name: WL-7MN-X	Group: PREDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.37	1.97	0.00	0.00
*** Node Name: WL-7PN-X	Group: PREDEV								
M025Y24H	0.00	114.10	115.00	0.0000	0.00	12.40	9.90	0.00	0.00
*** Node Name: WL-7RS-X	Group: PREDEV								
M025Y24H	0.00	113.80	115.00	0.0000	0.00	12.28	25.51	0.00	0.00
*** Node Name: DTAS7-1	Group: POSTDEV								
M025Y24H	22.65	120.73	122.00	0.0008	108133.31	12.08	15.48	22.65	0.61
*** Node Name: DTAS7-2	Group: POSTDEV								
M025Y24H	22.79	120.60	122.00	0.0006	111007.65	12.10	13.04	22.79	0.49
*** Node Name: DTAS7-3	Group: POSTDEV								
M025Y24H	13.87	119.75	122.00	0.0010	35064.39	12.08	6.34	13.87	0.72
*** Node Name: DTAS7-4	Group: POSTDEV								
M025Y24H	19.66	119.63	122.00	0.0008	44133.93	12.05	6.63	19.66	0.27
*** Node Name: DTAS7-5	Group: POSTDEV								
M025Y24H	14.58	119.57	120.00	0.0009	26285.57	12.05	4.55	14.58	0.39
*** Node Name: DTAS7-6	Group: POSTDEV								
M025Y24H	20.15	119.47	120.00	0.0006	25902.70	12.07	2.81	20.15	0.11
*** Node Name: POND7-7	Group: POSTDEV								
M025Y24H	13.00	114.70	116.00	0.0007	75840.37	12.32	16.11	13.00	9.59
*** Node Name: WL-7AASD	Group: POSTDEV								
M025Y24H	0.00	117.20	120.00	0.0000	0.00	12.22	8.81	0.00	0.00
*** Node Name: WL-7AS-D	Group: POSTDEV								
M025Y24H	0.00	116.90	120.00	0.0000	0.00	12.07	2.75	0.00	0.00
*** Node Name: WL-7DS-D	Group: POSTDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.32	6.23	0.00	0.00
*** Node Name: WL-7FN-D	Group: POSTDEV								
M025Y24H	0.00	119.10	120.00	0.0000	0.00	12.37	1.15	0.00	0.00
*** Node Name: WL-7GS-D	Group: POSTDEV								
M025Y24H	0.00	117.60	120.00	0.0000	0.00	12.13	5.64	0.00	0.00
*** Node Name: WL-7JS-D	Group: POSTDEV								
M025Y24H	0.00	117.00	120.00	0.0000	0.00	12.30	10.06	0.00	0.00
*** Node Name: WL-7MS-D	Group: POSTDEV								
M025Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	3.40	0.00	0.00
*** Node Name: WL-7MN-D	Group: POSTDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.03	1.10	0.00	0.00
*** Node Name: WL-7PN-D	Group: POSTDEV								
M025Y24H	0.00	114.10	115.00	0.0000	0.00	12.28	9.49	0.00	0.00
*** Node Name: WL-7RS-D	Group: POSTDEV								
M025Y24H	0.00	113.80	115.00	0.0000	0.00	12.47	21.23	0.00	0.00

TABLE B.4 Revised Node Maximum Comparison Report, SWFMWD 100-year 24-hour

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 100YR 24HR FLMOD

********** Node Maximum Comparisons **********

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
(Time units - hours)									
*** Node Name: WL-7AASX		Group: PREDEV							
M100Y24H	0.00	117.20	120.00	0.0000	0.00	12.47	19.83	0.00	0.00
*** Node Name: WL-7AS-X		Group: PREDEV							
M100Y24H	0.00	116.90	120.00	0.0000	0.00	12.08	2.99	0.00	0.00
*** Node Name: WL-7DS-X		Group: PREDEV							
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.13	13.59	0.00	0.00
*** Node Name: WL-7FN-X		Group: PREDEV							
M100Y24H	0.00	119.10	120.00	0.0000	0.00	12.15	5.41	0.00	0.00
*** Node Name: WL-7GS-X		Group: PREDEV							
M100Y24H	0.00	117.60	120.00	0.0000	0.00	12.33	11.72	0.00	0.00
*** Node Name: WL-7JS-X		Group: PREDEV							
M100Y24H	0.00	117.00	120.00	0.0000	0.00	12.25	23.26	0.00	0.00
*** Node Name: WL-7MS-X		Group: PREDEV							
M100Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	5.25	0.00	0.00
*** Node Name: WL-7NN-X		Group: PREDEV							
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.30	3.38	0.00	0.00
*** Node Name: WL-7PN-X		Group: PREDEV							
M100Y24H	0.00	114.10	115.00	0.0000	0.00	12.40	15.24	0.00	0.00
*** Node Name: WL-7RS-X		Group: PREDEV							
M100Y24H	0.00	113.80	115.00	0.0000	0.00	12.28	37.56	0.00	0.00
*** Node Name: DTAS7-1		Group: POSTDEV							
M100Y24H	15.76	120.98	122.00	0.0013	111811.18	12.08	26.15	15.76	1.84
*** Node Name: DTAS7-2		Group: POSTDEV							
M100Y24H	16.07	120.80	122.00	0.0010	113999.83	12.10	21.74	16.07	1.43
*** Node Name: DTAS7-3		Group: POSTDEV							
M100Y24H	13.09	120.01	122.00	0.0014	36525.32	12.07	9.92	13.09	2.05
*** Node Name: DTAS7-4		Group: POSTDEV							
M100Y24H	14.12	119.81	122.00	0.0013	46024.39	12.05	11.01	14.12	0.99
*** Node Name: DTAS7-5		Group: POSTDEV							
M100Y24H	12.95	119.79	120.00	0.0014	27185.74	12.05	7.48	12.95	1.38
*** Node Name: DTAS7-6		Group: POSTDEV							
M100Y24H	14.09	119.59	120.00	0.0010	26353.54	12.05	4.76	14.09	0.45
*** Node Name: POND7-7		Group: POSTDEV							
M100Y24H	13.00	114.90	116.00	0.0010	76695.33	12.32	23.21	13.00	13.75
*** Node Name: WL-7AASD		Group: POSTDEV							
M100Y24H	0.00	117.20	120.00	0.0000	0.00	12.22	13.04	0.00	0.00
*** Node Name: WL-7AS-D		Group: POSTDEV							
M100Y24H	0.00	116.90	120.00	0.0000	0.00	12.07	3.74	0.00	0.00
*** Node Name: WL-7DS-D		Group: POSTDEV							
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.38	9.94	0.00	0.00
*** Node Name: WL-7FN-D		Group: POSTDEV							
M100Y24H	0.00	119.10	120.00	0.0000	0.00	12.35	1.57	0.00	0.00
*** Node Name: WL-7GS-D		Group: POSTDEV							
M100Y24H	0.00	117.60	120.00	0.0000	0.00	12.12	8.85	0.00	0.00
*** Node Name: WL-7JS-D		Group: POSTDEV							
M100Y24H	0.00	117.00	120.00	0.0000	0.00	12.32	16.93	0.00	0.00
*** Node Name: WL-7MS-D		Group: POSTDEV							
M100Y24H	0.00	117.80	120.00	0.0000	0.00	12.10	5.74	0.00	0.00
*** Node Name: WL-7NN-D		Group: POSTDEV							
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.03	1.50	0.00	0.00
*** Node Name: WL-7PN-D		Group: POSTDEV							
M100Y24H	0.00	114.10	115.00	0.0000	0.00	12.28	12.90	0.00	0.00
*** Node Name: WL-7RS-D		Group: POSTDEV							
M100Y24H	0.00	113.80	115.00	0.0000	0.00	12.47	30.80	0.00	0.00

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: DTAS7-1     Base Flow(cfs): 0          Init Stage(ft): 120
  Group: POSTDEV                               Warn Stage(ft): 122
Comment:

Stage(ft)     Area(ac)
120           2.235
120.5         2.405
121.5         2.745
--------Class: Node-----------------------------------------------------------------
   Name: DTAS7-2     Base Flow(cfs): 0          Init Stage(ft): 120
  Group: POSTDEV                               Warn Stage(ft): 122
Comment:

Stage(ft)     Area(ac)
120           2.35
120.4         2.483
121.5         2.85
--------Class: Node-----------------------------------------------------------------
   Name: DTAS7-3     Base Flow(cfs): 0          Init Stage(ft): 119.1
  Group: POSTDEV                               Warn Stage(ft): 122
Comment:

Stage(ft)     Area(ac)
119.1         0.734
119.5         0.772
120.5         0.902
--------Class: Node-----------------------------------------------------------------
   Name: DTAS7-4     Base Flow(cfs): 0          Init Stage(ft): 119
  Group: POSTDEV                               Warn Stage(ft): 122
Comment:

Stage(ft)     Area(ac)
119           0.894
119.5         0.981
120.5         1.221
--------Class: Node-----------------------------------------------------------------
   Name: DTAS7-5     Base Flow(cfs): 0          Init Stage(ft): 119
  Group: POSTDEV                               Warn Stage(ft): 120
Comment:

Stage(ft)     Area(ac)
119           0.551
119.4         0.588
120           0.643
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report **********************************************************
--------Class: Node-------------------------------------------------------------
   Name: DTAS7-6    Base Flow(cfs): 0          Init Stage(ft): 119
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Stage(ft)     Area(ac)
119           0.551
119.4         0.588
120           0.643
--------Class: Node-------------------------------------------------------------
   Name: POND7-7    Base Flow(cfs): 0          Init Stage(ft): 114.19
  Group: POSTDEV                              Warn Stage(ft): 116
Comment:

Stage(ft)     Area(ac)
113.8         1.655
116           1.866
--------Class: Node-------------------------------------------------------------
   Name: WL-7AASD   Base Flow(cfs): 0          Init Stage(ft): 117.2
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.2
72            117.2
--------Class: Node-------------------------------------------------------------
   Name: WL-7AS-D   Base Flow(cfs): 0          Init Stage(ft): 116.9
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             116.9
72            116.9
--------Class: Node-------------------------------------------------------------
   Name: WL-7DS-D   Base Flow(cfs): 0          Init Stage(ft): 117.5
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.5
72            117.5
--------Class: Node-------------------------------------------------------------
   Name: WL-7FN-D   Base Flow(cfs): 0          Init Stage(ft): 119.1
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             119.1
72            119.1
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: WL-7GS-D   Base Flow(cfs): 0          Init Stage(ft): 117.6
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.6
72            117.6
--------Class: Node-----------------------------------------------------------------
   Name: WL-7JS-D   Base Flow(cfs): 0          Init Stage(ft): 117
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117
72            117
--------Class: Node-----------------------------------------------------------------
   Name: WL-7MS-D   Base Flow(cfs): 0          Init Stage(ft): 117.8
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.8
72            117.8
--------Class: Node-----------------------------------------------------------------
   Name: WL-7NN-D   Base Flow(cfs): 0          Init Stage(ft): 117.5
  Group: POSTDEV                              Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.5
72            117.5
--------Class: Node-----------------------------------------------------------------
   Name: WL-7PN-D   Base Flow(cfs): 0          Init Stage(ft): 114.1
  Group: POSTDEV                              Warn Stage(ft): 115
Comment:

Time(hrs)     Stage(ft)
0             114.1
72            114.1
--------Class: Node-----------------------------------------------------------------
   Name: WL-7RS-D   Base Flow(cfs): 0          Init Stage(ft): 113.8
  Group: POSTDEV                              Warn Stage(ft): 115
Comment:

Time(hrs)     Stage(ft)
0             113.8
72            113.8
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: WL-7AASX   Base Flow(cfs): 0          Init Stage(ft): 117.2
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.2
72            117.2
--------Class: Node-----------------------------------------------------------------
   Name: WL-7AS-X   Base Flow(cfs): 0          Init Stage(ft): 116.9
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             116.9
72            116.9
--------Class: Node-----------------------------------------------------------------
   Name: WL-7DS-X   Base Flow(cfs): 0          Init Stage(ft): 117.5
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.5
72            117.5
--------Class: Node-----------------------------------------------------------------
   Name: WL-7FN-X   Base Flow(cfs): 0          Init Stage(ft): 119.1
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             119.1
72            119.1
--------Class: Node-----------------------------------------------------------------
   Name: WL-7GS-X   Base Flow(cfs): 0          Init Stage(ft): 117.6
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.6
72            117.6
--------Class: Node-----------------------------------------------------------------
   Name: WL-7JS-X   Base Flow(cfs): 0          Init Stage(ft): 117
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117
72            117
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [5]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: WL-7MS-X   Base Flow(cfs): 0          Init Stage(ft): 117.8
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.8
72            117.8
--------Class: Node-----------------------------------------------------------------
   Name: WL-7NN-X   Base Flow(cfs): 0          Init Stage(ft): 117.5
  Group: PREDEV                               Warn Stage(ft): 120
Comment:

Time(hrs)     Stage(ft)
0             117.5
72            117.5
--------Class: Node-----------------------------------------------------------------
   Name: WL-7PN-X   Base Flow(cfs): 0          Init Stage(ft): 114.1
  Group: PREDEV                               Warn Stage(ft): 115
Comment:

Time(hrs)     Stage(ft)
0             114.1
72            114.1
--------Class: Node-----------------------------------------------------------------
   Name: WL-7RS-X   Base Flow(cfs): 0          Init Stage(ft): 113.8
  Group: PREDEV                               Warn Stage(ft): 115
Comment: WL-RS-X

Time(hrs)     Stage(ft)
0             113.8
72            113.8
--------Class: Basin----------------------------------------------------------------
Basin: 7-01T      Node: DTAS7-1    Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 8.334       Concentration Time(min): 13.9
            Curve #: 65                  Time Shift(hrs): 0
            DCIA(%): 0
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [6]
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I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-01U      Node: WL-7AASD   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 4.1          Concentration Time(min): 26.3
            Curve #: 81                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-02U      Node: WL-7DS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 4.185        Concentration Time(min): 35.3
            Curve #: 73                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-03T      Node: DTAS7-2    Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 6.775        Concentration Time(min): 14
            Curve #: 66                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-03U      Node: WL-7GS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.658        Concentration Time(min): 18.1
            Curve #: 73                   Time Shift(hrs): 0
            DCIA(%): 0
```

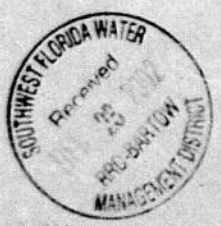

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [7]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-04T      Node: DTAS7-3    Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.56         Concentration Time(min): 13
            Curve #: 73                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-04U      Node: WL-7JS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 6.182        Concentration Time(min): 28.7
            Curve #: 72                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-05T      Node: DTAS7-4    Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.966        Concentration Time(min): 10
            Curve #: 66                   Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-05U      Node: WL-7MS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 1.901        Concentration Time(min): 15.1
            Curve #: 65                   Time Shift(hrs): 0
            DCIA(%): 0
```

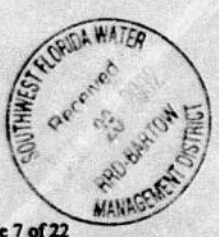

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [8]
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********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-06T       Node: DTAS7-6     Status: On Site     Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 1.35          Concentration Time(min): 10
            Curve #: 64                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-06U       Node: WL-7PN-D    Status: On Site     Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 6
           Area(ac): 3.827         Concentration Time(min): 31.6
            Curve #: 98                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-07T       Node: DTAS7-5     Status: On Site     Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 1.967         Concentration Time(min): 10
            Curve #: 67                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-07U       Node: WL-7RS-D    Status: On Site     Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.453         Concentration Time(min): 35.3
            Curve #: 95                    Time Shift(hrs): 0
            DCIA(%): 0
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [9]
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********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-08T      Node: POND7-7    Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
          Area(ac): 7.766        Concentration Time(min): 32.6
           Curve #: 85                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-08U      Node: WL-7RS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
          Area(ac): 3.663        Concentration Time(min): 32.5
           Curve #: 92                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-09U      Node: WL-7AS-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
          Area(ac): 0.732        Concentration Time(min): 13.2
           Curve #: 98                   Time Shift(hrs): 0
           DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-10U      Node: WL-7FN-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 8
          Area(ac): 0.521        Concentration Time(min): 38.9
           Curve #: 98                   Time Shift(hrs): 0
           DCIA(%): 0
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [10]
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********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-11U      Node: WL-7NN-D   Status: On Site    Type: SCS Unit Hydr
Group: POSTDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 0.264        Concentration Time(min): 10
            Curve #: 98                   Time Shift(hrs): 0
            DCIA(%): 0



--------Class: Basin-----------------------------------------------------------------
Basin: 7-01X      Node: WL-7AASX   Status: On Site    Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 12.41        Concentration Time(min): 42.5
            Curve #: 62                   Time Shift(hrs): 0
            DCIA(%): 0

         Predeveloped to 30" RCP outfall 2070+00 (WL-7AaS)

--------Class: Basin-----------------------------------------------------------------
Basin: 7-02X      Node: WL-7DS-X   Status: On Site    Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 5.849        Concentration Time(min): 18
            Curve #: 59                   Time Shift(hrs): 0
            DCIA(%): 0



--------Class: Basin-----------------------------------------------------------------
Basin: 7-03X      Node: WL-7GS-X   Status: On Site    Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                  Peak Factor: 256
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 6.657        Concentration Time(min): 30.5
            Curve #: 59                   Time Shift(hrs): 0
            DCIA(%): 0

         Predeveloped area to 24" RCP @ sta 2098+00
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [11]
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********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-04X       Node: WL-7JS-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 10.393        Concentration Time(min): 28.7
            Curve #: 66                    Time Shift(hrs): 0
            DCIA(%): 0

          Predeveloped Area to 42" RCP outfall sta 2105+00

--------Class: Basin-----------------------------------------------------------------
Basin: 7-05X       Node: WL-7MS-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.078         Concentration Time(min): 15.1
            Curve #: 59                    Time Shift(hrs): 0
            DCIA(%): 0

          Predevelopment Area to 24" RCP sta 2118+00

--------Class: Basin-----------------------------------------------------------------
Basin: 7-06X       Node: WL-7PN-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 6.873         Concentration Time(min): 42.9
            Curve #: 76                    Time Shift(hrs): 0
            DCIA(%): 0

          Predevelopment area to WL PN

--------Class: Basin-----------------------------------------------------------------
Basin: 7-07X       Node: WL-7RS-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 11.231        Concentration Time(min): 40.5
            Curve #: 81                    Time Shift(hrs): 0
            DCIA(%): 0

          Predevelopment area to WL-RS
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [12]
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I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: 7-08X       Node: WL-7RS-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD             Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 2.82          Concentration Time(min): 10
            Curve #: 84                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-09X       Node: WL-7AS-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD             Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 0.732         Concentration Time(min): 13.2
            Curve #: 76                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-10X       Node: WL-7FN-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD             Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 1.475         Concentration Time(min): 19.8
            Curve #: 81                    Time Shift(hrs): 0
            DCIA(%): 0


--------Class: Basin-----------------------------------------------------------------
Basin: 7-11X       Node: WL-7NN-X   Status: On Site     Type: SCS Unit Hydr
Group: PREDEV
    Unit Hydrograph: UH256                    Peak Factor: 256
      Rainfall File: FLMOD             Storm Duration(hrs): 24
Rainfall Amount(in): 8
           Area(ac): 1.69          Concentration Time(min): 32
            Curve #: 64                    Time Shift(hrs): 0
            DCIA(%): 0
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [13]
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********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: B1                  From Node: DTAS7-1
   Group: POSTDEV               To Node: WL-7AASD
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 100
  Left Side Slope(h/v): 6
 Right Side Slope(h/v): 6
            Invert(ft): 121.5
      Control Elev(ft): 121.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: B2A                 From Node: DTAS7-2
   Group: POSTDEV               To Node: WL-7DS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 79
  Left Side Slope(h/v): 4
 Right Side Slope(h/v): 4
            Invert(ft): 121.5
      Control Elev(ft): 121.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [14]
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********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: B2B                 From Node: DTAS7-2
   Group: POSTDEV               To Node: WL-7GS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 97
  Left Side Slope(h/v): 6
 Right Side Slope(h/v): 6
           Invert(ft): 121.5
      Control Elev(ft): 121.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: B3A                 From Node: DTAS7-3
   Group: POSTDEV               To Node: WL-7GS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 85
  Left Side Slope(h/v): 6
 Right Side Slope(h/v): 6
           Invert(ft): 120.5
      Control Elev(ft): 120.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [15]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: B3B                 From Node: DTAS7-3
   Group: POSTDEV               To Node: WL-7JS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 85
  Left Side Slope(h/v): 6
 Right Side Slope(h/v): 6
           Invert(ft): 120.5
      Control Elev(ft): 120.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: B4                  From Node: DTAS7-4
   Group: POSTDEV               To Node: WL-7JS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 55
  Left Side Slope(h/v): 4
 Right Side Slope(h/v): 6
           Invert(ft): 120.5
      Control Elev(ft): 120.5
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [16]
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********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: B5                  From Node: DTAS7-5
   Group: POSTDEV               To Node: WL-7RS-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 72
  Left Side Slope(h/v): 6
 Right Side Slope(h/v): 4
           Invert(ft): 120
      Control Elev(ft): 120
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: B6                  From Node: DTAS7-6
   Group: POSTDEV               To Node: WL-7PN-D
   Count: 1

 Type: Fread    Flow: Both       Geometry: Trapezoidal

      Bottom Width(ft): 72
  Left Side Slope(h/v): 4
 Right Side Slope(h/v): 6
           Invert(ft): 120
      Control Elev(ft): 120
  StructOpeningDim(ft): 99          TABLE
       Bottom Clip(ft): 0
          Top Clip(ft): 0
   Weir Discharge Coef: 2.6
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [17]
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********** Input Report ************************************************************
--------Class: Weir-------------------------------------------------------------------
    Name: W-1                 From Node: DTAS7-1
   Group: POSTDEV               To Node: WL-7AASD
   Count: 1

 Type: Mavis     Flow: Both        Geometry: Rectangular


              Span(in): 24
              Rise(in): 12
            Invert(ft): 120.5
      Control Elev(ft): 120.5
                                      TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-------------------------------------------------------------------
    Name: W-2A                From Node: DTAS7-2
   Group: POSTDEV               To Node: WL-7DS-D
   Count: 1

 Type: Mavis     Flow: Both        Geometry: Rectangular


              Span(in): 24
              Rise(in): 13.2
            Invert(ft): 120.4
      Control Elev(ft): 120.4
                                      TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
   Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [18]
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********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: W-2B                From Node: DTAS7-2
   Group: POSTDEV               To Node: WL-7GS-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


             Span(in): 24
             Rise(in): 6
           Invert(ft): 120.8
     Control Elev(ft): 120.8
                                    TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: W-3A                From Node: DTAS7-3
   Group: POSTDEV               To Node: WL-7GS-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


             Span(in): 24
             Rise(in): 6
           Invert(ft): 120.01
     Control Elev(ft): 120.01
                                    TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [19]
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I-4 Segment 7 - Permit Plans Design  10/31/02


********** Input Report ************************************************************
--------Class: Weir-------------------------------------------------------------------
    Name: W-3B                From Node: DTAS7-3
   Group: POSTDEV               To Node: WL-7JS-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


            Span(in): 24
            Rise(in): 12
          Invert(ft): 119.5
     Control Elev(ft): 119.5
                                TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-------------------------------------------------------------------
    Name: W-4A                From Node: DTAS7-4
   Group: POSTDEV               To Node: WL-7JS-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


            Span(in): 24
            Rise(in): 12
          Invert(ft): 119.5
     Control Elev(ft): 119.5
                                TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [20]
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********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: W-5                 From Node: DTAS7-5
   Group: POSTDEV               To Node: WL-7RS-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


             Span(in): 24
             Rise(in): 7.2
           Invert(ft): 119.4
     Control Elev(ft): 119.4
                                    TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6


--------Class: Weir-----------------------------------------------------------------
    Name: W-6                 From Node: DTAS7-6
   Group: POSTDEV               To Node: WL-7PN-D
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Rectangular


             Span(in): 24
             Rise(in): 7.2
           Invert(ft): 119.4
     Control Elev(ft): 119.4
                                    TABLE
      Bottom Clip(in): 0
         Top Clip(in): 0
  Weir Discharge Coef: 2.8
Orifice Discharge Coef: 0.6
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [21]
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********** Input Report ************************************************************
--------Class: Drop Structure-------------------------------------------------------
     Name: DS7-7          From Node: POND7-7        Length(ft): 20
    Group: POSTDEV          To Node: WL-7RS-D            Count: 3

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dc
    Upstream Geometry: Hor Ellipse   Downstream Geometry: Hor Ellipse
                           UPSTREAM              DOWNSTREAM
               Span(in): 23                    23
               Rise(in): 14                    14
             Invert(ft): 113.5                 113.4
          Manning's N: 0.012                 0.012
          Top Clip(in): 0                    0
       Bottom Clip(in): 0                    0

     Entrance Loss Coef: 0.5                    Flow: Both
         Exit Loss Coef: 1                   Equation: Aver Conveyance

      Upstream FHWA Inlet Edge Description:
      Horizontal Ellipse Concrete: Square edge with headwall    29    1
      Downstream FHWA Inlet Edge Description:
      Horizontal Ellipse Concrete: Square edge with headwall    29    1


 *** Weir 1 of 2 for Drop Structure DS7-7 ***                    [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Fread                   Top Clip(in): 0
    Flow: No Flow          Weir Discharge Coef: 2.6
Geometry: Circular      Orifice Discharge Coef: 0.6

         Span(in): 2                        Invert(ft): 113.8
         Rise(in): 2                  Control Elev(ft): 113.8


 *** Weir 2 of 2 for Drop Structure DS7-7 ***                    [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Mavis                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3
Geometry: Rectangular   Orifice Discharge Coef: 0.6

         Span(in): 120                      Invert(ft): 114.19
         Rise(in): 15.7               Control Elev(ft): 114.19
```

TABLE C.1
REVISED ICPR INPUT REPORT
I-4 SEGMENT 7

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [22]
    Copyright 1995, Streamline Technologies, Inc.

    I-4 Segment 7 - Permit Plans Design  10/31/02


    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 P:\E9X94700\600DISC\620DES-1\DRAINAGE\SEG                M025Y24H
 Execution: Both
    Header: I-4 SEGMENT 7
            POSTDEVELOPMENT CONDITIONS 25YR 24HR FLMOD

---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10              Rain Amount(in): 7
     Sim Start Time(hrs): 0                 Rainfall File: FLMOD
       Sim End Time(hrs): 30
      Min Calc Time(sec): 1
      Max Calc Time(sec): 5
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        10         30                         10         15
        15         5                          15         1
        60         30                         24         15
---------GROUP SELECTIONS-----------------------------------------------------------
- BASE     [10/08/02]       + PREDEV   [12/23/02]       + POSTDEV  [12/23/02]


    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 P:\E9X94700\600DISC\620DES-1\DRAINAGE\SEG                M100Y24H
 Execution: Both
    Header: I-4 SEGMENT 7
            POSTDEVELOPMENT CONDITIONS 100YR 24HR FLMOD

---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10              Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                 Rainfall File: FLMOD
       Sim End Time(hrs): 30
      Min Calc Time(sec): 1
      Max Calc Time(sec): 5
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        10         30                         10         15
        15         5                          15         1
        60         30                         24         15
---------GROUP SELECTIONS-----------------------------------------------------------
- BASE     [ NO RUN ]       + PREDEV   [12/23/02]       + POSTDEV  [12/23/02]
```

Data Source: Field indicators flagged By Scheda Ecological Associates, Inc August 21-23, 2002 and tied to Field Survey by ___

Units: Feet

Wetland No.	Point Descripter	Station	Offset	Elevation	Notes	
7AS-	SHW1	2057+93.4	277.1 RT	116.27	knot ??? ???? On buttonbush. Perhaps NP Elev	
7AS-	SHW2	2055+33.0	286.0 RT	118.70	Nail - Lichen lines on ??? Holly	
7AS-	SHW3	2054+94.3	337.8 RT	118.10	Nail - Racked debris on myrtle	
7AS-	SHW4	2054+94.3	398.2 RT	117.68	Nail - Lichen line on Holly	
				118.2	**Average SHW (not incl SHW1)**	
7DS-	SHW1	2080+02.1	131.3 RT	117.48	Sharpie - Stain line elev on east end of headwall	x
7DS-	SHW2	2080+21.9	170.1 RT	118.22	Nail - Stain/lichen line on large tree near headwall	x
7DS-	SHW3	2080+32.0	159.0 RT	117.99	nail - Lichen line in holly tree	
				117.9	**Average SHW**	
7DS-	NP1	208+29.2	178.1 RT	116.82	Knot - mass of ad on bacchanj	
7DS-	NP2	2080+32.0	159.0 RT	117.74	Nail - mass ??? On same holly tree as 7DS-SHW3	
7GS					Herbaceous marsh, myrtle fringe	
7GS-	SHW1	2092+43.6	160.8 RT	118.61	Nail - lichen line on wax myrtle	
7GS-	SHW2	2096+34.5	145.8 RT	117.71	Nail - Stain line on small myrtle	x
7GS-	SHW3	2096+89.0	142.1 RT	118.49	Nail - lichen line on ???	
7GS-	SHW4	2097+97.1	131.6 RT	118.30	Stain line on end wall	x
				118.3	**Average SHW**	
7GS-	NP1	2093+88.0	158.7 RT	117.55	Nail - Mass of add roots on holly	
7GS-	NP2	2097+86.1	146.6 RT	116.73	Knot - ad. Roots on ludwigia	
7HN	SHW1	2108+99.6	145.0 LT	116.89	Knot - ad roots on dead button bush	
7HN	SHW2	2108+37.9	142.1 LT	116.67	Knot - ad roots on dead button bush	
7HN	SHW3	2107+50.2	132.4 LT	116.75	Knot - ad roots on salix	
				116.8		
7JS					PEM within exist. ROW Scrub Shrub	
7JS	SHW1	2104+88.0	137.3 RT	117.77	Stain line 2' below top of headwall	x
7JS	SHW2	2105+44.6	166.2 RT	118.51	Nail - lichen line on wax myrtle	
7JS	SHW3	2105+28.4	151.4 RT	118.38	Nail - lichen line on wax myrtle	
				118.2	**Average SHW**	
7JS	NP1	2105+44.6	166.2 RT	117.87	Nail - ad. roots on same wax myrtle as SHW2	
7JS	NP2	2105+28.4	151.4 RT	117.93	Nail - ad. roots on same wax myrtle as SHW3	
7MS					PEM SS fringe w/ Bacchanj, Salix Ludwigia	
7MS	SHW1	2118+19.9	112.0 RT	118.53	Stain line on headwall	x
7MS	SHW2	2119+99.1	154.5 RT	118.97	Nail - lichen line on bacchanj	
				118.7	**Average SHW**	
7MS	NP1	2118+14.8	158.6 RT	117.27	Nail - ad. Roots on dead bacchanj	
7NN					all 2" or 3" above water	
7NN	SHW1	2121+55.8	112.6 LT	117.12	Knot - racked veg on dead shrub	
7NN	SHW2	2121+55.7	114.4 LT	117.31	Knot - racked debris on shrub	
7NN	SHW3	2121+34.3	148.8 LT	117.36	Knot - ad. Roots and racked veg	
				117.3	**Average SHW**	
				117.0	**NP**	
7PN						
7PN	SHW1	2154+94.4	195.8 LT	114.146	Nail - lichen line on cypress. 2" below is recent water line, and 2" below that is standing water	
7PN	SHW2	2151+17.8	125.4 LT	114.14	Nail - lichen line on maple. Approx 4" above present water surface	
7PN	SHW3	2151+13.4	130.8 LT	114.06	Nail - lichen line on maple. Approx 4" above present water surface	
				114.1	**Average SHW**	
				113.8	**NP**	
7RS						
7RS	SHW1	2145+19.3	410.2 RT	114.20	Nail - lichen/moss line on maple. Approx 4"-5" above saturated ground	
7RS	SHW2	2145+22.3	377.5 RT	113.60	Knot - top of tussock w/ ludwigia ad. roots	
7RS	SHW3	2145+27.4	364.3 RT	113.75	Knot - dog fennel w/ ad roots. 4"-5" above ground	
7RS	SHW4	2147+81.1	245.5 RT	113.87	Nail - lichen line on sweetbay	
7RS	SHW5	2147+81.1	245.5 RT	114.06	lichen line on sweetbay	
				113.9	**Average SHW**	
7RS	NP1	2147+81.1	245.5 RT	113.57	Moss collar	
7RS	NP2	2147+81.1	245.5 RT	113.62	Moss collar	

Permit No. 44-011896.024

US 27/I-4 Interchange

Polk County: Section 9

HIGH SPEED RAIL

HNTB PW #50288

Drainage Design Documentation
I-4 Six Laning – Section 9

SWFWMD Permit #44-011896.024
US 27/I-4 Interchange

Polk County: Section 9

March 2000

FPID #201204-2-52-01

Book 1 of 1

Drainage Design Documentation

Interstate 4 Six Laning - Section 9

Polk County

Financial Project ID: 201204-2-52-01

Prepared For:

Florida Department of Transportation
District One, Bartow

Prepared By:

HDR Engineering, Inc.
1201 South Orlando Avenue, Suite 200
Winter Park, Florida 32789
(407) 628-0875

March, 2000

Clayton J. Lee, P.E.
Florida Registration. No. 44032
Date: _____

EXECUTIVE SUMMARY

This project is located along the Interstate 4 corridor in Polk County, Florida, approximately two miles (3.2 km) southwest of the Polk/Osceola County line. The proposed work is to 6-lane Interstate 4 by adding one lane to the median in each direction. The ultimate section for Interstate 4 will include a ten-lane section with provisions for rail in the median envelope. The stormwater conveyance system and stormwater management facilities (SMF) for the project will be designed and permitted for the proposed 6 – laning construction.

This project is divided into two (2) on-site drainage basins, to utilize one wet and one dry detention/retention pond. The proposed SMF will provide both water quality treatment and peak flow attenuation. Basin A was designed with a wet detention system, while Basin E has a dry detention/retention system. The SMF's selected were identified in the Interstate 4/US 27 Interchange Pond Siting Report based upon a thorough investigation of each site for hydraulic suitability, wetland/biological impacts, cultural impacts, contamination potential, right-of-way acquisition costs and construction cost.

A "Design Alternatives Report" was prepared for Interstate 4 - Section 9 and Interstate 4/US 27 Interchange by HDR Engineering in June 1997. Several sources of information have been utilized during the preparation of this report containing the drainage design documentation such as: the Pond Siting Report, Survey data, Geotechnical Report and the roadway plans.

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SECTION 1.0 INTRODUCTION

1.1 Project Description

The proposed Interstate 4 project is located approximately 2 miles (3.2 km) southwest of the Polk County/Osceola County Line along the Interstate 4 corridor (See Project Location Map, Figure 1.1). The project involves improvements to 1.3 miles (2.1 km) of Interstate 4 (I-4) and major off-ramp improvements to the existing interchange at I-4 and US 27. Interstate 4 is a limited access facility, which serves as a primary east-west corridor for traffic traveling to and from the Tampa, Orlando and Daytona urban areas. The proposed improvements are to widen I-4 from an existing four-lane rural highway to a six-lane rural section. An ultimate I-4 build out to ten lanes: six general use and four special use lanes, with provision for rail in the median is planed. The ultimate interchange improvements will include expanding the existing partial-cloverleaf configuration and add two frontage/access roads, in the northwest and southwest quadrants of the interchange to maintain right of entry and to provide access to adjacent properties. Stormwater treatment and attenuation facilities are to be constructed along with the proposed 6-lane roadway improvements. The proposed drainage facilities are sized to accommodate the ultimate interchange and roadway requirements. The drainage design as presented in this report is for the 6-laning of I-4 not the ultimate build out.

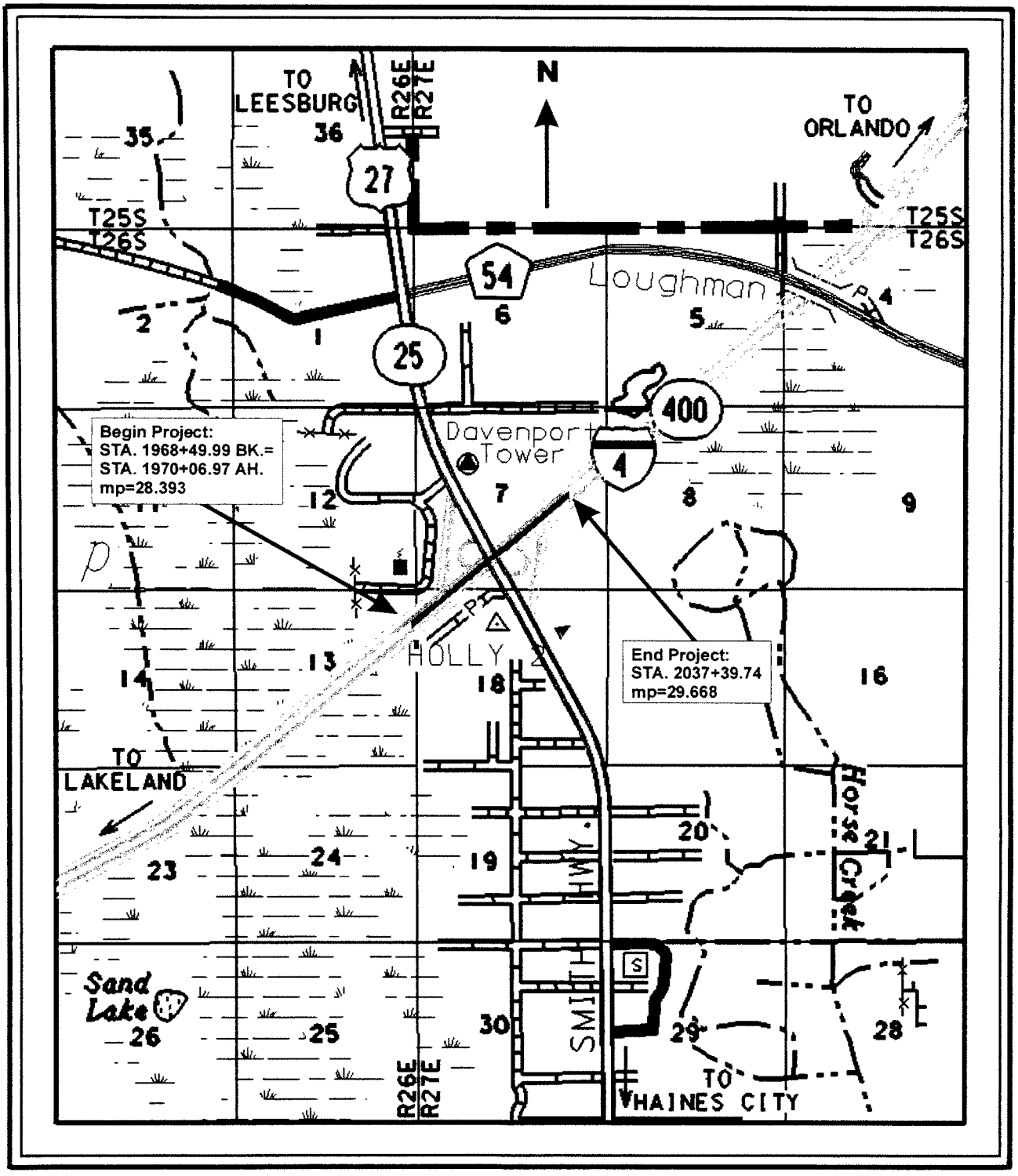
The roadway right-of-ways lie within the limits of Polk County, Florida. It is expected that additional right-of-way will be acquired for the improvements in this area, including both roadway and stormwater management facility improvements.

This project lies within two separate regulatory agencies' jurisdictional boundaries. Although the bulk of the project lies within the Southwest Florida Water Management District, the western most portion of the project falls inside the jurisdiction of the St. Johns River Water Management District. As the result of conversations involving the FDOT and the two agencies, this project will be permitted through the Southwest Florida Water Management District. An interagency agreement is located in the correspondence section of this report.

1.2 Report Objectives

The objectives of this document are to identify and quantify the treatment and conveyance of project waters. This document will focus on the contributory basin characteristics, design considerations, pond treatment and attenuation volumes, conveyance ditches, and stormsewer design.

The intent of this report is to provide documentation for the design of the stormwater management facilities. This report will serve as the document of record for technical support as the project is designed and constructed.



HDR 1201 S. Orlando Avenue Suite 200 Winter Park, FL 32789 (407) 628-0875	***Project Location Map*** **Interstate 4 Six Laning - Section 9** Polk County, Florida FPID# 201204-2-52-01	**Figure 1.1**

SECTION 2.0 BASIN CHARACTERISTICS

2.1 Land Use

The proposed I4 study corridor is located in an area dominated by agricultural and commercial sites. The study area lies physiographically in the Kissimmee Ridge Drainage Basin with primary drainage being provided by overland flow and man made drainage conveyances. The topography of the area is generally classified as rolling uplands and knolls, with elevations varying from 134 to 203 feet NGVD (See USGS Quad Map, **Figure 2.1**). Although the I-4 corridor is pocked with isolated and non-isolated wetlands along its length, there are no wetland impacts anticipated by proposed roadway alignments or pond sites within the project limits of I-4 - Section 9.

Stormwater runoff from the study area is collected in roadside swales and conveyed via ditches, side drains and cross drains, which discharge primarily to open basins dominated by herbaceous wetlands. Due to the highly permeable nature of the surrounding soils, very few off-site areas contribute significant runoff to the roadway drainage system. No formal water quality treatment or attenuation is currently provided for the roadway runoff within the study area.

2.1.1 Soil Characteristics

According to the United States Agriculture Department, Soil Conservation Service, the near surface soils in the area consist predominately of nearly level to moderately sloping, excessively drained, sandy soils (See Soils Map, Figure 2.2). The primary soil encountered along the study corridor is the Candler (3), with the western and eastern portions of Interstate 4 abutting Adamsville (31) and Basinger (36) Series respectively. The specific characteristics of the soils found within the study area are outlined in the SCS publication *Soil Survey of Polk County, Florida.*

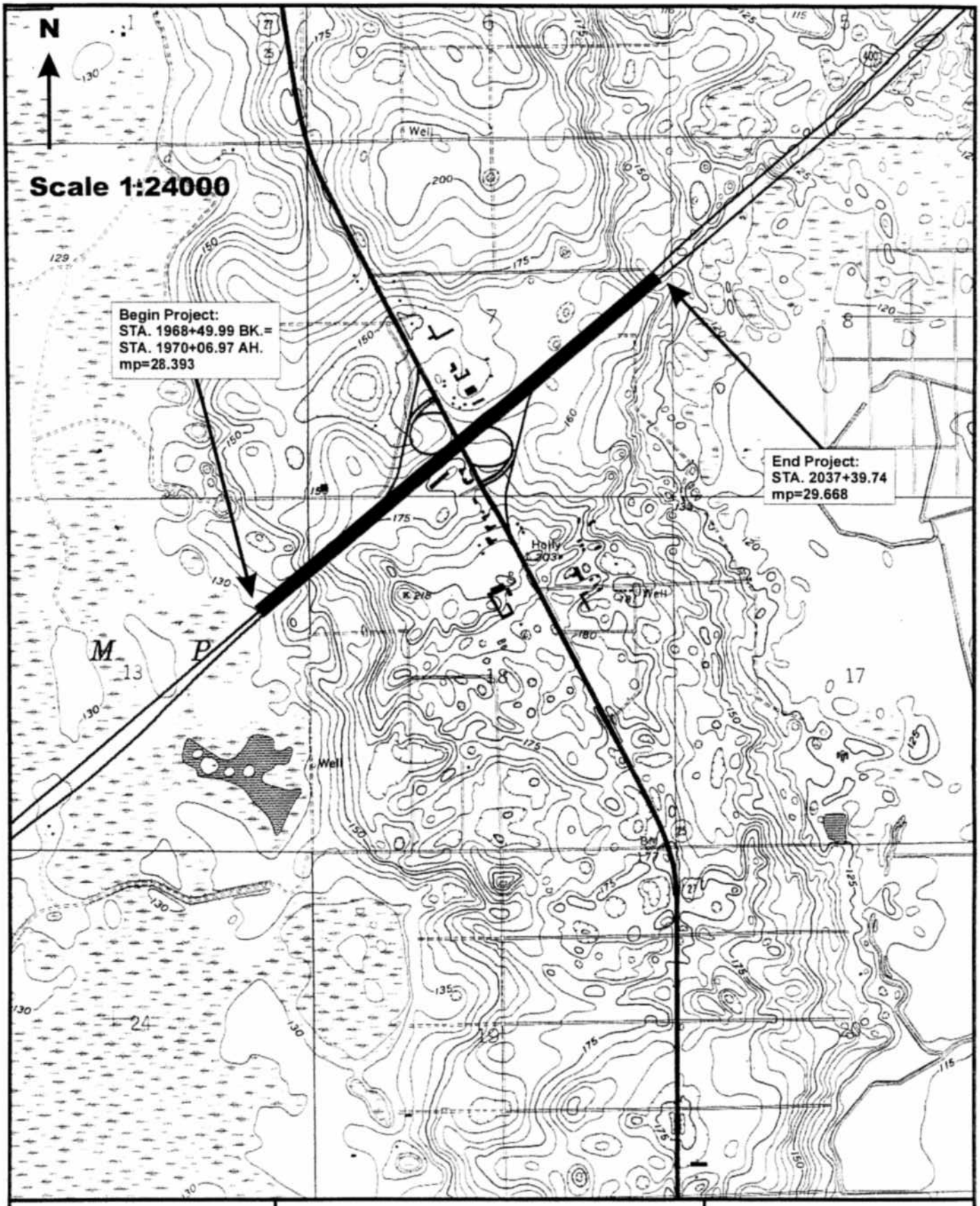
2.1.2 Subsurface Conditions

Pursuant to the *SCS Soil Survey* and information obtained by the project geotechnical consultant, it was determined that the seasonal high groundwater is commonly low within the project corridor. Ground water elevations are typically found to be greater than six feet deep. However, the western portion of the Interstate 4 corridor encroaches into an area with a higher water table, ranging from 2-3.5 feet below the existing surface. The specific morphology of each soil series found within the study area is outlined in the SCS publication *Soil Survey of Polk County, Florida.*

Based on this information, a dry detention/retention pond will be utilized in the eastern portion of the project, and in the western portion, a wet detention pond will be utilized. Site specific geotechnical data will be used in the final design of pond geometry.

2.2 Ecological Assessment and Protected Species

An Ecological Assessment and Protected Species Survey was completed for the project corridor in October 1997, by HDR staff. A copy of this report has been included as a part



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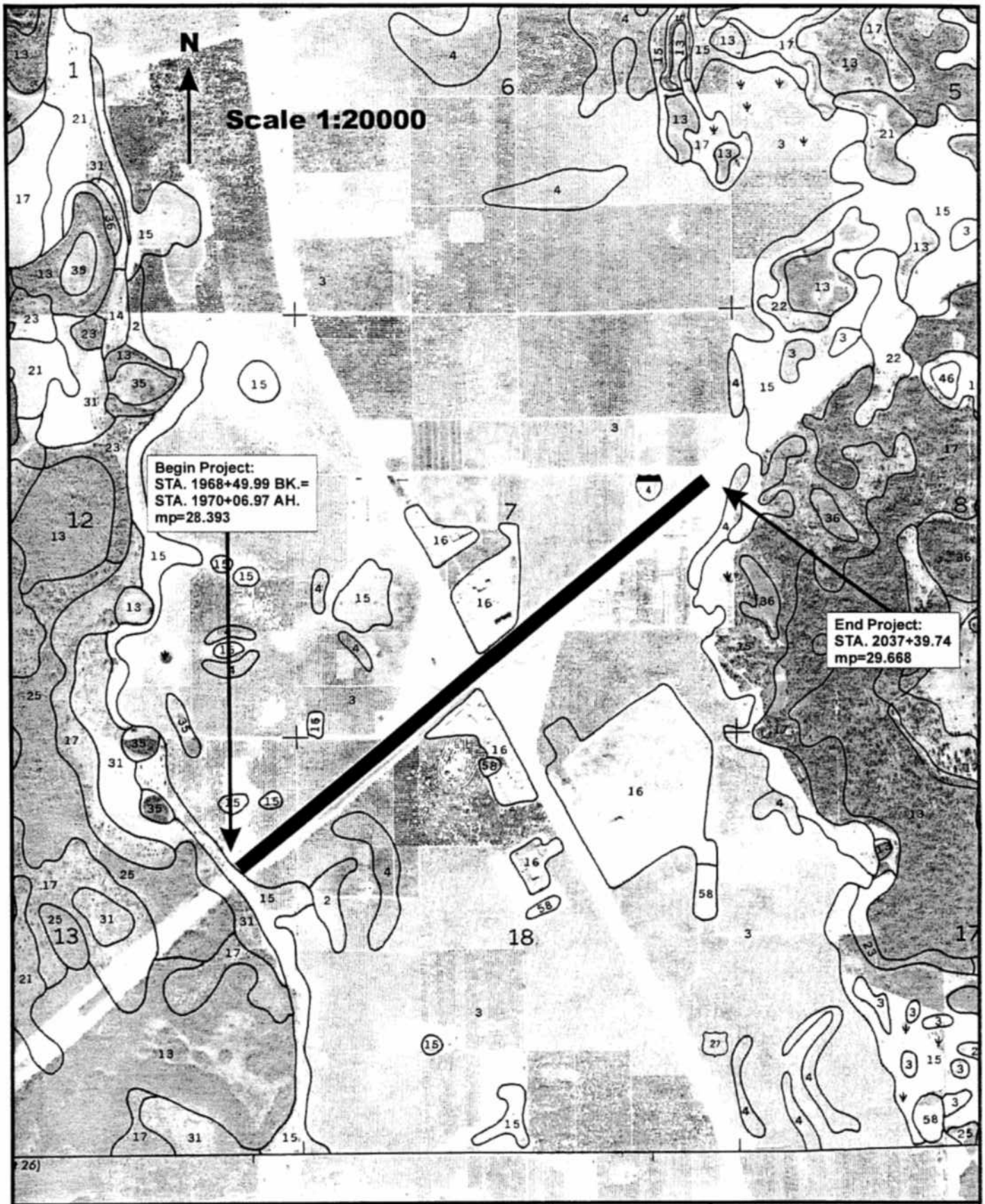
USGS Quad Map
Interstate 4 Six Laning - Section 9
Polk County, Florida
FPID# 201204-2-52-01

Figure 2.1



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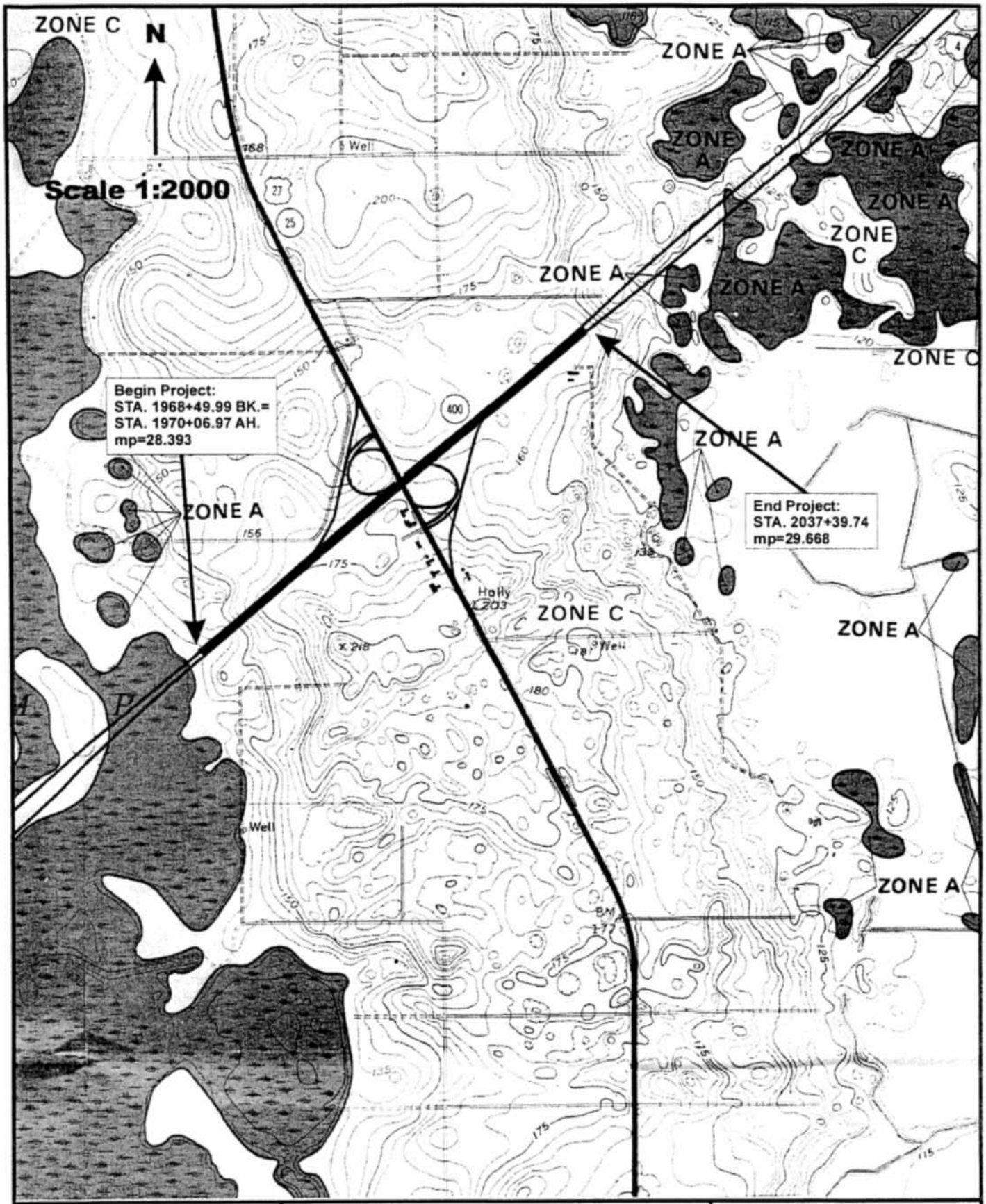
Soils Map
Interstate 4 Six Laning - Section 9
Polk County, Florida
FPID# 201204-2-52-01

Figure 2.2



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FEMA Map
Interstate 4 Six Laning - Section 9
Polk County, Florida
FPID# 201204-2-52-01

Figure 2.3

of this document, attached as Appendix C. A total of 24 pond sites were investigated for potential impacts to jurisdictional wetlands and potential impacts to threatened, endangered or species of special concern. During the course of this study, many field visits were made by HDR Staff to determine the possible biological impacts. Numerous Gopher Tortoise burrows were identified within the project limits. The approximate locations of these burrows have been delineated and labeled, and are shown on figures in **Appendix C.** The results of this study have been evaluated and considered when selecting preferred pond sites.

The preferred pond sites do not show any significant impacts to SWFWMD or USACOE Jurisdictional wetland areas. Some of the recommended pond locations may impact T/E species, which would have to be permitted as incidental takings. In most cases however, the preferred pond site can be configured to eliminate or minimize impacts to jurisdictional areas and areas of beneficial habitat for T/E species.

2.3 Flood Plains

The flood plains in the study corridor consist of low areas within the extreme western portion of the project. The Flood Insurance Rate Map (FIRM) indicates a 100 year flood plain (See FEMA Map, Figure 2.3) in the western portion of the project but not directly intersecting the project corridor of Section 9. However, this area does abut an area of the proposed pond site locations (Basin A) and care was taken to avoid any encroachment into the floodplain when determining the ponds' final configuration. No net encroachment into the 100-year flood plain, that will adversely affect the existing rights of others, is anticipated with the construction of this project

2.3.1 Flood Insurance Zone Classification

The region adjacent to the western portion of the corridor study area has been classified as Zone A (See FEMA Map, Figure 2.3). Zone A is defined by FEMA as "Areas of 100-year flood; base flood elevations and flood hazard factors not determined."

2.3.2 Regulatory Floodways

There are no floodways within the project study area.

SECTION 3.0 DESIGN CONSIDERATIONS

3.1 Roadway Geometry

During the course of this study, as-built plans for Interstate 4 and US 27 were reviewed, as was the Design Alternatives Report, June 1997 prepared by HDR Engineering. The 60% roadway plans for this project reflect drainage design contained herein. The following are the roadway geometry criteria used for the Interstate 4 - Section 9 improvements.

3.1.1 Typical Section

The proposed typical section for Interstate 4 is shown in Figure 3.1 on the following page. The swale depth will vary along the alignment, especially in those areas where additional grading to maintain positive flow will be required. Each cross drain was sized to accommodate runoff from the ultimate roadway section.

3.1.2 Horizontal Alignment

The proposed horizontal alignment for Interstate 4 will follow that of the existing roadway, with widening and right-of-way acquisition taking place on both sides of the existing alignments.

3.1.3 Vertical Alignment

The proposed vertical alignment of Interstate 4 widening will mimic the existing condition.

3.2 Right-of-Way

Right-of-way acquisition will be required to accommodate the proposed roadway and stormwater system improvements. The right-of-way required for this project is consistent with the ultimate widening of I-4 and the I-4/US 27 Interchange is contained in the Design Alternatives Report, June 1997 prepared by HDR Engineering. However, for the project only, two parcels will be required for the construction of Stormwater Management Facilities, Pond A and Pond E.

3.3 Utilities

Although several utilities exist within the study area, including water, sewer, telephone, power and cable, an extensive investigation as to the ownership and location of these was not made as part of this report. The utilities located along this corridor are anticipated to be impacted by the proposed project roadway improvements. However, it is not anticipated that the construction of the stormwater management facilities evaluated for this project will have any significant impacts to existing utilities. Utility coordination will need to occur during the preparation of the construction plans for the project.

3.4 Permit Agency Coordination

3.4.1 Regulatory Agencies

The following regulatory agencies will have jurisdiction over the issuance of permits for stormwater management, dredging & filling activities, encroachments into wetlands, and erosion/turbidity control:

- South West Florida Water Management District (SWFWMD)
- Environmental Protection Agency (EPA)
- U.S. Army Corps of Engineers (USACOE)
- Florida Game and Fresh Water Fish Commission

3.4.1.1 SouthWest Florida Water Management District

The SWFWMD will regulate and control stormwater discharge and will require an Environmental Resource Permit (ERP) for this project prior to initiating construction. The SWFWMD has also been delegated authority to regulate impacts to isolated wetlands (wetlands not connected to waters of the state) and with the new ERP Rule in effect, wetlands connected to waters of the State.

The ERP permit application required for this project will be submitted to the SWFWMD even though one pond is within the SJRWMD. The Florida Statues 373.046 states; "The SJRWMD and SWFWMD shall enter into an interagency agreement allowing the SWFWMD to process all permit applications for activities within Polk County requiring a permit from the SJRWMD." Section 8 of this report documents the initial coordination efforts to clarify WMD jurisdiction. The Bartow office of the SWFWMD will provide the technical review of the permit application package.

A review of the SWFWMD Rules and Regulations indicates that the attenuation volume is calculated based on the 25-year, 24-hour storm event for ponds discharging to open basins. System A will be an on-line wet detention system. This system will provide a water quality treatment volume equal to that of the first one inch of runoff from the directly connected impervious area. System E will be an on-line, dry retention system and will treat the runoff from the first inch of rainfall or as an option, the first one-half inch of runoff from the directly connected impervious area.

3.4.1.2 Environmental Protection Agency

The EPA requires permits for stormwater discharge in association with the National Pollutant Discharge Elimination System (NPDES) and the Clean Water Act. The application requirements include a stormwater pollution prevention plan indicating both structural and non-structural controls to be implemented.

It is anticipated that project impacts will be greater than 5 acres, therefore, an NPDES permit will be required.

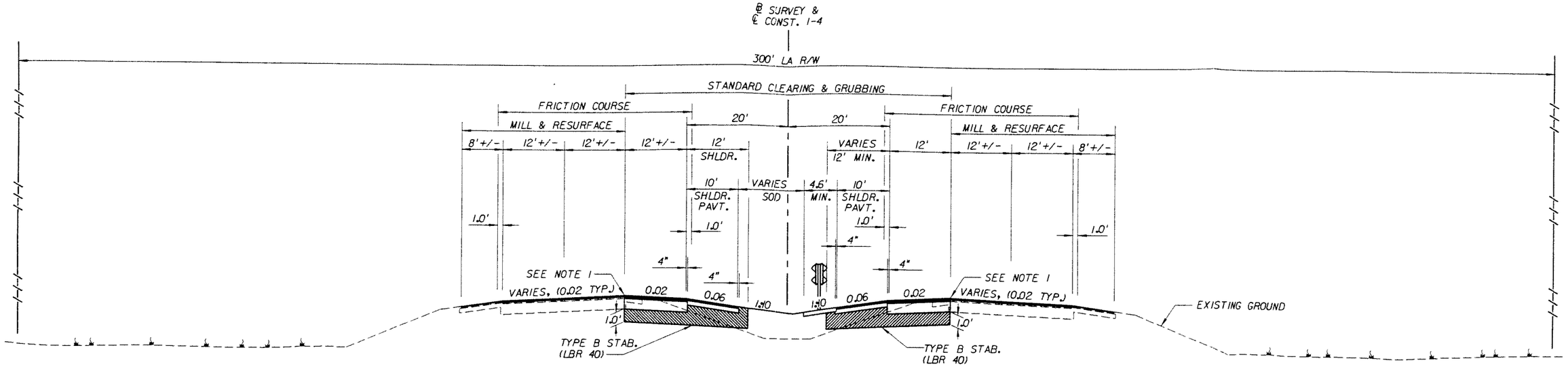
3.4.1.3 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers has jurisdiction over all wetlands of the United States. The Corps will require the acquisition of a Wetland Resource Management (Dredge/Fill) Permit for activities in all wetlands prior to beginning construction. The Corps provides a separate and independent review of the Wetland Resource Management Permit from SWFWMD.

It is not anticipated that this project will have impacts to wetlands requiring USACOE permits or reviews.

3.4.1.4 Florida Game and Fresh Water Fish Commission

The Florida Game and Fresh Water Fish Commission is not involved in issuance of permits but will comment on the dredging and/or filling activities in waters of the State. The commission will also conduct field reviews and comment to SWFWMD on any adverse affects the proposed activity may have on the wildlife and their habitat.



TYPICAL SECTION

STA. 1970+06.97 TO STA. 1996+93.62 EB
STA. 1970+06.97 TO STA. 1999+91.51 WB
STA. 2020+07.00 TO STA. 2037+39.74 EB
STA. 2022+08.80 TO STA. 2037+39.74 WB

TRAFFIC DATA (I-4)

CURRENT YEAR ESTIMATE = 2000 AADT= 74,100
OPENING YEAR ESTIMATE = 2002 AADT= 76,890
DESIGN YEAR ESTIMATE = 2015 AADT= 108,434
K = 10% D = 55% T = 12% (24 HR.)
DESIGN HR. T= 12%
DESIGN SPEED 70 mph

MILLING AND RESURFACING

MILL EXISTING ASPHALT PAVEMENT (2.75" AVERAGE DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL D) (150 lb/SY) AND
FRICTION COURSE FC-5 (80lb/SY) RUBBER

WIDENING

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL D) (400lb/SY) AND
FRICTION COURSE FC-5 (80lb/SY) RUBBER

SHOULDER MILLING AND RESURFACING

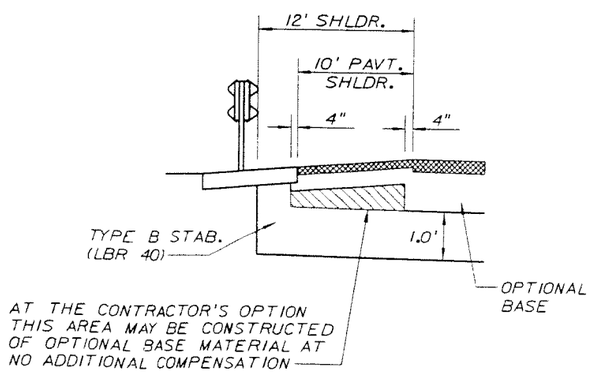
MILL EXISTING ASPHALT PAVEMENT (1.50" AVERAGE DEPTH)
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL D) (150 lb/SY) AND
FRICTION COURSE FC-5 (80lb/SY) RUBBER

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 1 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL D) (150lb/SY) AND
FRICTION COURSE FC-5 (80lb/SY) RUBBER

NOTES:

1. ELEVATIONS IN CROSS SECTIONS ARE SHOWN FOR REFERENCE ONLY. WIDENING SHALL MATCH EXISTING.
2. ACTUAL WIDTH OF BASE WIDENING MAY VARY DUE TO ACTUAL EXISTING PAVEMENT WIDTH. CONTRACTOR MAY ELECT TO PLACE UNIFORM WIDTH BASE WIDENING STRIP AT NO ADDITIONAL COST TO THE DEPARTMENT.
3. PROPOSED GUARDRAIL IS SHOWN ADJACENT TO EB ROADWAY. FOR STA. 2010+27.72 TO STA. 2037+39.74, PROPOSED GUARDRAIL SHALL BE CONSTRUCTED ADJACENT TO WB ROADWAY.



SHOULDER PAVEMENT DETAIL

NTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
P.O. Box 2547
Winter Park, FL 32790
(407) 628-0875
www.hdrinc.com
License No. 3415

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
MAINLINE TYPICAL SECTION
FIGURE 3-1

SHEET NO.

29 FEB 2000 14:06:57 H:\14_US27_BWIDEN\Draw\Typicals\typsr400.dgn

SECTION 4.0 STORMWATER CONVEYANCE

4.1 Existing Conditions

The project limits for Interstate 4 - Section 9 lie within the Kissimmee Ridge Drainage Basin of the Southwest Florida Water Management District. Primary drainage is provided by overland flow and man made drainage conveyances in both open and closed basins. No predominate flow pattern exists, with runoff concentration in both small and large depressional areas along the right-of-way and in the wetlands buffering the east and west ends of the project.

Presently, all stormwater runoff along the Interstate 4 corridor is collected in median and roadside swales and conveyed to low points which outfall into the aforementioned wetlands. Field reviews of the existing conditions were made which revealed that the system is functional. The existing interchange drainage consists of sheet flows and roadside swales to convey runoff to cross-drains and into small depressions within the infield areas, eventually over-topping to the wetlands flanking the eastern and western limits of the project. Field reviews of these areas, even during heavy rainfall events, did not detect any areas of prolonged standing water.

4.2 Proposed Conditions

Full size drainage maps with aerial background are contained in Appendix D.

Impacts By Stormwater Management Facilities

The stormwater management facilities shall be designed such that the control, treatment and design high water elevations shall not adversely impact off-site contributory areas including the existing and proposed roadway drainage structures. Additionally, the SMF installations will not impede existing off-site flow patterns.

4.2.1 BASIN A

The area analyzed as Basin A consists of approximately 39.3 ac (15.9 ha) of roadway pavement and open areas associated with the proposed roadway right-of-way (R.O.W.). The basin begins at the I-4 corridor station 1968+50 (600+00) and extends eastward to the U.S. 27 overpass at station 2009+85 (612+60). Longitudinal grades varying from 0.3% to 1.3% exhibit an existing "east to west" flow pattern within the roadway corridor. Currently, the pre-construction limits of Basin A are drained by roadside and median ditches with westerly flow patterns, which subsequently discharge into Karst wetlands, "The Green Swamp". The referenced wetlands, located just west of the project limits, are part of the Peace River watershed and is the outfall for Basin A. The criteria for sizing the ponds in Basin A involves wet detention water quality volume equivalent to 1 in (2.54 cm) of runoff from the contributing basin, and maintenance of the pre-developed vs. post-developed attenuated discharge rate in accordance with SWFWMD ERP B-BOR 4.2 and 5.2.

Pond site A is located left of I-4 station 1971+76 (601+00), and is situated on 5.0 ac (2.0 ha) of upland pastureland immediately east of the receiving wetlands. Pond A-1 is proposed to function as an on-line wet detention system, maintaining the pre-existing outfall to the adjacent wetlands via treated and attenuated broad flow. The proposed alignment of Pond A will endeavor to avoid any appreciable intrusion into wetland boundaries, yet provide additional creation of flood plain volume to the extent practicable. This pond site is situated within upland areas contiguous to wetlands which exhibit potential for mitigation site consideration. Therefore, this pond location and configuration could require coordination with any mitigation site alternatives considered in this area. The biological assessment exposed endangered, threatened or species of special concern at this location, that being the Gopher Tortoise. One active site was identified within the outfall easement for Pond A-1; however, it appears that the easement can be adjusted to avoid the impact. The soils encountered at this site, based on the SCS Soil Survey, include Candler and Tavares sands located at the periphery of Placid and Myakka fine sands associated with the adjacent wetland. The topography within the pond A-1 site is represented by east to west sloping contours between elevation 140.0 ft (42.7 meters) and 134.0 ft (40.8 meters) NGVD.

4.2.2 BASIN E

The area analyzed as Basin E consists of approximately 25.1 ac (10.1 ha) of roadway pavement and open areas associated with the proposed roadway right-of -way (R.O.W.). The basin begins at the I-4 corridor station 2016+10 (614+50) and extends eastward to the I-4 End Project limits at station 2047+25 (624+00). Longitudinal grades varying from 0.3% to 2.0% exhibit an existing "west to east" flow pattern within the roadway corridor. Currently, the pre-construction limits of Basin E are drained by roadside and median ditches with easterly flow patterns. The roadside ditch along the north side of the I-4 corridor discharges to minor depressional area, less than 0.5 meters deep. It is located just outside of the proposed ROW and beyond the project limits. This depression then pops off back to the I-4 north ditch which outfalls to Horse Creek. The proposed north roadside ditch will divert the I-4 runoff away this depression. Sense I-4 contributes only a minor portion of the flows to the depression, negligible decrease in depression staging will occur. The median ditch and southerly roadside ditch discharge into wetlands delimiting the upper reaches of the open basin for the Horse Creek (Kissimmee River) watershed.

The pond will outfall to the upper reaches of Horse Creek, an open basin, thus the criteria for sizing Pond E involves dry retention water quality volume equivalent to the greater of the first 1 in (2.54 cm) of rainfall or 0.5 in (1.27 cm) runoff from the contributing basin. Also, compliance with the pre vs. post attenuated discharge rate thus satisfying both SWFWMD ERP B-BOR 4.2 and 5.2. The site is adjacent to the pre-existing outfall available within the proximity. The site is presently an undeveloped upland location, and would involve only one property owner.

Pond site E is located right of the I-4 corridor End Project station 2052+15 (625+50), and is situated on 3.5 ac (1.4 ha) of upland pasture land immediately west of the wetlands acting as the pre-existing open basin outfall for practically all of Basin E. Pond E would function as an on-line dry retention percolation pond, maintaining the pre-existing outfall to the adjacent offsite open basin outfall by means of approximately 260 lf (80 meters) of spreader swale broad flowing to the downgradient open basin wetlands. The proposed alignment of Pond E would not intrude into any jurisdictional boundaries. The soils encountered at this site, based on the SCS Soil Survey, include Candler and Tavares sands located on an upland knoll above the periphery of hydric Basinger mucky sands associated with the downgradient wetland outfall. The topography within the pond E site is represented by west to east sloping contours between elevation 148.0 ft (45.1 meters) and 131.0 ft (39.9 meters) NGVD. Site vicinity soil conditions should exhibit rapid percolation and ground water depths favorable for dry pond conditions. The biological assessment exposed endangered, threatened or species of special concern at this location, that species being the Gopher Tortoise. Six active sites and one inactive site were identified within the proposed pond area. It does not appear that modifying the pond configuration will avoid impacts to T/E species.

4.3 Pond and Treatment Swale Sizing

The alternate pond sites were sized based upon the criteria stated for each basin, be it open or closed, wet or dry. Each system was designed as an on-line treatment system, utilizing weirs or diversion boxes to direct flows into each system from the roadway. For wet treatment systems a minimum pond depth of 6 ft (1.8 m) was used, assuming a ground water elevation as described in Section 2.1.2. The wet treatment depth will fluctuate depending on specific site characteristics. The dry treatment depth was assumed in such a way that it allowed for some modification to the system should site conditions differ from those assumed. Both wet and dry systems were assumed to have Design High Water Levels that would not adversely impact the proposed roadway improvements. The top-of-bank (berm) elevations were established in relation to the adjacent roadway improvements at each site and maintaining a minimum one-foot freeboard to ensure adequate storage volume was available to meet peak discharge requirements for both SWFWMD and FDOT 14-86.

5.0 STORMWATER MANAGEMENT FACILITY DESIGN CRITERIA

5.1 Drainage Design Criteria

The stormwater management facilities shall be designed in accordance with the *Florida Department of Transportation, Drainage Manuals, Volumes 1-4.* In addition, the design shall also comply with the rules and regulations outlined by the South West Florida Water Management District in the publication *Environmental Resource Permitting, Information Manual, April 1997.*

5.2 Water Quantity and Quality

5.2.1 Wet Detention Systems

The criteria for sizing wet detention systems involves water quality volume equivalent to 1 in (2.54 cm) of runoff from the contributing basin, and maintenance of the pre vs. post attenuated discharge rate in accordance with SWFWMD ERP B-BOR 4.2 and 5.2. For open basins, the 25-year frequency, 24-hour duration storm event shall be used to determine the amount of storage volume required to attenuate the post-development peak outflow such that it does not exceed the pre-development rate, pursuant to Section 6.3, *Permit Information Manual.* For closed basins, the 100-year frequency, 24-hour duration storm event will be used. A table summarizing the results for peak stages and flows and recovery of the pollution abatement volume for each of the ponds is provided as Table 5.1 and 5.2.

5.2.2 Dry Retention System

The criteria for sizing dry retention systems water quality volume is equivalent to the greater of the first 1 in (2.54 cm) of rainfall or 0.5 in (1.27 cm) runoff from the contributing basin. Also, compliance with the pre- vs. post-attenuated discharge rate will satisfy SWFWMD ERP B-BOR 4.2 and 5.2. For closed basins, the dry retention volume is sized in accordance with storage volume criteria set forth by SWFWMD ERP B-BOR 4.2 & 5.2 and the FDOT Chapter 14-86 critical duration analysis. For open basins, the 25-year frequency, 24-hour duration storm event shall be used to determine the amount of storage volume required to attenuate the post-development peak outflow such that it does not exceed the pre-development rate, pursuant to Section 6.3, *Permit Information Manual.* For closed basins, the 100-year frequency, 24-hour duration storm event will be used. A table summarizing the results for peak stages and flows and recovery of the pollution abatement volume for each of the ponds is provided as Table 5.1 and 5.2.

5.2.3 Off-site Drainage

Adequate provisions shall be made to allow drainage from off-site upgradient areas to downgradient areas without adversely altering the time, stage, volume, point or manner of discharge or dispersion and without degrading water quality. No attempt to treat off-site areas will be made.

5.3 Retention/Detention Facility Design

5.3.1 Bleed-Down Devices

Bleed-down devices incorporating dimensions smaller than 6 sq in (38.7 cc) of cross-sectional area or 2 in (5.08 cm) minimum dimension or 20 degrees for V-notches shall include a device to eliminate clogging. Such devices include baffles, grates, pipe elbows, etc. Pond outfalls shall be located away from the storm sewer system inflow point(s). This serves to minimize "short-circuiting" of the pond. The bleed-down invert elevation shall be at or above the estimated wet season water table elevation (unless this elevation is lowered by the proposed drainage design) and above the wet season tailwater elevation in the receiving water.

5.3.2 Skimmer/Debris Control Devices

Outfall structures shall have oil and grease skimmers and baffles or other devices as necessary to prevent clogging of the bleed-down device. The outlet structure shall be designed to skim floating debris, oil, and grease from an elevation 6 in (150 mm) below the surface of the pollution abatement volume elevation to an elevation 6 in (150 mm) above the 25-year frequency Design High Water (DHW) level of the pond.

5.3.3 Side Slopes

Retention/detention pond side slopes, for purposes of public safety, water quality enhancement, and maintenance shall be no steeper than 4:1 (horizontal : vertical) to a depth of 2 ft (600 mm) below the control water elevation (for wet ponds) or to the pond bottom (for dry facilities).

5.3.4 Vertical Clearance of Control Elevation

Twenty-four (24) hour elevations shall be no higher than 2 ft (600 mm) below the roadway base elevation in the area served by the control device in order to protect the roadway subgrade.

5.3.5 Geometric Criteria

Pond geometric criteria at the control elevation shall be such to maximize the flow path of water from the system inlets to the pond outlet to promote good mixing. Under these design conditions, short circuiting is minimized and pollutant removal efficiency and mixing is maximized.

Length to Width Ratio	2:1 or Greater
Minimum Length	200 ft (61.0 m) or Greater
Minimum Width	100 ft (30.5 m) or Greater
Minimum Area	0.5 ac (0.20 ha) or Greater
Minimum Depth	6 ft (1.8 m) or Greater

If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers such as islands, peninsulas, or baffles to the pond.

5.3.6 Depth

The detention or retention area shall not be excavated to a depth that breaches an aquitard such that it would allow for lesser quality water to pass, either way, between the two systems.

5.3.7 Facility Entrance

A stabilized entrance driveway to the retention/detention pond will be necessary. This driveway will be 15 ft (4.5 m) wide minimum, stabilized to a 12 in (300 mm) depth, and compacted. In a rural design section, a driveway pipe with mitered end sections will be necessary. All stabilized driveways shall be grassed.

5.3.8 Facility Perimeter Berms

Ponds shall be designed to provide a minimum 20 ft (6.1 m) horizontal clearance between the top edge of the normal pool elevation and the right-of-way line. At least 20 ft (6.1 m) adjacent to the pond shall be level or have a maximum slope of 1:10. The berm surface shall be smooth and uniform to provide uninterrupted vehicle access around the pond perimeter. Facilities shall be designed with round corners for ease of maintenance.

5.3.9 Fence and Gates

Wet retention/detention ponds shall be enclosed with FDOT Type B fence that is 6 ft (1.8 m) high. Gates are to be located at the closest direct approach to the facility outfall structure and aligned with the maintenance berm and shall be a 20-ft (6.1-m) double swing configuration.

5.3.10 Grassing

All pond slopes shall be sodded. The pond slopes (inside) shall be sodded down to the normal water level. The 20-ft (6.1 m) wide maintenance berms shall be seeded and mulched or sodded.

5.3.11 Construction Survey Information

All retention/detention pond bottom radii shall be shown with centerline station and offset furnished. Each fence corner shall have a centerline station and offset shown.

5.4 Storm Sewer Design

5.4.1 Design Frequency and Rainfall Intensity

The 3-year frequency storm event, Zone 8 Intensity-Duration-Frequency (IDF) curve shall be utilized to determine the required storm sewer pipe size to convey the design discharge.

5.4.2 Time of Concentration

A minimum time of concentration of ten (10) minutes shall be used in determining the design rainfall intensity to be used in the Rational Method to compute design discharges. The standard FDOT storm sewer tabulation tables shall be used to summarize the storm sewer design.

5.4.3 Pipe Size and Length

A minimum pipe size of 18 in (450 mm) shall be used in the storm sewer design. The maximum pipe lengths recommended without access structures are as follows:

Table 5.1
Recommended Pipe Lengths

Pipe Diameter mm (in)	Maximum Length Feet (Meters)
18 (450)	300 (90)
24 to 36 (600 to 900)	400 (120)
42 (1050) and greater	500 (150)

5.4.4 Vertical Clearances

A minimum of 1 ft (300 mm) between the bottom of the roadway base material and the outside crown of the pipe is required, with 15 to 18 in (380 to 450 mm) preferred.

5.4.5 Hydraulic Slope

The minimum desirable physical slope shall be that which produces a velocity of 2.5 ft (750 mm) per second when the storm sewer pipe is flowing full. If 2.5 ft (750 mm) per second is physically unobtainable, an absolute minimum velocity of 2.0 ft (600 mm) per second for full flow shall be considered.

5.5 Pavement Hydraulics

5.5.1 Design Frequency

The design frequency for pavement drainage shall be consistent with the frequency selected for other components of the drainage system. A rainfall intensity of 4 in (100 mm) per hour shall be used as the design frequency for pavement hydraulics.

5.5.2 Surface Spread

For sections with a design speed greater than 45 mph (70 km/h), and for sections with shoulders greater than 6 ft (1.8 m) in width, spread shall not encroach into the

travel lane. For all other facilities, the spread shall not be greater than one-half the travel lane width adjacent to the gutter.

5.5.3 Inlet Spacing

Inlet locations shall be deigned for all low points along the roadway and along continuous grades, such that the spread criteria and inlet capacities are not exceeded. No inlets shall be placed on radii of curb returns, in conflict with pedestrian or bicycle crossings and shall intercept all flows prior to these locations or exiting the roadway right of way.

5.6 Design High Water (DHW)

The design high water (DHW) for the roadway grades is based on a determination of the water elevation which occurs for 24 hours. The roadway base clearance is the distance between the DHW elevation and the roadway base course.

5.7 Flood Plain Storage

5.7.1 U.S. Army Corps of Engineers

Loss of regulatory floodway storage through additional embankment fill must be compensated. Compensation shall be for all flood volume displaced below the elevation of the base (100-year) flood elevation.

5.7.2 South West Florida Water Management District

No net encroachment into the flood plain, up to that encompassed by the 100-year event, which will adversely effect either conveyance, storage, water quality or adjacent lands will be allowed. Any required compensating storage shall be equivalently provided between the seasonal high water level and the 100-year flood level to allow storage function during all lesser flood events.

BASIN A

BASIN A

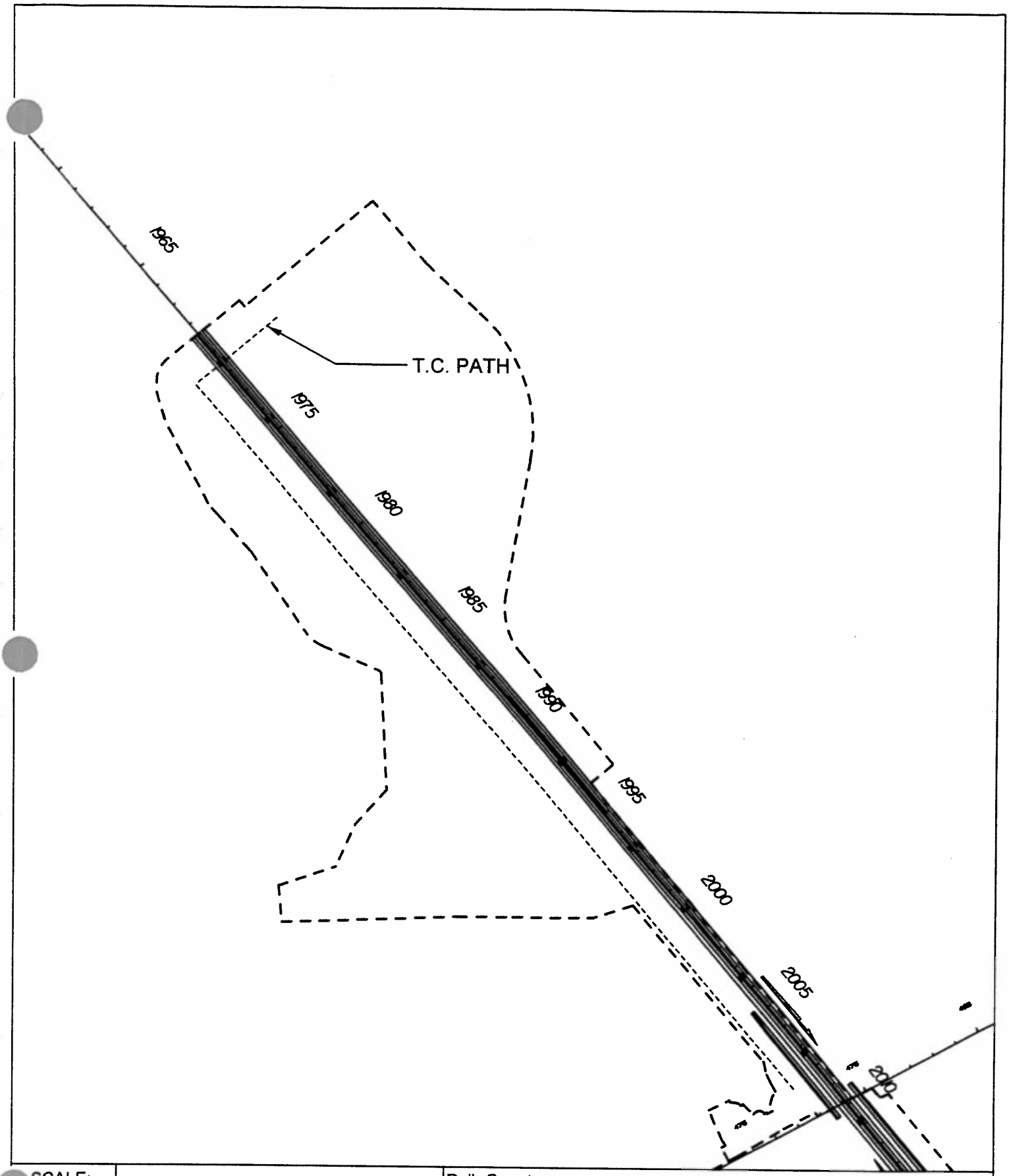
Basin A consists of approximately 70.59 ac (28.57 ha) of roadway pavement and open areas associated with the proposed 6-lane right-of-way of I-4. The basin begins at Station 1970+06.96 (I-4) and extends eastward to the U.S. 27 overpass at Station 2009+85.00. Longitudinal grades varying from 0.3% to 1.3% exhibit an existing "east to west" flow pattern within the roadway corridor. The offsite area south of I-4 was assumed to be undeveloped since there are treatment pond systems already in place. The offsite areas north of I-4 were assumed to be undeveloped. Presently, Basin A has a positive outfall into the Green Swamp via a system of roadside ditches. The Green Swamp is part of the Peace River watershed.

The stormwater management system for Basin A consists of a wet detention pond, Pond A, discharging to the existing positive outfall. The stormwater management system is designed for the ultimate widening of I-4. Pond A will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year, 24 hour storm. The required water quality used for Basin A is one inch of runoff from the directly connected impervious area. The bleed down orifice size was calculated based on SWFWMD criteria. The control elevation is based on the seasonal high water table (SHWT) determinations by the geotechnical consultant.

Basin A is not in the 100-year flood zone (see Figure 2.3, FEMA map).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin A was routed using a 25-year, 24-hour storm, with a rainfall depth of 9.0 inches (0.23 meters) obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgement, and data from the Green Swamp from the previously approved section of I-4 west of Basin A. Results illustrate that the post development flows are less than the pre development flows. A minimum of 1.0 foot (0.30 meters) freeboard is provided in Pond A. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. Results from the analysis can be found in Section 11. The results show that Pond A meets the 14-86 criteria of the FDOT.



SCALE:
1" = 500'

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County — Florida

BASIN A DRAINAGE AREAS

BY	DATE	JOB NUMBER	SHEET
NRS	03-10-00	FLD-5	1 of 1

FLD5BASIN A.301

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 03/30/00
Location: POLK COUNTY, Pond A Checked: CLC Date: 03/31/00

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			58.93	2298.27
	Impervious area-roadway	98			6.69	655.62
	Pastures, grassland, range-good Pond area	39			4.97	193.83
						0.00
						0.00
						0.00
						0.00
						0.00
	Use only one CN source per line.				Totals =	70.59 3147.72

CN (weighted) = total product/total area = $\frac{3147.72}{70.59}$ = 44.59 Use CN: 45

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.2	1.0	1.2

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 03/30/00
Location: POLK COUNTY, Pond A Checked: CLC Date: 03/31/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area acres / mi^2 / %	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			54.91	2141.49
	Impervious area-roadway	98			10.71	1049.58
	Open space, good condition Pond area	39			2.15	83.85
	Pond Impervious	100			2.82	282.00
						0.00
						0.00
						0.00
						0.00

Use only one CN source per line. Totals = 70.59 3556.92

CN (weighted) = total product/total area = $\frac{3556.92}{70.59}$ = 50.39 Use CN: 50

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.3	1.4	1.7
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 03/30/2000

Pond Volume

Basin	A			Retention
Pond	A		Runoff	Volume
Basin Area	70.59	Acres	(inches)	(Acre-ft)
DCIA*	10.71	Acres	1.00	0.89
Required Storage	0.89	Acre-ft		
Retention Stage	131.95	ft		
½ Required Storage	0.45	Acre-ft		
½ Required Stage	130.65	ft		

NOTE: Max depth is 18 inches for wet detention in SWFWMD.
Actual retention depth = 16.8 inches

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
130.50	2.72	-	-	-	0.00
135.17	3.39	3.05	4.67	14.25	14.25
136.15	4.15	3.77	0.98	3.71	17.96

(*) - Calculation of treatment volume using Directly Connected Impervious Area (DCIA) is applicable only to existing public roadway projects.

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 03/30/2000

Permanent Pool Calculations

Basin	A	
Pond	A	
Basin Area	70.59	Acres
Composite 'C'	24	Percent
Average Rainfall	31.04	inches (June-September)
Wet Season Duration	122	days

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
124.67	1.15	-	-	-	0.00
129.20	1.56	1.35	4.53	6.12	6.12
129.23	2.54	2.05	0.03	0.07	6.19
130.50	2.72	2.63	1.27	3.34	9.52

Permanent Pool Available = 9.52 Acre-ft

Average daily runoff volume (using 122 day rainfall period) =
(% imp/100)(Basin Area)(31.04"/122 days)(1'/12") =
0.36 Acre-ft

$$\text{Residence Time} = \frac{\text{Permanent Pool Available}}{\text{Average daily runoff volume}} = 26.7 \text{ days}$$

Min Residence Time = 14.0 days **O.K.**

RESIDENCE TIME >= 21.0 DAYS,
NO LITTORAL ZONE REQUIRED

ORIFICE BLEED-DOWN CALCULATIONS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.11) [1]

I-4/US 27 INTERCHANGE - POND A ORIFICE
INPUT REPORT
03/31/00

********** Input Report **********

--------Class: Node--------

Name: OUTFALL	Base Flow(cfs): 0	Init Stage(ft): 128.9
Group: BASE	Length(ft): 0	Warn Stage(ft): 128.9

Comment:

Time(hrs)	Stage(ft)
0	128.9
120	128.9

--------Class: Node--------

Name: POND-A	Base Flow(cfs): 0	Init Stage(ft): 131.95
Group: BASE	Length(ft): 0	Warn Stage(ft): 131.95

Comment:

Stage(ft)	Area(ac)
130.5	2.72
135.17	3.39
136.15	4.15

--------Class: Drop Structure--------

Name: A-OUT	From Node: POND-A	Length(ft): 214
Group: BASE	To Node: OUTFALL	Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	36	36
Rise(in):	36	36
Invert(ft):	129.1	128.6
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

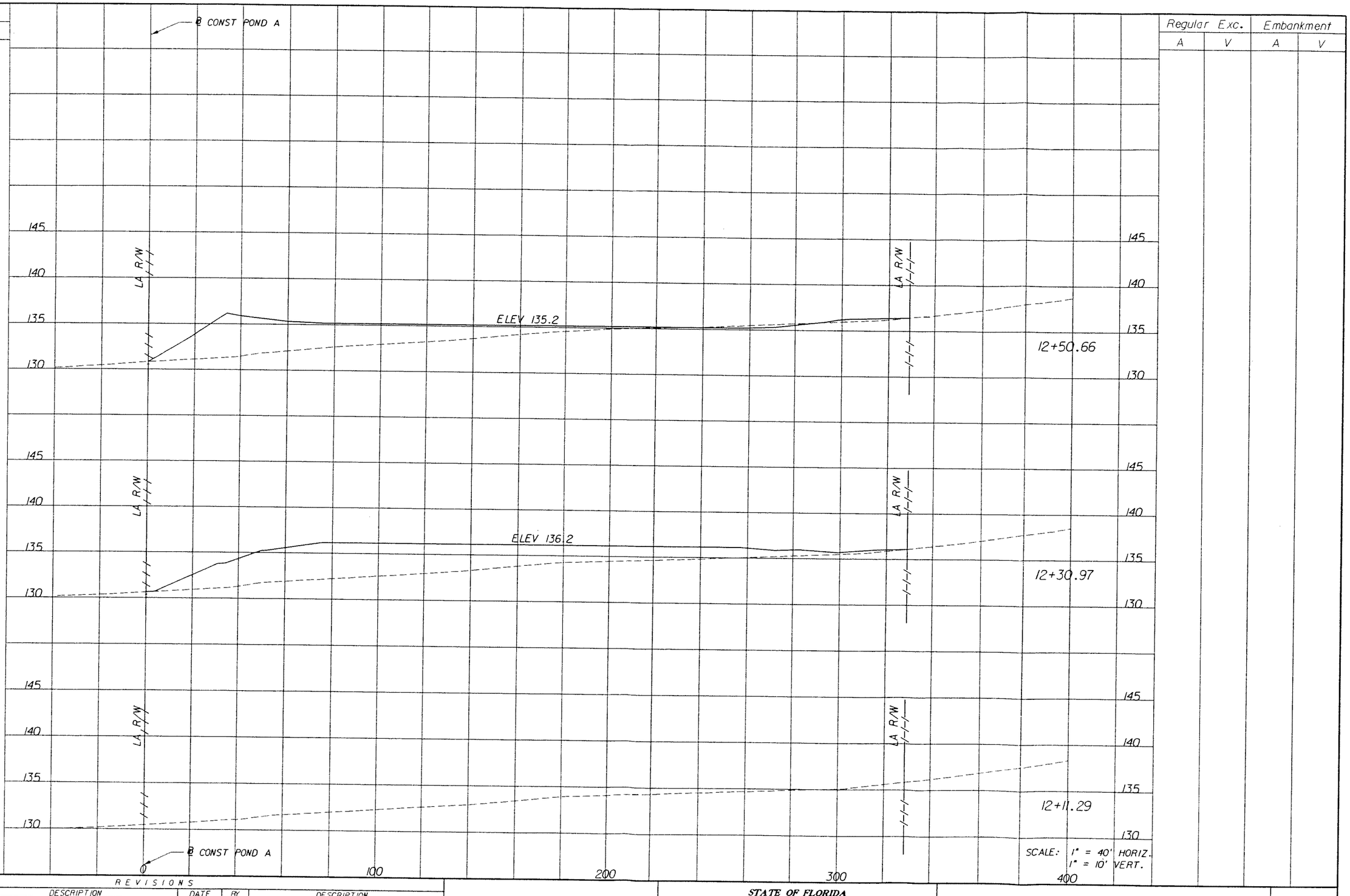
Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
03/30/00

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
36.277	131.68	2.89	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.7722
37.277	131.68	2.89	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.7922
38.277	131.67	2.89	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.8122
39.277	131.66	2.89	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.8321
40.277	131.66	2.89	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.8520
41.277	131.65	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.8718
42.277	131.64	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.8915
43.277	131.64	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.9112
44.277	131.63	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.9308
45.277	131.62	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.9503
46.277	131.62	2.88	0.00	0.00	0.00	0.00	0.00	0.24	0.0000	0.9698
47.277	131.61	2.88	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	0.9892
48.277	131.60	2.88	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.0085
49.277	131.60	2.88	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.0278
50.277	131.59	2.88	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.0470
51.277	131.58	2.88	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.0661
52.277	131.58	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.0852
53.277	131.57	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1042
54.277	131.56	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1232
55.277	131.56	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1420
56.277	131.55	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1608
57.277	131.54	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1796
58.277	131.54	2.87	0.00	0.00	0.00	0.00	0.00	0.23	0.0000	1.1982
59.277	131.53	2.87	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.2168
60.277	131.52	2.87	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.2354
61.277	131.52	2.87	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.2538
62.277	131.51	2.87	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.2723
63.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.2906
64.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3089
65.277	131.49	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3271
66.277	131.49	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3452
67.277	131.48	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3633
68.277	131.47	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3813
69.277	131.47	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.3992
70.277	131.46	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.4171
71.277	131.45	2.86	0.00	0.00	0.00	0.00	0.00	0.22	0.0000	1.4349
72.277	131.45	2.86	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.4526
73.277	131.44	2.86	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.4703
74.277	131.44	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.4879
75.277	131.43	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5055
76.277	131.42	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5229
77.277	131.42	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5403
78.277	131.41	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5577
79.277	131.40	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5750
80.277	131.40	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.5922
81.277	131.39	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.6093
82.277	131.39	2.85	0.00	0.00	0.00	0.00	0.00	0.21	0.0000	1.6264

Subsoil Exc.		Regular Exc.		Embankment	
A	V	A	V	A	V



CERTIFICATE OF CHECK (Green Check or Circle & Remark Incorrect) DATE

REMARK INCORPORATION (Blue Highlighter) DATE

CHECKED Correct (Green) Changes Req DATE

CHECKED Corrections Followed (Changes Incl) DATE

CONCURRENCE, ORIGINATOR (Red Check) DATE

CHANGE INCORPORATION (Blue Highlighter) DATE

INITIATOR DATE

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407-388-8482
License No. 0035490

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

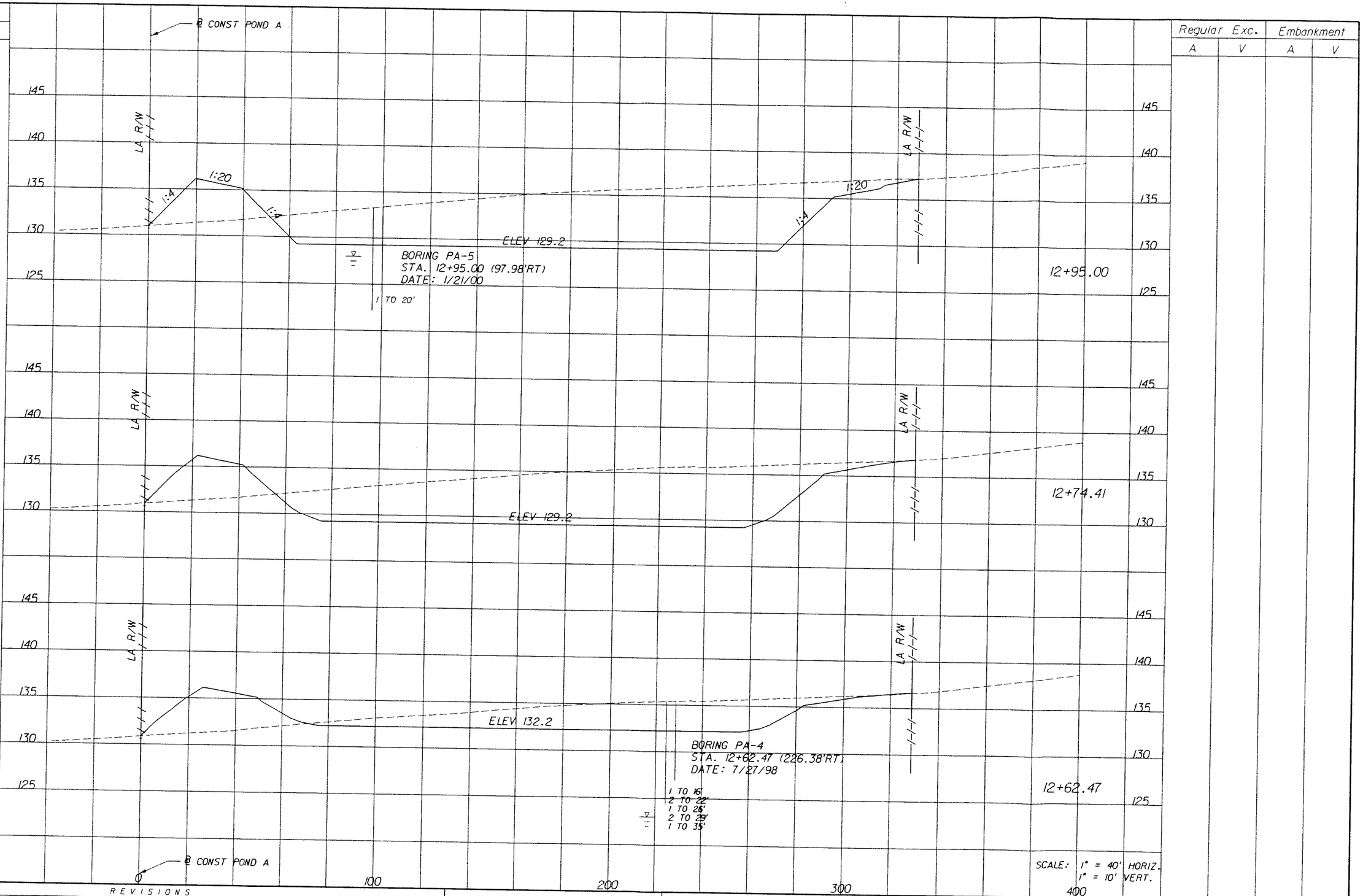
S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO. **E-193**

6-33

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.

E-194
6-34

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CHECKED Correct(Green)Changes(Red)
DATE
CONCURRENCE, ORIGINATOR (Red Check)
CHANGE INCORPORATION (Blue Highlighter)
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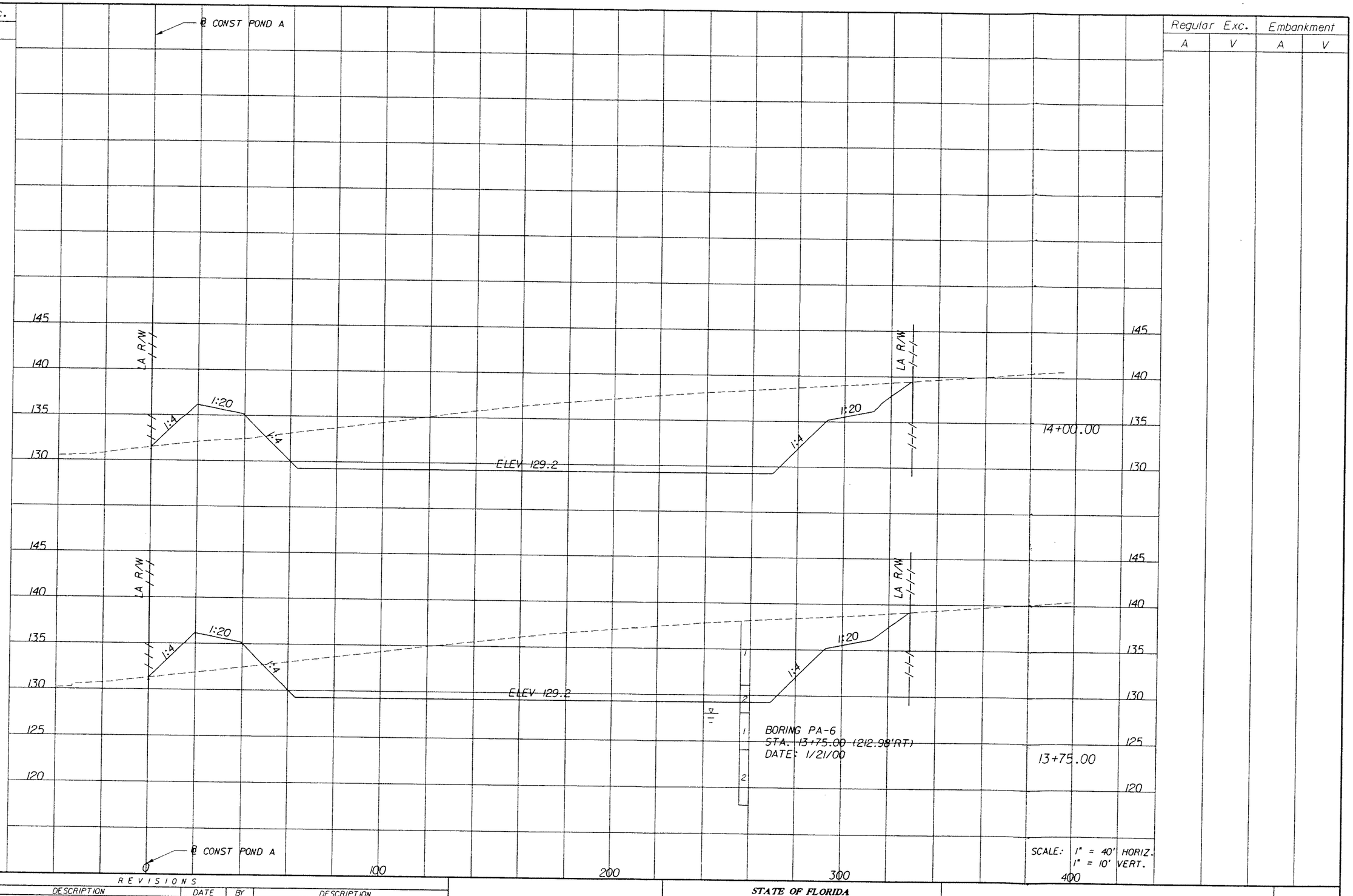
Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



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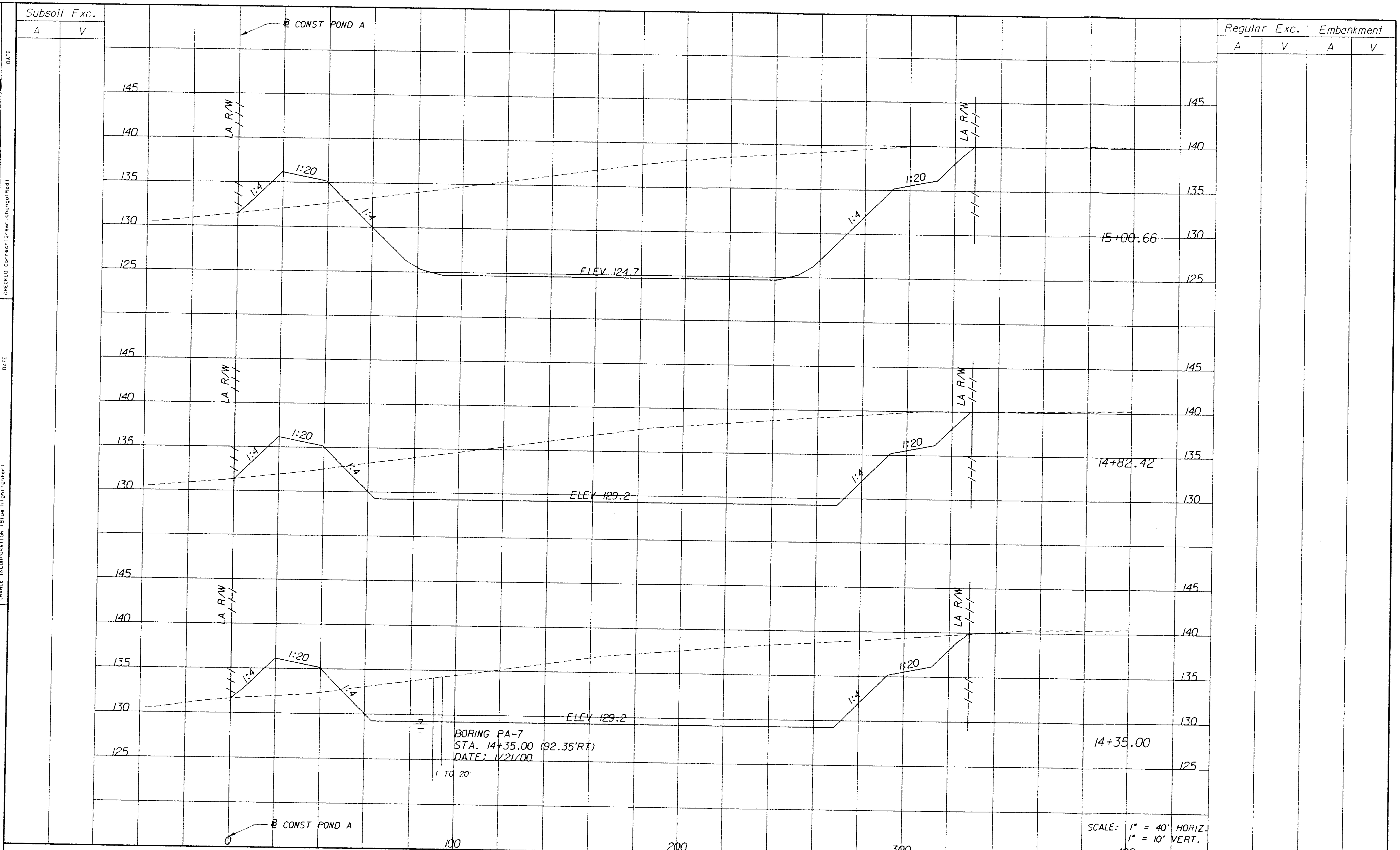
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.



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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.

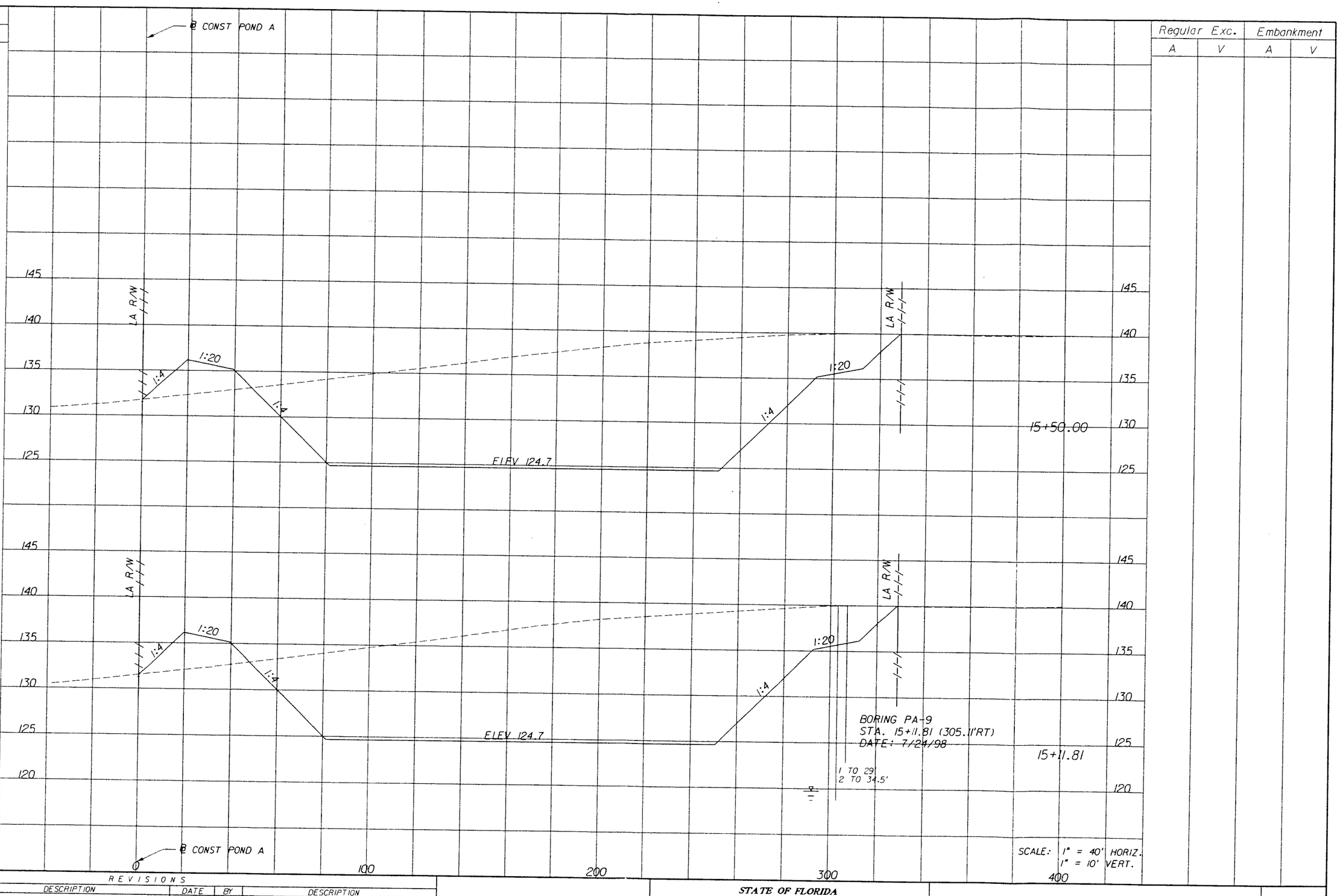
E-196

6-36

03/31/00

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

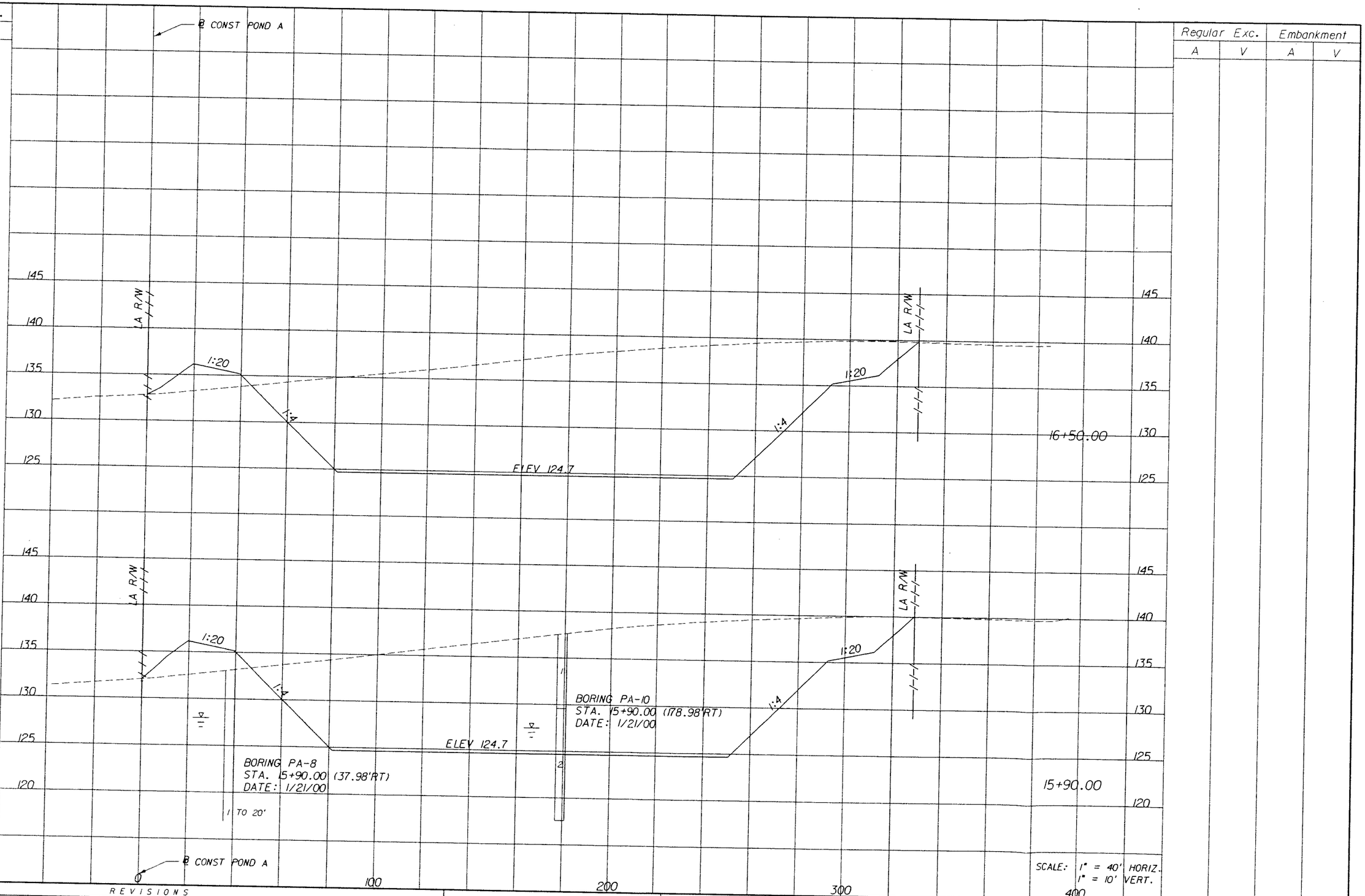
S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.

E-197
6-37

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

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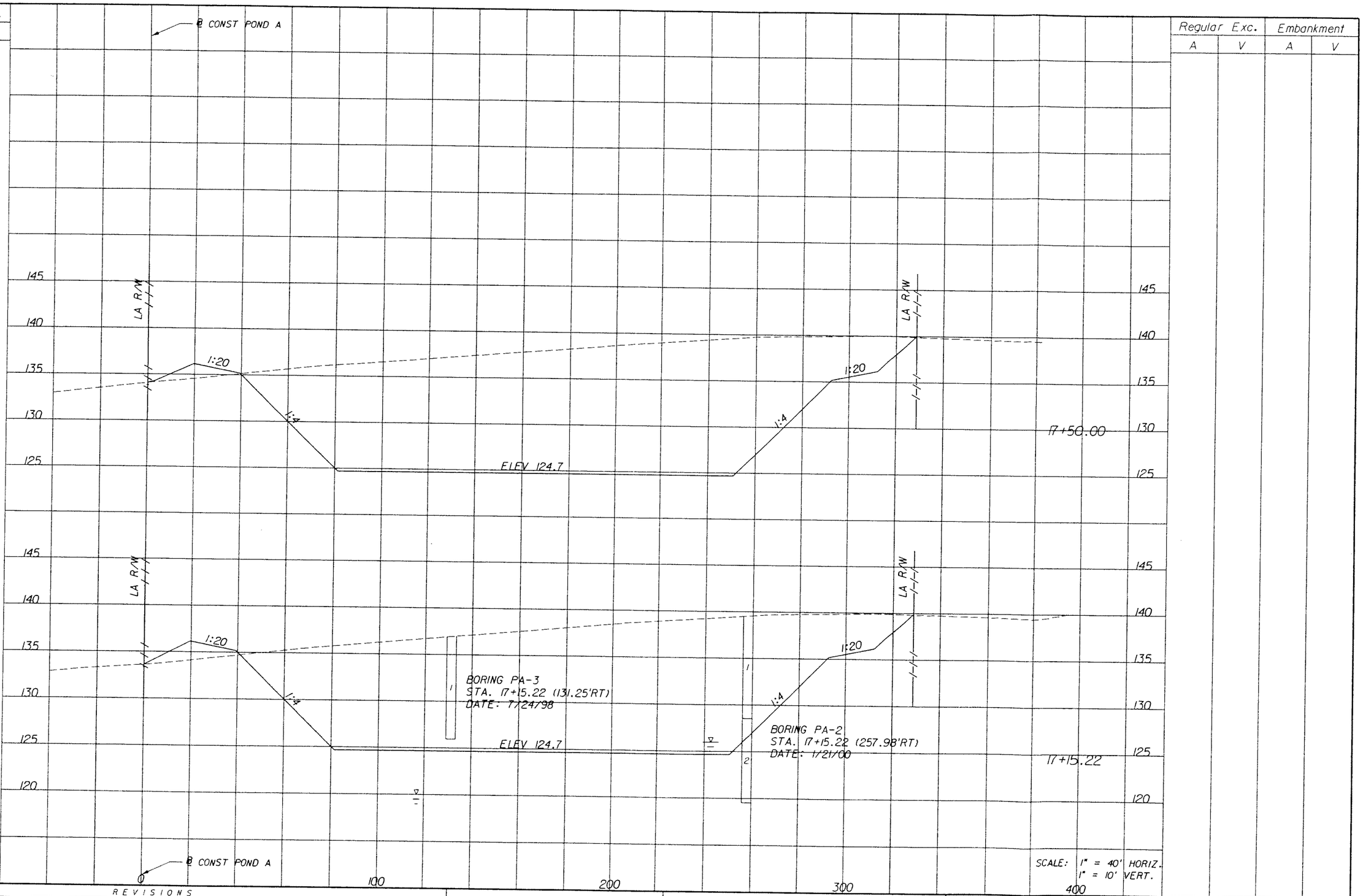
S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.

E-198
6-38

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

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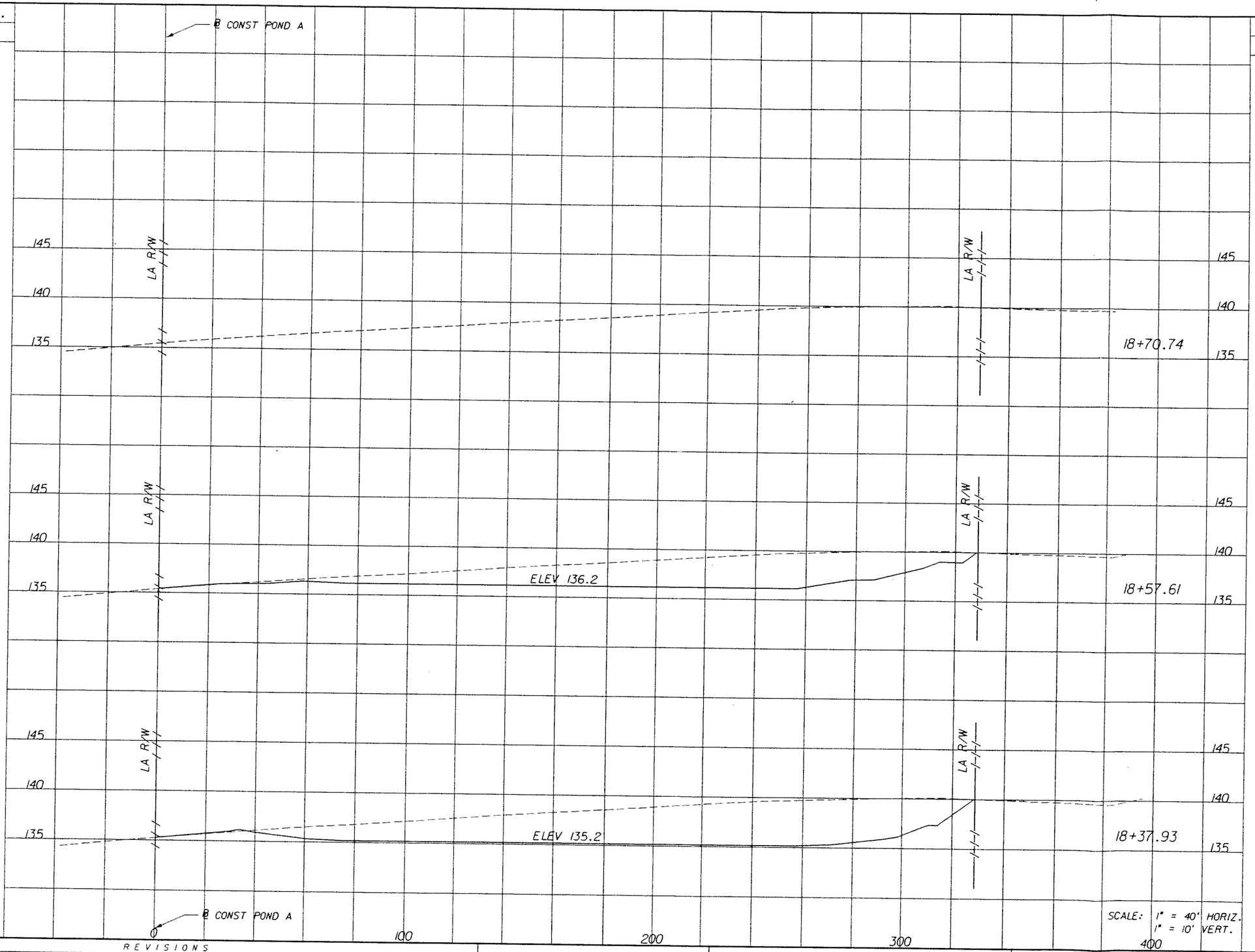
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO.

Subsoil Exc.		Regular Exc.		Embankment	
A	V	A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "A" CROSS SECTIONS

SHEET NO. E-200

6-41

BASIN E

7-1

BASIN E

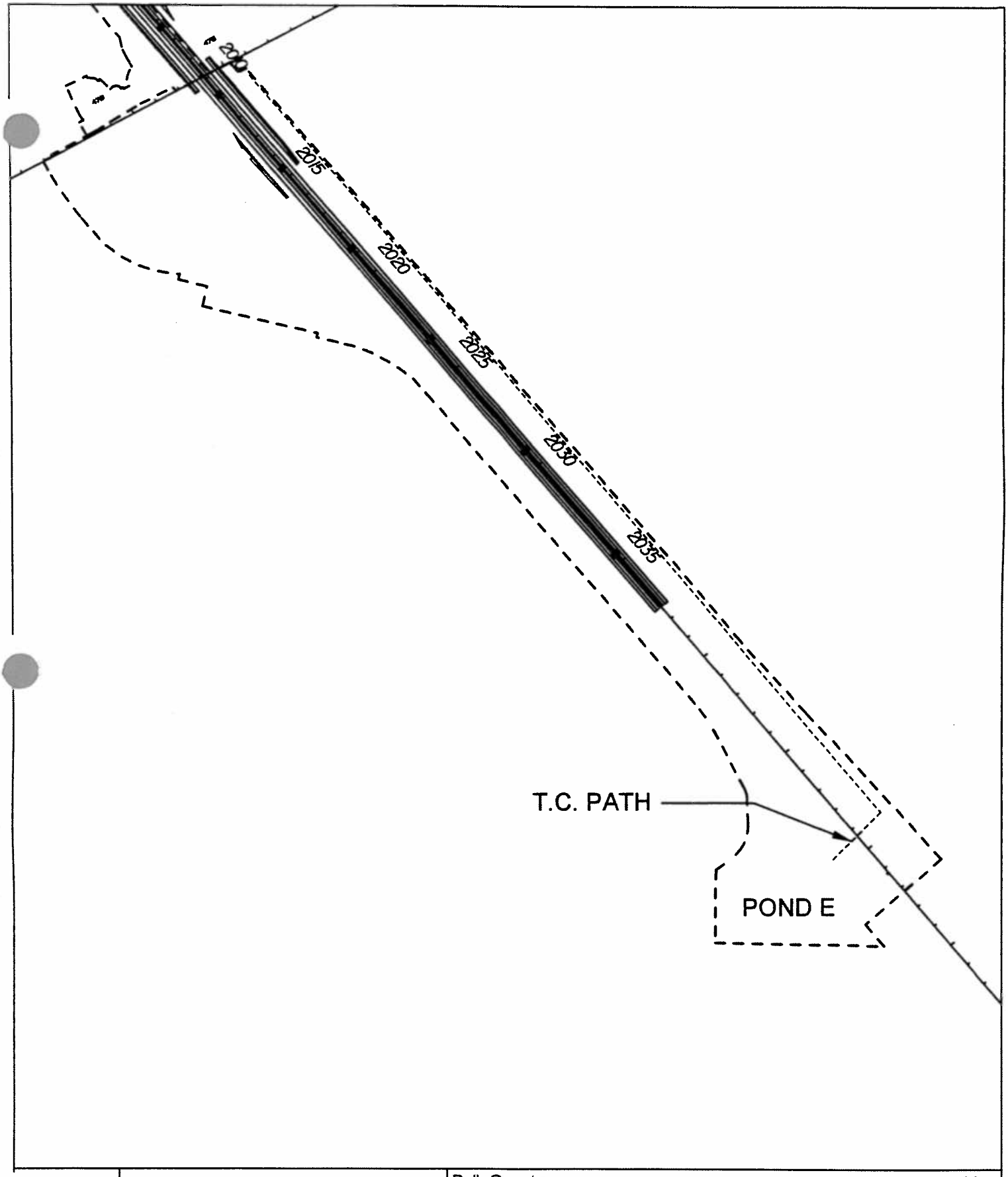
Basin E consists of approximately 48.49 ac (19.62 ha) of roadway pavement and open areas associated with the proposed 6-lane roadway right-of-way. The basin begins at the I-4 corridor Station 2009+85 and extends east to Station 2052+15.41. Longitudinal grades varying from 0.3% to 2.0% exhibit an existing west to east flow pattern within the roadway corridor. Basin E has a positive outfall to Horse Creek via a system of roadside and median ditches. Horse Creek is part of the Kissimmee River basin.

The stormwater management system for Basin E consists of a dry, online detention pond discharging to the existing positive outfall via the I-4 swale system. Pond E is the proposed detention pond for Basin E. The stormwater management system is designed for the ultimate widening of I-4. Pond E will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year, 24-hour storm. The required water quality used for Basin E is one inch of runoff from the directly connected impervious area. Percolation will be used for recovery of the water quality volume. Recovery of the water quality volume was done using the program MODRET. Groundwater data for MODRET was based on information from the geotechnical consultant.

Basin E is not in the 100-year flood zone (see Figure 2.3, FEMA map).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin E was routed using a 25-year, 24-hour storm, with a rainfall depth of 9.0 inches (0.23 meters) obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgement, and an analysis of the I-4 swale. Results illustrate that the post development flows are less than the pre development flows. A minimum of 1.0 foot (0.30 meters) freeboard is provided in Pond E. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. Results from the analysis can be found in Section 11. The results show that Pond E meets the 14-86 criteria of the FDOT.



SCALE:
1" = 500'

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407-380-0402

Polk County — Florida

BASIN E DRAINAGE AREAS

BY	DATE	JOB NUMBER	SHEET
NRS	03-10-00	FLD-5	1 of 1

E-204

FLD5BASIN E.301

7-3

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 03/30/00
Location: POLK COUNTY, Pond E Checked: CLC Date: 03/31/00

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN ✓ Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi^2 / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			39.46	1538.94
	Impervious area-roadway	98			5.43	532.14
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
						0.00
✓ Use only one CN source per line.				Totals =	48.49	2211.48

CN (weighted) = total product/total area = $\frac{2211.48}{48.49}$ = 45.61 Use CN: 46

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.2	1.1	1.3

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 03/30/00
Location: POLK COUNTY, Pond E Checked: CLC Date: 03/31/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN (Table 2-2)	CN (Fig 2-3)	CN (Fig 2-4)	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			34.04	1327.56
	Impervious area-roadway	98			10.85	1063.30
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
						0.00
	Use only one CN source per line.			Totals =	48.49	2531.26

CN (weighted) = total product/total area = $\frac{2531.26}{48.49}$ = 52.20 Use CN: 52

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.4	1.6	1.9

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 03/31/2000

Pond Volume

			Runoff	Retention Volume
Basin	E			
Pond	E		(inches)	(Acre-ft)
Basin Area	48.49	Acres	1.00	0.90
DCIA*	10.85	Acres		
Required Storage	0.90	Acre-ft		
Retention Stage	123.25	ft		
½ Required Storage	0.45	Acre-ft		
½ Required Stage	123.0	ft		

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
122.70	1.60	-	-	-	0.00
123.69	1.71	1.65	0.98	1.63	1.63
124.67	1.82	1.76	0.98	1.73	3.36
126.97	2.08	1.95	2.30	4.47	7.84
127.95	2.68	2.38	0.98	2.34	10.18

(*) - Calculation of treatment volume using Directly Connected Imperviou
Area (DCIA) is applicable only to existing public roadway pro

GTC Engineering Corporation

Project: I-4/U.S. 27
Pond: Pond E
Date: 3/31/00

Calc. By: NRS
Checked By: CLC

From Williams Earth Sciences geotechnical report

Saturated Hydraulic Conductivity, k

Ground Elevation =	38.7 m =	127.0 ft
Groundwater Depth =	2.0 m =	6.6 ft
Groundwater Elevation =	36.7 m =	120.5 ft

MODRET INPUT DATA

Project/Pond Name	Pond E
Runoff Data, Hydrograph (H) or Manual (M)	M
Unsaturated Analysis Included?	Y
Is there overflow?	N
Design High Water Elevation (DHW)	124.08 ft
Pond Bottom Area	69696 sq ft
Pond Volume Between Bottom & DHW	39204 cu ft
Pond Length to Width Ratio	2.0
Elevation of Effective Aquifer Base	95.0 ft
Elevation of Seasonal High Groundwater Table	120.5 ft
Elevation of Pond Bottom	122.7 ft
Effective Storage Coefficient of Soil for Unsaturated	0.3
Unsaturated Vertical Hydraulic Conductivity	8.50 ft/day (*)
Factor of Safety	2
Saturated Horizontal Hydraulic Conductivity	12.80 ft/day
Effective Storage Coefficient of Soil for Saturated	0.3
Average Effective Storage Coefficient of Pond	1.0

**** - estimated @2/3 of saturated hydraulic conductivity***

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : I4/US 27 - POND E
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	69696.00 ft²
Pond Volume between Bottom & DHWL	39204.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	92.00 ft
Elevation of Seasonal High Groundwater Table	120.50 ft
Elevation of Pond Bottom	122.70 ft
Design High Water Level Elevation	124.08
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.12
Unsaturated Vertical Hydraulic Conductivity	8.50 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	12.80 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.12
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	200.00
Elevation of water level	0.00	0.00	0.00	118.00

Friday, 3/31/2000

7-8

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: I4/US 27 - POND E

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	1.49	18399.74
1	1.51	20805.00
2	3.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

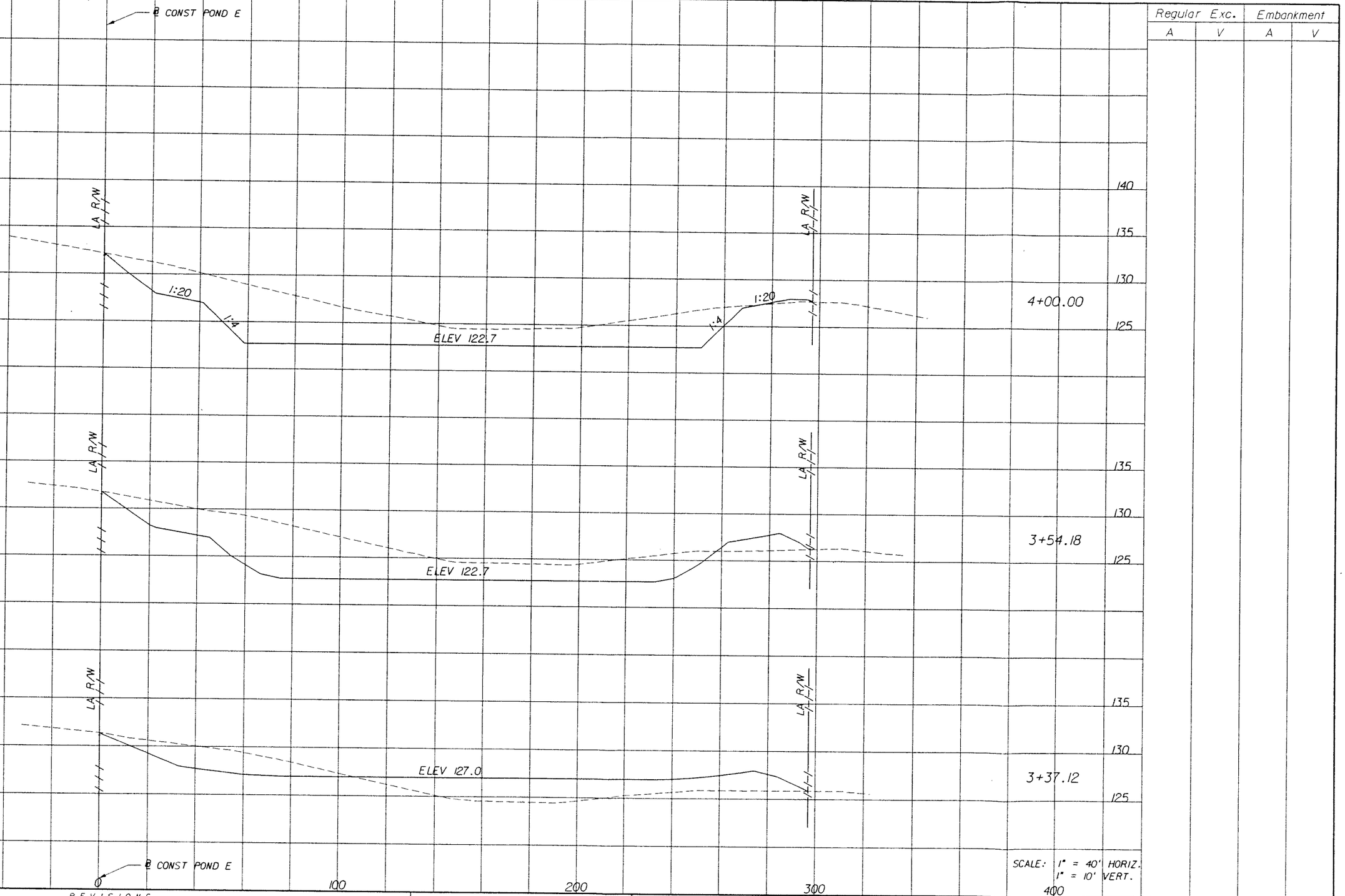
SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND E

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	120.500	0.000 *		
			0.00	
0.00	120.500	2.66816		
			1.85212	0.00
3.00	123.376	1.03608		
			0.22026	0.00
6.00	123.292	0.19733		
			0.15147	0.00
12.00	123.177	0.13482		
			0.10152	0.00
24.00	123.022	0.08996		
			0.07841	0.00
36.00	122.903	0.07175		
			0.06509	0.00
48.00	122.804	0.06074		
			0.05640	0.00
60.00	122.718	0.05324		
			0.05009	0.00
72.00	122.642	0.04729		
			0.04169	0.00
96.00	122.516	0.03880		
			0.03591	0.00
120.00	122.406	0.03374		
			0.03157	0.00
144.00	122.310			

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

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CHECKED Correct (Yellow) (Orange) (Red)
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CHANGE INCORPORATION (Blue Highlighter)
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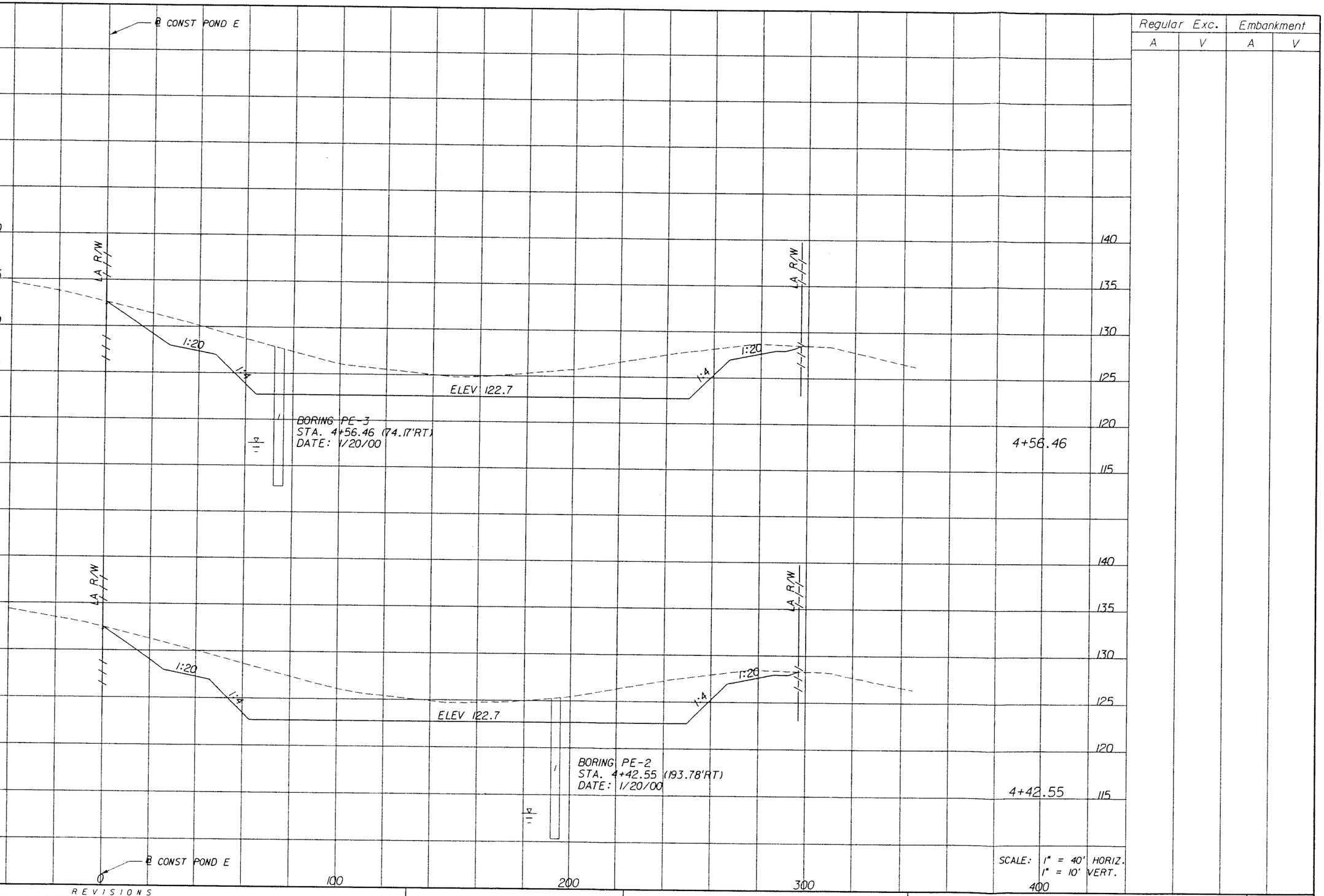
Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



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CHECKED Correct(Green)Change(Red) DATE

CHECKED Correct(Yellow)Change(Red)
CONCURRENCE, ORIGINATOR (Red Check)
CHANGE INCORPORATION (Blue Highlighter)

DATE
DATE
DATE

ORIGINATOR

COLLATION

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

SHEET NO.

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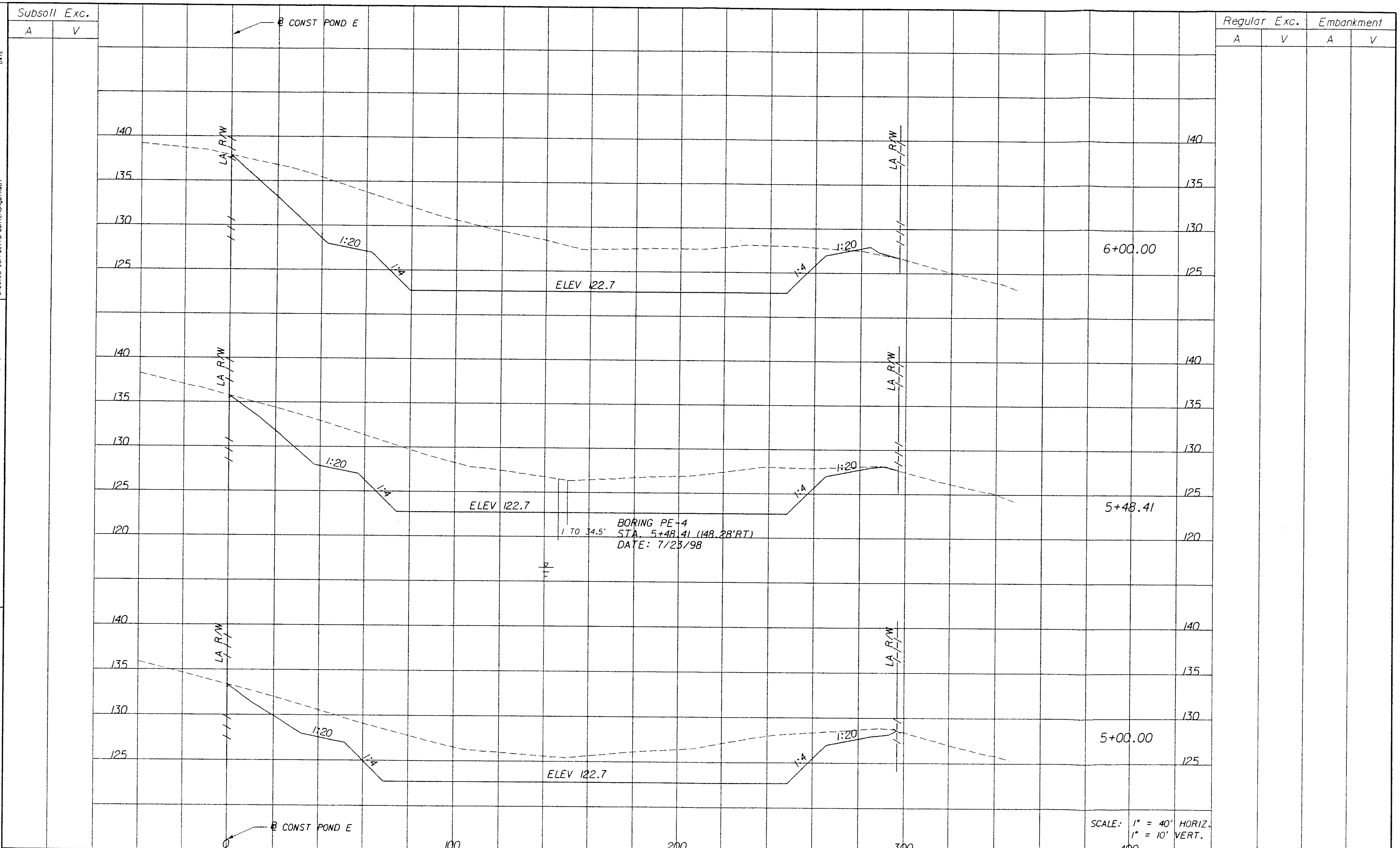


REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

GTC Engineering Corporation

License No. 0035490

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

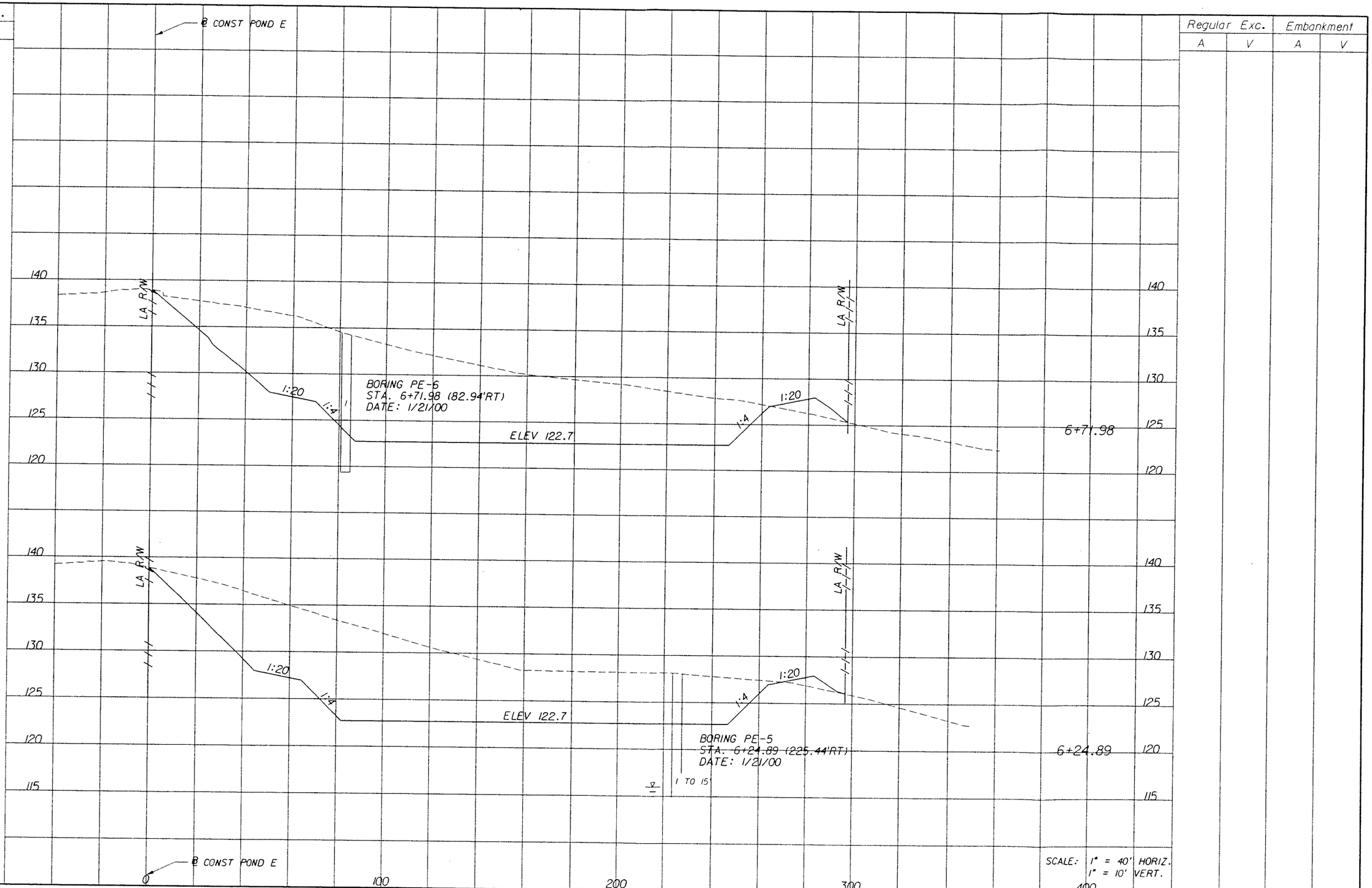
SHEET NO.

E-214

03/31/00

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-568-8682
License No. 0035490

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

SHEET NO.

E-215

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CONCURRENCE, ORIGINATOR (Red Check)
CHANGE INCORPORATION (Blue Highlighter)
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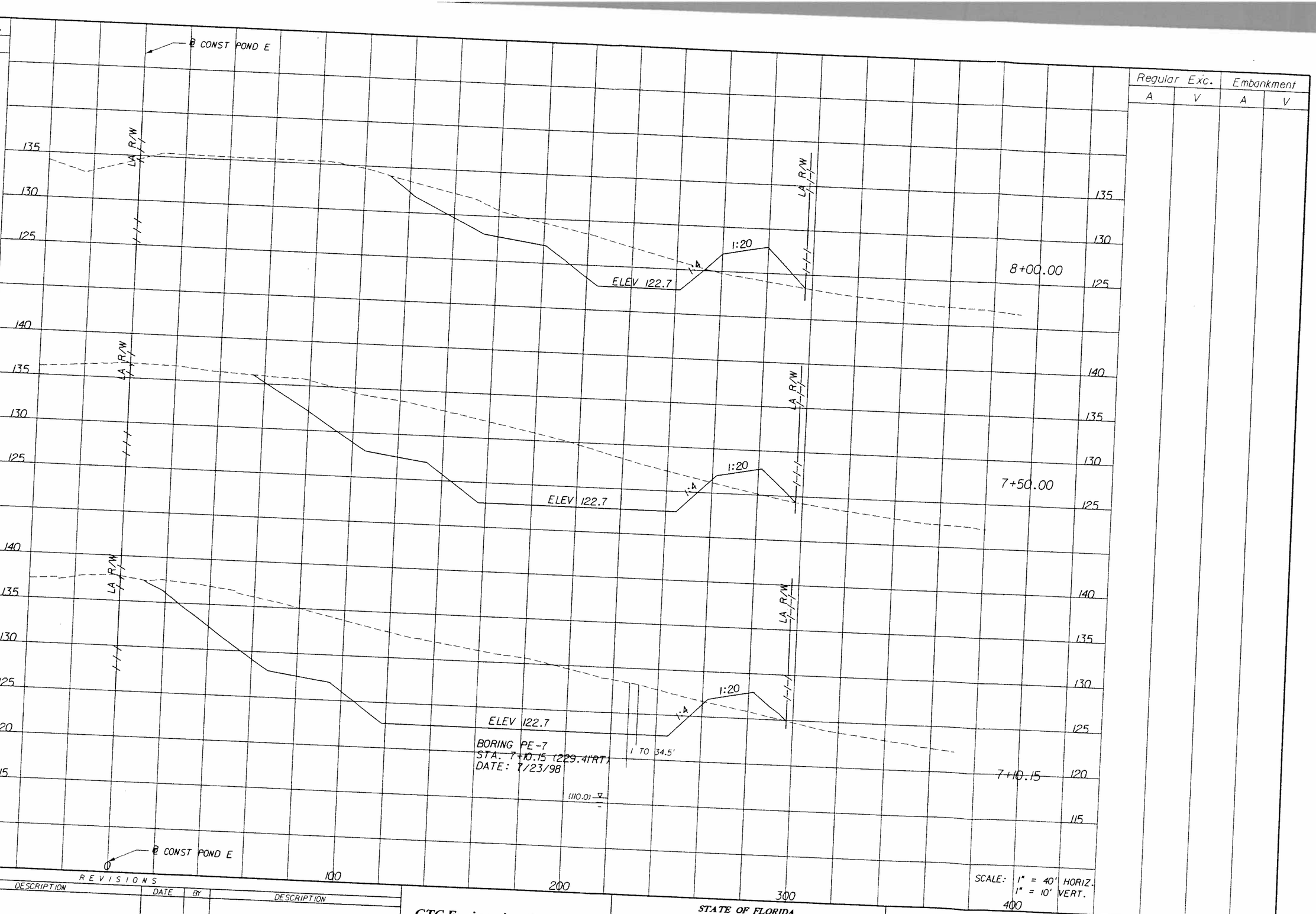
ORIGINATOR

Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

VERIFICATION, CHECKER (Green Check or Circle & Remark Incorrect)
REMARK INCORPORATION (Blue Highlighter)
CHECKED Correct(Green)Change(Red)
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CONCURRENCE, ORIGINATOR (Red Check or Circle)
CHANGE INCORPORATION (Blue Highlighter)
DATE

E.W. ORIGINATOR
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XOC/OA

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

GTC Engineering Corporation
99 South Semoran Blvd, Orlando, FL 32807
407-568-8482
License No. 0035490

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

SHEET NO.

E-216

Subsoil Exc.		Regular Exc.		Embankment	
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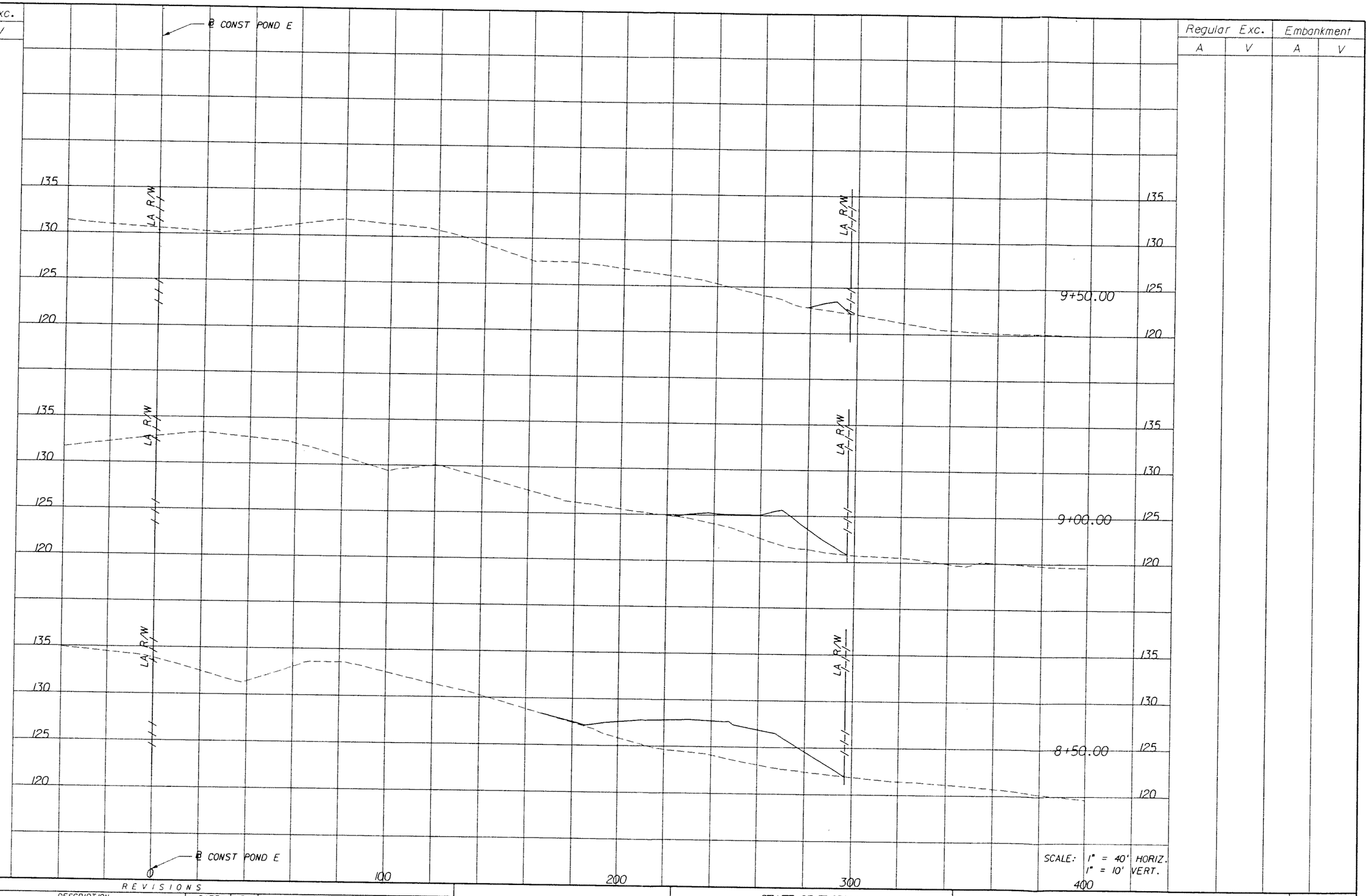

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REMARK INCORPORATION (Blue Highlighter) — DATE
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CONCURRENCE, ORIGINATOR (Red Check) — DATE
CHANGE INCORPORATION (Blue Highlighter) — DATE

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-388-8482
License No. 0035490

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

SHEET NO.

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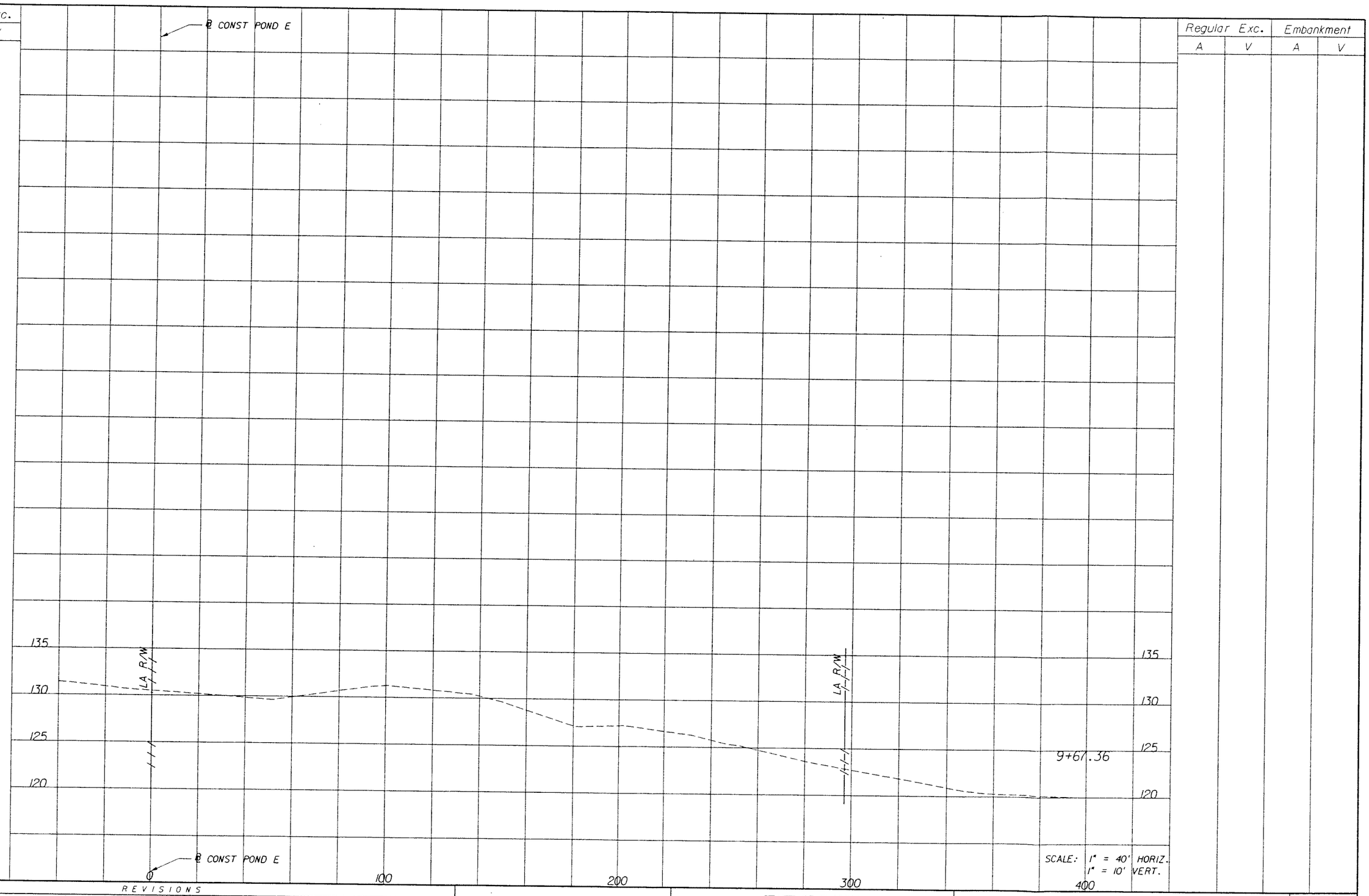
Subsoil Exc.	
A	V

Regular Exc.		Embankment	
A	V	A	V



SCALE: 1" = 40' HORIZ.
1" = 10' VERT.

DATE
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REMARK INCORPORATION (Blue Highlighter)
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CONCURRENCE, ORIGINATOR (Red Check)
CHANGE INCORPORATION (Blue Highlighter)

DATE
ORIGINATOR

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-388-8482
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
S.R. 400	POLK	201204-2-52-01

S.R. 400 - INTERSTATE 4
POND "E" CROSS SECTIONS

SHEET NO.

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STORM SEWER TABULATIONS

The following Storm Sewer Tabulations were made using the 6-lanig flows with the ultimate I-4 structure size and locations. A copy of the October 1998 60% Ultimate I-4 storm sewer system design is located in Section 12 of this report.

The I-4 Ultimate runoff flows storm sewer systems are controlling pipe sizes for the I-4 systems. The Ultimate I-4 section includes HOV lanes and a rail envelope separated from the general use lanes by barrier walls. The barrier wall inlet spacing is based on spread and inlet capacity, see the enclosed spreadsheets, in section 12. The Ultimate I-4 systems were modeled using ASAD to size the pipes to convey the runoff from the ultimate section.

Where possible the I-4 proposed storm sewer system structures were located where the ultimate structures will be required. Some manholes were added so that the bottoms could be utilized for the ultimate barrier wall inlets. The Proposed I-4 structures are shown on the plans and are identified by structure numbers "S – x" and storm tabulations were done by hand.

The proposed roadside conveyance ditches are an integral part of the drainage systems. For this reason some ditch reach connections were included in the ASAD models. These ditch depth of flow and time of concentration calculation are found in the conveyance swale section.

(checked: GTP 3/31/0

STORM SEWER TABULATION SHEET - RATIONAL FORMULA

DATE: 2/25/00 F.P.I.D. NO: 201204-2-52-01 ROAD: I - 4 Six Laning at the US 27 Interchange COUNTY: Polk BY: CJL

LOCATION OF UPPER END Station	Dist.	Side	STRUCTURE No.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	DRAINAGE AREA (ACRES) C= 0.95 C= 0.20 C= INCRE	SUB TOT	SUB TOTAL (CA)	Tc (MIN)	TIME OF FLOW IN SECTION (MIN)	INTENSITY (IN/HR)	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FT)	ELEV. OF H.G.L. CROWN ELEV. FLOW LINE ELEV. UPPER END	LOWER END	FALL (FT)	DIAMETER (IN)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	NOTES / REMARKS
																							ZONE 8 FREQUENCY 10 YR
																							n = 0.012 CONC. PIPE
S-103 to S-102			S-103	DBI	RCP	153								21.5	134.00	132.04	131.90	0.14		0.09	3.0	21.5	Transitional Flow
				"D"												132.10	131.85		36				Flows from the ICPR model 25yr
1971+25.00	278.00	Lt														129.10	128.85	0.25		0.16	4.1	29.2	
S-102 to S-101			S-102	MH	RCP	115								21.5	133.11	131.90	131.80	0.10		0.09	3.0	21.5	Partial Depth Flow
																131.85	131.80		36				
1971+65.00	130.00	Lt														128.85	128.80	0.05		0.04	2.1	15.1	
S-101			S-101	MES	RCP									21.5	128.80	131.80							
																131.80			36				Assume tailwater at crown of pipe
1970+50.00	130.00	Lt														128.80							SHWT at wetland is only 129.0'
S-109 to S-108			S-109	DBI	RCP	26	2.93	2.93	2.78							131.03	131.00	0.03		0.11	3.0	14.9	Full Flow
				"H"			10.51	10.51	2.10	69		3.0	4.89	14.9	132.00	130.75	130.66		30				
1972+07.54	95.00	Rt														128.25	128.16	0.09		0.35	5.3	26.3	
S-108 to S-107			S-108	MH	RCP	69		2.93	2.78							131.00	130.97	0.03		0.04	2.1	14.9	Transitional Flow
								10.51	2.10	69		3.0	4.89	14.9	133.93	131.18	130.84		36				ALT. B - J Bottom
1972+07.54	69.23	Rt														128.16	127.84	0.32		0.46	6.9	49.1	
S-107 to S-106			S-107	DBI	RCP	69	4.21	7.14	6.78							130.97	130.92	0.04		0.06	2.9	27.8	Transitional Flow
				"B"			1.15	11.66	2.33	69		3.0	9.12	27.8	133.75	131.34	129.50		42				
1972+07.54		CL														127.84	126.00	1.84		2.66	18.5	177.7	
S-106 to S-105			S-106	MH	RCP	90		7.14	6.78							130.92	130.86	0.06		0.06	2.9	27.8	Full Flow
								11.66	2.33	69		3.0	9.12	27.8	133.79	129.50	128.50		42				ALT. B - J Bottom
1972+07.54	69.23	Lt														126.00	125.00	1.00		1.11	12.0	115.0	
S-105 to S-104			S-105	DBI	RCP	342	1.77	8.91	8.48							130.86	130.50	0.36		0.11	3.7	35.5	Full Flow
				"H"			4.29	15.95	3.19	69	2	3.0	11.65	35.5	131.00	128.50	128.20		42				
1972+10.89	158.96	Lt														125.00	124.70	0.30		0.09	3.4	32.3	
S - 104			S-104	MES	RCP										124.70	130.50							
																128.20			42				Initial Pond A stage = 130.5'
1972+30.57	500.65	Lt														124.70							

Checked: GTI 3/31/00

STORM SEWER TABULATION SHEET - RATIONAL FORMULA

DATE: 2/25/00 F.P.I.D. NO: 201204-2-52-01 ROAD: I - 4 Six Laning at the US 27 Interchange COUNTY: Polk BY: CJL

LOCATION OF UPPER END Station	Dist.	Side	STRUCTURE No.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	DRAINAGE AREA (ACRES) C= 0.95 C= 0.20 C= INCRE	SUB TOT	SUB TOTAL (CA)	Tc (MIN)	TIME OF FLOW IN SECTION (MIN)	INTENSITY (IN/HR)	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FT)	ELEV. OF H.G.L. CROWN ELEV. FLOW LINE ELEV. UPPER END	LOWER END	FALL (FT)	DIAMETER (IN)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	NOTES ZONE 8 FREQUENCY 10 YR n = 0.012 CONC. PIPE REMARKS
S-150 to S-151			S-150	DBI	RCP	138	3.19	3.19	3.03	80		2.8	4.53	12.5	131.23	129.00	128.59		36			12.5	Partial Depth Flow
2050+52.09	132.81	Lt		"H"			7.49	7.49	1.50							126.00	125.59	0.41		0.30	5.6	39.4	
S-151 to S-152			S-151	DBI	RCP	46	4.46	7.65	7.27	80		2.8	9.18	25.3	130.00	128.59	128.49		38			25.3	Partial Depth Flow
2050+52.09	4.81	Rt		"B"			2.08	9.57	1.91							125.59	125.49	0.10		0.22	4.8	33.6	
S-152 to S-153			S-152	MH	RCP	96		7.65	7.27	80		2.8	9.18	25.3	133.36	128.49	126.30		36			25.3	Partial Depth Flow
2050+52.09	50.93	Rt						9.57	1.91							125.49	126.75						ALT. B - J Bottom
S-153 to S-154			S-153	DBI	RCP	129	5.61	13.28	12.60	154		1.7	18.11	30.1	128.94	125.49	123.75	1.74		1.81	13.8	97.2	
2050+52.09	146.98	Rt		"H"			18.00	27.57	5.51							126.30	126.20	0.10	42	0.08	3.1	30.1	Partial Depth Flow
																127.25	126.20						
																123.75	122.70	1.05		0.81	10.2	98.2	
S - 154			S-154	MES	RCP										122.70	126.20			42				Pond E is a dry pond
2050+52.09	276.30	Rt														126.20							Assume tailwater at crown of pipe
																122.70							
S-155 to S-156			S-155	DBI	RCP	109								21.4	127.00		124.41					21.4	Partial Depth Flow
2051+84.20	275.50	Rt		"D"												124.70	124.50		36				Flows from the ICPR model 25yr
																121.70	121.50	0.20		0.18	4.4	31.0	
S-156 to S-157			S-156	MH	RCP	17								21.4	128.00	124.41	124.40	0.01		0.09	3.0	21.4	Partial Depth Flow
2052+40.32	182.40	Rt														124.50	124.40		36				
																121.50	121.40	0.10		0.61	8.0	56.2	
S - 157			S-157	MES	RCP									21.4	121.40	124.40							
2052+56.82	182.40	Rt														124.40			36				Assume tailwater at crown of pipe
																121.40							SHWT at wetland is only 118.0'

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STORM SEWER TABULATION SHEET - RATIONAL FORMULA

DATE: 2/25/00 F.P.I.D. NO: 201204-2-52-01 ROAD: I - 4 Six Laning at the US 27 Interchange COUNTY: Polk BY: CJL

LOCATION OF UPPER END			STRUCTURE No.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	DRAINAGE AREA (ACRES) C= 0.95 C= 0.20 C=			Tc	TIME OF FLOW IN SECTION	INTENSITY (IN/HR)	TOTAL (CA)	TOTAL RUNOFF	INLET ELEVATION	ELEV. OF H.G.L. CROWN ELEV. FLOW LINE ELEV.			DIAMETER	SLOPE	VELOCITY	CAPACITY	NOTES ZONE 8 FREQUENCY 50 YR n = 0.012 CONC. PIPE
Station	Dist.	Side					INCRE	SUB TOT	SUB TOTAL (CA)	(MIN)	(MIN)			(CFS)	(FT)	UPPER END	LOWER END	FALL (FT)	(IN)	(%)	(FPS)	(CFS)	REMARKS
S-103 to S-102			S-103	DBI "D"	RCP	153								21.5	134.00	132.04	131.90	0.14	36	0.09	3.0	21.5	Transitional Flow
1971+25.00	278.00	Lt														132.10	131.85						Flows from the iCPR model 25yr
																129.10	128.85	0.25		0.16	4.1	29.2	
S-102 to S-101			S-102	MH	RCP	115								21.5	133.11	131.90	131.80	0.10	36	0.09	3.0	21.5	Partial Depth Flow
1971+65.00	130.00	Lt														131.85	131.80						
																128.85	128.80	0.05		0.04	2.1	15.1	
S-101			S-101	MES	RCP									21.5	128.80	131.80			36				Assume tailwater at crown of pipe
1970+50.00	130.00	Lt														131.80							SHWT at wetland is only 129.0'
																128.80							
S-109 to S-108			S-109	DBI "H"	RCP	28	2.93	2.93	2.78	89		3.9	4.89	19.2	132.00	131.37	131.32	0.05	30	0.19	3.9	19.2	Full Flow
1972+07.54	95.00	Rt					10.51	10.51	2.10							130.75	130.66						
																128.25	128.16	0.09		0.35	5.3	26.3	
S-108 to S-107			S-108	MH	RCP	69		2.93	2.78	89		3.9	4.89	19.2	133.93	131.32	131.27	0.05	36	0.07	2.7	19.2	Full Flow
1972+07.54	69.23	Rt						10.51	2.10							131.18	130.84						ALT. B - J Bottom
																128.16	127.84	0.32		0.46	6.9	49.1	
S-107 to S-106			S-107	DBI "B"	RCP	69	4.21	7.14	8.78	69		3.9	9.12	35.7	133.75	131.27	131.20	0.07	42	0.11	3.7	35.7	Transitional Flow
1972+07.54		CL					1.15	11.66	2.33							131.34	129.50						
																127.84	126.00	1.84		2.68	18.5	177.7	
S-106 to S-105			S-106	MH	RCP	90		7.14	8.78	69		3.9	9.12	35.7	133.79	131.20	131.10	0.10	42	0.11	3.7	35.7	Full Flow
1972+07.54	69.23	Lt						11.66	2.33							129.50	128.50						ALT. B - J Bottom
																126.00	125.00	1.00		1.11	12.0	115.0	
S-105 to S-104			S-105	DBI "H"	RCP	342	1.77	8.91	8.46	69	2	3.9	11.65	45.7	131.00	131.10	130.50	0.60	42	0.18	4.8	45.7	Full Flow
1972+10.89	158.96	Lt					4.29	15.95	3.19							128.50	128.20						
																125.00	124.70	0.30		0.09	3.4	32.3	
S - 104			S-104	MES	RCP										124.70	130.50			42				
1972+30.57	500.65	Lt														128.20							Initial Pond A stage = 130.5'
																124.70							

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3/31/

STORM SEWER TABULATION SHEET - RATIONAL FORMULA

DATE: 2/25/00 F.P.I.D. NO: 201204-2-52-01 ROAD: I - 4 Six Laning at the US 27 Interchange COUNTY: Polk BY: CJL

LOCATION OF UPPER END Station	Dist.	Side	STRUCTURE No.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	DRAINAGE AREA (ACRES) C= 0.95 C= 0.20 C= INCRE	SUB TOT	SUB TOTAL (CA)	Tc (MIN)	TIME OF FLOW IN SECTION (MIN)	INTENSITY (IN/HR)	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FT)	ELEV. OF H.G.L. CROWN ELEV. FLOW LINE ELEV. UPPER END	LOWER END	FALL (FT)	DIAMETER (IN)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	NOTES ZONE 8 FREQUENCY 50 YR n = 0.012 CONC. PIPE REMARKS
S-150 to S-151			S-150	DBI	RCP	138	3.19	3.19	3.03	80		3.8	4.53	16.1	131.23								
							7.49	7.49	1.50							129.00	128.59		36			16.1	Partial Depth Flow
2050+52.09	132.81	Lt		"H"												126.00	125.59	0.41		0.30	5.6	39.4	
S-151 to S-152			S-151	DBI	RCP	48	4.46	7.65	7.27	80		3.6	9.18	32.7	130.00								
							2.08	9.57	1.91							128.59	128.49		36			32.7	Partial Depth Flow
2050+52.09	4.81	Rt		"B"												125.59	125.49	0.10		0.22	4.8	33.8	
S-152 to S-153			S-152	MH	RCP	96		7.65	7.27	80		3.6	9.18	32.7	133.36		126.37						
								9.57	1.91							128.49	126.75		36			32.7	Partial Depth Flow
2050+52.09	50.93	Rt														125.49	123.75	1.74		1.81	13.8	97.2	ALT. B - J Bottom
S-153 to S-154			S-153	DBI	RCP	129	5.61	13.26	12.60	154		2.2	18.11	39.0	128.94	126.37	126.20	0.17		0.13	4.0	39.0	Partial Depth Flow
							18.00	27.57	5.51							127.25	126.20		42				
2050+52.09	146.98	Rt		"H"												123.75	122.70	1.05		0.81	10.2	98.2	
S - 154			S-154	MES	RCP										122.70	126.20							Pond E Is a dry pond
																126.20			42				Assume tailwater at crown of pipe
2050+52.09	276.30	Rt														122.70							
S-155 to S-156			S-155	DBI	RCP	109								21.4	127.00		124.41					21.4	Partial Depth Flow
																124.70	124.50		36				Flows from the ICPR model 25yr
2051+84.20	275.50	Rt		"D"												121.70	121.50	0.20		0.18	4.4	31.0	
S-156 to S-157			S-156	MH	RCP	17								21.4	128.00	124.41	124.40	0.01		0.09	3.0	21.4	Partial Depth Flow
																124.50	124.40		36				
2052+40.32	182.40	Rt														121.50	121.40	0.10		0.61	8.0	56.2	
S - 157			S-157	MES	RCP									21.4	121.40	124.40							
																124.40			36				Assume tailwater at crown of pipe
2052+56.82	182.40	Rt														121.40							SHWT at wetland is only 118.0'

Conveyance Swale Calculation Description

The Spreadsheet Calculations are based on FDOT Drainage Manual Chapter 7 Open Channel Hydraulics. The Spreadsheet format for this is based on FDOT worksheet for roadside ditches Table 7-7. The items to be input or calculated in this Spreadsheet have been identified by number on the figure and are briefly described below:

1. Excel spreadsheet file name: [WORKBOOK NAME .XLW] document name.

2. **Station**: The station which the row of calculations apply.

3. **Baseline (B/L):** Identifies which baseline the stationing applies.

4. **Side:** Locates the swale on the, right (RT) or left (LT), side of the baseline.

5. **Flowline (FL)**: The swale flowline elevation at the referenced station, in feet.

6. **Slope:** The slope from the next upstream station in percent.

7. **Time of Concentration (tc):** The initial time of concentration at the upper end of the reach is calculated using TR-55 Urban Hydrology For Small Watersheds or as a minimum of 10 minutes may be used. Subsequent times of concentration are calculated by dividing the distance from the previous station by the previous velocity which is added to the previous time of concentration in minutes.

8. **Weighted Runoff Coefficient (Cw):** The weighted runoff coefficients for all contributing areas upstream from station. The runoff coefficient values used are from the FDOT Drainage Manual Table 5-5.

9. **Rainfall Intensity (Zone 8, i10):** Intensity values are calculated using the intensity-duration-frequency (IDF) regression equation from the FDOT Drainage Manual Table 5-2. The rainfall zone is determined from FDOT Drainage Manual fig. 5-1. The intensity is calculated using a design frequency of 10 years and the time of concentration (tc), in inches per hour.

10. **Area:** The subtotal of all incremental areas contributing at this station, in acres.

11. **Flow Rate (Q):** The peak flow rate produced by a 10 years design storm at this station is calculated by the Rational Method $Q = C\ i\ A$, FDOT Drainage Manual equation 5-12, in cubic feet per second.

12. **Front Slope (fs):** The front slope of the ditch at this station, in feet horizontal to one foot vertical.

13. **Bottom Width (bw):** The bottom width of the ditch at this station, in feet.

14. **Back Slope (bs):** The back slope of the ditch at this station, in feet horizontal to one foot vertical.

15. **Ditch Lining:** Type of ditch lining as recommended FDOT Drainage Manual Tables 7-1 & 7-2, dependent on the velocity of flow.

16. **Manning's "n":** Manning's roughness coefficient value obtained for the FDOT Drainage Manual Tables 7-3 & 7-4. For maintained grass or sodded ditches with a good stand, it was assumed that the depth of flow to be > 0.7' thus n = 0.04.

17. **Depth of Flow "d":** The normal depth flow in the ditch is determined by trial and error procedure by solving Manning's Equation and assumes uniform flow condition. The channel shape, roughness coefficient, slope and the design discharge are the known values used to determine the depth of flow, in feet.

18. **Area of Flow (A):** The cross-sectional area of flow in the trapezoidal ditch is determined by the depth of flow "d", bottom width and the side slopes of the ditch, in square feet.

19. **Velocity of Flow (V):** The average velocity produced by the flow rate Q divided by the area of flow A, in feet per second.

20. **Length of Flow (L):** The total length of ditch from the beginning of the reach, in feet.

21. **Remarks:** This space to record pertinent remarks.

22. **Maximum Depth "d":** The maximum depth of flow in this reach used to check the freeboard.

23. **Maximum Velocity "V":** The maximum velocity of flow in this reach used to check the ditch lining type.

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/10/00
Checked by: CJL Date:
cl 3-31-00

Conveyance Swale A-L

Sta.1972+07 to Sta. 1993+71.3 (LT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
600+76																			
1971+00	C\L	Lt	**131.50**		10			0.00	0.0								0.5	0	High Point
1972+00	C\L	Lt	131.04	**-0.464%**	13	0.58	6.8	0.18	0.7	6	5	4	Grass	0.060	0.22	1.3	0.5	100	
1972+07.7	C\L	Lt	**131.00**	-0.464%	14	0.56	6.7	0.21	0.8	6	5	4	Grass	0.060	0.23	1.4	0.6	108	

Maximum Depth "d" = 0.23 ft
Maximum Velocity "V" = 0.56 fps

Maximum Depth "d" = 0.78 ft
Maximum Velocity "V" = 1.91 fps

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/10/00
Checked by: CJL Date: 3-31-00

Conveyance Swale A-L

Sta.1972+07 to Sta. 1993+71.3 (LT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section (ft) fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
1972+07.7	C\L	Lt	**131.00**	**1.793%**	44	0.40	4.0	5.86	9.4	6	5	4	Grass	0.060	0.61	4.9	1.9	2164	DBI Type H/Ditch Block
1973+00	C\L	Lt	132.65	1.793%	44	0.40	4.0	5.61	9.0	6	5	4	Grass	0.060	0.60	4.8	1.9	2071	
1974+00	C\L	Lt	134.45	1.793%	43	0.40	4.1	5.34	8.7	6	5	4	Grass	0.060	0.59	4.6	1.9	1971	
1975+00	C\L	Lt	**136.24**	1.350%	42	0.40	4.1	5.07	8.4	14	0	6.5	Grass	0.060	0.74	5.6	1.5	1871	
1976+00	C\L	Lt	137.59	1.420%	40	0.40	4.2	4.80	8.0	14	0	4	Grass	0.060	0.76	5.2	1.5	1771	
1977+00	C\L	Lt	139.01	1.250%	39	0.40	4.2	4.53	7.7	14	0	4	Grass	0.060	0.77	5.3	1.5	1671	
1978+00	C\L	Lt	140.26	1.190%	38	0.40	4.3	4.26	7.4	13	0	4	Grass	0.060	0.78	5.1	1.4	1571	
1979+00	C\L	Lt	141.45	1.450%	37	0.40	4.4	3.99	7.0	12	0	4	Grass	0.060	0.75	4.5	1.5	1471	
1980+00	C\L	Lt	142.90	1.190%	36	0.40	4.4	3.71	6.6	13	0	3	Grass	0.060	0.76	4.7	1.4	1371	
1981+00	C\L	Lt	144.09	1.270%	35	0.40	4.5	3.44	6.2	13	0	3	Grass	0.060	0.74	4.4	1.4	1271	
1982+00	C\L	Lt	145.36	1.250%	34	0.40	4.6	3.17	5.9	13	0	3	Grass	0.060	0.72	4.2	1.4	1171	
1983+00	C\L	Lt	146.61	1.280%	32	0.40	4.7	2.90	5.5	13	0	3	Grass	0.060	0.70	3.9	1.4	1071	
1984+00	C\L	Lt	147.89	1.050%	31	0.40	4.8	2.63	5.0	12	0	3	Grass	0.060	0.72	3.9	1.3	971	
1985+00	C\L	Lt	148.94	1.650%	30	0.40	4.9	2.36	4.6	11	0	3	Grass	0.060	0.66	3.0	1.5	871	
1986+00	C\L	Lt	150.59	0.650%	28	0.40	5.0	2.09	4.2	18	0	3	Grass	0.060	0.65	4.4	0.9	771	
1987+00	C\L	Lt	151.24	0.530%	26	0.40	5.2	1.82	3.8	14	0	3	Grass	0.060	0.70	4.2	0.9	671	
1988+00	C\L	Lt	151.77	0.860%	25	0.40	5.3	1.55	3.3	12	0	3	Grass	0.060	0.64	3.1	1.1	571	
1989+00	C\L	Lt	152.63	0.750%	23	0.40	5.5	1.28	2.8	14	0	3	Grass	0.060	0.59	3.0	0.9	471	
1990+00	C\L	Lt	153.38	0.730%	21	0.40	5.7	1.01	2.3	15	0	2.5	Grass	0.060	0.54	2.6	0.9	371	
1991+00	C\L	Lt	154.11	0.490%	19	0.40	6.0	0.73	1.8	18	0	2	Grass	0.060	0.50	2.5	0.7	271	
1992+00	C\L	Lt	154.60	0.380%	16	0.40	6.4	0.46	1.2	21	0	2	Grass	0.060	0.43	2.2	0.6	171	
1993+00	C\L	Lt	154.98	0.561%	12	0.40	6.9	0.19	0.5	25	0	2	Grass	0.060	0.28	1.1	0.5	71	
1993+71.3	C\L	Lt	155.38		10			0.00									0.5	0	High Point/Ditch Block

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-31-00

Conveyance Swale A-L

Sta.1972+07 to Sta. 1993+71.3 (LT)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Out. Shldr. (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
1971+00	C\L	10.0	24.0	0.0		71	-28		
1972+00	C\L	10.0	24.0	0.0	3400	165	-47	8050	
1972+08	C\L	10.0	24.0	0.0	262	184	-69	897	
					3662			8947	69
1972+08	C\L	10.0	24.0	0.0	3138	150	-32	10891	
1973+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1974+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1975+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1976+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1977+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1978+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1979+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1980+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1981+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1982+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1983+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1984+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1985+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1986+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1987+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1988+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1989+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1990+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1991+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1992+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
1993+00	C\L	10.0	24.0	0.0	2424	150	-32	8413	
1993+71	C\L	10.0	24.0	0.0		150	-32		
					73562			255305	63

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 3/28/00
Checked by: CJL Date: 3-30-00

Conveyance Swale A-Med

Sta. 1970+07 to Sta. 2010+00 (Med)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section (ft) fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
1972+07.7	C\L	Med	**133.75**	0.596%	60	0.75	3.3	5.36	13.4	10	5	10	Grass	0.042	0.70	8.4	1.6	3792	DBI Type B/Ditch Block
1973+00	C\L	Med	134.30	1.240%	59	0.75	3.4	5.22	13.2	10	0.01	10	Grass	0.042	0.79	6.2	2.1	3700	
1974+00	C\L	Med	135.54	1.290%	58	0.75	3.4	5.07	12.9	10	0.01	10	Grass	0.042	0.78	6.0	2.1	3600	
1975+00	C\L	Med	136.83	1.320%	58	0.75	3.4	4.93	12.6	10	0.01	10	Grass	0.042	0.77	5.9	2.1	3500	
1976+00	C\L	Med	138.15	1.300%	57	0.75	3.4	4.78	12.4	10	0.01	10	Grass	0.042	0.76	5.8	2.1	3400	
1977+00	C\L	Med	139.45	1.270%	56	0.75	3.5	4.63	12.1	10	0.01	10	Grass	0.042	0.76	5.8	2.1	3300	
1978+00	C\L	Med	140.72	1.260%	55	0.75	3.5	4.48	11.8	10	0.01	10	Grass	0.042	0.76	5.7	2.1	3200	
1979+00	C\L	Med	141.98	1.290%	54	0.75	3.5	4.34	11.6	10	0.01	10	Grass	0.042	0.75	5.6	2.1	3100	
1980+00	C\L	Med	143.27	1.288%	54	0.76	3.6	4.19	11.3	10	0.01	10	Grass	0.042	0.74	5.5	2.1	3000	
1981+00	C\L	Med	144.56	1.272%	53	0.76	3.6	4.04	11.0	10	0.01	10	Grass	0.042	0.73	5.4	2.0	2900	
1982+00	C\L	Med	145.83	1.230%	52	0.76	3.6	3.90	10.7	10	0.01	10	Grass	0.042	0.73	5.3	2.0	2800	
1983+00	C\L	Med	147.06	1.390%	51	0.76	3.7	3.75	10.4	10	0.01	10	Grass	0.042	0.71	5.0	2.1	2700	
1984+00	C\L	Med	148.45	1.290%	50	0.76	3.7	3.60	10.1	10	0.01	10	Grass	0.042	0.71	5.0	2.0	2600	
1985+00	C\L	Med	149.74	1.270%	49	0.76	3.7	3.46	9.8	10	0.01	10	Grass	0.042	0.70	4.9	2.0	2500	
1986+00	C\L	Med	151.01	1.030%	48	0.76	3.8	3.31	9.5	10	0.01	10	Grass	0.042	0.72	5.2	1.8	2400	
1987+00	C\L	Med	152.04	0.860%	48	0.76	3.8	3.16	9.2	10	0.01	10	Grass	0.042	0.74	5.5	1.7	2300	
1988+00	C\L	Med	152.90	0.670%	46	0.76	3.9	3.02	8.9	10	0.01	10	Grass	0.042	0.76	5.9	1.5	2200	
1989+00	C\L	Med	153.57	0.500%	46	0.77	3.9	2.87	8.6	10	0.01	10	Conc	0.020	0.60	3.6	2.4	2100	
1990+00	C\L	Med	154.07	0.370%	45	0.77	3.9	2.72	8.3	10	0.01	10	Conc	0.020	0.63	4.0	2.1	2000	
1991+00	C\L	Med	154.44	0.220%	44	0.77	4.0	2.57	7.9	10	0.01	10	Conc	0.020	0.68	4.7	1.7	1900	
1992+00	C\L	Med	154.66	0.270%	43	0.77	4.0	2.43	7.6	10	0.01	10	Conc	0.020	0.65	4.2	1.8	1800	
1993+00	C\L	Med	154.93	0.290%	42	0.78	4.1	2.28	7.2	10	0.01	10	Conc	0.020	0.63	3.9	1.8	1700	
1994+00	C\L	Med	155.22	0.290%	41	0.78	4.1	2.13	6.9	10	0.01	10	Conc	0.020	0.61	3.8	1.8	1600	
1995+00	C\L	Med	155.51	0.280%	40	0.78	4.2	1.99	6.5	10	0.01	10	Conc	0.020	0.61	3.7	1.8	1500	
1996+00	C\L	Med	155.79	0.330%	39	0.79	4.3	1.84	6.2	10	0.01	10	Grass	0.042	0.76	5.8	1.1	1400	
1997+00	C\L	Med	156.12	0.410%	37	0.79	4.4	1.69	5.8	10	0.01	10	Grass	0.042	0.72	5.1	1.1	1300	
1998+00	C\L	Med	156.53	0.330%	36	0.80	4.5	1.55	5.5	10	0.01	10	Grass	0.042	0.73	5.3	1.0	1200	
1999+00	C\L	Med	156.86	0.380%	34	0.80	4.6	1.41	5.1	10	0.01	10	Grass	0.042	0.69	4.8	1.1	1100	
2000+00	C\L	Med	157.24	0.350%	32	0.81	4.7	1.27	4.8	10	0.01	10	Grass	0.042	0.68	4.7	1.0	1000	

Maximum Depth "d" = 0.79 ft
Maximum Velocity "V" = 2.36 fps

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 3/28/00
Checked by: CJL Date: 3-30-00

Conveyance Swale A-Med

Sta. 1970+07 to Sta. 2010+00 (Med)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2001+00	C\L	Med	157.59	0.380%	31	0.81	4.8	1.13	4.4	10	0.01	10	Grass	0.042	0.65	4.3	1.0	900	
2002+00	C\L	Med	157.97	0.260%	29	0.81	4.9	1.00	4.0	10	0.01	10	Grass	0.042	0.68	4.6	0.9	800	
2003+00	C\L	Med	158.23	0.170%	27	0.81	5.1	0.88	3.6	10	0.01	10	Grass	0.042	0.71	5.0	0.7	700	
2004+00	C\L	Med	158.40	0.200%	25	0.81	5.2	0.75	3.2	10	0.01	10	Conc	0.020	0.49	2.4	1.3	600	
2005+00	C\L	Med	158.60	0.100%	24	0.80	5.4	0.63	2.7	10	0.01	10	Conc	0.020	0.53	2.8	1.0	500	
2006+00	C\L	Med	158.70	0.150%	22	0.80	5.6	0.50	2.2	10	0.01	10	Conc	0.020	0.46	2.1	1.1	400	
2007+00	C\L	Med	158.85	0.080%	20	0.79	5.8	0.38	1.7	10	0.01	10	Conc	0.020	0.47	2.2	0.8	300	
2008+00	C\L	Med	158.93	0.050%	17	0.78	6.2	0.25	1.2	10	0.01	10	Conc	0.020	0.44	2.0	0.6	200	
2009+00	C\L	Med	158.98	0.030%	13	0.73	6.8	0.13	0.6	10	0.01	10	Conc	0.020	0.38	1.5	0.4	100	
2010+00	C\L	Med	159.01		10			0.00									0.5	0	High Point

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-30-00

Conveyance Swale A-Med

Sta. 1970+07 to Sta. 2010+00 (Med)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Misc (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
1972+08	C\L	4.5	24.0	20.0	4477	32.0	32.0	5907	
1973+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1974+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1975+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1976+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1977+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1978+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1979+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1980+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1981+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1982+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1983+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1984+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1985+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1986+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1987+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1988+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1989+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1990+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1991+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1992+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1993+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1994+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1995+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
1996+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6395	
1997+00	C\L	4.5	24.0	20.0	4850	32.0	31.9	6320	
1998+00	C\L	4.5	24.0	20.0	4850	32.0	30.5	6180	
1999+00	C\L	4.5	24.0	20.0	4850	32.0	29.1	6035	
2000+00	C\L	4.5	24.0	20.0	4850	31.9	27.7	5855	
2001+00	C\L	4.5	24.0	20.0	4850	30.4	27.1	5680	
2002+00	C\L	4.5	24.0	20.0	4850	29.0	27.1	5540	
2003+00	C\L	4.5	24.0	20.0	4850	27.6	27.1	5460	
2004+00	C\L	4.5	24.0	20.0	4850	27.4	27.1	5450	
2005+00	C\L	4.5	24.0	20.0	4850	27.4	27.1	5450	
2006+00	C\L	4.5	24.0	20.0	4850	27.4	27.1	5450	
2007+00	C\L	4.5	24.0	20.0	4850	27.4	27.1	5450	
2008+00	C\L	4.5	24.0	20.0	4850	27.4	27.1	5450	
2009+00	C\L	4.5	24.0	20.0	4125	27.4	27.1	5450	
2010+00	C\L	10.0	24.0	0.0		27.4	27.1		
					183202			233272	87

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/9/00
Checked by: CJL Date: 3-31-00

Conveyance Swale A-R

Sta. 1972+07.7 to Sta. 2009+65 (RT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2001+00	C\L	Lt	156.82	0.210%	34	0.38	4.6	2.66	4.6	14	0.01	3	Grass	0.042	0.79	5.3	0.9	865	
2002+00	C\L	Lt	157.03	0.540%	32	0.38	4.7	2.38	4.2	13	0.01	3	Grass	0.060	0.75	4.5	0.9	765	
2003+00	C\L	Lt	157.57	-0.250%	29	0.38	4.9	2.09	3.9	19	0.01	3	Grass	0.060	0.74	6.1	0.6	665	
2004+00	C\L	Lt	157.32	0.360%	27	0.37	5.1	1.81	3.5	13	0.01	3	Grass	0.060	0.75	4.5	0.8	565	
2005+00	C\L	Lt	157.68	-0.150%	24	0.37	5.4	1.53	3.1	20	0.01	3	Grass	0.060	0.74	6.2	0.5	465	
2006+00	C\L	Lt	157.53	0.420%	22	0.37	5.6	1.25	2.6	10	0.01	3	Grass	0.060	0.70	3.2	0.8	365	
2007+00	C\L	Lt	157.95	1.010%	20	0.36	5.8	0.94	2.0	15	0.01	3	Grass	0.060	0.48	2.1	1.0	265	
2008+00	C\L	Lt	158.96	0.140%	18	0.38	6.1	0.54	1.2	0	0.01	3.5	Grass	0.042	0.97	1.7	0.7	165	
2009+00	C\L	Lt	159.10	0.123%	12	0.43	7.0	0.16	0.5	15	0.01	2	Grass	0.060	0.42	1.5	0.3	65	
2009+65	C\L	Lt	159.18		10			0.00									0.5	0	High Point

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-31-00

Conveyance Swale A-R

Sta. 1972+07.7 to Sta. 2009+65 (RT)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Out. Shldr. (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
1972+08	C\L	10.0	24.0	0.0	3138	-32	324	28105	
1973+00	C\L	10.0	24.0	0.0	3400	-32	349	32825	
1974+00	C\L	10.0	24.0	0.0	3400	-32	372	35075	
1975+00	C\L	10.0	24.0	0.0	3400	-32	394	36800	
1976+00	C\L	10.0	24.0	0.0	3400	-32	406	31800	
1977+00	C\L	10.0	24.0	0.0	3400	-32	294	21100	
1978+00	C\L	10.0	24.0	0.0	3400	-32	192	15450	
1979+00	C\L	10.0	24.0	0.0	3400	-32	181	14900	
1980+00	C\L	10.0	24.0	0.0	3400	-32	181	14950	
1981+00	C\L	10.0	24.0	0.0	3400	-32	182	13400	
1982+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1983+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1984+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1985+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1986+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1987+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1988+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1989+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1990+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1991+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1992+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1993+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1994+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1995+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1996+00	C\L	10.0	24.0	0.0	3400	-32	150	11800	
1997+00	C\L	10.0	24.0	0.0	3400	-32	150	11850	
1998+00	C\L	10.0	24.0	0.0	3400	-31	150	12000	
1999+00	C\L	10.0	24.0	0.0	3400	-29	150	12150	
2000+00	C\L	10.0	24.0	0.0	3400	-28	150	12250	
2001+00	C\L	10.0	24.0	0.0	3400	-27	150	12300	
2002+00	C\L	10.0	24.0	0.0	3400	-27	150	12300	
2003+00	C\L	10.0	24.0	0.0	3400	-27	150	12300	
2004+00	C\L	10.0	24.0	0.0	3400	-27	150	12300	
2005+00	C\L	10.0	24.0	0.0	3400	-27	150	12300	
2006+00	C\L	10.0	24.0	0.0	3400	-27	150	13400	
2007+00	C\L	10.0	24.0	0.0	3400	-27	172	17600	
2008+00	C\L	10.0	24.0	0.0	3400	-27	234	16400	
2009+00	C\L	10.0	24.0	0.0	2210	-27	148	6955	
2009+65	C\L	10.0	24.0	0.0		-27	120		
					127748			585510	60

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/10/00
Checked by: CJL Date: 3-31-00

Conveyance Swale E-L

Sta. 2009+65 to Sta. 2050+52.5 (LT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2009+65	C\L	Lt	159.07		10			0.00	0.0								0.5	0	High Point
2010+00	C\L	Lt	158.93	-0.400%	11	0.75	7.2	0.03	0.2	7	0	5	Grass	0.060	0.27	0.5	0.4	35	
2011+00	C\L	Lt	158.53	-0.400%	15	0.75	6.5	0.13	0.7	10	0.01	4	Grass	0.060	0.41	1.2	0.5	135	
2012+00	C\L	Lt	157.35	-1.180%	18	0.75	6.0	0.23	1.1	10	0.01	4	Grass	0.060	0.40	1.1	0.9	235	
2013+00	C\L	Lt	157.29	-0.060%	20	0.67	5.8	0.43	1.6	10	0.01	4	Grass	0.042	0.73	3.7	0.4	335	
2014+00	C\L	Lt	157.34	0.050%	24	0.56	5.4	0.71	2.1	10	0.01	5	Grass	0.042	0.81	4.9	0.4	435	
2015+00	C\L	Lt	156.83	-0.510%	28	0.51	5.0	0.99	2.5	7	0.01	5	Grass	0.042	0.61	2.2	1.1	535	
2016+00	C\L	Lt	156.39	-0.440%	29	0.49	4.9	1.27	3.0	9	0.01	5	Grass	0.042	0.63	2.8	1.1	635	
2017+00	C\L	Lt	156.33	-0.060%	31	0.47	4.8	1.55	3.5	9	0.01	5	Grass	0.042	0.97	6.6	0.5	735	
2018+00	C\L	Lt	156.04	-0.290%	34	0.46	4.6	1.83	3.8	9	0.01	5	Grass	0.042	0.75	3.9	1.0	835	
2019+00	C\L	Lt	155.98	-0.060%	36	0.45	4.5	2.11	4.2	10	0.01	5	Grass	0.042	1.01	7.7	0.5	935	
2020+00	C\L	Lt	155.51	-0.470%	39	0.44	4.3	2.39	4.5	9	0.01	4	Grass	0.042	0.75	3.6	1.3	1035	
2021+00	C\L	Lt	155.32	-0.190%	40	0.44	4.2	2.67	4.9	7.5	0.01	4	Grass	0.042	0.96	5.3	0.9	1135	
2022+00	C\L	Lt	155.03	-0.290%	42	0.43	4.1	2.94	5.3	9	0.01	4	Grass	0.042	0.86	4.9	1.1	1235	
2023+00	C\L	Lt	154.86	-0.170%	43	0.43	4.0	3.21	5.6	9	0.01	4	Grass	0.042	0.98	6.2	0.9	1335	
2024+00	C\L	Lt	154.94	0.080%	45	0.43	3.9	3.48	5.9	11	0.01	5	Grass	0.042	1.06	9.0	0.7	1435	
2025+00	C\L	Lt	154.71	-0.230%	48	0.43	3.8	3.75	6.1	10	0.01	4.5	Grass	0.042	0.92	6.1	1.0	1535	
2026+00	C\L	Lt	154.30	-0.410%	49	0.43	3.7	4.02	6.4	9	0.01	4	Grass	0.042	0.87	4.9	1.3	1635	
2027+00	C\L	Lt	154.13	-0.170%	51	0.42	3.7	4.29	6.7	9	0.01	5	Grass	0.042	1.02	7.3	0.9	1735	
2028+00	C\L	Lt	153.82	-0.310%	52	0.42	3.6	4.57	7.0	10	0.01	5	Grass	0.042	0.90	6.1	1.2	1835	
2029+00	C\L	Lt	153.60	-0.220%	54	0.42	3.6	4.84	7.3	10	0.01	5	Grass	0.042	0.97	7.1	1.0	1935	
2030+00	C\L	Lt	153.11	-0.490%	55	0.42	3.5	5.11	7.5	9	0.01	4	Grass	0.042	0.89	5.2	1.4	2035	
2031+00	C\L	Lt	153.18	0.070%	57	0.42	3.5	5.38	7.8	11	0.01	4	Grass	0.042	1.24	11.5	0.7	2135	
2032+00	C\L	Lt	153.03	-0.150%	59	0.42	3.4	5.65	8.0	11	0.01	4	Grass	0.042	1.08	8.8	0.9	2235	
2033+00	C\L	Lt	152.97	-0.060%	61	0.42	3.3	5.92	8.2	12.5	0.01	4	Grass	0.042	1.25	12.9	0.6	2335	
2034+00	C\L	Lt	152.49	-0.480%	64	0.42	3.2	6.19	8.3	10	0.01	4	Grass	0.042	0.91	5.8	1.4	2435	
2035+00	C\L	Lt	152.29	-0.200%	65	0.42	3.2	6.46	8.6	11	0.01	4	Grass	0.042	1.05	8.3	1.0	2535	
2036+00	C\L	Lt	152.13	-0.160%	66	0.42	3.1	6.74	8.8	9	0.01	4	Grass	0.042	1.17	8.9	1.0	2635	
2037+00	C\L	Lt	151.77	-0.360%	68	0.42	3.1	7.01	9.0	10	0.01	4	Grass	0.042	0.98	6.8	1.3	2735	
2038+00	C\L	Lt	151.30	-0.470%	69	0.41	3.0	7.28	9.2	10	0.01	4	Grass	0.042	0.95	6.3	1.5	2835	
2039+00	C\L	Lt	150.80	-0.500%	70	0.41	3.0	7.56	9.4	10	0.01	4	Grass	0.042	0.94	6.2	1.5	2935	
2040+00	C\L	Lt	150.00	-0.800%	71	0.41	3.0	7.83	9.6	9	0.01	4	Grass	0.042	0.90	5.2	1.8	3035	
2041+00	C\L	Lt	149.00	-1.000%	72	0.41	3.0	8.10	9.9	9	0.01	4	Grass	0.042	0.87	4.9	2.0	3135	

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/10/00
Checked by: CJL Date:
cl 3-31-00

Conveyance Swale E-L

Sta. 2009+65 to Sta. 2050+52.5 (LT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2042+00	C\L	Lt	147.60	-1.400%	73	0.41	2.9	8.37	10.1	9	0.01	4	Grass	0.042	0.82	4.4	2.3	3235	
2043+00	C\L	Lt	146.20	-1.400%	74	0.41	2.9	8.64	10.4	9	0.01	4.5	Grass	0.042	0.82	4.5	2.3	3335	
2044+00	C\L	Lt	**143.60**	-2.600%	75	0.41	2.9	8.91	10.6	8	0.01	7	Grass	0.060	0.81	4.9	2.2	3435	
2045+00	C\L	Lt	141.70	**-1.896%**	75	0.41	2.9	9.18	10.9	12	5	4	Grass	0.060	0.60	5.9	1.9	3535	
2046+00	C\L	Lt	139.81	-1.896%	76	0.41	2.8	9.46	11.1	6	5	4	Grass	0.060	0.65	5.4	2.0	3635	
2047+00	C\L	Lt	137.91	-1.896%	77	0.41	2.8	9.73	11.3	6	5	4	Grass	0.060	0.66	5.5	2.1	3735	
2048+00	C\L	Lt	136.02	-1.896%	78	0.41	2.8	10.00	11.5	6	5	4	Grass	0.060	0.67	5.6	2.1	3835	
2049+00	C\L	Lt	134.12	-1.896%	79	0.41	2.8	10.27	11.8	12	5	4	Grass	0.060	0.62	6.2	1.9	3935	
2050+00	C\L	Lt	132.23	-1.896%	80	0.41	2.8	10.54	12.0	12	5	4	Grass	0.060	0.63	6.3	1.9	4035	
2050+52.5	C\L	Lt	**131.23**	-1.896%	80	0.41	2.8	10.68	12.1	6	5	4	Grass	0.060	0.68	5.8	2.1	4088	Type H DBI/Ditch Block

Maximum Depth "d" = 1.25 ft
Maximum Velocity "V" = 2.30 fps

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-31-00

Conveyance Swale E-MED

Sta. 2010+00 to Sta. 2050+52.5 (Med)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Misc (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
2010+00	C\L	10.5	24.0	20.0		27.4	27.1		
2011+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2012+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2013+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2014+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2015+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2016+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2017+00	C\L	4.5	24.0	20.0	5150	27.4	27.7	5480	
2018+00	C\L	4.5	24.0	20.0	4850	27.4	29.1	5580	
2019+00	C\L	4.5	24.0	20.0	4850	27.6	30.5	5730	
2020+00	C\L	4.5	24.0	20.0	4850	29.0	31.9	5950	
2021+00	C\L	4.5	24.0	20.0	4850	30.5	32.0	6170	
2022+00	C\L	4.5	24.0	20.0	4850	31.9	32.0	6320	
2023+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6395	
2024+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2025+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2026+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2027+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2028+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2029+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2030+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2031+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2032+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2033+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2034+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2035+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2036+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2037+00	C\L	0.0	24.0	20.0	4625	32.0	32.0	6400	
2038+00	C\L	0.0	24.0	20.0	4400	32.0	32.0	6400	
2039+00	C\L	0.0	24.0	20.0	4400	32.1	32.0	6405	
2040+00	C\L	0.0	24.0	20.0	4400	33.1	32.0	6460	
2041+00	C\L	0.0	24.0	20.0	4400	34.6	33.2	6645	
2042+00	C\L	0.0	24.0	20.0	4400	36.7	35.6	7005	
2043+00	C\L	0.0	24.0	20.0	4400	39.5	38.1	7495	
2044+00	C\L	0.0	24.0	20.0	4400	42.7	41.6	8095	
2045+00	C\L	0.0	24.0	20.0	4400	46.9	45.3	8825	
2046+00	C\L	0.0	24.0	20.0	4400	51.0	48.9	9605	
2047+00	C\L	0.0	24.0	20.0	4400	55.3	53.4	10430	
2048+00	C\L	0.0	24.0	20.0	4400	59.3	57.8	11290	
2049+00	C\L	0.0	24.0	20.0	4400	63.5	62.4	12150	
2050+00	C\L	0.0	24.0	20.0	4400	67.4	66.4	12985	
2050+53	C\L	0.0	24.0	20.0	2310	69.4	68.4	7130	
					194135			284845	

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Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/8/00
Checked by: CJL Date: 3-31-00

Conveyance Swale E-MED

Sta. 2010+00 to Sta. 2050+52.5 (Med)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section (ft) fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2010+00	C\L	Rt	159.01		10			0.00	0.0								0.5	0	High Point
2011+00	C\L	Rt	158.95	-0.060%	13	0.90	6.8	0.13	0.8	10	0	10	Conc	0.020	0.36	1.3	0.6	100	
2012+00	C\L	Rt	158.93	-0.020%	16	0.90	6.3	0.25	1.4	10	0	10	Conc	0.020	0.56	3.2	0.5	200	
2013+00	C\L	Rt	158.83	-0.100%	20	0.90	5.8	0.38	2.0	10	0	10	Conc	0.020	0.47	2.2	0.9	300	
2014+00	C\L	Rt	158.76	-0.070%	22	0.90	5.6	0.50	2.5	10	0	10	Conc	0.020	0.55	3.0	0.8	400	
2015+00	C\L	Rt	158.72	-0.040%	24	0.90	5.4	0.63	3.0	10	0	10	Conc	0.020	0.66	4.3	0.7	500	
2016+00	C\L	Rt	158.54	-0.180%	26	0.90	5.2	0.75	3.5	10	0	10	Conc	0.020	0.52	2.7	1.3	600	
2017+00	C\L	Rt	158.29	-0.250%	27	0.89	5.1	0.88	4.0	10	0	10	Grass	0.042	0.68	4.6	0.9	700	
2018+00	C\L	Rt	158.03	-0.260%	29	0.88	4.9	1.00	4.3	10	0	10	Grass	0.042	0.70	4.9	0.9	800	
2019+00	C\L	Rt	157.75	-0.280%	31	0.87	4.8	1.14	4.7	10	0	10	Grass	0.042	0.71	5.0	0.9	900	
2020+00	C\L	Rt	157.34	-0.410%	33	0.86	4.6	1.27	5.1	10	0	10	Grass	0.042	0.68	4.6	1.1	1000	
2021+00	C\L	Rt	157.07	-0.270%	35	0.85	4.5	1.41	5.5	10	0	10	Grass	0.042	0.75	5.7	1.0	1100	
2022+00	C\L	Rt	156.67	-0.400%	36	0.84	4.4	1.56	5.8	10	0	10	Grass	0.042	0.72	5.1	1.1	1200	
2023+00	C\L	Rt	156.44	-0.230%	38	0.83	4.3	1.71	6.1	10	0	10	Grass	0.042	0.81	6.6	0.9	1300	
2024+00	C\L	Rt	156.15	-0.290%	40	0.82	4.2	1.85	6.4	10	0	10	Grass	0.042	0.79	6.3	1.0	1400	
2025+00	C\L	Rt	155.92	-0.230%	41	0.82	4.1	2.00	6.8	10	0	10	Grass	0.042	0.84	7.1	1.0	1500	
2026+00	C\L	Rt	155.65	-0.270%	43	0.81	4.0	2.15	7.0	10	0	10	Grass	0.042	0.83	6.9	1.0	1600	
2027+00	C\L	Rt	155.40	-0.250%	45	0.80	4.0	2.29	7.3	10	0	10	Grass	0.042	0.85	7.3	1.0	1700	
2028+00	C\L	Rt	155.12	-0.280%	46	0.80	3.9	2.44	7.6	10	0	10	Grass	0.042	0.85	7.2	1.1	1800	
2029+00	C\L	Rt	154.89	-0.230%	48	0.80	3.8	2.59	7.9	10	0	10	Grass	0.042	0.89	7.9	1.0	1900	
2030+00	C\L	Rt	154.63	-0.260%	49	0.79	3.7	2.73	8.1	10	0	10	Grass	0.042	0.88	7.8	1.0	2000	
2031+00	C\L	Rt	154.36	-0.270%	51	0.79	3.7	2.88	8.3	10	0	10	Grass	0.042	0.88	7.8	1.1	2100	
2032+00	C\L	Rt	154.17	-0.190%	53	0.79	3.6	3.03	8.6	10	0	10	Grass	0.042	0.95	9.1	0.9	2200	
2033+00	C\L	Rt	153.92	-0.250%	54	0.78	3.5	3.18	8.8	10	0	10	Grass	0.042	0.91	8.4	1.1	2300	
2034+00	C\L	Rt	153.69	-0.230%	56	0.78	3.5	3.32	9.0	10	0	10	Grass	0.042	0.94	8.8	1.0	2400	
2035+00	C\L	Rt	153.51	-0.180%	58	0.78	3.4	3.47	9.2	10	0	10	Grass	0.042	0.99	9.8	0.9	2500	
2036+00	C\L	Rt	153.22	-0.290%	59	0.78	3.4	3.62	9.4	10	0	10	Grass	0.042	0.91	8.3	1.1	2600	
2037+00	C\L	Rt	152.90	-0.320%	61	0.77	3.3	3.76	9.6	10	0	10	Grass	0.042	0.90	8.2	1.2	2700	
2038+00	C\L	Rt	152.15	-0.750%	62	0.77	3.3	3.91	9.8	6	0	6	Grass	0.042	0.94	5.3	1.8	2800	
2039+00	C\L	Rt	151.73	-0.420%	63	0.77	3.2	4.06	10.0	10	0	10	Grass	0.042	0.87	7.6	1.3	2900	
2040+00	C\L	Rt	150.96	-0.770%	64	0.76	3.2	4.21	10.2	10	0	10	Grass	0.042	0.78	6.2	1.7	3000	
2041+00	C\L	Rt	149.62	-1.340%	65	0.76	3.2	4.36	10.5	10	0	10	Grass	0.042	0.71	5.1	2.1	3100	
2042+00	C\L	Rt	148.05	-1.570%	66	0.76	3.1	4.52	10.7	10	0	10	Grass	0.042	0.70	4.9	2.2	3200	

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/8/00
Checked by: CJL Date: 3-31-00

Conveyance Swale E-MED

Sta. 2010+00 to Sta. 2050+52.5 (Med)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2043+00	C\L	Rt	146.49	-1.560%	67	0.75	3.1	4.69	10.9	10	0	10	Grass	0.042	0.70	5.0	2.2	3300	
2044+00	C\L	Rt	144.85	-1.640%	68	0.75	3.1	4.88	11.2	10	0	10	Grass	0.042	0.70	5.0	2.3	3400	
2045+00	C\L	Rt	142.46	-2.390%	68	0.74	3.1	5.08	11.5	10	0	10	Grass	0.042	0.66	4.4	2.6	3500	
2046+00	C\L	Rt	140.36	-2.100%	69	0.73	3.0	5.30	11.7	10	0	10	Grass	0.042	0.68	4.7	2.5	3600	
2047+00	C\L	Rt	**138.12**	-2.240%	70	0.72	3.0	5.54	12.0	10	0	10	Grass	0.042	0.68	4.7	2.6	3700	
2048+00	C\L	Rt	135.82	-2.304%	70	0.71	3.0	5.80	12.3	6	5	6	Grass	0.060	0.64	5.6	2.2	3800	
2049+00	C\L	Rt	133.51	-2.304%	71	0.70	3.0	6.08	12.6	6	5	6	Grass	0.060	0.65	5.7	2.2	3900	
2050+00	C\L	Rt	131.21	-2.304%	72	0.68	3.0	6.38	12.9	6	5	6	Grass	0.060	0.65	5.8	2.2	4000	
2050+52.5	C\L	Rt	**130.00**	-2.304%	72	0.68	3.0	6.54	13.1	6	5	6	Grass	0.060	0.66	5.9	2.2	4053	DBI Type B/Ditch Block

Maximum Depth "d" = 0.99 ft
Maximum Velocity "V" = 2.62 fps

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-31-00

Conveyance Swale E-MED

Sta. 2010+00 to Sta. 2050+52.5 (Med)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Misc (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
2010+00	C\L	10.5	24.0	20.0		27.4	27.1		
2011+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2012+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2013+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2014+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2015+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2016+00	C\L	10.5	24.0	20.0	5450	27.4	27.1	5450	
2017+00	C\L	4.5	24.0	20.0	5150	27.4	27.7	5480	
2018+00	C\L	4.5	24.0	20.0	4850	27.4	29.1	5580	
2019+00	C\L	4.5	24.0	20.0	4850	27.6	30.5	5730	
2020+00	C\L	4.5	24.0	20.0	4850	29.0	31.9	5950	
2021+00	C\L	4.5	24.0	20.0	4850	30.5	32.0	6170	
2022+00	C\L	4.5	24.0	20.0	4850	31.9	32.0	6320	
2023+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6395	
2024+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2025+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2026+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2027+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2028+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2029+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2030+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2031+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2032+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2033+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2034+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2035+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2036+00	C\L	4.5	24.0	20.0	4850	32.0	32.0	6400	
2037+00	C\L	0.0	24.0	20.0	4625	32.0	32.0	6400	
2038+00	C\L	0.0	24.0	20.0	4400	32.0	32.0	6400	
2039+00	C\L	0.0	24.0	20.0	4400	32.1	32.0	6405	
2040+00	C\L	0.0	24.0	20.0	4400	33.1	32.0	6460	
2041+00	C\L	0.0	24.0	20.0	4400	34.6	33.2	6645	
2042+00	C\L	0.0	24.0	20.0	4400	36.7	35.6	7005	
2043+00	C\L	0.0	24.0	20.0	4400	39.5	38.1	7495	
2044+00	C\L	0.0	24.0	20.0	4400	42.7	41.6	8095	
2045+00	C\L	0.0	24.0	20.0	4400	46.9	45.3	8825	
2046+00	C\L	0.0	24.0	20.0	4400	51.0	48.9	9605	
2047+00	C\L	0.0	24.0	20.0	4400	55.3	53.4	10430	
2048+00	C\L	0.0	24.0	20.0	4400	59.3	57.8	11290	
2049+00	C\L	0.0	24.0	20.0	4400	63.5	62.4	12150	
2050+00	C\L	0.0	24.0	20.0	4400	67.4	66.4	12985	
2050+53	C\L	0.0	24.0	20.0	2310	69.4	68.4	7130	
					194135			284845	

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Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP Date: 2/10/00
Checked by: CJL Date: 3-31-00

Conveyance Swale E-R

Sta. 2025+00 to Sta. 2050+52.5 (RT)

Station (ft)	B/L	Side	FL (ft)	Slope	tc min.	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw (ft)	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
2025+00	C\L	Rt	153.13		114	0.18	2.1	16.73	6.2	9		5					0.5	0	Drains Ramp Infields
2026+00	C\L	Rt	152.30	-0.830%	117	0.18	2.1	17.00	6.3	7	0	5	Grass	0.042	0.78	3.7	1.7	100	
2027+00	C\L	Rt	152.35	0.050%	118	0.18	2.1	17.27	6.5	7	0	4	Grass	0.042	1.39	10.6	0.6	200	
2028+00	C\L	Rt	152.41	0.060%	121	0.19	2.0	17.54	6.6	8	0	4	Grass	0.042	1.30	10.2	0.6	300	
2029+00	C\L	Rt	151.94	-0.470%	124	0.19	2.0	17.81	6.7	8	0	4	Grass	0.042	0.89	4.8	1.4	400	
2030+00	C\L	Rt	151.65	-0.290%	125	0.19	2.0	18.08	6.9	8	0	3	Grass	0.042	1.02	5.7	1.2	500	
2031+00	C\L	Rt	150.97	-0.680%	126	0.20	2.0	18.36	7.0	6	0	3	Grass	0.042	0.94	4.0	1.7	600	
2032+00	C\L	Rt	151.14	0.170%	127	0.20	1.9	18.63	7.2	7	0	4	Grass	0.042	1.14	7.2	1.0	700	
2033+00	C\L	Rt	151.29	0.150%	129	0.20	1.9	18.90	7.3	8	0	4.5	Grass	0.042	1.12	7.9	0.9	800	
2034+00	C\L	Rt	151.25	-0.040%	131	0.20	1.9	19.17	7.5	8	0	4	Grass	0.042	1.47	13.0	0.6	900	
2035+00	C\L	Rt	151.24	-0.010%	133	0.21	1.9	19.44	7.5	9	0	4	Grass	0.042	1.86	22.5	0.3	1000	
2036+00	C\L	Rt	150.82	-0.420%	138	0.21	1.8	19.71	7.5	8	0	4	Grass	0.042	0.95	5.4	1.4	1100	
2037+00	C\L	Rt	150.88	0.060%	140	0.21	1.8	19.98	7.6	8	0	4	Grass	0.042	1.38	11.4	0.7	1200	
2038+00	C\L	Rt	150.60	-0.280%	142	0.21	1.8	20.25	7.7	8	0	4	Grass	0.042	1.04	6.4	1.2	1300	
2039+00	C\L	Rt	150.50	-0.100%	144	0.22	1.8	20.53	7.9	8	0	4	Grass	0.042	1.26	9.6	0.8	1400	
2040+00	C\L	Rt	150.20	-0.300%	146	0.22	1.7	20.80	8.0	9	0	4	Grass	0.042	1.00	6.5	1.2	1500	
2041+00	C\L	Rt	149.50	-0.700%	147	0.22	1.7	21.07	8.1	8	0	4	Grass	0.042	0.89	4.7	1.7	1600	
2042+00	C\L	Rt	147.80	-1.700%	148	0.22	1.7	21.34	8.2	7	0	4	Grass	0.042	0.78	3.4	2.4	1700	
2043+00	C\L	Rt	146.00	-1.800%	149	0.23	1.7	21.60	8.4	6	0	4	Grass	0.042	0.81	3.3	2.6	1800	
2044+00	C\L	Rt	144.20	-1.800%	149	0.23	1.7	21.88	8.5	8	0	5	Grass	0.042	0.73	3.5	2.4	1900	
2045+00	C\L	Rt	**142.48**	-1.720%	150	0.23	1.7	22.15	8.7	10	17	4	Grass	0.042	0.26	4.9	1.8	2000	
2046+00	C\L	Rt	140.03	**-2.451%**	151	0.23	1.7	22.43	8.8	6	5	4	Grass	0.042	0.45	3.3	2.7	2100	
2047+00	C\L	Rt	137.58	-2.451%	151	0.23	1.7	22.70	9.0	6	5	4	Grass	0.042	0.45	3.3	2.7	2200	
2048+00	C\L	Rt	135.13	-2.451%	152	0.24	1.7	22.98	9.1	6	5	4	Grass	0.042	0.46	3.3	2.7	2300	
2049+00	C\L	Rt	132.68	-2.451%	153	0.24	1.7	23.25	9.3	6	5	4	Grass	0.042	0.46	3.4	2.7	2400	
2050+00	C\L	Rt	130.23	-2.451%	153	0.24	1.7	23.53	9.4	6	5	4	Grass	0.042	0.47	3.4	2.8	2500	
2050+52.5	C\L	Rt	**128.94**	-2.451%	154	0.24	1.7	23.67	9.5	6	5	4	Grass	0.042	0.47	3.4	2.8	2553	DBI Type H/Ditch Block

Maximum Depth "d" = 1.86 ft
Maximum Velocity "V" = 2.77 fps

Interstate 4 Six Laning
Polk County, FL

Prepared by: GTP
Checked by: CJL 3-31-00

Conveyance Swale E-R

Sta. 2025+00 to Sta. 2050+52.5 (RT)

Station (ft)	B/L	Impervious Pavement Widths			Impervious Area (sq ft)	Contributing Area		Total Area (sq ft)	Remarks
		Out. Shldr. (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide		LT break (ft. left)	RT break (ft. right)		
2025+00	C\L	10.0	24.0	0.0	157687	150	-32	728759	16.73 acres of
2026+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	Interchange Infield
2027+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2028+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2029+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2030+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2031+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2032+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2033+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2034+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2035+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2036+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2037+00	C\L	10.0	24.0	0.0	3400	150	-32	11800	
2038+00	C\L	10.0	24.0	0.0	3400	150	-31	11850	
2039+00	C\L	10.0	24.0	0.0	3400	150	-31	11900	
2040+00	C\L	10.0	24.0	0.0	3400	150	-32	11850	
2041+00	C\L	10.0	24.0	0.0	3400	150	-33	11750	
2042+00	C\L	10.0	24.0	0.0	3400	152	-36	11650	
2043+00	C\L	10.0	24.0	0.0	3400	157	-38	11750	
2044+00	C\L	10.0	24.0	0.0	3400	161	-42	11900	
2045+00	C\L	10.0	24.0	0.0	3400	165	-46	11900	
2046+00	C\L	10.0	24.0	0.0	3400	170	-49	12000	
2047+00	C\L	10.0	24.0	0.0	3400	174	-54	12050	
2048+00	C\L	10.0	24.0	0.0	3400	178	-58	12000	
2049+00	C\L	10.0	24.0	0.0	3400	182	-63	11950	
2050+00	C\L	10.0	24.0	0.0	3400	185	-66	11900	
2050+53	C\L	10.0	24.0	0.0	1785	185	-66	6248	
					244472			1031057	61

FDOT CRITICAL DURATION ANALYSIS

POND A

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: NRS
Pond: Pond A Checked By: CLC
Date: 3/31/00

Inches of Rainfall for Specified Storm Events

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

$S = 1000/CN - 10$

$C = 1.0 - S\,[1.2 - S/(P + 0.8S)]/P$

where S = soil storage, inches
CN = curve number
P = total rainfall depth for a return period, inches
C = runoff coefficient for a return period

Pre CN	45	S =	12.2
Post CN	50	S =	10.00

Pre Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.00	0.01	0.02	0.04	0.08	0.13	0.20	0.24
5 YR	0.01	0.02	0.05	0.08	0.14	0.20	0.27	0.32
10 YR	0.02	0.04	0.07	0.12	0.19	0.25	0.34	0.38
25 YR	0.04	0.07	0.11	0.15	0.24	0.32	0.38	0.42
50 YR	0.06	0.10	0.14	0.19	0.29	0.35	0.42	0.47
100 YR	0.07	0.12	0.16	0.22	**0.31**	0.40	0.47	**0.50**

Post Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.01	0.03	0.05	0.07	0.13	0.19	0.26	0.30
5 YR	0.03	0.06	0.09	0.13	0.20	0.26	0.34	0.39
10 YR	0.05	0.08	0.12	0.17	0.26	0.32	0.40	0.44
25 YR	0.08	0.12	0.16	0.21	0.30	0.39	0.44	0.49
50 YR	0.10	0.15	0.20	0.26	0.36	0.42	0.49	0.53
100 YR	0.12	0.17	0.22	0.28	**0.38**	0.47	0.53	**0.56**

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond A

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 1-Hour	2-Hour	4-Hour	8-Hour	24-Hour
2-Year	Q-pre	49.32	49.32	49.32	49.32	49.32
	Q-post	15.62	14.95	15.92	14.21	7.79
	E-max	133.57	133.53	133.58	133.47	132.95
5-Year	Q-pre	58.82	58.82	58.82	58.82	58.82
	Q-post	21.11	20.43	21.74	20.36	10.54
	E-max	133.87	133.83	133.90	133.83	133.19
10-Year	Q-pre	65.56	65.56	65.56	65.56	65.56
	Q-post	24.66	24.19	26.02	25.20	13.07
	E-max	134.06	134.04	134.14	134.09	133.38
25-Year	Q-pre	76.55	76.55	76.55	76.55	76.55
	Q-post	30.10	29.09	31.29	29.47	15.72
	E-max	134.40	134.33	134.47	134.36	133.57
50-Year	Q-pre	84.86	84.86	84.86	84.86	84.86
	Q-post	34.07	33.67	36.01	34.12	18.77
	E-max	134.65	134.62	134.77	134.65	133.74
100-Year	Q-pre	92.30	92.30	92.30	92.30	92.30
	Q-post	37.66	36.88	39.41	37.15	20.58
	E-max	134.87	134.82	134.98	134.84	133.84

Critical Duration: **** 4-HOUR,100-YEAR STORM ****

Q-pre (cfs) = 92.30
Q-post (cfs) = 39.41
E-max (ft) = 134.98

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond A

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
131.95	2.928	4.430	.00	.00	.00
132.97	3.074	7.546	.00	7.97	7.97
133.16	3.102	8.126	.00	10.12	10.12
133.54	3.156	9.287	.00	15.13	15.13
134.12	3.239	11.059	.00	25.71	25.71
135.00	3.366	13.748	.00	39.70	39.70
136.00	4.034	17.396	.00	60.54	60.54

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond A

**** 4-HOUR,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 70.59
Runoff coefficient	= .310
Time of concentration (min.)	= 69.0
Rainfall intensity (in/hr)	= 4.22
Peak flow rate (cfs)	= 92.30

Post-development Condition:

Drainage area (acres)	= 70.59
Runoff coefficient	= .380
Rainfall zone number	= 8
Total rainfall depth (inches)	= 6.72

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	131.95	.00	.00	.00
.5	.080	14.42	132.04	.72	.00	.72
1.0	.200	36.05	132.36	3.18	.00	3.18
1.5	.360	64.89	132.97	7.93	.00	7.93
2.0	.520	93.73	133.84	20.68	.00	20.68
2.5	.420	75.71	134.62	33.70	.00	33.70
3.0	.280	50.47	134.98	39.41	.00	39.41
3.5	.100	18.03	134.92	38.40	.00	38.40
4.0	.000	.00	134.56	32.70	.00	32.70

Output Summary

Peak flow (cfs)	= 39.41
Peak stage (ft)	= 134.98
Peak Storage (ac-ft)	= 13.691
Time to peak (hrs)	= 3.0

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00
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License To: GTC Engineering corporation

I4/US 27, Pond A

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 3-Day	7-Day	10-Day
2-Year	Q-pre	49.32	49.32	49.32
	Q-post	5.21	3.54	4.78
	E-max	132.62	132.40	132.56
5-Year	Q-pre	58.82	58.82	58.82
	Q-post	6.51	4.48	6.19
	E-max	132.78	132.52	132.74
10-Year	Q-pre	65.56	65.56	65.56
	Q-post	7.82	5.42	7.31
	E-max	132.95	132.64	132.89
25-Year	Q-pre	76.55	76.55	76.55
	Q-post	9.99	6.13	8.46
	E-max	133.15	132.73	133.01
50-Year	Q-pre	84.86	84.86	84.86
	Q-post	11.20	7.07	9.70
	E-max	133.24	132.86	133.12
100-Year	Q-pre	92.30	92.30	92.30
	Q-post	13.51	8.02	11.09
	E-max	133.42	132.97	133.23

Critical Duration: **** 3-DAY,100-YEAR STORM ****

Q-pre (cfs) = 92.30
Q-post (cfs) = 13.51
E-max (ft) = 133.42

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond A

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
131.95	2.928	4.430	.00	.00	.00
132.97	3.074	7.546	.00	7.97	7.97
133.16	3.102	8.126	.00	10.12	10.12
133.54	3.156	9.287	.00	15.13	15.13
134.12	3.239	11.059	.00	25.71	25.71
135.00	3.366	13.748	.00	39.70	39.70
136.00	4.034	17.396	.00	60.54	60.54

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond A

**** 3-DAY,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 70.59
Runoff coefficient	= .310
Time of concentration (min.)	= 69.0
Rainfall intensity (in/hr)	= 4.22
Peak flow rate (cfs)	= 92.30

Post-development Condition:

Drainage area (acres)	= 70.59
Runoff coefficient	= .380
Rainfall zone number	= 8
Total rainfall depth (inches)	= 14.00

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	131.95	.00	.00	.00
4.0	.003	1.13	131.99	.33	.00	.33
8.0	.009	3.38	132.14	1.47	.00	1.47
12.0	.028	10.52	132.55	4.73	.00	4.73
16.0	.016	6.01	132.82	6.83	.00	6.83
20.0	.006	2.25	132.62	5.23	.00	5.23
24.0	.003	1.13	132.35	3.12	.00	3.12
28.0	.005	1.88	132.23	2.16	.00	2.16
32.0	.009	3.38	132.26	2.44	.00	2.44
36.0	.033	12.39	132.68	5.68	.00	5.68
40.0	.019	7.14	132.99	8.14	.00	8.14
44.0	.007	2.63	132.74	6.17	.00	6.17
48.0	.003	1.13	132.41	3.62	.00	3.62
52.0	.007	2.63	132.28	2.58	.00	2.58
56.0	.014	5.26	132.38	3.39	.00	3.39
60.0	.050	18.78	133.03	8.67	.00	8.67
64.0	.028	10.52	133.42	13.51	.00	13.51
68.0	.010	3.76	133.01	8.37	.00	8.37
72.0	.000	.00	132.52	4.42	.00	4.42

Output Summary

Peak flow (cfs)	= 13.51
Peak stage (ft)	= 133.42
Peak Storage (ac-ft)	= 8.911
Time to peak (hrs)	= 64.0

POND E

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: NRS
Pond: Pond E Checked By: CLC
Date: 10/1/98

Inches of Rainfall for Specified Storm Events

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

$S = 1000/CN - 10$

$C = 1.0 - S\,[1.2 - S/(P + 0.8S)]/P$

where S = soil storage, inches
CN = curve number
P = total rainfall depth for a return period, inches
C = runoff coefficient for a return period

Pre CN	46	S =	11.7
Post CN	52	S =	9.23

Pre Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.00	0.01	0.03	0.04	0.09	0.14	0.21	0.25
5 YR	0.01	0.03	0.06	0.09	0.15	0.21	0.29	0.33
10 YR	0.03	0.05	0.08	0.13	0.21	0.27	0.35	0.39
25 YR	0.05	0.08	0.12	0.16	0.25	0.33	0.39	0.44
50 YR	0.06	0.11	0.15	0.21	0.30	0.36	0.44	0.48
100 YR	0.08	0.13	0.18	0.23	**0.32**	0.41	0.48	**0.51**

Post Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.02	0.04	0.07	0.09	0.15	0.21	0.29	0.33
5 YR	0.04	0.07	0.11	0.15	0.23	0.29	0.37	0.41
10 YR	0.07	0.10	0.14	0.19	0.28	0.35	0.43	0.47
25 YR	0.10	0.14	0.18	0.24	0.33	0.41	0.47	0.52
50 YR	0.12	0.17	0.23	0.28	0.38	0.44	0.52	0.55
100 YR	0.14	0.19	0.25	0.31	**0.40**	0.49	0.55	**0.59**

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 1-Hour	2-Hour	4-Hour	8-Hour	24-Hour
2-Year	Q-pre	18.83	18.83	18.83	18.83	18.83
	Q-post	12.17	11.59	12.01	10.93	5.82
	E-max	125.22	125.16	125.21	125.08	124.45
5-Year	Q-pre	23.09	23.09	23.09	23.09	23.09
	Q-post	15.27	14.78	15.45	14.55	7.89
	E-max	125.57	125.52	125.59	125.49	124.72
10-Year	Q-pre	26.15	26.15	26.15	26.15	26.15
	Q-post	17.77	17.40	18.60	17.82	9.70
	E-max	125.79	125.76	125.87	125.80	124.94
25-Year	Q-pre	30.26	30.26	30.26	30.26	30.26
	Q-post	22.13	21.21	22.90	21.23	11.50
	E-max	126.17	126.09	126.23	126.09	125.15
50-Year	Q-pre	34.12	34.12	34.12	34.12	34.12
	Q-post	25.43	24.98	26.80	25.26	13.25
	E-max	126.45	126.41	126.56	126.43	125.35
100-Year	Q-pre	37.03	37.03	37.03	37.03	37.03
	Q-post	28.40	27.60	29.58	27.78	14.36
	E-max	126.70	126.63	126.79	126.64	125.47

Critical Duration: **** 4-HOUR,100-YEAR STORM ****

Q-pre (cfs) = 37.03
Q-post (cfs) = 29.58
E-max (ft) = 126.79

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
123.25	1.661	.910	.00	.00	.00
124.44	1.794	2.962	.00	5.75	5.75
124.62	1.814	3.280	.00	7.07	7.07
124.98	1.855	3.973	.00	10.03	10.03
125.55	1.919	5.084	.00	15.05	15.05
126.00	1.970	5.962	.00	20.11	20.11
127.00	2.098	7.925	.00	32.03	32.03
128.00	2.711	10.305	.00	45.66	45.66

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

**** 4-HOUR,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 48.49
Runoff coefficient	= .320
Time of concentration (min.)	= 154.0
Rainfall intensity (in/hr)	= 2.39
Peak flow rate (cfs)	= 37.03

Post-development Condition:

Drainage area (acres)	= 48.49
Runoff coefficient	= .400
Rainfall zone number	= 8
Total rainfall depth (inches)	= 6.72

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	123.25	.00	.00	.00
.5	.080	10.43	123.37	.57	.00	.57
1.0	.200	26.07	123.77	2.51	.00	2.51
1.5	.360	46.92	124.53	6.44	.00	6.44
2.0	.520	67.78	125.54	14.92	.00	14.92
2.5	.420	54.74	126.41	24.98	.00	24.98
3.0	.280	36.50	126.79	29.58	.00	29.58
3.5	.100	13.03	126.70	28.51	.00	28.51
4.0	.000	.00	126.29	23.60	.00	23.60

Output Summary

Peak flow (cfs)	= 29.58
Peak stage (ft)	= 126.79
Peak Storage (ac-ft)	= 7.521
Time to peak (hrs)	= 3.0

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 3-Day	7-Day	10-Day
2-Year	Q-pre	18.83	18.83	18.83
	Q-post	3.88	2.63	3.53
	E-max	124.05	123.79	123.98
5-Year	Q-pre	23.09	23.09	23.09
	Q-post	4.85	3.33	4.56
	E-max	124.25	123.94	124.19
10-Year	Q-pre	26.15	26.15	26.15
	Q-post	5.84	4.03	5.39
	E-max	124.45	124.08	124.37
25-Year	Q-pre	30.26	30.26	30.26
	Q-post	7.51	4.56	6.32
	E-max	124.67	124.19	124.52
50-Year	Q-pre	34.12	34.12	34.12
	Q-post	8.36	5.26	7.32
	E-max	124.78	124.34	124.65
100-Year	Q-pre	37.03	37.03	37.03
	Q-post	9.89	6.00	8.33
	E-max	124.96	124.47	124.77

Critical Duration: **** 3-DAY,100-YEAR STORM ****

Q-pre (cfs) = 37.03
Q-post (cfs) = 9.89
E-max (ft) = 124.96

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
123.25	1.661	.910	.00	.00	.00
124.44	1.794	2.962	.00	5.75	5.75
124.62	1.814	3.280	.00	7.07	7.07
124.98	1.855	3.973	.00	10.03	10.03
125.55	1.919	5.084	.00	15.05	15.05
126.00	1.970	5.962	.00	20.11	20.11
127.00	2.098	7.925	.00	32.03	32.03
128.00	2.711	10.305	.00	45.66	45.66

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 3/31/00

License To: GTC Engineering corporation

I4/US 27, Pond E

**** 3-DAY,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 48.49
Runoff coefficient	= .320
Time of concentration (min.)	= 154.0
Rainfall intensity (in/hr)	= 2.39
Peak flow rate (cfs)	= 37.03

Post-development Condition:

Drainage area (acres)	= 48.49
Runoff coefficient	= .400
Rainfall zone number	= 8
Total rainfall depth (inches)	= 14.00

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	123.25	.00	.00	.00
4.0	.003	.81	123.30	.26	.00	.26
8.0	.009	2.44	123.48	1.13	.00	1.13
12.0	.028	7.60	123.99	3.59	.00	3.59
16.0	.016	4.34	124.31	5.10	.00	5.10
20.0	.006	1.63	124.03	3.76	.00	3.76
24.0	.003	.81	123.70	2.15	.00	2.15
28.0	.005	1.36	123.56	1.48	.00	1.48
32.0	.009	2.44	123.61	1.75	.00	1.75
36.0	.033	8.96	124.13	4.25	.00	4.25
40.0	.019	5.16	124.49	6.11	.00	6.11
44.0	.007	1.90	124.16	4.40	.00	4.40
48.0	.003	.81	123.76	2.47	.00	2.47
52.0	.007	1.90	123.62	1.77	.00	1.77
56.0	.014	3.80	123.76	2.45	.00	2.45
60.0	.050	13.58	124.55	6.59	.00	6.59
64.0	.028	7.60	124.96	9.89	.00	9.89
68.0	.010	2.72	124.47	5.99	.00	5.99
72.0	.000	.00	123.87	3.00	.00	3.00

Output Summary

Peak flow (cfs)	= 9.89
Peak stage (ft)	= 124.96
Peak Storage (ac-ft)	= 3.941
Time to peak (hrs)	= 64.0

OPTIONAL CULVERT MATERIALS

Optional materials are evaluated on the basis of their durability and structural capacity.

In relation to durability, culverts shall have a Design Service Life (DSL) appropriate for culvert function and highway type. Also, several site factors will influence pipe performance and durability. These include environmental conditions, its theoretical corrosion rate, the potential for abrasion, and other appropriate factors. Corrosion indicators include: pH, Resistivity, Sulfates, and Chlorides.

Also, the structural integrity is met by providing adequate cover over the pipe as per Standard Index Drawing 205 for minimum and maximum cover requirements.

The following table identifies the minimum storm sewer pipe requirements.

Polyethylene and PVC pipe can be used up to 36 in (900 mm) diameter pipes.

Project : Interstate 4 Six Laning
FPI: 201204-2-52-01

Designed by: GTP **Date:** 2/22/00
Checked by: CJL **Date:**
CL 3-31-00

Optional Pipe Materials

Structure No.	DSL	Size (inches)	Material & Thickness	Plotted	Remarks
S-102, S-103	50	36	RCP, Class I (Only)	X	
S-105, S-106	100	42	RCP, Class I	X	
			SRSP, 12 GA		
			SRASP, 16 GA		
			SRAP, 14 GA		
S-107	100	42	RCP, Class IV (Only)	X	Under Future Rail
S-108, S-150, S-151	100	36	RCP, Class IV (Only)	X	Under Future Rail
S-109	100	30	RCP, Class I	X	
			SRSP, 12 GA		Select Bedding
S-152	100	36	RCP, Class I	X	
			SRASP, 16 GA		Select Bedding
			SRAP, 16 GA		Select Bedding
S-153	100	42	RCP, Class I (Only)	X	
S-155, S-156	50	36	RCP, Class I	X	
			SRSP, 12 GA		
			SRASP, 16 GA		
			SRAP, 16 GA		
			CPE or PVC		

ORIGINAL CALCULATIONS
FOR ULTIMATE DESIGN
(METRIC)
SEPTEMBER, 1998

FOR REFERENCE ONLY

BASIN A

BASIN A

Basin A consists of approximately 70.59 ac (28.57 ha) of roadway pavement and open areas associated with the proposed right-of-way of I-4. The basin begins at Station 1970+06.96 (I-4) and extends eastward to the U.S. 27 overpass at Station 2009+85.00. Longitudinal grades varying from 0.3% to 1.3% exhibit an existing "east to west" flow pattern within the roadway corridor. The offsite area south of I-4 was assumed to be undeveloped since there are treatment pond systems already in place. The offsite areas north of I-4 were assumed to be undeveloped. Presently, Basin A has a positive outfall into the Green Swamp via a system of roadside ditches. The Green Swamp is part of the Peace River watershed.

The stormwater management system for Basin A consists of a wet detention pond, Pond A, discharging to the existing positive outfall. The stormwater management system is designed for the ultimate widening of I-4. Pond A will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year, 24 hour storm. The required water quality used for Basin A is one inch of runoff from the directly connected impervious area. The bleed down orifice size was calculated based on SWFWMD criteria. The control elevation is based on the seasonal high water table (SHWT) determinations by the geotechnical consultant.

Basin A is not in the 100-year flood zone (see Exhibit I-C, FEMA map).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin A was routed using a 25-year, 24-hour storm, with a rainfall depth of 9.0 inches (0.23 meters) obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgement, and data from the Green Swamp from the previously approved section of I-4 west of Basin A. Results are summarized in the Drainage Basin Summary table and illustrate that post development flows are less than pre development flows. A minimum of 1.0 foot (0.30 meters) freeboard is provided in Pond A. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. Results from the analysis can be found in Section 11. The results show that Pond A meets the 14-86 criteria of the FDOT.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: KS Date: 08/26/98
Location: POLK COUNTY, Pond A Checked: Date:

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi^2 / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			24.92	971.88
	Impervious area-roadway	98			6.69	655.62
	Pastures, grassland, range-good Pond area	39			4.97	193.83
						0.00
						0.00
						0.00
						0.00
						0.00
					Totals =	36.58 / 1821.33

[1] Use only one CN source per line.

CN (weighted) = total product/total area = $\frac{1821.33}{36.58}$ = 49.79 Use CN: 50

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.3	1.4	1.6
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: KS Date: 08/26/98
Location: POLK COUNTY, Pond A Checked: ____ Date: ____

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi^2 / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			7.59	296.01
	Impervious area-roadway	98			24.02	2353.96
	Open space, good condition Pond area	39			2.15	83.85
	Pond Impervious	100			2.82	282.00
						0.00
						0.00
						0.00
						0.00

[1] Use only one CN source per line. Totals = 36.58 3015.82

CN (weighted) = total product/total area = $\frac{3015.82}{36.58}$ = 82.44 Use CN: 82

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	2.2	4.5	5.0
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: CLC Date:

Circle One: Pre-developed Developed **Pond A**

Circle One: T_c T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)
2. Manning's roughness coeff., n (table3-1.)
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. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5} \cdot s^{0.4}}$ Compute T...hr

	+		= 0.00

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)
8. Flow length, L ft
9. Watercourse slope, s ft/ft
10. Average velocity, V (figure 3-1) ft/s
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr

		0.00	
	+		= 0.00

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2
13. Wetted perimeter, P_w ft/ft
14. Hydraulic radius, $r = a/P_w$ Compute r ..... ft
15. Channel slope, s ft/ft
16. Manning's roughness coeff., n
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ ..... Compute V..... ft/s
18. Flow length, L ft
19. $T_t = L / 3600\ V$ Compute T ..... hr
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr

2.00			
4120			
0.57	+		= 0.57
			0.57

NOTE: Assume 2 fps flow in existing ditch
For Developed time of concentration, see storm sewer calculations.

34 minutes

12-6 E-268

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: KS
DATE: 09/01/98

Pond Volume

Basin	A			Retention
Pond	A		Runoff	Volume
Basin Area	36.58	Acres	(inches)	(Acre-ft)
DCIA*	26.84	Acres	1.00	2.24
Required Storage	2.24	Acre-ft		
Retention Stage	131.95	ft		
½ Required Storage	1.12	Acre-ft		
½ Required Stage	131.59	ft		

NOTE: Max depth is 18 inches for wet detention in SWFWMD.
Actual retention depth 8.4 inches

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
131.23	2.82	-	-	-	0.00
135.17	3.39	3.11	3.94	12.23	12.23
136.15	4.15	3.77	0.98	3.71	15.93

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

12-7

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: KS
DATE: 09/01/98

Permanent Pool Calculations

Basin	A	
Pond	A	
Basin Area	36.58	Acres
Composite 'C'	68	Percent
Average Rainfall	31.04	inches (June-September)
Wet Season Duration	122	days

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
124.67	1.15	-	-	-	0.00
129.20	1.56	1.35	4.53	6.12	6.12
129.23	2.54	2.05	0.03	0.07	6.19
131.23	2.82	2.68	2.00	5.37	11.55

Permanent Pool Available = 11.55 Acre-ft

Average daily runoff volume (using 122 day rainfall period) =
(% imp/100)(Basin Area)(31.04"/122 days)(1'/12") =
0.53 Acre-ft

$$\text{Residence Time} = \frac{\text{Permanent Pool Available}}{\text{Average daily runoff volume}} = 21.9 \text{ days}$$

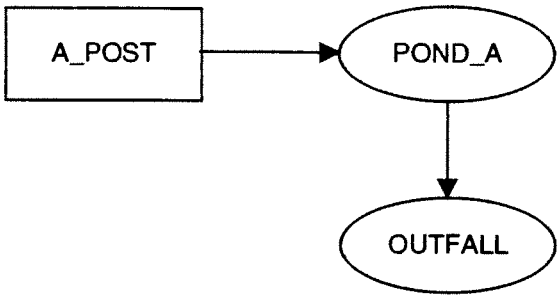
Min Residence Time = 14.0 days **O.K.**

RESIDENCE TIME >= 21.0 DAYS,
NO LITTORAL ZONE REQUIRED

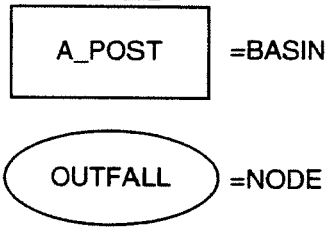
12-8

GTC Engineering Corporation

NODAL DIAGRAM - BASIN A
PROPOSED CONDITIONS



LEGEND



Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [1]

I-4/US 27 INTERCHANGE - POND A ORIFICE
INPUT REPORT
10/01/98

********** Input Report **********

--------Class: Node--------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 128.9
Group: BASE Length(ft): 0 Warn Stage(ft): 128.9
Comment:

Time(hrs)	Stage(ft)
0	128.9
120	128.9

--------Class: Node--------

Name: POND-A Base Flow(cfs): 0 Init Stage(ft): 131.95
Group: BASE Length(ft): 0 Warn Stage(ft): 131.95
Comment:

Stage(ft)	Area(ac)
131.23	2.82
135.17	3.39
136.15	4.15

--------Class: Drop Structure--------

Name: A-OUT From Node: POND-A Length(ft): 214
Group: BASE To Node: OUTFALL Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	36	36
Rise(in):	36	36
Invert(ft):	129.1	128.6
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [2]

I-4/US 27 INTERCHANGE - POND A ORIFICE
INPUT REPORT
10/01/98

********** Input Report **********

*** Weir 1 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Circular	Orifice Discharge Coef:	0.6
Span(in):	3	Invert(ft):	131.23
Rise(in):	3	Control Elev(ft):	131.23

*** Weir 2 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	27.559	Invert(ft):	131.95
Rise(in):	999	Control Elev(ft):	131.95

*** Weir 3 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	0
Geometry:	Rectangular	Orifice Discharge Coef:	0
Span(in):	49	Invert(ft):	134
Rise(in):	37	Control Elev(ft):	134

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [3]
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    I-4/US 27 INTERCHANGE - POND A ORIFICE
    INPUT REPORT
    10/01/98

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 C:\JOBS1\FLD5\ICPR\PONDA\ORIFICE\FLD5
 Execution: Hydraulics
    Header: I-4/US 27 INTERCHANGE
            DRAWDOWN CALCULATIONS, POND A
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 120
      Min Calc Time(sec): 120
      Max Calc Time(sec): 300
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        10         60                         24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [10/01/98]
```

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [1]
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I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
10/01/98

********** Node Time Series by Node - FLD5
****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
*** Group: BASE		Node: POND-A								
0.000	131.95	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0000
1.006	131.94	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0151
2.027	131.94	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0304
3.027	131.93	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0453
4.027	131.93	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0601
5.027	131.92	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0749
6.027	131.92	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0896
7.027	131.91	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.1042
8.027	131.91	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.1188
9.027	131.90	2.92	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.1333
10.027	131.90	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1477
11.027	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1621
11.277	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1657
11.527	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1692
11.777	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1728
12.027	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1764
12.277	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1800
12.527	131.89	2.92	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1835
12.777	131.89	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1871
13.027	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1906
13.277	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1942
13.527	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1977
13.777	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2013
14.027	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2048
14.277	131.88	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2083
15.277	131.87	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2224
16.277	131.87	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2365
17.277	131.86	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2504
18.277	131.86	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2643
19.277	131.85	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2781
20.277	131.85	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2919
21.277	131.85	2.91	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.3056
22.277	131.84	2.91	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3192
23.277	131.84	2.91	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3328
24.277	131.83	2.91	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3463
25.277	131.83	2.91	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3598
26.277	131.82	2.91	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3731
27.277	131.82	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3864
28.277	131.81	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3997
29.277	131.81	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4129
30.277	131.80	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4260
31.277	131.80	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4390
32.277	131.79	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4520
33.277	131.79	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4649
34.277	131.79	2.90	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.4778
35.277	131.78	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4905

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [2]
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I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
10/01/98

********** Node Time Series by Node - FLD5
****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
36.277	131.78	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5033
37.277	131.77	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5159
38.277	131.77	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5285
39.277	131.76	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5410
40.277	131.76	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5535
41.277	131.76	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5658
42.277	131.75	2.90	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5782
43.277	131.75	2.89	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5904
44.277	131.74	2.89	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.6026
45.277	131.74	2.89	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.6147
46.277	131.73	2.89	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.6268
47.277	131.73	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6388
48.277	131.73	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6507
49.277	131.72	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6626
50.277	131.72	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6744
51.277	131.71	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6861
52.277	131.71	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6978
53.277	131.71	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7094
54.277	131.70	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7209
55.277	131.70	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7324
56.277	131.69	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7438
57.277	131.69	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7551
58.277	131.69	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7664
59.277	131.68	2.89	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.7776
60.277	131.68	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7887
61.277	131.67	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7998
62.277	131.67	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8108
63.277	131.67	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8217
64.277	131.66	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8326
65.277	131.66	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8434
66.277	131.66	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8541
67.277	131.65	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8648
68.277	131.65	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8754
69.277	131.64	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8859
70.277	131.64	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8964
71.277	131.64	2.88	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.9068
72.277	131.63	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9172
73.277	131.63	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9274
74.277	131.63	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9376
75.277	131.62	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9478
76.277	131.62	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9579
77.277	131.62	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9679
78.277	131.61	2.88	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9778
79.277	131.61	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9877
80.277	131.61	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9975
81.277	131.60	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	1.0073
82.277	131.60	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	1.0169

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.10) [3]
Copyright 1995, Streamline Technologies, Inc.

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
10/01/98

********** Node Time Series by Node - FLD5

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
83.277	131.60	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	1.0265
84.277	131.59	2.87	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	1.0361
85.277	131.59	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0456
86.277	131.59	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0550
87.277	131.58	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0643
88.277	131.58	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0736
89.277	131.58	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0828
90.277	131.57	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.0920
91.277	131.57	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1011
92.277	131.57	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1101
93.277	131.56	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1190
94.277	131.56	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1279
95.277	131.56	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1367
96.277	131.55	2.87	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.1455
97.277	131.55	2.87	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1542
98.277	131.55	2.87	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1628
99.277	131.55	2.87	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1713
100.277	131.54	2.87	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1798
101.277	131.54	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1882
102.277	131.54	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1966
103.277	131.53	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.2049
104.277	131.53	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.2131
105.277	131.53	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.2212
106.277	131.53	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.2292
107.277	131.52	2.86	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.2371
108.277	131.52	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2449
109.277	131.52	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2526
110.277	131.51	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2602
111.277	131.51	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2677
112.277	131.51	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2751
113.277	131.51	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2823
114.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2895
115.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2966
116.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.3035
117.277	131.50	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.3104
118.277	131.49	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.3172
119.277	131.49	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.3238
120.069	131.49	2.86	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.3291

BASIN E

BASIN E

Basin E consists of approximately 48.49 ac (19.62 ha) of roadway pavement and open areas associated with the proposed roadway right-of-way. The basin begins at the I-4 corridor Station 2009+85 and extends east to Station 2052+15.41. Longitudinal grades varying from 0.3% to 2.0% exhibit an existing west to east flow pattern within the roadway corridor. Basin E has a positive outfall to Horse Creek via a system of roadside and median ditches. Horse Creek is part of the Kissimmee River basin.

The stormwater management system for Basin E consists of a dry, online detention pond discharging to the existing positive outfall via the I-4 swale system. Pond E is the proposed detention pond for Basin E. The stormwater management system is designed for the ultimate widening of I-4. Pond E will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year, 24-hour storm. The required water quality used for Basin E is one inch of runoff from the directly connected impervious area. Percolation will be used for recovery of the water quality volume. Recovery of the water quality volume was done using the program MODRET. Groundwater data for MODRET was based on information from the geotechnical consultant.

Basin E is not in the 100-year flood zone (see Exhibit I-C, FEMA map).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin E was routed using a 25-year, 24-hour storm, with a rainfall depth of 9.0 inches (0.23 meters) obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgement, and an analysis of the I-4 swale. Results are summarized in the Drainage Basin Summary table and illustrate that post development flows are less than pre development flows. A minimum of 1.0 foot (0.30 meters) freeboard is provided in Pond E. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. Results from the analysis can be found in Section 11. The results show that Pond E meets the 14-86 criteria of the FDOT.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: KS Date: 08/26/98
Location: POLK COUNTY, Pond E Checked: _____ Date: _____

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			33.63	1311.57
	Impervious area-roadway	98			5.43	532.14
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.				Totals =	42.66	1984.11

CN (weighted) = total product/total area = $\frac{1984.11}{42.66}$ = 46.51 Use CN: 47

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.2	1.1	1.4
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: KS Date: 08/26/98
Location: POLK COUNTY, Pond E Checked: ____ Date: ____

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN ✓ Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			11.61	452.79
	Impervious area-roadway	98			27.45	2690.10
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
						0.00
✓ Use only one CN source per line.					Totals =	42.66 3283.29

CN (weighted) = total product/total area = $\frac{3283.29}{42.66}$ = 76.96 Use CN: 77

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	1.8	3.9	4.4
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: Date:

Circle One: Present Developed **Pond E+D51**

Circle One: T_c T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)
2. Manning's roughness coeff., n (table3-1.)
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...hr

	+		=	0.00

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)
8. Flow length, L ft
9. Watercourse slope, s ft/ft
10. Average velocity, V (figure 3-1) ft/s
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr

		0.00		
	+		=	0.00

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2
13. Wetted perimeter, P_w ft/ft
14. Hydraulic radius, $r = a/P_w$ Compute r ft
15. Channel slope, s ft/ft
16. Manning's roughness coeff., n
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ Compute V ft/s
18. Flow length, L ft
19. $T_t = L / 3600\ V$ Compute T hr
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr

2.00				
4000				
0.56	+		=	0.56
				0.56

NOTE: Assume 2 fps flow in existing ditch
For Developed time of concentration, see storm sewer calculations. 33 minutes

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Detention

PROJ: **State Road 400 (I-4)**
BY: KS
DATE: 09/02/98

Pond Volume

Basin	E			Retention
Pond	E		Runoff	Volume
Basin Area	42.66	Acres	(inches)	(Acre-ft)
DCIA*	27.45	Acres	1.00	2.29
Required Storage	2.29	Acre-ft		
Retention Stage	124.08	ft		
½ Required Storage	1.14	Acre-ft		
½ Required Stage	123.4	ft		

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
122.70	1.60	-	-	-	0.00
123.69	1.71	1.65	0.98	1.63	1.63
124.67	1.82	1.76	0.98	1.73	3.36
126.97	2.08	1.95	2.30	4.47	7.84
127.95	2.68	2.38	0.98	2.34	10.18

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: CLC
Pond: Pond E Checked By:
Date: 10/1/98

From Williams Earth Sciences geotechnical report

Saturated Hydraulic Conductivity, k

Vertical =	3.7E-05	cm/sec =	0.10	ft/day
Horizontal =	4.5E-03	cm/sec =	13	ft/day
Ground Elevation =	38.5	m =	126.3	ft
Groundwater Depth =	2.0	m =	6.6	ft
Groundwater Elevation =	36.5	m =	119.7	ft

[redacted]

Project/Pond Name	Pond E	
Runoff Data, Hydrograph (H) or Manual (M)	M	
Unsaturated Analysis Included?	Y	
Is there overflow?	N	
Design High Water Elevation (DHW)	124.08	ft
Pond Bottom Area	73045	sq ft
Pond Volume Between Bottom & DHW	99752	cu ft
Pond Length to Width Ratio	2.0	
Elevation of Effective Aquifer Base	95.0	ft
Elevation of Seasonal High Groundwater Table	119.7	ft
Elevation of Pond Bottom	122.7	ft
Effective Storage Coefficient of Soil for Unsaturated	0.3	
Unsaturated Vertical Hydraulic Conductivity	0.07	ft/day (*)
Factor of Safety	2	
Saturated Horizontal Hydraulic Conductivity	13	ft/day
Effective Storage Coefficient of Soil for Saturated	0.3	
Average Effective Storage Coefficient of Pond	1.0	

**** - estimated @2/3 of saturated hydraulic conductivity***

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : I4/US 27 - POND E
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS EXCLUDED

Pond Bottom Area	73045.00 ft²
Pond Volume between Bottom & DHWL	99752.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	119.70 ft
Elevation of Pond Bottom	122.70 ft
Design High Water Level Elevation	124.08
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	0.10 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	13.00 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	0.00
Elevation of water level	0.00	0.00	0.00	0.00

Friday, 10/ 9/1998

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: I4/US 27 - POND E

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	0.00	0.00
1	1.00	99752.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND E

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	119.700	0.000 *		
			0.00	
0.00	119.700	0.69887		
			0.68201	0.00
1.00	124.046	0.66516		
			0.58088	0.00
6.00	123.901	0.53807		
			0.48670	0.00
12.00	123.756	0.44633		
			0.36558	0.00
24.00	123.537	0.32588		
			0.28618	0.00
36.00	123.366	0.25951		
			0.23283	0.00
48.00	123.227	0.21446		
			0.19608	0.00
60.00	123.110	0.18275		
			0.16941	0.00
72.00	123.009	0.15837		
			0.13629	0.00
96.00	122.846	0.12535		
			0.11440	0.00
120.00	122.709	0.10656		
			0.09872	0.00
144.00	122.591			

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

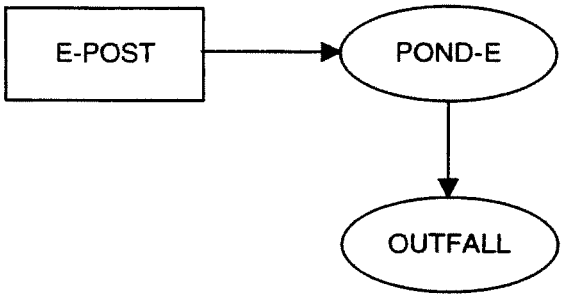
Pond Name / No.: I4/US 27 - POND E

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)

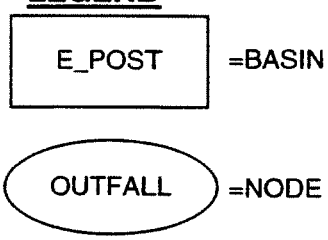
Max. WL : 124.046 @ 1.00 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

GTC Engineering Corporation

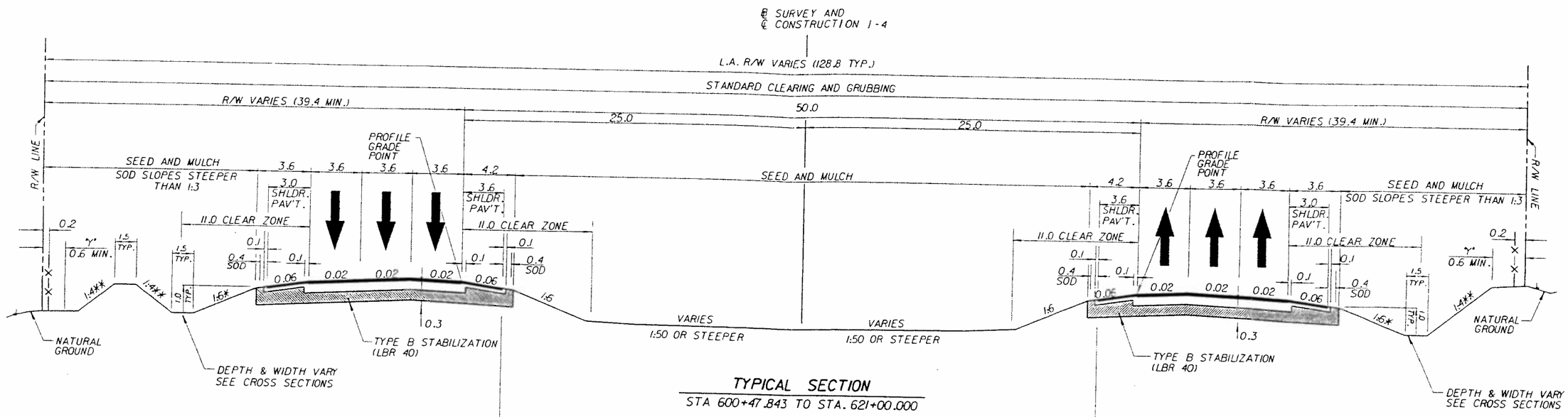
NODAL DIAGRAM - BASIN E
PROPOSED CONDITIONS



LEGEND



STATE PROJ. NO.	SHEET NO.
16320-3408	7



TYPICAL SECTION

STA 600+47.843 TO STA. 621+00.000

NEW CONSTRUCTION-MAINLINE

OPTIONAL BASE GROUP 12 AND
190mm TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL 5) AND
20mm FRICTION COURSE, FC-5

NEW CONSTRUCTION-SHOULDERS

OPTIONAL BASE GROUP 6 AND
90mm TYPE SP STRUCTURAL COURSE (TRAFFIC LEVEL 5) AND
20mm FRICTION COURSE, FC-5

NOTES:

THE CUT AND FILL SECTIONS ARE SHOWN ON THE RIGHT AND LEFT, RESPECTIVELY, FOR ILLUSTRATION ONLY. CUT SECTIONS WHICH OCCUR ON THE LEFT SHALL BE SIMILAR TO THOSE SHOWN ON THE RIGHT; LIKEWISE. FILL SECTIONS WHICH OCCUR ON THE RIGHT SHALL BE SIMILAR TO THOSE SHOWN ON THE LEFT.

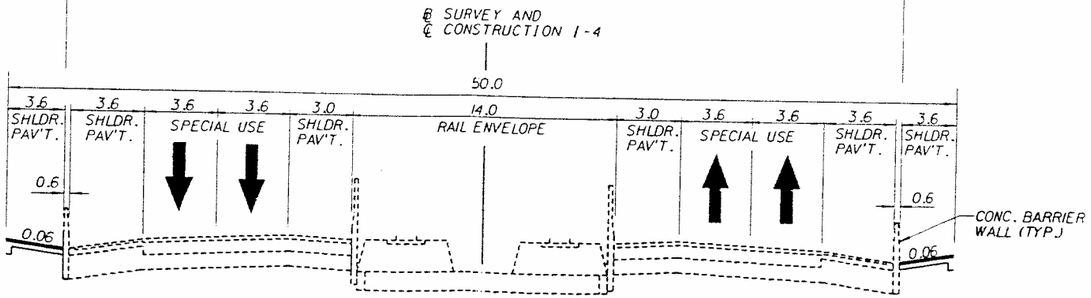
"Y" THE AREA DISTURBED BY CONSTRUCTION VARIES.

* 1:6 FILLS TO 1.5
1:6 TO EDGE OF CLEAR ZONE & 1:4 FILLS 1.5 TO 3.0
1:6 TO EDGE OF CLEAR ZONE & 1:3 FILLS 3.0 TO 6.0
1:2 (WITH GUARDRAIL) FILLS OVER 6.0

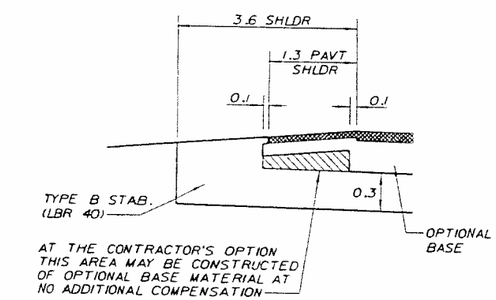
** SLOPES ARE 1:4 OR FLATTER

TRAFFIC DATA (1-4)

CURRENT YEAR ESTIMATE = 1995 ADT= 61 600
OPENING YEAR ESTIMATE = 2000 ADT= 74 100
DESIGN YEAR ESTIMATE = 2020 ADT= 114 600
K = 9% D = 55% T = 15% (24 HR)
DESIGN HR T= 12%
DESIGN SPEED 110 km/h



FUTURE CONSTRUCTION IN MEDIAN



SHOULDER PAVEMENT DETAIL

N.T.S.

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering Inc.
1201 South Orlando Ave.
Suite 200
Winter Park, Florida 32789

FLORIDA DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

STORM SEWER HYDRAULICS

System: **I-4A**

PROJECT			
Number:	00009-505-096	Organization:	HDR Engineering, Inc.
Description:	I-4/US27 INTERCHANGE	Designed by:	SMH
County:	POLK	Checked by:	CJL

CONDITIONS					
Outfall Tailwater Elevation:	40.000	Storm Event		Runoff Coefficients		
Exit Loss at Outfall:	0.000	Zone	Freq	Area 1	Area 2	Area 3
Storm Sewer Control Elevatio	40.000	8	10	0.90	0.20	0.90

FROM / Station / Type	TO / Offset / Brls / Len	Drainage Areas Inc.	Sub-Total	Sub-Total CA	Tc (min)	Travel Time (min)	Inten. mm/hr	Total CA (ha)	Flow (cm/s) (Qb)	Sum(Qb) CIA TOTAL	Inlet Elevations Inlet Clear.	Inlet HGL Jnc Loss	Pipe Elevations HGL Crown Line	Pipe Elevations HGL Flow Line	Fall (m)	Pipe Height Width (mm)	HGL (%) FL (%)	Flow Type	Velocity (m/s)	Capacity (cm/s)	Mann'g 'N'
U-101	**U-106**	0.282	0.282	0.254					0.000	0.000	41.758	40.900	40.900	40.364	0.536	450	2.823	Partial			
600+90	-20.75	0.000	0.000	0.000	10.00	0.06	189	0.449		0.234			41.198	39.397				sub	4.949	1.063	0.0120
MED-BW-41	18.980	0.217	0.217	0.195						**0.234**	0.858	0.000	40.748	38.947	1.801	450	9.486				
U-102	**U-107**	0.104	0.104	0.094					0.000	0.000	41.953	41.059	41.059	40.414	0.645	450	3.398	Partial			
600+90	-6.70	0.000	0.000	0.000	10.00	0.07	189	0.280		0.146			41.393	39.436				sub	4.491	1.108	0.0120
MED-BW-41	18.980	0.207	0.207	0.186						**0.146**	0.894	0.000	40.943	38.986	1.957	450	10.312				
U-103	**U-108**	0.104	0.104	0.094					0.000	0.000	41.953	41.060	41.060	40.487	0.573	450	3.020	Partial			
600+90	6.70	0.000	0.000	0.000	10.00	0.07	189	0.280		0.146			41.393	39.472				sub	4.443	1.098	0.0120
MED-BW-41	18.980	0.207	0.207	0.186						**0.146**	0.893	0.000	40.943	39.022	1.921	450	10.119				
U-104	**U-109**	0.282	0.282	0.254					0.000	0.000	41.758	40.902	40.902	40.535	0.368	450	1.937	Partial			
600+90	20.75	0.000	0.000	0.000	10.00	0.07	189	0.449		0.234			41.198	39.511				sub	4.834	1.029	0.0120
MED-BW-41	18.980	0.217	0.217	0.195						**0.234**	0.855	0.000	40.748	39.061	1.687	450	8.887				
U-105	**U-111**	1.811	6.119	5.507					0.000	0.001	40.700	40.215	40.215	40.001	0.213	1,050	0.559	Full			
601+10	-45.00	2.124	2.872	0.574	54.00	0.24	90	9.321		2.315			39.928	38.550					2.602	5.884	0.0120
DBI-Hm 1	38.174	0.000	3.600	3.240						**2.316**	0.485	0.000	38.878	37.500	1.378	1,050	3.610				
U-106	**U-105**	0.177	3.922	3.530					0.000	0.001	41.747	40.364	40.364	40.215	0.149	1,050	0.616	Full			
601+08.98	-20.75	0.000	0.748	0.150	24.64	0.15	135	6.538		2.430			39.997	39.928					2.731	1.659	0.0120
MED-BW-41	24.266	0.060	3.176	2.858						**2.431**	1.383	0.000	38.947	38.878	0.070	1,050	0.287				
U-107	**U-106**	0.009	2.846	2.561					0.000	0.001	41.943	40.414	40.414	40.364	0.050	1,050	0.357	Full			
601+08.98	-6.70	0.000	0.748	0.150	24.53	0.11	135	4.966		1.850			40.036	39.997					2.079	1.622	0.0120
MED-BW-41	14.055	0.152	2.506	2.255						**1.851**	1.528	0.000	38.986	38.947	0.039	1,050	0.274				
U-108	**U-107**	0.009	2.603	2.343					0.000	0.001	41.943	40.487	40.487	40.414	0.073	900	0.542	Full			
601+08.98	6.70	0.000	0.748	0.150	24.44	0.10	135	4.112		1.534			39.922	39.886					2.326	1.090	0.0120
MED-BW-41	13.400	0.152	1.800	1.620						**1.535**	1.456	0.000	39.022	38.986	0.037	900	0.273				
U-109	**U-108**	0.177	2.360	2.124					0.000	0.001	41.747	40.535	40.535	40.487	0.048	900	0.342	Full			
601+08.98	20.75	0.000	0.748	0.150	24.31	0.13	136	3.258		1.218			39.961	39.922					1.847	1.092	0.0120
MED-BW-41	14.055	0.060	1.094	0.985						**1.219**	1.212	0.000	39.061	39.022	0.039	900	0.274				
U-110	**U-109**	0.205	1.284	1.155					0.000	0.001	40.700	40.597	40.597	40.535	0.062	750	0.242	Full			
601+08.98	46.30	0.488	0.748	0.150	24.00	0.31	136	1.687		0.634			39.885	39.811					1.381	0.692	0.0120
DBI-Hm 1	25.545	0.000	0.424	0.382						**0.635**	0.103	0.000	39.135	39.061	0.073	750	0.288				
U-111	**PONDA**	0.000	6.119	5.507					0.000	0.001	40.674	40.001	40.001	40.000	0.002	1,000	0.007	Full			
601+16	-82.70	0.000	2.872	0.574	54.24	0.00	90	9.321		2.308			38.500	38.000					0.428	40.461	0.0120
MESm 2	22.255	0.000	3.600	3.240						**2.309**	0.673	0.000	37.500	37.000	0.500	2,700	2.247				
U-114	**U-106**	0.285	0.617	0.555					0.000	0.000	41.751	40.893	40.893	40.364	0.529	450	4.799	Partial			
601+20	-20.75	0.000	0.000	0.000	10.32	0.03	187	0.909		0.469			41.150	39.397				sub	7.221	1.377	0.0120
MED-BW-41	11.019	0.151	0.393	0.354						**0.469**	0.858	0.000	40.700	38.947	1.753	450	15.909				

Units: METRIC

STORM SEWER HYDRAULICS

System: **I-4A**

PROJECT			
Number:	00009-505-096	Organization:	HDR Engineering, Inc.
Description:	I-4/US27 INTERCHANGE	Designed by:	SMH
County:	POLK	Checked by:	CJL

CONDITIONS					
Outfall Tailwater Elevation:	40.000	Storm Event		Runoff Coefficients		
Exit Loss at Outfall:	0.000	Zone	Freq	Area 1	Area 2	Area 3
Storm Sewer Control Elevatio	40.000	8	10	0.90	0.20	0.90

FROM / Station / Type	TO / Offset / Brls / Len	Drainage Areas Inc.	Sub-Total	Sub-Total CA	Tc (min)	Travel Time (min)	Inten. mm/hr	Total CA (ha)	Flow (cm/s) (Qb)	Sum(Qb) CIA TOTAL	Inlet Elevations Inlet Clear.	HGL Jnc Loss	Pipe Elevations HGL / Crown Line / Flow Line		Fall (m)	Pipe Height / Width (mm)	HGL (%) / FL (%)	Flow Type	Velocity (m/s)	Capacity (cm/s)	Mann'g 'N'
U-115	**U-107**	0.130	0.130	0.117					0.000	0.000	41.946	41.063	41.063	40.414	0.648	450	5.884	Partial			
601+20	-6.70	0.000	0.000	0.000	10.00	0.03	189	0.429		0.224			41.386	39.436				sub	6.097	1.452	0.0120
MED-BW-41	11.019	0.347	0.347	0.312						**0.224**	0.883	0.000	40.936	38.986	1.950	450	17.698				
U-116	**U-108**	0.130	0.130	0.117					0.000	0.000	41.946	41.063	41.063	40.487	0.576	450	5.225	Partial			
601+20	6.70	0.000	0.000	0.000	10.00	0.03	189	0.429		0.224			41.386	39.472				sub	6.097	1.438	0.0120
MED-BW-41	11.019	0.347	0.347	0.312						**0.224**	0.883	0.000	40.936	39.022	1.914	450	17.366				
U-117	**U-109**	0.285	0.617	0.555					0.000	0.000	41.751	40.896	40.896	40.535	0.361	450	3.280	Partial			
601+20	20.75	0.000	0.000	0.000	10.32	0.03	187	0.909		0.469			41.150	39.511				sub	7.051	1.331	0.0120
MED-BW-41	11.019	0.151	0.393	0.354						**0.469**	0.854	0.000	40.700	39.061	1.639	450	14.877				
U-118	**U-114**	0.332	0.332	0.299					0.000	0.000	41.797	41.333	41.333	41.150	0.182	450	0.608	Full			
601+50	-20.75	0.000	0.000	0.000	10.00	0.32	189	0.517		0.269			41.237	41.150					1.583	0.185	0.0120
MED-BW-41	30.000	0.242	0.242	0.218						**0.269**	0.464	0.000	40.787	40.700	0.086	450	0.288				
U-119	**U-117**	0.332	0.332	0.299					0.000	0.000	41.797	41.333	41.333	41.150	0.182	450	0.608	Full			
601+50	20.75	0.000	0.000	0.000	10.00	0.32	189	0.517		0.269			41.237	41.150					1.583	0.185	0.0120
MED-BW-41	30.000	0.242	0.242	0.218						**0.269**	0.464	0.000	40.787	40.700	0.086	450	0.288				
U-120	**U-110**	0.000	1.079	0.971					0.000	0.001	41.257	41.236	41.236	40.597	0.640	1,000	0.454	Partial			
602+50	46.20	0.000	0.260	0.052	10.89	0.77	184	1.405		0.712			41.899	40.135				sub	3.067	15.100	0.0120
MESm	1 141.018	0.000	0.424	0.382						**0.713**	0.021	0.000	40.900	39.135	1.765	2,700	1.252				
U-121	**U-120**	0.247	1.079	**0.971**					0.000	0.001	42.448	41.729	41.729	41.649	0.080	750	0.311	Full			
602+75	40.00	0.260	0.260	0.052	10.62	0.27	186	1.405		0.718			41.715	41.649					1.563	0.649	0.0120
S-STDm	1 25.757	0.000	0.424	0.382						**0.719**	0.718	0.000	40.965	40.900	0.065	750	0.253				
U-122	**U-121**	0.199	0.832	0.749					0.000	0.001	42.603	41.765	41.765	41.729	0.036	600	0.698	Full			
602+80	38.80	0.000	0.000	0.000	10.57	0.04	186	1.130		0.579			41.928	41.565					1.998	1.845	0.0120
BW-CG	1 5.142	0.000	0.424	0.382						**0.580**	0.838	0.000	41.328	40.965	0.364	600	7.072				
U-123	**U-105**	0.000	0.386	0.347					0.000	0.000	41.637	41.879	41.879	40.215	1.665	1,000	0.925	Partial			
602+90	-49.50	0.000	0.000	0.000	10.46	1.09	186	0.729		0.374			42.649	39.878				sub	2.748	16.746	0.0120
MESm	1 180.054	0.000	0.424	0.382						**0.374**	-0.242	0.000	41.649	38.878	2.772	2,700	1.539				
U-124	**U-123**	0.260	0.386	0.347					0.000	0.000	42.712	42.442	42.442	42.099	0.343	450	1.192	Full			
602+90	-20.75	0.000	0.000	0.000	10.24	0.22	188	0.729		0.377			42.152	42.099					2.217	0.147	0.0120
MED-BW-41	28.745	0.203	0.424	0.382						**0.377**	0.269	0.000	41.702	41.649	0.052	450	0.181				
U-125	**U-124**	0.126	0.126	0.113					0.000	0.000	42.907	42.473	42.473	42.442	0.031	450	0.222	Full			
602+90	-6.70	0.000	0.000	0.000	10.00	0.24	189	0.312		0.163			42.347	42.152					0.957	0.407	0.0120
MED-BW-41	14.055	0.221	0.221	0.199						**0.163**	0.433	0.000	41.897	41.702	0.195	450	1.390				
U-126	**U-127**	0.126	0.126	0.113					0.000	0.000	42.907	42.084	42.084	42.053	0.031	450	0.222	Full			
602+90	6.70	0.000	0.000	0.000	10.00	0.24	189	0.312		0.163			42.347	41.987					0.957	0.553	0.0120
MED-BW-41	14.055	0.221	0.221	0.199						**0.163**	0.823	0.000	41.897	41.537	0.360	450	2.563				

Units: METRIC

STORM SEWER HYDRAULICS

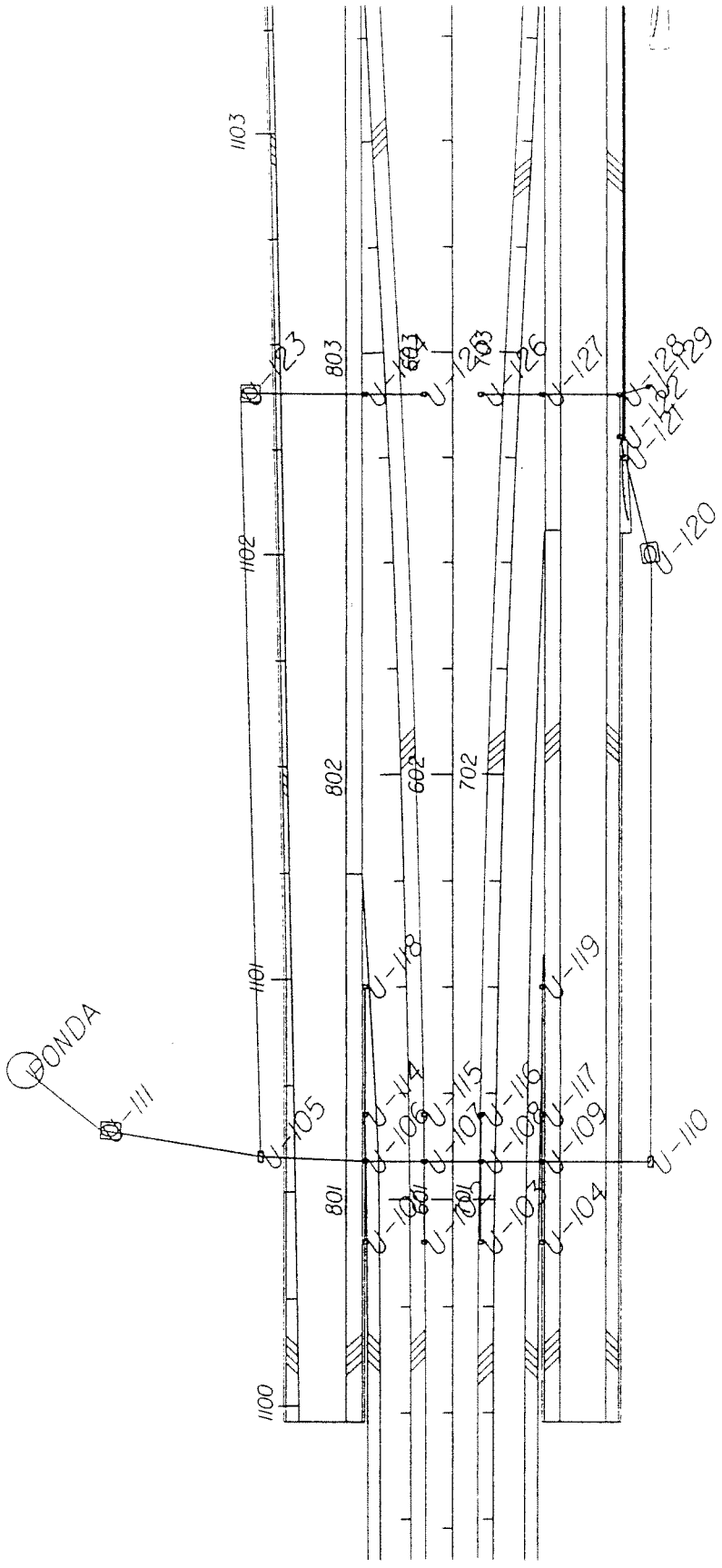
System: **I-4A**

PROJECT			
Number:	00009-505-096	Organization:	HDR Engineering, Inc.
Description:	I-4/US27 INTERCHANGE	Designed by:	SMH
County:	POLK	Checked by:	CJL

CONDITIONS					
		Storm Event		Runoff Coefficients	
Outfall Tailwater Elevation:	40.000	Zone	Freq	Area 1	Area 2	Area 3
Exit Loss at Outfall:	0.000	8	10	0.90	0.20	0.90
Storm Sewer Control Elevatio	40.000					

FROM Station / Type	Brls	TO Offset / Len	Drainage Areas Inc.	Sub-Total	Sub-Total CA	Tc (min)	Travel Time (min)	Inten. mm/hr	Total CA (ha)	Flow (cm/s) (Qb)	Sum(Qb) CIA TOTAL	Inlet Elevations Inlet Clear.	HGL Jnc Loss	Pipe Elevations HGL / Crown Line / Flow Line		Fall (m)	Pipe Height / Width (mm)	HGL (%) FL (%)	Flow Type	Velocity (m/s)	Capacity (cm/s)	Mann'g 'N'
U-127		**U-128**	0.260	0.386	0.347					0.000	0.000	42.712	42.053	42.053	41.999	0.053	600	0.295	Full			
602+90		20.75	0.000	0.000	0.000	10.24	0.23	188	0.729		0.377			42.137	41.999					1.300	0.605	0.0120
MED-BW-41		18.045	0.203	0.424	0.382						**0.377**	0.659	0.000	41.537	41.399	0.137	600	0.760				
U-128		**U-122**	0.247	0.633	0.570					0.000	0.001	42.707	41.978	41.978	41.928	0.050	600	0.497	Full			
602+90		38.80	0.000	0.000	0.000	10.48	0.10	186	0.951		0.488			41.999	41.928					1.687	0.585	0.0120
BW-CG	1	10.000	0.000	0.424	0.382						**0.489**	0.729	0.000	41.399	41.328	0.071	600	0.712				
U-129		**U-128**	0.000	0.000	0.000					0.001	0.001	43.999	42.904	42.904	41.978	0.926	450	13.477	Partial			
602+91.9		45.40	0.000	0.000	0.000	10.00	0.17	189	0.000		0.000			43.339	41.849				critical	0.677	1.608	0.0120
MH7-Pm	1	6.868	0.000	0.000	0.000						**0.001**	1.096	0.000	42.889	41.399	1.490	450	21.696				

Units: METRIC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BONDA

ROADWAY SPREAD ANALYSIS
(HEC-12 Method)

Node	Station	Offset	Drain Area	Rfall Intensity.	Flow Rate	Sag Inlet	Manning Coeff	Long. Slope	Rdwy X-Slope	Gutter X-Slope	Gutter Width	Spread Width	Velocity
			(hect)	(mm/hr)	(c.m./s)			(m/m)	(m/m)	(m/m)	(m)	(m)	(m/s)
U-101	600+90	20.755	0.254	101.6	0.072		0.0130	0.0011	0.0600	0.1786	0.630	1.859	0.563
			0.63	*4.00*	*2.53*						*2.07*	*6.10*	*1.85*
U-102	600+90	6.700	0.094	101.6	0.026		0.0130	0.0011	0.0600	0.1786	0.630	1.003	0.492
			0.23	*4.00*	*0.93*						*2.07*	*3.29*	*1.61*
U-103	600+90	6.700	0.094	101.6	0.026		0.0130	0.0011	0.0600	0.1786	0.630	1.003	0.492
			0.23	*4.00*	*0.93*						*2.07*	*3.29*	*1.61*
U-104	600+90	20.755	0.254	101.6	0.072		0.0130	0.0011	0.0600	0.1786	0.630	1.859	0.563
			0.63	*4.00*	*2.53*						*2.07*	*6.10*	*1.85*
U-106	601+10	20.755	0.159	101.6	0.022 *	Yes	0.0130	0.0001	0.0600	0.1786	0.630	2.159	0.138
			0.39	*4.00*	*0.79*						*2.07*	*7.08*	*0.45*
U-107	601+10	6.700	0.008	101.6	0.001 *	Yes	0.0130	0.0001	0.0600	0.1786	0.630	0.000	0.049
			0.02	*4.00*	*0.04*						*2.07*	*0.00*	*0.16*
U-108	601+10	6.700	0.008	101.6	0.001 *	Yes	0.0130	0.0001	0.0600	0.1786	0.630	0.000	0.049
			0.02	*4.00*	*0.04*						*2.07*	*0.00*	*0.16*
U-109	601+10	20.755	0.159	101.6	0.022 *	Yes	0.0130	0.0001	0.0600	0.1786	0.630	2.159	0.138
			0.39	*4.00*	*0.79*						*2.07*	*7.08*	*0.45*
U-114	601+20	20.755	0.256	101.6	0.072		0.0130	0.0006	0.0600	0.1786	0.630	2.139	0.450
			0.63	*4.00*	*2.56*						*2.07*	*7.02*	*1.48*
U-115	601+20	6.700	0.117	101.6	0.033		0.0130	0.0006	0.0600	0.1786	0.630	1.406	0.399
			0.29	*4.00*	*1.17*						*2.07*	*4.61*	*1.31*
U-116	601+20	6.700	0.117	101.6	0.033		0.0130	0.0006	0.0600	0.1786	0.630	1.406	0.399
			0.29	*4.00*	*1.17*						*2.07*	*4.61*	*1.31*
U-117	601+20	20.755	0.256	101.6	0.072		0.0130	0.0006	0.0600	0.1786	0.630	2.139	0.450
			0.63	*4.00*	*2.56*						*2.07*	*7.02*	*1.48*
U-118	601+50	20.755	0.299	101.6	0.084		0.0130	0.0024	0.0600	0.1786	0.630	1.652	0.800
			0.74	*4.00*	*2.98*						*2.07*	*5.42*	*2.62*
U-119	601+50	20.755	0.299	101.6	0.084		0.0130	0.0024	0.0600	0.1786	0.630	1.652	0.800
			0.74	*4.00*	*2.98*						*2.07*	*5.42*	*2.62*
U-121	602+75	40.000	0.274	101.6	0.077		0.0130	0.0098	0.0600	0.0000	0.000	1.498	1.150
			0.68	*4.00*	*2.73*						*0.00*	*4.91*	*3.77*
U-122	602+80	38.800	0.179	101.6	0.051		0.0130	0.0101	0.0600	0.2000	0.755	0.000	1.267
			0.44	*4.00*	*1.79*						*2.48*	*0.00*	*4.16*
U-124	602+90	20.755	0.234	101.6	0.066		0.0130	0.0107	0.0600	0.1786	0.630	0.841	1.475
			0.58	*4.00*	*2.33*						*2.07*	*2.76*	*4.84*
U-125	602+90	6.700	0.113	101.6	0.032		0.0130	0.0107	0.0600	0.1786	0.630	0.000	1.360
			0.28	*4.00*	*1.13*						*2.07*	*0.00*	*4.46*
U-126	602+90	6.700	0.113	101.6	0.032		0.0130	0.0107	0.0600	0.1786	0.630	0.000	1.360
			0.28	*4.00*	*1.13*						*2.07*	*0.00*	*4.46*
U-127	602+90	20.755	0.234	101.6	0.066		0.0130	0.0107	0.0600	0.1786	0.630	0.841	1.475
			0.58	*4.00*	*2.33*						*2.07*	*2.76*	*4.84*
U-128	602+90	38.800	0.222	101.6	0.063		0.0130	0.0107	0.0600	0.2000	0.755	0.000	1.572
			0.55	*4.00*	*2.22*						*2.48*	*0.00*	*5.16*

** - Sag inlet. 'Flow Rate' value is one half the actual Q entering the inlet. 'Spread Width' and 'Velocity' are computed using the 'Flow Rate'.*

STORM SEWER HYDRAULICS

System: **I-4E**

PROJECT			
Number:	00009-505-096	Organization:	HDR Engineering, Inc.
Description:	I-4/US27 INTERCHANGE	Designed by:	SMH
County:	POLK	Checked by:	CJL

CONDITIONS					
		Storm Event		Runoff Coefficients	
Outfall Tailwater Elevation:	38.400	Zone	Freq	Area 1	Area 2	Area 3
Exit Loss at Outfall:	0.000	8	10	0.90	0.20	0.90
Storm Sewer Control Elevatio	38.400					

FROM / Station / Type	TO / Offset / Brls / Len	Drainage Areas: Inc.	Sub-Total	Sub-Total CA	Tc (min)	Travel Time (min)	Inten. mm/hr	Total CA (ha)	Flow (cm/s): (Qb)	Sum(Qb) CIA TOTAL	Inlet Elevations: Inlet Clear.	HGL Jnc Loss	Pipe Elevations HGL: Crown Line	Flow Line	Fall (m)	Pipe Height (mm) / Width	HGL (%) FL (%)	Flow Type	Velocity (m/s)	Capacity (cm/s)	Mann'g 'N'
U-501	**U-504**	0.341	0.341	0.307					0.000	0.000	46.955	46.763	46.763	46.625	0.138	450	0.691	Full			
620+30	-20.75	0.000	0.000	0.000	10.00	0.20	189	0.551		0.287			46.399	46.299					1.688	0.244	0.0120
MED-BW-41	20.000	0.271	0.271	0.244						**0.287**	0.191	0.000	45.949	45.849	0.100	450	0.500				
U-502	**U-507**	0.341	0.341	0.307					0.000	0.000	46.955	46.165	46.165	45.599	0.565	450	2.827	Partial			
620+30	20.75	0.000	0.000	0.000	10.00	0.09	189	0.551		0.287			46.399	45.599				sub	3.817	0.690	0.0120
MED-BW-41	20.000	0.271	0.271	0.244						**0.287**	0.790	0.000	45.949	45.149	0.800	450	4.000				
U-503	**U-517**	0.000	0.731	0.658					0.000	0.000	45.830	44.946	44.946	39.719	5.228	1,000	1.162	Partial			
620+50	-45.30	0.000	0.000	0.000	10.38	2.41	187	1.285		0.662			45.630	39.435				sub	3.107	15.836	0.0120
MESm	1 450.089	0.000	0.697	0.627						0.662	0.884	0.000	44.630	38.435	6.196	2,700	1.377				
U-504	**U-503**	0.233	0.731	0.658					0.000	0.000	46.905	46.625	46.625	46.399	0.226	600	0.919	Full			
620+50	-20.75	0.000	0.000	0.000	10.20	0.18	188	1.285		0.665			46.449	46.399					2.294	0.313	0.0120
MED-BW-41	24.545	0.160	0.697	0.627						**0.665**	0.280	0.000	45.849	45.799	0.050	600	0.204				
U-505	**U-504**	0.157	0.157	0.141					0.000	0.000	47.100	46.671	46.671	46.625	0.046	450	0.330	Full			
620+50	-6.70	0.000	0.000	0.000	10.00	0.20	189	0.381		0.198			46.549	46.299					1.167	0.460	0.0120
MED-BW-41	14.055	0.266	0.266	0.239						**0.198**	0.429	0.000	46.099	45.849	0.250	450	1.779				
U-506	**U-507**	0.157	0.157	0.141					0.000	0.000	47.100	45.646	45.646	45.599	0.046	450	0.330	Full			
620+50	6.70	0.000	0.000	0.000	10.00	0.20	189	0.381		0.198			45.849	45.599					1.167	0.460	0.0120
MED-BW-41	14.055	0.266	0.266	0.239						0.198	1.455	0.000	45.399	45.149	0.250	450	1.779				
U-507	**U-508**	0.233	0.731	0.658					0.000	0.000	46.905	45.540	45.540	44.990	0.550	600	1.727	Partial			
620+50	20.75	0.000	0.000	0.000	10.20	0.16	188	1.285		0.665			45.749	45.199				sub	3.412	0.912	0.0120
MED-BW-41	31.845	0.160	0.697	0.627						0.665	1.365	0.000	45.149	44.599	0.550	600	1.727				
U-508	**U-522**	0.000	0.731	0.658					0.000	0.000	45.830	44.907	44.907	39.265	5.642	1,000	1.254	Partial			
620+50	52.60	0.000	0.000	0.000	10.36	2.33	187	1.285		0.662			45.599	38.735				sub	3.224	16.669	0.0120
MESm	1 450.062	0.000	0.697	0.627						0.662	0.923	0.000	44.599	37.735	6.865	2,700	1.525				
U-509	**U-511**	0.224	0.224	0.202					0.000	0.000	41.031	40.914	40.914	40.900	0.014	450	0.285	Full			
624+85	-25.80	0.000	0.000	0.000	10.00	0.08	189	0.354		0.184			40.950	40.900					1.084	0.345	0.0120
MED-BW-41	5.000	0.169	0.169	0.152						**0.184**	0.117	0.000	40.500	40.450	0.050	450	1.000				
U-510	**U-512**	0.206	0.206	0.185					0.000	0.000	41.499	40.912	40.912	40.900	0.012	450	0.243	Full			
624+85	15.72	0.000	0.000	0.000	10.00	0.08	189	0.327		0.170			40.950	40.900					1.001	0.345	0.0120
MED-BW-41	5.000	0.157	0.157	0.141						0.170	0.587	0.000	40.500	40.450	0.050	450	1.000				
U-511	**U-513**	0.176	0.400	0.360					0.000	0.000	40.957	40.736	40.736	40.636	0.100	450	2.000	Partial			
624+90	-25.86	0.000	0.000	0.000	10.08	0.03	189	0.620		0.322			40.900	40.800				sub	3.011	0.488	0.0120
MED-BW-41	5.000	0.120	0.289	0.260						**0.322**	0.221	0.000	40.450	40.350	0.100	450	2.000				
U-512	**U-516**	0.166	0.372	0.335					0.000	0.000	41.425	40.724	40.724	40.624	0.100	450	2.000	Partial			
624+90	15.65	0.000	0.000	0.000	10.08	0.03	189	0.580		0.301			40.900	40.800				sub	2.967	0.488	0.0120
MED-BW-41	5.000	0.115	0.272	0.245						**0.301**	0.702	0.000	40.450	40.350	0.100	450	2.000				

Units: METRIC

STORM SEWER HYDRAULICS

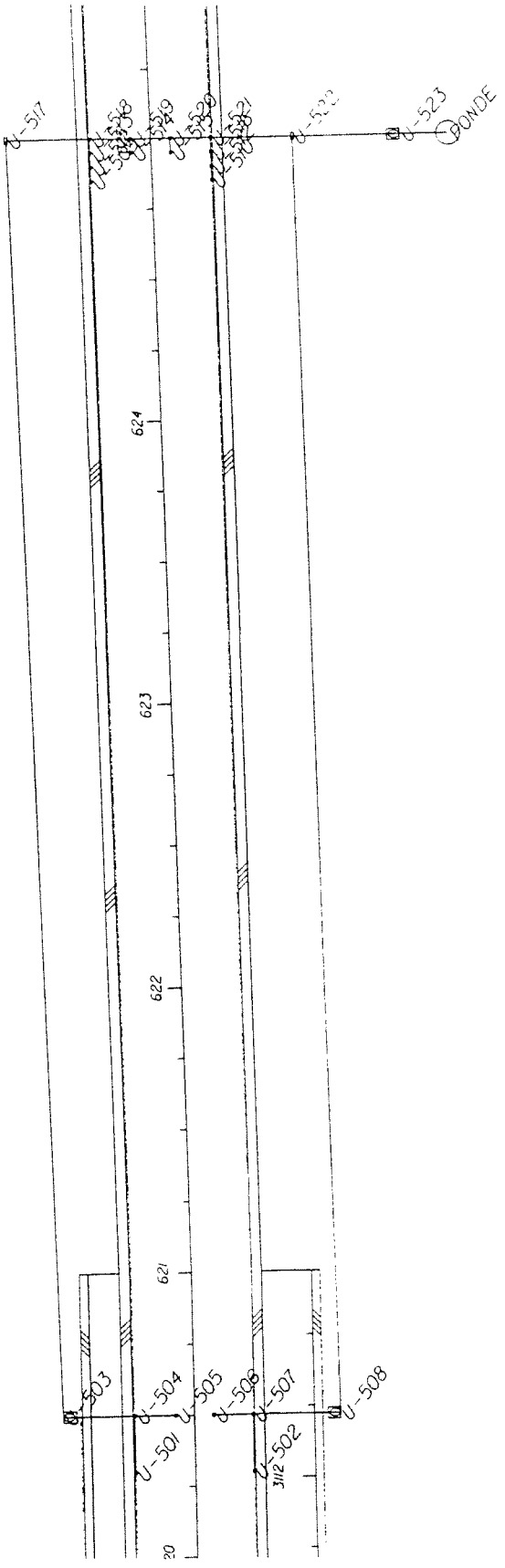
System: **I-4E**

PROJECT			
Number:	00009-505-096	Organization:	HDR Engineering, Inc.
Description:	I-4/US27 INTERCHANGE	Designed by:	SMH
County:	POLK	Checked by:	CJL

CONDITIONS					
		Storm Event		Runoff Coefficients		
Outfall Tailwater Elevation:	38.400	Zone	Freq	Area 1	Area 2	Area 3
Exit Loss at Outfall:	0.000					
Storm Sewer Control Elevatio	38.400	8	10	0.90	0.20	0.90

FROM / Station / Type	TO / Offset / Brls / Len	Drainage Areas Inc.	Sub-Total	Sub-Total CA	Tc (min)	Travel Time (min)	Inten. mm/hr	Total CA (ha)	Flow (cm/s) (Qb)	Sum(Qb) CIA TOTAL	Inlet Elevations Inlet Clear.	HGL Jnc Loss	Pipe Elevations HGL Crown Line	HGL Flow Line	Fall (m)	Pipe Height Width (mm)	HGL (%) FL (%)	Flow Type	Velocity (m/s)	Capacity (cm/s)	Mann'g 'N'
U-513	**U-518**	0.126	0.526	0.473					0.000	0.000	40.884	40.490	40.490	39.596	0.894	450	17.878	Partial			
624+95	-25.93	0.000	0.000	0.000	10.10	0.01	188	0.795		0.413			40.800	38.800				sub	9.760	2.183	0.0120
MED-BW-41	5.000	0.068	0.357	0.321						0.413	0.394	0.000	40.350	38.350	2.000	450	39.997				
U-514	**U-519**	0.110	0.110	0.099					0.000	0.000	41.136	40.432	40.432	39.505	0.927	450	18.535	Partial			
624+95	-11.88	0.000	0.000	0.000	10.00	0.01	189	0.280		0.146			40.800	38.770				sub	7.280	2.199	0.0120
MED-BW-41	5.000	0.201	0.201	0.181						**0.146**	0.704	0.000	40.350	38.320	2.030	450	40.597				
U-515	**U-520**	0.102	0.102	0.092					0.000	0.000	41.352	40.429	40.429	39.464	0.965	450	19.296	Partial			
624+95	1.53	0.000	0.000	0.000	10.00	0.01	189	0.258		0.135			40.800	38.730				sub	7.152	2.221	0.0120
MED-BW-41	5.000	0.185	0.185	0.166						**0.135**	0.923	0.000	40.350	38.280	2.070	450	41.397				
U-516	**U-521**	0.125	0.497	0.447					0.000	0.000	41.352	40.485	40.485	39.410	1.074	450	21.488	Partial			
624+95	15.59	0.000	0.000	0.000	10.11	0.01	188	0.757		0.393			40.800	38.700				sub	9.757	2.237	0.0120
MED-BW-41	5.000	0.072	0.344	0.310						**0.393**	0.867	0.000	40.350	38.250	2.100	450	41.996				
U-517	**U-518**	2.478	3.209	2.888					0.000	0.000	40.000	39.719	39.719	39.596	0.123	750	0.431	Full			
625+00	-54.50	1.915	1.915	0.383	67.00	0.26	79	3.898		0.847			39.200	39.100					1.841	0.764	0.0120
DBI-Hm 1	28.505	0.000	0.697	0.627						**0.847**	0.281	0.000	38.450	38.350	0.100	750	0.351				
U-518	**U-519**	0.074	3.809	3.428					0.000	0.000	40.811	39.596	39.596	39.505	0.090	750	0.643	Full			
625+00	-26.00	0.000	1.915	0.383	67.26	0.10	79	4.775		1.035			39.100	39.070					2.250	0.596	0.0120
MED-BW-41	14.055	0.017	1.071	0.964						**1.035**	1.215	0.000	38.350	38.320	0.030	750	0.213				
U-519	**U-520**	0.055	3.974	3.577					0.000	0.000	41.062	39.505	39.505	39.464	0.042	900	0.310	Full			
625+00	-11.94	0.000	1.915	0.383	67.36	0.13	79	5.362		1.161			39.220	39.180					1.759	1.139	0.0120
MED-BW-41	13.407	0.286	1.558	1.402						**1.161**	1.557	0.000	38.320	38.280	0.040	900	0.298				
U-520	**U-521**	0.057	4.133	3.720					0.000	0.000	41.278	39.464	39.464	39.410	0.053	900	0.380	Full			
625+00	1.47	0.000	1.915	0.383	67.49	0.12	78	5.942		1.285			39.180	39.150					1.947	0.963	0.0120
MED-BW-41	14.055	0.301	2.044	1.840						**1.285**	1.815	0.000	38.280	38.250	0.030	900	0.213				
U-521	**U-522**	0.083	4.713	4.242					0.000	0.000	41.278	39.410	39.410	39.265	0.145	900	0.496	Full			
625+00	15.52	0.000	1.915	0.383	67.61	0.22	78	6.800		1.469			39.150	39.050					2.225	1.219	0.0120
MED-BW-41	29.278	0.029	2.417	2.175						**1.469**	1.868	0.000	38.250	38.150	0.100	900	0.342				
U-522	**U-523**	2.552	7.996	7.196					0.000	0.000	39.300	39.265	39.265	39.050	0.216	1,050	0.564	Full			
625+00	44.80	2.066	3.981	0.796	67.83	0.24	78	10.795		2.327			39.200	39.050					2.614	1.941	0.0120
DBI-Hm 1	38.200	0.000	3.114	2.803						**2.327**	0.034	0.000	38.150	38.000	0.150	1,050	0.393				
U-523	**PONDE**	0.000	7.996	7.196					0.000	0.000	39.991	38.419	38.419	38.400	0.020	1,000	0.115	Partial			
625+00	83.00	0.000	3.981	0.796	68.07	0.00	78	10.795		2.321			39.000	38.000				sub	7.426	32.735	0.0120
MESm 1	17.000	0.000	3.114	2.803						**2.321**	1.571	0.000	38.000	37.000	1.000	2,700	5.882				

Units: METRIC


U-517
U-523
PONDE
624
623
622
621
620
U-503
U-504
U-505
U-506
U-507
U-508
U-501
U-502
3112

ROADWAY SPREAD ANALYSIS
(HEC-12 Method)

Node	Station	Offset	Drain Area	Rfall Intensity.	Flow Rate	Sag Inlet	Manning Coeff	Long. Slope	Rdwy X-Slope	Gutter X-Slope	Gutter Width	Spread Width	Velocity
			(hect)	(mm/hr)	(c.m./s)			(m/m)	(m/m)	(m/m)	(m)	(m)	(m/s)
U-501	620+30	20.755	0.307	101.6	0.087		0.0130	0.0025	0.0600	0.1786	0.630	1.666	0.811
			0.76	*4.00*	*3.06*						*2.07*	*5.46*	*2.66*
U-502	620+30	20.755	0.307	101.6	0.087		0.0130	0.0025	0.0600	0.1786	0.630	1.666	0.811
			0.76	*4.00*	*3.06*						*2.07*	*5.46*	*2.66*
U-504	620+50	20.755	0.210	101.6	0.059		0.0130	0.0025	0.0600	0.1786	0.630	1.334	0.769
			0.52	*4.00*	*2.09*						*2.07*	*4.38*	*2.52*
U-505	620+50	6.700	0.141	101.6	0.040		0.0130	0.0025	0.0600	0.1786	0.630	1.015	0.733
			0.35	*4.00*	*1.41*						*2.07*	*3.33*	*2.40*
U-506	620+50	6.700	0.141	101.6	0.040		0.0130	0.0025	0.0600	0.1786	0.630	1.015	0.733
			0.35	*4.00*	*1.41*						*2.07*	*3.33*	*2.40*
U-507	620+50	20.755	0.210	101.6	0.059		0.0130	0.0025	0.0600	0.1786	0.630	1.334	0.769
			0.52	*4.00*	*2.09*						*2.07*	*4.38*	*2.52*
U-509	624+85	25.799	0.202	101.6	0.057		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	1.605
			0.50	*4.00*	*2.01*						*2.07*	*-1.00*	*5.27*
U-510	624+85	15.718	0.185	101.6	0.052		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	1.476
			0.46	*4.00*	*1.85*						*2.07*	*-1.00*	*4.84*
U-511	624+90	25.864	0.158	101.6	0.045		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	1.261
			0.39	*4.00*	*1.58*						*2.07*	*-1.00*	*4.14*
U-512	624+90	15.653	0.149	101.6	0.042		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	1.190
			0.37	*4.00*	*1.49*						*2.07*	*-1.00*	*3.90*
U-513	624+95	25.930	0.113	101.6	0.032		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.903
			0.28	*4.00*	*1.13*						*2.07*	*-1.00*	*2.96*
U-514	624+95	11.875	0.099	101.6	0.028		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.788
			0.24	*4.00*	*0.99*						*2.07*	*-1.00*	*2.59*
U-515	624+95	1.532	0.092	101.6	0.026		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.731
			0.23	*4.00*	*0.91*						*2.07*	*-1.00*	*2.40*
U-516	624+95	15.587	0.112	101.6	0.032		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.896
			0.28	*4.00*	*1.12*						*2.07*	*-1.00*	*2.94*
U-518	625+00	25.995	0.067	101.6	0.019		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.530
			0.16	*4.00*	*0.66*						*2.07*	*-1.00*	*1.74*
U-519	625+00	11.940	0.049	101.6	0.014		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.394
			0.12	*4.00*	*0.49*						*2.07*	*-1.00*	*1.29*
U-520	625+00	1.467	0.051	101.6	0.014		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.408
			0.13	*4.00*	*0.51*						*2.07*	*-1.00*	*1.34*
U-521	625+00	15.522	0.075	101.6	0.021		0.0130	0.0147	0.0000	0.1786	0.630	-0.305	0.595
			0.18	*4.00*	*0.74*						*2.07*	*-1.00*	*1.95*

** - Sag inlet. 'Flow Rate' value is one half the actual Q entering the inlet. 'Spread Width' and 'Velocity' are computed using the 'Flow Rate'.*

Barrier Wall Inlet Spacing & Gutter Spread Check

HOV Lanes / Rail Envelope

Roadway Width =	10.0 ft	Roughness Coefficient =	0.9	Depression Depth =	**3.0 in**
Allowable Spread =	10.0 ft	Rainfall Intensity =	**7.4 in/hr** 10yr	Depression Width =	**2.00 ft**
Manning's n =	0.016			Length of Inlet =	**4.0 ft**

Station (M)	Station (ft)	Slopes		Flows, cfs							Gutter Spread Check	Area which is Intercepted (ha)
		Long.	Cross	Gutter max	Roadway		bypass-in	Total in	Intercept	bypass-out		
		S	Sx	Qg	Length	Qr	Qbi	Qt	Qi	Qbo		Ai
												A 1
597+50	**1960+30**	**H/P**										
600+90	1971+46	0.11 %	6%	5.00 cfs	1115 ft	1.71 cfs	0.00 cfs	1.71 cfs	1.71 cfs	0.00 cfs	Ok	0.104
601+09	1972+08	0.01 %	6%	1.16 cfs	**98 ft**	0.15 cfs	**0.00 cfs**	0.15 cfs	0.15 cfs	0.00 cfs	**Sump**	0.009
601+20	1972+44	0.07 %	6%	3.81 cfs	558 ft	0.85 cfs	1.28 cfs	2.13 cfs	2.13 cfs	0.00 cfs	Ok	0.130
602+90	1978+02	1.07 %	6%	15.42 cfs	2001 ft	3.06 cfs	0.29 cfs	3.35 cfs	2.07 cfs	1.28 cfs	Ok	0.126
609+00	1998+03	0.21 %	6%	6.81 cfs	1728 ft	2.64 cfs	0.00 cfs	2.64 cfs	2.35 cfs	0.29 cfs	Ok	0.143
614+27	**2015+31**	**H/P**										
614+27	**2015+31**	**H/P**										
620+50	2035+76	0.25 %	6%	7.43 cfs	2045 ft	3.13 cfs	0.00 cfs	3.13 cfs	2.58 cfs	0.54 cfs	Ok	0.157
624+95 rt	2050+36	1.73 %	6%	19.62 cfs	1460 ft	2.23 cfs	0.54 cfs	2.78 cfs	1.67 cfs	1.10 cfs	Ok	0.102
625+00 rt	2050+52	1.69 %	6%	19.42 cfs	16 ft	0.03 cfs	1.10 cfs	1.13 cfs	0.94 cfs	0.19 cfs	Ok	0.057
												0.011
624+95 lt	2050+36	1.19 %	6%	16.30 cfs	1460 ft	2.23 cfs	0.54 cfs	2.78 cfs	1.80 cfs	0.97 cfs	Ok	0.110
625+00 lt	2050+52	1.16 %	6%	16.09 cfs	16 ft	0.03 cfs	0.97 cfs	1.00 cfs	0.91 cfs	0.09 cfs	Ok	0.055
												0.005

Barrier Wall Inlet Spacing & Gutter Spread Check

HOV Lanes / Rail Envelope

Roadway Width =	23.0 ft	Roughness Coefficient =	0.9	Depression Depth =	**3.0 in**
Allowable Spread =	10.0 ft	Rainfall Intensity =	**7.4 in/hr** 10yr	Depression Width =	**2.00 ft**
Manning's n =	0.016			Length of Inlet =	**4.0 ft**

Station (M)	Station (ft)	Slopes		Flows, cfs							Gutter Spread Check	Area which is Intercepted (ha)
		Long.	Cross	Gutter max	Roadway		bypass-in	Total in	Intercept	bypass-out		
		S	Sx	Qg	Length	Qr	Qbi	Qt	Qi	Qbo		Ai
597+50	**1960+30**	**H/P**										
600+90	1971+46	0.11 %	6%	5.00 cfs	1115 ft	3.92 cfs	0.00 cfs	3.92 cfs	3.41 cfs	0.51 cfs	Ok	0.207
601+09	1972+08	0.01 %	6%	1.16 cfs	**98 ft**	0.35 cfs	**2.15 cfs**	2.49 cfs	2.49 cfs	0.00 cfs	**Sump**	0.152
601+20	1972+44	0.07 %	6%	3.81 cfs	558 ft	1.96 cfs	5.39 cfs	7.35 cfs	5.71 cfs	1.64 cfs	Move	0.347
602+90	1978+02	1.07 %	6%	15.42 cfs	2001 ft	7.04 cfs	1.99 cfs	9.02 cfs	3.64 cfs	5.39 cfs	Ok	0.221
609+00	1998+03	0.21 %	6%	6.81 cfs	1728 ft	6.07 cfs	0.00 cfs	6.07 cfs	4.09 cfs	1.99 cfs	Ok	0.248
614+27	**2015+31**	**H/P**										
614+27	**2015+31**	**H/P**										
620+50	2035+76	0.25 %	6%	7.43 cfs	2045 ft	7.19 cfs	0.00 cfs	7.19 cfs	4.38 cfs	2.82 cfs	Ok	0.266
624+95 rt	2050+36	1.73 %	6%	19.62 cfs	1460 ft	5.13 cfs	2.82 cfs	7.95 cfs	3.05 cfs	4.91 cfs	Ok	0.185
625+00 rt	2050+52	1.69 %	6%	19.42 cfs	16 ft	0.06 cfs	4.91 cfs	4.96 cfs	2.36 cfs	2.61 cfs	Ok	0.143
												0.158
624+95 lt	2050+36	1.19 %	6%	16.30 cfs	1460 ft	5.13 cfs	2.82 cfs	7.95 cfs	3.31 cfs	4.64 cfs	Ok	0.201
625+00 lt	2050+52	1.16 %	6%	16.09 cfs	16 ft	0.06 cfs	4.64 cfs	4.70 cfs	2.48 cfs	2.22 cfs	Ok	0.151
												0.135

Barrier Wall Inlet Spacing & Gutter Spread Check

General Use / HOV Lanes

Roadway Width =	36.4 ft	Roughness Coefficient =	0.9	Depression Depth =	**3.0 in**
Allowable Spread =	11.8 ft	Rainfall Intensity =	**7.4 in/hr** 10yr	Depression Width =	**2.00 ft**
Manning's n =	0.016			Length of Inlet =	**4.0 ft**

Station (M)	Station (ft)	Slopes		Flows, cfs							Gutter Spread Check	Area which is Intercepted (ha) Ai
		Long.	Cross	Gutter max	Roadway		bypass-in	Total in	Intercept	bypass-out		
		S	Sx	Qg	Length	Qr	Qbi	Qt	Qi	Qbo		
597+50	**1960+30**	**H/P**										A1
600+90	1971+46	0.11 %	6%	7.77 cfs	1115 ft	6.21 cfs	0.00 cfs	6.21 cfs	4.65 cfs	1.56 cfs	Ok	0.282
601+09	1972+08	0.01 %	6%	1.80 cfs	**98 ft**	0.55 cfs	**2.37 cfs**	2.92 cfs	2.92 cfs	0.00 cfs	**Sump**	0.177
601+20	1972+44	0.07 %	6%	5.92 cfs	98 ft	0.55 cfs	4.96 cfs	5.50 cfs	4.69 cfs	0.81 cfs	Ok	0.285
601+50	1973+43	0.24 %	6%	11.40 cfs	459 ft	2.56 cfs	7.87 cfs	10.43 cfs	5.47 cfs	4.96 cfs	Ok	0.332
602+90	1978+02	1.07 %	6%	23.97 cfs	2001 ft	11.14 cfs	1.01 cfs	12.15 cfs	4.28 cfs	7.87 cfs	Ok	0.260
609+00	1998+03	0.21 %	6%	10.59 cfs	33 ft	0.18 cfs	4.11 cfs	4.29 cfs	3.28 cfs	1.01 cfs	Ok	0.199
609+10	1998+36	0.21 %	6%	10.59 cfs	1695 ft	9.43 cfs	0.00 cfs	9.43 cfs	5.32 cfs	4.11 cfs	Ok	0.324
614+27	**2015+31**	**H/P**										
614+27	**2015+31**	**H/P**										
620+30	2035+10	0.25 %	6%	11.55 cfs	1980 ft	11.02 cfs	0.00 cfs	11.02 cfs	5.62 cfs	5.40 cfs	Ok	0.341
620+50	2035+76	0.25 %	6%	11.55 cfs	66 ft	0.37 cfs	5.40 cfs	5.77 cfs	3.83 cfs	1.94 cfs	Ok	0.233
624+85 rt	2050+03	1.80 %	6%	31.12 cfs	1427 ft	7.94 cfs	1.94 cfs	9.88 cfs	3.39 cfs	6.49 cfs	Ok	0.206
624+90 rt	2050+20	1.76 %	6%	30.81 cfs	16 ft	0.09 cfs	6.49 cfs	6.58 cfs	2.73 cfs	3.85 cfs	Ok	0.166
624+95 rt	2050+36	1.73 %	6%	30.51 cfs	16 ft	0.09 cfs	3.85 cfs	3.94 cfs	2.06 cfs	1.88 cfs	Ok	0.125
625+00 rt	2050+52	1.69 %	6%	30.20 cfs	16 ft	0.09 cfs	1.88 cfs	1.97 cfs	1.36 cfs	0.61 cfs	Ok	0.083
624+85 lt	2050+03	1.26 %	6%	26.02 cfs	1427 ft	7.94 cfs	1.94 cfs	9.88 cfs	3.68 cfs	6.20 cfs	Ok	0.224
624+90 lt	2050+20	1.22 %	6%	25.66 cfs	16 ft	0.09 cfs	6.20 cfs	6.29 cfs	2.89 cfs	3.40 cfs	Ok	0.176
624+95 lt	2050+36	1.19 %	6%	25.34 cfs	16 ft	0.09 cfs	3.40 cfs	3.49 cfs	2.07 cfs	1.42 cfs	Ok	0.126
625+00 lt	2050+52	1.16 %	6%	25.02 cfs	16 ft	0.09 cfs	1.42 cfs	1.51 cfs	1.22 cfs	0.29 cfs	Ok	0.074

E-302

Barrier Wall Inlet Spacing & Gutter Spread Check

General Use / HOV Lanes

Roadway Width =	24.6 ft	Roughness Coefficient =	0.9	Depression Depth =	**3.0 in**
Allowable Spread =	11.8 ft	Rainfall Intensity =	**7.4 in/hr** 10yr	Depression Width =	**2.00 ft**
Manning's n =	0.016			Length of Inlet =	**4.0 ft**

Station (M)	Station (ft)	Slopes		Flows, cfs							Gutter Spread Check	Area which is Intercepted (ha)
		Long.	Cross	Gutter max	Roadway		bypass-in	Total in	Intercept	bypass-out		
		S	Sx	Qg	Length	Qr	Qbi	Qt	Qi	Qbo		Ai
597+50	**1960+30**	**H/P**										
600+90	1971+46	0.11 %	6%	7.77 cfs	1115 ft	4.20 cfs	0.00 cfs	4.20 cfs	3.57 cfs	0.62 cfs	Ok	0.217
601+09	1972+08	0.01 %	6%	1.80 cfs	**98 ft**	0.37 cfs	**0.62 cfs**	0.99 cfs	0.99 cfs	0.00 cfs	**Sump**	0.060
601+20	1972+44	0.07 %	6%	5.92 cfs	98 ft	0.37 cfs	2.11 cfs	2.48 cfs	2.48 cfs	0.00 cfs	Ok	0.151
601+50	1973+43	0.24 %	6%	11.40 cfs	459 ft	1.73 cfs	4.37 cfs	6.09 cfs	3.98 cfs	2.11 cfs	Ok	0.242
602+90	1978+02	1.07 %	6%	23.97 cfs	2001 ft	7.53 cfs	0.17 cfs	7.70 cfs	3.33 cfs	4.37 cfs	Ok	0.203
609+00	1998+03	0.21 %	6%	10.59 cfs	33 ft	0.12 cfs	2.16 cfs	2.29 cfs	2.11 cfs	0.17 cfs	Ok	0.128
609+10	1998+36	0.21 %	6%	10.59 cfs	1695 ft	6.37 cfs	0.00 cfs	6.37 cfs	4.21 cfs	2.16 cfs	Ok	0.256
614+27	**2015+31**	**H/P**										
614+27	**2015+31**	**H/P**										
620+30	2035+10	0.25 %	6%	11.55 cfs	1980 ft	7.45 cfs	0.00 cfs	7.45 cfs	4.47 cfs	2.98 cfs	Ok	0.271
620+50	2035+76	0.25 %	6%	11.55 cfs	66 ft	0.25 cfs	2.98 cfs	3.23 cfs	2.64 cfs	0.59 cfs	Ok	0.160
624+85 rt	2050+03	1.80 %	6%	31.12 cfs	1427 ft	5.37 cfs	0.59 cfs	5.96 cfs	2.58 cfs	3.38 cfs	Ok	0.157
624+90 rt	2050+20	1.76 %	6%	30.81 cfs	16 ft	0.06 cfs	3.38 cfs	3.44 cfs	1.89 cfs	1.55 cfs	Ok	0.115
624+95 rt	2050+36	1.73 %	6%	30.51 cfs	16 ft	0.06 cfs	1.55 cfs	1.61 cfs	1.19 cfs	0.42 cfs	Ok	0.072
625+00 rt	2050+52	1.69 %	6%	30.20 cfs	16 ft	0.06 cfs	0.42 cfs	0.48 cfs	0.48 cfs	0.00 cfs	Ok	0.029
624+85 lt	2050+03	1.26 %	6%	26.02 cfs	1427 ft	5.37 cfs	0.59 cfs	5.96 cfs	2.79 cfs	3.17 cfs	Ok	0.169
624+90 lt	2050+20	1.22 %	6%	25.66 cfs	16 ft	0.06 cfs	3.17 cfs	3.23 cfs	1.97 cfs	1.26 cfs	Ok	0.120
624+95 lt	2050+36	1.19 %	6%	25.34 cfs	16 ft	0.06 cfs	1.26 cfs	1.32 cfs	1.11 cfs	0.21 cfs	Ok	0.068
625+00 lt	2050+52	1.16 %	6%	25.02 cfs	16 ft	0.06 cfs	0.21 cfs	0.27 cfs	0.27 cfs	0.00 cfs	Ok	0.017

Barrier Wall Inlet Spacing & Gutter Spread Check

General Use Lanes

Roadway Width =	36.4 ft	Roughness Coefficient =	0.9	Depression Depth =	**3.0 in**
Allowable Spread =	11.8 ft	Rainfall Intensity =	**7.4 in/hr** 10yr	Depression Width =	**2.00 ft**
Manning's n =	0.016			Length of Inlet =	**4.0 ft**

Station (M)	Station (ft)	Slopes		Flows, cfs							Gutter Spread Check	Area which is Intercepted (ha)
		Long.	Cross	Gutter max	Roadway		bypass-in	Total in	Intercept	bypass-out		
		S	Sx	Qg	Length	Qr	Qbi	Qt	Qi	Qbo		Ai
602+75	**1977+53**	**End Wall and Shoulder Gutter with Shoulder gutter Inlet**										
602+75	1977+53	0.03 %	6%	4.16 cfs	16 ft	0.09 cfs	4.02 cfs	4.11 cfs	4.06 cfs	0.05 cfs	Ok	0.247
602+80	1977+69	1.01 %	6%	23.31 cfs	33 ft	0.18 cfs	7.12 cfs	7.30 cfs	3.28 cfs	4.02 cfs	Ok	0.199
602+90	1978+02	1.10 %	6%	24.36 cfs	2001 ft	11.14 cfs	0.04 cfs	11.18 cfs	4.06 cfs	7.12 cfs	Ok	0.247
609+00	1998+03	0.21 %	6%	10.59 cfs	33 ft	0.18 cfs	1.54 cfs	1.72 cfs	1.69 cfs	0.04 cfs	Ok	0.102
609+10	1998+36	0.21 %	6%	10.59 cfs	951 ft	5.30 cfs	0.00 cfs	5.30 cfs	3.75 cfs	1.54 cfs	Ok	0.228
612+00	**2007+87**	**H/P**										

Curb Inlet Length

Formula: Lt = K Qg^0.42 S^0.3 (1/n Se)^0.6

Lt = 100% intercept Length, ft
K = Coefficient = 0.6
Qg = Gutter Flow Rate, cfs
S = Longitudinal Slope, ft/ft
n = Manning's Roughness Coefficient
Se = Equivalent Cross Slope, ft/ft

Intercepted Flows

Formula: Qi = Qt E = Qt (1 - (1 - L / Lt)^1.8)

Qi = Intercepted Flow Rate, cfs
Qt = Total Gutter Flow Rate, cfs
E = Efficiency of Inlet
L = Length of Inlet, ft
Lt = 100% intercept Length, ft

Sag Inlet operating as a Weir

Formula: Qi = Cw (L + 1.8 W) d^1.5

Qi = Intercepted Flow Rate, cfs
Cw = Coefficient = 2.3
L = Length of Inlet, ft
W = Width of Depression, ft
d = Depth at curb = T Sx, ft

Bypassed Flows

Formula: Qb = Qt - Qi

Qb = Bypassed Flow Rate, cfs
Qi = Intercepted Flow Rate, cfs
Qt = Total Gutter Flow Rate, cfs

Efficiency of Inlet

Formula: E = (1 - (1 - L / Lt)^1.8)

E = Efficiency of Inlet
L = Length of Inlet, ft
Lt = 100% intercept Length, ft

Non-Gutter (Shldr) Flows

Formula: Qs = 0.56/n Sx^5/3 S^1/2 T^8/3

Qs = Non-Gutter (Shldr) Flow Rate, cfs
n = Manning's Roughness Coefficient
Sx = Pavement Cross Slope, ft/ft
S = Longitudinal Slope, ft/ft
T = Width of Flow Spread, ft

Equivalent Cross Slope

Formula: Se = Sx + Sw' Eo

Se = Equivalent Cross Slope, ft/ft
Sx = Non-gutter Cross Slope, ft/ft
Sw' = Gutter Cross Slope, ft/ft
Eo = Ratio of Flows = Qw / Q
Qw = Gutter Flow Rate, cfs
Q = Total Flow Rate, cfs

APPENDIX A

GEOTECHNICAL DATA

See the Geotechnical Exploration for the Interim Roadway Report dated February 2000, Geotechnical Exploration for the 60% Roadway Report dated October 1999, and the Report of Geotechnical Exploration for Pond Structures dated August 1998 for all project related geotechnical data.

Geotechnical Exploration
For the Interim Roadway Report

Interstate 4 and US 27 Interchange
Polk County, Florida

State Project Nº 16320-1408
WPI Nº 1147942
Financial Project ID 201204-1-52-02

Prepared for:
HDR Engineering, Inc.

February 2000

Williams Project No. C395040

WILLIAMS
EARTH SCIENCES

WILLIAMS
EARTH SCIENCES

February 9, 2000

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Tracy Hood, P.E.

Subject: Geotechnical Exploration for the Interim Roadway Report
Interstate 4 & US 27 Interchange in Polk County
State Project Nº 16320-1408
W.P.I. Nº 1147942
Financial Project ID 201204-1-52-02
WES Project Nº C395040

Dear Mr. Hood:

Williams Earth Sciences, Inc. has completed the geotechnical exploration for the Interim Roadway Report for the above referenced project. This report includes fieldwork and preliminary engineering evaluations for the roadway and ponds associated with the Interim Roadway.

Included in this report are the results of the subsurface exploration program, laboratory testing results, groundwater conditions and engineering evaluations and recommendations.

If you should have any questions concerning this report, or if you need any additional information, please do not hesitate to contact our office. We appreciate the opportunity of working with you on this project, and look forward to a successful completion.

Very truly yours,

WILLIAMS EARTH SCIENCES, INC.

Javen S. Figueroa, E.I.
Geotechnical Engineer

R. B. "Chip" Leadbetter, III, P.E.
Senior Geotechnical Engineer
Florida Registration Nº 53182

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Submittals (4) Addressee
(1) Theresa Puckett, FDOT Dist 1
(1) File

CORPORATE OFFICE:
10600 Endeavour Way
Largo, FL 33777
(727) 541-3444 FAX (727) 541-1510
WESLargo@aol.com

Table 2.2 – Summary of Groundwater Conditions

Proposed Pond	Test Location	Groundwater Depth (feet)	Seasonal High Water Level (feet)
A-1	PA-1	8.8	—
	PA-2	12.8	—
	PA-3*	16.4	5.0 – 6.5
	PA-4*	10.5	4.0 – 5.5
	PA-5	5.0	—
	PA-6	10.0	7.0
	PA-7	5.2	—
	PA-8	5.0	—
	PA-9*	20.0	6.5 – 8.2
	PA-10	10.8	—
E-3	PE-1*	13.0	6.5 – 9.8
	PE-2	13.0	8.0
	PE-3	11.0	7.0
	PE-4*	9.8	5.0 – 8.0
	PE-5	12.0	—
	PE-6	12.0	—
	PE-7*	18.0	8.2 – 9.8

* Denotes information from previous fieldwork.

2.5 Field Permeability Tests

The geotechnical exploration for retention ponds also included five open-hole percolation tests. Previous exploration preformed by Williams included two open-hole percolation tests, one in each pond area. The tests were performed in general accordance with test methods accepted by the Southwest Florida Water Management District (SWFWMD). The open-hole tests performed for this project tend to determine the horizontal hydraulic conductivity of the soils. The test locations and results obtained are presented in Table 2.3 below. The individual results and parameters used for calculations are included in Appendix B. Note that the values presented are ultimate values. The designer should determine what, if any, safety factor may be appropriate for the design.

Table 2.3 – Summary of Permeability Tests

Test Location	Station and Offset	Borehole Depth (feet)	Groundwater Depths (feet)	Hydraulic Conductivity (in/hr)
TA-1	1972+15, 805ft LT	20	8.75	0.4
TA-4*	1972+64, 263ft LT	13	10.5	0.2
TA-7	1991+30, 435ft LT	20	5.17	0.4
TA-10	1972+25, 590ft LT	20	10.8	1.0
TE-1*	2047+51, 571ft RT	13	13.0	6.4
TE-5	2049+05, 545ft RT	15	12.0	2.6
TE-6	2048+25, 455ft RT	15	12.0	3.9

* Denotes information from previous fieldwork.

Geotechnical Exploration for the 60% Roadway Report

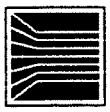
Interstate 4 and US 27 Interchange
Polk County, Florida

State Project Nº 16320-1408
WPI Nº 1147942

Prepared for:
HDR Engineering, Inc.

October 1998

Williams Project No. C395040



WILLIAMS
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EARTH SCIENCES

October 13, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Robert D. Minsch, P.E.

Subject: Geotechnical Exploration for the 60% Roadway Report
Interstate 4 & US 27 Interchange in Polk County
State Project Nº 16320-1408
W.P.I. Nº 1147942
WES Project Nº C395040

Dear Mr. Minsch:

Williams Earth Sciences, Inc. has completed the geotechnical exploration for the 60% Roadway Report for the above referenced project. This report includes field work and preliminary engineering evaluations for the roadway and pond portions of this project.

Included in this report are the results of the subsurface exploration program, laboratory testing results, groundwater conditions and engineering evaluations and recommendations.

If you should have any questions concerning this report, or if you need any additional information, please do not hesitate to contact our office. We appreciate the opportunity of working with you on this project, and look forward to a successful completion.

Very truly yours,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Senior Geotechnical Engineer
Florida Registration Nº 53182

Keith D. Bennett, P.E.
Principal Geotechnical Engineer
Florida Registration Nº 33075

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Submittals (5) Addressee
(1) File

permeability, suitability as roadway subgrade, and suitability as general fill material. Tests were performed in general accordance with ASTM D-442. A total of sixty-nine full grain size tests and thirteen fines content tests were also performed.

3.3 Organic Content

Moisture free soil samples are used for this test. Drying is accomplished by heating the natural soils in a warm 49^0 Centigrade oven. The dried soil samples are then heated in a muffle furnace ranging in temperature from 550^0 to 660^0 Centigrade for six hours, thereby burning off all organic-type material, leaving only the soil minerals. The difference in weight prior to and after the burning is the weight of organics. The weight of the organics divided by the weight of the dried soil is the percentage of organics within a sample. Organics contents in excess of 5 percent are considered detrimental by FDOT criteria. Tests were performed in general accordance with ASTM D-2974. A total of six tests were performed with organic contents being less than 5 percent in two cases.

3.4 Natural Moisture Content

Laboratory moisture content tests consist of the determination of the percentage of moisture in selected samples in general accordance with ASTM D-2974. Briefly, natural moisture content is determined by weighing a sample of the selected material and then drying it in a warm oven. Care is taken to use gentle heat so as not to destroy any organics. 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. A total of seventy-five tests were performed with moisture contents ranging from 3 to 26 percent.

3.5 Corrosion Testing

Corrosion testing was performed on selected soil sample to evaluate the resistivity, pH, chloride content and sulphate content of the soil to determine the environmental classification. The soil samples were retrieved from a depth of approximately 0 to 0.5 meters below ground surface. These tests were performed in general accordance with AASHTO, ASTM and FDOT standards. Test results are provided in Table 3.2

below, and also in Appendix C. Based on the results of the corrosion testing, the samples tested were classified as Slightly to Extremely Aggressive.

Table 3.2 -- Summary of Environmental Classification

Sample ID	Sample Type	pH	Chlorides (ppm)	Sulphates (ppm)	Resistivity (ohm-cm)	FDOT Classification *	
						Concrete	Steel
1	Soil	8.5	≤ 60	< 2	> 10,000	S	S
2	Soil	8.1	≤ 60	< 2	> 10,000	S	S
3	Soil	7.6	≤ 60	10	6200	S	S
4	Soil	8.5	≤ 60	< 2	> 10,000	S	S
5	Soil	6.0	≤ 60	< 2	> 10,000	M	M
6	Soil	7.0	≤ 60	35	> 10,000	S	S
7	Soil	5.7	≤ 60	5	> 10,000	M	E
8	Soil	8.3	≤ 60	22	> 10,000	S	S
9	Soil	8.5	≤ 60	20	> 10,000	S	S

* S - Slightly Aggressive M - Moderately Aggressive E - Extremely Aggressive

3.6 Limerock Bearing Ratio

Limerock Bearing Ratio (LBR) tests were performed in accordance with the Florida Department of Transportation Standard FM 515 including a Modified Proctor Test. The LBR test is a measure of the bearing capacity of a soil. The test consists of measuring the load required to cause a standard circular plunger (area of 19.4 square centimeters) to penetrate a specimen at a specified rate. The LBR is the load in MPa units, required to force the plunger into the soil 0.25 centimeters expressed as a percentage of the load in MPa units, required to force the same plunger the same depth into a standard sample of crushed limerock. A summary of the preliminary LBR tests performed is shown in Table 3.3 below, while the Limerock Bearing Ratio (LBR) curves and corresponding proctor curves are shown in Appendix C.

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CORROSION TEST RESULTS

Job Name: I-4 @ U.S. 27
Job No.: C395040
Tested by: Monica L. Fowler

Sample ID	Sample Date	Sample Location	Sample Type	Sample Depth (Ft.)	pH	Chlorides ppm	Sulphates ppm	Resistivity ohm-cm	FDOT Classification*	
									Concrete	Steel
1	3/2/98	US 27, Sta. 138+00 ℄ Light brown medium to fine sand with limerock fragments (A-3)	Soil	0-1.0	8.5	≤60	<2	>10,000	S	S
2	3/2/98	US 27, Sta. 156+00℄ Reddish brown medium to fine sand (A-3)	Soil	0-1.0	8.1	≤60	<2	>10,000	S	S
3	3/2/98	US 27, Sta. 131+00℄ Grayish brown medium to fine sand with minor roots (A-3)	Soil	0-1.0	7.6	≤60	10	6200	S	S
4	3/2/98	US 27, Sta. 150+00℄ Light reddish brown slightly silty fine sand with limerock fragments (A-3)	Soil	0-1.0	8.5	≤60	<2	>10,000	S	S
5	3/2/98	Ramp A-1, Sta. 1107+50 ℄, Tan medium to fine sand (A-3)	Soil	0-1.0	6.0	≤60	<2	>10,000	M	M

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CORROSION TEST RESULTS

Job Name: I-4 @ U.S. 27
Job No.: C395040
Tested by: Monica L. Fowler

Sample ID	Sample Date	Sample Location	Sample Type	Sample Depth	pH	Chlorides ppm	Sulphates ppm	Resistivity ohm-cm	FDOT Classification*	
									Concrete	Steel
6	3/2/98 Station - 2027+56 (English)	Sta. 618+00, Light reddish brown medium to fine sand with pockets of white clayey fine sand (A-3)	Soil	0-1.5	7.0	≤60	35	>10,000	S	S
7	3/2/98	C1-31 Sta. 3107+52 Tan medium to fine sand (A-3)	Soil	0-1.0	5.7	≤60	5	>10,000	M	E
8	3/2/98 Station - 1976+71 (English)	Sta. 602+50, Light reddish brown medium to fine sand (A-3)	Soil	0-1.5	8.3	≤60	22	>10,000	S	S
9	3/2/98 Station - 2001+31 (English)	Sta. 610+00 ℄, Light orange medium to fine sand (A-3)	Soil	0-1.0	8.5	≤60	20	>10,000	S	S

* S - Slightly Aggressive M - Moderately Aggressive E - Extremely Aggressive

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EARTH SCIENCES

September 21, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Robert D. Minsch, P.E.
Senior Project Manager

Subject: Response to Comments of Theresa Puckett Dated 9/2/98
Interstate 4 and US 27 Interchange in Polk County
Polk County, Florida
State Project Nº 16320-1408
W.P.I. Nº 1147942
Williams Project Nº G395040

Dear Mr. Minsch:

Williams Earth Sciences has reviewed the comments of Theresa Puckett, District Geotechnical Engineer for District I, dated September 9, 1998, for the above referenced project. Responses to the comments are presented in this letter and a copy of the comment letter is included.

Comment No. 1: The Report of Core Borings Sheets for the ponds shall have strata numbers that correspond to the Roadway Soils Survey Sheet and the Financial Management Number shall be added.

Response: Agree. The information shall be added to the sheets.

Comment No. 2: Why is Pond B-2 shown as two different ponds? Label them separately, even if as B-2(a) and B-2(b), for example. Add GNE to PB1-1 and to the Notes.

Response: One of the sheets had a typographical error. The small triangular pond with boring PB3-1 should have been labeled as Pond B-3. This has been corrected. In addition, GNE will be added to the boring and the Notes.

Comment No. 3: Why were the borings for Pond C-3 not performed in the pond.

Response: In Section 2.3 of the report, under the Pond D-2 heading, the locations of the borings were discussed. The proposed pond was located in a very dense fruit tree grove, limiting access of the drilling equipment. Performing the boreholes inside the pond would have required trimming of the trees to allow equipment access. The boreholes were offset to an access road just north of the pond. The subsurface conditions in the area are uniform enough that the test information collected will be representative of the conditions inside the pond. When this pond location is accepted with its final location, the remaining pond borings and percolation tests will be performed within the planted pond boundaries. Any trimming of the orange grove will be performed at that time.

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Comment No. 4: Pond NW-1 From the lab results, the material in boring PNW1-2 appears to be SM not SC and A-2-4 not A-2-6.

Response: Agree. Material should be classified as SM A-2-4 material. The sheets will be corrected.

Comment No. 5: Water tables or GNE needed for swale NW-4.

Response: Agree. The information shall be added to the sheets.

Comment No. 6: Swale NW-4 - The lab results for NW4-2 indicate the material is not A-7-6.

Response: Agree. Material should be classified as SM A-2-4 material. The sheets will be corrected.

Comment No. 7: We question the results of the Constant Head tests for TNW1-3, TA-4, TB1-1, TB1-12 and TB2-8. The Hydraulic Conductivity rate is very slow for A-3 material and needs an explanation. The information provided on the test summary sheet shall include the soils below the bottom the borehole depth. Check calculations for TA-4. Provide the field data for the Double ring test.

Response: Because of the relatively deep anticipated pond bottom elevations, three types of percolation tests were performed in the testing program to evaluate the difference between lateral and vertical permeability. A double ring test was performed to evaluate the near surface vertical permeability for the relatively shallow swale structures. The Constant Head borehole permeability test was performed with and without casing for the deeper pond structures. Due to the amount of water being used to perform the open hole tests, the constant head tests TNW1-3, TB1-1, TB1-12, and TB2-8 were all performed in an "open end" method as indicated on the test sheets and summary table.

The test was performed in an open ended casing at the depth indicated. Using the casing in the borehole will lower the amount of water needed to perform the percolation test by preventing the sidewalls of the borehole from accepting water. The remaining Constant Head tests were performed without a casing to evaluate primarily the lateral permeability of the sides of the pond structures. One problem with this style of testing is the end area will collect the fine materials stirred up by pouring the water into the casing. This collection of fines will typically lower the percolation rate. However, because the sands are relatively clean, it was anticipated that this would not affect the test results. An in depth review of the test data has shown that this did appear to affect the test data.

Horizontal permeability rates are typically four times greater than vertical rates. The open hole test will provide primarily horizontal percolation rate estimations while the open end test will provide primarily vertical rate estimations. The open hole results were approximately $1x10^{-3}$ to $1x10^{-4}$ cm/sec while the open end tests were approximately $1x10^{-4}$ to $1x10^{-5}$ cm/sec. This indicates a difference of approximately 10 or more. This may be a result of the collection of disturbed fines problem discussed earlier and/or the increase in density of the material with depth. It is suggested that the results of the open hole tests (i.e. no casing) be used in the pond design and evaluation as the results appear more reliable.

The additional test information will be added to the double ring and constant head test results sheets. The rate provided for TA-4 is incorrect and should be 3.81×10^{-3} cm/sec. This will be corrected.

Our report will be revised and resubmitted with the changes resulting from the comments discussed in this letter. We appreciate the opportunity to provide our services on this project, and look forward to a successful completion. If you have any questions concerning the information provided in this report, please do not hesitate to contact our office.

Sincerely,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Geotechnical Engineer

Submittals: (4) Addressee
(1) Theresa Puckett, P.E., FDOT Dist 1
(1) File

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WILLIAMS
EARTH SCIENCES

August 24, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Clayton Lee, P.E.
Senior Project Manager

Subject: Revised Groundwater Information Table
Interstate 4 and US 27 Interchange in Polk County
Polk County, Florida
State Project N° 16320-1408
W.P.I. N° 1147942
Williams Project N° C395040

Dear Mr. Lee:

As discussed in our phone conversation on August 24, 1998, attached to this letter is the revised information regarding groundwater conditions for the above referenced project. The attached Table 2.2 may replace the table presented in the pond structures report dated August 18, 1998.

As discussed in our conversation, the Seasonal High Water Level (SHWL) was detectable during the field exploration. The clean sands typically found over the majority of the project do not retain the indicators for the determination of the SHWL. Therefore, as agreed in our conversation, Table 2.2 was revised to include SHWL estimated from the groundwater measurements recorded at the time of our borings with the SHWL estimated to be approximately 0.5 meters above the measured groundwater level.

We appreciate the opportunity to provide our services on this project, and look forward to a successful completion. If you have any questions concerning the information provided in this report, please do not hesitate to contact our office.

Sincerely,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Geotechnical Engineer

Submittals: (4)-addressee
(1) Theresa Puckett, FDOT Dist.1
(1) File

F:\PROJECTS\C395040\PONDS\COMMNT1.WPD

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Table 2.2 Summary of Groundwater Conditions

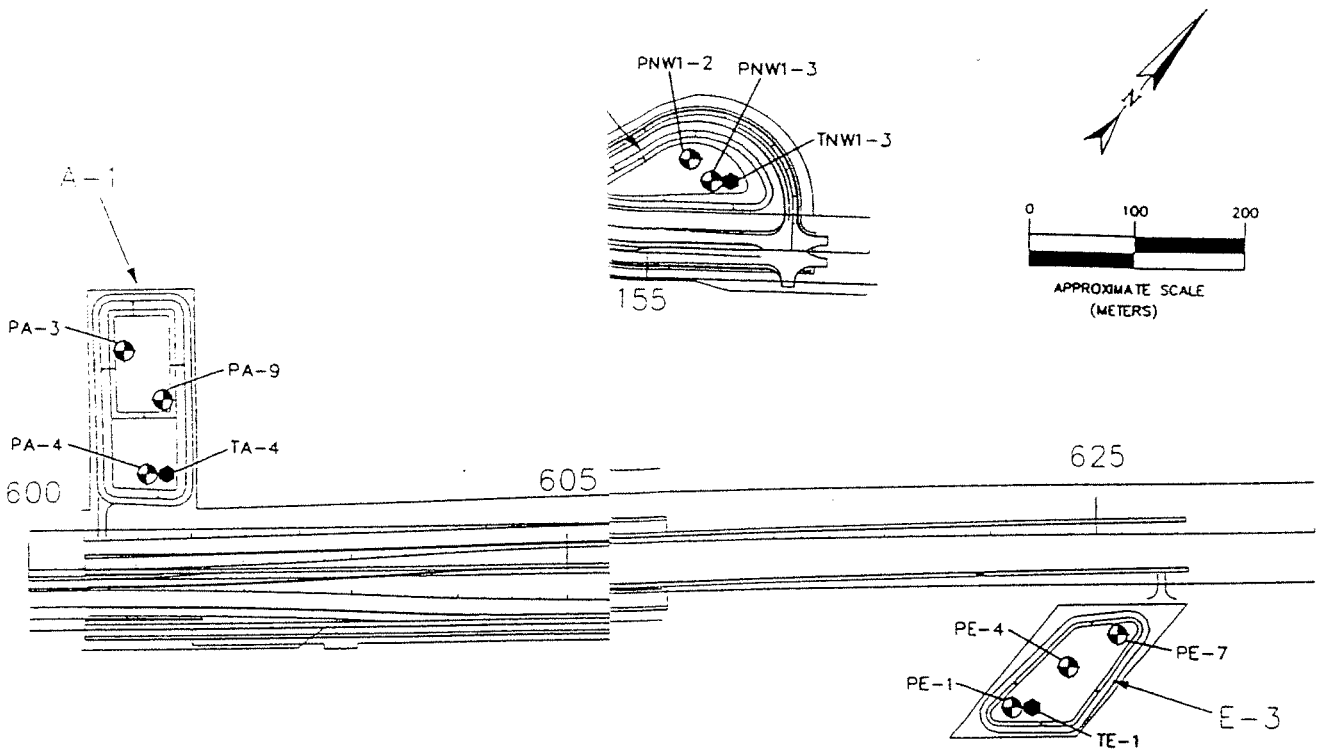
Proposed Pond	Test Nº	Groundwater Depth (meters)	Seasonal High Water Level (meters)	Ground Elevation (meters)
Pond A-1	PA-3	5.0	1.5 - 2.0	41.7
	PA-4	3.2	1.2 - 1.7	41.2
	PA-9	6.1	2.0 - 2.5	42.6
Pond B-2 (a)	PB1-1	Not Encountered	9.5 - 10.0 *	49.7
	PB1-2	7.0	6.2 - 6.7 *	47.8
	PB1-6	7.9	7.2 - 7.7 *	45.6
	PB1-12	8.8	8.1 - 8.6 *	48.0
	PB1-16	6.1	5.4 - 5.9 *	45.7
Pond B-2 (b)	PB2-1	11.0	10.3 - 10.8 *	50.9
	PB2-5	11.6	10.9 - 11.4 *	48.8
	PB2-8	11.6	10.9 - 11.4 *	48.5
Pond B-2 (c)	PB3-1	8.7	8.0 - 8.5 *	45.6
Pond C-2 (a)	PC1-1	8.2	7.5 - 8.0 *	55.3
	PC1-2	7.9	7.2 - 7.7 *	53.1
	PC1-5	7.0	6.3 - 6.8 *	50.8
	PC1-8	6.1	5.4 - 5.9 *	51.7
	PC1-10	6.1	5.4 - 5.9 *	51.9
Pond C-2 (b)	PC2-1	7.3	6.6 - 7.1 *	50.0
	PC2-3	6.1	5.4 - 5.9 *	49.2
	PC2-4	7.9	7.2 - 7.7 *	50.3
Pond C-2 (c)	PC3-1	7.0	6.3 - 6.8 *	57.4
Pond D-2	PD-3	7.6	6.9 - 7.4 *	52.2
	PD-5	7.9	7.2 - 7.7 *	53.3
	PD-7	6.1	5.4 - 5.9 *	53.0
Pond E-3	PE-1	4.0	2.0 - 3.0	38.9
	PE-4	3.0	1.5 - 2.5	38.5
	PE-7	5.5	2.5 - 3.0	39.2

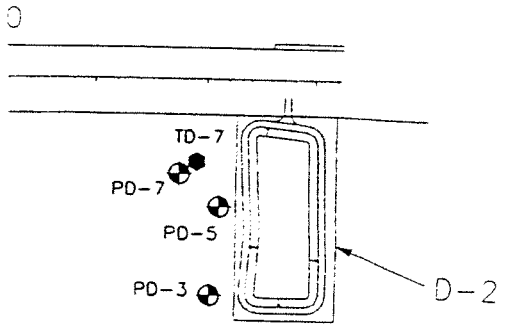
Table 2.2 Continued

Proposed Pond	Test №	Groundwater Depth (meters)	Seasonal High Water Level (meters)	Ground Elevation (meters)
Pond SW-2	PSW-2	6.1	5.4 - 5.9 *	53.5
	PSW-3	6.1	5.4 - 5.9 *	53.7
Pond NW-1	PNW1-2	7.0	5.3 - 5.8 * 45.3	50.6
	PNW1-3	7.9	7.2 - 7.7 * 45.0	52.2
Swale NW-4	PNW4-2	Not Encountered	>2.5 **	51.1
	PNW4-4	Not Encountered	>2.5 **	49.8
	PNW4-6	Not Encountered	>2.5 **	45.2

* Could not be determined from field exploration. Estimated based on groundwater tables measured in boreholes.

** Water table and/or SHWL not encountered during field exploration.





LEGEND

- APPROXIMATE LOCATION OF SPT
- APPROXIMATE LOCATION OF PER
- APPROXIMATE LOCATION OF HAN

I-4 / US 27
POLK COUNTY, FLORIDA

A-18

FIELD EXPLORATION PLAN

wn By: TEJ	Date: 8-13-98	Scale: AS SHOWN
cked By: KL	Report No. C395040	Figure No. 2

Table 4.1 Summary of Percolation Tests

Test Nº	Station and Offset	Test Method	Borehole Depth (meters)	Groundwater Depths (meters)	Hydraulic Conductivity (cm/sec)
Constant Head Test					
TA-4	601+26, 80m LT	Open-Hole	4.0	3.2	$1.3X10^{-4}$
TB1-1	144+89, 83m LT	Open-End	4.0	Not Encountered	$1.6X10^{-5}$
TB1-12	147+09, 96m LT	Open-End	4.0 44.0	8.8	$1.2X10^{-5}$
TB2-8	609+94, 83m LT	Open-End K_V	6.1 42.4	11.6	$5.9X10^{-6}$
TB3-1	148+97, 58m LT	Open-Hole	4.0 41.6	8.7 36.9	$1.0X10^{-3}$
TC1-1	141+05, 71m RT	Open-Hole	7.0 49.3	8.2 47.1	$1.6X10^{-3}$
TC1-5	142+10, 184m RT	Open-Hole	4.0	7.0	$1.8X10^{-3}$
TC2-1	615+37, 93m RT	Open-Hole	7.0 43.0	7.3 42.7	$4.1X10^{-4}$
TC3-1	140+24, 80m RT	Open-Hole K_H	13.4 46.1	7.0 50.4	$3.9X10^{-4}$
TD-7	128+10, 97m LT	Open-Hole	6.1	6.1	$2.7X10^{-3}$
TE-1	624+08, 174m RT	Open-Hole	4.0	4.0	$4.5X10^{-3}$
TSW-3	302+29, 37m RT	Open-Hole	4.0	6.1	$1.3X10^{-2}$
TNW1-3	155+69, 48m LT	Open-End	4.6	7.9	$8.4X10^{-5}$
Double-Ring Infiltrometer Test					
Test Nº	**Station and Offset**	**Test Method**	**Borehole Depth (meters)**	**Groundwater Depths (meters)**	**Infiltration Rate (cm/sec)**
TNW4-4	202+36, 62m RT	Double-Ring K_V	2.0 47.9	Not Encountered	$3.5X10^{-2}$

GROUND ELEV / POND BOTTOM

48.0 (+2.2) 41.80
48.5 (-1.95) 44.25
45.6 (-0.45) 42.05
55.3
50.9 (+2.65) 44.15
50.0 (-1.75) 44.7
57.4 (-5.15) 52.3
= 6.4 in/hr
49.8 (+3.55) 44.3

8/25/98

For open-End (K_V) ∴ use F_S = 1

For Open-Hole (K_H) ∴ use F_S = 2

For Double Ring (K_V) surface ∴ use F_S = 4

WILLIAMS EARTH SCIENCES

APPENDIX B

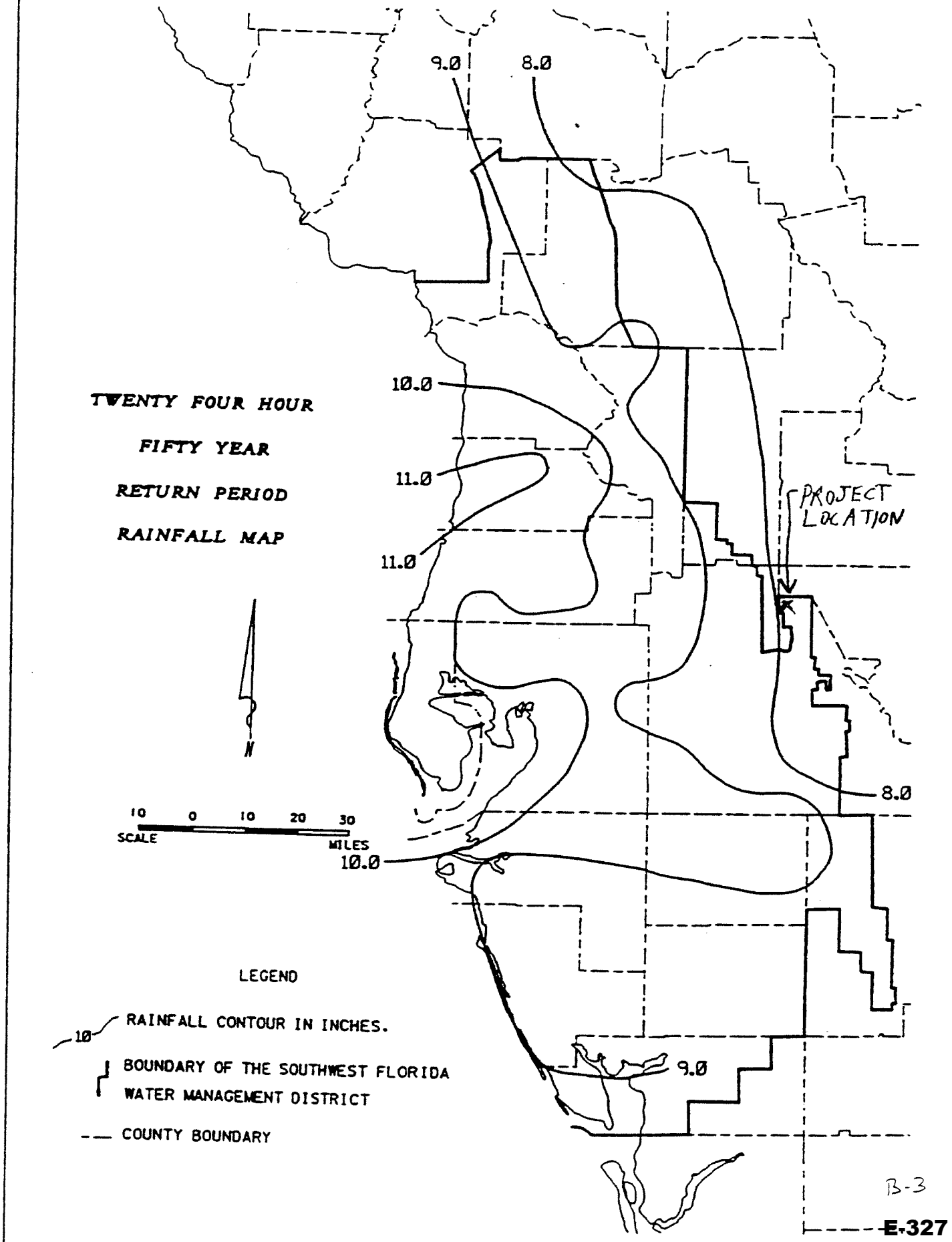
HYDRAULIC DESIGN INFORMATION

ZONE 8

INCHES OF RAINFALL FOR SPECIFIED STORM EVENTS*

FREQUENCY	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

* Data taken from rainfall intensity-duration-frequency curves (Figure 5-8, page 79 of 98), and precipitation depth data for various frequency storms (Figures 5-13 through 5-17, pages 84-88 of 98), presented in the Florida Department of Transportation Drainage Manual.

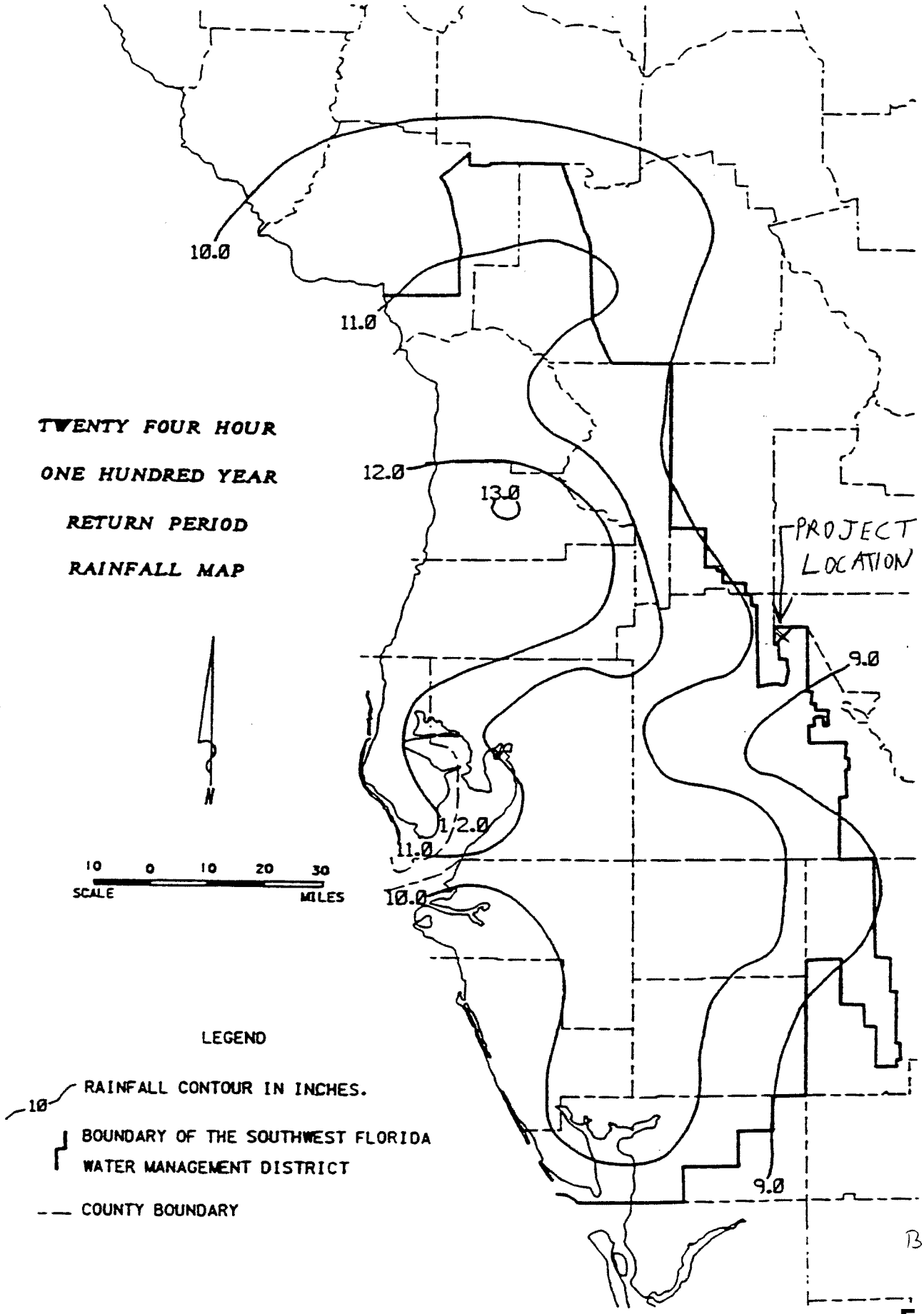


B-3

E-327

FIGURE D-6

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT



B-4

FIGURE D-7

APPENDIX C

ECOLOGICAL ASSESSMENT & PROTECTED SPECIES SURVEY

I-4 / U.S. 27 INTERCHANGE

ECOLOGICAL ASSESSMENT

AND

PROTECTED SPECIES SURVEY

FOR

STORMWATER POND

SITE ALTERNATIVES

POLK COUNTY, FLORIDA

SPN: 16320-3408

WPI: 1147942

PREPARED FOR:

FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT ONE, BARTOW

PREPARED BY:

HDR ENGINEERING, INC.

October 1997

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

The Florida Department of Transportation proposes to increase service capability of the existing I-4 / US 27 interchange by constructing a series of bridge replacements, ramp improvements, limited access roads, and storm water management ponds. Future improvements to the I-4 corridor will include an ultimate ten-lane section with a proposed rail service corridor in the I-4 median.

The project area encompasses 9 on-site drainage basins. This report will serve as a component of the Storm Water Pond Siting Analysis by providing ecological and protected species data for the 24 alternative pond sites identified within the project basins.

The project is located in Polk County, Florida and specifically within Sections 7, 8, 13, and 18; Township 26S., and Ranges 26E. and 27E. Refer to Figures 1 and 2 for the location of the project and proposed pond site alternatives.

2.0 SOILS

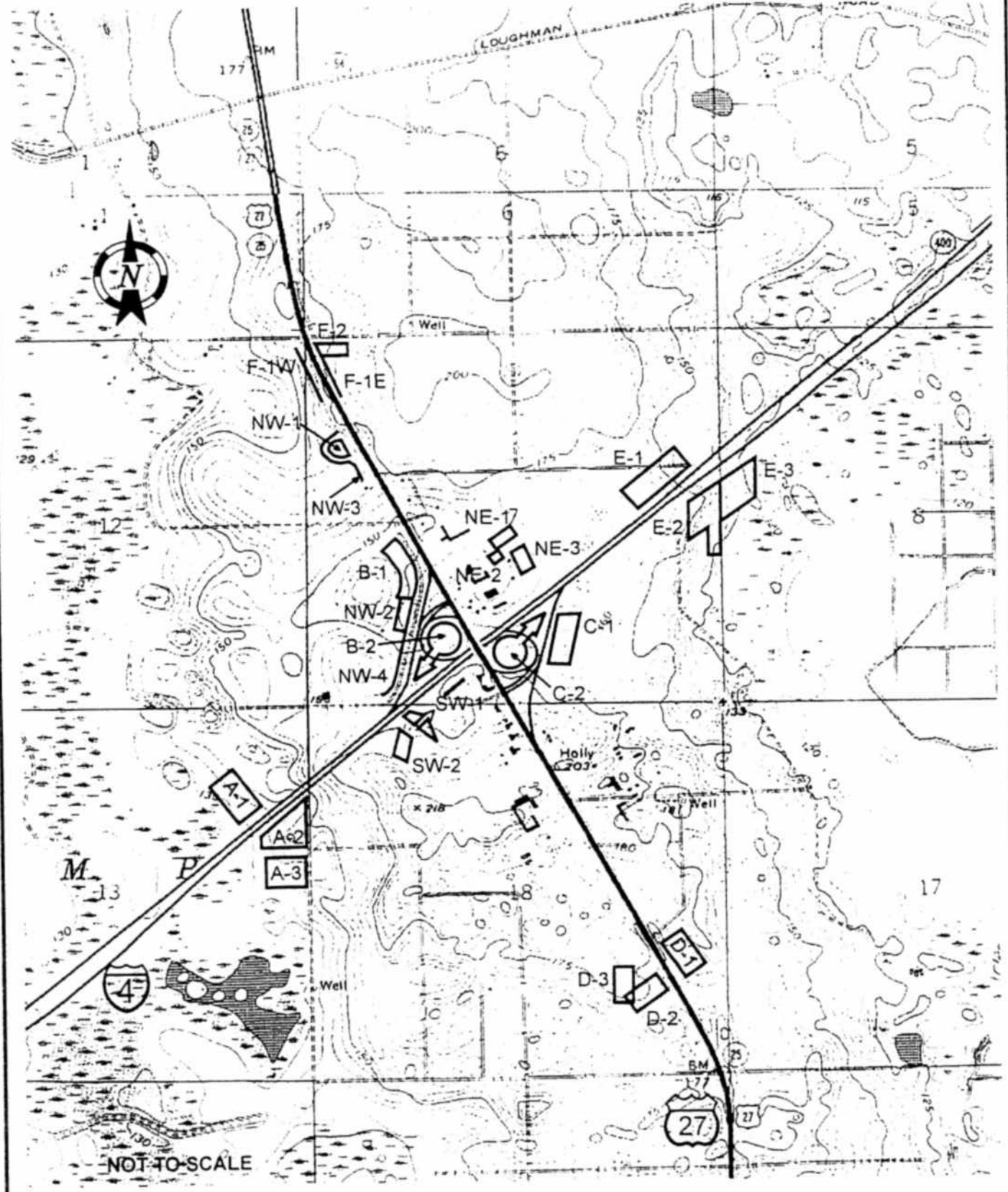
The majority of soil types within the project limits (Figure 3) are characteristic of excessively to moderately drained sandy soils found on upland ridges and knolls of historic flatwood communities. Examination of the 1974 aerial photography used in the Polk County soil survey indicates that all proposed pond sites are situated within former citrus grove areas or areas classified as disturbed urban land. All soil types within the project limits were verified as non-hydric, presenting little opportunity for wetland involvement.

The dominant soil type in the project area is Candler sand (0 to 5 percent slopes). Lesser sized sub-units of Candler sand (5 to 8 percent slopes) are found on steeper ridges. Both are classified as excessively drained soils with seasonal high water tables approximately 80 inches below the surface during the wet season. Small areas of Tavares fine sand (0 to 5 percent slopes) are found within the project area. This is a moderately well drained soil associated with historic upland flatwoods. The seasonal high water table is estimated at 40 to 80 inches below the surface throughout most of the year. The final soil unit encountered is classified as Urban land. Soils in these areas have been extensively reworked and are no longer recognized as natural soil features.

3.0 LAND COVER DESCRIPTIONS

All proposed pond sites, access easements, and frontage roads are situated in upland parcels. No evidence of wetland plant communities was observed within any proposed pond site. Pond alternatives A-1, A-2, A-3, and E-3 are located adjacent to jurisdictional wetlands, however proposed construction limits will not encroach upon wetland jurisdictional limits.

HDR	I-4 / US27 INTERCHANGE POLK COUNTY, FLORIDA SPN: 16320-3408	PROJECT LOCATION	FIGURE 1



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I-4/US 27 Interchange Pond Location Evaluation SPN: 16320-3408 WPI: 1147942	LOCATION OF CANDIDATE STORMWATER PONDS AND TREATMENT SWALES	FIGURE 2

HDR

HDR	I-4 / US 27 INTERCHANGE SPN: 78000-3528 POND NW-4	PROJECT SOILS MAP	FIGURE 3

All proposed pond sites are composed of upland plant communities with bahiagrass (*Paspalum notatum*), dog fennel (*Eupatorium spp.*), wild mustard (*Brassica sp.*), and ragweed (*Ambrosia spp.*) found as the dominant herbaceous plant species. Less frequently occurring plants included prickly pear cactus (*Opuntia stricta*), passion flower (*Passiflora foetida*), and castor bean (*Ricinus communis*). Tree and shrub strata included non-wetland species such as live oak (*Quercus virginiana*), turkey oak (*Quercus laevis*), dwarf palmetto (*Sabal minor*), and saw palmetto (*Serenoa repens*).

4.0 PROTECTED ANIMAL SPECIES

METHODOLOGY

Surveys were conducted to determine the absence or presence of state or federally-listed animal species within the 24 alternative pond sites. During the course of the surveys, no federally-listed threatened or endangered species were observed. Evidence of state-listed species was limited to active burrows most likely inhabited by gopher tortoises (*Gopherus polyphemus*). No evidence of any other state-listed species was observed.

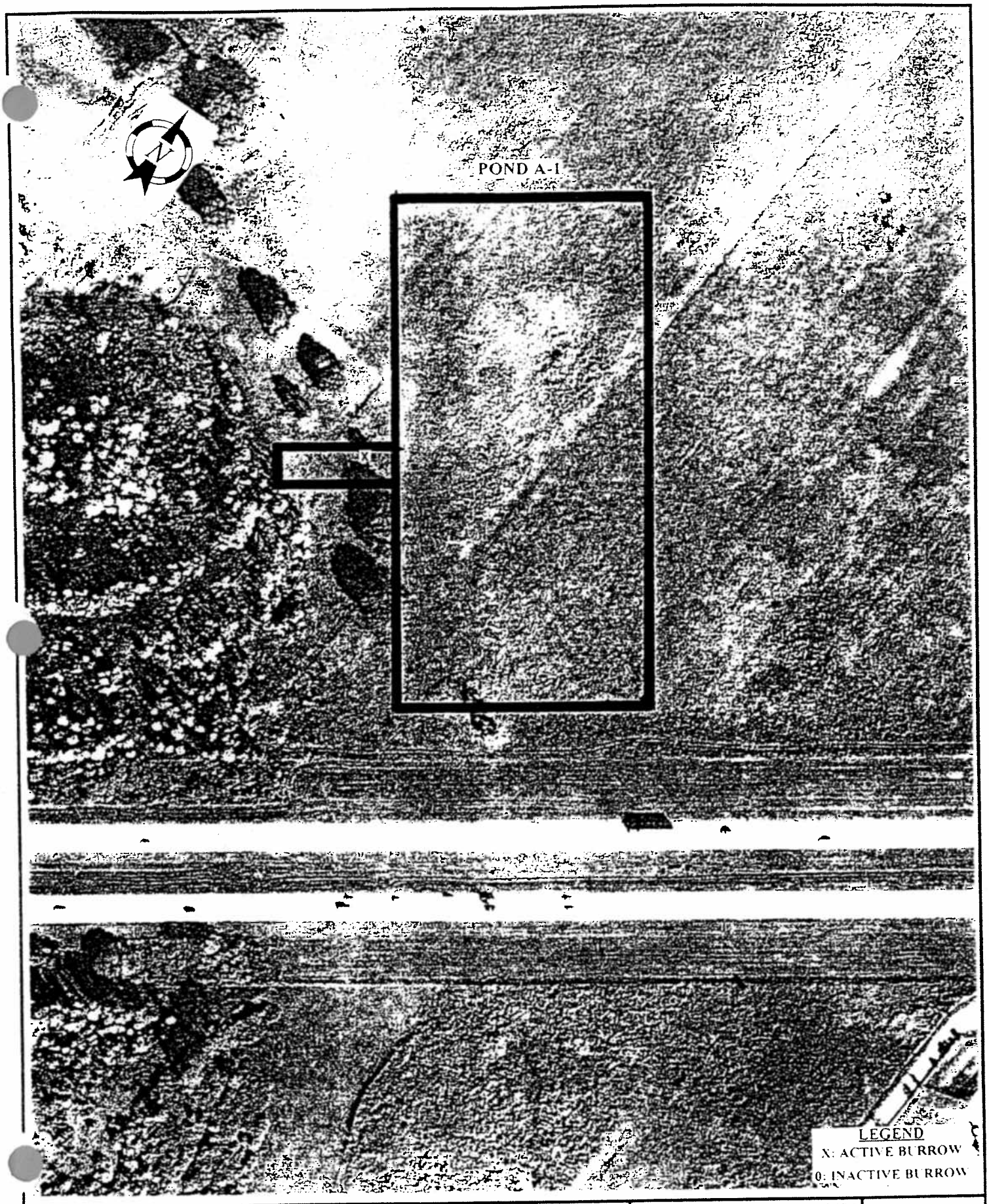
Proposed sites for stormwater ponds (24 total) were assessed to determine the population number of gopher tortoises on October 2 and 4, 1997. Surveys were conducted in accordance with Technical Report No. 4, Ecology and Habitat Protection Needs of Gopher Tortoise (*Gopherus Polyphemus*) Populations Found on Lands Slated for Large-Scale Development in Florida (Cox, Inkley & Kautz, 1987).

Pedestrian surveys were conducted along parallel transects, approximately 15 meters apart to insure 100% census coverage. Additional observations were conducted within the often tangled undergrowth associated with remnant palms and oaks scattered throughout several proposed sites. By utilizing this method, there is a high level of confidence that all areas of the project area were visually inspected and that very few burrow sites, if any, were not detected.

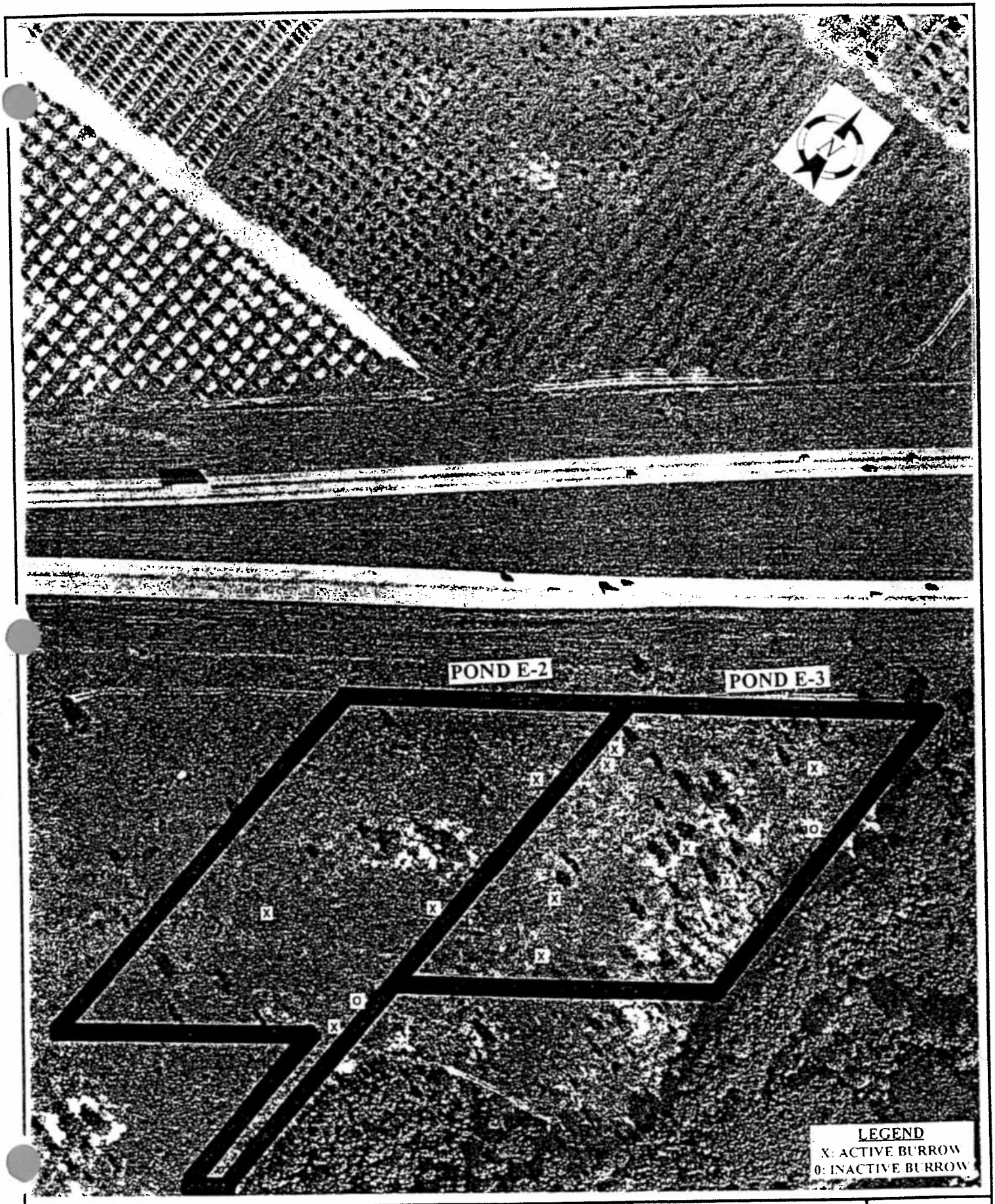
RESULTS

Active gopher tortoise burrows were identified in pond sites A-1, E-2, E-3, and NW-1 (Table 1). Inactive burrows, along with active burrows, were observed in pond sites E-2 and E-3. Pond site NW-4 contained 2 inactive burrows, with no active burrows observed. Refer to Figures 4 through 7 for aerial photos that indicate the locations of active and inactive burrows within affected pond sites.

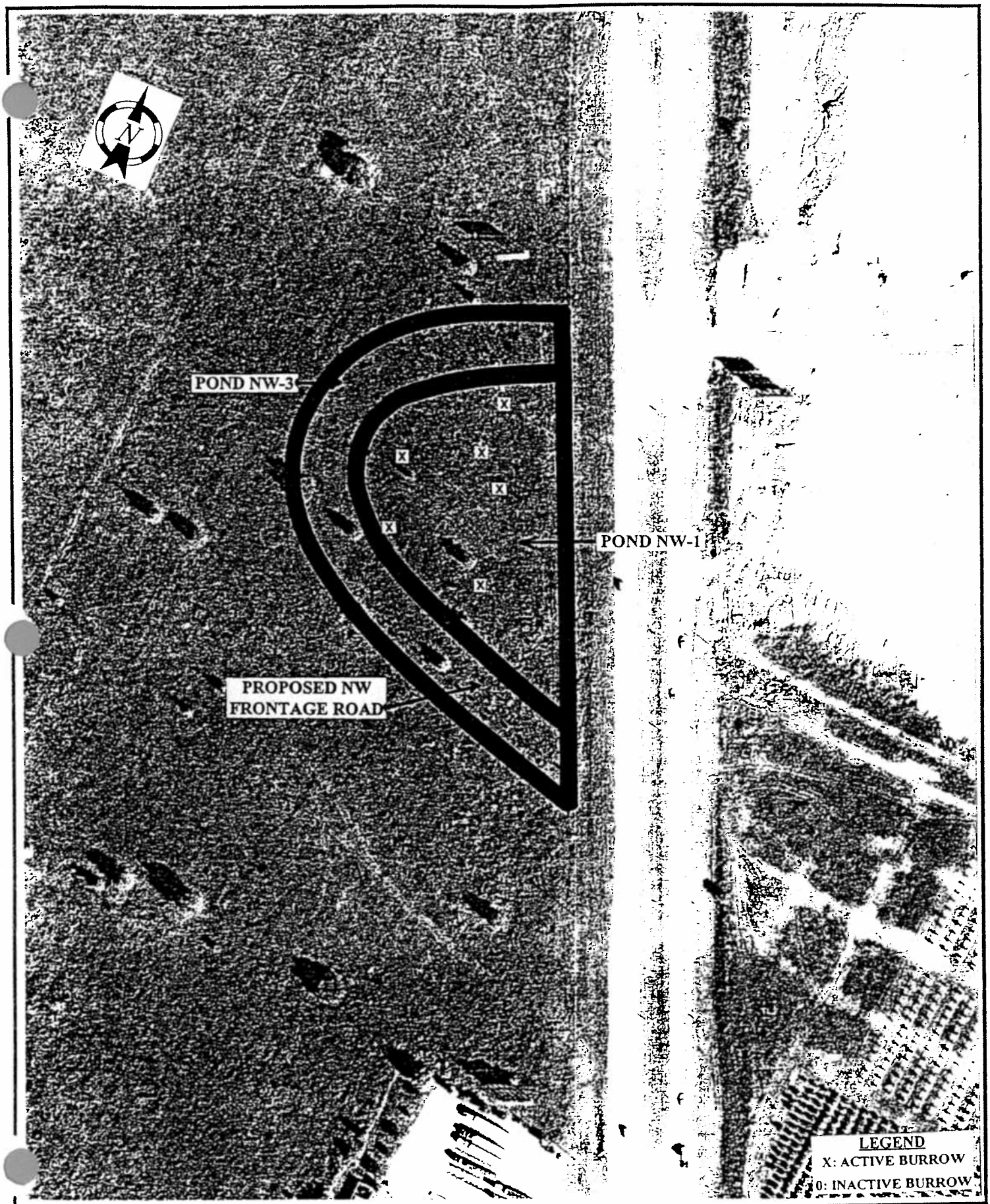
Table 1	I-4 / US 27 ALTERNATIVE POND SITES GOPHER TORTOISE SURVEY		
POND SITE	ACTIVE BURROWS	INACTIVE BURROWS	COMMENTS
A-1	1	0	Recommend either Pond A-2 or A-3.
A-2	0	0	
A-3	0	0	
B-1	0	0	Ponds B-1 or B-2 are viable alternatives.
B-2	0	0	
C-1	0	0	Ponds C-1 and C-2 are viable alternatives.
C-2	0	0	
D-1	0	0	Ponds D-1, D-2, and D-3 are viable alternatives.
D-2	0	0	
D-3	0	0	
E-1	0	0	Recommend utilizing Pond site E-1.
E-2	3	1	
E-3	6	1	
F-1/ E&W	0	0	Both sites are viable alternatives
F-2	0	0	Pond site is a viable alternative.
NE-1	0	0	Ponds NE-1, NE-2, Nd NE-3 are viable alternatives.
NE-2	0	0	
NE-3	0	0	
NW-1	6	0	Recommend either NW-2 or NW-3. Expansive areas to north and south of NW-1 site were observed with numerous clusters of active burrows.
NW-2	0	0	
NW-3	0	0	
NW-4	0	2	
SW-1	0	0	Both Pond sites are viable alternatives.
SW-2	0	0	



HDR	I-4 / US 27 INTERCHANGE SPN: 78000-3528 POND A-1	GOPHER TORTOISE BURROW LOCATIONS	FIGURE 4

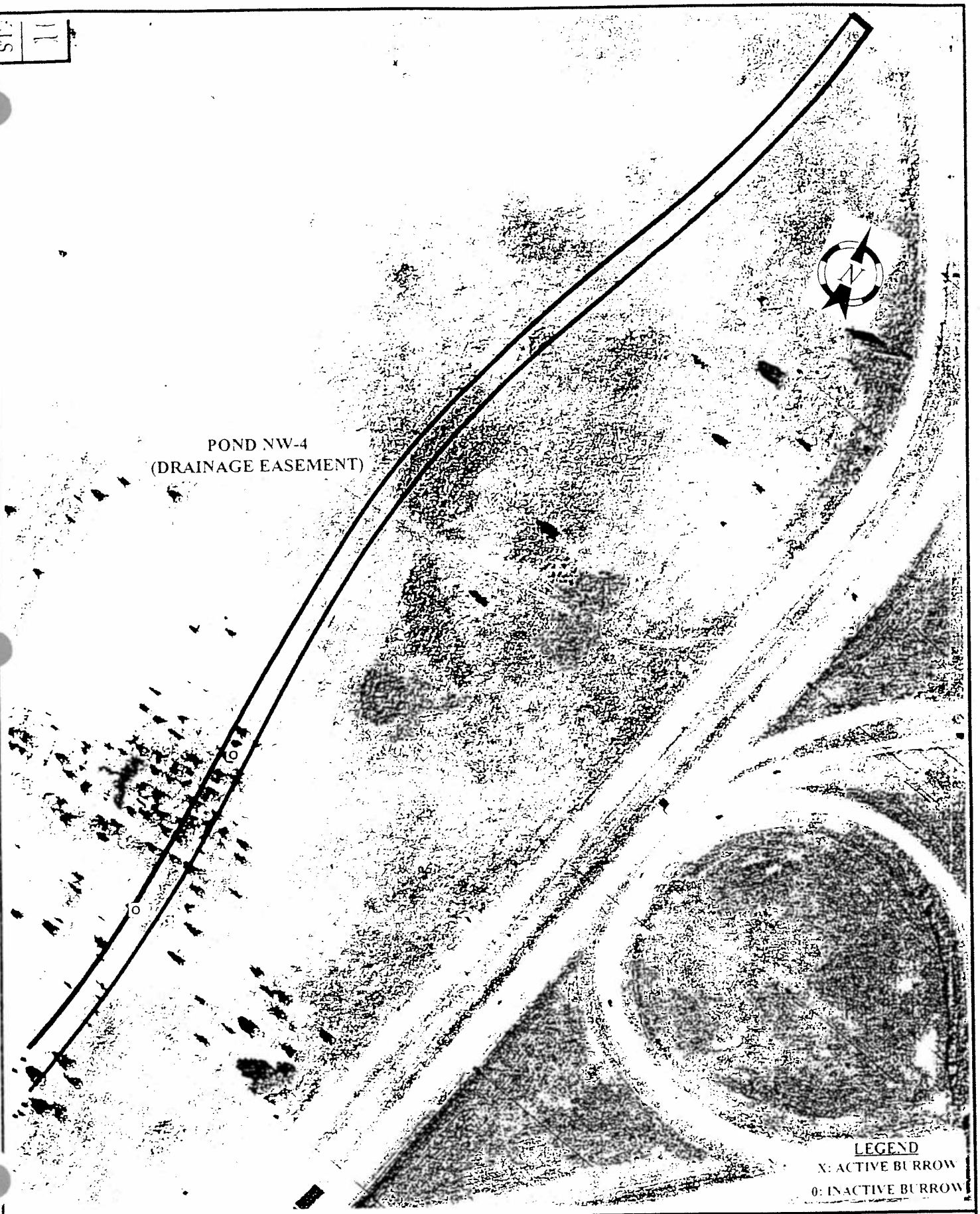


HDR	I-4 / US 27 INTERCHANGE SPN: 78000-3528 PONDS E-2 AND E-3	GOPHER TORTOISE BURROW LOCATIONS	FIGURE 5



HDR	I-4 / US 27 INTERCHANGE SPN: 78000-3528 POND NW-1	GOPHER TORTOISE BURROW LOCATIONS	FIGURE 6

ST: 11



HDR	I-4 / US 27 INTERCHANGE SPN: 78000-3528 POND NW-4	GOPHER TORTOISE BURROW LOCATIONS	FIGURE 7

5.0 DISCUSSION

WETLANDS

There are no jurisdictional wetland areas within the project limits. The project will not incur wetland impacts by constructing any of the pond alternatives, access easements, or frontage roads. Proposed sites A-2, A-3, E-2, and E-3 are situated in close proximity to palustrine forested and emergent wetlands. If any of these alternatives were to be constructed, a minimum 50 ft. buffer would be recommended to avoid impacts to existing hydroperiods within adjacent wetland systems.

PROTECTED SPECIES

The FDOT has four "mitigation" options to consider if gopher tortoise impacts are unavoidable.

- Avoidance of the tortoise burrows may be accomplished, in some cases, by slight shifts in pond locations. Pond NW-4 (swale treatment) could be shifted approximately 15 ft. west to avoid the 2 inactive burrows. The proposed outlet swale for Pond A-1 could be reconfigured approximately 15 ft. south to avoid the single active burrow in the area.

  Ponds E-2, E-3, and NW-1 are located in habitat able to support high densities of tortoises. Expanded pedestrian surveys were conducted outside the proposed pond sites to determine if avoidance was possible by shifting pond locations. The resulting survey indicates that burrows occur in such densities that any shifts will not avoid impacts to tortoises.

- Relocation programs are administered by the Florida Game and Fresh Water Fish Commission (FGFWFC). Tortoises may be relocated "on-site" if the adjacent land provides suitable habitat for the species. The permit applicant (FDOT) must enter into a land agreement with the landowner of the recipient site to establish a conservation easement over the affected acreage.

- Off-site relocations are possible, however it is the responsibility of the applicant to identify areas of suitable habitat to establish permitted recipient sites. Land agreements must be established to set up perpetual conservation easements.

- The FDOT may apply for an "incidental take" permit that allows construction to proceed by offering a monetary exchange to the FGFWFC. The current program assesses population densities of tortoises within proposed construction limits and then assigns a monetary value on a percentage of habitat loss. Refer to Table 2 for cost estimates for this mitigation strategy.

Table 2

I-4 / US 27
ALTERNATIVE POND SITES
COSTS FOR GOPHER TORTOISE INCIDENTAL TAKE PERMITTING

POND SITE	ACTIVE BURROWS	INACTIVE BURROWS	POPULATION NUMBER (active + inactive x .614)	POND SIZE (acres)	DENSITY (population no. / pond size)	*COST
A-1	1	0	.614	5.0	0.12	$1142.43
E-2	4	1	2.456	3.5	0.70	$5,331.37
E-3	7	1	4.298	4.5	0.95	$6,854.63
NW-1	6	0	3.684	1.0	3.68	$1,523.25
NW-4	0	2	1.228	1.9	0.65	$1736.50

* Density of 0.8 or greater = 25% of Pond Size x $6093.00
Density between 0.4 and 0.8 = 15% of Pond Size x $6093.00
Density between 0.0 and 0.4 = 0 to 15% of Pond Size x $6093.00

APPENDIX D

FULL SIZE DRAINAGE MAPS

FINANCIAL PROJECT ID	SHEET NO.
201204-1-52-02	3

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE MAP

16320-1408

FINANCIAL PROJECT ID	SHEET NO.
201204-1-52-02	2

5.79 ac
7.69 ac
0.30 ac
1.49 ac
7.75 ac
5.33 ac
14.95 ac
11.48 ac
7.08 ac
1"= 167'
℄ SR 25 (US 27)
℄ CONST & ℄ SURVEY 1-4
26S R27E SEC 18
26S R27E SEC 7

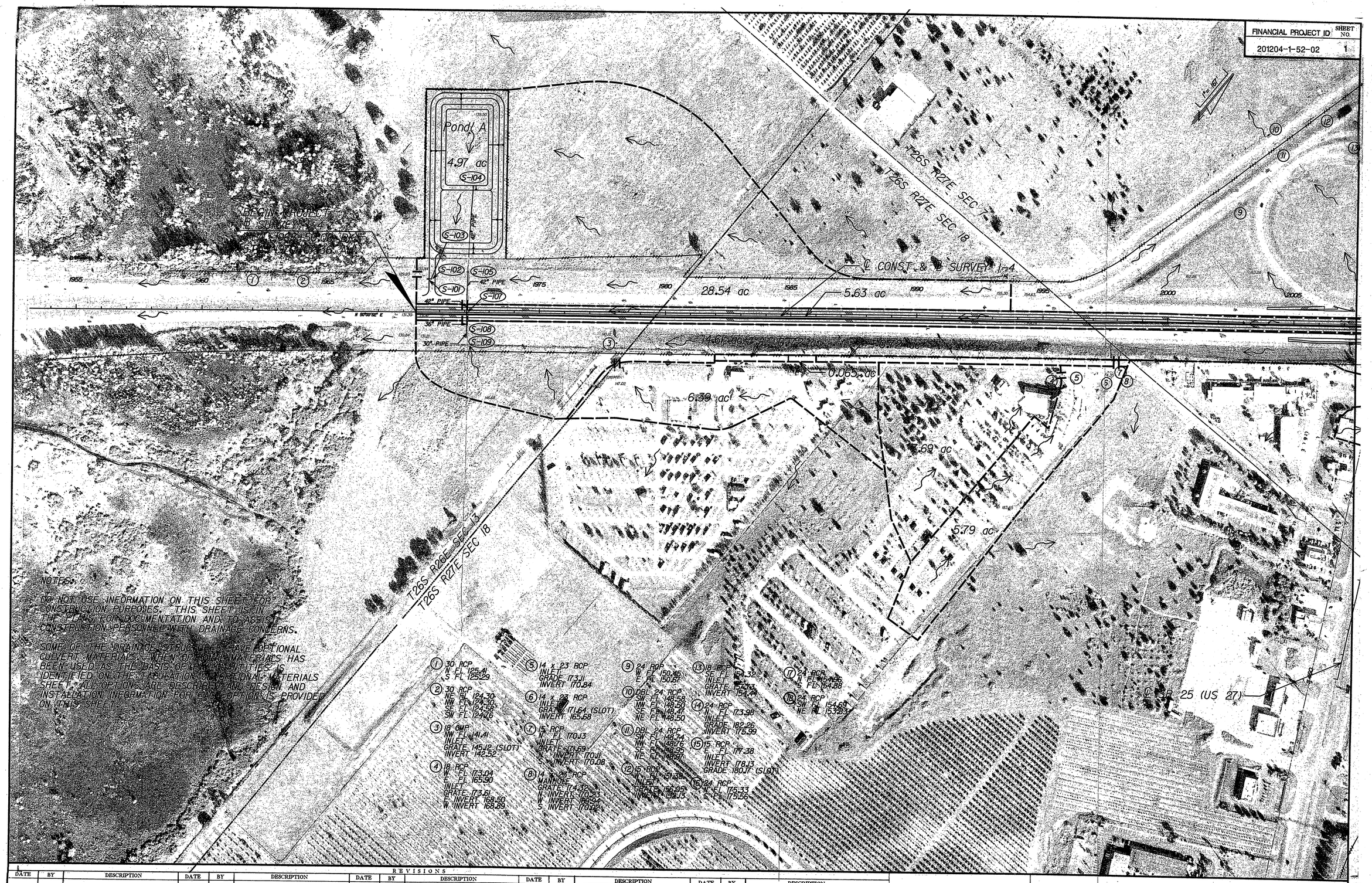
REVISIONS														
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE MAP

16320-1408

FINANCIAL PROJECT ID:	SHEET NO.
201204-1-52-02	1



REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE MAP

16320-1408

Permit No. 44-011896.024

E of US 27 to Osceola County Line

Polk County: Section 7

HIGH SPEED RAIL

HNTB PW #50288

SWFWMD Permit #44-011896.024

E of US 27 to Osceola County Line

May 2003

Polk County: Section 7

FPID #201204-1

Book 2 of 4

DRAINAGE REPORT

Final Submittal

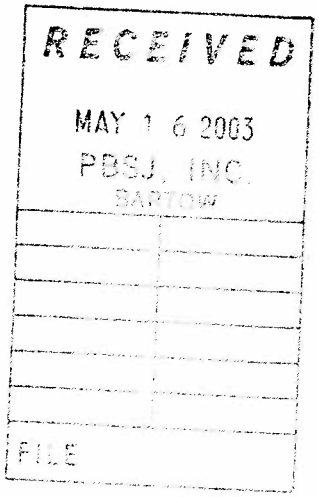
for the:

I-4 (SR 400) Segment 7 Widening from East of US 27 to the Osceola County Line – Design/Build Project

Financial Project Number 201204-1

submitted to the:

Florida Department of Transportation
District One



Prepared By:

Hubbard Construction Company

and

Jacobs Civil Inc.

May 12, 2003

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Jacobs Civil Inc., located at 18302 Highwoods Preserve Parkway, Highwoods Plaza, Suite 200, Tampa Florida 33647 (Federal ID No. 43-162-1641). Jacobs Civil Inc. is a corporation authorized to operate as an Engineering Business by the State of Florida Department of Business and Professional Regulation, Board of Professional Engineers (Engineering Business No. CA6572). I further certify that I have been in responsible charge of the preparation and production of this document, and have prepared or approved the analyses, calculations, evaluations, findings, opinions, conclusions, and/or technical advice herein reported.

PROJECT:	**I-4 (SR 400), Segment 7 Widening, East of US 27 to the Osceola County Line**
OWNER:	**Florida Department of Transportation – District One**
FINANCIAL PROJECT ID NUMBER:	**201204-1**
LOCATION:	**Polk Co., Fl.**
PROJECT LIMITS:	**US 27 to the Osceola Co. line**
REPORT:	**Drainage Report (5/12/03)**

This report includes the following sections: Project Description, Drainage Design Criteria, Site Information, Description of the Stormwater Management System, Compliance with Environmental Resource Protection (ERP) Regulations, Description of Design Calculations and Other Support Data, Control and Abatement of Erosion and Water Pollution, and Maintenance Operations; and Appendices: Onsite Basin Hydrology Pre and Post Construction Conditions; Stormwater Facility Design; ICPR Input Data; Critical Duration Analysis: Peak Flow Summary and ICPR Routing Results; Attenuation/Treatment Facility Volume Recovery Analysis; Shoulder Gutter Inlet Spacing/Spread Calculations; Storm Drain Design; Cross Drain Analysis; Floodplain Impact/Compensation Analysis; Geotechnical Data; Wetland-Related Agency Correspondence; Listed Species Evaluation; Wildlife-Related Agency Correspondence.

I acknowledge that the procedures and references used to develop the results contained in this report are standards to the professional practice of drainage engineering and planning as applied through professional judgment and experience.

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
EBN 6572

NAME: William J. Veon Jr., P.E.

FLORIDA REGISTRATION NUMBER: 35650

SIGNATURE: _____

DATE: 5/12/03

DRAINAGE REPORT
Volume III of III

DRAINAGE REPORT NARRATIVE

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DRAINAGE REPORT NARRATIVE

1.0 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) proposes to widen State Road (SR) 400 (Interstate 4) in Polk County, Florida. The projects limits for this project, Segment 7, extend from Station 2051+00 and continues north and east to the intersection of SR 400 and the Polk-Osceola County line at Station 2160+08.17, for a total project length of 2.07 miles. The project includes the addition of two lanes located to the outside of the existing four-lane roadway (one located in each direction), resulting in a six-lane divided highway. Both the new and existing shoulders will be made ten feet wide. Work will also include milling and resurfacing the existing pavement. This typical section transitions at the east project boundary to join the next segment's road layout, which places the two new lanes to the inside into the existing median. Additional widening for an on-ramp acceleration lane occurs at the western end of the project.

With the planned increase in the number of travel lanes and wider shoulders, there will be an increase in stormwater runoff associated with the new impervious area. Water quantity attenuation and water quality treatment for this increased runoff will be provided using two methods. Dry ponds will be constructed west of County Road (CR) 54. To the east, a wet pond will be constructed.

The purpose of this report is to discuss the stormwater management plan for the improvements to I-4. This report documents the drainage design as well as the hydraulic and hydrologic modeling required for the project. Stormwater systems will be designed to be hydraulically functional and environmentally permittable. The stormwater systems will meet the requirements of the Southwest Florida Water Management District (SWFWMD) 40D-4 and the FDOT Florida Administrative Code (FAC) 14-86, critical storm duration analysis.

2.0 DRAINAGE DESIGN CRITERIA

The following is a list of the references consulted in developing the design criteria for the drainage and stormwater management facilities for this project:

FDOT Drainage Manual (10/2000)
FDOT Drainage Handbook - Hydrology (10/2000)
FDOT Drainage Handbook - Storm Drains (8/2000)
FDOT Drainage Handbook – Cross Drains (8/1996)
FDOT Stormwater Management Facility Handbook (1/1999)
FDOT Erosion And Sediment Control Handbook (12/1994)

And

SWFWMD Environmental Resource Permitting Information Manual
Chapter 40D-4 – Individual Environmental Resource Permit (9/2002)

Basis of Review (9/2002)

The following is a summary of the standards and criteria incorporated into the design of the drainage and stormwater management facilities for the project:

Hydrology

Rainfall
Depth – Zone 8 IDF Curves
Distributions – SCS Type II, Florida Modified,
FDOT, Critical Storm Duration Distributions

Time of Concentration
Velocity Method (10 minutes minimum)

Runoff
Storm Drain Design – Rational Method (via StormCAD software)
Stormwater Treatment Pond Design – SCS Hydrograph Method
(via ICPR software)

Storm Drains

Methodology
Rational Method (via StormCAD software)

Storm Frequency
10 year (Interstate Facility)

Minimum Pipe Size

18" diameter (for new pipe)

Existing size (for extension of existing pipe)

Minimum Pipe Slope

Physical slope necessary to maintain 2.5 fps velocity at full flow (for new pipe)

Existing slope (for extension of existing pipe)

Vertical Clearance

1' below bottom of roadway base material (for conventional excavation installation)

4' below top of roadway pavement (for jack and bore installation)

Maximum Pipe Lengths

For 18" – 300'

For 24" to 36" – 400'

For 42" and larger – 500'

For Box Culverts – 500'

Materials

RCP (n=0.012) for roadway storm drains and existing cross drain extensions

Steel casing (n=0.012) for jack and bore cross drains

Tailwater

For median storm drains in eastern project area - Proposed Wet Detention Pond 10 year / 24 hour storm WSEL.

For shoulder gutter storm drains in western project area - tops of ditch block weirs.

Freeboard

0' between HGL and gutter line when minor losses are considered (HEC 22 methodology used to estimate minor head losses)

Inlets and Pavement

Storm Frequency

10 year (for shoulder gutter)

4 in/hr design rainfall intensity for other gutter types

Minimum Gutter Grade

0.3% (for shoulder gutter)

Maximum Spacing

300' on a continuous grade

Maximum Spread

The gutter flow resulting from a 4 in/hr rainfall intensity shall not encroach onto the travel lanes.

For shoulder gutter – the spread resulting from a 10-year storm shall not exceed 1'-3" outside the gutter in the direction of the front slope (or to the guardrail post).

Cross Drains

Methodology

USGS Regression Equations (basins > 100 acres) or Rational Method (basins < 100 acres) for peak flow estimates

Inlet control/outlet control hydraulic analysis (via CulvertMaster software)

Storm Frequency

50 year

Tailwater

Seasonal High Water Table in receiving wetland

Refer to Storm Drains for other criteria

Stormwater Management Facility – Stormwater Attenuation/Treatment Ponds and Swales

Methodology

Storage – Indication Pond Routing Method (via ICPR software)

Storm Frequency

10 year/24 hour (to establish TW for storm drains contributing to wet detention ponds)

25 year/24 hour (to establish Design High Water for ponds in Open Basins)

100 year/ 24 hour (to evaluate possible floodplain impacts and to establish Design High Water for ponds in Closed Basins)

2 year/1 hour to 100 year/10 day (for FDOT Critical Storm Duration analysis)

Treatment Volume

Wet Detention Volume:

Treat 1 inch of runoff from the contributing drainage basin. Wet detention shall include a minimum of 35% littoral zone. Treatment volume shall not totally recover in less than 120 hours with no more than one-half the total volume being recovered the first 60 hours.

Dry Retention Volume:

Treat one-half inch of runoff from the contributing drainage basin. The total retained treatment volume shall again be available within 72 hours.

Attenuation Volume

In general, for Open Basins, the detention system will attenuate the post-development peak rate to the pre-development peak rate for the 25-year/24-hour rainfall event.

For closed basins, a runoff volume equal to the post-development volume less the pre-development volume must be retained for the 100-year/24-hour rainfall event. The rate of runoff leaving the site shall, also, not cause adverse offsite impacts.

For critical duration analysis, the detention system will attenuate the post-development peak rate for all frequencies (2-year through 100-year) for the critical duration (1 hour through 10-day)

Minimum Maintenance Berm Width

20' horizontal clearance desired between the top edge of normal pool elevation and the right-of-way line, with at least 15' adjacent to pond at a slope no steeper than 8H:1V (typical).

15' maintenance berm at 15:1 side slope proposed for wet detention pond 7-7.

No formal maintenance berm proposed for dry, shallow attenuation/treatment swales 7-1 to 7-6.

Maximum Pond Side Slopes/Fencing

No fencing required for pond side slopes at 1:4 or flatter (typical).

Fencing will be required for wet detention pond 7-7.

No fencing for dry attenuation/treatment swales 7-1 to 7-6

3.0 SITE INFORMATION

3.01 Existing Topography and Hydrologic Features

Onsite Basin Descriptions, General:

SR 400 (I-4) runs in a northeast direction with a series of wetlands and floodplains on each side. The major drainage division for the project is based on two major areas contributing to floodplains with two different estimated elevations. The West Basin from the beginning of the project to just west of CR 54 drains to wetlands having an estimated floodplain elevation 120' NGVD. The remaining portion of the project, the East Basin drains to wetlands east of CR 54 having an estimated floodplain elevation of 115' NGVD.

Within the West Basin, most of the adjacent wetlands appear connected within the floodplain elevation. Cross drains under the roadway provide connection to the wetlands within the median and on opposite sides of the roadways. However, there are four wetlands within the project in the West Basin that are apparently isolated from the larger floodplain by higher ground. Their floodplain elevation is estimated also to be 120' NGVD, since the soils are quite permeable so these wetlands are connected by groundwater and will equalize relatively quickly.

Within the East Basin, there are two large wetlands on opposite sides of the roadways that receive runoff from the project. They are connected by twin cross drains under the roadways.

Onsite Basin Descriptions, Existing Conditions:

West Basin drainage areas: (refer to Existing Conditions Drainage Area Maps):

Basin 7-9X includes sub-basin 7-9RX, and drains the right side of the roadway from the beginning of the project to Sta 2056+50 into Wetland 7AS. Drainage from the adjacent, future I-4 Segment 9 project to the west also reaches Wetland 7AS and is conveyed a short distance in the right roadside ditch within the Segment 7 project limits.

Basin 7-1X includes sub-basins 7-1RX, 7-1MX, and 7-1LX. This Basin encompasses both sides of the roadway not included in Basin 7-9 and the median from the beginning of the project to Sta 2074+00, and drains into Wetland 7AaS via ditches on each side of the roadway and in the median, and a 30" RCP cross drain at Sta 2070+00. Drainage from the I-4 Segment 9 area also reaches Wetland 7AaS and is conveyed in the left roadside ditch within the Segment 7 project limits.

Basin 7-2X includes sub-basins 7-2RX and 7-2MX. This Basin is comprised of the right side of the roadway and median from Sta 2074+00 to Sta 2087+00, and drains into Wetland 7DS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2080+00.

Basin 7-10X includes sub-basin 7-10LX. This Basin includes the left side of the roadway from Sta 2074+00 to Sta 2087+00, and drains into Wetland 7FN via ditches on the left side of the roadway.

Basin 7-3X includes sub-basins 7-3RX and 7-3MX. This Basin contains the right side of the roadway and median from Sta 2087+00 to Sta 2102+00, and drains into Wetland 7GS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2098+00.

Basin 7-4X includes sub-basins 7-4RX, 7-4MX, and 7-4LX. This Basin incorporates both sides of the roadway and median not included in Basin 7-3 from Sta 2087+00 to Sta 2117+00, and drains into Wetland 7JS and Wetland 7HN via ditches on each side of the roadway and in the median, and a double 42" RCP cross drain at Sta 2105+00.

Basin 7-5X includes sub-basins 7-5RX and 7-5MX. This Basin encloses the right side of the roadway and median from Sta 2115+00 to Sta 2121+00, and drains into Wetland 7MS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2118+20.

Basin 7-11X includes sub-basin 7-11LX. This Basin encompasses the left side of the roadway from Sta 2116+00 to Sta 2123+00, and drains into Wetland 7NN via ditches on the left side of the roadway.

East Basin drainage areas: (refer to Existing Conditions Drainage Area Maps)

Basin 7-6X includes sub-basins 7-6LX and 7-6MX. Sub-basin 7-6LX contains the left side of the roadway from Sta 2123+00 to Sta 2156+00, including a portion of CR 54 (sub-basin 7-CR54LX) and drains into Wetland 7PN via ditches on the left side of the roadway. Sub-basin 7-6MX is comprised of the median between Sta 2121+00 and Sta 2132+00, and drains, via a median ditch, to a 24" RCP cross drain that connects the median to the left outside ditch at Sta 2132+00. Drainage from the sub-basins is conveyed east to Wetland 7PN.

Basin 7-7X includes sub-basins 7-7RX and 7-7MX. This Basin encompasses the right side of the roadway and median, except for the portion included in sub-basin 7-6X, from Sta 2121+00 to the end of project (Sta 2160+08), and drains into Wetland 7RS via ditches on the right side of the roadway and in the median, and a double 36" RCP cross drain at Sta 2147+00. A portion of CR54, sub-basin 7-CR54RX, is also contained in Basin 7-7X.

Basin 7-8X is the direct drainage area for Pond 7-7.

Basin 7-12X includes sub-basin 7-12LX. This Basin incorporates the left side of the roadway from Sta 2156+00 to the end of project (Sta 2160+08), and drains into Wetland 7PN via cross drains under ramps that are not included in the project.

Onsite Basin Descriptions, Proposed Conditions:

West Basin drainage areas: (refer to Proposed Conditions Drainage Area Maps)

Basin 7-9U includes sub-basin 7-9RU, and drains the right side of the eastbound roadway from the beginning of the project to Sta 2056+50 into Wetland 7AS. Drainage from the adjacent, future I-4 Segment 9 project also reaches Wetland 7AS and is conveyed a short distance in the right roadside ditch within the Segment 7 project limits. Drainage peak flows and volumes from the Segment 9 project will be somewhat less than existing (per ERP 44011896.024), which will allow for the release of more peak flow and volume from Basin 7-9U. No direct treatment or attenuation is provided for Basin 7-9U.

Basin 7-1T includes sub-basins 7-1LT and 7-1MT. This Basin contains the median and the left side of the roadway from Sta 2051+00 to Sta 2069+00. Stormwater from Basin 7-1T is collected via a shoulder gutter and storm drain system on the left side of the roadway and sheet flow into the median, is processed through a dry shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7AaS by a 30" RCP cross drain at Sta 2070+00. A ditch block in the median at Sta 2051+00 will prevent median drainage from Segment 9 from flowing east into the Segment 7 project. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-1, and will provide both treatment and attenuation.

Basin 7-1U includes sub-basins 7-1RU, 7-1MU, and 7-1LU. This Basin contains the right side of the roadway from Sta 2056+50 to Sta 2074+00 that drains into Wetland 7AaS via a ditch on the right side of the roadway. The also included left side of roadway and median between Sta 2069+00 and Sta 2074+00, drain to Wetland 7AaS via ditches and a 30" RCP cross drain at Sta 2070+00. Drainage from the Segment 9 project also reaches Wetland 7AaS and is conveyed in the left roadside ditch within the Segment 7 project limits. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-2U includes sub-basins 7-2RU and 7-2MU. This Basin encompasses the right side of the roadway from Sta 2074+00 to Sta 2090+50, as well as a portion of the median between Sta 2074+00 and Sta 2081+00, and drains into Wetland 7DS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2080+00. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-10U includes sub-basin 7-10LU. This Basin incorporates the left side of the roadway from Sta 2074+00 to Sta 2079+00, and drains into Wetland 7FN via ditches on the left side of the roadway. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-3T includes sub-basins 7-3LT and 7-3MT. This Basin consists of an area from Sta 2079+00 to Sta 2094+00 on the left side of the roadway, and from Sta 2081+00 to Sta 2095+50 in the median. Stormwater from Basin 7-3T is collected via a shoulder gutter

and storm drain system on the left side of the roadway, is processed through a dry, shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7GS via a 24" RCP cross drain at Sta 2098+00. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-2, and will provide both treatment and attenuation.

Basin 7-3U includes sub-basins 7-3RU and 7-3MU. Sub-basin 7-3RU includes the right side of the roadway from Sta 2090+50 to Sta 2101+00, and drains into Wetland 7GS via ditches on the right side of the roadway. Sub-basin 7-3MU includes the median from Sta 2095+50 to Sta 2099+93, and drains to Wetland 7GS via a 24" RCP cross drain at Sta 2098+00. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-4T includes sub-basins 7-4LT and 7-4MT. This Basin contains the left side of the roadway between Sta 2094+00 and Sta 2104+00, and the median between Sta 2099+93 and Sta 2104+00. Stormwater from Basin 7-4T is collected via a shoulder gutter and storm drain system on the left side of the roadway and sheet flow into the median, is processed through a dry, shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7JS via a double 42" RCP cross drain at Sta 2105+00. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-3, and will provide both treatment and attenuation.

Basin 7-4U includes sub-basins 7-4RU, 7-4MU, and 7-4LU. Sub-basin 7-4RU incorporates the right side of the roadway from Sta 2101+00 to Sta 2117+00, and drains to Wetland 7JS via a roadside ditch and sheet flow. Sub-basin 7-4MU includes the median from Sta 2104+00 to Sta 2115+00, and drains into Wetland 7JS via ditches in the median, and a double 42" RCP cross drain at Sta 2105+00. Sub-basin 7-4LU contains the left side of the roadway from Sta 2105+00 to Sta 2111+00 and drains via sheet flow into Wetland 7HN. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-5U includes sub-basins 7-5RU and 7-5MU. This Basin includes the right side of the roadway from Sta 2117+00 to Sta 2120+20 and the median from Sta 2115+00 to Sta 2121+00, and drains into Wetland 7MS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2118+20. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-5T includes sub-basin 7-5LT. This Basin contains the left side of the roadway from Sta 2111+00 to Sta 2120+50, and drains to Wetland 7NN after stormwater is processed through a dry, shallow, longitudinal pond on the left side of the roadway. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-4, and will provide both treatment and attenuation.

Basin 7-11U includes sub-basin 7-11LU, the left side of the roadway from Sta 2120+50 to Sta 2123+00, and drains into Wetland 7NN via sheet flow. There are no facilities for treatment and attenuation provided within this Basin.

East Basin drainage areas: (refer to Proposed Conditions Drainage Area Maps)

Basin 7-6T includes sub-basin 7-6LT. This Basin consists of the left side of the roadway from Sta 2123+00 to Sta 2127+00, and drains into Wetland 7PN after processing through a dry, shallow, longitudinal pond that outfalls into a connecting ditch on the left side of the roadway. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-6, and will provide both treatment and attenuation.

Basin 7-6U includes sub-basin 7-6LU. This Basin contains the left side of the roadway from Sta 2127+00 to Sta 2156+00, including a portion of CR 54 (sub-basin 7-CR54LU), and drains into Wetland 7PN via ditches on the left side of the roadway.

Basin 7-7T includes sub-basin 7-7RT. This Basin includes the right side of the roadway from Sta 2120+20 to Sta 2127+00, and drains into Wetland 7RS via ditches on the right side of the roadway after stormwater is processed through a dry, shallow, longitudinal pond. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-5, and will provide both treatment and attenuation.

Basin 7-7U includes sub-basin 7-7RU. This Basin encompasses the right side of the roadway from Sta 2127+00 to Sta 2147+00 (outside shoulder only between Sta 2136+50 and Sta 2147+00), and drains into Wetland 7RS via sheet flow and ditches on the right side of the roadway. There are no facilities for treatment and attenuation provided within this basin. A portion of CR54 , sub-basin 7-CR54RU, is also contained in Basin 7-7U.

Basin 7-8T includes sub-basins 7-8MT and 7-8PT. Sub-basin 7-8MT consists of the median from Sta 2121+00 to Sta 2147+00, and the travel lanes of the eastbound roadway from Sta 2136+50 to Sta 2147+00. This sub-basin drains to a wet detention pond (Pond 7-7) on the south side of the roadway via a new 42" RCP cross drain at Sta 2142+00. Sub-basin 7-8PT is the direct drainage area for Pond 7-7. The wet detention Pond 7-7 will provide both attenuation and treatment of the stormwater from the Basin.

Basin 7-8U includes sub-basins 7-8MU and 7-8RU. This Basin contains the median from Sta 2147+00 to the end of the project at Sta 2160+08, as well as the right side of the roadway from Sta 2147+00 to the end of the project, and drains into Wetland 7RS via sheet flow, a median ditch and a cross drain at Sta 2147+00. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-12U includes sub-basin 7-12LU. This Basin includes the left side of the roadway from Sta 2156+00 to the end of project at Sta 2160+08, and drains into Wetland 7SN via cross drains under ramps that are not included in this project. There will be no change to the amount of impervious area in this Basin. Since there is no change between pre-development and post-development conditions for this Basin, neither this Basin (post-development) nor Basin 7-12X (pre-development) has been included in the IPCR model analysis that will be used to evaluate stormwater attenuation. There are no facilities for treatment and attenuation provided within this basin.

3.02 Land Use (Existing and Proposed)

The existing land use in the immediate project area is mostly open space. The land use will generally remain unchanged after construction.

The total project area is about 121.1 acres within the right of way. The existing total area includes about 20.1 acres (17%) of impervious roadway, about 79.9 acres (66%) of pervious grass surfaces, and about 21.1 acres (17%) of wetland and other surface waters.

The proposed total area will include about 30.0 acres (25%) of impervious roadway, about 63.1 acres (52%) of pervious grass surfaces, about 8.6 acres (7%) of ponds and detention/retention areas, and about 19.4 acres (16%) of wetlands and other surface waters.

3.03 100 – Year Floodplain

The Federal Emergency Management Agency (FEMA) has developed floodplain maps for the project area that have been assembled into an area composite shown in Figure 3.

The proposed roadway widening will encroach into portions of the Zone A, 100-year floodplain areas on both sides of the alignment. Impacts and compensation are assessed in Appendix I. A total of 2.99 acre-feet of impact (floodplain fill) has been computed for the proposed widening. This impact will be offset by 6.53 acre-feet of compensation (floodplain excavation). The result of the proposed roadway widening will be a net increase to available floodplain storage in the immediate project area.

3.04 Soil Type Identification

A review of the US Department of Natural Resources Conservation Service (NRCS) soil maps for Polk County revealed seven soil groups within the contributing drainage basins. The soil categories located within the project limits are shown on Figures 4 and 5. The following table provides the generalized, NRCS soil type, soil number, hydrologic soil group (HSG), Seasonal High Water (SHW) and permeability rate for the identified soil groups. Site specific soil data is included in the geotechnical information contained in Appendix J.

Soil Type Identification

Soil Number	Soil Type	Hydrologic Soil Group	SHWT	Permeability In/Hr
3	Candler fine sand	A	>6.0'	6.0-20.0
13	Samsula fine sand	B/D	+2.0'-0	6.0-20.0
15	Tavares fine sand	A	3.5'-6.0'	>6.0
17	Smyrna fine sand	B/D	0-1.0'	0.6-20.0
22	Pomello fine sand	C	2.0'-3.5'	2.0-20.0
25	Placid fine sand	D	+2.0'-0	6.0-20.0
36	Basinger fine sand	D	+2.0'-0	6.0-20.0

3.05 Wetlands Within the Project Area

Jurisdictional wetland boundaries within the project limits were established in accordance with Section 62-340 FAC and the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. Wetland boundaries were originally flagged and surveyed during the Project Development and Environment (PD&E) study. The jurisdictional boundaries were field reviewed and approved by Mr. Dave Bishof of the SWFWMD in August 1994, and Mr. Mark Hurst of the SWFWMD in May 1998. Ms. Linda Ferrel, Ms. Tori Agramonte and Ms. Pauline Baker of the USACOE field verified wetland boundaries for this project in June 1995, April 1996, and August 1998, respectively. Wetland lines were re-evaluated and time extensions granted in August 1999. Refer to Appendix K for related correspondence.

Seasonal high water elevations were established by marking biological indicators (stain lines. elevated lichen lines, etc) in wetlands affected by the project. The elevations were then surveyed. The selected biological indicators were reviewed in the field by Mr. Mark Hurst of the SWFWMD on September 25, 2002.

Descriptions of each wetland within the project limits are given below. Figure 7 shows the location and seasonal high water elevations of each wetland.

WETLAND 7AS

USFWS Classification:	PEM
NRCS Soil Type:	Candler sand, 0-5% slope (3) Non-Hydric
SHW Elevation:	16.9
Drainage Basin:	Kissimmee River

Located at Station No. 2055+60 to 2057+60, approximately 200 ft south of I-4, Wetland 7AS is isolated from Waters of the State and has a total area of approximately 3.6 ac. A non-forested system, Wetland 7AS is a high quality system and little disturbance is reflected in its vegetation, soils and hydrology.

Emergent vegetation is predominantly maidencane and torpedo grass. Bloodroot, meadow beauty and yellow-eyed grass are also common. Flora growing on the fringe of Wetland 7AS includes wax myrtle, St. John's wort, gallberry, saw palmetto and slash pine.

WETLAND 7AaS

USFWS Classification:	PFO
NRCS Soil Type:	Smyrna and Myakka fine sand (17) Non-Hydric
SHW Elevation:	117.2
Drainage Basin:	Kissimmee River

Located at Station No. 2063+90 to 2072+10 , approximately 118 ft south of I-4, Wetland 7AaS is primarily a forested system with a total area of approximately 65.5 ac. The canopy layer is dominated by loblolly bay (*Gordonia lasianthus*), and sweet bay (*Magnolia virginiana*), with relatively few pond cypress (*Taxodium ascendens*). However, the roadside portion of Wetland 7AaS is dominated by shrubby vegetation consisting of primrose willow (*Ludwigia peruviana*) and groundsel tree (*Baccharis halimifolia*). Wax myrtle (*Myrica cerifera*) and immature loblolly bay are also common in the shrub layer. Groundcover vegetation is primarily composed of maidencane (*Panicum hemitomon*), Virginia chain fern (*Woodwardia virginica*), hatpins (*Eriocaulon compressum*), and meadow beauty (*rhexia virginica*).

WETLAND 7CM

USFWS Classification:	PSS
NRCS Soil Type:	Tavares fine sand (15) Non-Hydric
SHW Elevation:	116.9
Drainage Basin:	Kissimmee River

Located at Station No. 2069+60 to 2070+30, within the median of I-4, Wetland 7CM is isolated from Waters of the State and has a total area of approximately 0.3 ac. A forested system, Wetland 7CM has been altered by road construction and changes in drainage patterns.

The dense shrub layer is predominantly Carolina willow. Primrose willow is also common in the shrub layer. Groundcover vegetation contains Virginia chain fern and sedge.

WETLAND 7DS

USFWS Classification:	PFO
NRCS Soil Type:	Smyrna and Myakka fine sands (17) Non-Hydric

SHW Elevation: 117.5
Drainage Basin: Kissimmee River

Located at Station No. 2079+10 to 2080+60 and 2082+90 to 2088+00, approximately 120 ft south of I-4, Wetland 7DS is isolated from Waters of the State and has a total area greater than 50.0 ac. A forested system, Wetland 7DS has been altered by road construction, changes in drainage patterns and agricultural practices.

The canopy layer is dominated by sweetbay and loblolly bay, and is relatively open. Slash pine is also a common canopy species. The dense shrub layer is predominantly saplings of canopy species. Primrose willow is also common in the shrub layer. Groundcover vegetation contains Virginia chain fern, maidencane and marsh fern.

WETLAND 7EM

USFWS Classification: PSS
NRCS Soil Type: Pomella fine sand (22) Non-Hydric
SHW Elevation: 117.5
Drainage Basin: Kissimmee River

Located at Station No. 2077+60 to 2080+60, within the median of I-4, Wetland 7EM is isolated from Waters of the State and has a total area of approximately 0.5 ac. A non-forested system, Wetland 7EM has been altered by road construction and changes in drainage patterns.

The relatively open shrub layer is predominantly Carolina willow and primrose willow. Emergent vegetation is predominantly saw grass and hatpins. Meadow beauty, soft rush, bloodroot and marsh fern are also common. Flora growing on the fringe of Wetland 7EM includes groundsel tree and Virginia chain fern.

WETLAND 7FN

USFWS Classification: PEM
NRCS Soil Type: Samsula muck (13) Hydric
SHW Elevation: 119.1
Drainage Basin: Kissimmee River

Located at Station No. 2080+10 to 2081+10, approximately 150 ft north of I-4, Wetland 7FN is isolated from Waters of the State and has a total area of approximately 6.1 ac. Primarily a non-forested system, Wetland 7FN has been altered by agricultural practices.

The open canopy layer is dominated by loblolly bay. Dahoon holly is also common along the edges of the system. The relatively open shrub layer is predominantly St. John's wort and buttonbush. Groundcover vegetation is dominated by spikerush and sedge. Meadow beauty and Virginia chain fern are also common. Emergent vegetation is predominantly water lily, arrowhead and pickerelweed. Flora growing on the fringe of Wetland 7FN includes wax myrtle, saw palmetto and bahia grass.

WETLAND 7GS

USFWS Classification:	PEM
NRCS Soil Type:	Basinger mucky fine sand, depressional (36) Hydric
SHW Elevation:	117.6
Drainage Basin:	Kissimmee River

Located at Station No. 2092+10 to 2100+20, approximately 120 ft south of I-4, Wetland 7GS is isolated from Waters of the State and has a total area of approximately 3.2 ac. Primarily a non-forested system, Wetland 7GS has been altered by road construction, changes in drainage patterns and agricultural practices.

The relatively open shrub layer is predominantly buttonbush, wax myrtle and groundsel tree. Emergent vegetation is predominantly rush, torpedo grass and maidencane. Yellow-eyed grass, meadow beauty, arrowhead, sedge, camphorweed and cattail are also common emergent species. Flora growing on the fringe of Wetland 7GS includes wax myrtle, groundsel tree, primrose willow and gallberry.

WETLAND 7HN

USFWS Classification:	PEM
NRCS Soil Type:	Samsula muck (13) Hydric
SHW Elevation:	116.8
Drainage Basin:	Kissimmee River

Located at Station No. 2097+00 to 2110+70, approximately 130 ft north of I-4, Wetland 7HN is isolated from Waters of the State and has a total area of approximately 16.1 ac. A non-forested system, Wetland 7HN has been altered by road construction, changes in drainage patterns and agricultural practices.

Emergent vegetation is predominantly water lily. Arrowhead, pickerelweed, buttonbush and bloodroot are also common emergent species. Flora growing on the fringe of Wetland 7HN includes St. John's wort, Virginia chain fern, wax myrtle, Carolina willow, primrose willow, elderberry, cattail, red maple and sweetbay.

WETLAND 7IM

USFWS Classification:	PSS
NRCS Soil Type:	Tavares fine sand (15) Non-Hydric
SHW Elevation:	117.6
Drainage Basin:	Kissimmee River

Located at Station No. 2097+40 to 2099+70, within the median of I-4, Wetland 7IM is isolated from Waters of the State and has a total area of approximately 0.2 ac. A non-forested system, Wetland 7IM has been altered by road construction and changes in drainage patterns.

The relatively open shrub layer is predominantly Carolina willow and primrose willow. Groundsel tree is also common in the shrub layer. Groundcover vegetation is dominated by cattail and camphorweed.

WETLAND 7JS

USFWS Classification:	PEM
NRCS Soil Type:	Basinger fine sand, depressional (36) Hydric
SHW Elevation:	117.0
Drainage Basin:	Kissimmee River

Located at Station No. 2102+00 to 2109+00, approximately 210 ft south of I-4, Wetland 7JS is connected to Waters of the State and has a total area greater than 50.0 ac. A non-forested system, Wetland 7JS has been altered by road construction, changes in drainage patterns and direct encroachment from urbanization.

Emergent vegetation is predominantly arrowhead, pickerelweed and water lily. Rush, buttonbush, meadow beauty, sedge and yellow-eyed grass are also common. Flora growing on the fringe of Wetland 7JS near I-4 includes wax myrtle, Carolina willow, cattail, primrose willow and slash pine.

WETLAND 7KM

USFWS Classification:	PSS
NRCS Soil Type:	Basinger fine sand, depressional (36) Hydric
SHW Elevation:	117.0
Drainage Basin:	Kissimmee River

Located at Station No. 2104+60 to 2108+00, within the median of I-4, Wetland 7KM is isolated from Waters of the State and has a total area of approximately 0.5 ac. A non-forested system, Wetland 7KM has been altered by road construction and changes in drainage patterns.

The dense shrub layer is predominantly Carolina willow, elderberry and primrose willow. Wax myrtle, buttonbush and groundsel tree are also common in the shrub layer. Emergent vegetation is predominantly arrowhead. Water lily is a common emergent species.

WETLAND 7MS

USFWS Classification:	PEM
NRCS Soil Type:	Samsula muck (13) Hydric
SHW Elevation:	117.8
Total Wetland Area:	2.4 ac
Wetland Impact:	0.4 ac
Drainage Basin:	Kissimmee River

Located at station No. 2117+90 to 2120+40, approximately 110 ft south of I-4, Wetland 7MS is isolated from Waters of the State and has a total area of approximately 2.4 ac. A

non-forested system, Wetland 7MS has been altered by road construction, changes in drainage patterns, and agricultural practices.

Emergent vegetation is predominantly maidencane, torpedo grass, and water lily, and cattail, bloodroot, hatpins, rushes and sedges are also common. Flora growing on the fringe of Wetland 7MS adjacent to I-4 includes primrose willow, cattail, gallberry, and saw palmetto.

WETLAND 7NN

USFWS Classification:	PEM
NRCS Soil Type:	Smyrna and Myakka fine sand (17) Non-Hydric
SHW Elevation:	117.5
Drainage Basin:	Kissimmee River

Located at Station No. 2121+10 to 2122+50, approximately 120 ft north of I-4, Wetland 7NN is isolated from Waters of the State and has a total area of approximately 0.6 ac. A non-forested system, Wetland 7NN has been altered by road construction, changes in drainage patterns, and agricultural practices.

Emergent vegetation is predominantly sand cordgrass. Maidencane, pickerelweed, and buttonbush are common emergent species. Flora growing on the fringe of Wetland 7NN includes Carolina willow, groundsel tree, and bloodroot.

WETLAND 7PN

USFWS Classification:	PFO
NRCS Soil Type:	Samsula muck (13) Hydric
	Pomella fine sand (22) Non-Hydric
	Placid & Myakka find sand, depressional (25) Hydric
	Kaliga muck (32) Hydric
SHW Elevation:	114.1
Drainage Basin:	Kissimmee River

Located at Station No. 2133+00 to 2158+30 approximately 100 ft north of I-4, Wetland 7PN is isolated from Waters of the State and has a total area greater than 50.0 ac. Primarily a forested system, Wetland 7PN has been altered by road construction, changes in drainage patterns, and agricultural practices.

The canopy layer is dominated by red maple, and is closed. Sweetbay is also present as a canopy species. The dense shrub layer is predominantly a fringe along I-4, and consists of canopy saplings, wax myrtle, and Carolina willow. Groundsel tree and elderberry are also common in the shrub layer. Groundcover vegetation is dominated by Virginia chain fern and lizard's tail. Cinnamon fern, royal fern, marsh fern, and netted chain fern are also common groundcover species.

WETLAND 7RS

USFWS Classification: PFO

NRCS Soil Type:	Samsula muck (13) Hydric
	Smyrna and Myakka fine sand (17) Non-Hydric
	Basinger mucky fine sand, depressional (36) Hydric
SHW Elevation:	113.8
Drainage Basin:	Kissimmee River

Located at Station No. 2137+10 to 2140+50, and 2136+70 to end of project, approximately 90 ft south of I-4, Wetland 7RS (7121S) is connected to Waters of the State and has a total area greater than 50.0 ac. A forested system, Wetland 7RS has been altered by road construction, changes in drainage patterns and agricultural practices.

The closed canopy layer is dominated by red maple and sweetbay. Laurel oak and slash pine are also common canopy species. The shrub layer is predominantly canopy saplings and is relatively open. Groundcover vegetation is dominated by Virginia chain fern. Royal fern, cinnamon fern, marsh fern, and netted chain fern are also common groundcover species.

3.06 Proposed Impacts to Wetlands and Other Surface Waters

Since the proposed project involves an existing, linear transportation corridor, the opportunity to avoid wetland impacts is limited. Additionally, the proposed widening must be constructed on the outside of the existing roadway because the median is reserved for the future high-speed rail corridor. Wetland impacts have been minimized to the extent practical by steepening side slopes from the standard 6:1 to 4:1 in wetland areas. A 4:1 side slope is the steepest slope that can be constructed on a high-speed, limited access facility without compromising the safety of the traveling public.

Unavoidable, permanent impacts to wetlands and other surface waters will result from placement of fill material for the construction of roadway embankment and stormwater treatment ponds. The proposed project will result in 1.99 acres of permanent wetland impact.

Temporary clearing of wetlands and other surface waters will result from construction equipment working within wetlands to construct roadway embankment, install drainage structures and replace the limited-access right-of-way fence. The proposed project will result in 3.02 acres of temporary wetland impacts.

Proposed impacts to wetlands and other surface waters were summarized in the final version of Table One, Section E of the ERP application form, as well as in the ERP (#43011896.027, issued 2/25/03) itself. (Impact acreages are also identified on the Proposed Conditions Drainage Area Maps.) The areal extent of the impacts was calculated on CADD using digital design and survey files.

3.07 Wetland Mitigation

Compensation for unavoidable wetland impacts will be provided through the FDOT

Mitigation Plan in accordance with FS 373.4137.

3.08 Threatened and Endangered Species

Extensive data collection, field surveys and agency coordination were conducted during the Project Development & Environment (PD&E) Study with regard to protected species. The Listed Species Evaluation prepared for the I-4 corridor from Memorial Blvd. to the Osceola County line is located in Appendix L of this document.

Protected species data collection efforts involved research of existing available information for the project area and contacting appropriate agencies (USFWS, FFWCC). In addition, field surveys were conducted within the project's natural habitats. All data was compiled and a list of protected species which were either known to occur, or could potentially occur, within the project study area was developed. This list included the gopher tortoise, eastern indigo snake and the Florida scrub jay.

Gopher Tortoise

Wildlife surveys conducted during the PD&E study revealed gopher tortoise burrows within or immediately adjacent to the right-of-way. The gopher tortoise is currently under review for listing by the USFWS and is listed as a Species of Special Concern (SSC) by the FFWCC. A gopher tortoise Incidental Take Permit (Permit # POL 21) was acquired for impacts to gopher tortoise burrows and habitat. A copy of the permit is provided in Appendix M of this document.

Eastern Indigo Snake

The Eastern indigo is listed as threatened by the USFWS and the FFWCC. Since the indigo is a commensal species with the gopher tortoise, it is presumed to potentially occur within the project area. The FDOT Standard Protection Measures for the Eastern Indigo Snake, as approved by the USFWS, will be implemented during construction. The protection measures are provided in the Listed Species Evaluation located in Appendix L of this document.

Florida Scrub Jay

The Florida scrub jay is listed as threatened by the USFWS and the FFWCC. Surveys conducted for this project revealed the presence of scrub jays adjacent to the right-of-way in Segment 7. The FDOT has provided mitigation for impacts to scrub jay habitat through withdrawal of 6.3 acre-credits from the Platt Branch Mitigation Bank. A copy of the receipt for mitigation credits is provided in Appendix M of this document.

4.0 DESCRIPTION OF THE STORMWATER MANAGEMENT SYSTEM

4.01 General System Discussion

The increase in number of travel lanes and wider shoulders causes an increase in impervious surfaces and the associated increase in stormwater runoff. Dry detention/retention facilities will be constructed west of County Road (CR) 54. The proposed drainage design concept for this area is to provide the required treatment and attenuation of the stormwater runoff with swales (or dry, shallow, longitudinal ponds), ditch blocks and control structures (overflow weirs) to meter the flow. East of CR 54, a wet detention pond will be constructed. The stormwater management facilities and the drainage conveyance system have been designed to meet the FDOT's Drainage Manual and also, to comply with Southwest Florida Water Management District's (SWFWMD) current Environmental Resource Permitting requirements. The detailed description of each Basin is given in Section 3.01.

5.0 COMPLIANCE WITH ENVIRONMENTAL RESOURCE PROTECTION (ERP) REGULATIONS

5.01 SWFWMD (ERP) Requirements

SWFWMD requires stormwater runoff from new impervious surfaces to be treated in order that the State Water Quality Standards will be met as set forth in Chapter 17-3, Florida Administrative Code (FAC).

SWFWMD also requires that the projected water surface elevations for the proposed conditions cannot exceed the existing conditions upstream or downstream from the project area for both the 25-yr and 100-yr design storm events. In addition, for Open Basins, the peak flow rate for the proposed conditions cannot exceed that for the existing conditions for the 25yr/24hr storm. For Closed Basins, the difference between the proposed conditions and existing conditions 100yr/24hr runoff volume must be retained onsite.

5.02 Proposed Project Compliance with Requirements

Water quality treatment volumes were calculated based upon the requirements for dry detention/retention ponds and for wet detention ponds, as appropriate. The first flush to be treated for the dry detention/retention facilities is one half-inch of runoff from the total contributing basin area. The first flush to be treated for the wet detention pond is one-inch of runoff from the total contributing basin area. The project's total new impervious surface for which stormwater treatment is required is 9.9 acres. The proposed stormwater treatment facilities include 10.6 acres of impervious surface within their drainage areas. Therefore, the result of the roadway widening project will be an increase in stormwater treatment in the project area, exceeding the permitting requirement.

The installation of proposed storm sewer systems and facilities will not create adverse water surface elevation impacts during a 25-yr or a 100-yr design storm. The storm sewers themselves are designed for the 10-year storm frequency, and the ponds provide significant attenuation during the 25-year/24-hour design storm. Pond routing analysis has also shown that the post-construction 100–year design storm discharges should also be less than 100-year pre-construction discharges from the site. Recovery of both the stormwater treatment volumes and the pre/post-100-year difference volumes (for the Closed Basin facilities) is well within acceptable time limits. Therefore, the proposed project also meets the ERP water quantity requirements.

6.0 DESCRIPTION OF DESIGN CALCULATIONS AND OTHER SUPPORT DATA

The computations to support the proposed design can be found in the Appendices. The StormCAD model was used to design the storm drains, and the CulvertMaster software was used to analyze the extensions of the cross drains. The ICPR model was used to design both the detention/retention facilities and the wet detention pond, and the ModRet program was used to evaluate retention volume recovery. Methods described in the "Storm Drains Handbook" were used to design the inlets and evaluate the potential spread of flow in the shoulder gutter areas.

Appendices A, B, C and E contain the calculations and support documentation for the design of the stormwater attenuation and treatment facilities, including the design hydrology, pond routings and treatment volume recovery analyses. Appendix D includes the FDOT Critical Storm Duration analysis. Appendix F contains an evaluation of the spacing for the shoulder gutter inlets (spread calculations), as well as an assessment of the inlet capacities. Appendix G contains the HGL analysis for the storm sewer design, and Appendix H includes the cross drain culvert evaluations. The floodplain impact and compensation computations are contained in Appendix I, as is the analysis for determining the 100-yr flood elevations. Finally, Appendices J through M contain support data for the proposed drainage design, including geotechnical data, listed species information, and correspondence from and to wetland and wildlife agencies.

Other support data for the design of the drainage and stormwater management facilities can be found in the proposed Construction Plans, the Existing Conditions and Proposed Conditions Drainage Area Maps and the Floodplain Analysis Cross-Sections. The Construction Plans are included separately from this Drainage Report, as is a document that contains the Drainage Area Maps and the Floodplain Cross-Sections.

7.0 CONTROL AND ABATEMENT OF EROSION AND WATER POLLUTION

Per the FDOT Drainage Manual, the Contractor will be responsible for implementing all measures necessary to control erosion within the limits of the project. These measures shall consist of the construction and maintenance of temporary erosion control features to prevent the pollution of water and protect public or private property adjacent to the project right of way. Additional measures may be required as directed by the Engineer due to unforeseen conditions at the time of construction.

The Contractor shall take sufficient precautions to prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, bitumens, oils, calcium chloride, or other harmful materials.

When dewatering operations are necessary during construction, the water shall be treated before discharge into receiving bodies of water. Treatment can be accomplished by pumping the water into grassed swales, suitable vegetated areas, sediment basins, or an area confined by enclosure in a turbidity barrier.

Staging areas, borrow pits and disposal areas shall be approved by the Engineer prior to construction, in order that erosion during and after construction will not result in harmful siltation or water pollution.

Temporary erosion and water pollution control features shall consist of: temporary grassing, temporary sodding, temporary mulching, sandbagging, slope drains, sediment basins, sediment checks, berms, baled hay or straw, floating turbidity barrier, staked turbidity barrier and silt fence, as appropriate. Details can be found in the FDOT Roadway and Traffic Design Standards, and requirements for the items are described in Section 104 of the FDOT Standard Specifications.

The Contractor shall be responsible for routine maintenance of permanent and temporary erosion control features until the project is completed and accepted. In the event that erosion control devices become damaged or fail to operate as intended, the Contractor will be responsible for their replacement. Upon completion of the project or when permanent erosion control devices are in place, the temporary erosion control devices shall be removed or disposed of in a method that will not result in harmful impacts.

Best management practices for erosion and turbidity control shall be utilized at all times during project construction to prevent erosion and sedimentation into Waters of the State. Erosion and turbidity control devices shall be inspected, per NPDES permit requirements, by a qualified person and be maintained to ensure their effectiveness at all times during construction.

8.0 MAINTENANCE OPERATIONS

The Florida Department of Transportation will be the entity responsible for maintenance and operation of the proposed drainage improvements. The main goal of the maintenance activities is to keep the proposed facilities free of significant debris, sedimentation and vegetation that could substantially reduce capacities and efficiencies. These operations will be required to maintain a properly functioning system. Maintenance operations that would be typical for maintaining roadway drainage systems include but are not limited to the following items:

- Roadway Inlets and Pipes: Periodic inspections of the roadway conveyance system to prevent restrictions and/or blockages in pipes and inlets. Since soil erosion and sedimentation are likely occurrences in the project area, periodic removal of silt from the inlets/pipes will be required. Maintenance of the inlets and pipes shall also consist of periodic checks for erosion problems that could occur within the roadway drainage system. Additional sodding and/or riprap material may be required in the event that unforeseen erosion occurs as a result of the construction.

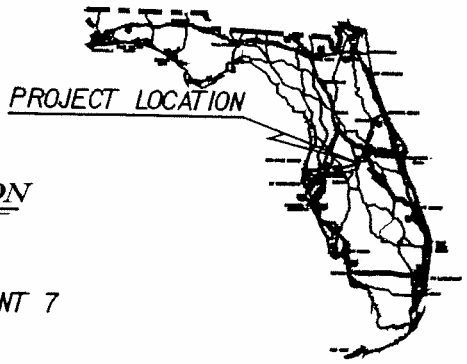
- Ditches and Ponds: Ditches and ponds on the project shall be checked regularly for sediment and erosion problems. Ditch or pond areas with erosion problems shall be repaired and re-grassed as necessary in order to limit the likelihood of reduced water quality benefits.

- Cross Drains and Pond Control Structures: Cross drains and pond control structures are often susceptible to siltation, scouring and erosion. Such facilities should be inspected periodically to prevent such maintenance problems. Vegetation that is overgrown on the upstream and downstream sides of these structures should be maintained in a manner in which flow restriction will not occur. The removal of silt and debris from the structures will be required to maintain the hydraulic capacity of the crossing or outfall. Failure to maintain these facilities could result in upstream flooding.

Figures

Project Location Map

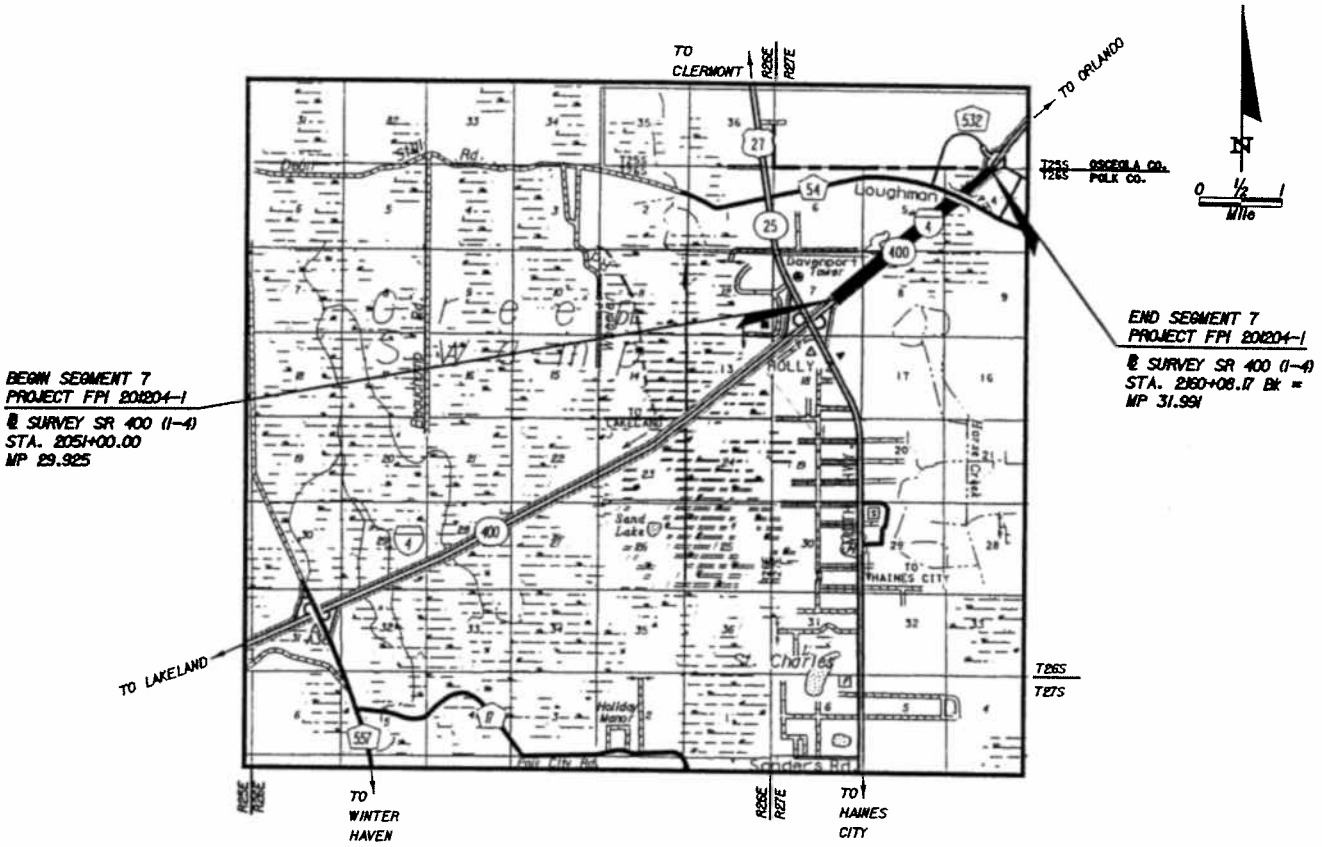
Figure 1



STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

POLK COUNTY FPID: 201204-1-52-01

WIDENING PROJECT FOR SR 400 (I-4) SEGMENT 7



ENGINEER OF RECORD:

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL. 33647
Tel. (813) 977-3434
EBN 6572

PROJECT LOCATION MAP	FIG. NO. 1

Existing Conditions Aerial Photography

Figure 2

OSCEOLA CO.
POLK CO.

N

1"= 1500'

P:\E9X9470\600DISC\620DESIGN\DRAINAGE\ARCINFO\7AERIAL_FIGURE.DWG LATKOWKJ 08-OCT 2002

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL. 33647
Tel. (813) 977-3434
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

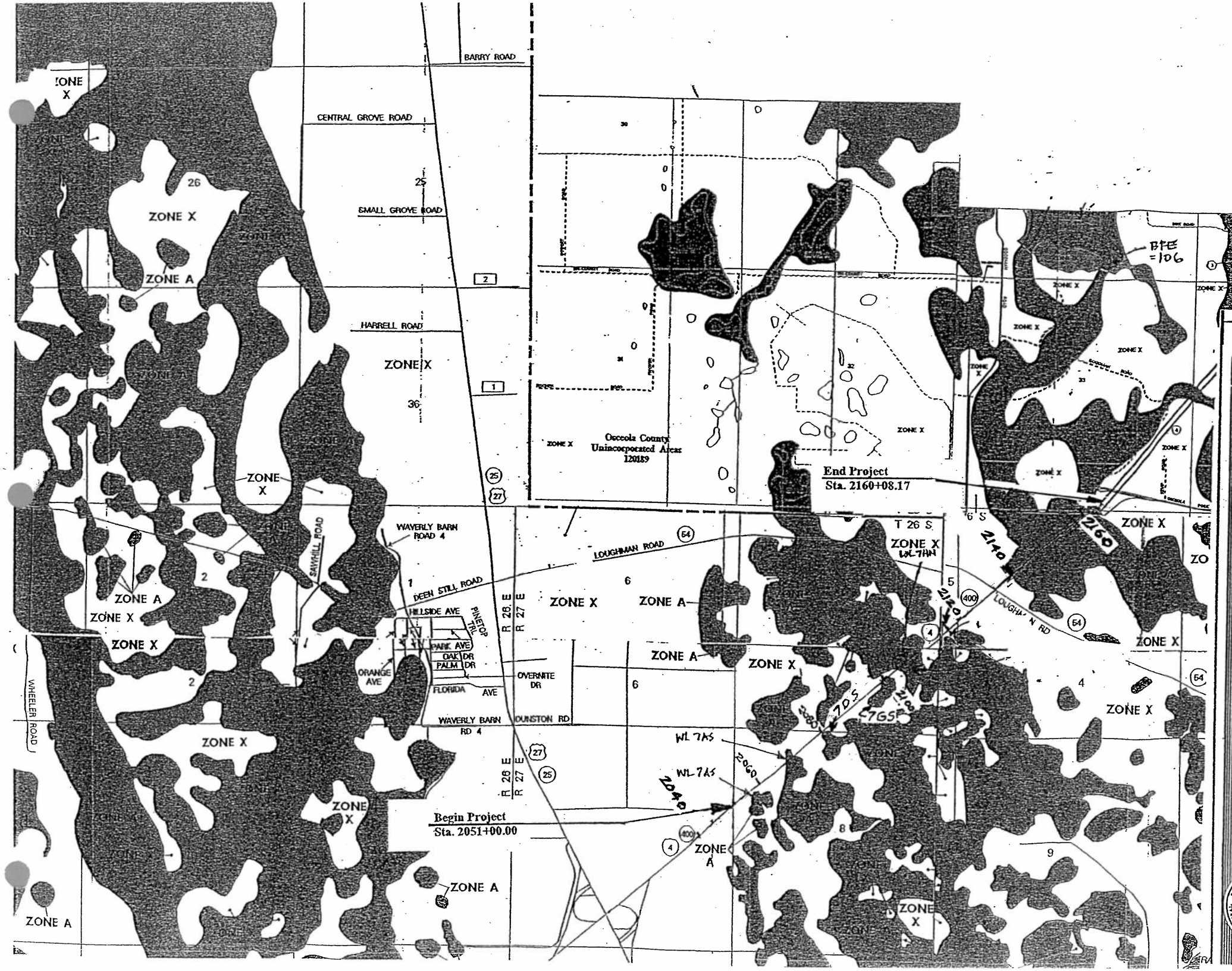
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EXISTING CONDITIONS AERIAL PHOTOGRAPHY SR 400 (I-4) SEGMENT 7

FIGURE NO. 2

FEMA Floodplain Map (Composite of Panels)

Figure 3



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

POLK COUNTY,
FLORIDA
AND INCORPORATED AREAS

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
POLK COUNTY			

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.

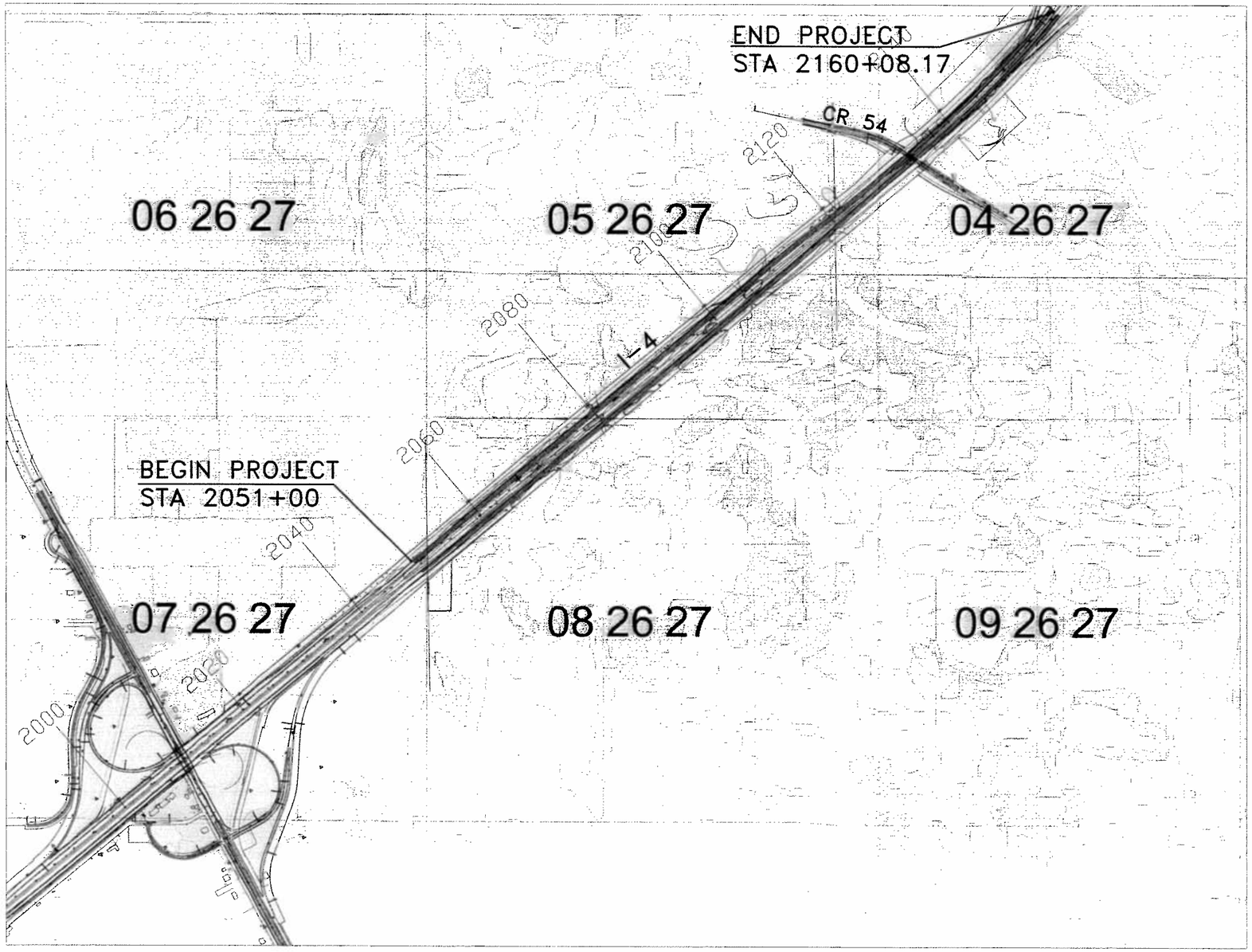
EFFECTIVE DATE:
DECEMBER 20, 2000

E-384

Federal Emergency Management Agency

Existing Conditions Hydrologic Soil Groups

Figure 4



OSCEOLA CO.

POLK CO.

N

1"= 1500'

LEGEND

HYDROLOGIC SOIL GROUPS

- A
- B/D
- C
- D
- UND OR W

15 26 27 (EXAMPLE) – SECTION, TOWNSHIP, RANGE

N

1 Mile 5000 Feet

0 0

Scale 1:20000

¼ ½ ¾ 1 2 3 4 5 1000 2000 3000 4000 5000

R 26 E R 27 E

OSCEOLA COUNTY

625 000 FEET

END PROJECT

BEGIN PROJECT

T. 26 S.

(Joins sheet 25)

(Joins sheet 26)

605 000 FEET

Pasture Creek

Existing Conditions
Wetland/Floodplain Areas

Figure 6

END PROJECT
STA 2160+08.17

BEGIN PROJECT
STA 2051+00

36 25 26 | 31 25 27 | 32 25 27 | 33 25 27 | 34 25 27

01 26 26 | 06 26 27 | 05 26 27 | 04 26 27 | 03 26 27

12 26 26 | 07 26 27 | 08 26 27 | 09 26 27 | 10 26 27

13 26 26 | 18 26 27 | 17 26 27 | 16 26 27 | 15 26 27

OSCEOLA CO.
POLK CO.

CR 54

I-4

R/W

7PN 7RS 7NR 7NS 7JS 7KM 7GS 7FN 7EM 7CM 7DS 7AGS 7AS

N
1"= 2000'

LEGEND

- FLOOD ZONE "A"
- WETLANDS
- 5' CONTOURS (EXAMPLE)
- 7KM – (EXAMPLE) JURISDICTIONAL WETLAND IDENTIFICATION
- 15 26 27 (EXAMPLE) – SECTION, TOWNSHIP, RANGE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel: (813) 977-3434
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

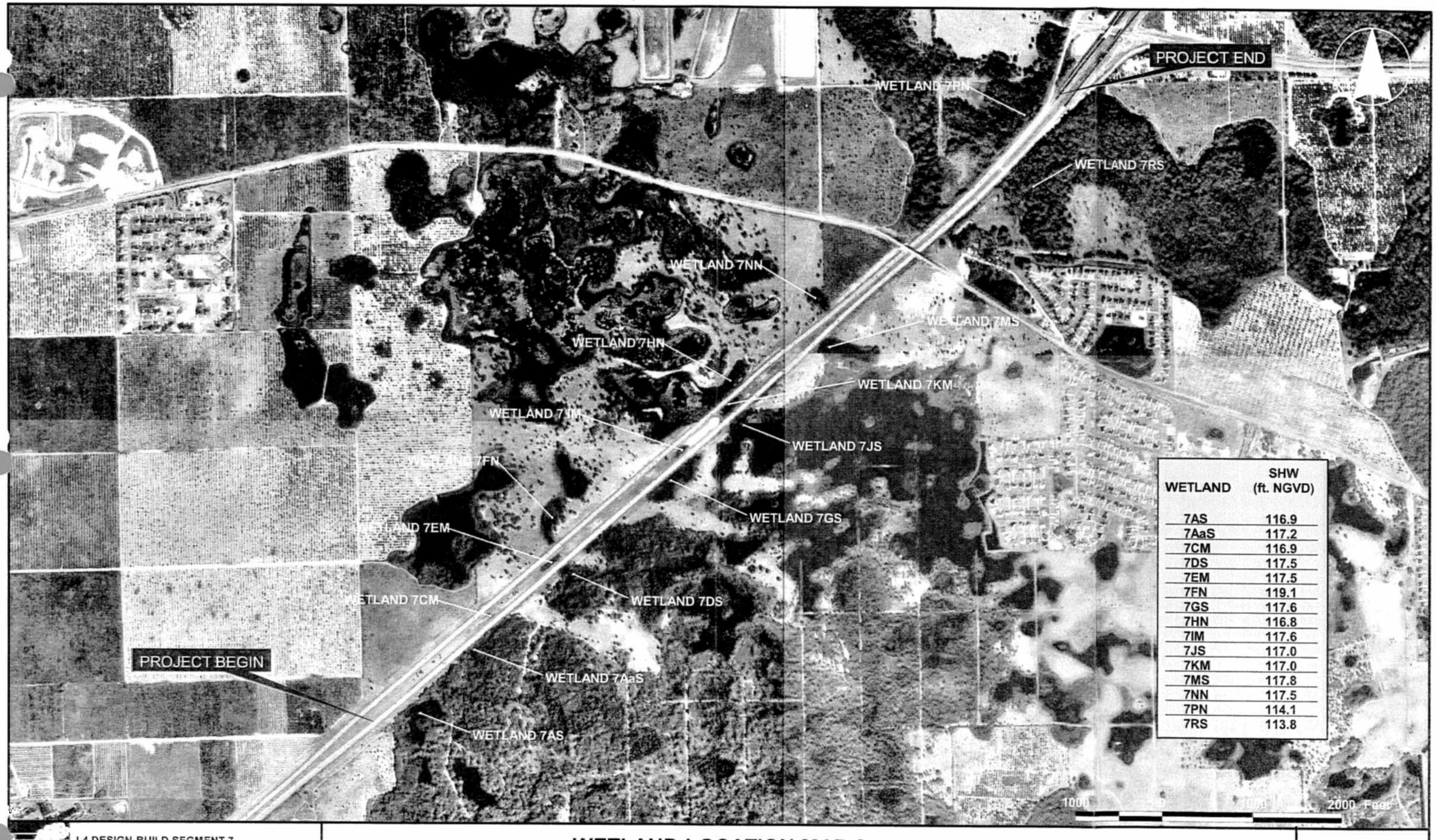
EXISTING CONDITIONS
WETLAND/FLOODPLAIN AREAS
SR 400 (I-4) SEGMENT 7

FIGURE NO. 6

P:\E9X94700\600DISC\DRAINAGE\ARCINFO\7FLOODPLAINNEW.DWG 08-OCT 2002 LATKOWKJ

Wetland Location Map & Seasonal High Water Elevations

Figure 7



WETLAND	SHW (ft. NGVD)
7AS	116.9
7AaS	117.2
7CM	116.9
7DS	117.5
7EM	117.5
7FN	119.1
7GS	117.6
7HN	116.8
7IM	117.6
7JS	117.0
7KM	117.0
7MS	117.8
7NN	117.5
7PN	114.1
7RS	113.8

I-4 DESIGN-BUILD SEGMENT 7
E AST OF US 27 TO OSCEOLA COUNTY LINE
SEA Project No. 02.527

WETLAND LOCATION MAP & SEASONAL HIGH WATER ELEVATIONS

Figure 7

Appendix A

Onsite Basin Hydrology - Pre and Post Construction Conditions

Appendix A

APPENDIX A
Onsite Basin Hydrology – Pre and Post Construction Conditions
I-4 Segment 7

Summary:

In order to provide mitigation for the impacts the project may have on the hydrology and water quality in the project vicinity, it is necessary to determine the runoff from the existing project area and compare it with runoff from the proposed project area. Onsite drainage areas have been developed for a total of 62.64 acres. Within them, the pavement area will change from the existing area of 20.07 acres to 29.94 acres, for an increase of 9.88 acres. Water quality treatment must be provided for an impervious area equivalent or more to this increase. The proposed facilities will treat an impervious area of 10.64 acres to provide more water quality treatment than required.

An accepted method for computing runoff hydrology is the use of the ICPR® software (Streamline Technologies) to determine runoff hydrographs, and to model both the effects of changing the runoff characteristics of the improvements, and the flow attenuation provided by the designed flow control and treatment facilities.

The project area in which the runoff will be modified by the improvements is subdivided into basins and sub-basins for the existing condition and for the improved condition. These delineations are shown on the Existing Conditions Drainage Area Maps and the Proposed Conditions Drainage Area Maps. The basin input variables for the program are the impervious areas, pervious areas, CN- values, and Times of Concentration. The impervious and pervious areas have been tabulated in the following Tables: Table A.1, Pre-development Areas Calculations; TableA.2, Post-development (Treated) Areas Calculations; and TableA.3, Post-development (Untreated) Areas Calculations. The weighted CN-values and Times of Concentration are calculated in Table A.4, Pre-development NRCS Data Sheets; Table A.5, Post-development (Treated Areas) NRCS Data Sheets; and Table A.6, Post-development (Untreated Areas) NRCS Data Sheets. This hydrologic data was then input into the ICPR model for generation of the runoff hydrographs. An echo printout of the ICPR input data can be found in Appendix C, ICPR Input Report. The ICPR Basin Summary Output sheets for both the pre-development and post-development conditions 25yr/24hr and 100yr/24hr hydrographs (for SWFWMD – ERP) can be found in Tables A.7 and A.8, respectively.

The Pre-development Basins and Post-development Basins are described, respectively, under the Onsite Basin Descriptions, Existing Conditions and the Onsite Basin Descriptions, Proposed Conditions headings, following the Design Criteria.

Design Criteria:

Methodology – NRCS (SCS) Unit Hydrograph with a 256 peaking (shape) factor

Rainfall Volumes:

SWFWMD rainfall volumes are derived from Figures A.1 and A.2 taken from the ERP Manual, Part D, Project Design Aids, SWFWMD. The 25-year 24-hour rainfall total shown in Figure A.1 is less than 7-inches. Therefore, 7-inches is used for design. The 100-year 24-hour from Figure A.2 is 9.5 inches, and 9.5-inches is used for design.

FDOT volumes for the 1-hour through 24-hour durations and the 2-year through 100-year frequencies are derived from Rainfall-intensity-Duration-Frequency Curves Zone 8, FDOT Hydrology Handbook (see Figures A.3 and A.4). FDOT volumes for the 2-day through 10-day durations and the 2-year through 100-year frequencies are interpreted from Precipitation Depth Data, FDOT Hydrology Handbook (see Figures A.5 through A.9). The derived values for the critical duration analysis are shown in Table A.9 - FDOT Critical Storm Analysis – Rainfall Volumes. (The FDOT Critical Storm Analysis results can be found in Appendix D.)

Rainfall Distributions

NRCS (SCS) Type II, Florida Modified (for SWFWMD – ERP - analysis)
FDOT Critical Duration Distributions (for FDOT analysis)

Runoff Curve Numbers from Table T-7, FDOT Hydrology Handbook (Table A.10):

Pavement: 98
Grass, Fair Condition, Hydrologic Soil Group A: 49
Grass, Fair Condition, Hydrologic Soil Group D: 84

Time of Concentration:

10 minutes (minimum) for overland and shallow concentrated flow travel time
Concentrated Pipe and channel flow travel time estimated assuming:

For 18" diameter pipe (typical): $V = 64*s^{0.5}$ (corresponds to 2.5 fps for FDOT minimum allowable slope for 18" pipe – 0.151%)

For 5' wide flat-bottom grass lined ditch (typical): $V = 12*s^{0.5}$ (corresponds to 5' to 6'-wide ditch at 0.5' depth and n=0.2 [per FDOT requirement for unmaintained median grass – design condition])

Design Procedure:

The delineation of the onsite basins and sub-basins are based on the destination of the runoff as necessary for routing of hydrographs for the ICPR model. The sub-basins are identified by a coding system. For example: Basin 7-1RX means the sub-basin of 7-1, R for Right side, X for existing conditions. The code is R for sub-basin running off to Right side roadway, M for sub-basin running off to the Median of the roadway, L for sub-basin running off to Left side roadway, X for existing conditions (pre-development), T for sub-basin running off to a treatment facility under proposed conditions (Post-development

Treated), and U for sub-basin running off without treatment under proposed conditions (Post-development Untreated). The areas of pervious with their appropriate CN-values, the areas of impervious, and the times of concentration are calculated for each sub-basin. The resulting Basin/sub-basin data is then input into the ICPR model for runoff hydrograph generation for both the pre-development and post-development 25-year 24-hour and 100-year 24-hour storms.

Onsite Basin Descriptions, General:

SR 400 (I-4) runs in a northeast direction with a series of wetlands and floodplains on each side. The major drainage division for the project is based on two major areas contributing to floodplains with two different estimated elevations. The West Basin from the beginning of the project to just west of CR 54 drains to wetlands having an estimated floodplain elevation 120' NGVD. The remaining portion of the project, the East Basin drains to wetlands east of CR 54 having an estimated floodplain elevation of 115' NGVD.

Within the West Basin, most of the adjacent wetlands appear connected within the floodplain elevation. Cross drains under the roadway provide connection to the wetlands within the median and on opposite sides of the roadways. However, there are four wetlands within the project in the West Basin that are apparently isolated from the larger floodplain by higher ground. Their floodplain elevation is estimated also to be 120' NGVD, since the soils are quite permeable so these wetlands are connected by groundwater and will equalize relatively quickly.

Within the East Basin, there are two large wetlands on opposite sides of the roadways that receive runoff from the project. They are connected by twin cross drains under the roadways.

Onsite Basin Descriptions, Existing Conditions:

West Basin drainage areas: (refer to Existing Conditions Drainage Area Maps):

Basin 7-9X includes sub-basin 7-9RX, and drains the right side of the roadway from the beginning of the project to Sta 2056+50 into Wetland 7AS. Drainage from the adjacent, future I-4 Segment 9 project to the west also reaches Wetland 7AS and is conveyed a short distance in the right roadside ditch within the Segment 7 project limits.

Basin 7-1X includes sub-basins 7-1RX, 7-1MX, and 7-1LX. This Basin encompasses both sides of the roadway not included in Basin 7-9 and the median from the beginning of the project to Sta 2074+00, and drains into Wetland 7AaS via ditches on each side of the roadway and in the median, and a 30" RCP cross drain at Sta 2070+00. Drainage from the I-4 Segment 9 area also reaches Wetland 7AaS and is conveyed in the left roadside ditch within the Segment 7 project limits.

Basin 7-2X includes sub-basins 7-2RX and 7-2MX. This Basin is comprised of the right side of the roadway and median from Sta 2074+00 to Sta 2087+00, and drains into Wetland 7DS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2080+00.

Basin 7-10X includes sub-basin 7-10LX. This Basin includes the left side of the roadway from Sta 2074+00 to Sta 2087+00, and drains into Wetland 7FN via ditches on the left side of the roadway.

Basin 7-3X includes sub-basins 7-3RX and 7-3MX. This Basin contains the right side of the roadway and median from Sta 2087+00 to Sta 2102+00, and drains into Wetland 7GS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2098+00.

Basin 7-4X includes sub-basins 7-4RX, 7-4MX, and 7-4LX. This Basin incorporates both sides of the roadway and median not included in Basin 7-3 from Sta 2087+00 to Sta 2117+00, and drains into Wetland 7JS and Wetland 7HN via ditches on each side of the roadway and in the median, and a double 42" RCP cross drain at Sta 2105+00.

Basin 7-5X includes sub-basins 7-5RX and 7-5MX. This Basin includes the right side of the roadway and median from Sta 2115+00 to Sta 2121+00, and drains into Wetland 7MS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2118+20.

Basin 7-11X includes sub-basin 7-11LX. This Basin encompasses the left side of the roadway from Sta 2116+00 to Sta 2123+00, and drains into Wetland 7NN via ditches on the left side of the roadway.

East Basin drainage areas: (refer to Existing Conditions Drainage Area Maps)

Basin 7-6X includes sub-basins 7-6LX and 7-6MX. Sub-basin 7-6LX contains the left side of the roadway from Sta 2123+00 to Sta 2156+00, including a portion of CR 54 (sub-basin 7-CR54LX) and drains into Wetland 7PN via ditches on the left side of the roadway. Sub-basin 7-6MX is comprised of the median between Sta 2121+00 and Sta 2132+00, and drains, via a median ditch, to a 24" RCP cross drain that connects the median to the left outside ditch at Sta 2132+00. Drainage from the sub-basins is conveyed east to Wetland 7PN.

Basin 7-7X includes sub-basins 7-7RX and 7-7MX. This Basin encompasses the right side of the roadway and median, except for the portion included in sub-basin 7-6X, from Sta 2121+00 to the end of project (Sta 2160+08), and drains into Wetland 7RS via ditches on the right side of the roadway and in the median, and a double 36" RCP cross drain at Sta 2147+00. A portion of CR54, sub-basin 7-CR54RX, is also contained in Basin 7-7X.

Basin 7-8X is the direct drainage area for Pond 7-7.

Basin 7-12X includes sub-basin 7-12LX. This Basin incorporates the left side of the roadway from Sta 2156+00 to the end of project (Sta 2160+08), and drains into Wetland 7PN via cross drains under ramps that are not included in the project.

Onsite Basin Descriptions, Proposed Conditions:

West Basin drainage areas: (refer to Proposed Conditions Drainage Area Maps)

Basin 7-9U includes sub-basin 7-9RU, and drains the right side of the eastbound roadway from the beginning of the project to Sta 2056+50 into Wetland 7AS. Drainage from the adjacent, future I-4 Segment 9 project also reaches Wetland 7AS and is conveyed a short distance in the right roadside ditch within the Segment 7 project limits. Drainage peak flows and volumes from the Segment 9 project will be somewhat less than existing (per ERP 44011896.024), which will allow for the release of more peak flow and volume from Basin 7-9U. No direct treatment or attenuation is provided for Basin 7-9U.

Basin 7-1T includes sub-basins 7-1LT and 7-1MT. This Basin contains the median and the left side of the roadway from Sta 2051+00 to Sta 2069+00. Stormwater from Basin 7-1T is collected via a shoulder gutter and storm drain system on the left side of the roadway and sheet flow into the median, is processed through a dry shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7AaS by a 30" RCP cross drain at Sta 2070+00. A ditch block in the median at Sta 2051+00 will prevent median drainage from Segment 9 from flowing east into the Segment 7 project. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-1, and will provide both treatment and attenuation.

Basin 7-1U includes sub-basins 7-1RU, 7-1MU, and 7-1LU. This Basin contains the right side of the roadway from Sta 2056+50 to Sta 2074+00 that drains into Wetland 7AaS via a ditch on the right side of the roadway. The also included left side of roadway and median between Sta 2069+00 and Sta 2074+00, drain to Wetland 7AaS via ditches and a 30" RCP cross drain at Sta 2070+00. Drainage from the Segment 9 project also reaches Wetland 7AaS and is conveyed in the left roadside ditch within the Segment 7 project limits. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-2U includes sub-basins 7-2RU and 7-2MU. This Basin encompasses the right side of the roadway from Sta 2074+00 to Sta 2090+50, as well as a portion of the median between Sta 2074+00 and Sta 2081+00, and drains into Wetland 7DS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2080+00. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-10U includes sub-basin 7-10LU. This Basin incorporates the left side of the roadway from Sta 2074+00 to Sta 2079+00, and drains into Wetland 7FN via ditches on the left side of the roadway. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-3T includes sub-basins 7-3LT and 7-3MT. This Basin consists of an area from Sta 2079+00 to Sta 2094+00 on the left side of the roadway, and from Sta 2081+00 to Sta 2095+50 in the median. Stormwater from Basin 7-3T is collected via a shoulder gutter and storm drain system on the left side of the roadway, is processed through a dry, shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7GS via a 24" RCP cross drain at Sta 2098+00. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-2, and will provide both treatment and attenuation.

Basin 7-3U includes sub-basins 7-3RU and 7-3MU. Sub-basin 7-3RU includes the right side of the roadway from Sta 2090+50 to Sta 2101+00, and drains into Wetland 7GS via ditches on the right side of the roadway. Sub-basin 7-3MU includes the median from Sta 2095+50 to Sta 2099+93, and drains to Wetland 7GS via a 24" RCP cross drain at Sta 2098+00. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-4T includes sub-basins 7-4LT and 7-4MT. This Basin contains the left side of the roadway between Sta 2094+00 and Sta 2104+00, and the median between Sta 2099+93 and Sta 2104+00. Stormwater from Basin 7-4T is collected via a shoulder gutter and storm drain system on the left side of the roadway and sheet flow into the median, is processed through a dry, shallow, longitudinal pond in the median, and is ultimately discharged to Wetland 7JS via a double 42" RCP cross drain at Sta 2105+00. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-3, and will provide both treatment and attenuation.

Basin 7-4U includes sub-basins 7-4RU, 7-4MU, and 7-4LU. Sub-basin 7-4RU incorporates the right side of the roadway from Sta 2101+00 to Sta 2117+00, and drains to Wetland 7JS via a roadside ditch and sheet flow. Sub-basin 7-4MU includes the median from Sta 2104+00 to Sta 2115+00, and drains into Wetland 7JS via ditches in the median, and a double 42" RCP cross drain at Sta 2105+00. Sub-basin 7-4LU contains the left side of the roadway from Sta 2105+00 to Sta 2111+00 and drains via sheet flow into Wetland 7HN. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-5U includes sub-basins 7-5RU and 7-5MU. This Basin includes the right side of the roadway from Sta 2117+00 to Sta 2120+20 and the median from Sta 2115+00 to Sta 2121+00, and drains into Wetland 7MS via ditches on the right side of the roadway and in the median, and a 24" RCP cross drain at Sta 2118+20. There are no facilities for treatment and attenuation provided within this Basin.

Basin 7-5T includes sub-basin 7-5LT. This Basin contains the left side of the roadway from Sta 2111+00 to Sta 2120+50, and drains to Wetland 7NN after stormwater is processed through a dry, shallow, longitudinal pond on the left side of the roadway. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-4, and will provide both treatment and attenuation.

Basin 7-11U includes sub-basin 7-11LU, the left side of the roadway from Sta 2120+50 to Sta 2123+00, and drains into Wetland 7NN via sheet flow. There are no facilities for treatment and attenuation provided within this Basin.

East Basin drainage areas: (refer to Proposed Conditions Drainage Area Maps)

Basin 7-6T includes sub-basin 7-6LT. This Basin consists of the left side of the roadway from Sta 2123+00 to Sta 2127+00, and drains into Wetland 7PN after processing through a dry, shallow, longitudinal pond that outfalls into a connecting ditch on the left side of the roadway. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-6, and will provide both treatment and attenuation.

Basin 7-6U includes sub-basin 7-6LU. This Basin contains the left side of the roadway from Sta 2127+00 to Sta 2156+00, including a portion of CR 54 (sub-basin 7-CR54LU), and drains into Wetland 7PN via ditches on the left side of the roadway.

Basin 7-7T includes sub-basin 7-7RT. This Basin includes the right side of the roadway from Sta 2120+20 to Sta 2127+00, and drains into Wetland 7RS via ditches on the right side of the roadway after stormwater is processed through a dry, shallow, longitudinal pond. The dry detention/ retention facility is named Dry Treatment Attenuation Swale (DTAS) 7-5, and will provide both treatment and attenuation.

Basin 7-7U includes sub-basin 7-7RU. This Basin encompasses the right side of the roadway from Sta 2127+00 to Sta 2147+00 (outside shoulder only between Sta 2136+50 and Sta 2147+00), and drains into Wetland 7RS via sheet flow and ditches on the right side of the roadway. There are no facilities for treatment and attenuation provided within this basin. A portion of CR54 , sub-basin 7-CR54RU, is also contained in Basin 7-7U.

Basin 7-8T includes sub-basins 7-8MT and 7-8PT. Sub-basin 7-8MT consists of the median from Sta 2121+00 to Sta 2147+00, and the travel lanes of the eastbound roadway from Sta 2136+50 to Sta 2147+00. This sub-basin drains to a wet detention pond (Pond 7-7) on the south side of the roadway via a new 30" RCP cross drain at Sta 2142+00. Sub-basin 7-8PT is the direct drainage area for Pond 7-7. The wet detention Pond 7-7 will provide both attenuation and treatment of the stormwater from the Basin.

Basin 7-8U includes sub-basins 7-8MU and 7-8RU. This Basin contains the median from Sta 2147+00 to the end of the project at Sta 2160+08, as well as the right side of the roadway from Sta 2147+00 to the end of the project, and drains into Wetland 7RS via sheet flow, a median ditch and a cross drain at Sta 2147+00. There are no facilities for treatment and attenuation provided within this basin.

Basin 7-12U includes sub-basin 7-12LU. This Basin includes the left side of the roadway from Sta 2156+00 to the end of project at Sta 2160+08, and drains into Wetland 7SN via cross drains under ramps that are not included in this project. There will be no change to the amount of impervious area in this Basin. Since there is no change between pre-development and post-development conditions for this Basin, neither this Basin (post-

development) nor Basin 7-12X (pre-development) have been included in the IPCR model analysis that will be used to evaluate stormwater attenuation. There are no facilities for treatment and attenuation provided within this basin.

TABLE A.4 Pre-development NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub Basin
7-11X	2116+00.00	2123+00.00	7-11LX

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data
Design Condition: Pre-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.514	50.4
A	Unpaved (grass)		49	1.175	57.6
			Totals =	**1.690**	108.0
		CN (weighted) = **64**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW			
Travel Time, Tt	Mins.	10.00	10.0

CHANNEL FLOW	Segment :	From Sta. 2116+00.00	To Sta. 2121+00.00	
Channel Description		Grass ditch		
Elev	ft.	120.50	120.000	
Channel Slope, s	ft./ft.	0.0010		
K factor		12.0		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.38		
Flow Length, "L"	ft.	500		
Travel Time, Tt	Mins.	21.96		22.0

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**32.0**

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-1T	2051+00.00	2069+10.00	7-1MT , 7-1LT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (CN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.800	274.4
A	Unpaved (grass)		49	5.534	271.1
			Totals =	**8.334**	545.6
		CN (weighted) = 65			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
PIPE FLOW	Segment :	2063+00.00	2069+00.00	
Pipe Description		Shldr Gutter		
Elev	ft	117.93	119.44	
Pipe Slope, s	ft./ft.	0.0022		
K factor		64		
Velocity, v ($v = K*s^{0.5}$)	ft./sec.	2.97		
Flow Length, "L"	ft.	700		
Travel Time, Tt	Mins.	3.92		3.9
Watershed or Subarea Time of Concentration or Travel Time (Mins):				13.9

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-3T	2078+93.00	2095+50.00	7-3MT, 7-3LT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (CN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.309	226.3
A	Unpaved (grass)		49	4.466	218.8
			Totals =	6.775	445.1
		CN (weighted) = 66			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
PIPE FLOW	Segment :	2089+00.00	2094+00.00	
Pipe Description		Shldr Gutter		
Elev	ft	118.52	119.43	
Pipe Slope, s	ft./ft.	0.0015		
K factor		64		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	2.49		
Flow Length, "L"	ft.	600		
Travel Time, Tt	Mins.	4.01		4.0
Watershed or Subarea Time of Concentration or Travel Time (Mins):				**14.0**

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-4T	2094+00.00	2104+00.00	7-4LT,7-4MT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (CN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	1.274	124.9
A	Unpaved (grass)		49	1.286	63.0
			Totals =	**2.560**	187.9
		CN (weighted) = 73			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
PIPE FLOW	Segment :	2096+00.00	2100+00.00	
Pipe Description		Shldr Gutter		
Elev	ft	119.58	118.65	
Pipe Slope, s	ft./ft.	0.0019		
K factor		64		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	2.76		
Flow Length, "L"	ft.	500		
Travel Time, Tt	Mins.	3.02		3.0
Watershed or Subarea Time of Concentration or Travel Time (Mins):				**13.0**

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-5T	2111+00.00	2120+50.00	7-5LT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (CN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	1.003	98.3
A	Unpaved (grass)		49	1.963	96.2
			Totals =	**2.966**	194.5
		CN (weighted) = **66**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
Travel Time, Tt	Mins.			0.0
Watershed or Subarea Time of Concentration or Travel Time (Mins):				**10.0**

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-6T	2123+00.00	2127+00.00	7-6LT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.422	41.4
A	Unpaved (grass)		49	0.927	45.4
			Totals =	1.350	86.8
		CN (weighted) = 64			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins	10.00		10.0

		From Sta.	To Sta.	
Travel Time Tt	Mins			0.0

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**10.0**

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-7T	2120+20.00	2127+00.00	7-7RT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (CN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.718	70.4
A	Unpaved (grass)		49	1.249	61.2
			Totals =	1.967	131.6
		CN (weighted) = 67			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW			
Travel Time, Tt	Mins.	10.00	10.0

		From Sta.	To Sta.	
Travel Time, Tt	Mins.			0.0

Watershed or Subarea Time of Concentration or Travel Time (Mins):	10.0

TABLE A.5 Post-development (Treated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin	From Sta.	To Sta.	Sub-Basins
7-8T	2121+00.00	2147+00.00	7-8MT

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A & D	Paved (asphalt)		98	2.112	207.0
A	Unpaved (grass)		49	1.448	71.0
D	Unpaved (grass)		84	2.550	214.2
D	Water Surface		100	1.655	165.5
			Totals =	7.766	657.7
		CN (weighted) = 85			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2121+00.00	To Sta. 2127+00.00	
Channel Description		Grass Ditch		
Elev	ft	120.0	118.27	
Channel Slope, "s"	ft./ft.	0.0029		
K factor		12.0		
Average Velocity,"v" ($v=K*s^{0.5}$)	ft./sec.	0.64		
Flow Length, "L"	ft.	600		
Travel Time, Tt	Mins.	15.52		15.5

PIPE FLOW	Segment :	From Sta. 2127+00.00	To Sta. 2142+00.00	
Pipe Description		Median Sys		
Elev	ft	116.31	109.00	
Channel Slope, s	ft./ft.	0.0042		
K factor		64		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	4.14		
Flow Length, "L"	ft.	1750		
Travel Time, Tt	Mins.	7.05		7.1

Watersbed or Subarea Time of Concentration or Travel Time (Mins):	32.6

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basins	From Sta.	To Sta.	Sub Basins
7-1U	2056+50.00	2074+00.00	7-1RU, 7-1MU, 7-1LU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.642	258.9
A	Unpaved (grass)		49	1.462	71.7
			Totals =	**4.10**	330.6
		CN (weighted) = **81**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
CHANNEL FLOW	Segment :	2056+50.00	2064+00.00	
Channel Description		Grass V ditch		
Elev	ft	119.5	117.5	
K		12		
Average Channel Slope, s	ft./ft.	0.0031		
Velocity, v ($v = K*s^{0.5}$)	ft./sec.	0.67		
Flow Length, "L"	ft.	650		
Travel Time, Tt	Mins.	16.28		16.3
Watershed or Subarea Time of Concentration or Travel Time (Mins):				**26.3**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-2U	2074+00.00	2090+50.00	7-2MU, 7-2RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.064	202.3
A	Unpaved (grass)		49	2.121	103.9
			Totals =	**4.185**	306.2
		CN (weighted) = 73			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0
		From Sta.	To Sta.	
CHANNEL FLOW	Segment :	2074+00.00	2079+50.00	
Channel Description		Grass Ditch		
Elev	ft	118.50	118.00	
K factor		12.0		
Channel Slope, s	ft./ft.	0.0009		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.36		
Flow Length, "L"	ft.	550		
Travel Time, Tt	Mins.	25.34		25.3
Watershed or Subarea Time of Concentration or Travel Time (Mins):				35.3

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-3U	2090+50.00	2101+00.00	7-3MU, 7-3RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	1.315	128.9
A	Unpaved (grass)		49	1.343	65.8
			Totals =	**2.658**	194.7
		CN (weighted) = 73			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

		From Sta.	To Sta.	
CHANNEL FLOW	Segment :	2090+50.00	2092+00.00	
Channel Description		Grass Ditch		
Elev	ft	119.1	119.0	
K factor		12.0		
Channel Slope, s	ft./ft.	0.0007		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.31		
Flow Length, "L"	ft.	150		
Travel Time, Tt	Mins.	8.07		8.1

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**18.1**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-4U	2101+00.00	2117+00.00	7-4MU, 7-4RU, 7-4LU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.934	287.5
A	Unpaved (grass)		49	3.248	159.2
			Totals =	**6.182**	446.7
		CN (weighted) = **72**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

		From Sta.	To Sta.	
CHANNEL FLOW	Segment :	2105+00.00	2115+00.00	
Channel Description		Grass Ditch		
Elev	ft	115.0	120.5	
K factor		12.0		
Channel Slope, s	ft./ft.	0.0055		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.89		
Flow Length, "L"	ft.	1000		
Travel Time, Tt	Mins.	18.73		18.7

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**28.7**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-5U	2115+00.00	2121+00.00	7-5MU, 7-5RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.613	60.1
A	Unpaved (grass)		49	1.288	63.1
			Totals =	**1.901**	123.2
		CN (weighted) = **65**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2115+00.00	To Sta. 2118+00.00	
Channel Description		Grass Ditch		
Elev	ft	120.0	118.0	
K factor		12.0		
Channel Slope, s	ft./ft.	0.0067		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.98		
Flow Length, "L"	ft.	300		
Travel Time, Tt	Mins.	5.10		5.1

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**15.1**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-6U	2127+00.00	2156+00.00	7-6LU,7-CR54LU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	3.807	373.1
A	Unpaved (grass)		49	0.021	1.0
D	Paved (asphalt)		98	0.000	0.0
D	Unpaved (grass)		84	0.000	0.0
			Totals =	3.827	374.1
		CN (weighted) = 98			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2127+00.00	To Sta. 2138+00.00	
Channel Description		Grass Ditch		
Elev	ft.	119.50	114.00	
Channel Slope, s	ft./ft.	0.0050		
K factor		12.0		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.85		
Flow Length, "L"	ft.	1100		
Travel Time, Tt	Mins.	21.61		21.6

Watershed or Subarea Time of Concentration or Travel Time (Mins):	31.6

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-7U	2127+00.00	2147+00.00	7-7RU,7-CR54RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data
Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	2.000	196.0
A	Unpaved (grass)		49	0.025	1.2
D	Paved (asphalt)		98	0.000	0.0
D	Unpaved (grass)		84	0.428	36.0
			Totals =	2.453	233.2
		CN (weighted) = 95			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2127+00.00	To Sta. 2138+00.00	
Channel Description		Grass Ditch		
Elev	ft.	117.00	113.000	
Channel Slope, s	ft./ft.	0.0036		
K factor		12.0		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.72		
Flow Length, "L"	ft.	1100		
Travel Time, Tt	Mins.	25.34		25.3

Watershed or Subarea Time of Concentration or Travel Time (Mins):	35.3

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basin #	From Sta.	To Sta.	Sub-basins
7-8U	2147+00.00	2160+08.00	7-8MU, 7-8RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
D	Paved (asphalt)		98	1.982	194.2
D	Unpaved (grass)		84	1.682	141.2
			Totals =	**3.663**	335.5
		CN (weighted) = **92**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2147+00.00	To Sta. 2160+08.00	
Channel Description		Grass Ditch		
Elev	ft.	121.50	113.000	
Channel Slope, s	ft./ft.	0.0065		
K factor		12.0		
Velocity, v ($v=K*s^{0.5}$)	ft./sec.	0.97		
Flow Length, "L"	ft.	1308		
Travel Time, Tt	Mins.	22.54		22.5

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**32.5**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basins	From Sta.	To Sta.	Sub Basins
7-9U	2051+00.00	2056+50.00	7-9RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.732	71.8
A	Unpaved (grass)		49	0.000	0.0
			Totals =	**0.732**	71.8
		CN (weighted) = **98**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2052+00.00	To Sta. 2055+00.00	
Channel Description		Grass Ditch		
Elev	ft	128.0	123.0	
K		12		
Average Channel Slope, s	ft./ft.	0.0167		
Velocity, v ($v= K*s^{0.5}$)	ft./sec.	1.55		
Flow Length, "L"	ft.	300		
Travel Time, Tt	Mins.	3.23		3.2

Watershed or Subarea Time of Concentration or Travel Time (Mins):	13.2

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basins	From Sta.	To Sta.	Sub Basins
7-10U	2074+00.00	2078+93.00	7-10RU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.521	51.0
A	Unpaved (grass)		49	0.000	0.0
			Totals =	**0.521**	51.0
		CN (weighted) = **98**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW				
Travel Time, Tt	Mins.	10.00		10.0

CHANNEL FLOW	Segment :	From Sta. 2074+00.00	To Sta. 2080+00.00	
Channel Description		Grass Ditch		
Elev	ft	119.5	119	
K		12		
Average Channel Slope, s	ft./ft.	0.0008		
Velocity, v ($v = K*s^{0.5}$)	ft./sec.	0.35		
Flow Length, "L"	ft.	600		
Travel Time, Tt	Mins.	28.87		28.9

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**38.9**

TABLE A.6 Post-development (Untreated Areas) NRCS Data Sheets

E9X94700, I-4 project - Segment 7, Hubbard Construction (FDOT, D-1)

STORMWATER MANAGEMENT ANALYSIS

Basins	From Sta.	To Sta.	Sub Basins
7-11U	2120+50.00	2123+00.00	7-11LU

Natural Resources Conservation Service (NRCS) Hydrologic Method - TR-55 Data

Design Condition: Post-Developed Routed

Runoff Curve Number (RCN)

Hydrologic Soil Group	Land Use Description Include Treatment, Practice & Condition		CN	Area (Acres)	CN x Area
A	Paved (asphalt)		98	0.264	25.9
A	Unpaved (grass)		49	0.000	0.0
			Totals =	**0.264**	25.9
		CN (weighted) = **98**			

Time of Concentration (Tc) or Travel Time (Tt)

SHEET + SHALLOW CONCENTRATED FLOW			
Travel Time, Tt	Mins.	10.00	10.0

		From Sta.	To Sta.

Watershed or Subarea Time of Concentration or Travel Time (Mins):	**10.0**

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20)

I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 25YR 24HR FLMOD

********** Basin Summary - M025Y24H **********

***					
Basin Name:	7-01T	7-01X	7-02X	7-03X	7-04X
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	PREDEV
Node Name:	DTAS7-1	WL-7AASX	WL-7DS-X	WL-7GS-X	WL-7JS-X
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Comp Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.90	42.50	18.00	30.50	28.70
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	8.33	12.41	5.85	6.66	10.39
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	65.00	62.00	59.00	59.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.47	12.16	12.34	12.31
Flow Max (cfs):	15.48	11.29	7.46	6.44	13.89
Runoff Volume (in):	3.10	2.80	2.51	2.50	3.20
Runoff Volume (cf):	93779	126113	53189	60529	120811

***					
Basin Name:	7-05X	7-06X	7-07X	7-08X	7-03T
Group Name:	PREDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7MS-X	WL-7PN-X	WL-7RS-X	WL-7RS-X	DTAS7-2
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Comp Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	15.10	42.90	40.50	10.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.08	6.87	11.23	2.82	6.78
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	59.00	76.00	81.00	84.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.11	12.39	12.42	12.04	12.10
Flow Max (cfs):	2.90	9.90	18.97	10.06	13.05
Runoff Volume (in):	2.50	4.25	4.80	5.14	3.20
Runoff Volume (cf):	18894	106070	195669	52598	78763

TABLE A.7 BASIN SUMMARY REPORT - SWFWMD 25-YEAR 24-HOUR HYDROGRAPHS

***

Basin Name:	7-04T	7-05T	7-06T	7-07T	7-08T
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	DTAS7-3	DTAS7-4	DTAS7-6	DTAS7-5	POND7-7
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Comp Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	10.00	10.00	10.00	32.60
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.56	2.97	1.35	1.97	7.77
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	66.00	64.00	67.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.07	12.07	12.04	12.32
Flow Max (cfs):	6.36	6.63	2.81	4.55	16.11
Runoff Volume (in):	3.93	3.20	3.00	3.31	5.25
Runoff Volume (cf):	36545	34489	14703	23605	147984

***

Basin Name:	7-02U	7-10X	7-11X	7-09X	7-01U
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7DS-D	WL-7FN-X	WL-7NN-X	WL-7AS-X	WL-7AASD
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Comp Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	35.30	19.80	32.00	13.20	26.30
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.18	1.48	1.69	0.73	4.10
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	81.00	64.00	76.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.32	12.14	12.37	12.09	12.21
Flow Max (cfs):	6.23	3.67	1.97	1.96	8.81
Runoff Volume (in):	3.93	4.80	3.00	4.26	4.80
Runoff Volume (cf):	59694	25712	18395	11308	71453

TABLE A.7 BASIN SUMMARY REPORT - SWFWMD 25-YEAR 24-HOUR HYDROGRAPHS

***					
Basin Name:	7-09U	7-10U	7-03U	7-04U	7-05U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7AS-D	WL-7FN-D	WL-7GS-D	WL-7JS-D	WL-7MS-D
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Comp Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.20	38.90	18.10	28.70	15.10
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	0.73	0.52	2.66	6.18	1.90
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	98.00	98.00	73.00	72.00	65.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.06	12.36	12.15	12.25	12.11
Flow Max (cfs):	2.76	1.16	5.64	10.05	3.41
Runoff Volume (in):	6.76	6.75	3.93	3.83	3.10
Runoff Volume (cf):	17958	12775	37941	85871	21399

***				
Basin Name:	7-06U	7-07U	7-08U	7-11U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7PN-D	WL-7RS-D	WL-7RS-D	WL-7NN-D
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.21	4.71	4.33	1.33
Comp Time Inc (min):	4.21	4.71	4.33	1.33
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	31.60	35.30	32.50	10.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	3.83	2.45	3.66	0.26
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	98.00	95.00	92.00	98.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.29	12.32	12.28	12.04
Flow Max (cfs):	9.49	5.63	8.51	1.11
Runoff Volume (in):	6.75	6.40	6.05	6.76
Runoff Volume (cf):	93839	56974	80461	6477

TABLE A.8 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20)
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I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 100YR 24HR FLMOD

********** Basin Summary - M100Y24H **********

***					
Basin Name:	7-01T	7-01X	7-02X	7-03X	7-04X
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	PREDEV
Node Name:	DTAS7-1	WL-7AASX	WL-7DS-X	WL-7GS-X	WL-7JS-X
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Comp Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.90	42.50	18.00	30.50	28.70
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	8.33	12.41	5.85	6.66	10.39
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	65.00	62.00	59.00	59.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.47	12.12	12.34	12.25
Flow Max (cfs):	26.17	19.83	13.61	11.73	23.26
Runoff Volume (in):	5.13	4.75	4.37	4.37	5.26
Runoff Volume (cf):	155320	214014	92703	105497	198558

***					
Basin Name:	7-05X	7-06X	7-07X	7-08X	7-03T
Group Name:	PREDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7MS-X	WL-7PN-X	WL-7RS-X	WL-7RS-X	DTAS7-2
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Comp Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	15.10	42.90	40.50	10.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.08	6.87	11.23	2.82	6.78
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	59.00	76.00	81.00	84.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.11	12.39	12.42	12.04	12.10
Flow Max (cfs):	5.26	15.25	28.07	14.51	21.74
Runoff Volume (in):	4.37	6.53	7.16	7.54	5.26
Runoff Volume (cf):	32931	162947	291941	77193	129449

TABLE A.8 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

***					
Basin Name:	7-04T	7-05T	7-06T	7-07T	7-08T
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	DTAS7-3	DTAS7-4	DTAS7-6	DTAS7-5	POND7-7
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Comp Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	10.00	10.00	10.00	32.60
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.56	2.97	1.35	1.97	7.77
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	66.00	64.00	67.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.04	12.04	12.04	12.32
Flow Max (cfs):	9.95	11.03	4.77	7.49	23.22
Runoff Volume (in):	6.16	5.26	5.01	5.39	7.66
Runoff Volume (cf):	57203	56683	24543	38505	216031

***					
Basin Name:	7-02U	7-10X	7-11X	7-09X	7-01U
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7DS-D	WL-7FN-X	WL-7NN-X	WL-7AS-X	WL-7AASD
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Comp Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	35.30	19.80	32.00	13.20	26.30
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.18	1.48	1.69	0.73	4.10
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	81.00	64.00	76.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.32	12.14	12.30	12.09	12.21
Flow Max (cfs):	9.82	5.43	3.38	2.99	13.04
Runoff Volume (in):	6.15	7.16	5.01	6.54	7.16
Runoff Volume (cf):	93445	38361	30707	17370	106607

TABLE A.8 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

***

Basin Name:	7-09U	7-10U	7-03U	7-04U	7-05U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7AS-D	WL-7FN-D	WL-7GS-D	WL-7JS-D	WL-7MS-D
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Comp Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.20	38.90	18.10	28.70	15.10
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	0.73	0.52	2.66	6.18	1.90
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	98.00	98.00	73.00	72.00	65.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.06	12.36	12.11	12.25	12.11
Flow Max (cfs):	3.75	1.57	8.86	15.95	5.74
Runoff Volume (in):	9.26	9.25	6.16	6.03	5.14
Runoff Volume (cf):	24594	17496	59389	135291	35441

***

Basin Name:	7-06U	7-07U	7-08U	7-11U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7PN-D	WL-7RS-D	WL-7RS-D	WL-7NN-D
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.21	4.71	4.33	1.33
Comp Time Inc (min):	4.21	4.71	4.33	1.33
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	31.60	35.30	32.50	10.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	3.83	2.45	3.66	0.26
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	98.00	95.00	92.00	98.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.29	12.32	12.28	12.04
Flow Max (cfs):	12.90	7.72	11.82	1.50
Runoff Volume (in):	9.25	8.89	8.53	9.26
Runoff Volume (cf):	128517	79127	113364	8871

TABLE A.9
FDOT Critical Storm Analysis
RAINFALL VOLUMES: I-4, SEGMENT 7

RAINFALL VOLUMES (IN)	2 (YR)	5 (YR)	10 (YR)	25 (YR)	50 (YR)	100 (YR)	Derivation Source
1 HR	2.5	3.0	3.3	3.9	4.3	4.7	FDOT Drainage Manual Intensity-Duration-Frequency Curves for Zone 8 (Intensity at Storm Duration times Duration)
2 HR	2.9	3.5	4.0	4.6	5.2	5.6	
4 HR	3.4	4.1	4.7	5.4	6.1	6.7	
8 HR	3.8	4.8	5.6	6.5	7.4	8.0	
1 DAY	4.8	6.2	7.4	8.5	9.8	10.6	
2 DAY	5.5	7.1	8.2	9.5	11.0	12.5	FDOT Drainage Manual Precipitation Depth Data Figures F-16 through F-20 (3 Day Interpolated from 2 Day and 4 Day Depths)
3 DAY	6.0	7.6	8.7	10.5	12.0	13.7	
4 DAY	6.5	8.1	9.2	11.5	13.0	15.0	
7 DAY	7.5	9.5	11.2	13.0	15.0	17.0	
10 DAY	8.5	11.0	13.0	15.0	17.0	19.0	

Table A.10 ~~T-7~~

SCS Runoff Curve Numbers for Selected Agricultural, Suburban, and Urban Land Use

Land Use Description		Hydrologic Soil Group A	B	C	D
Cultivated Land [a]:					
Without conservation treatment		72	81	88	91
With conservation treatment		62	71	78	81
Pasture or range land:					
Poor condition		68	79	86	89
Good condition		39	61	74	80
Meadow: good condition		30	58	71	78
Wood or Forest Land:					
Thin stand, poor cover, no mulch		45	66	77	83
Good cover [b]		25	55	70	77
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries:					
Good condition: grass cover on 75% or more of the area		39	61	74	80
Fair condition: grass cover on 50% to 75% of the area		49	69	79	84
Poor condition: grass cover on 50% or less of the area		68	79	86	89
Commercial and Business Areas (85% impervious)		89	92	94	95
Industrial Districts (72% impervious)		81	88	91	93
Residential [c]					
Average lot size	Average % Impervious [d]				
1/8 acre or less	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
Paved Parking Lots, Roofs, Driveways [e]:		98	98	98	98
Streets and Roads:					
Paved with curbs and storm sewers [e]		98	98	98	98
Gravel		76	85	89	91
Dirt		72	82	87	89
Paved with open ditches		83	89	92	93
Newly graded area (no vegetation established) [f]		77	86	91	94

[a] For a more detailed description of agricultural land use curve numbers, refer to Table T-8.
[b] Good cover is protected from grazing and litter and brush cover soil.
[c] Curve numbers are computed assuming the runoff from the house and driveway is directed toward the street with a minimum of roof water directed to lawns where additional infiltration could occur. Depends on depth and degree of permeability of underlying strata.
[d] The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.
[e] In some warmer climates of the country, a curve number of 96 may be used.
[f] Use for temporary conditions during grading and construction.
Note: These values are for Antecedent Moisture Condition II, and $I_a = 0.2S$.

Reference: USDA, SCS, TR-55 (1984).

TABLE A.10 E-428

Stormwater Facility Design

Appendix B

APPENDIX B
Stormwater Treatment and Attenuation Facilities Design
I-4 Segment 7

Summary:

In order to provide mitigation for the impacts the project may have on hydrology and water quality, the proposed improvements include six dry ponds and one wet detention pond. Onsite drainage areas have been developed for a total of 62.64 acres. Within them, the pavement area will change from the existing area of 20.07 acres to 29.94 acres for an increase of 9.88 acres.

Treatment must be provided for an impervious area equivalent or more than this increase. Attenuation must be provided so that the post-development peak design flows to a particular receiving waters do not increase above the existing peak design flows.

Conclusions:

Treatment:
The proposed facilities will provide stormwater treatment for an impervious area of 10.64 acres, allowing for more treatment than required, as shown below in Table B.1, Treatment Summary.

Table B.1 Treatment Summary

Attenuation/ Treatment Facility	Added Pavement Area Acres	Pavement Area Treated Acres	Total Area Treated Acres	Treatment Volume Required Cubic Feet	Retention or Wet Detention Volume Available for Treatment Cubic Feet
DTAS 7-1		2.800	8.334	15,126	50,535
DTAS 7-2		2.309	6.775	12,297	42,110
DTAS 7-3		1.274	2.560	4,646	13,120
DTAS 7-4		1.003	2.966	5,383	20,425
DTAS 7-5		0.718	1.967	3,570	9,920
DTAS 7-6		0.422	1.350	2,450	9,920
POND 7-7		2.112	7.766	28,191	28,434
TOTAL	9.88	10.64	31.718	71,663	174,464

The dry attenuation/treatment facility infiltration recovery of the respective stormwater treatment volumes meets the design criteria of recovery in less than 72 hours, as shown in Appendix E – Attenuation/Treatment Facility Volume Recovery Analysis. The wet detention Pond 7-7 meets its corresponding treatment volume recovery design criteria of

no more than ½ of the volume released in 60 hours, and no less than 120 hours for full recovery. Appendix E also contains the Pond 7-7 treatment volume recovery analysis.

Additionally, for the wet detention Pond 7-7, the design overflow elevation is 114.19' NGVD, the control elevation is 113.8' NGVD and the elevation of the littoral shelf is 111.8' NGVD. These design elevations meet the requirements of < 18" between the control elevation and the overflow elevation, and < 3.5' between the littoral shelf and the overflow elevation. The pond's littoral area also comprises more than 35% of the pond surface area at the control elevation.

Attenuation:
The project has been designed to meet the SWFWMD attenuation requirements as shown in Table B.5 - Detention Analysis – Peak Flow, Peak Stage Summary - SWFWMD 25-year 24-hour and 100-year 24-hour. The 25-year 24-hour Post-development peak flows total for the project is less than that for the Pre-development condition. The same is true if the East Basin (corresponding to the el. 115' floodplain area) and West Basin (corresponding to the el. 120' floodplain area) are totaled separately. The peak flow reduction also holds true for three of the four small Closed Basins.

The Wetland 7AS basin (7-9X [pre-development] or 7-9U [post-development]) is the minor exception to the peak flow reduction trend. However, drainage peak flows and volumes from the adjacent, future I-4 Segment 9 project, which also drains to Wetland 7AS, will be somewhat less than existing (per ERP 44011896.024). The reduced flow from Segment 9 should allow for the small (< 1 cfs) increase from Segment 7.

Pond 7-7 can hold the SWFWMD 100-year 24-hour storm runoff well below the top of the pond embankment.

Closed Basin Retention:
The project has been designed to meet the SWFWMD Closed Basin retention requirements, as shown in Table B.6, Closed Basin Retention Volumes. The 100-year 24-hour Post-development peak volume totals to be directly released to each Closed Basin are less than the respective Pre-development volumes. The Wetland 7AS basin is, again, the minor exception to the volume reduction trend. However, floodplain compensation is included adjacent to Wetland 7AS to specifically offset the additional 100 yr volume to be released from Segment 7 to Wetland 7AS.

Design Criteria:

Treatment Volume:

Dry Detention/Retention Volume:
Treat one-half inch of runoff from the contributing basin. The total detention/retention volume shall be available again within 72 hours.

Wet Detention Volume:

Treat one inch of runoff from the contributing basin. The treatment volume shall not totally recover in less than 120 hours with no more than half of the total volume being recovered within the first 60 hours. A wet detention pond must include a minimum 35% littoral zone near the outfall.

Attenuation:

A method accepted by SWFWMD for computing runoff hydrology uses the Program ICPR® (Streamline Technologies, Inc.) to determine runoff hydrographs (via NRCS Unit Hydrograph methodology), and to model the effects of changing the runoff characteristics of the improvements and the flow attenuation provided by the designed flow control and treatment facilities.

SWFWMD requires that detention systems attenuate the post-development peak rate to the pre-development rate for the 25-year 24-hour storm. The Florida Modified NRCS Type II Rainfall Distribution and Unit Hydrograph methodology are accepted standards for developing detention system inflow hydrographs. The stages in the ponds are also checked for the 100-year 24-hour storm impacts.

FDOT requires a critical duration analysis. For the critical duration analysis, the detention system will attenuate the post-development storms for all frequencies (2-year through 100-year) for the critical duration (1-hour through 10-day) FDOT Rainfall Data. The FDOT Critical Storm Duration Analysis is contained in Appendix D.

Retention Volume for Closed Basins:

The retention volume for Closed Basins shall be the post-development runoff volume less the Pre-development runoff volume for the SWFWMD 100-year 24-hour design storm. The rate of runoff shall not cause adverse off-site effects. Maintenance of pre-development low flows may be required for hydrologically sensitive areas.

Design Procedure:

The treatment/attenuation facilities are located and sized to meet the treatment and attenuation requirements, as well as the constraints of seasonal high ground water table, topography, hydraulics, and available right of way. Three of the dry, shallow ponds shown on the Construction Plans as Dry Treatment/Attenuation Swales (DTAS) 7-1, 7-2, and 7-3 are located within the median. Shoulder gutter stormwater collection systems are provided on the outside of the westbound roadway shoulder to increase the amount of roadway runoff area directed to these median facilities, as necessary to meet treatment area requirements. Offsite runoff is intercepted by roadside ditches to avoid comingling with the runoff captured by the shoulder gutter systems. A median stormwater collection system is used to deliver runoff to the wet detention Pond 7-7, located on the south side of the road near the eastern project limits. Direct sheet flow from the roadway is the stormwater delivery mechanism for the remaining three dry, shallow ponds, DTAS 7-4,

7-5 and 7-6, that are located adjacent to the roadway shoulders west of the CR 54 overpass.

The hydrographs generated for each sub-basin are routed to the receiving wetlands using the ICPR program. Runoff from the treated areas is routed through the ponds by modeling the ponds as nodes and their outlets as weirs and drop structures. Pond infiltration during the storm event is ignored. Stage-storage information for the dry pond nodes is taken from Table B.2 - Dry Pond Locations and Parameters. Stage-storage information for the Pond 7-7 node was measured, via CADD, from Sheet 18 (Plan Sheet, Pond 7-7) of the Construction Plans. Schematics showing the connectivity and routing schemes for Existing Conditions and Proposed Conditions, as well as the input report for the ICPR model, are contained in Appendix C, ICPR Input Data.

The output report containing the routing results for the SWFWMD 25-year 24-hour storm is shown in Table B.3, Node Maximum Comparison Report, SWFWMD 25-year 24-hour. The output report containing the routing results for the SWFWMD 100-year 24-hour storm is shown in Table B.4, Node Maximum Comparison Report, SWFWMD 100-year 24-hour.

The output report data for the SWFWMD design storm events is summarized by basin and receiving wetland in Table B.5, Detention Analysis – Peak Flow, Peak Stage Summary - SWFWMD 25-year 24-hour and 100-year 24-hour. The table subtotals the peaks within the two major floodplain basins, the West Basin, having a 100-year floodplain at el. 120' NGVD, and the East Basin, having a 100-year floodplain at el. 115' NGVD. Also subtotaled are the peaks for the individual wetland basins that receive runoff from the project. Four of these basins are closed within the West Basin, and are separated from the main floodplain by ground above the el. 120' contour.

(Note: The FDOT Critical Duration Analysis output report data and summary tables are included in Appendix D).

Closed Basin Analysis:

The basins for the receiving Wetlands 7AS, 7GS, 7FN, and 7NN are Closed Basins within the West Basin, separated from the contiguous el. 120' floodplain by ground higher than the 120' contour.

Volumes of runoff to the Closed Basins are taken from the ICPR basin summary data shown in Table B.6, Basin Summary Report – SWFWMD 100-year 24-hour Hydrographs. Values for available retention volume are taken from the "storage volume below the weir" for the dry ponds shown in Table B.2, Dry Pond Locations and Parameters. Table B.7, Closed Basin Retention Volumes, shows that the 100-year 24-hour Post-development peak volume totals to each Closed Basin are less than those for the Pre-development condition. The Wetland 7AS basin, as stated before, is the minor exception to this volume reduction trend. However, appropriate floodplain compensation

has been provided adjacent to the wetland to specifically offset the increased 100 yr volume to be discharged from Segment 7 to this wetland.

TABLE B.2 DRY POND LOCATIONS AND PARAMETERS

Begin Sta	End Sta	Bottom Offset 1 @ Begin Sta	Bottom Offset 2 @ Begin Sta	Bottom Offset 1 @ End Sta	Bottom Offset 2 @ End Sta	Bottom Width @ Begin Sta	Bottom Width @ End Sta	Estimated Seasonal High Ground-water	Base Elevation	Pond Length	Elevation @ Pond Bottom	Elevation @ Weir	Elevation @ Top of Pond	Plan Area at Base Elevation	Plan Area at Bottom Elevation	Plan Area @ Weir Elevation	Plan Area @ Top Elevation	Storage Volume below Weir	Required WQ Treatment Volume
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(Acres)	(Acres)	(Acres)	(Acres)	cf	cf
DTAS 7-1	Located in Median (offsets from centerline)																		
2054+20.00	2057+00.00	16.0 Lt	29.0 Rt	16.0 Lt	37.0 Rt	45.00	53.00	118.6	119.50	280.00	120.00	120.50	121.50	0.315	0.347	0.379	0.444	7910	
2057+00.00	2060+00.00	16.0 Lt	37.0 Rt	16.0 Lt	37.0 Rt	53.00	53.00	118.6	119.50	300.00	120.00	120.50	121.50	0.365	0.399	0.434	0.503	9075	
2060+00.00	2061+00.00	16.0 Lt	37.0 Rt	17.0 Lt	41.0 Rt	53.00	58.00	118.6	119.50	100.00	120.00	120.50	121.50	0.127	0.139	0.150	0.173	3150	
2061+00.00	2063+00.00	17.0 Lt	41.0 Rt	21.0 Lt	40.0 Rt	58.00	61.00	117.9	119.50	200.00	120.00	120.50	121.50	0.273	0.296	0.319	0.365	6700	
2063+00.00	2069+00.00	21.0 Lt	40.0 Rt	42.0 Lt	40.0 Rt	61.00	82.00	117.9	119.50	600.00	120.00	120.50	121.50	0.985	1.054	1.123	1.260	23700	
										1480.00				2.065	2.235	2.405	2.745	50535	15126.2
DTAS 7-2	Located in Median (offsets from centerline)																		
2081+00.00	2084+00.00	27.0 Lt	40.0 Rt	20.0 Lt	40.0 Rt	67.00	60.00	118.5	119.50	300.00	120.00	120.40	121.50	0.437	0.472	0.499	0.575	8460	
2084+00.00	2088+00.00	20.0 Lt	40.0 Rt	20.0 Lt	40.0 Rt	60.00	60.00	118.5	119.50	400.00	120.00	120.40	121.50	0.551	0.597	0.634	0.735	10720	
2088+00.00	2092+00.00	20.0 Lt	40.0 Rt	30.0 Lt	40.0 Rt	60.00	70.00	117.9	119.50	400.00	120.00	120.40	121.50	0.597	0.643	0.680	0.781	11520	
2092+00.00	2095+50.00	30.0 Lt	40.0 Rt	39.0 Lt	40.0 Rt	70.00	79.00	117.9	119.50	350.00	120.00	120.40	121.50	0.599	0.639	0.671	0.759	11410	
										1450.00				2.184	2.350	2.483	2.850	42110	12296.6
DTAS 7-3	Located in Median (offsets from centerline)																		
2099+90.00	2104+00.00	38.0 Lt	35.0 Rt	38.0 Lt	35.0 Rt	73.00	73.00	117.6	118.60	410.00	119.10	119.50	120.50	0.687	0.734	0.772	0.902	13120	
										410.00				0.687	0.734	0.772	0.902	13120	4646.4
DTAS 7-4	Located in Left Right of Way (from centerline)																		
2111+00.00	2120+50.00	143.0 Lt	184.0 Lt	115.0 Lt	156.0 Lt	41.00	41.00	118.0	119.00	950.00	119.00	119.50	120.50	0.894	0.894	0.981	1.221	20425	
										950.00				0.894	0.894	0.981	1.221	20425	5383.3
DTAS 7-5	Located in Right Right of Way (offsets from Center baseline)																		
2123+00.00	2127+00.00	111.0 Rt	171.0 Rt	106.0 Rt	166.0 Rt	60.00	60.00	118.00	119.00	400.00	119.00	119.40	120.00	0.551	0.551	0.588	0.643	9920	
										400.00				0.551	0.551	0.588	0.643	9920	3570.1
DTAS 7-6	Located in Left Right of Way (from centerline)																		
2123+00.00	2127+00.00	115.0 Lt	175.0 Lt	108.0 Lt	168.0 Lt	60.00	60.00	118.00	119.00	400.00	119.00	119.40	120.00	0.551	0.551	0.588	0.643	9920	
										400.00				0.551	0.551	0.588	0.643	9920	2450.3

Total Dry Pond Storage (cf)	146030	
Total Dry Pond Storage (ac-ft)	3.35	
Total Treatment Vol. Required (cf)		43473
Tot. Treatment Vol. Required (ac-ft)		1.00

TABLE B.3 Revised Node Maximum Comparison Report, SWFMWD 25-year 24-hour

********** Node Maximum Comparisons **********

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 25YR 24HR FLMOD

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: WL-7AASX	Group: PREDEV								
M025Y24H	0.00	117.20	120.00	0.0000	0.00	12.47	11.29	0.00	0.00
*** Node Name: WL-7AS-X	Group: PREDEV								
M025Y24H	0.00	116.90	120.00	0.0000	0.00	12.08	1.96	0.00	0.00
*** Node Name: WL-7DS-X	Group: PREDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.15	7.45	0.00	0.00
*** Node Name: WL-7FN-X	Group: PREDEV								
M025Y24H	0.00	119.10	120.00	0.0000	0.00	12.15	3.67	0.00	0.00
*** Node Name: WL-7GS-X	Group: PREDEV								
M025Y24H	0.00	117.60	120.00	0.0000	0.00	12.33	6.44	0.00	0.00
*** Node Name: WL-7JS-X	Group: PREDEV								
M025Y24H	0.00	117.00	120.00	0.0000	0.00	12.30	13.88	0.00	0.00
*** Node Name: WL-7MS-X	Group: PREDEV								
M025Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	2.89	0.00	0.00
*** Node Name: WL-7NN-X	Group: PREDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.37	1.97	0.00	0.00
*** Node Name: WL-7PN-X	Group: PREDEV								
M025Y24H	0.00	114.10	115.00	0.0000	0.00	12.40	9.90	0.00	0.00
*** Node Name: WL-7RS-X	Group: PREDEV								
M025Y24H	0.00	113.80	115.00	0.0000	0.00	12.28	25.51	0.00	0.00
*** Node Name: DTAS7-1	Group: POSTDEV								
M025Y24H	22.65	120.73	122.00	0.0008	108133.31	12.08	15.48	22.65	0.61
*** Node Name: DTAS7-2	Group: POSTDEV								
M025Y24H	22.79	120.60	122.00	0.0006	111007.65	12.10	13.04	22.79	0.49
*** Node Name: DTAS7-3	Group: POSTDEV								
M025Y24H	13.87	119.75	122.00	0.0010	35064.39	12.08	6.34	13.87	0.72
*** Node Name: DTAS7-4	Group: POSTDEV								
M025Y24H	19.66	119.63	122.00	0.0008	44133.93	12.05	6.63	19.66	0.27
*** Node Name: DTAS7-5	Group: POSTDEV								
M025Y24H	14.58	119.57	120.00	0.0009	26285.57	12.05	4.55	14.58	0.39
*** Node Name: DTAS7-6	Group: POSTDEV								
M025Y24H	20.15	119.47	120.00	0.0006	25902.70	12.07	2.81	20.15	0.11
*** Node Name: POND7-7	Group: POSTDEV								
M025Y24H	13.00	114.70	116.00	0.0007	75840.37	12.32	16.11	13.00	9.59
*** Node Name: WL-7AASD	Group: POSTDEV								
M025Y24H	0.00	117.20	120.00	0.0000	0.00	12.22	8.81	0.00	0.00
*** Node Name: WL-7AS-D	Group: POSTDEV								
M025Y24H	0.00	116.90	120.00	0.0000	0.00	12.07	2.75	0.00	0.00
*** Node Name: WL-7DS-D	Group: POSTDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.32	6.23	0.00	0.00
*** Node Name: WL-7FN-D	Group: POSTDEV								
M025Y24H	0.00	119.10	120.00	0.0000	0.00	12.37	1.15	0.00	0.00
*** Node Name: WL-7GS-D	Group: POSTDEV								
M025Y24H	0.00	117.60	120.00	0.0000	0.00	12.13	5.64	0.00	0.00
*** Node Name: WL-7JS-D	Group: POSTDEV								
M025Y24H	0.00	117.00	120.00	0.0000	0.00	12.30	10.06	0.00	0.00
*** Node Name: WL-7MS-D	Group: POSTDEV								
M025Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	3.40	0.00	0.00
*** Node Name: WL-7NN-D	Group: POSTDEV								
M025Y24H	0.00	117.50	120.00	0.0000	0.00	12.03	1.10	0.00	0.00
*** Node Name: WL-7PN-D	Group: POSTDEV								
M025Y24H	0.00	114.10	115.00	0.0000	0.00	12.28	9.49	0.00	0.00
*** Node Name: WL-7RS-D	Group: POSTDEV								
M025Y24H	0.00	113.80	115.00	0.0000	0.00	12.47	21.23	0.00	0.00

TABLE B.4 Revised Node Maximum Comparison Report, SWFMWD 100-year 24-hour

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 100YR 24HR FLMOD

********** Node Maximum Comparisons **********

(Time units - hours)

Sim Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
*** Node Name: WL-7AASX	Group: PREDEV								
M100Y24H	0.00	117.20	120.00	0.0000	0.00	12.47	19.83	0.00	0.00
*** Node Name: WL-7AS-X	Group: PREDEV								
M100Y24H	0.00	116.90	120.00	0.0000	0.00	12.08	2.99	0.00	0.00
*** Node Name: WL-7DS-X	Group: PREDEV								
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.13	13.59	0.00	0.00
*** Node Name: WL-7FN-X	Group: PREDEV								
M100Y24H	0.00	119.10	120.00	0.0000	0.00	12.15	5.41	0.00	0.00
*** Node Name: WL-7GS-X	Group: PREDEV								
M100Y24H	0.00	117.60	120.00	0.0000	0.00	12.33	11.72	0.00	0.00
*** Node Name: WL-7JS-X	Group: PREDEV								
M100Y24H	0.00	117.00	120.00	0.0000	0.00	12.25	23.26	0.00	0.00
*** Node Name: WL-7MS-X	Group: PREDEV								
M100Y24H	0.00	117.80	120.00	0.0000	0.00	12.12	5.25	0.00	0.00
*** Node Name: WL-7NN-X	Group: PREDEV								
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.30	3.38	0.00	0.00
*** Node Name: WL-7PN-X	Group: PREDEV								
M100Y24H	0.00	114.10	115.00	0.0000	0.00	12.40	15.24	0.00	0.00
*** Node Name: WL-7RS-X	Group: PREDEV								
M100Y24H	0.00	113.80	115.00	0.0000	0.00	12.28	37.56	0.00	0.00
*** Node Name: DTAS7-1	Group: POSTDEV								
M100Y24H	15.76	120.98	122.00	0.0013	111811.18	12.08	26.15	15.76	1.84
*** Node Name: DTAS7-2	Group: POSTDEV								
M100Y24H	16.07	120.80	122.00	0.0010	113999.83	12.10	21.74	16.07	1.43
*** Node Name: DTAS7-3	Group: POSTDEV								
M100Y24H	13.09	120.01	122.00	0.0014	36525.32	12.07	9.92	13.09	2.05
*** Node Name: DTAS7-4	Group: POSTDEV								
M100Y24H	14.12	119.81	122.00	0.0013	46024.39	12.05	11.01	14.12	0.99
*** Node Name: DTAS7-5	Group: POSTDEV								
M100Y24H	12.95	119.79	120.00	0.0014	27185.74	12.05	7.48	12.95	1.38
*** Node Name: DTAS7-6	Group: POSTDEV								
M100Y24H	14.09	119.59	120.00	0.0010	26353.54	12.05	4.76	14.09	0.45
*** Node Name: POND7-7	Group: POSTDEV								
M100Y24H	13.00	114.90	116.00	0.0010	76695.33	12.32	23.21	13.00	13.75
*** Node Name: WL-7AASD	Group: POSTDEV								
M100Y24H	0.00	117.20	120.00	0.0000	0.00	12.22	13.04	0.00	0.00
*** Node Name: WL-7AS-D	Group: POSTDEV								
M100Y24H	0.00	116.90	120.00	0.0000	0.00	12.07	3.74	0.00	0.00
*** Node Name: WL-7DS-D	Group: POSTDEV								
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.38	9.94	0.00	0.00
*** Node Name: WL-7FN-D	Group: POSTDEV								
M100Y24H	0.00	119.10	120.00	0.0000	0.00	12.35	1.57	0.00	0.00
*** Node Name: WL-7GS-D	Group: POSTDEV								
M100Y24H	0.00	117.60	120.00	0.0000	0.00	12.12	8.85	0.00	0.00
*** Node Name: WL-7JS-D	Group: POSTDEV								
M100Y24H	0.00	117.00	120.00	0.0000	0.00	12.32	16.93	0.00	0.00
*** Node Name: WL-7MS-D	Group: POSTDEV								
M100Y24H	0.00	117.80	120.00	0.0000	0.00	12.10	5.74	0.00	0.00
*** Node Name: WL-7NN-D	Group: POSTDEV								
M100Y24H	0.00	117.50	120.00	0.0000	0.00	12.03	1.50	0.00	0.00
*** Node Name: WL-7PN-D	Group: POSTDEV								
M100Y24H	0.00	114.10	115.00	0.0000	0.00	12.28	12.90	0.00	0.00
*** Node Name: WL-7RS-D	Group: POSTDEV								
M100Y24H	0.00	113.80	115.00	0.0000	0.00	12.47	30.80	0.00	0.00

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-6X	6.87	-	3.35	-	3.52	-	WL-7PN	7E-1	76	-	9.90	-	15.25	-	-	-	
7-6U	-	3.83	-	3.81	-	0.02	WL-7PN	7E-1	-	98	-	9.49	-	12.9	-	-	NO ATTENUATION
7-6T	-	1.35	-	0.42	-	0.93	WL-7PN	7E-1	-	64	-	0.11	-	0.45	119.47	119.59	DTAS 7-6
	6.87	5.18	3.35	4.23	3.52	0.95	WL-7PN	7E-1	-	-	9.90	9.60	15.25	13.35	-	-	
7-7X	11.23	-	4.69	-	6.54	-	WL-7RS	7E-1	81	-	18.97	-	28.07	-	-	-	
7-7U	-	2.45	-	2.00	-	0.45	WL-7RS	7E-1	-	95	-	5.63	-	7.72	-	-	NO ATTENUATION
7-7T	-	1.97	-	0.72	-	1.25	WL-7RS	7E-1	-	67	-	0.39	-	1.38	119.57	119.79	DTAS 7-5
7-8X	2.82	-	-	-	2.82	-	WL-7RS	7E-1	84	-	10.06	-	14.51	-	-	-	
7-8U	-	3.66	-	1.98	-	1.68	WL-7RS	7E-1	-	92	-	8.51	-	11.82	-	-	NO ATTENUATION
7-8T	-	7.77	-	2.11	-	5.66	WL-7RS	7E-1	-	85	-	9.59	-	13.75	114.70	114.90	POND 7-7
	14.05	15.85	4.69	6.81	9.36	9.04	WL-7RS	7E-1	-	-	29.03	24.12	42.58	34.67	-	-	
SUM 7E-1	20.92	21.03	8.04	11.04	12.88	9.99		7E-1	-	-	38.93	33.72	57.83	48.02	-	-	
											PRE	POST	PRE	POST			
									SUM OF EAST(7E-1)		38.93	33.72	57.83	48.02			

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-1X	12.41	-	3.40	-	9.01	-	WL-7AaS	7W-1	62	-	11.29	-	19.83	-	-	-	
7-1U	-	4.10	-	2.64	-	1.46	WL-7AaS	7W-1	-	81	-	8.81	-	13.04	-	-	NO ATTENUATION
7-1T	-	8.33	-	2.80	-	5.53	WL-7AaS	7W-1	-	65	-	0.61	-	1.84	120.73	120.98	DTAS 7-1
	12.41	12.43	3.40	5.44	9.01	6.99	WL-7AaS	7W-1	-	-	11.29	9.42	19.83	14.88	-	-	
7-2X	5.85	-	1.19	-	4.66	-	WL-7DS	7W-1	59	-	7.46		13.61	-	-	-	
7-2U	-	4.18	-	2.06	-	2.12	WL-7DS	7W-1	-	73	-	6.23	-	9.82	-	-	NO ATTENUATION
	5.85	4.18	1.19	2.06	4.66	2.12	WL-7DS	7W-1	-	-	7.46	6.23	13.61	9.82	-	-	
7-3T	-	6.78	-	2.31	-	4.47	WL-7DS	7W-1	-	66	-	0.49	-	1.43	120.60	120.80	DTAS 7-2
	-	6.78	-	2.31	-	4.47	WL-7DS	7W-1	-	-	-	0.49	-	1.43	-	-	
7-4X	10.39	-	3.55	-	6.85	-	WL-7JS	7W-1	66	-	13.89	-	23.26	-	-	-	
7-4U	-	6.18	-	2.93	-	3.25	WL-7JS	7W-1	-	72	-	10.05	-	15.95	-	-	NO ATTENUATION
7-4T	-	2.56	-	1.27	-	1.29	WL-7JS	7W-1	-	73	-	0.72	-	2.05	119.75	120.01	DTAS 7-3
	10.39	8.74	3.55	4.20	6.85	4.54	WL-7JS	7W-1	-	-	13.89	10.77	23.26	18.00	-	-	
7-5X	2.08	-	0.40	-	1.67	-	WL-7JS/7HN	7W-1	59	-	2.90	-	5.26	-	-	-	
7-5U	-	1.90	-	0.61	-	1.29	WL-7JS/7HN	7W-1	-	65	-	3.41	-	5.74	-	-	NO ATTENUATION
7-5T	-	2.97	-	1.00	-	1.96	WL-7JS/7HN	7W-1	-	66	-	0.27	-	0.99	119.63	119.81	DTAS 7-4
	2.08	4.87	0.40	1.61	1.67	3.25	WL-7JS/7HN	7W-1	-	-	2.90	3.68	5.26	6.73	-	-	
SUM 7W-1	30.73	37.00	8.54	15.63	22.19	21.37	-	7W-1	-	-	35.54	30.59	61.96	50.86	-	-	

	PRE	POST	PRE	POST
SUM OF WEST (7W-1 to 7W-5)	49.58	41.26	85.49	66.54

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-9X	0.73	-	0.40	-	0.33	-	WL-7AS	7W-2	76	-	1.96	-	2.99	-	-	-	
7-9U	-	0.73	-	0.73	-	0.00	WL-7AS	7W-2	-	98	-	2.76	-	3.75	-	-	NO ATTENUATION
	0.73	0.73	0.40	0.73	0.33	0.00	WL-7AS	7W-2	-	-	1.96	2.76	2.99	3.75	-	-	**Closed Basin**

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-10X	1.48	-	0.96	-	0.52	-	WL-7FN	7W-3	81	-	3.67	-	5.43	-	-	-	
7-10U	-	0.52	-	0.52	-	0.00	WL-7FN	7W-3	-	98	-	1.16	-	1.57	-	-	NO ATTENUATION
	1.48	0.52	0.96	0.52	0.52	0.00	WL-7FN	7W-3	-	-	3.67	**1.16**	5.43	**1.57**	-	-	**Closed Basin**

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-3X	6.66	-	1.30	-	5.35	-	WL-7GS	7W-4	59	-	6.44	-	11.73	-	-	-	
7-3U	-	2.66	-	1.32	-	1.34	WL-7GS	7W-4	-	73	-	5.64	-	8.86	-	-	NO ATTENUATION
7-3T	-	-	-	-	-	-	WL-7GS	7W-4	-	66	-	0.00	-	0.00	120.28	120.64	DTAS 7-2*
7-4T	-	-	-	-	-	-	WL-7JS	7W-I	-	73	-	0.00	-	0.00	119.75	120.01	DTAS 7-3**
	6.66	2.66	1.30	1.32	5.35	1.34	WL-7GS	7W-4	-	-	6.44	5.64	11.73	8.86	-	-	Closed Basin

* DTAS 7-2 does not discharge to WL-7GS during storms < = 100-yr/24-hr storm - all discharges for lesser storms are directed to WL-7DS (Open Basin)

** DTAS 7-3 does not discharge to WL-7GS during storms < = 100-yr/24-hr storm - all discharges for lesser storms are directed to WL-7JS (Open Basin)

TABLE B.5
DETENTION ANALYSIS - PEAK FLOW, PEAK STAGE SUMMARY - SWFWMD 25-YEAR 24-HOUR & 100-YEAR 24-HOUR
I-4 SEGMENT 7

SUB BASIN NUMBER	TOTAL AREA		PAVED AREA		UNPAVED AREA		RECEIVING WATER	BASIN ID	CN VALUE		PEAK DISCHARGE				PEAK STAGE		REMARK
											25Y/24H		100Y/24H		25Y/24H	100Y/24H	
	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)	PRE (AC)	POST (AC)			PRE	POST	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	(FT)	(FT)	
7-11X	1.69	-	0.51	-	1.18	-	WL-7NN	7W-5	64	-	1.97	-	3.38	-	-	-	
7-11U	-	0.26	-	0.26	-	0.00	WL-7NN	7W-5	-	98	-	1.11	-	1.5	-	-	NO ATTENUATION
	1.69	0.26	0.51	0.26	1.18	0.00	WL-7NN	7W-5	-	-	1.97	1.11	3.38	1.50	-	-	Closed Basin

TABLE B.6 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20)
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I-4 SEGMENT 7
POSTDEVELOPMENT CONDITIONS 100YR 24HR FLMOD

********** Basin Summary - M100Y24H **********

***					
Basin Name:	7-01T	7-01X	7-02X	7-03X	7-04X
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	PREDEV
Node Name:	DTAS7-1	WL-7AASX	WL-7DS-X	WL-7GS-X	WL-7JS-X
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Comp Time Inc (min):	1.85	5.67	2.40	4.07	3.83
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.90	42.50	18.00	30.50	28.70
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	8.33	12.41	5.85	6.66	10.39
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	65.00	62.00	59.00	59.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.47	12.12	12.34	12.25
Flow Max (cfs):	26.17	19.83	13.61	11.73	23.26
Runoff Volume (in):	5.13	4.75	4.37	4.37	5.26
Runoff Volume (cf):	155320	214014	92703	105497	198558

***					
Basin Name:	7-05X	7-06X	7-07X	7-08X	7-03T
Group Name:	PREDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7MS-X	WL-7PN-X	WL-7RS-X	WL-7RS-X	DTAS7-2
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Comp Time Inc (min):	2.01	5.72	5.40	1.33	1.87
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	15.10	42.90	40.50	10.00	14.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.08	6.87	11.23	2.82	6.78
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	59.00	76.00	81.00	84.00	66.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.11	12.39	12.42	12.04	12.10
Flow Max (cfs):	5.26	15.25	28.07	14.51	21.74
Runoff Volume (in):	4.37	6.53	7.16	7.54	5.26
Runoff Volume (cf):	32931	162947	291941	77193	129449

TABLE B.6 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

***					
Basin Name:	7-04T	7-05T	7-06T	7-07T	7-08T
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	DTAS7-3	DTAS7-4	DTAS7-6	DTAS7-5	POND7-7
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Comp Time Inc (min):	1.73	1.33	1.33	1.33	4.35
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.00	10.00	10.00	10.00	32.60
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	2.56	2.97	1.35	1.97	7.77
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	66.00	64.00	67.00	85.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.08	12.04	12.04	12.04	12.32
Flow Max (cfs):	9.95	11.03	4.77	7.49	23.22
Runoff Volume (in):	6.16	5.26	5.01	5.39	7.66
Runoff Volume (cf):	57203	56683	24543	38505	216031

***					
Basin Name:	7-02U	7-10X	7-11X	7-09X	7-01U
Group Name:	POSTDEV	PREDEV	PREDEV	PREDEV	POSTDEV
Node Name:	WL-7DS-D	WL-7FN-X	WL-7NN-X	WL-7AS-X	WL-7AASD
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Comp Time Inc (min):	4.71	2.64	4.27	1.76	3.51
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	35.30	19.80	32.00	13.20	26.30
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	4.18	1.48	1.69	0.73	4.10
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	73.00	81.00	64.00	76.00	81.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.32	12.14	12.30	12.09	12.21
Flow Max (cfs):	9.82	5.43	3.38	2.99	13.04
Runoff Volume (in):	6.15	7.16	5.01	6.54	7.16
Runoff Volume (cf):	93445	38361	30707	17370	106607

TABLE B.6 BASIN SUMMARY REPORT - SWFWMD 100-YEAR 24-HOUR HYDROGRAPHS

***

Basin Name:	7-09U	7-10U	7-03U	7-04U	7-05U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7AS-D	WL-7FN-D	WL-7GS-D	WL-7JS-D	WL-7MS-D
Hydrograph Type:	UH	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00	256.00
Spec Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Comp Time Inc (min):	1.76	5.19	2.41	3.83	2.01
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	13.20	38.90	18.10	28.70	15.10
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	0.73	0.52	2.66	6.18	1.90
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00	1.00
Curve Number:	98.00	98.00	73.00	72.00	65.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	12.06	12.36	12.11	12.25	12.11
Flow Max (cfs):	3.75	1.57	8.86	15.95	5.74
Runoff Volume (in):	9.26	9.25	6.16	6.03	5.14
Runoff Volume (cf):	24594	17496	59389	135291	35441

***

Basin Name:	7-06U	7-07U	7-08U	7-11U
Group Name:	POSTDEV	POSTDEV	POSTDEV	POSTDEV
Node Name:	WL-7PN-D	WL-7RS-D	WL-7RS-D	WL-7NN-D
Hydrograph Type:	UH	UH	UH	UH
Unit Hydrograph:	UH256	UH256	UH256	UH256
Peaking Factor:	256.00	256.00	256.00	256.00
Spec Time Inc (min):	4.21	4.71	4.33	1.33
Comp Time Inc (min):	4.21	4.71	4.33	1.33
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	31.60	35.30	32.50	10.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	3.83	2.45	3.66	0.26
Vol of Unit Hyd (in):	1.00	1.00	1.00	1.00
Curve Number:	98.00	95.00	92.00	98.00
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.29	12.32	12.28	12.04
Flow Max (cfs):	12.90	7.72	11.82	1.50
Runoff Volume (in):	9.25	8.89	8.53	9.26
Runoff Volume (cf):	128517	79127	113364	8871

TABLE B.7 CLOSED BASIN RETENTION VOLUMES

Closed Basin Receiving Wetland	Post-development Contributing Basin	Post-development 100-yr Volume* (cf)	Pre-development Contributing Basin	Pre-development 100-yr Volume* (cf)	Required Retention Volume (Post - Pre)** (cf)	Retention Facility	Available Retention or Mitigation Volume (cf)
WL 7AS	7-09U	24594	7-09X	17370	7224	Floodplain Mitigation	> 11000
WL 7FN	7-10U	17496	7-10X	38361	0	None needed	0
WL 7GS	7-03U	59389	7-03X	105497	0	None needed	0
WL 7NN	7-11U	8871	7-11X	30707	0	None needed	0

* See Table B.6 for 100-yr basin runoff volumes

** If Pre volume > Post volume --> required retention = 0

Appendix C

ICPR Input Data

Appendix C

APPENDIX C
IPCR Input
I-4 Segment 7

Summary:

The basin hydrology derived in Appendix A is input into the IPCR® Program, and the resulting runoff hydrographs are routed thorough the existing and proposed systems. The input data report is shown in Table C.1, ICPR Input Report. Figure C.1, ICPR Basin-Node-Link Schematic – Pre-development and Figure C.2, ICPR Basin-Node-Link Schematic – Post-development present schematic layouts of the connectivity of the basins, nodes and links, and show the pond routing sequences used to produce the output for the stormwater attenuation/ treatment facilities design discussed in Appendix B.

Design Routing Description:

The receiving wetlands are modeled as boundary nodes with constant water surface elevations equal to the respective Seasonal High Water Elevations (see Figure 7). The pre-developed basins are discharged directly to their respective receiving wetland nodes. The developed untreated basins are similarly directly discharged to their appropriate wetland nodes. For example Basin 7-11X has WL-7NN-X (X designating existing condition) as its node. In the developed condition Basin 7-11U has WL-7NN-D (D designating developed condition) as its node. Treated basins have their associated attenuation/treatment facilities as their nodes. The dry attenuation/treatment nodes DTAS7-1 though DTAS7-6 are linked to their receiving wetlands by their control weirs (W1 through W6), and by overflow weirs B1 through B6, representing overtopping of the ditch-block berms. The wet attenuation/treatment Pond 7-7 is linked to its receiving wetland, WL-7RS-D; via a drop structure that is comprised of a sizable weir and multiple-pipe outfall.

Appendix D

Critical Duration Analysis: Peak Flow Summary and ICPR Routing Results

Appendix D

TABLE D-1
CRITICAL STORM DURATION ANALYSIS - PEAK STAGE SUMMARY

POND ID	2 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.06	120.12	120.20	120.27	120.45	120.63	120.79	120.79
DTAS 7-2	120.05	120.10	120.17	120.22	120.37	120.51	120.65	120.64
DTAS 7-3	119.21	119.31	119.41	119.49	119.61	119.66	119.69	119.73
DTAS 7-4	119.07	119.12	119.20	119.26	119.42	119.57	119.68	119.69
DTAS 7-5	119.08	119.14	119.23	119.29	119.45	119.52	119.55	119.58
DTAS 7-6	119.04	119.08	119.13	119.17	119.29	119.43	119.51	119.51
POND 7-7	114.33	114.45	114.49	114.47	114.37	114.35	114.33	114.36

POND ID	5 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.10	120.20	120.32	120.45	120.67	120.80	120.91	120.98
DTAS 7-2	120.08	120.17	120.26	120.37	120.55	120.66	120.75	120.81
DTAS 7-3	119.27	119.40	119.54	119.63	119.69	119.73	119.73	119.78
DTAS 7-4	119.11	119.20	119.30	119.42	119.61	119.69	119.73	119.79
DTAS 7-5	119.13	119.23	119.34	119.46	119.53	119.59	119.59	119.63
DTAS 7-6	119.07	119.13	119.20	119.29	119.45	119.51	119.54	119.57
POND 7-7	114.37	114.52	114.56	114.55	114.42	114.39	114.36	114.40

POND ID	10 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.13	120.28	120.42	120.60	120.81	120.90	120.98	121.08
DTAS 7-2	120.11	120.23	120.34	120.48	120.66	120.74	120.81	120.89
DTAS 7-3	119.31	119.49	119.64	119.71	119.74	119.77	119.76	119.82
DTAS 7-4	119.14	119.27	119.40	119.55	119.69	119.74	119.77	119.83
DTAS 7-5	119.17	119.31	119.45	119.54	119.58	119.62	119.62	119.66
DTAS 7-6	119.09	119.18	119.27	119.39	119.51	119.54	119.56	119.60
POND 7-7	114.40	114.57	114.62	114.62	114.46	114.41	114.38	114.43

TABLE D-1
CRITICAL STORM DURATION ANALYSIS - PEAK STAGE SUMMARY

POND ID	25 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.19	120.37	120.55	120.74	120.91	121.00	121.05	121.16
DTAS 7-2	120.16	120.31	120.45	120.60	120.75	120.83	120.86	120.95
DTAS 7-3	119.39	119.60	119.74	119.79	119.79	119.82	119.80	119.86
DTAS 7-4	119.22	119.36	119.52	119.66	119.75	119.81	119.81	119.88
DTAS 7-5	119.25	119.41	119.55	119.61	119.63	119.66	119.64	119.70
DTAS 7-6	119.14	119.25	119.36	119.48	119.54	119.59	119.59	119.63
POND 7-7	114.46	114.64	114.70	114.70	114.49	114.44	114.40	114.45

POND ID	50 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.24	120.48	120.68	120.87	121.01	121.08	121.12	121.24
DTAS 7-2	120.20	120.39	120.55	120.71	120.84	120.89	120.92	121.00
DTAS 7-3	119.45	119.70	119.84	119.89	119.85	119.86	119.83	119.89
DTAS 7-4	119.27	119.46	119.63	119.74	119.80	119.85	119.85	119.92
DTAS 7-5	119.30	119.51	119.64	119.69	119.68	119.70	119.67	119.73
DTAS 7-6	119.18	119.32	119.45	119.54	119.58	119.62	119.61	119.65
POND 7-7	114.51	114.72	114.78	114.79	114.52	114.47	114.42	114.47

POND ID	100 YR							
	1-hr	2-hr	4-hr	8-hr	1-day	3-day	7-day	10-day
DTAS 7-1	120.29	120.55	120.79	120.95	121.08	121.16	121.19	121.32
DTAS 7-2	120.24	120.45	120.64	120.78	120.89	120.95	120.97	121.05
DTAS 7-3	119.51	119.77	119.92	119.96	119.89	119.90	119.86	119.93
DTAS 7-4	119.32	119.53	119.71	119.80	119.83	119.90	119.88	119.96
DTAS 7-5	119.36	119.57	119.71	119.75	119.71	119.74	119.70	119.76
DTAS 7-6	119.22	119.37	119.51	119.57	119.60	119.65	119.63	119.67
POND 7-7	114.55	114.77	114.84	114.84	114.55	114.50	114.45	114.50

INPUT DATA

```
==========================================================================================
==== Basins ==============================================================================
==========================================================================================

        Name: 7-01T                    Node: DTAS7-1                  Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 13.90
              Area(ac): 8.334                Time Shift(hrs): 0.00
          Curve Number: 65.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


------------------------------------------------------------------------------------------
        Name: 7-01U                    Node: WL-7AASD                 Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 26.30
              Area(ac): 4.100                Time Shift(hrs): 0.00
          Curve Number: 81.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


------------------------------------------------------------------------------------------
        Name: 7-01X                    Node: WL-7AASX                 Status: Onsite
       Group: PREDEV                   Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 42.50
              Area(ac): 12.410               Time Shift(hrs): 0.00
          Curve Number: 62.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00

Predeveloped to 30" RCP outfall 2070+00 (WL-7AaS)

------------------------------------------------------------------------------------------
        Name: 7-02U                    Node: WL-7DS-D                 Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 35.30
              Area(ac): 4.185                Time Shift(hrs): 0.00
          Curve Number: 73.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


------------------------------------------------------------------------------------------
        Name: 7-02X                    Node: WL-7DS-X                 Status: Onsite
       Group: PREDEV                   Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 18.00
              Area(ac): 5.849                Time Shift(hrs): 0.00
          Curve Number: 59.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


------------------------------------------------------------------------------------------
        Name: 7-03T                    Node: DTAS7-2                  Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

       Unit Hydrograph: UH256                  Peaking Factor: 256.0
         Rainfall File: FLMOD            Storm Duration(hrs): 24.00
    Rainfall Amount(in): 8.000             Time of Conc(min): 14.00
              Area(ac): 6.775                Time Shift(hrs): 0.00
          Curve Number: 66.00           Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


------------------------------------------------------------------------------------------
        Name: 7-03U                    Node: WL-7GS-D                 Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph
```

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 18.10
Area(ac): 2.658 | Time Shift(hrs): 0.00
Curve Number: 73.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-03X | Node: WL-7GS-X | Status: Onsite
Group: PREDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 30.50
Area(ac): 6.657 | Time Shift(hrs): 0.00
Curve Number: 59.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Predeveloped area to 24" RCP @ sta 2098+00

Name: 7-04T | Node: DTAS7-3 | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 13.00
Area(ac): 2.560 | Time Shift(hrs): 0.00
Curve Number: 73.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-04U | Node: WL-7JS-D | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 28.70
Area(ac): 6.182 | Time Shift(hrs): 0.00
Curve Number: 72.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-04X | Node: WL-7JS-X | Status: Onsite
Group: PREDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 28.70
Area(ac): 10.393 | Time Shift(hrs): 0.00
Curve Number: 66.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Predeveloped Area to 42" RCP outfall sta 2105+00

Name: 7-05T | Node: DTAS7-4 | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 10.00
Area(ac): 2.966 | Time Shift(hrs): 0.00
Curve Number: 66.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-05U | Node: WL-7MS-D | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 | Peaking Factor: 256.0
Rainfall File: FLMOD | Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 | Time of Conc(min): 15.10
Area(ac): 1.901 | Time Shift(hrs): 0.00
Curve Number: 65.00 | Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-05X | Node: WL-7MS-X | Status: Onsite
Group: PREDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	15.10
Area(ac):	2.078	Time Shift(hrs):	0.00
Curve Number:	59.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Predevelopment Area to 24" RCP sta 2118+00

Name: 7-06T | Node: DTAS7-6 | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	10.00
Area(ac):	1.350	Time Shift(hrs):	0.00
Curve Number:	64.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 7-06U | Node: WL-7PN-D | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	31.60
Area(ac):	3.827	Time Shift(hrs):	0.00
Curve Number:	98.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 7-06X | Node: WL-7PN-X | Status: Onsite
Group: PREDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	42.90
Area(ac):	6.873	Time Shift(hrs):	0.00
Curve Number:	76.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Predevelopment area to WL PN

Name: 7-07T | Node: DTAS7-5 | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	10.00
Area(ac):	1.967	Time Shift(hrs):	0.00
Curve Number:	67.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 7-07U | Node: WL-7RS-D | Status: Onsite
Group: POSTDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	35.30
Area(ac):	2.453	Time Shift(hrs):	0.00
Curve Number:	95.00	Max Allowable Q(cfs):	999999.000
DCIA(%):	0.00		

Name: 7-07X | Node: WL-7RS-X | Status: Onsite
Group: PREDEV | Type: SCS Unit Hydrograph

Unit Hydrograph:	UH256	Peaking Factor:	256.0
Rainfall File:	FLMOD	Storm Duration(hrs):	24.00
Rainfall Amount(in):	8.000	Time of Conc(min):	40.50

```
            Area(ac): 11.231                Time Shift(hrs): 0.00
        Curve Number: 81.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00

Predevelopment area to WL-RS

-------------------------------------------------------------------------------------------------
        Name: 7-08T                    Node: POND7-7              Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 32.60
            Area(ac): 7.766                 Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-08U                    Node: WL-7RS-D             Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 32.50
            Area(ac): 3.663                 Time Shift(hrs): 0.00
        Curve Number: 92.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-08X                    Node: WL-7RS-X             Status: Onsite
       Group: PREDEV                   Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 10.00
            Area(ac): 2.820                 Time Shift(hrs): 0.00
        Curve Number: 84.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-09U                    Node: WL-7AS-D             Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 13.20
            Area(ac): 0.732                 Time Shift(hrs): 0.00
        Curve Number: 98.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-09X                    Node: WL-7AS-X             Status: Onsite
       Group: PREDEV                   Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 13.20
            Area(ac): 0.732                 Time Shift(hrs): 0.00
        Curve Number: 76.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-10U                    Node: WL-7FN-D             Status: Onsite
       Group: POSTDEV                  Type: SCS Unit Hydrograph

    Unit Hydrograph: UH256                    Peaking Factor: 256.0
      Rainfall File: FLMOD              Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000                Time of Conc(min): 38.90
            Area(ac): 0.521                 Time Shift(hrs): 0.00
        Curve Number: 98.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
        Name: 7-10X                    Node: WL-7FN-X             Status: Onsite
```

Group: PREDEV Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 Peaking Factor: 256.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 Time of Conc(min): 19.80
Area(ac): 1.475 Time Shift(hrs): 0.00
Curve Number: 81.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-11U Node: WL-7NN-D Status: Onsite
Group: POSTDEV Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 Peaking Factor: 256.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 Time of Conc(min): 10.00
Area(ac): 0.264 Time Shift(hrs): 0.00
Curve Number: 98.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: 7-11X Node: WL-7NN-X Status: Onsite
Group: PREDEV Type: SCS Unit Hydrograph

Unit Hydrograph: UH256 Peaking Factor: 256.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 8.000 Time of Conc(min): 32.00
Area(ac): 1.690 Time Shift(hrs): 0.00
Curve Number: 64.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========

**** Nodes ****

==========

Name: DTAS7-1 Base Flow(cfs): 0.000 Init Stage(ft): 120.000
Group: POSTDEV Warn Stage(ft): 122.000
Type: Stage/Area

Stage(ft)	Area(ac)
120.000	2.2350
120.500	2.4050
121.500	2.7450

Name: DTAS7-2 Base Flow(cfs): 0.000 Init Stage(ft): 120.000
Group: POSTDEV Warn Stage(ft): 122.000
Type: Stage/Area

Stage(ft)	Area(ac)
120.000	2.3500
120.400	2.4830
121.500	2.8500

Name: DTAS7-3 Base Flow(cfs): 0.000 Init Stage(ft): 119.100
Group: POSTDEV Warn Stage(ft): 122.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.100	0.7340
119.500	0.7720
120.500	0.9020

Name: DTAS7-4 Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: POSTDEV Warn Stage(ft): 122.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.8940
119.500	0.9810
120.500	1.2210

Name: DTAS7-5 Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: POSTDEV Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.5510
119.400	0.5880
120.000	0.6430

Name: DTAS7-6 Base Flow(cfs): 0.000 Init Stage(ft): 119.000
Group: POSTDEV Warn Stage(ft): 120.000
Type: Stage/Area

Stage(ft)	Area(ac)
119.000	0.5510
119.400	0.5880
120.000	0.6430

Name: POND7-7 Base Flow(cfs): 0.000 Init Stage(ft): 114.190
Group: POSTDEV Warn Stage(ft): 116.000
Type: Stage/Area

Stage(ft)	Area(ac)
113.800	1.6550
116.000	1.8660

Name: WL-7AASD Base Flow(cfs): 0.000 Init Stage(ft): 117.200
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.200
72.00	117.200

Name: WL-7AASX Base Flow(cfs): 0.000 Init Stage(ft): 117.200
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.200
72.00	117.200

Name: WL-7AS-D Base Flow(cfs): 0.000 Init Stage(ft): 116.900
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.900
72.00	116.900

Name: WL-7AS-X Base Flow(cfs): 0.000 Init Stage(ft): 116.900
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	116.900
72.00	116.900

Name: WL-7DS-D Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.500
72.00	117.500

Name: WL-7DS-X Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.500
72.00	117.500

Name: WL-7FN-D Base Flow(cfs): 0.000 Init Stage(ft): 119.100
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	119.100
72.00	119.100

Name: WL-7FN-X Base Flow(cfs): 0.000 Init Stage(ft): 119.100
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	119.100
72.00	119.100

Name: WL-7GS-D Base Flow(cfs): 0.000 Init Stage(ft): 117.600
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.600
72.00	117.600

Name: WL-7GS-X Base Flow(cfs): 0.000 Init Stage(ft): 117.600
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.600
72.00	117.600

Name: WL-7JS-D Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)

0.00	117.000
72.00	117.000

Name: WL-7JS-X Base Flow(cfs): 0.000 Init Stage(ft): 117.000
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.000
72.00	117.000

Name: WL-7MS-D Base Flow(cfs): 0.000 Init Stage(ft): 117.800
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.800
72.00	117.800

Name: WL-7MS-X Base Flow(cfs): 0.000 Init Stage(ft): 117.800
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.800
72.00	117.800

Name: WL-7NN-D Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: POSTDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.500
72.00	117.500

Name: WL-7NN-X Base Flow(cfs): 0.000 Init Stage(ft): 117.500
Group: PREDEV Warn Stage(ft): 120.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	117.500
72.00	117.500

Name: WL-7PN-D Base Flow(cfs): 0.000 Init Stage(ft): 114.100
Group: POSTDEV Warn Stage(ft): 115.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	114.100
72.00	114.100

Name: WL-7PN-X Base Flow(cfs): 0.000 Init Stage(ft): 114.100
Group: PREDEV Warn Stage(ft): 115.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	114.100

72.00 114.100

Name: WL-7RS-D Base Flow(cfs): 0.000 Init Stage(ft): 113.800
Group: POSTDEV Warn Stage(ft): 115.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	113.800
72.00	113.800

Name: WL-7RS-X Base Flow(cfs): 0.000 Init Stage(ft): 113.800
Group: PREDEV Warn Stage(ft): 115.000
Type: Time/Stage

WL-RS-X

Time(hrs)	Stage(ft)
0.00	113.800
72.00	113.800

==========
==== Cross Sections ====
==========

==========
==== Operating Tables ====
==========

==========
==== Pipes ====
==========

==========
==== Channels ====
==========

==========
==== Drop Strcutures ====
==========

Name: DS7-7 From Node: POND7-7 Length(ft): 20.00
Group: POSTDEV To Node: WL-7RS-D Count: 3

	UPSTREAM	DOWNSTREAM
Geometry:	Horz Ellipse	Horz Ellipse
Span(in):	23.00	23.00
Rise(in):	14.00	14.00
Invert(ft):	113.500	113.400
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 dc
Solution Incs: 0

Upstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description:
Horizontal Ellipse Concrete: Square edge with headwall

*** Weir 1 of 2 for Drop Structure DS7-7 ***

TABLE

Count: 1 Bottom Clip(in): 0.000
Type: Vertical: Fread Top Clip(in): 0.000
Flow: None Weir Disc Coef: 2.600
Geometry: Circular Orifice Disc Coef: 0.600

Span(in): 2.00 Invert(ft): 113.800
Rise(in): 2.00 Control Elev(ft): 113.800

*** Weir 2 of 2 for Drop Structure DS7-7 ***

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): 120.00                    Invert(ft): 114.190
            Rise(in): 15.70                  Control Elev(ft): 114.190

==========================================================================================
==== Weirs ===============================================================================
==========================================================================================

        Name: B1                  From Node: DTAS7-1
       Group: POSTDEV               To Node: WL-7AASD
        Flow: Both                    Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 100.00
  Left Side Slope(h/v): 6.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 121.500
 Control Elevation(ft): 121.500
Struct Opening Dim(ft): 99.00
                                      TABLE
       Bottom Clip(ft): 0.000
          Top Clip(ft): 0.000
   Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------
        Name: B2A                 From Node: DTAS7-2
       Group: POSTDEV               To Node: WL-7DS-D
        Flow: Both                    Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 79.00
  Left Side Slope(h/v): 4.00
 Right Side Slope(h/v): 4.00
          Invert(ft): 121.500
 Control Elevation(ft): 121.500
Struct Opening Dim(ft): 99.00
                                      TABLE
       Bottom Clip(ft): 0.000
          Top Clip(ft): 0.000
   Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------
        Name: B2B                 From Node: DTAS7-2
       Group: POSTDEV               To Node: WL-7GS-D
        Flow: Both                    Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 97.00
  Left Side Slope(h/v): 6.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 121.500
 Control Elevation(ft): 121.500
Struct Opening Dim(ft): 99.00
                                      TABLE
       Bottom Clip(ft): 0.000
          Top Clip(ft): 0.000
   Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600


------------------------------------------------------------------------------------------
        Name: B3A                 From Node: DTAS7-3
       Group: POSTDEV               To Node: WL-7GS-D
        Flow: Both                    Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 85.00
  Left Side Slope(h/v): 6.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 120.500
 Control Elevation(ft): 120.500
Struct Opening Dim(ft): 99.00
                                      TABLE
       Bottom Clip(ft): 0.000
          Top Clip(ft): 0.000
   Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600
```

```
        Name: B3B                  From Node: DTAS7-3
       Group: POSTDEV                To Node: WL-7JS-D
        Flow: Both                     Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 85.00
  Left Side Slope(h/v): 6.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 120.500
 Control Elevation(ft): 120.500
Struct Opening Dim(ft): 99.00
                                      TABLE
    Bottom Clip(ft): 0.000
       Top Clip(ft): 0.000
  Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600
```

```
        Name: B4                   From Node: DTAS7-4
       Group: POSTDEV                To Node: WL-7JS-D
        Flow: Both                     Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 55.00
  Left Side Slope(h/v): 4.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 120.500
 Control Elevation(ft): 120.500
Struct Opening Dim(ft): 99.00
                                      TABLE
    Bottom Clip(ft): 0.000
       Top Clip(ft): 0.000
  Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600
```

```
        Name: B5                   From Node: DTAS7-5
       Group: POSTDEV                To Node: WL-7RS-D
        Flow: Both                     Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 72.00
  Left Side Slope(h/v): 6.00
 Right Side Slope(h/v): 4.00
          Invert(ft): 120.000
 Control Elevation(ft): 120.000
Struct Opening Dim(ft): 99.00
                                      TABLE
    Bottom Clip(ft): 0.000
       Top Clip(ft): 0.000
  Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600
```

```
        Name: B6                   From Node: DTAS7-6
       Group: POSTDEV                To Node: WL-7PN-D
        Flow: Both                     Count: 1
        Type: Vertical: Fread      Geometry: Trapezoidal

    Bottom Width(ft): 72.00
  Left Side Slope(h/v): 4.00
 Right Side Slope(h/v): 6.00
          Invert(ft): 120.000
 Control Elevation(ft): 120.000
Struct Opening Dim(ft): 99.00
                                      TABLE
    Bottom Clip(ft): 0.000
       Top Clip(ft): 0.000
  Weir Discharge Coef: 2.600
Orifice Discharge Coef: 0.600
```

```
        Name: W-1                  From Node: DTAS7-1
       Group: POSTDEV                To Node: WL-7AASD
        Flow: Both                     Count: 1
```

```
        Type: Vertical: Mavis      Geometry: Rectangular

                    Span(in): 24.00
                    Rise(in): 12.00
                  Invert(ft): 120.500
       Control Elevation(ft): 120.500
                                          TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 2.800
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------------
        Name: W-2A                From Node: DTAS7-2
       Group: POSTDEV               To Node: WL-7DS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                    Span(in): 24.00
                    Rise(in): 13.20
                  Invert(ft): 120.400
       Control Elevation(ft): 120.400
                                          TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 2.800
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------------
        Name: W-2B                From Node: DTAS7-2
       Group: POSTDEV               To Node: WL-7GS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                    Span(in): 24.00
                    Rise(in): 6.00
                  Invert(ft): 120.800
       Control Elevation(ft): 120.800
                                          TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 2.800
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------------
        Name: W-3A                From Node: DTAS7-3
       Group: POSTDEV               To Node: WL-7GS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                    Span(in): 24.00
                    Rise(in): 6.00
                  Invert(ft): 120.010
       Control Elevation(ft): 120.010
                                          TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 2.800
      Orifice Discharge Coef: 0.600


--------------------------------------------------------------------------------------------------------------
        Name: W-3B                From Node: DTAS7-3
       Group: POSTDEV               To Node: WL-7JS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                    Span(in): 24.00
                    Rise(in): 12.00
                  Invert(ft): 119.500
       Control Elevation(ft): 119.500
                                          TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 2.800
      Orifice Discharge Coef: 0.600
```

```
        Name: W-4A                From Node: DTAS7-4
       Group: POSTDEV               To Node: WL-7JS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                  Span(in): 24.00
                  Rise(in): 12.00
                Invert(ft): 119.500
      Control Elevation(ft): 119.500
                                      TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
         Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600


        Name: W-5                 From Node: DTAS7-5
       Group: POSTDEV               To Node: WL-7RS-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                  Span(in): 24.00
                  Rise(in): 7.20
                Invert(ft): 119.400
      Control Elevation(ft): 119.400
                                      TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
         Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600


        Name: W-6                 From Node: DTAS7-6
       Group: POSTDEV               To Node: WL-7PN-D
        Flow: Both                    Count: 1
        Type: Vertical: Mavis     Geometry: Rectangular

                  Span(in): 24.00
                  Rise(in): 7.20
                Invert(ft): 119.400
      Control Elevation(ft): 119.400
                                      TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
         Weir Discharge Coef: 2.800
     Orifice Discharge Coef: 0.600


==========================================================================================
==== Bridges =============================================================================
==========================================================================================


==========================================================================================
==== Breaches ============================================================================
==========================================================================================


==========================================================================================
==== Rating Curves =======================================================================
==========================================================================================


==========================================================================================
==== Hydrology Simulations ===============================================================
==========================================================================================

        Name: 100Y24HR
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\100Y24HR.R32

     Override Defaults: Yes
   Storm Duration(hrs): 24.00
         Rainfall File: FDOT-24
  Rainfall Amount(in): 10.60

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00
```

```
        Name: 10YR10D
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR10D.R32

     Override Defaults: Yes
  Storm Duration(hrs): 240.00
        Rainfall File: FDOT-240
  Rainfall Amount(in): 13.00

Time(hrs)       Print Inc(min)
--------------- ---------------
240.000         5.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR1HR
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR1HR.R32

     Override Defaults: Yes
  Storm Duration(hrs): 1.00
        Rainfall File: FDOT-1
  Rainfall Amount(in): 3.30

Time(hrs)       Print Inc(min)
--------------- ---------------
1.000           1.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR2HR
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR2HR.R32

     Override Defaults: Yes
  Storm Duration(hrs): 2.00
        Rainfall File: FDOT-2
  Rainfall Amount(in): 4.00

Time(hrs)       Print Inc(min)
--------------- ---------------
2.000           1.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR3DAY
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR3DAY.R32

     Override Defaults: Yes
  Storm Duration(hrs): 72.00
        Rainfall File: FDOT-72
  Rainfall Amount(in): 8.70

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR4HR
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR4HR.R32

     Override Defaults: Yes
  Storm Duration(hrs): 4.00
        Rainfall File: FDOT-4
  Rainfall Amount(in): 4.70

Time(hrs)       Print Inc(min)
--------------- ---------------
4.000           2.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR7DAY
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR7DAY.R32

     Override Defaults: Yes
  Storm Duration(hrs): 168.00
        Rainfall File: FDOT-168
  Rainfall Amount(in): 11.20

Time(hrs)       Print Inc(min)
--------------- ---------------
168.000         5.00

-------------------------------------------------------------------------------------------------------
        Name: 10YR8HR
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\10YR8HR.R32

     Override Defaults: Yes
  Storm Duration(hrs): 8.00
        Rainfall File: FDOT-8
  Rainfall Amount(in): 5.60
```

Time(hrs)	Print Inc(min)
8.000	4.00

Name: 25YR10D
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR10D.R32

Override Defaults: Yes
Storm Duration(hrs): 240.00
Rainfall File: FDOT-240
Rainfall Amount(in): 15.00

Time(hrs)	Print Inc(min)
240.000	5.00

Name: 25YR1HR
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR1HR.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: FDOT-1
Rainfall Amount(in): 3.90

Time(hrs)	Print Inc(min)
1.000	1.00

Name: 25YR24HR
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR24HR.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: FDOT-24
Rainfall Amount(in): 8.50

Time(hrs)	Print Inc(min)
24.000	5.00

Name: 25YR2HR
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR2HR.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: FDOT-2
Rainfall Amount(in): 4.60

Time(hrs)	Print Inc(min)
2.000	1.00

Name: 25YR3DAY
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR3DAY.R32

Override Defaults: Yes
Storm Duration(hrs): 72.00
Rainfall File: FDOT-72
Rainfall Amount(in): 10.50

Time(hrs)	Print Inc(min)
72.000	5.00

Name: 25YR4HR
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR4HR.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: FDOT-4
Rainfall Amount(in): 5.40

Time(hrs)	Print Inc(min)
4.000	2.00

Name: 25YR7DAY
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR7DAY.R32

```
      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 13.00

Time(hrs)        Print Inc(min)
---------------- ----------------
168.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: 25YR8HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\25YR8HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 6.50

Time(hrs)        Print Inc(min)
---------------- ----------------
8.000            4.00

-------------------------------------------------------------------------------------------------------------
         Name: 2YR10DAY
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR10DAY.R32

      Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): 8.50

Time(hrs)        Print Inc(min)
---------------- ----------------
240.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: 2YR1HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR1HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 2.50

Time(hrs)        Print Inc(min)
---------------- ----------------
1.000            1.00

-------------------------------------------------------------------------------------------------------------
         Name: 2YR2HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR2HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
    Rainfall Amount(in): 2.90

Time(hrs)        Print Inc(min)
---------------- ----------------
2.000            1.00

-------------------------------------------------------------------------------------------------------------
         Name: 2YR3DAY
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR3DAY.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 6.00

Time(hrs)        Print Inc(min)
---------------- ----------------
72.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: 2YR4HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR4HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 3.40

Time(hrs)        Print Inc(min)
---------------- ----------------
4.000            2.00
```

```
---------------------------------------------------------------------------------------------------
         Name: 2YR7DAY
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR7DAY.R32

      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 7.50

Time(hrs)        Print Inc(min)
---------------- ----------------
168.000          5.00

---------------------------------------------------------------------------------------------------
         Name: 2YR8HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\2YR8HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 3.80

Time(hrs)        Print Inc(min)
---------------- ----------------
8.000            4.00

---------------------------------------------------------------------------------------------------
         Name: 50YR10D
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR10D.R32

      Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): I7.00

Time(hrs)        Print Inc(min)
---------------- ----------------
240.000          5.00

---------------------------------------------------------------------------------------------------
         Name: 50YR1HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR1HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 4.30

Time(hrs)        Print Inc(min)
---------------- ----------------
1.000            1.00

---------------------------------------------------------------------------------------------------
         Name: 50YR2HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR2HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
    Rainfall Amount(in): 5.20

Time(hrs)        Print Inc(min)
---------------- ----------------
2.000            1.00

---------------------------------------------------------------------------------------------------
         Name: 50YR3DAY
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR3DAY.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 12.00

Time(hrs)        Print Inc(min)
---------------- ----------------
72.000           5.00

---------------------------------------------------------------------------------------------------
         Name: 50YR4HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR4HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
```

```
    Rainfall Amount(in): 6.10

Time(hrs)        Print Inc(min)
---------------- ----------------
4.000            2.00

-------------------------------------------------------------------------------------------------------
          Name: 50YR7DAY
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\50YR7DAY.R32

       Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 15.00

Time(hrs)        Print Inc(min)
---------------- ----------------
168.000          5.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR10DAY
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR10DAY.R32

       Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): 11.00

Time(hrs)        Print Inc(min)
---------------- ----------------
240.000          5.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR1HR
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR1HR.R32

       Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 3.00

Time(hrs)        Print Inc(min)
---------------- ----------------
1.000            1.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR2HR
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR2HR.R32

       Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
    Rainfall Amount(in): 3.50

Time(hrs)        Print Inc(min)
---------------- ----------------
2.000            1.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR3DAY
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR3DAY.R32

       Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 7.60

Time(hrs)        Print Inc(min)
---------------- ----------------
72.000           5.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR4HR
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR4HR.R32

       Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 4.10

Time(hrs)        Print Inc(min)
---------------- ----------------
4.000            2.00

-------------------------------------------------------------------------------------------------------
          Name: 5YR7DAY
```

```
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR7DAY.R32

      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 9.50

Time(hrs)       Print Inc(min)
--------------- ---------------
168.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: 5YR8HR
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\5YR8HR.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 4.80

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           4.00

-------------------------------------------------------------------------------------------------------------
         Name: D002Y24H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D002Y24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 4.80

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: D005Y24H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D005Y24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 6.20

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: D010Y24H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D010Y24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 7.40

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: D050Y24H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D050Y24H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 9.80

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: D050Y8H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D050Y8H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 7.40

Time(hrs)       Print Inc(min)
```

```
--------------- ---------------
8.000           4.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y10D
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y10D.R32

      Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): 19.00

Time(hrs)       Print Inc(min)
--------------- ---------------
240.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y1H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y1H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 4.70

Time(hrs)       Print Inc(min)
--------------- ---------------
1.000           1.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y2H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y2H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
    Rainfall Amount(in): 5.60

Time(hrs)       Print Inc(min)
--------------- ---------------
2.000           1.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y3D
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y3D.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 13.70

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y4H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y4H.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 6.70

Time(hrs)       Print Inc(min)
--------------- ---------------
4.000           2.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y7D
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y7D.R32

      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 17.00

Time(hrs)       Print Inc(min)
--------------- ---------------
168.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: D100Y8H
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 7\FDOT Critical Duration Analysis\ICPR3 Data\D100Y8H.R32

      Override Defaults: Yes
```

Appendix E

Attenuation/Treatment Facility Volume Recovery Analysis

Appendix E

APPENDIX E
Attenuation/Treatment Facility Volume Recovery Analysis
I-4 Segment 7

Summary:
Six dry ponds and one wet pond are proposed for this project. The six dry, shallow ponds are labeled Dry Treatment/Attenuation Swales DTAS 7-1 through DTAS 7-6. Three of these DTAS facilities are located within the median, and receive inflow from the roadway shoulder storm drain systems. These storm drain systems collect roadway runoff from the shoulder gutters to be constructed along the westbound lanes. Two of the DTAS facilities are located to the left of the westbound roadway, and the final one is located to the right of the eastbound roadway. The DTAS facilities are intended to provide both treatment and attenuation to meet the ERP requirements of SWFWMD. Calculation of infiltration recover for the retained stormwater volumes is also required by SWFMWD. The program MODRET® was used to confirm that infiltration recovery for all six DTAS facilities meets the recovery requirement of 72 hours.

The project Geotechnical consultant, Professional Services Industries, Inc (PSI), performed field testing in September, 2002 to determine appropriate permeability rates and seasonal high water table elevations for the DTAS facilities designs. The permeability results of the field-testing are summarized in Table E.2, Constant Head Field Permeability Test Results, and in Table E.3, Double Ring Infiltration Test Results. The results of the Seasonal High Water Table determinations are summarized in Table E.4, Summary of Existing Water Table and Estimated Seasonal High Water Table. (Note: the original Geotechnical Data can also be found in Appendix J.)

A special routing was performed for the wet pond, Pond 7-7, to design the facility to meet the required treatment volume recovery criteria. The initial stage of the pond was set at the overflow weir elevation (the top of the stormwater treatment pool), and the ICPR model was then used to size the needed drawdown orifice. (Note: there was no external inflow into the pond during the ICPR drawdown analysis.) The orifice diameter was adjusted to 1.9-inches so that at least 50% of the treatment volume was still present 60 hours after the analysis began. The treatment storage was also not completely released before another 60 hours. This slow drawdown is documented in the ICPR input and output contained in Table E.6, Treatment Recovery Input and Node Time Series Report.

Conclusions:
All six DTAS facilities meet the recovery requirement of 72 hours. The results of the infiltration recovery calculations have been rounded up to the nearest hour and are summarized in Table E.1, Treatment Volume/Retention Volume Recovery Summary.

The wet pond also meets its treatment volume recovery requirements, as indicated in Table E.1.

Table E.1 Treatment Volume/Retention Volume Recovery Summary

Pond	Recovery Time (Hours)
DTAS 7-1	34
DTAS 7-2	37
DTAS 7-3	36
DTAS 7-4	31
DTAS 7-5	35
DTAS 7-6	36
Pond 7-7 (50% recovery)	67
Pond 7-7 (100% recovery)	> 120

Assumptions for DTAS Facilities:

Safety Factor:
A safety factor of 2.0 was used on the permeability data.

Effective Aquifer Base Elevation:
The elevation of the effective Aquifer Base was determined per the MODRET® user's guide. The program limits the effective depth of an unconfined aquifer below an infiltration pond to one (1) width of the pond, if the actual depth exceeds the pond width. However, since the project boring information does not extend to depths equal to or greater than the proposed pond widths, the Effective Aquifer Base Elevation will conservatively be assumed at a lesser depth within the limits of the boring data.

The soil boring information contained in Final Roadway Soil Survey- I-4 Section 3 Design Build, Segment 7 - East of U.S. 27 to the Osceola County Line, Professional Services Industries, Inc., October 2002, was reviewed to evaluate the presence of confining soil layers. The deeper boring locations and data can be found in Appendix J, Geotechnical Data. The borings within Segment 7 did not seem to indicate that restrictive soil layers were present. But since the borings only extended to a maximum of about 25 feet below the ground elevation (or to about el. 97 at.a few locations), they do not indicate how far down below the borings the actual aquifer base elevation could be. A conservative assumption is that the Effective Aquifer Base Elevation is at least below el. 97' NGVD, or at, say, el. 95 NGVD (to the nearest 5 feet) for design purposes.

Design Criteria:

DTAS Facilities:
Time for retention volume recovery shall be less than 72 hours.

Pond bottom shall be a minimum of one foot above the Seasonal High Water Table.

Pond 7-7:
No more than 50% of the treatment volume shall be discharged within the first 60 hours of recovery, and no less than 120 hours shall pass before the entire treatment volume is recovered.

Design Procedure:

DTAS Facilities:
The Seasonal High Water Table was determined for each DTAS facility based on the information in Table E.4, except for DTAS 7-4, DTAS 7-5 and DTAS 7-6 where substantial excavations below existing ground will take place. The Seasonal high water tables used for design of these three DTAS's consider the influence of the seasonal high water elevations in the adjacent wetlands (see Figure 7 of this Volume for wetland SHW's).

Input parameters for pond geometrics and SHW were entered from Table E.5, Dry Pond Locations and Parameters. Soil infiltration parameters were input from Table E.2, Constant Head Field Permeability Test Results and Table E.3, Double Ring Infiltration Test Results. The MODRET infiltration module was then run. The program input and output summaries follow Table E.6.

Pond 7-7:
The initial stage of the pond was set at the overflow weir el. 114.19' NGVD (the top of the stormwater treatment pool), and the ICPR model was then used to size the needed drawdown orifice. (Note: there was no external inflow into the pond during the ICPR drawdown analysis.) The ICPR input and output data for the treatment volume recovery analysis is contained in Table E.6, Treatment Recovery Input and Node Time Series Report.

TABLE E.2 CONSTANT HEAD FIELD PERMEABILITY TEST RESULTS
I-4 SEGMENT 7

POLK COUNTY, FLORIDA F.P.N. 201204-1 PSI PROJECT NO. 775-25283					
TEST NO.	TEST DEPTH (feet)	STATION AND OFFSET B/L SURVEY S.R. 400 (I-4) (feet)	HORIZONTAL PERMEABILITY RATE (ft/day)	HORIZONTAL PERMEABILITY RATE (inch/hr)	DESIGN INFILTRATION RATE W/ SF=2.0 (in/hr)
P-1	6.5	2057+00, B/L	>20*	>10*	5.0
P-2	5.5	2085+00, B/L	9.8	4.9	2.5
P-3	4	2102+00, B/L	9.3	4.7	2.3
P-4	10	2127+00, 120 LT	15.5	7.8	3.9
P-5	9	2127+00, 115 RT	15.9	8.0	4.0

* Test results were greater than 20 ft/day. However, we recommend that 20 ft/day be a maximum value used for design.

TABLE E.3 DOUBLE RING INFILTRATION TEST RESULTS
I-4 SEGMENT 7

POLK COUNTY, FLORIDA F.P.N. 201204-1 PSI PROJECT NO. 775-25283					
TEST NO.	TEST DEPTH (feet)	STATION AND OFFSET B/L SURVEY S.R. 400 (I-4) (feet)	INFILTRATION RATE (ft/day)	MEASURED INFILTRATION RATE (in/hr)	DESIGN INFILTRATION RATE W/ SF=2.0 (in/hr)
DRIT-1	2	2064+00, 20 RT	16.6	8.3	4.2
DRIT-2	1	2092+00, B/L	9.4	4.7	2.4
DRIT-3	2.5	2112+00, B/L	14.6	7.3	3.7

TABLE E.4 SUMMARY OF EXISTING WATER TABLE AND ESTIMATED SEASONAL HIGH WATER TABLE
I-4 SEGMENT 7

POLK COUNTY, FLORIDA
F.P.N. 201204-1
PSI PROJECT NO. 775-25283

BORING LOCATION B/L SURVEY		EXISTING GROUND SURFACE ELEVATION (feet, NGVD)	APPROXIMATE GROUNDWATER TABLE		ESTIMATED SEASONAL HIGH GROUNDWATER	
STATION	OFFSET		DEPTH (feet)	ELEVATION (feet, NGVD)	DEPTH (feet)	ELEVATION (feet, NGVD)
2064+00	C/L	123.89	>5[1]	>118.9	6	117.9
2092+00	C/L	119.43	2.3	117.1	1.5	117.9
2112+00	C/L	119.91	2.6	117.3	1.5	118.4
2057+00	C/L	125.60	>7[1]	>118.6	7	118.6
2085+00	C/L	126.01	>6[1]	>120	7.5	118.5
2102+00	C/L	121.72	>5[1]	>116.7	5.5	116.2
2127+00	135.78 LT	129.25	>10[1]	>119.2	11	118.3
2127+00	140.18 RT	128.95	>10[1]	>119	10	119
2137+00	C/L	114.77	3.3	111.5	1.5	113.3
2142+00	C/L	114.67	3.2	111.5	2	112.7
2150+00	C/L	114.01	2.5	111.5	2	112
2155+00	C/L	114.36	2.9	111.5	2	112.4

[1] Groundwater table was not encountered within the depth of boring performed.

* Existing ground surface elevation provided by Boyer-Singleton & Associates, Inc.

TABLE E.5 DRY POND LOC...IONS AND PARAMETERS

Begin Sta	End Sta	Bottom Offset 1 @ Begin Sta	Bottom Offset 2 @ Begin Sta	Bottom Offset 1 @ End Sta	Bottom Offset 2 @ End Sta	Bottom Width @ Begin Sta (ft)	Bottom Width @ End Sta (ft)	Estimated Seasonal High Ground-water (ft)	Base Elevation (ft)	Pond Length (ft)	Elevation @ Pond Bottom (ft)	Elevation @ Weir (ft)	Elevation @ Top of Pond (ft)	Plan Area at Base Elevation (Acres)	Plan Area at Bottom Elevation (Acres)	Plan Area @ Weir Elevation (Acres)	Plan Area @ Top Elevation (Acres)	Storage Volume below Weir cf	Required WQ Treatment Volume cf
DTAS 7-1	Located in Median (offsets from centerline)																		
2054+20.00	2057+00.00	16.0 Lt	29.0 Rt	16.0 Lt	37.0 Rt	45.00	53.00	118.6	119.50	280.00	120.00	120.50	121.50	0.315	0.347	0.379	0.444	7910	
2057+00.00	2060+00.00	16.0 Lt	37.0 Rt	16.0 Lt	37.0 Rt	53.00	53.00	118.6	119.50	300.00	120.00	120.50	121.50	0.385	0.399	0.434	0.503	9075	
2060+00.00	2061+00.00	16.0 Lt	37.0 Rt	17.0 Lt	41.0 Rt	53.00	58.00	118.6	119.50	100.00	120.00	120.50	121.50	0.127	0.139	0.150	0.173	3150	
2061+00.00	2063+00.00	17.0 Lt	41.0 Rt	21.0 Lt	40.0 Rt	58.00	61.00	117.9	119.50	200.00	120.00	120.50	121.50	0.273	0.296	0.319	0.365	6700	
2063+00.00	2069+00.00	21.0 Lt	40.0 Rt	42.0 Lt	40.0 Rt	61.00	82.00	117.9	119.50	600.00	120.00	120.50	121.50	0.985	1.054	1.123	1.280	23700	
										1480.00				2.065	2.235	2.405	2.745	50535	15126.2
DTAS 7-2	Located in Median (offsets from centerline)																		
2081+00.00	2084+00.00	27.0 Lt	40.0 Rt	20.0 Lt	40.0 Rt	67.00	60.00	118.5	119.50	300.00	120.00	120.40	121.50	0.437	0.472	0.499	0.575	8460	
2084+00.00	2088+00.00	20.0 Lt	40.0 Rt	20.0 Lt	40.0 Rt	60.00	60.00	118.5	119.50	400.00	120.00	120.40	121.50	0.551	0.597	0.634	0.735	10720	
2088+00.00	2092+00.00	20.0 Lt	40.0 Rt	30.0 Lt	40.0 Rt	60.00	70.00	117.9	119.50	400.00	120.00	120.40	121.50	0.597	0.643	0.680	0.781	11520	
2092+00.00	2095+50.00	30.0 Lt	40.0 Rt	39.0 Lt	40.0 Rt	70.00	79.00	117.9	119.50	350.00	120.00	120.40	121.50	0.599	0.639	0.671	0.759	11410	
										1450.00				2.184	2.350	2.483	2.850	42110	12296.6
DTAS 7-3	Located in Median (offsets from centerline)																		
2099+90.00	2104+00.00	38.0 Lt	35.0 Rt	38.0 Lt	35.0 Rt	73.00	73.00	117.6	118.60	410.00	119.10	119.50	120.50	0.687	0.734	0.772	0.902	13120	
										410.00				0.687	0.734	0.772	0.902	13120	4648.4
DTAS 7-4	Located in Left Right of Way (from centerline)																		
2111+00.00	2120+50.00	143.0 Lt	185.0 Lt	114.0 Lt	154.0 Lt	42.00	40.00	118.0	119.00	950.00	119.00	119.50	120.50	0.894	0.894	0.981	1.221	20425	
										950.00				0.894	0.894	0.981	1.221	20425	5383.3
DTAS 7-5	Located in Right Right of Way (offsets from Center baseline)																		
2123+00.00	2127+00.00	111.0 Rt	171.0 Rt	106.0 Rt	166.0 Rt	60.00	60.00	118.00	119.00	400.00	119.00	119.40	120.00	0.551	0.551	0.588	0.643	9920	
										400.00				0.551	0.551	0.588	0.643	9920	3570.1
DTAS 7-6	Located in Left Right of Way (from centerline)																		
2123+00.00	2127+00.00	115.0 Lt	175.0 Lt	108.0 Lt	168.0 Lt	60.00	60.00	118.00	119.00	400.00	119.00	119.40	120.00	0.551	0.551	0.588	0.643	9920	
										400.00				0.551	0.551	0.588	0.643	9920	2450.3

Total Dry Pond Storage (cf)	146030	
Total Dry Pond Storage (ac-ft)	3.35	
Total Treatment Vol. Required (cf)		43473
Tot. Treatment Vol. Required (ac-ft)		1.00

TABLE E.6 Treatment Recovery Input and Node Time Series Report

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 Segment 7 - Permit Plans - Pond 7-7 Recovery

********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: POND7-7    Base Flow(cfs): 0          Init Stage(ft): 114.19
  Group: BASE                                 Warn Stage(ft): 116
Comment:

Stage(ft)     Area(ac)
113.8         1.655
116           1.866
--------Class: Node-----------------------------------------------------------------
   Name: WL-7RS-D   Base Flow(cfs): 0          Init Stage(ft): 113.8
  Group: BASE                                 Warn Stage(ft): 115
Comment:

Time(hrs)     Stage(ft)
0             113.8
130           113.8
--------Class: Drop Structure-------------------------------------------------------
     Name: DS7-7          From Node: POND7-7        Length(ft): 20
    Group: BASE            To Node: WL-7RS-D            Count: 3

    Outlet Cntrl Spec: Use dc or tw     Inlet Cntrl Spec: Use dc
    Upstream Geometry: Hor Ellipse   Downstream Geometry: Hor Ellipse
                          UPSTREAM              DOWNSTREAM
                Span(in): 23                    23
                Rise(in): 14                    14
              Invert(ft): 113.5                 113.4
           Manning's N: 0.012                   0.012
             Top Clip(in): 0                   0
          Bottom Clip(in): 0                   0

       Entrance Loss Coef: 0.5                    Flow: Both
           Exit Loss Coef: 1                  Equation: Aver Conveyance

        Upstream FHWA Inlet Edge Description:
        Horizontal Ellipse Concrete: Square edge with headwall    29    1
        Downstream FHWA Inlet Edge Description:
        Horizontal Ellipse Concrete: Square edge with headwall    29    1


     *** Weir 1 of 2 for Drop Structure DS7-7 ***                [TABLE]
       Count: 1                    Bottom Clip(in): 0
        Type: Mavis                   Top Clip(in): 0
        Flow: Both            Weir Discharge Coef: 3
    Geometry: Rectangular  Orifice Discharge Coef: 0.6

            Span(in): 120                      Invert(ft): 114.19
            Rise(in): 15.7                Control Elev(ft): 114.19


     *** Weir 2 of 2 for Drop Structure DS7-7 ***                [TABLE]
       Count: 1                    Bottom Clip(in): 0
        Type: Fread                   Top Clip(in): 0
        Flow: Both            Weir Discharge Coef: 2.6
    Geometry: Rectangular  Orifice Discharge Coef: 0.6

            Span(in): 1.9                      Invert(ft): 113.3
            Rise(in): 1.9                 Control Elev(ft): 113.8

   --------Class: Simulation-----------------------------------------------------
 P:\E9X94700\600DISC\620DES-1\DRAINAGE\SEG              POND_7-1\P7-7-REC
 Execution: Hydraulics
    Header: 1-4 D/B Project - Segment 7
            Pond 7-7 Treatment Volume Recovery Analysis
            Permit Plans Design
---------HYDRAULICS----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 120
      Min Calc Time(sec): 1
      Max Calc Time(sec): 5
        To Hour:   PInc(min):                To Hour:   PInc(min):
        120        240                       10         15
                                             15         1
                                             30         15
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE      [11/01/02]
```

TABLE E.6 Treatment Recovery Input and Node Time Series Report

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4 D/B Project - Segment 7
Pond 7-7 Treatment Volume Recovery Analysis
Permit Plans Design

********** Node Time Series by Node - P7-7-REC **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
*** Group: BASE		Node: POND7-7								
0.000	114.19	1.69	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	0.0000
4.000	114.18	1.69	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.0246
8.000	114.16	1.69	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.0488
12.000	114.15	1.69	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.0725
16.000	114.13	1.69	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.0957
20.000	114.12	1.69	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.1184
24.000	114.11	1.68	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.1407
28.000	114.09	1.68	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	0.1625
32.000	114.08	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.1838
36.000	114.07	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.2047
40.000	114.06	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.2251
44.000	114.04	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.2450
48.000	114.03	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.2645
52.000	114.02	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.2834
56.000	114.01	1.68	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	0.3019
60.000	114.00	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.3200
64.000	113.99	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.3375
68.000	113.98	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.3546
72.000	113.97	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.3712
76.000	113.96	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.3874
80.000	113.95	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.4030
84.000	113.94	1.67	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	0.4182
88.000	113.93	1.67	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4329
92.000	113.92	1.67	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4472
96.000	113.92	1.67	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4609
100.000	113.91	1.67	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4742
104.000	113.90	1.66	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4870
108.000	113.89	1.66	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.4994
112.000	113.89	1.66	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	0.5112
116.000	113.88	1.66	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	0.5226
120.000	113.87	1.66	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	0.5335
120.001	113.87	1.66	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	0.5335
*** Group: BASE		Node: WL-7RS-D								
0.000	113.80	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.0000	0.0000
4.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.0246	0.0000
8.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.0488	0.0000
12.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.0725	0.0000
16.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.0957	0.0000
20.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.1184	0.0000
24.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.1407	0.0000
28.000	113.80	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.1625	0.0000
32.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.1838	0.0000
36.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.2047	0.0000
40.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.2251	0.0000
44.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.2450	0.0000
48.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.2645	0.0000
52.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.2834	0.0000
56.000	113.80	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.3019	0.0000
60.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.3200	0.0000
64.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.3375	0.0000
68.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.3546	0.0000
72.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.3712	0.0000
76.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.3874	0.0000
80.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.4030	0.0000
84.000	113.80	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.4182	0.0000
88.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4329	0.0000
92.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4472	0.0000
96.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4609	0.0000
100.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4742	0.0000
104.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4870	0.0000
108.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.4994	0.0000
112.000	113.80	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.5112	0.0000
116.000	113.80	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.5226	0.0000
120.000	113.80	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.5335	0.0000
120.001	113.80	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.5335	0.0000

< 0.324 ac-ft

< 0.647 ac-ft

Pond 7-7 Treatment Volume $= 7.766$ ac. $\times \frac{1 \text{ in}}{12 \text{ in/ft}} \approx 0.647$ ac-ft

$\therefore$ 1/2 Vol ≈ 0.647 ac-ft $/2 \approx 0.324$ ac-ft

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-1
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	97,357.00 ft²
Pond Volume between Bottom & DHWL	50,535.00 ft³
Pond Length to Width Ratio (L/W)	22.50
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	118.60 ft
Elevation of Starting Water Level	120.00 ft
Elevation of Pond Bottom	120.00 ft
Design High Water Level Elevation	120.50 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	16.60 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	20.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-1

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	0.40	13,630.00
1	1.00	36,905.00
2	8.82	0.00
3	8.82	0.00
4	8.82	0.00
5	8.82	0.00
6	8.82	0.00
7	8.82	0.00
8	8.82	0.00
9	8.82	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-1

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	118.600	0.000 *		
			0.00000	
0.00	118.600	4.11624		
			3.67350	
1.40	120.316	3.23076		0.00
			0.44971	
10.23	120.175	0.35587		0.00
			0.26203	
19.05	120.092	0.22667		0.00
			0.19132	
27.88	120.032	0.17309		0.00
			0.15486	
33.74	120.000	0.14291		0.00
			0.13095	
45.53	119.943	0.12237		0.00
			0.11379	
54.35	119.907	0.10769		0.00
			0.10158	
63.18	119.875	0.09691		0.00
			0.09224	
72.00	119.846			0.00

Maximum Water Elevation: 120.316 feet @ 1.40 hours Recovery @ 33.741 hours

* Time increment when there is no runoff

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-2
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	102,366.00 ft²
Pond Volume between Bottom & DHWL	42,110.00 ft³
Pond Length to Width Ratio (L/W)	20.50
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	118.50 ft
Elevation of Starting Water Level	120.00 ft
Elevation of Pond Bottom	120.00 ft
Design High Water Level Elevation	120.40 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	9.40 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	9.80 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-2

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	0.77	15,354.90
1	1.00	26,755.10
2	8.78	0.00
3	8.78	0.00
4	8.78	0.00
5	8.78	0.00
6	8.78	0.00
7	8.78	0.00
8	8.78	0.00
9	8.78	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-2

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	118.500	0.000 *		
			0.00000	
0.00	118.500	3.27604		
			2.85118	
1.77	120.228	2.42632		0.00
			0.31415	
10.55	120.134	0.25333		0.00
			0.19250	
19.32	120.076	0.16654		0.00
			0.14058	
28.10	120.034	0.12863		0.00
			0.11667	
36.50	120.000	0.10830		0.00
			0.09992	
45.66	119.968	0.09403		0.00
			0.08813	
54.44	119.942	0.08356		0.00
			0.07898	
63.22	119.918	0.07555		0.00
			0.07212	
72.00	119.897			0.00

Maximum Water Elevation: 120.228 feet @ 1.77 hours Recovery @ 36.502 hours

* Time increment when there is no runoff

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-3
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	31,973.00 ft²
Pond Volume between Bottom & DHWL	13,120.00 ft³
Pond Length to Width Ratio (L/W)	5.50
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	117.60 ft
Elevation of Starting Water Level	119.10 ft
Elevation of Pond Bottom	119.10 ft
Design High Water Level Elevation	119.50 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	6.20 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	9.30 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-3

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	1.16	4,795.95
1	1.00	8,324.05
2	8.73	0.00
3	8.73	0.00
4	8.73	0.00
5	8.73	0.00
6	8.73	0.00
7	8.73	0.00
8	8.73	0.00
9	8.73	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-3

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	117.600	0.000 *		
			0.00000	
0.00	117.600	0.83539		
			0.71313	
2.16	119.331	0.59088		0.00
			0.09707	
10.89	119.238	0.07994		0.00
			0.06280	
19.62	119.178	0.05565		0.00
			0.04849	
28.35	119.131	0.04453		0.00
			0.04056	
35.36	119.100	0.03823		0.00
			0.03590	
45.81	119.058	0.03365		0.00
			0.03140	
54.54	119.028	0.03024		0.00
			0.02908	
63.27	119.000	0.02796		0.00
			0.02685	
72.00	118.974			0.00

Maximum Water Elevation: 119.331 feet @ 2.16 hours Recovery @ 35.357 hours

* Time increment when there is no runoff

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-4
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	38,943.00 ft²
Pond Volume between Bottom & DHWL	20,425.00 ft³
Pond Length to Width Ratio (L/W)	23.00
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	118.00 ft
Elevation of Starting Water Level	119.00 ft
Elevation of Pond Bottom	119.00 ft
Design High Water Level Elevation	119.50 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	14.60 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	20.00 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-4

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	0.33	3,894.30
1	1.00	16,530.70
2	8.83	0.00
3	8.83	0.00
4	8.83	0.00
5	8.83	0.00
6	8.83	0.00
7	8.83	0.00
8	8.83	0.00
9	8.83	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-4

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	118.000	0.000 *		
			0.00000	
0.00	118.000	1.55416		
			1.39895	
1.33	119.336	1.24374		0.00
			0.21191	
10.16	119.171	0.16517		0.00
			0.11844	
19.00	119.079	0.10151		0.00
			0.08457	
27.83	119.013	0.07556		0.00
			0.06654	
30.07	119.000	0.06090		0.00
			0.05526	
45.50	118.918	0.05128		0.00
			0.04730	
54.33	118.882	0.04452		0.00
			0.04173	
63.17	118.849	0.03941		0.00
			0.03708	
72.00	118.820			0.00

Maximum Water Elevation: 119.336 feet @ 1.33 hours Recovery @ 30.075 hours

* Time increment when there is no runoff

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-5
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	24,002.00 ft^2
Pond Volume between Bottom & DHWL	9,920.00 ft^3
Pond Length to Width Ratio (L/W)	6.50
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	118.00 ft
Elevation of Starting Water Level	119.00 ft
Elevation of Pond Bottom	119.00 ft
Design High Water Level Elevation	119.40 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	10.60 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	15.90 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-5

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	0.45	2,400.20
1	1.00	7,519.80
2	8.82	0.00
3	8.82	0.00
4	8.82	0.00
5	8.82	0.00
6	8.82	0.00
7	8.82	0.00
8	8.82	0.00
9	8.82	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-5

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	118.000	0.000 *		
			0.00000	
0.00	118.000	0.70481		
			0.62834	
1.45	119.267	0.55188		0.00
			0.08774	
10.27	119.155	0.07096		0.00
			0.05418	
19.09	119.086	0.04757		0.00
			0.04096	
27.91	119.033	0.03736		0.00
			0.03376	
34.72	119.000	0.03146		0.00
			0.02916	
45.54	118.953	0.02731		0.00
			0.02546	
54.36	118.920	0.02422		0.00
			0.02298	
63.18	118.891	0.02192		0.00
			0.02085	
72.00	118.864			0.00

Maximum Water Elevation: 119.267 feet @ 1.45 hours Recovery @ 34.721 hours

* Time increment when there is no runoff

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4, Segment 7 - DTAS 7-6
POLLUTION VOLUME RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	24,002.00 ft^2
Pond Volume between Bottom & DHWL	9,920.00 ft^3
Pond Length to Width Ratio (L/W)	6.50
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	118.00 ft
Elevation of Starting Water Level	119.00 ft
Elevation of Pond Bottom	119.00 ft
Design High Water Level Elevation	119.40 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.10
Unsaturated Vertical Hydraulic Conductivity	10.30 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	15.50 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.10
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4, SEGMENT 7 - DTAS 7-6

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	0.47	2,400.20
1	1.00	7,519.80
2	8.82	0.00
3	8.82	0.00
4	8.82	0.00
5	8.82	0.00
6	8.82	0.00
7	8.82	0.00
8	8.82	0.00
9	8.82	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4, Segment 7 - DTAS 7-6

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	118.000	0.000 *		
			0.00000	
0.00	118.000	0.69551		
			0.61954	
1.47	119.268	0.54357		0.00
			0.08667	
10.28	119.157	0.07012		0.00
			0.05358	
19.10	119.089	0.04703		0.00
			0.04049	
27.92	119.037	0.03695		0.00
			0.03341	
35.51	119.000	0.03111		0.00
			0.02881	
45.55	118.957	0.02698		0.00
			0.02516	
54.37	118.925	0.02405		0.00
			0.02295	
63.18	118.896	0.02181		0.00
			0.02067	
72.00	118.869			0.00

Maximum Water Elevation: 119.268 feet @ 1.47 hours Recovery @ 35.512 hours

* Time increment when there is no runoff

Appendix F

By: _____ Date: _____
Checked By: _____ Date: _____

Shoulder Gutter Inlet Spacing/Spread Calculations
SR 400 (I-4) Segment 7

Summary:
Shoulder gutter has been designed to capture runoff from selected locations of the outer edge of the roadways so that the runoff can be directed into the treatment and attenuation facilities within the median. The edge of traveled pavement will be flatter than 0.2% parallel to the shoulder gutters for portions of their length. Where the edge of the traveled pavement is flatter than 0.2%, it is necessary to warp the shoulder and create localized sumps for the inlets (Type S) to achieve a minimum 0.2% slope in the shoulder gutter. This will be done by maintaining the design cross-slope of the shoulder section to 6% at the inlet locations and flattening the cross-slope at a point between inlets so that a minimum 0.2% to the inlet is achieved. The spacing and number of inlets has been adjusted to achieve the minimum slope requirements and to comply with allowable spread.

Design Criteria:
Min. slope of gutter: 0.2%
Normal cross-slope of shoulder: 6%
Flattest desirable cross-slope of shoulder: 3%
Spread:
Maximum allowable spread for 4-in/hr rainfall: No encroachment on travel lanes.
Spread resulting from a 10-year frequency storm shall not exceed 1'3" outside the gutter in the direction toward the front slope.

Design Procedure:
The profile grade line elevations at the location of the shoulder gutter were obtained from the road design group. The edge of pavement elevations and the gutter longitudinal slope were calculated using the normal roadway and shoulder cross slopes. Where the gutter slope was less than 0.2%, the shoulder cross slope transition began. The edge of pavement elevations where then calculated using the cross slope of the warped shoulder.

There are two criteria stated for spread in a shoulder gutter. Spread resulting from a 4 in/hr intensity rainfall shall not encroach on the travel lanes and the spread resulting from a 10-year frequency storm shall not exceed 1'3" outside the gutter in the direction toward the front slope. Since the intensity of the 10-year frequency storm is greater and the allowable spread less, the 10-year storm will control the design.

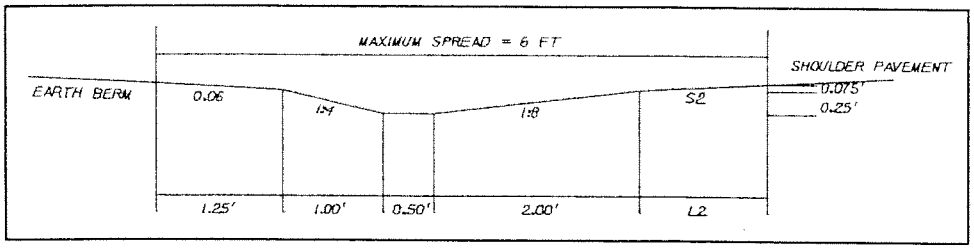
To determine the spread, the conveyance of the shoulder gutter section was determined. Using the calculated conveyance the allowable flow in the gutter that meets spread criteria was determined. The runoff resulting from the contributing roadway section to each inlet was determined. If the runoff calculated was less than the allowable flow, the spread criteria were met. If the runoff was greater than the allowable flow, the inlet

spacing was revised and the calculation repeated. The results are included in the Shoulder Gutter Spreadsheet.

The interception capacity of the shoulder gutter inlet (Type S) was checked using Figure A-16 of the FDOT Storm Drain Handbook. The capacity of the inlet is 100% for the range of discharges calculated for this project.

Project:	I-4 Design Build Segment 7	**By:**	LGC	**Date:**	4/25/2003
Subject:	Sample Gutter Capacity Calculation	**Checked:**		**Date:**	
		Revised:		**Date:**	

DESIGN SKETCH:



SECTION DATA:

MAXIMUM SPREAD TOWARD BERM =	1.25	FT
BERM SLOPE =	0.06	FT/FT
SHOULDER CROSS SLOPE =	0.06	FT/FT

SHOULDER GUTTER DATA:

LEFT SIDE SLOPE	4	HORIZ: 1 VERT.
LEFT SIDE WIDTH	1	FT
BOTTOM WIDTH	0.5	FT
RIGHT SIDE SLOPE	8	HORIZ: 1 VERT.
RIGHT SIDE WIDTH	2	FT
GUTTER DEPTH	0.25	FT
MANNING'S n	0.016	

CALCULATION:

A) MAXIMUM FLOW DEPTH ABOVE SHOULDER GUTTER:

d = Maximum spread toward front slope x Berm slope =

d = 1.25 ft x 0.06 ft/ft = [redacted] FT

B) FLOW AREA:

A = (1/2 x Spread toward brem x d) + (3.5 ft x d) + (1/2 x Spread toward shoulder x d) + Shoulder Gutter flow area =

A = [redacted] FT^2

C) WETTED PERIMETER:

Pw =[(Spread toward berm)^2 + (Flow Depth)^2]$^{1/2}$ + [((LT Side Width)^2+(Gutter Depth)^2)$^{1/2}$] + Bottom Width + [((RT Side Width)^2+(Gutter Depth)^2)$^{1/2}$] + [((Spread toward shoulder)^2 + (Flow Depth)^2)$^{1/2}$)]

Pw = [redacted] FT

D) HYDRAULIC RADIUS:

R = Flow Area / Wetted Perimeter

R = [redacted] FT

E) SECTION CONVEYANCE:

K = (1.486/ n) AR$^{2/3}$ K = [redacted] CFS

F) MAXIMUM FLOW IN SECTION:

LONGITUDINAL SLOPE (S) = 0.2 %

Q = K S$^{1/2}$ Q = [redacted] CFS

Project: I-4 Design Build Segment 7 Author: LGC Date: 4/23/2003
Subject: Westbound Shoulder Gutter Checked: Date:

Soulder Cross Slope Transition:

STA	PGL	EDGE OF TRAVEL LANE (WB)	SHOULDER SLOPE	SHOULDER WIDTH	EOP	GUTTER SLOPE	REMARKS
2054+00.00	**130.4612**	**129.6212**	**0.06**	**8**	**129.1412**	**-0.2421**	LOW POINT - BEGIN SPECIAL GUTTER GRADE
2054+10.00	130.4406	129.6006	0.0547	8	129.1626	0.214	
2054+20.00	130.4224	129.5824	0.0498	8	129.184	0.214	
2054+30.00	130.4042	129.5642	0.0449	8	129.2054	0.214	
2054+40.00	130.386	129.546	0.0399	8	129.2268	0.214	
2054+50.00	130.3679	129.5279	0.0350	8	129.2482	0.214	
2054+60.00	**130.3497**	**129.5097**	**0.0300**	**8**	**129.2696**	**0.214**	HIGH POINT
2054+70.00	130.3315	129.4915	0.0326	8	129.23042	-0.3918	
2054+80.00	130.3133	129.4733	0.0353	8	129.19124	-0.3918	
2054+90.00	130.2951	129.4551	0.0379	8	129.15206	-0.3918	
2055+00.00	130.2779	129.4379	0.0406	8	129.11288	-0.3918	
2055+10.00	130.2693	129.4293	0.0444	8	129.0737	-0.3918	
2055+20.00	130.2612	129.4212	0.0483	8	129.03452	-0.3918	
2055+30.00	130.2531	129.4131	0.0522	8	128.99534	-0.3918	
2055+40.00	130.245	129.405	0.0581	8	128.95616	-0.3918	
2055+50.00	**130.237**	**129.397**	**0.0600**	**8**	**128.917**	**-0.3916**	LOW POINT
2055+60.00	130.2289	129.3889	0.0558	8	128.9426	0.256	
2055+70.00	130.2208	129.3808	0.0516	8	128.9682	0.256	
2055+80.00	130.2127	129.3727	0.0474	8	128.9938	0.256	
2055+90.00	130.2046	129.3646	0.0432	8	129.0194	0.256	
2056+00.00	130.1961	129.3561	0.0389	8	129.045	0.256	
2056+10.00	130.1972	129.3572	0.0358	8	129.0706	0.256	
2056+20.00	130.1995	129.3595	0.0329	8	129.0962	0.256	
2056+30.00	**130.2018**	**129.3618**	**0.0300**	**8**	**129.1218**	**0.256**	HIGH POINT
2056+40.00	130.2041	129.3641	0.0333	8	129.09758	-0.2422	
2056+50.00	130.2064	129.3664	0.0366	8	129.07336	-0.2422	
2056+60.00	130.2087	129.3687	0.0399	8	129.04914	-0.2422	
2056+70.00	130.211	129.371	0.0433	8	129.02492	-0.2422	
2056+80.00	130.2133	129.3733	0.0466	8	129.0007	-0.2422	
2056+90.00	130.2156	129.3756	0.0499	8	128.97648	-0.2422	
2057+00.00	130.2223	129.3823	0.0538	8	128.95226	-0.2422	
2057+10.00	130.2237	129.3837	0.0570	8	128.92804	-0.2422	
2057+20.00	**130.2238**	**129.3838**	**0.0600**	**8**	**128.90382**	**-0.2422**	LOW POINT
2057+30.00	130.2239	129.3839	0.0563	8	128.93348	0.2966	
2057+40.00	130.224	129.384	0.0526	8	128.96314	0.2966	
2057+50.00	130.224	129.384	0.0489	8	128.9928	0.2966	
2057+60.00	130.2241	129.3841	0.0452	8	129.02246	0.2966	
2057+70.00	130.2242	129.3842	0.0415	8	129.05212	0.2966	
2057+80.00	130.2243	129.3843	0.0378	8	129.08178	0.2966	
2057+90.00	130.2244	129.3844	0.0341	8	129.11144	0.2966	
2058+00.00	**130.2211**	**129.3811**	**0.0300**	**8**	**129.1411**	**0.2966**	HIGH POINT
2056+10.00	130.1915	129.3515	0.0332	8	129.08571	-0.5539	
2058+20.00	130.1588	129.3188	0.0361	8	129.03032	-0.5539	
2058+30.00	130.1262	129.2862	0.0389	8	128.97493	-0.5539	
2058+40.00	130.0936	129.2536	0.0418	8	128.91954	-0.5539	
2058+50.00	130.061	129.221	0.0448	8	128.86415	-0.5539	
2058+60.00	130.0284	129.1884	0.0475	8	128.80876	-0.5539	
2058+70.00	129.9958	129.1558	0.0503	8	128.75337	-0.5539	
2058+80.00	129.9632	129.1232	0.0532	8	128.69798	-0.5539	
2058+90.00	129.9306	129.0906	0.0560	8	128.64259	-0.5539	
2059+00.00	**129.9072**	**129.0672**	**0.0600**	**8**	**128.5872**	**-0.5539**	LOW POINT
2059+10.00	129.9362	129.0962	0.0569	8	128.64078	0.5358	
2059+20.00	129.9665	129.1265	0.0540	8	128.69436	0.5358	
2059+30.00	129.9968	129.1568	0.0511	8	128.74794	0.5358	
2059+40.00	130.027	129.187	0.0482	8	128.80152	0.5358	
2059+50.00	130.0572	129.2172	0.0453	8	128.8551	0.5358	
2059+60.00	130.0874	129.2474	0.0423	8	128.90868	0.5358	
2059+70.00	130.1176	129.2776	0.0394	8	128.96226	0.5358	
2059+80.00	130.1478	129.3078	0.0365	8	129.01584	0.5358	
2059+90.00	130.178	129.338	0.0336	8	129.06942	0.5358	
2060+00.00	**130.203**	**129.363**	**0.0300**	**8**	**129.123**	**0.5358**	HIGH POINT
2060+10.00	130.1871	129.3471	0.0333	8	129.08049	-0.4251	
2060+20.00	130.1707	129.3307	0.0366	8	129.03798	-0.4251	
2060+30.00	130.154	129.314	0.0398	8	128.99547	-0.4251	
2060+40.00	130.1347	129.2947	0.0427	8	128.95296	-0.4251	
2060+50.00	130.1152	129.2752	0.0456	8	128.91045	-0.4251	
2060+60.00	130.0956	129.2556	0.0485	8	128.86794	-0.4251	
2060+70.00	130.0761	129.2361	0.0513	8	128.82543	-0.4251	
2060+80.00	130.0565	129.2165	0.0542	8	128.78292	-0.4251	
2060+90.00	130.037	129.197	0.0571	8	128.74041	-0.4251	
2061+00.00	**130.0179**	**129.1779**	**0.0600**	**8**	**128.6979**	**-0.4251**	END SPECIAL GUTTER GRADE

STA	PGL	EDGE OF TRAVEL LANE (WB)	SHOULDER SLOPE	SHOULDER WIDTH	EOP	GUTTER SLOPE	REMARKS
2083+00.00	**128.7481**	**127.9081**	**0.0600**	**8**	**127.4281**		BEGIN SPECIAL GUTTER GRADE
2083+10.00	128.7595	127.8195	0.0539	8	127.4881	0.006	
2083+20.00	128.7663	127.9263	0.0473	8	127.5481	0.006	
2083+30.00	128.8026	127.9626	0.0443	8	127.6081	0.006	
2083+40.00	128.8758	128.0358	0.0460	8	127.6681	0.006	
2083+50.00	128.9455	128.1055	0.0472	8	127.7281	0.006	
2083+60.00	128.9814	128.1414	0.0442	8	127.7881	0.006	
2083+70.00	129.0142	128.1742	0.0408	8	127.8481	0.006	
2083+80.00	129.0469	128.2069	0.0373	8	127.9081	0.006	
2083+90.00	129.0796	128.2396	0.0339	8	127.9681	0.006	
2084+00.00	**129.1105**	**128.2705**	**0.0303**	**8**	**128.0281**	**0.006**	HIGH POINT
2084+10.00	129.1246	128.2846	0.0346	8	128.0081	-0.002	
2084+20.00	129.1374	128.2874	0.0387	8	127.9881	-0.002	
2084+30.00	129.1501	128.3101	0.0428	8	127.9681	-0.002	
2084+40.00	129.1628	128.3228	0.0468	8	127.9481	-0.002	
2084+50.00	129.1755	128.3355	0.0509	8	127.9281	-0.002	
2084+60.00	129.1882	128.3482	0.0550	8	127.9081	-0.002	
2084+70.00	**129.2009**	**128.3609**	**0.0591**	**8**	**127.8881**	**-0.002**	LOW POINT
2084+80.00	129.2136	128.3736	0.0569	8	127.9181	0.003	
2084+90.00	129.2245	128.3845	0.0545	8	127.9481	0.003	
2085+00.00	129.2302	128.3902	0.0515	8	127.9781	0.003	
2085+10.00	129.2199	128.3799	0.0465	8	128.0081	0.003	
2085+20.00	129.2068	128.3668	0.0411	8	128.0381	0.003	
2085+30.00	129.1938	128.3538	0.0357	8	128.0681	0.003	
2085+40.00	**129.1808**	**128.3408**	**0.0303**	**8**	**128.0981**	**0.003**	HIGH POINT
2085+50.00	129.1677	128.3277	0.0312	8	128.0781	-0.002	
2085+60.00	129.1547	128.3147	0.0321	8	128.0581	-0.002	
2085+70.00	129.1417	128.3017	0.0329	8	128.0381	-0.002	
2085+80.00	129.1287	128.2887	0.0338	8	128.0181	-0.002	
2085+90.00	128.1156	128.2756	0.0347	8	127.9981	-0.002	
2086+00.00	129.1163	128.2763	0.0373	8	127.8781	-0.002	
2086+10.00	129.1341	128.2941	0.0420	8	127.9581	-0.002	
2086+20.00	129.1533	128.3133	0.0468	8	127.9381	-0.002	
2086+30.00	129.1725	128.3325	0.0518	8	127.9181	-0.002	
2086+40.00	**129.1917**	**128.3517**	**0.0567**	**8**	**127.8981**	**-0.002**	LOW POINT
2086+50.00	129.2109	128.3709	0.0566	8	127.8181	0.002	
2086+60.00	129.23	128.39	0.0565	8	127.9381	0.002	
2086+70.00	129.2492	128.4092	0.0564	8	127.9581	0.002	
2086+80.00	129.2684	128.4284	0.0563	8	127.8781	0.002	
2086+90.00	129.287	128.447	0.0561	8	127.9981	0.002	
2087+00.00	129.3038	128.4639	0.0557	8	128.0181	0.002	
2087+10.00	129.2962	128.4562	0.0523	8	128.0381	0.002	
2087+20.00	129.2804	128.4404	0.0478	8	128.0581	0.002	
2087+30.00	129.2646	128.4246	0.0433	8	128.0781	0.002	
2087+40.00	128.2488	128.4088	0.0388	8	128.0981	0.002	
2087+50.00	129.233	128.393	0.0344	8	128.1181	0.002	
2087+60.00	**129.2172**	**128.3772**	**0.0299**	**8**	**128.1381**	**0.002**	HIGH POINT
2087+70.00	128.2014	128.3614	0.0354	8	128.0781	-0.006	
2087+80.00	129.1856	128.3456	0.0409	8	128.0181	-0.006	
2087+90.00	129.1698	128.3298	0.0465	8	127.9581	-0.006	
2088+00.00	129.1535	128.3135	0.0519	8	127.8981	-0.006	
2088+10.00	128.1183	128.2783	0.0550	8	127.8381	-0.006	
2088+20.00	128.0736	128.2336	0.0568	8	127.7781	-0.006	
2088+30.00	129.0289	128.1889	0.0588	8	127.7181	-0.006	
2088+40.00	128.9843	128.1443	0.0608	8	127.6581	-0.006	END SPECIAL GUTTER GRADE
2096+00.00	**123.7796**	**122.9396**	**0.0600**	**8**	**122.4596**	**-0.0029**	LOW POINT - BEGIN SPECIAL GUTTER GRADE
2096+10.00	123.7584	122.8184	0.0549	8	122.4796	0.002	
2096+20.00	123.7469	122.9069	0.0509	8	122.4996	0.002	
2096+30.00	123.7355	122.8955	0.0470	8	122.5196	0.002	
2096+40.00	123.724	122.884	0.0431	8	122.5396	0.002	
2096+50.00	123.7126	122.8726	0.0391	8	122.5596	0.002	
2096+60.00	123.702	122.862	0.0353	8	122.5796	0.002	
2096+70.00	123.6814	122.8514	0.0315	8	122.5996	0.002	
2096+80.00	**123.6809**	**122.8409**	**0.0277**	**8**	**122.6196**	**0.002**	HIGH POINT
2096+90.00	123.6704	122.8304	0.0289	8	122.5996	-0.002	
2097+00.00	123.6502	122.8102	0.0288	8	122.5796	-0.002	
2097+10.00	123.6099	122.7699	0.0263	8	122.5596	-0.002	
2097+20.00	123.6062	122.7662	0.0283	8	122.5396	-0.002	
2097+30.00	123.6024	122.7624	0.0304	8	122.5196	-0.002	
2097+40.00	123.5987	122.7587	0.0324	8	122.4996	-0.002	
2097+50.00	123.5948	122.7548	0.0344	8	122.4796	-0.002	
2097+60.00	123.5865	122.7465	0.0359	8	122.4596	-0.002	
2097+70.00	123.5758	122.7358	0.0370	8	122.4396	-0.002	
2097+80.00	123.5652	122.7252	0.0382	8	122.4196	-0.002	
2097+90.00	123.5545	122.7145	0.0394	8	122.3996	-0.002	
2098+00.00	123.543	122.703	0.0404	8	122.3796	-0.002	
2098+10.00	123.5346	122.8946	0.0418	8	122.3596	-0.002	

STA	PGL	EDGE OF TRAVEL LANE (WB)	SHOULDER SLOPE	SHOULDER WIDTH	EOP	GUTTER SLOPE	REMARKS
2098+20.00	123.5355	122.6955	0.0445	8	122.3396	-0.002	
2098+30.00	123.5363	122.6963	0.0471	8	122.3196	-0.002	
2098+40.00	123.5371	122.8971	0.0497	8	122.2996	-0.002	
2098+50.00	123.5405	122.7005	0.0526	8	122.2796	-0.002	
2098+60.00	**123.5333**	**122.6933**	**0.0542**	**8**	**122.2596**	**-0.002**	LOW POINT
2098+70.00	123.5373	122.6973	0.0510	8	122.2896	0.003	
2098+80.00	123.5413	122.7013	0.0477	8	122.3196	0.003	
2098+90.00	123.5452	122.7052	0.0444	8	122.3496	0.003	
2099+00.00	123.5399	122.6999	0.0400	8	122.3796	0.003	
2099+10.00	123.5861	122.7461	0.0421	8	122.4096	0.003	
2099+20.00	123.5832	122.7432	0.0379	8	122.4396	0.003	
2099+30.00	**123.5803**	**122.7403**	**0.0338**	**8**	**122.4696**	**0.003**	HIGH POINT
2099+40.00	123.5774	122.7374	0.0370	8	122.4416	-0.0028	
2099+50.00	123.5748	122.7348	0.0401	8	122.4136	-0.0028	
2099+60.00	123.5739	122.7339	0.0435	8	122.3856	-0.0028	
2099+70.00	123.5725	122.7325	0.0469	8	122.3576	-0.0028	
2099+80.00	123.571	122.731	0.0502	8	122.3296	-0.0028	
2099+90.00	123.5696	122.7296	0.0535	8	122.3016	-0.0028	
2100+00.00	**123.5661**	**122.7261**	**0.0534**	**8**	**122.2985**	**-0.00028**	LOW POINT
2100+10.00	123.536	122.696	0.0471	8	122.3188	0.002	
2100+20.00	123.5038	122.6638	0.0406	8	122.3388	0.002	
2100+30.00	123.5114	122.6714	0.0391	8	122.3588	0.002	
2100+40.00	123.5235	122.6835	0.0381	8	122.3788	0.002	
2100+50.00	123.5292	122.6892	0.0363	8	122.3988	0.002	
2100+60.00	123.5343	122.6943	0.0344	8	122.4188	0.002	
2100+70.00	123.5443	122.7043	0.0332	8	122.4388	0.002	
2100+80.00	123.5689	122.7289	0.0338	8	122.4588	0.002	
2100+90.00	123.5888	122.7488	0.0338	8	122.4788	0.002	
2101+00.00	**123.5827**	**122.7427**	**0.0305**	**8**	**122.4988**	**0.002**	HIGH POINT
2101+10.00	123.5281	122.6881	0.0292	8	122.4548	-0.0044	
2101+20.00	123.4673	122.6273	0.0271	8	122.4108	-0.0044	
2101+30.00	123.458	122.618	0.0290	8	122.3858	-0.0025	
2101+40.00	123.498	122.658	0.0372	8	122.3608	-0.0025	
2101+50.00	123.5492	122.7092	0.0467	8	122.3358	-0.0025	
2101+60.00	123.5367	122.6967	0.0482	8	122.3108	-0.0025	
2101+70.00	123.5228	122.6828	0.0496	8	122.2858	-0.0025	
2101+80.00	123.509	122.669	0.0510	8	122.2608	-0.0025	
2101+90.00	123.4951	122.6551	0.0524	8	122.2358	-0.0025	
2102+00.00	**123.4971**	**122.6571**	**0.0558**	**8**	**122.2108**	**-0.0025**	LOW POINT
2102+10.00	123.4839	122.6439	0.0510	8	122.2358	0.0025	
2102+20.00	123.4801	122.6401	0.0474	8	122.2608	0.0025	
2102+30.00	123.4907	122.6507	0.0456	8	122.2858	0.0025	
2102+40.00	123.5014	122.6614	0.0438	8	122.3108	0.0025	
2102+50.00	123.5206	122.6806	0.0431	8	122.3358	0.0025	
2102+60.00	123.538	122.698	0.0422	8	122.3608	0.0025	
2102+70.00	123.5462	122.7062	0.0401	8	122.3858	0.0025	
2102+80.00	123.5534	122.7134	0.0378	8	122.4108	0.0025	
2102+90.00	123.5605	122.7205	0.0356	8	122.4358	0.0025	
2103+00.00	**123.5666**	**122.7266**	**0.0332**	**8**	**122.4608**	**0.0025**	HIGH POINT
2103+10.00	123.5509	122.7109	0.0340	8	122.4388	-0.0022	
2103+20.00	123.5203	122.6803	0.0329	8	122.4168	-0.0022	
2103+30.00	123.4896	122.6496	0.0319	8	122.3948	-0.0022	
2103+40.00	123.4589	122.6189	0.0308	8	122.3728	-0.0022	
2103+50.00	123.4591	122.6191	0.0335	8	122.3508	-0.0022	
2103+60.00	123.5533	122.7133	0.0481	8	122.3288	-0.0022	
2103+70.00	123.5484	122.7084	0.0502	8	122.3068	-0.0022	
2103+80.00	123.5435	122.7035	0.0523	8	122.2848	-0.0022	
2103+90.00	123.5386	122.6986	0.0545	8	122.2628	-0.0022	
2104+00.00	**123.5283**	**122.6883**	**0.0559**	8	122.2408	**-0.0022**	LOW POINT END SHOULDER GUTTER

Project: I-4 Design Build Segment 7
Subject: Shoulder Gutter Spread

By: LGC Date: 4/24/2003
Checked: Date:
Revised: Date:

INLET FLOW DATA										GUTTER SECTION FLOW DATA									
FROM STATION	TO STATION	SIDE	DRAINAGE AREA (ACRES)	RUNOFF COEFF.	DRAINAGE AREA (ACRES)	RUNOFF COEFF	STORM FREQUENCY (YR)	RAINFALL INTENSITY (IN/HR)	TOTAL RUNOFF (CFS)	BERM SLOPE (S1) (FT/ FT)	SPREAD TOWARD BERM (L1) (FT)	SHOULDER SLOPE (S2) (FT/ FT)	MAX SPREAD IN SHOULDER (L2) (FT)	FLOW AREA (FT^2)	WETTED PERIMETER (FT)	HYDRAULIC RADIUS (FT)	SECTION CONVEYANCE (CFS)	LONGITUDINAL SLOPE (FT/FT)	MAXIMUM FLOW (CFS)	MEETS SPREAD CRITERIA?
2051+00.00	2053+00.00	LT	0.218	0.95	0.018	0.2	10	7.45	1.57	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.005847	1.651	YES; TOTAL RUNOFF<MAX. FLOW
2053+00.00	2054+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.002421	1.063	YES; TOTAL RUNOFF<MAX. FLOW
	2054+00.00																			
2054+60.00	2054+00.00	LT	0.067	0.95	0.006	0.2	10	7.45	0.48	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	0.00214	0.999	YES; TOTAL RUNOFF<MAX. FLOW
2054+60.00	2055+50.00	LT	0.098	0.95	0.008	0.2	10	7.45	0.71	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.003918	1.352	YES; TOTAL RUNOFF<MAX. FLOW
	2055+50.00																			
20563+00.00	2055+50.00	LT	0.087	0.95	0.007	0.2	10	7.45	0.63	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	0.00256	1.093	YES; TOTAL RUNOFF<MAX. FLOW
2056+30.00	2057+20.00	LT	0.098	0.95	0.008	0.2	10	7.45	0.71	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.002422	1.063	YES; TOTAL RUNOFF<MAX. FLOW
	2057+20.00																			
2058+00.00	2057+20.00	LT	0.087	0.95	0.007	0.2	10	7.45	0.63	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	0.002966	1.176	YES; TOTAL RUNOFF<MAX. FLOW
2058+00.00	2059+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.005539	1.607	YES; TOTAL RUNOFF<MAX. FLOW
	2059+00.00																			
2060+00.00	2059+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	0.005358	1.581	YES; TOTAL RUNOFF<MAX. FLOW
2060+00.00	2061+50.00	LT	0.164	0.95	0.014	0.2	10	7.45	1.18	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.004248	1.408	YES; TOTAL RUNOFF<MAX. FLOW
2061+50.00	2063+00.00	LT	0.164	0.95	0.014	0.2	10	7.45	1.18	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	0.00479	1.495	YES; TOTAL RUNOFF<MAX. FLOW
2063+00.00	2065+00.00	LT	0.218	0.95	0.018	0.2	10	7.45	1.57	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.010544	2.217	YES; TOTAL RUNOFF<MAX. FLOW
2065+00.00	2067+50.00	LT	0.273	0.95	0.023	0.2	10	7.45	1.96	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.009256	2.078	YES; TOTAL RUNOFF<MAX. FLOW
2067+50.00	2069+00.00	LT	0.164	0.95	0.014	0.2	10	7.45	1.18	0.06	1.25	0.06	1.25	0.856	6.051	0.142	21.595	-0.004176	1.396	YES; TOTAL RUNOFF<MAX. FLOW

Project: I-4 Design Build Segment 7
Subject: Shoulder Gutter Spread

By: LGC **Date:** 4/24/2003
Checked: **Date:**
Revised: **Date:**

INLET FLOW DATA										GUTTER SECTION FLOW DATA										
FROM STATION	TO STATION	SIDE	DRAINAGE AREA (ACRES)	RUNOFF COEFF.	DRAINAGE AREA (ACRES)	RUNOFF COEFF.	STORM FREQUENCY (YR)	RAINFALL INTENSITY (IN/HR)	TOTAL RUNOFF (CFS)	BERM SLOPE (S1) (FT/ FT)	SPREAD TOWARD BERM (L1) (FT)	SHOULDER SLOPE (S2) (FT/ FT)	SPREAD IN SHOULDER (L2) (FT)	FLOW AREA (FT^2)	WETTED PERIMETER (FT)	HYDRAULIC RADIUS (FT)	SECTION CONVEYANCE (CFS)	LONGITUDINAL SLOPE (FT/FT)	MAXIMUM FLOW (CFS)	MEETS SPREAD CRITERIA?
2087+60.00	2086+40.00	LT	0.131	0.95	0.011	0.2	10	7.45	0.94	0.06	1.25	0.057	1.32	0.859	6.123	0.140	21.538	0.002	0.963	YES; TOTAL RUNOFF<MAX. FLOW
	2086+40.00																			
2085+40.00	2086+40.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.057	1.32	0.859	6.123	0.140	21.538	-0.002	0.963	YES; TOTAL RUNOFF<MAX. FLOW
2085+40.00	2084+70.00	LT	0.076	0.95	0.006	0.2	10	7.45	0.55	0.06	1.25	0.059	1.27	0.857	6.070	0.141	21.580	0.003	1.182	YES; TOTAL RUNOFF<MAX. FLOW
	2084+70.00																			
2084+00.00	2084+70.00	LT	0.076	0.95	0.006	0.2	10	7.45	0.55	0.06	1.25	0.059	1.27	0.857	6.070	0.141	21.580	-0.002	0.965	YES; TOTAL RUNOFF<MAX. FLOW
2084+00.00	2082+00.00	LT	0.218	0.95	0.018	0.2	10	7.45	1.57	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	0.00678	1.778	YES; TOTAL RUNOFF<MAX. FLOW
2082+00.00	2081+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	0.00945	2.099	YES; TOTAL RUNOFF<MAX. FLOW
2081+00.00	2078+93.00	LT	0.226	0.95	0.019	0.2	10	7.45	1.63	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	0.008096	1.943	YES; TOTAL RUNOFF<MAX. FLOW
2087+60.00	2089+00.00	LT	0.153	0.95	0.013	0.2	10	7.45	1.10	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	-0.0043	1.416	YES; TOTAL RUNOFF<MAX. FLOW
2089+00.00	2091+50.00	LT	0.273	0.95	0.023	0.2	10	7.45	1.96	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	-0.0102	2.181	YES; TOTAL RUNOFF<MAX. FLOW
2091+50.00	2093+25.00	LT	0.191	0.95	0.016	0.2	10	7.45	1.37	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	-0.0078	1.907	YES; TOTAL RUNOFF<MAX. FLOW
2093+25.00	2095+00.00	LT	0.191	0.95	0.016	0.2	10	7.45	1.37	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	-0.0069	1.794	YES; TOTAL RUNOFF<MAX. FLOW
2095+00.00	2096+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	-0.0029	1.163	YES; TOTAL RUNOFF<MAX. FLOW
	2096+00.00																			
2096+80.00	2096+00.00	LT	0.087	0.95	0.007	0.2	10	7.45	0.63	0.06	1.25	0.060	1.25	0.856	6.051	0.142	21.595	0.002	0.966	YES; TOTAL RUNOFF<MAX. FLOW
2096+80.00	2097+60.00	LT	0.087	0.95	0.007	0.2	10	7.45	0.63	0.06	1.25	0.041	1.83	0.878	6.634	0.132	21.183	-0.002	0.947	YES; TOTAL RUNOFF<MAX. FLOW
2097+60.00	2098+60.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.053	1.42	0.862	6.216	0.139	21.468	-0.002	0.960	YES; TOTAL RUNOFF<MAX. FLOW
	2098+60.00																			
2099+30.00	2098+60.00	LT	0.076	0.95	0.006	0.2	10	7.45	0.55	0.06	1.25	0.053	1.42	0.862	6.216	0.139	21.468	0.003	1.176	YES; TOTAL RUNOFF<MAX. FLOW
2099+30.00	2100+00.00	LT	0.076	0.95	0.006	0.2	10	7.45	0.55	0.06	1.25	0.057	1.33	0.859	6.126	0.140	21.536	-0.0028	1.140	YES; TOTAL RUNOFF<MAX. FLOW
	2100+00.00																			
2101+00.00	2100+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.057	1.33	0.859	6.126	0.140	21.536	0.002	0.963	YES; TOTAL RUNOFF<MAX. FLOW
2101+00.00	2102+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.053	1.42	0.863	6.224	0.139	21.462	-0.0025	1.073	YES; TOTAL RUNOFF<MAX. FLOW
	2102+00.00																			
2103+00.00	2102+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.053	1.42	0.863	6.224	0.139	21.462	0.0025	1.073	YES; TOTAL RUNOFF<MAX. FLOW
2103+00.00	2104+00.00	LT	0.109	0.95	0.009	0.2	10	7.45	0.79	0.06	1.25	0.059	1.28	0.857	6.078	0.141	21.573	-0.0022	1.012	YES; TOTAL RUNOFF<MAX. FLOW

JE JACOBS

I-4 Design/Build - Segment 7
Shoulder Gutter Drainage Calculations
County Road 54

Date:
Date:
Date:

	A	B	C	D	
ZONE 8-10yr	11.54908	-0.89694	-0.53000	0.06319	CONTINUOUS
ZONE 8-25yr	10.92110	0.51710	-0.93480	0.09473	SAG

From Sta	To Sta	Side	Long. Slope	Cum. Drainage Area	Imperv.	Runoff Coeff. C	Time of Conc Tc	Grade Consideration	Standard Gutter Spread Intensity	10-yr Design Intensity	10 yr Local Q	By-Pass Q From Upslope Sta	Total Design 10yr Q	Gutter Left Side Slope	Gutter Bottom Width	Ditch Right Side Slope	Ditch Flow Area	Ditch Hydraulic Radius	Rough. Coeff. n	Flow Depth	Gutter Spread (I=4 in/hr) for continuous	Gutter Spread (10yr) for Continuous	Capacity Check at Sump Location (Q<3.388)	Shoulder Width	Surface Treatment	Upper Sta Elev @ Gutter	Lower Sta Elev @ Gutter	Water Surface Elev	EOP Elev	Shoulder Cross Slope Sx	Long. Slope So
		LT/RT	%	Ac	%		min	Sag/Continuous	in/hr	in/hr	cfs	cfs	cfs	H ft/V ft	ft	H ft/V ft	sq ft	ft		ft	ft	ft	cfs	ft		ft	ft	ft	ft	%	%
STA132+00 to 141+00																															
132+00.00	133+00.00	LT	1.20%	0.024	100	0.95	10	CONTINUOUS	4.00	7.45	0.17	0.00	0.17	4	0.5	8	0.43	0.330	0.016	0.067	1.60	2.02		10.00	paved	144.70	143.50	143.57	143.83	3.30	1.20
133+00.00	134+00.00	LT	0.50%	0.048	100	0.95	10	CONTINUOUS	4.00	7.45	0.34	0.00	0.34	4	0.5	8	0.66	0.380	0.016	0.102	2.45	3.09		10.00	paved	145.20	144.70	144.80	145.03	3.30	0.50
134+00.00	134+43.91	LT	0.68%	0.059	100	0.95	10	CONTINUOUS	4.00	7.45	0.42	0.00	0.42	4	0.5	8	0.67	0.382	0.016	0.104	2.49	3.14		10.00	paved	145.50	145.20	145.30	145.53	3.30	0.68
133+00.00	134+00.00	RT	1.20%	0.098	100	0.95	10	CONTINUOUS	4.00	7.45	0.69	0.00	0.69	4	0.5	8	0.73	0.391	0.016	0.113	2.71	3.42		10.00	paved	142.70	141.50	141.61	141.83	3.30	1.20
134+00.00	134+43.91	RT	1.37%	0.140	100	0.95	10	CONTINUOUS	4.00	7.45	0.99	0.00	0.99	4	0.5	8	0.82	0.403	0.016	0.126	3.03	3.82		10.00	paved	143.30	142.70	142.83	143.03	3.30	1.37
134+43.91	135+00.00	RT	1.78%	0.061	100	0.95	10	CONTINUOUS	4.00	7.45	0.43	0.00	0.43	4	0.5	8	0.57	0.363	0.016	0.088	2.10	2.65		10.00	paved	144.30	143.30	143.39	143.63	3.30	1.78
135+00.00	135+45.00	RT	0.82%	0.109	100	0.95	10	CONTINUOUS	4.00	7.45	0.77	0.00	0.77	4	0.5	8	0.82	0.403	0.016	0.126	3.03	3.83		10.00	paved	144.67	144.30	144.43	144.63	3.30	0.82
136+00.00	136+50.00	RT	0.42%	0.054	100	0.95	10	CONTINUOUS	4.00	7.45	0.38	0.00	0.38	4	0.5	8	0.71	0.389	0.016	0.110	2.64	3.33		10.00	paved	144.55	144.34	144.45	144.67	3.30	0.42
136+50.00	137+00.00	RT	0.66%	0.079	100	0.95	10	CONTINUOUS	4.00	7.45	0.56	0.00	0.56	4	0.5	8	0.76	0.395	0.016	0.117	2.80	3.54		10.00	paved	144.34	144.01	144.13	144.34	3.30	0.66
137+00.00	138+00.00	RT	0.97%	0.130	100	0.95	10	CONTINUOUS	4.00	7.45	0.92	0.00	0.92	4	0.5	8	0.85	0.406	0.016	0.131	3.14	3.96		10.00	paved	144.01	143.04	143.17	143.37	3.30	0.97
138+00.00	138+32.31	RT	1.18%	0.146	100	0.95	10	CONTINUOUS	4.00	7.45	1.03	0.00	1.03	4	0.5	8	0.86	0.407	0.016	0.132	3.16	3.99		10.00	paved	143.04	142.66	142.79	142.99	3.30	1.18
135+45.00	136+00.00	LT	0.22%	0.059	100	0.95	10	CONTINUOUS	4.00	7.45	0.42	0.00	0.42	4	0.5	8	0.84	0.405	0.016	0.129	3.09	3.91		10.00	paved	144.67	144.55	144.68	144.88	3.30	0.22
136+00.00	136+50.00	LT	0.42%	0.113	100	0.95	10	CONTINUOUS	4.00	7.45	0.80	0.00	0.80	4	0.5	8	0.94	0.416	0.016	0.145	3.49	4.40		10.00	paved	144.55	144.34	144.49	144.67	3.30	0.42
136+50.00	137+00.00	LT	0.66%	0.139	100	0.95	10	CONTINUOUS	4.00	7.45	0.98	0.00	0.98	4	0.5	8	0.94	0.415	0.016	0.144	3.46	4.36		10.00	paved	144.34	144.01	144.15	144.34	3.30	0.66
137+00.00	138+00.00	LT	0.97%	0.189	100	0.95	10	CONTINUOUS	4.00	7.45	1.34	0.00	1.34	4	0.5	8	0.98	0.419	0.016	0.150	3.61	4.56		10.00	paved	144.01	143.04	143.19	143.37	3.30	0.97
138+00.00	138+32.31	LT	1.18%	0.205	100	0.95	10	CONTINUOUS	4.00	7.45	1.45	0.00	1.45	4	0.5	8	0.97	0.419	0.016	0.150	3.59	4.54		10.00	paved	143.04	142.66	142.81	142.99	3.30	1.18
138+32.31	139+00.00	LT	2.25%	0.041	100	0.95	10	CONTINUOUS	4.00	7.45	0.29	0.00	0.29	4	0.5	8	0.47	0.341	0.016	0.073	1.74	2.20		10.00	paved	142.66	141.14	141.21	141.47	3.30	2.25
139+00.00	140+00.00	LT	1.81%	0.102	100	0.95	10	CONTINUOUS	4.00	7.45	0.72	0.00	0.72	4	0.5	8	0.69	0.385	0.016	0.106	2.55	3.22		10.00	paved	141.14	139.33	139.44	139.66	3.30	1.81
140+00.00	141+00.00	LT	2.23%	0.163	100	0.95	10	CONTINUOUS	4.00	7.45	1.15	0.00	1.15	4	0.5	8	0.79	0.399	0.016	0.122	2.92	3.69		10.00	paved	139.33	137.10	137.22	137.43	3.30	2.23

Appendix G

Storm Drainage Calculations
I-4 Segment 7

Summary:
The storm sewer systems have been designed to take runoff from selected locations of the outer edge of the roadways and median and transport the runoff into the treatment and attenuation facilities. All but one of the systems is located in the shoulder gutter on the westbound lanes and deposit runoff to ponds in the median. The remaining system is within the median and deposits runoff into a pond to the south of the roadway.

Each system was laid out trying to minimize the size of pipe, the depth of pipe, and number of inlets needed. Minimum cover at the gutter, at the roadway and at the grassed median was taken into account. In many instances, the cover dictated the positioning of the trunk pipes. Taking all the design criteria into consideration, it became necessary for some of the outlet pipes of the systems to be outleted in a sump location in the ponds. Where this occurs, the outlet pipe's invert and surrounding area is slightly lower than the pond's bottom elevation.

All of the storm sewer systems successfully convey the runoff from the roadway to the treatment and attenuation facilities.

Design Criteria:
Design Frequency: 10-Year Rainfall Event
Time of Concentration: 10 minutes minimum
Maximum Velocity: < or = 10.0 ft/s
Minimum Velocity: > or = 2.5 ft/s
Based on physical pipe slope when the pipe is flowing full.
Pipe Materials: Reinforced Concrete Pipe
Manning's "n" coefficient:
Pipe: 0.012
Pipe Size:
18" minimum
Maximum Pipe Length:

18" pipe	300 ft
24" – 36" pipe	400 ft

Vertical Clearance:
Jack and Bored Pipe: Top of pipe that is jack and bored under existing roadway must be at least 48" below the top of pavement.
Pipe under Shoulder Gutter: 1' below bottom of roadway base
Pipe under Grassed Median: 3"
Min. slope of pipe:
18" pipe = 0.15 %
24" pipe = 0.102%
36" pipe = 0.059%
Design Tailwater: 10yr-24hr WSEL for receiving pond

Design Procedure:
Gutter elevations were taken from the shoulder gutter calculation sheet included in the calculation package. Median elevations were taken from cross sections already created. From there, the minimum invert elevations for the pipes were calculated and are shown in a spreadsheet. Using the typical sections, drainage areas for each inlet were calculated. The elevations and areas were inputted into StormCAD. The 10-year frequency storm was used for the analysis and the hydraulic grade line (HGL) line was produced. Each system was designed so that the HGL remained within the pipe system. The tailwater elevation for each system was set at the 10-year elevation for the pond into which the system drained. All systems successfully worked with a tailwater condition.

By LGC 05/09/03
Chkd

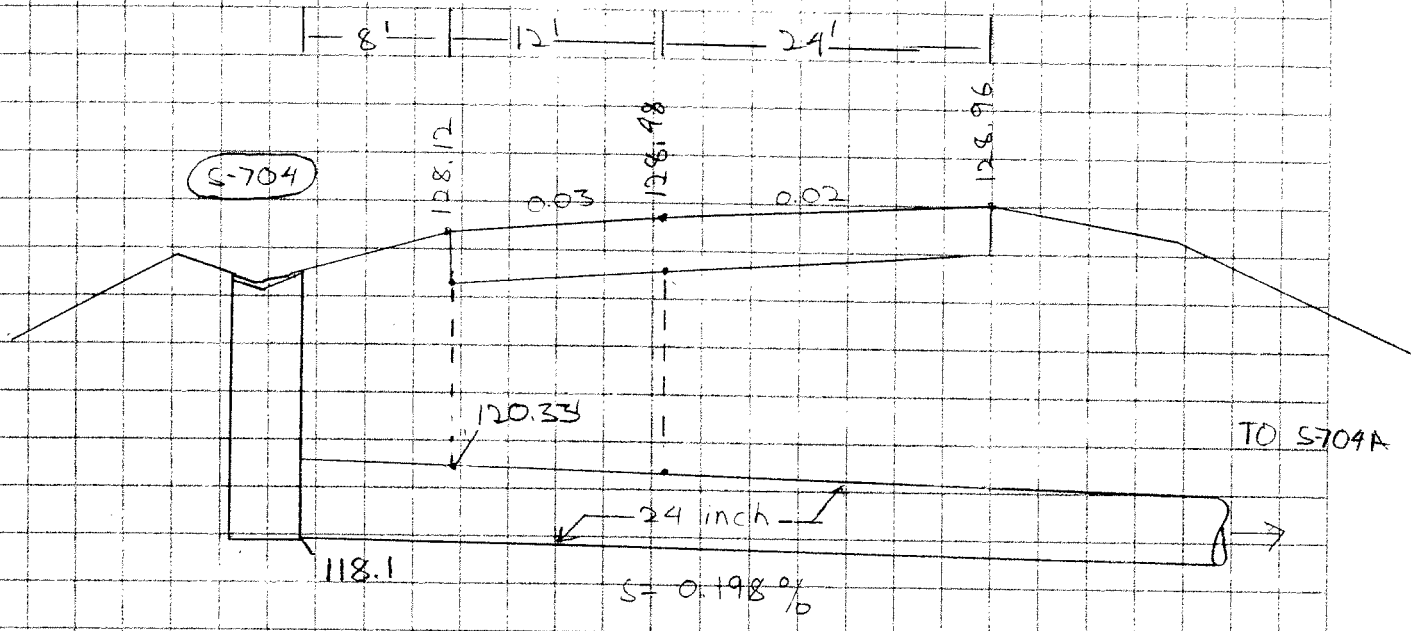
Structure	Station	Gutter Elev.(ft)	Grate Elev.(ft)	Pipe size (in.) (Downstream)	Pipe Thickness (in)	Min Cover (in)	Invert elev. (ft) (Sump)	Invert-Sump Elev. Used (ft)	Notes
SD1									
700	2053+00.00	129.58	129.205	18	2.5	10	126.7	122.3	
701	2054+00.00	129.14	128.765	18	2.5	10	126.2	121.8	
701A	2055+50.00	128.92	128.545	18	2.5	10	126.0	121.2	
702	2057+20.00	128.90	128.525	18	2.5	10	126.0	120.6	
702A	2059+00.00	128.59	128.215	18	2.5	10	125.7	120.0	
703	2061+50.00	128.49	128.115	18	2.5	10	125.6	119.1	
704	2063+00.00	127.63	127.255	24	3	10	124.2	118.1	
705	2065+00.00	125.74	125.365	18	2.5	10	122.8	118.9	
705A	2067+50.00	123.54	123.165	18	2.5	10	120.6	119.3	
706	2069+00.00	122.45	122.075	18	2.5	10	119.6	119.6	
SD2									
709	2078+93.00	124.06	123.69	18	2.5	10	121.14	120.3	
710	2081+00.00	125.99	125.62	18	2.5	10	123.07	119.9	
711	2082+00.00	126.86	126.49	18	2.5	10	123.94	119.7	
712	2084+70.00	127.89	127.52	18	2.5	10	124.97	121.5	
712A	2086+40.00	127.9	127.53	18	2.5	10	124.98	122.0	
SD3									
713	2089+00.00	127.4	127.03	18	2.5	10	124.48	118.7	
714	2091+50.00	125.71	125.34	18	2.5	10	122.79	119.0	
714A	2093+25.00	124.24	123.87	18	2.5	10	121.32	119.4	
715	2095+00.00	122.92	122.80	18	2.5	10	120.25	119.7	

Structure	Station	Gutter Elev.(ft)	Grate Elev.(ft)	Pipe size (in.) (Downstream)	Pipe Thickness (in)	Min Cover (in)	Invert elev. (ft) (Sump)	Invert-Sump Elev. Used (ft)	Notes
SD4									
716	2096+00.00	122.46	122.09	18	2.5	10	119.54	119.5	
716A	2097+60.00	122.42	122.05	18	2.5		120.34	119.2	
717	2098+60.00	122.27	121.90	18	2.5	10	119.35	119.0	
719	2100+00.00	122.27	121.90	18	2.5	10	119.35	117.0	
720	2102+00.00	122.24	121.87	18	2.5	10	119.32	119.0	
721	2104+00.00	122.22	121.85	18	2.5	10	119.30	119.3	
SD5									
732	2127+00.00		119.50	18	2.5	3	117.54	114.5	
733	2130+00.00		118.30	18	2.5	3	116.34	113.3	
734	2132+00.00		117.50	18	2.5	3	115.54	112.5	
735	2133+25.00		117.90	18	2.5	3	115.94	112.0	
736	2135+00.00		117.30	18	2.5	3	115.34	111.5	
737	2138+00.00		116.30	24	3	3	113.80	110.1	
738	2142+00.00		115.00	36	4	3	111.42	108.3	

STORM DRAIN # 1:

FROM S-704 TO S-704A

STA 2063+00



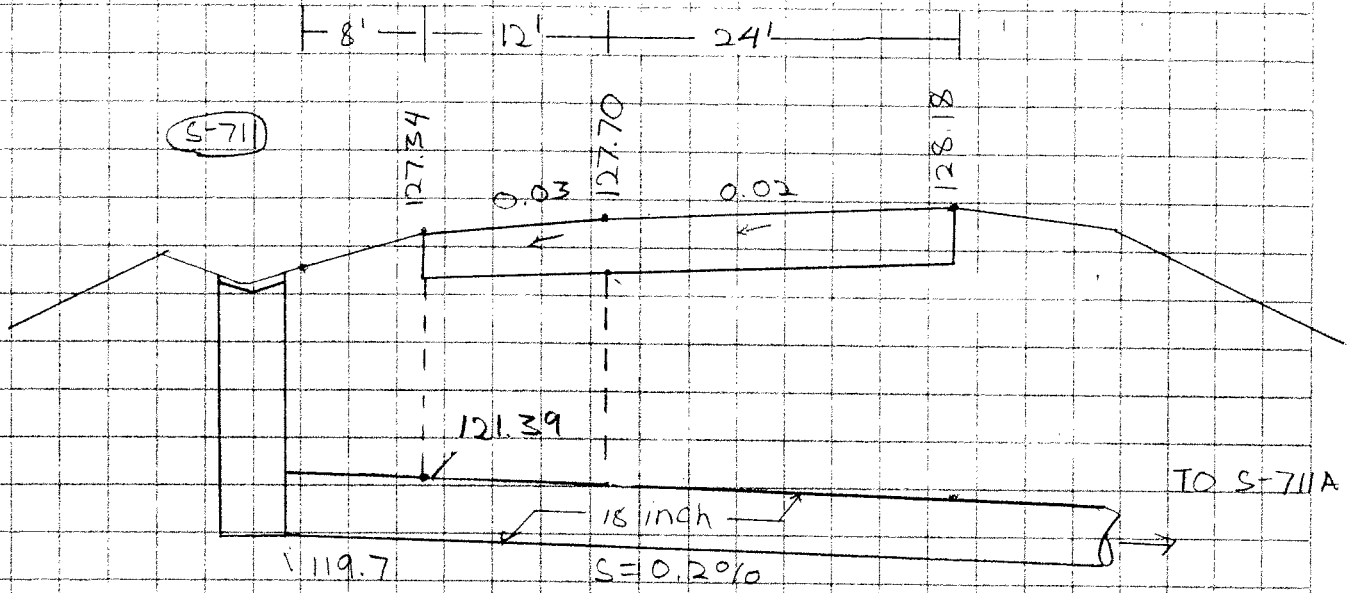
CLEARANCE OF JACK & BORED SECTION:

AT EDGE OF TRAVEL LANE = 128.12 − 120.33 = 7.79' > 4' OK!

STORM DRAIN #2:

FROM S-711 TO S-711A

STA 2082+00



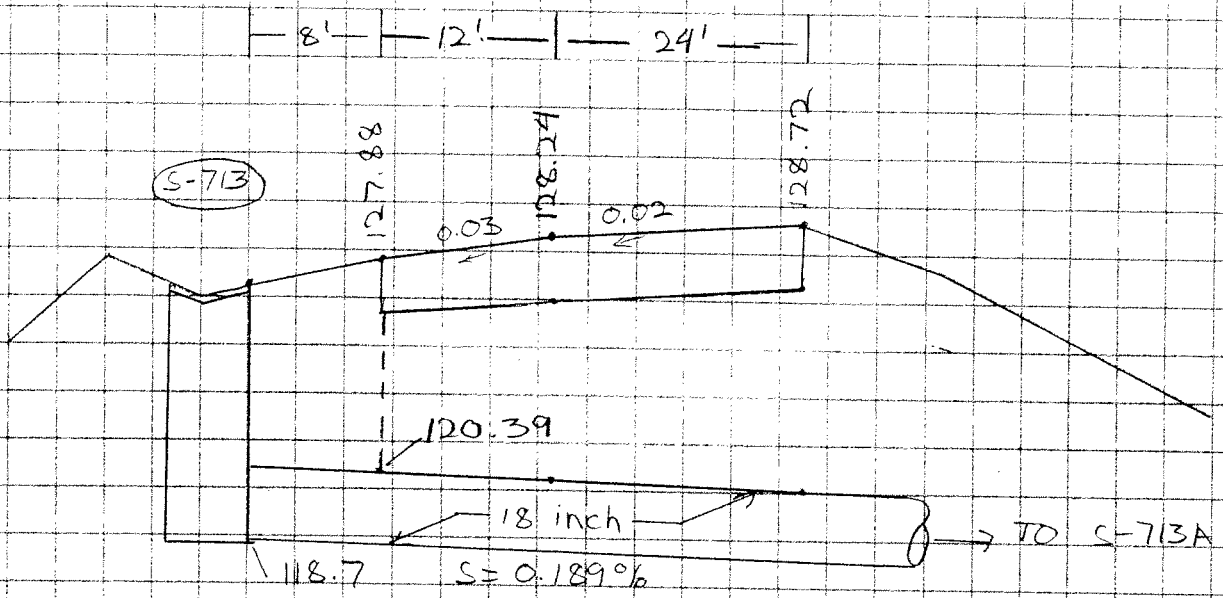
CLEARANCE OF JACK & BORED SECTION:

AT EDGE OF TRAVEL LANE = 127.34 - 121.39 = 5.95' > 4' OK!

STORM DRAIN #3

FROM S-713 TO S-713A

STA 2089+00



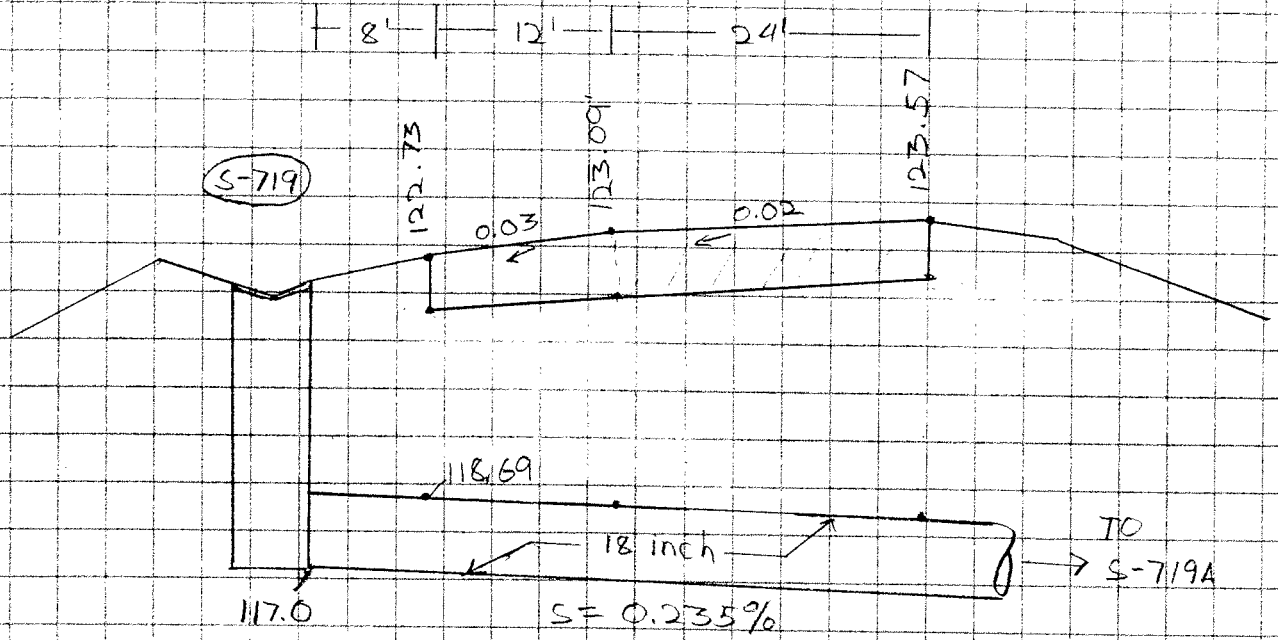
CLEARANCE OF JACK & BORED SECTION:

AT EDGE OF TRAVEL LANE = 127.88 - 120.39 = 7.49' > 4' OK!

STORM DRAIN #4

FROM S-719 TO S-719A

STA 2100+00



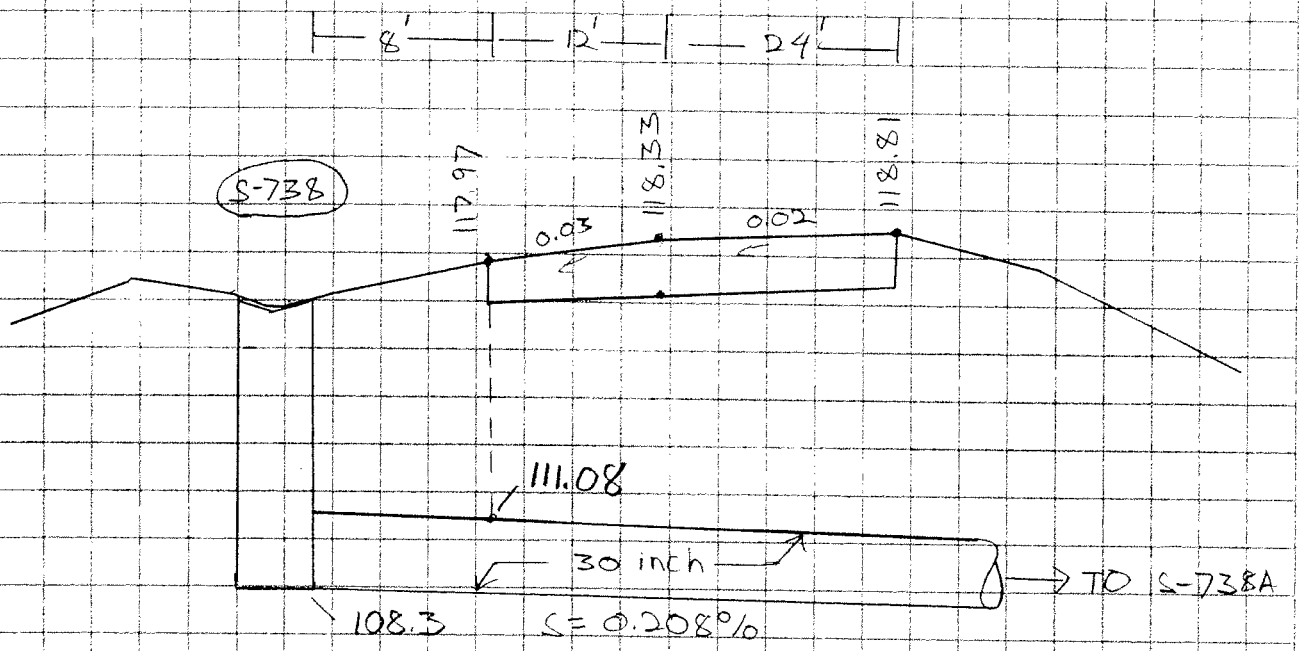
AVAILABLE CLEARANCE:

AT EDGE OF TRAVEL LANE = 122.73 - 118.69 = 4.04' > 4' OK

STORM DRAIN #5

FROM S-738 TO S-738A

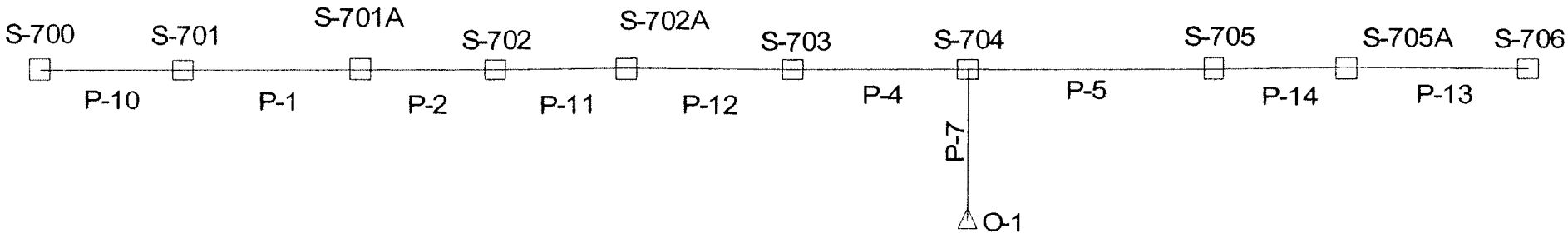
STA 2142 +00



CLEARANCE OF SACK & BOARD SECTION:

AT EDGE OF TRAVEL LANE = 117.97 - 111.08 = 6.85' > 4' OK!

Scenario: Base



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Jacobs Sverdrup
 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

FLORIDA DEPARTMENT OF TRANSPORTATION

STORM DRAIN TABULATION FORM

Financial Project ID No. 201204-1 County: POLK

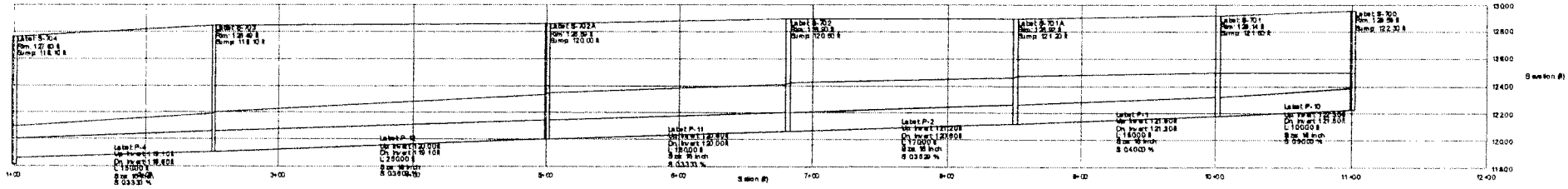
Description I-4 DESIGN BUILD - SEGMENT 7

Sheet 1 of 1

Prepared by: LGC Date: 5/7/2003

Checked by: Date:

LOCATION OF UPPER END STATION	DISTANCE (ft)	SIDE	UPPER / LOWER STRUCTURE NUMBER	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (ft)	DRAINAGE AREA C = 0.95, C = 0.20, C = INCREMENT	DRAINAGE AREA TOTAL	SUB TOTAL C x A	TIME OF CONCENTRATION (min.)	TIME OF FLOW IN SECTION (min.)	INTENSITY (in/hr)	TOTAL C x A	TOTAL RUNOFF	INLET OR GUTTER ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE: UPPER END ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE: LOWER END ELEV. (ft.)	FALL (ft.)	DIAMETER (in.)	HYD. GRAD PHYSICAL MIN. PHYS. SLOPE (%)	VELOCITY (fps)	REMARKS
							0.22	0.22	0.21							124.94	124.92	0.02		0.019		ZONE: 8
			S-700				0.02	0.02	0.00							123.8	123.3			0.500		FREQUENCY: 10YR
2053+00.00	121.98	LT	S-701	S		100				10	1.88	7.45	0.21	1.58	129.58	122.3	121.8	0.5	18	0.150	0.9	NOTES:
							0.39	0.39	0.37							124.9	124.64	0.26		0.172		Tailwater: 120.69 ft
			S-701				0.38	0.38	0.08							123.3	122.7			0.400		
2054+00.00	123.00	LT	S-701A	S		150				11.86	0.94	7.1	0.86	4.72	129.14	121.8	121.2	0.8	18	0.150	2.67	
							0.19	0.19	0.18							124.6	124.15	0.45		0.264		
			S-701A				0.01	0.01	0.00							122.7	122.1			0.353		
2055+50.00	122.92	LT	S-702	S		170				12.8	0.86	6.92	0.84	5.85	128.92	121.2	120.6	0.6	18	0.150	3.31	
							0.19	0.19	0.18							124.09	123.42	0.67		0.371		
			S-702				0.01	0.01	0.00							122.1	121.5			0.333		
2057+20.00	120.70	LT	S-702A	S		180				13.85	3.71	8.76	1.02	6.93	128.9	120.6	120	0.8	18	0.150	3.92	
							0.22	0.22	0.21							123.35	122.05	1.3		0.517		
			S-702A				0.02	0.02	0.00							121.5	120.8			0.380		
2059+00.00	123.16	LT	S-703	S		250				14.42	0.9	6.61	1.23	8.18	128.59	120	119.1	0.9	18	0.150	4.63	
							0.17	0.17	0.18							121.97	121.03	0.94		0.630		
			S-703				0.01	0.01	0.00							120.8	120.1			0.333		
2061+50.00	123.04	LT	S-704	S		150				15.32	0.49	8.46	1.39	9.03	128.49	119.1	118.6	0.5	18	0.150	5.11	
							0.17	0.17	0.16							121.47	121.45	0.02		0.011		
			S-708				0.01	0.01	0.00							121.1	120.8			0.200		
2069+00.00	122.81	LT	S-705A	S		150				10	3.71	7.45	0.16	1.19	122.45	119.6	119.3	0.3	18	0.150	0.67	
							0.27	0.27	0.28							121.45	121.29	0.16		0.0627		
			S-705A				0.02	0.02	0.00							120.8	120.4			0.16		
2067+50.00	123.27	LT	S-705	S		250				13.71	2.58	6.75	0.42	2.85	123.54	119.3	118.9	0.4	18	0.150	1.81	
							0.22	0.22	0.21							121.28	121.03	0.25		0.1248		
			S-705				0.02	0.02	0.00							120.4	120.1			0.15		
2065+00.00	123.21	LT	S-704	S		200				18.29	1.47	8.33	0.63	4.02	125.74	118.9	118.6	0.3	18	0.150	2.27	
							0.17	0.17	0.16							120.99	120.69	0.3		0.302		
			S-704				0.01	0.01	0.00							120.1	119.9			0.198		
2063+00.00	123.27	LT	S-704A	S		101				18.15	0.39	6.14	2.17	13.46	127.63	118.1	117.9	0.2	24	0.102	4.29	



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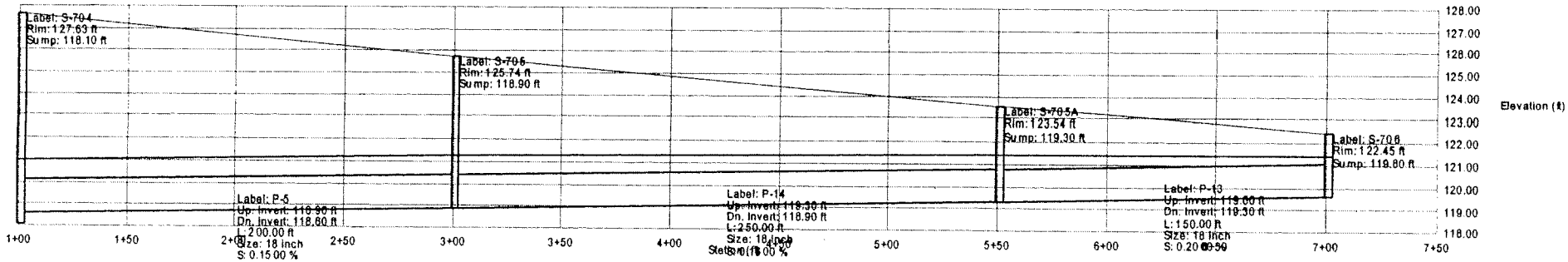
 Jacobs Sverdrup 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

ɔfile
Scenario: Base



DOT Report

Label	-Node- Upstream Downstream	Upstream Inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (%)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-10	S-700	0.24	0.21	0.21	129.58	124.94	0.0193	1.58	Circular	100.00	0.90	
	S-701				129.14	124.92	0.5000	8.05	18 Inch			
P-1	S-701	0.77	0.45	0.66	129.14	124.90	0.1720	4.72	Circular	150.00	2.67	
	S-701A				128.92	124.64	0.4000	7.20	18 Inch			
P-2	S-701A	0.20	0.18	0.84	128.92	124.60	0.2641	5.85	Circular	170.00	3.31	
	S-702				128.90	124.15	0.3529	6.76	18 Inch			
P-13	S-706	0.18	0.16	0.16	122.45	121.47	0.0110	1.19	Circular	150.00	0.67	
	S-705A				123.54	121.45	0.2000	5.09	18 Inch			
P-11	S-702	0.20	0.18	1.02	128.90	124.09	0.3707	6.93	Circular	180.00	3.92	
	S-702A				128.59	123.42	0.3333	6.57	18 Inch			
P-14	S-705A	0.29	0.26	0.42	123.54	121.45	0.0627	2.85	Circular	250.00	1.61	
	S-705				125.74	121.29	0.1600	4.55	18 inch			
P-12	S-702A	0.24	0.21	1.23	128.59	123.35	0.5172	8.18	Circular	250.00	4.63	
	S-703				128.49	122.05	0.3600	6.83	18 Inch			
P-5	S-705	0.24	0.21	0.63	125.74	121.28	0.1248	4.02	Circular	200.00	2.27	
	S-704				127.63	121.03	0.1500	4.41	18 Inch			
P-4	S-703	0.18	0.16	1.39	128.49	121.97	0.6295	9.03	Circular	150.00	5.11	
	S-704				127.63	121.03	0.3333	6.57	18 Inch			
P-7	S-704	0.18	0.16	2.17	127.63	120.99	0.3020	13.46	Circular	101.00	4.29	
	O-1				120.69	120.69	0.1980	10.91	24 Inch			

Node Report

Label	Area (acres)	Inlet C	Inlet CA (acres)	External CA (acres)	System CA (acres)	Time of Concentration (min)	External Time of Concentration (min)	Upstream Time Of Concentration (min)	System Flow Time (min)	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Additional Carryover (cfs)	Known Flow (cfs)	Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)	Rim Elevation (ft)	Hydraulic Grade Line In (ft)
S-700	0.24	0.89	0.21	0.00	0.21	10.00	0.00	0.00	10.00	7.45	1.58	0.00	0.00	0.00	0.00	1.58	129.58	129.58	124.94
S-701	0.77	0.58	0.45	0.00	0.66	10.00	0.00	11.86	11.86	7.10	4.72	0.00	0.00	0.00	0.00	4.72	129.14	129.14	124.92
S-701A	0.20	0.89	0.18	0.00	0.84	10.00	0.00	12.80	12.80	6.92	5.85	0.00	0.00	0.00	0.00	5.85	128.92	128.92	124.64
S-706	0.18	0.89	0.16	0.00	0.16	10.00	0.00	0.00	10.00	7.45	1.19	0.00	0.00	0.00	0.00	1.19	122.45	122.45	121.47
S-702	0.20	0.89	0.18	0.00	1.02	10.00	0.00	13.65	13.65	6.76	6.93	0.00	0.00	0.00	0.00	6.93	128.90	128.90	124.15
S-705A	0.29	0.90	0.26	0.00	0.42	10.00	0.00	13.71	13.71	6.75	2.85	0.00	0.00	0.00	0.00	2.85	123.54	123.54	121.45
S-702A	0.24	0.89	0.21	0.00	1.23	10.00	0.00	14.42	14.42	6.61	8.18	0.00	0.00	0.00	0.00	8.18	128.59	128.59	123.42
S-705	0.24	0.89	0.21	0.00	0.63	10.00	0.00	16.29	16.29	6.33	4.02	0.00	0.00	0.00	0.00	4.02	125.74	125.74	121.29
S-703	0.18	0.89	0.16	0.00	1.39	10.00	0.00	15.32	15.32	6.46	9.03	0.00	0.00	0.00	0.00	9.03	128.49	128.49	122.05
S-704	0.18	0.89	0.16	0.00	2.17	10.00	0.00	17.76	17.76	6.14	13.46	0.00	0.00	0.00	0.00	13.46	127.63	127.63	121.03
O-1					2.17				18.15	6.09	13.35					13.35	120.69	119.93	120.69

Node Report

Hydraulic Grade Line Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)	Description
124.94	7.45	1.58	S
124.90	7.45	3.37	S
124.60	7.45	1.34	S
121.47	7.45	1.19	S
124.09	7.45	1.34	S
121.45	7.45	1.96	S
123.35	7.45	1.58	S
121.28	7.45	1.58	S
121.97	7.45	1.19	S
120.99	7.45	1.19	S
120.69			MES

Pipe Report

Label	Upstream Node	Downstream Node	Upstream Inlet Area (acres)	Upstream Inlet Rational Coefficient	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Constructed Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Upstream Ground Elevation (ft)	Downstream Ground Elevation (ft)	Upstream Cover (ft)
P-10	S-700	S-701	0.24	0.89	0.21	0.21	7.45	1.58	100.00	0.5000	18 inch	0.012	8.05	122.30	121.80	129.58	129.14	5.78
P-1	S-701	S-701A	0.77	0.58	0.45	0.66	7.10	4.72	150.00	0.4000	18 inch	0.012	7.20	121.80	121.20	129.14	128.92	5.84
P-2	S-701A	S-702	0.20	0.89	0.18	0.84	6.92	5.85	170.00	0.3529	18 inch	0.012	6.76	121.20	120.60	128.92	128.90	6.22
P-13	S-706	S-705A	0.18	0.89	0.16	0.16	7.45	1.19	150.00	0.2000	18 inch	0.012	5.09	119.60	119.30	122.45	123.54	1.35
P-11	S-702	S-702A	0.20	0.89	0.18	1.02	6.76	6.93	180.00	0.3333	18 inch	0.012	6.57	120.60	120.00	128.90	128.59	6.80
P-14	S-705A	S-705	0.29	0.90	0.26	0.42	6.75	2.85	250.00	0.1600	18 inch	0.012	4.55	119.30	118.90	123.54	125.74	2.74
P-12	S-702A	S-703	0.24	0.89	0.21	1.23	6.61	8.18	250.00	0.3600	18 inch	0.012	6.83	120.00	119.10	128.59	128.49	7.09
P-5	S-705	S-704	0.24	0.89	0.21	0.63	6.33	4.02	200.00	0.1500	18 inch	0.012	4.41	118.90	118.60	125.74	127.63	5.34
P-4	S-703	S-704	0.18	0.89	0.16	1.39	6.46	9.03	150.00	0.3333	18 inch	0.012	6.57	119.10	118.60	128.49	127.63	7.89
P-7	S-704	O-1	0.18	0.89	0.16	2.17	6.14	13.46	101.00	0.1980	24 inch	0.012	10.91	118.10	117.90	127.63	120.69	7.53

Pipe Report

Downstream Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Description
5.84	124.94	124.92	
6.22	124.90	124.64	
6.80	124.60	124.15	
2.74	121.47	121.45	
7.09	124.09	123.42	
5.34	121.45	121.29	
7.89	123.35	122.05	
7.53	121.28	121.03	
7.53	121.97	121.03	
0.79	120.99	120.69	

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Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coeff.	Up. Inlet CA (acres)	Up.Calc. CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Const. Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Up. Invert Elev. (ft)	Dn. Invert Elev. (ft)	Up. Ground Elev. (ft)	Dn. Ground Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Desc
P-10	S-700	S-701	0.24	0.89	0.21	0.21	7.45	1.58	100.00	0.5000	18 inch	0.012	8.05	122.30	121.80	129.58	129.14	5.78	5.84	124.94	124.92	
P-1	S-701	S-701A	0.77	0.58	0.45	0.66	7.10	4.72	150.00	0.4000	18 inch	0.012	7.20	121.80	121.20	129.14	128.92	5.84	6.22	124.90	124.64	
P-2	S-701A	S-702	0.20	0.89	0.18	0.84	6.92	5.85	170.00	0.3529	18 inch	0.012	6.76	121.20	120.60	128.92	128.90	6.22	6.80	124.60	124.15	
P-13	S-706	S-705A	0.18	0.89	0.16	0.16	7.45	1.19	150.00	0.2000	18 inch	0.012	5.09	119.60	119.30	122.45	123.54	1.35	2.74	121.47	121.45	
P-11	S-702	S-702A	0.20	0.89	0.18	1.02	6.76	6.93	180.00	0.3333	18 Inch	0.012	6.57	120.60	120.00	128.90	128.59	6.80	7.09	124.09	123.42	
P-14	S-705A	S-705	0.29	0.90	0.26	0.42	6.75	2.85	250.00	0.1600	18 inch	0.012	4.55	119.30	118.90	123.54	125.74	2.74	5.34	121.45	121.29	
P-12	S-702A	S-703	0.24	0.89	0.21	1.23	6.61	8.18	250.00	0.3600	18 inch	0.012	6.83	120.00	119.10	128.59	128.49	7.09	7.89	123.35	122.05	
P-5	S-705	S-704	0.24	0.89	0.21	0.63	6.33	4.02	200.00	0.1500	18 inch	0.012	4.41	118.90	118.60	125.74	127.63	5.34	7.53	121.28	121.03	
P-4	S-703	S-704	0.18	0.89	0.16	1.39	6.46	9.03	150.00	0.3333	18 Inch	0.012	6.57	119.10	118.60	128.49	127.63	7.89	7.53	121.97	121.03	
P-7	S-704	O-1	0.18	0.89	0.16	2.17	6.14	13.46	101.00	0.1980	24 Inch	0.012	10.91	118.10	117.90	127.63	120.69	7.53	0.79	120.99	120.69	

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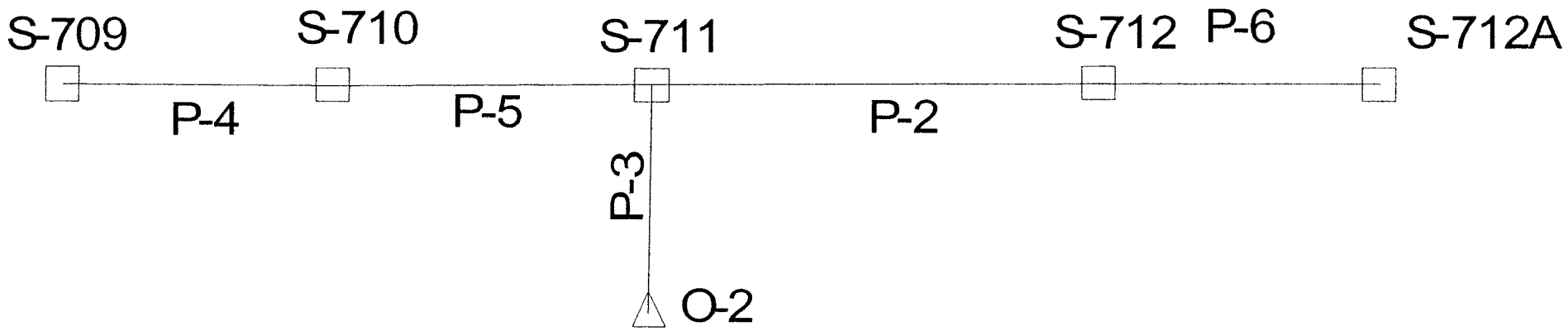
Scenario: Base



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Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

FLORIDA DEPARTMENT OF TRANSPORTATION

STORM DRAIN TABULATION FORM

Financial Project ID No. 201204-1 County: POLK

Description I-4 DESIGN BUILD - SEGMENT 7

Sheet 1 of 1

Prepared by: LGC Date: 5/7/2003

Checked by: Date:

LOCATION OF UPPER END			UPPER / LOWER STRUCTURE NUMBER	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (ft)	DRAINAGE AREA C = 0.95, C = 0.20, C =		SUB TOTAL C x A	TIME OF CONCENTRATION (min.)	TIME OF FLOW IN SECTION (min.)	INTENSITY (in/hr)	TOTAL C x A	TOTAL RUNOFF	INLET OR GUTTER ELEV. (ft.)	HYD. GRADIENT CROWN / FLOW LINE			DIAMETER (in.)	HYD. GRAD PHYSICAL MIN. PHYS. SLOPE (%)	VELOCITY (fps)	ZONE: 8 FREQUENCY: 10YR NOTES: Tailwater: @ 120.56 ft REMARKS
STATION	DISTANCE (ft)	SIDE					INCREMENT	TOTAL								UPPER END ELEV. (ft.)	LOWER END ELEV. (ft.)	FALL (ft.)				
							0.23	0.23	0.22							121.12	121.07	0.05		0.027		
			S-709				0.02	0.02	0.00							121.8	121.4			0.193		
2078+93.00	122.91	LT	S-710	S		207				10	2.5	7.45	0.22	1.84	124.06	120.3	119.9	0.4	18	0.150	1.38	
							0.11	0.11	0.11							121.06	121.03	0.03		0.032		
			S-710				0.01	0.01	0.00							121.4	121.2			0.200		
2081+00.00	122.71	LT	S-711	S		100				12.5	1.14	8.98	0.32	2.28	125.99	119.9	119.7	0.2	18	0.150	1.46	
							0.24	0.24	0.23							122.55	122.15	0.4		0.233		
			S-712A				0.02	0.02	0.00							123.5	123			0.294		
2086+40.00	123.48	LT	S-712	S		170				10	1.05	7.45	0.23	1.74	127.9	122	121.5	0.5	18	0.150	2.69	
							0.16	0.18	0.15							122.13	121.03	1.1		0.408		
			S-712				0.00	0.00	0.00							123	121.2			0.667		
2084+70.00	123.15	LT	S-711	S		270				11.05	0	7.25	0.38	2.77	127.89	121.5	119.7	1.8	18	0.150	2.79	
							0.22	0.22	0.21							120.99	120.56	0.43		0.428		
			S-711				0.02	0.02	0.00							121.2	121			0.200		
2082+00.00	123.27	LT	S-711A	S		100				13.64	0.39	6.78	0.91	8.22	126.86	119.7	119.5	0.2	18	0.150	4.26	

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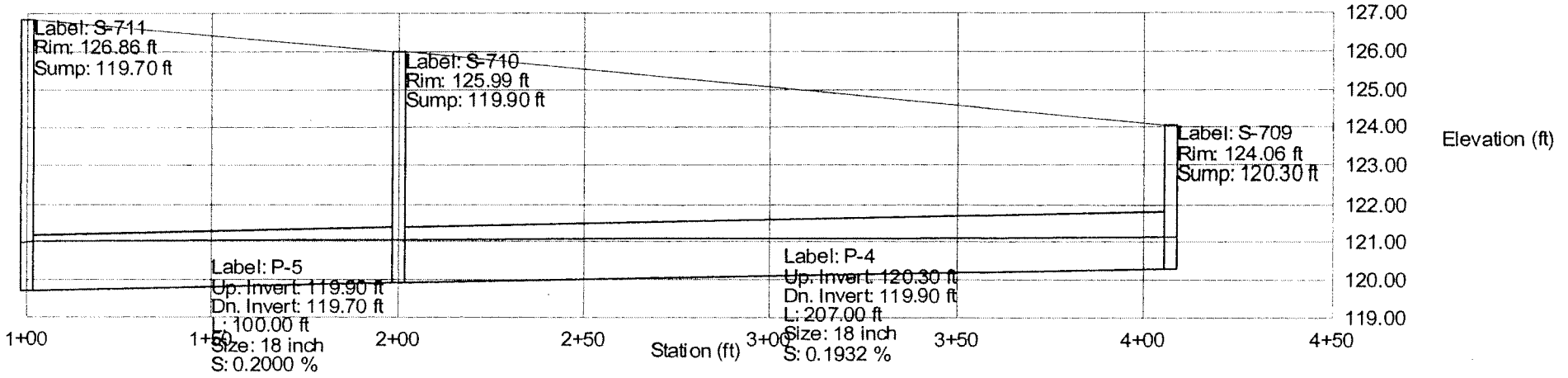
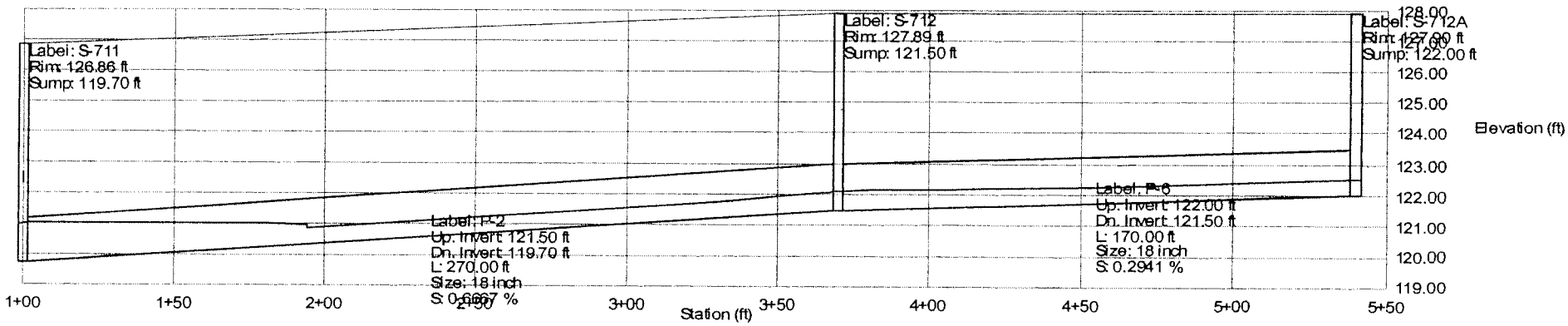
Scenario: Base





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Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

DOT Report

Label	-Node- Upstream Downstream	Upstream Inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (%)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-4	S-709	0.25	0.22	0.22	124.06	121.12	0.0378	1.64	Circular	207.00	1.38	
	S-710				125.99	121.07	0.1932	5.00	18 inch			
P-6	S-712A	0.26	0.23	0.23	127.90	122.55	0.2637	1.74	Circular	170.00	2.69	
	S-712				127.89	122.15	0.2941	6.17	18 inch			
P-5	S-710	0.12	0.11	0.32	125.99	121.06	0.0398	2.28	Circular	100.00	1.46	
	S-711				126.86	121.03	0.2000	5.09	18 inch			
P-2	S-712	0.16	0.15	0.38	127.89	122.13	0.4799	2.77	Circular	270.00	2.79	
	S-711				126.86	121.03	0.6667	9.29	18 inch			
P-3	S-711	0.24	0.21	0.91	126.86	120.99	0.3195	6.22	Circular	100.00	4.26	
	O-2				119.50	120.56	0.2000	5.09	18 inch			

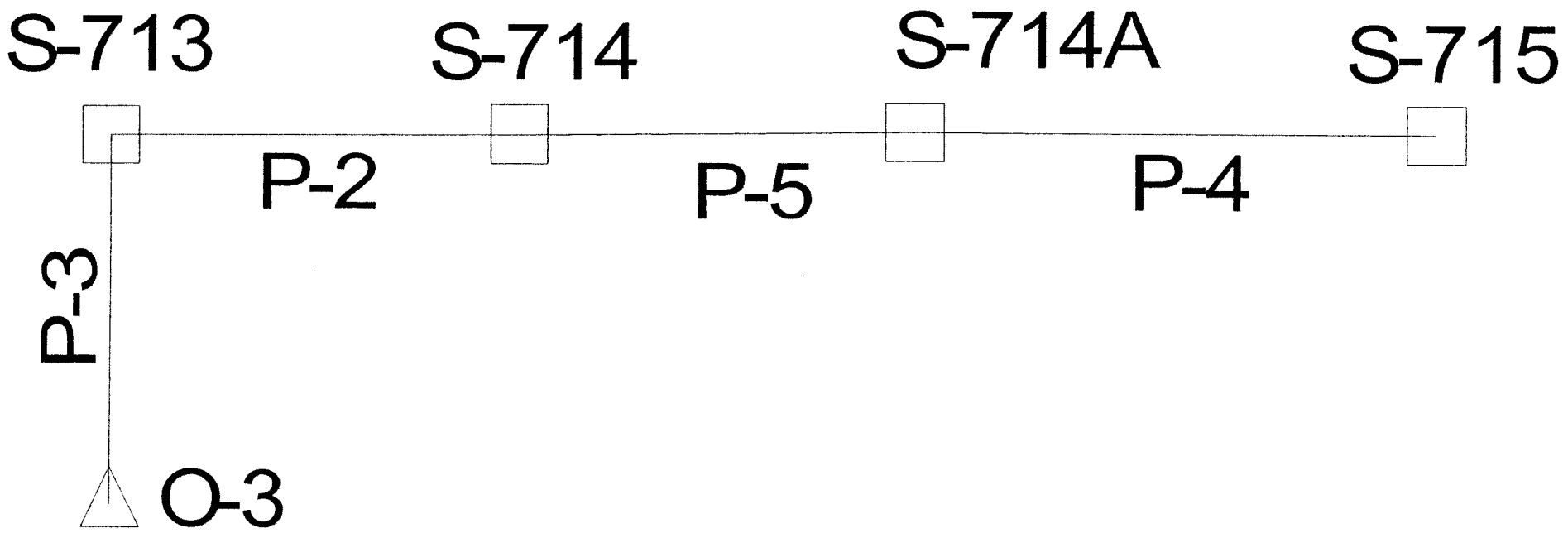
Node Report

Label	Area (acres)	Inlet C	Inlet CA (acres)	External CA (acres)	System CA (acres)	Tc (min)	Ext. Tc (min)	Up. Tc (min)	System Flow Time (min)	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)	Rim Elev. (ft)	HGL IN (ft)	HGL OUT (ft)	Local Intensity (In/hr)	Local Rational Flow (cfs)
S-709	0.25	0.89	0.22	0.00	0.22	10.00	0.00	0.00	10.00	7.45	1.64	0.00	0.00	0.00	1.64	124.06	124.06	121.12	121.12	7.45	1.64
S-712A	0.26	0.89	0.23	0.00	0.23	10.00	0.00	0.00	10.00	7.45	1.74	0.00	0.00	0.00	1.74	127.90	127.90	122.55	122.55	7.45	1.74
S-710	0.12	0.89	0.11	0.00	0.32	10.00	0.00	12.50	12.50	6.98	2.28	0.00	0.00	0.00	2.28	125.99	125.99	121.07	121.06	7.45	0.79
S-712	0.16	0.90	0.15	0.00	0.38	10.00	0.00	11.05	11.05	7.25	2.77	0.00	0.00	0.00	2.77	127.89	127.89	122.15	122.13	7.45	1.10
S-711	0.24	0.89	0.21	0.00	0.91	10.00	0.00	13.64	13.64	6.76	6.22	0.00	0.00	0.00	6.22	126.86	126.86	121.03	120.99	7.45	1.58
O-2					0.91				14.03	6.68	6.15				6.15	119.50	121.00	120.56	120.56		

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coeff.	Up. Inlet CA (acres)	Up. Calc. CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Const. Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Up. Invert Elev. (ft)	Dn. Invert Elev. (ft)	Up. Ground Elev. (ft)	Dn. Ground Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Desc
P-4	S-709	S-710	0.25	0.89	0.22	0.22	7.45	1.64	207.00	0.1932	18 inch	0.012	5.00	120.30	119.90	124.06	125.99	2.26	4.58	121.12	121.07	
P-6	S-712A	S-712	0.26	0.89	0.23	0.23	7.45	1.74	170.00	0.2941	18 inch	0.012	6.17	122.00	121.50	127.90	127.89	4.40	4.89	122.55	122.15	
P-5	S-710	S-711	0.12	0.89	0.11	0.32	6.98	2.28	100.00	0.2000	18 inch	0.012	5.09	119.90	119.70	125.99	126.86	4.58	5.66	121.06	121.03	
P-2	S-712	S-711	0.16	0.90	0.15	0.38	7.25	2.77	270.00	0.6667	18 inch	0.012	9.29	121.50	119.70	127.89	126.86	4.89	5.66	122.13	121.03	
P-3	S-711	O-2	0.24	0.89	0.21	0.91	6.76	6.22	100.00	0.2000	18 Inch	0.012	5.09	119.70	119.50	126.86	119.50	5.66	-1.50	120.99	120.56	

Scenario: Base



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 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

FLORIDA DEPARTMENT OF TRANSPORTATION

STORM DRAIN TABULATION FORM

Financial Project ID No. 201204-1 County: POLK

Description I-4 DESIGN BUILD - SEGMENT 7

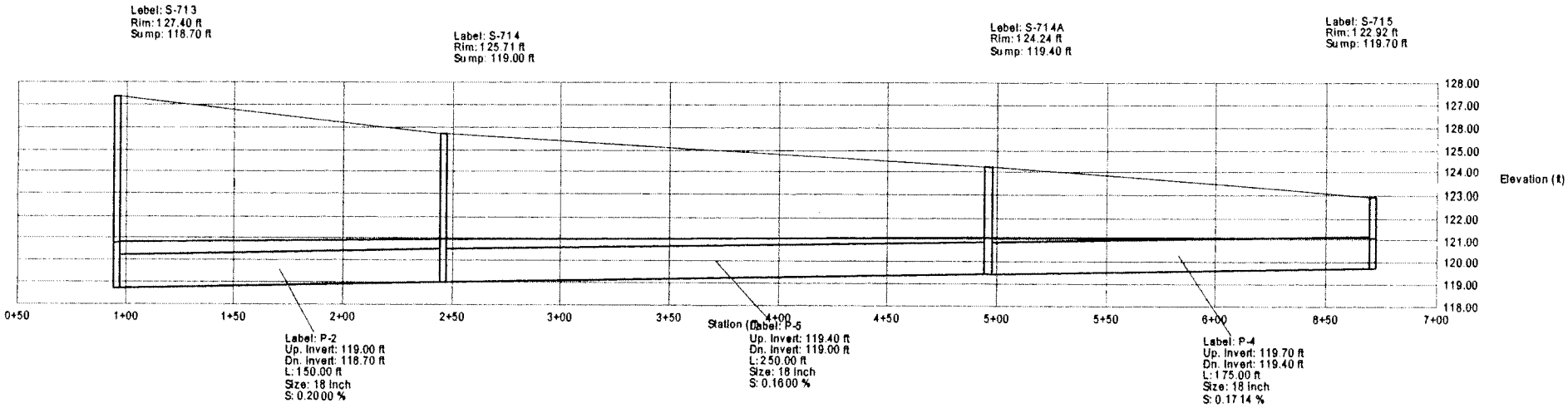
Sheet 1 of 1

Prepared by: LGC Date: 5/7/2003

Checked by: Date:

LOCATION OF UPPER END			UPPER / LOWER STRUCTURE NUMBER	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (ft)	DRAINAGE AREA			TIME OF CONCENTRATION (min.)	TIME OF FLOW IN SECTION (min.)	INTENSITY (in/hr)	TOTAL C x A	TOTAL RUNOFF	INLET OR GUTTER ELEV. (ft.)	HYD. GRADIENT			DIAMETER (in.)	HYD. GRAD	VELOCITY (fps)	ZONE: 8
							C = 0.95									CROWN				PHYSICAL		FREQUENCY: 10YR
							C = 0.20									FLOW LINE				MIN. PHYS.		NOTES:
							C =															Tailwater: 120.56 ft
STATION	DISTANCE (ft)	SIDE	STRUCTURE NUMBER				INCRE-MENT	TOTAL	SUB TOTAL C x A							UPPER END ELEV. (ft.)	LOWER END ELEV. (ft.)	FALL (ft.)		SLOPE (%)		REMARKS
							0.18	0.18	0.17							121.13	121.11	0.02		0.014		
			S-715				0.03	0.03	0.01							121.2	120.9			0.171		
2095+00.00	122.55	LT	S-714A	S		175				10	3.69	7.45	0.18	1.39	122.92	119.7	119.4	0.3	18	0.150	0.79	
							0.18	0.18	0.17							121.1	120.98	0.12		0.049		
			S-714A				0.03	0.03	0.01							120.9	120.5			0.160		
2093+25.00	122.74	LT	S-714	S		250				13.69	2.93	8.75	0.37	2.51	124.24	119.4	119	0.4	18	0.150	1.42	
							0.27	0.27	0.25							120.97	120.78	0.19		0.125		
			S-714				0.03	0.03	0.01							120.5	120.2			0.200		
2091+50.00	120.41	LT	S-713	S		150				18.62	1.1	8.29	0.63	4.01	125.71	119.0	118.7	0.3	18	0.150	2.27	
							0.15	0.15	0.15							120.76	120.56	0.2		0.212		
			S-713				0.02	0.02	0.00							120.2	120.0			0.208		
2089+00.00	120.40	LT	S-713A	S		96				17.72	0	6.15	0.78	4.84	127.4	118.7	118.5	0.2	18	0.150	2.74	

Profile
Scenario: Base



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 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

DOT Report

Label	-Node- Upstream Downstream	Upstream Inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Caiculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (%)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-4	S-715	0.21	0.18	0.18	122.92	121.13	0.0145	1.39	Circular	175.00	0.79	
	S-714A				124.24	121.11	0.1714	4.71	18 inch			
P-5	S-714A	0.21	0.18	0.37	124.24	121.10	0.0487	2.51	Circular	250.00	1.42	
	S-714				125.71	120.98	0.1600	4.55	18 inch			
P-2	S-714	0.30	0.26	0.63	125.71	120.97	0.1245	4.01	Circular	150.00	2.27	
	S-713				127.40	120.78	0.2000	5.09	18 inch			
P-3	S-713	0.17	0.15	0.78	127.40	120.76	0.2123	4.84	Circular	96.00	2.74	
	O-3				118.52	120.56	0.2083	4.79	18 inch			

Node Report

Label	Area (acres)	Inlet C	Inlet CA (acres)	External CA (acres)	System CA (acres)	Tc (min)	Ext. Tc (min)	Up. Tc (min)	System Flow Time (min)	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)	Rim Elev. (ft)	HGL IN (ft)	HGL OUT (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
S-715	0.21	0.89	0.18	0.00	0.18	10.00	0.00	0.00	10.00	7.45	1.39	0.00	0.00	0.00	1.39	122.92	122.92	121.13	121.13	7.45	1.39
S-714A	0.21	0.89	0.18	0.00	0.37	10.00	0.00	13.69	13.69	6.75	2.51	0.00	0.00	0.00	2.51	124.24	124.24	121.11	121.10	7.45	1.39
S-714	0.30	0.89	0.26	0.00	0.63	10.00	0.00	16.62	16.62	6.29	4.01	0.00	0.00	0.00	4.01	125.71	125.71	120.98	120.97	7.45	1.98
S-713	0.17	0.89	0.15	0.00	0.78	10.00	0.00	17.72	17.72	6.15	4.84	0.00	0.00	0.00	4.84	127.40	127.40	120.78	120.76	7.45	1.11
O-3					0.78				18.30	6.07	4.78				4.78	118.52	120.02	120.56	120.56		

 Jacobs Sverdrup
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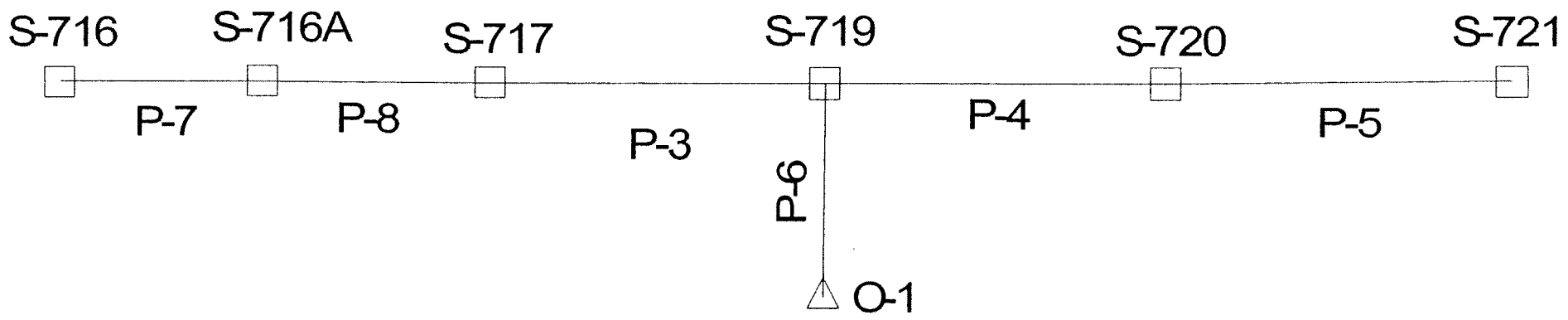
Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coeff.	Up. Inlet CA (acres)	Up.Calc. CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Const. Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Up. Invert Elev. (ft)	Dn. Invert Elev. (ft)	Up. Ground Elev. (ft)	Dn. Ground Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Desc
P-4	S-715	S-714A	0.21	0.89	0.18	0.18	7.45	1.39	175.00	0.1714	18 inch	0.012	4.71	119.70	119.40	122.92	124.24	1.72	3.34	121.13	121.11	
P-5	S-714A	S-714	0.21	0.89	0.18	0.37	6.75	2.51	250.00	0.1600	18 inch	0.012	4.55	119.40	119.00	124.24	125.71	3.34	5.21	121.10	120.98	
P-2	S-714	S-713	0.30	0.89	0.26	0.63	6.29	4.01	150.00	0.2000	18 inch	0.012	5.09	119.00	118.70	125.71	127.40	5.21	7.20	120.97	120.78	
P-3	S-713	O-3	0.17	0.89	0.15	0.78	6.15	4.84	96.00	0.2083	18 inch	0.013	4.79	118.70	118.50	127.40	118.52	7.20	-1.48	120.76	120.56	

Scenario: Base



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Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

FLORIDA DEPARTMENT OF TRANSPORTATION

STORM DRAIN TABULATION FORM

Financial Project ID No. 201204-1 County: POLK

Description I-4 DESIGN BUILD - SEGMENT 7

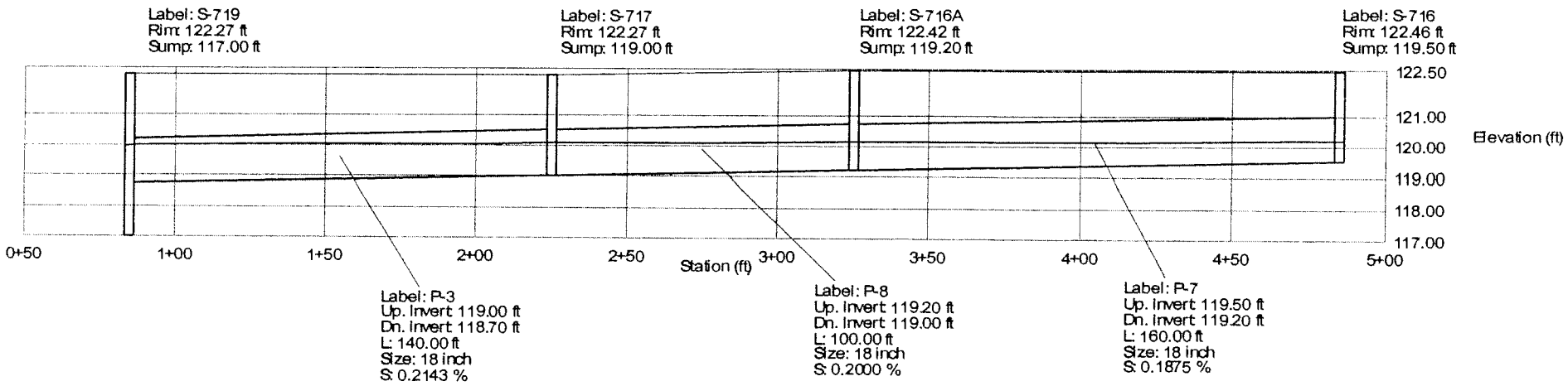
Sheet 1 of 1

Prepared by: LGC Date: 5/7/2003

Checked by: Date:

LOCATION OF UPPER END			UPPER / LOWER STRUCTURE NUMBER	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (ft)	DRAINAGE AREA C = 0.95 C = 0.20 C = INCREMENT	DRAINAGE AREA TOTAL	SUB TOTAL C x A	TIME OF CONCENTRATION (min.)	TIME OF FLOW IN SECTION (min.)	INTENSITY (in/hr)	TOTAL C x A	TOTAL RUNOFF	INLET OR GUTTER ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE: UPPER END ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE: LOWER END ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE: FALL (ft.)	DIAMETER (in.)	HYD. GRAD PHYSICAL MIN. PHYS. SLOPE (%)	VELOCITY (fps)	ZONE: 8 / FREQUENCY: 10YR / NOTES: / Tailwater: 119.71 ft / REMARKS
STATION	DISTANCE (ft)	SIDE																				
							0.20	0.20	0.19							120.18	120.11	0.07		0.039		
			S-718				0.01	0.01	0.00							121.0	120.7			0.188		
2096+00.00	123.29	LT	S-716A	S		180				10	1.72	7.45	0.19	1.42	122.48	119.5	119.2	0.3	18	0.150	1.55	
							0.08	0.08	0.08							120.11	120.07	0.04		0.036		
			S-718A				0.01	0.01	0.00							120.7	120.5			0.200		
2097+60.00	122.82	LT	S-717	S		100				11.72	1.04	7.12	0.27	1.96	122.48	119.2	119.0	0.2	18	0.150	1.6	
							0.19	0.19	0.18							120.06	119.97	0.09		0.070		
			S-717				0.01	0.01	0.00							120.5	120.2			0.214		
2098+80.00	123.27	LT	S-719	S		140				12.76	1.07	8.93	0.45	3.16	122.28	119.0	118.7	0.3	18	0.150	2.17	
							0.11	0.11	0.11							120.05	120.04	0.01		0.009		
			S-721				0.01	0.01	0.00							120.8	120.5			0.150		
2104+00.00	123.37	LT	S-720	S		200				10	0	7.45	0.11	0.79	122.24	119.3	119	0.3	18	0.150	0.75	
							0.22	0.22	0.21							120.03	120.0	0.06		0.034		
			S-720				0.02	0.02	0.00							120.5	120.2			0.150		
2102+00.00	123.28	LT	S-719	S		200				14.48	2.28	6.6	0.32	2.1	122.21	119.0	118.7	0.3	18	0.150	1.47	
							0.19	0.19	0.18							119.93	119.71	0.22		0.277		
			S-719				0.01	0.01	0.00							118.5	118.3			0.250		
2100+00.00	123.27	LT	S-719A	S		80				16.72	0.39	6.28	0.95	5.99	122.3	117	118.8	0.2	18	0.150	3.39	

Profile
Scenario: Base



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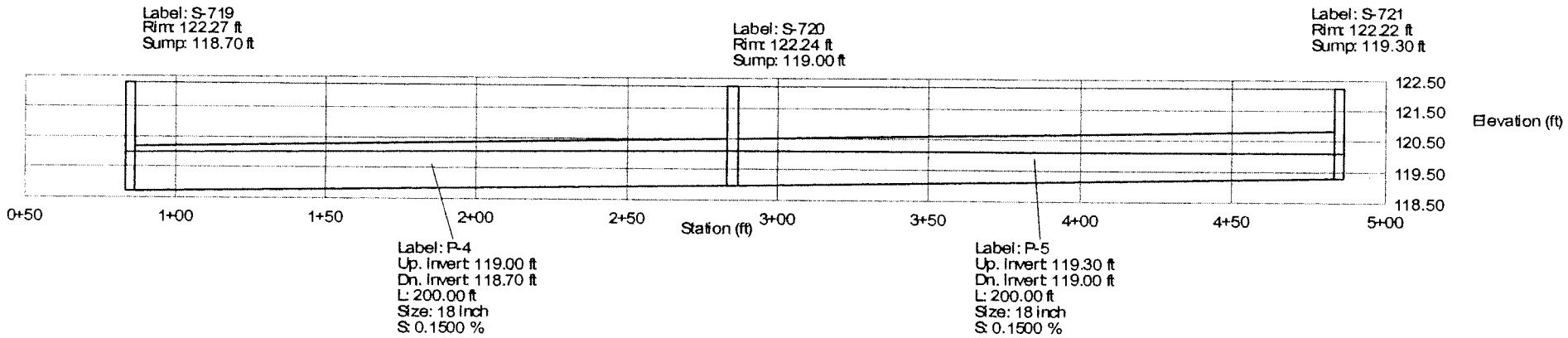
Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

Profile
Scenario: Base



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Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

DOT Report

Label	-Node- Upstream Downstream	Upstream inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (%)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-7	S-716	0.21	0.19	0.19	122.46	120.18	0.0565	1.42	Circular	160.00	1.55	
	S-716A				122.46	120.11	0.1875	4.93	18 inch			
P-5	S-721	0.12	0.11	0.11	122.24	120.05	0.0119	0.79	Circular	200.00	0.75	
	S-720				122.21	120.04	0.1500	4.41	18 inch			
P-8	S-716A	0.09	0.08	0.27	122.46	120.11	0.0512	1.96	Circular	100.00	1.60	
	S-717				122.26	120.07	0.2000	5.09	18 inch			
P-4	S-720	0.24	0.21	0.32	122.21	120.03	0.0405	2.10	Circular	200.00	1.47	
	S-719				122.30	119.97	0.1500	4.41	18 inch			
P-3	S-717	0.20	0.18	0.45	122.26	120.06	0.0879	3.16	Circular	140.00	2.17	
	S-719				122.30	119.97	0.2143	5.27	18 inch			
P-6	S-719	0.20	0.18	0.95	122.30	119.93	0.2772	5.99	Circular	80.00	3.39	
	O-1				118.65	119.71	0.2500	5.69	18 inch			

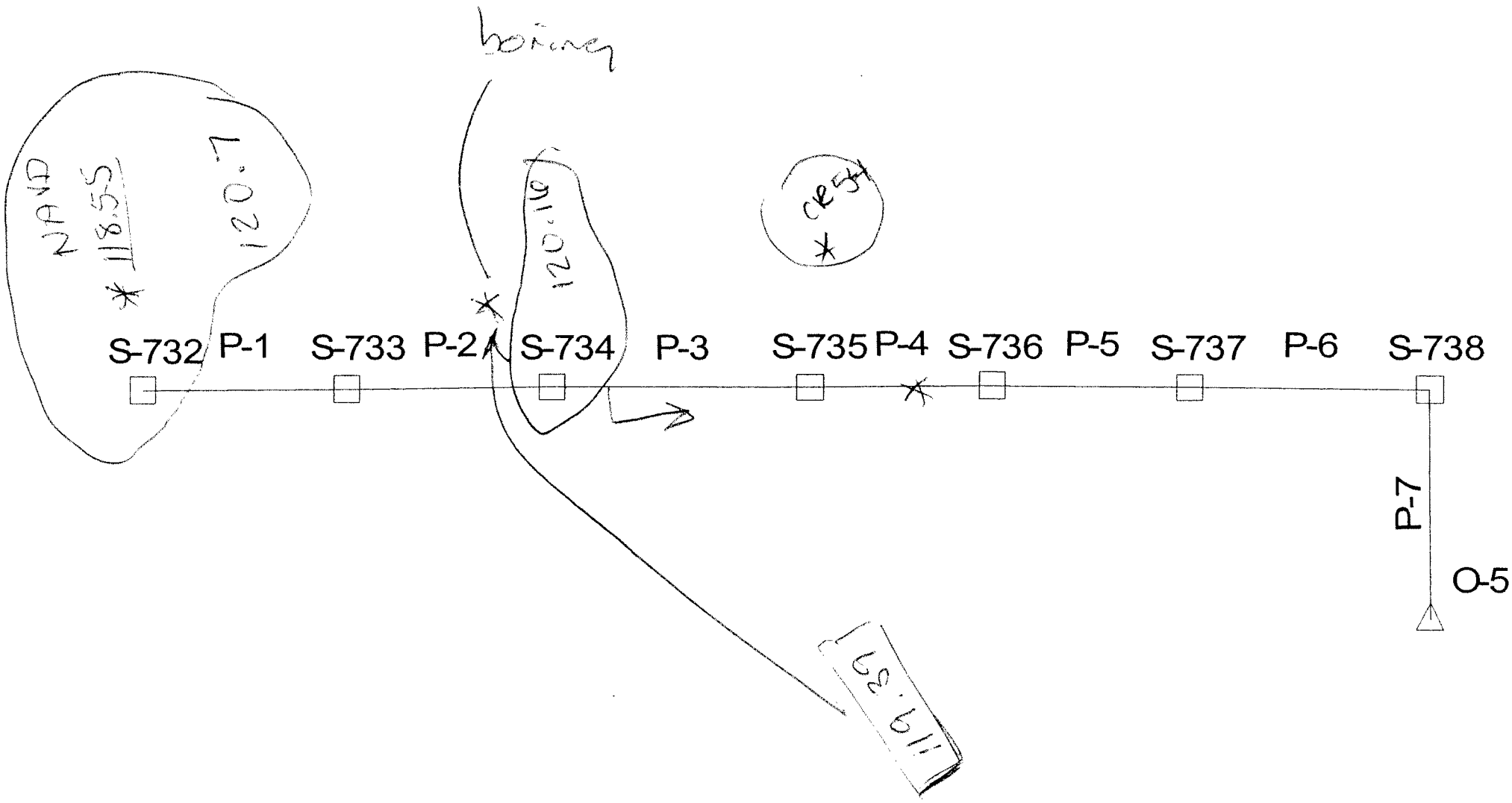
Node Report

Label	Area (acres)	Inlet C	Inlet CA (acres)	External CA (acres)	System CA (acres)	Tc (min)	Ext. Tc (min)	Up. Tc (min)	System Flow Time (min)	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)	Rim Elev. (ft)	HGL IN (ft)	HGL OUT (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
S-716	0.21	0.89	0.19	0.00	0.19	10.00	0.00	0.00	10.00	7.45	1.42	0.00	0.00	0.00	1.42	122.46	122.46	120.18	120.18	7.45	1.42
S-721	0.12	0.89	0.11	0.00	0.11	10.00	0.00	0.00	10.00	7.45	0.79	0.00	0.00	0.00	0.79	122.24	122.24	120.05	120.05	7.45	0.79
S-716A	0.09	0.89	0.08	0.00	0.27	10.00	0.00	11.72	11.72	7.12	1.96	0.00	0.00	0.00	1.96	122.46	122.46	120.11	120.11	7.45	0.63
S-720	0.24	0.89	0.21	0.00	0.32	10.00	0.00	14.46	14.46	6.60	2.10	0.00	0.00	0.00	2.10	122.21	122.21	120.04	120.03	7.45	1.58
S-717	0.20	0.89	0.18	0.00	0.45	10.00	0.00	12.76	12.76	6.93	3.16	0.00	0.00	0.00	3.16	122.26	122.26	120.07	120.06	7.45	1.34
S-719	0.20	0.89	0.18	0.00	0.95	10.00	0.00	16.72	16.72	6.28	5.99	0.00	0.00	0.00	5.99	122.30	122.30	119.97	119.93	7.45	1.34
O-1					0.95				17.11	6.23	5.94				5.94	118.65	120.15	119.71	119.71		

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coeff.	Up. Inlet CA (acres)	Up.Calc. CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Const. Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Up. Invert Elev. (ft)	Dn. Invert Elev. (ft)	Up. Ground Elev. (ft)	Dn. Ground Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Desc
P-7	S-716	S-716A	0.21	0.89	0.19	0.19	7.45	1.42	160.00	0.1875	18 inch	0.012	4.93	119.50	119.20	122.46	122.46	1.46	1.76	120.18	120.11	
P-5	S-721	S-720	0.12	0.89	0.11	0.11	7.45	0.79	200.00	0.1500	18 inch	0.012	4.41	119.30	119.00	122.24	122.21	1.44	1.71	120.05	120.04	
P-8	S-716A	S-717	0.09	0.89	0.08	0.27	7.12	1.96	100.00	0.2000	18 inch	0.012	5.09	119.20	119.00	122.46	122.26	1.76	1.76	120.11	120.07	
P-4	S-720	S-719	0.24	0.89	0.21	0.32	6.60	2.10	200.00	0.1500	18 inch	0.012	4.41	119.00	118.70	122.21	122.30	1.71	2.10	120.03	119.97	
P-3	S-717	S-719	0.20	0.89	0.18	0.45	6.93	3.16	140.00	0.2143	18 inch	0.012	5.27	119.00	118.70	122.26	122.30	1.76	2.10	120.06	119.97	
P-6	S-719	O-1	0.20	0.89	0.18	0.95	6.28	5.99	80.00	0.2500	18 inch	0.012	5.69	117.00	116.80	122.30	118.65	3.80	0.35	119.93	119.71	

Scenario: Base



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Jacobs Sverdrup
 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

FLORIDA DEPARTMENT OF TRANSPORTATION

STORM DRAIN TABULATION FORM

Financial Project ID No. 201204-1 County: POLK

Description I-4 DESIGN BUILD - SEGMENT 7

Sheet 1 of 1

Prepared by: LGC Date: 5/7/2003

Checked by: ____ Date: ____

LOCATION OF UPPER END			UPPER / LOWER STRUCTURE NUMBER	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (ft)	DRAINAGE AREA C = 0.95 C = 0.20 C =		SUB TOTAL C x A	TIME OF CONCEN-TRATION (min.)	TIME OF FLOW IN SECTION (min.)	INTENSITY (in/hr)	TOTAL C x A	TOTAL RUNOFF	INLET OR GUTTER ELEV. (ft.)	HYD. GRADIENT CROWN FLOW LINE			DIAMETER (in.)	HYD. GRAD PHYSICAL MIN. PHYS.	VELOCITY (fps)	ZONE: 8 FREQUENCY: 10YR NOTES: Tailwater: 114.66 ft
STATION	DISTANCE (ft)	SIDE					INCRE-MENT	TOTAL								UPPER END ELEV. (ft.)	LOWER END ELEV. (ft.)	FALL (ft.)		SLOPE (%)		REMARKS
							0.27	0.27	0.26							117.44	117.22	0.22		0.073		
			S-732				0.75	0.75	0.15							118	114.8			0.400		
2127+00.00	2.60	LT	S-733	DBI-B		300				10	2.87	7.45	0.41	3.08	119.5	114.5	113.3	1.2	18	0.150	1.74	
							0.14	0.14	0.13							117.2	116.93	0.27		0.135		
			S-733				0.29	0.29	0.06							114.8	114			0.400		
2130+00.00	3.10	LT	S-734	DBI-B		200				12.87	1.41	6.9	0.8	4.18	118.3	113.3	112.5	0.8	18	0.150	2.36	
							0.10	0.10	0.09							116.9	116.67	0.23		0.183		
			S-734				0.19	0.19	0.04							114	113.5			0.402		
2132+00.00	2.90	LT	S-735	DBI-B		124				14.28	0.75	6.64	0.73	4.66	117.5	112.5	112	0.5	18	0.150	2.75	
							0.10	0.10	0.10							118.63	118.24	0.39		0.225		
			S-735				0.00	0.00	0.00							113.5	113			0.285		
2133+10.00	1.40	LT	S-736	DBI-B		176				15.03	1.87	6.5	0.83	5.4	117.9	112	111.5	0.5	18	0.150	3.08	
							0.14	0.14	0.13							118.18	115.2	0.98		0.329		
			S-738				0.30	0.30	0.06							113	112.1			0.300		
2135+00.00	1.40	LT	S-737	DBI-B		300				15.99	1.35	8.37	1.02	8.53	117.3	111.5	110.6	0.9	18	0.150	3.69	
							0.14	0.14	0.13							115.18	114.8	0.38		0.095		
			S-737				0.30	0.30	0.06							112.1	110.8			0.325		
2138+00.00	0.10	LT	S-738	DBI-B		400				17.34	2.76	6.2	1.21	7.55	116.3	110.1	108.8	1.3	24	0.102	2.4	
							0.51	0.51	0.49							114.79	114.88	0.13		0.056		
			S-738				0.42	0.42	0.08							110.8	110.3			0.208		
2142+00.00	1.70	LT	S-738A	DBI-B		240				20.12	1.87	5.84	1.78	10.48	115	108.3	107.8	0.5	30	0.076	2.13	

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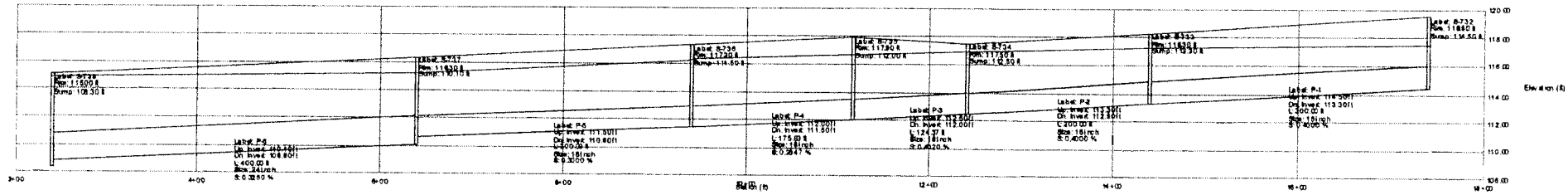
Scenario: Base



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 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

DOT Report

Label	-Node- Upstream Downstream	Upstream Inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (%)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-1	S-732	1.02	0.41	0.41	119.50	117.44	0.0732	3.08	Circular	300.00	1.74	
	S-733				118.30	117.22	0.4000	7.20	18 inch			
P-2	S-733	0.43	0.19	0.60	118.30	117.20	0.1348	4.18	Circular	200.00	2.36	
	S-734				117.50	116.93	0.4000	7.20	18 inch			
P-3	S-734	0.29	0.13	0.73	117.50	116.90	0.1828	4.86	Circular	124.37	2.75	
	S-735				117.90	116.67	0.4020	7.21	18 inch			
P-4	S-735	0.10	0.10	0.83	117.90	116.63	0.2254	5.40	Circular	175.63	3.06	
	S-736				117.30	116.24	0.2847	6.07	18 inch			
P-5	S-736	0.44	0.19	1.02	117.30	116.18	0.3293	6.53	Circular	300.00	3.69	
	S-737				116.30	115.20	0.3000	6.23	18 inch			
P-6	S-737	0.44	0.19	1.21	116.30	115.18	0.0948	7.55	Circular	400.00	2.40	
	S-738				115.00	114.80	0.3250	13.97	24 inch			
P-7	S-738	0.93	0.57	1.78	115.00	114.79	0.0556	10.48	Circular	240.00	2.13	
	O-5				117.00	114.66	0.2083	20.28	30 inch			

Node Report

Label	Area (acres)	Inlet C	Inlet CA (acres)	External CA (acres)	System CA (acres)	Tc (min)	Ext. Tc (min)	Up. Tc (min)	System Flow Time (min)	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Known Flow (cfs)	Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)	Rim Elev. (ft)	HGL IN (ft)	HGL OUT (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
S-732	1.02	0.40	0.41	0.00	0.41	10.00	0.00	0.00	10.00	7.45	3.08	0.00	0.00	0.00	3.08	119.50	119.50	117.44	117.44	7.45	3.08
S-733	0.43	0.44	0.19	0.00	0.60	10.00	0.00	12.87	12.87	6.90	4.18	0.00	0.00	0.00	4.18	118.30	118.30	117.22	117.20	7.45	1.43
S-734	0.29	0.44	0.13	0.00	0.73	10.00	0.00	14.28	14.28	6.64	4.86	0.00	0.00	0.00	4.86	117.50	117.50	116.93	116.90	7.45	0.95
S-735	0.10	0.95	0.10	0.00	0.83	10.00	0.00	15.03	15.03	6.50	5.40	0.00	0.00	0.00	5.40	117.90	117.90	116.67	116.63	7.45	0.73
S-736	0.44	0.43	0.19	0.00	1.02	10.00	0.00	15.99	15.99	6.37	6.53	0.00	0.00	0.00	6.53	117.30	117.30	116.24	116.18	7.45	1.44
S-737	0.44	0.43	0.19	0.00	1.21	10.00	0.00	17.34	17.34	6.20	7.55	0.00	0.00	0.00	7.55	116.30	116.30	115.20	115.18	7.45	1.44
S-738	0.93	0.61	0.57	0.00	1.78	10.00	0.00	20.12	20.12	5.84	10.48	0.00	0.00	0.00	10.48	115.00	115.00	114.80	114.79	7.45	4.29
O-5					1.78				21.99	5.67	10.18				10.18	117.00	111.50	114.66	114.66		

Title: Storm Drain System #5
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05/09/03 10:05:45 AM

Jacobs Sverdrup
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Alicia Henke
StormCAD v4.1.1 [4.2014]

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coeff.	Up. Inlet CA (acres)	Up.Calc. CA (acres)	System Intensity (in/hr)	Total System Flow (cfs)	Length (ft)	Const. Slope (%)	Section Size	Mannings n	Full Capacity (cfs)	Up. Invert Elev. (ft)	Dn. Invert Elev. (ft)	Up. Ground Elev. (ft)	Dn. Ground Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	Hydraulic Grade Line In (ft)	Hydraulic Grade Line Out (ft)	Desc.
P-1	S-732	S-733	1.02	0.40	0.41	0.41	7.45	3.08	300.00	0.4000	18 inch	0.012	7.20	114.50	113.30	119.50	118.30	3.50	3.50	117.44	117.22	
P-2	S-733	S-734	0.43	0.44	0.19	0.60	6.90	4.18	200.00	0.4000	18 inch	0.012	7.20	113.30	112.50	118.30	117.50	3.50	3.50	117.20	116.93	
P-3	S-734	S-735	0.29	0.44	0.13	0.73	6.64	4.86	124.37	0.4020	18 inch	0.012	7.21	112.50	112.00	117.50	117.90	3.50	4.40	116.90	116.67	
P-4	S-735	S-736	0.10	0.95	0.10	0.83	6.50	5.40	175.63	0.2847	18 inch	0.012	6.07	112.00	111.50	117.90	117.30	4.40	4.30	116.63	116.24	
P-5	S-736	S-737	0.44	0.43	0.19	1.02	6.37	6.53	300.00	0.3000	18 inch	0.012	6.23	111.50	110.60	117.30	116.30	4.30	4.20	116.18	115.20	
P-6	S-737	S-738	0.44	0.43	0.19	1.21	6.20	7.55	400.00	0.3250	24 inch	0.012	13.97	110.10	108.80	116.30	115.00	4.20	4.20	115.18	114.80	
P-7	S-738	O-5	0.93	0.61	0.57	1.78	5.84	10.48	240.00	0.2083	30 inch	0.012	20.28	108.30	107.80	115.00	117.00	4.20	6.70	114.79	114.66	

Appendix H

Cross Drain Analysis

Appendix H

Culvert Calculations
I-4 Segment 7

Summary:
The cross drains along the I-4 segment 7 have been designed and evaluated. There are 3 existing cross drains at sta: 2070+00, 2105+00 and 2147+00, which take the runoff from the left side to the right side of the roadway. Another 3 existing cross drains at sta: 2080+00, 2098+00 and 2118+19.07, which transport the water in the median area to the right side of roadway.

Out of the 6 cross drains, 5 of them have been extended and the end walls have been relocated to the outside the clear zone. The proposed headwater elevation has been compared to make sure it does not raise 0.1 ft higher than the existing headwater elevation. The same sizes of culverts have been selected and headwater analyses have been applied by CulverMaster.

Five cross drain systems convey the runoff without rising more than 0.1 ft headwater elevation comparing the existing condition. No culvert extension has been made for the 2-36" cross drain at station 2147+00, therefore, the existing and proposed headwater elevation should be same.

Design Criteria:
Design Frequency: 50-Year Rainfall Event
Time of Concentration: 10 minutes minimum
Pipe Materials: Reinforced Concrete Pipe
Manning's "n" coefficient: 0.013
Pipe Size: 24" minimum
Peak flow procedure selection:
USGS regression equations: median rural, large rural and major watersheds.
Rational method: small drainage area, normally less than 100 acres.

Design Procedure:
Elevation and length of culverts were taken from the drainage structure sheet (1 to 3) included in the calculation package. The existing slopes have been used to calculate the proposed invert elevation when the culverts have been extended.

The tailwater elevation was set at the seasonal high water elevation for each cross drain location.

References:
1. Rainfall Intensity-Duration-Frequency Cure (zone 8)
2. Runoff Coefficients
3. Procedure Selection for USGS Regression Equations
4. Drainage Structure Sheets (1 to 3)
5. Drainage Area Map

TABLE___ CULVERT SUMMARY

	Station	FLOW (CFS)	CROSS DRAIN SIZE	DOWNSTREAM CULVERT					UPSTREAM CULVERT					COMPUTED ELEVATION DIFFERENCE (FT)
				INV. IN (FT)	INV. OUT (FT)	LENGTH (FT)	TW EL (SHW) (FT)	COMPUTED HW EL (FT)	INV. IN (FT)	INV. OUT (FT)	LENGTH (FT)	TW EL (SHW) (FT)	COMPUTED HW EL (FT)	
EXISTING	2070+00	7.28	30"	116.96	116.28	108.67	117.20	118.35	117.64	117.04	108.67	118.35	119.03	
PROPOSED	2070+00	7.28	30"	116.96	116.24	115.60	117.20	118.35	117.64	117.04	108.67	118.35	119.03	
EXISTING	2105+00	110	2-42"	113.30	113.21	100.50	117.00	118.06	113.49	113.48	88.80	118.06	119.09	
PROPOSED	2105+00	110	2-42"	113.30	113.20	108.73	117.00	118.09	113.50	113.48	112.03	118.09	119.19	
EXISTING	2080+00	10.13	24"	116.67	116.06	87.10	117.50	118.51						
PROPOSED	2080+00	10.13	24"	116.74	115.95	114.16	117.50	118.58						
EXISTING	2098+00	10.96	24"	116.46	115.80	90.00	117.60	118.39						
PROPOSED	2098+00	10.96	24"	116.51	115.70	112.66	117.60	118.44						
EXISTING	2118+19.07	4.47	24"	116.00	115.46	88.30	117.80	117.88						
PROPOSED	2118+19.07	4.47	24"	116.03	115.38	108.00	117.80	117.89						

USGS regression equation

Sta:		DA sq mile	SL ft/mile	LK percent		Q 50 cfs
2105+00		0.375	1.4	0.65		109.5

DA: drainage area (sq miles)

SL: Channel slope, in ft/mile, between points at 10 and 85% percent of the total channel length

LK: Lake area, in percent of the total

Drainage area:	240	acres
Length of the flow channel:	3394	ft
Ele at 10% percent ot toal length	115	ft
Ele at 85% percent ot toal length	114.1	ft
Lake area (in percent of the total	0.65	

Q 50 for the regional A, FL

$Q_{50} = 496*(DA^{0.69})*(SL^{0.227})((LK+3)^{(-0.705)})$

Ex. Sta: 2105+00 (downstream)

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	1.36
Computed Headwater Elev	118.06 ft	Discharge	110.00 cfs
Inlet Control HW Elev.	117.00 ft	Tailwater Elevation	117.00 ft
Outlet Control HW Elev.	118.06 ft	Control Type	Outlet Control

Grades			
Upstream Invert	113.30 ft	Downstream Invert	113.21 ft
Length	100.50 ft	Constructed Slope	0.000896 ft/ft

Hydraulic Profile			
Profile	PressureProfile	Depth, Downstream	3.79 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	2.32 ft
Velocity Downstream	5.72 ft/s	Critical Slope	0.004931 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	3.50 ft
Section Size	42 inch	Rise	3.50 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev.	118.06 ft	Upstream Velocity Head	0.51 ft
Ke	0.50	Entrance Loss	0.25 ft

Inlet Control Properties			
Inlet Control HW Elev.	117.00 ft	Flow Control	N/A
Inlet Type	Square edge w/headwall	Area Full	19.2 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Calculator Report
Ex. Sta: 2105+00 (upstream)

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	1.60
Computed Headwater Elev	119.09 ft	Discharge	110.00 cfs
Inlet Control HW Elev.	118.06 ft	Tailwater Elevation	118.06 ft
Outlet Control HW Elev.	119.09 ft	Control Type	Outlet Control

Grades			
Upstream Invert	113.49 ft	Downstream Invert	113.48 ft
Length	88.80 ft	Constructed Slope	0.000113 ft/ft

Hydraulic Profile			
Profile	PressureProfile	Depth, Downstream	4.58 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	2.32 ft
Velocity Downstream	5.72 ft/s	Critical Slope	0.004931 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	3.50 ft
Section Size	42 inch	Rise	3.50 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev.	119.09 ft	Upstream Velocity Head	0.51 ft
Ke	0.50	Entrance Loss	0.25 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.06 ft	Flow Control	N/A
Inlet Type	Square edge w/headwall	Area Full	19.2 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Pro. Sta: 2105+00 (downstream)

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	1.37
Computed Headwater Elev	118.09 ft	Discharge	110.00 cfs
Inlet Control HW Elev.	117.00 ft	Tailwater Elevation	117.00 ft
Outlet Control HW Elev.	118.09 ft	Control Type	Outlet Control

Grades			
Upstream Invert	113.30 ft	Downstream Invert	113.20 ft
Length	108.73 ft	Constructed Slope	0.000920 ft/ft

Hydraulic Profile			
Profile	PressureProfile	Depth, Downstream	3.80 ft
Slope Type	N/A	Normal Depth	N/A ft
Flow Regime	N/A	Critical Depth	2.32 ft
Velocity Downstream	5.72 ft/s	Critical Slope	0.004931 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	3.50 ft
Section Size	42 inch	Rise	3.50 ft
Number Sections	2		

Outlet Control Properties			
Outlet Control HW Elev.	118.09 ft	Upstream Velocity Head	0.51 ft
Ke	0.50	Entrance Loss	0.25 ft

Inlet Control Properties			
Inlet Control HW Elev.	117.00 ft	Flow Control	N/A
Inlet Type	Square edge w/headwall	Area Full	19.2 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Pro. Sta: 2105+00 (upstream)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	123.00	ft	Headwater Depth/Height	1.62	
Computed Headwater Elev:	119.19	ft	Discharge	110.00	cfs
Inlet Control HW Elev.	118.09	ft	Tailwater Elevation	118.09	ft
Outlet Control HW Elev.	119.19	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	113.50	ft	Downstream Invert	113.48	ft
Length	112.03	ft	Constructed Slope	0.000179	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	4.61	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	2.32	ft
Velocity Downstream	5.72	ft/s	Critical Slope	0.004931	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.50	ft
Section Size	42 inch		Rise	3.50	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	119.19	ft	Upstream Velocity Head	0.51	ft
Ke	0.50		Entrance Loss	0.25	ft

Inlet Control Properties					
Inlet Control HW Elev.	118.09	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	19.2	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

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RUNOFF ANALYSIS

Sheet 1 of 1
Designed:
Date
Checked:
Date:

Description: I-4
Location: STA: 2070+00

METHOD OF COMPUTATION — RATIONAL

Land Usage	Drainage Area (A), Acres	Runoff Coefficient (C)	CA
Undeveloped Area	3.68	0.20	0.74
Paved (Proposed FCP)	0.32	0.95	0.30
Total	4.00		1.04

OVERLAND FLOW			CHANNEL FLOW			DITCH FLOW		
	Feet			Feet			Feet	
Flow Distance (FT)	230.00		Flow Distance			Flow Distance	300.00	
Upper Elevation	124.50		Upper Elevation			Upper Elevation	118.50	
Lower Elevation	118.50		Lower Elevation			Lower Elevation	117.64	
Slope	0.0261		Elevation Change			Elevation Change	0.86	

Rational "C" Value 0.26

Overland Flow Time (SEELYE) (minutes) 16.98

Time of Ditch Flow (KIRPICH) (minutes) 6.32 | Adjustment Factor: 1.0 | 6.32

TOTAL TIME OF CONCENTRATION (MINUTES): 23.30

RETURN PERIOD (YEARS): 50
I-D-F CURVE FOR ZONE 8, FL 7.00

DISCHARGE (CFS) 7.28

Ex. Sta: 2070+00 (downstream)

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.56
Computed Headwater Elev	118.35 ft	Discharge	7.28 cfs
Inlet Control HW Elev.	118.20 ft	Tailwater Elevation	117.20 ft
Outlet Control HW Elev.	118.35 ft	Control Type	Entrance Control

Grades			
Upstream Invert	116.96 ft	Downstream Invert	116.28 ft
Length	108.67 ft	Constructed Slope	0.006257 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	0.92 ft
Slope Type	Steep	Normal Depth	0.80 ft
Flow Regime	N/A	Critical Depth	0.90 ft
Velocity Downstream	4.44 ft/s	Critical Slope	0.004173 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.50 ft
Section Size	30 inch	Rise	2.50 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.35 ft	Upstream Velocity Head	0.33 ft
Ke	0.50	Entrance Loss	0.16 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.20 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	4.9 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Calculator Report
Ex. Sta: 2070+00 (upstream)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	123.00	ft	Headwater Depth/Height	0.56	
Computed Headwater Elev	119.03	ft	Discharge	7.28	cfs
Inlet Control HW Elev.	118.88	ft	Tailwater Elevation	118.35	ft
Outlet Control HW Elev.	119.03	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	117.64	ft	Downstream Invert	117.04	ft
Length	108.67	ft	Constructed Slope	0.005521	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	1.31	ft
Slope Type	Steep		Normal Depth	0.83	ft
Flow Regime	N/A		Critical Depth	0.90	ft
Velocity Downstream	2.80	ft/s	Critical Slope	0.004173	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	119.03	ft	Upstream Velocity Head	0.33	ft
Ke	0.50		Entrance Loss	0.16	ft

Inlet Control Properties					
Inlet Control HW Elev.	118.88	ft	Flow Control	Unsubmerged	
Inlet Type	Square edge w/headwall		Area Full	4.9	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Pro. Sta: 2070+00 (downstream)

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.56
Computed Headwater Elev	118.35 ft	Discharge	7.28 cfs
Inlet Control HW Elev.	118.20 ft	Tailwater Elevation	117.20 ft
Outlet Control HW Elev.	118.35 ft	Control Type	Entrance Control

Grades			
Upstream Invert	116.96 ft	Downstream Invert	116.24 ft
Length	115.60 ft	Constructed Slope	0.006228 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	0.96 ft
Slope Type	Steep	Normal Depth	0.81 ft
Flow Regime	N/A	Critical Depth	0.90 ft
Velocity Downstream	4.19 ft/s	Critical Slope	0.004173 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.50 ft
Section Size	30 inch	Rise	2.50 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.35 ft	Upstream Velocity Head	0.33 ft
Ke	0.50	Entrance Loss	0.16 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.20 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	4.9 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Calculator Report
Pro. Sta: 2070+00 (upstream)

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	123.00	ft	Headwater Depth/Height	0.56	
Computed Headwater Elev	119.03	ft	Discharge	7.28	cfs
Inlet Control HW Elev.	118.88	ft	Tailwater Elevation	118.35	ft
Outlet Control HW Elev.	119.03	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	117.64	ft	Downstream Invert	117.04	ft
Length	108.67	ft	Constructed Slope	0.005521	ft/ft

Hydraulic Profile					
Profile	CompositeS1S2		Depth, Downstream	1.31	ft
Slope Type	Steep		Normal Depth	0.83	ft
Flow Regime	N/A		Critical Depth	0.90	ft
Velocity Downstream	2.80	ft/s	Critical Slope	0.004173	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.50	ft
Section Size	30 inch		Rise	2.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	119.03	ft	Upstream Velocity Head	0.33	ft
Ke	0.50		Entrance Loss	0.16	ft

Inlet Control Properties				
Inlet Control HW Elev.	118.88	ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall		Area Full	4.9 ft²
K	0.00980		HDS 5 Chart	1
M	2.00000		HDS 5 Scale	1
C	0.03980		Equation Form	1
Y	0.67000			

JACOBS CIVIL

RUNOFF ANALYSIS

Sheet 1 of 1
Designed:
Date
Checked:
Date:

Description: I-4
Location: STA: 2118+19.07

METHOD OF COMPUTATION: **RATIONAL**

Land Usage	Drainage Area (A), Acres	Runoff Coefficient (C)	CA
Undeveloped Area	1.27	0.20	0.25
Paved (Proposed FCP)	0.28	0.95	0.27
AREA: 7-5MX			
Total	1.55		0.52

OVERLAND FLOW			CHANNEL FLOW			DITCH FLOW		
	Feet			Feet			Feet	
Flow Distance (FT)	100.00		Flow Distance	230.00		Flow Distance	-	
Upper Elevation	123.00		Upper Elevation	120.00		Upper Elevation	0.00	
Lower Elevation	120.00		Lower Elevation	116.00		Lower Elevation	0.00	
Slope	0.0300		Elevation Change	4.00		Elevation Change	0.00	

Rational "C" Value 0.34

Overland Flow Time (SEELYE) (minutes) 9.03

Time of Ditch Flow (KIRPICH) (minutes) 2.61 | Adjustment Factor: 1.0 | 2.61

TOTAL TIME OF CONCENTRATION (MINUTES): 11.64

RETURN PERIOD (YEARS): 50
I-D-F CURVE FOR ZONE 8, FL 8.60

DISCHARGE (CFS) 4.47

Culvert Calculator Report
Ex. Sta: 2118+19.07

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.94
Computed Headwater Elev	117.88 ft	Discharge	4.47 cfs
Inlet Control HW Elev.	117.80 ft	Tailwater Elevation	117.80 ft
Outlet Control HW Elev.	117.88 ft	Control Type	Outlet Control

Grades			
Upstream Invert	116.00 ft	Downstream Invert	115.46 ft
Length	88.30 ft	Constructed Slope	0.006116 ft/ft

Hydraulic Profile			
Profile	CompositePressureProfileS1	Depth, Downstream	2.34 ft
Slope Type	N/A	Normal Depth	0.69 ft
Flow Regime	Subcritical	Critical Depth	0.74 ft
Velocity Downstream	1.42 ft/s	Critical Slope	0.004514 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	117.88 ft	Upstream Velocity Head	0.03 ft
Ke	0.50	Entrance Loss	0.02 ft

Inlet Control Properties			
Inlet Control HW Elev.	117.80 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.93
Computed Headwater Elev:	117.89 ft	Discharge	4.47 cfs
Inlet Control HW Elev.	117.80 ft	Tailwater Elevation	117.80 ft
Outlet Control HW Elev.	117.89 ft	Control Type	Outlet Control

Grades			
Upstream Invert	116.03 ft	Downstream Invert	115.38 ft
Length	108.00 ft	Constructed Slope	0.006019 ft/ft

Hydraulic Profile			
Profile	CompositePressureProfileS1	Depth, Downstream	2.42 ft
Slope Type	N/A	Normal Depth	0.69 ft
Flow Regime	Subcritical	Critical Depth	0.74 ft
Velocity Downstream	1.42 ft/s	Critical Slope	0.004514 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	117.89 ft	Upstream Velocity Head	0.03 ft
Ke	0.50	Entrance Loss	0.02 ft

Inlet Control Properties			
Inlet Control HW Elev.	117.80 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

JACOBS CIVIL

RUNOFF ANALYSIS

Sheet 1 of 1
Designed:
Date
Checked:
Date:

Description: I-4
Location: STA: 2098+00

METHOD OF COMPUTATION: RATIONAL

Land Usage	Drainage Area (A), Acres	Runoff Coefficient (C)	CA
Undeveloped Area	4.43	0.20	0.89
Paved (Proposed FCP)	0.74	0.95	0.70
AREA: 7-3MX			
Total	5.17		1.59

OVERLAND FLOW			CHANNEL FLOW			DITCH FLOW		
	Feet			Feet			Feet	
Flow Distance (FT)	100.00		Flow Distance	1,100.00		Flow Distance	-	
Upper Elevation	128.00		Upper Elevation	125.00		Upper Elevation	0.00	
Lower Elevation	125.00		Lower Elevation	116.46		Lower Elevation	0.00	
Slope	0.0300		Elevation Change	8.54		Elevation Change	0.00	
Rational "C" Value	0.31							

Overland Flow Time (SEELYE)	(minutes)				9.86
Time of Ditch Flow (KIRPICH)	(minutes)	11.47	Adjustment Factor:	1.0	11.47
TOTAL TIME OF CONCENTRATION (MINUTES):					21.33

RETURN PERIOD (YEARS): 50
I-D-F CURVE FOR ZONE 8, FL: 6.90

DISCHARGE (CFS): 10.96

Culvert Calculator Report
Ex. Sta: 2098+00

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.96
Computed Headwater Elev	118.39 ft	Discharge	10.96 cfs
Inlet Control HW Elev.	118.25 ft	Tailwater Elevation	117.60 ft
Outlet Control HW Elev.	118.39 ft	Control Type	Entrance Control

Grades			
Upstream Invert	116.46 ft	Downstream Invert	115.80 ft
Length	90.00 ft	Constructed Slope	0.007333 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	1.80 ft
Slope Type	Steep	Normal Depth	1.08 ft
Flow Regime	N/A	Critical Depth	1.19 ft
Velocity Downstream	3.68 ft/s	Critical Slope	0.005378 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.39 ft	Upstream Velocity Head	0.49 ft
Ke	0.50	Entrance Loss	0.25 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.25 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Calculator Report
Pro. Sta: 2098+00

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.96
Computed Headwater Elev	118.44 ft	Discharge	10.96 cfs
Inlet Control HW Elev.	118.30 ft	Tailwater Elevation	117.60 ft
Outlet Control HW Elev.	118.44 ft	Control Type	Entrance Control

Grades			
Upstream Invert	116.51 ft	Downstream Invert	115.70 ft
Length	122.66 ft	Constructed Slope	0.006604 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	1.90 ft
Slope Type	Steep	Normal Depth	1.11 ft
Flow Regime	N/A	Critical Depth	1.19 ft
Velocity Downstream	3.56 ft/s	Critical Slope	0.005378 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.44 ft	Upstream Velocity Head	0.49 ft
Ke	0.50	Entrance Loss	0.25 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.30 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

JACOBS CIVIL

RUNOFF ANALYSIS

Sheet 1 of 1
Designed:
Date
Checked:
Date:

Description: I-4
Location: STA: 2080+00

METHOD OF COMPUTATION — RATIONAL

Land Usage	Drainage Area (A), Acres	Runoff Coefficient (C)	CA
Undeveloped Area	3.90	0.20	0.78
Paved (Proposed FCP)	0.60	0.95	0.57
AREA: 7-2MX			
Total	4.50		1.35

OVERLAND FLOW			CHANNEL FLOW			DITCH FLOW		
	Feet			Feet			Feet	
Flow Distance (FT)	100.00		Flow Distance	600.00		Flow Distance	-	
Upper Elevation	127.00		Upper Elevation	126.00		Upper Elevation	0.00	
Lower Elevation	126.00		Lower Elevation	116.67		Lower Elevation	0.00	
Slope	0.0100		Elevation Change	9.33		Elevation Change	0.00	

Rational "C" Value 0.30

Overland Flow Time (SEELYE) (minutes) 12.45

Time of Ditch Flow (KIRPICH) (minutes) 5.59 | Adjustment Factor: 1.0 | 5.59

TOTAL TIME OF CONCENTRATION (MINUTES): 18.04

RETURN PERIOD (YEARS): 50
I-D-F CURVE FOR ZONE 8, FL 7.50

DISCHARGE (CFS) **10.13**

Ex. Sta: 2080+00

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.92
Computed Headwater Elev	118.51 ft	Discharge	10.13 cfs
Inlet Control HW Elev.	118.37 ft	Tailwater Elevation	117.50 ft
Outlet Control HW Elev.	118.51 ft	Control Type	Entrance Control

Grades			
Upstream Invert	116.67 ft	Downstream Invert	116.06 ft
Length	87.10 ft	Constructed Slope	0.007003 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	1.44 ft
Slope Type	Steep	Normal Depth	0.00 ft
Flow Regime	N/A	Critical Depth	1.14 ft
Velocity Downstream	4.18 ft/s	Critical Slope	0.005225 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.51 ft	Upstream Velocity Head	0.47 ft
Ke	0.50	Entrance Loss	0.23 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.37 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		

Culvert Calculator Report
Pro. Sta: 2080+00

Solve For: Headwater Elevation

Culvert Summary			
Allowable HW Elevation	123.00 ft	Headwater Depth/Height	0.92
Computed Headwater Elev	118.58 ft	Discharge	10.13 cfs
Inlet Control HW Elev.	118.44 ft	Tailwater Elevation	117.50 ft
Outlet Control HW Elev.	118.58 ft	Control Type	Entrance Control

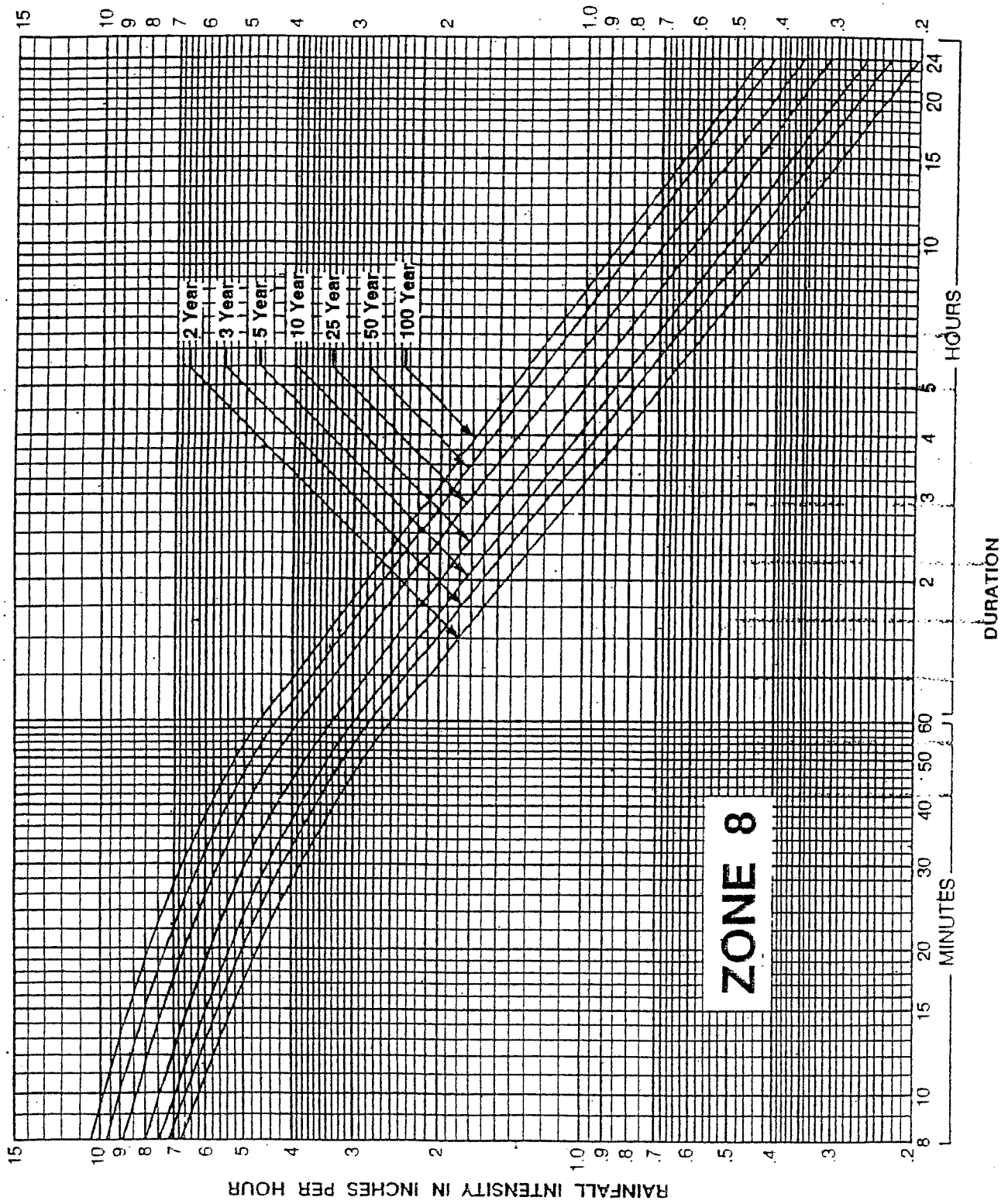
Grades			
Upstream Invert	116.74 ft	Downstream Invert	115.95 ft
Length	114.16 ft	Constructed Slope	0.006920 ft/ft

Hydraulic Profile			
Profile	CompositeS1S2	Depth, Downstream	1.55 ft
Slope Type	Steep	Normal Depth	1.04 ft
Flow Regime	N/A	Critical Depth	1.14 ft
Velocity Downstream	3.88 ft/s	Critical Slope	0.005225 ft/ft

Section			
Section Shape	Circular	Mannings Coefficient	0.013
Section Material	Concrete	Span	2.00 ft
Section Size	24 inch	Rise	2.00 ft
Number Sections	1		

Outlet Control Properties			
Outlet Control HW Elev.	118.58 ft	Upstream Velocity Head	0.47 ft
Ke	0.50	Entrance Loss	0.23 ft

Inlet Control Properties			
Inlet Control HW Elev.	118.44 ft	Flow Control	Unsubmerged
Inlet Type	Square edge w/headwall	Area Full	3.1 ft²
K	0.00980	HDS 5 Chart	1
M	2.00000	HDS 5 Scale	1
C	0.03980	Equation Form	1
Y	0.67000		



Rainfall Intensity-Duration-Frequency Curve
Zone 8

ref 2

RUNOFF COEFFICIENTS [a]

Slope	Land Use	Sandy Soils Min.	Sandy Soils Max.	Clay Soils Min.	Clay Soils Max.
Flat (0-2%)	Woodlands	0.10	0.15	0.15	0.20
	Pasture, grass, and farmland [b]	0.15	0.20	0.20	0.25
	Bare Earth	0.30	0.50	0.50	0.60
	Rooftops and pavement	0.95	0.95	0.95	0.95
	Pervious pavements [c]	0.75	0.95	0.90	0.95
	SFR: 1/2-acre lots and larger	0.30	0.35	0.35	0.45
	Smaller lots	0.35	0.45	0.40	0.50
	Duplexes	0.35	0.45	0.40	0.50
	MFR: Apartments, townhouses, and condominiums	0.45	0.60	0.50	0.70
	Commercial and Industrial	0.50	0.95	0.50	0.95
Rolling (2-7%)	Woodlands	0.15	0.20	0.20	0.25
	Pasture, grass, and farmland [b]	0.20	0.25	0.25	0.30
	Bare Earth	0.40	0.60	0.60	0.70
	Rooftops and pavement	0.95	0.95	0.95	0.95
	Pervious pavements [c]	0.80	0.95	0.90	0.95
	SFR: 1/2-acre lots and larger	0.35	0.50	0.40	0.55
	Smaller lots	0.40	0.55	0.45	0.60
	Duplexes	0.40	0.55	0.45	0.60
	MFR: Apartments, townhouses, and condominiums	0.50	0.70	0.60	0.80
	Commercial and Industrial	0.50	0.95	0.50	0.95
Steep (7%+)	Woodlands	0.20	0.25	0.25	0.30
	Pasture, grass, and farmland [b]	0.25	0.35	0.30	0.40
	Bare Earth	0.50	0.70	0.70	0.80
	Rooftops and pavement	0.95	0.95	0.95	0.95
	Pervious pavements [c]	0.85	0.95	0.90	0.95
	SFR: 1/2-acre lots and larger	0.40	0.55	0.50	0.65
	Smaller lots	0.45	0.60	0.55	0.70
	Duplexes	0.45	0.60	0.55	0.70
	MFR: Apartments, townhouses, and condominiums	0.60	0.75	0.65	0.85
	Commercial and Industrial	0.60	0.95	0.65	0.95

a. Weighted coefficient based on percentage of impervious surfaces and green areas must be selected for each site.

b. Coefficients assume good ground cover and conservation treatment.

c. Depends on depth and degree of permeability of underlying strata.

Note: SFR = Single Family Residential, MFR = Multi-Family Residential

Table 2-2

methods for determining peak runoff rates for pre-project conditions are usually unavailable; in such cases, it is accepted practice to estimate peak runoff using several different methods. In general, results should be compared, not averaged, and the method that best reflects project conditions should be used, with the reasons documented.

A consideration of peak runoff rates for design conditions is generally adequate for conveyance systems such as storm drains or open channels. However, if the design must include flood routing (e.g., storage basins or complex conveyance networks), a flood hydrograph is usually required. Although the development of a runoff hydrograph (typically more complex than estimating peak runoff rates) is often accomplished using computer programs, only desktop procedures are presented in this manual.

Guidelines for selecting peak runoff rate and flood hydrograph procedures are presented in Table 5-1. The following watershed categories are addressed:

- Small urban, zero to 200 acres

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- Large urban, more than 200 acres
- Small rural, zero to 200 acres
- Medium rural, 200 to 1,000 acres
- Large rural, 1,000 acres to 10 square miles
- Major, more than 10 square miles

In general, procedures using streamflow analysis and unit hydrograph theory are applicable to all watershed categories (see Sections 5.7 and 5.10.1, respectively).

The Rational Method provides peak runoff rates for small and intermediate urban or rural watersheds, but is best suited to urban storm drain systems. It should be used with caution if the time of concentration exceeds 30 minutes (see Section 5.8.1).

USGS regression equations for natural flow conditions have been developed for three regions of Florida. They are applicable for medium rural, large rural, and major watersheds. Additional limitations on the USGS equations are presented in Section 5.8.2. USGS regression equations for natural flow conditions for west-central Florida, presented in USGS Water Resources Investigations Open-File Report 79-1293 (Seijo et al., 1979), have not been included in this version of the manual, but will appear in subsequent versions.

FHWA regression equations are an alternative method for natural flow conditions. Their use is generally limited to watershed areas of less than 50 square miles, but they may be used for areas up to 100 square miles. The method should be used for comparison purposes only (see Section 5.8.2).

USGS equations for urban conditions are based on adjusting the equivalent rural peak runoff rate to account for urban conditions. The application of this procedure is thus limited by procedures for estimating rural peak runoff rates (see Section 5.8.3).

The USGS Equations by Bridges (1982) supercede the information presented in the USGS Water Supply Paper (WSP) No. 1674 by Pride (1958). Although not recommended as a design procedure, the method presented in WSP No. 1674 can be used as an independent check for evaluating natural flow estimates for watershed areas between 100 and 10,000 square miles.

USGS Equations

The Statistical Analysis System (SAS) was used by Bridges (1982) to perform multiple regression analyses of flood peak data from 182 gaging stations in Florida. Results of these analyses are presented in Tables 5-12, 5-13, and 5-14 as peak runoff equations for the three geographic regions in Florida delineated in Figure 5-23.

The natural flow regression equations for Regions A and C take the following general form:

$$Q_T = C\ DA^{B_1}\ SL^{B_2}\ (LK + 3.0)^{B_3} \qquad (5\text{-}13)$$

where:

Q_T = Peak runoff rate for return period T, in ft^3/sec

C = Regression constant (see Tables 5-12 and 5-14)

DA = Drainage area, in $miles^2$

SL = Channel slope, in ft/mile, between points at 10 and 85 percent of the total channel length

LK = Lake area, in percent of the total

B_1, B_2, B_3 = Regression exponents (see Tables 5-12 and 5-14)

The general form for Region B is:

$$Q_T = C\ DA^{B_1}\ (LK + 0.6)^{B_2} \qquad (5\text{-}14)$$

where:

Q_T = Peak runoff rate for return period T, in ft^3/sec

C = Regression constant (see Table 5-13)

DA = Drainage area, in $miles^2$

LK = Lake area, in percent of the total

B_1, B_2 = Regression exponents (see Table 5-13)

The square of the multiple regression coefficient (R^2) and the standard error, in percent, are reported for each regression equation in Tables 5-12, 5-13, and 5-14. The R^2 value provides a measure of the equation's ability to account for variation in the dependent variable. The standard error is the standard deviation of the distribution of residuals about the regression line, i.e., 68 percent of estimated values are within one standard error and 95 percent are within two standard errors.

The range of applicability for the equations is presented in each of the three tables; they are not to be used outside these ranges. It should also be noted that, in areas of karst topography, some basins may contain closed depressions and sinkholes which do not contribute to direct surface runoff. Karst areas are more likely to be found in Region B. When the drainage area is determined from 7.5-minute topographic maps, any area containing sinkholes or depressions (noncontributing area) should be subtracted from the total drainage area. All basins used in the regression analysis were adjusted, as necessary, to contributing drainage area.

The regression equations are inapplicable for basins where manmade changes have a significant effect on flood runoff. Inappropriate basins are those influenced by regulation from

dams, reservoirs, levees, diversion canals, strip mines, and basins that have significant urban development.

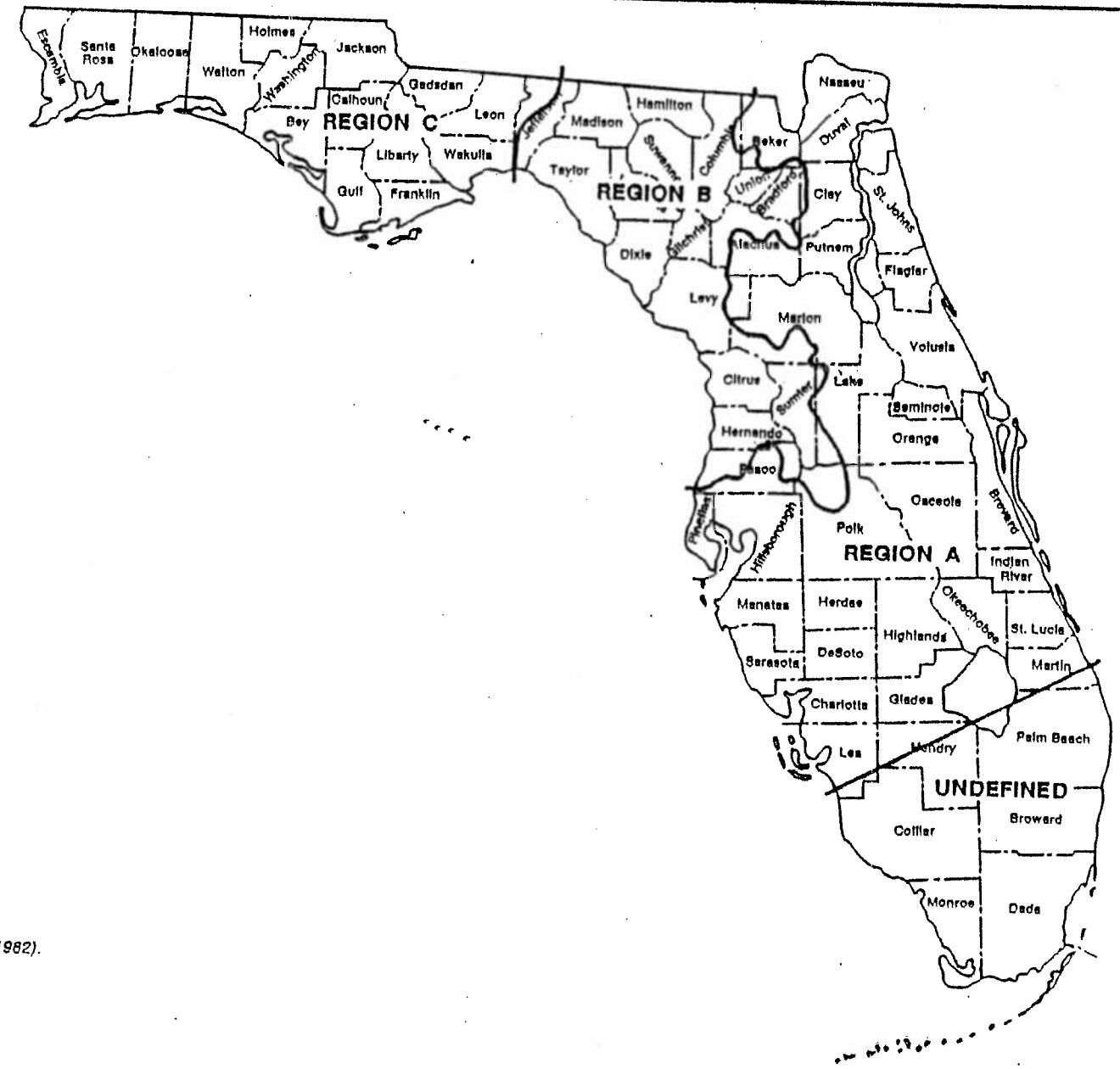
The following steps should be used to apply the USGS regression equations:

1. Locate the appropriate region on Figure 5-23.

2. Select Table 5-12 for Region A, Table 5-13 for Region B, or Table 5-14 for Region C. (Regression equations are not available for the undefined region shown in Figure 5-23.)

3. Determine the input parameters required for the equations selected in Step 2.

4. Calculate peak runoff rates for desired return periods.



Reference: Bridges (1982).

FIGURE 5-23
Regions for USGS Regression Equations for Natural Flow Conditions

Table 5-12
USGS REGRESSION EQUATIONS FOR
NATURAL FLOW CONDITIONS IN FLORIDA:
REGION A

Peak Runoff Equation	R^2	Standard Error in %
$Q_2 = 93.4\ DA^{0.756}\ SL^{0.268}\ (LK + 3)^{-0.803}$	0.868	42.6
$Q_5 = 192\ DA^{0.722}\ SL^{0.255}\ (LK + 3)^{-0.759}$	0.858	42.4
$Q_{10} = 274\ DA^{0.708}\ SL^{0.248}\ (LK + 3)^{-0.738}$	0.843	44.2
$Q_{25} = 395\ DA^{0.696}\ SL^{0.240}\ (LK + 3)^{-0.717}$	0.821	47.3
$Q_{50} = 496\ DA^{0.690}\ SL^{0.234}\ (LK + 3)^{-0.705}$	0.803	50.0
$Q_{100} = 609\ DA^{0.685}\ SL^{0.227}\ (LK + 3)^{-0.695}$	0.784	52.9
$Q_{200} = 779\ DA^{0.674}\ SL^{0.205}\ (LK + 3)^{-0.694}$	0.763	55.8
$Q_{500} = 985\ DA^{0.668}\ SL^{0.196}\ (LK + 3)^{-0.687}$	0.738	59.7

Q_T = Peak runoff rate for return period of T-years, in cfs

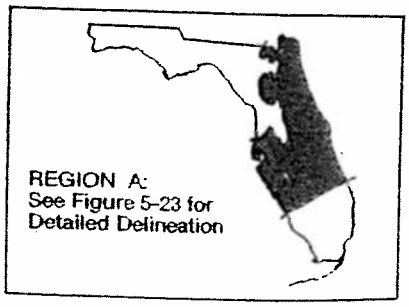
DA = Drainage area, in miles²

SL = Channel slope between points at 10 and 85 percent of total channel length, in ft/mile (minimum = 0.9)

LK = Lake area, in percent of total

Basin Characteristic	Range of Applicability
Drainage area	1,170 acres to 3,066 miles²
Slope	0.15 to 24.2 ft/miles
Lake area	0 to 28.16 %

Reference: Bridges (1982).



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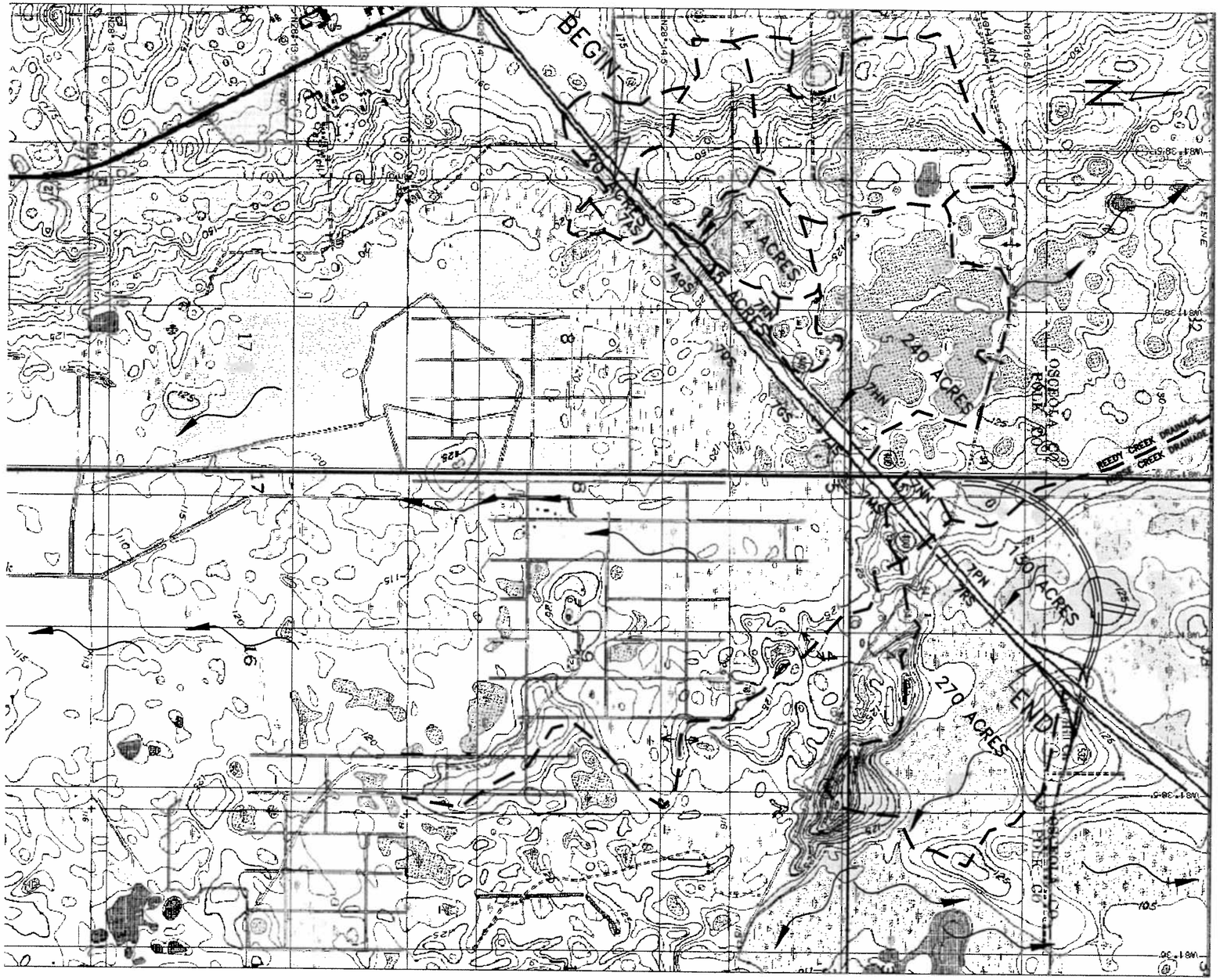

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1"= 2000'

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD:
Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel: (813) 977-3434
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

REGIONAL DRAINAGE MAP SR 400 (I-4) SEGMENT 7

FIGURE NO. 7

Appendix I

Floodplain Impact/ Compensation Analysis

Appendix I

APPENDIX I
Floodplain Impact/Compensation Analysis
I-4 Segment 7

Summary and Conclusions:

The proposed widening of I-4, Segment 7 occurs within areas designated by FEMA as Zone A (see Figure 3), areas in which flooding is expected to occur, but where the base flood (100 year) elevations have not been formally determined. In order to determine floodplain impacts for the proposed roadway widening it is necessary to estimate the base flood elevations (BFE's) and the Seasonal High Water elevations (SHW's) of the adjacent wetlands. The potential floodplain storage volume displaced by the project between these elevations must be compensated for or replaced with additional excavation elsewhere within the right of way so that the net displacement is zero or less.

The proposed values of wetland SHW for determining floodplain impact and required mitigation volumes were tabulated by David A. Landers, Senior Environmental Scientist with Scheda Ecological, and are shown on Figure 7. These SHW values have been verified in the field by Mark Hurst of SWFWMD.

The FEMA Zone A floodplains fall into two separate basins within the limits of the Segment 7 project:

- West of a ridgeline that generally follows CR54, but crosses I-4 approximately at Station 2123+00, the floodplains are approximately delineated by the el. 120 contour. Four of the wetlands (7AS, 7FN, 7GS, and 7NN) appear to be in isolated floodplains. However, most of the wetlands on each side of the highway appear to merge into an extensive area that can be considered a single floodplain linked by cross culverts under the highway that connect the wetlands on each side and in the median of the highway.

- East of the ridgeline, the floodplain is approximately delineated by the 115' contour. The single floodplain is linked by cross culverts under the highway that connect the wetlands on each side and in the median of the highway.

The proposed BFE is determined to be el. 120 west of Station 2123+00. The proposed BFE is determined to be el. 115 east of Station 2123+00. These values appear conservative relative to the established SHW's.

Six dry attenuation/treatment swales, or dry, shallow ponds, and a wet treatment pond are proposed for the project. A determination of the Seasonal High Ground Water (SHGW) elevations and native soil permeability's is critical to the design of these facilities. The Professional Services Industries, Inc. (PSI), the project geotechnical engineer, performed field tests to determine the Seasonal High Ground Water and permeability within the originally proposed stormwater treatment facility locations. The results of this geotechnical investigation can be found in Appendix J, Geotechnical Data. This information is used for the dry pond design and is also included in Appendix E, Table E.4, Summary of Existing Water Table and Estimated Seasonal High Water Table.

The data for the nearby SHGW's from the geotechnical engineer and the nearby SHW's from the Environmental Scientist were reviewed to finalize the locations and bottom elevations of the

stormwater facilities. The SHGW selected for the basis of design for each facility is summarized in Appendix E, Table E.5, Dry Pond Locations and Parameters, and in Appendix B, Table B.2.

Cross-sections of the roadway right of way, including the proposed improvements, have been developed to determine the impact of fill below the proposed BFE and to determine the compensation provided. (These Floodplain Analysis Cross Sections are included in a separate document along with the Drainage Area Maps.) The impacts and compensation volumes have been calculated in Table I.2, Floodplain Volume Impact and Compensation – Right Side, Table I.3, Floodplain Volume Impact and Compensation - Median, and Table I.4, Floodplain Volume Impact and Compensation – Left Side. This information is summarized in Table I.1, Floodplain Volume Impact and Compensation Summary.

(Note: The impact of fill and the compensation for such fill below the SHW, the impacts and compensation for the Historical Basin Storage, are also similarly accounted for in Tables I.5 through I.8.)

Approach to the Determination of Floodplain Impacts:

Available GIS mapping and orthographic mapping provided by SWFWMD, were reviewed. Wetland boundaries were overlaid with Soils and USGS 5' contours. The Flood Zone A, Wetland Boundaries, soils classifications, and contours shown in the GIS mapping were found generally consistent with each other in the area surrounding the project (see Figure 6).

Available Project mapping includes 1' contour topography (within the right of way) and the established jurisdictional wetland boundaries. The relationship between the contours and the jurisdictional wetland boundaries were reviewed.

Seasonal High Water elevations for surface water were determined from field observations in August and September 2002. The Project Environmental Scientist (Scheda Ecological Associates) located indicators of the seasonal high water elevation for surface water within or adjacent to the jurisdictional wetlands that have been identified in the project documents. The Project Surveyor determined exact locations of these points relative to the project vertical datum and horizontal datum.

The Project Geotechnical Consultant (PSI), using test pit, boring information, and existing ground elevations, determined seasonal High Water elevations in upland areas. The Project Surveyor determined exact locations of these points relative to the project vertical datum and horizontal datum.

An additional source of data reviewed for the Seasonal High Water Elevations were the estimates used by Tampa Bay Engineering in the previous design for the project. This data was used in general to supplement the other sources in locations where other data is sparse. This source of data was not heavily relied on. At several locations the estimates seemed unrealistically high, given the rapid draining soil conditions and close proximity to free water surface. Therefore these data are not included.

A partial copy of an FDOT historical drainage map from the original I-4 design was reviewed and found to support the estimates for seasonal high water. The approximate right of way and wetland names have been sketched on and included for reference as Figure I.1.

Analysis of Data:

Wetland 7AS

Approximate Station Limits: 2055 to 2058 Rt.

GIS Data: The Flood Zone A boundary (approx. 4.4 acres) is roughly the same size and shape of a closed el. 120 contour. Almost entirely within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Emergent-Persistent-Semipermanently Flooded Wetland of approximately 2.4 acres. The soils overlay indicates intermingling fingers of Tavares Fine Sand and Candler Sand. Both are Hydrologic Soil Group A. The Land –use Overlay indicates Wetland Marsh with the land surrounding it Wetland Forested Mixed. A second Flood Zone A, el. 120 contour, and wetland, all similar in size and character exists less than 100' south of this one. From the 5' contour USGS map overlay and the FEMA map overlay, there appears to be higher ground above el. 120 that isolate these two floodplains from the surface waters of the much larger floodplain to the east that includes Wetland 7AaS.

Project Mapping: The wetland boundary is generally between the el. 117 and el. 118 contours.

Wetland 7AaS

Approximate Station Limits: 2064 to 2072 Rt.

GIS Data: The Flood Zone A boundary (approx. 54 acres) is roughly within the el. 120 contour, although both the Flood Map and the USGS Map have not been updated to show the existing I-4 roadway. Generally within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Forested-Deciduous-Semipermanently Flooded Wetland (6 acres) adjacent to the project, and a mix of other wetland classifications within and beyond the floodplain to the south (approx. 69 acres). The soils overlay indicates Smyrna and Myakka Fine Sands, Hydrologic Soil Group B/D. The Land–use Overlay indicates Wetland Forested Mixed.

Project Mapping: The wetland boundary is generally between the el. 117 and el. 118 contours.

Wetland 7CM

Approximate Station Limits: 2070 Median.

This is a small remnant wetland within the median of the existing I-4. A culvert connects this wetland to Wetland 7AaS. The SHW and BFE are assumed to be equal to those for Wetland 7AaS.

Project Mapping: The wetland boundary is generally between the el. 118 and el. 119 contours.

Wetland 7DS

Approximate Station Limits: 2079 to 2088 Rt.

GIS Data: The Flood Zone A boundary is roughly within the el. 120 contour, although both the Flood Map and the USGS Map have not been updated to show the existing I-4 roadway. Generally within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Forested-Evergreen-Seasonally Flooded Wetland (approx. 19 acres) adjacent to the project and Palustrine-Forested-Needle leaved Evergreen-Temporarily-Flooded (approx. 32 acres) within and beyond

the floodplain to the south. The soils overlay indicates Pomello Fine Sand- HSG C, Smyrna and Myakka Fine Sands- HSG B/D, and Tavares Fine Sand- HSG A adjacent to the project from west to east. Smyrna and Myakka Fine Sands- HSG B/D are the primary soils for the entire wetland.

Project Mapping: The wetland boundary is generally between the el. 117 and el. 118 contours.

Wetland 7EM

Approximate Station Limits: 2078 to 2081 Median

This is a small remnant wetland within the median of the existing I-4. A culvert connects this wetland to Wetland 7DS. The SHW and BFE are assumed to be equal to those for Wetland 7DS.

Project Mapping: The wetland boundary is generally between the el. 118 and el. 119 contours.

Wetland 7FN

Approximate Station Limits: 2080 to 2081 Lt.

GIS Data: The Flood Zone A boundary (approx. 2 acres) is roughly the same size and shape as a closed el. 120 contour. Almost entirely within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Forested-Deciduous-Semipermanently Flooded Wetland of 1.2 acres. The soils overlay indicates the wetland bottom to be Samsula Muck- HSG B/D.

Project Mapping: The wetland boundary is generally between the el. 118 and el. 119 contours.

Wetland 7GS

Approximate Station Limits: 2092 to 2101 Rt.

GIS Data: The Flood Zone A boundary (approx. 5 acres) is roughly the same size and shape as a closed el. 120 contour. Almost entirely within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Emergent-Persistent-Intermittently Exposed Wetland of 3 acres. The soils overlay indicates the wetland bottom to be Basinger Mucky FineSand/Depressional- HSG D, and the surrounding upland to be Tavares Fine Sand- HSG A.

Project Mapping: The wetland boundary is close to the el. 118 contour.

Wetland 7HN

Approximate Station Limits: 2097 to 2111 Lt.

GIS Data: The Flood Zone A boundary (approx. 200 acres) is roughly the same size and shape as the el. 120 contour. Almost entirely within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Emergent-Persistent-Intermittently Exposed Wetland of approx. 110 acres. The soils overlay indicates the wetland bottom to be Samsula Muck- HSG B/D, and the surrounding upland to be Tavares Fine Sand- HSG A.

Project Mapping: The wetland boundary is close to the el. 118 contour.

Wetland 7IM

Approximate Station Limits: 2097 to 2100 Median

This is a small remnant wetland within the median of the existing I-4. A culvert connects this wetland to Wetland 7GS. The SHW and BFE are assumed to be equal to those for Wetland 7GS.

Project Mapping: The wetland boundary is generally between the el. 118 and el. 119 contours.

Wetland 7JS

Approximate Station Limits: 2104 to 2108 Rt.

GIS Data: The Flood Zone A boundary does not extend to the roadway. The wetland extends beyond the Flood Zone A as mapped. Both the wetland and the flood zone are generally within the el. 120 contour, but the flood zone boundary conflicts with the topography east of the wetland. Within the el. 120 contour lies a Palustrine-Emergent-Persistent-Intermittently Exposed Wetland of 72 acres. The soils overlay indicates the wetland bottom to be Basinger Mucky FineSand/Depressional- HSG D, and the surrounding upland to be Tavares Fine Sand- HSG A.

Project Mapping: The wetland boundary is close to the el. 118 contour.

Wetland 7KM

Approximate Station Limits: 2105 to 2108 Median

This is a small remnant wetland within the median of the existing I-4. A culvert connects this wetland to Wetland 7JS. The SHW and BFE are assumed to be equal to those for Wetland 7JS.

Project Mapping: The wetland boundary is generally between the el. 118 and el. 119 contours.

Wetland 7MS

Approximate Station Limits: 2118 to 2120 Rt

GIS Data: The Flood Zone A boundary is a finger of a very large floodplain area, roughly the same size and shape as the el. 120 contour. Almost entirely within the Flood Zone A boundary and the el. 120 contour lies a Palustrine-Emergent-Persistent-Semipermanently Flooded Wetland. The soils overlay indicates the wetland bottom to be Samsula Muck- HSG B/D and Smyrna and Myakka Fine Sands- HSG B/D. The surrounding upland is comprised of Tavares Fine Sand- HSG A to the south and Candler Sand-HSG A to the north.

Project Mapping: The wetland boundary is close to the el. 118 contour.

Wetland 7NN

Approximate Station Limits: 2121 to 2122 Lt

GIS Data: There is no official Flood Zone A boundary associated with this small wetland. However, almost entirely within the el. 120 contour lies a Palustrine-Emergent-Persistent-Semipermanently Flooded Wetland. The soils overlay indicates the wetland bottom to be Smyrna

and Myakka Fine Sands- HSG B/D. The surrounding upland is comprised of Tavares Fine Sand-HSG A to the south and Candler Sand-HSG A to the north.

Project Mapping: The wetland boundary is close to the el. 118 contour.

Wetland 7PN

Approximate Station Limits: 2133 to 2160 (and beyond) Lt

GIS Data: The Flood Zone boundary is mapped above the el. 115 contour, but the mapping does not correspond well with any of the contours. The Flood Zone on the opposite side of I-4 is mapped approximately following the el. 115 contour. There are three flow connection paths to the el. 110 contour: 800' N; 600' NE; or 1100' SE. The wetland mapping indicates Palustrine-Forested-Broad Leaved Deciduous/Mixohaline (Brackish) -Seasonally Flooded Wetland parallel to I-4 (42 acres), contiguous with Palustrine-Forested-Evergreen-Saturated Wetland to the north (60 acres).

Project Mapping: The wetland boundary is generally between the el. 113 and el. $116^{+/-}$ contours, not clearly following any specific contour.

Wetland 7RS

Approximate Station Limits: 2137 to 2160 (and beyond) Rt

GIS Data: The Flood Zone boundary is mapped roughly following the el. 115 contour. The wetland mapping indicates Palustrine-Forested-Broad Leaved Deciduous/Mixohaline (Brackish) - Seasonally Flooded Wetland parallel to I-4 (approx. 920 acres).

Project Mapping: The wetland boundary generally is near the el. 115 contour.

Wetland 7SN

Approximate Station Limits: 2158 to 2160 (and beyond) Lt

GIS Data: The data does not have detail sufficient to distinguish Wetland 7SN from Wetland 7PN.

Project Mapping: The wetland boundary generally is near the el. 114 contour. This is a small remnant wetland within the interchange of the existing I-4 and CR 532. A culvert under the westbound on-ramp connects this wetland to Wetland 7PN. The SHW and BFE are assumed to be equal to those for Wetland 7PN.

TABLE I.1 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION SUMMARY

SUMMARY

West Basin (120' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Vol. (CF)	Encroachment Vol. (Acre-ft)	Compensation Vol. (Acre-ft)
Right side	25182	109701	0.58	2.52
Median	13340	19070	0.31	0.44
Left side	40070	88685	0.92	2.04
Sub_total	**78592**	**217456**	**1.80**	**4.99**

East Basin (115' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Accumulated Vol. (CF)	Encroachment Accumulated Vol. (Acre-ft)	Compensation Accumulated Vol. (Acre-ft)
Right side	34336	52104	0.79	1.20
Median	14920	860	0.34	0.02
Left side	2280	14210	0.05	0.33
Sub_total	**51536**	**67174**	**1.18**	**1.54**

Total	**130128**	**284630**	**2.99**	**6.53**

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2053	0.0			0.0			120.0	116.9	WL-7AS
2054	0.0	0		22.0	1100				
2055	0.0	0		42.6	3230				
2056	0.0	0		53.1	4785				
Sub-sum		**0**	**0**		**9115**	**9115**			
2056	0.0			53.1			120.0	117.2	WL-7AaS
2057	0.0	0		3.8	2845				
2058	0.0	0		35.7	1975				
2059	3.1	155		49.8	4275				
2060	3.2	315		60.0	5490				
2061	4.0	360		41.1	5055				
2062	4.9	445		82.5	6180				
2063	3.7	430		77.1	7980				
2064	2.3	300		0.0	3855				
2065	0.4	135		0.0	0				
2066	3.6	200		0.0	0				
2067	18.8	1120		0.0	0				
2068	23.7	2125		0.0	0				
2069	14.5	1910		0.0	0				
2070	0.0	725		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		17.6	880				
2073	0.0	0		14.5	1605				
2074	0.0	0		8.6	1155				
Sub-sum		**8220**	**8220**		**41295**	**50410**			
2074	0.0			8.6			120.0	117.5	WL-7DS
2075	0.0	0		14.5	1155				
2076	0.0	0		27.0	2075				
2077	0.3	15		38.8	3287.5				
2078	0.1	20		77.2	5795.5				
2079	4.1	210		41.2	5918				
2080	6.8	545		0.0	2060				
2081	0.0	341		9.0	450				
2082	0.0	1		9.0	900				
2083	11.1	555		0.0	450				
2084	17.4	1425		0.0	0				
2085	0.1	875		12.7	635				
2086	3.4	175		0.0	635				
2087	3.9	365		0.0	0				
2088	0.0	195		16.5	825				
2089	0.0	0		9.0	1275				
2090	0.0	0		3.5	625				
2091	0.0	0		80.7	4210				
Sub-sum		**4722**	**12942**		**30296**	**80706**			

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2091	0.0			80.7			120.0	117.6	WL-7GS
2092	0.0	0		77.5	7910				
2093	9.4	470		0.0	3875				
2094	12.2	1080		0.0	0				
2095	15.0	1360		0.0	0				
2096	9.1	1205		0.0	0				
2097	7.6	835		0.0	0				
2098	4.8	620		0.0	0				
2099	8.4	660		0.0	0				
2100	1.8	510		4.9	245				
2101	0.0	90		4.4	465				
2102	0.0	0		6.6	550				
2103	0.0	0		9.0	780				
Sub-sum		**6830**	**19772**		**13825**	**94531**			
2103	0.0			9.0			120.0	117.0	WL-7JS
2104	0.8	40		10.0	950				
2105	8.7	475		0.0	500				
2106	12.8	1075		0.0	0				
2107	9.0	1090		0.0	0				
2108	0.0	450		24.5	1225				
2109	0.0	0		17.2	2085				
2110	0.0	0		14.9	1605				
2111	0.0	0		12.7	1380				
2112	0.0	0		10.6	1165				
2113	0.0	0		8.6	960				
2114	0.0	0		6.7	765				
2115	0.0	0		4.9	580				
Sub-sum		**3130**	**22902**		**11215**	**105746**			
2115	0.0			4.9			120.0	117.8	WL-7MS
2116	0.0	0		3.2	405				
2117	0.0	0		1.6	240				
2118	5.2	260		0.0	80				
2119	15.2	1020		0.0	0				
2120	2.4	880		32.3	1615				
2121	0.0	120		0.0	1615				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**2280**	**25182**		**3955**	**109701**			

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0			115.0	113.8	WL-7RS
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		3.4	170				
2134	0.0	0		37.2	2030				
2135	0.0	0		95.5	6635				
2136	0.0	0		93.6	9455				
2137	0.1	5		11.8	5270				
2138	3.7	190		10.2	1100				
2139	4.3	400		10.4	1030				
2140	4.8	455		3.0	670				
2141	4.2	450		8.3	565				
2142	3.8	400		6.2	725				
2143	2.4	310		6.2	620				
2144	0.1	125		3.9	505				
2145	1.0	55		1.9	290				
2146	1.8	140		0.0	95				
2147	0.0	90		0.0	0				
2148	0.0	0		0.0	0				
2149	1.5	75		0.0	0				
2150	2.4	195		0.0	0				
2151	1.0	170		0.0	0				
2152	0.0	50		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Pond 7-7		31226			22944				
Sub-sum		**34336**	**34336**		**52104**	**52104**			

TABLEI.2 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland

Pond 7-7 floodplain impacts calculated from measured areas (via CADD) along contours and outside toe-of-slope

Measured area for contour =	115	1.067 ac	
Measured total area for contour =	114	0.231 ac	
Incremental impact vol. =			28270 cf
Measured area for contour =	114	0.166 ac	
Toe of slope @	113.3	0 ac	
Incremental impact vol. =			2531 cf
Measured area for contour =	114	0.065 ac	
Toe of slope @	113.7	0 ac	
Incremental impact vol. =			425 cf
Total impact vol. =			31226 cf

Pond 7-7 floodplain compensation calculated from volume between 25yr-24hr Peak Stage (DHW) and Floodplain (BFE):

BFE =	115.00 ft		
25yr-24hr Peak Stage (DHW) =	114.70 ft		
depth=	0.30 ft		
*Pond Area @ DHW Stage 114.70 =		75852 sf	
*Pond Area @ BFE Stage 115.00 =		77105 sf	
*Average Pond Area =		76479 sf	
Compensatory Storage within Pond 7-7 =			22944 cf

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2051	0.0			0.0			120.0	116.9	WL-7CM
2052	0.0	0		0.0	0				
2053	0.0	0		0.0	0				
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0				
2056	0.0	0		0.0	0				
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.1	5		0.0	0				
2066	1.4	75		0.0	0				
2067	7.6	450		0.0	0				
2068	37.9	2275		0.0	0				
2069	30.2	3405		0.0	0				
2070	0.0	1510		0.0	0				
2071	0.0	0		0.0	0				
Sub-sum		**7720**	**7720**		**0**	**0**			
2071	0.0			0.0			120.0		N/A
2072	0.0	0		0.0	0				
Sub-sum		**0**	**7720**		**0**	**0**			
2079	0.0	0		0.0	0		120.0	117.5	WL-7EM
2080	1.4	70		0.0	0				
2081	0.0	70		0.0	0				
Sub-sum		**140**	**7860**		**0**	**0**			

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2081	0.0			0.0			120.0		N/A
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	0.0	0		0.0	0				
2085	0.0	0		0.0	0				
2086	0.0	0		0.0	0				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	22.6	1130		0.0	0				
2092	14.9	1875		0.0	0				
2093	1.2	805		0.0	0				
2094	0.0	60		0.0	0				
2095	0.0	0		0.0	0				
Sub-sum		**3870**	**11730**		**0**	**0**			
2095	0.0			0.0			120.0	117.6	WL-7IM
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		0.0	0				
2099	3.1	155		0.0	0				
2100	11.3	720		20.0	1000				
Sub-sum		**875**	**12605**		**1000**	**1000**			
2100	11.3			20.0			120.0		N/A
2101	0.0	565		41.9	3095				
2102	0.0	0		42.8	4235				
2103	0.0	0		43.1	4295				
2104	0.0	0		42.9	4300				
Sub-sum		**565**	**13170**		**15925**	**16925**			
2104	0.0			42.9			120.0	117.0	WL-7KM
2105	0.0	0		0.0	2145				
2106	1.7	85		0.0	0				
2107	0.0	85		0.0	0				
Sub-sum		**170**	**13340**		**2145**	**19070**			

TABLE I.3 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2131	0.0	0		0.0	0		115.0	113.8	WL-7RS
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.4	20		0.0	0				
2136	1.3	85		0.0	0				
2137	2.3	180		0.0	0				
2138	3.8	305		0.0	0				
2139	6.0	490		0.0	0				
2140	3.8	490		0.0	0				
2141	6.7	525		0.0	0				
2142	7.4	705		0.0	0				
2143	9.8	860		0.0	0				
2144	10.0	990		0.0	0				
2145	14.7	1235		0.0	0				
2146	22.8	1875		0.0	0				
2147	0.0	1140		0.0	0				
2148	3.8	190		2.7	135				
2149	0.7	225		5.9	430				
2150	10.4	555		0.0	295				
2151	6.8	860		0.0	0				
2152	11.2	900		0.0	0				
2153	8.6	990		0.0	0				
2154	10.0	930		0.0	0				
2155	8.4	920		0.0	0				
2156	0.3	435		0.0	0				
2157	0.0	15		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**14920**	**14920**		**860**	**860**			

TABLE I.4 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2061	0.0			0.0			120.0	117.2	WL-7AaS
2062	0.0	0		0.0	0				
2063	0.0	0		0.5	26.5				
2064	0.0	0		2.5	149				
2065	0.0	0		5.0	371				
2066	0.0	0		8.0	648.5				
2067	0.0	0		11.6	978.5				
2068	0.0	0		15.7	1362.5				
2069	0.0	0		20.8	1824				
2070	0.0	0		0.0	1040				
2071	0.0	0		27.9	1395				
2072	0.0	0		17.6	2275				
2073	0.0	0		14.5	1605				
2074	0.0	0		6.1	1030				
Sub-sum		**0**	**0**		**12705**	**12705**			
2074	0.0			6.1			120.0	119.1	WL-7FN
2075	0.0	0		7.6	685				
2076	0.0	0		9.2	840				
2077	0.8	40		10.8	997.5				
2078	0.0	40		12.6	1167.5				
2079	0.0	0		16.7	1465				
2080	0.0	0		5.0	1085				
2081	13.2	660		0.0	250				
2082	0.0	660		0.0	0				
Sub-sum		**1400**	**1400**		**6490**	**19195**			
2093	0.0			0.0			120	116.8	WL-7HN
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
2096	0.0	0		3.6	180				
2097	0.0	0		10.8	720				
2098	0.0	0		133.3	7205				
2099	0.0	0		84.0	10865				
2100	0.0	0		107.9	9595				
2101	0.0	0		66.8	8735				
2102	32.8	1640		0.0	3340				
2103	65.3	4905		0.0	0				
2104	57.2	6125		0.0	0				
2105	49.1	5315		0.0	0				
2106	50.5	4980		0.0	0				
2107	52.2	5135		0.0	0				
2108	50.8	5150		0.0	0				
2109	24.6	3770		0.0	0				
Sub-sum		**37020**	**38420**		**40640**	**59835**			
2109	24.6			0.0			120.0	117.5	WL-7NN
2110	4.2	1440		0.0	0				
2111	0.0	210		24.3	1215				
2112	0.0	0		24.3	2430				
2113	0.0	0		24.3	2430				
2114	0.0	0		24.3	2430				
2115	0.0	0		24.3	2430				
2116	0.0	0		24.3	2430				
2117	0.0	0		24.3	2430				
2118	0.0	0		24.3	2430				
2119	0.0	0		24.3	2430				
2120	0.0	0		24.3	2430				
2121	0.0	0		45.5	3490				
2122	0.0	0		0.0	2275				
2123	0.0	0		0.0	0				
Sub-sum		**1650**	**40070**		**28850**	**88685**			

TABLE I.4 FLOODPLAIN VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0			115.0	114.1	WL-7PN
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		23.3	1165				
2134	0.0	0		20.9	2210				
2135	0.0	0		20.9	2090				
2136	0.6	30		26.2	2355				
2137	0.6	60		30.5	2835				
2138	0.5	55		9.4	1995				
2139	0.8	65		0.0	470				
2140	1.4	110		0.0	0				
2141	1.4	140		0.0	0				
2142	1.9	165		0.0	0				
2143	2.5	220		0.0	0				
2144	3.5	300		0.0	0				
2145	3.8	365		0.0	0				
2146	3.1	345		0.0	0				
2147	0.0	155		0.0	0				
2148	0.5	25		0.0	0				
2149	2.2	135		0.0	0				
2150	0.0	110		1.8	90				
2151	0.0	0		1.1	145				
2152	0.0	0		2.0	155				
2153	0.0	0		3.6	280				
2154	0.0	0		2.4	300				
2155	0.0	0		0.0	120				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**2280**	**2280**		**14210**	**14210**			

TABLE I.5 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION SUMMARY

SUMMARY

West Basin (120' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Vol. (CF)	Encroachment Vol. (Acre-ft)	Compensation Vol. (Acre-ft)
Right side	1750	5170	0.04	0.12
Median	0	0	0.00	0.00
Left side	9710	11870	0.22	0.27
Sub_total	**11460**	**17040**	**0.26**	**0.39**

East Basin (115' Floodplain)	Encroachment Accumulated Vol. (CF)	Compensation Accumulated Vol. (CF)	Encroachment Accumulated Vol. (Acre-ft)	Compensation Accumulated Vol. (Acre-ft)
Right side	90	370	0.00	0.01
Median	550	900	0.01	0.02
Left side	380	1600	0.01	0.04
Sub_total	**1020**	**2870**	**0.02**	**0.07**

Total	**12480**	**19910**	**0.29**	**0.46**

TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2053	0.0			0.0			120.0	116.9	WL-7AS
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0				
2056	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2056	0.0			0.0			120.0	117.2	WL-7AaS
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0				
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		0.0	0				
2073	0.0	0		0.0	0				
2074	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2074	0.0			0.0			120.0	117.5	WL-7DS
2075	0.0	0		0.0	0				
2076	0.0	0		0.0	0				
2077	0.0	0		0.0	0				
2078	0.0	0		0.0	0				
2079	0.0	0		0.0	0				
2080	0.0	0		0.0	0				
2081	0.0	0		0.0	0				
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	1.0	50		0.0	0				
2085	0.0	50		6.0	300				
2086	0.0	0		0.0	300				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	0.0	0		10.9	545				
Sub-sum		**100**	**100**		**1145**	**1145**			

TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2091	0.0			10.9			120.0	117.6	WL-7GS
2092	0.0	0		19.3	1510				
2093	0.4	20		0.0	965				
2094	1.0	70		0.0	0				
2095	5.3	315		0.0	0				
2096	0.4	285		0.0	0				
2097	0.0	20		0.0	0				
2098	0.0	0		0.0	0				
2099	0.4	20		0.0	0				
2100	0.0	20		0.0	0				
2101	0.0	0		0.0	0				
2102	0.0	0		0.0	0				
2103	0.0	0		0.0	0				
Sub-sum		**750**	**850**		**2475**	**3620**			
2103	0.0			0.0			120.0	117.0	WL-7JS
2104	0.0	0		0.0	0				
2105	0.0	0		0.0	0				
2106	0.0	0		0.0	0				
2107	0.0	0		0.0	0				
2108	0.0	0		0.0	0				
2109	0.0	0		0.0	0				
2110	0.0	0		0.0	0				
2111	0.0	0		0.0	0				
2112	0.0	0		0.0	0				
2113	0.0	0		0.0	0				
2114	0.0	0		0.0	0				
2115	0.0	0		0.0	0				
Sub-sum		**0**	**850**		**0**	**3620**			
2115	0.0			0.0			120.0	117.8	WL-7MS
2116	0.0	0		0.0	0				
2117	0.0	0		0.0	0				
2118	0.0	0		0.0	0				
2119	9.0	450		0.0	0				
2120	0.0	450		15.5	775				
2121	0.0	0		0.0	775				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**900**	**1750**		**1550**	**5170**			

TABLEI.6 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - RIGHT SIDE

RIGHT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremental Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0			115.0	113.8	WL-7RS
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0				
2144	0.0	0		1.9	95				
2145	0.0	0		1.8	185				
2146	0.3	15		0.0	90				
2147	0.0	15		0.0	0				
2148	0.0	0		0.0	0				
2149	0.3	15		0.0	0				
2150	0.0	15		0.0	0				
2151	0.3	15		0.0	0				
2152	0.0	15		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**90**	**90**		**370**	**370**			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2051	0.0			0.0			120.0	116.9	WL-7CM
2052	0.0	0		0.0	0				
2053	0.0	0		0.0	0				
2054	0.0	0		0.0	0				
2055	0.0	0		0.0	0				
2056	0.0	0		0.0	0				
2057	0.0	0		0.0	0				
2058	0.0	0		0.0	0				
2059	0.0	0		0.0	0				
2060	0.0	0		0.0	0				
2061	0.0	0		0.0	0				
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0				
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2071	0.0			0.0			120.0		N/A
2072	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2079	0.0	0		0.0	0		120.0	117.5	WL-7EM
2080	0.0	0		0.0	0				
2081	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
2081	0.0			0.0			120.0		N/A
2082	0.0	0		0.0	0				
2083	0.0	0		0.0	0				
2084	0.0	0		0.0	0				
2085	0.0	0		0.0	0				
2086	0.0	0		0.0	0				
2087	0.0	0		0.0	0				
2088	0.0	0		0.0	0				
2089	0.0	0		0.0	0				
2090	0.0	0		0.0	0				
2091	0.0	0		0.0	0				
2092	0.0	0		0.0	0				
2093	0.0	0		0.0	0				
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2095	0.0			0.0			120.0	117.6	WL-7IM
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		0.0	0				
2099	0.0	0		0.0	0				
2100	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2100	0.0			0.0			120.0		N/A
2101	0.0	0		0.0	0				
2102	0.0	0		0.0	0				
2103	0.0	0		0.0	0				
2104	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2104	0.0			0.0			120.0	117.0	WL-7KM
2105	0.0	0		0.0	0				
2106	0.0	0		0.0	0				
2107	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			

TABLE I.7 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - MEDIAN

MEDIAN									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0				
2144	0.0	0		0.0	0				
2145	0.5	25		0.0	0				
2146	4.5	250		0.0	0				
2147	0.0	225		0.0	0		115.0	113.8	WL-7RS
2148	0.5	25		4.3	215				
2149	0.0	25		4.7	450				
2150	0.0	0		0.0	235				
2151	0.0	0		0.0	0				
2152	0.0	0		0.0	0				
2153	0.0	0		0.0	0				
2154	0.0	0		0.0	0				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**550**	**550**		**900**	**900**			

TABLE I.8 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
WEST BASIN									
2061	0.0			0.0			120.0	117.2	WL-7AaS
2062	0.0	0		0.0	0				
2063	0.0	0		0.0	0				
2064	0.0	0		0.0	0				
2065	0.0	0		0.0	0				
2066	0.0	0		0.0	0				
2067	0.0	0		0.0	0				
2068	0.0	0		0.0	0				
2069	0.0	0		0.0	0				
2070	0.0	0		0.0	0				
2071	0.0	0		0.0	0				
2072	0.0	0		0.0	0				
2073	0.0	0		0.0	0				
2074	0.0	0		0.0	0				
Sub-sum		**0**	**0**		**0**	**0**			
2074	0.0			0.0			120.0	119.1	WL-7FN
2075	0.0	0		0.0	0				
2076	0.0	0		0.0	0				
2077	0.0	0		0.0	0				
2078	0.0	0		0.0	0				
2079	0.0	0		13.0	650				
2080	0.0	0		13.5	1325				
2081	8.6	430		0.0	675				
2082	0.0	430		0.0	0				
Sub-sum		**860**	**860**		**2650**	**2650**			
2093	0.0			0.0			120	116.8	WL-7HN
2094	0.0	0		0.0	0				
2095	0.0	0		0.0	0				
2096	0.0	0		0.0	0				
2097	0.0	0		0.0	0				
2098	0.0	0		29.1	1455				
2099	0.0	0		13.6	2135				
2100	0.0	0		25.4	1950				
2101	0.0	0		24.1	2475				
2102	9.7	485		0.0	1205				
2103	21.2	1545		0.0	0				
2104	11.9	1655		0.0	0				
2105	15.5	1370		0.0	0				
2106	12.2	1385		0.0	0				
2107	9.0	1060		0.0	0				
2108	6.8	790		0.0	0				
2109	2.2	450		0.0	0				
Sub-sum		**8740**	**9600**		**9220**	**11870**			
2109	2.2			0.0			120.0	117.5	WL-7NN
2110	0.0	110		0.0	0				
2111	0.0	0		0.0	0				
2112	0.0	0		0.0	0				
2113	0.0	0		0.0	0				
2114	0.0	0		0.0	0				
2115	0.0	0		0.0	0				
2116	0.0	0		0.0	0				
2117	0.0	0		0.0	0				
2118	0.0	0		0.0	0				
2119	0.0	0		0.0	0				
2120	0.0	0		0.0	0				
2121	0.0	0		0.0	0				
2122	0.0	0		0.0	0				
2123	0.0	0		0.0	0				
Sub-sum		**110**	**9710**		**0**	**11870**			

TABLE I.8 HISTORIC BASIN STORAGE VOLUME IMPACTS AND COMPENSATION - LEFT SIDE

LEFT SIDE									
Encroachment				Compensation					
Staion	Cross section area (SF)	Incremented Vol. (CF)	Accumulated Vol. (CF)	Area (SF)	Vol. (CF)	Accumulated Vol. (CF)	BFE (FT)	SHW (FT)	Associated wetland
EAST BASIN									
2123	0.0			0.0			115.0	114.1	WL-7PN
2124	0.0	0		0.0	0				
2125	0.0	0		0.0	0				
2126	0.0	0		0.0	0				
2127	0.0	0		0.0	0				
2128	0.0	0		0.0	0				
2129	0.0	0		0.0	0				
2130	0.0	0		0.0	0				
2131	0.0	0		0.0	0				
2132	0.0	0		0.0	0				
2133	0.0	0		0.0	0				
2134	0.0	0		0.0	0				
2135	0.0	0		0.0	0				
2136	0.0	0		0.0	0				
2137	0.0	0		0.0	0				
2138	0.0	0		0.0	0				
2139	0.0	0		0.0	0				
2140	0.0	0		0.0	0				
2141	0.0	0		0.0	0				
2142	0.0	0		0.0	0				
2143	0.0	0		0.0	0				
2144	0.0	0		0.0	0				
2145	0.7	35		0.0	0				
2146	1.4	105		0.0	0				
2147	0.0	70		0.0	0				
2148	0.0	0		0.0	0				
2149	1.7	85		0.0	0				
2150	0.0	85		5.2	260				
2151	0.0	0		3.1	415				
2152	0.0	0		6.3	470				
2153	0.0	0		1.4	385				
2154	0.0	0		0.0	70				
2155	0.0	0		0.0	0				
2156	0.0	0		0.0	0				
2157	0.0	0		0.0	0				
2158	0.0	0		0.0	0				
2159	0.0	0		0.0	0				
2160	0.0	0		0.0	0				
Sub-sum		**380**	**380**		**1600**	**1600**			

Appendix J

Geotechnical Data

Appendix J

PSI Information To Build On
Engineering • Consulting • Testing

October 2, 2002

Jacobs Engineering
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647

Attention: Mr. Tom Fulton, P.E.

RE: Seasonal High Groundwater Table
I-4 Design Build Section 3
Interstate 4 (S.R. 400) from East of C.R. 557 to the Osceola County Line
Polk County, Florida
F.P.N. 201204-1
PSI Project No. 775-25283

Dear Mr. Fulton:

Pursuant to your request, Professional Services Industries, Inc. (PSI) has performed geotechnical services to estimate seasonal high groundwater table depths along the segment 7 roadway alignment for the above referenced project.

A total of twelve (12) hand auger borings were performed at locations selected along the proposed roadway alignment and proposed ponds to estimate the seasonal high groundwater levels. These borings were advanced in 6 inch increments to depths ranging from approximately 6 to 10 feet below the existing ground surface at offsets ranging from approximately C/L to 140 feet from the survey baseline of I-4. The subsurface soils encountered in the borings generally consisted of fine sands to slightly silty fine sands (A-3) from the existing ground surface to the boring termination depths. The groundwater table, when encountered, was measured to range from approximately 2.3 to 3.3 feet below the existing ground surface. The groundwater table was not encountered at half of the locations where borings were performed to depths of 5 to 10 feet below existing grades.

The boring locations and elevations were determined by the project surveyor, Boyer-Singleton & Associates, Inc. after the borings were completed. The seasonal high groundwater tables were estimated from a review of the soil samples recovered, water table measurements, USDA SCS Soil Survey and the surrounding topography. The results of our evaluation are summarized on **Table 1**.

We appreciate the opportunity of working with Jacobs Engineering on this project. If you need additional information or have any questions, please do not hesitate to contact our office.

Sincerely,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Jeremy A. Sewell, E.I.
Project Engineer

Ching L. Kuo, Ph.D., P.E.
Chief Engineer
Florida License No. 36115

JAS/CLK/jas:77525283/SHGWT/Seg7_SHGWT

Attachments: Table 1 – Summary of Existing Water Table and Seasonal High Water Table

SUMMARY OF EXISTING WATER TABLE AND ESTIMATED SEASONAL HIGH WATER TABLE
S.R. 400 (I-4), DESIGN BUILD SECTION 3, SEGMENT 7
POLK COUNTY, FLORIDA
F.P.N. 201204-1
PSI PROJECT NO. 775-25283

BORING LOCATION B/L SURVEY		EXISTING GROUND SURFACE ELEVATION (feet, NGVD)	APPROXIMATE GROUNDWATER TABLE		ESTIMATED SEASONAL HIGH GROUNDWATER	
STATION	OFFSET		DEPTH (feet)	ELEVATION (feet, NGVD)	DEPTH (feet)	ELEVATION (feet, NGVD)
2064+00	C/L	123.89	>5[1]	>118.9	6	117.9
2092+00	C/L	119.43	2.3	117.1	1.5	117.9
2112+00	C/L	119.91	2.6	117.3	1.5	118.4
2057+00	C/L	125.60	>7[1]	>118.6	7	118.6
2085+00	C/L	126.01	>6[1]	>120	7.5	118.5
2102+00	C/L	121.72	>5[1]	>116.7	5.5	116.2
2127+00	135.78 LT	129.25	>10[1]	>119.2	11	118.3
2127+00	140.18 RT	128.95	>10[1]	>119	10	119
2137+00	C/L	114.77	3.3	111.5	1.5	113.3
2142+00	C/L	114.67	3.2	111.5	2	112.7
2150+00	C/L	114.01	2.5	111.5	2	112
2155+00	C/L	114.36	2.9 *	111.5	2	112.4

[1] Groundwater table was not encountered within the depth of boring performed.

* Existing ground surface elevation provided by Boyer-Singleton & Associates, Inc.

PSI Information To Build On
Engineering • Consulting • Testing

October 21, 2002

Jacobs Engineering
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647

Attention: Mr. Tom Fulton, P.E.

RE: Permeability and DRI Test Results
I-4 Design Build Section 3
Interstate 4 (S.R. 400) from East of C.R. 557 to the Osceola County Line
Polk County, Florida
F.P.N. 201204-1
PSI Project No. 775-25283

Dear Mr. Fulton:

Pursuant to your request, Professional Services Industries, Inc. (PSI) has performed constant head field permeability and Double Ring Infiltration (DRI) testing along the segment 7 roadway alignment for the above referenced project.

A total of three (3) DRI tests and five (5) constant head field permeability tests were performed at locations within the swale areas. The DRI and permeability tests were performed at depths ranging from 1 to 2.5 feet and 4 to 10 feet below existing grades, respectively. The tests were performed in fine to slightly silty fine sands (A-3). The DRI test results varied from approximately 9.4 to 16.6 feet per day. The constant head field permeability test results varied from approximately 9.3 to greater than 20 feet per day. The results of our evaluation are summarized on the attached **Tables 1 and 2**.

We appreciate the opportunity of working with Jacobs Engineering on this project. If you need additional information or have any questions, please do not hesitate to contact our office.

Sincerely,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Jeremy A. Sewell, E.I.
Project Engineer

10/21/02
Ching L. Kuo, Ph.D., P.E.
Chief Engineer
Florida License No. 36115

JAS/CLK/jas:77525283/SHGWT/Seg7_PercTests

Attachments: Tables 1 and 2

TABLE 1
DOUBLE RING INFILTRATION TEST RESULTS
S.R. 400 (I-4), DESIGN BUILD SECTION 3
POLK COUNTY, FLORIDA
F.P.N. 201204-1
PSI PROJECT NO. 775-25283

TEST NO.	TEST DEPTH (feet)	STATION AND OFFSET B/L SURVEY S.R. 400 (I-4) (feet)	INFILTRATION RATE (ft/day)
DRIT-1	2	2064+00, 20 RT	16.6
DRIT-2	1	2092+00, B/L	9.4
DRIT-3	2.5	2112+00, B/L	14.6

TABLE 2
CONSTANT HEAD FIELD PERMEABILITY TEST RESULTS
S.R. 400 (I-4), DESIGN BUILD SECTION 3
POLK COUNTY, FLORIDA
F.P.N. 201204-1
PSI PROJECT NO. 775-25283

TEST NO.	TEST DEPTH (feet)	STATION AND OFFSET B/L SURVEY S.R. 400 (I-4) (feet)	HORIZONTAL PERMEABILITY RATE (ft/day)
P-1	6.5	2057+00, B/L	>20*
P-2	5.5	2085+00, B/L	9.8
P-3	4	2102+00, B/L	9.3
P-4	10	2127+00, 120 LT	15.5
P-5	9	2127+00, 115 RT	15.9

* Test results were greater than 20 ft/day. However, we recommend that 20 ft/day be a maximum value used for design.

DRAFT (FINAL) DETENTION
POND REPORT
I-4 FROM EAST OF U.S. 27
TO OSCEOLA COUNTY LINE
SEGMENT 7
POLK COUNTY, FLORIDA
F.P.N. 201205-1-32-02
STATE PROJECT NO. 16320-3426
W.P.I. NO. 1147943
PSI PROJECT NO. 775-95358

PSI Information To Build On
Engineering • Consulting • Testing

June 2, 2000

Tampa Bay Engineering, Inc.
18167 U.S. 19 North
Suite 550
Clearwater, Florida 34624

Attention: Mr. Christian Marinescu, P.E.

RE: Draft (Final) Detention Pond Report
I-4 from East of U.S. 27
to Osceola County Line
Segment 7
Polk County, Florida
F.P.N. 201205-1-32-02
State Project No. 16320-3426
W.P.I. No. 1147943
PSI Project No. 775-95358

Dear Mr. Marinescu:

Professional Service Industries, Inc. (PSI), has completed the final retention pond report for the subject S.R. 400 (I-4) Segment 7 improvements in Polk County, Florida. This study was requested and authorized by Mr. David Gilbert of Tampa Bay Engineering, Inc. (TBE).

The following pond report presents the results of our field soil survey for the subject pond site. Presented in this report are the methods, procedures, analyses and evaluations for the proposed pond. All field and laboratory support services were provided by PSI. A revised Final Roadway report will be submitted separately. A preliminary Retention Pond Report dated June 18, 1998 was submitted.

PSI appreciates the opportunity of working with Tampa Bay Engineering, Inc. on this project and looks forward to maintaining our professional relationship with you as the project proceeds. If you have any questions about this report, or if we can be of further service to you, please do not hesitate to contact our office.

Sincerely,

Professional Service Industries, Inc.

Kirk M. Eastman, P.E.
Project Engineer
Florida Registration No. 50733

Ching L. Kuo, P.E.
Chief Engineer
Florida Registration No. 36115

KME/CLK/hkd:95358g01.wpd

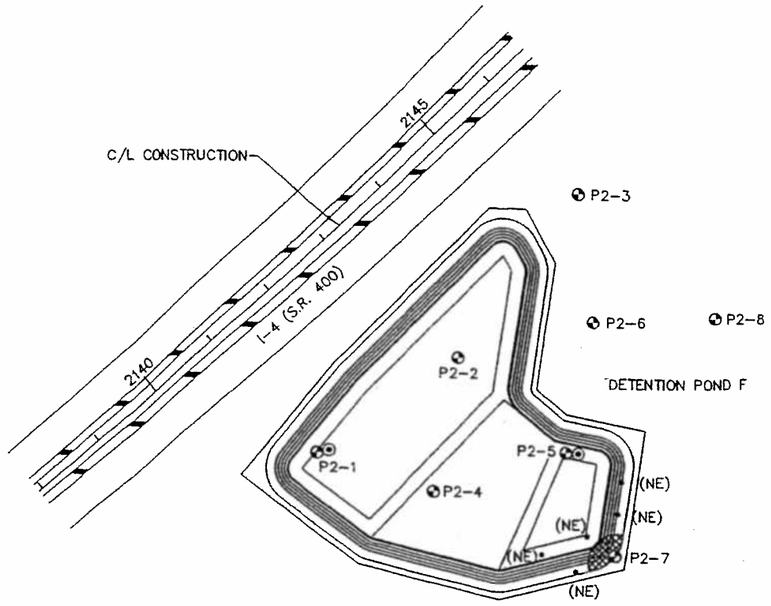
Attachments: Appendices

APPENDIX B

BORING LOCATION PLAN

D 100'
PLAN SCALE

LOCATION	
TOWNSHIP:	25 S
RANGE:	27 E
SECTION:	4



LEGEND

1. BROWN/LIGHT BROWN FINE SAND (A-3)
2. DARK BROWN SILTY FINE SAND (A-2-4)
3. MUCK (A-8)
4. GRAY/BROWN CLAY (A-6)
5. GRAY/BROWN SANDY CLAY (A-7-5)
6. BROWN SANDY CLAY (A-7-6)
7. SILT (A-4)
8. BROWN CLAYEY FINE SAND (A-2-6)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL

A WITH LIMESTONE FRAGMENTS

B WITH TRACE ORGANICS

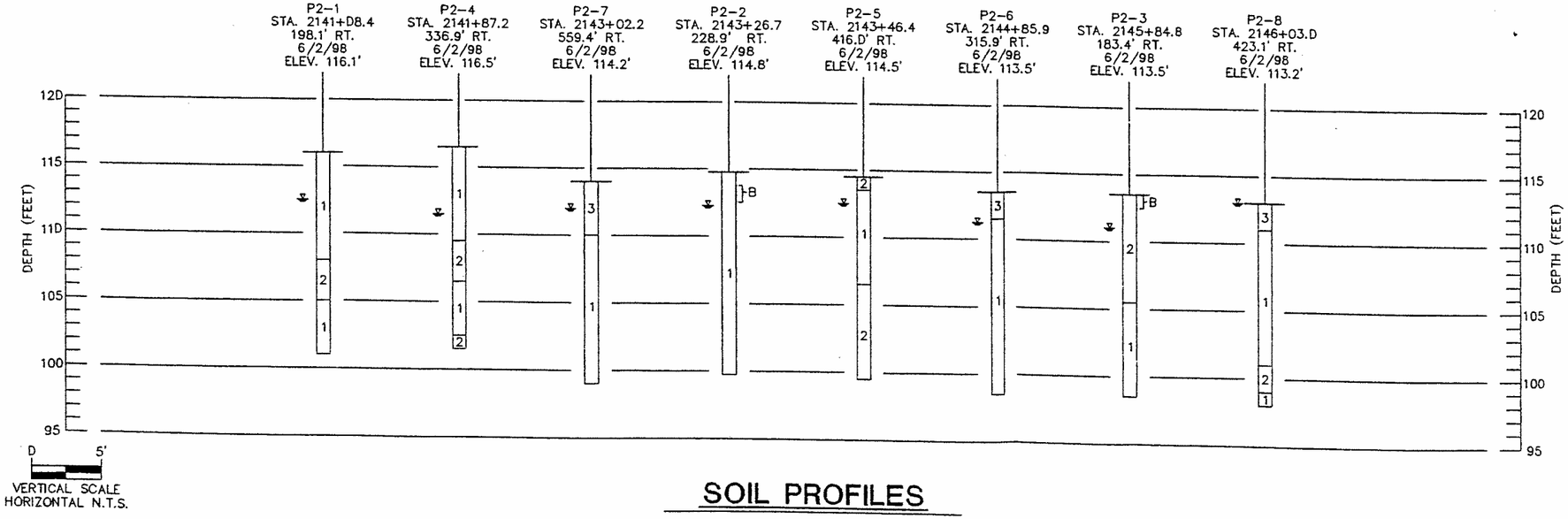
APPROXIMATE POWER AUGER BORING LOCATION

APPROXIMATE FIELD PERMEABILITY TEST LOCATION

APPROXIMATE MUCK PROBE LOCATION

(NE) NO MUCK ENCOUNTERED

APPROXIMATE EXTENT OF ORGANIC SOIL



D 5'
VERTICAL SCALE
HORIZONTAL N.T.S.

SOIL PROFILES

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PROFESSIONAL SERVICES INDUSTRIES, INC.
5801 BENJAMIN CENTER DRIVE SUITE 112
TAMPA, FLORIDA 33634

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201205-1-52-02

DETENTION POND F

ROADWAY SOILS SURVEY

I-4 POLK COUNTY, SECTION 7

SHEET NO. E-632

775358s2.[

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
MATERIAL AND RESEARCH

DATE OF SURVEY: AUG. 1994, SEPT. 1994, NOV. 1994, NOV. 1995, FEB. 1997 & JUNE 1998, DEC. 99, FEB. 2000, MARCH 2000
SURVEY MADE BY: PSI
SUBMITTED BY: CHING L. KUO, PhD., P.E.

FPN: 201205-1-52-02

DISTRICT: ONE
ROAD No.: S.R. 400
COUNTY: POLK

CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA. 2037+40

SURVEY ENDS STA. 2160+08

		ORGANIC CONTENT		MOISTURE CONTENT		SIEVE ANALYSIS RESULTS % PASS						ATTERBERG LIMITS (%)					CORROSION TEST RESULTS				
STRATUM NO.	LBR VALUE (%)	No. OF TESTS	% ORGANIC	No. OF TESTS	MOISTURE CONTENT	No. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT	PLASTIC INDEX	AASHTO GROUP	DESCRIPTION	NO. OF TESTS	RESISTIVITY OHM-CM	CHLORIDES PPM	SULFATE PPM	pH
1	14-37	9	2-4	15	2-86	76(FULL) 13(-200)	94-100	79-100	27-78	4-21	1-10	--	------	------	A-3	BROWN/LIGHT BROWN FINE SAND	45	13,000- > 1,100,000	< 3-30	< 15-88	3.80-8.40
2	------	1	2	19	4-22	38(FULL) 2(-200)	99-100	85-95	48-83	12-45	11-28	17	NP-25	NP-10	A-2-4	DARK BROWN SILTY FINE SAND	5	15,000-460,000	< 3-30	< 15-88	6.1-8.30
3	------	35	7-85	38	17-380	13(FULL) 32(-200)	35-100	25-93	16-65	8-45	3-80	--	------	------	A-8	MUCK	--	------	------	------	------
4	------	--	------	2	24-30	5	100	88-92	72-78	55-63	46-55	2	37-40	16-25	A-6	GRAY/BROWN CLAY	--	------	------	------	------
5	------	--	------	1	62	1	100	97	93	89	86	1	77	42	A-7-5	GRAY/BROWN SANDY CLAY	--	------	------	------	------
6	------	--	------	1	57	1(FULL) 2(-200)	100	94	83	73	61-67	2	56-60	31-36	A-7-6	BROWN SANDY CLAY	--	------	------	------	------
7	------	--	------	2	26-28	2(FULL) 1(-200)	100	93-94	68-77	45-62	37-55	2	NP-28	NP-8	A-4	SILT	--	------	------	------	------
8	------	--	------	1	18	1	100	84	60	39	29	1	36	20	A-2-6	BROWN CLAYEY FINE SAND	--	------	------	------	------

EMBANKMENT AND SUBGRADE MATERIAL

STRATA BOUNDARIES ARE APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY.

▼ WATER TABLE ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH TRACE ORGANICS

NOTES:

1. THE MATERIAL FROM STRATUM NUMBER 1 APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH INDEX 505.
2. THE MATERIAL FROM STRATUM NUMBER 2 APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH INDEX 505. HOWEVER, THIS MATERIAL IS LIKELY TO RETAIN EXCESS MOISTURE AND MAY BE DIFFICULT TO DRY AND COMPACT. IT SHOULD BE USED IN THE EMBANKMENT ABOVE WATER LEVEL EXISTING AT THE TIME OF CONSTRUCTION.
3. THE MATERIAL FROM STRATUM NUMBER 3 IS MUCK/A-8 MATERIAL AND SHALL BE REMOVED IN ACCORDANCE WITH INDEX 500 IF ENCOUNTERED WITHIN THE EXTENTS OF THE PROPOSED ROADWAY IMPROVEMENTS.
4. THE MATERIAL FROM STRATA NUMBERS 4, 7 AND 8 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.
5. THE MATERIAL FROM STRATA NUMBERS 5 AND 6 IS HIGH 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.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PSI ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
PROFESSIONAL SERVICES INDUSTRIES, INC.
5801 BENJAMIN CENTER DRIVE SUITE 112
TAMPA, FLORIDA 33634

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201205-1-52-02

ROADWAY SOILS SURVEY

I-4 POLK COUNTY, SECTION 7

SHEET NO. E-633

775358s3.D

PSI Information To Build On
Engineering • Consulting • Testing

(DRAFT) FINAL ROADWAY SOIL SURVEY
I-4 SECTION 3 DESIGN BUILD, SEGMENT 7
EAST OF U.S. 27 TO THE
OSCEOLA COUNTY LINE
POLK COUNTY, FLORIDA
F.P.N. 201204-1
PSI PROJECT NO. 775-25283

E-634

PSI Information To Build On
Engineering • Consulting • Testing

October 18, 2002

Jacobs Engineering
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647

Attention: Mr. Tom Fulton, P.E.

RE: (Draft) Final Roadway Soil Survey
I-4 Section 3 Design Build, Segment 7
East of U.S. 27 to the
Osceola County Line
Polk County, Florida
F.P.N. No. 201204-1
PSI Project No. 775-25283

Dear Mr. Fulton:

Professional Service Industries, Inc. (PSI) has completed the roadway soil survey for the referenced S.R. 400 (I-4) Design Build Section 3 roadway improvements in Polk County, Florida. The project consists of roadway widening improvements to I-4 from east of S.R. 557 to the Osceola County Line consisting of three (3) Segments (Segments 6, 7 and 9).

The following report presents the results of our roadway soil survey for Segment 7 of the project which consists of improvements to I-4 from east of U.S. 27 to the Osceola County Line. Presented in this report are the field and laboratory test results, analyses and evaluations for the roadway improvements. This report was prepared based on available field data and laboratory test results previously performed by PSI and additional supplemental data performed, as needed. Separate reports will be prepared for Segments 6 and 9 of the project.

We sincerely appreciate the opportunity of working with Jacobs Engineering on this project. If you have any questions, or if we may be of further service, please do not hesitate to contact our office.

Sincerely,
Professional Service Industries, Inc.

Jeremy A. Sewell, E.I
Project Engineer

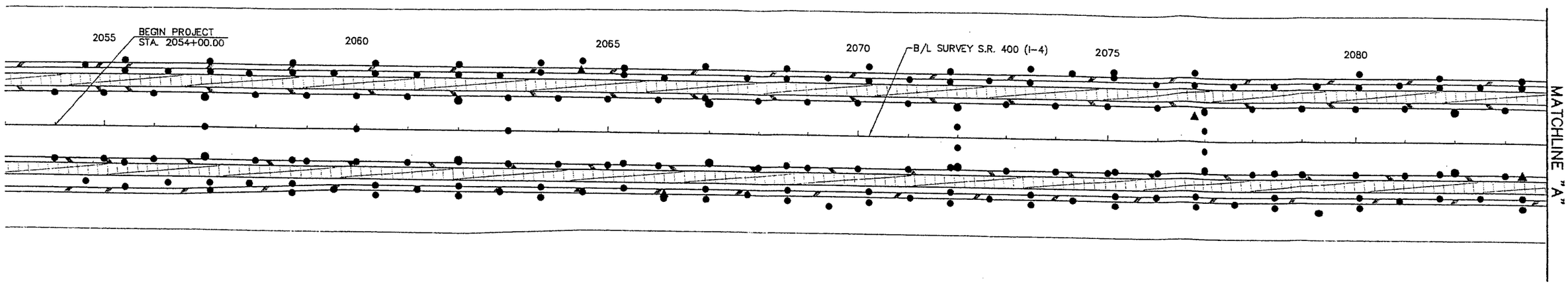
Ching L. Kuo, Ph.D., P.E.
Chief Engineer
Florida License No. 36115

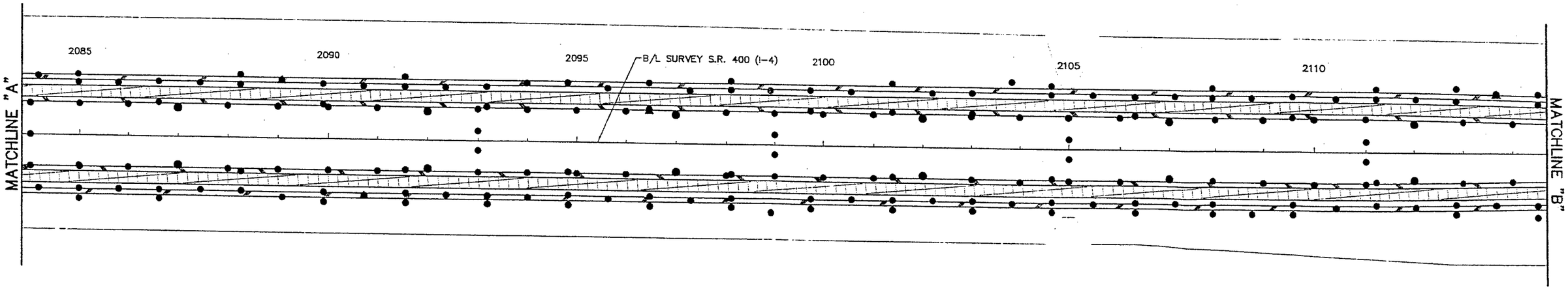
C. Rees Nickerson, P.E.
Chief Engineer
Florida License No. 35792

JAS/CLK/CRN/hkd: 77525283g01_roadwayS7

Attachments: Appendix A – Tables 1-7
Appendix B – Sheets 1-27
Appendix C – LBR Test Curves

APPENDIX B





BORING LOCATION PLAN

0 100'
PLAN SCALE

LOCATION	
TOWNSHIP:	26 S
RANGE:	27 E
SECTION:	4, 5, 7 & 8

LEGEND

- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE LBR SAMPLE LOCATION
- LIMITS OF MILLING AND RESURFACING
- LIMITS OF ROADWAY WIDENING

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE
OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

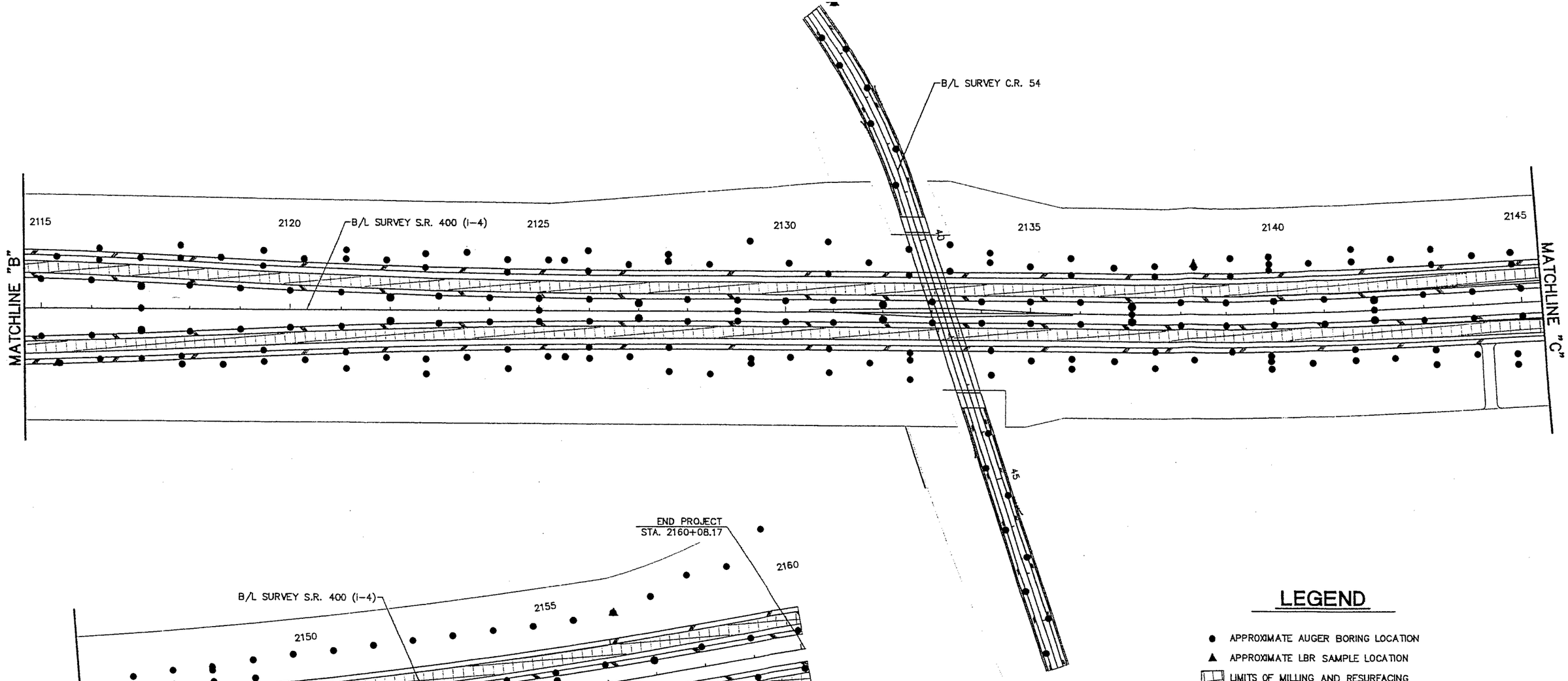
ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.
E-638

PSI PROJECT No. 775-25283
SHEET 1

p:\geo\fdot\I-4\7752528\segment 7\7752830l



LEGEND

- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE LBR SAMPLE LOCATION
- LIMITS OF MILLING AND RESURFACING
- LIMITS OF ROADWAY WIDENING

BORING LOCATION PLAN

0 100'
PLAN SCALE

LOCATION	
TOWNSHIP:	26 S
RANGE:	27 E
SECTION:	4, 5, 7 & 8

p:\geo\dot\I-4\7752528J\segment 7\7752830Z

REVISIONS					
Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

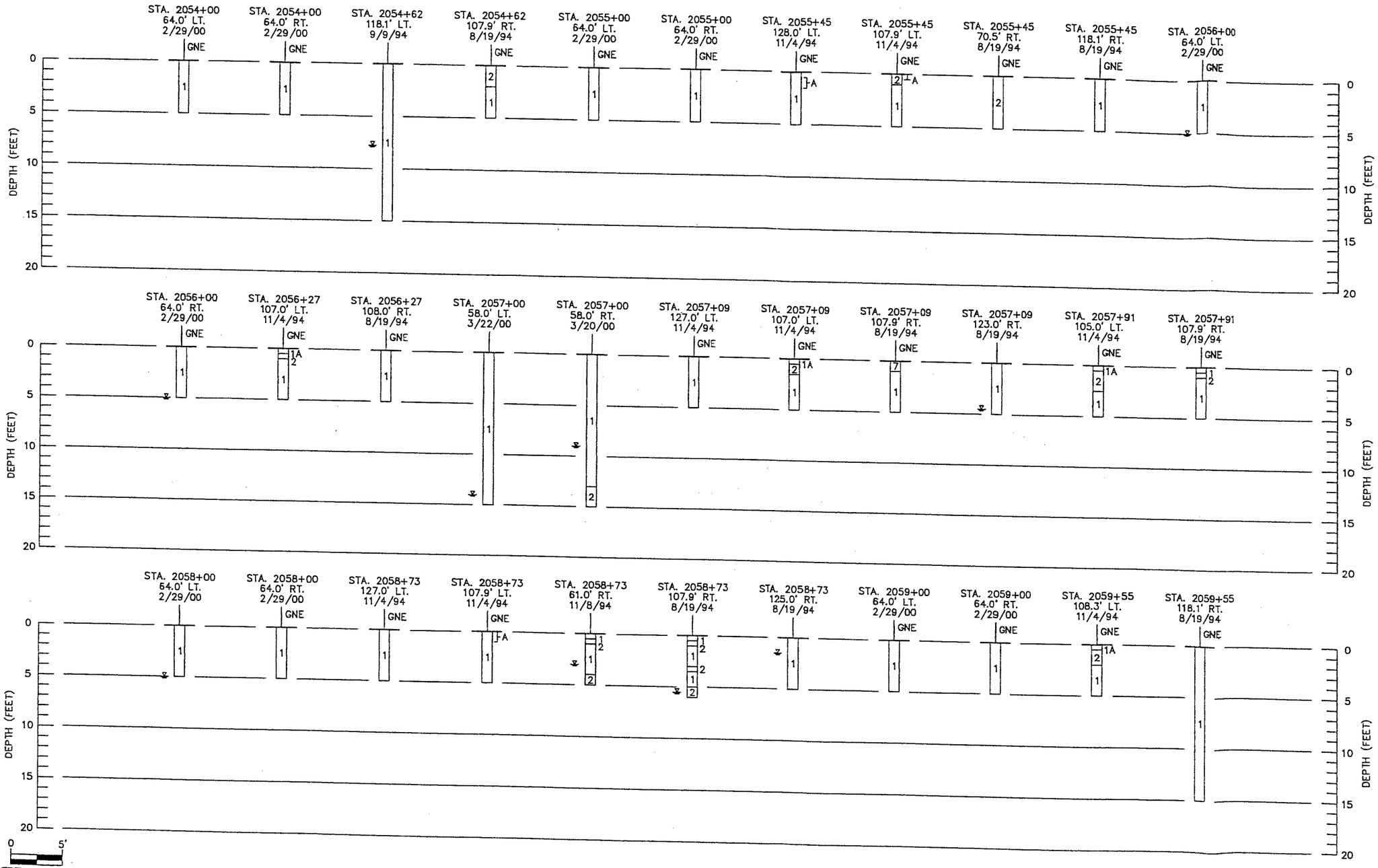
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 775-25283
SHEET 3
E-639



LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. OARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-640

PSI PROJECT No. 775-25283
SHEET 3

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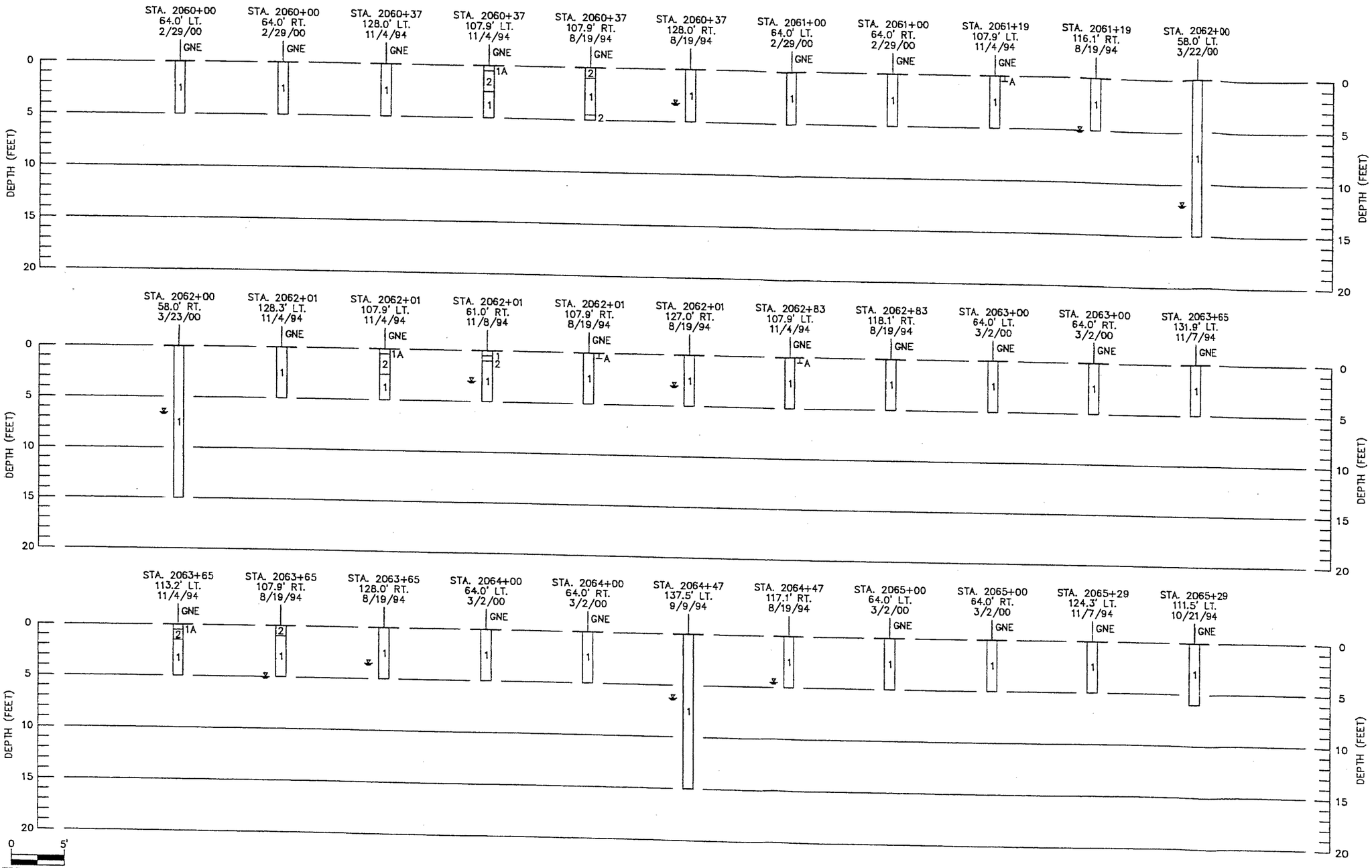

SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO OARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SANO (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS OETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNOWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

REVISIONS

Date	By	Description	Date	By	Description

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STATE OF FLORIDA
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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-641

PSI PROJECT No. 775-2528
SHEET

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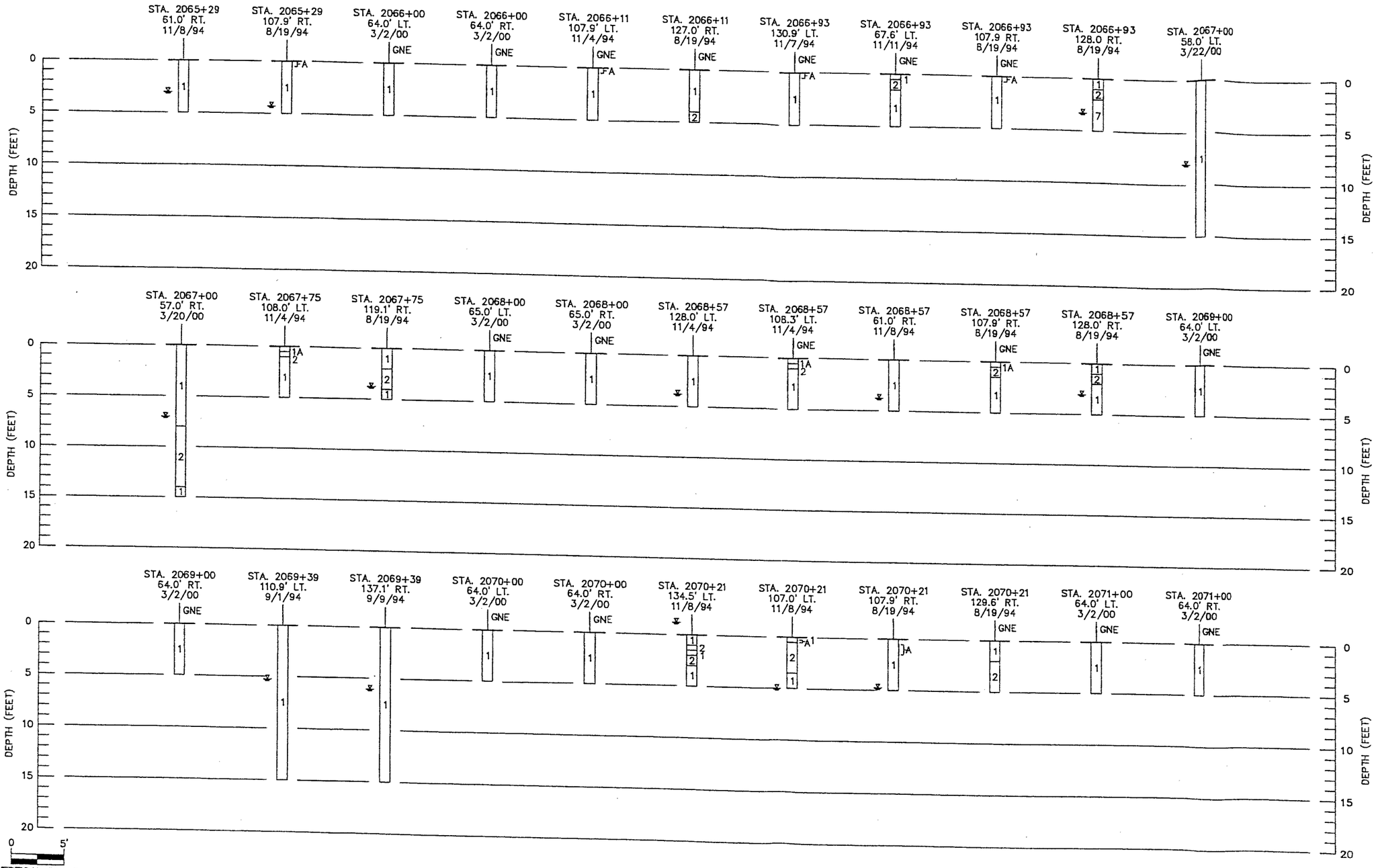

SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANOY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNOWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

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S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-642

PSI PROJECT No. 775-2528
SHEET

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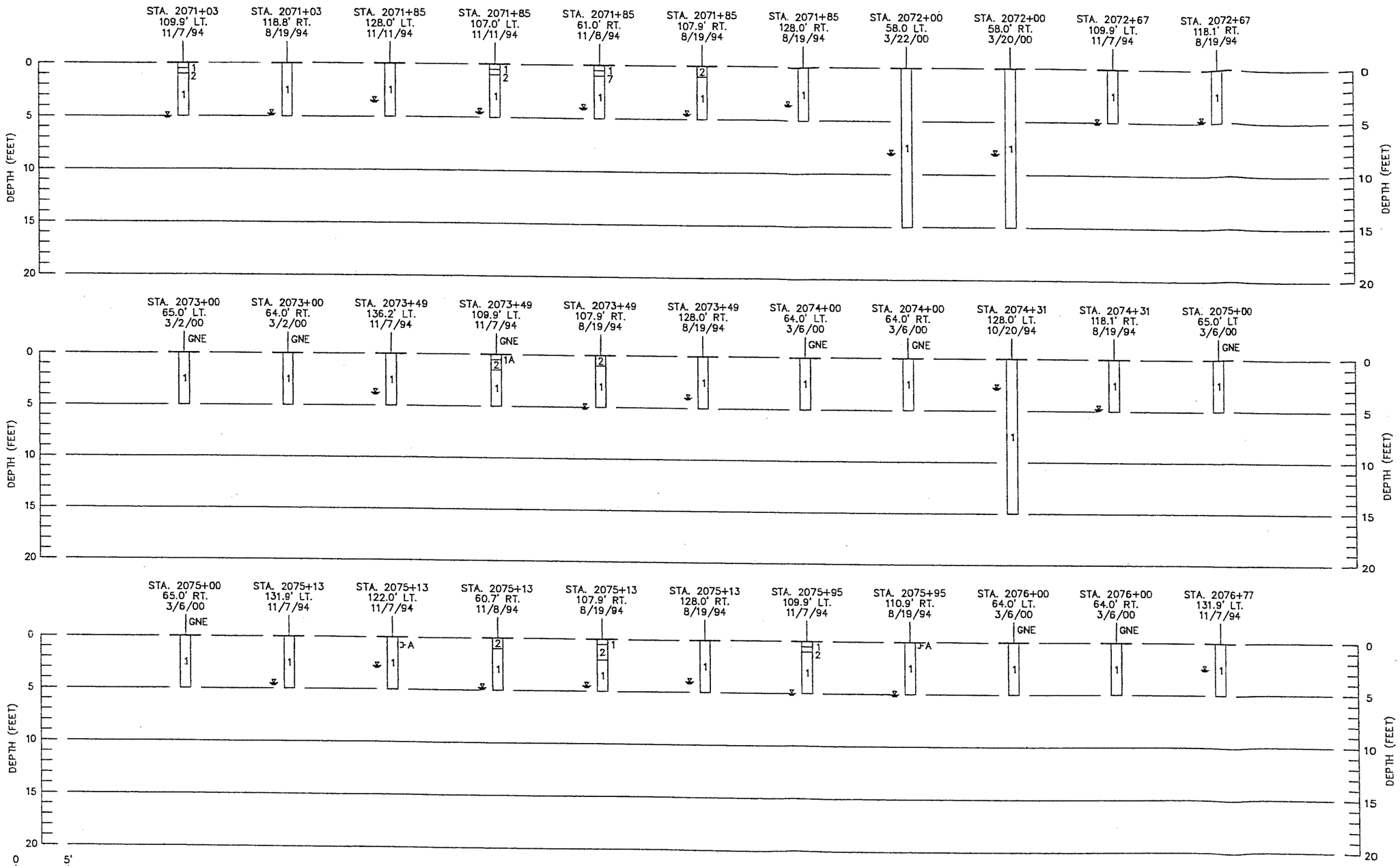

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

REVISIONS

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 75252853

E-643

SHEET 6

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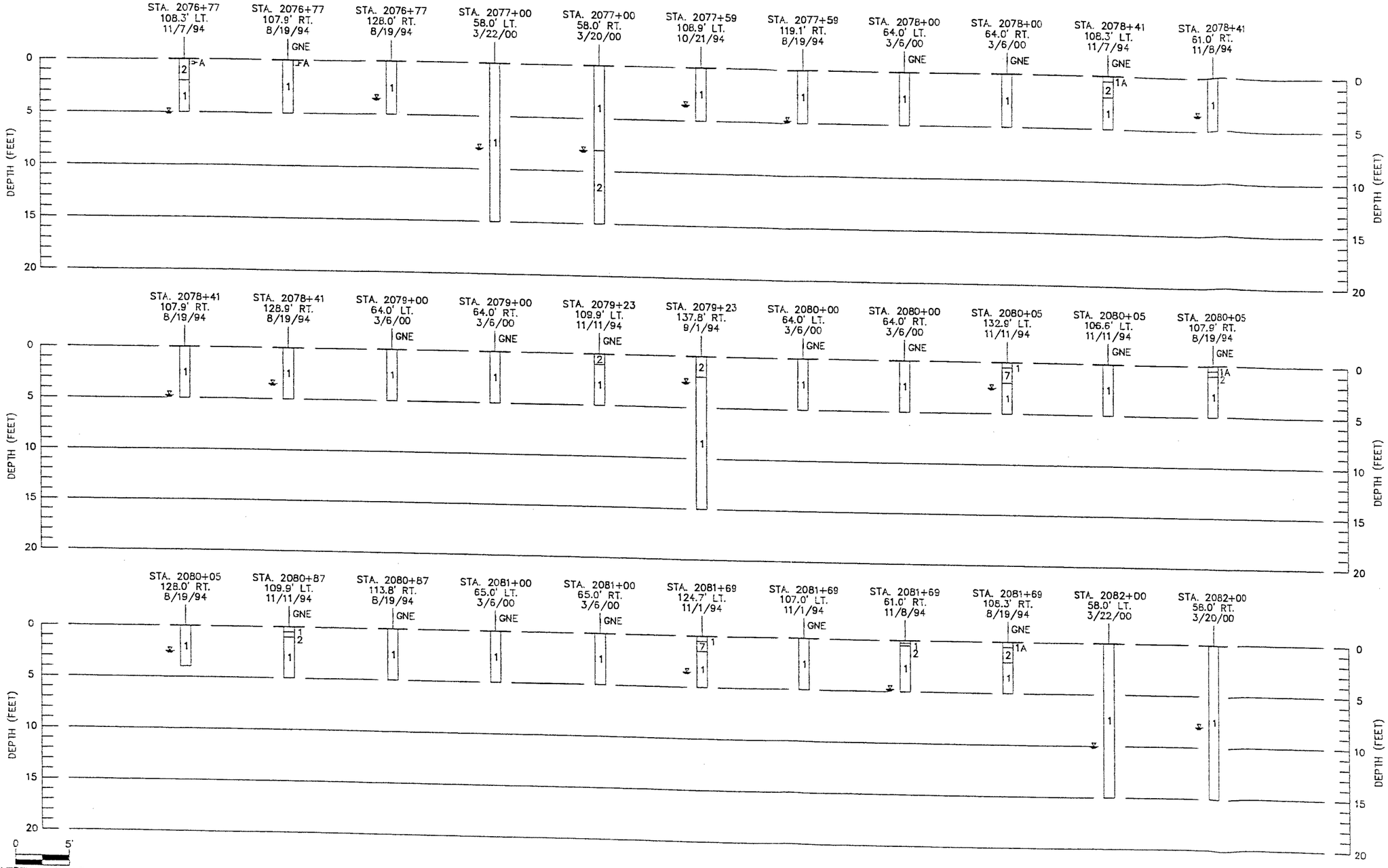

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

REVISIONS

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. **E-644**

PSI PROJECT No. 775-25283
SHEET 7

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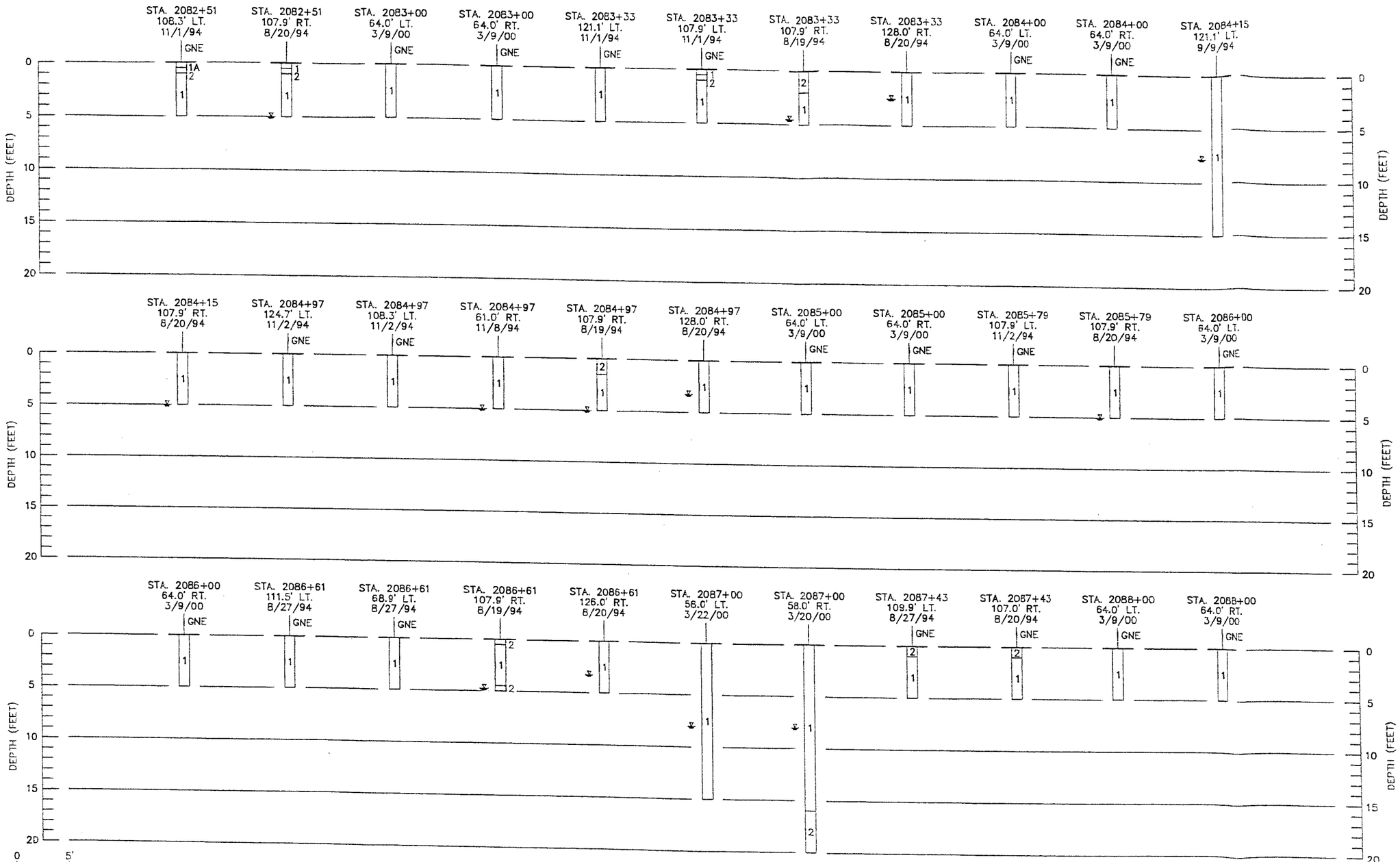

SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

REVISIONS

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	20120A-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. E-645

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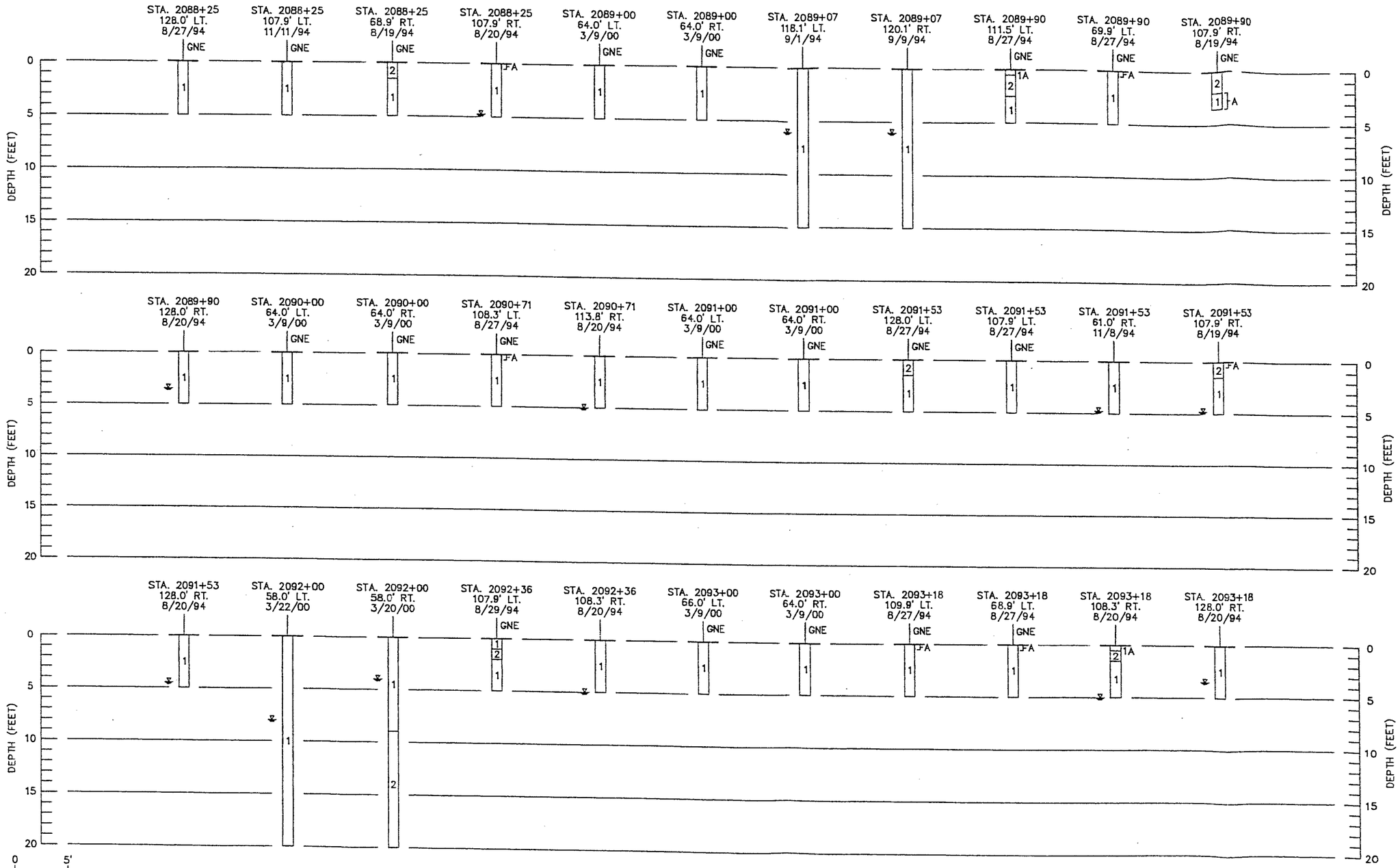

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 77525283
SHEET

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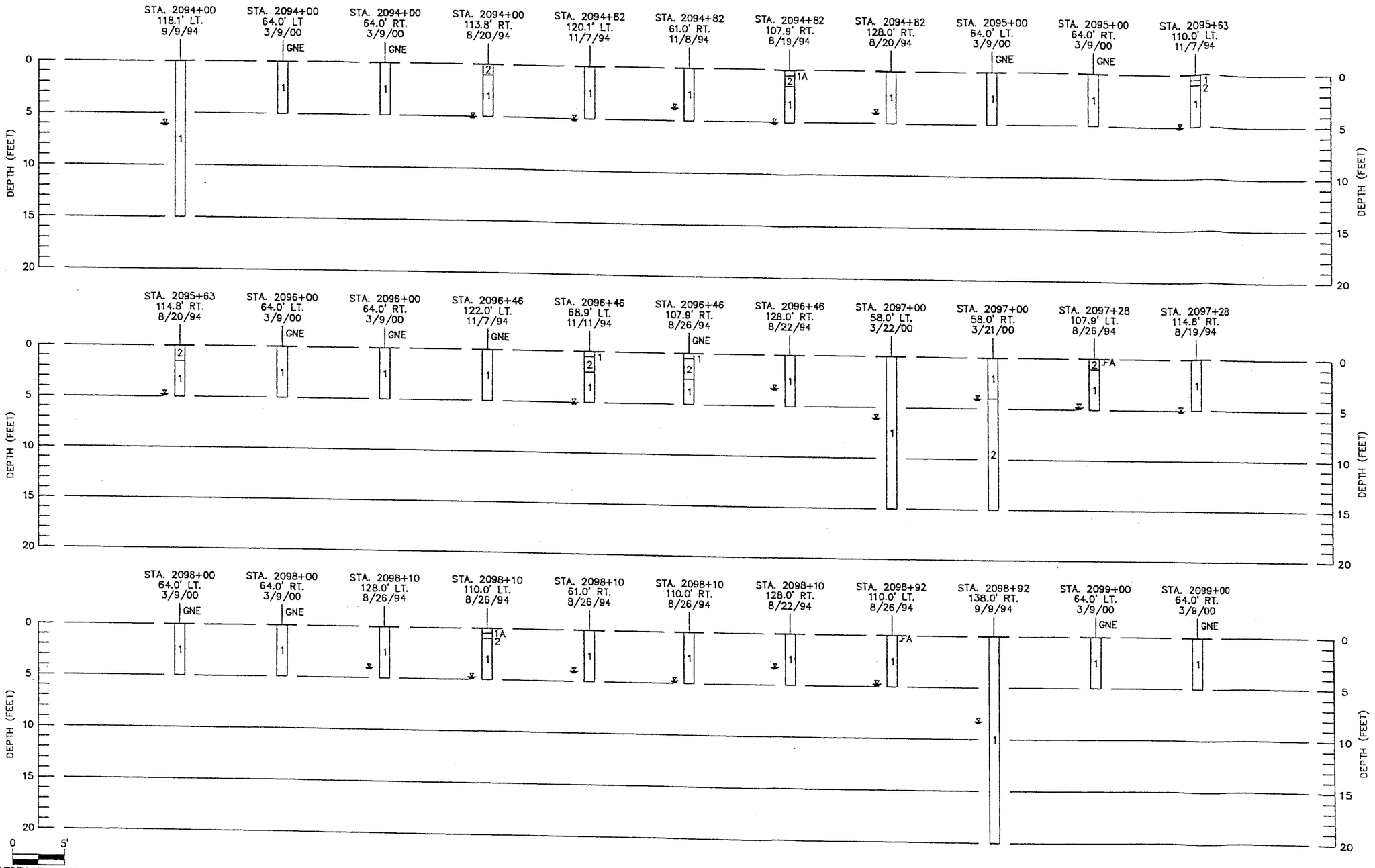

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

REVISIONS

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

E-647

PSI PROJECT No. 775-2528
SHEET 1

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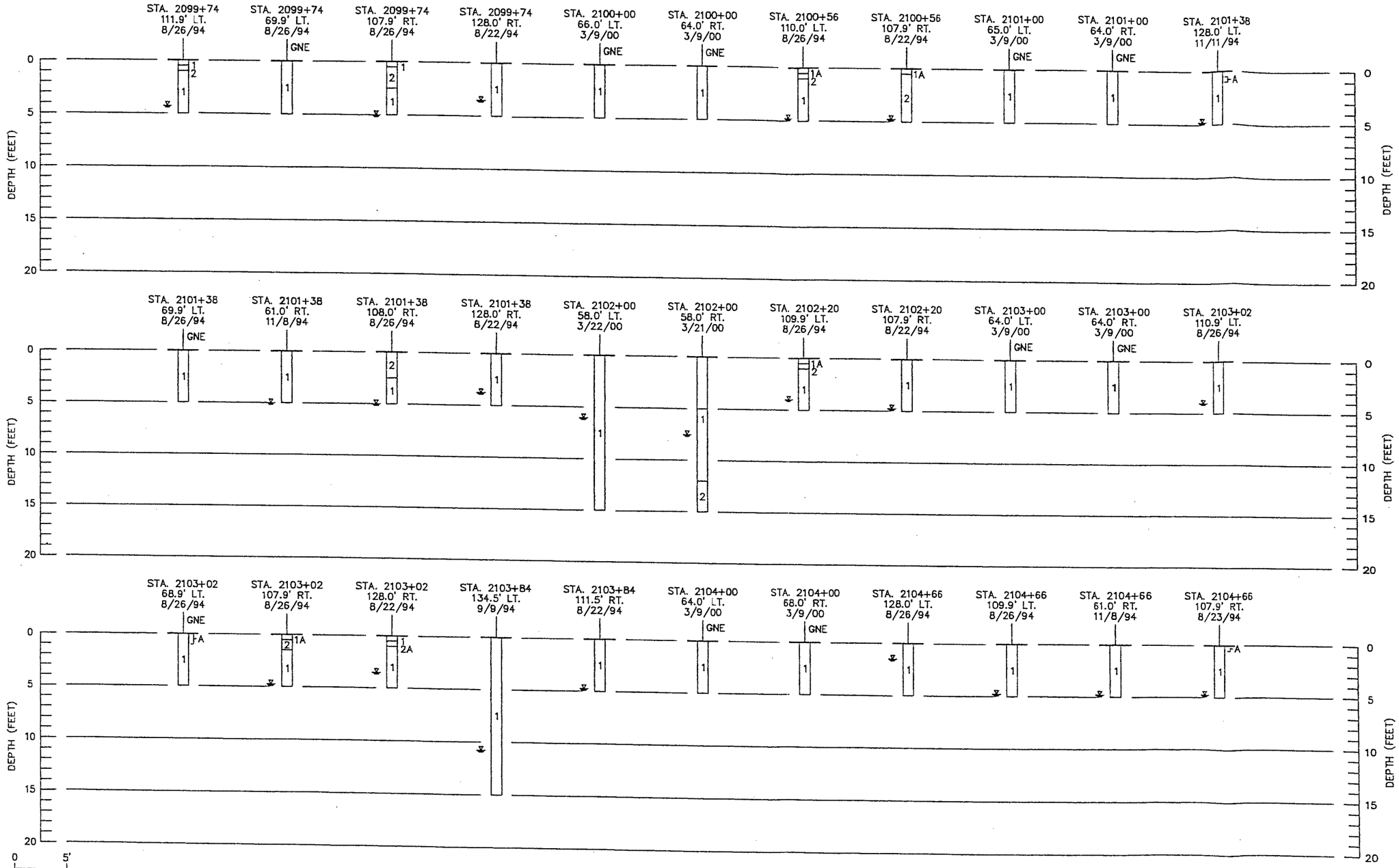

SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANOY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANOY CLAY (A-7-5/A-7-6)
7. OARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNOWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

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REVISIONS

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. E-648

SHEET 11

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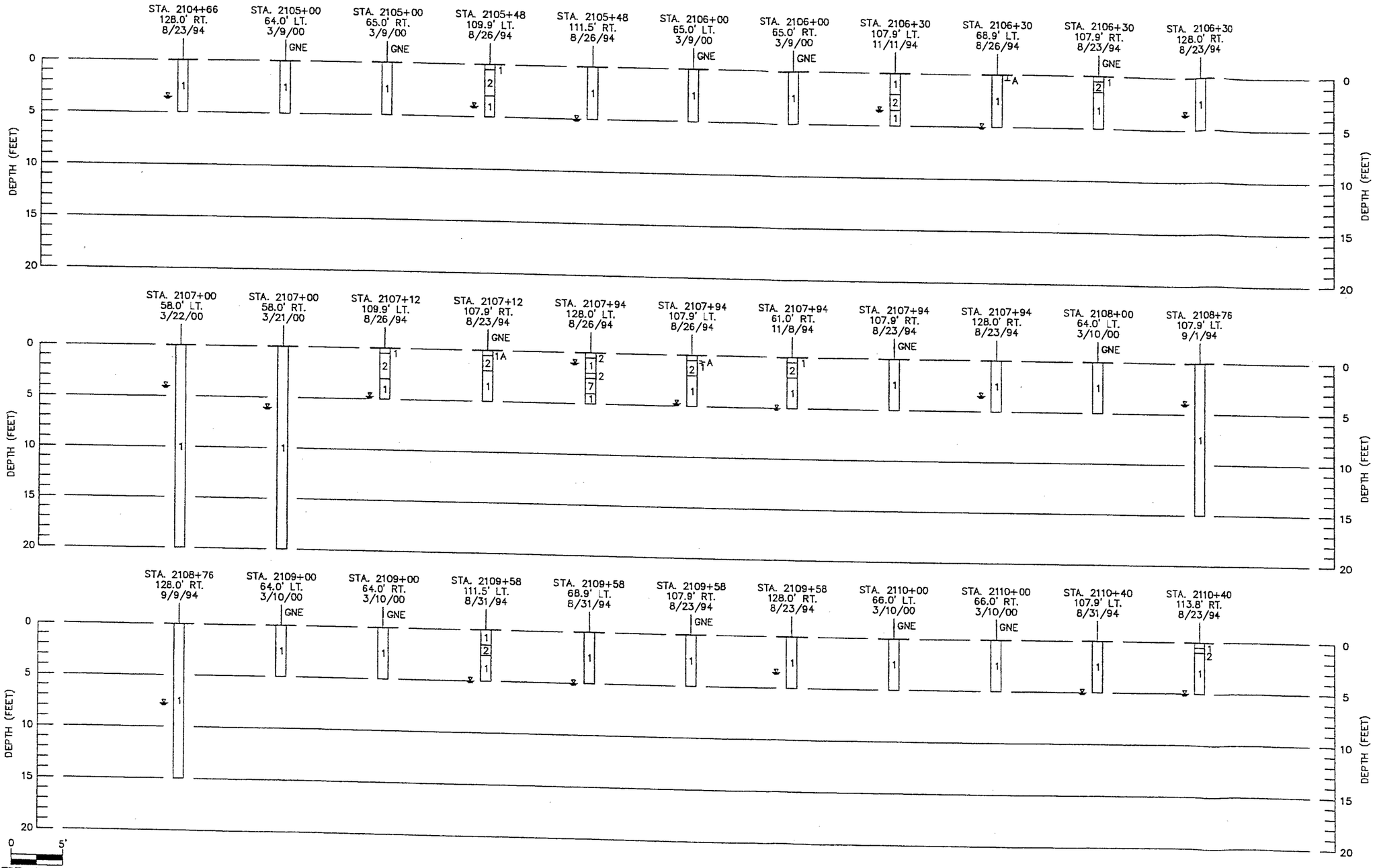

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

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S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-649

PSI PROJECT No. 775-25283
SHEET 12

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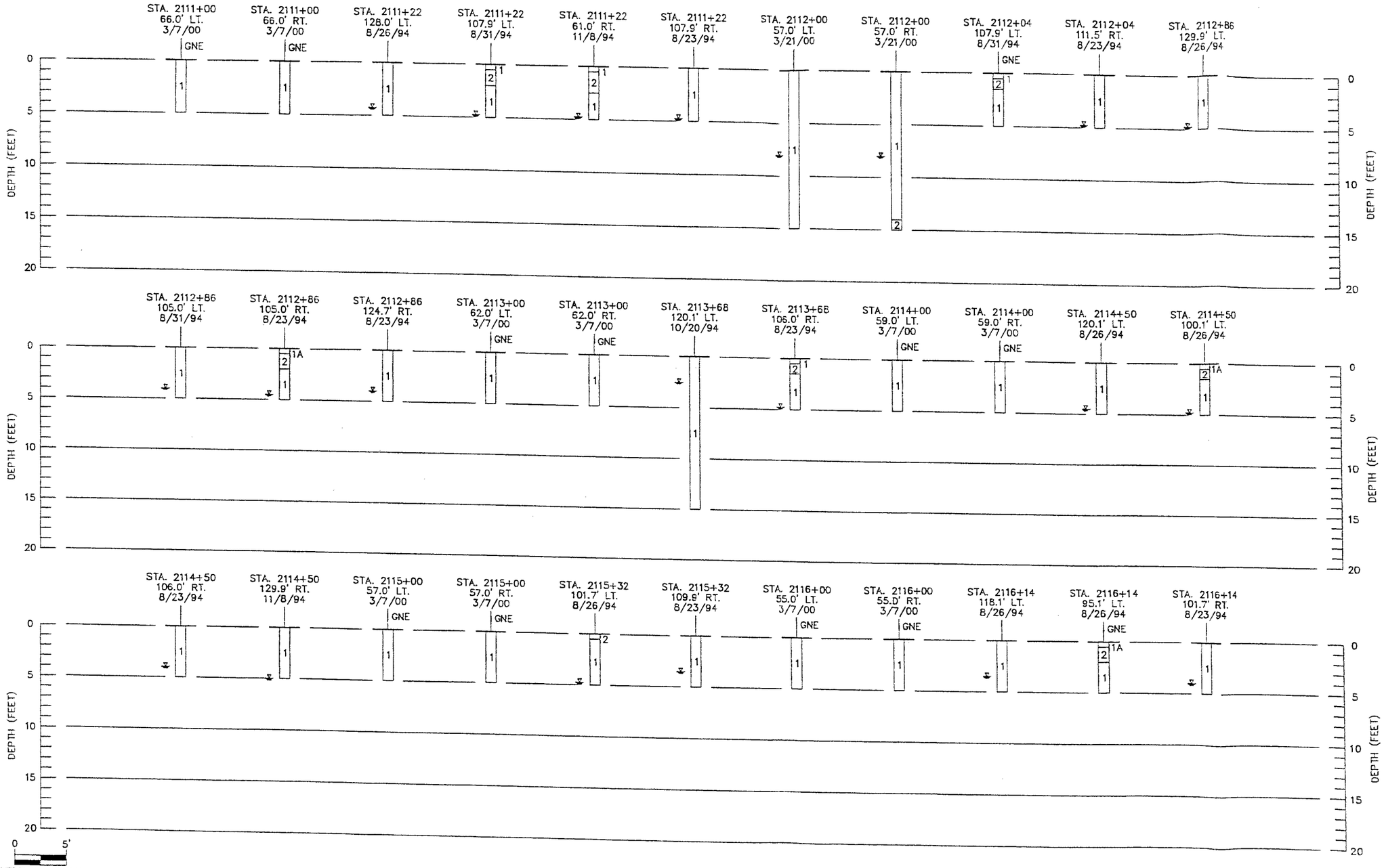

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

REVISIONS

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S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 77528313

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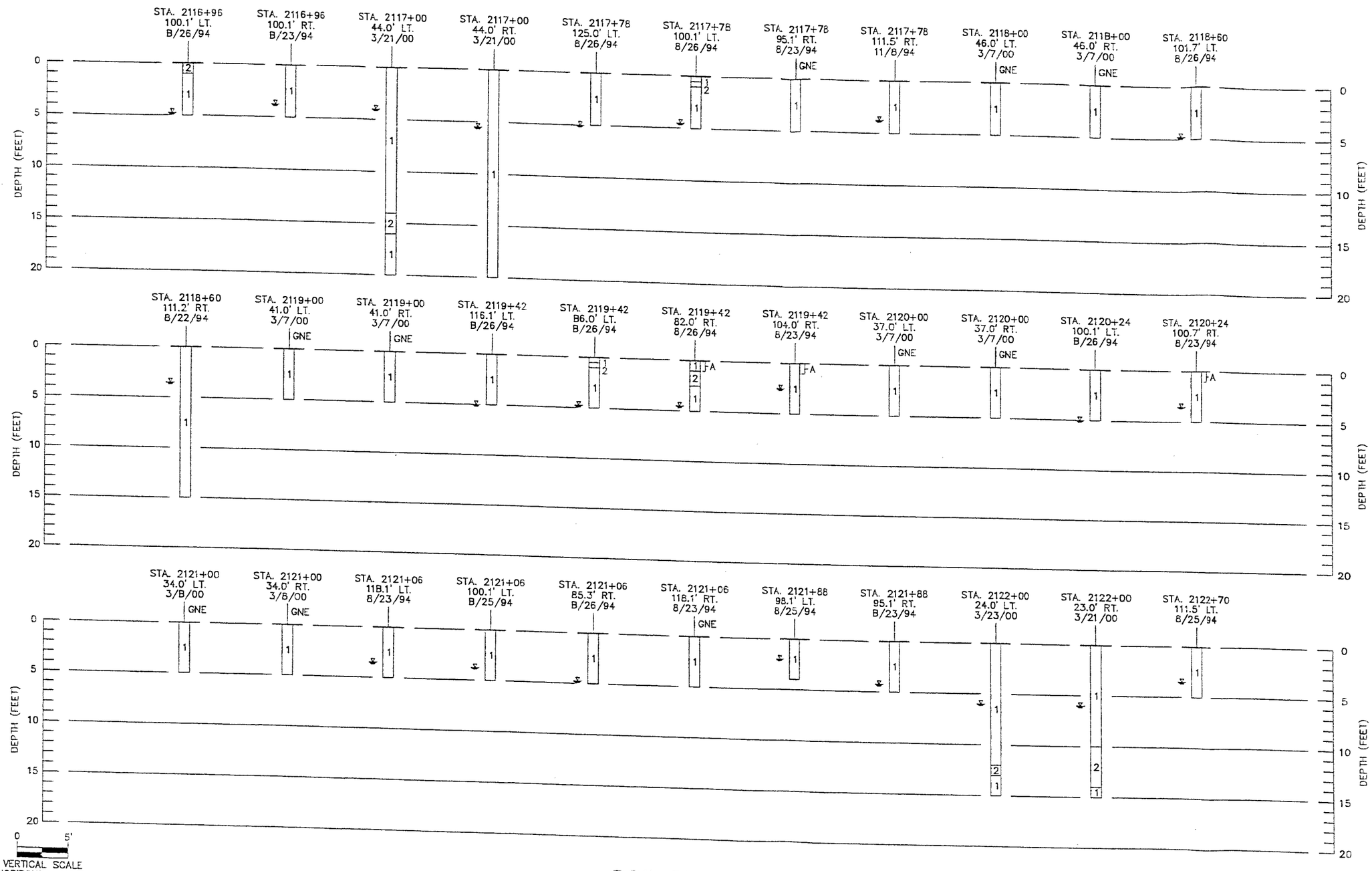

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

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ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. E-651

SHEET 12

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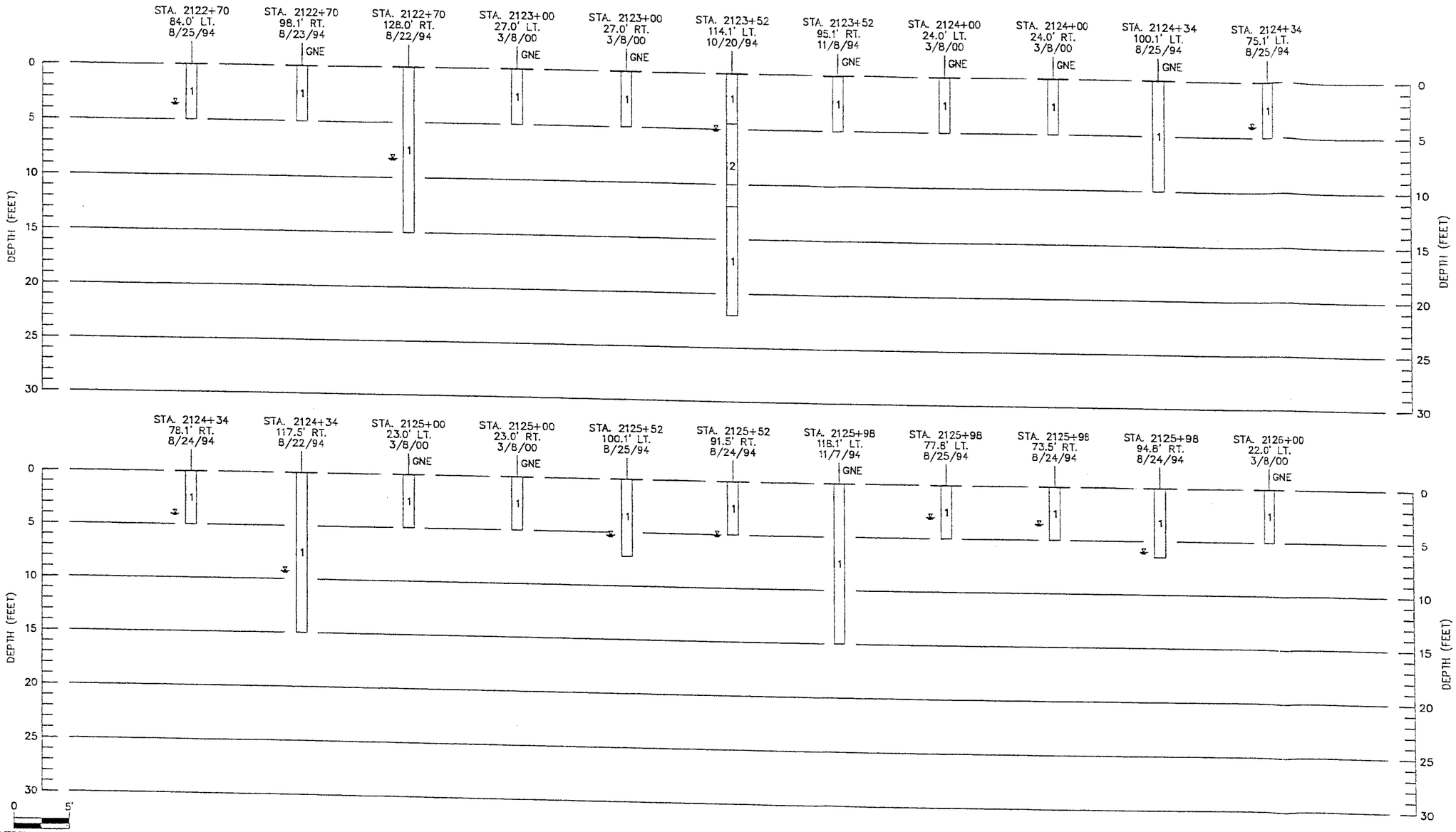

SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

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REVISIONS

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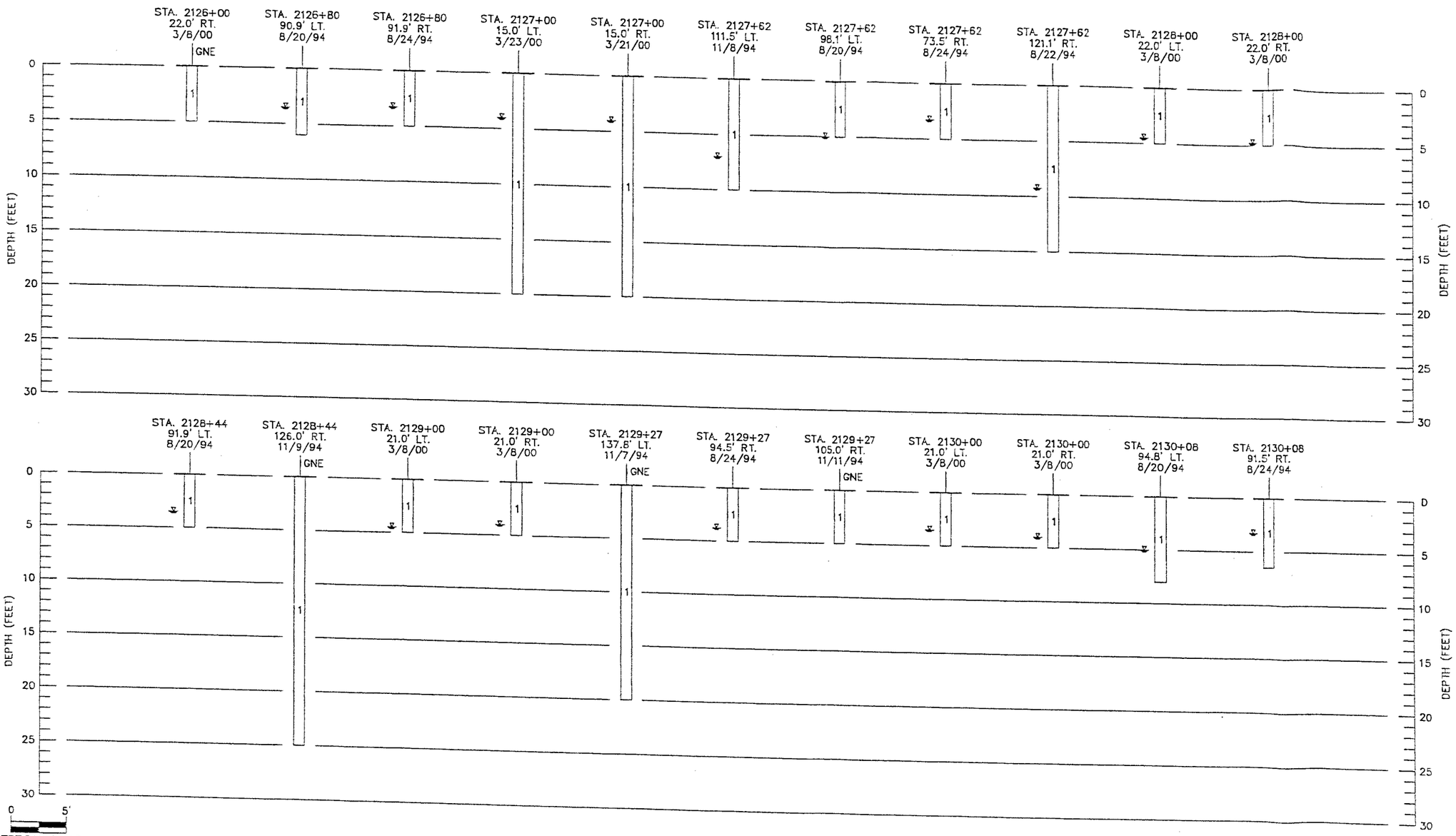
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	20120A-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. E-652



SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

P:\geo\fdot\I-4\7752583\segment 7\7752815

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

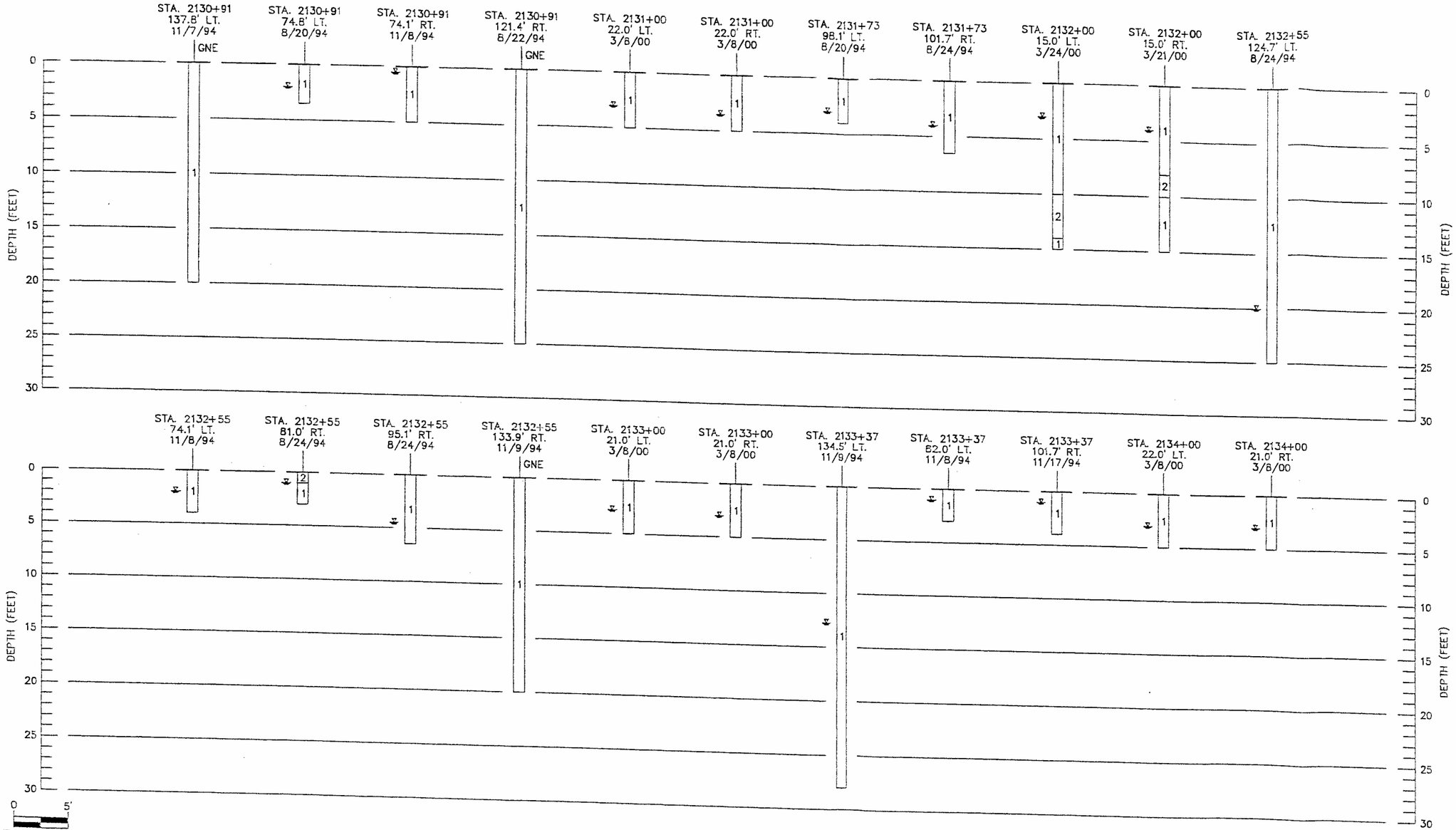
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	20120<u>4</u>-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. E-653
SHEET 16



SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

325283\segment 7\77528317

p:\geo\

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

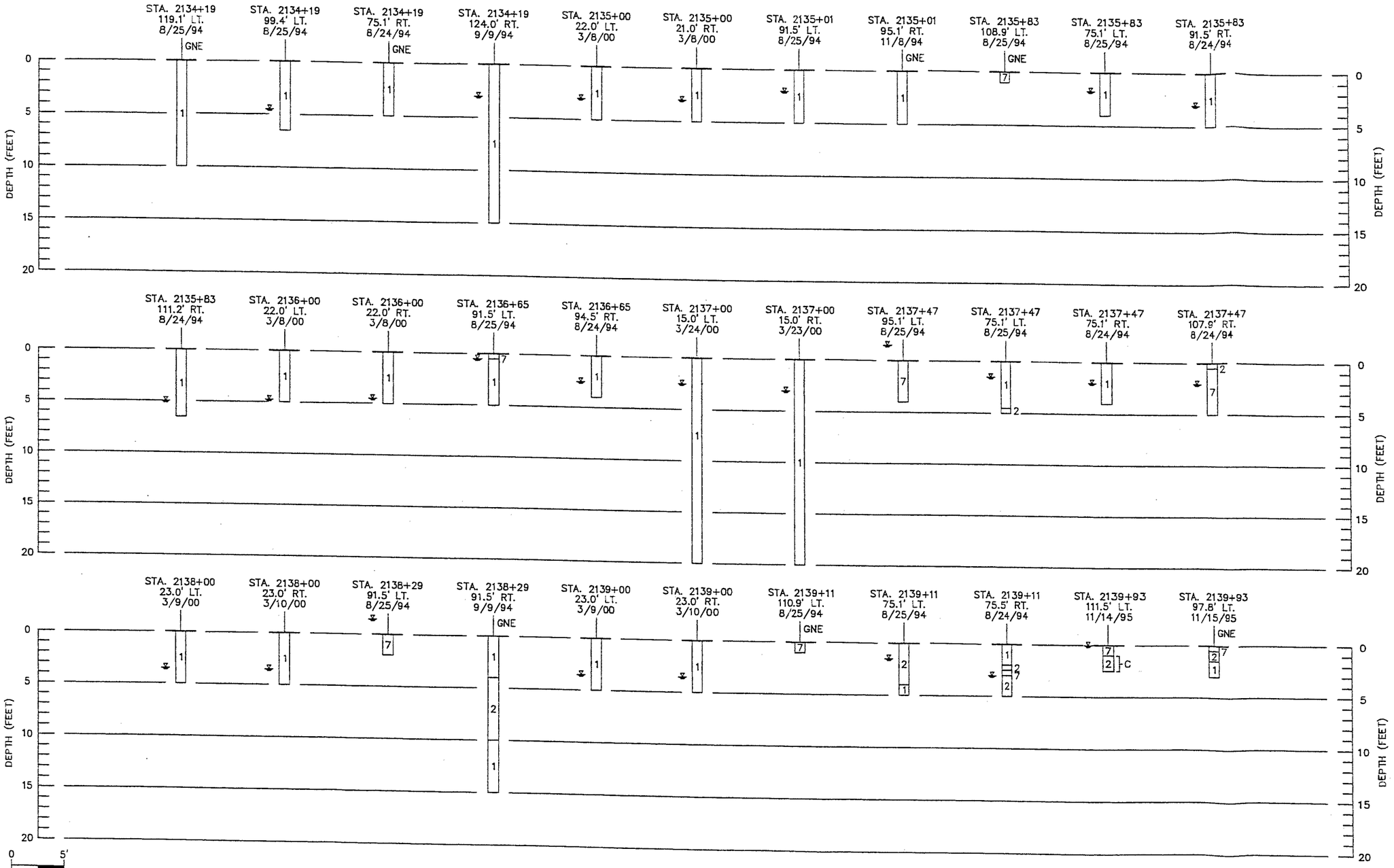
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	20120A-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 775-25283
SHEET 17



LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO OARK BROWN SILTY FINE SANO (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SANO (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
5. GRAY TO BROWN CLAYEY FINE SANO (A-2-7)
6. GRAY TO BROWN SANOY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SANO, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS OETERMINED BY VISUAL REVIEW

GROUNOWATER LEVEL, OATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

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REVISIONS

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PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

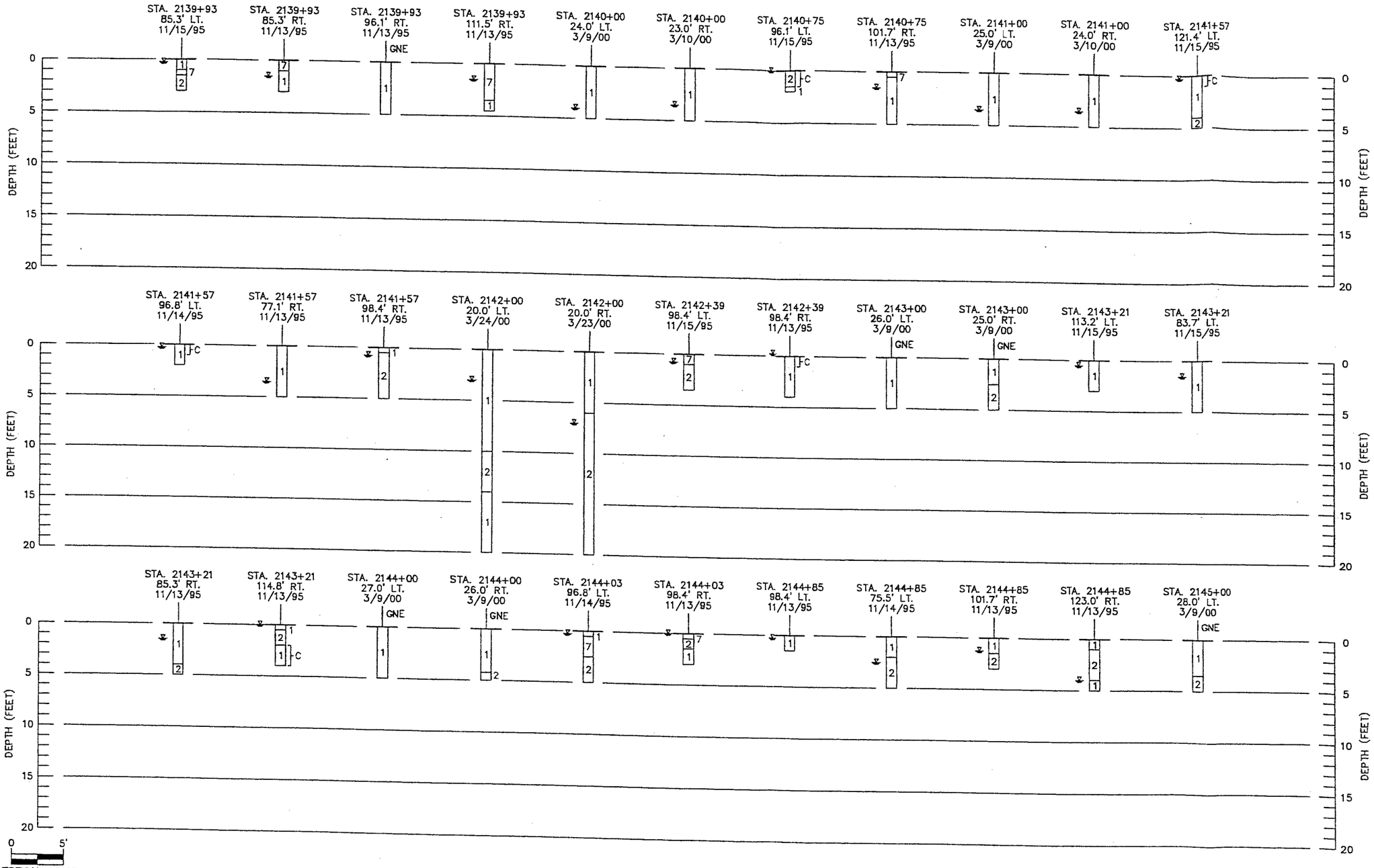
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-655

PSI PROJECT No. 775-25283
SHEET 18



SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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6. GRAY TO BROWN SANDY CLAY (A-7-5/A-7-6)
7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

p:\geo\fdot\I-4\7752283\segment 7\7752831g

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

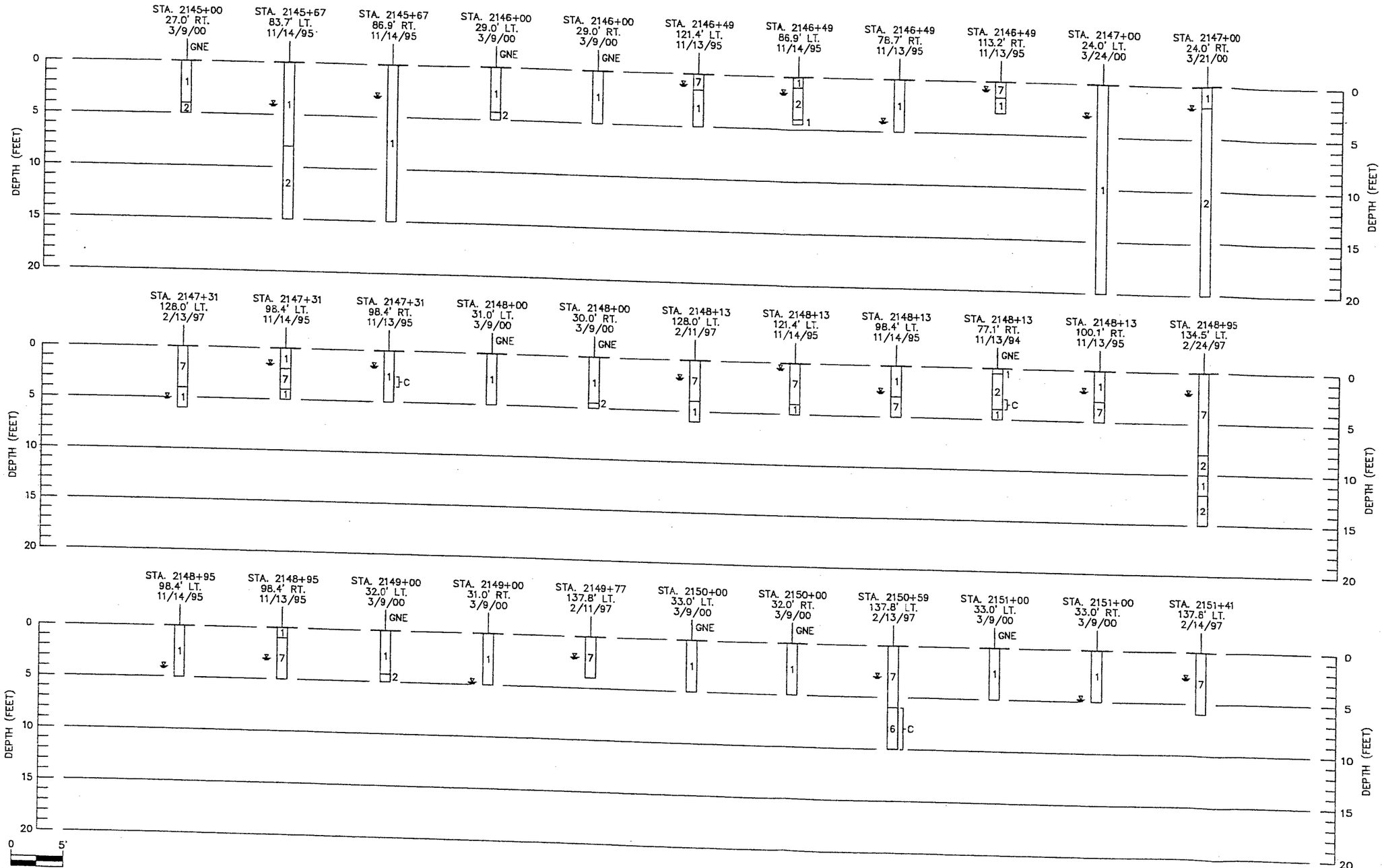
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.



LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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5. GRAY TO BROWN CLAYEY FINE SAND (A-2-7)
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7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

P:\geo\fdot\I-4\77525283\segment 7\77528320

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

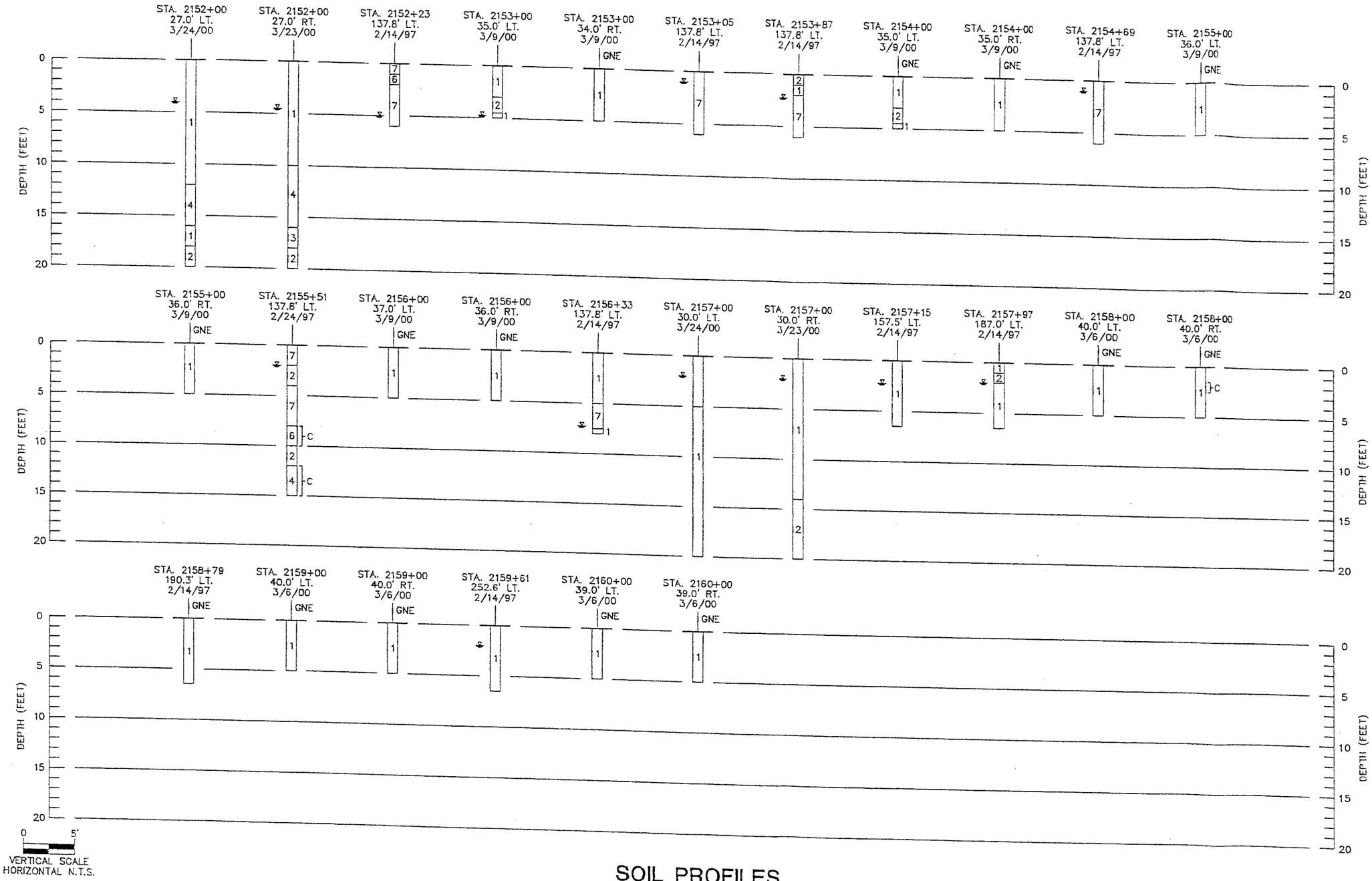
ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO. E-657

PSI PROJECT No. 775-25283
SHEET 20



LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
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7. DARK BROWN TO BLACK ORGANIC SILTY SAND, MUCK (A-8)

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

SOIL PROFILES

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REVISIONS

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PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

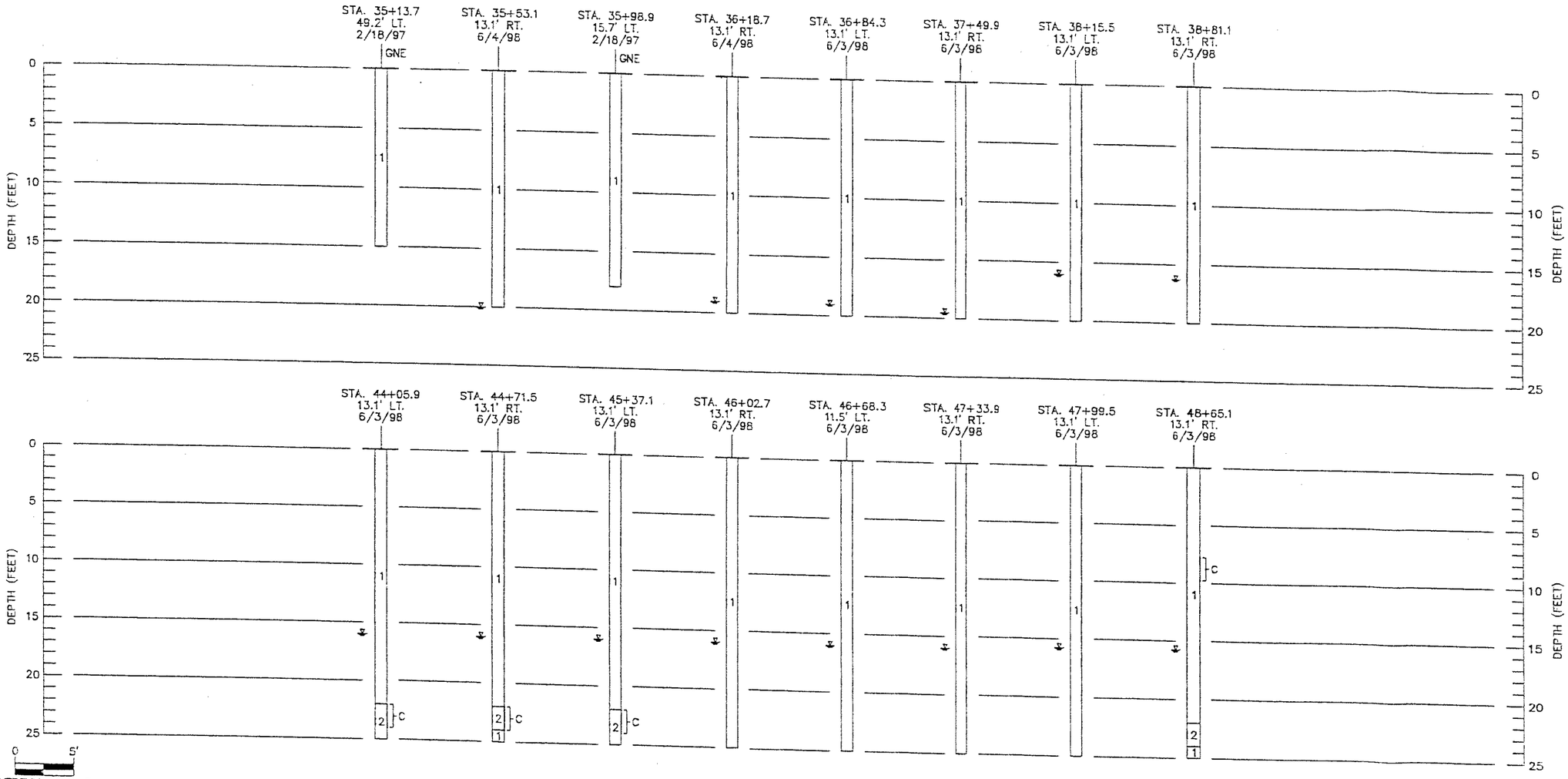
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.



SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
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A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

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REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

B/L SURVEY C.R. 54

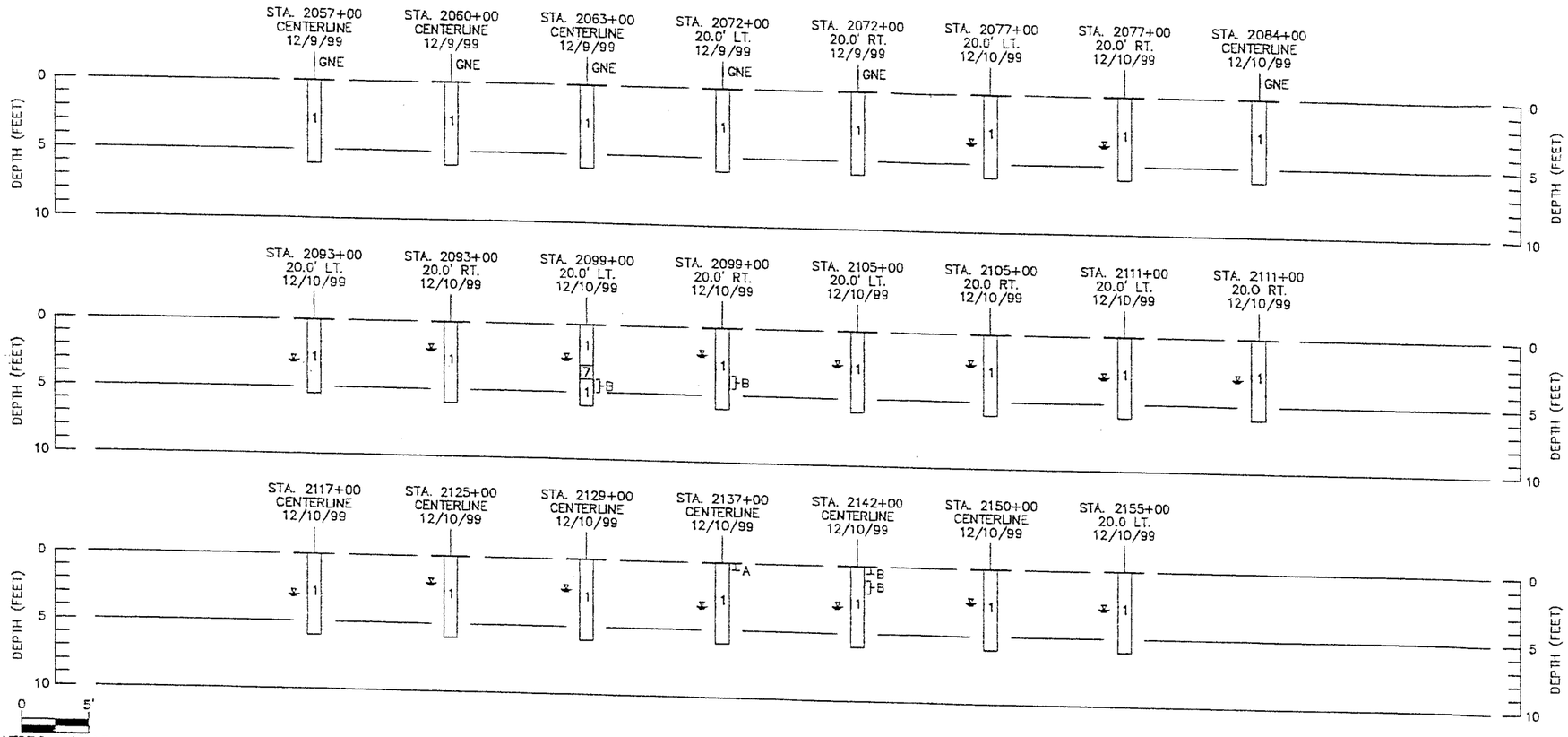
ROADWAY SOILS SURVEY

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 7526322



SOIL PROFILES

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
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A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

C WITH TRACE ORGANICS

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REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

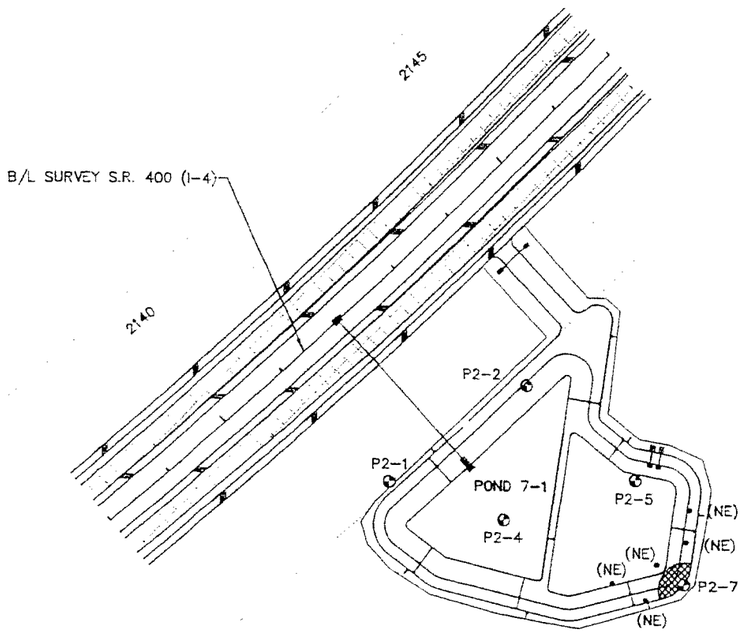
I-4 MEDIAN

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No.



BORING LOCATION PLAN

0 100'
PLAN SCALE

LOCATION	
TOWNSHIP:	26 S
RANGE:	27 E
SECTION:	4

LEGEND

1. LIGHT BROWN TO BROWN FINE SAND (A-3/A-1-b)
2. BROWN TO DARK BROWN SILTY FINE SAND (A-2-4)
3. GRAY TO BROWN CLAYEY FINE SAND (A-2-6)
4. GRAY TO BROWN SANDY CLAY (A-4/A-6)
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A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW

GROUNDWATER LEVEL, DATE OBSERVED

GNE GROUNDWATER LEVEL NOT ENCOUNTERED

A WITH LIMESTONE FRAGMENTS

B WITH CLAY LENSES

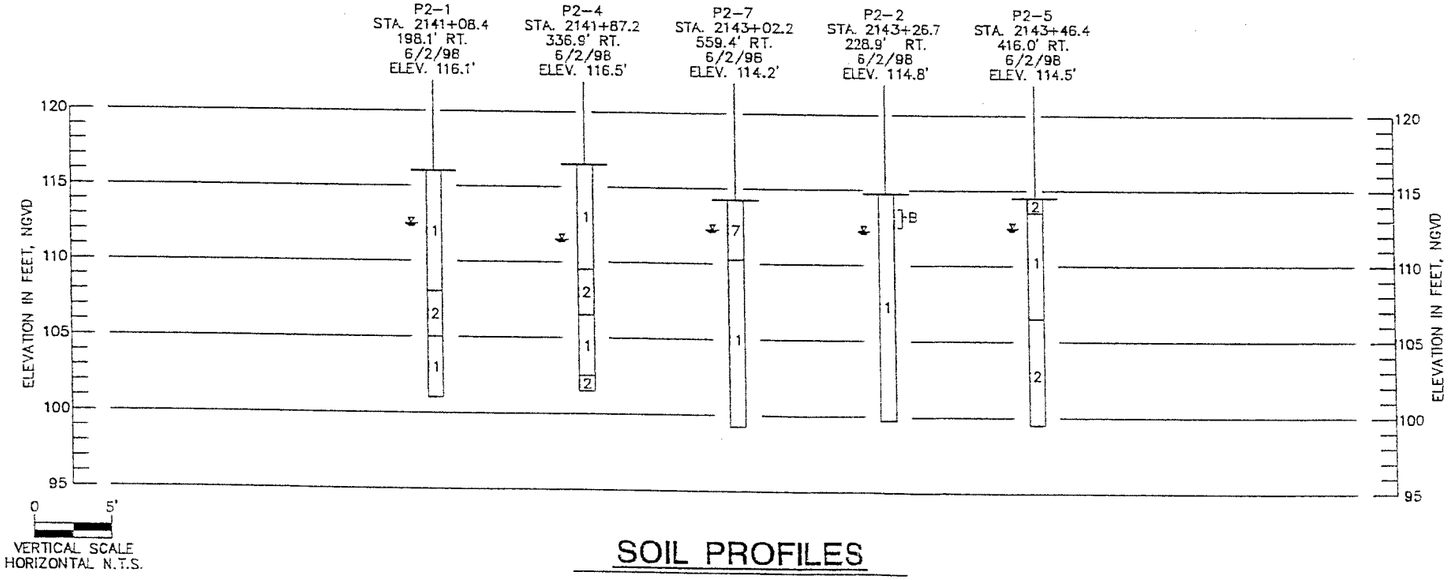
C WITH TRACE ORGANICS

APPROXIMATE POWER AUGER BORING LOCATION

APPROXIMATE MUCK PROBE LOCATION

(NE) NO MUCK ENCOUNTERED

APPROXIMATE EXTENT OF ORGANIC SOIL



SOIL PROFILES

REVISIONS

Date	By	Description	Date	By	Description

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DR., SUITE 112
TAMPA, FL. 33634
(813)-886-1075
FLORIDA ENGINEERING CERTIFICATE OF AUTHORIZATION No. 3684

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT NO.
S.R. 400	POLK	201204-1

POND 7-1

ROADWAY SOILS SURVEY

I-4 DESIGN BUILD SECTION 3
SEGMENT 7

SHEET NO.

PSI PROJECT No. 775-2528

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Appendix K

Wetland-Related Agency Correspondence

Appendix K

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only)
or (352) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103
Internet address: http://www.dep.state.fl.us/swfwmd

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 486-1212
SUNCOM 526-6900

3600 West Sovereign Path, Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

An Equal Opportunity Employer

October 1, 1998

Mr. Gregory L. Thomas, M.S.
Scheda Ecological Associates, Inc.
4013 East Fowler Avenue
Tampa, FL 33617

Subject: **Wetland and/or Surface Water Determination**

Project Name:	State Road 400 (Interstate 4) Improvements Final Design Segment 7
Inquiry No.:	45793
State Project No.:	16320-3426
W.P.I. No.:	1147943
County:	Polk
Sec/Twp/Rge:	4/26S/27E

Dear Mr. Thomas:

During a site visit on May 4, 1998, District staff determined that the property referenced above contains wetlands and/or surface waters as defined by Chapter 62-340, Florida Administrative Code (F.A.C.). The approximate boundaries are shown on the certified survey, received by the District on August 6, 1998. This information will be kept on file in the Bartow Service Office. Formal acceptance of wetland and/or surface water boundaries is accomplished through the issuance of an Environmental Resource Permit or a formal wetland determination, issued pursuant to Chapter 40D-4.042, F.A.C.

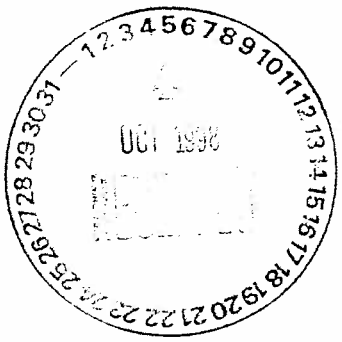
Work in wetlands and/or surface waters as well as any site development constitutes the creation, operation, alteration, abandonment or removal of a surface water management system and requires a permit from the District pursuant to Rule 40D-4.041, F.A.C. Environmental, water quality and quantity concerns related to site development will be evaluated during the District's review of the permit application.

If you have questions regarding this determination or District permitting procedures, please contact me in our Bartow Service Office. Please refer to the project name and inquiry number in future communications regarding this property.

Sincerely,

Mark K. Hurst
Environmental Scientist
Bartow Regulation Department

MKH/if
cc: D. Carpenter



Excellence Through Quality Service

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only)
or (352) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103
Internet address: http://www.dep.state.fl.us/swfwmd

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 486-1212
SUNCOM 526-6900

3600 West Sovereign Path, Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

An Equal Opportunity Employer

August 31, 1998

Mr. Gregory Thomas, Senior Scientist
Scheda Ecological Associates, Inc.
4013 East Fowler Avenue
Tampa, FL 33617

Subject: **On-Site Wetlands**
Project Name: I-4 Improvements - Final Design Segment 7
WDP No.: 43092
County: Polk
Sec/Twp/Rge: 4/26S/27E

Dear Mr. Thomas:

On May 5, 1998, I accompanied you on a site inspection of the subject property to review the wetland boundaries. All wetland boundaries which you had delineated were reviewed and were accepted.

We have not received a survey describing the wetland boundary; therefore, we are closing this compliance tracking (CT) record. Please refer to CT number 43092 in any future correspondence concerning this project.

If we can provide any further assistance regarding this project, please contact me in the Bartow Service Office at (941) 534-1448.

Sincerely,

Mark K. Hurst
Environmental Scientist
Bartow Regulation Department

MKH/po221

cc: D. Carpenter

Excellence Through Quality Service

DEPARTMENT OF THE ARMY
TAMPA REGULATORY FIELD OFFICE, JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 19247
TAMPA, FLORIDA 33686- 9247

REPLY TO
ATTENTION OF

August 17, 1998

Regulatory Division
West Permits Branch
Tampa Regulatory Office
199802765 (JF-PB)

Scheda Ecological Associates
Attn: Gregory L. Thomas
4013 East Fowler Avenue
Tampa, Florida 33617

Dear Mr. Thomas:

Reference is made to your correspondence received August 6, 1998, for a jurisdictional determination for **"I-4 SEGMENT 7 (SR54)"** located at Section 004, Township 26 South, Range 27 East, Polk County, Florida. An onsite field meeting on July 2, 1998, was attended by Pauline E. Baker of my staff.

The delineation shown on the enclosed survey by James N. Gatch, Jr. FPLS# 4595, which was submitted with your correspondence, has been verified and represents the approximate upland/wetland boundary for purposes of determining the U.S. Army Corps of Engineers jurisdictional limits in accordance with the 1987 Jurisdictional Manual. Please be advised that this jurisdictional delineation reflects current policy and regulations and is valid for a period no longer than five years from the date of this letter unless new information warrants revision of the delineation before the expiration date. If after the 5-year period, this jurisdictional determination has not been specifically revalidated by the Corps of Engineers, it shall automatically expire. Any reliance upon jurisdictional correspondence beyond that time frame may lead to incorrect planning and design efforts as well as possible violations of current Federal laws and/or regulations. You may revalidate or update the jurisdiction guidance as appropriate for your project duration. Any revalidation or updating will then reflect current Federal laws and regulations.

The jurisdictional areas are regulated by the U.S. Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act. Any activities undertaken in these areas may require Department of the Army authorization. State, local or other Federal permits may also be required.

When submitting your permit application for Department of the Army authorization, please reference the following: **COE #199802765 (JF-PB)-I-4 SEGMENT 7 (SR54).**

Thank you for your cooperation with the U.S. Army Corps of Engineers Regulatory Program. If you have any questions regarding this letter or the Corps of Engineers regulations, please contact Pauline E. Baker at our Tampa Office at (813)840-2908.

Sincerely,

Joseph R. Bacheler
Chief, Tampa Regulatory Office

Enclosures

Copy Furnished:

Natural Resource Conservation Service
Attn: District Conservationist

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

August 4, 1998

Ms. Pauline Baker
U.S. Army Corps of Engineers
P.O. Box 19247
Tampa, Florida 33686

Re: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line
COE File No. 199802765 and "I-4 Segment 7 (SR54)"
State Project No. 16320-3426
W.P.I. No. 1147943
Polk County
Validation of Wetland Jurisdictional Survey

Dear Pauline:

As agreed during the field review of July 2, 1998, please find enclosed three (3) copies of the wetland survey for the above referenced site. These surveys are for your review and written validation of the jurisdictional line. Please return one validated survey to SEA, Inc. If you have any questions, please call me at (813) 971-3755.

Sincerely,

Scheda Ecological Associates, Inc.

Greg Thomas

Gregory L. Thomas, M.S.
Senior Environmental Scientist

Enclosure: Wetland Jurisdictional Survey (3 copies)

cc: Ann Venables, TBE (without enclosures)

183\LTR\980804pb.ltr

4013 EAST FOWLER AVENUE • TAMPA, FLORIDA 33617
TEL / 813.971.3755 • FAX / 813.971.0170 • E-MAIL / SCHEDA@GATE.NET

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

August 4, 1998

Mr. Mark Hurst
Southwest Florida Water Management District
170 Century Boulevard
Bartow, FL 33830

Re: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line
State Project No. 16320-3426
W.P.I. No. 1147943
I-4 / County Road 54 Crossing
Polk County
Validation of Wetland Jurisdictional Survey

Dear Mark:

As agreed during our field review on May 4, 1998, please find enclosed two (2) copies of the wetland survey for the above referenced site. These surveys are for your review and written validation of the wetland boundaries.

Please keep one copy of the survey for your pre-application file and validate the other copy and return it to SEA, Inc. If you have any questions, please contact me at 971-3755.

Sincerely,

Scheda Ecological Associates, Inc.

Greg Thomas

Gregory L. Thomas, M.S.
Senior Environmental Scientist

Enclosure: Wetland Survey (2 copies)

cc: Ann Venables, TBE (without enclosures)

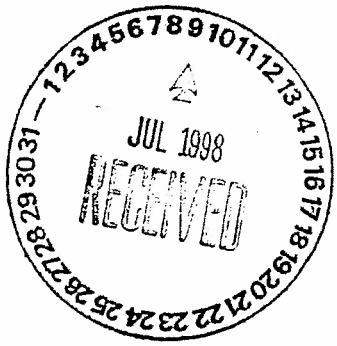
183\LTR\980804mh.ltr

4013 EAST FOWLER AVENUE • TAMPA, FLORIDA 33617
TEL / 813.971.3755 • FAX / 813.971.0170 • E-MAIL / SCHEDA@GATE.NET

DEPARTMENT OF THE ARMY
TAMPA REGULATORY FIELD OFFICE, JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 19247
TAMPA, FLORIDA 33686-9247

REPLY TO
ATTENTION OF

July 6, 1998



Regulatory Division
West Permits Branch
Tampa Regulatory Office
199802765 (PB)

SUBJECT: Jurisdictional Review, I-4 SEGMENT 7 (SR54)

Scheda Ecological Associates
4013 East Fowler Avenue
Tampa, Florida 33617

Dear Mr. Landers:

Reference is made to the July 2, 1998, field review of the U.S. Army Corps of Engineers' jurisdictional limits located in Section 004, Township 26 South, Range 27 East, Polk County, Florida.

Please refer to the following: number **199802765** and "I-4 SEGMENT 7 (SR54)" for this and all future related actions to minimize time frames. Upon receipt of three (3) copies of the requested jurisdictional documents, the delineation will be reviewed and validated in writing. Please send the requested materials to the above address. If you need additional assistance, I can be reached at telephone number (813)840-2908.

Sincerely,

Pauline E. Baker
Legal Instruments Examiner
Tampa Regulatory Office

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

May 8, 1998

Mr. Eric Summa
U.S. Army Corps of Engineers
Post Office Box 19247
Tampa, Florida 33686

RE: Interstate 4 Improvements - Final Design Segment 7
From East of US 27 to the Osceola County Line
Polk County
Township 26S - Range 27E - Section 4
SPN: 16320-1426
W.P.I. No.: 1147943
Jurisdictional Wetland Review Request

Dear Eric:

This letter is to request a field wetland review for the above referenced site, as we discussed on April 22, 1998. I expect the field effort to be short (approximately one hour on-site). For your reference, previous U.S. Army Corps of Engineers (USACOE) jurisdictional determinations were conducted for the roadway and drainage components of this project under USACOE File Nos. 199404246 and 199507898 (documentation enclosed). Three small additional wetlands that were not identified in the previous jurisdictionals need to be reviewed. This will complete the current phase of this project. The standard USACOE information package is enclosed for your use. Please contact me (813.971.3755) at your earliest convenience to arrange the wetland review.

Sincerely,

Scheda Ecological Associates, Inc.

Gregory Thomas

Gregory Thomas
Senior Scientist

Enclosures: Correspondence (June 26, 1995 and April 22, 1996)
Project Location Map
Soil Data
Aerial Photograph
Completed Data Sheets

xc: Ann Venables, TBE

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4013 EAST FOWLER AVENUE • TAMPA, FLORIDA 33617
TEL / 813.971.3755 • FAX / 813.971.0170 • E-MAIL / SCHEDA@GATE.NET

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

April 27, 1998

Mr. Mark Hurst
Environmental Scientist
Southwest Florida Water Management District
170 Century Boulevard
Bartow, Florida 33830-7700

RE: Interstate 4 Improvements - Final Design Segment 7
(from east of US 27 to the Osceola County Line)
Polk County
Township 26S - Range 27E - Section 4
SPN: 16320-3426
W.P.I. No.: 1147943
Jurisdictional Wetland Review Request

Dear Mr. Hurst:

This letter is to request a field wetland review for the above referenced site, as we discussed. I expect the field effort to be short (approximately one hour on-site). For your information, previous Southwest Florida Water Management District (SWFWMD) wetland reviews for this segment of I-4 were conducted under SWFWMD Permit Inquiry No. 15538 (December 5, 1995 and April 10, 1997 correspondence). Please meet me on May 4, 1998 at 12:30 p.m., at the Burger King on US 27, in the northeast corner of the I-4/US 27 intersection. Enclosed, please find an aerial photograph, project location map, and soil map.

If you have any questions, please contact me at 813.971.3755.

Sincerely,

Scheda Ecological Associates, Inc.

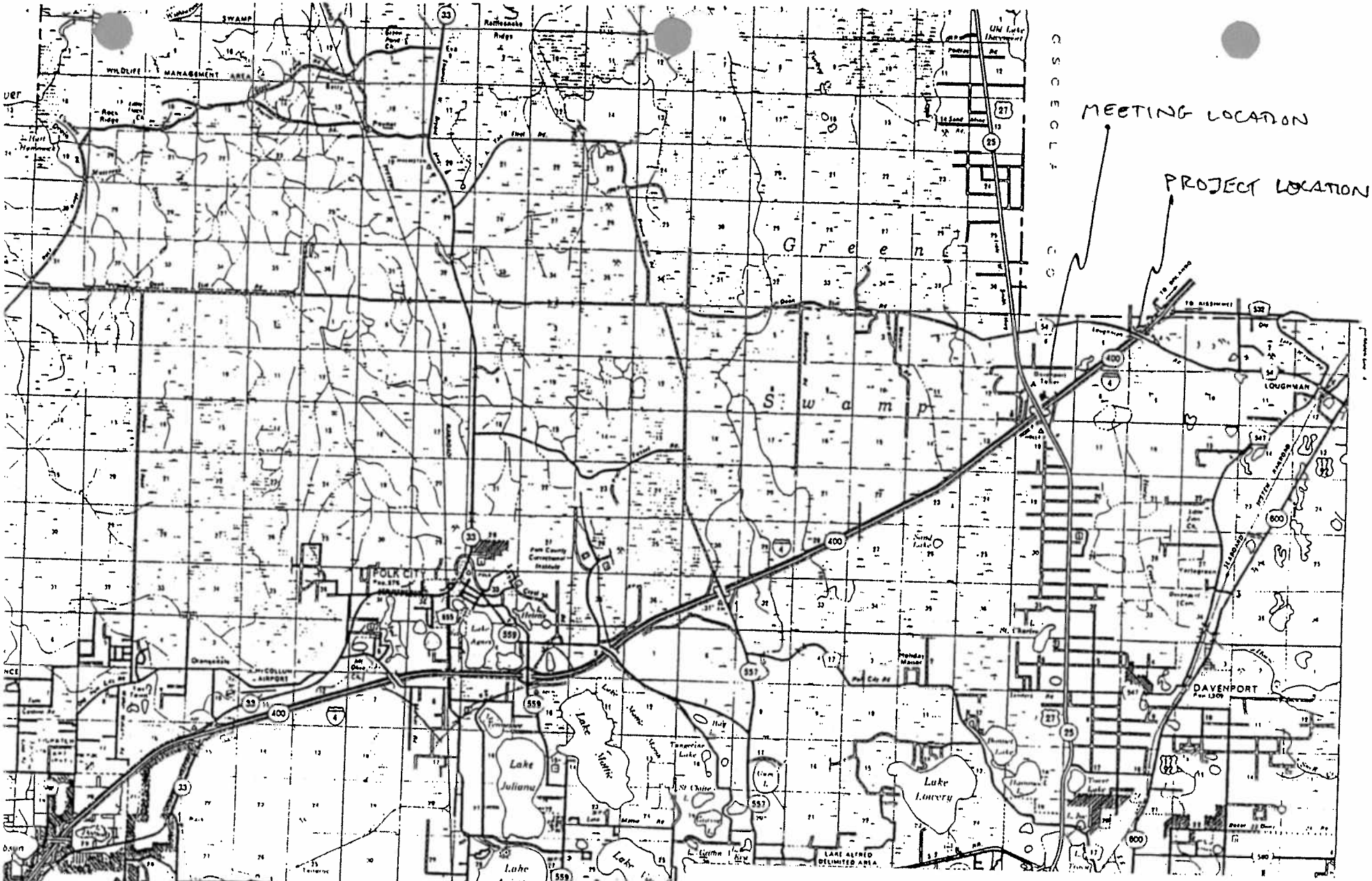
Gregory Thomas

Gregory Thomas
Senior Scientist

xc: Ann Venables, TBE

183\LTR\980427mh.ltr

4013 EAST FOWLER AVENUE • TAMPA, FLORIDA 33617
TEL / 813.971.3755 • FAX / 813.971.0170 • E-MAIL / SCHEDA@GATE.NET



State Road 400 (Intersate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line
state Project No. 16320-1426
W.P.I. No. 1147943
F.A.P. No. N/A
Polk County
PROJECT LOCATION MAP

E673

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only) or
(352) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 486-1212
SUNCOM 526-6900

2303 Highway 44 West
Inverness, Florida 34453-3809
(352) 637-1360

An Equal Opportunity Employer

April 10, 1997

Mr. Gregory L. Thomas
Senior Environmental Scientist
Scheda Ecological Associates
4013 East Fowler Avenue
Tampa, FL 33617

Subject: **Wetland Verification: I-4, Polk County Segment 7, Stormwater Pond Sites**
Permit Inquiry No.: 15538
Sec\Twp\Rge: 4,5,8/26S/27E
County: Polk

Dear Mr. Thomas:

Subsequent to our site visit on January 9, 1996, please be advised that the subject property contains wetlands. Pursuant to Rule 40D-4.051(2)(c), Florida Administrative Code, activities in wetlands require a permit from this agency. Pursuant to Rule 40D-4.301(1)(f), F.A.C., Conditions for Issuance of Permits include reasonable assurance that the proposed activity "will not cause environmental impacts or adverse impacts to wetlands, fish and wildlife, or other natural resources".

By this letter, we acknowledge receipt on April 10, 1996, of a certified survey (date February 22, 1996) depicting approximate boundaries of wetlands and surface waters on the proposed storm water pond sites. This information will be included in a permit inquiry file in our Bartow office.

Please refer to Permit Inquiry No. 15538 and include a copy of this letter in future correspondence regarding the subject property. Formal acceptance of wetland boundary delineations is accomplished only through permit issuance. Environmental concerns, and aspects of water quality and quantity related to development of this site, shall be evaluated during staff review of a permit application.

Please feel free to call me if I may be of any further assistance.

Sincerely,

David E. Bishof
Environmental Scientist
Bartow Regulation Department

DEB/po713
cc: D. Carpenter

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS, VERO BEACH REGULATORY OFFICE
2001 9TH AVENUE, SUITE 304
VERO BEACH, FLORIDA 32960-6438

REPLY TO
ATTENTION OF

APR 22 1996

Construction-Operations Division
Regulatory Branch
Atlantic Permits Section
JURISDICTIONAL (199507898)

Mr. Gregory L. Thomas
Scheda Ecological Associates, Inc.
4013 East Fowler Avenue
Tampa, Florida 33617

Dear Mr. Thomas:

Reference is made to your correspondence dated April 15, 1996 for a jurisdictional determination for "State Road 400/I-4 Improvements" located in Sections 4 and 5, Township 26 South, Range 27 East, Polk County, Florida. An onsite field meeting on January 22, 1996 was attended by Tori K. Agramonte.

The delineation shown on the survey (enclosure) by Mr. R. E. Edgerton FPLS #4292 which was submitted with your correspondence, has been verified and represents the approximate upland/wetland boundary for purposes of determining the U.S. Army Corps of Engineers jurisdictional line. Please be advised that the jurisdictional delineation shown is based on the Corps of Engineers Wetlands Delineation Manual (1987) and is valid for a period no longer than five years from the date of this letter. If after the five-year period, this jurisdictional delineation has not been specifically revalidated by the Corps of Engineers, it shall automatically expire. Any reliance upon jurisdictional correspondence beyond that time frame may lead to incorrect planning and design efforts, as well as possible violation of current Federal laws and/or regulations. You may revalidate or update the jurisdictional delineation as appropriate for your project duration. Any revalidation or updating will then reflect current Federal laws and regulations.

The jurisdictional areas are regulated by the U.S. Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act of 1977. Any activities constructed in these areas may require Department of the Army authorization. Other Federal, State or local permits may also be required.

If you propose to impact jurisdictional areas, you will be required to submit a joint permit application, reflecting all proposed encroachment into wetlands within the Department of the Army jurisdiction. You are cautioned that work performed below the mean high water line or ordinary high water line in waters of the United States, or the discharge of dredged or fill material into adjacent wetlands, without a Department of the Army permit could subject you to enforcement action. Receipt of a permit from the Florida Department of Environmental Protection does not obviate the requirement for obtaining a Department of the Army permit for the work described above prior to commencing work.

Thank you for your cooperation with our permit program. If you have any questions concerning this matter please contact Ms. Tori K. Agramonte at the letterhead address or by telephone (407) 567-1681.

Sincerely,

Tori K Agramonte

Tori K. Agramonte
Field Biologist

Enclosure
cc: NRCS, Bartow Field Office

DEPARTMENT OF THE ARMY

JACKSONVILLE DISTRICT CORPS OF ENGINEERS, VERO BEACH REGULATORY OFFICE
2001 9TH AVENUE, SUITE 304
VERO BEACH, FLORIDA 32960-6438

REPLY TO
ATTENTION OF

JAN 22 1996

Construction-Operations Division
Regulatory Branch
Atlantic Permits Section
199507898

SUBJECT: Jurisdictional Review, "State Road 400/Interstate 4 Improvements"

Mr. Gregory L. Thomas
Scheda Ecological Associates, Inc.
4013 East Fowler Avenue
Tampa, Florida 33617

Dear Mr. Thomas:

Reference is made to the January 22, 1996 field review of the U.S. Army Corps of Engineers jurisdictional limits located at Sections 4 and 5, Township 26 South, Range 27 East, Polk County, Florida.

Upon receipt of the jurisdictional documents as requested in the field by the Corps of Engineers representative, the delineation will be reviewed and validated in writing. When furnishing the requested materials, please refer to the following to minimize time frames: File #199507898 and "State Road 400/Interstate 4 Improvements".

Thank you for your cooperation with our regulatory program. If you have any questions regarding this matter, please contact Ms. Tori K. Agramonte at the letterhead address or by telephone (407) 567-1681.

Sincerely,

Tori Agramonte

Tori K. Agramonte
Field Biologist

Southwest Florida Water Management District

2379 Broad Street • Brooksville, Florida 34609-6899 • 1-800-423-1476 (Florida Only)
(904) 796-7211 • SUNCOM 628-4150 • T.D.D. Number Only (Florida Only): 1-800-231-6103

7601 Highway 301 North
Tampa, Florida 33637-6759
1-800-836-0797 or (813) 985-7481
SUNCOM 578-2070

170 Century Boulevard
Bartow, Florida 33830-7700
1-800-492-7862 or (941) 534-1448
SUNCOM 572-6200

115 Corporation Way
Venice, Florida 34292-3524
1-800-320-3503 or (941) 483-5970
SUNCOM 549-5970

2379 Highway 44 West
Inverness, Florida 34453-3809
(904) 637-2166

An Equal Opportunity Employer

December 5, 1995

Scheda Ecological Associates, Inc.
Mrs. Sandy Scheda
4013 East Fowler Avenue
Tampa, FL 33617

Subject: Site Review Response
Inquiry No.: CT 15538
Parcel Name: Interstate 4, Segment 7, SPN 16320-3426
Owner: FDOT
Sec/Twp/Rge: 8,5,4/26S/27E
County: Polk

Dear Mrs. Scheda:

During an August 23, 1995, site visit, District staff determined that the property referenced above contains wetlands.

The District acknowledges receipt on June 16, 1995, of a certified survey depicting of the approximate boundaries of the wetlands and surface waters on site, and will include this information in a pre-application file in the Bartow Service Office. Please refer to the Permit Inquiry Number and include a copy of this letter in subsequent correspondence regarding the property.

Any site development which will alter, abandon or remove any existing surface water management system requires a permit from this agency pursuant to Rule 40D-4.041(1), Florida Administrative Code (F.A.C.). Environmental concerns and questions of water quality and quantity related to site development will be evaluated during staff review of the permit application. Formal acceptance of the wetland delineation is accomplished only through permit issuance or a formal wetland determination issued pursuant to Rule 40D-4.042, F.A.C.

If you have questions regarding this matter, please contact me at the Bartow Service Office.

Sincerely,

David E. Bishof
Environmental Scientist
Bartow Regulation Department

DEB:jfc164
cc: Permit Inquiry No. CT 15538

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

December 22, 1995

David E. Bishof,
Environmental Scientist
Southwest Florida Water Management District
170 Century Blvd.
Bartow, FL 33830-7700

RE: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line, Polk County
State Project No. 16320-3426
W.P.I. No. 1147943
Request for Field Jurisdiction Verification

Dear Mr. Bishof:

This letter is to request a field wetland verification for the above referenced site, as we discussed on December 15, 1995. Enclosed, please find the aerial photographs as requested. Please reference SWFWMD Permit Inquiry Number 15538. We will meet on January 9, 1996 at 10:00 at the Mobil gas station at the northeast quadrant of the intersection of I-4 and US 27.

If you have any questions, please contact me.

Sincerely,

Scheda Ecological Associates, Inc.

Greg

Gregory L. Thomas, M.S.
Senior Environmental Scientist

Enc.: Aerial Photograph

cc: Mohsin Khalil, TBE

183\LTR\122195db.ltr

4013 EAST FOWLER AVE
TAMPA, FLORIDA 33617
TEL. 813/971-3755
FAX. 813/971-3755

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

December 22, 1995

Tori Agramonte, Biologist
U.S. Army Corps of Engineers
2001 9th Avenue, Suite 304
Vero Beach, FL 32960

RE: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line, Polk County
State Project No. 16320-3426
W.P.I. No. 1147943
Request for Field Jurisdiction Verification from U.S. Army Corps of Engineers

Dear Tori:

This letter is to request a field wetland verification for the above referenced site, as we discussed. Please find the aerial photograph, marked with project limits, soil data, latitude-longitude, and S-T-R enclosed as you requested. I will provide completed data sheets at the time of our meeting. We will tentatively plan to meet January 22, 1996 at 10:30 at the Mobil gas station at the northeast quadrant of the I-4 and US 27 intersection.

If you have any questions, please contact me.

Sincerely,

Scheda Ecological Associates, Inc.

Greg

Gregory L. Thomas, M.S.
Senior Environmental Scientist

Enclosure

cc: Mohsin Khalil, TBE

183\LTR\122195ta.ltr

4013 EAST FOWLER AVE.
TAMPA, FLORIDA 33617
TEL: 813/971-3755
FAX: 813/971-0170

Southwest Florida Water Management District

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SUNCOM 549-5970

2379 Highway 44 West
Inverness, Florida 34453-3809
(904) 637-2369

An Equal Opportunity Employer

December 5, 1995

Scheda Ecological Associates, Inc.
Mrs. Sandy Scheda
4013 East Fowler Avenue
Tampa, FL 33617

Subject: Site Review Response
Inquiry No.: CT 15538
Parcel Name: Interstate 4, Segment 7, SPN 16320-3426
Owner: FDOT
Sec/Twp/Rge: 8,5,4/26S/27E
County: Polk

Dear Mrs. Scheda:

During an August 23, 1995, site visit, District staff determined that the property referenced above contains wetlands.

The District acknowledges receipt on June 16, 1995, of a certified survey depicting of the approximate boundaries of the wetlands and surface waters on site, and will include this information in a pre-application file in the Bartow Service Office. Please refer to the Permit Inquiry Number and include a copy of this letter in subsequent correspondence regarding the property.

Any site development which will alter, abandon or remove any existing surface water management system requires a permit from this agency pursuant to Rule 40D-4.041(1), Florida Administrative Code (F.A.C.). Environmental concerns and questions of water quality and quantity related to site development will be evaluated during staff review of the permit application. Formal acceptance of the wetland delineation is accomplished only through permit issuance or a formal wetland determination issued pursuant to Rule 40D-4.042, F.A.C.

If you have questions regarding this matter, please contact me at the Bartow Service Office.

Sincerely,

David E. Bishof
Environmental Scientist
Bartow Regulation Department

DEB:jfc164
cc: Permit Inquiry No. CT 15538

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

June 26, 1995

Atlantic Permits Branch
Vero Beach Field Office
2001 Ninth Avenue, Suite 212C
Vero Beach, Florida 32960

JURISDICTIONAL (199404246)

Ms. Dorie K. Faulkner
c/o Scheda Ecological Associates
4013 East Fowler Avenue
Tampa, Florida 336177

Dear Ms. Faulkner:

Reference is made to your correspondence dated June 14, 1995, for a jurisdictional determination for "State Road 400/I-4 Improvements" at Sections 3, 4, 5, 6, 7, 8, 9, & 10, Township 26 South, Range 27 East, Polk County, Florida. An onsite field meeting on August 15, 1994 was attended by Ms. Linda S. Ferrell.

The delineation shown on the aerials (enclosure), which were submitted with your correspondence, has been verified and represents the approximate upland/wetland boundary for purposes of determining the U.S. Army Corps of Engineers jurisdictional line. Please be advised that the jurisdictional delineation shown is based on the Corps of Engineers Wetlands Delineation Manual (1987) and is valid for a period no longer than five years from the date of this letter. If after the five-year period, this jurisdictional delineation has not been specifically revalidated by the Corps of Engineers, it shall automatically expire. Any reliance upon jurisdictional correspondence beyond that time frame may lead to incorrect planning and design efforts, as well as possible violation of current Federal laws and/or regulations. You may revalidate or update the jurisdictional delineation as appropriate for your project duration. Any revalidation or updating will then reflect current Federal laws and regulations.

The jurisdictional areas are regulated by the U.S. Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act of 1977. Any activities constructed in these areas may require Department of the Army authorization. Other Federal, State or local permits may also be required.

If you propose to impact jurisdictional areas, you will be required to submit a joint permit application reflecting all existing and proposed encroachment into wetlands within the Department of the Army jurisdiction. You are cautioned that work performed below the mean high water line or ordinary high water line in waters of the United States, or the discharge of dredged or fill material into adjacent wetlands, without a Department of the Army permit could subject you to enforcement action. Receipt of a permit from the Florida Department of Environmental Protection does not obviate the requirement for obtaining a Department of the Army permit for the work described above prior to commencing work.

Thank you for your cooperation with the U.S. Army Corps of Engineers Regulatory Program. If you have any questions regarding this matter or the Corps of Engineers regulations, please contact Ms. Linda S. Ferrell at the Vero Beach Field Office or by telephone, (407) 770-2440.

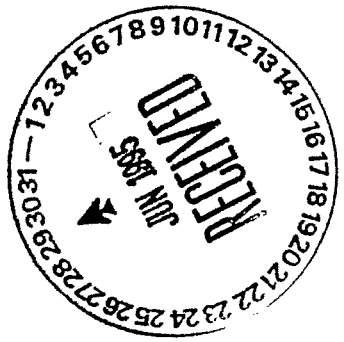
Sincerely,

Linda S. Ferrell

Linda S. Ferrell
Field Biologist

Enclosure

bcc: NRCS-Bartow Field Office



SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

June 14, 1995

Ms. Linda Ferrel
U.S. Army Corps of Engineers
2001 9th Avenue
Suite 212C
Vero Beach, Florida 32960

Re: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line
State Project No. 16320-3426
W.P.I. No. 1147943
Polk County
Validation of Wetland Jurisdictional Survey

Dear Linda:

As agreed during our field review on August 23, 1994, please find enclosed three (3) copies of the wetland survey for the above referenced site. These surveys are for your review and written validation of the jurisdictional line. If you have any questions, please call me at (813) 971-3755.

Sincerely,

Scheda Ecological Associates, Inc.

Dorie K. Faulkner, M.S.
Senior Environmental Scientist

cc: Tracy Hood, TBE (without enclosures)
Enclosure: Wetland Jurisdictional Survey

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4013 EAST FOWLER AVE.
TAMPA, FLORIDA 33617
TEL: 813/971-3755
FAX: 813/971-0173

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

June 14, 1995

Mr. David Bishof
Southwest Florida Water Management District
170 Century Boulevard
Bartow, FL 33830

Re: State Road 400 (Interstate 4) Improvements -- Final Design Segment 7
From East of U.S. 27 to the Osceola County Line
State Project No. 16320-3426
W.P.I. No. 1147943
Polk County
Validation of Wetland Jurisdictional Survey

Dear Dave:

As agreed during our field review on August 23, 1994, please find enclosed one copy of the wetland survey for the above referenced site. This survey is for your review and written validation of the wetland boundaries.

I remember that you are extremely overloaded right now, and I have taken the liberty of enclosing the standard SWFWMD letter on a WordPerfect file in case it will help. If you have any questions, please contact me at 971-3755. Thank you.

Sincerely,

Scheda Ecological Associates, Inc.

Dorie K. Faulkner, M.S.
Senior Environmental Scientist

cc: Tracy Hood, TBE (without enclosures)
Enclosure: Wetland Survey
Computer diskette

183\LTR\061495db.ltr

4013 EAST FOWLER AVE.
TAMPA, FLORIDA 33617
TEL: 813/971-3755
FAX: 813/971-2172

MINUTES

PROJECT: I-4, Polk County, Segment 7
State Project No. 16320-1426, WPI No. 1147943

DATE/TIME: June 6, 1995/2:00 PM

LOCATION: Southwest Florida Water Management District Office (Bartow)

SUBJECT: Southwest Florida Water Management District Pre-Application Meeting

---

The following represents our understanding of the meeting. Should anyone's recollection differ, please advise immediately. The attached meeting register reflects those that were present at the meeting.

1. The Southwest Florida Water Management District (SWFWMD) evaluators for this project will be Sammy Hares, PE and Dave Bishof, ES.

2. The project is currently in the 30 percent design stage (approximate), with the 60 percent design expected around the end of the year.

3. The following was stated with regard to the ERP Rules:

   - The ERP rules are expected to be effective within 60 days.
   - There are *draft* copies of the ERP rules around, but none are available in Bartow.
   - The current rules are expected to be very similar to the August 1994 version of the rules.
   - The rules will take effect in two phases. The first phase will be implementation of the new permit forms and statewide environmental rules. The second phase will be implementation of statewide stormwater rules.
   - The statewide rules are expected to be similar to St. John's River Water Management District (SJRWMD) rules.
   - It is expected that permits granted prior to the implementation of the new rules would be "grandfathered" and would not need to be revised, but no assurances were given.

4. The existing roadway was constructed in the early 60s. The existing roadway consists of two 3.6-meter (12-foot) lanes, a 2.4-meter (8-foot) outside paved shoulder, and

1.2-meter (4-foot) inside paved shoulder. The median width varies from 19.2 meters (64 feet) at US 27, to 45 meters (150 feet) through the majority of the project, back to 19.2 meters (64 feet) at County Road 54, then to 30 meters (100 feet) at the County Road 532 (County Line Road) interchange. The right-of-way varies, correspondingly, from 90 meters (300 feet), to 120 meters (400 feet), then back to 90 meters (300 feet) for the remainder of the project.

5. Proposed Roadway Design comments:

- The Florida Department of Transportation (FDOT) has prepared a Master Plan for the I-4 corridor which identifies the ultimate I-4 typical section as five lanes of roadway and one rail in each direction. The five roadway lanes will be divided into three general use lanes and two special use lanes. The special use lanes will be for High Occupancy Vehicles (HOV) or "through trip" vehicles. The general use lanes and the special use lanes will be separated by a barrier wall except where slip ramps are constructed to provide access between the two.

- The project will be phase constructed. The first phase will consist of the six general purpose lanes. The number of remaining phases, and the timing for the remaining phases is unknown.

- These plans will be for the first phase construction, but the stormwater and mitigation facilities will be designed and constructed for the ultimate typical section. It is being assumed for this design that the entire median area will be impervious.

- The typical section will be rural (using roadside swales) rather than urban (using a closed drainage system) due primarily to the availability of right-of-way, and the cost preclusiveness of the urban section (i.e. retaining walls, barrier, drainage, etc.).

- The roadway alignment will shift approximately 6.9 meters (23 feet) to the north through the section with 120 meter (400 foot) right-of-way. This shift in alignment minimizes the impacts to wetlands, and optimizes the use of existing right-of-way for stormwater treatment.

- The County Road 532 interchange will not be included in these plans because the interchange is in the jurisdiction of District 5. District 5 is at Tier 1 of a 3-Tier Master Plan development process, therefore, has not set the ultimate interchange configuration.

6. Sammy Hares and Bill Hartman agreed that the project should be considered to be an alteration of an existing project, not a new project.

7. Environmental issues on this project include:

   - The project impacts 15 wetlands with a total area of approximately 13 acres (7.3 acres of forested wetland, 4.6 acres of marsh and 0.9 acres of scrub).
   - Preliminary ratios of 1.5:1 for herbaceous impacts, and 2.5:1 for forested impacts, were discussed.
   - Replacement ratios may be lowered slightly if proposed system will be of higher quality than the existing system.
   - Replacement must be type for type.
   - A forested wetland is any wetland with greater than 10 percent canopy coverage from "trees." The rules define the definition of a tree.
   - If a mitigation banking scheme is utilized, the banks must be in the same basin as the impacts.

8. Existing drainage conditions:

   - The project lies within two primary basins: Horse Creek, and Reedy Creek. Both basins are tributaries of the Kissimmee River Basin.
   - There are three existing cross drains on the project that will most likely be extended.

9. Proposed Drainage Design includes:

   - The proposed drainage system will consist of two discreet systems: the outside two lanes, and the inside lane and median. The roadway crown is located between the outside two lanes and the inside lane of the proposed general use lanes. The runoff from the outside two lanes will discharge into roadway swales, while the inside lanes and median areas will be collected in inlets and conveyed to treatment areas. In the current design, the median runoff will be collected in grate inlets, while in the ultimate design, it will be collected in a combination of shoulder inlets, barrier wall inlets, and grate inlets.

- The outside two lanes will be allowed to discharge, through the roadside swales, directly from the project. Storage is not proposed in these swales as it would create standing water in the "clear zone", which is a safety concern. The interior lanes and median will be handled separately in the two basins.

- West of County Road 54, the interior lanes and median area will be piped to a linear pond along the south side of the roadway. This swale is located in the additional right-of-way provided through the bifurcated area, and will provide the required treatment volume for the interior lanes and median. The swale will be elevated with the roadway embankment and will provide on-line dry retention. The linear swale will be terminated at wetland areas.

- Dave Bishoff was concerned about direct discharge into wetlands, but Sammy Hares agreed with the concept of allowing the proposed outside two lanes to function exactly as the existing two lanes.

- Attenuation west of County Road 54 will be provided in an attenuation pond located on the north side of the roadway. This attenuation pond will be contiguous with the existing wetlands, and will be controlled, along with the contiguous wetlands, by the roadway culvert. The system will be modeled to show that the proposed design does not significantly impact the existing storm fluctuations and hydroperiod. The attenuation pond may also be planted as a mitigation area.

- Dave Bishoff was concerned that creating an attenuation pond adjacent to isolated wetlands may draw down the water level in the isolated wetlands. Sammy Hares also pointed out that the fluctuation in the attenuation pond could be no more than six inches if it is going to be used for mitigation.

- East of County Road 54, the interior lanes and median area will be piped to an off-site treatment and attenuation pond. This pond will be located south of the roadway, and will provide the required treatment volume for the interior lanes and median. The pond will provide on-line wet detention.

- Compensation for 100-year floodplain impacts will be provided in the proposed ponds.

- Sammy Hares noted that the attenuation and attenuation/treatment ponds may not be suitable for 100-year floodplain mitigation if the volume created is not between the Seasonal High Water Elevation (SHW) and the 100-year floodplain elevation.

Mr. Hares also pointed out that the 100-year floodplain elevation should be determined according to FDOT practice.

10. Sammy Hares requested that information be sent to him as the design progresses, rather than all at once in the permit submittal.

0095-88.00

MEETING REGISTER

PROJECT NAME: I-4 POLK COUNTY, SEGMENT 7 (SPN 16520-1426) PROJECT # 0895-88.00

DATE: JUNE 6, 1995 TIME: 2100 MEETING LOCATION: SWFWMD, BARTOW

NAME	TITLE	FIRM	ADDRESS	PHONE #
GARY JD ELWER	DRAINAGE REVIEW	CARR SMITH ASSOC.	BARTOW	(813) 534-850
Cheryl Jones	Program Mgr.	Sverdrup Civil, Inc.	"	"
MOHSIN K. KHALIL	Proj Engineer	Tampa Bay Engineering	Clearwater, FL	(813) 531-350
SAMMY HARES	PRJ. COORD.	SWFWMD	BARTOW	534-144
David Bishop	ES	SWFWMD	Bartow	534-1448
DORIE FAULKNER	ES	Scheda Ecological Assoc	Tampa	813-971-3755
Bill Hartmann	Surf. Wtr. Mgr. - SWFWMD	SWFWMD	Bartow	
Michael D Finch	Dist. Drainage Engineer	FDOT	Bartow	941-533-816
JAMES H. LEE JR. E.I.	DRAINAGE ENG.	FDOT	BARTOW	" "
John H. DeWinkler	Interstate Mngr.	FDOT - D1	Bartow	(941) 533-816
TRACY A. HOOD	PROJ. ENG.	TBE	CLEARWATER	813 531-350
Jeff Toussaint	~~SEC~~ GC Project Mgr.	Sverdrup Civil, Inc	Bartow	813 534 850
DON GRAHAM	DRAINAGE COOR.	CARR SMITH ASSOC.	BARTOW	"

J:\DOC\GOHD\MEETING.JHM

SERVICE OFFICE: Bartow TIME: 1400 hrs. DATE: 6/6/95
SPN 16320-3426 1600 HRS

PROJECT NAME: I-4 : Segment 7 -- 10 Lane widening w/HSR.
(U.S 27 - - to Osceola-County Line)

ATTENDEES:

Name	Company	Phone No.
See Sign-in sheet		
District consultants	- Tampa Bay Engineer	
	~ Scheda	
	Carr-Smith	

PROJECT LOCATION:
County: Polk Section: _____ Township: _____S Range: _____E
(Adjacent Permitted Projects: MSSW No(s): _____

* Type of Permit:
(N.A.) Letter Modification - (form needed): ___ Yes ___ No
(N.A.) Noticed General (✓) General
(N.A.) Individual (N.A.) Conceptual
(N.A.) Integrated (N.A.) Water Use
(✓) Fee $ 1600.-

David: Call-Clark Hull to see what Ecosystem Mgmt scenario he is promoting:

Modification of existing Permit? ___ Yes ✓ No
(If yes, MSSW No.: Project built into
Previous Evaluator: N.A.
( ) Dredge and Fill Permit needed: ___ Yes ___ No

Dave Ishof
Eric Faulkner

Notice of Receipt of MSSW Form discussed:	✓ Yes	___ No
Environmental Scientist site visit required:	✓ Yes	___ No
Wetland verification required?	✓ Yes	___ No
Seasonal High Water (SHW) and Normal Pool (NP) elevations required?	✓ Yes	___ No
Mitigation required?	✓ Yes	___ No

Comments: 15 wetlands (4 forested), mostly W.O.S. wetlands. w/few isolated wetlands, predom. high quality systems. DEB to consider wetland creation w/higher quality wetland than one disturbed w/ some reduction in ratio ~ 13ac. w/L impacts (7.3 forested, 4.6 marsh, 0.9 scrub) 1.5:1 Herbac. 2.5:1 Forested

( ) Flexible Criteria (✓) Rigid Criteria ( ) Ratios?

Type of water quality treatment system? Road project - combination of wet det. & on-line retention

Outstanding Florida Waters?	___ Yes	✓ No
Upland SHW elevation determination obtained?	___ Yes	✓ No
Soil Conservation Service SHW determination required?	___ Yes	___ No
Soil matrices from SCS Mapping?	___ Yes	___ No
Mounding analysis required:	___ Yes	___ No

Drainage Basin: For the most part open systems.
( ) Open ( ) Closed Design Storm: _____

Rainfall Depth: _____ FEMA Panel No.: _____

Project within 100-year floodplain? (✓) Yes ( ) No

Method of floodplain determination and other comments: Look for volumetric cup for cup replacement volume as ideal soln.

E-692

DEPARTMENT OF THE ARMY
TAMPA REGULATORY FIELD OFFICE, JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 19247
TAMPA, FLORIDA 33686- 9247

REPLY TO
ATTENTION OF

August 24, 1994

Tampa Regulatory
Field Office
199404246

SUBJECT: Jurisdictional Review, State Road 400/I-4 Improvements

Mr. Douglas M. Krofta
c/o Scheda Ecological Associates
4013 East Fowler Avenue
Tampa, Florida 33617

Dear Mr. Krofta:

Reference is made to the August 15, 1994 field review of the U.S. Army Corps of Engineers' jurisdictional limits located in Sections 3, 4, 5, 6, 7, 8, 9 & 10, Township 26 South, Range 27 East, Polk County, Florida.

Upon receipt of the jurisdictional documents as requested in the field by the Corps of Engineers representative, the delineation will be reviewed and validated in writing. When furnishing the requested materials, please refer to the following to minimize time frames: 199404246 and "State Road 400/I-4 Improvements".

Thank you for your cooperation with the U. S. Army, Corps of Engineers Regulatory Program.

Sincerely,

Joseph R. Bacheler
Chief, Tampa Regulatory
Field Office

FIELD MEMORANDUM

TO: File

FROM: Dorie K. Faulkner, SEA

RE: State Road 400 (Interstate 4) Improvements - Final Design Segment 7
From East of US 27 to the Osceola County Line
State Project No. 16320-3426
WPI No. 1147943
FAP No. N/A
Polk County
Southwest Florida Water Management District Field Review

Date: August 24, 1994

An agency field review of wetland boundaries within the I-4 (Segment 7) project corridor was conducted on August 23, 1994 with Mr. David Bishof of the Southwest Florida Water Management District (SWFWMD). The meeting began at 9:00 a.m. and continued until approximately 11:40 a.m.

Mr. Bishof examined the boundaries of each of the 15 wetlands that had been delineated by project biologists from Scheda Ecological Associates, Inc. He also added a wetland, Wetland No. 7AS, due to its extremely close proximity to the existing R/W. We flagged Wetland 7AS together, adding only 8 more survey points. At the eastern end of the project, a small patch of cogon grass, an upland species, was excluded from Wetland 7SN by moving four flags down to the wetland tree line. David concurred on each of the other wetland boundary delineations.

Regarding hydric soils issues, David's position is that the new wetland delineation methodology that has been adopted classifies all of the median systems as wetlands.

Therefore, whether a wetland is manmade or natural, in hydric or non-hydric soils, SWFWMD and the ACOE will claim the wet median systems. Even if the size is <1/2-acre, most of these wetlands are connected to Waters of the State via culverts to adjoining wetlands.

Although we did not conduct a point-by-point review of ditch flags, David agreed in principle with the format we used on Segment 1. We used the same format on Segment 7 and the ACOE has concurred with these wetland determinations. All ditches in hydric soils were considered wetlands if wetland vegetation was dominant.

David said he would place his field aerial and notes in the pre-application file at the Bartow Service Office of SWFWMD. When the wetland boundary survey becomes available, it will be filed with the field records. However, formal approval of the wetland boundary survey is not granted until the permit is issued.

cc: Tracy Hood, TBE
Jeff Toussant, Sverdrup
John Hartley, FDOT/1
Linda Ferrel, ACOE
Dave Bishof, SWFWMD
George Craciun, FDEP
Doug Krofta, SEA

18314\swfwmd.fm

FIELD MEMORANDUM

TO: File

FROM: Douglas M. Krofta, SEA DMK

RE: State Road 400 (Interstate 4) Improvements - Final Design Segment 7
From East of US 27 to the Osceola County Line
State Project No. 16320-3426
WPI No. 1147943
FAP No. N/A
Polk County
U S Army Corps of Engineers Field Review

Date: August 17, 1994

An agency field review of wetland boundaries within the I-4 (Segment 7) project corridor was conducted on August 15, 1994 with Ms. Linda Ferrel of the U S Army Corps of Engineers (ACOE). The meeting began at 9:30 a.m. and continued until approximately 12:40 p.m.

Ms. Ferrel examined the boundaries of each of the 15 wetlands and delineated by project biologists from Scheda Ecological Associates, Inc. She concurred on each wetland boundary.

The following is a more detailed description of the field review.

Preliminary Discussion

A preliminary discussion of the wetland delineation methodology used for this project and a review of wetland boundaries as drawn on aerial photography was conducted from approximately 9:30 to 10:00 a.m.

Field Verification of Wetland Boundaries

The field review of wetland boundaries began at 10:00 a.m. Initially, if wetlands within the median did not occur in soils listed as hydric by the Soil Conservation Service, they were non-jurisdictional. This eliminated 3 of the 4 wetlands within the median as being jurisdictional. Ms. Ferrel requested that soils within 7EM (delineated by the SCS as having non-hydric soils) be verified using the soil probe. Soils within 7EM were determined to be hydric. Subsequent probes were taken at the 2 other wetlands that were in non-hydric soils as delineated by the SCS to verify their soils. It was also determined that the soils in each of these wetlands were hydric due to flooding, leaf litter accumulation and decomposition for many years. For comparison, soil probes were taken in 7KM, which is delineated by the SCS as being in hydric soils. Soils in this wetland were hydric, but exhibited more of a non-hydric character than did the other three. It was discussed that this may be the result of fill during the construction of I-4. Ms. Ferrel stated that each of these 4 median wetlands met the hydric soil test and ponding criteria of the ACOE and were jurisdictional wetlands.

Wetland delineation limits in each of the remaining 11 wetlands were accepted and determined to be the ACOE jurisdictional boundaries.

Ms. Ferrel exerted ACOE jurisdiction on only those ditches that occurred in hydric soils. This meant that since ditches 7DA, 7DB, 7DC and 7DD were in upland soils they were not jurisdictional. Ditches 7DE and 7DF were incorporated into wetlands 7RS and 7DG, respectively; Only those portions within hydric soils were determined to be jurisdictional. The eastern portion of ditch 7DF was in hydric soils and determined to be jurisdictional; the western portion that extended into upland soils was non-jurisdictional.

Closing Discussions

Ms. Ferrel ended the field meeting by stating that she concurred with our wetland limits as flagged. She continued by requesting 3 sets of the completed survey of wetlands, one of which she will verify, sign and return to Scheda Ecological Associates, Inc. She also requested that those wetlands close to the project area, specifically 7AS, be included on the surveys. Her field verification (jurisdictional survey) is good for a period of 5 years at which time an extension can be granted if requested ahead of time, in writing.

cc: Tracy Hood, TBE
Jeff Toussant, Sverdrup
John Hartley, FDOT/1
Linda Ferrel, ACOE
Dave Bishof, SWFWMD
George Craciun, FDEP
Liz Johnson, SJRWMD
Dorie Faulkner, SEA

Appendix L

Permit No. 44-011896.029

Department of Transportation

I-4 Polk County,

Section 9 Modification

HIGH SPEED RAIL

HNTB PW #50288

SWFWMD Permit #44-011896.024 (Mod)

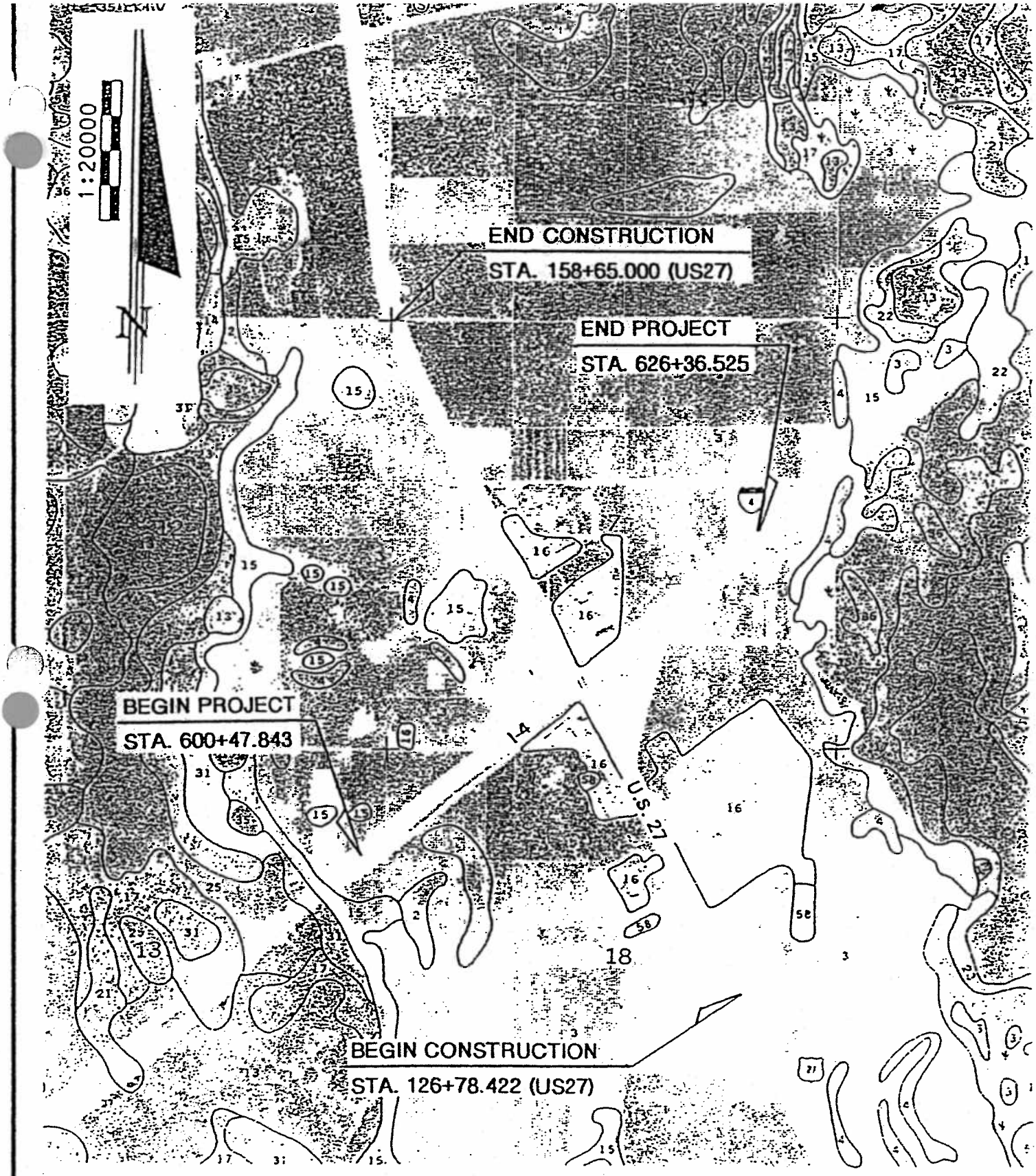
US 27/I-4 Interchange

Polk County: Section 9

January 2001

FPID #201204-1

Book 1 of 1



OIL SURVEY OF
OLK COUNTY,
FLORIDA

HDR

HDR Engineering, Inc
Orlando, Florida

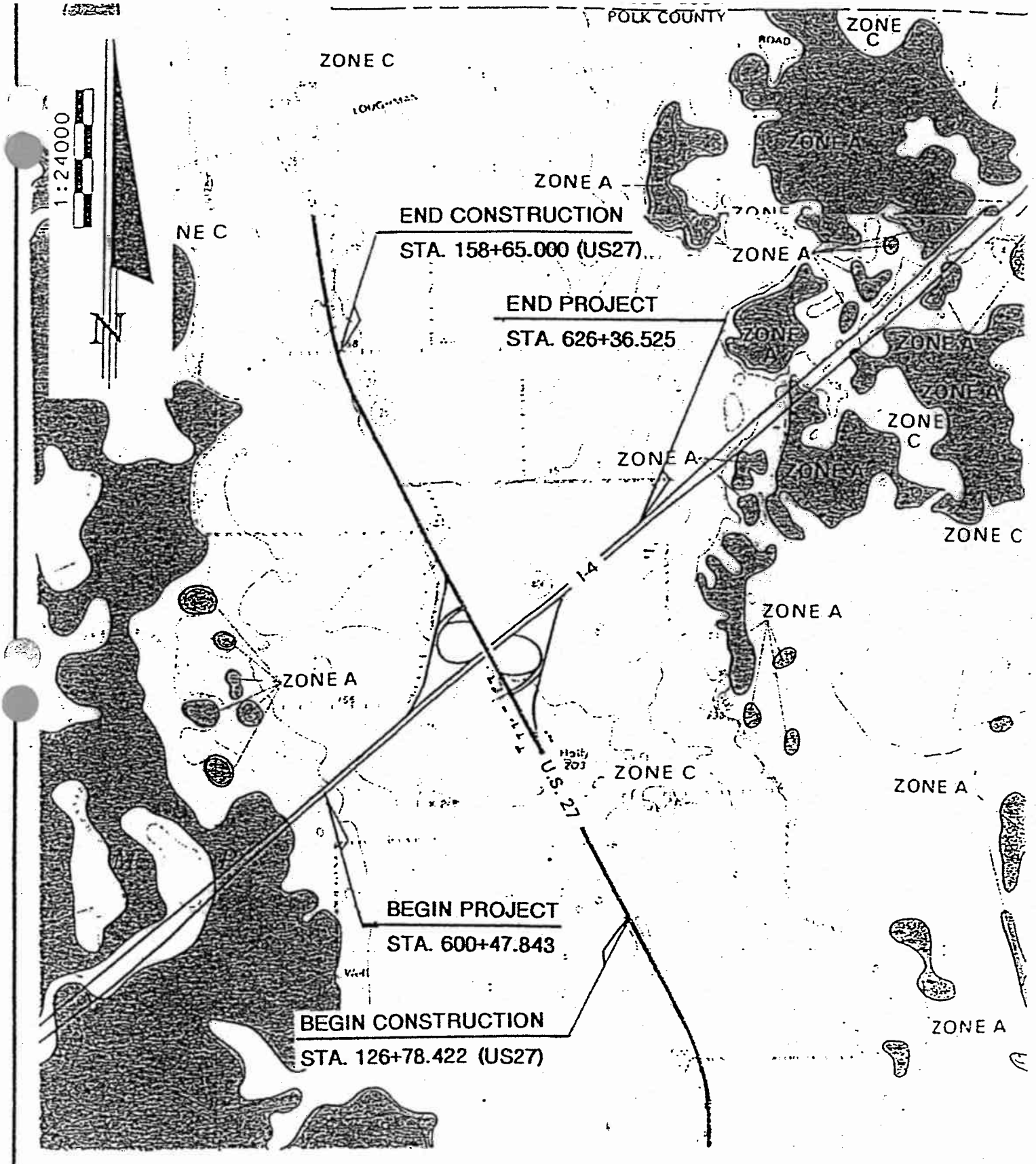
I-4, US27 INTERCHANGE WPI 1147942

SOILS MAP

FIGURE 2.2

FEMA Floodplain Map

Figure 4



COMMUNITY-PANEL NUMBER
120261 0225 B

EFFECTIVE DATE:
JANUARY 19, 1983
PANEL 225 OF 1025

HDR

HDR Engineering, Inc.
Orlando, Florida

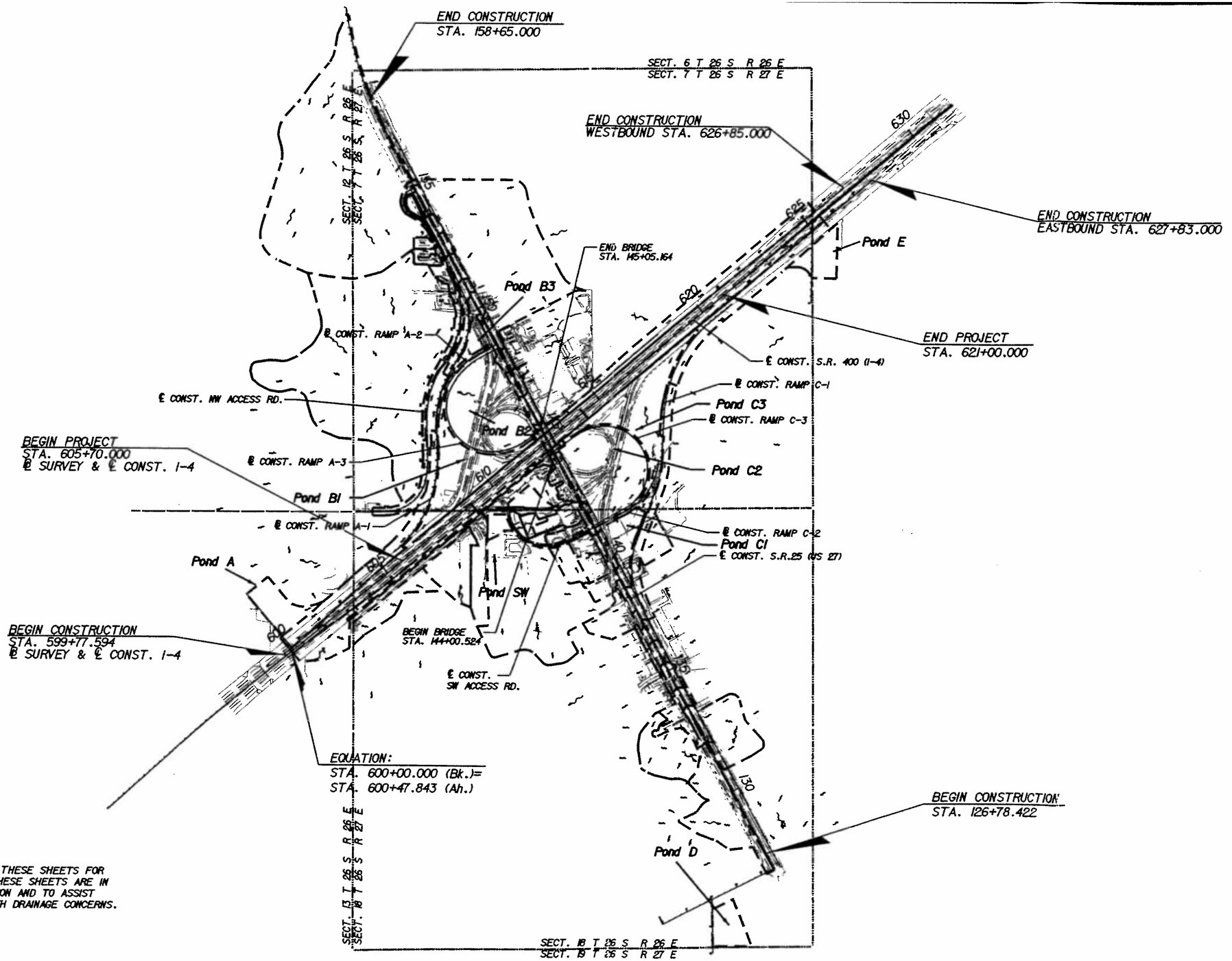
I-4, US27 INTERCHANGE WPI 1147942

FEMA MAP

FIGURE E-704

Drainage Area Maps

Figure 5



NOTES:

DO NOT USE INFORMATION ON THESE SHEETS FOR CONSTRUCTION PURPOSES. THESE SHEETS ARE IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

$$$$$$$DONOTSPECIFICATION$$$$$$$
$FILE$

$$$$$$$TIME$$$$$$$
$DATE$

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-8875
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

OVERALL DRAINAGE MAP

SHEET NO.

$DATE$ $TIME$ $FILE$

EQUATION:
STA. 600+00.000 BK.=
STA. 600+47.843 AH.

BEGIN CONSTRUCTION
STA. 599+77.594
℄ SURVEY & ℄ CONST. I-4

PROPOSED WETLAND IMPACTS

WETLAND N14
SWFWMD & USACOE
JURISDICTION LIMITS

WETLAND S13
SWFWMD & USACOE
JURISDICTION LIMITS

SECT. 13 T 26 S R 26 E

SECT. 18 T 26 S R 27 E

1:4000

BASIN A

BASIN NW

BASIN SW

BASIN B

BASIN C

BASIN D

NEW I-4 HIGHPOINT LOCATION

NATURAL RETENTION AREA

BEGIN PROJECT
STA. 605+70.000
℄ SURVEY & ℄ CONST. I-4

POND A
1.994 ha

POND-B1
2.936 ha

POND-B2
3.601 ha

POND-SW
0.354 ha

℄ CONST. NW ACCESS ROAD

℄ CONST. SW ACCESS ROAD

℄ CONST. RAMP A-1

℄ CONST. RAMP A-2

℄ CONST. RAMP A-3

℄ CONST. S.R. 400

℄ CONST. WAVERLY ROAD

℄ CONST. S.R. 25

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

09-MAR-2003 11:52

E-707

BASIN A

BASIN SW

NATURAL RETENTION AREA

BASIN D

BASIN C

BASIN B

BASIN NW

NEW BASIN B AND BASIN NW DIVIDE

NEW I-4 HIGH POINT LOCATION

OLD I-4 HIGH POINT LOCATION

℄ CONST. NW ACCESS ROAD

℄ CONST. SW ACCESS ROAD

℄ CONST. RAMP A-1

℄ CONST. S.R 400

℄ CONST. RAMP A-3

℄ CONST. RAMP A-2

℄ CONST. S.R. 25

℄ CONST. RAMP C-1

℄ CONST. RAMP C-2

℄ CONST. RAMP C-3

POND B1 2.936 ha

POND B2 3.601 ha

POND B3 0.194 ha

POND C1 0.881 ha

POND C2 1.922 ha

POND C3 3.408 ha

BEAM BRIDGE STA. M4+00.524

END BRIDGE STA. M5+05.184

SR 400

SECT. 18 T 26 S R 27 E

SECT. 7 T 26 S R 27 E

SECT. 12 T 26 S. R 26 E.

SECT. 7 T 26 S, R 27 E

1:4000

VERIFICATION, CHECKER (OR)
CONCURRENCE, ORIGINATOR (RP)
REMARK, INCORPORATION
CHANGE INCORPORATION
REMARK, VERIFICATION

ORIGINATOR (RP)
PRODUCTION CHECKING COMPLETE.
REVIEW (RP)

CHECKED (OR)
CONCURRENCE, ORIGINATOR (RP)
CHANGE INCORPORATION

PHASE

REVISIONS					
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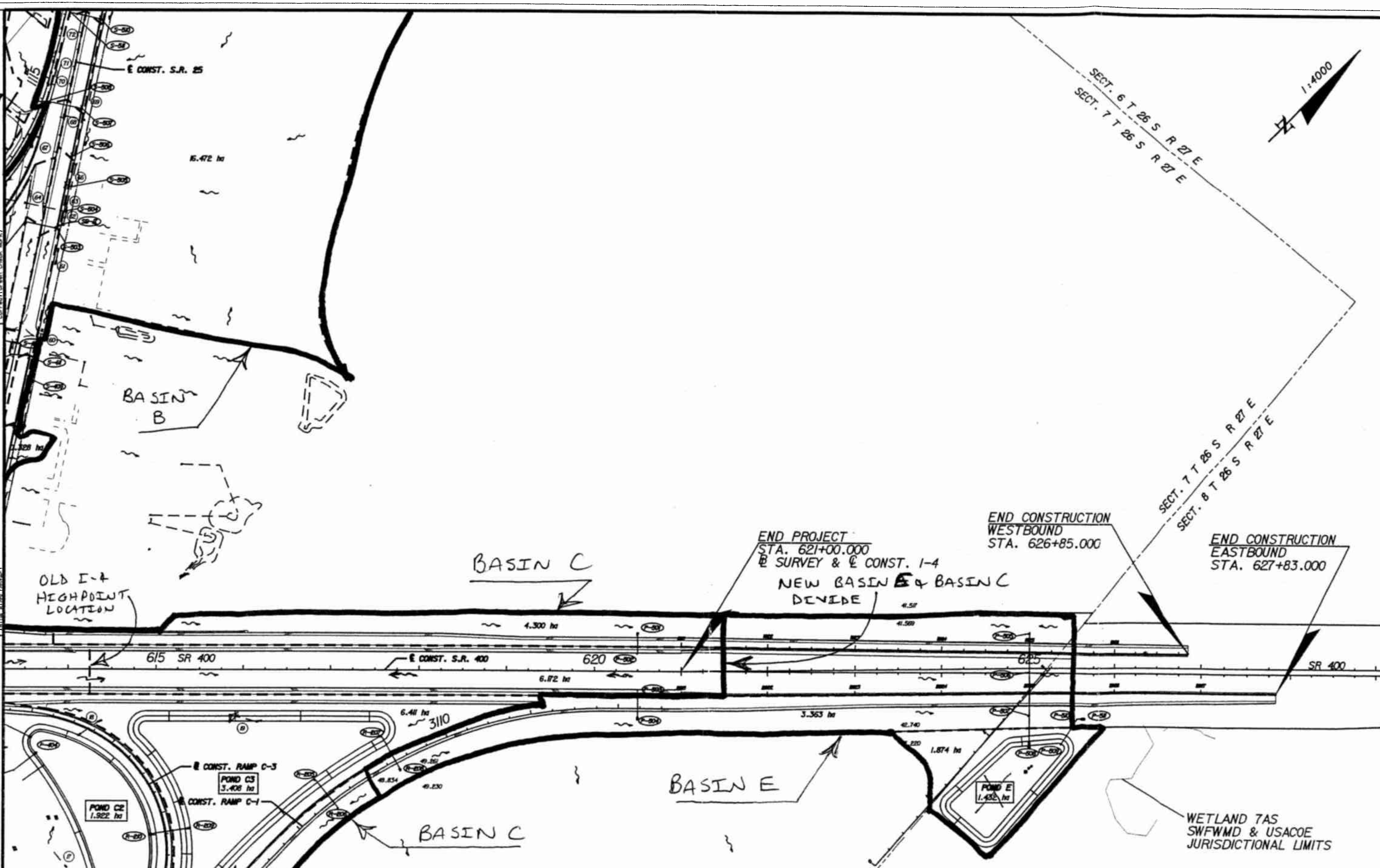
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT DRAINAGE MAP

SHEET NO.



VERIFICATION, CHECKER (OR) (Green Check Mark or Circle & Remark) | DATE
REMARK INCORPORATION (Blue Highlighter) | DATE
REMARK VERIFICATION (Correct/Green Check Mark) | DATE
CHECKED (OR) Correct (Yellow Highlighter) Change (...) | DATE
CONCURRENCE, ORIGINATOR (RP) (Red Check Mark or X-Out to Disagree) | DATE
CHANGE INCORPORATION | DATE
ORIGINATOR (RP) PRODUCTION CHECKING COMPLETE, READY FOR SUBMITTAL REVIEW (RP) | DATE
PHASE

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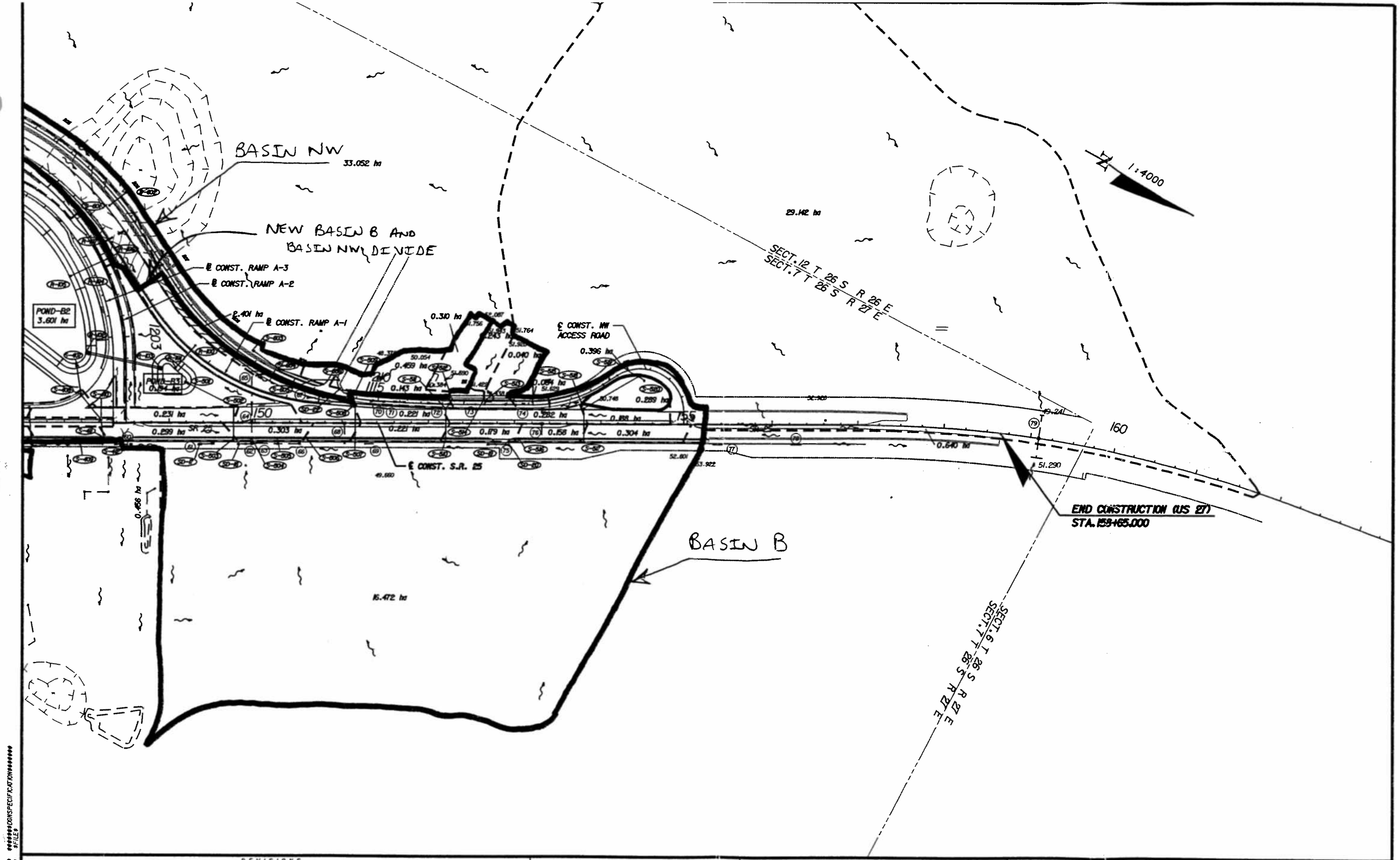
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.



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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT DRAINAGE MAP

SHEET NO.

#DATE# #TIME# #FILE# ######SPECIFICATION######

SECT. 19 T 26 S R 27 E

SECT. 18 T 26 S R 27 E

1:4000

NATURAL RETENTION AREA

14.064 ha

POND-D
1.420 ha

1.716 ha

BASIN D

3.766 ha

5.386 ha

1.098 ha

1.819 ha

0.247 ha

0.505 ha

0.172 ha

0.214 ha

0.150 ha

0.198 ha

0.822 ha

0.145 ha

0.286 ha

0.181 ha

0.183 ha

3.222 ha

3.879 ha

℄ CONST. S.R. 25

℄ CONST. RAMP C-1

BEGIN CONSTRUCTION (US 27)
STA. 126+78.422

BASIN D

BASIN C

SECT. 18 T 26 S R 27 E

SECT. 17 T 26 S R 27 E

VERIFICATION, CHECKER (OR) DATE
(Green Check Mark or Circle & Remark)
REMARK INCORPORATION DATE
REMARK VERIFICATION DATE
Correct (Green Check Mark)

CHECKED (QR)
Correct (Initial or Change if Discrepancy)
CONCURRENCE, ORIGINATOR (RP)
(Red Check Mark or X-Out to Discrepancy)
CHANGE INCORPORATION
(Initial and Date)

ORIGINATOR (RP) DATE
PRODUCTION CHECKING COMPLETE.
REVISIONS INCORPORATED, REVIEW (RP)

PHASE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

$DATE$ $TIME$ $FILE$

Pond Hydrology & Hydraulics
(Input / Output and FDOT Critical Storm)

Appendix A

Basin Summary Table

Appendix A-1

Pond Summary Sheet

Pond / Facility ID	Pond A1		Pond B1		Pond B2	
	Permitted Design	Current Design	Permitted Design	Current Design	Permitted Design	Current Design
Location	I-4 1971+00 LT	NO CHANGE	I-4 1998+00 LT	NO CHANGE	US 27 480+00 LT	NO CHANGE
Type of Treatment	Wet Detention	NO CHANGE	Dry Retention	NO CHANGE	Dry Retention	NO CHANGE
Receiving Body	Green Swamp	NO CHANGE	Pond B2	NO CHANGE	Closed Basin	NO CHANGE
Existing Ground El.	136.15	NO CHANGE	157.48	NO CHANGE	150.92	NO CHANGE
Seasonal High Water Table (SHWT) EL.	128.61	NO CHANGE	133.20	NO CHANGE	132.20	NO CHANGE
Pond Bottom EL.	122.7	NO CHANGE	137.80	NO CHANGE	137.14	NO CHANGE
Weir Crest EL.	129.18	NO CHANGE	N/A	NO CHANGE	N/A	NO CHANGE
Weir Length (Ft.)	2.3	NO CHANGE	N/A	NO CHANGE	N/A	NO CHANGE
Design High Water (DHW 25yr) EL.	130.86	NO CHANGE	139.63	NO CHANGE	139.63	NO CHANGE
Design High Water (DHW 100yr) EL.	131.43	NO CHANGE	141.05	NO CHANGE	141.05	NO CHANGE
Berm EL.	134.19	NO CHANGE	150.43	NO CHANGE	142.39	NO CHANGE
Pond Total Drainage Area (acres)	41.97	NO CHANGE	22.79	21.99	26.95	23.25
Impervious Area Onsite & Offsite (acres)	20.94	NO CHANGE	10.82	10.02	7.82	7.32
Pond Area at Control - Water Body (acres)	2.81	NO CHANGE	N/A	NO CHANGE	N/A	NO CHANGE
Pervious Area (acres)	21.03	NO CHANGE	11.97	NO CHANGE	19.13	15.93
Treatment Volume Required (ac-ft)	1.75	NO CHANGE	1.24	NO CHANGE	1.44	NO CHANGE
Treatment Volume Provided (ac-ft)	1.75	NO CHANGE	12.00	NO CHANGE	20.50	NO CHANGE
Storm Frequency - 24 Hour	25-Yr	NO CHANGE	100-Yr	NO CHANGE	100-Yr	NO CHANGE
Rainfall Type	FLMOD	NO CHANGE	FLMOD	NO CHANGE	FLMOD	NO CHANGE
Pre-Development Discharge (CFS)	23.14	NO CHANGE	49.93	NO CHANGE	90.56	NO CHANGE
Post-Development Discharge (CFS)	16.16	NO CHANGE	7.89	NO CHANGE	0.00	NO CHANGE
Does Pond Recovery in Required Time	Yes	NO CHANGE	Yes	NO CHANGE	Yes	NO CHANGE
		Note: Reduction in drainage areas for Ponds B1 and B2 is due to the shifting of the I-4 PGL highpoint				
		about 800' to the west relative to its previous position in the originally permitted design. The total 4.5 ac				
		area removed from Ponds B1 and B2 is accounted for in the new Pond C2 and Pond C3 drainage areas.				
		The originally permitted 10-lane section for I-4 is still included in the current design of Ponds A and B-1				

Pond Summary Sheet

Pond / Facility ID	Pond B3		Pond C1		Pond C2	
	Permitted Design	Current Design	Permitted Design	Current Design	Permitted Design	Current Design
Location	US 27 489+00 LT	NO CHANGE	US 27 460+00 RT	NO CHANGE	I-4 2015+00 RT	NO CHANGE
Type of Treatment	Dry Retention	NO CHANGE	Dry Retention	NO CHANGE	Dry Retention	NO CHANGE
Receiving Body	Pond B2	NO CHANGE	Pond C2	NO CHANGE	Pond C3	NO CHANGE
Existing Ground El.	150.92	NO CHANGE	187.01	NO CHANGE	167.32	NO CHANGE
Seasonal High Water Table (SHWT) EL.	123.36	NO CHANGE	167.65	NO CHANGE	142.70	NO CHANGE
Pond Bottom EL.	137.96	NO CHANGE	171.10	NO CHANGE	146.82	NO CHANGE
Weir Crest EL.	N/A	NO CHANGE	172.11	NO CHANGE	N/A	NO CHANGE
Weir Length (Ft.)	N/A	NO CHANGE	1.00	NO CHANGE	N/A	NO CHANGE
Design High Water (DHW 25yr) EL.	139.86	NO CHANGE	172.34	NO CHANGE	147.92	148.17
Design High Water (DHW 100yr) EL.	141.05	NO CHANGE	172.68	NO CHANGE	148.70	148.73
Berm EL.	143.21	NO CHANGE	176.35	NO CHANGE	150.10	152.10
Pond Total Drainage Area (acres)	57.45	NO CHANGE	8.10	NO CHANGE	27.00	27.10
Impervious Area Onsite & Offsite (acres)	7.41	NO CHANGE	1.80	NO CHANGE	6.30	6.40
Pond Area at Control - Water Body (acres)	N/A	NO CHANGE	N/A	NO CHANGE	N/A	NO CHANGE
Pervious Area (acres)	50.04	NO CHANGE	6.30	NO CHANGE	20.70	NO CHANGE
Treatment Volume Required (ac-ft)	2.39	NO CHANGE	0.36	NO CHANGE	1.18	NO CHANGE
Treatment Volume Provided (ac-ft)	0.70	NO CHANGE	2.00	NO CHANGE	5.25	3.95
Storm Frequency - 24 Hour	100-Yr	NO CHANGE	25-Yr	NO CHANGE	25-Yr	NO CHANGE
Rainfall Type	FLMOD	NO CHANGE	FLMOD	NO CHANGE	FLMOD	NO CHANGE
Pre-Development Discharge (CFS)	70.31	NO CHANGE	14.50	NO CHANGE	47.15	50.70
Post-Development Discharge (CFS)	68.78	NO CHANGE	0.40	NO CHANGE	3.30	5.50
Does Pond Recovery in Required Time	Yes	NO CHANGE	Yes	NO CHANGE	Yes	NO CHANGE
			Note: The Pond C2 drainage area has been increased by 0.1 ac of impervious area transferred from Basin B. Also, the pond top of bank has been raised to the originally intended elevation. The Pond C2 WSEL's and flows are dictated by the Pond C3 control structure.			

Pond Summary Sheet

Pond / Facility ID	Pond C3		Pond D		Pond E	
	Permitted Design	Current Design	Permitted Design	Current Design	Permitted Design	Current Design
Location	I-4 2022+00 RT	NO CHANGE	US 27 415+00 LT	NO CHANGE	I-4 2051+00 RT	Removed
Type of Treatment	Dry Retention	NO CHANGE	Dry Retention	NO CHANGE	Dry Retention	Removed
Receiving Body	Horse Creek	NO CHANGE	Closed Basin	NO CHANGE	Horse Creek	Removed
Existing Ground El.	164.04	NO CHANGE	172.24	NO CHANGE	126.35	Removed
Seasonal High Water Table (SHWT) EL.	143.70	NO CHANGE	147.30	NO CHANGE	120.50	Removed
Pond Bottom EL.	146.82	NO CHANGE	159.45	NO CHANGE	122.70	Removed
Weir Crest EL.	148.00	147.80	N/A	NO CHANGE	126.58	Removed
Weir Length (Ft.)	3.00	6.00	N/A	NO CHANGE	1.40	Removed
Design High Water (DHW 25yr) EL.	147.91	148.17	162.36	NO CHANGE	126.58	Removed
Design High Water (DHW 100yr) EL.	148.68	148.71	164.76	NO CHANGE	127.25	Removed
Berm EL.	152.07	NO CHANGE	170.60	NO CHANGE	127.95	Removed
Pond Total Drainage Area (acres)	23.70	45.20	41.02	NO CHANGE	38.81	21.70
Impervious Area Onsite & Offsite (acres)	4.70	9.70	6.91	NO CHANGE	24.16	4.10
Pond Area at Control - Water Body (acres)	N/A	NO CHANGE	N/A	NO CHANGE	N/A	Removed
Pervious Area (acres)	19.00	35.50	34.11	NO CHANGE	14.65	17.60
Treatment Volume Required (ac-ft)	1.19	1.31	0.58	NO CHANGE	2.01	0.00
Treatment Volume Provided (ac-ft)	9.60	6.61	1.75	NO CHANGE	2.01	0.00
Storm Frequency - 24 Hour	25-Yr	NO CHANGE	100-Yr	NO CHANGE	25-Yr	NO CHANGE
Rainfall Type	FLMOD	NO CHANGE	FLMOD	NO CHANGE	FLMOD	NO CHANGE
Pre-Development Discharge (CFS)	19.41	39.20	38.30	NO CHANGE	20.40	14.20
Post-Development Discharge (CFS)	0.00	4.30	0.00	NO CHANGE	18.52	14.20
Does Pond Recovery in Required Time	Yes	NO CHANGE	Yes	NO CHANGE	Yes	Removed

Note: The Pond C3 drainage area has been increased by 4.4 ac (1.2 ac impervious) transferred from Basin B, and by 17.1 ac (3.8 ac impervious) transferred from Basin E. The Basin E drainage area has been reduced accordingly. However, only the 6-lane section currently proposed for I-4 is included in the impervious surface calculations for Pond C3 and Basin E - the previously permitted 10-lane section is not included for these basins in the current design. The aggregate post-development discharge for Pond C3 and Basin E is unchanged in comparing the previous permitted design to the current design. Also, Ponds C2 and C3 include treatment for about 3.8 ac of proposed and existing pavement from the original Basin E to offset the current design requirement to provide treatment for the total new impervious surface of 3.3 ac contained in the original Basin E (considering only the 6-lane section for I-4).

Pond Summary Sheet

Pond / Facility ID	Pond SW		SUMMARY			
	Permitted Design	Current Design	Permitted Design	Current Design		
Location	US 27 469+00 LT	NO CHANGE				
Type of Treatment	Dry Detention	NO CHANGE				
Receiving Body	Closed Basin	NO CHANGE				
Existing Ground El.	174.70	NO CHANGE				
Seasonal High Water Table (SHWT) EL.	149.60	NO CHANGE				
Pond Bottom EL.	166.34	NO CHANGE				
Weir Crest EL.	N/A	NO CHANGE				
Weir Length (Ft.)	N/A	NO CHANGE				
Design High Water (DHW 25yr) EL.	169.63	NO CHANGE				
Design High Water (DHW 100yr) EL.	171.56	NO CHANGE				
Berm EL.	173.23	NO CHANGE				
Pond Total Drainage Area (acres)	6.48	NO CHANGE	294.27	294.26		
Impervious Area Onsite & Offsite (acres)	2.03	NO CHANGE	92.89	76.63		
Pond Area at Control - Water Body (acres)	N/A	NO CHANGE				
Pervious Area (acres)	4.45	NO CHANGE	201.38	217.63		
Treatment Volume Required (ac-ft)	0.17	NO CHANGE	12.31	10.42		
Treatment Volume Provided (ac-ft)	1.75	NO CHANGE	57.31	51.01		
Storm Frequency - 24 Hour	100-Yr	NO CHANGE				
Rainfall Type	FLMOD	NO CHANGE				
Pre-Development Discharge (CFS)	0.00	NO CHANGE	373.70	390.84		
Post-Development Discharge (CFS)	0.00	NO CHANGE	34.68	34.66		
Does Pond Recovery in Required Time	Yes	NO CHANGE				
		Note: The total project post-development discharge is unchanged				
		in comparing the previous permitted design to the current design.				
		Also, the current design still has more than adequate treatment capacity				
		in comparing the current design required to provided volumes.				

ORIGINAL

ERP # 4401196.024

TOTAL PROJECT SUMMARY
for
Basin's A, B, C, D, E, SW and NW

Total Project Summary for Basin's A, B, C, D, E and SW.

POND ID	A (Metric)	A (English)	B1 (Metric)	B1 (English)	B2 (Metric)	B2 (English)	B3 (Metric)	B3 (English)
Location	I-4 600+00 Left	I-4 600+00 Left	I-4 609+00 Left	I-4 609+00 Left	I-4 611+00 Left	I-4 611+00 Left	US27 149+00 Left	US27 149+00 Left
Type Of Treatment	Wet Retention	Wet Retention	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention
Receiving Body	Green Swamp	Green Swamp	Closed Basin	Closed Basin	Closed Basin	Closed Basin	Closed Basin	Closed Basin
Existing Ground El.	41.50	136.15	48.00	157.48	46.00	150.92	46.00	150.92
Seasonal High Water Table (Shwt) El.	39.20	128.61	40.60	133.20	40.29	132.20	37.80	123.36
Pond Bottom El.	37.40	122.70	42.00	137.80	41.80	137.14	42.05	137.96
Weir Crest El.	39.37	129.16	NA	NA	NA	NA	NA	NA
Weir Length	0.700	2.30	NA	NA	NA	NA	NA	NA
Design High Water (Dhw25/100) El.	39.89	130.86	42.58	139.63	42.58	139.63	42.63	139.66
Design High Water (Dhw 100yr) El.	40.06	131.43	43.00	141.05	43.00	141.05	43.00	141.05
Berm El.	40.90	134.19	45.85	150.43	43.40	142.39	43.85	143.21
Pond Total Drainage Area (ha / acres)	18.98	41.97	9.22	22.79	10.91	26.95	23.25	57.45
Impervious Area Onsite And Offsite (ha / acres)	8.47	20.94	4.38	10.82	3.18	7.62	3.00	7.41
Pond Area At Control – Water Body (ha / acres)	1.14	2.61	NA	NA	NA	NA	NA	NA
Pervious Area (ha / acres)	6.51	21.03	4.84	11.97	7.74	19.13	20.25	50.04
Treatment Volume Required (m^3 / ac-ft)	2158.59	1.75	1529.52	1.24	1776.21	1.44	2948.02	2.39
Treatment Volume Provided (m^3 / ac-ft)	2158.59	1.75	14801.76	12.00	25286.38	20.50	663.44	0.70
Storm Frequency – 24 Hour	25 yr	25 yr	100 yr	100 yr	100 yr	100 yr	100 yr	100 yr
Rainfall Type	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Pre-Development Discharge (m^3 / cfs)	0.66	23.14	1.41	49.93	2.58	90.56	1.99	70.31
Post-Development Discharge (m^3 / cfs)	0.46	16.16	0.22	7.69	0.00	0	1.95	68.76
Does Pond Recover In Required Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Total Project Summary for Basin's A, B, C, D, E and SW.

POND ID	C1 (Metric)	C1 (English)	C2 (Metric)	C2 (English)	C3 (Metric)	C3 (English)	D (Metric)	D (English)
Location	US27 140+00 Right	US27 140+00 Right	I4 814+00 Right	I4 814+00 Right	I4 818+00 Right	I4 816+00 Right	US27 126+50 Left	US27 126+50 Left
Type Of Treatment	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention	Dry Detention
Receiving Body	Pond C2	Pond C2	Closed Basin	Closed Basin	Pond E	Pond E	Closed Basin	Closed Basin
Existing Ground El.	57.00	187.01	51.00	187.32	50.00	164.04	52.50	172.24
Seasonal High Water Table (Shwt) El.	51.10	167.65	43.49	142.70	43.80	143.70	48.90	142.50
Pond Bottom El.	52.15	171.10	44.75	146.82	44.75	148.82	48.80	159.45
Weir Crest El.	52.48	172.11	NA	NA	45.11	148.00	NA	NA
Weir Length	0.305	1.00	NA	NA	0.914	3.00	NA	NA
Design High Water (Dhw 25yr) El.	52.53	172.34	45.09	147.92	45.06	147.91	49.49	162.36
Design High Water (Dhw 100yr) El.	52.63	172.68	45.32	148.70	45.32	148.68	50.22	164.78
Berm El.	53.75	176.35	45.75	150.10	46.35	152.07	52.00	170.60
Pond Total Drainage Area (ha / acres)	3.28	8.10	10.93	27.00	9.59	23.70	18.80	41.02
Impervious Area Onsite And Offsite (ha / acres)	0.73	1.80	2.55	6.30	1.90	4.70	2.80	8.91
Pond Area At Control – Water Body (ha / acres)	NA	NA	NA	NA	NA	NA	NA	NA
Pervious Area (ha / acres)	2.55	8.30	8.38	20.70	7.69	19.00	13.80	34.11
Treatment Volume Required (m^3 / ac-ft)	444.05	0.36	1455.51	1.18	1467.84	1.19	715.42	0.58
Treatment Volume Provided (m^3 / ac-ft)	2488.96	2.00	8475.78	5.25	11841.43	9.80	2158.59	1.75
Storm Frequency – 24 Hour	25 year	25 year	25 year	25 year	25 year	25 year	100 yr	100 yr
Rainfall Type	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD	FLMOD
Pre-Development Discharge (m^3 / cfs)	0.41	14.50	1.34	47.15	0.55	19.41	1.08	38.30
Post-Development Discharge (m^3 / cfs)	0.01	0.4	0.09	3.3	0.00	0	0.00	0
Does Pond Recover In Required Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Total Project Summary for Basin's A, B, C, D, E and SW.

POND ID	E (Metric)	E (English)	SW (Metric)	SW (English)
Location	I4 825+00 Right	I4 825+00 Right	I4 609+00 Right	I4 809+00 Right
Type Of Treatment	Dry Detention	Dry Detention	Dry Detention	Dry Detention
Receiving Body	Horse Creek	Horse Creek	Closed Basin	Closed Bsin
Existing Ground El.	36.51	126.35	53.25	174.70
Seasonal High Water Table (Shwt) El.	36.73	120.50	47.60	149.60
Pond Bottom El.	37.40	122.70	50.70	166.34
Weir Crest El.	38.58	126.58	NA	NA
Weir Length	0.427	1.40	NA	NA
Design High Water (Dhw 25yr) El.	38.58	126.58	61.70	169.63
Design High Water (Dhw 100yr) El.	38.79	127.25	52.29	171.56
Berm El.	39.00	127.95	52.80	173.23
Pond Total Drainage Area (ha / acres)	15.71	38.81	2.62	8.48
Impervious Area Onsite And Offsite (ha / acres)	9.78	24.18	0.82	2.03
Pond Area At Control – Water Body (ha / acres)	NA	NA	NA	NA
Parvious Area (ha / acres)	6.93	14.65	1.80	4.45
Treatment Volume Required (m^3 / ac-ft)	2479.30	2.01	209.89	0.17
Treatment Volume Provided (m^3 / ac-ft)	2479.30	2.01	2158.59	1.75
Storm Frequency – 24 Hour	25 yr	25 yr	100 yr	100 yr
Rainfall Type	FLMOD	FLMOD	FLMOD	FLMOD
Pre-Development Discharge (m^3 / cfs)	0.58	20.40	0.00	0.00
Post-Development Discharge (m^3 / cfs)	0.52	18.52	0.00	0
Does Pond Recover in Raquired Time	Yes	Yes	Yes	Yes

Total Project Summary for Basin's A, B, C, D, E and SW.

POND ID Location	TOTAL (metric)	TOTAL (english)
Pond Total Drainage Area (ha / acres)	119.09	294.27
Impervious Area Onsite And Offsite (ha / acres)	37.59	92.89
Pond Area At Control – Water Body (ha / acres)		
Pervious Area (ha / acres)	81.50	201.38
Treatment Volume Required (m^3 / ac-ft)	15184.16	12.31
Treatment Volume Provided (m^3 / ac-ft)	70690.85	57.31
Pre-Development Discharge (m^3 / cfs)	10.58	373.70
Post-Development Discharge (m^3 / cfs)	3.26	115.05
Does Pond Recover in Required Time		

Basin A

Appendix A-2

BASIN A

Basin A consists of approximately 41.97 acres of roadway pavement and open areas associated with the proposed right-of-way of I-4. The basin begins at **Station 1970+00** (I-4) and extends eastward to **Station 1998+00, at the cross drain to Pond 9-B1**. Longitudinal grades varying from 0.3% to 1.3% exhibit an existing "east to west" flow pattern within the roadway corridor. The offsite area south of I-4 was assumed to be undeveloped since there are treatment pond systems already in place. The offsite areas north of I-4 were assumed to be undeveloped. Presently, Basin A has a positive outfall into the Green Swamp via a system of roadside ditches. The Green Swamp is part of the Peace River watershed.

The stormwater management system for Basin A consists of a wet detention pond, Pond A, discharging to the existing positive outfall. The stormwater management system is designed for the ultimate widening of I-4. Pond A will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year / 24-hour storm event. The required water quality used for Basin A is one inch of runoff from the directly connected impervious area. The bleed down orifice size was calculated based on SWFWMD criteria. The control elevation is based on the seasonal high water table (SHWT) determinations by the **original** geotechnical consultant.

Basin A is not in the 100-year flood zone (see FEMA map, Figure 4).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin A was routed using a 25-year, 24-hour storm, with a rainfall depth of 7.0 inches obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgment, and data from the Green Swamp from the previously approved section of I-4 west of Basin A. Results illustrate that the post development flows are less than the pre development flows. A minimum of 1.0 foot of freeboard is provided in Pond A. The AdICPR results can be found in this section.

A critical duration analysis was also done using the program SUPRA by Kato Dee. The results from the analysis can be found in this section. The results show that Pond A meets the 14-86 criteria of the FDOT.

Since the originally permitted design has been reviewed and has been found to still be viable, the original HDR Pond A calculations are provided herein to support the currently proposed design. Only minor modifications have been made to the original Pond A drainage collection system due to the modification of the PGL along Mainline I-4. These changes include stormsewer and cross drain invert and grate elevation revisions, as well as ditch flowline elevation revisions.

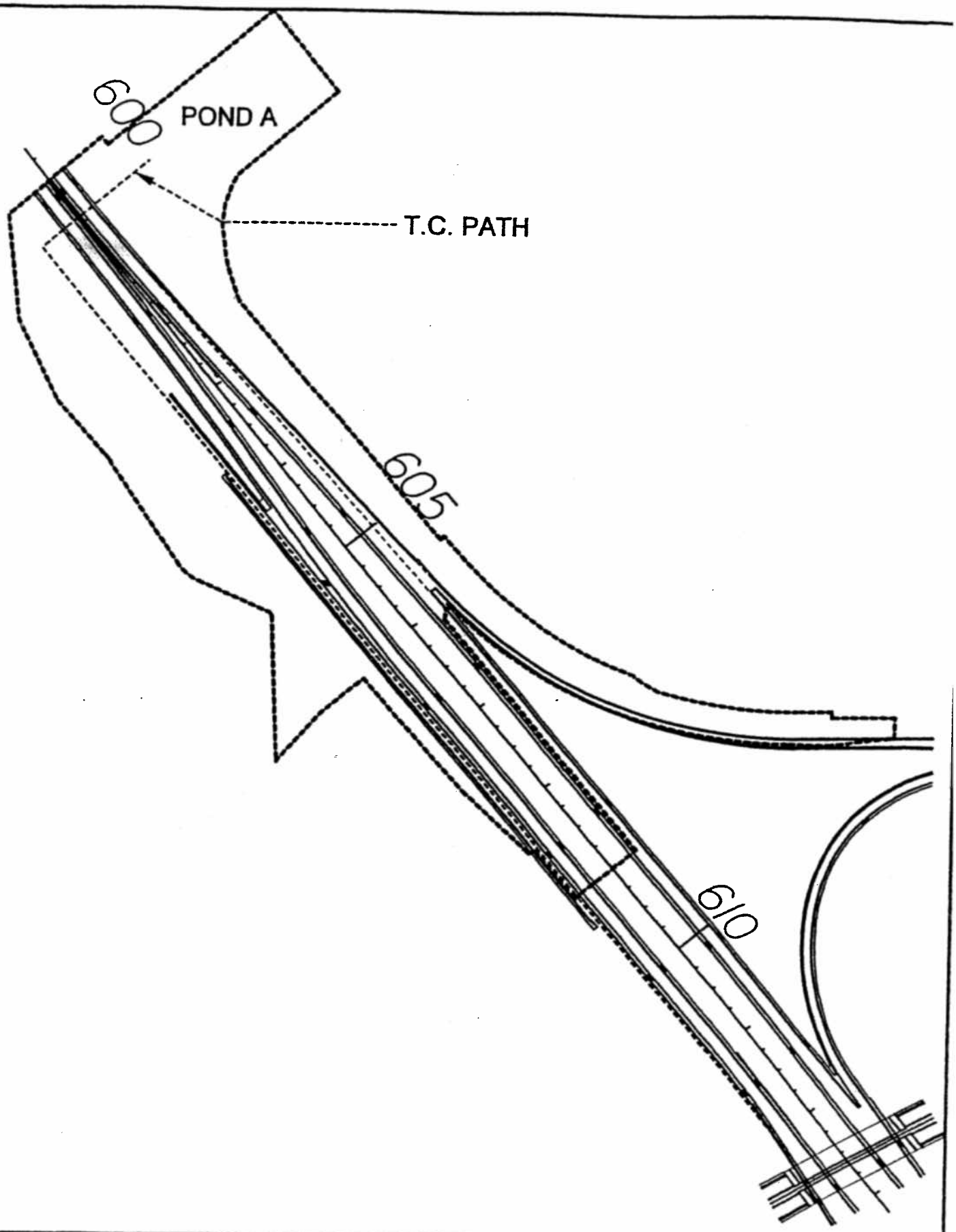
Note that Pond A has been designed for the ultimate 10-lane section proposed for the future I-4 (per the original permit). However, only the 6-lane section will be constructed under the current project.

ORIGINAL

ERP # 440118896-024

BASIN A

CALCULATIONS



SCALE:
1:5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

Florida

BASIN A DRAINAGE AREAS

E-726

2-2

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/12/00
Location: POLK COUNTY, Pond A Checked: CLC Date: 10/13/00

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			30.31	1182.09
	Impervious area-roadway	98			6.69	655.62
	Pastures, grassland, range-good Pond area	39			4.97	193.83
						0.00
						0.00
						0.00
						0.00
						0.00
	Use only one CN source per line.			Totals =	41.97	2031.54

CN (weighted) = total product/total area = $\frac{2031.54}{41.97}$ = 48.40 Use CN = 48

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.3	1.3	1.5

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/12/00
Location: POLK COUNTY, Pond A Checked: CLC Date: 10/13/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			21.03	820.17
	Impervious area-roadway	98			18.12	1775.76
	Pond Impervious	100			2.82	282.00
						0.00
						0.00
						0.00
						0.00
					Totals =	

[1] Use only one CN source per line.

41.97 | 2877.93

CN (weighted) = total product/total area = $\frac{2877.93}{41.97}$ = 68.57 Use CN: 69

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
1.2	3.1	3.5

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: NRS Date: 3/30/00
Location: POLK COUNTY Checked: CLC Date: 3/31/00

Shade One: [redacted] Developed **Pond A**

Shade One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)
2. Manning's roughness coeff., n (table3-1.)
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...hr

	+	= 0.00

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)
8. Flow length, L ft
9. Watercourse slope, s ft/ft
10. Average velocity, V (figure 3-1) ft/s
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr

0.00		
	+	= 0.00

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2
13. Wetted perimeter, P_w ft/ft
14. Hydraulic radius, $r = a/P_w$ Compute r ..... ft
15. Channel slope, s ft/ft
16. Manning's roughness coeff., n
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ ..... Compute V..... ft/s
18. Flow length, L ft
19. $T_t = L / 3600\ V$ Compute T ..... hr
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr

2.00		
4120		
0.57	+	= 0.57
		0.57

NOTE: Assume 2 fps flow in existing ditch
For Developed time of concentration, see storm sewer calculations.

34 minutes

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 01/09/2001

Pond Volume

Basin	A			Retention
Pond	A		Runoff	Volume
Basin Area	41.97	Acres	(inches)	(Acre-ft)
DCIA*	20.94	Acres	1.00	1.75
Required Storage	1.75	Acre-ft		
Retention Stage	129.18	ft		
½ Required Storage	0.87	Acre-ft		
½ Required Stage	128.90	ft		

NOTE: Max depth is 18 inches for wet detention in SWFWMD.
Actual retention depth = 7.2 inches

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
128.61	2.72	-	-	-	0.00
133.20	3.39	3.05	4.59	14.01	14.01
134.19	4.15	3.77	0.99	3.73	17.74

(*) - Calculation of treatment volume using Directly Connected Impervious Area (DCIA) is applicable only to existing public roadway projects.

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Wet Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 10/13/2000

Permanent Pool Calculations

Basin	A	
Pond	A	
Basin Area	41.97	Acres
Composite 'C'	23	Percent
Average Rainfall	31.04	inches (June-September)
Wet Season Duration	122	days

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
124.67	1.15	-	-	-	0.00
129.20	1.56	1.35	4.53	6.12	6.12
129.23	2.54	2.05	0.03	0.07	6.19
130.50	2.72	2.63	1.27	3.34	9.52

Permanent Pool Available = 9.52 Acre-ft

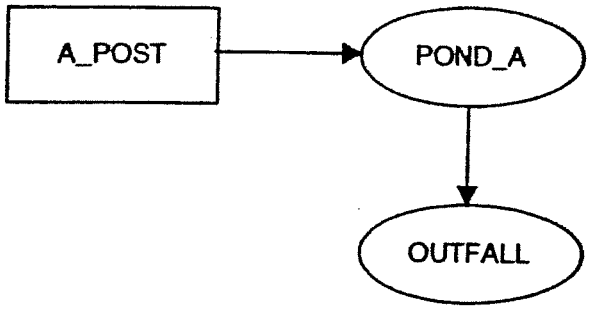
Average daily runoff volume (using 122 day rainfall period) =
(% imp/100)(Basin Area)(31.04"/122 days)(1'/12") =
0.21 Acre-ft

$$\text{Residence Time} = \frac{\text{Permanent Pool Available}}{\text{Average daily runoff volume}} = 45.9 \text{ days}$$

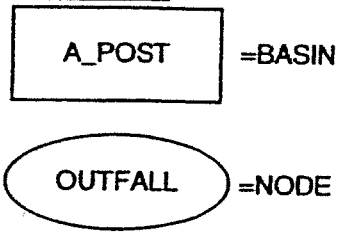
Min Residence Time = 14.0 days O.K.

RESIDENCE TIME >= 21.0 DAYS,
NO LITTORAL ZONE REQUIRED

NODAL DIAGRAM - BASIN A
PROPOSED CONDITIONS



LEGEND



ICPR OUTPUT

ORIFICE BLEED-DOWN CALCULATIONS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]

I-4/US 27 INTERCHANGE - POND A ORIFICE
DRAWDOWN CALCULATIONS
INPUT REPORT

********** Input Report **********

--------Class: Node--------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 128.2
Group: BASE Warn Stage(ft): 128.2
Comment:

Time(hrs)	Stage(ft)
0	128.2
120	128.2

--------Class: Node--------

Name: POND-A Base Flow(cfs): 0 Init Stage(ft): 129.18
Group: BASE Warn Stage(ft): 133.19
Comment:

Stage(ft)	Area(ac)
128.61	2.72
133.2	3.39
134.19	4.15

--------Class: Drop Structure--------

Name: A-OUT From Node: POND-A Length(ft): 173
Group: BASE To Node: OUTFALL Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	36	36
Rise(in):	36	36
Invert(ft):	127.1	126.6
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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I-4/US 27 INTERCHANGE - POND A ORIFICE
DRAWDOWN CALCULATIONS
INPUT REPORT

********** Input Report **********

*** Weir 1 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Circular	Orifice Discharge Coef:	0.6
Span(in):	3	Invert(ft):	128.11
Rise(in):	3	Control Elev(ft):	128.61

*** Weir 2 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	27.559	Invert(ft):	129.18
Rise(in):	20.16	Control Elev(ft):	129.18

*** Weir 3 of 3 for Drop Structure A-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	49	Invert(ft):	130.86
Rise(in):	37	Control Elev(ft):	130.86

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE - POND A ORIFICE
    DRAWDOWN CALCULATIONS
    INPUT REPORT

    ********** Input Report **********************************************************
    --------Class: Simulation-------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDA\ORIFICE\FLD5
 Execution: Both
    Header: I-4/US 27 INTERCHANGE
            DRAWDOWN CALCULATIONS, POND A
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 180
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------
+ BASE     [01/12/01]
```

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
01/15/01

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
*** Group: BASE		Node: POND-A								
0.000	129.18	2.80	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0000
1.004	129.17	2.80	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0148
2.004	129.17	2.80	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0294
3.004	129.16	2.80	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0440
4.004	129.16	2.80	0.00	0.00	0.00	0.00	0.00	0.18	0.0000	0.0585
5.004	129.15	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.0729
6.004	129.15	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.0873
7.004	129.14	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1016
8.004	129.14	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1158
9.004	129.13	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1299
10.004	129.13	2.80	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1440
11.004	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1581
11.254	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1616
11.504	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1650
11.754	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1685
12.004	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1720
12.254	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1755
12.504	129.12	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1790
12.754	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1824
13.004	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1859
13.254	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1894
13.504	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1928
13.754	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1963
14.004	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.1997
14.254	129.11	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2032
15.254	129.10	2.79	0.00	0.00	0.00	0.00	0.00	0.17	0.0000	0.2169
16.254	129.10	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2306
17.254	129.09	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2442
18.254	129.09	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2577
19.254	129.08	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2712
20.254	129.08	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2845
21.254	129.07	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.2979
22.254	129.07	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3111
23.254	129.06	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3243
24.254	129.06	2.79	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3374
25.254	129.05	2.78	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3505
26.254	129.05	2.78	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3635
27.254	129.05	2.78	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3764
28.254	129.04	2.78	0.00	0.00	0.00	0.00	0.00	0.16	0.0000	0.3892
29.254	129.04	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4020
30.254	129.03	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4147
31.254	129.03	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4273
32.254	129.02	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4399
33.254	129.02	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4524
34.254	129.01	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4648
35.254	129.01	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4772

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
01/15/01

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
36.254	129.00	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.4895
37.254	129.00	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5017
38.254	129.00	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5139
39.254	128.99	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5260
40.254	128.99	2.78	0.00	0.00	0.00	0.00	0.00	0.15	0.0000	0.5380
41.254	128.98	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.5500
42.254	128.98	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.5618
43.254	128.97	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.5737
44.254	128.97	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.5854
45.254	128.97	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.5971
46.254	128.96	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6087
47.254	128.96	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6202
48.254	128.95	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6317
49.254	128.95	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6431
50.254	128.95	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6545
51.254	128.94	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6657
52.254	128.94	2.77	0.00	0.00	0.00	0.00	0.00	0.14	0.0000	0.6769
53.254	128.93	2.77	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.6880
54.254	128.93	2.77	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.6991
55.254	128.92	2.77	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7101
56.254	128.92	2.77	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7210
57.254	128.92	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7319
58.254	128.91	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7427
59.254	128.91	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7534
60.254	128.91	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7640
61.254	128.90	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7746
62.254	128.90	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7851
63.254	128.89	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.7955
64.254	128.89	2.76	0.00	0.00	0.00	0.00	0.00	0.13	0.0000	0.8059
65.254	128.89	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8162
66.254	128.88	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8264
67.254	128.88	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8366
68.254	128.88	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8467
69.254	128.87	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8567
70.254	128.87	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8667
71.254	128.86	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8766
72.254	128.86	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8864
73.254	128.86	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.8961
74.254	128.85	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9058
75.254	128.85	2.76	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9154
76.254	128.85	2.75	0.00	0.00	0.00	0.00	0.00	0.12	0.0000	0.9250
77.254	128.84	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9344
78.254	128.84	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9438
79.254	128.84	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9532
80.254	128.83	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9624
81.254	128.83	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9716
82.254	128.83	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.9808

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
01/15/01

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Ou (ac.ft
83.254	128.82	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.989
84.254	128.82	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	0.998
85.254	128.82	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.007
86.254	128.81	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.016
87.254	128.81	2.75	0.00	0.00	0.00	0.00	0.00	0.11	0.0000	1.025
88.254	128.81	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.034
89.254	128.80	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.042
90.254	128.80	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.051
91.254	128.80	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.059
92.254	128.80	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.068
93.254	128.79	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.076
94.254	128.79	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.084
95.254	128.79	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.0931
96.254	128.78	2.75	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1012
97.254	128.78	2.74	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1093
98.254	128.78	2.74	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1173
99.254	128.77	2.74	0.00	0.00	0.00	0.00	0.00	0.10	0.0000	1.1253
100.254	128.77	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1332
101.254	128.77	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1410
102.254	128.77	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1487
103.254	128.76	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1564
104.254	128.76	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1640
105.254	128.76	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1715
106.254	128.75	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1790
107.254	128.75	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1864
108.254	128.75	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.1937
109.254	128.75	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2009
110.254	128.74	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2081
111.254	128.74	2.74	0.00	0.00	0.00	0.00	0.00	0.09	0.0000	1.2152
112.254	128.74	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2223
113.254	128.74	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2293
114.254	128.73	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2362
115.254	128.73	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2430
116.254	128.73	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2498
117.254	128.73	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2565
118.254	128.72	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2631
119.254	128.72	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2696
120.254	128.72	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2761
121.254	128.72	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2825
122.254	128.71	2.74	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2889
123.254	128.71	2.73	0.00	0.00	0.00	0.00	0.00	0.08	0.0000	1.2952
124.254	128.71	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3014
125.254	128.71	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3075
126.254	128.71	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3136
127.254	128.70	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3196
128.254	128.70	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3255
129.254	128.70	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3314

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
01/15/01

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
130.254	128.70	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3372
131.254	128.69	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3429
132.254	128.69	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3485
133.254	128.69	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3541
134.254	128.69	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3596
135.254	128.69	2.73	0.00	0.00	0.00	0.00	0.00	0.07	0.0000	1.3651
136.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3704
137.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3757
138.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3810
139.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3861
140.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3912
141.254	128.68	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.3962
142.254	128.67	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4012
143.254	128.67	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4061
144.254	128.67	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4109
145.254	128.67	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4156
146.254	128.67	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4203
147.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.06	0.0000	1.4249
148.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4294
149.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4339
150.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4383
151.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4426
152.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4469
153.254	128.66	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4511
154.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4552
155.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4592
156.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4632
157.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4671
158.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4709
159.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.05	0.0000	1.4747
160.254	128.65	2.73	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4784
161.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4820
162.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4856
163.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4891
164.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4925
165.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4958
166.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.4991
167.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.5023
168.254	128.64	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.5054
169.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.5085
170.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.04	0.0000	1.5115
171.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5144
172.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5173
173.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5201
174.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5228
175.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5254
176.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5280

I-4/US 27 INTERCHANGE
DRAWDOWN CALCULATIONS, POND A
01/15/01

********** Node Time Series by Node - FLD5 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
177.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5305
178.254	128.63	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5329
179.254	128.62	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5353
180.008	128.62	2.72	0.00	0.00	0.00	0.00	0.00	0.03	0.0000	1.5370

ICPR ROUTING

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Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, POND A
INPUT REPORT
01/15/01

********** Input Report ************************************************************
--------Class: Node-----------------------------------------------------------------
   Name: OUTFALL    Base Flow(cfs): 0          Init Stage(ft): 128.2
  Group: BASE                                 Warn Stage(ft): 128.2
Comment:

Time(hrs)     Stage(ft)
0             128.2
6             128.2
12            129
120           128.2
--------Class: Node-----------------------------------------------------------------
   Name: POND-A     Base Flow(cfs): 0          Init Stage(ft): 129.18
  Group: BASE                                 Warn Stage(ft): 133.19
Comment:

Stage(ft)     Area(ac)
128.61        2.72
133.2         3.39
134.19        4.15
--------Class: Basin----------------------------------------------------------------
Basin: A_POST     Node: POND-A     Status: On Site    Type: SCS Unit Hydr
Group: BASE
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 7
           Area(ac): 41.97       Concentration Time(min): 66
            Curve #: 69                  Time Shift(hrs): 0
            DCIA(%): 0

          PROPOSED CONDITIONS

--------Class: Basin----------------------------------------------------------------
Basin: A_PRE      Node: ZZZ        Status: On Site    Type: SCS Unit Hydr
Group: BASE
    Unit Hydrograph: UH323                    Peak Factor: 323
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 7
           Area(ac): 41.97       Concentration Time(min): 34
            Curve #: 48                  Time Shift(hrs): 0
            DCIA(%): 0

          EXISTING CONDITIONS
```

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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I-4/US 27 INTERCHANGE, POND A
INPUT REPORT
01/15/01

********** Input Report **********

--------Class: Drop Structure----------

Name: A-OUT From Node: POND-A Length(ft): 173
Group: BASE To Node: OUTFALL Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	36	36
Rise(in):	36	36
Invert(ft):	127.1	127.0
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

*** Weir 1 of 3 for Drop Structure A-OUT *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Mavis Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.2
Geometry: Circular Orifice Discharge Coef: 0.6

Span(in): 3 Invert(ft): 128.11
Rise(in): 3 Control Elev(ft): 128.61

*** Weir 2 of 3 for Drop Structure A-OUT *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Mavis Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.2
Geometry: Rectangular Orifice Discharge Coef: 0.6

Span(in): 27.559 Invert(ft): 129.18
Rise(in): 20.16 Control Elev(ft): 129.18

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I-4/US 27 INTERCHANGE, POND A
INPUT REPORT
01/15/01

********** Input Report ************************************************************
 *** Weir 3 of 3 for Drop Structure A-OUT ***                          [TABLE]
   Count: 1                    Bottom Clip(in): 0
    Type: Horiz                   Top Clip(in): 0
    Flow: Both             Weir Discharge Coef: 3.2
Geometry: Rectangular  Orifice Discharge Coef: 0.6

          Span(in): 49                              Invert(ft): 130.86
          Rise(in): 37                        Control Elev(ft): 130.86


   --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDA\36HOUR\FLD5_25
 Execution: Both
   Header: I-4/US 27 INTERCHANGE, POND A
           25 YEAR/24 HOUR STORM
           $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: No
    Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 120
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [01/12/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
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    I-4/US 27 INTERCHANGE, POND A
    INPUT REPORT
    01/15/01

    ********** Input Report **********************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDA\36HOUR\FLD5_50
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POND A
            50 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 8
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [01/12/01]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDA\36HOUR\FLD5_10
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POND A
            10 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 6.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [01/12/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [5]
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    I-4/US 27 INTERCHANGE, POND A
    INPUT REPORT
    01/15/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDA\36HOUR\FLD5_100
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POND A
            100 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [01/12/01]
```

I-4/US 27 INTERCHANGE, POND A
25 YEAR/24 HOUR STORM
01/15/01

********** Basin Summary - FLD5_25 **********

Basin Name:	A_PRE	A_POST
Group Name:	BASE	BASE
Node Name:	ZZZ	POND-A
Hydrograph Type:	UH	UH
Unit Hydrograph:	UH323	UH323
Peaking Factor:	323.00	323.00
Spec Time Inc (min):	4.53	8.80
Comp Time Inc (min):	4.53	8.80
Rainfall File:	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00
Storm Duration (hr):	24.00	24.00
Status:	ONSITE	ONSITE
Time of Conc. (min):	34.00	66.00
Lag Time (hr):	0.00	0.00
Area (acres):	41.97	41.97
Vol of Unit Hyd (in):	1.00	1.00
Curve Number:	48.00	69.00
DCIA (%):	0.00	0.00
Time Max (hrs):	12.39	12.61
Flow Max (cfs):	23.14	44.99
Runoff Volume (in):	1.49	3.51
Runoff Volume (cf):	226999	534767

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I-4/US 27 INTERCHANGE, POND A
10 YEAR/24 HOUR STORM
01/16/01

********** Node Maximum Conditions - FLD5_10 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	129.00	128.20	0.0011	0.00	14.92	13.81	0.00	0.00
POND-A	BASE	14.92	130.68	133.19	0.0085	131673.88	12.67	39.46	14.92	13.81

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I-4/US 27 INTERCHANGE, POND A
25 YEAR/24 HOUR STORM
01/16/01

********** Node Maximum Conditions - FLD5_25 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	129.00	128.20	0.0011	0.00	14.81	16.16	0.00	0.00
POND-A	BASE	14.81	130.86	133.19	0.0095	132782.93	12.67	44.88	14.81	16.16

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I-4/US 27 INTERCHANGE, POND A
50 YEAR/24 HOUR STORM
01/16/01

********** Node Maximum Conditions - FLD5_50 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	129.00	128.20	0.0011	0.00	14.26	25.07	0.00	0.00
POND-A	BASE	14.26	131.11	133.19	0.0100	134405.54	12.67	56.01	14.26	25.07

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, POND A
100 YEAR/24 HOUR STORM
01/16/01

********** Node Maximum Conditions - FLD5_100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	129.00	128.20	0.0011	0.00	13.89	38.34	0.00	0.00
POND-A	BASE	13.89	131.43	133.19	0.0100	136395.19	12.66	73.18	13.89	38.34

FDOT CRITICAL DURATION ANALYSIS

POND A

14-2

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: CLC
Pond: Pond A Checked By:
Date: 12/4/00

Inches of Rainfall for Specified Storm Events

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

$S = 1000/CN - 10$

$C = 1.0 - S\,[1.2 - S/(P + 0.8S)]/P$

where S = soil storage, inches
CN = curve number
P = total rainfall depth for a return period, inches
C = runoff coefficient for a return period

Pre CN	48	S =	10.8
Post CN	69	S =	4.49

Pre Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.00	0.02	0.04	0.06	0.11	0.17	0.23	0.27
5 YR	0.02	0.04	0.07	0.11	0.18	0.23	0.31	0.36
10 YR	0.04	0.06	0.10	0.15	0.23	0.29	0.38	0.42
25 YR	0.06	0.10	0.14	0.19	0.27	0.36	0.42	0.46
50 YR	0.08	0.13	0.18	0.23	0.33	0.39	0.46	0.50
100 YR	0.10	0.15	0.20	0.26	**0.35**	0.44	0.50	**0.54**

Post Runoff Coefficient

	DURATION							
FREQ	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.17	0.21	0.26	0.30	0.38	0.45	0.52	0.56
5 YR	0.22	0.27	0.32	0.38	0.46	0.52	0.59	0.64
10 YR	0.26	0.31	0.37	0.43	0.52	0.58	0.65	0.68
25 YR	0.31	0.36	0.42	0.47	0.56	0.64	0.68	0.71
50 YR	0.34	0.40	0.46	0.52	0.61	0.66	0.71	0.74
100 YR	0.36	0.43	0.49	0.54	**0.63**	0.70	0.74	**0.76**

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01

License To: GTC Engineering corporation

I4/US 27, Pond A

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 1-Hour	2-Hour	4-Hour	8-Hour	24-Hour
2-Year	Q-pre	52.65	52.65	52.65	52.65	52.65
	Q-post	15.14	14.67	15.54	13.98	8.04
	E-max	130.78	130.74	130.81	130.69	130.21
5-Year	Q-pre	61.58	61.58	61.58	61.58	61.58
	Q-post	18.43	18.28	19.21	18.30	10.68
	E-max	131.09	131.07	131.16	131.07	130.44
10-Year	Q-pre	68.78	68.78	68.78	68.78	68.78
	Q-post	20.45	20.58	21.90	21.22	13.09
	E-max	131.29	131.30	131.43	131.37	130.63
25-Year	Q-pre	78.15	78.15	78.15	78.15	78.15
	Q-post	23.93	23.85	25.60	24.09	15.55
	E-max	131.64	131.63	131.80	131.65	130.81
50-Year	Q-pre	86.29	86.29	86.29	86.29	86.29
	Q-post	26.53	27.00	28.95	27.52	17.47
	E-max	131.90	131.94	132.14	132.00	130.99
100-Year	Q-pre	93.43	93.43	93.43	93.43	93.43
	Q-post	28.87	29.21	31.40	29.76	18.71
	E-max	132.13	132.17	132.38	132.22	131.11

Critical Duration: **** 4-HOUR,100-YEAR STORM ****

Q-pre (cfs) = 93.43
Q-post (cfs) = 31.40
E-max (ft) = 132.38

14-4

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01

License To: GTC Engineering corporation

I4/US 27, Pond A

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
129.18	2.803	1.741	.00	.18	.18
129.77	2.889	3.544	.00	3.52	3.52
130.30	2.967	5.163	.00	8.92	8.92
130.62	3.013	6.141	.00	12.97	12.97
130.84	3.046	6.813	.00	15.96	15.96
130.86	3.048	6.874	.00	16.16	16.16

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01

License To: GTC Engineering corporation

I4/US 27, Pond A

**** 4-HOUR,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 41.97
Runoff coefficient	= .350
Time of concentration (min.)	= 34.0
Rainfall intensity (in/hr)	= 6.36
Peak flow rate (cfs)	= 93.43

Post-development Condition:

Drainage area (acres)	= 41.97
Runoff coefficient	= .630
Rainfall zone number	= 8
Total rainfall depth (inches)	= 6.72

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	129.18	.00	.00	.00
.5	.080	14.21	129.27	.70	.00	.70
1.0	.200	35.54	129.59	2.49	.00	2.49
1.5	.360	63.97	130.19	7.81	.00	7.81
2.0	.520	92.40	131.07	18.28	.00	18.28
2.5	.420	74.63	131.90	26.54	.00	26.54
3.0	.280	49.75	132.35	31.06	.00	31.06
3.5	.100	17.77	132.38	31.40	.00	31.40
4.0	.000	.00	132.10	28.55	.00	28.55

Output Summary

Peak flow (cfs)	= 31.40
Peak stage (ft)	= 132.38
Peak Storage (ac-ft)	= 11.530
Time to peak (hrs)	= 3.5

14-6

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01

License To: GTC Engineering corporation

I4/US 27, Pond A

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 3-Day	7-Day	10-Day
2-Year	Q-pre	52.65	52.65	52.65
	Q-post	5.13	3.14	4.74
	E-max	129.93	129.70	129.89
5-Year	Q-pre	61.58	61.58	61.58
	Q-post	6.70	4.15	6.12
	E-max	130.08	129.83	130.03
10-Year	Q-pre	68.78	68.78	68.78
	Q-post	8.14	5.30	7.22
	E-max	130.22	129.94	130.13
25-Year	Q-pre	78.15	78.15	78.15
	Q-post	10.21	6.17	8.50
	E-max	130.40	130.03	130.26
50-Year	Q-pre	86.29	86.29	86.29
	Q-post	11.30	7.32	9.91
	E-max	130.49	130.14	130.38
100-Year	Q-pre	93.43	93.43	93.43
	Q-post	13.48	8.48	11.35
	E-max	130.66	130.26	130.49

Critical Duration: **** 3-DAY,100-YEAR STORM ****

Q-pre (cfs) = 93.43
Q-post (cfs) = 13.48
E-max (ft) = 130.66

14-7

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01

License To: GTC Engineering corporation

I4/US 27, Pond A

Percolation rate (in/hr) = .00

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
129.18	2.803	1.741	.00	.18	.18
129.77	2.889	3.544	.00	3.52	3.52
130.30	2.967	5.163	.00	8.92	8.92
130.62	3.013	6.141	.00	12.97	12.97
130.84	3.046	6.813	.00	15.96	15.96
130.86	3.048	6.874	.00	16.16	16.16

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 1/16/01
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License To: GTC Engineering corporation

I4/US 27, Pond A

**** 3-DAY,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 41.97
Runoff coefficient	= .350
Time of concentration (min.)	= 34.0
Rainfall intensity (in/hr)	= 6.36
Peak flow rate (cfs)	= 93.43

Post-development Condition:

Drainage area (acres)	= 41.97
Runoff coefficient	= .630
Rainfall zone number	= 8
Total rainfall depth (inches)	= 14.00

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	129.18	.00	.00	.00
4.0	.003	1.11	129.23	.44	.00	.44
8.0	.009	3.33	129.37	1.28	.00	1.28
12.0	.028	10.36	129.82	4.08	.00	4.08
16.0	.016	5.92	130.11	6.97	.00	6.97
20.0	.006	2.22	129.91	4.91	.00	4.91
24.0	.003	1.11	129.66	2.92	.00	2.92
28.0	.005	1.85	129.54	2.24	.00	2.24
32.0	.009	3.33	129.57	2.41	.00	2.41
36.0	.033	12.22	129.98	5.65	.00	5.65
40.0	.019	7.03	130.26	8.47	.00	8.47
44.0	.007	2.59	130.00	5.87	.00	5.87
48.0	.003	1.11	129.71	3.19	.00	3.19
52.0	.007	2.59	129.60	2.56	.00	2.56
56.0	.014	5.18	129.71	3.18	.00	3.18
60.0	.050	18.51	130.32	9.20	.00	9.20
64.0	.028	10.36	130.66	13.48	.00	13.48
68.0	.010	3.70	130.24	8.31	.00	8.31
72.0	.000	.00	129.79	3.72	.00	3.72

Output Summary

Peak flow (cfs)	= 13.48
Peak stage (ft)	= 130.66
Peak Storage (ac-ft)	= 6.255
Time to peak (hrs)	= 64.0

14-9

Basin B

Appendix A-3

BASIN B

Basin B consists of approximately 107.2 acres of pavement and open areas associated with the proposed roadway right-of-way. The basin includes portions of US 27 and I-4: the I-4 corridor basin begins at **Station 1998+00** and extends to **Station 2007+00 (due to the relocation of highpoint of I-4 Mainline PGL)**; the US 27 corridor basin runs north from the US-27 bridge at **Station 472+50** to **Station 513+00**. Typically the flow pattern is from east to west along the present I-4 roadside and median ditches and from north to south along the present US 27 roadside and median ditches. Stormwater runoff is presently conveyed into a large dry depressional area via a system of roadside ditches and culverts. This offsite depressional area is located north of I-4 and west US 27 and is a land-locked or closed basin. Therefore, the Basin B pond system was designed to retain the runoff from the 100-year / 24-hour storm event.

The stormwater management system for Basin B consists of three interconnected ponds that retain the runoff from the 100-year 24-hour storm event due to the filling of 33 percent of the depression. There are no adverse impacts to the stage in the depression **(see table below)**. There is no outfall for the B-system ponds because the size of the proposed ponds is large enough to contain all runoff from the 100-year 24-hour storm. The ponds are large, due to FHWA concerns with regard to the depth of water in the infield ponds, and that the area was available in the infield areas without any extra right-of-way costs. The B-system ponds will also store the required water quality volume. The required water quality volume for Basin B is one inch of runoff from the directly connected impervious area. Groundwater recovery of the water quality volume was done using Darcy's equation in a spreadsheet form. Groundwater data, such as infiltration rates and the seasonal high water table elevation was based on information from the **original** geotechnical consultant.

Basin B is not in the 100-year flood zone (see FEMA map, Figure 4).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Channel & Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin B was routed using rainfall depths of 7.0 inches and 9.5 inches for the 25-year and 100-year 24-hour storms, respectively, obtained from the SWFWMD rainfall maps. Results are summarized in the Basin Summary Table **(Appendix A-1)**, and illustrate that post development flows are wholly contained in the Pond B system for the 100-year 24-hour storm event. A minimum of 1.0 foot of freeboard is provided in the B-system ponds. The AdICPR results can be found in this section.

A critical duration analysis was also performed with the use of AdICPR. Results from the analysis can be found in this section. The results show that the Pond B system meets the 14-86 criteria of the FDOT.

Pre vs. Post Stage for Impacted Depression

	25-Year / 24-Hour	100-Year / 24-Hour
Pre	136.29	138.26
Post	134.97	136.52

Since the originally permitted design has been reviewed and has been found to still be viable, the original HDR B-Ponds calculations are provided herein to support the currently proposed design. Although there have been two minor changes to the drainage

area associated with the current B-Ponds design, neither of these changes reduces the viability of the original design. The first drainage area change is a redistribution of the area between the NW Access Road basin and the Pond B-3 basin, near the Ramp A-1 and US 27 intersection (see Drainage Area Maps, Figure 5). This redistribution was prompted by proposed changes to the cross section shapes in that area, but the net drainage area to each basin has not been changed. The second drainage area revision is a reduction of 4.5 acres, in the area that drains to Pond B-1. This reduction was created when the I-4 Mainline PGL was shifted about 800' to the west, establishing the new "highpoint" at about Station 2007+00, rather than the original Station 2015+00+/-. Since this change is a reduction in the drainage area, the original design calculations for the B-Ponds are still appropriate, and will be slightly conservative. (Note that the 4.5-acre reduction for the Pond B-1 drainage area has resulted in an increase of 4.5 acres for the Pond C-3 drainage area – see the C-Ponds calculations in Appendix A-4.)

Only minor modifications have been made to the original B-Ponds drainage collection system due to the modifications of the PGL's along the Mainline I-4, the A-Ramps and the NW Access Road. These changes include stormsewer and cross drain invert and grate elevation revisions, as well as ditch flowline elevation revisions.

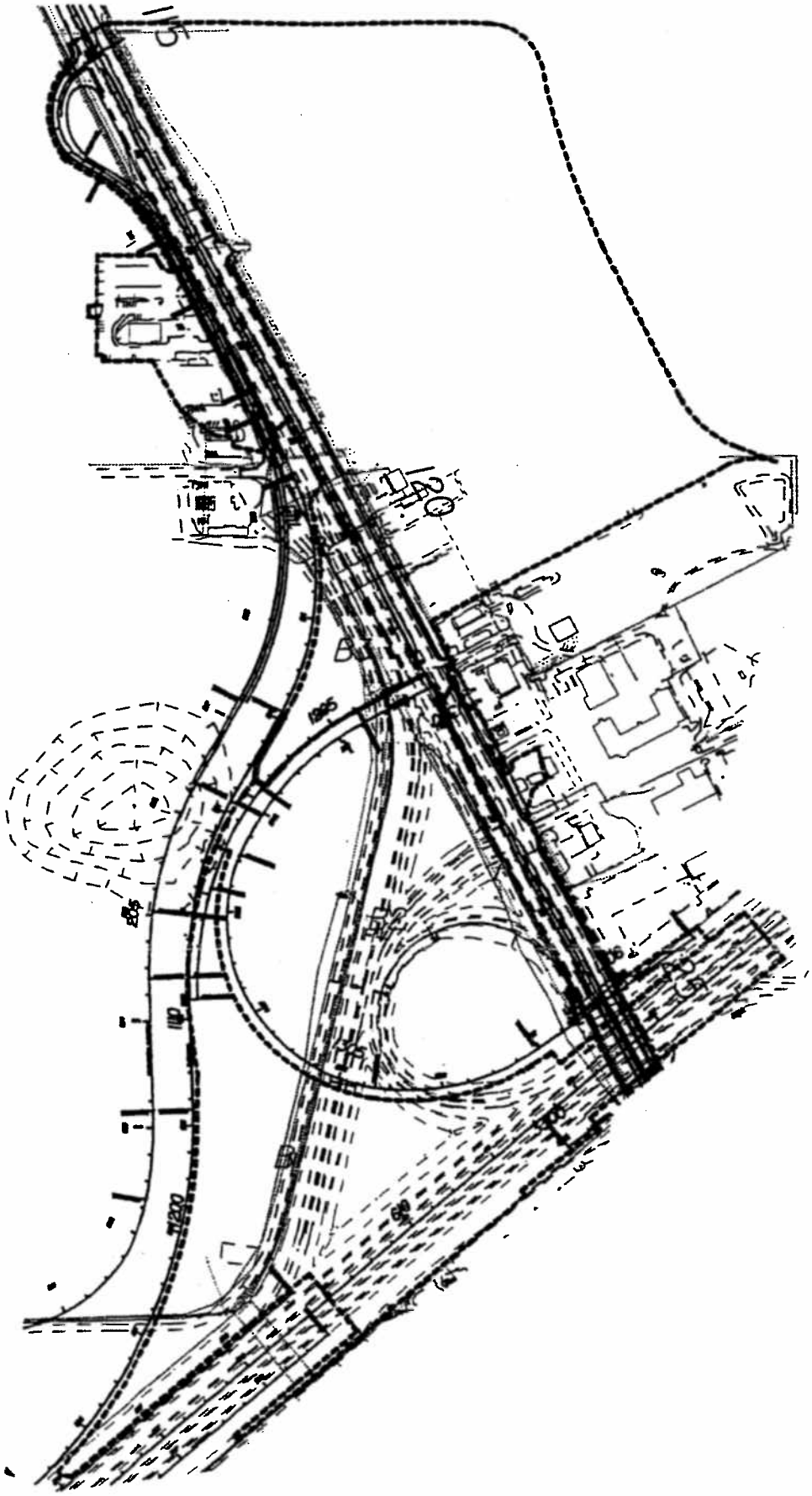
Note that the B-Ponds have been designed for the ultimate 10-lane section proposed for the future I-4 (per the original permit). However, only the 6-lane section will be constructed under the current project.

ORIGINAL

ERP # 4401 1896-024

BASIN B
PRE DEVELOPMENT

CALCULATIONS



ALE:
1:5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County Florida

BASIN B PRE DRAINAGE AREAS

E-767

BY MRS | DATE 02-23-01 | JOB NUMBER FLD-5 | SHEET 1 of 1

Job No. | No.

HDR Computation

HDR

Project: I-4/US27 INTERCHANGE IMPROVEMENTS | Computed: SLL | Date: 10/10/98

Subject: DEPRESSION ANALYSIS – EXISTING COND. | Checked | Date

Task: DETERMINE HYDROLOGIC PARAMETERS | Sheet | Of

BASIN CHARACTERISTICS:

- CONTRIBUTARY DRAINAGE AREA: 66.535 HA (164.4 AC)

33.052	HA	POST DEV. DEPRESSION BASIN
11.028	HA	EXISTING FRONTAGE ROAD TO PROPOSED NW FRONTAGE ROAD
4.941	HA	EXISTING RAMP / INFIELD + US27 LT
16.472	HA	OFFSITE US 27 RT
1.042	HA	US 27 RT
66.535	HA	

- SOILS: CANDLER SERIES
  HYDROLOGIC GROUP A

LAND USE & CURVE NUMBER GENERATION:

AREA (HA)	CN	LAND USE
14.520	43	ORCHARDS, FAIR CONDITION – A SOILS
44.027	49	BRUSH, WEEDS, GRASS – A SOILS
7.988	98	ROADWAY, BUILDINGS – IMPERVIOUS US 27 LT, US 27 RT RAMP, FRONTAGE ROAD

$$\overline{CN} = \frac{(14.52)(43)+(44.027)(49)+(7.988)(98)}{66.535} \Longrightarrow CN = 53.57$$

- TIME OF CONCENTRATION: 67 minutes
  (SEE NEXT PAGE FOR INFO)

25 YEAR 24 HOUR RUNOFF VOLUME = 33581 m^3] ICPR RESULTS
100 YEAR 24 HOUR RUNOFF VOLUME = 61934 m^3]

Job No. | No.

HDR Computation

HDR

Project: I-4 / US 27 INTERCHANGE IMPROVEMENTS | Computed: SLU | Date: 10/10/05

Subject: DEPRESSION ANALYSIS - EXISTING COND. | Checked | Date

Task: DETERMINE PEAK STAGE OF DEPRESSION | Sheet | Of

DEPRESSION STAGE - AREA RELATIONSHIPS (FROM SURVEY DATA)

STAGE (m)	AREA (HA)
40.6	0.1200
40.8	0.4258
41.0	0.6875
41.2	0.9600
41.4	1.2443
41.6	1.5134
41.8	1.7812
42.0	2.0658
42.2	2.3639
43.0	3.6303
44.0	5.7631

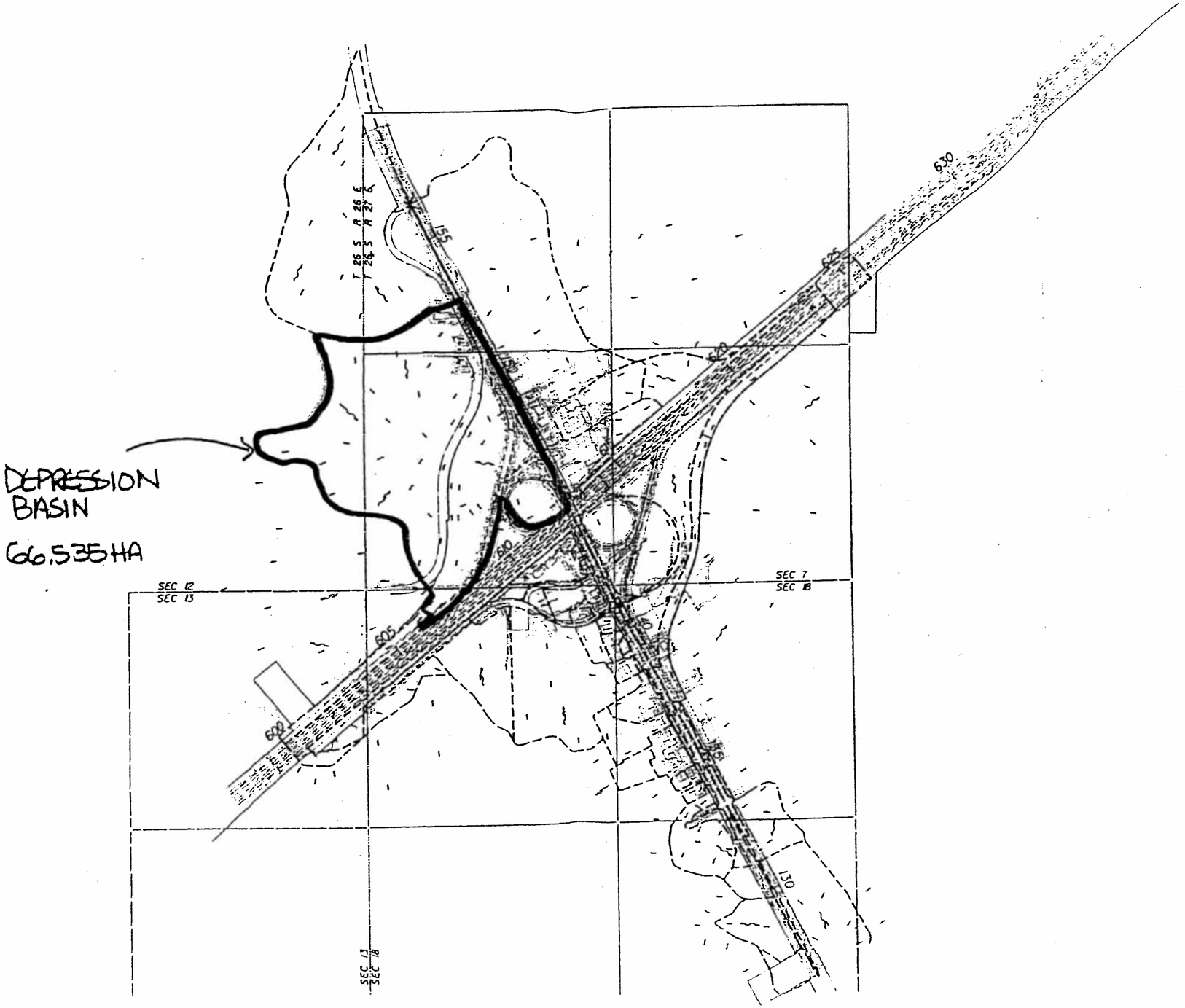
ICPR ROUTING RESULTS

25 YEAR 24 HOUR PEAK STAGE = 41.54

100 YEAR 24 HOUR PEAK STAGE = 42.14

RESULTS VERIFY THAT THE DEPRESSION BASIN IS LAND LOCKED FOR EVENTS UP TO, AND EXCEEDING, THE 100 YEAR 24 HOUR STORM.

16320-3408



EXISTING CONDITION

OVERALL DRAINAGE MAP

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR ENGINEERING, INC.
201 S. ORANGE AVENUE
SUITE 925
ORLANDO, FLORIDA 32801

FLORIDA DEPARTMENT OF TRANSPORTATION

H:\US27\FOOT\ROW\DRAIN\DRAINALL.DGN

E-770

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: SLU Date: 10/8/98
Location: POLK COUNTY Checked: CJL Date:

Circle One: **Present** Developed **Depression Basin - Pre Development**

Circle One: T_c T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

	AB		
1. Surface Description (table 3-1.)	LIGHT UNDERBRUSH		
2. Manning's roughness coeff., n (table3-1.)	0.40		
3. Flow length, L (total L <= 300 ft.) ft	295		
4. Two-yr 24-hr rainfall, P_2 in	4.8		
5. Land slope, s ft/ft	0.010		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T...hr	0.916	+	= 0.92

Shallow concentrated flow **Segment ID**

	BC		CD
7. Surface Description (paved or unpaved)	unpaved		unpaved
8. Flow length, L ft	1100		760
9. Watercourse slope, s ft/ft	0.0327		0.020
10. Average velocity, V (figure 3-1) ft/s	2.92		2.27
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr	0.105	+	0.093 = 0.20

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2			
13. Wetted perimeter, P_w ft/ft			
14. Hydraulic radius, $r = a/P_w$ Compute r ft			
15. Channel slope, s ft/ft			
16. Manning's roughness coeff., n			
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ Compute V ft/s			
18. Flow length, L ft			
19. $T_t = L / 3600\ V$ Compute T hr		+	= 0.00

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr 1.11

67 minutes

I-4 / US 27
Polk County, FL

Prepared by: SLU
Checked by: CJL

INFILTRATION: STAGE-DISCHARGE RELATIONSHIPS

DEPRESSION - PRE DEVELOPMENT

Boring # PN4-2 — Void Ratio: 0.32

Perm. # TNW4-4 Double Ring Method

S.H.W.T. (m)=greater than 2.5 meters — 37.70 — **Permeability Rate :**

Depression Bottom (m)= — 40.60 — k (cm/s) = 0.035

Unsaturated Storage Volume Available (m^3)= — 1113.6 — **FS =** 4

	ELEVATION		AREA				DISCHARGE	
	(Metric) m	(English) ft	(Metric) m^2	(English) sf	(Metric) ha	(English) ac	(Metric) m^3/Sec	(English) ft^3/sec
Bottom	40.60	133.20	1200	12917	0.120	0.297	0.10500	3.7080
	40.80	133.86	4258	45833	0.426	1.052	0.37258	13.1574
	41.00	134.51	6875	74002	0.688	1.699	0.60156	21.2440
	41.20	135.17	9600	103334	0.960	2.372	0.84000	29.6643
	41.40	135.83	12443	133935	1.244	3.075	1.08876	38.4493
	41.60	136.48	15134	162901	1.513	3.740	1.32423	46.7646
	41.80	137.14	17812	191727	1.781	4.401	1.55855	55.0397
	42.00	137.80	20658	222361	2.066	5.105	1.80758	63.8339
	42.20	138.45	23639	254448	2.364	5.841	2.06841	73.0453
	43.00	141.08	36303	390762	3.630	8.971	3.17651	112.1775

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

US 27/ I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
INPUT DATA

********** Input Report **********

--------Class: Node--------

Name: DEPRESSN Base Flow(cfs): 0 Init Stage(ft): 133.2
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
133.2	0.3
133.86	1.05
134.51	1.7
135.17	2.37
135.83	3.07
136.48	3.74
137.14	4.4
137.79	5.1
138.45	5.84

--------Class: Node--------

Name: SHWT Base Flow(cfs): 0 Init Stage(ft): 123.69
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	123.69
72	123.69

--------Class: Operating Table--------

Name: INFILTRT Type: Rating Curve
Comment: INFILTRATION WITH A FS=4

U/S Stage(ft)	Discharge(cfs)
133.2	3.71
133.86	13.16
134.51	21.24
135.17	29.66
135.83	38.45
136.48	46.76
137.14	55.04
137.8	63.83
138.45	73.04
141.08	112.18

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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US 27/ I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
INPUT DATA

********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: DEPRESSN   Node: DEPRESSN   Status: On Site    Type: Santa Barbara
Group: BASE
      Rainfall File: FLMOD            Storm Duration(hrs): 24
Rainfall Amount(in): 7                Time Increment(min): 5
          Area(ac): 164.41
           Curve #: 53.57        Concentration Time(min): 67
           DCIA(%): 0                    Time Shift(hrs): 0



--------Class: Rating Curve----------------------------------------------------------
    Name: INFILTRT   Count: 1          From Node: DEPRESSN
   Group: BASE         Flow: Both        To Node: SHWT

          TABLE     ELEV ON(ft) ELEV OFF(ft)
      #1: INFILTRT  133.2       133.2
      #2:           0           0
      #3:           0           0
      #4:           0           0



   --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\DEPRES~1\PRE\ENGLISH\S
 Execution: Both
   Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
           DEPRESSION ANALYSIS - EXISTING CONDITION
           25-YEAR 24-HOUR STORM EVENT
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
       Max Delta Z (ft): 1
         Delta Z Factor: 0.05          Override Defaults: No
    Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 72
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 1
        To Hour:   PInc(min):                To Hour:   PInc(min):
        72         15                        24         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
    Copyright 1995, Streamline Technologies, Inc.

    US 27/ I-4 INTERCHANGE IMPROVEMENTS
    DEPRESSION ANALYSIS - EXISTING CONDITION
    INPUT DATA

    ********** Input Report **********************************************************
    --------Class: Simulation-------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\DEPRES-1\PRE\ENGLISH\S
 Execution: Both
    Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
            DEPRESSION ANALYSIS - EXISTING CONDITION
            100-YEAR 24-HOUR STORM EVENT
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 1
        To Hour:   PInc(min):              To Hour:   PInc(min):
        72         15                      24         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
25-YEAR 24-HOUR STORM EVENT

********** Basin Summary - 25Y24H **********

***

Basin Name:	DEPRESSN
Group Name:	BASE
Node Name:	DEPRESSN
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FLMOD
Rainfall Amount (in):	7.00
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	67.00
Lag Time (hr):	0.00
Area (acres):	164.41
Curve Number:	53.57
DCIA (%):	0.00
Time Max (hrs):	12.25
Flow Max (cfs):	87.40
Runoff Volume (in):	1.99
Runoff Volume (cf):	1185885

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
100-YEAR 24-HOUR STORM EVENT

********** Basin Summary - 100Y24H **********

***

Basin Name:	DEPRESSN
Group Name:	BASE
Node Name:	DEPRESSN
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FLMOD
Rainfall Amount (in):	9.50
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	67.00
Lag Time (hr):	0.00
Area (acres):	164.41
Curve Number:	53.57
DCIA (%):	0.00
Time Max (hrs):	12.25
Flow Max (cfs):	175.21
Runoff Volume (in):	3.66
Runoff Volume (cf):	2187159

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
25-YEAR 24-HOUR STORM EVENT

********** Node Maximum Conditions - 25Y24H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
DEPRESSN	BASE	14.04	136.29	0.00	0.0009	154250.12	12.25	87.40	14.04	44.29
SHWT	BASE	0.00	123.69	0.00	0.0000	0.00	14.04	44.29	0.00	0.00

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS - EXISTING CONDITION
100-YEAR 24-HOUR STORM EVENT

********** Node Maximum Conditions - 100Y24H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
DEPRESSN	BASE	14.35	138.25	0.00	0.0012	244822.41	12.25	175.20	14.35	70.26
SHWT	BASE	0.00	123.69	0.00	0.0000	0.00	14.35	70.26	0.00	0.00

ORIGINAL

ERP # 4401 1896.024

BASIN B
POST DEVELOPMENT

CALCULATIONS

Job No. | No.

HDR Computation

HDR

Project I-4/US 27 INTERCHANGE IMPROVEMENTS | Computed SLU | Date 10/10/98

Subject DEPRESSION ANALYSIS - POST DEV. | Checked | Date

Task DETERMINE HYDROLOGIC PARAMETERS AND PEAK STAGE OF DEPRESSION | Sheet | Of

ANALYZE POST DEVELOPMENT DEPRESSION BASIN USING SCS EQUATIO

BASIN CHARACTERISTICS

- CONTRIBUTARY DRAINAGE AREA : 33.052 HA (81.7 AC)
- SOILS : CANDLER SERIES
  HYDROLOGIC GROUP A
- LAND USE : BRUSH / WEEDS / GRASS
  FAIR CONDITION
- CURVE NUMBER: (BASED ON LAND USE AND SOILS) → CN = 49
- TIME OF CONCENTRATION : 36 minutes
  (SEE NEXT PAGE FOR INFO.)

25 YEAR 24 HOUR RUNOFF VOLUME = 20517 m^3
100 YEAR 24 HOUR RUNOFF VOLUME = 32135 m^3] ICPR RESULTS

DEPRESSION STAGE-AREA RELATIONSHIPS (FROM SURVEY DATA) AND US 27/I-4 DESIGN OF THE NW FRONTAGE ROAD

STAGE (m)	AREA (HA)
40.6	0.1200
40.8	0.4025
41.0	0.6070
41.2	0.8203
41.4	1.0328
41.6	1.2251
41.8	1.4235
42.0	1.6177
* 42.2	1.8212
43.0	2.6353

CRITICAL ELEVATION

NW FRONTAGE ROAD STATION 206+67
LOWEST ELEVATION 42.16

- THIS ROAD MUST BE PASSABLE FOR THE 25 YEAR 24 HOUR EVENT.

ICPR ROUTING RESULTS

25 YEAR 24 HOUR PEAK STAGE = 41.14
24 HOUR DURATION DHW = 41.00
100 YEAR 24 HOUR PEAK STAGE = 41.61

NOTE: POST DEVELOPMENT PEAK STAGES ARE LOWER THAN PRE-DEVELOPMENT

1:8000

N

DEPRESSION BASIN 3

NOTES:

DO NOT USE INFORMATION ON THESE SHEETS FOR CONSTRUCTION PURPOSES. THESE SHEETS ARE IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

PROPOSED CONDITION

REVISIONS				
DATE	BY	DESCRIPTION	DATE	BY

OVERALL DRAINAGE MAP

SHEET NO.

E-782

3-17

PHASE ___ Y

ORIGINATOR (RP) ... DATE
PRODUCTION CHECKING COMPLETE.
READY FOR SUBMITTAL REVIEW (RP)

CHECKED (OR) ... DATE
Correct (Yellow Highlighter) Change
CONCURRENCE. ORIGINATOR (RP)
(Red Check Mark or X-Out to Disagree)
CHANGE INCORPORATION
(Blue Highlighter)

VERIFICATION, CHECKER (OR) ... DATE
(Green Check Mark or Circle & Remark)
REMARK INCORPORATION ... DATE
(Blue Highlighter)
REMARK VERIFICATION ... DATE
Correct (Green Check Work)

04/17/2001 H:\US27\FDOT\RDWY\DRAIN\drmpoll.dgn
04/17/2001 01:25:58 PM H:\US27\FDOT\RDWY\DRAIN\drmpoll.dgn

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: SLU Date: 10/8/98
Location: POLK COUNTY Checked: CJL Date:

Circle One: Present **Developed** **Depression Basin - Post Development**

Circle One: T_c T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)		
2. Manning's roughness coeff., n (table3-1.)	short grass	
3. Flow length, L (total L <= 300 ft.) ft	0.15	
4. Two-yr 24-hr rainfall, P_2 in	300	
5. Land slope, s ft/ft	4.8	
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T...hr	0.018	
	0.332 +	= 0.33

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)		
8. Flow length, L ft	unpaved	
9. Watercourse slope, s ft/ft	1750	
10. Average velocity, V (figure 3-1) ft/s	0.0118	
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr	1.85	
	0.263 +	= 0.26

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2		
13. Wetted perimeter, P_w ft/ft		
14. Hydraulic radius, $r = a/P_w$ Compute r ft		
15. Channel slope, s ft/ft		
16. Manning's roughness coeff., n		
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ Compute V ft/s		
18. Flow length, L ft		
19. $T_t = L / 3600\ V$ Compute T hr		
	+	= 0.00
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr		0.60

36 minutes

NN
FRONTAGE
ROAD
WAVERLY

I-4 / US 27
Polk County, FL

Prepared by: SLU
Checked by: CJL

INFILTRATION: STAGE-DISCHARGE RELATIONSHIPS

DEPRESSION - POST DEVELOPMENT

Boring # PN4-2 Void Ratio: 0.32

Perm. # TNW4-4 Double Ring Method

S.H.W.T. (m)=greater than 2.5 meters 37.70 **Permeability Rate :**

Depression Bottom (m)= 40.60 k (cm/s) = 0.035

Unsaturated Storage Volume Available (m^3)= 1113.6 **FS =** 4

	ELEVATION		AREA				DISCHARGE	
	(Metric) m	(English) ft	(Metric) m^2	(English) ft^2	(Metric) ha	(English) ac	(Metric) m^3/sec	(English) ft^3/sec
Bottom	40.60	133.20	1200	12917	0.120	0.297	0.10500	3.7080
	40.80	133.86	4025	43325	0.403	0.995	0.35219	12.4374
	41.00	134.51	6070	65337	0.607	1.500	0.53113	18.7565
	41.20	135.17	8203	88296	0.820	2.027	0.71776	25.3475
	41.40	135.83	10328	111170	1.033	2.552	0.90370	31.9139
	41.60	136.48	12251	131869	1.225	3.027	1.07196	37.8560
	41.80	137.14	14235	153224	1.424	3.518	1.24556	43.9866
	42.00	137.80	16177	174128	1.618	3.997	1.41549	49.9875
	42.20	138.45	18212	196032	1.821	4.500	1.59355	56.2757
	43.00	141.08	26353	283661	2.635	6.512	2.30589	81.4316

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

US 27/I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION POST ANALYSIS
INPUT DATA

********** Input Report **********
--------Class: Node--------
Name: DEPRESSN Base Flow(cfs): 0 Init Stage(ft): 133.2
Group: BASE Warn Stage(ft): 138.32
Comment:

Stage(ft)	Area(ac)
132.87	0
133.2	0.3
133.86	1
134.51	1.5
135.17	2.03
135.83	2.55
136.48	3.03
137.14	3.52
137.8	4
138.45	4.5
141.08	6.51

--------Class: Node--------
Name: SHWT Base Flow(cfs): 0 Init Stage(ft): 123.69
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	123.69
72	123.69

--------Class: Operating Table--------
Name: INFILTRT Type: Rating Curve
Comment: infiltration with a SF=2

U/S Stage(ft)	Discharge(cfs)
133.2	3.71
133.86	12.44
134.51	18.76
135.17	25.35
135.83	31.91
136.48	37.86
137.14	43.99
137.8	49.99
138.45	56.27
141.08	81.43

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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US 27/I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION POST ANALYSIS
INPUT DATA

********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: DEPRESSN   Node: DEPRESSN   Status: On Site    Type: Santa Barbara
Group: BASE
      Rainfall File: FLMOD              Storm Duration(hrs): 24
Rainfall Amount(in): 9.5                Time Increment(min): 5
           Area(ac): 81.67
            Curve #: 49             Concentration Time(min): 36
            DCIA(%): 0                       Time Shift(hrs): 0



--------Class: Rating Curve----------------------------------------------------------
    Name: INFILTRT   Count: 1          From Node: DEPRESSN
   Group: BASE        Flow: Both        To Node: SHWT

          TABLE     ELEV ON(ft) ELEV OFF(ft)
      #1: INFILTRT  133.2       133.2
      #2:           0           0
      #3:           0           0
      #4:           0           0



   --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\DEPRES-1\POST\ENGLISH\
 Execution: Both
   Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
           DEPRESSION ANALYSIS
           100-YEAR 24-HOUR STORM EVENT
---------HYDRAULICS-------------------------------HYDROLOGY--------------------
       Max Delta Z (ft): 1
         Delta Z Factor: 0.05           Override Defaults: No
    Time Step Optimizer: 10
Drop Structure Optimizer: 10
    Sim Start Time(hrs): 0
      Sim End Time(hrs): 30
     Min Calc Time(sec): 0.5
     Max Calc Time(sec): 1
       To Hour:   PInc(min):                To Hour:   PInc(min):
       30         15                        24         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
    Copyright 1995, Streamline Technologies, Inc.

    US 27/I-4 INTERCHANGE IMPROVEMENTS
    DEPRESSION POST ANALYSIS
    INPUT DATA

    ********** Input Report **********************************************************
    --------Class: Simulation-------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\DEPRES~1\POST\ENGLISH\
 Execution: Both
    Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
            DEPRESSION ANALYSIS
            25-YEAR 24-HOUR STORM EVENT
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.05          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 7
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 30
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 1
        To Hour:   PInc(min):               To Hour:   PInc(min):
        30         15                       24         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS
25-YEAR 24-HOUR STORM EVENT

********** Basin Summary - 25Y24H **********

***

Basin Name:	DEPRESSN
Group Name:	BASE
Node Name:	DEPRESSN
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FLMOD
Rainfall Amount (in):	7.00
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	36.00
Lag Time (hr):	0.00
Area (acres):	81.67
Curve Number:	49.00
DCIA (%):	0.00
Time Max (hrs):	12.25
Flow Max (cfs):	46.42
Runoff Volume (in):	1.58
Runoff Volume (cf):	466984

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS
100-YEAR 24-HOUR STORM EVENT

********** Basin Summary - 100Y24H **********

***

Basin Name:	DEPRESSN
Group Name:	BASE
Node Name:	DEPRESSN
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FLMOD
Rainfall Amount (in):	9.50
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	36.00
Lag Time (hr):	0.00
Area (acres):	81.67
Curve Number:	49.00
DCIA (%):	0.00
Time Max (hrs):	12.17
Flow Max (cfs):	101.78
Runoff Volume (in):	3.08
Runoff Volume (cf):	913660

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS
25-YEAR 24-HOUR STORM EVENT

********** Node Maximum Conditions - 25Y24H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
DEPRESSN	BASE	13.20	134.97	138.32	0.0007	81531.37	12.25	46.42	13.20	23.38
SHWT	BASE	0.00	123.69	0.00	0.0000	0.00	13.20	23.38	0.00	0.00

US 27 / I-4 INTERCHANGE IMPROVEMENTS
DEPRESSION ANALYSIS
100-YEAR 24-HOUR STORM EVENT

********** Node Maximum Conditions - 100Y24H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
DEPRESSN	BASE	13.45	136.52	138.32	0.0011	133430.40	12.25	100.00	13.45	38.27
SHWT	BASE	0.00	123.69	0.00	0.0000	0.00	13.45	38.27	0.00	0.00

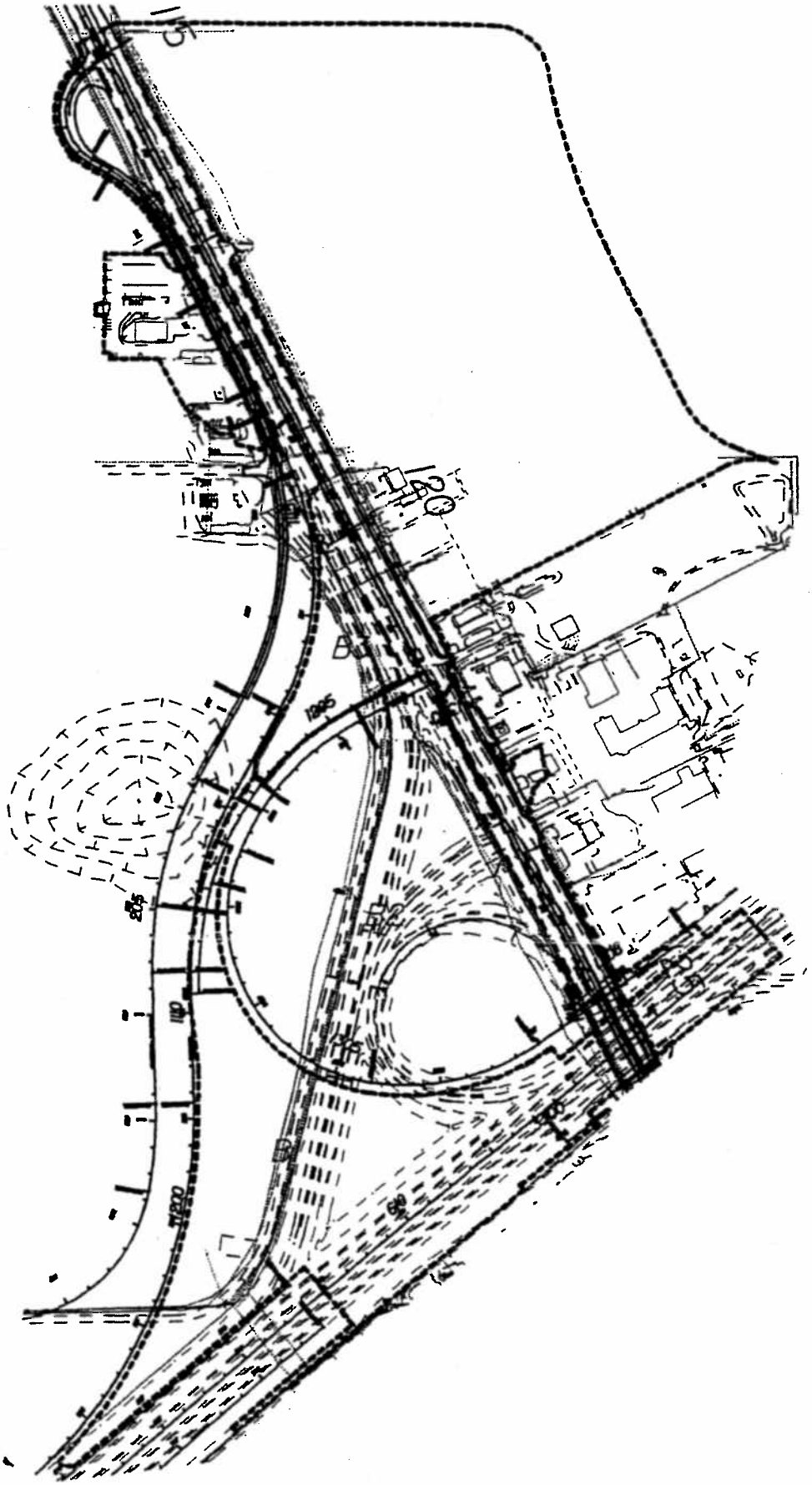
ORIGINAL

ERP # 44011896.024

BASIN B
POST DEVELOPMENT

B-SYSTEM PONDS

CALCULATIONS



ALE:
1:5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

Florida

BASIN B POST DRAINAGE AREAS

E-794
3-29

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/28/2000

Pond Volume

Basin	B	
Pond	B1	
Basin Area	22.79	Acres
DCIA*	10.82	Acres
Required Storage	1.24	Acre-ft
Retention Stage	138.0	ft
Provided Storage	12.00	Acre-ft
Actual Retention Stage	139.6	ft
½ Required Storage	0.62	Acre-ft
½ Required Stage	137.9	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
137.80	2.91	-	-	-	0.00
148.46	6.32	4.62	10.66	49.20	0.00
150.43	7.26	6.79	1.97	13.38	13.38

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/29/00
Location: POLK COUNTY, Pond B1 Checked: CLC Date: 11/30/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			11.97	586.53
	Impervious area-roadway	98			10.82	1060.36
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
Use only one CN source per line.				Totals =	22.79	1646.89

CN (weighted) = total product/total area = $\frac{1646.89}{22.79}$ = 72.26 Use CN = 72

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	1.5	3.4	3.9
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/28/2000

Pond Volume

Basin	B	
Pond	B2	
Basin Area	26.95	Acres
DCIA*	7.82	Acres
Required Storage	1.44	Acre-ft
Retention Stage	137.3	ft
Provided Storage	20.50	Acre-ft
Actual Retention Stage	139.6	ft
½ Required Storage	0.72	Acre-ft
½ Required Stage	137.2	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
137.14	6.61	-	-	-	0.00
140.42	7.75	7.18	3.28	23.55	0.00
142.39	8.95	8.35	1.97	16.45	16.45

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/29/00
Location: POLK COUNTY, Pond B2 Checked: CLC Date: 11/30/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN (Table 2-2)	CN (Fig 2-3)	CN (Fig 2-4)	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			19.13	937.37
	Impervious area-roadway	98			7.82	766.36
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00

Use only one CN source per line. Totals = 26.95 1703.73

CN (weighted) = total product/total area = $\frac{1703.73}{26.95}$ = 63.22 Use CN = 63

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.9	2.6	2.9

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/28/2000

Pond Volume

Basin	B	
Pond	B3	
Basin Area	57.45	Acres
DCIA*	7.41	Acres
Required Storage	2.39	Acre-ft
Retention Stage	144.3	ft
Provided Storage	0.70	Acre-ft
Actual Retention Stage	139.8	ft
½ Required Storage	1.20	Acre-ft
½ Required Stage	141.1	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
137.96	0.12	-	-	-	0.00
141.24	0.27	0.19	3.28	0.63	0.00
143.21	0.48	0.38	1.97	0.74	0.74

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/29/00
Location: POLK COUNTY, Pond B3 Checked: CLC Date: 11/30/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			50.04	2451.96
	Impervious area-roadway	98			7.41	726.18
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.					Totals =	57.45	3178.14

CN (weighted) = total product/total area = $\frac{3178.14}{57.45}$ = 55.32 Use CN = 55

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.5	1.8	2.2
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

Water Quality Volume Calculation

Pond B1 : (off I-4)

Drainage Basin :	9.22 ha	22.8 ac
Impervious Area :	4.38 ha	10.8 ac
Grassed Area :	3.66 ha	9.0 ac
Pond Bottom :	1.18 ha	2.9 ac

Water Quality Volume Required:

First inch of Rainfall = 1.24 ac-ft 0.5" of runoff x basin area = 0.95 ac-ft

Water Quality Vol. Required = 1.24 ac-ft
1528 m3

Pond B2 : (off Ramp)

Drainage Basin :	10.90 ha	26.9 ac
Impervious Area :	3.16 ha	7.8 ac
Grassed Area :	5.07 ha	12.5 ac
Pond Bottom :	2.67 ha	6.6 ac

Water Quality Volume Required:

First inch of Rainfall = 1.44 ac-ft 0.5" of runoff x basin area = 1.12 ac-ft

Water Quality Vol. Required = 1.44 ac-ft
1774 m3

Pond B3 : (off US 27)

Drainage Basin :	23.25 ha	57.4 ac
Impervious Area :	3.00 ha	7.4 ac
Grassed Area :	20.20 ha	49.9 ac
Pond Bottom :	0.05 ha	0.1 ac

Water Quality Volume Required:

First inch of Rainfall = 1.93 ac-ft 0.5" of runoff x basin area = 2.39 ac-ft

Water Quality Vol. Required = 2.39 ac-ft
2953 m3

I-4 / US 27
Polk County, FL

Prepared by: B.D.
Checked by: CJL

INFILTRATION: STAGE-DISCHARGE RELATIONSHIPS

POND B-1

Boring # PB1-2 — Void Ratio: 0.32
Perm. # TB3-1 — Open Hole Method

S.H.W.T. (m)= 40.60 — **Permeability Rate :**
Pond Bottom (m)= 42.00 — k (cm/s) = 0.001
Unsaturated Storage Volume Available (m^3)= 5281.5 — FS = 2

	ELEVATION		AREA				DISCHARGE	
	(Metric) m	(English) ft	(Metric) sm	(English) sf	(Metric) ha	(English) ac	(Metric) m^3/sec	(English) ft^3/sec
Pond Bottom	42.00	137.80	11789	126896	1.179	2.913	0.05895	2.0816
	45.25	148.46	24836	267337	2.484	6.137	0.12418	4.3854
Top of Berm	45.85	150.43	29389	316341	2.939	7.262	0.14695	5.1893

POND B-2

Boring # PB2-5 — Void Ratio: 0.32
Perm. # TB3-1 — Open Hole Method

S.H.W.T. (m)= 40.30 — **Permeability Rate :**
Pond Bottom (m)= 41.80 — k (cm/s) = 0.001
Unsaturated Storage Volume Available (m^3)= 12833.3 — FS = 2

	ELEVATION		AREA				DISCHARGE	
	(Metric) m	(English) ft	(Metric) sm	(English) sf	(Metric) ha	(English) ac	(Metric) m^3/sec	(English) ft^3/sec
Pond Bottom	41.80	137.14	26736	287784	2.674	6.607	0.13368	4.7209
	42.80	140.42	31362	337578	3.136	7.750	0.15681	5.5377
Top of Berm	43.40	142.39	36214	389804	3.621	8.949	0.18107	6.3944

POND B-3

Boring # PB3-1 — Void Ratio: 0.32
Perm. # TB3-1 — Open Hole Method

S.H.W.T. (m)= 37.60 — **Permeability Rate :**
Pond Bottom (m)= 42.05 — k (cm/s) = 0.001
Unsaturated Storage Volume Available (m^3)= 665.0 — FS = 2

	ELEVATION		AREA				DISCHARGE	
	(Metric) m	(English) ft	(Metric) sm	(English) sf	(Metric) ha	(English) ac	(Metric) m^3/sec	(English) ft^3/sec
Pond Bottom	42.05	137.96	467	5027	0.047	0.115	0.00234	0.0825
	43.05	141.24	1092	11754	0.109	0.270	0.00546	0.1928
Top of Berm	43.65	143.21	1943	20914	0.194	0.480	0.00972	0.3431

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : POND B-1
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	126760.00 ft²
Pond Volume between Bottom & DHWL	54014.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	118.10 ft
Elevation of Seasonal High Groundwater Table	133.20 ft
Elevation of Pond Bottom	137.80 ft
Design High Water Level Elevation	139.63
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	2.83 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	4.24 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.03
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	0.00
Elevation of water level	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: POND B-1

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	23.41	174928.80
1	1.00	0.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: POND B-1

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	133.200	0.000 *		
			0.00	
0.00	133.200	3.57801		
			1.99642	0.00
24.41	137.784	0.41482		
			0.09081	0.00
29.41	137.728	0.07896		
			0.06475	0.00
35.41	137.681	0.05826		
			0.04528	0.00
47.41	137.615	0.04077		
			0.03627	0.00
59.41	137.562	0.03371		
			0.03116	0.00
71.41	137.516	0.02950		
			0.02784	0.00
83.41	137.475	0.02667		
			0.02550	0.00
95.41	137.438	0.02446		
			0.02239	0.00
119.41	137.372	0.02133		
			0.02027	0.00
143.41	137.313	0.01946		
			0.01865	0.00
167.41	137.258	0.01802		

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: POND B-1

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
			0.01739	0.00
191.41	137.208	0.01686		
			0.01634	0.00
215.41	137.160	0.01591		
			0.01548	0.00
239.41	137.114			

Max. WL : 137.784 @ 24.41 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : POND B-2
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	293159.00 ft²
Pond Volume between Bottom & DHWL	166835.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	116.50 ft
Elevation of Seasonal High Groundwater Table	132.20 ft
Elevation of Pond Bottom	137.10 ft
Design High Water Level Elevation	139.63
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	2.83 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	4.24 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.03
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	0.00
Elevation of water level	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: POND B-2

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	24.93	430943.73
1	1.00	0.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: POND B-2

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	132.200	0.000 *		
			0.00	
0.00	132.200	8.39212		
			4.62206	0.00
25.93	137.091	0.85200		
			0.12511	0.00
30.93	137.057	0.11322		
			0.09895	0.00
36.93	137.025	0.09009		
			0.07237	0.00
48.93	136.977	0.06514		
			0.05791	0.00
60.93	136.940	0.05364		
			0.04937	0.00
72.93	136.907	0.04656		
			0.04376	0.00
84.93	136.879	0.04179		
			0.03983	0.00
96.93	136.852	0.03816		
			0.03483	0.00
120.93	136.807	0.03311		
			0.03139	0.00
144.93	136.766	0.03014		
			0.02889	0.00
168.93	136.728	0.02789		

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

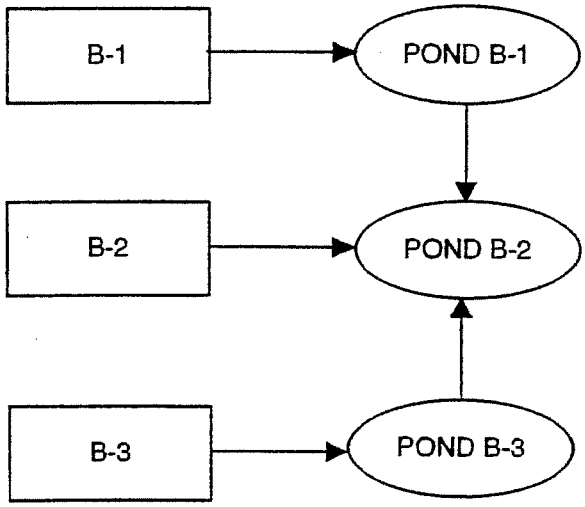
Pond Name / No.: POND B-2

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
			0.02690	0.00
192.93	136.693	0.02610		
			0.02530	0.00
216.93	136.659	0.02469		
			0.02408	0.00
240.93	136.628			

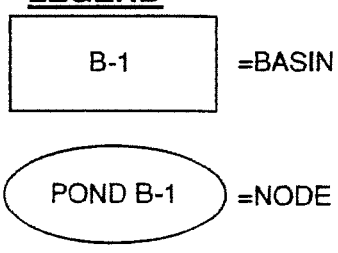
Max. WL : 137.091 @ 25.93 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

ICPR OUTPUT

NODAL DIAGRAM - BASIN B
PROPOSED CONDITIONS



LEGEND



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US 27/I-4 INTERCHANGE IMPROVEMENTS
POND B SYSTEM
INPUT DATA

********** Input Report **********

--------Class: Node--------

Name: B-1 Base Flow(cfs): 0 Init Stage(ft): 137.8
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.8	2.91
148.46	6.14
150.43	7.26

--------Class: Node--------

Name: B-2 Base Flow(cfs): 0 Init Stage(ft): 137.14
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.14	6.61
140.42	7.75
142.39	8.95

--------Class: Node--------

Name: B-3 Base Flow(cfs): 0 Init Stage(ft): 137.96
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.96	0.12
141.24	0.27
143.21	0.48

--------Class: Node--------

Name: SHWTB-1 Base Flow(cfs): 0 Init Stage(ft): 133.2
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	133.2
72	133.2

--------Class: Node--------

Name: SHWTB-2 Base Flow(cfs): 0 Init Stage(ft): 132.22
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	132.22
72	132.22

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POND B SYSTEM
INPUT DATA

********** Input Report **********

--------Class: Node--------

Name: SHWTB-3 Base Flow(cfs): 0 Init Stage(ft): 123.36
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	123.36
72	123.36

--------Class: Operating Table--------

Name: RWTB-1 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.8	2.1
148.46	4.39
150.43	5.19

--------Class: Operating Table--------

Name: RWTB-2 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.14	4.72
140.42	5.54
142.39	6.39

--------Class: Operating Table--------

Name: RWTB-3 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.96	0.08
141.24	0.19
143.21	0.34

--------Class: Basin--------

Basin: B-1 Node: B-1 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 22.79
Curve #: 72 Concentration Time(min): 51
DCIA(%): 0 Time Shift(hrs): 0

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US 27/I-4 INTERCHANGE IMPROVEMENTS
POND B SYSTEM
INPUT DATA

********** Input Report **********

--------Class: Basin--------

Basin: B-2 Node: B-2 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 26.95
Curve #: 63 Concentration Time(min): 13
DCIA(%): 0 Time Shift(hrs): 0

--------Class: Basin--------

Basin: B-3 Node: B-3 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 57.45
Curve #: 55 Concentration Time(min): 59
DCIA(%): 0 Time Shift(hrs): 0

--------Class: Pipe--------

Name: RB-1 From Node: B-1 Length(ft): 220
Group: BASE To Node: B-2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	24	24	Flow:	Both
Rise(in):	24	24	Entrance Loss Coef:	0.5
Invert(ft):	137.8	137.14	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

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US 27/I-4 INTERCHANGE IMPROVEMENTS
POND B SYSTEM
INPUT DATA

********** Input Report **********

--------Class: Pipe--------

Name:	RB-3	From Node: B-3	Length(ft):	285
Group:	BASE	To Node: B-2	Count:	2

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	36	36	Flow:	Both
Rise(in):	36	36	Entrance Loss Coef:	0.5
Invert(ft):	137.96	137.14	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Rating Curve--------

Name:	RWTB-1	Count: 1	From Node: B-1
Group:	BASE	Flow: No Flow	To Node: SHWTB-1

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	RWTB-1	137.81	137.8
#2:		0	0
#3:		0	0
#4:		0	0

--------Class: Rating Curve--------

Name:	RWTB-2	Count: 1	From Node: B-2
Group:	BASE	Flow: No Flow	To Node: SHWTB-2

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	RWTB-2	137.15	137.14
#2:		0	0
#3:		0	0
#4:		0	0

```
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US 27/I-4 INTERCHANGE IMPROVEMENTS
POND B SYSTEM
INPUT DATA

********** Input Report ************************************************************
--------Class: Rating Curve-----------------------------------------------------
    Name: RWTB-3     Count: 1          From Node: B-3
   Group: BASE        Flow: No Flow     To Node: SHWTB-3

          TABLE     ELEV ON(ft)  ELEV OFF(ft)
    #1: RWTB-3     137.97       137.96
    #2:            0            0
    #3:            0            0
    #4:            0            0



    --------Class: Simulation-------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDB\ENGLISH\SIM\25Y2
 Execution: Both
    Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
            B-SYSTEM PONDS
            25-YEAR 24-HOUR PEAK STAGE RESULTS
---------HYDRAULICS------------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.005          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 7
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 80
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        8          15                        8          15
        15         5                         15         5
        80         15                        80         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [30]
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    US 27/I-4 INTERCHANGE IMPROVEMENTS
    POND B SYSTEM
    INPUT DATA

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDB\ENGLISH\SIM\100Y
 Execution: Both
    Header: US 27 / I-4 INTERCHANGE IMPROVEMENTS
            B-SYSTEM PONDS
            100-YEAR 24-HOUR PEAK STAGE RESULTS
---------HYDRAULICS-------------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.005          Override Defaults: Yes
     Time Step Optimizer: 10                Storm Dur(hrs): 24
Drop Structure Optimizer: 10              Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                 Rainfall File: FLMOD
       Sim End Time(hrs): 120
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        8          15                        8          15
        15         5                         15         5
        120        15                        120        15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE     [02/21/01]
```

US 27 / I-4 INTERCHANGE IMPROVEMENTS
B-SYSTEM PONDS
25-YEAR 24-HOUR PEAK STAGE RESULTS

********** Basin Summary - 25Y24H1 **********

***			
Basin Name:	B-1	B-2	B-3
Group Name:	BASE	BASE	BASE
Node Name:	B-1	B-2	B-3
Hydrograph Type:	SB	SB	SB
Spec Time Inc (min):	5.00	5.00	5.00
Comp Time Inc (min):	5.00	5.00	5.00
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	51.00	13.00	59.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	22.79	26.95	57.45
Curve Number:	72.00	63.00	55.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.17	12.00	12.25
Flow Max (cfs):	31.50	53.12	36.20
Runoff Volume (in):	3.82	2.90	2.12
Runoff Volume (cf):	316358	283358	442144

US 27 / I-4 INTERCHANGE IMPROVEMENTS
B-SYSTEM PONDS
100-YEAR 24-HOUR PEAK STAGE RESULTS

********** Basin Summary - 100Y24H1 **********

***			
Basin Name:	B-1	B-2	B-3
Group Name:	BASE	BASE	BASE
Node Name:	B-1	B-2	B-3
Hydrograph Type:	SB	SB	SB
Spec Time Inc (min):	5.00	5.00	5.00
Comp Time Inc (min):	5.00	5.00	5.00
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	51.00	13.00	59.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	22.79	26.95	57.45
Curve Number:	72.00	63.00	55.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.17	12.00	12.25
Flow Max (cfs):	49.93	90.56	70.31
Runoff Volume (in):	6.03	4.88	3.85
Runoff Volume (cf):	498467	476927	802474

US 27 / I-4 INTERCHANGE IMPROVEMENTS
B-SYSTEM PONDS
25-YEAR 24-HOUR PEAK STAGE RESULTS

********** Node Maximum Conditions - 25Y24H1 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
B-1	BASE	24.00	139.62	0.00	0.0026	150852.79	12.17	31.50	13.86	6.93
B-2	BASE	24.00	139.62	0.00	0.0031	326189.29	12.00	80.71	0.00	0.00
B-3	BASE	12.44	139.85	0.00	0.0050	9833.38	12.25	36.20	12.24	34.77
SHWTB-1	BASE	0.00	133.20	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-2	BASE	0.00	132.22	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-3	BASE	0.00	123.36	0.00	0.0000	0.00	0.00	0.00	0.00	0.00

US 27 / I-4 INTERCHANGE IMPROVEMENTS
B-SYSTEM PONDS
100-YEAR 24-HOUR PEAK STAGE RESULTS

********** Node Maximum Conditions - 100Y24H1 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
B-1	BASE	23.99	141.05	0.00	0.0030	169642.10	12.17	49.93	12.75	7.89
B-2	BASE	23.99	141.05	0.00	0.0031	354365.50	12.01	145.51	0.00	0.00
B-3	BASE	23.99	141.05	0.00	0.0050	11434.30	12.25	70.30	12.31	68.78
SHWTB-1	BASE	0.00	133.20	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-2	BASE	0.00	132.22	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-3	BASE	0.00	123.36	0.00	0.0000	0.00	0.00	0.00	0.00	0.00

BASIN B

ICPR CALCULATIONS
WITHOUT PERCOLATION
100 YEAR 24 HOUR STORM EVENT
RETENTION OF THE STORAGE VOLUME

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US 27/I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR STORM EVENT
100 YEAR VOLUME STORAGE CALCULATIONS

********** Input Report **********

--------Class: Node----------

Name: B-1 Base Flow(cfs): 0 Init Stage(ft): 137.8
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.8	2.91
148.46	6.14
150.43	7.26

--------Class: Node----------

Name: B-2 Base Flow(cfs): 0 Init Stage(ft): 137.14
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.14	6.61
140.42	7.75
142.39	8.95

--------Class: Node----------

Name: B-3 Base Flow(cfs): 0 Init Stage(ft): 137.96
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
137.96	0.12
141.24	0.27
143.21	0.48

--------Class: Node----------

Name: SHWTB-1 Base Flow(cfs): 0 Init Stage(ft): 133.2
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	133.2
72	133.2

--------Class: Node----------

Name: SHWTB-2 Base Flow(cfs): 0 Init Stage(ft): 132.22
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	132.22
72	132.22

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US 27/I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR STORM EVENT
100 YEAR VOLUME STORAGE CALCULATIONS

********** Input Report **********
--------Class: Node--------
Name: SHWTB-3 Base Flow(cfs): 0 Init Stage(ft): 123.36
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	123.36
72	123.36

--------Class: Operating Table--------
Name: RWTB-1 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.8	2.1
148.46	4.39
150.43	5.19

--------Class: Operating Table--------
Name: RWTB-2 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.14	4.72
140.42	5.54
142.39	6.39

--------Class: Operating Table--------
Name: RWTB-3 Type: Rating Curve
Comment:

U/S Stage(ft)	Discharge(cfs)
137.96	0.08
141.24	0.19
143.21	0.34

--------Class: Basin--------
Basin: B-1 Node: B-1 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 22.79
Curve #: 72 Concentration Time(min): 51
DCIA(%): 0 Time Shift(hrs): 0

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US 27/I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR STORM EVENT
100 YEAR VOLUME STORAGE CALCULATIONS

********** Input Report **********

--------Class: Basin----------

Basin: B-2 Node: B-2 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 26.95
Curve #: 63 Concentration Time(min): 13
DCIA(%): 0 Time Shift(hrs): 0

--------Class: Basin----------

Basin: B-3 Node: B-3 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 57.45
Curve #: 55 Concentration Time(min): 59
DCIA(%): 0 Time Shift(hrs): 0

--------Class: Pipe----------

Name: RB-1 From Node: B-1 Length(ft): 220
Group: BASE To Node: B-2 Count: 1

	UPSTREAM	DOWNSTREAM		
			Equation:	Average K
Geometry:	Circular	Circular	Flow:	Both
Span(in):	24	24	Entrance Loss Coef:	0.5
Rise(in):	24	24	Exit Loss Coef:	0.5
Invert(ft):	137.8	137.14	Bend Loss Coef:	0
Manning's N:	0.012	0.012	Outlet Cntrl Spec:	Use dc or tw
Top Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
Bottom Clip(in):	0	0	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

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US 27/I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR STORM EVENT
100 YEAR VOLUME STORAGE CALCULATIONS

********** Input Report **********

--------Class: Pipe--------

Name:	RB-3	From Node:	B-3	Length(ft):	285
Group:	BASE	To Node:	B-2	Count:	2

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	36	36	Flow:	Both
Rise(in):	36	36	Entrance Loss Coef:	0.5
Invert(ft):	137.96	137.14	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Rating Curve--------

Name:	RWTB-1	Count:	1	From Node:	B-1
Group:	BASE	Flow:	No Flow	To Node:	SHWTB-1

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	RWTB-1	137.81	137.8
#2:		0	0
#3:		0	0
#4:		0	0

--------Class: Rating Curve--------

Name:	RWTB-2	Count:	1	From Node:	B-2
Group:	BASE	Flow:	No Flow	To Node:	SHWTB-2

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	RWTB-2	137.15	137.14
#2:		0	0
#3:		0	0
#4:		0	0

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US 27/I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR STORM EVENT
100 YEAR VOLUME STORAGE CALCULATIONS

********** Input Report **********
--------Class: Rating Curve----------

Name: RWTB-3 Count: 1 From Node: B-3
Group: BASE Flow: No Flow To Node: SHWTB-3

	TABLE	ELEV ON(ft)	ELEV OFF(ft)
#1:	RWTB-3	137.97	137.96
#2:		0	0
#3:		0	0
#4:		0	0

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US 27 / I-4 INTERCHANGE IMPROVEMENTS
100 YEAR 24 HOUR VOLUME STORAGE CALCULATIONS
LINK MAXIMUM RESULTS

********** Link Maximum Conditions - 100Y24H1 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
RB-1	BASE	12.75	7.89	-0.29	119.99	141.09	120.00	141.09
RB-3	BASE	12.31	68.78	-4.44	119.99	141.09	120.00	141.09
RWTB-1	BASE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RWTB-2	BASE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RWTB-3	BASE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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US 27 / I-4 INTERCHANGE IMPROVEMENTS
100-YEAR 24 HOUR STORAGE VOLUME CALCULATIONS
PEAK STAGE RESULTS

********** Node Maximum Conditions - 100Y24H1 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
B-1	BASE	23.99	141.05	0.00	0.0030	169642.10	12.17	49.93	12.75	7.89
B-2	BASE	23.99	141.05	0.00	0.0031	354365.50	12.01	145.51	0.00	0.00
B-3	BASE	23.99	141.05	0.00	0.0050	11434.30	12.25	70.30	12.31	68.78
SHWTB-1	BASE	0.00	133.20	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-2	BASE	0.00	132.22	0.00	0.0000	0.00	0.00	0.00	0.00	0.00
SHWTB-3	BASE	0.00	123.36	0.00	0.0000	0.00	0.00	0.00	0.00	0.00

FDOT CRITICAL DURATION ANALYSIS

POND B

14-10

POND B1 CRITICAL DURATION

B1 POST PEAK STAGE

	1 HOUR	2 HOUR	4 HOUR	8 HOUR	24 HOUR	72 HOUR	168 HOUR	240 HOUR
2 YEAR	138.0	138.1	138.2	138.2	138.1	138.1	138.2	138.3
5 YEAR	138.1	138.3	138.4	138.5	138.4	138.3	138.4	138.8
10 YEAR	138.2	138.4	138.6	138.7	139.0	138.7	138.8	139.4
25 YEAR	138.4	138.6	138.8	138.9	139.6	139.6	139.2	140.0
50 YEAR	138.5	138.8	139.0	139.5	140.4	140.1	139.9	140.6
100 YEAR	138.6	138.9	139.2	139.8	140.7	141.1	140.6	**141.2**

US 27 / I-4 INTERCHANGE IMPROVEMENTS
B-SYSTEM PONDS - CRITICAL DURATION ANALYSIS
100 YEAR / 240 HOUR STORM

********** Node Maximum Conditions - 100Y240H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
B-1	BASE	193.14	141.18	0.00	0.0031	171437.45	183.00	14.27	177.77	4.85
B-2	BASE	192.91	141.19	0.00	0.0031	358039.61	178.29	48.97	192.91	5.87
B-3	BASE	192.74	141.19	0.00	0.0050	11713.35	183.00	31.89	178.29	32.71
SHWTB-1	BASE	0.00	133.20	0.00	0.0000	0.00	193.14	2.83	0.00	0.00
SHWTB-2	BASE	0.00	132.22	0.00	0.0000	0.00	192.91	5.87	0.00	0.00
SHWTB-3	BASE	0.00	123.36	0.00	0.0000	0.00	192.74	0.19	0.00	0.00

14-11-9

POND B2 CRITICAL DURATION

B2 POST PEAK STAGE

	1 HOUR	2 HOUR	4 HOUR	8 HOUR	24 HOUR	72 HOUR	168 HOUR	240 HOUR
2 YEAR	137.2	137.2	137.4	137.5	137.5	137.7	137.8	138.1
5 YEAR	137.3	137.4	137.7	138.0	138.3	138.2	138.3	138.8
10 YEAR	137.4	137.6	138.0	138.5	139.0	138.7	138.8	139.4
25 YEAR	137.6	138.0	138.4	138.9	139.6	139.6	139.2	140.0
50 YEAR	137.8	138.3	138.9	139.5	140.4	140.2	139.9	140.6
100 YEAR	138.0	138.6	139.2	139.8	140.8	141.1	140.6	**141.2**

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E-835

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US 27 / I-4 INTERCHANGE IMPROVEMENTS
C-SYSTEM PONDS - CRITICAL DURATION ANALYSIS
100 YEAR / 240 HOUR STORM

********** Node Maximum Conditions - 100Y240H **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C-1	BASE	184.25	173.01	0.00	0.0044	63113.55	183.00	4.74	184.25	3.36
C-2	BASE	184.58	148.64	0.00	0.0048	151849.58	183.00	18.31	184.00	11.07
C-3	BASE	186.07	148.50	0.00	0.0038	288598.73	183.65	20.03	186.07	6.51

14-12a

POND B3 CRITICAL DURATION

B3 POST PEAK STAGE

	1 HOUR	2 HOUR	4 HOUR	8 HOUR	24 HOUR	72 HOUR	168 HOUR	240 HOUR
2 YEAR	138.4	138.6	138.8	138.8	138.6	138.8	138.8	138.9
5 YEAR	138.8	138.9	139.2	139.1	138.9	139.0	139.0	139.1
10 YEAR	139.0	139.1	139.3	139.4	139.0	139.2	139.1	139.4
25 YEAR	139.3	139.4	139.7	139.7	139.6	139.6	139.2	140.0
50 YEAR	139.5	139.7	140.1	140.1	140.4	140.2	139.9	140.6
100 YEAR	139.7	139.9	140.3	140.3	140.8	141.1	140.6	**141.2**

14-13
E-837

Basins C & E

Appendix A-4

COMBINED BASINS C & E

Basin C: The currently proposed Basin C consists of approximately **80.4 ac (58.8 ac from the original Basin C + 17.1 ac from the original Basin E + 4.5 ac from the original Basin B)** of roadway pavement and open areas associated with the proposed roadway right-of-way. The basin includes portions of US 27 and I-4: the I-4 corridor begins at Station 2007+00 and extends to Station 2039+00; along the US 27 corridor the basin runs south from the US-27 bridge to approximately Station 449+00. Typically the flow pattern is from west to east along the present I-4 roadside and median ditches. Stormwater runoff is presently conveyed into the I-4 ditch via a system of roadside ditches and culverts from the existing ramp. The Basin C pond system was designed to accommodate the runoff from the 25-year 24-hour storm event.

The stormwater management system for Basin C consists of three interconnected ponds that hold the pre-post runoff from the 25-year 24-hour storm event. The C-system ponds will also store the required water quality volume. The required water quality volume for Basin C is one inch of runoff from the directly connected impervious area. Groundwater recovery of the water quality volume was done using the MODRET software. Groundwater data, such as infiltration rates and the seasonal high water table elevation were based on information from the **original** geotechnical consultant. Basin C is not in the 100-year flood zone (see FEMA map, Figure 4).

The water quantity calculations were performed using standard *SCS* methods and the Advanced Interconnected Channel & Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin C was routed using rainfall depths of 7.0 inches and 9.5 inches for the 25-year and 100-year 24-hour storms, obtained from the SWFWMD rainfall maps. Results are summarized in the Basin Summary Table (Appendix A-1) and illustrate that post development flows are less than pre development flows due to attenuation from the Pond C system for the 25-year 24-hour storm event. A minimum of 1.0 foot of freeboard is provided in the C-system ponds. The AdICPR results can be found in this section.

A critical duration analysis was also performed with the use of AdICPR. Results from the analysis can be found herein. The results show that the Pond C system meets the 14-86 criteria of the FDOT.

See further details below pertaining to the combining of Basins C and E for evaluating quality and quantity requirements for the current design.

Basin E: The **currently proposed Basin E consists of approximately 21.7 ac** of roadway pavement and open areas associated with the proposed roadway right-of-way. The basin begins at the I-4 corridor Station 2039+00 and extends east to approximately Station 2051+00. Longitudinal grades varying from 0.3% to 2.0% exhibit an existing west to east flow pattern within the roadway corridor. Basin E has a positive outfall to Horse Creek via a system of roadside and median ditches. Horse Creek is part of the Kissimmee River basin.

The **original permitted** stormwater management system for Basin E consisted of a dry, online detention pond discharging to the existing positive outfall via the I-4 swale system. **However, Pond E has been eliminated at this time due to environmental constraints.**

Basin E is not in the 100-year flood zone (see FEMA map, Figure 3).

See further details below pertaining to the combining of Basins C and E for evaluating quality and quantity requirements for the current design.

Basins C & E Modifications: Since Pond E was eliminated due to environmental constraints, the Pond C system was modified to include additional treatment and attenuation for 17.1 ac of the original Basin E drainage area. (The diversion of the 17.1 ac of original Basin E is accomplished via ditch blocks at I-4 Mainline Sta 2039+00, and the associated regarding of the median and roadside ditches to provide proper slope to a cross drain at Sta 2026+00.) Also, due to the westward relocation of the highpoint of the PGL along I-4 (as discussed in Appendix A-3) about 4.5 ac of the original Basin B drainage area will now be directed to the Pond C system. The overall basin draining to the C-Ponds increased from 58.8 acres to 80.4 acres. This area includes additional median area, as well as the entire westbound lane section and the inside shoulder of the eastbound lane section from Sta 2007+00 to Sta 2039+00 that originally drained to Ponds B1, B2 and E.

The Pond C system (and Ponds C-2 and C-3, in particular) will store the required water quality volume, and will provide appropriate attenuation for the combined Basins. However, only the proposed 6-lane section of I-4, and not the previously permitted 10-lane section, is considered in the proposed modification calculations. This limitation on included impervious area allows the original footprints and locations of the C-Ponds to be preserved, and also helps to generally preserve the permitted DHW's for the C-Ponds (within a few tenths of a foot).

Although a portion of the original Basin E drainage area will not be directed to a formal treatment or attenuation facility, the aggregate 25-yr/24-hr post-construction discharge from the combined Basins C and E will still be no greater than the previously permitted 25-yr/24-hr post-construction discharge from the combined Basins. The required water quality volume for the combined Basins C and E is equal to 1" of runoff from the proposed new impervious surface. This requirement is met by adding all of the impervious surface included in the original Basin C (plus the area associated with the newly diverted portion of Basin B) to the total impervious area included in the newly diverted portion of Basin E. The total impervious area (new and old) included in the diverted Basin E (3.8 ac) is greater than the total new impervious surface for the entire original Basin E (3.3ac). Therefore, a more than "equivalent treatment" area of original Basin E will be processed through the C-Ponds to offset the total treatment requirement for the original Basin E. The C-Ponds can, then, adequately accommodate the quantity and quality requirements for the combined Basins C and E without the need for Pond E.

The roadway profile along I-4 was adjusted to accommodate the critical duration storm events for the low edge of pavement.

The calculations that follow this narrative include the modifications identified above, as well as the original Basin C and Basin E calculations. Much of the data from the original calculations is still valid, and is referenced in the modified calculations.

Changes from the original design plans include an adjustment to the Pond C-2 TOB elevation to correspond to the originally intended TOB identified on page 4-11 of the "Original Basin C Calcs", the lowering of the Pond C-3 outfall weir elevation, the addition of the ditch blocks at I-4 Sta 2039+00 and the cross drain at I-4 Sta 2026+00, the revision of the cross drain at I-4 Sta 2050+50 (original Pond E cross drain), and adjustments to pipe inverts and inlet structure tops.

BASINS C & E
PROPOSED MODIFICATIONS

RUNOFF CURVE NUMBER AND RUNOFF CALCULATIONS

Project:	I-4 / US 27 Interchange Improvements	Designed by:	Date:
Location:	Segment 9, Pond C System	Checked by:	Date:

PRE-CONSTRUCTION

Original Basin C Drainage Area, CN and Tc values - taken from original ERP data (refer to pg 4-4 of Original Basin C Calcs)

Area = 67.41 ac
CN = 57.8
Time of Conc. = 44 minutes

Original Basin E Drainage Area, CN and Tc values - taken from original ERP data (refer to pgs 6-3 & 6-5 of Original Basin E Calcs)

Area = 38.81 ac
CN = 47
Time of Conc. = 33 minutes

NOTE: Both Basin C and Basin E discharge to the wetlands to the east and southeast of the project site

Combined Basins C & E Hydrologic Parameters:

Area = 106.22 ac
CN = 53.9 (weighted by basin area)
Time of Conc. = 44 minutes

Design Storm Event (SWFWMD) - consistent with Original Basin C & E Calcs, pgs 4-4 and 6-3, respectively)

25-year / 24-hour
Rainfall Depth = 7.0 inches

POST-CONSTRUCTION

Modified Basin C Drainage Area, CN and Tc values - by Pond

Pond C-1 (unchanged from Original Basin C Calcs, pgs 4-12 and 4-27)

Area = 8.1 ac
CN = 60
Time of Conc. = 12 minutes

Pond C-2 (minor increase in impervious area from Basin B)

Area = 27.1 ac
CN = 61
Time of Conc. = 13 minutes (refer to pg 4-27 of the Original Basin C Calcs)

Pond C-3 (significant increase in total area from Basins B and E)

Area = 45.2 ac
CN = 60
Time of Conc. = 54 minutes (refer to pg 4-28 of the Original Basin C Calcs)

Modified Basin E Drainage Area, CN and Tc values - remainder of original Basin E - no proposed treatment or attenuation

Area = 21.7 ac
CN = 50
Time of Conc. = 33 minutes (refer to pg 6-14 of the Original Basin E Calcs)

NOTE: The revisions to the Basin C and Basin E Curve Number values consider only the impervious area of the current 6-lane project. Future expansion of I-4 in Basins C and E will need to provide additional appropriate stormwater treatment and attenuation.

Design Storm Event (SWFWMD) - consistent with Original Basin C & E Calcs, pgs 4-27, 4-28 and 6-14, respectively)

25-year / 24-hour
Rainfall Depth = 7.0 inches

Project: I-4 / US 27 Interchange Improvements **Designed by:** **Date:**
Location: Segment 9, Pond C2 - REVISED **Checked by:** **Date:**

Circle One: **Existing** **Proposed**

1. Runoff Curve Number (CN) (Reference pg 4-13 of the Original Basin C Calcs)

Soil name and Hydrologic Group (Appendix A)	Cover Description (cover treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Figure 2-3	CN Figure 2-4	Area acres	
Candler and Tavares Fine Sand Group A	Pastures, Grassland, Range-good	49			20.7	1014.3
	Impervious area-roadway	98			6.3	617.4
	Impervious area-roadway from original Basin B	98			0.1	9.8
				Totals =	27.1	1641.5

CN (weighted) = portion area*CN / total area = $\frac{1641.5}{27.1}$ = 60.6

Use CN = 61

2. Runoff

Frequency.....yr
Rainfall.....in
Runoff.....in
(Use P and CN with Table 2-1, Fig.2-1, or Eqs. 2-3 and 2-4)

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.8	2.3	2.7

Project: I-4 / US 27 Interchange Improvements Designed by: Date:
Location: Segment 9, Pond C3 - REVISED Checked by: Date:

Circle One: Existing **Proposed**

1. Runoff Curve Number (CN) (Reference pg 4-14 of the Original Basin C Calcs)

Soil name and Hydrologic Group (Appendix A)	Cover Description (cover treatment, and hydrologic condition, percent impervious area ratio)		CN		Area acres	
		Table 2-2	Figure 2-3	Figure 2-4		
Candler and Tavares Fine Sand Group A	Pastures, Grassland, Range-good	49			19	931
	Impervious area-roadway	98			4.7	460.6
	Additional Impervious Area from Basin E (6-lanes only) Sta 2015+25 to Sta 2039+00*	98			3.8	372.4
	Additional Pervious Area from Basin E	49			13.3	651.7
	Additional Impervious Area from Basin B (6-lanes only) Sta 2007+00 to Sta 2015+25*	98			1.2	117.6
	Additional Pervious Area from Basin B	49			3.2	156.8
				Totals =	45.2	2690.1

CN (weighted) = portion area*CN / total area = $\frac{2690.1}{45.2}$ = 59.5

Use CN = 60

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.7	2.2	2.6

Frequency.....yr
Rainfall.....in
Runoff.....in
(Use P and CN with Table 2-1, Fig.2-1, or Eqs. 2-3 and 2-4)

* westbound travel lanes (3*12ft) plus shoulders (2*10ft) and eastbound inside shoulder (1*10ft) = 66ft width

Project: I-4 / US 27 Interchange Improvements
Location: Segment 9, Basin E - REVISED

Designed by: **Date:**
Checked by: **Date:**

Circle One: **Existing** **Proposed**

1. Runoff Curve Number (CN) (Reference pg 6-4 of the Original Basin E Calcs)

Soil name and Hydrologic Group (Appendix A)	Cover Description (cover treatment, and hydrologic condition, percent impervious area ratio)		CN		Area acres	
		Table 2-2	Figure 2-3	Figure 2-4		
Candler and Tavares Fine Sand Group A	Pastures, Grassland, Range-good	39			14	546
	Impervious area-roadway (6-lanes only)	98			4.1	401.8
	Pastures, grassland, range-good original Pond E site	39			3.6	140.4
				Totals =	21.7	1088.2

CN (weighted) = portion area*CN / total area = $\frac{1088.2}{21.7}$ = 50.1

Use CN = 50

2. Runoff

Frequency.....yr
Rainfall.....in
Runoff.....in
(Use P and CN with Table 2-1, Fig.2-1, or Eqs. 2-3 and 2-4)

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.3	1.4	1.7

POND C1
Basin Pond Analysis
SWFWMD Requirements
Dry Retention

Project:	I-4 / US 27 Interchange Improvements	Designed by: _____	Date: _____
Location:	Pond C1 , Segment 9	Checked by: _____	Date: _____

NOTE: Pond C1 parameters are unchanged from the original permitted design

Pond Volume

Basin		C
Pond		C1
Basin Area	=	8.1 acres
DCIA*	=	1.8 acres
Pond Bottom Elevation	=	171.1 ft.
Required (Treatment) Storage	=	0.36 ac-ft
(Treatment) Retention Stage	=	171.3 ft.
Provided (Total Retention) Storage	=	2.00 ac-ft
Actual Retention (Weir) Stage	=	172.1 ft.

Elevation (ft.)	Area (ac.)	Average Area (ac.)	Increment Depth (ft.)	Increment Storage (ac-ft)	Cumulative Storage (ac-ft)	
171.1	1.17	-	-	-	0	
174.4	1.65	1.41	3.3	4.65	4.65	**
176.4	2.18	1.92	2	3.83	8.48	**

* DCIA - Calculation treatment volume using Directly Connected Impervious Area (DCIA) is applicable only to existing public roadway projects.

** Revised - original "Cumulative" values on Sheet 4-10a of the Original Basin C Calcs were incorrectly summed

POND C2
Basin Pond Analysis
SWFWMD Requirements
Dry Retention

Project: I-4 / US 27 Interchange Improvements **Designed by:** _____ **Date:** _____
Location: Pond C2 , Segment 9 - REVISED **Checked by:** _____ **Date:** _____

NOTE: Drainage area to pond increased slightly, and pond surface areas revised (increased) to match typical Pond C2 section

Pond Volume

Basin		C	
Pond		C2	
Basin Area	=	27.1 acres	revised
DCIA*	=	6.4 acres	revised
Required (Treatment) Storage	=	1.18 ac-ft	
(Treatment) Retention Stage	=	147.1 ft.	
Provided (Total Retention) Storage	=	3.95 ac-ft	revised
Actual Retention Stage	=	147.8 ft.	revised
			(Pond C2 stages controlled by Pond C3 weir @ el. 147.8)

Elevation (ft.)	Area (ac.)	Average Area (ac.)	Increment Depth (ft.)	Increment Storage (ac-ft)	Cumulative Storage (ac-ft)	
146.8	3.52	-	-	-	0	
150.1	4.38	3.95	3.3	13.03	13.03	**
152.1	5.32	4.85	2	9.70	22.73	**

* DCIA - Calculation treatment volume using Directly Connected Impervious Area (DCIA) is applicable only to existing public roadway projects.

** Revised - pond areas at el 150.1 and 152.1 have been increased to reflect the typical Pond C2 section, and original "Cumulative" values on Sheet 4-10b of the Original Basin C Calcs were incorrectly summed

POND C3
Basin Pond Analysis
SWFWMD Requirements
Dry Retention

Project:	I-4 / US 27 Interchange Improvements	**Designed by:** _____	**Date:** _____
Location:	Pond C3 , Segment 9 - REVISED	**Checked by:** _____	**Date:** _____

NOTE: Drainage area and impervious surface area to pond increased significantly, and original weir elevation lowered slightly. The Basin E Stormwater Treatment requirement is included in the Pond C3 treatment volume.

Pond Volume

Basin		C	
Pond		C3	
Basin Area	=	45.2 acres	revised
DCIA*	=	9.7 acres	revised (see calculation below)
Required (Treatment) Storage	=	1.31 ac-ft	revised (1in * (9.7ac + 6ac)/12)
(Treatment) Retention Stage	=	147.0 ft.	
Provided (Total Retention) Storage	=	6.61 ac-ft	revised
Actual Retention (Weir) Stage	=	147.8 ft.	revised

Elevation (ft.)	Area (ac.)	Average Area (ac.)	Increment Depth (ft.)	Increment Storage (ac-ft)	Cumulative Storage (ac-ft)	
146.82	6.02	-	-	-	0	
150.1	7.19	6.61	3.28	21.66	21.66	**
152.07	8.42	7.81	1.97	15.38	37.04	**

* DCIA - Calculation treatment volume using Directly Connected Impervious Area (DCIA) is applicable only to existing public roadway projects.

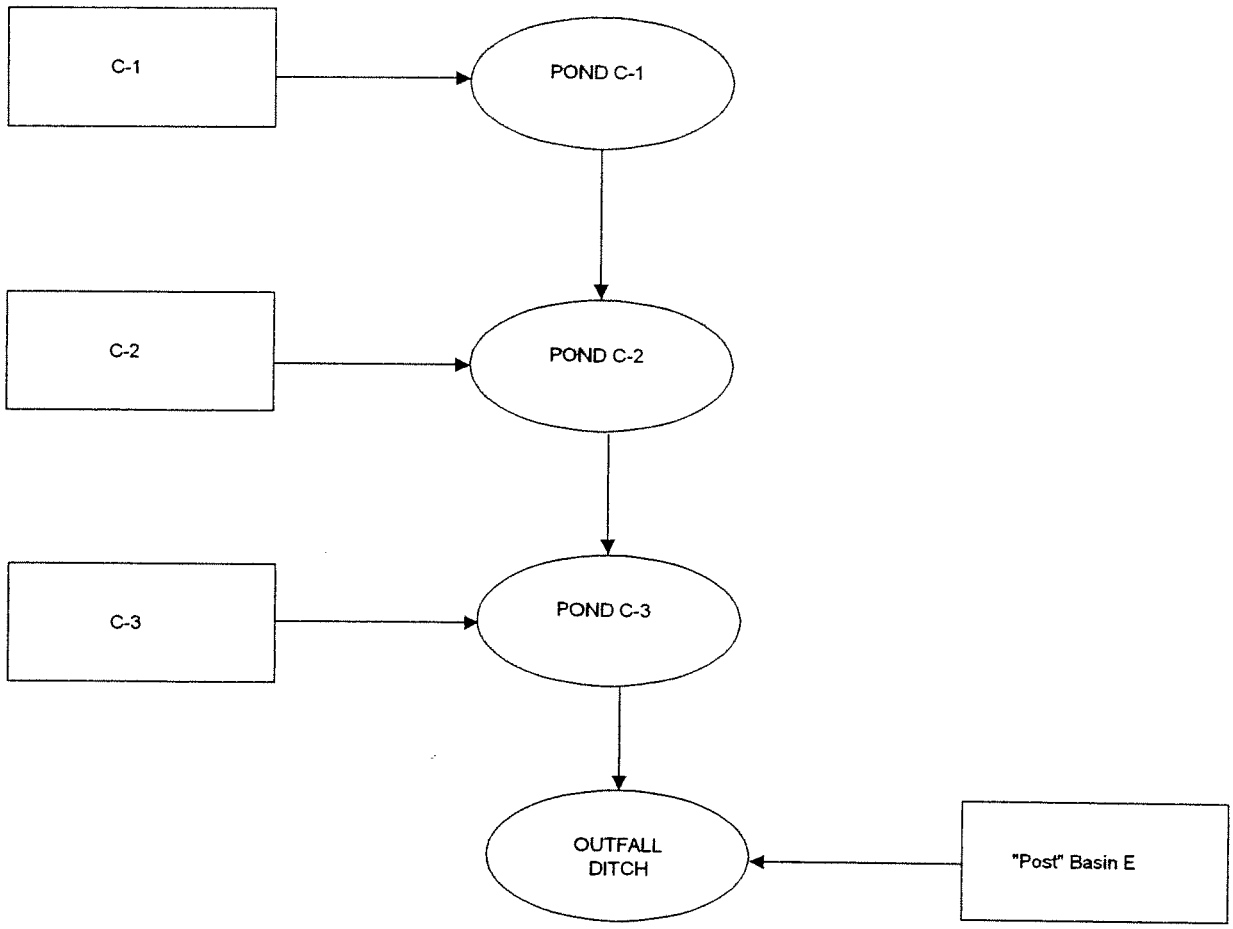
** Revised - original "Cumulative" values on Sheet 4-11 of the Original Basin C Calcs were incorrectly summed

Revised DCIA =		4.7 ac	original Pond C3 DCIA (see Sheet 4-11 of Original Basin C Calcs)
	+	3.8 ac	from original Basin E - westbound 3 travel lanes and shoulders plus eastbound inside shoulder between Sta 2015+25 (614+25) and Sta 2039+00 (621+50) - 6-lane roadway only
	+	1.2 ac	from original Basin B - westbound 3 travel lanes and shoulders plus eastbound inside shoulder between Sta 2007+00 (611+75) and to Sta 2015+25 (614+25) - 6-lane roadway only
	=	9.7 ac	

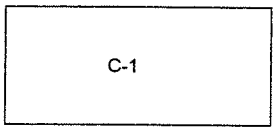
NOTE: Total additional impervious area in original Basin E due to proposed roadway widening (6-lane section only) from western limit (Sta 2015+25) to eastern limit (Sta 2051+00) = (205100ft - 201525ft) * (112ft - 72ft)/43560 = 3.3 ac < 3.8 ac directed to Pond C3
Existing pavement width = 2 * (24ft + 8ft + 4ft) = 72ft
Proposed pavement width = 2 * (36ft + 10ft + 10ft) = 112ft

INPUT DATA

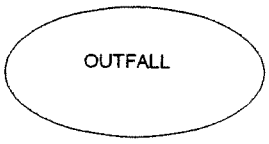
NODAL DIAGRAM - BASIN C
PROPOSED CONDITIONS



LEGEND



= BASIN



= NODE

==========
==== Basins ====
==========

Name: C-1 Node: C-1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: UH323 Peaking Factor: 323.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 12.00
Area(ac): 8.100 Time Shift(hrs): 0.00
Curve Number: 60.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C-2 Node: C-2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: UH323 Peaking Factor: 323.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 13.00
Area(ac): 27.100 Time Shift(hrs): 0.00
Curve Number: 61.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: C-3 Node: C-3 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: UH323 Peaking Factor: 323.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 54.00
Area(ac): 45.200 Time Shift(hrs): 0.00
Curve Number: 60.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

ADDITIONAL AREA FROM WESTBOUND LANES TO POND C-3

Name: POST_E Node: BASINE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: UH323 Peaking Factor: 323.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 33.00
Area(ac): 21.700 Time Shift(hrs): 0.00
Curve Number: 50.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

AREA ONLY FOR 6-LANE SECTION

Name: PRE-C-E Node: BASINE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: UH323 Peaking Factor: 323.0
Rainfall File: FLMOD Storm Duration(hrs): 24.00
Rainfall Amount(in): 9.500 Time of Conc(min): 44.00
Area(ac): 106.200 Time Shift(hrs): 0.00
Curve Number: 54.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: BASINE Base Flow(cfs): 0.000 Init Stage(ft): 127.000
Group: BASE Warn Stage(ft): 128.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	127.000
300.00	127.000

Name: C-1 Base Flow(cfs): 0.000 Init Stage(ft): 171.100

Group: BASE Warn Stage(ft): 174.400
Type: Stage/Area

Stage(ft)	Area(ac)
171.100	1.1710
174.380	1.6470
176.350	2.1780

Name: C-2 Base Flow(cfs): 0.000 Init Stage(ft): 146.800
Group: BASE Warn Stage(ft): 150.100
Type: Stage/Area

Stage(ft)	Area(ac)
146.800	3.5160
150.100	4.3770
152.070	5.3230

Name: C-3 Base Flow(cfs): 0.000 Init Stage(ft): 146.800
Group: BASE Warn Stage(ft): 150.100
Type: Stage/Area

Stage(ft)	Area(ac)
146.820	6.0210
150.100	7.1940
152.070	8.4220

Name: OUTFALL Base Flow(cfs): 0.000 Init Stage(ft): 147.000
Group: BASE Warn Stage(ft): 148.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	147.000
300.00	147.000

Name: SHWTC-1 Base Flow(cfs): 0.000 Init Stage(ft): 167.650
Group: BASE Warn Stage(ft): 168.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	167.650
72.00	167.650
300.00	167.650

Name: SHWTC-2 Base Flow(cfs): 0.000 Init Stage(ft): 142.700
Group: BASE Warn Stage(ft): 143.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	142.700
72.00	142.700
300.00	142.700

Name: SHWTC-3 Base Flow(cfs): 0.000 Init Stage(ft): 142.700
Group: BASE Warn Stage(ft): 143.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	142.700
72.00	142.700

300.00 142.700

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==== Cross Sections ====
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==== Operating Tables ====
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==== Pipes ====
==========

Name: P1 From Node: C-2 Length(ft): 155.00
Group: BASE To Node: C-3 Count: 3
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 1.00
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	146.800	146.800
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope

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==== Channels ====
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==== Drop Strcutures ====
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Name: RC-1 From Node: C-1 Length(ft): 185.00
Group: BASE To Node: C-2 Count: 1
Friction Equation: Average Conveyance
Solution Algorithm: Automatic
Flow: Both
Entrance Loss Coef: 0.500
Exit Loss Coef: 0.500
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 0

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	170.800	170.100
Manning's N:	0.012000	0.012000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

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 RC-1 ***

TABLE

Count: 1 Bottom Clip(in): 0.000
Type: Horizontal Top Clip(in): 0.000
Flow: Both Weir Disc Coef: 3.300
Geometry: Rectangular Orifice Disc Coef: 0.600

Span(in): 36.00 Invert(ft): 173.000
Rise(in): 54.00 Control Elev(ft): 173.000

*** Weir 2 of 2 for Drop Structure RC-1 ***

TABLE

Count: 1 Bottom Clip(in): 0.000
Type: Vertical: Mavis Top Clip(in): 0.000
Flow: Both Weir Disc Coef: 3.300
Geometry: Rectangular Orifice Disc Coef: 0.600

Span(in): 12.00 Invert(ft): 172.100
Rise(in): 10.80 Control Elev(ft): 172.100

Name:	RC-3A	From Node:	C-3
Group:	BASE	To Node:	OUTFALL

Length(ft): 135.00
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	147.100	146.900
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: 0.500
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 0

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 RC-3A ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.300
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	150.100
Rise(in):	54.00	Control Elev(ft):	150.100

*** Weir 2 of 2 for Drop Structure RC-3A ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.300
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	147.800
Rise(in):	27.60	Control Elev(ft):	147.800

Name:	RC-3B	From Node:	C-3
Group:	BASE	To Node:	OUTFALL

Length(ft): 135.00
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	24.00	24.00
Rise(in):	24.00	24.00
Invert(ft):	147.100	146.900
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: 0.500
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Solution Incs: 0

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 RC-3B ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Horizontal	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.300
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	150.100
Rise(in):	54.00	Control Elev(ft):	150.100

*** Weir 2 of 2 for Drop Structure RC-3B ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.300
Geometry:	Rectangular	Orifice Disc Coef:	0.600
Span(in):	36.00	Invert(ft):	147.800
Rise(in):	27.60	Control Elev(ft):	147.800

==== Weirs ====

==== Bridges ====

==== Breaches ====

==== Rating Curves ====

==== Hydrology Simulations ====

Name: R100_168
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R100_168.R32

Override Defaults: Yes
Storm Duration(hrs): 168.00
Rainfall File: FDOT-168
Rainfall Amount(in): 17.00

Time(hrs)	Print Inc(min)
168.000	5.00

Name: R100_240
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R100_240.R32

Override Defaults: Yes
Storm Duration(hrs): 240.00
Rainfall File: FDOT-240
Rainfall Amount(in): 19.00

Time(hrs)	Print Inc(min)
240.000	5.00

Name: R_100_1
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_1.R32

Override Defaults: Yes
Storm Duration(hrs): 1.00
Rainfall File: FDOT-1
Rainfall Amount(in): 4.60

Time(hrs)	Print Inc(min)
1.000	1.00

Name: R_100_2
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_2.R32

Override Defaults: Yes
Storm Duration(hrs): 2.00
Rainfall File: FDOT-2
Rainfall Amount(in): 5.60

Time(hrs)	Print Inc(min)
2.000	1.00

Name: R_100_24
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_24.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: FDOT-24
Rainfall Amount(in): 10.60

Time(hrs)	Print Inc(min)

24.000 5.00

Name: R_100_4
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_4.R32

Override Defaults: Yes
Storm Duration(hrs): 4.00
Rainfall File: FDOT-4
Rainfall Amount(in): 6.70

Time(hrs)	Print Inc(min)
4.000	2.00

Name: R_100_72
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_72.R32

Override Defaults: Yes
Storm Duration(hrs): 72.00
Rainfall File: FDOT-72
Rainfall Amount(in): 14.00

Time(hrs)	Print Inc(min)
72.000	5.00

Name: R_100_8
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_8.R32

Override Defaults: Yes
Storm Duration(hrs): 8.00
Rainfall File: FDOT-8
Rainfall Amount(in): 8.00

Time(hrs)	Print Inc(min)
8.000	4.00

Name: R_10_168
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_10_168.R32

Override Defaults: Yes
Storm Duration(hrs): 168.00
Rainfall File: FDOT-168
Rainfall Amount(in): 11.50

Time(hrs)	Print Inc(min)
168.000	5.00

Name: R_10_240
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_10_240.R32

Override Defaults: Yes
Storm Duration(hrs): 240.00
Rainfall File: FDOT-240
Rainfall Amount(in): 13.00

Time(hrs)	Print Inc(min)
240.000	5.00

Name: R_25_168
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_25_168.R32

Override Defaults: Yes
Storm Duration(hrs): 168.00
Rainfall File: FDOT-168
Rainfall Amount(in): 13.00

Time(hrs)	Print Inc(min)
168.000	5.00

Name: R_25_240
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_25_240.R32

Override Defaults: Yes
Storm Duration(hrs): 240.00

```
          Rainfall File: FDOT-240
     Rainfall Amount(in): 15.00

Time(hrs)        Print Inc(min)
---------------- ----------------
240.000          5.00

-------------------------------------------------------------------------------------------------------------
          Name: R_50_168
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_50_168.R32

       Override Defaults: Yes
     Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
     Rainfall Amount(in): 15.00

Time(hrs)        Print Inc(min)
---------------- ----------------
168.000          5.00

-------------------------------------------------------------------------------------------------------------
          Name: R_50_240
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_50_240.R32

       Override Defaults: Yes
     Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
     Rainfall Amount(in): 17.00

Time(hrs)        Print Inc(min)
---------------- ----------------
240.000          5.00

-------------------------------------------------------------------------------------------------------------
          Name: RUN10024
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10024.R32

       Override Defaults: No

Time(hrs)        Print Inc(min)
---------------- ----------------
24.000           5.00

-------------------------------------------------------------------------------------------------------------
          Name: RUN1024
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN1024.R32

       Override Defaults: Yes
     Storm Duration(hrs): 24.00
          Rainfall File: FLMOD
     Rainfall Amount(in): 6.50

Time(hrs)        Print Inc(min)
---------------- ----------------
24.000           5.00

-------------------------------------------------------------------------------------------------------------
          Name: RUN10_1
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_1.R32

       Override Defaults: Yes
     Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
     Rainfall Amount(in): 3.40

Time(hrs)        Print Inc(min)
---------------- ----------------
1.000            1.00

-------------------------------------------------------------------------------------------------------------
          Name: RUN10_2
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_2.R32

       Override Defaults: Yes
     Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
     Rainfall Amount(in): 3.90

Time(hrs)        Print Inc(min)
---------------- ----------------
2.000            1.00

-------------------------------------------------------------------------------------------------------------
          Name: RUN10_24
      Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_24.R32
```

```
      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
   Rainfall Amount(in): 7.40

Time(hrs)        Print Inc(min)
---------------- ----------------
24.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN10_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_4.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
   Rainfall Amount(in): 4.70

Time(hrs)        Print Inc(min)
---------------- ----------------
4.000            2.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN10_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_72.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
   Rainfall Amount(in): 9.00

Time(hrs)        Print Inc(min)
---------------- ----------------
72.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN10_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_8.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
   Rainfall Amount(in): 5.60

Time(hrs)        Print Inc(min)
---------------- ----------------
8.000            4.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2524
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2524.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FLMOD
   Rainfall Amount(in): 7.00

Time(hrs)        Print Inc(min)
---------------- ----------------
24.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN25_1
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_1.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
   Rainfall Amount(in): 3.90

Time(hrs)        Print Inc(min)
---------------- ----------------
1.000            1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN25_2
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_2.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
   Rainfall Amount(in): 4.60

Time(hrs)        Print Inc(min)
---------------- ----------------
2.000            1.00
```

```
---------------------------------------------------------------------------------------------------------
         Name: RUN25_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_24.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 8.50

Time(hrs)        Print Inc(min)
---------------- ---------------
24.000           5.00

---------------------------------------------------------------------------------------------------------
         Name: RUN25_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_4.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 5.40

Time(hrs)        Print Inc(min)
---------------- ---------------
4.000            2.00

---------------------------------------------------------------------------------------------------------
         Name: RUN25_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_72.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 11.00

Time(hrs)        Print Inc(min)
---------------- ---------------
72.000           5.00

---------------------------------------------------------------------------------------------------------
         Name: RUN25_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_8.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 6.40

Time(hrs)        Print Inc(min)
---------------- ---------------
8.000            4.00

---------------------------------------------------------------------------------------------------------
         Name: RUN2_1
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_1.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 2.50

Time(hrs)        Print Inc(min)
---------------- ---------------
1.000            1.00

---------------------------------------------------------------------------------------------------------
         Name: RUN2_168
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_168.R32

      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
    Rainfall Amount(in): 7.50

Time(hrs)        Print Inc(min)
---------------- ---------------
168.000          5.00

---------------------------------------------------------------------------------------------------------
         Name: RUN2_2
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_2.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
```

```
    Rainfall Amount(in): 2.90

Time(hrs)       Print Inc(min)
--------------- ---------------
2.000           1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_24.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 4.80

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2_240
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_240.R32

      Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): 8.50

Time(hrs)       Print Inc(min)
--------------- ---------------
240.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_4.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 3.40

Time(hrs)       Print Inc(min)
--------------- ---------------
4.000           2.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_72.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 6.00

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN2_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_8.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 3.80

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           4.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_1
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_1.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
    Rainfall Amount(in): 4.30

Time(hrs)       Print Inc(min)
--------------- ---------------
1.000           1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_2
```

```
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_2.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
   Rainfall Amount(in): 5.20

Time(hrs)        Print Inc(min)
---------------- ---------------
2.000            1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_24.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
   Rainfall Amount(in): 10.00

Time(hrs)        Print Inc(min)
---------------- ---------------
24.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_4.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
   Rainfall Amount(in): 6.20

Time(hrs)        Print Inc(min)
---------------- ---------------
4.000            2.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_72.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
   Rainfall Amount(in): 12.00

Time(hrs)        Print Inc(min)
---------------- ---------------
72.000           5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN50_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_8.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
   Rainfall Amount(in): 7.40

Time(hrs)        Print Inc(min)
---------------- ---------------
8.000            4.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_1
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_1.R32

      Override Defaults: Yes
    Storm Duration(hrs): 1.00
          Rainfall File: FDOT-1
   Rainfall Amount(in): 3.00

Time(hrs)        Print Inc(min)
---------------- ---------------
1.000            1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_168
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_168.R32

      Override Defaults: Yes
    Storm Duration(hrs): 168.00
          Rainfall File: FDOT-168
   Rainfall Amount(in): 9.50

Time(hrs)        Print Inc(min)
```

```
--------------- ---------------
168.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_2
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_2.R32

      Override Defaults: Yes
    Storm Duration(hrs): 2.00
          Rainfall File: FDOT-2
    Rainfall Amount(in): 3.50

Time(hrs)       Print Inc(min)
--------------- ---------------
2.000           1.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_24.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: FDOT-24
    Rainfall Amount(in): 6.20

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_240
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_240.R32

      Override Defaults: Yes
    Storm Duration(hrs): 240.00
          Rainfall File: FDOT-240
    Rainfall Amount(in): 11.00

Time(hrs)       Print Inc(min)
--------------- ---------------
240.000         5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_4.R32

      Override Defaults: Yes
    Storm Duration(hrs): 4.00
          Rainfall File: FDOT-4
    Rainfall Amount(in): 4.10

Time(hrs)       Print Inc(min)
--------------- ---------------
4.000           2.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_72.R32

      Override Defaults: Yes
    Storm Duration(hrs): 72.00
          Rainfall File: FDOT-72
    Rainfall Amount(in): 7.50

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

-------------------------------------------------------------------------------------------------------------
         Name: RUN5_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_8.R32

      Override Defaults: Yes
    Storm Duration(hrs): 8.00
          Rainfall File: FDOT-8
    Rainfall Amount(in): 4.80

Time(hrs)       Print Inc(min)
--------------- ---------------
8.000           4.00

=============================================================================================
==== Routing Simulations ====================================================================
=============================================================================================

         Name: R100_168            Hydrology Sim: R100_168
```

Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R100_168.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 180.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/168-HOUR STORM EVENT(FDOT Rainfall,Zone 8
2/03

Time(hrs)	Print Inc(min)
180.000	60.000

Group	Run
BASE	Yes

Name: R100_240 Hydrology Sim: R100_240
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R100_240.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 260.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/240-HOUR STORM EVENT(FDOT Rainfall,Zone 8
2/03

Time(hrs)	Print Inc(min)
260.000	60.000

Group	Run
BASE	Yes

Name: R_100_1 Hydrology Sim: R_100_1
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_1.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 3.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/1-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
3.000	15.000

Group	Run
BASE	Yes

Name: R_100_2 Hydrology Sim: R_100_2
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_2.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00

```
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/2-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
6.000            15.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: R_100_24             Hydrology Sim: R_100_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_24.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 30.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/24-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
30.000           60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: R_100_4              Hydrology Sim: R_100_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_4.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 12.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/4-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
12.000           30.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: R_100_72             Hydrology Sim: R_100_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_72.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 90.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/72-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
```

```
--------------- ---------------
90.000          60.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------------
        Name: R_100_8             Hydrology Sim: R_100_8
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_100_8.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 24.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR/8-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          60.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------------
        Name: R_10_168            Hydrology Sim: R_10_168
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_10_168.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 180.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM/ BASIN E
10-YEAR/168-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
180.000         60.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------------
        Name: R_10_240            Hydrology Sim: R_10_240
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_10_240.I32

     Execute: Yes         Restart: No            Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 260.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR/240-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
260.000         60.000

Group           Run
--------------- -----
BASE            Yes
```

```
---------------------------------------------------------------------------------------------------
        Name: R_25_168            Hydrology Sim: R_25_168
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_25_168.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                   Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                   End Time(hrs): 180.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                        Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/168-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
180.000         60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------
        Name: R_25_240            Hydrology Sim: R_25_240
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_25_240.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                   Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                   End Time(hrs): 260.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                        Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/240-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
260.000         60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------
        Name: R_50_168            Hydrology Sim: R_50_168
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_50_168.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                   Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                   End Time(hrs): 180.00
    Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
       Boundary Stages:                        Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/168-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
180.000         60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------
        Name: R_50_240            Hydrology Sim: R_50_240
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\R_50_240.I32

     Execute: Yes         Restart: No           Patch: No
 Alternative: No

       Max Delta Z(ft): 1.00                   Delta Z Factor: 0.01000
```

```
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 260.00
     Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
        Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/240-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
260.000          60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN10024            Hydrology Sim: RUN10024
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10024.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 30.00
     Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
        Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
100-YEAR / 24-HOUR STORM EVENT (SWFWMD Rainfall)
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
30.000           60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN1024             Hydrology Sim: RUN1024
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN1024.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 30.00
     Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
        Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR / 24-HOUR STORM EVENT (SWFWMD Rainfall)
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
30.000           60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN10_1             Hydrology Sim: RUN10_1
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_1.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 3.00
     Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
        Boundary Stages:                          Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR /1-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03
```

```
Time(hrs)       Print Inc(min)
--------------- ---------------
3.000           15.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN10_2              Hydrology Sim: RUN10_2
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_2.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.0I000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 6.00
    Min Calc Time(sec): I0.0000               Max Calc Time(sec): 30.0000
      Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR /2-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
6.000           I5.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN10_24             Hydrology Sim: RUN10_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_24.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 30.00
    Min Calc Time(sec): I0.0000               Max Calc Time(sec): 30.0000
      Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR /24-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          60.000

Group           Run
--------------- -----
BASE            Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN10_4              Hydrology Sim: RUNI0_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUNI0_4.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

       Max Delta Z(ft): I.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): I2.00
    Min Calc Time(sec): I0.0000               Max Calc Time(sec): 30.0000
      Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR /4-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
12.000          30.000

Group           Run
--------------- -----
BASE            Yes
```

```
---------------------------------------------------------------------------------------------------------
        Name: RUN10_72              Hydrology Sim: RUN10_72
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_72.I32

     Execute: Yes          Restart: No            Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                      End Time(hrs): 90.00
   Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
     Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR/72-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
90.000          60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------------
        Name: RUN10_8               Hydrology Sim: RUN10_8
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN10_8.I32

     Execute: Yes          Restart: No            Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                      End Time(hrs): 24.00
   Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
     Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
10-YEAR /8-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
24.000          60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------------
        Name: RUN2524               Hydrology Sim: RUN2524
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2524.I32

     Execute: Yes          Restart: No            Patch: No
 Alternative: No

      Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
  Time Step Optimizer: 10.000
      Start Time(hrs): 0.000                      End Time(hrs): 30.00
   Min Calc Time(sec): 10.0000               Max Calc Time(sec): 30.0000
     Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR / 24-HOUR STORM EVENT (SWFWMD Rainfall)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          60.000

Group           Run
--------------- -----
BASE            Yes


---------------------------------------------------------------------------------------------------------
        Name: RUN25_1               Hydrology Sim: RUN25_1
    Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_1.I32

     Execute: Yes          Restart: No            Patch: No
 Alternative: No
```

Max Delta Z(ft): 1.00 Delta Z Factor: 0.0I000
Time Step Optimizer: I0.000
Start Time(hrs): 0.000 End Time(hrs): 3.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/1-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
3.000	15.000

Group	Run
BASE	Yes

Name: RUN25_2 Hydrology Sim: RUN25_2
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_2.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/2-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
6.000	15.000

Group	Run
BASE	Yes

Name: RUN25_24 Hydrology Sim: RUN25_24
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_24.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/24-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
30.000	60.000

Group	Run
BASE	Yes

Name: RUN25_4 Hydrology Sim: RUN25_4
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_4.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E

25-YEAR/4-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
12.000	30.000

Group	Run
BASE	Yes

Name: RUN25_72 Hydrology Sim: RUN25_72
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_72.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 90.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/72-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
90.000	60.000

Group	Run
BASE	Yes

Name: RUN25_8 Hydrology Sim: RUN25_8
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN25_8.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
25-YEAR/8-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
24.000	60.000

Group	Run
BASE	Yes

Name: RUN2_1 Hydrology Sim: RUN2_1
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_1.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 3.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 1-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
3.000	15.000

Group	Run

BASE	Yes

Name: RUN2_168 Hydrology Sim: RUN2_168
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_168.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 180.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 168-HOUR STORM EVENT (FDOT Rainfall,Zone
2/03

Time(hrs)	Print Inc(min)
180.000	60.000

Group	Run
BASE	Yes

Name: RUN2_2 Hydrology Sim: RUN2_2
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_2.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 2-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
6.000	15.000

Group	Run
BASE	Yes

Name: RUN2_24 Hydrology Sim: RUN2_24
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_24.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 24-HOUR STORM EVENT (FDOT Rainfall,Zone 8
2/03

Time(hrs)	Print Inc(min)
30.000	60.000

Group	Run
BASE	Yes

Name: RUN2_240 Hydrology Sim: RUN2_240
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_240.I32

```
      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                      End Time(hrs): 260.00
     Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
        Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 240-HOUR STORM EVENT (FDOT Rainfall,Zone
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
260.000          60.000

Group            Run
---------------- -----
BASE             Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN2_4               Hydrology Sim: RUN2_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_4.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                      End Time(hrs): 12.00
     Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
        Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 4-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
12.000           30.000

Group            Run
---------------- -----
BASE             Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN2_72              Hydrology Sim: RUN2_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_72.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                      End Time(hrs): 90.00
     Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
        Boundary Stages:                           Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 72-HOUR STORM EVENT (FDOT Rainfall,Zone
2/03

Time(hrs)        Print Inc(min)
---------------- ---------------
90.000           60.000

Group            Run
---------------- -----
BASE             Yes


--------------------------------------------------------------------------------------------------------------
         Name: RUN2_8               Hydrology Sim: RUN2_8
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN2_8.I32

      Execute: Yes          Restart: No             Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                      End Time(hrs): 24.00
     Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
        Boundary Stages:                           Boundary Flows:
```

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
2-YEAR / 8-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
24.000	60.000

Group	Run
BASE	Yes

Name: RUN50_1 Hydrology Sim: RUN50_1
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_1.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 3.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/1-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
3.000	15.000

Group	Run
BASE	Yes

Name: RUN50_2 Hydrology Sim: RUN50_2
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_2.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 6.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/2-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
6.000	15.000

Group	Run
BASE	Yes

Name: RUN50_24 Hydrology Sim: RUN50_24
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_24.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 30.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/24-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
30.000	60.000

Group	Run
BASE	Yes

Name: RUN50_4 Hydrology Sim: RUN50_4
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_4.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 12.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/4-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
12.000	30.000

Group	Run
BASE	Yes

Name: RUN50_72 Hydrology Sim: RUN50_72
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_72.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 90.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/72-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
90.000	60.000

Group	Run
BASE	Yes

Name: RUN50_8 Hydrology Sim: RUN50_8
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN50_8.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
50-YEAR/8-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
24.000	60.000

Group	Run
BASE	Yes

Name: RUN5_1 Hydrology Sim: RUN5_1

```
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_1.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 3.00
    Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
       Boundary Stages:                            Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR / 1-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
3.000           15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------
        Name: RUN5_168            Hydrology Sim: RUN5_168
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_168.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 180.00
    Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
       Boundary Stages:                            Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR /168-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
180.000         60.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------
        Name: RUN5_2              Hydrology Sim: RUN5_2
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_2.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 6.00
    Min Calc Time(sec): 10.0000                Max Calc Time(sec): 30.0000
       Boundary Stages:                            Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR / 2-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)       Print Inc(min)
--------------- ---------------
6.000           15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------------
        Name: RUN5_24             Hydrology Sim: RUN5_24
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_24.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                      Delta Z Factor: 0.01000
   Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                      End Time(hrs): 30.00
```

```
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM /BASIN E
5-YEAR /24-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
30.000           60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN5_240             Hydrology Sim: RUN5_240
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_240.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 260.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR /240-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
260.000          60.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN5_4               Hydrology Sim: RUN5_4
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_4.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 12.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR / 4-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
---------------- ----------------
12.000           30.000

Group            Run
---------------- -----
BASE             Yes


-------------------------------------------------------------------------------------------------------------
         Name: RUN5_72              Hydrology Sim: RUN5_72
     Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_72.I32

      Execute: Yes          Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                     Delta Z Factor: 0.01000
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                     End Time(hrs): 90.00
     Min Calc Time(sec): 10.0000              Max Calc Time(sec): 30.0000
        Boundary Stages:                         Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR / 72-HOUR STORM EVENT(FDOT Rainfall,Zone 8)
2/03

Time(hrs)        Print Inc(min)
```

90.000	60.000

Group	Run
BASE	Yes

Name: RUN5_8 Hydrology Sim: RUN5_8
Filename: P:\E9x94700\600DISC\620design\Drainage\Segment 9\Basin C\ICPR3 Data\RUN5_8.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.01000
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 24.00
Min Calc Time(sec): 10.0000 Max Calc Time(sec): 30.0000
Boundary Stages: Boundary Flows:

I-4 / US 27 INTERCHANGE, POND C SYSTEM / BASIN E
5-YEAR / 8-HOUR STORM EVENT (FDOT Rainfall,Zone 8)
2/03

Time(hrs)	Print Inc(min)
24.000	60.000

Group	Run
BASE	Yes

HYDROLOGIC & HYDRAULIC OUTPUT

SWFWMD POND DESIGN ANALYSIS & FDOT CRITICAL DURATION ANALYSIS

SUMMARIES OF ICPR POND ROUTING MODEL OUTPUT

Storm Frequency yrs	Storm Duration hrs	Storm Distribution agency	Pond C-1 Maximum Inflow cfs***	Pond C-1 Maximum Outflow cfs	Pond C-1 Maximum WSEL ft	Pond C-2 Maximum Inflow cfs***	Pond C-2 Maximum Outflow cfs	Pond C-2 Maximum WSEL ft	Pond C-3 Maximum Inflow cfs***	Pond C-3 Maximum Outflow cfs	Pond C-3 Maximum WSEL ft	Post Basin E Maximum Outflow cfs	Post* Basin C + E Maximum Outflow cfs	Pre Basin C + E Maximum Outflow cfs	Post - Pre Outflow Difference cfs	Permitted** Maximum Design Outflow cfs	Post (C+E) - Permitted Outflow Difference cfs
10	24	SWFWMD	12.9	0.2	172.28	43.6	4.1	148.08	33.5	2.8	148.07	11.5	14.3	63.5	-49.2		
25	24	SWFWMD	15	0.4	172.35	50.7	5.5	148.17	39.2	4.3	148.17	14.2	18.5	76.5	-58	18.5	0
100	24	SWFWMD	26.8	1.5	172.68	86.9	14.8	148.73	70.1	12.1	148.71	30.2	42.3	150.2	-107.9	49.1	-6.8
2	1	FDOT	3.2	0	171.17	11.5	0	148.89	8.3	0	148.83	0.7	0.7	7	-6.3		
2	2	FDOT	2.3	0	171.25	8.3	0.2	148.99	7.2	0	148.91	1.2	1.2	9.7	-8.5		
2	4	FDOT	2.9	0	171.37	10.4	0.8	147.11	10.8	0	147.08	2.5	2.5	16.8	-14.3		
2	8	FDOT	3.1	0	171.47	10.8	0.8	147.21	9.1	0	147.21	2.1	2.1	14.4	-12.3		
2	24	FDOT	1.1	0	171.75	3.8	0.8	147.54	5.3	0	147.54	1.4	1.4	8.9	-7.5		
2	72	FDOT	1.4	0	172.14	4.8	0.9	147.94	7.5	1.1	147.94	2.5	3.8	14.4	-10.8		
2	188	FDOT	1.3	0.8	172.43	4.4	2.5	148.28	7.1	5.8	148.28	2.7	8.5	14.6	-6.1		
2	240	FDOT	1.7	0.5	172.39	5.7	2.1	148.24	9.1	5.2	148.24	3.4	8.8	18.7	-10.1		
5	1	FDOT	5.9	0	171.25	20.8	0.1	148.97	12	0	148.85	2.5	2.5	17.3	-14.8		
5	2	FDOT	4.4	0	171.38	15.7	0.8	147.12	12.7	0	147.01	2.9	2.9	19.5	-18.8		
5	4	FDOT	4.8	0	171.54	16.8	1.8	147.29	17.4	0	147.23	5	5	30.3	-25.3		
5	8	FDOT	5.8	0	171.75	19.4	1.9	147.51	18.8	0	147.51	4.7	4.7	28.3	-23.8		
5	24	FDOT	2	0.1	172.19	6.9	1.2	148.02	8.8	2	148.01	2.8	4.8	16.3	-11.5		
5	72	FDOT	2	0.8	172.41	6.9	2.4	148.27	10.8	5.7	148.27	4	9.7	21.9	-12.2		
5	188	FDOT	1.8	1.4	172.87	8.1	4.8	148.83	9.9	10.7	148.82	4	14.7	21	-6.3		
5	240	FDOT	2.4	1.7	172.75	8.2	5.7	148.75	13.2	12.8	148.75	5.3	17.9	28.1	-10.2		
10	1	FDOT	8.4	0	171.32	29.2	0.3	147.05	17.5	0	148.87	4.8	4.8	28.4	-23.8		
10	2	FDOT	8.2	0	171.47	21.8	1.2	147.23	17.1	0	147.09	4.3	4.3	27.9	-23.8		
10	4	FDOT	6.5	0	171.71	22.4	3	147.48	23.9	0	147.39	7.8	7.8	43.6	-36		
10	8	FDOT	7.9	0	172	27.1	3.7	147.79	24.4	0	147.79	7.6	7.6	44	-36.4		
10	24	FDOT	2.8	0.7	172.44	9.8	2.8	148.31	12.9	6.2	148.31	4.1	10.3	23.8	-13.3		
10	72	FDOT	2.6	1.3	172.84	9	4.8	148.82	14.3	10.6	148.81	5.5	16.1	29.7	-13.6		
10	188	FDOT	2.3	1.9	172.8	7.8	8.4	148.87	12.7	14.2	148.86	5.3	19.5	27.8	-8.1		
10	240	FDOT	3	2.5	172.92	10.2	7.8	149.08	16.5	17.4	149.06	8.8	24.2	35.8	-11.8		
25	1	FDOT	12	0	171.42	41.2	0.7	147.18	25.3	0	148.91	8	8	45.3	-37.3		
25	2	FDOT	10	0	171.66	34.1	2.7	147.42	25.9	0	147.27	7.6	7.8	45.4	-37.8		
25	4	FDOT	8.8	0	171.93	29.8	5.2	147.85	32	0	147.6	11	11	61.2	-50.2		
25	8	FDOT	10.3	0.2	172.25	35.2	6	148.06	32.7	2.7	148.06	11.3	14	82.4	-48.4		
25	24	FDOT	3.7	1.2	172.81	12.8	4.2	148.58	18.9	10	148.57	5.7	15.7	32.3	-16.6		
25	72	FDOT	3.5	2.1	172.84	11.8	7.3	149.01	19	16.2	149	7.7	23.9	40.8	-16.7		
25	188	FDOT	2.7	2.3	172.88	9	7.5	149.04	14.8	18.8	149.02	6.3	23.1	32.8	-9.5		
25	240	FDOT	3.6	3.3	173.04	12.1	9.7	149.35	19.9	21.1	149.32	8.4	29.5	43.5	-14		
50	1	FDOT	15.1	0	171.51	51.7	1.3	147.28	32.3	0	148.94	11.2	11.2	60.9	-49.7		
50	2	FDOT	13.5	0	171.83	45.9	4.7	147.8	34.4	0	147.41	11.1	11.1	83.5	-52.4		
50	4	FDOT	11.2	0.1	172.18	38.3	8.4	147.86	42.1	0.3	147.86	15.4	15.7	83.3	-67.8		
50	8	FDOT	13.5	0.9	172.51	45.8	9.3	148.39	43.9	7.3	148.39	18.6	23.9	88.1	-64.2		
50	24	FDOT	4.9	1.9	172.8	18.7	8.8	148.94	22.7	15.2	148.92	8.3	23.5	45.2	-21.7		
50	72	FDOT	3.9	2.5	172.93	13.3	8.4	149.17	21.4	18.8	149.14	8.8	27.4	46.1	-18.7		
50	188	FDOT	3.2	2.8	172.99	10.7	9	149.27	17.7	20.1	149.24	7.7	27.8	39.2	-11.4		
50	240	FDOT	4.2	4.1	173.08	14.1	11.3	149.62	23.2	24.5	149.58	10	34.5	51.3	-16.8		
100	1	FDOT	17.7	0	171.58	60.1	1.8	147.34	37.9	0	146.97	13.8	13.8	73.8	-59.8		
100	2	FDOT	18.1	0	171.95	54.3	8.4	147.72	40.5	0	147.53	13.8	13.8	78.7	-62.9		
100	4	FDOT	12.8	0.4	172.34	43.9	10.6	148.03	48.7	2.2	148.03	18.3	20.5	97.9	-77.4		
100	8	FDOT	15.4	1.3	172.83	52.5	11.3	148.59	50.9	10.1	148.58	20	30.1	104.5	-74.4		
100	24	FDOT	5.4	2.2	172.87	18.3	7.5	149.08	25.1	17.3	149.05	9.3	28.8	50.8	-24		
100	72	FDOT	4.8	3.8	173.06	18.1	10.1	149.49	26.2	22.5	149.44	11	33.5	57.2	-23.7		
100	188	FDOT	3.7	3.8	173.05	12.4	10.5	149.51	20.5	22.9	149.47	9	31.9	45.9	-14		
100	240	FDOT	4.8	4.8	173.1	16.1	12.9	149.89	26.5	28.2	149.84	11.8	39.8	59.1	-19.3		

* Post Basin C + E Maximun Outflow = Pond C-3 Maximum Outflow + Post Basin E Maximum Outflow

** Permitted Maximum Design Outflow = Original Pond C-3 Outflow (Sheets 4-33 & 4-34) + Original Pond E Outflow (Sheets 6-21 & 6-23)

*** Peak flow for local basin runoff hydrograph (from hydrologic output data)

NOTE: SWFWMD Storm Distribution = NRCS Type II, Florida Modified (FLMOD)

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
R100_168	C-1	BASE	160.00	3.688	10.994	*********
R100_168	C-2	BASE	159.98	12.418	11.180	*********
R100_168	C-3	BASE	159.96	20.482	10.994	*********
R100_168	POST_E	BASE	159.94	9.017	8.998	*********
R100_168	PRE-C-E	BASE	159.96	45.906	9.827	*********
R100_240	C-1	BASE	184.00	4.781	12.832	*********
R100_240	C-2	BASE	183.99	16.106	13.028	*********
R100_240	C-3	BASE	183.96	26.481	12.832	*********
R100_240	POST_E	BASE	183.99	11.587	10.707	*********
R100_240	PRE-C-E	BASE	184.01	59.116	11.592	*********
R_100_1	C-1	BASE	0.75	17.650	1.073	31550.856
R_100_1	C-2	BASE	0.75	60.125	1.134	*********
R_100_1	C-3	BASE	1.20	37.889	1.070	*********
R_100_1	POST_E	BASE	1.03	13.846	0.533	41966.781
R_100_1	PRE-C-E	BASE	1.08	73.625	0.733	*********
R_100_2	C-1	BASE	0.88	16.070	1.666	48977.850
R_100_2	C-2	BASE	0.90	54.265	1.741	*********
R_100_2	C-3	BASE	1.44	40.510	1.638	*********
R_100_2	POST_E	BASE	1.25	13.820	0.948	74690.568
R_100_2	PRE-C-E	BASE	1.37	76.711	1.210	*********
R_100_24	C-1	BASE	12.00	5.350	5.392	*********
R_100_24	C-2	BASE	12.02	18.314	5.529	*********
R_100_24	C-3	BASE	12.36	25.085	5.392	*********
R_100_24	POST_E	BASE	12.17	9.347	3.977	*********
R_100_24	PRE-C-E	BASE	12.22	50.594	4.543	*********
R_100_4	C-1	BASE	2.53	12.818	2.394	70404.333
R_100_4	C-2	BASE	2.54	43.925	2.486	*********
R_100_4	C-3	BASE	3.12	48.736	2.387	*********
R_100_4	POST_E	BASE	3.08	18.304	1.498	*********
R_100_4	PRE-C-E	BASE	3.13	97.875	1.834	*********
R_100_72	C-1	BASE	60.00	4.771	8.302	*********
R_100_72	C-2	BASE	59.97	16.122	8.469	*********
R_100_72	C-3	BASE	60.00	26.194	8.302	*********
R_100_72	POST_E	BASE	59.99	11.029	6.545	*********
R_100_72	PRE-C-E	BASE	60.03	57.180	7.265	*********
R_100_8	C-1	BASE	4.03	15.440	3.335	98051.337
R_100_8	C-2	BASE	4.02	52.473	3.441	*********
R_100_8	C-3	BASE	4.44	50.925	3.320	*********
R_100_8	POST_E	BASE	4.18	20.009	2.250	*********
R_100_8	PRE-C-E	BASE	4.30	104.515	2.664	*********
R_10_168	C-1	BASE	160.00	2.296	6.143	*********
R_10_168	C-2	BASE	159.98	7.766	6.290	*********
R_10_168	C-3	BASE	159.96	12.710	6.143	*********
R_10_168	POST_E	BASE	160.01	5.292	4.627	*********
R_10_168	PRE-C-E	BASE	159.96	27.610	5.241	*********
R_10_240	C-1	BASE	184.00	3.000	7.427	*********
R_10_240	C-2	BASE	183.99	10.152	7.587	*********
R_10_240	C-3	BASE	183.96	16.535	7.427	*********
R_10_240	POST_E	BASE	183.99	6.836	5.763	*********
R_10_240	PRE-C-E	BASE	184.01	35.760	6.442	*********
R_25_168	C-1	BASE	160.00	2.677	7.427	*********
R_25_168	C-2	BASE	159.98	9.039	7.587	*********
R_25_168	C-3	BASE	159.96	14.835	7.427	*********
R_25_168	POST_E	BASE	160.01	6.301	5.760	*********
R_25_168	PRE-C-E	BASE	159.96	32.590	6.441	*********
R_25_240	C-1	BASE	184.00	3.595	9.190	*********
R_25_240	C-2	BASE	183.99	12.142	9.363	*********
R_25_240	C-3	BASE	183.96	19.856	9.190	*********
R_25_240	POST_E	BASE	183.99	8.408	7.350	*********
R_25_240	PRE-C-E	BASE	184.01	43.523	8.106	*********
R_50_168	C-1	BASE	160.00	3.1B3	9.189	*********
R_50_168	C-2	BASE	159.98	10.732	9.363	*********
R_50_168	C-3	BASE	159.96	17.663	9.189	*********
R_50_168	POST_E	BASE	159.94	7.657	7.346	*********
R_50_168	PRE-C-E	BASE	159.96	39.249	8.106	*********
R_50_240	C-1	BASE	184.00	4.189	10.995	*********
R_50_240	C-2	BASE	183.99	14.127	11.180	*********
R_50_240	C-3	BASE	183.96	23.173	10.995	*********
R_50_240	POST_E	BASE	183.99	9.994	9.002	*********
R_50_240	PRE-C-E	BASE	184.01	51.317	9.828	*********
RUN10024	C-1	BASE	12.05	26.647	4.498	*********
RUN10024	C-2	BASE	12.08	88.946	4.625	*********
RUN10024	C-3	BASE	12.60	70.126	4.498	*********
RUN10024	POST_E	BASE	12.32	30.245	3.214	*********
RUN10024	PRE-C-E	BASE	12.42	150.185	3.724	*********
RUN1024	C-1	BASE	12.08	12.857	2.257	66357.212
RUN1024	C-2	BASE	12.08	43.596	2.347	*********
RUN1024	C-3	BASE	12.60	33.480	2.257	*********
RUN1024	POST_E	BASE	12.39	11.453	1.396	*********
RUN1024	PRE-C-E	BASE	12.52	63.476	1.727	*********
RUN10_1	C-1	BASE	0.77	8.396	0.488	14358.144
RUN10_1	C-2	BASE	0.78	29.159	0.527	51881.776
RUN10_1	C-3	BASE	1.20	17.463	0.486	79811.934
RUN10_1	POST_E	BASE	1.03	4.611	0.170	13405.078
RUN10_1	PRE-C-E	BASE	1.08	28.420	0.281	*********

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
RUN10_2	C-1	BASE	0.91	6.246	0.714	20987.186
RUN10_2	C-2	BASE	0.90	21.763	0.761	74886.739
RUN10_2	C-3	BASE	1.68	17.082	0.699	*********
RUN10_2	POST_E	BASE	1.69	4.335	0.301	23725.638
RUN10_2	PRE-C-E	BASE	1.66	27.789	0.444	*********
RUN10_24	C-1	BASE	12.03	2.833	2.892	85022.288
RUN10_24	C-2	BASE	12.02	9.811	2.994	*********
RUN10_24	C-3	BASE	12.36	12.888	2.892	*********
RUN10_24	POST_E	BASE	15.11	4.079	1.893	*********
RUN10_24	PRE-C-E	BASE	12.32	23.619	2.282	*********
RUN10_4	C-1	BASE	2.56	6.466	1.130	33230.007
RUN10_4	C-2	BASE	2.54	22.393	1.192	*********
RUN10_4	C-3	BASE	3.24	23.892	1.126	*********
RUN10_4	POST_E	BASE	3.15	7.609	0.571	45009.822
RUN10_4	PRE-C-E	BASE	3.23	43.614	0.772	*********
RUN10_72	C-1	BASE	60.00	2.637	4.102	*********
RUN10_72	C-2	BASE	60.00	8.974	4.225	*********
RUN10_72	C-3	BASE	60.00	14.323	4.102	*********
RUN10_72	POST_E	BASE	59.99	5.507	2.882	*********
RUN10_72	PRE-C-E	BASE	60.03	29.714	3.367	*********
RUN10_8	C-1	BASE	4.03	7.866	1.666	48977.747
RUN10_8	C-2	BASE	4.04	27.062	1.741	*********
RUN10_8	C-3	BASE	4.44	24.361	1.657	*********
RUN10_8	POST_E	BASE	4.25	7.625	0.953	75054.846
RUN10_8	PRE-C-E	BASE	4.40	43.996	1.216	*********
RUN2524	C-1	BASE	12.08	14.997	2.605	76585.997
RUN2524	C-2	BASE	12.08	50.729	2.702	*********
RUN2524	C-3	BASE	12.60	39.192	2.605	*********
RUN2524	POST_E	BASE	12.39	14.193	1.667	*********
RUN2524	PRE-C-E	BASE	12.52	76.489	2.029	*********
RUN25_1	C-1	BASE	0.77	11.974	0.713	20950.794
RUN25_1	C-2	BASE	0.78	41.187	0.761	74845.093
RUN25_1	C-3	BASE	1.20	25.333	0.710	*********
RUN25_1	POST_E	BASE	1.03	7.996	0.301	23695.977
RUN25_1	PRE-C-E	BASE	1.08	45.310	0.449	*********
RUN25_2	C-1	BASE	0.88	9.960	1.075	31600.139
RUN25_2	C-2	BASE	0.90	34.137	1.134	*********
RUN25_2	C-3	BASE	1.56	25.938	1.055	*********
RUN25_2	POST_E	BASE	1.39	7.561	0.533	42010.880
RUN25_2	PRE-C-E	BASE	1.47	45.371	0.726	*********
RUN25_24	C-1	BASE	12.03	3.669	3.714	*********
RUN25_24	C-2	BASE	12.02	12.645	3.830	*********
RUN25_24	C-3	BASE	12.36	16.921	3.714	*********
RUN25_24	POST_E	BASE	12.17	5.717	2.561	*********
RUN25_24	PRE-C-E	BASE	12.32	32.379	3.015	*********
RUN25_4	C-1	BASE	2.53	8.589	1.541	45322.960
RUN25_4	C-2	BASE	2.54	29.628	1.614	*********
RUN25_4	C-3	BASE	3.12	32.021	1.536	*********
RUN25_4	POST_E	BASE	3.08	11.028	0.859	67681.893
RUN25_4	PRE-C-E	BASE	3.13	61.245	1.109	*********
RUN25_72	C-1	BASE	60.00	3.487	5.723	*********
RUN25_72	C-2	BASE	60.00	11.825	5.867	*********
RUN25_72	C-3	BASE	60.00	19.045	5.723	*********
RUN25_72	POST_E	BASE	59.99	7.671	4.263	*********
RUN25_72	PRE-C-E	BASE	60.03	40.551	4.852	*********
RUN25_8	C-1	BASE	4.03	10.288	2.189	64357.262
RUN25_8	C-2	BASE	4.04	35.184	2.275	*********
RUN25_8	C-3	BASE	4.44	32.698	2.178	*********
RUN25_8	POST_E	BASE	4.25	11.347	1.344	*********
RUN25_8	PRE-C-E	BASE	4.30	62.427	1.661	*********
RUN2_1	C-1	BASE	0.83	3.219	0.173	5097.708
RUN2_1	C-2	BASE	0.81	11.517	0.195	19213.373
RUN2_1	C-3	BASE	1.20	6.277	0.172	28295.968
RUN2_1	POST_E	BASE	1.10	0.654	0.023	1833.783
RUN2_1	PRE-C-E	BASE	1.17	7.015	0.068	26078.656
RUN2_168	C-1	BASE	160.00	1.284	2.964	87161.038
RUN2_168	C-2	BASE	159.98	4.376	3.069	*********
RUN2_168	C-3	BASE	159.96	7.070	2.964	*********
RUN2_168	POST_E	BASE	160.01	2.684	1.951	*********
RUN2_168	PRE-C-E	BASE	159.96	14.579	2.347	*********
RUN2_2	C-1	BASE	1.07	2.285	0.298	8768.993
RUN2_2	C-2	BASE	1.07	8.312	0.327	32208.306
RUN2_2	C-3	BASE	1.80	7.213	0.290	47628.849
RUN2_2	POST_E	BASE	1.91	1.218	0.073	5783.820
RUN2_2	PRE-C-E	BASE	1.96	9.652	0.144	55669.818
RUN2_24	C-1	BASE	12.03	1.065	1.186	34885.530
RUN2_24	C-2	BASE	12.05	3.790	1.251	*********
RUN2_24	C-3	BASE	15.24	5.255	1.186	*********
RUN2_24	POST_E	BASE	15.18	1.399	0.612	48237.774
RUN2_24	PRE-C-E	BASE	15.25	8.933	0.825	*********
RUN2_240	C-1	BASE	184.00	1.668	3.714	*********
RUN2_240	C-2	BASE	183.99	5.691	3.832	*********
RUN2_240	C-3	BASE	183.96	9.123	3.714	*********
RUN2_240	POST_E	BASE	183.99	3.426	2.561	*********
RUN2_240	PRE-C-E	BASE	184.01	18.700	3.017	*********

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
RUN2_4	C-1	BASE	2.56	2.948	0.489	14385.841
RUN2_4	C-2	BASE	2.57	10.430	0.528	51933.231
RUN2_4	C-3	BASE	3.24	10.808	0.487	79904.264
RUN2_4	POST_E	BASE	3.23	2.495	0.171	13450.027
RUN2_4	PRE-C-E	BASE	3.23	16.808	0.278	*********
RUN2_72	C-1	BASE	60.00	1.398	1.922	56523.388
RUN2_72	C-2	BASE	60.00	4.809	2.006	*********
RUN2_72	C-3	BASE	60.12	7.490	1.922	*********
RUN2_72	POST_E	BASE	60.06	2.516	1.143	89998.597
RUN2_72	PRE-C-E	BASE	60.03	14.419	1.440	*********
RUN2_8	C-1	BASE	4.05	3.069	0.666	19595.852
RUN2_8	C-2	BASE	4.04	10.780	0.712	70032.698
RUN2_8	C-3	BASE	5.16	9.125	0.662	*********
RUN2_8	POST_E	BASE	5.13	2.143	0.274	21620.622
RUN2_8	PRE-C-E	BASE	5.18	14.360	0.411	*********
RUN50_1	C-1	BASE	0.75	15.123	0.913	26830.490
RUN50_1	C-2	BASE	0.75	51.679	0.968	95218.491
RUN50_1	C-3	BASE	1.20	32.315	0.910	*********
RUN50_1	POST_E	BASE	1.03	11.198	0.427	33624.825
RUN50_1	PRE-C-E	BASE	1.08	60.884	0.605	*********
RUN50_2	C-1	BASE	0.88	13.531	1.420	41752.486
RUN50_2	C-2	BASE	0.90	45.918	1.489	*********
RUN50_2	C-3	BASE	1.56	34.403	1.395	*********
RUN50_2	POST_E	BASE	1.32	11.113	0.772	60783.939
RUN50_2	PRE-C-E	BASE	1.47	63.466	1.006	*********
RUN50_24	C-1	BASE	12.00	4.861	4.901	*********
RUN50_24	C-2	BASE	12.02	16.668	5.033	*********
RUN50_24	C-3	BASE	12.36	22.704	4.901	*********
RUN50_24	POST_E	BASE	12.17	8.271	3.556	*********
RUN50_24	PRE-C-E	BASE	12.22	45.200	4.092	*********
RUN50_4	C-1	BASE	2.53	11.158	2.054	60406.592
RUN50_4	C-2	BASE	2.54	38.319	2.139	*********
RUN50_4	C-3	BASE	3.12	42.128	2.048	*********
RUN50_4	POST_E	BASE	3.08	15.392	1.238	97501.125
RUN50_4	PRE-C-E	BASE	3.13	83.283	1.541	*********
RUN50_72	C-1	BASE	60.00	3.915	6.567	*********
RUN50_72	C-2	BASE	59.97	13.257	6.719	*********
RUN50_72	C-3	BASE	60.00	21.424	6.567	*********
RUN50_72	POST_E	BASE	59.99	8.779	5.000	*********
RUN50_72	PRE-C-E	BASE	60.03	46.061	5.635	*********
RUN50_8	C-1	BASE	4.03	13.469	2.892	85022.287
RUN50_8	C-2	BASE	4.02	45.831	2.991	*********
RUN50_8	C-3	BASE	4.44	43.887	2.879	*********
RUN50_8	POST_E	BASE	4.25	16.575	1.893	*********
RUN50_8	PRE-C-E	BASE	4.30	88.076	2.272	*********
RUN5_1	C-1	BASE	0.80	5.878	0.333	9784.030
RUN5_1	C-2	BASE	0.81	20.601	0.364	35834.530
RUN5_1	C-3	BASE	1.20	11.966	0.331	54361.343
RUN5_1	POST_E	BASE	1.03	2.465	0.090	7068.601
RUN5_1	PRE-C-E	BASE	1.17	17.280	0.170	65713.446
RUN5_168	C-1	BASE	160.00	1.788	4.498	*********
RUN5_168	C-2	BASE	159.98	6.066	4.626	*********
RUN5_168	C-3	BASE	159.96	9.878	4.498	*********
RUN5_168	POST_E	BASE	160.01	3.966	3.213	*********
RUN5_168	PRE-C-E	BASE	159.96	21.022	3.726	*********
RUN5_2	C-1	BASE	0.91	4.420	0.532	15632.660
RUN5_2	C-2	BASE	0.92	15.670	0.572	56265.036
RUN5_2	C-3	BASE	1.68	12.725	0.520	85264.311
RUN5_2	POST_E	BASE	1.76	2.889	0.194	15283.787
RUN5_2	PRE-C-E	BASE	1.76	19.523	0.308	*********
RUN5_24	C-1	BASE	12.03	1.971	2.054	60406.349
RUN5_24	C-2	BASE	12.02	6.882	2.140	*********
RUN5_24	C-3	BASE	12.48	8.781	2.054	*********
RUN5_24	POST_E	BASE	15.11	2.759	1.242	97845.193
RUN5_24	PRE-C-E	BASE	15.16	16.235	1.552	*********
RUN5_240	C-1	BASE	184.00	2.405	5.723	*********
RUN5_240	C-2	BASE	183.99	8.161	5.867	*********
RUN5_240	C-3	BASE	183.96	13.221	5.723	*********
RUN5_240	POST_E	BASE	183.99	5.289	4.264	*********
RUN5_240	PRE-C-E	BASE	184.01	28.072	4.852	*********
RUN5_4	C-1	BASE	2.56	4.764	0.812	23868.414
RUN5_4	C-2	BASE	2.57	16.616	0.863	84899.943
RUN5_4	C-3	BASE	3.24	17.487	0.808	*********
RUN5_4	POST_E	BASE	3.15	5.025	0.363	28557.436
RUN5_4	PRE-C-E	BASE	3.23	30.271	0.521	*********
RUN5_72	C-1	BASE	60.00	2.008	2.964	87163.456
RUN5_72	C-2	BASE	60.00	6.864	3.069	*********
RUN5_72	C-3	BASE	60.00	10.845	2.964	*********
RUN5_72	POST_E	BASE	59.99	3.958	1.951	*********
RUN5_72	PRE-C-E	BASE	60.03	21.860	2.347	*********
RUN5_8	C-1	BASE	4.05	5.597	1.186	34885.530
RUN5_8	C-2	BASE	4.04	19.413	1.249	*********
RUN5_8	C-3	BASE	4.56	16.758	1.180	*********
RUN5_8	POST_E	BASE	5.06	4.678	0.612	48237.750
RUN5_8	PRE-C-E	BASE	5.08	28.270	0.820	*********

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3

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
BASINE	BASE	R100_168	0.00	127.000	128.000	0.0000	0	159.91	54.905	0.00	0.000
BASINE	BASE	R100_240	0.00	127.000	128.000	0.0000	0	184.00	70.685	0.00	0.000
BASINE	BASE	R_100_1	0.00	127.000	128.000	0.0000	0	0.99	83.218	0.00	0.000
BASINE	BASE	R_100_2	0.00	127.000	128.000	0.0000	0	1.37	90.356	0.00	0.000
BASINE	BASE	R_100_24	0.00	127.000	128.000	0.0000	0	12.25	59.841	0.00	0.000
BASINE	BASE	R_100_4	0.00	127.000	128.000	0.0000	0	3.07	116.115	0.00	0.000
BASINE	BASE	R_100_72	0.00	127.000	128.000	0.0000	0	60.00	68.195	0.00	0.000
BASINE	BASE	R_100_8	0.00	127.000	128.000	0.0000	0	4.27	123.386	0.00	0.000
BASINE	BASE	R_10_168	0.00	127.000	128.000	0.0000	0	159.92	32.883	0.00	0.000
BASINE	BASE	R_10_240	0.00	127.000	128.000	0.0000	0	184.00	42.582	0.00	0.000
BASINE	BASE	R_25_168	0.00	127.000	128.000	0.0000	0	159.91	38.873	0.00	0.000
BASINE	BASE	R_25_240	0.00	127.000	128.000	0.0000	0	184.00	51.916	0.00	0.000
BASINE	BASE	R_50_168	0.00	127.000	128.000	0.0000	0	159.91	46.888	0.00	0.000
BASINE	BASE	R_50_240	0.00	127.000	128.000	0.0000	0	184.00	61.295	0.00	0.000
BASINE	BASE	RUN10024	0.00	127.000	128.000	0.0000	0	12.42	179.843	0.00	0.000
BASINE	BASE	RUN1024	0.00	127.000	128.000	0.0000	0	12.50	74.370	0.00	0.000
BASINE	BASE	RUN10_1	0.00	127.000	128.000	0.0000	0	1.00	30.290	0.00	0.000
BASINE	BASE	RUN10_2	0.00	127.000	128.000	0.0000	0	1.66	32.113	0.00	0.000
BASINE	BASE	RUN10_24	0.00	127.000	128.000	0.0000	0	12.33	27.556	0.00	0.000
BASINE	BASE	RUN10_4	0.00	127.000	128.000	0.0000	0	3.14	51.187	0.00	0.000
BASINE	BASE	RUN10_72	0.00	127.000	128.000	0.0000	0	60.00	35.197	0.00	0.000
BASINE	BASE	RUN10_8	0.00	127.000	128.000	0.0000	0	4.34	51.426	0.00	0.000
BASINE	BASE	RUN2524	0.00	127.000	128.000	0.0000	0	12.50	89.985	0.00	0.000
BASINE	BASE	RUN25_1	0.00	127.000	128.000	0.0000	0	0.99	49.715	0.00	0.000
BASINE	BASE	RUN25_2	0.00	127.000	128.000	0.0000	0	1.47	52.927	0.00	0.000
BASINE	BASE	RUN25_24	0.00	127.000	128.000	0.0000	0	12.25	38.005	0.00	0.000
BASINE	BASE	RUN25_4	0.00	127.000	128.000	0.0000	0	3.13	72.222	0.00	0.000
BASINE	BASE	RUN25_72	0.00	127.000	128.000	0.0000	0	60.00	48.200	0.00	0.000
BASINE	BASE	RUN25_8	0.00	127.000	128.000	0.0000	0	4.33	73.345	0.00	0.000
BASINE	BASE	RUN2_1	0.00	127.000	128.000	0.0000	0	1.00	6.243	0.00	0.000
BASINE	BASE	RUN2_168	0.00	127.000	128.000	0.0000	0	159.92	17.247	0.00	0.000
BASINE	BASE	RUN2_2	0.00	127.000	128.000	0.0000	0	1.95	10.867	0.00	0.000
BASINE	BASE	RUN2_24	0.00	127.000	128.000	0.0000	0	15.25	10.328	0.00	0.000
BASINE	BASE	RUN2_240	0.00	127.000	128.000	0.0000	0	184.00	22.115	0.00	0.000
BASINE	BASE	RUN2_4	0.00	127.000	128.000	0.0000	0	3.24	19.279	0.00	0.000
BASINE	BASE	RUN2_72	0.00	127.000	128.000	0.0000	0	60.00	16.913	0.00	0.000
BASINE	BASE	RUN2_8	0.00	127.000	128.000	0.0000	0	5.20	16.450	0.00	0.000
BASINE	BASE	RUN50_1	0.00	127.000	128.000	0.0000	0	1.00	68.225	0.00	0.000
BASINE	BASE	RUN50_2	0.00	127.000	128.000	0.0000	0	1.46	74.387	0.00	0.000
BASINE	BASE	RUN50_24	0.00	127.000	128.000	0.0000	0	12.25	53.402	0.00	0.000
BASINE	BASE	RUN50_4	0.00	127.000	128.000	0.0000	0	3.10	98.533	0.00	0.000
BASINE	BASE	RUN50_72	0.00	127.000	128.000	0.0000	0	59.99	54.820	0.00	0.000
BASINE	BASE	RUN50_8	0.00	127.000	128.000	0.0000	0	4.33	103.734	0.00	0.000
BASINE	BASE	RUN5_1	0.00	127.000	128.000	0.0000	0	1.00	17.646	0.00	0.000
BASINE	BASE	RUN5_168	0.00	127.000	128.000	0.0000	0	159.92	24.970	0.00	0.000
BASINE	BASE	RUN5_2	0.00	127.000	128.000	0.0000	0	1.76	22.401	0.00	0.000
BASINE	BASE	RUN5_24	0.00	127.000	128.000	0.0000	0	15.17	18.990	0.00	0.000
BASINE	BASE	RUN5_240	0.00	127.000	128.000	0.0000	0	184.00	33.348	0.00	0.000
BASINE	BASE	RUN5_4	0.00	127.000	128.000	0.0000	0	3.20	35.172	0.00	0.000
BASINE	BASE	RUN5_72	0.00	127.000	128.000	0.0000	0	60.00	25.795	0.00	0.000
BASINE	BASE	RUN5_8	0.00	127.000	128.000	0.0000	0	5.07	32.904	0.00	0.000
C-1	BASE	R100_168	160.02	173.053	174.400	0.0012	63353	159.91	3.686	160.02	3.599
C-1	BASE	R100_240	184.00	173.101	174.400	0.0015	63658	183.92	4.778	184.00	4.752
C-1	BASE	R_100_1	1.00	171.578	174.400	0.0090	54031	0.75	17.629	0.00	0.000
C-1	BASE	R_100_2	2.01	171.954	174.400	0.0090	56406	0.88	16.011	0.00	0.000
C-1	BASE	R_100_24	19.38	172.868	174.400	0.0028	62187	12.00	5.348	19.38	2.222
C-1	BASE	R_100_4	4.00	172.341	174.400	0.0070	58856	2.53	12.808	4.00	0.391
C-1	BASE	R_100_72	60.20	173.061	174.400	0.0016	63407	60.00	4.770	60.20	3.781
C-1	BASE	R_100_8	8.00	172.634	174.400	0.0083	60706	4.00	15.336	8.00	1.288

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
C-1	BASE	R_10_168	160.11	172.795	174.400	0.0007	61723	159.92	2.295	160.11	1.911
C-1	BASE	R_10_240	184.12	172.921	174.400	0.0010	62519	184.00	2.997	184.12	2.454
C-1	BASE	R_25_168	160.10	172.880	174.400	0.0009	62262	159.92	2.675	160.10	2.274
C-1	BASE	R_25_240	184.08	173.038	174.400	0.0012	63260	183.92	3.592	184.08	3.317
C-1	BASE	R_50_168	160.10	172.987	174.400	0.0010	62940	159.91	3.182	160.10	2.759
C-1	BASE	R_50_240	184.01	173.077	174.400	0.0013	63505	183.92	4.186	184.01	4.137
C-1	BASE	RUN10024	16.33	172.677	174.400	0.0091	60980	12.08	26.339	16.33	1.448
C-1	BASE	RUN1024	24.00	172.263	174.400	0.0073	58358	12.08	12.747	24.00	0.216
C-1	BASE	RUN10_1	1.00	171.315	174.400	0.0049	52368	0.79	8.383	0.00	0.000
C-1	BASE	RUN10_2	2.00	171.471	174.400	0.0036	53351	0.90	6.239	0.00	0.000
C-1	BASE	RUN10_24	22.19	172.443	174.400	0.0016	59501	12.00	2.827	22.19	0.664
C-1	BASE	RUN10_4	4.00	171.712	174.400	0.0037	54878	2.54	6.455	0.00	0.000
C-1	BASE	RUN10_72	64.13	172.640	174.400	0.0012	60742	60.00	2.636	64.13	1.308
C-1	BASE	RUN10_8	8.00	171.996	174.400	0.0044	56670	4.00	7.769	0.00	0.000
C-1	BASE	RUN2524	24.00	172.345	174.400	0.0084	58877	12.08	14.873	24.00	0.399
C-1	BASE	RUN25_1	1.00	171.415	174.400	0.0069	53002	0.77	11.962	0.00	0.000
C-1	BASE	RUN25_2	2.00	171.656	174.400	0.0058	54525	0.89	9.934	0.00	0.000
C-1	BASE	RUN25_24	21.29	172.614	174.400	0.0020	60578	12.00	3.665	21.29	1.215
C-1	BASE	RUN25_4	4.00	171.926	174.400	0.0048	56228	2.53	8.587	0.00	0.000
C-1	BASE	RUN25_72	60.58	172.841	174.400	0.0013	62013	60.00	3.486	60.58	2.104
C-1	BASE	RUN25_8	8.00	172.250	174.400	0.0057	58277	4.00	10.186	8.00	0.191
C-1	BASE	RUN2_1	1.00	171.173	174.400	0.0019	51472	0.82	3.210	0.00	0.000
C-1	BASE	RUN2_168	160.25	172.433	174.400	0.0006	59438	160.00	1.283	160.25	0.635
C-1	BASE	RUN2_2	2.00	171.253	174.400	0.0013	51978	1.06	2.283	0.00	0.000
C-1	BASE	RUN2_24	24.00	171.754	174.400	0.0006	55140	12.00	1.059	0.00	0.000
C-1	BASE	RUN2_240	184.45	172.387	174.400	0.0008	59147	184.00	1.667	184.45	0.508
C-1	BASE	RUN2_4	4.00	171.369	174.400	0.0017	52708	2.57	2.944	0.00	0.000
C-1	BASE	RUN2_72	72.00	172.136	174.400	0.0008	57559	60.00	1.397	72.00	0.023
C-1	BASE	RUN2_8	8.00	171.468	174.400	0.0018	53336	4.06	3.038	0.00	0.000
C-1	BASE	RUN50_1	1.00	171.507	174.400	0.0071	53582	0.75	15.116	0.00	0.000
C-1	BASE	RUN50_2	2.00	171.831	174.400	0.0078	55629	0.89	13.472	0.00	0.000
C-1	BASE	RUN50_24	21.04	172.797	174.400	0.0026	61739	12.00	4.858	21.04	1.922
C-1	BASE	RUN50_4	4.00	172.184	174.400	0.0062	57864	2.54	11.148	4.00	0.081
C-1	BASE	RUN50_72	60.44	172.927	174.400	0.0014	62561	59.99	3.914	60.44	2.484
C-1	BASE	RUN50_8	8.00	172.505	174.400	0.0074	59890	4.00	13.364	8.00	0.850
C-1	BASE	RUN5_1	1.00	171.245	174.400	0.0034	51923	0.80	5.871	0.00	0.000
C-1	BASE	RUN5_168	160.13	172.667	174.400	0.0006	60916	159.92	1.787	160.13	1.410
C-1	BASE	RUN5_2	2.00	171.376	174.400	0.0026	52752	0.91	4.410	0.00	0.000
C-1	BASE	RUN5_24	24.00	172.193	174.400	0.0011	57918	12.00	1.965	24.00	0.093
C-1	BASE	RUN5_240	184.15	172.746	174.400	0.0010	61416	184.00	2.403	184.15	1.715
C-1	BASE	RUN5_4	4.00	171.543	174.400	0.0027	53810	2.56	4.753	0.00	0.000
C-1	BASE	RUN5_72	64.40	172.414	174.400	0.0010	59317	60.00	2.008	64.40	0.581
C-1	BASE	RUN5_8	8.00	171.746	174.400	0.0032	55095	4.06	5.529	0.00	0.000
C-2	BASE	R100_168	160.27	149.509	150.100	0.0013	183966	159.92	16.003	160.03	10.514
C-2	BASE	R100_240	184.30	149.894	150.100	0.0018	188345	183.92	20.846	184.05	12.936
C-2	BASE	R_100_1	1.00	147.342	150.100	0.0100	159705	0.75	60.070	1.00	1.826
C-2	BASE	R_100_2	2.01	147.719	150.100	0.0100	164057	0.90	54.062	2.01	6.358
C-2	BASE	R_100_24	21.79	149.080	150.100	0.0025	179090	12.00	18.291	21.08	7.548
C-2	BASE	R_100_4	4.04	148.029	150.100	0.0076	167580	2.54	43.860	3.42	10.610
C-2	BASE	R_100_72	64.17	149.487	150.100	0.0019	183715	60.00	19.750	64.02	10.119
C-2	BASE	R_100_8	8.01	148.585	150.100	0.0090	173732	4.01	52.117	5.01	11.331
C-2	BASE	R_10_168	160.32	148.867	150.100	0.0008	176675	159.92	9.659	160.02	6.405
C-2	BASE	R_10_240	184.41	149.078	150.100	0.0011	179073	184.00	12.583	184.04	7.844
C-2	BASE	R_25_168	160.29	149.041	150.100	0.0009	178654	159.92	11.294	160.03	7.544
C-2	BASE	R_25_240	184.32	149.348	150.100	0.0013	182144	184.00	15.432	184.05	9.666
C-2	BASE	R_50_168	160.26	149.271	150.100	0.0011	181259	159.92	13.471	160.03	9.023
C-2	BASE	R_50_240	184.31	149.622	150.100	0.0016	185251	183.92	18.249	184.05	11.321
C-2	BASE	RUN10024	18.61	148.727	150.100	0.0100	175233	12.08	88.265	12.91	14.764
C-2	BASE	RUN1024	24.00	148.075	150.100	0.0082	168092	12.09	43.214	13.25	4.108

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
C-2	BASE	RUN10_1	1.00	147.050	150.100	0.0056	156280	0.79	29.118	1.00	0.306
C-2	BASE	RUN10_2	2.00	147.227	150.100	0.0042	158373	0.90	21.761	2.00	1.168
C-2	BASE	RUN10_24	22.91	148.314	150.100	0.0016	170758	12.00	9.786	24.20	2.609
C-2	BASE	RUN10_4	4.00	147.455	150.100	0.0042	161031	2.56	22.383	3.74	3.021
C-2	BASE	RUN10_72	64.58	148.621	150.100	0.0012	174119	60.00	9.894	64.02	4.760
C-2	BASE	RUN10_8	8.10	147.786	150.100	0.0050	164826	4.06	26.754	5.36	3.710
C-2	BASE	RUN2524	24.00	148.171	150.100	0.0094	169170	12.08	50.255	13.18	5.454
C-2	BASE	RUN25_1	1.00	147.162	150.100	0.0079	157603	0.78	41.113	1.00	0.729
C-2	BASE	RUN25_2	2.00	147.423	150.100	0.0066	160652	0.90	34.021	2.00	2.733
C-2	BASE	RUN25_24	22.23	148.581	150.100	0.0019	173686	12.00	12.621	21.07	4.214
C-2	BASE	RUN25_4	3.99	147.648	150.100	0.0054	163253	2.53	29.566	3.63	5.230
C-2	BASE	RUN25_72	64.20	149.009	150.100	0.0014	178282	60.00	13.851	64.02	7.332
C-2	BASE	RUN25_8	8.00	148.063	150.100	0.0064	167959	4.00	34.815	5.22	5.981
C-2	BASE	RUN2_1	1.00	146.889	150.100	0.0022	154338	0.82	11.514	1.00	0.025
C-2	BASE	RUN2_168	160.89	148.283	150.100	0.0006	170417	160.00	4.989	160.02	2.537
C-2	BASE	RUN2_2	2.00	146.985	150.100	0.0016	155516	1.06	8.308	2.00	0.166
C-2	BASE	RUN2_24	24.01	147.544	150.100	0.0007	162065	12.00	3.769	15.85	0.585
C-2	BASE	RUN2_240	185.57	148.237	150.100	0.0009	169904	184.00	6.154	184.03	2.125
C-2	BASE	RUN2_4	4.00	147.113	150.100	0.0020	157038	2.57	10.411	4.00	0.572
C-2	BASE	RUN2_72	72.00	147.943	150.100	0.0008	166611	60.00	4.808	57.59	0.898
C-2	BASE	RUN2_8	8.46	147.207	150.100	0.0021	158154	4.06	10.730	6.26	0.623
C-2	BASE	RUN50_1	1.00	147.264	150.100	0.0080	158796	0.77	51.651	1.00	1.288
C-2	BASE	RUN50_2	2.00	147.599	150.100	0.0088	162685	0.90	45.740	2.00	4.717
C-2	BASE	RUN50_24	22.04	148.938	150.100	0.0023	177483	12.00	16.645	21.08	6.604
C-2	BASE	RUN50_4	4.00	147.875	150.100	0.0067	165843	2.54	38.254	3.50	8.351
C-2	BASE	RUN50_72	64.18	149.168	150.100	0.0016	180089	59.99	15.665	64.02	8.378
C-2	BASE	RUN50_8	8.00	148.388	150.100	0.0080	171579	4.00	45.508	5.10	9.252
C-2	BASE	RUN5_1	1.00	146.970	150.100	0.0040	155331	0.80	20.562	1.00	0.121
C-2	BASE	RUN5_168	160.55	148.625	150.100	0.0006	174165	160.00	7.460	160.02	4.836
C-2	BASE	RUN5_2	2.00	147.123	150.100	0.0030	157155	0.93	15.637	2.00	0.616
C-2	BASE	RUN5_24	24.00	148.016	150.100	0.0012	167434	12.00	6.860	14.12	1.202
C-2	BASE	RUN5_240	184.75	148.751	150.100	0.0010	175478	184.00	9.850	184.03	5.652
C-2	BASE	RUN5_4	4.00	147.293	150.100	0.0032	159147	2.56	16.592	3.87	1.612
C-2	BASE	RUN5_72	65.52	148.272	150.100	0.0011	170297	60.00	6.940	64.02	2.404
C-2	BASE	RUN5_8	8.25	147.511	150.100	0.0037	161688	4.06	19.232	5.58	1.949
C-3	BASE	R100_168	160.61	149.471	150.100	0.0013	303592	160.00	30.949	160.61	22.926
C-3	BASE	R100_240	184.68	149.837	150.100	0.0018	309290	184.00	39.351	184.68	28.165
C-3	BASE	R_100_1	3.00	146.973	150.100	0.0031	264980	0.99	34.749	0.00	0.000
C-3	BASE	R_100_2	4.49	147.529	150.100	0.0076	273762	1.56	44.486	0.00	0.000
C-3	BASE	R_100_24	21.74	149.053	150.100	0.0032	297089	12.25	29.725	21.74	17.292
C-3	BASE	R_100_4	4.00	148.030	150.100	0.0064	281579	3.23	58.255	4.00	2.186
C-3	BASE	R_100_72	64.46	149.438	150.100	0.0018	303080	60.08	35.101	64.46	22.468
C-3	BASE	R_100_8	8.00	148.580	150.100	0.0065	289976	4.51	58.806	8.00	10.084
C-3	BASE	R_10_168	160.56	148.856	150.100	0.0013	294020	160.00	19.086	160.56	14.246
C-3	BASE	R_10_240	184.64	149.063	150.100	0.0014	297236	184.00	24.343	184.64	17.437
C-3	BASE	R_25_168	160.56	149.024	150.100	0.0009	296633	160.00	22.345	160.56	16.836
C-3	BASE	R_25_240	184.65	149.321	150.100	0.0015	301258	184.00	29.474	184.65	21.122
C-3	BASE	R_50_168	160.58	149.243	150.100	0.0011	300048	160.00	26.644	160.58	20.103
C-3	BASE	R_50_240	184.67	149.581	150.100	0.0016	305314	184.00	34.440	184.67	24.496
C-3	BASE	RUN10024	18.67	148.712	150.100	0.0060	291939	12.58	81.711	18.67	12.084
C-3	BASE	RUN1024	24.00	148.073	150.100	0.0040	282249	12.59	35.945	24.00	2.832
C-3	BASE	RUN10_1	3.00	146.874	150.100	0.0090	263341	1.00	14.705	0.00	0.000
C-3	BASE	RUN10_2	6.00	147.094	150.100	0.0062	266879	1.69	17.832	0.00	0.000
C-3	BASE	RUN10_24	22.81	148.310	150.100	0.0016	285889	12.50	14.550	22.81	6.234
C-3	BASE	RUN10_4	5.98	147.391	150.100	0.0040	271591	3.24	26.115	0.00	0.000
C-3	BASE	RUN10_72	64.60	148.614	150.100	0.0013	290495	60.04	17.666	64.60	10.601
C-3	BASE	RUN10_8	8.00	147.786	150.100	0.0029	277794	4.54	26.008	0.00	0.000
C-3	BASE	RUN2524	24.00	148.168	150.100	0.0048	283710	12.59	42.708	24.00	4.293
C-3	BASE	RUN25_1	3.00	146.907	150.100	0.0091	263896	0.99	22.088	0.00	0.000

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
C-3	BASE	RUN25_2	6.00	147.268	150.100	0.0031	269642	1.57	27.541	0.00	0.000
C-3	BASE	RUN25_24	22.37	148.573	150.100	0.0022	289878	12.41	19.763	22.37	9.987
C-3	BASE	RUN25_4	5.03	147.600	150.100	0.0040	274884	3.23	36.248	0.00	0.000
C-3	BASE	RUN25_72	64.46	148.985	150.100	0.0016	296022	60.04	25.028	64.46	16.224
C-3	BASE	RUN25_8	8.00	148.063	150.100	0.0040	282083	4.54	35.782	8.00	2.667
C-3	BASE	RUN2_1	3.00	146.833	150.100	0.0038	262615	1.00	4.746	0.00	0.000
C-3	BASE	RUN2_168	160.82	148.281	150.100	0.0011	285446	160.00	9.593	160.82	5.838
C-3	BASE	RUN2_2	6.00	146.914	150.100	0.0063	263966	1.91	7.340	0.00	0.000
C-3	BASE	RUN2_24	24.00	147.544	150.100	0.0015	274006	15.27	5.811	0.00	0.000
C-3	BASE	RUN2_240	185.45	148.235	150.100	0.0012	284733	184.01	11.233	185.45	5.202
C-3	BASE	RUN2_4	11.89	147.061	150.100	0.0035	266340	3.33	11.162	0.00	0.000
C-3	BASE	RUN2_72	72.00	147.943	150.100	0.0008	280230	60.00	7.733	72.00	1.071
C-3	BASE	RUN2_8	8.00	147.207	150.100	0.0029	268683	5.20	9.544	0.00	0.000
C-3	BASE	RUN50_1	3.00	146.942	150.100	0.0076	264473	1.00	29.171	0.00	0.000
C-3	BASE	RUN50_2	5.15	147.419	150.100	0.0056	272042	1.57	37.327	0.00	0.000
C-3	BASE	RUN50_24	21.95	148.918	150.100	0.0029	294975	12.30	26.984	21.95	15.183
C-3	BASE	RUN50_4	4.40	147.861	150.100	0.0054	278951	3.24	49.367	4.40	0.296
C-3	BASE	RUN50_72	64.45	149.135	150.100	0.0015	298361	60.04	28.328	64.45	18.559
C-3	BASE	RUN50_8	8.00	148.385	150.100	0.0055	287030	4.53	49.674	8.00	7.276
C-3	BASE	RUN5_1	3.00	146.853	150.100	0.0062	262979	1.00	9.683	0.00	0.000
C-3	BASE	RUN5_168	160.57	148.620	150.100	0.0011	290587	160.00	14.694	160.57	10.691
C-3	BASE	RUN5_2	6.00	147.010	150.100	0.0037	265534	1.80	13.143	0.00	0.000
C-3	BASE	RUN5_24	24.00	148.016	150.100	0.0014	281354	13.38	9.807	24.00	1.983
C-3	BASE	RUN5_240	184.70	148.745	150.100	0.0013	292418	184.00	18.848	184.70	12.572
C-3	BASE	RUN5_4	7.54	147.227	150.100	0.0032	268998	3.26	18.558	0.00	0.000
C-3	BASE	RUN5_72	65.36	148.269	150.100	0.0011	285255	60.02	11.627	65.36	5.666
C-3	BASE	RUN5_8	8.00	147.513	150.100	0.0040	273510	5.13	17.788	0.00	0.000
OUTFALL	BASE	R100_168	0.00	147.000	148.000	0.0000	0	160.61	22.926	0.00	0.000
OUTFALL	BASE	R100_240	0.00	147.000	148.000	0.0000	0	184.68	28.165	0.00	0.000
OUTFALL	BASE	R_100_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	R_100_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	R_100_24	0.00	147.000	148.000	0.0000	0	21.74	17.292	0.00	0.000
OUTFALL	BASE	R_100_4	0.00	147.000	148.000	0.0000	0	4.00	2.186	0.00	0.000
OUTFALL	BASE	R_100_72	0.00	147.000	148.000	0.0000	0	64.46	22.468	0.00	0.000
OUTFALL	BASE	R_100_8	0.00	147.000	148.000	0.0000	0	8.00	10.084	0.00	0.000
OUTFALL	BASE	R_10_168	0.00	147.000	148.000	0.0000	0	160.56	14.246	0.00	0.000
OUTFALL	BASE	R_10_240	0.00	147.000	148.000	0.0000	0	184.64	17.437	0.00	0.000
OUTFALL	BASE	R_25_168	0.00	147.000	148.000	0.0000	0	160.56	16.836	0.00	0.000
OUTFALL	BASE	R_25_240	0.00	147.000	148.000	0.0000	0	184.65	21.122	0.00	0.000
OUTFALL	BASE	R_50_168	0.00	147.000	148.000	0.0000	0	160.58	20.103	0.00	0.000
OUTFALL	BASE	R_50_240	0.00	147.000	148.000	0.0000	0	184.67	24.496	0.00	0.000
OUTFALL	BASE	RUN10024	0.00	147.000	148.000	0.0000	0	18.67	12.084	0.00	0.000
OUTFALL	BASE	RUN1024	0.00	147.000	148.000	0.0000	0	24.00	2.832	0.00	0.000
OUTFALL	BASE	RUN10_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN10_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN10_24	0.00	147.000	148.000	0.0000	0	22.81	6.234	0.00	0.000
OUTFALL	BASE	RUN10_4	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN10_72	0.00	147.000	148.000	0.0000	0	64.60	10.601	0.00	0.000
OUTFALL	BASE	RUN10_8	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN2524	0.00	147.000	148.000	0.0000	0	24.00	4.293	0.00	0.000
OUTFALL	BASE	RUN25_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN25_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN25_24	0.00	147.000	148.000	0.0000	0	22.37	9.987	0.00	0.000
OUTFALL	BASE	RUN25_4	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN25_72	0.00	147.000	148.000	0.0000	0	64.46	16.224	0.00	0.000
OUTFALL	BASE	RUN25_8	0.00	147.000	148.000	0.0000	0	8.00	2.667	0.00	0.000
OUTFALL	BASE	RUN2_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN2_168	0.00	147.000	148.000	0.0000	0	160.82	5.838	0.00	0.000
OUTFALL	BASE	RUN2_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000

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
OUTFALL	BASE	RUN2_24	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN2_240	0.00	147.000	148.000	0.0000	0	185.45	5.202	0.00	0.000
OUTFALL	BASE	RUN2_4	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN2_72	0.00	147.000	148.000	0.0000	0	72.00	1.071	0.00	0.000
OUTFALL	BASE	RUN2_8	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN50_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN50_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN50_24	0.00	147.000	148.000	0.0000	0	21.95	15.183	0.00	0.000
OUTFALL	BASE	RUN50_4	0.00	147.000	148.000	0.0000	0	4.40	0.296	0.00	0.000
OUTFALL	BASE	RUN50_72	0.00	147.000	148.000	0.0000	0	64.45	18.559	0.00	0.000
OUTFALL	BASE	RUN50_8	0.00	147.000	148.000	0.0000	0	8.00	7.276	0.00	0.000
OUTFALL	BASE	RUN5_1	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN5_168	0.00	147.000	148.000	0.0000	0	160.57	10.691	0.00	0.000
OUTFALL	BASE	RUN5_2	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN5_24	0.00	147.000	148.000	0.0000	0	24.00	1.983	0.00	0.000
OUTFALL	BASE	RUN5_240	0.00	147.000	148.000	0.0000	0	184.70	12.572	0.00	0.000
OUTFALL	BASE	RUN5_4	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
OUTFALL	BASE	RUN5_72	0.00	147.000	148.000	0.0000	0	65.36	5.666	0.00	0.000
OUTFALL	BASE	RUN5_8	0.00	147.000	148.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R100_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R100_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_100_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_10_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_10_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_25_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_25_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_50_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	R_50_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10024	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN1024	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN10_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2524	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN25_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN2_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN50_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN50_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN50_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000

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
SHWTC-1	BASE	RUN50_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN50_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN50_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_1	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_168	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_2	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_24	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_240	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_4	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_72	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-1	BASE	RUN5_8	0.00	167.650	168.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R100_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R100_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_100_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_10_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_10_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_25_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_25_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_50_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	R_50_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10024	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN1024	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN10_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2524	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN25_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN2_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN50_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000

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
SHWTC-2	BASE	RUN5_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-2	BASE	RUN5_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R100_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R100_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_100_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_10_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_10_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_25_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_25_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_50_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	R_50_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10024	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN1024	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN10_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2524	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN25_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN2_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN50_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_1	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_168	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_2	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_24	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_240	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_4	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_72	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000
SHWTC-3	BASE	RUN5_8	0.00	142.700	143.000	0.0000	0	0.00	0.000	0.00	0.000

ORIGINAL

ERP # 44011896.024

BASIN C

CALCULATIONS

BASIN C

Basin C consists of approximately 23.78 ha (58.76 ac) of roadway pavement and open areas associated with the proposed roadway right-of-way. The basin includes portions of US 27 and I-4: the I-4 corridor begins at Station 612+60 and extends to Station 614+25; along the US 27 corridor the basin runs north from the US-27 bridge to Station 137+00. Typically the flow pattern is from west to east along the present I-4 roadside and median ditches. Stormwater runoff is presently conveyed into the I-4 ditch via a system of roadside ditches and culverts from the existing ramp. Basin C pond system was designed to accommodate the runoff from the 25-year 24-hour storm event.

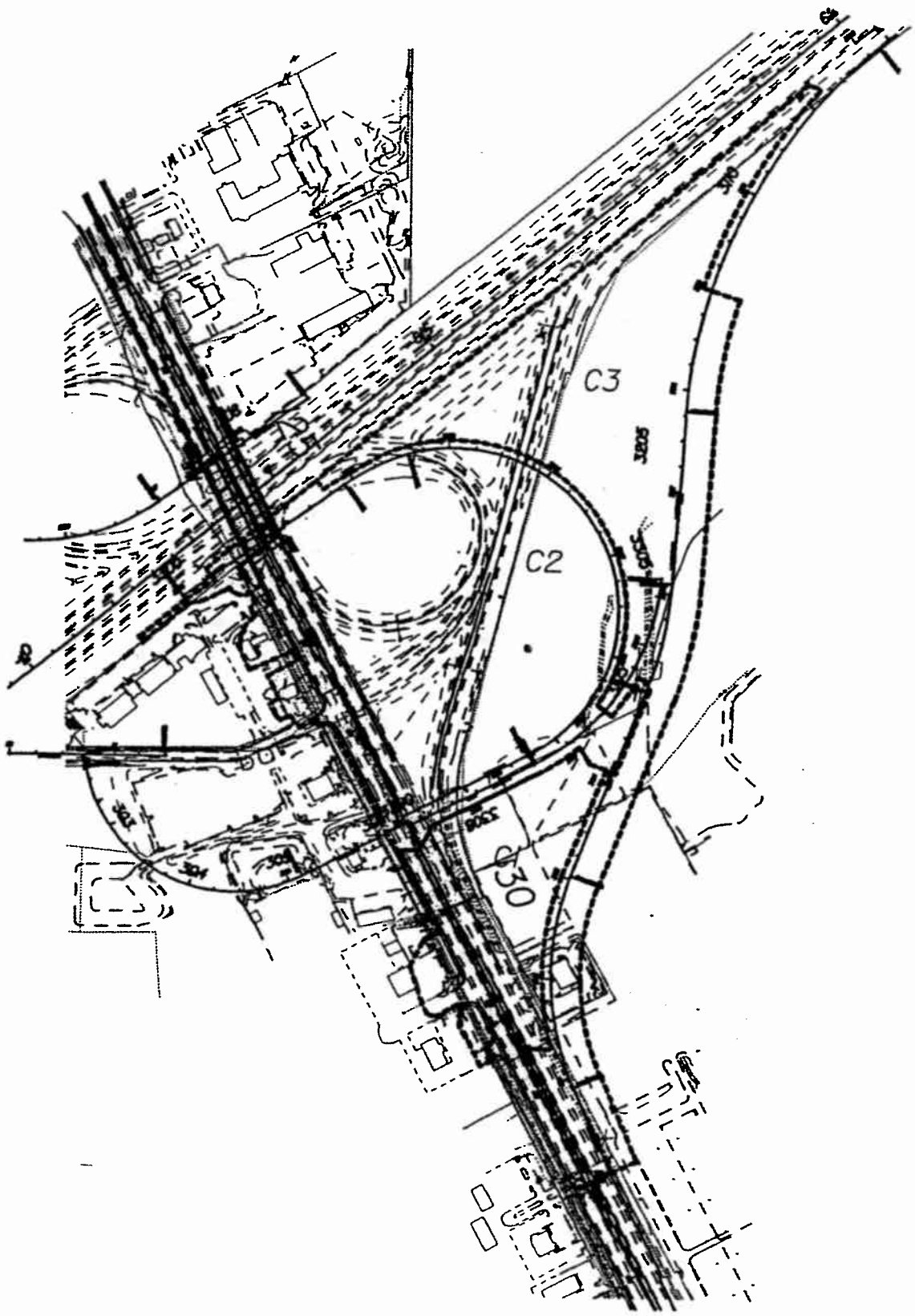
The stormwater management system for Basin C consists of three interconnected ponds that holds the pre-post runoff from the 25-year 24-hour storm event. The C-system ponds will also store the required water quality volume. The required water quality volume for Basin C is one inch of runoff from the directly connected impervious area. Groundwater recovery of the water quality volume was done using Darcy's equation in a spreadsheet form. Groundwater data, such as infiltration rates and the seasonal high water table elevation was based on information from the geotechnical consultant.

Basin C is not in the 100-year flood zone (see FEMA map, FIGURE 2.3).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Channel & Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin C was routed using rainfall depths of 7.0 inches and 9.5 inches for the 25-year and 100-year 24-hour storms, obtained from the SWFWMD rainfall maps. Results are summarized in the Drainage Basin Summary table and illustrate that post development flows are less than pre development flows due to attenuation from the Pond C system for the 25-year 24-hour storm event. A minimum of 0.30 meters (1.0 foot) freeboard is provided in the C-system ponds. The AdICPR results can be found in this section.

A critical duration analysis was also performed with the use of AdICPR. Results from the analysis can be found in Section 13. The results show that the Pond C system meets the 14-86 criteria of the FDOT.

BASIN C
PRE DEVELOPMENT



SCALE:
1"=5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County — Florida

BASIN C PRE DRAINAGE AREAS

4-3

BY NRS	DATE 02-22-01	JOB NUMBER FLD-5	SHEET 1 of

E-895

FLDSBASIN C.301

HDR Computation

HDR

US 27/I-4 INTERCHANGE IMPROVEMENTS	Computed SLU	Date 8/31/98
Subject PRE-DEVELOPMENT ANALYSIS	Checked SLU	Date 9/21/98
Task DETERMINE PRE-DEVELOPMENT PEAK FLOW C-SYSTEM	Sheet	Of

DRAINAGE AREA AND CURVE NUMBER TAKEN FROM POND SITING REPORT (JUNE 1998)

TIME OF CONCENTRATION WAS COMPUTED BASED ON TR-55 AND USING EXISTING RAMP DITCHES AS CONVEYANCE FLOW PATH.
TOTAL FLOW LENGTH = 930 m (3050 Ft)
STATION 139+60 (EX CROSS SECTION) INVERT = 58.6 (192.3')
STATION 619+00 (EX CROSS SECTION) INVERT = 46.0 (150.9')
WATERCOURSE SLOPE = (586-460)/930 = 0.014

HYDROLOGIC PARAMETERS:

AREA = (67.41 AC) = 27.28 HA
CN = 57.8
TC = 44 min

25 YEAR 24 HOUR STORM EVENT:
RAINFALL DEPTH = (7.0") = 17.78 cm

PEAK FLOW = 2.50 m^3/sec

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: SLU Date: 8/31/98
Location: POLK COUNTY Checked: CJL Date:

Circle One: [redacted] Developed C System: Pre

Circle One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)		short grass
2. Manning's roughness coeff., n (table3-1.)		0.15
3. Flow length, L (total L <= 300 ft.) ft		300
4. Two-yr 24-hr rainfall, P_2 in		4.8
5. Land slope, s ft/ft		0.020
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T...hr	+	0.321 = 0.32

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)		unpaved
8. Flow length, L ft		2750
9. Watercourse slope, s ft/ft		0.0136
10. Average velocity, V (figure 3-1) ft/s		1.85
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr	+	0.413 = 0.41

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2		
13. Wetted perimeter, P_w ft/ft		
14. Hydraulic radius, $\bar{r} = a/P_w$ Compute r ft		
15. Channel slope, s ft/ft		
16. Manning's roughness coeff., n		
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ Compute V ft/s		
18. Flow length, L ft		
19. $T_t = L / 3600\ V$ Compute T hr	+	0.00
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr		0.73

44 minutes

US 21/I-4 INTERCHANGE
C-SYSTEM PRE-DEVELOPMENT ANALYSIS
WATERCOURSE SLOPE = 0.0136 ft/ft (TR55)

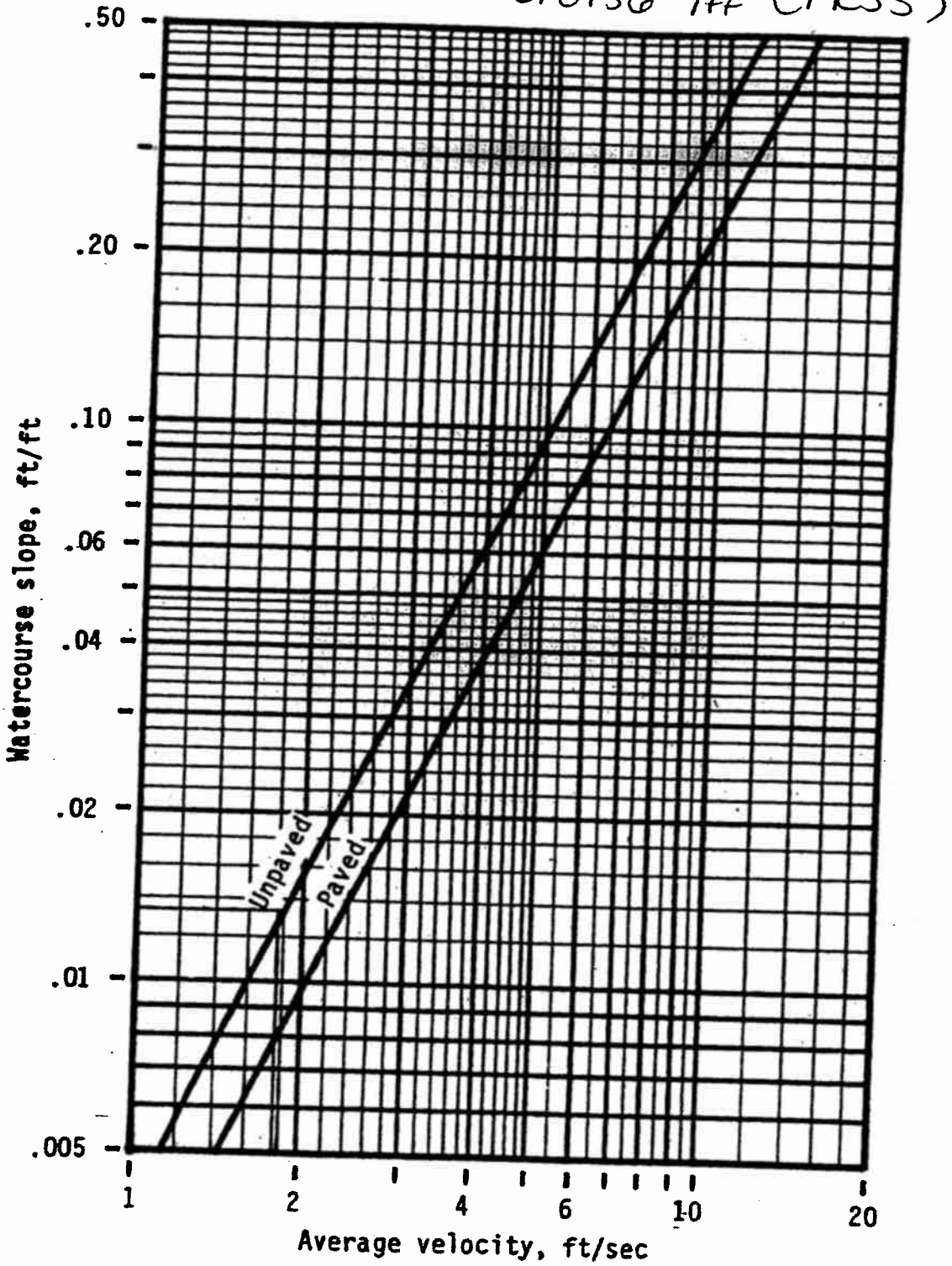


Figure 3-1.—Average velocities for estimating travel time for shallow concentrated flow.

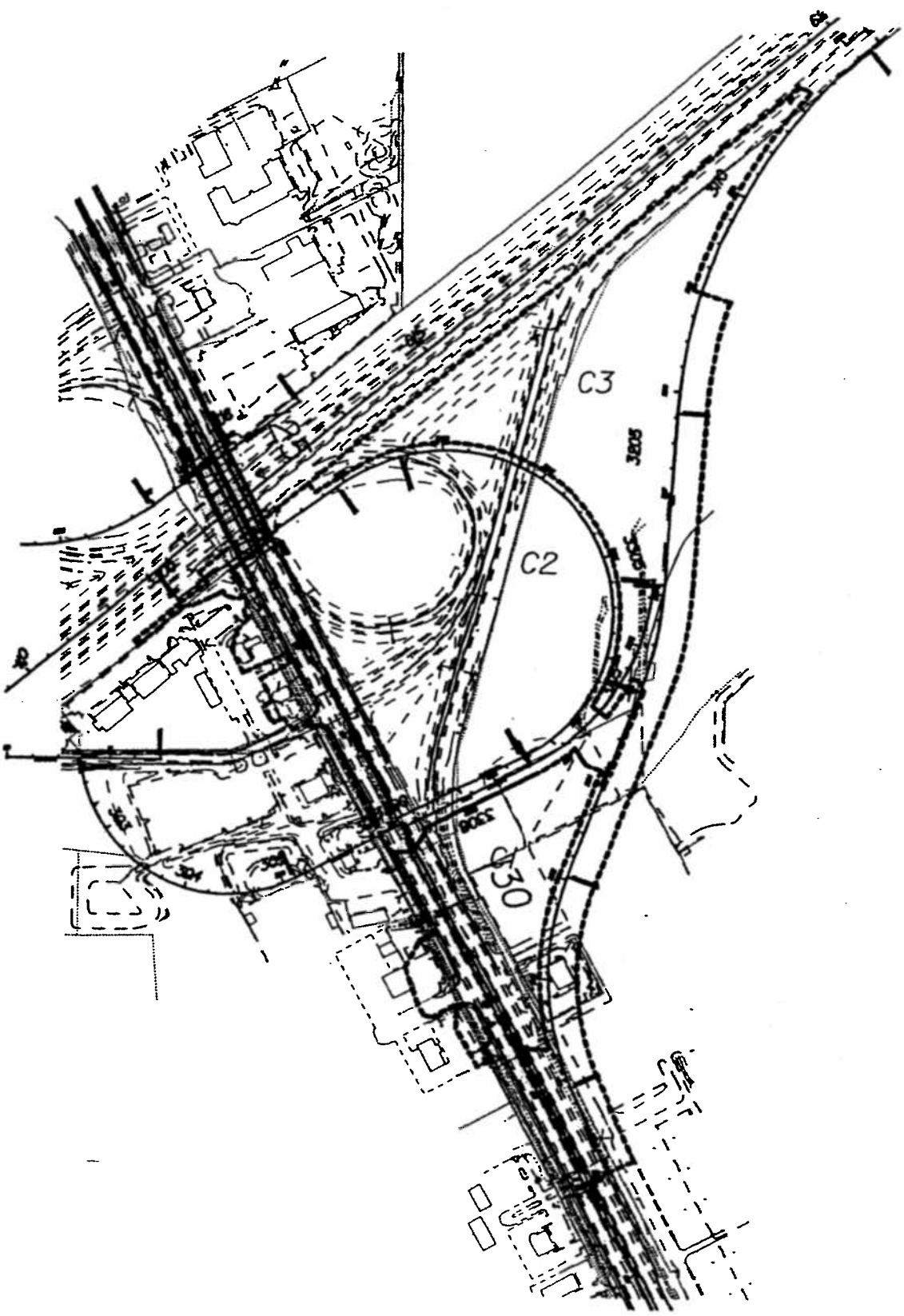
US 27 / I-4 INTERCHANGE IMPROVEMENTS
25 YEAR 24 HOUR STORM EVENT ANALYSIS
PRE-DEVELOPMENT C-SYSTEM PEAK FLOW

********** Basin Summary - 25Y24H **********

***

Basin Name:	PONDCPRE
Group Name:	BASE
Node Name:	PONDCPRE
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FDOT-24
Rainfall Amount (in):	7.00
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	44.00
Lag Time (hr):	0.00
Area (acres):	67.41
Curve Number:	57.80
DCIA (%):	0.00
Time Max (hrs):	12.00
Flow Max (cfs):	16.14
Runoff Volume (in):	2.39
Runoff Volume (cf):	583859

BASIN C
POST DEVELOPMENT



SCALE: 1"=5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

Florida

BASIN C POST DRAINAGE AREAS

4-9

BY	DATE	JOB NUMBER	SHEET
MRS	02-22-01	FLD-5	1 of 1

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/02/2000

Pond Volume

Basin	C	
Pond	C1	
Basin Area	8.10	Acres
DCIA*	1.80	Acres
Required Storage	0.36	Acre-ft
Retention Stage	171.3	ft
Provided Storage	2.00	Acre-ft
Actual Retention Stage	172.1	ft
½ Required Storage	0.18	Acre-ft
½ Required Stage	171.2	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
171.10	1.17	-	-	-	0.00
174.38	1.65	1.41	3.28	4.62	0.00
176.35	2.18	1.91	1.97	3.77	3.77

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/02/2000

Pond Volume

Basin	C	
Pond	C2	
Basin Area	27.00	Acres
DCIA*	6.30	Acres
Required Storage	1.18	Acre-ft
Retention Stage	147.1	ft
Provided Storage	5.25	Acre-ft
Actual Retention Stage	148.0	ft
½ Required Storage	0.59	Acre-ft
½ Required Stage	147.0	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
146.82	3.52	-	-	-	0.00
150.10	3.86	3.69	3.28	12.10	0.00
152.07	4.75	4.30	1.97	8.48	8.48

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 11/02/2000

Pond Volume

Basin	C	
Pond	C3	
Basin Area	23.70	Acres
DCIA*	4.70	Acres
Required Storage	1.19	Acre-ft
Retention Stage	147.0	ft
Provided Storage	9.60	Acre-ft
Actual Retention Stage	148.0	ft
½ Required Storage	0.60	Acre-ft
½ Required Stage	146.9	ft

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
146.82	6.02	-	-	-	0.00
150.10	7.19	6.61	3.28	21.67	0.00
152.07	8.42	7.81	1.97	15.38	15.38

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/02/00
Location: POLK COUNTY, Pond C1 Checked: CLC Date: 11/03/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			6.30	308.70
	Impervious area-roadway	98			1.80	176.40
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
Use only one CN source per line.					Totals =	8.10 / 485.10

CN (weighted) = total product/total area = $\frac{485.10}{8.10}$ = 59.89 Use CN = 60

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.8	2.2	2.6
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/02/00
Location: POLK COUNTY, Pond C2 Checked: CLC Date: 11/03/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			20.70	1014.30
	Impervious area-roadway	98			6.30	617.40
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.					Totals =	27.00	1631.70

CN (weighted) = total product/total area = $\frac{1631.70}{27.00}$ = 60.43 Use CN = 60

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.8	2.3	2.6

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 11/02/00
Location: POLK COUNTY, Pond C3 Checked: CLC Date: 11/03/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi^2 / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	49			19.00	931.00
	Impervious area-roadway	98			4.70	460.60
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
					Totals =	23.70	1391.60

[1] Use only one CN source per line.

CN (weighted) = total product/total area = $\frac{1391.60}{23.70}$ = 58.72 Use CN = 59

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.7	2.1	2.5

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

Water Quality Volume Calculation

Pond C1 : (off US 27)

Drainage Basin :	3.26 ha	8.1 ac
Impervious Area :	0.72 ha	1.8 ac
Grassed Area :	2.07 ha	5.1 ac
Pond Bottom :	0.47 ha	1.2 ac

Water Quality Volume Required:

First inch of Rainfall = 0.36 ac-ft 0.5" of runoff x basin area = 0.34 ac-ft

Water Quality Vol. Required = 0.36 ac-ft
450 m3

Pond C2 : (off Ramp)

Drainage Basin :	10.92 ha	27.0 ac
Impervious Area :	2.55 ha	6.3 ac
Grassed Area :	7.16 ha	17.7 ac
Pond Bottom :	1.22 ha	3.0 ac

Water Quality Volume Required:

First inch of Rainfall = 1.18 ac-ft 0.5" of runoff x basin area = 1.12 ac-ft

Water Quality Vol. Required = 1.18 ac-ft
1461 m3

Pond C3 : (off I-4)

Drainage Basin :	9.60 ha	23.7 ac
Impervious Area :	1.90 ha	4.7 ac
Grassed Area :	5.26 ha	13.0 ac
Pond Bottom :	2.44 ha	6.0 ac

Water Quality Volume Required:

First inch of Rainfall = 1.19 ac-ft 0.5" of runoff x basin area = 0.99 ac-ft

Water Quality Vol. Required = 1.19 ac-ft
1469 m3

I-4 / US 27
Polk County, FL

Prepared by: B.D.
Checked by: CJL

INFILTRATION: STAGE-DISCHARGE RELATIONSHIPS

POND C-1

Boring # PC3-1
Perm. # TC3-1

Void Ratio: 0.32

Open Hole Method
S.H.W.T. (m)= 51.10
Pond Bottom (m)= 52.15
Unsaturated Storage Volume Available (m^3)= 1592.3

Permeability Rate :
k (cm/s) = 0.00039
FS = 2

Permeability Rate :
1.11 ft/day

	ELEVATION (Meters)	ELEVATION (Feet)	AREA (Meters)	AREA (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)
Pond Bottom	52.15	171.10	4739	51010	0.474	1.171	0.00924	0.3263
	53.15	174.38	6665	71741	0.667	1.647	0.01300	0.4590
Top of Berm	53.75	176.35	8816	94895	0.882	2.178	0.01719	0.6071

POND C-2

Boring # PC1-10
Perm. # TC1-5

Void Ratio: 0.32

Open Hole Method
S.H.W.T. (m)= 43.50
Pond Bottom (m)= 44.75
Unsaturated Storage Volume Available (m^3)= 4889.9

Permeability Rate :
k (cm/s) = 0.0018
FS = 2

Permeability Rate :
5.10 ft/day

	ELEVATION (Meters)	ELEVATION (Feet)	AREA (Meters)	AREA (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)
Pond Bottom	44.75	146.82	12225	131587	1.222	3.021	0.11002	3.8854
	45.75	150.10	15609	168019	1.561	3.857	0.14049	4.9612
Top of Berm	46.35	152.07	19220	206886	1.922	4.749	0.17298	6.1088

POND C-3

Boring # PC2-3
Perm. # TC2-1

Void Ratio: 0.32

Open Hole Method
S.H.W.T. (m)= 43.50
Pond Bottom (m)= 44.75
Unsaturated Storage Volume Available (m^3)= 9746.8

Permeability Rate :
k (cm/s) = 0.00041
FS = 2

Permeability Rate :
1.16 ft/day

	ELEVATION (Meters)	ELEVATION (Feet)	AREA (Meters)	AREA (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)	DISCHARGE (Meters)	DISCHARGE (Feet)
Pond Bottom	44.75	146.82	24367	262284	2.437	6.021	0.04995	1.7641
	45.75	150.10	29112	313359	2.911	7.194	0.05968	2.1076
Top of Berm	46.35	152.07	34083	366866	3.408	8.422	0.06987	2.4674

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

PROJECT NAME : I-4/ US 27 Pond C-1
MANUAL RUNOFF DATA USED
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	51,000.00 ft²
Pond Volume between Bottom & DHWL	15,682.00 ft³
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	122.00 ft
Elevation of Seasonal High Groundwater Table	167.65 ft
Elevation of Starting Water Level	171.10 ft
Elevation of Pond Bottom	171.10 ft
Design High Water Level Elevation	172.10 ft
Avg. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.32
Unsaturated Vertical Hydraulic Conductivity	1.11 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	1.65 ft/d
Avg. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Avg. Effective Storage Coefficient of Pond/Exfiltration Trench	1.00

Hydraulic Control Features:

	Top	Bottom	Left	Right
Groundwater Control Features - Y/N	N	N	N	N
Distance to Edge of Pond	0.00	0.00	0.00	0.00
Elevation of Water Level	0.00	0.00	0.00	0.00
Impervious Barrier - Y/N	N	N	N	N
Elevation of Barrier Bottom	0.00	0.00	0.00	0.00

4-17

MODRET

TIME - RUNOFF INPUT DATA

PROJECT NAME: I-4/ US 27 POND C-1

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft^3)
Unsat	47.74	56,304.20
1	1.00	0.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

MODRET

SUMMARY OF RESULTS

PROJECT NAME : I-4/ US 27 Pond C-1

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	167.650	0.000 *		
			0.00000	
0.00	167.650	0.54692		
			0.32264	
48.74	171.100	0.09836		0.00
			0.07535	
53.74	171.100	0.07080		0.00
			0.06534	
59.74	171.100	0.06085		0.00
			0.05186	
71.74	171.100	0.04715		0.00
			0.04243	
83.74	171.100	0.03918		0.00
			0.03592	
95.74	171.100	0.03340		0.00
			0.03089	
107.74	171.100	0.02904		0.00
			0.02719	
119.74	171.100	0.02569		0.00
			0.02269	
143.74	171.100	0.02098		0.00
			0.01926	
167.74	171.100	0.01807		0.00
			0.01688	
191.74	170.061			0.00

Maximum Water Elevation: 171.100 feet @ 48.74 hours Recovery @ 0.000 hours

* Time increment when there is no runoff

WARNING Maximum Infiltration Rate: 1.778 ft/day Exceeds Vertical Permeability: 0.555 ft/day

4-19

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : POND C-2,C-3
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	415431.72 ft²
Pond Volume between Bottom & DHWL	456974.88 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	123.00 ft
Elevation of Seasonal High Groundwater Table	142.70 ft
Elevation of Pond Bottom	146.82 ft
Design High Water Level Elevation	147.92
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	5.10 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	7.65 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	0.00
Elevation of water level	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: POND C-2,C-3

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	11.63	513473.61
1	1.00	0.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00
12	24.00	0.00
13	24.00	0.00
14	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: POND C-2,C-3

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	142.700	0.000 *		
			0.00	
0.00	142.700	19.20122		
			11.31526	0.00
12.63	146.817	3.42930		
			0.30811	0.00
17.63	146.804	0.30564		
			0.30268	0.00
23.63	146.788	0.29929		
			0.29250	0.00
35.63	146.758	0.28775		
			0.28300	0.00
47.63	146.728	0.27826		
			0.27351	0.00
59.63	146.700	0.26902		
			0.26453	0.00
71.63	146.672	0.26031		
			0.25608	0.00
83.63	146.646	0.25076		
			0.24011	0.00
107.63	146.596	0.23297		
			0.22583	0.00
131.63	146.549	0.21918		
			0.21252	0.00
155.63	146.505	0.20637		

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

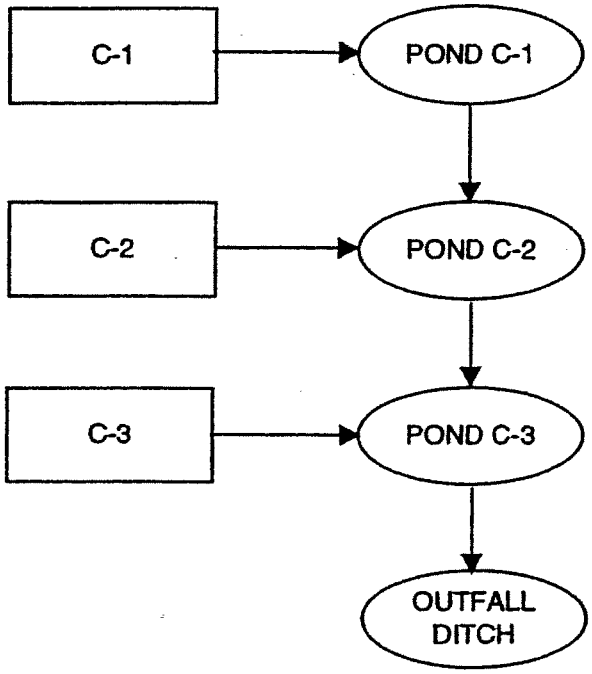
Pond Name / No.: POND C-2,C-3

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
			0.20022	0.00
179.63	146.463	0.19473		
			0.18924	0.00
203.63	146.424	0.18416		
			0.17907	0.00
227.63	146.386			

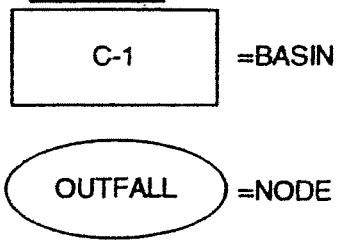
Max. WL : 146.817 @ 12.63 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

ICPR OUTPUT

NODAL DIAGRAM - BASIN C
PROPOSED CONDITIONS



LEGEND



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POND C POST CALCULATIONS ENGLISH
INPUT REPORT
4/27/01

********** Input Report **********

--------Class: Node--------

Name: C-1 Base Flow(cfs): 0 Init Stage(ft): 171.1
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
171.1	1.171
174.38	1.647
176.35	2.178

--------Class: Node--------

Name: C-2 Base Flow(cfs): 0 Init Stage(ft): 146.82
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
146.82	3.516
148.13	3.857
150.10	4.749

--------Class: Node--------

Name: C-3 Base Flow(cfs): 0 Init Stage(ft): 146.82
Group: BASE Warn Stage(ft): 0
Comment:

Stage(ft)	Area(ac)
146.82	6.021
150.1	7.194
152.07	8.422

--------Class: Node--------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 147
Group: BASE Warn Stage(ft): 0
Comment: Stage of ditch: See conveyance calculations

Time(hrs)	Stage(ft)
0	147
240	147

--------Class: Node--------

Name: SHWTC-1 Base Flow(cfs): 0 Init Stage(ft): 167.65
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	167.65
72	167.65
240	167.65

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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POND C POST CALCULATIONS ENGLISH
INPUT REPORT
4/27/01

********** Input Report **********

--------Class: Node----------

Name: SHWTC-2 Base Flow(cfs): 0 Init Stage(ft): 142.7
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	142.7
72	142.7
240	142.7

--------Class: Node----------

Name: SHWTC-3 Base Flow(cfs): 0 Init Stage(ft): 142.7
Group: BASE Warn Stage(ft): 0
Comment:

Time(hrs)	Stage(ft)
0	142.7
72	142.7
240	142.7

--------Class: Basin----------

Basin: C-1 Node: C-1 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH323 Peak Factor: 323
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7
Area(ac): 8.1 Concentration Time(min): 12
Curve #: 60 Time Shift(hrs): 0
DCIA(%): 0

--------Class: Basin----------

Basin: C-2 Node: C-2 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH323 Peak Factor: 323
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7
Area(ac): 27 Concentration Time(min): 13
Curve #: 60 Time Shift(hrs): 0
DCIA(%): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]

POND C POST CALCULATIONS ENGLISH
INPUT REPORT
4/27/01

********** Input Report **********

--------Class: Basin----------

Basin: C-3 Node: C-3 Status: On Site Type: SCS Unit Hydr
Group: BASE

Unit Hydrograph:	UH323	Peak Factor:	323
Rainfall File:	FLMOD	Storm Duration(hrs):	24
Rainfall Amount(in):	7		
Area(ac):	23.7	Concentration Time(min):	54
Curve #:	59	Time Shift(hrs):	0
DCIA(%):	0		

--------Class: Pipe----------

Name:	P1	From Node:	C-2	Length(ft):	138
Group:	BASE	To Node:	C-3	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	24	24	Flow:	Both
Rise(in):	24	24	Entrance Loss Coef:	0.5
Invert(ft):	146.82	146.82	Exit Loss Coef:	1
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Downstream FHWA Inlet Edge Description:
Circular CMP: Mitered to slope 2 2

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
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POND C POST CALCULATIONS ENGLISH
INPUT REPORT
4/27/01

********** Input Report **********
--------Class: Drop Structure----------

Name: RC-1	From Node: C-1	Length(ft): 164
Group: BASE	To Node: C-2	Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	24	24
Rise(in):	24	24
Invert(ft):	170.8	170.08
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 0.5 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Type E Control Structure

*** Weir 1 of 2 for Drop Structure RC-1 *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.3
Geometry:	Rectangular	Orifice Discharge Coef:	0.6

Span(in): 36 Invert(ft): 173
Rise(in): 54 Control Elev(ft): 173

*** Weir 2 of 2 for Drop Structure RC-1 *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.3
Geometry:	Rectangular	Orifice Discharge Coef:	0.6

Span(in): 12 Invert(ft): 172.1
Rise(in): 10.8 Control Elev(ft): 172.1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [5]
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POND C POST CALCULATIONS ENGLISH
INPUT REPORT
4/27/01

********** Input Report **********
--------Class: Drop Structure----------

Name: RC-3 From Node: C-3 Length(ft): 143
Group: BASE To Node: OUTFALL Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	18	18
Rise(in):	18	18
Invert(ft):	147.14	146.98
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 0.5 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Type E Control Structure
*** Weir 1 of 2 for Drop Structure RC-3 *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Horiz Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.3
Geometry: Rectangular Orifice Discharge Coef: 0.6

Span(in): 36 Invert(ft): 149.5
Rise(in): 54 Control Elev(ft): 149.5

*** Weir 2 of 2 for Drop Structure RC-3 *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Mavis Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.3
Geometry: Rectangular Orifice Discharge Coef: 0.6

Span(in): 36 Invert(ft): 148.3
Rise(in): 14.4 Control Elev(ft): 148.3

US 27 / I-4 INTERCHANGE IMPROVEMENTS
C-SYSTEM PONDS
25-YEAR 24-HOUR PEAK STAGE RESULTS

********** Basin Summary - 25Y24H1 **********

Basin Name:	C-1	C-2	C-3
Group Name:	BASE	BASE	BASE
Node Name:	C-1	C-2	C-3
Hydrograph Type:	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00
Spec Time Inc (min):	1.60	1.73	7.20
Comp Time Inc (min):	1.60	1.73	7.20
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	12.00	13.00	54.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	8.10	27.00	23.70
Vol of Unit Hyd (in):	1.00	1.00	1.00
Curve Number:	60.00	60.00	59.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.08	12.08	12.60
Flow Max (cfs):	15.00	48.42	19.63
Runoff Volume (in):	2.60	2.60	2.51
Runoff Volume (cf):	76586	255179	215687

US 27 / I-4 INTERCHANGE IMPROVEMENTS
C-SYSTEM PONDS
100-YEAR 24-HOUR PEAK STAGE RESULTS

********** Basin Summary - 100Y24H1 **********

Basin Name:	C-1	C-2	C-3
Group Name:	BASE	BASE	BASE
Node Name:	C-1	C-2	C-3
Hydrograph Type:	UH	UH	UH
Unit Hydrograph:	UH323	UH323	UH323
Peaking Factor:	323.00	323.00	323.00
Spec Time Inc (min):	1.60	1.73	7.20
Comp Time Inc (min):	1.60	1.73	7.20
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	12.00	13.00	54.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	8.10	27.00	23.70
Vol of Unit Hyd (in):	1.00	1.00	1.00
Curve Number:	60.00	60.00	59.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.05	12.08	12.60
Flow Max (cfs):	26.65	86.00	35.61
Runoff Volume (in):	4.50	4.50	4.37
Runoff Volume (cf):	132259	440699	375917

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US 27 / I-4 INTERCHANGE IMPROVEMENTS
C-SYSTEM PONDS
25-YEAR 24-HOUR PEAK STAGE RESULTS

********** Node Maximum Conditions - 25Y24H1 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C-1	BASE	23.99	172.34	0.00	0.0048	58877.18	12.08	14.90	23.99	0.40
C-2	BASE	24.00	147.92	0.00	0.0050	158330.62	12.08	48.12	17.09	2.86
C-3	BASE	24.00	147.91	0.00	0.0029	279595.29	12.58	20.78	0.00	0.00

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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US 27 / I-4 INTERCHANGE IMPROVEMENTS
C-SYSTEM PONDS
100-YEAR 24-HOUR PEAK STAGE RESULTS

********** Node Maximum Conditions - 100Y24H1 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
C-1	BASE	16.38	172.68	0.00	0.0047	60980.04	12.08	26.35	16.38	1.45
C-2	BASE	24.00	148.70	0.00	0.0050	161853.59	12.08	85.41	15.41	7.21
C-3	BASE	24.00	148.68	0.00	0.0030	291693.02	12.58	39.80	24.00	2.55

ORIGINAL

ERP # 44011896.024

BASIN E

CALCULATIONS

BASIN E

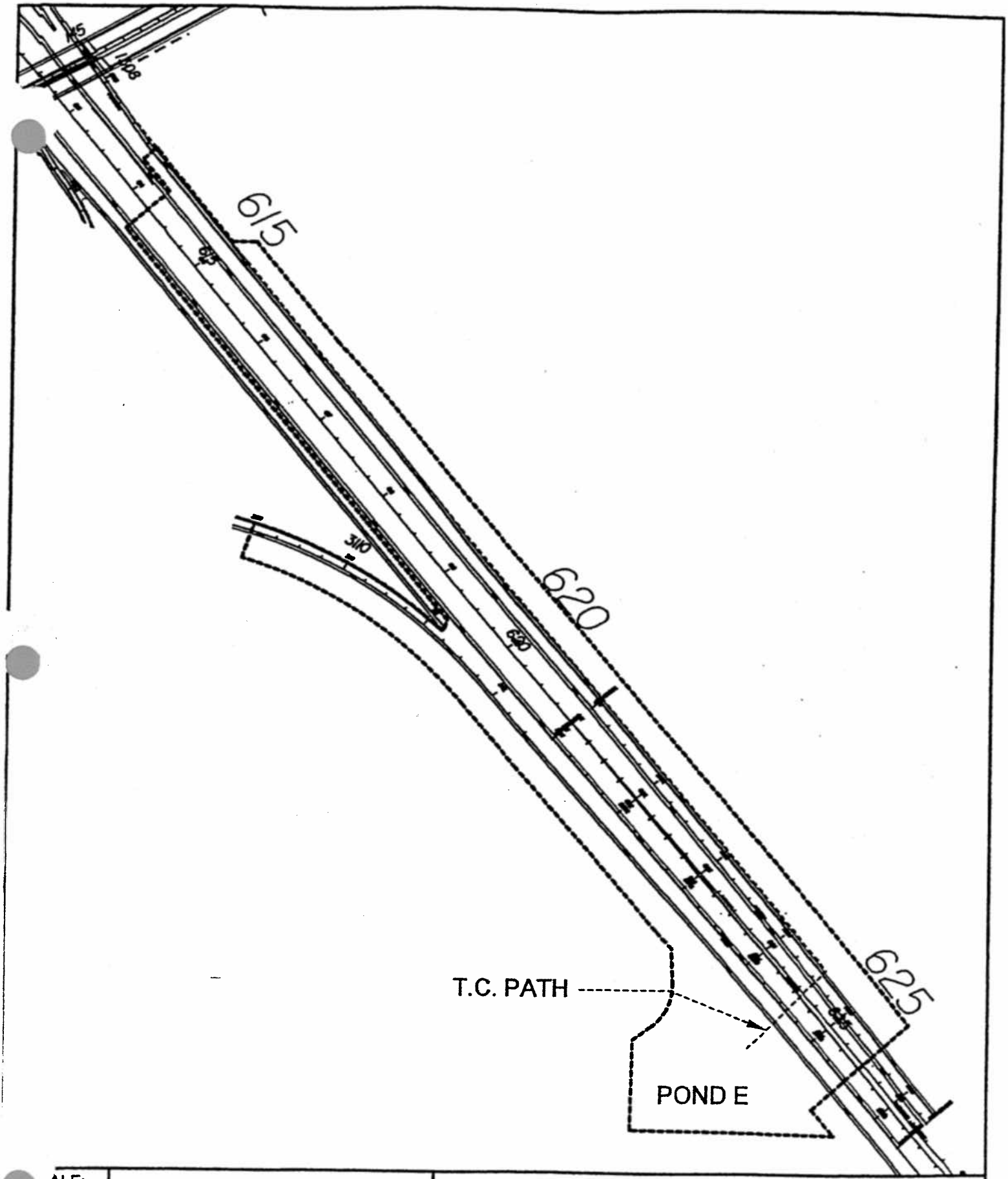
Basin E consists of approximately 15.7 ha (38.81 ac) of roadway pavement and open areas associated with the proposed roadway right-of-way. The basin begins at the I-4 corridor Station 614+25 and extends east to Station 625+60. Longitudinal grades varying from 0.3% to 2.0% exhibit an existing west to east flow pattern within the roadway corridor. Basin E has a positive outfall to Horse Creek via a system of roadside and median ditches. Horse Creek is part of the Kissimmee River basin.

The stormwater management system for Basin E consists of a dry, online detention pond discharging to the existing positive outfall via the I-4 swale system. Pond E is the proposed detention pond for Basin E. The stormwater management system is designed for the ultimate widening of I-4 (see Section 1, Figure 3.1). Pond E will store the required water quality, and attenuate the post discharge to the pre discharge level for the 25-year, 24-hour storm. The required water quality used for Basin E is one inch of runoff from the directly connected impervious area. Percolation will be used for recovery of the water quality volume. Recovery of the water quality volume was done using the program MODRET. Groundwater data for MODRET was based on information from the geotechnical consultant.

Basin E is not in the 100-year flood zone (see FEMA map, FIGURE 2.3).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin E was routed using a 25-year, 24-hour storm, with a rainfall depth of 0.18 meters (7.0 inches) obtained from the SWFWMD rainfall map. Tailwater elevations were based on field conditions, engineering judgement, and an analysis of the I-4 swale. Results illustrate that the post development flows are less than the pre development flows. A minimum of 0.30 meters (1.0 foot) freeboard is provided in Pond E. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. Results from the analysis can be found in Section 13. The results show that Pond E meets the 14-86 criteria of the FDOT.



SCALE:
1:5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

Florida

BASIN E DRAINAGE AREAS

6-2 **E-930**

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/12/00
Location: POLK COUNTY, Pond E Checked: CLC Date: 10/13/00

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			29.78	1161.42
	Impervious area-roadway	98			5.43	532.14
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.				Totals =	38.81	1833.96

CN (weighted) = total product/total area = $\frac{1833.96}{38.81}$ = 47.25 Use CN: 47

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.2	1.2	1.4

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/12/00
Location: POLK COUNTY, Pond E Checked: CLC Date: 10/13/00

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN (Table 2-2)	CN (Fig 2-3)	CN (Fig 2-4)	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			11.05	430.95
	Impervious area-roadway	98			24.16	2367.68
	Pastures, grassland, range-good Pond area	39			3.60	140.40
						0.00
						0.00
						0.00
						0.00
Use only one CN source per line.				Totals =	38.81	2939.03

CN (weighted) = total product/total area = $\frac{2939.03}{38.81}$ = 75.73 Use CN: 76

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	1.7	3.8	4.2
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: NRS Date: 3/30/00
Location: POLK COUNTY Checked: CLC Date: 3/31/00

Shade One: [redacted] Developed Pond E+D51

Shade One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) Segment ID

1. Surface Description (table 3-1.)
2. Manning's roughness coeff., n (table3-1.)
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...hr

	+		=	0.00

Shallow concentrated flow Segment ID

7. Surface Description (paved or unpaved)
8. Flow length, L ft
9. Watercourse slope, s ft/ft
10. Average velocity, V (figure 3-1) ft/s
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr

		0.00		
	+		=	0.00

Channel flow Segment ID

12. Cross sectional flow area, a ft^2
13. Wetted perimeter, P_w ft/ft
14. Hydraulic radius, $r = a/P_w$ Compute r ..... ft
15. Channel slope, s ft/ft
16. Manning's roughness coeff., n
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ ..... Compute V..... ft/s
18. Flow length, L ft
19. $T_t = L / 3600\ V$ Compute T ..... hr
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr

2.00				
4000				
0.56	+		=	0.56
				0.56

NOTE: Assume 2 fps flow in existing ditch
For Developed time of concentration, see storm sewer calculations. 33 minutes

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 10/13/2000

Pond Volume

			Runoff (inches)	Retention Volume (Acre-ft)
Basin	E			
Pond	E			
Basin Area	38.81	Acres		
DCIA*	24.16	Acres	1.00	2.01
Required Storage	2.01	Acre-ft		
Retention Stage	124.0	ft		
½ Required Storage	1.01	Acre-ft		
½ Required Stage	123.3	ft		

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
122.70	1.60	-	-	-	0.00
123.69	1.71	1.65	0.98	1.63	1.63
124.67	1.82	1.76	0.98	1.73	3.36
126.97	2.08	1.95	2.30	4.47	7.84
127.95	2.68	2.38	0.98	2.34	10.18

(*) - Calculation of treatment volume using Directly Connected Imperviou
Area (DCIA) is applicable only to existing public roadway pro

GTC Engineering Corporation

Project: I-4/U.S. 27
Pond: Pond E
Date: 3/31/00

Calc. By: NRS
Checked By: CLC

From Williams Earth Sciences geotechnical report

Saturated Hydraulic Conductivity, k

Horizontal =	4.50E-03 cm/sec =	12.76 ft/day
Ground Elevation =	38.7 m =	127.0 ft
Groundwater Depth =	2.0 m =	6.6 ft
Groundwater Elevation =	36.7 m =	120.5 ft

MODRET INPUT DATA

Project/Pond Name	Pond E
Runoff Data, Hydrograph (H) or Manual (M)	M
Unsaturated Analysis Included?	Y
Is there overflow?	N
Design High Water Elevation (DHW)	124.00 ft
Pond Bottom Area	69765 sq ft
Pond Volume Between Bottom & DHW	87556 cu ft
Pond Length to Width Ratio	2.0
Elevation of Effective Aquifer Base	95.0 ft
Elevation of Seasonal High Groundwater Table	120.5 ft
Elevation of Pond Bottom	122.7 ft
Effective Storage Coefficient of Soil for Unsaturated	0.3
Unsaturated Vertical Hydraulic Conductivity	8.50 ft/day (*)
Factor of Safety	2
Saturated Horizontal Hydraulic Conductivity	12.76 ft/day
Effective Storage Coefficient of Soil for Saturated	0.3
Average Effective Storage Coefficient of Pond	1.0

**** - estimated @2/3 of saturated hydraulic conductivity***

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : I4/US 27 - POND E
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	69765.00 ft²
Pond Volume between Bottom & DHWL	87556.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	95.00 ft
Elevation of Seasonal High Groundwater Table	120.50 ft
Elevation of Pond Bottom	122.70 ft
Design High Water Level Elevation	124.00
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	8.50 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	12.76 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	200.00
Elevation of water level	0.00	0.00	0.00	118.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: I4/US 27 - POND E

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	3.73	46044.90
1	1.51	41510.70
2	3.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND E

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	120.500	0.000 *		
			0.00	
0.00	120.500	3.95341		
			2.56700	0.00
5.24	123.281	1.18060		
			0.38641	0.00
8.24	123.219	0.36352		
			0.31773	0.00
14.24	123.118	0.28959		
			0.23332	0.00
26.24	122.968	0.20671		
			0.18010	0.00
38.24	122.852	0.16273		
			0.14537	0.00
50.24	122.759	0.13349		
			0.12161	0.00
62.24	122.681	0.11315		
			0.10469	0.00
74.24	122.614	0.09776		
			0.08390	0.00
98.24	122.506	0.07706		
			0.07023	0.00
122.24	122.416	0.06538		
			0.06054	0.00
146.24	122.339			

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

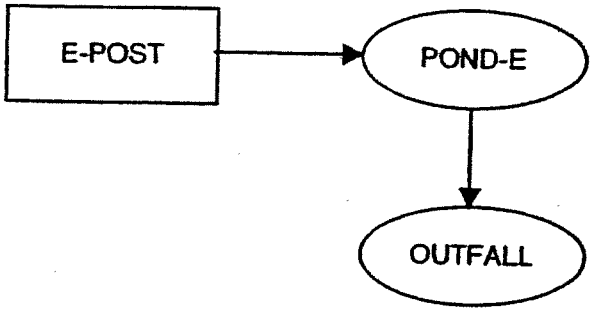
Pond Name / No.: I4/US 27 - POND E

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)

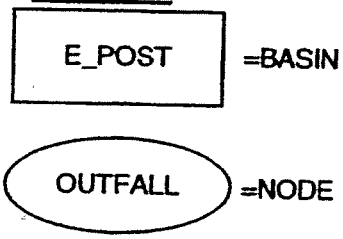
Max. WL : 123.281 @ 5.24 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

6-11 **E-939**

NODAL DIAGRAM - BASIN E
PROPOSED CONDITIONS



LEGEND



ICPR OUTPUT

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, POND E
INPUT REPORT
10/13/00

********** Input Report **********
--------Class: Node----------
Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 121.39
Group: BASE Warn Stage(ft): 121.75
Comment:

Time(hrs)	Stage(ft)
0	121.39
9	121.39
12	121.75
24	121.39
120	121.39

--------Class: Node----------
Name: POND-E Base Flow(cfs): 0 Init Stage(ft): 123.25
Group: BASE Warn Stage(ft): 126.97
Comment:

Stage(ft)	Area(ac)
122.7	1.6
123.69	1.71
124.67	1.82
126.97	2.08
127.95	2.68

--------Class: Basin----------
Basin: E_POST Node: POND-E Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH323 Peak Factor: 323
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7
Area(ac): 38.81 Concentration Time(min): 66
Curve #: 76 Time Shift(hrs): 0
DCIA(%): 0

PROPOSED CONDITIONS

--------Class: Basin----------
Basin: E_PRE Node: ZZZ Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH323 Peak Factor: 323
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7
Area(ac): 38.81 Concentration Time(min): 33
Curve #: 47 Time Shift(hrs): 0
DCIA(%): 0

EXISTING CONDITIONS

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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I-4/US 27 INTERCHANGE, POND E
INPUT REPORT
10/13/00

********** Input Report **********

--------Class: Drop Structure----------

Name: E-OUT	From Node: POND-E	Length(ft): 113	
Group: BASE	To Node: OUTFALL	Count: 1	

Outlet Cntrl Spec: Use dc or tw — Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular — Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	36	36
Rise(in):	36	36
Invert(ft):	121.7	121.39
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 — Flow: Both
Exit Loss Coef: 0.5 — Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

*** Weir 1 of 2 for Drop Structure E-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	16.8	Invert(ft):	124
Rise(in):	30.96	Control Elev(ft):	124

*** Weir 2 of 2 for Drop Structure E-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	49	Invert(ft):	126.58
Rise(in):	37	Control Elev(ft):	126.58

```
     Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
     Copyright 1995, Streamline Technologies, Inc.

     I-4/US 27 INTERCHANGE, POND E
     INPUT REPORT
     10/13/00

     ********** Input Report ************************************************************
     --------Class: Simulation-----------------------------------------------------------
  H:\JOBS1\FLD5\ICPR\PONDE\FLD5E25
  Execution: Both
     Header: I-4/US 27 INTERCHANGE
             25 YEAR/24 HOUR STORM, POND E
             $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
         Max Delta Z (ft): 1
           Delta Z Factor: 0.01          Override Defaults: No
      Time Step Optimizer: 10
Drop Structure Optimizer: 10
      Sim Start Time(hrs): 0
        Sim End Time(hrs): 24
       Min Calc Time(sec): 10
       Max Calc Time(sec): 30
         To Hour:   PInc(min):                To Hour:   PInc(min):
         10         60                        24         5
         14         15
         75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE      [10/13/00]
     --------Class: Simulation-----------------------------------------------------------
  H:\JOBS1\FLD5\ICPR\PONDE\FLD5E50
  Execution: Both
     Header: I-4/US 27 INTERCHANGE
             50 YEAR/24 HOUR STORM, POND E
             $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
         Max Delta Z (ft): 1
           Delta Z Factor: 0.01          Override Defaults: Yes
      Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10              Rain Amount(in): 8
      Sim Start Time(hrs): 0                 Rainfall File: FLMOD
        Sim End Time(hrs): 24
       Min Calc Time(sec): 10
       Max Calc Time(sec): 30
         To Hour:   PInc(min):                To Hour:   PInc(min):
         10         60                        24         5
         14         15
         75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE      [10/13/00]
```

```
     Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
     Copyright 1995, Streamline Technologies, Inc.

     I-4/US 27 INTERCHANGE, POND E
     INPUT REPORT
     10/13/00

     ********** Input Report ************************************************************
     --------Class: Simulation-----------------------------------------------------------
  H:\JOBS1\FLD5\ICPR\PONDE\FLD5E10
  Execution: Both
     Header: I-4/US 27 INTERCHANGE
             10 YEAR/24 HOUR STORM, POND E
             $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 6.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE      [10/13/00]
     --------Class: Simulation-----------------------------------------------------------
  H:\JOBS1\FLD5\ICPR\PONDE\FLD5E100
  Execution: Both
     Header: I-4/US 27 INTERCHANGE
             100 YEAR/24 HOUR STORM, POND E
             $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 10
      Max Calc Time(sec): 30
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE      [10/13/00]
```

I-4/US 27 INTERCHANGE
25 YEAR/24 HOUR STORM, POND E
12/11/00

********** Basin Summary - FLD5E25 **********

***

Basin Name:	E_PRE	E_POST
Group Name:	BASE	BASE
Node Name:	ZZZ	POND-E
Hydrograph Type:	UH	UH
Unit Hydrograph:	UH323	UH323
Peaking Factor:	323.00	323.00
Spec Time Inc (min):	4.40	8.80
Comp Time Inc (min):	4.40	8.80
Rainfall File:	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00
Storm Duration (hr):	24.00	24.00
Status:	ONSITE	ONSITE
Time of Conc. (min):	33.00	66.00
Lag Time (hr):	0.00	0.00
Area (acres):	38.81	38.81
Vol of Unit Hyd (in):	1.00	1.00
Curve Number:	47.00	76.00
DCIA (%):	0.00	0.00
Time Max (hrs):	12.39	12.61
Flow Max (cfs):	20.04	51.32
Runoff Volume (in):	1.41	4.25
Runoff Volume (cf):	197939	599211

I-4/US 27 INTERCHANGE
25 YEAR/24 HOUR STORM, POND E
12/12/00

********** Node Time Series by Node - FLD5E25 **********

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow Base Q (cfs)	Inflow Onsite (cfs)	Inflow Offsite (cfs)	Inflow Bndry Q (cfs)	Inflow Link Q (cfs)	Link Outflow (cfs)	Cumulative Volume In (ac.ft)	Cumulative Volume Out (ac.ft)
*** Group: BASE		Node: POND-E								
0.000	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
1.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
2.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
3.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
4.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
5.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
6.004	123.25	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
7.004	123.25	1.66	0.00	0.08	0.00	0.00	0.00	0.00	0.0033	0.0000
8.004	123.26	1.66	0.00	0.45	0.00	0.00	0.00	0.00	0.0251	0.0000
9.004	123.30	1.67	0.00	1.09	0.00	0.00	0.00	0.00	0.0885	0.0000
10.004	123.38	1.68	0.00	2.11	0.00	0.00	0.00	0.00	0.2205	0.0000
11.004	123.52	1.69	0.00	4.15	0.00	0.00	0.00	0.00	0.4790	0.0000
11.254	123.58	1.70	0.00	4.95	0.00	0.00	0.00	0.00	0.5730	0.0000
11.504	123.65	1.71	0.00	6.23	0.00	0.00	0.00	0.00	0.6885	0.0000
11.754	123.74	1.72	0.00	10.00	0.00	0.00	0.00	0.00	0.8562	0.0000
12.004	123.92	1.74	0.00	20.80	0.00	0.00	0.00	0.00	1.1744	0.0000
12.254	124.25	1.77	0.00	37.25	0.00	0.00	0.00	0.58	1.7733	0.0059
12.501	124.74	1.83	0.00	49.41	0.00	0.00	0.00	2.84	2.6595	0.0409
12.753	125.26	1.89	0.00	50.54	0.00	0.00	0.00	6.30	3.6992	0.1360
13.000	125.68	1.93	0.00	45.01	0.00	0.00	0.00	9.78	4.6762	0.3005
13.250	126.00	1.97	0.00	38.42	0.00	0.00	0.00	12.71	5.5367	0.5324
13.505	126.23	2.00	0.00	32.68	0.00	0.00	0.00	14.95	6.2849	0.8234
13.756	126.39	2.01	0.00	28.46	0.00	0.00	0.00	16.51	6.9208	1.1505
14.006	126.48	2.03	0.00	25.18	0.00	0.00	0.00	17.55	7.4750	1.5023
14.256	126.54	2.03	0.00	22.26	0.00	0.00	0.00	18.18	7.9650	1.8714
15.256	126.53	2.03	0.00	14.40	0.00	0.00	0.00	18.01	9.4800	3.3669
16.256	126.32	2.01	0.00	9.69	0.00	0.00	0.00	15.81	10.4756	4.7645
17.256	126.05	1.98	0.00	6.53	0.00	0.00	0.00	13.13	11.1457	5.9605
18.256	125.80	1.95	0.00	5.37	0.00	0.00	0.00	10.78	11.6372	6.9484
19.256	125.59	1.92	0.00	4.68	0.00	0.00	0.00	8.98	12.0523	7.7647
20.256	125.43	1.91	0.00	4.26	0.00	0.00	0.00	7.62	12.4215	8.4508
21.256	125.29	1.89	0.00	3.73	0.00	0.00	0.00	6.56	12.7515	9.0371
22.256	125.18	1.88	0.00	3.52	0.00	0.00	0.00	5.74	13.0510	9.5454
23.256	125.09	1.87	0.00	3.29	0.00	0.00	0.00	5.11	13.3323	9.9937
24.002	125.03	1.86	0.00	3.00	0.00	0.00	0.00	4.71	13.5262	10.2965

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I-4/US 27 INTERCHANGE
10 YEAR/24 HOUR STORM, POND E
12/12/00

********** Node Maximum Conditions - FLD5E10 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	121.75	121.75	0.0010	0.00	14.80	15.85	0.00	0.00
POND-E	BASE	14.80	126.32	126.97	0.0100	87414.63	12.67	45.67	14.80	15.85

9-29

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE
25 YEAR/24 HOUR STORM, POND E
12/12/00

********** Node Maximum Conditions - FLD5E25 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	121.75	121.75	0.0010	0.00	14.66	18.52	0.00	0.00
POND-E	BASE	14.66	126.58	126.97	0.0100	88663.34	12.67	51.03	14.66	18.52

I-4/US 27 INTERCHANGE
50 YEAR/24 HOUR STORM, POND E
12/12/00

********** Node Maximum Conditions - FLD5E50 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	121.75	121.75	0.0010	0.00	14.05	29.53	0.00	0.00
POND-E	BASE	14.05	126.90	126.97	0.0100	90246.14	12.67	61.90	14.05	29.53

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I-4/US 27 INTERCHANGE
100 YEAR/24 HOUR STORM, POND E
12/12/00

********** Node Maximum Conditions - FLD5E100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
OUTFALL	BASE	12.00	121.75	121.75	0.0010	0.00	13.60	46.50	0.00	0.00
POND-E	BASE	13.60	127.25	126.97	0.0100	98046.56	12.66	78.38	13.60	46.50

6-23E-951

Basin D

Appendix A-5

BASIN D

BASIN D

Basin D consists of approximately 41.02 acres of roadway pavement, commercial frontage, open areas and active citrus groves associated with the proposed roadway right-of-way of U.S. 27. The basin limits along U.S. 27 begin at **Station 416+00** and continue north to **about Station 455+40**. Typically, the flow pattern is from north to south flow along the present U.S. 27 roadside and median ditches. Stormwater runoff is presently conveyed into several dry depressional areas via a system of roadside ditches and culverts. These offsite depressional areas are located along the southbound lanes of U.S. 27 just south of Pond D, and are a closed basin. Therefore, the Basin D pond was designed to retain the runoff from the l00-year, 24-hour storm.

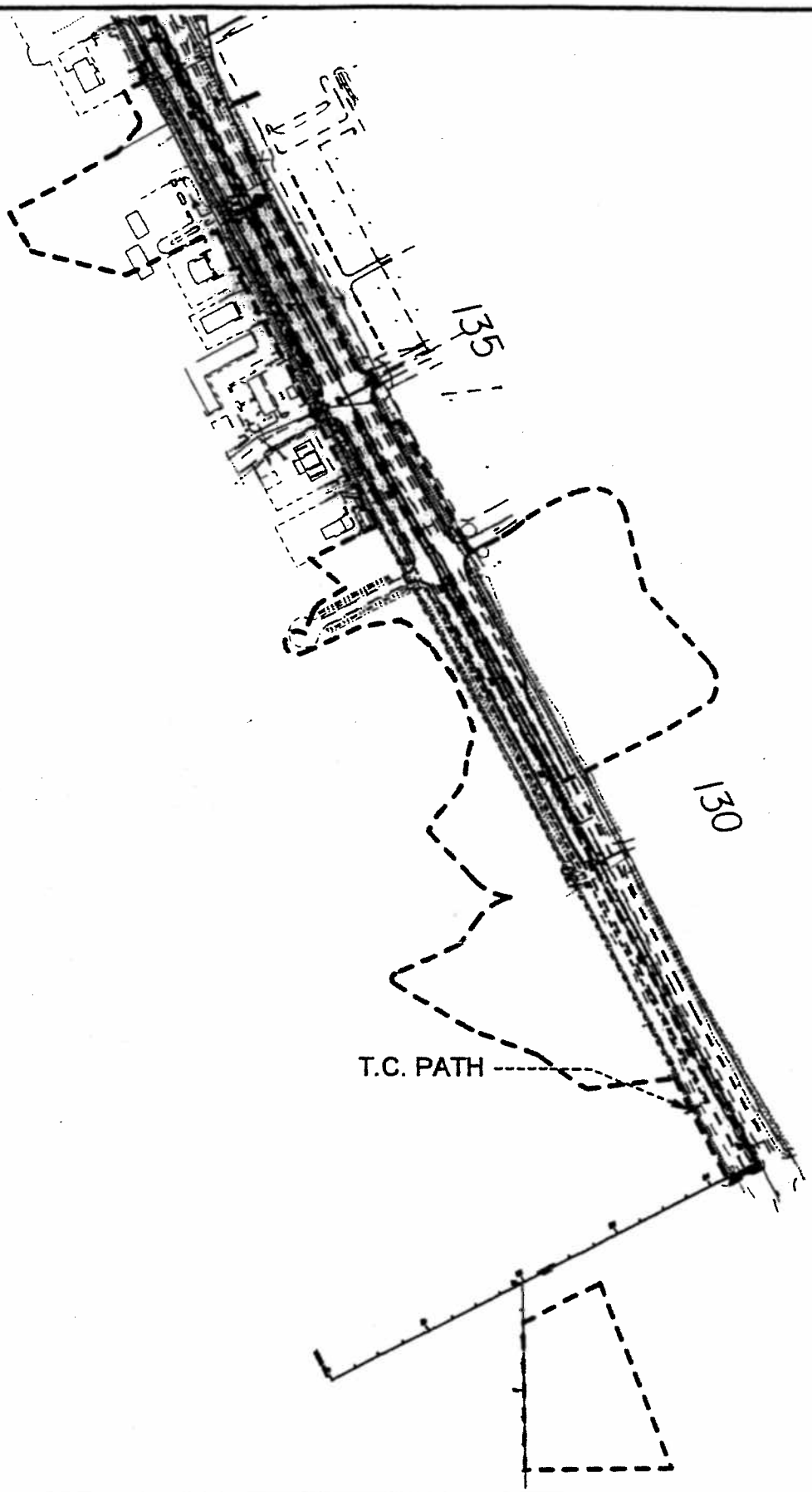
The stormwater management system for Basin D consists of a dry retention pond that retains the runoff from the 100-year, 24-hour storm. Pond D is the proposed retention pond for Basin D, Pond D will also store the required water quality. The required water quality used for Basin D is one inch of runoff from the directly connected impervious area. Groundwater recovery of the water quality volume was done using the program MODRET. Groundwater data for MODRET was based on information from the **original** geotechnical consultant.

Basin D is not in the 100-year flood zone (see FEMA map, Figure 4).

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies, Inc. to route the storms. Basin D was routed using a 100-year, 24-hour storm, with a rainfall depth of 9.5 inches obtained from the SWFWMD rainfall map. Results are summarized in the Basin Summary Table **(Appendix A-1),** and illustrate that post development flows are contained within Pond D for the 100-year, 24-hour storm. A minimum of 1.0 foot of freeboard is provided in Pond D. The AdICPR results can be found in this section.

A critical duration analysis was done using the program SUPRA by Kato Dee. The results from the analysis can be found in this section. The results show that Pond D meets the 14-86 criteria of the FDOT.

Since the originally permitted design has been reviewed and has been found to still be viable, the original HDR Pond D calculations are provided herein to support the currently proposed design. Only minor modifications have been made to the original Pond D drainage collection system due to the modification of the PGL along US 27. (Note that the current design relies upon the existing US 27 PGL, whereas the original HDR design had developed a slightly different PGL – however the original drainage areas have not been significantly impacted by the PGL revision.) The modifications to the drainage collection system include stormsewer and cross drain invert and grate elevation revisions, as well as ditch flowline elevation revisions.



SCALE:
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N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

Florida

BASIN D DRAINAGE AREAS

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/19/00
Location: POLK COUNTY, Pond D Checked: CLC Date: 10/20/00

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			22.75	887.25
	Impervious area-roadway	98			6.16	603.68
	Pastures, grassland, range-good Pond area	39			4.24	165.36
						0.00
						0.00
						0.00
						0.00
						0.00
	Use only one CN source per line.			Totals =	33.15	1656.29

CN (weighted) = total product/total area = $\frac{1656.29}{33.15}$ = 49.96 Use CN = 50

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.3	1.4	1.7

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 04/05/01
Location: POLK COUNTY, Pond D Checked: CLC Date: 04/05/01

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN ↙ Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			29.87	1164.93
	Impervious area-roadway	98			6.91	677.18
	Pastures, grassland, range-good Pond area	39			4.24	165.36
						0.00
						0.00
						0.00
						0.00
						0.00
↙ Use only one CN source per line.					Totals =	41.02 2007.47

CN (weighted) = total product/total area = $\frac{2007.47}{41.02}$ = 48.94 Use CN = 49

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.3	1.3	1.6

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 By: NRS Date: 10/19/00
Location: POLK COUNTY, Pond D Checked: CLC Date: 10/20/00
(Used to determine 100-yr. runoff volume/stage)
Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi^2 / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			29.87	1164.93
	Impervious area-roadway	98			6.91	677.18
	Pastures, grassland, range-good Pond area	39			4.24	165.36
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.				Totals =	41.02	2007.47

CN (weighted) = total product/total area = $\frac{2007.47}{41.02}$ = 48.94 ; Use CN = 49

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	100		
Rainfall, P (24hr) .....in	9.5		
Runoff, Q .....in	3.1		
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)	10.53 AC-FT		

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: Date:

Circle One: [redacted] Developed **Pond D**

Circle One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only)	Segment ID			
1. Surface Description (table 3-1.)				
2. Manning's roughness coeff., n (table3-1.)				
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...hr		+		= 0.00

Shallow concentrated flow	Segment ID			
7. Surface Description (paved or unpaved)				
8. Flow length, L ft				
9. Watercourse slope, s ft/ft				
10. Average velocity, V (figure 3-1) ft/s			0.00	
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr		+		= 0.00

Channel flow	Segment ID			
12. Cross sectional flow area, a ft^2				
13. Wetted perimeter, P_w ft/ft				
14. Hydraulic radius, $r = a/P_w$ Compute r ..... ft				
15. Channel slope, s ft/ft				
16. Manning's roughness coeff., n				
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ ..... Compute V..... ft/s		2.00		
18. Flow length, L ft		3550		
19. $T_t = L / 3600\ V$ Compute T ..... hr		0.49	+	= 0.49
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr				0.49

NOTE: Assume 2 fps flow in existing ditch
For Developed time of concentration, see storm sewer calculations. 30 minutes

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Retention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 10/19/2000

Pond Volume

Basin	D			Retention
Pond	D		Runoff	Volume
Basin Area	41.02	Acres	(inches)	(Acre-ft)
DCIA*	6.91	Acres	1.00	0.58
Required Storage	0.58	Acre-ft		
Retention Stage	159.7	ft		
½ Required Storage	0.29	Acre-ft		
½ Required Stage	159.6	ft		

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
159.45	1.64	-	-	-	0.00
164.04	2.16	1.90	4.59	8.72	0.00
167.32	2.55	2.35	3.28	7.72	7.72
169.62	2.84	2.70	2.30	6.19	13.92
170.60	3.51	3.18	0.98	3.13	17.04

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

GTC Engineering Corporation

Project:	I-4/U.S. 27	Calc. By:	NRS
Pond:	Pond D	Checked By:	CLC
Date:	04/05/2001		

From Williams Earth Sciences geotechnical report

Saturated Hydraulic Conductivity, k

Horizontal =	1.35E-02 cm/sec =	38.3	ft/day
Ground Elevation =	51.1 m =	167.5	ft
Groundwater Depth =	7.6 m =	25.0	ft
Groundwater Elevation =	43.5 m =	142.5	ft

Project/Pond Name	Pond D	
Runoff Data, Hydrograph (H) or Manual (M)	M	
Unsaturated Analysis Included?	Y	
Is there overflow?	N	
Design High Water Elevation (DHW)	159.70	ft
Pond Bottom Area	71518	sq ft
Pond Volume Between Bottom & DHW	25265	cu ft
Pond Length to Width Ratio	2.0	
Elevation of Effective Aquifer Base	135.0	ft
Elevation of Seasonal High Groundwater Table	142.5	ft
Elevation of Pond Bottom	159.45	ft
Effective Storage Coefficient of Soil for Unsaturated	0.3	
Unsaturated Vertical Hydraulic Conductivity	25.51	ft/day (*)
Factor of Safety	2	
Saturated Horizontal Hydraulic Conductivity	38.3	ft/day
Effective Storage Coefficient of Soil for Saturated	0.3	
Average Effective Storage Coefficient of Pond	1.0	

**** - estimated @2/3 of saturated hydraulic conductivity***

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : I4/US 27 - POND D
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	71518.00 ft²
Pond Volume between Bottom & DHWL	25265.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	135.00 ft
Elevation of Seasonal High Groundwater Table	142.50 ft
Elevation of Pond Bottom	159.45 ft
Design High Water Level Elevation	159.70
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	25.51 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	38.30 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	0.00	0.00
Elevation of water level	0.00	0.00	0.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: I4/US 27 - POND D

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	9.57	363669.03
1	1.00	0.00
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND D

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	142.500	0.000 *		
			0.00	
0.00	142.500	14.66535		
			9.79503	0.00
10.57	159.361	4.92470		
			2.62042	0.00
15.57	158.894	2.59464		
			2.56370	0.00
21.57	158.346	2.42920		
			2.16022	0.00
33.57	157.423	1.94337		
			1.72653	0.00
45.57	156.685	1.55964		
			1.39274	0.00
57.57	156.090	1.27369		
			1.15464	0.00
69.57	155.596	1.06926		
			0.98389	0.00
81.57	155.175	0.91501		
			0.77724	0.00
105.57	154.511	0.70908		
			0.64093	0.00
129.57	153.963	0.59286		
			0.54478	0.00
153.57	153.497			

MODRET

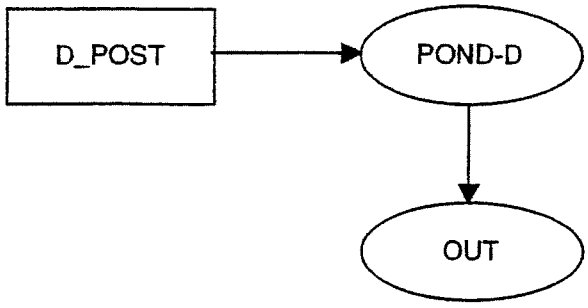
SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND D

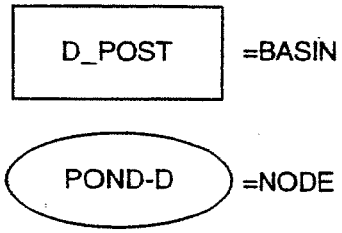
CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)

Max. WL : 159.361 @ 10.57 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

NODAL DIAGRAM - BASIN D
PROPOSED CONDITIONS



LEGEND



ICPR OUTPUT

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4/US 27 INTERCHANGE, POND D
INPUT REPORT
04/05/01

********** Input Report **********

--------Class: Node--------

Name: OUT	Base Flow(cfs): 0	Init Stage(ft): 0
Group: BASE		Warn Stage(ft): 0

Comment:

Time(hrs)	Stage(ft)
0	0
120	0

--------Class: Node--------

Name: POND-D	Base Flow(cfs): 0	Init Stage(ft): 159.45
Group: BASE		Warn Stage(ft): 169.6

Comment:

Stage(ft)	Area(ac)
159.45	1.64
164.04	2.16
167.32	2.55
169.62	2.84
170.6	3.51

--------Class: Basin--------

Basin: D_POST Node: POND-D Status: On Site Type: Santa Barbara
Group: BASE

Rainfall File: FLMOD		Storm Duration(hrs): 24
Rainfall Amount(in): 7		Time Increment(min): 5
Area(ac): 41.02		
Curve #: 49	Concentration Time(min): 59	
DCIA(%): 0	Time Shift(hrs): 0	

ULTIMATE CONDITIONS

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
Copyright 1995, Streamline Technologies, Inc.

I-4/US 27 INTERCHANGE, POND D
INPUT REPORT
04/05/01

********** Input Report ************************************************************
--------Class: Weir-----------------------------------------------------------------
    Name: OUT                From Node: POND-D
   Group: BASE                 To Node: OUT
   Count: 1

 Type: Mavis    Flow: Both       Geometry: Circular


              Span(in): 0.01
              Rise(in): 0.01
            Invert(ft): 999
      Control Elev(ft): 999
                                      TABLE
       Bottom Clip(in): 0
          Top Clip(in): 0
  Weir Discharge Coef: 3.2
Orifice Discharge Coef: 0.6


   --------Class: Simulation-----------------------------------------------------------
H:\JOBS1\FLD5\ICPR\PONDD\SIM\FLD5_25
Execution: Both
   Header: I-4/US 27 INTERCHANGE
           25 YEAR/24 HOUR STORM
           $$DATE$$, $$TIME$$
---------HYDRAULICS-------------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 120
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         15                        24         5
        14         5
        75         15
---------GROUP SELECTIONS-------------------------------------------------------
+ BASE      [04/05/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, POND D
    INPUT REPORT
    04/05/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDD\SIM\FLD5_50
 Execution: Both
    Header: I-4/US 27 INTERCHANGE
            50 YEAR/24 HOUR STORM
            $$DATE$$, $$TIME$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 8
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 120
        To Hour:   PInc(min):               To Hour:   PInc(min):
        10         15                       24         5
        14         5
        30         15
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [04/05/01]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDD\SIM\FLD5_10
 Execution: Both
    Header: I-4/US 27 INTERCHANGE
            10 YEAR/24 HOUR STORM
            $$DATE$$, $$TIME$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 6.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 120
        To Hour:   PInc(min):               To Hour:   PInc(min):
        10         15                       24         5
        14         5
        75         15
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [04/05/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, POND D
    INPUT REPORT
    04/05/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDD\SIM\FLD5_100
 Execution: Both
    Header: I-4/US 27 INTERCHANGE
            100 YEAR/24 HOUR STORM
            $$DATE$$, $$TIME$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 72
      Min Calc Time(sec): 1
      Max Calc Time(sec): 120
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         15                        24         5
        14         5
        75         15
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [04/05/01]
```

I-4/US 27 INTERCHANGE
25 YEAR/24 HOUR STORM
04/05/01, 4:33 pm

********** Basin Summary - FLD5_25 **********

***

Basin Name:	D_POST
Group Name:	BASE
Node Name:	POND-D
Hydrograph Type:	SB
Spec Time Inc (min):	5.00
Comp Time Inc (min):	5.00
Rainfall File:	FLMOD
Rainfall Amount (in):	7.00
Storm Duration (hr):	24.00
Status:	ONSITE
Time of Conc. (min):	59.00
Lag Time (hr):	0.00
Area (acres):	41.02
Curve Number:	49.00
DCIA (%):	0.00
Time Max (hrs):	12.25
Flow Max (cfs):	17.30
Runoff Volume (in):	1.58
Runoff Volume (cf):	234550

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE
10 YEAR/24 HOUR STORM
04/05/01, 4:34 pm

********** Node Maximum Conditions - FLD5_10 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND-D	BASE	24.03	161.91	169.60	0.0099	83582.52	12.26	13.77	0.00	0.00

5-29-03

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE
25 YEAR/24 HOUR STORM
04/05/01, 4:34 pm

********** Node Maximum Conditions - FLD5_25 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND-D	BASE	24.02	162.36	169.60	0.0099	85804.63	12.26	17.29	0.00	0.00

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
Copyright 1995, Streamline Technologies, Inc.

I-4/US 27 INTERCHANGE
50 YEAR/24 HOUR STORM
04/05/01, 4:34 pm

********** Node Maximum Conditions - FLD5_50 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND-D	BASE	23.99	163.30	169.60	0.0100	90441.29	12.25	25.10	0.00	0.00

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE
100 YEAR/24 HOUR STORM
04/05/01, 4:35 pm

********** Node Maximum Conditions - FLD5_100 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND-D	BASE	24.00	164.76	169.60	0.0100	97837.57	12.25	38.29	0.00	0.00

FDOT CRITICAL DURATION ANALYSIS

POND D

14-18

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: CLC
Pond: Pond D Checked By:
Date: 04/05/2001

Inches of Rainfall for Specified Storm Events

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

$S = 1000/CN - 10$

$C = 1.0 - S\,[1.2 - S/(P + 0.8S)]/P$

where S = soil storage, inches
CN = curve number
P = total rainfall depth for a return period, inches
C = runoff coefficient for a return period

Pre CN	50	S =	10.0
Post CN	49	S =	10.41

Pre Runoff Coefficient

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.01	0.03	0.05	0.07	0.13	0.19	0.26	0.30
5 YR	0.03	0.06	0.09	0.13	0.20	0.26	0.34	0.39
10 YR	0.05	0.08	0.12	0.17	0.26	0.32	0.40	0.44
25 YR	0.08	0.12	0.16	0.21	0.30	0.39	0.44	0.49
50 YR	0.10	0.15	0.20	0.26	0.36	0.42	0.49	0.53
100 YR	0.12	0.17	0.22	0.28	**0.38**	0.47	0.53	**0.56**

Post Runoff Coefficient

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.01	0.02	0.04	0.06	0.12	0.18	0.25	0.29
5 YR	0.02	0.05	0.08	0.12	0.19	0.25	0.32	0.37
10 YR	0.04	0.07	0.11	0.16	0.24	0.31	0.39	0.43
25 YR	0.07	0.11	0.15	0.20	0.29	0.37	0.43	0.48
50 YR	0.09	0.14	0.19	0.24	0.34	0.40	0.48	0.52
100 YR	0.11	0.16	0.21	0.27	**0.36**	0.45	0.52	**0.55**

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 1-Hour	2-Hour	4-Hour	8-Hour	24-Hour
2-Year	Q-pre	47.87	47.87	47.87	47.87	47.87
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	160.64	160.63	160.68	160.57	160.16
5-Year	Q-pre	55.68	55.68	55.68	55.68	55.68
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	160.87	160.89	160.97	160.87	160.36
10-Year	Q-pre	62.36	62.36	62.36	62.36	62.36
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	161.03	161.07	161.19	161.11	160.54
25-Year	Q-pre	70.54	70.54	70.54	70.54	70.54
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	161.29	161.32	161.49	161.34	160.71
50-Year	Q-pre	77.98	77.98	77.98	77.98	77.98
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	161.49	161.56	161.75	161.61	160.89
100-Year	Q-pre	84.40	84.40	84.40	84.40	84.40
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	161.66	161.74	161.95	161.78	161.00

Critical Duration: **** 4-HOUR,100-YEAR STORM ****

Q-pre (cfs) = 84.40
Q-post (cfs) = .00
E-max (ft) = 161.95

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

Percolation rate (in/hr) = 19.10

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
159.45	1.640	.000	.00	.00	.00
170.60	3.510	25.755	67.60	.00	67.60

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

**** 4-HOUR,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 33.15
Runoff coefficient	= .380
Time of concentration (min.)	= 30.0
Rainfall intensity (in/hr)	= 6.70
Peak flow rate (cfs)	= 84.40

Post-development Condition:

Drainage area (acres)	= 41.02
Runoff coefficient	= .360
Rainfall zone number	= 8
Total rainfall depth (inches)	= 6.72

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	159.45	.00	.00	.00
.5	.080	7.94	159.52	.41	.41	.00
1.0	.200	19.85	159.75	1.80	1.80	.00
1.5	.360	35.72	160.19	4.47	4.47	.00
2.0	.520	51.60	160.85	8.50	8.50	.00
2.5	.420	41.68	161.50	12.43	12.43	.00
3.0	.280	27.79	161.88	14.72	14.72	.00
3.5	.100	9.92	161.95	15.15	15.15	.00
4.0	.000	.00	161.78	14.10	14.10	.00

Output Summary

Peak flow (cfs)	= .00
Peak stage (ft)	= 161.95
Peak Storage (ac-ft)	= 5.770
Time to peak (hrs)	= 3.5

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 3-Day	7-Day	10-Day
2-Year	Q-pre	47.87	47.87	47.87
	Q-post	0.00	0.00	0.00
	E-max	159.93	159.77	159.88
5-Year	Q-pre	55.68	55.68	55.68
	Q-post	0.00	0.00	0.00
	E-max	160.05	159.86	160.01
10-Year	Q-pre	62.36	62.36	62.36
	Q-post	0.00	0.00	0.00
	E-max	160.17	159.95	160.11
25-Year	Q-pre	70.54	70.54	70.54
	Q-post	0.00	0.00	0.00
	E-max	160.32	160.01	160.22
50-Year	Q-pre	77.98	77.98	77.98
	Q-post	0.00	0.00	0.00
	E-max	160.40	160.10	160.32
100-Year	Q-pre	84.40	84.40	84.40
	Q-post	0.00	0.00	0.00
	E-max	160.56	160.18	160.42

Critical Duration: **** 3-DAY,100-YEAR STORM ****

Q-pre (cfs) = 84.40
Q-post (cfs) = .00
E-max (ft) = 160.56

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

Percolation rate (in/hr) = 19.10

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
159.45	1.640	.000	.00	.00	.00
170.60	3.510	25.755	67.60	.00	67.60

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 4/5/01

License To: GTC Engineering corporation

I4/US 27, Pond D

**** 3-DAY,100-YEAR STORM ****

Pre-development Condition:
- Drainage area (acres) = 33.15
- Runoff coefficient = .380
- Time of concentration (min.) = 30.0
- Rainfall intensity (in/hr) = 6.70
- Peak flow rate (cfs) = 84.40

Post-development Condition:
- Drainage area (acres) = 41.02
- Runoff coefficient = .360
- Rainfall zone number = 8
- Total rainfall depth (inches) = 14.00

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	159.45	.00	.00	.00
4.0	.003	.62	159.48	.19	.19	.00
8.0	.009	1.86	159.59	.82	.82	.00
12.0	.028	5.79	159.89	2.64	2.64	.00
16.0	.016	3.31	160.08	3.79	3.79	.00
20.0	.006	1.24	159.92	2.87	2.87	.00
24.0	.003	.62	159.73	1.70	1.70	.00
28.0	.005	1.03	159.64	1.17	1.17	.00
32.0	.009	1.86	159.67	1.34	1.34	.00
36.0	.033	6.82	159.97	3.16	3.16	.00
40.0	.019	3.93	160.19	4.50	4.50	.00
44.0	.007	1.45	160.01	3.40	3.40	.00
48.0	.003	.62	159.77	1.97	1.97	.00
52.0	.007	1.45	159.68	1.40	1.40	.00
56.0	.014	2.89	159.76	1.87	1.87	.00
60.0	.050	10.34	160.23	4.74	4.74	.00
64.0	.028	5.79	160.56	6.75	6.75	.00
68.0	.010	2.07	160.28	5.04	5.04	.00
72.0	.000	.00	159.88	2.62	2.62	.00

Output Summary

- Peak flow (cfs) = .00
- Peak stage (ft) = 160.56
- Peak Storage (ac-ft) = 2.572
- Time to peak (hrs) = 64.0

Basin SW

Appendix A-6

BASIN SW

The existing Basin SW consists of two sub-basins that cover approximately 12.96 ac of roadway pavement, commercial frontage and open areas associated with the proposed roadway right-of-way. The basin begins west of the Fort Summit Camping Resort and extends east to U.S 27. The two sub-basins, Fort Summit West and Fort Summit East, flow to interconnected stormwater ponds (Pond 1 and Pond 2). Pond 1 flows to Pond 2, which discharges to the I-4 drainage system. There is another sub-basin (Days Inn) that flows through the area but does not intermingle with the SW system and is land-locked. The system drains the eastern portion of Basin SW via a system of roadside ditches, overland flow and culverts, with runoff discharging to an existing pond/depressional area at Station 204+10. This third sub-basin is part of a closed basin.

Pond SW will consist of a dry retention pond. The proposed roadway improvements lie totally within the existing Days Inn basin, but we are providing an emergency pop-off structure to the I-4 system along with tying to the Fort Summit drainage system. Since a portion of the basin 6.48 acres is part of a closed basin, the Pond SW overflow weir was set to retain the 100-year, 24-hour storm for the entire basin. The proposed overflow structure of Pond SW was only designed as an emergency overflow structure for our pond. The pipe leaving the structure connects to a manhole that the Pond 2 system is tying into. From there, the pipe drains to a gutter inlet in the I-4 system where the pre-development peak rate of the Pond 2 system is maintained.

Pond SW will also store the required water quality. The required water quality used for Pond SW is one inch of runoff from the directly connected impervious area. Groundwater recovery of the water quality volume was done using the program MODRET. Groundwater data for MODRET was based on information from the **original** geotechnical consultant.

Basin SW is not in the 100-year flood zone (see FEMA map, Figure 4).

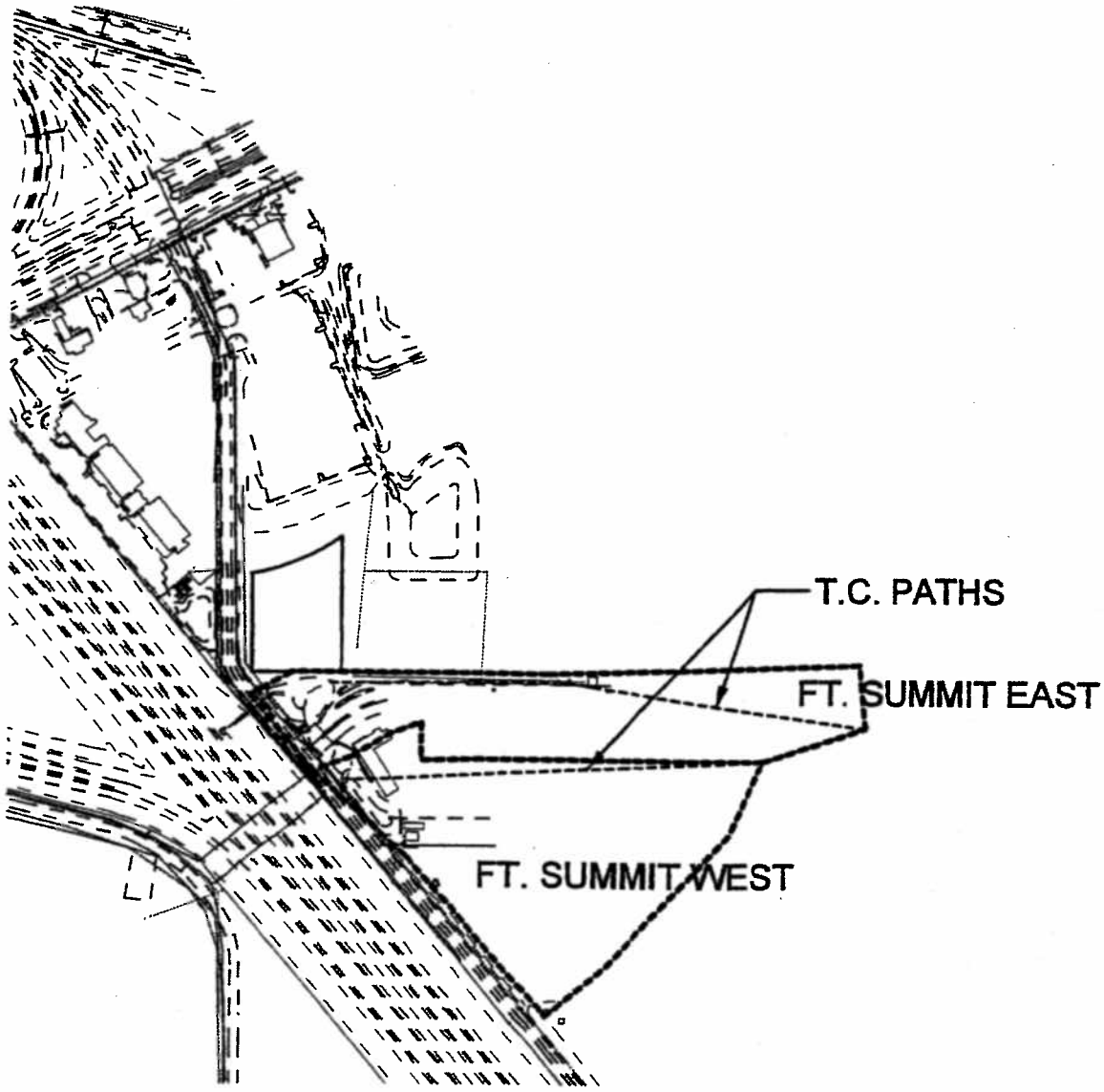
At about Station 208+00, the proposed SW frontage road will be encroaching into an existing non-permitted pond. The existing low point on the berm is in the northwest quadrant at an approximate elevation of 182.9 ft. Assuming the impact extends from right-of-way to right-of-way, a vertical line at the right-of-way line would delineate an impact of about 6,356 cubic feet of fill into the existing non-permitted pond. The bottom of the pond is estimated to be at 175.9 ft. and our impact is down to elevation 178.5 ft. This impact is approximately 5.5% of the total volume of the pond, which is considered a minor impact.

The water quantity calculations were performed using standard SCS methods and the Advanced Interconnected Pond Routing (AdICPR) program by Streamline Technologies,. Inc. to route the storms. The existing and proposed basins were routed using a 100-year, 24-hour storm, with a rainfall depth of 9.5 inches obtained from the SWFWMD rainfall map. Results are summarized in the Basin Summary Table (**Appendix A-1**), and illustrate that post development flows are less than pre development flows. A minimum of 1.0 foot of freeboard is provided in Pond SW. The AdICPR results can be found in this section.

A critical duration analysis was also done using the program SUPRA by Kato Dee. The results from the analysis can be found in this section. The results show that Pond SW meets the 14-86 criteria of the FDOT.

Since the originally permitted design has been reviewed and has been found to still be viable, the original HDR Pond SW calculations are provided herein to support the currently proposed design. Only minor modifications have been made to the original Pond SW drainage collection system due to the modification of the PGL along the SW frontage road. (Note that these minor PGL changes have not significantly changed the original drainage areas.) The drainage collection system revisions include stormsewer and cross drain invert and grate elevation revisions, as well as ditch flowline elevation revisions.

BASIN SW



ALE:
1:5000

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County

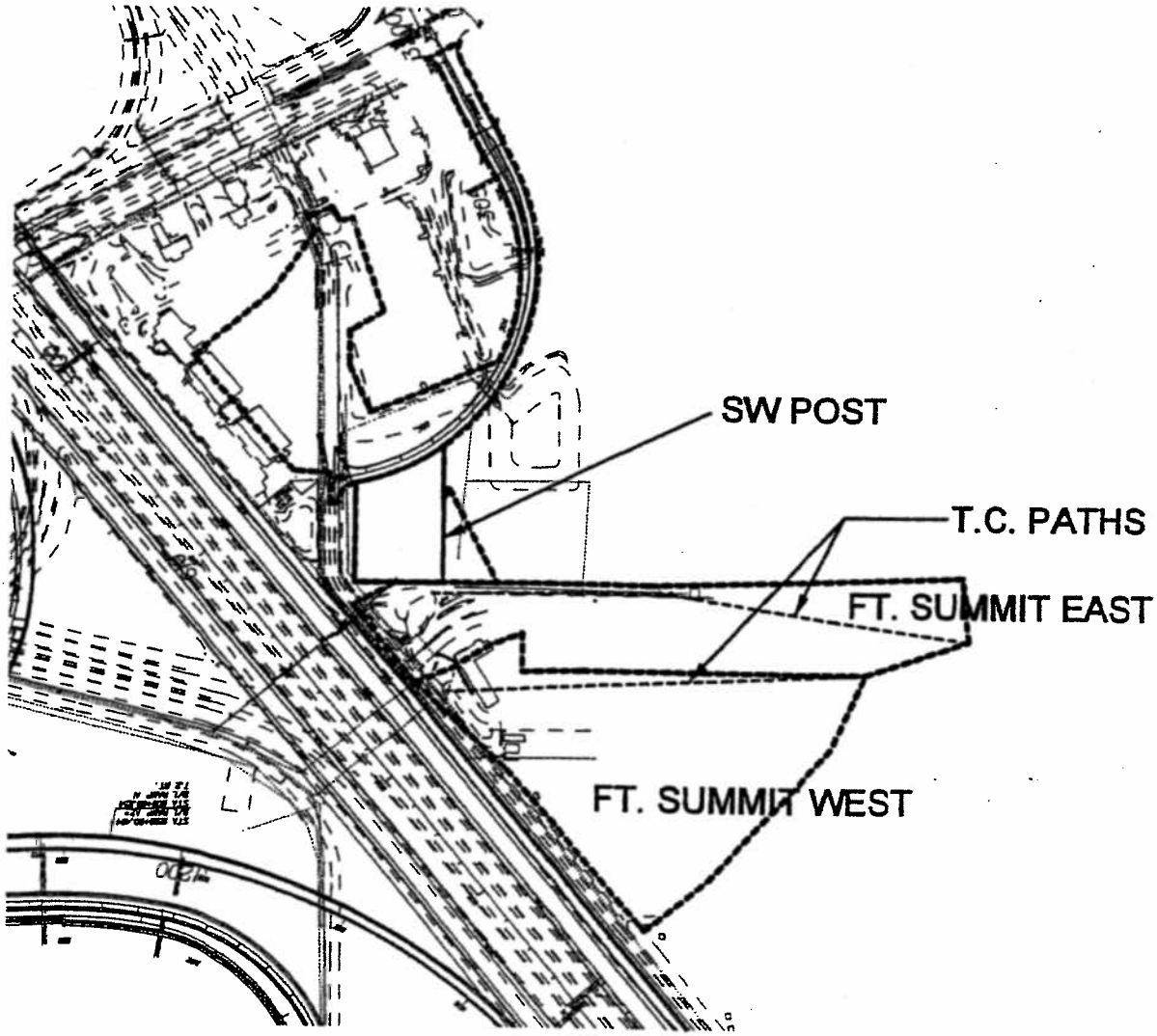
Florida

BASIN SW DRAINAGE AREAS
EXISTING FT. SUMMIT SYSTEM

E-990

BY KS

DATE 10-09-00



ALE:
1:5000

N

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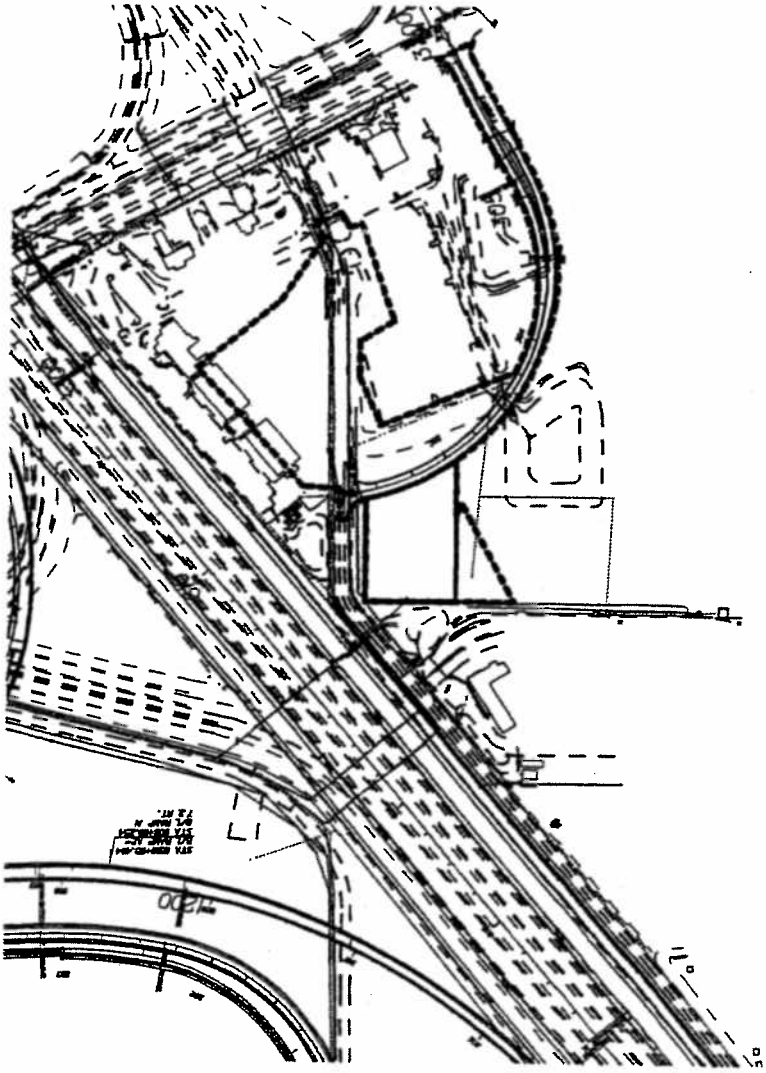
Polk County

Florida

BASIN SW DRAINAGE AREAS
PROPOSED SYSTEM

7-E991



SCALE:
1:5000

N

GTC Engineering Corporation
98 South Semoran Blvd, Orlando, FL 32807
407-380-0402

Polk County Florida

BASIN SW DRAINAGE AREA
USED TO DETERMINE
100 YEAR STORAGE VOLUME

E-992

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27, Basin FT_SUM_W By: KS Date: 08/24/98
Location: POLK COUNTY, Ft. Summit West Checked: _____ Date: _____

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN [1] Table 2-2	Fig 2-3	Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			6.10	237.90
	Impervious area-roadway	98			1.15	112.70
						0.00
						0.00
						0.00
						0.00
						0.00
[1] Use only one CN source per line.					Totals =	7.25	350.60

CN (weighted) = total product/total area = $\frac{350.60}{7.25}$ = 48.36 ; Use CN = 48

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.3	1.3	1.5
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: Date:

Circle One: [redacted] Developed **Basin FT_SUM_W (Ft. Summit West)**

Circle One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)		grass
2. Manning's roughness coeff., n (table3-1.)		0.41
3. Flow length, L (total L <= 300 ft.)	ft	300
4. Two-yr 24-hr rainfall, P_2	in	4.9
5. Land slope, s	ft/ft	0.052
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	Compute T...hr	0.486 + = 0.49

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)		unpaved
8. Flow length, L	ft	410
9. Watercourse slope, s	ft/ft	0.016
10. Average velocity, V (figure 3-1)	ft/s	2.00
11. $T_t = \frac{L}{3600\ V}$	Compute T_t .....hr	0.057 + = 0.06

Channel flow **Segment ID**

12. Cross sectional flow area, a	ft^2	
13. Wetted perimeter, P_w	ft/ft	
14. Hydraulic radius, $r = a/P_w$	Compute r ..... ft	
15. Channel slope, s	ft/ft	
16. Manning's roughness coeff., n		
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$	..... Compute V..... ft/s	
18. Flow length, L	ft	
19. $T_t = L / 3600\ V$	Compute T ..... hr	+ = 0.00
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr	0.54

33 minutes

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27, Basin FT_SUM_E By: NRS Date: 10/09/00
Location: POLK COUNTY, Ft. Summit East Checked: _____ Date: _____

Circle One: (Present) Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN (Table 2-2)	CN (Fig 2-3)	CN (Fig 2-4)	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			3.50	136.50
	Impervious area-roadway	98			2.21	216.58
						0.00
						0.00
						0.00
						0.00
						0.00
	Use only one CN source per line.			Totals =	5.71	353.08

CN (weighted) = total product/total area = $\frac{353.08}{5.71}$ = 61.84 ; Use CN = 62

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency .....yr	2 year	10 year	25 year
Rainfall, P (24hr) .....in	4	6.5	7
Runoff, Q .....in	0.9	2.4	2.8
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)			

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: Date:

Circle One: [redacted] Developed **Basin FT_SUM_E (Ft. Summit East)**

Circle One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) **Segment ID**

1. Surface Description (table 3-1.)		grass		
2. Manning's roughness coeff., n (table3-1.)		0.41		
3. Flow length, L (total L <= 300 ft.) ft		300		
4. Two-yr 24-hr rainfall, P_2 in		4.9		
5. Land slope, s ft/ft		0.093		
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T...hr		0.384	+	= 0.38

Shallow concentrated flow **Segment ID**

7. Surface Description (paved or unpaved)		unpaved		
8. Flow length, L ft		381		
9. Watercourse slope, s ft/ft		0.026		
10. Average velocity, V (figure 3-1) ft/s		2.50		
11. $T_t = \frac{L}{3600\ V}$ Compute T_t .....hr		0.042	+	= 0.04

Channel flow **Segment ID**

12. Cross sectional flow area, a ft^2		Ditch Flow		
13. Wetted perimeter, P_w ft/ft				
14. Hydraulic radius, $r = a/P_w$ Compute r ..... ft				
15. Channel slope, s ft/ft				
16. Manning's roughness coeff., n				
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$ ..... Compute V..... ft/s				
18. Flow length, L ft		2.00		
19. $T_t = L / 3600\ V$ Compute T ..... hr		500		
		0.07	+	= 0.07

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) ..... hr = 0.50

NOTE: Assume 2 fps flow in ditch

30 minutes

TR-55, Time of concentration (Tc) or travel time (Tt)

Project: Interstate 4, Polk County — By: KS — Date: 08/17/98
Location: Pond SW — Checked: ____ — Date: ____

Bold one: **Present** Developed
Bold one: **Tc** Tc through subarea

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.

Sheet flow (Applicable to Tc only)

		Segment ID			
Surface description (table 3-1)		GRASS			
Manning's roughness coeff., n (table 3-1)		0.41			
Flow length, L	ft	300			
Two-yr 24-hr rainfall, P2	in	4.9			
Top elev	ft NGVD	219.0			
Bot elev	ft NGVD	191.0			
Land slope, s	ft/ft	0.0933			
Tt = 0.007(nL)^0.8 / (P2^0.5)(s^0.4) — Compute Tt	hr	0.38	+		= 0.38

Shallow concentrated flow

		Segment ID			
Surface description (paved or unpaved)					
Flow length, L	ft	540			
Top elev	ft NGVD	191.0			
Bot elev	ft NGVD	178.0			
Watercourse slope, s	ft/ft	0.0241			
Average velocity, V (figure 3-1)	ft/s	2.5			
Tt = L/(3600 x V) — Compute Tt	hr	0.06	+		= 0.06

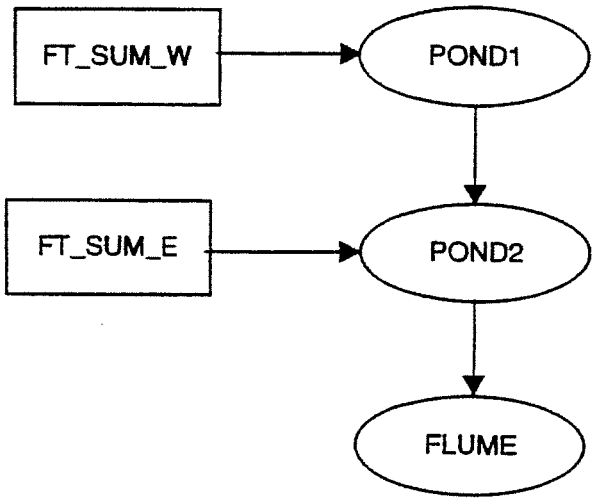
Channel flow

		Segment ID			
		Ditch Flow			
Cross sectional area,	sq ft				
Wetted perimeter, Pw	ft				
Hydraulic radius, r = a/Pw	ft				
Top elev	ft NGVD				
Bot elev	ft NGVD				
Channel slope, s	ft/ft				
Manning's roughness coeff., n					
Velocity, V= 1.49 r^(2/3)(s^0.5) / n	ft/s				
Flow length, L	ft				
Tt = L/(3600 x V) — Compute Tt	hr		+		=

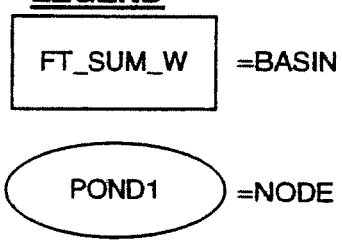
T Total, hours 0.44
T Total, min 26

H:\Jobs1\FLD5\SWFWMD\PondSW\Tc Pre SW.wb3

NODAL DIAGRAM - BASIN SW - FT. SUMMIT
EXISTING CONDITIONS



LEGEND



FT_SUM_W - Ft. Summit West

FT_SUM_E - Ft. Summit East

POND1 - Existing Pond

POND2 - Existing Pond

GW - Groundwater exfiltration

FLUME - Flume outfall at I-4

BASIN POND ANALYSIS, EXISTING SYSTEM

PROJ: I-4/U.S. 27 Interchange
BY: KS
DATE: 08/24/98

Pond Volume

Basin FT_SUM_W (Fort Summit West)

POND 1

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
173.03	0.00	-	-	-	0.00
173.88	0.06	0.03	0.85	0.03	0.03
174.70	0.10	0.08	0.82	0.07	0.09
175.52	0.21	0.15	0.82	0.12	0.22

Basin FT_SUM_E (Fort Summit East)

POND 2

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
165.68	0.01	-	-	-	0.00
167.32	0.03	0.02	1.64	0.04	0.04
170.60	0.09	0.06	3.28	0.20	0.23
171.42	0.11	0.10	0.82	0.08	0.31
173.88	0.18	0.15	2.46	0.36	0.67

ICPR INPUT

EXISTING FORT SUMMIT SYSTEM

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, FT. SUMMIT EXISTING SYSTEM
INPUT REPORT
2/21/01

********** Input Report **********
--------Class: Node--------
Name: FLUME Base Flow(cfs): 0 Init Stage(ft): 170.14
Group: BASE Warn Stage(ft): 170.14
Comment:

Time(hrs)	Stage(ft)
0	170.14
200	170.14

--------Class: Node--------
Name: GW Base Flow(cfs): 0 Init Stage(ft): 100
Group: BASE Warn Stage(ft): 100
Comment: GROUND WATER

Time(hrs)	Stage(ft)
0	100
100	100

--------Class: Node--------
Name: POND1 Base Flow(cfs): 0 Init Stage(ft): 173.03
Group: BASE Warn Stage(ft): 174.7
Comment:

Stage(ft)	Area(ac)
173.03	0
173.88	0.06
174.7	0.1
175.52	0.21

--------Class: Node--------
Name: POND2 Base Flow(cfs): 0 Init Stage(ft): 165.68
Group: BASE Warn Stage(ft): 173.88
Comment:

Stage(ft)	Area(ac)
165.68	0.01
167.32	0.03
170.6	0.09
171.42	0.11
173.88	0.18
175	0.18

--------Class: Basin--------
Basin: FT_SUM_E Node: POND2 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 5.71
Curve #: 62 Concentration Time(min): 30
DCIA(%): 0 Time Shift(hrs): 0

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]

I-4/US 27 INTERCHANGE, FT. SUMMIT EXISTING SYSTEM
INPUT REPORT
2/21/01

********** Input Report **********

--------Class: Basin--------

Basin: FT_SUM_W Node: POND1 Status: On Site Type: Santa Barbara
Group: BASE
Rainfall File: FLMOD Storm Duration(hrs): 24
Rainfall Amount(in): 7 Time Increment(min): 5
Area(ac): 7.25
Curve #: 48 Concentration Time(min): 33
DCIA(%): 0 Time Shift(hrs): 0

--------Class: Pipe--------

Name: PIPE1 From Node: POND1 Length(ft): 186
Group: BASE To Node: POND2 Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	1
Invert(ft):	173.03	165.9	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
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I-4/US 27 INTERCHANGE, FT. SUMMIT EXISTING SYSTEM
INPUT REPORT
2/21/01

********** Input Report **********
--------Class: Drop Structure--------

Name: POND2OUT	From Node: POND2	Length(ft): 71	
Group: BASE	To Node: FLUME	Count: 1	

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	15	15
Rise(in):	15	15
Invert(ft):	170	169.95
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

*** Weir 1 of 2 for Drop Structure POND2OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Mavis	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	47.2	Invert(ft):	171.68
Rise(in):	999	Control Elev(ft):	171.68

*** Weir 2 of 2 for Drop Structure POND2OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6
Span(in):	36	Invert(ft):	173.46
Rise(in):	23	Control Elev(ft):	173.46

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, FT. SUMMIT EXISTING SYSTEM
    INPUT REPORT
    2/21/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\OFFSITE\FLD5OS2
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
            25 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [10/20/00]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\OFFSITE\FLD5OS0
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
            100 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10              Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [10/20/00]
```

I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
25 YEAR/24 HOUR STORM
02/22/01

********** Basin Summary - FLD5OS25 **********

***

Basin Name:	FT_SUM_W	FT_SUM_E
Group Name:	BASE	BASE
Node Name:	POND1	POND2
Hydrograph Type:	SB	SB
Spec Time Inc (min):	5.00	5.00
Comp Time Inc (min):	5.00	5.00
Rainfall File:	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00
Storm Duration (hr):	24.00	24.00
Status:	ONSITE	ONSITE
Time of Conc. (min):	33.00	30.00
Lag Time (hr):	0.00	0.00
Area (acres):	7.25	5.71
Curve Number:	48.00	62.00
DCIA (%):	0.00	0.00
Time Max (hrs):	12.17	12.00
Flow Max (cfs):	3.99	7.36
Runoff Volume (in):	1.49	2.80
Runoff Volume (cf):	39163	57969

I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
100 YEAR/24 HOUR STORM
02/22/01

********** Basin Summary - FLD5OS00 **********

***

Basin Name:	FT_SUM_W	FT_SUM_E
Group Name:	BASE	BASE
Node Name:	POND1	POND2
Hydrograph Type:	SB	SB
Spec Time Inc (min):	5.00	5.00
Comp Time Inc (min):	5.00	5.00
Rainfall File:	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50
Storm Duration (hr):	24.00	24.00
Status:	ONSITE	ONSITE
Time of Conc. (min):	33.00	30.00
Lag Time (hr):	0.00	0.00
Area (acres):	7.25	5.71
Curve Number:	48.00	62.00
DCIA (%):	0.00	0.00
Time Max (hrs):	12.17	12.00
Flow Max (cfs):	8.97	13.01
Runoff Volume (in):	2.96	4.75
Runoff Volume (cf):	77772	98388

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
25 YEAR/24 HOUR STORM
02/22/01

********** Node Maximum Conditions - FLD5OS25 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND1	BASE	12.36	174.07	174.70	-0.0090	3151.35	12.17	3.99	12.35	3.74
POND2	BASE	12.74	172.89	173.88	0.0100	6741.26	12.19	10.68	12.74	7.32

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, FT. SUMMIT EX. SYSTEM
100 YEAR/24 HOUR STORM
02/22/01

********** Node Maximum Conditions - FLD5OS00 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
POND1	BASE	12.91	175.46	174.70	-0.0100	8796.18	12.17	8.97	12.03	8.75
POND2	BASE	12.83	174.89	173.88	0.0100	7847.78	12.03	21.68	12.83	11.15

7-24-09

ICPR ROUTING
PROPOSED SYSTEM

WORKSHEET 3: Time of Concentration (Tc) or Travel Time (Tt)

Project: I-4/U.S. 27 By: KS Date: 9/3/98
Location: POLK COUNTY Checked: Date:

Circle One: Present [redacted] Basin SW_POST

Circle One: [redacted] T_t through subarea

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.

Sheet flow (Applicable to T_c only) Segment ID

1. Surface Description (table 3-1.)		grass
2. Manning's roughness coeff., n (table3-1.)		0.41
3. Flow length, L (total L <= 300 ft.)	ft	300
4. Two-yr 24-hr rainfall, P_2	in	4.9
5. Land slope, s	ft/ft	0.093
6. $T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$	Compute T...hr	0.384 + = 0.38

Shallow concentrated flow Segment ID

7. Surface Description (paved or unpaved)		unpaved
8. Flow length, L	ft	540
9. Watercourse slope, s	ft/ft	0.024
10. Average velocity, V (figure 3-1)	ft/s	2.50
11. $T_t = \frac{L}{3600\ V}$	Compute T_t .....hr	0.060 + = 0.06

Channel flow Segment ID

12. Cross sectional flow area, a	ft^2	
13. Wetted perimeter, P_w	ft/ft	
14. Hydraulic radius, $r = a/P_w$	Compute r ..... ft	
15. Channel slope, s	ft/ft	
16. Manning's roughness coeff., n		
17. $V = 1.49\ r^{2/3}\ s^{1/2}/n$	..... Compute V..... ft/s	
18. Flow length, L	ft	
19. $T_t = L / 3600\ V$	Compute T ..... hr	+ = 0.00
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19)	hr	0.44

NOTE: Assume 2 fps flow in ditch

27 minutes

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27 - Basin SW_POST_CLOSED By: NRS Date: 10/09/00

Location: POLK COUNTY Checked: Date:

(Used to determine 100-yr. runoff volume/stage for area not previously discharging to I-4)

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN Table 2-2	CN Fig 2-3	CN Fig 2-4	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			2.95	115.05
	Impervious area-roadway	98			2.03	198.94
	Pastures, grassland, range-good Pond area	39			1.50	58.50
						0.00
						0.00
						0.00
						0.00
						0.00
Use only one CN source per line.					Totals =	6.48 / 372.49

CN (weighted) = total product/total area = $\frac{372.49}{6.48}$ = 57.48 ; Use CN = 57

2. Runoff

Storm #1	Storm #2	Storm #3
100		
9.5		
4.2		
2.25 AC-FT		

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

Stage = 171.56 ft (Based on ICPR Pond SW Stage-Storage)

Use 171.6 for Pond SW weir overflow

WORKSHEET 2: Runoff curve number and runoff

Project: I-4/U.S. 27, Basin SW_POST By: NRS Date: 10/09/00
Location: POLK COUNTY, Pond SW Checked: _____ Date: _____

Circle One: Present (Developed)

1. Runoff curve number (CN)

Soil name and hydrologic group (appendix A)	Cover description (cover type, treatment, and hydrologic condition, percent impervious area ratio)	CN (Table 2-2)	CN (Fig 2-3)	CN (Fig 2-4)	Area (acres / mi² / %)	
Candler and Tavares F.S. Group A	Pastures, grassland, range-good	39			2.95	115.05
	Impervious area-roadway	98			2.03	198.94
	Pastures, grassland, range-good Pond area	39			1.50	58.50
						0.00
						0.00
						0.00
						0.00
						0.00
Use only one CN source per line.					Totals =	6.48 / 372.49

CN (weighted) = total product/total area = $\frac{372.49}{6.48}$ = 57.48 ; Use CN = 57

2. Runoff

Storm #1	Storm #2	Storm #3
2 year	10 year	25 year
4	6.5	7
0.6	2.0	2.4

Frequency .....yr
Rainfall, P (24hr) .....in
Runoff, Q .....in
(Use P and CN with table 2-1, fig 2-1, or eqs. 2-3 and 2-4)

BASIN POND ANALYSIS, SWFWMD REQUIREMENTS
Dry Detention

PROJ: **State Road 400 (I-4)**
BY: NRS
DATE: 10/09/2000

Pond Volume

Basin	SW-POST			Retention
Pond	SW		Runoff	Volume
Basin Area	6.48	Acres	(inches)	(Acre-ft)
DCIA*	2.03	Acres	1.00	0.17
Required Storage	0.17	Acre-ft		
Retention Stage	166.6	ft		
½ Required Storage	0.08	Acre-ft		
½ Required Stage	166.5	ft		

2.4 inches

Elev (Feet)	Area (Acres)	Average Area (Acres)	Incre Depth (Feet)	Incre Storage (Acre-ft)	Cumulative Storage (Acre-ft)
166.34	0.30	-	-	-	0.00
172.24	0.58	0.44	5.91	2.60	2.60
173.23	0.87	0.73	0.98	0.71	3.31

(*) - Calculation of retention volume using DCIA is applicable only to existing public roadway projects.

GTC Engineering Corporation

Project: I-4/U.S. 27
Pond: Pond SW
Date: 04/05/2001

Calc. By: NRS
Checked By: CLC

From Williams Earth Sciences geotechnical report

Saturated Hydraulic Conductivity, k

Horizontal =	2.25E-02	cm/sec =	63.78 ft/day
Ground Elevation =	53.2	m =	174.3 ft
Groundwater Depth =	7.6	m =	25.0 ft
Groundwater Elevation =	45.5	m =	149.3 ft

Project/Pond Name	Pond SW
Runoff Data, Hydrograph (H) or Manual (M)	M
Unsaturated Analysis Included?	Y
Is there overflow?	N
Design High Water Elevation (DHW)	166.60 ft
Pond Bottom Area	12858 sq ft
Pond Volume Between Bottom & DHW	7405 cu ft
Pond Length to Width Ratio	2.0
Elevation of Effective Aquifer Base	141.0 ft
Elevation of Seasonal High Groundwater Table	149.6 ft
Elevation of Pond Bottom	166.34 ft
Effective Storage Coefficient of Soil for Unsaturated	0.3
Unsaturated Vertical Hydraulic Conductivity	42.52 ft/day (*)
Factor of Safety	2
Saturated Horizontal Hydraulic Conductivity	63.78 ft/day
Effective Storage Coefficient of Soil for Saturated	0.3
Average Effective Storage Coefficient of Pond	1.0

**** - estimated @2/3 of saturated hydraulic conductivity***

MODRET

SUMMARY OF UNSATURATED & SATURATED INPUT PARAMETERS

POND NAME/No. : I4/US 27 - POND SW
MANUAL RUNOFF DATA
UNSATURATED ANALYSIS INCLUDED

Pond Bottom Area	12858.00 ft²
Pond Volume between Bottom & DHWL	7405.00 ft3
Pond Length to Width Ratio (L/W)	2.00
Elevation of Effective Aquifer Base	141.00 ft
Elevation of Seasonal High Groundwater Table	149.60 ft
Elevation of Pond Bottom	166.34 ft
Design High Water Level Elevation	171.60
Ave. Effective Storage Coefficient of Soil for Unsaturated Analysis	0.30
Unsaturated Vertical Hydraulic Conductivity	42.52 ft/d
Factor of Safety	2.00
Saturated Horizontal Hydraulic Conductivity	63.78 ft/d
Ave. Effective Storage Coefficient of Soil for Saturated Analysis	0.30
Average Effective Storage Coefficient of Pond	1.00

Groundwater Control Features:

	Top	Bottom	Left	Right
Flag	N	N	N	N
Distance to edge of pond	0.00	0.00	15.00	0.00
Elevation of water level	0.00	0.00	18.00	0.00

MODRET

TIME - RUNOFF INPUT DATA

Pond Name / No.: I4/US 27 - POND SW

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)
UNSAT	5.67	64572.88
1	1.00	33437.12
2	5.00	0.00
3	6.00	0.00
4	12.00	0.00
5	12.00	0.00
6	12.00	0.00
7	12.00	0.00
8	12.00	0.00
9	24.00	0.00
10	24.00	0.00
11	24.00	0.00

STRESS PERIOD NUMBER	INCREMENT OF TIME (hrs)	VOLUME OF RUNOFF (ft3)

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

Pond Name / No.: I4/US 27 - POND SW

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)
00.00 - 0.00	149.600	0.000 *		
			0.00	
0.00	149.600	4.87916		
			3.43613	0.00
6.67	177.358	1.99310		
			0.91124	0.00
11.67	165.707	0.64669		
			0.32923	0.00
17.67	160.656	0.26084		
			0.12407	0.00
29.67	156.848	0.09337		
			0.06268	0.00
41.67	154.925	0.04997		
			0.03727	0.00
53.67	153.782	0.03088		
			0.02450	0.00
65.67	153.030	0.02087		
			0.01724	0.00
77.67	152.501	0.01497		
			0.01043	0.00
101.67	151.861	0.00865		
			0.00688	0.00
125.67	151.439	0.00585		
			0.00482	0.00
149.67	151.143			

MODRET

SUMMARY OF RESULTS - TABLE FORMAT

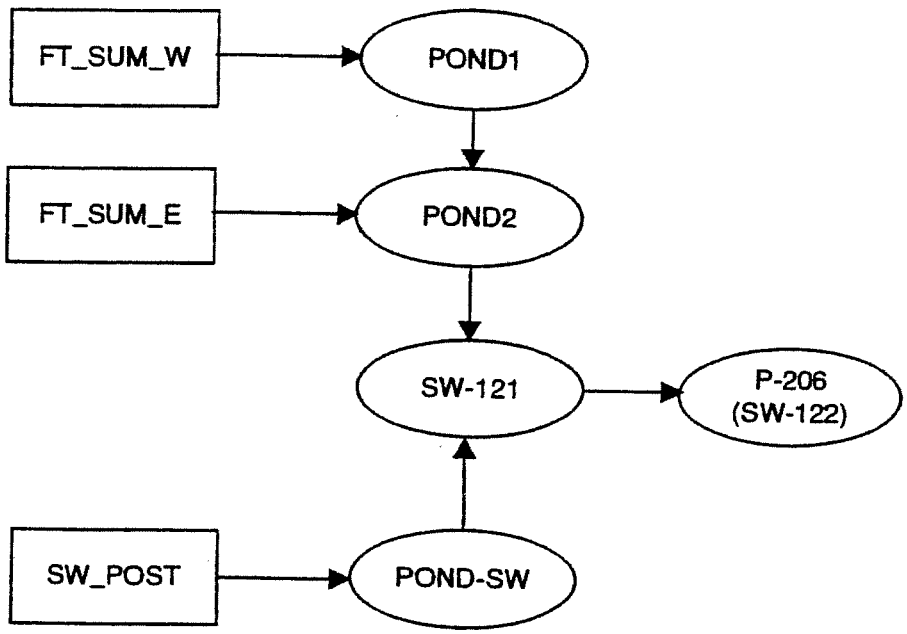
Pond Name / No.: I4/US 27 - POND SW

CUMULATIVE TIME (hrs)	WATER ELEVATION (feet)	INSTANTANEOUS INFILTRATION RATE (cfs)	AVERAGE INFILTRATION RATE (cfs)	CUMULATIVE OVERFLOW (ft^3)

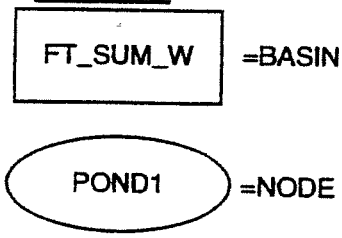
Max. WL : 177.358 @ 6.67 h	* Ø RO = Ø INF	Max.OVF : 0.000cfs @ 0.0 h

7-31
E-1019

NODAL DIAGRAM - BASIN SW & FT. SUMMIT
PROPOSED CONDITIONS



LEGEND



FT_SUM_W - Ft. Summit West

FT_SUM_E - Ft. Summit East

POND1 - Existing Pond

POND2 - Existing Pond

POND-SW - Proposed Pond

SW-121 - Manhole connecting existing to proposed system

P-206 (SW-122) - Inlet outfall to I-4

ICPR OUTPUT

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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I-4/US 27 INTERCHANGE, POND SW POST CONDITION
INPUT REPORT
2/21/01

********** Input Report **********

--------Class: Node--------

Name: MANHOLE Base Flow(cfs): 0 Init Stage(ft): 166.34
Group: BASE Warn Stage(ft): 177
Comment: MANHOLE WITH STUB TO EXISTING SYSTEM

Stage(ft)	Area(ac)
166.34	0.01
177	0.01

--------Class: Node--------

Name: OUTFALL Base Flow(cfs): 0 Init Stage(ft): 156
Group: BASE Warn Stage(ft): 156
Comment:

Time(hrs)	Stage(ft)
0	156
240	156

--------Class: Node--------

Name: POND-SW Base Flow(cfs): 0 Init Stage(ft): 166.34
Group: BASE Warn Stage(ft): 172.24
Comment:

Stage(ft)	Area(ac)
166.34	0.3
172.24	0.58
173.23	0.87

--------Class: Node--------

Name: POND1 Base Flow(cfs): 0 Init Stage(ft): 173.03
Group: BASE Warn Stage(ft): 174.7
Comment:

Stage(ft)	Area(ac)
173.03	0
173.88	0.06
174.7	0.1
175.52	0.21

--------Class: Node--------

Name: POND2 Base Flow(cfs): 0 Init Stage(ft): 165.68
Group: BASE Warn Stage(ft): 173.88
Comment:

Stage(ft)	Area(ac)
165.68	0.01
167.32	0.03
170.6	0.09
171.42	0.11
173.88	0.18
175	0.18

```
Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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I-4/US 27 INTERCHANGE, POND SW POST CONDITION
INPUT REPORT
2/21/01

********** Input Report ************************************************************
--------Class: Basin-----------------------------------------------------------------
Basin: FT_SUM_E   Node: POND2      Status: On Site    Type: Santa Barbara
Group: BASE
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 7               Time Increment(min): 5
           Area(ac): 5.71
            Curve #: 62          Concentration Time(min): 30
            DCIA(%): 0                   Time Shift(hrs): 0



--------Class: Basin-----------------------------------------------------------------
Basin: FT_SUM_W   Node: POND1      Status: On Site    Type: Santa Barbara
Group: BASE
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 7               Time Increment(min): 5
           Area(ac): 7.25
            Curve #: 48          Concentration Time(min): 33
            DCIA(%): 0                   Time Shift(hrs): 0



--------Class: Basin-----------------------------------------------------------------
Basin: SW_POND    Node: POND-SW    Status: On Site    Type: Santa Barbara
Group: BASE
      Rainfall File: FLMOD           Storm Duration(hrs): 24
Rainfall Amount(in): 7               Time Increment(min): 5
           Area(ac): 6.48
            Curve #: 57          Concentration Time(min): 13
            DCIA(%): 0                   Time Shift(hrs): 0

          ULTIMATE CONDITIONS
```

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [3]
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I-4/US 27 INTERCHANGE, POND SW POST CONDITION
INPUT REPORT
2/21/01

********** Input Report **********

--------Class: Pipe----------

Name:	PIPE1	From Node:	POND1	Length(ft): 186
Group:	BASE	To Node:	POND2	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	1
Invert(ft):	173.03	165.9	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Pipe----------

Name:	PIPE2	From Node:	MANHOLE	Length(ft): 58
Group:	BASE	To Node:	OUTFALL	Count: 1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Equation:	Average K
Span(in):	18	18	Flow:	Both
Rise(in):	18	18	Entrance Loss Coef:	1
Invert(ft):	166.34	166.16	Exit Loss Coef:	0.5
Manning's N:	0.012	0.012	Bend Loss Coef:	0
Top Clip(in):	0	0	Outlet Cntrl Spec:	Use dc or tw
Bottom Clip(in):	0	0	Inlet Cntrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [4]
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I-4/US 27 INTERCHANGE, POND SW POST CONDITION
INPUT REPORT
2/21/01

********** Input Report **********
--------Class: Drop Structure----------

Name: POND2OUT From Node: POND2 Length(ft): 7
Group: BASE To Node: MANHOLE Count: 1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	15	15
Rise(in):	15	15
Invert(ft):	170	169.95
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef: 1 Flow: Both
Exit Loss Coef: 0.5 Equation: Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

*** Weir 1 of 2 for Drop Structure POND2OUT *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Horiz Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.2
Geometry: Rectangular Orifice Discharge Coef: 0.6

Span(in): 36 Invert(ft): 173.46
Rise(in): 23 Control Elev(ft): 173.46

*** Weir 2 of 2 for Drop Structure POND2OUT *** [TABLE]
Count: 1 Bottom Clip(in): 0
Type: Mavis Top Clip(in): 0
Flow: Both Weir Discharge Coef: 3.2
Geometry: Rectangular Orifice Discharge Coef: 0.6

Span(in): 47.2 Invert(ft): 171.68
Rise(in): 999 Control Elev(ft): 171.68

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [5]

I-4/US 27 INTERCHANGE, POND SW POST CONDITION
INPUT REPORT
2/21/01

********** Input Report **********

--------Class: Drop Structure----------

Name:	SW-OUT	From Node:	POND-SW	Length(ft):	148
Group:	BASE	To Node:	MANHOLE	Count:	1

Outlet Cntrl Spec: Use dc or tw Inlet Cntrl Spec: Use dn
Upstream Geometry: Circular Downstream Geometry: Circular

	UPSTREAM	DOWNSTREAM
Span(in):	18	18
Rise(in):	18	18
Invert(ft):	168.96	168.73
Manning's N:	0.012	0.012
Top Clip(in):	0	0
Bottom Clip(in):	0	0

Entrance Loss Coef:	1	Flow:	Both
Exit Loss Coef:	0.5	Equation:	Aver Conveyance

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1
Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

*** Weir 1 of 1 for Drop Structure SW-OUT *** [TABLE]

Count:	1	Bottom Clip(in):	0
Type:	Horiz	Top Clip(in):	0
Flow:	Both	Weir Discharge Coef:	3.2
Geometry:	Rectangular	Orifice Discharge Coef:	0.6

Span(in):	36	Invert(ft):	171.6
Rise(in):	49	Control Elev(ft):	171.6

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [6]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, POND SW POST CONDITION
    INPUT REPORT
    2/21/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\FLD5OS25
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            25 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01           Override Defaults: No
     Time Step Optimizer: 10
Drop Structure Optimizer: 10
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        10         60                          24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [02/21/01]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\FLS5OS00
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            100 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01           Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 9.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                  To Hour:   PInc(min):
        10         60                          24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [02/21/01]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [7]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, POND SW POST CONDITION
    INPUT REPORT
    2/21/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\FLD5OS10
 Execution: Both
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            10 YEAR/24 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 24
Drop Structure Optimizer: 10             Rain Amount(in): 6.5
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 24
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        10         60                        24         5
        14         15
        75         60
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [02/21/01]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\10Y3H
 Execution: None
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            10 YEAR/3 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 3
Drop Structure Optimizer: 10             Rain Amount(in): 4.35
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 5
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                To Hour:   PInc(min):
        3          15                        3          5
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [12/12/00]
```

```
    Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [8]
    Copyright 1995, Streamline Technologies, Inc.

    I-4/US 27 INTERCHANGE, POND SW POST CONDITION
    INPUT REPORT
    2/21/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\10Y2H
 Execution: None
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            10 YEAR/2 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 2
Drop Structure Optimizer: 10             Rain Amount(in): 4
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 5
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        2          15                         2          5
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [10/11/00]
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\10Y1H
 Execution: None
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            10 YEAR/1 HOUR STORM
            $$DATE$$
---------HYDRAULICS-----------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 1
Drop Structure Optimizer: 10             Rain Amount(in): 3.3
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 5
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        2          15                         2          5
---------GROUP SELECTIONS-----------------------------------------------------------
+ BASE     [10/11/00]
```

```
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    I-4/US 27 INTERCHANGE, POND SW POST CONDITION
    INPUT REPORT
    2/21/01

    ********** Input Report ************************************************************
    --------Class: Simulation-----------------------------------------------------------
 H:\JOBS1\FLD5\ICPR\PONDSW\POST\10Y30M
 Execution: None
    Header: I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
            10 YEAR/30 MINUTE STORM
            $$DATE$$
---------HYDRAULICS-------------------------------HYDROLOGY--------------------
        Max Delta Z (ft): 1
          Delta Z Factor: 0.01          Override Defaults: Yes
     Time Step Optimizer: 10               Storm Dur(hrs): 0.5
Drop Structure Optimizer: 10             Rain Amount(in): 2.45
     Sim Start Time(hrs): 0                Rainfall File: FLMOD
       Sim End Time(hrs): 5
      Min Calc Time(sec): 1
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        2          15                         2          5
---------GROUP SELECTIONS-------------------------------------------------------------
+ BASE     [10/11/00]
```

I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
25 YEAR/24 HOUR STORM
02/21/01

********** Basin Summary - FLD5OS25 **********

Basin Name:	FT_SUM_W	FT_SUM_E	SW_POND
Group Name:	BASE	BASE	BASE
Node Name:	POND1	POND2	POND-SW
Hydrograph Type:	SB	SB	SB
Spec Time Inc (min):	5.00	5.00	5.00
Comp Time Inc (min):	5.00	5.00	5.00
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	7.00	7.00	7.00
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	33.00	30.00	13.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	7.25	5.71	6.48
Curve Number:	48.00	62.00	57.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.17	12.00	12.00
Flow Max (cfs):	3.99	7.36	9.86
Runoff Volume (in):	1.49	2.80	2.31
Runoff Volume (cf):	39163	57969	54322

I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
100 YEAR/24 HOUR STORM
02/21/01

********** Basin Summary - FLS5OS00 **********

*** Basin Name:	FT_SUM_W	FT_SUM_E	SW_POND
Group Name:	BASE	BASE	BASE
Node Name:	POND1	POND2	POND-SW
Hydrograph Type:	SB	SB	SB
Spec Time Inc (min):	5.00	5.00	5.00
Comp Time Inc (min):	5.00	5.00	5.00
Rainfall File:	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.50	9.50	9.50
Storm Duration (hr):	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	33.00	30.00	13.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	7.25	5.71	6.48
Curve Number:	48.00	62.00	57.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	12.17	12.00	12.00
Flow Max (cfs):	8.97	13.01	18.17
Runoff Volume (in):	2.96	4.75	4.10
Runoff Volume (cf):	77772	98388	96551

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I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
25 YEAR/24 HOUR STORM
02/21/01

********** Node Maximum Conditions - FLD5OS25 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
MANHOLE	BASE	12.68	168.34	177.00	-0.0100	446.91	12.66	7.94	12.68	7.93
OUTFALL	BASE	0.00	156.00	156.00	0.0000	2.18	12.68	7.93	0.00	0.00
POND-SW	BASE	24.00	169.63	172.24	0.0054	19869.76	12.00	9.86	0.00	0.00
POND1	BASE	12.36	174.07	174.70	-0.0090	3151.31	12.17	3.99	12.35	3.74
POND2	BASE	12.66	172.71	173.88	0.0100	6512.99	12.19	10.68	12.66	7.94

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I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
100 YEAR/24 HOUR STORM
02/21/01

********** Node Maximum Conditions - FLS5OS00 **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
MANHOLE	BASE	12.81	169.31	177.00	-0.0100	444.45	12.78	11.91	12.81	11.91
OUTFALL	BASE	0.00	156.00	156.00	0.0000	2.18	12.81	11.91	0.00	0.00
POND-SW	BASE	24.00	171.56	172.24	0.0057	23855.38	12.00	18.17	0.00	0.00
POND1	BASE	12.82	175.33	174.70	-0.0100	8056.12	12.17	8.97	12.03	8.86
POND2	BASE	12.78	174.67	173.88	0.0100	7847.78	12.03	21.79	12.78	11.91

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I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
25 YEAR/24 HOUR STORM
02/21/01

********** Link Maximum Conditions - FLD5OS25 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
PIPE1	BASE	12.35	3.74	-0.02	12.36	174.07	11.42	167.06
PIPE2	BASE	12.68	7.93	0.53	12.68	168.34	12.64	167.25
POND2OUT	BASE	12.66	7.94	-0.06	12.66	172.71	12.68	168.34
SW-OUT	BASE	0.00	0.00	0.00	24.00	169.63	12.68	168.34

I-4/US 27 INTERCHANGE, POST SW PROPOSED SYSTEM
100 YEAR/24 HOUR STORM
02/21/01

********** Link Maximum Conditions - FLS5OS00 **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (cfs)	Max Delta Q (cfs)	Max Time U/S Stage	Max US Stage (ft)	Max Time D/S Stage	Max DS Stage (ft)
PIPE1	BASE	12.03	8.86	2.57	12.82	175.33	12.78	174.67
PIPE2	BASE	12.81	11.91	-0.49	12.81	169.31	12.78	167.47
POND2OUT	BASE	12.78	11.91	0.08	12.78	174.67	12.81	169.31
SW-OUT	BASE	0.00	0.00	0.00	24.00	171.56	12.81	169.31

FDOT CRITICAL DURATION ANALYSIS

POND SW

GTC Engineering Corporation

Project: I-4/U.S. 27 Calc. By: CLC
Pond: Pond SW Checked By:
Date: 12/4/00

Inches of Rainfall for Specified Storm Events

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	2.5	2.9	3.4	3.8	4.8	6.0	7.5	8.5
5 YR	3.0	3.5	4.1	4.8	6.2	7.5	9.5	11.0
10 YR	3.4	3.9	4.7	5.6	7.4	9.0	11.5	13.0
25 YR	3.9	4.6	5.4	6.4	8.5	11.0	13.0	15.0
50 YR	4.3	5.2	6.2	7.4	10.0	12.0	15.0	17.0
100 YR	4.6	5.6	6.7	8.0	10.6	14.0	17.0	19.0

$S = 1000/CN - 10$

$C = 1.0 - S\,[1.2 - S/(P + 0.8S)]/P$

where S = soil storage, inches
CN = curve number
P = total rainfall depth for a return period, inches
C = runoff coefficient for a return period

Pre CN	54	S =	8.5
Post CN	57	S =	7.54

Pre Runoff Coefficient

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.03	0.05	0.08	0.11	0.17	0.24	0.31	0.35
5 YR	0.06	0.09	0.13	0.17	0.25	0.31	0.39	0.44
10 YR	0.08	0.12	0.17	0.22	0.31	0.37	0.46	0.50
25 YR	0.12	0.16	0.21	0.26	0.35	0.44	0.50	0.54
50 YR	0.14	0.20	0.25	0.31	0.41	0.47	0.54	0.58
100 YR	0.16	0.22	0.28	0.33	**0.43**	0.52	0.58	**0.61**

Post Runoff Coefficient

FREQ	DURATION							
	1 HR	2 HR	4 HR	8 HR	24 HR	3 DAY	7 DAY	10 DAY
2 YR	0.05	0.07	0.11	0.14	0.21	0.28	0.35	0.40
5 YR	0.08	0.12	0.16	0.21	0.29	0.35	0.43	0.48
10 YR	0.11	0.15	0.20	0.26	0.35	0.41	0.50	0.53
25 YR	0.15	0.20	0.25	0.30	0.40	0.48	0.53	0.58
50 YR	0.18	0.23	0.29	0.35	0.45	0.51	0.58	0.61
100 YR	0.20	0.26	0.32	0.38	**0.47**	0.56	0.61	**0.64**

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 1-Hour	2-Hour	4-Hour	8-Hour	24-Hour
2-Year	Q-pre	11.54	11.54	11.54	11.54	11.54
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	167.62	167.60	167.65	167.54	167.08
5-Year	Q-pre	13.32	13.32	13.32	13.32	13.32
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	167.87	167.88	167.96	167.86	167.29
10-Year	Q-pre	14.76	14.76	14.76	14.76	14.76
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	168.04	168.07	168.19	168.11	167.48
25-Year	Q-pre	16.72	16.72	16.72	16.72	16.72
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	168.32	168.34	168.51	168.36	167.66
50-Year	Q-pre	18.42	18.42	18.42	18.42	18.42
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	168.53	168.60	168.80	168.64	167.84
100-Year	Q-pre	19.89	19.89	19.89	19.89	19.89
	Q-post	0.00	0.00	0.00	0.00	0.00
	E-max	168.72	168.79	169.00	168.83	167.96

Critical Duration: **** 4-HOUR,100-YEAR STORM ****

Q-pre (cfs) = 19.89
Q-post (cfs) = .00
E-max (ft) = 169.00

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

Percolation rate (in/hr) = 12.30

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
166.34	.300	.000	.00	.00	.00
169.63	.456	1.448	4.01	.00	4.01
173.23	.870	3.314	10.79	.00	10.79

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

**** 4-HOUR,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	=	6.48
Runoff coefficient	=	.430
Time of concentration (min.)	=	26.0
Rainfall intensity (in/hr)	=	7.14
Peak flow rate (cfs)	=	19.89

Post-development Condition:

Drainage area (acres)	=	6.48
Runoff coefficient	=	.470
Rainfall zone number	=	8
Total rainfall depth (inches)	=	6.72

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	166.34	.00	.00	.00
.5	.080	1.64	166.41	.09	.09	.00
1.0	.200	4.09	166.66	.39	.39	.00
1.5	.360	7.37	167.13	.97	.97	.00
2.0	.520	10.64	167.85	1.84	1.84	.00
2.5	.420	8.60	168.54	2.68	2.68	.00
3.0	.280	5.73	168.94	3.17	3.17	.00
3.5	.100	2.05	169.00	3.24	3.24	.00
4.0	.000	.00	168.80	3.00	3.00	.00

Output Summary

Peak flow (cfs)	=	.00
Peak stage (ft)	=	169.00
Peak Storage (ac-ft)	=	1.171
Time to peak (hrs)	=	3.5

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

Summary of Critical Duration Analysis

Frequency	Peak Values	Duration 3-Day	7-Day	10-Day
2-Year	Q-pre	11.54	11.54	11.54
	Q-post	0.00	0.00	0.00
	E-max	166.84	166.68	166.79
5-Year	Q-pre	13.32	13.32	13.32
	Q-post	0.00	0.00	0.00
	E-max	166.96	166.77	166.93
10-Year	Q-pre	14.76	14.76	14.76
	Q-post	0.00	0.00	0.00
	E-max	167.09	166.86	167.03
25-Year	Q-pre	16.72	16.72	16.72
	Q-post	0.00	0.00	0.00
	E-max	167.25	166.93	167.14
50-Year	Q-pre	18.42	18.42	18.42
	Q-post	0.00	0.00	0.00
	E-max	167.34	167.02	167.24
100-Year	Q-pre	19.89	19.89	19.89
	Q-post	0.00	0.00	0.00
	E-max	167.50	167.11	167.35

Critical Duration: **** 3-DAY,100-YEAR STORM ****

Q-pre (cfs) = 19.89
Q-post (cfs) = .00
E-max (ft) = 167.50

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

Percolation rate (in/hr) = 12.30

*** Stage/Storage/Discharge Data ****

Stage (ft)	Area (acres)	Storage (ac-ft)	Percolation Flow	Connected Outflow	Total Outflow
166.34	.300	.000	.00	.00	.00
169.63	.456	1.448	4.01	.00	4.01
173.23	.870	3.314	10.79	.00	10.79

Note: The stage-storage data is computed by using the double-end area method and a rectangular approximation. The other option should be used for pond with highly irregular shape or with nonuniform side slope.

Supra-3 (V5.12) - Critical Duration Analysis Date: 12/13/00

License To: GTC Engineering corporation

I4/US 27, Pond SW

**** 3-DAY,100-YEAR STORM ****

Pre-development Condition:

Drainage area (acres)	= 6.48
Runoff coefficient	= .430
Time of concentration (min.)	= 26.0
Rainfall intensity (in/hr)	= 7.14
Peak flow rate (cfs)	= 19.89

Post-development Condition:

Drainage area (acres)	= 6.48
Runoff coefficient	= .470
Rainfall zone number	= 8
Total rainfall depth (inches)	= 14.00

Time (hrs)	I/Ptotal Ratio	Inflow (cfs)	Stage (ft)	Total Outflow	Percolation Flow	Connected Outflow
.0	.000	.00	166.34	.00	.00	.00
4.0	.003	.13	166.37	.04	.04	.00
8.0	.009	.38	166.48	.18	.18	.00
12.0	.028	1.19	166.80	.56	.56	.00
16.0	.016	.68	166.99	.80	.80	.00
20.0	.006	.26	166.82	.59	.59	.00
24.0	.003	.13	166.62	.34	.34	.00
28.0	.005	.21	166.53	.23	.23	.00
32.0	.009	.38	166.57	.27	.27	.00
36.0	.033	1.41	166.89	.66	.66	.00
40.0	.019	.81	167.11	.94	.94	.00
44.0	.007	.30	166.91	.70	.70	.00
48.0	.003	.13	166.66	.39	.39	.00
52.0	.007	.30	166.57	.28	.28	.00
56.0	.014	.60	166.66	.39	.39	.00
60.0	.050	2.13	167.16	1.00	1.00	.00
64.0	.028	1.19	167.50	1.42	1.42	.00
68.0	.010	.43	167.19	1.04	1.04	.00
72.0	.000	.00	166.77	.52	.52	.00

Output Summary

Peak flow (cfs)	= .00
Peak stage (ft)	= 167.50
Peak Storage (ac-ft)	= .511
Time to peak (hrs)	= 64.0

Basin NW

Appendix A-7

BASIN NW

Basin NW is the area containing the proposed Northwest Access Road as described in the Design Alternatives Report, June 1997, as prepared by HDR Engineering. The roadway was split into two smaller basins: NWN and NWS consisting of the north and south portions of the proposed roadway respectively. This split was due to a high point along the proposed Access Road, near Station 138+00, that splits the roadway into two distinct basins (note: all stations listed for Basin NW are based off the proposed Northwest Access Road baseline). The area identified as Basin NWN consists of roadway pavement and open area associated with the proposed roadway right-of-way from the McDonalds Restaurant and extends northward ending at the proposed intersection with US 27, at Station 146+20. The Basin NWN area was added into Basin B for treatment and attenuation.

The area analyzed as Basin NWS consists of approximately 6.5 ac of roadway pavement, commercial frontage and open areas associated with the proposed Northwest Access roadway right-of-way (R.O.W.). The basin begins at an existing dirt roadway north of the northwest quadrant of the interchange, at Station 100+00. It extends eastward until it parallels the western right-of-way line of U.S. 27 for a short distance, ending northeast of the existing McDonalds Restaurant. Longitudinal grades vary, exhibiting existing flow patterns towards a low point west of the US 27 roadway corridor. Currently, the pre-construction limits of Basin NWN are drained by roadside ditches and sheet flow with flow patterns sloping toward the aforementioned low point. Storm water runoff collected at the low point subsequently discharges into a dry depression located approximately 900 ft west of the corridor low point. The referenced depressional offsite area delineates a 96 ac closed basin providing ground water recharge to the Oklawaha River watershed, and acts as the pre-existing closed basin outfall for Basin NWS and Basin B.

The stormwater management system for Basin NWS consists of treatment swales and online detention discharging to the existing depression. The criteria for sizing the treatment swales in Basin NWS involves dry retention water quality volume equivalent to the greater of either the first 1 inch of rainfall from the DCIA or 0.5 inch of runoff from the contributing basin. Percolation will be used for recovery of the water quality volume. Recovery of the water quality volume was done using the Darcy's equation, see the treatment swale calculations in this section. Groundwater data was based on information from the **original** geotechnical consultant.

Basin NW is not in the 100-year flood zone (see FEMA map, Figure 4).

Treatment Swale Systems are located in the expanded right-of-way for the Northwest Access Road. The swales will extend from station 103+60 to the transition to an urban section at approximate station 128+50. The system will consist of terraced cells, with an outfall into the depressional area discussed with pond site NW, at approximately station 119+70. The swales are proposed to function as an on-line dry retention percolation systems, maintaining the pre-existing outfalls to the adjacent closed basins. The proposed alignment of the swales will be situated within the roadway right-of-way contiguous to the rims of the offsite depressional areas to minimize any appreciable intrusion into the storage volume of the outfall. The biological assessment did not identify any endangered, threatened or species of special concern at these locations. The soils encountered at these sites, based on the *SCS* Soil Survey, are representative of Candler sands located throughout the Basin NW corridors up to the periphery of Tavares fine sand associated with the adjacent offsite dry depressional areas. In accordance with *SCS* Soil Survey data and on-site geotechnical exploration, the sites vicinity soil conditions

exhibit rapid percolation and ground water depths favorable for dry system conditions. See this section for the Treatment swale calculations.

The PGL for the NW Access Road has been modified as has the PGL for the adjacent Ramp A1. Because of these modifications, in addition to minor adjustments to inlet tops, pipe inverts and ditch flowline elevations, two additional impacts to the original permitted design have been evaluated. Neither impact, however, has significantly changed the ability of the current design to meet or exceed the previously permitted requirements for Basin NW.

The first impact relates to a redistribution of original drainage area between Basin NWS and Basin B-3, near the Ramp A1 intersection with US 27 (refer to the Drainage Basin Maps, Figure 5). The original permitted design included a drainage divide between the basins, located between Stations 206+30 and 208+70, per Figure 5 relative to the NW Access Road baseline (approximate current design Stations 120+70 and 128+50, respectively). However, the current PGL's have eliminated this divide, but any "net" change to the individual basin drainage area values has also been basically eliminated. The incorporation of a highpoint in the wider ditch between the NW Access Road and Ramp A1, at current design Station 123+00 (approximate Figure 5 Station 207+00), will appropriately balance the current drainage basins to the original values. The "balance" area is only about 0.6 acres (see Figure 5).

The second impact relates to the reevaluation of treatment and attenuation capacity relative to ditch grades that are different than the original design grades. The current design's ditch grades are slightly steeper than the original, so the number and location of ditch blocks has changed. However, the total stormwater treatment capacity for the current design, 15,821 cu ft (0.36 ac ft), exceeds the original permitted requirement of 9,082 cu ft (0.21 ac ft). Both the original HDR design calculations and updated calculations to identify the actual current design's stormwater storage capacity, are provided to support the conclusion that the PGL changes in the Basin NW area have really resulted in improving upon the permitted project's stormwater treatment capacity.

Basin NW
Recomputation of Treatment Capacity

Treatment Swale[illegible]s - NW Access Rd
Summary

Treatment Reach	Volume of 1" Rainfall	Volume of 0.5" Runoff	Treament Volume Required	Treament Volume Provided
103.8 to 108.1 Lt	878	1428	878	2231
108.1 to 110 Lt	371	555	371	565
110 to 113.5 Lt	644	3092	644	537
113.5 to 117 Lt	137	1658	137	557
124 to 128.5 Lt	883	4768	883	1469
111 to 119.7 Rt	1554	4175	1554	8418
119.7 to 123 Rt	696	1748	696	2044
Total NW Access	5160	17454	5160	15821

STRUCTURE	STATION	ROADWAY / SIDE	TOP OF BERM EL #1 (FT)	WEIR LENGTH #2 (FT)	WEIR CREST EL #3 (FT)	SKIMMER SUMP EL. #4 (FT)	DITCH FL #5 (FT)	TOP SKIMMER EL. #6 (FT)	BOT. SKIMMER EL. #7 (FT)	DHW EL. (FT)	REMARKS
W-1	108+10	NWACCESS LT	168.02	5.00	187.50	165.00	166.50	168.52	167.00	168.02	
W-1A	110+00	NWACCESS LT	163.86	5.00	183.50	161.00	162.50	164.36	163.00	163.86	
W-2	113+50	NWACCESS LT	152.78	5.00	152.00	149.50	150.85	153.28	151.50	152.78	
W-2A	117+00	NWACCESS LT	140.35	5.00	139.91	137.41	138.76	140.85	139.41	140.35	
W-3	124+00	NWACCESS LT	143.05	5.00	142.00	139.50	141.10	143.55	141.50	143.05	
R-601	119+70	NWACCESS RT	137.30	8.00 (DBI TYPE D MOD. DOUBLE SLOT)	136.50	134.60	135.10	137.80	136.00	137.30	#6 Stand-off = 1.0'

Q (25-YR.) (cfs)	skimmer orifice area available (SF)	skimmer orifice area req'd (SF)	EOP (FT)
1.88	2.5	1.2	168.07
1.11	2.5	0.7	164.11
3.45	2.5	2.3	152.00
1.45	2.5	1.0	140.66
5.38	2.5	3.5	144.08
5.71	6.0	3.8	137.72
-	-	-	

Treatment Swale Calculations - NW Access Rd.

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
103+60	C\L	LT	167.94		10.00																High Point
105+00	C\L	LT	167.80	0.10%	23.25	0.50	5.5	0.36	1.0	4	5	4	SOD	0.17	0.70	5.5	0.5069	1.0	0.2	140	
106+00	C\L	LT	167.30	0.50%	28.93	0.50	5.1	0.50	1.2	4	5	4	SOD	0.2	0.55	4.0	0.4153	1.2	0.3	100	
107+00	C\L	LT	166.80	0.50%	34.21	0.50	4.7	0.64	1.5	4	5	4	SOD	0.2	0.63	4.7	0.4647	1.5	0.3	100	
108+00	C\L	LT	166.50	0.30%	39.99	0.50	4.3	0.77	1.6	4	5	4	SOD	0.18	0.70	5.5	0.5069	1.6	0.3	100	
108+10	C\L	LT	166.47	0.30%	40.54	0.50	4.3	0.79	1.7	4	5	4	SOD	0.17	0.70	5.5	0.5069	1.7	0.3	10	
					Max Tc		i25	Max A	Q25												
					40.54	0.50	4.83	0.79	1.9												

Control Structure Station 108+10

Control Elevation 167.50

Water Quality Volume

Provided (CF)	2231.2
Avg. Perc (CFS)	0.6
Recovery (Hre)	1.1

Avg. SHWT (EL)	146.0
Avg. Swale Bottom (EL) =	166.5
Unsaturated Storage Vol Aval (CF):	16951.9
Permeability (In/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	166.50	167.0	167.50
AREA (FT^2)	52.40	1256.40	2756.40
AREA (Acres)	0.0	0.0	0.1
PERC (CFS)	0.0301	0.7213	1.5824

NOTES:
1. Water Quality Provided based on Control Elevation.
2. Cells in [illegible] need to be input by user.
3. Cells in Aqua are calculated by the spread sheet however are also compared for iteretive step in determining required depth "d".
4. All Clear Cells are calculated by the spread sheet.

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wide	Roadway (ft) Wide	Med Shldr. (ft) Wide	Impervious Area (Sq Ft)	Contributing Area: Lt Break (Ft	Rt Break (Ft Right)	Contr Length (Ft)	Total Area (Sq Ft)	Remarks
103+60	C/L	6	24	0		48	12			
105+00	C\L	6	24	0	4200.00	100	12	140	15680	
106+00	C\L	6	24	0	3000.00	48	12	100	6000	
107+00	C\L	6	24	0	3000.00	48	12	100	6000	
108+00	C\L	6	24	0	3000.00	48	12	100	6000	
108+10	C\L	6	24	0	300.00	48	12	10	600	
					13500.00				34280	

		0.31 Ac	0.79 Ac
Ac * C(0.95) =		0.29	-0.31
Water Quality Volume Reqd.			0.48
		Ac * C(0.2) =	0.10
1" of rainfall =	878		0.29
1/2" runoff =	1428.33	Cw=	0.50
Water Quality Volume Required	877.50		

Treatment Swale Calculations - NW Access Rd.

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	be	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
108+10	C/L	LT	166.50		10.00		0.0	0.00	0.0	4	5	4	SOD	0.20		0.0	0.0000	0.0			High Point
109+00	C\L	LT	164.80	1.89%	14.12	0.52	6.6	0.14	0.5	4	5	4	SOD	0.20	0.25	1.5	0.2124	0.5	0.4	90	
110+00	C\L	LT	162.50	2.30%	17.59	0.52	6.2	0.31	1.0	4	5	4	SOD	0.20	0.34	2.2	0.2771	1.0	0.5	100	Control Str.

		Max Tc		I25	Max A	Q25
		17.59	0.52	6.95	0.31	1.1

Control Structure Station 110+00

Control Elevation 163.50

Water Quality Volume

Providad (CF)	565.2
Avg. Perc (CFS)	0.1
Racovery (Hrs)	1.4

Avg. SHWT (EL)	146.0
Avg. Swale Bottom (EL) =	162.5
Unsaturated Storage Vol Aval (CF):	2797.8
Permeability (In/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	162.50	163.0	163.50
AREA (FT^2)	0.00	195.65	565.22
AREA (Acres)	0.0	0.0	0.0
PERC (CFS)	0.0000	0.1123	0.3245

NOTES:
1. Water Quality Provided based on Control Elevation.
2. Calls in yellow need to be input by user.
3. Calls in Aqua are calculated by the spraad sheet however era also comparad for iterativa step in determining raquired depth "d".
4. All Claar Calls are calculated by tha spraad sheet.

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wida	Roadwey (ft) Wide	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Aree: Lt Break (Ft Right)	Rt Breek (Ft Right)	Contr Length (Ft)	Total Area (Sq Ft)	Remarks
108+10	C/L	6	24	0		56	12			
109+00	C\L	6	24	0	2700.00	56	12	90	6120	
110+00	C\L	6	24	0	3000.00	60	12	100	7200	
					5700.00				13320	
					0.13 Ac				0.31 Ac	
			Ac * C(0.95) =		0.12				-0.13	
Water Quaiity Voluma Raqd.									0.17	
								Ac * C(0.2) =	0.03	
1" of rainfall =	371		1/2" runoff =		555.00				0.12	
								Cw=	0.52	
			Water Quaiity Voluma Raquirad		370.50					

Treatment Swale Calculations - NW Access Rd.

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
110+00	C\L	LT	162.50		10.00		0.0	0.00	0.0	4	5	4	SOD	0.20		0.0	0.0000	0.0			High Point
111+00	C\L	LT	159.20	3.30%	13.11	0.30	6.8	0.49	1.0	4	5	4	SOD	0.20	0.30	1.9	0.2489	1.0	0.5	100	
112+00	C\L	LT	155.90	3.30%	15.65	0.30	6.4	0.97	1.9	4	5	4	SOD	0.20	0.43	2.9	0.3381	1.9	0.7	100	
113+00	C\L	LT	152.60	3.30%	17.94	0.30	6.1	1.46	2.7	4	5	4	SOD	0.20	0.52	3.7	0.3964	2.7	0.7	100	
113+50	C\L	LT	150.85	3.50%	19.01	0.30	6.0	1.70	3.1	4	5	4	SOD	0.20	0.55	4.0	0.4153	3.1	0.8	50	Control Str.
					Max Tc		I25	Max A	Q25												
					19.01	0.30	6.76	1.70	3.5												

Control Structure Stetion 113+50

Control Elevetion 152.00

Water Quality Volume

Provided (CF)	536.6
Avg. Parc (CFS)	0.09
Recovery (Hrs)	1.7

Avg. SHWT (EL)	135.0
Avg. Swale Bottom (EL) =	150.85
Unsaturated Storage Vol Aval (CF):	2218.5
Permeability (In/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	150.85	151.4	152.00
AREA (FT^2)	0.00	128.57	466.57
AREA (Acres)	0.0	0.0	0.0
PERC (CFS)	0.0000	0.0738	0.2678

NOTES:
1. Water Quality Providad based on Control Elevation.
2. Cells in [illegible] need to be input by user.
3. Cells in Aqua are calculated by the spread sheat however ara also compared for iterative step in determining required depth "d".
4. All Clear Calls are calculated by the spread sheat.

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wide	Roedwey (ft) Wide	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Area: Lt Break (Ft Right)	Rt Break (Ft Right)	Contr Length (Ft)	Total Area (Sq Ft)	Remarks
110+00	C/L	6	24	0		200	12			
111+00	C\L	6	24	0	3000.00	200	12	100	21200	
112+00	C\L	6	24	0	3000.00	200	12	100	21200	
113+00	C\L	6	24	0	3000.00	200	12	100	21200	
113+50	C\L	6	12	0	900.00	200	12	50	10600	
					9900.00				74200	
					0.23 Ac				1.70 Ac	
			Ac * C(0.95) =		0.22				-0.23	
Water Quality Volume Reqd.									1.48	
								Ac * C(0.2) =	0.30	
1" of rainfall =		644	1/2" runoff =		3091.67				0.22	
								Cw=	0.30	

Water Quality Volume Required **643.50**

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
113+50	C/L	LT	150.85		10.00		0.0	0.00	0.0	4	5	4	SOD	0.20		0.0	0.0000	0.0			
114+00	C/L	LT	148.87	3.96%	11.92	0.24	7.2	0.23	0.4	4	5	4	SOD	0.20	0.18	1.0	0.1568	0.4	0.4	50	High Point
115+00	C/L	LT	145.50	3.37%	14.89	0.24	6.5	0.69	1.1	4	5	4	SOD	0.20	0.32	2.0	0.2631	1.1	0.6	100	
116+00	C/L	LT	142.13	3.37%	17.81	0.24	6.1	0.85	1.2	4	5	4	SOD	0.20	0.33	2.1	0.2701	1.2	0.6	100	
117+00	C/L	LT	138.76	3.37%	20.63	0.24	5.8	0.93	1.3	4	5	4	SOD	0.20	0.35	2.2	0.2840	1.3	0.6	100	

	Max Tc		i25	Max A	Q25
	20.63	0.24	6.55	0.93	1.5

Control Structure Station 119+00

Control Elevation 139.91

Water Quality Volume

Provided (CF)	557.3
Avg. Perc (CFS)	0.09
Recovery (Hrs)	1.7

Avg. SHWT (EL)	114.0
Avg. Swale Bottom (EL) =	138.8
Unsaturated Storage Vol Aval (CF):	3599.4
Permeability (In/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	138.76	139.3	139.91
AREA (FT^{4})	0.00	133.53	484.57
AREA (Acres)	0.0	0.0	0.0
PERC (CFS)	0.0000	0.0767	0.2782

NOTES:
1. Water Quality Provided based on Control Elevation.
2. Cells in [illegible] need to be input by user.
3. Cells in Aqua are calculated by the spread sheet however are also compared for iteretive step in determining required depth "d".
4. All Clear Cells are calculated by the spread sheet.

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wide	Roadwey (ft) Wide	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Area: Lt Bresk (Ft Right)	Rt Breek (Ft Right)	Contr Length (Ft)	Totel Area (Sq Ft)	Remarks
113+50	C/R	6	0	0		200	0			
114+00	C/R	6	0	0	300.00	200	0	50	10000	
115+00	C/R	6	0	0	600.00	200	0	100	20000	
116+00	C/R	6	0	0	600.00	70	0	100	7000	
117+00	C/R	8	0	0	600.00	35	0	100	3500	
					2100.00				40500	

Weter Quelity Volume Reqd.

	Ac * C(0.95) =	0.05 Ac 0.05	0.93 Ac -0.05
			0.88
		Ac * C(0.2) =	0.18
			0.05
		Cw=	0.24

1" of rainfall = 137 1/2" runoff = 1667.50

Weter Quality Volume Required 136.50

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 i10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
111+00	C/L	RT	158.40		10.00		0.0	0.00	0.0	4	40	4	SOD	0.20		0.0	0.0000	0.0			High Point
112+00	C/L	RT	153.80	4.60%	14.96	0.38	6.5	0.18	0.4	4	12	4	SOD	0.20	0.10	1.2	0.0967	0.4	0.3	100	no ditch
113+00	C/L	RT	150.20	3.60%	19.10	0.38	6.0	0.37	0.8	4	12	4	SOD	0.20	0.16	2.0	0.1518	0.8	0.4	100	A1 ditch
114+00	C/L	RT	146.60	3.60%	22.09	0.38	5.6	0.66	1.4	4	8	4	SOD	0.20	0.28	2.6	0.2477	1.4	0.6	100	A1 ditch
115+00	C/L	RT	143.00	3.60%	24.65	0.38	5.4	0.95	1.9	4	6	4	SOD	0.20	0.38	2.9	0.3129	1.9	0.7	100	A1 ditch
116+00	C/L	RT	139.40	3.60%	27.45	0.38	5.2	1.23	2.4	4	12	4	SOD	0.20	0.30	4.0	0.2736	2.4	0.6	100	A1 ditch
117+00	C/L	RT	136.80	2.60%	30.37	0.38	5.0	1.51	2.8	4	12	4	SOD	0.20	0.37	4.9	0.3273	2.8	0.6	100	A1 ditch
118+00	C/L	RT	135.90	0.90%	34.98	0.38	4.6	1.79	3.1	4	20	4	SOD	0.20	0.40	8.5	0.3665	3.1	0.4	100	A1 ditch
119+70	C/L	RT	135.10	0.47%	44.17	0.38	4.1	2.30	3.5	4	20	4	SOD	0.20	0.52	11.4	0.4686	3.5	0.3	170	control str
124+00	C/L	RT																			
119+70	C/L	RT			40.18			2.37	4.01												
								4.67	7.54												

		Max Tc		I25	Max A	Q25
		44.17	0.38	4.62	4.87	8.2

Control Structure Station 119+00

Control Elsvation 136.50

Water Quality Volume

Provided (CF)	8417.6
Avg. Psrc (CFS)	1.36
Recovery (Hrs)	1.7

Avg. SHWT (EL)	114.0
Avg. Swale Bottom (EL) =	135.1
Unsaturated Storage Vol Aval (CF):	44039.9
Permeability (in/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	135.10	135.6	136.50
AREA (FT^2)	0	2550	6957
AREA (Acres)	0.0	0.1	0.2
PERC (CFS)	0.0	1.5	4.0

NOTES:
1. Water Quality Provided based on Control Elevation.
2. Cells in ... head to be input by user.
3. Cells in Aqua are calculated by the spread sheet however are also compared for iteretive step in determining required depth "d".
4. All Cleer Cells are calculated by the spread sheet.

Station	B/L	Impervious Pevement Widths: Out Shldr (ft) Wide	Roadway (ft) Wids	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Area: Lt Break (Ft Right)	Rt Break (Ft Right)	Contr Length (Ft)	Total Area (Sq Ft)	Remarks
111+00	C/R	0	0	6		0	77			
112+00	C/R	0	0	12	1200.00	0	77	100	7700	
113+00	C/R	0	12	10	2200.00	0	84	100	8400	
114+00	C/R	0	24	10	3400.00	12	113	100	12500	
115+00	C/R	0	24	6	3000.00	12	114	100	12600	
116+00	C/R	0	24	6	3000.00	12	110	100	12200	
117+00	C/R	0	24	6	3000.00	12	110	100	12200	
118+00	C/R	0	24	6	3000.00	12	113	100	12500	
119+70	C/R	0	24	6	5100.00	12	118	170	22100	
					23900.00				100200	

			2.30 Ac
Ac * C(0.95) =	0.55 Ac		-0.55
	0.52		1.75
Water Quelity Volume Reqd.		Ac * C(0.2) =	0.35
			0.52
1" of reinfell = 1554	1/2" runoff = 4175.00	Cw=	0.36
Water Quality Volume Required	1553.50		

Treatment Swale C...ons - NW Access Rd.

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
123+00	C\L	RT	142.00		10.00	0.39	7.5	0.00	0.0	4	20	4	SOD	0.20		0.0	0.0000	0.0			no ditch
122+00	C/L	RT	137.50	4.50%	14.42	0.39	6.6	0.30	0.8	4	18	4	SOD	0.20	0.12	2.2	0.1168	0.8	0.4	100	A1 ditch
121+00	C\L	RT	136.75	0.75%	20.69	0.39	5.8	0.61	1.4	4	18	4	SOD	0.20	0.27	5.2	0.2547	1.4	0.3	100	A1 ditch
120+00	C\L	RT	136.00	0.75%	26.11	0.39	5.3	0.89	1.8	4	18	4	SOD	0.18	0.30	5.8	0.2813	1.8	0.3	100	A1 ditch
119+70	C\L	RT	135.10	3.00%	27.23	0.39	5.2	0.96	1.9	4	20	4	SOD	0.20	0.21	4.4	0.2014	1.9	0.4	30	control str
					Max Tc		i25	Max A	Q25												
					27.23	0.39	5.84	0.96	2.2												

Control Structure Station 119+70

Control Elevation 136.50

Water Quality Volume

Provided (CF)	2043.7
Avg. Perc (CFS)	0.46
Recovery (Hrs)	1.2

Avg. SHWT (EL)	114.0
Avg. Swale Bottom (EL) =	135.1
Unsaturated Storage Vol Aval (CF):	15208.9
Permeability (In/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	135.10	136.0	136.50
AREA (FT^2)	0	816	2403
AREA (Acres)	0.0	0.0	0.1
PERC (CFS)	0.0	0.5	1.4

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wide	Roadway (ft) Wide	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Area: Lt Break (Ft Right)	Rt Break (Ft Right)	Contr Length (Ft)	Total Area (Sq Ft)	Remarks
123+00	C/R	0	24	27	0.00	12	135		0	
122+00	C/R	0	24	10	3400.00	12	120	100	13200	
121+00	C/R	0	24	10	3400.00	12	120	100	13200	
120+00	C/R	0	24	6	3000.00	12	110	100	12200	
119+70	C/R	0	24	6	900.00	12	100	30	3360	
					10700.00				41960	

		0.25 Ac	0.96 Ac
Ac * C(0.95) =		0.23	-0.25
Water Quality Volume Reqd.			0.72
	Ac * C(0.2) =		0.14
1" of rainfall = 696	1/2" runoff =	1748.33	0.23
	Cw=		0.39
Water Quality Volume Required		695.50	

Treatment Swale Calculations - NW Access Rd.

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
128+53	C/L	LT	146.70		34.00	0.46	4.7	1.95	4.2	4	5	4	SOD	0.20		0.0	0.0000	0.0			High Point
127+53	C/L	LT	144.90	1.80%	36.46	0.46	4.5	2.11	4.4	4	5	4	SOD	0.20	0.79	6.4	0.5599	4.4	0.7	100	outfall
127+00	C/L	LT	144.00	1.71%	37.77	0.46	4.5	2.19	4.5	4	5	4	SOD	0.20	0.81	6.7	0.5715	4.5	0.7	53	
126+00	C/L	LT	142.70	1.30%	40.48	0.46	4.3	2.36	4.7	4	5	4	SOD	0.20	0.89	7.6	0.6174	4.7	0.6	100	
125+00	C/L	LT	141.30	1.40%	43.13	0.46	4.1	2.51	4.7	4	5	4	SOD	0.20	0.87	7.4	0.6060	4.7	0.6	100	
124+00	C/L	LT	141.10	0.20%	47.24	0.46	3.9	2.63	4.7	4	5	4	SOD	0.14	1.19	11.6	0.7841	4.7	0.4	100	
					Max Tc		i25	Max A	Q25												
					47.24	0.46	4.45	2.63	5.4												

Control Structure Station 124+00

Control Elevation 142.00

Water Quality Volume
Provided (CF) 1469.0
Avg. Perc (CFS) 0.35
Recovery (Hrs) 1.2

Avg. SHWT (EL)	121.0
Avg. Swale Bottom (EL) =	141.1
Unsaturated Storage Vol Aval (CF):	10552.5
Permeability (in/Hr) =	49.6
Factor of Safety (FS)	2

STAGE (EL)	141.10	141.3	142.00
AREA (FT^2)	0	660	1750
AREA (Acres)	0.0	0.0	0.0
PERC (CFS)	0.0	0.4	1.0

NOTES:
1. Water Quality Provided based on Control Elevation.
2. Cells in [illegible] need to be input by user.
3. Cells in Aqua are calculated by the spread sheet however are also compared for iterative step in determining required depth "d".
4. All Clear Cells are calculated by the spread sheet.

Station	B/L	Impervious Pavement Widths: Out Shldr (ft) Wide	Roadwey (ft) Wide	Med Shldr. (ft) Wide	Impervous Area (Sq Ft)	Contributing Area: Lt Break (Ft Right)	Rt Break (Ft Right)	Contr Length (Ft)	Total Aree (Sq Ft)	Remarks
128+53	C/R	6	24	0		56	12			
127+53	C/R	8	24	0	3000.00	56	12	100	6800	
127+00	C/R	6	24	0	1590.00	60	12	53	3816	
126+00	C/R	6	24	0	3000.00	60	12	100	7200	
125+00	C/R	6	24	0	3000.00	52	12	100	6400	
124+00	C/R	6	24	0	3000.00	42	12	100	5400	
OFFSITE									84817	Cw = 0.46
					13590.00				114433	
					0.31 Ac				2.63 Ac	
			Ac * C(0.95) =		0.30				-0.31	
Water Quality Volume Reqd.									2.32	
								Ac * C(0.2) =	0.46	
1" of rainfall =		883	1/2" runoff =		4766.04				-0.30	
								Cw=	0.46	
			Water Quality Volume Required		883.35					

E-1057

ORIGINAL

ERP # 440118896.024

Basin NW

CALCULATIONS

ORIGINAL ERP # 4401 1896.024

CALCULATIONS

Treatment Swale Calculation

First Page

The first page of the treatment swale spreadsheet beings the same as the conveyance swale spreadsheet calculations. The additional items are used to determine the Water Quality Volume Provided and the unsaturated soil recovery rate. The items to be input or calculated in this spreadsheet have been identified by number on the figure and are briefly described below:

1. Excel spreadsheet file name: [WORKBOOK NAME .XLW] document name.

2. The station where the control structure is located followed by the control elevation that the Water Quality Treatment Volume provided will rise to, in feet above NGVD.

3. Stage: Incremental stages beginning with the minimum swale flowline elevation, then the average between the minimum elevation and the control elevation, followed by the control elevation, in feet above NGVD.

4. Area: The total surface area for each of the incremental stages in square feet and acres. The areas are based on average end surface widths at the respective stage elevation for each station in the reach. See the attached average end area / volume calculations.

5. The average estimated Seasonal High Water Table (SHWT) elevation within the swale reach, in feet above NGVD.

6. The average swale bottom elevation within the treatment area of the reach, in feet NGVD.

7. The vertical rate of permeability as determined by the geotechnical engineer's test results which are applicable to treatment area of the swale reach, in inches per hour.

8. A factor of safety (FS) of two or more applied to the vertical permeability rate to allow for geological uncertainties.

9. Perc: The percolation flow rate which corresponds to each of the incremental stages, calculated using Darcy's Equation $Q = K\ i\ A$. The vertical permeability rate is divided by the factor of safety then multiplied by the surface area for each of the incremental stages to obtain the unsaturated flow rate, in cubic feet per second.

10. The unsaturated storage volume available is calculated by multiplying the unsaturated depth available by the surface area and the effective storage coefficient, in cubic feet. The unsaturated depth available is obtained by subtracting the estimated seasonal high water table from the average swale bottom elevation. The effective storage coefficient or fillable porosity was assumed to be 0.3. If the water quality volume provided is greater than the unsaturated storage volume available then the unsaturated recovery time is shown below, in hours. The unsaturated recovery time is calculated by dividing the unsaturated storage volume by the average percolation flow rate.

11 The water quality volume provided is based on the average end areas at each station in the reach and a depth determined by the control elevation, in cubic feet. If the unsaturated storage volume available is greater than the water quality volume provided then the total recovery time is shown below, in hours. The recovery time is calculated by dividing the water quality volume provided by the average percolation flow rate.

)ject Name
)ject Location

DATE:
TIME:
BY: (Designer)

Example Treatment Swale Calculations

)tation	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (acres)	Q (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
)00+00	C\L	RT.	150.00		10			0.00		6	5	3					0.5	0	High Point
)01+00	C\L	RT.	149.80	-0.20%	13	0.54	6.8	0.16	0.6	6	5	3	SOD	0.040	0.20	1.2	0.5	100	
)02+00	C\L	RT.	149.60	-0.20%	17	0.54	6.2	0.32	1.1	6	5	3	SOD	0.040	0.28	1.7	0.6	200	
)03+00	C\L	RT.	149.40	-0.20%	19	0.54	5.9	0.48	1.5	6	5	3	SOD	0.040	0.34	2.2	0.7	300	
)04+00	C\L	RT.	149.20	-0.20%	22	0.54	5.6	0.64	1.9	6	5	3	SOD	0.040	0.39	2.6	0.8	400	
)05+00	C\L	RT.	149.00	-0.20%	24	0.54	5.4	0.80	2.3	4	5	4	SOD	0.040	0.43	2.9	0.8	500	
)06+00	C\L	RT.	148.80	-0.20%	26	0.54	5.2	0.96	2.7	4	5	4	SOD	0.040	0.47	3.2	0.8	600	
)07+00	C\L	RT.	148.60	-0.20%	28	0.54	5.0	1.12	3.0	4	5	4	SOD	0.040	0.50	3.5	0.9	700	
)08+00	C\L	RT.	148.40	-0.20%	30	0.54	4.9	1.29	3.4	4	5	4	SOD	0.040	0.53	3.7	0.9	800	
)09+00	C\L	RT.	148.20	-0.20%	32	0.54	4.7	1.45	3.7	4	5	4	SOD	0.040	0.55	4.0	0.9	900	
)10+00	C\L	RT.	148.00	-0.20%	33	0.54	4.6	1.61	4.0	4	5	4	SOD	0.040	0.58	4.2	1.0	1000	

a. 1210+00
)ntrol Elevation 149.2 ft. NGVD

ater Quality Volume :
Provided = 2968 cf.
Recovery = 3.6 hours

(3) STAGE : 148.0 148.6 149.2 149.8 ft.
(4) AREA : 0.0 0.1 0.1 0.3 ac.
AREA : 250 2470 6130 11350 sq.ft.
(9) PERC : 0.0 0.2 0.6 1.1 cfs

(5) Avg. S.H.W.T. = 146.0 Avg. Swale bottom = 148.6 (6)
(10) Unsaturated Storage Volume Available = 4781 cf.
(7) Permeability of 8.0 In/hr and the F.S. = 2 (8)

E2106

Treatment Swale Calculation

Second Page

The Second page of the treatment swale spreadsheet is used to determine the Water Quality Treatment Volume Required as identified in the SWFWMD Permit Information Manual section 3.2.2.2.C. An on-line treatment system shall treat the runoff from the first one inch of rainfall; or as an option, the first one-half inch of runoff. The items to be input or calculated in this spreadsheet have been identified by number on the figure and are briefly described below:

1. Excel spreadsheet file name: [WORKBOOK NAME .XLW] document name.

2. Station: The station at which the row of calculations apply.

3. Baseline (B/L): Identifies which baseline the stationing applies.

4. Out. Shldr.: The outside shoulder width of impervious pavement at the station, in feet.

5. Roadway: The roadway impervious pavement width at the station, in feet.

6. Med. Shldr.: The median shoulder width of impervious pavement at the station, in feet.

7. Impervious Area: Area of impervious pavement between the current and the previous station based on average end pavement width of each, in square feet.

8. LT break: Left break point of the contributing drainage area, in feet left of baseline.

9. RT break: Right break point of the contributing drainage area, in feet right of baseline.

10. Total Area: Total contributing drainage area between the current and the previous station based on average end width of each drainage area, in square feet.

11. Remarks: This space to record pertinent remarks.

12. The sum of all impervious areas in the reach, in square feet.

13. The sum of the total contributing drainage areas in the reach, in square feet.

14. The volume of runoff from one inch of rainfall is estimated using the SCS method developed by the United States Department of Agriculture's Soil Conservation Service (SCS). The runoff from the impervious area (Qi) is calculated separately using a curve number (CN) value of 98, 1 inch of rainfall and an initial abstraction (Ia) value of 0.05S thus Qi = 0.82 in. The runoff from remaining contributing area (Qg) is then calculated using an assumed CN value of 39, 1 inch of rainfall and a Ia value of 0.2S thus Qg = 0.34 in. The total volume of runoff from one inch of rainfall from all contributing areas is then shown in cubic feet. (WQV = 0.82/12' * impervious area + 0.34/12' * grass area)

15 The runoff volume of one-half inch of depth over the total contributing area is calculated and shown in cubic feet (WQV = 0.5/12' * total contributing area)

16 The total Water Quality Treatment Volume Required is set equal to the first one inch of rainfall or, if less, the first one-half inch of runoff

Project Name
Project Location

DATE:
TIME:
BY: (Designer)

Example Treatment Swale Calculations

Station	B/L	Impervious Pavement Widths			Impervious Area	Contributing Area		Total Area	Remarks
		Out. Shldr. (ft) Wide	Roadway (ft) Wide	Med. Shldr. (ft) Wide	(sq ft)	LT break (ft. right)	RT break (ft. right)	(sq ft)	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1200+00	C/L	10.0	24.0	0.0		30	100		
1201+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1202+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1203+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1204+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1205+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1206+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1207+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1208+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1209+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
1210+00	C/L	10.0	24.0	0.0	3400	30	100	7000	
					(12) 34000			(13) 70000	

Water Quality Volume Required:

(14) 1" of rainfall = 3343 cu ft

(15) 1/2" of runoff = 2917 cu ft

(16) Water Quality Volume Required 2917 cu ft

U
Polk ..y, Florida

North West Frontage Roadside Treatment Swales

..y: B.D.
Chec..d by: CJL
4-18-01

Station (m)	Station (ft)	B/L	Side	FL (m)	FL (ft)	Slope	tc	Cw	Zone 8 i10	Area (acres)	Q (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarl
201+00	659+45	C\L	LT.	**50.40**	165.35		10			0.00		6	5	3					0.4	0	Begin Spe
201+50	661+09	C\L	LT.	**50.35**	165.19	**-0.10%**	17	0.47	6.2	0.41	1.2	6	5	2	Grass	0.060	0.45	3.1	0.4	164	
201+75	661+91	C\L	LT.	50.18	164.62	**-0.70%**	20	0.44	5.8	0.67	1.7	6	5	3	Grass	0.060	0.31	2.0	0.8	246	
202+00	662+73	C\L	LT.	**50.00**	164.04	-0.70%	22	0.40	5.6	1.02	2.3	6	5	3	Grass	0.060	0.37	2.5	0.9	328	
202+25	663+55	C\L	LT.	**49.80**	163.39	**-0.80%**	23	0.39	5.4	1.37	2.9	6	8	3	Grass	0.060	0.32	3.1	0.9	410	
202+50	664+37	C\L	LT.	**49.80**	163.39	**0.00%**	25	0.38	5.3	1.84	3.7	6	8	3	Grass	0.042	1.28	17.6	0.2	492	

W-1 Sta. 202+50
Control Elevation 164.27 ft (50.07 M) NGVD
Water Quality Volume :
Provided = 1416 cf.
Required = 1394 cf. OK
Recovery = 0.9 hours

STAGE :	163.4	163.8	164.3	164.7 ft.
AREA :	0.0	0.0	0.1	0.1 ac.
AREA :	984	1474	2542	3838 sq.ft.
PERC :	0.3	0.4	0.7	1.1 cfs

(35.05 M)
Avg. S.H.W.T. = 115.0 Avg. Swale bottom = 163.8
Unsaturated Storage Volume Available = 37232 cf.

Permeability of 49.6 in/hr and the F.S. = 4
TNW4-4 0.035 cm/sec

202+50	664+37	C\L	LT.	**49.80**	163.39		10			0.00		6	5	4					0.4	0	
202+75	665+19	C\L	LT.	49.55	162.57	**-1.00%**	13	0.42	6.8	0.54	1.5	6	5	4	Grass	0.060	0.27	1.7	0.9	82	
203+00	666+01	C\L	LT.	**49.30**	161.75	-1.00%	15	0.17	6.5	0.99	1.1	6	5	4	Grass	0.060	0.22	1.4	0.8	164	
203+25	666+83	C\L	LT.	48.65	159.61	**-2.60%**	17	0.08	6.2	1.46	0.7	6	5	4	Grass	0.060	0.13	0.7	1.0	246	
203+50	667+65	C\L	LT.	**48.00**	157.48	-2.60%	18	0.08	6.0	1.92	0.9	6	5	4	Grass	0.060	0.15	0.9	1.0	328	
203+75	668+47	C\L	LT.	**45.90**	150.59	**-4.20%**	19	0.08	5.9	2.35	1.1	6	5	4	Grass	0.060	0.14	0.8	1.3	410	
204+00	669+29	C\L	LT.	**45.90**	150.59	**0.00%**	20	0.11	5.8	2.95	1.9	6	8	4	Grass	0.042	0.91	11.4	0.2	492	

W-2 Sta. 204+00
Control Elevation 151.40 ft (46.15 M) NGVD
Water Quality Volume :
Provided = 1001 cf.
Required = 995 cf. OK
Recovery = 0.8 hours

STAGE :	150.6	151.0	151.4	151.8 ft.
AREA :	0.0	0.0	0.0	0.1 ac.
AREA :	738	1236	1734	2232 sq.ft.
PERC :	0.2	0.4	0.5	0.6 cfs

(35.00 M)
Avg. S.H.W.T. = 114.8 Avg. Swale bottom = 151.0
Unsaturated Storage Volume Available = 18814 cf.

Permeability of 49.6 in/hr and the F.S. = 4
TNW4-4 0.035 cm/sec

E-1063

Polk County, Florida

North West Frontage Roadside Treatment Swales

Checked by: CJL

4-19-01

Station (m)	Station (ft)	B/L	Side	FL (m)	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (acres)	Q (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remarks
203+20	666+67	C\L	RT.	**48.64**	159.58		10			0.00		6	5	4					0.4	0	
203+50	667+65	C\L	RT.	47.50	155.84	**-3.80%**	14	0.49	6.6	0.08	0.3	6	5	4	Grass	0.060	0.07	0.4	0.8	98	
204+00	669+29	C\L	RT.	45.60	149.61	-3.80%	18	0.49	6.1	0.22	0.6	6	5	4	Grass	0.060	0.11	0.6	1.0	262	
204+25	670+11	C\L	RT.	44.65	146.49	-3.80%	19	0.49	5.9	0.28	0.8	6	5	4	Grass	0.060	0.13	0.7	1.1	344	
204+50	670+93	C\L	RT.	**43.70**	143.37	-3.80%	20	0.50	5.8	0.37	1.1	6	5	4	Grass	0.060	0.15	0.8	1.2	427	
204+75	671+75	C\L	RT.	43.05	141.24	**-2.60%**	21	0.50	5.7	0.47	1.3	6	5	4	Grass	0.060	0.19	1.1	1.2	509	
205+00	672+57	C\L	RT.	**42.40**	139.11	-2.60%	22	0.49	5.5	0.64	1.7	6	5	4	Grass	0.060	0.22	1.3	1.3	591	
205+25	673+39	C\L	RT.	41.95	137.63	-1.80%	24	0.45	5.4	0.88	2.2	6	5	4	Grass	0.060	0.28	1.8	1.2	673	
205+50	674+21	C\L	RT.	**41.50**	136.15	-1.80%	25	0.43	5.3	1.13	2.6	6	5	4	Grass	0.060	0.31	2.0	1.3	755	
205+75	675+03	C\L	RT.	41.50	136.15	**0.00%**	26	0.42	5.2	1.38	3.0	6	5	4	Grass	0.042	1.32	15.3	0.2	837	
206+00	675+85	C\L	RT.	41.50	136.15	0.00%	33	0.41	4.7	1.62	3.1	6	5	4	Grass	0.042	1.34	15.6	0.2	919	

R-602 Sta. 206+00

Control Elevation 136.73 ft (41.68 M) NGVD

Water Quality Volume :

Provided = 743 cf.

Required = 1746 cf. Not OK

Recovery = 0.6 hours

STAGE :	136.2	136.4	136.7	137.0	ft.
AREA :	0.0	0.0	0.0	0.1	ac.
AREA :	820	1292	1764	2235	sq.ft.
PERC :	0.2	0.4	0.5	0.6	cfs

(35.05 M)

Avg. S.H.W.T. = 115.0 Avg. Swale bottom = 136.4

Unsaturated Storage Volume Available = 11345 cf.

Permeability of TNW4-4 49.6 In/hr and the F.S. = 4

0.035 cm/sec

R-602 Sta. 206+00

Control Elevation 136.73 ft (41.68 M) NGVD

Water Quality Volume :

2324 Provided = 1581 cf.

2310 Required = 564 cf. OK

Recovery = 0.6 hours

STAGE :	136.2	136.4	136.7	137.3	ft.
AREA :	0.0	0.1	0.1	0.1	ac.
AREA :	0	2476	3802	5860	sq.ft.
PERC :	0.00	0.71	1.09	1.68	cfs

(35.50 M)

Avg. S.H.W.T. = 116.5 Avg. Swale bottom = 136.4

Unsaturated Storage Volume Available = 22778 cf.

Permeability of TNW4-4 49.6 In/hr and the F.S. = 4

0.035 cm/sec

206+00	675+85	C\L	RT.	41.50	136.15	0.00%	46	0.29	3.9	1.23	1.4	6	10	4	Grass	0.060	0.83	11.8	0.1	787	
206+25	676+67	C\L	RT.	41.50	136.15	**0.00%**	34	0.27	4.6	0.99	1.2	6	10	4	Grass	0.060	0.78	10.8	0.1	705	
206+50	677+49	C\L	RT.	**41.50**	136.15	0.40%	31	0.25	4.7	0.79	0.9	6	8	4	Grass	0.060	0.21	1.9	0.5	623	
206+75	678+31	C\L	RT.	41.60	136.48	**0.40%**	29	0.23	5.0	0.65	0.7	6	6.5	4	Grass	0.060	0.20	1.5	0.5	541	
207+00	679+13	C\L	RT.	**41.70**	136.81	**1.60%**	27	0.21	5.1	0.53	0.6	6	5	4	Grass	0.060	0.13	0.8	0.8	459	
207+50	680+77	C\L	RT.	**42.50**	139.44	**2.40%**	23	0.20	5.5	0.31	0.3	6	5	4	Grass	0.060	0.09	0.5	0.7	295	
208+00	682+41	C\L	RT.	**43.70**	143.37	**1.75%**	17	0.20	6.2	0.12	0.1	6	5	4	Grass	0.060	0.06	0.3	0.5	131	
208+40	683+73	C\L	RT.	**44.40**	145.67		10			0.00		6	5	4					0.3	0	

E/1/1064

Polk County, Florida

North West Frontage Roadside Treatment Swales

Des. by: B.D.
Checked by: CJL

4-19-0

Station (m)	Station (ft)	B/L	Side	FL (m)	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (acres)	Q (cfs)	Ditch Section fs	Ditch Section bw	Ditch Section bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	V (fps)	L (ft)	Remar
W-3	Sta. 207+00																				
	Control Elevation 137.45 ft (41.89 M) NGVD																				
	Water Quality Volume :																				
	Provided = 4465 cf.																				
	Required = 4383 cf. OK																				
	Recovery = 1.2 hours																				
	STAGE : 136.2 136.8 137.5 138.7 ft.																				
	AREA : 0.0 0.1 0.1 0.2 ac.																				
	AREA : 0 3656 5091 7959 sq.ft.																				
	PERC : 0.00 1.05 1.46 2.28 cfs																				
	(35.50 M)																				
	Avg. S.H.W.T. = 116.5 Avg. Swale bottom = 136.8																				
	Unsaturated Storage Volume Available = 31051 cf.																				
	Permeability of TNW4-4 49.6 in/hr and the F.S. = 4																				
	0.035 cm/sec																				
207+00	679+13	C\L	LT.	**41.50**	136.15	**0.20%**	49	0.49	3.7	3.21	5.9	6	20	3	Grass	0.060	0.44	9.7	0.6	853	
207+50	680+77	C\L	LT.	**41.60**	136.48	**2.40%**	48	0.48	3.8	2.98	5.5	6	6.5	3	Grass	0.060	0.38	3.1	1.8	689	
208+00	682+41	C\L	LT.	**42.80**	140.42	**3.50%**	46	0.48	3.9	2.74	5.0	6	5	4	Grass	0.060	0.37	2.5	2.0	525	
208+40	683+73	C\L	LT.	**44.20**	145.01	0.20%	43	0.47	4.0	2.54	4.8	6	5	4	Grass	0.060	0.76	6.7	0.7	394	End Dit
209+00	685+70	C\L	LT.	44.32	145.41	0.20%	39	0.47	4.3	2.25	4.5	6	5	4	Grass	0.060	0.73	6.3	0.7	197	
209+50	687+34	C\L	LT.	44.42	145.73	0.20%	35	0.46	4.5	2.00	4.2	6	5	4	Grass	0.060	0.70	6.0	0.7	33	
209+60	687+66	C\L	LT.	44.44	145.80	0.20%	34	0.46	4.6	1.95	4.1	6	5	4	Grass	0.060	0.70	5.9	0.7	0	Offsite

TOTAL REQUIRED TREATMENT VOL. = 9082 CUFT (0.21 A-F)
(ORIGINAL PERMITTED DESIGN)

E#1065

North West Frontage Roadside Treatment Swales

Station (M)	Station (ft)	B/L	Impervious Pavement Widths LT Shldr. (ft) Wide	Roadway (ft) Wide	RT Shldr. (ft) Wide	Impervious Area (sq ft)	Contributing Area LT break (ft. left)	RT break (ft. right)	Total Area (sq ft)	Remarks CN_w Values
201+00	659+45	C\L	5.0	24.0	5.0		43	17		
201+50	661+09	C\L	5.0	24.0	5.0	5577	43	17	17760	
201+75	661+91	C\L	5.0	24.0	5.0	2789	43	17	11409	
202+00	662+73	C\L	5.0	24.0	5.0	2789	49	13	15392	
202+25	663+55	C\L	5.0	24.0	5.0	2789	49	13	15123	
202+50	664+37	C\L	5.0	24.0	5.0	2789	49	13	20613	
						16732			80297	84

Water Quality Volume Required:

1" of DCIA = 1394 cu ft

Water Quality Volume Required = 1394 cu ft

202+50	664+37	C\L	5.0	24.0	5.0		49	13		
202+75	665+19	C\L	5.0	24.0	5.0	2789	49	13	23519	
203+00	666+01	C\L	5.0	24.0	0.0	2584	56	10	19751	
203+25	666+83	C\L	5.0	18.0	0.0	2133	56	10	20344	
203+50	667+65	C\L	5.0	12.0	0.0	1640	56	10	19806	
203+75	668+47	C\L	5.0	12.0	0.0	1394	56	10	19105	
204+00	669+29	C\L	5.0	12.0	0.0	1394	56	0	25995	
						11934			128520	82

Water Quality Volume Required:

1" of DCIA = 995 cu ft

Water Quality Volume Required = 995 cu ft

E-1066

Desi oy: B.D.
Checked by: CJL
4-19-01

North West Frontage Roadside Treatment Swales

Station (M)	Station (ft)	B/L	Impervious Pavement Widths LT Shldr. (ft) Wide	Roadway (ft) Wide	RT Shldr. (ft) Wide	Impervious Area (sq ft)	Contributing Area LT break (ft. left)	RT break (ft. right)	Total Area (sq ft)	Remarks CN_w Values
203+20	666+67	C\L	0.0	10.0	5.0		0	36		
203+50	667+65	C\L	0.0	10.0	5.0	1476	0	36	3543	
204+00	669+29	C\L	0.0	10.0	5.0	2461	0	36	5906	
204+25	670+11	C\L	0.0	10.0	5.0	1230	0	36	2953	
204+50	670+93	C\L	0.0	20.0	5.0	1640	13	39	3613	
204+75	671+75	C\L	0.0	20.0	5.0	2051	13	39	4273	
205+00	672+57	C\L	5.0	20.0	5.0	2256	16	115	7509	
205+25	673+39	C\L	5.0	20.0	5.0	2461	16	115	10745	
205+50	674+21	C\L	5.0	20.0	5.0	2461	16	115	10745	
205+75	675+03	C\L	5.0	20.0	5.0	2461	16	115	10745	
206+00	675+85	C\L	5.0	20.0	5.0	2461	16	115	10745	
						20956			70776	85

Water Quality Volume Required:

1" of DCIA = 1746 cu ft

Water Quality Volume Required = 1746 cu ft

Water Quality Volume Required:

1" of runoff from DCIA = 564 cu ft

Water Quality Volume Required 564 cu ft

206+00	675+85	C\L	5.0	20.0	5.0	2461	16	115	10745	
206+25	676+67	C\L	5.0	20.0	5.0	1845	16	115	8489	
206+50	677+49	C\L	0.0	10.0	5.0	1230	0	76	6070	
206+75	678+31	C\L	0.0	10.0	5.0	820	0	72	5372	
207+00	679+13	C\L	0.0	0.0	5.0	410	-13	72	9678	
207+50	680+77	C\L	0.0	0.0	0.0	0	-13	72	8120	
208+00	682+41	C\L	0.0	0.0	0.0	0	-13	53	5249	
208+40	683+73	C\L	0.0	0.0	0.0		-13	53		
						6767			53724	82

North West Frontage Roadside Treatment Swales

Station (M)	Station (ft)	B/L	Impervious Pavement Widths: LT Shldr. (ft) Wide	Roadway (ft) Wide	RT Shldr. (ft) Wide	Impervious Area (sq ft)	Contributing Area: LT break (ft. left)	RT break (ft. right)	Total Area (sq ft)	Remarks CN_W Values

Water Quality Volume Required:

1" of runoff from DCIA = 4383 cu ft

Water Quality Volume Required = 4383 cu ft

207+00	679+13	C\L	5.0	24.0	0.0	5167	50	13	10335	
207+50	680+77	C\L	5.0	24.0	5.0	5577	50	13	10335	
208+00	682+41	C\L	5.0	24.0	5.0	4134	50	13	8465	
208+40	683+73	C\L	5.0	24.0	0.0	5709	53	13	12992	
209+00	685+70	C\L	5.0	24.0	0.0	4757	53	13	10827	
209+50	687+34	C\L	5.0	24.0	0.0	951	53	13	2165	
209+60	687+66	C\L	5.0	24.0	0.0		53	13	84817	
						26296			139935	83

US[redacted]

De[redacted] : B.D.
Checked by: CJL

4-24-

Ditch Bottom Inlets and Skimmer Summary

Metric

Structure	Station	Station m	Side	Top of Berm el m	Weir		Flow line		Skimmer		DHW (25 yr) M	Conc. Ditch Pav. (100mm) M2
					Length (WL) m	Crest (WC) m	@ Weir (FW) m	@ Ditch (FL) m	Top (ST) m	Bottom (SB) m		
R-602	NW		RT	42.00	DBI	41.67	41.20	41.50	41.88	41.51	41.73	31.81
w-1	NW	202+50	LT	50.20	2.13	50.07	49.76	49.80	50.34	49.92	50.17	50.00
w-2	NW	204+00	LT	46.40	2.26	46.15	45.84	45.90	46.36	46.0	46.21	50.00
w-3	NW	207+00	LT	42.00	3.05	41.89	41.59	41.50	42.18	41.7	42.01	50.00
w-4	I-4	625+07	LT	40.00	-	40.00	-	38.92	-	-	-	

Total: 182

Note: The 100 mm concrete ditch pavement shall include 150 x 150, no. 10 welded wire fabric. Payment of the welded wire fabric and the 5 mm fiberglass skimmers with posts shall be included in the unit cost per square yard of 100 mm concrete ditch pavement. The CPVC piping required for the Bleed-down shall also be included in the cost of square yard of 100 mm concrete ditch pavement for these structures.

11-11

E-1069

Shoulder Gutter Inlet Spacing / Spread Calculations

Appendix B

Roadway Spread Analysis
Basin A

Structure Number	Structure Type	Station	Offset Dist	Offset Lt / Rt	Drainage Area (ac.)	Rainfall Intensity (In./hr.)	Runoff Flow Rate (cfs)	Sag Inlet	Manning's Coefficient 'n'	Long Slope (ft./ft.)	Roadway Cross Slope (ft./ft.)	Gutter Spread (ft.)	Bypass Spread (ft.)	Bypass Flow Rate (cfs)	Accum. Flow Rate (cfs)
P-205	BWI	1998+00												0.00	
P-116	BWI	1989+80	130	Rt	0.90	4	3.43	No	0.016	0.004	0.06	6.87	0.00	0.00	3.43
P-115	BWI	1989+50	130	Rt	0.03	4	0.13	No	0.016	0.004	0.06	1.99	0.00	0.00	0.13
P-114	BWI	1986+90	130	Rt	0.29	4	1.09	No	0.016	0.006	0.06	4.19	0.00	0.00	1.09
P-113	BWI	1983+90	130	Rt	0.34	4	1.28	No	0.016	0.011	0.06	3.93	0.00	0.00	1.28
P-112	BWI	1981+00	130	Rt	0.35	4	1.33	No	0.016	0.017	0.06	3.65	0.00	0.00	1.33
P-110	BWI	1978+56	130	Rt	0.33	4	1.26	No	0.016	0.019	0.045	4.21	0.00	0.00	1.26

Notes: a.) Longitudinal slopes determined based on EOP elevations and distances from Drain Str Sheets.
b.) Max spread is 12' and is based on a 10' shoulder width.
c.) BWI & C.I.capacity approx. 4 cfs based on 0.2 % longitudinal and cross slope & 90% efficiency

Roadway Spread Analysis
Basin B

Structure Number	Structure Type	Station	Offset Dist	Offset Lt / Rt	Drainage Area (ac.)	Rainfall Intensity (in./hr.)	Runoff Flow Rate (cfs)	Sag Inlet	Manning's Coefficient 'n'	Long Slope (ft./ft.)	Roadway Cross Slope (ft./ft.)	Gutter Spread (ft.)	Bypass Spread (ft.)	Bypass Flow Rate (cfs)	Accum. Flow Rate (cfs)
HP		2007+00													
P-207	BWI	1998+40	130	Rt	0.95	4	3.60	No	0.016	0.004	0.06	6.99	0.00	0.00	3.60
P-205	BWI	1998+00	130	Rt	0.04	4	0.17	No	0.016	0.004	0.06	2.21	0.00	0.00	0.17
HP		472+49													
S-401	C.I. P-1	476+40	60.71	Lt	0.601	4	2.29	No	0.016	0.0335	0.03	6.11	0.00	0.00	2.29
S-403	C.I. P-1	480+30	60.48	Lt	0.600	4	2.28	No	0.016	0.01768	0.03	6.88	0.00	0.00	2.28
S-405	C.I. P-1	483+65	61.13	Lt	0.446	4	1.69	No	0.016	0.01768	0.03	6.15	0.00	0.00	1.69
S-408	C.I. P-1	485+50	104.45	Lt	0.340	4	1.29	No	0.016	0.01768	0.03	5.56	0.00	0.00	1.29
HP		472+49													
S-402	C.I. P-1	476+50	60.53	Rt	0.617	4	2.34	No	0.016	0.0335	0.03	6.17	0.00	0.00	2.34
S-404	C.I. P-1	480+30	60.48	Rt	0.611	4	2.32	No	0.016	0.01768	0.03	6.92	0.00	0.00	2.32
S-406	C.I. P-1	483+65	59.61	Rt	0.592	4	2.25	No	0.016	0.01768	0.03	6.84	0.00	0.00	2.25
S-411	C.I. P-1	486+40	64.16	Rt	0.486	4	1.85	No	0.016	0.01768	0.03	6.36	0.00	0.00	1.85
													0.00		
HP		508+00											0.00		
S-517	C.I. P-1	504+60	65.52	Rt	0.510	4	1.94	No	0.016	0.01	0.03	7.20	0.00	0.00	1.94
S-516	C.I. P-1	502+15	65.52	Rt	0.358	4	1.36	No	0.016	0.01	0.03	6.31	0.00	0.00	1.36
S-510	C.I. P-1	499+35	65.52	Rt	0.448	4	1.70	No	0.016	0.018	0.03	6.14	0.00	0.00	1.70
S-507	C.I. P-1	495+90	65.26	Rt	0.578	4	2.20	No	0.016	0.021	0.03	6.57	0.00	0.00	2.20
S-506	C.I. P-1	494+10	65.54	Rt	0.248	4	0.94	No	0.016	0.01	0.03	5.50	0.00	0.00	0.94
S-505	C.I. P-1	493+00	65.52	Rt	0.165	4	0.63	No	0.016	0.01	0.03	4.72	0.00	0.00	0.63
													0.00		
HP		486+40											0.00		
S-503	C.I. P-1	491+30	65.28	Rt	0.689	4	2.62	No	0.016	0.018	0.03	7.22	0.00	0.00	2.62
HP		508+00													
S-518	C.I. P-1	504+60	65.26	Lt	0.537	4	2.04	No	0.016	0.01	0.03	7.34	0.00	0.00	2.04
S-511	BWI	499+35	65.54	Lt	0.852	4	3.24	No	0.016	0.018	0.03	7.82	0.00	0.00	3.24
S-508	BWI	495+90	65.52	Lt	0.578	4	2.20	No	0.016	0.021	0.03	6.57	0.00	0.00	2.20
HP		138+00													
S-512	C.I. P-5	135+70	17.5	Lt	0.211	4	0.80	No	0.016	0.02065	0.03	4.52	0.00	0.00	0.80
S-509	BWI	131+85	17.5	Lt	0.354	4	1.34	No	0.016	0.02065	0.03	5.48	0.00	0.00	1.34
S-604	BWI	128+53	17.5	Lt	0.305	4	1.16	No	0.016	0.02065	0.03	5.18	0.00	0.00	1.16
HP		4007+60													
R-107	C.I. P-8	4011+50	1.5	Lt	0.448	4	1.70	No	0.016	0.0102	0.03	6.83	0.00	0.00	1.70
R-106	C.I. P-8	4012+10	1.5	Lt	0.262	4	0.99	Yes	0.016	0.0102	0.03	5.59	0.00	0.00	0.99
R-104	C.I. P-8	4013+35	1.5	Lt	0.253	4	0.96	No	0.016	0.022	0.03	4.78	0.00	0.00	0.96
HP		4018+00													

Notes: a.) Longitudinal slopes determined based on EOP elevations and distances from Drain Str Sheets.
b.) Max spread is 12' and is based on a 10' shoulder width.
c.) BWI & C.I.capacity approx. 4 cfs based on 0.2 % longitudinal and cross slope & 90% efficiency

Roadway Spread Analysis
Basin C

Structure Number	Structure Type	Station	Offset Dist	Offset Lt / Rt	Drainage Area (ac.)	Rainfall Intensity (in./hr.)	Generated Flow Rate (cfs)	Sag Inlet	Manning's Coefficient 'n'	Long Slope (ft./ft.)	Roadway Cross Slope (ft./ft.)	Gutter Spread (ft.)
HP		455+00										
S-201	C.I. P-1	458+00	65.6	Lt	0.448	4	1.70	No	0.016	0.00739	0.03	7.26
S-203	C.I. P-1	461+60	65.46	Lt	0.537	4	2.04	No	0.016	0.00739	0.03	7.77
HP		463+00										
S-301	C.I. P-1	466+00	65.6	Lt	0.650	4	2.47	No	0.016	0.00739	0.03	8.35
S-304	C.I. P-2	469+90	65.46	Lt	0.582	4	2.21	Yes	0.016	0.00739	0.03	8.01
S-304	C.I. P-2	469+90	65.46	Lt	0.418	4	1.59	Yes	0.016	0.00689	0.03	7.17
HP		472+70										
HP		463+00										
S-303	C.I. P-1	467+35	65.6	Lt	0.399	4	1.52	No	0.016	0.00739	0.03	6.95
S-305	C.I. J-2	469+90	65.46	Lt	0.234	4	0.89	Yes	0.016	0.00739	0.03	5.69
S-305	C.I. J-2	469+90	65.46	Lt	0.418	4	1.59	Yes	0.016	0.00689	0.03	7.17
HP		472+70										
HP		2007+00										
P-400	BWI	2008+50	140	Rt	0.189	4	0.72	No	0.016	0.01	0.12	2.08
P-402	BWI	2010+30	140	Rt	0.269	4	1.02	No	0.016	0.01	0.12	2.38
HP		7004+80										
R-211	C.I. P-1	7007+15	5	Rt	0.183	4	0.70	No	0.016	0.02711	0.19	1.28

Note: a.) Longitudinal slopes determined based on EOP elevations and distances from Drain Str Sheets.
b.) Max spread is 12' and is based on a 10' shoulder width.
c.) BWI & C.I.capacity approx. 4 cfs based on 0.2 % longitudinal and cross slope & 90% efficiency

Roadway Spread Analysis
Basin D

Structure Number	Structure Type	Station	Offset Dist	Offset Lt / Rt	Drainage Area (ac.)	Rainfall Intensity (in./hr.)	Generated Flow Rate (cfs)	Sag Inlet	Manning's Coefficient 'n'	Long Slope (ft./ft.)	Roadway Cross Slope (ft./ft.)	Gutter Spread (ft.)
HP		455+00										
S-120	C.I. P-1	451+10	65.38	Lt	0.58	4	2.21	No	0.016	0.01	0.06	4.90
S-118	C.I. P-1	448+80	65.33	Lt	0.34	4	1.30	No	0.016	0.01	0.06	4.02
S-116	C.I. P-1	446+85	65.36	Lt	0.29	4	1.11	No	0.016	0.01	0.06	3.78
S-113	C.I. P-1	443+90	77.32	Lt	0.44	4	1.67	No	0.016	0.01	0.06	4.42
HP		450+50										
S-117	C.I. P-5	446+85	77.49	Rt	0.54	4	2.07	No	0.016	0.01	0.06	4.78
S-114	C.I. P-5	443+90	77.32	Rt	0.44	4	1.67	No	0.016	0.01	0.06	4.42
HP		442+50										
S-110	C.I. P-1	440+50	65.36	Lt	0.30	4	1.13	No	0.016	0.01	0.06	3.82
S-107	C.I. P-1	437+70	65.4	Lt	0.42	4	1.59	No	0.016	0.01	0.06	4.33
HP		442+50										
S-111	C.I. P-5	440+50	77.46	Rt	0.37	4	1.40	No	0.016	0.01	0.06	4.13
S-108	C.I. P-1	437+70	77.5	Rt	0.51	4	1.95	No	0.016	0.01	0.06	4.68
HP		437+00										
S-105	C.I. P-1	433+10	65.51	Lt	0.58	4	2.33	No	0.016	0.01	0.06	5.00
HP		437+00										
S-106	C.I. P-1	433+10	65.51	Rt	0.58	4	2.33	No	0.016	0.01	0.06	5.00

Note: a.) Longitudinal slopes determined based on EOP elevations and distances from Drain Str Sheets.
b.) Max spread is 10' and is based on a 1/2 the outside driving lane (6') plus 4' shoulder width.
c.) C.I.capacity approx. 4 cfs based on 0.2 % longitudinal and cross slope & 90% efficiency

test max		@ 0.21%			0.533	4	2.132	No	0.016	0.0021	0.03	10.00

or 400 ' x 58' wide

					Allowable							max
test max		@ 0.30%			0.636	4	2.544	No	0.016	0.003	0.03	10.00

or 478 ' x 58' wide

Roadway Spread Analysis
Basin SW

Structure Number	Station	Offset Dist	Offset Lt / Rt	Drainage Area (ac.)	Rainfall Intensity (in./hr.)	Generated Flow Rate (cfs)	Sag Inlet	Manning's Coefficient 'n'	Long Slope (ft./ft.)	Roadway Cross Slope (ft./ft.)	Gutter Spread (ft.)
HP	212+50										
SW-210	210+60	17.6	Rt	0.131	4	0.524	No	0.016	0.0035	0.06	3.48
SW-111	207+69	4.61	LT	0.11	4	0.44	No	0.016	0.0035	0.06	3.26
SW-110	206+60	15	Lt	0.387	4	1.47	No	0.016	0.029	0.06	3.45
SW-107	204+70	12	Lt	0.13	4	0.52	No	0.016	0.029	0.03	3.61
SW-105	201+80	12	Lt	0.20	4	0.80	Yes	0.016	0.029	0.03	4.23
SW-105	201+80	12	Lt	0.12	4	0.48	Yes	0.016	0.029	0.03	3.49
HP	200+00										

Note: a.) Longitudinal slopes determined based on EOP elevations and distances from Drain Str Sheets.
b.) Max spread is 6' and is based on a 12' lane.
c.) C.I.capacity approx. 4 cfs based on 0.2 % longitudinal and cross slope & 90% efficiency

Storm Drain Design

Appendix C

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

		C=	0.950
		C=	0.200
		C=	0.150

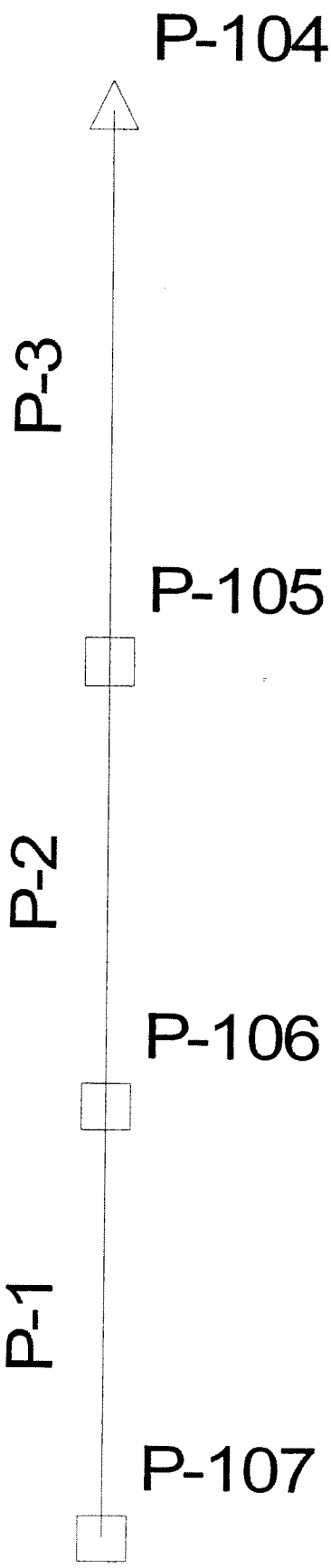
US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

I-4: P-104 to P-107 @ STA. 1972 + 10

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 131.4 ft
		10-year Storm Sewer Analysis
		Zone 6 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			1.004	3.616	3.435							132.00	131.70	0.30		0.278	2.43	23.34	
				TYPE			5.702	5.808	1.182							129.98	129.66	0.32					
P-107 to P-106	97.50	R	P-107	B	M	93	0.000	0.000	0.000	29.00	0.639	5.04	4.60	23.340	132.000	127.48	127.16	0.32	30	0.340	5.28	25.93	
				DBI			2.550	6.166	5.858							131.69	131.82	0.07		0.060	2.77	26.66	
				TYPE			10.440	16.248	3.250							129.66	127.50	2.16					
P-106 to P-105	0.00	C	P-106	B	M	102	0.000	0.000	0.000	71.00	0.813	2.90	9.11	26.660	133.100	126.16	124.00	2.16	42	0.292	6.14	59.00	
				DBI			2.179	8.345	7.928							133.81	131.40	2.21		0.053	2.87	36.04	Time of Concentration based on Ditch from
				TYPE			8.310	24.558	4.912							127.50	126.70	0.80					RA-1; Assumes 2fps; over 3281' tc = 27.3 min.
P-105 to P-104	107.20	L	P-105	B	M	365	0.000	0.000	0.000	71.61	2.120	2.88	12.84	36.040	131.000	123.50	122.70	0.80	48	0.721	10.54	132.42	Tailwater Elev. = 10-year /24-hr DHW Pond 9A-1

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	P-107	6.71	2.09	4.59	132.00	132.00	0.003238	23.34	Circula	93.00	4.75	
	P-106				133.10	131.70	0.003430	24.02	30 inch			
P-2	P-106	12.99	4.51	9.10	133.10	131.69	0.000702	26.66	Circula	102.00	2.77	
	P-105				131.70	131.62	0.021196	146.47	42 inch			
P-3	P-105	10.49	3.73	12.84	131.70	131.61	0.000573	37.23	Circula	365.00	2.96	
	P-104				132.00	131.40	0.002205	73.08	48 inch			

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Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
P-107	6.71	0.31	2.09	2.50	4.59	29.00	0.00	0.00	29.00	5.04	23.34	0.00	0.00	0.00	0.00	23.34	132.00	132.00	132.00	132.00	5.04	10.64
P-106	12.99	0.35	4.51	0.00	9.10	71.00	0.00	29.33	71.00	2.90	26.66	0.00	0.00	0.00	0.00	26.66	133.10	133.10	131.70	131.69	2.90	13.21
P-105	10.49	0.36	3.73	0.00	12.84	40.00	0.00	71.61	71.61	2.88	37.23	0.00	0.00	0.00	0.00	37.23	131.70	131.70	131.62	131.61	4.20	15.80
P-104					12.84				73.67	2.78	36.04					36.04	132.00	132.00	131.40	131.40		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	P-107	P-106	6.71	0.31	2.09	4.59	5.04	23.34	93.00	0.003430	30 inch	0.013	24.02	127.48	127.16	132.00	133.10	2.02	3.44	132.00	131.70	
P-2	P-106	P-105	12.99	0.35	4.51	9.10	2.90	26.66	102.00	0.021196	42 inch	0.013	146.47	126.16	124.00	133.10	131.70	3.44	4.20	131.69	131.62	
P-3	P-105	P-104	10.49	0.36	3.73	12.84	2.88	37.23	365.00	0.002205	48 inch	0.012	73.08	123.50	122.70	131.70	132.00	4.19	5.30	131.61	131.40	

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STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)			
	c=	0.950	
	c=	0.200	
	c=	0.150	
DRAINAGE AREA (ACRES)			
	c=	0.950	
	c=	0.200	
	c=	0.150	

US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

P-108 to P-116, STA. 1976+80 to 1989+80 (I-4)

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 136.5 ft
		10-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

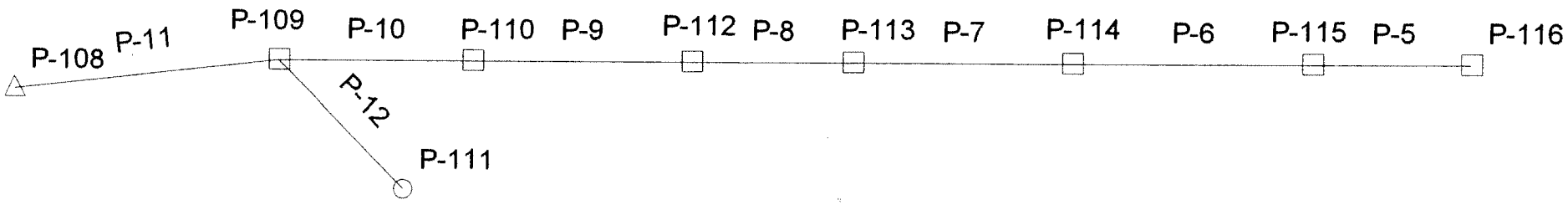
Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 136.5 ft
		10-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	SIDE	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET GRATE ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				BARR			1.040	1.040	0.988							151.87	151.77	0.100		0.385	5.17	7.41	
				WALL			0.000	0.000	0.000							152.20	152.07	0.130					
P-116 to P-115	130.00	R	P-116	INLET	M	26	0.000	0.000	0.000	10.00	0.080	7.45	0.99	7.356	154.760	150.70	150.57	0.130	18	0.500	4.55	8.04	
				BARR			0.028	1.068	1.015							151.73	150.54	1.190		0.465	5.18	7.59	
				WALL			0.000	0.000	0.000							152.07	150.79	1.280					
P-115 to P-114	130.00	R	P-115	INLET	M	256	0.000	0.000	0.000	10.08	0.830	7.43	1.01	7.535	154.640	150.57	149.29	1.280	18	0.500	4.55	8.04	
				BARR			0.287	1.355	1.287							150.47	147.71	2.760		0.932	7.19	9.40	
				WALL			0.000	0.000	0.000							150.79	147.83	2.960					
P-114 to P-113	130.00	R	P-114	INLET	M	296	0.000	0.000	0.000	10.91	0.680	7.24	1.29	9.321	153.190	149.29	148.33	2.960	18	1.000	8.44	11.37	
				8ARR			0.337	1.892	1.607							147.62	142.35	5.270		1.843	9.27	11.50	
				WALL			0.000	0.000	0.000							147.83	142.97	4.862					
P-113 to P-112	130.00	R	P-113	INLET	M	286	0.000	0.000	0.000	11.59	0.520	7.10	1.81	11.411	149.870	146.33	141.47	4.862	18	1.700	8.39	14.82	
				8ARR			0.353	2.045	1.943							142.30	139.52	2.780		1.188	8.77	13.70	
				WALL			0.000	0.000	0.000							142.97	140.00	2.969					
P-112 to P-110	130.00	R	P-112	INLET	M	234	0.000	0.000	0.000	12.11	0.440	7.00	1.94	13.591	144.840	140.97	138.00	2.969	24	1.269	8.79	27.60	
				MAN			0.000	0.000	0.000							136.71	136.62	0.090		0.205	0.00	0.00	
				TYPE			0.000	0.000	0.000							136.01	135.68	0.330					
P-111 to P-109	153.75	R	P-111	P-8	M	44	0.000	0.000	0.000	10.00	0.000	7.45	0.00	0.000	144.690	134.51	134.18	0.330	18	0.750	5.57	9.84	
				8ARR			0.445	2.490	2.366							139.46	136.62	2.840		3.191	8.58	18.48	
				WALL			0.000	0.000	0.000							140.00	139.05	0.950					
P-110 to P-109	130.00	R	P-110	INLET	M	89	0.000	0.000	0.000	12.55	0.180	6.91	2.37	18.349	140.750	136.00	137.05	0.950	24	1.067	8.06	25.31	
				D8I			0.122	2.812	2.481							136.60	136.50	0.100		0.135	4.95	17.35	
				TYPE			0.106	0.106	0.021							136.68	136.50	0.180					
P-109 to P-108	127.00	R	P-109	8	M	74	0.000	0.000	0.000	12.73	4.220	6.88	2.50	17.212	139.900	134.18	134.00	0.180	30	0.243	4.47	21.92	Crown Elev. = Hydraulic Grade Elev.

E-1082

4/17/2003

Scenario: Base



Title: I-4 Design Build - Segment 9
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04/18/03 11:14:30 AM

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 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Project Engineer: Bill Veon
StormCAD v4.1.1 [4.2014]

Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-5	P-116	1.04	0.99	0.99	154.76	151.87	0.004540	7.41	Circula	26.00	5.17	
	P-115				154.64	151.77	0.005000	8.05	18 inch			
P-6	P-115	0.03	0.03	1.01	154.64	151.73	0.004861	7.59	Circula	256.00	5.18	
	P-114				153.19	150.54	0.005000	8.05	18 inch			
P-7	P-114	0.29	0.27	1.29	153.19	150.47	0.009802	9.40	Circula	296.00	7.19	
	P-113				149.87	147.71	0.010000	11.38	18 inch			
P-8	P-113	0.34	0.32	1.61	149.87	147.62	0.016113	11.50	Circula	286.00	9.27	
	P-112				144.84	142.46	0.016993	14.83	18 inch			
P-9	P-112	0.35	0.34	1.94	144.84	142.30	0.012516	13.70	Circula	234.00	8.77	
	P-110				140.75	139.52	0.012692	27.61	24 inch			
P-12	P-111	N/A	N/A	0.00	144.69	136.71	0.000000	0.00	Circula	44.00	0.00	
	P-109				139.90	136.71	0.007500	9.85	18 inch			
P-10	P-110	0.45	0.42	2.37	140.75	139.46	0.009063	16.48	Circula	89.00	8.58	
	P-109				139.90	138.24	0.010674	25.32	24 inch			
P-11	P-109	0.23	0.14	2.50	139.90	136.60	0.001424	17.35	Circula	74.00	4.95	
	P-108				140.00	136.50	0.002432	21.91	30 inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	Extemal Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rationai Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (In/hr)	Local Rationai Flow (cfs)	Desc.
P-116	1.04	0.95	0.99	0.00	0.99	10.00	0.00	0.00	10.00	7.45	7.41	0.00	0.00	0.00	0.00	7.41	154.76	154.76	151.87	151.87	7.45	7.41	
P-115	0.03	0.95	0.03	0.00	1.01	10.00	0.00	10.08	10.08	7.43	7.59	0.00	0.00	0.00	0.00	7.59	154.64	154.64	151.77	151.73	7.45	0.20	
P-114	0.29	0.95	0.27	0.00	1.29	10.00	0.00	10.91	10.91	7.24	9.40	0.00	0.00	0.00	0.00	9.40	153.19	153.19	150.54	150.47	7.45	2.05	
P-113	0.34	0.95	0.32	0.00	1.61	10.00	0.00	11.59	11.59	7.10	11.50	0.00	0.00	0.00	0.00	11.50	149.87	149.87	147.71	147.62	7.45	2.40	
P-112	0.35	0.95	0.34	0.00	1.94	10.00	0.00	12.11	12.11	7.00	13.70	0.00	0.00	0.00	0.00	13.70	144.84	144.84	142.35	142.30	7.45	2.52	
P-111					0.00				0.00	0.00	0.00					0.00	144.69	144.69	136.71	136.71			
P-110	0.45	0.95	0.42	0.00	2.37	10.00	0.00	12.55	12.55	6.91	16.48	0.00	0.00	0.00	0.00	16.48	140.75	140.75	139.52	139.46	7.45	3.17	
P-109	0.23	0.60	0.14	0.00	2.50	10.00	0.00	12.73	12.73	6.88	17.35	0.00	0.00	0.00	0.00	17.35	139.90	139.90	136.62	136.60	7.45	1.03	
P-108					2.50				12.97	6.83	17.24					17.24	140.00	140.00	136.50	136.50			

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)
P-5	P-116	P-115	1.04	0.95	0.99	0.99	7.45	7.41	26.00	0.005000	18 inch	0.012	8.05	150.70	150.57	154.76	154.64	2.56	2.57	151.87	151.77
P-6	P-115	P-114	0.03	0.95	0.03	1.01	7.43	7.59	256.00	0.005000	18 inch	0.012	8.05	150.57	149.29	154.64	153.19	2.57	2.40	151.73	150.54
P-7	P-114	P-113	0.29	0.95	0.27	1.29	7.24	9.40	296.00	0.010000	18 inch	0.012	11.38	149.29	146.33	153.19	149.87	2.40	2.04	150.47	147.71
P-8	P-113	P-112	0.34	0.95	0.32	1.61	7.10	11.50	286.00	0.016993	18 inch	0.012	14.83	146.33	141.47	149.87	144.84	2.04	1.87	147.62	142.46
P-9	P-112	P-110	0.35	0.95	0.34	1.94	7.00	13.70	234.00	0.012692	24 inch	0.012	27.61	140.97	138.00	144.84	140.75	1.87	0.75	142.30	139.52
P-12	P-111	P-109	N/A	N/A	N/A	0.00	0.00	0.00	44.00	0.007500	18 inch	0.012	9.85	134.51	134.18	144.69	139.90	8.68	4.22	136.71	136.71
P-10	P-110	P-109	0.45	0.95	0.42	2.37	6.91	16.48	89.00	0.010674	24 inch	0.012	25.32	138.00	137.05	140.75	139.90	0.75	0.85	139.46	138.24
P-11	P-109	P-108	0.23	0.60	0.14	2.50	6.88	17.35	74.00	0.002432	30 inch	0.012	21.91	134.18	134.00	139.90	140.00	3.22	3.50	136.60	136.50

 Jacobs Sverdrup
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STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)		
c=	0.950	
c=	0.200	
c=	0.150	

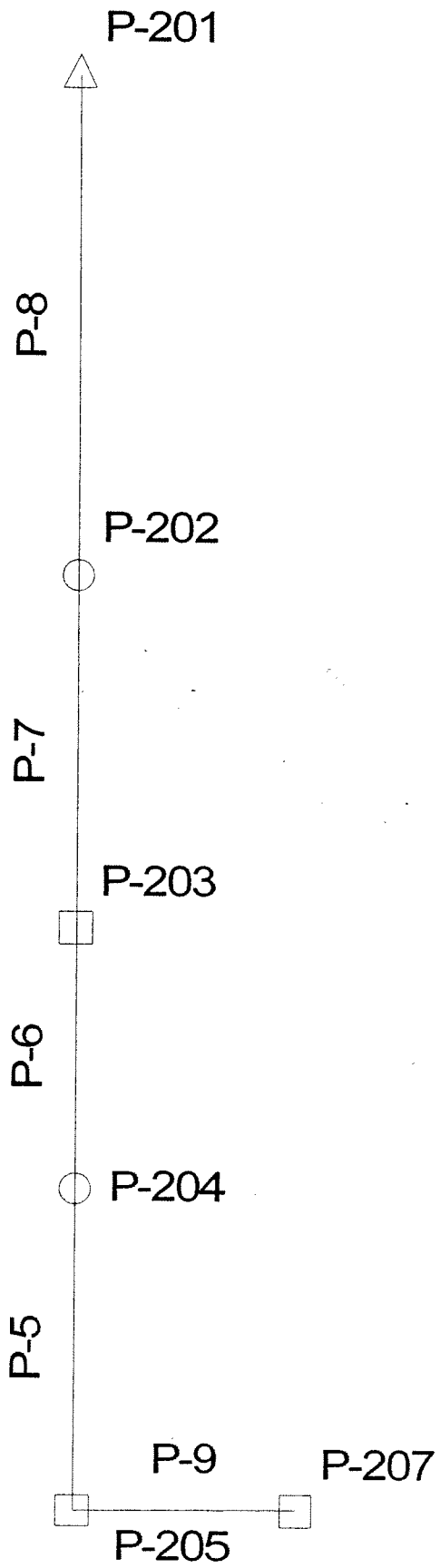
US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

I-4 Cross Drain @ Sta. 1998+00

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 139.0 ft
		10-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainaga Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				BARR.			0.950	0.950	0.903							155.71	155.49	0.220					
				WALL			0.000	0.000	0.000							156.16	155.98	0.180		0.511	5.24	6.72	
P-207 to P-205	127.97	R	P-207	INLET	M	36	0.000	0.000	0.000	10.00	0.115	7.450	0.90	6.724	158.20	154.66	154.48	0.180	18	0.500	4.55	8.04	
				BARR.			0.234	1.184	1.125							155.01	152.22	2.790					
				WALL			0.000	0.000	0.000							155.98	153.16	2.820		5.125	5.06	8.36	
P-205 to P-204	130.00	R	P-205	INLET	M	55	0.000	0.000	0.000	10.11	0.181	7.430	1.12	8.357	158.02	153.98	151.16	2.820	24	5.127	17.67	55.49	
				MAN.			0.000	1.184	1.125							152.19	148.45	5.740					
				TYPE			0.000	0.000	0.000							153.16	147.27	5.890		9.011	4.74	8.31	
P-204 to P-203	68.32	R	P-204	P-8	M	65	0.000	0.000	0.000	10.30	0.229	7.390	1.12	8.312	158.90	151.16	145.27	5.890	24	9.062	23.49	68.10	
				DBI			0.990	2.174	2.065							146.42	145.46	0.960					
				TYPE			2.940	2.940	0.588							147.27	146.28	0.990		1.498	5.42	10.22	
P-203 to P-202	0.68	R	P-203	B	M	86	0.000	0.000	0.000	50.00	0.203	3.850	2.65	10.215	150.40	145.27	144.28	0.990	24	1.500	9.56	27.71	
				MAN.			0.000	2.174	2.065							145.43	139.00	6.430					
				TYPE			0.000	2.940	0.588							146.28	139.80	8.480		3.969	5.38	10.19	
P-202 to P-201	87.88	L	P-202	P-8	M	162	0.000	0.000	0.000	50.20	0.504	3.840	2.65	10.189	154.48	144.28	137.80	6.480	24	4.000	15.61	49.01	

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-9	P-207	0.95	0.90	0.90	158.20	155.71	0.005112	6.78	Circula	36.00	5.24	
	P-205				158.02	155.49	0.005000	8.05	18 Inch			
P-5	P-205	0.23	0.22	1.12	158.02	155.01	0.051253	8.42	Circula	55.00	5.06	
	P-204				158.90	152.22	0.051273	55.49	24 Inch			
P-6	P-204	N/A	N/A	1.12	158.90	152.19	0.090107	8.38	Circula	65.00	4.74	
	P-203				150.40	146.45	0.090615	68.10	24 Inch			
P-7	P-203	3.93	1.53	2.65	150.40	146.42	0.014975	10.30	Circula	66.00	5.42	
	P-202				154.48	145.46	0.015000	27.71	24 Inch			
P-8	P-202	N/A	N/A	2.65	154.48	145.43	0.039974	10.27	Circula	162.00	5.36	
	P-201				140.00	139.00	0.040000	49.01	24 Inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
P-207	0.95	0.95	0.90	0.00	0.90	10.00	0.00	0.00	10.00	7.45	6.78	0.00	0.00	0.00	0.00	6.78	158.20	158.20	155.71	155.71	7.45	6.78
P-205	0.23	0.95	0.22	0.00	1.12	10.00	0.00	10.11	10.11	7.43	8.42	0.00	0.00	0.00	0.00	8.42	158.02	158.02	155.23	155.01	7.45	1.67
P-204					1.12				10.30	7.39	8.38					8.38	158.90	158.90	152.22	152.19		
P-203	3.93	0.39	1.53	0.00	2.65	50.00	0.00	10.52	50.00	3.85	10.30	0.00	0.00	0.00	0.00	10.30	150.40	150.40	146.45	146.42	3.85	5.93
P-202					2.65				50.20	3.84	10.27					10.27	154.48	154.48	145.46	145.43		
P-201					2.65				50.71	3.82	10.21					10.21	140.00	140.00	139.00	139.00		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-9	P-207	P-205	0.95	0.95	0.90	0.90	7.45	6.78	36.00	0.005000	18 Inch	0.012	8.05	154.66	154.48	158.20	158.02	2.04	2.04	155.71	155.49	
P-5	P-205	P-204	0.23	0.95	0.22	1.12	7.43	8.42	55.00	0.051273	24 Inch	0.012	55.49	153.98	151.16	158.02	158.90	2.04	5.74	155.01	152.22	
P-6	P-204	P-203	N/A	N/A	N/A	1.12	7.39	8.38	65.00	0.090615	24 Inch	0.013	68.10	151.16	145.27	158.90	150.40	5.74	3.13	152.19	146.45	
P-7	P-203	P-202	3.93	0.39	1.53	2.65	3.85	10.30	66.00	0.015000	24 Inch	0.013	27.71	145.27	144.28	150.40	154.48	3.13	8.20	146.42	145.46	
P-8	P-202	P-201	N/A	N/A	N/A	2.65	3.84	10.27	162.00	0.040000	24 Inch	0.012	49.01	144.28	137.80	154.48	140.00	8.20	0.20	145.43	139.00	

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c=	0.950
c=	0.200
c=	0.150

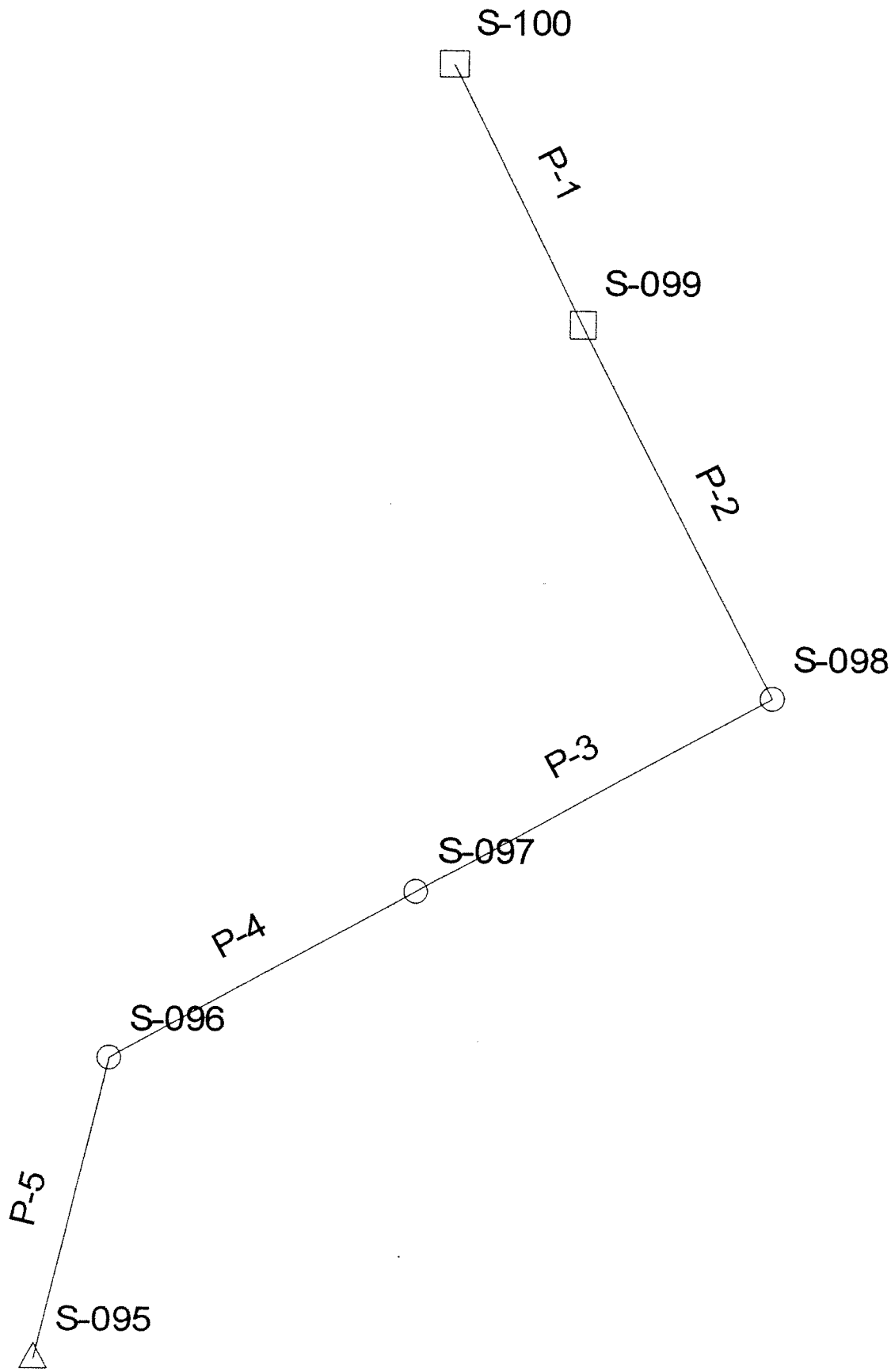
US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

US 27 INFLOW SEWER TO POND D

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 161.2 ft
		10-year Storm Sewer Analysis
		Zone 6 used for Rainfall Intensity
		FDOT Drainage Manual

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.225	5.530	5.254							182.81	182.65	0.160					
				TYPE			13.079	31.797	6.359							161.84	161.50	0.340		0.295	5.56	39.26	Time of Concentration from HDR Design
S-100 to S-099	75.45	L	S-100	D	M	56	0.000	0.000	0.000	61.00	0.170	3.360	11.81	39.260	163.540	158.84	158.50	0.340	36	0.607	7.98	58.36	
				DBI			0.000	5.530	5.254							162.81	162.33	0.280					Physical Velocity Used In Time Of Flow
				TYPE			0.000	31.797	8.359							161.50	161.33	0.170		0.294	5.54	39.17	In Pipe Section
S-099 to S-098	75.45	L	S-099	D	M	96	0.000	0.000	0.000	61.17	0.290	3.350	11.61	39.170	163.200	158.50	158.33	0.170	36	0.177	4.31	30.44	
				MAN.			0.000	5.530	5.254							162.14	161.82	0.320					Physical Velocity Used In Time Of Flow
				TYPE			0.000	31.797	8.359							161.83	161.63	0.200		0.128	4.06	39.02	In Pipe Section
S-098 to S-097	75.45	L	S-098	J-7	M	248	0.000	0.000	0.000	61.46	1.020	3.330	11.61	39.020	165.680	158.33	158.13	0.200	42	0.081	3.23	31.07	
				MAN.			0.000	5.530	5.254							161.80	161.46	0.340					Physical Velocity Used In Time Of Flow
				TYPE			0.000	31.797	6.359							161.63	161.43	0.200		0.124	4.00	38.48	In Pipe Section
S-097 to S-096	329.23	L	S-097	J-7	M	279	0.000	0.000	0.000	62.48	1.160	3.290	11.61	38.480	165.600	158.13	157.93	0.200	42	0.072	3.05	29.30	
				MAN.			0.000	5.530	5.254							161.33	161.20	0.130					Physical Velocity Used In Time Of Flow
				TYPE			0.000	31.797	8.359							161.43	161.13	0.300		0.120	3.94	37.87	In Pipe Section
S-096 to S-095	814.68	L	S-096	J-7	M	116	0.000	0.000	0.000	63.64	0.490	3.240	11.61	37.870	165.600	157.93	157.63	0.300	42	0.259	5.78	55.57	HGL = TW = 10 yr critical storm

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	S-100	13.30	2.83	11.61	163.54	162.81	0.002953	39.26	Circula	56.00	5.55	
	S-099				163.20	162.65	0.006071	56.30	36 inch			
P-2	S-099	0.00	0.00	11.61	163.20	162.61	0.002939	39.17	Circula	96.00	5.54	
	S-098				165.68	162.33	0.001771	30.40	36 inch			
P-3	S-098	N/A	N/A	11.61	165.68	162.14	0.001282	39.02	Circula	248.00	4.06	
	S-097				165.60	161.82	0.000806	30.95	42 inch			
P-4	S-097	N/A	N/A	11.61	165.60	161.80	0.001247	38.48	Circula	279.00	4.00	
	S-096				185.60	161.46	0.000717	29.18	42 inch			
P-5	S-096	N/A	N/A	11.61	165.60	161.33	0.001157	37.87	Circula	116.00	3.95	
	S-095				163.63	161.20	0.002586	55.43	42 inch			

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)	Desc.
S-100	13.30	0.21	2.83	8.78	11.61	61.00	0.00	0.00	61.00	3.36	39.26	0.00	0.00	0.00	0.00	39.26	163.54	163.54	162.81	162.81	3.36	9.57	
S-099	0.00	0.57	0.00	0.00	11.61	10.00	0.00	61.17	61.17	3.35	39.17	0.00	0.00	0.00	0.00	39.17	163.20	163.20	162.65	162.61	0.00	0.00	
S-098					11.61				61.46	3.33	39.02					39.02	165.68	165.68	162.33	162.14			
S-097					11.61				62.48	3.29	38.48					38.48	165.60	165.60	161.82	161.80			
S-096					11.61				63.64	3.24	37.87					37.87	165.60	165.60	161.46	161.33			
S-095					11.61				64.13	3.21	37.61					37.61	163.63	163.63	161.20	161.20			

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	S-100	S-099	13.30	0.21	2.83	11.61	3.36	39.26	56.00	0.006071	36 Inch	0.012	56.30	158.84	158.50	163.54	163.20	1.70	1.70	162.81	162.65	
P-2	S-099	S-098	0.00	0.57	0.00	11.61	3.35	39.17	96.00	0.001771	36 inch	0.012	30.40	158.50	158.33	163.20	165.68	1.70	4.35	162.61	162.33	
P-3	S-098	S-097	N/A	N/A	N/A	11.61	3.33	39.02	248.00	0.000806	42 inch	0.012	30.95	158.33	158.13	165.68	165.60	3.85	3.97	162.14	161.82	
P-4	S-097	S-096	N/A	N/A	N/A	11.61	3.29	38.48	279.00	0.000717	42 Inch	0.012	29.18	158.13	157.93	165.60	165.60	3.97	4.17	161.80	161.46	
P-5	S-096	S-095	N/A	N/A	N/A	11.61	3.24	37.87	116.00	0.002586	42 inch	0.012	55.43	157.93	157.63	165.60	163.63	4.17	2.50	161.33	161.20	

Jacobs Sverdrup
37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)		
c=	0.950	
c=	0.200	
c=	0.150	

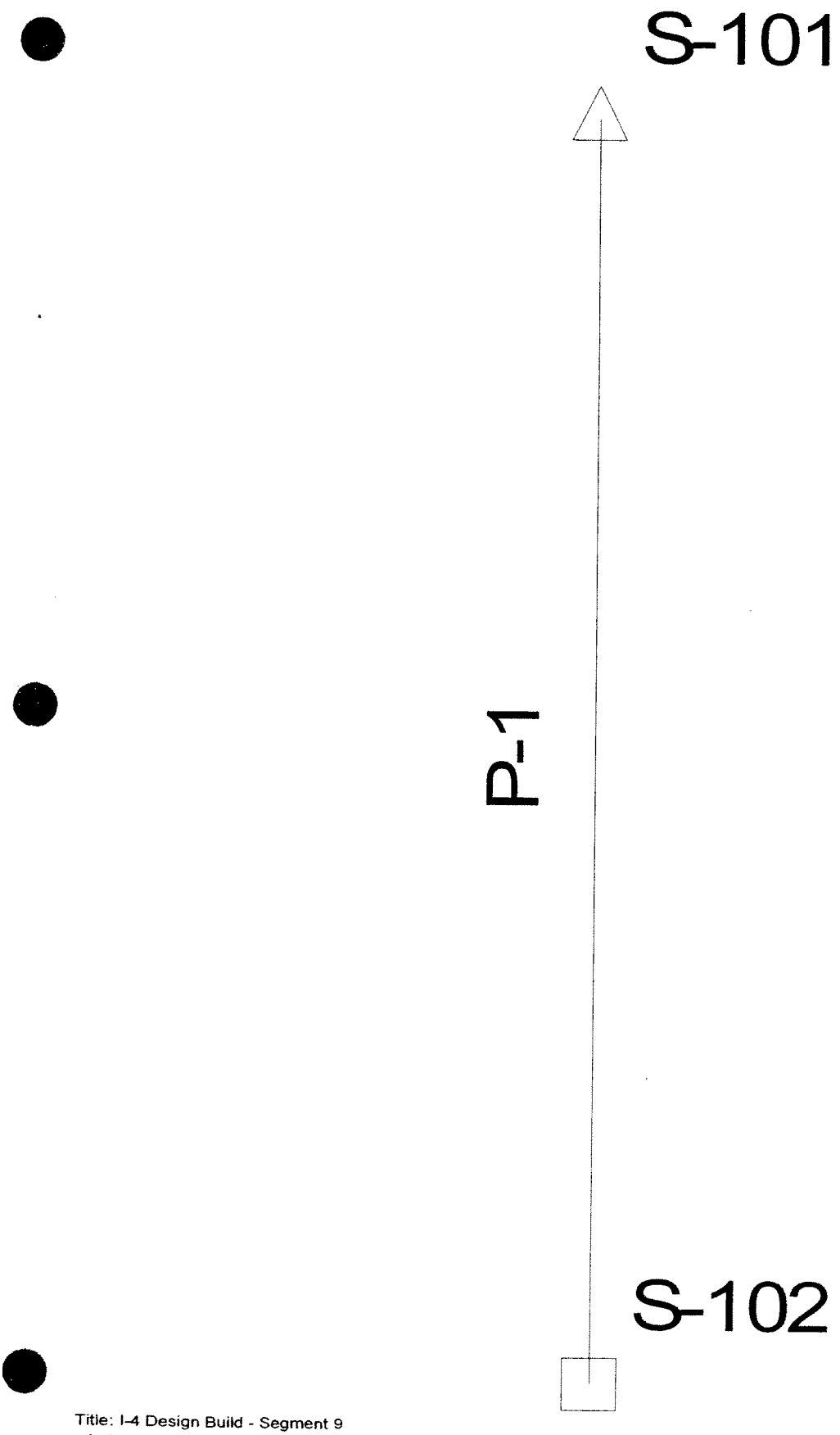
US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

US 27 - CROSS DRAIN @ STA 430+00

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 174.24 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.296	0.296	0.281						TOB =	172.64	172.12	0.517					
				TYPE			9.360	9.360	1.872						178.000	172.32	171.80	0.519		0.349	3.80	8.72	Physical Velocity Used In Time Of Flow
S-102 to S-101	83.70	R	S-102	D	M	148	0.000	0.000	0.000	52.00	0.647	3.120	2.15	6.718	173.420	170.82	170.30	0.519	18	0.351	3.81	8.73	In Pipe Section
																							Crown Elev. = Hydraulic Grade Elev.

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	S-102	9.66	2.15	2.15	173.42	172.62	0.003404	6.64	Circula	148.00	3.76	
	S-101				176.00	172.12	0.003514	6.74	18 Inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
S-102	9.66	0.22	2.15	0.00	2.15	52.00	0.00	0.00	52.00	3.06	6.64	0.00	0.00	0.00	0.00	6.64	173.42	173.42	172.62	172.62	3.06	6.64
S-101					2.15				52.66	3.04	6.59					6.59	176.00	176.00	172.12	172.12		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	S-102	S-101	9.66	0.22	2.15	2.15	3.06	6.64	148.00	0.003514	18 Inch	0.012	6.74	170.82	170.30	173.42	176.00	1.10	4.20	172.62	172.12	

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

US 27 BETWEEN STA. 432+80 & 451+10

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = Crown Elev.
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.000	0.000	0.000							186.61	185.28	1.330					Physical Velocity Used In Time Of Flow
				TYPE			4.493	4.493	0.899							187.79	186.05	1.740		10.932	3.58	5.46	In Pipe Section
S-119 to S-120	84.30	L	S-119	H	S	14	0.000	0.000	0.000	13.00	0.070	8.030	0.90	5.460	188.97	186.79	184.05	1.740	24	12.428	27.51	88.39	
				INLET			0.430	0.430	0.409							185.07	184.09	0.980					Physical Velocity Used In Time Of Flow
				TYPE			0.277	4.770	0.954							186.05	185.07	0.978		0.429	5.13	8.26	In Pipe Section
S-120 to S-118	65.38	L	S-120	P-1	M	228	0.000	0.000	0.000	13.07	0.740	6.020	1.36	8.260	192.22	184.05	183.07	0.978	24	0.429	5.11	16.05	
				INLET			0.227	0.657	0.624							182.53	181.61	0.920					Physical Velocity Used In Time Of Flow
				TYPE			0.131	4.901	0.980							183.43	182.38	1.050		0.532	5.02	9.50	In Pipe Section
S-118 to S-116	65.33	L	S-118	P-1	M	193	0.000	0.000	0.000	13.81	0.640	5.880	1.60	9.500	189.24	181.43	180.38	1.050	24	0.544	5.76	18.07	
				DBI			0.017	0.017	0.016							181.86	181.86	0.001					Physical Velocity Used In Time Of Flow
				TYPE			0.366	0.366	0.073							182.41	182.38	0.030		0.005	0.49	0.59	In Pipe Section
S-115 to S-118	77.77	L	S-115	D	S	10	0.000	0.000	0.000	10.00	0.047	6.600	0.09	0.590	183.40	180.91	180.88	0.030	18	0.300	3.63	6.23	
				INLET			0.210	0.884	0.840							181.58	178.44	3.140					Physical Velocity Used In Time Of Flow
				TYPE			0.109	5.376	1.075							182.38	179.49	2.889		0.937	8.62	11.11	In Pipe Section
S-116 to S-113	65.36	L	S-116	P-1	M	293	0.000	0.000	0.000	14.45	0.730	5.760	1.92	11.110	187.03	180.38	177.49	2.889	24	0.986	7.75	24.33	
				DBI			0.040	0.040	0.038							178.46	178.26	0.200					Physical Velocity Used In Time Of Flow
				TYPE			0.353	0.353	0.071							179.59	179.49	0.100		0.134	1.80	0.72	In Pipe Section
S-112 to S-113	82.38	L	S-112	C	S	14	0.000	0.000	0.000	10.00	0.043	6.600	0.11	0.720	181.43	178.09	177.99	0.100	18	0.714	5.44	9.61	
				INLET			0.390	1.314	1.248							178.23	176.84	1.390					Physical Velocity Used In Time Of Flow
				TYPE			0.094	6.823	1.165							179.49	177.76	1.740		0.479	4.89	13.68	In Pipe Section
S-113 to S-110	65.39	L	S-113	P-1	M	338	0.000	0.000	0.000	15.18	1.160	5.630	2.41	13.680	184.91	176.99	175.25	1.740	30	0.515	8.50	31.91	
				INLET			0.035	0.035	0.033							177.08	177.08	0.001					Physical Velocity Used In Time Of Flow
				TYPE			0.294	0.294	0.059							177.85	177.75	0.100		0.010	0.66	0.61	In Pipe Section
S-109 to S-110	81.10	L	S-109	C	S	13	0.000	0.000	0.000	10.00	0.038	8.600	0.09	0.610	179.79	176.35	176.25	0.100	18	0.769	5.64	9.97	
				INLET			0.356	0.356	0.338							182.11	180.24	1.870					Physical Velocity Used In Time Of Flow
				TYPE			0.096	0.096	0.019							183.03	180.61	2.420		0.698	2.70	2.38	In Pipe Section
S-117 to S-114	77.49	R	S-117	P-5	S	293	0.000	0.000	0.000	10.00	1.810	6.600	0.36	2.380	186.50	181.53	179.11	2.420	18	0.826	5.85	10.33	
				INLET			0.368	0.724	0.688							180.21	179.73	0.480					Physical Velocity Used In Time Of Flow
				TYPE			0.082	0.178	0.036							180.61	178.87	1.740		0.161	2.93	4.56	In Pipe Section
S-114 to S-111	77.32	R	S-114	P-5	S	338	0.000	0.000	0.000	11.81	1.920	6.260	0.72	4.560	184.28	179.11	177.37	1.740	18	0.515	4.62	8.16	

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)			
		c=	0.950
		c=	0.200
		c=	0.150

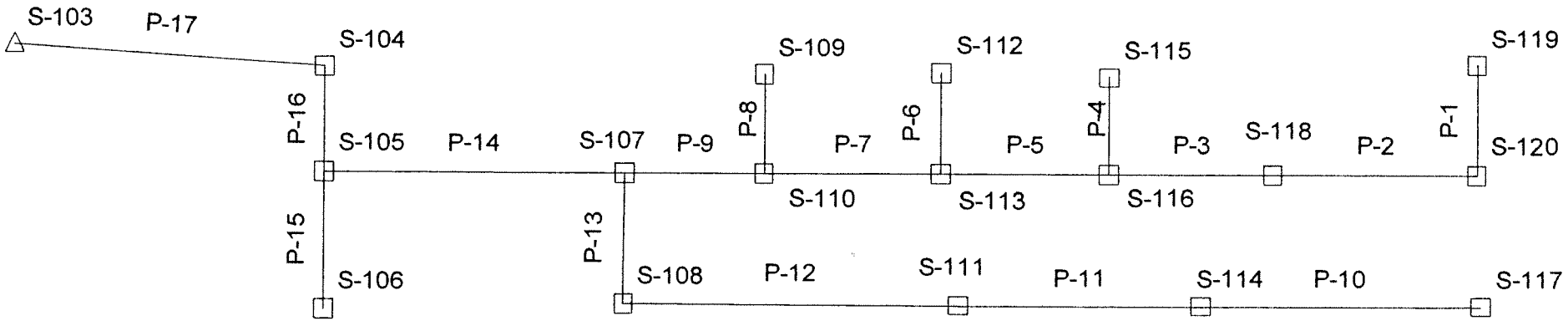
US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

US 27

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = Crown Elev.
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.600	1.324	1.258							179.67	178.39	1.279					
				TYPE			0.022	0.200	0.040							178.87	177.69	1.179		0.460	4.36	7.71	Physical Velocity Used In Time Of Flow
S-111 to S-108	77.46	R	S-111	P-6	S	278	0.000	0.000	0.000	13.73	1.060	6.890	1.30	7.710	182.16	177.37	176.19	1.179	18	0.424	4.19	7.40	In Pipe Section
				INLET			0.417	3.090	2.936							176.81	176.61	0.200					
				TYPE			0.111	6.428	1.286							177.76	176.64	1.209		0.152	4.15	16.14	Physical Velocity Used In Time Of Flow
S-110 to S-107	65.36	L	S-110	P-1	M	278	0.000	0.000	0.000	16.34	1.110	5.480	2.92	16.140	182.63	175.25	174.04	1.209	30	0.435	5.98	29.33	In Pipe Section
				INLET			0.373	1.697	1.612							177.89	176.94	0.950					
				TYPE			0.025	0.225	0.045							177.69	176.54	1.151		0.698	5.38	9.50	Physical Velocity Used In Time Of Flow
S-108 to S-107	77.50	R	S-108	P-1	S	136	0.000	0.000	0.000	14.79	0.383	5.690	1.66	9.600	180.38	176.19	175.04	1.151	18	0.846	5.92	10.46	In Pipe Section
				INLET			0.276	5.063	4.810							176.57	174.98	1.588					
				TYPE			0.148	6.801	1.360							176.54	174.90	1.640		0.347	5.33	26.18	Physical Velocity Used In Time Of Flow
S-107 to S-105	65.40	L	S-107	P-1	M	458	0.000	0.000	0.000	17.45	1.430	5.330	4.87	26.180	180.92	174.04	172.40	1.640	30	0.358	6.42	26.60	In Pipe Section
				INLET			0.689	0.689	0.655							176.18	174.98	0.204					
				TYPE			0.057	0.057	0.011							175.32	174.90	0.420		0.145	2.67	4.43	Physical Velocity Used In Time Of Flow
S-106 to S-105	77.23	R	S-106	P-1	S	141	0.000	0.000	0.000	10.00	0.669	6.600	0.67	4.430	177.73	173.82	173.40	0.420	18	0.298	3.51	6.21	In Pipe Section
				INLET			0.580	6.332	6.015							174.94	174.88	0.060					
				TYPE			0.000	6.858	1.372							174.90	173.90	1.000		0.505	6.43	31.58	Physical Velocity Used In Time Of Flow
S-105 to S-104	65.51	L	S-105	P-1	M	10	0.000	0.000	0.000	18.88	0.006	6.150	8.09	31.580	178.10	172.40	171.40	1.000	30	10.000	28.66	140.60	In Pipe Section
				DBI			0.000	6.332	6.015							174.37	173.80	0.670					
				TYPE			2.700	9.558	1.912							173.90	173.80	0.100		0.491	6.34	31.14	Physical Velocity Used In Time Of Flow
S-104 to S-103	77.95	L	S-104	D	M	116	0.000	0.000	0.000	24.00	0.727	4.660	6.63	31.140	175.85	171.40	171.30	0.100	30	0.086	2.66	13.04	In Pipe Section
																							Crown Elev. = Hydraulic Grade Elev.

Scenario: Base



Scena : Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	S-119	4.49	0.90	0.90	188.97	186.61	0.109319	5.46	Circula	14.00	3.58	
	S-120				192.22	185.28	0.124286	86.39	24 inch			
P-2	S-120	0.71	0.46	1.36	192.22	185.07	0.004298	8.26	Circula	228.00	5.13	
	S-118				189.24	184.09	0.004298	16.07	24 inch			
P-3	S-118	0.36	0.24	1.60	189.24	182.53	0.005317	9.50	Circula	193.00	5.02	
	S-116				187.03	181.61	0.005440	18.08	24 inch			
P-4	S-115	0.38	0.09	0.09	183.40	181.86	0.000049	0.59	Circula	10.00	0.49	
	S-116				187.03	181.86	0.003000	6.23	18 inch			
P-10	S-117	0.45	0.36	0.36	186.50	182.11	0.006982	2.38	Circula	293.00	2.70	
	S-114				184.28	180.24	0.008259	10.34	18 inch			
P-6	S-112	0.39	0.11	0.11	181.43	178.46	0.001338	0.72	Circula	14.00	1.80	
	S-113				184.91	178.48	0.007143	9.62	18 inch			
P-5	S-116	0.32	0.22	1.92	187.03	181.58	0.009373	11.11	Circula	293.00	6.62	
	S-113				184.91	178.44	0.009863	24.34	24 inch			
P-11	S-114	0.45	0.37	0.72	184.28	180.21	0.001606	4.56	Circula	338.00	2.93	
	S-111				182.16	179.73	0.005148	8.16	18 Inch			
P-7	S-113	0.48	0.39	2.41	184.91	178.23	0.004785	13.68	Circula	338.00	4.89	
	S-110				182.63	176.84	0.005148	31.88	30 inch			
P-8	S-109	0.33	0.09	0.09	179.79	177.08	0.000102	0.61	Circula	13.00	0.66	
	S-110				182.63	177.08	0.007692	9.98	18 inch			
P-12	S-111	0.62	0.57	1.30	182.16	179.67	0.004593	7.71	Circula	278.00	4.36	
	S-108				180.38	178.39	0.004245	7.41	18 inch			
P-9	S-110	0.53	0.42	2.92	182.63	176.81	0.001515	16.14	Circula	278.00	4.15	
	S-107				180.92	176.61	0.004353	29.31	30 inch			
P-13	S-108	0.40	0.36	1.66	180.38	177.89	0.006984	9.50	Circula	136.00	5.38	
	S-107				180.92	176.94	0.008456	10.46	18 Inch			
P-14	S-107	0.42	0.29	4.87	180.92	176.57	0.003472	26.18	Circula	458.00	5.33	
	S-105				178.10	174.98	0.003581	26.59	30 Inch			
P-15	S-106	0.75	0.67	0.67	177.73	175.18	0.001445	4.43	Circula	141.00	2.57	
	S-105				178.10	174.98	0.002979	6.21	18 inch			
P-16	S-105	0.58	0.55	6.09	178.10	174.94	0.005051	31.58	Circula	10.00	6.43	
	S-104				175.85	174.88	0.100000	140.51	30 inch			
P-17	S-104	2.70	0.54	6.63	175.85	174.37	0.004911	31.14	Circula	116.00	6.34	
	S-103				175.00	173.80	0.000862	13.05	30 inch			

Jacobs Sverdrup
37 Brookside Ro[redacted] Waterbury, CT 06708 USA +1-203-755-1666

Scena Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL in (ft)	HGL Out (ft)	Local Intensity (In/hr)	Local Rational Flow (cfs)	Desc.
S-119	4.49	0.20	0.90	0.00	0.90	13.00	0.00	0.00	13.00	6.03	5.46	0.00	0.00	0.00	0.00	5.46	188.97	188.97	186.61	186.61	6.03	5.46	
S-120	0.71	0.66	0.46	0.00	1.36	10.00	0.00	13.07	13.07	6.02	8.26	0.00	0.00	0.00	0.00	8.26	192.22	192.22	185.28	185.07	6.60	3.09	
S-118	0.36	0.68	0.24	0.00	1.60	10.00	0.00	13.81	13.81	5.88	9.50	0.00	0.00	0.00	0.00	9.50	189.24	189.24	182.56	182.53	6.60	1.61	
S-115	0.38	0.23	0.09	0.00	0.09	10.00	0.00	0.00	10.00	6.60	0.59	0.00	0.00	0.00	0.00	0.59	183.40	183.40	181.86	181.86	6.60	0.59	
S-117	0.45	0.79	0.36	0.00	0.36	10.00	0.00	0.00	10.00	6.60	2.38	0.00	0.00	0.00	0.00	2.38	186.50	186.50	182.11	182.11	6.60	2.38	
S-112	0.39	0.28	0.11	0.00	0.11	10.00	0.00	0.00	10.00	6.60	0.72	0.00	0.00	0.00	0.00	0.72	181.43	181.43	178.46	178.46	6.60	0.72	
S-116	0.32	0.69	0.22	0.00	1.92	10.00	0.00	14.45	14.45	5.76	11.11	0.00	0.00	0.00	0.00	11.11	187.03	187.03	181.61	181.58	6.60	1.47	
S-114	0.45	0.81	0.37	0.00	0.72	10.00	0.00	11.81	11.81	6.26	4.56	0.00	0.00	0.00	0.00	4.56	184.28	184.28	180.24	180.21	6.60	2.43	
S-113	0.48	0.80	0.39	0.00	2.41	10.00	0.00	15.18	15.18	5.63	13.68	0.00	0.00	0.00	0.00	13.68	184.91	184.91	178.26	178.23	6.60	2.59	
S-109	0.33	0.28	0.09	0.00	0.09	10.00	0.00	0.00	10.00	6.60	0.61	0.00	0.00	0.00	0.00	0.61	179.79	179.79	177.08	177.08	6.60	0.61	
S-111	0.62	0.92	0.57	0.00	1.30	10.00	0.00	13.73	13.73	5.89	7.71	0.00	0.00	0.00	0.00	7.71	182.16	182.16	179.73	179.67	6.60	3.82	
S-110	0.53	0.79	0.42	0.00	2.92	10.00	0.00	16.34	16.34	5.48	16.14	0.00	0.00	0.00	0.00	16.14	182.63	182.63	176.84	176.81	6.60	2.78	
S-108	0.40	0.90	0.36	0.00	1.66	10.00	0.00	14.79	14.79	5.69	9.50	0.00	0.00	0.00	0.00	9.50	180.38	180.38	178.39	177.89	6.60	2.39	
S-107	0.42	0.69	0.29	0.00	4.87	10.00	0.00	17.45	17.45	5.33	26.18	0.00	0.00	0.00	0.00	26.18	180.92	180.92	176.61	176.57	6.60	1.94	
S-106	0.75	0.89	0.67	0.00	0.67	10.00	0.00	0.00	10.00	6.60	4.43	0.00	0.00	0.00	0.00	4.43	177.73	177.73	175.18	175.18	6.60	4.43	
S-105	0.58	0.95	0.55	0.00	6.09	10.00	0.00	18.88	18.88	5.15	31.58	0.00	0.00	0.00	0.00	31.58	178.10	178.10	174.98	174.94	6.60	3.67	
S-104	2.70	0.20	0.54	0.00	6.63	24.00	0.00	18.91	24.00	4.66	31.14	0.00	0.00	0.00	0.00	31.14	175.85	175.85	174.88	174.37	4.66	2.54	
S-103					6.63				24.30	4.63	30.97					30.97	175.00	175.00	173.80	173.80			

Scena Base

Pipe Report

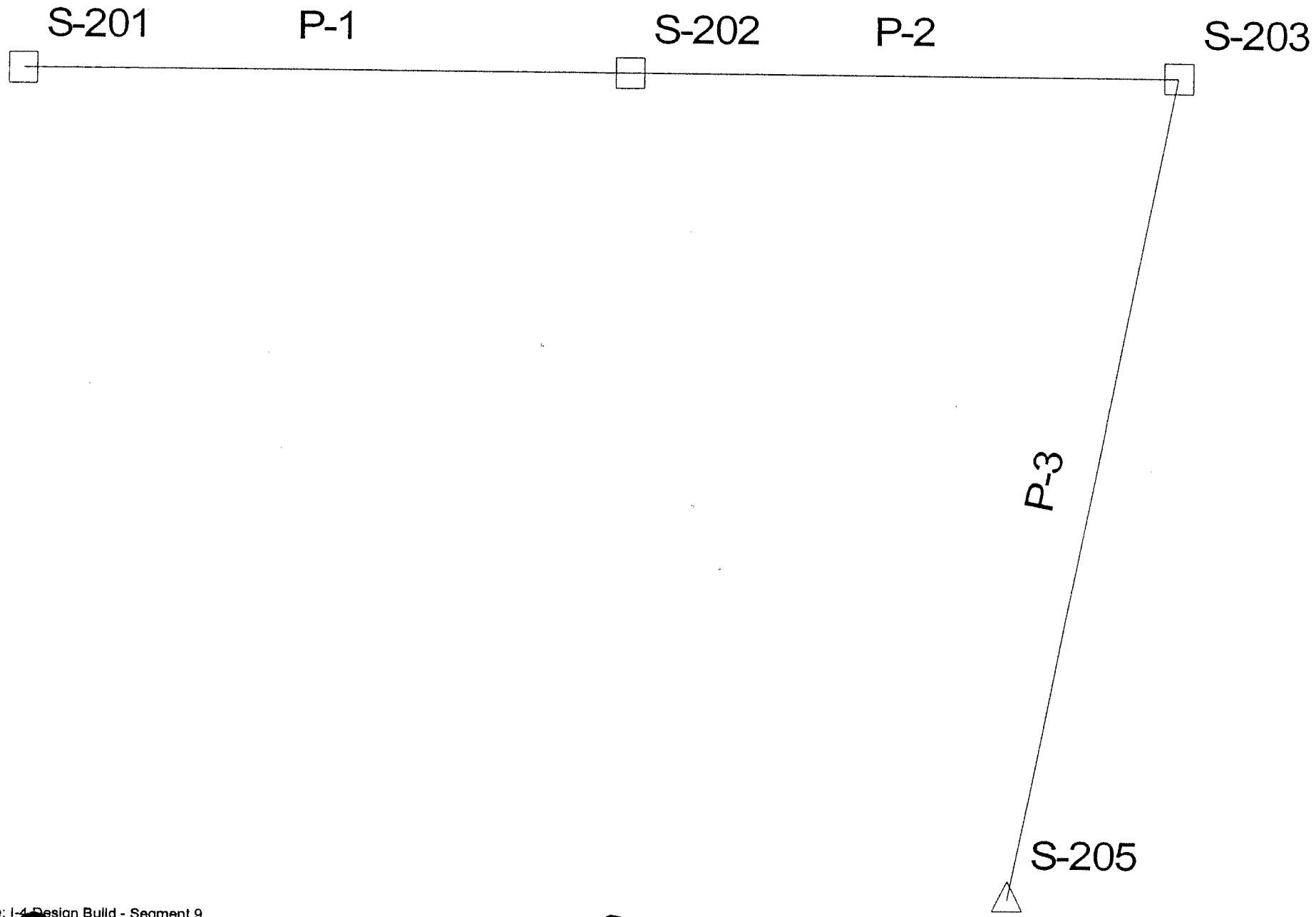
Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	S-119	S-120	4.49	0.20	0.90	0.90	6.03	5.46	14.00	0.124286	24 inch	0.012	86.39	185.79	184.05	188.97	192.22	1.18	6.17	186.61	185.28	
P-2	S-120	S-118	0.71	0.66	0.46	1.36	6.02	8.26	228.00	0.004298	24 inch	0.012	16.07	184.05	183.07	192.22	189.24	6.17	4.17	185.07	184.09	
P-3	S-118	S-116	0.36	0.68	0.24	1.60	5.88	9.50	193.00	0.005440	24 inch	0.012	18.08	181.43	180.38	189.24	187.03	5.81	4.65	182.53	181.61	
P-4	S-115	S-116	0.38	0.23	0.09	0.09	6.60	0.59	10.00	0.003000	18 inch	0.012	6.23	180.91	180.88	183.40	187.03	0.99	4.65	181.86	181.86	
P-10	S-117	S-114	0.45	0.79	0.36	0.36	6.60	2.38	293.00	0.008259	18 inch	0.012	10.34	181.53	179.11	186.50	184.28	3.47	3.67	182.11	180.24	
P-6	S-112	S-113	0.39	0.28	0.11	0.11	6.60	0.72	14.00	0.007143	18 inch	0.012	9.62	178.09	177.99	181.43	184.91	1.84	5.42	178.46	178.48	
P-5	S-116	S-113	0.32	0.69	0.22	1.92	5.76	11.11	293.00	0.009863	24 inch	0.012	24.34	180.38	177.49	187.03	184.91	4.65	5.42	181.58	178.44	
P-11	S-114	S-111	0.45	0.81	0.37	0.72	6.26	4.56	338.00	0.005148	18 inch	0.012	8.16	179.11	177.37	184.28	182.16	3.67	3.29	180.21	179.73	
P-7	S-113	S-110	0.48	0.80	0.39	2.41	5.63	13.68	338.00	0.005148	30 inch	0.012	31.88	176.99	175.25	184.91	182.63	5.42	4.88	178.23	176.84	
P-8	S-109	S-110	0.33	0.28	0.09	0.09	6.60	0.61	13.00	0.007692	18 inch	0.012	9.98	176.35	176.25	179.79	182.63	1.94	4.88	177.08	177.08	
P-12	S-111	S-108	0.62	0.92	0.57	1.30	5.89	7.71	278.00	0.004245	18 inch	0.012	7.41	177.37	176.19	182.16	180.38	3.29	2.69	179.67	178.39	
P-9	S-110	S-107	0.53	0.79	0.42	2.92	5.48	16.14	278.00	0.004353	30 inch	0.012	29.31	175.25	174.04	182.63	180.92	4.88	4.38	176.81	176.61	
P-13	S-108	S-107	0.40	0.90	0.36	1.66	5.69	9.50	136.00	0.008456	18 inch	0.012	10.46	176.19	175.04	180.38	180.92	2.69	4.38	177.89	176.94	
P-14	S-107	S-105	0.42	0.69	0.29	4.87	5.33	26.18	458.00	0.003581	30 inch	0.012	26.59	174.04	172.40	180.92	178.10	4.38	3.20	176.57	174.98	
P-15	S-106	S-105	0.75	0.89	0.67	0.67	6.60	4.43	141.00	0.002979	18 inch	0.012	6.21	173.82	173.40	177.73	178.10	2.41	3.20	175.18	174.98	
P-16	S-105	S-104	0.58	0.95	0.55	6.09	5.15	31.58	10.00	0.100000	30 inch	0.012	140.51	172.40	171.40	178.10	175.85	3.20	1.95	174.94	174.88	
P-17	S-104	S-103	2.70	0.20	0.54	6.63	4.66	31.14	116.00	0.000862	30 inch	0.012	13.05	171.40	171.30	175.85	175.00	1.95	1.20	174.37	173.80	

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

							DRAINAGE AREA (ACR		c=	0.950	US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4											Manning's Roughness Coefficient		
									c=	0.200												n=	0.009	Plastic Solid Pipe
									c=	0.150	US 27 TO POND C-1; STA. 458+00 to 461+80											n=	0.012	Concrete Pipe
																								Design Tailwater Elevation = 172.8 ft
																								3-year Storm Sewer Analysis
																								Zone 8 used for Rainfall Intensity
																								FDOT Drainage Manual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.320	0.320	0.304							188.89	187.82	1.274					
				TYPE			0.593	0.593	0.119							189.75	188.38	1.370		0.720	3.57	2.78	
S-201 to S-202	65.60	L	S-201	P-1	M	177	0.000	0.000	0.000	10.00	0.630	8.560	0.42	2.781	194.00	188.25	186.88	1.370	18	0.774	5.66	10.00	
				MAN			0.128	0.448	0.428							187.60	188.48	1.142					
				TYPE			0.049	0.642	0.128							188.38	187.00	1.381		0.645	3.63	3.55	
S-202 to S-203	85.52	L	S-202	P-7	M	177	0.000	0.000	0.000	10.83	0.810	8.400	0.55	3.548	192.48	188.88	185.50	1.381	18	0.780	5.88	10.04	
				INLET			0.324	0.772	0.733							186.42	172.60	13.822					
				TYPE			0.217	0.859	0.172							187.00	172.60	14.400		8.143	4.11	5.85	
S-203 to S-205	85.48	L	S-203	P-1	M	225	0.000	0.000	0.000	11.64	0.230	6.240	0.91	5.848	191.21	185.50	171.10	14.400	18	8.400	18.28	28.78	T.W. = HGL = Crown Elev.

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	S-201	0.91	0.42	0.42	193.88	188.89	0.007584	2.80	Circula	177.00	3.57	
	S-202				192.51	187.82	0.007740	10.01	18 Inch			
P-2	S-202	0.18	0.13	0.55	192.51	187.60	0.007281	3.57	Circula	177.00	3.83	
	S-203				191.07	186.46	0.007797	10.05	18 Inch			
P-3	S-203	0.54	0.35	0.91	191.07	188.42	0.062438	5.69	Circula	225.00	4.11	
	S-205				172.60	172.60	0.064000	28.79	18 Inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	Extemal Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Locai Intensity (in/hr)	Locai Rational Flow (cfs)
S-201	0.91	0.46	0.42	0.00	0.42	10.00	0.00	0.00	10.00	6.58	2.80	0.00	0.00	0.00	0.00	2.80	193.88	193.88	188.89	188.89	6.58	2.80
S-202	0.18	0.74	0.13	0.00	0.55	10.00	0.00	10.83	10.83	6.40	3.57	0.00	0.00	0.00	0.00	3.57	192.51	192.51	187.62	187.80	6.58	0.87
S-203	0.54	0.85	0.35	0.00	0.91	10.00	0.00	11.64	11.64	8.24	5.69	0.00	0.00	0.00	0.00	5.89	191.07	191.07	186.46	186.42	6.58	2.33
S-205					0.91				12.55	6.07	5.54					5.54	172.60	172.80	172.60	172.60		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	S-201	S-202	0.91	0.46	0.42	0.42	6.58	2.80	177.00	0.007740	18 inch	0.012	10.01	188.25	186.88	193.88	192.51	4.13	4.13	188.89	187.62	
P-2	S-202	S-203	0.18	0.74	0.13	0.55	6.40	3.57	177.00	0.007797	18 Inch	0.012	10.05	188.88	185.50	192.51	191.07	4.13	4.07	187.60	186.46	
P-3	[illegible]3	S-205	0.54	0.65	0.35	0.91	6.24	5.69	225.00	0.064000	[illegible]nch	0.012	28.79	185.50	171.10	191.07	172.60	4.07	0.00	188.42	17[illegible]	

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

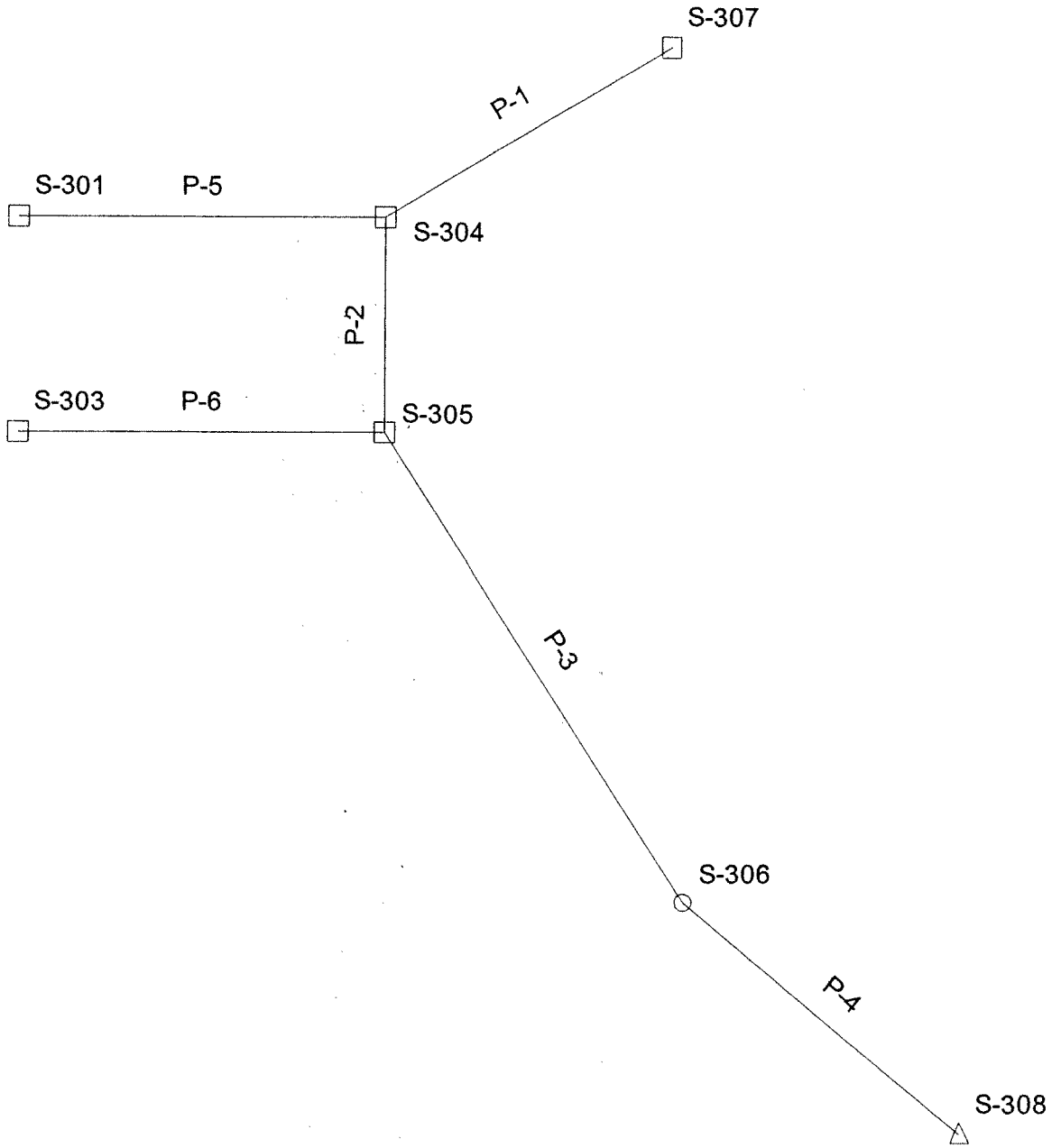
US 27 INTERCHANGE IMPROVEMENTS MAINLINE I-4

US 27 TO POND C-2

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 148.8 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.064	0.064	0.061							180.87	180.87	0.002					
				TYPE			0.000	0.000	0.000							181.34	181.18	0.160		0.002	0.29	0.40	
S-307 to S-304	88.56	L	S-307	C	M	106	0.000	0.000	0.000	10.00	6.080	6.580	0.06	0.400	182.44	179.84	179.68	0.160	18	0.151	2.50	4.42	
				INLET			0.492	0.492	0.487							182.95	180.87	2.158					
				TYPE			0.106	0.106	0.021							184.32	182.14	2.180		0.562	3.49	3.24	
S-301 to S-304	60.58	L	S-301	P-1	M	384	0.000	0.000	0.000	10.00	1.088	6.580	0.49	3.215	187.73	182.32	180.14	2.180	24	0.588	5.88	18.46	
				INLET			0.768	1.324	1.258							180.95	180.71	0.244					
				TYPE			1.208	1.314	0.263							181.88	181.29	0.390		0.220	3.99	8.45	
S-304 to S-305	55.00	L	S-304	P-2	M	111	0.000	0.000	0.000	16.08	0.460	5.510	1.52	8.379	185.20	179.68	179.29	0.390	24	0.351	4.63	14.52	
				INLET			0.840	0.840	0.608							182.06	180.71	1.444					
				TYPE			0.143	0.143	0.029							182.77	181.29	1.480		0.587	4.09	4.22	
S-303 to S-305	59.66	R	S-303	P-1	M	248	0.000	0.000	0.000	10.00	0.821	8.580	0.84	4.189	186.57	181.27	179.79	1.480	18	0.602	4.99	8.82	
				INLET			0.489	2.433	2.311							180.67	166.39	11.618					
				TYPE			0.259	1.718	0.343							181.29	167.68	13.810		4.090	10.43	14.58	
S-305 to S-306	55.00	R	S-305	J-2	M	284	0.000	0.000	0.000	18.54	0.460	5.450	2.85	14.487	185.20	179.29	165.68	13.610	24	4.792	17.08	53.64	
				MAN.			0.000	2.433	2.311							162.13	148.80	13.814					
				TYPE			0.000	1.718	0.343							182.78	148.80	13.960		14.330	5.44	14.42	
S-306 to S-308	329.72	R	S-306	P-8	M	95	0.000	0.000	0.000	17.00	0.053	5.390	2.65	14.308	170.60	160.78	148.80	13.960	24	14.895	29.92	93.94	TW = Crown Elev.

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-5	S-301	0.60	0.49	0.49	187.73	182.95	0.005617	3.24	Circula	384.00	3.49	
	S-304				185.20	180.87	0.005677	18.46	24 inch			
P-1	S-307	0.06	0.06	0.06	182.44	180.87	0.000016	0.40	Circula	106.00	0.29	
	S-304				185.20	180.87	0.001509	4.42	18 inch			
P-2	S-304	1.98	0.97	1.52	185.20	180.84	0.002198	8.45	Circula	111.00	3.99	
	S-305				185.20	180.71	0.003514	14.53	24 inch			
P-6	S-303	0.78	0.64	0.64	186.57	182.06	0.005872	4.22	Circula	246.00	4.09	
	S-305				185.20	180.71	0.006016	8.83	18 inch			
P-3	S-305	0.73	0.50	2.65	185.20	180.67	0.040902	14.58	Circula	284.00	10.43	
	S-306				170.60	166.39	0.047923	53.65	24 inch			
P-4	S-306	N/A	N/A	2.65	170.60	162.13	0.143334	14.42	Circula	95.00	5.44	
	S-308				150.00	148.80	0.146947	93.94	24 inch			

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)			
		c=	0.950
		c=	0.200
		c=	0.150

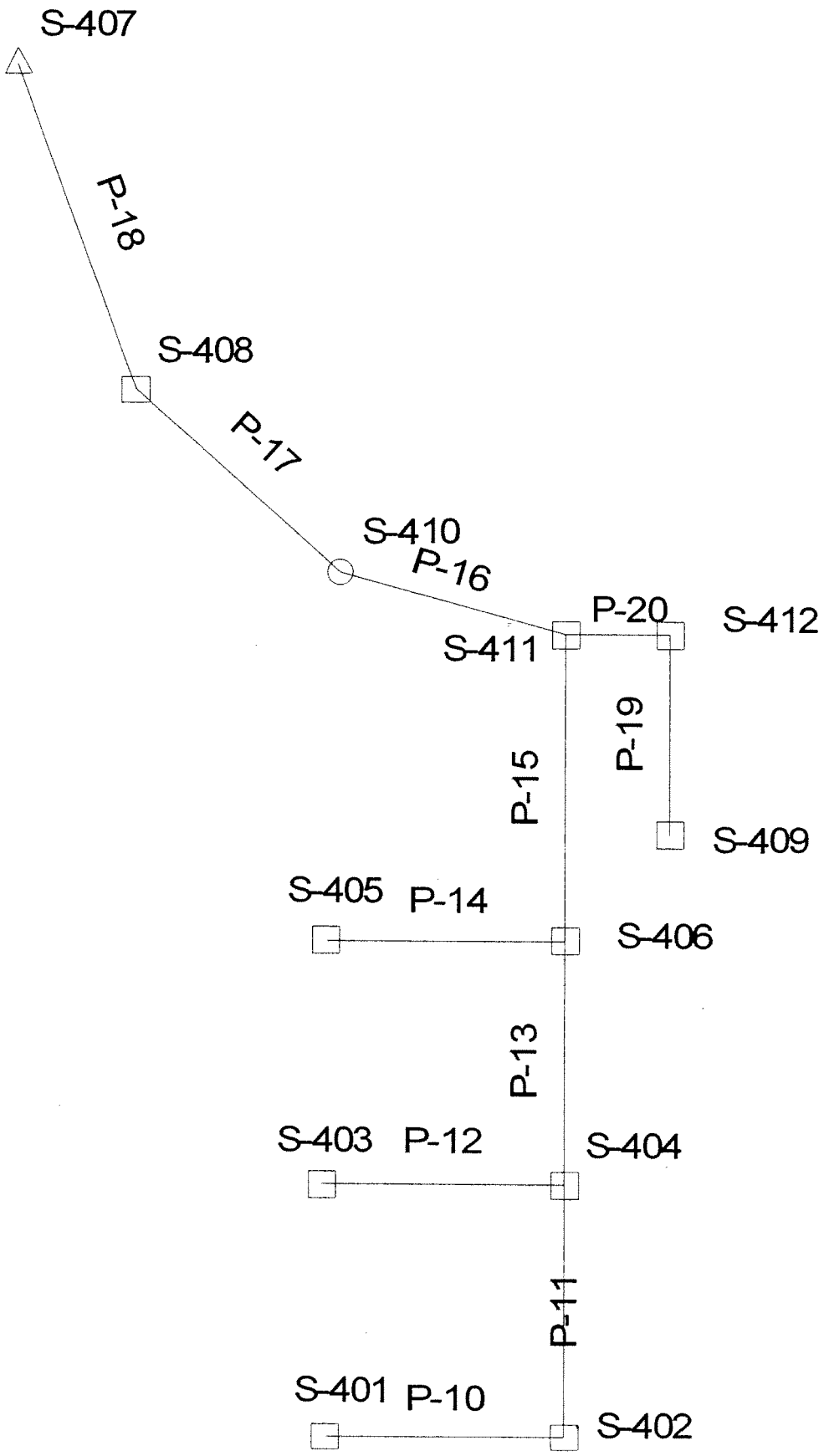
US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

US 27

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 138.30 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Reinfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.450	0.450	0.428							175.73	175.68	0.050					
				TYPE			0.188	0.188	0.038							178.52	176.04	0.485		0.044	2.98	3.07	
S-401 to S-402	60.71	L	S-401	P-1	S	114	0.000	0.000	0.000	10.00	0.640	6.600	0.47	3.070	179.93	175.03	174.54	0.485	18	0.425	4.20	7.41	
				INLET			0.383	0.833	0.791							175.45	165.61	9.840					
				TYPE			0.133	0.321	0.064							176.04	165.31	10.731		2.603	4.07	5.54	
S-402 to S-404	60.53	R	S-402	P-1	M	378	0.000	0.000	0.000	10.64	1.550	6.480	0.86	5.544	179.62	174.54	163.81	10.731	18	2.839	10.84	19.15	
				INLET			0.462	0.462	0.439							165.70	165.61	0.090					
				TYPE			0.161	0.161	0.032							165.67	165.31	0.360		0.079	1.77	3.11	
S-403 to S-404	60.76	L	S-403	P-1	S	114	0.000	0.000	0.000	10.00	0.525	6.600	0.47	3.109	170.80	164.17	163.81	0.360	18	0.316	3.62	6.39	
				INLET			0.442	1.737	1.650							165.44	162.06	3.380					
				TYPE			0.153	0.635	0.127							165.31	159.90	5.411		1.015	6.27	10.98	
S-404 to S-406	60.48	R	S-404	P-1	M	333	0.000	0.000	0.000	12.19	0.880	6.180	1.78	10.983	170.59	163.81	158.40	5.411	18	1.625	8.20	14.49	
				INLET			0.390	0.390	0.371							162.12	162.06	0.060					
				TYPE			0.079	0.079	0.016							160.26	159.90	0.360		0.053	1.45	2.55	
S-405 to S-406	61.13	L	S-405	P-1	S	114	0.000	0.000	0.000	10.00	0.525	6.600	0.39	2.550	164.66	158.76	158.40	0.360	18	0.316	3.62	6.39	
				INLET			0.398	2.525	2.399							161.83	156.43	5.400					
				TYPE			0.484	1.198	0.240							159.16	156.09	3.071		1.978	9.05	15.88	
S-406 to S-411	59.61	R	S-406	P-1	M	273	0.000	0.000	0.000	13.07	5.680	6.020	2.64	15.883	164.39	158.40	154.59	3.071	18	1.125	6.83	12.06	
				DBI			0.000	0.000	0.000							156.47	156.47	0.000					
				TYPE			0.172	0.172	0.034							157.34	156.35	0.990		0.000	0.23	0.23	
S-409 to S-412	82.06	R	S-409	C	S	88	0.000	0.000	0.000	10.00	6.420	6.600	0.03	0.227	159.45	155.84	154.85	0.990	18	1.125	6.83	12.06	
				DBI			0.000	0.000	0.000							156.47	156.43	0.040					
				TYPE			0.000	0.172	0.034							156.17	156.09	0.075		0.267	0.11	0.19	
S-412 to S-411	82.06	R	S-412	C	S	15	0.000	0.000	0.000	16.42	0.055	5.470	0.03	0.188	157.48	154.85	154.59	0.075	18	0.500	4.55	8.04	
				INLET			0.455	2.980	2.831							156.38	155.90	0.480					
				TYPE			0.030	1.400	0.280							156.83	156.39	0.444		0.649	5.91	16.05	
S-411 to S-410	64.16	R	S-411	P-1	M	74	0.000	0.000	0.000	18.75	0.204	5.160	3.11	16.053	159.68	154.59	154.39	0.444	24	0.600	6.04	18.98	
				manhole			0.000	2.980	2.831							155.84	152.15	3.690					
				TYPE			0.000	1.400	0.280							156.39	155.61	0.780		3.237	6.49	15.87	
S-410 to S-408	10.34	L	S-410	P-8	M	114	0.000	0.000	0.000	18.95	0.294	5.100	3.11	15.866	161.38	154.39	153.61	0.780	24	0.684	6.45	20.27	
				INLET			0.314	3.294	3.129							151.77	138.30	13.470					
				TYPE			0.020	1.420	0.284							152.26	139.10	13.156		12.245	14.04	17.34	
S-408 to S-407	10[illegible]	L	S-408	P-1	M	110	0.000	0.000	0.000	19.25	0.068	5.080	[illegible]	17.339	159.11	150.26	137.10	13.156	24	11.960	26.99	84.74	T.W. Elev. = [illegible]

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-10	S-401	0.64	0.47	0.47	179.93	175.73	0.001800	3.09	Circular	114.00	2.98	
	S-402				179.62	175.68	0.004298	7.46	18 inch			
P-11	S-402	0.52	0.39	0.86	179.62	175.45	0.026550	5.59	Circular	378.00	4.07	
	S-404				170.59	165.64	0.028386	19.17	18 inch			
P-12	S-403	0.62	0.47	0.47	170.80	165.70	0.000759	3.13	Circular	114.00	1.77	
	S-404				170.59	165.61	0.003158	6.39	18 inch			
P-13	S-404	0.60	0.45	1.78	170.59	165.44	0.009479	11.08	Circular	333.00	6.27	
	S-406				164.39	162.28	0.016246	14.50	18 inch			
P-14	S-405	0.47	0.39	0.39	164.66	162.12	0.000510	2.57	Circular	114.00	1.45	
	S-406				164.39	162.06	0.003158	6.39	18 inch			
P-19	S-409	0.17	0.03	0.03	159.45	156.47	0.000009	0.23	Circular	88.00	0.23	
	S-412				157.48	156.47	0.011250	12.07	18 inch			
P-15	S-406	0.88	0.47	2.64	164.39	161.83	0.019770	16.00	Circular	273.00	9.05	
	S-411				159.68	156.43	0.013956	13.44	18 inch			
P-20	S-412	0.00	0.00	0.03	157.48	156.47	0.000003	0.19	Circular	15.00	0.11	
	S-411				159.68	156.47	0.017333	14.98	18 inch			
P-16	S-411	0.49	0.44	3.11	159.68	156.38	0.004229	16.19	Circular	74.00	5.91	
	S-410				161.22	155.90	0.002703	12.74	24 inch			
P-17	S-410	N/A	N/A	3.11	161.22	155.84	0.006705	16.10	Circular	114.00	6.89	
	S-408				159.11	154.96	0.006842	20.27	24 inch			
P-18	S-408	0.33	0.30	3.41	159.11	151.77	0.071044	17.54	Circular	110.00	14.04	
	S-407				140.00	137.72	0.119636	84.76	24 inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)	Desc.
S-401	0.64	0.73	0.47	0.00	0.47	10.00	0.00	0.00	10.00	6.60	3.09	0.00	0.00	0.00	0.00	3.09	179.93	179.93	175.73	175.73	6.60	3.09	
S-402	0.52	0.76	0.39	0.00	0.86	10.00	0.00	10.64	10.64	6.48	5.59	0.00	0.00	0.00	0.00	5.59	179.62	179.62	175.68	175.45	6.60	2.60	
S-403	0.62	0.76	0.47	0.00	0.47	10.00	0.00	0.00	10.00	6.60	3.13	0.00	0.00	0.00	0.00	3.13	170.80	170.80	165.70	165.70	6.60	3.13	
S-404	0.60	0.76	0.45	0.00	1.78	10.00	0.00	12.19	12.19	6.18	11.08	0.00	0.00	0.00	0.00	11.08	170.59	170.59	165.61	165.44	6.60	3.00	
S-405	0.47	0.82	0.39	0.00	0.39	10.00	0.00	0.00	10.00	6.60	2.57	0.00	0.00	0.00	0.00	2.57	164.66	164.66	162.12	162.12	6.60	2.57	
S-409	0.17	0.20	0.03	0.00	0.03	10.00	0.00	0.00	10.00	6.60	0.23	0.00	0.00	0.00	0.00	0.23	159.45	159.45	156.47	156.47	6.60	0.23	
S-406	0.88	0.54	0.47	0.00	2.64	10.00	0.00	13.07	13.07	6.02	16.00	0.00	0.00	0.00	0.00	16.00	164.39	164.39	162.06	161.83	6.60	3.16	
S-412	0.00	0.00	0.00	0.00	0.03	10.00	0.00	16.42	16.42	5.47	0.19	0.00	0.00	0.00	0.00	0.19	157.48	157.48	156.47	156.47	0.00	0.00	
S-411	0.49	0.90	0.44	0.00	3.11	10.00	0.00	18.75	18.75	5.16	16.19	0.00	0.00	0.00	0.00	16.19	159.68	159.68	156.43	156.38	6.60	2.92	
S-410					3.11				18.96	5.13	16.10					16.10	161.22	161.22	155.90	155.84			
S-408	0.33	0.91	0.30	0.00	3.41	10.00	0.00	19.24	19.24	5.10	17.54	0.00	0.00	0.00	0.00	17.54	159.11	159.11	152.15	151.77	6.60	2.01	
S-407					3.41				19.37	5.08	17.49					17.49	140.00	140.00	138.30	138.30			

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (In/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)
P-10	S-401	S-402	0.64	0.73	0.47	0.47	6.60	3.09	114.00	0.004298	18 inch	0.012	7.46	175.03	174.54	179.93	179.62	3.40	3.58	175.73	175.68
P-11	S-402	S-404	0.52	0.76	0.39	0.86	6.48	5.59	378.00	0.028386	18 inch	0.012	19.17	174.54	163.81	179.62	170.59	3.58	5.28	175.45	165.64
P-12	S-403	S-404	0.62	0.76	0.47	0.47	6.60	3.13	114.00	0.003158	18 inch	0.012	6.39	164.17	163.81	170.80	170.59	5.13	5.28	165.70	165.61
P-13	S-404	S-406	0.60	0.76	0.45	1.78	6.18	11.08	333.00	0.016246	18 inch	0.012	14.50	163.81	158.40	170.59	164.39	5.28	4.49	165.44	162.28
P-14	S-405	S-406	0.47	0.82	0.39	0.39	6.60	2.57	114.00	0.003158	18 inch	0.012	6.39	158.76	158.40	164.66	164.39	4.40	4.49	162.12	162.06
P-19	S-409	S-412	0.17	0.20	0.03	0.03	6.60	0.23	88.00	0.011250	18 inch	0.012	12.07	155.84	154.85	159.45	157.48	2.11	1.13	156.47	156.47
P-15	S-406	S-411	0.88	0.54	0.47	2.64	6.02	16.00	273.00	0.013956	18 inch	0.012	13.44	158.40	154.59	164.39	159.68	4.49	3.59	161.83	156.43
P-20	S-412	S-411	0.00	0.00	0.00	0.03	5.47	0.19	15.00	0.017333	18 inch	0.012	14.98	154.85	154.59	157.48	159.68	1.13	3.59	156.47	156.47
P-16	S-411	S-410	0.49	0.90	0.44	3.11	5.16	16.19	74.00	0.002703	24 inch	0.012	12.74	154.59	154.39	159.68	161.22	3.09	4.83	156.38	155.90
P-17	S-410	S-408	N/A	N/A	N/A	3.11	5.13	16.10	114.00	0.006842	24 inch	0.012	20.27	154.39	153.61	161.22	159.11	4.83	3.50	155.84	154.96
P-18	S-408	S-407	0.33	0.91	0.30	3.41	5.10	17.54	110.00	0.119636	24 inch	0.012	84.76	150.26	137.10	159.11	140.00	6.85	0.90	151.77	137.72

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STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

						DRAINAGE AREA (ACRES)																		
								c=	0.950															
								c=	0.200															
								c=	0.150															

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

US 27 INTO POND B-3

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 140.5 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.241	0.241	0.229							162.83	162.82	0.010					Physical Velocity Used In Time Of Flow
				TYPE			0.044	0.044	0.009							162.56	162.40	0.165		0.021	0.89	1.57	In Pipe Section
S-515 to S-518A	167.43	L	S-515	P-2	S	47	0.000	0.000	0.000	10.00	0.206	6.600	0.24	1.569	168.41	161.06	160.90	0.165	18	0.350	3.81	6.72	
				DBI			0.000	0.000	0.000							163.16	163.16	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.714	0.714	0.143							162.76	162.56	0.197		0.000	0.53	0.94	In Pipe Section
S-520 to S-519	167.43	L	S-520	C	S	48	0.000	0.000	0.000	10.00	1.490	6.600	0.14	0.942	164.14	161.26	161.06	0.197	18	0.410	4.12	7.28	
				INLET			0.653	0.653	0.620							163.16	162.82	0.340					Physical Velocity Used In Time Of Flow
				TYPE			0.181	0.895	0.179							162.56	162.40	0.158		0.301	2.86	5.05	In Pipe Section
S-519 to S-518A	184.03	L	S-519	P-2	M	113	0.000	0.000	0.000	11.49	0.650	6.320	0.80	5.052	168.03	161.06	160.90	0.158	18	0.140	2.41	4.25	
				INLET			0.000	0.894	0.849							162.78	162.47	0.310					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.939	0.188							162.39	162.27	0.116		0.320	3.63	6.42	In Pipe Section
S-518A to S-518	184.03	L	S-519	P-2	M	97	0.000	0.000	0.000	12.14	0.440	6.190	1.04	6.420	170.60	160.89	160.77	0.116	18	0.120	2.23	3.94	
				INLET			0.358	1.252	1.189							162.23	161.56	0.670					Physical Velocity Used In Time Of Flow
				TYPE			0.106	1.045	0.209							162.27	161.78	0.490		0.568	4.84	8.54	In Pipe Section
S-518 to S-517	65.37	L	S-518	P-1	M	118	0.000	0.000	0.000	12.58	0.390	6.110	1.40	8.544	170.98	160.77	160.28	0.490	18	0.415	4.15	7.32	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.588	1.840	1.748							161.32	160.48	0.840					Physical Velocity Used In Time Of Flow
				TYPE			0.163	1.208	0.242							161.78	161.12	0.660		0.339	3.83	12.02	In Pipe Section
S-517 to S-516	59.65	R	S-517	P-1	M	248	0.000	0.000	0.000	12.97	0.820	6.040	1.99	12.017	171.09	159.78	159.12	0.660	24	0.266	4.02	12.64	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.247	2.087	1.983							160.44	157.44	3.000					Physical Velocity Used In Time Of Flow
				TYPE			0.143	1.351	0.270							161.12	157.65	3.470		1.099	4.22	13.25	In Pipe Section
S-516 to S-510	64.87	R	S-516	P-1	M	273	0.000	0.000	0.000	13.79	0.860	5.880	2.25	13.247	168.35	159.12	155.65	3.470	24	1.271	8.80	27.63	Crown Elev. = Hydraulic Grade Elev.
				DBI			0.583	0.583	0.554							161.30	161.30	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.017	0.017	0.003							165.31	165.21	0.100		0.000	2.08	3.68	In Pipe Section
S-514 to S-513	105.93	L	S-514	C	S	2	0.000	0.000	0.000	10.00	0.002	6.600	0.56	3.678	167.00	163.81	163.71	0.100	18	5.000	14.39	25.42	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	0.583	0.554							161.30	159.55	1.750					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.017	0.003							162.06	159.90	2.160		1.446	2.08	3.68	In Pipe Section
S-513 to S-512	101.29	L	S-513	P-7	S	121	0.000	0.000	0.000	10.00	0.588	6.600	0.56	3.678	166.76	160.56	158.40	2.160	18	1.785	8.60	15.19	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.212	0.795	0.755							159.26	159.26	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.027	0.044	0.009							159.90	158.54	1.360		0.000	2.81	4.96	In Pipe Section
S-512 to S-511	102.22	L	S-512	P-5	S	35	0.000	0.000	0.000	10.59	0.150	6.490	0.76	4.959	164.44	158.40	157.04	1.360	18	3.886	12.69	22.41	Crown Elev. = Hydraulic Grade Elev.
							0.479	1.274	1.210							158.93	157.44	1.490					Physical Velocity Used In Time Of Flow
				BWI			0.215	0.259	0.052							158.54	157.65	0.890		1.192	4.62	8.15	In Pipe Section
S-511 to S-510	66.66	L	S-511		S	125	0.000	0.000	0.000	10.74	0.384	6.460	1.26	8.153	162.80	157.04	156.15	0.890	18	0.712	5.43	9.59	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.274	3.635	3.453							157.32	153.10	4.220					Physical Velocity Used [illegible]e Of Flow
				TYPE			0.168	1.778	0.356							157.65	148.82	9.031		1.230	8.94	21.79	In Pipe Section
S-510 to S-507	65.52	R	S-510	P-1	M	343	0.000	0.000	0.000	14.65	0.451	5.720	3.81	21.787	163.38	155.65	146.62	9.031	24	2.633	12.66	39.78	Crown Elev. = Hydraulic Grade Elev.

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STORM SEWER TABULATION FORM

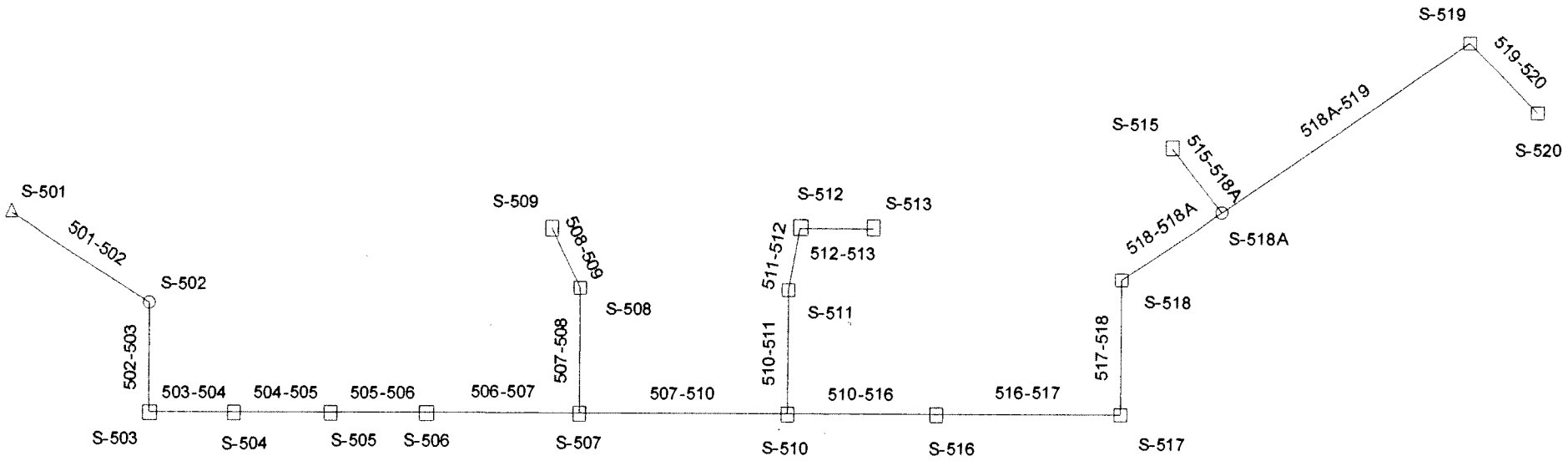
3-year Storm Sewer Analysis

									US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4														
						DRAINAGE AREA (ACRES)																	
							c=	0.950															
							c=	0.20	**US 27 INTO POND B-3**														
							c=	0.23															

Menning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 139.4 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Menuel

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.353	0.353	0.335							153.78	153.77	0.010					
				TYPE			0.042	0.042	0.008							149.10	148.78	0.320		0.029	1.28	2.27	In Pipe Section
S-509 to S-508	17.50	L	S-509	P-5	S	35	0.000	0.000	0.000	10.00	0.450	6.600	0.34	2.269	156.82	147.60	147.28	0.320	18	0.914	8.15	10.87	Crown Elev. = Hydraulic Grade Elev.
							0.445	0.798	0.758							153.81	153.10	0.510					Physical Velocity Used In Time Of Flow
				BWI			0.101	0.143	0.029							148.78	148.12	0.660		0.392	2.90	5.12	In Pipe Section
S-508 to S-507	73.24	L	S-508		S	130	0.000	0.000	0.000	10.45	4.970	8.510	0.79	5.121	154.85	147.28	146.62	0.660	18	0.508	4.59	8.10	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.405	4.838	4.596							152.79	150.42	2.370					Physical Velocity Used In Time Of Flow
				TYPE			0.141	2.062	0.412							148.62	148.32	0.301		1.331	8.92	28.00	In Pipe Section
S-507 to S-506	65.28	R	S-507	P-1	M	178	0.000	0.000	0.000	15.42	0.330	5.590	5.01	27.998	155.40	146.62	146.32	0.301	24	0.169	3.21	10.07	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.161	4.999	4.749							150.22	148.70	1.520					Physical Velocity Used In Time Of Flow
				TYPE			0.121	2.183	0.437							148.32	147.51	0.810		1.407	9.17	28.78	In Pipe Section
S-506 to S-505	65.54	R	S-506	P-1	M	108	0.000	0.000	0.000	15.75	0.200	5.550	5.19	28.780	152.37	146.32	145.51	0.810	24	0.750	8.78	21.22	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.704	5.703	5.418							148.84	148.11	0.530					Physical Velocity Used In Time Of Flow
				TYPE			0.045	2.228	0.448							148.01	145.87	2.140		0.541	8.61	32.42	In Pipe Section
S-505 to S-504	65.52	R	S-505	P-1	M	98	0.000	0.000	0.000	15.95	0.122	5.530	5.86	32.425	151.60	145.51	143.37	2.140	30	2.184	13.39	65.71	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	5.703	5.418							147.96	147.23	0.730					Physical Velocity Used In Time Of Flow
				TYPE			0.000	2.228	0.448							145.87	144.89	0.980		1.074	9.35	45.89	In Pipe Section
S-504 to S-503	64.21	R	S-504	P-7	M	68	40.070	40.070	9.084	52.00	0.120	3.070	14.95	45.688	152.11	143.37	142.39	0.980	30	1.441	10.88	53.37	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.509	8.212	5.901							145.89	143.82	2.270					Physical Velocity Used In Time Of Flow
				TYPE			0.229	2.457	0.491							144.89	144.56	0.330		1.846	9.68	47.51	In Pipe Section
S-503 to S-502	85.28	R	S-503	P-1	M	123	0.000	40.070	9.084	52.12	0.520	3.070	15.48	47.513	152.23	142.39	142.06	0.330	30	0.268	4.89	23.02	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	6.212	5.901							142.58	139.40	3.180					Physical Velocity Used In Time Of Flow
				TYPE			0.000	2.457	0.491							141.30	140.50	0.799		1.683	9.85	47.37	In Pipe Section
S-502 to S-501	64.21	L	S-502	J-7	M	189	0.000	40.070	12.121	52.64		3.060	15.48	47.369	151.92	138.80	138.00	0.799	30	0.423	5.89	28.92	Tellweler Elev. = Hydraulic Grade Elev.

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Upstream Downstream	Upstream Inlet Area (acres)	Upstream Inlet CA (acres)	Upstream Calculated System CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	Section Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)
519-520	S-520	0.71	0.14	0.14	164.14	163.16	0.000070	0.95	Circular	48.00	0.54
	S-519				168.03	163.16	0.004167	7.35	18 inch		
518A-519	S-519	0.83	0.66	0.80	168.03	163.06	0.002001	5.09	Circular	113.00	2.88
	S-518A				170.60	162.83	0.001416	4.28	18 inch		
515-518A	S-515	0.28	0.24	0.24	168.41	162.83	0.000188	1.58	Circular	47.00	0.93
	S-518A				170.60	162.82	0.012766	12.86	18 inch		
518-518A	S-518A	N/A	N/A	1.04	170.60	162.78	0.003237	6.47	Circular	97.00	3.66
	S-518				170.98	162.47	0.001340	4.17	18 inch		
517-518	S-518	0.46	0.36	1.40	170.98	162.23	0.005049	8.61	Circular	118.00	5.15
	S-517				171.09	161.56	0.004153	7.33	18 inch		
512-513	S-513	0.60	0.56	0.56	166.76	161.30	0.015969	3.71	Circular	121.00	3.42
	S-512				164.44	159.55	0.017851	15.20	18 inch		
516-517	S-517	0.75	0.59	1.99	171.09	161.32	0.002987	12.11	Circular	248.00	4.99
	S-516				168.35	160.48	0.002661	12.64	24 inch		
511-512	S-512	0.24	0.21	0.76	164.44	159.26	0.006416	5.00	Circular	35.00	3.80
	S-511				162.80	159.26	0.038857	22.43	18 inch		
510-516	S-516	0.39	0.26	2.25	168.35	160.44	0.011936	13.35	Circular	273.00	5.30
	S-510				163.36	157.44	0.012711	27.63	24 inch		
510-511	S-511	0.69	0.50	1.26	162.80	158.93	0.005215	8.22	Circular	125.00	4.65
	S-510				163.36	158.28	0.007120	9.60	18 inch		
508-509	S-509	0.39	0.34	0.34	156.82	153.78	0.000404	2.29	Circular	35.00	1.29
	S-508				154.85	153.77	0.009143	10.88	18 inch		
507-510	S-510	0.44	0.29	3.81	163.36	157.32	0.012865	21.95	Circular	343.00	7.40
	S-507				155.40	153.10	0.026327	39.76	24 inch		
507-508	S-508	0.55	0.44	0.79	154.85	153.61	0.002061	5.17	Circular	130.00	2.92
	S-507				155.40	153.34	0.005077	8.11	18 inch		
506-507	S-507	0.55	0.41	5.01	155.40	152.79	0.013287	28.25	Circular	178.00	8.99
	S-506				152.37	150.42	0.001685	10.06	24 inch		
505-506	S-506	0.28	0.18	5.19	152.37	150.22	0.014027	29.02	Circular	108.00	9.24
	S-505				151.60	148.70	0.007500	21.22	24 inch		
504-505	S-505	0.75	0.68	5.86	151.60	148.64	0.005406	32.66	Circular	98.00	6.66
	S-504				152.11	148.11	0.021837	65.66	30 inch		
503-504	S-504	40.77	9.08	14.95	152.11	147.96	0.010834	46.25	Circular	68.00	9.42
	S-503				152.23	147.23	0.014412	53.34	30 inch		
502-503	S-503	0.74	0.53	15.47	152.23	145.89	0.011480	47.81	Circular	123.00	9.98
	S-502				151.92	144.33	0.002683	23.01	30 inch		
501-502	S-502	N/A	N/A	15.47	151.92	142.58	0.011435	47.68	Circular	189.00	9.95
	S-501				141.00	140.27	0.004233	28.91	30 inch		

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rationa Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)	Desc.
S-520	0.71	0.20	0.14	0.00	0.14	10.00	0.00	0.00	10.00	6.60	0.95	0.00	0.00	0.00	0.00	0.95	164.14	164.14	163.16	163.16	6.60	0.95	
S-519	0.83	0.79	0.66	0.00	0.80	10.00	0.00	11.49	11.49	6.32	5.09	0.00	0.00	0.00	0.00	5.09	168.03	168.03	163.16	163.06	6.60	4.37	
S-515	0.28	0.83	0.24	0.00	0.24	10.00	0.00	0.00	10.00	6.60	1.58	0.00	0.00	0.00	0.00	1.58	168.41	168.41	162.83	162.83	6.60	1.58	
S-518A					1.04				12.14	6.19	6.47					6.47	170.60	170.60	162.82	162.78			
S-518	0.46	0.78	0.36	0.00	1.40	10.00	0.00	12.58	12.58	6.11	8.61	0.00	0.00	0.00	0.00	8.61	170.98	170.98	162.47	162.23	6.60	2.40	
S-513	0.60	0.93	0.56	0.00	0.56	10.00	0.00	0.00	10.00	6.60	3.71	0.00	0.00	0.00	0.00	3.71	166.76	166.76	161.30	161.30	6.60	3.71	
S-517	0.75	0.79	0.59	0.00	1.99	10.00	0.00	12.97	12.97	6.04	12.11	0.00	0.00	0.00	0.00	12.11	171.09	171.09	161.56	161.32	6.60	3.93	
S-512	0.24	0.87	0.21	0.00	0.76	10.00	0.00	10.59	10.59	6.49	5.00	0.00	0.00	0.00	0.00	5.00	164.44	164.44	159.55	159.26	6.60	1.38	
S-516	0.39	0.67	0.26	0.00	2.25	10.00	0.00	13.79	13.79	5.88	13.35	0.00	0.00	0.00	0.00	13.35	168.35	168.35	160.48	160.44	6.60	1.75	
S-511	0.69	0.72	0.50	0.00	1.26	10.00	0.00	10.74	10.74	6.46	8.22	0.00	0.00	0.00	0.00	8.22	162.80	162.80	159.26	158.93	6.60	3.31	
S-509	0.39	0.87	0.34	0.00	0.34	10.00	0.00	0.00	10.00	6.60	2.29	0.00	0.00	0.00	0.00	2.29	156.82	156.82	153.78	153.78	6.60	2.29	
S-510	0.44	0.66	0.29	0.00	3.81	10.00	0.00	14.65	14.65	5.72	21.95	0.00	0.00	0.00	0.00	21.95	163.36	163.36	157.44	157.32	6.60	1.96	
S-508	0.55	0.81	0.44	0.00	0.79	10.00	0.00	10.45	10.45	6.51	5.17	0.00	0.00	0.00	0.00	5.17	154.85	154.85	153.77	153.61	6.60	2.95	
S-507	0.55	0.76	0.41	0.00	5.01	10.00	0.00	15.42	15.42	5.59	28.25	0.00	0.00	0.00	0.00	28.25	155.40	155.40	153.10	152.79	6.60	2.75	
S-506	0.28	0.63	0.18	0.00	5.19	10.00	0.00	15.75	15.75	5.55	29.02	0.00	0.00	0.00	0.00	29.02	152.37	152.37	150.42	150.22	6.60	1.18	
S-505	0.75	0.90	0.68	0.00	5.86	10.00	0.00	15.95	15.95	5.53	32.66	0.00	0.00	0.00	0.00	32.66	151.60	151.60	148.70	148.64	6.60	4.51	
S-504	40.77	0.22	9.08	0.00	14.95	52.00	0.00	16.20	52.00	3.07	46.25	0.00	0.00	0.00	0.00	46.25	152.11	152.11	148.11	147.96	3.07	28.10	
S-503	0.74	0.72	0.53	0.00	15.47	10.00	0.00	52.12	52.12	3.07	47.81	0.00	0.00	0.00	0.00	47.81	152.23	152.23	147.23	145.89	6.60	3.52	
S-502					15.47				52.33	3.06	47.68					47.68	151.92	151.92	143.62	142.58			
S-501					15.47				52.64	3.04	47.49					47.49	141.00	141.00	139.20	139.20			

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (In/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)
519-520	S-520	S-519	0.71	0.20	0.14	0.14	6.60	0.95	48.00	0.004167	18 Inch	0.012	7.35	161.26	161.06	164.14	168.03	1.38	5.47	163.16	163.16
518A-519	S-519	S-518A	0.83	0.79	0.66	0.80	6.32	5.09	113.00	0.001416	18 Inch	0.012	4.28	161.06	160.90	168.03	170.60	5.47	8.20	163.06	162.83
515-518A	S-515	S-518A	0.28	0.83	0.24	0.24	6.60	1.58	47.00	0.012766	18 Inch	0.012	12.86	161.50	160.90	168.41	170.60	5.41	8.20	162.83	162.82
518-518A	S-518A	S-518	N/A	N/A	N/A	1.04	6.19	6.47	97.00	0.001340	18 Inch	0.012	4.17	160.90	160.77	170.60	170.98	8.20	8.71	162.78	162.47
517-518	S-518	S-517	0.46	0.78	0.36	1.40	6.11	8.61	118.00	0.004153	18 Inch	0.012	7.33	160.77	160.28	170.98	171.09	8.71	9.31	162.23	161.56
512-513	S-513	S-512	0.60	0.93	0.56	0.56	6.60	3.71	121.00	0.017851	18 Inch	0.012	15.20	160.56	158.40	166.76	164.44	4.70	4.54	161.30	159.55
516-517	S-517	S-516	0.75	0.79	0.59	1.99	6.04	12.11	248.00	0.002661	24 Inch	0.012	12.64	159.78	159.12	171.09	168.35	9.31	7.23	161.32	160.48
511-512	S-512	S-511	0.24	0.87	0.21	0.76	6.49	5.00	35.00	0.038857	18 Inch	0.012	22.43	158.40	157.04	164.44	162.80	4.54	4.26	159.26	159.26
510-516	S-516	S-510	0.39	0.67	0.26	2.25	5.88	13.35	273.00	0.012711	24 Inch	0.012	27.63	159.12	155.65	168.35	163.36	7.23	5.71	160.44	157.44
510-511	S-511	S-510	0.69	0.72	0.50	1.26	6.46	8.22	125.00	0.007120	18 Inch	0.012	9.60	157.04	156.15	162.80	163.36	4.26	5.71	158.93	158.28
508-509	S-509	S-508	0.39	0.87	0.34	0.34	6.60	2.29	35.00	0.009143	18 Inch	0.012	10.88	147.60	147.28	156.82	154.85	7.72	6.07	153.78	153.77
507-510	S-510	S-507	0.44	0.66	0.29	3.81	5.72	21.95	343.00	0.026327	24 Inch	0.012	39.76	155.65	146.62	163.36	155.40	5.71	6.78	157.32	153.10
507-508	S-508	S-507	0.55	0.81	0.44	0.79	6.51	5.17	130.00	0.005077	18 Inch	0.012	8.11	147.28	146.62	154.85	155.40	6.07	7.28	153.61	153.34
506-507	S-507	S-506	0.55	0.76	0.41	5.01	5.59	28.25	178.00	0.001685	24 Inch	0.012	10.06	146.62	146.32	155.40	152.37	6.78	4.05	152.79	150.42
505-506	S-506	S-505	0.28	0.63	0.18	5.19	5.55	29.02	108.00	0.007500	24 Inch	0.012	21.22	146.32	145.51	152.37	151.60	4.05	4.09	150.22	148.70
504-505	S-505	S-504	0.75	0.90	0.68	5.86	5.53	32.66	98.00	0.021837	30 Inch	0.012	65.66	145.51	143.37	151.60	152.11	3.59	6.24	148.64	148.11
503-504	S-504	S-503	40.77	0.22	9.08	14.95	3.07	46.25	68.00	0.014412	30 Inch	0.012	53.34	143.37	142.39	152.11	152.23	6.24	7.34	147.96	147.23
502-503	S-503	S-502	0.74	0.72	0.53	15.47	3.07	47.81	123.00	0.002683	30 Inch	0.012	23.01	142.39	142.06	152.23	151.92	7.34	7.36	145.89	144.33
501-502	S-502	S-501	N/A	N/A	N/A	15.47	3.06	47.68	189.00	0.004233	30 Inch	0.012	28.91	138.80	138.00	151.92	141.00	10.62	0.50	142.58	140.27

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

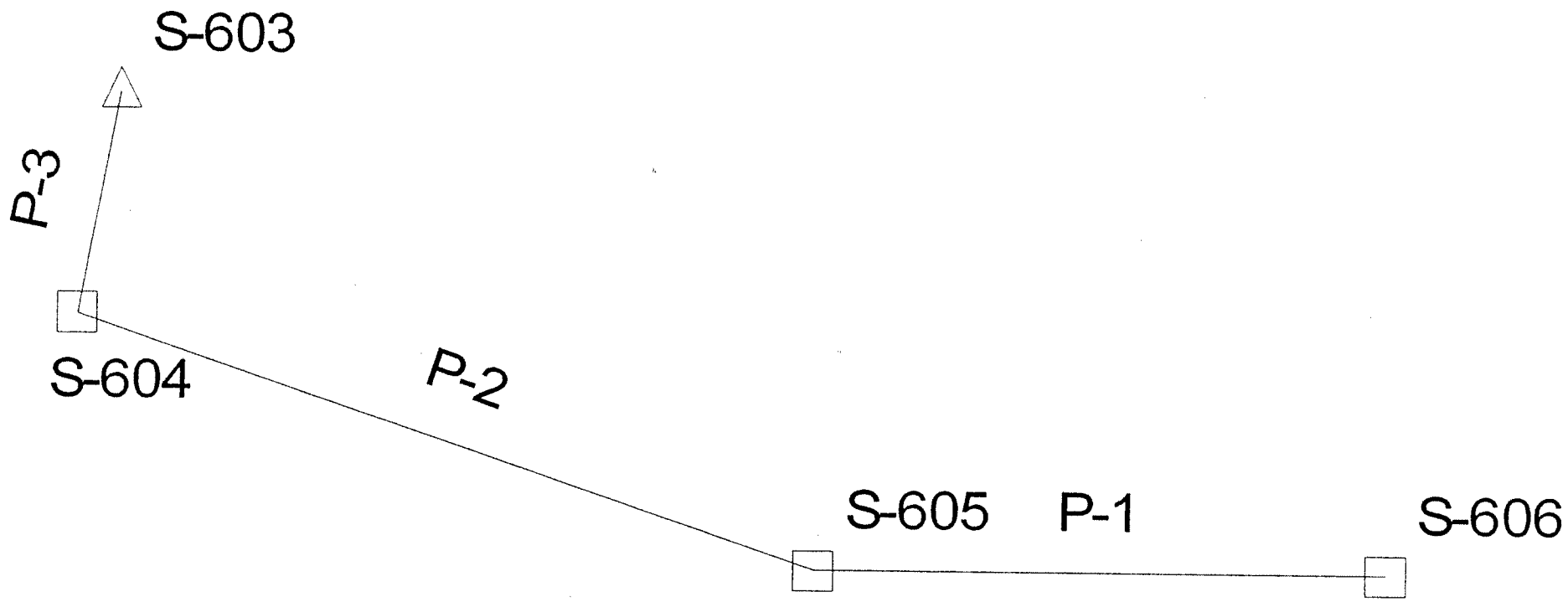
US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

NW ACCESS ROAD @ STA. 130+00

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 148.2 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCENTRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.650	0.650	0.818							149.89	149.74	0.143					
				TYPE			0.120	0.120	0.024							148.80	148.50	0.300		0.139	2.40	4.23	
S-606 to S-605	60.80	L	S-606	C	M	103	0.000	0.000	0.000	10.00	0.710	8.600	0.84	4.234	152.58	147.30	147.00	0.300	18	0.291	3.47	6.13	
				DBI			0.910	1.560	1.482							149.65	148.43	1.206					
				TYPE			0.230	0.360	0.070							148.50	148.30	0.199		0.768	5.64	9.96	
S-605 to S-604	33.17	L	S-605	C	M	157	0.000	0.000	0.000	10.71	0.480	6.420	1.55	9.964	151.90	147.00	146.80	0.199	18	0.127	2.29	4.06	
				Inlet			0.280	1.840	1.746							148.35	148.20	0.143					
				TYPE			0.000	0.360	0.070							148.30	148.20	0.100		1.026	8.52	11.51	
S-604 to S-603	36.30	L	S-604	P-5	M	14	0.000	0.000	0.000	11.17	0.043	6.330	1.82	11.508	150.00	148.80	146.70	0.100	18	0.714	5.44	9.81	Crown Elev. = Hydraulic Grade Elev.

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	S-606	0.77	0.64	0.64	152.58	149.89	0.001398	4.25	Circula	103.00	2.41	
	S-605				151.90	149.74	0.002913	6.14	18 inch			
P-2	S-605	1.14	0.91	1.55	151.90	149.65	0.007799	10.05	Circula	157.00	5.69	
	S-604				150.00	148.43	0.001274	4.06	18 inch			
P-3	S-604	0.28	0.27	1.82	150.00	148.35	0.010395	11.60	Circula	14.00	6.57	
	S-603				150.00	148.20	0.007143	9.62	18 inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
S-606	0.77	0.83	0.64	0.00	0.64	10.00	0.00	0.00	10.00	6.58	4.25	0.00	0.00	0.00	0.00	4.25	152.58	152.58	149.89	149.89	6.58	4.25
S-605	1.14	0.80	0.91	0.00	1.55	10.00	0.00	10.71	10.71	6.42	10.05	0.00	0.00	0.00	0.00	10.05	151.90	151.90	149.74	149.65	6.58	6.04
S-604	0.28	0.95	0.27	0.00	1.82	10.00	0.00	11.17	11.17	6.33	11.60	0.00	0.00	0.00	0.00	11.60	150.00	150.00	148.43	148.35	6.58	1.76
S-603					1.82				11.21	6.32	11.58					11.58	150.00	150.00	148.20	148.20		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (In/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	S-606	S-605	0.77	0.83	0.64	0.64	6.58	4.25	103.00	0.002913	18 Inch	0.012	6.14	147.30	147.00	152.58	151.90	3.78	3.40	149.89	149.74	
P-2	S-605	S-604	1.14	0.80	0.91	1.55	6.42	10.05	157.00	0.001274	18 Inch	0.012	4.06	147.00	146.80	151.90	150.00	3.40	1.70	149.65	148.43	
P-3	S-604	S-603	0.28	0.95	0.27	1.82	6.33	11.60	14.00	0.007143	18 Inch	0.012	9.62	146.80	146.70	150.00	150.00	1.70	1.80	148.35	148.20	

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

																					Manning's Roughness Coefficient		
																					n=	0.009	Plastic Solid Pipe
																					n=	0.012	Concrete Pipe
						DRAINAGE AREA (ACRES)		US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4															Design Tailwater Elevation = 168.8 ft
							c=	0.950															3-year Storm Sewer Analysis
							c=	0.200	SW ACCESS ROAD														Zone 6 used for Rainfall Intensity
							c=	0.150															FDOT Drainage Manual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.250	0.250	0.238							169.48	169.45	0.034					Physical Velocity Used In Time Of Flow
				TYPE			1.670	1.670	0.334							169.68	169.62	0.060		0.113	1.22	3.62	In Pipe Section
SW-102 to SW-103	16.62	L	SW-102	D	M	30	0.000	0.000	0.000	10.00	0.174	6.680	0.57	3.818	171.59	168.18	168.12	0.060	18	0.200	2.88	5.08	Crown Elev. = Hydraulic Grade Elev.
				DBI			0.540	0.790	0.751							168.45	169.28	0.169					Physical Velocity Used In Time Of Flow
				TYPE			0.500	2.170	0.434							169.62	169.28	0.338		0.103	2.50	7.87	In Pipe Section
SW-103 to SW-101	16.50	R	SW-103	D	M	164	0.000	0.000	0.000	10.17	0.770	6.640	1.18	7.865	171.59	167.62	167.28	0.339	24	0.207	3.55	11.15	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	0.790	0.751							169.28	168.97	0.150					Physical Velocity Used In Time Of Flow
				TYPE			0.000	2.170	0.434							169.28	168.97	0.314		0.096	2.41	7.58	In Pipe Section
SW-101 to SW-105	11.00	L	SW-101	P-7	M	157	0.000	0.000	0.000	10.94	0.750	6.400	1.18	7.581	173.17	167.28	166.97	0.314	24	0.200	3.48	10.96	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.173	0.173	0.164							169.42	169.42	0.010					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							178.47	174.18	4.274		0.009	0.62	1.10	In Pipe Section
SW-111 to SW-110	4.61	C	SW-111	P-8	M	105	0.000	0.000	0.000	11.69	0.135	6.680	0.16	1.096	183.64	176.97	172.68	4.274	18	4.070	12.96	22.93	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.368	0.541	0.514							169.42	169.35	0.069					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							174.19	173.41	0.780		0.089	1.92	3.39	In Pipe Section
SW-110 to SW-109	15.00	L	SW-110	P-1	M	78	0.000	0.000	0.000	10.00	0.202	6.600	0.51	3.392	180.80	172.69	171.91	0.780	18	1.000	6.44	11.37	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	0.541	0.514							168.35	169.26	0.086					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							173.41	172.40	1.013		0.088	1.91	3.37	In Pipe Section
SW-109 to SW-107	26.51	L	SW-109	P-8	M	97	0.000	0.000	0.000	11.83	0.247	6.560	0.51	3.372	177.04	171.81	170.90	1.013	18	1.040	6.56	11.59	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.148	0.688	0.655							169.26	168.10	0.162					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							169.48	169.31	0.171		0.138	2.40	4.24	In Pipe Section
SW-107 to SW-106	12.00	L	SW-107	P-1	M	116	0.000	0.000	0.000	12.08	0.784	6.480	0.65	4.241	175.43	187.98	187.81	0.171	18	0.147	2.47	4.36	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	0.689	0.655							169.10	168.88	0.204					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							169.31	168.97	0.336		0.132	2.34	4.14	In Pipe Section
SW-106 to SW-105	23.53	L	SW-106	P-7	M	154	0.000	0.000	0.000	12.86	0.853	6.320	0.65	4.137	174.37	187.81	187.47	0.336	16	0.219	3.01	5.31	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.422	1.901	1.806							168.89	168.80	0.095					Physical Velocity Used In Time Of Flow
				TYPE			0.783	2.953	0.581							168.97	168.80	0.170		0.107	2.87	14.57	In Pipe Section
SW-105 to SW-104	12.00	L	SW-105	J-2	M	68	0.000	0.000	0.000	13.71	0.368	6.080	2.40	14.571	171.75	166.47	166.30	0.170	30	0.193	3.98	19.53	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

50-year Cross Drain Analysis

DRAINAGE AREA (ACRES)
c= 0.95
c= 0.2
c= 0.15

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

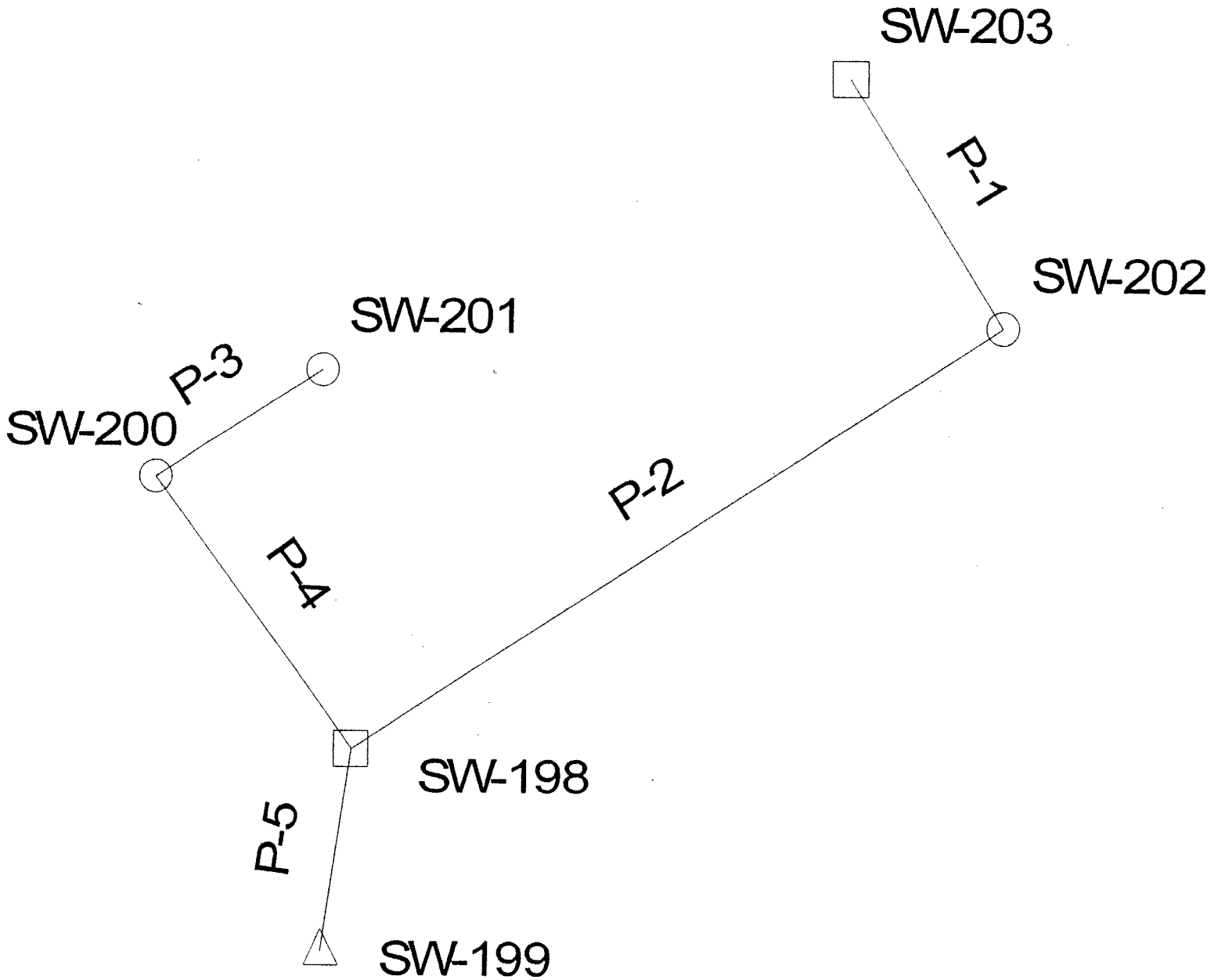
SW ACCESS ROAD

Manning's Roughness Coefficient
n= 0.009 Plastic Solid Pipe
n= 0.012 Concrete Pipe
Design Tailwater Elevation = 172.28 ft
3-year Storm Sewer Analysis
Zone 8 used for Rainfall Intensity
FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
							0.000	0.000	0.000							175.07	174.58	0.4900					
				MES			0.736	0.736	0.147							176.20	175.71	0.4900		1.140	2.87	0.97	
SW-203 to SW-202	35.14	L	SW-203	4:1	S	43	0.000	0.000	0.000	10.00	0.10	6.58	0.15	0.97	176.20	174.70	174.21	0.4900	18	1.140	6.87	12.15	
				MAN.			0.000	0.000	0.000							174.58	172.28	2.3000					
				TYPE			0.000	0.736	0.147							175.71	171.35	4.3600		1.635	1.72	1.34	
SW-202 to SW-198	12.00	R	SW-202	P-8	M	148	0.000	0.000	0.000	10.25	0.22	9.12	0.15	1.34	178.66	174.21	169.85	4.3600	18	2.946	11.05	19.53	
				MAN.			0.000	0.000	0.000							172.28	172.28	0.0000					
				TYPE			0.000	0.000	0.000							171.95	171.85	0.1000		0.000	0.00	0.00	
SW-201 to SW-200	20.07	L	SW-201	P-8	S	20	0.000	0.000	0.000	10.00	0.06	9.12	0.00	0.00	175.15	169.95	169.85	0.1000	24	0.510	5.57	17.33	
				MAN.			0.000	0.000	0.000							172.28	172.28	0.0000					
				TYPE			0.000	0.736	0.147							172.35	172.32	0.0300	***	0.000	0.00	1.34	
SW-200 to SW-198	22.65	L	SW-200	J-8	M	30	0.000	0.000	0.000	10.06	0.17	9.12	0.15	1.34	175.32	169.85	169.82	0.0300	30	0.102	2.89	14.05	
				MAN.			0.563	0.563	0.535							172.28	172.28	0.0000					
				TYPE			0.000	0.736	0.147							172.32	172.28	0.0400	***	0.000	0.87	6.14	
SW-198 to SW-199	23.53	R	SW-198	J-7	S	7	0.000	0.000	0.000	11.68	0.02	9	0.68	6.14	174.79	169.82	169.78	0.0400	30	0.571	6.85	33.61	TW = Crown Elev.

*** 30" EQUIV. TO 24" x 38"

Scenario: Base



Title: Design Build - Segment 9
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 ...bs Sverdrup 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Proj...gineer: Bill Veon
Stor...D v4.1.1 [4.2014]

Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-3	SW-201	N/A	N/A	0.00	175.15	172.28	0.000000	0.00	Circula	20.00	0.00	
	SW-200				175.32	172.28	0.005000	17.33	24 Inch			
P-1	SW-203	0.74	0.15	0.15	176.20	175.07	0.011391	0.98	Circula	43.00	2.87	
	SW-202				178.66	174.58	0.011395	12.15	18 Inch			
P-4	SW-200	N/A	N/A	0.00	175.32	172.28	0.000000	0.00	Circula	30.00	0.00	
	SW-198				174.79	172.28	0.001000	14.05	30 Inch			
P-2	SW-202	N/A	N/A	0.15	178.66	174.58	0.016350	0.97	Circula	148.00	1.72	
	SW-198				174.79	172.28	0.029459	19.53	18 Inch			
P-5	SW-198	0.56	0.53	0.68	174.79	172.28	0.000087	4.28	Circula	7.00	0.87	
	SW-199				172.78	172.28	0.005714	33.59	30 Inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
SW-20					0.00				0.00	0.00	0.00					0.00	175.15	175.15	172.28	172.28		
SW-20	0.74	0.20	0.15	0.00	0.15	10.00	0.00	0.00	10.00	6.58	0.98	0.00	0.00	0.00	0.00	0.98	176.20	176.20	175.07	175.07	6.58	0.98
SW-20					0.00				0.00	0.00	0.00					0.00	175.32	175.32	172.28	172.28		
SW-20					0.15				10.25	6.52	0.97					0.97	178.66	178.66	174.58	174.58		
SW-19	0.56	0.95	0.53	0.00	0.68	10.00	0.00	11.68	11.68	6.23	4.28	0.00	0.00	0.00	0.00	4.28	174.79	174.79	172.28	172.28	6.58	3.55
SW-19					0.68				11.82	6.20	4.26					4.26	172.78	172.78	172.28	172.28		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-3	SW-20	SW-20	N/A	N/A	N/A	0.00	0.00	0.00	20.00	0.005000	24 Inch	0.012	17.33	169.95	169.85	175.15	175.32	3.20	3.47	172.28	172.28	
P-1	SW-20	SW-20	0.74	0.20	0.15	0.15	6.58	0.98	43.00	0.011395	18 Inch	0.012	12.15	174.70	174.21	176.20	178.66	0.00	2.95	175.07	174.58	
P-4	SW-20	SW-19	N/A	N/A	N/A	0.00	0.00	0.00	30.00	0.001000	30 Inch	0.012	14.05	169.85	169.82	175.32	174.79	2.97	2.47	172.28	172.28	
P-2	SW-20	SW-19	N/A	N/A	N/A	0.15	6.52	0.97	148.00	0.029459	18 Inch	0.012	19.53	174.21	169.85	178.66	174.79	2.95	3.44	174.58	172.28	
P-5	SW-19	SW-19	0.56	0.95	0.53	0.68	6.23	4.28	7.00	0.005714	30 Inch	0.012	33.59	169.82	169.78	174.79	172.78	2.47	0.50	172.28	172.28	

STORM SEWER TABULATION FORM

50-year Cross Drain Analysis

									US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4												Manning's Roughness Coefficient		
																					n=	0.009	Plastic Solid Pipe
																					n=	0.012	Concrete Pipe
						DRAINAGE AREA (ACRES)																	Design Tailwater Elevation = 180.64 ft
							c=	0.950	SW ACCESS ROAD														50-year Storm Sewer Analysis
							c=	0.200															Zone 8 used for Rainfall Intensity
							c=	0.150															FDOT Drainage Manual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				2-DBI			1.329	1.329	1.263							180.77	180.64	0.134					Physical Velocity Used In Time Of Flow
				type D			0.000	0.000	0.000							180.75	180.64	0.110		0.223	3.68	11.56	In Pipe Section
SW-204 to SW-205	23.50	R	SW-204		M	60	0.000	0.000	0.000	10.00	0.300	9.160	1.26	11.565	184.22	178.75	178.64	0.110	24	0.183	3.34	10.48	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

50-year Cross Drain Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

SW ACCESS ROAD

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 183.30 ft
		50-year Cross Drain Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCENTRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
							0.000	0.000	0.000							183.30	183.30	0.000					Physical Velocity Used In Time Of Flow
							0.000	0.000	0.000							184.70	183.30	1.400		0.000	0.00	0.00	In Pipe Section
SW-208 to SW-207	60.71	R	SW-208	collar	M	51	0.000	0.000	0.000	10.00	0.066	9.160	0.00	0.000	-	182.70	181.30	1.400	24	2.745	12.93	40.60	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

50-year Cross Drain Analysis

																						Manning's Roughness Coefficient		
																						n=	0.009	Plastic Solid Pipe
																						n=	0.012	Concrete Pipe
					DRAINAGE AREA (ACRES)				US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4															Design Tailwater Elevation = 185.27 ft
						c=	0.950																	
						c=	0.200		SW ACCESS ROAD														50-year Cross Drain Analysis
						c=	0.150																Zone 8 used for Rainfall Intensity
																							FDOT Drainage Manual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			1.514	1.514	1.438							185.50	185.49	0.012					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							185.36	185.33	0.030	***	0.289	4.20	13.17	In Pipe Section
SW-211 to SW-210	23.50	R	SW-211	D	M	4	0.000	0.000	0.000	10.00	0.010	9.160	1.44	13.175	187.34	183.36	183.33	0.030	24	0.750	8.76	21.22	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.131	1.645	1.563							185.49	185.27	0.217					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							185.33	185.27	0.060	***	0.338	4.54	14.25	In Pipe Section
SW-210 to SW-209	17.60	R	SW-210	P-1	M	64	0.000	0.000	0.000	10.00	0.446	9.120	1.56	14.252	187.01	183.33	183.27	0.060	24	0.094	2.39	7.50	Crown Elev. = Hydraulic Grade Elev.

*** 24" EQUIV. 19" X 30"

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

SW POND OUTFALL

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 139.8 ft
		10-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.000	0.000	0.000							170.23	170.23	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							170.46	170.23	0.230		0.000	0.00	0.00	In Pipe Section
SW-119 to SW-120	270.61	R	SW-119	D (MOD.)	M	75	0.000	0.000	0.000	10.00	0.351	7.500	0.00	0.000	171.60	168.96	168.73	0.230	18	0.307	3.57	6.30	No Flow over Weir for 10-year Storm Event
				MAN.			0.000	0.000	0.000							170.10	170.10	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							170.23	170.10	0.130		0.000	0.00	0.00	In Pipe Section
SW-120 to SW-121	192.33	R	SW-120	P-7	M	71	0.000	0.000	0.000	10.35	0.430	7.500	0.00	0.000	173.06	168.73	168.60	0.130	18	0.183	2.75	4.86	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	0.000	0.000							168.17	168.17	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							168.34	168.17	0.170		0.000	0.00	0.00	In Pipe Section
SW-121 to P-206	192.35	R	SW-121	P-7	M	55	0.000	0.000	0.000	10.78	0.211	7.400	0.00	0.000	172.24	166.34	166.17	0.170	24	0.309	4.34	13.62	Crown Elev. = Hydraulic Grade Elev.
				BARR.			0.480	0.480	0.456							156.15	156.13	0.022					Physical Velocity Usad In Time Of Flow
				WALL			0.000	0.000	0.000							167.50	155.98	11.520		0.170	2.45	3.42	In Pipe Section
P-206 to P-205	131.25	R	P-206	INLET	M	13	0.000	0.000	0.000	10.00	0.088	7.500	0.46	3.420	169.74	166.17	154.65	11.520	16	88.615	55.99	78.13	Crown Elev. = Hydraulic Grade Elev.
				BARR.			0.563	1.043	0.991							156.13	155.98	0.154					Physical Velocity Used In Time Of Flow
				WALL			0.000	0.000	0.000							156.16	155.98	0.180		0.427	4.21	7.43	In Pipe Section
P-207 to P-205	130.00	R	P-207	INLET	M	36	0.000	0.000	0.000	10.00	0.143	7.500	0.99	7.431	158.20	154.66	154.48	0.180	18	0.500	4.55	8.04	Crown Elev. = Hydraulic Grade Elev.
				BARR.			0.030	1.073	1.019							153.21	153.16	0.054					Physical Velocity Used In Time Of Flow
				WALL			0.000	0.000	0.000							155.98	153.16	2.820		0.097	2.43	7.65	In Pipe Section
P-205 to P-204	130.00	R	P-205	INLET	M	55	0.000	0.000	0.000	10.09	0.376	7.500	1.02	7.645	158.02	153.98	151.16	2.820	24	5.127	17.67	55.49	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	1.073	1.019							147.33	147.27	0.062					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							153.16	147.27	5.889		0.095	2.40	7.54	In Pipe Section
P-204 to P-203	68.32	R	P-204	P-8	M	65	0.000	0.000	0.000	10.46	0.451	7.400	1.02	7.543	158.90	151.16	145.27	5.889	24	9.060	23.49	73.76	Crown Elev. = Hydraulic Grade Elev.
				DBI			1.870	2.943	2.796							147.17	146.28	0.894					Physical Velocity Used In Time Of Flow
				TYPE			5.560	5.560	1.112							147.27	146.28	0.990		1.355	9.09	28.53	In Pipe Section
P-203 to P-202	0.68	L	P-203	B	M	66	0.000	0.000	0.000	10.92	0.121	7.300	3.91	28.527	150.40	145.27	144.28	0.990	24	1.500	9.56	30.01	Crown Elev. = Hydraulic Grade Elev.
				MAN.			0.000	2.943	2.796							141.97	139.80	2.166					Physical Velocity Used In Time Of Flow
				TYPE			0.000	5.560	1.112							146.28	139.80	6.480		1.337	9.02	28.33	In Pipe Section
P-202 to P-201	67.88	L	P-202	P-8	M	162	0.000	0.000	0.000	11.04	0.299	7.250	3.91	28.332	154.48	144.28	137.80	6.480	24	4.000	15.61	49.01	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

3-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

NW ACCESS ROAD

Manning's Roughness Coefficient		
n=	0.009	Plestic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 168.97 ft
		3-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manuel, Voluma 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			0.000	0.000	0.000							148.50	148.50	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							148.80	148.50	0.300		0.000	0.00	0.00	In Pipe Section
S-606 to S-605	60.80	L	S-606	C	M	103	0.000	0.000	0.000	10.00	0.494	9.160	0.00	0.000	152.58	147.30	147.00	0.300	18	0.291	3.47	6.13	Crown Elev. = Hydraulic Grade Elev.
				DBI			0.000	0.000	0.000							148.30	148.30	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							148.50	148.30	0.199		0.000	0.00	0.00	In Pipe Section
S-605 to S-604	33.17	L	S-605	C	M	157	0.000	0.000	0.000	10.00	1.141	9.120	0.00	0.000	151.90	147.00	146.80	0.199	18	0.127	2.29	4.05	Crown Elev. = Hydreulic Grade Elev.
				Inlet			0.000	0.000	0.000							148.20	148.20	0.000					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							148.30	148.20	0.100		0.000	0.00	0.00	In Pipe Section
S-604 to S-603	36.30	L	S-604	P-5	M	14	0.000	0.000	0.000	11.14	0.043	9.120	0.00	0.000	150.75	148.80	146.70	0.100	18	0.714	5.44	9.61	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

																						Menning's Roughness Coefficient		
																						n=	0.009	Plastic Solid Pipe
																						n=	0.012	Concrete Pipe
						DRAINAGE AREA (ACRES)																		Design Tailwater Elevation = 139.46 ft
							c=	0.950																10-year Storm Sewer Analysis
							c=	0.200																Zone 8 used for Rainfall Intensity
							c=	0.150																FDOT Drainage Menuel, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				MES			0.000	0.000	0.000							139.10	139.10	0.000					Physical Velocity Used In Time Of Flow
				1:4			0.000	0.000	0.000							139.80	139.10	0.701		0.000	0.00	0.00	In Pipe Section
R-109 to R-108	146.13	R	R-109		M	139	0.000	0.000	0.000	10.00	0.418	7.560	0.00	0.000	148.40	137.80	137.10	0.701	24	0.504	5.54	17.40	Crown Elev. = Hydraulic Grade Elev.

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

EQUALIZER PIPE BETWEEN POND B-1 & B-2

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

DRAINAGE AREA (ACRES)

c= 0.950

c= 0.200

c= 0.150

US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4

EQUALIZER PIPE BETWEEN POND B-2 & B-3

Manning's Roughness Coefficient		
n=	0.009	Plastic Solid Pipe
n=	0.012	Concrete Pipe
		Design Tailwater Elevation = 140.1 ft
		10-year Storm Sewer Analysis
		Zone 8 used for Rainfall Intensity
		FDOT Drainage Manual, Volume 2A

LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCENTRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
							0.726	0.726	0.690							140.11	140.10	0.014					Physical Velocity Used In Time Of Flow
				MES			0.000	0.000	0.000							140.82	140.10	0.721		0.005	0.73	5.17	In Pipe Section
R-103 to R-102	137.49	L	R-103	1:4	M	287	0.000	0.000	0.000	10.00	0.836	7.500	0.69	5.173	141.00	137.82	137.10	0.721	36	0.270	5.32	37.59	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

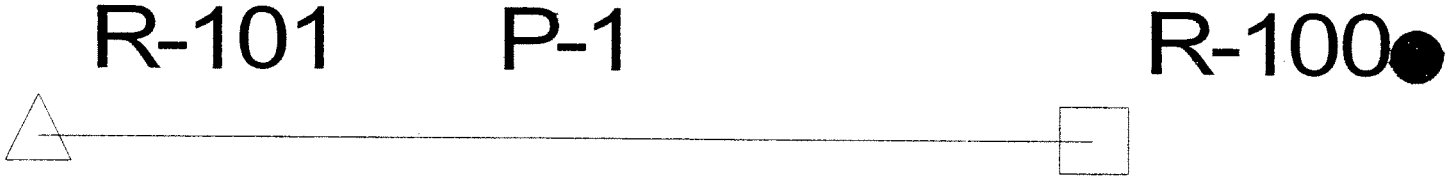
									US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4												Manning's Roughness Coefficient		
																					n=	0.009	Plastic Solid Pipe
																					n=	0.012	Concreta Pipe
					DRAINAGE AREA (ACRES)																		Design Tailwater Elevetion = 138.64 ft
						c=	0.950		RAMP A2 INTO POND B-2														10-year Storm Sawar Analysis
						c=	0.200																Zone 8 used for Rainfall Intansity
						c=	0.150																FDOT Dreinage Menual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCEN-TRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				INLET			0.245	0.245	0.233							145.56	145.53	0.029					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							145.86	145.53	0.329		0.024	1.00	1.76	In Pipe Section
R-104 to R-106	1.50	L	R-104	P-8	M	122	0.000	0.000	0.000	10.00	0.608	7.560	0.23	1.760	150.68	144.36	144.03	0.329	18	0.270	3.34	5.91	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.064	0.309	0.294							145.55	145.53	0.022					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							145.86	145.53	0.330		0.038	1.26	2.22	In Pipe Section
R-107 to R-106	1.50	L	R-107	P-8	M	58	0.000	0.000	0.000	10.61	0.199	7.560	0.29	2.219	149.71	144.36	144.03	0.330	18	0.569	4.85	8.57	Crown Elev. = Hydraulic Grade Elev.
				INLET			0.104	0.413	0.392							138.72	138.64	0.082					Physical Velocity Used In Time Of Flow
				TYPE			0.000	0.000	0.000							138.64	138.64	0.000		0.065	1.64	2.90	In Pipe Section
R-106 TO R-105	1.50	L	R-106	P-8	M	125	0.000	0.000	0.000	10.81	0.139	7.400	0.39	2.903	148.84	144.03	137.14	6.781	18	5.425	14.99	26.48	Crown Elev. = Hydraulic Grade Elev.

STORM SEWER TABULATION FORM

10-year Storm Sewer Analysis

									US 27 INTERCHANGE IMPROVEMENTS / MAINLINE I-4												Manning's Roughness Coefficient		
																					n=	0.009	Plastic Solid Pipe
																					n=	0.012	Concrete Pipe
						DRAINAGE AREA (ACRES)																	Design Tailwater Elevation = 139.4 ft
							c=	0.950	INFLOW PIPE TO POND 9-B3 @ STA. 3040+60, RAMP A-1														10-year Storm Sewer Analysis
							c=	0.200															Zone 8 used for Rainfall Intensity
							c=	0.150															FDOT Drainage Manual, Volume 2A
LOCATION OF UPPER END STATION	DIST	S	STRUCTURE NO.	TYPE OF STRUCTURE	TYPE OF LINE	LENGTH (FT.)	INCREMENT	SUB-TOTAL	SUB-TOTAL (CA)	TIME OF CONCENTRATION (MIN.)	TIME OF FLOW IN SECTION (MIN.)	INTENSITY	TOTAL (CA)	TOTAL RUNOFF (CFS)	INLET ELEVATION (FEET)	UPPER END	LOWER END	FALL (IN FEET)	DIAMETER (IN.)	SLOPE (%)	VELOCITY (FPS)	CAPACITY (CFS)	REMARKS
				DBI			1.410	1.410	1.340							140.75	139.40	1.350					
				TYPE			0.770	0.770	0.154							139.50	139.30	0.200		0.971	6.34	11.20	
R-100 to R-101	28.00	L	R-100	C	M	139	0.000	0.000	0.000	10.00	0.949	7.500	1.49	11.201	141.00	138.00	137.80	0.200	18	0.144	2.44	4.31	

Scenario: Base



Scenario: Base

DOT Report

Label	-Node- Up. Dn.	Up. Inlet Area (acres)	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	-Ground- Up. Dn. (ft)	-HGL- Up. Dn. (ft)	-Slope- Energy Constructed (ft/ft)	Section Disch Cap. (cfs)	Section Shape Size	L (ft)	Avg. v (ft/s)	Desc.
P-1	R-100	2.18	1.49	1.49	141.00	140.75	0.009702	11.21	Circula	139.00	6.34	
	R-101				140.00	139.40	0.001439	4.32	18 Inch			

Scenario: Base

Node Report

Label	Area (acres)	C	Inlet CA (acres)	Ext CA (acres)	System CA (acres)	TC (min)	External Tc (min)	Up. Tc (min)	System Tc (min)	I (in/hr)	System Rational Q (cfs)	Add. Q (cfs)	CO (cfs)	Known Q (cfs)	Up. Add. Q (cfs)	System Q (cfs)	Gr. Elev. (ft)	Rim (ft)	HGL In (ft)	HGL Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
R-100	2.18	0.69	1.49	0.00	1.49	10.00	0.00	0.00	10.00	7.45	11.21	0.00	0.00	0.00	0.00	11.21	141.00	141.00	140.75	140.75	7.45	11.21
R-101					1.49				10.37	7.36	11.08					11.08	140.00	140.00	139.40	139.40		

Scenario: Base

Pipe Report

Label	Up. Node	Dn. Node	Up. Inlet Area (acres)	Up. Inlet Rat. Coef.	Up. Inlet Area (acres)	Up. Calc. Sys. CA (acres)	I (in/hr)	System Q (cfs)	L (ft)	S (ft/ft)	Size	Mannings n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Desc.
P-1	R-100	R-101	2.18	0.69	1.49	1.49	7.45	11.21	139.00	0.001439	18 inch	0.012	4.32	138.00	137.80	141.00	140.00	1.50	0.70	140.75	139.40	

Cross / Side Drain Analysis

Appendix D

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK
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Checked by:
Date:

CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	10
Basin Flow:	54.7 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Span (B):	2 ft
Diameter or Height (D):	2 ft
Length:	43 ft
Area / Barrel:	3.1 ft^2
Total X-Sectional Area:	3.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	6.3 ft
Hydraulic Radius/Barrel:	0.50 ft
Upstream Invert:	169.99 ft
Downstream Invert:	169.87 ft
Critical Elevation:	175.00 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert:

D/S Invert + Culvert Height = 171.87 ft

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK

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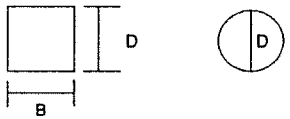
WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION

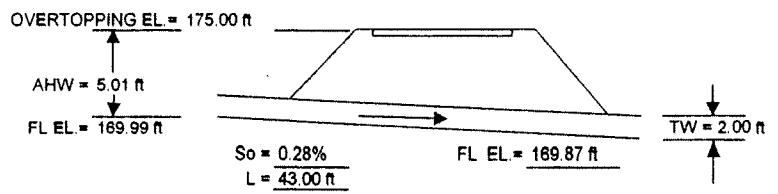


D = Diameter or Height
B = Span

Q_{10} = 54.7 cfs

TW_{10} = 2.00 ft

SKETCH



LSo = 0.12

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTRO-LLING HW	OUTLET VELOCITY	PROP. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
10 YR	27.4	2.00	2.00		2.00	4.00	0.70	2.54	0.00	1.00	2.00	2.00	0.12	4.42	4.42	8.73	174.41

SUMMARY & RECOMMENDATIONS: 2 - 24" Required for total flow of 54.7 CFS

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2A

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK
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CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	12
Basin Flow:	1.7 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Span (B):	1.92 ft
Diameter or Height (D):	1.17 ft
Length:	62 ft
Area / Barrel:	1.1 ft^2
Total X-Sectional Area:	1.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	3.7 ft
Hydraulic Radius/Barrel:	0.29 ft
Upstream Invert:	178.87 ft
Downstream Invert:	178.48 ft
Critical Elevation:	180.50 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert: _____

D/S Invert + Culvert Height = 179.98 ft

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK

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WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION

D = Diameter or Height
B = Span

Q_{10} = 1.7 cfs

TW_{10} = 1.50 ft

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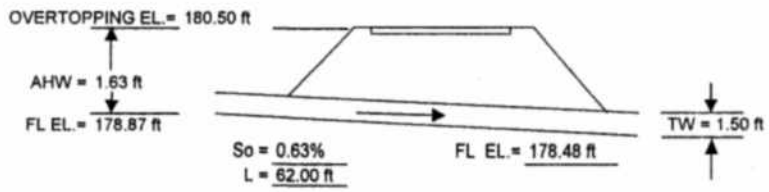

LSo = 0.39

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTRO-LLING HW	OUTLET VELOCITY	PROP. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
10 YR	1.7	1.17	1.92	0.89	0.45	0.53	0.70	0.12	0.29	0.73	1.50	1.50	0.39	1.23	1.23	1.58	180.10

SUMMARY & RECOMMENDATIONS: 1 - 18" Required for total flow of 1.7 CFS

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2A

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK
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CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	14
Basin Flow:	1.3 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Span (B):	1.5 ft
Diameter or Height (D):	1.5 ft
Length:	117 ft
Area / Barrel:	1.8 ft^2
Total X-Sectional Area:	1.8 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	4.7 ft
Hydraulic Radius/Barrel:	0.38 ft
Upstream Invert:	176.50 ft
Downstream Invert:	176.26 ft
Critical Elevation:	179.50 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert: _____

D/S Invert + Culvert Height = 177.76 ft

Subject: EXISTING CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK

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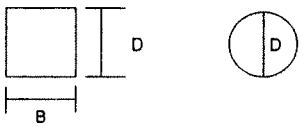
WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION



D = Diameter or Height
B = Span

Q_{10} = 1.3 CFS

TW_{10} = 1.50 ft

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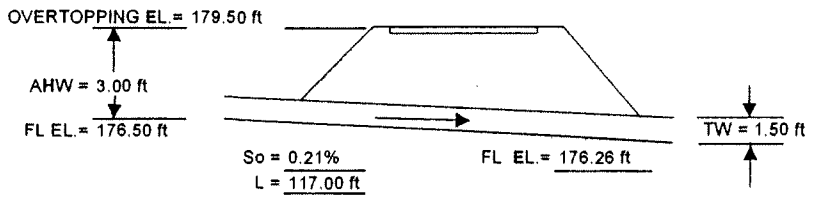

LSo = 0.24

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTRO-LLING HW	OUTLET VELOCITY	EXIST. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
10 YR	1.3	1.50	1.50		0.50	0.75	0.70	0.03	0.00	0.75	1.50	1.50	0.24	1.29	1.29	0.74	177.79

SUMMARY & RECOMMENDATIONS: 1 - 18" Required for total flow of 1.3 CFS

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2A

Subject: PROPOSED CULVERT ANALYSIS
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CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	19
Basin Flow:	9.7 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Span (B):	2 ft
Diameter or Height (D):	2 ft
Length:	145 ft
Area / Barrel:	3.1 ft^2
Total X-Sectional Area:	3.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	6.3 ft
Hydraulic Radius/Barrel:	0.50 ft
Upstream Invert:	165.23 ft
Downstream Invert:	164.47 ft
Critical Elevation:	167.00 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert: _____

D/S Invert + Culvert Height = 166.47 ft

Subject: PROPOSED CULVERT ANALYSIS
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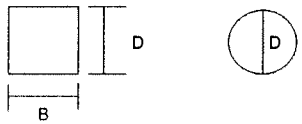
WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION



D = Diameter or Height
B = Span

Q_{10} = 9.7 cfs

TW_{10} = 2.00 ft

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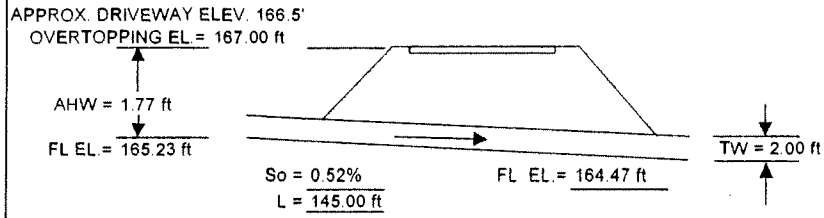

LSo = 0.76

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTROLLING HW	OUTLET VELOCITY	EXIST. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
10 YR	9.7	1.50	1.50	6.47	1.60	2.40	0.70	1.95	1.09	1.30	1.50	1.50	0.76	2.69	2.69		167.92
10 YR	9.7	2.00	2.00	4.85	0.85	1.70	0.70	0.50	0.90	1.45	2.00	2.00	0.76	1.74	1.74		167.92

SUMMARY & RECOMMENDATIONS: 1 - 24" Required for total flow of 9.7 CFS / Existing Pipe is an 18" CMP

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2A

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CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	P-501
Basin Flow:	16.42 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

	Tc	Cw	A	FDOT Zone 8 I_{50}	FDOT Zone 8 Q_{50}
	81.0	0.42	10.95	3.53	16.42

Span (B):	2 ft
Diameter or Height (D):	2 ft
Length:	148 ft
Area / Barrel:	3.1 ft^2
Total X-Sectional Area:	3.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	6.3 ft
Hydraulic Radius/Barrel:	0.50 ft
Upstream Invert:	147.50 ft
Downstream Invert:	147.00 ft
Critical Elevation:	150.84 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert: _____

HW P-505 149.81 ft

Subject: PROPOSED CULVERT ANALYSIS
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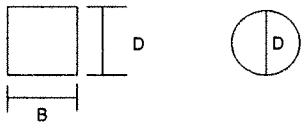
WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION

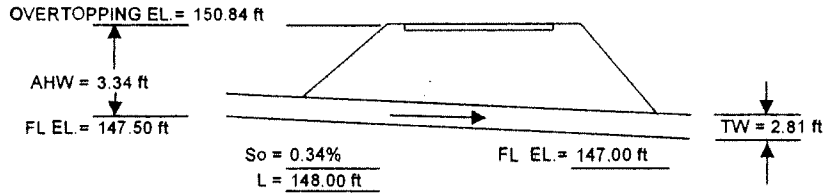


D = Diameter or Height
B = Span

Q_{10} = 16.4 cfs

TW_{50} = 2.81 ft

SKETCH



LSo = 0.50

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTRO. LLING HW	OUTLET VELOCITY	EXIST. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
50 yr	18.4	2.00	2.00	8.21	0.90	1.80	0.70	1.38	1.28	1.84	2.81	2.81	0.50	3.89	3.69	5.23	151.19

SUMMARY & RECOMMENDATIONS: 1 - 24" Required for total flow of 29.1 CFS / Existing Pipe is an 18" CMP

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2A and HW/D from Fig 8-4 Nomograph

CROSSDRAIN CHARACTERISTICS

Tc	Cw	A	FDOT Zone 8	
123.0	0.3	8.3		
81.0	0.42	10.95	I_{50}	Q_{50}
123.0	0.37	19.26	2.59	18.51

Cross Drain No.:	P-503
Basin Flow:	18.51 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Span (B):	2 ft
Diameter or Height (D):	2 ft
Length:	185 ft
Area / Barrel:	3.1 ft^2
Total X-Sectional Area:	3.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	6.3 ft
Hydraulic Radius/Barrel:	0.50 ft
Upstream Invert:	147.00 ft
Downstream Invert:	146.82 ft
Critical Elevation:	150.84 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert: _____

Pond C4 50yr FDOT 148.50 ft

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK

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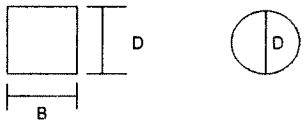
Date:
Checked by:
Date:

WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION

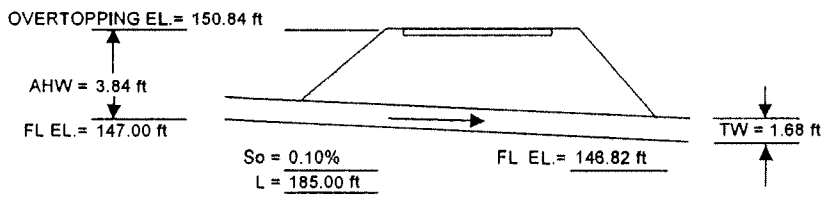


D = Diameter or Helght
B = Span

Q_{10} = 18.5 cfs

$TW1_0$ = 1.68 ft

SKETCH



LSo = 0.18

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTRO-LLING HW	OUTLET VELOCITY	EXIST. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL				HW = H + DTW - LSo						
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
50 yr	18.5	2.00	2.00	9.25	1.25	2.50	0.70	1.97	1.39	1.69	1.68	1.69	0.18	3.48	3.48	5.89	150.48

SUMMARY & RECOMMENDATIONS:

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ $dc = .315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2/ and HW/D from Fig 8-4 Nomograph

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK
FIP:

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CROSSDRAIN CHARACTERISTICS

Cross Drain No.:	P-507
Basin Flow:	10.32 CFS
Number of Barrels:	1
Flow Direction:	South
Culvert Material:	RCP
Manning's roughness:	0.012 (FDOT Drainage Manual 2000)
Entrance Coefficient:	0.7 (Table 8-2: FDOT Drainage Manual 1987)

Tc	Cw	A
68.43	0.54	3.91

FDOT Zone 8	
I_{50}	Q_{50}
3.94	8.32
Outflow Pond C3	2.00
	10.32

Span (B):	2 ft
Diameter or Height (D):	2 ft
Length:	300 ft
Area / Barrel:	3.1 ft^2
Total X-Sectional Area:	3.1 ft^2
Acceleration Due to Gravity:	32.2 ft^2 / sec
Wetted Perimeter/Barrel:	6.3 ft
Hydraulic Radius/Barrel:	0.50 ft
Upstream Invert:	144.30 ft
Downstream Invert:	141.60 ft
Critical Elevation:	152.00 ft @ Station:

(Highway(H), Over a Watershed Divide (W), or through Emergency Relief (E) structures.)

II. DETERMINE TAILWATER

Water Stain Noted at Culvert:

Depth in dn ditch 143.20 ft

Subject: PROPOSED CULVERT ANALYSIS
Project: I-4 Segment 9
County: POLK

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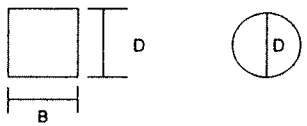
Made by:
Date:
Checked by:
Date:

WORKSHEET FOR CULVERT CAPACITY CALCULATIONS

HYDROLOGIC AND CHANNEL INFORMATION

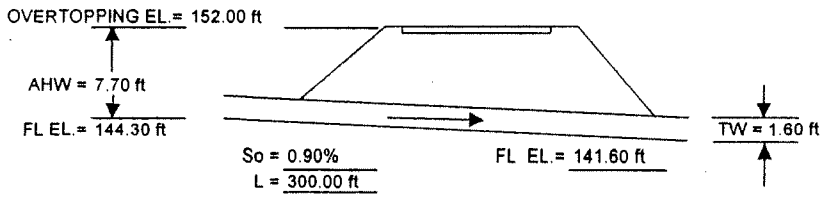


D = Diameter or Height
B = Span

Q_{10} = 10.3 cfs

TW_{50} = 1.60 ft

SKETCH



LSo = 2.70

CULVERT DESCRIPTION (ENTRANCE	Q	CULVERT SIZE		HEADWATER COMPUTATIONS											CONTROLLING HW	OUTLET VELOCITY	EXIST. PEAK STAGE
				INLET CONTROL			OUTLET CONTROL HW = H + DTW - LSo										
		D	B	Q/B	HW/D	HW	Ke	H	dc	(dc+D)/2	TW	DTW	LSo	HW			
50 yr	10.3	2.00	2.00	5.16	0.82	1.64	0.70	0.81	0.94	1.47	1.60	1.60	2.70	-0.29	1.64	3.29	145.94

SUMMARY & RECOMMENDATIONS:

H @ Outlet Control = $[1 + Ke + (29n^2L)/(Rh^{1.33})] * [(Q/A)^2/(2g)]$ dc = $.315(Q/B)^{2/3}$

Worksheet for Culvert Capacity Calculations, Source: Figure 8-2 FDOT Drainage Manual Vol. 2 and HW/D from Fig 8-4 Nomograph

Ditch Calculations

Appendix E

CONVEYANCE SWALE CALCULATIONS FOR STA 1971+00 LEFT MAINLINE I-4 TO RAMP A-1

v	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 i10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
1971+00	I-4	LT	131.50	0.20%	10.0	0.00	7.45	0.00	0.5	6	5	4	SOD	0.2	0.40	2.8	0.31	0.4	0.2	100	High Point
1972+00	I-4	LT	131.30	0.20%	18.6	0.36	5.98	0.45	1.0	6	5	4	SOD	0.2	0.62	5.0	0.44	1.0	0.2	100	
1972+10	I-4	LT	131.00	1.56%	102.0	0.42	2.32	8.91	8.7	6	5	4	SOD	0.14	0.89	8.4	0.60	7.9	0.9	10	
1973+00	I-4	LT	132.40	1.56%	101.8	0.44	2.32	8.11	8.2	6	5	4	SOD	0.14	0.87	8.1	0.58	7.5	0.9	90	
1974+00	I-4	LT	133.95	1.55%	100.2	0.44	2.35	7.62	7.9	6	5	4	SOD	0.14	0.91	8.7	0.61	8.3	1.0	100	
1975+00	I-4	LT	135.50	1.55%	98.4	0.45	2.38	7.07	7.6	6	5	4	SOD	0.14	0.90	8.5	0.60	8.0	0.9	100	
1976+00	I-4	LT	136.86	1.36%	96.6	0.46	2.41	6.53	7.3	6	5	3	SOD	0.14	0.93	8.5	0.63	7.8	0.9	100	
1977+00	I-4	LT	138.22	1.36%	94.8	0.47	2.44	6.07	7.0	6	5	3	SOD	0.14	0.89	8.0	0.61	7.1	0.9	100	
1978+00	I-4	LT	139.58	1.36%	92.9	0.47	2.48	5.71	6.7	6	5	3	SOD	0.14	0.86	7.6	0.59	6.7	0.9	100	
1979+00	I-4	LT	140.94	1.36%	91.0	0.47	2.52	5.40	6.4	6	5	3	SOD	0.14	0.85	7.4	0.58	6.4	0.9	100	
1980+00	I-4	LT	142.30	1.36%	89.1	0.47	2.56	5.16	6.2	6	5	3	SOD	0.14	0.81	7.0	0.56	5.9	0.8	100	
1981+00	I-4	LT	143.66	1.36%	87.1	0.47	2.60	4.91	5.9	6	5	3	SOD	0.14	0.80	6.9	0.56	5.8	0.8	100	
1982+00	I-4	LT	145.00	1.34%	85.1	0.46	2.64	4.65	5.7	6	5	3	SOD	0.14	0.81	6.9	0.56	5.8	0.8	100	
1983+00	I-4	LT	146.00	1.00%	83.1	0.45	2.69	4.38	5.3	6	5	3	SOD	0.14	0.81	7.0	0.56	5.1	0.7	100	
1984+00	I-4	LT	147.00	1.00%	80.8	0.45	2.74	4.09	5.0	6	5	3	SOD	0.14	0.83	7.3	0.57	5.3	0.7	100	
1985+00	I-4	LT	147.20	0.20%	78.5	0.44	2.79	3.81	4.7	6	5	3	SOD	0.14	1.16	11.9	0.75	4.7	0.4	100	
1986+00	I-4	LT	147.40	0.20%	74.3	0.43	2.90	3.52	4.4	6	5	3	SOD	0.14	1.13	11.4	0.74	4.4	0.4	100	
1987+00	I-4	LT	147.60	0.20%	70.0	0.42	3.02	3.22	4.0	6	5	3	SOD	0.14	1.07	10.5	0.71	4.0	0.4	100	
1988+00	I-4	LT	147.80	0.20%	65.6	0.40	3.15	2.91	3.7	6	5	3	SOD	0.14	1.03	9.9	0.68	3.7	0.4	100	
1989+00	I-4	LT	148.00	0.20%	61.1	0.39	3.29	2.66	3.4	6	5	3	SOD	0.14	0.99	9.4	0.66	3.4	0.4	100	
1990+00	I-4	LT	148.60	0.60%	56.5	0.39	3.45	2.43	3.2	6	5	3	SOD	0.14	0.73	6.0	0.51	3.2	0.5	100	
3016+00	A-1	LT	149.00	0.40%	53.4	0.39	3.57	2.17	3.0	6	5	3	SOD	0.14	0.78	6.6	0.54	3.0	0.4	100	
3017+00	A-1	LT	149.20	0.20%	49.7	0.39	3.73	1.91	2.8	6	5	3	SOD	0.14	0.90	8.1	0.61	2.8	0.3	100	
3018+00	A-1	LT	150.33	1.13%	44.8	0.40	3.95	1.66	2.5	6	5	3	SOD	0.2	0.67	5.4	0.48	2.6	0.5	100	
3019+00	A-1	LT	151.63	1.30%	41.4	0.40	4.12	1.42	2.4	6	5	3	SOD	0.2	0.62	4.8	0.45	2.4	0.5	100	
3020+00	A-1	LT	152.93	1.30%	38.1	0.41	4.31	1.19	2.1	6	5	3	SOD	0.2	0.58	4.4	0.43	2.1	0.5	100	
3021+00	A-1	LT	154.23	1.30%	34.6	0.41	4.53	0.99	1.8	6	5	3	SOD	0.2	0.53	3.9	0.40	1.8	0.5	100	
107+00	NW	RT	156.10	1.87%	31.0	0.41	4.78	0.79	1.5	6	5	3	SOD	0.2	0.44	3.1	0.34	1.5	0.5	100	
108+00	NW	RT	157.20	1.10%	27.6	0.41	5.05	0.59	1.2	6	5	3	SOD	0.2	0.45	3.2	0.35	1.2	0.4	100	
109+00	NW	RT	157.80	0.60%	23.3	0.41	5.44	0.39	0.9	6	5	3	SOD	0.2	0.45	3.2	0.35	0.9	0.3	100	
110+00	NW	RT	158.30	0.50%	17.4	0.41	6.14	0.20	0.5	6	5	3	SOD	0.2	0.35	2.3	0.28	0.5	0.2	100	
111+00	NW	RT	158.40	0.10%	10.0	0.00	7.45	0.00	0.2	6	5	3	SOD	0.2	0.30	1.9	0.25	0.2	0.1	100	High Point

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14

Maximum Depth "d" =	1.16 ft.
Maximum Velocity "V" =	1.0 fps

AREA CALCULATIONS FOR STA 1971+00 MAINLINE I-4 TO RAMP A-1

v	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
1971+00	I-4	10	32	0	0	153	0	0	0.00	0.00		High Point
1972+00	I-4	10	30	0	4100	153	15300	19400	0.45	0.45	0.36	
1972+10	I-4	10	30	0	400	153	15300	15700	0.36	8.91	0.42	Outfall P-105
1973+00	I-4	10	30	0	3600	150	17600	21200	0.49	8.11	0.44	
1974+00	I-4	10	30	0	4000	202	20050	24050	0.55	7.62	0.44	
1975+00	I-4	10	30	0	4000	199	19650	23650	0.54	7.07	0.45	
1976+00	I-4	10	30	0	4200	194	15500	19700	0.45	6.53	0.46	
1977+00	I-4	10	34	0	4550	116	11400	15950	0.37	6.07	0.47	
1978+00	I-4	10	37	0	4800	112	8450	13250	0.30	5.71	0.47	
1979+00	I-4	10	39	0	5000	57	5650	10650	0.24	5.40	0.47	
1980+00	I-4	10	41	0	5200	56	5750	10950	0.25	5.16	0.47	
1981+00	I-4	10	43	0	5350	59	6000	11350	0.26	4.91	0.47	
1982+00	I-4	10	44	0	5550	61	6300	11850	0.27	4.65	0.46	
1983+00	I-4	10	47	0	5800	65	6500	12300	0.28	4.38	0.45	
1984+00	I-4	10	49	0	6000	65	6500	12500	0.29	4.09	0.45	
1985+00	I-4	10	51	0	6200	65	6450	12650	0.29	3.81	0.44	
1986+00	I-4	10	53	0	6400	64	6450	12850	0.29	3.52	0.43	
1987+00	I-4	10	55	0	6800	65	6600	13400	0.31	3.22	0.42	
1988+00	I-4	10	61	0	4750	67	6450	11200	0.26	2.91	0.40	
1989+00	I-4	4	20	0	2400	62	7550	9950	0.23	2.66	0.39	
1990+00	I-4	4	20	0	2400	89	8900	11300	0.26	2.43	0.39	
3016+00	A-1	4	20	0	2400	89	8900	11300	0.26	2.17	0.39	
3017+00	A-1	4	20	0	2400	89	8500	10900	0.25	1.91	0.39	
3018+00	A-1	4	20	0	2400	81	8000	10400	0.24	1.66	0.40	
3019+00	A-1	4	20	0	2400	79	7450	9850	0.23	1.42	0.40	
3020+00	A-1	4	20	0	2400	70	6600	9000	0.21	1.19	0.41	
3021+00	A-1	4	20	0	2400	62	6200	8600	0.20	0.99	0.41	
107+00	NW	4	20	0	2400	62	6200	8600	0.20	0.79	0.41	
108+00	NW	4	20	0	2400	62	6200	8600	0.20	0.59	0.41	
109+00	NW	4	20	0	2400	62	6200	8600	0.20	0.39	0.41	
110+00	NW	4	20	0	2400	62	6200	8600	0.20	0.20	0.41	
111+00	NW	4	20	0		62		0	0.00			High Point

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 and Ramp A-1 to Pond A

Impervious Area = 2.7 ac

Pervious Area = 6.3 ac

Total Area = 8.9 ac

CONVEYANCE SWALE CALCULATIONS FOR SR 9A 2018+00 TO 2051+00 LEFT MAINLINE I-4

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 i10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
2013+44	I-4	LT			10.0	0.95	7.45	0.62	0.0												High Point
2018+00	I-4	LT		0.30%	13.6	0.62	6.71	0.86	3.6	17	0.01	0.01	pvmt	0.014	0.46	1.7	0.21	3.6	2.1	456	
2019+00	I-4	LT	149.68	0.68%	18.1	0.27	6.04	1.15	1.9	6	5	3	SOD	0.200	0.65	5.2	0.47	1.9	0.4	100	
2020+00	I-4	LT	149.00	0.28%	22.6	0.32	5.52	1.44	2.6	6	5	3	SOD	0.140	0.79	6.8	0.55	2.6	0.4	100	
2021+00	I-4	LT	148.72	0.30%	26.6	0.36	5.13	1.73	3.2	6	5	3	SOD	0.140	0.87	7.8	0.59	3.2	0.4	100	
2022+00	I-4	LT	148.42	0.23%	30.9	0.39	4.78	2.04	3.8	6	5	3	SOD	0.140	0.98	9.2	0.66	3.8	0.4	100	
2023+00	I-4	LT	148.19	0.23%	34.9	0.40	4.51	2.34	4.3	6	5	3	SOD	0.140	1.14	11.5	0.74	4.5	0.4	100	
2024+00	I-4	LT	147.96	0.23%	38.6	0.42	4.28	2.66	4.8	6	5	3	SOD	0.140	1.32	14.4	0.84	6.6	0.5	100	
2025+00	I-4	LT	147.73	0.23%	42.7	0.43	4.05	2.98	5.1	6	5	3	SOD	0.140	1.06	10.4	0.70	4.2	0.4	100	
2026+00	I-4	LT	147.50		81.0	0.42	2.74	10.95	8.6	6	8	3	SOD	0.140	1.43	20.5	0.97	0.0	0.0	100	Low Point
2027+00	I-4	LT	147.60	0.10%	81.0	0.45	2.74	4.06	5.0	6	8	3	SOD	0.140	1.22	16.5	0.85	6.0	0.3	100	18" RCP
2028+00	I-4	LT	147.70	0.10%	75.5	0.45	2.87	3.75	4.9	6	8	3	SOD	0.140	1.21	16.3	0.85	4.9	0.3	100	Crossdrain
2029+00	I-4	LT	147.80	0.10%	69.9	0.45	3.02	3.43	4.7	6	8	3	SOD	0.140	1.19	15.9	0.84	4.7	0.3	100	
2030+00	I-4	LT	147.90	0.10%	64.3	0.45	3.19	3.12	4.6	6	5	3	SOD	0.140	1.35	15.0	0.86	4.6	0.3	100	
2031+00	I-4	LT	148.00	0.10%	58.9	0.45	3.37	2.81	4.3	6	5	3	SOD	0.140	1.32	14.4	0.84	4.3	0.3	100	
2032+00	I-4	LT	148.10	0.10%	53.3	0.45	3.58	2.50	4.1	6	5	3	SOD	0.140	1.29	13.9	0.82	4.1	0.3	100	
2033+00	I-4	LT	148.20	0.10%	47.6	0.45	3.82	2.19	3.8	6	5	3	SOD	0.140	1.24	13.1	0.80	3.8	0.3	100	
2034+00	I-4	LT	148.30	0.10%	41.9	0.45	4.10	1.87	3.5	6	5	3	SOD	0.140	1.20	12.5	0.78	3.5	0.3	100	
2035+00	I-4	LT	148.40	0.10%	36.0	0.45	4.44	1.56	3.1	6	5	3	SOD	0.140	1.13	11.4	0.74	3.1	0.3	100	
2036+00	I-4	LT	148.50	0.10%	30.0	0.45	4.86	1.25	2.8	6	5	3	SOD	0.140	1.07	10.5	0.71	2.8	0.3	100	
2037+00	I-4	LT	148.60	0.10%	23.7	0.45	5.40	0.94	2.3	6	5	3	SOD	0.140	0.98	9.2	0.66	2.3	0.3	100	
2038+00	I-4	LT	148.70	0.10%	17.1	0.45	6.17	0.62	1.7	6	5	3	SOD	0.140	0.84	7.4	0.58	1.7	0.2	100	
2039+00	I-4	LT	148.80	0.10%	10.0	0.45	7.45	0.31	1.1	6	5	4	SOD	0.160	0.70	6.0	0.49	1.1	0.2	100	High Point
2040+00	I-4	LT	145.60	3.20%	12.6	0.45	6.90	0.62	2.0	6	5	4	SOD	0.200	0.44	3.2	0.33	2.0	0.6	100	
2041+00	I-4	LT	144.10	1.50%	15.7	0.45	6.37	0.95	2.7	6	5	4	SOD	0.200	0.62	5.0	0.44	2.7	0.5	100	
2042+00	I-4	LT	142.60	1.50%	18.7	0.45	5.97	1.28	3.4	6	5	4	SOD	0.200	0.70	6.0	0.49	3.4	0.6	100	
2043+00	I-4	LT	141.10	1.50%	21.1	0.44	5.68	1.62	4.1	6	5	4	SOD	0.165	0.70	6.0	0.49	4.1	0.7	100	
2044+00	I-4	LT	139.60	1.50%	23.2	0.44	5.46	1.98	4.8	6	5	4	SOD	0.140	0.70	6.0	0.49	4.8	0.8	100	
2045+00	I-4	LT	138.10	1.50%	25.2	0.44	5.26	2.33	5.4	6	5	4	SOD	0.140	0.74	6.4	0.51	5.4	0.8	100	
2046+00	I-4	LT	136.80	1.50%	27.1	0.44	5.09	2.69	6.0	6	5	4	SOD	0.140	0.78	6.9	0.54	6.0	0.9	100	
2047+00	I-4	LT	135.10	1.50%	29.0	0.43	4.93	3.05	6.5	6	5	4	SOD	0.140	0.82	7.4	0.56	6.5	0.9	100	
2048+00	I-4	LT	133.05	2.05%	30.6	0.43	4.80	3.41	7.1	6	5	4	SOD	0.140	0.79	7.0	0.54	7.1	1.0	100	
2049+00	I-4	LT	131.00	2.05%	32.3	0.43	4.69	3.77	7.6	6	5	4	SOD	0.140	0.82	7.4	0.56	7.6	1.0	100	
2050+00	I-4	LT	128.95	2.05%	33.9	0.42	4.58	4.07	7.9	6	5	4	SOD	0.140	0.83	7.6	0.56	7.9	1.0	100	
2050+50	I-4	LT	127.90	2.10%	34.7	0.42	4.52	4.25	8.1	6	5	4	SOD	0.140	0.84	7.7	0.57	8.1	1.1	50	drain in
2051+00	I-4	LT	127.40	1.00%	51.5	0.42	3.65	8.12	12.6	3	5	3	SOD	0.140	1.32	11.8	0.89	11.8	1.0	50	
2052+00	C\L	LT	126.40	1.00%	51.5	0.42	3.65	8.35	12.9	3	5	3	SOD	0.140	1.34	12.1	0.90	12.0	1.0	100	

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14

Maximum Depth "d" =	1.43	ft.
Maximum Velocity "V" =	2.1	fps

AREA CALCULATIONS FOR STA 2[illegible] TO STA 2051+00 LEFT MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
2013+44	I-4	10	48	0	26904	58	0	26904	0.62	0.62	0.95	
2018+00	I-4	10	50	0	5900	20	4650	10550	0.24	0.86	0.62	High Point
2019+00	I-4	10	48	0	5800	73	6850	12650	0.29	1.15	0.27	
2020+00	I-4	10	48	0	5800	64	6700	12500	0.29	1.44	0.32	
2021+00	I-4	10	48	0	5800	70	7150	12950	0.30	1.73	0.36	
2022+00	I-4	10	48	0	5800	73	7300	13100	0.30	2.04	0.39	
2023+00	I-4	10	48	0	5800	73	7650	13450	0.31	2.34	0.40	
2024+00	I-4	10	48	0	5800	80	8050	13850	0.32	2.66	0.42	
2025+00	I-4	10	48	0	5600	81	8300	13900	0.32	2.98	0.43	
2026+00	I-4	10	44	0	5200	85	8750	13950	0.32	7.36	0.42	18" Crossdrain
2027+00	I-4	10	40	0	4800	90	9000	13800	0.32	4.06	0.45	
2028+00	I-4	10	36	0	4600	90	9000	13600	0.31	3.75	0.45	
2029+00	I-4	10	36	0	4600	90	9000	13600	0.31	3.43	0.45	
2030+00	I-4	10	36	0	4600	90	9000	13600	0.31	3.12	0.45	
2031+00	I-4	10	36	0	4600	90	9000	13600	0.31	2.81	0.45	
2032+00	I-4	10	36	0	4600	90	9000	13600	0.31	2.50	0.45	
2033+00	I-4	10	36	0	4600	90	9000	13600	0.31	2.19	0.45	
2034+00	I-4	10	36	0	4600	90	9000	13600	0.31	1.87	0.45	
2035+00	I-4	10	36	0	4600	90	9000	13600	0.31	1.56	0.45	
2036+00	I-4	10	36	0	4600	90	9000	13600	0.31	1.25	0.45	
2037+00	I-4	10	36	0	4600	90	9000	13600	0.31	0.94	0.45	
2038+00	I-4	10	36	0	4600	90	9000	13600	0.31	0.62	0.45	
2039+00	I-4	10	36	0	4600	90	9000	13600	0.31	0.31	0.45	High Point
2040+00	I-4	10	36	0	4600	90	9000	13600	0.31	0.62	0.45	
2041+00	I-4	10	36	0	4600	90	9500	14100	0.32	0.95	0.45	
2042+00	I-4	10	36	0	4600	100	10000	14600	0.34	1.28	0.45	
2043+00	I-4	10	36	0	4600	100	10250	14850	0.34	1.62	0.44	
2044+00	I-4	10	36	0	4600	105	10750	15350	0.35	1.98	0.44	
2045+00	I-4	10	36	0	4600	110	11000	15600	0.36	2.33	0.44	
2046+00	I-4	10	36	0	4600	110	11000	15600	0.36	2.69	0.44	
2047+00	I-4	10	36	0	4600	110	11000	15600	0.36	3.05	0.43	
2048+00	I-4	10	36	0	4600	110	11000	15600	0.36	3.41	0.43	
2049+00	I-4	10	36	0	4600	110	11000	15600	0.36	3.77	0.43	
2050+00	I-4	10	36	0	2300	110	11000	13300	0.31	4.07	0.42	
2050+50	I-4	10	36	0	2300	110	5500	7800	0.18	4.25	0.42	Outfall P-505
2051+00	I-4	10	36	0	4600	110	5500	10100	0.23	0.23	8.31	
2052+00	I-4	10	36	0		110	2750	2750	0.06	0.06		

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 Left Ditch To Pond C-3

Impervious Area = 2.5 ac
Pervious Area = 4.2 ac

Total Area = 6.6 ac

Mainline I-4 Left Ditch to Outfall

Impervious Area = 1.2 ac
Pervious Area = 2.8 ac

Total Area = 3.9 ac

CONVEYANCE SWALE CALCULATIONS FO... 1971+20 TO STA 1976+80 RIGHT MAINLINE I-4

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
1971+20	I-4	RT	132.20		10.0	0.40		0.40	0.0										0.5	80	
1972+00	I-4	RT	132.18	1.80%	10.1	0.37	7.42	0.92	2.5	6	10	4	SOD	0.04	0.17	1.8	0.16	2.7	1.5	10	Outfall P-107
1972+10	I-4	RT	132.00	0.40%	17.1	0.55	6.17	6.89	23.4	6	5	4	SOD	0.04	1.12	11.9	0.72	22.5	1.9	100	
1973+00	I-4	RT	132.40	0.42%	16.3	0.60	6.30	5.45	20.5	6	5	4	SOD	0.04	1.06	10.9	0.69	20.6	1.9	100	
1974+00	I-4	RT	132.82	0.42%	15.4	0.62	6.43	4.94	19.8	6	5	4	SOD	0.04	1.05	10.8	0.68	20.2	1.9	100	
1975+00	I-4	RT	133.24	0.42%	14.5	0.65	6.57	4.44	19.1	6	5	4	SOD	0.04	1.02	10.3	0.67	19.0	1.8	100	
1976+00	I-4	RT	133.66	0.43%	13.6	0.69	6.72	3.93	18.3	6	5	4	SOD	0.04	1.00	10.0	0.66	18.4	1.8	80	
1976+80	I-4	RT	134.00	0.42%	12.9	0.71	6.85	3.63	17.7	6	5	4	SOD	0.04	0.99	9.9	0.65	17.9	1.8	0	
																					MES Outfall

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14

Maximum Depth "d" =	1.12 ft.
Maximum Velocity "V" =	1.9 fps

AREA CALCULATIONS FOR STA 1971+20 TO STA 1976+80 RIGHT MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
1971+20	I-4	10	36	0	4600	75	12950	17550	0.40	0.40	0.40	
1972+00	I-4	10	36	0	4600	184	18050	22650	0.52	0.92	0.37	
1972+10	I-4	10	36	0	4600	177	17700	22300	0.51	6.89	0.55	Outfall P-107
1973+00	I-4	10	36	0	4600	177	17550	22150	0.51	5.45	0.60	
1974+00	I-4	10	36	0	4600	174	17400	22000	0.51	4.94	0.62	
1975+00	I-4	10	36	0	4600	174	17400	22000	0.51	4.44	0.65	
1976+00	I-4	10	36	0	4600	174	8700	13300	0.31	3.93	0.69	
1976+80	I-4	10	36	0	107767	0	50268	158035	3.63	3.63	0.71	MES Outfall

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 Ditch Right to Pond A

Impervious Area = 3.2 ac

Pervious Area = 3.7 ac

Total Area = 6.9 ac

CONVEYANCE SWALE CALCULATION . . . RAMP C-1 TO STA 2050+50 MAINLINE I-4

Y	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
6005+00	I-4	RT	187.20		10.0	0.54		0.21	0.0									0.0	0.5	0	High Point
6006+00	I-4	RT	187.00	0.20%	16.0	0.54	6.33	0.48	1.6	6	5	4	SOD	0.15	0.70	6.0	0.49	1.6	0.3	100	
6007+00	I-4	RT	186.80	0.20%	21.0	0.54	5.69	0.74	2.3	6	5	4	SOD	0.13	0.77	6.8	0.53	2.3	0.3	100	
6008+00	I-4	RT	186.60	0.20%	25.7	0.54	5.22	1.03	2.9	6	5	4	SOD	0.13	0.86	8.0	0.58	2.9	0.4	100	
6009+00	I-4	RT	166.40	0.20%	30.1	0.54	4.85	1.31	3.4	6	5	4	SOD	0.13	0.95	9.3	0.63	3.5	0.4	100	
6010+00	I-4	RT	184.00	2.40%	32.4	0.54	4.67	1.59	4.0	6	5	4	SOD	0.20	0.69	5.8	0.48	4.1	0.7	100	
6011+00	I-4	RT	161.00	3.00%	34.5	0.54	4.53	1.88	4.6	6	5	4	SOD	0.20	0.70	5.9	0.49	4.7	0.8	100	
6012+00	I-4	RT	176.00	3.00%	36.5	0.54	4.41	2.16	5.1	6	5	4	SOD	0.19	0.70	6.0	0.49	5.2	0.9	100	
6013+00	I-4	RT	174.00	4.00%	38.2	0.54	4.30	2.40	5.6	6	5	4	SOD	0.19	0.70	6.0	0.49	5.7	1.0	100	
6014+00	I-4	RT	170.00	4.00%	39.6	0.54	4.21	2.62	6.0	6	5	4	SOD	0.18	0.70	6.0	0.49	6.1	1.0	100	
6015+00	I-4	RT	166.00	4.00%	41.3	0.54	4.13	2.84	6.3	6	5	4	SOD	0.17	0.70	6.0	0.49	6.5	1.1	100	
6016+00	I-4	RT	162.00	4.00%	42.8	0.54	4.05	3.06	6.7	6	5	4	SOD	0.16	0.70	6.0	0.49	6.9	1.2	100	
6017+00	I-4	RT	156.00	4.00%	44.1	0.54	3.98	3.28	7.0	6	5	4	SOD	0.15	0.70	6.0	0.49	7.2	1.2	100	
6016+00	I-4	RT	156.00	2.00%	45.7	0.54	3.91	3.50	7.4	6	5	4	SOD	0.13	0.79	7.0	0.54	7.5	1.1	100	
6019+00	I-4	RT	155.00	1.00%	47.7	0.54	3.81	3.71	7.6	6	5	4	SOD	0.13	0.95	9.2	0.63	7.7	0.8	100	
6020+00	I-4	RT	154.00	1.00%	49.7	0.54	3.73	3.93	7.9	6	5	4	SOD	0.13	0.96	9.4	0.64	8.0	0.8	100	
6021+00	I-4	RT	153.00	1.00%	51.6	0.54	3.65	4.14	8.1	6	5	4	SOD	0.13	0.99	9.8	0.65	8.4	0.9	100	
6022+00	I-4	RT	152.60	0.40%	54.3	0.54	3.54	4.37	8.3	6	5	4	SOD	0.13	1.26	14.2	0.79	8.8	0.6	100	
6023+00	I-4	RT	152.20	0.40%	56.9	0.54	3.44	4.66	8.7	6	5	4	SOD	0.13	1.30	14.9	0.82	9.4	0.6	100	
6024+00	I-4	RT	151.80	0.40%	59.5	0.54	3.35	4.95	9.0	6	5	4	SOD	0.13	1.33	15.5	0.83	10.0	0.6	100	
6025+00	I-4	RT	151.40	0.40%	62.1	0.54	3.26	5.23	9.2	6	5	4	SOD	0.13	1.37	16.2	0.86	10.6	0.7	100	
6026+00	I-4	RT	151.00	0.40%	64.6	0.54	3.16	5.51	9.5	6	5	4	SOD	0.13	1.41	16.9	0.87	11.2	0.7	100	
6026+85	I-4	RT	150.64	0.42%	66.6	0.54	3.12	6.50	10.9	6	5	4	SOD	0.13	1.50	18.7	0.92	13.2	0.7	85	Outfall R-206
6027+00	I-4	RT	150.70	0.40%	16.5	0.54	6.25	0.71	2.4	6	5	4	SOD	0.15	0.70	6.0	0.49	2.4	0.4	15	
6026+00	I-4	RT	151.10	0.40%	15.9	0.54	6.35	0.42	1.6	6	5	4	SOD	0.20	0.65	5.4	0.46	1.5	0.3	100	
6028+50	I-4	RT	151.30	0.40%	10.0	0.54	7.45	0.14	0.6	6	5	4	SOD	0.20	0.40	2.8	0.31	0.6	0.2	50	Ditch Block
6029+00	I-4	RT	147.10	4.20%	10.0	0.54	7.45	0.14	0.6	6	5	3	SOD	0.20	0.22	1.3	0.19	0.7	0.5	100	
6030+00	I-4	RT	146.90	0.20%	16.6	0.54	6.22	0.42	1.4	6	5	3	SOD	0.17	0.70	5.7	0.50	1.4	0.2	100	
6031+00	I-4	RT	146.80	0.10%	23.7	0.54	5.41	0.70	2.0	6	5	3	SOD	0.14	0.90	8.1	0.61	2.0	0.2	100	
6032+00	I-4	RT	146.70	0.10%	30.0	0.54	4.85	0.98	2.6	6	5	3	SOD	0.14	1.04	10.1	0.69	2.6	0.3	100	
6033+00	I-4	RT	146.60	0.10%	36.2	0.54	4.43	1.25	3.0	6	5	3	SOD	0.14	1.10	10.9	0.72	3.0	0.3	100	
2031+00	I-4	RT	146.40	0.20%	40.8	0.54	4.16	1.52	3.4	6	5	3	SOD	0.14	0.99	9.4	0.66	3.4	0.4	100	
2032+00	I-4	RT	146.20	0.20%	45.3	0.54	3.92	1.79	3.8	6	5	4	SOD	0.14	1.03	10.5	0.67	3.8	0.4	100	
2033+00	I-4	RT	146.00	0.20%	49.6	0.54	3.72	2.11	4.2	6	5	4	SOD	0.14	1.08	11.2	0.70	4.2	0.4	100	
2034+00	I-4	RT	145.60	0.20%	54.1	0.54	3.55	2.46	4.7	6	5	4	SOD	0.14	1.14	12.2	0.73	4.7	0.4	100	
2035+00	I-4	RT	145.60	0.20%	58.3	0.54	3.39	2.84	5.2	6	5	4	SOD	0.14	1.19	13.0	0.76	5.2	0.4	100	
2036+00	I-4	RT	145.40	0.20%	62.4	0.54	3.25	3.20	5.6	6	5	4	SOD	0.14	1.24	13.9	0.79	5.6	0.4	100	
2037+00	I-4	RT	145.20	0.20%	66.4	0.54	3.12	3.56	6.0	6	5	4	SOD	0.14	1.28	14.6	0.81	6.0	0.4	100	
2038+00	I-4	RT	144.30	0.90%	88.4	0.54	3.06	3.91	6.5	4	5	2	SOD	0.14	1.08	8.8	0.75	7.3	0.6	100	P-507
2039+00	I-4	RT	143.40	0.90%	70.4	0.54	3.01	4.25	6.9	4	5	2	SOD	0.14	1.12	9.4	0.77	8.0	0.8	100	ditch culv
2040+00	I-4	RT	142.50	0.90%	72.3	0.54	2.95	4.60	7.3	4	5	2	SOD	0.14	1.17	10.0	0.80	8.7	0.9	100	ditch culv
2041+00	I-4	RT	141.60	0.90%	74.2	0.54	2.90	4.96	7.8	4	5	2	SOD	0.14	1.21	10.4	0.82	9.3	0.9	100	P-507A
2042+00	I-4	RT	140.70	0.90%	76.0	0.54	2.86	5.33	8.2	4	5	2	SOD	0.14	1.26	11.1	0.85	10.0	0.9	100	
2043+00	I-4	RT	139.80	0.90%	78.0	0.54	2.81	5.72	8.7	6	5	3	SOD	0.14	1.21	12.6	0.78	10.7	0.9	100	
2044+00	I-4	RT	136.90	0.90%	79.9	0.54	2.76	6.12	9.1	6	5	3	SOD	0.14	1.25	13.2	0.80	11.5	0.9	100	
2045+00	I-4	RT	136.00	0.90%	61.8	0.54	2.72	6.51	9.5	6	5	3	SOD	0.14	1.29	13.9	0.82	12.3	0.9	100	
2046+00	I-4	RT	136.17	1.83%	83.2	0.54	2.68	6.89	10.0	6	5	4	SOD	0.14	1.09	11.4	0.71	13.0	1.1	100	
2047+00	I-4	RT	134.33	1.63%	64.7	0.54	2.65	7.26	10.4	6	5	4	SOD	0.14	1.12	11.8	0.72	13.6	1.2	100	
2048+00	I-4	RT	132.50	1.63%	66.1	0.54	2.62	7.66	10.8	6	5	4	SOD	0.14	1.15	12.3	0.74	14.4	1.2	100	
2049+00	I-4	RT	130.67	1.83%	87.5	0.54	2.59	8.05	11.3	6	5	4	SOD	0.14	1.17	12.7	0.75	15.1	1.2	100	
2050+00	I-4	RT	126.83	1.83%	68.9	0.54	2.56	8.43	11.7	6	5	4	SOD	0.14	1.20	13.2	0.77	15.9	1.2	100	
2050+50	I-4	RT	127.92	1.83%	89.6	0.54	2.55	8.69	12.0	6	5	4	SOD	0.14	1.22	13.5	0.77	16.3	1.2	50	
2051+00	I-4	RT	127.00	0.92%	91.5	0.54	2.51	0.00		6	5	4	SOD	0.14	1.23	13.7	0.78	11.9	0.9	100	
2052+00	I-4	RT	124.00	3.00%	92.6	0.54	2.49	0.00		6	5	4	SOD	0.14	1.23	13.7	0.78	21.4	1.6	100	

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14

Maximum Depth "d" =	1.50 ft.
Maximum Velocity "V" =	1.2 fps

AREA CALCULATIONS FOR RAMP C-1 TO STA 2050+50 MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area par Sta. (sq. ft.)	Total Area par Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
6005+00	I-4	10	24	4		90	9000	9000	0.21	0.21	0.20	High Point
6006+00	I-4	10	24	4	3800	90	8000	11800	0.27	0.48	0.34	
6007+00	I-4	10	24	4	3800	70	7750	11550	0.27	0.74	0.38	
6008+00	I-4	10	24	4	3800	85	8500	12300	0.28	1.03	0.39	
6009+00	I-4	10	24	4	3800	85	8500	12300	0.28	1.31	0.40	
6010+00	I-4	10	24	4	3800	85	8800	12400	0.28	1.59	0.41	
8011+00	I-4	10	24	4	3800	87	8700	12500	0.29	1.88	0.41	
8012+00	I-4	10	24	0	3600	87	8600	12200	0.28	2.18	0.41	
6013+00	I-4	10	0	0	2200	85	8500	10700	0.25	2.40	0.40	
6014+00	I-4	10	0	0	1000	85	8500	9500	0.22	2.82	0.39	
8015+00	I-4	10	0	0	1000	85	8500	9500	0.22	2.84	0.39	
6018+00	I-4	10	0	0	1000	85	8500	9500	0.22	3.06	0.38	
6017+00	I-4	10	0	0	1000	85	8500	9500	0.22	3.28	0.37	
6018+00	I-4	10	0	0	1000	85	8500	9500	0.22	3.50	0.37	
8019+00	I-4	10	0	0	1000	85	8500	9500	0.22	3.71	0.36	
8020+00	I-4	10	0	0	1000	85	8350	9350	0.21	3.93	0.36	
8021+00	I-4	10	0	0	1000	82	8100	9100	0.21	4.14	0.35	
8022+00	I-4	10	24	0	2200	80	7900	10100	0.23	4.37	0.35	
6023+00	I-4	10	56	0	5000	78	7650	12650	0.29	4.86	0.36	
6024+00	I-4	10	36	0	5600	75	7250	12850	0.29	4.95	0.37	
8025+00	I-4	10	40	0	4800	70	7150	11950	0.27	5.23	0.38	
6028+00	I-4	10	38	4	5000	73	7250	12250	0.28	5.51	0.39	
6028+85	I-4	10	38	4	5000	73	7400	12400	0.28	6.50	0.40	Outfall S-206
8027+00	I-4	10	35	4	4950	72	7350	12300	0.28	0.71	0.50	
6028+00	I-4	10	34	4	4850	75	7650	12500	0.29	0.42	0.50	
6028+50	I-4	10	34	4	2400	75	3800	6200	0.14	0.14	0.49	Ditch Block
8029+00	I-4	10	31	4	2325	78	3875	6200	0.14	0.14	0.48	
6030+00	I-4	10	29	4	4400	77	7750	12150	0.28	0.42	0.47	
6031+00	I-4	10	28	4	4250	78	7900	12150	0.28	0.70	0.47	
6032+00	I-4	10	26	4	4100	80	7900	12000	0.28	0.98	0.47	
8033+00	I-4	10	24	4	3900	78	7900	11800	0.27	1.25	0.46	
2031+00	I-4	10	24	4	3800	80	8000	11800	0.27	1.52	0.48	
2032+00	I-4	10	24	4	3800	80	8000	11800	0.27	1.79	0.46	
2033+00	I-4	10	69	0	5850	80	8250	14100	0.32	2.11	0.46	
2034+00	I-4	10	62	0	7550	85	8500	18050	0.37	2.48	0.48	
2035+00	I-4	10	80	0	7100	85	8600	15700	0.36	2.84	0.49	
2036+00	I-4	10	80	0	7000	87	8700	15700	0.38	3.20	0.49	
2037+00	I-4	10	60	0	7000	87	8700	15700	0.36	3.56	0.50	
2038+00	I-4	10	60	0	7000	87	8100	15100	0.35	3.91	0.50	
2039+00	I-4	10	60	0	7000	75	7750	14750	0.34	4.25	0.50	
2040+00	I-4	10	80	0	7000	80	8350	15350	0.35	4.80	0.51	
2041+00	I-4	10	80	0	7000	87	8800	15600	0.36	4.96	0.51	
2042+00	I-4	10	58	0	8900	85	9250	18150	0.37	5.33	0.51	
2043+00	I-4	10	55	0	8650	100	10500	17150	0.39	5.72	0.51	
2044+00	I-4	10	50	0	8250	110	11000	17250	0.40	6.12	0.51	
2045+00	I-4	10	48	0	5900	110	11000	16900	0.39	6.51	0.50	
2048+00	I-4	10	48	0	5800	110	11000	16800	0.39	8.89	0.50	
2047+00	I-4	10	48	0	5800	110	11000	16800	0.39	7.28	0.50	
2048+00	I-4	10	48	0	5800	110	11000	16800	0.39	7.68	0.50	
2049+00	I-4	10	48	0	5800	110	11000	16800	0.39	8.05	0.50	
2050+00	I-4	10	48	0	5800	110	11000	16800	0.39	8.43	0.49	
2050+50	I-4	10	48	0	5800	110	5500	11300	0.28	8.69	0.50	Outfall P-507

* Measured from Design Plans

6-LANE SECTION ONLY

Ramp C-1 Right Ditch to Pond C-3

Total Impervious Area =	1.8 ac
Pervious Area =	4.8 ac
Total Area =	6.5 ac

Mainline I-4 Right Ditch to P-507 Outfall

Total Impervious Area =	3.4 ac
Pervious Area =	5.3 ac
Total Area =	8.7 ac

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
1970+07	C\L	I-4	131.50		10.0	0.00		0.00	0.0										0.5	100	Ditch Block
1971+00	C\L	I-4	133.50	2.00%	15.0	0.42	6.48	0.15	0.4	6	10	6	SOD	0.14	0.11	1.2	0.10	0.2	0.3	100	
1972+00	C\L	I-4	133.20	0.30%	22.1	0.33	5.57	0.28	0.5	6	10	6	SOD	0.14	0.30	3.5	0.26	0.8	0.2	100	
1972+10	C\L	I-4	133.15	0.50%	115.9	0.30	2.10	9.05	5.8	6	10	6	SOD	0.20	0.60	8.1	0.47	2.6	0.3	10	Outfall P-106
1973+00	C\L	I-4	133.60	0.50%	115.4	0.30	2.11	8.59	5.4	6	10	6	SOD	0.14	0.74	10.6	0.56	5.4	0.5	90	
1974+00	C\L	I-4	134.10	0.50%	112.5	0.30	2.15	8.38	5.4	6	10	6	SOD	0.14	0.74	10.6	0.56	5.4	0.5	100	
1975+00	C\L	I-4	134.60	0.50%	109.2	0.30	2.20	8.16	5.3	6	10	6	SOD	0.14	0.73	10.5	0.56	5.3	0.5	100	
1976+00	C\L	I-4	135.80	1.20%	105.9	0.30	2.25	7.90	5.3	6	10	6	SOD	0.20	0.70	9.8	0.53	5.3	0.5	100	
1977+00	C\L	I-4	137.00	1.20%	102.8	0.29	2.30	7.63	5.2	6	10	6	SOD	0.20	0.69	9.8	0.53	5.2	0.5	100	
1978+00	C\L	I-4	138.35	1.35%	99.7	0.29	2.35	7.34	5.1	6	10	6	SOD	0.20	0.66	9.2	0.51	5.1	0.6	100	
1979+00	C\L	I-4	139.70	1.35%	96.7	0.29	2.41	7.04	5.0	6	10	6	SOD	0.20	0.65	9.0	0.50	5.0	0.5	100	
1980+00	C\L	I-4	141.40	1.70%	93.7	0.29	2.47	6.71	4.8	6	10	6	SOD	0.20	0.60	8.2	0.47	4.8	0.6	100	
1981+00	C\L	I-4	143.10	1.70%	90.8	0.29	2.52	6.37	4.7	6	10	6	SOD	0.20	0.59	8.0	0.47	4.7	0.6	100	
1982+00	C\L	I-4	144.80	1.70%	88.0	0.29	2.58	6.02	4.6	6	10	6	SOD	0.20	0.58	7.8	0.46	4.5	0.6	100	
1983+00	C\L	I-4	145.70	0.90%	85.1	0.29	2.64	5.66	4.4	6	10	6	SOD	0.20	0.68	9.6	0.52	4.4	0.5	100	
1984+00	C\L	I-4	146.60	0.90%	81.5	0.29	2.72	5.30	4.2	6	10	6	SOD	0.20	0.66	9.2	0.51	4.2	0.5	100	
1985+00	C\L	I-4	147.35	0.75%	77.8	0.29	2.81	4.92	4.0	6	10	6	SOD	0.20	0.68	9.6	0.52	4.0	0.4	100	
1986+00	C\L	I-4	148.10	0.75%	73.8	0.29	2.91	4.55	3.9	6	10	6	SOD	0.20	0.67	9.4	0.52	3.9	0.4	100	
1987+00	C\L	I-4	148.40	0.30%	69.8	0.29	3.02	4.17	3.7	6	10	6	SOD	0.15	0.70	9.9	0.54	3.7	0.4	100	
1988+00	C\L	I-4	148.70	0.30%	65.3	0.29	3.16	3.79	3.5	6	10	6	SOD	0.16	0.70	9.9	0.54	3.5	0.3	100	
1989+00	C\L	I-4	149.00	0.30%	60.5	0.29	3.31	3.41	3.3	6	10	6	SOD	0.16	0.70	9.9	0.54	3.3	0.3	100	
1990+00	C\L	I-4	149.30	0.30%	55.6	0.29	3.49	3.03	3.1	6	10	6	SOD	0.18	0.70	9.9	0.54	3.1	0.3	100	
1991+00	C\L	I-4	149.60	0.30%	50.2	0.29	3.71	2.65	2.9	6	10	6	SOD	0.19	0.70	9.9	0.54	2.9	0.3	100	
1992+00	C\L	I-4	149.90	0.30%	44.4	0.29	3.97	2.27	2.6	6	10	6	SOD	0.20	0.69	9.8	0.53	2.6	0.3	100	
1993+00	C\L	I-4	150.20	0.30%	38.2	0.29	4.30	1.89	2.4	6	10	6	SOD	0.20	0.66	9.2	0.51	2.4	0.3	100	
1994+00	C\L	I-4	150.50	0.30%	31.8	0.29	4.72	1.52	2.1	6	10	6	SOD	0.20	0.61	8.3	0.48	2.1	0.2	100	
1995+00	C\L	I-4	150.80	0.30%	25.1	0.29	5.27	1.14	1.7	6	10	6	SOD	0.20	0.50	6.5	0.40	1.4	0.2	100	
1996+00	C\L	I-4	151.10	0.30%	17.6	0.29	6.10	0.76	1.3	6	10	6	SOD	0.20	0.48	6.2	0.39	1.3	0.2	100	
1997+00	C\L	I-4	152.40	1.30%	10.0	0.29	7.45	0.38	0.8	6	10	6						0.0		100	high point
1998+00	C\L	I-4	150.40																		Outfall P-203

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14
Note: bottom widths wider than 10' assumed equal to 10' for Tc calculations.

Maximum Depth "d" =	0.74 ft.
Maximum Velocity "V" =	0.5 fps

AREA CALCULATIONS FOR STA 1970+06.96 TO STA 1998+00 MEDIAN MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
1970+06.96	I-4	0	0	20		48				0.00		High Point
1971+00	I-4	0	0	20	1866.8	50	4573.66	6440.46	0.15	0.15	0.42	
1972+00	I-4	0	0	20	200	57	5750	5950	0.14	0.28	0.33	
1972+10	I-4	0	0	20	1800	58	6150	7950	0.18	9.05	0.30	Outfall P-106
1973+00	I-4	0	0	20	2000	65	6850	8850	0.20	8.59	0.30	
1974+00	I-4	0	0	20	2000	72	7850	9850	0.23	8.38	0.30	
1975+00	I-4	0	0	20	2000	85	9000	11000	0.25	8.16	0.30	
1976+00	I-4	0	0	20	2000	95	9850	11850	0.27	7.90	0.30	
1977+00	I-4	0	0	20	2000	102	10600	12600	0.29	7.63	0.29	
1978+00	I-4	0	0	20	2000	110	11400	13400	0.31	7.34	0.29	
1979+00	I-4	0	0	20	2000	118	12150	14150	0.32	7.04	0.29	
1980+00	I-4	0	0	20	2000	125	12750	14750	0.34	6.71	0.29	
1981+00	I-4	0	0	20	2000	130	13250	15250	0.35	6.37	0.29	
1982+00	I-4	0	0	20	2000	135	13650	15650	0.36	6.02	0.29	
1983+00	I-4	0	0	20	2000	138	13900	15900	0.37	5.66	0.29	
1984+00	I-4	0	0	20	2000	140	14250	16250	0.37	5.30	0.29	
1985+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.92	0.29	
1986+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.55	0.29	
1987+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.17	0.29	
1988+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.79	0.29	
1989+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.41	0.29	
1990+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.03	0.29	
1991+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.65	0.29	
1992+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.27	0.29	
1993+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.89	0.29	
1994+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.52	0.29	
1995+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.14	0.29	
1996+00	I-4	0	0	20	2000	145	14500	16500	0.38	0.76	0.29	
1997+00	I-4	0	0	20	2000	145	14500	16500	0.38	0.38	0.29	
1998+00	I-4	0	0	20		145						Outfall P-203

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 Median to Pond A

Impervious Area = 1.2 ac

Pervious Area = 7.8 ac

Total Area = 9.1 ac

CONVEYANCE SWALE CALCULATIONS FOR STA 1998+00 TO STA 2015+25.17 MEDIAN MAINLINE I-4

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
1998+00	I-4	MED	150.40	0.10%	156.3	0.29	1.64	6.62	3.1	6	10	6	SOD	0.14	0.84	12.6	0.62	3.1	0.2	100	Outfall P-20
1999+00	I-4	MED	150.50	0.10%	149.5	0.29	1.70	6.24	3.1	6	10	6	SOD	0.14	0.84	12.6	0.62	3.1	0.2	100	
2000+00	I-4	MED	150.60	0.10%	142.8	0.29	1.77	5.86	3.0	6	10	6	SOD	0.14	0.82	12.2	0.61	3.0	0.2	100	
2001+00	I-4	MED	150.70	0.10%	135.9	0.29	1.84	5.48	2.9	6	10	6	SOD	0.14	0.81	12.0	0.61	2.9	0.2	100	
2002+00	I-4	MED	150.80	0.10%	129.0	0.29	1.93	5.10	2.8	6	10	6	SOD	0.14	0.79	11.6	0.59	2.8	0.2	100	
2003+00	I-4	MED	150.90	0.10%	122.0	0.29	2.01	4.72	2.8	6	10	6	SOD	0.14	0.79	11.6	0.59	2.8	0.2	100	
2004+00	I-4	MED	151.00	0.10%	114.9	0.29	2.11	4.34	2.7	6	10	6	SOD	0.14	0.76	11.1	0.57	2.6	0.2	100	
2005+00	I-4	MED	151.10	0.10%	107.8	0.29	2.22	3.97	2.5	6	10	6	SOD	0.14	0.75	10.9	0.57	2.5	0.2	100	
2006+00	I-4	MED	151.20	0.10%	100.6	0.29	2.34	3.59	2.4	6	10	6	SOD	0.14	0.74	10.7	0.56	2.4	0.2	100	
2007+00	I-4	MED	151.30	0.10%	93.3	0.29	2.47	3.21	2.3	6	10	6	SOD	0.14	0.72	10.3	0.55	2.3	0.2	100	
2008+00	I-4	MED	151.40	0.10%	85.9	0.29	2.62	2.83	2.1	6	10	6	SOD	0.15	0.70	9.9	0.54	2.1	0.2	100	
2009+00	I-4	MED	151.50	0.10%	77.9	0.29	2.81	2.45	2.0	6	10	6	SOD	0.155	0.70	9.9	0.54	2.0	0.2	100	
2010+00	I-4	MED	151.60	0.10%	69.6	0.29	3.03	2.07	1.8	6	10	6	SOD	0.17	0.70	9.9	0.54	1.8	0.2	100	
2011+00	I-4	MED	151.70	0.10%	60.5	0.29	3.31	1.69	1.6	6	10	6	SOD	0.19	0.70	9.9	0.54	1.6	0.2	100	
2012+00	I-4	MED	151.80	0.10%	50.3	0.29	3.70	1.31	1.4	6	10	6	SOD	0.2	0.67	9.4	0.52	1.4	0.2	100	
2013+00	I-4	MED	151.90	0.10%	39.3	0.28	4.24	0.94	1.1	6	10	6	SOD	0.2	0.58	7.8	0.46	1.1	0.1	100	
2014+00	I-4	MED	152.00	0.10%	27.4	0.28	5.06	0.56	0.8	6	10	6	SOD	0.2	0.50	6.5	0.40	0.8	0.1	100	
2015+00	I-4	MED	152.10	0.12%	14.5	0.25	6.57	0.18	0.3	6	10	6	SOD	0.2	0.25	2.9	0.22	0.3	0.1	25.17	
2015+25.17	I-4	MED	152.13		10	0.00	7.45	0.00	0.0	6	10	6	SOD	0.2		0.0	0.00	0.0		0	

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14
Note: bottom widths wider than 10' assumed equal to 10' for Tc calculations.

Maximum Depth "d" =	0.84	ft.
Maximum Velocity "V" =	0.2	fps

AREA CALCULATION FOR STA 1998+00 TO STA 2015+25.17 MEDIAN MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
1998+00	I-4	0	0	20	2000	145	14500	16500	0.38	6.62	0.29	Outfall P-203
1999+00	I-4	0	0	20	2000	145	14500	16500	0.38	6.24	0.29	
2000+00	I-4	0	0	20	2000	145	14500	16500	0.38	5.86	0.29	
2001+00	I-4	0	0	20	2000	145	14500	16500	0.38	5.48	0.29	
2002+00	I-4	0	0	20	2000	145	14500	16500	0.38	5.10	0.29	
2003+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.72	0.29	
2004+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.34	0.29	
2005+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.97	0.29	
2006+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.59	0.29	
2007+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.21	0.29	
2008+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.83	0.29	
2009+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.45	0.29	
2010+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.07	0.29	
2011+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.69	0.29	
2012+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.31	0.29	
2013+00	I-4	0	0	20	2000	145	14500	16500	0.38	0.94	0.28	
2014+00	I-4	0	0	20	2000	145	14500	16500	0.38	0.56	0.28	
2015+00	I-4	0	0	20	503.4	145	7250	7753.4	0.18	0.18	0.25	
2015+25.17	I-4	0	0	20								High Point

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 to Pond B System

Impervious Area = 0.8 ac

Pervious Area = 5.8 ac

Total Area = 6.6 ac

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
2015+25	I-4	MED	152.13		10	0.27	7.45	0.37	0.0									0.0			High Point
2016+00	I-4	MED	151.40	0.98%	13.8	0.26	6.68	0.75	1.4	6	10	6	SOD	0.2	0.35	4.2	0.30	1.4	0.3	74.83	
2017+00	I-4	MED	151.26	0.14%	16.9	0.26	5.94	1.12	1.9	6	10	6	SOD	0.19	0.70	9.9	0.54	1.9	0.2	100	
2018+00	I-4	MED	151.12	0.14%	27.5	0.29	5.06	1.50	2.2	6	10	6	SOD	0.17	0.70	9.9	0.54	2.2	0.2	100	
2019+00	I-4	MED	150.96	0.14%	35.2	0.29	4.49	1.68	2.4	6	10	6	SOD	0.15	0.70	9.9	0.54	2.4	0.2	100	
2020+00	I-4	MED	150.84	0.14%	35.2	0.35	4.49	1.88	2.8	6	10	6	SOD	0.14	0.73	10.5	0.56	2.8	0.3	100	
2021+00	I-4	MED	150.70	0.14%	41.4	0.34	4.12	2.26	3.1	6	10	6	SOD	0.14	0.77	11.3	0.58	3.1	0.3	100	
2022+00	I-4	MED	150.56	0.14%	47.4	0.33	3.83	2.64	3.3	6	10	6	SOD	0.14	0.79	11.6	0.59	3.3	0.3	100	
2023+00	I-4	MED	150.42	0.14%	53.3	0.32	3.58	3.02	3.5	6	10	6	SOD	0.14	0.82	12.2	0.61	3.5	0.3	100	
2024+00	I-4	MED	150.26	0.14%	59.1	0.32	3.36	3.40	3.7	6	10	6	SOD	0.14	0.84	12.6	0.62	3.7	0.3	100	
2025+00	I-4	MED	150.14	0.14%	64.9	0.32	3.17	3.78	3.8	6	10	6	SOD	0.14	0.85	12.8	0.63	3.8	0.3	100	
2026+00	I-4	MED	150.00	0.14%	123.0	0.32	2.00	5.16	5.3	6	10	6	SOD	0.2	0.70	9.9	0.54	1.8		100	Outfall to Pond C-3
2027+00	I-4	MED	150.10	0.10%	123.0	0.29	2.00	4.53	2.6	6	10	6	SOD	0.14	0.78	11.1	0.57	2.6	0.2	100	
2028+00	I-4	MED	150.20	0.10%	115.8	0.29	2.10	4.15	2.5	6	10	6	SOD	0.14	0.75	10.9	0.57	2.5	0.2	100	
2029+00	I-4	MED	150.30	0.10%	106.6	0.29	2.21	3.78	2.4	6	10	6	SOD	0.14	0.73	10.5	0.56	2.4	0.2	100	
2030+00	I-4	MED	150.40	0.10%	101.3	0.29	2.33	3.40	2.3	6	10	6	SOD	0.14	0.72	10.3	0.55	2.3	0.2	100	
2031+00	I-4	MED	150.50	0.10%	93.9	0.29	2.46	3.02	2.2	6	10	6	SOD	0.14	0.70	9.9	0.54	2.2	0.2	100	
2032+00	I-4	MED	150.60	0.10%	86.4	0.29	2.61	2.64	2.0	6	10	6	SOD	0.155	0.70	9.9	0.54	2.0	0.2	100	
2033+00	I-4	MED	150.70	0.10%	78.1	0.29	2.80	2.26	1.8	6	10	6	SOD	0.17	0.70	9.9	0.54	1.8	0.2	100	
2034+00	I-4	MED	150.80	0.10%	89.0	0.29	3.05	1.68	1.7	6	10	6	SOD	0.18	0.70	9.9	0.54	1.7	0.2	100	
2035+00	I-4	MED	150.90	0.10%	59.4	0.29	3.35	1.50	1.5	6	10	6	SOD	0.2	0.70	9.9	0.54	1.5	0.2	100	
2036+00	I-4	MED	151.00	0.10%	46.7	0.29	3.77	1.12	1.2	6	10	6	SOD	0.2	0.60	8.2	0.47	1.2	0.1	100	
2037+00	I-4	MED	151.10	0.10%	37.0	0.29	4.38	0.74	1.0	6	10	6	SOD	0.2	0.55	7.3	0.44	1.0	0.1	100	
2038+00	I-4	MED	151.20	0.10%	24.7	0.29	5.31	0.37	0.6	6	10	6	SOD	0.2	0.40	5.0	0.33	0.6	0.1	100	
2039+00	I-4	MED	151.30	0.10%	10	0.00	7.45	0.00	0.0	6	10	6	SOD	0.2	0.70	9.9	0.54				High Point

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' ; n = 0.20; deeper n = 0.14
Note: bottom widths wider than 10' assumed equal to 10' for Tc calculations.

Maximum Depth "d" =	0.85	ft.
Maximum Velocity "V" =	0.3	fps

AREA CALCULATIONS FOR STA 2015+25.17 TO STA 2039+00 MEDIAN MAINLINE I-4

v	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
2015+25.17	I-4	0	0	20	1496.6	145	14500	15996.6	0.37	0.37	0.27	High Point
2016+00	I-4	0	0	20	2000	145	14500	16500	0.38	0.75	0.28	
2017+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.12	0.28	
2018+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.50	0.29	
2019+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.88	0.29	
2020+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.88	0.35	
2021+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.26	0.34	
2022+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.64	0.33	
2023+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.02	0.32	
2024+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.40	0.32	
2025+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.78	0.32	
2026+00	I-4	0	0	20	2000	145	14500	16500	0.38	8.31	0.32	Outfall to Pond C-3
2027+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.53	0.29	
2028+00	I-4	0	0	20	2000	145	14500	16500	0.38	4.15	0.29	
2029+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.78	0.29	
2030+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.40	0.29	
2031+00	I-4	0	0	20	2000	145	14500	16500	0.38	3.02	0.29	
2032+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.64	0.29	
2033+00	I-4	0	0	20	2000	145	14500	16500	0.38	2.26	0.29	
2034+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.88	0.29	
2035+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.50	0.29	
2036+00	I-4	0	0	20	2000	145	14500	16500	0.38	1.12	0.29	
2037+00	I-4	0	0	20	2000	145	14350	16350	0.38	0.74	0.29	
2038+00	I-4	0	0	20	2000	142	14100	16100	0.37	0.37	0.29	
2039+00	I-4	0	0	20		140		0	0.00	0.00		High Point

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 Median to Pond C-3

Impervious Area = 1.1 ac

Pervious Area = 8.0 ac

Total Area = 9.1 ac

CONVEYANCE SWALE CALCULATIONS FOR STA 2039+00 TO STA 2051+00 MEDIAN MAINLINE I-4

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
2039+00	I-4	MED	151.30		10	0.00	7.45	0.00	0.0	6	10	6	SOD	0.2	0.10	1.1	0.09	0.0	0.0	0	High Point
2040+00	I-4	MED	148.00	3.30%	13.0	0.29	6.82	0.37	0.7	6	10	6	SOD	0.2	0.30	3.5	0.26	1.0	0.6	100	
2041+00	I-4	MED	146.85	1.15%	18.2	0.30	6.03	0.72	1.3	6	10	6	SOD	0.2	0.30	3.5	0.26	1.1	0.3	100	
2042+00	I-4	MED	145.35	1.50%	22.4	0.30	5.54	1.06	1.7	6	10	6	SOD	0.2	0.33	4.0	0.28	1.6	0.4	100	
2043+00	I-4	MED	143.85	1.50%	26.4	0.30	5.15	1.38	2.1	6	10	6	SOD	0.2	0.37	4.5	0.31	1.9	0.4	100	
2044+00	I-4	MED	142.35	1.50%	30.2	0.30	4.84	1.69	2.5	6	10	6	SOD	0.2	0.40	5.0	0.33	2.2	0.4	100	
2045+00	I-4	MED	140.85	1.50%	33.8	0.30	4.58	1.99	2.8	6	10	6	SOD	0.2	0.43	5.4	0.36	2.5	0.5	100	
2046+00	I-4	MED	139.35	1.50%	37.3	0.31	4.35	2.28	3.0	6	10	6	SOD	0.2	0.46	5.9	0.38	2.8	0.5	100	
2047+00	I-4	MED	137.68	1.67%	40.6	0.31	4.17	2.58	3.3	6	10	6	SOD	0.2	0.47	6.0	0.38	3.1	0.5	100	
2048+00	I-4	MED	136.01	1.67%	43.8	0.31	4.00	2.87	3.5	6	10	6	SOD	0.2	0.49	6.3	0.40	3.3	0.5	100	
2049+00	I-4	MED	134.34	1.67%	46.9	0.31	3.85	3.17	3.8	6	10	6	SOD	0.2	0.51	6.7	0.41	3.5	0.5	100	
2050+00	I-4	MED	132.67	1.67%	50.0	0.31	3.71	3.46	4.0	6	10	6	SOD	0.2	0.52	6.8	0.42	3.7	0.5	100	
2050+50	I-4	MED	132.00	1.00%	51.5	0.30	3.65	3.87	4.2	6	10	6	SOD	0.14	0.51	6.7	0.41	3.9	0.6	50	Outfall to P-507
2051+00	I-4	MED	132.50		10.0	0.00	7.45	0.13	0.0	6	10	6	SOD	0.2	0.10	1.1	0.09	0.0	0.0	50	

Per FDOT: for grassed ditch maintained 6" - 12"; d < 0.7' : n = 0.20; deeper n = 0.14
Note: bottom widths wider than 10' assumed equal to 10' for Tc calculations.

Maximum Depth "d" =	0.52	ft.
Maximum Velocity "V" =	0.6	fps

AREA CALCULATIONS FOR STA 2039+00 TO STA 2051+00 MEDIAN MAINLINE I-4

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
2039+00	I-4	0	0	20		140		0	0.00	0.00		High Point
2040+00	I-4	0	0	20	2000	138	13900	15900	0.37	0.37	0.29	
2041+00	I-4	0	0	20	2000	130	13400	15400	0.35	0.72	0.30	
2042+00	I-4	0	0	20	2000	125	12750	14750	0.34	1.06	0.30	
2043+00	I-4	0	0	20	2000	120	12250	14250	0.33	1.38	0.30	
2044+00	I-4	0	0	20	2000	110	11500	13500	0.31	1.69	0.30	
2045+00	I-4	0	0	20	2000	108	10900	12900	0.30	1.99	0.30	
2046+00	I-4	0	0	20	2000	108	10800	12800	0.29	2.28	0.31	
2047+00	I-4	0	0	20	2000	108	10800	12800	0.29	2.58	0.31	
2048+00	I-4	0	0	20	2000	108	10800	12800	0.29	2.87	0.31	
2049+00	I-4	0	0	20	2000	108	10800	12800	0.29	3.17	0.31	
2050+00	I-4	0	0	20	2000	110	10900	12900	0.30	3.46	0.31	
2050+50	I-4	0	0	20	1000	110	11000	12000	0.28	3.87	0.30	Outfall P-507
2051+00	I-4	0	0	20		115	5625	5625	0.13	0.13		

* Measured from Design Plans

6-LANE SECTION ONLY

Mainline I-4 to Outfall P-506

Impervious Area = **0.5 ac**

Pervious Area = **3.3 ac**

Total Area = **3.9** ac

CONVEYANCE SWALE CALCULATIONS FOR STA 430+00 TO STA 440+94 RIGHT US 27

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
430+00	C\L	RT	173.42	1.08%	27.8	0.21	5.1	9.49	10.2	4	5	4	SOD	0.04	0.61	4.5	0.45	10.4	2.3	100	Outfall S-102
431+00	C\L	RT	174.50	0.50%	27.1	0.20	5.2	8.10	8.6	4	5	4	SOD	0.04	0.68	5.2	0.49	8.6	1.6	100	Existing Ditch
432+00	C\L	RT	175.00	0.60%	26.1	0.20	5.3	6.77	7.1	4	5	4	SOD	0.04	0.59	4.3	0.44	7.2	1.7	100	Begin C&G
433+00	C\L	RT	175.60	0.20%	25.1	0.20	5.4	5.61	6.0	4	5	4	SOD	0.04	0.72	5.7	0.52	6.1	1.1	100	
434+00	C\L	RT	175.80	0.20%	23.5	0.20	5.5	4.52	5.0	4	5	4	SOD	0.04	0.64	4.8	0.47	4.9	1.0	100	
435+00	C\L	RT	176.00	0.20%	21.9	0.20	5.7	3.38	3.8	4	5	4	SOD	0.04	0.56	4.1	0.42	3.8	0.9	100	
436+00	C\L	RT	176.20	0.20%	20.1	0.20	5.9	2.21	2.6	4	5	4	SOD	0.04	0.46	3.1	0.36	2.6	0.8	100	
437+00	C\L	RT	176.40	0.20%	18.1	0.20	6.1	1.03	1.3	4	5	4	SOD	0.04	0.31	1.9	0.26	1.6	0.7	100	
438+00	C\L	RT	176.60	0.90%	15.6	0.20	6.4	0.36	0.6	4	5	4	SOD	0.04	0.12	0.7	0.11	0.5	0.8	100	
439+00	C\L	RT	177.50	1.50%	13.6	0.20	6.8	0.22	0.3	4	5	4	SOD	0.04	0.10	0.5	0.09	0.5	0.9	100	
440+00	C\L	RT	179.00	1.50%	11.8	0.20	7.2	0.09	0.1	4	5	4	SOD	0.04	0.10	0.5	0.09	0.5	0.9	100	
440+94	C\L	RT	180.50	0.30%	10	0.00	7.5	0.00	0.0	4	5	4	SOD	0.04	0.10	0.5	0.09	0.2	0.4	0	

Maximum Depth "d" =	**0.72 ft.**
Maximum Velocity "V" =	**2.3 fps**

AREA CALCULATIONS FOR STA 430+00 TO STA 440+94 RIGHT US 27

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Drainlng to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
430+00	US 27	5	33	0	3900	577	57000	60900	1.40	9.49	0.21	Outfall S-102
431+00	US 27	5	35	0	2000	563	55550	57550	1.32	8.10	0.20	
432+00	US 27	0	0	0	0	548	50550	50550	1.16	6.77	0.20	Begin C&G
433+00	US 27	0	0	0	0	463	47600	47600	1.09	5.61	0.20	
434+00	US 27	0	0	0	0	489	49550	49550	1.14	4.52	0.20	
435+00	US 27	0	0	0	0	502	51050	51050	1.17	3.38	0.20	
436+00	US 27	0	0	0	0	519	51550	51550	1.18	2.21	0.20	
437+00	US 27	0	0	0	0	512	29050	29050	0.67	1.03	0.20	
438+00	US 27	0	0	0	0	69	6250	6250	0.14	0.36	0.20	
439+00	US 27	0	0	0	0	56	5600	5600	0.13	0.22	0.20	
440+00	US 27	0	0	0	0	56	3901	3901	0.09	0.09	0.20	
440+94	US 27	0	0	0	0	27		0	0.00	0.00		

CONVEYANCE SWALE CALCULATIONS FOR STA 416+67 TO STA 438+98 LEFT US 27

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
416+67	C\L	LT	164.37	0.52%	29.66	0.38	5.0	32.93	62.1	4	5	3	SOD	0.04	1.85	21.2	1.15	62.3	0.5	33	
417+00	C\L	LT	164.54	0.50%	28.56	0.38	5.1	32.85	62.6	4	5	3	SOD	0.04	1.87	21.6	1.16	62.8	2.9	100	
418+00	C\L	LT	165.04	0.50%	27.99	0.38	5.1	32.16	62.2	4	5	3	SOD	0.04	1.87	21.6	1.16	62.8	2.9	100	
419+00	C\L	LT	165.54	0.50%	27.41	0.38	5.2	31.09	61.5	4	5	3	SOD	0.04	1.96	23.2	1.21	69.4	3.0	100	
420+00	C\L	LT	166.04	0.50%	26.85	0.39	5.2	30.16	60.9	4	5	3	SOD	0.04	1.95	23.1	1.20	68.6	3.0	100	
421+00	C\L	LT	166.54	0.50%	26.29	0.39	5.3	29.30	60.3	4	5	3	SOD	0.04	1.94	22.9	1.20	67.9	3.0	100	
422+00	C\L	LT	167.04	0.50%	25.73	0.40	5.3	28.30	59.6	4	5	3	SOD	0.04	1.92	22.5	1.19	66.4	2.9	100	
423+00	C\L	LT	167.54	1.33%	25.17	0.40	5.4	27.12	58.6	4	5	3	SOD	0.04	1.53	15.8	0.98	67.2	4.2	100	
424+00	C\L	LT	168.87	0.76%	24.77	0.41	5.4	25.74	57.4	4	5	3	SOD	0.04	1.72	19.0	1.08	64.8	3.4	100	
425+00	C\L	LT	169.63	0.26%	24.29	0.42	5.5	24.21	56.0	4	5	3	SOD	0.04	2.18	27.5	1.32	62.9	2.3	100	
426+00	C\L	LT	169.89	0.26%	23.56	0.43	5.5	23.22	55.2	4	5	3	SOD	0.04	2.16	27.1	1.31	61.6	2.3	100	
427+00	C\L	LT	170.15	0.26%	22.82	0.43	5.6	22.66	54.7	4	5	3	SOD	0.04	2.15	26.9	1.30	61.0	2.3	100	
428+00	C\L	LT	170.41	0.26%	22.09	0.44	5.6	21.82	53.8	4	5	3	SOD	0.04	2.15	26.9	1.30	61.0	2.3	100	
429+00	C\L	LT	170.67	0.26%	21.35	0.45	5.7	20.88	53.3	4	5	3	SOD	0.04	2.13	26.5	1.29	59.8	2.3	100	
430+00	C\L	LT	170.93	0.26%	20.61	0.46	5.8	19.99	52.8	4	5	3	SOD	0.04	2.12	26.3	1.29	59.2	2.2	100	Outfall S-101
431+00	C\L	LT	171.19	0.46%	19.87	0.46	5.9	19.30	52.5	4	5	3	SOD	0.04	1.86	21.4	1.15	59.5	2.8	100	
432+00	C\L	LT	171.65	0.45%	19.27	0.47	6.0	18.88	52.3	4	5	3	SOD	0.04	1.86	21.4	1.15	58.9	2.7	20	Begin C&G
432+80	C\L	LT	171.74	3.98%	18.48	0.20	6.1	18.57	22.5	4	5	3	SOD	0.04	0.73	5.5	0.53	27.0	4.9	100	Outfall S-103
433+00	C\L	LT	175.72	1.25%	19.15	0.20	6.0	2.54	3.0	4	5	4	SOD	0.04	0.30	1.9	0.25	3.1	1.6	100	
434+00	C\L	LT	176.97	0.50%	18.14	0.20	6.1	2.26	2.8	4	5	4	SOD	0.04	0.37	2.4	0.30	2.8	1.2	100	
435+00	C\L	LT	177.47	0.50%	16.72	0.20	6.3	2.03	2.5	4	5	4	SOD	0.04	0.35	2.2	0.28	2.5	1.1	100	
436+00	C\L	LT	177.97	0.50%	15.26	0.20	6.5	1.74	2.2	4	5	4	SOD	0.04	0.32	2.0	0.26	2.2	1.1	100	
437+00	C\L	LT	178.47	0.50%	13.71	0.20	6.7	1.24	1.7	4	5	4	SOD	0.04	0.28	1.7	0.23	1.7	1.0	100	
438+00	C\L	LT	178.97	0.50%	12.05	0.20	7.1	0.61	0.9	4	5	4	SOD	0.04	0.19	1.1	0.17	0.9	0.8	98	
438+98	C\L	LT	179.46		10			0.00	0.0	4	5	4	SOD	0.04	0.10	0.5	0.09	0.0	0.0		

Maximum Depth "d" =	**2.18 ft.**
Maximum Velocity "V" =	**4.9 fps**

CONVEYANCE SWALE CALCULATIONS FOR STA 416+67 TO 438+98 LEFT US 27

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
416+67	US 27	4	24	0	924	88	2904	3828	0.09	32.93	0.38	Existing Ditch
417+00	US 27	4	24	0	2800	88	27050	29850	0.69	32.85	0.38	Existing Ditch
418+00	US 27	4	24	0	2800	453	43950	46750	1.07	32.16	0.38	Existing Ditch
419+00	US 27	4	24	0	2800	426	37750	40550	0.93	31.09	0.38	Existing Ditch
420+00	US 27	4	24	0	2800	329	34700	37500	0.86	30.16	0.39	Existing Ditch
421+00	US 27	4	24	0	2800	365	40650	43450	1.00	29.30	0.39	Existing Ditch
422+00	US 27	4	24	0	2800	448	48650	51450	1.18	28.30	0.40	
423+00	US 27	4	24	0	2800	525	57250	60050	1.38	27.12	0.40	
424+00	US 27	4	24	0	2800	620	64000	66800	1.53	25.74	0.41	
425+00	US 27	4	24	0	2800	660	39950	42750	0.98	24.21	0.42	
426+00	US 27	4	24	0	3800	139	20950	24750	0.57	23.22	0.43	
427+00	US 27	5	43	0	4450	280	32000	36450	0.84	22.66	0.43	
428+00	US 27	5	36	0	4150	360	36850	41000	0.94	21.82	0.44	
429+00	US 27	5	37	0	4200	377	34650	38850	0.89	20.88	0.45	
430+00	US 27	5	37	0	3500	316	26200	29700	0.68	19.99	0.46	Outfall S-101
431+00	US 27	5	23	0	1400	208	17100	18500	0.42	19.30	0.46	
432+00	US 27	0	0	0	0	134	13400	13400	0.31	18.88	0.47	Begin C&G
432+80	US 27	0	0	0	291416	134	406902	698318	16.03	18.57	0.47	Outfall S-103
433+00	US 27	0	0	0	0	131	12150	12150	0.28	2.54	0.20	
434+00	US 27	0	0	0	0	112	10100	10100	0.23	2.26	0.20	
435+00	US 27	0	0	0	0	90	12600	12600	0.29	2.03	0.20	
436+00	US 27	0	0	0	0	162	21700	21700	0.50	1.74	0.20	
437+00	US 27	0	0	0	0	272	27400	27400	0.63	1.24	0.20	
438+00	US 27	0	0	0	0	276	26750	26750	0.61	0.61	0.20	
438+98	US 27	0	0	0	0	259		0	0.00	0.00		

CONVEYANCE SWALE CALCULATIONS FOR STA 493+77 TO STA 512+00 RIGHT US 27

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
493+77	C\L	RT	148.75	0.04%	23.34	0.20		47.74	0.0										0.5	23	
494+00	C\L	RT	148.76	0.32%	22.57	0.20	5.6	45.03	51.0	4	5	3	SOD	0.04	1.89	22.0	1.17	51.4	2.3	100	
495+00	C\L	RT	149.08	3.20%	21.86	0.20	5.7	42.32	48.9	4	5	3	SOD	0.04	1.06	9.2	0.73	49.7	5.4	100	
496+00	C\L	RT	152.28	2.34%	21.55	0.20	5.7	39.60	45.8	4	5	3	SOD	0.04	1.11	9.9	0.75	46.5	4.7	100	
497+00	C\L	RT	154.62	3.52%	21.2	0.21	5.7	36.89	43.1	4	5	3	SOD	0.04	0.97	8.1	0.67	43.8	5.4	100	
498+00	C\L	RT	158.14	2.42%	20.89	0.21	5.8	34.18	40.4	4	5	3	SOD	0.04	1.03	8.9	0.71	40.8	4.6	100	
499+00	C\L	RT	160.56	2.43%	20.52	0.21	5.8	31.47	37.6	4	5	3	SOD	0.04	1.00	8.5	0.69	38.6	4.5	100	
500+00	C\L	RT	162.99	1.48%	20.16	0.21	5.9	28.76	34.7	4	5	3	SOD	0.04	1.08	9.5	0.74	35.1	3.7	100	
501+00	C\L	RT	164.47	1.04%	19.71	0.21	5.9	26.05	31.8	4	5	3	SOD	0.04	1.15	10.4	0.78	33.3	3.2	100	
502+00	C\L	RT	165.51	1.00%	19.19	0.21	6.0	23.34	29.1	4	5	3	SOD	0.04	1.09	9.6	0.74	29.8	3.1	100	
503+00	C\L	RT	166.51	1.68%	18.64	0.21	6.1	20.63	26.1	4	5	3	SOD	0.04	0.90	7.3	0.63	28.2	3.6	100	
504+00	C\L	RT	168.19	1.56%	18.17	0.21	6.1	17.91	23.0	4	5	3	SOD	0.04	0.87	7.0	0.62	23.6	3.4	100	
505+00	C\L	RT	169.75	0.05%	17.68	0.21	6.2	15.20	19.9	4	5	3	SOD	0.04	1.89	22.0	1.17	20.3	0.9	100	
506+00	C\L	RT	169.80	0.20%	15.88	0.21	6.4	12.49	17.1	4	5	3	SOD	0.04	1.27	12.0	0.84	17.8	1.5	100	
507+00	C\L	RT	170.00	0.50%	14.75	0.22	6.6	9.78	14.0	4	5	3	SOD	0.04	0.91	7.4	0.64	14.6	2.0	100	
508+00	C\L	RT	170.50	2.20%	13.9	0.22	6.7	7.01	10.3	4	5	3	SOD	0.04	0.52	3.5	0.40	10.7	3.0	100	
509+00	C\L	RT	172.70	1.80%	13.35	0.22	6.8	4.21	6.2	4	5	3	SOD	0.04	0.42	2.7	0.34	6.6	2.4	100	
510+00	C\L	RT	174.50	0.50%	12.66	0.22	7.0	2.81	4.2	4	5	3	SOD	0.04	0.48	3.2	0.38	4.4	1.4	100	
511+00	C\L	RT	175.00	0.50%	11.45	0.21	7.2	1.42	2.2	4	5	3	SOD	0.04	0.35	2.2	0.29	2.5	1.1	100	
512+00	C\L	RT	175.50		10	0.00	7.5	0.03	0.0	4	5	3	SOD	0.04	0.10	0.5	0.09	0.0	0.0	100	High Point

Maximum Depth "d" =	**1.89 ft.**
Maximum Velocity "V" =	**5.4 fps**

AREA CALCULATIONS FOR STA 493+77 TO STA 512+00 RIGHT US 27

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
493+77	US 27	0	0	0	0	1181	118100	118100	2.71	47.74	0.20	
494+00	US 27	0	0	0	0	1181	118100	118100	2.71	45.03	0.20	
495+00	US 27	0	0	0	0	1181	118100	118100	2.71	42.32	0.20	
496+00	US 27	0	0	0	0	1181	118100	118100	2.71	39.60	0.20	
497+00	US 27	0	0	0	0	1181	118100	118100	2.71	36.89	0.21	
498+00	US 27	0	0	0	0	1181	118100	118100	2.71	34.18	0.21	
499+00	US 27	0	0	0	0	1181	118100	118100	2.71	31.47	0.21	
500+00	US 27	0	0	0	0	1181	118100	118100	2.71	28.76	0.21	
501+00	US 27	0	0	0	0	1181	118100	118100	2.71	26.05	0.21	
502+00	US 27	0	0	0	0	1181	118100	118100	2.71	23.34	0.21	
503+00	US 27	0	0	0	0	1181	118100	118100	2.71	20.63	0.21	
504+00	US 27	0	0	0	0	1181	118100	118100	2.71	17.91	0.21	
505+00	US 27	0	0	0	0	1181	118100	118100	2.71	15.20	0.21	
506+00	US 27	0	0	0	0	1181	118100	118100	2.71	12.49	0.21	
507+00	US 27	0	0	0	2500	1181	118100	120600	2.77	9.78	0.22	
508+00	US 27	5	45	0	3950	1181	118100	122050	2.80	7.01	0.22	Begin C&G
509+00	US 27	5	33	0	1900	1181	59050	60950	1.40	4.21	0.22	Existing Ditch
510+00	US 27	5	24	0	1450	1181	59050	60500	1.39	2.81	0.22	Existing Ditch
511+00	US 27	5	24	0	1450	1181	59050	60500	1.39	1.42	0.21	Existing Ditch
512+00	US 27	5	24	0	1450	1181		1450	0.03	0.03		Existing Ditch

CONVEYANCE SWALE CALCULATIONS FOR RAMP A-1 (POND B SYSTEM)

Station	B/L	Side	FL (ft)	Slope	tc	Cw	Zone 8 I10	Area (Acres)	Q Rat (cfs)	Ditch Section fs	bw	bs	Ditch Lining	"n"	"d" (ft)	A (sq ft)	Hyd Radius	Q Ditch Calc	V (fps)	L (ft)	Remarks
495+90	C\L	LT	153.45	1.50%	10	0.00	7.5	0.00	0.0	6	10	1	SOD	0.04	0.10	1.0	0.10	1.0	0.0	90	Area South of S-508
495+00	C\L	LT	152.10	1.50%	11.39	0.80	7.2	0.16	1.0	6	10	1	SOD	0.04	0.12	1.3	0.11	1.3	1.1	90	
494+00	C\L	LT	150.60	1.50%	12.68	0.77	7.0	0.42	2.2	6	10	1	SOD	0.04	0.16	1.7	0.15	2.2	1.3	100	
493+44.31	C\L	LT	146.70	3.41%	13.16	0.75	6.6	0.55	2.8	6	10	1	SOD	0.04	0.15	1.6	0.14	3.0	1.9	55.69	
129+00	C\L	RT	146.30	2.40%	14.11	0.67	6.6	0.79	3.6	6	10	4	SOD	0.04	0.19	2.1	0.17	3.7	1.8	100	
126+00	C\L	RT	144.40	1.90%	15.06	0.60	6.5	1.03	4.0	6	10	4	SOD	0.04	0.22	2.4	0.20	4.3	1.8	100	
127+00	C\L	RT	142.60	1.60%	16.02	0.56	6.3	1.29	4.6	6	10	4	SOD	0.04	0.25	2.6	0.22	4.9	1.7	100	
126+00	C\L	RT	141.60	1.20%	17.05	0.52	6.2	1.56	5.0	6	10	4	SOD	0.04	0.26	3.2	0.25	5.1	1.6	100	
125+75	C\L	RT	141.43	0.17%	19.01	0.51	6.0	1.63	5.0	6	10	4	SOD	0.04	0.50	6.3	0.41	6.3	0.9	100	Outfall R-100
125+00	C\L	RT	140.90	0.53%	10.00	0.12	7.5	0.21	0.2	6	10	4	SOD	0.04	0.11	1.2	0.10	0.7	0.6	100	
124+00	C\L	RT	140.30	0.60%	11.46	0.20	7.2	0.49	0.7	6	10	4	SOD	0.04	0.14	1.5	0.13	1.1	0.7	100	
123+00	C\L	RT	139.00	1.30%	12.61	0.26	6.9	0.77	1.4	6	10	4	SOD	0.04	0.15	1.6	0.14	1.8	1.1	100	
122+00	C\L	RT	137.50	1.50%	14.37	0.26	6.6	1.07	2.0	6	10	3	SOD	0.04	0.15	1.6	0.14	2.0	1.2	100	
121+00	C\L	RT	136.90	0.60%	15.85	0.30	6.4	1.36	2.8	6	10	3	SOD	0.04	0.25	2.6	0.23	3.0	1.1	100	
120+00	C\L	RT	136.30	0.60%	17.19	0.35	6.2	1.49	3.2	6	10	3	SOD	0.04	0.27	3.0	0.24	3.4	1.1	100	
119+70	C\L	RT	136.24	0.20%	19.44	0.64	6.0	3.53	13.4	6	10	2	SOD	0.04	0.82	10.9	0.65	13.6	1.2	30	Outfall S-601
119+00	C\L	RT	136.44	0.20%	19.04	0.40	6.0	1.92	4.6	6	10	2	SOD	0.04	0.45	5.3	0.39	4.7	0.9	70	
116+00	C\L	RT	136.58	0.20%	17.72	0.40	6.1	1.71	4.1	6	10	2	SOD	0.04	0.42	4.9	0.36	4.2	0.8	100	
117+00	C\L	RT	136.76	2.72%	15.75	0.40	6.4	1.46	3.7	6	10	2	SOD	0.04	0.19	2.0	0.16	4.0	1.9	100	
116+00	C\L	RT	139.50	3.50%	14.69	0.40	6.5	1.20	3.1	6	10	2	SOD	0.04	0.16	1.7	0.15	3.4	2.0	100	
115+00	C\L	RT	143.00	3.60%	14.04	0.40	6.6	0.95	2.5	6	10	3	SOD	0.04	0.14	1.5	0.13	2.7	1.8	100	
114+00	C\L	RT	146.60	3.60%	13.13	0.40	6.6	0.70	1.9	6	10	3	SOD	0.04	0.12	1.3	0.11	2.1	1.7	100	
113+00	C\L	RT	150.20	3.70%	12.13	0.40	7.1	0.45	1.3	6	10	4	SOD	0.04	0.10	1.1	0.10	1.8	1.5	100	
112+00	C\L	RT	153.90	4.50%	11.01	0.37	7.3	0.21	0.5	6	10	4	SOD	0.04	0.10	1.1	0.10	1.7	1.6	100	
111+00	C\L	RT	158.40		10	0.00	7.5	0.00	0.0	6	10	4	SOD	0.04	0.10	1.1	0.10	0.0	0.0	0	High Point

Maximum Depth "d" =	0.60 ft.
Maximum Velocity "V" =	1.9 fps

AREA CALCULATIONS FOR RAMP A-1 (POND B SYSTEM)

Station	B/L	Impervious Pavement Widths*			Impervious Area (sq. ft.)	Contributing Width Draining to Ditch* (ft.)	Pervious Area per Sta. (sq. ft.)	Total Area per Sta. (sq. ft.)	Total Area per Sta. (ac.)	Total Area Cum. (ac.)	Weighted Runoff Coeff. c = 0.95 pvd. c = 0.2 grass	Remarks
		Out. Shldr. Width (ft.)	Roadway Width (ft.)	Med Shldr. Width (ft.)								
495+90	US 27	10	41	18		0	0	0	0.00	0.00	0.00	Area South of S-508
495+00	US 27	10	41	18	6210	0	1575	7785	0.18	0.18	0.80	
494+00	US 27	5	60	17	7550	35	2750	10300	0.24	0.42	0.77	
493+44.31	US 27	5	36	15	3842.61	20	2144.065	5986.7	0.14	0.55	0.75	
129+00	NW	6	15	4	4050	57	6450	10500	0.24	0.79	0.67	
128+00	NW	6	15	4	2500	72	7800	10300	0.24	1.03	0.60	
127+00	NW	6	15	4	2500	84	8800	11300	0.26	1.29	0.56	
126+00	NW	6	15	4	2500	92	9300	11800	0.27	1.56	0.52	
125+75	NW	6	15	4	625	94	2362.5	2987.5	0.07	1.63	0.51	Outfall R-100
125+00	NW	6	15	4	1875	95	7237.5	9112.5	0.21	0.21	0.12	
124+00	NW	6	15	4	2500	98	9800	12300	0.28	0.49	0.20	
123+00	NW	6	15	4	2500	98	9800	12300	0.28	0.77	0.26	
122+00	NW	6	24	4	2950	98	9800	12750	0.29	1.07	0.28	
121+00	NW	4	24	4	3300	98	9550	12850	0.29	1.36	0.30	
120+00	NW	4	24	0	3000	93	2700	5700	0.13	1.49	0.35	
119+70	NW	4	24	0	2800	87	2610	5410	0.12	3.53	0.64	Outfall S-601
119+00	NW	4	24	0	2800	87	6020	8820	0.20	1.92	0.40	
118+00	NW	4	24	0	2800	85	8400	11200	0.26	1.71	0.40	
117+00	NW	4	24	0	2800	83	8300	11100	0.25	1.46	0.40	
116+00	NW	4	24	0	2800	83	8250	11050	0.25	1.20	0.40	
115+00	NW	4	24	0	2800	82	8100	10900	0.25	0.95	0.40	
114+00	NW	4	24	0	3000	80	7750	10750	0.25	0.70	0.40	
113+00	NW	4	24	4	3200	75	7400	10600	0.24	0.45	0.40	
112+00	NW	4	24	4	2000	73	7000	9000	0.21	0.21	0.37	
111+00	NW	4	0	4	0	67	0	0	0.00	0.00	0.00	High Point

Total Areas

Impervious = 1.63 ac

Pervious = 3.53 ac

Total Area = 5.16 ac

Geotechnical Data

Appendix F

ORIGINAL

ERP # 44011896.024

GEOTECHNICAL DATA

See the Geotechnical Exploration for the Roadway Report dated May 1998 and the Report of Geotechnical Exploration for Pond Structures dated August 1998 for all project related geotechnical data.

WILLIAMS EARTH SCIENCES, INC.
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Panama City: (850) 747-0419 Fax: (850) 763-8486

REPORT OF AUGER BORINGS

CLIENT: HDR Engineering, Inc.
PROJECT NAME: I-4 and US-27 Interchange
WILLIAMS PROJECT NO.: C395040

LOCATION	DATE PERFORMED	DEPTH FROM/TO (m)	SOIL DESCRIPTION	USCS	AASHTO CLASS	GROUNDWATER LEVEL (m)
SWA-1	3/14/01	0.0 - 1.8	Brown fine SAND	SP	A-3	Not Encountered
		1.8 - 3.4	Orange fine to medium SAND	SP	A-3	
		3.4 - 4.6	Light orange fine SAND	SP	A-3	
SWA-2	3/14/01	0.0 - 0.9	Brown fine SAND	SP	A-3	Not Encountered
		0.9 - 2.9	Orange fine to medium SAND	SP	A-3	
		2.9 - 4.6	Light orange fine SAND	SP	A-3	
PDA-1	3/14/01	0.0 - 2.3	Brown fine SAND	SP	A-3	Not Encountered
		2.3 - 4.0	Orange fine to medium SAND	SP	A-3	
		4.0 - 4.6	Light orange fine SAND	SP	A-3	
PDA-2	3/14/01	0.0 - 0.8	Brown fine SAND	SP	A-3	Not Encountered
		0.8 - 2.4	Orange fine to medium SAND	SP	A-3	
		2.4 - 4.6	Bright orange fine SAND	SP	A-3	
PDA-3	3/14/01	0.0 - 0.8	Brown fine SAND	SP	A-3	Not Encountered
		0.8 - 2.1	Orange fine to medium SAND	SP	A-3	
		2.1 - 4.6	Light orange fine SAND	SP	A-3	
PDA-4	3/14/01	0.0 - .9	Brown & dark brown fine SAND	SP - SM	A-3	Not Encountered
		0.9 - 3.4	Orange fine to medium SAND	SP	A-3	
		3.4 - 4.6	Bright orange fine SAND	SP	A-3	

WILLIAMS EARTH SCIENCES, INC.
CORPORATE OFFICE:
10500 Endeavour Way, Largo, Florida 33777

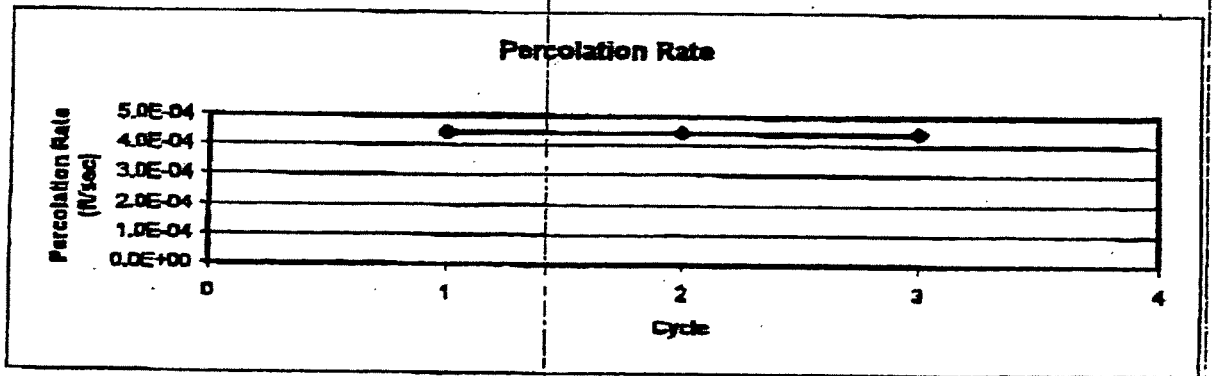
Borehole Percolation Field Permeability Test

(10 Feet 2' PVC Casing w/ 5 feet Screen)

Project Name: I-4 and U.S. 27
Project Number: C395040
Test Date: 03/14/01
Test ID: PDP-1
Location Description: North end of Pond D

Borehole diameter:		3 inches	0.0762 m
Borehole depth:		15 feet	4.572 m
Groundwater Level:		25 ft	7.62 m
Stabilized Inflow:		2.23E-02 cfs	6.30E+02 cm^3/sec
H1	0 ft		
H2	25 ft		
Ds	-10 ft		

Cycle	ElapTime (sec)	Vol Used (in^3)	Flow Rate (cfs)	Percolation Rate (ft/sec)	Percolation Rate (in/hr)	Percolation Rate (cm/sec)
1	600	23070	2.23E-02	0.00044224	1.91E+01	1.35E-02
2						
3						
4						
5						
6						
		Avg	2.23E-02	4.42E-04	1.91E+01	1.35E-02



Hydraulic Conductivity:

4.42E-04	cfs/ft^2-ft head or feet/sec
19.105	in/hr
1.35E-02	cm/sec

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WILLIAMS EARTH SCIENCES, INC.
CORPORATE OFFICE:
10500 Endeavour Way, Largo, Florida 33777

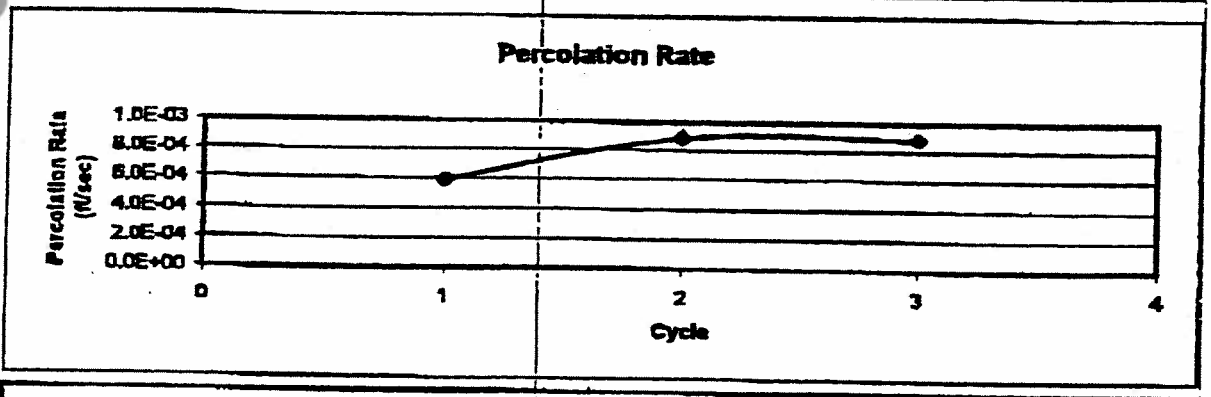
Borehole Percolation Field Permeability Test

(10 Feet 2' PVC Casing w/ 5 feet Screen)

Project Name: I-4 and U.S. 27
Project Number: C395040
Test Date: 03/14/01
Test ID: SWP-1
Location Description: Northwest corner of Pond SW

Borehole diameter:	3 inches	0.0762 m	
Borehole depth:	15 feet	4.572 m	
Groundwater Level:	25 ft	7.62 m	
Stabilized Inflow:	3.71E-02 cfs	1.05E+03 cm^3/sec	
H1	0 ft		
H2	25 ft		
Ds	-10 ft		

Cycle	ElapTime (sec)	Vol Used (in^3)	Flow Rate (cfs)	Percolation Rate (ft/sec)	Percolation Rate (in/hr)	Percolation Rate (cm/sec)
1	900	46140	2.97E-02	0.00058985	2.55E+01	1.80E-02
2	15	1153.5	4.45E-02	0.00088448	3.82E+01	2.70E-02
3						
4						
5						
6						
		Avg	3.71E-02	7.37E-04	3.18E+01	2.25E-02



Hydraulic Conductivity:

7.37E-04	cfs/ft^2-ft head or feet/sec
31.841	in/hr
2.25E-02	cm/sec

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WILLIAMS EARTH SCIENCES, INC.
CORPORATE OFFICE:
10900 Endeavour Way, Largo, Florida 33777

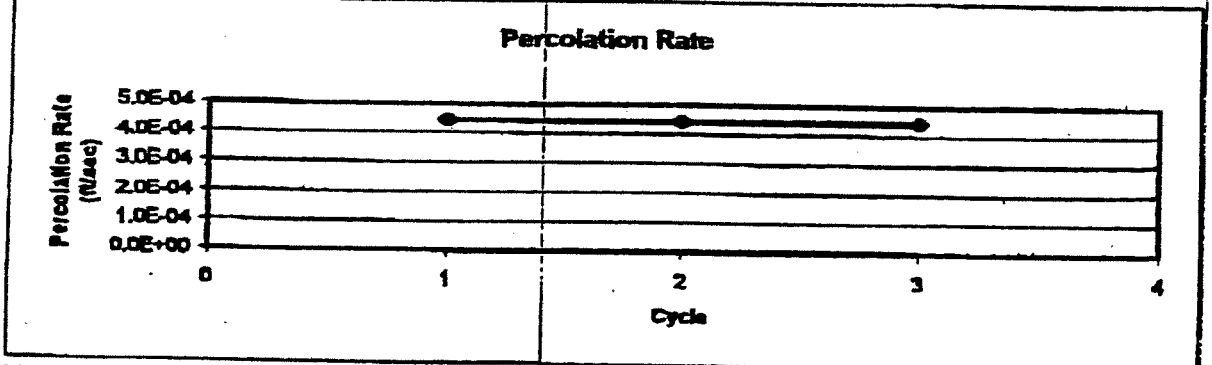
Borehole Percolation Field Permeability Test

(10 Feet 2' PVC Casing w/ 5 feet Screen)

Project Name: I-4 and U.S. 27
Project Number: C395040
Test Date: 03/14/01
Test ID: PDP-2
Location Description: Southeast corner of Pond D

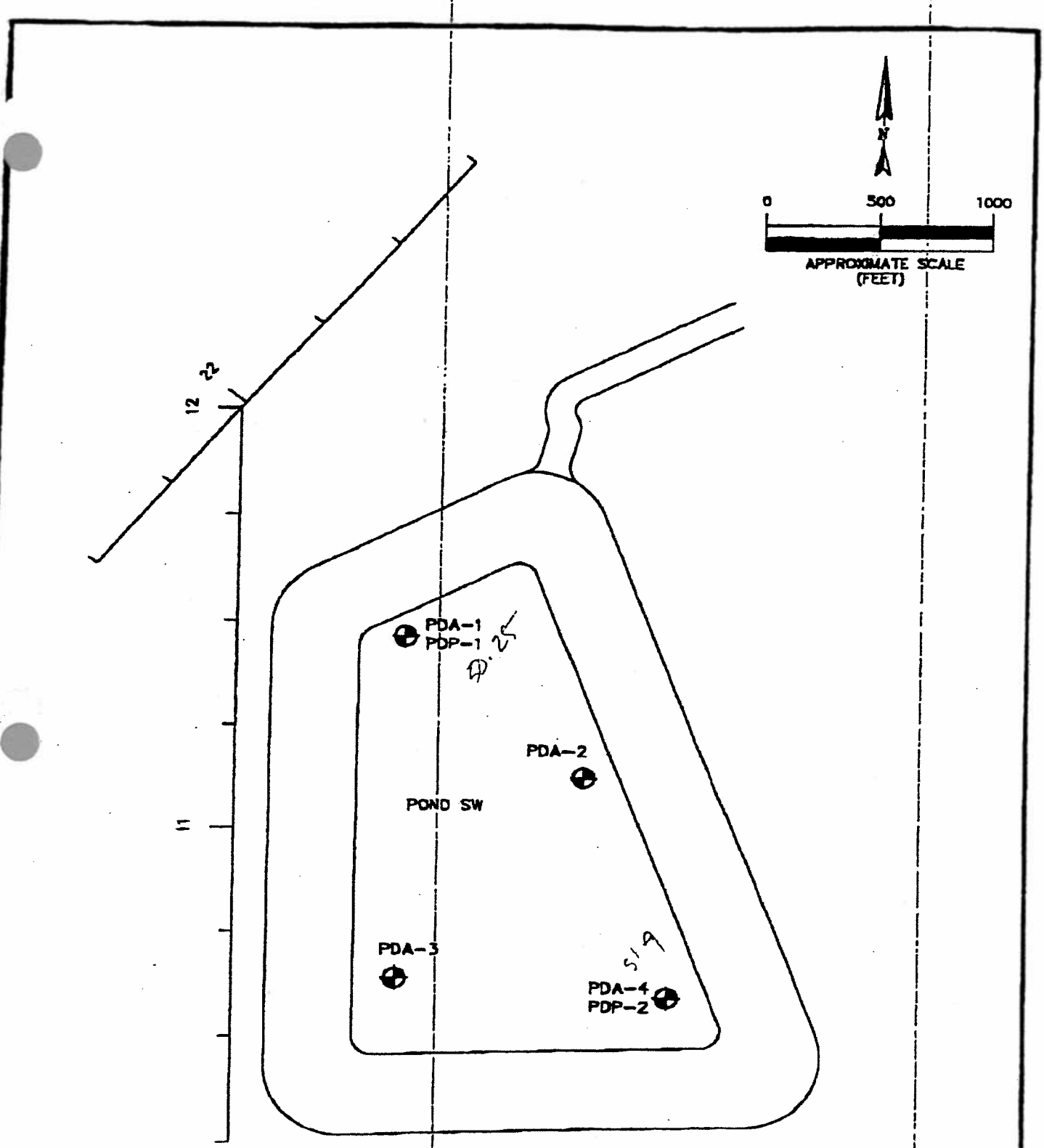
Borehole diameter:		3 inches	0.0762 m
Borehole depth:		15 feet	4.572 m
Groundwater Level:		25 ft	7.62 m
Stabilized Inflow:		2.23E-02 cfs	6.30E+02 cm^3/sec
H1	0 ft		
H2	25 ft		
Ds	-10 ft		

Cycle	ElapTime (sec)	Vol Used (in^3)	Flow Rate (cfs)	Percolation Rate (ft/sec)	Percolation Rate (in/hr)	Percolation Rate (cm/sec)
1	1080	41526	2.23E-02	0.00044224	1.91E+01	1.35E-02
2						
3						
4						
5						
6						
		Avg	2.23E-02	4.42E-04	1.91E+01	1.35E-02



Hydraulic Conductivity:

4.42E-04	cfs/ft^2-ft head or feet/sec
19.105	in/hr
1.35E-02	cm/sec



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Panama City	(850) 747-9419	FAX: (850) 763-2964

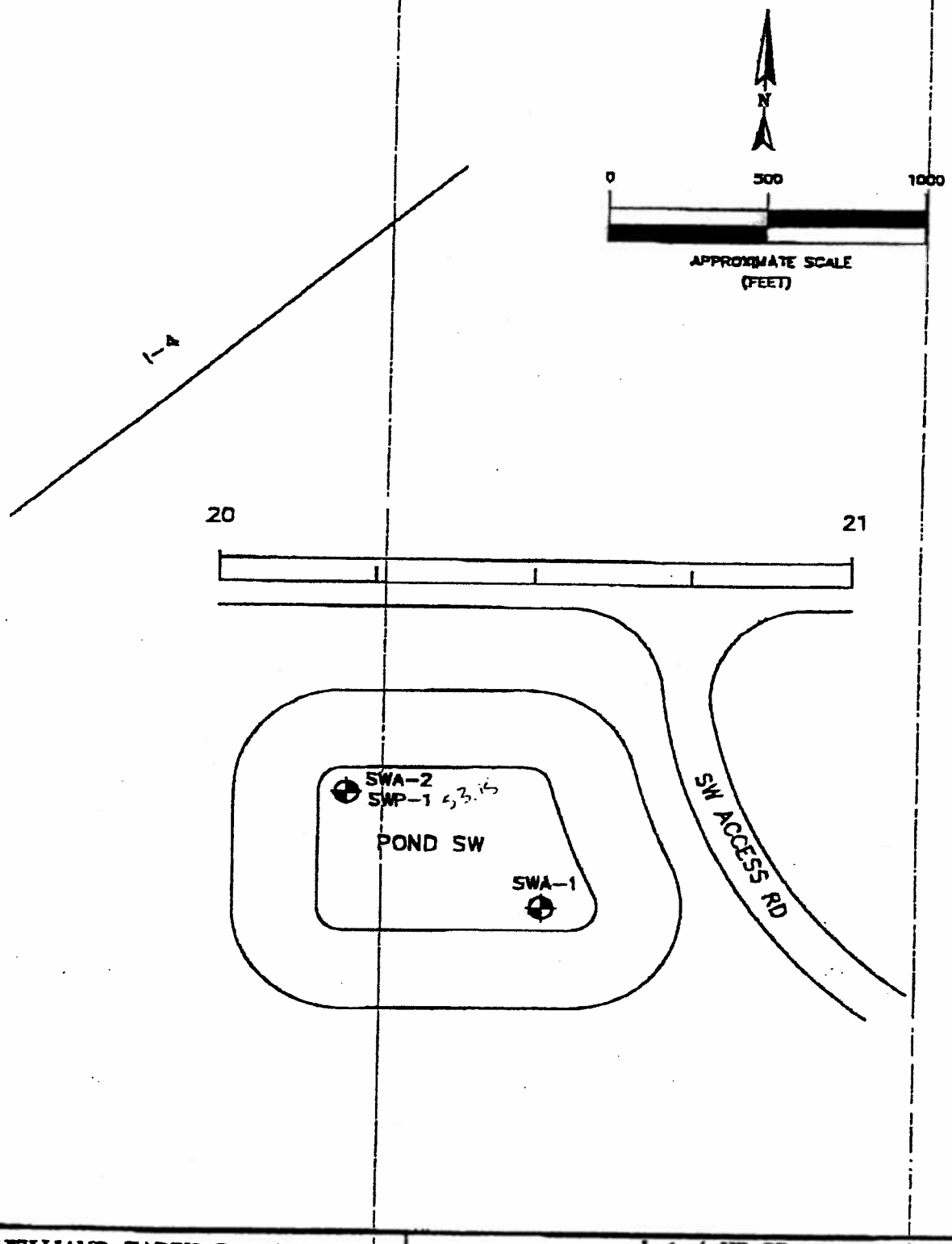
I-4 / US 27
POLK COUNTY, FLORIDA

POND BORING LOCATION PLAN

Drawn By:	TEJ	Date:	3-30-01	Scale:	AS SHOWN
Checked By:	SK	Report No.	C395040	Figure No.	2

field3

E-1191



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I-4 / US 27
POLK COUNTY, FLORIDA

POND BORING LOCATION PLAN

Drawn By: TEJ	Date: 3-30-01	Scale: AS SHOWN
Checked By: SK	Report No. C395040	Figure No. 1

field2

E-1192

WILLIAMS
EARTH SCIENCES INC

January 8, 2001

HDR Engineering, Inc.
1201 South Orlando Ave., Suite 200
Winter Park, Florida 32789

Attention: Mr. Clayton Lee, P.E.

Subject: Revised Seasonal High Estimates for Ponds A & E
Interstate 4 & US 27 Interchange in Polk County
State Project Nº 16320-1408
W.P.I. Nº 1147942
Financial Project ID 201204-1-52-02
WES Project Nº C395040

Dear Mr. Lee:

This letter is a response to the request for average seasonal high water level (SHWL) estimates using wetland data from areas nearby the pond sites. Wetland information was provided during a telephone conversation with Clayton Lee of HDR on 1/4/00. Review of the data permits Williams to recommend the following average SHWL elevations:

- Pond A: 39.2 m
- Pond E: 36.0 m

These SHWL elevations should be used at the pond sites only. Due to the lack of field SHWL indicators at this site, it is recommended that HDR contact the Soil Conservation Survey (SCS) to perform a site visit and provide a SHWL measurement for each pond.

If you should have any questions concerning this letter, or if you need any additional information, please do not hesitate to contact our office. We appreciate the opportunity to work with you on this project, and look forward to a successful completion.

Very truly yours,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Senior Geotechnical Engineer
Florida Registration Nº 53182

F:\PROJECTS\C395XXX\C395040 I4 US27\CORRESP\LETTER 2.DOC

Submittals: (2) Addressee
(1) Thomas G. Caffery, P.E., HDR
(1) File

CORPORATE OFFICE:
10600 Endeavour Way
Largo, FL 33777
(727) 541-3444 FAX (727) 541-1510
WESLargo@aol.com

C O V E R

FAX

S H E E T

WILLIAMS EARTH SCIENCES, INC.
10600 Endeavour Way
Largo, Florida 33777

Telephone: 813-541-3444
Fax: 813-541-1510

To: Mr. Robert J. Minsch, P.E.
Company: HDR Engineering, Inc.
From: Robert B. Leadbetter, P.E.
Fax #: 407-872-0603
Subject: Response to Comments of T. Puckett Dated 9/2/98
I-4 and US 27 Interchange in Polk County
Date: September 23, 1998
Pages: [4], including this cover sheet.

Signed copies to be mailed.

FILE: I4/US27, C1.9
XC: CLAYTON
FILE G1.5
STEPHANIE

WILLIAMS
EARTH SCIENCES

September 21, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Robert D. Minsch, P.E.
Senior Project Manager

Subject: Response to Comments of Theresa Pucket Dated 9/2/98
Interstate 4 and US 27 Interchange in Polk County
Polk County, Florida
State Project N° 16320-1408
W.P.I. N° 1147942
Williams Project N° G395040

Dear Mr. Minsch:

Williams Earth Sciences has reviewed the comments of Theresa Pucket, District Geotechnical Engineer for District I, dated September 9, 1998, for the above referenced project. Responses to the comments are presented in this letter and a copy of the comment letter is included.

Comment No. 1: The Report of Core Borings Sheets for the ponds shall have strata numbers that correspond to the Roadway Soils Survey Sheet and the Financial Management Number shall be added.

Response: Agree. The information shall be added to the sheets.

Comment No. 2: Why is Pond B-2 shown as two different ponds? Label them separately, even if as B-2(a) and B-2(b), for example. Add GNE to PB1-1 and to the Notes.

Response: One of the sheets had a typographical error. The small triangular pond with boring PB3-1 should have been labeled as Pond B-3. This has been corrected. In addition, GNE will be added to the boring and the Notes.

Comment No. 3: Why were the borings for Pond C-3 not performed in the pond.

Response: In Section 2.3 of the report, under the Pond D-2 heading, the locations of the borings were discussed. The proposed pond was located in a very dense fruit tree grove, limiting access of the drilling equipment. Performing the boreholes inside the pond would have required trimming of the trees to allow equipment access. The boreholes were offset to an access road just north of the pond. The subsurface conditions in the area are uniform enough that the test information collected will be representative of the conditions inside the pond. When this pond location is accepted with its final location, the remaining pond borings and percolation tests will be performed within the planned pond boundaries. Any trimming of the orange grove will be performed at that time.

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WESLargo@aol.com

Comment No. 4: Pond NW-1 From the lab results, the material in boring PNW1-2 appears to be SM not SC and A-2-4 not A-2-6.

Response: Agree. Material should be classified as SM A-2-4 material. The sheets will be corrected.

Comment No. 5: Water tables or GNE needed for swale NW-4.

Response: Agree. The information shall be added to the sheets.

Comment No. 6: Swale NW-4 - The lab results for NW4-2 indicate the material is not A-7-6.

Response: Agree. Material should be classified as SM A-2-4 material. The sheets will be corrected.

Comment No. 7: We question the results of the Constant Head tests for TNW1-3, TA-4, TB1-1, TB1-12 and TB2-8. The Hydraulic Conductivity rate is very slow for A-3 material and needs an explanation. The information provided on the test summary sheet shall include the soils below the bottom the borehole depth. Check calculations for TA-4. Provide the field data for the Double ring test.

Response: Because of the relatively deep anticipated pond bottom elevations, three types of percolation tests were performed in the testing program to evaluate the difference between lateral and vertical permeability. A double ring test was performed to evaluate the near surface vertical permeability for the relatively shallow swale structures. The Constant Head borehole permeability test was performed with and without casing for the deeper pond structures. Due to the amount of water being used to perform the open hole tests, the constant head tests TNW1-3, TB1-1, TB1-12, and TB2-8 were all performed in an "open end" method as indicated on the test sheets and summary table.

The test was performed in an open ended casing at the depth indicated. Using the casing in the borehole will lower the amount of water needed to perform the percolation test by preventing the sidewalls of the borehole from accepting water. The remaining Constant Head tests were performed without a casing to evaluate primarily the lateral permeability of the sides of the pond structures. One problem with this style of testing is the end area will collect the fine materials stirred up by pouring the water into the casing. This collection of fines will typically lower the percolation rate. However, because the sands are relatively clean, it was anticipated that this would not affect the test results. An in depth review of the test data has shown that this did appear to affect the test data.

Horizontal permeability rates are typically four times greater than vertical rates. The open hole test will provide primarily horizontal percolation rate estimations while the open end test will provide primarily vertical rate estimations. The open hole results were approximately $1x10^{-3}$ to $1x10^{-4}$ cm/sec while the open end tests were approximately $1x10^{-4}$ to $1x10^{-5}$ cm/sec. This indicates a difference of approximately 10 or more. This may be a result of the collection of disturbed fines problem discussed earlier and/or the increase in density of the material with depth. It is suggested that the results of the open hole tests (i.e. no casing) be used in the pond design and evaluation as the results appear more reliable.

The additional test information will be added to the double ring and constant head test results sheets. The rate provided for TA-4 is incorrect and should be 3.81×10^{-3} cm/sec. This will be corrected.

Our report will be revised and resubmitted with the changes resulting from the comments discussed in this letter. We appreciate the opportunity to provide our services on this project, and look forward to a successful completion. If you have any questions concerning the information provided in this report, please do not hesitate to contact our office.

Sincerely,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Geotechnical Engineer

Submittals: (4) Addressee
(1) Theresa Puckett, P.E., FDOT Dist 1
(1) File

F:\PROJECTS\C395040\PONDS\COMMNT3.WPD

August 27, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Clayton Lee, P.E.
Senior Project Manager

Subject: Revised Groundwater Information Table
Interstate 4 and US 27 Interchange in Polk County
Polk County, Florida
State Project Nº 16320-1408
W.P.I. Nº 1147942
Williams Project Nº C395040

Dear Mr. Lee:

Per your request, Williams Earth Sciences has performed an in-depth review of the groundwater conditions at the above referenced project site. The site conditions, described in our report, basically consists of a large sand ridge with typically low water table levels. The US Soil Conservation publications do not provide a Seasonal High Water Level (SHWL) for the majority of the project site. In addition, the naturally occurring sands encountered in our subsurface exploration did not retain the indicators of the SHWL. Therefore, this estimation had to be made off of the water levels recorded in the borings. Through discussions with Clayton Lee at HDR, it was agreed that the SHWL should be approximately 0.5 meters above the measured water tables at the site. However, further review of the information indicated that this determination would not be sufficient.

The subsurface exploration was performed in roughly three separate field efforts. The first effort was for the BDR report and consisted of primarily deep borings. These borings were primarily allowed to stand overnight prior to measurement of the water table. The water level in the borehole will typically stabilize or equalize at the ground water level during the overnight period. The second effort was performed for the roadway structures. Due to the depth of roadway cut and fill on the project, there were several deeper borings performed that provide water level information. Again, for the most part, these borings were permitted time to stabilize to the groundwater conditions. The third field effort was performed for the pond structures. Due to the schedule required to meet plan deadlines, these borings were generally not provided appropriate time to stabilize. This results in elevated water table readings.

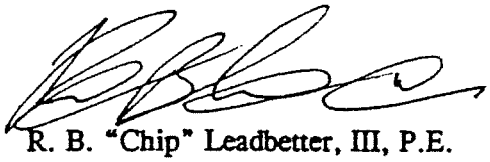
Attached with this letter is a plot of the deeper borings performed on the project to date. The vertical bar represents a boring with the upper green section being the portion of the boring above the SHWL (based on the measured water level). The blue section represents the portion of the boring below the SHWL (based on the measured water level) where the boring was allowed to stabilize. The red sections indicate the portion of the boring below the SHWL (based on the measured water level), where the boring was not allowed to stabilize. It is felt that the borings with red sections are elevated and do not indicate the true water table elevation. The hatched light blue band indicates the zone which represents the best estimation of the SHWL.

Due to the consistent sands over the project site and the distribution of borings with equalized or stabilized water levels, it appears appropriate to use an SHWL of approximately +40 m elevation for the interchange portion of the project. This does not apply to the ponds at the far eastern and western portions of the project (Ponds A and E). These ponds will retain the previously listed SHWL levels.

We appreciate the opportunity to provide our services on this project, and look forward to a successful completion. If you have any questions concerning the information provided in this report, please do not hesitate to contact our office.

Sincerely,

WILLIAMS EARTH SCIENCES, INC.



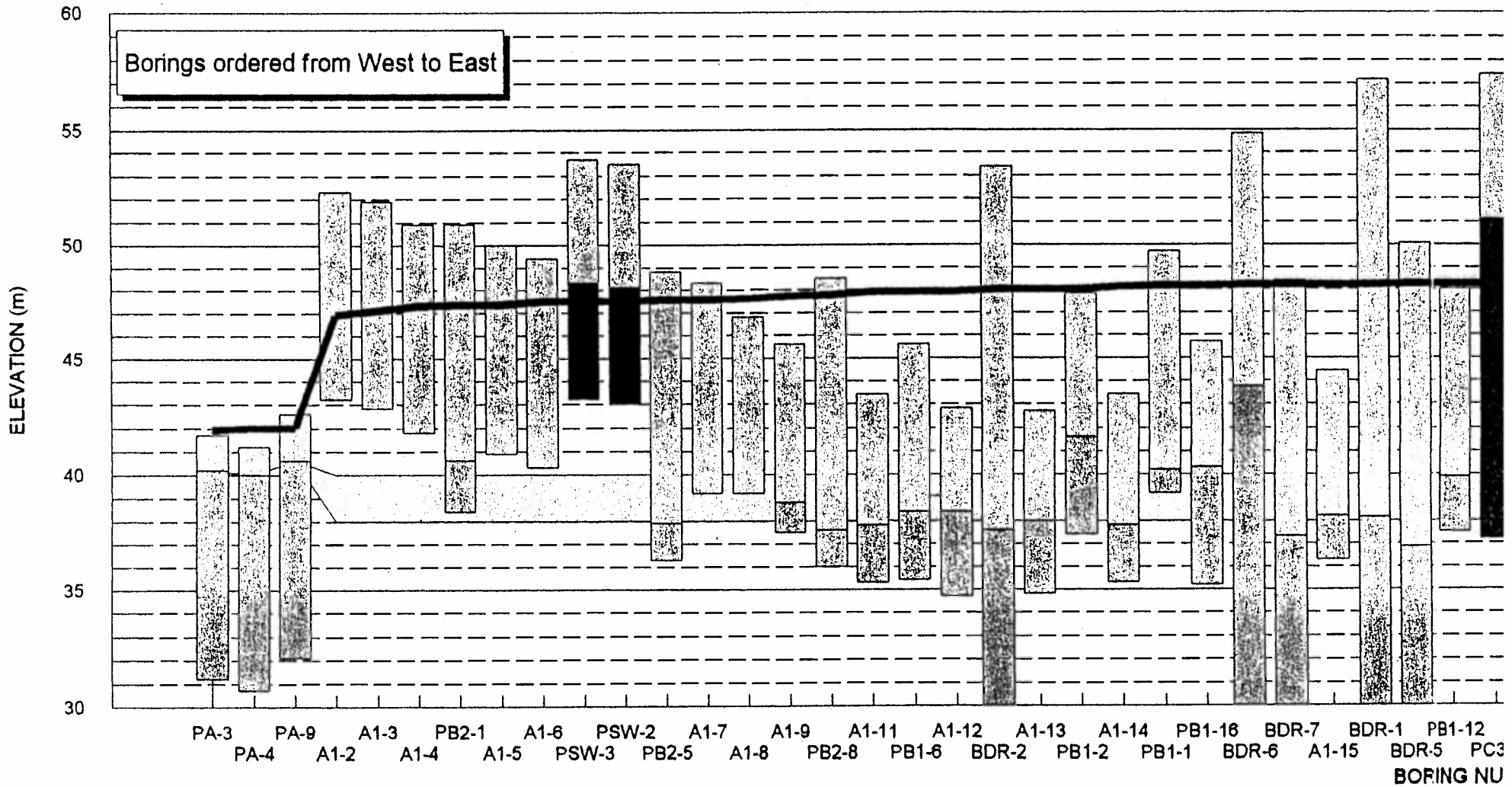
R. B. "Chip" Leadbetter, III, P.E.
Geotechnical Engineer

Submittals: (4) addressee
(1) Theresa Puckett, FDOT Dist 1
(1) File

F:\PROJECTS\C395040\PONDS\COMMNT2.WPD

SHWL ESTIMATION BASED O

I4\US27 C



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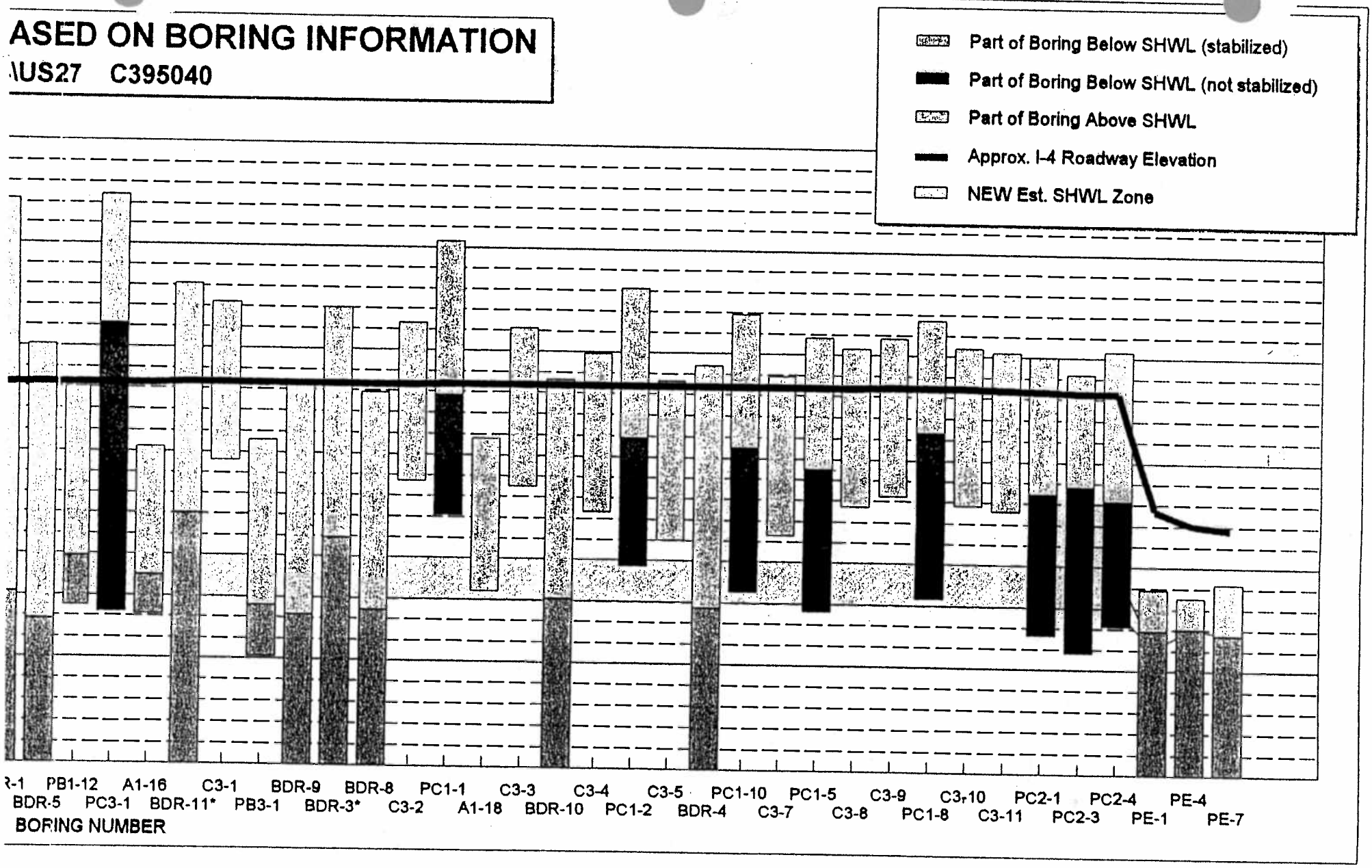
\US27 C395040



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C1.9

August 24, 1998

HDR Engineering, Inc.
201 South Orange Avenue, Suite 925
Orlando, Florida 32801-3413

Attention: Mr. Clayton Lee, P.E.
Senior Project Manager

Subject: Revised Groundwater Information Table
Interstate 4 and US 27 Interchange in Polk County
Polk County, Florida
State Project Nº 16320-1408
W.P.I. Nº 1147942
Williams Project Nº C395040

Dear Mr. Lee:

As discussed in our phone conversation on August 24, 1998, attached to this letter is the revised information regarding groundwater conditions for the above referenced project. The attached Table 2.2 may replace the table presented in the pond structures report dated August 18, 1998.

As discussed in our conversation, the Seasonal High Water Level (SHWL) was detectable during the field exploration. The clean sands typically found over the majority of the project do not retain the indicators for the determination of the SHWL. Therefore, as agreed in our conversation, Table 2.2 was revised to include SHWL estimated from the groundwater measurements recorded at the time of our borings with the SHWL estimated to be approximately 0.5 meters above the measured groundwater level.

We appreciate the opportunity to provide our services on this project, and look forward to a successful completion. If you have any questions concerning the information provided in this report, please do not hesitate to contact our office.

Sincerely,

WILLIAMS EARTH SCIENCES, INC.

R. B. "Chip" Leadbetter, III, P.E.
Geotechnical Engineer

Submittals: (4) addressee
(1) Theresa Puckett, FDOT Dist 1
(1) File

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Table 2.2 Summary of Groundwater Conditions

Proposed Pond	Test Nº	Groundwater Depth (meters)	Seasonal High Water Level (meters)	Ground Elevation (meters)
Pond A-1	PA-3	5.0	1.5 - 2.0	41.7
	PA-4	3.2	1.2 - 1.7	41.2
	PA-9	6.1	2.0 - 2.5	42.6
Pond B-2 (a)	PB1-1	Not Encountered	9.5 - 10.0 * 40.2	49.7
	PB1-2	7.0	6.2 - 6.7 * 41.6	47.8
	✱ PB1-6	7.9	7.2 - 7.7 * 38.4	45.6
	PB1-12	8.8	8.1 - 8.6 * 39.9	48.0
	✱ PB1-16	6.1	✓ 5.4 - 5.9 * 40.3	45.7
Pond B-2 (b)	PB2-1	11.0	✓ 10.3 - 10.8 * 40.6	50.9
	PB2-5	11.6	10.9 - 11.4 * 37.9	48.8
	PB2-8	11.6	10.9 - 11.4 * 37.6	48.5
Pond B-2 (c)	PB3-1	8.7	✓ 8.0 - 8.5 * 37.6	45.6
Pond C-2 (a)	PC1-1	8.2	7.5 - 8.0 * 47.8	55.3
	PC1-2	7.9	7.2 - 7.7 * 45.9	53.1
	✱ PC1-5	7.0	6.3 - 6.8 * 44.5	50.8
	✱ PC1-8	6.1	5.4 - 5.9 * 46.3	51.7
	✱ PC1-10	6.1	✓ 5.4 - 5.9 * 46.5	51.9
Pond C-2 (b)	PC2-1	7.3	6.6 - 7.1 * 43.4	50.0
	PC2-3	6.1	✓ 5.4 - 5.9 * 43.8	49.2
	PC2-4	7.9	7.2 - 7.7 * 43.1	50.3
Pond C-2 (c)	PC3-1	7.0	✓ 6.3 - 6.8 * 51.1	57.4
Pond D-2	PD-3	7.6	6.9 - 7.4 *	52.2
	PD-5	7.9	7.2 - 7.7 *	53.3
	PD-7	6.1	5.4 - 5.9 *	53.0
Pond E-3	PE-1	4.0	2.0 - 3.0	38.9
	PE-4	3.0	1.5 - 2.5	38.5
	PE-7	5.5	2.5 - 3.0	39.2

Table 2.2 Continued

Proposed Pond	Test N#	Groundwater Depth (meters)	Seasonal High Water Level (meters)	Ground Elevation (meters)
Pond SW-2	PSW-2	6.1	5.4 - 5.9 *	53.5
	PSW-3	6.1	5.4 - 5.9 *	53.7
Pond NW-1	PNW1-2	7.0	5.3 - 5.8 * 453	50.6
	PNW1-3	7.9	7.2 - 7.7 * 45.0	52.2
Swale NW-4	PNW4-2	Not Encountered	>2.5 **	51.1
	PNW4-4	Not Encountered	>2.5 **	49.8
	PNW4-6	Not Encountered	>2.5 **	45.2

* Could not be determined from field exploration. Estimated based on groundwater tables measured in boreholes.

** Water table and/or SHWL not encountered during field exploration.

Table 4.1 Summary of Percolation Tests

Test N°	Station and Offset	Test Method	Borehole Depth (meters)	Groundwater Depths (meters)	Hydraulic Conductivity (cm/sec)
Constant Head Test					
TA-4	601+26, 80m LT	Open-Hole	4.0	3.2	$1.3X10^{-4}$
TB1-1	144+89, 83m LT	~~Open-End~~	4.0	Not Encountered	$1.6X10^{-5}$
TB1-12	147+09, 96m LT	~~Open-End~~	4.0 44.0	8.8 39.7	$1.2X10^{-5}$
TB2-8	609+94, 83m LT	~~Open-End~~ K_V	6.1 42.4	11.6 36.9	$5.9X10^{-6}$ PB2B
TB3-1	148+97, 58m LT	Open-Hole	4.0 41.6	8.7 36.9	$1.0X10^{-3}$ PB3-1
TC1-1	141+05, 71m RT	Open-Hole	7.0 48.3	8.2 47.1	$1.6X10^{-3}$ PC1-1
TC1-5	142+10, 184m RT	Open-Hole	4.0 46.8	7.0 43.9	$1.8X10^{-3}$ PC1-5
TC2-1	615+37, 93m RT	Open-Hole	7.0 43.0	7.3 42.7	$4.1X10^{-4}$ PC2-1
TC3-1	140+24, 80m RT	Open-Hole K_H	13.4 44	7.0 50.4	$3.9X10^{-4}$
TD-7	128+10, 97m LT	Open-Hole	6.1	6.1	$2.7X10^{-3}$?
TE-1	624+08, 174m RT	Open-Hole	4.0	4.0	$4.5X10^{-3}$
TSW-3	302+29, 37m RT	Open-Hole	4.0	6.1	$1.3X10^{-2}$
TNW1-3	155+69, 48m LT	~~Open-End~~	4.6	7.9	$8.4X10^{-5}$
Double-Ring Infiltrometer Test					
Test N°	**Station and Offset**	**Test Method**	**Borehole Depth (meters)**	**Groundwater Depths (meters)**	**Infiltration Rate (cm/sec)**
TNW4-4	202+36, 62m RT	Double-Ring K_V	2.0 47.8	Not Encountered	$3.5X10^{-2}$

GROUND ELEV | POND BOTTO

48.0 (+2.2) 41.
485 (-1.85) 44.
456 (-0.45) 42
55.3 ——
50.8 (+2.65) 44.
50.0 (-1.75) 44
57.4 (-8.15) 5
49.8 (+3.55) 4

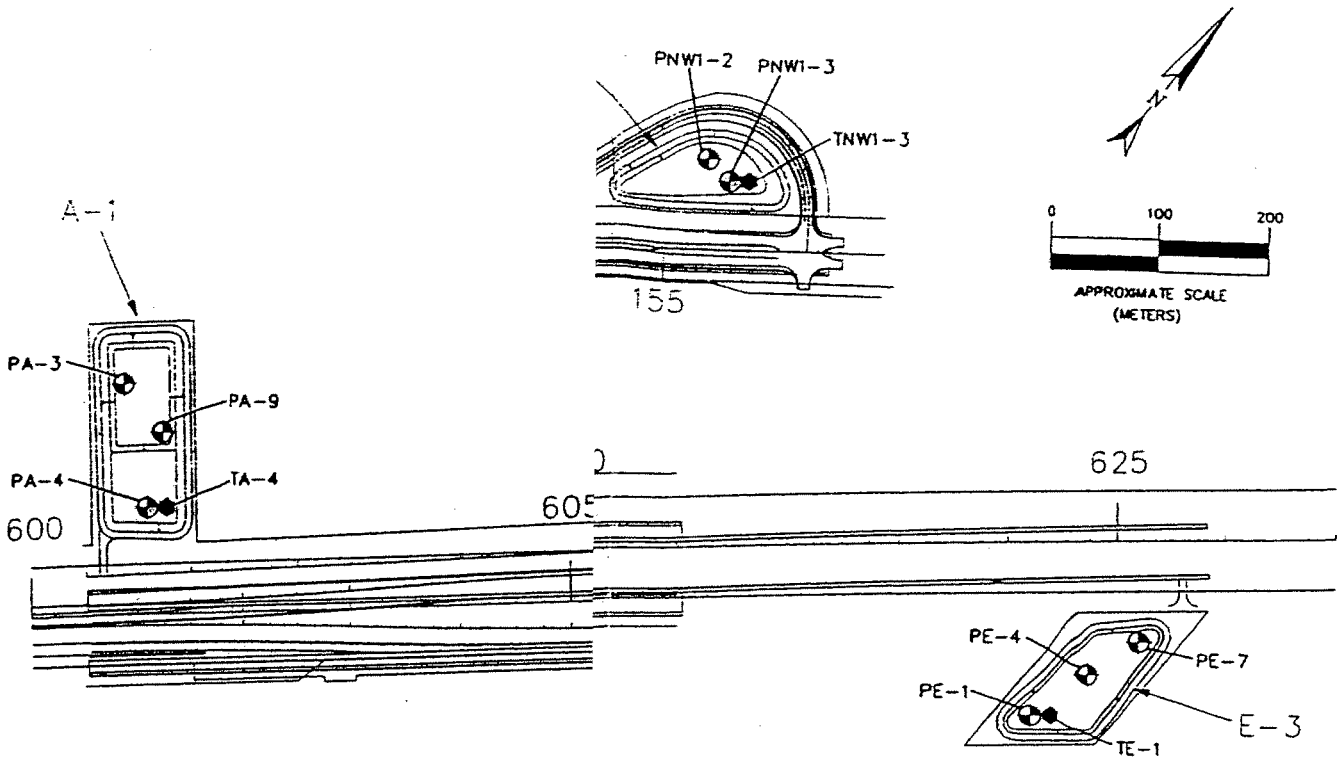
- ANW44

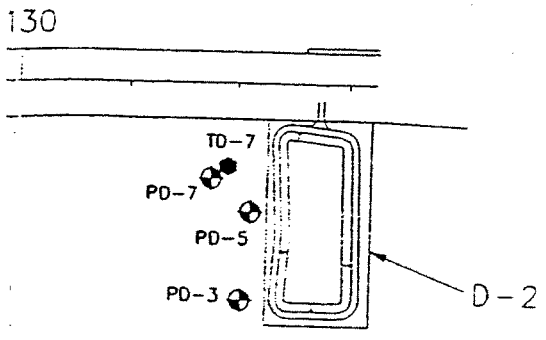
8/25/08

For open-End (K_V) ∴ use $F_s = 1$

For open-Hole (K_H) ∴ use $F_s = 2$

For Double Ring (K_V) surface ∴ use $F_s = 4$





LEGEND

- APPROXIMATE LOCATION OF
- APPROXIMATE LOCATION OF
- APPROXIMATE LOCATION OF

I-4 / US 27
POLK COUNTY, FLORIDA

FIELD EXPLORATION PLAN

Drawn By:	TEJ	Date:	8-13-98	Scale:	AS SHOWN
Checked By:	KL	Report No.	C395040	Figure No.	2

E-1206

also in Appendix C. Based on the results of the corrosion testing, the samples tested were classified as Slightly to Extremely Aggressive.

Table 3.2 – Summary of Environmental Classification

Sample ID	Sample Type	pH	Chlorides (ppm)	Sulphates (ppm)	Resistivity (ohm-cm)	FDOT Classification *	
						Concrete	Steel
1	Soil	8.5	≤ 60	< 2	> 10,000	S	S
2	Soil	8.1	≤ 60	< 2	> 10,000	S	S
3	Soil	7.6	≤ 60	10	6200	S	S
4	Soil	8.5	≤ 60	< 2	> 10,000	S	S
5	Soil	6.0	≤ 60	< 2	> 10,000	M	M
6	Soil	7.0	≤ 60	35	> 10,000	S	S
7	Soil	5.7	≤ 60	5	> 10,000	M	E
8	Soil	8.3	≤ 60	22	> 10,000	S	S
9	Soil	8.5	≤ 60	20	> 10,000	S	S

* S - Slightly Aggressive M - Moderately Aggressive E - Extremely Aggressive

3.6 Limerock Bearing Ratio

Limerock Bearing Ratio (LBR) tests were performed in accordance with the Florida Department of Transportation Standard FM 515 including a Modified Proctor Test. The LBR test is a measure of the bearing capacity of a soil. The test consists of measuring the load required to cause a standard circular plunger (area of 19.4 square centimeters) to penetrate a specimen at a specified rate. The LBR is the load in MPa units, required to force the plunger into the soil 0.25 centimeters expressed as a percentage of the load in MPa units, required to force the same plunger the same depth into a standard sample of crushed limerock. A summary of the preliminary LBR tests performed is shown in Table 3.3 below, while the Limerock Bearing Ratio (LBR) curves and corresponding proctor curves are shown in Appendix C.

IS BARTH SCIENCES, INC
CORPORATE OFFICE:
10600 Endeavour Way, Largo, FL 33777
Largo: (813) 641-3444 Fax: (813) 641-1618
Jacksonville: (904) 262-6662 Fax: (904) 262-6664
Panama City: (904) 747-8418 Fax: (904) 766-2464

CORROSION TEST RESULTS

Job Name: I-4 @ U.S. 27
Job No.: C395040
Tested by: Monica L. Fowler

Sample ID	Sample Date	Sample Location	Sample Type	Sample Depth (Ft.)	pH	Chlorides ppm	Sulphates ppm	Resistivity ohm-cm	FDOT Classification*	
									Concrete	Steel
✓1 US 27 50	3/2/98	US 27, Sta. 138+00 ℄ Light brown medium to fine sand with limerock fragments (A-3)	Soil	0-1.0	8.5	≤60	<2	>10,000	S	S
✓2 US 27 50	3/2/98	US 27, Sta. 156+00℄ Reddish brown medium to fine sand (A-3)	Soil	0-1.0	8.1	≤60	<2	>10,000	S	S
✓3 US 27 50	3/2/98	US 27, Sta. 131+00℄ Grayish brown medium to fine sand with minor roots (A-3)	Soil	0-1.0	7.6	≤60	10	6200	S	S
✓4 US 27 50	3/2/98	US 27, Sta. 150+00℄ Light reddish brown slightly silty fine sand with limerock fragments (A-3)	Soil	0-1.0	8.5	≤60	<2	>10,000	S	S
5 ✓ I 4 100	3/2/98	Ramp A-1, Sta. 1107+50 ℄, Tan medium to fine sand (A-3)	Soil	0-1.0	6.0	≤60	<2	>10,000	M	M

E-1208

W[illegible] EARTH SCIENCES, INC
CORPORATE OFFICE:
10600 Endeavour Way, Largo, FL 33777
Largo: (813) 541-3444 Fax: (813) 541-1616
Jacksonville: (904) 292-6992 Fax: (904) 292-6994
Panama City: (904) 747-6419 Fax: (904) 783-3484

CORROSION TEST RESULTS

Job Name: I-4 @ U.S. 27
Job No.: C395040
Tested by: Monica L. Fowler

Sample ID	Sample Date	Sample Location	Sample Type	Sample Depth	pH	Chlorides ppm	Sulphates ppm	Resistivity ohm-cm	FDOT Classification*	
									Concrete	Steel
6 ✓ I-4 100	3/2/98	Sta. 618+00, Light reddish brown medium to fine sand with pockets of white clayey fine sand (A-3)	Soil	0-1.5	7.0	≤60	35	>10,000	S	S
7 ✓ I-4 100	3/2/98	C1-31 Sta. 3107+52 Tan medium to fine sand (A-3)	Soil	0-1.0	5.7	≤60	5	>10,000	M	E
8 I-4 100	3/2/98	Sta. 602+50, Light reddish brown medium to fine sand (A-3)	Soil	0-1.5	8.3	≤60	22	>10,000	S	S
9 I-4 100	3/2/98	Sta. 610+00 ℄, Light orange medium to fine sand (A-3)	Soil	0-1.0	8.5	≤60	20	>10,000	S	S

* S - Slightly Aggressive M - Moderately Aggressive E - Extremely Aggressive

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Portions of May 2002 Listed Species Evaluation

Appendix G

LISTED SPECIES EVALUATION

INTERSTATE 4

Project Development and Environment Study
From West of Memorial Boulevard
To the Polk/Osceola County Line
Polk County, Florida

The proposed action consists of widening the existing four-lane divided highway to six general purpose lanes, four special use lanes and sufficient right-of-way for future inclusion of rail service in the median.

The Florida Department of Transportation
District One
Bartow, Florida

May, 2002

H.W. LOCHNER, INC.
PROJECT QUALITY ASSURANCE CERTIFICATION

1330

Lochner Project Number

LISTED SPECIES EVALUATION

INTERSTATE 4

Project Development and Environment Study

From West of Memorial Boulevard
To the Polk/Osceola County Line
Polk County, Florida

DISTRICT ONE

DEPARTMENT OF TRANSPORTATION

May, 2002 Submittal

Checking has been carried out under the direction of

_____

Roger Menendez, AICP.

Adherence to QC procedures has been confirmed by _____

Herschel C. Conner, AICP

Quality Assurance review has been accomplished by _____

Principal-in-Charge

I certify that all elements of the project have been subjected to the procedures and quality control process described in the approved Project Management and Quality Control Plan, and am now authorizing delivery to client.

_____

Principal-in-Charge

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES:

1.0 INTRODUCTION

This Listed Species Evaluation is prepared in accordance with the Florida Department of Transportation's (FDOT) Project Development and Environment (PD&E) Manual, Part 2, Chapter 27, and Section 7 of the Endangered Species Act (ESA) of 1973, as amended.

This document is a review, update, and addendum of previous studies that were performed in 1998 and 1994. The information contained herein includes data collected from fieldwork performed since the original study.

1.1 Project Description

The FDOT is proposing improvements to I-4 from west of Memorial Boulevard (MP 2.565) to the Polk/Osceola County line (MP 32.022), a study length of approximately 47.4 km (29.5 mi.) to accommodate present and future traffic demands. These improvements include adding two additional lanes to the existing four-lane divided highway with an ultimate expansion to ten lanes. Several existing interchanges would be improved. Structures at several non-interchange locations (including the CSX Railroad overpass) would be replaced to accommodate the proposed I-4 typical section. Future I-4 mainline right-of-way is proposed up to a maximum of 128.8 m (422.6 ft.).

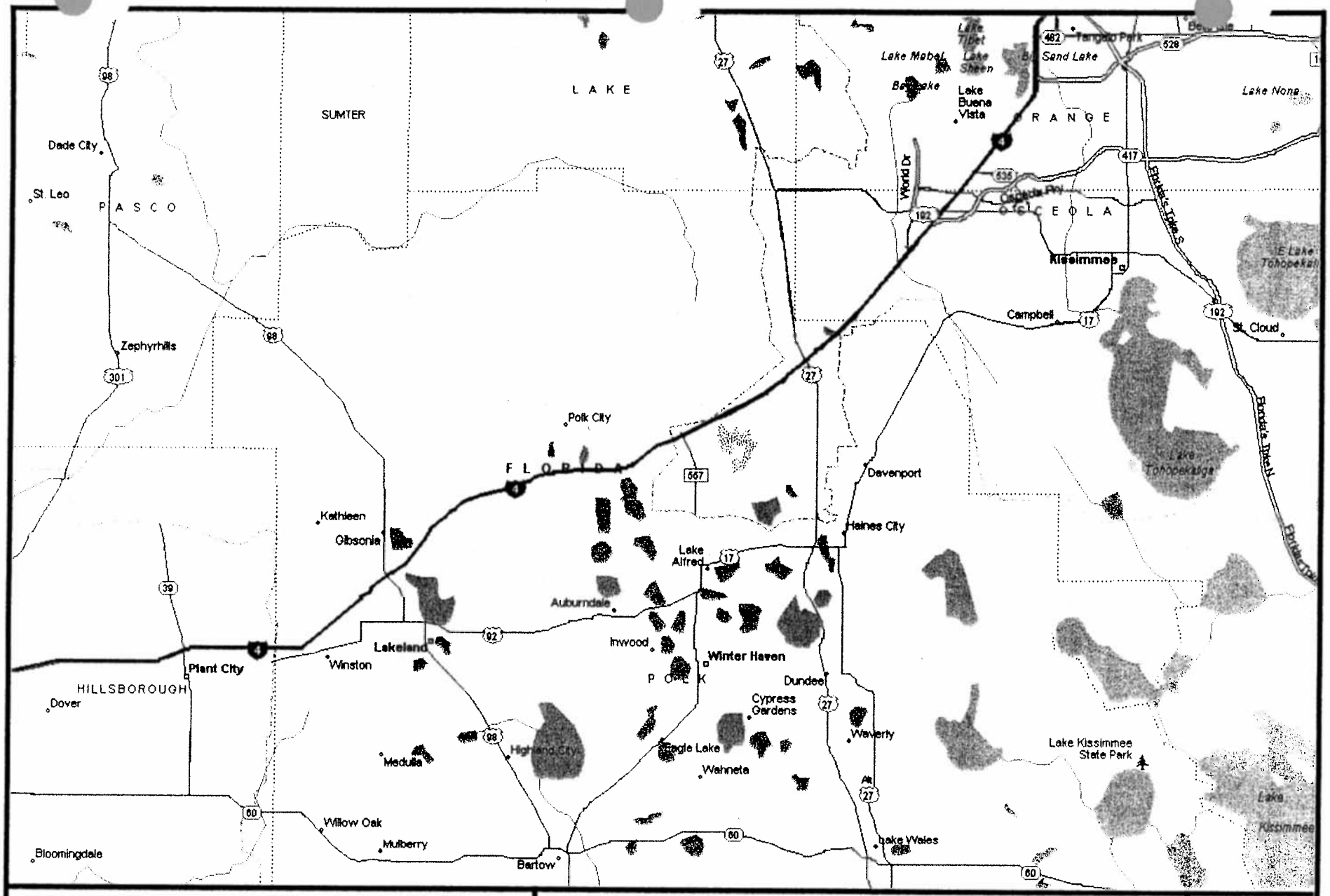
The I-4 PD&E study was comprised of eight segments (numbered 2 through 9). Project segment limits and numbers have been arranged corresponding to the anticipated future design contracts for I-4 and are shown in Table 1.

Table 1. PROJECT SEGMENTS

I-4 Endangered Species Biological Assessment

Segment Number	Length	Description
2	5.8 km (3.6 mi)	West of Memorial Blvd. (MP 2.565) to West of US 98 (MP 6.15)
3	9.5 km (5.9 mi)	East of US 98 (MP 6.68) to East of SR 33 (MP 12.608)
4	9.8 km (6.1 mi)	East of SR 33 (MP 12.608) to East of SR 559 (MP 18.669)
5	6.4 km (4.0 mi)	East of SR 559 (MP 18.669) to East CR 557 (MP 22.647)
6	10.0 km (6.2 mi)	East of CR 557 (MP 22.647) to West of 27 (MP 28.838)
7	3.8 km (2.4 mi)	East of US 27 (MP 29.501) to the Polk/Osceola County line (MP 32.022)
8	0.8 km (0.5 mi)	US 98 interchange, from West of US 98 (MP 6.15) to East of US 98 (MP 6.68)
9	1.1 km (0.7 mi)	US 27 interchange, from West of US 27 (MP 28.838) to East of US 27 (MP 29.501)

Segment 1 of I-4 is not included in this PD&E study. Segment 1 covers the area from the Hillsborough/Polk County line to West of Memorial Boulevard, a distance of 5.3 km (3.3 mi.). A Design Reevaluation for I-4 Segment 1 was previously conducted in January 1994 as part of a Design Reevaluation for the Polk County Parkway, in order to evaluate the impacts of the Polk County Parkway (by others) interchange on I-4 in the vicinity of Clark Road. This PD&E study excludes Segment 1 of I-4 in Polk County from the Hillsborough/Polk County line to North Galloway Road. The project location is shown in Figure 1.



I-4 Listed Species Evaluation
Polk County

I-4 Project Location Map

Figure 1

1.2 Flora

So much of the I-4 corridor has been developed that very little native flora remains intact. Wetland areas have been less impacted than upland areas. The relatively intact upland areas existing within the project corridor are on the whole not unique or of outstanding quality. The majority of the areas are xeric turkey oak and live oak communities. These areas have been shown to support listed species, although the habitat type is marginal and highly fragmented. Most of the federally listed species (see the Polk County Protected Species List in Appendix A) occur on the white sand Pleistocene ridges of central Florida, all of which have been converted to citrus groves and pasture within the project corridor. The typical pine flatwoods found throughout most of Florida have been converted to pasture or mined for phosphate throughout the length of the project corridor leaving little possibility of intact floral communities. The most intact habitat throughout the I-4 corridor that may support protected species is the wetland areas. Although none of the wetland areas are relatively unique, the size and complex interrelationship among these areas may provide unique environmental conditions supportive of individual populations.

Table 2 lists the confirmed sightings or occurrences of protected species within the project corridor.

Table 2 - I-4 PROTECTED SPECIES OBSERVATIONS

I-4 Endangered Species Biological Assessment

Species	USFWS	FWC	FDACS
Scrub Jay (Aphelocoma coerulescens coerulescens)	T	T	-
Bald Eagle (Haliaeetus leucocephalus)	T	T	-
Fl. Sandhill Crane (Grus canadensis pratenssis)	-	T	-
Woodstork (Mycteria americana)	E	E	-
Sherman's fox squirrel (Sciurus niger shermani)	-	SSC	-
Sand skink (Neoseps reynoldsi)	T	T	-
Blue-Tailed Mole Skink (Eumeces egregious lividus) *	T	T	
Alligator (Alligator mississippiensis)	T	SSC	-
Gopher Tortoise (Gopherus polyphemus)	-	SSC	-
Beargrass (Nolina brittoniana)	E	-	E
Garberia (Garberia heterophylla)	-	-	T
Leafless Beaked Orchid (Stenorrhynchos lanceolata)	-	-	T
Scrub Plum (Prunus geniculata)	E		E
Clasping warea (Warea amplexifolia)	E		E

T=threatened, E=endangered, SC=species of special concern

* Assumed to be present.

1.3 Animals

1.3.1 Invertebrates

Population ecology of invertebrates is a poorly understood area when related to the abundance and distribution of a certain species. Most of the invertebrates which are protected occur as commensals with other protected species or are obligate species to specific habitat types which are small and isolated or rapidly diminishing. Only one

species of listed insect (Anomala exigua, probably extinct) has been reported within Polk County once this century, due to the presence of its commensal host.

No guidelines exist for this particular species although it is commensal with the gopher tortoise and mitigative efforts required for the tortoise may apply to this species in tandem.

1.3.2 Amphibians

The only possible, and confirmed in Polk County, occurrence of a protected amphibian is the gopher frog (Rana capito aesopus=Rana areolata), which is known to be commensal with the gopher tortoise. Mitigative efforts for the gopher tortoise may apply to this species.

1.3.3 Reptiles

Due to the extent of habitat degradation within the project corridor, the possibility of impacting a habitat that is critical to the survival of relatively mobile creatures (such as alligators and snakes) is remote. Evidence of impacts to an existing reptile population is the presence of gopher tortoise burrows within the I-4 corridor which infers the possible occurrence of listed gopher tortoise commensal species.

Gopher tortoise appropriate habitat within the I-4 corridor was surveyed according to Fl. Game and Fresh Water Fish Commission (GFC) Technical Report No. 4 guidelines. The scattered presence of gopher tortoises within the I-4 corridor will require continued coordination with the Florida Fish and Wildlife Conservation Commission (FWC). Impacts, if any, will be mitigated for using the Platt Branch Mitigation Site.

Sand skink sampling stations were set up late in December, 2001. These sampling stations consist of various size, square plywood and pressed wood sheets that were placed on the

ground (cover boards) in areas of potential habitat and occurrence. During visits on March 12, 14, 22, and April 11, 2002, all cover boards were lifted and the substrate raked.

Due to the potential for the occurrence of eastern indigo snakes, and their habit of using inactive gopher tortoise burrows, the FDOT Standard Protection Measures for the eastern indigo snake will be followed.

1.3.4 Birds

The mobile nature of birds makes it possible for sightings of most of the listed species to occur within the I-4 corridor; however the chance of impacting valuable habitat that is critical to any one species is remote. Reports of the Florida scrub jay have been confirmed in Segment 7. Direct impacts to Florida scrub jay territories may result within the proposed project corridor. No burrowing owls have been sighted within the project corridor, although potential habitat exists adjacent to the project corridor. The presence of the bald eagle has been noted adjacent to the project area and nesting trees are actively monitored by the U.S. Fish and Wildlife Service (USFWS) and FWC. The project is located within the protection zones of three bald eagle nests. Rookery and nesting areas have been identified by FWC for wading bird species, in particular the Florida sandhill crane. Potential habitat for nesting cranes does occur along the project corridor; however, no nests were found within or adjacent to the I-4 right-of-way.

1.3.5 Mammals

The presence of gopher tortoises within the I-4 corridor creates the possibility that the Florida mouse (Podomys floridanus) is also present. This mammal is known to be commensal with the gopher tortoise and has been confirmed to occur in Polk County. Impacts to individuals of this species may occur in conjunction with impacts to individual gopher tortoises. Mitigative efforts for this species may be tied to gopher tortoise impacts. No guidelines currently exist for the Florida mouse.

Other reported species include Sherman's fox squirrel and the Florida black bear (Ursus americanus floridanus). The lack of suitable habitat and the level of disturbance in the project corridor preclude these species from the area. Use of adjacent properties is possible and one fox squirrel was observed 200 yards south of the I-4 right-of-way. Considerations will be made regarding the unimpeded movement of fauna in the form of wildlife crossings located in appropriate areas.

2.0 METHODOLOGY

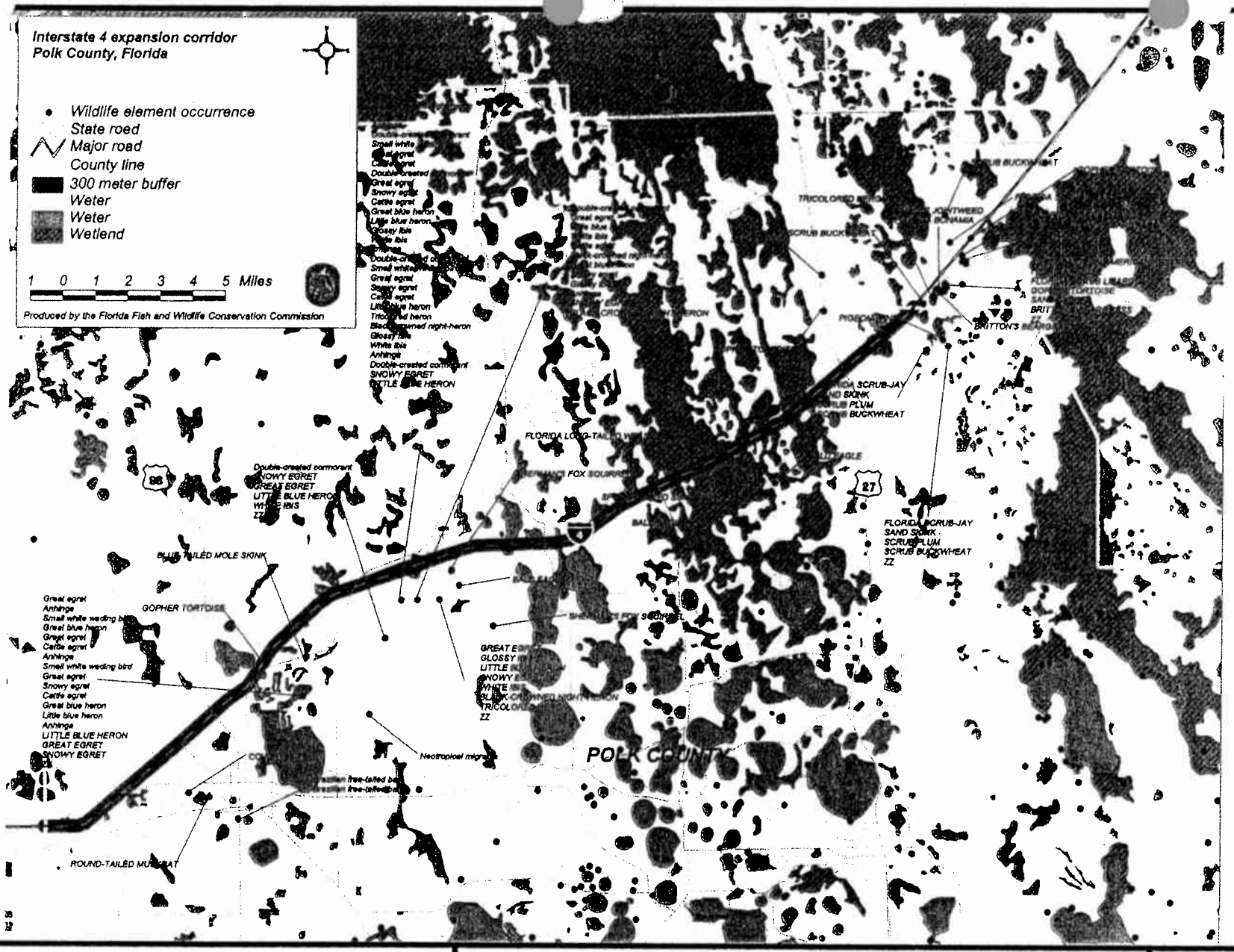
This section describes the methodology used to evaluate the habitat, wildlife and protected species that may occur within the project area. Project methods and materials used for these tasks are listed below and further discussed in the following sections:

- USFWS, FWC agency and responses;
- USGS Quad Sheet, NWI maps, project aerials;
- Discussions with agency personnel and knowledgeable parties;
- Reference materials and information from previous studies;
- Field surveys and observations;
- Correspondence with agencies and other organizations; and
- Florida Natural Areas Inventory (FNAI) Polk County Inventory.

2.1 Preliminary Data Collection

Using the response received from the FNAI, USFWS, and FWC, a preliminary literature search was conducted to determine the habitat requirements of the protected or listed species within the project area (Figure 2). Additionally, project biologists consulted standard references such as the *Rare and Endangered Biota of Florida*, and other studies to help determine potential listed species in the project area. Detailed review of project aerial photographs was undertaken (Appendix B), FWC LANDSAT images (Figure 3), and a preliminary field survey was conducted to determine the various habitat types within the project study area. The USFWS list was used as the list of species which may potentially

occur within the project study area. The list of potentially occurring protected species has been continually updated to reflect recent changes in listings.



I-4 Listed Species Evaluation

Polk County

I-4 Historical Protected Species

Figure 2

I-4 Listed Species Evaluation
Polk County

I-4 LANDSAT Imagery

Figure 3

2.2 Determination of Survey Methodology

Field review and surveys for all potentially occurring species were conducted. During field surveys, the presence of potential habitat and prey species were carefully assessed. In addition, on-going coordination with the agencies during the study was conducted to assure possible impacts were avoided and/or minimized. Approved USFWS and FWC guidelines and methodologies were used to conduct all surveys. Henry (1989) was specifically used to evaluate the project area for red-cockaded woodpecker habitat.

Initially, a comprehensive literature search was conducted in order to determine if protected species or critical habitat are present within the study area. The literature search included standard Florida references such as the *Florida Atlas of Breeding Sites for Herons and their Allies,* the FNAI, and the FWC's publication listing protected species and their status. As mentioned previously, a detailed review of project aerial photographs was conducted, along with a preliminary field survey in order to determine the various habitat types within the study area. Coordination with the USFWS and the FWC was initiated during the Advanced Notification process and has continued throughout the project. The agencies were asked to review the list of potentially occurring threatened and endangered species developed for the project and to either comment on or concur with the list. Following the data collection and preliminary field review, it was determined that general wildlife and floral surveys of existing habitats within the project corridor would be conducted to determine the presence of listed species.

3.0 DATA

3.1 Mammals

The Florida mouse and the Sherman's fox squirrel are the only protected mammals that may regularly occur in the I-4 corridor based on the existing and available habitat, field reviews, literature reviews and communication with the USFWS and the FWC. These species are

listed as species of special concern (SSC) by the FWC. Florida mouse occurrence is possible. The status of both of these animals is currently under review by the USFWS.

3.1.1 Florida Mouse

The Florida mouse has one of the smallest geographical ranges of any species of North American mammal and is the only genus of mammal endemic to Florida. The most commonly used habitats of the Florida mouse are sandpine and rosemary scrub, scrubby flatwoods, and sandhill. The well-drained soils of the xeric upland habitats used by the Florida mouse make them especially favorable for residential and commercial development and citrus culture. As a result of its narrow habitat specificity, the Florida mouse is extremely vulnerable to habitat loss.

General body form and coloration of the Florida mouse resembles typical members of the genus Peromyscus with enlarged eyes, ears, and hind feet but differs in the number of plantar tubercles. Populations range in length from 179-197 mm (7 - 8 in.) Omnivorous, the Florida mouse feeds on seeds, nuts, and invertebrates.

No estimate of the total population is available and due to reductions in suitable habitat, it is believed that the existing population is dwindling. The Florida mouse appears to be an exclusively burrow-dwelling species, frequently using the burrows of the gopher tortoise, constructing its own burrows and nest chambers off the main tortoise burrow.

3.1.1.1 Impacts

No verified observations of this species have been made within the project corridor. Scattered individual gopher tortoise burrows are present within the I-4 corridor enhancing the possibility that the Florida mouse may also be present. The development of the project will not affect any identified critical habitat or any existing population of the Florida mouse.

Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.1.2 Sherman's Fox Squirrel

The fox squirrel is the largest of the North American tree squirrels. Coloration is highly variable. Typically the top of the head is black, with nose and ears white. The remainder of the pelage is variable falling into one of three basic color morphs from all dark to light tan. Populations have been on the decline due primarily to the loss of habitat; long leaf pine and sandhill base communities. Reports of this species were made in the documentation for the Bridgewater Development of Regional Impact (DRI). This DRI is located adjacent to I-4 near CR 582 and occurs on both sides of I-4 west of the State Road (SR) 33 interchange (Segment 3).

3.1.2.1 Impacts

No standard survey methodology currently exists for this species; however, general pedestrian transects were surveyed and species observed were documented.

Potential habitat for this species does exist adjacent to the project corridor and one Sherman's fox squirrel was sighted on April 11, 2002 during field surveys for this project. This individual was seen in an old flat topped long leaf pine tree approximately 200 yards south of the I-4 right-of-way in Segment 7, and in the same general area as the scrub jays mentioned below.

It is not anticipated that any adverse impact to fox squirrel habitat will occur as a result of this project. No unique habitats or nesting sites were observed. However, a resurvey of the project corridor for nesting sites may be required prior to construction. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.2 Avifauna

The mobile nature of birds makes transitory sightings of many listed species possible along the I-4 corridor. Many species of wading birds have been observed foraging in the wetland areas of the I-4 corridor. Impacts to valuable habitats that are critical to any one species are limited due to the linear nature of the project. Areas of concern within the I-4 corridor include upland areas conducive to habitation by the Florida scrub jay, and areas adjacent to known and potential nesting sites of the Florida sandhill crane, the Southeastern American kestrel (Falco sparverius paulus), and the bald eagle. The wood stork and other wading birds are also species of concern since they have been observed, both singly and in small flocks, feeding in the I-4 corridor.

3.2.1 Florida Scrub Jay

The Florida scrub jay is the only bird species endemic to the state of Florida. It is classified as Threatened by the FWC and USFWS.

The Florida scrub jay was once found scattered throughout peninsular Florida, as was its requisite habitat, scrubby oaks and bare sand patches associated with extreme xeric conditions. They now occur only in central peninsular Florida restricted to the low growing oak scrub that occurs on well drained sandy ridges. This distinctive habitat is endemic to Florida and the scrub jay is the only bird whose distribution depends on patches of this rare habitat.

The Florida scrub jay is about the same size as the blue jay (Cyanocitta cristata), but lacks the crest and is paler in color. The male has sky blue underparts and breast band. A typical clutch consists of three greenish, brown-spotted eggs. Scrub jays are gregarious and often the offspring of mating pairs assist in the rearing of subsequent offspring before striking out to find their own territory. Offspring do not usually spend more than a year assisting the parents. Scrub jays are not far ranging and different familial groups can be found in close proximity to each other. Their diet consists of oak mast, nuts, berries, and insects.

During the development of the Master Plan of the Polk County section of I-4, several areas of interest in regards to protected species and unique habitats came to light. Subsequent field investigations indicated the need for a systematic search of specific areas.

The current predominant land use in the area is improved pasture and citrus grove. A large residential subdivision was platted for development within the Horse Creek area. This activity appears to have occurred decades ago and is no longer active. Presently, a large intact area of wetlands and some fringing uplands and upland island areas occur throughout the site. The very highest land areas have been cleared of native vegetation in the past, apparently for the production of citrus and pasture grasses. Very few areas still contain some of the original components of native vegetation. Predominantly sandhill vegetation, areas of turkey oaks (Quercus laevis), sky blue lupines (Lupinus diffuses), purple milkweed (Asclepias humistrata), pawpaw (Asimina spp.), and sandhill grasses (Dichanthelium spp.) occur sporadically along the southern side of I-4, east of US 27 within the project corridor (Segment 7). No active citrus groves occur south of I-4 within this area. To the north of I-4 are several areas of active and abandoned citrus groves, improved pasture with scattered live oak, emergent marsh and wet prairie areas.

3.2.1.1 Impacts

Survey methodology used for Florida scrub jays was in accordance with the established guidelines set forth in the GFC Nongame Wildlife Program Technical Report No.8.

Two clans of Florida scrub jays formerly existed in Segment 7 of the I-4 corridor at County Road 54. This appears to be the only known occurrence of the scrub jay along I-4 within Polk County. A total of eight birds were observed over a period of seven days during the fall (1994) surveys at this location. Five adult plumaged birds were observed acting as a distinct unit protecting territory when a taped vocalization of the alarm call was played. This response to the call was observed to decrease at a specific boundary which interfaced with an area occupied by a clan consisting of two adult plumaged birds and one juvenile plumaged bird.

These three birds were observed occupying and defending this territory against the five other jays.

A distinct territorial squabble occurred in a large live oak tree which sits prominently on a hillside overlooking most of the two territories. Members of both clans were seen using this tree as a lookout perch when not occupied by the other clan and would fly off towards their respective territory as members of the other clan approached.

Spring surveys conducted in April, 1995 revealed a total of six birds. The clan members were less distinct in their associations yet the clan territorial boundary appeared to remain the same as evident from foraging activities of various members.

The surrounding area was surveyed for additional clans or territories during both survey periods. No additional sightings or responses were made outside of the identified areas.

The site was surveyed again in November, 2000. One group of three scrub jays was observed at this time. The site was looked at again in March and April of 2002 and scrub jays were observed on both of these visits.

Direct impact to Florida scrub jay habitat may result within the proposed project. The widening of the road would directly affect 1.28 ha (3.17 ac) of Type III habitat within the territory of a clan but would probably not affect access to the remaining territories or the survival of the existing clans due to the negative roadway elevation relative to the surrounding grade and the apparent habituation to the traffic these clans exhibit. Mitigation for impacts to Florida scrub jay territories will be accomplished at a ratio of 2:1 through utilization of the FDOT Highlands County mitigation bank.

In accordance with Section 7 of the Endangered Species Act, consultation with the USFWS has been initiated.

3.2.2 Burrowing Owl

The burrowing owl subspecies (Speotyto cunicularia floridana), a member of the *Strigidae* family, which is found in Florida, is a small, ground dwelling owl, measuring approximately 23 cm. (9 in.) in length with a wingspan reaching 56 cm. (22 in.) The owl weighs an average of 135 to 150 grams (5 - 6 ounce). The burrowing owl is the only North American owl species in which males are larger than females. This sexual size dimorphism is not as pronounced in the Florida subspecies. The owl has a round head and lacks ear tufts. Adult plumage is brown with white bars and stripes on the back and beige with brown bars and stripes on the front. White feathers along the brow, under the eyes and across the throat give these owls the appearance of having eye brows, a mustache and a collar. During the breeding season, males appear to be lighter in color than females. Females spend long periods incubating eggs in the burrow and retain a dark feather coat. The lighter feather coat in males may be due to sun bleaching while guarding the burrow entrance. Burrowing owls have bright yellow irises; chocolate, olive and straw-colored irises have also been observed. The burrowing owl's bill is yellow or greenish-yellow. These owls have long un-feathered legs.

The nesting season begins in late March or April. Burrowing owls are found in open, dry grasslands, agricultural and range lands. They commonly perch on fence posts or on top of mounds outside the burrow. Burrowing owls have been reported to nest in loose colonies. During the nesting season, adult males forage over a home range of 2 to 3 square kilometers. Ranges of neighboring males may overlap considerably. A small area around the nest burrow is aggressively defended against intrusions by other burrowing owls and predators.

The burrowing owl is listed as a species of special concern by the FWC.

3.2.2.1 Impacts

No standard survey methodology currently exists for this species; however, general pedestrian transects were surveyed and species observed were documented.

No burrowing owls have been sighted within the project corridor, although potential habitat exists adjacent to the project corridor. A resurvey of the project corridor (or appropriate habitat) may be required prior to construction. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

It is not anticipated that there will be any impact to this species as a result of this project.

3.2.3 Bald Eagle

Considered to be endangered by the USFWS and threatened by the FWC, the bald eagle is a large blackish bird with a white head and tail. Juveniles resemble the adult golden eagle, but have a pale wing lining and a more massive bill. Primarily riparian, bald eagles build their nests near the shores of bodies of water or in marsh areas where they feed on fish and small water fowl. Nests can usually be found in the larger pine and/or cypress trees in the eagles' territory. A nesting pair will often use alternate nests in different years with both nests in close proximity to one another. Clutches usually consist of two to three eggs and are laid in late fall or winter. Both parents will care for the offspring.

Active nests are most easily spotted during nesting season, from early October to mid-May, when activity in and around a nest area increases. All construction will be accomplished outside of the primary zone distance, 228.60 to 457.20 m (750 to 1500 ft), during the nesting season in accordance with established USFWS guidelines.

Because the bald eagle is wide ranging, it has been seen in a diverse range of habitats from pine flatwoods to hardwood forests to agricultural areas. Its preferred habitat during the nesting season (October-May) includes the shores of fresh water lakes and rivers, marshes, wet prairies, salt marshes and coastal beaches, where food is readily available.

3.2.3.1 Impacts

The most current bald eagle information was obtained from Jennifer Swan with the FWC's Wildlife Research Unit in Gainesville, Florida. Latitude and longitude locations received for these nests have a possible error of 161 m. (0.10 mi.). This data shows there are three eagle nests whose protection zones overlap this project. PO050 B&C are located approximately 58.5 m.(192 ft.) north of I-4 and PO50D is located approximately 206 m. (675 ft.) south of I-4. All three nests are located in Section 20, Township 27 South, Range 24 East (Figure 4).

The USFWS has designated primary zones to extend 750 feet in all directions from bald eagle nests and a secondary zone to extend an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from each nest.

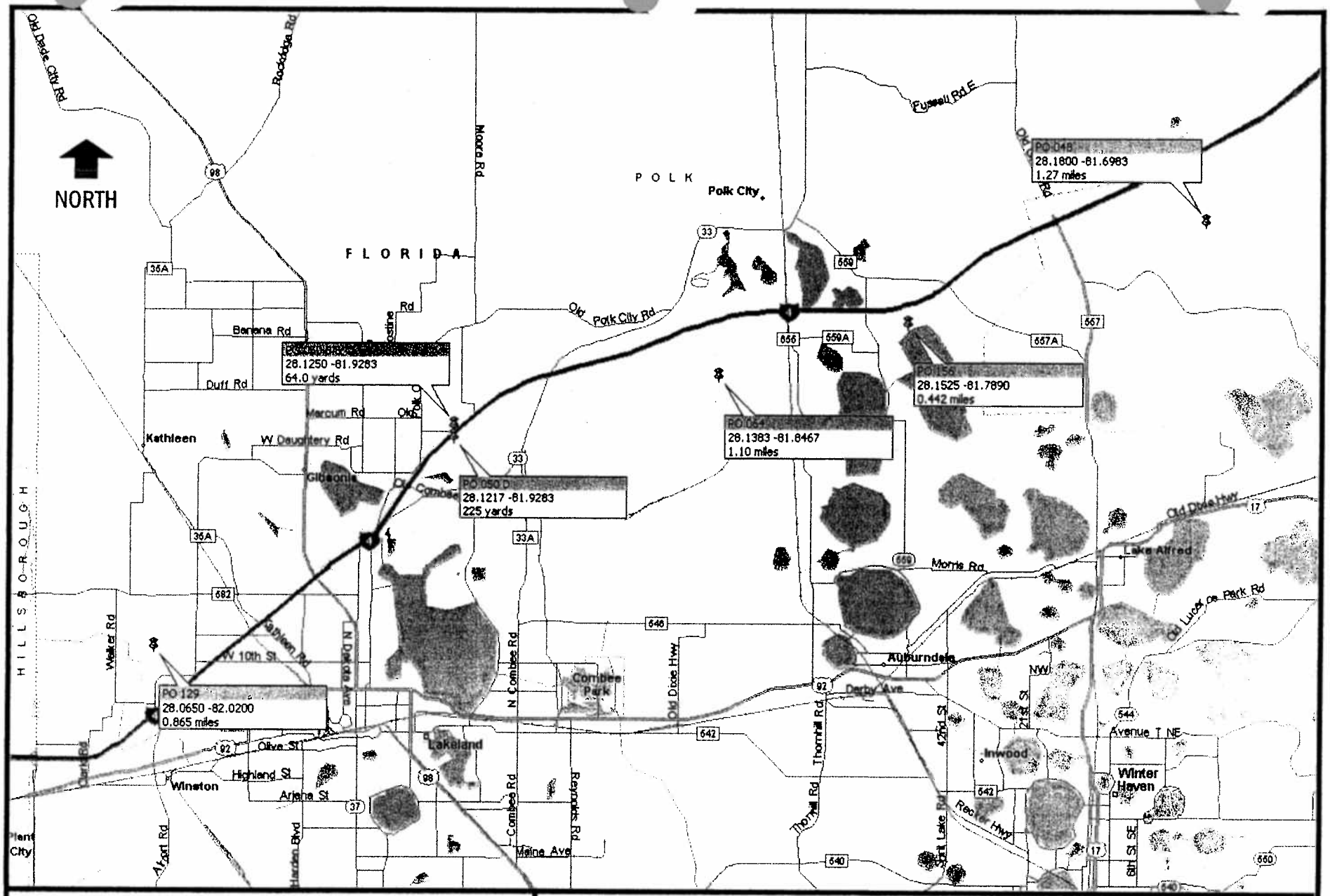
If construction is required within the protection zone of these eagles the FDOT will coordinate further with the appropriate agency(s). Ospreys and bald eagles compete for and use similar nesting resources. On occasion osprey nest sites from one year will house an eagle nest the following year. Contractors should note this possibility and prepare accordingly for potential changes in eagles' nests from one nest site to another over the course of a breeding season. The FDOT is committed to protect and prevent impacts to bald eagles' and their nests.

3.2.4 Florida Sandhill Crane

Florida sandhill cranes are 86-122 cm (34-48 in.) in height and have a wing span of up to 2 m (80 in). These birds are grey or brown in color and the adults have a red crown. Florida populations of this species are non-migratory and are found in Florida year round. Migrant cranes come from the Midwest to winter in Florida. Nesting takes place from January through June. Large nests are constructed in patches of marsh vegetation, such as pickerelweed and maidencane. Nests contain two large brown-spotted buff eggs. Sandhill cranes feed on a variety of plants and invertebrates.

The Florida sandhill crane prefers wet prairies, marshy lake margins, sparsely vegetated marshes and shallow flooded open areas. It avoids forests and deep marshlands. This subspecies is listed as threatened by FWC. The migratory species is not a listed species, but is conferred protection under the Migratory Bird Act.

Sandhill cranes have been observed utilizing suitable habitat areas along the I-4 corridor. A nesting location was reported south of the proposed right-of-way just to the west of CR 54 (Segment 7). Another nesting site is located approximately 2.01 km (1.25 mi.) south of I-4 and approximately 2.41 km (1.5 mi.) east of the SR 33 interchange. This second area is a multi-species rookery, identified as POLK001040 by the FWC.



I-4 Listed Species Evaluation
Polk County

I-4 Eagle Nest Sites

Figure 4

3.2.4.1 Impacts

Potential habitat for nesting cranes does occur along the project corridor, however, no nests were found within or adjacent to the I-4 right-of-way. The nesting areas are not within 457 m (1500 ft) of the roadway, therefore, it is anticipated that scheduling of construction activities will not be affected. A resurvey of the project corridor (or appropriate habitat) may be required prior to construction. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.2.5 Southeastern American Kestrel

The southeastern American kestrel, a member of the Falconidae family, is the smallest falcon in the United States and similar in size to the morning dove. There are distinctions between the sexes with the male having blue-gray wings and the female being larger and having a more uniformly patterned, rufous back and wings. Both sexes have a mustached black and white facial pattern. This pattern shows strong perpendicular lines extending below the eyes and near the ear, and a rufous tail. Falcons in general have long, pointed wings and long tails.

The kestrel can be found in open pine habitats, woodland edges, prairies and pastures throughout much of Florida. Kestrels prefer sandhill (high pine) habitats for nesting but they will also utilize flatwoods settings. Open patches of grass or bare ground are needed in flatwoods settings for ease in detection of prey. A key habitat feature necessary for breeding is a suitable cavity tree. Cavity trees are usually excavated in large pines, and less frequently, oaks.

3.2.5.1 Impacts

The project area contains some marginal to good foraging habitat as well as potential nesting habitat, although no nesting locations or live birds were seen during recent pedestrian surveys. A resurvey of the project corridor, or appropriate habitat, may be required prior to

construction. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.2.6 Wood Stork

Wood storks are large, white wading birds with black primary feathers, a naked head and neck (adults), and a long heavy bill. They are listed as endangered by both the USFWS and the FWC. The wood stork is a gregarious species, which nests in colonies or rookeries, and roosts and feeds in locks. Wood storks that nest in the southeastern United States are a separate population from those that nest in Mexico. Wood stork rookeries are found in swamp areas where food stocks of fish become concentrated in deeper pools during periods of falling water levels. While their main forage is small fish, stork will also eat invertebrates and small vertebrates such as frogs, baby alligators, and small rodents. For a successful nesting, the wood stork coordinates nesting with the rise and fall of the water level. During extremely dry or extremely wet years, the stork will have to fly relatively long distances, using valuable energy to find suitable nesting and foraging habitat. Wood storks lay 2-3 large eggs in a large nest of sticks generally located in cypress swamps or mangroves.

The wood stork breeds in Florida and may wander as far as Texas and South Carolina. Rookeries are primarily found in cypress swamps and mangroves of south Florida but are increasingly found in suitable habitat throughout the state and in the swamps of southern Georgia. Wood stork may be seen feeding in roadside ditches, wet prairies, marshes, and intertidal coastal habitats. No standard survey methodology is currently recommended for the wood stork; however, the recommended management guidelines and activity restrictions within the primary zone, as prescribed by the USFWS, will be followed.

During the non-breeding season or while foraging, wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in

shallow-water areas with highly concentrated prey. Mating occurs after a period of highly ritualized courtship displays at the nest site.

Since the 1960s, the wood stork population has shown a substantial decline in southern Florida and a substantial increase in northern Florida, Georgia, and South Carolina. The population declined from 8,500 pairs in 1961 to fewer than 500 pairs from 1987 through 1995.

The U.S. population of the wood stork was listed as endangered in 1984 because it had declined by more than 75 percent since the 1930s. At the time, the USFWS believed that the U.S. breeding population would be extirpated by the turn of the century if it continued to decline at the same rate. The original listing recognized the relationship between the declining wood stork population, the loss of suitable foraging habitat, and colony nesting failures, particularly in the breeding colonies in south Florida where human actions have reduced wetland areas by about 35 percent.

3.2.6.1 Impacts

No wood storks were observed during the field surveys. Nesting and roosting habitat for this species are not present in the project area. Foraging habitat is available depending on the existing water levels in ditches and swales, and other wetlands. Wetland mitigation will replace any lost wetlands, therefore there will be no net loss of wetlands, and the wood stork will not lose any nesting, roosting or foraging habitats. There will be no adverse affects to this species as a result of the proposed project.

3.2.7 Other Wading Birds

Other wading birds include the little blue heron (Egretta ceulea), the snowy egret (Egretta thula), white ibis (Eudocimus albus), the limpkin (Aramus guarauna), and the tricolored heron (Egretta tricolor). All of these species are listed as SSC by the FWC and potentially could occur. While each species is distinct, wading birds are discussed collectively since they occupy similar habitats and have similar life styles.

These five species are wading birds. The populations of these species have been historically adversely affected by plume hunting, the destruction of wetlands due to development, and by the drainage of wetland for flood control or agriculture. However, it is assumed that these species may utilize wetland areas within the project area, and contact with the USFWS and FWC report no known nesting sites within the project corridor.

While the two different genera have different food preferences, they prefer the same habitat. Preferred habitat for the listed species include: hardwood swamps, cypress swamps, wet prairies and marshes, coastal beaches, salt marshes, urban storm water retention areas, and flooded agricultural environments.

3.2.7.1 Impacts

Standard avifauna surveying techniques can be employed. Pedestrian and vehicular surveillance of the wetlands and ditches can be utilized to determine the presence of these listed species. No methodology is currently recommended by the governing agencies.

The primary concern for the impacts to these wading birds would be the loss of feeding habitat, i.e. wetlands. There is no unique wetland habitat, nesting sites or rookeries in the project corridor. As part of the project, all impacts to wetland areas will be mitigated to prevent a net loss of functional wetland area. The exact type of mitigation will be coordinated with the USACOE, and SWFWMD. The mitigation accepted by these agencies will be designed to provide replacement for any wading bird feeding habitat lost due to project impacts. Therefore, the project should have no adverse impact on these species.

3.3 Reptiles and Amphibians

Several species of reptiles that may occur in the I-4 corridor are listed as threatened or species of special concern (SSC) by the USFWS and/or FWC. These species include the gopher tortoise (SSC, FWC), American alligator (T, USFWS and SSC, FWC), eastern indigo snake

(Drymarchon corias couperi) (T, USFWS and FWC), the Florida pine snake (Pituophis melanoleucuc mugitus) (SSC, FWC), sand skink (T, USFWS and FWC), blue-tailed mole skink (T, USFWS and FWC) and the short tailed snake (Stilosoma extenuatum) (T, FWC). The alligator population has recovered remarkably throughout its range. In recent years, the alligator has increasingly encroached into urban and suburban waterways in southern Florida. It is likely that the alligator occasionally occurs in the ditches and marshes within the project corridor.

Alligators are highly mobile, and usually leave areas of direct human activity. Since the alligator is wary of human activity, it would undoubtedly move out of construction areas. Therefore, the project construction and operation will not have an adverse affect on this species.

The gopher tortoise is listed as SSC by FWC and is the primary reptilian species of concern in the I-4 corridor since, by burrowing, it provides habitat and refuge for more than eighty species of wildlife. The snakes listed above frequently use tortoise burrows as protection from weather and fire and for places to seek prey. The only listed species (SSC, FWC) of amphibian known to occur in Polk County is the gopher frog, which is commensal with the gopher tortoise. The status of these species can be attributed to wide spread habitat destruction.

3.3.1 Gopher Tortoise

The gopher tortoise is a medium sized tortoise with a broad muscular head, short tail, and flattened, clawed forelimbs used for digging. Adult tortoises average 22.86 to 27.94 cm (9 to 11 in) in length and weigh from 3.63 to 5.02 kg (8 to 10 lbs). Adulthood is not achieved for 10-20 years. Mating occurs in April and May, after which the female will lay 1-9 eggs in a nest about 15 cm (6 in) deep located in the excavated sand at the burrow entrance. A tortoise's diet consists of large amounts of grasses and leaves, fruits, and insects.

The gopher tortoise has suffered a large population decline over most of its historic range, which includes the sandy coastal plain of the southeastern U.S., and Florida is now the last stronghold for this species. Habitat loss is the main cause of decline. The gopher tortoise requires well-drained and loose sandy soils for burrowing, and low-growing herbs and grasses for food. These habitat conditions are best provided in the sandhill (longleaf pine-xeric oak) community, although tortoises are known to use many other habitats, including sand pine scrub, xeric oak hammocks, dry prairies, pine flatwoods, and ruderal sites. The gopher tortoise is considered a keystone species, since its burrows harbor and protect a number of commensal species, such as the Florida mouse and the gopher frog.

3.3.1.1 Impacts

Pedestrian surveys were conducted in October and November, 1999, to assess the presence of the gopher tortoise in the project area. These surveys followed the methodology as specified by the GFC guidelines established in Technical Report #4. Evidence of tortoise activity was identified in other segments.

Based upon the results of this survey, the FDOT has obtained Incidental Take Permit for gopher tortoises impacted as a result of the proposed project. By using the prescribed mitigation guidelines, a total of 9.0 acre credits will be utilized in the Platt Branch Mitigation Bank to satisfy the project mitigation requirements. These credits have been established in conjunction with the FWC and USFWS. Alternative mitigation options, such as on-site relocation, have been explored, however the limited ROW ownership of suitable habitat within the I-4 corridor prohibits this alternative. Gopher tortoise documentation can be found in Appendix D.

Detailed reports regarding the occurrence of the gopher tortoise are available under separate cover at the FDOT, Modal Management Office in Bartow.

3.3.2 Eastern Indigo Snake

The eastern indigo snake is a large, black, non-venomous snake found in the southeastern U.S. It is widely distributed throughout central and South Florida, but primarily occurs in sandhill habitats in northern Florida and southern Georgia.

The eastern indigo snake is the longest snake in the United States, reaching lengths of up to 265 cm (40 in). Its color is uniformly lustrous-black, dorsally and ventrally, except for a red or cream-colored suffusion of the chin, throat, and sometimes the cheeks. Its scales are large and smooth (the central 3 to 5 scale rows are lightly keeled in adult males) in 17 scale rows at midbody. Its anal plate is undivided. Its antepenultimate supralabial scale does not contact the temporal or postocular scales.

Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise, the burrows of which provide shelter from winter cold and desiccation. In wetter habitats that lack gopher tortoises, eastern indigo snakes may take shelter in hollowed root channels, hollow logs, or the burrows of rodents, armadillo (Dasypus novemcinctus), or land crabs (Cardisoma guanhumi).

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. Eastern indigo snakes need a mosaic of habitats to complete their annual cycle. Interspersion of tortoise-inhabited sandhills and wetlands improves habitat quality for this species. Eastern indigo snakes require sheltered "retreats" from winter cold and desiccating conditions.

3.3.2.1 Impacts

Although indigo snakes in the project area could be unintentionally killed during construction, their secretive habits confound capture, so no effort would be made to relocate indigo snakes prior to construction. The construction contract will include special provisions for supplying

construction personnel with a species description and a warning of the penalties for intentional harm. Contact with any individuals discovered during construction will be avoided. Due to the possible presence of the indigo snake, provisions in the construction contract will require the contractor to follow precautionary measures. Standard FDOT Protection Measures for construction are included in Appendix C. If snakes are discovered, FDOT biologists will be notified immediately and will coordinate USFWS and FWC in accordance with Section 7 of the Endangered Species Act of 1973, as amended through 1982. Through adhering to these precautions, the proposed project will not have a significant impact on the eastern indigo snake.

No eastern indigo snakes were seen during field surveys.

3.3.3 Short-Tailed Snake

The short-tailed snake is an extremely slender, spotted snake with a cylindrical body rarely exceeding. 510 mm (20 in.) total length. Very large specimens 61 cm (24 in.) have been seen which are no bigger than a pencil in diameter. This snake is a grayish, ground color with 50-80 dark brown blotches lacking darker edges and often separated by areas of yellow to red along its back, giving the impression of an indistinct orange stripe running down the back. alternating with a series of smaller blotches along its side. The belly is white with dark blotches. The blunt head is very small and roughly the same diameter as the body, and the crown is dark brown or black. The tail is short, comprising no more than 10% of the snake's total length. There are 19 dorsal scale rows at mid-body, and the scales are smooth. The pupils are round.

The short-tailed snake prefers dry upland habitats such as sandhill, xeric hammock, and sand pine scrub. This snake is endemic to Florida and is considered rare because it is restricted to limited habitats which are under threat of development. The short-tailed snake is a burrowing species and is rarely seen above ground or under cover objects. It is thought to feed exclusively, or nearly so, on the Florida crowned snake (Tantilla relicta).

3.3.3.1 Impacts

Although short-tailed snakes in the project area could be unintentionally killed during construction, their secretive habits confound capture, so no effort would be made to relocate short-tailed snakes prior to construction.

No members of this species were seen during field surveys and no impact to this species, during construction, is anticipated. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.3.4 Florida Pine Snake

The Florida pine snake is a highly variable snake. The ground color ranges from an off white to ash gray. The dorsum is blotched; on the anterior portion of the body the blotches are ill defined, becoming more distinct farther toward the posterior. Blotches themselves are highly variable, being almost invisible in some animals to black, dark tan or almost brick red in others. Some specimens have blotches with pale centers. Dorsal blotches range from 25-31. The Florida pine snake is the largest of the eastern Pituophis species.

The head is usually devoid of any pattern, although neonates are occasionally marked with post ocular stripes and a supraocular bar, which fades as the animal matures. Many animals have maculations or small markings on the head, usually in the same color as the dorsal blotches. The head is disproportionately small for the animals' size and its wedge shape and prominent rostral scale equip it well for its burrowing activities. The blotches along the neck are usually indistinct in mature animals, although some neonates will display distinct neck markings, which gradually fade. The ventrals are usually immaculate, colored typically in a smoky gray or off white.

Florida pine snakes are found in sandy, open areas, including pine-turkey oak woodland, abandoned fields and longleaf pine forests. This environment is characterized by soft, sandy soil frequented by the burrowing rodents the pine snake most often preys upon. Studies have

shown the Florida pine snake spends as much as 85% of its time underground, often in the burrows of pocket gophers or, less frequently, gopher tortoises. The Florida pine snake occupies large home ranges: one study in Florida using radio telemetry indicated 2 adult females occupied territories 11 and 12 ha (27.5 and 30 acres) each, while 3 males used areas 2-8 time larger.

The Florida pine snake preys on a variety of small rodents, including mice, various rats, immature cottontail rabbits and pocket gophers. It will also eat the eggs and young of ground dwelling birds, such as bobwhite quail.

3.3.4.1 Impacts

Although pine snakes in the project area could be unintentionally killed during construction, their secretive habits confound capture, so no effort would be made to relocate pine snakes prior to construction.

No members of this species were seen during field surveys and no impact to this species, during construction, is anticipated. Presence of this listed species will facilitate coordination with the appropriate resource agency at that time.

3.3.5 American Alligator

The American alligator is a large, mostly black crocodilian with a broadly rounded snout. Juveniles have yellow crossbands on the back, tail, and snout. The alligator's throat and belly are white to creamy yellow at all ages. The head is smooth in front of the eyes and there is no prominently visible tooth protruding from the lower jaw when the mouth is closed.

The American alligator can be found in most permanent bodies of fresh water including marshes, swamps, lakes, and rivers. The alligator will occasionally wander into brackish and salt water but will rarely stay there.

The American alligator is finally recovering from uncontrolled poaching and hunting which severely depleted populations in the 1960s. The increase in populations, particularly in Florida, has been recognized by a relaxation of the species protected status in recent years and by the opening of controlled hunting for management purposes in some parts of the state. Current management efforts are also underway to minimize the conflicts between man and alligator that are occurring in populated areas.

3.3.5.1 Impacts

This species is capable of utilizing a variety of wetland areas, including those within the project area. As the project will not cause any net loss of wetland area, it will not affect the overall habitat area available to the alligator. Given the opportunity to do so, the alligator will avoid the noise and disturbance that occurs during construction. The mobility of the alligator and its ability to utilize habitats adjacent to the project area should prevent any impact to the species due to the project.

No critical alligator habitat exists in the project limits. No FWC conservation or survey guidelines currently exist for the American alligator. No impacts to this species are expected as a result of the project.

3.3.6 Sand Skink/Blue-Tailed Mole Skink

Sand Skink: A unique lizard adapted to an underground existence, the sand skink measures 10 to 13 cm. (4 to 5 in.) in length and has a gray to tan color. Its forelegs are tiny and bear only one toe; its hind-legs are small and have two toes. The tail comprises about half of the animal's total length. The sand skink has a wedge-shaped head, a partially countersunk lower jaw, body grooves into which the forelegs can be folded, and small eyes which have transparent windows in the lower lids. These features enable the lizard to swim beneath the surface of loose sand. The diet of this species consists of surface-dwelling invertebrates, including beetle larvae, termites, spiders, and larval antlions.

The sand skink exists in areas vegetated with sand pine (Pinus clausa)-rosemary (Ceratiola ericoides) scrub or a longeleaf pine (Pinus palustris)-turkey oak (Quercus laevis) association. Food supply and moisture are important factors in the species' selection of habitat. Sand skinks are most frequently found in the ecotone between rosemary scrub and palmetto-pine flatwoods where moisture is present beneath the surface litter, e.g., bark, and in sand starting at a depth of 2 cm.or (1 in.). The species usually remains underground and burrows 5 to 10 centimeters (2 - 4 in.) beneath the soil to find its nourishment.

Blue-tailed mole skink: The blue-tailed mole skink has a long cylindrical body with small legs. It grows to 9 to 15 cm. (3 to 6 in.); the animal's body comprises somewhat less than half of its total length. Young skinks have blue tails which may turn pink with age or regeneration. Blue-tailed mole skinks eat fossorial invertebrates, generally roaches, spiders, and crickets. The life history of the blue-tailed mole skink is probably similar to the peninsular mole skink (Eumeces egregius onocrepis). Mole skinks usually reach sexual maturity during their first year, and they mate during the fall and winter. Females produce three to seven eggs which are laid underground in the spring.

Restricted to Polk and Highlands Counties in Florida, the blue-tailed mole skink occurs at many of the same sites as the sand skink. North of Polk County, the blue-tail is replaced by the peninsular mole skink (Eumeces egregius onocrepis), or intergrades with that subspecies. Only 20 sites for the blue-tail are recorded by the FNAI. However, it may occur at some additional scrub and sandhill habitat sites, including Lake Kissimee State Park, Lake Arbuckle, Saddle Blanket Lakes, and Tiger Creek.

Sand pine scrub and sandhill areas support the blue-tailed mole skink. Unlike the sand skink, which is dispersed throughout suitable habitat areas, the blue-tailed mole skink exists in localized pockets under surface litter. The moisture found under surface litter may be important for thermoregulation, nesting, and feeding. Mole skinks forage for food on the surface or up to 5 cm. (2 in.) underground. Although blue-tailed mole skinks are frequently found with sand skinks under surface litter, the two species usually live in different microhabitats and do not compete for food.

3.3.6.1 Impacts

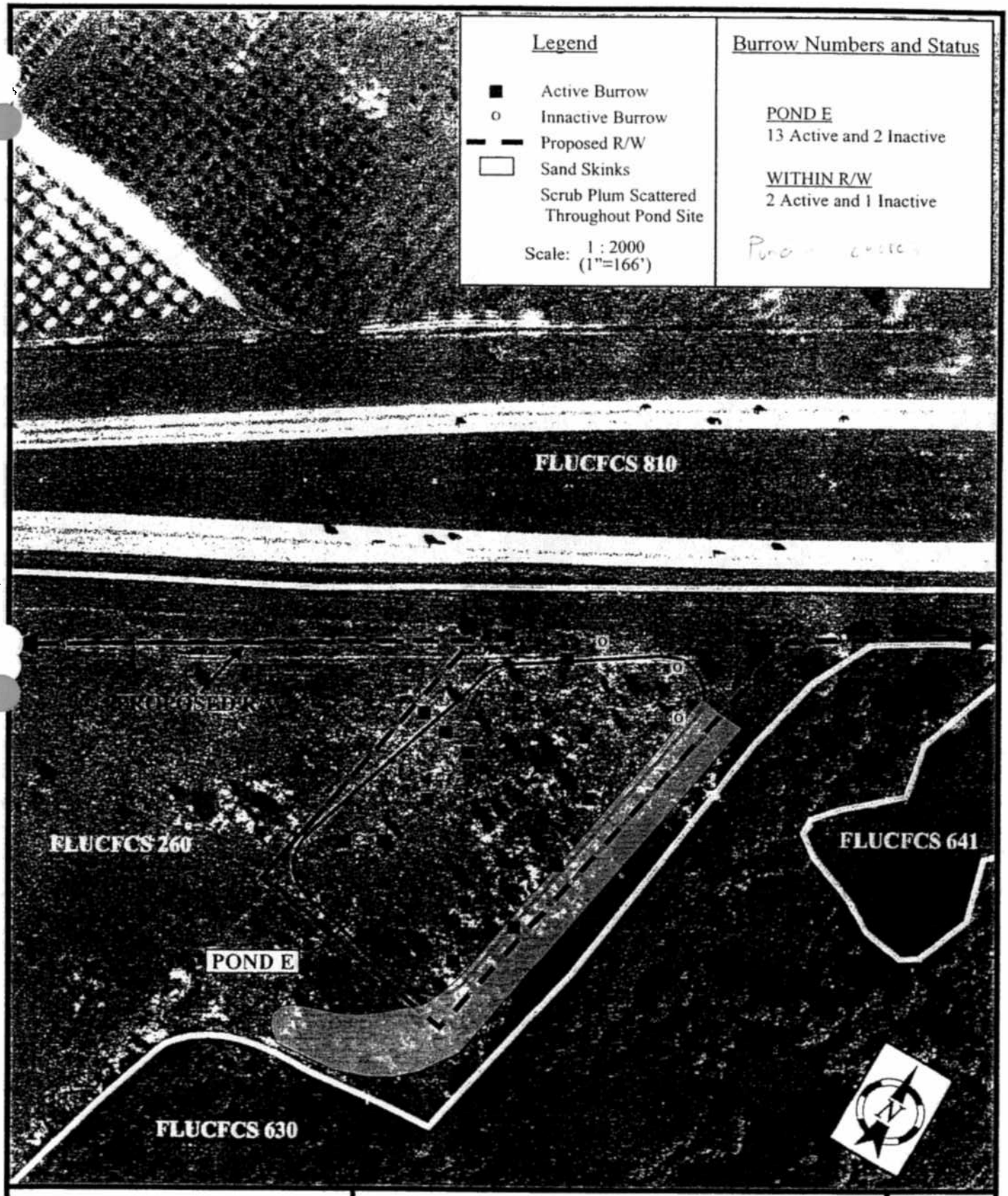
Cover boards were lifted 3 days in March and on April 11, 2002 in areas of appropriate habitat throughout the project corridor. Biologists with H.W. Lochner, accompanied by Paul Moler (FWC), conducted a field review of the pond site located in the southeastern quadrant of the I-4 and US 27 interchange, adjacent to what was formerly Boardwalk and Baseball (Figure 5). Mr. Moler had requested permission to visit the site. He was convinced that the sand skinks were present at the site; although we had sampled using the methodology described to us by biologists at the Archbold Biological Field Station, we were unable to locate any skinks.

During our field visit we collected eight specimens of the sand skink along the sand road that abuts the scrub/shrub habitat at this location. There were abundant signature sand skink tracks along the road. The sand skinks appear to be fairly abundant, although their actual numbers and distribution were not quantified. No sand skinks were found in other areas of the project corridor.

All of the individuals found were either in the loose sand, or within the leaf litter. It is important to note that scrub jays, one of the skinks main predators, are not present at this site.

Mr. Moler also indicated the boundary between the blue-tailed mole skink and the peninsula mole skink was approximately at the Polk-Lake County line. He indicated that we could assume that the mole skink (Eumeces egregius) is also present. As the site is in Polk County, it is likely that they would be classified as blue-tailed mole skinks.

Impacts to both species are probable if a stormwater pond is built at this location on the particular parcel (Figure 5). Both species are protected by State and Federal regulations. Presence of these listed species will facilitate coordination with the appropriate resource agency at that time.



I-4 Listed Species Evaluation
Polk County

Location of Gopher Tortoise Burrows, Sand Skinks, Mole Skinks & Scrub Plum
I-4 / US 27 Interchange
Southeast Quadrant - Pond E

Figure 5

E-1250

3.4 Flora

Most of the I-4 corridor has suffered some form of disturbance so that very little of the native flora remains intact. All of the habitats within the I-4 corridor are remnants of historically larger systems and are highly fragmented. The wetland areas have been less impacted than the upland areas. None of the wetland areas are relatively unique, but the larger size and complex interrelationship among these areas may provide unique environmental conditions supportive of individual populations of protected species. The relatively intact upland areas existing within the I-4 corridor are not unique in Florida or of outstanding quality. The majority of these areas are historic xeric turkey oak and live oak communities which can support listed species. Most of the federally listed species occur on the white sand Pleistocene ridges of central Florida. All of this habitat type within the project scope has been converted to citrus grove minimizing the possibility of the existence of listed species in this habitat regime. A list of protected plant species that occur within Polk County is attached in Appendix B.

During recent pedestrian transects of the pond site in the southeast quadrant of the US 27/I-4 Interchange, 13 individual scrub plum plants were observed. The scrub plum is considered endangered by both the FWC and the USFWS. This plant is described below:

3.4.1 Scrub Plum

The scrub plum is a scraggly, heavily branched shrub that can reach up to 2 m. (6 feet) tall. Its twigs are strongly zigzag, with spiny lateral branches. The deciduous leaves have stipules and fine teeth. The pinkish white flowers have five petals that are 1 to 1.3 cm. (0.4 to 0.6 in.) in diameter. The fruit is a dull reddish plum, that is bitter to the taste, 1.2 to 2.5 cm. (0.4- to 1-in.) long. Flowering occurs in the winter months, usually February and March.

Scrub plum is native to Lake County between Lake Apopka and Clermont and Polk and Highlands Counties from Lake Wales south to US Highway 27 near Venus, where the plant occurs in scrub on the Lake Wales Ridge. It is known from the Pine Ridge Nature Reserve of

Bok Tower Gardens near Lake Wales, from Saddle Blanket Lakes in Polk County, and from The Nature Conservancy's Tiger Creek Preserve in Polk County. This plant has been reported from approximately 36 localities. No estimate of the total number of plants is available.

This plant is found in longleaf pine-turkey oak vegetation in Lake County, and in sand pine (Pinus clausa - evergreen oak scrub vegetation -locally referred to as scrub) in Polk and Highlands Counties. The major evergreen scrub oaks are myrtle oak (Quercus myrtifolia); Chapman oak (Quercus chapmanii); and sand live oak (Quercus geminata).

Loss of habitat to residential and agricultural development is the primary factor in the decline of this species. Scrub plum is native to two areas in central Florida. One of these areas, in Lake County, has now been converted almost entirely to citrus groves. The other area, in Polk and Highlands Counties, has largely been developed. The scrub plum is also vulnerable to taking because of its potential value as an attractive ornamental plant. A further threat is that restriction to a specialized habitat and small geographic range tends to intensify any adverse affects upon its populations.

3.4.1.1 Impacts

Impacts to this species are probable if a stormwater pond is built at this location on the particular parcel (Figure 5). This species is protected by State and Federal regulations. Presence of this or other listed plant species will facilitate coordination with the appropriate resource agency at that time. Additional surveys for this plant may be necessary prior to beginning of construction.

4.0 REFERENCES

Allen, M. 1988. Wildlife Survey Methodology Guidelines for Section 18.D of the Application for Development Approval. Florida Game and Fresh Water Fish Commission, Office of Environmental Services. 14pp.

Wildlife Related Agency Correspondence

Appendix H

APPENDIX J

Wildlife-Related Agency Correspondence

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

BRADLEY J. HARTMAN, DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

April 29, 2002

Mr. John Hartley
Florida Dept. Of Transportation
Post Office Box 1249
Bartow, Florida 33831-1249

RE: Interstate 4 (SR 400), WPI# 1147947,
Polk/Osceola County

Dear Mr. Hartley:

Attached please find a receipt stating the type and amount of credits withdrawn from the Platt Branch Mitigation Park based on a request we received from your agency for the above-referenced project. Also attached is a life-to-date record for all mitigation credits encumbered by your agency. If you need any additional information, please contact me at 904-488-6661.

Sincerely,

Mike Allen
Mitigation Park Coordinator

ENV 6-6-1/4
Attachments
cc: Thomas Grahl, USFWS (Vero Beach)

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

FLORIDA DEPARTMENT OF TRANSPORTATION

PLATT BRANCH MITIGATION RECEIPT

PERMIT NUMBER: Work Program # 1147947

NO. OF ACRE-CREDITS WITHDRAWN: 6.34

TYPE: Scrub Jay

DATE: April 29, 2002

THIS RECEIPT ACKNOWLEDGES THAT THE ACRE-CREDIT WITHDRAWAL SPECIFIED IN THE ABOVE-REFERENCED PERMIT HAS BEEN MET.

Paula Cooper

PAULA COOPER
(Staff Assistant)

OR

TRACI WALLACE
(Administrative Assistant)

cc: ENV 6-6-1/4
OES Field Office

Florida Department of Transportation

JEB BUSH
GOVERNOR

801 N. Broadway
Bartow, Florida 33830

THOMAS F. BARRY, JR.
SECRETARY

April 26, 2002

Mr. Bradley J. Hartman, Director
Office of Environmental Services
Florida Game and Fresh Water Fish Commission
Farris Bryant Building
620 South Meridian Street
Tallahassee, FL 32399-1600

Re: PLATT BRANCH MITIGATION PARK (FDOT 1 Mitigation Bank)
Interstate 4 (SR 400) From West of Memorial Boulevard (SR 546) To
The Polk/Osceola County Line
Work Program Item No.: 1147947
State Project No.: 16320-1402
FWS LOG NO.: 4-1-97-I-524
FM No.: 201209
Polk County, Florida

Dear Mr. Hartman:

The Department requests the removal of 6.3 credits of Florida scrub jay mitigation credit from the Platt Branch Mitigation Park (FDOT 1 Mitigation Bank) for the construction related activities for the above referenced project. Impacts total 6.34 acres.

Enclosed you will find a letter from the USFWS agreeing with the 6.34 acres of impact and the use of the Highlands Mitigation Bank (a.k.a. Platt Branch Mitigation Park). Re-evaluations of scrub habitat was conducted in 2001. The results of the survey indicated a reduction in jay population. The area extent of habitat impact for scrub jays still remains the same as previously described. Due to the USACOE permit requirements, an expeditious execution of this request would be appreciated.

Thank you for your assistance in this matter. If you need any additional information or have any questions, please contact me at (941) 519-2625 or SunCom 557-2625 at your convenience.

Sincerely,

John Hartley
Environmental Specialist

cc: Mr. Jim Young, FDOT
Mr. Ed Ponce, FDOT
Mr. Thomas Grahl, USFWS (Vero Beach)
Mr. Terry Gilbert, FFWCC (Tallahassee)
Mr. Mike Allen, FFWCC (Tallahassee)
Mr. Gene Bauer, EAP, Sarasota
Mr. Roger J. Menendez, HW Lochner

LOCHNER

H.W. LOCHNER, INC. 13577 Feather Sound Drive, Suite 600, Clearwater, FL 33762

(727) 572-7111

FAX (727) 571-3371

Memorandum

Date: March 20, 2002

To: John Hartley, Mark Schulz

From: David Petti, Roger Menendez

Re: **Summary of Protected Species Reassessment; I-4, Polk County.**

Below please find a summary of the status of the protected species known to occur along the I-4 corridor in Polk County. This memo is a concise summary of the Technical Memorandum currently being completed. The Technical Memorandum will be submitted to the Department in April, 2002.

1. **Sand Skink/Mole Skink**

- Sand skink (*Neoseps reynoldsi*) sampling stations were set up late in December, 2001. These Sampling stations consist of various size, square plywood and pressed wood sheets that were placed on the ground (cover boards) in areas of potential habitat and occurrence. During visits on March 12, 14, 22 and 28, 2002, all cover boards were lifted and the substrate raked. No sand skinks or mole skinks (*Eumeces egregious lividus)* were observed. It is possible that the evidence (tracks) in the sand observed on preliminary visits were created by other fauna.

2. **Scrub Plum**

- During pedestrian transects of the pond site in the southeast quadrant of the US 27/I-4 Interchange, 13 individual scrub plum (*Prunus geniculata*) plants were observed. The scrub plum is considered endangered by both the state of Florida and the federal government.

LOCHNER

H.W. LOCHNER, INC. 13577 Feather Sound Drive, Suite 600, Clearwater, FL 33762

(727) 572-7111
FAX (727) 571-3371

Memorandum

Date: January 18, 2002

To: John Hartley

From: David Petti

Re: **Summary of Protected Species Reassessment; I-4, Polk County.**

Below please find a summary of the status of the protected species known to occur along the I-4 corridor in Polk County. This memo is a concise summary of the Technical Memorandum currently being completed. The Technical Memorandum will be submitted to the Department in March 2002.

1. Scrub Jay

   The corridor has been re-surveyed for the scrub jay. The only location the species was found to be present is just east of CR 54 on the south side of I-4. Two clans are currently at this location.

   A letter for agencies requesting withdrawal of mitigation credits for scrub jay impacts within the ultimate right-of-way is being prepared.

2. Gopher Tortoise

   Gopher tortoise report and incidental take permit has been acquired for right-of-way depicted on latest FDOT ten laning design plans.

3. Bald Eagle

   The latest data, as of 1/22/02, from the FWC shows multiple bald eagle nests along the project corridor (see attached).

4. Sandhill Crane

   Sandhill cranes have been seen in the vicinity of the project; however, this species is transient and mobile and no known nesting sites exist within the project boundaries.

5. **Woodstork**

Woodstorks have been seen in the vicinity of the project; however, this species is transient and mobile and FWC knows of no nesting colonies within the study area.

6. **Eastern Indigo Snake**

Due to the possible presence of the indigo snake in the project vicinity, provisions must be included in the construction contract which will require the contractor to follow precautionary measures. Standard FDOT indigo snake precautionary measures will need to be followed for any construction activities along the corridor.

7. **Sand Skink**

Sign of this species' probable presence has been observed within the project limits at the I-4 and US 27 interchange. Sampling stations have been set up and will be checked in March.

8. **Florida Mouse**

The project corridor has been checked for appropriate habitat and potential presence of this species. There is some potential (non-optimal) habitat present, but the species was not observed.

9. **Flora**

Of the six protected plant species previously found within the project corridor, only one has been recently found. There are twelve individual scrub plum plants in the southeast quadrant of the I-4 and US 27 interchange.

Attachments

CC: Roger Menendez

Bald Eagle Nest Histories for nests along I-4 in Polk County

Nest ID	Nest Letter	Latitude	Longitude	TRS	Location Name	Territ. First Active	Nest Active 1995	Nest Active 1996	Nest Active 1997	Nest Active 1998	Nest Active 1999	Nest Active 2000	Nest Active 2001	Decimal Lat.	Decimal Long.
PO048		28 10.60	81 41.90	28S 26E 34	GORE'S NEST	1990	Y	Y	Y	Y	Y	Y	Y	28.180000	-81.698333
PO049		28 04.60	81 57.80	28S 23E 01	W LAKE PARKER	1991	Y	N	N	N	N	-	NE**	28.076667	-81.963333
PO050	C	28 07.20	81 55.20	27S 24E 21	FOX TOWN	1991	Y	Y	Y	Y	Y	Y	-	28.120000	-81.920000
PO050	D	28 07.30	81 55.70	27S 24E 20	FOX TOWN	1991	-	-	-	-	-	-	Y	28.121667	-81.928333
PO051		28 11.10	81 48.20	26S 25E 34	POLK CORRECTIONAL	1992	Y	Y	Y	Y	Y	Y	Y	28.185000	-81.803333
PO064	A	28 09.00	81 51.50	27S 24E 12	KING NEST	1985	-	-	-	Y	Y	Y	-	28.150000	-81.858333
PO064*	A	28 08.40	81 50.80	27S 25E 18	KING NEST	1985	-	-	-	Y	Y	Y	Y	28.140000	-81.846667
PO066		28 09.20	81 42.90	27S 26E 09	ESE OF AIRPORT	1985	Y	Y	Y	Y	Y	Y	Y	28.153333	-81.715000
PO118		28 05.60	81 55.90	27S 24E 32	LAKELAND POWER PLANT	1995	Y	Y	Y	Y	Y	Y	Y	28.093333	-81.931667
PO129		28 03.90	82 01.20	28S 23E 09		1997	-	-	Y	Y	Y	Y	Y	28.065000	-82.020000
PO156		28 09.15	81 47.34	27S 25E 10		2001	-	-	-	-	-	-	Y	28.152500	-81.789000

* I'm not exactly sure what happened concerning PO064 A
I believe that the 2001 location is simply a better lat. / long. for the nest,
and that the 2000 location was incorrect.

** NE = Not Entered into the database

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

WILDLIFE RESEARCH LABORATOR
4005 SOUTH MAIN STREE
GAINESVILLE, FL 22601-909
(352) 955-2230 FAX (352) 376-535

Fax Cover Sheet

Date: 1.22.02

From: Julia Dodge

To: Dave Pelli
H.W. Lochner

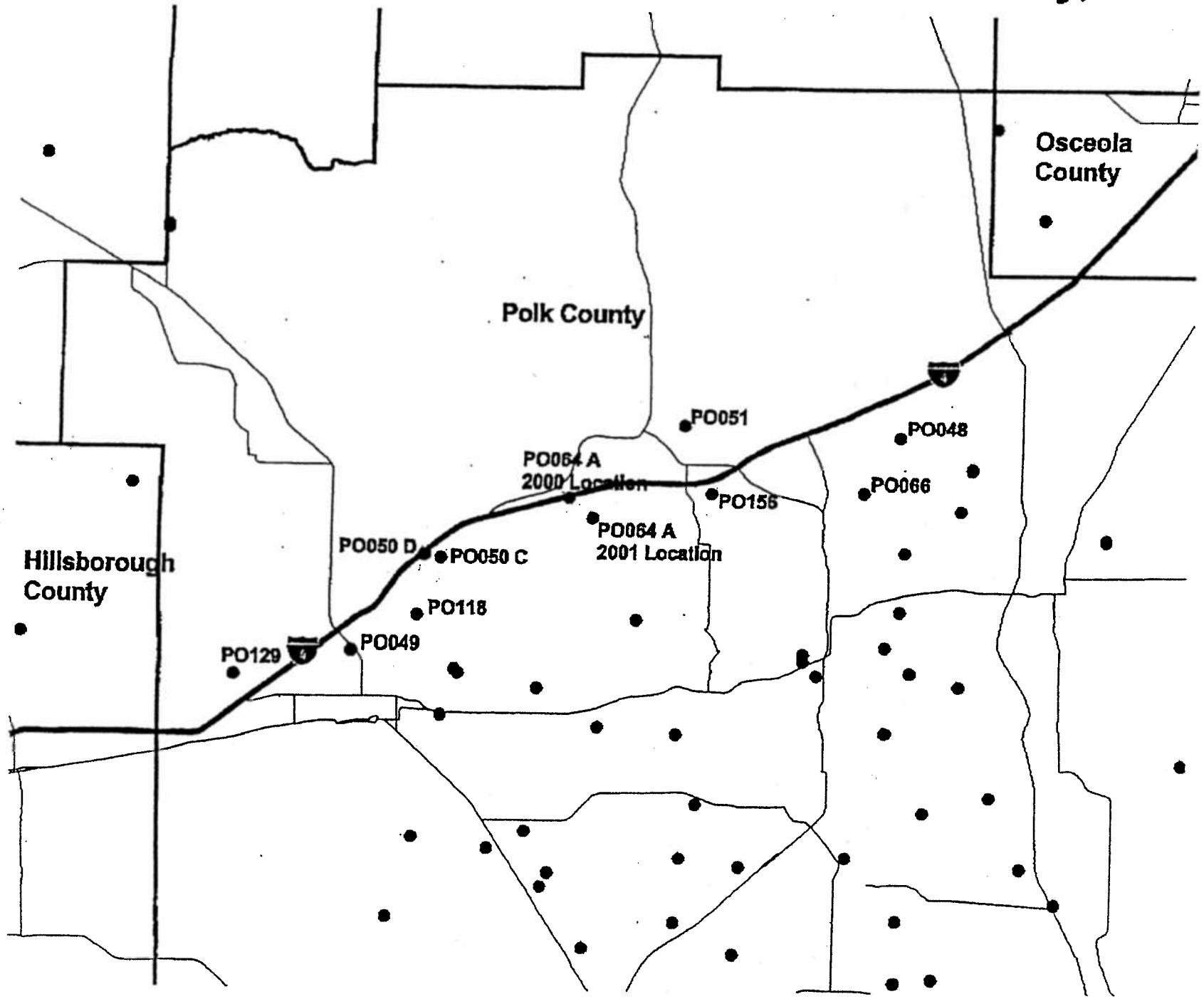
Fax Number: (727) 571 - 3371

Total of 3 Pages (including this cover sheet).

Comments:

Dave - Here is the info for eagle nests along I-4 in Polk County.
I looked into whether there are known wood stork colonies nearby as well. There are no wood ~~storck~~ stork colonies nearby.
Call if you need more.
Julia Dodge

Bald Eagle Nests Along Interstate 4 in Polk County, Florida



Florida Department of Transportation

JEB BUSH
GOVERNOR

801 N. Broadway
Bartow, Florida 33830

THOMAS F. BARRY, JR.
SECRETARY

MEMORANDUM

Date: November 9, 2001

To: Mr. Rhett Harper, Amy Shafer, and Nicole Mills

From: John Hartley - DEMO Environmental Project Manager JH

Copies: Mark Schulz, Jim Young, Eddie Joyner, Gene Bauer, Roger Menendez, Bernie Masing, Charles Bleam

Subject: Gopher Tortoise Incidental Take Permit #POL-21
Interstate 4 Segments 2, 3, 4, 5, 6, 7, 8

Please find attached a copy of Gopher Tortoise Incidental Take Permit #Pol-21 for the above referenced projects. This permit covers only those areas of right-of-way and easements as indicated in the permit. It does not include off-site areas.

This permit covers pondsites and right-of-way associated with the ultimate 10-lane build out, and therefore should also cover any selected interim 6-lane alternative. If interim alternatives utilize areas not covered in this permit, the permit can be modified accordingly. Be advised a permit for I-4 segment 9 (US 27 Interchange) was previously obtained and distributed. It also covers pondsites and right-of-way associated with the proposed 10-lane build out. These permits have no expiration date.

As a result of this permit, no modifications to the design plans you provided are anticipated for this project. However, should future design efforts for this project change, the right-of-way or easements requirements in any way, please contact me immediately.

If you have any questions or need additional information, please feel free to contact me at Ext. 2625.

District One Environmental Management
801 North Broadway * Post Office Box 1249 * Bartow, FL 33831-1249
(863) 519-2300 * (863) 534-7039 (Fax) * MS 1-40

October 26, 2001

Mr. John Hartley
Florida Department of Transportation
District One Environmental Office
801 North Broadway
Bartow, Florida 33831

Re: Gopher Tortoise Incidental Take Permit
#POL-21, Polk County

Dear Mr. Hartley:

Enclosed is permit #POL-21 for the incidental taking of gopher tortoises, their eggs and their burrows within the development boundaries specified. The application for this permit was complete as of October 8, 2001.

Please contact me, or Mr. Steve Lau at (561) 778-5094 if you have any questions regarding this permit.

Sincerely,

Brian Barnett, for
Bradley J. Hartman, Director
Office of Environmental Services

BJH/ps
ENV 3-2/5
Enclosure
gtpermit.ltr
cc: Mr. Gene Bauer, Environmental Analysis and Permitting, Inc.
Polk County Planning Department
Ms. Nancy Douglass, Southwest Region, FWC
Major Buckhalter, Southwest Region, FWC
Mr. Steve Lau, OES, Vero Beach, FWC
Ms. Angela Williams, Division of Wildlife, FWC

FLORIDA DEPARTMENT OF TRANSPORTATION

PLATT BRANCH MITIGATION RECEIPT

PERMIT NUMBER: POL-21

NO. OF ACRE-CREDITS WITHDRAWN: 12.7 acre-credits

TYPE: FDOT 1 Mitigation Bank

DATE: October 26, 2001

THIS RECEIPT ACKNOWLEDGES THAT THE ACRE-CREDIT WITHDRAWAL SPECIFIED IN THE ABOVE-REFERENCED PERMIT HAS BEEN MET.

Paula Silas

PAULA SILAS
(Staff Assistant)

OR

TRACI WALLACE
(Executive Secretary)

cc: ENV 6-6-1/4
OES Field Office

Florida Department of Transportation

JEB BUSH
GOVERNOR

801 N. Broadway
Bartow, Florida 33830

THOMAS F. BARRY, JR.
SECRETARY

October 4, 2001

Mr. Bradley; J. Hartman, Director
Office of Environmental Services
Florida Fish and Wildlife Conservation Commission
Farris Bryant Building
620 South Meridian Street
Tallahassee, Florida 32399-1600

Re: Gopher Tortoise Incidental Take Permit For Segments 2-8, Pond Sites P2-700, P3-10, P3-14, P5-3, P5-8, P5-10, P5-11 and R.O.W. Survey Sites AS1-AS16.
Financial Management No.: 201209 (DEMO Contract No.)
State Project No.: 16320-1434
I-4 (SR400), from west of Memorial Boulevard (SR 546) to the Polk/ Osceola County Line
Polk County

Dear Mr. Hartman:

The Florida Department of Transportation FDOT), District One, has retained Environmental Analysis and Permitting, Inc. (EAP, 78 Sarasota Center Boulevard, Sarasota, Florida, 34240) as their agent to obtain an Incidental Take Permit for gopher tortoises (*Gopherus polyphemus)* for proposed Pond Sites P2-700, P3-10, P3-14, P5-3, P5-8, P5-10, P5-11 and right-of-way sites AS1-AS16 on the I-4 Project from west of Memorial Boulevard to the Polk/Osceola County Line in Polk County, Florida as shown on Figure1, Map Sheets 1-5 and Aerial Map Sheets 1A-31A.

EAP has surveyed the existing and proposed R.O.W. and forty-six proposed pond sites. Gopher tortoise burrows were found at the above referenced sites. Mitigation requirements for potential impacts at the above referenced sites were calculated to be 12.74 acres.

Based on the Department's understanding of Florida Fish and Wildlife Conservation Commission criteria, mitigation requirements for a gopher tortoise density below .4/acre is based on a sliding scale from 0 to 15%. Densities between .4 and .8/acre require 15% mitigation for habitat impacts and a density greater than or equal to .8/acre is capped at 25%. Total mitigation for the project is 12.74 acres for 84.88 acres of potential gopher tortoise habitat impacts.

Based on the above referenced requirements, FDOT proposes to protect 12.74 acres of gopher tortoise habitat by using 12.7 credits of gopher tortoise habitat within the Platt Branch Mitigation Park in Highlands County (FFWCC requested that mitigation credits be rounded to the nearest tenth).

Enclosed is a copy of the report and site location map. Two copies of the report (one unbound) were sent to Rick McCann at your Tallahassee Office. If you need any additional information, please contact me at SC 557-2625 or (863) 519-2625.

Sincerely,

John Hartley
Environmental Project Manager

Enclosures
cc: Mr. Mark Schulz, District Environmental Administrator
Mr. Rhett Harper, FDOT District 1 Project Management (with 1 copy)
Ms. Nicole Mills, FDOT District 1 Project Management (with 1 copy)
Ms. Amy Shafer, FDOT District 1 Project Management (with 1 copy)
Mr. Jim Young, FDOT District 1 Construction (with 1 copy)
Mr. Ed Ponce, FDOT District 1 Permits
Mr. Terry Gilbert FFWCC, (Tallahassee)
Mr. Rick McCann, FFWCC (Tallahassee) {with 2 copies– 1 unbound}
Mr. Mike Allen, FFWCC (Tallahassee)
Mr. Stephen Lau, FFWCC (Vero Beach)
Mr. Rodger Menendez, H.W. Lochner (Clearwater) (with 1 copy)
Mr. Gene Bauer, Environmental Analysis & Permitting, Inc. (EAP) Sarasota

Florida Natural Areas Inventory
1018 Thomasville Road, Suite 200-C
Tallahassee, Florida 32303
(850) 224-8207 fax (850) 681-9364
www.fnai.org

July 31, 2001

David S. Petti
Environmental Scientist
HW Lochner, Inc
13577 Feather Sound Drive, Suite 800
Clearwater, FL 33762

Dear Mr. Petti:

Thank you for your request for information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project:	I-4 Corridor
Date Received:	July 24, 2001
Location:	Polk County

Element Occurrences

A search of our maps and database indicates that currently we have several Element Occurrences mapped within one mile of the study area (see enclosed map and table).

The Element Occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates the precision of the element occurrence location, defined as second (within about 300 feet of the point), minute (within about one mile), or general (within about 5 miles). For animals and plants, Element Occurrences generally refer to more than a casual siting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant.

Several of the species and natural communities tracked by the Inventory are considered **data sensitive.** Occurrence records for these elements contain information which we consider sensitive due to collection pressures, extreme rarity, or at the request of the source of the information. The Element Occurrence Record has been labeled "Data Sensitive." We request that you not publish or release specific locational data about these species or communities without consent from the Inventory. If you have any questions concerning this please do not hesitate to call.

Land Acquisition Projects

This site appears to be located within the Green Swamp CARL Project Macrosite, which is part of the State of Florida's Conservation and Recreation Lands land acquisition program. The Green Swamp project is scheduled to be acquired for management as a wildlife management are and a state park by the Fish and Wildlife Conservation Commission, and the Division of Recreation and

Parks, Florida Department of Environmental Protection. For more information on this CARL Project, contact the Florida Department of Environmental Protection, Division of State Lands.

Conservation and Recreation Lands (CARL) projects are proposed and acquired through the Florida Department of Environmental Protection, Division of State Lands. Save Our Rivers (SOR) projects are administered by Florida's five water management districts. The state has no regulatory authority over these lands until they are purchased.

Potential Natural Areas

Portions of the site appear to be located on or near Potential Natural Areas (PNA). This PNA is a priority 5 and may include the following community types: Baygall, depression ponds, and small basin swamps.

Potential Natural Areas are lands which appear to be relatively intact areas of natural vegetation based on aerial photography, as determined by FNAI scientists. Please see the enclosed explanation sheet for more information. PNAs are not a regulatory designation; they are intended for conservation planning purposes. The maps show a revised version of the PNAs, based on 1995 land use land cover data from the water management districts.

Potential Habitat for Rare Species

Portions of the site appear to be located on or near Potential Habitat for Rare Species. The potential habitat on this site is associated with a known occurrence in the vicinity of:

- florida bonamia, *Bonamia grandiflora*
- pygmy fringe tree, *Chionanthus pygmaeus*
- pigeon-wing, *Clitoria fragrans*
- eastern indigo snake, *Drymarchon corais couperi*
- scrub buckwheat, *Eriogonum longifolium var gnaphalifolium*
- bald eagle, *Haliaeetus leucocephalus*
- wood stork, *Mycteria americana*
- sand skink, *Neoseps reynoldsi*
- britton's beargrass, *Nolina brittoniana*
- lewton's polygala, Polygala lewtonii
- lewton's polygala, *Polygala lewtonii*
- scrub plum, *Prunus geniculata*

FNAI Potential Habitat for Rare Species indicates areas which, based on landcover type, offer suitable habitat for one or more rare species which is known to occur in the vicinity. Potential habitat layers have been developed for approximately 250 of the rarest species tracked by the Inventory, including all federally listed species. Note that not all potential habitat is identified as a Potential Natural Area. This may represent lands which are somewhat disturbed (such as pine plantation or pasture), but nevertheless may serve as functional habitat for some rare species.

Potential Habitat is not a regulatory designation, and should not be confused with "critical habitat", which is an official designation made by the U.S. Fish and Wildlife Service. Information on critical habitats can be found in the Code of Federal Regulations, 50 CFR 17.95, which lists all critical habitats which have been designated. The Code of Federal Regulations can be accessed through the following website: "www.access.gpo.gov/nara/cfr/cfr-table-search.html".

The Inventory always recommends that a site specific survey be conducted to determine the current presence or absence of rare, threatened, or endangered species. Surveys should be conducted by persons familiar with Florida's flora and fauna. For your convenience, a summary of the elements recorded for Polk County is enclosed.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

Thank you for your use of FNAI services. A copy of the invoice is enclosed for your information; the original will be mailed to your accounts payable department. If I can be of further assistance, please give me a call at (850) 224-8207.

Sincerely,

for Jonathan Oetting
Information Coordinator

jo:dm

encl

LOCHNER

H.W. LOCHNER, INC., 13577 FEATHER SOUND DRIVE, SUITE 600, CLEARWATER, FL 33762

(727) 572-7111
FAX (727) 571-3371
E-mail: clearwater@hwlochner.com
www.hwlochner.com

July 24, 2001

Mr. John Oetting
Florida Natural Areas Inventory
1018 Thomasville Road, Suite 200-C
Tallahassee, Florida 32303

RE: Potential Listed Species Along I-4 Corridor Beginning at Hillsborough/Polk County Line and Proceeds in an Easterly Direction, Terminating at the Polk/Osceola County Line.

Dear Mr. Oetting:

I am currently working on the Project Design & Environment Guidelines (PD&E) Phase of a road widening project along the corridor mentioned above. I am interested in any Federal or State listed species of flora and fauna that have been documented along this corridor.

I have included a map of the project throughout Polk County.

If you have any questions pertaining to this project, please contact me at (727) 572-7111.

Please review your records and let me know if there are any known listed species. Thank you for your expedient response.

Sincerely,

HW Lochner, Inc.

David S. Petti

David S. Petti
Environmental Scientist

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

July 2, 2001

David Petti
H.W. Lochner, Inc.
13577 Feather Sound Drive
Suite 600
Clearwater, Florida 33762

Dear Mr. Petti:

An examination of the Florida Fish and Wildlife Conservation Commission's (FWC) Division of Wildlife species occurrence database revealed several significant wildlife species occurrences within the vicinity of the Interstate 4 expansion project in Polk County, Florida. These include gopher tortoise (*Gopherus polyphemus*), bluetail mole skink (*Eumeces egregius*), bald eagle (*Haliaeetus leucocephalus*), Sherman 's fox squirrel (*Sciurus niger shermani*), and Florida scrub-jay (*Aphelocoma coerulescens*) . Gopher tortoise, and Sherman's fox squirrel are listed as species of special concern by the FWC. Bald eagle, bluetail mole skink, and Florida scrub-jay are listed as threatened species by the U.S. Fish and Wildlife Service (USFWS).

Interpretation of LANDSAT imagery indicated the predominate vegetative communities are barren land and grass or agricultural lands, freshwater marsh and cypress swamp. A copy of the LANDSAT imagery is included with this letter.

Due to the ample amount of suitable wildlife habitat, and the occurrence of listed wildlife species in the vicinity of the Interstate 4 expansion project we strongly recommend a comprehensive vegetative and wildlife survey be conducted prior to any activity that could impact these natural resources.

For your reference, the official list of Florida's endangered species, threatened species, and species of special concern can be found on FWC's website at http://floridaconservation.org/pubs/endanger.html. The current USFWS list of threatened and endangered species of Florida can be found at http://ecos.fws.gov/webpage/webpage_usa_lists.html#FL .

If you have any further questions please contact me by telephone at (850) 922-8777, or by e-mail at Aldend@fwc.state.fl.us.

Sincerely,

David Alden
Biological Scientist III
Division of Wildlife

cc: Hugh Boyter

LOCHNER

H.W. LOCHNER, INC., 13577 FEATHER SOUND DRIVE, SUITE 600, CLEARWATER, FL 33762

(727) 572-7111
FAX (727) 571-3371
E-mail: clearwater@hwlochner.com
www.hwlochner.com

June 26, 2001

Mr. David Alden
Florida Fish and Wildlife Conservation Commission
Bryant Building
620 S. Meridian Street
Tallahassee, Florida 32399

RE: Potential Listed Species Along I-4 Corridor Beginning at Hillsborough/Polk County Line and Proceeds in an Easterly Direction, Terminating at the Polk/Osceola County Line.

Dear Mr. Alden:

I am currently working on the Project Design & Environment Guidelines (PD&E) Phase of a road widening project along the corridor mentioned above. I am interested in any Federal or State listed species of flora and fauna that have been documented along this corridor.

I have included a map of the project throughout Polk County.

If you have any questions pertaining to this project, please contact me at (727) 572-7111.

Please review your records and let me know if there are any known listed species. Thank you for your expedient response.

Sincerely,

HW Lochner, Inc.

David S. Petti
Environmental Scientist

Enclosures

I-4 Six-Lane Widening Reevaluation
Threatened and Endangered Species Survey

State Project No. 16320-1402
Federal-Aid Project No. ACDH-4-1 (130) 25
Financial Project No. 201210 1 21 01

Threatened and endangered species surveys were conducted for I-4 segments 2-9 on June 20 and 21, 2000 and scrub jay surveys were performed again on August 1 and September 14, 2000, by Parsons Brinckerhoff biologists. Species significant habitat, individual sightings, burrows, and nests have all been marked and labeled on the project aerials. The following is a summary of the findings from the field review.

Approximate Station	Description	Affected by					
		Existing		Six-Lane		Ultimate	
		R/W	Const.	R/W	Const.	R/W	Const.
927+00 (Right)	Gopher tortoise burrow (1 Inactive). Located near the ROW fenceline next to an abandon rest stop on the south side of the road. No suitable habitat exists in proximity to the inactive burrow.	Yes	N/A	Yes	No	Yes	Yes
941+00 (Left)	Two sandhill cranes observed foraging. Located east of Old Combee Road on the north side of the road.	No	N/A	No	No	No	No
1001+00 to 1024+00 (Right)	Thirteen gopher tortoise burrows (2 Active,11 Inactive). All are within the grassy border on the south side of the road. Gopher tortoise habitat also exists outside of the ROW fenceline.	Yes	N/A	Yes	No	Yes	Yes
1002+00 (Right)	Eagle's nest (not numbered by the FFWCC). No birds were observed during the field review and the nest was inactive. Since June is not within the nesting season for bald eagles no nesting would be expected. FFWCC biologists have said that this is a new nest built in the 98-99 nesting season. The nest is located on the south side of the road outside of the ROW in a large pine tree surrounded by a heavily grazed open field.	No	N/A	No	Yes	No	Yes

Approximate Station	Description	Affected by					
		Existing		Six-Lane		Ultimate	
		R/W	Const.	R/W	Const.	R/W	Const.
1307+00 to 1311+00 (Right)	Gopher tortoise burrows (2 Active). Both burrows are located on the south side of the road along the ROW fenceline. Tortoise habitat also exists outside of the ROW fenceline.	No	N/A	No	No	Yes	Yes
1455+00 to 1474+00 (Left)	Gopher tortoise burrows (2 Active). Both burrows are located on the north side of the road along the ROW fenceline. Tortoise habitat also exists outside of the ROW fenceline.	Yes	N/A	Yes	No	Yes	Yes
1470+00 to 1489+00 (Right)	Gopher tortoise habitat, no burrows observed.	Yes	N/A	Yes	No	Yes	No
1495+00 to 1500+00 (Left)	Potential Scrub Jay habitat on the north side of the road. Canopy maybe too thick to support jays. Vegetation consists of oak and palmetto.	Yes	N/A	Yes	No	Yes	No
1500+00 to 1508+00 (Left and Right)	Gopher tortoise habitat, no burrows observed.	Yes	N/A	Yes	No	Yes	No
1530+00 (Left)	Two sandhill cranes observed foraging on the north side of the road.	Yes	N/A	Yes	No	Yes	No
1538+00 to 1550+00 (Left)	Gopher tortoise habitat, no burrows observed	No	N/A	No	No	Yes	Yes
1540+00 to 1563+00 (Left)	Gopher tortoise habitat in Eastbound Rest Area, no burrows observed.	Yes	N/A	Yes	No	Yes	Yes
1565+00 to 1584+00 (Left)	Gopher tortoise habitat in Westbound Rest Area, one inactive burrow observed.	Yes	N/A	Yes	No	Yes	No
1574+00 to 1603+00 (Right)	Thirteen gopher tortoise burrows (9 Active, 4 Inactive). All burrows were along the ROW fenceline on the south side of the road. Tortoise habitat exists outside of the ROW also.	Yes	N/A	Yes	No	Yes	Yes
1588+00 to 1592+00 (Left)	Two swallow tailed kites observed flying above a cypress dome on the north side of the road.	No	N/A	No	No	No	No

Approximate Station	Description	Affected by					
		Existing		Six-Lane		Ultimate	
		R/W	Const.	R/W	Const.	R/W	Const.
1655+00 to 1970+00 (Right)	Sandhill crane nesting habitat outside of existing R/W.	No	N/A	No	No	Yes	Yes
1686+00 to 1694+00 (Right)	Gopher tortoise habitat, no burrows observed.	Yes	N/A	Yes	No	Yes	Yes
1795+00 to 1798+00 (Left)	Gopher tortoise habitat located on the north side of the road, no burrows observed.	Yes	N/A	Yes	No	Yes	No
1818+00 (Right)	Two sandhill cranes observed foraging in an open pasture on the south side of the road.	No	N/A	No	No	No	No
1924+00 to 1930+00 (Right)	Gopher tortoise habitat located on the south side of the road, no burrows observed.	Yes	N/A	Yes	No	Yes	No
2017+00 to 2054+00 (Right)	Gopher tortoise habitat, one active burrow south of the eastbound on- ramp along the ROW fenceline (2026+00), five active burrows along R/W fence in existing R/W (2047+00), one active burrow in grassy border (2043+00).	Yes	N/A	Yes	Yes	Yes	Yes
2072+00 to 2076+00 (Right)	Gopher tortoise and scrub jay habitat, three active tortoise burrows outside existing R/W on the south side of the road along the fenceline.	Yes	N/A	Yes	No	Yes	Yes
2072+00 to 2080+00 (Left)	Gopher tortoise habitat exists inside and outside of the R/W on the north side of the road.	Yes	N/A	Yes	No	Yes	Yes
2106+00 to 2017+00 (Right)	Gopher tortoise and Type III scrub jay habitat exists inside and outside of the ROW on the south side of the road, (Scrub jays were observed in December 1994).	Yes	N/A	Yes	No	Yes	Yes

Approximate Station	Description	Affected by					
		Existing		Six-Lane		Ultimate	
		R/W	Const.	R/W	Const.	R/W	Const.
2120+00 to 2133+00 (Right)	Gopher tortoise and Type III scrub jay habitat exists outside of the ROW on the south side of the road. (Scrub jays were observed in December 1994.) One tortoise burrow was observed along the R/W fenceline and several were observed outside of the R/W fenceline. Three call stations were performed for scrub jays on June 20, August 1, and September 14, 2000. No scrub jays were observed.	Yes	N/A	Yes	No	Yes	Yes
2110+00 to 2132+00 (Left)	Gopher tortoise and Type III scrub jay habitat exists inside and outside of the R/W on the north side of the road. One call station was performed for jays on June 20, 2000, two call stations on August 1, 2000, and one on September 14, 2000. No scrub jays were observed.	Yes	N/A	Yes	No	Yes	Yes

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676

September 3, 1998

Greg Thomas
Scheda Ecological Associates, Inc.
4013 East Fowler Avenue
Tampa, FL 33617

Dear Mr. Thomas:

Thank you for your letter to the U.S. Fish and Wildlife Service (FWS) requesting information on the presence of federally listed species in the vicinity of the section of Interstate 4 described in your letter. The Florida Department of Transportation is proposing the widening of segment 7 of Interstate 4 from a four-lane divided rural freeway to a ten-lane divided urban and rural expressway. The project site is located in Polk County, Florida.

The FWS has reviewed the information in your letter as well as information available to us on the presence of threatened or endangered species in the vicinity of the proposed activity. From this review, we have found evidence of the federally endangered Britton's beargrass (*Nolina brittoniana*), the federally threatened Florida bonamia (*Bonamia grandiflora*), and suitable habitat for the federally threatened Florida scrub-jay (*Aphelocoma coerulescens*) within one mile of the proposed project. Furthermore, the federally endangered pygmy fringe-tree (*Chionanthus pygmaeus*), sandlace (*Polygonella myriophylla*), and scrub plum (*Prunus geniculata*); and the federally threatened Florida scrub-jay, sand skink (*Neoseps reynoldsi*), pigeon wing (*Clitoria fragans*), and scrub buckwheat (*Eriogonum longifolium* variety *gnaphalifolium*) occur within two miles of the project site. No critical habitat has been designated on or near the project site.

The recorded locations of threatened and endangered species in or adjacent to the proposed project site are based on a review of Geographic Information Systems (GIS) data maintained by the FWS' South Florida Field Office. The GIS database is a compilation of data received from several sources; its accuracy has not been verified by the FWS. The GIS database is updated as new data is received and resources are available. Listed species may be present in suitable habitat, even if no known locations are identified in our database. The FWS assumes suitable habitat supports listed species and recommends site surveys to determine the presence or absence of listed species.

We have provided for your consideration a list of species that are protected as either threatened or endangered under the Endangered Species Act (16 U.S.C. 1531 *et seq.*), as well as candidates for listing which may be present in Polk County. Since this list does not include State-listed

species, the Florida Game and Fresh Water Fish Commission should be contacted to identify those species potentially present in the vicinity.

In addition, we are providing you with a list of species that we would consider during our review of any proposal associated with this project. This list represents species that the FWS is required to protect and conserve under other authorities, such as the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*) and the Migratory Bird Treaty Act (16 U.S.C. 701 *et seq.*). We are providing this list as technical assistance only. If you would like to discuss means and methods to conserve these species, please contact this office.

Thank you for the opportunity to provide this information. If you have any questions, please contact Wesley Shockley at (561) 562-3909.

Sincerely,

Kalani D. Cairns

for James J. Slack
Project Leader
South Florida Field Office

Enclosures

cc: COE, Tampa, FL (w/o enclosures)
GFC, Punta Gorda, FL (w/o enclosures)

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES
AND CANDIDATES FOR FEDERAL LISTING
IN POLK COUNTY

Scientific Name	Common Name	Status
Amphibians and Reptiles		
Alligator mississippiensis	American alligator	T(S/A)
Drymarchon corais couperi	Eastern indigo snake	T
Eumeces egregius lividus	Blue-tailed mole skink	T
Neoseps reynoldsi	Sand skink	T
Birds		
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E
Aphelocoma coerulescens	Florida scrub-jay	T
Campephilus principalis principalis	Ivory-billed woodpecker (probably extinct in south Florida)	E
Haliaeetus leucocephalus	Bald eagle	T
Mycteria americana	Wood stork	E
Picoides (=Dendrocopos)borealis	Red-cockaded woodpecker	E
Polyborus (=Caracara) plancus audubonii	Audubon's crested caracara	T
Vermivora bachmanii	Bachman's warbler	E
Mammals		
Ursus americanus floridanus	Florida black bear	C
Plants		
Family Agavaceae		
Nolina brittoniana	Britton's beargrass	E
Family Asteraceae		
Liatris ohlingerae	Scrub blazing star	E
Family Brassicaceae		
Warea amplexifolia	Clasping warea	E
Warea carteri	Carter's mustard	E
Family Caryophyllaceae		
Paronychia chartacea (=Nyachia pulvinata)	Papery whitlow-wort	T
Family Convolvulaceae		

Scientific Name	Common Name	Status
Bonamia grandiflora	Florida bonamia	T
Family Fabaceae		
Clitoria fragrans	Pigeon wing	T
Crotalaria avonensis	Avon Park harebells	E
Lupinus aridorum	Scrub lupine	E
Family Hypericaceae		
Hypericum cumulicola	Highlands scrub hypericum	E
Family Lamiaceae		
Conradina brevifolia	Short-leaved rosemary	E
Family Oleaceae		
Chionanthus pygmaeus	Pygmy fringetree	E
Family Polygalaceae		
Polygala lewtonii	Lewton's polygala	E
Family Polygonaceae		
Eriogonum longifolium var. *gnaphalifolium*	Scrub buckwheat	T
Polygonella basiramia (=*celiata var. b.*)	Wireweed	E
Polygonella myriophylla	Sandlace	E
Family Rhamnaceae		
Ziziphus celata	Florida ziziphus	E
Family Rosaceae		
Prunus geniculata	Scrub plum	E
Cladonia perforata	Florida perforate cladonia (Deer moss)	E

MIGRATORY BIRDS OCCURRING IN SOUTH FLORIDA

ORDER GAVIIFORMES
FAMILY GAVIIDAE
Gavia stellata, Red-throated Loon
Gavia immer, Common Loon
Gavia pacifica, Pacific Loon

ORDER PODICIPEDIFORMES
FAMILY PODICIPEDIDAE
Tachybaptus dominicus, Least Grebe
Podilymbus podiceps, Pied-billed Grebe
Podiceps auritus, Horned Grebe
Podiceps nigricollis, Eared Grebe

ORDER PROCELLARIIFORMES
FAMILY PROCELLARIIDAE
Calonectris diomedea, Cory's Shearwater
Puffinus gravis, Greater Shearwater
Puffinus griseus, Sooty Shearwater
Puffinus puffinus, Manx Shearwater
Puffinus lherminieri, Audubon's Shearwater

FAMILY HYDROBATIDAE
Oceanites oceanicus, Wilson's Storm-Petrel
Oceanodroma leucorhoa, Leach's Storm-Petrel
Oceanodroma castro, Band-rumped Storm-Petrel

ORDER PELECANIFORMES
FAMLY PHAETHONTIDAE
Phaethon lepturus, White-tailed Tropicbird
Phaethon aethereus, Red-billed Tropicbird

FAMILY SULIDAE
Sula dactylatra, Masked Booby
Sula leucogaster, Brown Booby
Sula sula, Red-footed Booby
Sula bassanus, Northern Gannet

FAMILY PELECANIDAE
Pelecanus erythrorhynchos, American White Pelican
Pelecanus occidentalis, Brown Pelican

FAMILY PHALACROCORACIDAE
Phalacrocorax carbo, Great Cormorant
Phalacrocorax auritus, Double-crested Cormorant

FAMILY ANHINGIDAE
Anhinga anhinga, Anhinga

FAMILY FREGATIDAE
Fregata magnificens, Magnificent Frigatebird

ORDER CICONIIFORMES
FAMILY ARDEIDAE
Botaurus lentiginosus, American Bittern
Ixobrychus exilis, Least Bittern
Ardea herodias, Great Blue Heron
Casmerodius albus, Great Egret
Egretta thula, Snowy Egret
Egretta caerulea, Little Blue Heron
Egretta tricolor, Tricolored Heron
Egretta rufescens, Reddish Egret
Bubulcus ibis, Cattle Egret
Butorides striatus, Green-backed Heron
Nycticorax nycticorax, Black-crowned Night Heron
Nycticorax violaceus, Yellow-crowned Night Heron

FAMILY THRESKIORNITHIDAE
Eudocimus albus, White Ibis
Eudocimus ruber, Scarlet Ibis
Plegadis falcinellus, Glossy Ibis
Plegadis chihi, White-faced Ibis
Ajaia ajaja, Roseate Spoonbill

FAMILY CICONIIDAE
Mycteria americana, Wood Stork

ORDER PHOENICOPTERIFORMES
FAMILY PHOENICOPTERIDAE
Phoenicopterus ruber, Greater Flamingo

ORDER ANSERIFORMES
FAMILY ANATIDAE
Dendrocygna bicolor, Fulvous Whistling-Duck
Dendrocygna autumnalis, Black-bellied Whistling-Duck
Anser albifrons, Greater White-fronted Goose
Chen caerulescens, Snow Goose
Branta bernicla, Brant
Branta canadensis, Canada Goose
Aix sponsa, Wood Duck
Anas crecca, Green-winged Teal
Anas rubripes, American Black Duck
Anas fulvigula, Mottled Duck
Anas platyrhynchos, Mallard
Anas bahamensis, White-cheeked Pintail
Anas acuta, Northern Pintail
Anas discors, Blue-winged Teal
Anas cyanoptera, Cinnamon Teal
Anas clypeata, Northern Shoveler
Anas strepera, Gadwall
Anas penelope, Eurasian Wigeon
Anas americana, American Wigeon
Aythya valisineria, Canvasback
Aythya americana, Redhead
Aythya collaris, Ring-necked Duck
Aythta marila, Greater Scaup
Aythya affinis, Lesser Scaup
Somateria mollissima, Common Eider
Somateria spectabilis, King Eider
Histrionicus histrionicus, Harlequin Duck
Clangula hyemalis, Oldsquaw
Melanitta nigra, Black Scoter
Melanitta perspicillata, Surf Scoter
Melanitta fusca, White-winged Scoter
Bucephala clangula, Common Goldeneye

Bucephala albeola, Bufflehead
Lophodytes cucullatus, Hooded Merganser
Mergus merganser, Common Merganser
Mergus serrator, Red-breasted Merganser
Oxyura jamaicensis, Ruddy Duck
Oxyura dominica, Masked Duck

ORDER FALCONIFORMES
FAMILY CATHARTIDAE
Coragyps atratus, Black Vulture
Cathartes aura, Turkey Vulture

FAMILY ACCIPITRIDAE
Pandion haliaetus, Osprey
Elanoides forficatus, American Swallow-tailed Kite
Elanus caeruleus, Black-shouldered Kite
Rhostrhamus sociabilis, Snail Kite
Ictinia mississippiensis, Mississippi Kite
Haliaeetus leucocephalus, Bald Eagle
Circus cyaneus, Northern Harrier
Accipiter striatus, Sharp-shinned Hawk
Accipiter cooperii, Cooper's Hawk
Buteo lineatus, Red-shouldered Hawk
Buteo platypterus, Broad-winged Hawk
Buteo brachyurus, Short-tailed Hawk
Buteo swainsoni, Swainson's Hawk
Buteo jamaicensis, Red-tailed Hawk

FAMILY FALCONIDAE
Polyborus plancus, Crested Caracara
Falco sparverius, American Kestrel
Falco columbarius, Merlin
Falco peregrinus, Peregrine Falcon

ORDER GRUIFORMES
FAMILY RALLIDAE
Coturnicops noveboracensis, Yellow Rail
Laterallus jamaicensis, Black Rail
Rallus longirostris, Clapper Rail
Rallus elegans, King Rail
Rallus limicola, Virginia Rail
Porzana carolina, Sora
Porphyrula martinica, Purple Gallinule
Gallinula chloropus, Common Moorhen
Fulica americana, American Coot

FAMILY ARAMIDAE
Aramus guarauna, Limpkin

FAMILY GRUIDAE
Grus canadensis, Sandhill Crane

ORDER CHARADRIIFORMES
FAMILY CHARADRIIDAE
Pluvialis squatarola, Black-bellied Plover
Pluvialis dominica, Lesser Golden-Plover
Charadrius alexandrinus, Snowy Plover
Charadrius wilsonia, Wilson's Plover
Charadrius semipalmatus, Semipalmated Plover
Charadrius melodus, Piping Plover
Charadrius vociferus, Killdeer
Charadrius montanus, Mountain Plover

FAMILY HAEMATOPODIDAE
Haematopus palliatus, American Oystercatcher

FAMILY RECURVIROSTRIDAE
Himantopus mexicanus, Black-necked Stilt
Recurvirostra americana, American Avocet

FAMILY SCOLOPACIIDAE
Tringa melanoleuca, Greater Yellowlegs
Tringa flavipes, Lesser Yellowlegs
Tringa solitaria, Solitary Sandpiper
Catoptrophorus semipalmatus, Willet
Actitus macularia, Spotted Sandpiper
Bartramia longicauda, Upland Sandpiper
Numenius phaeopus, Whimbrel
Numenius americanus, Long-billed Curlew
Limosa limosa, Black-tailed Godwit
Limosa haemastica, Hudsonian Godwit
Limosa fedoa, Marbled Godwit
Arenaria interpres, Ruddy Turnstone
Aphriza virgata, Surfbird
Calidris canutus, Red Knot
Calidris alba, Sanderling
Calidris pusilla, Semipalmated Sandpiper
Calidris mauri, Western Sandpiper
Calidris minutilla, Least Sandpiper
Calidris fuscicollis, White-rumped Sandpiper
Calidris bairdii, Baird's Sandpiper
Calidris melanotos, Pectoral Sandpiper
Calidris acuminata, Sharp-tailed Sandpiper
Calidris maritima, Purple Sandpiper
Calidris alpina, Dunlin
Calidris ferruginea, Curlew Sandpiper
Calidris himantopus, Stilt Sandpiper
Tryngites subruficollis, Buff-breasted Sandpiper
Philomachus pugnax, Ruff
Limnodromus griseus, Short-billed Dowitcher
Limnodromus scolopaceus, Long-billed Dowitcher
Gallinago gallinago, Common Snipe
Scolopax minor, American Woodcock
Phalaropus tricolor, Wilson's Phalarope
Phalaropus lobatus, Red-necked Phalarope
Phalaropus fulicaria, Red Phalarope

FAMILY LARIDAE
Stercorarius pomarinus, Pomarine Jaeger
Stercorarius parasiticus, Parasitic Jaeger
Stercorarius longicaudus, Long-tailed Jaeger
Larus atricilla, Laughing Gull
Larus pipixcan, Franklin's Gull
Larus minutus, Little Gull
Larus ridibundus, Common Black-headed Gull
Larus philadelphia, Bonaparte's Gull

Larus delawarensis, Ring-billed Gull
Larus argentatus, Herring Gull
Larus thayeri, Thayer's Gull
Larus fuscus, Lesser Black-backed Gull
Larus hyperboreus, Glaucous Gull
Larus marinus, Great Black-backed Gull
Rissa tridactyla, Black-legged Kittiwake
Xema sabini, Sabine's Gull
Sterna nilotica, Gull-billed Tern
Sterna caspia, Caspian Tern
Sterna maxima, Royal Tern
Sterna sandvicensis, Sandwich Tern
Sterna dougallii, Roseate Tern
Sterna hirundo, Common Tern
Sterna paradisaea, Arctic Tern
Sterna forsteri, Forster's Tern
Sterna antillarum, Least Tern
Sterna anaethetus, Bridled Tern
Sterna fuscata, Sooty Tern
Chlidonias niger, Black Tern
Anous stolidus, Brown Noddy
Anous minutus, Black Noddy
Rynchops niger, Black Skimmer

FAMILY ALCIDAE
Alle alle, Dovekie
Alca torda, Razorbill

ORDER COLUMBIFORMES
FAMILY COLUMBIDAE
Columba squamosa, Scaly-naped Pigeon
Columba leucocephala, White-crowned Pigeon
Columba fasciata, Band-tailed Pigeon
Zenaida asiatica, White-winged Dove
Zenaida aurita, Zenaida Dove
Zenaida macroura, Mourning Dove
Columbina passerina, Common Ground-Dove
Geotrygon chrysia, Key West Quail-Dove
Geotrygon montana, Ruddy Quail-Dove

ORDER CUCULIFORMES
FAMILY CUCULIDAE
Coccyzus erythropthalmus, Black-billed Cuckoo
Coccyzus americanus, Yellow-billed Cuckoo
Coccyzus minor, Mangrove Cuckoo
Crotophaga ani, Smooth-billed Ani
Crotophaga sulcirostris, Groove-billed Ani

ORDER STRIGIFORMES
FAMILY TYTONIDAE
Tyto alba, Common Barn-Owl

FAMILY STRIGIDAE
Otus asio, Eastern Screech-Owl
Bubo virginianus, Great Horned Owl
Athene cunicularia, Burrowing Owl
Strix varia, Barred Owl
Asio otus, Long-eared Owl
Asio flammeus, Short-eared Owl
Aegolius acadicus, Northern Saw-whet Owl

ORDER CAPRIMULGIFORMES
FAMILY CAPRIMULGIDAE
Chordeiles acutipennis, Lesser Nighthawk
Chordeiles minor, Common Nighthawk
Chordeiles gundlacchii, Antillean Nighthawk
Caprimulgus carolinensis, Chuck-will's-widow
Caprimulgus vociferus, Whip-poor-will

ORDER APODIFORMES
FAMILY APODIDAE
Chaetura pelagica, Chimney Swift
Tachornis phoenicobia, Antillean Palm Swift

FAMILY TROCHILIDAE
Amazilia yucatenensis, Buff-bellied Hummingbird
Calliphlox evelynae, Bahama Woodstar
Archilochus colubris, Ruby-throated Hummingbird
Archilochus alexandri, Black-chinned Hummingbird
Selasphorus rufus, Rufous Hummingbird

ORDER CORACIIFORMES
FAMILY ALCEDINIDAE
Ceryle alcyon, Belted Kingfisher

ORDER PICIFORMES
FAMILY PICIDAE
Melanerpes erythrocephalus, Red-headed Woodpecker
Melanerpes carolinus, Red-bellied Woodpecker
Sphyrapicus varius, Yellow-bellied Sapsucker
Picoides pubescens, Downy woodpecker
Picoides villosus, Hairy woodpecker
Picoides borealis, Red-cockaded woodpecker
Colaptes auratus, Northern Flicker
Dryocopus pileatus, Pileated Woodpecker
Campephilus principalis, Ivory-billed Woodpecker

ORDER PASSERIFORMES
FAMILY TYRANNIDAE
Contopus borealis, Olive-sided flycatcher
Contopus virens, Eastern Wood-Pewee
Empidonax flaviventris, Yellow-bellied Flycatcher
Empidonax virescens, Acadian Flycatcher
Empidonax alnorum, Alder Flycatcher
Empidonax traillii, Willow Flycatcher
Empidonax minimus, Least Flycatcher
Sayornis nigricans, Black Phoebe
Sayornis phoebe, Eastern Phoebe
Sayornis saya, Say's Phoebe
Pyrocephalus rubinus, Vermilion Flycatcher
Myiarchus cinerascens, Ash-throated Flycatcher
Myiarchus crinitus, Great Crested Flycatcher
Myiarchus tyrannulus, Brown-crested Flycatcher
Tyrannus vociferans, Cassin's Kingbird

Tyrannus verticalis, Western Kingbird
Tyrannus tyrannus, Eastern Kingbird
Tyrannus dominicensis, Gray Kingbird
Tyrannus caudifasciatus, Loggerhead Kingbird
Tyrannus forficatus, Scissor-tailed Flycatcher
Tyrannus savana, Fork-tailed Flycatcher

FAMILY ALAUDIDAE
Eremophila alpestris, Horned Lark

FAMILY HIRUNDINIDAE
Progne subis, Purple Martin
Tachycineta bicolor, Tree Swallow
Tachycineta cyaneoviridis, Bahama Swallow
Stelgidopteryx serripennis, Northern Rough-winged Swallow
Riparia riparia, Bank Swallow
Hirundo pyrrhonota, Cliff Swallow
Hirundo fulva, Cave Swallow
Hirundo rustica, Barn Swallow

FAMILY CORVIDAE
Cyanocitta cristata, Blue Jay
Aphelocoma coerulescens, Scrub Jay
Corvus brachyrhynchos, American Crow
Corvus ossifragus, Fish Crow

FAMILY PARIDAE
Parus carolinensis, Carolina Chickadee
Parus bicolor, Tufted Titmouse

FAMILY SITTIDAE
Sitta canadensis, Red-breasted Nuthatch
Sitta pusilla, Brown-headed Nuthatch

FAMILY CERTHIIDAE
Certhia americana, Brown Creeper

FAMILY TROGLODYTIDAE
Thryothorus ludovicianus, Carolina Wren
Troglodytes aedon, House Wren
Troglodytes troglodytes, Winter Wren
Cistothorus platensis, Sedge Wren
Cistothorus palustris, Marsh Wren

FAMILY MUSCICAPIDAE
SUBFAMILY SYLVIINAE
Regulus satrapa, Golden-crowned Kinglet
Regulus calendula, Ruby-crowned Kinglet
Polioptila caerulea, Blue-gray Gnatcatcher

SUBFAMILY TURDINAE
Oenanthe oenanthe, Northern Wheatear
Sialis sialis, Eastern Bluebird
Catharus fuscescens, Veery
Catharus minimus, Gray-cheeked Thrush
Catharus ustulatus, Swainson's Thrush
Catharus guttatus, Hermit Thrush
Hylocichla mustelina, Wood Thrush
Turdus migratorius, American Robin
Ixoreus naevius, Varied Thrush

FAMILY MIMIDAE
Dumetella carolinensis, Gray Catbird
Mimus polyglottos, Northern Mockingbird
Toxostoma rufum, Brown Thrasher

FAMILY MOTACILLIDAE
Anthus spragueii, Sprague's Pipit

FAMILY BOMBYCILLIDAE
Bombycilla cedrorum, Cedar Waxwing

FAMILY LANIIDAE
Lanius ludovicianus, Loggerhead Shrike

FAMILY VIREONIDAE
Vireo griseus, White-eyed Vireo
Vireo bellii, Bells' Vireo
Vireo solitarius, Solitary Vireo
Vireo flavifrons, Yellow-throated Vireo
Vireo gilvus, Warbling Vireo
Vireo philadelphicus, Philadelphia Vireo
Vireo olivaceus, Red-eyed Vireo
Vireo altiloquus, Black-whiskered Vireo

FAMILY EMBERIZIDAE
SUBFAMILY PARULINAE
Vermivora bachmanii, Bachman's Warbler
Vermivora pinus, Blue-winged Warbler
Vermivora chrysoptera, Golden-winged Warbler
Vermivora peregrina, Tennessee Warbler
Vermivora celata, Orange-crowned Warbler
Vermivora ruficapilla, Nashville Warbler
Parula americana, Northern Parula
Dendroica petechia, Yellow Warbler
Dendroica pensylvanica, Chestnut-sided Warbler
Dendroica magnolia, Magnolia Warbler
Dendroica tigrina, Cape May Warbler
Dendroica caerulescens, Black-throated Blue Warbler
Dendroica coronata, Yellow-rumped Warbler
Dendroica nigrescens, Black-throated Gray Warbler
Dendroica townsendi, Townsend's Warbler
Dendroica virens, Black-throated Green Warbler
Dendroica fusca, Blackburnian Warbler
Dendroica dominica, Yellow-throated Warbler
Dendroica pinus, Pine Warbler
Dendroica kirtlandii, Kirtland's Warbler
Dendroica discolor, Prairie Warbler
Dendroica palmarum, Palm Warbler
Dendroica castanea, Bay-breasted Warbler
Dendroica striata, Blackpoll Warbler
Dendroica cerulea, Cerulean Warbler
Mniotilta varia, Black-and-White Warbler
Setophaga ruticilla, American Redstart
Protonotaria citrea, Prothonotary Warbler
Helmitheros vermivorus, Worm-eating Warbler
Limnothlypis swainsonii, Swainson's Warbler
Seiurus aurocapillus, Ovenbird
Seiurus noveboracensis, Northern Waterthrush
Seiurus motacilla, Louisiana Waterthrush

Oporornis formosus, Kentucky Warbler
Oporornis agilis, Connecticut Warbler
Oporornis philadelphia, Mourning Warbler
Geothlypis trichas, Common Yellowthroat
Wilsonia citrina, Hooded Warbler
Wilsonia pusilla, Wilson's Warbler
Wilsonia canadensis, Canada Warbler
Icteria virens, Yellow-breasted Chat

SUBFAMILY THRAUPINAE
Spindalis zena, Stripe-headed Tanager
Piranga rubra, Summer Tanager
Piranga olivacea, Scarlet Tanager
Piranga ludoviciana, Western Tanager

SUBFAMILY CARDINALINAE
Cardinalis cardinals, Northern Cardinal
Pheucticus ludovicianus, Rose-breasted Grosbeak
Pheucticus melanocephalus, Black-headed Grosbeak
Guiraca caerulea, Blue Grosbeak
Passerina amoena, Lazuli Bunting
Passerina cyanea, Indigo Bunting
Passerina ciris, Painted Bunting
Spiza americana, Dickcissel

SUBFAMILY EMBERIZINAE
Pipilo erythrophthalmus, Rufous-sided Towhee
Tiaris bicolor, Black-faced Grassquit
Aimophila aestivalis, Bachman's Sparrow
Spizella passerina, Chipping Sparrow
Spizella pallida, Clay-colored Sparrow
Spizella pusilla, Field Sparrow
Pooecetes gramineus, Vesper Sparrow
Chondestes grammacus, Lark Sparrow
Calamospiza melanocorys, Lark Bunting
Passerculus sandwichensis, Savannah Sparrow
Ammodramus savannarum, Grasshopper Sparrow
Ammodramus henslowii, Henslow's Sparrow
Ammodramus leconteii, Le Conte's Sparrow
Ammodramus caudacutus, Sharp-tailed Sparrow
Ammodramus maritimus, Seaside Sparrow
Melospiza melodia, Song Sparrow
Melospiza lincolnii, Lincoln's Sparrow
Melospiza georgiana, Swamp Sparrow
Zonotrichia albicollis, White-throated Sparrow
Zonotrichia leucophrys, White-crowned Sparrow
Zonotrichia querula, Harris' Sparrow
Junco hyemalis, Dark-eyed Junco
Calcarius lapponicus, Lapland Longspur

SUBFAMILY ICTERINAE
Dolichonyx oryzivorus, Bobolink
Agelaius phoeniceus, Red-winged Blackbird
Sturnella magna, Eastern Meadowlark
Sturnella neglecta, Western Meadowlark
Xanthocephalus xanthocephalus, Yellow-headed Blackbird
Euphagus carolinus, Rusty Blackbird
Euphagus cyanocephalus, Brewer's Blackbird
Quiscalus major, Boat-tailed Grackle
Quiscalus quiscula, Common Grackle
Molothrus bonariensis, Shiny Cowbird
Molothrus aeneus, Bronzed Cowbird
Molothrus ater, Brown-headed Cowbird
Icterus spurius, Orchard Oriole
Icterus galbula, Northern Oriole

FAMILY FRINGILLIDAE
SUBFAMILY CARDUELINAE
Carpodacus purpureus, Purple Finch
Carduelis pinus, Pine Siskin
Carduelis tristis, American Goldfinch

United States Department of the Interior
FISH AND WILDLIFE SERVICE
P.O. BOX 2676
VERO BEACH, FLORIDA 32961-2676

June 11, 1998

Bryan Williams
District Environmental Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33830-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-4-1(130) 25
State Project No.: 16320-1402
Dated: February 13, 1998
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Williams:

Thank you for your February 13, 1998, letter to the U.S. Fish and Wildlife Service (FWS) reinitiating section 7 consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

We understand that the Florida Department of Transportation (FDOT) is proposing to widen Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County line in Polk County, Florida. The proposed project area is approximately 29.5 miles (47.4 km) long and will widening Interstate 4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes (high occupancy/single occupancy vehicles) with provisions for rail service in the median.

In your February 13, 1998, letter, you indicated that your project had been modified and will affect an additional 1.77 acres of occupied Florida scrub-jay *(Aphelocoma coerulescens)* habitat. With this modification, a total of 3.17 acres of occupied Florida scrub-jay habitat will be affected by the proposed action. Furthermore, you stated that FDOT is proposing to compensate for this lost habitat by withdrawing credits from your Highlands Mitigation Bank. We support your efforts to compensate for lost habitat by withdrawing 6.34 acre credits from your Mitigation Bank.

In addition, we recommend that FDOT modified the project plans to include the planting of sod along the roadway in a manner that minimizes the exposure of bare sand, thus deterring any roadside foraging of scrub-jays. Also, since the right-of-ways have been clearly defined, these areas shall be clearly marked and avoided to prevent further degradation of occupied scrub habitat due to construction activities.

Your project is proposing to remove habitat that is occupied by the Florida scrub-jay and may affect the species. Based on the fact that you are proposing to affect wetlands of the United States and will be applying to the Department of Army for a permit, the U.S. Army Corps of Engineers will consult with the FWS under section 7 of the ESA during the public notice comment period. At that time we will provide comments concerning the proposed actions.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

James J. Slack
Project Leader
South Florida Field Office

cc:
GFC, Vero Beach, FL
COE, Tampa, FL

FLORIDA GAME AND FRESH WATER FISH COMMISSION

March 17, 1998

OFFICE OF ENVIRONMENTAL SERVIC
BRADLEY J. HARTMAN, Direc
FARRIS BRYANT BUILDI
620 South Meridian Str
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RECEIVED
MAR 23 1998
District One
Environmental Management

Ms. Kimberly Warren
Florida Department of Transportation
District One
P. O. Box 1249
Bartow, FL 33831-1249

RE: Proposed Right of Way Addition to I-4 Project from West of Memorial Boulevard to the Polk/Osceola County Line, Polk County

Dear Ms. Warren:

The Office of Environmental Services has reviewed the document submitted for the project referenced above. Based on the information provided, we concur with the proposed increase in mitigation acreage for the anticipated increase in impacts to Type III Florida scrub jay habitat.

Sincerely,

Bradley J. Hartman
Director, Office of Environmental Services

BJH/JMW/rs
ENV 1-3-2
CC: Mr. Terry Gilbert
i4conc-1.ypd

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Jeff Sawyer	From Mark A. Schulz
Co. Michael Baker	Co. FDOT
Dept.	Phone # (941) 519-2357
Fax # (813) 287-5651	Fax #

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676

August 27, 1997

Mark A. Schulz
Environmental Project Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33830-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-4-1(130) 25
State Project No.: 16320-1402
Dated: March 18, 1997
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Schulz:

Thank you for your July 28, 1997, letter to the U.S. Fish and Wildlife Service (FWS) submitted in response to our May 8, 1997, letter requesting additional information for the proposed road-widening project referenced above. This letter represents the FWS' view on the effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

The Florida Department of Transportation (FDOT) is currently conducting a Project Development and Environmental Study for improvements to Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County line in Polk County, Florida. The purpose of the study is to provide detailed information necessary for the FDOT to reach a decision on the type and design of the road improvements that are warranted within the study area. The study area length is approximately 29.5 miles (47.4 km) long to accommodate present and future traffic demands. The project involves the widening of Interstate 4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes (high occupancy/single occupancy vehicles) with provisions for rail service in the median.

Our May 8, 1997, letter requested additional information concerning three federally threatened bald eagle *(Haliaeetus leucocephalus)* nests, PO-49, PO-50A and PO-64, which are in the vicinity of the project area. Available information indicates that PO-49 was blown out of the tree, and the nest tree was destroyed. A new nest, PO-49A, was constructed approximately 4,100

feet south of the proposed project. We have designated a primary zone for this nest to extend 750 feet in all directions from the nest and a secondary zone to extend an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from the nest. Information indicates that nest PO-50A is located 3,800 feet northwest of the project area. Given the surrounding habitat and development, we have designated a primary zone that extends 750 feet from the nest and a secondary zone that extends an additional 750 feet from the boundary of the primary zone, for a total distance of 1,500 feet from the nest. As stated in our May 8, 1997, letter, PO-64A is approximately one mile from the project area.

Given the above information, the proposed project is located outside of the protection zones for bald eagle nests PO-49, PO-49A, PO-50A, and PO-64A. Therefore, we conclude that the proposed project is not likely to adversely affect the aforementioned bald eagle nests.

Although this does not constitute a Biological Opinion described under section 7 of the ESA, it does fulfill the requirements of the ESA, and no further action is required. If modifications are made to the project or if additional information involving potential impacts on listed species becomes available, reinitiation of consultation may be necessary.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

Thomas E. Grahl
Acting Field Supervisor,
South Florida Ecosystem Office

cc:
GFC, Vero Beach, FL
COE, Tampa, FL

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676

May 8, 1997

Mark A. Schulz
Environmental Project Manager
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33831-1249

FWS Log No.: 4-1-97-I-524
Federal Aid Project No.: ACDH-41 (130) 25
State Project No.: 16320-1402
Dated: March 18, 1997
Applicant: Florida Department of Transportation
County: Polk

Dear Mr. Schulz:

Thank you for your March 18, 1997, letter to the U.S. Fish and Wildlife Service (FWS) requesting our review of the project referenced above. This letter represents the FWS' view on the effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA). We have assigned FWS Log Number 4-1-97-I-524 to this consultation.

The Florida Department of Transportation (FDOT) is currently conducting a Project Development and Environmental Study (PD & E) for improvements to Interstate 4 from west of Memorial Boulevard to the Polk/Osceola County Line in Polk County, Florida. The purpose of the study is to provide detailed information necessary for the FDOT to reach a decision on the type and design of the road improvements that are warranted within the study area. The study area length is approximately 29.5 miles (47.4 km) long to accommodate present and future traffic demands. The project involves the widening of Interstate-4 from a four-lane, divided highway to a six-lane general purpose highway, which includes four special-use lanes for high occupancy/ single occupancy vehicles with provisions for rail service in the median.

On October 22, 1993, a letter was submitted to your office enclosing a list of threatened and endangered species that may be present in Polk County. On October 19, 1994, we submitted a letter clarifying the status of three federally threatened bald eagle *(Haliaeetus leucocephalus)* nests, PO-49, PO-50, and PO-64, which were found in the vicinity of the project area. Currently, PO-49 is located approximately 1,900 feet south of the project and was documented as "deteriorating" in the 1995-96 nesting season. In accordance with the *Habitat Management*

Guidelines for the Bald Eagle in the Southeast Region (FWS 1987) (Guidelines), this nest site is considered active for a period of five consecutive breeding seasons subsequent to the 1995-96 season, even if the eagles do not return to the site during that time period. PO-50 is located approximately 3,700 feet north of the project. This nest site was documented as "down" during the 1993-94 nesting season. However, a new nest was established during the 1991-92 nesting season, designated as PO-50A, which is currently active. PO-64 is located approximately one mile south of the proposed project. This nest was documented as "down" during the 1990-91 nesting season. A new nest was constructed during the 1991-92 nesting season and was designated as PO-64A. This nest was documented as "down" during the 1993-94 nesting season. Currently, our information indicates that no new nests have been designated within the PO-64 nesting area. In addition, since this nesting site is a mile from the project area, we do not anticipate that the proposed activities will affect the bald eagle at PO-64A.

Given the above information, it appears that Bald Eagle Nests PO-49 and PO-50A may be affected by the proposed project and should be considered in the project plans. In accordance with the Guidelines, we recommend that no construction activities occur within primary zones for bald eagle nests and further recommend that any activities within the secondary zones of bald eagle nests occur outside of the nesting season (typically October 1 through May 15). In order to establish protection zones for these nests, we need additional information. We recommend FDOT submit a blue-line aerial map indicating the nest's location in reference to the proposed project. This map should identify surrounding development and vegetation within one mile of the project. Once we receive this information, we will make protection zone determinations for the nests. In addition, given the pre-development phase of this project, we recommend that the project alignment be surveyed at least two weeks prior to construction to determine if any new nests are present within one mile of the proposed project.

Information available to us indicates that suitable habitat for the federally threatened Florida scrub jay *(Aphelocoma coerulescens)* is documented within 8,500 feet of the proposed project and, therefore, may be affected. As outlined in previous letters, dated October 19, 1994 and April 16, 1996, we concurred with your determination to conduct surveys in scrub habitat along I-4, between the county line and U.S. 27, using guidelines outlined in *Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay*, published by the Florida Game and Fresh Water Fish Commission (620 South Meridian Street, Tallahassee, Florida 32399-1600). Also, we understand that FDOT has agreed to purchase credits in the Highlands Mitigation Bank at a 2:1 ratio for the 1.4 acres of impact, equating to 2.8 acres. Based on the information available, we conclude that the proposed project is not likely to adversely affect the Florida scrub jay. No critical habitat has been designated for the Florida scrub jay.

The upland habitat on the project site contains state-listed gopher tortoise *(Gopherus polyphemus)* burrows. The federally threatened eastern indigo snake *(Drymarchon corais couperi)* is strongly associated with high, dry, well-drained sandy soils, closely paralleling the sandhill habitat preferred by the gopher tortoise. Also, indigo snakes have been documented using inactive gopher tortoise burrows. Since gopher tortoise burrows are present, the eastern indigo snake may also occur at the project site and, therefore, may be affected. In view of this, we recommend that the Standard Protection Measures for the Eastern Indigo Snake (enclosed) be

followed during any construction phase of this project. As a reminder, part of the Standard Protection Measures for the Eastern Indigo Snake requires that we approve the protection/education plan, the biologist who will be on-site, and any relocation site prior to initiation of any clearing/construction activities. In addition, only a qualified biologist, who has either been authorized by a section 10(a)(1)(A) permit issued by the FWS or has been designated as an agent of the State of Florida by the Florida Game and Fresh Water Fish Commission for such activities, is permitted to come into contact with or relocate an eastern indigo snake. We look forward to reviewing this information. All of the above determinations have not been verified by a site visit.

Thank you for your cooperation in the effort to protect endangered and threatened species. If you have any questions, please contact Grant Webber at (561) 562-3909.

Sincerely,

Thomas E Grahl

Thomas E. Grahl
Acting Field Supervisor
South Florida Ecosystem Office

Enclosure

cc:

GFC, Vero Beach, FL (w/o enclosure)
COE, Vero Beach, FL (w/o enclosure)

U.S. Fish and Wildlife Service. 1987. *Habitat Management Guidelines for the Bald Eagle in the Southeast Region.* 9 pp.

Fitzpatrick, J.W., G.E. Woolfenden, and M.T. Kopeny. 1991. *Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay (Aphelocoma coerulescens coerulescens),* Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 8. 49 pp.

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

The following are guidelines that should be implemented during all projects in counties where the eastern indigo snake *(Drymarchon corais couperi)* is likely to be present; these guidelines may be modified to be project-specific, if necessary:

1. The applicant shall coordinate with the FWS' South Florida Ecosystem Office (SFEO) to establish and implement an eastern indigo snake protection/education plan. This plan must be provided to the SFEO for review and approval at least 45 days prior to any construction or clearing activities.

2. A qualified biologist (or biologists) shall be present on site to oversee the implementation of the protection/education plan during all phases of the project. The name(s) and qualifications of the proposed biologist(s) shall be submitted to the SFEO for review and approval at least 45 days prior to any construction or land-clearing activities.

3. The protection/education plan should include a combination of posters or videos, pamphlets, and lectures and should contain the following information:

   a. a description of the eastern indigo snake, its habits, physical similarities with the black racer, and protection under Federal Law;

   b. instructions not to injure, harm, harass, or kill this species;

   c. directions to notify the qualified biologist if an eastern indigo snake is sighted;

   d. directions to cease construction activity and notify the qualified biologist for further instructions if an eastern indigo snake is sighted. The qualified biologist will determine whether to promptly relocate the eastern indigo snake or allow the snake sufficient time to move away from the site on its own before construction activity can resume (only a qualified, permitted biologist who has either been authorized by a section 10(a)(1)(A) permit issued by the FWS or has been designated as an agent of the State of Florida by the Florida Game and Fresh Water Fish Commission (GFC) for such activities is authorized to come in contact with, or relocate an eastern indigo snake; and

   e. telephone numbers of pertinent agencies to be contacted if an eastern indigo snake is found dead (FWS and GFC).

4. All members of the construction crew shall become familiar with the protection/education plan before any construction or land clearing is initiated.

5. Because eastern indigo snakes are known to occupy gopher tortoise (*Gopherus polyphemus)* burrows, the qualified biologists shall map and flag the locations of all active and inactive gopher tortoise burrows on the site. These tortoise burrow location maps shall be made available to all construction personnel. No more than two weeks prior to actual clearing the qualified biologist shall update the initial survey. A qualified biologist shall also be responsible for identifying potential release sites for eastern indigo snakes prior to land clearing. Information on release sites and preserve areas for eastern indigo snake should be submitted to the SFEO for review and approval at least 45 days prior to any construction or clearing activities.

6. All gopher tortoise burrows (active and inactive) encountered that will be destroyed by the construction or land-clearing activity shall be investigated to determine if eastern indigo snakes are present. To conduct this investigation, an underground camera shall be used by a qualified biologist, experienced with these devices. If the biologist is unable to confidently reach a conclusion concerning the presence or absence of an eastern indigo snake due to obstruction within the burrow, complications with the camera, or the inability to reach the end of the burrow, the burrow shall be carefully excavated with a combination of backhoe and hand excavation to protect eastern indigo snakes that may be inhabiting the burrow. If at any time the qualified biologist determines that an eastern indigo snake is present in the burrow, the camera shall be used to monitor the snake's position and condition during excavation. Before excavating any burrow, a strong, flexible tube or hose should be inserted into the burrow to mark the course of the entire burrow in case it collapses during excavation. If a backhoe is used, the bucket must be equipped with a straight blade, not one with teeth, and the excavation must be done with caution to prevent potential injury to an eastern indigo snake. Hand excavation must replace backhoe excavation approximately three feet before the end of the burrow is reached.

7. If an indigo snake is found in the burrow, it may be captured and released immediately (by the qualified biologist) into the pre-approved release site or preserve. Eastern indigo snakes shall be held in captivity only long enough to transport them to a release site; at no time shall two snakes be kept in the same container during transportation.

8. A monitoring report summarizing all activities pertaining to the eastern indigo snake shall be provided to the SFEO. This information will be used to update our information base on the distribution of eastern indigo snakes in South Florida. The report shall be submitted within 60 days of the conclusion of clearing and construction phases and shall contain the following information:

   a. any sightings of eastern indigo snake (section, Township, Range and Latitude/Longitude or UTM coordinates);

   b. summaries on any relocated snakes (specific locations of where and when they were found and relocated);

   c. a thorough description of the preserve area (types of habitat, percent coverage of dominant species, etc.); and

   d. summaries of maintenance activities and schedules.

I-4 PD&E Project No. 20741-001
XC: TJM/SDF/JLS/Project Book
PBQD - Dave Reutter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 2676
Vero Beach, Florida 32961-2676

IN REPLY REFER TO:

April 16, 1996

RECEIVED
APR 24 1996
MICHAEL BAKER, JR., INC
TAMPA, FL

Jeff Sawyer
Baker Engineering
1408 NW Shore Blvd., Suite 612
Tampa, Florida 33607

Project: Interstate 4, Project Development and Environmental Study
State Project No.: 16320-1402
Counties: Polk & Osceola

Dear Mr. Sawyer:

Reference is made to the Florida Department of Transportation's (FDOT) Biological Assessment, dated October, 1995, concerning the federally listed Florida scrub jay (*Aphgelocoma coerulescens coerulescens*) and the proposed widening of Interstate 4 from a four-lane divided rural freeway to a ten-lane divided urban and rural expressway, in Polk County, Florida. This letter is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The information available to us indicates that two families of the threatened Florida scrub jays exist in the corridor immediately west of the County Road 54 (Loughman Road) crossing. The widening of I-4 would directly affect about 1.4 acres of scrub habitat, but would not affect the adjacent scrub habitat which supports the two families. As mitigation for the loss of scrub habitat, FDOT proposes to purchase credits through the use of the FDOT's Highlands County Mitigation Bank.

As a general guide, individual scrub jay families require approximately 25 acres of contiguous suitable habitat. The U.S. Fish and Wildlife Service (FWS) supports a regionally-based approach to scrub jay conservation in Highlands County. Therefore, the FWS recommends a 2:1 ratio for mitigation of active scrub jay habitat in Highlands County, equating to 2.8 acres of habitat preservation and long-term maintenance as compensation for the 1.4 acres of impact.

For more information regarding scrub jay and survey methodologies, the FWS recommends the Florida Game and Fresh Water Fish Commission's Nongame Wildlife Program Technical Report No. 8 entitled, "Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay (*Aphelocoma coerulescens coerulescens*)."

We have provided for your consideration a list of species that are protected as either threatened or endangered under the Endangered Species Act (16 U.S.C. 1531 et seq.) as well as candidates for listing which may be present on or near the project site. Since this list does not include State-listed species, the Florida Game and Fresh Water Fish Commission should be contacted to identify those species potentially present in the vicinity.

In addition, we are providing you with a list of species that we would consider during our review of any proposal associated with this project. This list represents species that the FWS is required to protect and conserve under other authorities, such as Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and the Migratory Bird Treaty Act (16 U.S.C. 701 et seq.). We are providing this list as technical assistance only. If you would like to discuss means and methods to conserve these species, feel free to contact this office.

Thank you for the opportunity to comment on this project. If you have any questions, feel free to contact John Tichy at (407) 562-3909.

Sincerely yours,

Craig Johnson
Supervisor, South Florida Ecosystem Office

CC:

FG&FWFC, Vero Beach, FL

FLORIDA GAME AND FRESH WATER FISH COMMISSION

110 43rd Ave., S.W.
Vero Beach, FL 32968
January 23, 1996

Mr Jeffrey L. Sawyer
Michael Baker Jr., Inc.
1408 North Westshore Blvd.
Austin Center West, Tower II
Suite 612
Tampa, FL 33607

RE Endangered Species Biological Assessment, I-4
Project Development and Environment Study, Polk
County, FL

Dear Mr Sawyer

The Office of Environmental Services has reviewed the document referenced above and offer the following comments:

According to the assessment, no Florida mice were captured or observed during sampling for this species of special concern on the site of the proposed eastbound rest area. To determine the status of the Florida mouse throughout the corridor, we recommend that sampling be continued wherever gopher tortoise burrows and appropriate habitat exist.

Two families of Florida scrub jays (threatened) occur along the I-4 corridor at county road 54. The Florida Department of Transportation (FDOT) has proposed to purchase acreage in a 1700 acre FDOT mitigation bank in Highlands county as mitigation for impacts to jays. In your cover letter you have asked for our concurrence on this proposed mitigation concept. Usually for projects requiring scrub jay mitigation we defer to the guidance of the U. S. Fish and Wildlife Service (USFWS). Please contact the USFWS to determine if the proposed mitigation concept is adequate.

Sincerely,

John M. Wrublik

John M. Wrublik
Wildlife Biologist

JAN 26 1996

MICHAEL BAKER JR., INC.
TAMPA, FL

JMW:rs
ESV I 11-2
HESBA.LET

MEMORANDUM

TO: David S. Reutter, Parsons Brinckerhoff Quade & Douglas, Inc.

FROM: James N. Layne

DATE: 16 December 1994

SUBJECT: Identification of mice occurring on a site along I4 in Polk County (I-4 PD&E Study)

The following identifications are based on color photographs of specimens live-trapped during 9 nights of trapping at the above-mentioned locality. The specimens were in clear plastic bags (numbers 1-9) or on the ground at time of release (number 6 release site).

Identifications

Photos 1-3: House mouse (*Mus musculus*). Distinguishing characteristics include coloration (dorsum uniform grayish brown; venter, which shows much variation in this species, paler gray); relatively small ears and eyes; profile of snout ("Roman" nose); long, sparsely-haired, uniformally (not bi-colored) tail; and shape of scrotum in photo (#1) of ventral view of a male. A further morphological feature, which would require examination of a dead specimen or skull, absolutely distinguishing this species is the presence of three rows of tubercles on the cheek teeth compared with two rows in any native mouse with which it is likely to be confused. The trappers may also have noted in handling these mice that they were very active and left a strong odor in the trap, which are further distinguishing traits of the species. The occurrence of feral house mice is consistent with the habitat at this site.

Photos 4-8 and 6-release: Oldfield mouse (*Peromyscus polionotus*). On a geographic basis, the subspecies is presumably *P. p. rhoadsi*. Distinguishing characteristics include relatively pale brown dorsal coloration contrasting sharply with white venter; relatively small ears and eyes; relatively short, light-colored tail (a narrow dorsal dark stripe not clearly visible in photos); and rostrum not Roman-nosed. Photos 6-release show the mouse entering a burrow that appears to be a typical oldfield mouse burrow. This species digs its own burrow that has a diameter of about an inch and a fan-shaped apron of sand in front. It looks somewhat like a gopher tortoise burrow but the entrance is usually smaller than the smallest tortoise burrow and circular rather than semi-circular in outline. In this area of central Florida, oldfield mice are often common in open, disturbed sites such as road-shoulders and edges of citrus groves.

Comments

As the purpose of this survey was to determine the status of the Florida mouse (*Podomys floridanus*) on the subject site, which has potential Florida mouse habitat, it may be worth

noting the differences between the above species and the Florida mouse. An adult *Podomys* is considerably larger than the other two species. Although this cannot be determined from the photos because of a lack of a scale, the trappers would undoubtedly have noted this. If weights were taken, the house mouse and oldfield mouse would be less than about 15 grams, whereas adult *Podomys* from that area should be above 25 grams. The Florida mouse also has conspicuously larger ears and eyes; a relatively shorter tail than the house mouse and a relatively longer and darker tail than the oldfield mouse. The most obvious distinguishing feature that would have shown up in the photographs is the bright, ochraceous color on the shoulders and along the sides between the brown dorsal and whitish ventral coloration found in adult Florida mice (the juveniles are pale gray above). Florida mice also leave a distinct "skunky" odor in a trap that the observers probably would have noted. An important identifying characteristic of the Florida mouse is the presence of five rather than six plantar tubercles on the hind feet, which requires an actual specimen in the hand to determine. This was probably checked by observers in the field. However, it should be noted that *Peromyscus polionotus* also may sometimes have only five instead of the typical six plantar tubercles. Such individuals are readily separable from Florida mice on the basis of size, coloration, and other features mentioned above.

FLORIDA GAME AND FRESH WATER FISH COMMISSION

110 43rd Avenue, S.W.
Vero Beach, Florida 32968
October 27, 1994

Mr. Roger J. Menendez
Parsons Brinckerhoff Quade & Douglas, Inc.
4200 West Cypress Street, Suite 700
Tampa, Florida 33607

Re: Threatened and Endangered Species Agency Coordination report, I-4 PD&E Study, Polk County (Work Program No. 1147948; State Project No. 16320-1402)

Dear Mr. Menendez:

At your request, the Office of Environmental Services of the Florida Game and Fresh Water Fish Commission (GFC) has reviewed the referenced coordination report, dated September 23, 1994, and provides the following comments.

The Threatened and Endangered Species Agency Coordination report provides a listing of all wildlife and plant species considered by the GFC and the U.S. Fish and Wildlife Service as endangered or threatened, or, in the case of the GFC, of special concern. Included is a brief natural history summary for each species, a section addressing proposed survey methodologies for each, and a map showing already-known locations of bald eagle (threatened) nests, Florida sandhill crane (threatened) nests, gopher tortoise (species of special concern) burrows, and rookeries within the study area. Neither specific survey methodologies nor measures for addressing potential impacts are provided unless they have been previously published by the GFC as guidelines (i.e. Florida scrub jays and gopher tortoises).

Because the coordination report does not set forth specific methodologies for any species except to reference the GFC guidelines for Florida scrub jays and gopher tortoises, we cannot provide comments regarding the efficacy of the data collection until such specific information is supplied. Since there is little coverage as to how impacts would be addressed for each species, we assume that this aspect will be covered at a later date; however, at this time we can provide the following information.

Sherman's fox squirrel (species of special concern)

The report states that there have been no sightings of the Sherman's fox squirrel within the corridor; however, the Bridgewater Development of Regional Impact Application for Development Approval has documented a sighting within the study corridor at the northwest corner of SR 33 and I-4. We recommend surveying areas containing pines and oaks for evidence of fox squirrel nests.

Florida sandhill crane (threatened)

Additional information is available on nesting areas for Florida sandhill cranes from a 1990 masters thesis by Nancy Dwyer at the University of Florida; however, surveys should not be restricted to these areas, since cranes are likely to nest elsewhere along the study area, as well.

Southeastern American kestrel (threatened)

The GFC has published survey methodology guidelines for the southeastern American kestrel, which is considered a threatened species, as opposed to a species of special concern as described on p. 5. These guidelines are described in the GFC Nongame Wildlife Technical Report No. 13, "Ecology and Habitat Protection Needs of the Southeastern American Kestrel (*Falco sparvarius paulus*) on Large-Scale Development Sites in Florida," and we recommend that they be followed.

Herpetofauna

It does not appear that surveys are planned to ascertain whether eastern indigo snakes, short-tailed snakes, Florida pine snakes (all threatened), or gopher frogs (species of special concern) are present within the study corridor. In the absence of data, we will have to assume that these species occur in the appropriate habitats, and that impacts to them will have to be addressed.

Contrary to the statement on p. 11, the American alligator is listed as threatened only by the U.S. Fish and Wildlife Service; the GFC lists them as species of special concern.

Bald eagle (threatened)

Please refer to the attached memorandum from Mr. Paul A. Schulz regarding corrections to the eagle data.

Other avifauna

The information provided is too scanty to assess. For example, at what time of year would the study area be assessed for nesting by Florida sandhill cranes? What are "standard avifauna surveying techniques" (p. 11)?

General wildlife

One of the issues in question has been whether I-4 has posed a significant barrier to genetic exchange between populations of wildlife species north and south of the roadway. None of the information provided in the coordination report appears to be aimed at ascertaining whether there is justification to link similar areas of habitat on either side of the road. Primary target areas would be protected lands, if any, and regulated habitats

(i.e., wetlands) that may be expected to retain most of their habitat functions in the future.

Sincerely,

Stephen R. Lau
Biological Administrator

SRL/MAP/rs
ENV 1-13-2
i-4coord.let
cc: Mr. Mark Schulz, FDOT, Bartow

Mr. David Ferrell, USFWS, Vero Beach

Mr. Terry Gilbert, GFC, Tallahassee
enclosure

United States Department of the Interior
FISH AND WILDLIFE SERVICE
P.O. BOX 2676
VERO BEACH, FLORIDA 32961-2676

October 19, 1994

Mr. Roger J. Menendez
Supervising Environmental Scientist
Parsons Brinckerhoff
4200 West Cypress Street
Suite 700
Tampa, FL 33607

Dear Mr. Menendez:

Thank you for your letter dated September 23, 1994, regarding the Interstate-4 PD & E Study, Polk County, Florida. We have reviewed the report you provided, and offer the following comments.

The bald eagle was recently reclassified as threatened in Florida by the U.S. Fish and Wildlife Service. The statement on Page 6 of your reported should be amended.

We agree that eagle nest PO50 is likely to be affected by the proposed project, and construction activity in the secondary zone of this nest should be planned to occur outside the nesting season. However, we do not agree with your conclusions for nests PO49 and PO64. Although it is true that the nest structure was lost for PO49, our guidelines call for a waiting period of at least 2 nesting seasons to see if eagles rebuild a nest in another tree in this territory. Paul Schultz of the Florida Game and Fresh Water Fish Commission reports that he was unable to find a new nest in this vicinity in the 1993-94 nesting season. If a new nest is not established in this territory in the 1994-95 nesting season, then the nesting territory would be considered vacant. Your statement that PO64 has been inactive for 5 years appears to be incorrect; the FGFWFC database indicates that the nest was active in 1992. Therefore, any project planning for construction to occur before 1997 should treat this as an active nest.

Regarding scrub jays, we have no evidence of occupied scrub jay habitat along I-4 between the Osceola/Polk county line and U.S. 27; scrub jays are confirmed just northeast of the where I-4 crosses the county line, which according to your report is beyond the scope of the project. However, we strongly agree that you should conduct surveys in scrub habitat along I-4 between the county line and U.S. 27, using the methodology in the FGFWFC's Technical Report No. 8.

Thank you again for the opportunity to provide comments. If you have any questions, you may contact Robert Pace of my staff at 407-562-3909.

Sincerely,

David L. Ferrell
Field Supervisor

cc:
FGFWFC, Tallahassee
FGFWFC, Vero Beach

Florida Game and Fresh Water Fish Commission
Division of Wildlife
South Region

FAX TRANSMITTAL 11 October 1994

TO: Mary Ann Poole, Office of Environmental Services

FROM: Paul A. Schulz, Bureau of Wildlife Management

SUBJECT: Parsons Brinckerhoff's I-4 PD&E Study, Polk County

I have reviewed the information contained in Parsons Brinckerhoff's Report on the Bald Eagle, in particular the section entitled History of the Species Within the Project Corridor on page 7 and have the following comments:

1) Nesting Territory PO-50: Nest PO-50 was active only during the 1990-91 nesting season. Nest PO-50A was first documented during the 1991-92 nesting season and has been the active nest since. Only one nest (PO-50A) was present in the territory during the 1993-94 season.

2) Nesting Territory PO-49: A new nest (designated PO-49A) was constructed in the territory, within a live pine tree southeast of the original nest location, during the 1993-94 nesting season.

3) Nesting Territory PO-64: This territory is last documented, in our records, as being active during the 1992-93 nesting season.

If you have any questions or require additional information, please feel free to contact me.

\PAS
ESC 6-1

ARCHBOLD BIOLOGICAL STATION

ARCHBOLD EXPEDITIONS

SEP 19 [illegible]

15 September 1994

David S. Reutter
Parsons Brinckerhoff
4200 West Cypress Street
Suite 700
Tampa, Florida 33607

Dear Mr. Reutter:

The proposed protocol for surveying the 28-acre abandoned citrus grove for presence of Podomys floridanus looks good to me.

My only suggestion relative to identification would be that you photograph any mice that may be captured to nail down the identification if there was ever a question. The photos (color preferred) need not be fancy but should be close-ups showing the details of coloration, ears, eyes, etc. The mouse could simply be held by the scruff of the neck with one hand and photographed in side view with the camera held in the other hand. Juveniles can be especially tricky to identify, unless one is absolutely certain about the plantar tubercle counts.

Sincerely,

James N. Layne

James N. Layne
Senior Research Biologist Emeritus

P.O. BOX 2057, LAKE PLACID, FLORIDA, 33852, USA • PHONE (813) 465-2571 • FAX (813) 699-1927

E-1311

General Correspondence / Existing Permits

Appendix I

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

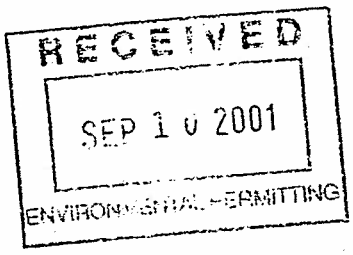
Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 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

September 7, 2001



Eduardo A. Ponce, P.E.
District Permit Engineer
Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33831-1249

Subject: **Notice of Final Agency Action for Approval**
ERP Standard General Construction
Permit No: 44011896.024
Project Name: DOT, I-4 Polk County, Section 9
County: Polk
Sec/Twp/Rge: 7,8,18/26S/27E and 12,13/26S/26E

Dear Mr. Ponce:

This letter constitutes notice of Final Agency Action for approval of the permit application 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, 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.

1 of 15

If you have questions concerning the permit, please contact Jan R. Burke, P.E., at the Bartow Service Office. For assistance with environmental concerns, please contact Mark K. Hurst.

Sincerely,

Brian S. Starford, P.G., Director
Bartow Regulation Department

BSS:JRB:kmh
Enclosures: Approved Permit w/Condltions 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 44011896.024
USACOE
Clayton Lee, P.E., HDR Engineering, Inc.
M. Hurst

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

NOTICE OF AUTHORIZATION TO COMMENCE CONSTRUCTION

DOT, I-4 Polk County, Section 9

PROJECT NAME

Road Project

PROJECT TYPE

Polk

COUNTY

7,8,18/26S/27E and 12,13/26S/26E

SEC(s)/TWP(s)/RGE(s)

Florida Department of Transportation

PERMITTEE

Application No.: 44011896.024

DATE ISSUED: September 7, 2001

Southwest Florida
Water Management District

Issuing Authority

THIS NOTICE SHOULD BE CONSPICUOUSLY DISPLAYED AT THE SITE OF THE WORK

(44.00-075 (10/92)

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
STANDARD GENERAL CONSTRUCTION
PERMIT NO. 44011896.024

EXPIRATION DATE: September 7, 2006

PERMIT ISSUE DATE: September 7, 2001

This permit issued under the provisions of Chapter 373, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.), Rule 40D-40, 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 Administrative Code and the conditions of this permit.

PROJECT NAME: DOT, I-4 Polk County, Section 9

GRANTED TO: Florida Department of Transportation
P.O. Box 1249
Bartow, FL 33831-1249

ABSTRACT: This permit authorization is for the construction of a new surface water management system serving a 300.60-acre public road project, as named above and as shown on the approved construction plans. The surface water management system, which includes one detention pond and ten retention systems, is designed to accommodate the runoff from the activities associated with the widening of the existing four-lane roadway to a six-lane roadway. The roadway improvements will take place at the interchange of Interstate 4 and U.S. Highway 27, Polk County.

The project area is located within hydrologically open drainage basins and hydrologically closed drainage basins. Consistent with Chapter 40D-4, F.A.C., water quantity requirements, the design storm was based on a 25-year, 24-hour rainfall event of 7.0 inches. Allowable discharge for the project was established as a pre-development peak rate of runoff leaving the project site for the design storm event. The project was also designed to ensure that the post-development runoff volume for the 100-year, 24-hour rainfall event will not exceed the pre-development runoff volume for the portions of the project area located within closed basins. 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. Flood Insurance Rate Map Community Panel No. 120261 0225 B indicates that the project does not lie within a floodplain. No adverse off-site/on-site water quantity impacts are expected.

Compliance with Chapter 40D-4, F.A.C., water quality requirements is assured, as the retention systems will treat the runoff from the first inch of rainfall from the directly connected impervious areas through natural infiltration. This is consistent with Part B, Environmental Resource Permitting Information Manual, Section 5.8 of the Basis of Review. The detention pond will utilize wet detention treatment. This is consistent with Part B, Environmental Resource Permitting Information Manual, Sections 5.2(a.)(1). No adverse on-site/off-site water quality impacts are expected. The ponds and swales will be equipped with skimmers to ensure that oils, greases, and floating pollutants are not discharged into the down gradient receiving waters. No adverse on-site/off-site water quality impacts are expected.

The project area includes 0.09 acre of non-forested isolated wetlands. Permanent impacts are proposed to 0.01 acre of non-forested wetlands. Impacts to wildlife habitat are minimal, therefore no mitigation for habitat is required. The project will not cause adverse secondary impacts.

The surface water management system will be maintained and operated by the Florida Department of Transportation.

OP. & MAINT. ENTITY: Florida Department of Transportation

PROPERTY LOCATION: Polk County

Permit No. 44011896.024
Project Name: DOT, I-4 Polk County, Section 9
Page 2

TOTAL ACRES OWNED OR UNDER CONTROL: N/A

PROJECT SIZE: 300.60 Acres

LAND USE: Road Project

DATE APPLICATION FILED: March 22, 2001

AMENDED DATE: N/A

I. Water Quantity/Quality

POND NO.	AREA ACRES AT TOP OF BANK	TREATMENT TYPE
A	4.15	Wet Detention
B	6.79	Retention
B2	8.95	Retention
B3	0.38	Retention
C1	2.18	Retention
C2	4.75	Retention
C3	8.42	Retention
D	3.51	Retention
E	2.68	Retention
SW	0.87	Retention
NW Swales	10.85	Retention
TOTAL	53.53	

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*	Encroachment Result**(feet)
0.00	0.00	NE [X]	Depth [N/A]

*Codes [X] for the type or method of compensation provided are as follows:
NE = No Encroachment
N/A = Not Applicable

**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.

5 of 15

III. Environmental Considerations

Wetland Information:

WETLAND NO.	TOTAL AC.	NOT IMPACTED AC.	TEMPORARILY DISTURBED AC.	PERMANENTLY DESTROYED AC.
N14	0.07	0.07	0.00	0.00
S13	0.02	0.02	0.00	0.00
TOTAL	0.09	0.09	0.00	0.00

Comments: The project area includes 0.09 acre of non-forested isolated wetlands (Wetlands N14 and S13). Permanent impacts are proposed to 0.01 acre of disturbed non-forested wetlands (N14). The wetland loss is not recorded in the Wetland Information table because it was deemed insignificant. Impacts to wildlife habitat are minimal; therefore, no mitigation for habitat is required for 0.01 acre of wetland impacts. The project will not cause adverse secondary impacts.

Watershed names: Oklawaha River and Kissimmee Ridge

A regulatory conservation easement is not required.

A proprietary conservation easement is not 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. The discharges from this system shall meet state water quality standards as set forth in Chapter 62-302 and Section 62-4.242, F.A.C., for class waters equivalent to the receiving waters.

3. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to:

   Bartow Regulation Department
   Southwest Florida Water Management District
   170 Century Boulevard
   Bartow, Florida 33830-7700

   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.

4. 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.

5. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Bartow 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.

6. 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.

7. 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.

8. 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, Bartow Service Office.

9. For dry bottom retention systems, the retention area(s) shall become dry within 72 hours after a rainfall event. If a retention area is regularly wet, this situation shall be deemed to be a violation of this permit.

10. 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 boundaries
    (X) limits of approved wetland impacts

    The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

11. Wetland boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District.

12. All construction is prohibited within the permitted project area until the Permittee acquires legal ownership or legal control of the project area as delineated in the permitted construction drawings.

13. The Permittee, the Florida Department of Transportation, shall submit to the District a site-specific plan for erosion and sediment control best management practices, pursuant to Section 104, F.D.O.T. Standard Specifications for Road and Bridge Construction. The Permittee shall submit this plan and receive District approval prior to construction commencement.

14. Refer to **GENERAL CONDITION** No. 15 herein.

7815

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.

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.

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.

3. 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.

9. 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.

10. 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.

STATEMENT OF COMPLETION AND REQUEST FOR TRANSFER TO OPERATION ENTITY

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

2379 BROAD STREET • BROOKSVILLE, FL 34604-6899
(352) 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 form 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 check 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, or 40D-6, Florida Administrative Code (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 describe the deviation(s) in writing, and provide confirming depiction on the as-built drawings and information.)

This certification shall be verified by TWO COPIES of attached "as-built" drawings (as-built drawings must be signed, dated and sealed by a Florida Registered Professional Engineer or Professional Land Surveyor and Mapper, as required by State Law).

By: _____ Name *(please type)* _____ Fla. P.E. Reg. No.
Signature of Engineer of Record

• AFFIX SEAL •

_____
Company Name

Date: _____ Company Address
(Enter month and day, two-digits each; and year, four digits)

Phone: (____) _____
City, State, Zip

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

_____
Permit Number

_____
Name and Title *(please type)*

_____
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 Chapters 40D-4 and 40D-40, or 40D-45, or 40D-6, 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 and Title *(please type)*

_____
Permit Number

_____
Name of Owner or Other Acceptable Legal Entity for O&M

_____
Address

_____
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

_____
Effective Date
(Enter month and day, two-digits each; and year, four digits)

_____
Permit Number

AS-BUILT DRAWINGS AND INFORMATION CHECKLIST

Following is a list of information that is to be verified and submitted by the Engineer of Record in support of the Statement of Completion.

1. On behalf of the permittee, the Engineer shall certify that:

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, or 40D-6, F.A.C. (The as-built drawings and information submitted to the District shall confirm this certification.); or

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 describe the deviation(s) in writing, and provide confirming depiction on the as-built drawings and information.)

2. The Engineer's certification shall be based upon on-site observation of construction (scheduled and conducted by the professional engineer of record or by a project representative under direct supervision) and review of as-built drawings, with field measurements and verification as needed, for the purpose of determining if the work was completed in accordance with original permitted construction plans, information and specifications.

3. The as-built drawings are to be based on the District permitted construction drawings revised to reflect any changes made during construction. Both the original design and constructed condition must be clearly shown. The plans need to be clearly labeled as "as-built" or "record" drawings. As required by law, all surveyed dimensions and elevations required shall be verified and signed, dated and sealed by a Florida registered professional surveyor and mapper or professional engineer. The following information, at a minimum, shall be verified on the as-built drawings, and supplemental documents if needed:

a. Discharge structures - Locations, 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 clean-outs, pipes, connections to control structures and points of discharge to receiving waters;

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 mitigation 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, as 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 will be shown on the as-built drawings or otherwise provided as needed to verify and support the Statement of Completion (example: home owners association final documents, and other items required by permitting conditions.)

PART II HEARINGS INVOLVING
DISPUTED ISSUES OF MATERIAL FACT

-106.201 Initiation of Proceedings.

) Unless otherwise provided by statute, initiation of proceedings shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document that requests an evidentiary proceeding and asserts the existence of a disputed issue of material fact. Each petition shall be legible and on 8 1/2 by 11 inch white paper. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) Upon receipt of a petition involving disputed issues of material fact, the agency shall grant or deny the petition, and if granted shall, unless otherwise provided by law, refer the matter to the Division of Administrative Hearings with a request that an administrative law judge be assigned to conduct the hearing. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from the face of the petition that the defect cannot be cured.

(5) The Agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(3), 120.54(5) FS.
Law Implemented 120.54(5), 120.569, 120.57 FS.
History—New 4-1-97, Amended 9-17-98.

PART III PROCEEDINGS AND HEARINGS NOT INVOLVING
DISPUTED ISSUES OF MATERIAL FACT

28-106.301 Initiation of Proceedings.

(1) Initiation of a proceeding shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document which requests a proceeding. Each petition shall be legible and on 8 1/2 by 11 inch white paper or on a form provided by the agency. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(e) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(f) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) If the petition does not set forth disputed issues of material fact, the agency shall refer the matter to the presiding officer designated by the agency with a request that the matter be scheduled for a proceeding not involving disputed issues of material fact. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this Rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from tthe face of the petition that the defect cannot be cured.

(5) The agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(5) FS.
Law Implemented 120.54(5), 120.569, 120.57 FS.
History—New 4-1-97, Amended 9-17-98.

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HDR

PHONE CONVERSATION RECORD

Subject: I-4/US27 Interchange / USACOE Permitting 20/2041

Date: July 20, 2001

Time: 10:40 a.m.

Discussed With: Eric Summa / USACOE Tampa Permits Branch
(813) 840-2908 ext. 242

Discussion:

I spoke with Mr. Eric Summa this morning regarding the U.S. Army Corps of Engineers (USACOE) permit review for the above-referenced project. Mr. Summa indicated that upon review of the proposed activities the USACOE had determined that the project would not require a permit under Section 404 criteria.

I indicated to Mr. Summa that I would create a phone conversation record to serve as evidence of the USACOE's finding in lieu of a formal letter of "No Permit Required". Mr. Summa thanked me and the FDOT for this decision as this action will save his staff considerable time and effort.

Chip Messenkopf
Sr. Environmental Scientist
HDR Engineering, Inc.
(813) 282-2356

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

December 20, 2000

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DIRECTOR
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

Mr. John Hartley
Florida Department of Transportation, District One
801 North Broadway
Bartow, Florida 33831

Re: Gopher Tortoise Incidental Take Permit
#POL-16, Polk County

Dear Mr. Hartley:

Enclosed is permit POL-16 for the incidental taking of gopher tortoises, their eggs and their burrows within the development boundaries specified. The application for this permit was complete as of December 6, 2000.

Please contact me or Mr. Steve Lau at (561) 778-5094 if you have any questions regarding this permit.

Sincerely,

Brian Barnett, for

Bradley J. Hartman, Director
Office of Environmental Services

BJH/ps
ENV 3-2/5
Enclosure
gtpermit.ltr
cc: Polk County Planning Department
Mr. Chip Messenkopf, HDR Engineering, Inc.
Ms. Nancy Douglass, South Region, FWC
Major Buckhalter, South Region, FWC
Mr. Steve Lau, OES, FWC
Ms. Angela Williams, Division of Wildlife, FWC

PERMIT FOR TAKING OF GOPHER TORTOISES AND THEIR BURROWS

Chapter 39-27.002(4) FAC

STATE OF FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Issuance Date: December 19,2000

Permittee: Florida Department of Transportation, District One
Street Address: 801 North Broadway
Bartow, Florida 33831
Attn: Mr. John Hartley

Authorized Agent: Mr. Chip Messenkopf
Address: HDR Engineering, Inc.
2202 N. Westshore Blvd., Suite 250
Tampa, Florida 33607

Permit Number: POL-16

Location of Affected Site: Proposed 228-acre I-4 Interstate widening from four to eight lanes, and I-4/US 27 Interchange Improvements project site, including construction of eleven stormwater ponds which impacts 38.3 acres of gopher tortoise habitat, located at the interchange of I-4 and US 27 within Sections 7, 8 and 18, Township 26S, and Range 27E, and Sections 12 and 13, Township 26S, Range 26E, Polk County. See the attached location maps (Attachments 1 and 2).

Permitted Action: The permittee or its agents are authorized to take gopher tortoises, their eggs and their burrows within its development boundaries where such taking is incidental to development activities. The criteria of Rule 39-27.002(4), F.A.C., have been satisfied and the taking, as conditioned below, will not be detrimental to the survival potential of the species.

Provisions/Conditions:

1. The permittee shall protect 9.0 acres of tortoise habitat by using 9.0 acre-credits of gopher tortoise habitat within the Platt Branch Mitigation Park (FDOT 1 Mitigation Bank). Attached is a written receipt (Attachment #3) acknowledging use of the gopher tortoise habitat acre-credits.

2. The permit is effective immediately. As described in the permit Notice of Rights Statement, issuance of this permit may be appealed by a concerned party within 21 days of the permittee's receipt of this notice. If a Petition for Administrative Hearing is timely filed within this prescribed time period, the permittee will be notified by the FWC. Upon such notification, the permittee shall cease all work authorized by this permit until the petition is resolved.

3. This permit does not relieve the permittee from any other "taking" requirements by the U.S. Fish and Wildlife Service (USFWS) or the FWC as to other listed species. Specifically, this permit does not authorize any destruction of scrub jays or scrub jay habitat. Consultation with the USFWS should be sought if this species is present.

4. The permittee, or authorized agents of the permittee, are authorized to move tortoises, at their discretion, within the property boundaries to minimize taking. This permit does not authorize the permittee or its authorized agent(s) to possess or move tortoises off the contiguous ownership of the permittee or to move tortoises into areas previously authorized as a relocation site by FWC permit. A separate relocation permit from FWC shall be required for those activities.

5. This permit does not authorize any taking of gopher tortoises beyond that which is a direct result of development activities or the on-site movement of animals addressed in Condition #4. Any other form of taking or relocation will require a separate permit from the Executive Director.

6. This permit must be available for inspection at all times while engaged in the permitted activity.

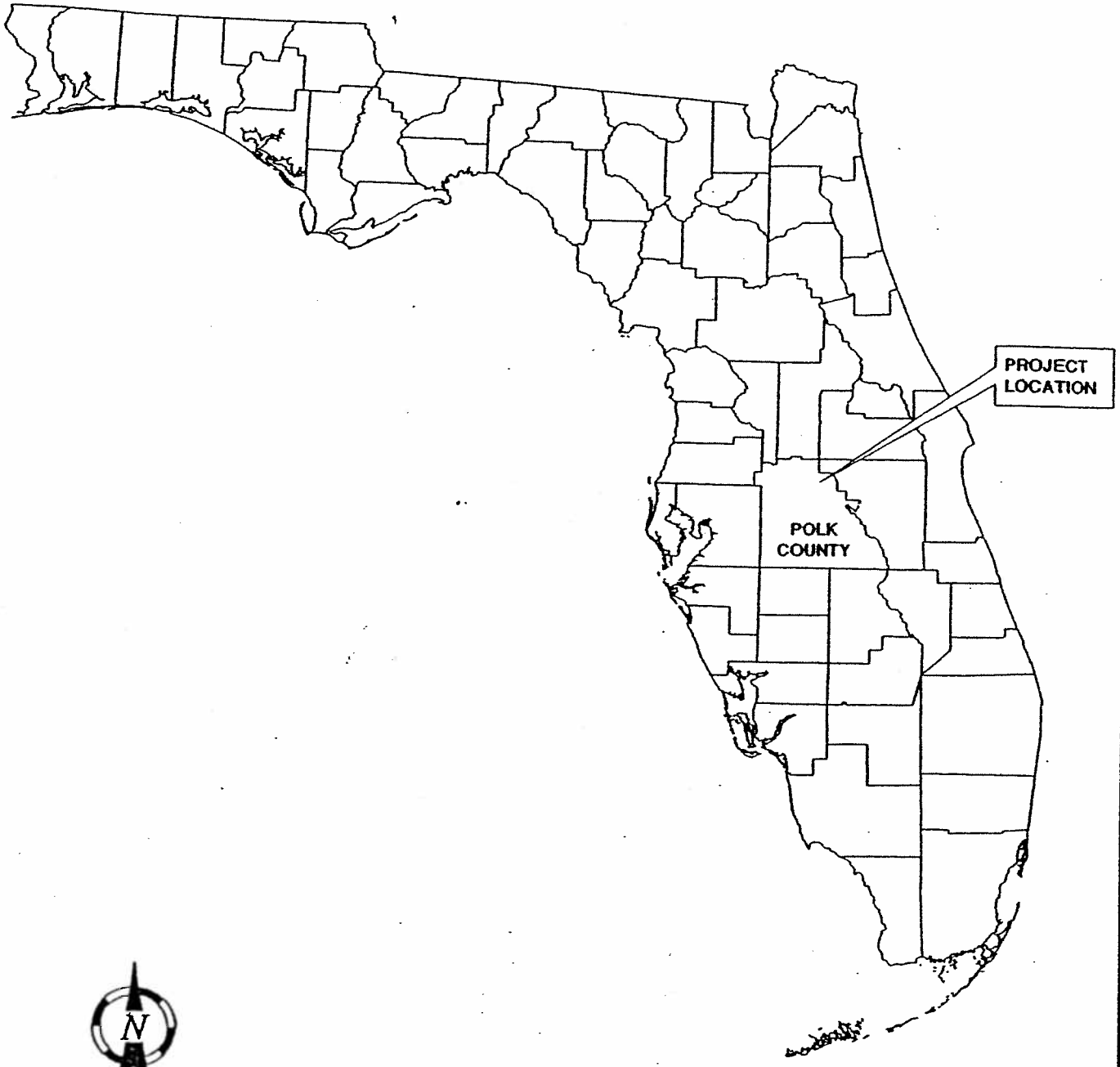
7. This permit is transferrable to subsequent owners of the property.

Notice of Rights Statement: In accordance with Rules 28-5.111 and 28.6.008, Florida Administrative Code, and Section 120.60, Florida Statutes, any party may request a hearing on this matter pursuant to Section 120.57, Florida Statutes by filing a completed Election of Rights form (copy attached) by certified mail, return receipt requested, with the undersigned within twenty-one (21) days of receipt of this permit and notice. If timely requested and a hearing is granted, the hearing will be conducted under the procedures established by Section 120.57, Florida Statutes. A party will be given the opportunity to be represented by counsel or other qualified representative, to take testimony, to call and cross-examine witnesses, and to have subpoenas issued on your behalf.

Allan L. Egbert, Ph.D.
Executive Director

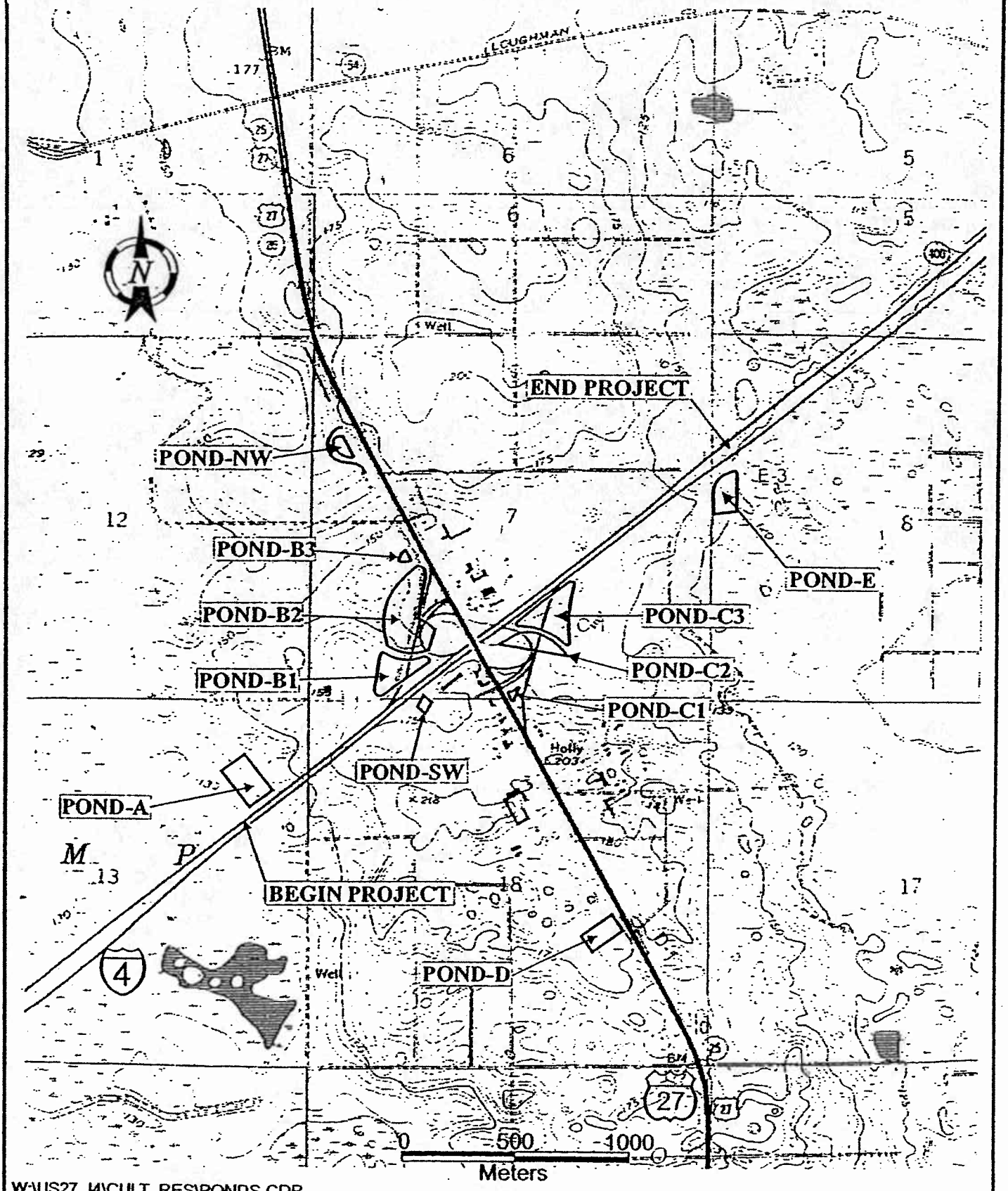
By: Brian Barnett

ENV 3-2/5
Attachments:
1. General Location Map
2. Site Location Map
3. Receipt for Platt Branch mitigation acre-credits
4. Election of Rights
pol-16



HDR	PROJECT LOCATION I-4 / US 27 INTERCHANGE	PROJECT LOCATION	FIGURE 1

E-1332



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I-4/US 27 INTERCHANGE SPN: 16320-3408 WPI: 1147942	PROJECT CONSTRUCTION LIMITS AND PROPOSED POND SITES	FIGURE 2 HDR

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 43011896.027

EXPIRATION DATE: February 25, 2008 PERMIT ISSUE DATE: February 25, 2003

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). 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, I-4 Widening, Section 7
GRANTED TO:	Florida Department of Transportation Post Office Box 1249 Bartow, FL 33831-1249

ABSTRACT: This permit authorization is for the construction of a new surface water management system serving a 121.06-acre public roadway project as named above and as shown on the approved construction drawings. The two-mile roadway improvement project is located east of the U.S. Highway 27 interchange and extends east to the Polk/Osceola county line. Information regarding the surface water management system, 100-year floodplain and wetlands is contained within the tables and comments below.

OP. & MAINT. ENTITY:	Florida Department of Transportation
PROPERTY LOCATION:	Polk County
SEC/TWP/RGE:	4, 5, 7 and 8/26S/27E
TOTAL ACRES OWNED OR UNDER CONTROL:	N/A
PROJECT SIZE:	121.06 Acres
LAND USE:	Road Project
DATE APPLICATION FILED:	November 22, 2002
AMENDED DATE:	N/A

Permit No. 43011896.027
Project Name: FDOT, I-4 Widening, Section 7
Page 2

I. Water Quantity/Quality

POND NO.	AREA ACRES AT TOP OF BANK	TREATMENT TYPE
7-1	2.74	Retention
7-2	2.85	Retention
7-3	0.90	Retention
7-4	1.22	Retention
7-5	0.64	Retention
7-6	0.64	Retention
7-7	1.87	Wet Detention
TOTAL	10.86	

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*	Encroachment Result**(feet)
2.99	6.53	EE [X]	Depth [N/A]

*Codes [X] for the type or method of compensation provided are as follows:
EE = Equivalent Excavation to offset project filling per Section 4.4 of the District's Basis of Review;
N/A = Not Applicable

**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 Information				
WETLAND NO.	TOTAL AC.	NOT IMPACTED AC.	TEMPORARILY DISTURBED AC.	PERMANENTLY DESTROYED AC.
7AaS	0.92	0.57	0.27	0.08
7CM	0.05	0.05	0.00	0.00
7DS	0.85	0.43	0.21	0.21
7EM	0.41	0.40	0.01	0.00
7FN	0.24	0.16	0.05	0.03
7GS	1.09	0.57	0.38	0.14
7HN	2.50	1.43	0.59	0.48
7IM	0.26	0.21	0.05	0.00
7JS	0.42	0.24	0.15	0.03
7KM	0.60	0.54	0.05	0.01
7MS	0.51	0.36	0.10	0.05
7NN	0.23	0.19	0.04	0.00
7PN	5.11	4.04	0.53	0.54
7RS	7.86	6.85	0.59	0.42
TOTAL	21.05	16.04	3.02	1.99

Comments: The project area includes 13.82 acres of forested wetlands (7DS, 7PN, and 7RS) and 7.23 acres of non-forested wetlands (7AaS, 7CM, 7EM, 7FN, 7GS, 7HN, 7IM, 7JS, 7KM, 7MS, and 7NN). Permanent impacts are proposed to 1.17 acre of forested wetlands (7DS, 7PN, and 7RS) and 0.82 acre of non-forested wetlands (7AaS, 7EM, 7FN, 7GS, 7HN, 7IM, 7JS, 7KM, 7MS, and 7NN). Temporary impacts are proposed to 1.33 acres of forested wetlands (7DS, 7PN, and 7RS) and 1.69 acres of non-forested wetlands (7AaS, 7EM, 7FN, 7GS, 7HN, 7IM, 7JS, 7KM, 7MS, and 7NN). The project consists of widening an existing roadway; therefore, no additional secondary impacts are expected.

Mitigation Information:

AREA NO	CREATED/ RESTORED AC	UPLAND PRESERVED AC	ENHANCED WETLAND AC	WETLANDS PRESERVED AC	MISC MITI AC
0.00	0.00	0.00	0.00	0.00	1.99
TOTAL	0.00	0.00	0.00	0.00	1.99
NET CHANGE	0.00			OTHER MITIGATION TOTAL	0.00

Watershed name: Kissimmee Ridge

Comments: Mitigation for 1.99 acres of permanent wetland impacts associated with this project is approved to be provided within the Reedy Creek Mitigation Bank as described in the Southwest Florida Water Management District's "FDOT Mitigation Plan" dated October 30, 2002. Temporary wetland impacts will be restored on site following completion of construction of the project.

A regulatory conservation easement is not required.

A proprietary conservation easement is not 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. The discharges from this system shall meet state water quality standards as set forth in Chapter 62-302 and Section 62-4.242, F.A.C., for class waters equivalent to the receiving waters.

3. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to:

Bartow Regulation Department
Southwest Florida Water Management District
170 Century Boulevard
Bartow, Florida 33830-7700

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.

4. 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.

5. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Bartow 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.

6. 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.

7. The Permittee shall monitor and maintain the wetland restoration areas until the criteria set forth in the Wetland Restoration Success Criteria Conditions are met. The Permittee shall perform corrective actions identified by the District if the District identifies a wetland restoration deficiency.

8. WETLAND RESTORATION SUCCESS CRITERIA: RESTORATION AREAS 7AaS, 7EM, 7FN, 7GS, 7HN, 7IM, 7JS, 7KM, 7MS, and 7NN

Restoration is expected to restore temporary impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands 7AaS, 7EM, 7FN, 7GS, 7HN, 7IM, 7JS, 7KM, 7MS, and 7NN shall be regraded to the original wetland elevations and revegetated with native wetland species endemic to adjoining, undisturbed wetlands, within seven days of completion of construction.

These wetland areas shall be maintained and planted as necessary, to ensure that satisfactory revegetation occurs. "Satisfactory revegetation" means that the herbaceous wetlands have achieved not less than 33 percent cover of planted or naturally re-established herbaceous wetland species within 18 months of completion of construction and a maintenance plan must be developed and implemented to ensure the survival of the planted or naturally re-establishing wetland species. Within the revegetated wetland areas, non-native vegetation must be controlled such that it does not constitute more than 5 percent of the area cover in any stratum at any time for the five-year period following the initial planting or restoration of the site.

9. WETLAND MITIGATION SUCCESS CRITERIA - RESTORATION AREAS 7PN AND 7RS

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands constructed for mitigation purposes will be considered successful and will be released from monitoring and reporting requirements when the following criteria are met continuously for a period of at least one year without intervention in the form of irrigation or the addition or removal of vegetation.

a. The mitigation area can be reasonably expected to develop into a Palustrine Forested Wetland as determined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States.

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetland/surface water type specified in criterion "a."

c. The dominant and subdominant species of desirable wetland plants comprising each vegetation zone and stratum of the mitigation area shall be as follows:

ZONE	STRATUM	PERCENT COVER	DOMINANT SPECIES	SUBDOMINANT SPECIES
N/A	Canopy	50%	*Acer rubrum*	*Magnolia virginiana*

[1] Tree species must be greater than 12 feet in height and have been planted for greater than three (3) years.
[2] Plant species providing the same function as those listed may also be considered in determining success.

This criterion must be achieved within five (5) years of mitigation area construction. The Permittee shall complete any activities necessary to ensure the successful achievement of the mitigation requirements by the deadline specified. Any request for an extension of the deadline specified shall be accompanied with an explanation and submitted as a permit letter modification to the District for evaluation.

d. Species composition of recruiting wetland vegetation are indicative of the wetland type specified in criterion "a."

e. Density of trees surviving in the mitigation area equals or exceeds 400/acre for trees greater than or equal to 12 feet in height.

f. Coverage by nuisance or exotic species does not exceed five percent.

g. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

The mitigation area may be released from monitoring and reporting requirements and be deemed successful at any time during the monitoring period if the Permittee demonstrates that the conditions in the mitigation area have adequately replaced the wetland and surface water functions affected by the regulated activity and that the site conditions are sustainable.

10. WETLAND MITIGATION SUCCESS CRITERIA - RESTORATION AREA 7DS

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands constructed for mitigation purposes will be considered successful and will be released from monitoring and reporting requirements when the following criteria are met continuously for a period of at least one year without intervention in the form of irrigation or the addition or removal of vegetation.

a. The mitigation area can be reasonably expected to develop into a Palustrine Forested Wetland as determined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States.

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetland/surface water type specified in criterion "a."

c. The dominant and subdominant species of desirable wetland plants comprising each vegetation zone and stratum of the mitigation area shall be as follows:

ZONE	STRATUM	PERCENT COVER	DOMINANT SPECIES[1]	SUBDOMINANT SPECIES[2]
N/A	Canopy	30%	*Magnolia virginiana*	*Gordonia lasianthus*

[1] Tree species must be greater than 12 feet in height and have been planted for greater than three (3) years.
[2] Plant species providing the same function as those listed may also be considered in determining success.

This criterion must be achieved within five (5) years of mitigation area construction. The Permittee shall complete any activities necessary to ensure the successful achievement of the mitigation requirements by the deadline specified. Any request for an extension of the deadline specified shall be accompanied with an explanation and submitted as a permit letter modification to the District for evaluation.

d. Species composition of recruiting wetland vegetation are indicative of the wetland type specified in criterion "a."

e. Density of trees surviving in the mitigation area equals or exceeds 400/acre for trees greater than or equal to 12 feet in height.

f. Coverage by nuisance or exotic species does not exceed five percent.

g. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

The mitigation area may be released from monitoring and reporting requirements and be deemed successful at any time during the monitoring period if the Permittee demonstrates that the conditions in the mitigation area have adequately replaced the wetland and surface water functions affected by the regulated activity and that the site conditions are sustainable.

11. The Permittee shall undertake required maintenance activities within the wetland restoration areas as needed at any time between restoration area planting and termination of monitoring, with the exception of the final year. Maintenance shall include the manual removal of all nuisance and exotic species; with sufficient frequency that their combined coverage at no time exceeds the Wetland Mitigation Success Criteria Conditions above. Herbicides shall not be used without the prior written approval of the District.

12. A Wetland Restoration Completion Report shall be submitted to the District within 30 days of completing planting of the wetland restoration areas. Upon District inspection and approval of the restoration areas, the monitoring program shall be initiated with the date of the District field inspection being the construction completion date of the restoration areas. Monitoring events shall occur between March 1 and November 30 of each year. An Annual Wetland Monitoring Report shall be submitted upon the anniversary date of District approval to initiate monitoring.

Annual reports shall provide documentation that a sufficient number of maintenance inspection/activities were conducted to maintain the restoration areas in compliance with the Wetland Mitigation Success Criteria Conditions above. Note that the performance of maintenance inspections and maintenance activities will normally need to be conducted more frequently than the collection of other monitoring data to maintain the restoration areas in compliance with the Wetland Mitigation Success Criteria Conditions above.

Monitoring Data shall be collected annually.

13. Termination of monitoring for the wetland restoration areas shall be coordinated with the District by:

a. notifying the District in writing when the criteria set forth in the Wetland Mitigation Success Criteria Conditions have been achieved;

b. suspending all maintenance activities in the wetland restoration areas including, but not limited to, irrigation and addition or removal of vegetation; and,

c. submitting a monitoring report to the District one year following the written notification and suspension of maintenance activities.

Upon receipt of the monitoring report, the District will evaluate the wetland restoration sites to determine if the Mitigation Success Criteria Conditions have been met and maintained. The District will notify the Permittee in writing of the evaluation results. The Permittee shall perform corrective actions for any portions of the wetland restoration areas that fail to maintain the criteria set forth in the Wetland Mitigation Success Criteria Conditions.

14. The construction of all wetland impacts and wetland restoration 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.

15. 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 boundaries
(X) limits of approved wetland impacts

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

16. Wetland boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District.

17. 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.

18. 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, Bartow Service Office.

19. For dry bottom retention systems, the retention areas shall become dry within 72 hours after a rainfall event. If a retention area is regularly wet, this situation shall be deemed to be a violation of this permit.

20. Mitigation to offset adverse impacts to wetlands and other surface waters authorized by this permit shall be provided by the implementation of the Southwest Florida Water Management District's "FDOT Mitigation Plan", dated October 30, 2002.

21. 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

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 43011896.027
DOT – I-4 Widening, Section 7

SUMMARY: This permit authorization is for the construction of a new surface water management system serving a 121.06-acre public roadway project as named above and as shown on the approved construction drawings. The roadway improvements consist of the addition of two new travel lanes and a 10-foot paved shoulder each direction to the existing four-lane roadway. The surface water management system, which includes a wet detention pond and six retention systems, is designed to accommodate the runoff from the activities associated with the roadway-widening project. The two mile roadway improvement project is located east of the U.S. Highway 27 interchange and extends east to the Polk/Osceola county line.

The project is located within hydrologically open and closed drainage basins. Consistent with Chapter 40D-4, F.A.C., water quantity requirements, the design storm was based on the 25-year, 24-hour rainfall event of 7.0 inches for open drainage basins. Allowable discharge for the project was established as a pre-development peak rate of runoff leaving the project site for the 25-year, 24-hour rainfall event. 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. In the closed drainage basins, the total post-development runoff volume leaving the site will be no more than the total pre-development runoff volume leaving the site for the 100-year, 24-hour rainfall event. Flood Insurance Rate Map Community Panel Nos. 12105C0 100F, F, 125F, and 225F indicates that portions of the project lie within and adjacent to the floodplain. There will be 2.99 acre-feet of encroachment within these floodplains. As compensation for this encroachment, 6.53 acre-feet of equivalent excavation is proposed. No adverse off-site/on-site water quantity impacts are expected.

Compliance with Chapter 40D-4, F.A.C., water quality requirements is assured, as the detention pond will treat one inch of stormwater runoff from the contributing drainage basin area through wet detention. The retention systems will treat the first one-half inch of runoff from the contributing drainage basin areas through natural infiltration. Refer to Subsection 5.2(a.) and (c.) of the Basis of Review. The discharge structures for the detention/retention ponds will be equipped with skimmers to ensure that oils, greases, and floating pollutants are not discharged into the down gradient receiving waters. No adverse on-site/off-site water quality impacts are expected.

The following are the determinations of the Environmental Scientist evaluation of this project:

-Wetlands and surface waters	The project area includes 13.82 acres of forested wetlands and 7.23 acres of non-forested wetlands.
-Wetland/surface water impacts	Permanent impacts are proposed to 1.17 acre of forested wetlands and .0.82 acre of non-forested wetlands. Temporary impacts are proposed to 1.33 acres of forested wetlands and 1.69 acres of non-forested wetlands.
-Reduction/Elimination of impacts	Addressed in initial submittal received on 11/22/02 (Section 3.0, page 18 of 24)
-Mitigation	Mitigation for 1.99 acres of permanent wetland impacts associated with this project is approved to be provided in the Reedy Creek Mitigation Bank as described in the Southwest Florida Water Management District's "FDOT Mitigation Plan" dated October 30, 2002. Temporary wetland impacts will be restored on site following completion of construction of the project.
-Secondary Impacts	The project consists of widening an existing roadway; therefore, no additional secondary impacts are expected.

Existing Plans FPID No. 92130-3401, 75280-3498, 77160-3402

Osceola County

State Road No. 400 (I-4)

State Project No.

92130-3401

75280-3498

77160-3402

FISCAL YEAR	SHEET NO.
94	1

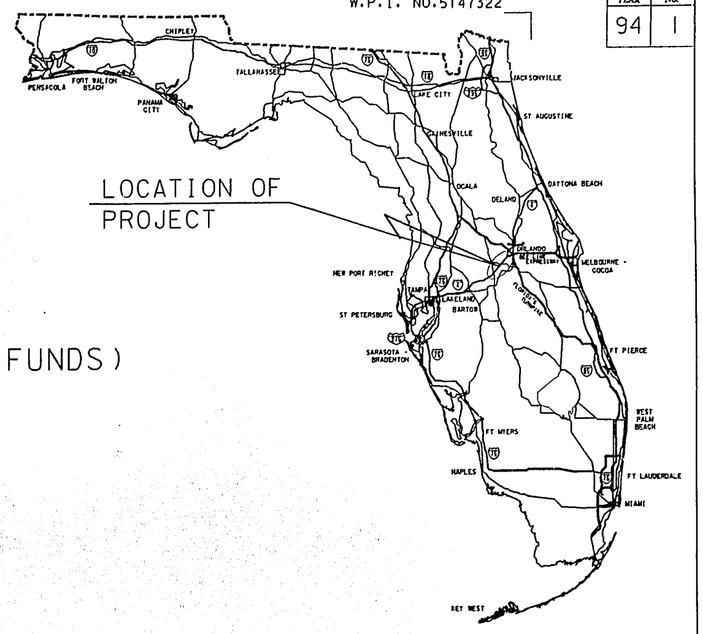
W.P.I. NO.5147322

THIS CONTRACT PLAN SET INCLUDES:

ROADWAY PLANS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY



LOCATION OF PROJECT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	KEY MAP SHEET
3	TYPICAL SECTION FOR FENCING
4	SUMMARY OF QUANTITIES

STATE PROJECT NO. 92130-3401 (FEDERAL FUNDS)

OSCEOLA COUNTY

STATE ROAD NO 400 (I-4)

SEE SHEET 2 FOR KEY MAP AND PROJECT LOCATION

NOTE: THIS PROJECT IS TO BE LET TO CONTRACT WITH STATE PROJECT NOS. 75280-3498 AND 77160-3402.

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS (BOOKLET DATED JANUARY, 1992).

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

GOVERNING SPECIFICATIONS: STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 1991 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

LENGTH OF PROJECT

	LINEAR FT.	MILES
ROADWAY	41609.73	7.880
BRIDGES	0.000	0.000
NET LENGTH OF PROJ.	41609.73	7.880
EXCEPTIONS	0.000	0.000
GROSS LENGTH OF PROJ.	41609.73	7.880

FDOT PROJECT MANAGER : MARK D. ROBINSON, P.E.

7-16-93

ROADWAY PLANS APPROVED BY: MARK D. ROBINSON, P.E.

DATE: 7/16/93

P.E. NO.: 42054

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Fri Jul 16 14:51:31 1993
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FISCAL YEAR	SHEET NO.
94	1

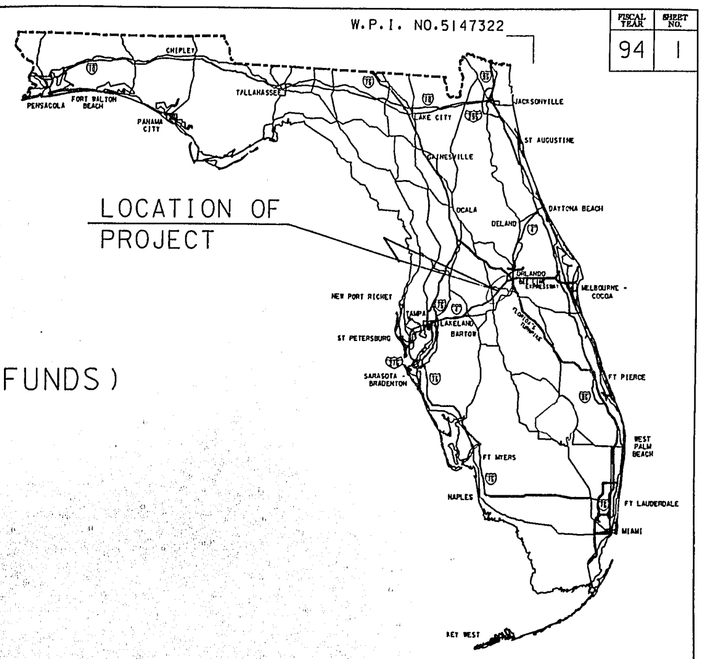
W.P.I. NO.5147322

THIS CONTRACT PLAN SET INCLUDES:

ROADWAY PLANS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY



LOCATION OF PROJECT

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	KEY MAP SHEET
3	TYPICAL SECTION FOR FENCING
4	SUMMARY OF QUANTITIES

STATE PROJECT NO. 92130-3401 (FEDERAL FUNDS)

OSCEOLA COUNTY

STATE ROAD NO 400 (I-4)

SEE SHEET 2 FOR KEY MAP
AND PROJECT LOCATION

NOTE: THIS PROJECT IS TO BE LET TO CONTRACT WITH STATE PROJECT NOS. 75280-3498 AND 77160-3402.

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS (BOOKLET DATED JANUARY, 1992).

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LENGTH OF PROJECT

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FDOT PROJECT MANAGER : MARK D. ROBINSON, P.E.

7-16-93

ROADWAY PLANS APPROVED BY: MARK D. ROBINSON, P.E.

DATE: 7/16/93

P.E. NO.: 42054

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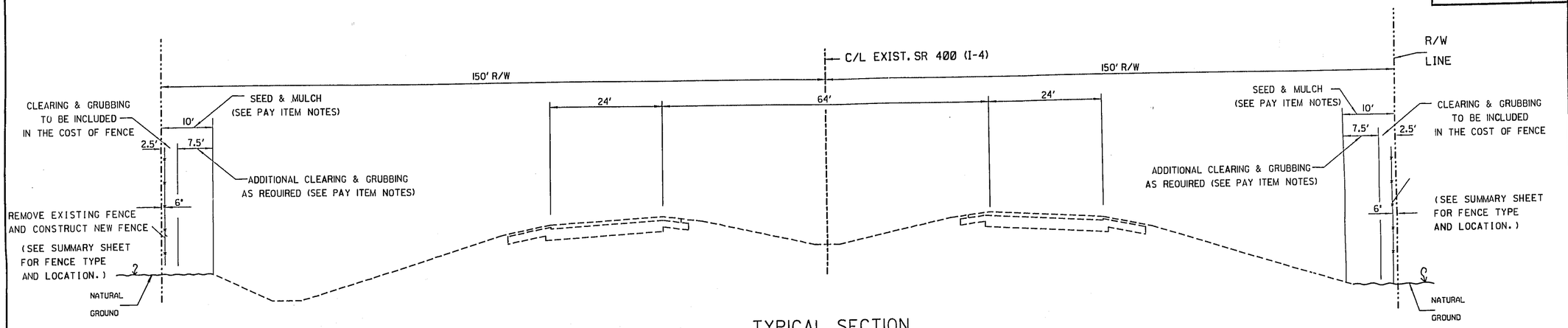
STATE PROJ. NO.	SHEET NO.
92130-3401	3



TYPICAL SECTION

STA. 00+00.00 - STA. 416+09.73

PAY ITEM NOTES

110-1-1 AREA OF ADDITIONAL 7.5 FT. WIDTH OF A CLEARING & GRUBBING ADJACENT TO FENCE LINE IS APPROXIMATE. ESTIMATED QUANTITY OF 3.108 ACRES IS BASED ON 20% OF THE FENCE LINE LENGTH AND IS TO BE ADJUSTED AS NECESSARY TO MEET ACTUAL FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

550- 1 THE MAINTENANCE OF TRAFFIC FOR THIS PROJECT WILL BE IN ACCORDANCE WITH THE CURRENT FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS 600 SERIES AND THE STANDARD SPECIFICATIONS. SPECIAL ATTENTION IS DIRECTED TO INDEX NUMBERS 600, AND 610. COST TO BE INCLUDED IN BID PRICE FOR FENCE.

570- 2
570- 3
570- 5
570- 9 QUANTITIES FOR THESE ITEMS ARE APPROXIMATE. QUANTITIES ARE BASED ON 20% OF THE FENCE LINE LENGTH AND ARE TO BE ADJUSTED AS NECESSARY TO MEET ACTUAL FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.

550- 1
550- 2
550-3-1
550-3-2
550-4-1
550-4-2 INCLUDES 2.5 FT. WIDTH OF CLEARING & GRUBBING SURROUNDING FENCE LINE AS NEEDED TO CONSTRUCT FENCE. THIS ALSO INCLUDES THE REMOVAL AND DISPOSAL OF ALL FENCE, POSTS AND ATTACHED HARDWARE BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. OTHER INCIDENTAL WORK THAT MAY BE REQUIRED TO CONSTRUCT FENCE IS TO BE PAID FOR AS SPECIFIED IN SECTION 550 OF THE STANDARD SPECIFICATIONS.

GENERAL NOTES

1. THE PROPOSED FENCE SHALL BE CONSTRUCTED IN THE SAME LOCATION AS THE EXISTING FENCE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. IN AREAS WHERE IN THE ENGINEER'S JUDGEMENT THE PROPOSED FENCE AND THE RIGHT OF WAY LINE MAY BE IN CONFLICT, THE ACTUAL RIGHT OF WAY LINE SHALL BE LOCATED BY SURVEY CONDUCTED BY THE CONTRACTOR, AS DIRECTED BY THE PROJECT ENGINEER. THIS QUANTITY WILL BE MINIMAL, COST TO BE INCLUDED IN BID PRICE FOR CLEARING AND GRUBBING.
3. AT THE END OF EACH DAY THE CONTRACTOR SHALL MAINTAIN INTERSTATE SECURITY BY CONSTRUCTING EITHER PROPOSED OR TEMPORARY FENCE AT NO ADDITIONAL COST TO THE DEPARTMENT.
4. EXISTING DRAINAGE STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION SHALL REMAIN.
5. THE APPROPRIATE UTILITY COMPANY SHALL BE NOTIFIED BY THE CONTRACTOR IN ADVANCE OF ANY EXCAVATION INVOLVING THEIR UTILITY SO THAT A COMPANY REPRESENTATIVE CAN BE PRESENT.
6. CONTRACTOR SHALL WHEN POSSIBLE KEEP ALL PERSONNEL, PARKED EQUIPMENT, PILED DEBRIS AND STOCKPILED MATERIALS 40' CLEAR FROM TRAVELED ROADWAY.
7. ATTENTION IS DRAWN TO THE FACT THAT THE CONTRACT TIME WAS ESTABLISHED BY ESTIMATING ONE (1) MILE A DAY WHICH MAY REQUIRE MULTIPLE WORK CREWS TO ACCOMPLISH ALL WORK IN THE GIVEN CONTRACT TIME.
8. ANY RIGHT-OF-WAY MARKER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A RIGHT-OF-WAY MARKER IS DESTROYED IT SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
9. ANY DESIRABLE TREES WITHIN THE CLEARING AND GRUBBING AREA MAY REMAIN, AS DIRECTED BY THE ENGINEER.

7-16-93

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	FLORIDA DEPARTMENT OF TRANSPORTATION	TYPICAL SECTION FOR FENCING	

Fri Jul 16 17:02:54 1993
/usr/usr3/pro1/fm160/3402/hpsrd01.dgn

Fri Jul 16 17:02:32 1993
/usr/usr3/pro1/fm160/3402/hpsrd01.dgn

STATE PROJ. NO.	SHEET NO.
92130-3401	4

SUMMARY OF FENCING

LOCATION STA. TO STA. STATIONS FROM R/W MAP	SIDE	FENCE TYPE A LF. P	FENCE TYPE A LF. F	PULL & END POST ASSEMBLY EA. P	PULL & END POST ASSEMBLY EA. F	CORNER POST ASSEMBLY EA. P	CORNER POST ASSEMBLY EA. F	FENCE TYPE B LF. P	FENCE TYPE B LF. F	PULL & END POST ASSEMBLY EA. P	PULL & END POST ASSEMBLY EA. F	CORNER POST ASSEMBLY EA. P	CORNER POST ASSEMBLY EA. F	CLEARING & GRUBBING EA. P	CLEARING & GRUBBING EA. F	REMARKS
0+00.00 TO 12+51.86	LT.							1434.47		7				.313		INTERCHANGE (CR 532)
12+51.86 TO 110+00.00	LT.	9749.00		30		2								2.238		
110+00.00 TO 121+00.00	LT.							1100.00		4				.230		CAMPGROUNDS
120+00.00 TO 255+00.00	LT.	13600.00		41										3.099		
255+00.00 TO 270+92.31	LT.	1592.31		5										.366		
270+92.31 TO 303+33.01	LT.	3240.70		10										.744		
303+33.01 TO 319+15.96	LT.	1592.31		5										.366		
319+15.96 TO 323+64.23	LT.	448.27		3										.103		
323+64.23 TO 377+51.50	LT.							7189.22		21		3		1.650		INTERCHANGE (SR 192)
377+51.50 TO 416+09.73	LT.	3858.23		12										.886		
00+00.00 TO 9+14.63	RT.	914.63						1223.22		5		1		.210		INTERCHANGE (CR 532)
9+14.63 TO 50+00.00	RT.	4085.37		13										.938		
50+00.00 TO 110+00.00	RT.	6000.00		19										1.377		
110+00.00 TO 120+00.00	RT.	1000.00		3		2								.230		
120+00.00 TO 255+00.00	RT.	13600.00		41										3.099		
255+00.00 TO 270+92.31	RT.	1592.31		5										.366		
270+92.31 TO 303+33.01	RT.	3240.70		10										.744		
303+31.01 TO 319+15.96	RT.	1592.31		5										.366		
319+15.96 TO 328+78.25	RT.	962.29		3										.221		
328+78.25 TO 376+91.10	RT.							8212.84		28		5		1.885		INTERCHANGE (SR 192)
376+91.10 TO 416+09.73	RT.	3938.63		12										.904		
TOTAL :		71,107.06		217		4		19159.75		65		9		20.335		

NOTE: FENCE QUANTITIES CALCUTAED FROM R/W MAP STATION 4860+00 - NORTH BOUND REST AREA SHALL HAVE A TYPE B GATE. LOCATION TO BE DESIGNATED BY THE ENGINEER.

NOTE: EXTRA QUANTITIES HAVE BEEN CALCULATED AT CROSS, REST AREA AND OTHER LOCATIONS THAT REQUIRE ADDITIONAL FENCE.

7-16-93

REVISIONS															
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

FLORIDA DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

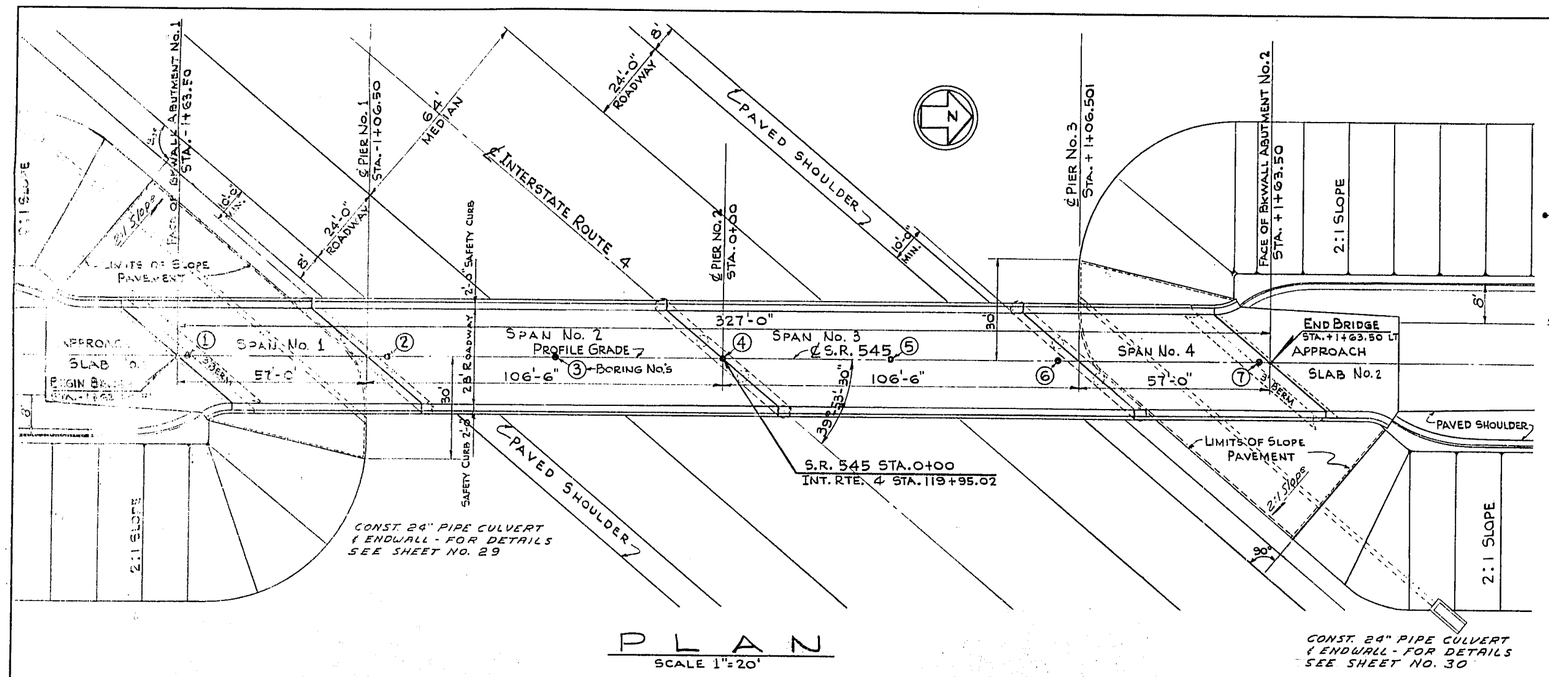
Fri Jul 16 16:13:32 1993
/usr/usr1/prj/92130/3401/sequential.dgn

Fri Jul 16 16:11:30 1993
/usr/usr1/prj/92130/3401/sequential.dgn

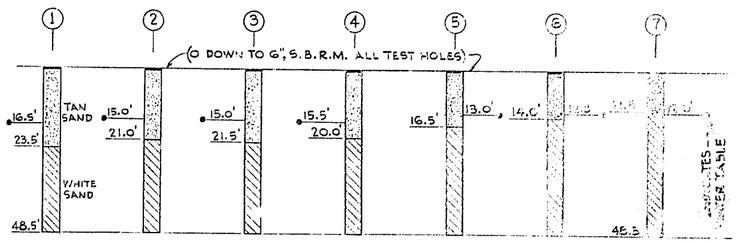
State Project No.

92130-3401

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3404 I-4-2(39)174	59	B-15



PLAN
SCALE 1"=20'

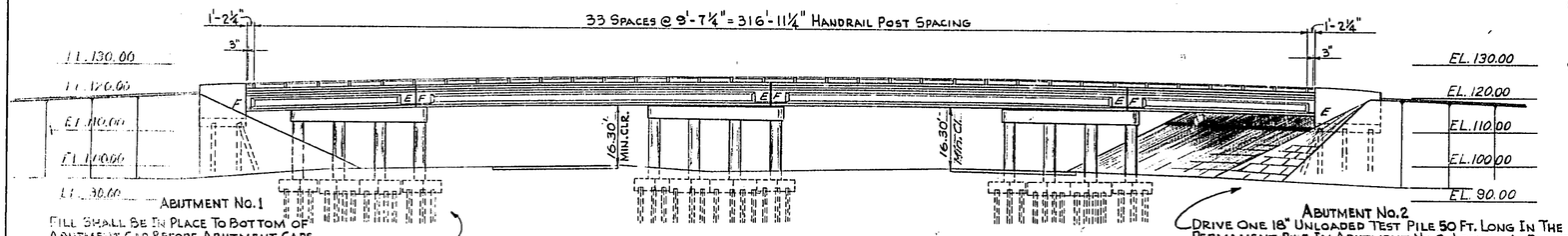


NOTE: HOLE No. 4 LOCATED ON ℄ OF S.R. 545 STA. 0+00 ALL OTHER TEST HOLES LOCATED TO LEFT OR RIGHT ON S.R. 545 ℄ AS INDICATED ABOVE.
THE PRESENT PAVEMENT ON S.R. No. 545 APPEARS TO BE A 6" STABILIZED BY MIXING ROAD MIX.

SOIL BORING LOG
VERTICAL SCALE 1"=20'

GENERAL NOTES

1. GENERAL SPECIFICATIONS - FLORIDA STATE ROAD DEPARTMENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED APRIL 1, 1959.
2. DESIGN SPECIFICATIONS - A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTH EDITION 1957, AND TENTATIVE PRESTRESSED CONCRETE REVISIONS
3. DESIGN LOADING - H20 - 44
4. DATUM - ALL ELEVATIONS REFER TO MEAN SEA LEVEL U.S.C. & G.S.
5. CONCRETE SHALL BE CLASS "A" TYPE CONCRETE FOR ABUTMENTS, PIERS, AND DECK, AND SHALL BE CLASS "P" TYPE CONCRETE FOR PRESTRESSED BEAMS AND PILING.
6. ALL EDGES OF CONCRETE SLABS AT TRANSVERSE JOINTS SHALL BE ROUNDED TO A ¼" RADIUS.
7. ALL EXPOSED CONCRETE EDGES AND CORNERS SHALL BE GIVEN A ¾" CHAMFER, EXCEPT PIER COLUMNS AND CAPS WHICH SHALL HAVE A 1⅝" CHAMFER.
8. SURFACE FINISH - ALL EXPOSED SURFACES OF PIERS AND ABUTMENTS, AND ALL SURFACES OF SUPERSTRUCTURE AS SEEN IN ELEVATION, EXCEPT PRESTRESSED BEAMS, SHALL BE GIVEN A CLASS 1 SURFACE FINISH. *Outside surfaces of Exterior Beams shall be painted with two coats of White Cement-Water Paint, Code CW-1 (See Art. 535.10 of the Specifications).*
9. WASH BORINGS - ALL BORINGS ARE WASH BORINGS.



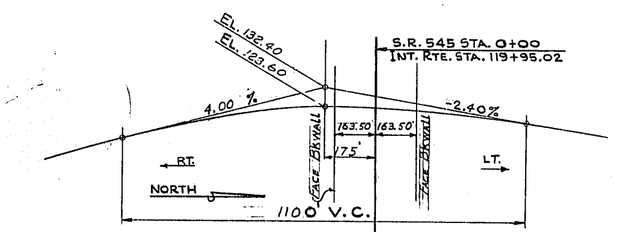
FILL SHALL BE IN PLACE TO BOTTOM OF ABUTMENT CAP BEFORE ABUTMENT CAPS ARE POURED.

DRIVE ONE 18" UNLOADED TEST PILE 40 FT. LONG IN THE POSITION OF A PERMANENT PILE IN PIER No. 1 LOCATED AS DIRECTED BY THE ENGINEER.

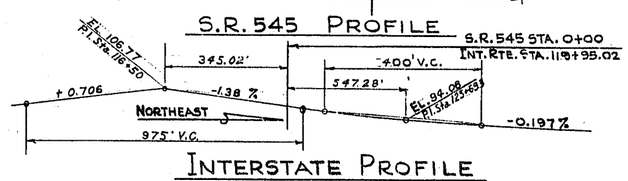
DRIVE ONE 18" UNLOADED TEST PILE 50 FT. LONG IN THE POSITION OF A PERMANENT PILE IN ABUTMENT No. 2 LOCATED AS DIRECTED BY THE ENGINEER.

ELEVATION
SCALE 1"=20'

INDEX OF BRIDGE DRAWINGS



S.R. 545 PROFILE



INTERSTATE PROFILE

PLAN AND ELEVATION

* QUANTITIES DO NOT INCLUDE APPROACH SLABS
** THE NUMBER OF TEST LOADS MAY BE INCREASED OR OMITTED AS DIRECTED BY THE ENGINEER.

ESTIMATED BRIDGE QUANTITIES*

ITEM No.	ITEM	UNIT	QUANTITY	ITEM No.	ITEM	UNIT	QUANTITY
300-1	CLASS "A" CONCRETE	CU.YD.	712				
507-1	ALUMINUM HANDRAIL	LIN.FT.	638	403-10	TEST LOADS ** (90 TONS)	EACH	1
510-1	REINFORCING STEEL	LB.	95,100	451-4	CONCRETE SLOPE PAVEMENT (4" THICK)	SQ.YD.	800
402-3	PRECAST CONCRETE PILING - FURNISHED			401-16	PRESTRESSED BEAMS (TYPE IV (34-0))	LIN.FT.	440
	(18" SQ. PRESTRESSED)	LIN.FT	2,700	401-1F	PRESTRESSED BEAMS (TYPE IV (46-3))	LIN.FT.	1,463
402-4	PRECAST CONCRETE PILING - DRIVEN			320-1	STRUCTURAL STEEL (SHOE ASSEMBLIES)	LB.	10,164
	(13" SQ. PRESTRESSED)	LIN.FT	2,700				
402-9	UNLOADED TEST PILING (18" SQ.)	LIN.FT.	90				

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

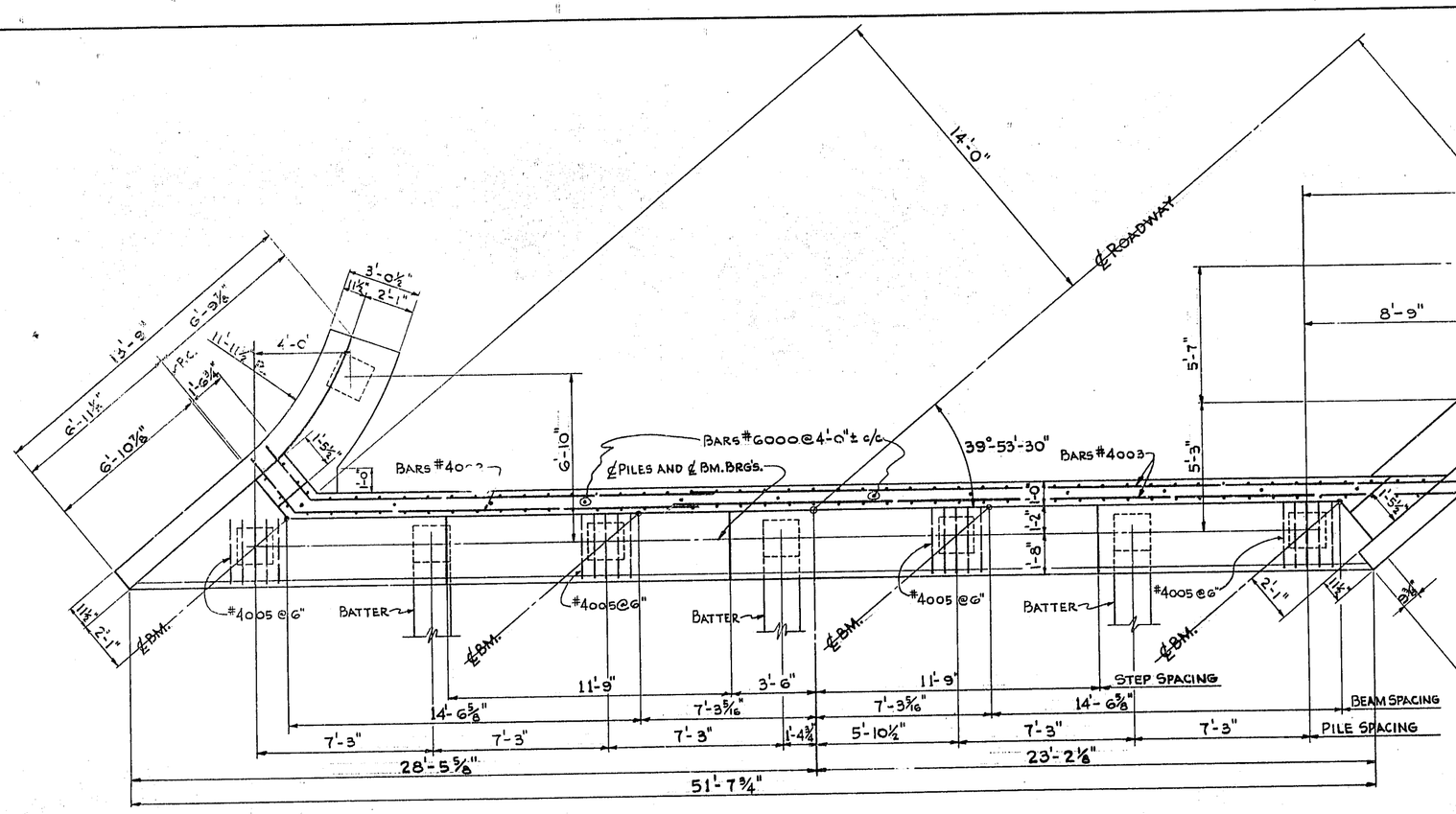
REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Date	Descriptions	S.R. 400	OSCEOLA	92130-1401
8-60 MCG.	Bridge grade raised by 0.9'.			

	Name	Date
Detailed by	HEYNER	12-58
Checked by	R.E.T.	12-58
Quantities by	R.E.T.	1-59
Checked by	R.W.G.	1-59
Traced by		

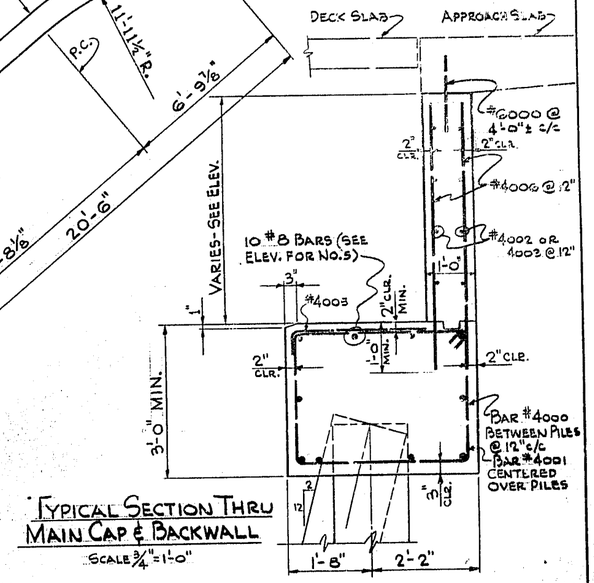
APPROVED BY
T. W. Simmons, Engineer of Bridge Design
W. S. Dean, Assistant State Highway Engineer

Drawing No. 1 OF 12
Index No. 4560

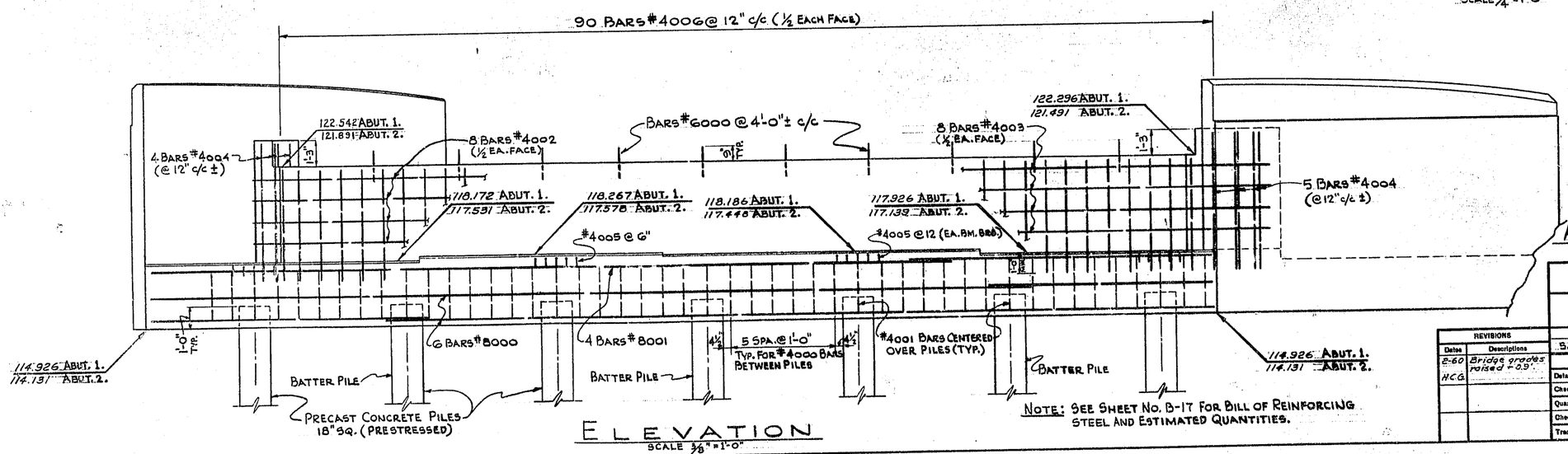
FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3401 I-4-2(10)176	59	B-16



PLAN
SCALE ⅜"=1'-0"



TYPICAL SECTION THRU MAIN CAP & BACKWALL
SCALE ¾"=1'-0"



ELEVATION
SCALE ⅜"=1'-0"

NOTE: SEE SHEET No. B-17 FOR BILL OF REINFORCING STEEL AND ESTIMATED QUANTITIES.

GENERAL NOTES

1. DESIGN LOAD FOR PILES - 45 TONS
2. ANCHOR BOLTS - SET ANCHOR BOLTS SHOWN IN DETAILS OF BEARING SHOE ASSEMBLIES.

ABUTMENT No. 1 AND 2

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R.400	OSCEOLA	92130-3401
2-60	Bridge grades raised -0.9'.			
H.C.G.				

	Names	Dates
Detailed by	HEYNER	12-58
Checked by	R.E.T.	12-58
Quantities by		
Checked by		
Traced by		

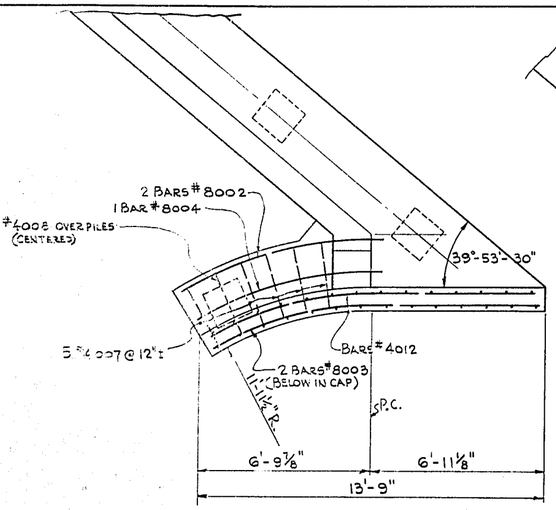
APPROVED BY: T. W. Jennings, Engineer of Bridge Design

Assistant State Highway Engineer

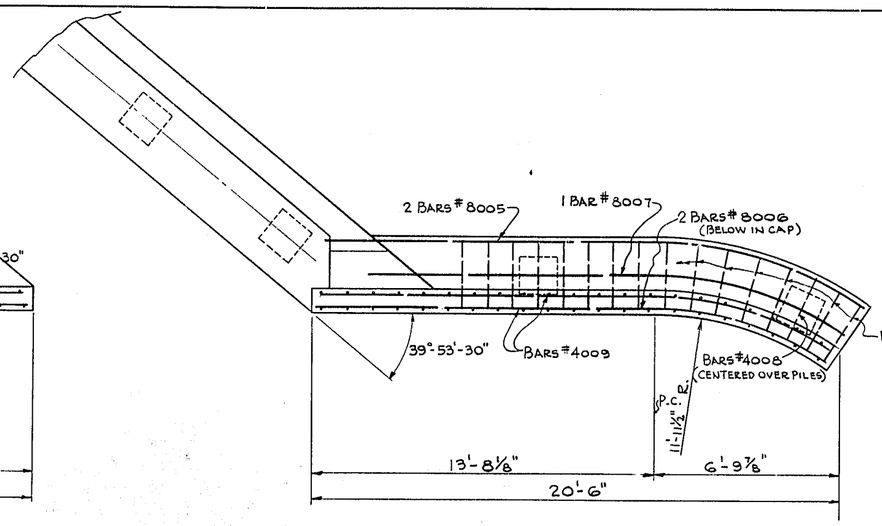
Drawing No. 2 OF 12

Index No. 4560

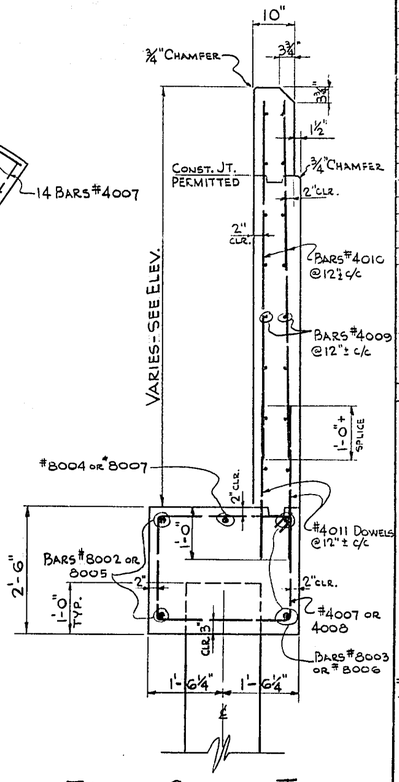
FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA	9213-3401 I-4-2(79)76	72	B-27



PLAN
SCALE ⅜"=1'-0"



PLAN
SCALE ⅜"=1'-0"

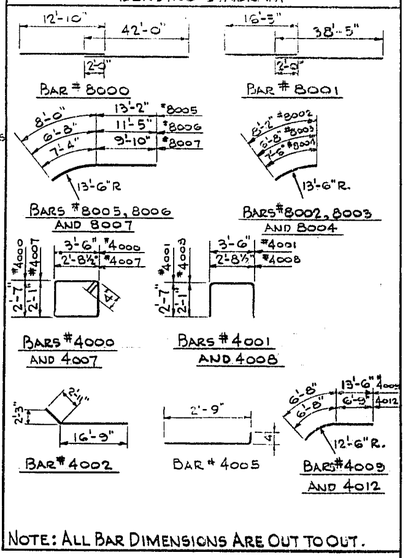


TYPICAL SECTION THRU WINGWALL AND CAP
SCALE ¾"=1'-0"

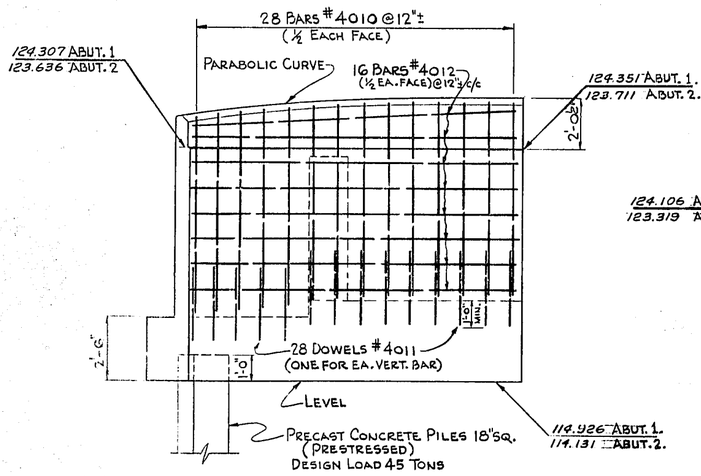
BILL OF REINFORCING STEEL FOR ABUT. No. 1-27

MARK	SIZE	NO. REQD	LENGTH	LOCATION	BENDING
8000	E	6	54'-10"	MAIN CAP	SEE DIAG.
8001	E	4	54'-10"	"	"
8002	E	2	8'-...	WING CAP	/
8003	E	2	6'-...	"	/
8004	E	1	11'-2"	"	/
8005	E	2	21'-2"	"	/
8006	E	2	18'-...	"	/
8007	E	1	17'-2"	"	/
6000	6	12	1'-6"	PKWALL	STR.
4000	4	20	2'-10"	MAIN CAP	[
4001	4	7	8'-8"	"	[
4002	4	8		PKWALL	—
4003	4	8	32'-...	"	[
4004	4	7	8'-...	"	[
4005	4	20		"	[
4006	4	30	5'-...	"	[
4007	4	13	3'-3"	WING CAP	[
4008	4	3	1'-...	"	[
4009	4	71	20'-2"	WINGWALL	/
4010	4	10	7'-9"	"	STR.
4011	4	70	3'-...	WING CAP & WINGWALL	STR.
4012	4	16	3'-...	WINGWALL	/

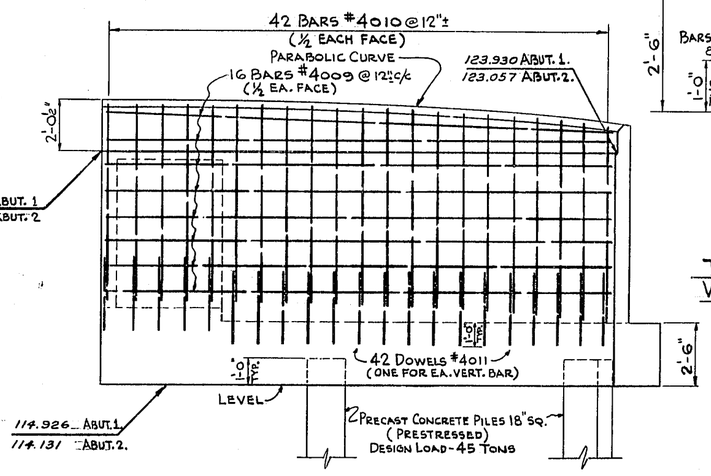
BENDING DIAGRAM



NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT.



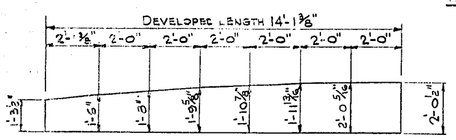
ELEVATION
SCALE ⅜"=1'-0"



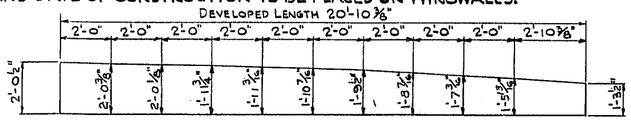
ELEVATION
SCALE ⅜"=1'-0"

TYPICAL WINGWALLS FOR ABUTMENT NO. 1 AND 2.

NOTE: SEE SHEET No. B-26 FOR DETAILS OF ELEVATION MARKERS AND DATE OF CONSTRUCTION TO BE PLACED ON WINGWALLS.



WINGWALL ORDINATES



WINGWALL ORDINATES

* QUANTITIES SHOWN ARE FOR ONE ABUTMENT ONLY.
** SEE ESTIMATED BRIDGE QUANTITIES

ESTIMATED QUANTITIES *			REVISIONS	
ITEM	UNIT	QUANTITY	Dates	Descriptions
CONCRETE CLASS "A"	CU.YD.	48.9	2-60	Bridge grades raised +0.5'
REINFORCING STEEL	LB.	3,913	H.C.G.	
PRECAST CONC. PILING (18" SQ. PRESTRESSED)	LIN. FT.	**		

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

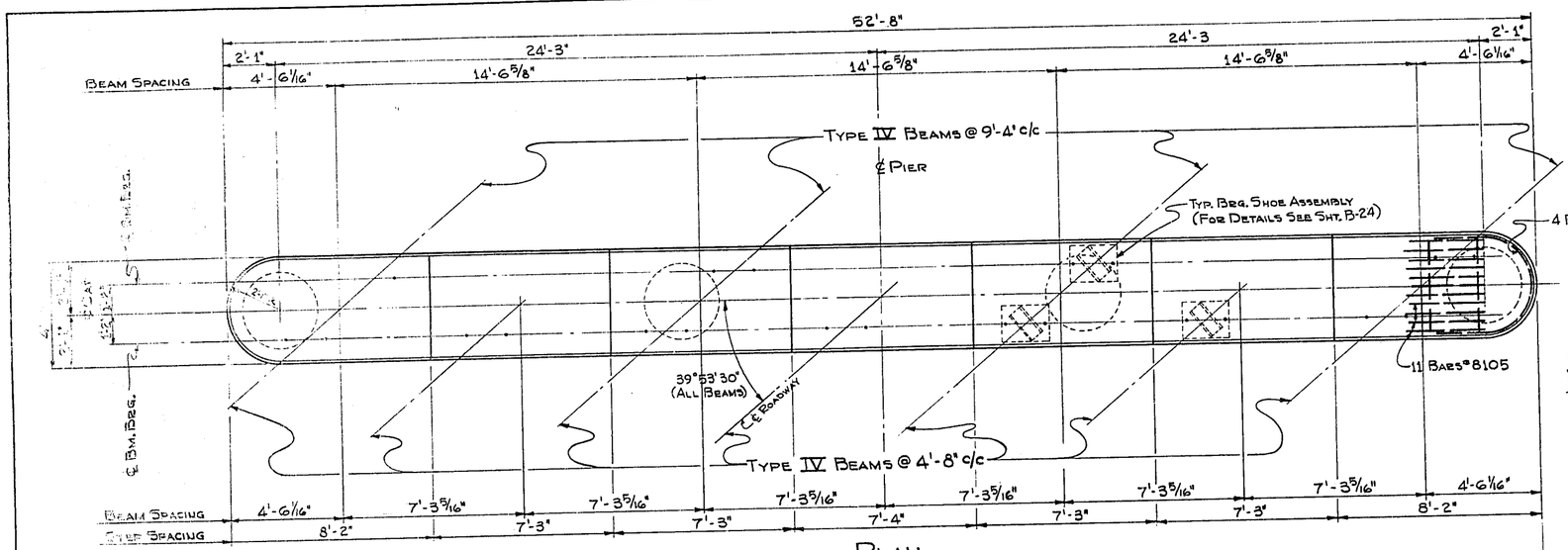
ROAD NO.	COUNTY	PROJECT NO.
S.R. 400	OSCEOLA	9213-3401

	Names	Dates
Detailed by	HEYNER	12-58
Checked by	R.E.T.	12-58
Quantities by	F.W.H.	1-59
Checked by	R.E.T.	1-59
Traced by		

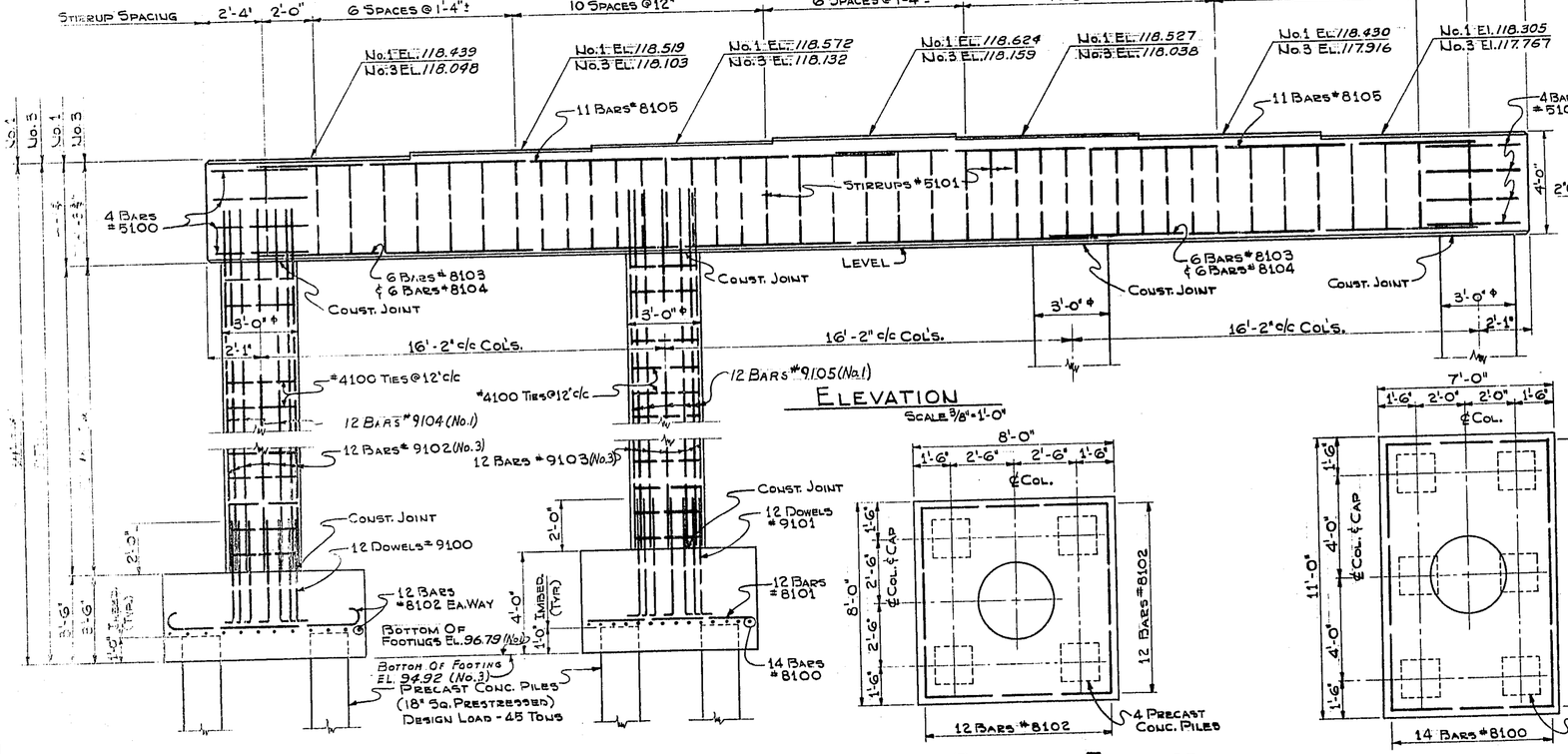
APPROVED BY: T. W. Gunning, Engineer of Bridge Design
Assistant State Highway Engineer

Drawing No. 3 OF 12 | Index No. 4560

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	2-4-2( )274	59	B-13

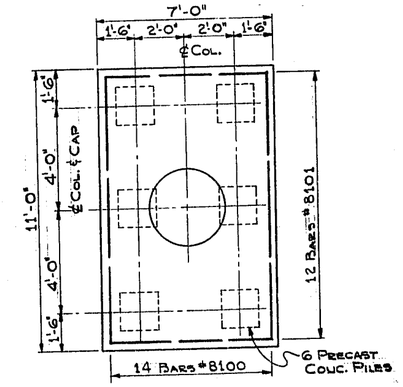


PLAN
SCALE 3/8"=1'-0"

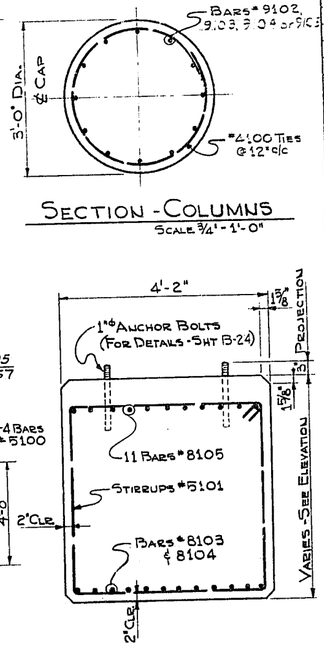


ELEVATION
SCALE 3/8"=1'-0"

PLAN - EXTERIOR FOOTINGS
SCALE 3/8"=1'-0"



PLAN - INTERIOR FOOTINGS
SCALE 3/8"=1'-0"



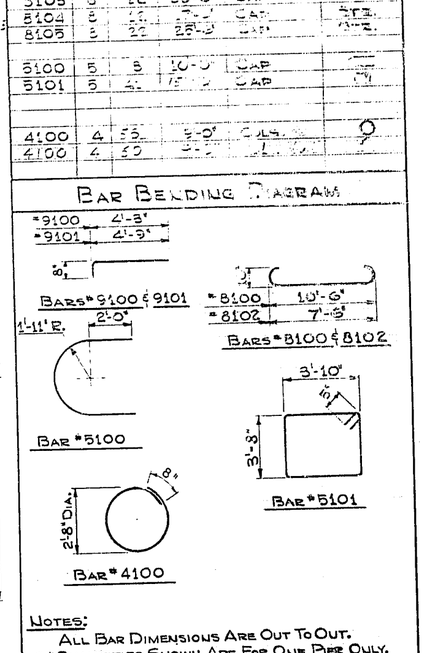
SECTION - CAP
SCALE 3/4"=1'-0"

SECTION - COLUMNS
SCALE 3/4"=1'-0"

BILL OF REINFORCING STEEL FOR PIER No. 1 & No. 3

MARK	SIZE	REQ'D	LENGTH	LOCATION	REMARKS
9100	9	24	4'-11"	EXT. FTGS.	
9101	9	24	5'-5"	INT. FTGS.	
9102	9	24			STR.
9103	9	24			STR.
9104	9	24			
5105	5	22			
8100	8	28		INT. FTGS.	
8101	8	24		INT. FTGS.	STR.
8102	8	48		EXT. FTGS.	STR.
5103	5	12	35'-3"	CAP	STR.
5104	5	12		CAP	STR.
5105	5	22	28'-3"	CAP	STR.
5100	5	8	10'-0"	CAP	
5101	5	44	15'-2"	CAP	
4100	4	52	3'-0"	COLS.	
4100	4	50		COLS.	

BAR BENDING DIAGRAM



NOTES:
ALL BAR DIMENSIONS ARE OUT TO OUT.
**QUANTITIES SHOWN ARE FOR ONE PIER ONLY.
*SEE ESTIMATED BRIDGE QUANTITIES.

ESTIMATED QUANTITIES **

ITEM	UNIT	QUANTITY No.1	QUANTITY No.3
CONCRETE - CLASS "A"	CU. YD.	85.5	117.6
REINFORCING STEEL	LBS.	10,8[illegible]	16,5[illegible]
PRECAST CONC. PILING (18" Sq. PRESTRESSED)	L.N.FT.	*	*

PIERS No.1 & No.3

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION
STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

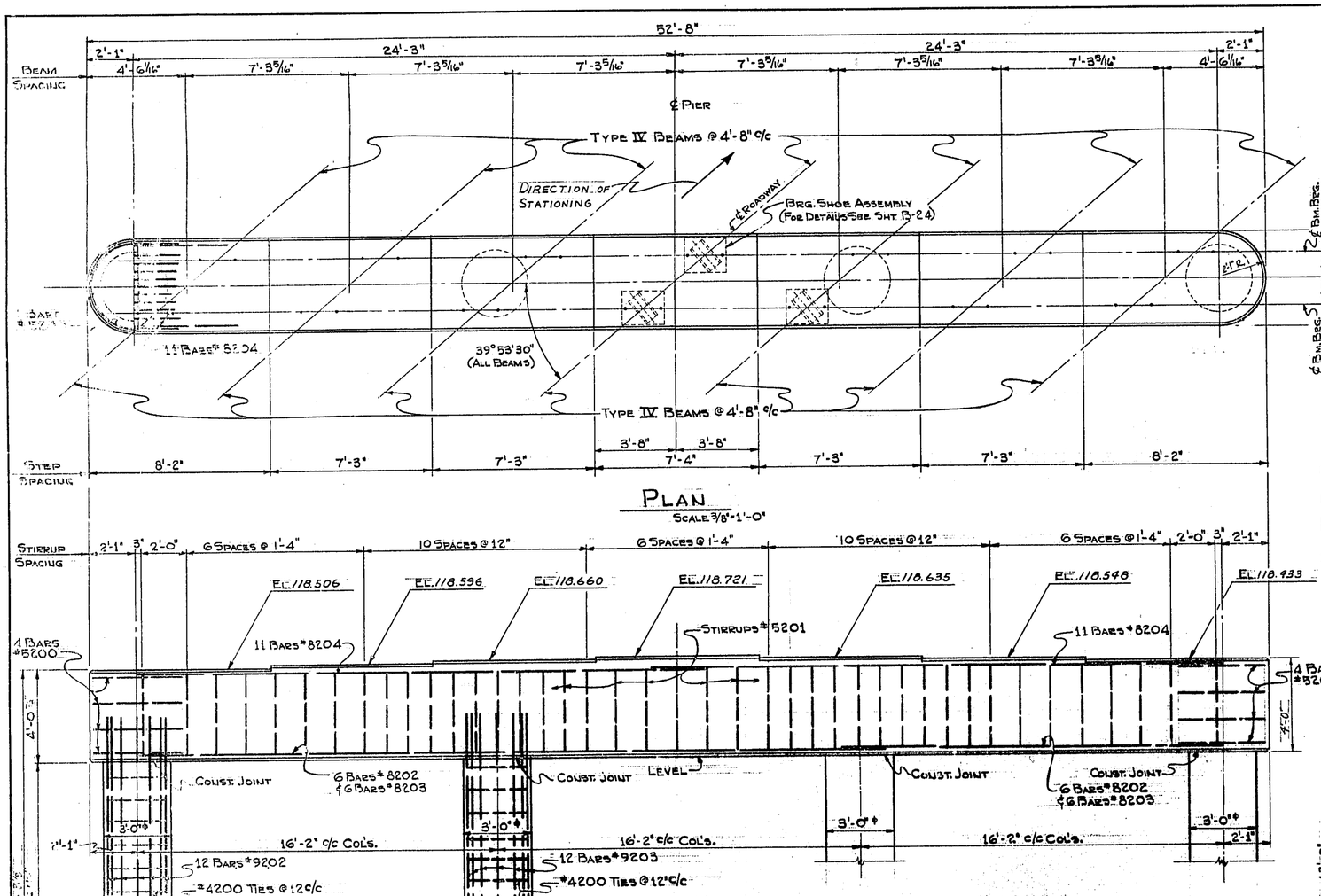
REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R.400	OSCEOLA	9215-[illegible]
2-60	Bridge grades raised 0.9'			
H.C.G.				

	Names	Dates
Detailed by	S.T.V.	1-59
Checked by	R.E.T.	1-59
Quantities by	S.T.V.	1-59
Checked by	R.E.T.	1-59
Traced by		

APPROVED BY T. W. Jennings
Engineer of Bridges & Design
Assistant State Highway Engineer

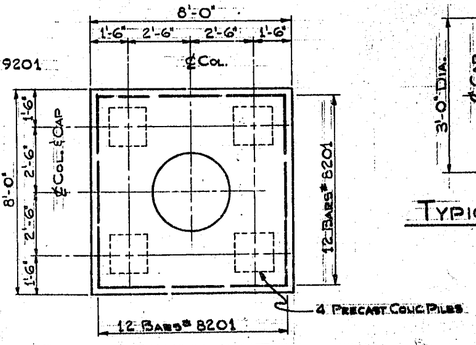
Drawing No. 4 of 12
Index No. 4560

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3401 I-4-2( )76	59	B-19

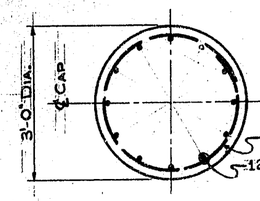


PLAN
SCALE 3/8"=1'-0"

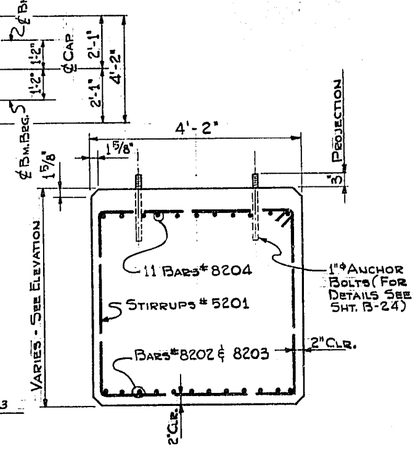
ELEVATION
SCALE 3/8"=1'-0"



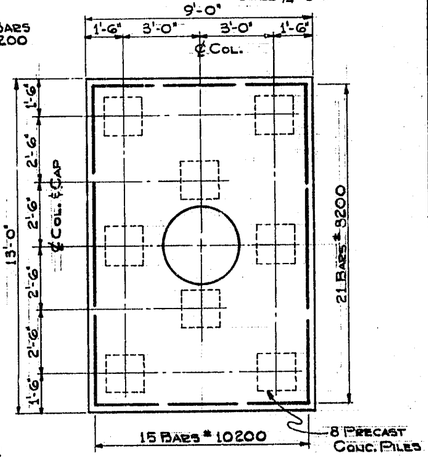
PLAN - EXTERIOR FOOTINGS
SCALE 3/8"=1'-0"



TYPICAL SECTION - COLUMNS
SCALE 3/4"=1'-0"



SECTION - CAP
SCALE 3/4"=1'-0"

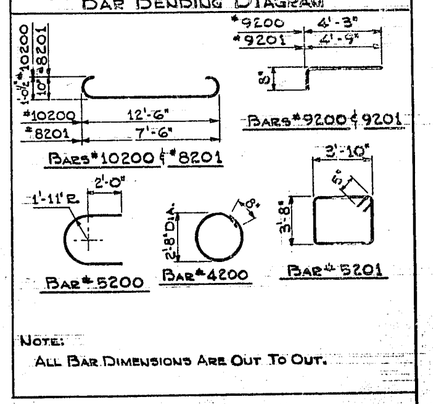


PLAN - INTERIOR FOOTINGS
SCALE 3/8"=1'-0"

BILL OF REINFORCING STEEL FOR PIER No. 2

MARK	SIZE	NO. REQD.	LENGTH	LOCATION	BENDING
10200	10	30	15'-4"	CONC. PILE	
9200	9	24	4'-3"	EXT. FTG.	
9201	9	24	5'-9"	EXT. FTG.	
9202	9	24	20'-4"	EXT. COL.	SPIR.
9203	9	24	10'-10"	EXT. COL.	SPIR.
8200	8	42	8'-6"	EXT. FTG.	
8201	8	46	6'-1"	EXT. FTG.	
8202	8	12	33'-6"	CAP	
8203	8	12	17'-0"	CAP	
8204	8	22	33'-6"	CAP	
5200	5	8	10'-0"	CAP	
5201	5	44	15'-7"	CAP	
4200	4	72	9'-0"	COL.	SPIR.

BAR BENDING DIAGRAM



NOTE:
ALL BAR DIMENSIONS ARE OUT TO OUT.

ESTIMATED QUANTITIES **

ITEM	UNIT	QUANTITY
CONCRETE, CLASS "A"	CU. YD.	101.1
REINFORCING STEEL	LB.	12,601
PRECAST CONC. PILING (18" Sq. PRESTRESSED)	LIN. FT.	*

*SEE ESTIMATED BRIDGE QUANTITIES

REVISIONS	
Date	Descriptions
2-60	Bridge grade raised 1.0'
H.C.G.	

PIER No. 2

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

ROAD NO.	COUNTY	PROJECT NO.
S.R.400	OSCEOLA	92130-3401

	Names	Dates
Detailed by	S.T.V.	12-58
Checked by	R.E.T.	1-59
Quantities by	S.T.V.	1-59
Checked by	R.E.T.	1-59
Traced by		

APPROVED BY: T.W. Jennings
Engineer of Bridge Design
Assistant State Highway Engineer

Drawing No. 5 of 12
Index No. 4560

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3401 I-4-2(17)176	59	B-26

NOTE: ½" CONTINUOUS 'V' GROOVES ACROSS TOP & DOWN EACH FACE OF 10"×10" PARAPET SPACED AS SHOWN

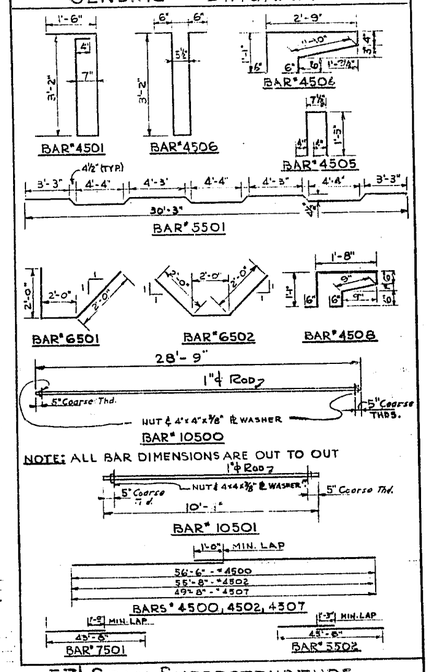
ESTIMATED QUANTITIES

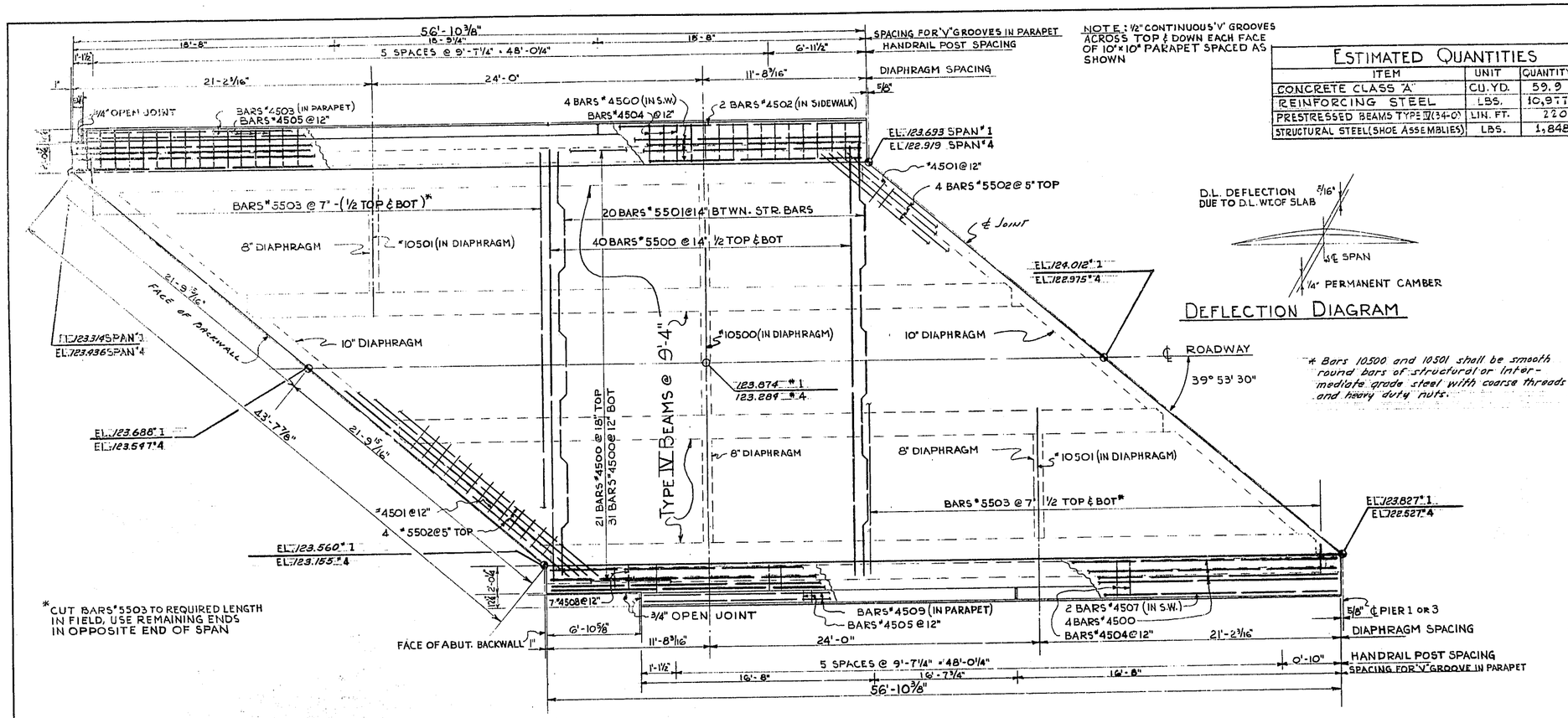
ITEM	UNIT	QUANTITY
CONCRETE CLASS "A"	CU.YD.	59.9
REINFORCING STEEL	LBS.	10,977
PRESTRESSED BEAMS TYPE IV (34-0")	LIN. FT.	220
STRUCTURAL STEEL (SHOE ASSEMBLIES)	LBS.	1,848

BILL OF REINFORCING STEEL

MARK	SIZE	NO REQD.	LENGTH	LOCATION	BENDING
4500	4	80	56'-6"	SLABS & S.W.	SEE DIAGRAM
4501	4	78	8'-7"	10" DIAPHRAGM	"
4502	4	2	55'-3"	SAFETY WALK	SEE DIAGRAM
4503	4	6	8'-1"	PARAPET	"
4504	4	107	7'-6"	" "	"
4505	4	107	3'-0"	PARAPET	"
4506	4	40	7'-1"	8" DIAPHRAGM	"
4507	4	2	49'-8"	SAFETY WALK	SEE DIAGRAM
4508	4	7	5'-6"	SAFETY WALK	"
4509	4	6	6'-4"	PARAPET	"
5500	5	20	30'-3"	SLAB	STR.
5501	5	20	3'-3"	"	BENT
5502	5	8	45'-8"	"	STR.
5503	5	114	30'-3"	"	LAP IN FIELD
5504	5	10	7'-6"	8" DIAPH.	"
6500	6	76	42'-3"	SLAB	STR.
6501	6	2	2'-3"	" "	"
6502	6	4	6'-0"	" "	"
7500	7	12	12'-0"	10" DIAPH.	STR.
7501	7	4	43'-8"	" "	STR.
#10500	1" ϕ	1	28'-9"	8" DIAPH	SEE DIAGRAM
#10501	1" ϕ	2	10'-	" "	" "

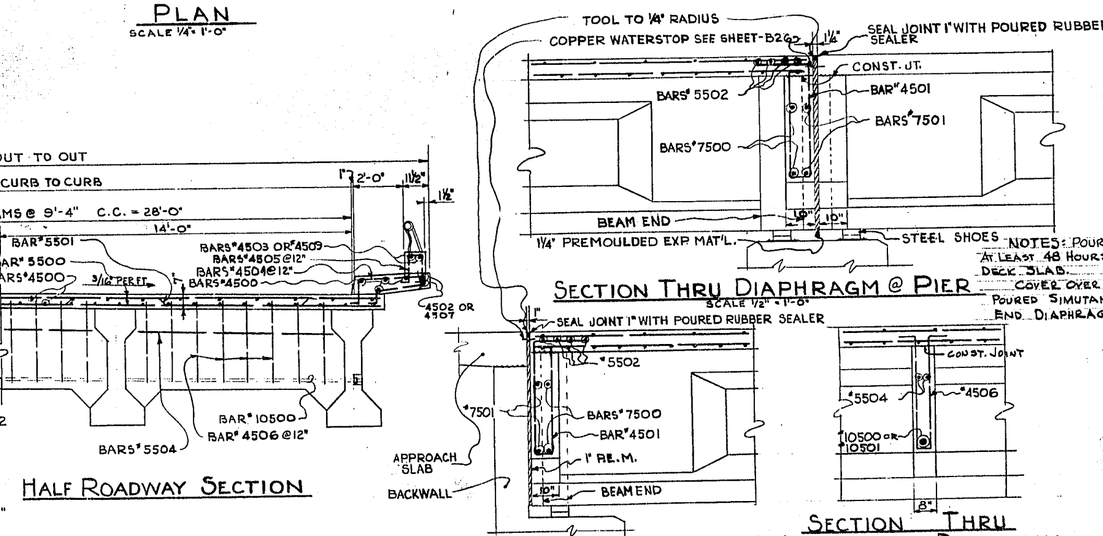
BENDING DIAGRAM





* CUT BARS #5503 TO REQUIRED LENGTH IN FIELD, USE REMAINING ENDS IN OPPOSITE END OF SPAN

PLAN
SCALE 1/4" = 1'-0"

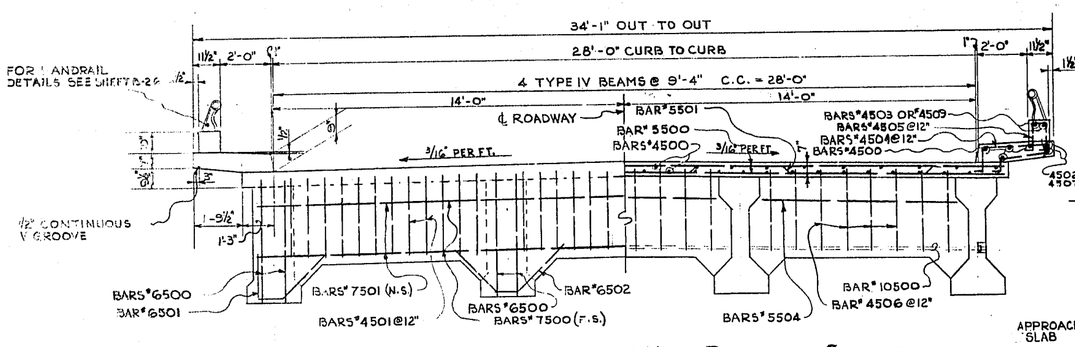


SECTION THRU DIAPHRAGM @ PIER
SCALE ½" = 1'-0"

NOTES: POUR ALL DIAPHRAGMS AT LEAST 48 HOURS BEFORE POURING DECK SLAB.
COVER OVER END BLOCK TO BE POURED SIMUTANEOUSLY WITH END DIAPHRAGM.

SECTION THRU DIAPHRAGM @ ABUTMENT
SCALE ½" = 1'-0"

SECTION THRU INTERMEDIATE DIAPHRAGM
SCALE ½" = 1'-0"



HALF END ELEVATION
SCALE: 3/8" = 1'-0"

HALF ROADWAY SECTION

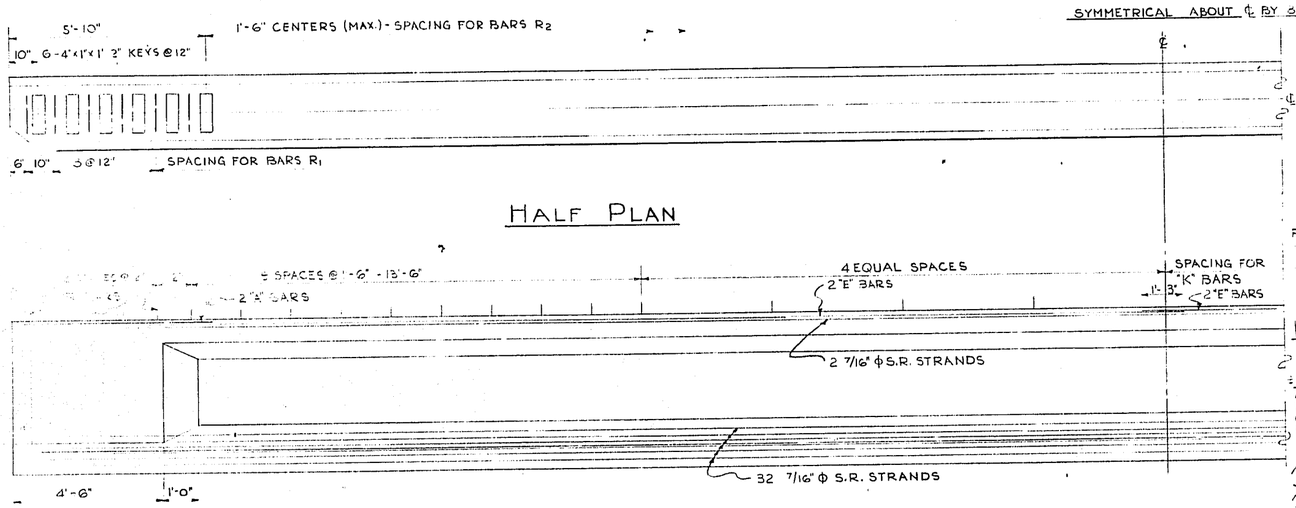
TYPICAL 57' SPAN SUPERSTRUCTURE

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

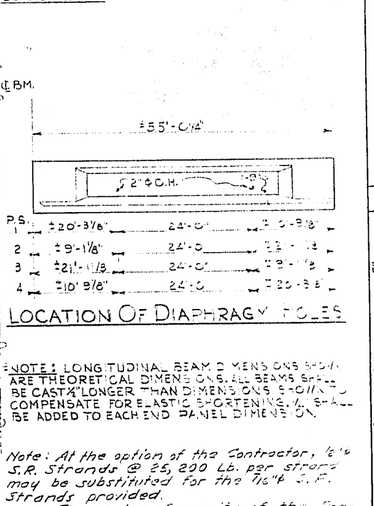
STATE ROAD 545 OVER INTERSTATE ROUTE NO. 4

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R. 400	OSCEOLA	92130-3401
2-60	Bridge grades raised 0.9'			
H.C.G.			Names / Dates	APPROVED BY
		Detailed by	STARR 12-58	T.W. Jennings
		Checked by	R.E.T. 1-59	Engineer of Bridge Design
		Quantities by	D.M.S. 1-59	Assistant State Highway Engineer
		Checked by	R.E.T. 1-59	
		Traced by		Drawing No. 6 OF 12 / Index No. 4560

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



HALF PLAN



LOCATION OF DIAPHRAGM HOLES

NOTE: LONGITUDINAL BEAM DIMENSIONS SHOWN ARE THEORETICAL DIMENSIONS. ALL BEAMS SHALL BE CAST ¾" LONGER THAN DIMENSIONS SHOWN TO COMPENSATE FOR ELASTIC SHORTENING. ¼" SHALL BE ADDED TO EACH END PANEL DIMENSION.

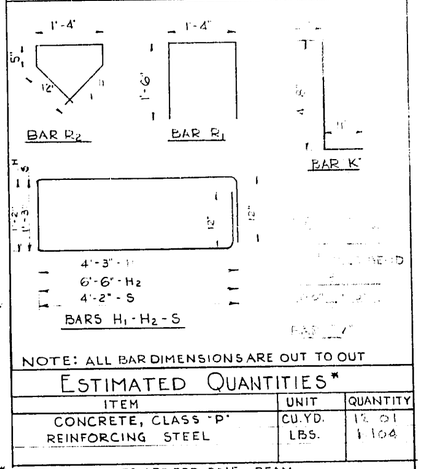
Note: At the option of the Contractor, ½"ϕ S.R. Strands @ 25,200 Lb. per strand may be substituted for the 7/16"ϕ S.R. Strands provided.

The center of gravity of the final stressing force from ½"ϕ Strands must coincide with the center of gravity of the force from the 7/16"ϕ Strands.

BILL OF REINFORCING STEEL FOR ONE BEAM

MARK	SIZE	No REQD.	LENGTH	LOCATION	BENDING
E	-	-	-	-	STR
H_1	5	12	11'-8"	END BLOCK	
H_2	5	2	16'-2"	" "	
K	5	-	6'-1"	WEB	
S	5	26	11'-"	END BLOCK	
V	4	14	-	END BLOCK	SEE DIAGRAM
R_1	5	10	4'-4"	" "	
R_2	3	-	4'-2	TOP FLANGE	

BENDING DIAGRAM

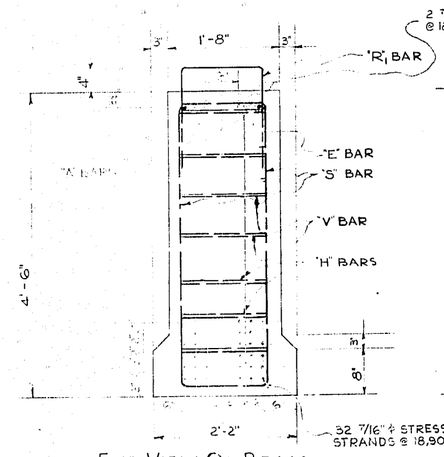


NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT

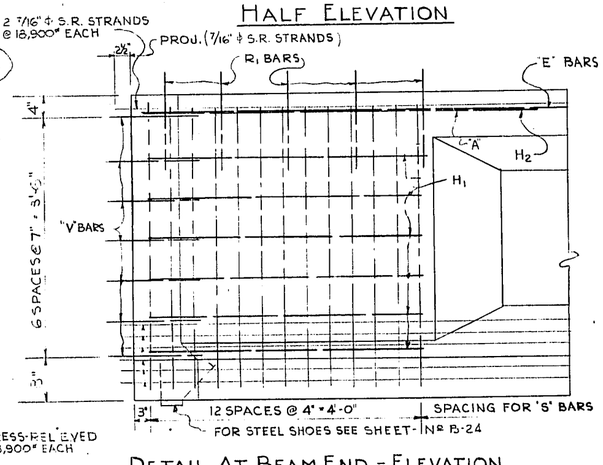
ESTIMATED QUANTITIES*

ITEM	UNIT	QUANTITY
CONCRETE, CLASS "P"	CU.YD.	15.01
REINFORCING STEEL	LBS.	1 104

* NOTE: QUANTITIES ARE FOR ONE BEAM. THESE QUANTITIES ARE NOT INCLUDED IN THE ESTIMATED BRIDGE QUANTITIES.

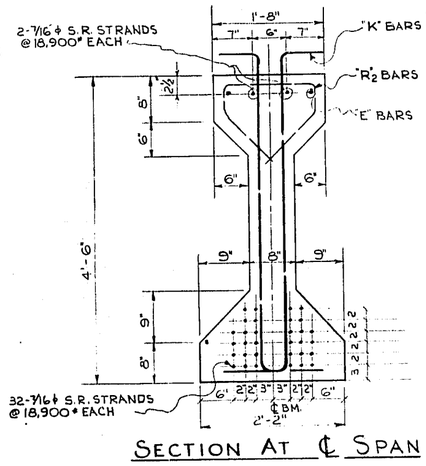


END VIEW OF BEAM

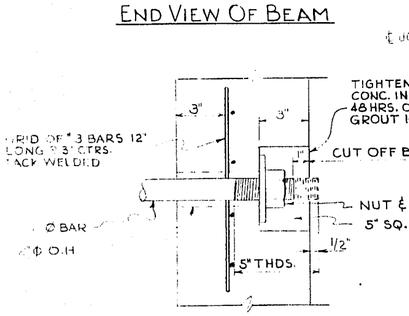


HALF ELEVATION

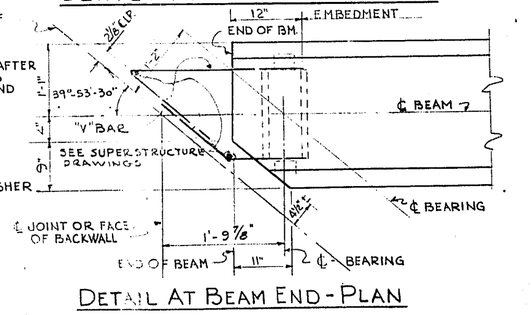
DETAIL AT BEAM END - ELEVATION



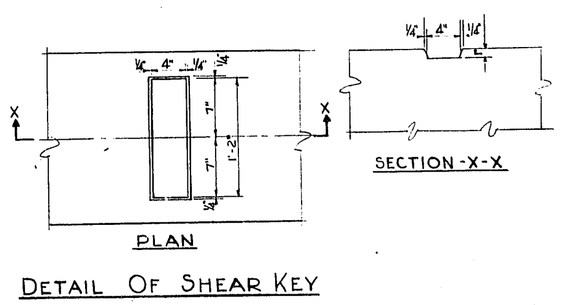
SECTION AT ℄ SPAN



DETAIL AT END OF INTERMEDIATE DIAPHRAGM BAR



DETAIL AT BEAM END - PLAN



PLAN

DETAIL OF SHEAR KEY

GENERAL NOTES

SHOP DRAWINGS: THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING COMPLETE DETAILS OF BEAMS INCLUDING REINFORCING STEEL

CONCRETE: CONCRETE FOR BEAMS SHALL BE CLASS "P"

FORMS & PALLETS: ALL BEAMS SHALL BE CAST ON CONCRETE FLOORED PALLETS AND IN METAL FORMS

CHAMFERS & CORNERS: ALL EXPOSED CORNERS SHALL BE CHAMFERED ¾" OR ROUNDED TO A ¾" RADIUS. ANGLES OF INTERSECTION BETWEEN WEBS AND FLANGES SHALL BE ROUNDED TO NOT LESS THAN A ¾" RADIUS.

FINISH: TOPS OF BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, ENTIRE TOP OF BEAM SHALL BE SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING SLAB.

CYLINDER STRENGTH: AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4000 PSI.

CABLE EXTENSIONS: ALL CABLES SHALL EXTEND 2½" BEYOND ENDS OF BEAMS

HANDLING: IN HANDLING BEAMS, THEY MUST BE MAINTAINED IN AN UPRIGHT POSITION AT ALL TIMES AND MUST BE PICKED UP FROM POINTS WITHIN THE SOLID BEARING BLOCKS AT BEAM ENDS. DISREGARD OF THIS REQUIREMENT MAY LEAD TO COLLAPSE OF THE MEMBER.

METERIALS: THE CONTRACT UNIT PRICE FOR PRESTRESSED BEAMS SHALL INCLUDE ALL METERIALS IN THE BEAMS. THE COST OF THE ½" NEOPRENE BEARING PADS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR PRESTRESSED BEAMS.

57' SPAN PRESTRESSED CONCRETE BEAM TYPE IV (3-4-0)

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD FOR ONE
INTERSTATE ROUTE No. 7

REVISIONS Dates	Descriptions

ROAD NO.	COUNTY	PROJECT NO.
S.R.400	OSCEOLA	92 [illegible] 3401

	Names	Dates
Detailed by	STARR	12-58
Checked by	R.E.T.	1-59
Quantities by	D.M.S.	1-59
Checked by	R.E.T.	1-59
Traced by		

APPROVED BY

Engineer of Bridges

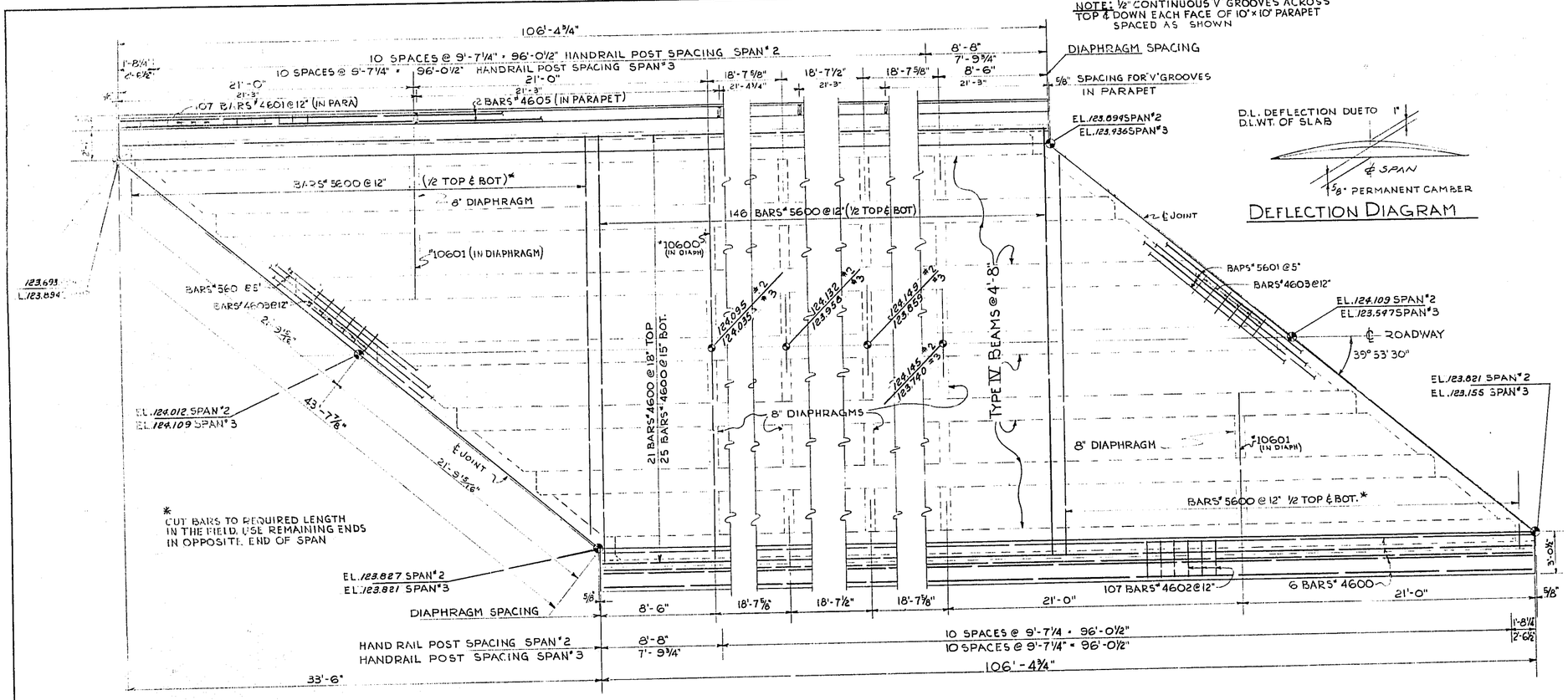
Assistant State Highway Engineer

Drawing No.	Index No.
7 OF 12	4560

E-135

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	[illegible]	[illegible]	[illegible]

NOTE: ½" CONTINUOUS 'V' GROOVES ACROSS TOP & DOWN EACH FACE OF 10"x10" PARAPET SPACED AS SHOWN



* CUT BARS TO REQUIRED LENGTH IN THE FIELD. USE REMAINING ENDS IN OPPOSITE END OF SPAN

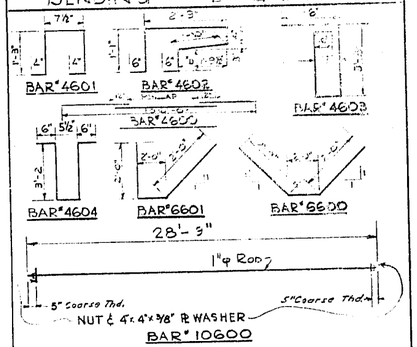
PLAN
SCALE 1/4" = 1'-0"

DEFLECTION DIAGRAM

BILL OF REINFORCING STEEL

MARK	SIZE	No REQ'D.	LENGTH	LOCATION	BENDING
4600	4	[illegible]	[illegible]	[illegible]	SLAB SEE
4601	4	214	[illegible]	PARAPET	
4602	4	214	[illegible]	[illegible]	
4603	4	14	[illegible]	END DIAPH	
4604	4	84	[illegible]	INT. DIAPHM	
4605	4	20	[illegible]	PARAPET	
5600	5	2[illegible]	[illegible]	SLAB	
5601	5	4	[illegible]	END DIAPH	
5602	5	56	[illegible]	INT DIAPHM	
5603	5	24	[illegible]	END SLAB	
5604	5	2	[illegible]	[illegible]	
6600	6	10	[illegible]	END DIAPH	
6601	6	4	[illegible]	[illegible]	
6602	6	28	[illegible]	[illegible]	
#10600	⅝	2	[illegible]	END DIAPH	SEE DIAGRAM
#10601	⅝	2	[illegible]	[illegible]	

BENDING

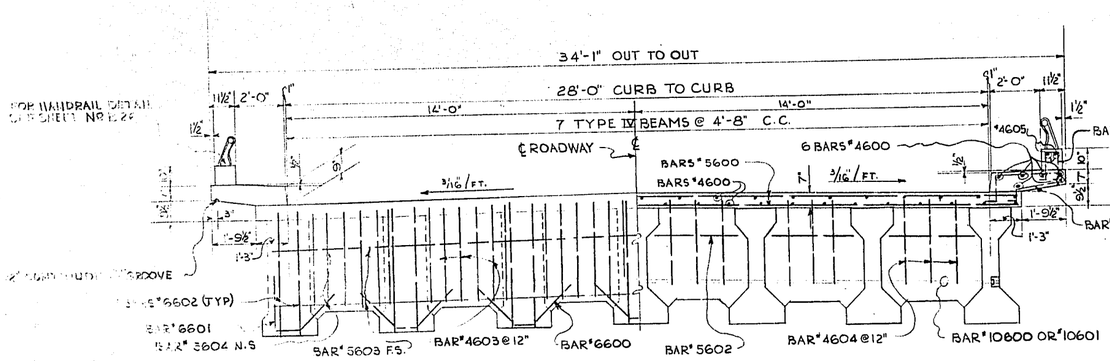


NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE CLASS "A"	CU. YD.	108.4
REINFORCING STEEL	LBS.	15,303
PRESTRESSED BEAMS TYPE IV (46-3)	LIN.FT.	731.6
STRUCTURAL STEEL (SHOE ASSEMBLIES)	LBS	3,254

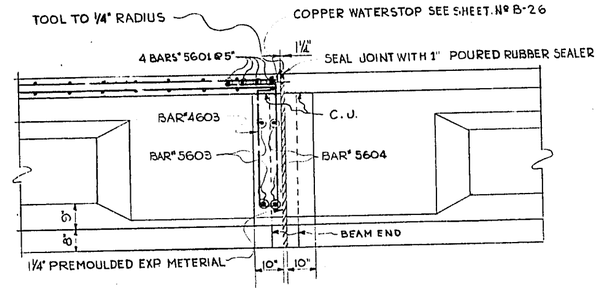
#Bars 10600 and 10601 shall be smooth round bars of structural or intermediate grade steel with coarse threads and heavy duty nuts.



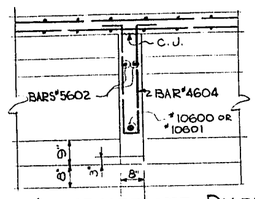
HALF END ELEVATION
SCALE 3/8" = 1'-0"

HALF ROADWAY SECTION
SCALE 3/8" = 1'-0"

NOTE: COVER OVER END BLOCK SHALL BE POURED SIMULTANEOUSLY WITH END DIAPHRAGM.



SECTION THRU DIAPHRAGM @ PIERS
SCALE ½" = 1'-0"



SECTION THRU INTERMEDIATE DIAPHRAGM
SCALE ½" = 1'-0"

NOTE: POUR ALL DIAPHRAGMS AT LEAST 48 HOURS BEFORE POURING DECK SLAB.

TYPICAL 106'-6" SPAN SUPERSTRUCTURE

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R.400	OSCEOLA	5280-3404
2-60	Bridge grades raised -0.9'			
H.C.G.				

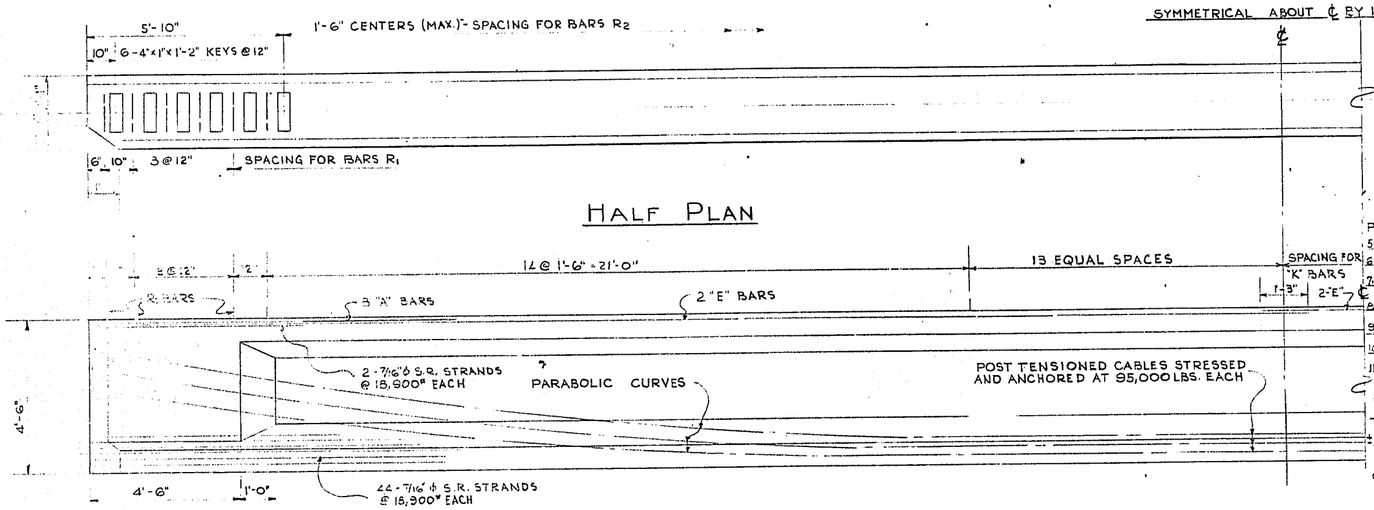
	Names	Dates
Detailed by	D.M.S.	12-58
Checked by	R.E.T.	1-59
Quantities by	D.M.S.	1-59
Checked by	R.E.T.	1-59
Traced by		

APPROVED BY: T.W. Jennings, Engineer of Bridge Design

Assistant State Highway Engineer

Drawing No. 8 OF 12 | Index No. 4560

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			B



LOCATION OF DIAPHRAGM POLES

NOTE: LONGITUDINAL BEAM DIMENSIONS SHOWN ARE THEORETICAL DIMENSIONS. ALL BEAMS SHALL BE CAST 1/8" LONGER THAN DIMENSIONS SHOWN TO COMPENSATE FOR ELASTIC SHORTENING. 1/4" SHALL BE ADDED TO EACH END PANEL DIMENSION.

Note: At the option of the Contractor, 1/2"ϕ S.R. Strands @ 25,200 Lbs. per strand may be substituted for the 7/16"ϕ S.R. Strands provided.

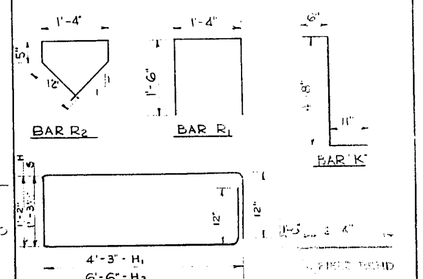
The center of gravity of the Prestressing force from 1/2"ϕ Strands must coincide with the center of gravity of the force from the 7/16"ϕ Strands.

Pretensioned Beams with depressed Strands may be used in lieu of the combined pretensioned-posttensioned Beams shown.

BILL OF REINFORCING STEEL FOR ONE BEAM

MARK	SIZE	No REQD.	LENGTH	LOCATION	BENDING
E	#	-	-	-	STR.
H_1	5	12	11'-8"	END BLOCK	
H_2	5	2	16'-2"	" "	
K	5	-	2'-1"	WEB	
S	5	26	11'-"	END BLOCK	
V	4	14	-	END BLOCK	SEE DIAGRAM
R_1	5	10	4'-4"	" "	
R_2	8	-	4'-2"	TOP FLANGE	
-	-	6	-	-	

BENDING DIAGRAM

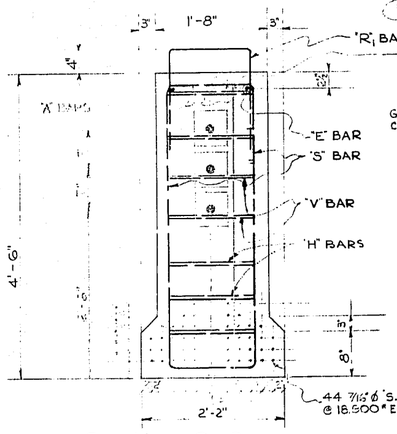


NOTE: ALL BAR DIMENSIONS ARE OUT TO OUT

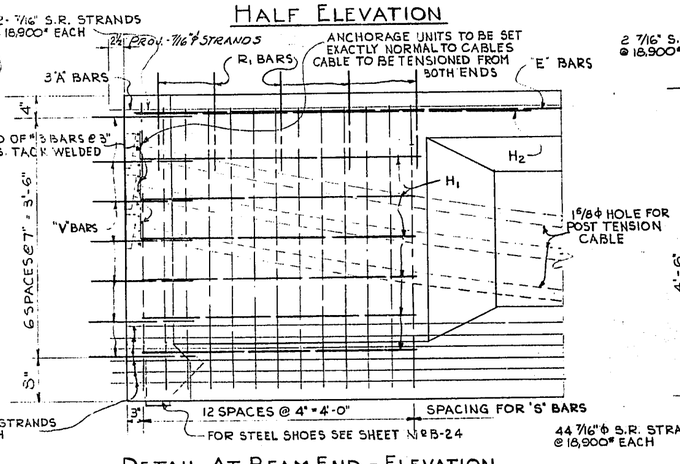
ESTIMATED QUANTITIES*

ITEM	UNIT	QUANTITY
CONCRETE, CLASS "P"	CU.YD.	72.01
REINFORCING STEEL	LBS.	1,682

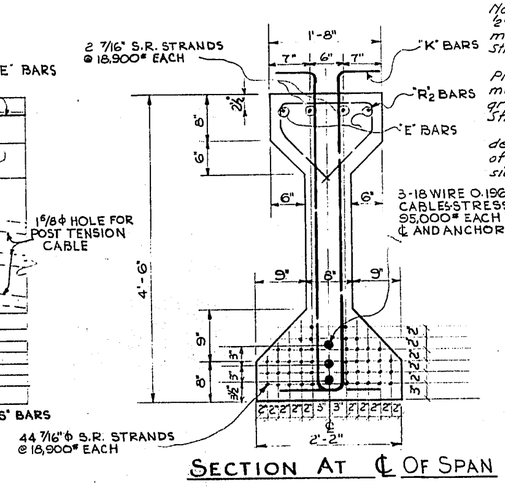
* NOTE: QUANTITIES ARE FOR ONE BEAM. THESE QUANTITIES ARE NOT INCLUDED IN THE ESTIMATED BRIDGE QUANTITIES.



END VIEW OF BEAM



DETAIL AT BEAM END - ELEVATION



SECTION AT ℄ OF SPAN

GENERAL NOTES

SHOP DRAWINGS: THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING COMPLETE DETAILS OF BEAMS INCLUDING REINFORCING STEEL

CONCRETE: CONCRETE FOR BEAMS SHALL BE CLASS "P"

FORMS & PALLETS: ALL BEAMS SHALL BE CAST ON CONCRETE FLOORED PALLETS AND IN METAL FORMS

CHAMFERS & CORNERS: ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" OR ROUNDED TO A 3/4" RADIUS. ANGLES OF INTERSECTION BETWEEN WEBS AND FLANGES SHALL BE ROUNDED TO NOT LESS THAN A 1/4" RADIUS.

FINISH: TOPS OF BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, ENTIRE TOP OF BEAM SHALL BE SCRUBBED TRANSVERSELY WITH A COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING SLAB.

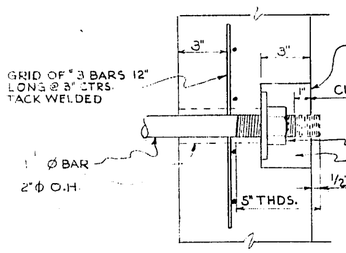
CYLINDER STRENGTH: AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4000 PSI. (MIN.)

CABLE EXTENSIONS: ALL CABLES SHALL EXTEND 2 1/2" BEYOND ENDS OF BEAMS

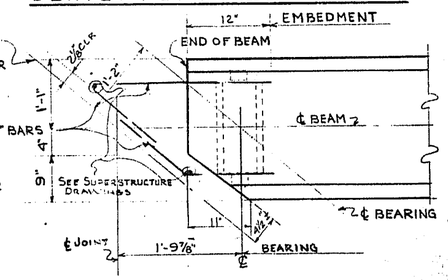
HANDLING: IN HANDLING BEAMS, THEY MUST BE MAINTAINED IN AN UPRIGHT POSITION AT ALL TIMES AND MUST BE PICKED UP FROM POINTS WITHIN THE SOLID BEARING BLOCKS AT BEAM ENDS. DISREGARD OF THIS REQUIREMENT MAY LEAD TO COLLAPSE OF THE MEMBER.

GROUTING: ALL POST TENSION REINFORCEMENT SHALL BE GROUTED AFTER STRESSING. SEE ARTICLE 450-9 OF THE SPECIFICATIONS.

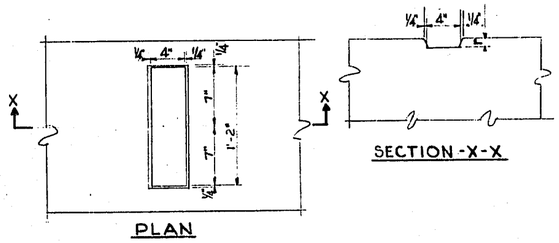
MATERIALS: THE CONTRACT UNIT PRICE FOR PRESTRESSED BEAMS SHALL INCLUDE ALL MATERIAL IN THE BEAMS. THE COST OF THE 1/4" NEOPRENE BEARING PAD SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR PRESTRESSED BEAMS



SECTION THRU EXTERIOR BEAM AT INTERMEDIATE DIAPHRAGM BAR



DETAIL AT BEAM END - PLAN



DETAIL OF SHEAR KEY

106'-6" SPAN PRESTRESSED CONCRETE BEAM TYPE IV (46-3)

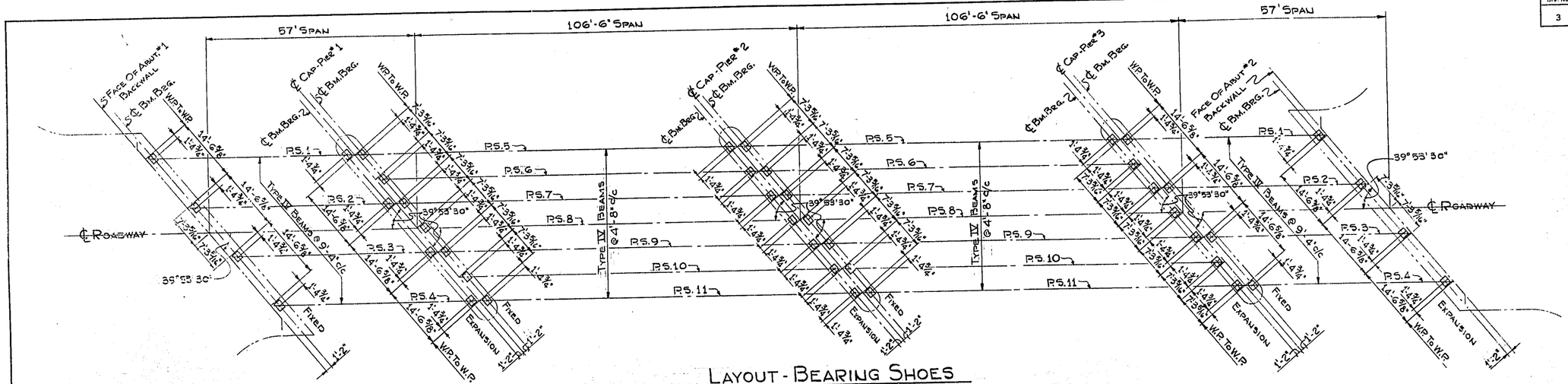
STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. [illegible]

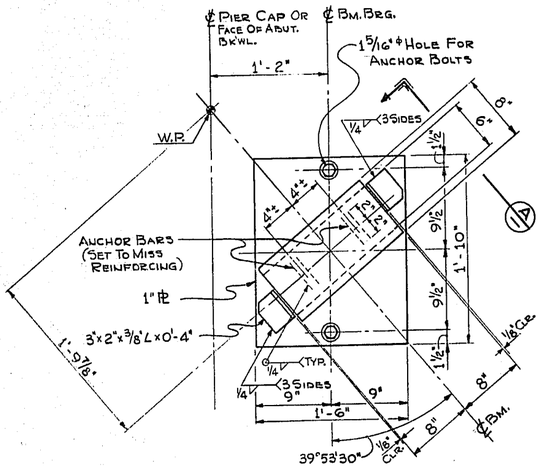
REVISIONS		ROAD NO.	COUNTY		PROJECT NO.
Dates	Descriptions	S.R. 600	OSCEOLA		9233-3401
			Names	Dates	APPROVED BY
		Detailed by	STARR	12-58	T. W. Jamming
		Checked by	R.E.T.	1-59	Engineer of Bridge Design
		Quantities by	D.M.S	1-59	
		Checked by	R.E.T.	1-59	Assistant State Highway Engineer
		Traced by			Drawing No. 9 OF 12 / Index No. 4560

E-135

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA	92130-3401 I-4-2(19)176	59	B-24



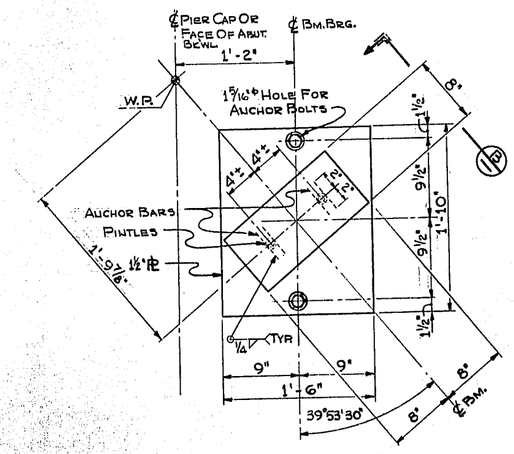
Layout - Bearing Shoes



Plan - Expansion Shoe

Scale 1½"=1'-0"

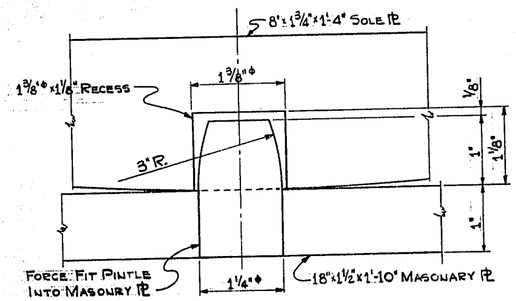
(Weight Of One Shoe Assembly - 215 Lbs.)



Plan - Fixed Shoe

Scale 1½"=1'-0"

(Weight Of One Shoe Assembly - 247 Lbs.)



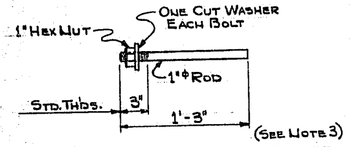
Detail - Pintle

Full Scale

General Notes

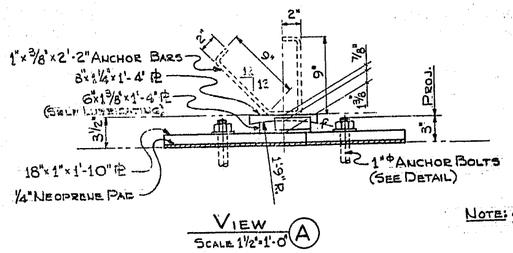
All Bearing Plates (except self-lubricating plates), Anchor Bolts, Nuts, Washers, Pintles and Angles shall be hot dip galvanized in accordance with requirements of ASTM Specifications, Designation A-123. Self-lubricating plates shall conform to requirements of Articles 537.15 and 537.16 of the State Road Department Standard Specifications.

Cost of ¼" Neoprene Pads shall be included in the Contract Unit Price for Structural Steel Shoe Assemblies.



Detail - Anchor Bolt

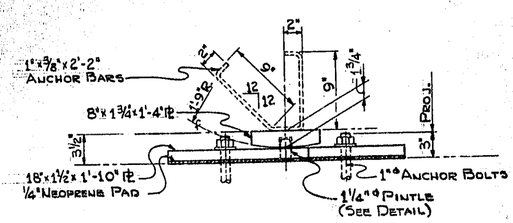
Scale 1½"=1'-0"



View (A)

Scale 1½"=1'-0"

Note: 4-8"x3/4"ϕ Studs May Be Substituted For 2-1"x3/8" Anchor Bars If So Desired.



View (B)

Scale 1½"=1'-0"

Layout And Details Of Bearing Shoe Assemblies

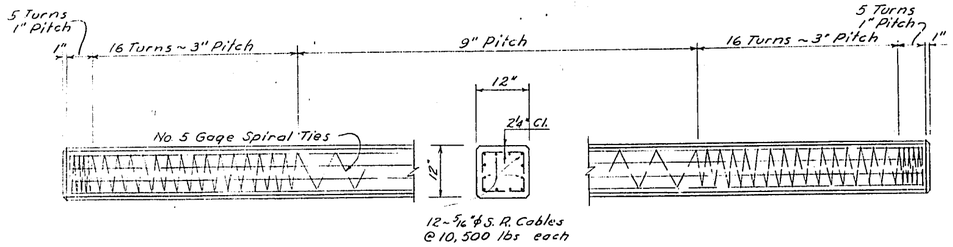
STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

State Road 545 Over Interstate Route No. 4

REVISIONS		ROAD NO.	COUNTY		PROJECT NO.
Dates	Descriptions	SR 400	Osceola		92130-3401
			Names	Dates	APPROVED BY
		Detailed by	S.T.V.	12-58	T.W. Jennings
		Checked by	R.E.T.	1-59	Engineer of Bridges
		Quantities by			Assistant State Highway Engineer
		Checked by			Drawing No. 10 of 12
		Traced by			Index No. 4560

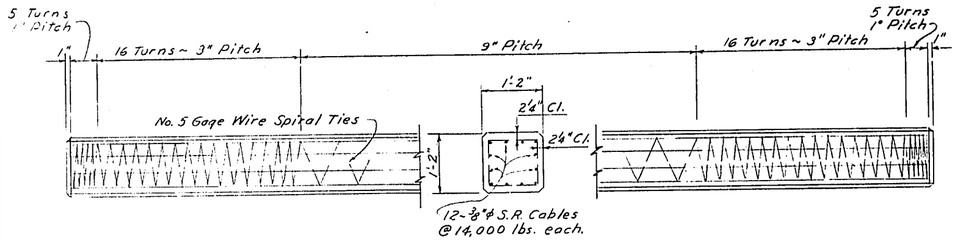
A. R. Cogswell, Jacksonville

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			



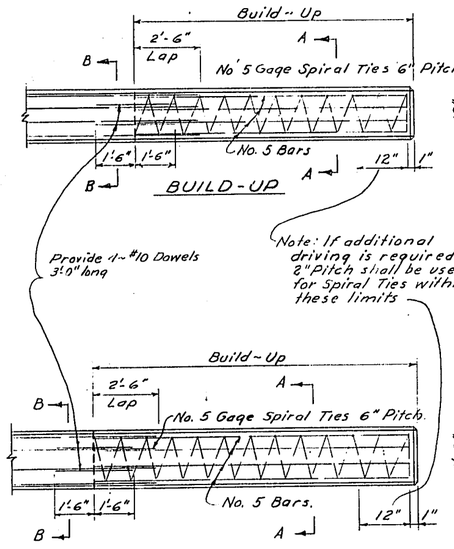
PRESTRESSED 12" x 12" PILES

Maximum Length ~ 50 Ft. Single Point Pick-up.
Maximum Length ~ 75 Ft. Double Point Pick-up.

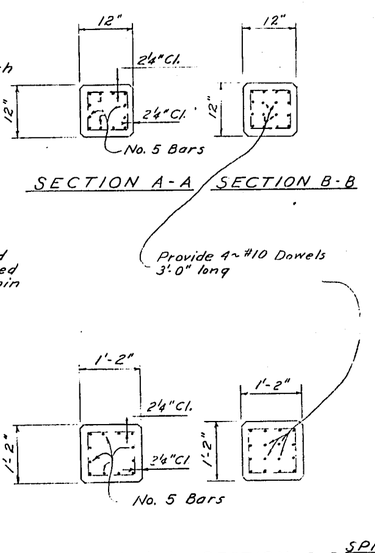


PRESTRESSED 14" x 14" PILES

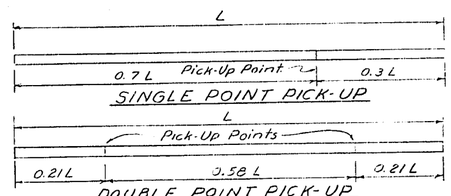
Single Point Pick-Up Maximum Length 60 Ft.
Double Point Pick-Up Maximum Length 85 Ft.



BUILD-UP



SECTION A-A SECTION B-B



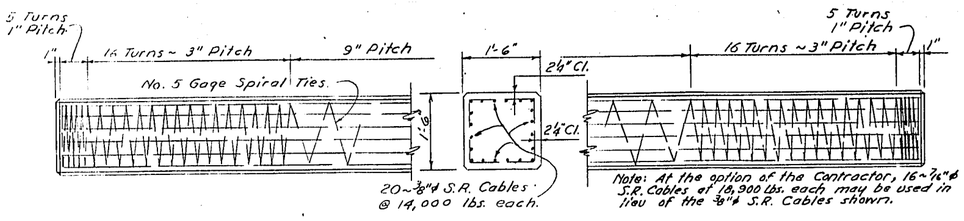
Note: Piles shall be marked at Pick-Up Points to indicate proper points for attaching handling lines.

GENERAL NOTES

SPIRAL TIES: Spirals shall be tied to all corner cables.

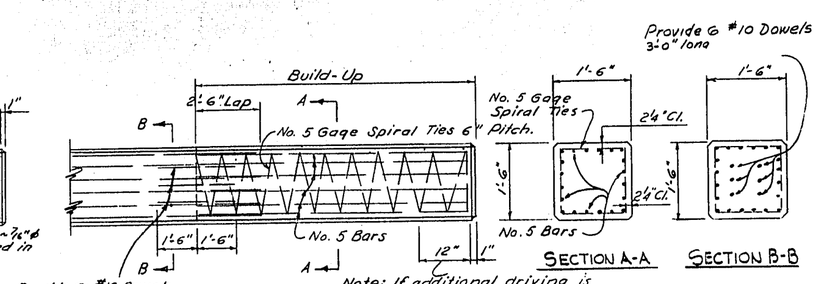
MATERIAL FOR SPIRAL TIES: Spirals may be manufactured from stock meeting requirements of any grade of reinforcing steel or hard drawn steel.

PILE CUTOFFS: In cutting off Concrete Piles an abrasive saw shall be used to score the Concrete at Cut off elevation to the approximate depth of reinforcing steel. As an alternate to sawing, scoring may be done with a templated power drill.



PRESTRESSED 18" x 18" PILES

Single Point Pick-Up Maximum Length 70 Ft.
Double Point Pick-Up Maximum Length 95 Ft.



BUILD-UP

Note: If additional driving is required 2" Pitch shall be used for spiral ties within these limits.

SECTION A-A SECTION B-B

PRESTRESSED CONCRETE PILING

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R. 400	OSCEOLA	[illegible]-3401

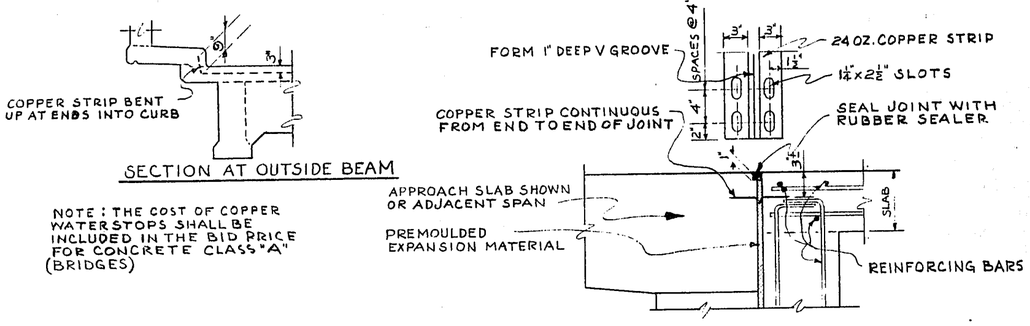
STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION
STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

	Names	Dates
Detailed by	W.T.M.	6-58
Checked by	C.P.L.	6-58
Quantities by		
Checked by		
Traced by	W.T.M.	6-58

APPROVED BY [signature] Engineer of Bridge Design
Assistant State Highway Engineer

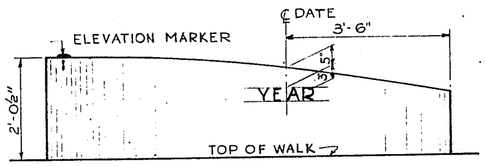
Drawing No. 11 OF 12
Index No. 4560

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA			



TYPICAL DETAIL 24 OZ. COPPER-WATERSTOP

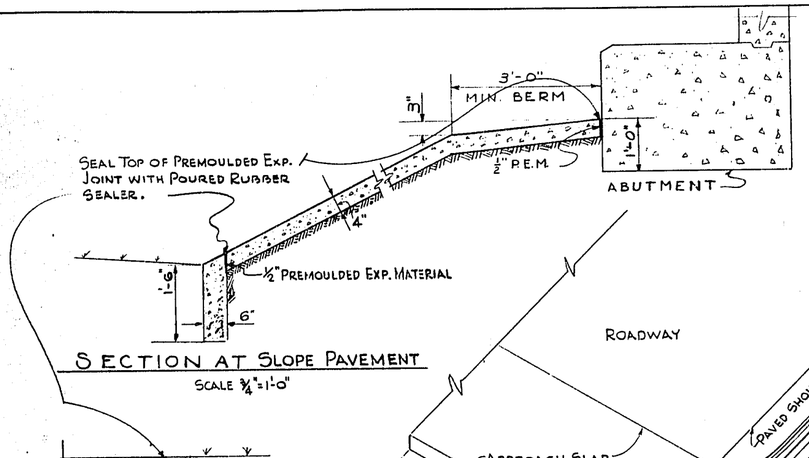
A MARKER RECORDING THE ELEVATION SHALL BE PLACED ON TOP OF ONE WINGWALL. ON BRIDGES LONGER THAN 100 FEET, A MARKER SHALL BE PLACED AT BOTH ENDS OF THE BRIDGE.
MARKERS ARE TO BE FURNISHED BY THE STATE ROAD DEPARTMENT, AND INSTALLED BY THE CONTRACTOR. THE COST OF INSTALLING THE MARKERS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR CONCRETE, CLASS 'A'



WING WALL ELEVATION

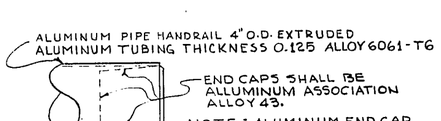
THE YEAR OF CONSTRUCTION SHALL BE PLACED ON THE RIGHT HAND WINGWALLS FACING ON COMING TRAFFIC AT BOTH ENDS OF BRIDGES, IN THREE-INCH-HIGH RECESSED FIGURES.
THE STYLE OF FIGURES SHALL BE APPROVED BY THE ENGINEER.

ELEVATION MARKERS - DATES

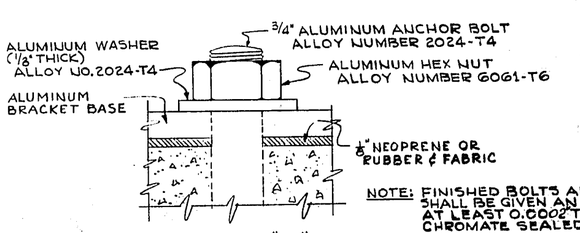


NOTE:
SLOPE PAVEMENT SHALL BE TOOLED WITH DOUBLE ¼" RADIUS TOOL AT INTERVALS OF 2'-0" UP SLOPE AND 4'-0" MAXIMUM HORIZONTAL MEASUREMENT. VERTICAL JOINTS SHALL BE TOOLED RADIALLY ALONG CURVED SLOPE.
CONSTRUCTION JOINTS WILL BE PERMITTED AT TOOLED JOINTS AS DIRECTED BY THE ENGINEER.
SEAL TOP OF PREMOULDED EXP. JOINT WITH POURED RUBBER JOINT SEALER.

CONCRETE SLOPE PAVEMENT

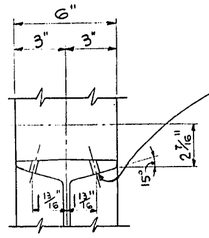


DETAIL OF END CAP
SCALE 3" = 1'-0"

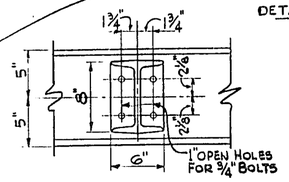


DETAIL "B"

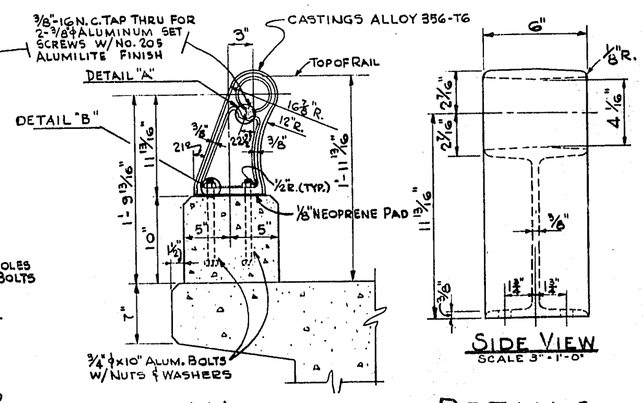
NOTE: FINISHED BOLTS AND WASHERS SHALL BE GIVEN AN ANODIC COATING AT LEAST 0.0002 THICK AND CHROMATE SEALED.



DETAIL "A"
SCALE 3" = 1'-0"



PLAN HANDRAIL POST
SCALE 1½" = 1'-0"



SIDE VIEW
SCALE 3" = 1'-0"

NOTE: THE LINEAL FOOT PRICE FOR ALUMINUM HANDRAIL QUANTITIES SHALL INCLUDE THE HANDRAIL, HANDRAIL POSTS, ALUMINUM ANCHOR BOLTS, NEOPRENE PADS, ETC. THIS PRICE SHALL NOT INCLUDE THE PARAPET WHICH HAS BEEN INCLUDED IN CONC. CLASS "A" AND REINFORCING STEEL IN THE APPROPRIATE DECK SPANS

TYPICAL HANDRAIL DETAILS

MISCELLANEOUS DETAILS

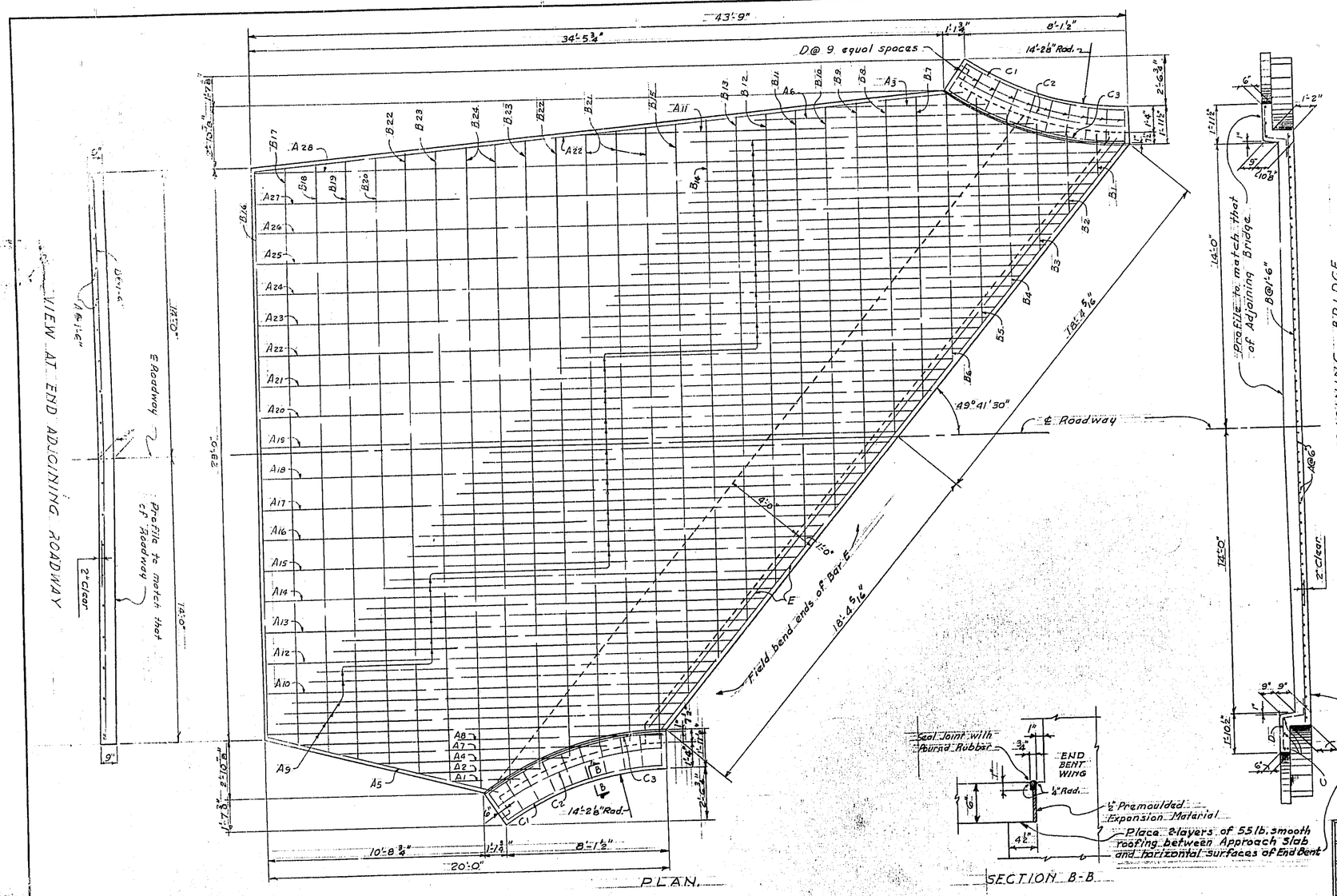
STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE PLANE COORD. INTERSTATE ROUTE 1

REVISIONS		ROAD NO.	COUNTY		PROJECT NO.
Dates	Descriptions	S.R. 500	DUVAL		[illegible]-3601
			Names	Dates	APPROVED BY
		Detailed by	D.M.S.	10-58	— [illegible]
		Checked by	R.W.G.	10-58	Engineer of Bridge Design
		Quantities by			
		Checked by			Assistant State Highway Engineer
		Traced by	STARR	10-58	Drawing No. 2 of 12 / Index No. 3780

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3401	58	

I-4-2(12)2

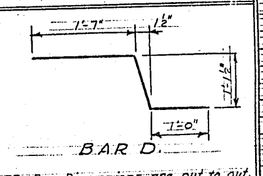


* Note: Estimated Quantities and Bill of Reinforcing Steel are for One Approach Slab.

BILL OF REINFORCING STEEL *

MARK	SIZE	NO. REQ'D.	LENGTH
A1	5	1	3'-4"
A2	5	1	4'-3"
A3	5	1	5'-3"
A4	5	1	6'-4"
A5	5	1	7'-11"
A6	5	1	9'-7"
A7	5	1	11'-8"
A8	5	1	13'-2"
A9	5	42	19'-10"
A10	5	1	21'-6"
A11	5	1	22'-10"
A12	5	1	23'-10"
A13	5	1	24'-7"
A14	5	1	25'-4"
A15	5	1	26'-7"
A16	5	1	27'-10"
A17	5	1	29'-1"
A18	5	1	30'-4"
A19	5	1	31'-8"
A20	5	1	32'-11"
A21	5	1	34'-2"
A22	5	2	31'-5"
A23	5	1	3'-2"
A24	5	1	38'-5"
A25	5	1	39'-3"
A26	5	1	40'-6"
A27	5	1	41'-9"
A28	5	1	43'-1"
B1	4	1	2'-2"
B2	4	1	4'-1"
B3	4	1	6'-3"
B4	4	1	8'-7"
B5	4	1	11'-1"
B6	4	1	13'-2"
B7	4	1	14'-10"
B8	4	1	16'-4"
B9	4	1	18'-1"
B10	4	1	19'-9"
B11	4	1	21'-5"
B12	4	1	23'-1"
B13	4	1	24'-9"
B14	4	1	26'-4"
B15	4	1	28'-0"
B16	4	1	27'-8"
B17	4	1	28'-3"
B18	4	1	28'-9"
B19	4	1	29'-4"
B20	4	1	29'-10"
B21	4	3	30'-0"
B22	4	2	30'-4"
B23	4	2	30'-10"
B24	4	2	31'-4"
C1	4	2	8'-5"
C2	4	2	8'-11"
C3	4	2	9'-5"
D	4	20	3'-9"
E	4	2	37'-0"

BENDING DIAGRAM



BAR D.

NOTE: Bar Dimensions are out to out.

ESTIMATED QUANTITIES *

ITEM	UNIT	QUANTITY
Concrete, Class A	Cu. Yd.	28.69
Reinforcing Steel	Lb.	2155

APPROACH SLAB

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD NO. 530 OVER INTERSTATE ROUTE NO. 4

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	400	OSCEOLA	92130-3401

	Names	Dates	APPROVED BY
Detailed by	W.H.W.	10-58	T. W. Jennings, Engineer of Bridge Design
Checked by	R.M.M.	12-58	M. E. Dean, Assistant State Highway Engineer
Quantities by	W.H.W.	10-58	
Checked by	R.M.M.	12-58	Drawing No. 1 of 1
Traced by	W.H.W.	10-58	Index No. 4218

STATE JOBS NO. 16320-3407-41-11
NO. 92130-3401-41-11

FED. ROAD DIV. NO.	STATE	PROJECT NO.	SHEET NO.
3	FLA.	I-4-1(25)75 '59	1
		I-4-2(19)76	

STATE OF FLORIDA
STATE ROAD DEPARTMENT

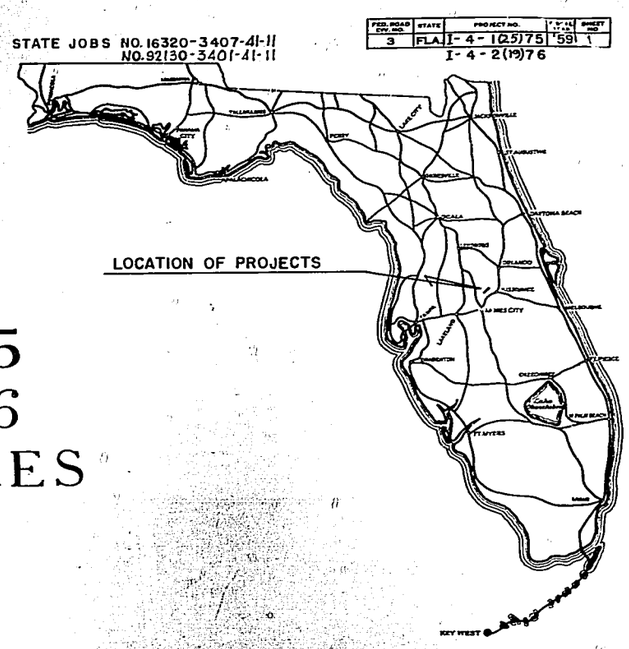
PLANS OF PROPOSED

STATE HIGHWAY

F.A. PROJECT NO. I-4-1(25)75
F.A. PROJECT NO. I-4-2(19)76
POLK AND OSCEOLA COUNTIES
STATE ROAD NO. 400

NET LENGTH OF PROJECTS 0.740 & 4.072 MILES

SCALE 1"= 2 MILES



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145	INDEX NO. 767 STANDARD OITCB BOTTOM DROP INLET
146	INDEX NO. 1101-K MISCELLANEOUS RDADWAY CONSTRDCTION DETAILS
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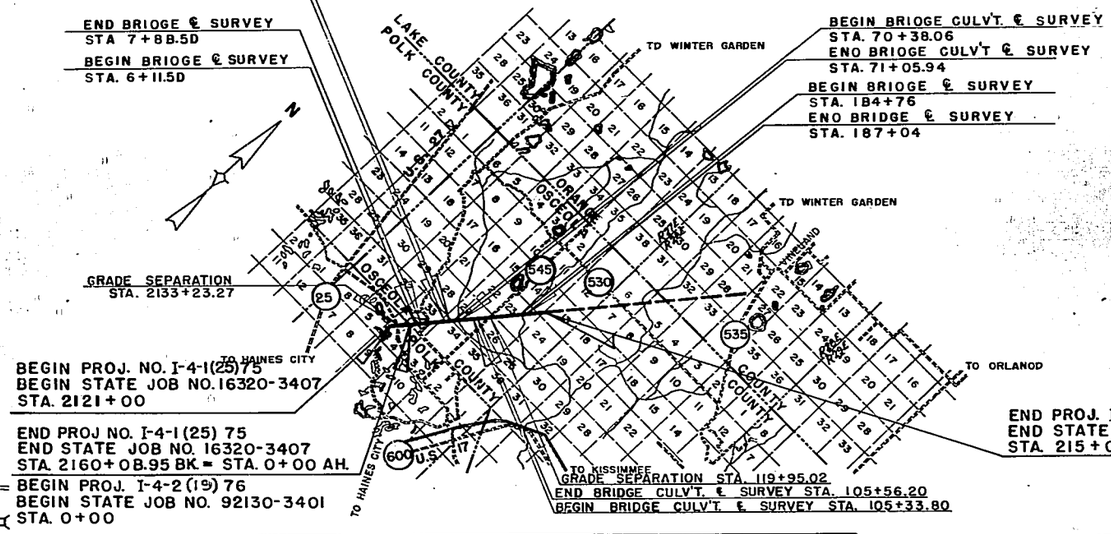
CONVENTIONAL SIGNS

COUNTY LINE	TRAVELED WAY
TOWNSHIP LINE	CULVERTS
SECTION LINE	BRIDGES OVER 20 FT. SPAN
UNFENCED PROPERTY	POWER POLE
CITY LINE	TELEPHONE POLE
FENCE LINE	MARSH
RIGHT OF WAY LINE	GROUND ELEV.
BASE OR SURVEY LINE	GRADE ELEV.
RAILROADS	R. R. MILE POST
L. A. R/W LINE	

GOVERNING SPECIFICATIONS: STATE OF FLORIDA, STATE ROAD DEPARTMENT, STANDARD SPECIFICATIONS, DATED April 1, 1959

APPROVED BY BUREAU OF PUBLIC ROADS — DATE



LENGTH OF PROJECT

	JOB NO. 16320-3407		JOB NO. 92130-3401		TOTAL	
	LIN. FT.	MILES	LIN. FT.	MILES	LIN. FT.	MILES
ROADWAY	3,908.95	0.740	20,981.14	3.974	24,890.09	4.714
BRIOGES	0.00	0.000	518.86	0.098	518.86	0.098
NET LENGTH OF PROJECT	3,908.95	0.740	21,500.00	4.072	25,408.95	4.812
EXCEPTIONS	0.00	0.000	0.00	0.000	0.00	0.000
GROSS LENGTH OF PROJECT	3,908.95	0.740	21,500.00	4.072	25,408.95	4.812

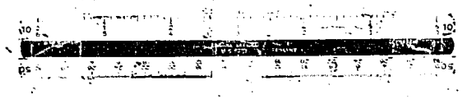
PREPARED BY
SMITH & GILLESPIE
ENGINEERS
JACKSONVILLE, FLORIDA

SUBMITTED BY

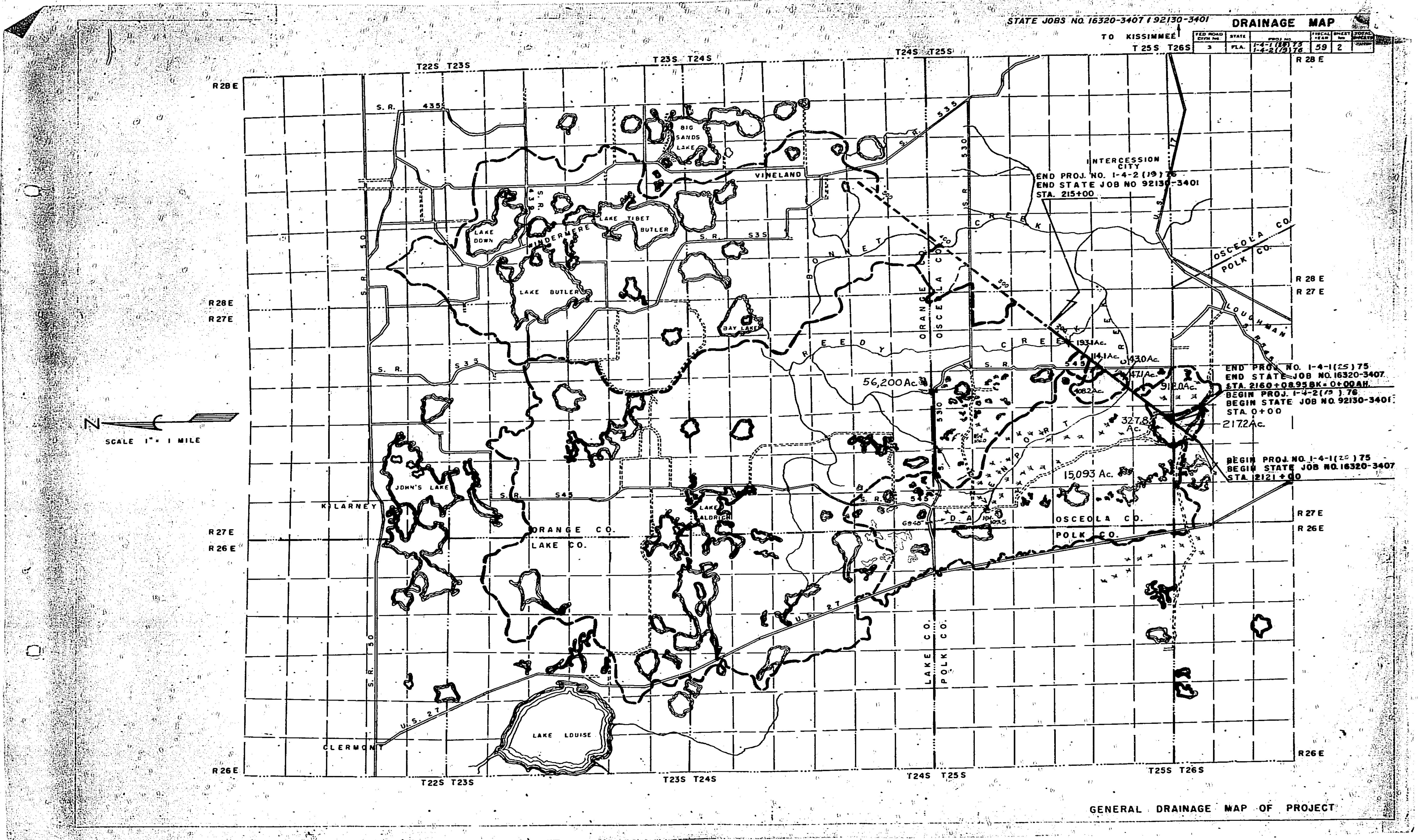
STATE HIGHWAY ENGINEER

APPROVED [redacted] DATE

DISTRICT ENGINEER
BUREAU OF PUBLIC ROADS



E-1364


STATE JOBS NO. 16320-3407 & 92130-3401
DRAINAGE MAP
TO KISSIMMEE
T 25 S T 26 S
T22S T23S
T23S T24S
T24S T25S
R 28 E
R 28 E R 27 E
R 27 E R 26 E
R 26 E
S. R. 435
S. R. 535
S. R. 530
S. R. 439
S. R. 50
S. R. 535
S. R. 545
U. S. 27
U. S. 17
BIG SANDS LAKE
VINELAND
LAKE DOWN
WINDERMERE
LAKE TIBET BUTLER
LAKE BUTLER
BAY LAKE
JOHN'S LAKE
KILARNEY
LAKE ALDRICH
LAKE LOUISE
CLERMONT
ORANGE CO.
LAKE CO.
OSCEOLA CO.
POLK CO.
LAKE CO. POLK CO.
ORANGE CO. OSCEOLA CO.
BONNET CREEK
REEDY CREEK
DAVENPORT CREEK
LOUGHMAN
INTERCESSION CITY
END PROJ. NO. I-4-2 (19) 76
END STATE JOB NO 92130-3401
STA. 215+00
END PROJ. NO. I-4-1(25) 75
END STATE JOB NO. 16320-3407
STA. 2160+08.95 BK = 0+00 AH.
BEGIN PROJ. I-4-2(19) 76
BEGIN STATE JOB NO. 92130-3401
STA. 0+00
BEGIN PROJ. NO. I-4-1(25) 75
BEGIN STATE JOB NO. 16320-3407
STA. 2121+00
56,200 Ac.
193.1 Ac.
114.1 Ac.
143.0 Ac.
147.1 Ac.
408.2 Ac.
912.0 Ac.
327.8 Ac.
217.2 Ac.
15,093 Ac.
N
SCALE 1" = 1 MILE
GENERAL DRAINAGE MAP OF PROJECT

E-1365

STATE JOBS NO. 16320-3407 & 92130-3401

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25) 75 I-4-2(19) 76	3

END PROJ NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 2160+08.95 BK. = 0+00 AH.
BEGIN PROJ NO. I-4-2(19)76
BEGIN STATE JOB NO. 92130-3401
STA. 0+00

BEGIN PROJ NO. I-4-1(25)75
BEGIN STATE JOB NO. 16320-3407
STA. 2121+00

NOT IN THIS CONTRACT

T25S R27E
T26S R27E

DEAN STYX CLAY ROAD

ROLLING SAND HILLS

GROVE

ROLLING HILLS

NOTE - WATER STANDS AROUND RUIN BUT NONE RUNS OFF. 24" CONC. DRAIN W.F.L. 148.87 C.F.L. 148.96 M.W. ELEV. 148.0

SAND HILLS NO WATER RUN OFF

NO WATER STANDS HERE

219-Ac.

225-Ac.

77-Ac.

110-Ac.

21-A.

81 Ac.

627-Ac. WET SWAMP

327.8 Ac.

2172 Ac.

HIGH HILL

SWAMP

POND

PASTURE

OSCEOLA POLK

TO HAINES CITY

COUNTY

12'X 20' TBR. BRIDGE
F.L. 106.5
H.W. 111.3
P.W. 103.65
TOP BR. 112.56.
10-11-57

15" RCP

WATER FLOWS OVER ROADS

15'x15' TBR. BR.
F.L. 106.6
H.W. 108.6
P.W. 106.72
REPLACED BY 36" CMP 11-1958

2-30'x11' TBR. BR.
F.L. 105.17
H.W. 108.0
P.W. 106.37
TOP BR. 108.33
10-11-57

P.W. 112.20
10-11-57

T25S R27E
T26S R27E

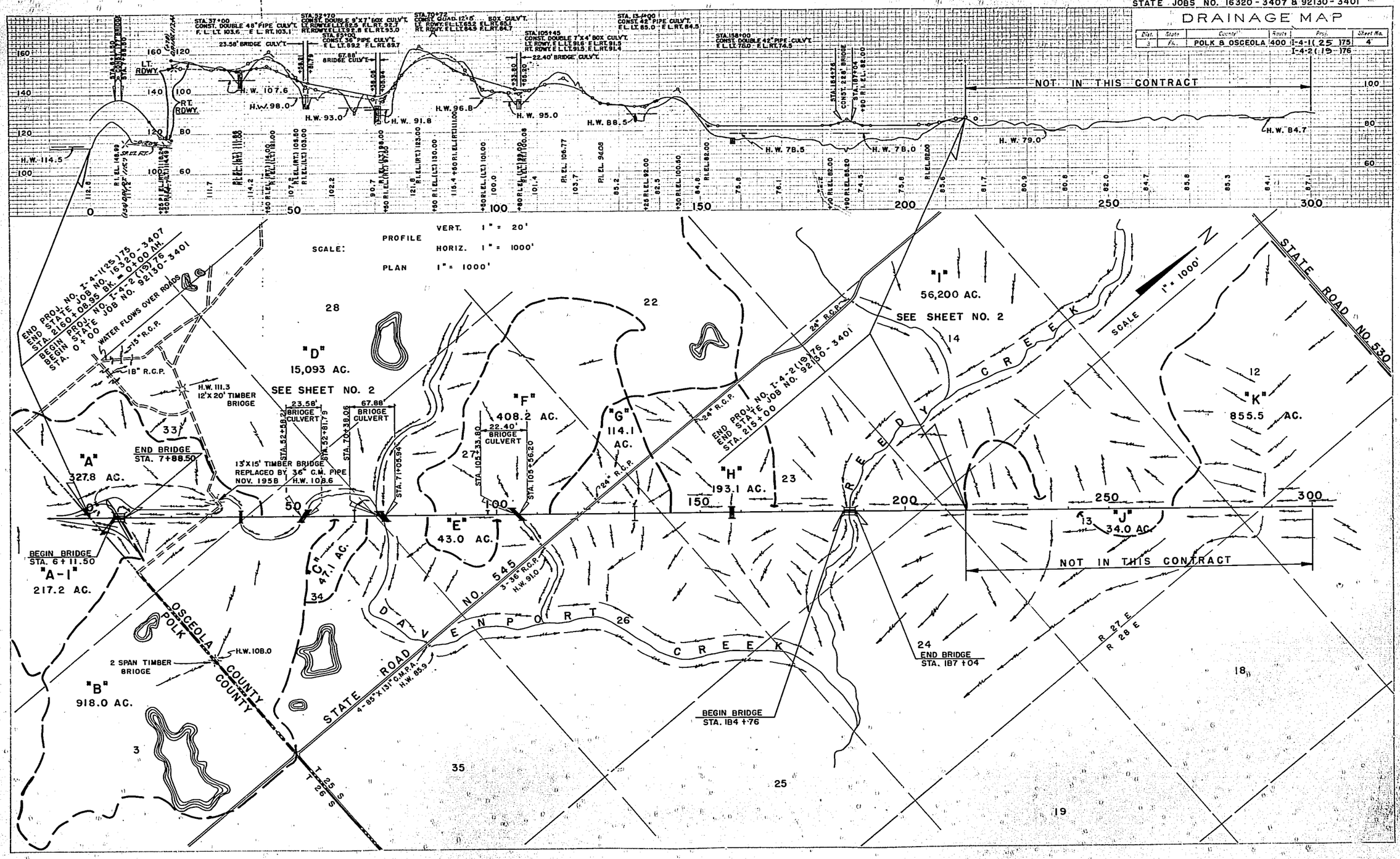
SCALE - 1" = 1000'

E-1366

STATE JOBS NO. 16320-3407 & 92130-3401

DRAINAGE MAP

Dist.	State	County	Route	Proj.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25) 175 I-4-2(19) 176	4

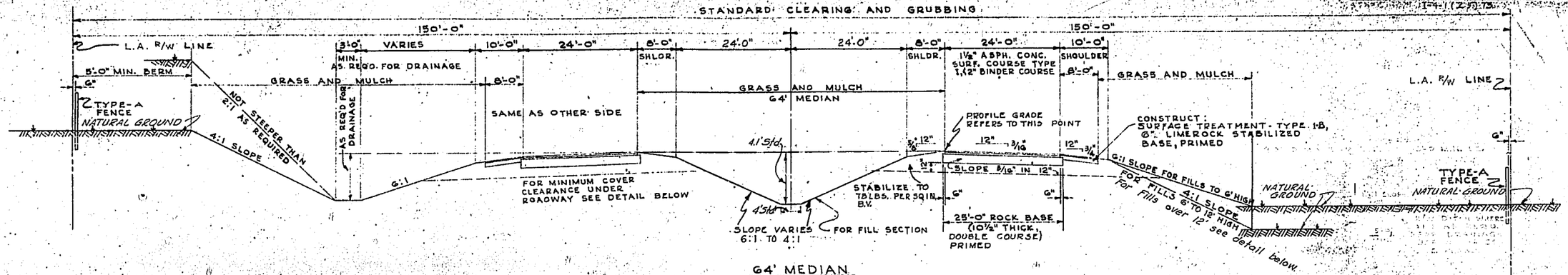


E-1367

STATE JOBS NO. 16320-3407 & 92130-3401

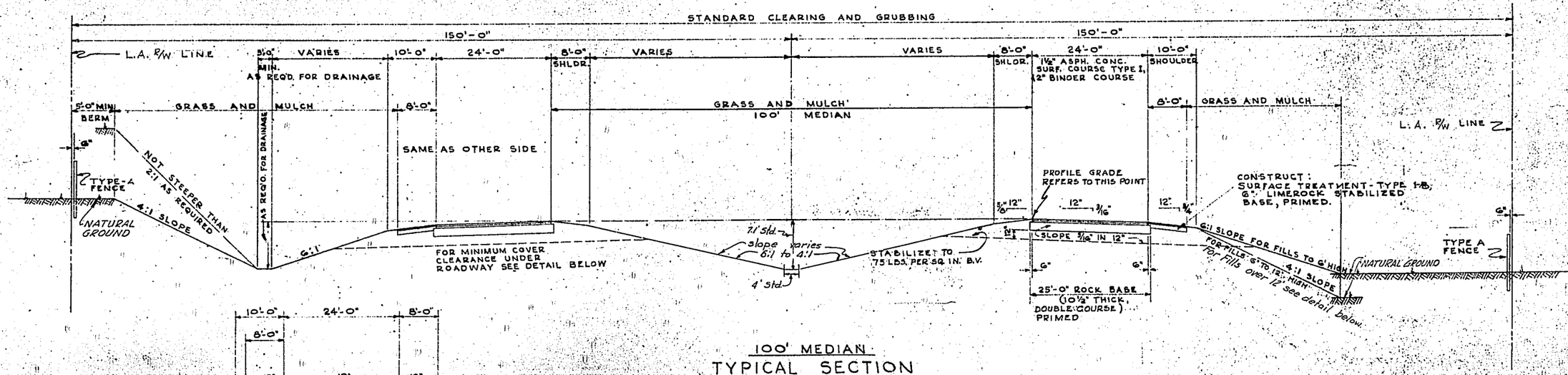
FED. ROAD DIVN. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	FLA.	I-4-2(19)76	59	6	
		I-4-1(22)75			

STANDARD CLEARING AND GRUBBING

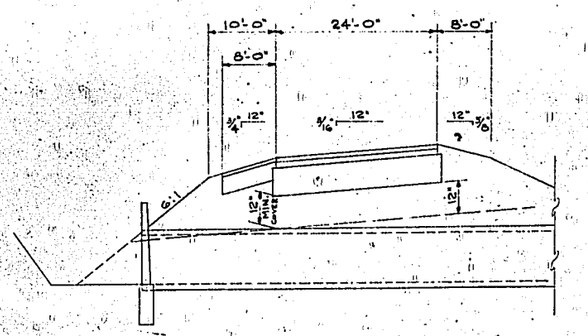


64' MEDIAN
TYPICAL SECTION

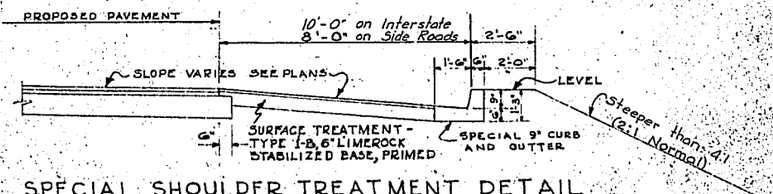
STANDARD CLEARING AND GRUBBING



100' MEDIAN
TYPICAL SECTION



DETAIL OF STRUCTURE IN STABILIZED AREA
STA. 20+32 (LINE A), STA. 20+80 (LINE B), STA. 10+72



SPECIAL SHOULDER TREATMENT DETAIL
(FOR FILLS STEEPER THAN 4:1)
For Additional Details see Index No. 5060-B

TYPICAL SECTIONS

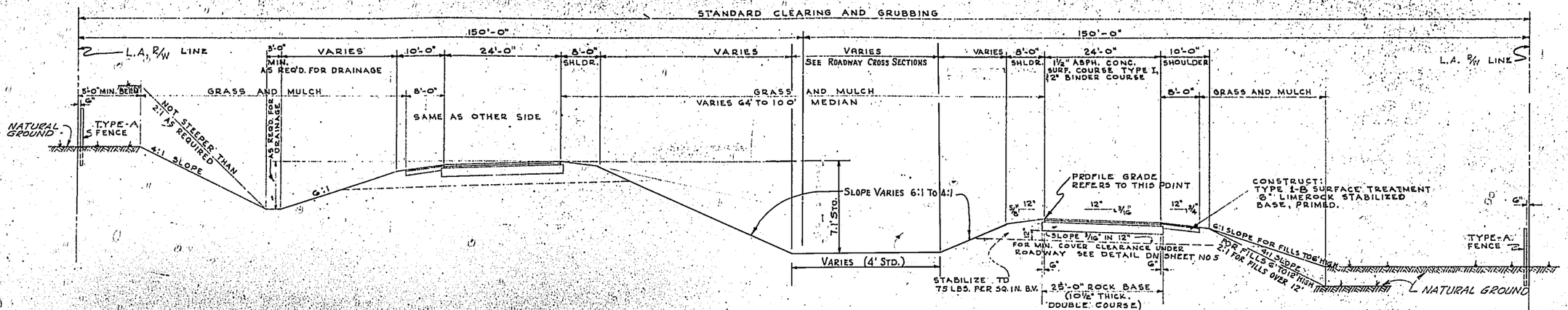
LIMEROCK BASE (10½" THICK, DOUBLE COURSE) PRIMED, WITH ASPHALTIC CONCRETE SURFACE COURSE, TYPE I (1½" THICK) AND BINDER COURSE (2" THICK)

FOR ADDITIONAL DETAILS SEE INDEX NO. 1101-F

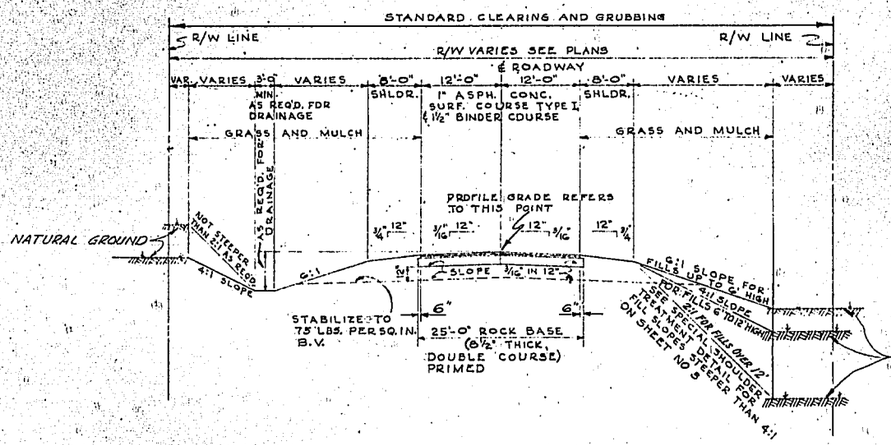
E-1368

STATE JOB'S NO. 16320-3407 & 92130-3401

FED. ROAD DIVN. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
9	FLA.	I-4-2(19)76		6	
		I-4-1(25)75			



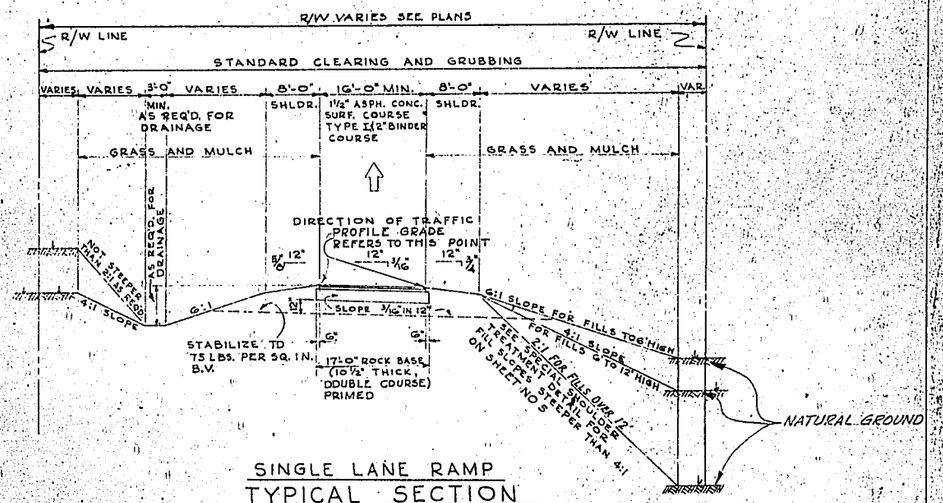
100' MEDIAN WITH VARYING ROADWAY ELEVATIONS
TYPICAL SECTION



SECONDARY ROAD
TYPICAL SECTION

LIMEROCK BASE (8½" THICK, DOUBLE COURSE) PRIMED, WITH ASPHALTIC CONCRETE SURFACE COURSE, TYPE I (1" THICK) AND BINDER COURSE (1½" THICK)

FOR ADDITIONAL DETAILS, SEE INDEX NOS. 1101-K, 2499-D & 5060-B



SINGLE LANE RAMP
TYPICAL SECTION

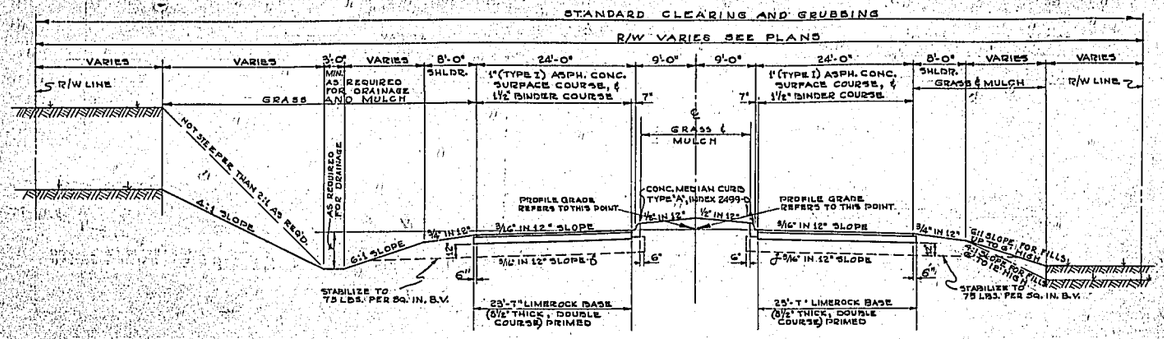
LIMEROCK BASE (10½" THICK, DOUBLE COURSE) PRIMED, WITH ASPHALTIC CONCRETE SURFACE COURSE, TYPE I (1½" THICK) AND BINDER COURSE (2" THICK).

FOR ADDITIONAL DETAILS, SEE INDEX NOS. 1101-K, 2499-D & 5010-C

E-1369

STATE JOBS NO. 16320 [illegible] & 92130-3401

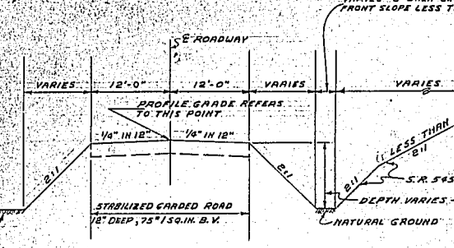
FED. ROAD DIVN. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.	1-4-2(19) [illegible]		7	
		1-4-1(25)75			

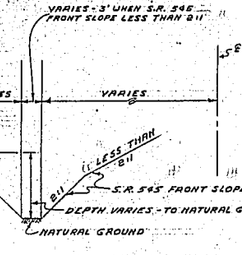


SECONDARY ROAD
POLK-OSCEOLA COUNTY LINE ROAD
TYPICAL SECTION

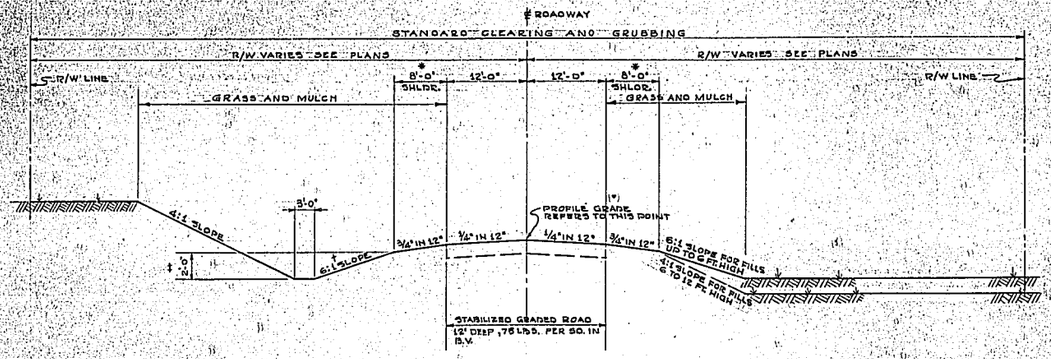
LIMEROCK BASE (8½" THICK, DOUBLE COURSE) PRIMED, WITH ASPHALTIC CONCRETE SURFACE COURSE, TYPE I (1" THICK) AND BINDER COURSE (1½" THICK)

FOR ADDITIONAL DETAILS SEE INDEX NOS. 1101-K, 2499-D & 5060-B



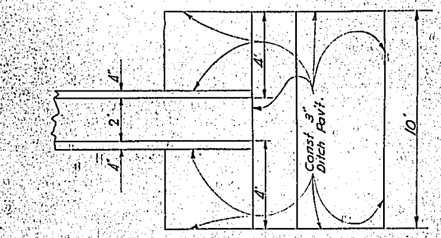


ACCESS ROAD LEFT
S.R. 545 LEFT
TYPICAL SECTION

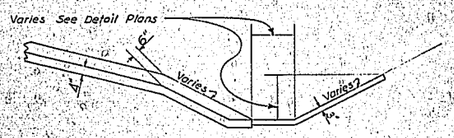


ACCESS ROAD
TYPICAL SECTION

* NO SHOULDER ON SERVICE ROAD (S.R. 545 RT.)
† 4:1 SLOPE ON SERVICE ROAD (S.R. 545 RT.)
‡ VARIABLE DEPTH ON SERVICE ROAD (S.R. 545 RT.)

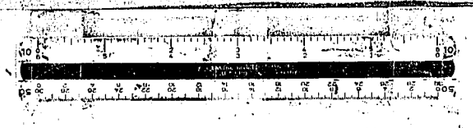


PLAN



PROFILE

DETAIL OF DRAINAGE FLUME, MODIFIED
For additional details see Index Nº 5060-B



E-1370

FED. ROAD DIV. No.	STATE	PROJECT No.	FISCAL YEAR	SHEET No.
3	FLA.	I-4-1(25)75 I-4-2(19)76	59	8

STATE JOB NO. 16320-3407
& 92130-3401

SUMMARY OF GUARDRAIL

F.A.Proj. No. I-4-2(19)76
State Job No. 92130-3401

STA TO STA.	RDWY.	SIDE	LENGTH
S2+66.24 TD 53+78.74	LT.	LT.	112.5'
S2+39.74 TO 53+52.24	LT.	RT.	112.5'
51+87.51 TD 53+00.01	RT.	LT.	112.5'
51+61.26 TD 52+73.76	RT.	RT.	112.5'
69+26.52 TD 70+76.52	LT.	LT.	150.0'
69+61.72 TD 71+11.72	LT.	RT.	150.0'
70+25.99 TD 71+88.49	RT.	LT.	162.5'
70+61.23 TD 72+23.73	RT.	RT.	162.5'
104+11 TD 105+11	LT.	LT.	100.0'
104+53 TD 105+53	LT.	RT.	100.0'
105+37 TD 106+37	RT.	LT.	100.0'
105+79 TO 106+79	RT.	RT.	100.0'
5+74.39 TO 6+24.39	RT.	LT.	50.0'
5+95.75 TO 6+45.75	RT.	RT.	50.0'
7+54.25 TD 8+04.25	LT.	LT.	50.0'
7+75.61 TD 8+25.61	LT.	RT.	50.0'
184+18.50 TO 184+68.50	RT.	LT	50.0'
184+18.50 TO 184+68.50	RT.	RT.	50.0'
185+73.50 TO 186+23.50	LT.	LT.	50.0'
185+73.50 TO 186+23.50	LT.	RT.	50.0'
1+55 TO 2+05 (SR 545 RT.)	—	LT.	50.0'
1+55 TO 2+05 (SR 545 LT.)	—	LT.	50.0'
TOTAL			1915.0'

Guardrail Stationing is approximate. The exact stationing is to be set by the Engr. during Const.

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY F.A.PROJ. NO. I-4-1(25)75 STATE JOB NO. 16320-3407 ROADWAY	F.A.PROJ. NO. I-4-1(25)75 STATE JOB NO. 16320-3407 BRIDGE	F.A.PROJ. NO. I-4-2(19)76 STATE JOB NO. 92130-3401 ROADWAY	F.A.PROJ. NO. I-4-2(19)76 STATE JOB NO. 92130-3401 BRIDGE	TOTAL
SD-1	MAINTENANCE OF TRAFFIC	LUMP SUM			1		1
53-1A	CLEARING AND GRUBBING (JDB NO. 92130-3401, F.A.P. NO. I-4-2(19)76)	LUMP SUM			1		1
53-1B	CLEARING AND GRUBBING (JDB NO. 16320-3407, F.A.P. NO. I-4-1(25)75)	LUMP SUM	1				1
5B-2	GRADING	ROAD MILE	0.740		4.072		4.812
5B-6	BORROW EXCAVATION	CU. YD.			302,466		302,466
5B-8	SUBSOIL EXCAVATION	CU. YD.	76,447		31,150		107,597
7D-1A	STABILIZING (JDB NO. 92130-3401, F.A.P. NO. I-4-2(19)76)	LUMP SUM			1		1
7D-1B	STABILIZING (JDB NO. 16320-3407, F.A.P. NO. I-4-1(25)75)	LUMP SUM	1				1
100-1A	LIMEROCK BASE (ID 1/2" THICK DOUBLE COURSE)	SQ. YD.	25,208		122,189		147,397
100-1B	LIMEROCK BASE (B 1/2" THICK DOUBLE COURSE)	SQ. YD.			8,591		8,591
120-1	LIMEROCK STABILIZED BASE (6" THICK)	SQ. YD.	6,646		38,621		45,267
120-2	LIMEROCK MATERIAL	CU. YD.	738		4,291		5,029
19D-2	CONCRETE APPROACH SLABS	EACH	2		10		12
2DD-1	BITUMINOUS MATERIAL (PLANT MIX & TACK COAT)	GAL.	58,751		299,238		357,989
21D-1	COVER MATERIAL FOR SURFACE TREATMENT (TYPE 1-B, GRADE 12)	CU. YD.	89		515		604
ALT. 21D-6A	BITUMINOUS MATERIAL, SURFACE TREATMENT (A.C-1SD-2DO PENETRATION)	GAL.	1,794		10,428		12,222
ALT. 210-6B	BITUMINOUS MATERIAL, SURFACE TREATMENT (EMULSIFIED ASPHALT)	GAL.	2,127		12,359		14,486
233-1A	TYPE I ASPHALTIC CONCRETE SURFACE COURSE, (1 1/2" THICK) WITH BINDER COURSE (2" THICK)	SQ. YD.	24,230		117,248		141,478
233-1B	TYPE I ASPHALTIC CONCRETE SURFACE COURSE, (1" THICK) WITH BINDER COURSE (1 1/2" THICK)	SQ. YD.			8332		8332
30D-1A	CLASS A CONCRETE (CULVERTS)	CU. YD.				1,814.94	1,814.94
300-1B	CLASS A CONCRETE (BRIDGE)	CU. YD.		436		2,079	2515
3D1-1	CLASS N.S CONCRETE (ENDWALLS)	CU. YD.	38.40		110.15		148.55
31D-1	REINFORCING STEEL	LB.	440	62,600		606,072	669,112
32D-1	STRUCTURAL STEEL (SHOE ASSEMBLIES)	LB.				10,164	10,164
3SS-1	INLETS	EACH			10		10
360-1A	CONCRETE PIPE CULVERT (18" CROSS DRAIN)	LIN. FT.	58		371		429
36D-1B	CONCRETE PIPE CULVERT (24" CROSS DRAIN)	LIN. FT.	206		273		479
360-1C	CONCRETE PIPE CULVERT (36" CROSS DRAIN)	LIN. FT.	310		209		519
36D-1D	CONCRETE PIPE CULVERT (42" CROSS DRAIN)	LIN. FT.			431		431
360-1E	CONCRETE PIPE CULVERT (48" CROSS DRAIN)	LIN. FT.			397		397
401-1A	PRESTRESSED BEAMS (TYPE II, 22-0)	LIN. FT.				569	569
401-1B	PRESTRESSED BEAMS (TYPE II, 18'-1)	LIN. FT.				1,201	1,201
4D1-1C	PRESTRESSED BEAMS (TYPE II, 24-0)	LIN. FT.				1,788	1,788
401-1F	PRESTRESSED BEAMS (TYPE IV, 46-3)	LIN. FT.				1,463	1,463
4D1-1G	PRESTRESSED BEAMS (TYPE IV, 34-0)	LIN. FT.				440	440
403-3	PRECAST CONCRETE PILING FURNISHED (18" SQUARE PRESTRESSED)	LIN. FT.		1,500		8400	9,900
4D3-4	PRECAST CONCRETE PILING DRIVEN (18" SQUARE PRESTRESSED)	LIN. FT.		1,500		8,400	9,900
4D3-9	UNLOADED TEST PILES (18" SQ. PRESTRESSED)	LIN. FT.		90		470	560
403-10	TEST LOADS	EACH		1		3	4
407-1	ALUMINUM HANDRAIL	LIN. FT.		440		2,234	2,674
430-1	CONCRETE CURB & GUTTER (SPECIAL 9" CURB)	LIN. FT.	402		4,662		5,064
430-2	CONCRETE CURB (MEDIAN TYPE A)	LIN. FT.	274		3,066		3,340
451-1	CONCRETE DITCH PAVEMENT (3" THICK)	SQ. YD.	262		1158		1,420
4S1-4	CONCRETE SLOPE PAVEMENT (4" THICK)	SQ. YD.		700		2,150	2,850
4S3-1	DRAINAGE FLUMES	EACH	2		10		12
4S6-1	RIPRAP (SAND-CEMENT)	CU. YD.				150	150
46S-1	GUARDRAIL	LIN. FT.			1,975		1,975
47D-1	INSTALLING RIGHT OF WAY MARKERS	EACH	15		77		92
475-1	DEAD-END BARRICADES	EACH			1		1
476-1	FENCING, TYPE A	LIN. FT.	7,680		42,704		50,384
48D-2	GRASSING & MULCHING	SQ. YD.	80,000		477,000		557,000
48D-3	MULCH MATERIAL	TON	50		296		346
401-1D	PRESTRESSED BEAMS (TYPE III, 16-0)	LIN. FT.		296			296
4D1-1E	PRESTRESSED BEAMS (TYPE III, 26-3)	LIN. FT.		734			734

ITEM 2DD-1 INCLUDES 23,968 GALLONS EST. FOR TACK COAT (3,877 GAL. JOB NO. 16320-3407 & 20,116 GAL. JOB NO. 92130-3401)

ITEM 4S1-1 INCLUDES 25 SQ. YDS. (16320-3407) & 100 SQ. YDS. (92130-3401) NOT SHOWN IN PLANS, TO BE CONSTRUCTED, WHERE NECESSARY, AT LOCATIONS AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH INDEX NO. 1101-K.

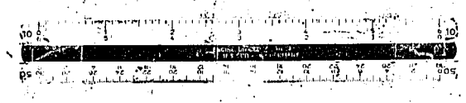
ITEM SO-1 INCLUDES MAINTENANCE OF TRAFFIC AT S.R. S45 ONLY.

ITEM 233-1A TO INCLUDE COST OF CONSTRUCTION OF MINERAL SEAL COAT AT RAMP TERMINALS, SEE INDEX NO. 5073A (SHEET 1 OF 2 SHEETS)

BASIS FOR ESTIMATE

ITEM NO. 21D-1 0.36 CU. FT. PER SQ. YD.
ITEM NO. 210-6A 0.27 GAL. PER SQ. YD.
ITEM NO. 21D-6B 0.32 GAL. PER SQ. YD.

ITEM NO. 20D-1 0.08 GAL. PER SQ. YD. PER APPLICATION
HDT BINDER COURSE - 95 LBS. PER SQ. YD. - IN., 5% AT B.SD LBS. PER GALLON. ASPHALTIC CONCRETE SURFACE COURSE TYPE I - 100 LBS. PER SQ. YD. - IN., 6.5D % AT B.SD LBS PER GALLON.
ITEM NO. 120-2 4" THICK, TRUCK MEASURE.



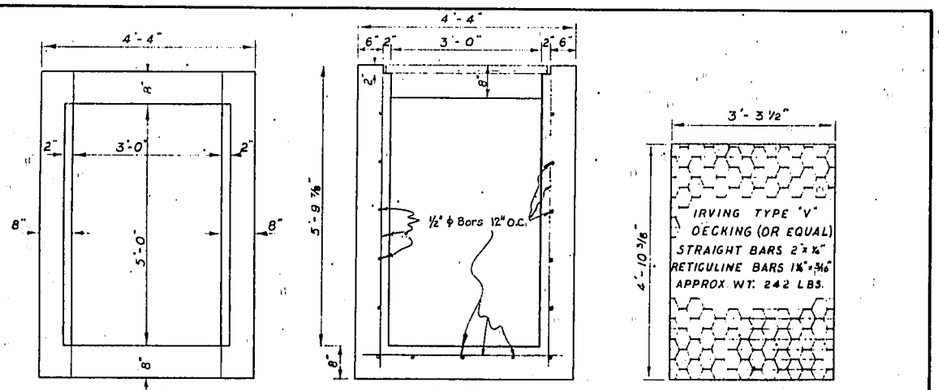
STATE JOBS NO. 16320-3407 & 92130-3401

FED ROAD DIVN NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.	I-4-1(25)75 I-4-2(19)78	'79	9	

SUMMARY OF DRAINAGE STRUCTURES

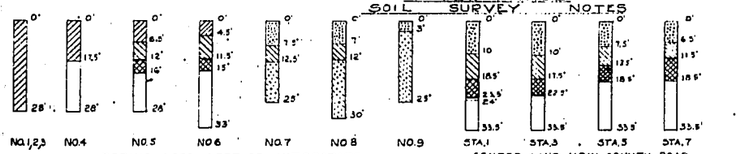
	INDEX NO.	STATION	SIDE	SIZE	LENGTH	TYPE	CONCRETE PIPE 18"	24"	36"	42"	48"	INLETS "C" 0'-4' 4'-6"	INLETS "E" 0'-4' 4'-6"	INLETS SPEC. 4'-8"	CONCRETE DRAINAGE FLUMES	CONCRETE CLASS "S" ENDWALL	CONCRETE CLASS "A" CULVERT	REINFORCING STEEL POUNDS
STATE JOB NO. 16320-3407	1454-B	2132+00	LT.	18"	58'	PIPE & ENDWALLS	58'									3.84		
	1129-A	2132+85.05 (86.4' LT.)	LT.	24"	106'	PIPE & ENDWALLS		106'								4.66		220
	1128-A	2133+58.92 (82.7' RT.)	RT.	24"	100'	PIPE & ENDWALLS		100'								4.66		220
	1464-B	2147+00	LT.	DOUBLE 36"	75'	PIPES & ENDWALLS			150'							12.62		
	1464-B	2147+00	RT.	DOUBLE 36"	80'	PIPES & ENDWALLS			160'							12.62		
	5060-B	2158+00	LT. & RT.			DRAINAGE FLUMES									2			
STATE JOB NO. 92130-3401	1454-B	18+00 (LINE "A")	LT. & RT.	24"	67'	PIPE & ENDWALLS		67'								5.30		
	767 or 2445, 1331-B, 1454-B	20+32 (LINE "A")	LT. & RT.	18"	57'	INLET, PIPE & ENDWALL	57'						1			1.92		
	767 or 2445, 1331-B, 1454-B	20+80 (LINE "B")	LT. & RT.	18"	54'	INLET, PIPE & ENDWALL	54'					1				1.92		
	767 or 2445, 1331-B, 1454-B	21+65 (LINE "C")	LT. & RT.	18"	42'	INLET, PIPE & ENDWALL	42'						1			1.92		
	1454-B	9+10 (LINE "E")	LT. & RT.	24"	57'	PIPE & ENDWALLS		57'								5.30		
	5060-B	16+00	LT.			DRAINAGE FLUME									1			
	5060-B	15+00	RT.			DRAINAGE FLUME									1			
	767 or 2445, 1331-B, 1454-B	19+00	LT.	18"	88' 197' 208'	INLET, PIPE & ENDWALL	98'						1			1.92		
	Special, 1331-B, 1454-B	37+00	RT. & LT.	DOUBLE 48"		INLET, PIPES & ENDWALLS					397'			1		22.40		
	6052-H	52+70	LT.	DOUBLE 9'X7'	79'	CONCRETE BOX CULVERT											168.01*	24,557 *
	6052-H	52+70	RT.	DOUBLE 8'X7'	101'	CONCRETE BOX CULVERT											208.05*	30,564 *
	767 or 2445, 1331-B, 1454-B	65+00	RT. & LT.	36"	209'	INLET, PIPES & ENDWALLS			209'				1			10.22		
	6058-SH	70+72	LT.	QUAD. 12'X8'	81'	CONCRETE BOX CULVERT											494.76*	81,360 *
	6059-SH	70+72	RT.	QUAD. 12'X8'	115'	CONCRETE BOX CULVERT											677.00*	112,151 *
	767 or 2445, 1331-B, 1464-B	88+00	LT.	18"	89'	INLET, PIPE & ENDWALL	89'						1			1.92		
	6021-M & 6021-SH	105+45	LT.	DOUBLE 7'X4'	89'	CONCRETE BOX CULVERT											118.16*	20,223 *
	6021-M & 6021-SH	105+45	RT.	DOUBLE 7'X4'	117'	CONCRETE BOX CULVERT											148.96*	25,917 *
	1454-B	5+10 (S.R. 546 LT.)	RT.	24"	118'	PIPE & ENDWALL & INLET		118'				1				2.65		
	200	5+10 (SERVICE RD. LT. S.R. 545 LT.)	LT.	24"	31'	PIPE & ENDWALLS		31'								1.54		
	5060-B	8+00 (S.R. 545 LT.)	RT. & LT.			DRAINAGE FLUMES									2			
	5060-B	5+00 (S.R. 545 RT.)	RT. & LT.			DRAINAGE FLUMES									2			
	1454-D	7+80 (S.R. 545 RT.)	LT.	18"	31'	PIPE & ENDSWALLS	31'									3.84		
	767 or 2445, 1331-D, 1454-B	134+00	RT. & LT.	42"	157'	INLET, PIPES & ENDWALLS			157'				1			14.06		
	1454-B	158+00	RT. & LT.	DOUBLE 42"	134'&140	INLET, PIPES & ENDWALLS			274'				1			35.24		
	5060-B	183+00	RT. & LT.			DRAINAGE FLUMES									2			
	5060-B	189+00	RT. & LT.			DRAINAGE FLUMES									2			
	TOTAL STATE JOB NO. 16320-3407						58'	206'	310'						2	38.40		440
	TOTAL STATE JOB NO. 92130-3401						371'	273'	209'	431'	397'	2	2	1	10	110.15	1814.94	294,772
	GRAND TOTAL						429'	479'	519'	431'	397'	2	2	1	12	148.55	1814.94	295,212

* DENOTES BRIDGE QUANTITIES



SPECIAL MEDIAN INLET
STA. 37+00 For additional details see Index No. 2445

INTERCHANGE SOIL SURVEY NOTES



BORING LOGS LEFT OF INTERSTATE

NO.1, STA. 10+15, 130' LEFT.
NO.2, STA. 8+00, 130' LEFT.
NO.3, STA. 7+00, 350' LEFT.
NO.4, STA. 6+00, 425' LEFT.
NO.5, STA. 5+00, 150' LEFT.
NO.6, STA. 4+00, 260' LEFT.
NO.7, STA. 3+00, 183' LEFT.
NO.8, STA. 2+00, 270' LEFT.
NO.9, STA. 1+00, 155' LEFT.

CENTER LINE NEW COUNTY ROAD
STA 1 WATER TABLE 24'
STA 3, 5 & 7 NO WATER TABLE ENCOUNTERED

THE MATERIAL AT ABOVE LOCATIONS IS APPARENTLY SATISFACTORY FOR CONSTRUCTION.

SYMBOLS
- TAN SAND
- WHITE SILTY SAND
- RED SAND CLAY
- TAN SILTY CLAY
- TAN COLORED SAND
- TAN AND WHITE SILTY SAND

INTERCHANGE AREA IS ON SIDE OF A KNOLL BORDERED BY LOW, SWAMPY AND MUCKY LAND ON THE EAST, NORTH AND WEST SIDES.

THE EXISTING MATERIALS ARE LISTED BELOW BY INDIVIDUAL LINES.

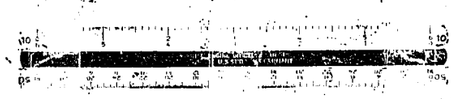
RAMP "E" STA. 3+00 TO STA. 9+20. MUCK UNDERLAID WITH SAND, WATER ON TOP OF GROUND. STA 10+00 TAN SAND TO 9.0' AND GRAY CLAY TO 12.5'. STA. 11+00 TAN SAND TO 10.0' AND GRAY CLAY TO 12.5'. GRAY CLAY NOT RECOMMENDED FOR USE EITHER AS EMBANKMENT OR SUBGRADE MATERIAL. BALANCE OF RAMP "E" APPROXIMATELY SAME MATERIAL AS THAT ENCOUNTERED ON COUNTY ROAD STA. 1+00 TO 7+00.

RAMP "A" STA. 11+00 TO STA. 17+70. MUCK UNDERLAID WITH SAND, WATER ON TOP OF GROUND.

RAMP "D" STA. 18+37 TO STA 21+68. MUCK 50' LEFT. CENTERLINE AND RIGHT SIDE FOUND TAN COLORED SAND TO A DEPTH OF 4.0' WATER TABLE FROM 2.5' TO 3.0'

COUNTY ACCESS ROAD STA. 4+40 TO STA. 12+00. MUCK WITH WATER ON TOP OF GROUND STA. 12+00 TO STA 28+00 NO EVIDENCE OF MUCK APPARENTLY TAN AND WHITE SANDS TO A DEPTH OF 4.0'.

CENTERLINE NEW COUNTY ROAD SEE BORING LOGS FOR DESCRIPTION OF MATERIAL. ALL MATERIAL APPARENTLY SATISFACTORY FOR USE IN CONSTRUCTION. TAN COLORED SAND- BEARING VALUE 20 TO 30 P.S.I. RED SAND CLAY- LIQUID LIMIT 20, PLASTIC INDEX 12, BEARING VALUE 220+ P.S.I. TAN AND WHITE SILTY SANDS- NON-PLASTIC, BEARING VALUE 175 P.S.I.



E-1372

CROSS SECTIONS

Scale 1 Inch = 5 feet

STATE JOBS NO 16320-3407 & 92130-3401

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(58)75 I-4-2(18)76	10

REVISED 9-24-59

BORROW PIT Nº 1 STA 170+00 — BORROW PIT Nº 2 STA 185+00 — HAUL ROUTE — ℄ Survey

STA 221+00 BEGIN PROJECT

STA 215+00 END PROJECT

END JOB Nº 92130-3401

POLK ← → OSCEOLA

SUMMARY OF	ROADWAY EARTHWORK		
	STATE JOB NO. 16320-3407	STATE JOB NO. 92130-3401	TOTAL
RDWY EXC. A-2, A-3	113,274 CY	491,064 CY	604,338 CY
RDWY EXC. A-8	658 CY	68 CY	726 CY
RDWY EXC. TOTAL	113,932	491,132	605,064
BORROW EXC.		302,466 CY	302,466 CY
*SUBSOIL EXC. A-8	76,447 CY	31,150 CY	107,597 CY
SUBSOIL EXC. TOTAL	76,447 CY	31,150 CY	107,597 CY

* INCLUDES APPROXIMATELY 55,746 CY OF EXCESS TO BE DISPOSED OF BY THE CONTRACTOR IN AREAS PROVIDED BY HIM.

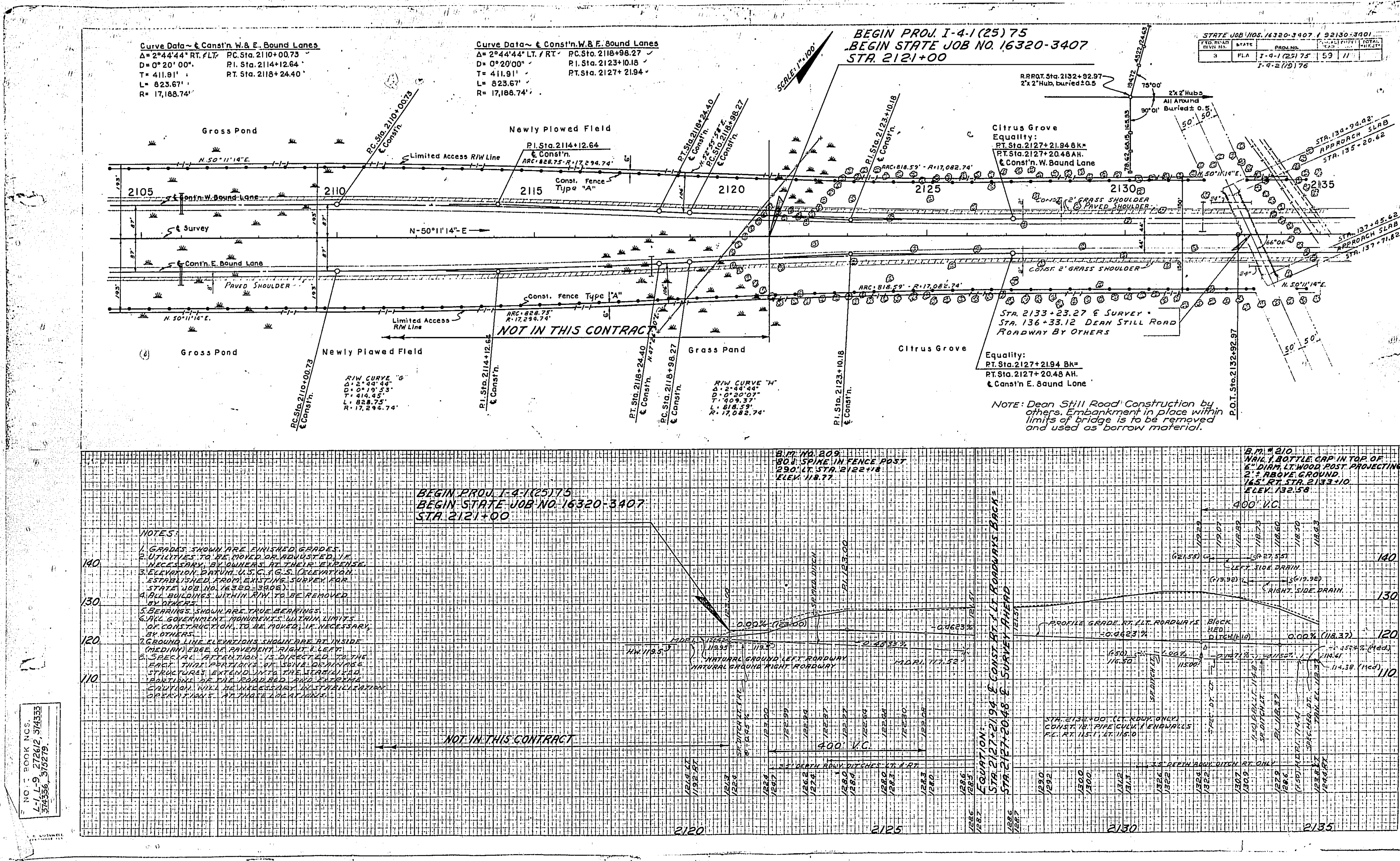
MASS DIAGRAM

This Diagram is for the Contractors Information Only

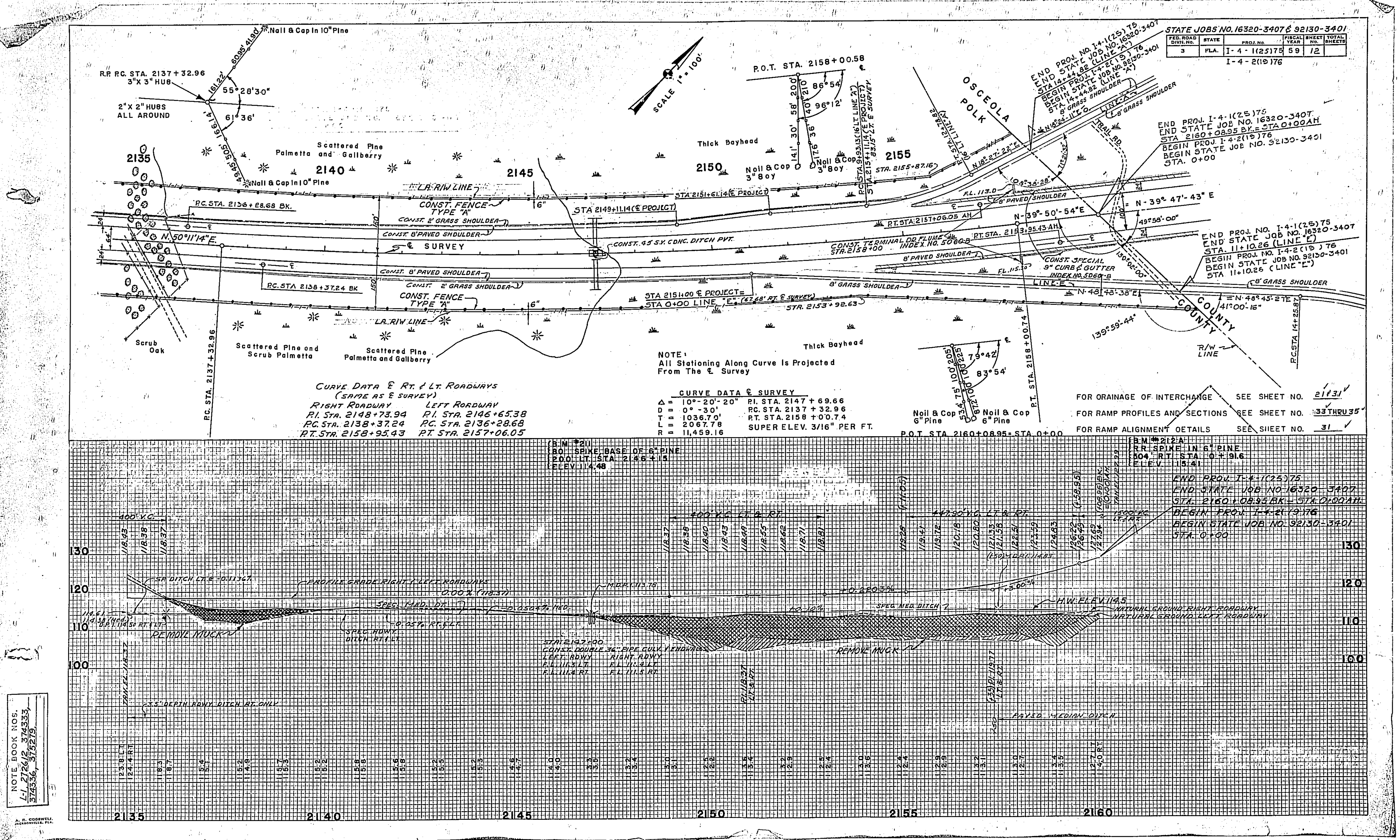
Application No. ____
Route No. ____
Original Plotted by ____ Checked by ____
Template by ____
Area by ____
Finals Plotted by ____ Checked by ____
Area by ____ Checked by ____

A. R. COGSWELL, JACKSONVILLE, FLA.

E-1373


BEGIN PROJ. I-4-1(25)75
BEGIN STATE JOB NO. 16320-3407
STA. 2121+00
STATE JOB NOS. 16320-3407 & 92130-3401
FED. ROAD DIVN. No. 3 | STATE FLA | PROJ. NO. I-4-1(25)75 I-4-2(19)76 | FISCAL YEAR 59 | SHEET NO. 11
Curve Data ~ ℄ Const'n. W.& E. Bound Lanes
Δ= 2°44'44" RT. & LT. P.C. Sta. 2110+00.73
D= 0° 20' 00" P.I. Sta. 2114+12.64
T= 411.91' P.T. Sta. 2118+24.40
L= 823.67'
R= 17,188.74'
Curve Data ~ ℄ Const'n. W.& E. Bound Lanes
Δ= 2°44'44" LT. / RT. P.C. Sta. 2118+98.27
D= 0°20'00" P.I. Sta. 2123+10.18
T= 411.91' P.T. Sta. 2127+21.94
L= 823.67'
R= 17,188.74'
SCALE: 1"=100'
R.R.P.O.T. Sta. 2132+92.97
2"x 2" Hub, buried ±0.5
2"x 2" Hubs All Around Buried ± 0.5
75°00'
90°01'
Gross Pond
Newly Plowed Field
Grass Pond
Citrus Grove
Limited Access R/W Line
Const. Fence Type "A"
N. 50°11'14" E.
N-50°11'14"-E
℄ Const'n. W. Bound Lane
℄ Survey
℄ Cont'n. E. Bound Lane
Paved Shoulder
Const. 2' Grass Shoulder
P.C. Sta. 2110+00.73 ℄ Const'n.
P.I. Sta. 2114+12.64 ℄ Const'n.
P.T. Sta. 2118+24.40 ℄ Const'n.
P.C. Sta. 2118+98.27 ℄ Const'n.
P.I. Sta. 2123+10.18 ℄ Const'n.
ARC = 828.75' - R = 17,294.74'
ARC = 818.59' - R = 17,082.74'
N. 52°55'58" E.
N. 47°26'30" E.
NOT IN THIS CONTRACT
Equality: P.T. Sta. 2127+21.94 Bk= P.T. Sta. 2127+20.48 AH. ℄ Const'n. W. Bound Lane
Equality: P.T. Sta. 2127+21.94 Bk= P.T. Sta. 2127+20.48 AH. ℄ Const'n E. Bound Lane
STA. 134+94.42 APPROACH SLAB STA. 135+20.62
STA. 137+45.62 APPROACH SLAB STA. 137+71.82
66°06'
STA. 2133+23.27 ℄ SURVEY = STA. 136+33.12 DEAN STILL ROAD ROADWAY BY OTHERS
P.O.T. Sta. 2132+92.97
R/W CURVE "G" Δ= 2°44'44" D= 0°19'53" T= 414.45' L= 828.75' R= 17,294.74'
R/W CURVE "H" Δ= 2°44'44" D= 0°20'07" T= 409.37' L= 818.59' R= 17,082.74'
NOTE: Dean Still Road Construction by others. Embankment in place within limits of bridge is to be removed and used as borrow material.
B.M. NO. 209 80d SPIKE IN FENCE POST 290' LT. STA. 2122+18 ELEV. 118.77
B.M. # 210 NAIL & BOTTLE CAP IN TOP OF 6" DIAM. LT. WOOD POST PROJECTING 2' ± ABOVE GROUND 165' RT. STA. 2133+10 ELEV. 132.58
NOTES:
1. GRADES SHOWN ARE FINISHED GRADES.
2. UTILITIES TO BE MOVED OR ADJUSTED, IF NECESSARY, BY OWNERS AT THEIR EXPENSE.
3. ELEVATION DATUM U.S.C.&G.S. (ELEVATION ESTABLISHED FROM EXISTING SURVEY FOR STATE JOB NO. 16320-3406).
4. ALL BUILDINGS WITHIN R/W TO BE REMOVED BY OTHERS.
5. BEARINGS SHOWN ARE TRUE BEARINGS.
6. ALL GOVERNMENT MONUMENTS WITHIN LIMITS OF CONSTRUCTION TO BE MOVED, IF NECESSARY, BY OTHERS.
7. GROUND LINE ELEVATIONS SHOWN ARE AT INSIDE (MEDIAN) EDGE OF PAVEMENT RIGHT & LEFT.
8. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES EXTEND INTO THE STABILIZED PORTIONS OF THE ROADBED AND EXTREME CAUTION WILL BE NECESSARY IN STABILIZATION OPERATIONS AT THOSE LOCATIONS.
0.00% (123.00)
-0.4623%
-0.4833%
M.D.P.I. 117.52
H.W. 119.5
NATURAL GROUND LEFT ROADWAY
NATURAL GROUND RIGHT ROADWAY
SP. MED. DITCH
P.I. 123.00
400' V.C.
3.5' DEPTH RDWY. DITCHES LT. & RT.
EQUATION: STA. 2127+21.94 ℄ CONST. RT. & LT. ROADWAYS BACK = STA. 2127+20.48 ℄ SURVEY AHEAD
PROFILE GRADE RT. & LT. ROADWAYS
Block MED. DITCH
0.00% (118.37)
LEFT SIDE DRAIN
RIGHT SIDE DRAIN
STA. 2132+00 (LT. RDWY. ONLY) CONST. 18" PIPE CULV. & ENDWALLS F.L. RT. 115.1, LT. 115.0
3.5' DEPTH RDWY. DITCH RT. ONLY
140
130
120
110
2105
2110
2115
2120
2125
2130
2135
NOTE BOOK NOS. L-1, L-9, 272612, 374333, 374336, 375279.

E-1374



STATE JOBS NO. 16320-3407 & 92130-3401
FED. ROAD DIVN. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS
3 | FLA. | I-4-1(25)75 I-4-2(19)76 | 59 | 12 |
SCALE 1" = 100'
R.P. P.C. STA. 2137+32.96 3"X 3" HUB
2"X 2" HUBS ALL AROUND
Nail & Cap in 10" Pine
55°28'30"
61°36'
P.O.T. STA. 2158+00.58
86°54'
96°12'
Nail & Cap 3" Bay
Scattered Pine Palmetto and Gallberry
Thick Bayhead
OSCEOLA
POLK
COUNTY
END PROJ. NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 14+44.82 (LINE "A")
BEGIN PROJ. I-4-2(19)76
BEGIN STATE JOB NO. 92130-3401
STA. 14+44.82 (LINE "A")
END PROJ. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 2160+08.95 BK. = STA. 0+00 AH
BEGIN PROJ. I-4-2(19)76
BEGIN STATE JOB NO. 92130-3401
STA. 0+00
END PROJ. NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 11+10.26 (LINE "E")
BEGIN PROJ. NO. I-4-2(19)76
BEGIN STATE JOB NO. 92130-3401
STA 11+10.26 (LINE "E")
L.A. R/W LINE
CONST. FENCE TYPE "A"
CONST. 2' GRASS SHOULDER
CONST. 8' PAVED SHOULDER
℄ SURVEY
N-50°11'14"E.
P.C. STA. 2136+28.68 BK.
P.C. STA. 2138+37.24 BK
STA 2149+11.14 (℄ PROJECT)
STA 2151+61.14 (℄ PROJECT)
STA 2151+00 ℄ PROJECT = STA 0+00 LINE "E" (67.68' RT. ℄ SURVEY)
STA. 2153+92.63
STA. 2155+87.16
CONST. 45 S.Y. CONC. DITCH PVT.
CONST. TERMINAL DR. FLUME STA. 2158+00 INDEX NO. 5060-B
P.T. STA. 2157+06.05 AH
P.T. STA. 2159+95.43 AH
N-39°-50'-54"E
N-39°-47'-43"E
N-48°48'-38"E
N-48°45'-27"E
49°58'-00"
41°00'-16"
139°59'-44"
CONST. SPECIAL 9" CURB & GUTTER INDEX NO. 5066-B
8' GRASS SHOULDER
LINE "E"
LINE "A"
TRAIL RD.
R/W LINE
P.C. STA. 14+25.81
Scrub Oak
Scattered Pine and Scrub Palmetto
Scattered Pine Palmetto and Gallberry
NOTE: All Stationing Along Curve Is Projected From The ℄ Survey
79°42'
83°54'
Nail & Cop 6" Pine
P.O.T. STA. 2160+08.95 = STA. 0+00
P.C. STA. 2137+32.96
P.T. STA. 2158+00.74
CURVE DATA ℄ RT. & LT. ROADWAYS (SAME AS ℄ SURVEY)
RIGHT ROADWAY | LEFT ROADWAY
P.I. STA. 2148+73.94 | P.I. STA. 2146+65.38
P.C. STA. 2138+37.24 | P.C. STA. 2136+28.68
P.T. STA. 2158+95.43 | P.T. STA. 2157+06.05
CURVE DATA ℄ SURVEY
Δ = 10°-20'-20" P.I. STA. 2147+69.66
D = 0°-30' P.C. STA. 2137+32.96
T = 1036.70' P.T. STA. 2158+00.74
L = 2067.78
R = 11,459.16 SUPER ELEV. 3/16" PER FT.
FOR DRAINAGE OF INTERCHANGE SEE SHEET NO. 21 & 31
FOR RAMP PROFILES AND SECTIONS SEE SHEET NO. 33 THRU 35
FOR RAMP ALIGNMENT DETAILS SEE SHEET NO. 31
B.M. #211 80' SPIKE BASE OF 6" PINE 200' LT. STA. 2146+15 ELEV. 114.48
B.M. #212 A RR SPIKE IN 6" PINE 504' RT. STA. 0+91.6 ELEV. 115.41
END PROJ. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 2160+08.95 BK. = STA. 0+00 AH.
BEGIN PROJ. I-4-2(19)76
BEGIN STATE JOB NO. 92130-3401
STA. 0+00
400' V.C.
400' V.C. LT. & RT.
447.90' V.C. LT. & RT.
PROFILE GRADE RIGHT & LEFT ROADWAYS
0.00% (118.37)
+0.2203%
+3.00%
H.W. ELEV. 114.5
NATURAL GROUND RIGHT ROADWAY
NATURAL GROUND LEFT ROADWAY
SPEC. MED. DITCH
REMOVE MUCK
STA. 2147+00 CONST. DOUBLE 36" PIPE CULV. & ENDWALLS
LEFT RDWY. F.L. 111.4 RT. | RIGHT RDWY. F.L. 111.5 RT.
PAVED MEDIAN DITCH
3.5' DEPTH RDWY. DITCH RT. ONLY
130
120
110
100
2135
2140
2145
2150
2155
2160
NOTE BOOK NOS. L-1, 2726-12, 374333, 374336, 375279
A. R. COGSWELL JACKSONVILLE, FLA.

E-1375

STATE JOBS NO.16320-3407 & 92130-3401

FED. ROAD DIVN. No.	STATE	PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	FLA.	I-4-1 (25) 75	59	13	
		I-4-2 (19) 76			

FOR DRAINAGE OF INTERCHANGE SEE SHEET NO. 21 & 31

FOR RAMP PROFILES AND SECTIONS SEE SHEET NO. 33 THRU 35

FOR RAMP ALIGNMENT DETAILS SEE SHEET NO. 31

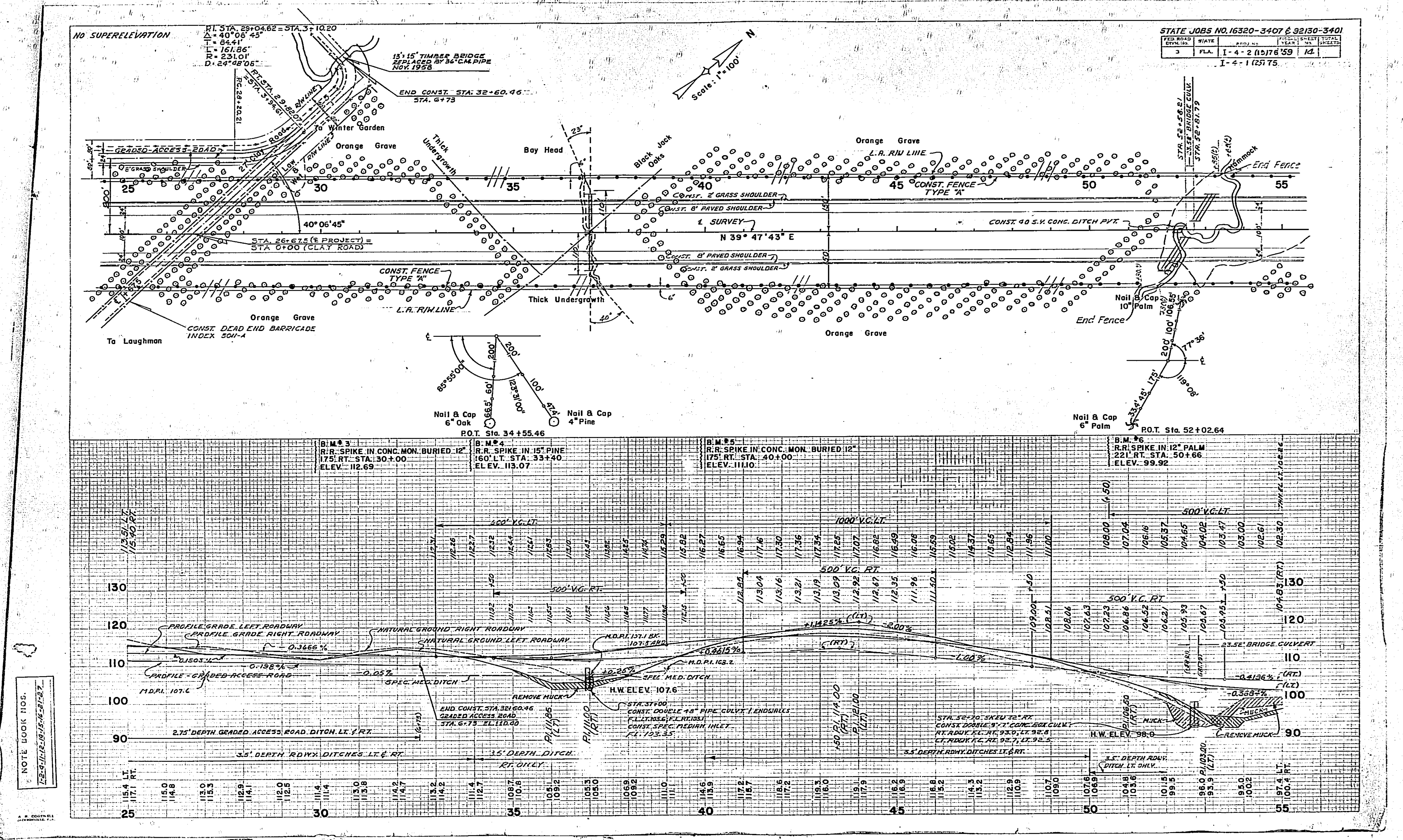
END PROJECT NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 2160+08.95 BACK

BEGIN PROJECT NO. I-4-2(19)76
BEGIN STATE JOB NO 92130-3401
STA. 0+00 AHEAD

NOTE BOOK NOS.
1-22-4, 1-13-13, 14-19
20-22, 29-27

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1376

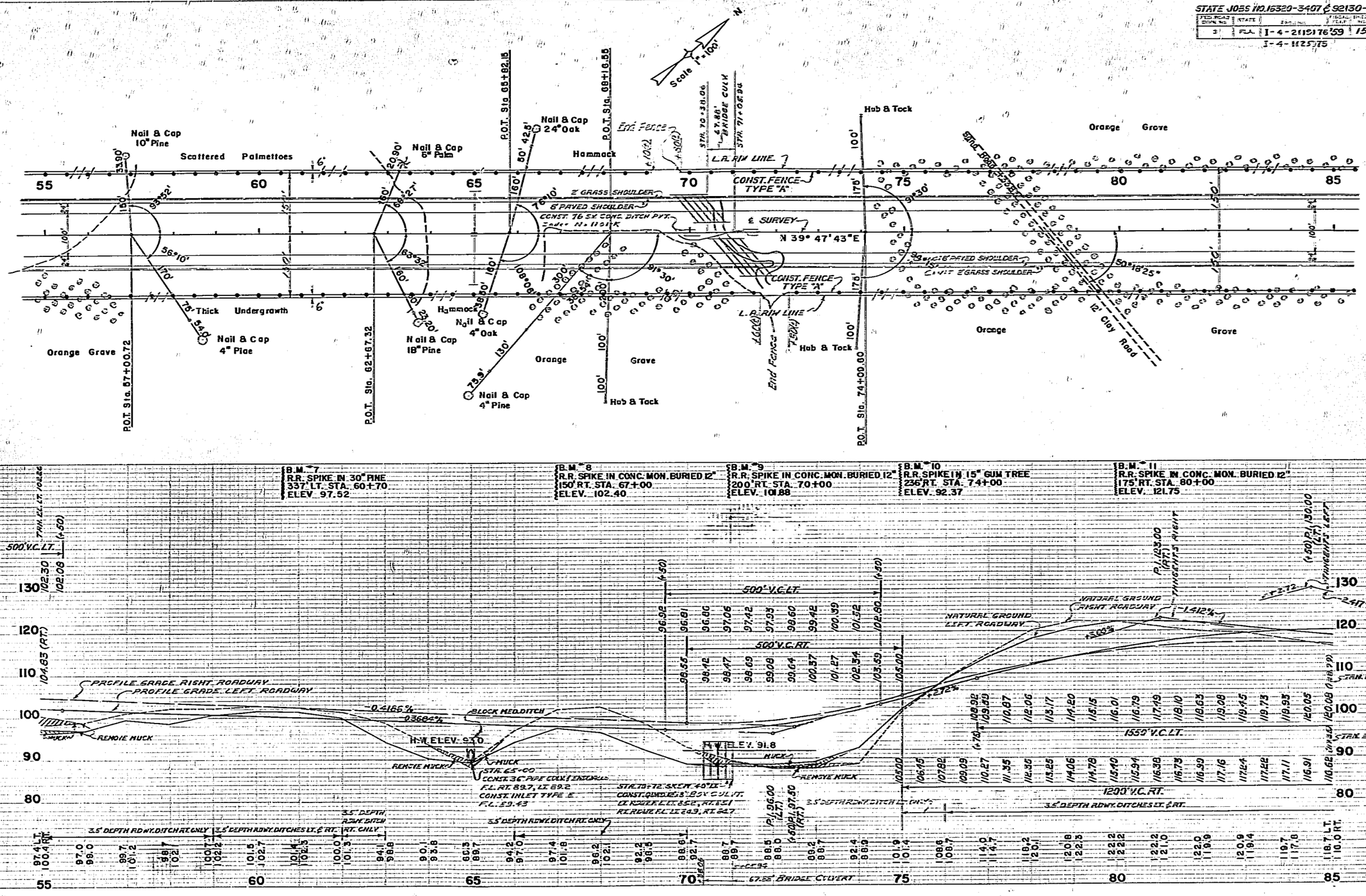

STATE JOBS NO. 16320-3407 & 92130-3401
FED. ROAD DIVN. NO. 3 | STATE FLA. | PROJ. NO. I-4-2 (15)76 | FISCAL YEAR '59 | SHEET NO. 14
I-4-1 (25)75
NO SUPERELEVATION
P.I. STA. 29+04.62 = STA. 3+10.20
Δ = 40°06'45"
T = 84.41'
L = 161.86'
R = 231.01'
D = 24°48'06"
15'x15' TIMBER BRIDGE REPLACED BY 36" C.M. PIPE NOV. 1958
END CONST. STA. 32+60.46
STA. 6+73
Scale: 1" = 100'
N
To Winter Garden
Orange Grove
Thick Undergrowth
Bay Head
Black Jack Oaks
L.A. R/W LINE
End Fence
Hammock
GRADED ACCESS ROAD
2' GRASS SHOULDER
CONST. 2' GRASS SHOULDER
CONST. 8' PAVED SHOULDER
SURVEY
N 39° 47' 43" E
CONST. FENCE TYPE "A"
CONST. 40 S.Y. CONC. DITCH PVT.
40°06'45"
STA. 26+67.5 (℄ PROJECT) = STA 0+00 (CLAY ROAD)
CONST. DEAD END BARRICADE INDEX 5011-A
To Laughman
STA. 52+58.21
23.58' BRIDGE CULV.
STA. 52+81.79
Nail & Cap 10" Palm
Nail & Cap 6" Oak
Nail & Cap 4" Pine
P.O.T. Sta. 34+55.46
Nail & Cap 6" Palm
P.O.T. Sta. 52+02.64
B.M. #3 R.R. SPIKE IN CONC. MON. BURIED 12" 175' RT. STA. 30+00 ELEV. 112.69
B.M. #4 R.R. SPIKE IN 15" PINE 160' LT. STA. 33+40 EL. ELEV. 113.07
B.M. #5 R.R. SPIKE IN CONC. MON. BURIED 12" 175' RT. STA. 40+00 ELEV. 111.10
B.M. #6 R.R. SPIKE IN 12" PALM 221' RT. STA. 50+66 ELEV. 99.92
400' V.C. LT.
1000' V.C. LT.
500' V.C. LT.
500' V.C. RT.
PROFILE GRADE LEFT ROADWAY
PROFILE GRADE RIGHT ROADWAY
NATURAL GROUND RIGHT ROADWAY
NATURAL GROUND LEFT ROADWAY
PROFILE - GRADED ACCESS ROAD
SPEC. MED. DITCH
REMOVE MUCK
H.W. EL. ELEV. 107.6
STA. 37+00 CONST. DOUBLE 48" PIPE CULVT. & ENDWALLS F.L. LT. 103.6, F.L. RT. 103.1 CONST. SPEC. MEDIAN INLET F.L. 103.35
END CONST. STA. 32+60.46 GRADED ACCESS ROAD STA. 6+73 EL. 110.00
2.75' DEPTH GRADED ACCESS ROAD DITCH LT. & RT.
3.5' DEPTH RDWY. DITCHES LT. & RT.
3.5' DEPTH DITCH RT. ONLY
3.5' DEPTH RDWY. DITCHES LT. & RT.
3.5' DEPTH RDWY. DITCH LT. ONLY
STA. 52+70 SKEW 32° RT. CONST. DOUBLE 9'x7' CONC. BOX CULV. RT. RDWY. F.L. RT. 93.0, LT. 92.8 LT. RDWY. F.L. RT. 92.7, LT. 92.5
H.W. ELEV. 98.0
23.58' BRIDGE CULVERT
MUCK
REMOVE MUCK
NOTE BOOK NOS. 1-2-4-11-12-13-15-16-21-27
25
30
35
40
45
50
55
130
120
110
100
90

E-1377

STATE JOBS NO. 16320-3407 & 92130-3401

FED. ROAD DIV. NO.	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
3	FLA.	I-4-2(115)76'59	15	

I-4-112(75)



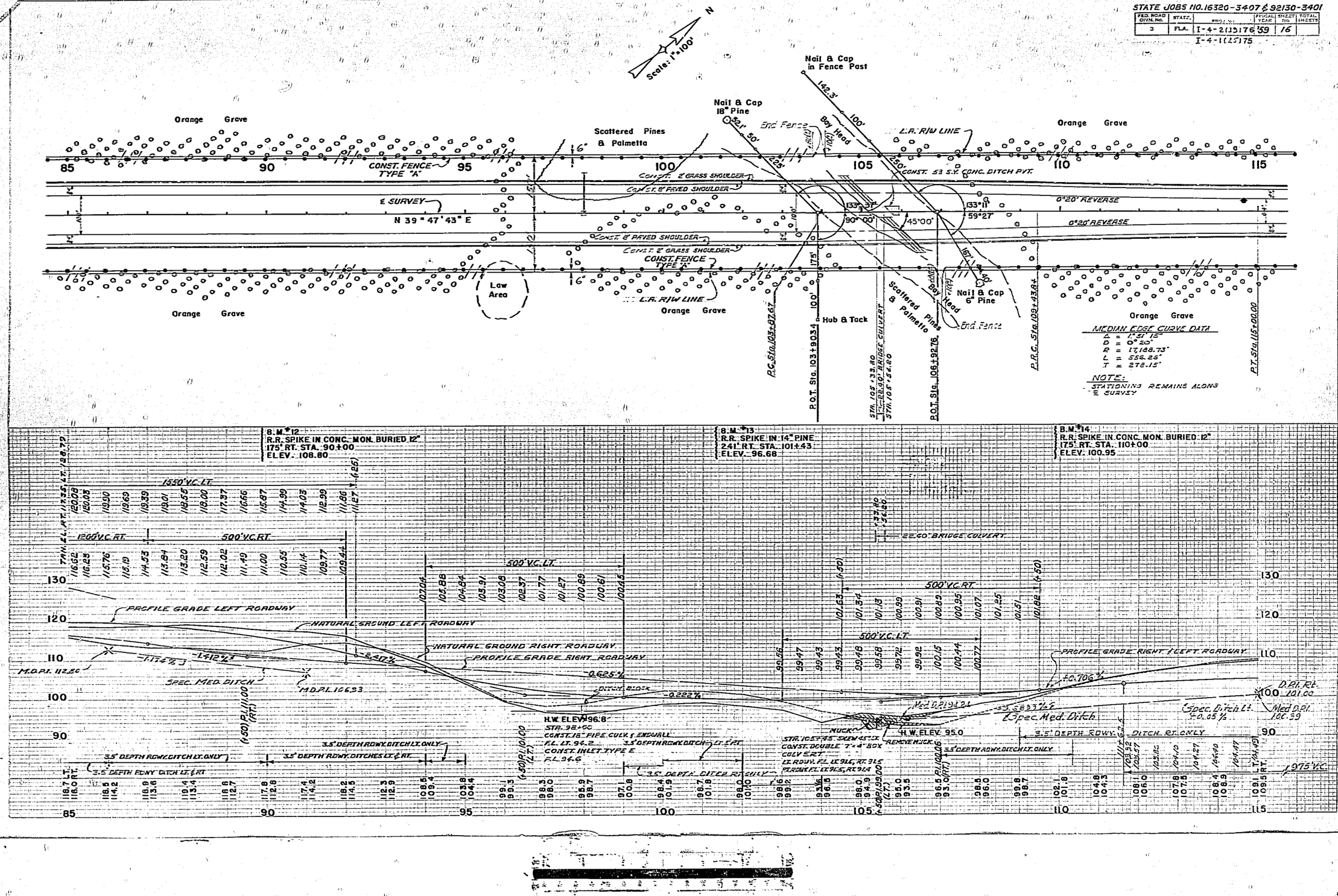
NOTE DRG. NOS. 1, 2, 3, 5, 10, 11, 12, 14, 16, 18

E-1378

STATE JOBS 110.16320-3407 & 92130-3401

FED. ROAD DIVN. No.	STATE	BRIDGE No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
3	FLA.	I-4-2(135)176	59	16	

I-4-1(25)175



E-1379

STATE JOBS NO. 16320-3407 & 92130-3410

I-4-2(19)176 59 17
I-4-1(25)175

Nail & Cap In Power Pole

To Winter Garden

N

Scale: 1"=100'

℄ R/W Line

19' R.B.S.T.

PRESENT 24" R.C.P. TO BE REMOVED AND REPLACED WITH 24" PIPE.

24" R.C.P.

Scattered Black Jack Oaks, Pines & Palmetto

Hub & Nail

Nail & Cap 4" Oak

Nail & Cap 4" Oak

Citrus Trees

Citrus Trees

TO BE REMOVED

END BRIDGE STA. 1+63.30 LT.

END APPR. SLAB STA. 2+02.40 LT.

CONST. SPEC. 9" CURB & GUTTER, INDEX NO. 5060-B

PROPOSED R/W LINE

Grass Pond

EXISTING R/W

R/W LINE 220.0

N 00°05'47" W

℄ EXIST. R/W LINE

PROPOSED R/W LINE

8' Dirt Rd.

18" R.C.P.

39°53'30"

100' PAV'T. TRANS. (26' TO 24' PAV'T.)

41°24'

CONST. FENCE TYPE "A"

CONST. 2' GRASS SHOULDER

CONST. 8' PAVED SHOULDER

℄ SURVEY

N 39° 47'43" E

CONST. 8' PAVED SHOULDER

CONST. 2' GRASS SHOULDER

CONST. SPEC. 9" CURB & GUTTER, INDEX NO. 5060-B

100' PAV'T. TRANS. (24' TO 26' PAV'T.)

142°24'

CONST. FENCE TYPE "A"

Exist. 18" Gas Pipeline with 24" O.D. Shell

Scattered Black Jack Oaks, Pines & Palmetta

STA. 119+95.02 (℄ PROJECT) = STA. 0+00 S.R. 545

Nail & Cap in Power Pole

1047' to S.R. 545

S 00°05'47" E

15' Dirt Rd.

1 Sty. Fr. Res.

PROPOSED R/W LINE

To Laughman

BEGIN PROP. SLAB STA. 1+48.40 RT.

BEGIN BRIDGE STA. 1+63.30 RT.

P.O.T. Sta. 119+75.80

FOR DETAILS OF INTERSECTION AND PROFILE OF S.R. 545 SEE SHEET No. 22

L.A. R/W LINE

L.A. R/W LINE

Bay Head

Nail & Cap 12" Palm

106.4'

50'

175'

43°51'

57.40'

50'

175'

75°30'

200'

90°00'

100'

200'

115°53'

61.40'

100'

P.O.T. Sta. 131+77.65

P.O.T. Sta. 137+18.66

115 125 130 135 140 145

B.M.*15
R.R. SPIKE IN POWER POLE
154' LT. STA. 121+34
ELEV. 101.90

B.M.*16
R.R. SPIKE IN 10" PINE
186' RT. STA. 129+86
ELEV. 88.83

B.M.*17
R.R. SPIKE IN 18" PALM TREE
183' RT. STA. 140+06
ELEV. 90.07

STA. 134+00
CONST. 157' OF 42" PIPE CULV. & ENDWALLS
F.L. LT. 85.0, RT. 84.5
CONST. MEDIAN INLET TYPE E
F.L. 84.75

106.77 P.I. (+50)

400' V.C.

(+69.3) (+69.3)

96.84 96.45 95.83 95.29 94.85 94.67 94.44 94.18 93.89 93.79 93.69

+0.706%

+0.10%

+0.05%

101.20

Sp. Ditch Rt

Sp Ditch Lt.

-1.38%

-0.2%

-2.1%

Exist. 18" Gas Pipe Line

Const. Spec. Med. Dt.

Med. P.I. El. 97.6

Med. P.I. El. 95.8

Med. P.I. El. 93.7

104.79 104.45 104.36 104.23 104.03 103.78 103.48 103.19 102.72 102.25 101.74 101.17 100.54 100.04

975' V.C.

35' DEPTH DITCH LT.

3.5' DEPTH DITCH RT.

3.5' DEPTH RDWY. DITCH LT. ONLY

3.5' DEPTH RDWY DITCH LT. & RT.

PROFILE GRADE RIGHT & LEFT ROADWAYS

-0.197%

NATURAL GROUND LEFT ROADWAY

NATURAL GROUND RIGHT ROADWAY

M.D.P.I. 88.36

M.D.P.I. 88.53

MUCK

REMOVE MUCK

+0.11%

MUCK

@ ELEV. 88.5

REMOVE MUCK

SPEC. MED. DITCH

+1.0303%

-2.4667%

(-50) P.I. 100.50

TANG. EL. 99.27

500' V.C.

1050' V.C.

(+75) (+75)

92.49 92.45 92.41 92.43 92.52 92.67 92.77 92.88 93.15 93.48 93.87 94.33 94.58

95.09 95.34 95.77 96.12 96.38 96.57 96.67 96.68 96.61 96.46 96.23 95.91 95.51

(-25)

120 110 100 90 80

120 110 100 90 80

1091 LT. 109.5 RT. 108.9 109.5 107.9 108.6 106.8 106.9 104.6 104.9 102.0 102.8 101.1 100.8 98.7 98.6 96.9 96.6 95.9 95.5 94.7 94.2 94.5 93.4 94.1 91.9 93.6 91.4 93.9 91.8 93.7 92.4 93.4 91.9 92.3 90.8 88.1 87.0 86.0 85.6 86.1 85.3 86.8 84.6 91.1 87.8 92.8 90.8 93.0 91.2 93.4 91.0 94.2 93.0 95.5 94.5 96.5 95.9 96.9 97.0 96.4 LT. 96.8 RT.

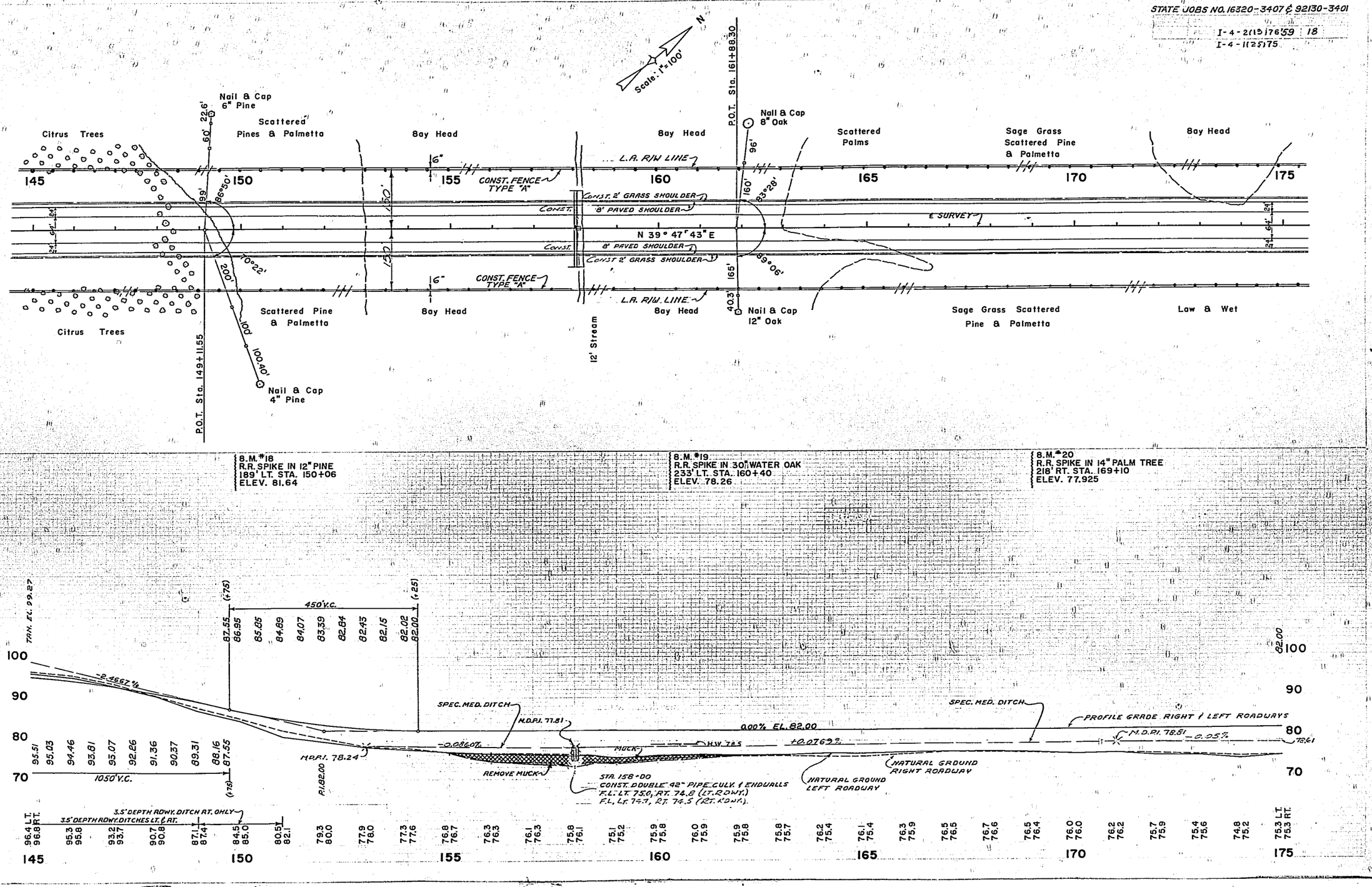
115 120 125 130 135 140 145

NOTE BOOK NOS.
1, 2, 3, 10 ETC.

E-1380

STATE JOBS NO. 16320-3407 & 92130-3401

I-4-2(15)76.59 18
I-4-1(25)75



E-1381

STATE JOBS NO. 16320-3407 & 92130-3401

	F.A.P.	I-4-2(19)76.59	19
		I-4-1(25)75	

P.O.T. Sta. 175+48.72

Nail & Cap 6" Palm

Sage Grass Scattered Pine & Palmetta

101'

81.70'

200'

65°30'

6"

8' Dirt Woods Rd.

BEGIN APPR. SLAB STA. 184+36

BEGIN BRIDGE STA. 184+76

Cypress

Creek

Swamp

END BRIDGE STA. 187+04

END APPR. SLAB STA. 187+24

P.O.T. Sta. 188+59.04

Nail & Cap 'B" Pine

127.70'

Scale: 1"=100'

N

CONST. SPEC. 9" CURB & GUTTER, INDEX NO. 5060-B

CONST. TERMINAL DRAINAGE FLUME INDEX NO. 5060-B

L.A. R/W. LINE

Cypress Swamp & Scattered Bays

P.O.T. Sta. 201+26.32

175 180 185 190 195 200 205

CONST. FENCE TYPE "A"

CONST 2' GRASS SHOULDER

CONST. 8' PAVED SHOULDER

℄ SURVEY

N 39° 47' 43" E

2' GRASS SHOULDER

8' PAVED SHOULDER

150'

24'

6"

F.L. 70.8

174' CHANNEL

F.L. 73.6

100' PAV'T. TRANS. (24' TO 26' PAV'T.)

100' PAV'T. TRANS. (26' TO 24' PAV'T.)

CONST. TERMINAL DRAINAGE FLUMES INDEX NO. 5060-B

F.L. 72.4

12' Tram Rd.

Ready

CONST. SPEC. 9" CURB & GUTTER, INDEX NO. 5060-B

Sage Grass Scattered Pine & Palmetta

Cypress

Swamp

Scattered Pines & Palmetta

Bay Head

91°24'

51°57'

39°03'

9°39'

175'

50'

64.30'

225'

89.0'

100'

100.9'

20'

Nail & Cap 6" Pine

Nail & Cap Tall B" Pine Stump

Nail & Cap 4" Pine

Nail & Cap 6" Palm

175.70'

B.M. #21
R.R. SPIKE IN 12" PALM TREE
168' RT. STA. 179+47
ELEV. 74.315

B.M. #22
R.R. SPIKE IN 14" PINE
165' LT. STA. 189+96
ELEV. 75.215

B.M. #23
R.R. SPIKE IN 8" PINE
184' RT. STA. 199+36
ELEV. 79.235

226' BRIDGE

BEGIN BRIDGE STA. 184+76

END BRIDGE STA. 187+04

400' V.C.

500' V.C.

(+90) P.I. 85.20

(+90) P.I. 82.00

(+50) P.I. 82.00

TAN EL. 82.00

SPEC. MED. DITCH

0.00% EL. 82.00

+0.80%

-0.80%

-0.03%

+0.03%

(+76) M.D.P.I. 73.12

(+04) M.D.P.I. 78.12

M.D.P.I. 79.02

78.61

H.W. ELEV. 78.0

MUCK

REMOVE MUCK

CHANNEL 174' BOT. WIDTH F.L. 68.50

NATURAL GROUND LEFT ROADWAY

NATURAL GROUND RIGHT ROADWAY

PROFILE GRADE RIGHT & LEFT ROADWAYS

90 80 70 60

82.00 82.04 82.12 82.26 82.40 (+90) 82.44 82.68 82.96 83.30 83.60

83.60 83.52 83.16 82.84 82.56 82.40 (+90) 82.36 82.20 82.08 82.02 82.00

82.00 82.01 82.04 82.09

83.60 83.68 84.01 84.24 84.37 84.40 (+90) 84.40 84.33 84.16 83.89 83.60 (+90)

75.3 LT. 75.3 RT. | 75.1 75.1 | 74.9 75.1 | 75.1 74.9 | 74.2 74.0 | 72.4 72.3 | 72.4 72.1 | 72.7 72.6 | 71.1 71.5 | 70.6 70.6 | 70.4 70.1 | 69.2 70.1 | 70.8 70.6 | 71.6 71.6 | 73.3 73.3 | 74.4 74.5 | 75.3 75.2 | 75.6 75.6 | 74.9 75.5 | 74.2 75.2 | 74.1 75.2 | 73.7 75.1 | 74.1 74.7 | 74.7 75.4 | 75.5 75.9 | 75.5 76.3 | 74.8 75.7 | 74.0 74.8 | 74.5 74.3 | 76.8 76.4 | 78.1 LT. 77.7 RT.

175 180 185 190 195 200 205

NOTE BOOK NOS.
12, 6, 10, 11, 14, 19

E-1382

STATE JOBS NO. 16320-3407 & 92130-3401

		I-4-1(25)75	'59	20
		I-4-2(19)76		

N

Scale, 1" = 100'

Nail & Cap 4" Pine

END PROJ. I-4-2(19)76
END STATE JOB NO. 92130-3401
STA. 215+00

Nail & Cap 6" Pine

Nail & Cap 6" Pine

Scattered Pines & Palmetta

Cypress Swamp

Scattered Pines & Palmetta

Cypress Swamp

Scattered Pines & Palmetta

205 210 215 220 225 230 235

CONST. FENCE TYPE "A"

97°38'

CONST. 2' GRASS SHOULDER

CONST. 8' PAVED SHOULDER

℄ SURVEY

N 39° 47' 43" E.

CONST. 6' PAVED SHOULDER

CONST. 2' GRASS SHOULDER

CONST. FENCE TYPE "A"

L.A. R/W LINE

NO ACCESS LINE

Bay Head

Scattered Pines & Palmetta

Cypress Swamp

NO ACCESS LINE

Scattered Pines & Palmetta

Scattered Pines & Palmetta

8' Dirt Woods Rd.

89°12'

62°03'

115°00'

85°53'

Nail & Cap 12" Pine

Nail & Cap 4" Pine

Nail & Cap 10" Pine

NOT IN THIS CONTRACT

P.O.T. Sta. 208+76.48

P.O.T. Sta. 223+82.51

P.O.T. Sta. 234+77.74

B.M. #24
R.R. SPIKE IN 10" PINE
188' RT. STA. 210+26
ELEV. 83.685

B.M. #25
R.R. SPIKE IN PINE STUMP
240' RT. STA. 221+89
ELEV. 84.935

B.M. #26
R.R. SPIKE IN 16" PINE
192' LT. STA. 231+27
ELEV. 82.46

NOT IN THIS CONTRACT

END PROJ. I-4-2(19)76
END STATE JOB NO. 92130-3401
STA 215+00

TAN. EL. 82.20

500' V.C.

(4.50)

82.09 82.16 82.24 82.35 82.48 82.62 82.79 82.97

P.I. 85.50

PROFILE GRADE, RIGHT & LEFT ROADWAYS

+0.00 %

+0.3889 %

-0.158 %

+0.05 %

SPEC. MED. DITCH

M.D.P.I. 79.02

(436) M.D.P.I. 79.29

P.I. 82.00

84.53 84.71 84.86 84.99 85.09 85.16 85.20 85.22 85.21 85.17 85.11

500' V.C.

MUCK

REMOVE MUCK

NATURAL GROUND LEFT ROADWAY

NATURAL GROUND RIGHT ROADWAY

82.89 82.82 82.75 82.69 82.64 82.60 82.56 82.54

500' V.C.

P.I. 82.50

3.5' DEPTH RDWY. DITCH LT. ONLY

3.5' DEPTH RDWY. DITCHES LT. & RT.

3.5' DEPTH RDWY. DITCH RT. ONLY

3.5' DEPTH RDWY. DITCHES LT. & RT.

3.5' DEPTH RDWY. DITCH RT. ONLY

78.1 LT. 77.7 RT. 79.2 79.5 80.3 79.8 82.0 81.3 83.2 82.5 83.8 83.4 84.2 83.7 83.9 82.8 84.0 82.1 84.3 84.0 84.5 84.2 84.3 84.0 83.2 82.6 81.5 81.5 81.5 80.6 81.6 81.6 81.6 81.6 81.8 82.3 82.0 83.5 83.6 83.5 83.3 83.4 82.7 83.1 80.6 82.3 82.2 82.7 82.3 82.5 80.6 81.2 82.0 82.1 81.2 81.4 80.6 80.8 79.4 79.8 78.2 LT. 78.7 RT.

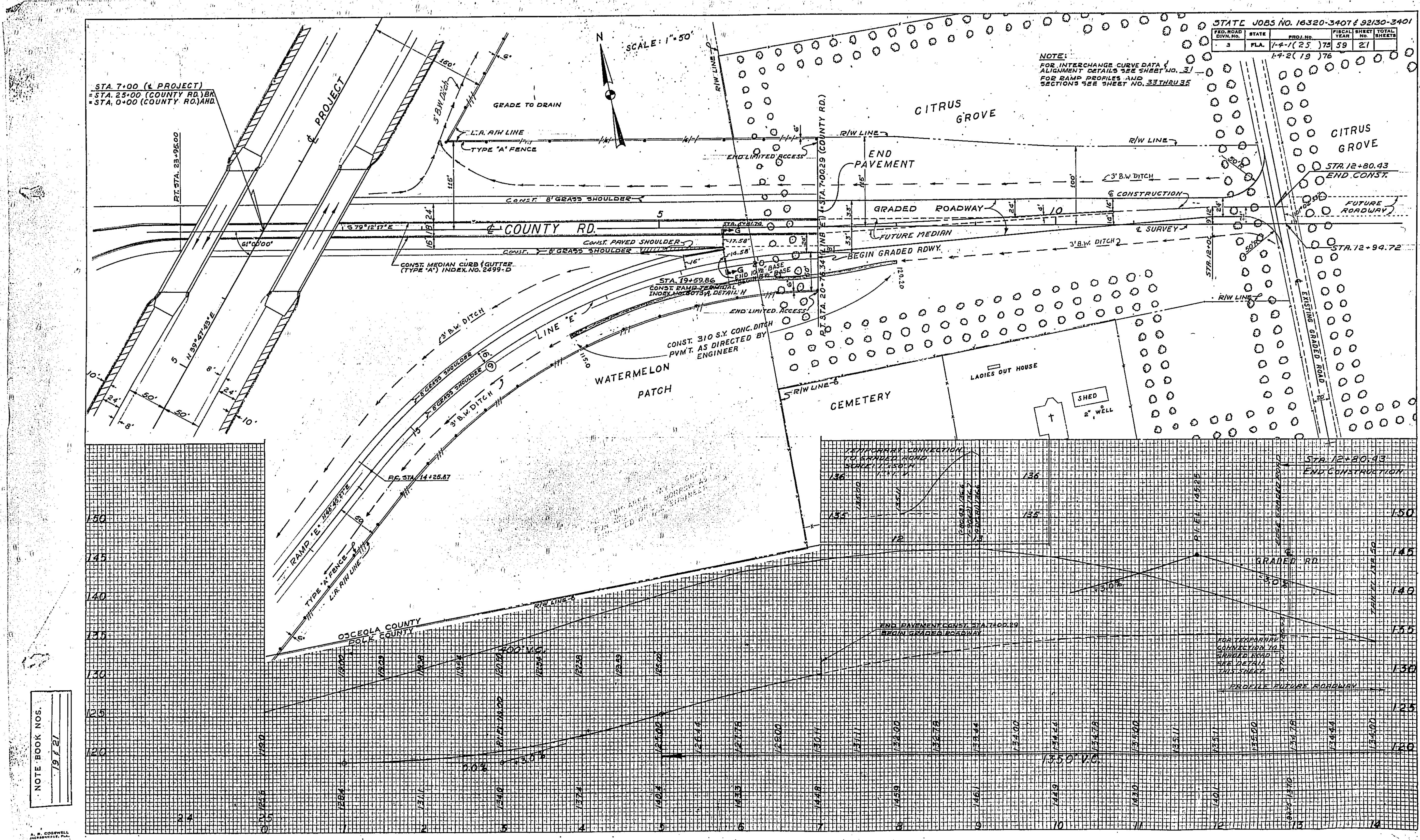
205 210 215 220 225 230 235

100 90 80 70

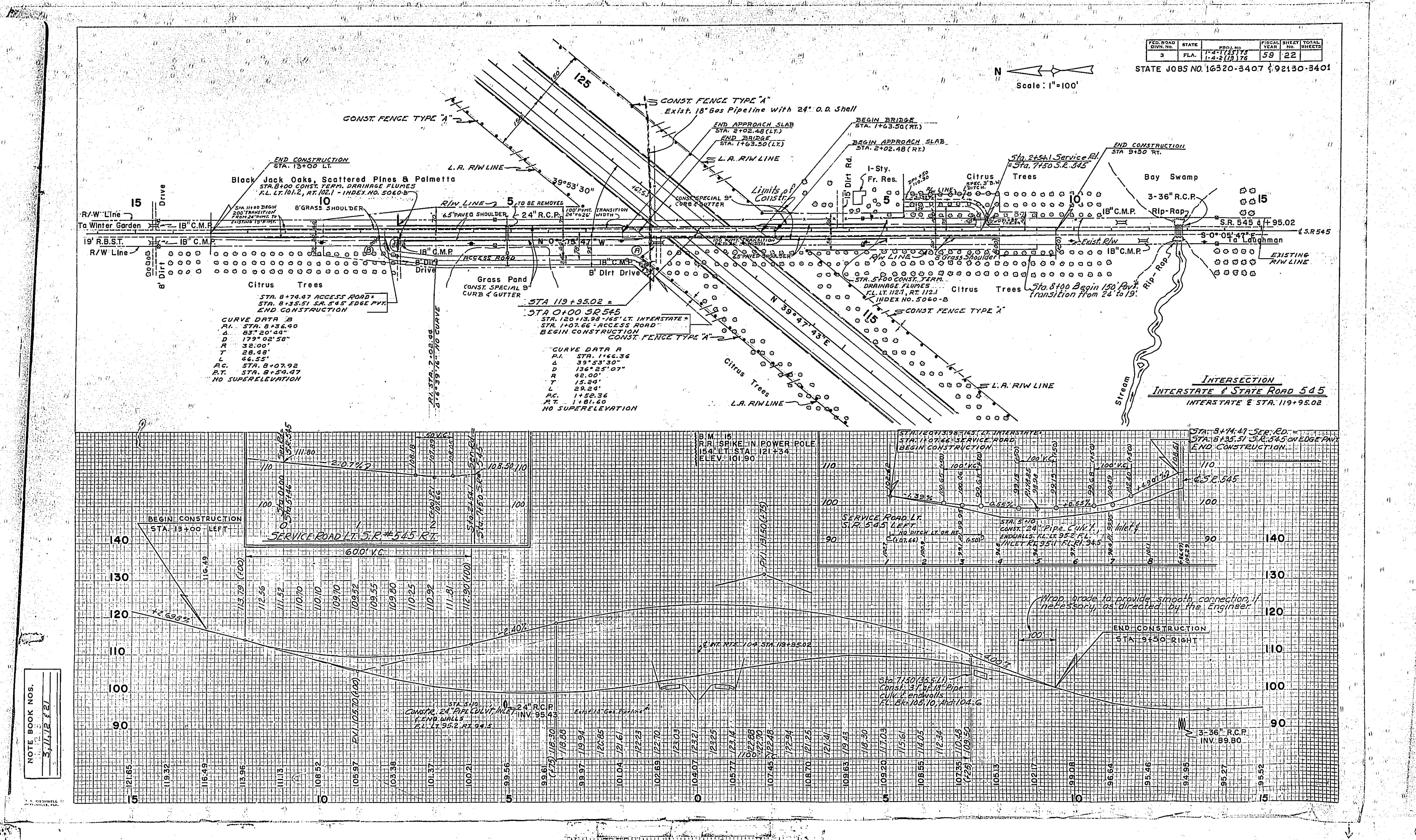
LEGEND

NOTE BOOK NOS.
1, 2, 6 & 14

E-1383


STATE JOBS NO. 16320-3407 & 92130-3401
FED. ROAD DIVN. No. | STATE | PROJ. No. | FISCAL YEAR | SHEET No. | TOTAL SHEETS
3 | FLA. | I-4-1(25)75 | 59 | 21
I-4-2(19)76
NOTE:
FOR INTERCHANGE CURVE DATA & ALIGNMENT DETAILS SEE SHEET NO. 31
FOR RAMP PROFILES AND SECTIONS SEE SHEET NO. 33 THRU 35
SCALE: 1" = 50'
N
STA. 7+00 (℄ PROJECT)
= STA. 25+00 (COUNTY RD.) BK.
= STA. 0+00 (COUNTY RD.) AHD.
℄ PROJECT
GRADE TO DRAIN
L.A. R/W LINE
TYPE "A" FENCE
5' B.W. DITCH
CONST. 8' GRASS SHOULDER
℄ COUNTY RD.
CONST. PAVED SHOULDER
CONST. 8' GRASS SHOULDER
CONST. MEDIAN CURB & GUTTER (TYPE "A") INDEX NO. 2499-D
S 79°12'17" E
N 39°47'43" E
61°00'00"
R/W LINE
END LIMITED ACCESS
P.T. STA. 7+00.29 (COUNTY RD.)
END PAVEMENT
CITRUS GROVE
3' B.W. DITCH
℄ CONSTRUCTION
GRADED ROADWAY
FUTURE MEDIAN
℄ SURVEY
BEGIN GRADED RDWY.
STA. 12+80.43
END CONST.
FUTURE ROADWAY
STA. 12+94.72
EXISTING GRADED ROAD
STA. 19+59.86
CONST. RAMP TERMINAL INDEX NO. 507 SV, DETAIL H
END LIMITED ACCESS
P.T. STA. 20+76.34 (LINE "E")
LINE "E"
CONST. 310 S.Y. CONC. DITCH PVM'T. AS DIRECTED BY ENGINEER
WATERMELON PATCH
CEMETERY
LADIES OUT HOUSE
SHED
2" WELL
8' GRASS SHOULDER
3' B.W. DITCH
P.C. STA. 14+25.87
RAMP "E"
TYPE "A" FENCE
L.A. R/W LINE
OSCEOLA COUNTY
POLK COUNTY
TEMPORARY CONNECTION TO GRADED ROAD
STA. 12+80.43
END CONSTRUCTION
GRADED RD.
P.I. EL. 145.25
400' V.C.
END PAVEMENT CONST. STA. 7+00.29
BEGIN GRADED ROADWAY
FOR TEMPORARY CONNECTION TO GRADED ROAD SEE DETAIL THIS SHEET
PROFILE FUTURE ROADWAY
1350' V.C.
0.0%
+3.0%
NOTE BOOK NOS.
19 & 21
A. R. COGSWELL JACKSONVILLE, FLA.

E-1384



FED. ROAD DIVN. NO. 3 | STATE FLA. | PROJ. NO. I-4-1(25)75, I-4-2(19)76 | FISCAL YEAR 59 | SHEET NO. 22
STATE JOBS NO. 16320-3407 & 92130-3401
N
Scale: 1"=100'
CONST. FENCE TYPE "A"
Exist. 18" Gas Pipeline with 24" O.D. Shell
END APPROACH SLAB STA. 2+02.48 (LT.)
END BRIDGE STA. 1+63.50 (LT.)
BEGIN BRIDGE STA. 1+63.50 (RT.)
BEGIN APPROACH SLAB STA. 2+02.48 (RT.)
L.A. R/W LINE
END CONSTRUCTION STA. 13+00 LT.
Black Jack Oaks, Scattered Pines & Palmetto
39°53'30"
Limits of Constr.
1-Sty. Fr. Res.
15' Dirt Rd.
Citrus Trees
Bay Swamp
END CONSTRUCTION STA. 9+50 RT.
3-36" R.C.P.
Rip-Rap
S.R. 545 ¢ + 95.02
To Winter Garden
To Laughman
19' R.B.S.T.
R/W Line
18" C.M.P.
24" R.C.P.
8' GRASS SHOULDER
6.5' PAVED SHOULDER
ACCESS ROAD
8' Dirt Drive
Grass Pond
CONST. SPECIAL 9" CURB & GUTTER
EXISTING R/W LINE
N 39°47'43" E
STA 119+95.02 = STA 0+00 SR 545
STA. 120+13.98 - 165' LT. INTERSTATE = STA. 1+07.66 - ACCESS ROAD BEGIN CONSTRUCTION
STA. 8+74.47 ACCESS ROAD = STA. 8+35.51 S.R. 545 EDGE PVT. END CONSTRUCTION
CURVE DATA B
P.I. STA. 8+36.40
Δ 83°20'44"
D 179°02'58"
R 32.00'
T 28.48'
L 46.55'
P.C. STA. 8+07.92
P.T. STA. 8+54.47
NO SUPERELEVATION
CURVE DATA A
P.I. STA. 1+66.36
Δ 39°53'30"
D 136°25'07"
R 42.00'
T 15.24'
L 29.24'
P.C. 1+52.36
P.T. 1+81.60
NO SUPERELEVATION
Sta. 8+00 Begin 150' Pvt. transition from 24' to 19'
STA. 5+00 CONST. TERM. DRAINAGE FLUMES F.L. LT. 112.1, RT. 112.1 INDEX NO. 5060-B
Stream
INTERSECTION
INTERSTATE & STATE ROAD 545
INTERSTATE ¢ STA. 119+95.02
SERVICE ROAD LT. S.R. #545 RT.
600' V.C.
B.M. 15 R.R. SPIKE IN POWER POLE 154' LT. STA. 121+34 ELEV. 101.90
SERVICE ROAD LT. S.R. 545 LEFT
BEGIN CONSTRUCTION STA. 13+00 LEFT
+2.699%
-2.40%
P.V.I. 105.70 (400)
P.V.I. 131.50 (475)
¢ INT. RTE. 104 STA. 119+95.02
Wrap grade to provide smooth connection, if necessary, as directed by the Engineer.
END CONSTRUCTION STA. 9+50 RIGHT
Sta. 7+50 (35.5 LT.) Const. 37' of 18" Pipe culv. & endwalls FL Bk. 105.10, Ahd. 104.6
STA. 5+10 CONSTR. 24" PIPE CULVT. INLET & END WALLS F.L. LT. 95.2, RT. 94.5
24" R.C.P. INV. 95.43
3-36" R.C.P. INV. 89.80
NOTE BOOK NOS. 3, 11, 12 & 21

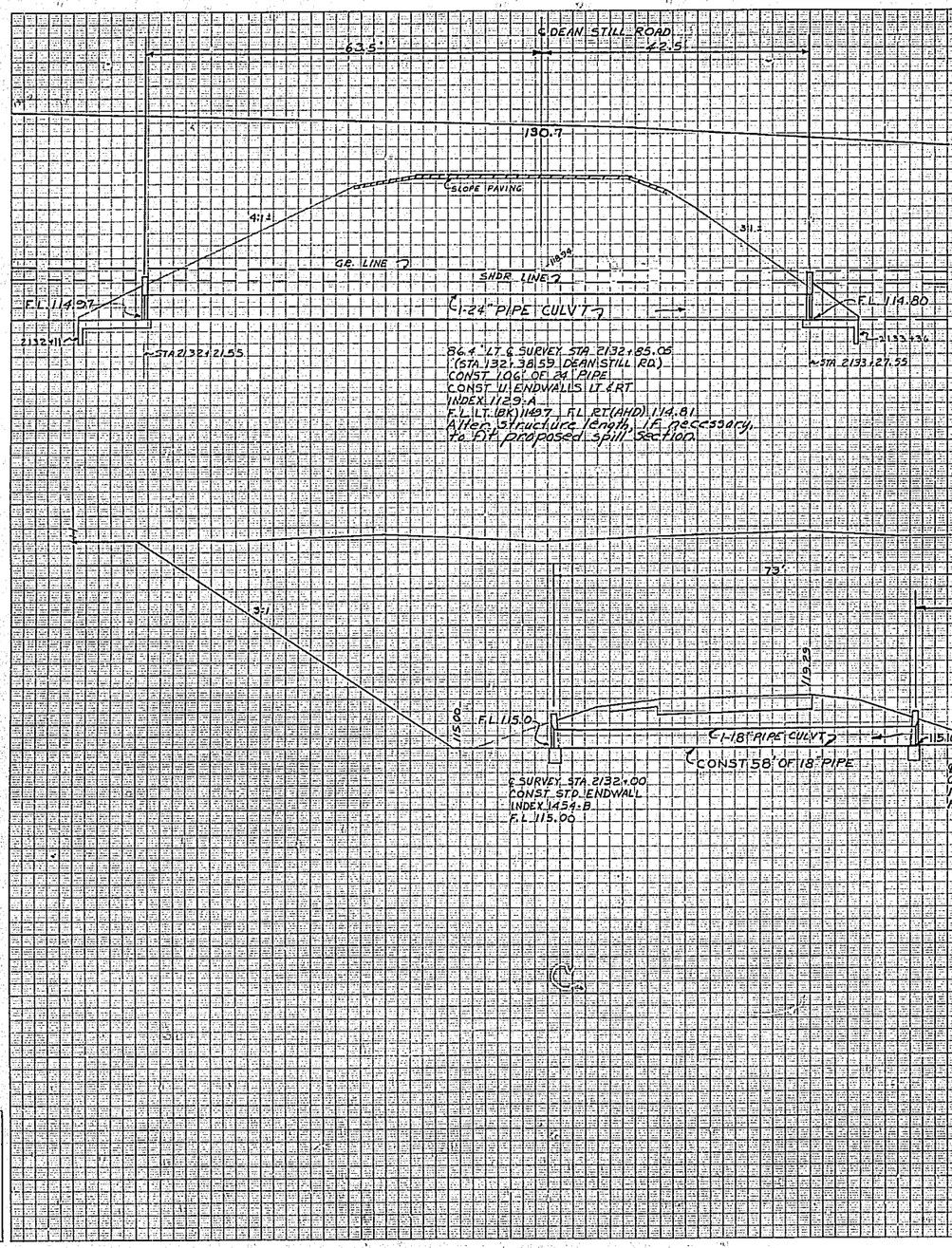
E-1385

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 ft H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK	400	I-4-1(22)77.76 I-4-1(22)77.75	23

JOB NO. 14320-3407 & 13320-3401



PROPOSED DRAINAGE STRUCTURES

Application No.	
Route No.	
Original Plotted by	
" Checked by	
Template by	
Area by	
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

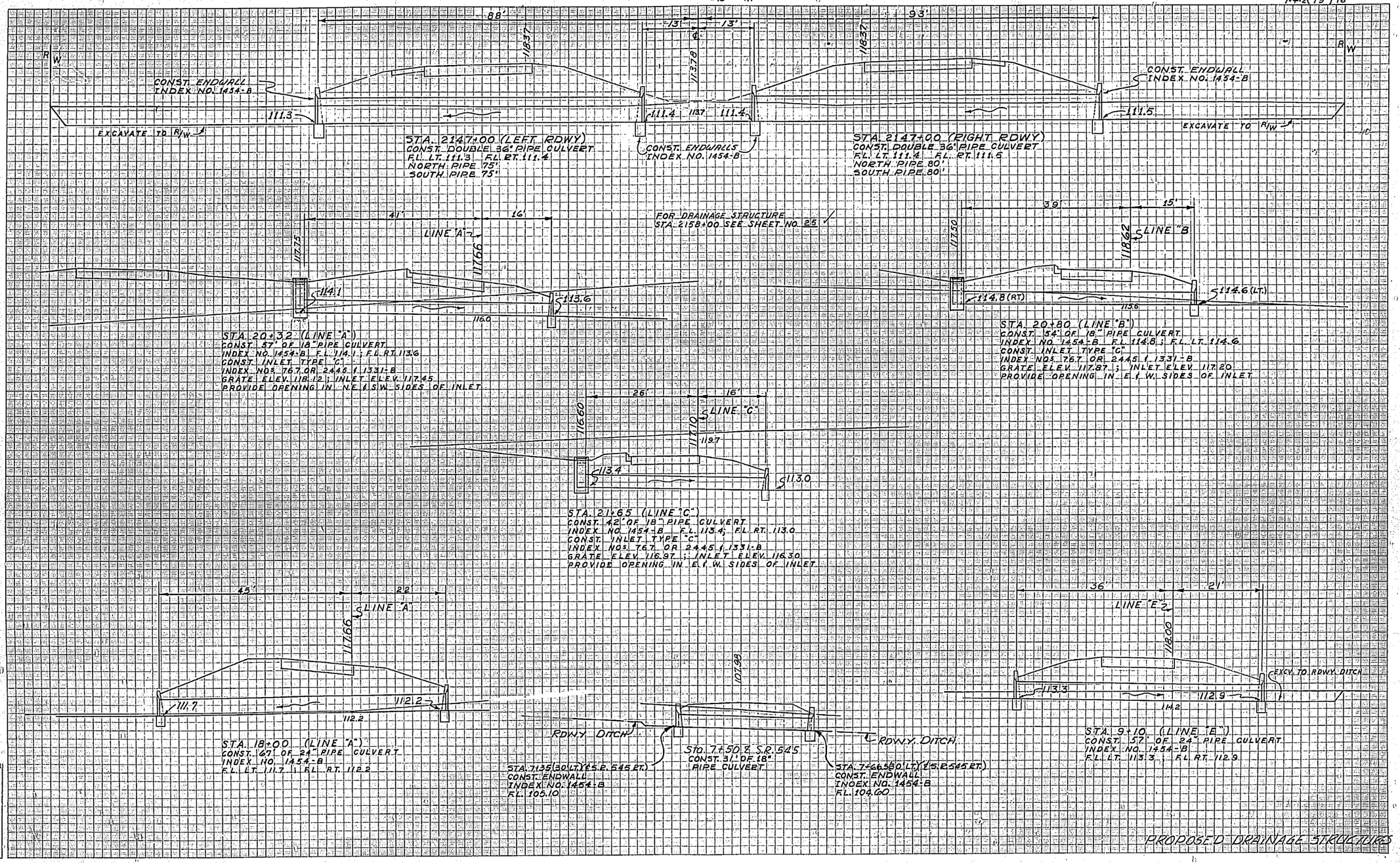
E-1386

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75	24
				I-4-2(19)76	

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10' H.



PROPOSED DRAINAGE STRUCTURES

Application No. _____
Note Sheet _____
Original Plotted by _____
" Checked by _____
Template by _____
Area by _____
Final Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

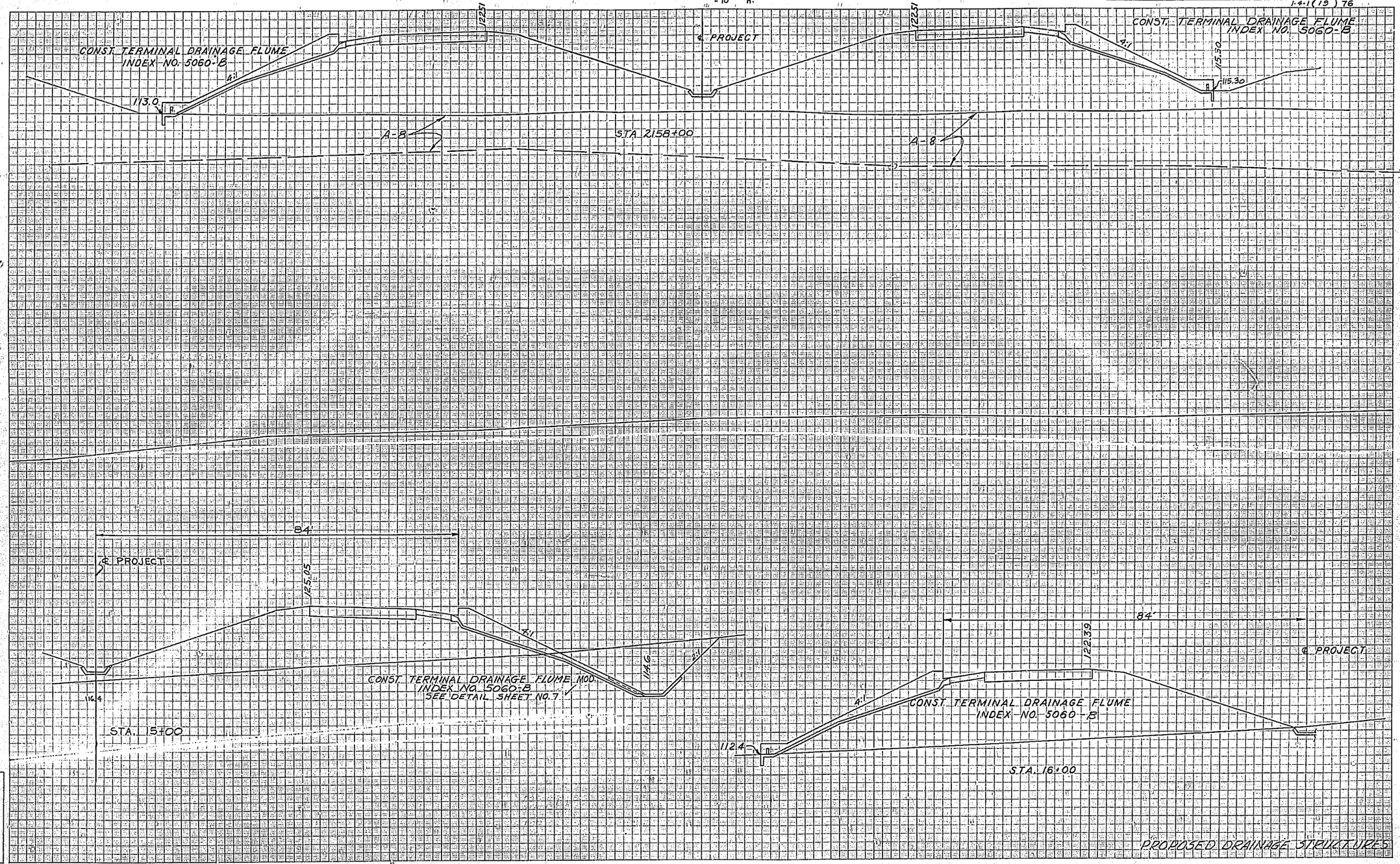
A. B. COGSWELL
JACKSONVILLE, FLA.

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Revl Grnt. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-1(13)76	25

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10' H.



Application No. _____
Route No. _____
Original Plotted by _____
Checked by _____
Template by _____
Area by _____
Finals Plotted by _____
Checked by _____
Area by _____
Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

PROPOSED DRAINAGE STRUCTURES

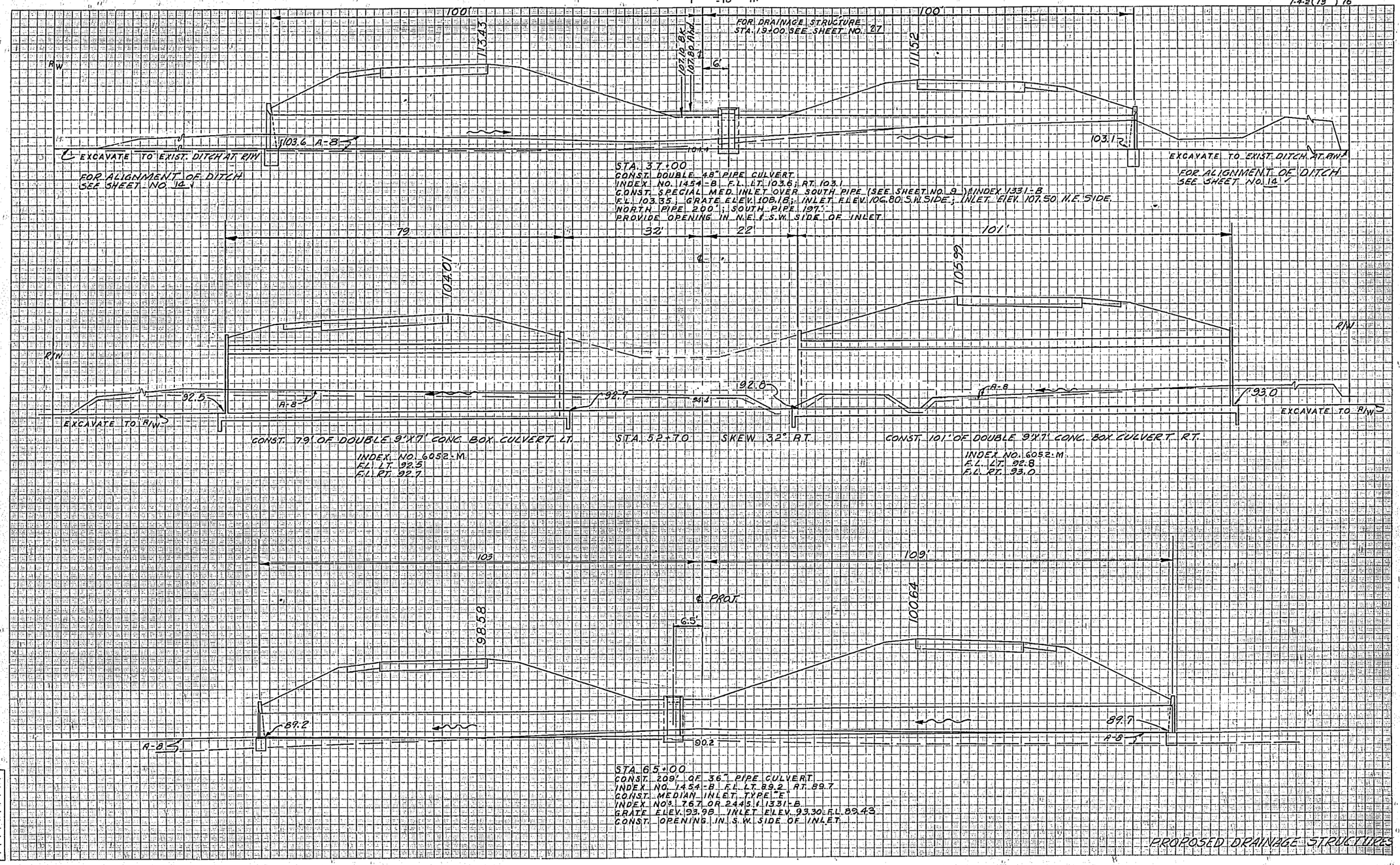
E-1388

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
7	Fla.	POLK & OSCEOLA	400	1-4-1(25) 75	26
				1-4-2(19) 76	

CROSS SECTIONS

Scale 1 inch = 5 feet V.
1" = 10' H.



PROPOSED DRAINAGE STRUCTURES

Application No. _____
Route No. _____
Original Plotted by _____
" Checked by _____
Template by _____
Area by _____
Plats Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

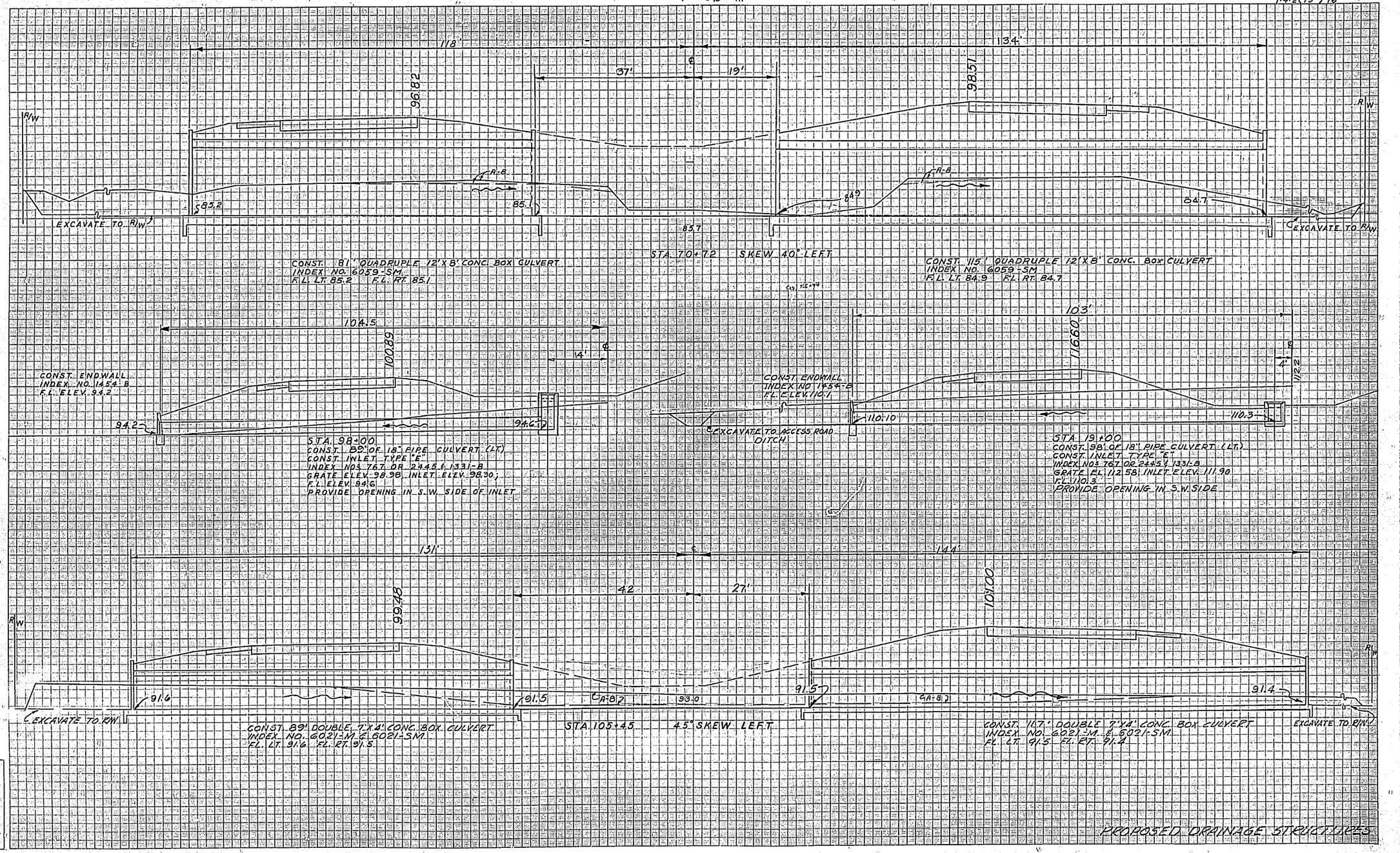
E-1389

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(23) 75	27
				I-4-2(19) 76	

CROSS SECTIONS

Scale 1 inch = 5 feet V.
1" = 10' H.



PROPOSED DRAINAGE STRUCTURES

Application No. ____
Route No. ____
Original Plotted by ____
— Checked by ____
Template by ____
Area by ____
Plans Plotted by ____
— Checked by ____
Area by ____
— Checked by ____

A. R. COGSWELL
JACKSONVILLE, FLA.

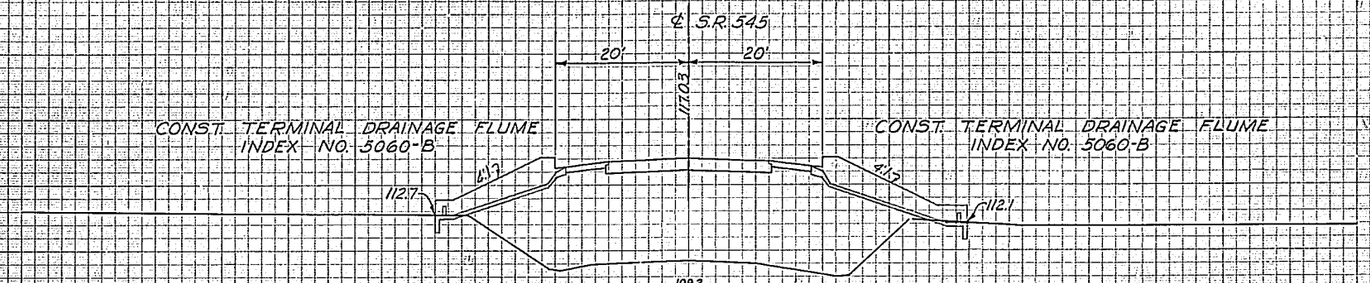
E-1390

CROSS SECTIONS

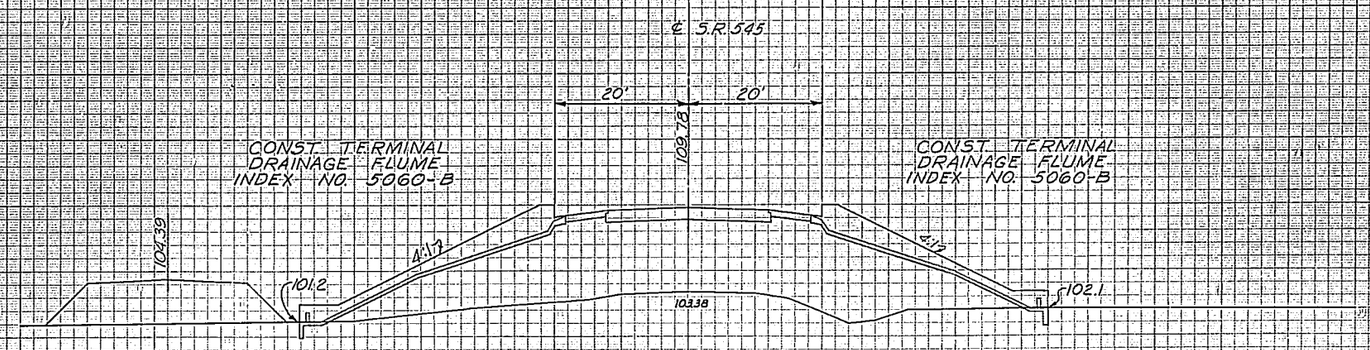
Scale 1 inch = 5 feet V.
1 inch = 10 ft. H.

F-A Rte/Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Polk & Osceola	400	1-4-1(25)75 1-4-2(19)76	22

State Job Nos. 92130-3401 & 16320-3207



STA. 1191+95.02 ℄ PROJECT =
STA. 5+00 ℄ S.R. 545 (Rt.)



STA. 1191+95.02 ℄ PROJECT =
STA. 8+00 ℄ S.R. 545 (Lt.)

PROPOSED DRAINAGE STRUCTURES

Application No.	
Sheet No.	
Original Plotted by	
Checked by	
Template by	
Area by	
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. B. COGSWELL
ASHEVILLE, FLA.

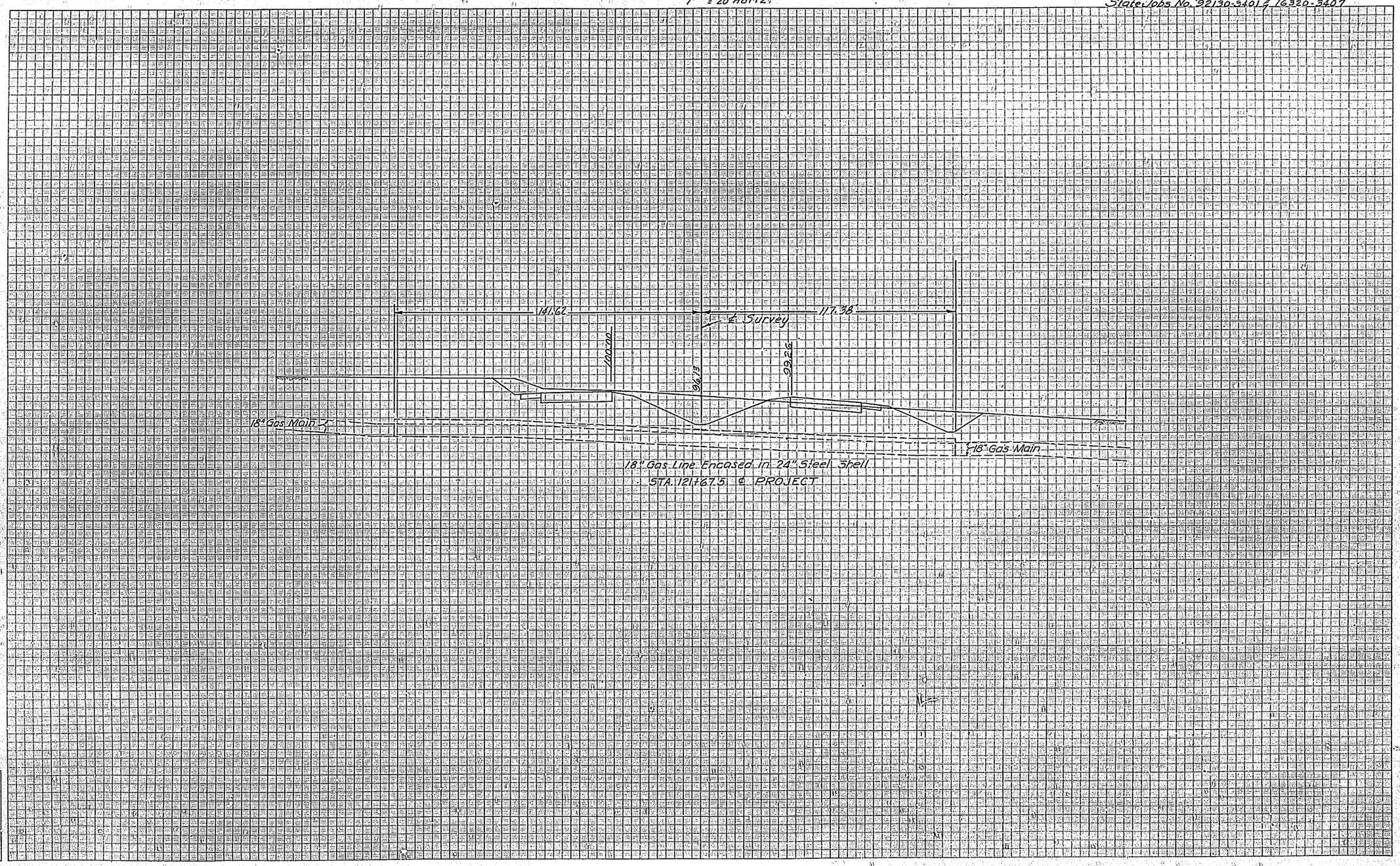
E-1391

CROSS SECTIONS

Scale 1 inch = 5 feet Vert.
1" = 20 Horiz.

Fed. Aid Proj. No.	State	County	Route	Fed. Proj. No.	Sheet No.
3	Fla.	Polk & Osceola	400	I-4-2(19)75 I-4-2(19)76	28A

State Jobs No. 92130-3401 & 16320-3407



Application No. ____
Route No. ____
Original Plotted by ____
" Checked by ____
Template by ____
Area by ____
Prints Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. R. COCKRELL
JACKSONVILLE, FLA.

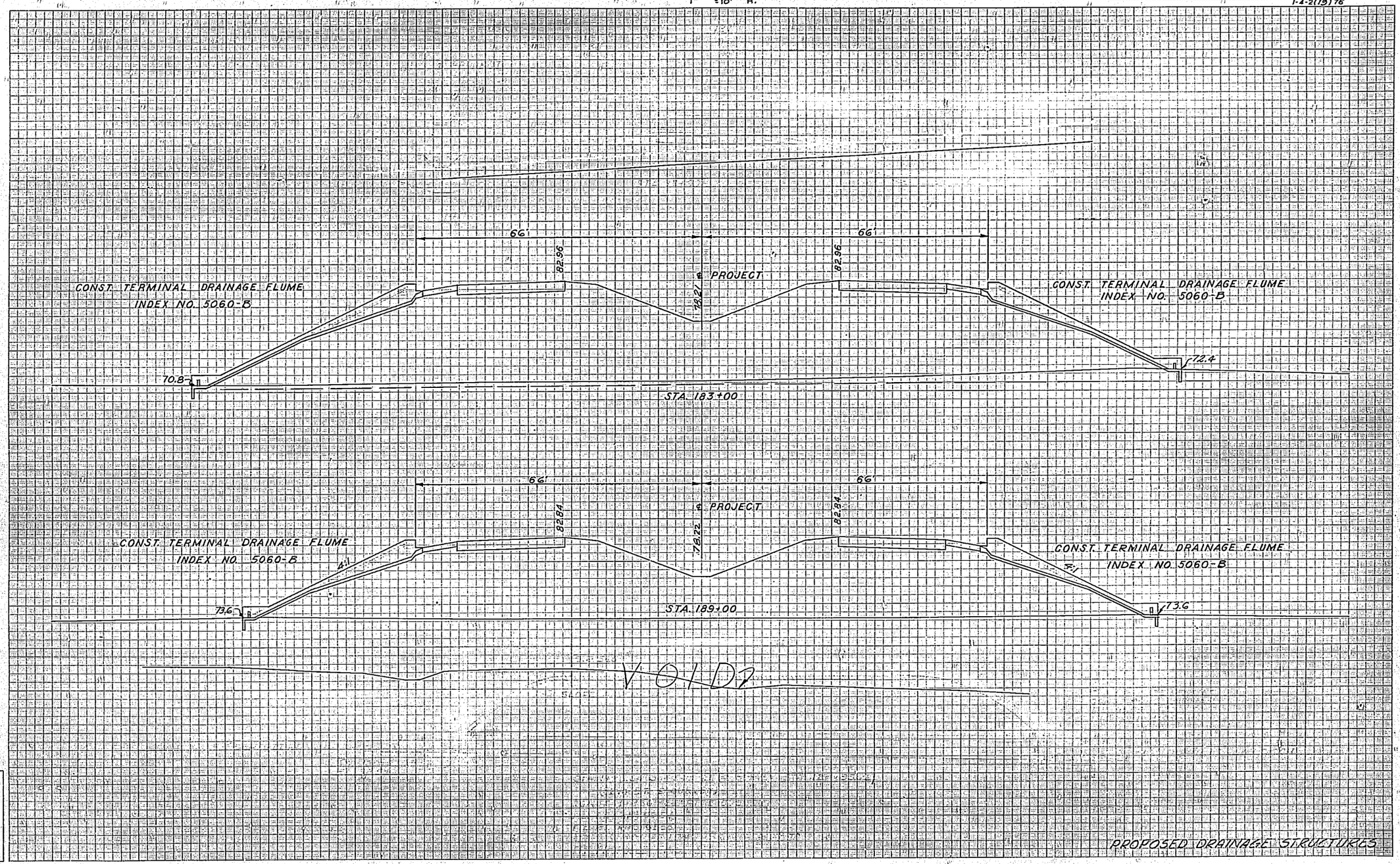
E-1392

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Proj. Bros. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	104	I-4-1(25)75 I-4-2(19)76	29

CROSS SECTIONS

Scale 1 inch = 5 feet V.
1" = 10' H.



PROPOSED DRAINAGE STRUCTURES

Application No. _____
Plate No. _____
Original Plotted by _____
" Checked by _____
Template by _____
Area by _____
Prints Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

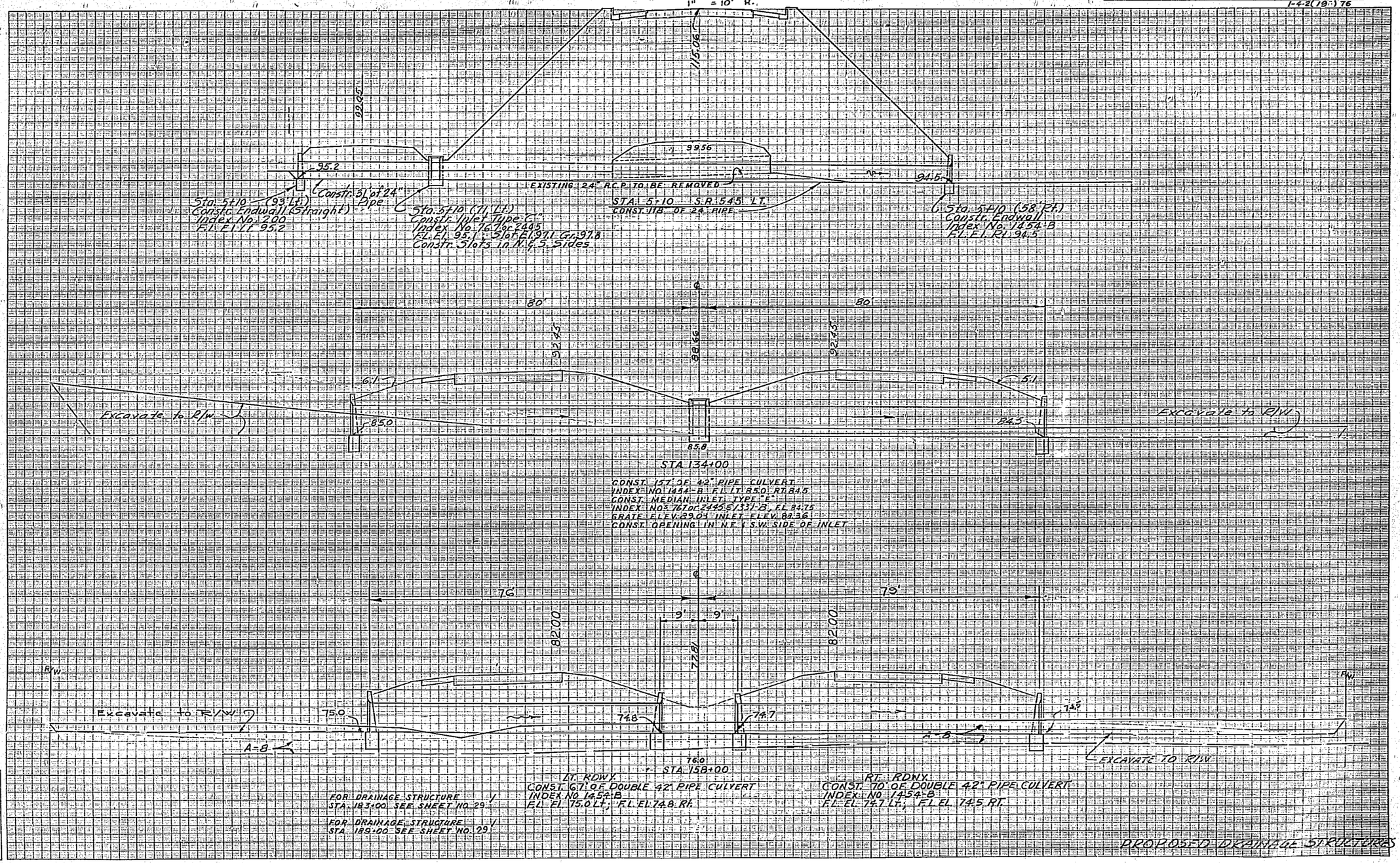
E-1393

STATE JOBS NO. 16320-3407 & 92130-3401

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(23)75 I-4-2(19)76	30

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10' H.



LT. RDWY.
CONST. 67 OF DOUBLE 42" PIPE CULVERT
INDEX NO 1454-B
FL EL 75.0 LT.; FL EL 74.8 RT.

RT. RDWY.
CONST. 70 OF DOUBLE 42" PIPE CULVERT
INDEX NO 1454-B
FL EL 74.7 LT.; FL EL 74.5 RT.

FOR DRAINAGE STRUCTURE V
STA. 183+00 SEE SHEET NO. 29

FOR DRAINAGE STRUCTURE V
STA. 189+00 SEE SHEET NO. 29

PROPOSED DRAINAGE STRUCTURES

Application No. _____
Route No. _____
Original Plotted by _____
Checked by _____
Template by _____
Area by _____ Checked by _____
Plans Plotted by _____
Checked by _____
Area by _____
Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1394

STATE JOBS NO. 16320-3407 & 92130-3401

FED. ROAD DSTN. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.	I-4-1 (25) 75	59	31	
		I-4-2(19) 76			

CURVE DATA

CURVE NO.	Δ	D	R	L	T	PAVEMENT EDGE	SUPER-ELEV.
1	75°30'00"	18°28'37"	310.00'	408.49'	240.03'	RT.	*
2	22°51'20"	8°00'00"	716.20'	285.69'	144.77'	LT.	*
3	25°29'43"	22°55'06"	250.00'	111.24'	56.56'	RT.	*
4	47°39'38"	21°32'23"	266.00'	221.27'	117.49'	RT.	*
5	15°07'32"	22°55'06"	250.00'	66.00'	33.19'	RT.	*
6	9°30'03"	5°30'00"	1041.74'	172.74'	86.57'	LT.	*
7	58°35'49"	17°47'37"	322.00'	329.31'	180.69'	℄	002"/ft
8	37°12'17"	13°34'32"	422.00'	274.02'	142.04'	℄	002"/ft
9	52°02'16"	8°00'00"	716.20'	650.47'	349.61'	RT.	010"/ft

* FOR RATE OF SUPER ELEVATION SEE RAMP PROFILE

INTERSTATE ℄ CURVE DATA

Δ = 10° 20' 20"
D = 0° 30' 00"
T = 1036.70'
L = 2067.76'
R = 11,459.16'
℄ = 3/16 in. PER FT.

EXTRA QUANTITIES

ITEM NO.	JOB NO. 16320-3407	JOB NO. 92130-3401	TOTAL
100-1A	3467.54	5,432	8,900
100-1B		3,663.13	3,663
* 200-1	8200.	19083.	27,283
233-1A	3361.87	5226.13	8610
233-1B		3,633.60	3,634
430-2	274.	3,066	3,340

* INCLUDES 541 GALS. EST. FOR TACK COAT FOR JOB NO. 16320-3407 & 1,418 GALS. EST. FOR TACK COAT FOR JOB NO. 92130-3401

SCALE: 1" = 50'

FOR RAMP PROFILES AND SECTIONS SEE SHEETS NO. 33, 34, 35

E-1395

STATE JOBS NO. 16320-3407 & 92130-3401

FED ROAD DIVN NO.	STATE	PROJ NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.	I-4-1(25)75	59	32	
		I-4-2(19)76			

ROADWAY CROSS SECTIONS AND LIMITS OF COVERAGE

CURVE DATA							
CURVE NO.	Δ	D	R	L	T	PAVEMENT EDGE	SUPER-ELEV.
1	75°30'00"	18°28'57"	310.00'	408.49'	240.03'	RT.	*
2	22°51'20"	8°00'00"	716.20'	285.69'	144.77'	LT.	*
3	25°29'43"	22°55'06"	250.00'	111.24'	56.56'	RT.	*
4	47°39'38"	21°32'23"	266.00'	221.27'	117.49'	RT.	*
5	15°07'32"	22°55'06"	250.00'	66.00'	33.19'	RT.	*
6	9°30'03"	5°30'00"	1041.74'	172.74'	86.57'	LT.	*
7	58°35'45"	17°47'37"	322.00'	329.31'	180.69'	℄	.002 FT/FT
8	37°12'17"	13°34'38"	422.00'	274.02'	142.04'	℄	.002 FT/FT
9	52°02'16"	8°00'00"	716.20'	650.47'	349.61'	RT.	.010 FT/FT

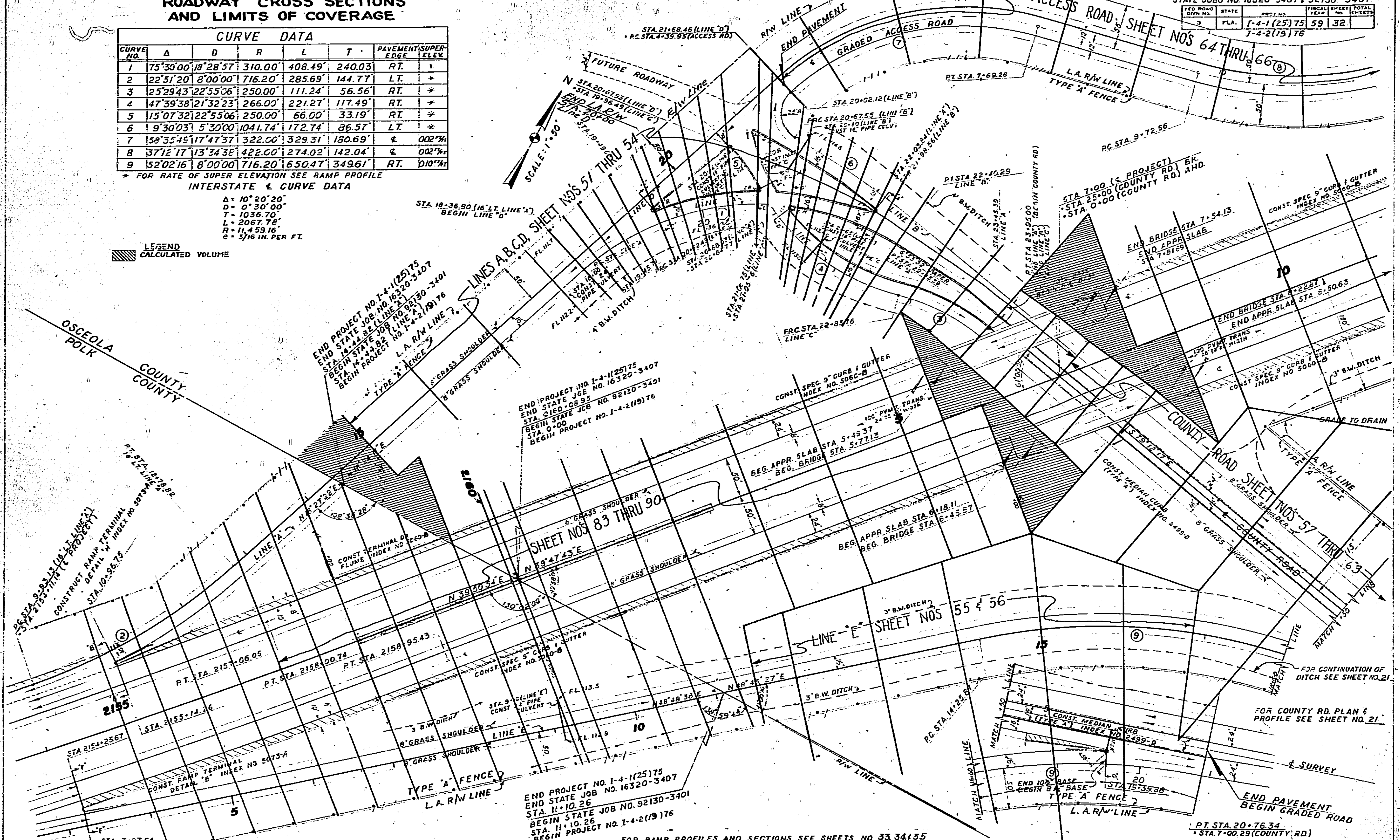
* FOR RATE OF SUPER ELEVATION SEE RAMP PROFILE

INTERSTATE ℄ CURVE DATA

Δ = 10°20'20"
D = 0°30'00"
T = 1036.70'
L = 2067.78'
R = 11,459.16'
e = 3/16 IN. PER FT.

LEGEND

CALCULATED VOLUME



ACCESS ROAD SHEET NOS 64 THRU 66
LINES A, B, C, D, SHEET NOS 51 THRU 54
SHEET NOS 83 THRU 90
COUNTY ROAD SHEET NOS 57 THRU 63
LINE "E" SHEET NOS 55 & 56
OSCEOLA COUNTY
POLK COUNTY
SCALE: 1"=50'
FUTURE ROADWAY
END PAVEMENT
GRADED ACCESS ROAD
L.A. R/W LINE
TYPE "A" FENCE
P.T. STA. 7+69.26
P.C. STA. 9+72.56
P.T. STA. 22+40.29 LINE "B"
STA. 7+00 (℄ PROJECT)
STA. 25+00 (COUNTY RD.) BK.
STA. 0+00 (COUNTY RD.) AHD.
END BRIDGE STA. 7+54.13
END APPR. SLAB STA. 7+51.69
END BRIDGE STA. 8+22.67
END APPR. SLAB STA. 8+50.63
CONST. SPEC. 9" CURB & GUTTER INDEX NO. 5060-B
STA. 18+36.80 (16' LT. LINE "A") BEGIN LINE "D"
END PROJECT NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 14+44.82 (LINE "A")
BEGIN STATE JOB NO. 92130-3401
STA. 14+44.82 (LINE "A")
BEGIN PROJECT NO. I-4-2(19)76
END PROJECT NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 2160+06.95
BEGIN STATE JOB NO. 92130-3401
STA. 0+00
BEGIN PROJECT NO. I-4-2(19)76
BEG. APPR. SLAB STA. 5+45.37
BEG. BRIDGE STA. 5+77.13
BEG. APPR. SLAB STA. 6+18.11
BEG. BRIDGE STA. 6+45.57
CONST. MEDIAN CURB (TYPE "A") INDEX NO. 2499-0
GRADE TO DRAIN
P.T. STA. 2157+06.05
P.T. STA. 2158+00.74
P.T. STA. 2158+95.43
STA. 2155+14.36
STA. 2154+25.67
N 39°47'43" E
N 39°50'54" E
N 48°48'38" E
CONSTRUCT RAMP TERMINAL DETAIL "B" INDEX NO. 5073-A
CONST. SPEC. 9" CURB & GUTTER INDEX NO. 5060-B
3' B.W. DITCH
8' GRASS SHOULDER
TYPE "A" FENCE
L.A. R/W LINE
END PROJECT NO. I-4-1(25)75
END STATE JOB NO. 16320-3407
STA. 11+10.26
BEGIN STATE JOB NO. 92130-3401
STA. 11+10.26
BEGIN PROJECT NO. I-4-2(19)76
P.C. STA. 14+25.81
FOR CONTINUATION OF DITCH SEE SHEET NO. 21
FOR COUNTY RD. PLAN & PROFILE SEE SHEET NO. 21
℄ SURVEY
END PAVEMENT
BEGIN GRADED ROAD
P.T. STA. 20+76.34
STA. 7+00.29 (COUNTY RD.)
STA. 3+27.54

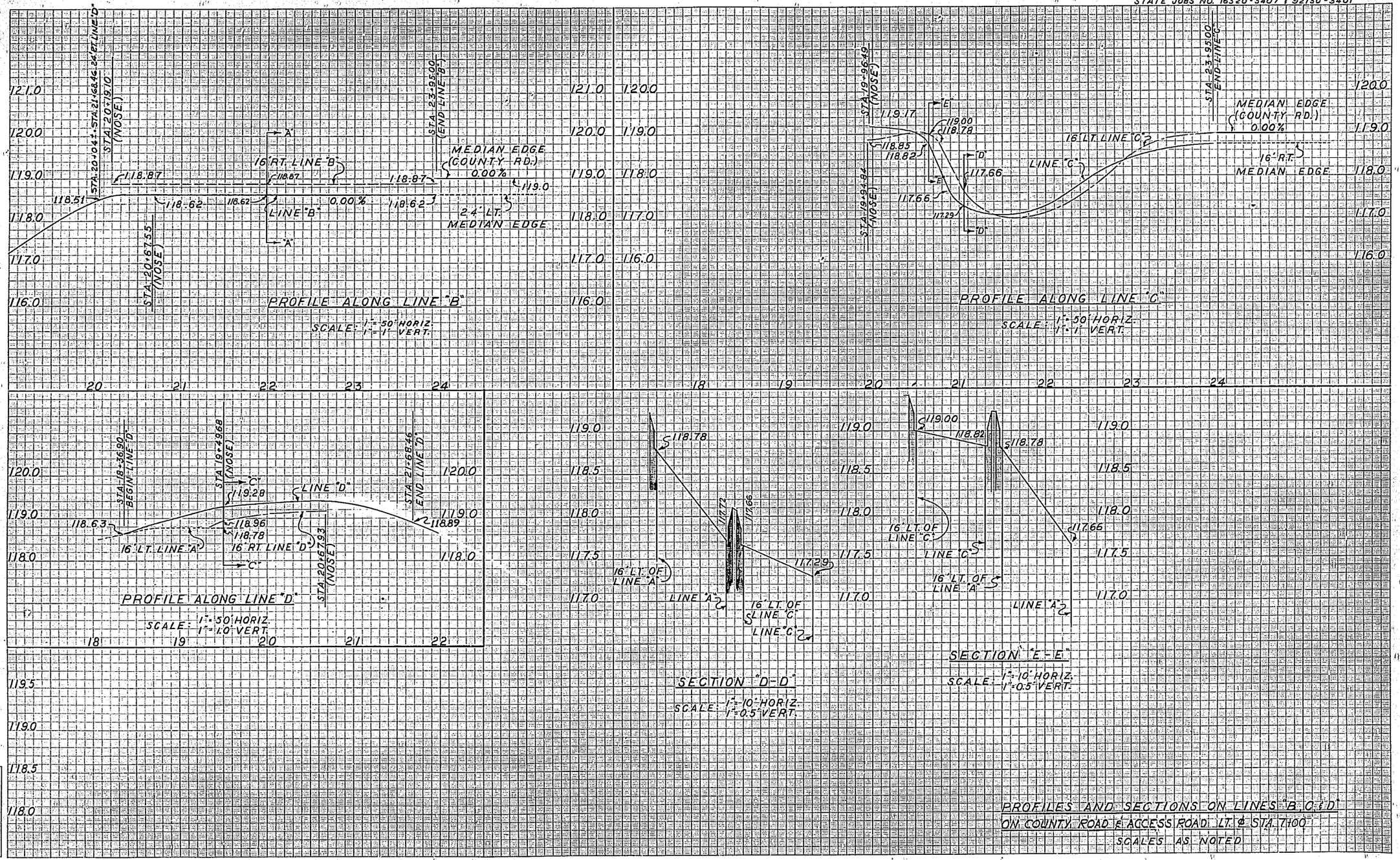
FOR RAMP PROFILES AND SECTIONS SEE SHEETS NO. 33, 34 & 35

E-1396

CROSS SECTIONS

Fed. Rd'l Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK (OSCEOLA	400	I-4-2 (25) 75 I-4-2 (19) 76	33

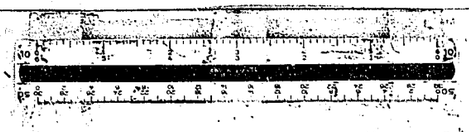
STATE JOBS NO. 16320-3407 (92130-3401



PROFILES AND SECTIONS ON LINES "B, C & D"
ON COUNTY ROAD & ACCESS ROAD LT. @ STA. 7+00
SCALES AS NOTED

Application No. _____
Route No. _____
Original Plotted by _____
" " Checked by _____
Template by _____
Area by _____
Final Plotted by _____
" " Checked by _____
Area by _____
" " Checked by _____

A. R. COGSWELL JACKSONVILLE, FLA.



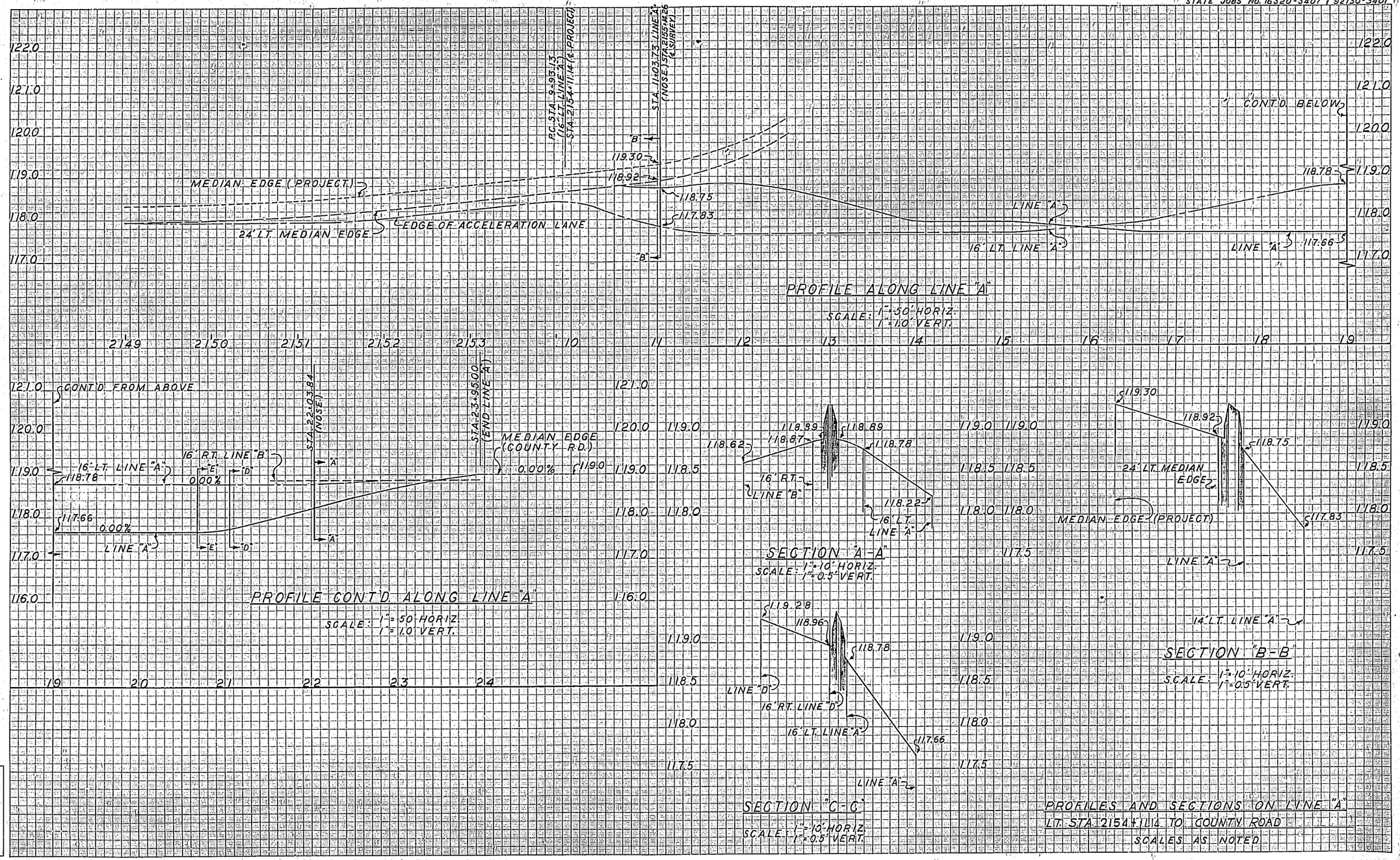
E-1397

CROSS SECTIONS

Scale 1 inch = 5 feet

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(23)75 I-4-3(19)76	34

STATE JOBS NO. 16320-3407 & 92130-3401



Application No. _____
Route No. _____
Original Plotted by _____
" Checked by _____
Template by _____
Also by _____
Finals Plotted by _____
" Checked by _____
Also by _____
" Checked by _____

A. N. COGSWELL
JACKSONVILLE, FLA.

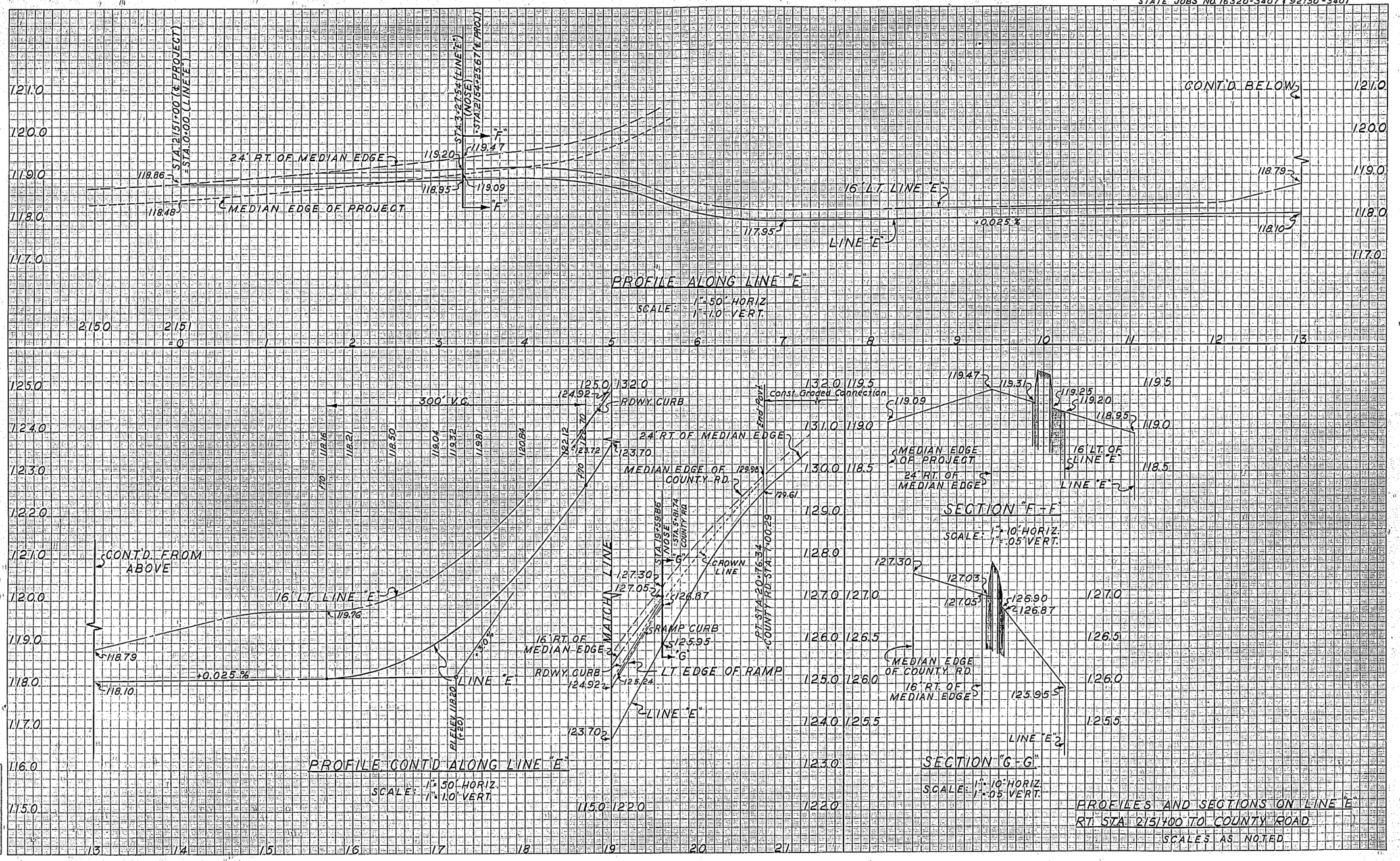
E-1398

CROSS SECTIONS

Scale: 1 inch = 5 feet

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(81)76 I-4-2(81)76	35

STATE JOBS NO. 16320-3407 & 92130-3401



PROFILES AND SECTIONS ON LINE "E" RT. STA. 215+00 TO COUNTY ROAD

SCALES AS NOTED

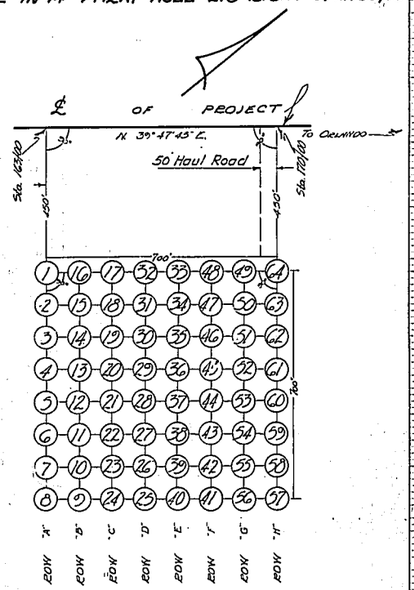
Application No.	
Route No.	
Original Plotted by	
" Checked by	
Template by	
Area by	
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. B. CODWELL, JACKSONVILLE, FLA.

E-1399

B.M. Nº 20 ELEV. 77.93

B.P. SPIKE IN 14" PALM TREE 218' RIGHT STA. 160+10



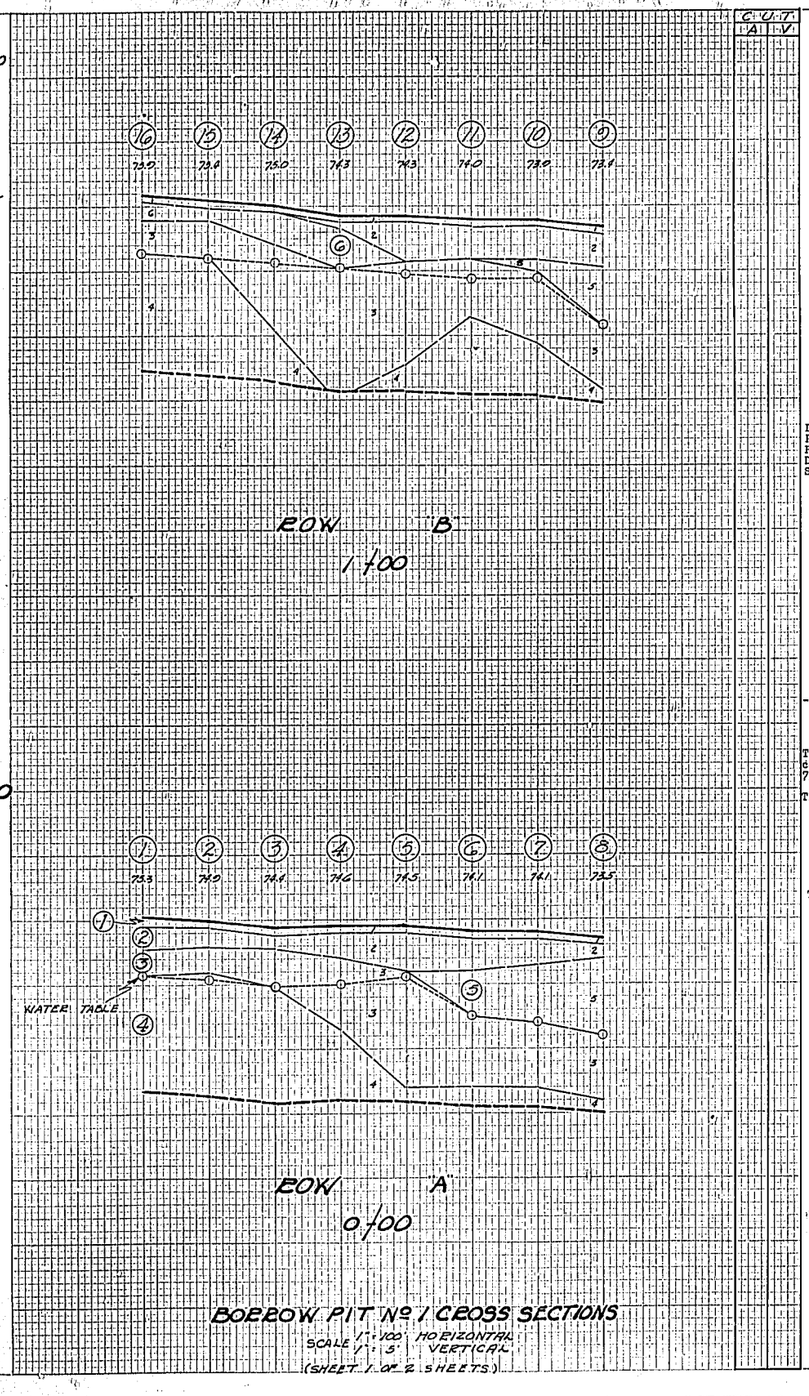
SCALE : 1" = 200'

Clearing & Grubbing : Medium

BORROW PIT Nº 1
SECTION 92130-3401 ROAD*400
OSCEOLA COUNTY

DESCRIPTION OF STRATA
STRATUM Nº 1: GREY SAND (TOPSOIL)
" " 2: WHITE & TAN SAND
" " 3: GREY SILTY SAND
" " 4: COARSE GREY & WHITE SAND
" " 5: GREY CLAY
" " 6: COARSE BROWN SAND

SUBMITTED BY:	RICHEY GREEN
DISTRICT :	FIFTH
SURVEYED BY:	LEE, SHEPHERD, & JOHNS
DATED SURVEYED:	DECEMBER 11, 1958



BORROW PIT Nº 1 CROSS SECTIONS
SCALE 1"=100' HORIZONTAL
1"=5' VERTICAL
(SHEET 1 OF 2 SHEETS)

STATE	COUNTY	ROAD	PROJECT	SHEETING
FLORIDA	OSCEOLA	400	1-4-1(25)75A	36

1-4-2(19)76

State Job Nos. 16320-3407 & 92130-3401

SOIL TEST RESULTS

Laboratory No.: 44220-S
Project No.: 92130-1401-41-11
Road No.: 400
District: Fifth
Submitted By: Richey Green

Date Sampled: 12/11/58
Date Received: 12/31/58
Date Tested: 1/6/59
Date Reported: 1/6/59
Sampled By: Lee

REPORT OF TESTS OF MATERIAL FROM BORROW PIT FOR USE IN EMBANKMENT AND SUBGRADE

Stretum No.	Bearing value Lbs. Per Sq. Inch	MECHANICAL ANALYSIS % Coarse Sand 2-.25mm 10M-60M	% Fine Sand .25-.05mm 60M-270M	% Total Sand	% Silt .05 to .005mm	% Clay less than .005mm	% Pass 40 Mesh	% Pass 60 Mesh	% Pass 200 Mesh	CONSTANTS MATERIAL PASSING NO. 40 SIEVE Liquid Limit	Plastic Index	Group
1	34											A-3
2	20											A-3
3	216	19	65	84	5	11	95	81	19	22	4	A-2
4	18											A-3
5	220+	32	42	74	7	19	93	68	29	34	15	A-2
6	44											A-3

EMBANKMENT AND SUBGRADE
(75 lbs. bearing value required)

The material from Strata 1, 2, 4 and 6 appears satisfactory for use in embankment, but if used, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Strata 3 and 5 appears satisfactory for use in embankment or subgrade.

TESTED BY: Jones-Barber-Moring

Engineer of Materials & Tests

A. R. COGSWELL, Tallahassee

E-1400

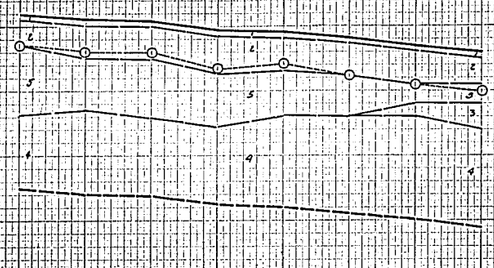
Fed. Road Sect. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA	400	I-4-1(63)75 & I-4-2(19)76	37

State Job Nos. 16320-3407 & 92130-3401

CUT | A | V

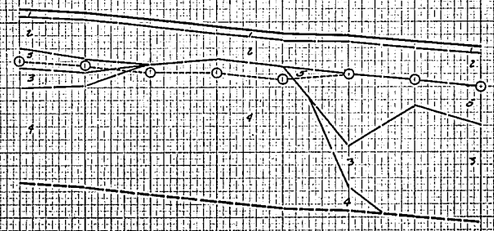
EOW "E" 4+00

33 75.9 | 34 75.6 | 35 75.4 | 36 74.7 | 37 74.5 | 38 74.1 | 39 73.5 | 40 73.0



EOW "D" 3+00

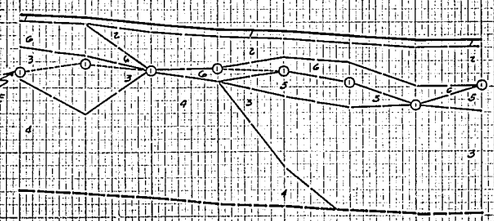
32 76.0 | 31 75.7 | 30 75.2 | 29 74.6 | 28 74.1 | 27 73.9 | 26 73.5 | 25 73.1



EOW "C" 2+00

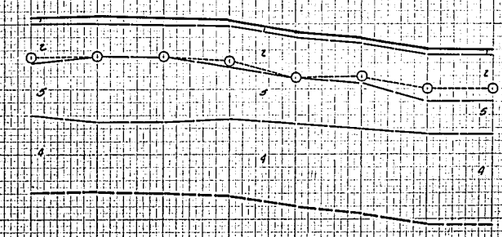
17 75.6 | 18 75.4 | 19 74.9 | 20 74.5 | 21 74.3 | 22 74.0 | 23 73.6 | 24 73.6

WATER TABLE



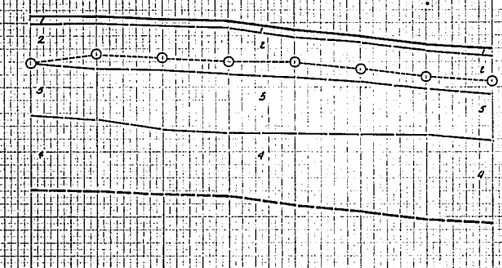
EOW "H" 7+00

49 75.5 | 50 75.6 | 51 75.5 | 52 75.3 | 53 74.5 | 54 73.9 | 55 73.1 | 56 73.0



EOW "G" 6+00

48 75.5 | 47 75.5 | 46 75.3 | 45 75.1 | 44 74.4 | 43 73.9 | 42 73.5 | 41 73.0



EOW "F" 5+00

BORROW PIT No. 1 CROSS SECTIONS CONT'D.

SCALE: 1" = 100' HORIZONTAL
1" = 5 VERTICAL

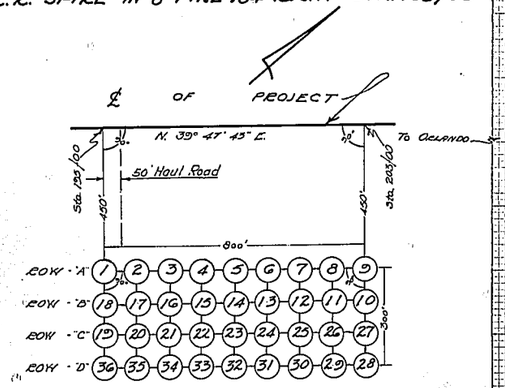
(SHEET 2 OF 2 SHEETS)

A. R. COGSWELL, Jacksonville

E-1401

B.M. Nº 23 ELEV. 79.24

R.R. SPIKE IN 8" PINE 18.4' RIGHT STA. 199/36



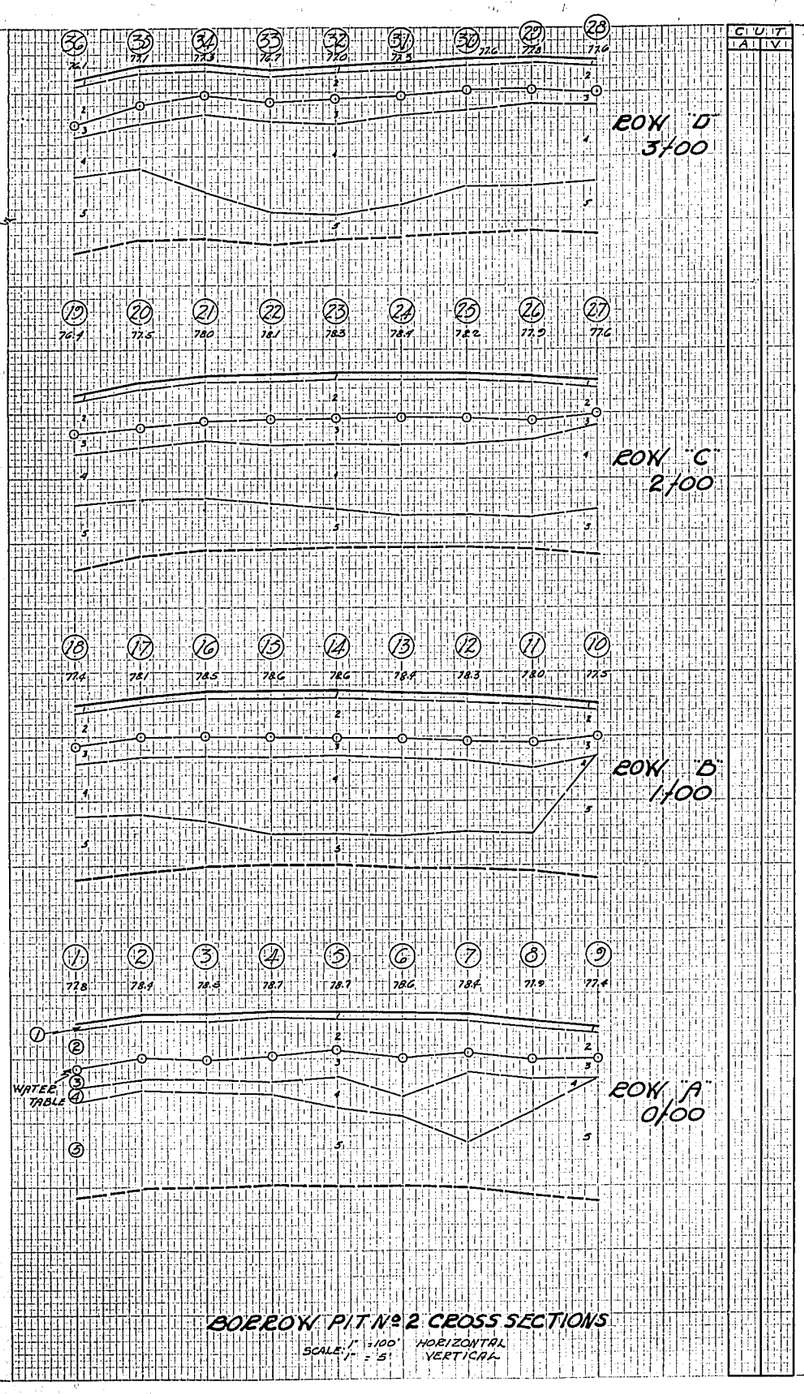
SCALE: 1" = 200'

Clearing & Grubbing: Medium

BORROW PIT Nº 2
SECTION 92130-3401 ROAD #400
OSCEOLA COUNTY

DESCRIPTION OF STRATA	
STRATUM Nº 1:	GREY SAND (TOPSOIL)
" " 2:	WHITE & GREY SAND
" " 3:	BROWN SAND (HARDPAN)
" " 4:	GREY SILTY SAND
" " 5:	COARSE TAN COLORED SAND

SUBMITTED BY:	RICHEY GREEN
DISTRICT:	FIFTH
SURVEYED BY:	LEE, SHEPHERD, & JOHNS
DATE SURVEYED:	DECEMBER 17, 1958



BORROW PIT Nº 2 CROSS SECTIONS

SCALE: 1" = 100' HORIZONTAL
1" = 5' VERTICAL

Form C-11

STATE	COUNTY	ROAD	PROJECT	SHEETING
FLORIDA	OSCEOLA	400	I-4-1(23) 75.6	38

I-4-2(19) 76

State Job Nos. 16320-3407 & 92130-3401

SOIL TEST RESULTS

Laboratory No.: 44220-S
Project No.: 92130-1401-41-11
Road No.: 400
District: Fifth
Submitted By: Richey Green

Date Sampled: 12/17/58
Date Received: 12/31/58
Date Tested: 1/6/59
Date Reported: 1/6/59
Sampled By: Leo

REPORT OF TESTS OF MATERIAL FROM BORROW PIT FOR USE IN EMBANKMENT AND SUBGRADE

Stratum No.	Bearing value Lbs. Per Sq. Inch	MECHANICAL ANALYSIS % Coarse Sand 2-.25mm 10M-60M	% Fine Sand .25-.05mm 60M-270M	% Total Sand	% Silt .05 to .005mm	% Clay less than .005mm	% Pass 40 Mesh	% Pass 60 Mesh	% Pass 200 Mesh	CONSTANTS MATERIAL PASSING NO. 40 SIEVE Liquid Limit	Plastic Index	Group
1	49											A-3
2	28											A-3
3	127											A-3
4	220+	33	50	83	4	13	88	67	20	20	4	A-2
5	46											A-3

EMBANKMENT AND SUBGRADE
(75 lbs. bearing value required)

The material from Strata 1, 2 and 5 appears satisfactory for use in embankment, but if used, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Strata 3 and 4 appears satisfactory for use in embankment and subgrade.

TESTED BY: Jones-Barber-Moring

Engineer of Materials & Tests

A. A. COGSWELL, Jacksonville

E-1402

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK	400	I-4-1(23)75 I-4-2(19)76	39

State Job Nos. 16320-3407-F
92130-3401

See Revision, Sheet No. 40

LEFT OR WEST BOUND LANE

130.0
125.0
120.0
115.0
110.0

S
W.T.

STRATUM Nº 5 - ORANGE SAND

AVERAGE 0.6 MUCK

STRATUM Nº 1 - MUCK

2120 2125 2130 2135 2140 2145 2150

See Revision, Sheet No. 40

RIGHT OR EAST BOUND LANE

130.0
125.0
120.0
115.0
110.0

AVERAGE 0.5 MUCK

2120 2125 2130 2135 2140 2145 2150

A. B. GOODRELL, Delaware

E-1403

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK	400	I-4-1(15)75E	40
				I-4-2(19)76	

State Job Nos. 16320-3407
92130-3401

Form 650

GRADE REVISION

140.0
135.0
130.0
125.0
120.0
115.0
110.0

2120 2125 2130 2135

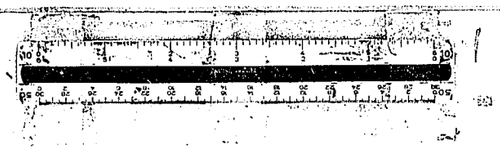
5 5 5 6

135.0
130.0
125.0
120.0
115.0
110.0

2120 2125 2130 2135

5 5 5

A. R. COCHRELL, Jacksonville



E-1404

Fed. Aid Proj. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Polk	400	I-4-1(25)75 & I-4-2(10)76	41

State Job Nos: 16320-3407 & 92130-3401

STATE ROAD DEPARTMENT OF FLORIDA
DIVISION OF TESTS

Laboratory No.: 387D2-S
Project No.: ~~I-4-1(25)75~~ I-4-1(25)75
Road No.: 40D
District: First
Submitted By: H. M. Johnson

Date Sampled: 11/18-12/17/57
Date Received: 1/8/58
Date Tested: 1/9/58
Date Reported: 1/10/58
Sampled By: Connar-McCua

REPORT OF TESTS OF MATERIAL FROM ROADWAY FOR USE IN EMBANKMENT AND SUB-GRADE

This Report of Test is from Sta. 2120+00 - Sta 2150+00.

Stretum No.	Bearing value Lbs. Per Sq. Inch	MECHANICAL ANALYSIS % Coarse Sand 2-.25mm 10M-60M	% Fine Sand .25-.05mm 60M-270M	% Total Sand	% Silt .05 to .005mm	% Clay less than .005mm	% Pass #40 Mesh	% Pass #60 Mesh	% Pass #200 Mesh	CONSTANTS MATERIAL PASSING No. 40 SIEVE Liquid Limit	Plastic Index	Group
1	-											A-8
2	28											A-3
3	220+	48	27	75	1	24	86	52	26	32	17	A-2
4	220+	51	36	87	2	21	79	49	23	29	15	A-2
5	12											A-3

EMBANKMENT AND SUBGRADE
(75 lbs. bearing value required)

The material from Stratum 1 is muck and is not satisfactory for use as embankment, subgrade or stabilizer under any conditions. Recommend complete removal and backfilling with suitable material of the A-1, A-2 or A-3 soil group. If material of the A-3 soil group having bearing values less than 75 pounds per square inch is used as backfill, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Strata 2 and 5 appears satisfactory for use in embankment, but if used, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Strata 3 and 4 appears satisfactory for use in embankment or subgrade.

TESTED BY: Barbar

Engineer of Materials & Tests

E-1405

Dist.	State	County	Route	Proj.	Sheet No.
	Fla.	OSCEOLA & POLK	400	I-4-2(19)76 & I-4-1(25)75	42

State Job Nos. 92130-3401 & 16320-3407

STATE ROAD DEPARTMENT OF FLORIDA

DIVISION OF TESTS

DATE OF SURVEY: DEC. 2-31, 1957

SURVEY MADE BY: DURHAM, HILLIARD & PADGETT

SUBMITTED BY: RICHEY GREEN

PROJECT NO. I-4-1(25)75 & I-4-2(19)76

DIVISION NO. 5

ROAD NO. 400

COUNTY OSCEOLA & POLK

PROFILE SUBGRADE SURVEY FOR THE DESIGN OF ROAD

PROJECT BEGINS STA. 2145+00 PROJECT ENDS STA. 225+00

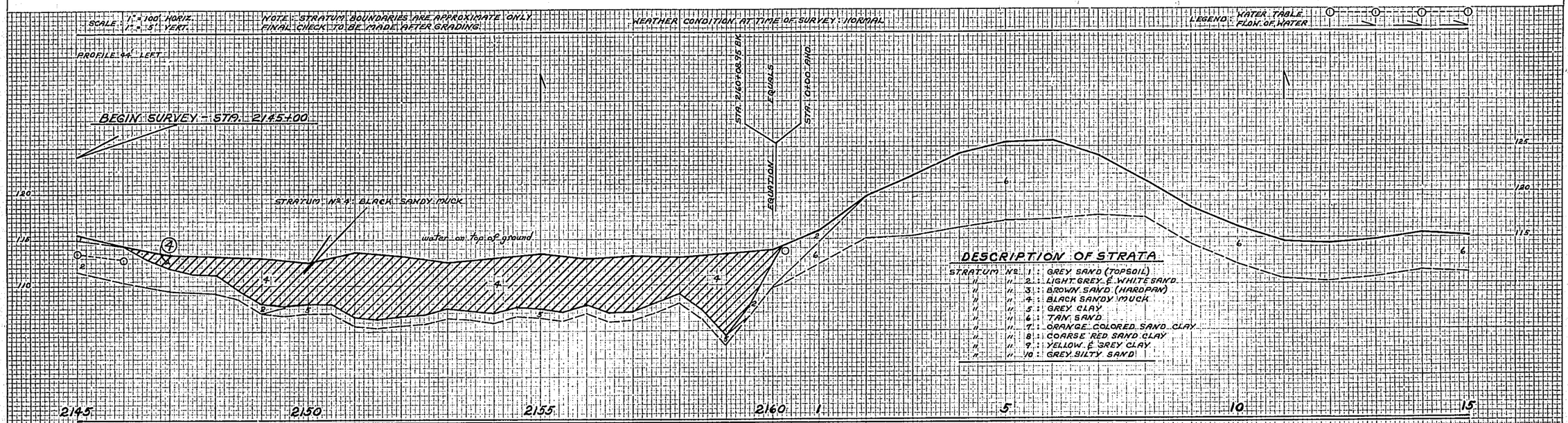
SCALE: 1" = 100' HORIZ. 1" = 5' VERT.

NOTE: STRATUM BOUNDARIES ARE APPROXIMATE ONLY FINAL CHECK TO BE MADE AFTER GRADING.

WEATHER CONDITION AT TIME OF SURVEY: NORMAL

LEGEND: WATER TABLE, FLOW OF WATER

PROFILE 44' LEFT



DESCRIPTION OF STRATA

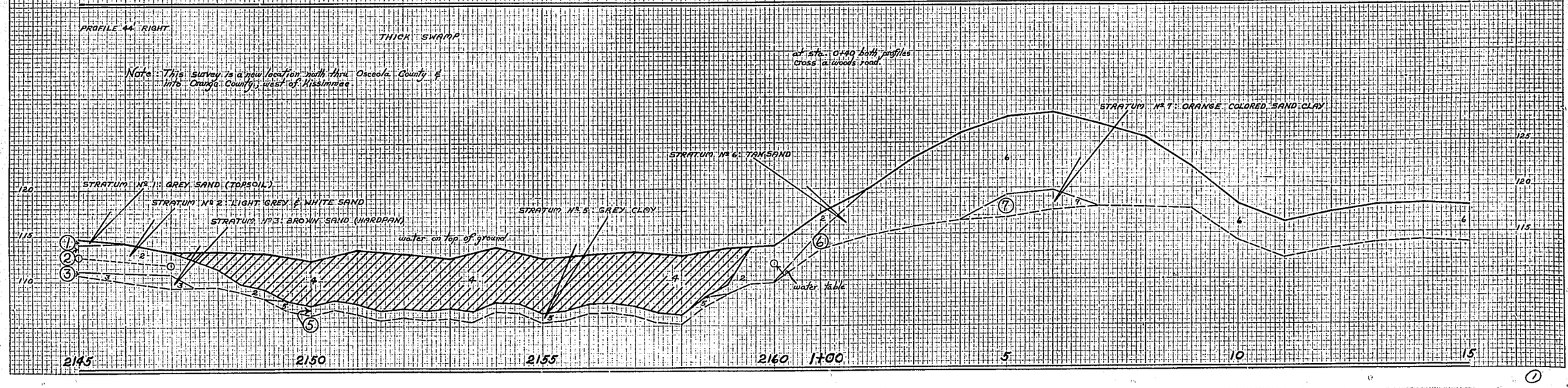
STRATUM No. 1: GREY SAND (TOPSOIL)
" " 2: LIGHT GREY & WHITE SAND
" " 3: BROWN SAND (HARDPAN)
" " 4: BLACK SANDY MUCK
" " 5: GREY CLAY
" " 6: TAN SAND
" " 7: ORANGE COLORED SAND CLAY
" " 8: COARSE RED SAND CLAY
" " 9: YELLOW & GREY CLAY
" " 10: GREY SILTY SAND

PROFILE 44' RIGHT

THICK SWAMP

Note: This survey is a new location with Hon. Osceola County & into Orange County, west of Kissimmee

at sta. 0+40 both profiles cross a woods road.



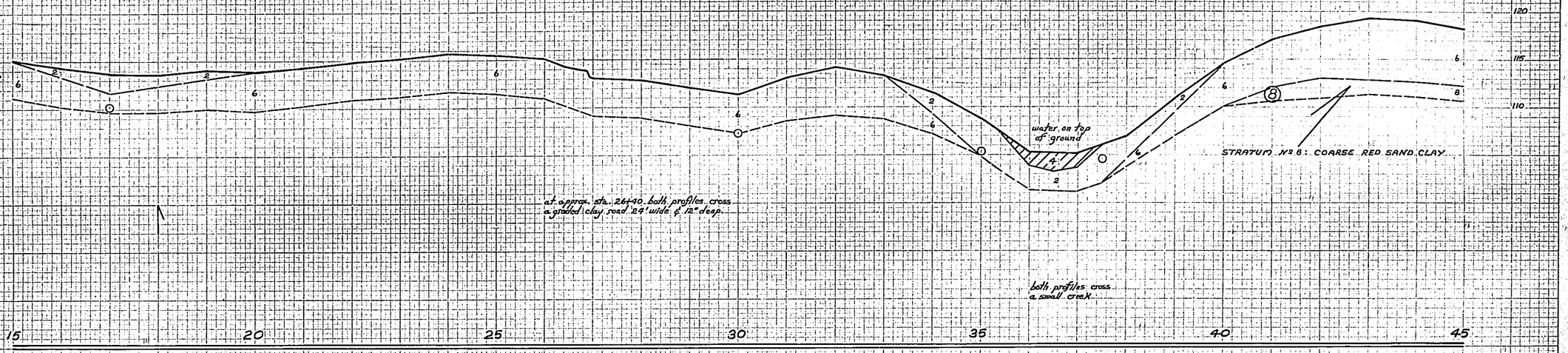
(1)

E-1406

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	F-4-2(19)76 & I-4-1(25)75	43

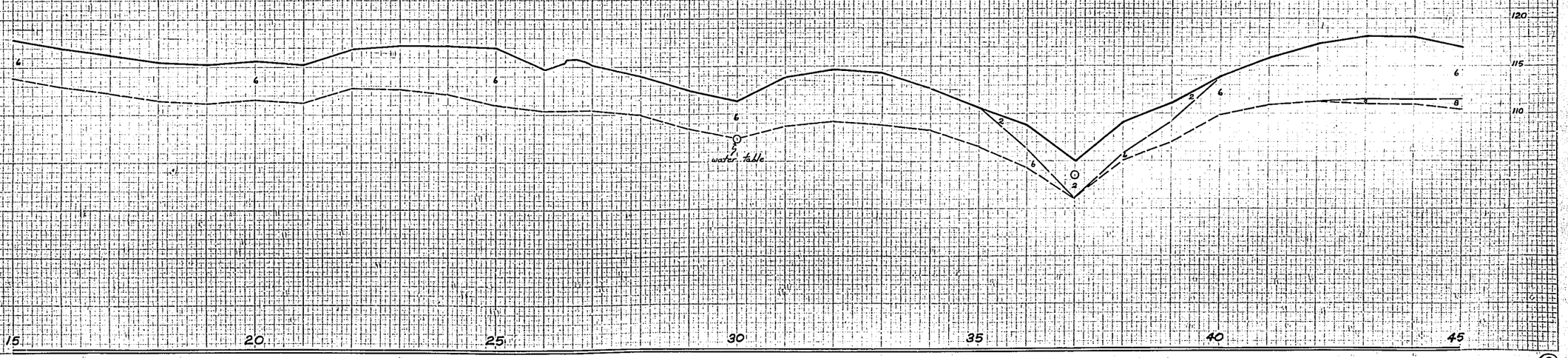
State Job Nos. 92130-3401 & 16320-3407

PROFILE 44' LEFT



PROFILE 44' RIGHT

ORANGE GROVES



(2)

E-1407

Fed. Aid Proj. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	I-4-3(9)76 & I-4-1(25)75	44

State Job Nos. 92130-3401 & 16320-3407

PROFILE 44' LEFT

ORANGE GROVES

SCRUB OAK & PALMETTOS

CYPRESS BAYHEAD

120
115
110
105
100
95

45 50 55 60 65 70 75

PROFILE 44' RIGHT

both profiles cross a small creek.

both profiles cross Davenport Creek.

120
115
110
105
100
95

45 50 55 60 65 70 75

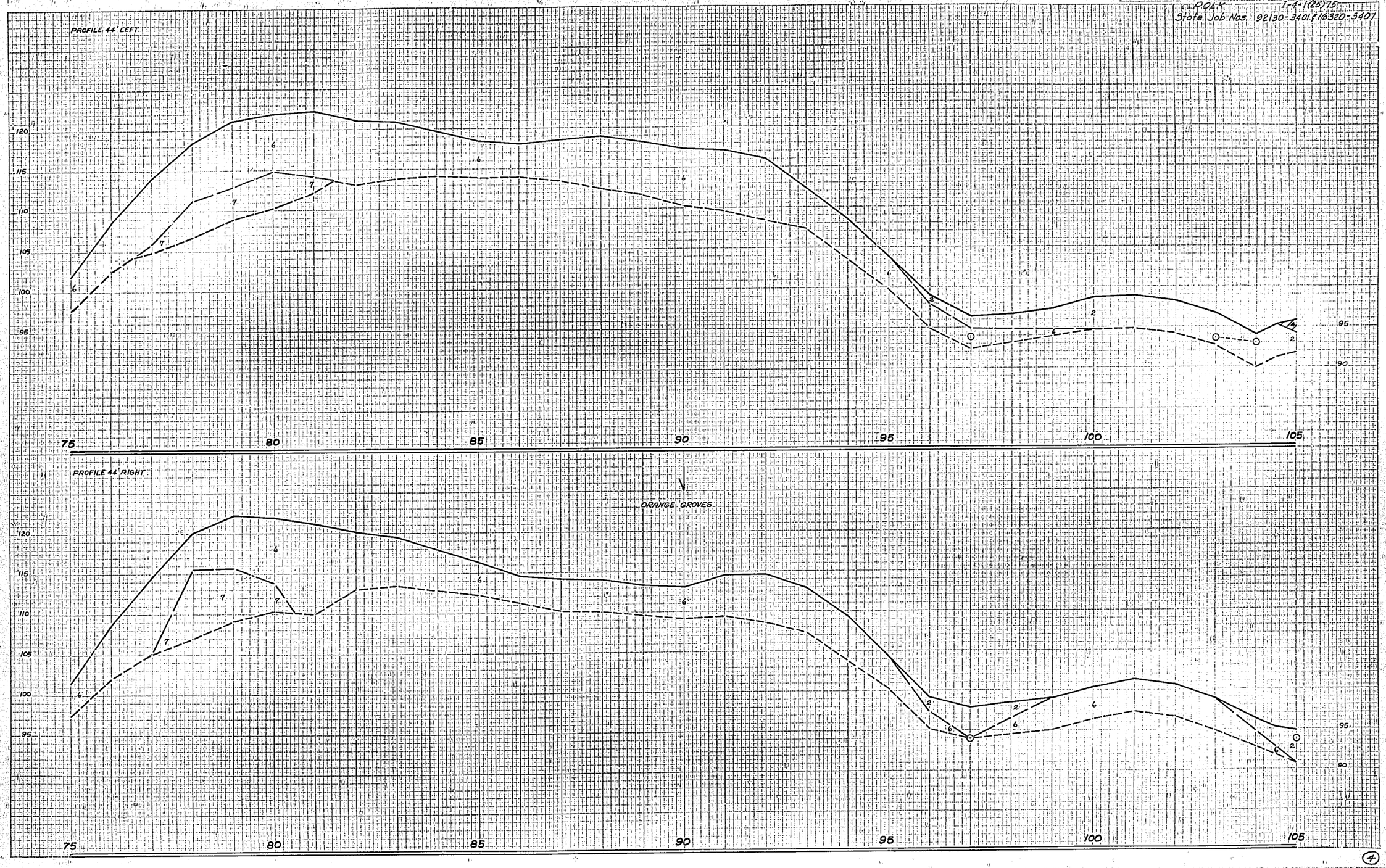
③

E-1408

Fed. Road Proj. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	I-4-2(19)76 & I-4-1(25)75	45

State Job Nos. 92130-3401 & 16320-3407

PROFILE 44 LEFT



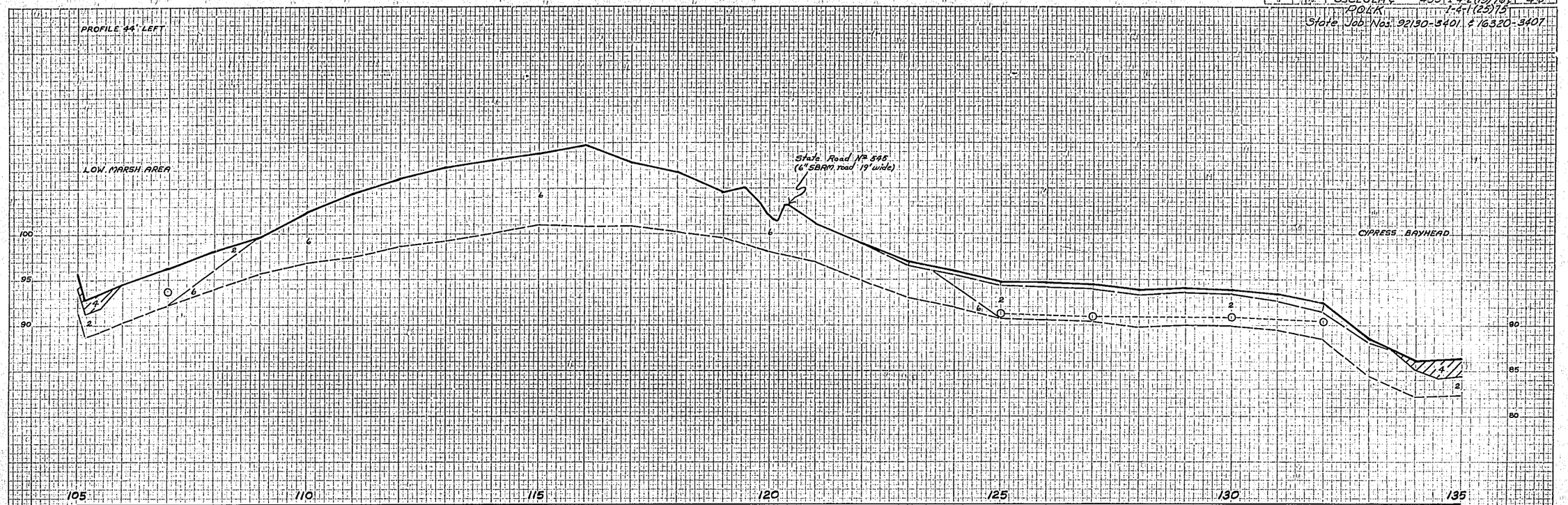
PROFILE 44 RIGHT

ORANGE GROVES

Fed. Road Dem. No.	State	County	Iteм	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	F-4-2(19)76 & F-4-1(25)75	46

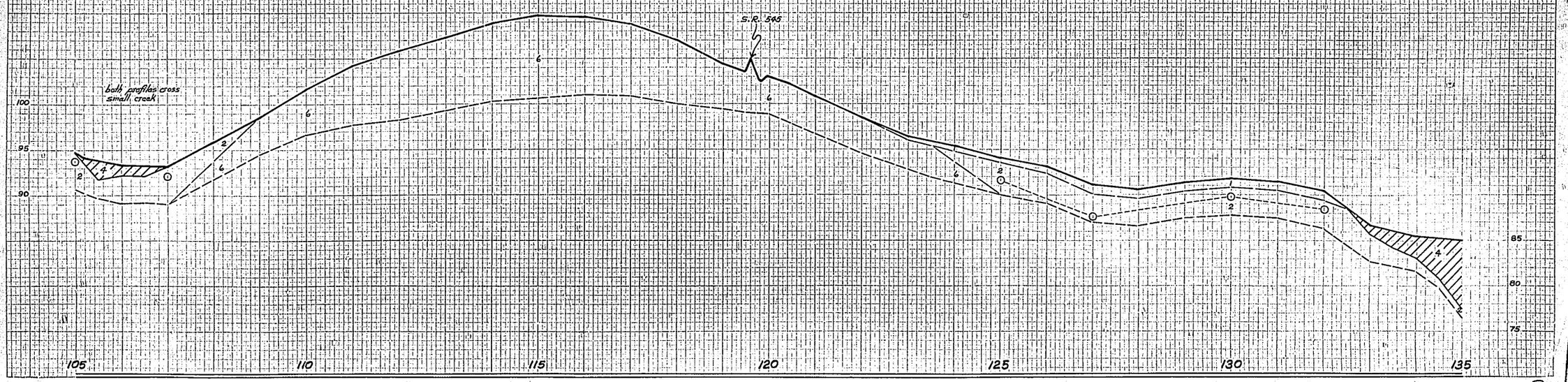
State Job Nos. 92130-3401 & 16320-3407

PROFILE 44' LEFT



PROFILE 44' RIGHT

PALMETTO & BLACK JACK OAK



5

E-1410

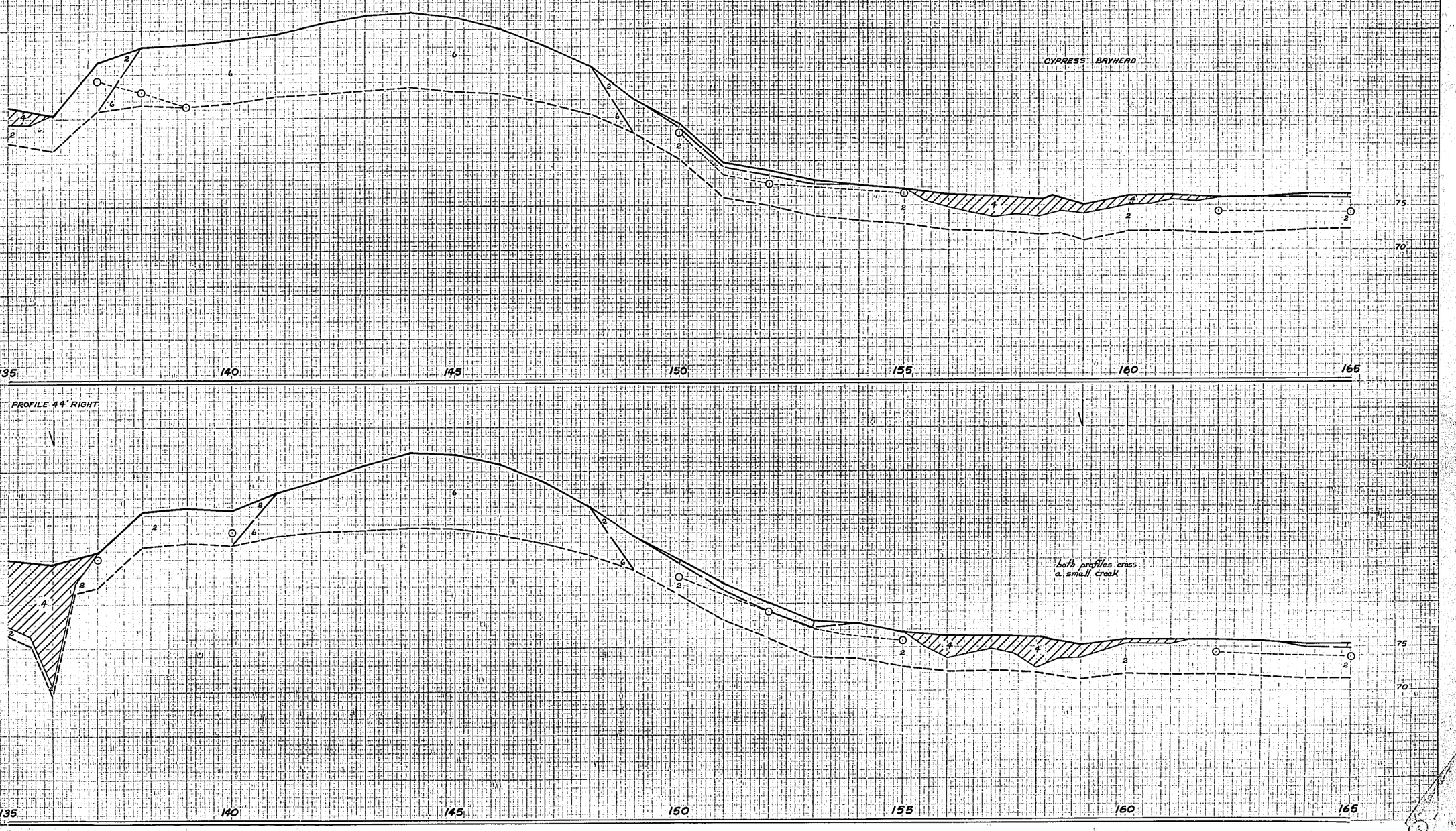
Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	I-4-2(19)766 & I-4-1(25)75	47

State Job Nos. 92130-3401 & 16320-3407

PROFILE 44' LEFT

ORANGE GROVES

CYPRESS BAYHEAD



PROFILE 44' RIGHT

Both profiles cross a small creek

E-1411

Fed. Road Proj. No.	State	County	Total	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	I-4-2(19)176 & I-4-1(25)15	48

State Job Nos. 92130-3401 & 16320-3407

PROFILE 44' LEFT

SCATTERED PINE & PALMETTO

STRATUM No 9: YELLOW & GREY CLAY

CYPRESS BAYHEAD

80 75 70

165 170 175 180 185 190 195

PROFILE 44' RIGHT

water on top of ground in this area.

both profiles cross Reedy Creek

80 75 70

165 170 175 180 185 190 195

E-1412

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	OSCEOLA & POLK	400	I-4-2(19)76 & I-4-(25)74	49

State Jobs Nos. 92130-3401 & 16320-3407

Scale: 1" = 100' Horiz.
1" = 5' Vert.

NOTE: Stratum Boundaries are approximate only. Final Check To Be made after grading.

Weather Conditions at Time of Survey: Normal

LEGEND: Water Table, Flow of Water

PROFILE 11' LEFT

Stratum No. 4: Black Sandy Muck

CYPRESS | BAYHEAD

Stratum No. 1: Grey Sand (Top soil)

Stratum No. 2: Light grey & white sand

Stratum No. 3: Yellow and grey clay

Stratum No. 6: Tan sand

STRATUM No. 10: GREY SILTY SAND

PROFILE 11' RIGHT

SCATTERED PINE & PALMETTO

195 200 205 210 215 220 225

A. B. CUSHWELL, Inc.

E-1413

Fed. Aid Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	Osceola & Polk	400	I-4-2(19)76R & I-4-(25)75	50

State Jobs Nos. 92130-3401 & 16320-3407

STATE ROAD DEPARTMENT OF FLORIDA

DIVISION OF TESTS

Laboratory No.: 38962-S
Project No.: ~~9213-401 & 7528-403~~ I-4-2(19)76
Road No.: 400
District: Fifth
Submitted By: Richey Green

Date Sampled: 12/31/57
Date Received: 1/24/58
Date Tested: 1/28/58
Date Reported: 1/29/58
Sampled By: Durham

REPORT OF TESTS OF MATERIAL FROM ROADWAY FOR USE IN EMBANKMENT AND SUBGRADE

This Report of Test is from Sta. 2145+00 - Sta. 225+00.

Strotum No.	Bearing value Lbs. Per Sq. Inch	MECHANICAL ANALYSIS % Coarse Sand 2-.25mm 10M-60M	% Fine Sand .25-.05mm 60M-270M	% Total Sand	% Silt .05 to .005mm	% Clay less than .005mm	% Pass 40 Mesh	% Pass 60 Mesh	% Pass 200 Mesh	CONSTANTS MATERIAL PASSING NO. 40 SIEVE Liquid Limit	Plastic Index	Group
1	35											A-3
2	16											A-3
3	108											A-3
4	—											A-8
5	2204	7	16	23	34	43	97	93	85	78	44	A-7
6	27											A-3
7	159	59	27	86	2	12	71	41	15	18	N. P.	A-2
8	218	38	36	74	4	22	76	62	26	35	16	A-2
9	2204	25	44	69	13	18	93	75	36	38	23	A-6
10	170	45	36	81	7	12	84	55	21	26	10	A-2

EMBANKMENT AND SUBGRADE
(75 lbs. bearing value required)

The material from Strata 1, 2 and 6 appears satisfactory for use in embankment, but if used, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Stroto 3, 7, 8 and 10 appears satisfactory for use in embankment or subgrade.

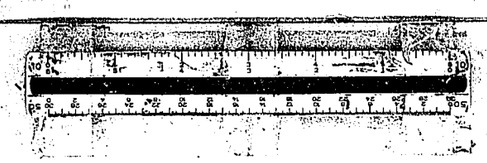
The material from Stratum 4 is muck and is not satisfactory for use as embankment, subgrade or stabilizer under any conditions. Recommend complete removal and backfilling with suitable material of the A-1, A-2 or A-3 soil group. If material of the A-3 soil group having bearing values less than 75 pounds per square inch is used as backfill, the upper portion of grade should be constructed with selected material or stabilized with suitable material in the proper proportions so that a minimum bearing value of 75 pounds per square inch will be obtained in the 12 inches immediately below the proposed pavement or base.

The material from Stratum 5 is of the A-7 subsoil group with liquid limits greater than 50 and is not satisfactory for use in embankment or subgrade under any conditions. Where this material occurs in a cut it should be removed to a minimum depth of 18 inches below finished subgrade the entire width of roadway from ditch slope to ditch slope. The remaining surface to a depth of 6 inches should be compacted to maximum density, and then backfilled with material of the A-1, friable A-2 or A-3 subsoil group. If material of the A-3 subsoil group having bearing values less than 75 pounds per sq.inch is used as backfill, it will be necessary to stabilize the upper portion of grade with suitable material in the proper proportions so as to provide a minimum of 12 inches of 75 pounds or greater bearing value material of a satisfactory subsoil group immediately below the proposed pavement or base.

The material from Stratum 9 is of the A-6 subsoil group and is not satisfactory for use in embankments unless compacted in accordance with standard specifications, and then covered with a minimum of 18 inches of material of the A-1, friable A-2 or A-3 subsoil group the entire width of roadway from slope to slope. Where this A-6 material occurs in a cut it should be removed to a minimum depth of 18 inches below finished subgrade the entire width of roadway from ditch slope to ditch slope. The remaining surface to a depth of 6 inches should be compacted to maximum density and then backfilled with material of the A-1, friable A-2 or A-3 subsoil group. If material of the A-3 subsoil group having bearing values less than 75 pounds per sq. inch is used as backfill in a cut or as cover on a fill, it will be necessary to stabilize the upper portion of grade with suitable material in the proper proportions so as to provide a minimum of 12 inches of 75 pounds or greater bearing value material of a satisfactory subsoil group immediately below the proposed pavement or base.

TESTED BY: Jones-Barber-Cribbs

Engineer of Materials & Tests



E-1414

CROSS SECTIONS

Scale 1 Inch = 5 feet
= 20' Horiz.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)175 I-4-2(15)176	31

STATE JOBS NO. 16320-3407 & 92130-3401

A-B MAT'L								AREA		VOLUME	
EXC.		S.S. EXC.		FILL				C.	P.	C.	P.
A	V	A	V	A	V						
				123							
						18+00		12	214		
										9	
						END Mucк	17+70	0			
0		0		306	470						959
	1	187								0	
1	144		113								
						17+00		0	504		
	4	715		437							
										0	1219
1		242		123							
						16+00		0	354		
4		1233		580							
										0	1515
		434		190							
						15+00		0	464		
		1002		456		CALCULATED VOLUMES FOR OSCEOLA COUNTY.					
						CALCULATED VOLUME OSCEOLA COUNTY					1105
						14+44.82		-	-		

LINE "A"
INTERCHANGE AT
INTERSTATE STA. 7+00

NOTE BOOK NOS.
4, 9, 20, 24

Application No.	
Route No.	
Original Plotted by	A.C.T.
" Checked by	A.R.C.
Template by	A.C.T.
Area by	A.C.
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1415

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)176 I-4-2(19)178	52

STATE JOBS NO. 16320-3407 & 92130-3401

A-B MAT'L		AREA		VOLUME	
FILL		C	F	C	F
A	V.				
0					
55	19+97 END MUCK FILL LT.				
	39				
61					
	41				
60					
71	19+57 END MUCK FILL RT.				
	27				
62					
	66				
60					
	46				
63					
	53				
60					
	60				
83					
	63				
66					
	143				

Line 'D' 123.36 118.78 117.66 — 115.2 — C.I.

Line 'D' 123.35 118.78 117.66 — 114.6

Line 'D' 123.30 118.78 117.66 — 114.0

Line 'D' 123.26 118.78 117.66 — 113.8

Line 'D' 123.5 118.78 117.66 — 113.4

Line 'D' 123.08 118.78 117.66 — 113.1

Line 'D' 118.78 117.66 — A 2:1 ½

112.8

Line 'D' 118.64 117.66 — A 4:1

112.6

Line 'D' 118.62 117.66 — A 6:1 ½ — 6:1

112.5

Line 'A'

200 150 100 50 50 100 150 200 250 300

END MUCK FILL LT. 19+97 — 56 412 — 370

19+77 — 36 267 — 42 350

END MUCK FILL RT. 19+57 — 27 241 — 32 302 — 281

19+46 — 28 117 — 29 284

19+17 — 28 281 — 23 240

18+97 — 16 169 — 21 215

18+77 — 15 156 — 20 206

18+57 — 14 153 — 18 206

LINE 'A' INTERCHANGE AT INTERSTATE STA. 7+00

18+37 — 14 154 — 21 210

EQUATION STA. 18+36.90 LINES 'A' & 'D' — 26 291

NOTE BOOK NOS. 419, 20, 24

Application No.
Route No.
Original Plotted by JNSE
" Checked by E.D.H.
Template by JNSE
Area by JNSE
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL JACKSONVILLE, FLA.

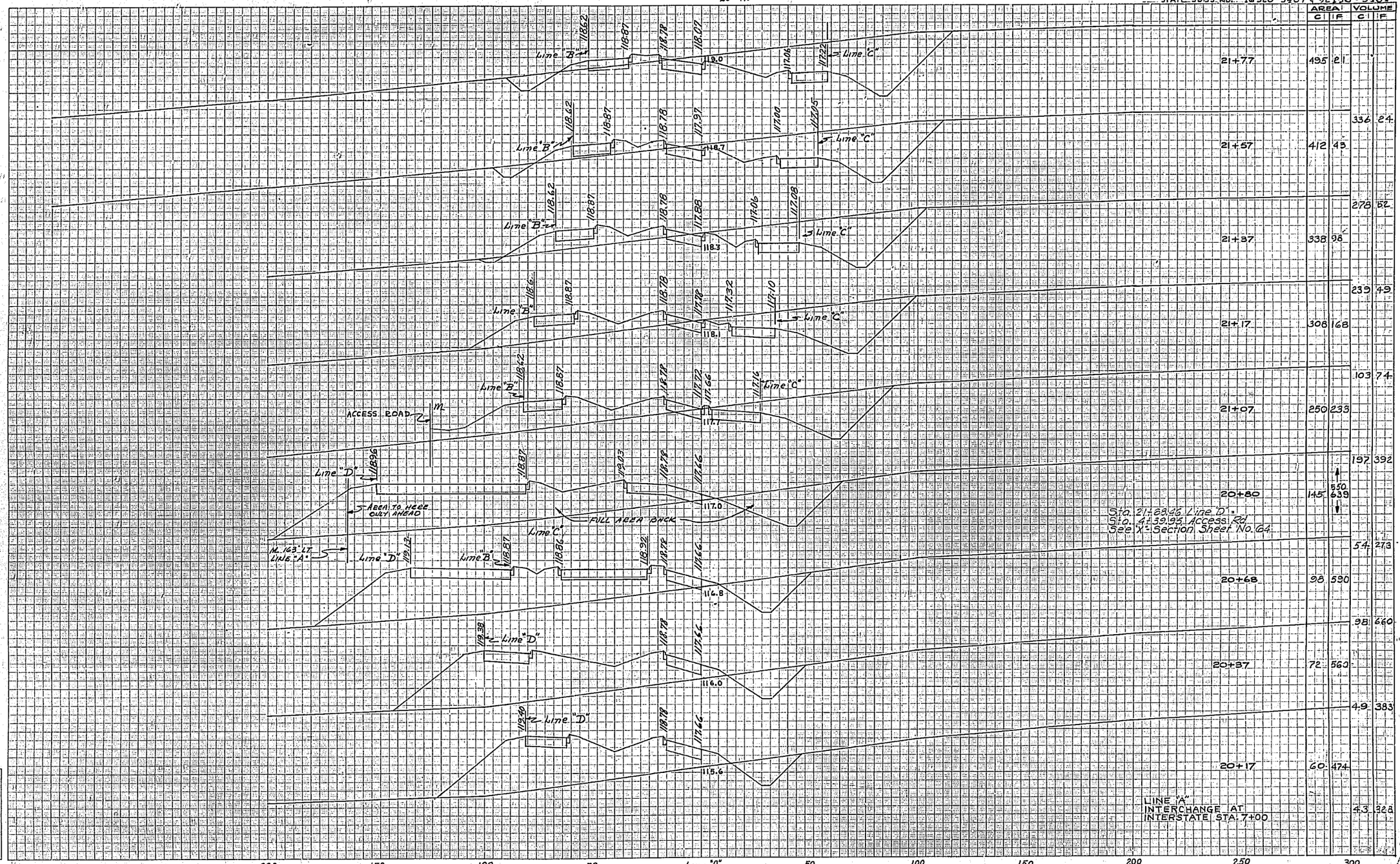
E-1416

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)174	55

STATE JOBS NO. 16320-3407 & 92130-3401



	AREA C	AREA F	VOLUME C	VOLUME F
21+77	495	21		
			336	24
21+57	412	45		
			278	52
21+37	338	98		
			239	49
21+17	306	68		
			103	74
21+07	250	233		
			197	392
20+80	145	639	54	273
20+68	98	590		
			98	660
20+37	72	560		
			49	383
20+17	60	474		
			43	328

NOTE BOOK NOS.
4, 19, 20, 24

Application No.
Route No.
Original Plotted by H.G.J.
" Checked by E.B.H.
Template by H.G.J.
Area by H.G.J.
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1417

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	1-4-2(19)76 1-4-2(19)75	54

STATE JOBS NO. 16320-3407 & 92130-3407

A-B MATERIAL VOLUME

RDWY EX.	S.S. EXC.	FILL
0	3137	2317

GRADING SUMMARY LINE "A"
CARRIED TO SHT. NO. 86

GRADING SUMMARY LINE "A" SHT. 51 THRU 54.
TOTALS CARRIED TO SHT. NO. 87
FOR MUCK (A-B) SEE LT. SIDE THIS SHEET.

FOR COUNTY RD. X-SECTIONS
SEE SHEET NO. 51

	AREA C	AREA F	VOLUME C	VOLUME F
			8,683	8,875
23+00=0+00 AHD ON COUNTY R'D.	804	0		
			1318	0
24+50	652	0		
			1169	0
23+95	1	0		
	496			
	586			
			984	0
23+45	476	0		
			1005	0
22+95	609	0		
			1141	0
22+45	683	0		
			631	0
22+17	593	0		
			274	1
22+04	547	3		
LINE 'A' INTERCHANGE AT INTERSTATE STA. 7+00			521	12

NOTE BOOK NOS.
4, 9, 20, 24

Application No.	
Route No.	
Original Plotted by	WDD
" Checked by	R.B.H.
Template by	WDD
Area by	
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

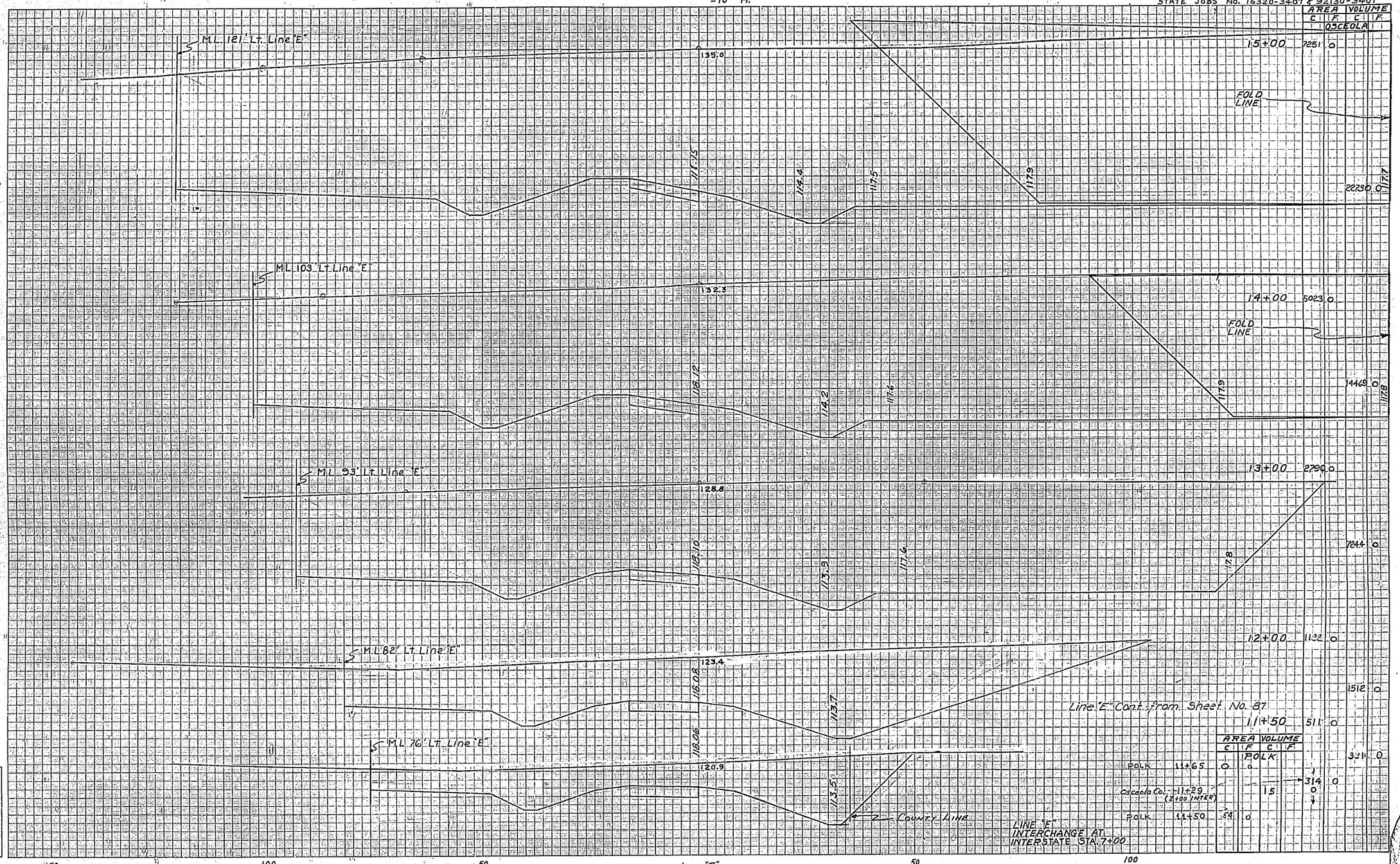
E-1418

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10' H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2-(19)174	55

STATE JOBS NO. 16320-3407 & 92130-3401



AREA		VOLUME	
C	F	C	F
	OSCEOLA		
	POLK		

NOTE BOOK NOS.
4, 19, 20, 24

Application No.	
Book No.	
Original Plotted by	A.J.S.
" Checked by	E.W.H.
Template by	A.J.S.
Area by	11/56 & 11/57
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1419

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10' H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(12)75 I-4-2(12)76	56

STATE JOBS NO. 16320-3407 & 92150-3401

GRADING SUMMARY	AREA C	AREA F	VOLUME C	VOLUME F
LINE E, STA 55+50 POLK	15	0		
TOTALS CARRIED TO SHT NO 59 OSCEOLA	88767	CUT		
NO MUCK		0	FILL	

(18+00)
OMIT

SEE STA 3700 COUNTY RD
FOR CONT OF GRADING
SEE SHT NO 57

16+86 2883 0

137.8

M-53' Lt. Line 'E'

118.76

1149

13152 0

136.4

16+00 5363 0

FOLD LINE

M-77' Lt. Line 'E'

118.21

1144

1175

1178

1177

LINE 'E'
INTERCHANGE AT
INTERSTATE STA. 7+00 23359 0

150 100 50 Line "E" 50 100

NOTE BOOK NOS.
419, 20, 24

Application No.	
Route No.	
Original Plotted by	H.B.R.
Checked by	L.D.H.
Tabulated by	H.B.R.
Area by	H.B.R. 9/11/69
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

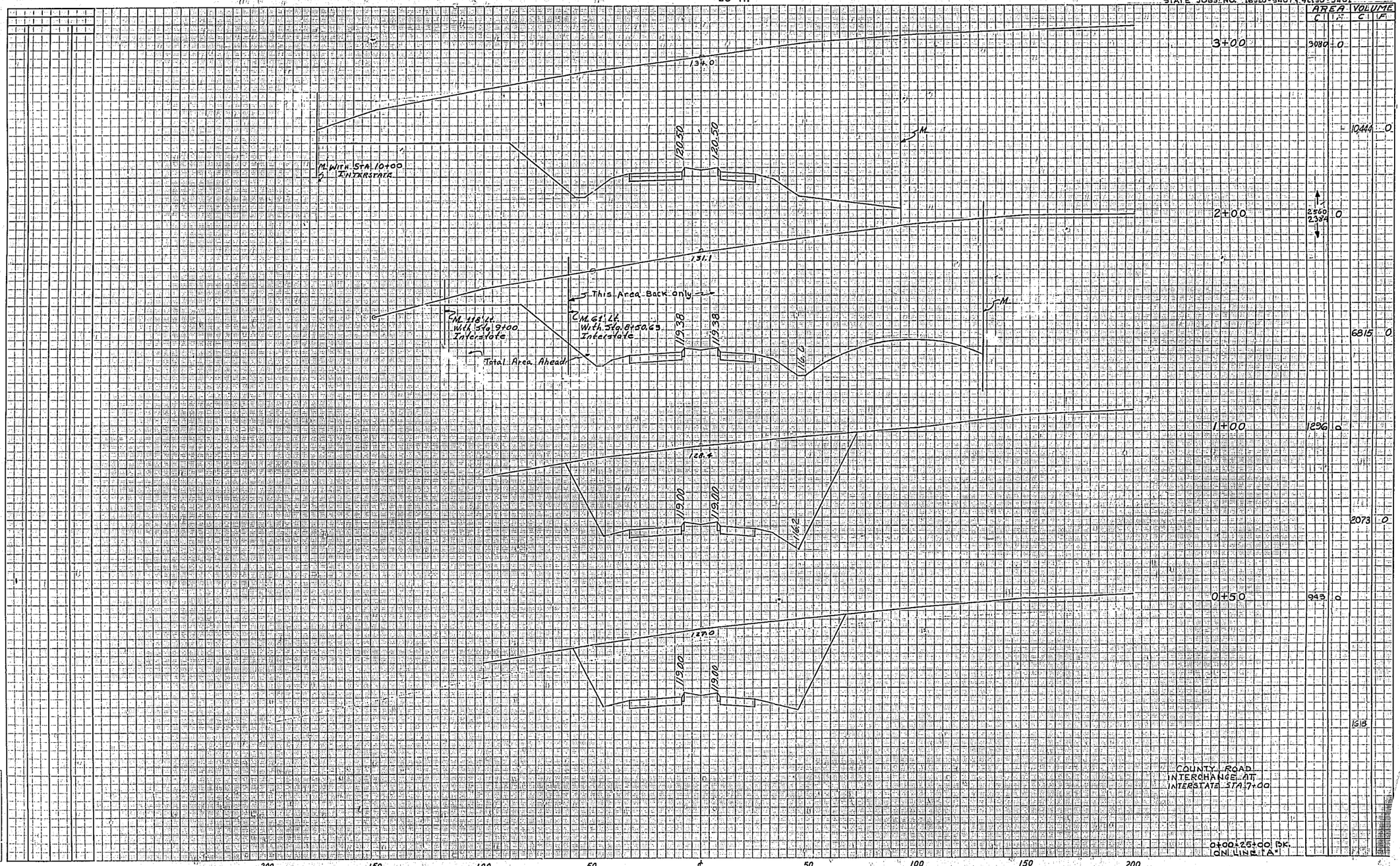
E-1420

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 20' H.

Fed. Road Dsn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)176	57

STATE JOBS NO. 16320-3407 & 98130-3401



NOTE BOOK NOS.
419 20 24

Applicant's No. _____
Route No. _____
Original Plotted by MEE
" Checked by C. C.
Template by MEE
Area by _____
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. CODWELL
JACKSONVILLE, FLA.

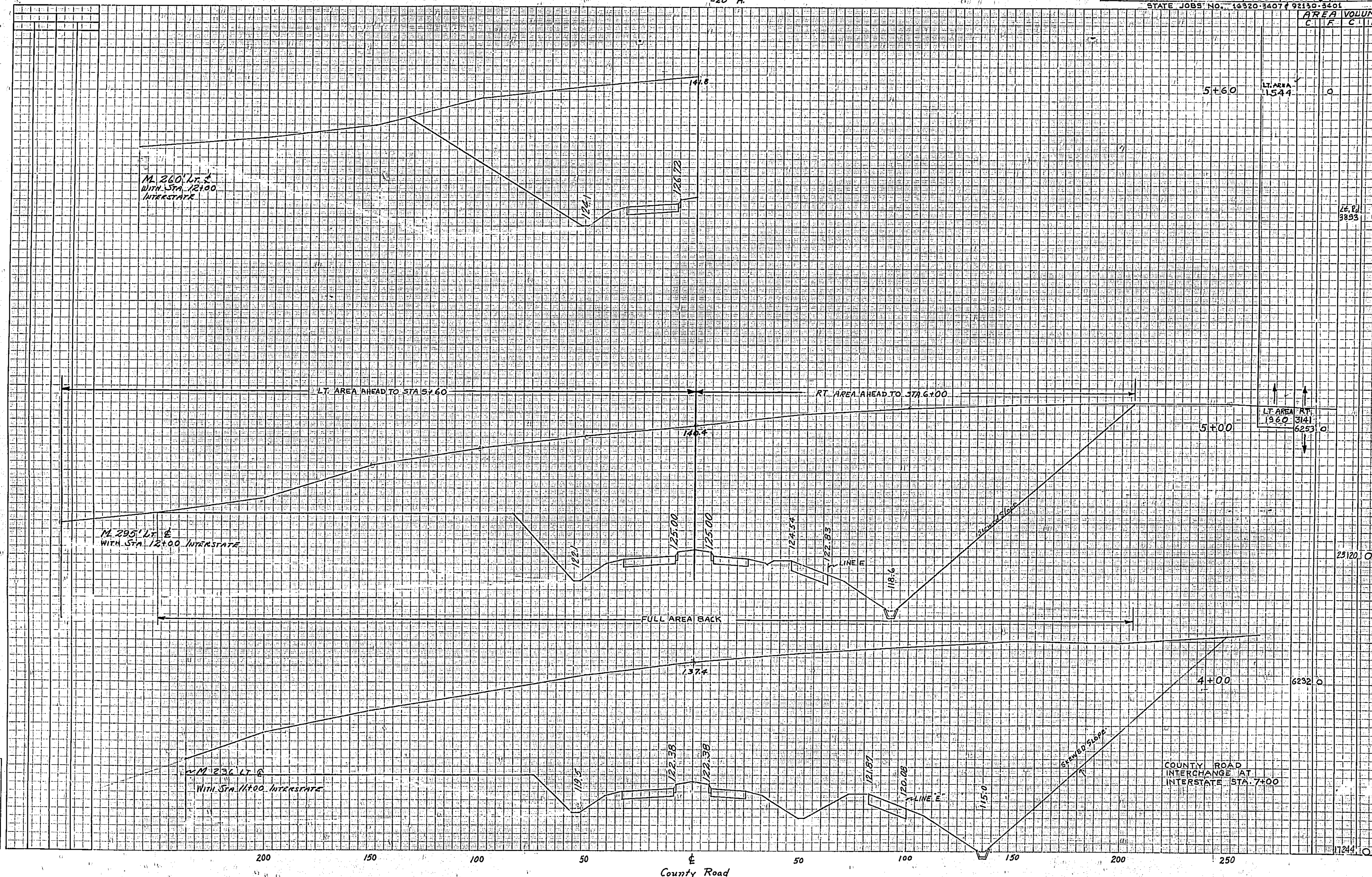
E-1421

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-(22)75 I-4-2(15)76	58

STATE JOBS NO. 16320-3407 & 92130-3401



AREA VOLUME
C. F. C. F.
141.8
5+60
LT. AREA 1544
0
M. 260' LT. ℄
WITH STA. 12+00
INTERSTATE
124.1
126.72
Lt. Rd. 3893 0
LT. AREA AHEAD TO STA. 5+60
RT. AREA AHEAD TO STA. 6+00
LT. AREA 1960
RT. 3141
6253 0
5+00
140.4
M. 295' LT. ℄
WITH STA. 12+00 INTERSTATE
122.1
125.00
125.00
124.54
122.83
LINE E
118.6
Skewed Slope
23120 0
FULL AREA BACK
137.4
4+00
6232 0
M. 236' LT. ℄
WITH STA. 11+00 INTERSTATE
119.5
122.38
122.38
121.87
120.08
LINE E
115.0
SKEWED SLOPE
COUNTY ROAD
INTERCHANGE AT
INTERSTATE STA. 7+00
17244 0
200
150
100
50
℄
50
100
150
200
250
County Road
NOTE BOOK NOS.
4, 19, 20, 24

Application No.	
Scale No.	
Original Plotted by	N.E.S.
Checked by	E.R.H.
Template by	N.E.S.
Area by	N.J.J. WNG 4/19
Quantity Plotted by	
Checked by	
Area by	
Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

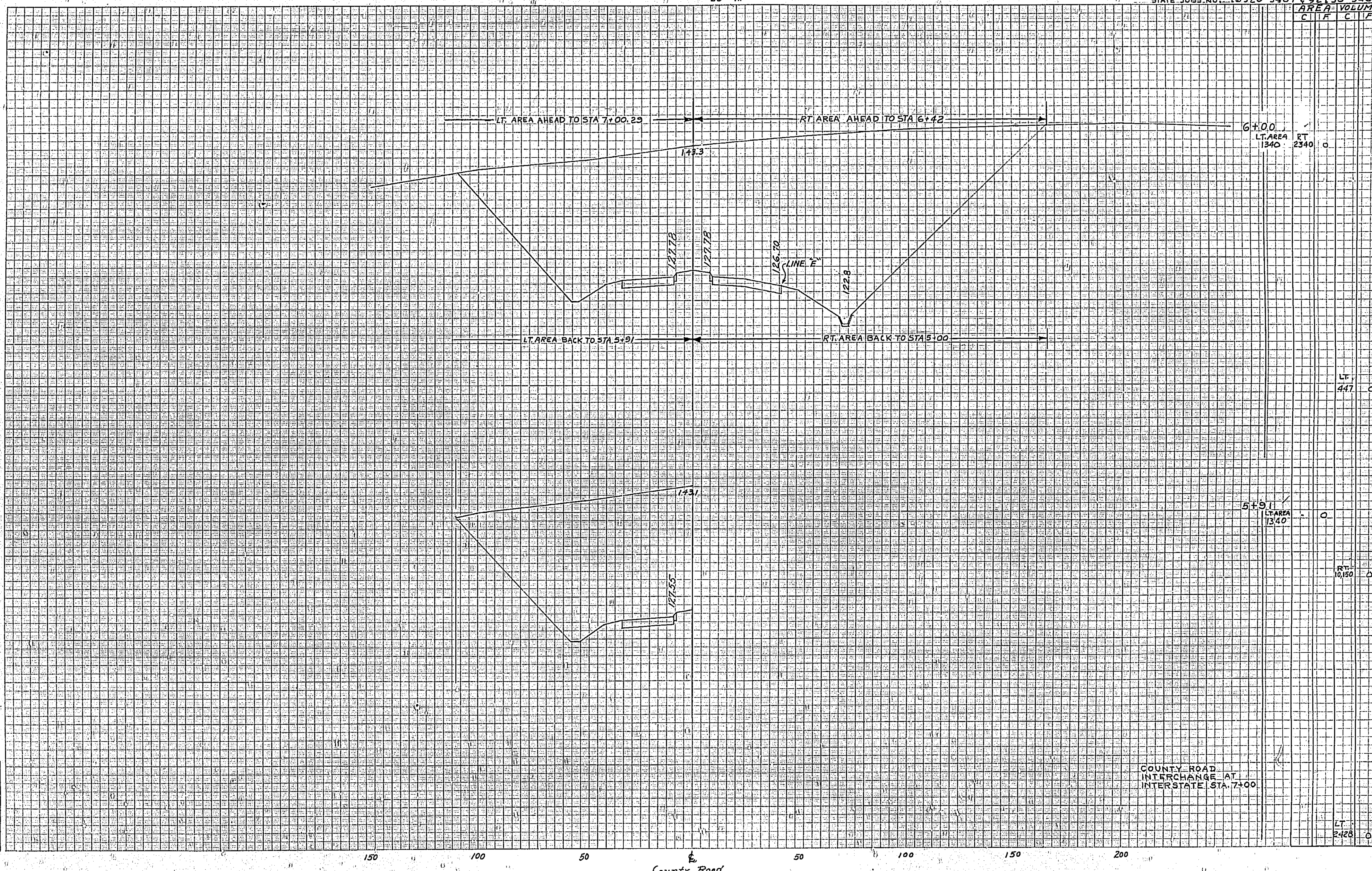
E-1422

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (2.5) 75 I-4-2 (1.9) 76	59

STATE JOBS NO. 16520-3407 & 92130-3401



NOTE BOOK NOS.
4,19,20,24

Application No.
Scale Fie...
Original Plotted by
Checked by
Template by
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1423

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 20' H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)76	60

STATE JOBS NO. 16520-3407 & 92130-3401

	AREA C	AREA F	VOLUME C	VOLUME F
7+00				
			E.T. 3623	0
6+52	E.T. 2132	0		
			E.T. 793	0
6+42	RT. 2152	0		
			E.T. 3494	0

NOTE BOOK NOS.
419, 204

Application No. .....
Route No. .....
Original Plotted by NES
" Checked by .....
Template by NES
Area by WE 6-22-59
Final Plotted by .....
" Checked by .....
Area by .....
" Checked by .....

A. R. COGSWELL
JACKSONVILLE, FLA.

COUNTY ROAD
INTERCHANGE AT
INTERSTATE STA. 7+00

200 150 100 50 ℄ 50 100 150 200

℄ County Road

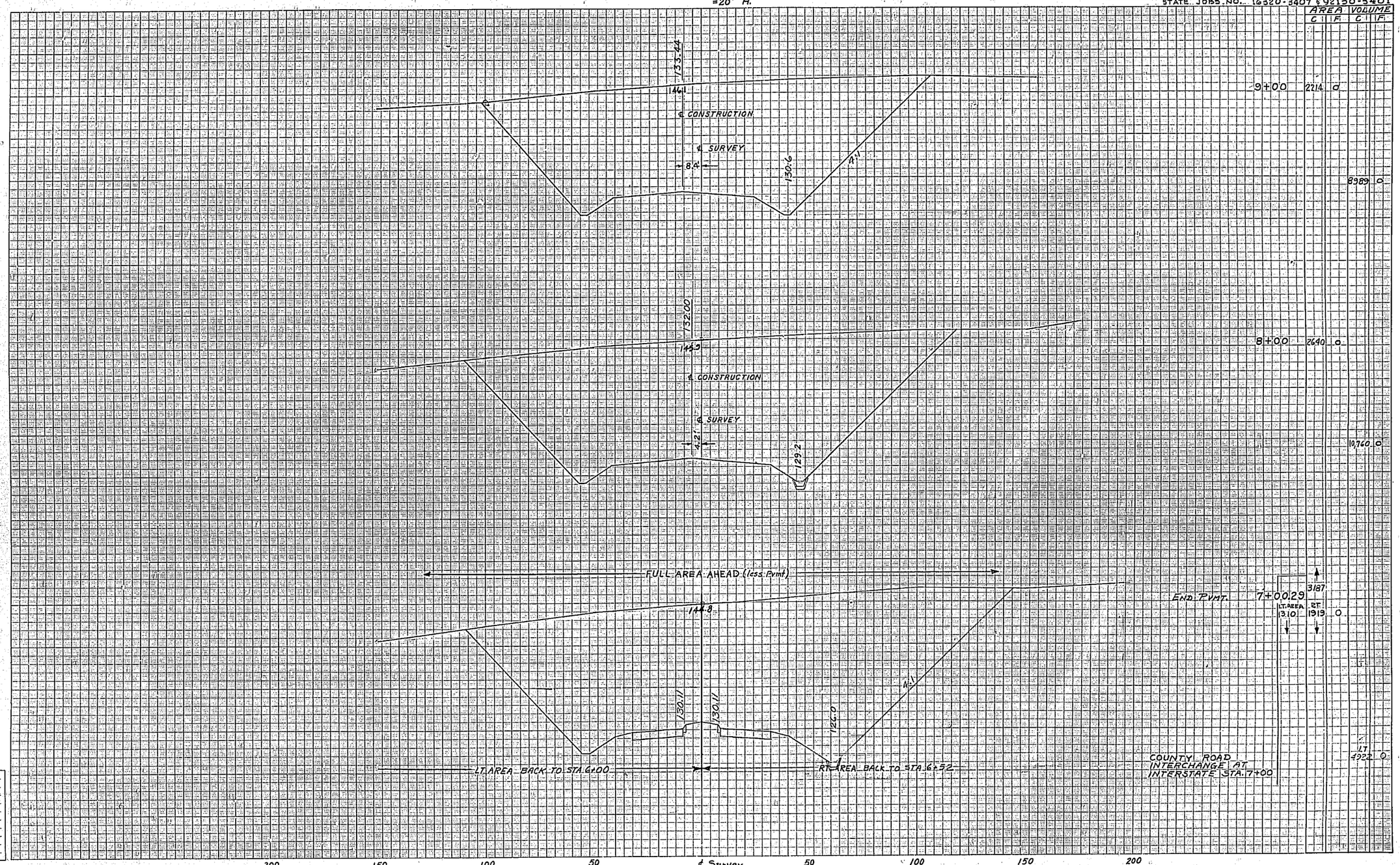
E-1424

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
=20' H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(10)75 I-4-2(10)76	61

STATE JOBS NO. 16320-3407 & 92130-3401



	AREA		VOLUME	
	C	F	C	F
9+00	2714	0		
			8989	0
8+00	2640	0		
			10,740	0
			LT 4922	0

NOTE BOOK NOS.
419, 20, 24

Application No. ____
Route No. ____
Original Plotted by A.H.D.
" Checked by E.D.H.
Template by A.H.D.
Area by A.H.D. & W.E. 9/21/59.
Final Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. R. CORNWELL
JACKSONVILLE, FLA.

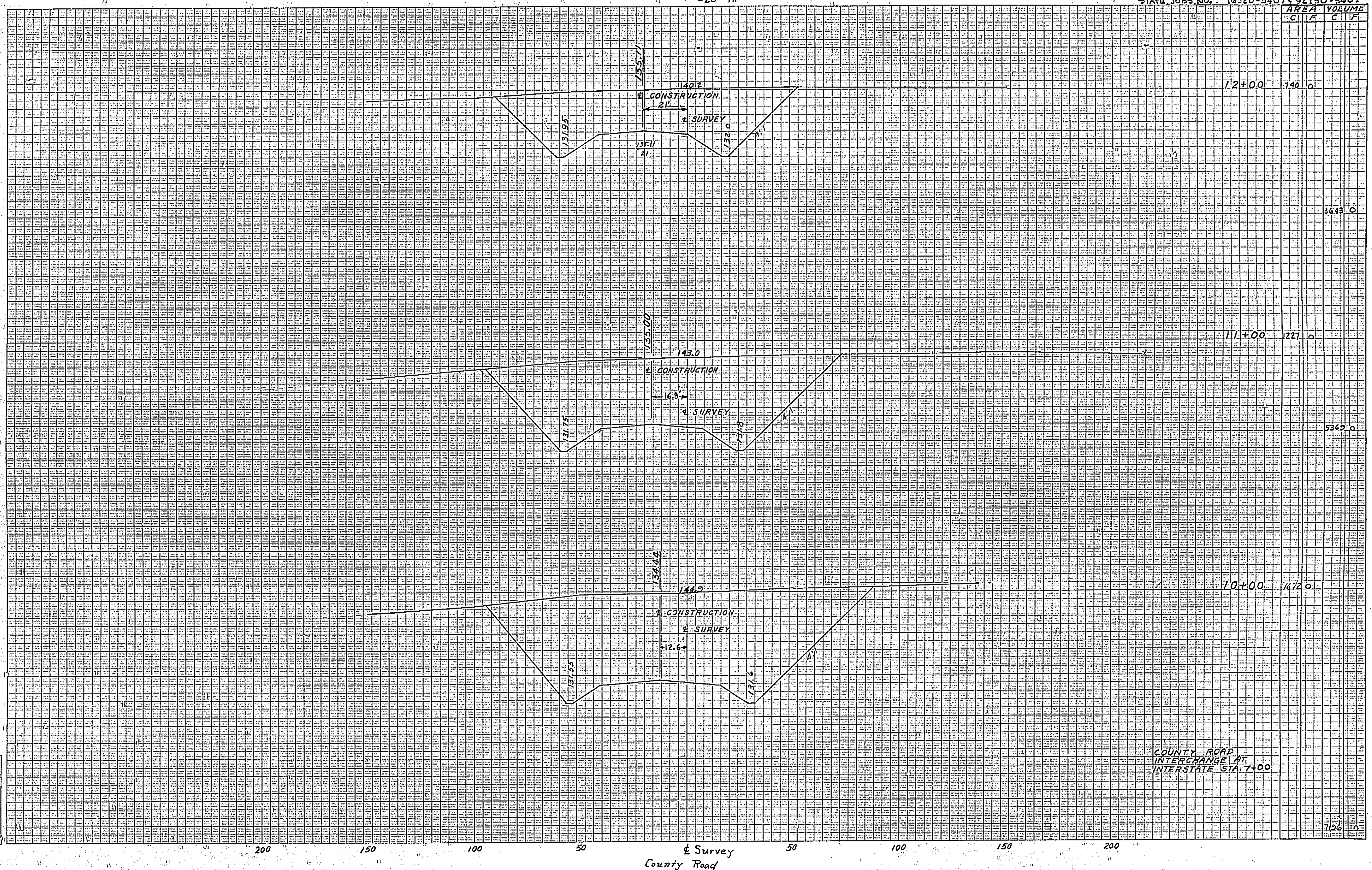
E-1425

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 20' H.

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(15)76	62

STATE JOBS NO.: 16320-3407 & 92130-3401



NOTE BOOK NOS.
4, 19, 20, 24

Application No. ______
Route No. ______
Original Plotted by ______
" Checked by E.B.M.
Template by ______
Area by ______ S.T.H. W.G. ______
Finals Plotted by ______
" Checked by ______
Area by ______
" Checked by ______

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1426

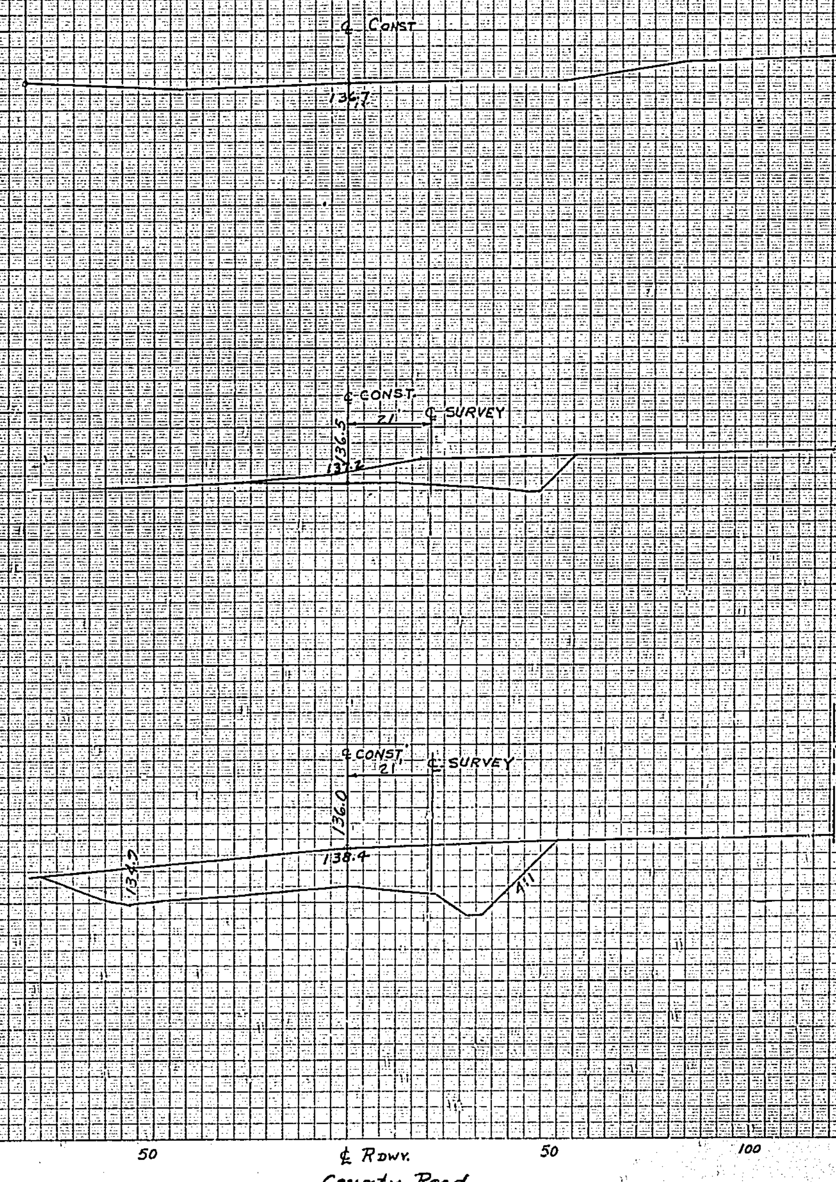
CROSS SECTIONS

Scale 1 Inch = 5 feet V.
=20' H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(19)76	63

STATE JOBS NO. 16320-3407 & 92130-3401

GRADING SUMMARY → 128193 (CUT) 0 (FILL)
SHTS 57 THRO 63
COUNTY ROAD
TOTALS CARRIED TO SHT NO 90
NO MUCK (A-8)



Station	Area C	Area F	Volume C	Volume F
END CONSTRUCTION 12+80.43	0	0		
			10	0
12+75	100	0		
			190	0
12+50	310	0		
			972	0

COUNTY ROAD
INTERCHANGE AT
INTERSTATE STA. 7+00

NOTE BOOK NOS.
4,19,20,24

Application No. ___
Route No. ___
Original Plotted by H.T.
Checked by J.S.J.
Template by H.T.
Area by H.T. J.S.J.
Finals Plotted by ___
Checked by ___
Area by ___
Checked by ___

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 ' H.

Fed. Road Distr. No.	State	County	Route	Job No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	1-4-(22)75 1-4-22-19)76	64

STATE JOBS NO. 16320-3407 & 92130-3401

A-B MAT'L S.S. EXC. A	V	FILL A	V
344		116	
	1120		370
261		64	
	633		311
21		84	
	200		504
27		81	
	30		182
0		63	

4+40 BEGIN MUCK FILL LT & RT.

	AREA C	AREA F	VOLUME C	VOLUME F
8+00	0	447		
			0	1493
7+00	0	359		
			0	1119
6+00	0	245		
			0	906
5+00	0	244		
			0	550
BEGIN MUCK FILL LT & RT 4+40				
BEGIN MUCK 4+40	0	251	0	251

2+68.46 Line 'D'=
4+39.95 Ahead on
Access Road

ACCESS ROAD
LT. INTERSTATE
LINE 'D' TO STA. 32+60.46

NOTE BOOK NOS.
4.19.2024

Application No.
Book No.
Original Plotted by A.E.S.
" Checked by E.S.A.
Template by A.E.S.
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

50 ℄ 50

ACCESS ROAD

E-1428

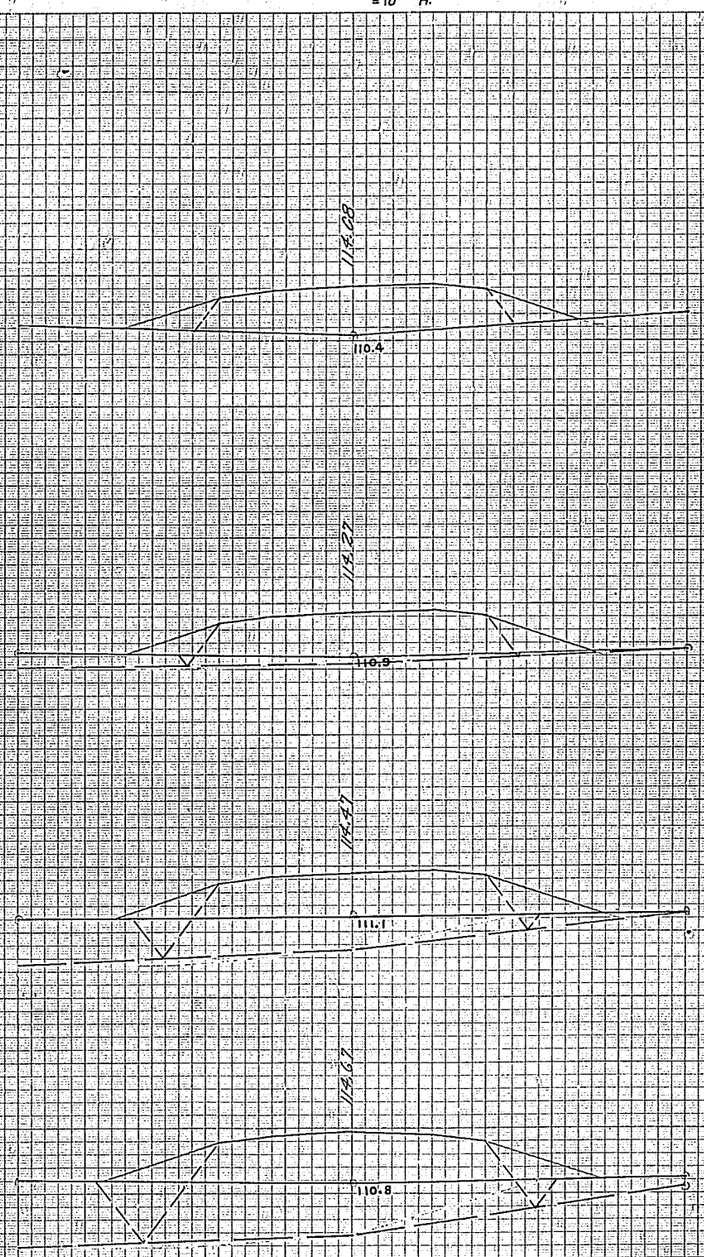
CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10' H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(10)76	65

STATE JOBS NO. 16320-3407 & 92130-3401

A-8 MAT'L. S.S. EXC. A	S.S. EXC. V	FILL A	FILL V		AREA C	AREA F	VOLUME C	VOLUME F
				GRADING SUMMARY ACCESS RD STA 4+33.95 TO 13+00 SHTS. 64 & 65 TOTALS CARRIED TO SHT NO 90			13	8,593
				STA 4+33.95 TO 12+10 ACCESS ROAD S. S. EXCV. (A-8) = 4,102 C.Y. FILL 100% = 4,102 C.Y.				
				MUCK SUMMARY CARRIED TO SHT NO 90				
		1						
		0						
		27		+10 END MUCK FILL LT & RT.				
			10					
0		27		12+00 END MUCK A-8				
				STA 13+00 (AHD)	7	131		
				EQUATION STA 12+44.58 ACCESS ROAD = STA 12+46.58 INTERSTATE				
				Access Road Cont. on Sheet No.			13	495
						1		
						166		
				±10		139		
				End Muck 12+00				52
				END MUCK FILL LT & RT. 12+00	0	143		
	50		111				0	565
27		33		11+00	0	161		
298		161					0	780
134		54		10+00	0	260		
691		243					0	1144
239		77		9+00	0	338		
1060		357					0	1491



ACCESS ROAD

NOTE BOOK NOS.
4,19,20,24

Application No.
Route No.
Original Plotted by MCP
" Checked by EBH
Template by MCP
Area by
Plotts Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

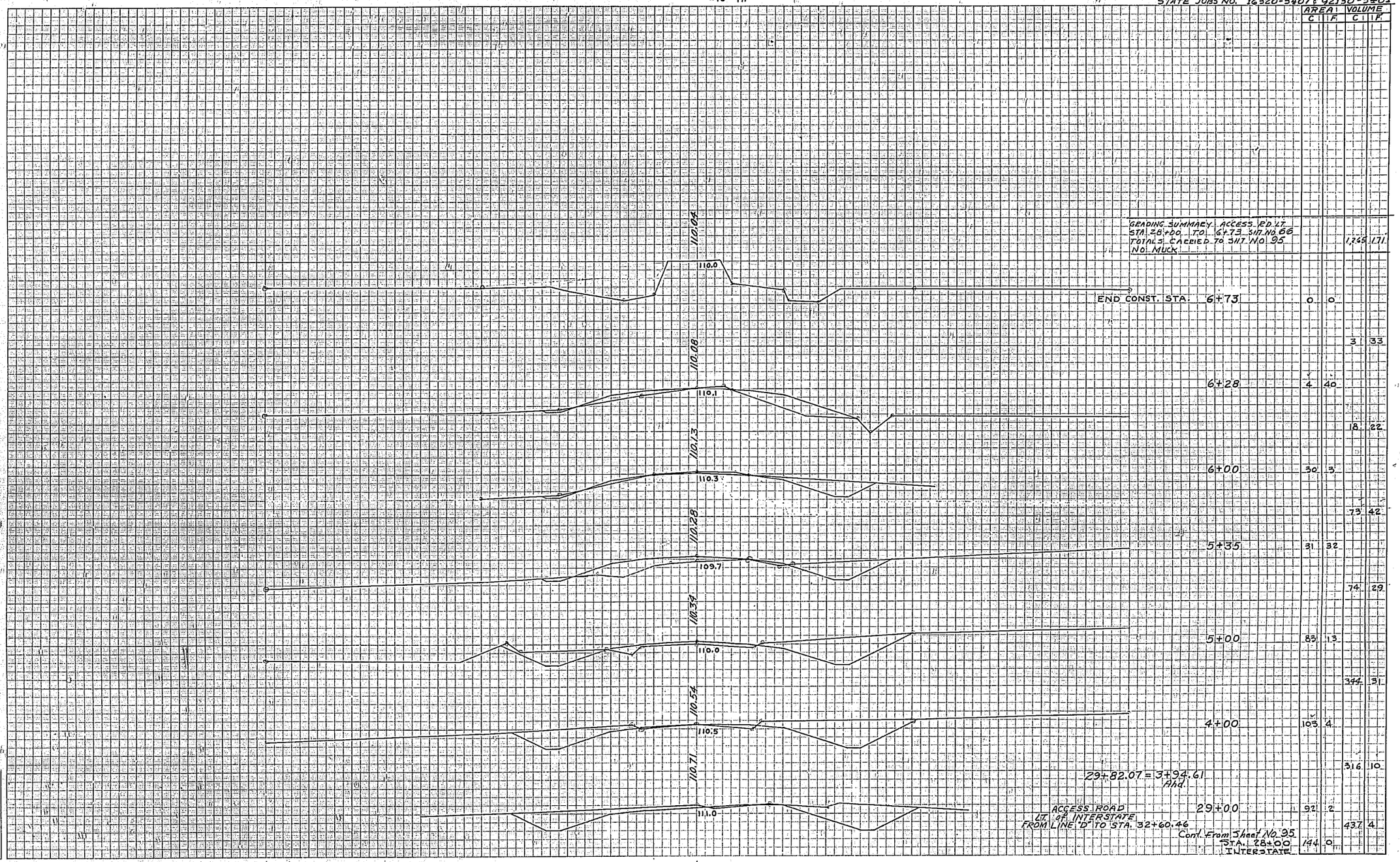
E-1429

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10' H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(10)75 I-4-2(10)76	66

STATE JOBS NO. 16320-3407 & 92130-3401

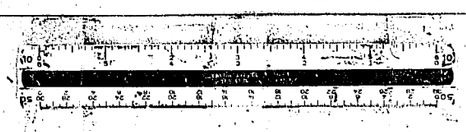


	AREA C	AREA F	VOLUME C	VOLUME F
GRADING SUMMARY ACCESS RD LT STA 28+00 TO 6+73 SHT NO 66 TOTALS CARRIED TO SHT NO 95 NO MUCK			1,265	171
END CONST. STA. 6+73	0	0		
			3	33
6+28	4	40		
			18	22
6+00	30	3		
			73	42
5+35	31	32		
			74	29
5+00	83	13		
			344	31
4+00	103	4		
			316	10
29+82.07 = 3+94.61 Rad.				
29+00	92	2		
			437	4
LT. ACCESS ROAD LT. OF INTERSTATE FROM LINE 'D' TO STA. 32+60.46				
Cont. From Sheet No. 95 STA. 28+00 INTERSTATE	144	0		

NOTE BOOK NOS. 12

Application No.	
Route No.	
Original Plotted by	A.T.S.
" Checked by	P.B.M.
Template by	A.T.S.
Area by	
Final Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.



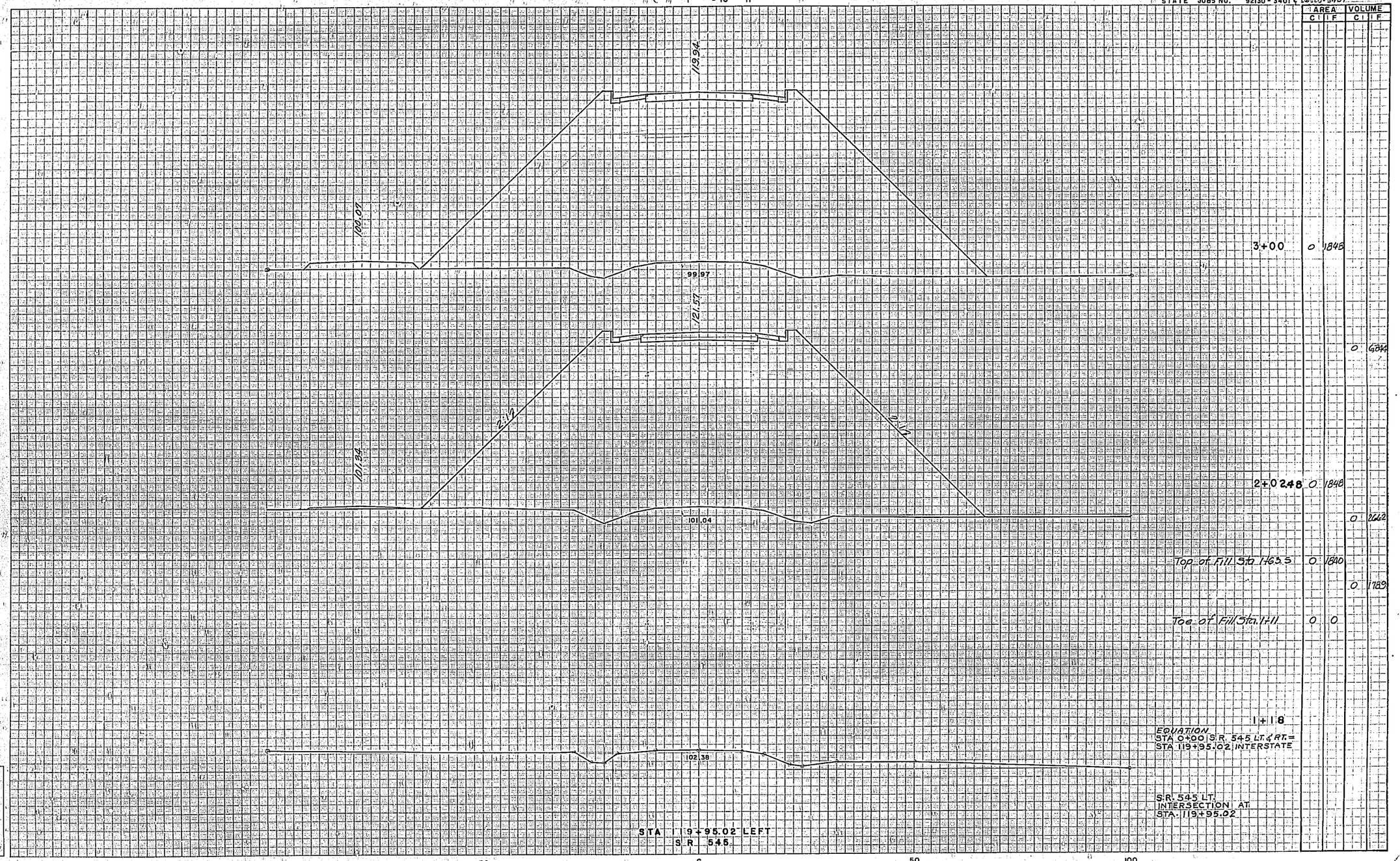
E-1430

CROSS SECTIONS

Scale 1 Inch = 5 feet V
1" = 10" H

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(12)75 I-4-2(12)76	67

STATE JOBS NO. 92130-3401 & 92320-3407



	AREA C	AREA F	VOLUME C	VOLUME F
3+00	0	1848		
				0 6844
2+02.48	0	1848		
				0 1662
Top of Fill Sta 1+63.5	0	1840		
				0 1789
Toe of Fill Sta. 1+11	0	0		
1+18				

EQUATION
STA 0+00 S.R. 545 LT. & RT. =
STA 119+95.02 INTERSTATE

S.R. 545 LT.
INTERSECTION AT
STA. 119+95.02

NOTE BOOK NOS.
12

Application No.
Route No.
Original Plotted by C. D. H.
" Checked by M.E.K.
Template by J.B.S.
Area by M.E.
Fields Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

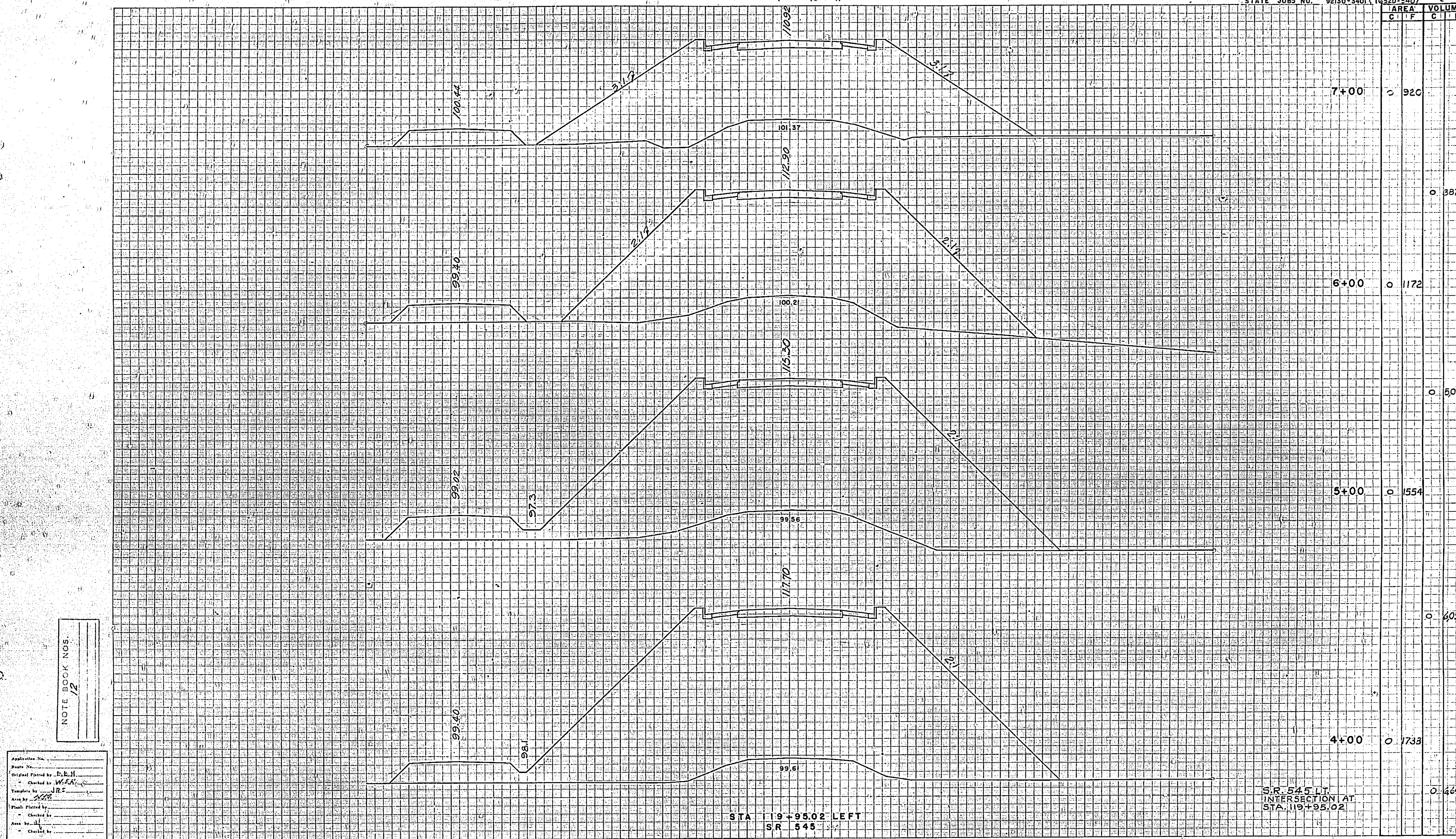
E-1431

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10" H

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (25) 75 / I-4-2 (19) 76	68

STATE JOBS NO. 92130-3401 { 16320-2407



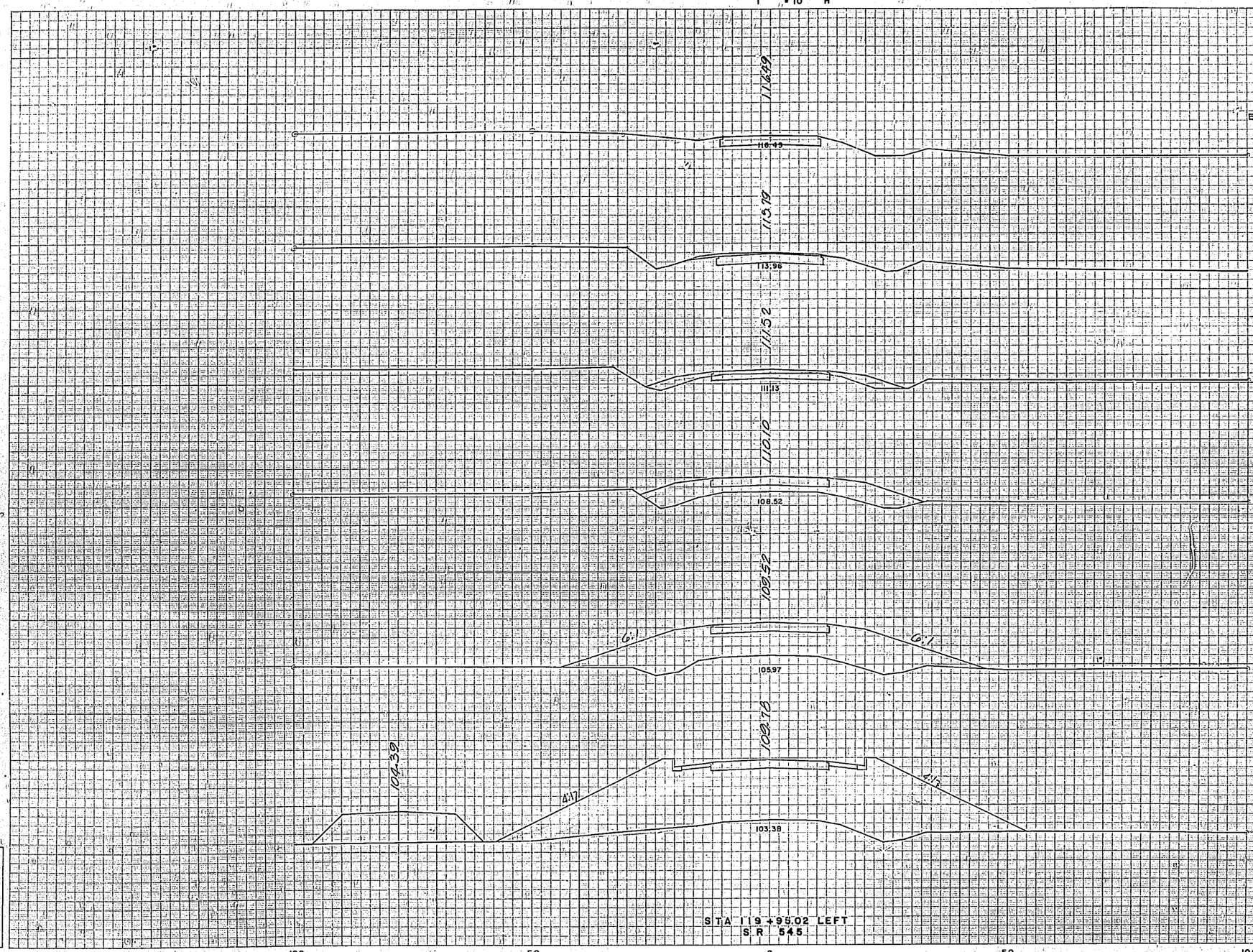
E-1432

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10" H

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (12) 176 I-4-2 (12) 175	69

STATE JOBS NO. 92130-3401 & 16320-3407



	AREA C.	AREA F.	VOLUME C.	VOLUME F.
13+00	19	0		
			91	0
12+00	30	0		
			87	44
11+00	17	24		
			31	193
10+00	0	80		
			0	593
9+00	0	240		
			0	1478
8+00	0	556		
			0	2737

NOTE BOOK NOS.
12

Application No.
Route No.
Original Plotted by E. B. H.
" Checked by W.E.K.
Traced by J.R.S.
Area by H.H.
Finals Plotted by
" Checked by
Area by H.
Vol. by C. Checked by

A. R. COLWELL
JACKSONVILLE, FLA.

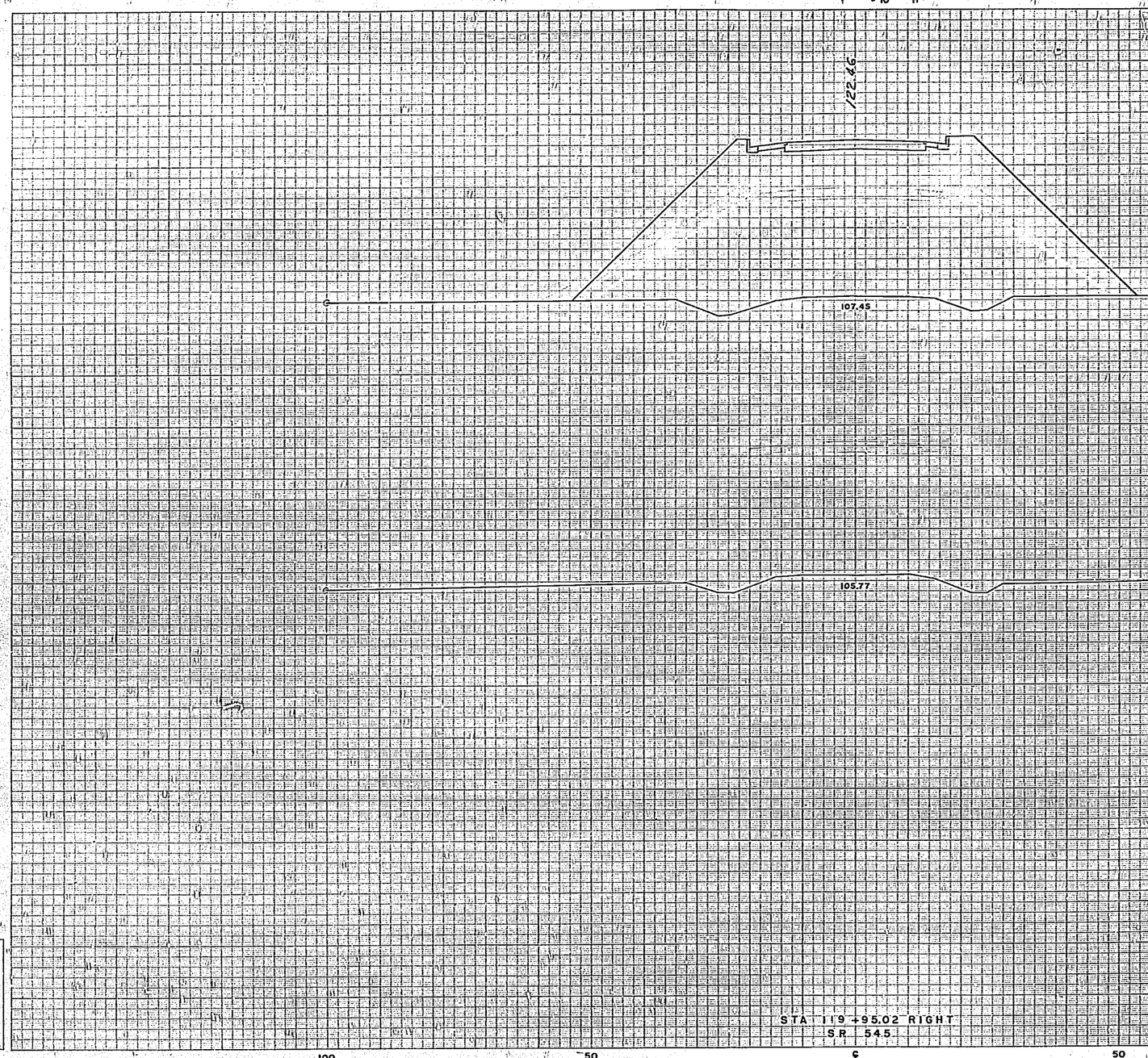
E-1433

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10' H

Fed. Proj. Sect. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(13)175 I-4-2(13)176	70

STATE JOBS NO. 92130-3401 & 16520-3407



	AREA C	AREA F	VOLUME C	VOLUME F
2+02.48	0	1160		
			0	1675
Top of Fill Sta. 1163.5	0	1160		
			0	1285
Toe of Fill Sta. 1141	0	0		

1+00

EQUATION
STA. 0+00 S.R.545 RT. & LT.
= STA. 119+95.02 INTER.
– STATE

S.R.545 RT.
INTERSECTION AT
STA. 119+95.02

STA 119+95.02 RIGHT
S.R. 545

NOTE BOOK NOS.
11

Application No.
Route No.
Original Plotted by E.B.H.
" Checked by WEB
Template by JES
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. A. COGSWELL
ASSOCIATES, INC.

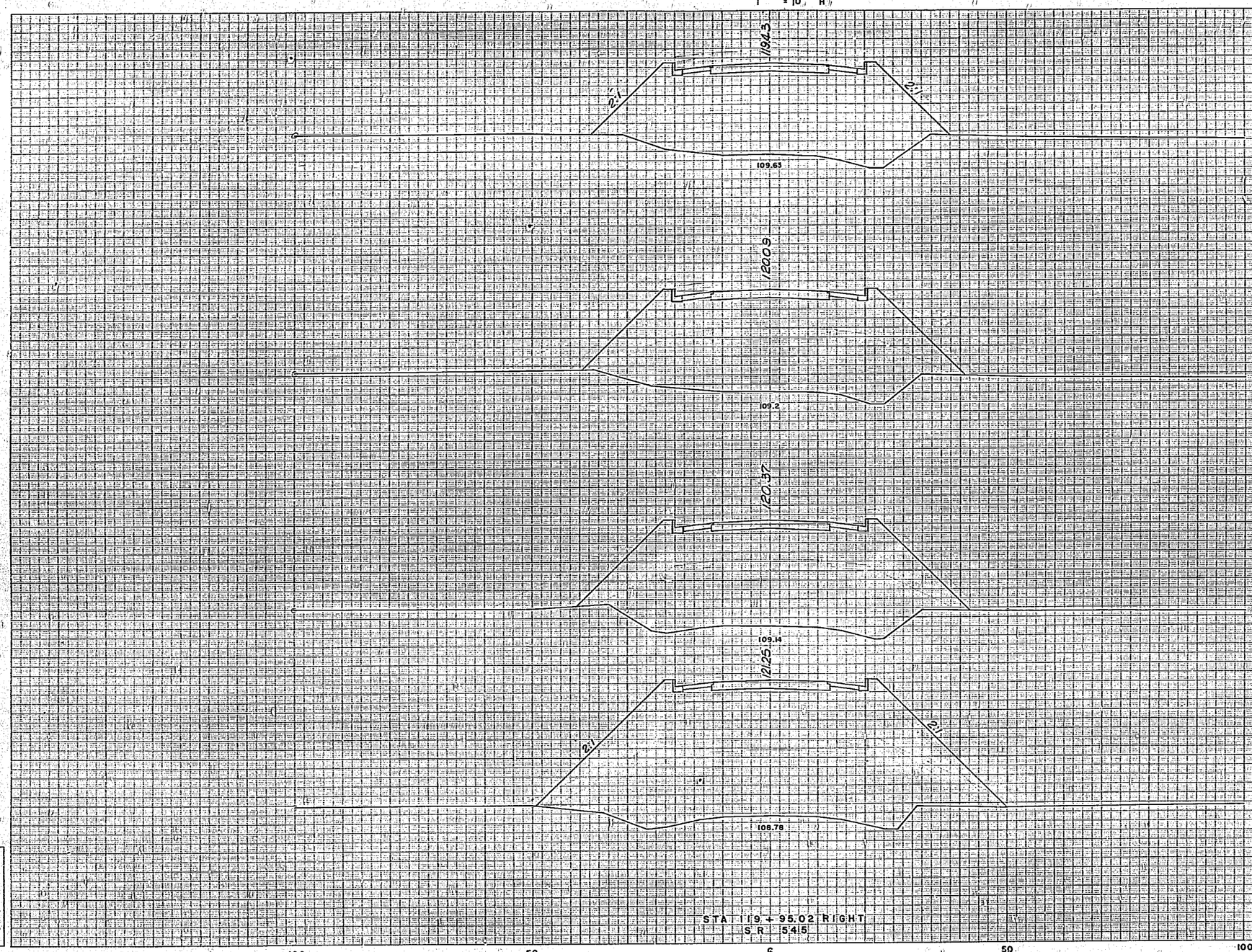
E-1434

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10" H

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19) 75 I-4-2 (19) 76	71

STATE JOBS NO. 92130-3401 & 16520-5407

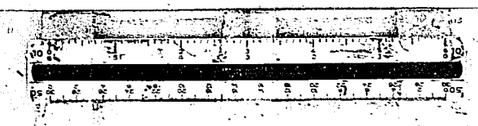


	AREA C	AREA F	VOLUME C	VOLUME F
4+00	0	560		
			0	738
3+67	0	48		
			0	373
3+52	0	696		
			0	1680
3+00	0	1048		
			0	3985

NOTE BOOK NOS.
11

Application No. ____
Sheet No. ____
Original Plotted by E.E.H.
- Checked by T.E.K.
Template by JRS
Area by SMB
Finals Plotted by ____
- Checked by ____
Area by ____
- Checked by ____

A. R. COGSWELL
JACKSONVILLE, FLA.



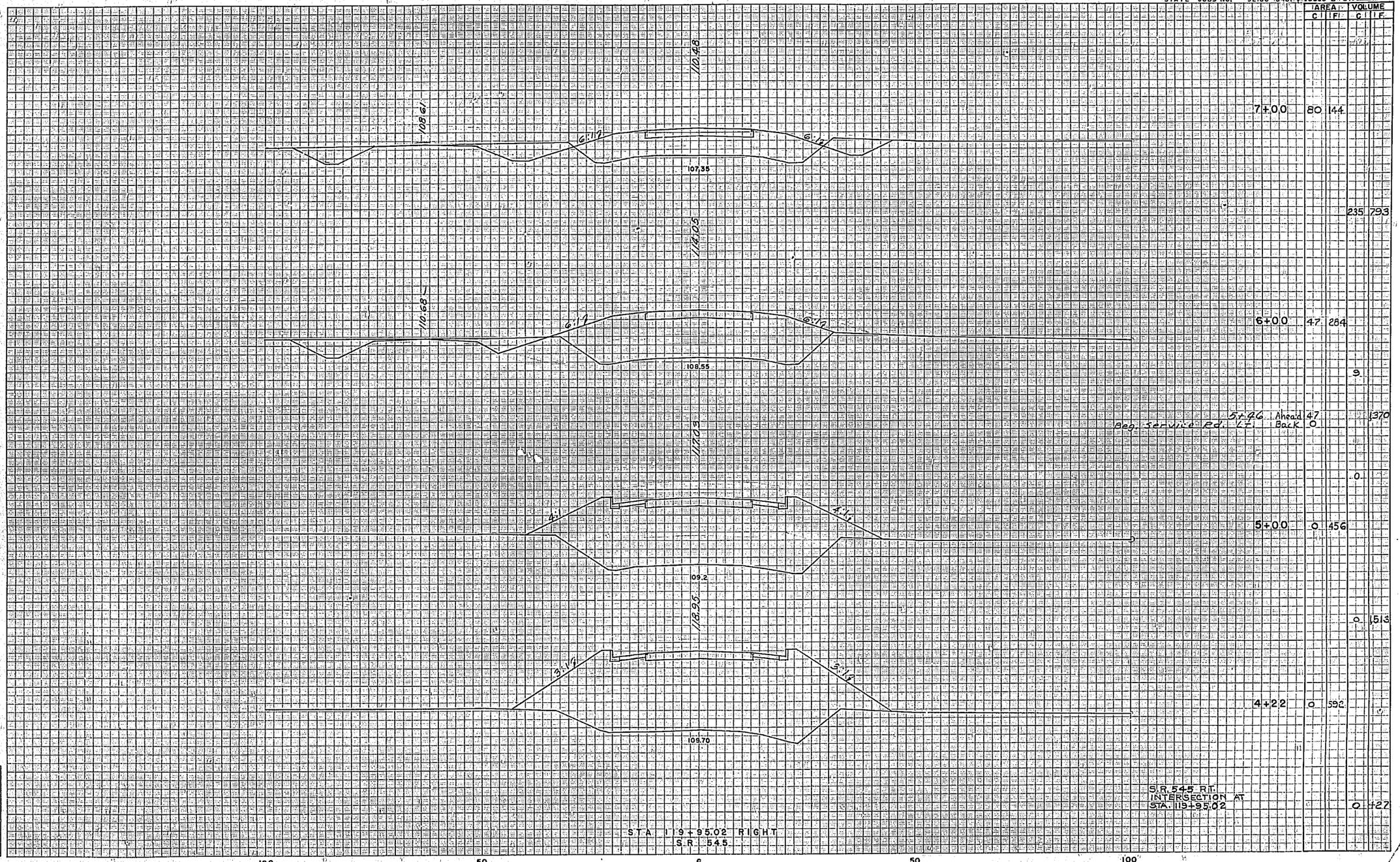
E-1435

CROSS SECTIONS

Scale 1 inch = 5 feet V'
1 " = 10 " H

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 178	12

STATE JOBS NO. 92130-3401 & 16320-3407



	AREA C	AREA F	VOLUME C	VOLUME F
7+00	80	144		
			235	793
6+00	47	284		
			9	
5+46 Ahead	47			1370
Back	0			
			0	
5+00	0	456		
			0	1513
4+22	0	592		
			0	422

Beg. Service Rd. Lt.

S.R. 545 RT.
INTERSECTION AT
STA. 119+95.02

STA 119+95.02 RIGHT
S.R. 545

NOTE BOOK NOS.
11

Application No.
Route No.
Original Plotted by E.D.H.
Checked by J.C.K.
Template by JRS
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1436

CROSS SECTIONS

Scale 1 inch = 5 feet V
1" = 10" H

Fed. Road Dwn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)176	73

STATE JOBS NO. 92130-3401 & 16320-3407

AREA C	AREA F	VOLUME C	VOLUME F
		730	52,323

SUMMARY - SR 545
TOTALS CARRIED TO X-SECT SHT NO 123
NO MUCK (A-8)

11+00

96.64

10+00

99.06

102.50

END CONSTRUCTION STA. 9+50 — 0 — 0

27 19

9+00 — 29 — 20

102.17

76 117

106.50

8+00 — 14 — 93

105.13

S.R. 545 RT.
INTERSECTION AT
STA. 119+95.02

174 346

STA 119+95.02 RIGHT
S.R. 545

100 50 ℄ 50 100

NOTE BOOK NOS.
11

Application No. _____
Route No. _____
Original Plotted by E.D.H.
" Checked by J.E.A.
Template by J.R.S.
Area by A.H.S.
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1437

CROSS SECTIONS

Scale 1 inch = 5 feet VERT.
= 10 FT. HORIZ

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	F-4-1(20)-75 F-4-2(19)-74	74

STATE PROJ NO 14320-3407 & 92130-3401

	AREA C	AREA F	VOLUME C	VOLUME F
2122+00	582	12		
			1337	106
2121+00	140	57		
	0	0		

℄ SURVEY STA 2121+00
BEGIN PROJECT
BEGIN CONSTRUCTION

119.50 123.00 119.94 124.0 123.00 119.50

119.35 123.00 120.62 122.2 123.00 119.35

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
L-1 272612

Application No. _____
Route No. _____
Original Plotted by J.M.H. Curtis
Checked by G.M. J.M.
Template by J.M.H.
Area by J.M.H. 9/21/59
Finals Plotted by _____
Checked by _____
Area by _____
Checked by _____

A. N. COGSWELL
JACKSONVILLE, FLA.

E-1438

CROSS SECTIONS

Scale 1 Inch = 5 feet VERTICAL

1 inch = 10 feet HORIZONTAL

Fed. Road Proj. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK	400	I-4-1(25)75	75

STATE JOB NO. 16320-3407 & 92130-3401

A-B MATERIAL						A-2 A-3 MATERIAL					
EXCAV.		FILL		CUT		SUBS.EXCV		AREA		VOLUME	
A	V	A	V	A	V	A	V	C.	F.	C.	F.
								1755	0		
										6357	0
								1678	0		
										6113	0
								623	0		
										5333	0
								1257	0		
										3408	4

2126+00 · 2125 · 2124 · 2123+00

A · A'

118.00 · 117.49 · 116.97 · 116.45

122.08 · 122.48 · 122.77 · 122.54

127.8 · 127.9 · 128 · 126.9

150 · 100 · 50 · C.L. · 50 · 100 · 150

NOTE BOOK NOS.
L-4 272612

Application No. _____
Route No. _____
Original Plotted by _____
" Checked by _____
Template by _____
Area by DWG 4/23/59
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1439

CROSS SECTIONS

Scale 1 inch = 5 feet VERTICAL
1 inch = 10 feet HORIZONTAL

Fed. Road Dem. No.	State	County	Route	Part(s)	Sheet No.
3	Fla.	POLK	400	I-4-1(25)75	76

STATE JOB NO. 16320-3407 & 92130-3401

A-1 MATERIAL EXCAV. A	A-1 MATERIAL EXCAV. V	A-1 MATERIAL FILL A	A-1 MATERIAL FILL V	A-1 MATERIAL CUT A	A-1 MATERIAL CUT V	A-2 SUBS.EXCV. A	A-3 MATERIAL AREA N	AREA C	AREA R	VOLUME C	VOLUME E
								3026	C		
										10361	C
								2569			
										8794	C
								2180			
										7511	C
								1930	C		
										6624	C

2130+00
131.0
41:1
120.22
120.22
2129
129.7
120.68
120.68
2128
129.0
121.14
121.14
PT STA 2127+21.94 & CONST LT & RT EQUIV.
2127+00
128.5
121.67
121.67
117.52

150 100 50 C.L. 50 100 150

NOTE BOOK NOS:
LY 272612

Application No. _____
Route No. _____
Original Plotted by _____
" Checked by _____
Template by J.N.
Area by LO NG 9/21/79
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. CODWELL
JACKSONVILLE, FLA.

E-1440

CROSS SECTIONS

Scale 1 inch = 5 feet VERTICAL

1 inch = 10 feet HORIZONTAL

Fed. Road Dem. No.	State	County	Route	Sheet No.
3	Fla.	POLK	I-4-1(25)76 I-4-1(25)75	77

STATE JOB NO. 16320-3407 & 32130-3401

A-B MATERIAL					
EXCAV.		FILL		CUT	
A	V	A	V	A	V

A-2, A-3 MATERIAL			
SUBS. EXCV		AREA	VOLUME
A	V	C F	C E

EQUATION
STA. 2133+23.27 =
STA. 1361+33.12 DEAN STILL RD.

2133+00 — 131.0 — 2561 0

BRIDGE SLOPE DEAN STILL RD

118.89 — 118.89

2132 — 132.3 — 3395 0

119.29 — 119.11

115.00

11030 0

12307

2131+00 — 132.2 — 3251 0

119.76 — 119.11

116.00

11625 0

150 100 50 C.L. 50 100 150

NOTE BOOK NOS.
L-J 272612

Application No.
Dwgs. by
Original Plotted by
" Checked by
Template by
Area by MG 4/1/69
Plats Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1441

CROSS SECTIONS

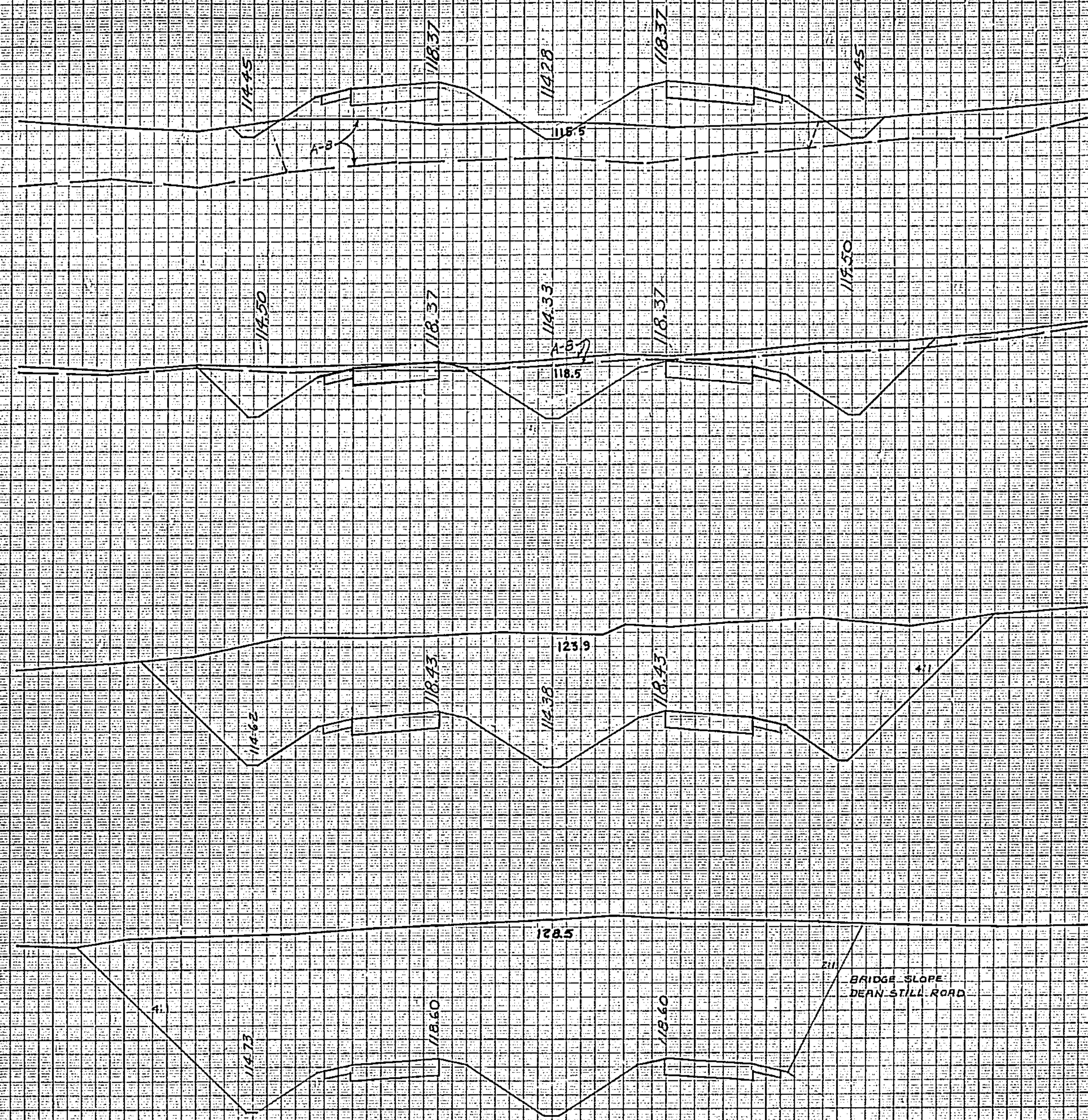
Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(18)76	78

STATE JOBS NO. 16320-3407 & 92130-3401

EXC.		A-8 MAT'L S.S. EXC.		A-8 MAT'L FILL	
A	V	A	V	A	V
32		388			
	254		719		
105		0			
	48				
0					

+75 BEGIN MUCK



Station	AREA C	AREA F	VOLUME C	VOLUME F
2137+00	0	610		
			659	1141
2136+00	356	6		
BEGIN MUCK 2135+75				
			3644	11
2135+00	1612	0		
			6985	0
2134+00	2160	0		
			8743	0

NOTE BOOK NOS.
L-1, 272612

Application No. ____
Route No. ____
Original Plotted by ____
" Checked by ____
Template by ____
Area by ____ 6/22/57
Finals Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1442

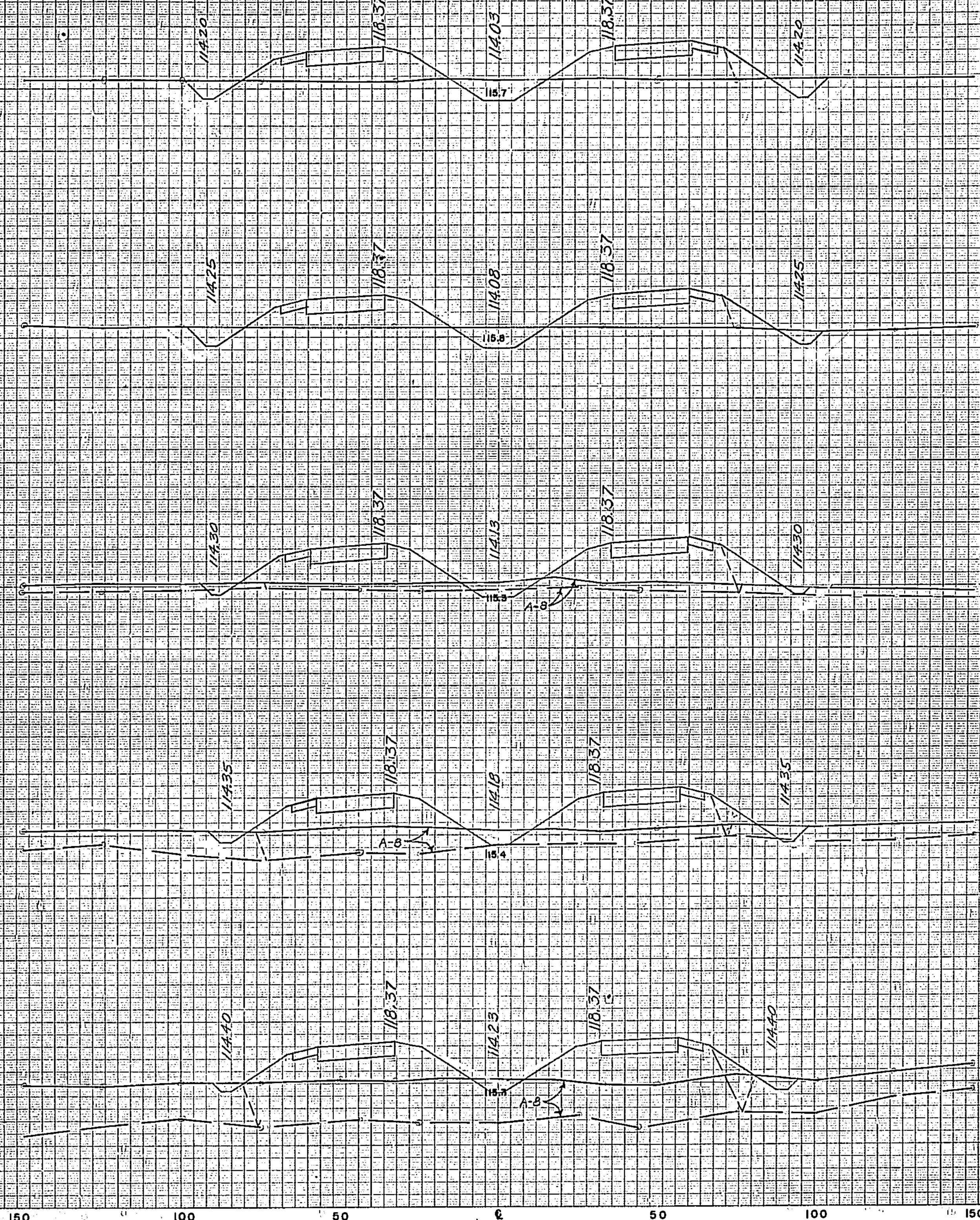
CROSS SECTIONS

Scale 1 inch = 5 feet V
=20" H

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-(25)75 / I-4-2(19)76	79

STATE JOBS NO. 16320-3407 & 92130-3401

Station	EXC A	EXC V	A1-8 S.S. EXC. A	A1-8 S.S. EXC. V	MAT'L FILL A	MAT'L FILL V
2142+00					12	
						52
2141+00					16	
+50	0		0			72
		19		91		
2140+00	20		98		23	
		107		589		70
2139+00	38		220		15	
		119		1374		69
2138+00	26		522		22 / 0	
		107		1685		



Station	AREA C	AREA F	VOLUME C	VOLUME F
2142+00	61	206		
			222	741
2141+00	59	194		
			97	405
END MUCK +50	46	244		
			55	531
2140+00	13	329		
			26	1387
2139+00	1	420		
			1	943
+50	0	593		
			0	1241
BEGIN MUCK FILL RT 2138+00	0	742 / 268		
			0	2552

NOTE BOOK NOS.
L1 272612

Application No.
Route No.
Original Plotted by JR
" Checked by EBH.
Template by N.A.S.
Area by H.D.T.M.
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1443

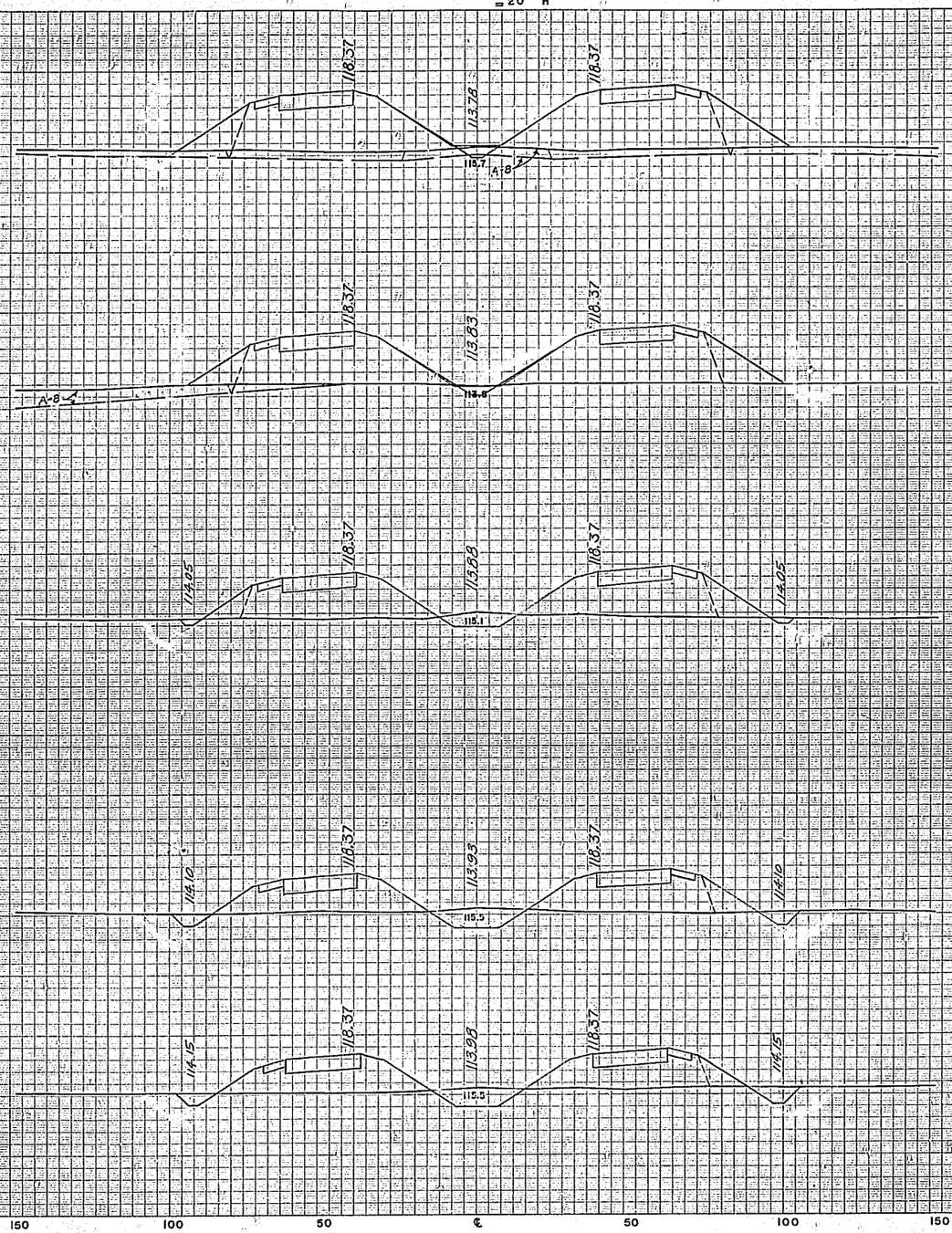
CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20" H

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)75 I-4-2(19)76	80

STATE JOBS NO. 12320-3407 & 92130-3401

A-8 MAT'L EXC. A	A-8 MAT'L EXC. V	A-8 MAT'L S.S. EXC. A	A-8 MAT'L S.S. EXC. V	A-8 MAT'L FILL A	A-8 MAT'L FILL V		AREA C	AREA F	VOLUME C	VOLUME F
0						2148+00				
					↓					
		109		92						
						2147+00	0	602		
		241		291					0	2067
		21		65						
						2146+00	0	414		
		39		204						
						BEGIN MUCK 2145+00			52	1344
0	45 30V					BEGIN MUCK FILL LT.				
						2145+00	28	330	3/2	
				91					157	1089
						2144+00	57	258		
				63					209	930
						2143+00	56	244		
				15					217	833
				50						



NOTE BOOK NOS.
L-J, 272612

Application No.	
Deals No.	
Original Plotted by	E. E. H.
" Checked by	J.E.
Template by	J.E.
Area by	J.E.
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1444

CROSS SECTIONS

Scale 1 Inch = 5 feet V
= 20" H

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	S-4-3(12)76 S-4-3(13)76	31

STATE JOB NO. 14320-3407 & 92130-3401

A-B MAT'L				AREA		VOLUME	
S.S. EXC.		FILL		C	F	C	F
A	V	A	V				
1598		256					
				2151+00		0 1966	
	5574		1002				0 7252
1412		285					
				2150+00		0 1950	
	4154		830				0 6026
631		163					
				2149+00		0 1304	
	2226		504				0 4041
371		109					
				2148+00		0 878	
	569		372				0 2741

118.48 114.18 118.48 118.85 Begin Line E
113.4 A-B

118.40 114.03 118.40
112.6 A-B

118.37 113.98 118.37
113.1 A-B

118.37 113.82 118.37
113.3 A-B

250 200 150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
L-1, 2726/2

Application No. ....
Route No. ....
Original Plotted by E.D.H.
" Checked by DRS
Template by DRS
Area by DRS
Finals Plotted by ....
" Checked by ....
Area by ....
" Checked by ....

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1445

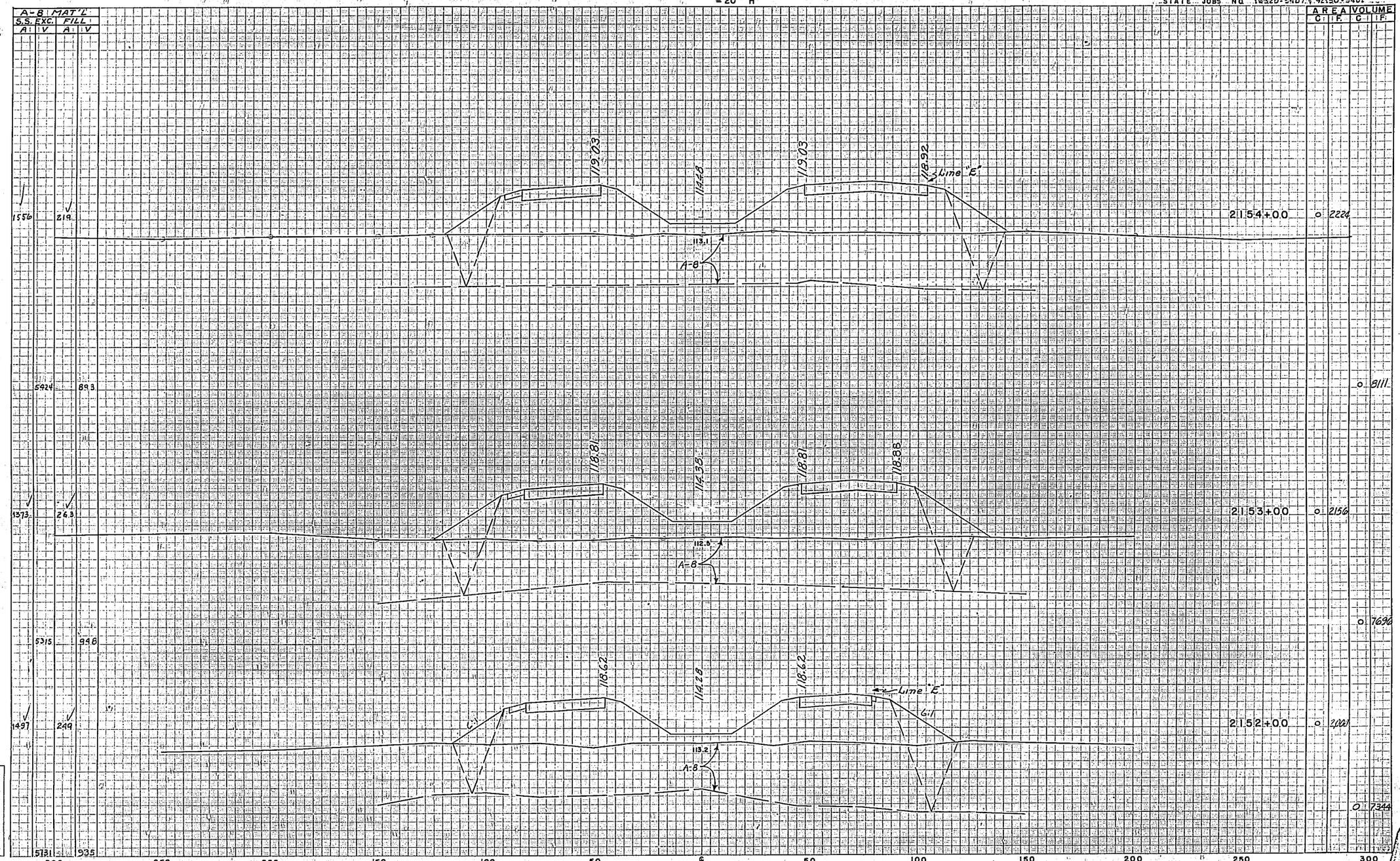
CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20 " H

Fed. Aid Proj. No.	State	County	Road	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(5)76	32

STATE JOBS NO. 16320-3407, 4, 92150-3401

A-8 MAT'L S.S. EXC. A	V	FILL A	V	AREA C	F.	VOLUME C	F.
1556		219					
				2154+00	0	2224	
5924		893				0	9111
1373		243					
				2153+00	0	2156	
5315		998				0	7696
1497		249					
				2152+00	0	2007	
5131		935				0	7344



NOTE BOOK NOS.
L-1, 272612

Application No. _____
Route No. _____
Original Plotted by E.D.H.
" Checked by J.B.S.
Template by J.C.P.
Area by J.B.S.
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. CODWELL
JACKSONVILLE, FLA.

E-1446

CROSS SECTIONS

Scale 1 inch, = 5 feet V
= 20" H

Fed. Aid Proj. No.	State	County	Route	Project	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)175 I-4-2(15)176	83

STATE JOB NO. 16320-3407 & 97130-3401

A-8 MAT'L			
S.S. EXC.		FILL	
A	V	A	V
2392		780	278
4379			509
2337			276
4045			517
2085			277
3651			490
1858			261
3449			496
1867			274
3205			497
1594			263
5833			893

Station	AREA C.F.	VOLUME C.F.
2157+50	3484	
	3960	
		7074
2157+00	3689	
		6441
2156+50	3278	
	3155	
	3145	
	2590	
2156+00	1928	
		5504
2155+50	2801	
		4913
2155+00	2512	
		3770

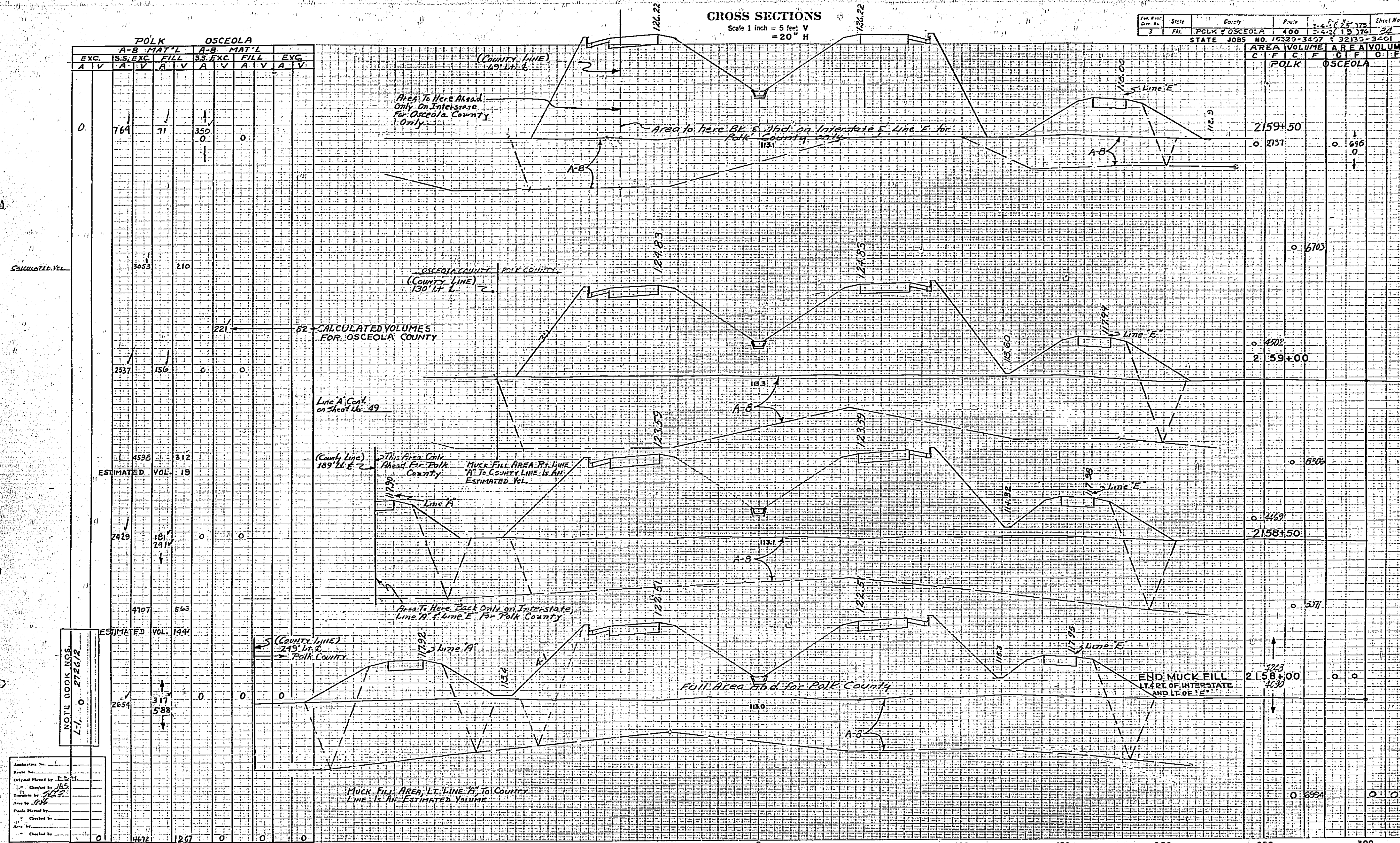
Roadway Exc. = 112,165 C.Y.
Fill + 40% = 112,165 C.Y.

NOTE BOOK NOS.
L-1, 272612

Application No.	
Route No.	
Original Plotted by	E.D.H.
" Checked by	J.R.S.
Template by	M.E.G.
Area by	W.M.
Finals Plotted by	
" Checked by	
Area by	
" Checked by	

A. R. COCKWELL
JACKSONVILLE, FLA.

E-1447


CROSS SECTIONS
Scale 1 inch = 5 feet V
= 20" H
POLK
OSCEOLA
A-8 MAT'L
EXC.
S.S. EXC.
FILL
STATE JOBS NO. 16320-3407 & 92130-3401
POLK & OSCEOLA
AREA
VOLUME
(COUNTY LINE) 69' Lt. ℄
Area To Here Ahead Only On Interstate For Osceola County Only
Area to here Bk ℄ Ahd. on Interstate ℄ Line 'E' for Polk County only
Line 'E'
2159+50
OSCEOLA COUNTY POLK COUNTY
(COUNTY LINE) 130' Lt. ℄
CALCULATED VOLUMES FOR OSCEOLA COUNTY
CALCULATED VOL.
Line 'A' Cont. on Sheet No. 49
2159+00
ESTIMATED VOL.
(County Line) 189' Lt. ℄
This Area Only Ahead For Polk County
MUCK FILL AREA Rt. LINE 'A' To COUNTY LINE Is An ESTIMATED VOL.
Line 'A'
2158+50
Area To Here Back Only on Interstate Line 'A' & Line 'E' For Polk County
(COUNTY LINE) 249' Lt. ℄ Polk County
Full Area Ahd. for Polk County
END MUCK FILL LT. & RT. OF INTERSTATE AND LT. OF 'E'
2158+00
MUCK FILL AREA, LT. LINE 'A', TO COUNTY LINE IS AN ESTIMATED VOLUME
NOTE BOOK NOS.
A-8
150
100
50
℄
50
100
150
200
250
300

E-1448

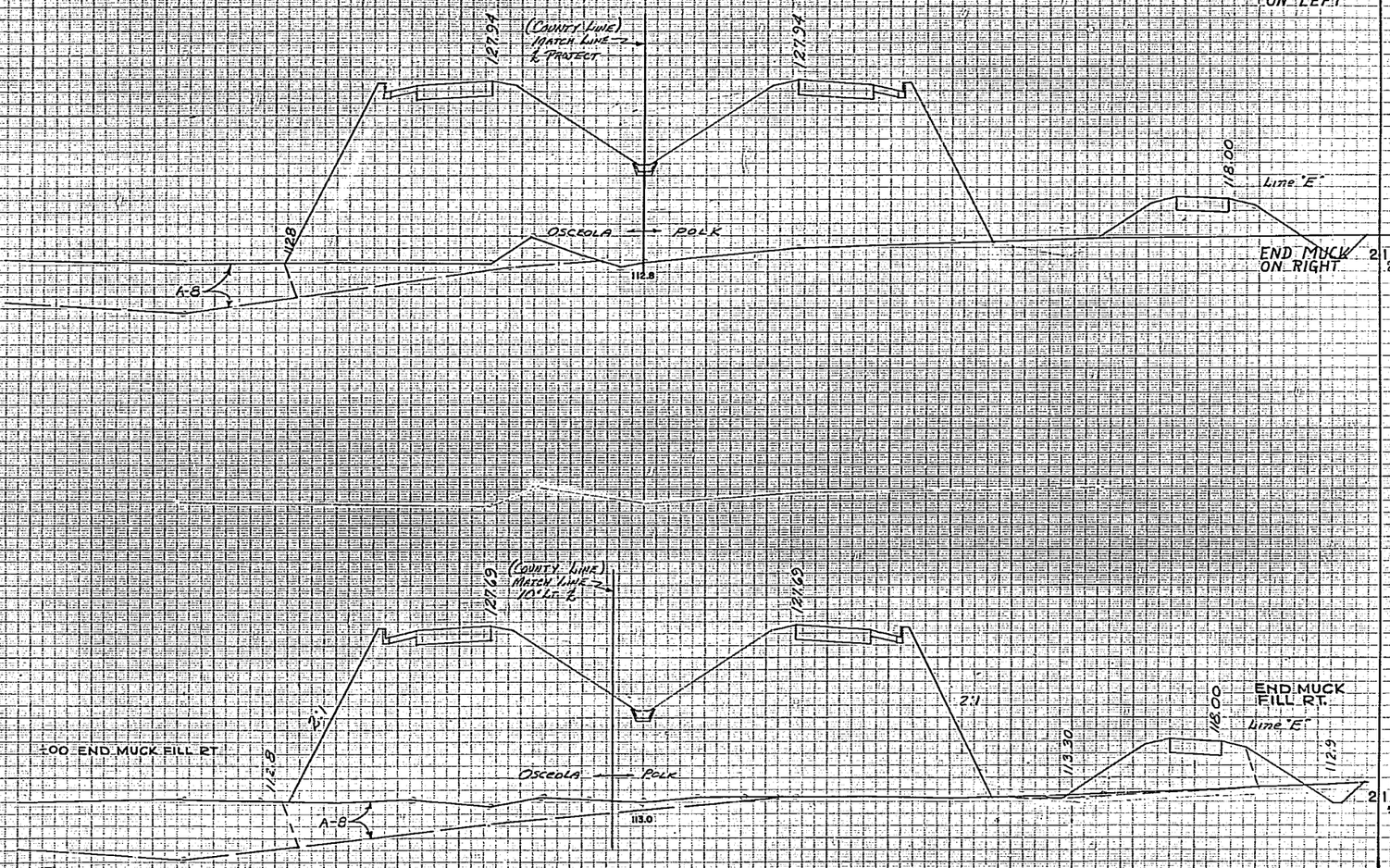
CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20" H

Fed. Aid Proj. No.	State	County	Route	Project	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(12)76 I-4-2(13)76	35

STATE JOBS NO. 16329-3407 & 92130-3401

POLK OSCEOLA	A-8 MAT'L EXC	A-8 MAT'L S.S. EXC.	A-8 MAT'L FILL	A-8 MAT'L S.S. EXC.	A-8 MAT'L FILL	EXC.	AREA	VOLUME	AREA	VOLUME
	A V	A V	A V	A V	A V	A V	C F	C F	C F	C F
							POLK		OSCEOLA	
END MUCK 2160+50 ON LEFT										
0	0	0	167			0				
END MUCK 2160+08.95=0+00 ON RIGHT							2160+50	0	1459	
1	7	0	46				7	474	0	475
							16	3931	0	1955
A5	0 28	233					2160+00	1508	0	1416



NOTE BOOK NOS.
L-1 2726/2, 4

Application No. ____
Route No. ____
Original Plotted by E.P.S.
Checked by JRC
Template by ____
Area by W.W.C.
Finals Plotted by ____
Checked by ____
Area by ____
Checked by ____

A. B. COCKRELL
JACKSONVILLE, FLA.

E-1449

CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20" H

Fed. Road Dist. No.	State	County	Route	Project No.	Sheet No.
8	Fla.	POLK & OSCEOLA	400	I-4-2(15)175 I-4-2(15)176	86

STATE JOBS NO. 16320-3407 & 32130-3401

POLK A-B MAT'L EXC. A	POLK A-B MAT'L EXC. V	POLK S.S. EXC. A	POLK S.S. EXC. V	POLK FILL A	POLK FILL V	OSCEOLA A-B MAT'L S.S. EXC. A	OSCEOLA A-B MAT'L S.S. EXC. V	OSCEOLA FILL A	OSCEOLA FILL V	OSCEOLA EXC. A	OSCEOLA EXC. V
0	0	0	0	0	0	0	0	0	0	0	0
				38	1						
				120	22						
				126	16						

NOTE BOOK NOS. 4-1 / 2726/22

STA. 2135+75 THRU 0+42
POLK - OSCEOLA COUNTY

	POLK Co.	OSCEOLA Co.	
RDWY. EXCV. (A-B)	658 C.Y.	32 C.Y.	690 C.Y.
S.S. EXCV. (A-B)	76,441 C.Y.	1027 C.Y.	84,913 C.Y.
FILL + 100%	24,516 C.Y.		33,252 C.Y.
EXCESS S.S. EXCV. (A-B) FROM POLK Co.	52,589 C.Y.		438 C.Y.
EXCESS EXCV. (A-B)	52,151 C.Y.		52,151 C.Y.

GRADING FROM LINE A
FROM SHTS. No. 51 THRU 54 TOTAL

0 CH.	690 C.Y.	
3137 C.Y.	84,913 C.Y.	
4,634 C.Y.	33,252 C.Y.	
1498 C.Y.	438 C.Y.	
	52,151 C.Y.	

AREA C	AREA F	VOLUME C	VOLUME F	POLK	AREA C	AREA F	VOLUME C	VOLUME F	OSCEOLA
179	0			56	2336				
		335	3				52	4402	
188	3			0	2420				
		399	1476				0	5801	
		68	1116				0	1486	

+50 +00 +42 0+25

(COUNTY LINE) MATCH LINE 180' Rt. ℄
(COUNTY LINE) MATCH LINE 120' Rt. ℄
(COUNTY LINE) MATCH LINE 530' Rt. ℄

OSCEOLA ← → POLK

Line E
Line C

END OF MUCK LEFT 0+42

A-8

200 150 100 50 ℄ 50 100 150

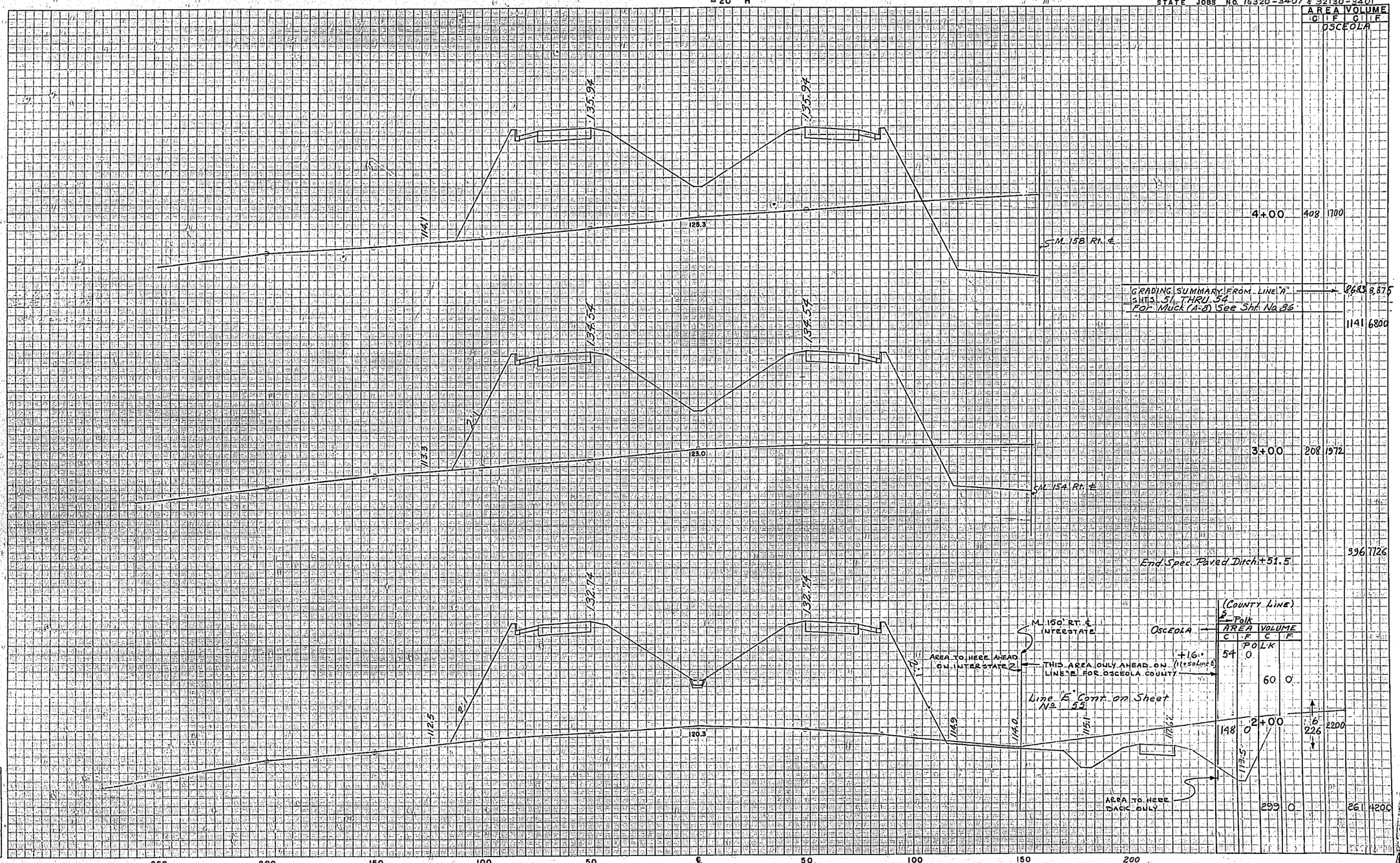
E-1450

CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20 " H

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(69)175 I-4-2(69)176	87

STATE JOBS NO. 16320-3407 & 32130-3401



AREA VOLUME			
	C	F	C	F
OSCEOLA				
4+00	408	1700		
GRADING SUMMARY FROM LINE "A"			8683	8875
UNITS 51 THRU 54				
For Muck (A-8) See Sht. No. 86				
			1141	6800
3+00	208	1972		
			3967	7726
OSCEOLA				
	C	F	C	F
	POLK			
	54	0		
			60	0
2+00	148	0	6226	2200
	293	0	2611	4200

NOTE BOOK NOS. 4

Application No. _____
Route No. _____
Original Plotted by E. L. H.
" Checked by J.R.S.
Template by A.D.Z.
Area by _____
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. P. COTHRELL
JACKSONVILLE, FLA.

E-1451

CROSS SECTIONS

Scale 1 inch = 5 feet V
=20' H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	F-4-2(75) I-4-2(19)76	85

STATE JOBS. NO. 16320-3407 & 92130-3401

	AREA C	AREA F	VOLUME C	VOLUME F
CALCULATED VOLUMES			1456	2465
6+00	0	0		
630	660			
			1251	1224
BEGIN APPROACH SLAB 5+49	649	636		
	1624			
			1129	2854
5+00	600	1566		
			1367	3048

M.L.

137.94

M.L. 167' Rt.

126.8

This Area Only Back

137.29

This Area Only Ahead

137.29

126.8

M. 165' Rt. ℄

Full Area Back

137.94

136.94

GRADING QUANTITY FROM LINE ℄ OSCEOLA 92,767 (CUT)
SWT No. 53 F.S.C. → POLK 131 (CUT)
No NUCK POLK & OSCEOLA 82,788 (CUT)

126.9

M. 163' Rt. ℄

115

250 200 150 100 50 ℄ 50 100 150 200 250

NOTE BOOK NOS 4

Application No.
Route No.
Original Plotted by H.P.B.
Checked by E.B.H.
Traced by W.E.F.
Area by
Finals Plotted by
Checked by
Area by
Checked by

S. R. COGSWELL JACKSONVILLE, FLA.

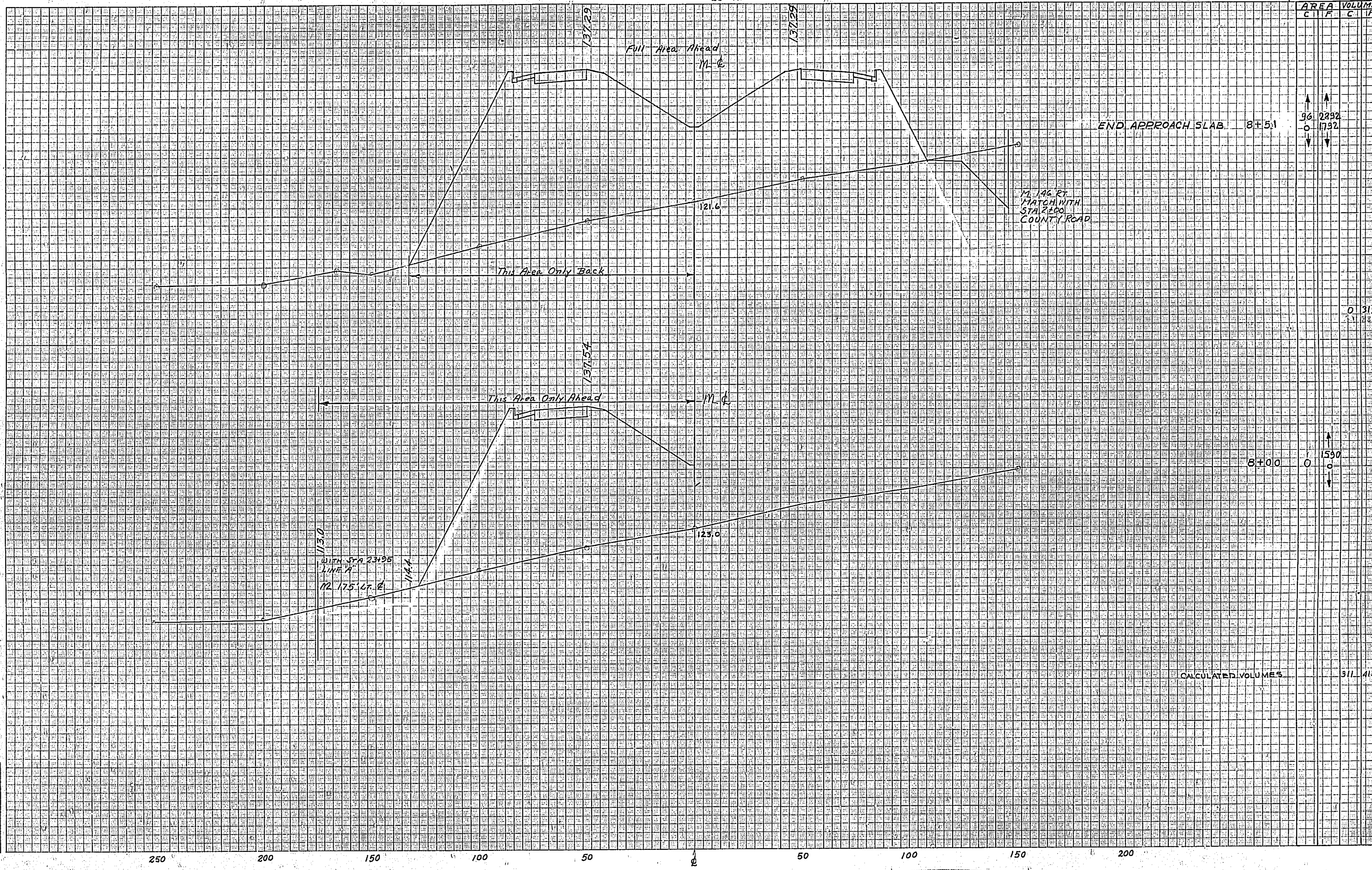
E-1452

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20' H.

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(15)76	89

STATE JOBS NO. 16320-3407 & 92130-3401



NOTE BOOK NOS. 4

Application No. ____
Route No. ____
Original Plotted by N.J.P.
Checked by E.D.H.
Template by N.J.P.
Area by ____
Finals Plotted by ____
Checked by ____
Area by ____
Checked by ____

A. R. COGSWELL JACKSONVILLE, FLA.

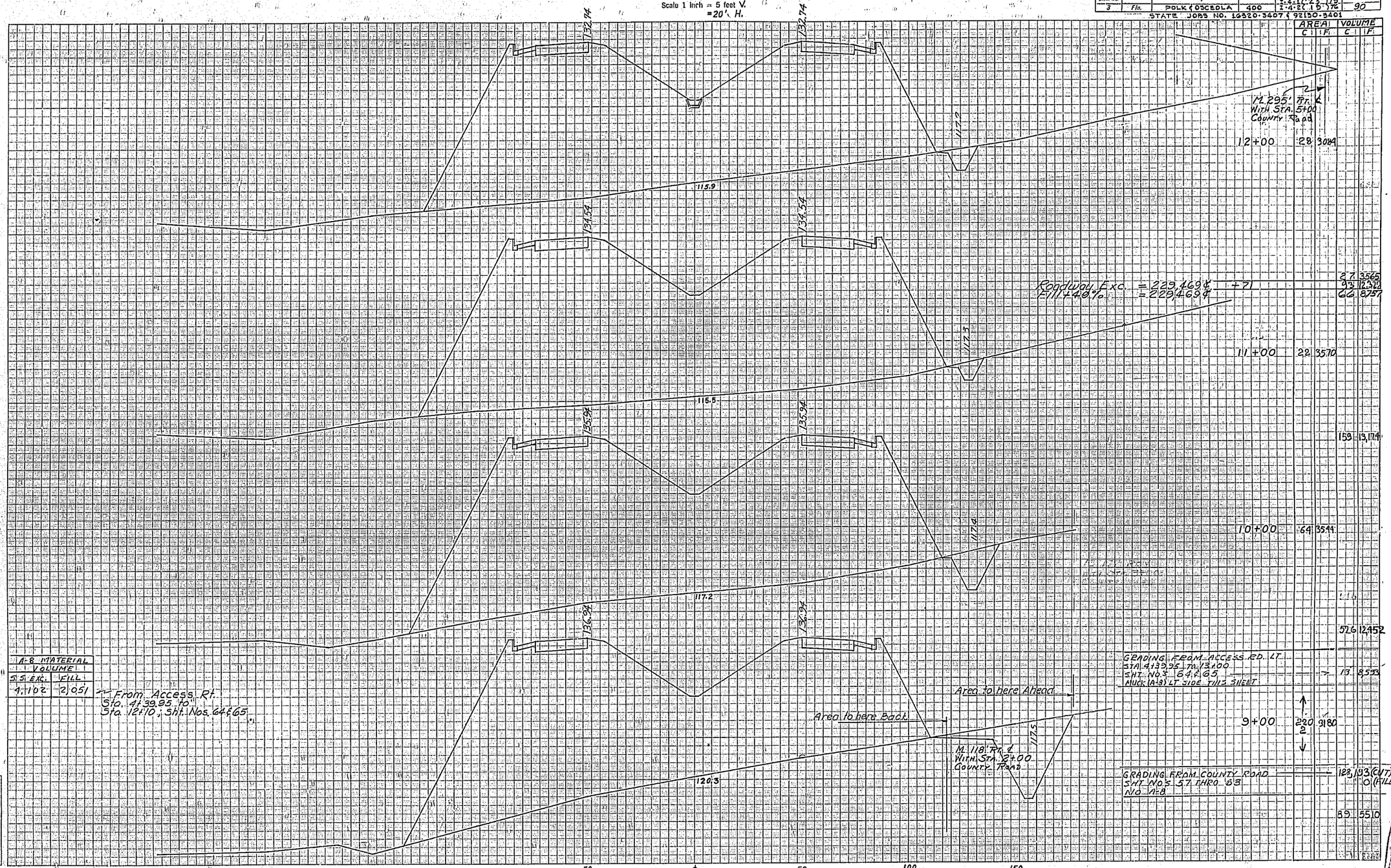
E-1453

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=20 ' H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)175	90

STATE JOBS NO. 16320-3407 & 92150-3401



AREA C	AREA F	VOLUME C	VOLUME F	
				12,295' Rt. ℄ With Sta. 5+00 County Road
				12+00
28	3084			
				Roadway Exc. = 223,469 ± +71
				211+40% = 229,469 ±
		27	3565	
		93	12,315	
		66	8757	
				11+00
22	3570			
		159	13,174	
				10+00
64	3599			
		576	12452	
				GRADING FROM ACCESS RD. LT. STA. 4+33.95 Rt. to 13+00 SHT. NO.S 64 & 65 MUCK (A-8) LT SIDE THIS SHEET
		19	8553	
				9+00
220	9180			
				GRADING FROM COUNTY ROAD SHT. NO.S 57 THRO 63 NO A-8
		122,193 (CUT) 01 (FILL)		
		89	5510	

A-8 MATERIAL VOLUME	
S.S. EXC.	FILL
9,102	2,051

From Access Rt. Sta. 4+39.95 to Sta. 12+10, Sht. Nos. 64 & 65

NOTE BOOK NOS. 4

Application No.
Route No.
Original Plotted by SHEET
Checked by E.B.H.
Template by SHEET
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. R. CODSWELL JACKSONVILLE, FLA.

E-1454

CROSS SECTIONS

Scale 1 Inch = 5 feet V
= 20 " H

Fed. Road Dvn. No.	State	County	Route	Proj. No.	Sheet No.
4	Fla.	POLK & OSCEOLA	400	I-4-2(15)75 I-4-2(15)76	91

STATE JOB NO. 16320-3407 & 92150-3407

	AREA		VOLUME	
	C	F	C	F
16+00	45	1084		
				1334748
15+00	59	1480		
				2116148
14+00	60	1840		
				2154056
13+00	56	2510		
		2414		
				1561081

STA 12+46.58 ACCESS RD
STA 12+46.58 INTERSTATE

NOTE BOOK NOS.
4

Application No.
Route No.
Original Plotted by F.B.H.
Checked by J.R.S.
Template by M.C.P.
Area by
Plots Plotted by
Checked by
Area by
Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1455

CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20 " H

Fed. Road Proj. No.	State	County	Route	Prefix	Sheet No.
3	Fla.	POLK (OSCEOLA	400	I-4-2(10)75 I-4-2(10)76	92

STATE JOBS NO. 16320-3407 & 92130-3401

	AREA C	AREA F	VOLUME C	VOLUME F
20+00	282	144		
			748	794
19+00	122	258		
			401	1315
18+00	98	452		
			278	2074
17+00	52	668		
			180	3244

NOTE BOOK NOS.
4

Application No. _____
Route No. _____
Original Plotted by E.B.H.
Checked by JRS
Template by H.E.S.
Area by _____
Finals Plotted by _____
Checked by _____
Area by _____
Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1456

CROSS SECTIONS

Scale 1 inch = 5 feet V
= 20 " H

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(13)75 I-4-2(13)76	93

STATE JOBS NO. 16320-3407 & 92130-3401

		AREA		VOLUME	
		C	F	C	F
25+00	1303	0			
				1756	0
24+00	1260	0			
				4085	11
23+00	946	6			
				3270	1100
22+00	820	78			
				2400	380
21+00	476	157			
				1404	557

250 200 150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
4

Application No.
Route No.
Original Plotted by E.D.H.
" Checked by
Template by
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1457

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 20 " H.

Fed. Road Civil No.	State	County	Route	Fed. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)75 I-4-2(19)76	94

STATE JOBS NO. 16320-3407, 92150-3401

		AREA		VOLUME	
		C	F	C	F
26+67	1020	0			
				735	0
26+48	1068	0			
				197	0
26+43	1069	0			
				1742	1
26+00	1129	1			
				1504	2

300 250 200 150 100 50 ℄ 50 100 150 200 250 300

NOTE BOOK NOS.
4

Application No.
Route No.
Original Plotted by E.P.H
Checked by J.R.S
Template by S.L.H
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. B. COGSWELL
JACKSONVILLE, FLA.

E-1458

CROSS SECTIONS

Scale 1 inch = 5 feet V
=20 " H

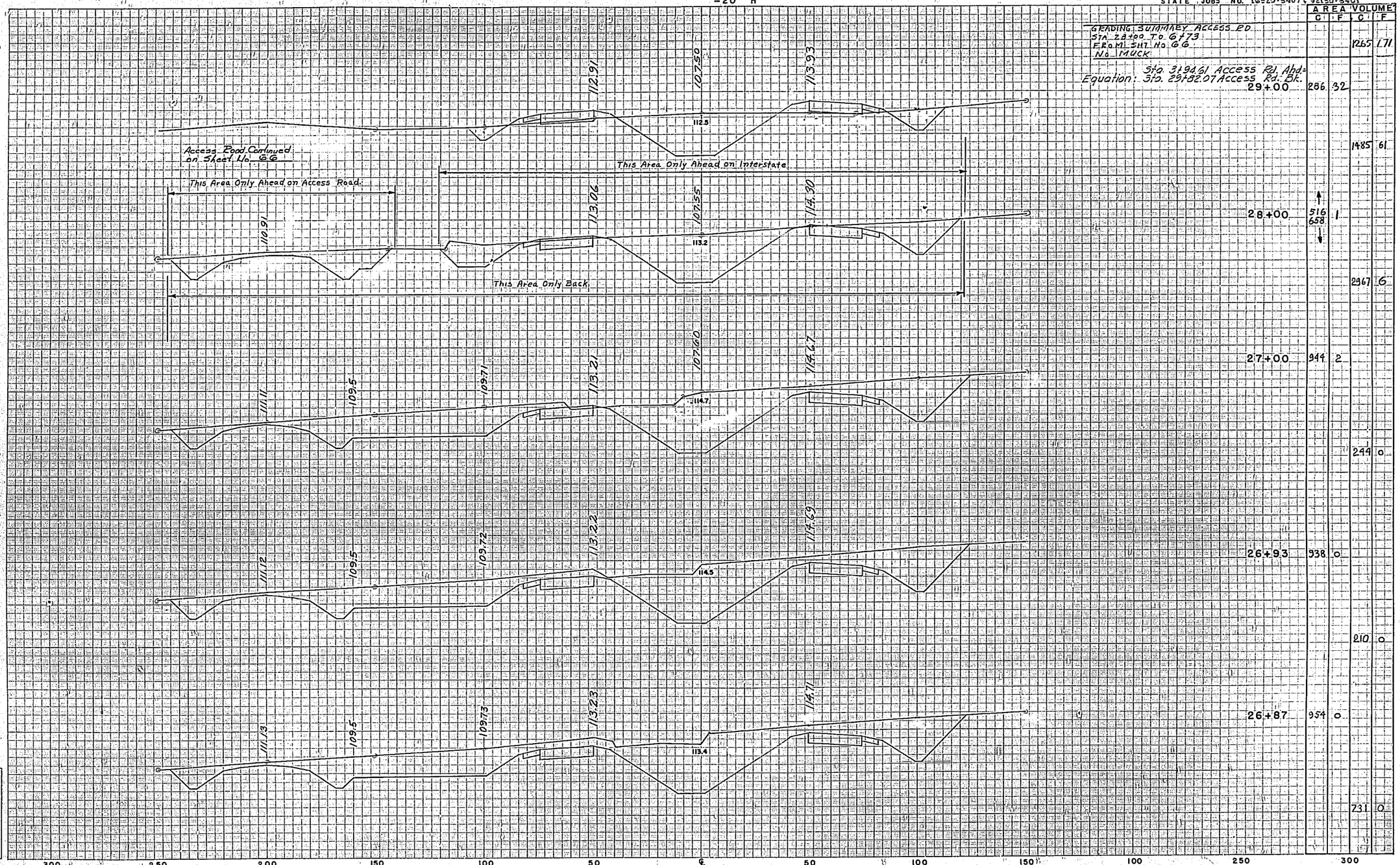
Fed. Roll Crs. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)72 & I-4-2(15)74	95

STATE JOBS NO. 16320-3407 & 92130-3401

GRADING, SUMMARY ACCESS RD.
STA. 28+00 TO 61+73
FROM SHT NO 66
No MUCK

Sta. 31+94.61 Access Rd. Ahd =
Equation: Sta. 29+82.07 Access Rd. Bk.

	AREA C	AREA F	VOLUME C	VOLUME F
			1265	171
29+00	286	32		
			1485	61
28+00	516	1		
	658			
			2367	6
27+00	944	2		
			2441	0
26+93	938	0		
			2101	0
26+87	954	0		
			731	0



NOTE BOOK NOS.
4

Application No. _____
Route No. _____
Original Plotted by E.D.H.
" Checked by J.R.S.
Template by S.C.H.
Area by _____
Finals Plotted by _____
C " Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

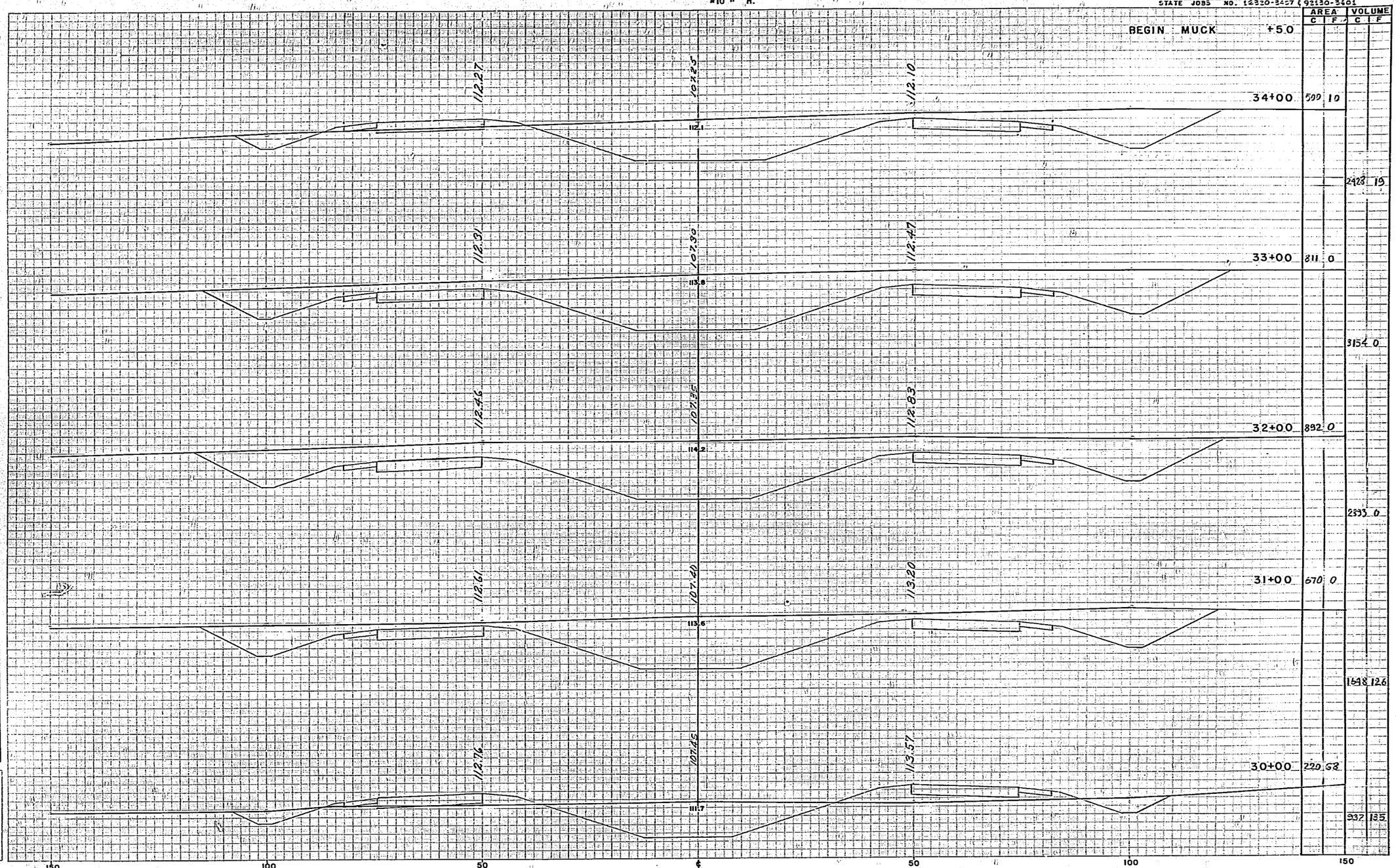
E-1459

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=10 " H.

Fed. Aid Sec. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)175	96

STATE JOBS NO. 12830-3407 & 92150-3401



	C	F	C	F
	AREA		VOLUME	
BEGIN MUCK +5.0				
34+00	509	19		
			2423	19
33+00	811	0		
			3154	0
32+00	892	0		
			2593	0
31+00	670	0		
			1648	126
30+00	220	52		
			932	135

NOTE BOOK NOS.
4

Plotted by R.L. & S.M.
Checked by A.S. & F.H.
Traced by [illegible]

A. P. CUSHWELL
JACKSONVILLE, FLA.

E-1460

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=10' H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)76	97

STATE JOBS NO. 16320-3407 & 92130-3401

A-B MAT'L SS-EXC		FILL		Sta. 38+00	AREA C	AREA F	VOLUME C	VOLUME F
A	V	A	V					
0				+19 END MUCK FILL LT.		1050		
	74					376		
316		51						730
172		76			37+00	0	1038	
520		272					56	3292
127		77			36+00	30	642	
278		246					435	1578
23		56		BEGIN MUCK FILL LT.	35+00	205	210	270
22								
0				+50 BEGIN MUCK				
							1206	519

END MUCK FILL LT +19

BEGIN MUCK FILL LT.

BEGIN MUCK +50

NOT TO BE USED

Application
Form No.
Original Plotted by E.S.H.
Checked by R.E.
Tracing by H.L.C.
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. R. COCKRELL JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

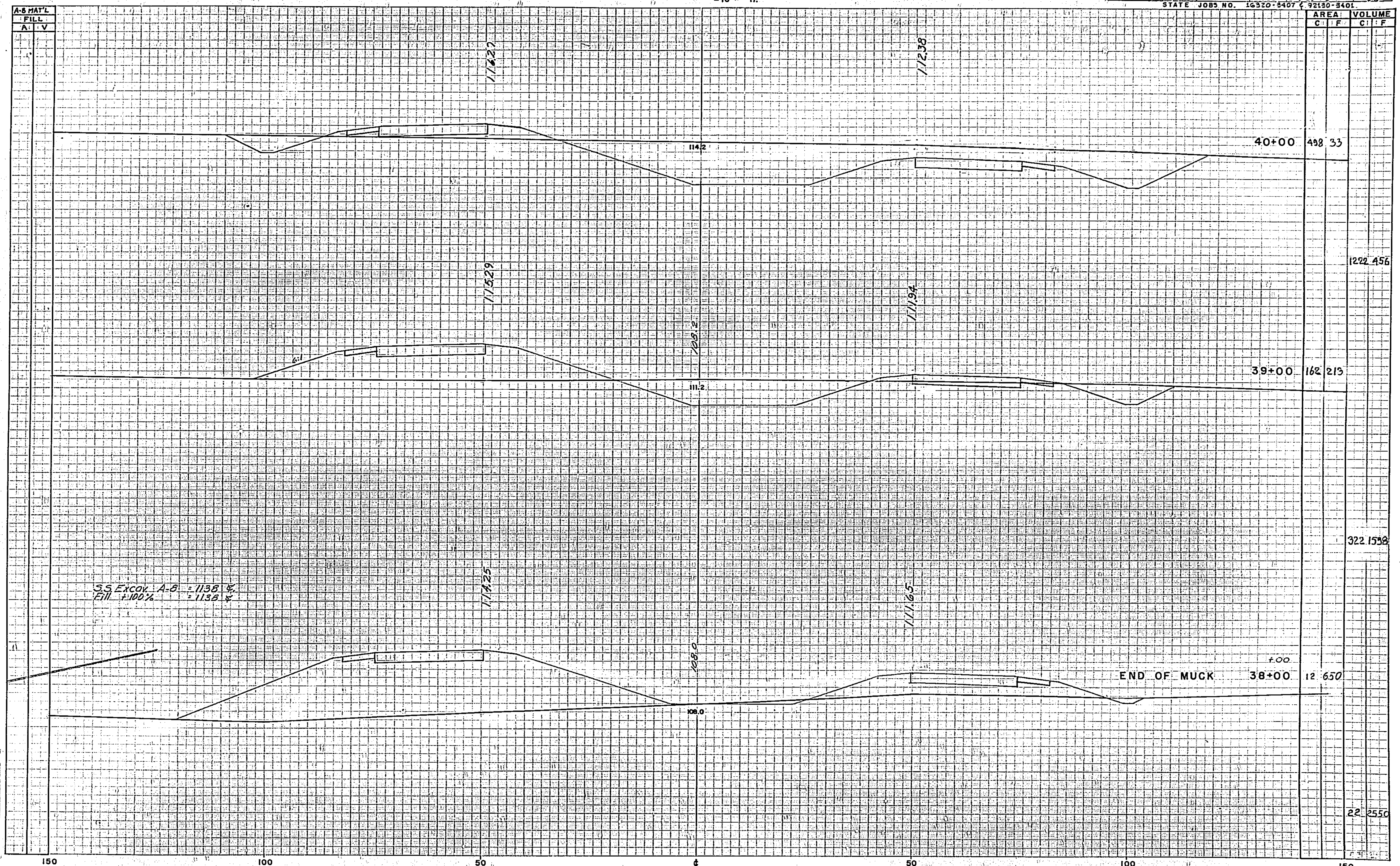
E-1461

CROSS SECTIONS

Scale 1 inch = 5 feet V.
=10 " H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(19)76	58

STATE JOBS NO. 16320-3407 & 92130-3401.



NOTE BOOK NOS.
4

Application No.
Field No.
Original Plotted by RZL. & S.M.
Checked by F.H. & A.S.
Template by [illegible]
Area by
Finish Plotted by
Checked by
Area by
Checked by

A. R. COGSWELL

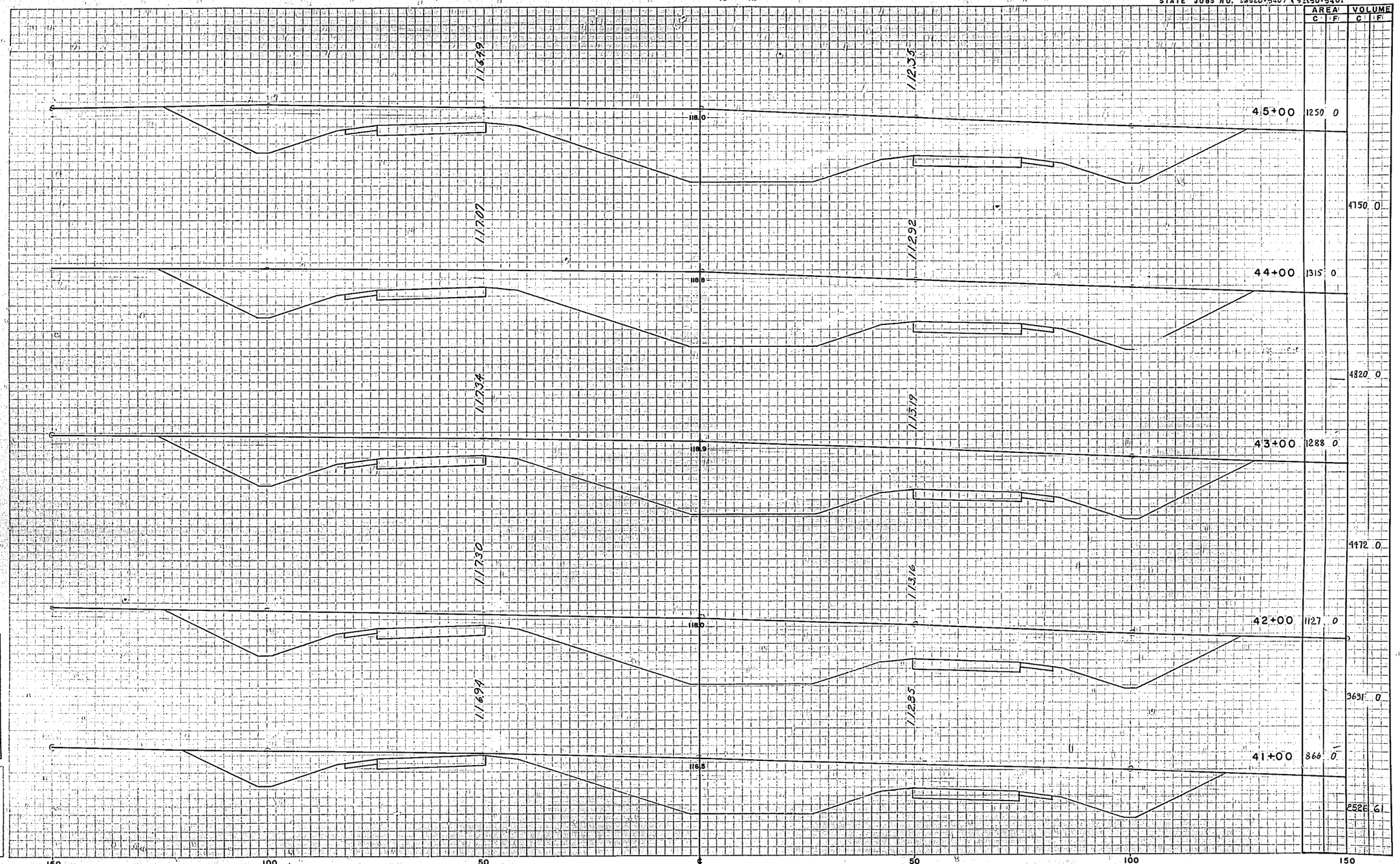
E-1462

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Aid Proj. No.	State Proj.	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(23)75 I-4-2(13)74	99

STATE JOBS NO. 16520-3407 & 92130-3407



NOTE BOOK NOS.

ECH
Checked by A.S. & F.H.
Notes by E.T.S. MILES

A. R. CONSWELL
JACKSONVILLE, FLA.

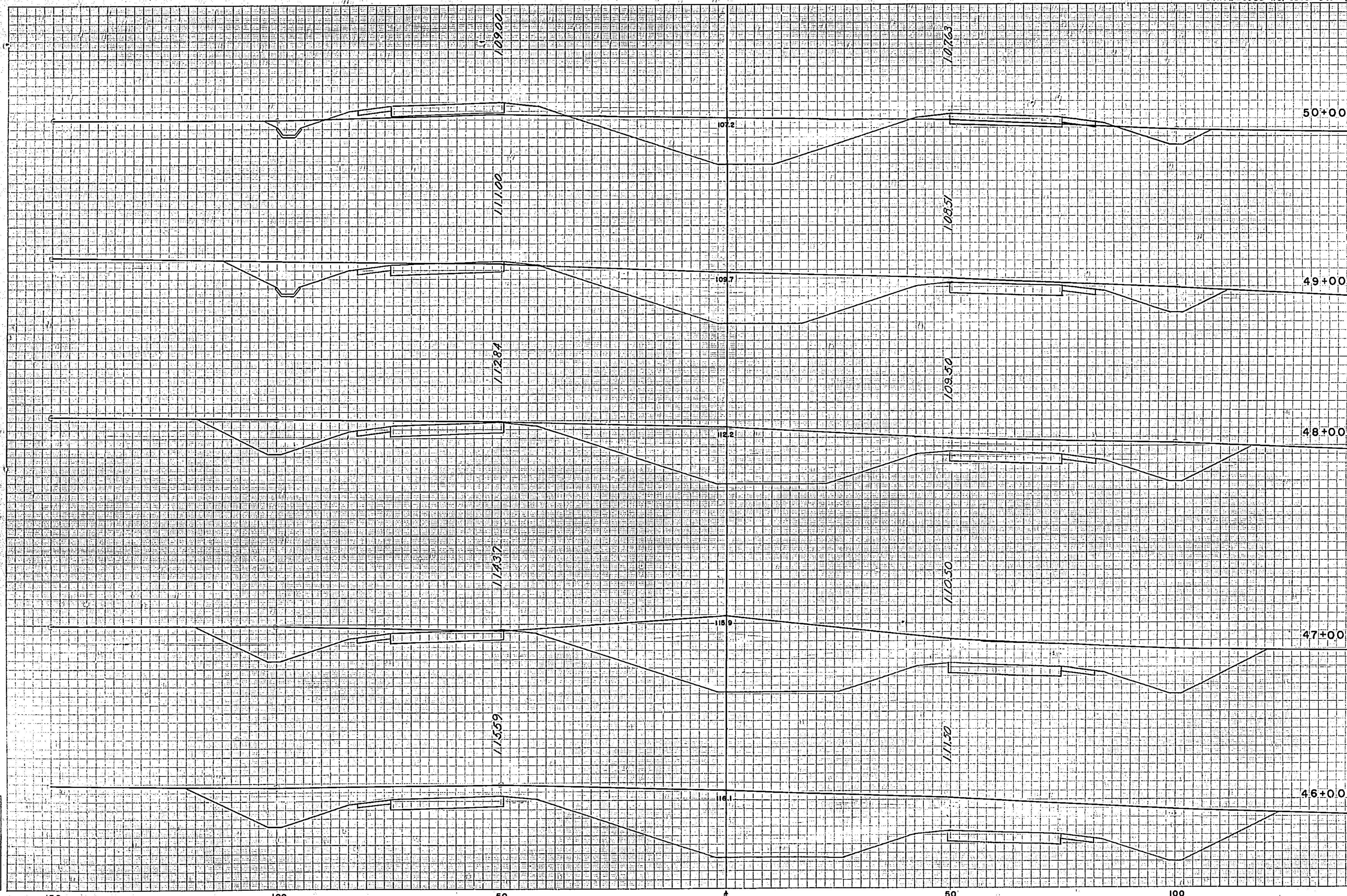
E-1463

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(25)75 I-4-2(17)76	100

STATE JOBS NO. 16320-3407 & 92130-3401



AREA C	AREA F	VOLUME C	VOLUME F
279	40		
		1463	76
511	1		
		2239	2
698	0		
		2963	0
902			
		3574	0
1028	0		
		4219	0

NOTE BOOK NOS.

Application No. ______
Photo No. ______
Original Plotted by RZL
Checked by A.S. & F.H.
Template by W.E.H. & JRS
Area by ______
Finals Plotted by ______
Checked by ______
Area by ______
Checked by ______

A. R. COGSWELL
JACKSONVILLE, FLA.

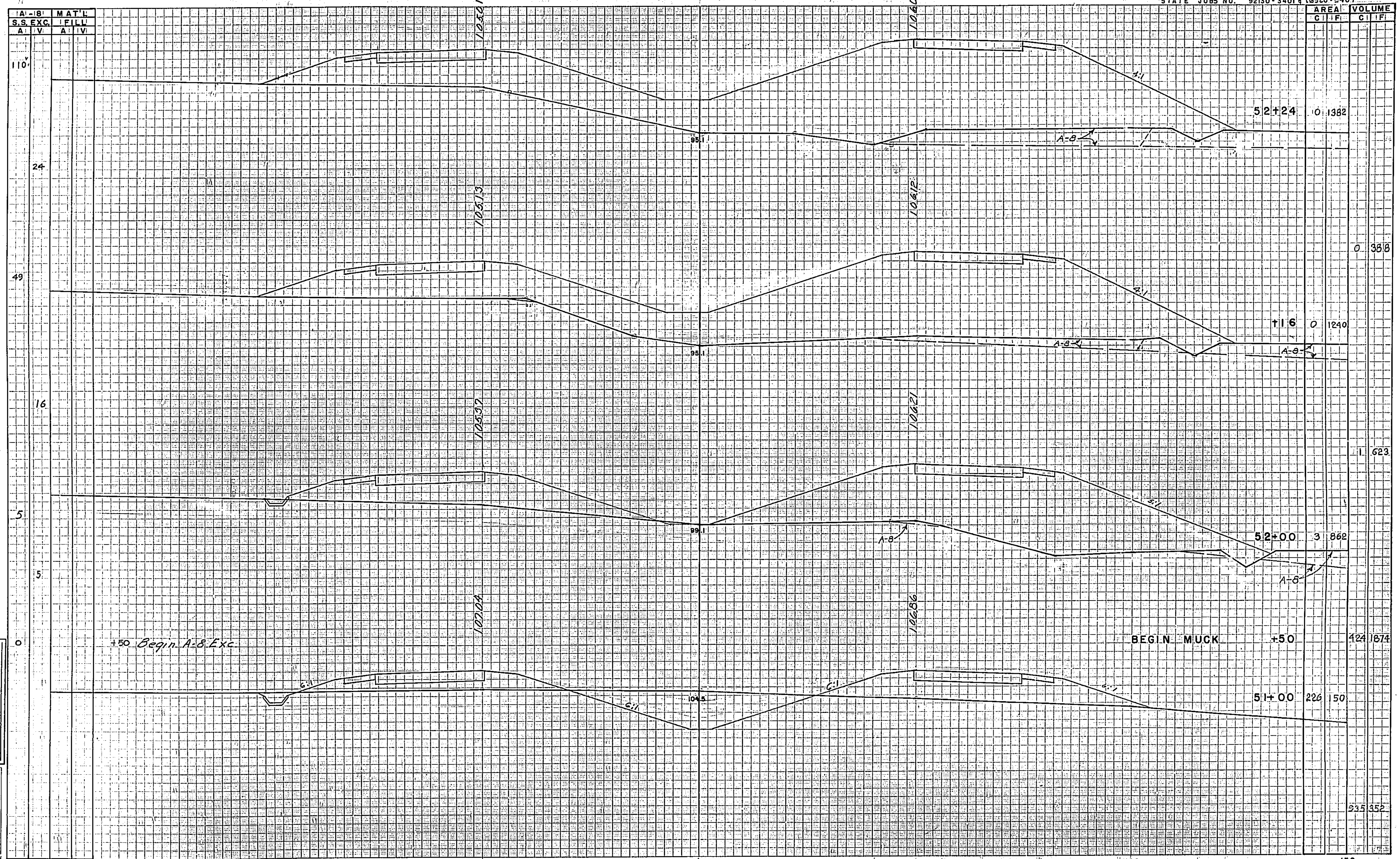
E-1464

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-(25) 75 I-4-2(13) 76	101

STATE JOBS NO. 92130-3401 & 16320-3407



NOTE BOOK NOS.

Application No.
Plate No.
Original Plotted by RL
" Checked by A.S. & F.H.
Template by W. E. K.
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. P. COGSWELL
JACKSONVILLE, FLA.

E-1465

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Aid Sys. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175	102

STATE JOBS NO. 92130-3401 & 92520-5407

A-8 S.S. EXC.		MAT'L FILL	
A	V	A	V
292		144	
289		166	
247		165	
298			
128			
47			
43			
51			

AREA		VOLUME	
C	F	C	F
53+29	0	1636	
		0	1738
BEGIN MUCK FILL LT. & RT. 53+00	0	1600	
		1765	
		0	909
+66		0	2646
		0	1737
Roadway Exc. = 83,900 ♯ Fill = 145% = 82,900 ♯			
52+57	0	1558	
		0	824
52+42	0	1410	
		0	931

NOTE BOOK NOS. 4

Application No. ...
Edwin No. ...
Original Plotted by RZL
" Checked by A.S. & F.H.
" Template by V.S.T.
Area by ...
Final Plotted by ...
" Checked by ...
Area by ...
" Checked by ...

A. B. COGSWELL, JACKSONVILLE, FLA.

E-1466

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(15)175 I-4-2(15)176	103

STATE JOBS NO. 52130-3401 & 16320-3407

A1-B1 S.S. EXC. CUT A	A1-B1 S.S. EXC. CUT V	MAT'L FILL A	MAT'L FILL V	STATION	AREA C	AREA F	VOLUME C	VOLUME F
86		88		54+00	0	836		
							0	576
51		59						
99		123		53+85	0	1238		
293		204					0	2185
288		146		53+44	0	1640		
							0	910
161		81						

1030.0 — 97.2 — 103.13 — 92.7 — 103.53 — 93.9 — 150 — 100 — 50 — ℄ — 50 — 100 — 150

1052.4 — C-1 — 1053.0 — 5:1 — A-B — 1053.41 — 4:1

NOTE BOOK NOS.

Application No.
Plate No.
Drilled Plotted by RZL
" Checked by A.S. & F.H.
Template by W.E.A. & J.R.S.
Area by
Plats Plotted by
" Checked by
Area by
" Checked by

A. H. COGSWELL
JACKSONVILLE, FLA.

E-1467

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	(c) County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175 I-4-2 (15) 176	104

STATE JOBS NO. 92130-3401 & 16320-3407

(A-1-B) S.S. EXC. A	(A-1-B) S.S. EXC. V	MAT'L FILL A	MAT'L FILL V	AREA C	AREA F	VOLUME C	VOLUME F
				59+00	406	9	
						1133	280
				58+00	206	1142	
						672	511
				57+00	157	134	
						357	1200
				END OF MUCK	56+00	36	514
						1535	
				+23		563 521	85
						470	
				END MUCK FILL LT & R.T.	55+00	10 0	582 516
						0	2504

100.29 10.15
101.16 103.57
100.6
101.53 103.99
100.8
101.89 104.41
96.9
102.30 102.82
96.8

S.S. EXCV. (A-8) = 1620
RDWY. EXCV. (A-8) = 36
FILL + 100% (A-8) = 1656

Ridwy Exc. A V
0

123 END MUCK FILL LT.

END MUCK FILL RT.

A-8

1:1

0 42 113 37 22 46 64 61 12 14 0 +36 272 281

NOTE BOOK NOS. 4

Application No.
Route No.
Original Plotted by SCA
" Checked by F.H. & A.S.
Template by W.E.K. & URS
Area by
Hools Plotted by
" Checked by
Area by
" Checked by

A. H. COGSWELL JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

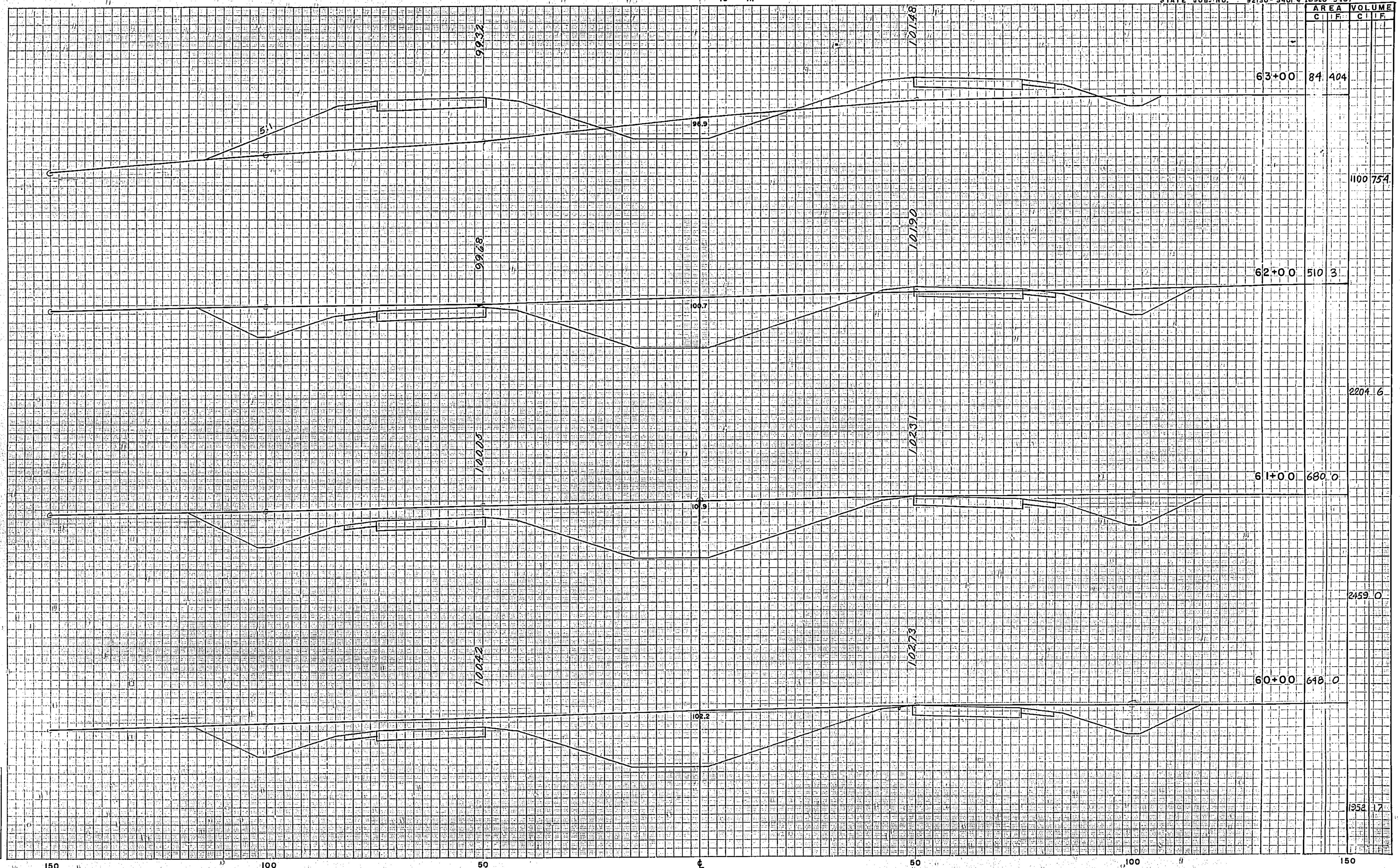
E-1468

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (22) 175 I-4-2 (19) 176	105

STATE JOBS NO. 92130-3401 & 16320-3407



NOTE BOOK NOS.
4

Application No. ______
Road No. ______
Original Plotted by RZL
" Checked by A.S. & F.H.
Template by JRS
Area by ______
Finals Plotted by ______
" Checked by ______
Area by ______
" Checked by ______

A. H. COGSWELL
JACKSONVILLE, FLA.

E-1469

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dmn. No.	State	County	Route	Proj. No.	Sheet No.
7	Fla.	POLK & OSCEOLA	400	I-4-2 (19) 175 I-4-2 (19) 176	106

STATE JOBS NO. 92130-3401 & 92320-3407

A1-B1 S.S. EXC. A	V	MAT'L FILL A	V	AREA C	F	VOLUME C	F
				END OF MUCK 66+00		84	384
						156	4,233
415							
224				65+00		0	1902
						0	3396
0	166			END MUCK FILL LT. & RT. +46		1499	1328
446							
						0	2066
	230			64+00		0	1097
17	104						
							3294
15		208					
				BEGIN MUCK 63+50			
0	120		+50	BEGIN MUCK FILL LT. & RT. +50		682 802	156
	0					0	2233

S.S. EXCV. (A-8) = 87.6 C.Y.
FILL + 100% = 87.6 C.Y.

+46 END MUCK FILL LT. & RT.

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.

Application No.
Route No.
Original Plotted by E.E.L. & S.M.
" Checked by A.G. & F.H.
Template by J.P.S.
Area by
Final Plotted by
" Checked by
Area by
" Checked by

A. R. CUDDELL, JACKSONVILLE, FLA.

J.C.
A.S.

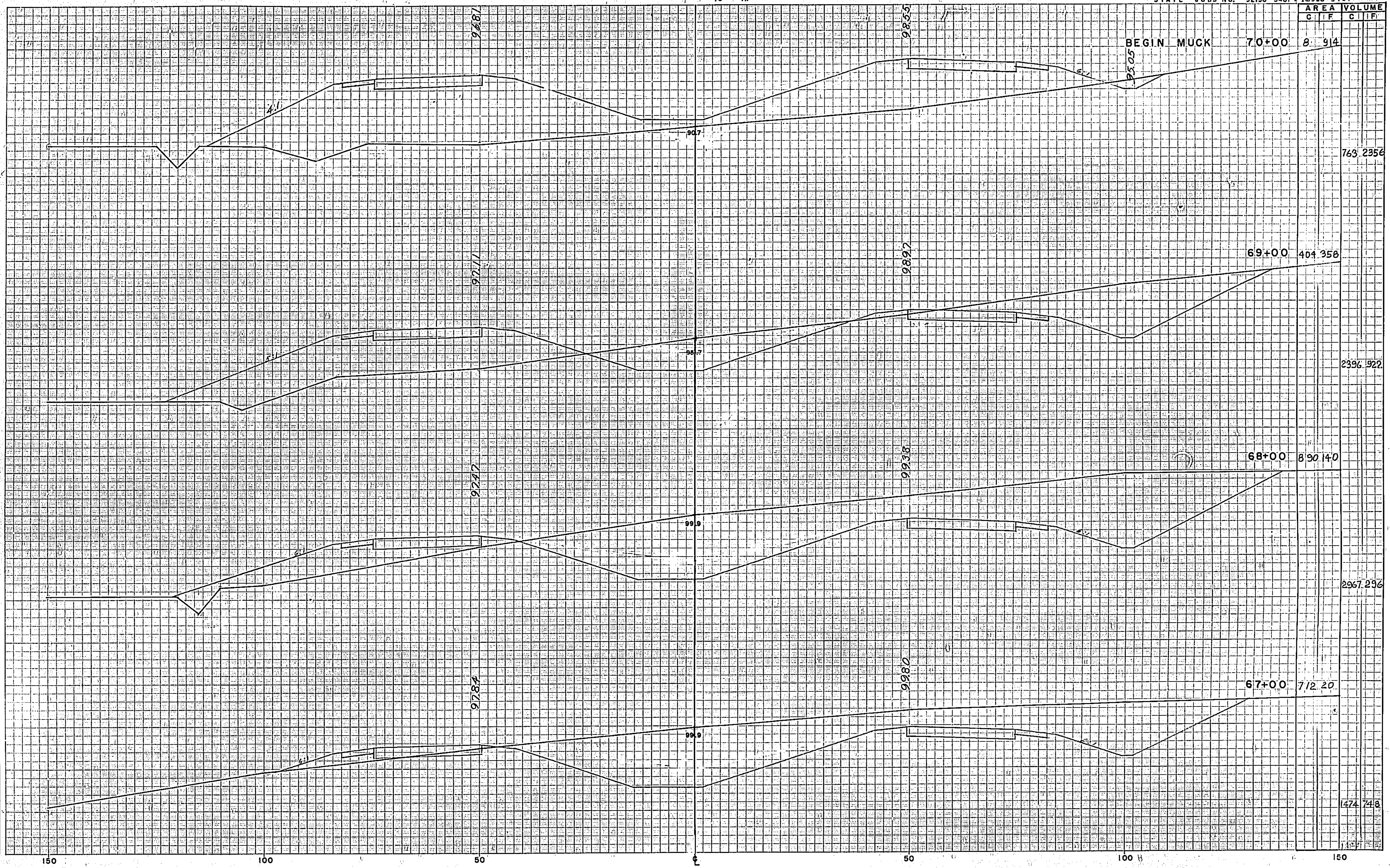
E-1470

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Divs. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (25) 75 I-4-2 (19) 76	107

STATE JOBS NO. 92130-3401 & 16320-5407



Field Plotted by R.Z.L.
Checked by R.L.S. & F.H.
Template by J.R.S.

A. R. CODDWELL
JACKSONVILLE, FLA.

E-1471

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK/OSCEOLA	400	I-4-2(19)175 I-4-2(19)176	108

STATE JOB NO. 92130-3401 & LG320-3407

A-B	MAT'L				AREA		VOLUME	
S.S.	EXC.		FILL		C	F.	C	F.
A	V.		A	V.				
		7106		9847				
32					7 1+00	0 1456		
							0 992	
26								
		9697		9843				
46					+82	0 1520		
		9686		9842				
35								
					7 0+58	0 1166		
32								
							3 2234	
34								
0								

Deduct 4289 C.Y. For Box Culvert (FILL) -4289

Begin Muck Sta. 7+00

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.

Application No.
Base No.
Oldsell Plotted by R.R.L.
" Checked by JHP & FWM.
Typed by J.R.S.
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1472

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 75 I-4-2 (15) 76	109

STATE JOBS NO. 92130-3401 & 16320-3407

A'-B' S.S. EXC. A	A'-B' S.S. EXC. V	MAT'L FILL A	MAT'L FILL V
0			
		0	
169		10	
387			
		163	
209		146	
559		470	
93		106	0
231			

S.S. Excav. (A-B) = 12.72 C.Y.
Fill + 100% = 12.72 C.Y.

10152 — 5:1 — 893 — 10234 — 2:1

+29 END MUCK FILL RT

9942 — 89.8 — A-B — 10237

9293 — 89.1 — A-B — 9928

+00 BEGIN MUCK FILL RT.

A-B — 2:1

	AREA C	AREA F	VOLUME C	VOLUME F
END OF MUCK 74+00	0	2092		
			0	5551
END MUCK FILL RT +29			2130	
	0	1961		
			0	2127
73+00	0	1999		
			0	6689
			1613	
72+00	0	1721		
BEGIN MUCK FILL RT.				
			0	5883

NOTE BOOK NOS.

R2L
JNF & FWH
JRS

A. B. CUSWELL, THOMASVILLE, GA.

150 100 50 ℄ 50 100 150

E-1473

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Aid Proj. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 75 I-4-2 (15) 76	110

STATE JOBS. NO. 92130-3401 & 16320-3407

	AREA		VOLUME	
	C	F	C	F
77+00	1696	0		
			4752	0
76+00	870	0		
			1885	370
75+00	148	200		
			178	1490
74+35	0	1038		
			0	3029

114.5 — 103.38 — 10959 — 10288 — 11022 — 10282 — 6:1

108.5 — 104.16 — 10320 — 6:1

101.9 — 102.46 — 105.19 — 6:1

95.3

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
4

Application No.
Route No.
Original Plotted by RLL
" Checked by AWS & RH
Template by JRS
Area by
Plans Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1474

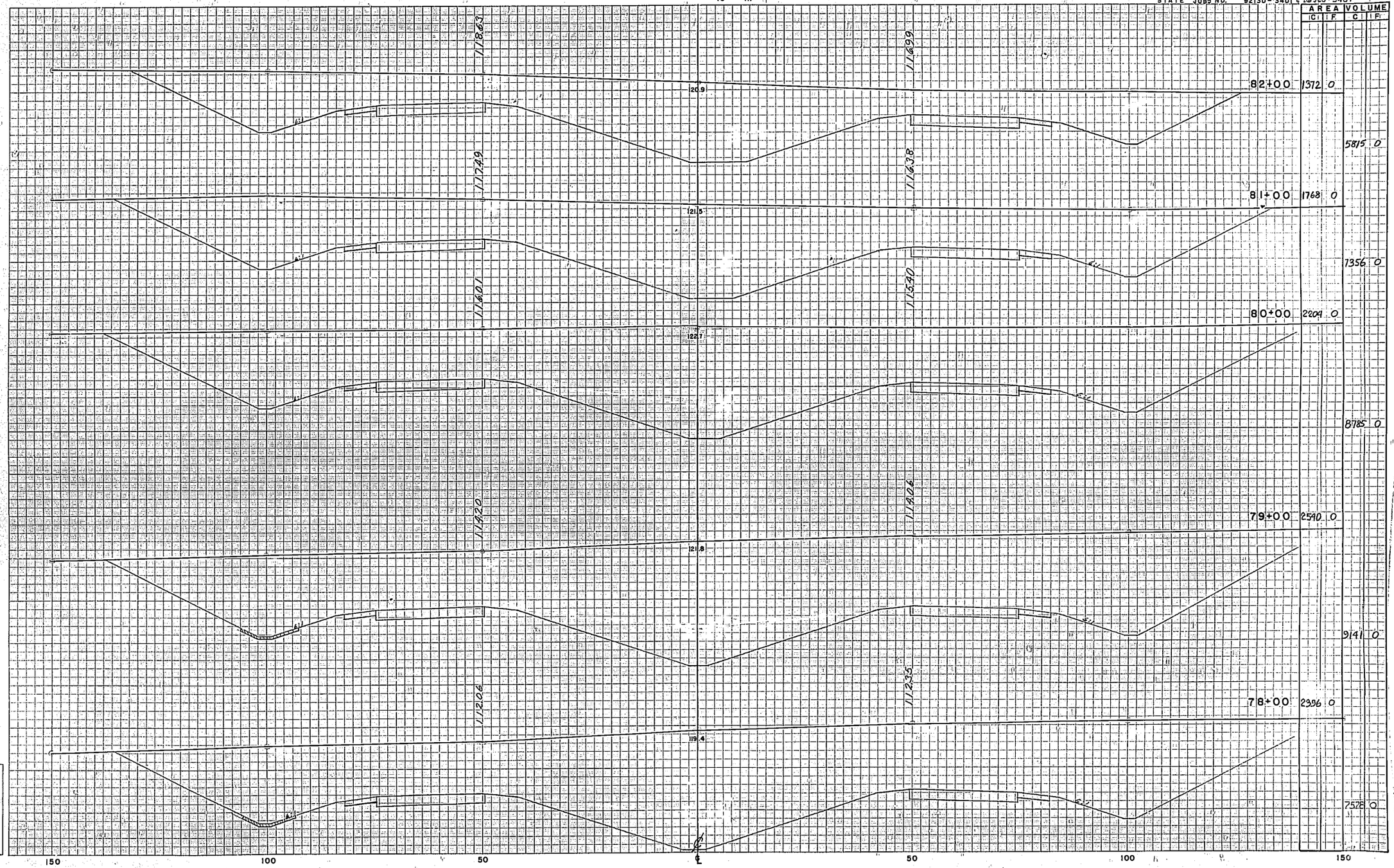
CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Sect. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2([15)176	1 1

STATE JOBS NO. 92130-3401 & 16320-3407

	AREA		VOLUME	
	C	F	C	F
82+00	1372	0		
			5815	0
81+00	1768	0		
			7356	0
80+00	2204	0		
			8785	0
79+00	2540	0		
			9141	0
78+00	2396	0		
			7528	0



NOTE BOOK NOS.
4 2 5

Application No.
Route No.
Original Plotted by R2L
Checked by AKSHEN
Template by JRS
Area by
Final Plotted by
Checked by
Area by
Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

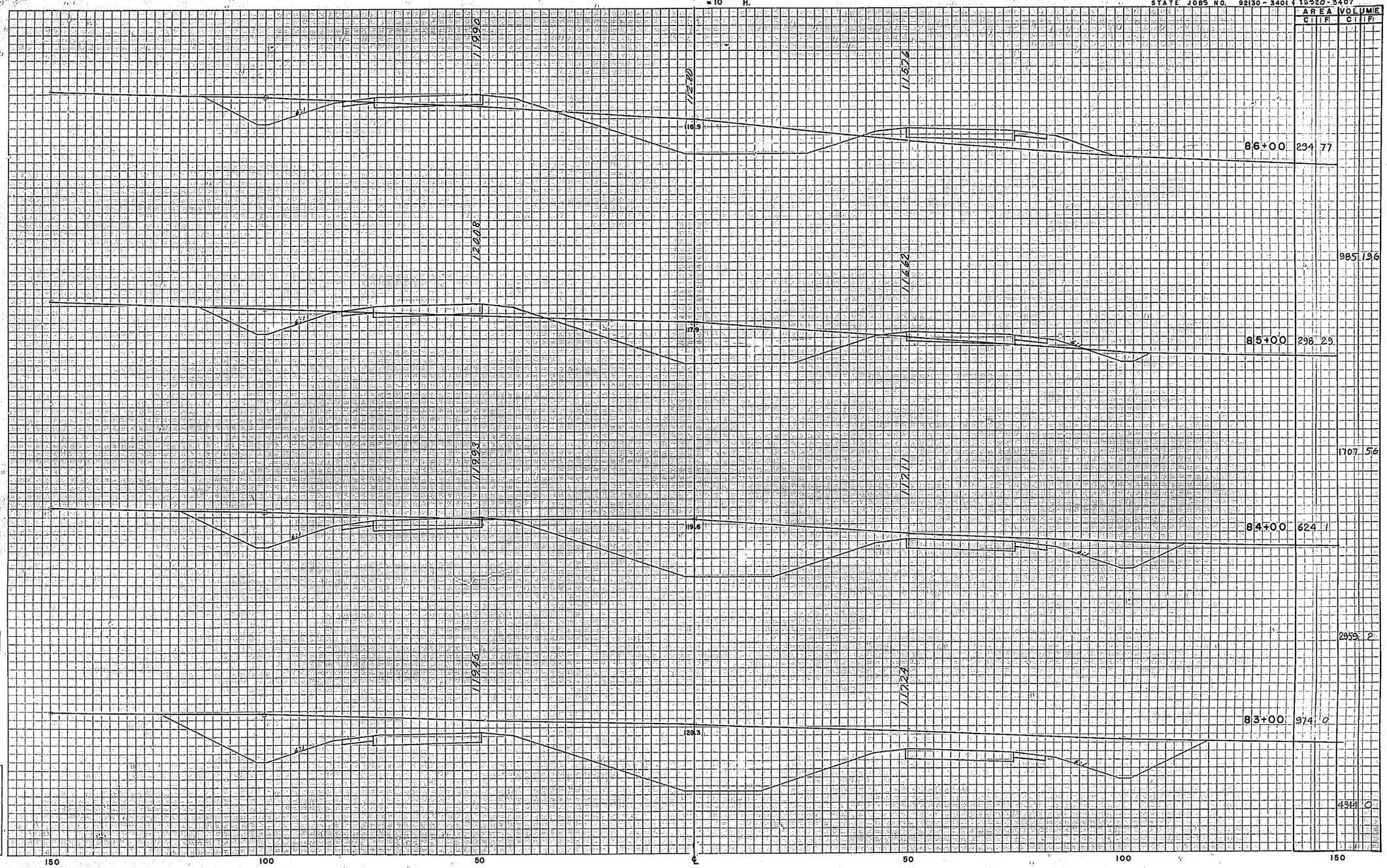
E-1475

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (12)175 I-4-2 (12)176	112

STATE JOBS NO. 92130-3401 & 16520-3407



	AREA C	AREA F	VOLUME C	VOLUME F
86+00	234	77		
			985	196
85+00	298	29		
			1707	56
84+00	624	1		
			2959	2
83+00	974	0		
			4344	0

NOTE BOOK NOS.
5

Application No. .....
Route No. .....
Original Plotted by R.Z.L.
" Checked by R.V.C. & F.H.
Template by J.R.S.
Area by .....
Finals Plotted by .....
" Checked by .....
Area by .....
" Checked by .....

A. R. COGSWELL
JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

E-1476

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19) 176	113

STATE JOBS NO. 92130-3401 & 16320-3407

	AREA C	AREA F	VOLUME C	VOLUME F
90+00	984	0		
			767	9
#76			3149	37
			2377	28
89+00	714	20		
			2452	48
88+00	610	6		
			1865	74
87+00	396	34		
			1157	206

Roadway E&C = 81,227 ℄
F.I.I. #40 % = 81,227 ℄

NOTE BOOK NOS.
5

Application No. _____
Route No. _____
Original Plotted by R.Z.L.
Checked by R.K.F. F.H.
Template by J.R.S.
Area by _____
Tinals Plotted by _____
Checked by _____
Area by _____
Checked by _____

A. R. CORNWELL
JACKSONVILLE, FLA.

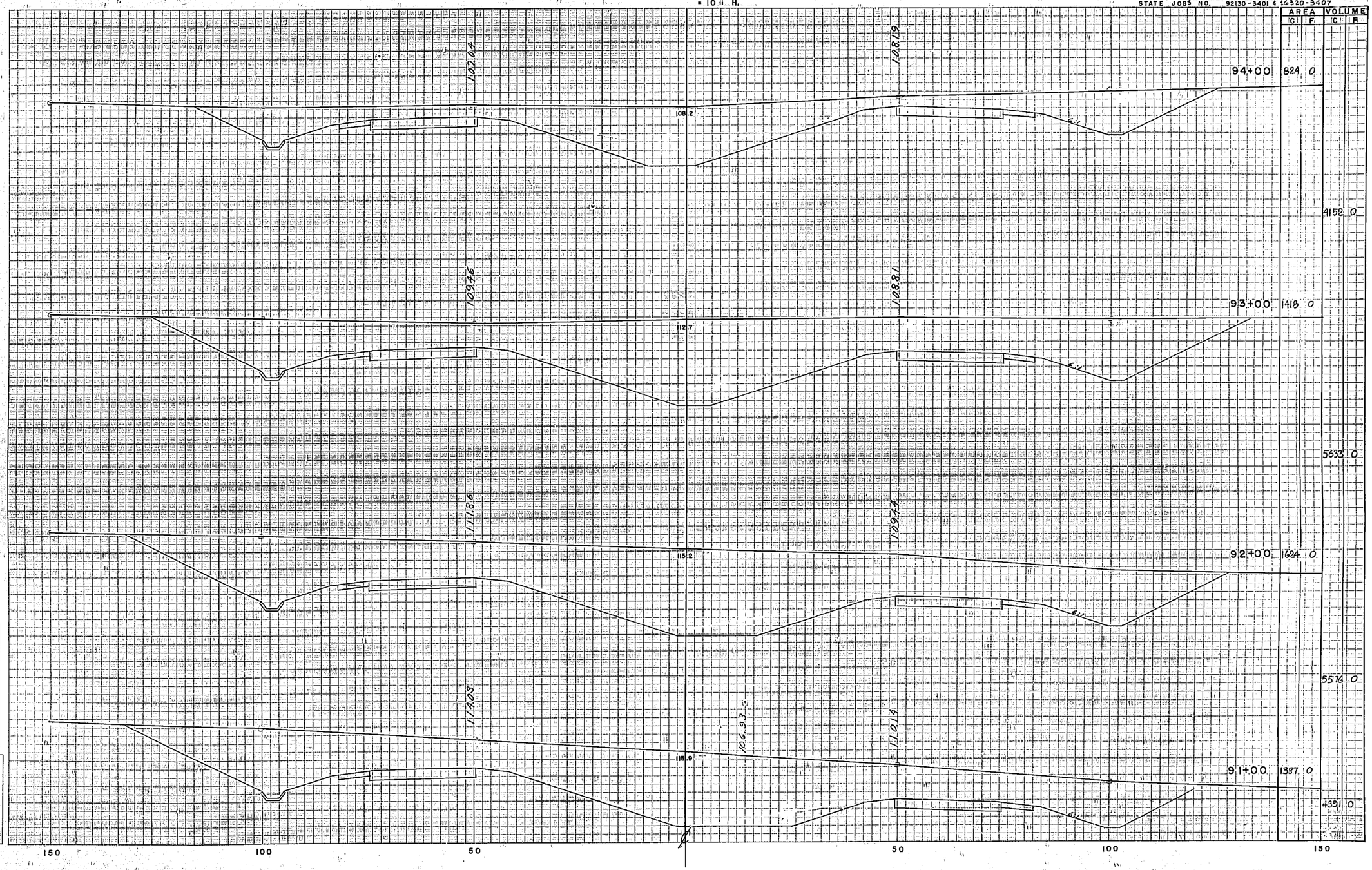
E-1477

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK, OSCEOLA	400	I-4-1 (12) 75 I-4-2 (12) 76	114

STATE JOBS NO. 92130-3401 & 92320-3407



AREA		VOLUME	
C	F	C	F

NOTE BOOK NOS. 5

Application No.
Route No.
Original Plotted by RZL
" Checked by AHS & FM
Template by JRS
Areas by
Finals Plotted by
" Checked by
Areas by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

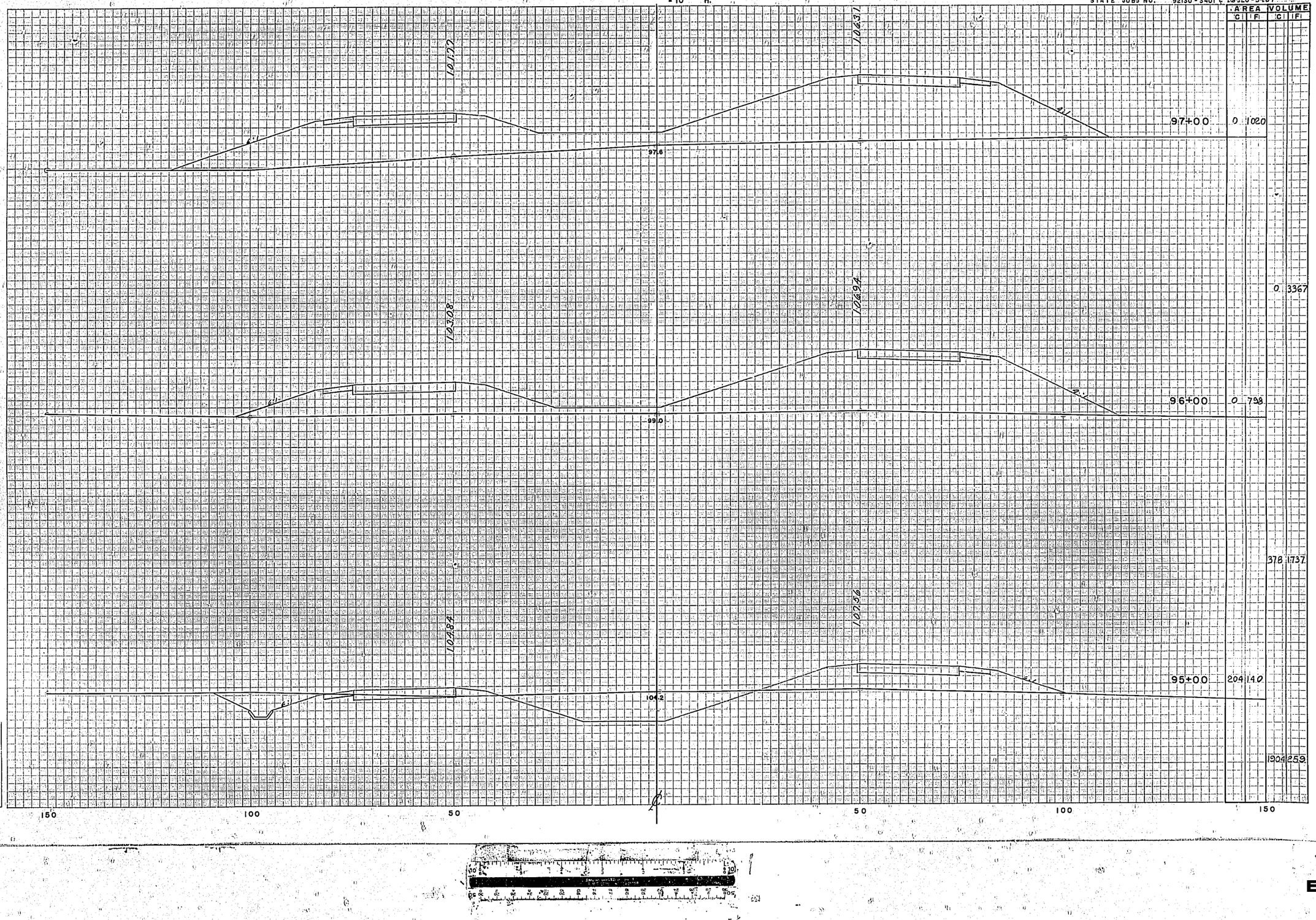
E-1478

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Proj. No.	State	County	Route	Ipi. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 75 I-4-2 (15) 76	115

STATE JOBS NO. 92130-3401 & 16320-3407



	AREA		VOLUME	
	C	F	C	F
97+00	0	1020		
			0	3367
96+00	0	798		
			378	1737
95+00	204	140		
			1904	259

NOTE BOOK NOS. 5

Application No.
Route No.
Original Plotted by RZL
" Checked by AHS & FH
Template by JRS
Area by
Plots Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
ALBERTVILLE, FLA.

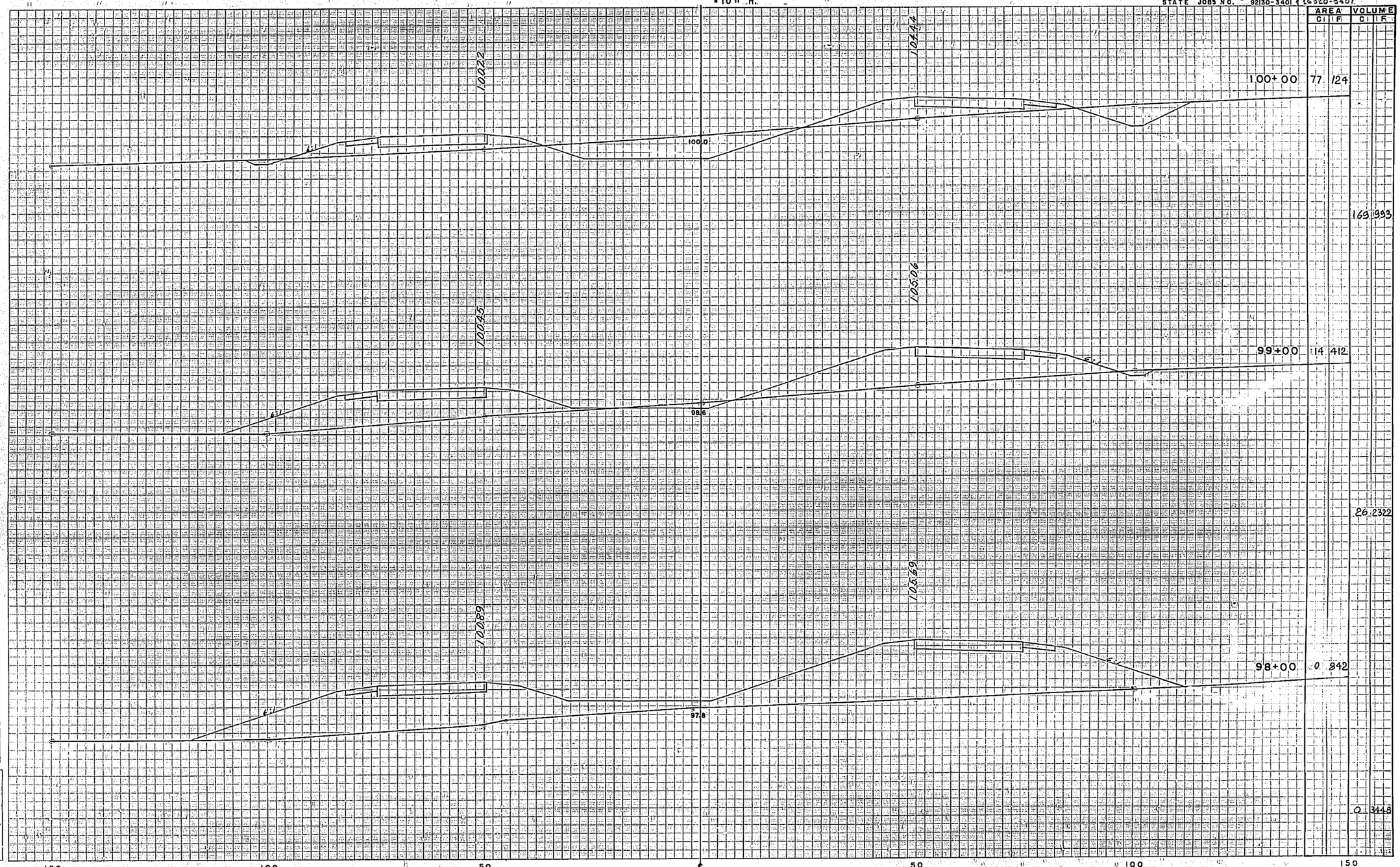
E-1479

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK OSCEOLA	400	I-4-2 (12)178	116

STATE JOBS NO. 92130-3401 & 16320-3407



AREA		VOLUME	
C	F	C	F
		169	993

NOTE BOOK NOS.
5

Application No.
Route No.
Original Plotted by R.Z.L.
Checked by AVS & RH
Graphic by JRS
Area by
Plots Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1480

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dsn. Ag.	State	County	Route	Proj. No.	Sheet No.
9	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175 I-4-2 (15) 176	117

STATE JOBS NO. 92130-3401 & 66520-3407

	AREA C	AREA F	VOLUME C	VOLUME F
104+00	8	618		
				167 1596
103+00	82	244		
				489 637
102+00	182	100		
				733 293
101+00	214	58		
				339 337

NOTE BOOK NOS. 15

Application No.
Route No.
Original Plotted by RZL
Checked by AVG, F.M.
Template by JRS
Area by
Finals Plotted by
Checked by
Area by
Checked by

A. R. CROSWELL, JACKSONVILLE, FLA.

E-1481

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK OSCEOLA	400	I-4-2 (19)175 I-4-2 (19)176	118

STATE JOB NO. 92130-3401 & 16320-3407

I A-18 S.S. EXC.		MAT'L FILL	
A	V.	A	V.
180	83		
	0		
	92		
95			
	88		
0			

AREA		VOLUME	
C	F.	C	F.
			2 543
			12 1272
			15 1178

+18 BEGIN MUCK FILL RT. & LT.

BEGIN MUCK FILL RT. & LT. 105+18 0.878

105+00 5 667

BEGIN MUCK +50

104+49 8 680

A-8

A-8

A-8

99.57

99.48

99.43

101.26

101.34

101.63

96.1

94.4

94.9

150 100 50 50 100 150

NOTE BOOK NOS.
15

Application No. ____
Route No. ____
Original Plotted by R.Z.L.
" Checked by A.V.S. & F.M.
Template by J.R.S.
Area by ____
Finals Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. N. COGSWELL
JACKSONVILLE, FLA.
J.C.
R.S.

E-1482

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (12) 175 I-4-2 (19) 176	19

STATE JOBS NO. 92130-3401 & 16320-3407

A-B S.S. EXC. A	A-B S.S. EXC. V	MAT'L FILL A	MAT'L FILL V	STATION	AREA C	AREA F	VOLUME C	VOLUME F
				109+00	156	128		
							448	341
				108+00	86	380		
							189	2026
				END OF MUCK 107+00	16	714		
							26	2262
				END MUCK FILL RT.+14	0	706 633		
							0	347
				END MUCK FILL LT.+00 106+00	0	705		
							0	2403
323	246	61	73	+14 END MUCK FILL RT.				
		36						
		65	79	+00 END MUCK FILL LT.				

S.S. EXCAV. (A-B) = 569 C.Y.
FILL + 100% = 569 C.Y.

NOTE BOOK NOS.
5

Application No.
Route No.
Original Plotted by RZL
" Checked by AVG.C.FH
Template by UAS
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1483

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Distr. No.	State	County	Route	Part No.	Sheet No.
3	Fla.	POLK OSCEOLA	400	I-4-2(12)175 I-4-2(12)176	120

STATE JOBS NO. 92130-3401 & 16520-3407

	AREA (C)	AREA (F)	VOLUME (C)	VOLUME (F)
114+00	1432.0			
			4542	
+08			1939.0	
			397.0	
113+00	1235.0			
			4454.0	
112+00	1008.0			
			3320.0	
111+00	785.0			
			2187.2	
110+00	396.1			
			1022.239	

Rdwy. Exc. (A-2, A-3) = 36,696 ✱
Fill (F 40% = 36,696 ✱

150 100 50 50 100 150

NOTE BOOK NOS.
5

Application No.
Route No.
Original Plotted by R.E.L.
" Checked by A.V.S. F.H.
Template by J.R.S.
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. B. COGSWELL
JACKSONVILLE, FLA.

E-1484

CROSS SECTIONS

Scale 1 Inch = 5 feet. V.
= 10 ". H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(12)75 I-4-2(12)76	7-1

STATE JOB NO. 92130-3401 & 92320-3407

	AREA		VOLUME	
	C	F	C	F
119+00	645	0		
			3028	0
118+00	990	0		
			4319	0
117+00	1342	0		
			5341	0
116+00	1542	0		
			5760	0
115+00	1572	0		
			5565	0

99.34 102.72 102.72 104.6 104.9

99.28 103.48 103.48 106.5 105.7

99.24 104.03 104.03 109.2 107.4

99.19 104.36 104.36 109.2 108.3

99.14 104.49 100.39 104.39 109.4 108.6

101.20 101.10 101.00

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
5

Application No. .....
Route No. .....
Original Plotted by R2L
" Checked by A.S. & F.H.
Template by JRS
Area by .....
Final Plotted by .....
" Checked by .....
Area by .....
" Checked by .....

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1485

CROSS SECTIONS

Scale 1 Inch = 5 feet V
= 10 " H

Fed. Roads Dists. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (12) 176	22

STATE JOBS NO. 92130-3401 & 16320-3407

	AREA C	AREA F	VOLUME C	VOLUME F
119+73	614	0		
			294	0
119+60	609	0		
			91	0
119+56	622	0		
			234	0
119+46	640	0		
			1095	0

NOTE BOOK NOS.
5

Application No. _____
Route No. _____
Original Plotted by E.B.H.
" Checked by J.R.S.
Template by _____
Area by _____
Finals Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

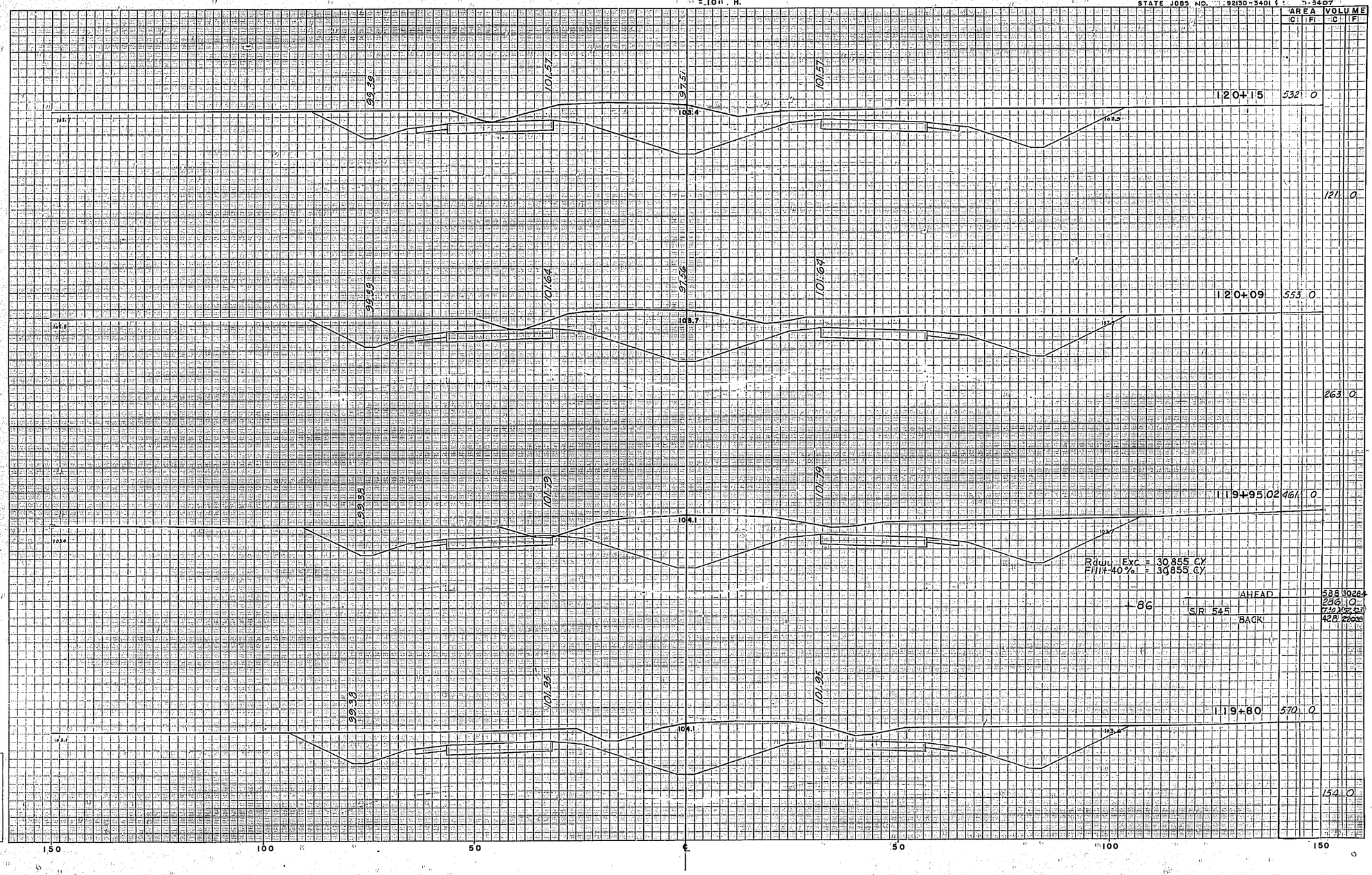
E-1486

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2( ) 175 176	123

STATE JOBS NO. 92130-3401 ( ) 5407



STATION	AREA C	AREA F	VOLUME C	VOLUME F
120+15	532	0		
			121	0
120+09	553	0		
			263	0
119+95.02	461	0		
			538	30284
			286	0
			428	22039
119+80	570	0		
			154	0

NOTE BOOK NOS.
5

Application No. .....
Plats Tot. .....
Original Plotted by RZL
" Checked by AVS F.M.
Template by URS
Area by .....
Plats Plotted by .....
" Checked by .....
Area by .....
" Checked by .....

A. R. COGSWELL
JACKSONVILLE, FLA.

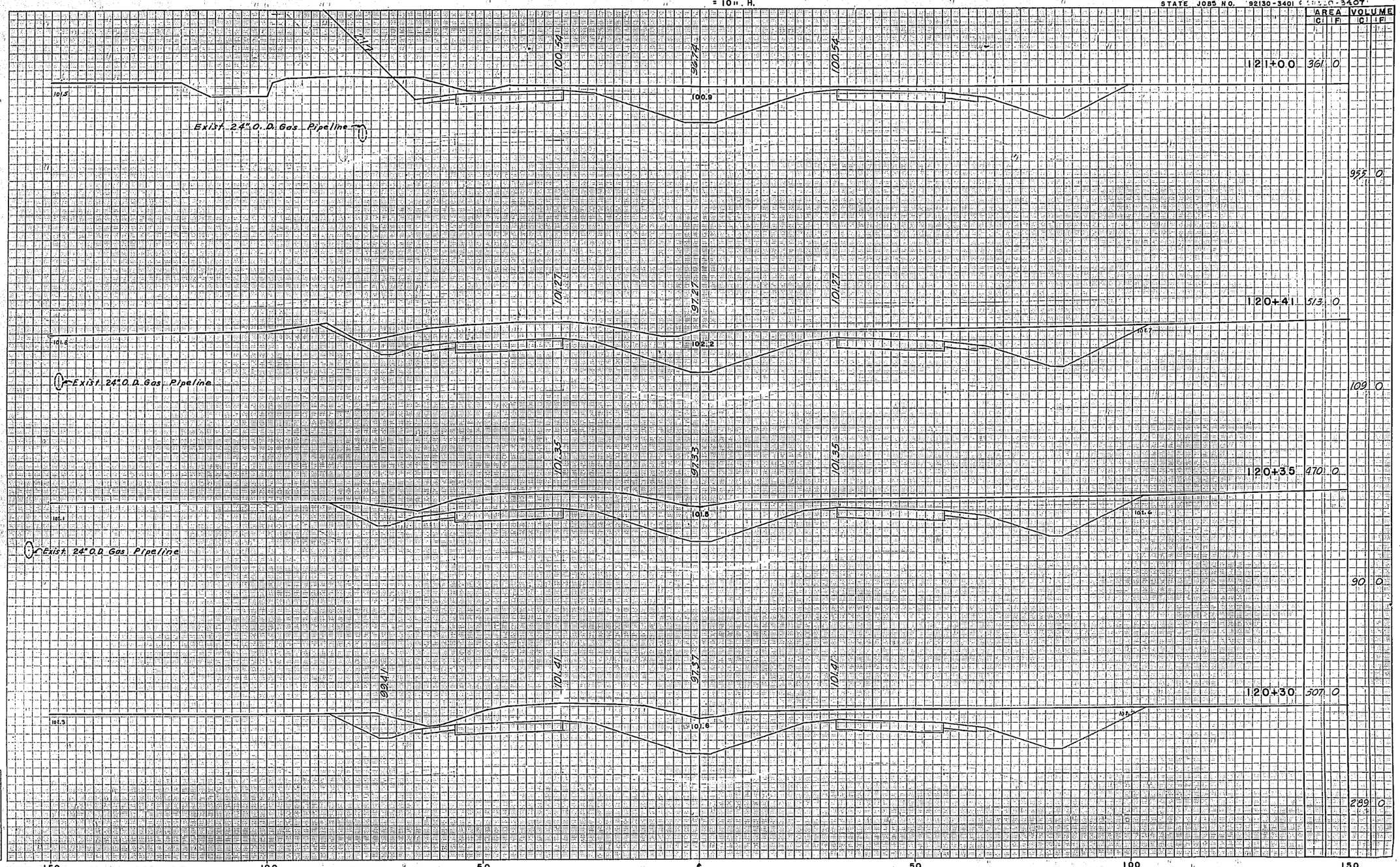
E-1487

CROSS SECTIONS

Scale 1 inch = 5 feet. V.
= 10 ". H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2(19)175 I-4-2(19)176	24

STATE JOBS NO. 92130-3401 & 92130-3407



NOTE BOOK NOS.
5

Application No.
Route No.
Highway Plotted by R.L.
" Checked by A.S. & F.H.
Template by J.R.S. & J.T.W.
Area by
Plats Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1488

CROSS SECTIONS

Scale 1 inch = 5 feet, V.
= 10 ft. H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175 I-4-2 (15) 176	125

STATE JOBS NO. 92130-3401 & 16320-3407

		AREA		VOLUME	
		C	F	C	F
126+00	233	19			
				772	63
125+00	184	15			
				683	48
124+00	185	11			
				609	54
123+00	144	18			
				652	39
122+00	208	3			
				434	6

94.44 940 94.44
95.29 95.9 95.29 94.3
96.43 96.4 96.43 95.6
97.80 97.5 93.74 98.8 97.80
99.12 99.9 95.55 98.8 99.18 98.4

Exist. 24" O.D. Gas Pipeline

NO MUCK A-B

Exist. 24" O.D. Gas Pipeline

100.33 152 100.0 140 98.6 195 98.5 152 29.4 124 99.9

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.
5

Application No.
Route No.
Original Plotted by F.W.H.
" Checked by F.H. J.C.
Template by JRS & J.T.H.
Area by
Form Plotted by
" Checked by
Area by
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1489

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175 76	126

STATE JOBS NO. 92130-3401 & 16520-3407

	AREA C	AREA F	VOLUME C	VOLUME F
BEGIN MUCK 131+00	292	41		
			1099	135
130+00	298	32		
			1109	220
129+00	301	87		
			987	676
128+00	232	278		
			956	793
127+00	284	150		
			957	313

NOTE BOOK NOS.
15

Application No. ...
Route No. ...
Original Plotted by F.H.M.
" Checked by J.C. F.H.
Template by V.R.S. & F.H.M.
Area by ...
Final Plotted by ...
" Checked by ...
Area by ...
" Checked by ...

A. R. CORNWELL
JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

E-1490

CROSS SECTIONS

Scale 1 inch = 5 feet V.r.
1 inch = 10 feet H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 175 I-4-2 (15) 176	127

STATE JOBS NO. 92130-3401 & 16320-3407

A-1-B S.S. EXC.		MAT'L FILL			AREA		VOLUME	
A	V	A	V		C	F	C	F
				136+00	18	1856		
1329		263						
								=93 6196
5898		704						
776		117 140		135+00 END MUCK FILL LT.				
				END MUCK FILL LT. 135+00	0	1490 1464		
2004		483		( ) INDICATES Req'd. Exc. A-8				0 4593
306		121 84		134+00 BEGIN MUCK FILL LT.				
				BEGIN MUCK FILL LT. 134+00	0	1052	1016	
754		298						7 3030
101		77		133+00	4	584		
								354 1306
207		200						
11		31 0		132+00 BEGIN MUCK FILL RT.				
				BEGIN MUCK FILL RT. 132+00	187	88	21	
20								887 239
0				131+00 BEGIN MUCK				

NOTE BOOK NOS. 5

Application No.
Route No.
Original Plotted by F.W.H.
" Checked by F.H. J.C.
Template by JRS
Area by
Plotted Plotted by
" Checked by
Area by
" Checked by

J.C. 15

A. R. COGSWELL JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

E-1491

CROSS SECTIONS

Scale 1 inch = 5 feet V.
1 inch = 10 ft. H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK OSCEOLA	400	I-4-2(115)175 I-4-2(115)176	23

STATE JOBS NO. 92130-3401 & 16320-3407

(A-1-b) S.S. EXC. A | V.	MAT'L FILL A | V.		AREA C | F	VOLUME C | F
		END MUCK FILL RT.	141+00	42 | 138
				223
				136 | 872
			140+00	64 | 273
				300 | 850
			139+00	98 | 186
				457 | 591
			138+00	149 | 133
				420 | 839
		END OF MUCK	+50	
			137+00	78 | 320
				178 | 1030

S.S. EXCV (A-8) = 9,383 C.Y.
FILL +100% = 5,788 C.Y.
Excess = 3,595 C.Y.

END MUCK FILL RT.

A-8

NOTE BOOK NOS. 5

Application No.
Route Book
Critical Plotted by F. Wells
" Checked by E.W. J.C.
Template by URS
Abs by
Final Plotted by
" Checked by
Area by 100
" Checked by

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1492

CROSS SECTIONS

Scale 1 inch = 5 feet V.&
1 inch = 10 feet H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (12) 75 I-4-2 (19) 76	29

STATE JOBS NO. 92130-3401 & 16320-3407

STATION	AREA C	AREA F	VOLUME C	VOLUME F
146+00	522.0			
			2048.0	
145+00	584.0			
			2041.0	
144+00	518.0			
			1465.11	
143+00	273.6			
			715.176	
142+00	113.89			
			287.582	

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.

Application No. .....
Route No. .....
Original Plotted by F.W.H.
" Checked by Fdh J.C.
Template by JRS
Area by JS
Plotted Plotted by .....
" Checked by .....
Area by .....
" Checked by .....

A. B. COGSWELL
JACKSONVILLE, FLA.

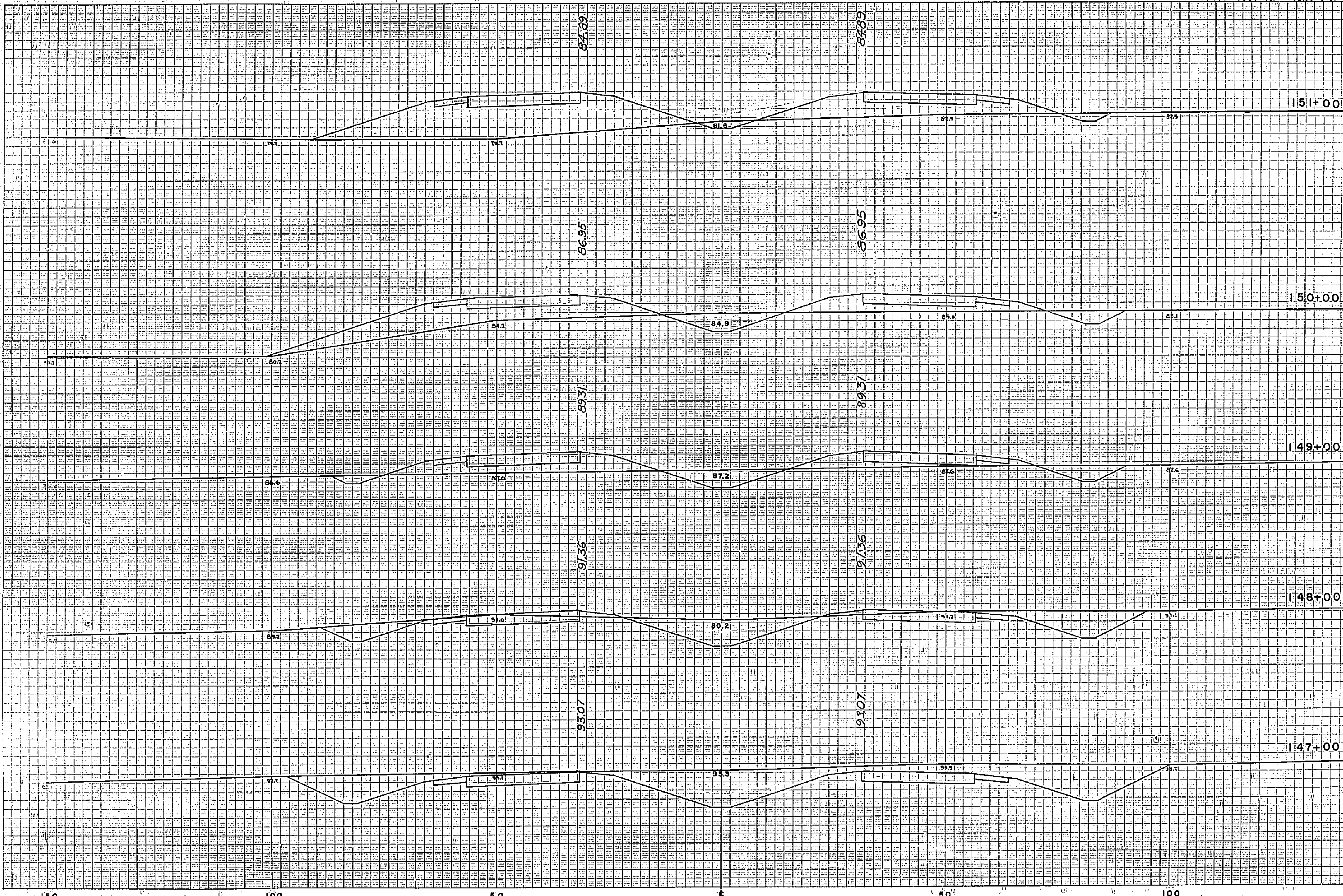
E-1493

Fed. Road Divn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (25) 175 I-4-2 (19) 176	130

STATE JOBS NO. 92130-3401 & 16[illegible]-3407

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
" " = 10 " H.



Station	AREA C	AREA F	VOLUME C	VOLUME F
151+00	14	345		
			117	1020
150+00	49	206		
			198	578
149+00	58	106		
			496	207
148+00	210	6		
			1141	11
147+00	406	0		
			1719	0

NOTE BOOK NOS.
5

Application No. ______
Route No. ______
Original Plotted by F.W.H.
" Checked by E.H. J.C.
Template by JRS
Area by ______
Finals Plotted by ______
" Checked by ______
Area by ______
" Checked by ______

A. H. COGSWELL, JACKSONVILLE, FLA.

E-1494

CROSS SECTIONS

Scale 1 Inch = 5 feet. V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19)176	19

STATE JOBS NO. 92130-3401 & 16320-3407

A-181 S.S. EXC.		MAT'L FILL		AREA		VOLUME	
A	V.	A	V.	C	F	C	F
324	104						
				156+00	0	904	
							0 1682
	210						
600	95						
	0			+43 BEGIN MUCK FILL LT. & RT.			
				BEGIN MUCK FILL RT. & LT.	+43	0 689	
						784	
							0 1109
0				BEGIN MUCK	155+00	0 602	
							0 2020
				154+00	0	489	
							0 1752
				153+00	0	457	
							9 1418
				152+00	5	341	
							35 1270

NOTE BOOK NOS.
5

Adjustment No. ....
Route No. ....
Original Plotted by F.W.H.
" Checked by F.W.H. J.C.
Templated by JRS
Area by ....
Finals Plotted by ....
" Checked by ....
Area by ....
" Checked by ....

A. R. COGSWELL
JACKSONVILLE, FLA.

J.C.
A.C.

E-1495

CROSS SECTIONS

Scale 1 Inch = 5 feet V.E.V.
1 Inch = 10 feet H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	4 00	I-4-2 (19) 175	132
		STATE JOBS NO.	92130-3401	7.163 20-3407	

MAT'L EXC.		MAT'L FILL		STATION	AREA		VOLUME	
A.I.	V.	A.I.	V.		C.	F.	C.	F.
196		124		159+00	0	930		
682		296					0	2486
323		101		+29	0	961		
331		93					0	906
422		109		+05	0	1078		
81		23					0	201
454		139		158+00	0	1033		
1422		483					0	3761
314		122		157+00	0	938		
							0	341
181		419						

NOTE BOOK NOS. 5

Application No. .....
Route No. .....
Original Plotted by F.W.H.
Checked by F.H. J.C.
Template by JRS F.J.T.W.
Area by .....
Blade Plotted by .....
Checked by .....
Area by .....
Checked by .....

A. E. COGSWELL JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

E-1496

CROSS SECTIONS

Scale 1 inch = 5 feet _V.
= 10 " H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (12) 175 I-4-2 (1) 176	133

STATE JOBS NO. 92130-3401 & 16320-3407

A-B S.S. EXC. A	A-B S.S. EXC. V	MAT'L FILL A	MAT'L FILL V	AREA C	AREA F	VOLUME C	VOLUME F
				164+00	0	758	
						0	2826
				163+00	0	768	
						0	2831
				+00			
0	123			END MUCK FILL LT. & RT.		761	
				END OF MUCK	162+00	0	638
						0	2496
135	338						
				161+00	0	710	
						0	2700
337	343						
				160+00	0	748	
						0	3102
565	402						

S.S. EXC.V (A-B): 5.334 c.y.
FILL +100% = 5.334 c.y.

NOTE BOOK NOS.
S-5

Application No. ....
Route No. ....
Original Plotted by F.W.J. H.
" Checked by F.H. J.C.
Template by J.R.S. & J.T.W.
Area by ....
Finals Plotted by ....
" Checked by ....
Area by ....
" Checked by ....

A. B. CAldwell, Jacksonville, Fla.

E-1497

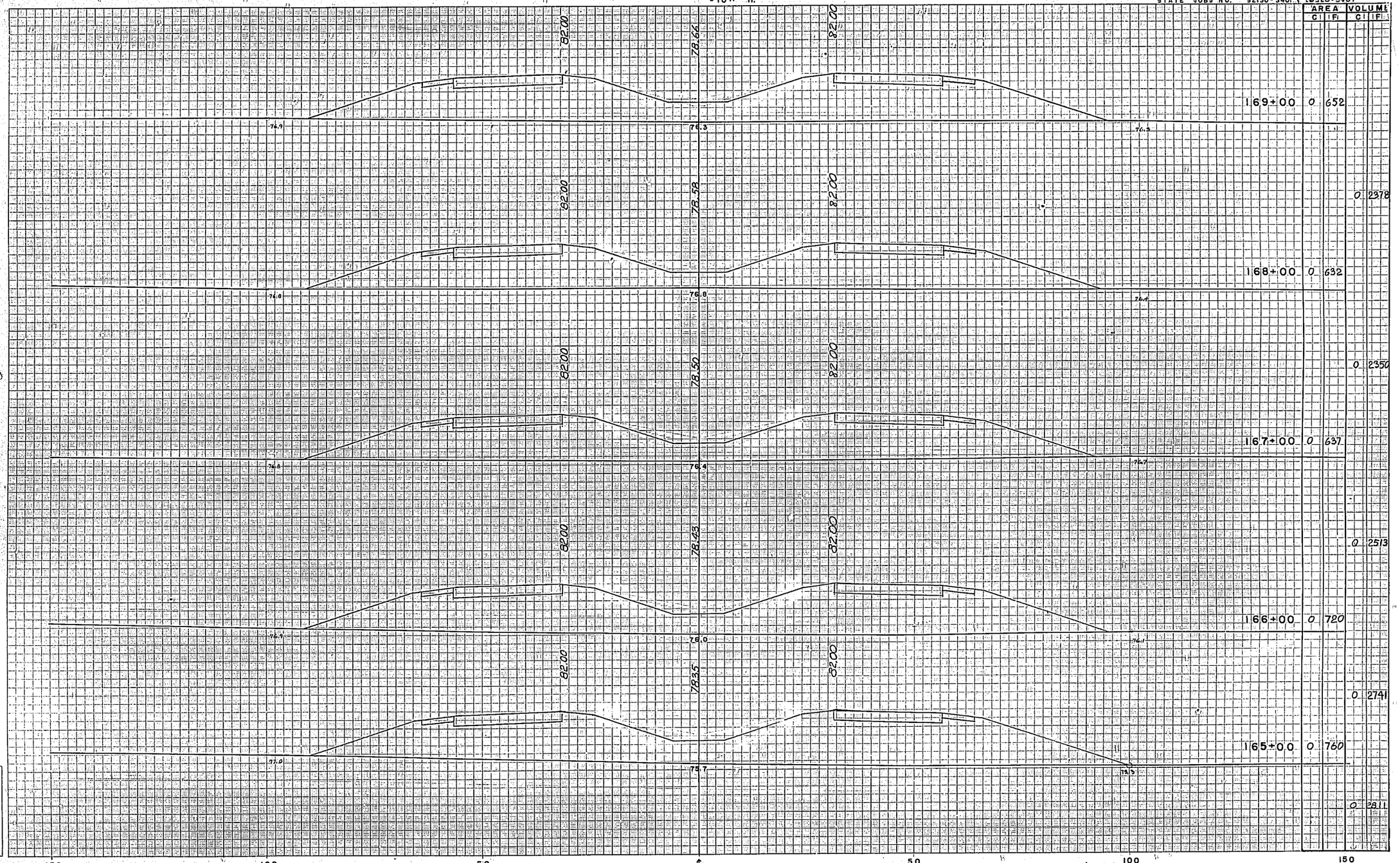
CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Roads Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 178 I-4-2 (15) 176	134

STATE JOBS NO. 92130-3401 & 16320-3407

	AREA C	AREA F	VOLUME C	VOLUME F
169+00	0	652		
			0	2378
168+00	0	632		
			0	2350
167+00	0	637		
			0	2513
166+00	0	720		
			0	2741
165+00	0	760		
			0	2811



NOTE BOOK NOS.
G

Application No. _____
Route No. _____
Original Plotted by D. L.
" Checked by A.S. & F.H.
Template by J.R.S. & J.T.W.
Area by _____ Ck. _____
Plans Plotted by _____
" Checked by _____
Area by _____ Ck. _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

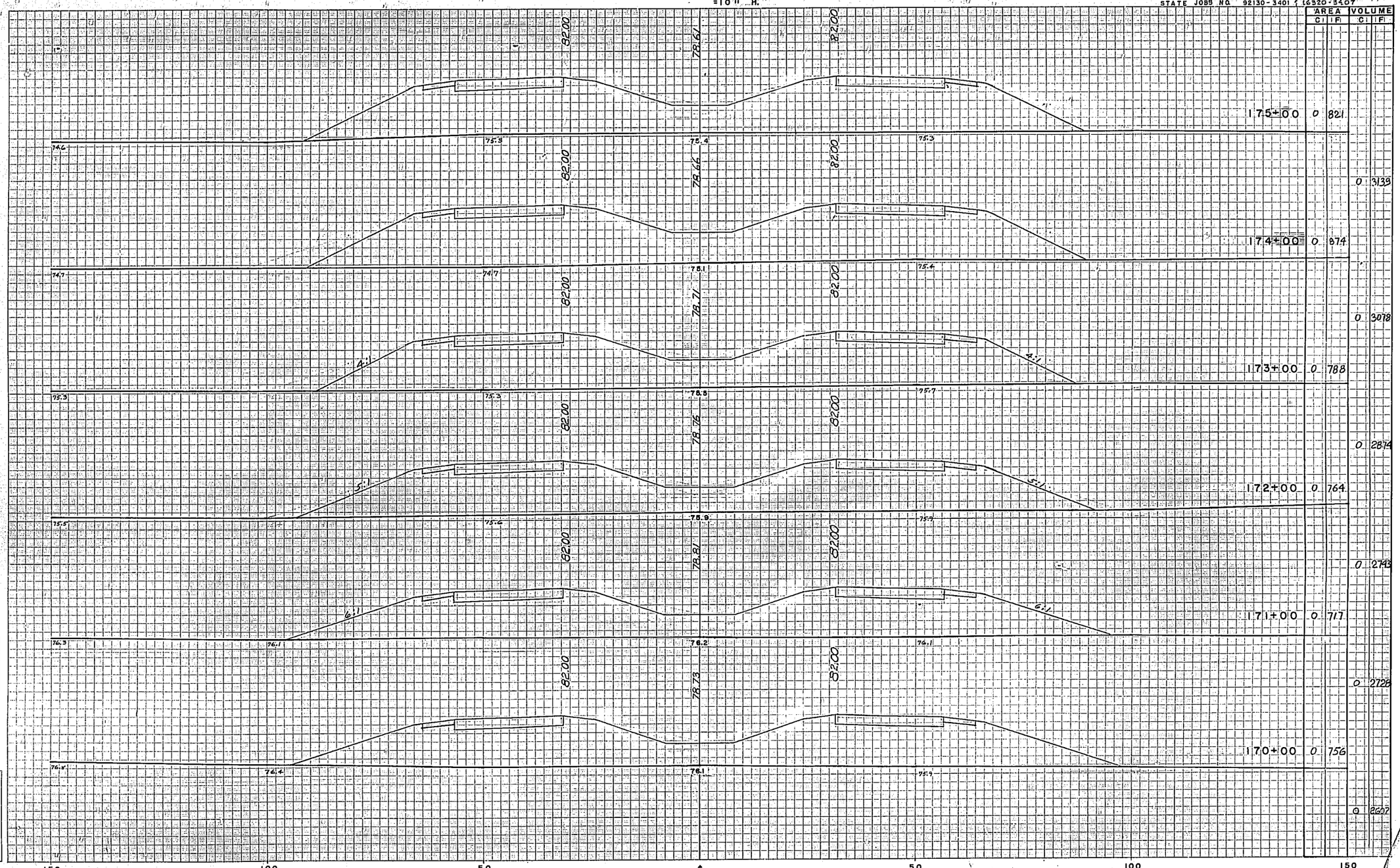
E-1498

CROSS SECTIONS

Scale 1 inch = 5 feet :V.
= 10 " :H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (2) 175 I-4-2 (1) 176	135

STATE JOBS NO. 92130-3401 & 16320-3407



	AREA		VOLUME	
	C	F	C	F
175+00	0	821		
			0	3139
174+00	0	874		
			0	3078
173+00	0	788		
			0	2874
172+00	0	764		
			0	2743
171+00	0	717		
			0	2728
170+00	0	756		
			0	2697

NOTE BOOK NOS.
9

Application No. _____
Route No. _____
Original Plotted by CLAYTON
" Checked by F.H. J.C.
Template by JRS F.J.T.W.
Area by _____
Check Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1499

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 " H.

Fed. Road Distr. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19)76	136

STATE JOBS NO. 92130-3401 & 16520-3407

A-B MAT'L					AREA		VOLUME	
S.S. EXC.		FILL			C	F	C	F
A	V.	A	V.					
				8272 78.3 8200 78.36 8200 78.41 8200 78.46 8200 78.51 8200 78.56 8200 78.28 8200 78.28 8200 78.28 8200 78.28 8200 78.28 8200 78.28				
183								
				181+00	0	1179		
657							0	4554
				BEGIN MUCK FILL LT & RT +00		1172		
172				180+00	0	1344		
0							0	4370
				179+00	0	1016		
							0	3467
				178+00	0	856		
							0	3187
				177+00	0	865		
							0	3169
				176+00	0	846		
							0	3087

+00 BEGIN MUCK FILL LT & RT

NOTE BOOK NOS.

Application No.
Route No.
Original Plotted by W.T.A.
" Checked by F.M. J.C.
Template by J.R.S. J.T.W.
Area by
Totals Plotted by
" Checked by
Area by
" Checked by

A. N. COGSWELL
JACKSONVILLE, FLA.

150 100 50 ℄ 50 100 150

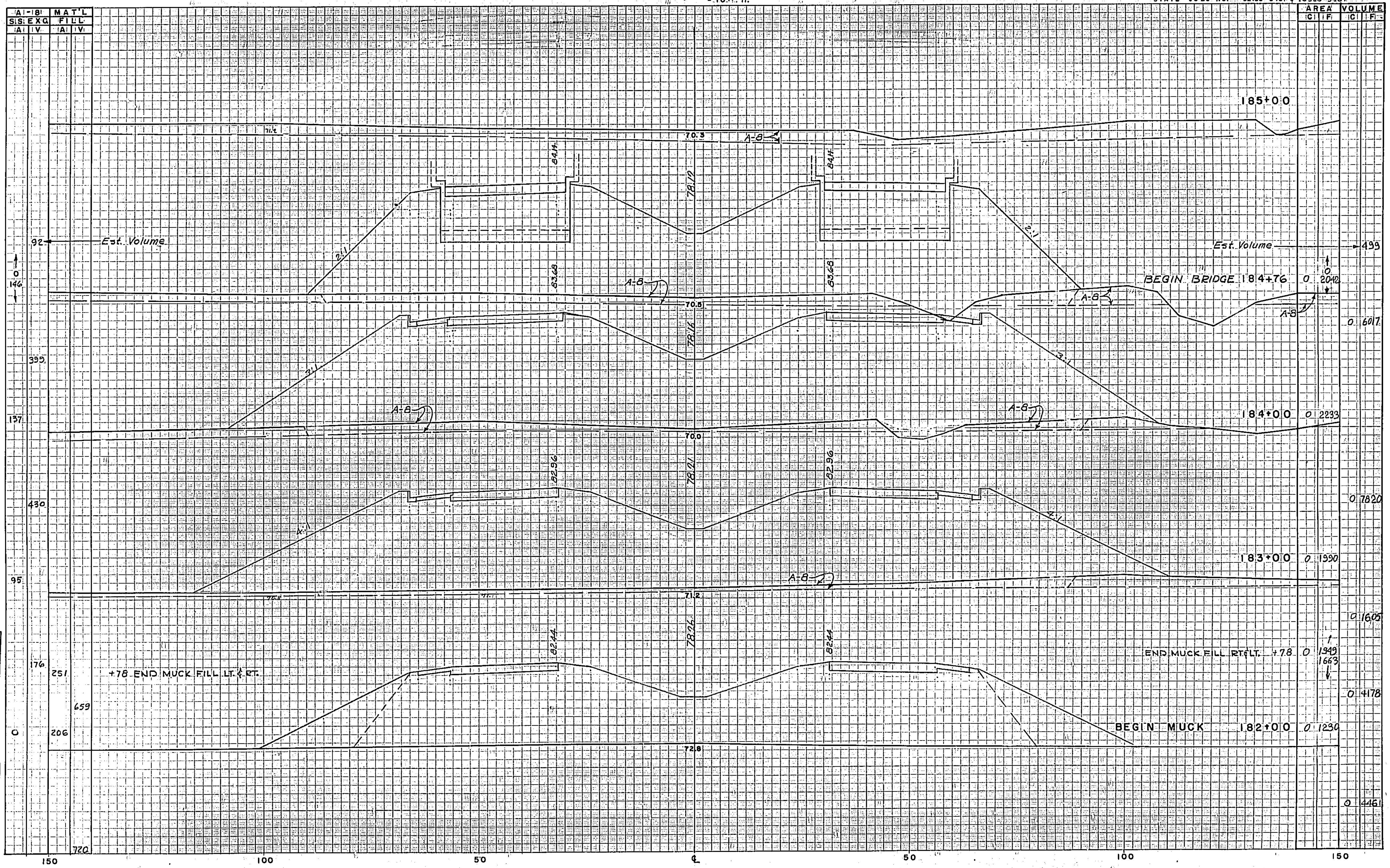
E-1500

CROSS SECTIONS

Scale 1 inch = 5 feet. V.
= 10 " H.

Fed. Road Div. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (22) 75 I-4-2 (19) 76	157

STATE JOBS NO. 92130-3401 & 16320-3407



NOTE BOOK NOS. 6

Application No.
Route No.
Original Plotted by M.T.K.
" " Checked by F.M. J.C.
Template by J.R.S. & J.T.W.
Area by
Finals Plotted by
" " Checked by
Area by
" Checked by

A. R. COGSWELL JACKSONVILLE, FLA.

Rec'd CR

E-1501

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 ft. H

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1(12)175 I-4-2(15)176	158

STATE JOB NO. 92130-3401 & 16520-3407

A-B S.S. EXC. A	A-B S.S. EXC. V	MAT'L FILL A	MAT'L FILL V	AREA C	AREA F	VOLUME C	VOLUME F
215							
				187+58	0	2138	
	559						
						0	4374
344							
0				END BRIDGE 187+04	0	2236	
						0	
150	Est. Volume			Est. Volume			626
				186+50			
(202)	MUCK EXCAVATION FOR REEDY CREEK CHANNEL WIDENING LT. & RT.						
	( ) INDICATES CHANNEL EXC. A-B						
				186+26			
				186+00			
				℄ REEDY CREEK 185+90			
				185+76			

150 100 50 ℄ 50 100 150

NOTE BOOK NOS. 9

Application No.
Route No.
Original Plotted by W.T.M.
" Checked by F.H. J.C.
Template by J.R.S. & J.T.W.
Area by
Finals Plotted by
" Checked by
Area by
" Checked by

A. E. GOSSWELL
JACKSONVILLE, FLA.

E-1502

CROSS SECTIONS

Scale 1 Inch = 5 feet, Vert.
= 10 " Hor.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-1 (2) 175 I-4-2 (19) 176	139

STATE JOBS NO. 92130-3401 & 16320-3407

A-8 MATL.			
S.S. EXC.		FILL	
A	V	A	V

	AREA		VOLUME	
	C	F	C	F
193+00	0	840		
			0	3052
192+00	0	808		
			0	3000
191+00	0	812		
			0	3433
190+00	0	1042		
			0	4576
189+00	0	1429		
			0	6144
END OF MUCK +50				
188+00	0	1869		
			0	3132

S. S. EXCV. (A-8) = 2045 C.Y.
RDWY. EXCV. (A-8) = 2027 C.Y.
FILL + 100% = 4,072 C.Y.

NOTE BOOK NOS.
9

Applicant No. ...
Route No. ...
Original Plotted by W.T.M.
" Checked by F.H. J.C.
Template by J.R.S. & J.T.W.
Area by ...
Quads Plotted by ...
" Checked by ...
Area by ...
" Checked by ...

A. N. COGSWELL
JACKSONVILLE, FLA.

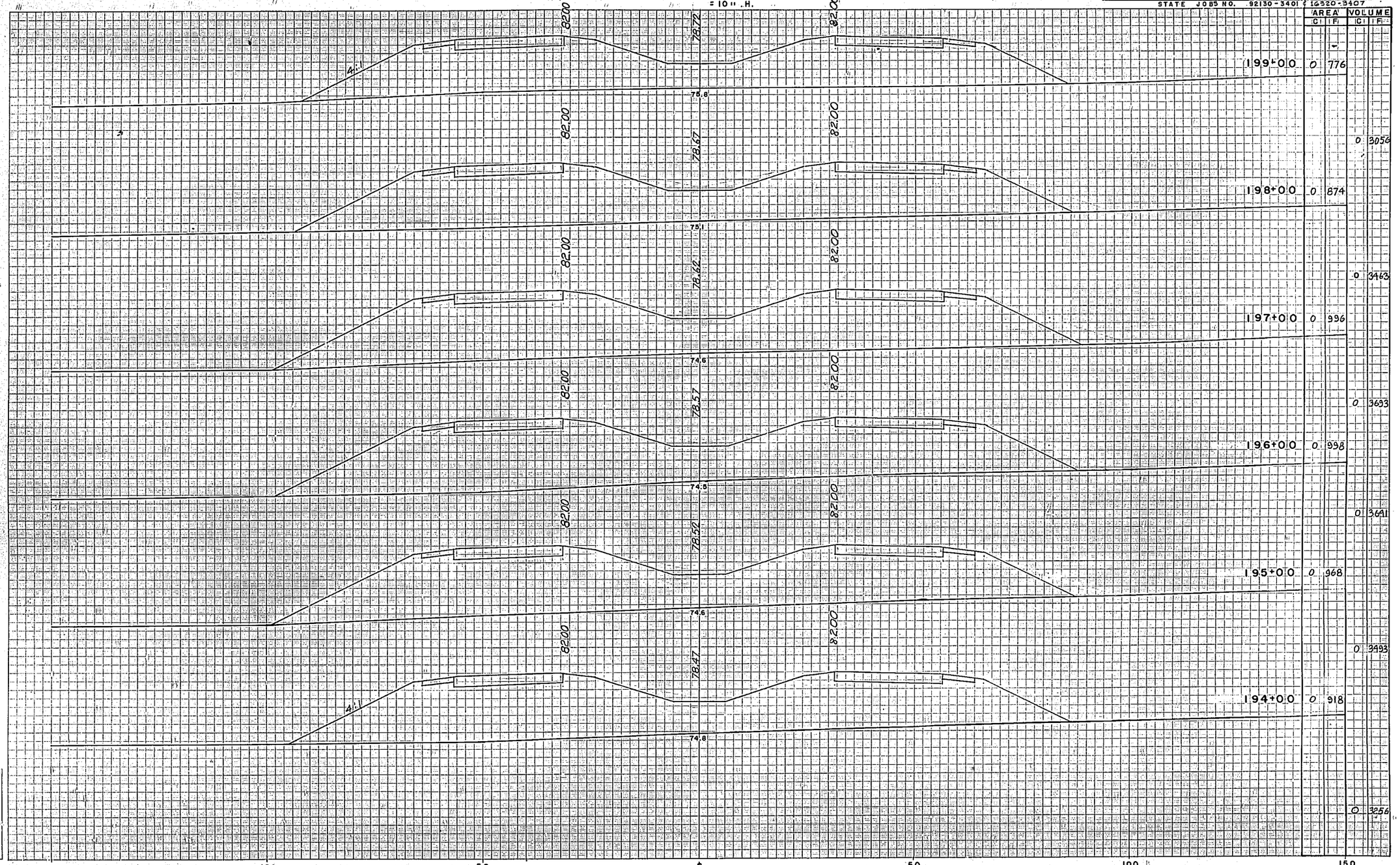
E-1503

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dist. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (15) 76	140

STATE JOBS NO. 92130-3401 & 16520-3407



Station	AREA C	AREA F	VOLUME C	VOLUME F
199+00	0	776		
			0	3056
198+00	0	874		
			0	3463
197+00	0	996		
			0	3693
196+00	0	998		
			0	3641
195+00	0	968		
			0	3493
194+00	0	918		
			0	3256

NOTE BOOK NOS.
6

Applicator No. ____
Route No. ____
Original Plotted by W.T.M.
" Checked by F.H. J.M.F.
Template by J.R.S & J.T.W.
Area by ____
Plots Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. H. COCKWELL
JACKSONVILLE, FLA.

E-1504

CROSS SECTIONS

Scale 1 Inch = 5 feet. V.
= 10.11 .H.

Fed. Road Desn. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19)175 I-4-2 (19)176	19

STATE JOB NO. 92130-3401 & 14220-3407

A=1.18 SS EXC. =A=	V	MAT'L FILL A	V	STA.	AREA C	AREA F	VOLUME C	VOLUME F
				205+00	0	412		
							0	1946
S. S. EXCV. (A-8) = 652 C.Y. FILL + 100% = 652 C.Y.				END OF MUCK	204+00	0	639	
							0	3228
121	0 95			+00 END MUCK FILL LT. & RT.				
				END MUCK FILL RT. & LT.	203+00	0	1104 1009	
							0	3380
352	326						975	
				BEGIN MUCK FILL RT. & LT. +08		0	1073	
							0	318
69	0 96			+08 BEGIN MUCK FILL LT. & RT.	202+00	0	1069	
							0	3520
0	76			BEGIN MUCK +40				
					201+00	0	832	
				+40				
							0	2893
							0	2789

NOTE BOOK NOS.
2
10

Application No. ____
Route No. ____
Original Plotted by R.Z.L.
" Checked by F.H. A.S.
Template by JRS & JTW
Area by ____
Finals Plotted by ____
" Checked by ____
Area by ____
" Checked by ____

A. B. COGSWELL
JACKSONVILLE, FLA.

E-1505

CROSS SECTIONS

Scale 1 Inch = 5 feet V.
= 10 " H.

Fed. Road Dem. No.	State	County	Route	Proj. No.	Sheet No.
3	Fla.	POLK & OSCEOLA	400	I-4-2 (19) 176	142

STATE JOBS NO. 92130 - 3401 & 16320 - 3407

	AREA C	AREA F	VOLUME C	VOLUME F
211+00	346	0		
			1270	0
210+00	340	0		
			1152	6
209+00	282	3		
			802	85
208+00	151	42		
			376	354
207+00	52	149		
			102	820
206+00	3	294		
			6	130

83.94 84.0 17.22 83.94
83.56 83.6 17.22 83.56
83.17 82.9 17.22 83.17
82.79 82.79 19.17 82.79
82.48 81.6 19.12 82.48
82.24 80.0 19.07 82.24
78.9

150 100 50 ℄ 50 100 150

NOTE BOOK NOS.

Application No. _____
Route No. _____
Original Plotted by ORU
" Checked by A.S. & F.H.
Template by URSEUZW
Area by _____
Final Plotted by _____
" Checked by _____
Area by _____
" Checked by _____

A. R. COGSWELL
JACKSONVILLE, FLA.

E-1506

CROSS SECTIONS

Scale 1 inch = 5 feet V.
= 10 = H.

Fed. Aid Proj. No.	State	County	Route	Project No.	Sheet No.
3	Fla.	POLK OSCEOLA	400	I-4-2 (25) 75 I-4-2 (19) 76	43

STATE JOBS NO. 92130-3401 & 16320-3407

STATION	AREA C	AREA F	VOLUME C	VOLUME F
BEGIN MUCK 217+00				
216+00				
STA 215+00 END PROJECT END CONSTRUCTION 215+00			197	12
214+00			190	16
213+00			148	115
212+00			181	39

NOT IN THIS CONTRACT

ROWY EXC = 31,024 CY
FILL + 10% = 333,492 CY
BORROW = 308,466 CY

		717	52
		626	243
		609	285
		976	72

NOTE BOOK NOS.
G

Application No.
Book No.
Original Plotted by R.Z.L.
" Checked by A.W.S. & F.M.
Template by J.R.S.
Area by
Plastic Plotted by
(2) " Checked by
Area by
" Checked by

A. W. COGSWELL
JACKSONVILLE, FLA.

150 100 50 50 100 150

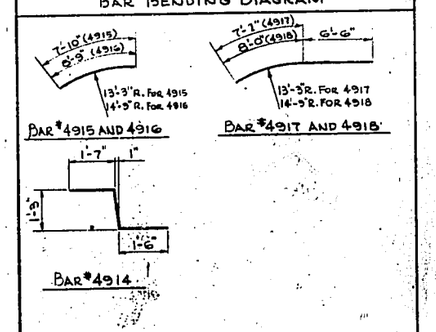
E-1507

FED. ROAD DIV. NO.	STATE	PROJECT NO	FISCAL YEAR	SHEET NO
3	FLA.	92130-3401 " I-4-2(19)96	59	157

BILL OF REINFORCING STEEL - TYP. APPROACH SLAB

MARK	SIZE	NO. REQD.	LENGTH	BENDING
5900 to 5955	5	1 EACH	1'-0" to 33'-0" (33'-6" Each Length)	STR.
5956	5	1	9'-0"	"
5957	5	2	6'-3"	"
5958	5	1	3'-8"	"
5959	5	1	1'-8"	"
5960	5	1	26'-8"	"
5961	5	1	18'-10"	"
5962	5	1	11'-10"	"
4900	4	1	27'-10"	STR.
4901	4	2	28'-6"	"
4902	4	1	29'-9"	"
4903	4	1	29'-10"	"
4904	4	1	28'-0"	"
4905	4	2	28'-8"	"
4906	4	1	28'-10"	"
4907	4	1	29'-0"	"
4908	4	1	29'-2"	"
4909	4	1	25'-3"	"
4910	4	1	21'-10"	"
4911	4	1	18'-6"	"
4912	4	1	14'-6"	"
4913	4	1	33'-9"	"
4914	4	22	4'-4"	
4915	4	1	7'-10"	
4916	4	1	8'-9"	
4917	4	1	13'-7"	
4918	4	1	14'-6"	
4919	4	1	5'-6"	STR.
4920	4	1	2'-4"	"
4921	4	1	31'-9"	"

BAR BENDING DIAGRAM



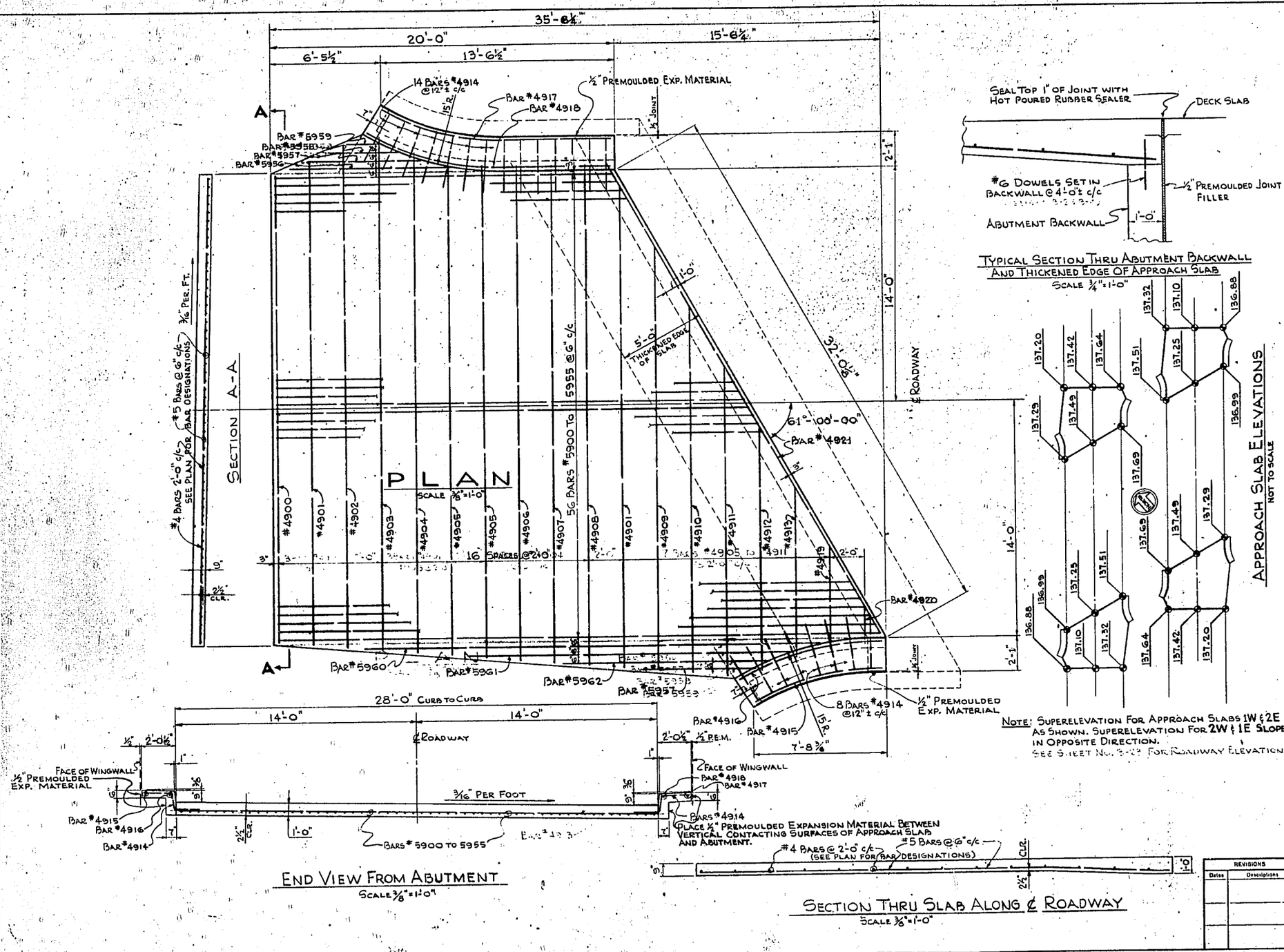
NOTE: ALL DIMENSIONS ARE OUT TO OUT.

ESTIMATED QUANTITIES *

ITEM	UNIT	QUANTITY
CONCRETE CLASS A	CU. YD.	24.882
REINFORCING STEEL	LB.	2,057

*QUANTITIES NOT INCLUDED IN "ESTIMATED BRIDGE QUANTITIES" ON SHEET NO. B-1

TYPICAL APPROACH SLAB



END VIEW FROM ABUTMENT
SCALE ⅜"=1'-0"

SECTION THRU SLAB ALONG ℄ ROADWAY
SCALE ⅜"=1'-0"

TYPICAL SECTION THRU ABUTMENT BACKWALL AND THICKENED EDGE OF APPROACH SLAB
SCALE ¾"=1'-0"

APPROACH SLAB ELEVATIONS
NOT TO SCALE

NOTE: SUPERELEVATION FOR APPROACH SLABS 1W & 2E AS SHOWN. SUPERELEVATION FOR 2W & 1E SLOPES IN OPPOSITE DIRECTION.
SEE SHEET NO. 3-23 FOR ROADWAY ELEVATIONS.

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

INTERSTATE ROUTE 4 OVER
COUNTY LINED ROAD

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	S.R. 400	OSCEOLA	92130-3401

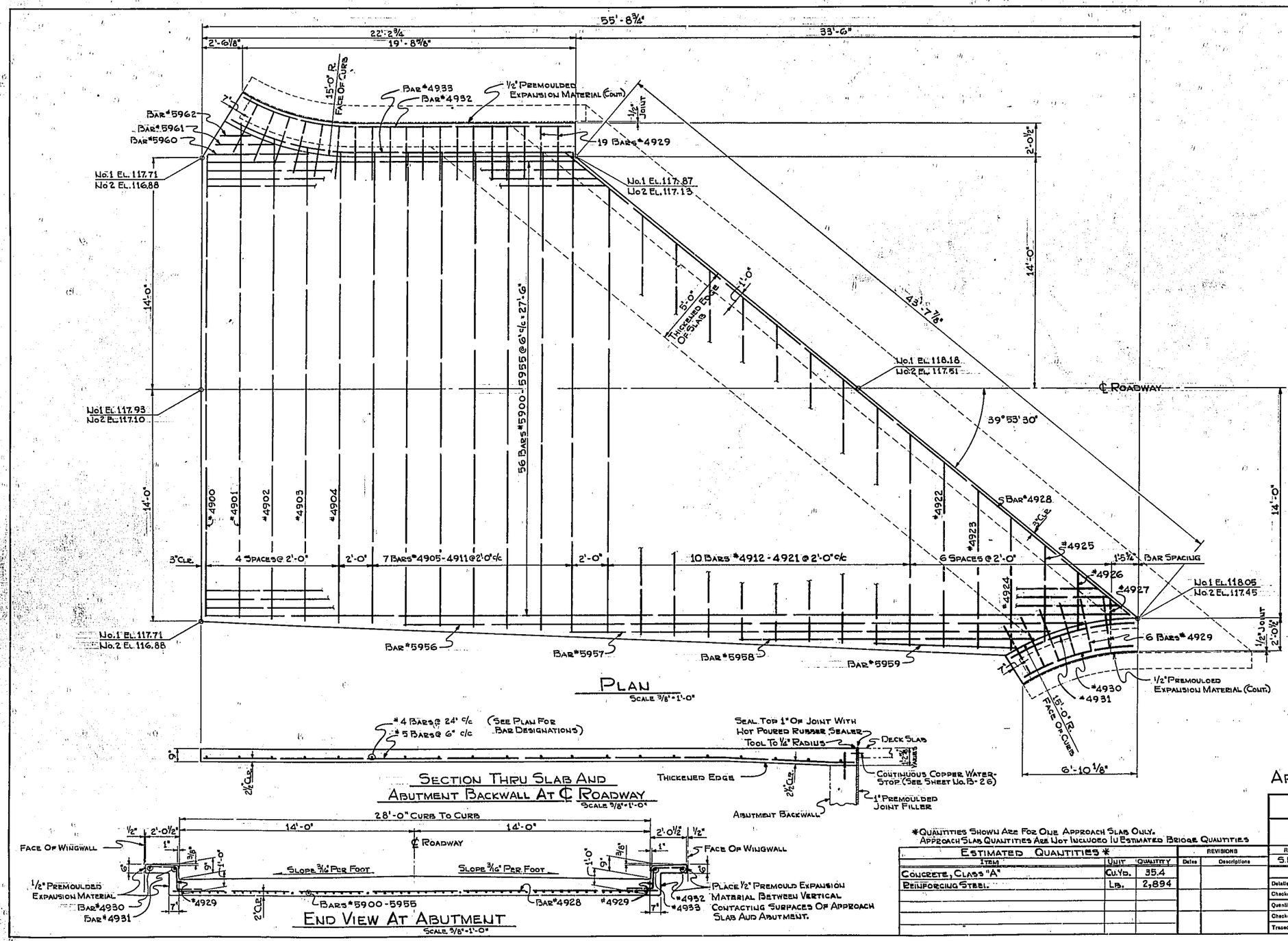
	Names	Dates
Detailed by	HEYNER	12-58
Checked by	R.W.G.	12-58
Quantities by	FWH	12-58
Checked by	DMS	12-58
Traced by		

APPROVED BY

Drawing No. 1 OF 1 | Index No. 4559

E-1508

FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA	92130-3401 I-4-2(19)76	59	158



PLAN

Scale 3/8" = 1'-0"

SECTION THRU SLAB AND ABUTMENT BACKWALL AT ℄ ROADWAY

Scale 3/8" = 1'-0"

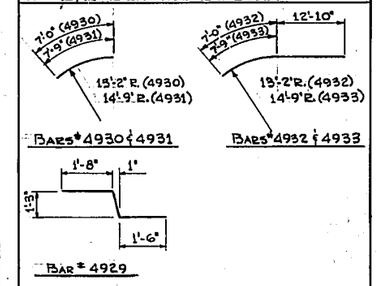
END VIEW AT ABUTMENT

Scale 3/8" = 1'-0"

BILL OF REINFORCING STEEL FOR APPROACH SLAB No.1 & No.2

MARK	SIZE	No. REQD.	LENGTH	BENDING
5900-5955	5	1 EA. (56)	27'-6" (3'-6" SPACES)	STR. (FIELD BEND)
5956	5	1	40'-6"	STR.
5957	5	1	28'-6"	STR.
5958	5	1	17'-6"	STR.
5959	5	1	8'-6"	STR.
5960	5	1	6'-0"	STR.
5961	5	1	3'-6"	STR.
5962	5	1	2'-0"	STR.
4900	4	1	28'-0"	STR.
4901	4	1	30'-0"	STR.
4902	4	1	29'-0"	STR.
4903	4	1	28'-6"	STR.
4904	4	1	28'-6"	STR.
4905-4911	4	1 EA. (7)	28'-0" TO 28'-0" (2" INCREASE)	STR.
4912-4921	4	1 EA. (10)	28'-0" TO 28'-10" (1'-0" INCREASE)	STR.
4922	4	1	11'-3"	STR.
4923	4	1	9'-7"	STR.
4924	4	1	8'-0"	STR.
4925	4	1	5'-10"	STR.
4926	4	1	3'-6"	STR.
4927	4	1	1'-6"	STR.
4928	4	1	44'-0"	STR.
4929	4	25	4'-8"	
4930	4	1	7'-0"	
4931	4	1	7'-9"	
4932	4	1	19'-10"	
4933	4	1	20'-7"	

BAR BENDING DIAGRAM



NOTE:
ALL BAR DIMENSIONS ARE OUT TO OUT.
QUANTITIES SHOWN ARE FOR ONE APPROACH ONLY.

*QUANTITIES SHOWN ARE FOR ONE APPROACH SLAB ONLY.
APPROACH SLAB QUANTITIES ARE NOT INCLUDED IN ESTIMATED BRIDGE QUANTITIES

ESTIMATED QUANTITIES *

ITEM	UNIT	QUANTITY
CONCRETE, CLASS "A"	CU. YD.	35.4
REINFORCING STEEL	LB.	2,894

REVISIONS	
DATES	DESCRIPTIONS

APPROACH SLAB No.1 & No.2

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

STATE ROAD 545 OVER INTERSTATE ROUTE No. 4

ROAD NO.	COUNTY	PROJECT NO.
S.R.400	OSCEOLA	92130-3401

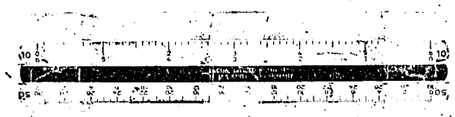
	NAMES	DATES
APPROVED BY		
Detailed by	S.T.V.	12-58
Checked by	R.E.T.	1-59
Quantities by	S.T.V.	1-59
Checked by	R.E.T.	1-59
Traced by		

Engineer of Bridge Design

Assistant State Highway Engineer

Drawing No. 1 of 1

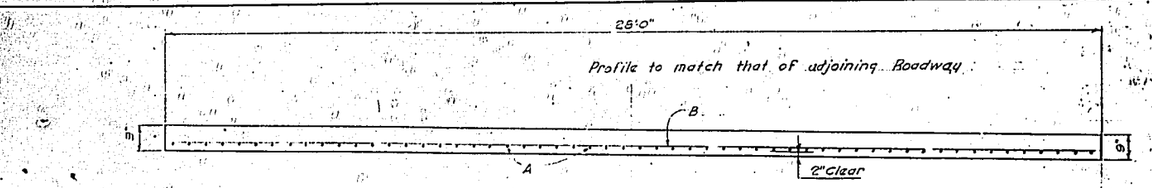
Index No. 4561



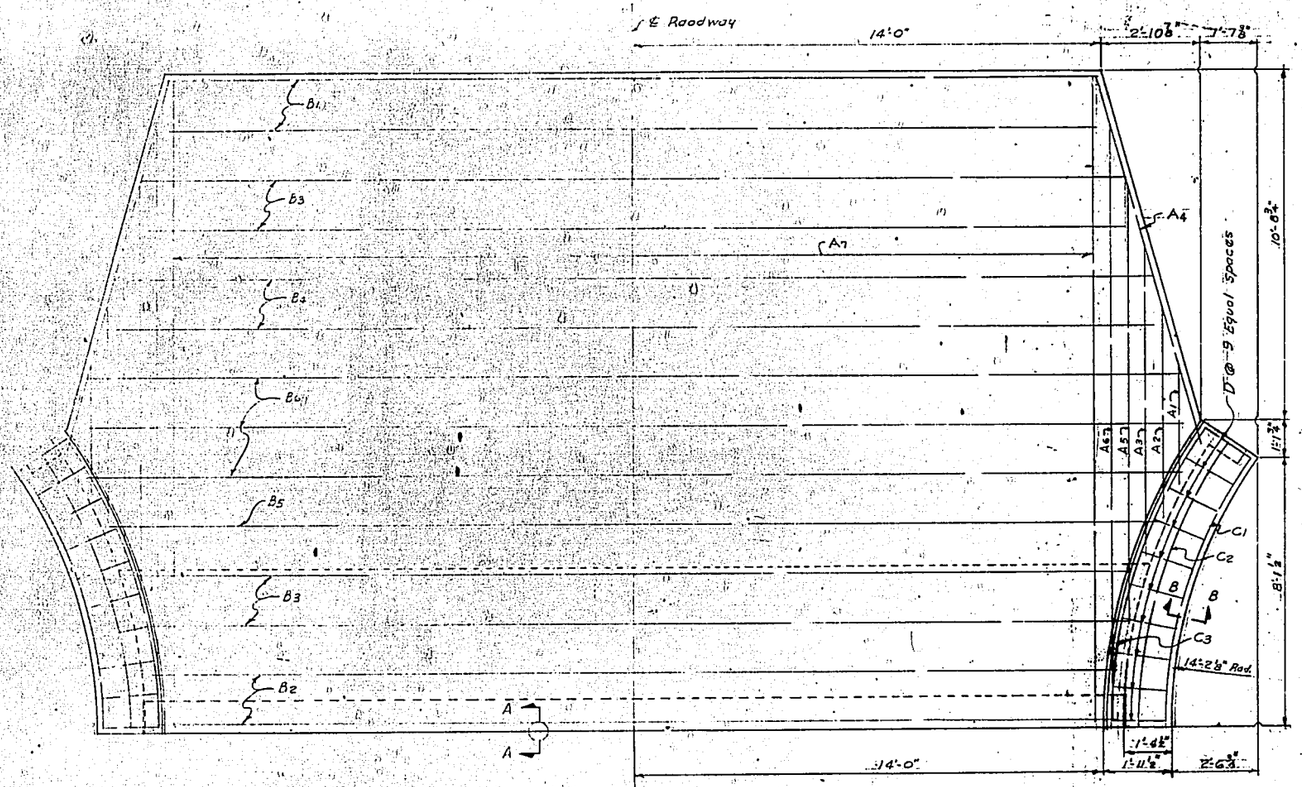
E-1509

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	92130-3401	59	159

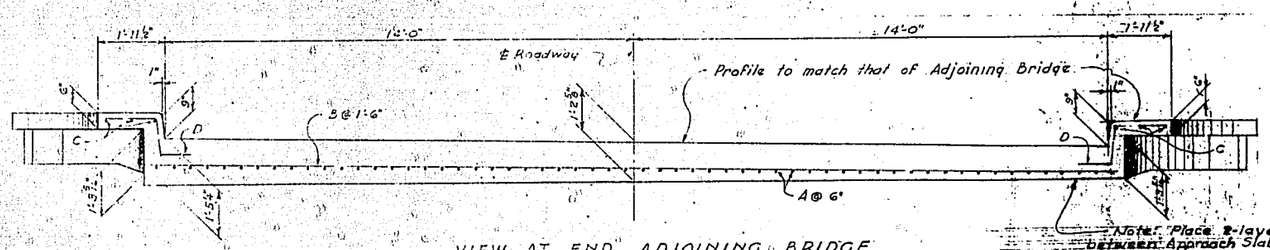
I-4-2(19)76



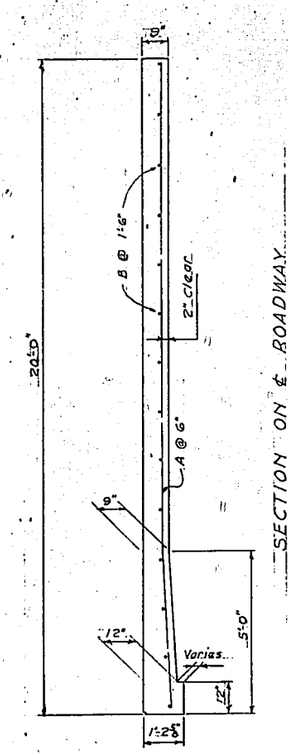
REFLECTED VIEW AT END ADJOINING ROADWAY



PLAN



VIEW AT END ADJOINING BRIDGE

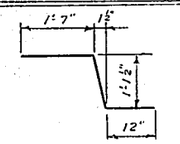


SECTION ON ℄ ROADWAY

* Note: Estimated Quantities and Bill of Reinforcing Steel are for one Approach Slab

BILL OF REINFORCING STEEL *			
MARK	SIZE	NO. REQ'D	LENGTH
A1	5	2	3'-7"
A2	5	12	6'-4"
A3	5	2	9'-6"
A4	5	2	11'-8"
A5	5	2	13'-2"
A6	5	2	18'-1"
A7	5	56	19'-8"
B1	4	2	27'-8"
B2	4	2	28'-10"
B3	4	4	29'-5"
B4	4	2	31'-0"
B5	4	1	31'-5"
B6	4	3	32'-8"
C1	4	2	8'-6"
C2	4	2	8'-11"
C3	4	2	9'-4"
D	4	20	3'-9"

BENDING DIAGRAMS

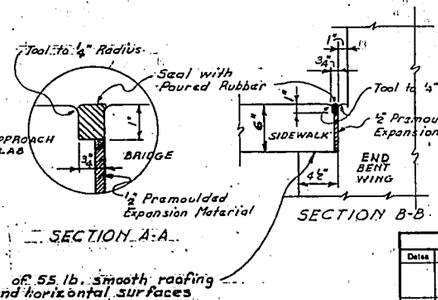


BAR D

NOTE: All bar dimensions are out to out.

ESTIMATED QUANTITIES *		
ITEM	UNIT	QUANTITY
Concrete Class A	Cu.Yd.	18.93
Reinforcing Steel	Lb.	1647

NOTE:
Details shown are for Approach Slabs 1-L and 2-R. Approach Slabs 2-L and 1-R are similar but opposite hand.



Note: Place 2-layers of 55 lb. smooth roofing between Approach Slab and horizontal surfaces of End Bent.

APPROACH SLAB

STATE ROAD DEPARTMENT OF FLORIDA
BRIDGE DIVISION

INTERSTATE ROUTE 4
OVER REEDY CREEK

REVISIONS		ROAD NO.	COUNTY	PROJECT NO.
Dates	Descriptions	400	OSCEOLA	92130-3401

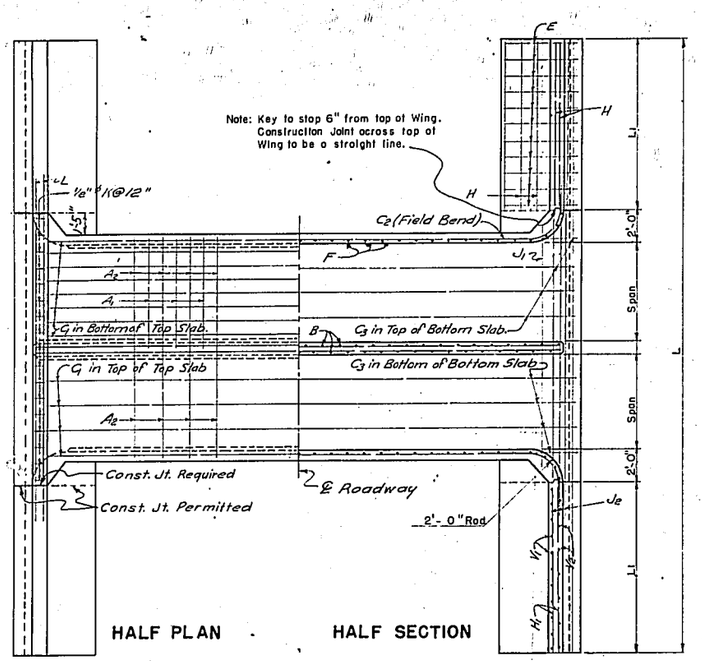
	Names	Dates	APPROVED BY
Detailed by	W.H.W.	10-58	
Checked by	R.M.M.	11-58	Engineer of Bridge Design
Quantities by	W.H.W.	10-58	
Checked by	R.M.M.	11-58	Assistant State Highway Engineer
Traced by	W.H.W.	10-58	

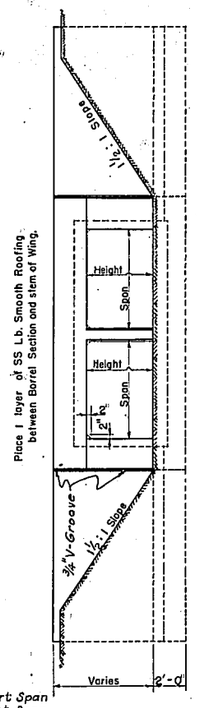
Drawing No. 1 of 1 | Index No. 4585

E-1510

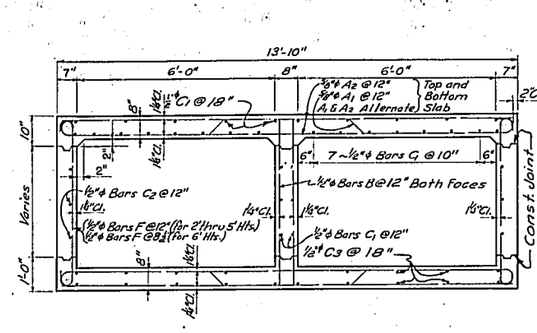
PROJECTS NO. I-4-1(25)75 & I-4-2(12)76
STATE JOBS NO. 16320-3407 & 92130-3401

FED. ROAD DIV. No	STATE	SECTION	JOB No	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.				167	

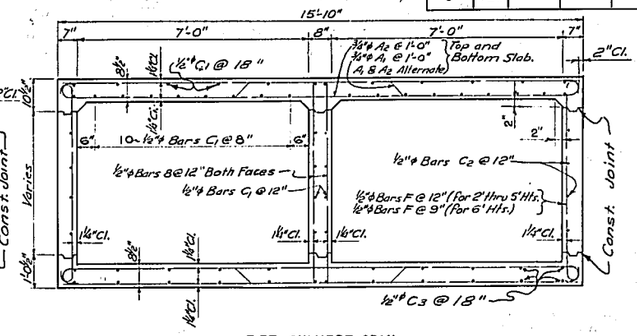




END ELEVATION

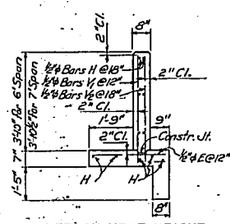


6 FT. CULVERT SPAN

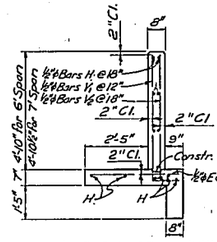


7 FT. CULVERT SPAN

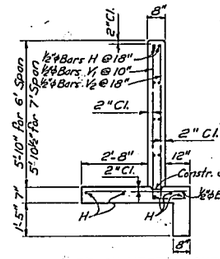
SECTIONS THRU BARRELS



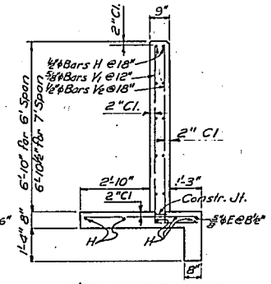
2 FT. CULVERT HEIGHT



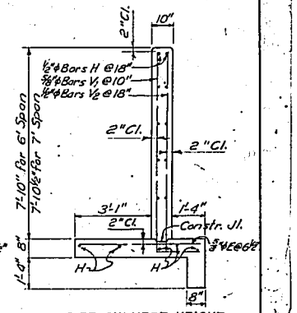
3 FT. CULVERT HEIGHT



4 FT. CULVERT HEIGHT

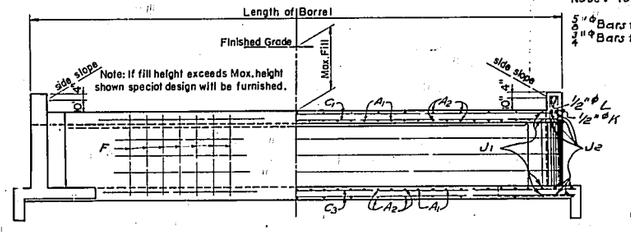


5 FT. CULVERT HEIGHT



6 FT. CULVERT HEIGHT

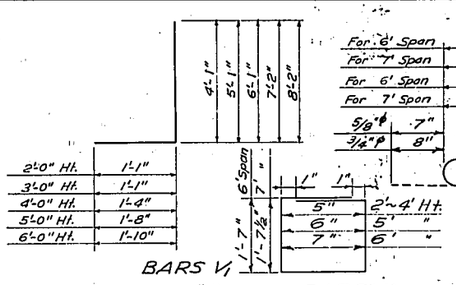
SECTIONS THRU WINGS



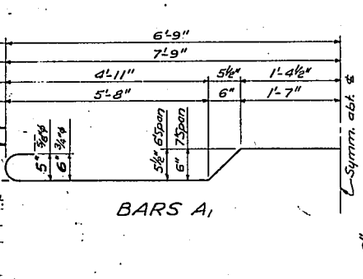
HALF ELEVATION HALF SECTION

Note: for J_1 and J_2
5" ϕ Bars for 6 ft. Culvert Span
4" ϕ Bars for 7 ft. Culvert Span

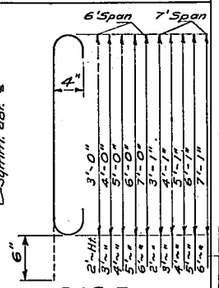
BENDING DIAGRAMS



BARS V_1 BARS K

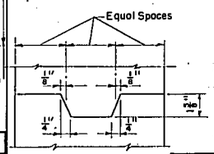


BARS A_1



BAR F

Note: All bar dimensions are out-to-out.



KEY DETAIL

GENERAL NOTES

DESIGN SPECIFICATIONS: A.A.S.H.O. 1957
*LOADING: H-15-44. FOR 6' SPAN CULVERTS
STRESSES: f_s= 20,000 f_c= 1,000
CHAMFER: All edges and corners to be chamfered ¾" unless otherwise noted.
REINFORCING STEEL SPECIFICATIONS: A.A.S.H.O. M-137
FABRICATION OF REINFORCING STEEL: Reinforcing steel shall be fabricated according to the A.A.S.H.O. manual of recommended practice for detailing reinforced concrete highway structures.
*LOADING: H20-S16-44 AND MILITARY FOR 7' SPAN CULVERTS.

DIMENSIONS

CULVERT SPAN	CULVERT HEIGHT	AREA OF OPENING	MAXIMUM FILL	Li	L
6'-0"	2'-0"	23.94	6'-0"	7'-3"	31'-2"
	3'-0"	35.94	6'-0"	8'-9"	34'-2"
	4'-0"	47.94	6'-0"	10'-3"	37'-2"
	5'-0"	59.94	6'-0"	11'-9"	40'-2"
	6'-0"	71.94	6'-0"	13'-3"	43'-2"
7'-0"	2'-6"	27.94	5'-0"	7'-4"	33'-2"
	3'-0"	41.94	5'-0"	8'-10"	36'-2"
	4'-0"	55.94	5'-0"	10'-4"	39'-2"
	5'-0"	69.94	5'-0"	11'-10"	42'-2"
	6'-0"	83.94	5'-0"	13'-4"	45'-2"

QUANTITIES

32' BARREL LENGTH		ADDITIONAL LENGTH	
CONCRETE CU. YD.	REINF. STEEL LBS.	CONC. CU. YD. PER LIN. FT.	REINF. STEEL LBS. PER LIN. FT.
35.52	4910	.82	129.03
40.49	5280	.89	134.37
45.94	5776	.96	139.72
53.57	6408	1.02	145.06
61.55	7261	1.09	153.97
40.69	6992	.97	191.84
45.67	7364	1.04	197.36
51.11	7861	1.10	203.10
58.81	8513	1.17	208.85
66.83	9375	1.24	218.17

REINFORCING STEEL

CULVERT SPAN	CULVERT HEIGHT	BARS A1 LENGTH	BARS A1 NO.	BARS A2 LENGTH	BARS A2 NO.	BARS B LENGTH	BARS B NO.	BARS C1 LENGTH	BARS C1 NO.	BARS C2 LENGTH	BARS C2 NO.	BARS C3 LENGTH	BARS C3 NO.	BARS E LENGTH	BARS E NO.	BARS F LENGTH	BARS F NO.	BARS H LENGTH	BARS H NO.	BARS J1 LENGTH	BARS J1 NO.	BARS J2 LENGTH	BARS J2 NO.	BARS K LENGTH	BARS K NO.	BARS L LENGTH	BARS L NO.	BARS V1 LENGTH	BARS V1 NO.	BARS V2 LENGTH	BARS V2 NO.
6'-0"	2'-0"	15'-0"	"	13'-6"	"	3'-0"	28	Barrel length minus 4"	2	Barrel length plus 4'-6"	2	Cut back to clear face of Concrete by 3"	18	2'-10"	28	4'-0"	2	6'-11"	44	14'-11"	8	19'-2"	16	3'-11"	34	19'-2"	4	5'-1"	28	4'-1"	20
	3'-0"	"	"	"	"	4'-0"	30	"	4	"	"	"	"	3'-6"	52	5'-0"	"	8'-5"	44	"	"	"	"	"	"	"	"	"	6'-1"	36	5'-1"	24
	4'-0"	"	"	"	"	5'-0"	32	"	6	"	"	"	"	4'-0"	80	6'-0"	"	9'-11"	52	"	"	"	"	"	"	"	"	"	7'-4"	48	6'-1"	28
	5'-0"	"	"	"	"	6'-0"	34	"	8	"	"	"	"	4'-6"	64	7'-0"	"	11'-5"	60	"	"	"	4'-2"	"	"	"	"	"	8'-9"	48	7'-2"	32
	6'-0"	"	"	"	"	7'-0"	36	"	10	"	"	"	"	4'-11"	96	8'-0"	"	12'-11"	60	"	"	"	4'-5"	"	"	"	"	"	9'-11"	64	8'-2"	36
7'-0"	2'-6"	17'-2"	"	15'-6"	"	3'-1"	36	"	2	"	2	"	22	2'-10"	28	4'-1"	2	7'-0"	44	16'-11"	8	21'-2"	16	4'-0"	38	21'-2"	4	5'-1"	28	4'-1"	20
	3'-0"	"	"	"	"	4'-1"	38	"	4	"	4	"	"	3'-6"	52	5'-1"	"	8'-6"	44	"	"	"	"	"	"	"	"	"	6'-1"	36	5'-1"	24
	4'-0"	"	"	"	"	5'-1"	40	"	6	"	6	"	"	4'-0"	80	6'-1"	"	10'-0"	52	"	"	"	"	"	4'-3"	"	"	"	7'-4"	48	6'-1"	28
	5'-0"	"	"	"	"	6'-1"	42	"	8	"	8	"	"	4'-6"	64	7'-1"	"	11'-6"	60	"	"	"	"	"	"	"	"	"	8'-9"	48	7'-2"	32
	6'-0"	"	"	"	"	7'-1"	44	"	10	"	10	"	"	4'-11"	96	8'-1"	"	13'-0"	60	"	"	"	"	"	"	"	"	"	9'-11"	64	8'-2"	36

Varies with length of Barrel

REVISIONS		
Names	Dates	Descriptions
		LOADING CHANGE FOR 7' SPAN

STATE OF FLORIDA
STATE ROAD DEPARTMENT

DOUBLE 6 FT. & 7 FT. SPAN CULVERTS
2·3·4·5·6 FT. HEIGHTS

ROAD NO.	COUNTY	SECTION	JOB NO.
400	POLK & OSCEOLA		I-4-1(25)75 I-4-2(12)76

	Names	Dates
Designed by	W.H.M.	1-51
Checked by	R.M.M.	1-51
Drawn by	W.H.W.	2-54
Checked by	J.L.W.	2-54
Quantities by	J.L.W.	2-54
Checked by	R.J.D	2-54
Traced by	W.H.W.	2-54

Drawing No. 1 of 1
Index No. 60.21-M

E-1511

FED. ROAD DIV. No.	STATE	SECTION	JOB No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.				168	

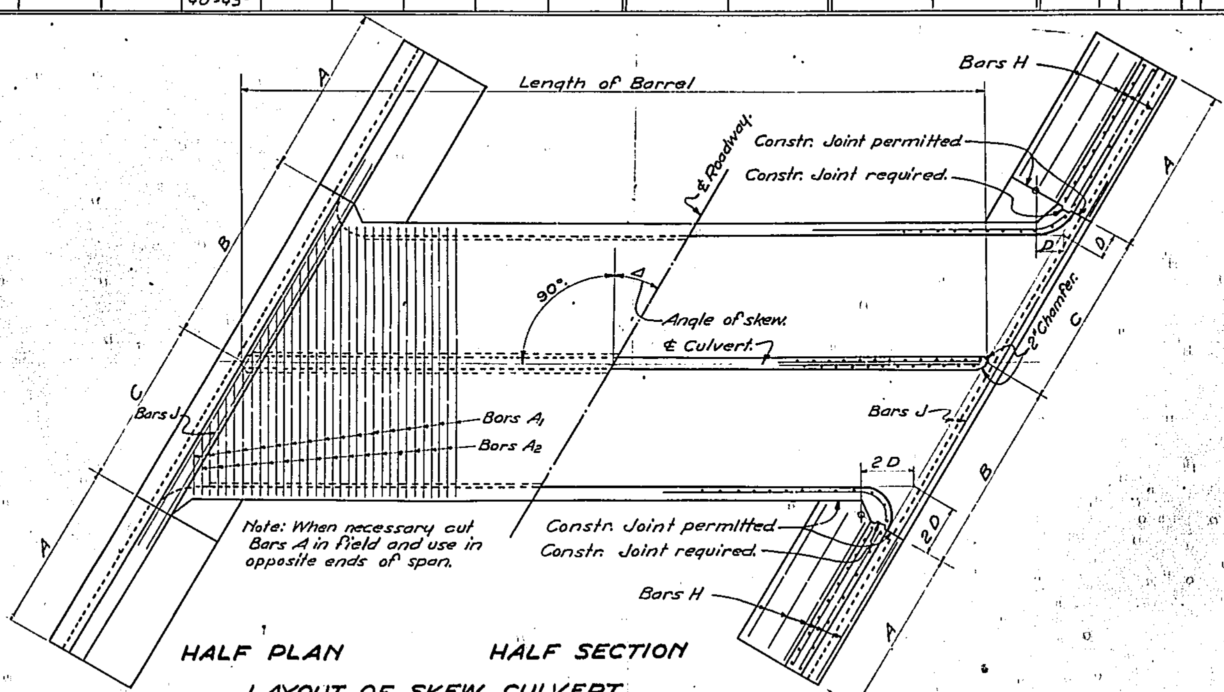
PROJECTS NO. I-4-1(25)75 & I-4-2(19)76
STATE JOBS NO. 16320-3407 &
92130-3401

DIMENSIONS / ESTIMATED QUANTITIES

Culvert Span	Culvert Height	Max. Fill	Angle of Skew (Δ)	A	B	C	D	32 Ft. Barrel Length: Concrete Cu. Yd.	32 Ft. Barrel Length: Reinforcing Steel	Additional Length: Concrete Cu. Yd. per Lin. Ft.	Additional Length: Reinforcing Steel Lbs. per Lin. Ft.
6'-0"	2'-0"		0°-15°		$\frac{2.333 + Span}{Cos\ \Delta}$	$\frac{1.3333 + Span}{Cos\ \Delta}$	$\frac{1}{Cos\ \Delta}$				
			15°-30°								
			30°-40°								
			40°-45°								
	3'-0"		0°-15°								
			15°-30°								
			30°-40°								
			40°-45°								
	4'-0"		0°-15°								
			15°-30°								
			30°-40°								
			40°-45°								
	5'-0"	5'-0"	0°-15°	11'-9"				53.61	6,308	1.02	145.06
			15°-30°								
			30°-40°								
			40°-45°								
	6'-0"		0°-15°								
			15°-30°								
			30°-40°								
			40°-45°								
7'-0"	2'-0"		0°-15°								
			15°-30°								
			30°-40°								
			40°-45°								
	3'-0"		0°-15°								
			15°-30°								
			30°-40°								
			40°-45°								
	4'-0"	5'-0"	0°-15°	10'-3"				51.23	8,168	1.10	202.99
		5'-0"	15°-30°	11'-6"				51.92	8,219	1.10	202.99
			30°-40°								
			40°-45°	14'-7"				55.46	8,633	1.10	203.34
	5'-0"		0°-15°								
		5'-0"	15°-30°	13'-3"				60.27	9,113	1.17	208.81
			30°-40°								
		5'-0"	40°-45°	16'-8"				65.19	9,087	1.17	210.38
	6'-0"	5'-0"	0°-15°	13'-6"				66.47	9,134	1.24	214.20
		5'-0"	15°-30°	15'-0"				68.90	9,869	1.24	214.36
			30°-40°								
			40°-45°								

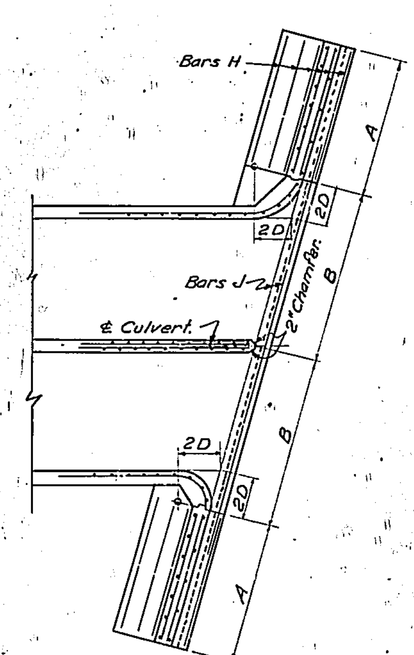
TABLE OF REINFORCING STEEL

Culvert Span	Culvert Height	Angle of Skew (Δ)	Bars A_1 Length	Bars A_1 Number (Varies with length of Culvert)	Bars A_2 Length	Bars A_2 Number (Varies with length of Culvert)	Bars B Length	Bars B Number (Varies with length of Culvert)	Bars C_1 Length (Barrel length minus 4")	Bars C_1 Number	Bars C_2 Length (Barrel length plus 3'-4")	Bars C_2 Number	Bars C_3 Length (Set length to Clear face of Concrete by 3"±)	Bars C_3 Number	Bars E Length	Bars E Number	Bars F Length	Bars F Number (Varies with length of Culvert)	Bars H Length	Bars H Number	Bars J Length	Bars J Number	Bars K Length	Bars K Number	Bars V_1 Length	Bars V_1 Number	Bars V_2 Length	Bars V_2 Number	Bars Length	Bars Number
6'-0"	2'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
	3'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
	4'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
	5'-0"	0°-15°	15'-0"		13'-6"		6'-0"			34		8		18	4'-6"	68	7'-0"		11'-5"	15	19'-9"	16	4'-2"	34	8'-9"	48	7'-2"	32		
		15°-30°																												
		30°-40°																												
		40°-45°																												
	6'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
7'-0"	2'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
	3'-0"	0°-15°																												
		15°-30°																												
		30°-40°																												
		40°-45°																												
	4'-0"	0°-15°	17'-2"		15'-6"		5'-1"			40		6		22	4'-0"	84	6'-1"		9'-11"	52	21'-4"	16	4'-0"	40	7'-4"	52	6'-1"	28		
		15°-30°	17'-2"		15'-6"		5'-1"			40		6		22	4'-0"	92	6'-1"		11'-2"	52	22'-11"	16	4'-0"	42	7'-4"	56	6'-1"	32		
		30°-40°																												
		40°-45°	17'-2"		15'-6"		5'-1"			40		6		22	4'-0"	116	6'-1"		14'-3"	52	28'-0"	16	4'-0"	50	7'-4"	72	6'-1"	40		
	5'-0"	0°-15°																												
		15°-30°	17'-2"		15'-6"		6'-1"			42		8		22	4'-6"	76	7'-1"		12'-11"	60	22'-11"	16	4'-3"	42	8'-9"	56	7'-2"	36		
		30°-40°																												
		40°-45°	17'-2"		15'-6"		6'-1"			42		8		22	4'-6"	96	7'-1"		16'-4"	60	26'-11"	16	4'-3"	50	8'-10"	68	7'-2"	48		
	6'-0"	0°-15°	17'-2"		15'-6"		7'-1"			44		10		22	4'-11"	100	8'-1"		13'-2"	60	21'-0"	16	4'-6"	38	9'-11"	68	8'-2"	36		
		15°-30°	17'-2"		15'-6"		7'-1"			44		10		22	4'-11"	112	8'-1"		14'-8"	60	23'-5"	16	4'-6"	40	9'-11"	72	8'-2"	44		
		30°-40°																												
		40°-45°																												

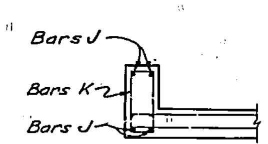


HALF PLAN HALF SECTION

LAYOUT OF SKEW CULVERT
WHEN Δ VARIES FROM 15° TO 45°



LAYOUT OF SKEW CULVERT WING
WHEN Δ VARIES FROM 0° TO 15°



SECTION THRU HEADWALL

·NOTES·

This Drawing to be used in conjunction with Index No. 6021M Dwg. 1 of 1

For all details not shown see Index No. 6021M Dwg. 1 of 1

STATE OF FLORIDA
STATE ROAD DEPARTMENT

DOUBLE SKEWED 6 & 7 FT. SPAN CULVERTS
2 · 3 · 4 · 5 · 6 FT. HEIGHTS

ROAD NO.	COUNTY	SECTION	JOB NO.
400	POLK & OSCEOLA		I-4-1(25)75 I-4-2(19)76

REVISIONS: Names	Dates	Descriptions
		LOADING CHANGE FOR 7' SPAN

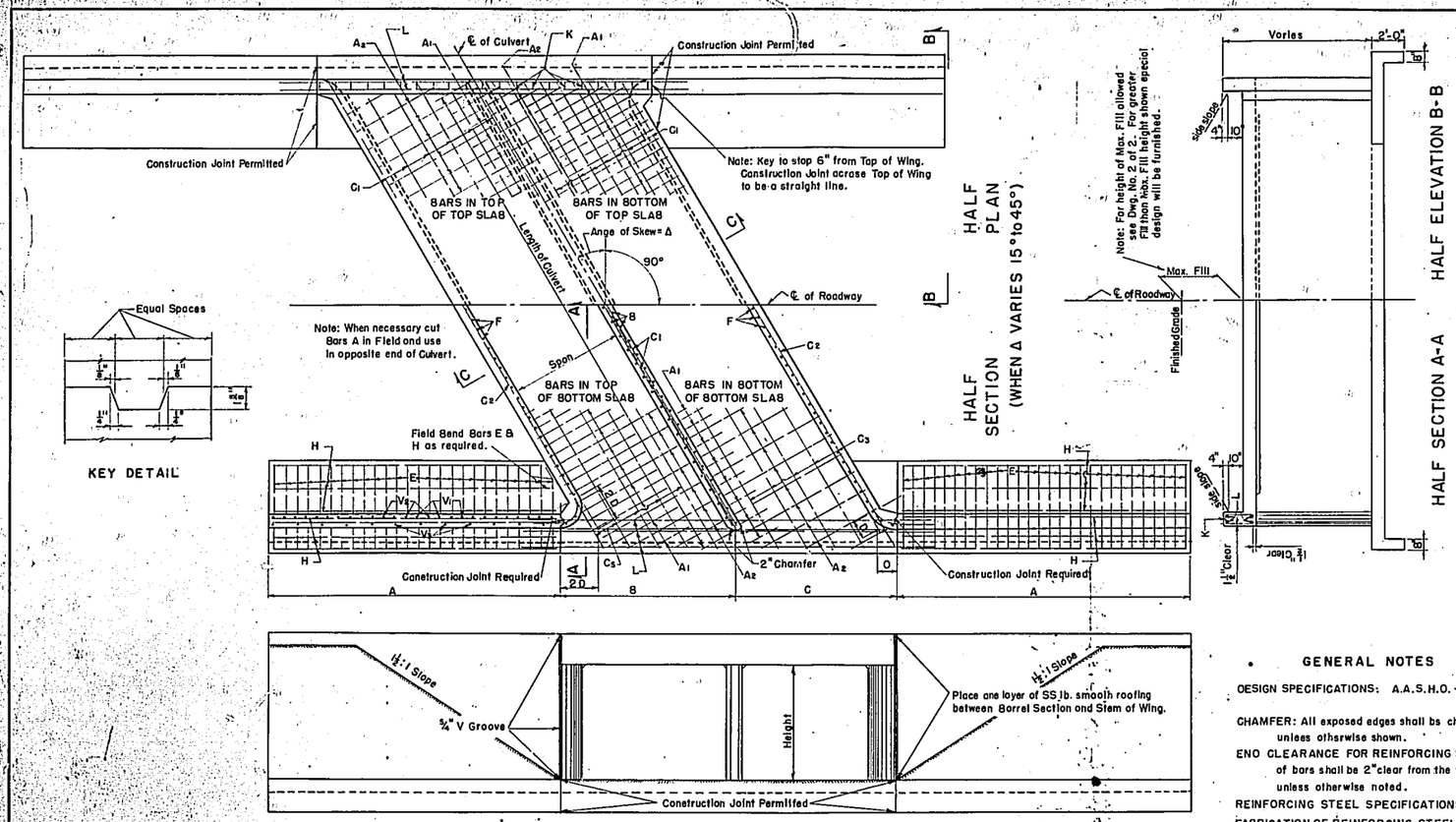
	Names	Dates
Designed by		
Checked by		
Drawn by	W.H.W.	8-54
Checked by	J.M.G.	8-54
Quantities by		
Checked by		
Traced by	W.H.W.	8-54

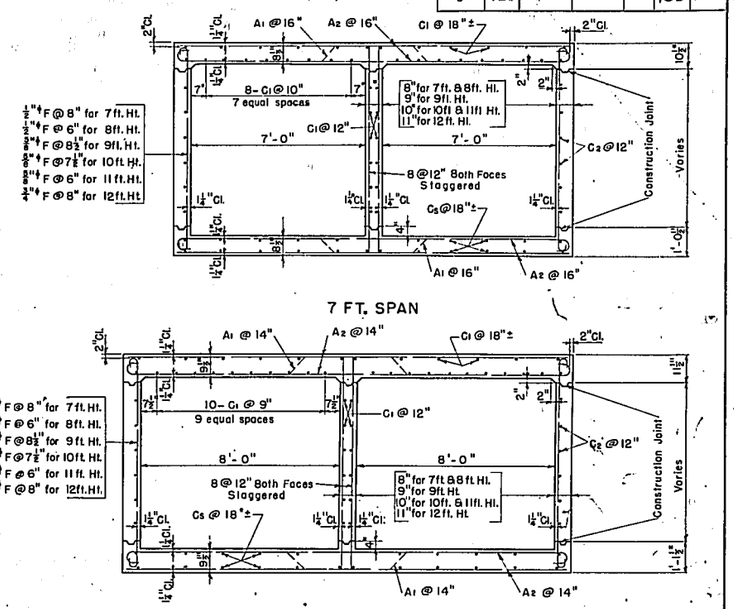
Drawing No.	Index No.
1 of 1	6021-S

E-1512

PROJECTS NO I-4-1(25)75 & I-4-2(15)76
STATE JOBS NO 16320-3407 & 92130-3401

FED. ROAD DIV. No	STATE	SECTION	JOB No	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.				169	171





GENERAL NOTES

DESIGN SPECIFICATIONS: A.A.S.H.O. - 1957.

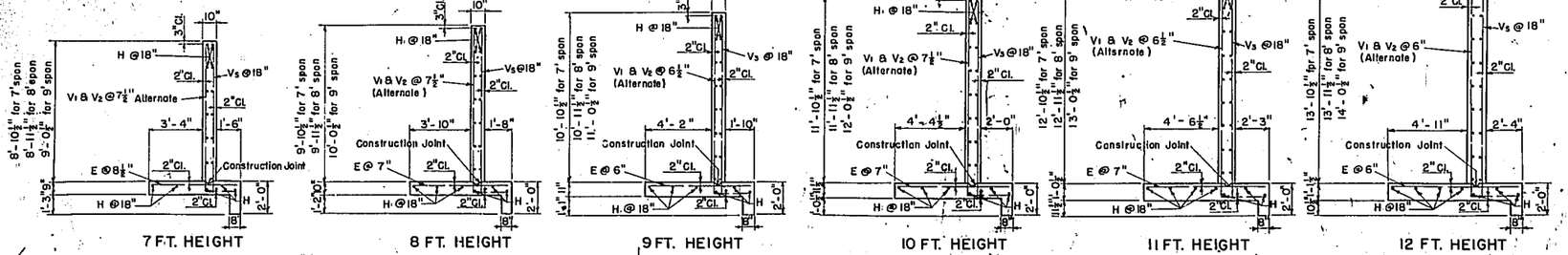
CHAMFER: All exposed edges shall be chamfered ¾" unless otherwise shown.

END CLEARANCE FOR REINFORCING STEEL: Ends of bars shall be 2" clear from the face of Concrete unless otherwise noted.

REINFORCING STEEL SPECIFICATIONS: A.A.S.H.O. - M-137

FABRICATION OF REINFORCING STEEL: Reinforcing steel shall be fabricated according to the A.A.S.H.O. manual of recommended practice for detailing reinforced concrete highway structures.

LOADING H20-S16-44 & Military Loading for 9' span. H-15-44 for others.



STATE OF FLORIDA
STATE ROAD DEPARTMENT

DOUBLE SKEWED 7-8-9 FT. SPAN CULVERTS
7-8-9-10-11-12 FT. HEIGHTS

ROAD NO.	COUNTY	SECTION	JOB NO.
400	POLK & OSCEOLA		

REVISIONS				Names	Dates
Names	Dates	Descriptions	Designed by	W.H.M.	1-51
			Checked by	R.M.M.	1-51
			Drawn by	W.H.W.	4-51
			Checked by	P.H.S.	4-51
			Quantities by	P.H.S.	4-51
			Checked by	J.L.W.	4-51
			Traced by	W.H.W.	4-51

T. W. Jennings
State Highway Engineer

Drawing No. 1 of 2
Index No. 6052-M

E-1513

PROJECTS NO I-4-1(25)75 & I-4-2(19)76
STATE JOBS NO 16320-3407 & 92130-3401

FED. ROAD DIV. No.	STATE	SECTION	JOB No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	FLA.					170

DIMENSIONS

SPAN	HEIGHT	SKEW	MAX. FILL HEIGHT	A	B	C	D
7'-0"	7'-0"	0° to 15°			9.333 / Cos Δ	8.333 / Cos Δ	D = 1 / Cos Δ
		15° to 30°					
		30° to 40°	5'-0"	18'-9"			
		40° to 45°					
	8'-0"	0° to 15°					
		15° to 30°					
		30° to 40°					
		40° to 45°					
	9'-0"	0° to 15°			9.375 / Cos Δ	8.375 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45°					
	10'-0"	0° to 15°			9.417 / Cos Δ	8.417 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45°					
	11'-0"	0° to 15°					
		15° to 30°					
		30° to 40°					
		40° to 45°					
	12'-0"	0° to 15°			9.458 / Cos Δ	8.458 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45°					
8'-0"	7'-0"	0° to 15°			10.333 / Cos Δ	9.333 / Cos Δ	D = 1 / Cos Δ
		15° to 30°	5'-0"	16'-9"			
		30° to 40°					
		40° to 45°	5'-0"	20'-6"			
	8'-0"	0° to 15°					
		15° to 30°	5'-0"	18'-6"			
		30° to 40°	5'-0"				
		40° to 45°	5'-0"	22'-9"			
	9'-0"	0° to 15°			10.375 / Cos Δ	9.375 / Cos Δ	
		15° to 30°	5'-0"	20'-3"			
		30° to 40°					
		40° to 45°					
	10'-0"	0° to 15°			10.417 / Cos Δ	9.417 / Cos Δ	
		15° to 30°					
		30° to 40°	5'-0"	24'-9"			
		40° to 45°					
	11'-0"	0° to 15°					
		15° to 30°					
		30° to 40°					
		40° to 45°					
	12'-0"	0° to 15°			10.458 / Cos Δ	9.458 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45°					
9'-0"	7'-0"	0° to 15°			11.333 / Cos Δ	10.333 / Cos Δ	D = 1 / Cos Δ
		15° to 30°		19'-0"			
		30° to 40°	5'-0"	(9'-0")			
		40° to 45°					
	8'-0"	0° to 15°					
		15° to 30°					
		30° to 40°					
		40° to 46°					
	9'-0"	0° to 15°			11.375 / Cos Δ	10.375 / Cos Δ	
		15° to 30°	5'-0"	20'-4"			
		30° to 40°					
		40° to 45°					
	10'-0"	0° to 15°			11.417 / Cos Δ	10.417 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45					
	11'-0"	0° to 15°					
		15° to 30°					
		30° to 40°					
		40° to 45°					
	12'-0"	0° to 15°			11.458 / Cos Δ	10.458 / Cos Δ	
		15° to 30°					
		30° to 40°					
		40° to 45°					

QUANTITIES

SPAN	HEIGHT	SKEW	32' BARREL LENGTH CONCRETE CU. YD.	32' BARREL LENGTH REINF. STEEL LBS.	ADDITIONAL LENGTH CONC. CU. YD. PER. LIN. FT.	ADDITIONAL LENGTH REINF. STEEL LBS. PER. LIN. FT.
7'-0"	7'-0"	30° to 40°	83.79	10,397	1.36	189.42
8'-0"	7'-0"	15° to 30°	87.26	10,798	1.576	223.97
8'-0"	7'-0"	40° to 45°	92.11	12,080	1.576	223.97
8'-0"	8'-0"	15° to 30°	98.17	12,681	1.65	236.83
8'-0"	8'-0"	40° to 45°	108.52	14,283	1.65	236.83
8'-0"	9'-0"	15° to 30°	114.46	15,264	1.82	249.00
8'-0"	10'-0"	30° to 40°	141.90	18,352	2.01	262.76
9'-0"	7'-0"	30° to 40°	100.73 / (82.47)	13,452 / (11,726)	1.82	273.01
9'-0"	9'-0"	15° to 30°	121.30	16,591	2.065	298.60

REINFORCING STEEL

SPAN	HEIGHT	SKEW	BAR A1 LENGTH	A1 NO	A1 SIZE	BAR A2 LENGTH	A2 NO	A2 SIZE	BAR B LENGTH	B NO	B SIZE	BAR C1 LENGTH	C1 NO	C1 SIZE	BAR C2 LENGTH	C2 NO	C2 SIZE	BAR C3 LENGTH	C3 NO	C3 SIZE
7'-0"	7'-0"	30° to 40°	17'-5"		3/4"φ	15'-8"		3/4"φ	8'-1"		1/2"φ		42	1/2"φ		12	1/2"φ		22	1/2"φ
8'-0"	7'-0"	15° to 30°	19'-5"		3/4"φ	17'-8"		3/4"φ	8'-3"		1/2"φ		46	1/2"φ		12	1/2"φ		22	1/2"φ
8'-0"	7'-0"	40° to 45°	19'-5"		3/4"φ	17'-8"		3/4"φ	8'-3"		1/2"φ		46	1/2"φ		12	1/2"φ		22	1/2"φ
8'-0"	8'-0"	15° to 30°	19'-5"		3/4"φ	17'-8"		3/4"φ	9'-3"		1/2"φ		48	1/2"φ		14	1/2"φ		22	1/2"φ
8'-0"	8'-0"	40° to 45°	19'-5"		3/4"φ	17'-8"		3/4"φ	9'-3"		1/2"φ		48	1/2"φ		14	1/2"φ		22	1/2"φ
8'-0"	9'-0"	15° to 30°	19'-5"		3/4"φ	17'-8"		3/4"φ	10'-3"		1/2"φ		50	1/2"φ		16	1/2"φ		22	1/2"φ
8'-0"	10'-0"	30° to 40°	20'-0"		3/4"φ	18'-2"		3/4"φ	11'-3"		1/2"φ		52	1/2"φ		18	1/2"φ		22	1/2"φ
9'-0"	7'-0"	30° to 40°	21'-6"		3/4"φ	19'-8"		3/4"φ	8'-5"		1/2"φ		52	1/2"φ		12	1/2"φ		26	1/2"φ
9'-0"	9'-0"	15° to 30°	21'-9"		3/4"φ	19'-11"		3/4"φ	10'-6		1/2"φ		56	1/2"φ		16	1/2"φ		26	1/2"φ

Bar A1 NO, Bar A2 NO, Bar B NO: Varies with length of Culvert. Bar C1 LENGTH: Barrel Length - 4". Bar C2 LENGTH: Barrel Length + 3'-4". Bar C3 LENGTH: Set Bar Length to Clear face of Concrete by 3"±.

SPAN	HEIGHT	SKEW	BAR E LENGTH	E NO	E SIZE	BAR F LENGTH	F NO	F SIZE	BAR H LENGTH	H NO	H SIZE	BAR K LENGTH	K NO	K SIZE	BAR L LENGTH	L NO	L SIZE
7'-0"	7'-0"	30° to 40°	5'-4"	108	3/4"φ	9'-1"		1/2"φ	18'-5"	68	1/2"φ	4'-10"	46	1/2"φ	25'-6"	20	3/4"φ
8'-0"	7'-0"	15° to 30°	5'-4"	96	3/4"φ	9'-3"		1/2"φ	16'-5"	68	1/2"φ	4'-8"	42	1/2"φ	23'-9"	16	3/4"φ
8'-0"	7'-0"	40° to 45°	5'-4"	116	3/4"φ	9'-3"		1/2"φ	20'-2"	68	1/2"φ	4'-8"	56	1/2"φ	30'-10"	20	3/4"φ
8'-0"	8'-0"	15° to 30°	6'-0"	128	3/4"φ	10'-3"		1/2"φ	18'-2"	80	1/2"φ	4'-8"	42	1/2"φ	23'-9"	16	3/4"φ
8'-0"	8'-0"	40° to 45°	6'-0"	156	3/4"φ	10'-3"		1/2"φ	22'-5"	80	1/2"φ	4'-8"	56	1/2"φ	30'-4"	20	3/4"φ
8'-0"	9'-0"	15° to 30°	6'-6"	164	3/4"φ	10'-3"		5/8"φ	19'-11"	88	1/2"φ	5'-0"	46	1/2"φ	25'-4"	20	3/4"φ
8'-0"	10'-0"	30° to 40°	7'-0"	172	3/4"φ	12'-5"		5/8"φ	24'-5"	88	1/2"φ	5'-3"	54	1/2"φ	28'-5"	20	3/4"φ
9'-0"	7'-0"	30° to 40°	5'-4"	108 / (13)	3/4"φ	9'-5"		1/2"φ	18'-8" / (8'-8")	68 / (17)	1/2"φ	5'-2"	56 / (52)	1/2"φ	30'-9" / (28'-6")	20	3/4"φ
9'-0"	9'-0"	15° to 30°	6'-6"	164	3/4"φ	11'-7"		5/8"φ	20'-0"	88	1/2"φ	4'-10"	50	1/2"φ	27'-8"	14	3/4"φ

Bar F NO: Varies with length of Culvert.

SPAN	HEIGHT	SKEW	BAR V1 LENGTH	V1 NO	V1 SIZE	BAR V2 LENGTH	V2 NO	V2 SIZE	BAR V3 LENGTH	V3 NO	V3 SIZE	BAR LENGTH	NO	SIZE	BAR LENGTH	NO	SIZE
7'-0"	7'-0"	30° to 40°	11'-2"	60	5/8"φ	7'-0"	60	5/8"φ	9'-2"	52	1/2"φ						
8'-0"	7'-0"	15° to 30°	11'-2"	56	5/8"φ	6'-11"	52	5/8"φ	9'-3"	44	1/2"φ						
8'-0"	7'-0"	40° to 45°	11'-2"	68	5/8"φ	6'-11"	64	5/8"φ	9'-3"	56	1/2"φ						
8'-0"	8'-0"	15° to 30°	12'-5"	60	3/4"φ	7'-8"	60	3/4"φ	10'-5"	52	1/2"φ						
8'-0"	8'-0"	40° to 45°	12'-5"	72	3/4"φ	7'-8"	76	3/4"φ	10'-5"	64	1/2"φ						
8'-0"	9'-0"	15° to 30°	13'-10"	76	3/4"φ	8'-1"	72	3/4"φ	11'-5"	56	1/2"φ						
8'-0"	10'-0"	30° to 40°	15'-1"	80	5/8"φ	8'-1"	80	5/8"φ	12'-6"	68	1/2"φ						
9'-0"	7'-0"	30° to 40°	11'-4"	64 / (8)	5/8"φ	7'-0"	60 / (8)	5/8"φ	9'-4" / (9'-2")	52 / (6)	1/2"φ						
9'-0"	9'-0"	15° to 30°	13'-10"	76	3/4"φ	8'-0"	76	3/4"φ	11'-7"	56	1/2"φ						

BENDING DIAGRAMS

BARS A1

7 FT. SPAN			Height	8 FT. SPAN			Height	9 FT. SPAN		
5'-9"	6"	1'-7"	7' Height	6'-6"	7"	1'-9"	7' Height	7'-3"	8"	1'-11"
5'-9"	6"	1'-7"	8' Height	6'-6"	7"	1'-9"	8' Height	7'-3"	8"	1'-11"
5'-10"	6"	1'-7½"	9' Height	6'-7"	7"	1'-9½"	9' Height	7'-4"	8"	1'-11½"
5'-11"	6"	1'-8"	10' Height	6'-8"	7"	1'-10"	10' Height	7'-5"	8"	2'-0"
5'-11"	6"	1'-8"	11' Height	6'-8"	7"	1'-10"	11' Height	7'-5"	8"	2'-0"
6'-0"	6"	1'-8½"	12' Height	6'-9"	7"	1'-10½"	12' Height	7'-6"	8"	2'-0½"

8" — 6" (7 FT. SPAN); 8" — 6" — 7" (8 FT. SPAN); 8" — 6" — 8" (9 FT. SPAN). Symmetrical about ℄.

BARS V1 & V2

Height	
7' Height	2'-0"
8' Height	2'-2"
9' Height	2'-4½"
10' Height	2'-7"
11' Height	2'-11"
12' Height	3'-1"

Ht.	V1 7' Span	V1 8' Span	V1 9' Span	V2
7'	9'-2"	9'-3"	9'-4"	5'-0"
8"	10'-3"	10'-4"	10'-5"	5'-7"
9"	11'-4½"	11'-5½"	11'-6½"	5'-8½"
10"	12'-5"	12'-6"	12'-7"	5'-6"
11"	13'-6"	13'-7"	13'-8"	5'-7"
12"	14'-7"	14'-8"	14'-9"	5'-5"

BARS K

Span 7'	1'-7½"
Span 8'	1'-8½"
Span 9'	1'-9½"

7' Height	8' Height	9' Height	10' Height	11' Height	12' Height
7"	7"	7"	8"	9"	10"

BARS F

9' Span: Height + 1'-5"
8' Span: Height + 1'-3"
7' Span: Height + 1'-1"

4" for 1/2"φ Bars
5" for 5/8"φ Bars
6" for 3/4"φ Bars

6" for 1/2"φ Bars
7" for 5/8"φ Bars
8" for 3/4"φ Bars

Note: All bar dimensions are given out to out.

REVISIONS		
Names	Dates	Descriptions
	6-60	Changed length of wing wall of 9'x7 Culvert.

STATE OF FLORIDA
STATE ROAD DEPARTMENT

DOUBLE SKEWED 7·8·9 FT. SPAN CULVERTS
7·8·9·10·11·12 FT. HEIGHTS

ROAD NO.	COUNTY	SECTION	JOB NO.
400	POLK & OSCEOLA	—	I-4-1(25)75 I-4-1(19)76

	Names	Dates
Designed by	W. H. M.	1-51
Checked by	R. M. M.	2-51
Drawn by	W. H. W.	2-51
Checked by	P. H. S.	4-51
Quantities by	P. H. S.	4-51
Checked by	J. L. W.	4-51
Traced by	W. H. W.	3-51

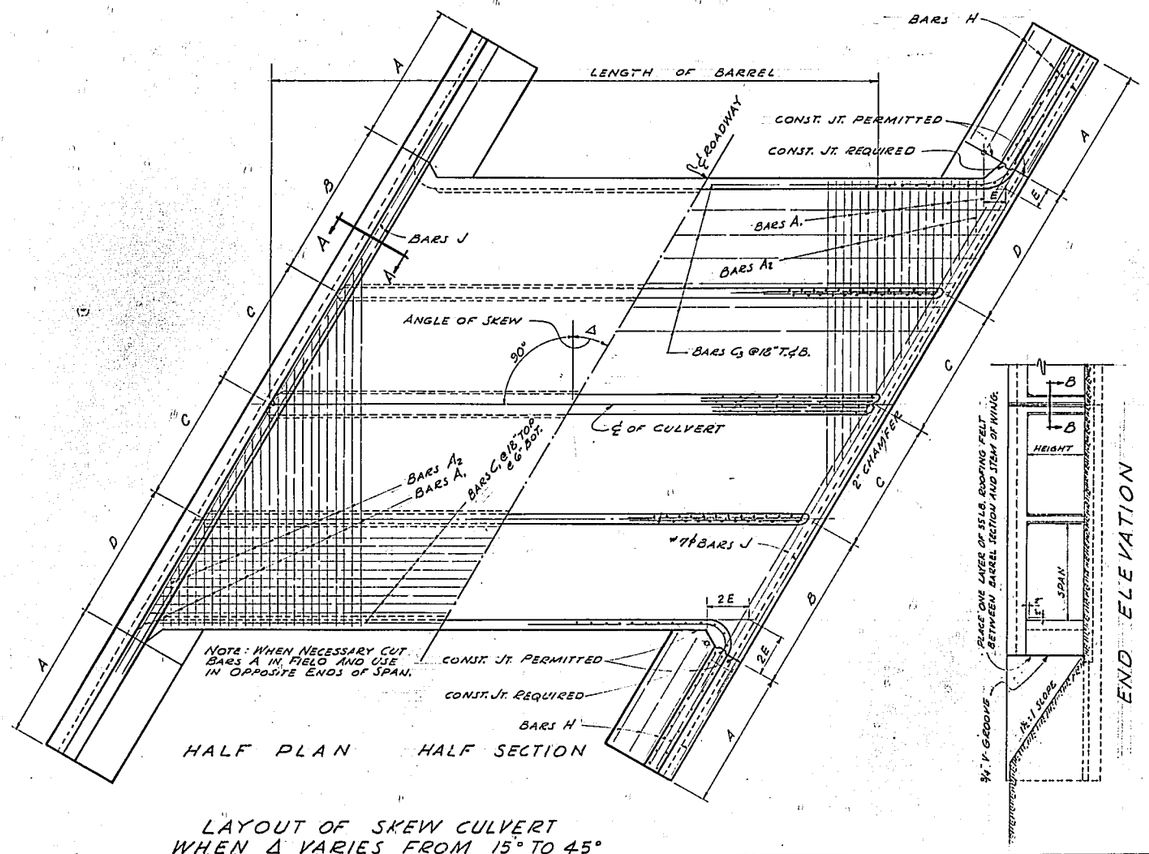
T. W. Jennings

Drawing No. 2 of 2
Index No. 6052

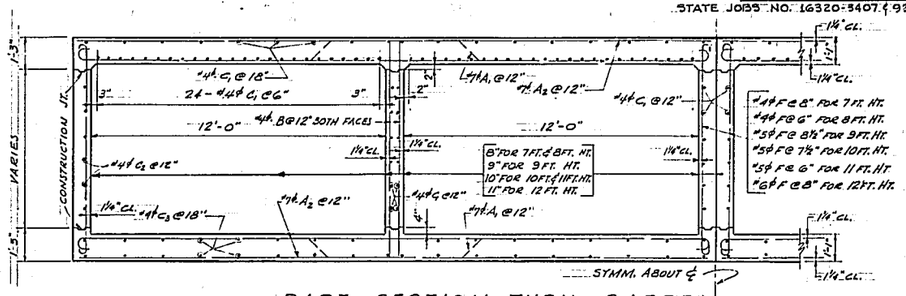
E-1514

FED. ROAD DIV. No.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.	I-4-1(25)75 I-4-2(19)76		174

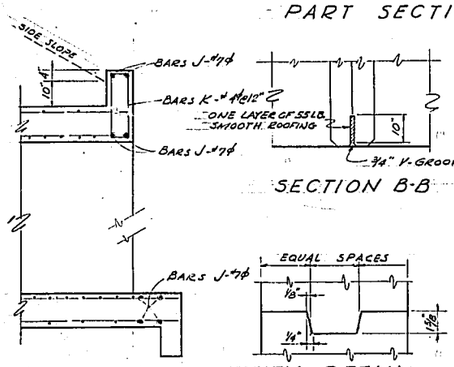
STATE JOBS NO. 16320-3407 & 92130-3401



LAYOUT OF SKEW CULVERT
WHEN Δ VARIES FROM 15° TO 45°



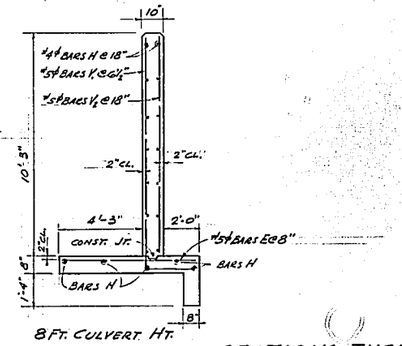
PART SECTION THRU BARREL



SECTION B-B

KEY DETAIL

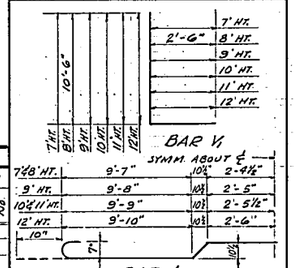
SECTION A-A



8 Ft. CULVERT HT.

SECTIONS THRU WINGS

BENDING DIAGRAMS



GENERAL NOTES

DESIGN SPECIFICATIONS: A.A.S.H.O. - 1957
LOADING: MILITARY
STRESSES: f_s = 20,000 f_c = 1600
CHAMFER: ALL EDGES AND CORNERS TO BE CHAMFERED ¾" UNLESS OTHERWISE NOTED.
REINFORCING STEEL SPECIFICATION: A.A.S.H.O.M.137
FABRICATION OF REINFORCING STEEL: ACCORDING TO THE A.A.S.H.O. MANUAL OF RECOMMENDED PRACTICES FOR DETAILING REINFORCED CONCRETE HIGHWAY STRUCTURES.

DIMENSIONS								ESTIMATED QUANTITIES			
CULVERT SPAN	CULVERT HEIGHT	MAX. FILL	ANGLE OF SKEW (Δ)	A	B	C	D	E	32' BARREL LENGTH CONCRETE CU. YD.	32' BARREL LENGTH REINF. STEEL	ADDITIONAL LENGTH CONCRETE CU. YD. PER LIN. FT.	ADDITIONAL LENGTH REINF. STL. LBS. PER LIN. FT.
12'-0"	7'-0"	5'-0"	0°-15°	20'-0"	2.333 + SPAN / cos Δ	1.000 + SPAN / cos Δ	4.333 + SPAN / cos Δ	1 / cos Δ	232.12	36,955	5.36	905.61
			15°-30°									
			30°-90°									
			40°-45°									
	8'-0"		0°-15°	21'-0"								
			15°-30°									
			30°-90°									
			40°-45°									
	9'-0"		0°-15°									
			15°-30°									
			30°-90°									
			40°-45°									
	10'-0"		0°-15°									
			15°-30°									
			30°-90°									
			40°-45°									
	11'-0"		0°-15°									
			15°-30°									
			30°-90°									
			40°-45°									
	12'-0"		0°-15°									
			15°-30°									
			30°-90°									
			40°-45°									

TABLE OF REINFORCING STEEL

BARS A. LENGTH	BARS A. No.	BARS A2 LENGTH	BARS A2 No.	BARS B LENGTH	BARS B No.	BARS C1 LENGTH	BARS C1 No.	BARS C2 LENGTH	BARS C2 No.	BARS C3 LENGTH	BARS C3 No.	BARS E LENGTH	BARS E No.	BARS F LENGTH	BARS F No.	BARS H LENGTH	BARS H No.	BARS J LENGTH	BARS J No.	BARS K LENGTH	BARS K No.	BARS V1 LENGTH	BARS V1 No.	BARS V2 LENGTH	BARS V2 No.
28'-1"	180	25'-8"	180	9'-10"	180	BARREL LENGTH PLUS 3'-4"	16	BARREL LENGTH MINUS 4"	16	367 LENGTH TO CLEAR FACE OF CONCRETE BY ±3"	72	6'-9"	128	10'-10"	128	20'-8"	76	37'-0"	32	5'-7"	142	13'-0"	156	10'-0"	56

VARIES WITH LENGTH OF CULVERT — VARIES WITH LENGTH OF CULVERT — VARIES WITH LENGTH OF CULVERT — VARIES WITH LENGTH OF CULVERT

STATE OF FLORIDA
STATE ROAD DEPARTMENT

QUADRUPLE 12 FT. SPAN CULVERT
7 · 8 · 9 · 10 · 11 · 12 FT. HEIGHTS

REVISIONS	
Dates	Descriptions

ROAD NO.	COUNTY		PROJECT NO.
400	POLK & OSCEOLA		I-4-1(25)76 & I-4-2(19)76
	Names	Dates	APPROVED BY
Detailed by	R.E.T.	11-58	
Checked by			Engineer of Bridge Design
Quantities by	R.E.T.	11-58	
Checked by			Assistant State Highway Engineer
Traced by			Drawing No. 1 of 1 — Index No. 6059-5M

E-1515

Existing Plans FPID No. 201204-1-52-01

Polk County (16320)

State Road No. 400 (I-4)

Segment 9

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
CONTRACT PLANS

FINANCIAL PROJECT ID 201204-1-52-01
(FEDERAL FUNDS)
POLK COUNTY (16320)
STATE ROAD NO. 400 (I-4)
SEGMENT 9

"This project was constructed in substantial accordance with these plans as provided by the Engineer of Record. If changes were made, those changes are indicated by black ink revision and bear the seal and signature of the Responsible Engineer."

4-15-05

"THIS PROJECT WAS CONSTRUCTED IN SUBSTANCIAL COMPLIANCE WITH THESE PLANS AS PROVIDED BY THE ENGINEER OF RECORD. THESE PLANS REFLECT "AS BUILT" CONDITIONS AND NO CHANGES WERE MADE TO THE PLAN SHEETS."

RESIDENT ENGINEER — DATE 8-16-05

COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS

INDEX OF ROADWAY PLANS

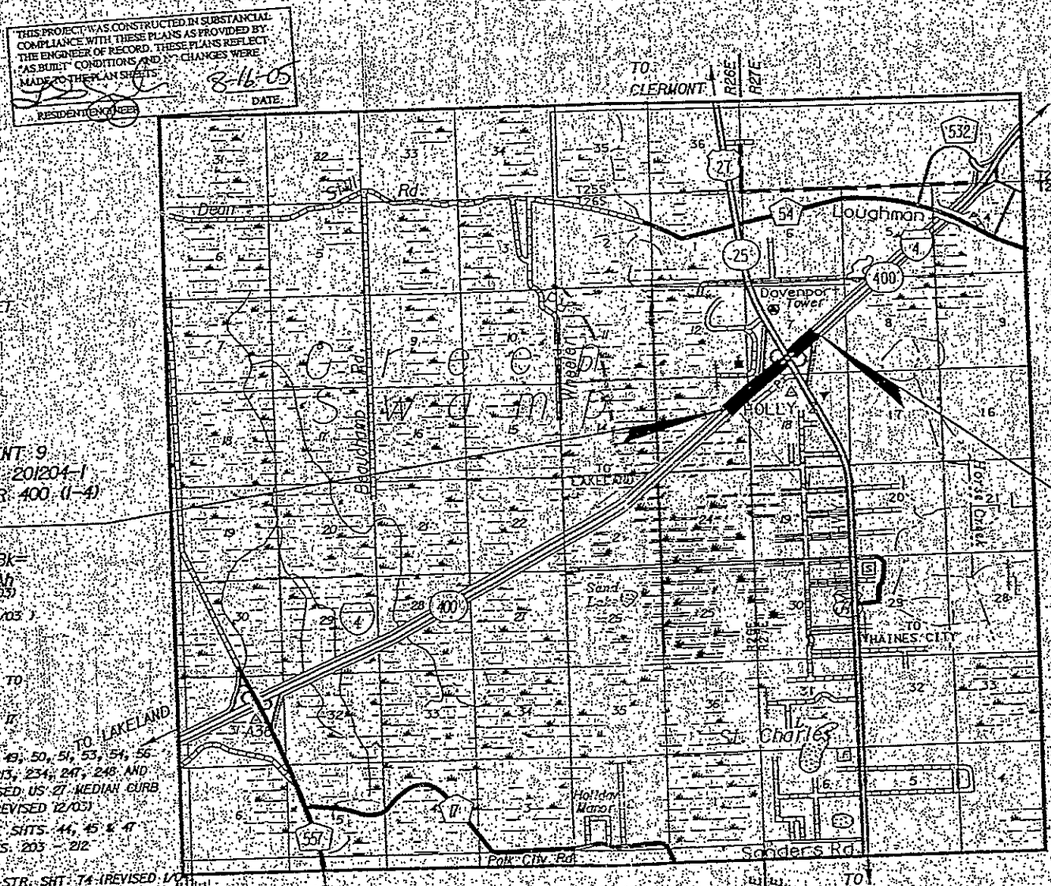
SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2-9	TYPICAL SECTIONS
10	NOT USED
11-13	SURVEY REFERENCE POINTS
14	PROJECT LAYOUT
15	GENERAL NOTES
16-37	ROADWAY PLAN SHEETS
38-58	ROADWAY PROFILE SHEETS
59-60	INTERCHANGE LAYOUT
61-62	INTERSECTION DETAILS
63	DRIVEWAY DETAIL
64-83	DRAINAGE STRUCTURE SHEETS
84-88A	DRAINAGE STRUCTURE DETAILS
89-97	POND DETAIL SHEETS
97A	DRAINAGE DETAILS
98	CROSS SECTION PATTERN SHEET
99-215	CROSS SECTIONS
216-221	NOT USED
222-306	CROSS SECTIONS
307-310	SWPPP
311-355	TRAFFIC CONTROL PLANS
356-377	UTILITY ADJUSTMENTS

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS, DATED JANUARY 2002, AND STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2000, AS AMENDED BY CONTRACT DOCUMENTS.

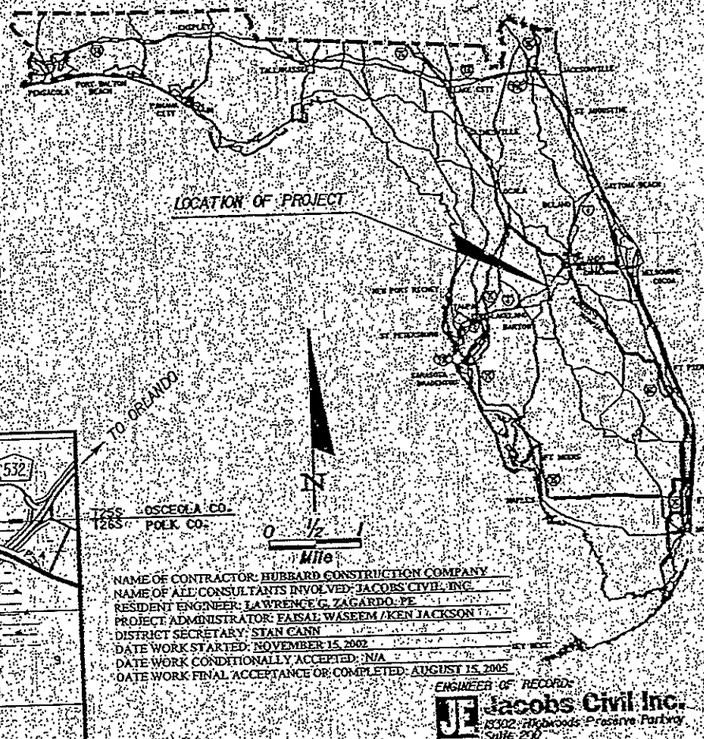
REVISIONS

BEGIN SEGMENT 9
PROJECT FPI 201204-1
B SURVEY SR 400 (I-4)
MP 28.392
EQUATION:
1968+50.00 BK=
1970+06.96 AH

1. ROADWAY PLANS SHEETS 6, 7, 24, 25, 43, 117-121, 155-161 (REVISED 7/03)
2. TRANSITION REALIGNMENT TO FIELD SURVEY BY HUBBARD (REVISED 7/25/03) STA. 2037+35 TO STA. 2051+00, ADDED SHEET 88A FOR ADDITIONAL DRAINAGE STRUCTURE DETAIL, ADDED RETENTION SWALES TO SHEETS 193 & 194, SHEETS 7-13 (REVISED 7/29/03)
3. ADDED SHEETS 346A AND 346B TO TRAFFIC CONTROL PLANS WHICH ARE TO REPLACE SHEETS 347 AND 348. (REVISED 8/12/03)
4. UPDATED ROADWAY GEOMETRY INFORMATION ON PLAN SHEETS NO. 15 AND 17. (REVISED 10/03)
5. US 27 POL CHANGE ON TYP. SECT. SHT. 7, PROF. SHEETS 42-44, 47, 49, 50, 51, 53, 54, 56 & 58, DRAIN. STR. SHTS. 70-76 AND CROSS SECT. SHTS. 179-185, 187-213, 234, 247, 248 AND 269-272, REVISED INVERT OF P-204 OF SHT. 66 (REVISED 11/03), REVISED US 27 MEDIAN CURB ON TYP. SECT. 6-7, PLAN SHT.'S 24-30, INTER. DETAIL SHTS. 61-62 (REVISED 12/03)
6. RICHIE BROS. ACCESS IMPROVEMENTS PLAN SHTS. 28, 29 & 30, PROFILE SHTS. 44, 45 & 47 DRAIN. STRUCT. SHTS. 74-76, POND DETAIL SHT. 92, CROSS SECT. SHTS. 203 - 212 (REVISED 1/14/04)
7. REVISED STORM SEWER CONFIG., PLAN SHT. 28, PROF. SHT. 44, DRAIN STR. SHT. 74 (REVISED 1/
8. ADDED SHIELDING FOR CANTILEVER SIGN, PLAN SHEETS 26 & 27 (REVISED 1/27/04)
9. REVISED STRUCTURE OFFSET (S-409, S-412)
10. DRAIN. STR. SHT 11, PLAN SHT. 13 (REVISED 2/18/04)
11. REVISED SPECIAL GUTTER EB RT. (SHT. 38), GRATE EL. & SLOPE AT STR. P-110 (64), REVISED CURBED ISLAND (29)
12. EOP ELEVATIONS (SHT. 76), RT. DITCH BETWEEN STA. 1977+00 TO 1978+00 (SHT. 100)
13. REVISED RICHIE BROS. PROFILE, REVISED OFFSETS ON SSIOA AND SD-19, PLAN SHEET 29, DRAIN. STR. SHEET 76 AND CROSS SECTION SHEET 208. (REVISED 3/04/04)
14. REVISED SHOULDER CROSS SLOPE. CROSS SECTION SHEET 102 (REVISED 3/16/04)
15. REVISED LIGHTING PLANS POLE DATA SHEET L3, AND PLAN SHEET L15 & L16 TO ACCOMODATE RITCHIE BROS. RT. TURN LANE (04/05/04)
16. REVISED CANTILEVER SIGN PLACEMENT, PLAN SHEET 12 (04/05/04)
17. REVISED GRAVITY WALL ON PLAN SHEET 4 (04/07/04)
18. ADDED CONC. GUTTER BEHIND GRAVITY WALL AND DETAILS PLAN SHT. NO. 17 (09/08/04)
19. ADDED CONC. GUTTER AND RIPRAP DETAILS DRAINAGE DETAIL SHT. NO. 97A (09/08/04)



LOCATION OF PROJECT



NAME OF CONTRACTOR: HUBBARD CONSTRUCTION COMPANY
NAME OF ALL CONSULTANTS INVOLVED: JACOBS CIVIL, INC.
RESIDENT ENGINEER: LAWRENCE G. ZAGARDO, PE
PROJECT ADMINISTRATOR: FAISAL WASEEM / KEN JACKSON
DISTRICT SECRETARY: STAN CANN
DATE WORK STARTED: NOVEMBER 15, 2002
DATE WORK CONDITIONALLY ACCEPTED: N/A
DATE WORK FINAL ACCEPTANCE OR COMPLETED: AUGUST 15, 2005

ENGINEER OF RECORD:
Jacobs Civil Inc.
8302 Hidden Woods Preserve Parkway
Suite 210
Tampa, FL 33647
(813) 348-3434
EB# 5512

END SEGMENT 9
PROJECT FPI 201204-1
B SURVEY SR 400 (I-4)
STA. 2051+00.00
MP 29.925

DRAINAGE ENGINEER OF RECORD: WILLIAM J. VEON, Jr. P.E.
P.E. NO.: 35550
9/9/04

INSPECTION CONDUCTED BY DISTRICT
CONSTRUCTION
By
9-17-04

TRAFFIC CONTROL PLAN ENGINEER OF RECORD: J. D. DABBONDE
P.E. NO.: 39820

ASBUILT FILE OF RECORD

440 11896 D35

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

ROADWAY PLANS ENGINEER OF RECORD: RICHARD C. ROCKTOFF, P.E.
P.E. NO.: 47052
9-9-04

FISCAL YEAR	SHEET NO.
02	01

FDOT PROJECT MANAGER: AMY SHAFER, P.E.

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	8093.04	1.53
BRIDGES	0.00	0.000
NET LENGTH OF PROJECT	8093.04	1.53
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	8093.04	1.53

E-1517

END CONSTRUCTION
STA. 598+85.000

SECT. 6 T 28 S. R 26 E.
SECT. 1 T 28 S. R 25 E.

END CONSTRUCTION
WESTBOUND STA. 626+85.000

END CONSTRUCTION
EASTBOUND STA. 627+83.000

Pond E

END BRIDGE
STA. 615+40.64

Pond B5

END PROJECT
STA. 621+00.000

℄ CONST. S.R. 400 0-9

℄ CONST. RAMP C-1

Pond C3

℄ CONST. RAMP C-3

℄ CONST. NW ACCESS RD.

Pond B2

Pond C2

BEGIN PROJECT
STA. 605+70.000
℄ SURVEY & ℄ CONST. I-4

℄ CONST. RAMP A-3

Pond B1

℄ CONST. RAMP A-1

℄ CONST. RAMP C-2

Pond C1

℄ CONST. S.R.25 (US 27)

Pond A

Pond SW

BEGIN BRIDGE
STA. 599+60.521

℄ CONST.
SW ACCESS RD.

BEGIN CONSTRUCTION
STA. 599+77.594
℄ SURVEY & ℄ CONST. I-4

EQUATION:
STA. 600+00.000 (BK.)=
STA. 600+47.843 (Ah.)

BEGIN CONSTRUCTION
STA. 635+78.422

Pond D

SECT. 15 T 28 S. R 25 E.
SECT. 15 T 28 S. R 27 E.

NOTES:

DO NOT USE INFORMATION ON THESE SHEETS FOR CONSTRUCTION PURPOSES. THESE SHEETS ARE IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Employee-owned

HDR Engineering, Inc.
2286 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-8675
www.hdrinc.com

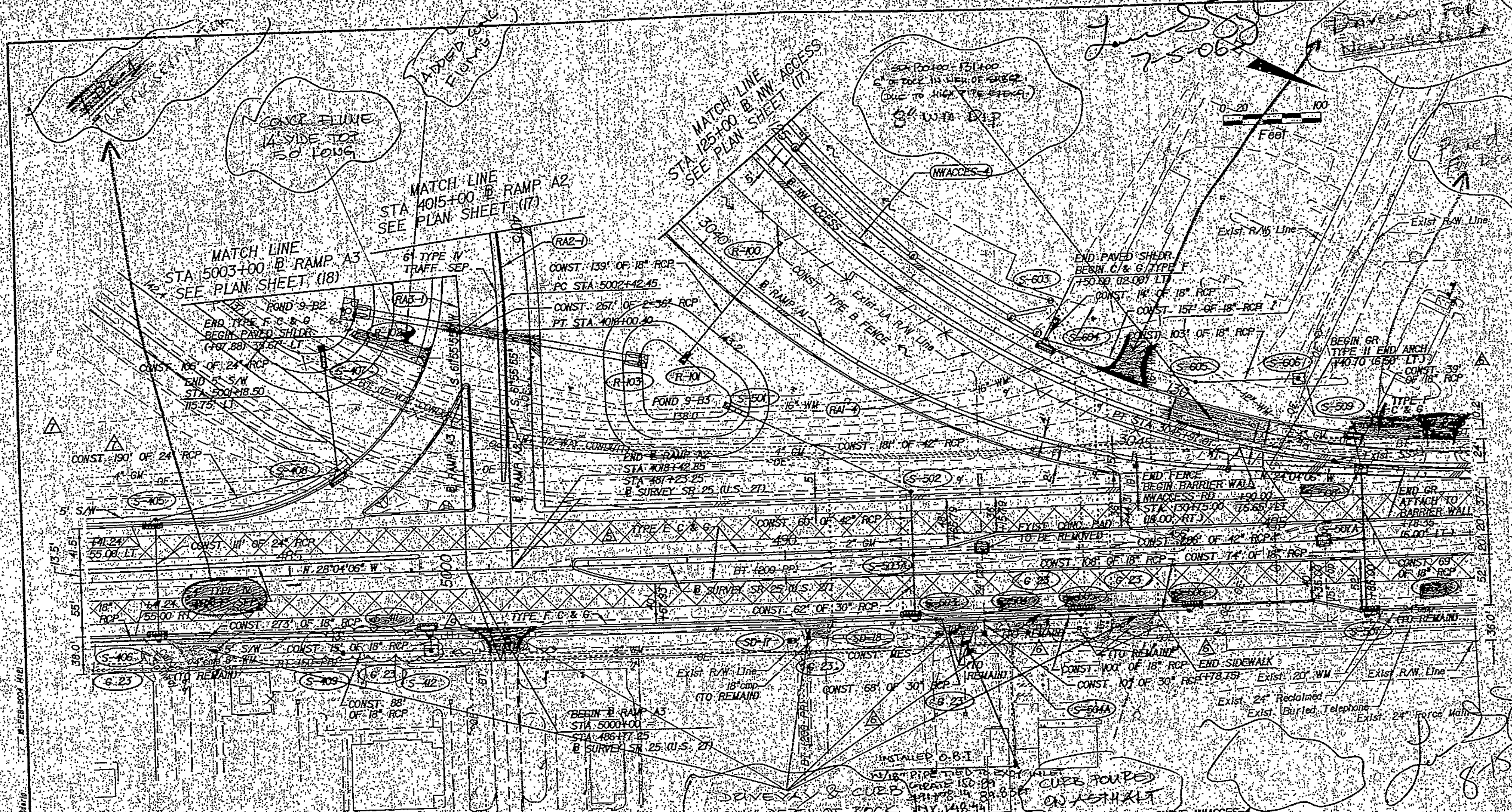
License No. 28531

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	240204-1-52-01

OVERALL DRAINAGE MAP

SHEET NO.



CURVE RA3-1
PI STA 5005+40.77
Δ = 40°03'04" (LT)
D = 07°00'00"
L = 572.16'
T = 298.33'
R = 818.51'
PC STA 5002+42.45
PCC STA 5008+14.60
e = 0.053

CURVE RA2-1
PI STA 4012+04.20
Δ = 58°03'06" (RT)
D = 06°37'39"
L = 875.94'
T = 479.71'
R = 864.51'
PC STA 4007+24.49
PT STA 4016+00.40
e = 0.083

CURVE RAI-4
PI STA 3042+49.42
Δ = 52°44'23" (LT)
D = 07°00'00"
L = 753.42'
T = 405.77'
R = 818.51'
PC STA 3038+43.65
PT STA 3045+97.07
e = 0.097

CURVE NWACCES-4
PI STA 128+94.48
Δ = 56°44'23" (LT)
D = 06°00'00"
L = 945.66'
T = 515.68'
R = 954.93'
PC STA 123+78.80
PT STA 133+24.46
e = 0.038

(CR ##) INDICATES CURB CUT RAMP NUMBER (SEE STANDARD INDEX NO. 304)

(G ##) INDICATES DRIVEWAY TURNOUT NUMBER (SEE STANDARD INDEX NO. 515)

[⊠] LIMITS OF MILLING AND RESURFACING

P:\E9194700\0CCADD\201204\roadway\plans13.dgn colderlo 18-FEB-2004 11:21

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03	RJR	△5 CHANGED MED. CURB TO TYPE E	1/21/04	TLF	△7 STORM SEWER REVISIONS REQUESTED BY HUBBARD
1/14/04	TLF	△6 REVISED ROADWAY GEOMETRY FOR RITCHIE BROTHERS ACCESS IMPROVEMENT	2/06/04	RJR	△9 CHANGED STR. OFFSET (S-409, S-412)

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel: (813) 977-3434
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 47032 EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

PLAN SHEET (13)
STA 483+00 TO STA 497+00
US 27

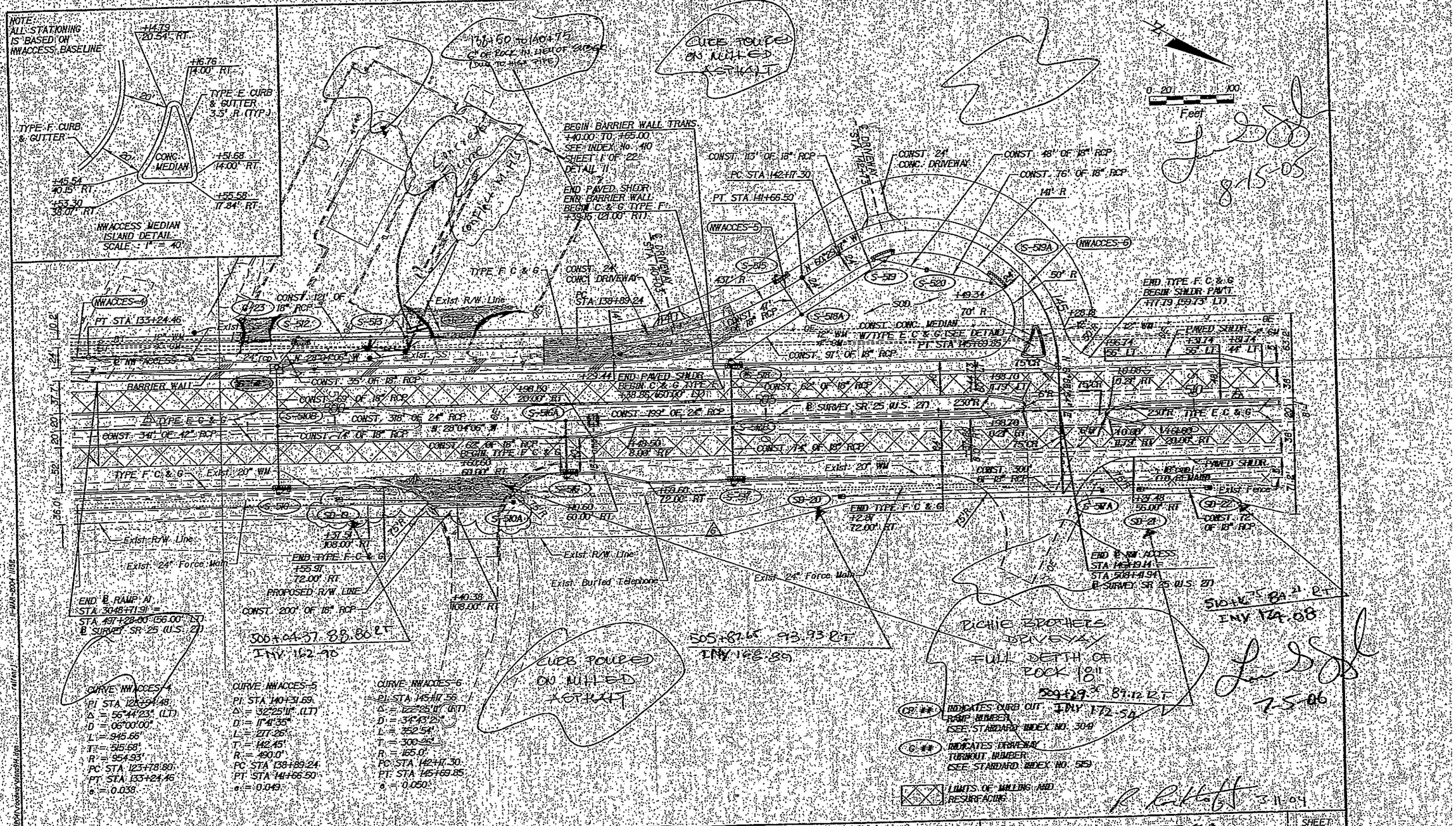
SHEET NO. 28

4401896.035

E-1519

NOTE:
ALL STATIONING IS BASED ON NWACCESS BASELINE

NWACCESS MEDIAN ISLAND DETAIL
SCALE: 1" = 40'



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03/03	RJR	CHANGED MED. CURB TO TYPE E	2/27/04	TLF	REVISED GEOMETRY FOR CONFIGURATION OF RAISED MEDIAN OF NW ACCESS RD.
1/14/04	TLF	REVISED ROADWAY GEOMETRY FOR RITCHIE BROTHERS ACCESS IMPROVEMENT AND ADDED PROPOSED R/W LINE	3/04/04	TLF	REVISED RICHIE BROS. PROFILE OFFSETS ON S-510A & SD-19

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33610
Tel (813) 977-3404
ENGINEER OF RECORD:
R. ROCKTOFF, P.E. No. 47032
EOR 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

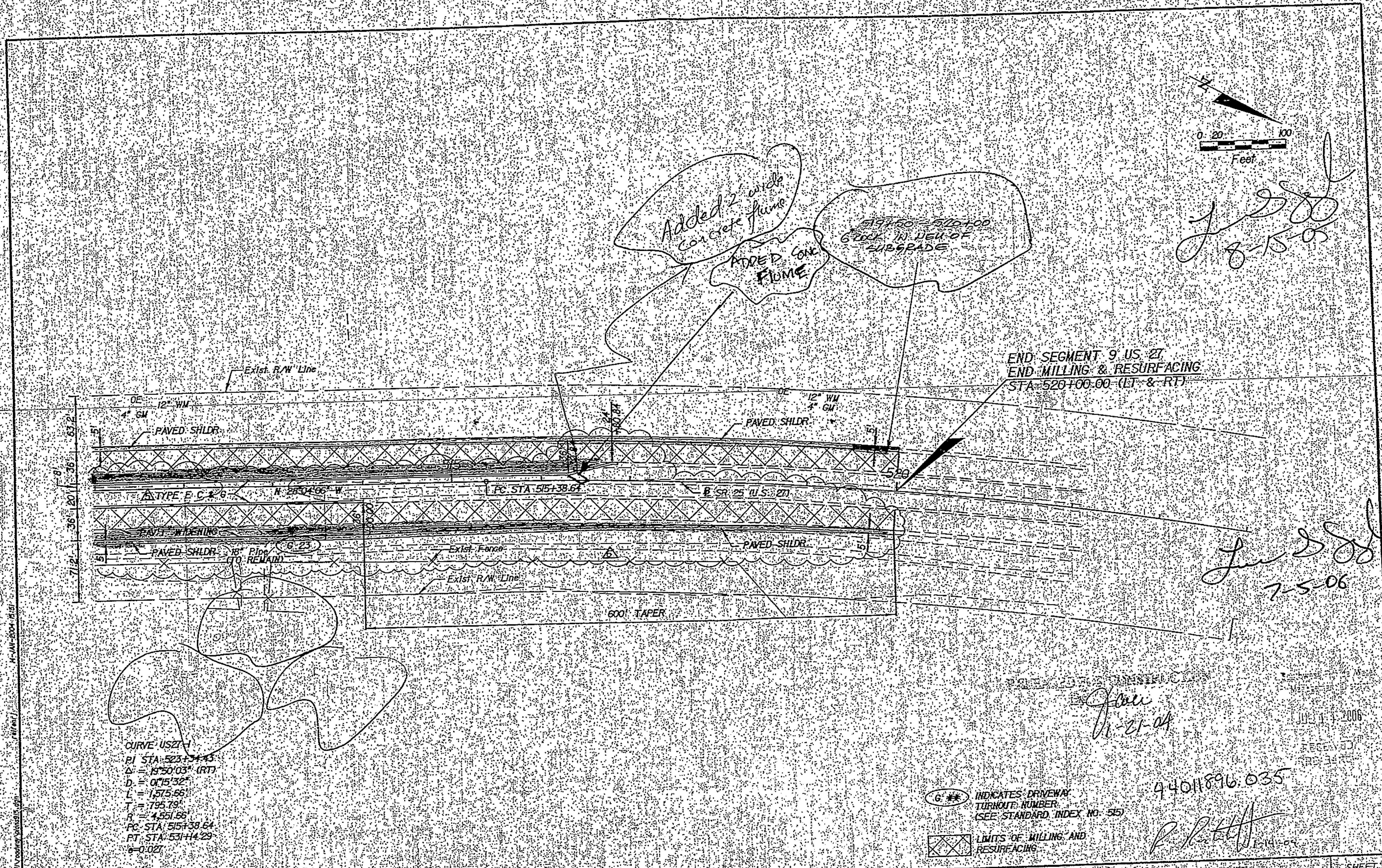
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20/204-1-52-01

PLAN SHEET (4)
STA 497+00 TO STA 511+00
US 27

SHEET NO. 29

410896.035

E-1520



REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03	RJR	△ CHANGED MED. CURB TO TYPE E			
1/14/04	TLF	△ REVISED ROADWAY GEOMETRY FOR RITCHIE BROTHERS ACCESS IMPROVEMENT			

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel (813) 977-3434
ENGINEER OF RECORD:
P. ROCKTOFF, P.E. No. 47032 EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (15)
STA 511+00 TO STA 514+00
US 27

SHEET NO. 30

E-1521

CURVE NWACCES-1
P.I. STA 105+03.77
Δ = 79°42'44" (LT)
D = 12°03'44"
L = 660.84'
T = 396.54'
R = 475.00'
PC STA 101+07.23
PCC STA 107+68.06
e = 0.049

CURVE RAI-2
P.I. STA 3018+69.50
Δ = 48°00'38" (LT)
D = 04°00'00"
L = 1,200.25'
T = 637.90'
R = 1,432.39'
PC STA 3012+31.60
PT STA 3024+31.86
e = 0.077

CURVE NWACCES-2
P.I. STA 109+05.00
Δ = 10°55'17" (LT)
D = 04°00'00"
L = 273.04'
T = 136.93'
R = 1,432.41'
PCC STA 107+68.06
PT STA 110+41.10
e = 0.032

CURVE RAI-3
P.I. STA 3032+56.94
Δ = 27°44'07" (RT)
D = 05°00'00"
L = 554.71'
T = 282.90'
R = 1,145.92'
PC STA 3029+74.04
PT STA 3035+28.75
e = (-)0.083

CURVE NWACCES-3
P.I. STA 117+81.72
Δ = 30°10'34" (RT)
D = 04°00'00"
L = 754.40'
T = 386.17'
R = 1,432.40'
PC STA 113+95.55
PT STA 121+49.96
e = (-)0.032

0 20 100
Feet

8-15-05

BEGIN ℄ NW ACCESS
STA 100+00

PC STA 101+07.23

Exist R/W Line

NWACCES-1

Exist R/W Line

CONST. TYPE B FENCE

MATCH LINE STA 3020+00 B RAMP A1 SEE PLAN SHEET (3)

PAVED SHLDR

PCC STA 107+68.06

DITCH BLOCK

NWACCES-2

PT STA 110+41.10

BRIDGE DECK

PC STA 113+95.55

NWACCES-3

RAF-2

PT STA 3024+31.86

B RAMP A1

Exist LA R/W Line

BEGIN GUARDRAIL TYPE II END ANCH STA 3029+37.0

PC STA 3029+74.04

CONST. GUARDRAIL

PAVED SHLDR

B RAMP A2

N 3°52'43" E

BEGIN B RAMP A2
STA 4000+00

We'll be installing this shortly

7-5-06

RELEASED FOR CONSTRUCTION
By
5-13-03

JUL 14 2006

4-6-11896-035

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel (813) 977-3434
ENGINEER OF RECORD
P. ROCCO FIORE, P.E. No. 41032 EB# 6572

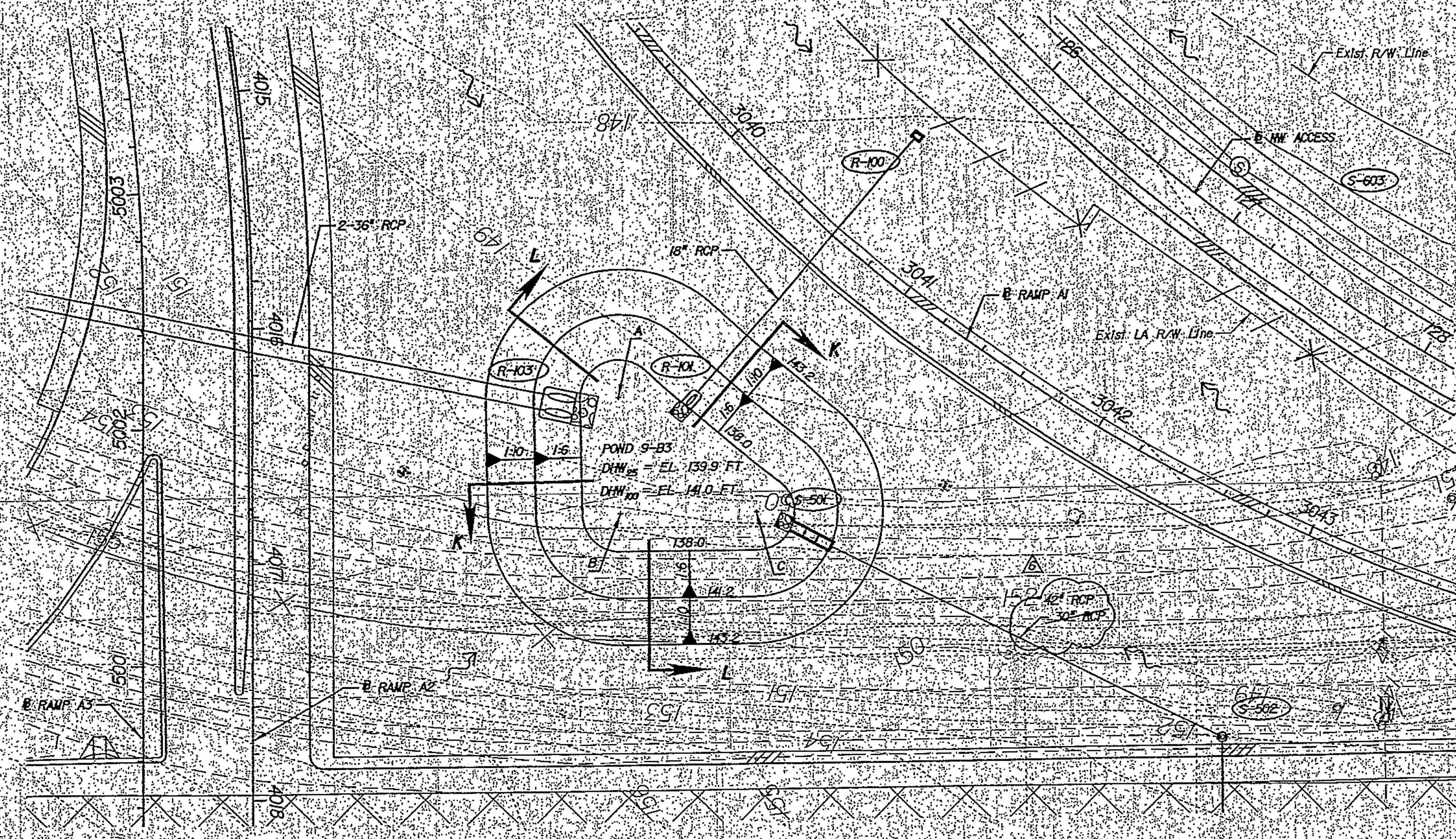
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120-1-52-01

PLAN SHEET (16)
STA 100+00 TO STA 116+00
NW ACCESS ROAD

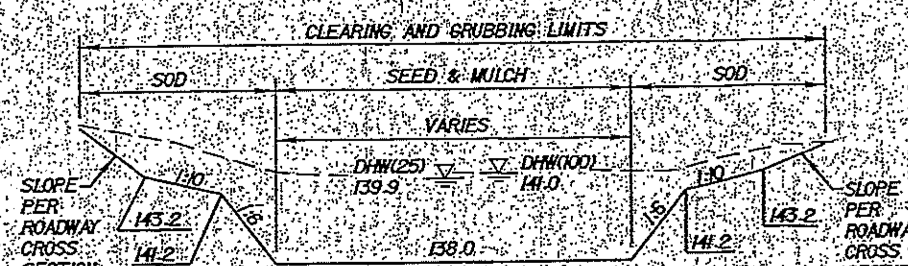
SHEET NO. 31

E-1522

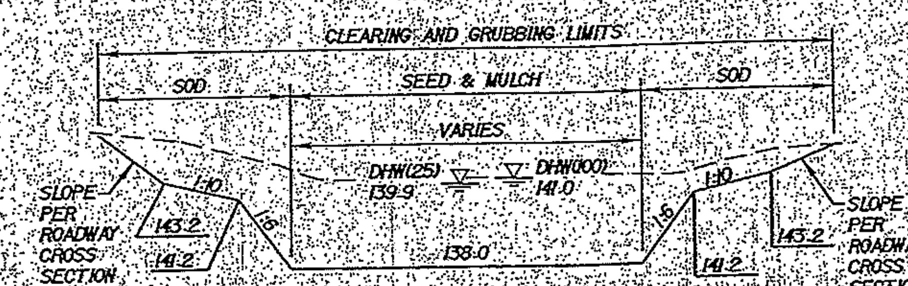


JACOBS CIVIL INC.
(SEE ADDRESS & PHONE NO. BELOW)
1-27-04
MEIYING GU
FL P.E. No. 52645

DATA - POND 9-B3	
TOB. EL.	143.2
DHW$_{100}$ EL.	141.0
DHW$_{25}$ EL.	139.9
BOT. EL.	138.0
SHGWT	123.4



SECTION L-L
NTS



SECTION K-K
NTS

POND RETURN DATA

	STATION	OFFSET	SIDE	RADIUS
A	3040+39.78	111.52'	RT.	16'
B	3040+68.85	147.60'	RT.	16'
C	3041+06.51	111.43'	RT.	16'

NOTE:
ALL INFIELD AREAS TO BE SEEDED AND MULCHED UNLESS OTHERWISE NOTED.

File of Record
Permit No. ____

LIMITS OF MILLING AND RESURFACING

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
1/14/04	TLF	6 REVISED ROADWAY GEOMETRY FOR RITCHIE BROTHERS ACCESS IMPROVEMENT			

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel.(813) 977-3434
ENGINEER OF RECORD:
W. VEON, JR., P.E. No. 35650
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

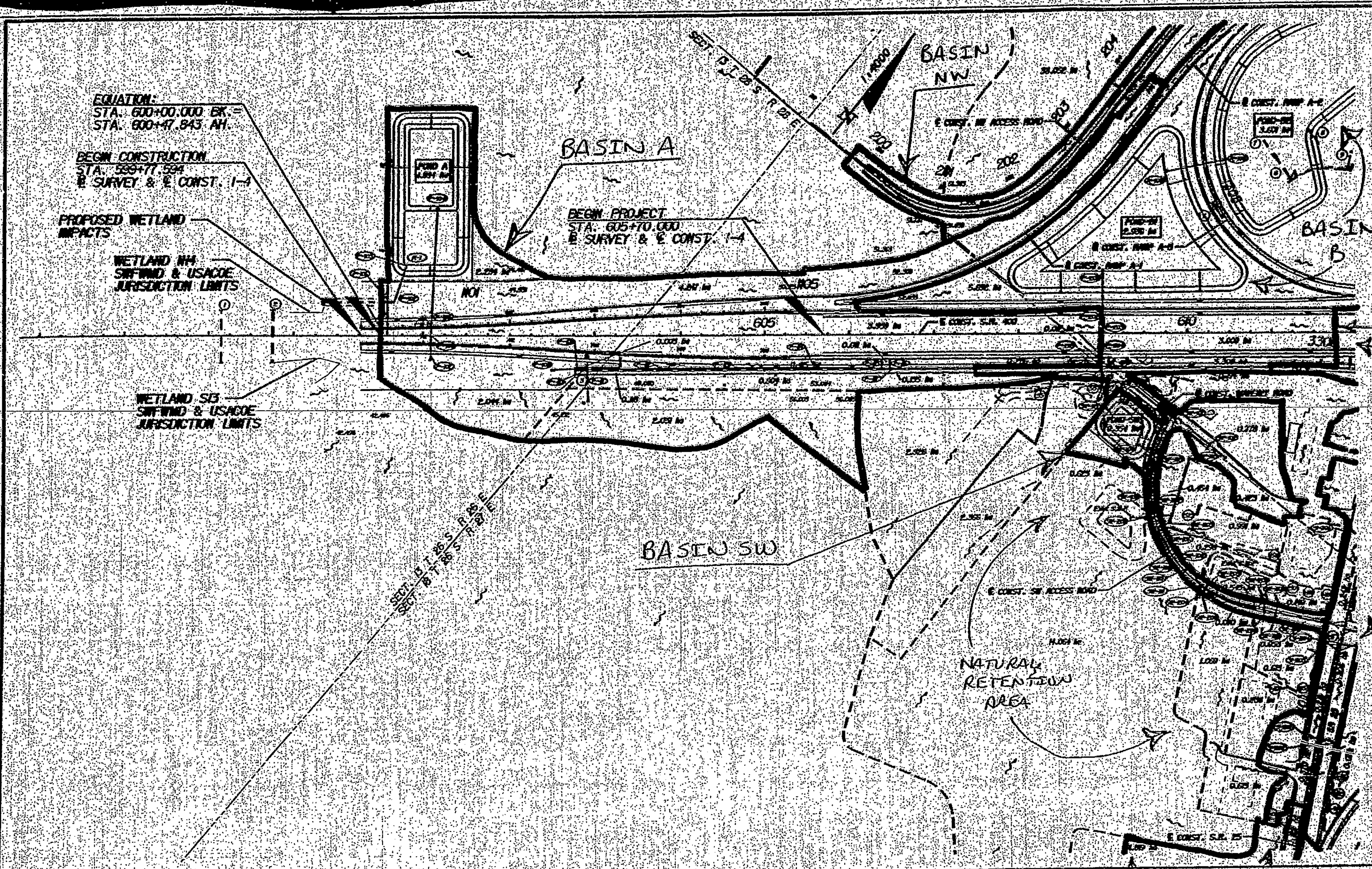
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

POND DETAIL SHEET
POND 9-B3

44011896.035

SHEET NO. 92

33
E-1523


EQUATION:
STA. 600+00.000 BK. =
STA. 600+47.843 AH.
BEGIN CONSTRUCTION
STA. 599+77.594
℄ SURVEY & ℄ CONST. I-4
PROPOSED WETLAND
IMPACTS
WETLAND NH4
SWFWMD & USACOE
JURISDICTION LIMITS
WETLAND SI3
SWFWMD & USACOE
JURISDICTION LIMITS
POND A
BASIN A
BEGIN PROJECT
STA. 605+70.000
℄ SURVEY & ℄ CONST. I-4
BASIN NW
BASIN B
BASIN C
NEW I-4 MIDPOINT LOCATION
BASIN SW
NATURAL RETENTION AREA
BASIN D
℄ CONST. SR ACCESS ROAD
℄ CONST. S.R. 25

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering, Inc.
License No. 8641

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

BASIN A

BASIN SW

NATURAL RETENTION AREA

BASIN D

E CONST. SR ACCESS ROAD

1200 LF

1:1400

BASIN NW

NEW BASIN B AND BASIN NW DIVERSE

NEW I-4 HIGHPOINT LOCATION

BASIN B

OLD I-4 HIGHPOINT LOCATION

BASIN C

SECT. 18 T.26 S. R 26 E

SECT. 17 T.26 S. R 26 E

SECT. 18 T.26 S. R 28 E

SECT. 17 T.26 S. R 28 E

3305

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

PHASE

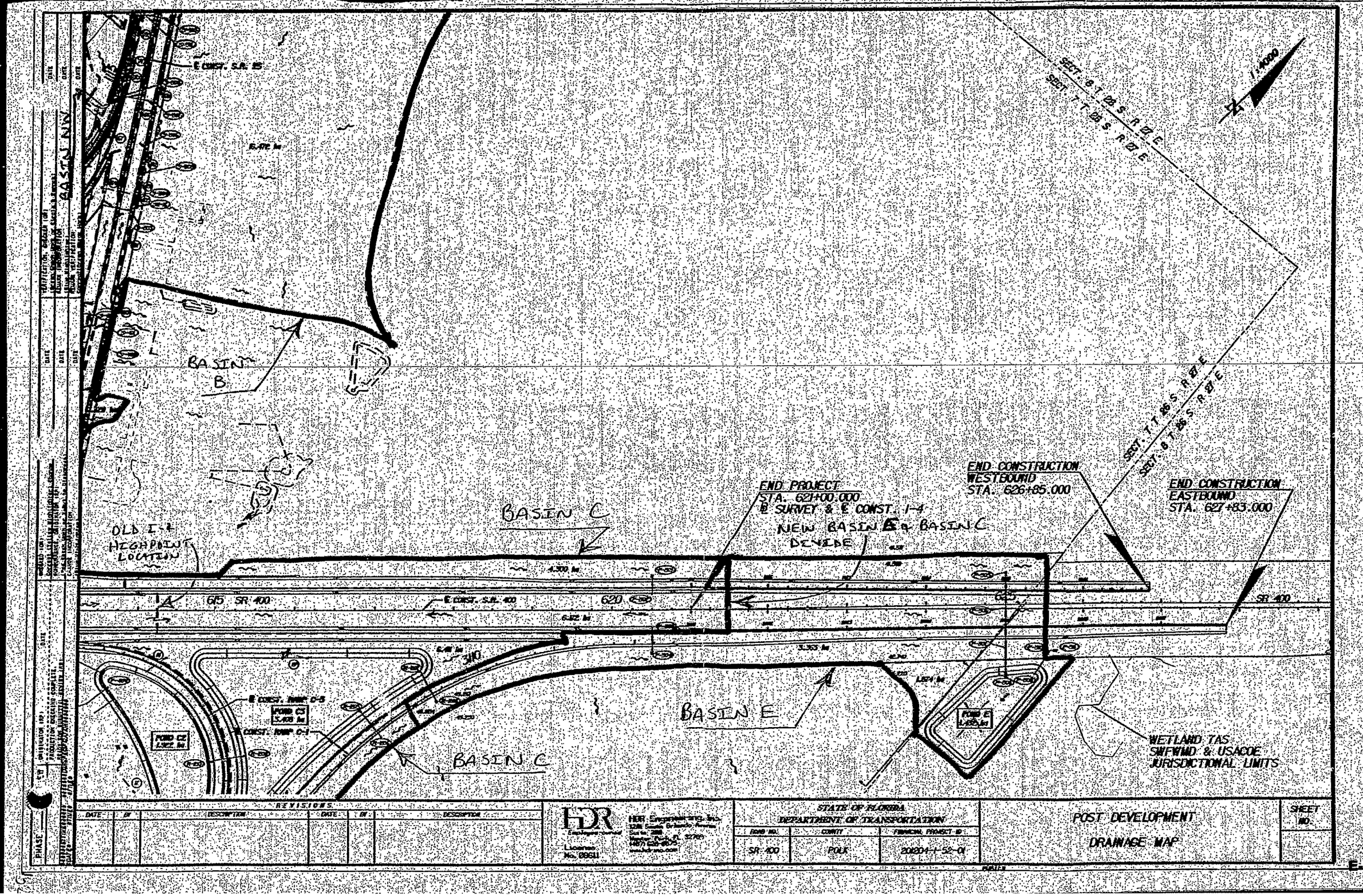
HDR Engineering, Inc.
1208 South Orlando Avenue
Suite 208
Winter Park, FL 32789
(407) 628-8675
www.hdrinc.com
License No. 28811

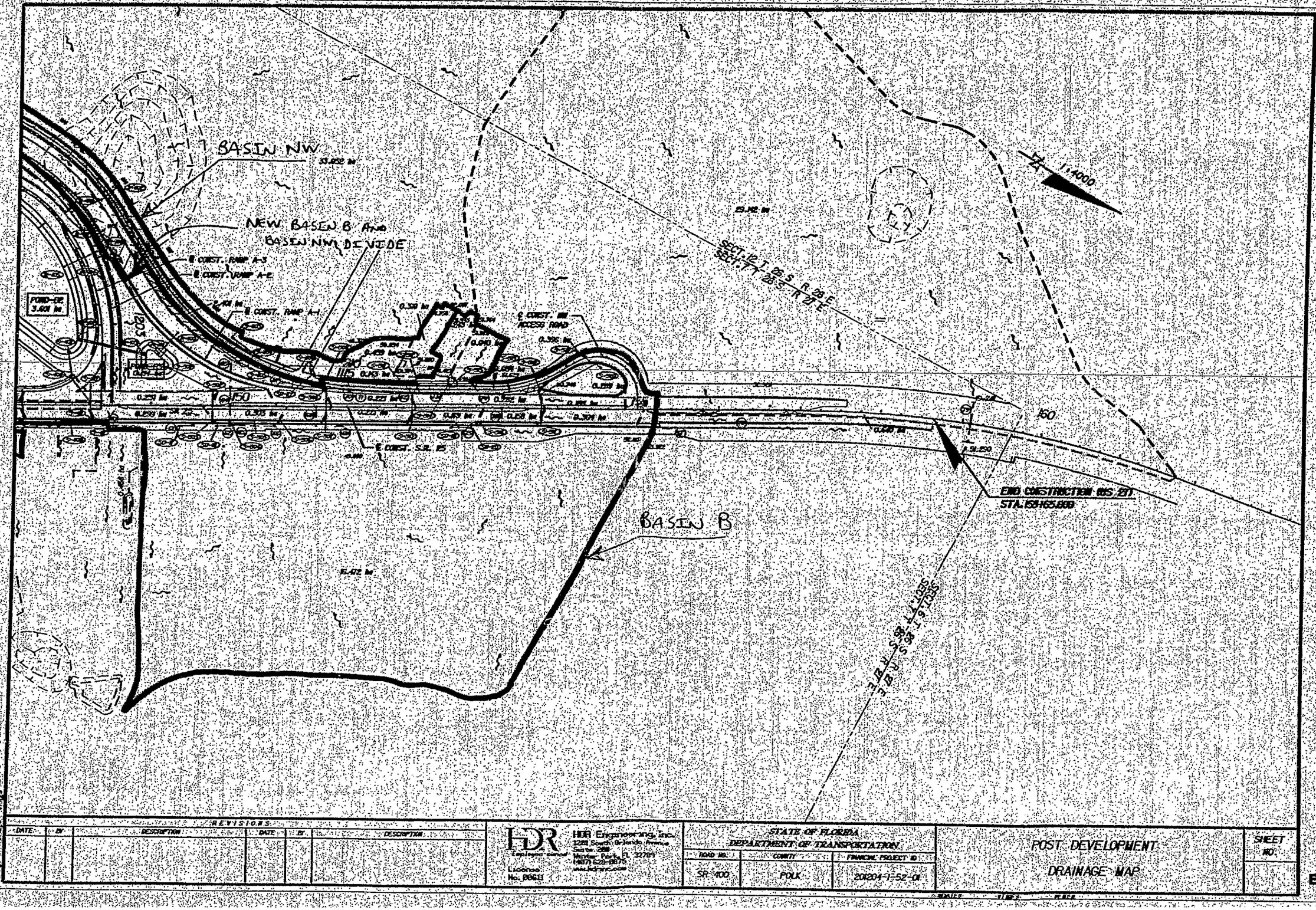
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20120A-1-52-01

POST DEVELOPMENT DRAINAGE MAP

SHEET NO.


BASIN A
BASIN B
BASIN C
BASIN E
BASIN C
OLD I-4 HIGHPOINT LOCATION
END PROJECT STA. 621+00.000 @ SURVEY & ℄ CONST. I-4
NEW BASIN ℄ & BASIN C DEVIDE
END CONSTRUCTION WESTBOUND STA. 626+85.000
END CONSTRUCTION EASTBOUND STA. 627+85.000
SECT. 6 T 28 S R 26 E
SECT. 7 T 28 S R 26 E
SECT. 7 T 28 S R 26 E
SECT. 6 T 28 S R 26 E
1"=1000'
615 SR 400
620
SR 400
℄ CONST. S.R. 400
℄ CONST. RAMP C-3
℄ CONST. RAMP C-1
POND C1 5.405 ac
POND C2 1.902 ac
POND E 1.430 ac
WETLAND TAS SWFWMD & USACOE JURISDICTIONAL LIMITS
REVISIONS
DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION
HDR Engineering, Inc.
License No. 00611
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD NO. | COUNTY | FINANCIAL PROJECT ID
SR 400 | POLK | 20820-1-52-01
POST DEVELOPMENT DRAINAGE MAP
SHEET NO.
PHASE
E-1526



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering, Inc.
3221 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-8675
www.hdrinc.com
License No. 00611

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	200204-1-52-01

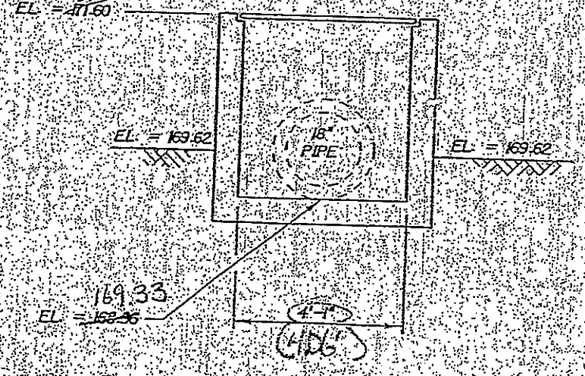
POST DEVELOPMENT DRAINAGE MAP

SHEET NO.

E-1527

PLAN VIEW

NTS



SECTION VIEW

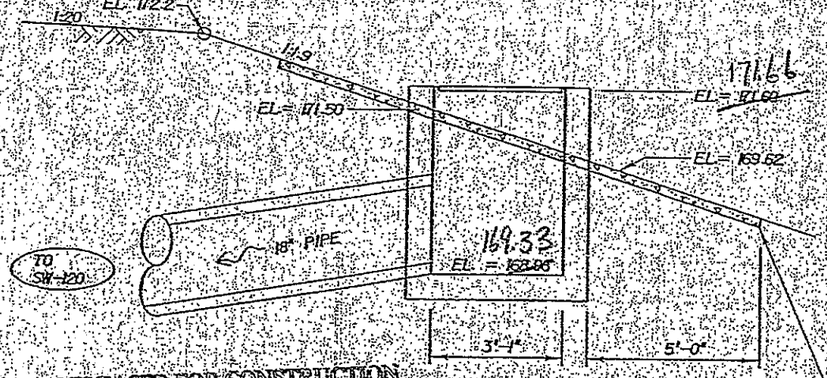
NTS

POND: "SW"
STRUCTURE: SW-119
STATION: 1930+80
OFFSET: 270.61
SIDE: RT.
INLET TYPE: D

NOTE: SEE INDEX NO. 232 FOR ADDITIONAL DETAILS.

THE 4" CONCRETE DITCH PAVEMENT, 6" X 6" NO. 10 WELDED WIRE FABRIC AND THE 0.20" FIBERGLASS SKIMMER AND HARDWARE SHALL BE INCLUDED IN THE UNIT PRICE OF DITCH BOTTOM INLET.

7-5-06



SECTION VIEW

NTS

RELEASED FOR CONSTRUCTION

By 5-13-03

5/20/03

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
8302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON JR., P.E. No. 35550 EBW 6572

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			DRAINAGE STRUCTURE DETAILS POND 9-SW	SHEET NO.
ROAD NO.:	COUNTY:	FINANCIAL PROJECT ID.:		
SR 400	POLK	201204-1	4140118960-03	86

E-1528

POND RETURN DATA				
	STATION	OFFSET	SIDE	RADIUS
A	200+75.55	179.43	RT.	12'
B	201+02.69	99.62	RT.	12'
C	201+18.25	197.43	RT.	12'
D	201+41.19	93.80	RT.	12'

TYPE 'B' FENCE

SECTION A-A

SECTION B-B

STA 469+52.53 ℄
■ (117.33
BENCHMARK=BM460
4"x4" C.M. w/BRASS
DISK STAMPED
"BM460"
ELEV=193.471

7-5-06

REVISIONS					
DATE	BY	DESCRIPTION			BY

JE Jacobs Civil, Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

POND RETAIL SHEET

POND 2-SW

E-1529

Existing Plans FPID No. 201204-1-52-01

Polk County (16110)

State Road No. 400 (I-4)

Segment 7

COMPONENTS OF CONTRACT PLANS SET
ROADWAY PLANS
STRUCTURE PLANS
SIGNING AND PAVEMENT MARKING PLANS

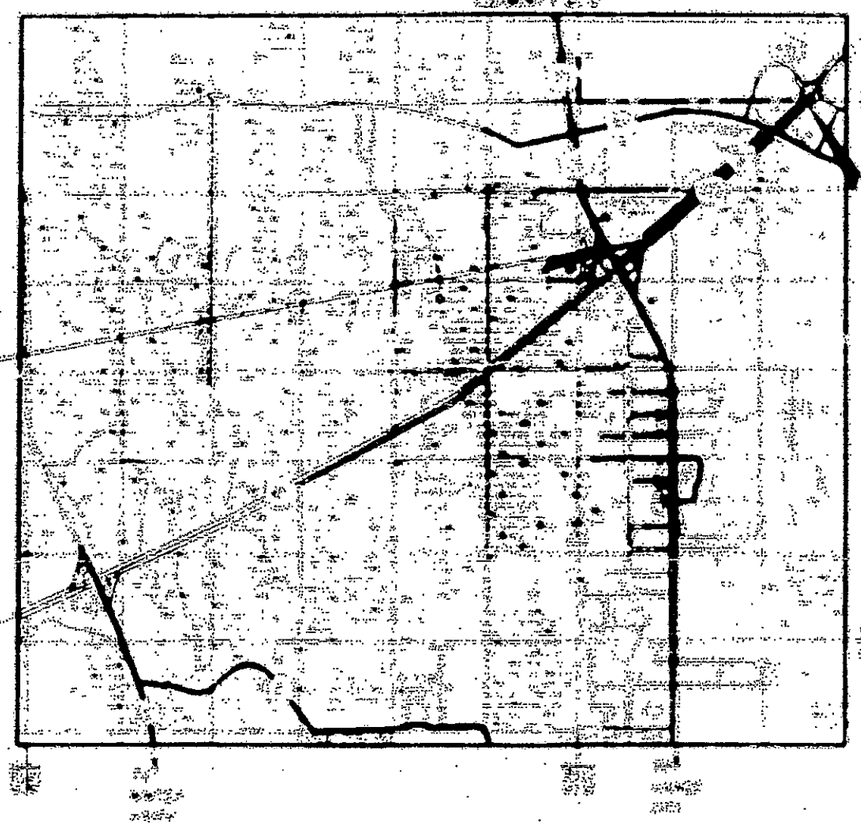
AS BUILT

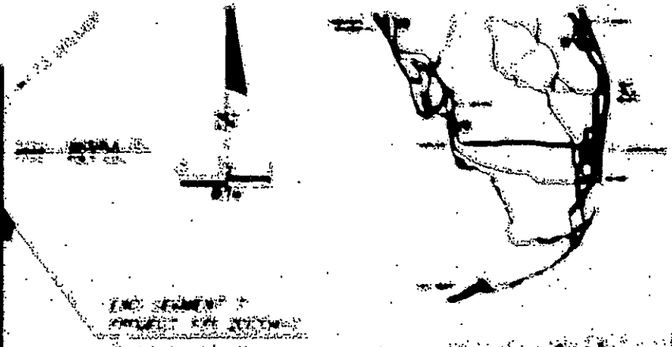
INDEX OF ROADWAY PLANS

SHEET NO	SHEET DESCRIPTION
1	TITLE SHEET
2-4	TYPICAL SECTIONS
5	GENERAL NOTES
6-18	ROADWAY PLAN SHEETS
19-28	ROADWAY PROFILE SHEETS
29-35	DRAINAGE STRUCTURES
36-38	SIGNING & DETAIL SHEETS
39A	CRASH WALL
39	ROAD DETAIL SHEETS
40	TRAFFIC OPERATION PROTECTION SHEET
41-120	CROSS SECTIONS
121	ROADWAY SOILS SURVEY
122-129	PERMITS, CONTRACT, PLANS
130-132	SPECIAL PROVISIONS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
CONTRACT PLANS

FINANCIAL PROJECT ID 22304-1-52-01
(FEDERAL FUNDS)
POLK COUNTY (16,80)
STATE ROAD NO. 400 (I-4)
SEGMENT 7
COMPONENT PLAN SET NO. 13





Jacobs Civil Inc.

LENGTH OF PROJECT	
LINEAR FEET	MILES

FIRST PROJECT NUMBER AND PHASE NO.

215

As built

'A' '119.95' 'B' '120.29' 'C' '117.96'

DITCH BLOCK SCHEDULE

SEED & MULCH

TREATMENT / ATTENUATION SWALE

FLOW

NOTE:

PLAN VIEW

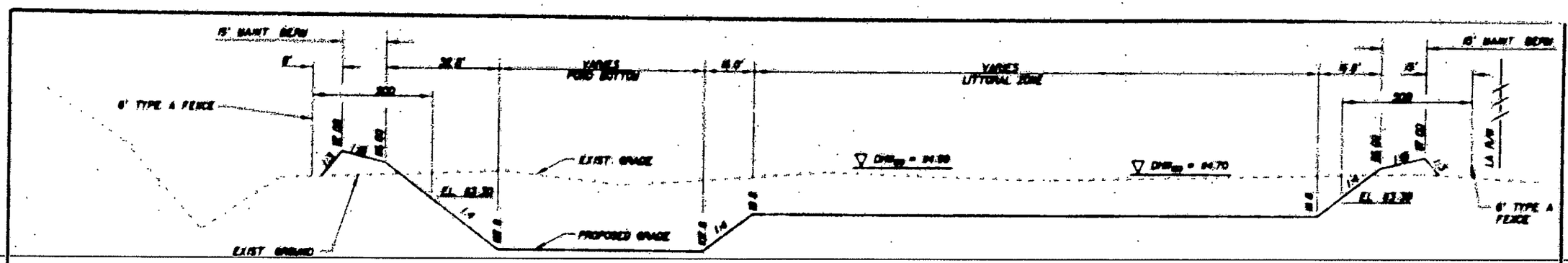
SECTION A-A

SECTION C-C

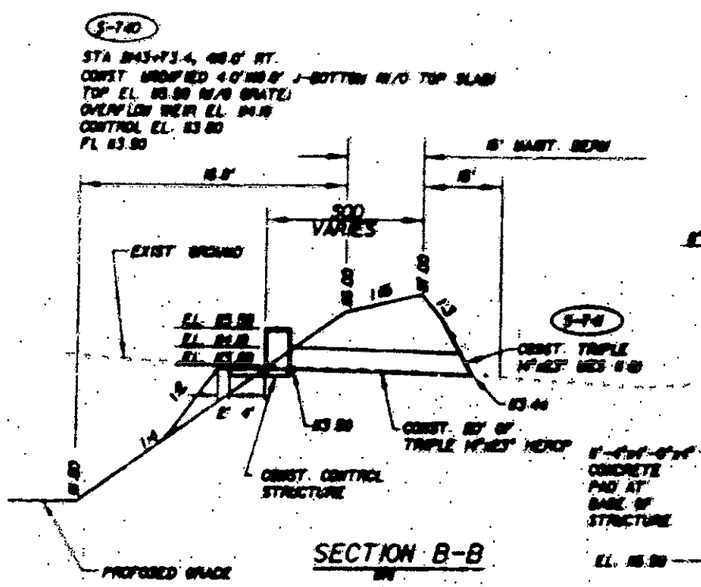
SECTION B-B

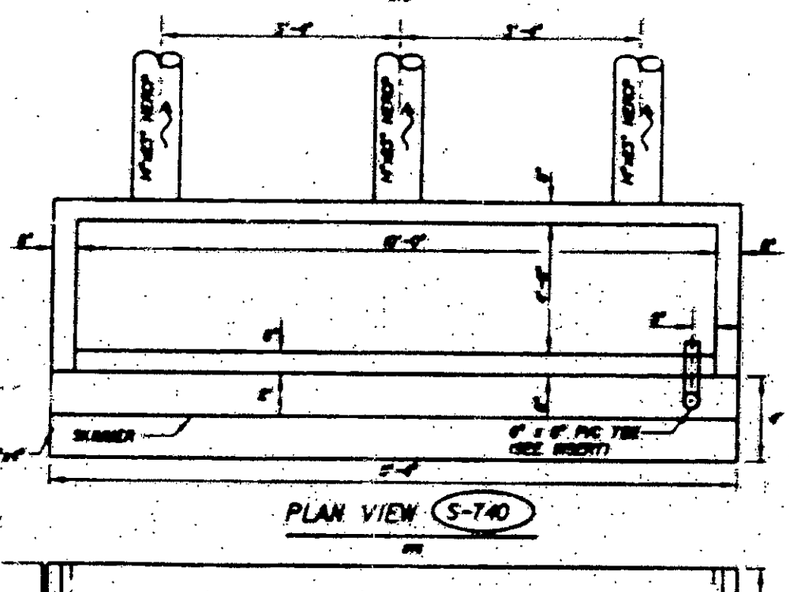
Jacobs Civil Inc.

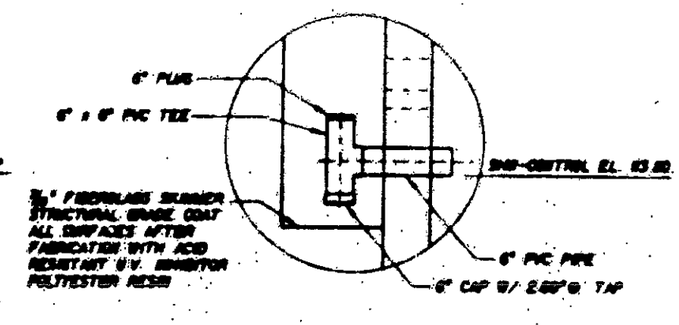
DRAINAGE STRUCTURE DETAILS
DRY TREATMENT / ATTENUATION SWALES



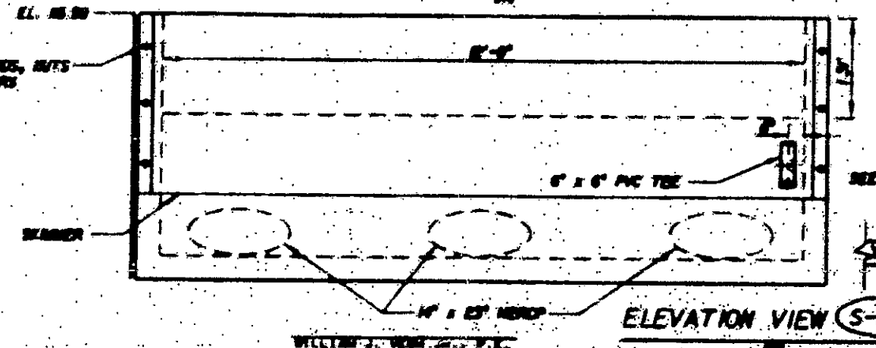
DETENTION POND SECTION A-A

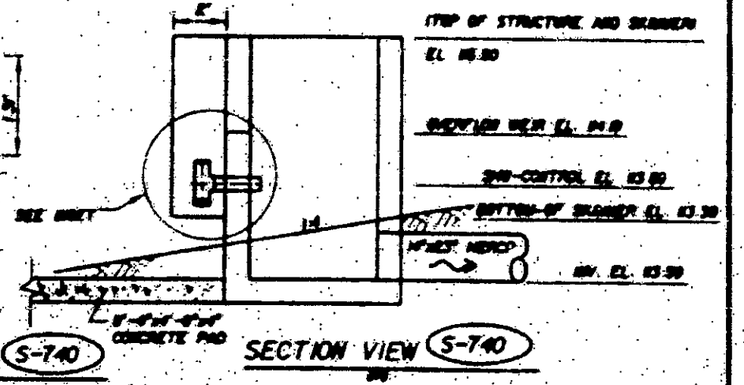






INSET





PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

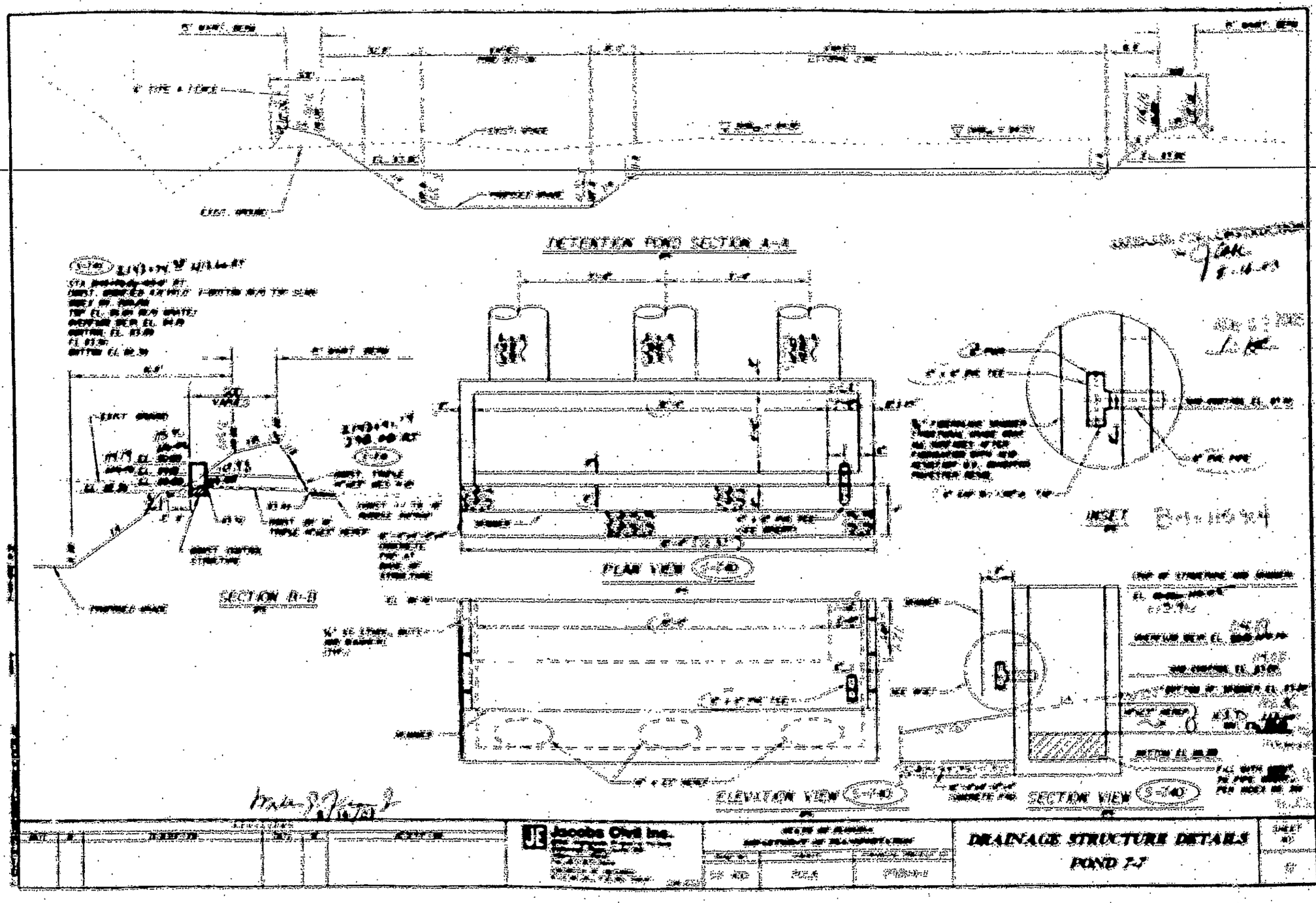
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

DISTRICT	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	238204-1

DRAINAGE STRUCTURE DETAILS
POND 7-1

SHEET NO. 31

E-1533


SECTION A-A
PLAN VIEW
SECTION B-B
ELEVATION VIEW
SECTION VIEW
DRAINAGE STRUCTURE DETAILS
POND J-J
Jacobs Civil Inc.

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

PERMANENT IMPACT WETLAND

TURBIDITY BARRIER

TEMPORARY IMPACT WETLAND

CONST 886' OF 18" RCP

S-739

CONST 388' OF 24" RCP

S-738

SURVEY SR 400 (I-4)

REMOVE WORK TO DRAIN TO INLET AT STA 236+00

845

840

EXIST INLET PROTECTION

0 50 100

Feet

PERMANENT IMPACT WETLAND

TURBIDITY BARRIER

TEMPORARY IMPACT WETLAND

CONST. 638' OF 36" RCP (JACK & BORE PORTION UNDER EXIST. ROADWAY)

A

SILT FENCE

TEMPORARY IMPACT WETLAND

Exist LA R/W Line

CONST. TYPE A FENCE

CONST. 0.4 TON OF TRIPLE RIP RAP

S-738A

POND 7-7

DHW_{IN} = 84.39' DHW_{OUT} = 84.50

TEMPORARY IMPACT WETLAND
A = 0.0082 AC.

PERMANENT IMPACT WETLAND
A = 0.083 AC.

B

Exist R/W Line

TEMPORARY IMPACT WETLAND
A = 0.033 AC.

S-740

CONST. 85' OF TRIPLE 42"RCP HERCP

LITTORAL ZONE

(SEE DRAINAGE STRUCTURE DETAILS, SHT. 38 FOR STRUCTURE INFORMATION AND POND CROSS SECTIONS.)

1:3 (TYP)

TOE OF SLOPE

TEMPORARY IMPACT WETLAND
A = 0.0036 AC.

CONST. TYPE A FENCE

TEMPORARY IMPACT WETLAND
A = 0.0086 AC.

A

CONST. TYPE A FENCE

CONST. TYPE A FENCE

Exist R/W Line

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

WETLAND JURISDICTIONAL LINES

LIMITS OF MILLING AND RESURFACING

PERMIT PLANS

WILLIAM J. VERA JR., P.E.
P.E. NO. 34454
12/23/02

REVISIONS					
NO.	BY	DESCRIPTION	NO.	BY	DESCRIPTION

Jacobs Civil Inc.

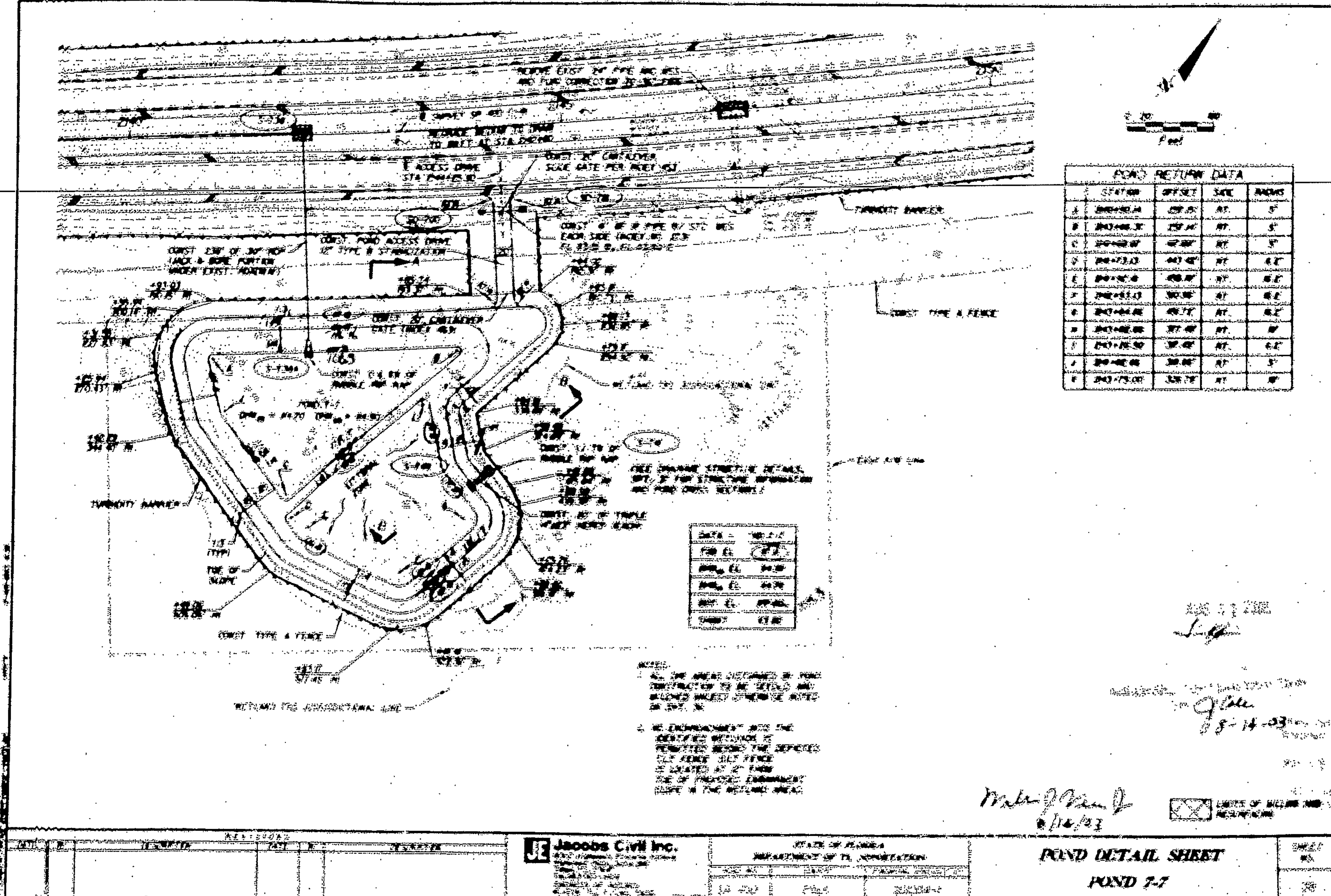
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINAN. PROJECT ID
SR 400	POLK	20204-1

PLAN SHEET (2)
POND 7-7

SHEET NO.
18

E-1535



POND RETURN DATA
TURBIDITY BARRIER
CONST. TYPE A FENCE
CONST. POND ACCESS DRIVE
WETLAND FDEP JURISDICTIONAL LINE
TOE OF SLOPE
NOTES:
LIMITS OF WILDLIFE MITIGATION
Jacobs Civil Inc.
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
POND DETAIL SHEET
POND 7-7

231

S-701

STA. 2054+00, 123.0' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 128.8
FL 125.50

S-703A

STA. 2055+50, 123.29' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 128.62
FL 124.20

S-702

STA. 2058+00, 123.30' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 128.50
FL 122.50

EXISTING 24" EMERGENCY OVERFLOW PIPE FROM ADJACENT OFFSITE POND - NO DISCHARGE FOR STORMS < 100 YR/24 HR

SECT. 7, T 28 S, R 26 E
SECT. 8, T 28 S, R 26 E

0 50 100
Feet

Exist LA R/W Line

CONST. TYPE A FENCE

CONST. SHLDR. GUTTER
CONST. 148' OF 18" PIPE

CONST. 248' OF 18" PIPE

VARIES

BROW SHLDR. GUTTER

PAVED SHLDR.

EARTHEN DITCH BLOCK SEE SHEET 8N

2045

2050

2055

℄ SURVEY SR 400 (I-4)

℄ SR 400 E

DRY TREATMENT/ATTENUATION SWALE T-1
BWL = 120.73 BWR = 120.98

SILT FENCE

Exist Fence

Exist LA R/W Line

CONST. TYPE A FENCE

WETLAND AS JURISDICTIONAL LINE

Exist R/W Line

Exist R/W Line

BEGIN SEGMENT 7 PERMIT PLANS
@ SURVEY SR 400 (I-4)
STA. 2051+00.00
MP 29.925

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

WETLAND JURISDICTIONAL LINES

LIMITS OF MILLING AND RESURFACING

WILLIAM J. VOSH JR., P.E.
P.E. NO. 34450
12/23/02

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20204-1

PLAN SHEET (1)
BEGIN CONSTRUCTION SEGMENT 7
TO STA 2059+00

SHEET NO. 7

S-703

STA. 2060+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 230
GRATE EL. 108.36
FL 100.10

S-704

STA. 2063+05, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 230
GRATE EL. 105.02
FL 98.04

S-704A

STA. 2063+00, 22.2' LT
CONST. MES W-46
INDEX NO. 272
FL 97.93

S-705

STA. 2066+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 230
GRATE EL. 103.81
FL 96.80

S-706

STA. 2068+30, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 230
GRATE EL. 101.88
FL 96.44

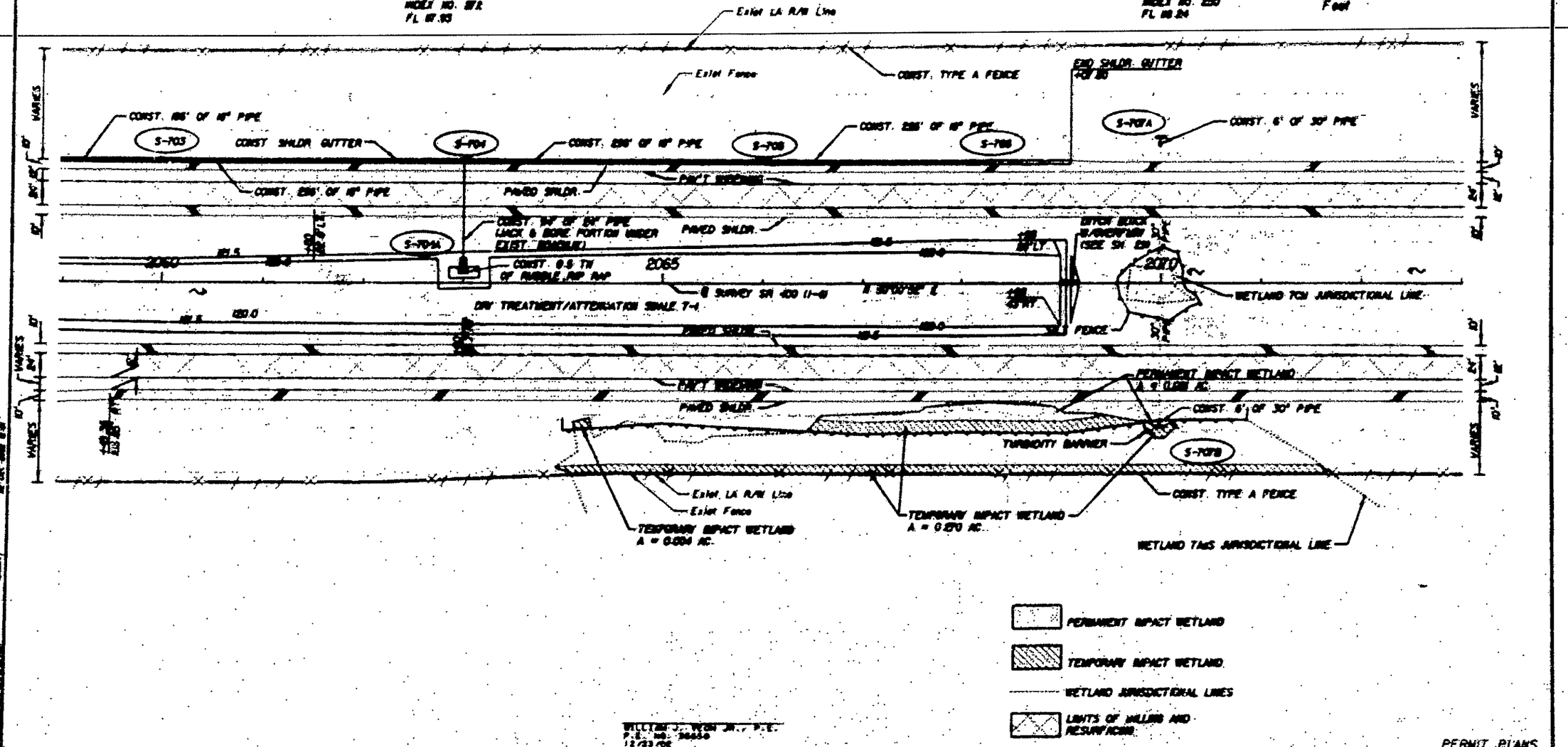
S-707A

STA. 2070+00, 149.45' LT
CONST. CONC. ENDWALL
INDEX NO. 290
FL 97.88

S-707B

STA. 2070+00, 145.2' RT
CONST. CONC. ENDWALL
INDEX NO. 290
FL 98.24

0 50 100
Feet



PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

WETLAND JURISDICTIONAL LINES

LIMITS OF MILLING AND RESURFACING

WILLIAM J. WISH JR., P.E.
P.E. NO. 36450
12/03/08

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	206604-1

PLAN SHEET (2)
STA 2059+00 TO STA 2071+00

SHEET NO. 8

E-1538

S-708A

STA. 2080+00, 36.0' RT
CONST. CONC. ENDWALL
INDEX NO. 280
FL 118.74

S-708

STA. 2079+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 280
GRATE EL. 125.63'
FL 119.92

S-711

STA. 2081+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 280
GRATE EL. 127.64
FL 119.66

S-712

STA. 2083+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 280
GRATE EL. 127.86
FL 122.15

S-708B

STA. 2080+00, 116.2' RT
CONST. CONC. ENDWALL
INDEX NO. 280
FL 119.95

S-708A

STA. 2082+00, 81.9' LT
CONST. MES 18"
INDEX NO. 272
FL 119.50

WETLAND 711 JURISDICTIONAL LINE

PERMANENT IMPACT WETLAND
A= 0.020 AC.

TEMPORARY IMPACT
WETLAND A= 0.003 AC.

Exist LA R/W Line

Exist Fence

CONST. TYPE A FENCE

BEGIN SHLDR. GUTTER
+00.00

S-708

CONST. 256' OF 18" PIPE

S-711

CONST. 256' OF 18" PIPE

S-712

CONST. SHLDR. GUTTER

PAVED SHLDR.

PAVT. WIDENING

WETLAND 709 JURISDICTIONAL LINE

DITCH BLOCK W/OVERFLOW (SEE SH. 8)

CONST. 30' OF 18" PIPE
LNCK & 80' PORTION UNDER EXIST. RDWAY

2075

2080

2085

TEMPORARY IMPACT
WETLAND A= 0.003 AC.

SILT FENCE

CONST. 16' OF 24" PIPE

S-708A

PAVED SHLDR.

PERMANENT IMPACT WETLAND
A= 0.004 AC.

PAVT. WIDENING

PAVED SHLDR.

PERMANENT IMPACT WETLAND
A = 0.035 AC.

S-708B

TURBIDITY BARRIER

CONST. 15' OF 54" PIPE

Exist LA R/W Line

Exist Fence

WETLAND 705 JURISDICTIONAL LINE

TEMPORARY IMPACT
WETLAND
A = 0.051 AC.

S-712A

E. SURVEY SR 400 11-8

DRY TREATMENT/ATTENUATION SWALE T-2

CONST. TYPE A FENCE

WETLAND 705 JURISDICTIONAL LINE

PERMANENT IMPACT WETLAND
A = 0.031 AC.

TEMPORARY IMPACT WETLAND
A = 0.031 AC.

SKimmel
Bulkley
OK
10/22/08

SECT. 8, T 28 S, R 26 E

SECT. 9, T 28 S, R 26 E

0 50 100
Feet

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

WETLAND JURISDICTIONAL LINES

LIMITS OF MILLING AND RESURFACING

WILLIAM J. HEGH JR., P.E.
P.E. NO. 39440
12/23/08

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
[illegible]
Tel [illegible]

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

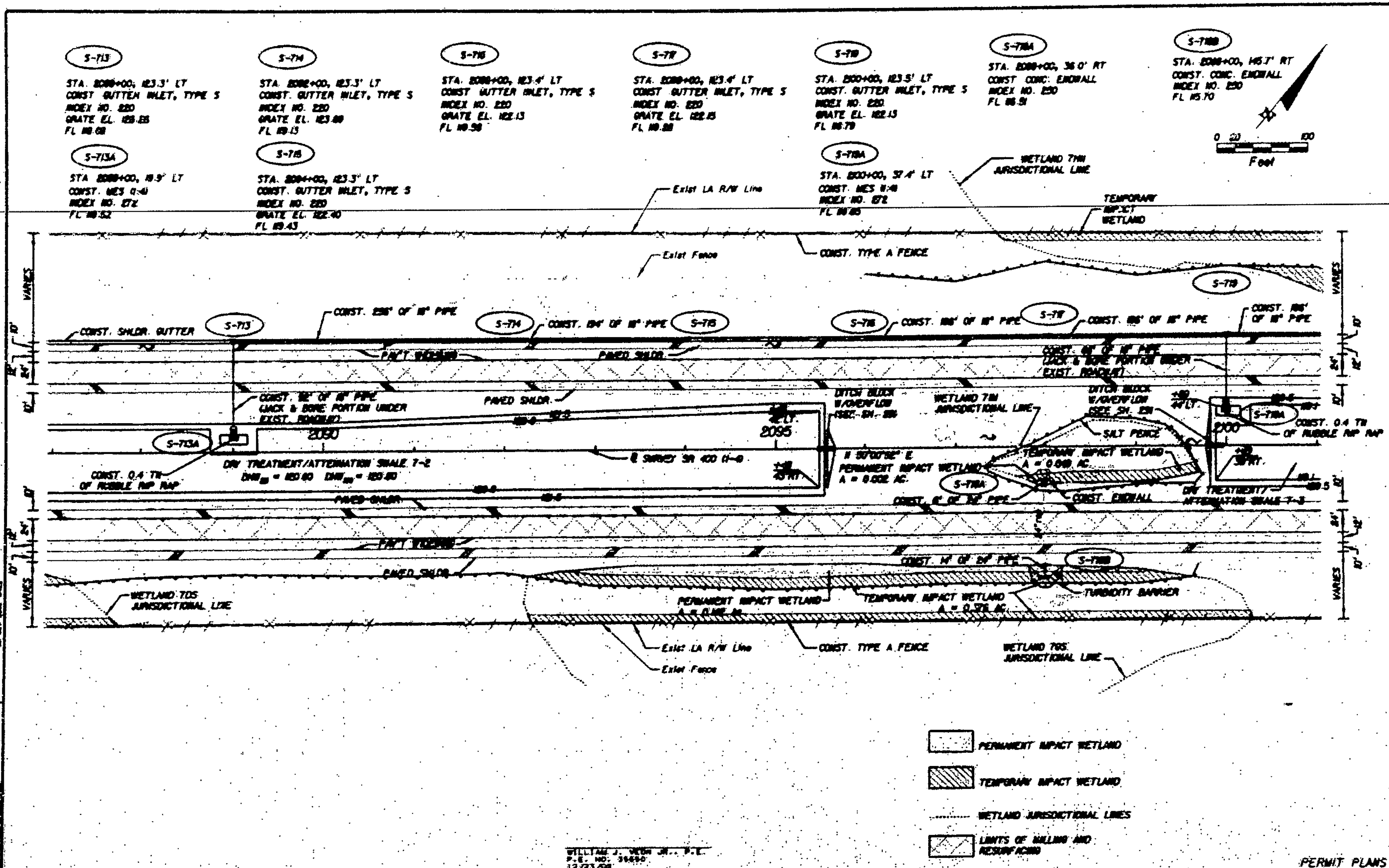
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20204-1

PLAN SHEET (8)

STA 2073+00 TO STA 2087+00

SHEET NO. 9

E-1539


S-713
STA. 2088+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 123.25
FL 118.68
S-714
STA. 2092+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 123.00
FL 119.13
S-716
STA. 2096+00, 123.4' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 122.13
FL 118.58
S-717
STA. 2098+00, 123.4' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 122.15
FL 118.28
S-719
STA. 2100+00, 123.5' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 122.13
FL 118.79
S-718A
STA. 2098+00, 36.0' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 118.51
S-718B
STA. 2098+00, 145.7' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 115.70
S-713A
STA. 2088+00, 18.9' LT
CONST. MES (1:4)
INDEX NO. 272
FL 118.52
S-715
STA. 2094+00, 123.3' LT
CONST. GUTTER INLET, TYPE S
INDEX NO. 220
GRATE EL. 122.40
FL 119.43
S-719A
STA. 2100+00, 37.4' LT
CONST. MES 1:4
INDEX NO. 272
FL 118.65
0 20 100
Feet
Exist LA R/W Line
WETLAND 7IN JURISDICTIONAL LINE
TEMPORARY IMPACT WETLAND
Exist Fence
CONST. TYPE A FENCE
VARIES
CONST. SHLDR. GUTTER
CONST. 256' OF 18" PIPE
CONST. 194' OF 18" PIPE
CONST. 186' OF 18" PIPE
CONST. 186' OF 18" PIPE
CONST. 186' OF 18" PIPE
PAV'T WIDENING
PAVED SHLDR.
CONST. 60' OF 18" PIPE (JACK & BORE PORTION UNDER EXIST. ROADWAY)
CONST. 182' OF 18" PIPE (JACK & BORE PORTION UNDER EXIST. ROADWAY)
DITCH BLOCK W/OVERFLOW (SEE SH. 50)
WETLAND 7IN JURISDICTIONAL LINE
SILT FENCE
2090
2095
2100
DRY TREATMENT/ATTENUATION SWALE 7-2
℄ SURVEY SR 400 (I-4)
N 50°00'52" E
PERMANENT IMPACT WETLAND A = 0.002 AC.
TEMPORARY IMPACT WETLAND A = 0.049 AC.
CONST. 0.4 TN OF RUBBLE RIP RAP
CONST. 6" OF 30" PIPE
CONST. ENDWALL
DRY TREATMENT/ATTENUATION SWALE 7-3
CONST. 14' OF 24" PIPE
TURBIDITY BARRIER
WETLAND 7OS JURISDICTIONAL LINE
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND A = 0.376 AC.
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
WETLAND JURISDICTIONAL LINES
LIMITS OF MILLING AND RESURFACING
PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

WILLIAM J. VEON JR., P.E.
P.E. NO. 39650

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (4)
STA 2087+00 TO STA 2101+00

SHEET NO. 10

S-7B0

STA. 2108+00, 163.9' LT
CONST GUTTER INLET, TYPE S
INDEX NO 230
GRATE EL. 122.16
FL 118.05

S-7B1

STA. 2104+00, 163.9' LT
CONST GUTTER INLET, TYPE S
INDEX NO 230
GRATE EL. 118.94
FL 116.38

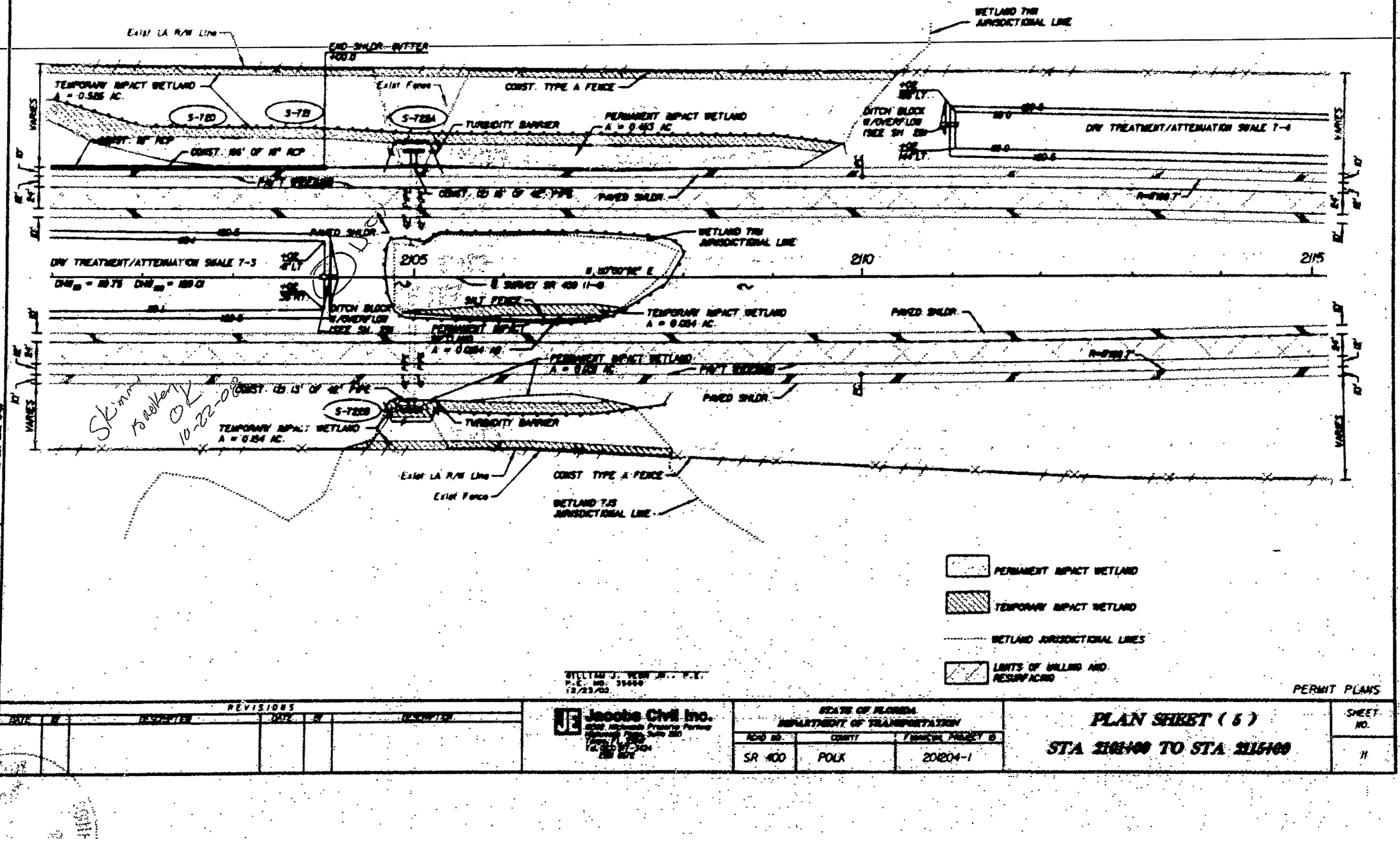
S-7B2A

STA. 2108+00, 150.0' LT
CONST CONC. ENDWALL
INDEX NO. 250
FL 113.50

S-7B2B

STA. 2108+00, 176.7' LT
CONST CONC. ENDWALL
INDEX NO 250
FL 113.20

0 50 100
Feet



Skinned Bracketed OK 10-22-08

WILLIAM J. WEBB JR., P.E.
P.E. NO. 39459
12/23/03

PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
[illegible]

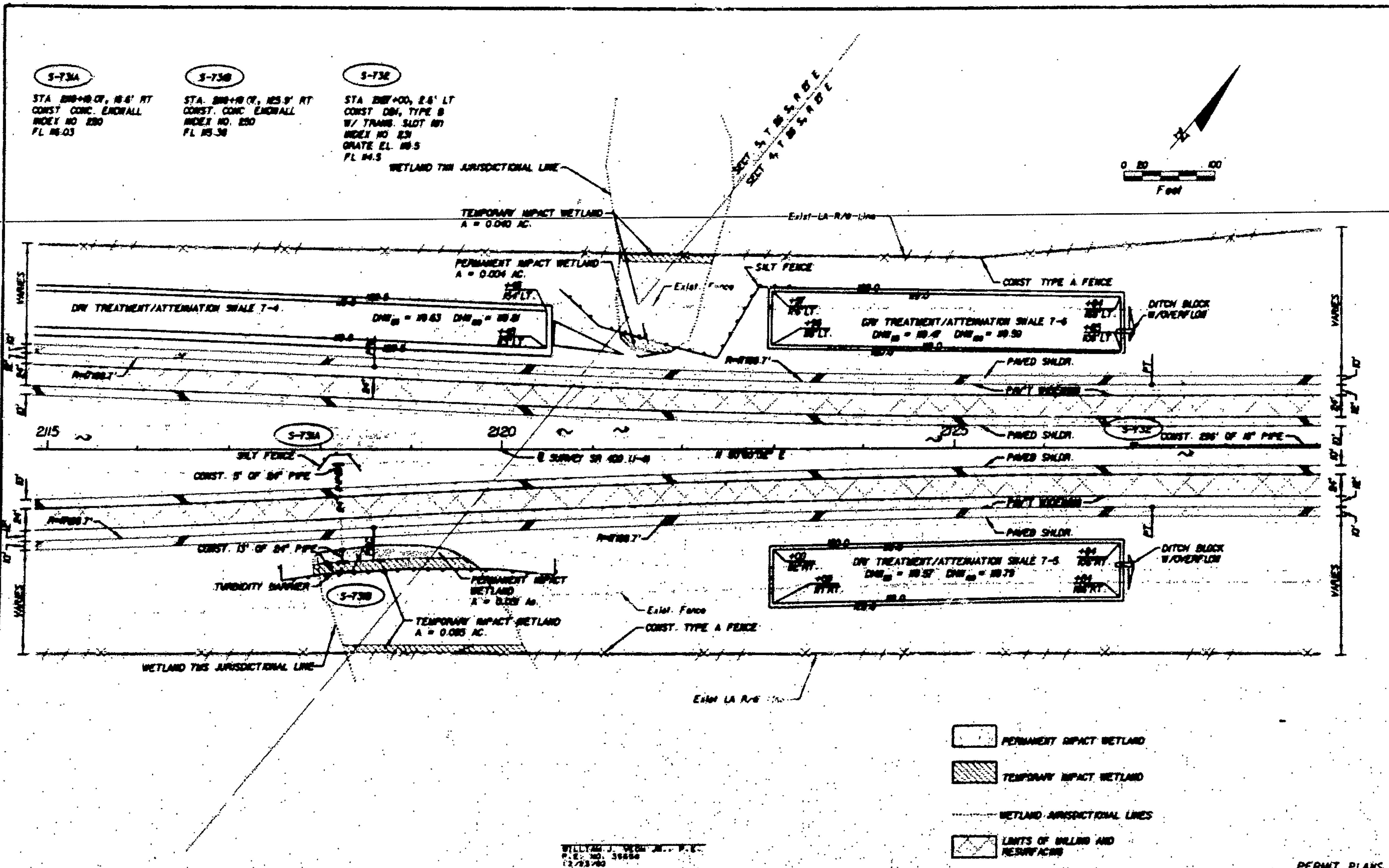
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	20820A-1

PLAN SHEET (6)
STA 2101+00 TO STA 2115+00

SHEET NO. 11

E-1541


S-73A
STA 2118+10.07, 18.6' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 116.03
S-73B
STA. 2118+10.07, 125.9' RT
CONST. CONC. ENDWALL
INDEX NO. 250
FL 115.38
S-73E
STA 2127+00, 2.6' LT
CONST. DBI, TYPE B
W/ TRANS. SLOT 181
INDEX NO. 231
GRATE EL. 118.5
FL 114.5
WETLAND T101 JURISDICTIONAL LINE
TEMPORARY IMPACT WETLAND
A = 0.040 AC.
PERMANENT IMPACT WETLAND
A = 0.004 AC.
SILT FENCE
Exist. Fence
CONST. TYPE A FENCE
Exist-LA-R/W-Line
DRY TREATMENT/ATTENUATION SWALE 7-4
DRY TREATMENT/ATTENUATION SWALE 7-6
DRY TREATMENT/ATTENUATION SWALE 7-5
DITCH BLOCK W/OVERFLOW
PAVED SHLDR.
PAV'T WIDENING
VARIES
Feet
2115
2120
2125
S-73A
S-73E
CONST. 236' OF 18" PIPE
© SURVEY SR 400 (I-4)
SILT FENCE
CONST. 5' OF 84" PIPE
CONST. 13' OF 84" PIPE
TURBIDITY BARRIER
S-73B
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
A = 0.085 AC.
WETLAND T105 JURISDICTIONAL LINE
Exist LA R/W Line
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
WETLAND JURISDICTIONAL LINES
LIMITS OF MILLING AND RESURFACING
PERMIT PLANS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.

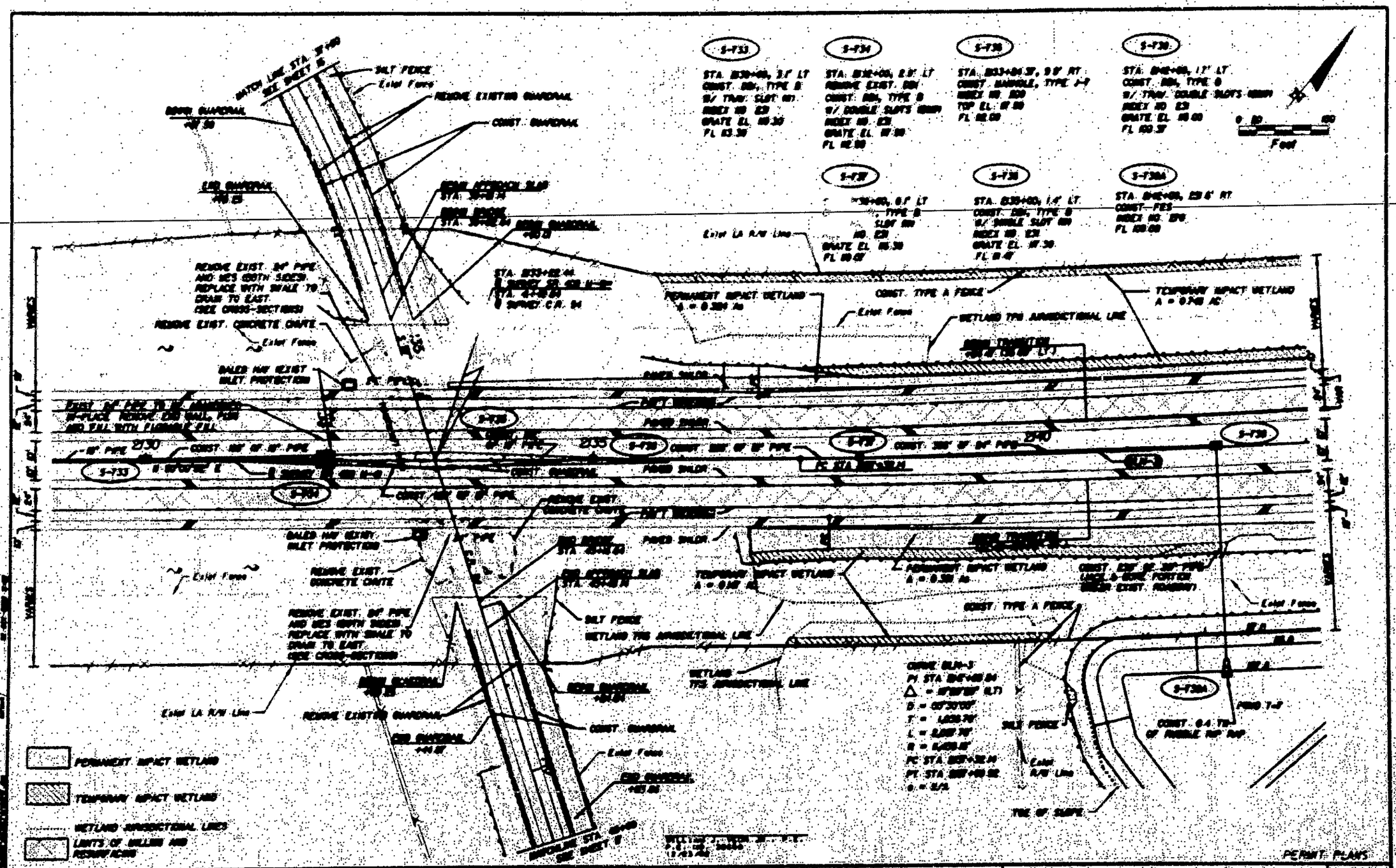
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

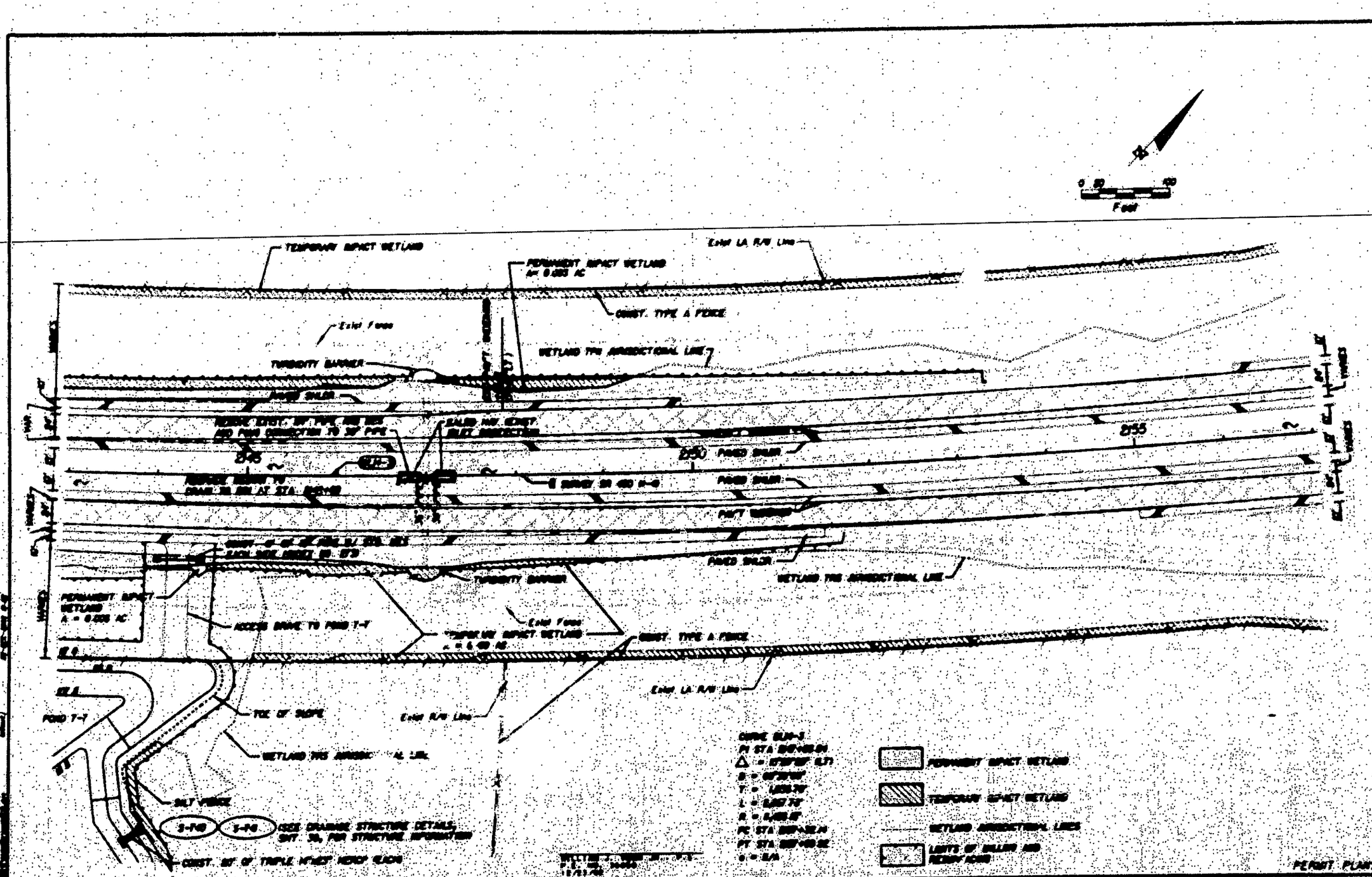
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

PLAN SHEET (6)

STA 2115+00 TO STA 2129+00

SHEET NO. 12


S-733
S-734
S-736
S-736
S-737
S-738
S-738A
MATCH LINE, STA. 2+00 SEE SHEET 6
SILT FENCE
Exist Fence
REMOVE EXISTING GUARDRAIL
CONST. GUARDRAIL
REMOVE EXIST. 24" PIPE AND SES (BOTH SIDES). REPLACE WITH SWALE TO DRAIN TO EAST. SEE CROSS-SECTIONS
REMOVE EXIST. CONCRETE CHUTE
BALED HAY EXIST. INLET PROTECTION
RIP-RAP APRON
CONST. TYPE A FENCE
TEMPORARY IMPACT WETLAND
WETLAND TRS JURISDICTIONAL LINE
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
WETLAND TRS JURISDICTIONAL LINES
LIMITS OF GRADING AND REINFORCING
PERMIT PLANS
PLAN SHEET (7)
STA 223+00 TO STA 236+00
SHEET NO. 13
SR 400
POLK
E-1543



REVISIONS						
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

Jacobs Civil Inc.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

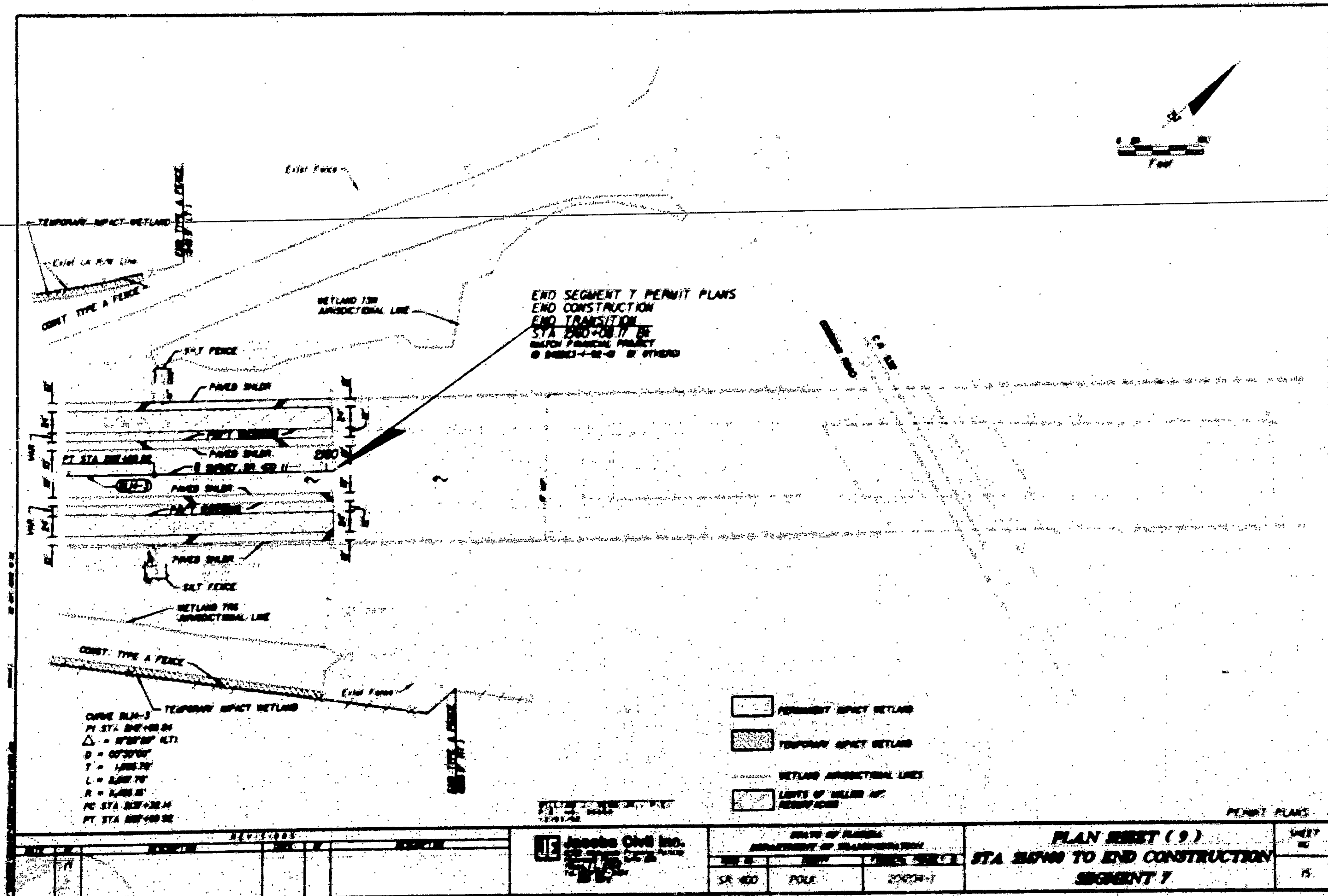
DISTRICT	COUNTY	FINANCIAL PROJECT ID
05	POLK	83604-1

PLAN SHEET (8)

STA 2640+00 TO STA 2670+00

SHEET NO. 14

E-1544



END SEGMENT 7 PERMIT PLANS
END CONSTRUCTION
END TRANSITION
TEMPORARY IMPACT WETLAND
CONST. TYPE A FENCE
SILT FENCE
PAVED SHLDR.
WETLAND TRS JURISDICTIONAL LINE
Exist. Fence
CURVE SLM-3
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
WETLAND JURISDICTIONAL LINES
PERMIT PLANS
Jacobs Civil Inc.
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
SR 400
POLK
PLAN SHEET (9)
SEGMENT 7

E-1545

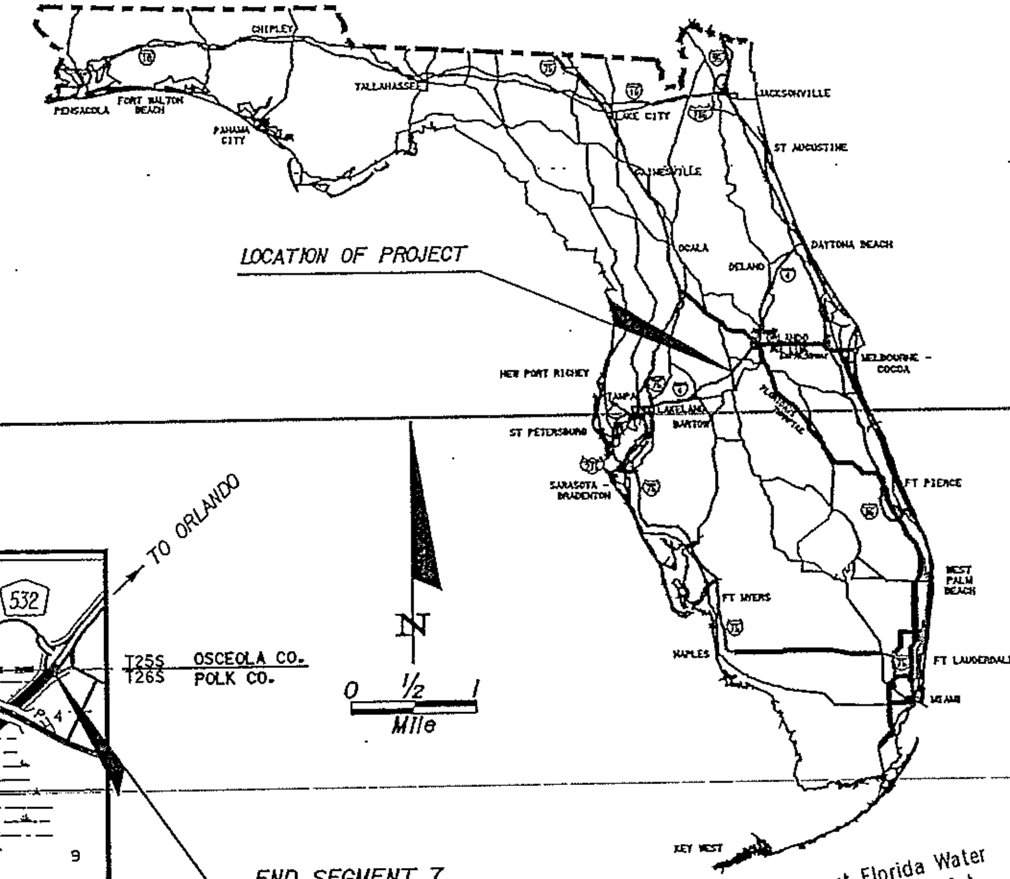
COMPONENTS OF CONTRACT PLANS SET
EROSION CONTROL PLANS

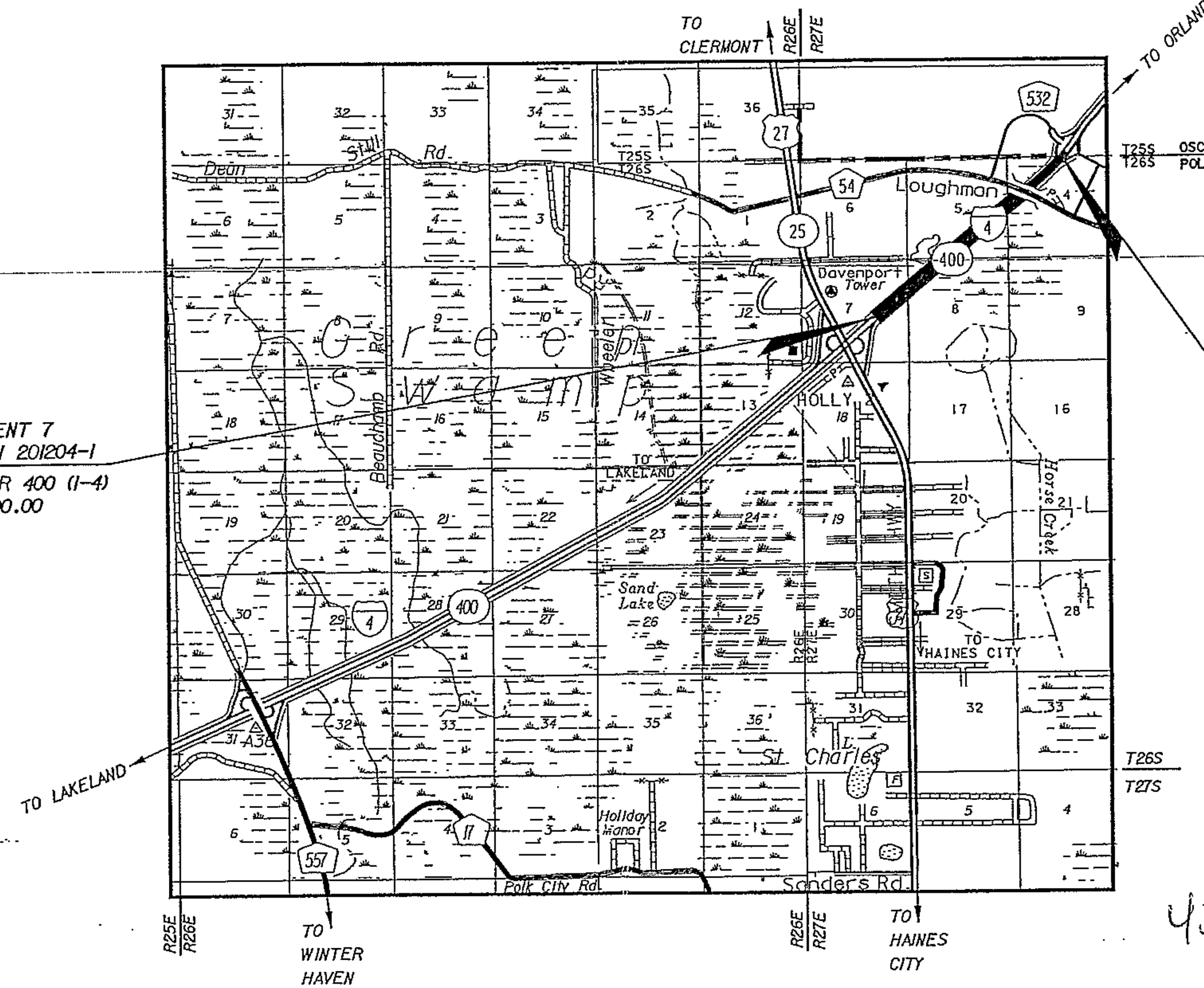
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
CONTRACT PLANS

FINANCIAL PROJECT ID 201204-1-52-01
POLK COUNTY (16110)
STATE ROAD NO. 400 (I-4)
SEGMENT 7

INDEX OF DRAINAGE PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2-13	EROSION CONTROL PLANS





BEGIN SEGMENT 7
PROJECT FPI 201204-1
℄ SURVEY SR 400 (I-4)
STA. 2051+00.00
MP 29.925

END SEGMENT 7
PROJECT FPI 201204-1
℄ SURVEY SR 400 (I-4)
STA. 2160+08.95 Bk =
MP 31.991

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EROSION CONTROL PLANS

File of Record
Permit No ______

ENGINEER OF RECORD:
Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
EBN 6572

MKH

430 896.027

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
ROADWAY AND TRAFFIC DESIGN STANDARDS
DATED JANUARY 2002, AND
STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION DATED 2000,
AS AMENDED BY CONTRACT DOCUMENTS.

REVISIONS

△ EROSION CONTROL PLANS SHEETS NOS. 8, 12-13 (REVISED 12/03)
WETLANDS REVISED

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	10,908.17	2.066
BRIDGES	0.00	0.000
NET LENGTH OF PROJECT	10,908.17	2.066
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	10,908.17	2.066

KEY SHEET REVISIONS

DATE	BY	DESCRIPTION

FDOT PROJECT MANAGER:

DRAINAGE PLANS
ENGINEER OF RECORD: WILLIAM J. YEOH, Jr., P.E.
1/22/04
P.E. NO.: 35650

FISCAL YEAR	SHEET NO.
02	01

E-1546

22-JAN-2004 17:08
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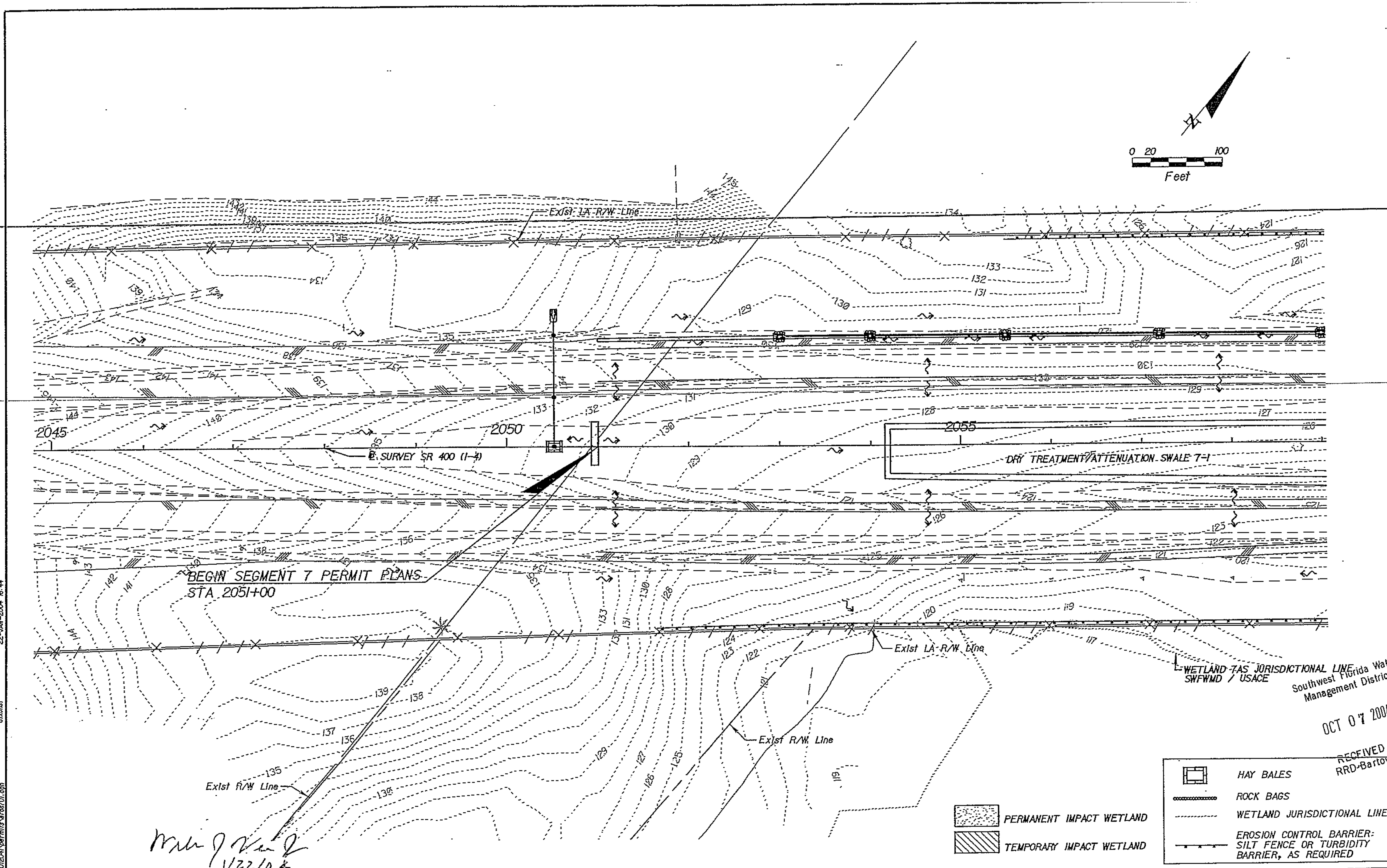

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
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Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650 EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO. 2

E-1547

P:\E3V94\T001\TOCADD\201204\permits\eros701.dgn dlnonsf 22-JAN-2004 16:44

0 20 100
Feet

Exist LA R/W Line

Conc. Headwall
Inv. 117.64

Mitered End Section
w/grate
Inv. 117.04

2060

2065

2070

DRY TREATMENT/ATTENUATION SWALE T-1

℄ SURVEY SR 400 (I-4)

WETLAND 7CM JURISDICTIONAL LINE
SWFWMD / USACE

PERMANENT IMPACT WETLAND
A = 0.081 AC.

EXIST. FENCE TO REMAIN
IN WETLAND

Conc. Headwall
Inv. 116.284

TIE PROPOSED FENCE INTO
EXIT. FENCE

Exist LA R/W Line

TIE PROPOSED FENCE INTO
EXIT. FENCE

TEMPORARY IMPACT WETLAND
A = 0.002 AC.

TEMPORARY IMPACT WETLAND
A = 0.090 AC.

WETLAND 7AcS JURISDICTIONAL LINE
SWFWMD / USACE

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Management District

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NOTE: CONST. PROPOSED FENCE ALONG CLEAR ZONE LINE IN WETLAND 7AcS

HAY BALES
ROCK BAGS
WETLAND JURISDICTIONAL LINE
EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND

8/20/04

1/22/04

REVISIONS					
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO.
E-1548

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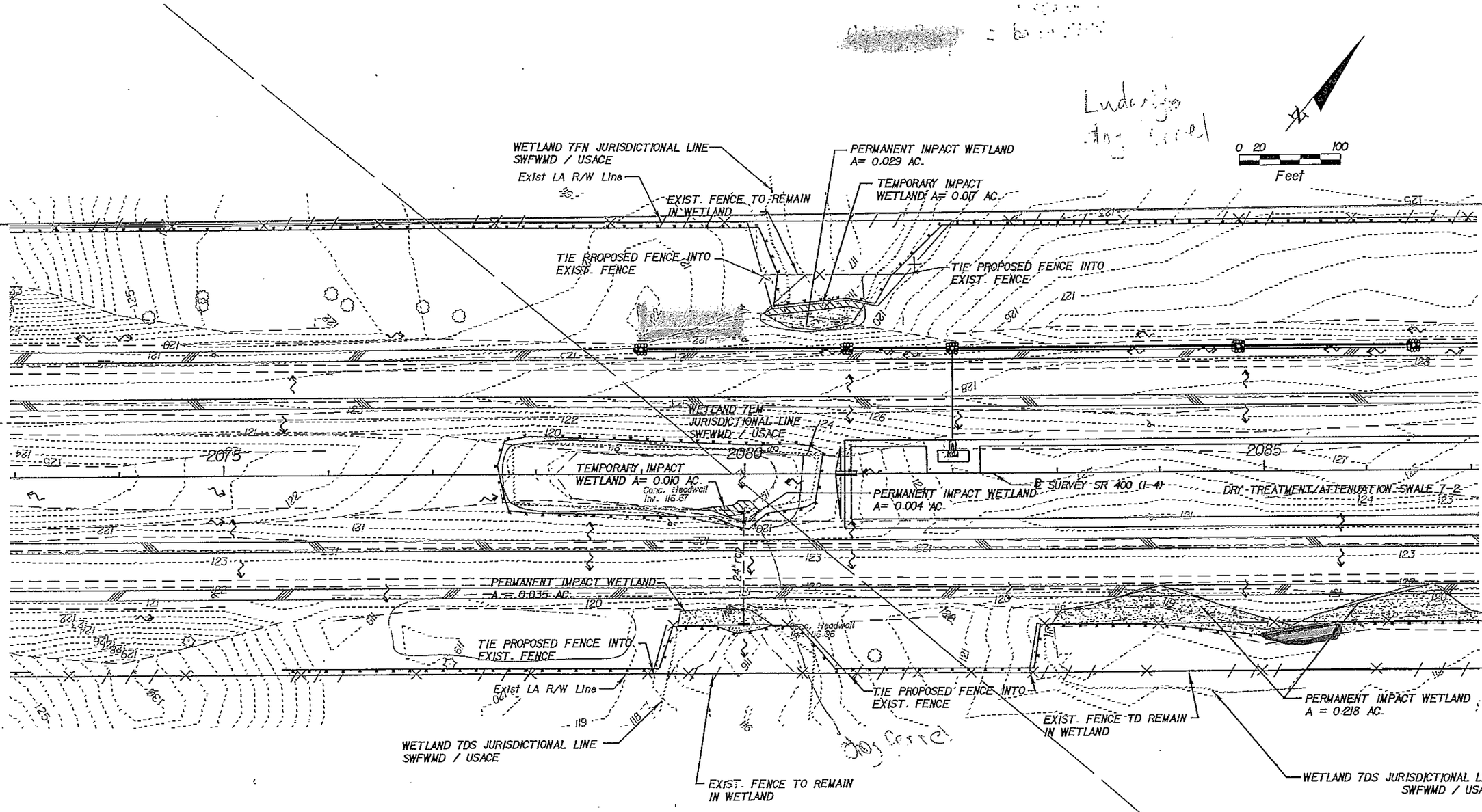

HAY BALES

ROCK BAGS

WETLAND JURISDICTIONAL LINE

EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

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REVISIONS					
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Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650 EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO. 4

E-1549

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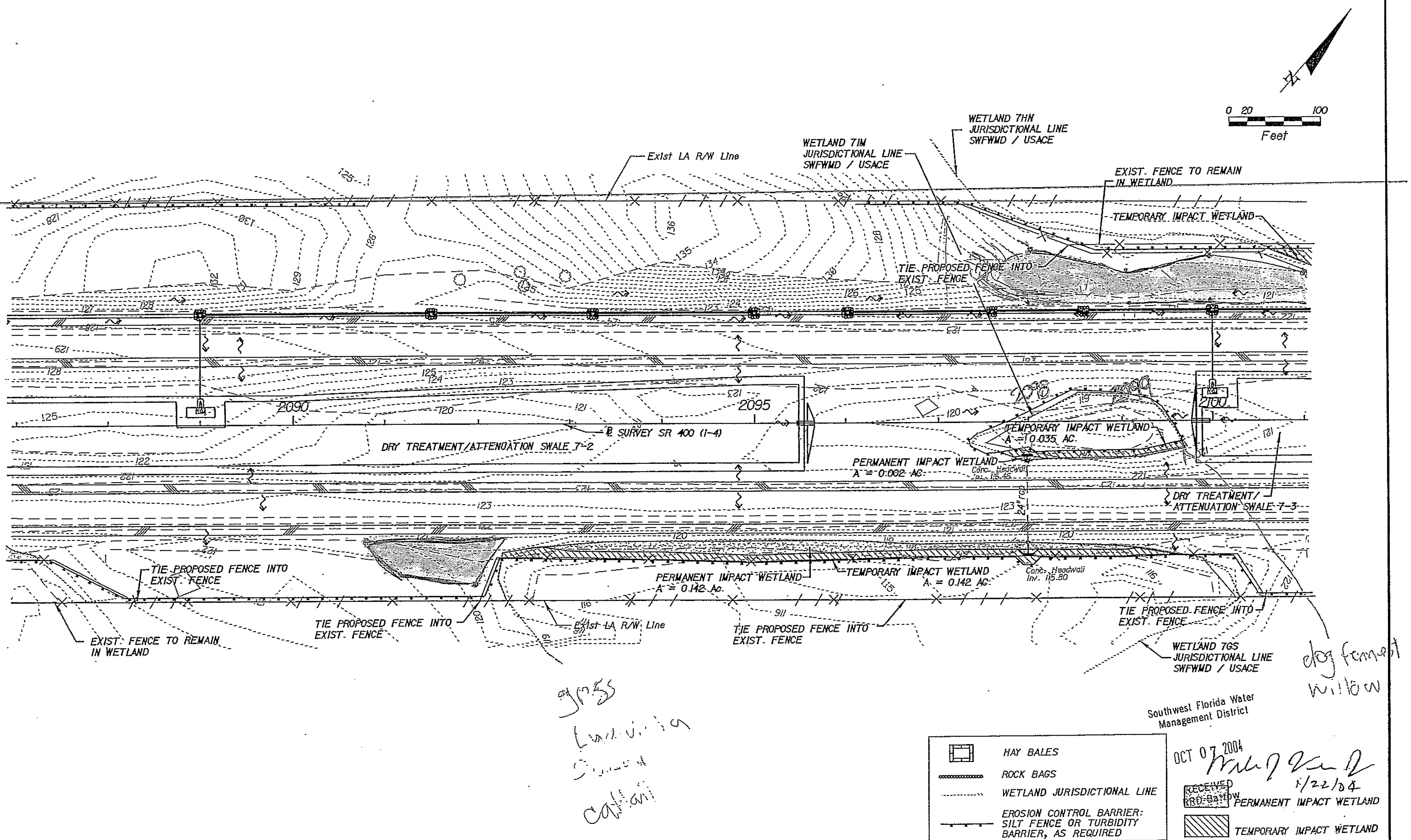

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650 EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO.
E-1550

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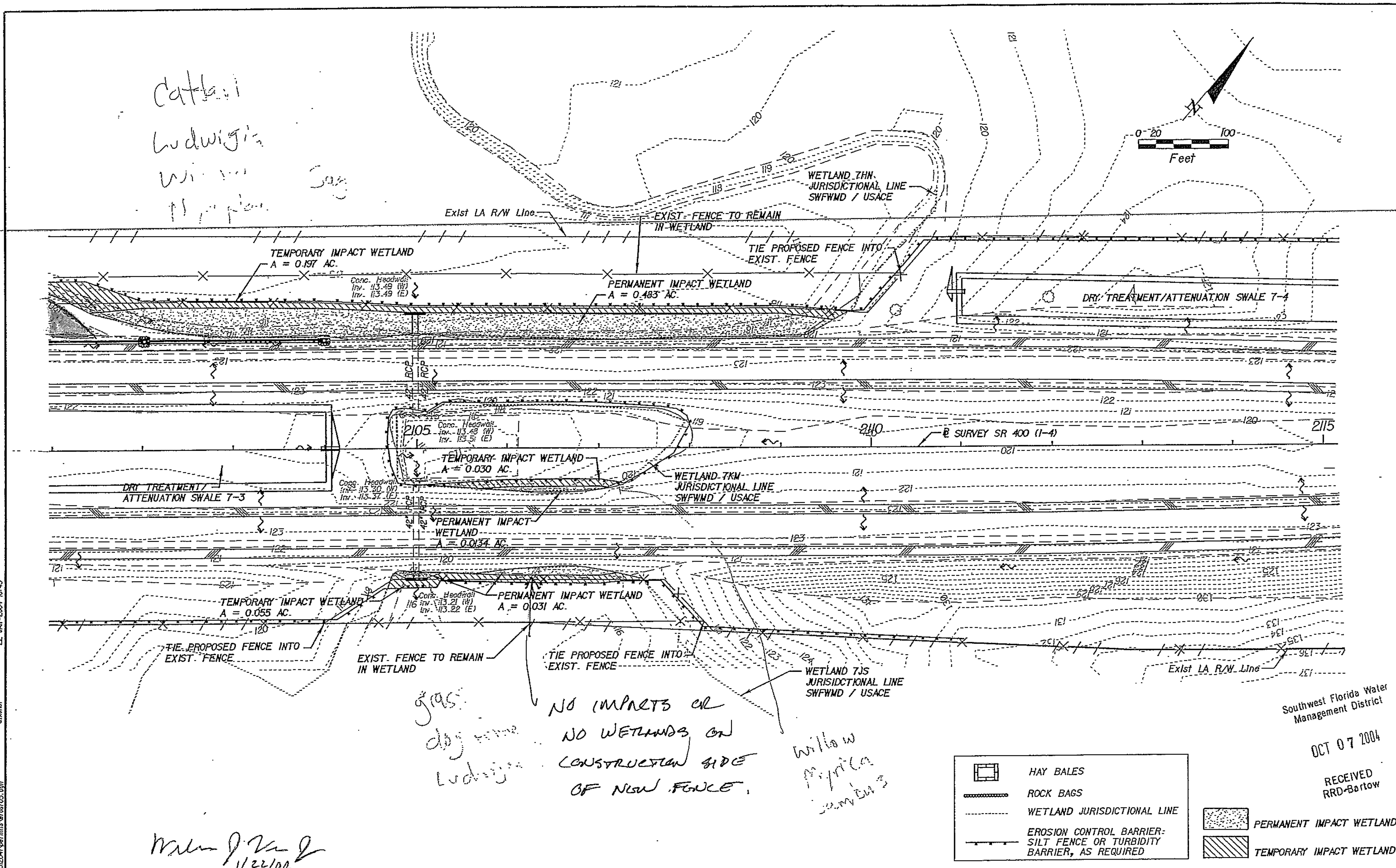
Catbail
Ludwigia
Feet
0 20 100
Exist LA R/W Line
EXIST. FENCE TO REMAIN IN WETLAND
WETLAND 7HN. JURISDICTIONAL LINE SWFWMD / USACE
TEMPORARY IMPACT WETLAND A = 0.197 AC.
TIE PROPOSED FENCE INTO EXIST. FENCE
PERMANENT IMPACT WETLAND A = 0.483 AC.
Conc. Headwall Inv. 113.49 (W) Inv. 113.49 (E)
DRY TREATMENT/ATTENUATION SWALE 7-4
2105
2110
2115
Conc. Headwall Inv. 113.48 (W) Inv. 113.5 (E)
TEMPORARY IMPACT WETLAND A = 0.030 AC.
Ⓑ SURVEY SR 400 (I-4)
WETLAND 7KM JURISDICTIONAL LINE SWFWMD / USACE
DRY TREATMENT/ ATTENUATION SWALE 7-3
Conc. Headwall Inv. 113.30 (W) Inv. 113.37 (E)
PERMANENT IMPACT WETLAND A = 0.0134 AC.
TEMPORARY IMPACT WETLAND A = 0.055 AC.
Conc. Headwall Inv. 113.21 (W) Inv. 113.22 (E)
PERMANENT IMPACT WETLAND A = 0.031 AC.
TIE PROPOSED FENCE INTO EXIST. FENCE
EXIST. FENCE TO REMAIN IN WETLAND
TIE PROPOSED FENCE INTO EXIST. FENCE
WETLAND 7JS JURISDICTIONAL LINE SWFWMD / USACE
Exist LA R/W Line
grass
Ludwigia
NO IMPACTS OR NO WETLANDS ON CONSTRUCTION SIDE OF NEW FENCE.
willow
Myrica
Sambucus
HAY BALES
ROCK BAGS
WETLAND JURISDICTIONAL LINE
EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
Southwest Florida Water Management District
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1/22/04

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Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO. 6

E-1551

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WETLAND 7NN
JURISDICTIONAL LINE
SWFWMD / USACE

NOTE: LA R/W FENCES BETWEEN WETLAND 7NN AND CR 54 AND BETWEEN WETLAND 7MS AND CR 54 SHALL BE CONSTRUCTED IN A MANNER THAT MINIMIZES DISTURBANCE TO EXISTING VEGETATION AND SHALL BE ADJUSTED TO AVOID TREES OF 2" DIAMETER OR GREATER.

0 20 100
Feet

TEMPORARY IMPACT WETLAND
A = 0.009 AC.

EXIST. FENCE TO REMAIN IN WETLAND

Exist LA R/W Line

TIE PROPOSED FENCE INTO EXIST. FENCE

TIE PROPOSED FENCE INTO EXIST. FENCE

DRY TREATMENT/ATTENUATION SWALE 7-4

DRY TREATMENT/ATTENUATION SWALE 7-6

PERMANENT IMPACT WETLAND
A = 0.004 AC.

2115 2120 2125

℄ SURVEY SR 400 (I-4)

Conc. Headwall Inv.= 116.00

Conc. Headwall Inv.= 115.47

TIE PROPOSED FENCE INTO EXIST. FENCE

PERMANENT IMPACT WETLAND
A = 0.051 Ac.

TEMPORARY IMPACT WETLAND
A = 0.031 AC.

TIE PROPOSED FENCE INTO EXIST. FENCE

DRY TREATMENT/ATTENUATION SWALE 7-5

WETLAND 7MS
JURISDICTIONAL LINE
SWFWMD / USACE

EXIST. FENCE TO REMAIN IN WETLAND

Exist LA R/W Line

Southwest Florida Water Management District

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- HAY BALES
- ROCK BAGS
- WETLAND JURISDICTIONAL LINE
- EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED
- PERMANENT IMPACT WETLAND
- TEMPORARY IMPACT WETLAND

1/22/04

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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Tampa, FL. 33647
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ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650 EBN 6572

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO.

E-1552

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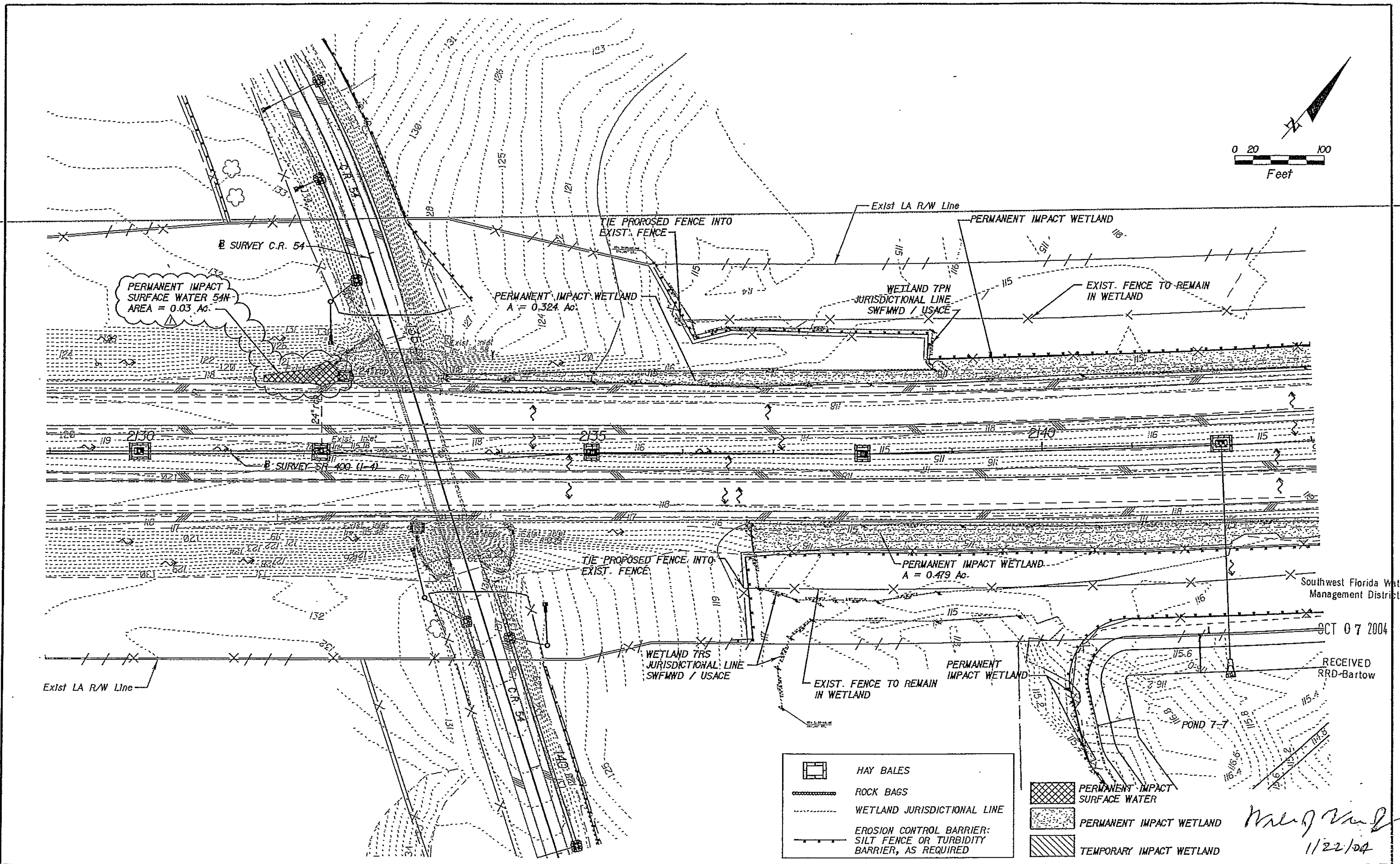
0 20 100
Feet
Exist LA R/W Line
PERMANENT IMPACT WETLAND
TIE PROPOSED FENCE INTO EXIST. FENCE
℄ SURVEY C.R. 54
C.R. 54
PERMANENT IMPACT SURFACE WATER 54N AREA = 0.03 Ac.
PERMANENT IMPACT WETLAND A = 0.324 Ac.
WETLAND 7PN JURISDICTIONAL LINE SWFMWD / USACE
EXIST. FENCE TO REMAIN IN WETLAND
Exist. Inlet
2130
2135
2140
℄ SURVEY SR 400 (I-4)
TIE PROPOSED FENCE INTO EXIST. FENCE
PERMANENT IMPACT WETLAND A = 0.479 Ac.
Southwest Florida Water Management District
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WETLAND 7RS JURISDICTIONAL LINE SWFMWD / USACE
EXIST. FENCE TO REMAIN IN WETLAND
PERMANENT IMPACT WETLAND
Exist LA R/W Line
POND 7-7
HAY BALES
ROCK BAGS
WETLAND JURISDICTIONAL LINE
EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED
PERMANENT IMPACT SURFACE WATER
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND
1/22/04

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03	SFD	⚠ WETLANDS REVISED			

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel.(813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650 EBN 6572

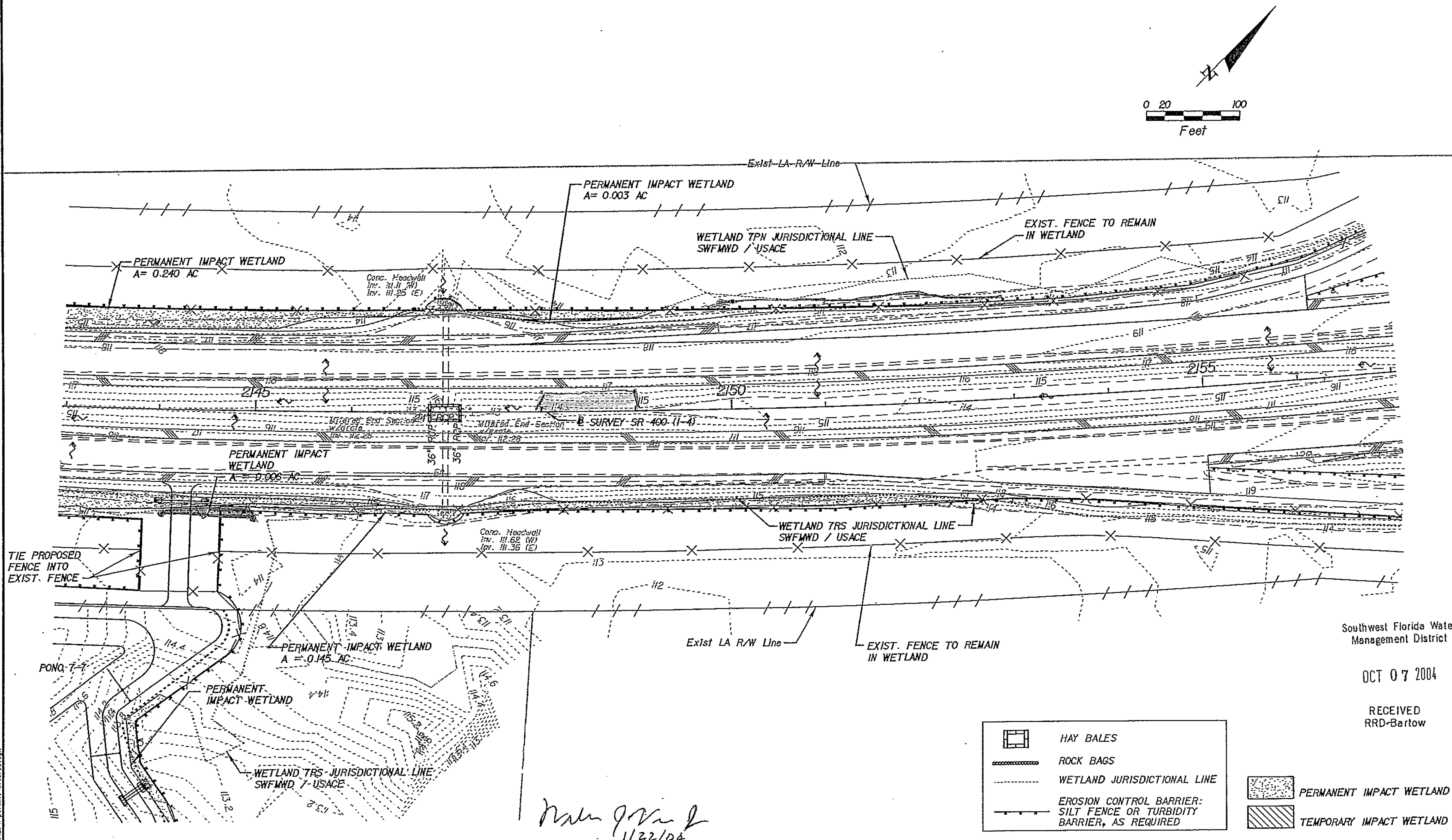
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO. E-8

1553



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, FL 33647
Tel. (813) 977-3434
ENGINEER OF RECORD
W. VEON Jr., P.E. No. 35650
EBN 6572

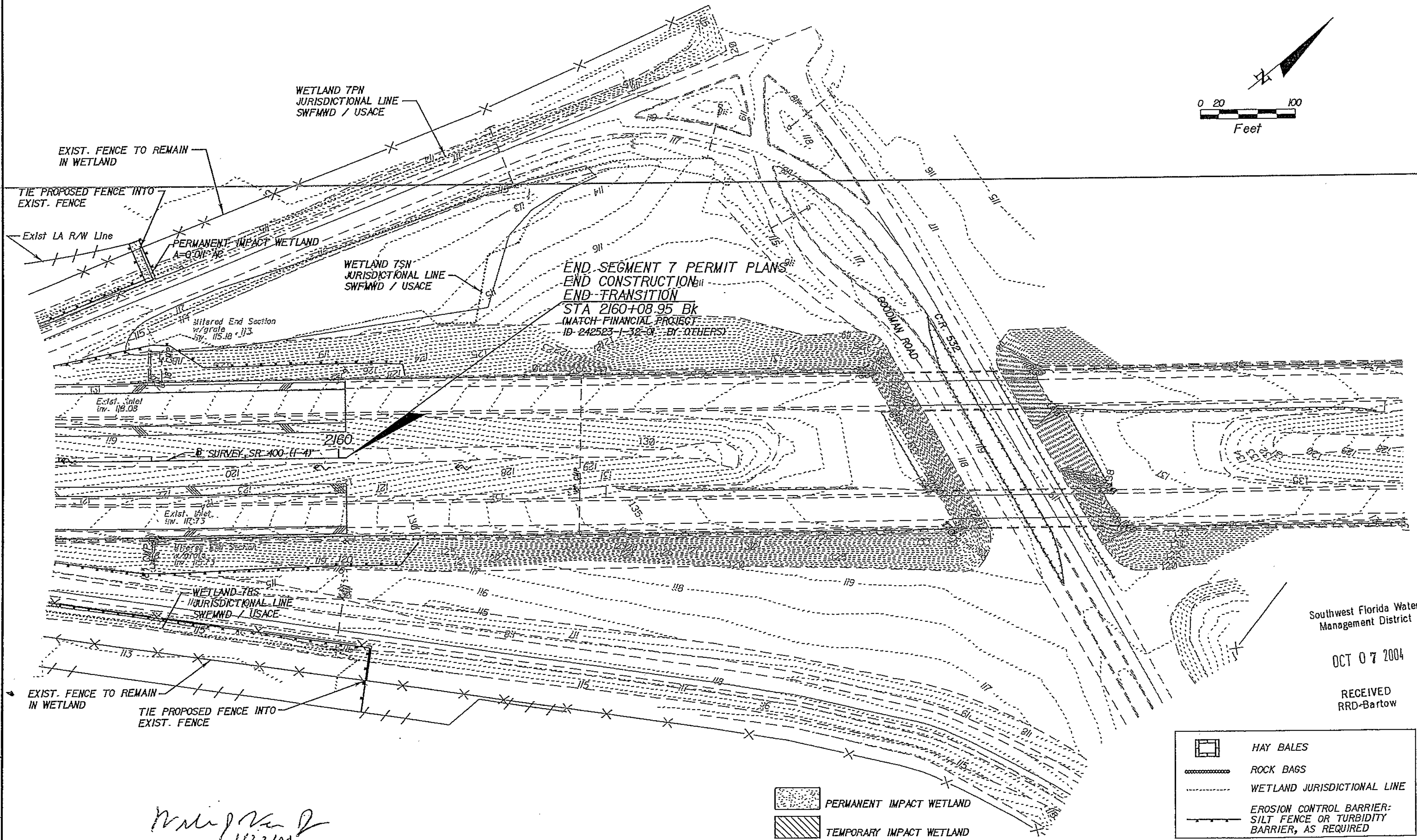
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO.
9

E-1554



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EBN 6572

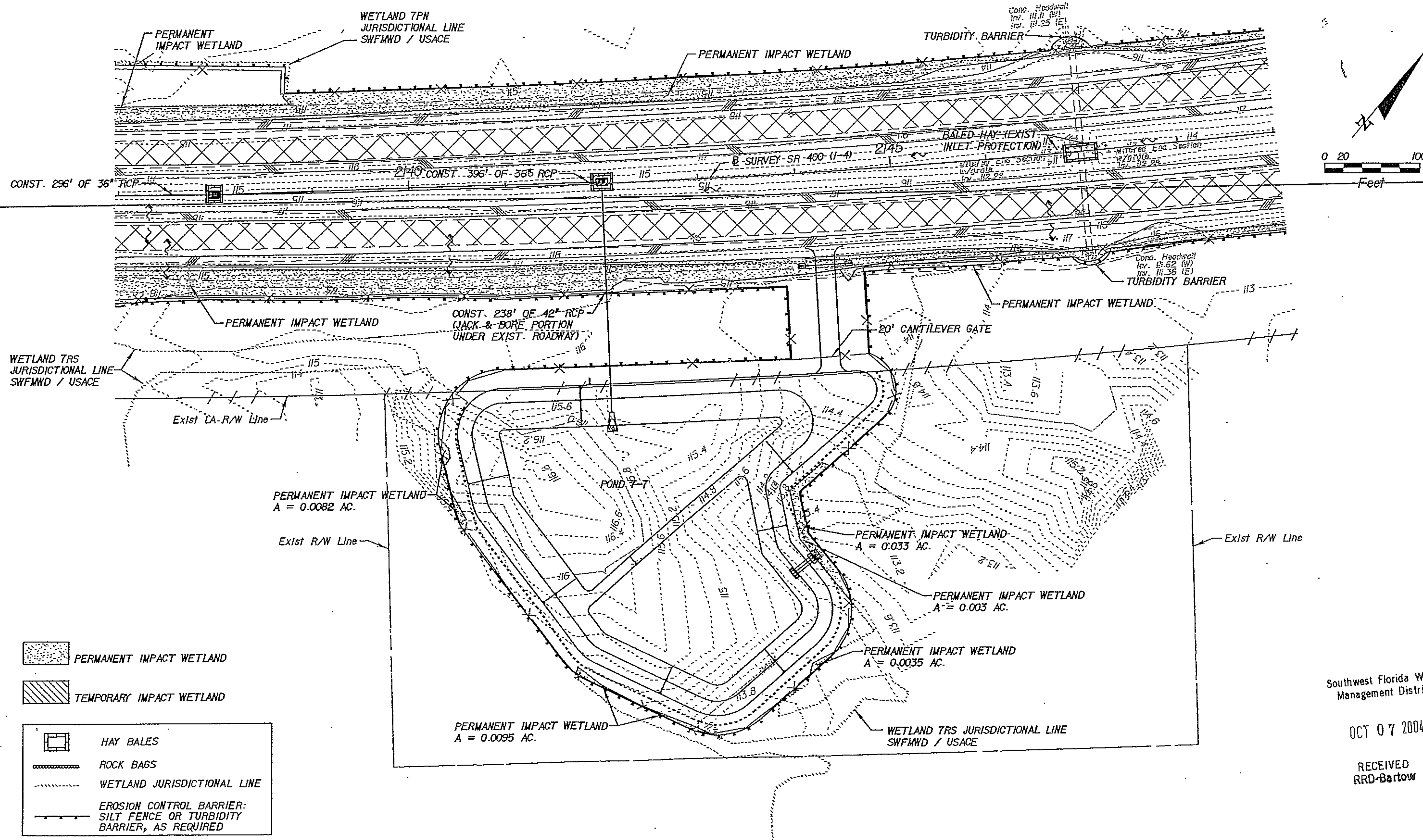
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4)

SHEET NO. 10

E-1555



Southwest Florida Water Management District

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W. VEON Jr., P.E. No. 35650 EBN 6572

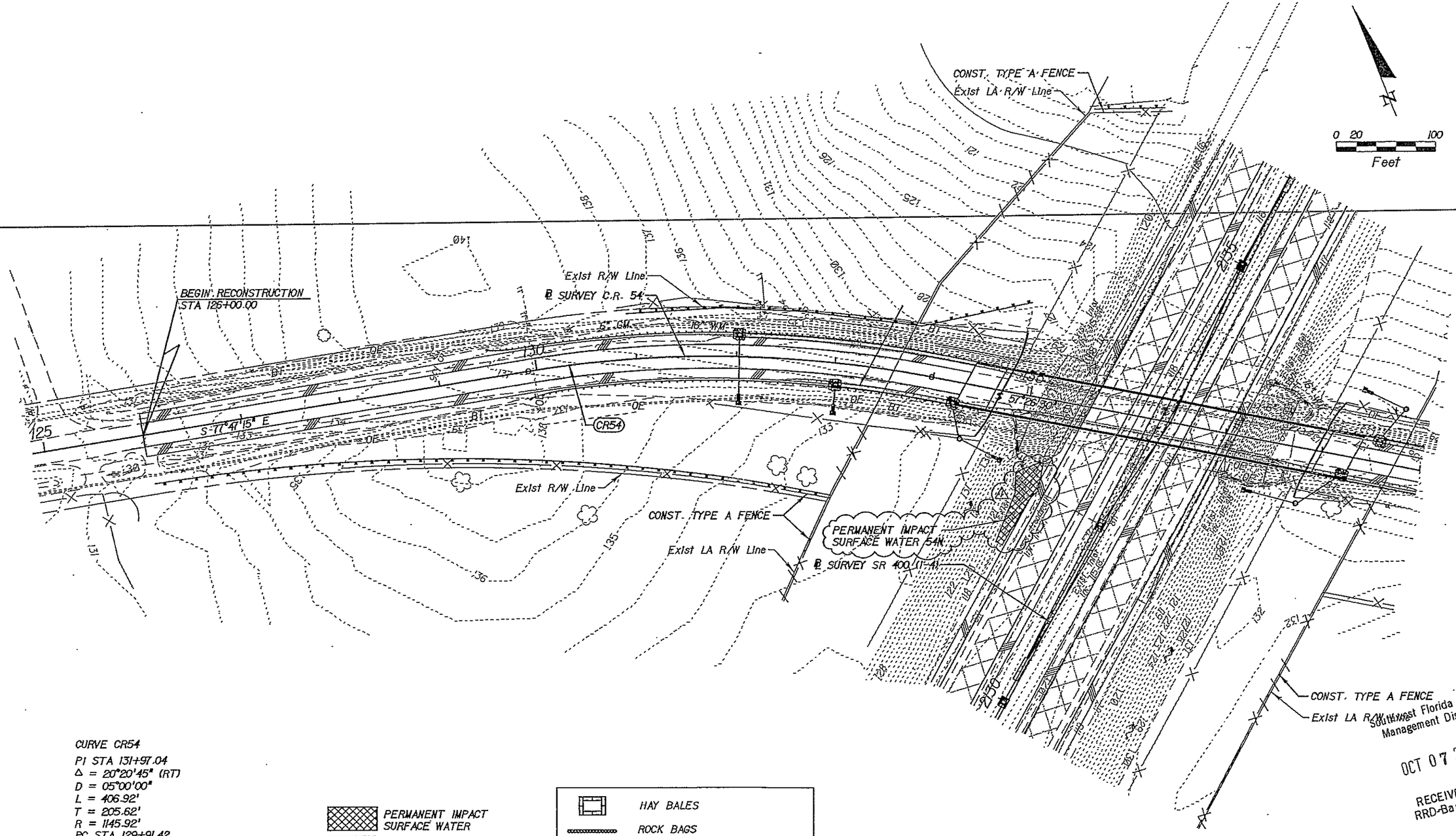
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
SR 400 (I-4) SEGMENT 7

SHEET NO. 11

E-1556



CURVE CR54
PI STA 131+97.04
Δ = 20°20'45" (RT)
D = 05°00'00"
L = 406.92'
T = 205.62'
R = 1145.92'
PC STA 129+91.42
PT STA 133+98.34
e = 0.098

PERMANENT IMPACT SURFACE WATER
PERMANENT IMPACT WETLAND
TEMPORARY IMPACT WETLAND

HAY BALES
ROCK BAGS
WETLAND JURISDICTIONAL LINE
EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED

1/22/04

NOTES:
1. INSTALL SLOPE STABILIZATION PER INDEX 501 ALONG SLOPE FROM STA. 132+00 (LT) TO STA 134+81 (LT) AND FROM STA. 138+04 (LT) TO STA 141+00 (LT).

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03	SFD	⚠ WETLANDS REVISED			

$FILES$
$TIMES$
$DATES$

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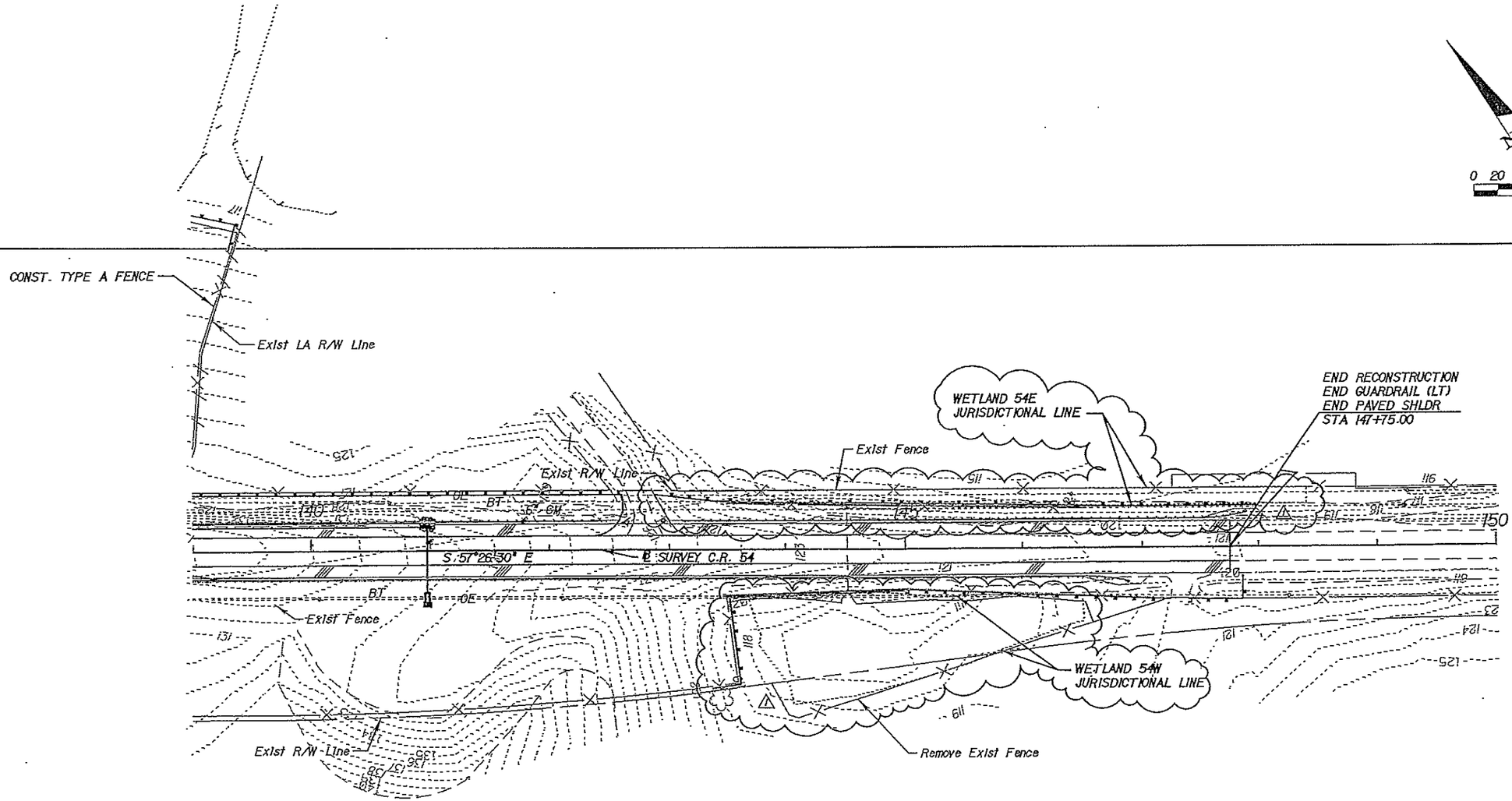
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
CR 54 at SR 400 (I-4) SEGMENT 7

SHEET NO.



NOTE: EROSION CONTROL BARRIER TO BE ERECTED ALONG EDGE OF WETLANDS ADJACENT TO GRAVITY WALLS. NO EROSION CONTROL BARRIERS SHALL ENCROACH INTO WETLANDS.

PERMANENT IMPACT WETLAND

TEMPORARY IMPACT WETLAND

HAY BALES

ROCK BAGS

WETLAND JURISDICTIONAL LINE

EROSION CONTROL BARRIER: SILT FENCE OR TURBIDITY BARRIER, AS REQUIRED

1/22/04

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/03	SFD	⚠ WETLANDS REVISED			

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W. VEON Jr., P.E. No. 35650
EBN 6572

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1

EROSION CONTROL PLANS
CR 54 * SR 400 (I-4) SEGMENT 7

SHEET NO. 13

E-1558

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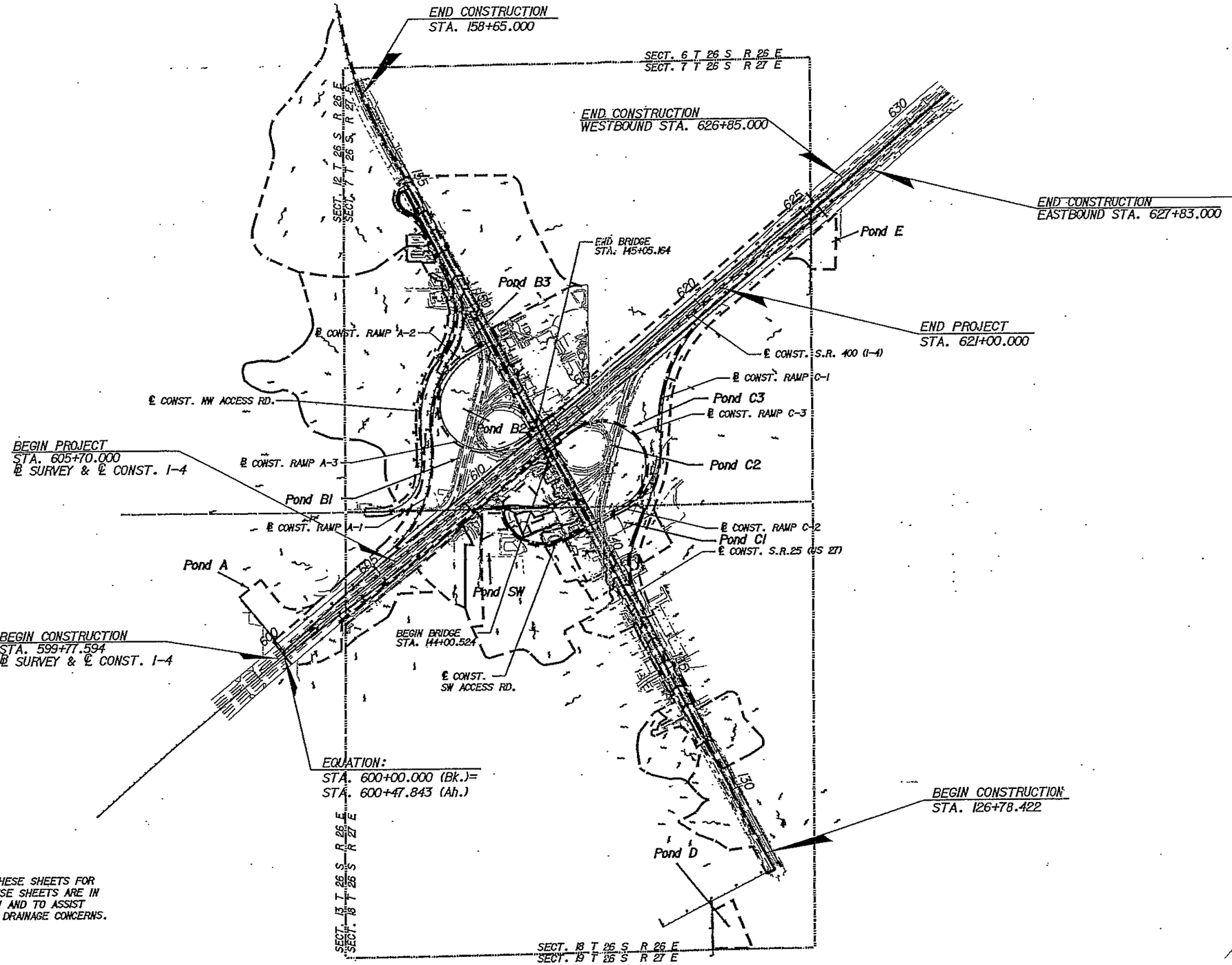


NOTES:

DO NOT USE INFORMATION ON THESE SHEETS FOR CONSTRUCTION PURPOSES. THESE SHEETS ARE IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

Southwest Florida Water Management District

JAN 27 2004

RECEIVED
RRD-Bartow

S.W.F.W.M.D.
JAN 29 2004
RESOURCE REGULATION DEPT.
MAPS & DATA

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Employee-owned
License No. 08611

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-8675
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

OVERALL DRAINAGE MAP

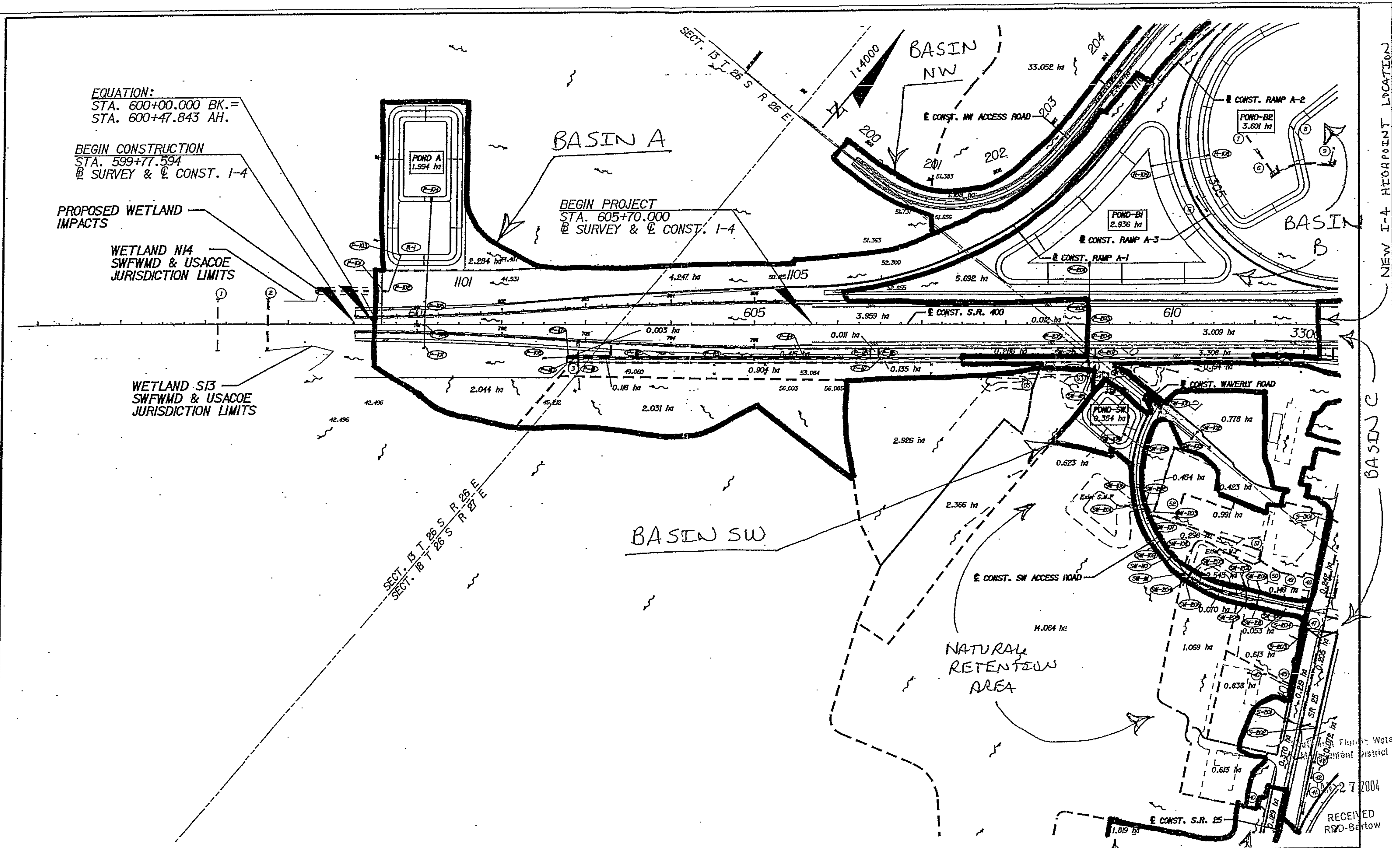
SHEET NO.

E-1559

#DATE# #TIME# #FILE#

#####DONSPECIFICATION#####
#FILE#

#####STTIME#####
#DATE#
#FILE#


EQUATION:
STA. 600+00.000 BK.=
STA. 600+47.843 AH.
BEGIN CONSTRUCTION
STA. 599+77.594
℞ SURVEY & ℄ CONST. I-4
PROPOSED WETLAND IMPACTS
WETLAND N14
SWFWMD & USACOE
JURISDICTION LIMITS
WETLAND S13
SWFWMD & USACOE
JURISDICTION LIMITS
BEGIN PROJECT
STA. 605+70.000
℞ SURVEY & ℄ CONST. I-4
SECT. 13 T 26 S R 26 E
SECT. 13 T 26 S R 26 E
SECT. 18 T 26 S R 27 E
1:4000
BASIN A
BASIN NW
BASIN B
BASIN C
BASIN D
BASIN SW
NATURAL RETENTION AREA
NEW I-4 HIGHPOINT LOCATION
POND A
1.994 ha
POND-B2
3.601 ha
POND-B1
2.936 ha
POND-SW
0.354 ha
℄ CONST. NW ACCESS ROAD
℄ CONST. RAMP A-2
℄ CONST. RAMP A-3
℄ CONST. RAMP A-1
℄ CONST. S.R. 400
℄ CONST. WAVERLY ROAD
℄ CONST. SW ACCESS ROAD
℄ CONST. S.R. 25
SR 25
605
610
RECEIVED
RFD-Bartow

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR
Employee-owned
License No. 08611

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-0875
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.
E-1560

BASIN A

BASIN SW

NATURAL RETENTION AREA

BASIN D

BASIN C

BASIN B

BASIN NW

NEW BASIN B AND BASIN NW DIVIDE

℄ CONST. SW ACCESS ROAD

℄ CONST. NW ACCESS ROAD

℄ CONST. S.R 400

℄ CONST. RAMP A-1

℄ CONST. RAMP A-2

℄ CONST. RAMP A-3

℄ CONST. RAMP C-1

℄ CONST. RAMP C-2

℄ CONST. RAMP C-3

℄ CONST. S.R. 25

POND A1 0.354 ha

POND B1 2.936 ha

POND B2 3.601 ha

POND B3 0.194 ha

POND C1 0.881 ha

POND C2 1.922 ha

POND C3 3.408 ha

NEW I-4 HIGHPOINT LOCATION

OLD I-4 HIGHPOINT LOCATION

END BRIDGE STA. 145+05.164

BEGIN BRIDGE STA. 144+00.524

SR 400

SECT. 18 T 26 S R 27 E

SECT. 7 T 26 S R 27 E

SECT. 12 T 26 S, R 26 E

SECT. 7 T 26 S, R 27 E

1:4000

JAN 27 2004

RECEIVED RRD-Bartow

Southwest Florida Water Management District

PHASE	DATE	ORIGINATOR (RP)	CHECKED (DR)
		PRODUCTION CHECKING COMPLETE.	CONCURRENCE, ORIGINATOR (RP)
		ADDED FOR SUBMITTAL REVIEW (RP)	final Check Mark or X-Out by Originator
		CHANGE INCORPORATION	

VERIFICATION, CHECKER (DR)
(Green Check Mark or Circle & Bancck)
REMARK INCORPORATION
(Blue Highlighter)
REMARK VERIFICATION
Incorrect (Green Check Mark)

DATE

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Employee-owned

License No. 08611

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-0875
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT DRAINAGE MAP

SHEET NO.

E-1561

BASIN NW

16.472 ha

℄ CONST. S.R. 25

BASIN B

3.28 ha

BASIN C

OLD I-4 HIGHPOINT LOCATION

615 SR 400

℄ CONST. S.R. 400

620

4.300 ha

6.172 ha

6.41 ha

3110

℄ CONST. RAMP C-3

POND C3
3.408 ha

POND C2
1.922 ha

℄ CONST. RAMP C-1

BASIN C

END PROJECT
STA. 621+00.000
℄ SURVEY & ℄ CONST. I-4

NEW BASIN E & BASIN C DEVIDE

41.511

41.569

3.363 ha

42.740

1.874 ha

BASIN E

POND E
1.432 ha

625

END CONSTRUCTION
WESTBOUND
STA. 626+85.000

END CONSTRUCTION
EASTBOUND
STA. 627+83.000

SECT. 6 T 26 S R 27 E

SECT. 7 T 26 S R 27 E

SECT. 7 T 26 S R 27 E

SECT. 8 T 26 S R 27 E

SR 400

1:4000

WETLAND 7AS
SWFWMD & USACOE
JURISDICTIONAL LIMITS

Southwest... Water Management District

JAN 27 2004

RECEIVED
RRD-Bartow

VERIFICATION, CHECKER (OR)
(Green Check Mark or circle & Remark)
REMARK VERIFICATION
(Blue Highlighter)
DATE

CHECKED (OR)
SECTION (Yellow Highlighter) Choose
CONCURRENCE, ORIGINATOR (RP)
(Red Check Mark or circle & Remark)
CHANGE INCORPORATION
(Blue Highlighter)
DATE

ORIGINATOR (RP)
PRODUCTION CHECKING COMPLETE;
SUBMITTAL REVIEW (RP)
DATE

PHASE

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering, Inc.
Employee-owned
License No. 08611
HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 203
Winter Park, FL 32789
(407) 628-8875
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

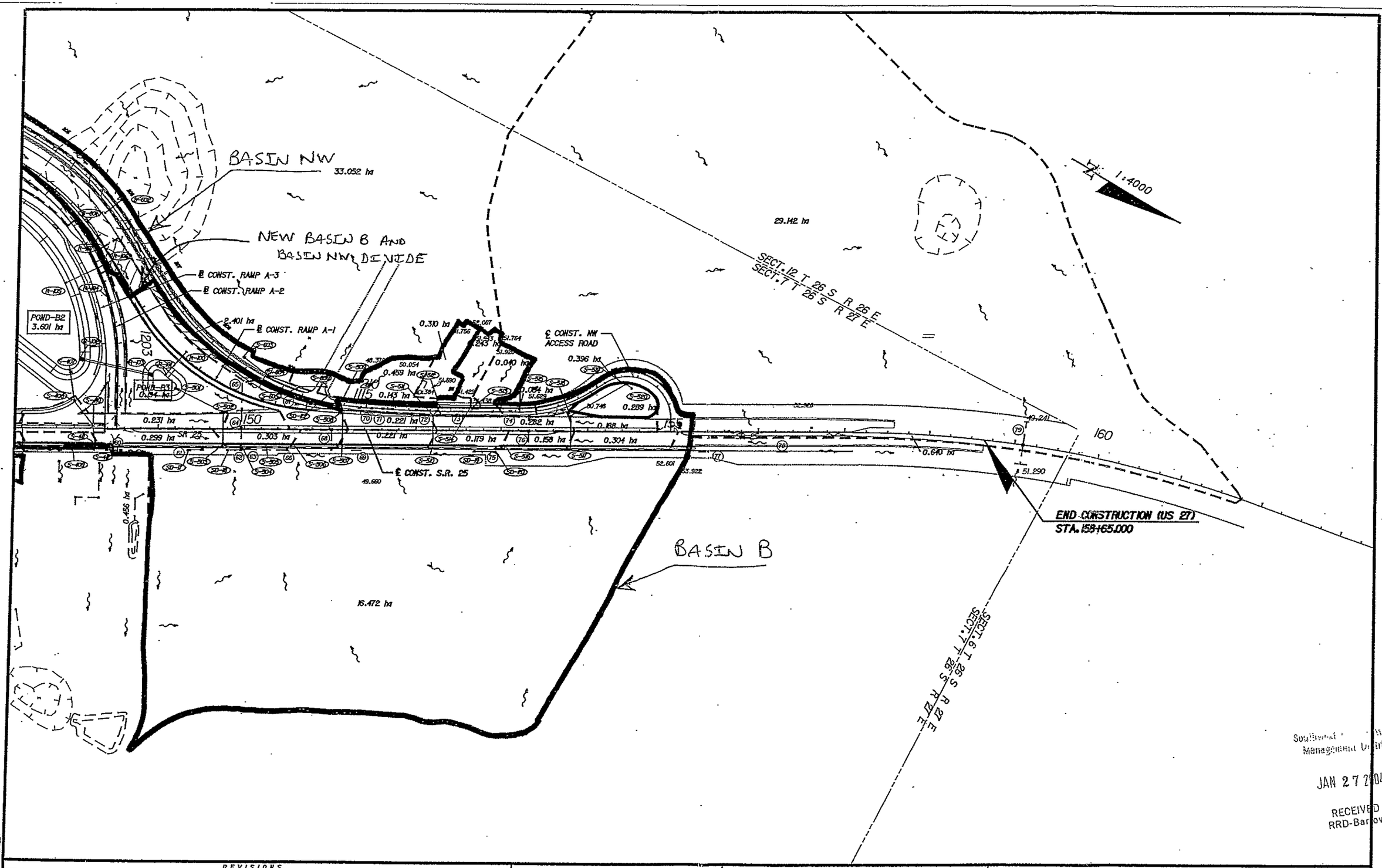
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

E-1562

#DATES



Southwest Florida Water Management District

JAN 27 2004

RECEIVED
RRD-Barlow

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-0875
www.hdrinc.com
License No. 08611

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

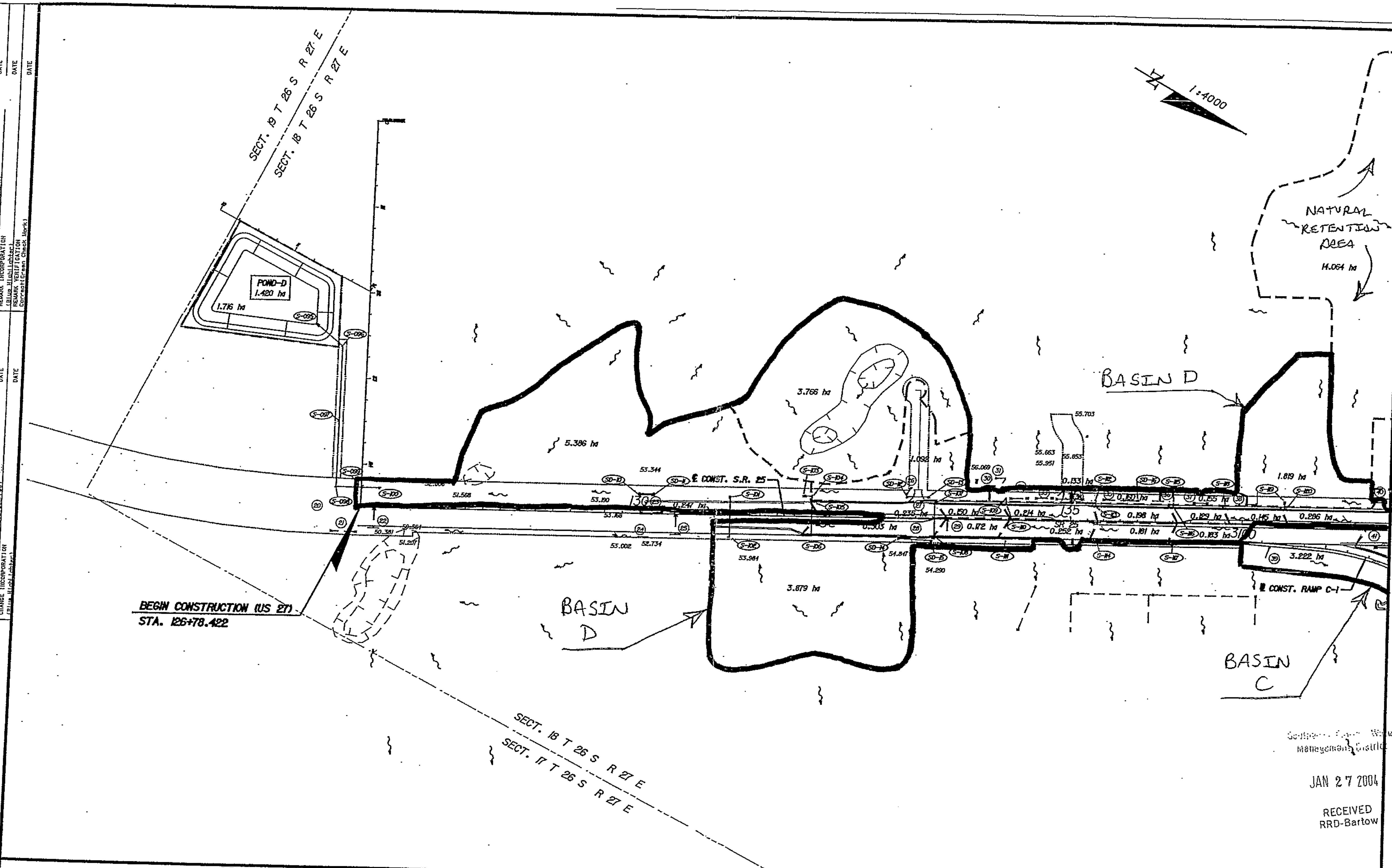
POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

E-1563

#####DOHSPECIFICATION#####
#FILES#
#####STIME#####
#STIMES#
#####SDATE#####
#SDATES#

#SDATES #STIMES #SFILES



Southwest Florida Water Management District

JAN 27 2004

RECEIVED
RRD-Bartow

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Employee-owned
License No. 08611

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-0875
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

POST DEVELOPMENT
DRAINAGE MAP

SHEET NO.

E-1564

END CONSTRUCTION
STA. 158+65.000

SECT. 6 T. 26 S. R 26 E
SECT. 7 T. 26 S. R 27 E

END CONSTRUCTION
WESTBOUND STA. 626+85.000

END CONSTRUCTION
EASTBOUND STA. 627+83.000

1"=15.000

SECT. 12 T. 26 S. R 26 E
SECT. 7 T. 26 S. R 27 E

BASIN B

END BRIDGE
STA. 145+05.64

Pond E

Pond B1

℄ CONST. RAMP A-2

END PROJECT
STA. 621+00.000

BASIN M

℄ CONST. S.R. 400 (I-4)

℄ CONST. RAMP C-1

℄ CONST. NW ACCESS RD.

Pond C3

Pond B2

℄ CONST. RAMP C-3

BEGIN PROJECT
STA. 605+70.000
℄ SURVEY & ℄ CONST. I-4

℄ CONST. RAMP A-3

BASIN C

Pond C2

Pond B1

℄ CONST. RAMP 1A-1

℄ CONST. RAMP C-2

Pond C1

Pond A

℄ CONST. S.R. 25 (US 27)

Pond SW

BEGIN CONSTRUCTION
STA. 599+77.594
℄ SURVEY & ℄ CONST. I-4

BEGIN BRIDGE
STA. 144+00.524

℄ CONST.
SW ACCESS RD.

BASIN SW

EQUATION:
STA. 600+00.000 (Bk.)=
STA. 600+47.843 (Ah.)

BEGIN CONSTRUCTION
STA. 126+78.422

Pond D

SECT. 18 T. 26 S. R 26 E
SECT. 18 T. 26 S. R 27 E

NOTES:

DO NOT USE INFORMATION ON THESE SHEETS FOR CONSTRUCTION PURPOSES. THESE SHEETS ARE IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

HDR Employee-owned
License No. 08511

HDR Engineering, Inc.
1201 South Orlando Avenue
Suite 200
Winter Park, FL 32789
(407) 628-0575
www.hdrinc.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 400	POLK	201204-1-52-01

OVERALL DRAINAGE MAP

SHEET NO.

wl-COLOR\mpoll.dgn 03/20/2003 03:22:20 PM

E-1565

Existing Plans FPID No. 201204-1

Polk County

State Road No. 400 (I-4)

Segment 6

Datasheet

Application No. 43011896.031
Application Type: INDIVIDUAL CONST
Project Name: DOT, I-4 POLK COUNTY, SECTION 6
Land Use: ROAD PROJECT
Tot. Acres Owned: ~~290.00~~ N/A
Project Size: 290.00
County: Polk
STR: 13, 14, 22, 23, 24, 27, 28, 29 & 32
Consolidated: Yes (No)
ISA Activities: Yes (No)
26 SOUTH
26 EAST

Received Date: 9/02/03
Issue Date:
Expiration Date:
Amended Date:
Comp/Inc. Date:
Default Date:

Modification: (Yes) ~~NO~~ (NO)
Modified No.
Date Mod. Issued:
Name Mod. Project

Permit
Fee Information:
Fee Required: $2,500.00
Fee Paid: $2,500.00
Refund: $0.00

Sov. Lands
Fee Required: $0.00
Fee Paid: $0.00

Activity Code: P Project Code: GVT Water Quality Code: 001

Related Permit No(s):
Prior Permit/Conditions Being Deleted: Permit & Revision Nos.: 43011896.020
Plotting Completed: (Yes) No
Watershed: 01 & 02
ERP Conservation Easement: Yes (No)
Wetlands: (Yes) No
Mitigation: (Yes) No
Other Compensation: Yes (No)
USACOE Noticing: Required (Yes) No
Date New Info. Sent:
Completed: (Yes) No

Construction Inspection Priority (A) B C None

District Engineer: WAH (JRB) SMW RAD FXR CYS
Permit Coordinator: Cheri Stallings
Environmental Scientist: JBW ADA (MKH) JMB DC

Contacts:
Permittee/Owner: EDUARDO A. PONCE, P.E.
DISTRICT PERMIT ENGINEER
FLORIDA DEPARTMENT OF TRANSPORTATION
PO BOX 1249
BARTOW, FL 33831-1249
Telephone: (863) 519- ~~0000~~ 2281

Contacts:
Engineer: WILLIAM ~~W.~~ J. VEON JR, P.E.
JACOBS CIVIL, INC.
1830 HIGHWOODS PRESERVE PARKWAY
HIGHWOODS PLAZA, SUITE 200
TAMPA, FL 33647

Contacts:
O&M: FDOT
PO BOX 1249
BARTOW, FL 33831-1249

Contacts:

Kmh – D:datasheet.doc

Activity Code

Agriculture
Commercial
Government
Industrial
Mining
Road Projects
Aquaculture
Residential
Semi-Public
Water Quality Treatment System

Land Uses

Agricultural
Commercial
Government
Industrial
Mining
Multi Family Residential
Mobile Home Park
Residential
Road Project
Single-family Residential
Semi-Public
Water Quality Treatment System

Project Code

Amusements
Airport
Aquaculture
Auditorium/Arena/Hall
Building
Business
Cellular Tower
Churches
Clubs & Golf Course Clubs
Congregate Living Facility
Condominiums
Commercial Subdivision
Drainage Systems
Dirt
Electric Companies
Fire Stations
Farm
Fish Farm
Grove
County-State-City
Hospitals
Industrial Use
Insects
Industrial Subdivision
Land Fills
Multi-Family Residential
Mobile Home Parks
Non-Profit Organization
Peat
Phosphate
Pipeline
Parking Lot
Police/Sheriff Station
Parks and Recreation Areas
Private School
Private Individual or Development
Rock
Land Reclamation
Residential Subdivision
RV Resorts
Public Schools
Code Description Undefined
Single-Family Residential
Shell
Minor Silvicultural Activities
Wetland Enhancement Restoration
Water Treatment Plant

RECORDS & DATA
ERP/MSSW/WOD
ADMINISTRATIVE CHECKLIST

☑ERP ☐MSSW ☐ D & F ☐WOD NO. [redacted]

TEMPORARY NO. 20-8598

PROJECT NAME: I-4 (SR400) Segment 6 Widening

S-T-R: 13, 14, 22, 23 / 24, 27, 28, 29, 32 / 26 / 26

TOTAL LAND 290.0 acres PROJECT SIZE 290. acres

	Charlotte - 015		Hernando - 053		Levy - 075		Pinellas - 103
	Citrus – 017		Highlands - 055		Manatee - 081		Polk - 105
	DeSoto – 027		Hillsborough - 057		Marion - 083		Sarasota - 115
	Hardee – 049		Lake - 069		Pasco - 101		Sumter - 119

TRACKING DATES			APPLICATION TYPE (CHECK APPROPRIATE BOX)		
Application Received Date	9-2-03		Conceptual		Exemption
30-Day Deadline	10-2-03	✓	Individual Construction		Variance
Date Received in R&D	9-3-03		General Construction		Formal Wetland Determination
Date Checklist Prepared	9-4-03		Noticed General Construction		Letter Modification
Prepared by: Shamara			Standard General Construction		Resubmittal of Withdrawn/Denied
Ext: 4377			Std. General Minor System		Unable to Determine Application Type
			Site Assessment		
			Dredge & Fill		

EVALUATOR - PLEASE NOTE AND RESPOND TO THE ITEMS CHECKED:

☑APPLICATION IS ADMINISTRATIVELY COMPLETE (All administrative items were received and property boundaries plotted)

☑FEE SUBMITTED WITH APPLICATION: $2500.00 **(EVALUATOR MUST DETERMINE IF FEE REC'D IS CORRECT)**

☐APPLICATION WAS NOT ___SIGNED ___SEALED

☐CONSTRUCTION DRAWINGS WERE NOT ___SIGNED ___SEALED

☐AGENT LETTER OF AUTHORIZATION WAS NOT INCLUDED.

☐**GIS REQUIREMENTS:**

( ) INSUFFICIENT INFORMATION TO PLOT ON QUAD MAP. PLEASE RETURN THIS FORM TO R&D WITH AERIAL OR MAP FOR PLOTTING

( ) LEGAL DESCRIPTION WAS NOT PROVIDED FOR: O TOTAL LAND O PROJECT SIZE

( ) OVERLAPPING PROJECTS - OVERLAPS PERMIT NO(S): _____

( ) ACREAGE DISCREPANCY _____

☐PROJECT IS IN A WELLFIELD AREA OF CONCERN (BROOKSVILLE REGULATION ONLY- M.Straub)

PROJECT IS WITHIN DISTANCE CRITERIA OF DEP CONTAMINATED SITE (See GIS paper plot or view in PCArcview)

☐LAND OWNER(S) NAME, ADDRESS, TELEPHONE NUMBER REQUIRED

43011896.032

☑IS EMINENT DOMAIN NOTICING REQUIRED? - EVALUATOR FORWARD MAILING LIST WITH A COPY OF THE PROJECT DATA SHEET TO ADMINISTRATIVE REVIEW & RECORDS SECTION (MAIL CODE: ARR) FOR RECEIPT OF APPLICATION NOTICING (Refer to IOP/ADM-027.01)

E-1569

SEE REVERSE SIDE FOR RECEIPT OF APPLICATION NOTICING INFO [redacted]

RECEIPT OF APPLICATION NOTICING[1]

ERP RECEIPT OF APPLICATION NOTICING HAS BEEN SENT TO THE FOLLOWING AGENCIES

ACOE[2] (Wetlands Only)	Inland Counties (Wetlands only)	Coastal Zone Management (CZM)	DEP (GIS LAYER)	TBRPC	STM
_Ft. Myers _Gainesville _Jacksonville ✓Tampa	✓DOS ✓FFWCC	_DCA _DOS _FFWCC	_CARL Noticing _Parks & Rec		

Evaluator: The following items were not received with the application submittal. Forward copies of the checked items when received to _____ (Mail Code: ARR) to complete agency noticing requirements

- ☐ Section B
- ☐ Section C
- ☐ 8-1/2" x 11" drawings
- ☐ Other _____

NOTE TO EVALUATOR

[1] IF YOU DETERMINE THIS MSSW APPLICATION WAS SUBMITTED IN ERROR AND THE SUBMITTAL IS AN ERP, PLEASE FORWARD THE NECESSARY ERP RECEIPT OF APPLICATION AGENCY NOTICING INFORMATION TO RECORDS & DATA, ADMINISTRATIVE REVIEW & RECORDS SECTION QUAD ROOM (MAIL CODE: ARR) WITHIN 30 DAYS OF RECEIPT OF THIS APPLICATION, OR AS SOON AS POSSIBLE. (Noticed General = Section A & B with 8-1/2" x 11" drawings; All Others = Sections A & C with 8-1/2" x 11" drawings)

[2] IF THIS BOX IS NOT CHECKED, RECEIPT OF APPLICATION NOTICING **HAS NOT** BEEN SENT TO THE ACOE. IF IT IS DETERMINED DURING THE EVALUATION PROCESS THAT THERE ARE WETLAND IMPACTS, THE EVALUATOR WILL, WITHIN 5 WORKING DAYS OF THE DISCOVERY, FORWARD THE ACOE NOTICE REQUEST MEMO TO RECORDS & DATA, ADMINISTRATIVE REVIEW & RECORDS SECTION (MAIL CODE: ARR).

ACOE County Distribution
Ft. Myers - Charlotte
Gainesville - Citrus, Hernando, Levy, Sumter
Jacksonville - Lake, Marion
Tampa - DeSoto, Hardee, Highlands, Hillsborough, Manatee, Pasco, Pinellas, Polk, Sarasota

COMMENTS:

4-9-03rr

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

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
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

DATE: Sep 4, 03

TO:
- ___ U.S. Army Corps of Engineers
- ___ Ft. Myers Regulatory Office
- ___ Gainesville Regulatory Office
- ___ Jacksonville Regulatory Office
- ✓ Tampa Regulatory Office
- ___ Department of Community Affairs
- ✓ FL Fish & Wildlife Conservation Commission
- ✓ FL Dept. Of State, Div. Of Historical Resources
- ___ Tampa Bay Regional Planning Council
- ___ Save The Manatee Club Inc
- ___ Dept. Of Environmental Protection (Parks)
- ___ Dept. Of Environmental Protection (CARL)

SUBJECT: Joint Application for Environmental Resource Permit/Authorization to Use State Owned Submerged Lands/Federal Dredge and Fill Permit
Environmental Resource Permit Application No. [redacted]

Enclosed is a copy of the above referenced application. This application pertains to:

- ✓ activities in, on, or over wetlands or other surface waters
- ___ activities in a coastal zone
- ___ other

The application is ___, is not ✓ missing information. Missing information will be forwarded upon receipt.

If you wish to request a Notice of Agency Action or opportunity to request an administrative hearing pursuant to Chapter 120.569 and 120.70 Florida Statutes, a written request referencing the permit application number must be filed with and received by Records and Data no later than fourteen (14) days after the date of receipt of this notice. Receipt of this notice is considered to be the fifth (5th) day after the date on which this notice is deposited in the U.S. mail. Interested persons have the opportunity to inspect a copy of any permit application, and submit written comments concerning the application to the District.

For activities identified as in a coastal zone, be advised a coastal zone management program consistency review may be required. We will send a notice requesting a consistency determination to the appropriate agencies at a later date. One of the following scenarios will occur at that notice. For those applications that are received complete, comments or objections will be requested within ten (10) days from the request for a consistency determination. For those applications that require a District request for additional information, comments or objections will be requested within 30 days from the request for a consistency determination.

If you need further information, please contact ( ) Marilyn Straub, Brooksville; (✓) Cheri Stallings, Bartow; ( ) Michelle Maxey, Tampa or ( ) Mary French, Sarasota Service Office, see telephone numbers listed above.

Sincerely,

BJ Jarvis, Director
Records and Data Department

43011896.032

Enclosures: application and drawings

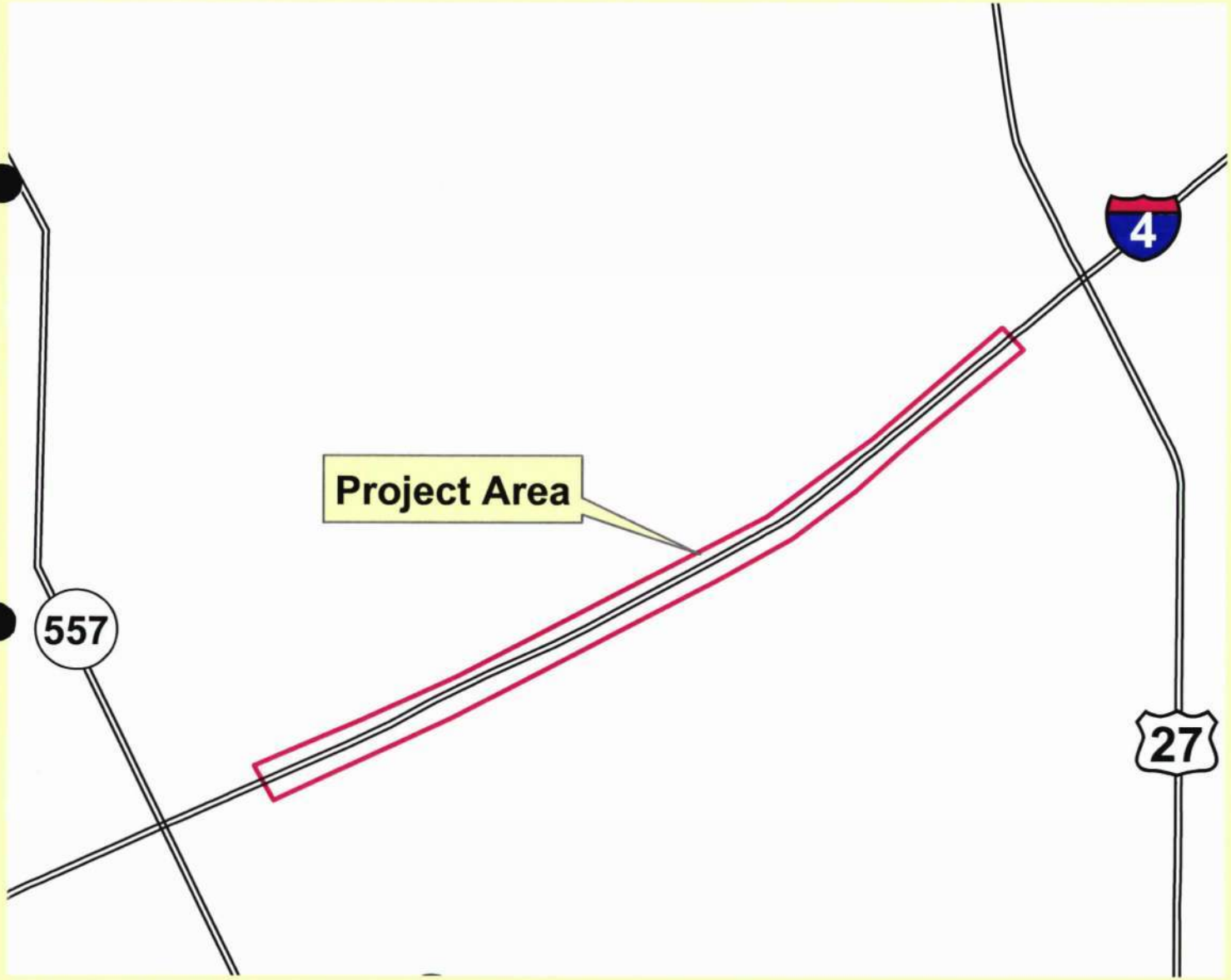
151

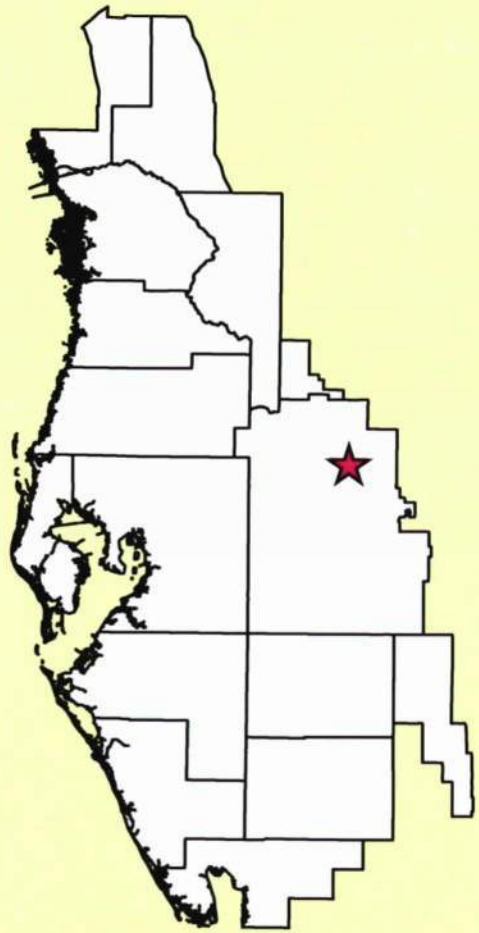
noticing-ltr
r. 04-23-03 rr

43021393.001

E-1571

Location Map
FDOT I-4, Section 6
ERP No. 43011896.032





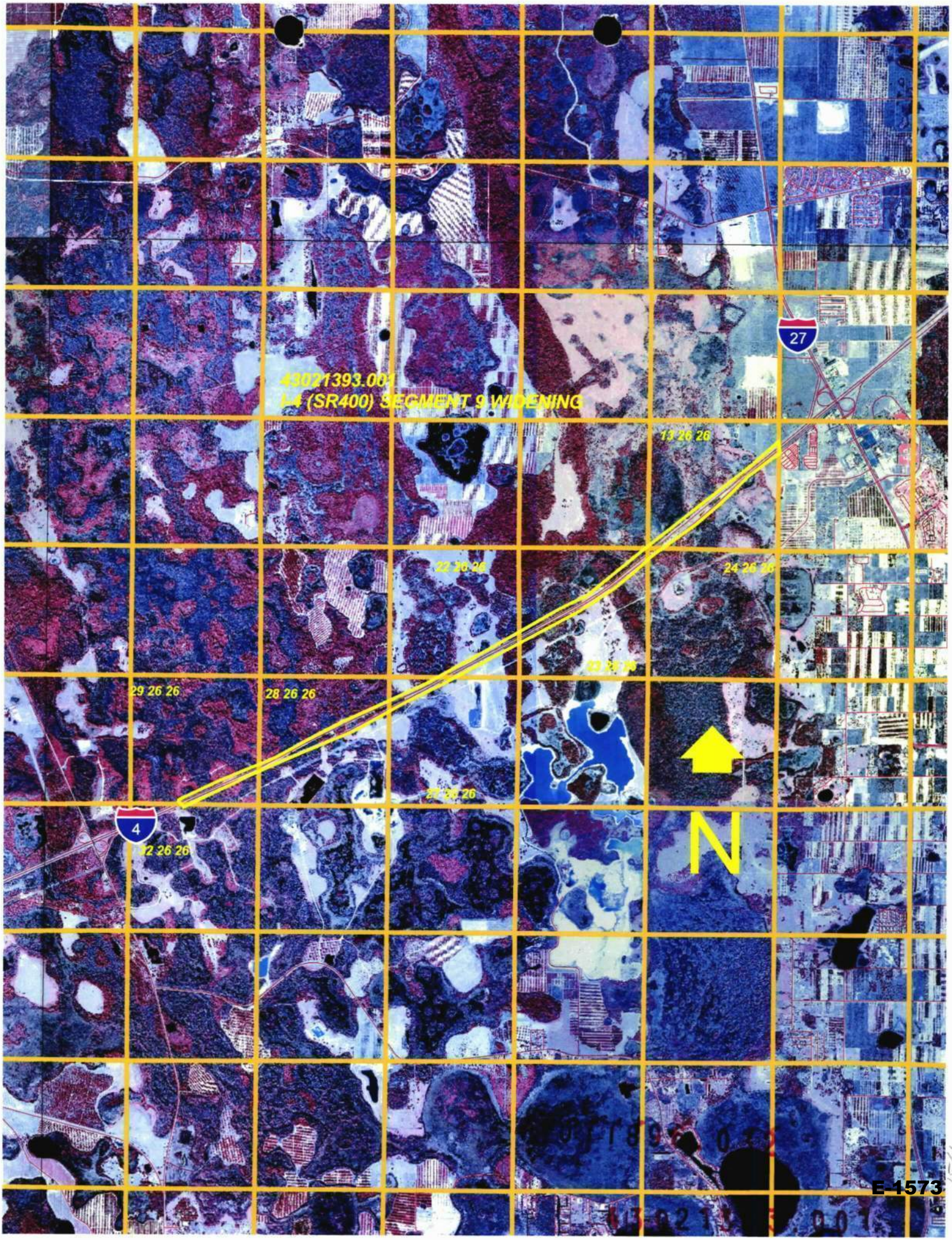
Polk Co.

N

258

Sec 13,14,22-24,27-29,32
Twn 26S, Rng 26E

E-1572


43021393.001
I-4 (SR400) SEGMENT 9 WIDENING
27
4
13 26 26
22 26 26
24 26 26
29 26 26
28 26 26
27 26 26
32 26 26
N

E-1573

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET (U.S. 41 SOUTH) BROOKSVILLE, FLORIDA 34604-6899
(352)796-7211 OR 1-800-423-1476(FLORIDA ONLY) (SUNCOM 628-4150)

SEPTEMBER 05, 2003

FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
801 N BROADWAY AVE
BARTOW, FL 33831-0000

SUBJECT: ENVIRONMENTAL RESOURCE PERMIT
APPLICATION NO. 43-[redacted]
PROJECT: DOT-I-4 SR 400 SEGMENT 6 WIDENING
APPLICANT REFERENCE NO. FM-2012041

ON SEPTEMBER 02, 2003, YOUR ABOVE APPLICATION WAS RECEIVED. PLEASE USE THIS NUMBER IN ALL CORRESPONDENCE. WITHIN 30 DAYS OF RECEIPT OF YOUR APPLICATION YOU WILL RECEIVE A REQUEST FOR ADDITIONAL INFORMATION OR A NOTICE STATING YOUR APPLICATION IS COMPLETE.

PLEASE BE AWARE OF CHOICES YOU HAVE IN ORDER TO ADDRESS ANY DISAGREEMENTS THAT MAY ARISE DURING THE PERMITTING PROCESS. IF A REGULATION-RELATED DISAGREEMENT OCCURS BETWEEN AN APPLICANT AND A DISTRICT STAFF MEMBER WHICH CANNOT BE RESOLVED AT STAFF LEVEL, THE APPLICANT SHOULD 1) APPEAL THE CONTESTED ISSUES BY MEETING WITH THE STAFF MEMBER'S MANAGER. IF A RESOLUTION IS NOT REACHED, THE APPLICANT SHOULD 2) SEEK A MEETING WITH THE REGULATION DEPARTMENT DIRECTOR. IF A RESOLUTION IS NOT REACHED, THE APPLICANT SHOULD 3) SEEK TO MEET WITH THE DEPUTY EXECUTIVE DIRECTOR OF REGULATION AND THE TECHNICAL SERVICES DIRECTOR. IF A RESOLUTION IS NOT REACHED, THE APPLICANT SHOULD 4)SEEK A MEETING WITH THE EXECUTIVE DIRECTOR. THE ONLY REQUIREMENT IS THAT THE PROCESS MUST BE FOLLOWED SEQUENTIALLY.

PLEASE CONTACT OUR BARTOW REGULATORY DEPARTMENT AT (863) 534-1448 OR 1-800-492-7862 (FLORIDA ONLY) IF YOU HAVE ANY QUESTIONS REGARDING THE EVALUATION OF YOUR APPLICATION.

SINCERELY,

(SIGNED)
MISTY L. CHANCEY
RECORDS AND DATA DEPARTMENT

43011896.032

CC: JACOBS CIVIL INC
18302 HIGHWOODS PRESERVE STE 200
TAMPA, FL 33647-0000

[redacted]

DURING THE WEEK OF 08/30/03 THROUGH 09/05/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000107

APPLICATION NUMBER: [redacted] DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (863) 519-2300

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

9th Prop

43011896.032

142

E-1575

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

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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
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
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Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

Protecting *Your* Water Resources

SEPTEMBER 08, 2003

IRWIN J BERLIN
5378 RIVER FRONT DRIVE
BRADENTON, FL 34208

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF SURFACE WATER PERMIT APPLICATIONS
INTERESTED PARTIES ID # 000107
REFERENCE: CHAPTER 40D-1.603

Dear IRWIN J BERLIN

As requested in your letter processed on MAY 20, 2003, enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of AUGUST 30, 2003 - SEPTEMBER 05, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact this office at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if we can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the RECORDS AND DATA DEPARTMENT at (352) 796-7211 or 1-800-423-1476 (FL only); TDD only: 1-800-231-6103

E-1576
143

DURING THE WEEK OF 08/30/03 THROUGH 09/05/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000083

APPLICATION NUMBER: [redacted] DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (863) 519-2300

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

43011896.032

1614

E-1577

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

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(352) 527-8131
SUNCOM 667-3271

SEPTEMBER 08, 2003

CHARLES KOCUR VICE PRESIDENT
EARTH BALANCE
2579 TOLEDO BLADE BLVD
NORTH PORT, FL 34289

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF SURFACE WATER PERMIT APPLICATIONS
INTERESTED PARTIES ID # 000083
REFERENCE: CHAPTER 40D-1.603

Dear CHARLES KOCUR VICE PRESIDENT

As requested in your letter processed on SEPTEMBER 05, 2003 enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of AUGUST 30, 2003 - SEPTEMBER 05, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact this office at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if we can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the RECORDS AND DATA DEPARTMENT at (352) 796-7211 or 1-800-423-1476 (FL only); TDD only: 1-800-231-6103

E-1578
145

DURING THE WEEK OF 08/30/03 THROUGH 09/05/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000077

APPLICATION NUMBER: [redacted] DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (863) 519-2300

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

43011896.032

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
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(352) 527-8131
SUNCOM 667-3271

SEPTEMBER 08, 2003

RICK MURATTI -LEGAL & WATER MGMT
DIVISION - ENVIRON PROTECT COMM
1900 9TH AVENUE
TAMPA, FL 33605

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF WATER USE AND SURFACE WATER PERMIT APPLICATIONS
INTERESTED PARTIES ID # 000077
REFERENCE: CHAPTER 40D-1.603

Dear RICK MURATTI -LEGAL & WATER MGMT

As requested in your letter processed on MAY 06, 2003, enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of AUGUST 30, 2003 - SEPTEMBER 05, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact this office at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if we can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the RECORDS AND DATA DEPARTMENT at (352) 796-7211 or 1-800-423-14[redacted](FL only); TDD only: 1-800-231-[redacted]3

DURING THE WEEK OF 08/30/03 THROUGH 09/05/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000014

APPLICATION NUMBER: [redacted] DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (863) 519-2300

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

43011896.032

Southwest Florida
Water Management District

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SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
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Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

Protecting *Your* Water Resources

SEPTEMBER 08, 2003

ANN LANGFORD, SECRETARY
G H C CONSTRUCTION INC
3168 NE HIGHWAY 17
ARCADIA, FL 34266

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF WATER USE AND SURFACE WATER PERMIT APPLICATIONS INTERESTED PARTIES ID # 000014
REFERENCE: CHAPTER 40D-1.603

Dear ANN LANGFORD, SECRETARY

As requested in your letter processed on MARCH 06, 2003, enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of AUGUST 30, 2003 - SEPTEMBER 05, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact this office at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if we can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

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Southwest Florida Water Management District

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(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

October 2, 2003

File of Record
Permit No. _____

S.W.F.W.M.D.
OCT - 7 2003
ARR
RECORDS & DATA

William Veon, Jr., P.E.
Jacobs Civil, Inc.
18302 Highwoods Preserve Parkway,
Highwoods Plaza, Suite 200
Tampa, FL 33647

Subject: **Request for Additional Information**

Project Name:	DOT, I-4 Polk County, Section 6
Application No.:	43011896~~.031~~ 032
County:	Polk
Sec/Twp/Rge:	13,14,22,23,24,27,28,29,32/26S/26E

References: Chapters 40D-1, 4, 40 and 400, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Veon:

Before the District can complete its review of the permit application referenced above, the information itemized on the enclosed checklist must be received.

Please ensure that your response to the checklist, including checks,

- is received in this office within 30 days from the date of this request;
- references the permit application number; and,
- includes three copies of **all** requested information.

Failure to provide this information within 30 days will delay the processing of the permit application, and may result in the permit application being denied. If the additional information cannot be provided within that time period, the Applicant may make a written request for a time extension in accordance with Rule 40D-1.1020, F.A.C., provided that an acceptable justification for the time extension accompanies the request. If needed, the time extension request should be received from the Applicant within 30 days from the date of this letter.

Pursuant to Subsection 373.4141(1), F.S., if you believe this request for additional information is not authorized by law or rule, you may request a hearing pursuant to Sections 120.569, 120.57, F.S., and Chapter 28-106, 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 Distict'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.

Previously #'d
430213 93.001

RDBS Record Updated
10-6-03 by CYS

138

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 Districts action in this matter is not available.

If you have questions regarding the information requested or the District's procedures, please contact me at the Bartow Service Office, extension 6103. For assistance with environmental concerns, please contact Mark K. Hurst, extension 6151.

Sincerely,

Jan R. Burke, P.E.
Bartow Regulation Department

JRB:kmh
Enclosures: Checklist
Sections 28-106.201 and 28-106.301, F.A.C.
cc/enc: File of Record 43011896.031
Eduardo A. Ponce', P.E., Florida Department of Transportation
M. Hurst

PROJECT INFORMATION REVIEW LIST
ENVIRONMENTAL RESOURCE PERMIT APPLICATION
INDIVIDUAL

DATE: October 2, 2003

PROJECT NAME: DOT, I-4 Polk County, Section 6

APPLICATION NUMBER: 43011896.031

DATE APPL. RECEIVED: September 2, 2003

APPLICATION REVIEWER/S:
ENGINEERING: Jan R. Burke, P.E.
ENVIRONMENTAL: Mark K. Hurst

In order to provide that reasonable assurance is given for those "Conditions for Issuance of Permits" found in Rule 40D-4.301, Florida Administrative Code (F.A.C.), and those "Additional Conditions or Issuance of Permits" found in Rule 40D-4.302, F.A.C., the following additional information is required as indicated. The items requested are extracted from Rules 40D-4.101, F.A.C., "Content of Application," 40D-4.091, F.A.C. "Basis of Review," and 40D-1.607, F.A.C. "Permit Processing Fee," and 40D-1.659, F.A.C. "Forms and Instructions."

APPLICATION AND APPLICATION CERTIFICATIONS:

1. Please provide proof of ownership or control (right-of-way certification) of the entire project area described in the application. If the Florida Department of Transportation does not have ownership or control of the project area, provide the names and mailing addresses as identified in the County Property Appraiser's records for the affected parcels. The affected property owners will need to be noticed in accordance with Rule 40D-1.603(4), Florida Administrative Code.

ENVIRONMENTAL CONSIDERATIONS:

2. Please provide reasonable assurance that the proposed temporary impacts to forested wetlands will not result in permanent or long-term adverse impacts to wetland functions. Provide a mitigation plan to replace or restore wetland functions following construction of the project. Refer to Rule 40D-4.301 (1)(d), F.A.C.

PLANS:

3. Please provide three sets of the final construction drawings with every page certified (signed, dated, and sealed by a Florida registered engineer as required by law). Refer to Section E, Part C, Plans, of the Environmental Resource Permit Application and Section 1.5(b.) of the Basis of Review.

DRAINAGE INFORMATION:

4. Please provide copies of the ADICPR output results for the 25-year, 24-hour rainfall event. Refer to Section E, Part E, 1, h of the Environmental Resource Permit Application.

Jacobs Civil Inc.
18302 Highwoods Preserve Parkway
Highwoods Plaza, Suite 200
Tampa, Florida 33647 U.S.A.
1.813.977.3434 Fax 1.813.977.3722

XC: JRB MKH

Southwest Florida Water Management District
170 Century Boulevard
Bartow, FL 33830-7700

October 13, 2003

Attention: Jan R. Burke, P.E., Senior Professional Engineer

S.W.F.W.M.D. OCT 16 2003 ARR RECORDS & DATA

Re: RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION
ERP No. 43011896.~~031~~ 032
DOT, I-4 Polk County, Section 6
Financial Project ID No.: 201204 1

Dear Mr. Burke:

Attached you should find three (3) originals of the subject RAI Response Documentation. This information is provided to complete the File of Record for this project, and includes:

- An FDOT memo certifying that all R/W has been obtained for this project
- A table showing the temporary forested wetland impact areas and the associated dominant tree species
- The original ICPR summary output for the pond designs

The Florida Department of Transportation is proposing to widen the existing Interstate 4 highway through Polk County. The Hubbard Construction/Jacobs Civil Inc. Design-Build Team has been chosen to design, permit and build these improvements; and I have been designated as FDOT's Authorized Agent for the project permitting process.

I hope you find the RAI Response document to be in order, and look forward to your expedient review and approval of our project. I will be happy to provide you with any additional information or to further discuss any issues, at your convenience. I would like to request, however, that any formal Letter of Clarification comments be faxed to me to allow us the maximum amount of time to develop responses. Alternatively, I can pick-up any additional comments at your office on or before the day that they are due.

Please do not hesitate to contact me by telephone (813-615-4565) or by email (bill.veon@jacobs.com) if you have any immediate questions.

RDBS Record Updated
10-13-03 by CYS

Sincerely,
Jacobs Civil Inc.

William J. Veon, Jr., P.E.
Chief Water Resources Engineer

File of Record
Permit No _____

Southwest Florida Water Management District
OCT 13 2003
RECEIVED
RRD-Bartow

3:45 PM H/D HM

cc: David Richey, FDOT
Jim Wilt, PE, FDOT
Mike Turner, Hubbard Construction
Doug Cox, PE, Jacobs Civil Inc. (w/o attachments)
Tom Fulton, PE, Jacobs Civil Inc. (w/o attachments)

10-22 K

Previously #d 43021393.001

DOT, I-4 Polk County, Section 6

Responses to the Southwest Florida Water Management District's Request for Additional Information (RAI), dated October 2, 2003

Application Number:	**43011896.031**
Applicant:	**Florida Department of Transportation, District One**
Authorized Agent:	**William J. Veon, Jr., P.E.**
Design/Build Team:	**Hubbard Construction/Jacobs Civil Inc.**

APPLICATION AND APPLICATION CERTIFICATIONS:

1. Please provide proof of ownership or control (right-of-way certification) of the entire project area described in the application. If the Florida Department of Transportation does not have ownership or control of the project area, provide the names and mailing addresses as identified in the County Property Appraiser's records for the affected parcels. The affected property owners will need to be noticed in accordance with Rule 40D-1.603(4), Florida Administrative Code.

   Response:

   Please see FDOT memo included as Attachment 1

ENVIRONMENTAL CONSIDERATIONS:

2. Please provide reasonable assurance that the proposed temporary impacts to forested wetlands will not result in permanent or long-term adverse impacts to wetland functions. Provide a mitigation plan to replace or restore wetland functions following construction of the project. Refer to Rule 40D-4.301(1)(d), Florida Administrative Code.

   Response:

   All temporary wetland impacts will consist of clearing vegetation for construction access and fence installation. Topsoil, if removed, will be stockpiled and replaced and temporary impact areas will be restored to pre-construction grades. Groundcover and herbaceous wetland areas will be allowed to revegetate naturally from existing seed source. Temporary impact areas within forested wetlands may be replanted with native wetland trees existing in the impact areas prior to construction, or observed in adjacent, undisturbed portions of the wetland.

   The Design-Build Team may elect to provide compensation for temporary impacts to forested wetlands through the provisions of F.S. 373.4137.

The attached table (Attachment 2) shows the temporary impact areas in forested wetlands and the dominant tree species found in each.

PLANS:

3. Please provide three sets of the final construction drawings with every page certified (signed, dated, and sealed by a Florida registered engineer as required by law). Refer to Section E, Part C, Plans, of the Environmental Resource Permit Application and Section 1.5(b) of the Basis of Review.

Response:

Three of the original ERP Permit Plans sets will be signed and sealed in the SWFWMD, Bartow Office on 10/13/03

DRAINAGE INFORMATION:

4. Please provide copies of the ADICPR output results for the 25-year, 24-hour rainfall event. Refer to Section E, Part E, 1, h, of the Environmental Resource Permit Application.

Response:

Please refer to Attachment 3 for the ICPR summary output for the 25-year and 100-year storm events.

Attachment 1

Florida Department of Transportation

JEB BUSH
GOVERNOR

THOMAS F. BARR
SECRETARY

RECEIVED
MAR 30 2001
RECORDS MANAGEMENT

MEMORANDUM

Date: March 30, 2001

To: Diane Bush, Central Office Right of Way, MS 22

From: for Thomas E. Small, District Right of Way Manager

Copies: B. A. Masing, R. T. Harper, R. R. Hoy, T. J. Buckley, W. M. Owings, B. F. Wolcott, C. D. Kintner, J. W. Dunsford, J. S. Crackel; Records Management Project File

Subject: RIGHT OF WAY CERTIFICATION

R/W ITEM/SEG. NO.	: 2012161
CONSTRUCTION ITEM/SEG. NO.	: 2012162
MANAGING DISTRICT	: 01
COUNTY	: Polk
FAP NUMBER	: N/A
STATE ROAD	: I-4
DESCRIPTION	: I-4 From E. of SR 557 To West of US 27

file in Proj. Correp. 2012161

Attached is a Right of Way Certification for construction on the above referenced project for your handling. **This certification covers all parcels for Right of Way Item/Segment 2012161. Construction Item/Segment 2012162 is the only Item/Segment with a currently funded construction phase. No additional certifications for Item/Segment 201216 are anticipated at this time.**

Should you have any questions in this matter, please contact Mr. Jim Crackel at Suncom 557-2579.

TES:JSC:rh
attachments(s)

Southwest Florida Water Management District
OCT 13 2003
RECEIVED
RRD-Bartow

District One, Right of Way Office
801 North Broadway Avenue*Post Office Box 1249*Bartow, FL 33831-1249
(941) 519-2401 *(941) 534-7168 (Fax)*MS 1-66
www.dot.state.fl.us

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RIGHT OF WAY CERTIFICATION

ITEM/SEGMENT NO.: 2012161
CONSTRUCTION ITEM/SEGMENT NO.: 2012162
F.A.P. NO.: N/A
COUNTY: Polk
PREFERRED LETTING DATE:

MANAGING DISTRICT: 01
STATE ROAD: I-4
DESCRIPTION: I-4 From E. of SR 557 to W. of US 27

This is to certify that right of way for the above described project meets the requirements of 49 CFR, Part 24 and 23 CFR, Part 635.309, if applicable, as well as statutory and procedural requirements for:

- ☐ Federal Construction Project
- ☒ Non-Federal Construction Project
- ☒ Certification for Construction
- ☐ Certification for Authorization and Advertisement

as detailed below: (Check applicable items)

1. TITLE TO RIGHT OF WAY

- ☐ (a) No additional right of way was required for this project.
- ☒ (b) Title to all right of way necessary for the construction of this project has been acquired in accordance with approved procedures.
- ☐ (c) Title to all right of way necessary for the construction of this project has been acquired in accordance with approved procedures with the exception of parcel(s) held by the TIITF or by a local governmental entity as street and road right of way, which have not yet been transferred to the Department, as identified below. If title will not be transferred, written permission to use the right of way has not been received by the Department.
- ☐ (d) Title to all right of way necessary for the construction of this project has been acquired in accordance with approved procedures with the exception of real property interests not yet acquired, as identified below. Prior approval for these exceptions has been obtained.

PROJECT EXCEPTIONS - TITLE TO RIGHT OF WAY

Parcel	Owner	Anticipated Title Transfer Date	Remarks

ITEM/SEG. NO.: 2012161

2. RELOCATION ASSISTANCE

☒ (a) No persons, businesses, or personal property have been or will be displaced by this project.

☐ (b) Relocation Assistance has been provided and all displaced persons, businesses, and personal property have been moved from this project in accordance with approved procedures. There ☐ were ☐ were no residential displacees on this project. Any residential displacee who has moved from the right of way of a federal construction project but not into DS&S housing is discussed below.

☐ (c) Displacees identified below remain on the right of way. Prior approval for these exceptions has been obtained.

PROJECT EXCEPTIONS - RELOCATION ASSISTANCE - NON DS&S HOUSING

Parcel	Name	Relocatee Type	Circumstances

PROJECT EXCEPTIONS - RELOCATION ASSISTANCE

Parcel	Name	Relocatee Type	Projected Move Date	Circumstances

ITEM/SEG. NO.: 2012161

3. DEMOLITION OF IMPROVEMENTS

☐ (a) No structures or improvements have been or will be removed from the right of way for this project. Typical clearing and grubbing items which will not be detailed for removal as a special provision in the construction contract may remain on the right of way.

☒ (b) All structures and improvements have been removed from the right of way for this project. Typical clearing and grubbing items which will not be detailed for removal as a special provision in the construction contract may remain on the right of way.

☐ (c) Structures or improvements, which will not be detailed for removal in the construction contract, remain on the right of way and are described below. A separate contract for removal of said structures and improvements has been executed.

☐ (d) Structures or improvements which are to be removed by the construction contractor remain on the right of way and are described below. (See construction contract special provisions - reference to article 110 of Standard Specifications for Road and Bridge Construction). Abatement of asbestos containing materials ☐ is ☐ is not required. If required, abatement of all asbestos containing materials by separate contract was completed on _____ or will be completed on _____.

☐ (e) Structures or improvements, which will not be detailed for removal in the construction contract, remain on the right of way and are described below. A separate contract for removal has not been executed. Prior approval for this exception has been obtained.

PROJECT EXCEPTIONS - DEMOLITION OF IMPROVEMENTS

Parcel	Improvement Type	Contract Demolition Completion Date (if applicable)	Remarks

Southwest Florida Water Management District

OCT 13 2003

RECEIVED
RRD-Bartow

RIGHT OF WAY CERTIFICATION BY:

William M. [illegible] 3-30-01

___ District Right of Way Manager
✓ Assistant District Right of Way Manager — Date

RECYCLED PAPER

Attachment 2

I-4 Design-Build Project 3
Segment 6 - East of CR 557 to West of US 27
SWFWMD Application Number 43011896.031

Response to SWFWMD Request for Additional Information Dated October 2, 2003

Forested Wetland Temporary Impact Areas and Species for Re-vegetation

WETLAND	TYPE	TEMPORARY IMPACT AC.	DOMINANT SPECIES	SUBDOMINANT SPECIES	SPACING	QUANTITY
C2A	PFO2/3	0.01	*Taxodium distichum* *Acer rubrum* *Magnolia virginiana*	*Gordonia lasianthus* *Quercus laurifolia*	5' OC	18
C3A	PFO2/3	0.02	*Taxodium distichum* *Acer rubrum* *Magnolia virginiana*	*Gordonia lasianthus* *Quercus laurifolia*	5' OC	35
N14	PFO2	0.07	*Taxodium distichum*	Pinus elliottii	10' OC	30

Attachment 3

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
BC01	BASE	SWF25Y24H	24.00	131.700	131.800	0.0000	0	12.50	13.177	0.00	0.000
BC02	BASE	SWF25Y24H	24.00	131.600	133.400	0.0000	0	12.67	10.514	0.00	0.000
BC03	BASE	SWF25Y24H	24.00	131.500	133.400	0.2000	0	12.33	8.549	0.00	0.000
BC04	BASE	SWF25Y24H	24.00	131.400	133.400	0.0000	0	12.71	6.222	0.00	0.000
BC05	BASE	SWF25Y24H	24.00	131.100	133.400	0.0000	0	12.58	16.324	0.00	0.000
BC06	BASE	SWF25Y24H	24.00	131.700	133.400	0.0000	0	0.00	0.000	0.00	0.000
BC07	BASE	SWF25Y24H	24.00	131.400	133.400	0.0000	0	12.50	23.065	0.00	0.000
BC08	BASE	SWF25Y24H	24.00	129.200	131.400	0.0000	0	12.77	18.875	0.00	0.000
BC09	BASE	SWF25Y24H	24.00	128.700	131.500	0.0000	0	12.06	9.708	0.00	0.000
BC10	BASE	SWF25Y24H	24.00	129.200	131.500	0.0000	0	12.36	5.396	0.00	0.000
BC11	BASE	SWF25Y24H	24.00	129.000	131.400	0.0000	0	12.62	4.668	0.00	0.000
BC12	BASE	SWF25Y24H	24.00	129.000	131.400	0.0000	0	12.50	3.216	0.00	0.000
BC13	BASE	SWF25Y24H	24.00	129.000	131.400	-0.1000	0	12.25	14.600	0.00	0.000
BC14	BASE	SWF25Y24H	24.00	132.120	135.000	0.0000	0	12.00	1.986	0.00	0.000
BC15	BASE	SWF25Y24H	24.00	132.250	135.000	0.0000	0	0.00	0.000	0.00	0.000
BC17	BASE	SWF25Y24H	24.00	131.100	133.400	0.0000	0	12.50	24.467	0.00	0.000
POND01	BASE	SWF25Y24H	12.73	133.925	134.300	0.0047	8066	12.00	3.574	12.73	1.536
POND02	BASE	SWF25Y24H	12.96	133.391	133.800	0.0037	25654	12.00	9.057	12.96	3.206
POND03	BASE	SWF25Y24H	12.71	133.271	133.930	0.0040	24022	12.00	10.840	12.71	5.929
POND04	BASE	SWF25Y24H	13.89	134.044	134.300	0.0045	55630	12.25	21.769	13.89	4.315
POND05	BASE	SWF25Y24H	12.66	133.670	134.100	0.0050	27363	12.25	18.306	12.66	11.265
POND07	BASE	SWF25Y24H	12.62	133.122	133.480	0.0033	24726	12.00	10.074	12.62	6.259
POND08	BASE	SWF25Y24H	13.15	130.952	131.250	0.0038	87218	12.00	30.418	13.15	6.431
POND09	BASE	SWF25Y24H	12.45	130.429	130.950	0.0037	17342	12.00	7.946	12.45	5.031
POND10	BASE	SWF25Y24H	12.36	130.854	130.930	0.0043	12928	12.00	7.674	12.36	5.396
POND11	BASE	SWF25Y24H	12.66	130.515	130.900	0.0031	20772	12.00	7.385	12.66	3.822
PRE-BC01	BASE	SWF25Y24H	24.00	131.700	131.800	0.0000	0	12.50	14.726	0.00	0.000
PRE-BC02	BASE	SWF25Y24H	24.00	131.600	133.400	0.0000	0	12.50	11.785	0.00	0.000
PRE-BC03	BASE	SWF25Y24H	24.00	131.500	133.400	0.2000	0	12.00	29.042	0.00	0.000
PRE-BC04	BASE	SWF25Y24H	24.00	131.400	133.400	0.0000	0	12.50	5.933	0.00	0.000
PRE-BC05	BASE	SWF25Y24H	24.00	131.100	133.400	0.0000	0	12.50	16.506	0.00	0.000
PRE-BC07	BASE	SWF25Y24H	24.00	131.800	133.400	0.0000	0	12.50	20.738	0.00	0.000
PRE-BC08	BASE	SWF25Y24H	24.00	128.900	131.400	0.0000	0	12.75	20.486	0.00	0.000
PRE-BC09	BASE	SWF25Y24H	24.00	128.700	131.500	0.0000	0	12.00	12.112	0.00	0.000
PRE-BC10	BASE	SWF25Y24H	24.00	129.200	131.500	0.0000	0	12.25	6.160	0.00	0.000
PRE-BC11	BASE	SWF25Y24H	24.00	129.000	131.400	0.0000	0	12.50	1.980	0.00	0.000
PRE-BC12	BASE	SWF25Y24H	24.00	129.000	131.400	0.0000	0	12.50	5.468	0.00	0.000
PRE-BC13	BASE	SWF25Y24H	24.00	129.000	131.400	0.0000	0	12.25	13.804	0.00	0.000
PRE-BC14	BASE	SWF25Y24H	24.00	132.120	135.000	0.0000	0	12.00	2.195	0.00	0.000
PRE-BC15	BASE	SWF25Y24H	24.00	132.250	135.000	0.0000	0	12.00	3.103	0.00	0.000
PRE-BC17	BASE	SWF25Y24H	24.00	131.100	131.200	0.0000	0	12.50	27.469	0.00	0.000

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
BC01	BASE	SWF100Y24H	24.00	131.700	131.800	0.0000	0	12.50	19.405	0.00	0.000
BC02	BASE	SWF100Y24H	24.00	131.600	133.400	0.0000	0	12.64	15.796	0.00	0.000
BC03	BASE	SWF100Y24H	24.00	131.500	133.400	0.2000	0	12.34	12.306	0.00	0.000
BC04	BASE	SWF100Y24H	24.00	131.400	133.400	0.0000	0	12.74	9.673	0.00	0.000
BC05	BASE	SWF100Y24H	24.00	131.100	133.400	0.0000	0	12.58	23.631	0.00	0.000
BC06	BASE	SWF100Y24H	24.00	131.700	133.400	0.0000	0	0.00	0.000	0.00	0.000
BC07	BASE	SWF100Y24H	24.00	131.400	133.400	0.0000	0	12.50	33.600	0.00	0.000
BC08	BASE	SWF100Y24H	24.00	129.200	131.400	0.0000	0	12.75	27.721	0.00	0.000
BC09	BASE	SWF100Y24H	24.00	128.700	131.500	0.0000	0	12.05	13.812	0.00	0.000
BC10	BASE	SWF100Y24H	24.00	129.200	131.500	0.0000	0	12.39	7.434	0.00	0.000
BC11	BASE	SWF100Y24H	24.00	129.000	131.400	0.0000	0	12.60	6.854	0.00	0.000
BC12	BASE	SWF100Y24H	24.00	129.000	131.400	0.0000	0	12.50	4.604	0.00	0.000
BC13	BASE	SWF100Y24H	24.00	129.000	131.400	-0.1000	0	12.25	21.056	0.00	0.000
BC14	BASE	SWF100Y24H	24.00	132.120	135.000	0.0000	0	12.00	2.846	0.00	0.000
BC15	BASE	SWF100Y24H	24.00	132.250	135.000	0.0000	0	0.00	0.000	0.00	0.000
BC17	BASE	SWF100Y24H	24.00	131.100	133.400	0.0000	0	12.50	35.796	0.00	0.000
POND01	BASE	SWF100Y24H	12.70	134.358	134.300	0.0047	9052	12.00	5.292	12.70	2.381
POND02	BASE	SWF100Y24H	12.93	133.850	133.800	0.0038	27496	12.00	13.354	12.93	4.958
POND03	BASE	SWF100Y24H	12.71	133.696	133.930	0.0040	26035	12.00	15.937	12.71	8.597
POND04	BASE	SWF100Y24H	13.79	134.817	134.300	0.0049	60808	12.25	31.698	13.79	6.900
POND05	BASE	SWF100Y24H	12.66	134.193	134.100	0.0050	29370	12.25	26.516	12.66	16.321
POND07	BASE	SWF100Y24H	12.62	133.449	133.480	0.0033	26490	12.00	14.815	12.62	9.126
POND08	BASE	SWF100Y24H	13.13	131.517	131.250	0.0042	92938	12.00	45.482	13.13	9.803
POND09	BASE	SWF100Y24H	12.47	130.723	130.950	0.0037	18640	12.00	11.667	12.47	7.087
POND10	BASE	SWF100Y24H	12.39	131.149	130.930	0.0042	14948	12.00	11.227	12.39	7.434
POND11	BASE	SWF100Y24H	12.66	130.835	130.900	0.0031	21828	12.00	10.910	12.66	5.639
PRE-BC01	BASE	SWF100Y24H	24.00	131.700	131.800	0.0000	0	12.50	22.072	0.00	0.000
PRE-BC02	BASE	SWF100Y24H	24.00	131.600	133.400	0.0000	0	12.50	18.037	0.00	0.000
PRE-BC03	BASE	SWF100Y24H	24.00	131.500	133.400	0.2000	0	12.00	43.074	0.00	0.000
PRE-BC04	BASE	SWF100Y24H	24.00	131.400	133.400	0.0000	0	12.50	9.164	0.00	0.000
PRE-BC05	BASE	SWF100Y24H	24.00	131.100	133.400	0.0000	0	12.50	24.670	0.00	0.000
PRE-BC07	BASE	SWF100Y24H	24.00	131.800	133.400	0.0000	0	12.50	31.056	0.00	0.000
PRE-BC08	BASE	SWF100Y24H	24.00	128.900	131.400	0.0000	0	12.75	30.884	0.00	0.000
PRE-BC09	BASE	SWF100Y24H	24.00	128.700	131.500	0.0000	0	12.00	17.980	0.00	0.000
PRE-BC10	BASE	SWF100Y24H	24.00	129.200	131.500	0.0000	0	12.25	9.191	0.00	0.000
PRE-BC11	BASE	SWF100Y24H	24.00	129.000	131.400	0.0000	0	12.50	3.093	0.00	0.000
PRE-BC12	BASE	SWF100Y24H	24.00	129.000	131.400	0.0000	0	12.50	8.066	0.00	0.000
PRE-BC13	BASE	SWF100Y24H	24.00	129.000	131.400	0.0000	0	12.25	20.396	0.00	0.000
PRE-BC14	BASE	SWF100Y24H	24.00	132.120	135.000	0.0000	0	12.00	3.206	0.00	0.000
PRE-BC15	BASE	SWF100Y24H	24.00	132.250	135.000	0.0000	0	12.00	4.562	0.00	0.000
PRE-BC17	BASE	SWF100Y24H	24.00	131.100	131.200	0.0000	0	12.50	41.316	0.00	0.000

OK mc

THE TAMPA TRIBUNE
Published Daily
Tampa, Hillsborough County, Florida

State of Florida }
County of Hillsborough } ss.

Before the undersigned authority personally appeared C. Pugh, who on oath says that she is Advertising Billing Supervisor of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE

in the matter of PURCHASE ORDER #32201

was published in said newspaper in the issues of SEPTEMBER 24, 2003

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, this advertisement for publication in the said newspaper.

C Pugh

Sworn to and subscribed by me, this 24 day of SEPTEMBER, A.D. 20 03

Personally Known ✓ or Produced Identification _____
Type of Identification Produced _____

Susie Lee Slaton

10-20-03 fm

S.W.F.W.M.D. OCT 15 2003 RECORDS & DATA

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
SUSIE LEE SLATON
COMMISSION NUMBER
DD000060
MY COMMISSION EXP.
APRIL 16, 2005

The original of this affidavit is required to be retained by the Records & Data Dept as part of the official File of Record for the permit noted on the attached ad.

43011896.032

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT NOTICE OF APPLICATIONS IN POLK COUNTY. APPLICATIONS FOR PERMITS HAVE BEEN RECEIVED BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT FROM: 43 010850.003 APPLICATION RECEIVED ON 08/29/03. CARPENTER CONTRACTORS OF AMERICA INC 3900 AVE G NW WINTER HAVEN FL 33880-0000. CONSTRUCTION/OPERATION PERMIT. PROJECT NAME: CARPENTER CONTRACTORS OF AMERICA. ACTIVITY: COMMERCIAL. OUTSTANDING FLORIDA WATER: NO. AQUATIC PRESERVE: NO. PROJECT DESCRIPTION: DRAINAGE SYSTEMS. PROJECT SIZE: 69.96 ACRES. SECTION(S) 24 25 TOWNSHIP 28S RANGE 25E. NUMBER 43 021393.001. APPLICATION RECEIVED ON 09/02/03. FLORIDA DEPT OF TRANSPORTATION DISTRICT 1 801 N BROADWAY AVE BARTOW FL 33831-0000. CONSTRUCTION/ OPERATION PERMIT. PROJECT NAME DOT-I-4 SR 400 SEGMENT E WIDENING. ACTIVITY ROAD PROJECTS. OUTSTANDING FLORIDA WATER: NO. AQUATIC PRESERVE: NO. PROJECT DESCRIPTION: COUNTY STATE, CITY. PROJECT SIZE: 290.00 ACRES. SECTION(S) 13 14 22 23 24 27 28 29 32. TOWNSHIP 26S RANGE 26E. NUMBER 43 025790.000. APPLICATION RECEIVED ON 09/02/03 ROYAL PALM VILLAGE LLC 29399 US HWY 19 N STE 32 CLEARWATER FL 33761-0000. CONSTRUCTION/OPERATION PERMIT PROJECT NAME: ROYAL PALM VILLAGE PH III. ACTIVITY: RESIDENTIAL. OUTSTANDING FLORIDA WATER: NO. AQUATIC PRESERVE: NO. PROJECT DESCRIPTION: DRAINAGE SYSTEMS. PROJECT SIZE 41.15 ACRES. SECTION(S) 24 25. TOWNSHIP 27S RANGE 26E. THE APPLICATIONS ARE ON FILE AT THE DISTRICT OFFICE AND AVAILABLE FOR INSPECTION. INTERESTED PERSONS HAVE THE OPPORTUNITY TO INSPECT A COPY OF THE APPLICATION AND SUBMIT WRITTEN COMMENTS CONCERNING THE APPLICATION. IN ADDITION, IF YOU WISH TO BE ADVISED AS TO AGENCY ACTION AND PROVIDED AN OPPORTUNITY TO REQUEST AN ADMINISTRATIVE HEARING REGARDING THE APPLICATION, YOU MUST FILE A WRITTEN REQUEST TO THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, 2379 BROAD STREET, BROOKSVILLE, FLORIDA 34604-6899. ALL REQUEST OR COMMENTS MUST BE FILED WITH THE RECORDS & DATA SECTION AT THE ABOVE ADDRESS AND MUST BE RECEIVED BY THE DEPARTMENT. NO LATER THAN 14 DAYS AFTER THE DATE OF THIS NOTICE AND SHALL INCLUDE THE PERMIT APPLICATION NUMBER. THE DISTRICT DOES NOT DISCRIMINATE BASED ON DISABILITY. ANYONE REQUIRING REASONABLE ACCOMMODATION UNDER THE ADA SHOULD CONTACT THE RECORDS & DATA DEPARTMENT AT (352) 796-7211 OR 1-800-423-1476. TDD ONLY 1-800-231-6103. 3174 09/24

E-1599

49

WUP & ERP REQUEST FORM
FOR
AMENDED APPLICATION
NUMBER CHANGE

TO: DEANNA NAUGLER, RECORDS & DATA DEPARTMENT
THRU: PERMIT COORDINATOR
FROM: JAN BOK/CG (Evaluator Name)
SUBJECT: ___Amended Application
X Number Change: Change Number to: 43011896.032 ~~031~~

Instructions: Forward original form to Records & Data for placement in the File of Record. Retain a copy for your work file.

WUP INFORMATION

WUP Application No.: _____ Permittee Name:_____
Information Received on:_____ Attached to this form? Yes___ No___
Has this application changed to a ❒ General
❒ Individual
Has this application changed to a Letter Modification? Yes____ No____
Advertise ____ or Readvertise ____ Reason for Advertising:_____
Complete this section for advertising if the following information has changed:
Use:_____ Location: Section ____Township ____Range ____
Ave gpd_____Peak Month gpd_____Maximum gpd_____

ERP INFORMATION

ERP Application No.: 43021393.001 Project Name: DOT-I-4 Polk County Section 6
Information Received on:_____ Attached to this form? Yes___ No___
Has the application changed to a: ❒ General
❒ Noticed General
❒ Individual Construction
❒ Conceptual
Has this application changed to a Letter Modification? Yes____ No____
Advertise____ or Readvertise ____ Reason for advertising:_____
Complete this section for advertising if the following information has changed:
Project Acreage: ___ ____ Location: Section_____Township _____Range _____
Activity:_____ Project Description:_____ Wetlands: Yes____ No____

For Records & Data Use Only

❒ Forward all amendments that change application to an Individual to M. Ford
❒ Initial when old number has been deleted.
❒ Initial and date when forwarded to: Vault _____/_____
❒ Initial and date when forwarded to: GIS _____/_____
❒ Quad Map:_____ S_____T 26 R 26
S- 13, 14, 22, 23, 24, 27, 28, 29, 32

10/29/03

S.W.F.W.M.D. OCT 15 2003 ARR RECORDS & DATA

42.00-032 (07/99)

RDBS Record Updated
10-6-03 by CYS

RDBS UPDATE Date Record
Permit No _____
OCT 14 2003
By: MC

Southwest Florida Water Management District Received OCT 7 2003 PERMITS DATA Brooksville, Florida

E-1600

117

DURING THE WEEK OF 10/11/03 THROUGH 10/17/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000014

APPLICATION NUMBER: 43-011896.032 DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (800) 292-3368

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

10 2903

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

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
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

OCTOBER 20, 2003

ANN LANGFORD, SECRETARY
G H C CONSTRUCTION INC
3168 NE HIGHWAY 17
ARCADIA, FL 34266

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF WATER USE AND SURFACE WATER PERMIT APPLICATIONS INTERESTED PARTIES ID # 000014
REFERENCE: CHAPTER 40D-1.603

Dear ANN LANGFORD, SECRETARY

As requested in your letter processed on MARCH 06, 2003, enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of OCTOBER 11, 2003 - OCTOBER 17, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact me at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if I can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the RECORDS AND DATA DEPARTMENT at (352) 796-7211 or 1-800-423-1476 (FL only); TDD only: 1-800-231-6103

DURING THE WEEK OF 10/11/03 THROUGH 10/17/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000107

APPLICATION NUMBER: 43-011896.032 DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (800) 292-3368

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

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
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

OCTOBER 20, 2003

IRWIN J BERLIN
5378 RIVER FRONT DRIVE
BRADENTON, FL 34208

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF SURFACE WATER PERMIT APPLICATIONS INTERESTED PARTIES ID # 000107
REFERENCE: CHAPTER 40D-1.603

Dear IRWIN J BERLIN

As requested in your letter processed on MAY 20, 2003, enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of OCTOBER 11, 2003 - OCTOBER 17, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact me at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if I can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

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DURING THE WEEK OF 10/11/03 THROUGH 10/17/03
SURFACE WATER PERMIT APPLICATIONS

INTERESTED PARTY ID: 000083

APPLICATION NUMBER: 43-011896.032 DATE APPLICATION RECEIVED: 09/02/03

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: DOT-I-4 SR 400 SEGMENT 6 WIDENING

ACRES OWNED: 290.00 PROJECT SIZE: 290.00

APPLICANT NAME: FLORIDA DEPT OF TRANSPORTATION
DISTRICT 1
ADDRESS: 801 N BROADWAY AVE
BARTOW, FL 33831 PHONE: (800) 292-3368

PROJECT DESC: COUNTY, STATE, CITY

ACTIVITY DESC: ROAD PROJECTS

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

SECTION(S): 13 14 22 23 24 27 28 29 32
TOWNSHIP: 26 RANGE: 26

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
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(941) 377-3722 or
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SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

Protecting *Your* Water Resources

OCTOBER 20, 2003

CHARLES KOCUR VICE PRESIDENT
EARTH BALANCE
2579 TOLEDO BLADE BLVD
NORTH PORT, FL 34289

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF SURFACE WATER PERMIT APPLICATIONS
INTERESTED PARTIES ID # 000083
REFERENCE: CHAPTER 40D-1.603

Dear CHARLES KOCUR VICE PRESIDENT

As requested in your letter processed on SEPTEMBER 05, 2003 enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of OCTOBER 11, 2003 - OCTOBER 17, 2003.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, RECORDS AND DATA DEPARTMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact me at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4338 if I can be of any further service in this matter.

Sincerely,

(Signed)
MYRA FORD
RECORDS AND DATA DEPARTMENT

ENCLOSURE(S) - As stated

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E-1606
124

REQUEST FOR CLARIFICATION

CONVERSATION RECORD

District Permit and/or File Number: 43 11896.32 Date and Time of Conversation: 10/23/03 - 0900

Conversation with: Applicant _____ Consultant ✓ Other _____

Name: DAVID LANDERS

Representing: SCHEDA ECOLOGICAL

Address: _____

File of Record
Permit No. 43011896.032

City/County: _____ Zip Code: _____

Phone Number: _____

Project Data:

Name: DOT, I-4 POLK CO. SEC 6

Address: _____

City/County: _____

Phone Number: _____

Summary of Conversation: Telephoned: ___ Was Called: ___ Scheduled Mtg.: ___ Unsched. Mtg. ___

Other Individuals Involved in the Conversation: _____

DISCUSSED ERRORS IN WET TABLE 1. DAVID WILL SUBMIT A CORRECTED TABLE (VIA FAX) BY 10/20/03 AND FOLLOW-UP W/ HARD COPY VIA MAIL.

S.W.F.W.M.D. NOV - 3 2003 ARR RECORDS & DATA

M. HURST

Signature:

cc: JRB

(Continued on Back) Bartow Regulation Department

RDBS Record Updated 10/31/03 by CYS

116

E-1607

SCHEDA ECOLOGICAL ASSOCIATES INCORPORATED

FAX

Scheda Ecological Associates, Inc.
4013 E. Fowler Ave.
Tampa, FL 33617
(813) 971-3755
(813) 971-0170 FAX

To:	Mark Hurst
Fax Number:	(863) 534-7058
Date:	October 27, 2003
Number of Pages (Including this page):	7

RE: I-4 Segment 6

Mark,
Per our discussion, attached is a revised Table one and a letter responding to your request for clarification. Hard copy to follow via U.S Mail.

Sorry for the mix up! If you have any questions, please contact me at 971-3755 or on my cell phone (813) 376-9890.

Sincerely,

David A. Landers
Senior Environmental Scientist
dlanders@scheda.com

Dec. 9.8

DEPT. HAS COPIES

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
FX-KH-8:00
OCT 28 2003 S.W.F.W.M.D.
RECEIVED
BARTOW, FLORIDA
NOV 3 2003
ARR
RECORDS & DATA

File of Record
Permit No. 43011896.032 ~~031~~

Imaged As Is

SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

October 27, 2003

Mr. Mark Hurst
Southwest Florida Water Management District
Bartow Regulatory Office
170 Century Blvd.
Bartow, Florida 33830

Re: I-4 Design-Build Project 3
Segment 6 – East of CR 557 to West of US 27
ERPApplication No. 43011896.031
032

Dear Mr. Hurst:

This letter and attachments are submitted in response to your request for clarification of submitted information during our telephone conversation on October 23, 2003 In response to your request for additional information (RAI) dated October 2, 2003, I submitted a revegetation plan for temporarily disturbed forested wetland areas totaling 0.10 acre. Your request for clarification was prompted by inconsistency between this revegetation acreage and the acreage of temporary forested impacts in Table One in our original application. As a result if your inquiry, it was discovered that an obsolete version of Table One was inadvertently submitted with the application. The table submitted was prepared prior to a design change that reduced the temporary wetland impacts by half (from approximately 15 acres to 8 acres) and almost completely eliminated temporary impacts to forested wetlands. The correct table, showing 0.10 acre of temporary impacts to forested wetlands, is attached to this letter. As added assurance that this was simply an oversight, please refer to the wetland impact exhibits (erosion control plans) submitted in the original application. You will find that the impacts shown coincide with the acreages in the enclosed table, rather than the table originally submitted.

As you requested, the enclosed table has been revised to include all of the wetland impacts in one table instead of separate tables for impacts in the SWFWMD and the SJRWMD. Since the original application, the District boundaries have been modified and the project is now entirely within the SWFWMD. Proposed mitigation for wetland impacts that were previously within the SJRWMD remains the same, and the enclosed table has been formatted to keep that distinction clear.

Finally, with this response, the Design-Build Team proposes to compensate for temporary impacts to forested wetlands through the provisions of F.S. 373.4137, rather

than restore on–site three separate areas totaling only 0.1 acre.

I trust that this information will allow you to complete your review of the proposed project. If you have any questions, please contact me at (813) 971-3755.

Sincerely,

Scheda Ecological Associates, Inc.

David A. Landers
Senior Environmental Scientist

Attachment: Table One: Project Wetland and Other Surface Water Summary

TABLE ONE: PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY

SWFWMD

WL & SW ID	WL & SW TYPE	WL & SW SIZE*	WL & SW NOT IMPACTED	TEMPORARY WL & SW IMPACTS			PERMANENT WL & SW IMPACTS			MITIGATION AREA ID
				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
N4	PSS	6.87	5.56	PSS	0.62	C	PSS	0.69	F	Hampton Tract
N5	PSS	2.98	2.61	PSS	0.26	C	PSS	0.11	F	Hampton Tract
N6	PSS	2.95	1.74	PSS	0.61	C	PSS	0.60	F	Hampton Tract
N7	PSS	2.22	1.44	PSS	0.26	C	PSS	0.19	F	Hampton Tract
N7	PSS			PSS	0.18	C	PSS	0.15	F	Lake Lowery
N8	PSS	3.89	3.56	PSS	0.29	C	PSS	0.04	F	Lake Lowery
N9	PSS	0.62	0.61	PSS	0.01	C				
N10	PSS	9.21	7.92	PSS	0.58	C	PSS	0.71		
N13	PSS	8.45	7.23	PSS	0.20	C	PSS	1.02	F	Lake Lowery
N14	PFO	3.02	2.74	PFO	0.07	C	PFO	0.21	F	Lake Lowery

Comments: *WL and SW size reflects acreage within right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
Wetland Type: from an established wetland classification system
Impact Type: D=dredge; F=fill; H=charge hydrology; S=shading; C=clearing; O=other
Multiple entries per cell not allowed, except in the "Mitigation ID" column. If more than one impact is proposed in a given area, indicate the final impact.

TABLE ONE (Continued): **PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY**
SWFWMD

WL & SW ID	WL & SW TYPE	WL & SW SIZE*	WL & SW NOT IMPACTED	TEMPORARY WL & SW IMPACTS			PERMANENT WL & SW IMPACTS			MITIGATION AREA ID
				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
S2	PSS	4.59	3.60	PSS	0.38	C	PSS	0.61	F	Hampton Tract
S3	PSS	0.32	0.30	PSS	0.01	C	PSS	0.01	F	Hampton Tract
S4	PSS	3.63	2.91	PSS	0.29	C	PSS	0.43	F	Hampton Tract
S4A	PEM	3.73	2.55	PEM	0.63	C	PEM	0.55	F	Hampton Tract
S6	PSS	0.39	0.35	PSS	0.04	C				Hampton Tract
S8	PSS	0.23	0.10	PSS	0.03	C	PSS	0.10	F	Hampton Tract
S9	PSS	2.04	1.38	PSS	0.15	C	PSS	0.13	F	Hampton Tract
S9	PSS			PSS	0.18	C	PSS	0.20	F	Lake Lowery

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SWFWMD

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				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
S10	PSS	3.00	2.53	PSS	0.32	C	PSS	0.15	F	Lake Lowery
S11	PSS	9.03	7.57	PSS	0.67	C	PSS	0.79	F	Lake Lowery
S11A	PSS	2.20	2.05	PSS	0.10	C	PSS	0.05	F	Lake Lowery
S12	PSS	6.64	5.15	PSS	0.93	C	PSS	0.56	F	Lake Lowery
S13	PSS	3.47	3.20	PSS	0.18	C	PSS	0.09	F	Lake Lowery
C1	PSS	4.47	4.29	PSS	0.16	C	PSS	0.02	F	Hampton Tract
C2	PSS	1.86	1.73	PSS	0.09	C	PSS	0.04	F	Hampton Tract
C2A	PFO	0.07	0.06	PFO	0.01	C				

Comments: *WL and SW size reflects acreage within right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
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TABLE ONE (Continued):

PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY
SWFWMD

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				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
C3A	PFO	0.07	0.05	PFO	0.02	C				
C4	PSS	3.43	3.34	PSS	0.04	C				
C4				PSS	0.05	C				
C5	PFO	1.63	1.32				PFO	0.31	F	Lake Lowery
COE-C	PEM	0.13	0.01	PEM	0.03	C	PEM	0.09	F	N/A
COE-D	PEM	0.10	0.03	PEM	0.04	C	PEM	0.03	F	N/A
COE-E	PEM	0.03	0.01	PEM	0.02	C				N/A
PROJECT TOTALS:		91.27	75.94		7.45			7.88		

Comments: *WL and SW size reflects acreage within right-of-way.

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SCHEDA
ECOLOGICAL
ASSOCIATES
INCORPORATED

XC: JRB
MKH

File of Record
Permit No _____

October 27, 2003

Mr. Mark Hurst
Southwest Florida Water Management District
Bartow Regulatory Office
170 Century Blvd.
Bartow, Florida 33830

Southwest Florida Water Management District
OCT 28 2003
RECEIVED
RRD-Bartow

1:00
H/D
Slagroth

Re: I-4 Design-Build Project 3
Segment 6 – East of CR 557 to West of US 27
ERPApplication No. 43011896.031 032

Dear Mr. Hurst:

This letter and attachments are submitted in response to your request for clarification of submitted information during our telephone conversation on October 23, 2003 In response to your request for additional information (RAI) dated October 2, 2003, I submitted a revegetation plan for temporarily disturbed forested wetland areas totaling 0.10 acre. Your request for clarification was prompted by inconsistency between this revegetation acreage and the acreage of temporary forested impacts in Table One in our original application. As a result if your inquiry, it was discovered that an obsolete version of Table One was inadvertently submitted with the application. The table submitted was prepared prior to a design change that reduced the temporary wetland impacts by half (from approximately 15 acres to 8 acres) and almost completely eliminated temporary impacts to forested wetlands. The correct table, showing 0.10 acre of temporary impacts to forested wetlands, is attached to this letter. As added assurance that this was simply an oversight, please refer to the wetland impact exhibits (erosion control plans) submitted in the original application. You will find that the impacts shown coincide with the acreages in the enclosed table, rather than the table originally submitted.

RDBS Record Updated
10-31-03 by CYS

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S.W.F.W.M.D.
NOV - 3 2003
RECORDS & DATA

Finally, with this response, the Design-Build Team proposes to compensate for temporary impacts to forested wetlands through the provisions of F.S. 373.4137, rather

110

4013 EAST FOWLER AVENUE • TAMPA, FL 33617-2008
TEL / 813.971.3755 • FAX / 813.971.0170
527\LTR\031027mh

1486-A SKEES ROAD • WEST PALM BEACH, FL 33411-2622
TEL / 561.689.9198 • FAX / 561.688.9005

WWW.SCHEDA.COM

E-1615

than restore on–site three separate areas totaling only 0.1 acre.

I trust that this information will allow you to complete your review of the proposed project. If you have any questions, please contact me at (813) 971-3755.

Sincerely,

Scheda Ecological Associates, Inc.

David A. Landers
Senior Environmental Scientist

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N6	PSS	2.95	1.74	PSS	0.61	C	PSS	0.60	F	Hampton Tract
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				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
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S3	PSS	0.32	0.30	PSS	0.01	C	PSS	0.01	F	Hampton Tract
S4	PSS	3.63	2.91	PSS	0.29	C	PSS	0.43	F	Hampton Tract
S4A	PEM	3.73	2.55	PEM	0.63	C	PEM	0.55	F	Hampton Tract
S6	PSS	0.39	0.35	PSS	0.04	C				Hampton Tract
S8	PSS	0.23	0.10	PSS	0.03	C	PSS	0.10	F	Hampton Tract
S9	PSS	2.04	1.38	PSS	0.15	C	PSS	0.13	F	Hampton Tract
S9	PSS			PSS	0.18	C	PSS	0.20	F	Lake Lowery

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PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY
SWFWMD

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				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
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S11	PSS	9.03	7.57	PSS	0.67	C	PSS	0.79	F	Lake Lowery
S11A	PSS	2.20	2.05	PSS	0.10	C	PSS	0.05	F	Lake Lowery
S12	PSS	6.64	5.15	PSS	0.93	C	PSS	0.56	F	Lake Lowery
S13	PSS	3.47	3.20	PSS	0.18	C	PSS	0.09	F	Lake Lowery
C1	PSS	4.47	4.29	PSS	0.16	C	PSS	0.02	F	Hampton Tract
C2	PSS	1.86	1.73	PSS	0.09	C	PSS	0.04	F	Hampton Tract
C2A	PFO	0.07	0.06	PFO	0.01	C				

Comments: *WL and SW size reflects acreage within right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
Wetland Type: from an established wetland classification system
Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other
Multiple entries per cell not allowed, except in the "Mitigation ID" column. If more than one impact is proposed in a given area, indicate the final impact.

TABLE ONE (Continued): **PROJECT WETLAND AND OTHER SURFACE WATER SUMMARY**
SWFWMD

WL & SW ID	WL & SW TYPE	WL & SW SIZE*	WL & SW NOT IMPACTED	TEMPORARY WL & SW IMPACTS			PERMANENT WL & SW IMPACTS			MITIGATION AREA ID
				WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	WL & SW TYPE	IMPACT SIZE	IMPACT TYPE	
C3A	PFO	0.07	0.05	PFO	0.02	C				
C4	PSS	3.43	3.34	PSS	0.04	C				
C4				PSS	0.05	C				
C5	PFO	1.63	1.32				PFO	0.31	F	Lake Lowery
COE-C	PEM	0.13	0.01	PEM	0.03	C	PEM	0.09	F	N/A
COE-D	PEM	0.10	0.03	PEM	0.04	C	PEM	0.03	F	N/A
COE-E	PEM	0.03	0.01	PEM	0.02	C				N/A
PROJECT TOTALS:		91.27	75.94		7.45			7.88		

Comments: *WL and SW size reflects acreage within right-of-way.

Note:
WL=Wetland SW=Other Surface Water ID=Identification number, letter, etc.
Wetland Type: from an established wetland classification system
Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other
Multiple entries per cell not allowed, except in the "Mitigation ID" column. If more than one impact is proposed in a given area, indicate the final impact.

FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. BJ Jarvis
Attn: Cheri Stallings
Southwest Florida Water Management District
170 Century Boulevard
Bartow, Florida 33830-7700

October 28, 2003

Re: Projects Reviewed by the Florida State Historic Preservation Office
No Historic Properties Likely Affected - **See Attached List**
Date(s) Received: 9/10/03 Corrected 10/28/03

File of Record
Permit No. _____

Dear Mr. Jarvis:

Our office received the referenced projects in accordance with Chapters 267 and 373, *Florida Statutes*, Florida's Coastal Management Program, and implementing state regulations, for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

Our review of the Florida Master Site File indicates that no significant archaeological or historical resources are recorded within the project areas. Furthermore, because of the location and/or nature of the projects it is unlikely that any such sites will be affected.

If there are any questions concerning our comments or recommendations, please contact Thaddeus Bissett, Historic Sites Specialist, by phone at (850)245-6371, or by electronic mail at tbissett@dos.state.fl.us. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske, Deputy SHPO

for Janet Snyder Matthews, Ph.D., Director, and
State Historic Preservation Officer

10:30 am HS, mail pm

File of Record
Permit No _____

Southwest Florida Water Management District
NOV 05 2003
RECEIVED
RRD-Bartow

500 S. Bronough Street • Tallahassee, FL 32399-0250 • http://www.flheritage.com

☐ Director's Office (850) 245-6300 • FAX: 245-6435
☐ Archaeological Research (850) 245-6444 • FAX: 245-6436
☒ Historic Preservation (850) 245-6333 • FAX: 245-6437
☐ Historical Museums (850) 245-6400 • FAX: 245-6433
☐ Palm Beach Regional Office (561) 279-1475 • FAX: 279-1476
☐ St. Augustine Regional Office (904) 825-5045 • FAX: 825-5044
☐ Tampa Regional Office (813) 272-3843 • FAX: 272-2340

DHR NO.	App. No.	Project Name	County	Date Rec'vd	
2003-8734	43021393-001 (430118 94.032)	I-4 (S.R. 400) Segment 6 Widening	PO	09/10/03	? JRB MKH
2003-8749	43025790-000	Royal Palm Village, Phase III	PO	09/10/03	RAD MKH

DEPT. HAS COPIES

File of Record
Permit No _____

100

Southwest Florida Water Management District

2379 Broad St., Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

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
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

November 10, 2003

William J. Veon, Jr., P.E.
Jacobs Civil, Inc.
18302 Highwoods Preserve Parkway,
Highwoods Plaza, Suite 200
Tampa, FL 33647

Subject: **Status of Permit Application** (Completeness)
Project Name: DOT, I-4 Polk County, Section 6
Application No.: 43011896.032
County: Polk
Sec/Twp/Rge: 13,14,22,23,24,27,28,29,32/26S/26E

References: Chapters 40D-1.1020, and 28-107.002, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Veon:

The permit application referenced above is complete with the information received on October 28, 2003.

Please note that this letter does not constitute authority to begin construction; construction is authorized once the permit is issued. District staff are now evaluating and processing the completed application, and will act on the application within 90 days.

Please be advised that any construction activities that disturb (includes clearing, grading and excavation) one (1) acre or more of land (total plan of development) and that may result in a stormwater discharge to a Water of the State or a municipal separate storm sewer system may require coverage under a Florida Department of Environmental Regulation (FDEP) National Pollutant Discharge Elimination System (NPDES) Stormwater Permit, including a Stormwater Pollution Prevention Plan. Information about the NPDES Stormwater program can be accessed via the FDEP-NPDES Stormwater section's website at: www.dep.state.fl.us/water/stormwater/npdes/.

If you have questions concerning the District's procedures, or if I may be of assistance, please contact me at the Bartow Service Office at extension 6103.

Dec. B.D.

Sincerely,

Jan R. Burke

Jan R. Burke, P.E.
Bartow Regulation Department

S.W.F.W.M.D. NOV 12 2003 ARR RECORDS & DATA

File of Record
Permit No.

RDBS Record Updated
11-10-03 by CYS

JRB:cys
cc: File of Record 43011896.032
James R. Wilt, Jr., P.E., Florida Department of Transportation
M. Hurst

Protecting Your Water Resources

E-1623

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
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SUNCOM 572-6200

Sarasota Service Office
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Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Leesburg Service Office
3600 West Sovereign Path
Suite 226
Leesburg, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

FAX TRANSMITTAL INFORMATION
Southwest Florida Water Management District
Bartow Regulation Department
170 Century Boulevard
Bartow, FL 33830-7700
(863) 534-1448 (SUNCOM 572-6200)
Fax (863) 534-7058 (SUNCOM Fax 515-2204)

Date: 11/13/03	
To: SHAMAIN	**From:** JAN
	Extension: 6103
Number of pages to follow: 2	Verification of receipt required?
Verify to:	Phone No:

Delivery Instructions:

Comments: PER YOUR REQUEST. COPY OF CLARIFICATION REQUEST (PHONE CONVERSATION) AND COMPLETENESS LETTER. CALL IF ADD'L QUESTIONS

Fax.form 051603

Protecting Your Water Resources

REQUEST FOR CLARIFICATION

CONVERSATION RECORD

District Permit and/or File Number: 43 11896.32 Date and Time of Conversation: 10/23/03 - 0900

Conversation with: Applicant _____ Consultant ✓ Other _____

Name: DAVID LANDERS

Representing: SCHEDA ECOLOGICAL

Address: _____

_____

City/County: _____ Zip Code: _____

Phone Number: _____

Project Data:

Name: DOT, I-4 POLK CO. SEC 6

Address: _____

City/County: _____

Phone Number: _____

Summary of Conversation: Telephoned: ___ Was Called: ___ Scheduled Mtg.: ___ Unsched. Mtg. ___

Other Individuals Involved in the Conversation: _____

DISCUSSED ERRORS IN WET TABLE I. DAVID WILL SUBMIT A CORRECTED TABLE (VIA FAX) BY 10/20/03 AND FOLLOW-UP W/ HARD COPY VIA MAIL.

M. HURST

Signature:

cc: JRB

(Continued on Back) Bartow Regulation Department

Southwest Florida Water Management District

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SUNCOM 667-3271

November 10, 2003

William J. Veon, Jr., P.E.
Jacobs Civil, Inc.
18302 Highwoods Preserve Parkway,
Highwoods Plaza, Suite 200
Tampa, FL 33647

Subject: **Status of Permit Application** (Completeness)
Project Name: DOT, I-4 Polk County, Section 6
Application No.: 43011896.032
County: Polk
Sec/Twp/Rge: 13,14,22,23,24,27,28,29,32/26S/26E

References: Chapters 40D-1.1020, and 28-107.002, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Veon:

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If you have questions concerning the District's procedures, or if I may be of assistance, please contact me at the Bartow Service Office at extension 6103.

Sincerely,

Jan R. Burke, P.E.
Bartow Regulation Department

JRB:cys
cc: File of Record 43011896.032
James R. Wilt, Jr., P.E., Florida Department of Transportation
M. Hurst

Protecting Your Water Resources

47

E-1626

11896.032

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
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(352) 527-8131
SUNCOM 667-3271

December 12, 2003

William J. Veon, Jr., P.E.
Jacobs Civil, Inc.
18302 Highwoods Preserve Parkway,
Highwoods Plaza, Suite 200
Tampa, FL 33647

Subject: **Project Evaluation - Permit Not Required**

Project Name:	DOT, I-4 Polk County, Section 6 - (Milling & Re-Surfacing of Existing Roadways)
Inquiry Number:	EX 373
County:	Polk
Sec/Twp/Rge:	13,14,22,23,24,27,28,29,32/26S/26E
Latitude/Longitude:	N/A

Reference: Rule 40D-4.041, Florida Administrative Code (F.A.C.)
Subsection 373.406(6), Florida Statutes (F.S.)

Dear Mr. Veon:

The District has reviewed the information you submitted on November 14, 2003, for the project referenced above and has determined that an Environmental Resource Permit (ERP) **will not be required** for the proposed milling and resurfacing of an existing (pre 1984) length of highway Interstate 4, Polk County, Section 6, described by your submitted contract plans (project I.D. 201204-1). It is being noted in this determination that ERP No. 43011896.032 that authorizes the Interstate 4 Lane Additions (Segment 6) is scheduled to go to the next Governing Board on December 16, 2003, with a recommendation for approval. Please note for future planning, that it will be more appropriate to submit these type of activities as part of an Incidental Site Activities (ISA) permit. Additionally, it is understood that the proposed work shall not substantially change the existing surface water drainage patterns, increase the original discharge or pollutant runoff, or alter the point of discharge. Appropriate erosion and sediment control measures shall be in place prior to the commencement of any construction or demolition activities. .

The information received by the District will be kept in the Bartow Service Office to support the District's determination regarding your project. The District's determination that your project does not require an ERP is only applicable pursuant to the statutes and rules in effect at the time the information was submitted and may not be valid in the event subsequent changes occur in the applicable rules and statutes. Additionally, this notification does not mean that the District has determined that your project is permanently exempt from permitting requirements. Any subsequent change you make in the project's operation may necessitate further evaluation or permitting by the District. Therefore, you are advised to contact the District before beginning the project and before beginning any activity which is not specifically described in your submittal. Your timely pursuit of this activity is encouraged to avoid any potential rule changes that could affect your request.

This letter constitutes notice of Final Agency Action of the project listed above. *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.

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.

If you have questions regarding this matter, please contact Paul Gould, at the Bartow Service Office, extension 6101. Please reference the Project Name and Inquiry Number in future communications concerning this project.

Sincerely,

William A. Hartmann
FOR-

Brian S. Starford, P.G., Director
Bartow Regulation Department

BSS:PDG:kmh
Enclosures: Noticing Packet (42.00-047)
Section 28-106.201 and 28-106.301. F.A.C.
cc: Inquiry No. EX 373
James R. Wilt, Jr., P.E., Florida Department of Transportation
David Richey, FDOT
James Young, FDOT
J. Burke
P. Gould
F.O.R. 43011896.032

SWFWMD ENGINEERING WORKSHEET

PERMIT NO. 43011896.032

PERMIT NAME: DOT, I-4 POLK COUNTY, SECTION 6

									TOTALS
BASIN NO. - POND NO.			O or C	6-1		6-2		6-3		→
POND DATA	POND BOTTOM ELEVATION			130.7		130.6		130.3	
	SEASONAL HIGH WATER ELEVATION			131.7		131.6		131.3	
	CONTROL DEVICE ELEVATION			131.7		131.6		131.3	
	DESIGN LOW WATER ELEVATION			132.65		132.18		132.16	
	WEIR INVERT ELEVATION			132.65		132.18		132.16	
	DESIGN HIGH WATER ELEVATION			133.92		133.39		133.27	
	TOP OF BANK ELEVATION			134.00		133.8		133.93	
	AREA AT TOP OF BANK (Ac.)			0.20		0.62		0.62	→
	VOLUME AT DHW (Ac.-Ft.)			0.24		0.65		0.52	
	VOLUME AT TOB (Ac.-Ft.)			0.32		0.90		0.93	
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH (FT)		4 INCHES		10 INCHES		TWO @ 2 INCHES	
		PRE-DEVELOPED (CFS)		—		—		—	
		POST-DEVELOPED (CFS)		1.54		3.21		5.93	
	100YR/24HR RETENTION VOLUMES	PROVIDED (Ac.-Ft.)		—		—		—	
		REQUIRED (Ac.-Ft.)		—		—		—	
QUALITY	TREATMENT AREA	OFW? Y OR N		1.11	N	3.03	N	3.74	N
	TREATMENT VOL. REQUIRED (Ac.-Ft.)			0.09		0.25		0.31	
	TREATMENT VOL. PROVIDED (Ac.-Ft.)			0.09		0.25		0.31	
	METHOD OF TREATMENT			WET DETENTION		WET DETENTION		WET DETENTION	
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE	
	CONTROL DEVICE DIMENSIONS			0.6 INCH ϕ		1.2 INCH ϕ		1.3 INCH ϕ	
	RECOVERY TIME (Hrs.)			>60 HRS		>60 HRS		>60 HRS	
100-YEAR FLOODPLAIN	ENCROACHMENT (Ac.-Ft.)			→		→		→	→
	COMPENSATION (Ac.-Ft.)			→		→		→	→
	COMPENSATION TYPE			→		→		→	→
	ENCROACHMENT RESULT (feet)			→		→		→	→

COMMENTS: JRB

William A. Hartmann 11/3/2003 -
SEE ATTACHED TABLES FOR ADDITIONAL WATER QUANTITY DATA

SWFWMD ENGINEERING WORKSHEET

PERMIT NO. 43011896.032

PERMIT NAME: DOT, I-4 Polk County Section 6

								TOTALS
BASIN NO. - POND NO.			O or C	6-4		6-5		6-7		→
POND DATA	POND BOTTOM ELEVATION			130.4		130.1		130.4		
	SEASONAL HIGH WATER ELEVATION			131.4		131.1		131.4		
	CONTROL DEVICE ELEVATION			131.4		131.1		131.4		
	DESIGN LOW WATER ELEVATION			132.05		132.25		132.27		
	WEIR INVERT ELEVATION			132.05		132.25		132.27		
	DESIGN HIGH WATER ELEVATION			134.04		133.67		133.12		
	TOP OF BANK ELEVATION			134.30		134.00		133.48		
	AREA AT TOP OF BANK (Ac.)			1.30		0.66		0.61		→
	VOLUME AT DHW (Ac.-Ft.)			2.35		0.81		0.43		
	VOLUME AT TOB (Ac.-Ft.)			2.69		1.09		0.65		
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH (~~FT~~ INCHES)		6 INCHES		30 INCHES		36 INCHES		
		PRE-DEVELOPED (CFS)		—		—		—		
		POST-DEVELOPED (CFS)		4.32		11.26		6.26		
	100YR/24HR RETENTION VOLUMES	PROVIDED (Ac.-Ft.)		—		—		—		
		REQUIRED (Ac.-Ft.)		—		—		—		
QUALITY	TREATMENT AREA	OFW? Y OR N		8.08	N	6.33	N	3.48	N	
	TREATMENT VOL. REQUIRED (Ac.-Ft.)			0.67		0.53		0.29		
	TREATMENT VOL. PROVIDED (Ac.-Ft.)			0.67		0.53		0.29		
	METHOD OF TREATMENT			WET DETENTION		WET DETENTION		WET DETENTION		
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE		
	CONTROL DEVICE DIMENSIONS			2 INCH ϕ		1.5 INCH ϕ		1.2 INCH ϕ		
	RECOVERY TIME (Hrs.)			>60 HRS		>60 HRS		>60 HRS		
100-YEAR FLOODPLAIN	ENCROACHMENT (Ac.-Ft.)			→		→		→		→
	COMPENSATION (Ac.-Ft.)			→		→		→		→
	COMPENSATION TYPE			→		→		→		→
	ENCROACHMENT RESULT (feet)			→		→		→		→

COMMENTS: JNB

SWFWMD ENGINEERING WORKSHEET

PERMIT NO. 43011896.032

PERMIT NAME: DOT, I-4 POLK COUNTY, SECTION 6

									TOTALS
BASIN NO. - POND NO.			O or C	6-8		6-9		6-10	→
POND DATA	POND BOTTOM ELEVATION			128.2		127.7		128.2	
	SEASONAL HIGH WATER ELEVATION			129.2		128.7		129.2	
	CONTROL DEVICE ELEVATION			129.2		128.7		129.2	
	DESIGN LOW WATER ELEVATION			129.70		129.71		130.18	
	WEIR INVERT ELEVATION			129.70		129.71		130.18	
	DESIGN HIGH WATER ELEVATION			~~130.97~~ 130.95		130.43		130.85	
	TOP OF BANK ELEVATION			131.25		130.95		130.93	
	AREA AT TOP OF BANK (Ac.)			2.07		0.45		0.30	→
	VOLUME AT DHW (Ac.-Ft.)			2.32		0.24		0.28	
	VOLUME AT TOB (Ac.-Ft.)			2.94		0.48		0.30	
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH (FT)		36 INCHES		36 INCHES		36 INCHES	
		PRE-DEVELOPED (CFS)		—		—		—	
		POST-DEVELOPED (CFS)		6.43		5.03		5.40	
	100YR/24HR RETENTION VOLUMES	PROVIDED (Ac.-Ft.)		—		—		—	
		REQUIRED (Ac.-Ft.)		—		—		—	
QUALITY	TREATMENT AREA		OFW? Y OR N	9.70	N	2.33	N	2.13	N
	TREATMENT VOL. REQUIRED (Ac.-Ft.)			0.81		0.19		0.18	
	TREATMENT VOL. PROVIDED (Ac.-Ft.)			0.81		0.19		0.18	
	METHOD OF TREATMENT			WET DETENTION		WET DETENTION		WET DETENTION	
	CONTROL DEVICE TYPE			ORIFICE		ORIFICE		ORIFICE	
	CONTROL DEVICE DIMENSIONS			2.5 INCH ϕ		0.9 INCH ϕ		0.8 INCH ϕ	
	RECOVERY TIME (Hrs.)			>60 HRS		>60 HRS		>60 HRS	
100-YEAR FLOODPLAIN	ENCROACHMENT (Ac.-Ft.)			→		→		→	→
	COMPENSATION (Ac.-Ft.)			→		→		→	→
	COMPENSATION TYPE			→		→		→	→
	ENCROACHMENT RESULT (feet)			→		→		→	→

COMMENTS: JRB

SWFWMD ENGINEERING WORKSHEET

PERMIT NO. 43011896.032

PERMIT NAME: DOT, I-4 POLK COUNTY, SECTION 6

								TOTALS
BASIN NO. - POND NO.		O or C	6-11					10
POND DATA	POND BOTTOM ELEVATION		128.0					
	SEASONAL HIGH WATER ELEVATION		129.0					
	CONTROL DEVICE ELEVATION		129.0					
	DESIGN LOW WATER ELEVATION		129.71					
	WEIR INVERT ELEVATION		129.71					
	DESIGN HIGH WATER ELEVATION		130.52					
	TOP OF BANK ELEVATION		130.9					
	AREA AT TOP OF BANK (Ac.)		~~0.51~~ 0.51					7.34
	VOLUME AT DHW (Ac.-Ft.)		0.90					
	VOLUME AT TOB (Ac.-Ft.)		1.10					
QUANTITY	25YR/24HR DISCHARGE RATES — WEIR WIDTH (FT)		24 INCHES					
	25YR/24HR DISCHARGE RATES — PRE-DEVELOPED (CFS)		—					
	25YR/24HR DISCHARGE RATES — POST-DEVELOPED (CFS)		3.82					
	100YR/24HR RETENTION VOLUMES — PROVIDED (Ac.-Ft.)		—					
	100YR/24HR RETENTION VOLUMES — REQUIRED (Ac.-Ft.)		—					
QUALITY	TREATMENT AREA	OFW? Y OR N	2.38	N				
	TREATMENT VOL. REQUIRED (Ac.-Ft.)		0.20					
	TREATMENT VOL. PROVIDED (Ac.-Ft.)		0.20					
	METHOD OF TREATMENT		WET DETENTION					
	CONTROL DEVICE TYPE		ORIFICE					
	CONTROL DEVICE DIMENSIONS		1 INCH Ø					
	RECOVERY TIME (Hrs.)		>60 HRS					
100-YEAR FLOODPLAIN	ENCROACHMENT (Ac.-Ft.)		—			→ 10.74		3.08
	COMPENSATION (Ac.-Ft.)		—			→ 10.74		0.00
	COMPENSATION TYPE		—			→ EE		SM
	ENCROACHMENT RESULT (feet)		—			→ N/A		N/A

COMMENTS: JNB

Permit No. 43022407.003

Ritchie Bros. Auction Facility Expansion

RDR314-01 SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT 08-29-08
18:27:59 APPLICATIONS ENTERED INTO THE DISTRICT RDBS PAGE 1
DURING THE WEEK OF 08/23/08 THROUGH 08/29/08
SURFACE WATER PERMIT APPLICATIONS

Imaged as Received

INTERESTED PARTY ID: 000137

APPLICATION NUMBER: 43-022407.003 DATE APPLICATION RECEIVED: 08/20/08

INCIDENTAL SITE ACTIVITY RECEIVED: 08/20/08

REGULATION DEPT: BARTOW LETTER-MOD: NO

TYPE: ERP INDIVIDUAL

PROJECT NAME: RITCHIE BROS AUCTION FACILITY EXPANSION

ACRES OWNED: 205.00 PROJECT SIZE: 205.00

APPLICANT NAME: RITCHIE BROS PROPERTIES INC &
SANDLER AT POLK CO LLC
ADDRESS: 6500 RIVER RD
RICHMOND BC V6X4G, PHONE: (801) 455-9005

PROJECT DESC: BUSINESS

ACTIVITY DESC: COMMERCIAL

COUNTY1: POLK COUNTY2:

BASIN: GREEN SWAMP

OUTSTANDING FLORIDA WATER: NO AQUATIC PRESERVE: NO

SECTION(S): 07
TOWNSHIP: 26 RANGE: 27

A map showing location of the proposed activity, and a description of any mitigation is available at the regulation department evaluating the application.

A request for a General Permit for Incidental Site Activities was filed concurrently with the individual application. The request for a General Permit for Incidental Site Activities will be designated as permit application number 43022407.003 (J). If approved, the General Permit would allow Incidental Site Activities, as defined in Rule 40D-40.021, F.A.C., to begin prior to final action on the individual permit. Rule 40D-40.381, F.A.C., requires that in the event the individual permit is not issued, the permittee cease Incidental Site Activities and restore the site to previous conditions.

This report was sent to the following interested parties found in RDBS:
43-22407.003
137

Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Lecanto Service Office
Suite 226
3600 West Sovereign Path
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)
SUNCOM 531-6900

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

An Equal Opportunity Employer

96 | 41

SEPTEMBER 01, 2008

Original Poor Quality

[redacted]

SUBJECT: REQUEST FOR APPLICATION NOTICING - RECEIPT OF SURFACE WATER PERMIT APPLICATIONS
INTERESTED PARTIES ID [redacted]

REFERENCE: CHAPTER 40D-1.603

Dear [redacted]

As requested in your letter processed on [redacted] enclosed is a computer generated report for the above referenced application(s) entered into the District Regulatory Database System (RDBS) during the week of AUGUST 23, 2008 - AUGUST 29, 2008.

Interested persons have the opportunity to inspect a copy of any permit application and submit written comments concerning the application. In addition, if you wish to be advised as to agency action and opportunity to request an administrative hearing regarding an application, you must file a written request with the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, REGULATION PERFORMANCE MANAGEMENT, 2379 BROAD STREET, BROOKSVILLE, FL 34604-6899. Any comments or requests filed at the above address must be received by the department no later than 14 days after the date of this notice and must include the permit application number.

As referenced in 40D-1.603, permit application noticing requests are valid for six months. In order for noticing to continue, you will need to submit another written request before that expiration date and every six months thereafter.

Please contact me at (352) 796-7211 or 1-800-423-1476 (toll free in Florida only) Extension 4180 if I can be of any further service in this matter.

Sincerely,

(Signed)
HEATHER MOCK
Regulation Performance Management Department

ENCLOSURE(S) - As stated

The District does not discriminate based on disability. Anyone requiring reasonable accommodation under the ADA should contact the Regulation Performance Management Department at (352) 796-7211 or 1-800-423-1476(FL only); TDD only: 1-800-231-6103

E-1635

Date: 9/15/08

MEMORANDUM

TO: ( )__ ( )JRB (✓)FXR ( )RAD ( )CYS ( )KAG ( )PDT ( )LCU ( )MSV

FROM: ( )DCC ( )MKH ( )CBS ( )SLP ( )MS ( )SLC (☼) MNM

SUBJECT: STATUS OF ENVIRONMENTAL SCIENTIST REVIEW

MSW/ERP/D&F NUMBER: 43022407.003

PROJECT NAME: Ritchie Bros. Auction Facility Expansion

( ) I have completed my review of this project and have no additional questions.

(☼) There are no environmental questions on this project as the site contains no wetlands. Utilize the following information in the Staff Report:

1) Language for the environmental consideration section of the Staff Report.

There are no wetlands within the project area (See Table 1)

2) Environmental Tracking and Specific Conditions required for this permit.

None

3) Wetlands Report (Table 1).

No wetlands

(☼) CIP Contact: No on-site or immediately adjacent wetlands or other environmental features that require inspection, other than sediment and erosion control.

(☼) Comments: No wetlands or surface waters exist within the project area.

E-1636

Original
Poor
Quality

Author: Melissa McConnell

Last modified: 09/15/2008 08:16 AM

UMAM Entry

Status: Report Created

Permit #	Project Name	ES Initials	Staff Initials	Project Size	Permit Type
43022407.003	RITCHIE BROS AUCTION FACILITY EXPANSION	MNM	FXR	205.00	EI

Wetland/Other Surface Water Information

Count: 0

For impacts that do not require mitigation, their functional loss is not included.

Sum Wetland/Other Surface Water Acres:	
Sum Acres Not Impacted:	
Sum Acres Temp Disturbed:	
Sum Temp Disturbed Functional Loss:	
Sum Acres Perm Destroyed:	
Sum Perm Destroyed Functional Loss:	
Sum Mitigation Functional Gain:	
Permit Functional Net:	

Wetland/Other Surface Water Comments:

No wetlands or surface waters exist within the project area.

Impact Area Information

Count of Impact Areas: 0

Mitigation Information

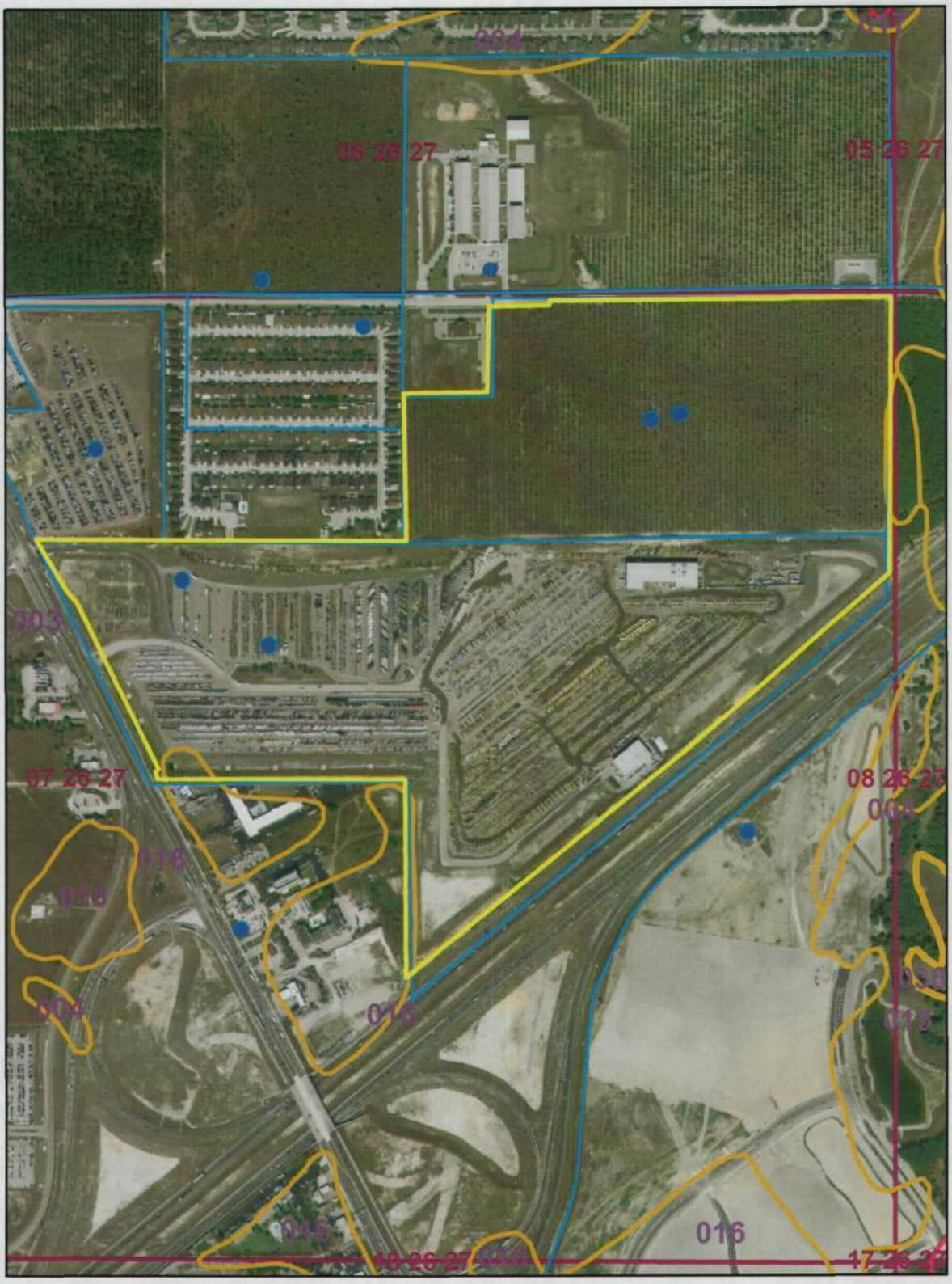
Count of Mitigations: 0

Type	Size (Acres)	Functional Gain
Creation:		
Restoration:		
Enhancement:		
Preservation:		
Preservation + Enhancement:		
Other:		

Mitigation Comments:

Mitigation Offset Information — **Count of Mitigation Offsets: 0**

ERP: 43022407.003
Richie Bros. Auction Facility Expansion
STR: 07/26S/27E
Polk



A - Candler Sand/0-5% Slopes (003)

A - Candler Sand/5-8% Slopes (004)

UND - Urban Land (016)

N

Miles
0 0.03 0.06 0.12 0.18 0.24

E-1639

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

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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)

September 18, 2008

File of Record
Permit No.

Kriss Y. Kaye, P.E.
Envisors, LLC
2105 Dundee Road
Winter Haven, FL 33883

Subject: **Request for Additional Information**

Project Name:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/Twp/Rge:	07/26S/27E

References: Chapters 40D-1, 4, 40 and 400, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Kaye:

Before the District can complete its review of the permit application referenced above, the information itemized on the enclosed checklist must be received.

Please ensure that your response to the checklist, including checks,

- is received in this office within 30 days from the date of this request;
- references the permit application number; and
- includes three copies of **all** requested information.

Failure to provide this information within 30 days will delay the processing of the permit application, and may result in the permit application being denied. If the additional information cannot be provided within that time period, the Applicant may make a written request for a time extension in accordance with Rule 40D-1.1020, F.A.C., provided that an acceptable justification for the time extension accompanies the request. If needed, the time extension request should be received from the Applicant within 30 days from the date of this letter.

Pursuant to Subsection 373.4141(1), F.S., if you believe this request for additional information is not authorized by law or rule, you may request a hearing pursuant to Sections 120.569, 120.57, F.S., and Chapter 28-106, 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.

RDBS Record Updated
9/18/08 by TLR

E-1640

If you have questions regarding the information requested or the District's procedures, please contact me at the Bartow Service Office, extension 6100. For assistance with environmental concerns, please contact Melissa N. McConnell, extension 6106.

Sincerely,

Nicole McConnell

For: Frank X. Ritchie
Bartow Regulation Department

FXR:MNM:nm
Enclosures: Checklist
Sections 28-106.201 and 28-106.301, F.A.C.
cc/enc: File of Record 43022407.003
Scott Lennon, Ritchie Bros. Properties, Inc., Real Estate Acquisition Manager
Robert Thompson, Director, Ritchie Bros. Properties, Inc., a Washington Corporation
Nathan D. Benson, Sandler at Polk County, LLC, a Virginia Limited Liability Company
M. Balser
M. Alford

PROJECT INFORMATION REVIEW LIST
ENVIRONMENTAL RESOURCE PERMIT APPLICATION
INDIVIDUAL

DATE:	September 18, 2008
PROJECT NAME:	Ritchie Bros. Auction Facility Expansion
APPLICATION NUMBER:	43022407.003
DATE APPL. RECEIVED:	August 20, 2008
APPLICATION REVIEWER/S:	ENGINEERING: Frank X. Ritchie ENVIRONMENTAL: Melissa N. McConnell

In order to provide that reasonable assurance is given for those "Conditions for Issuance of Permits" found in Rule 40D-4.301, Florida Administrative Code, (F.A.C.), and those "Additional Conditions or Issuance of Permits" found in Rule 40D-4.302, F.A.C., the following additional information is required as indicated. The items requested are extracted from Rules 40D-4.101, F.A.C., "Content of Application," 40D-4.091, F.A.C. "Basis of Review," and 40D-1.607, F.A.C. "Permit Processing Fee," and 40D-1.659, F.A.C. "Forms and Instructions."

APPLICATION AND APPLICATION CERTIFICATION:

1. Please note that the Owner or Authorized Agent must sign the Application. If signed by an Authorized Agent, a letter from the Owner designating the individual as the Authorized Agent must be provided with the signed form. A letter of authorization from an officer of Ritchie Bros. Properties, Inc., as listed on the State of Florida Corporations website, would be satisfactory to allow Mr. Thompson to sign the Application as the Authorized Agent. In addition, provide the corporate printout from the State of Florida Corporations website, and ensure that the printout matches the Application. Refer to Section A, Parts 6 and 9.B of the Environmental Resource Permit (ERP) Application.

2. Clarify the project area indicated in Section A, Part 4.D of the ERP Application. "Project Area" means the area within the total land area, as defined in Section 40D-4.021(11) F.A.C., which is or will be served by a Surface Water Management System (SWMS) to be permitted.

PLANS:

3. Please make sure that the Owner as indicated in the Application form is the same indicated on the Cover Sheet. Refer to Section E, Part C, 1 of the ERP Application and to Rule 40D-1.605(5), F.A.C.

4. The District requires five (5) separate sets of plans (including a cover sheet and details of erosion devices or other details as required) for the proposed Section J activities. A single Sheet 6A is not sufficient. Refer to Section E, Part E of the ERP Application.

5. Previous permits indicate control structures on Ponds 3 and 4; however, no indication of either are on the plans and no detail for removal are indicated. Refer to Section E, Part C, 11 of the ERP Application and Section 6 of the District's Basis of Review (B.O.R.).

6. Provide the design capacity of the internal storm sewer facilities:

   a. Clarify that all proposed pipes capacity, flow depth, hydraulic grade line, and that the flow combined with the inlet capacity, will not cause subsequent bypass of various inlets, resultant erosion, and failure of the systems;
   b. Provide the ditch pavement detail including the method of termination at inlet S-26;
   c. Review the assertion of Pond 4 being designed to closed basin standards. Inlet S-30 has a grate elevation of 137.4 feet NGVD, which is lower than the peak stage of Pond 4 as re-designed (elevation 142.93 feet NGVD). Higher elevations adjacent to each inlet appear to be no more than foot. The expectation of draining approximately 50 acres to Pond 4 with an 18-inch pipe, at any rational coefficient, or rainfall intensity, without surcharge exceeding this elevation, is questionable at best; and
   d. Review the pipes draining into Pond 4 from the west end for the need of erosion control (energy dissipation devices).

Provide a method of conveying the entire design storm to the Ponds. Refer to Section E, Part C.13 of the ERP Application.

7. Clarify the site grading details including perimeter grades. The concerns include but are not limited by:

   a. Provide spot elevations at specific points at the perimeter of the proposed customer parking lot;
   b. Clarify the top of curb elevation and the top of the asphalt tailings, ensuring that the top of the asphalt millings are 6-inches below the top of the curb, by revising the curb detail on Sheet 10;
   c. Clarify the difference between Sheet 6 and Sheet 8, concerning the proposed equipment display area. Sheet 6 shows that this area will be finished with asphalt millings and yet Sheet does not show this. If asphalt millings are used, provide a curb and the spot elevations described above to clarify the situation. If millings are not used, provide the method to be utilized in post-development to prevent erosion and maintain the direction of drainage flow toward the retention pond;
   d. Provide elevations for all paving area detailed on Sheets 9 and 10; and
   e. Provide details showing the permanent erosion control device rather than completely relying on text notes.

   Refer to Section E, Part C, 18 of the ERP Application.

CONSTRUCTION SCHEDULE AND TECHNIQUES:

8. Provide a Construction Surface Water Management Plan (CSWMP) consistent with Section 2.8 of the District's B.O.R. Please be aware that this CSWMP must be signed by the applicant\owner or authorized agent. It appears that the applicant intended to sign the CSWMP (by virtue of the box with his name on it); however, the CSWMP was not signed. Coordinate with a question in **APPLICATION AND APPLICATION CERTIFICATION** above. Refer to Section E, Part D, 2 of the ERP Application and Section 2.8 of the District's B.O.R.

DRAINAGE INFORMATION:

9. Clarify the size of Pond 1. ERP No. 43022407.002 shows the pond top area as 3.95 acres not 3.11 acres as is indicated for this permit. Refer to Section E, Part E, 1, f of the ERP Application.

10. Previous permits indicate control structures on Ponds 3 and 4; however, no indication of either are on the plans, no detail for removal are indicated, nor are the structures accounted for in the drainage calculations. Refer to Section E, Part E, 1.f, g, and h of the ERP Application.

11. Please provide the soils report signed and sealed by the Geotechnical Engineer as required law. Revise the drainage calculations as required should the results portrayed therein not support the drainage calculations as presently portrayed. Refer to Section E, Part E.2 of the ERP Application.

OPERATION AND MAINTENANCE AND LEGAL DOCUMENTATION:

12. Please describe the overall maintenance and operation schedule for the proposed system and provide this on the construction plans. Refer to Section E, Part F, 1 of the ERP Application.

13. Please provide a status report of the approvals being sought from other agencies with an indication that the surface water management portion of the project will be approved by the other pertinent jurisdictions. Refer to Section 1.4 of the District's B.O.R.

WATER USE:

14. Because this well will be utilized after construction and is within an area to be cut down by approximately 25-feet, the District will require reasonable assurance that this well is not accidentally destroyed during construction and is protected after construction. The assurance must include a specific list and the schedule of implementation of the items to be done to protect the well during construction. Please contact Mark Alford, Field Technician Supervisor at the Bartow Service Office, to discuss the water well protection criteria and the specific list of the items to be placed on the plans. Refer to Section E, Part G of the ERP Application.

PART II HEARINGS INVOLVING DISPUTED ISSUES OF MATERIAL FACT

28-106.201 Initiation of Proceedings.

(1) Unless otherwise provided by statute, initiation of proceedings shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document that requests an evidentiary proceeding and asserts the existence of a disputed issue of material fact. Each petition shall be legible and on 8 ½ by 11 inch white paper. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) Upon receipt of a petition involving disputed issues of material fact, the agency shall grant or deny the petition, and if granted shall, unless otherwise provided by law, refer the matter to the Division of Administrative Hearings with a request that an administrative law judge be assigned to conduct the hearing. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from the face of the petition that the defect cannot be cured.

(5) The agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(3), (5) F.S. Law Implemented 120.54(5), 120.569, 120.57 F.S. History–New 4-1-97, Amended 9-17-98.

PART III PROCEEDINGS AND HEARINGS NOT INVOLVING DISPUTED ISSUES OF MATERIAL FACT

28-106.301 Initiation of Proceedings

(1) Initiation of a proceeding shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document which requests a proceeding. Each petition shall be legible and on 8 ½ by 11 inch white paper or on a form provided by the agency. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(e) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(f) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) If the petition does not set forth disputed issues of material fact, the agency shall refer the matter to the presiding officer designated by the agency with a request that the matter be scheduled for a proceeding not involving disputed issues of material fact. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this Rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from the face of the petition that the defect cannot be cured.

(5) The agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(5) F.S. Law Implemented 120.54(5), 120.569, 120.57 F.S. History–New 4-1-97, Amended 9-17-98.

AFFIDAVIT OF PUBLICATION
THE LEDGER
Lakeland, Polk County, Florida

Original Poor Quality

Case No's:

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being A

Public Notice

in the matter of **Ritchie Bros Properties**

Concerning **Permit No. 43-022407.003**

was published in said newspaper in the issues of **9-18; 2008**

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed. Paula Freeman
Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this 18TH
day of September A.D. 20 08
Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 330015
EXPIRES: October 17, 2008
Bonded Thru Notary Public Underwriters

My Commission Expires.....

B971 L060G08FR0

Southwest Florida Water Management District
Notice of Applications in Polk County
Applications for permits have been received by the Southwest Florida Water Management District from:
Number: 43-022407.003
Application Received on 08/20/08
Ritchie Bros Properties Inc & Sandler at Polk Co LLC
6500 River Rd
Richmond, BC V6X4G5
Construction/Operation Permit
Project Name: Ritchie Bros Auction Facility Expansion
Activity: Commercial
Outstanding Florida Water: No
Aquatic Preserve: No
Project Description: Business
Project Size: 205.00 acres
Section(s) 7 Township 26S, Range 27E
The applications are on file at the District Office and available for inspection.
Interested persons have the opportunity to inspect a copy of the application and submit written comments concerning the application. In addition if you wish to be advised as to agency action regarding a permit application and provided an opportunity to request an administrative hearing regarding the application, you must file a written request to the Southwest Florida Water Management District, 2379 Broad Street, Brooksville, FL 34604-6899. Any requests or comments must be filed with the records & Data Department at the above address and must be received by the department not later than 14 days after the date of this notice an shall include the permit application number.
The district does not discriminated based on disability. Anyone requiring reasonable accommodations under the ADA should contact the records and Data Department at 352-796-7211 or 1-800-423-1476. TDD only 1-800-231-6103.
B971 9-18, 2008

Southwest Fla. Water Management District
SEP 26 2008
RPM-5

E-1645

ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

26 September 2008

XC: FxR MNM

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Imaged as Received

Subject:	Request for Additional Information
Project:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/TwpRge:	07/26S/27E
EVI Job No.:	10705301

Dear Mr. Ritchie:

We are pleased to respond to your letter of 18 September 2008 requesting additional information on the above-referenced project. Our responses to your comments are shown below and we are enclosing three (3) copies of all requested information.

Application and Application Certification:

Comment 1) Please note that the Owner or Authorized Agent must sign the Application. If signed by an Authorized Agent, a letter from the Owner designating the individual as the Authorized Agent must be provided with the signed form. A letter of authorization from an officer of Ritchie Bros. Properties, Inc., as listed on the State of Florida Corporations website, would be satisfactory to allow Mr. Thompson to sign the Application as the Authorized Agent. In addition, provide the corporate printout from the State of Florida Corporations website, and ensure that the printout matches the Application. Refer to Section A, Parts 6 and 9.B of the Environmental Resource Permit (ERP) Application.

Response 1) We have forwarded your request to Mr. Scott Lennon for clarification of the information they have provided for our submittal to you and to make any necessary changes to demonstrate ownership authority.

Southwest Florida Water Management District
SEP 30 2008
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RDBS Record Updated 10/2/08 by TLR

File of Record
Permit No.

4:55PM H/R PM

Continued . . .

Application and Application Certification: (Continued)

Comment 2) Clarify the project area indicated in Section A, Part 4.D of the ERP Application. "Project Area" means the area within the total land area, as defined in Section 40D-4.021(11) F.A.C., which is or will be served by a Surface Water Management System (SWMS) to be permitted.

Response 2) The project area, which is basically equivalent to the property area, is shown on the attached construction plans. The proposed project area is the area served by the stormwater management area.

Plans:

Comment 3) Please make sure that the Owner as indicated in the Application form is the same indicated on the Cover Sheet. Refer to Section E, Part C, 1 of the ERP Application and to Rule 40D-1.605(5), F.A.C.

Response 3) Mr. Dave N. Nicholson is noted on the construction plans.

Comment 4) The District requires five (5) separate sets of plans (including a cover sheet and details of erosion devices or other details as required) for the proposed Section J activities. A single Sheet 6A is not sufficient. Refer to Section E, Part E of the ERP Application.

Response 4) Five sets of the ISA plans are attached.

Comment 5) Previous permits indicate control structures on Ponds 3 and 4; however, no indication of either are on the plans and no detail for removal are indicated. Refer to Section E, Part C, 11 of the ERP Application and Section 6 of the District's Basis of Review (B.O.R.).

Response 5) Control structures do exist on the ponds. We have noted on Sheet No. 9 of the previously submitted plans a revision to the Pond No. 4 outfall structure wherein it is to be raised above the 100-year 24-hour design high water level. Pond No. 3 also has an outfall structure, which will remain in accordance with the as-built condition as shown on the attached construction plans. Please review the attached construction plans which illustrates that the proposed 100-year 24-hour DHWL in Pond Nos. 3 and 4 are lower than the crest of the overflow structure.

Comment 6) Provide the design capacity of the internal storm sewer facilities:

a. Clarify that all proposed pipes capacity, flow depth, hydraulic grade line, and that the flow combined with the inlet capacity, will not cause subsequent bypass of various inlets, resultant erosion, and failure of the systems;
b. Provide the ditch pavement detail including the method of termination at inlet S-16;

Continued . . .

Plans: (Continued)

c. Review the assertion of Pond 4 being designed to closed basin standards. Inlet S-30 has a grate elevation of 137.4 feet NGVD, which is lower than the peak stage of Pond 4 as re-designed (elevation 142.93 feet NGVD). Higher elevations adjacent to each inlet appear to be no more than foot. The expectation of draining approximately 50 acres to Pond 4 with an 18-inch pipe, at any rational coefficient, or rainfall intensity, without surcharge exceeding this elevation, is questionable at best; and

d. Review the pipes draining into Pond 4 from the west end for the need of erosion control (energy dissipation devices).

Response 6) **Attached please find the updated plans which illustrate the proposed stormsewer and inlets which have the capacity to convey the 25-year 24-hour storm event. Attached please find the OPSEW calculations which illustrate that the stormsewer has adequate capacity. The plans provide a detail of the erosion control for the pipe flowing into Pond No. 4 and the preceding inlets have grates and manholes which are higher in elevation that the 100-year 24-hour design high water level.**

Provide a method of conveying the entire design storm to the Ponds. Refer to Section E, Part C.13 of the ERP Application.

Comment 7) Clarify the site grading details including perimeter grades. The concerns include but are not limited by:

a. Provide spot elevations at specific points at the perimeter of the proposed customer parking lot;
b. Clarify the top of curb elevation and the top of the asphalt tailings, ensuring that the top of the asphalt millings are 6-inches below the top of the curb, by revising the curb detail on Sheet 10;
c. Clarify the difference between Sheet 6 and Sheet 8, concerning the proposed equipment display area. Sheet 6 shows that this area will be finished with asphalt millings and yet Sheet does not show this. If asphalt millings are used, provide a curb and the spot elevations described above to clarify the situation. If millings are not used, provide the method to be utilized in post-development to prevent erosion and maintain the direction of drainage flow toward the retention pond;
d. Provide elevations for all paving area detailed on Sheets 9 and 10; and
e. Provide details showing the permanent erosion control device rather than completely relying on text notes.

Refer to Section E, Part C, 18 of the ERP Application.

Continued . . .

Plans: (Continued)

Response 7) **Please review the attached construction plans which include the revisions you have requested to include spot elevations where contours are not present, top of curb at 6-inches above the asphalt, a millings detail, and indication that millings are to be used in the display and customer parking area.**

Our plans illustrate and call out permanent erosion control devices such as sod, stormsewer piping and inlets, stormwater management ponds, pyramat material, etc.

Construction Schedule and Techniques:

Comment 8) Provide a Construction Surface Water Management Plan (CSWMP) consistent with Section 2.8 of the District's B.O.R. Please be aware that this CSWMP must be signed by the application\owner or authorized agent. It appears that the applicant intended to sign the CSWMP (by virtue of the box with his name on it); however, the CSWMP was not signed. Coordinate with a question in **APPLICATION AND APPLICATION CERTIFICATION** above. Refer to Section E, Part D, 2 of the ERP Application and Section 2.8 of the District's B.O.R.

Response 8) **So as to not inconvenience the Owner with multiple instances that might require signatures, please let us know when the plans are complete and we will have the Owner or Owner's representative sign the plans.**

Drainage Information:

Comment 9) Clarify the size of Pond 1. ERP No. 43022407.002 shows the pond top area as 3.95 acres not 3.11 acres as is indicated for this permit. Refer to Section E, Part E, 1.f of the ERP Application.

Response 9) **Based on our measurement of the as-built conditions, Pond No. 1 has an area of 3.11 acres at an elevation of 154 ft.**

Comment 10) Previous permits indicate control structures on Ponds 3 and 4; however, no indication of either are on the plans, no detail for removal are indicated, nor are the structures accounted for in the drainage calculations. Refer to Section E, Part E, 1.f.g, and h of the ERP Application.

Response 10) **Please refer to the same comment above.**

Continued . . .

Drainage Information: (Continued)

Comment 11) Please provide the soils report signed and sealed by the Geotechnical Engineer as required law. Revise the drainage calculations as required should the results portrayed therein not support the drainage calculations as presently portrayed. Refer to Section E, Part E.2 of the ERP Application.

Response 11) Attached please find the geotechnical report provided by Qore.

Operation and Maintenance and Legal Documentation:

Comment 12) Please describe the overall maintenance and operation schedule for the proposed system and provide this on the construction plans. Refer to Section E, Part F, 1 of the ERP Application.

Response 12) Please reference the General Specifications (2 of 2) plans which includes a maintenance and operation schedule (list of items to be performed in attempt to ensure proper maintenance and operation).

Comment 13) Please provide a status report of the approvals being sought from other agencies with an indication that the surface water management portion of the project will be approved by the other pertinent jurisdictions. Refer to Section 1.4 of the District's B.O.R.

Response 13) The following is status of the approvals being sought: we have either submitted or will be submitting the necessary permit applications to Polk County, Polk County Health Department and the Florida Department of Environmental Protection. We understand that changes as a result of the additional requirements from agencies not contained within the final approved design may necessitate a permit modification with the SWFWMD.

Water Use:

Comment 14) Because this well will be utilized after construction and is within an area to be cut down by approximately 25-feet, the District will require reasonable assurance that this well is not accidentally destroyed during construction and is protected after construction. The assurance must include a specific list and the schedule of implementation of the items to be done to protect the well during construction. Please contact Mark Alford, Field Technical Supervisor at the Bartow Service Office, to discuss the water well protection criteria and the specific list of the items to be placed on the plans. Refer to Section E, Part G of the ERP Application.

Continued . . .

Water Use: (Continued)

Response 14) In accordance with my discussion last week with Mr. Boyd in your office, it is not necessary at this time to provide a specific list and the schedule of implementation of the items to be done to protect the well during construction. Mr. Boyd did ask that we note on the plans that "it is necessary for a licensed well contractor coordinate with the SWFWMD prior to and during construction to ensure the existing well is protected in accordance with the SWFWMD's requirements".

We appreciate your consideration and assistance in this matter. If you need anything further, please let us know.

Yours truly,
ENVISORS, LLC

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

KYK/ph
Enclosures: As stated
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.02 (RA 1) to F Ritchie.doc

Storm Sewer Design

Project: WEST PARKI Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.00 C3 = 0.00
Outfall Ground Elevation (feet) :157.00 Outfall Hydraulic Grade (feet) :158.04

Imaged as Received

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
1	2	64.00	0.41	0.41	0.25	9.9	2.4	180.00	178.30	178.29	0.01	24.0	0.000	0.78	2.4	1.00
						10.0			175.82	175.63						
S-1						10.0			173.82	173.63	0.19	0.012	0.300		13.4	
2	3	71.00	0.58	0.99	0.77	9.4	7.2	180.90	178.21	178.15	0.06	24.0	0.000	2.30	7.2	1.00
						10.0			175.63	175.42						
S-2						11.4			173.63	173.42	0.21	0.012	0.300		13.4	
3	4	65.00	0.65	1.64	1.35	9.2	12.5	181.50	177.90	177.74	0.17	24.0	0.000	3.98	12.5	1.00
						10.0			175.42	175.23						
S-3						11.9			173.42	173.23	0.19	0.012	0.290		13.3	
4	5	65.00	0.58	2.22	1.88	9.1	17.2	180.40	177.27	176.95	0.32	24.0	0.000	5.46	17.2	1.00
						10.0			175.23	175.04						
S-4						12.2			173.23	173.04	0.19	0.012	0.290		13.3	
5	6	69.00	0.33	2.55	2.17	9.1	19.7	180.40	176.34	175.89	0.45	24.0	0.000	6.28	19.7	1.00
						10.0			175.04	174.83						
S-5						12.4			173.04	172.83	0.21	0.012	0.300		13.6	
6	8	64.00	0.27	2.82	2.41	9.0	21.8	180.10	175.15	174.64	0.51	24.0	0.000	6.94	21.8	1.00
						10.0			174.83	174.64						
S-6						12.5			172.83	172.64	0.19	0.012	0.300		13.4	
7	8	301.00	0.77	0.77	0.69	9.9	6.9	176.20	174.60	173.63	0.97	24.0	0.000	4.41	6.9	1.00
						10.0			175.60	174.64						
S-8						10.0			173.60	172.64	0.96	0.012	0.320		13.9	
8	9	87.00	0.07	3.66	3.17	9.0	28.5	180.30	172.69	165.67	7.02	36.0	0.000	4.03	28.5	1.00
						10.0			175.00	165.00						
S-9						12.7			172.00	162.00	10.00	0.012	11.490		245.6	
9	10	220.00		3.66	3.17	8.9	28.1	171.50	163.07	158.04	5.03	36.0	0.000	12.95	28.1	1.00
						10.0			165.00	160.00						
S-9A						13.1			162.00	157.00	5.00	0.012	2.270		109.2	

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SEP 30 2008
Southwest Florida Water Management District

STATE OF FLORIDA PROFESSIONAL ENGINEER

9/29/08

E-1652

09-26-2008

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Imaged as Received

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
1	2	307.00			1.74	9.9	17.3	177.00	169.78	169.31	0.47	30.0	0.000	3.52	17.3	1.00
			4.98	4.98		10.0			169.84	168.00						
S-10						10.0			167.34	165.50	1.84	0.012	0.600		34.5	
2	3	300.00	2.50	2.50	3.24	9.4	30.4	173.50	169.02	168.49	0.53	36.0	0.000	4.31	30.4	1.00
				4.98		10.0			168.50	166.70						
S-11						11.5			165.50	163.70	1.80	0.012	0.600		56.1	
3	4	299.00	2.79	5.29	4.92	9.0	44.3	171.70	168.16	167.67	0.49	42.0	0.000	4.60	44.3	1.00
				4.98		10.0			167.20	165.40						
S-12						12.6			163.70	161.90	1.80	0.012	0.600		84.8	
4	5	295.00	2.15	7.44	6.21	8.7	53.8	169.90	167.18	166.46	0.72	42.0	0.000	5.60	53.8	1.00
				4.98		10.0			165.40	163.70						
S-13						13.7			161.90	160.20	1.70	0.012	0.580		83.0	
5	6	299.00	2.14	9.58	7.49	8.4	63.1	168.20	166.07	165.58	0.49	48.0	0.000	5.02	63.1	1.00
				4.98		10.0			164.20	162.40						
S-14						14.6			160.20	158.40	1.80	0.012	0.600		121.1	
6	11	295.00	2.19	11.77	8.81	8.2	71.9	166.40	165.37	165.18	0.19	60.0	0.000	3.66	71.9	1.00
				4.98		10.0			163.40	162.52						
S-15						15.6			158.40	157.52	0.88	0.012	0.300		154.5	
7	8	300.00	1.48	1.48	0.89	9.9	8.8	173.60	168.06	167.94	0.12	30.0	0.000	1.80	8.8	1.00
						10.0			168.10	166.30						
S-16						10.0			165.60	163.80	1.80	0.012	0.600		34.5	
8	9	300.00	2.09	3.57	2.14	8.9	19.2	171.80	167.70	167.15	0.56	30.0	0.000	3.91	19.2	1.00
						10.0			166.30	164.50						
S-17						12.8			163.80	162.00	1.80	0.012	0.600		34.5	
9	10	296.00	1.99	5.56	3.34	8.6	28.6	170.00	166.89	166.43	0.46	36.0	0.000	4.04	28.6	1.00
						10.0			165.00	163.20						
S-18						14.1			162.00	160.20	1.80	0.012	0.610		56.5	
10	11	300.00	2.04	7.60	4.56	8.2	37.6	168.20	165.99	165.18	0.81	36.0	0.000	5.32	37.6	1.00
						10.0			163.20	161.40						
S-19						15.3			160.20	158.40	1.80	0.012	0.600		56.1	

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Southwest Florida Water Management District

09-26-2008

9/29/08

E-1653

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Str	To	Length	Incr ment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
11	18	300.00	2.01	21.38	14.57	7.8	114.3	166.40	164.65	164.16	0.49	60.0	0.000	5.82	114.3	1.00
				4.98		10.0			162.52	161.62						
S-20						16.9			157.52	156.62	0.90	0.012	0.300		155.0	
12	13	300.00	3.67	3.67	2.92	9.9	29.0	177.00	174.65	174.16	0.48	36.0	0.000	4.10	29.0	1.00
			2.06	2.06		10.0			172.00	170.20						
S-21						10.0			169.00	167.20	1.80	0.012	0.600		56.1	
13	14	300.00	3.60	7.27	5.23	9.5	49.5	175.20	173.40	171.99	1.41	36.0	0.000	7.01	49.5	1.00
			0.42	2.48		10.0			170.20	168.40						
S-22						11.2			167.20	165.40	1.80	0.012	0.600		56.1	
14	15	300.00	3.90	11.17	7.57	9.2	69.8	173.40	171.51	170.91	0.60	48.0	0.000	5.56	69.8	1.00
				2.48		10.0			169.40	167.60						
S-23						11.9			165.40	163.60	1.80	0.012	0.600		120.9	
15	16	300.00	3.42	14.59	9.62	8.9	86.0	171.60	170.18	169.26	0.92	48.0	0.000	6.84	86.0	1.00
				2.48		10.0			167.60	165.80						
S-24						12.8			163.60	161.80	1.80	0.012	0.600		120.9	
16	17	300.00	3.06	17.65	11.46	8.7	99.8	169.80	168.28	167.05	1.24	48.0	0.000	7.95	99.8	1.00
				2.48		10.0			165.80	164.00						
S-25						13.6			161.80	160.00	1.80	0.012	0.600		120.9	
17	18	298.00	3.21	20.86	13.38	8.5	114.2	168.00	165.77	164.16	1.61	48.0	0.000	9.09	114.2	1.00
				2.48		10.0			164.00	162.20						
S-26						14.2			160.00	158.20	1.80	0.012	0.600		121.3	
18	19	300.00	3.12	45.36	29.83	7.7	228.2	166.20	162.06	160.10	1.96	60.0	0.000	11.62	228.2	1.00
				7.46		10.0			161.00	160.10						
S-27						17.8			156.00	155.10	0.90	0.012	0.300		154.9	
19	25	199.00	0.01	45.37	29.83	7.6	225.5	171.60	155.67	154.40	1.27	60.0	0.000	11.48	225.5	1.00
				7.46		10.0			155.00	154.40						
S-28						18.2			150.00	149.40	0.60	0.012	0.300		155.3	
20	21	285.00			2.49	9.9	24.7	168.25	165.63	164.25	1.38	36.0	0.000	7.08	24.7	1.00
			6.30	6.30		10.0			165.90	164.53						
EX1			0.30	0.30		10.0			162.90	161.53	1.37	0.012	0.480		50.2	

09-26-2008

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
21	22	341.00			2.89	9.7	27.9	168.90	164.01	163.50	0.51	36.0	0.000	3.95	27.9	1.00
			1.14	7.44		10.0			164.40	163.38						
EX2				0.30		10.7			161.40	160.38	1.02	0.012	0.300		39.6	
22	23	290.00			3.65	9.2	33.5	166.80	161.78	158.48	3.30	36.0	0.000	10.52	33.5	1.00
			2.18	9.62		10.0			163.38	160.10						
S-29				0.30		12.1			160.38	157.10	3.28	0.012	1.130		77.0	
23	24	208.00			4.25	9.0	38.3	162.10	154.93	153.72	1.21	36.0	0.000	8.41	38.3	1.00
			1.70	11.32		10.0			155.10	153.90						
S-30				0.30		12.6			152.10	150.90	1.20	0.012	0.580		55.0	
24	25	244.00			4.63	8.9	41.2	155.90	153.19	152.40	0.79	36.0	0.000	5.82	41.2	1.00
			1.10	12.42		10.0			153.14	152.40						
S-31				0.30		13.0			150.14	149.40	0.74	0.012	0.300		39.9	
25	26	83.00		45.37	34.98	7.5	262.3	154.40	143.91	142.90	1.01	60.0	0.000	17.73	262.3	1.00
			1.47	21.35		10.0			145.00	144.00						
S-32				0.30		18.5			140.00	139.00	1.00	0.012	1.200		310.5	

QORE

PROPERTY SCIENCES

For

Mr. Scott Lennon
Ritchie Brothers Properties
6500 River Road
Richmond BC, V6X4G5

Prepared By:

QORE, Inc.
1211 Tech Boulevard, Suite 200
Tampa, Florida 33619

REPORT OF

SUBSURFACE EXPLORATION

PROPOSED AUCTION SITE EXPANSION

700 RITCHIE ROAD

DAVENPORT, FLORIDA

QORE Project No. 240909, Report No. 56252
September 3, 2008

QORE

PROPERTY SCIENCES

September 3, 2008

Ritchie Brothers Properties
6500 River Road
Richmond BC, V6X4G5

Attention: Mr. Scott Lennon
Real Estate Acquisition Manager

Subject: Report of Subsurface Exploration
Proposed Auction Site Expansion
700 Ritchie Road
Davenport, Florida
QORE Project No. 240909, Report No. 56252

Dear Mr. Lennon:

QORE, Inc. (QORE) has completed a geotechnical exploration for the above referenced project, and we are submitting our findings in this report. We conducted this project in general accordance with our Proposal No. 08-1462, dated May 7, 2008. This proposal was authorized by you on May 16, 2008 through the execution of QORE's Proposal Acceptance Sheet (PAS).

This report explains our understanding of the project, provides a description of the site and subsurface conditions encountered, and presents our recommendations regarding the foundation design, construction, slab-on-grade support and pavement design.

QORE appreciates the opportunity to be of service to ***Ritchie Brothers Properties.*** We look forward to helping you through project completion. Please contact us if you have any questions.

Respectfully submitted,

QORE, Inc.

James LaCava, E.I.
Geotechnical Engineering Intern

9/3/08

Jeanne Berg, P.E.
Geotechnical Department Manager
FL License # 50699

Southwest Florida Water Management District

SEP 30 2008

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1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646 fax (813) 623-3795

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APPENDICES

REPORT OF SUBSURFACE EXPLORATION
PROPOSED AUCTION SITE EXPANSION
DAVENPORT, FLORIDA
QORE PROJECT NO. 240909, REPORT NO. 56252

1.0 INTRODUCTION

1.1 GENERAL DISCUSSION

QORE, Inc. conducted a subsurface exploration for the proposed Auction Site Expansion at 700 Ritchie Road in Davenport, Florida. We provided our services in general accordance with our Proposal No. 08-1462, dated May 7, 2008, authorized by Mr. Scott Lennon, Real Estate Acquisition Manager, utilizing QORE's Proposal Acceptance Sheet (PAS). The purpose of the exploration was to evaluate subsurface conditions for the proposed construction and to provide geotechnical engineering recommendations regarding site preparation, earthwork procedures and foundation, retention pond and pavement design. This report presents a brief discussion of our understanding of the project, the exploration procedures and results, and our conclusions and recommendations regarding the above considerations.

2.0 PROJECT INFORMATION

2.1 EXISTING SITE

The subject property proposed for development is located at 700 Ritchie Road in Davenport, Polk County, Florida. The site is currently occupied by an active auction center. The building located on the north side of the property is a single-story, steel framed service area and the building located on the south side of the property is a two-story, steel framed registration area. Retention ponds are located along the southern boundary of the property. Outparcels located around the north and northwest corner of the auction site are abandoned orange groves.

Based on topographic survey provided by Mr. Kriss Kaye, P.E., with Envisors, elevations across the existing auction center generally slope down towards the existing pond areas. The outparcel proposed for the parking area, in the vicinity of the northwest corner of the auction site, slopes down toward the northwest corner of the site. Topography of outparcels located around the north side slopes down toward the east side of the outparcel.

A water feature is located in the vicinity of the northeast corner of the outparcels with a water table elevation of +115 NGVD. Several wetlands are located in the vicinity of the proposed development with the boundary elevation of +120 feet NGVD. The general topography and location of the site are shown on Plate 1 in Appendix A. An abandoned ground water well is located within the outparcel located on the north side of the auction center. Several polyvinyl chloride (PVC) distribution pipe lines were observed within the orange groves. Closed circular depressions that could be indicative of sinkhole activity were not observed at the site.

2.2 PROPOSED CONSTRUCTION

We have been provided with a copy of a preliminary site layout (dated April 2008, prepared by Envisors, LLC) with requested boring locations. Based on review of the furnished preliminary site layout and electronic mail correspondence with Mr. Kriss Kaye, P.E., CFM, we understand that the project will consist of expansion of two existing buildings, pavement areas within the outparcel located along Highway 27, evaluation of existing stormwater ponds and a proposed pond.

Specific structural details, loads and allowable settlement criteria have not been provided to us at this time. Based on our experience with similar types of buildings in Florida, we anticipate that the building will be constructed with interior columns and exterior concrete masonry walls and supported by strip footings and isolated column footings. For the purposes of this proposal we have assumed that maximum column loads will be on the order of 75 kips or less, and continuous footing loads on the order of 6,000 pounds per lineal foot or less. Slab loads are expected to be approximately 500 psf or less, and no extraordinary slab performance criteria are expected. There are several depressions mapped within the proposed site development however these are not mapped as sinkholes as shown on the attached Site Location Map (Appendix A).

3.0 SITE INFORMATION

3.1 REGIONAL GEOLOGY

Florida is located within the Coastal Plain Physiographic Province. The Coastal Plain is a wedge-shaped deposit of sediment that ranges in thickness from near zero at the contact with the Piedmont Physiographic Province (the Fall Line) along its northwest edge, to thousands of feet at the coast (seaward). Coastal Plain soils are marine deposits that contain various materials including interbedded soft and hard limestones, gravels, sands, silts, and clays, as well as organics.

The site is in the physiographic division named the Central or Mid-Peninsular Zone of Florida. The central or mid-peninsular zone is characterized by discontinuous highlands in the form of sub-parallel ridges separated by broad valleys. Within the central or mid-peninsular zone the site is located in the Polk Upland. The Polk Upland is a roughly square area surrounded by lower ground on three sides; the DeSoto Plain on the south, the Gulf Coastal Lowland on the west, and the valley of the Hillsborough and upper Withlacoochee Rivers on the north. On the east it is bounded by the higher ground of the Lake Wales Ridge. The ground surface generally has elevations between 100 and 130 feet. The Bone Valley formation underlies most of the Polk Upland. This formation is comprised of interbedded layers of sand and clay containing sand-size phosphorite.

A review of the current Sinkhole Type, Development, and Distribution in Florida maps prepared by the U.S.G.S. (1985) indicates the subject site is located near the border of an area of few occurrences of sinkholes. Our site reconnaissance did not indicate current circular depressions or other apparent surface indicators of sinkhole activity on the site. In our opinion, this information indicates that the risk of future sinkhole formation at this site is low to moderate. It is

not possible to investigate or design to completely eliminate the possibility of future sinkhole related problems. The Owner must understand and accept this risk.

3.2 SOIL SURVEY INFORMATION

According to the Soil Survey of Polk County, Florida, prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service), the subject property is primarily underlain by Candler fine sand with 0 to 5 percent slopes. A summary of selected properties for the identified soil groups on the site is included below in the table.

SUMMARY OF SOIL INFORMATION					
Soil Map Unit & Name	**Hydrologic Soil Group**	**Water Table Type**	**SHGWT Depth (ft)**	**Shrink Swell Potential**	**Soil Consistency**
08-Candler Sand, 0 to 5 Percent Slopes	A	--	> 6.0	Low	0 to 80 inches Sand

4.0 EXPLORATION AND TESTING METHODS

The procedures used by QORE for field and laboratory sampling and testing are in general accordance with ASTM procedures and established engineering practice. Appendix B contains brief descriptions of the procedures used in this exploration. Number of borings and their locations were selected by Mr. Kriss Kaye, P.E., CFM, with Envisors, LLC.

4.1 FIELD EXPLORATION AND TESTING

The field exploration for the proposed building additions consisted of two (2) Standard Penetration Test (SPT) borings, advanced to depths of approximately 20 feet below the existing ground surface. The drillers advanced the borings using wet rotary methods and collected soil samples using a split-barrel sampler driven by a rope and cathead hammer system according to ASTM D1586.

In addition, eight (8) direct push samples were performed in the proposed and existing ponds areas to depths of approximately 30 feet below the existing ground surface. A "Simco Earth Probe 200" was used to obtain the continuous soil samples using a piston barrel sampler. Seven (7) hand augers were performed within the proposed parking and outparcel areas to depths of 5 to 10 feet below the existing grade. The borings were advanced by manually twisting a post-hole auger into the soil.

Also eight (8) manual test pits within the proposed and existing pond areas were performed to collect relatively undisturbed samples for laboratory testing.

The direct push sampling, SPT and hand auger borings drilled on the site were located by estimating right angles and pacing distances from existing site boundary features in the field.

Therefore, the boring locations shown on the Boring Location Plan, Plate 2 in Appendix A, should be considered approximate.

The Test Boring Records in Appendix B represent our interpretation of the conditions encountered at each boring location. The stratification lines indicated on the Test Boring Records represent the approximate boundaries between soil types; however these transitions may be more gradual than indicated.

4.2 LABORATORY TESTING

Our field representative sealed and returned the soil samples to the QORE office in Tampa where a geotechnical engineer visually classified the soils according to the Unified Soil Classification System (USCS) (ASTM D2487). Sixteen (16) Laboratory constant head permeability testing (ASTM D2434) were performed on relatively undisturbed samples. Two (2) bulk samples of surficial soil were obtained in the general area of the planned asphalt pavement for testing to evaluate the Limerock Bearing Ratio (LBR) (Florida Method FM 5-515). A summary of our laboratory testing results is presented Appendix C.

5.0 SUBSURFACE CONDITIONS

5.1 GENERAL SOIL PROFILE AND ROCK CONDITIONS

Based on the information obtained during the exploration, we developed the following generalized subsurface profile:

Stratum Number	Depth (ft.)	Soil Description	(USCS)	Range of Penetration Resistances, bpf
1	0 – 3½	SAND (SP) and Silty SAND (SM) with gravel - FILL (at borings located within the existing ponds and B-1)	SP, SM	9
2	3½ - 30	SAND (SP)	SP	11 – 47

Within the existing pond areas, our borings encountered silty sand with gravel deposits which were eroded from the open graded parking areas by the rain water. The depth of this sediment deposit varies from 0.5 feet to 3.5 feet below the pond bottom. The soil profiles encountered within our borings were uniform throughout the depths explored.

The above discussion provides only a brief and general description of subsurface conditions encountered in the borings. Detailed descriptions are presented on the individual Test Boring Records. Elevations listed on the Test Boring Records were provided by Mr. Kriss Kaye, P.E., CFM, with Envisors, LLC on June 17, 2008. When reviewing these records, the indicated boundaries between soil strata are approximate and the transitions between strata are typically more gradual. Also, variations in subsurface conditions from those encountered may exist between the boring locations.

5.2 GROUND WATER

Ground water was encountered at borings A-5 and A-6 at approximately depths of 20 feet and 22 feet below the existing grade respectively. Based on elevations provide by Mr. Kriss Kaye, P.E., these correspond to the elevations of about +112 to +116 feet NGVD, respectively. The groundwater was not encountered in the rest of the borings within the depth explored. Water table measurements were completed at the time of our exploration. No ponded water was observed during the site visit.

Ground water levels fluctuate with time due to seasonal moisture changes and locally heavy precipitation events. Therefore, future ground water levels may be encountered at depths different from those identified in our borings.

5.3 TYPICAL SEASONAL HIGH GROUND WATER TABLE

The seasonal high ground water table (SHGWT) is typically encountered during late summer following the rainy season. Several factors affect the SHGWT including the amount of rainfall. The drainage characteristics of the soils; the land surface elevation; relief points such as lakes, rivers or swamps; and distance to relief points are some more important factors influencing the SHGWT elevation. Based on published information, the data from our limited exploration and interpretation of the site conditions, we estimate the SHGWT level will be approximately 14 feet below the existing pond bottoms and greater than 30 feet below current ground surface at the proposed pond area.

6.0 CONCLUSIONS

We base the following conclusions in part on the preceding project information and the results of the subsurface exploration. The following describes our conclusions concerning geotechnical issues associated with the project:

Loose sands are present within the upper 4 to 5 feet of the site that will settle appreciably in response to the anticipated loads. Proofrolling must be performed in order to reduce both total and differential settlement as discussed in the next report section.

After performing proofrolling, we assess that the subsurface conditions are compatible with supporting the intended construction on shallow foundations. The proposed structure can be supported by shallow spread and continuous wall footings designed for a maximum soil bearing pressure of 2,500 psf after proper subgrade preparation.

Based on the assumed maximum loads and a maximum design soil bearing pressure of 2,500 psf, the total settlement is anticipated to be less than 1 inch with differential settlement less than ½ inch for the proposed building once proofrolling has been completed as recommended in this report. The above anticipated settlements are based on empirical calculations.

Sediment deposits consist of silty sand with gravels were encountered in the existing pond bottom to depths of approximately ½ feet to 3½ feet. These sediment materials should be removed.

The preferred soil used for structural fill is fine sand free of organics and debris and containing less than 12 percent material by weight that is finer than a number 200 sieve (fines) (materials conforming to SP and SP-SM in the Unified Soil Classification System). SP sand is present from the existing ground surface to the termination depth of 30 feet within the proposed pond area and may be used as a source of structural fill.

Surface or subsurface indicators of active sinkhole development were not encountered. We assess that the risk for future sinkhole development at this site is low to moderate.

7.0 RECOMMENDATIONS

7.1 SITE PREPARATION

7.1.1 Site Stripping

To prepare the site for construction, all remnants of the pavements, utilities (including septic tanks and lines, if any), and all existing vegetation and large root systems should be removed. After stripping, any pockets of organic material should be undercut. The resulting excavation should be backfilled with soils as discussed in the structural fill section of this report. The sediment deposits encountered within the existing ponds should be removed in order to use the recommended permeability values in the following section. Depth of the sediment deposits could vary from ½ feet to 3.5 feet below the existing pond bottom.

Several PVC distribution pipe lines were observed within the outparcels. These pipe lines should be properly abandoned or plugged.

7.1.2 Proofrolling

Following site stripping, and prior to any fill placement, proofrolling and densification should be performed within the construction areas that are to be filled or are at finished grade. The proofrolling efforts should extend to at least ten feet beyond the construction area limits. Since the proposed construction consists of expansion of the existing building, we do not recommend proofrolling using a large vibratory roller. Therefore, the contractor may use a fully loaded 2 cubic yard capacity front end loader or equivalent within 50 feet of the proposed structure. Proofrolling of the site should continue until a QORE engineering technician observes the soils to be relatively firm and unyielding. Half of the passes should be perpendicular to the direction of travel of the other passes.

Proofrolling should be monitored by our engineering technician. If unusual or excessive deflection is observed, then the areas should be undercut to firm soils and backfilled with structural fill placed in maximum one-foot thick lifts. Some undercutting and backfilling should be expected and budgeted accordingly. Backfill soils should be of the same composition and be compacted to the same criteria as structural fill soils, as subsequently discussed. Rolling should continue until the upper 1½ feet of sand is densified to at least 95 percent of its modified Proctor maximum dry density.

The number of passes required should be determined by constructing a test strip in the vicinity of B-1. The test strip should be at least 75 feet long and 25 feet wide. Test strip testing should be performed by a QORE representative. The number of passes needed to achieve this densification criterion should then be methodically applied to all production densification areas. We recommend that these production passes be witnessed by a QORE representative.

It is important that a representative of our firm observe proofrolling and densification activities. Previously unexplored or unknown conditions could become evident during these operations. We must judge whether the recommendations in this report should be modified in view of the conditions encountered.

7.1.3 Structural Fill Definition

The preferred soil used for structural fill is fine sand free of organics and debris and containing less than 12 percent material by weight that is finer than a number 200 sieve (fines) (materials conforming to SP and SP-SM in the USCS). Sand (SP) is present from the existing ground surface to the termination depth of 30 feet and may be used as a source of structural fill.

Structural fill should be placed in lifts not to exceed one foot thick in mass graded areas and lifts not exceeding 6 inches in utility trenches. The fill material should be compacted to at least 95 percent of its modified Proctor maximum dry density (ASTM D-1557). We recommend the upper 1-foot below the slab and pavement be compacted to at least 98 percent of modified Proctor maximum dry density.

7.2 FOUNDATIONS

7.2.1 Spread Footings

Based on the information revealed by our limited exploration, the proposed buildings can be supported by column footings and continuous strip footings bearing on compacted structural fill or compacted in-place soils. We recommend use of a maximum allowable net soil bearing pressure of 2500 psf to size column and strip footings supported by these materials. Total settlement is anticipated to be less than 1 inch with differential settlement less than ½ inch.

Even though computed footing dimensions may be less, column footings should have a minimum width of at least 24 inches and strip footings should be at least 18 inches wide. These dimensions facilitate densification and hand cleaning of footing subgrades disturbed by the excavation process and the placement of reinforcing steel. They also reduce the potential for localized punching shear failure. Footings should bear at least 18 inches below the finished exterior grade as a bearing capacity requirement.

Foundation excavation will produce a thin veneer of disturbed soil at the footing subgrade. We recommend that the surficial soils exposed at the bottom of the foundation excavation be compacted to at least 95 percent of the soil's modified Proctor maximum dry density. Hand guided vibrating plates can be used. The compaction should be performed and checked prior to placement of reinforcing steel.

7.3 FLOOR SLAB

We assess that unusual floor loads will not be applied to the floor slab. Extraordinary floor slab performance criteria, such as very low allowable deflection/settlement, are not expected. The upper 1-foot of soil beneath the slab area should be compacted to at least 98 percent of its modified Proctor maximum dry density. To reduce the possibility of slab cracking due to minor differential settlement, transitions from foundation-supported building elements to soil supported floors should be reinforced.

Use of a vapor retarder should be determined by the appropriate designer. Any vapor retarder should be placed in accordance with ACI guidelines.

It has been our experience that prior to slab construction, slab subgrades can be significantly disrupted by construction equipment, utility construction, and inclement weather. The soils exposed at the slab subgrade will consist primarily of sands. These materials are particularly susceptible to disturbance. Placement of concrete in these areas must occur promptly, or these areas will likely need re-compaction and re-testing.

7.4 RETENTION POND AREAS

Relatively undisturbed shelby-tube samples were collected from the existing and proposed ponds and tested in our laboratory to determine the horizontal and vertical hydraulic conductivity of the soils encountered. These laboratory permeability tests are performed in general accordance with American Society for Testing and Materials (ASTM D2434-68 (2006)) standards. The results of our laboratory permeability tests and recommended design values are listed in following table.

Location	k_{hs} (In/hr)[1]	k_{vs} (In/hr)[1]	k_{hu} (In/hr)[2]	k_{vu} (In/hr)[2]	Fillable Porosity n	Estimated Water Table Depth El. NVGD, ft[3]	Estimated SHGWT El. NVGD, ft[3,4]
PER – 1	30	30	20	20	0.21	+121	+141
PER – 2	25	25	20	20	0.21	+117	+131
PER – 3	20	20	20	20	0.17	+119	+129
PER – 4	30	30	20	20	0.22	+118	+130
PER – 5	30	30	20	20	0.20	+117	+122
PER – 6	30	30	20	20	0.20	+117	+120
PER – 7	20	20	20	20	0.20	+113	+113
PER - 8	30	30	20	20	0.23	+117	+130

Notes: 1. k_{hs} and k_{vs} are the horizontal and vertical saturated hydraulic conductivity respectively, based on field and laboratory results. 2. k_{hu} and k_{vu} are the horizontal and vertical unsaturated hydraulic conductivity respectively based on sieve analyses and theoretical formulas. 3. El. NVGD is the elevation with respect to the Nation Geodetic Vertical Datum of 1929, base map provided by Mr. Kriss Kaye, P.E. of Envisors, LLC. 4. SHGWT represents Seasonal High Ground Water Table.

These permeability rates can be used provided that the existing ponds are maintained including the periodic removal of sediments from the bottom of the pond. Since the soil profiles encountered in the borings were uniform throughout the depth explored, the permeability of the soil listed in the above table could be extrapolated. Confining layers were not encountered within the depth of our field exploration.

7.5 PAVEMENT

In general, following the completion of the recommended clearing and grading operations and fill placement, the compacted fill and natural shallow sandy soils may be used for construction and support of a flexible (limerock, crushed concrete, or shell base) or semi-flexible (soil cement base) type pavement section. It is our understanding that unsurfaced pavement sections are proposed for parking and drive areas for the surplus construction equipment. Where truck traffic or heavy loading is anticipated, such as dumpster areas, we would recommend using a rigid pavement section.

We have not been furnished with pavement longevity requirements, traffic load distribution and traffic frequency. The pavement information below represents general recommendations based on typical load and construction practices. Once the necessary design data have been furnished QORE would be pleased to provide specific pavement recommendations. All pavement materials and construction procedures should conform to the Florida Department of Transportation (FDOT) or appropriate municipality requirements.

Fill utilized to elevate the cleared pavement areas to subgrade elevation should consist of reasonably clean (less than 12% fines) sands uniformly compacted to a minimum depth of 12 inches and to a minimum density of 98% of the modified Proctor maximum dry density.

The choice of pavement base type will depend on final pavement grades. Since the SHWT is well below 18 inches, a limerock, shell, or crushed concrete base can be utilized. In areas where heavy axle loading is anticipated, we recommend a Type B stabilized subgrade (LBR = 40 min) as specified by the FDOT. We ran two (2) LBR tests on potential subgrade materials and the results were 21 and 27.

Limerock and shell base material should meet FDOT requirements including compaction to a minimum density of 98% of the modified Proctor maximum dry density and a minimum LBR of 100%. Crushed concrete should be graded in accordance with FDOT Standard Specification Section 901-5. We understand that 10 inches of limerock base material is being proposed for the roadway section. As a guideline for pavement design, we recommend that the base course be a minimum of 8 inches thick. Before paving, the base should be checked for soundness.

We understand that 3 inches of Type S-1 asphaltic concrete is being proposed. The asphaltic concrete structural course should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The asphaltic concrete should be compacted to a minimum of 95% of the maximum laboratory density found on the mix design.

We understand that 6 inches of No. 3 Coarse Granite Aggregate is proposed for the unsurfaced parking and drive areas. The coarse granite aggregate should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The coarse granite aggregate should be compacted to a minimum of 98% of the modified Proctor maximum dry density. To reduce maintenance and extend the life of the unsurfaced roadways, we recommend the use of Mirafi 600X or engineer approved equivalent as a confining and reinforcing layer between the subgrade and the coarse granite aggregate. The installation of the woven geotextile shall be completed in accordance with the manufacturer's guidelines.

8.0 FOLLOW-UP SERVICES

Our services do not end with the submission of this geotechnical report. QORE should be kept involved throughout the design and construction process to maintain continuity and to verify that our recommendations are properly interpreted and implemented. To achieve this, we should review project plans and specifications with the designers to see that our recommendations are fully incorporated. We also should be retained to monitor and test the site preparation and foundation construction.

QORE's familiarity with the site and with the foundation recommendations make us a valuable part of your construction quality assurance team. QORE recommends that we be retained by the owner to observe earthwork and foundation construction. Our personnel are qualified to recognize unanticipated ground conditions and can offer responsive remedial recommendations should unanticipated conditions occur.

9.0 LIMITATIONS OF REPORT

This report has been prepared for the exclusive use of ***Ritchie Brothers Properties*** and their designers for specific application to the project previously discussed. Our conclusions and recommendations have been prepared using generally accepted standards of geotechnical engineering and engineering geology practice in the State of Florida. No other warranty is expressed or implied.

Our conclusions and recommendations are based on the design information furnished to us, the data obtained from the previously described exploration and our experience. They do not necessarily reflect variations in the subsurface conditions, which are likely to exist intermediate of our borings and in unexplored areas of the site due to the inherent variability of the subsurface conditions in this geologic region as well as past land use. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon on-site observation of the conditions.

If changes are made in the overall design or location of the building and grading scheme, then the recommendations presented in this report may no longer be valid. In such cases, our firm should review the proposed changes to evaluate whether our recommendations need to be modified. The results of this review should be provided in writing. We also request the opportunity to review the foundation plan, grading plan and applicable portions of the project

specifications when the design is finalized. This review will allow us to check whether these documents are consistent with the intent of our recommendations.

Sampling and testing of the soil, rock, ground water, surface water and air for the presence of environmental contamination was beyond the scope of this exploration. We will be glad to provide these services at your request.

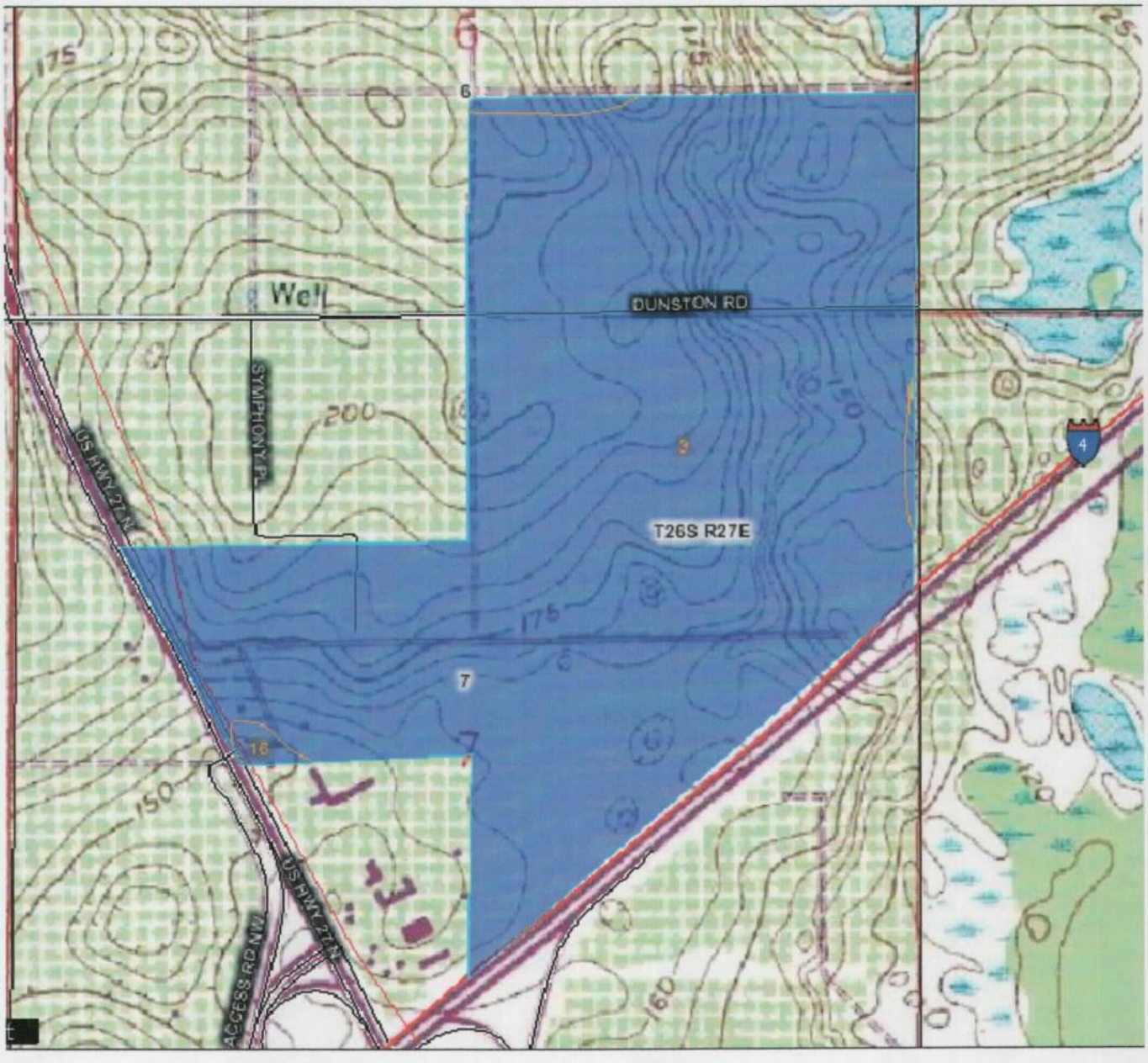
The site is underlain by limestone bedrock that is susceptible to dissolution and the subsequent development of karst features such as voids and sinkholes in the natural soil overburden. Construction in a sinkhole prone area is therefore accompanied by some risk that internal soil erosion and ground subsidence could affect new structures in the future. It is not possible to investigate or design to completely eliminate the possibility of future sinkhole related problems. In any event, the Owner must understand and accept this risk.

For more information about the use and limitations of this report, please read the ASFE document in Appendix D.

APPENDIX A

SITE LOCATION PLAN

BORING LOCATION PLAN



SECTION 3, T26S, R27E

USGS 7.5 MINUTE QUADRANGLE

NORTH

SCALE

0 1000 FT.

RITCHIE BROTHERS	DATE 6/10/08	JOB NO. 24-0909	PLATE NO. 1

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SITE LOCATION MAP

POLK COUNTY, FLORIDA

Southwest Florida Water Management District

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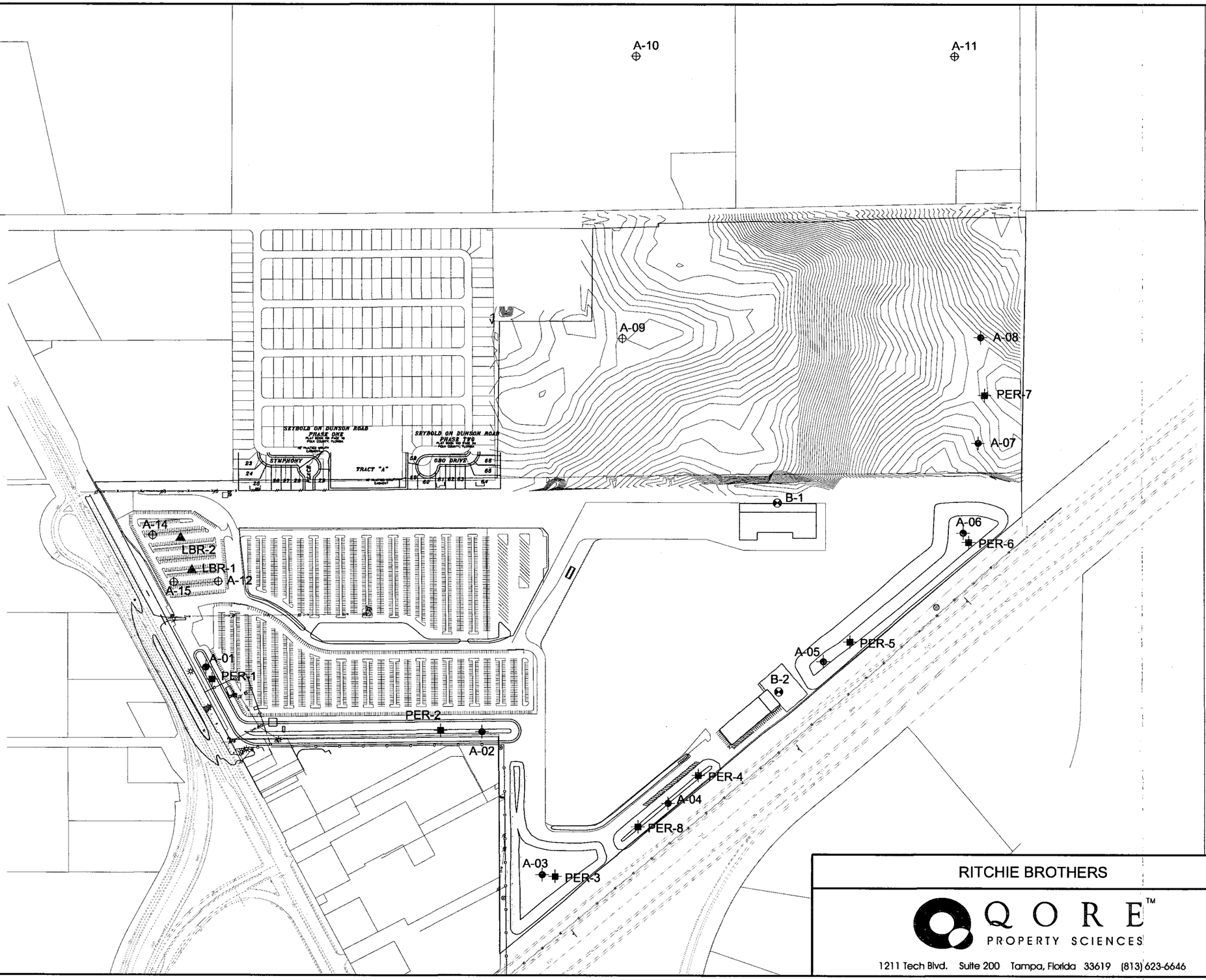
240909 Auction Site\APPENDIX\ACAD\siteloc-0809.dwg



LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE DIRECT PUSH SAMPLE LOCATION
- APPROXIMATE PERMEABILITY TEST LOCATION
- APPROXIMATE LBR LOCATION

MODIFIED FROM DRAWING PROVIDED BY ENVISORS, LLC, 06/12/2008

SCALE
0 500 FT.

RITCHIE BROTHERS

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DATE	JOB NO.	FIGURE NO.
6/10/08	24-0909	2

BORING LOCATION PLAN

POLK COUNTY, FLORIDA

E-1673

240909 Auction Site\APPENDIX\ACAD\BORLOC-0909.dwg

APPENDIX B

TEST BORING RECORDS
FIELD PROCEDURES
KEY TO SOIL CLASSIFICATION

APPENDIX B

TEST BORING RECORDS

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TEST BORING RECORD

BORING NO: **A-01**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 155 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	155.0	0	Dark brown SAND (SP)					
	154.0		Reddish brown SAND (SP)					
		5						
		10						
		15						
		20						
	132.0		Yellow SAND (SP)					
		25						
	125.0	30	Boring Terminated at 30 feet.					

Southwest Florida Water Management District
SEP 30 2008
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E-1676

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

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TEST BORING RECORD

BORING NO: **A-02**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 145 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	145.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	144.0		Reddish brown SAND (SP)					
		5						
		10						
		15						
		20						
	122.0		Yellow SAND (SP)					
		25						
	115.0	30	Boring Terminated at 30 feet.					

E-1677

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TEST BORING RECORD

BORING NO: **A-03**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 143 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	143.0	0	Dark brown SAND (SP) - FILL					
	142.0		Dark brown silty SAND (SM) with gravels - FILL					
	140.0		Brownish yellow SAND (SP)					
		5						
	135.0		yellow SAND (SP)					
		10						
		15						
	127.0		Brownish yellow SAND (SP)					
		20						
		25						
	113.0	30	Boring Terminated at 30 feet.					

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1678

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-04**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 144 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE:	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	144.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	143.0		Brownish yellow SAND (SP)					
		5						
	136.0		Reddish brown SAND (SP)					
		10						
		15						
	128.0		Brownish yellow SAND (SP)					
		20						
		25						
	114.0	30	Boring Terminated at 30 feet.					

E-1679

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-05**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 136 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: ▽ 20.0 feet ATD	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	136.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	134.0		Brownish yellow SAND (SP)					
▽		5						
		10						
		15						
		20						
		25						
	106.0	30	Boring Terminated at 30 feet.					

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SEP 30 2008
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BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1680

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-06**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 134 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: ▽ 22.0 feet ATD	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	134.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	130.5	5	Brownish yellow SAND (SP)					
▽		10						
		15						
		20						
		25						
	104.0	30	Boring Terminated at 30 feet.					

E-1681

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-07**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 141 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	141.0	0						
	140.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10						
		15						
		20						
		25						
	111.0	30	Boring Terminated at 30 feet.					

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1682

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-08**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 144 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	144.0	0						
	143.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10						
		15						
		20						
		25						
	114.0	30	Boring Terminated at 30 feet.					

E-1683

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QOR E™
PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-09**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 196 feet ±	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	196.0	0						
	195.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
	186.0	10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-10**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

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BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1685

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-11**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-12**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-13**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-14**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-15**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hollow-Stem Augers	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **B-1**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 169 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Wet Rotary	RIG TYPE: CME-550	HAMMER: Cathead-Rope-Pulley
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	169.0	0	Grayish brown sand with gravel - FILL					
	167.0		Brownish yellow, firm, SAND (SP)					
		5						4 - 5 - 6 (N = 11)
								6 - 5 - 7 (N = 12)
		10						6 - 6 - 5 (N = 11)
			...very firm					8 - 11 - 14 (N = 25)
		15						
	149.0	20	Boring Terminated at 20 feet.					11 - 13 - 14 (N = 27)
		25						
		30						

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **B-2**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 157 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Wet Rotary	RIG TYPE: CME-550	HAMMER: Cathead-Rope-Pulley
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	157.0	0						
	156.5		Dark brown, loose, SAND (SP)					2 - 3 - 6 (N = 9)
			Brownish yellow, loose, SAND (SP)					
			...dense					9 - 14 - 23 (N = 37)
		5						22 - 25 - 22 (N = 47)
								15 - 16 - 15 (N = 31)
			...firm					10 - 7 - 8 (N = 15)
		10						
			...very firm					10 - 11 - 15 (N = 26)
		15						
			...dense					10 - 16 - 17 (N = 33)
	137.0	20	Boring Terminated at 20 feet.					
		25						
		30						

E-1692

APPENDIX B

FIELD PROCEDURES

SOIL TEST BORING PROCEDURES (ASTM D 1586)

The borings were advanced by a rotary drilling process which utilized a viscous bentonite drilling fluid to flush the cuttings and stabilize the hole. At regular intervals, the drilling tools were withdrawn and soil samples obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split tube sampler.

The sampler was initially seated 6 inches to penetrate any loose cuttings; then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated as the standard penetration resistance. Penetration resistance, when properly evaluated, is an index to the soil's strength and density.

The samples were classified in the field by a senior engineering technician as they were obtained. Representative portions of each soil sample were then sealed in containers and transported to our laboratory. The samples were examined by a geotechnical engineer to visually check the field classification. All boring data, including sampling intervals, penetration resistances, soil classifications, and groundwater level are presented on the attached Test Boring Records.

HAND AUGER BORING PROCEDURES

The borings were made by manually twisting a post-hole auger into the soil. The auger consists of a two curved blades and a bucket which retains the soil as the auger is advanced. At approximately 6 inch intervals the auger is removed and the soil retained in the bucket is classified and placed in sealed containers for further evaluation by our project staff. Soil descriptions are tabulated on Auger Boring Records.

APPENDIX B

KEY TO SOIL CLASSIFICATION

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE COMPACTNESS AND CONSISTENCY

Sand and Gravel

Standard Penetration Resistance

Blows/Foot	Relative Compactness
0-4	Very Loose
5-10	Loose
11-20	Firm
21-30	Very Firm
31-50	Dense
Over 50	Very Dense

Silt and Clay

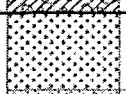
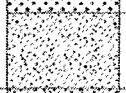
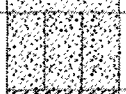
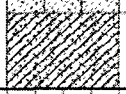
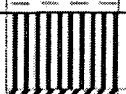
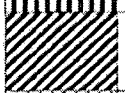
Standard Penetration Resistance

Blows/Foot	Consistency
0-1	Very Soft
2-4	Soft
5-8	Firm
9-15	Stiff
16-30	Very Stiff
31-50	Hard
Over 50	Very Hard

APPENDIX B

KEY TO SOIL CLASSIFICATION

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX B

UNIFIED SOIL CLASSIFICATION
(After U.S. Waterways Experiment Station and ASTM D 2487-66T)

Major Division		Group Symbol	Laboratory Classification Criteria		Soil Description
			Finer than 200 Sieve %	Supplementary Requirements	
Coarse-grained (over 50% by weight coarser than No. 200 sieve)	Gravelly soils (over half of coarse fraction larger than No. 4)	GW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}2/D_{60}XD_{10}$) between 1&3	Well-graded gravels, sandy gravels
		GP	0-5*	Not meeting above gradation for GW	Gap-graded or uniform gravels, sandy gravels
		GM	12 or more*	PL less than 4 or below A-line	Silty gravels, silty sandy-gravels,
		GC	12 or more*	PL over 7 and above A-line	Clayey gravels, clayey sandy gravels
	Sandy soils soils (over half of coarse fraction finer than No. 4)	SW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}2/D_{60}XD_{10}$) between 1&3	Well-graded sands, gravelly sands
		SP	0-5*	Not meeting above gradation for requirements	Gap-graded or uniform sands, gravelly sands
		SM	12 or more*	PL less than 4 or below A-line	Silty sands, silty gravelly sands
		SC	12 or more*	PL over 7 and above A-line	Clayey sands, clayey gravelly sands
Fine-grained (over 50% by weight finer than No. 200 sieve)	Low-com pressibility (liquid limit less than 50)	ML	Plasticity chart		Silts, very fine sands, silty or clayey fine sands, micaceous silts
		CL	Plasticity chart		Low plasticity clays, sandy or silty clays
		OL	Plasticity chart, organic odor or color		Organic silts and clays of low plasticity
	High com-pressibility (liquid limit more than 50)	MH	Plasticity chart		Micaceous silts, diatomaceous silts, volcanic ash
		CH	Plasticity chart		Highly plastic clays and sandy clays
		OH	Plasticity chart, organic odor or color		Organic silts and clays of high plasticity
Soils with fibrous organic matter		PT	Fibrous organic matter, will char, burn, or glow		Peat, sandy peats, and clayey peat

*For soils having 5 to 12 percent passing the No. 200 sieve, use a dual symbol such as GW-GC.

APPENDIX C

LABORATORY TEST RESULTS SUMMARY
LBR TEST RECORDS
LABORATORY PROCEDURES

LABORATORY TEST RESULTS SUMMARY

PROPOSED AUCTION SITE EXPANSION

DAVENPORT, FLORIDA

QORE PROJECT NO. 240909

	HYDRAULIC CONDUCTIVITY OF THE SOIL			
	Laboratory Test Result		Recommended Design Values	
Location	Horizontal, k_h (In/hr)	Vertical, k_v (In/hr)	Horizontal, k_h (In/hr)	Vertical, k_v (In/hr)
PER – 1	> 40	> 40	40	40
PER – 2	33	35	33	35
PER – 3	23	23	23	23
PER – 4	> 40	> 40	40	40
PER – 5	> 40	> 40	40	40
PER – 6	> 40	> 40	40	40
PER – 7	23	25	23	25
PER - 8	33	> 40	33	40

QORE PROPERTY SCIENCES

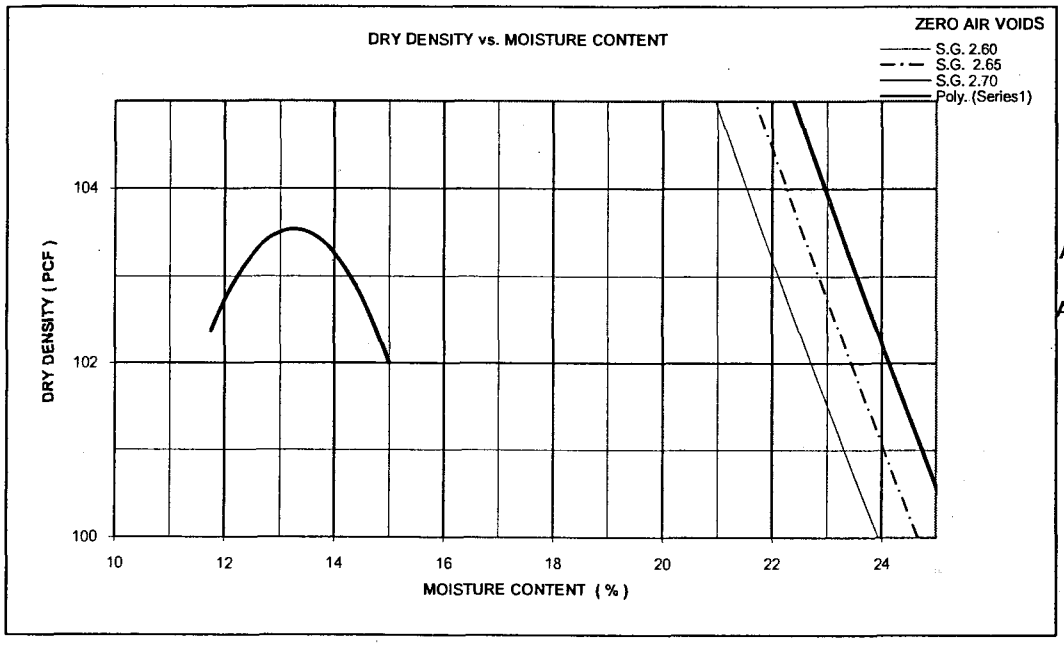
1211 Tech Boulevard, Suite 200 / Tampa, Florida 33619 / 813-623-6646 fax 813-623-3795
Florida Certificate of Authorization No. 3309

LIMEROCK BEARING RATIO TEST REPORT
FM 5-515

PROJECT:	Aution site expantion	**REPORT DATE:**	May 29, 2008
CLIENT :	Ritchie Brothers Properties	**JOB NO:**	240909
		PROCTOR SAMPLE NO:	L1
COPIES:	Client (A-4)	**REPORT NO:**	56260

SAMPLE LOCATION: LBR 1
SOIL DESCRIPTION: Yellowish brown sand

DATE SAMPLED: 21-May-08
SAMPLED BY: A. Dawkins

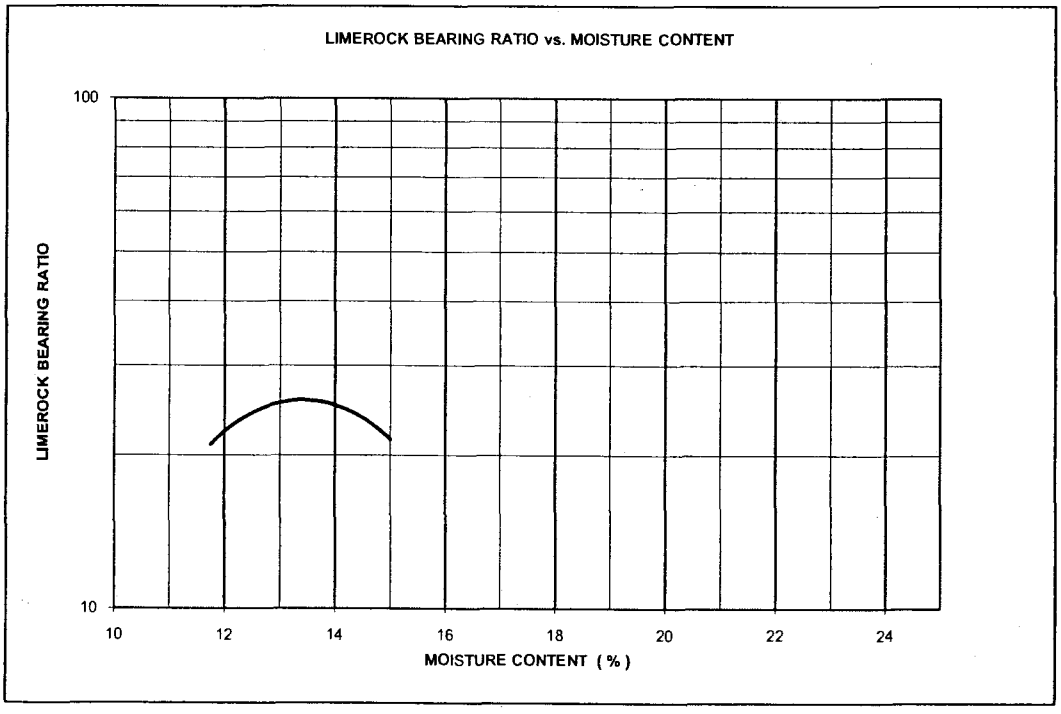


DATE COMPACTED: 5/27/09
DATE PENETRATED: 5/29/08
TESTED BY: M. Montel

ANTICIPATED USE OF SOIL: Subgrade
SURCHARGE: 15 lbs.
AASHTO CLASSIFICATION *: (A-3)
USCS CLASSIFICATION *: (SP)
** classifications based on visual methods*

MAXIMUM DRY DENSITY (pcf):
103.0

OPT. MOISTURE CONTENT (%):
13.0



LIMEROCK BEARING RATIO (LBR):
27

Minimum Required LBR:
40

Southwest Florida Water Management District
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PROPERTY SCIENCES

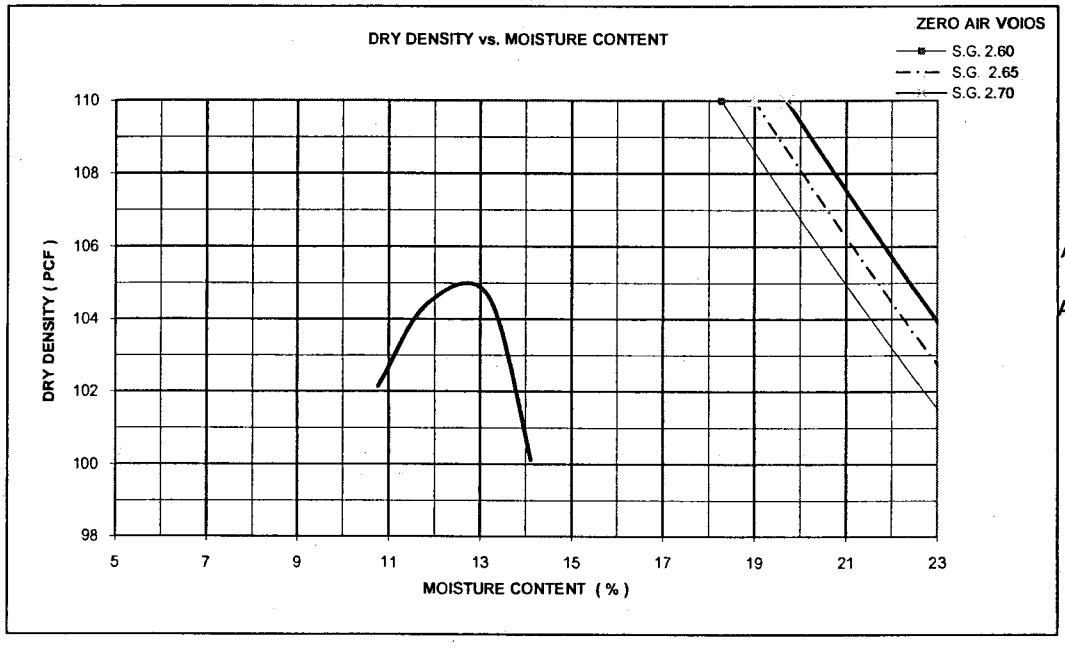
LIMEROCK BEARING RATIO TEST REPORT
FM 5-515

1211 Tech Boulevard, Suite 200 / Tampa, Florida 33619 / 813-623-6646 fax 813-623-3795
Florida Certificate of Authorization No. 3309

PROJECT:	Aution site expantion	**REPORT DATE:**	June 6, 2008
CLIENT :	Ritchie Brothers Properties	**JOB NO:**	240909
		PROCTOR SAMPLE NO:	L2
COPIES:	Client (A-4)	**REPORT NO:**	56260

SAMPLE LOCATION: LBR 1
SOIL DESCRIPTION: Yellowish brown sand

DATE SAMPLED: 31-May-08
SAMPLED BY: J. Mathi

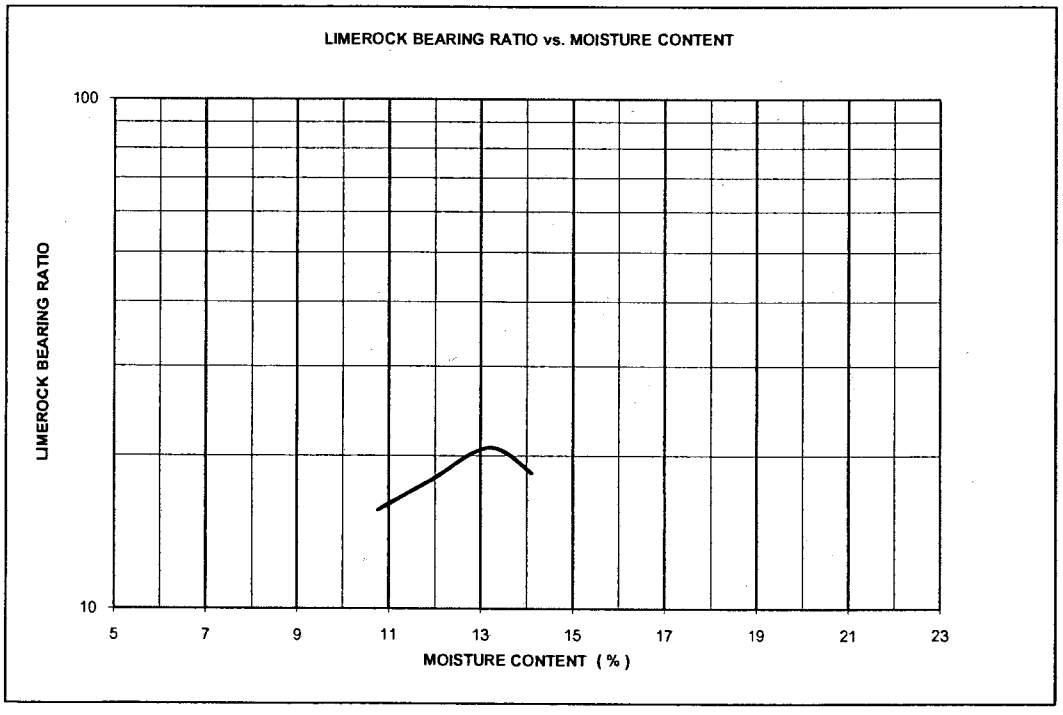


DATE COMPACTED: 6/4/08
DATE PENETRATED: 6/6/08
TESTED BY: M. Montel

ANTICIPATED USE OF SOIL: Subgrade
SURCHARGE: 15 lbs.
AASHTO CLASSIFICATION *: (A-3)
USCS CLASSIFICATION *: (SP)
** classifications based on visual methods*

MAXIMUM DRY DENSITY (pcf):
105.0

OPT. MOISTURE CONTENT (%):
13.0



LIMEROCK BEARING RATIO (LBR):
21

Minimum Required LBR:
40

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APPENDIX C

LABORATORY PROCEDURES

LABORATORY PERMEABILITY TESTS,
(ASTM D 2434, EM 1110 2 1906, APPENDIX VII-5)

The laboratory permeability tests are performed in general accordance with applicable American Society for Testing and Materials (ASTM) standards. Generally, a sample of soil from a soil boring is obtained and returned to the soils laboratory. The permeability soil sample is placed within the permeability testing frame. Water is allowed to flow through the sample. The level of water can be controlled at a fixed elevation during the test (Constant Head Test) or it may be allowed to fall (Falling Head Test). The rate at which water flows through the soil sample is directly related to the permeability of the soil. Permeability is generally reported in units of centimeters per second (cm/s). Other units, such as feet per day or inches per hour, are also commonly used.

LIMEROCK BEARING RATIO TEST PROCEDURES
(FLORIDA METHOD FM 5-515)

The Limerock Bearing Ratio Test (LBR) is useful for evaluating soils used for base, stabilized base, and sub-base material beneath pavements. The test is used to determine the punching shear resistance of soil to the penetration of a piston with standardized dimensions. The soil was compacted in the laboratory at a selected density and moisture content. The specimens are compacted according to the ASTM D-1557 remolded to modified Proctor. Each specimen was soaked under specified conditions for 48 hours. After soaking, a circular piston with an end area of 3.0 in2 was forced into the compacted specimen, with the resultant force measured with a proving ring, and the resultant deformation with a dial gauge accurate to 0.001 inch. Surcharge weights simulating the anticipated pavement weight per square foot were placed around the piston and on top of the soil specimen. These surcharge weights remained in place during the shearing process. The LBR value is a calculated value, expressed as a percent of the stress required to penetrate 0.1 and 0.2 inches into the test specimen, compared to a standard crushed rock sample (800 psi). The results are presented in the attached LBR Stress vs Penetration curves.

APPENDIX D

INFORMATION FROM ASFE

Important Information About Your
Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

03 October 2007

XC: FxR
MNM

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Imaged as Received

Subject:	Request for Additional Information
Project:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/TwpRge:	07/26S/27E
EVI Job No.:	10705301

Dear Mr. Ritchie:

Attached please find two additional geotechnical reports provided by QORE, Inc. Also enclosed are five copies of the revised Section A signed by Mr. Dave N. Nicholson, President of Ritchie Bros. Properties, Inc., five copies of the revised Section C, and the corporate printout from the State of Florida Corporations website which matches the application.

Yours truly,
ENVISORS, LLC

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

RDBS Record Updated
10/7/08 by TLR

File of Record
Permit No.

Southwest Florida Water Management District
OCT 03 2008
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KYK/ph
Enclosures: As stated
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.03 to F Ritchie.doc

4:55PM
#1D
AM

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

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 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 # **44022407.002**
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 _____.

E-1706

PART 3: A. OWNER(S) OF LAND	B. APPLICANT (IF OTHER THAN OWNER)
NAME **Mr. Dave N. Nicholson**	NAME
COMPANY AND TITLE **Ritchie Bros. Properties, Inc., President**	COMPANY AND TITLE
ADDRESS **4000 Pine Lake Road**	ADDRESS
CITY, STATE, ZIP **Lincoln, NE 68516**	CITY, STATE, ZIP
TELEPHONE **(801) 455-9005** FAX	TELEPHONE ( ) FAX ( )
C. AGENT AUTHORIZED TO SECURE PERMIT (IF AN AGENT IS USED)	D. CONSULTANT (IF DIFFERENT FROM AGENT)
NAME	NAME **Kriss Y. Kaye, P.E., CFM**
COMPANY AND TITLE	COMPANY AND TITLE **ENVISORS, LLC, Director**
ADDRESS	ADDRESS **2105 Dundee Road**
CITY, STATE, ZIP	CITY, STATE, ZIP **Winter Haven, FL 33883**
TELEPHONE FAX ( )	TELEPHONE **(863) 324-1112** FAX **(863) 294-6185**

PART 4: PROJECT INFORMATION

A. Name of project, including phase if applicable: **Ritchie Bros. Auction Facility Expansion**
B.. Is this application for part of a multi-phase project? ☐ yes ☒ no
C. Total applicant-owned area contiguous to the project: **205 +/- Acres (based on property appraisers map).**
D. Total project area for which a permit is sought: **205 +/- Acres .**
E. Total impervious area for which a permit is sought : **2.2 +/- Acres .**
F. Total area (metric equivalent for federally funded projects) of work in, on, or over wetlands or other surface waters: **0 Acres and 0 square feet** (hectares or square meters)
G. Total number of new boat slips proposed: **0**

Southwest Florida Water Management District

OCT 0 3 2008

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PART 5: PROJECT LOCATION (use additional sheets, if needed)

County(ies) **POLK**

Section(s) **07** Township **26** Range 27

Section(s) _____ Township _____ Range _____

Land Grant name, if applicable

Tax Parcel Identification Number **272607000000012030, 272607000000011010**

Street address, road, or other location **700 Ritchie Road**

City, Zip Code, if applicable **Davenport, Florida-33897**

PART 6: IDENTITY OF APPLICANTS

Is the permit applicant one of the following (please check if applicable):

_____ Florida corporation

_____ Florida limited liability company

_____ Florida limited partnership

_____ Florida general partnership

_____ Foreign corporation/partnership

_____ Trust

If so, please include with application documentation of status of applicant to legally operate in the State of Florida (e.g., copy of last corporate annual report submitted to the Florida Department of State).

PART 7: DESCRIBE IN GENERAL TERMS THE PROPOSED PROJECT, SYSTEM OR ACTIVITY.

Ritchie Bros. Properties, Inc., is seeking approval for a facility expansion to include a new NE gravel event display area (located northeast of the existing permitted Basin No.4), an expansion to the existing Refurbishing Building and an expansion to the existing Auction Building (located within Basin No. 4), a new customer parking area on the west side of the project (located in the permitted Basin No.1), an additional check-in building and associated pavement, and additional parking along Ritchie Bros. Road (within Basin No. 3). The site is located North of Interstate 4, East of US27, and South of Dunson Road in Polk County Florida. The total property to be used for this project is approximately 205 acres (based on Property Appraisers Information) which includes an area northeast of the Richie Brothers Properties, Inc. property (for the NE gravel display area), which is currently owned by Sandler at Polk County, LLC. The Project area is approximately 205 acres. It is estimated that approx. 2.2+/- acres of impervious area and 50.6 acres of gravel area will be added to the 205-acre Project Area as a result of the proposed improvements as depicted on the construction plans.

As a best management practice, onsite stormwater management ponds will be utilized to treat and retain the stormwater runoff from the 100-yr 24-hour event from the existing site and proposed expansion. The stormwater management ponds are designed to retain at a minimum the first 0.5 inch of runoff from the contributing area and recover that volume within less than 72 hours via natural filtration.

There are no known proposed impacts to any onsite wetlands.

See the attached construction plans for more information.

PART 8:

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.

Date(s)	Location(s)	Names
No		

B. If this project has been previously reviewed through the FDOT Efficient Transportation Decision Making (ETDM) process, provide the ETDM project review number(s) assigned by FDOT:

C. 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.

Agency	Date	Number/ Type	Action Taken
SWFWMD	**Nov. 8, 2005**	**44022407.002**	**Permit Issued**
SWFWMD	**Jan. 30, 2004**	**44022407.001**	**Permit Issued**
SWFWMD	**Sept 27, 2001**	**44022407.000**	**Permit Issued**

D. 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).

1. **Not Applicable**

2.

3.

4.

5.

6.

PART 9:

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.

Dave Nicholson — President

Typed/Printed Name of Owner, Applicant or Agent — Corporate Title, if applicable

Signature of Owner, Applicant or Agent — 9-25-08 — Date

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.

Typed/Printed Name of Owner, Applicant or Agent — 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.

Dave Nicholson — President

Typed/Printed Name — Corporate Title, if applicable

Signature — 9-25-08 — Date

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

• AFFIX SEAL •

Date: _____

Phone: (___) _____

_____ Name *(please type)* FL P.E. No.

_____ Company Name

_____ Company Address

_____ City, State, Zip

Southwest Florida Water Management District

OCT 03 2008

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E-1710

	ENVIRONMENTAL RESOURCE PERMIT APPLICATION *SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT* 2379 BROAD STREET • BROOKSVILLE, FL 34609-6899 (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 1/2" BY 11" PAPER.**

Project Name: **Ritchie Bros. Auction Facility Expansion**
County: **Polk**
Owner: **Ritchie Bros. Properties, Inc.**
Applicant: **Mr. Dave N. Nicholson, President**
Applicant Address: **4000 Pine Lake Road, Lincoln, Nebraska 68516**

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. **See Attachment "A" for the USGS Quadrangle Map.**

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: **There are no known existing on-site wetlands which will be filled, dredged, impounded, or diverted as a result of the proposed activities.**

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. **See the attached construction plans and the Grading and Drainage Plan.**

4. Briefly describe the proposed project (such as "construct a deck with boatshelter", "replace two existing culverts", "construct surface water management system to serve 150 acre residential development"):
Construction parking areas for customer and employee parking and a display area which will be served by the the onsite stormwater management areas.

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: **Not applicable. There are no known wetland or surface water impacts proposed.**

6. Provide a brief statement describing any proposed mitigation for impacts to wetlands and other surface waters: **Not applicable. There are no known wetland or surface water impacts proposed.**

FOR AGENCY USE ONLY
Application Name:
Application Number:
Office where the application can be inspected:

Southwest Florida Water Management District
OCT 03 2008
RECEIVED
by ERP Bureau

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.

QORE

PROPERTY SCIENCES

For

Mr. Scott Lennon
Ritchie Brothers Properties
6500 River Road
Richmond BC, V6X4G5

Prepared By:

QORE, Inc.
1211 Tech Boulevard, Suite 200
Tampa, Florida 33619

REPORT OF

SUBSURFACE EXPLORATION

PROPOSED AUCTION SITE EXPANSION

700 RITCHIE ROAD

DAVENPORT, FLORIDA

QORE Project No. 240909, Report No. 56252
September 3, 2008

QORE
PROPERTY SCIENCES

September 3, 2008

Ritchie Brothers Properties
6500 River Road
Richmond BC, V6X4G5

Attention: Mr. Scott Lennon
Real Estate Acquisition Manager

Subject: Report of Subsurface Exploration
Proposed Auction Site Expansion
700 Ritchie Road
Davenport, Florida
QORE Project No. 240909, Report No. 56252

Dear Mr. Lennon:

QORE, Inc. (QORE) has completed a geotechnical exploration for the above referenced project, and we are submitting our findings in this report. We conducted this project in general accordance with our Proposal No. 08-1462, dated May 7, 2008. This proposal was authorized by you on May 16, 2008 through the execution of QORE's Proposal Acceptance Sheet (PAS).

This report explains our understanding of the project, provides a description of the site and subsurface conditions encountered, and presents our recommendations regarding the foundation design, construction, slab-on-grade support and pavement design.

QORE appreciates the opportunity to be of service to ***Ritchie Brothers Properties.*** We look forward to helping you through project completion. Please contact us if you have any questions.

Respectfully submitted,

QORE, Inc.

James LaCava, E.I.
Geotechnical Engineering Intern

8/3/08

Jeanne Berg, P.E.
Geotechnical Department Manager
FL License # 50699

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APPENDICES

REPORT OF SUBSURFACE EXPLORATION
PROPOSED AUCTION SITE EXPANSION
DAVENPORT, FLORIDA

QORE PROJECT NO. 240909, REPORT NO. 56252

1.0 INTRODUCTION

1.1 GENERAL DISCUSSION

QORE, Inc. conducted a subsurface exploration for the proposed Auction Site Expansion at 700 Ritchie Road in Davenport, Florida. We provided our services in general accordance with our Proposal No. 08-1462, dated May 7, 2008, authorized by Mr. Scott Lennon, Real Estate Acquisition Manager, utilizing QORE's Proposal Acceptance Sheet (PAS). The purpose of the exploration was to evaluate subsurface conditions for the proposed construction and to provide geotechnical engineering recommendations regarding site preparation, earthwork procedures and foundation, retention pond and pavement design. This report presents a brief discussion of our understanding of the project, the exploration procedures and results, and our conclusions and recommendations regarding the above considerations.

2.0 PROJECT INFORMATION

2.1 EXISTING SITE

The subject property proposed for development is located at 700 Ritchie Road in Davenport, Polk County, Florida. The site is currently occupied by an active auction center. The building located on the north side of the property is a single-story, steel framed service area and the building located on the south side of the property is a two-story, steel framed registration area. Retention ponds are located along the southern boundary of the property. Outparcels located around the north and northwest corner of the auction site are abandoned orange groves.

Based on topographic survey provided by Mr. Kriss Kaye, P.E., with Envisors, elevations across the existing auction center generally slope down towards the existing pond areas. The outparcel proposed for the parking area, in the vicinity of the northwest corner of the auction site, slopes down toward the northwest corner of the site. Topography of outparcels located around the north side slopes down toward the east side of the outparcel.

A water feature is located in the vicinity of the northeast corner of the outparcels with a water table elevation of +115 NGVD. Several wetlands are located in the vicinity of the proposed development with the boundary elevation of +120 feet NGVD. The general topography and location of the site are shown on Plate 1 in Appendix A. An abandoned ground water well is located within the outparcel located on the north side of the auction center. Several polyvinyl chloride (PVC) distribution pipe lines were observed within the orange groves. Closed circular depressions that could be indicative of sinkhole activity were not observed at the site.

2.2 PROPOSED CONSTRUCTION

We have been provided with a copy of a preliminary site layout (dated April 2008, prepared by Envisors, LLC) with requested boring locations. Based on review of the furnished preliminary site layout and electronic mail correspondence with Mr. Kriss Kaye, P.E., CFM, we understand that the project will consist of expansion of two existing buildings, pavement areas within the outparcel located along Highway 27, evaluation of existing stormwater ponds and a proposed pond.

Specific structural details, loads and allowable settlement criteria have not been provided to us at this time. Based on our experience with similar types of buildings in Florida, we anticipate that the building will be constructed with interior columns and exterior concrete masonry walls and supported by strip footings and isolated column footings. For the purposes of this proposal we have assumed that maximum column loads will be on the order of 75 kips or less, and continuous footing loads on the order of 6,000 pounds per lineal foot or less. Slab loads are expected to be approximately 500 psf or less, and no extraordinary slab performance criteria are expected. There are several depressions mapped within the proposed site development however these are not mapped as sinkholes as shown on the attached Site Location Map (Appendix A).

3.0 SITE INFORMATION

3.1 REGIONAL GEOLOGY

Florida is located within the Coastal Plain Physiographic Province. The Coastal Plain is a wedge-shaped deposit of sediment that ranges in thickness from near zero at the contact with the Piedmont Physiographic Province (the Fall Line) along its northwest edge, to thousands of feet at the coast (seaward). Coastal Plain soils are marine deposits that contain various materials including interbedded soft and hard limestones, gravels, sands, silts, and clays, as well as organics.

The site is in the physiographic division named the Central or Mid-Peninsular Zone of Florida. The central or mid-peninsular zone is characterized by discontinuous highlands in the form of sub-parallel ridges separated by broad valleys. Within the central or mid-peninsular zone the site is located in the Polk Upland. The Polk Upland is a roughly square area surrounded by lower ground on three sides; the DeSoto Plain on the south, the Gulf Coastal Lowland on the west, and the valley of the Hillsborough and upper Withlacoochee Rivers on the north. On the east it is bounded by the higher ground of the Lake Wales Ridge. The ground surface generally has elevations between 100 and 130 feet. The Bone Valley formation underlies most of the Polk Upland. This formation is comprised of interbedded layers of sand and clay containing sand-size phosphorite.

A review of the current Sinkhole Type, Development, and Distribution in Florida maps prepared by the U.S.G.S. (1985) indicates the subject site is located near the border of an area of few occurrences of sinkholes. Our site reconnaissance did not indicate current circular depressions or other apparent surface indicators of sinkhole activity on the site. In our opinion, this information indicates that the risk of future sinkhole formation at this site is low to moderate. It is

not possible to investigate or design to completely eliminate the possibility of future sinkhole related problems. The Owner must understand and accept this risk.

3.2 SOIL SURVEY INFORMATION

According to the Soil Survey of Polk County, Florida, prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service), the subject property is primarily underlain by Candler fine sand with 0 to 5 percent slopes. A summary of selected properties for the identified soil groups on the site is included below in the table.

SUMMARY OF SOIL INFORMATION					
Soil Map Unit & Name	**Hydrologic Soil Group**	**Water Table Type**	**SHGWT Depth (ft)**	**Shrink Swell Potential**	**Soil Consistency**
08-Candler Sand, 0 to 5 Percent Slopes	A	--	> 6.0	Low	0 to 80 inches Sand

4.0 EXPLORATION AND TESTING METHODS

The procedures used by QORE for field and laboratory sampling and testing are in general accordance with ASTM procedures and established engineering practice. Appendix B contains brief descriptions of the procedures used in this exploration. Number of borings and their locations were selected by Mr. Kriss Kaye, P.E., CFM, with Envisors, LLC.

4.1 FIELD EXPLORATION AND TESTING

The field exploration for the proposed building additions consisted of two (2) Standard Penetration Test (SPT) borings, advanced to depths of approximately 20 feet below the existing ground surface. The drillers advanced the borings using wet rotary methods and collected soil samples using a split-barrel sampler driven by a rope and cathead hammer system according to ASTM D1586.

In addition, eight (8) direct push samples were performed in the proposed and existing ponds areas to depths of approximately 30 feet below the existing ground surface. A "Simco Earth Probe 200" was used to obtain the continuous soil samples using a piston barrel sampler. Seven (7) hand augers were performed within the proposed parking and outparcel areas to depths of 5 to 10 feet below the existing grade. The borings were advanced by manually twisting a post-hole auger into the soil.

Also eight (8) manual test pits within the proposed and existing pond areas were performed to collect relatively undisturbed samples for laboratory testing.

The direct push sampling, SPT and hand auger borings drilled on the site were located by estimating right angles and pacing distances from existing site boundary features in the field.

Therefore, the boring locations shown on the Boring Location Plan, Plate 2 in Appendix A, should be considered approximate.

The Test Boring Records in Appendix B represent our interpretation of the conditions encountered at each boring location. The stratification lines indicated on the Test Boring Records represent the approximate boundaries between soil types; however these transitions may be more gradual than indicated.

4.2 LABORATORY TESTING

Our field representative sealed and returned the soil samples to the QORE office in Tampa where a geotechnical engineer visually classified the soils according to the Unified Soil Classification System (USCS) (ASTM D2487). Sixteen (16) Laboratory constant head permeability testing (ASTM D2434) were performed on relatively undisturbed samples. Two (2) bulk samples of surficial soil were obtained in the general area of the planned asphalt pavement for testing to evaluate the Limerock Bearing Ratio (LBR) (Florida Method FM 5-515). A summary of our laboratory testing results is presented Appendix C.

5.0 SUBSURFACE CONDITIONS

5.1 GENERAL SOIL PROFILE AND ROCK CONDITIONS

Based on the information obtained during the exploration, we developed the following generalized subsurface profile:

Stratum Number	Depth (ft.)	Soil Description	(USCS)	Range of Penetration Resistances, bpf
1	0 – 3½	SAND (SP) and Silty SAND (SM) with gravel - FILL (at borings located within the existing ponds and B-1)	SP, SM	9
2	3½ - 30	SAND (SP)	SP	11 – 47

Within the existing pond areas, our borings encountered silty sand with gravel deposits which were eroded from the open graded parking areas by the rain water. The depth of this sediment deposit varies from 0.5 feet to 3.5 feet below the pond bottom. The soil profiles encountered within our borings were uniform throughout the depths explored.

The above discussion provides only a brief and general description of subsurface conditions encountered in the borings. Detailed descriptions are presented on the individual Test Boring Records. Elevations listed on the Test Boring Records were provided by Mr. Kriss Kaye, P.E., CFM, with Envisors, LLC on June 17, 2008. When reviewing these records, the indicated boundaries between soil strata are approximate and the transitions between strata are typically more gradual. Also, variations in subsurface conditions from those encountered may exist between the boring locations.

5.2 GROUND WATER

Ground water was encountered at borings A-5 and A-6 at approximately depths of 20 feet and 22 feet below the existing grade respectively. Based on elevations provide by Mr. Kriss Kaye, P.E., these correspond to the elevations of about +112 to +116 feet NGVD, respectively. The groundwater was not encountered in the rest of the borings within the depth explored. Water table measurements were completed at the time of our exploration. No ponded water was observed during the site visit.

Ground water levels fluctuate with time due to seasonal moisture changes and locally heavy precipitation events. Therefore, future ground water levels may be encountered at depths different from those identified in our borings.

5.3 TYPICAL SEASONAL HIGH GROUND WATER TABLE

The seasonal high ground water table (SHGWT) is typically encountered during late summer following the rainy season. Several factors affect the SHGWT including the amount of rainfall. The drainage characteristics of the soils; the land surface elevation; relief points such as lakes, rivers or swamps; and distance to relief points are some more important factors influencing the SHGWT elevation. Based on published information, the data from our limited exploration and interpretation of the site conditions, we estimate the SHGWT level will be approximately 14 feet below the existing pond bottoms and greater than 30 feet below current ground surface at the proposed pond area.

6.0 CONCLUSIONS

We base the following conclusions in part on the preceding project information and the results of the subsurface exploration. The following describes our conclusions concerning geotechnical issues associated with the project:

Loose sands are present within the upper 4 to 5 feet of the site that will settle appreciably in response to the anticipated loads. Proofrolling must be performed in order to reduce both total and differential settlement as discussed in the next report section.

After performing proofrolling, we assess that the subsurface conditions are compatible with supporting the intended construction on shallow foundations. The proposed structure can be supported by shallow spread and continuous wall footings designed for a maximum soil bearing pressure of 2,500 psf after proper subgrade preparation.

Based on the assumed maximum loads and a maximum design soil bearing pressure of 2,500 psf, the total settlement is anticipated to be less than 1 inch with differential settlement less than ½ inch for the proposed building once proofrolling has been completed as recommended in this report. The above anticipated settlements are based on empirical calculations.

Sediment deposits consist of silty sand with gravels were encountered in the existing pond bottom to depths of approximately ½ feet to 3½ feet. These sediment materials should be removed.

The preferred soil used for structural fill is fine sand free of organics and debris and containing less than 12 percent material by weight that is finer than a number 200 sieve (fines) (materials conforming to SP and SP-SM in the Unified Soil Classification System). SP sand is present from the existing ground surface to the termination depth of 30 feet within the proposed pond area and may be used as a source of structural fill.

Surface or subsurface indicators of active sinkhole development were not encountered. We assess that the risk for future sinkhole development at this site is low to moderate.

7.0 RECOMMENDATIONS

7.1 SITE PREPARATION

7.1.1 Site Stripping

To prepare the site for construction, all remnants of the pavements, utilities (including septic tanks and lines, if any), and all existing vegetation and large root systems should be removed. After stripping, any pockets of organic material should be undercut. The resulting excavation should be backfilled with soils as discussed in the structural fill section of this report. The sediment deposits encountered within the existing ponds should be removed in order to use the recommended permeability values in the following section. Depth of the sediment deposits could vary from ½ feet to 3.5 feet below the existing pond bottom.

Several PVC distribution pipe lines were observed within the outparcels. These pipe lines should be properly abandoned or plugged.

7.1.2 Proofrolling

Following site stripping, and prior to any fill placement, proofrolling and densification should be performed within the construction areas that are to be filled or are at finished grade. The proofrolling efforts should extend to at least ten feet beyond the construction area limits. Since the proposed construction consists of expansion of the existing building, we do not recommend proofrolling using a large vibratory roller. Therefore, the contractor may use a fully loaded 2 cubic yard capacity front end loader or equivalent within 50 feet of the proposed structure. Proofrolling of the site should continue until a QORE engineering technician observes the soils to be relatively firm and unyielding. Half of the passes should be perpendicular to the direction of travel of the other passes.

Proofrolling should be monitored by our engineering technician. If unusual or excessive deflection is observed, then the areas should be undercut to firm soils and backfilled with structural fill placed in maximum one-foot thick lifts. Some undercutting and backfilling should be expected and budgeted accordingly. Backfill soils should be of the same composition and be compacted to the same criteria as structural fill soils, as subsequently discussed. Rolling should continue until the upper 1½ feet of sand is densified to at least 95 percent of its modified Proctor maximum dry density.

The number of passes required should be determined by constructing a test strip in the vicinity of B-1. The test strip should be at least 75 feet long and 25 feet wide. Test strip testing should be performed by a QORE representative. The number of passes needed to achieve this densification criterion should then be methodically applied to all production densification areas. We recommend that these production passes be witnessed by a QORE representative.

It is important that a representative of our firm observe proofrolling and densification activities. Previously unexplored or unknown conditions could become evident during these operations. We must judge whether the recommendations in this report should be modified in view of the conditions encountered.

7.1.3 Structural Fill Definition

The preferred soil used for structural fill is fine sand free of organics and debris and containing less than 12 percent material by weight that is finer than a number 200 sieve (fines) (materials conforming to SP and SP-SM in the USCS). Sand (SP) is present from the existing ground surface to the termination depth of 30 feet and may be used as a source of structural fill.

Structural fill should be placed in lifts not to exceed one foot thick in mass graded areas and lifts not exceeding 6 inches in utility trenches. The fill material should be compacted to at least 95 percent of its modified Proctor maximum dry density (ASTM D-1557). We recommend the upper 1-foot below the slab and pavement be compacted to at least 98 percent of modified Proctor maximum dry density.

7.2 FOUNDATIONS

7.2.1 Spread Footings

Based on the information revealed by our limited exploration, the proposed buildings can be supported by column footings and continuous strip footings bearing on compacted structural fill or compacted in-place soils. We recommend use of a maximum allowable net soil bearing pressure of 2500 psf to size column and strip footings supported by these materials. Total settlement is anticipated to be less than 1 inch with differential settlement less than ½ inch.

Even though computed footing dimensions may be less, column footings should have a minimum width of at least 24 inches and strip footings should be at least 18 inches wide. These dimensions facilitate densification and hand cleaning of footing subgrades disturbed by the excavation process and the placement of reinforcing steel. They also reduce the potential for localized punching shear failure. Footings should bear at least 18 inches below the finished exterior grade as a bearing capacity requirement.

Foundation excavation will produce a thin veneer of disturbed soil at the footing subgrade. We recommend that the surficial soils exposed at the bottom of the foundation excavation be compacted to at least 95 percent of the soil's modified Proctor maximum dry density. Hand guided vibrating plates can be used. The compaction should be performed and checked prior to placement of reinforcing steel.

7.3 FLOOR SLAB

We assess that unusual floor loads will not be applied to the floor slab. Extraordinary floor slab performance criteria, such as very low allowable deflection/settlement, are not expected. The upper 1-foot of soil beneath the slab area should be compacted to at least 98 percent of its modified Proctor maximum dry density. To reduce the possibility of slab cracking due to minor differential settlement, transitions from foundation-supported building elements to soil supported floors should be reinforced.

Use of a vapor retarder should be determined by the appropriate designer. Any vapor retarder should be placed in accordance with ACI guidelines.

It has been our experience that prior to slab construction, slab subgrades can be significantly disrupted by construction equipment, utility construction, and inclement weather. The soils exposed at the slab subgrade will consist primarily of sands. These materials are particularly susceptible to disturbance. Placement of concrete in these areas must occur promptly, or these areas will likely need re-compaction and re-testing.

7.4 RETENTION POND AREAS

Relatively undisturbed shelby-tube samples were collected from the existing and proposed ponds and tested in our laboratory to determine the horizontal and vertical hydraulic conductivity of the soils encountered. These laboratory permeability tests are performed in general accordance with American Society for Testing and Materials (ASTM D2434-68 (2006)) standards. The results of our laboratory permeability tests and recommended design values are listed in following table.

Location	k_{hs} (In/hr)[1]	k_{vs} (In/hr)[1]	k_{hu} (In/hr)[2]	k_{vu} (In/hr)[2]	Fillable Porosity n	Estimated Water Table Depth El. NVGD, ft[3]	Estimated SHGWT El. NVGD, ft[3,4]
PER – 1	30	30	20	20	0.21	+121	+141
PER – 2	25	25	20	20	0.21	+117	+131
PER – 3	20	20	20	20	0.17	+119	+129
PER – 4	30	30	20	20	0.22	+118	+130
PER – 5	30	30	20	20	0.20	+117	+122
PER – 6	30	30	20	20	0.20	+117	+120
PER – 7	20	20	20	20	0.20	+113	+113
PER - 8	30	30	20	20	0.23	+117	+130

Notes: 1. k_{hs} and k_{vs} are the horizontal and vertical saturated hydraulic conductivity respectively, based on field and laboratory results. 2. k_{hu} and k_{vu} are the horizontal and vertical unsaturated hydraulic conductivity respectively based on sieve analyses and theoretical formulas. 3. El. NVGD is the elevation with respect to the Nation Geodetic Vertical Datum of 1929, base map provided by Mr. Kriss Kaye, P.E. of Envisors, LLC. 4. SHGWT represents Seasonal High Ground Water Table.

These permeability rates can be used provided that the existing ponds are maintained including the periodic removal of sediments from the bottom of the pond. Since the soil profiles encountered in the borings were uniform throughout the depth explored, the permeability of the soil listed in the above table could be extrapolated. Confining layers were not encountered within the depth of our field exploration.

7.5 PAVEMENT

In general, following the completion of the recommended clearing and grading operations and fill placement, the compacted fill and natural shallow sandy soils may be used for construction and support of a flexible (limerock, crushed concrete, or shell base) or semi-flexible (soil cement base) type pavement section. It is our understanding that unsurfaced pavement sections are proposed for parking and drive areas for the surplus construction equipment. Where truck traffic or heavy loading is anticipated, such as dumpster areas, we would recommend using a rigid pavement section.

We have not been furnished with pavement longevity requirements, traffic load distribution and traffic frequency. The pavement information below represents general recommendations based on typical load and construction practices. Once the necessary design data have been furnished QORE would be pleased to provide specific pavement recommendations. All pavement materials and construction procedures should conform to the Florida Department of Transportation (FDOT) or appropriate municipality requirements.

Fill utilized to elevate the cleared pavement areas to subgrade elevation should consist of reasonably clean (less than 12% fines) sands uniformly compacted to a minimum depth of 12 inches and to a minimum density of 98% of the modified Proctor maximum dry density.

The choice of pavement base type will depend on final pavement grades. Since the SHWT is well below 18 inches, a limerock, shell, or crushed concrete base can be utilized. In areas where heavy axle loading is anticipated, we recommend a Type B stabilized subgrade (LBR = 40 min) as specified by the FDOT. We ran two (2) LBR tests on potential subgrade materials and the results were 21 and 27.

Limerock and shell base material should meet FDOT requirements including compaction to a minimum density of 98% of the modified Proctor maximum dry density and a minimum LBR of 100%. Crushed concrete should be graded in accordance with FDOT Standard Specification Section 901-5. We understand that 10 inches of limerock base material is being proposed for the roadway section. As a guideline for pavement design, we recommend that the base course be a minimum of 8 inches thick. Before paving, the base should be checked for soundness.

We understand that 3 inches of Type S-1 asphaltic concrete is being proposed. The asphaltic concrete structural course should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The asphaltic concrete should be compacted to a minimum of 95% of the maximum laboratory density found on the mix design.

We understand that 6 inches of No. 3 Coarse Granite Aggregate is proposed for the unsurfaced parking and drive areas. The coarse granite aggregate should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The coarse granite aggregate should be compacted to a minimum of 98% of the modified Proctor maximum dry density. To reduce maintenance and extend the life of the unsurfaced roadways, we recommend the use of Mirafi 600X or engineer approved equivalent as a confining and reinforcing layer between the subgrade and the coarse granite aggregate. The installation of the woven geotextile shall be completed in accordance with the manufacturer's guidelines.

8.0 FOLLOW-UP SERVICES

Our services do not end with the submission of this geotechnical report. QORE should be kept involved throughout the design and construction process to maintain continuity and to verify that our recommendations are properly interpreted and implemented. To achieve this, we should review project plans and specifications with the designers to see that our recommendations are fully incorporated. We also should be retained to monitor and test the site preparation and foundation construction.

QORE's familiarity with the site and with the foundation recommendations make us a valuable part of your construction quality assurance team. QORE recommends that we be retained by the owner to observe earthwork and foundation construction. Our personnel are qualified to recognize unanticipated ground conditions and can offer responsive remedial recommendations should unanticipated conditions occur.

9.0 LIMITATIONS OF REPORT

This report has been prepared for the exclusive use of ***Ritchie Brothers Properties*** and their designers for specific application to the project previously discussed. Our conclusions and recommendations have been prepared using generally accepted standards of geotechnical engineering and engineering geology practice in the State of Florida. No other warranty is expressed or implied.

Our conclusions and recommendations are based on the design information furnished to us, the data obtained from the previously described exploration and our experience. They do not necessarily reflect variations in the subsurface conditions, which are likely to exist intermediate of our borings and in unexplored areas of the site due to the inherent variability of the subsurface conditions in this geologic region as well as past land use. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon on-site observation of the conditions.

If changes are made in the overall design or location of the building and grading scheme, then the recommendations presented in this report may no longer be valid. In such cases, our firm should review the proposed changes to evaluate whether our recommendations need to be modified. The results of this review should be provided in writing. We also request the opportunity to review the foundation plan, grading plan and applicable portions of the project

specifications when the design is finalized. This review will allow us to check whether these documents are consistent with the intent of our recommendations.

Sampling and testing of the soil, rock, ground water, surface water and air for the presence of environmental contamination was beyond the scope of this exploration. We will be glad to provide these services at your request.

The site is underlain by limestone bedrock that is susceptible to dissolution and the subsequent development of karst features such as voids and sinkholes in the natural soil overburden. Construction in a sinkhole prone area is therefore accompanied by some risk that internal soil erosion and ground subsidence could affect new structures in the future. It is not possible to investigate or design to completely eliminate the possibility of future sinkhole related problems. In any event, the Owner must understand and accept this risk.

For more information about the use and limitations of this report, please read the ASFE document in Appendix D.

APPENDIX A

SITE LOCATION PLAN
BORING LOCATION PLAN

SECTION 3, T26S, R27E

USGS 7.5 MINUTE QUADRANGLE

SCALE
0 1000 FT.

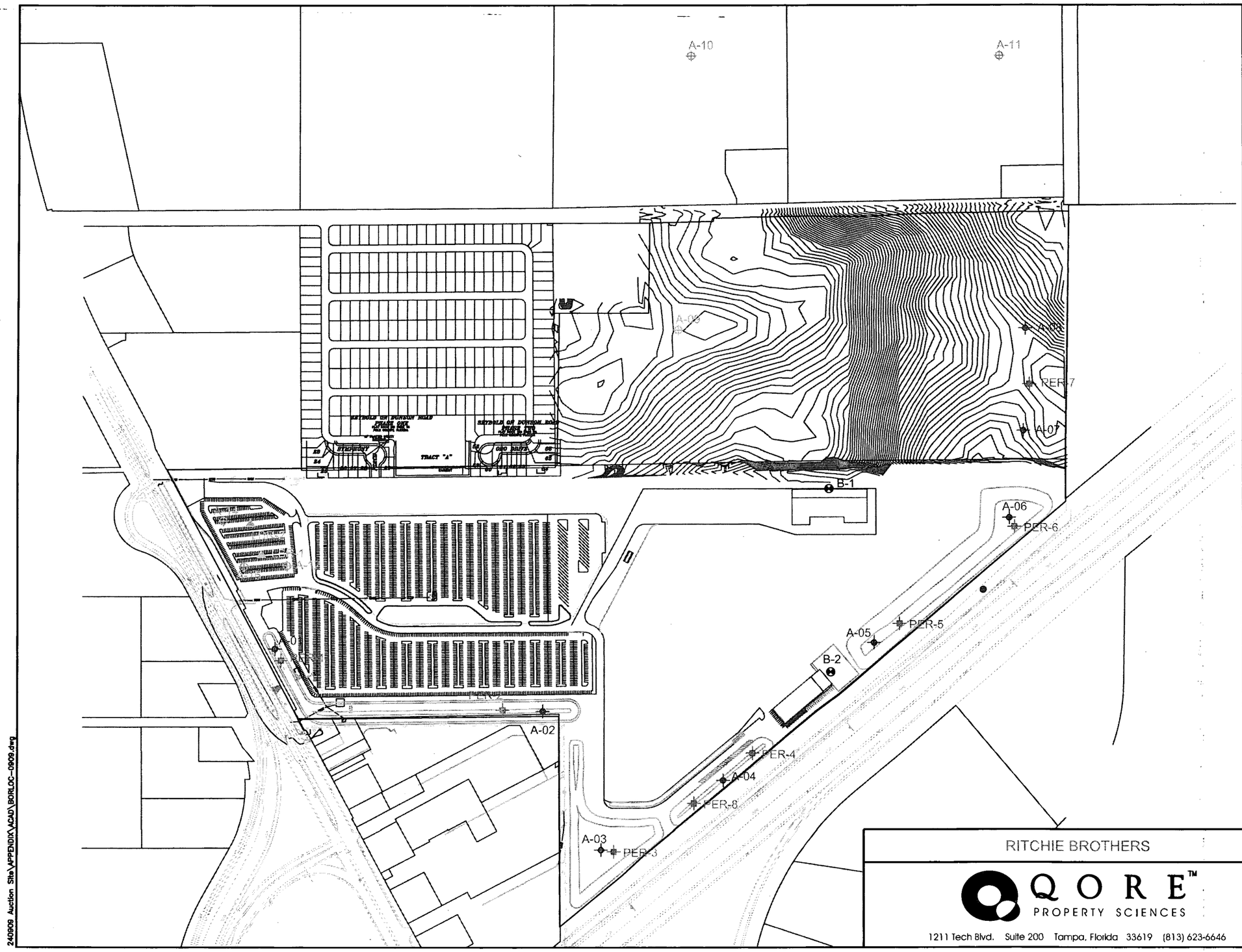
RITCHIE BROTHERS	DATE 6/10/08	JOB NO. 24-0909	PLATE NO. 1

QORE™ PROPERTY SCIENCES
1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

SITE LOCATION MAP

POLK COUNTY, FLORIDA

240909 Auction Sits\APPENDIX\ACAD\siteloc-0909.dwg



Original
Poor
Quality

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE AUGER BORING LOCATION
- APPROXIMATE DIRECT PUSH SAMPLE LOCATION
- APPROXIMATE PERMEABILITY TEST LOCATION
- APPROXIMATE LBR LOCATION

MODIFIED FROM DRAWING PROVIDED BY
ENVISORS, LLC, 06/12/2008

SCALE
0 500 FT.

RITCHIE BROTHERS	DATE	JOB NO.	PLATE NO.
QORE™ PROPERTY SCIENCES	6/10/08	24-0909	2
1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	BORING LOCATION MAP		
	POLK COUNTY, FLORIDA		

240909 Auction Site\APPENDIX\ACAD\BORLOC-0909.dwg

E-1729

APPENDIX B

TEST BORING RECORDS
FIELD PROCEDURES
KEY TO SOIL CLASSIFICATION

APPENDIX B

TEST BORING RECORDS

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-01**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 155 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	155.0	0	Dark brown SAND (SP)					
	154.0		Reddish brown SAND (SP)					
		5						
		10						
		15						
		20						
	132.0		Yellow SAND (SP)					
		25						
	125.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-02**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 145 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	145.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	144.0		Reddish brown SAND (SP)					
		5						
		10						
		15						
		20						
	122.0		Yellow SAND (SP)					
		25						
	115.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1733

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-03**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 143 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	143.0	0	Dark brown SAND (SP) - FILL					
	142.0		Dark brown silty SAND (SM) with gravels - FILL					
	140.0		Brownish yellow SAND (SP)					
		5						
	135.0		yellow SAND (SP)					
		10						
		15						
	127.0		Brownish yellow SAND (SP)					
		20						
		25						
	113.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1734

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-04**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 144 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE:	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	144.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	143.0		Brownish yellow SAND (SP)					
		5						
	136.0		Reddish brown SAND (SP)					
		10						
		15						
	128.0		Brownish yellow SAND (SP)					
		20						
		25						
	114.0	30	Boring Terminated at 30 feet.					

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1735

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-05**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 136 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: ▽ 20.0 feet ATD	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	136.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	134.0		Brownish yellow SAND (SP)					
		5						
		10						
		15						
▽		20						
		25						
	106.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 8/18/08

E-1736

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-06**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 134 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: ▽ 22.0 feet ATD	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	134.0	0	Dark brown silty SAND (SM) with gravels - FILL					
	130.5	5	Brownish yellow SAND (SP)					
▽		10						
		15						
		20						
		25						
	104.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1737

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-07**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 141 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	141.0	0						
	140.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10						
		15						
		20						
		25						
	111.0	30	Boring Terminated at 30 feet.					

BORING RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1738

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-08**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 144 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Direct Push	RIG TYPE: Geo-Probe	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	144.0	0						
	143.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10						
		15						
		20						
		25						
	114.0	30	Boring Terminated at 30 feet.					

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

BORING NO: **A-09**

TEST BORING RECORD

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 196 feet ±	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	196.0	0						
	195.5		Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
	186.0	10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1740

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-10**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 8/18/08

E-1741

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-11**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5						
		10	Boring Terminated at 10 feet.					
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1742

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-12**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1743

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-13**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

Southwest Florida Water Management District
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BORING_RECORD AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1744

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-14**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hand Auger	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **A-15**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: Not Surveyed	BORING STARTED: 5/21/2008	BORING COMPLETED: 5/21/2008
DRILLING METHOD: Hollow-Stem Augers	RIG TYPE: N/A	HAMMER: N/A
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
		0	Dark brown SAND (SP)					
			Brownish yellow SAND (SP)					
		5	Boring Terminated at 5 feet.					
		10						
		15						
		20						
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1746

QORE™ PROPERTY SCIENCES

TEST BORING RECORD

BORING NO: **B-1**

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 169 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Wet Rotary	RIG TYPE: CME-550	HAMMER: Cathead-Rope-Pulley
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	169.0	0	Grayish brown sand with gravel - FILL					
	167.0		Brownish yellow, firm, SAND (SP)					
		5						4 - 5 - 6 (N = 11)
								6 - 5 - 7 (N = 12)
		10						6 - 6 - 5 (N = 11)
			...very firm					8 - 11 - 14 (N = 25)
		15						
								11 - 13 - 14 (N = 27)
	149.0	20	Boring Terminated at 20 feet.					
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1747

QORE™ PROPERTY SCIENCES

BORING NO: **B-2**

TEST BORING RECORD

PROJECT: Proposed Auction Site Expansion	JOB NO: 240909	REPORT NO: 56252
PROJECT LOCATION: Davenport, Florida		
ELEVATION: 157 feet ±	BORING STARTED: 5/30/2008	BORING COMPLETED: 5/30/2008
DRILLING METHOD: Wet Rotary	RIG TYPE: CME-550	HAMMER: Cathead-Rope-Pulley
GROUNDWATER: Not Encountered	BORING DIAMETER (IN): 3	SHEET 1 OF 1

Remarks:

► - Loss of Drilling Fluid Circulation

G	ELEV. (FT.)	DEPTH (FT.)	MATERIAL DESCRIPTION	L	S	R	STANDARD PENETRATION RESISTANCE (N) 0 10 20 30 40 50 60 70 80 90 100	BLOWS/6-in (N-VALUE)
	157.0	0						
	156.5		Dark brown, loose, SAND (SP)					2 - 3 - 6 (N = 9)
			Brownish yellow, loose, SAND (SP)					
			...dense					9 - 14 - 23 (N = 37)
		5						22 - 25 - 22 (N = 47)
								15 - 16 - 15 (N = 31)
			...firm					10 - 7 - 8 (N = 15)
		10						
			...very firm					10 - 11 - 15 (N = 26)
		15						
			...dense					10 - 16 - 17 (N = 33)
	137.0	20	Boring Terminated at 20 feet.					
		25						
		30						

BORING_RECORD_AUCTION SITE.GPJ QOR_CORP_PLOG.GDT 6/18/08

E-1748

FIELD PROCEDURES

SOIL TEST BORING PROCEDURES (ASTM D 1586)

The borings were advanced by a rotary drilling process which utilized a viscous bentonite drilling fluid to flush the cuttings and stabilize the hole. At regular intervals, the drilling tools were withdrawn and soil samples obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split tube sampler.

The sampler was initially seated 6 inches to penetrate any loose cuttings; then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated as the standard penetration resistance. Penetration resistance, when properly evaluated, is an index to the soil's strength and density.

The samples were classified in the field by a senior engineering technician as they were obtained. Representative portions of each soil sample were then sealed in containers and transported to our laboratory. The samples were examined by a geotechnical engineer to visually check the field classification. All boring data, including sampling intervals, penetration resistances, soil classifications, and groundwater level are presented on the attached Test Boring Records.

HAND AUGER BORING PROCEDURES

The borings were made by manually twisting a post-hole auger into the soil. The auger consists of a two curved blades and a bucket which retains the soil as the auger is advanced. At approximately 6 inch intervals the auger is removed and the soil retained in the bucket is classified and placed in sealed containers for further evaluation by our project staff. Soil descriptions are tabulated on Auger Boring Records.

KEY TO SOIL CLASSIFICATION

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE COMPACTNESS AND CONSISTENCY

Sand and Gravel

Standard Penetration Resistance

Blows/Foot	Relative Compactness
0-4	Very Loose
5-10	Loose
11-20	Firm
21-30	Very Firm
31-50	Dense
Over 50	Very Dense

Silt and Clay

Standard Penetration Resistance

Blows/Foot	Consistency
0-1	Very Soft
2-4	Soft
5-8	Firm
9-15	Stiff
16-30	Very Stiff
31-50	Hard
Over 50	Very Hard

KEY TO SOIL CLASSIFICATION

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX B

UNIFIED SOIL CLASSIFICATION
(After U.S. Waterways Experiment Station and ASTM D 2487-66T)

Major Division		Group Symbol	Laboratory Classification Criteria		Soil Description
			Finer than 200 Sieve %	Supplementary Requirements	
Coarse-grained (over 50% by weight coarser than No. 200 sieve)	Gravelly soils (over half of coarse fraction larger than No. 4)	GW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}2/D_{60}XD_{10}$) between 1&3	Well-graded gravels, sandy gravels
		GP	0-5*	Not meeting above gradation for GW	Gap-graded or uniform gravels, sandy gravels
		GM	12 or more*	PL less than 4 or below A-line	Silty gravels, silty sandy-gravels,
		GC	12 or more*	PL over 7 and above A-line	Clayey gravels, clayey sandy gravels
	Sandy soils soils (over half of coarse fraction finer than No. 4)	SW	0-5*	D_{60}/D_{10} greater than 4, $D_{30}2/D_{60}XD_{10}$) between 1&3	Well-graded sands, gravelly sands
		SP	0-5*	Not meeting above gradation for requirements	Gap-graded or uniform sands, gravelly sands
		SM	12 or more*	PL less than 4 or below A-line	Silty sands, silty gravelly sands
		SC	12 or more*	PL over 7 and above A-line	Clayey sands, clayey gravelly sands
Fine-grained (over 50% by weight finer than No. 200 sieve)	Low-com pressibility (liquid limit less than 50)	ML	Plasticity chart		Silts, very fine sands, silty or clayey fine sands, micaceous silts
		CL	Plasticity chart		Low plasticity clays, sandy or silty clays
		OL	Plasticity chart, organic odor or color		Organic silts and clays of low plasticity
	High com-pressibility (liquid limit more than 50)	MH	Plasticity chart		Micaceous silts, diatomaceous silts, volcanic ash
		CH	Plasticity chart		Highly plastic clays and sandy clays
		OH	Plasticity chart, organic odor or color		Organic silts and clays of high plasticity
Soils with fibrous organic matter		PT	Fibrous organic matter, will char, burn, or glow		Peat, sandy peats, and clayey peat

*For soils having 5 to 12 percent passing the No. 200 sieve, use a dual symbol such as GW-GC.

APPENDIX C

LBR TEST RECORDS
LABORATORY PROCEDURES

QORE PROPERTY SCIENCES

LIMEROCK BEARING RATIO TEST REPORT
FM 5-515

1211 Tech Boulevard, Suite 200 / Tampa, Florida 33619 / 813-623-6646 fax 813-623-3795
Florida Certificate of Authorization No. 3309

PROJECT: Aution site expantion

CLIENT : Ritchie Brothers Properties

COPIES: Client (A-4)

REPORT DATE: May 29, 2008

JOB NO: 240909

PROCTOR SAMPLE NO: L1

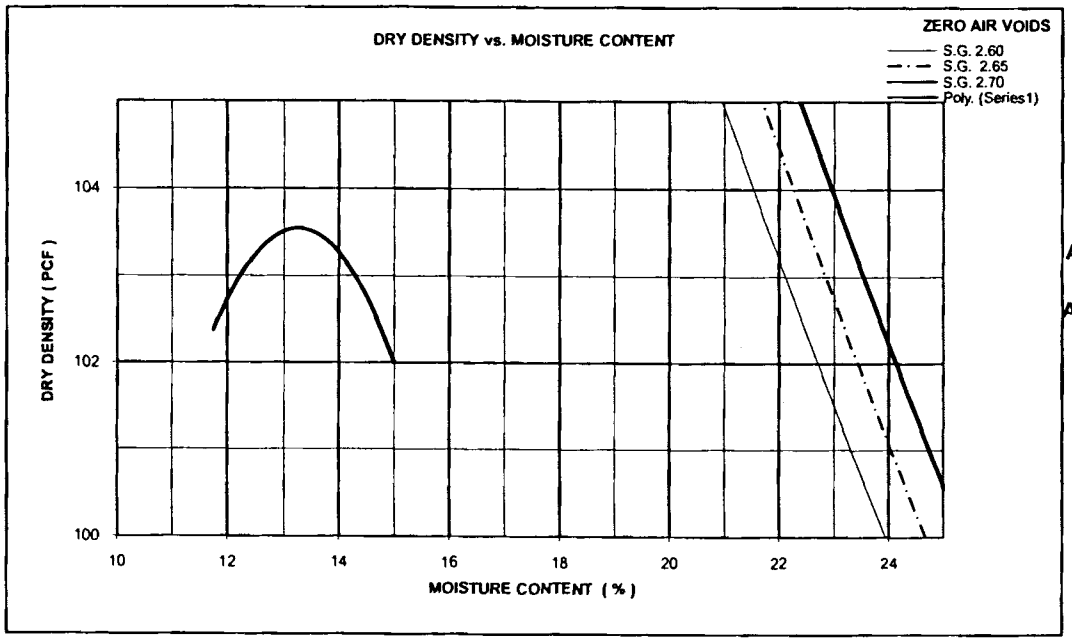
REPORT NO: 56260

SAMPLE LOCATION: LBR 1

SOIL DESCRIPTION: Yellowish brown sand

DATE SAMPLED: 21-May-08

SAMPLED BY: A. Dawkins



DATE COMPACTED: 5/27/09

DATE PENETRATED: 5/29/08

TESTED BY: M. Montel

ANTICIPATED USE OF SOIL: Subgrade

SURCHARGE: 15 lbs.

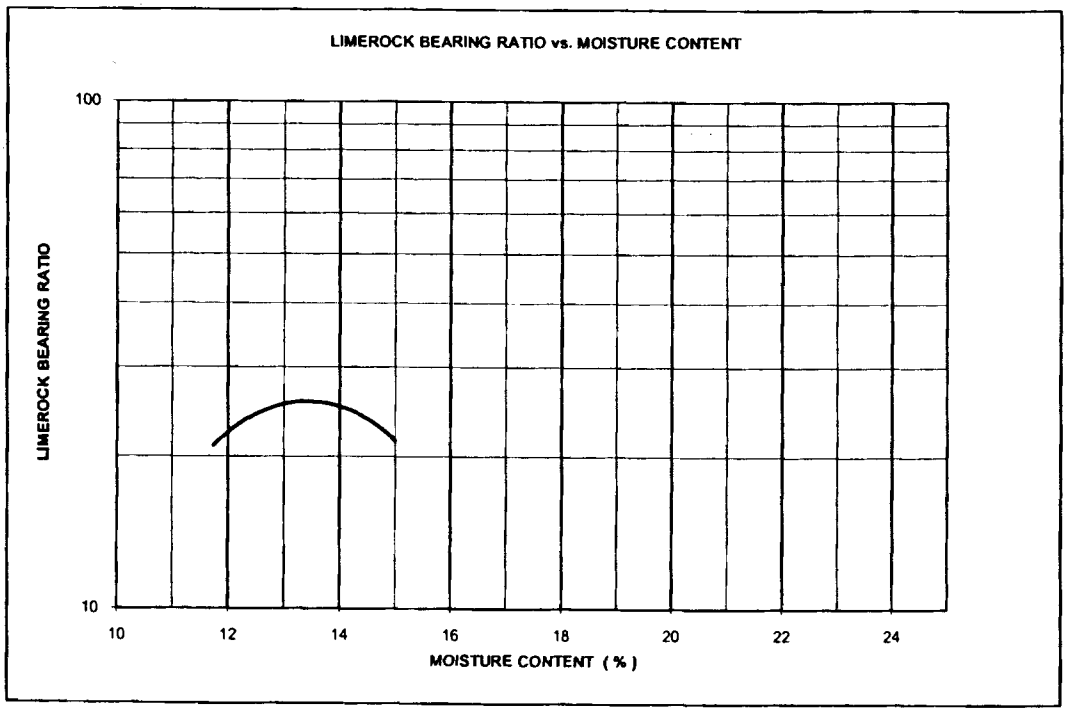
AASHTO CLASSIFICATION *: (A-3)

USCS CLASSIFICATION *: (SP)

** classifications based on visual methods*

MAXIMUM DRY DENSITY (pcf):
103.0

OPT. MOISTURE CONTENT (%):
13.0



LIMEROCK BEARING RATIO (LBR):
27

Minimum Required LBR:
40

E-1754

QORE™
PROPERTY SCIENCES

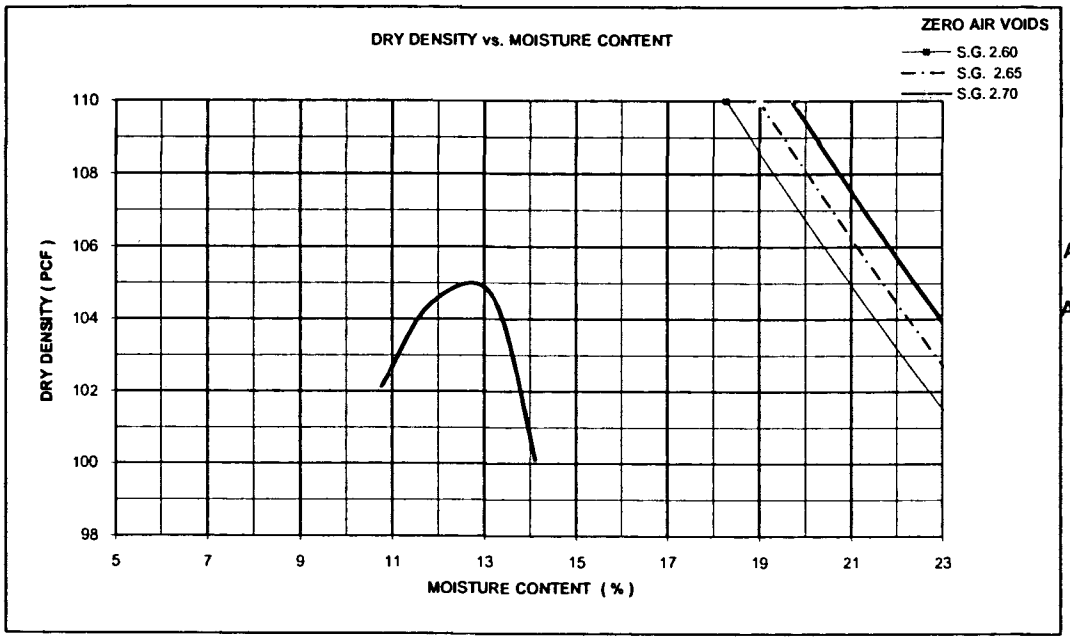
LIMEROCK BEARING RATIO TEST REPORT
FM 5-515

1211 Tech Boulevard, Suite 200 / Tampa, Florida 33619 / 813-623-6646 fax 813-623-3795
Florida Certificate of Authorization No. 3309

PROJECT:	Aution site expantion	**REPORT DATE:**	June 6, 2008
CLIENT :	Ritchie Brothers Properties	**JOB NO:**	240909
		PROCTOR SAMPLE NO:	L2
COPIES:	Client (A-4)	**REPORT NO:**	56260

SAMPLE LOCATION: LBR 1
SOIL DESCRIPTION: Yellowish brown sand

DATE SAMPLED: 31-May-08
SAMPLED BY: J. Mathi

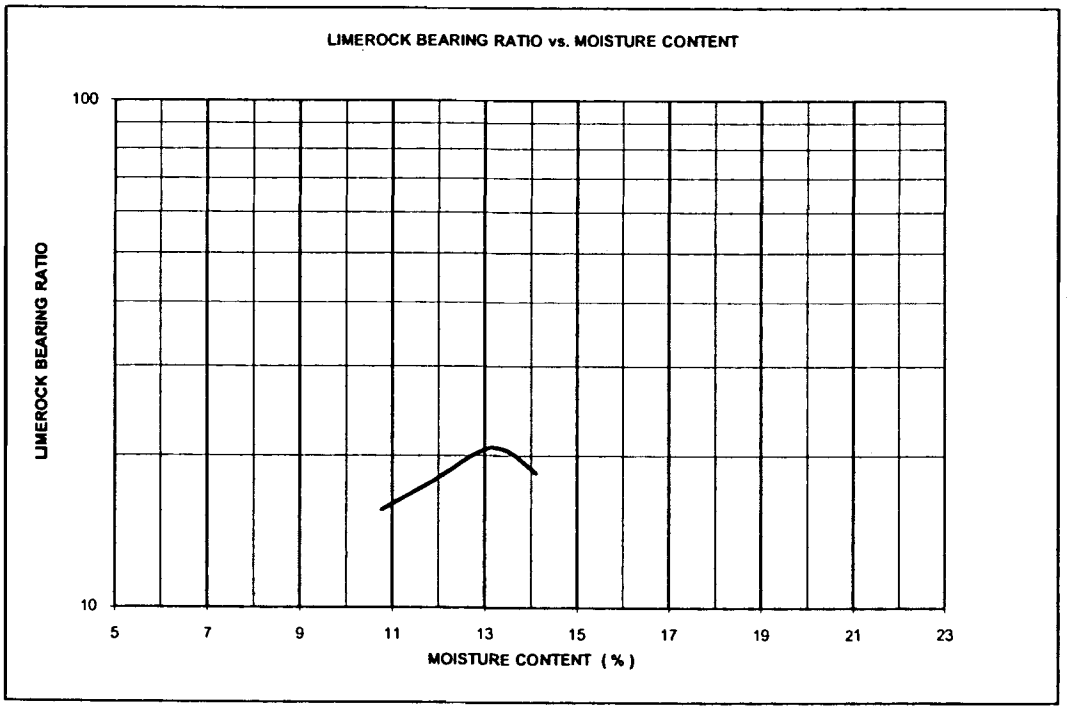


DATE COMPACTED: 6/4/08
DATE PENETRATED: 6/6/08
TESTED BY: M. Montel

ANTICIPATED USE OF SOIL: Subgrade
SURCHARGE: 15 lbs.
AASHTO CLASSIFICATION *: (A-3)
USCS CLASSIFICATION *: (SP)
** classifications based on visual methods*

MAXIMUM DRY DENSITY (pcf):
105.0

OPT. MOISTURE CONTENT (%):
13.0



LIMEROCK BEARING RATIO (LBR):
21

Minimum Required LBR:
40

E-1755

LABORATORY PROCEDURES

LABORATORY PERMEABILITY TESTS, (ASTM D 2434, EM 1110 2 1906, APPENDIX VII-5)

The laboratory permeability tests are performed in general accordance with applicable American Society for Testing and Materials (ASTM) standards. Generally, a sample of soil from a soil boring is obtained and returned to the soils laboratory. The permeability soil sample is placed within the permeability testing frame. Water is allowed to flow through the sample. The level of water can be controlled at a fixed elevation during the test (Constant Head Test) or it may be allowed to fall (Falling Head Test). The rate at which water flows through the soil sample is directly related to the permeability of the soil. Permeability is generally reported in units of centimeters per second (cm/s). Other units, such as feet per day or inches per hour, are also commonly used.

LIMEROCK BEARING RATIO TEST PROCEDURES (FLORIDA METHOD FM 5-515)

The Limerock Bearing Ratio Test (LBR) is useful for evaluating soils used for base, stabilized base, and sub-base material beneath pavements. The test is used to determine the punching shear resistance of soil to the penetration of a piston with standardized dimensions. The soil was compacted in the laboratory at a selected density and moisture content. The specimens are compacted according to the ASTM D-1557 remolded to modified Proctor. Each specimen was soaked under specified conditions for 48 hours. After soaking, a circular piston with an end area of 3.0 in2 was forced into the compacted specimen, with the resultant force measured with a proving ring, and the resultant deformation with a dial gauge accurate to 0.001 inch. Surcharge weights simulating the anticipated pavement weight per square foot were placed around the piston and on top of the soil specimen. These surcharge weights remained in place during the shearing process. The LBR value is a calculated value, expressed as a percent of the stress required to penetrate 0.1 and 0.2 inches into the test specimen, compared to a standard crushed rock sample (800 psi). The results are presented in the attached LBR Stress vs Penetration curves.

APPENDIX D

INFORMATION FROM ASFE

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

EVI ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

15 October 2007

XC: FXR
MUM

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Imaged as Received

Subject:	Civil Site Development Plans and Incidental Side Activities Plans
Project:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/TwpRge:	07/26S/27E
EVI Job No.:	10705301

Dear Mr. Ritchie:

Attached please find three (3) sets of the above-referenced plans signed and sealed by our client, Mr. Dave Nicholson, President of Ritchie Bros. Properties, for your use. If you need anything further, please let us know.

We appreciate your consideration and assistance in this matter.

Yours truly,
ENVISORS, LLC

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

File of Record
Permit No _____

RDBS Record Updated
10/20/08 TLR

HD
4.50
CD

Southwest Florida Water Management District
OCT 16 2008
RECEIVED
RRD-Bartow

KYK/ph
Enclosures: As stated
Copy to: Mr. Dave N. Nicholson, Ritchie Bros. Properties, Inc.
Mr. Scott Lennon, Ritchie Bros. Properties, Inc.
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.07 to F Ritchie.doc

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)

October 28, 2008

Kriss Y. Kaye, P.E.
Envisors, LLC
2105 Dundee Road
Winter Haven, FL 33883

Imaged as Received

Subject: **Clarification of Received Information**
Project Name: Ritchie Bros. Auction Facility Expansion
Application No.: 43022407.003
County: Polk
Sec/Twp/Rge: 07/26S/27E

References: Chapters 40D-1, 4, 40 and 400, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Kaye:

Thank you for responding to our request for additional information. Your permit application still lacks some of the components necessary for us to complete our review; the enclosed checklist describes the missing information.

Please ensure that your response to the checklist, including checks,

- is received in this office within 30 days from the date of this request;
- references the permit application number; and
- includes three copies of **all** requested information.

Failure to provide this information within 30 days will delay the processing of the permit application, and may result in the permit application being denied. If the additional information cannot be provided within that time period, the Applicant may make a written request for a time extension in accordance with Rule 40D-1.1020, F.A.C., provided that an acceptable justification for the time extension accompanies the request. If needed, the time extension request should be received from the Applicant within 30 days from the date of this letter.

If you have questions regarding the information requested or the District's procedures, please contact me at the Bartow Service Office, extension 6100. For assistance with environmental concerns, please contact Melissa N. McConnell, extension 6106.

Sincerely,

Frank X. Ritchie
Bartow Regulation Department

File of Record
Permit No.

FXR:kmh
Enclosure: Checklist
cc/enc: File of Record 43022407.003
Nathan D. Benson, Sandler at Polk County, LLC, a Virginia Limited Liability Company
Dave N. Nicholson, President, Ritchie Bros. Properties, Inc.
N. McConnell

RDBS Record Updated
10/28/08 by TLR

E-1761

PROJECT INFORMATION REVIEW LIST
ENVIRONMENTAL RESOURCE PERMIT APPLICATION
INDIVIDUAL

DATE: October 28, 2008

PROJECT NAME: Ritchie Bros. Auction Facility Expansion

APPLICATION NUMBER: 43022407.003

DATE APPL. RECEIVED: August 20, 2008

APPLICATION REVIEWER/S:
ENGINEERING: Frank X. Ritchie
ENVIRONMENTAL: Melissa N. McConnell

In order to provide that reasonable assurance is given for those "Conditions for Issuance of Permits" found in Rule 40D-4.301, Florida Administrative Code, (F.A.C.), and those "Additional Conditions or Issuance of Permits" found in Rule 40D-4.302, F.A.C., the following additional information is required as indicated. The items requested are extracted from Rules 40D-4.101, F.A.C., "Content of Application," 40D-4.091, F.A.C. "Basis of Review," and 40D-1.607, F.A.C. "Permit Processing Fee," and 40D-1.659, F.A.C. "Forms and Instructions."

PLANS:

1. Provide the design capacity of the internal storm sewer facilities for S-1 through MES-1 (proposed customer parking area). The storm sewer design tabulation sheet is incorrect with respect to many pipe sizes, length (even considering inlet size on each side), grate top etc. Refer to Section E, Part C.13 of the Environmental Resource Permit Application.

CONSTRUCTION SCHEDULE AND TECHNIQUES:

2. If the Construction Surface Water Management Plan (CSWMP) changes in any way, please remember that the revised CSWMP must be signed by the applicant\owner or authorized agent. Refer to Section 2.8 of the District's Basis of Review.

ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

xc: FxR MNM

30 October 2008

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Imaged as Received

Subject:	Clarification of Received Information
Project Name:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/Twp/Rge:	07/26S/27E
EVI Job No.:	10705301

Dear Mr. Ritchie:

We are pleased to respond to your letter of 28 October 2008 requesting clarification of the received information. Three (3) copies of all requested information are attached, and our responses to your comments are shown below.

Plans:

Comment 1) Provide the design capacity of the internal storm sewer facilities for S-1 through MES-1 (proposed customer parking area). The storm sewer design tabulation sheet is incorrect with respect to many pipe sizes, length (even considering inlet size on each side), grate top etc. Refer to Section E, Part C.13 of the Environmental Resource Permit Application.

Response 1) Please see the attached storm sewer design tabulation sheet for the proposed customer parking area and the northeast display area. Also attached are copies of the complete plans.

We appreciate your consideration and assistance in this matter.

Yours truly,
ENVISORS, LLC

File of Record
Permit No _____

RDBS Record Updated 11/7/08 by TLR

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

Southwest Florida Water Management District
NOV 04 2008
RECEIVED
RRD-Bartow
4:24 PM HD AM

KYK/ph
Enclosures: As stated
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.08 to F. Ritchie.doc

Storm Sewer Design

Project: Richie Bro Engineer:M. Patel Road: Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.00 C3 = 0.00
Outfall Ground Elevation (feet) :158.00 Outfall Hydraulic Grade (feet) :158.95

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
1	2	73.00	0.35	0.35	0.21	9.9	2.1	187.00	183.43	183.41	0.02	18.0	0.000	1.18	2.1	1.00
						10.0			184.50	183.30						
S-1						10.0			183.00	181.80	1.20	0.012	1.640		14.6	
2	3	73.00	0.36	0.71	0.43	9.5	4.1	185.80	182.73	181.72	1.01	18.0	0.000	6.63	4.1	1.00
						10.0			183.30	182.30						
S-2						11.0			181.80	180.80	1.00	0.012	1.370		13.4	
3	4	69.00	0.47	1.18	0.71	9.5	6.7	184.80	181.50	181.26	0.24	18.0	0.000	3.79	6.7	1.00
						10.0			182.30	180.80						
S-3						11.2			180.80	179.30	1.50	0.012	2.170		16.8	
4	8	85.00	0.51	1.69	1.01	9.4	9.5	183.30	180.06	178.65	1.41	24.0	0.000	8.78	9.5	1.00
						10.0			181.30	179.90						
S-4						11.5			179.30	177.90	1.40	0.012	1.650		31.5	
5	6	74.00	0.72	0.72	0.43	9.9	4.3	183.30	181.08	180.98	0.11	18.0	0.000	2.43	4.3	1.00
						10.0			180.80	180.30						
S-5						10.0			179.30	178.80	0.50	0.012	0.680		9.4	
6	7	68.00	0.55	1.27	0.76	9.7	7.4	182.80	180.70	180.42	0.29	18.0	0.000	4.20	7.4	1.00
						10.0			180.30	179.80						
S-6						10.5			178.80	178.30	0.50	0.012	0.740		9.8	
7	8	66.00	0.46	1.73	1.04	9.6	10.0	182.30	179.92	179.41	0.51	18.0	0.000	5.66	10.0	1.00
						10.0			179.80	179.41						
S-7						10.8			178.30	177.91	0.39	0.012	0.590		8.8	
8	9	90.00	0.41	3.83	2.30	9.3	21.4	181.90	172.71	166.27	6.43	36.0	0.000	18.01	21.4	1.00
						10.0			175.00	168.60						
S-8						11.7			172.00	165.60	6.40	0.012	7.110		193.2	
9	10	220.00	0.01	3.84	2.30	9.3	21.4	171.50	162.98	158.95	4.02	36.0	0.000	11.07	21.4	1.00
						10.0			165.00	161.00						
S-9						11.8			162.00	158.00	4.00	0.012	1.820		97.7	

Imaged as Received

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RRD-Bartow
NOV 04 2008
Southwest Florida Water Management District

10-06-2008

JAMES Y. KAYE
LICENSE
NO. 50507
STATE OF FLORIDA
PROFESSIONAL ENGINEER

10/30/08

E-1764

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
1	2	307.00			1.74	9.9	17.3	177.00	169.76	169.30	0.47	30.0	0.000	3.52	17.3	1.00
			4.98	4.98		10.0			169.84	168.00						
S-10						10.0			167.34	165.50	1.84	0.012	0.600		34.5	
2	3	300.00	2.50	2.50	3.24	9.4	30.4	173.50	169.01	168.48	0.53	36.0	0.000	4.31	30.4	1.00
				4.98		10.0			168.50	166.70						
S-11						11.5			165.50	163.70	1.80	0.012	0.600		56.1	
3	4	299.00	2.79	5.29	4.92	9.0	44.3	171.70	168.15	167.66	0.49	42.0	0.000	4.60	44.3	1.00
				4.98		10.0			167.20	165.40						
S-12						12.6			163.70	161.90	1.80	0.012	0.600		84.8	
4	5	295.00	2.15	7.44	6.21	8.7	53.8	169.90	167.17	166.45	0.72	42.0	0.000	5.60	53.8	1.00
				4.98		10.0			165.40	163.70						
S-13						13.7			161.90	160.20	1.70	0.012	0.580		83.0	
5	6	299.00	2.14	9.58	7.49	8.4	63.1	168.20	166.06	165.57	0.49	48.0	0.000	5.02	63.1	1.00
				4.98		10.0			164.20	162.40						
S-14						14.6			160.20	158.40	1.80	0.012	0.600		121.1	
6	11	295.00	2.19	11.77	8.81	8.2	71.9	166.40	165.36	165.17	0.19	60.0	0.000	3.66	71.9	1.00
				4.98		10.0			163.40	162.52						
S-15						15.6			158.40	157.52	0.88	0.012	0.300		154.5	
7	8	300.00	1.48	1.48	0.89	9.9	8.8	173.60	168.05	167.93	0.12	30.0	0.000	1.80	8.8	1.00
						10.0			168.10	166.30						
S-16						10.0			165.60	163.80	1.80	0.012	0.600		34.5	
8	9	300.00	2.09	3.57	2.14	8.9	19.2	171.80	167.69	167.13	0.56	30.0	0.000	3.91	19.2	1.00
						10.0			166.30	164.50						
S-17						12.8			163.80	162.00	1.80	0.012	0.600		34.5	
9	10	296.00	1.99	5.56	3.34	8.6	28.6	170.00	166.88	166.42	0.46	36.0	0.000	4.04	28.6	1.00
						10.0			165.00	163.20						
S-18						14.1			162.00	160.20	1.80	0.012	0.610		56.5	
10	11	300.00	2.04	7.60	4.56	8.2	37.6	168.20	165.98	165.17	0.81	36.0	0.000	5.32	37.6	1.00
						10.0			163.20	161.40						
S-19						15.3			160.20	158.40	1.80	0.012	0.600		56.1	

09-26-2008

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
11	18	300.00	2.01	21.38	14.57	7.8	114.3	166.40	164.64	164.15	0.49	60.0	0.000	5.82	114.3	1.00
				4.98		10.0			162.52	161.62						
S-20						16.9			157.52	156.62	0.90	0.012	0.300		155.0	
12	13	300.00	3.67	3.67	2.92	9.9	29.0	177.00	174.64	174.16	0.48	36.0	0.000	4.10	29.0	1.00
			2.06	2.06		10.0			172.00	170.20						
S-21						10.0			169.00	167.20	1.80	0.012	0.600		56.1	
13	14	300.00	3.60	7.27	5.23	9.5	49.5	175.20	173.40	171.99	1.41	36.0	0.000	7.01	49.5	1.00
			0.42	2.48		10.0			170.20	168.40						
S-22						11.2			167.20	165.40	1.80	0.012	0.600		56.1	
14	15	300.00	3.90	11.17	7.57	9.2	69.8	173.40	171.51	170.90	0.60	48.0	0.000	5.56	69.8	1.00
				2.48		10.0			169.40	167.60						
S-23						11.9			165.40	163.60	1.80	0.012	0.600		120.9	
15	16	300.00	3.42	14.59	9.62	8.9	86.0	171.60	170.18	169.26	0.92	48.0	0.000	6.84	86.0	1.00
				2.48		10.0			167.60	165.80						
S-24						12.8			163.60	161.80	1.80	0.012	0.600		120.9	
16	17	300.00	3.06	17.65	11.46	8.7	99.8	169.80	168.28	167.05	1.24	48.0	0.000	7.95	99.8	1.00
				2.48		10.0			165.80	164.00						
S-25						13.6			161.80	160.00	1.80	0.012	0.600		120.9	
17	18	300.00	3.21	20.86	13.38	8.5	114.2	168.00	165.76	164.15	1.62	48.0	0.000	9.09	114.2	1.00
				2.48		10.0			164.00	162.20						
S-26						14.2			160.00	158.20	1.80	0.012	0.600		120.9	
18	19	298.00	3.12	45.36	29.83	7.7	228.2	166.20	162.05	160.10	1.95	60.0	0.000	11.62	228.2	1.00
				7.46		10.0			161.00	160.10						
S-27						17.8			156.00	155.10	0.90	0.012	0.300		155.5	
19	25	199.00	0.01	45.37	29.83	7.6	225.5	171.60	155.67	154.40	1.27	60.0	0.000	11.48	225.5	1.00
				7.46		10.0			155.00	154.40						
S-28						18.2			150.00	149.40	0.60	0.012	0.300		155.3	
20	21	285.00			2.49	9.9	24.7	168.25	165.63	164.25	1.38	36.0	0.000	7.08	24.7	1.00
			6.30	6.30		10.0			165.90	164.53						
EX1			0.30	0.30		10.0			162.90	161.53	1.37	0.012	0.480		50.2	

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :139.00 Outfall Hydraulic Grade (feet) :142.90

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
21	22	341.00			2.89	9.7	27.9	168.90	164.01	163.50	0.51	36.0	0.000	3.95	27.9	1.00
			1.14	7.44		10.0			164.40	163.38						
EX2				0.30		10.7			161.40	160.38	1.02	0.012	0.300		39.6	
22	23	290.00			3.65	9.2	33.5	166.80	161.78	158.48	3.30	36.0	0.000	10.52	33.5	1.00
			2.18	9.62		10.0			163.38	160.10						
S-29				0.30		12.1			160.38	157.10	3.28	0.012	1.130		77.0	
23	24	208.00			4.25	9.0	38.3	162.10	154.93	153.72	1.21	36.0	0.000	8.41	38.3	1.00
			1.70	11.32		10.0			155.10	153.90						
S-30				0.30		12.6			152.10	150.90	1.20	0.012	0.580		55.0	
24	25	244.00			4.63	8.9	41.2	155.90	153.19	152.40	0.79	36.0	0.000	5.82	41.2	1.00
			1.10	12.42		10.0			153.14	152.40						
S-31				0.30		13.0			150.14	149.40	0.74	0.012	0.300		39.9	
25	26	83.00		45.37	34.98	7.5	262.3	154.40	143.91	142.90	1.01	60.0	0.000	17.73	262.3	1.00
			1.47	21.35		10.0			145.00	144.00						
S-32				0.30		18.5			140.00	139.00	1.00	0.012	1.200		310.5	

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)

November 7, 2008

File of Record
Permit No. _____

Kriss Y. Kaye, P.E.
Envisors, LLC
2105 Dundee Road
Winter Haven, FL 33883

Subject: **Status of Permit Application** (Completeness)
Project Name: Ritchie Bros. Auction Facility Expansion
Application No.: 43022407.003
County: Polk
Sec/Twp/Rge: 07/26S/27E

References: Chapters 40D-1.1020, and 28-107.002, Florida Administrative Code (F.A.C.)
Sections 373.4141 and 120.60, Florida Statutes (F.S.)

Dear Mr. Kaye:

The permit application referenced above is complete with the information received on November 4, 2008.

Please note that this letter does not constitute authority to begin construction; construction is authorized once the permit is issued. District staff are now processing the completed application, and will act on the application within 90 days.

Please be advised that any construction activities that disturb (includes clearing, grading and excavation) one (1) acre or more of land (total plan of development) and that may result in a stormwater discharge to a Water of the State or a municipal separate storm sewer system may require coverage under a Florida Department of Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES) Stormwater Permit, including a Stormwater Pollution Prevention Plan. Information about the NPDES Stormwater program can be accessed via the FDEP-NPDES Stormwater section's website at: www.dep.state.fl.us/water/stormwater/npdes/.

If you have questions concerning the District's procedures, or if I may be of assistance, please contact me at the Bartow Service Office at extension 6100.

Sincerely,

Frank X. Ritchie
Bartow Regulation Department

RDBS Record Updated
11/7/08 by TLR

FXR:nm
cc: File of Record 43022407.003
Nathan D. Benson, Sandler at Polk County, LLC, a Virginia Limited Liability Company
Dave N. Nicholson, President, Ritchie Bros. Properties, Inc.

E-1768

ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

07 November 2008

Imaged as Received

XC: FXR MUM

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Subject:	Civil Site Development Plans and Incidental Side Activities Plans
Project:	Ritchie Bros. Auction Facility Expansion
Application No.:	43022407.003
County:	Polk
Sec/TwpRge:	07/26S/27E
EVI Job No.:	10705301

Dear Mr. Ritchie:

Attached please find three (3) sets of the above-referenced plans signed and sealed by our client, Mr. Dave Nicholson, President of Ritchie Bros. Properties, for your use. If you need anything further, please let us know.

We appreciate your consideration and assistance in this matter.

Yours truly,
ENVISORS, LLC

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

4:15PM
HI PAM

Southwest Florida Water Management District
NOV 12 2008
RECEIVED
RRD-Bartow

RDBS Record Updated
11/14/08 by TLR

File of Record
Permit No _____

KYK/ph
Enclosures: As stated
Copy to: Mr. Dave N. Nicholson, Ritchie Bros. Properties, Inc.
Mr. Scott Lennon, Ritchie Bros. Properties, Inc.
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.10 to F Ritchie.doc

ENVISORS
Consulting Civil & Environmental Engineers, Planners, and Surveyors

2105 Dundee Road
Post Office Box 9309
Winter Haven, FL 33883-9309
Telephone: (863) 324-1112
Fax: (863) 294-6185
Email: envisors@envisors.com

08 December 2008

File of Record
Permit No. _____

Southwest Florida Water Management District HD
DEC 08 2008 4pm
RECEIVED
RRD-Bartow

XC: FKR MWM

Imaged as Received

Mr. Frank X. Ritchie
Bartow Regulation Department
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
170 Century Boulevard
Bartow, Florida 33830-7700

Subject: Revised Construction Plans

Project Name: Ritchie Bros. Auction Facility Expansion

Application No.: 43022407.003

EVI Job No.: 10705301

Dear Mr. Ritchie:

In accordance with our meeting with Mr. Scott Lennon of Ritchie Bros. at your office last week, we have revised the previously submitted construction plans to illustrate new final grades/elevations, storm pipe size changes and additional coarse aggregate area limits for the proposed improvements. The revisions have resulted in an increase in the proposed impervious area for the N.E. Display area of approximately 10.8+/- acres; however the attached stormwater routing calculations indicate that the estimated 100-year 24-hour design high water level elevation (143.6+/- ft.) for the one pond (Pond No. 4) that will be affected by said changes is lower than the berm elevation of 144 ft. Attached please find three (3) sets of construction plans, revised Stormwater Management System (Pond No. 4) and conveyance system calculations for your review.

Thank you for your help regarding the aforementioned and as always we appreciate your consideration and assistance in this matter.

Yours truly,
ENVISORS, LLC

Kriss Y. Kaye, P.E., CFM
Director of Drainage and Land Development

12/9/08

Xc: Scott Lennon, Ritchie Bros. Properties Inc. (Ritchie Bros, Inc.), no enclosures
KYK/ph
Enclosures: As stated
S:\JOBS\EVI\2007\10705301\CORRES\10705301 L.12 to F. Ritchie.doc

E-1770

Revised on December 8, 2009

INPUT DATA AND OUTPUT RESULTS PONDS 3.2 ANALYSES

I. Pre-Dev. Basin No. 4 and Post-Dev. Basin No. 4; Node Name Pond No. 4 Input Data

A. Summary of Pond and Groundwater Data:

Proposed Pond No. 4

Seasonal High Water Level - Est. (ft. ngvd) *	122.0	(Per-5 and Per-6; est. 122 ft and 121 ft)
Elevation of Effective Aquifer Est. (ft. ngvd.) *	106	(136' - 30' est per Qore's Report)
Fillable Porosity (percent)	20	
Kvus. Unsaturated Vert. Hyd. Conductivity (ft./day	20	(est.-see Qore's report)
Khs, Saturated Horiz. Hyd. Conductivity (ft./day)	30	
Pond Bottom Area (sq. ft.)	96703	
Pond Volume (cu. ft.)	1299609	
Pond Length to Width Ratio	1.5	(250/75)
Pond Bottom. (ft.)	161	
Effective Storage Coeff. of Pond	1	

Revised Pond No. 4 and Stormsewer Conveyance System calculations.

12/8/09

B. Pre-Development Hydrograph Development:

Not applicable as there is no routing and/or discharge in post-dev. Condition

BASIN No. 4

Total Area (acres)	98.300	
Hydrologic Soil Group	"A" (Candler Sand)	
Impervious Area	0.0%	
Curve Number	45	(see calculations below)
Time of Concentration	20 minutes	Not applicable Post-Dev. Discharge is Zero
Rainfall Volume	7.5 inches, 9.5 inches	
Storm Duration	24-hr	
Unit Hydrograph	SCS FL. MOD. TYPE II	
Storm Frequencies	25-yr, 100-yr	

C. Post-Development Hydrograph Development:

BASIN No. 4

Contribution Area (acres)	98.300
Hydrologic Soil Group	"A" (Candler Sand)
Impervious Area	96%
Curve Number Est.	78
Time of Concentration	10 minutes
Rainfall Volume	7.5 inches, 9.5 inches
Storm Duration	24-hr
Unit Hydrograph	SCS FL. MOD. TYPE II
Storm Frequencies	25-yr, 100-yr

Southwest Florida Water Management District

DEC 08 2008

RECEIVED
RRD-Bartow

II. Calculations

A Time of Concentration Estimate:

Predevelopment Conditions:
Assumed to be 30 minutes for conservatism. Not applicable as there is no routing and/or discharge in post-dev. Condition

Post-development Conditions:
Assumed to be 10 minutes for conservatism.

File of Record
Permit No _____

Revised on December 8, 2009

INPUT DATA AND OUTPUT RESULTS PONDS 3.2 ANALYSES

B Pre-Development Curve Number Estimate (not applicable):

BASIN No. 4

Basin Land Use Types	Area (acres)	Curve Number	Fraction of Total	Notes
A. Undeveloped	77.500	45	1.00	HSG "A" Good Condition
Sub-Total =	77.500	45	1.00	

C Post-Development Curve Number Estimate:

BASIN No. 4

Basin Land Use Types	Area (acres)	Curve Number	Fraction of Total	Notes
A. Buildings/Roads	9.41	98	0.10	Incl.s Auction/Refurb. Exp.s
B. Landscape	1.45	50	0.01	HSG "A" Good Condition
C. Gravel Display Area	85.22	76	0.87	Includes new N.E. Display
D. Pond 1	2.22	100	0.02	Assume Impervious
Sub-Total =	98.300	78	1.00	

The improvements include: 1) a Refurbish Building Expansion w/Pavement Addition totalling 22,300 sq. ft.;
2) Auction building addition and pavement totalling 29,900 sq. ft; and,
3) approximately 57.7+/- acres of new Gravel (crushed concrete and gravel) Area

D **Retention Volume Estimate for Matching Pre-Development Volume Release:**

BASIN No. 4

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

where P = rainfall depth (7" for a 25-yr 24-hr storm event)
S = potential storage abstraction = 1000/CN-10

1. Pre-Development Conditions — Volume estimate:

input: P = 7.5, CN = 45 → S = 12.22, Volume (Q) = 1.48 inches

Area = 98.30 acres
Pre-Dev. Volume = 12.12 ac-ft

2. Post-Development Conditions

input: P = 7.5, CN = 78 → S = 2.78, Volume (Q) = 4.96 inches

Area = 98.30 acres
Post-Dev. Volume [1] = 40.64 ac-ft

Post - PreDev Volume Difference= 28.52 ac-ft or 1242319 cu.ft.

E Treatment Volume Determination:

BASIN No. 4

Drainage Area	98.300	acres		
1/2-inch of Treatment Volume:	4.10	ac-ft	or	178415 cubic feet

Revised on December 8, 2009

INPUT DATA AND OUTPUT RESULTS PONDS 3.2 ANALYSES

F Pond Stage - Storage Relationships:

Pond 4 Design:

Bottom Pond Area Estimate	96703 sq. ft. @ 135 ft
Top Pond Area Estimate	192099 sq. ft. @144 ft
Pond Volume Estimate	1299609 cu. ft.
SHWT Elevation	122.0 ft.
Effective Aquifer Base	106 ft.

WATER QUANTITY DETENTION VOLUME
STAGE-STORAGE RELATIONSHIPS

	ELEVATION (MSL)	STAGE (FT)	AREA (SQ. FT.)	AREA (ACRES)	VOLUME (CU. FT.)	VOLUME (AC.-FT.)
	135.0	0.0	96703	2.22	0	0.00
##	136.0	1.0	107303	2.46	102003	2.34
	137.0	2.0	117902	2.71	214605	4.93
	138.0	3.0	128502	2.95	337807	7.75
	139.0	4.0	139101	3.19	471608	10.83
	140.0	5.0	149701	3.44	616009	14.14
	141.0	6.0	160300	3.68	771010	17.70
	142.0	7.0	170900	3.92	936610	21.50
	143.0	8.0	181499	4.17	1112810	25.55
	144.0	9.0	192099	4.41	1299609	29.83

III. Summary of Results & Basic Design Criteria Compliance

A Discharge Rates and Peak State Estimates:

Node	Storm Event	Peak Stage (ft)	Pre-Dev. Discharge (cfs)	Post-Dev. Discharge (cfs)
Pond 4	25-yr 24-hr	N/A	N/A	0.00
	100-yr 24-yr	143.6 +/-	N/A	0.00
	Pond 1 Top of Bank =	144 +/-		

B Storage Volume

POND 4	Stage (ft.)	Volume (cu. ft.)	elev. @ 72-hours
1/2-inch Treatment Vol.	<136.7	178415	below 135

Overflow structure is set at the 100-year 24-hour peak elevation of 143.6 ft.
* Pond Bottom (Drawdown elevation is below pond bottom elevation)

Revised on December 8, 2009

INPUT DATA AND OUTPUT RESULTS PONDS 3.2 ANALYSES

B Pre-Development Curve Number Estimate (not applicable):

BASIN No. 4

Basin Land Use Types	Area (acres)	Curve Number	Fraction of Total	Notes
A. Undeveloped	77.500	45	1.00	HSG "A" Good Condition
Sub-Total =	77.500	**45**	1.00	

C Post-Development Curve Number Estimate:

BASIN No. 4

Basin Land Use Types	Area (acres)	Curve Number	Fraction of Total	Notes
A. Buildings/Roads	9.41	98	0.10	Incl.s Auction/Refurb. Exp.s
B. Landscape	1.45	50	0.01	HSG "A" Good Condition
C. Gravel Display Area	85.22	76	0.87	Includes new N.E. Display
D. Pond 1	2.22	100	0.02	Assume Impervious
Sub-Total =	98.300	**78**	1.00	

The improvements include: 1) a Refurbish Building Expansion w/Pavement Addition totalling 22,300 sq. ft.;
2) Auction building addition and pavement totalling 29,900 sq. ft; and,
3) approximately 57.7+/- acres of new Gravel (crushed concrete and gravel) Area

D **Retention Volume Estimate for Matching Pre-Development Volume Release:**

BASIN No. 4

$Q = (P-0.2S)^2/(P+0.8S)$

where P = rainfall depth (7" for a 25-yr 24-hr storm event)
S = potential storage abstraction = 1000/CN-10

1. Pre-Development Conditions — Volume estimate:

input	P =	7.5	S =	12.22	
	CN =	45	Volume (Q) =	1.48	inches
			Area =	98.30	acres
			Pre-Dev. Volume =	12.12	ac-ft

2. Post-Development Conditions

input	P =	7.5	S =	2.78	
	CN =	78	Volume (Q) =	4.96	inches
			Area =	98.30	acres
			Post-Dev. Volume [1] =	40.64	ac-ft

Post - PreDev Volume Difference= 28.52 ac-ft or 1242319 cu.ft.

E Treatment Volume Determination:

BASIN No. 4

Drainage Area	98.300	acres		
1/2-inch of Treatment Volume:	4.10	ac-ft	or	178415 cubic feet

Revised on December 8, 2009

INPUT DATA AND OUTPUT RESULTS PONDS 3.2 ANALYSES

F Pond Stage - Storage Relationships:

Pond 4 Design:

Bottom Pond Area Estimate	96703 sq. ft. @ 135 ft
Top Pond Area Estimate	192099 sq. ft. @144 ft
Pond Volume Estimate	1299609 cu. ft.
SHWT Elevation	122.0 ft.
Effective Aquifer Base	106 ft.

WATER QUANTITY DETENTION VOLUME
STAGE-STORAGE RELATIONSHIPS

	ELEVATION (MSL)	STAGE (FT)	AREA (SQ. FT.)	AREA (ACRES)	VOLUME (CU. FT.)	VOLUME (AC.-FT.)
	135.0	0.0	96703	2.22	0	0.00
##	136.0	1.0	107303	2.46	102003	2.34
	137.0	2.0	117902	2.71	214605	4.93
	138.0	3.0	128502	2.95	337807	7.75
	139.0	4.0	139101	3.19	471608	10.83
	140.0	5.0	149701	3.44	616009	14.14
	141.0	6.0	160300	3.68	771010	17.70
	142.0	7.0	170900	3.92	936610	21.50
	143.0	8.0	181499	4.17	1112810	25.55
	144.0	9.0	192099	4.41	1299609	29.83

III. Summary of Results & Basic Design Criteria Compliance

A Discharge Rates and Peak State Estimates:

Node	Storm Event	Peak Stage (ft)	Pre-Dev. Discharge (cfs)	Post-Dev. Discharge (cfs)
Pond 4	25-yr 24-hr	N/A	N/A	0.00
	100-yr 24-yr	143.6 +/-	N/A	0.00
	Pond 1 Top of Bank =	144 +/-		

B Storage Volume

POND 4	Stage (ft.)	Volume (cu. ft.)	elev. @ 72-hours
1/2-inch Treatment Vol.	<136.7	178415	below 135

Overflow structure is set at the 100-year 24-hour peak elevation of 143.6 ft.
* Pond Bottom (Drawdown elevation is below pond bottom elevation)

PONDS Version 3.2.0207
Retention Pond Recovery - Refined Method
Copyright 2003
Devo Seereeram, Ph.D., P.E.

Project Data

Project Name:	Richie Bros. Expansion
Simulation Description:	Pond 4 Post-Develpment Analysis
Project Number:	
Engineer :	Kriss Kaye, P.E., CFM
Supervising Engineer:	Kriss Kaye, P.E., CFM
Date:	12-08-2008

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	106.00
Water Table Elevation, [WT] (ft datum):	122.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	30.00
Fillable Porosity, [n] (%):	20.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	20.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	192000.0

Geometry Data

Equivalent Pond Length, [L] (ft):	1280.0
Equivalent Pond Width, [W] (ft):	147.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
135.00	96703.0
140.00	149410.0
144.00	192099.0

Discharge Structures

Discharge Structure #1 is inactive

Discharge Structure #2 is inactive

Discharge Structure #3 is inactive

Scenario Input Data

Scenario 1 :: SCS Type II Florida Modified (x1) - Post Development Basin 4

Hydrograph Type:	Inline SCS
Modflow Routing:	Routed with infiltration
Repetitions:	1

Basin Area (acres)	98.300
Time Of Concentration (minutes)	10.0
DCIA (%)	0.0
Curve Number	78
Design Rainfall Depth (inches)	9.5
Design Rainfall Duration (hours)	24.0
Shape Factor	UHG 256
Rainfall Distribution	SCS Type II Florida Modified

Initial ground water level (ft datum) default, 122.00

No times after storm specified.

Summary of Results :: *Scenario 1 :: SCS Type II Florida Modified (x1) - Post Development Basin 4*

	Time (hours)	Stage (ft datum)	Rate (ft^3/s)	Volume (ft^3)
Stage				
Minimum	0.000	122.00		
Maximum	24.022	143.58		
Inflow				
Rate - Maximum - Positive	12.022		411.8801	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	24.978			2422803.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	25.022			2422803.0
Infiltration				
Rate - Maximum - Positive	13.911		218.8957	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	25.022			1227222.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	25.022			1227222.0
Combined Discharge				
Rate - Maximum - Positive	None		None	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	None			None
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	25.022			0.0
Discharge Structure 1 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 2 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 3 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Pollution Abatement:				
36 Hour Stage and Infiltration Volume	N.A.	N.A.		N.A.
72 Hour Stage and Infiltration Volume	N.A.	N.A.		N.A.

PONDS Version 3.2.0207
Retention Pond Recovery - Refined Method
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Devo Seereeram, Ph.D., P.E.

Project Data

Project Name:	Richie Bros. Expansion
Simulation Description:	Pond 4 Post-Develpment Analysis
Project Number:	
Engineer :	Kriss Kaye, P.E., CFM
Supervising Engineer:	Kriss Kaye, P.E., CFM
Date:	12-08-2008

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	106.00
Water Table Elevation, [WT] (ft datum):	122.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	30.00
Fillable Porosity, [n] (%):	20.00

Vertical infiltration was not considered.

Geometry Data

Equivalent Pond Length, [L] (ft):	1280.0
Equivalent Pond Width, [W] (ft):	147.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
135.00	96703.0
140.00	149410.0
144.00	192099.0

Discharge Structures

Discharge Structure #1 is inactive

Discharge Structure #2 is inactive

Discharge Structure #3 is inactive

Scenario Input Data

Scenario 2 :: 178415 ft³ slug load

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft³) 178415

Initial ground water level (ft datum) default, 122.00

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	3.500
1.500	4.000

Summary of Results :: *Scenario 2 :: 178415 ft³ slug load*

	Time (hours)	Stage (ft datum)	Rate (ft³/s)	Volume (ft³)
Stage				
Minimum	96.000	127.01		
Maximum	0.002	136.68		
Inflow				
Rate - Maximum - Positive	0.002		29735.8300	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	0.002			178415.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	96.000			178415.0
Infiltration				
Rate - Maximum - Positive	0.002		229.6097	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	6.000			178415.0
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	96.000			178415.0
Combined Discharge				
Rate - Maximum - Positive	None		None	
Rate - Maximum - Negative	None		None	
Cumulative Volume - Maximum Positive	None			None
Cumulative Volume - Maximum Negative	None			None
Cumulative Volume - End of Simulation	96.000			0.0
Discharge Structure 1 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 2 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Discharge Structure 3 - inactive				
Rate - Maximum - Positive	disabled		disabled	
Rate - Maximum - Negative	disabled		disabled	
Cumulative Volume - Maximum Positive	disabled			disabled
Cumulative Volume - Maximum Negative	disabled			disabled
Cumulative Volume - End of Simulation	disabled			disabled
Pollution Abatement:				
36 Hour Stage and Infiltration Volume	36.000	129.39		178415.0
72 Hour Stage and Infiltration Volume	72.000	127.67		178415.0

10705301 12/8/08

DN

Storm Sewer Design

Project: Richie Bro Engineer:M. Patel Road: Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.00 C3 = 0.00 (N.W. / US 27 Customer Parking Area)
Outfall Ground Elevation (feet) :158.00 Outfall Hydraulic Grade (feet) :158.94

Str	To	Length	Incr ment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
1	2	73.00	0.35	0.35	0.21	9.9	2.1	180.10	174.63	174.60	0.02	18.0	0.034	1.18	2.1	1.00
						10.0			174.10	173.00						
S-1						10.0			172.60	171.50	1.10	0.012	1.510		14.0	
2	3	73.00	0.36	0.71	0.43	9.5	4.1	179.00	174.52	174.43	0.09	18.0	0.127	2.30	4.1	1.00
						10.0			173.00	172.00						
S-2						11.0			171.50	170.50	1.00	0.012	1.370		13.4	0.08
3	4	69.00	0.47	1.18	0.71	9.4	6.6	178.00	174.21	173.98	0.23	18.0	0.338	3.75	6.6	1.00
						10.0			172.00	170.50						
S-3						11.6			170.50	169.00	1.50	0.012	2.170		16.8	0.22
4	8	85.00	0.51	1.69	1.01	9.2	9.4	177.00	173.84	173.71	0.12	24.0	0.146	2.98	9.4	1.00
						10.0			171.00	168.80						
S-4						11.9			169.00	166.80	2.20	0.012	2.590		39.5	0.14
5	6	74.00	0.72	0.72	0.43	9.9	4.3	177.10	175.39	175.28	0.11	18.0	0.142	2.43	4.3	1.00
						10.0			171.10	170.60						
S-5						10.0			169.60	169.10	0.50	0.012	0.680		9.4	0.09
6	7	68.00	0.55	1.27	0.76	9.7	7.4	176.60	175.01	174.72	0.29	18.0	0.425	4.20	7.4	1.00
						10.0			170.60	170.20						
S-6						10.5			169.10	168.70	0.40	0.012	0.590		8.8	0.27
7	8	66.00	0.46	1.73	1.04	9.6	10.0	176.20	174.22	173.71	0.51	18.0	0.771	5.66	10.0	1.00
						10.0			170.20	168.30						
S-7						10.8			168.70	166.80	1.90	0.012	2.880		19.4	0.50
8	9	90.00	0.41	3.83	2.30	9.1	20.9	175.80	169.67	164.84	4.83	36.0	5.362	16.15	20.9	1.00
						10.0			169.80	165.00						
S-8						12.3			166.80	162.00	4.80	0.012	5.330		167.3	4.05
9	10	220.00	0.01	3.84	2.30	9.1	20.9	171.50	162.96	158.94	4.02	36.0	1.828	10.99	20.9	1.00
						10.0			165.00	161.00						
S-9						12.4			162.00	158.00	4.00	0.012	1.820		97.7	1.88

Storm Sewer Design

10705301 12/8/08

DN

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :138.62 Outfall Hydraulic Grade (feet) :143.00

Str	To	Length	Incr ment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
1	2	168.00			1.92	9.9	19.1	184.10	179.79	175.12	4.66	30.0	0.185	3.89	19.1	1.00
			5.50	5.50		10.0			181.49	175.10						
S-10						10.0			178.99	172.60	6.39	0.012	3.800		86.9	
2	3	300.00	0.40	0.40	2.16	9.7	20.9	181.50	173.04	166.71	6.33	36.0	2.111	11.58	20.9	1.00
				5.50		10.0			175.10	168.80						
S-11						10.7			172.10	165.80	6.30	0.012	2.100		105.0	2.08
3	4	299.00	1.40	1.80	3.01	9.5	28.5	175.20	166.31	164.50	1.81	42.0	0.069	2.97	28.5	1.00
				5.50		10.0			168.80	162.60						
S-12						11.2			165.30	159.10	6.20	0.012	2.070		157.4	0.14
4	5	295.00	2.60	4.40	4.57	8.9	40.8	168.90	161.54	155.31	6.23	42.0	2.113	13.80	40.8	1.00
				5.50		10.0			162.60	156.40						
S-13						12.8			159.10	152.90	6.20	0.012	2.100		158.4	2.96
5	6	273.00	2.80	7.20	6.24	8.8	55.1	162.70	155.01	154.66	0.34	48.0	0.125	4.39	55.1	1.00
				5.50		10.0			156.40	150.60						
S-14						13.2			152.40	146.60	5.80	0.012	2.120		227.4	0.30
6	11	386.00	5.40	12.60	9.49	8.5	80.9	157.00	154.40	154.08	0.32	60.0	0.082	4.12	80.9	1.00
				5.50		10.0			150.60	148.28						
S-15						14.2			145.60	143.28	2.32	0.012	0.600		219.3	0.26
7	8	300.00	6.40	6.40	3.84	9.9	38.1	181.60	173.30	171.10	2.21	30.0	0.736	7.77	38.1	1.00
						10.0			175.20	168.90						
S-16						10.0			172.70	166.40	6.30	0.012	2.100		64.6	0.94
8	9	300.00	1.30	7.70	4.62	9.7	44.7	175.30	167.97	161.63	6.33	30.0	2.112	14.20	44.7	1.00
						10.0			168.90	162.60						
S-17						10.6			166.40	160.10	6.30	0.012	2.100		64.6	3.13
9	10	296.00	2.50	10.20	6.12	9.5	58.4	169.00	160.39	158.45	1.94	36.0	0.654	8.27	58.4	1.00
						10.0			162.60	156.40						
S-18						11.0			159.60	153.40	6.20	0.012	2.090		104.9	1.06
10	11	274.00	2.70	12.90	7.74	9.3	72.3	162.80	156.83	154.08	2.74	36.0	1.001	10.23	72.3	1.00
						10.0			156.40	150.60						
S-19						11.6			153.40	147.60	5.80	0.012	2.120		105.4	1.62

E-1783

1/

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :138.62 Outfall Hydraulic Grade (feet) :143.00

Str	To	Length	Incr ment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V HI
11	18	386.00	5.50	31.00	20.53	8.1	166.5	157.00	153.55	153.04	0.51	72.0	0.132	5.89	166.5	1.00
				5.50		10.0			149.28	146.96						
S-20						15.8			143.28	140.96	2.32	0.012	0.600		356.6	0.54
12	13	300.00	1.60	1.60	1.80	9.9	17.9	189.40	181.60	178.78	2.82	36.0	0.938	8.28	17.9	1.00
			2.40	2.40		10.0			183.00	180.20						
S-21						10.0			180.00	177.20	2.80	0.012	0.930		70.0	1.06
13	14	300.00	2.70	4.30	3.42	9.7	33.2	186.50	178.44	175.86	2.58	36.0	0.211	4.69	33.2	1.00
				2.40		10.0			180.20	175.30						
S-22						10.6			177.20	172.30	4.90	0.012	1.630		92.6	0.34
14	15	300.00	1.80	6.10	4.50	9.3	41.9	181.70	172.93	166.59	6.33	48.0	2.111	13.75	41.9	1.00
				2.40		10.0			175.30	169.00						
S-23						11.7			171.30	165.00	6.30	0.012	2.100		226.1	2.94
15	16	300.00	2.10	8.20	5.76	9.2	52.9	175.30	166.32	164.47	1.84	48.0	0.116	4.21	52.9	1.00
				2.40		10.0			169.00	162.70						
S-24						12.0			165.00	158.70	6.30	0.012	2.100		226.1	0.28
16	17	300.00	2.80	11.00	7.44	8.8	65.6	169.00	160.70	154.37	6.33	48.0	2.111	15.58	65.6	1.00
				2.40		10.0			162.70	156.40						
S-25						13.2			158.70	152.40	6.30	0.012	2.100		226.1	3.77
17	18	272.00	2.80	13.80	9.12	8.7	79.5	162.70	153.75	153.04	0.71	48.0	0.261	6.33	79.5	1.00
				2.40		10.0			156.40	150.70						
S-26						13.5			152.40	146.70	5.70	0.012	2.100		225.9	0.62
18	25	296.00	5.40	50.20	32.96	7.9	258.7	157.00	151.74	150.80	0.94	72.0	0.318	9.15	258.7	1.00
			0.20	8.10		10.0			146.96	146.06						
S-27						16.9			140.96	140.06	0.90	0.012	0.300		253.7	1.30
19	20	323.00			0.70	9.9	6.9	168.25	165.52	164.28	1.24	36.0	0.383	4.60	6.9	1.00
			2.00	2.00		10.0			165.90	164.67						
EX1						10.0			162.90	161.67	1.23	0.012	0.380		44.7	0.33
20	21	203.00			1.27	9.5	12.1	166.80	164.24	164.18	0.06	36.0	0.028	1.71	12.1	1.00
			1.10	3.10		10.0			164.67	163.65						

Storm Sewer Design

Project: NE DISPLAY Engineer:M. Patel Road: 10705301 Location:Polk
Return Period: 25 years County:Polk Drainage Coefficients: C1 = 0.6 C2 = 0.35 C3 = 0.95
Outfall Ground Elevation (feet) :138.62 Outfall Hydraulic Grade (feet) :143.00

Str	To	Length	Increment	Sub Total	Total CxA acres	Rain i Inc TC Cum TC	Total Runoff cfs	Inlet Top Curb	Up HGL Crown Invert	Dn HGL Crown Invert	Fall HGL Pipe	Pipe Dia n	Slope HGL Pipe	Vel Act Des	Act Q Cap	K V Hl
S-28			0.20	0.20		11.2			161.67	160.65	1.02	0.012	0.500		51.4	0.05
21	22	196.00			2.13	8.8	18.8	166.40	164.07	163.94	0.13	36.0	0.068	2.66	18.8	1.00
			0.80	3.90		10.0			163.65	162.68						
S-29			0.60	0.80		13.2			160.65	159.68	0.97	0.012	0.490		51.0	0.11
22	23	129.00			2.71	8.5	23.0	166.00	163.77	163.64	0.13	36.0	0.102	3.26	23.0	1.00
			0.60	4.50		10.0			162.68	162.02						
S-30			0.40	1.20		14.4			159.68	159.02	0.66	0.012	0.510		51.8	0.16
23	24	296.00			2.72	8.3	22.5	167.40	160.69	151.12	9.57	36.0	3.234	13.78	22.5	1.00
				4.50		10.0			162.02	152.50						
S-31				1.20		15.0			159.02	149.50	9.52	0.012	3.220		129.9	2.95
24	25	177.00			2.72	8.2	22.3	159.70	150.96	150.80	0.17	36.0	0.095	3.15	22.3	1.00
				4.50		10.0			152.50	145.00						
S-32				1.20		15.4			149.50	142.00	7.50	0.012	4.240		149.1	0.15
25	26	91.00		50.20	35.67	7.7	275.7	161.20	144.45	143.00	1.45	72.0	1.591	20.22	275.7	1.00
				12.60		10.0			146.06	144.62						
S-33				1.20		17.4			140.06	138.62	1.44	0.012	1.580		578.7	6.35

Location Map
Ritchie Bros. Auction Facility Expansion
ERP No. 43022407.003

Legend

Project Area

Polk County

N
W E
S

Southwest Florida
Water Management District

REG GIS 12/09/2008
2008 Aerial

E-1786

SWFWMD ENGINEERING WORKSHEET

PERMIT #: 43022407.003

PERMIT NAME: Ritchie Bros. Auction Facility Expansion

																				TOTALS
BASIN NO. - POND NO.			Open or Closed	1	C	2	C	3	C	4	C	NRS	C							5
POND DATA		POND BOTTOM ELEVATION		145.00		144.00		144.00		135.00		172.00								
		SEASONAL HIGH WATER ELEVATION		141.00		130.00		130.00		122.00		<160.00								
		CONTROL DEVICE ELEVATION		145.00		144.00		144.00		135.00		172.00								
		DESIGN LOW WATER ELEVATION		145.00		equalizer		144.00		135.00		172.00								
		WEIR INVERT ELEVATION		NA		→		153.50		143.60		NA								
		DESIGN HIGH WATER ELEVATION		153.04		153.28		153.28		143.58		174.50								
		TOP OF BANK ELEVATION		154.00		154.00		154.00		144.00		175.00								
		AREA AT TOP OF BANK (ac)		3.11		4.14		1.33		4.41		0.14								13.13
		VOLUME AT DHW (ac-ft)																		
		VOLUME AT TOB (ac-ft)		15.60		30.83		7.97		29.83		0.30								
QUANTITY	25YR/24HR DISCHARGE RATES	WEIR WIDTH (ft)		NA		→		25		Type C		NA								
		PRE-DEVELOPED (cfs)		NA		NA		NA		NA		NA								
		POST-DEVELOPED (cfs)		0.00		0.00		0.00		NA		NA								
	100YR/24HR RETENTION VOLUMES	PROVIDED (ac-ft)		15.6+9.83SS		→		38.80		29.83-0.29SS		0.30								
		REQUIRED (ac-ft)		25.43		→		28.70		30.12		0.25								
QUALITY	TREATMENT AREA	OFW ? Y OR N		49.60	N	11.10	N	25.50	N	98.30	N	1.16	N							
		TREATMENT VOL. REQUIRED (ac-ft)		2.07		→		1.53		4.10		0.05		0.00		0.00		0.00		0.00
		TREATMENT VOL. PROVIDED (ac-ft)		15.60		→		38.80		29.83		0.05								
		METHOD OF TREATMENT		retention		→		retention		retention		retention								
		CONTROL DEVICE TYPE		NI		→		NI		NI		NI								
		CONTROL DEVICE DIMENSIONS		Kh=25ft/day		Kh=20ft/day		Kh=20ft/day		Kh=20ft/day		18in/hr								
		RECOVERY TIME (hrs)		<36		>		<36		<36		<36								
100-YEAR FLOODPLAIN		ENCROACHMENT (ac-ft)		0.00		>		>		>		>								0.00
		COMPENSATION (ac-ft)		0.00		>		>		>		>								0.00
		COMPENSATION TYPE		NE		>		>		>		>								NE
		ENCROACH'T RESULT (ft)		NA		>		>		>		>								NA

COMMENTS:

Soils-Candler(HSG A)

Soil borings\permeability\SHWT-

12/10/08

RITCHIE BROS. AUCTION FACILITY EXPANSION

ENVIRONMENTAL RESOURCE PERMIT
APPLICATION NO. 43022407.003

APPLICATION CHRONOLOGY

APPLICATION RECEIVED	AUGUST 20, 2008
ADD. INFORMATION REQUESTED	SEPTEMBER 18, 2008
ADD. INFORMATION RECEIVED	SEPTEMBER 30, 2008
CLARIFICATION REQUESTED	OCTOBER 28, 2008
CLARIFICATION RECEIVED	NOVEMBER 8, 2008
APPLICATION COMPLETE	NOVEMBER 8, 2008

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE INDIVIDUAL CONSTRUCTION
PERMIT NO.: 43022407.003
RITCHIE BROS. AUCTION FACILITY EXPANSION

Director's Summary: This permit authorization is for the construction of a surface water management system serving a 204.85-acre commercial project as named above and as shown on the approved construction drawings. The surface water management system, which includes storm drains with associated piping and five on-line retention ponds, is designed to accommodate the stormwater runoff from the activities associated with the expansion of the gravel construction equipment storage and parking areas along with the paved parking spaces. The project site is located at the northeast corner of the intersection of U.S. Highway 27 and Interstate 4, in Polk County.

The project is located within a hydrologically open drainage basin; however, the consultant has chosen to design the surface water management system to closed basin standards. Compliance with Chapter 40D-4, F.A.C., water quantity requirements is met as the retention ponds are designed to retain and infiltrate the entire post-development stormwater runoff for the 100-year, 24-hour rainfall event, from the contributing drainage basin area, without any surface discharges. This is consistent with Part B, Environmental Resource Permitting Information Manual, Section 4.2(c). Flood Insurance Rate Map Community Panel No. 1202610225 B indicates that this project does not lie within a floodplain. No adverse off-site/on-site water quantity impacts are expected.

Compliance with Chapter 40D-4, F.A.C., water quality requirements is met, as the retention ponds will treat the first one-half inch of stormwater runoff from the contributing drainage basin areas and recover this volume within 72 hours through natural infiltration. This is consistent with Part B, Environmental Resource Permitting Information Manual, Section 5.2. (c.). No adverse on-site/off-site water quality impacts are expected.

Environmental:

No wetlands or other surface waters exist within the project area.

Water Use Information:

Potable and sanitary water services will be provided by Polk County Utilities.

The existing well is part of Water Use Permit No. 20001351.003. The WUP will be modified and the existing well protected during construction so as to use the well for irrigation after construction.

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003	**Agency Action Received Date:**	08/20/2008
Temp. App. #:	Bar-3069	**Agency Action Issue Date:**	01/26/2009
Application Type:	ERP Individual Construction	**Agency Action Expiration Date:**	01/26/2014
Project Name:	Ritchie Bros. Auction Facility Expansion	**Amended Date:**	
Land Use:	Commercial	**Agency Action Comp/Inc. Date:**	11/04/2008
Tot. Acres Owned:	204.85	**Agency Action Default Date:**	02/02/2009
Wetland Acreage:	0.00		
Project Size:	204.85		
County:	Polk		
S/T/R (all acres):	07/26S/27E		

Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve

*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Modification: ● No ○ Yes

**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Incidental Site Activities: ● No ○ Yes

Fee Information:	**Permit**	**Sov. Lands**
Fee Required:	~~2,500.00~~ 3300.00	
Fee Paid:	~~2,500.00~~ 3300.00	
Refund (R&D Action):		

Fee Comments: Two Checks one for the amount of 800.00 ISA receipt # BA08-01612A and the other for the amount of 2,500.00 Ind. Const. receipt # BA08-01613A

Mitigation	☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14 ☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional	

	information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☒ 36 ☒ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☒ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: 005
2. Related Permit No(s): 44022407.000; 44022407.001; 44022407.002
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): 44022407.000; 44022407.001; 44022407.002 (turns off all tracking)
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No

8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION.
USACOE Noticing:	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office:	Tampa (Office is computed from 'County' indicated in Permit Info section.)
Eminent Domain:	Required: ○ Yes ● No Receipt of Application Noticing Complete: ○ Yes ○ No Brief Project Description:
Request For Additional Info:	☐ New Application Required ☐ Additional Information Required
Coastal Zone Management:	☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM
Reason:	
Letter Date:	
Letter Number:	
State Lands:	○ Yes ● No
Construction Inspection Priority:	● A ○ B ○ C ○ None
Reason:	

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:			Teri L. Rhodes		TLR	6005
Environmental Scientist:			Melissa N. McConnell		MNM	6106
Hydrologist:						
Field Services Technician:						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000
Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Lat/Long:

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003	Agency Action Received Date:	08/20/2008
Temp. App. #:	Bar-3069	Agency Action Issue Date:	01/26/2009
Application Type:	ERP Individual Construction	Agency Action Expiration Date:	01/26/2014
Project Name:	Ritchie Bros. Auction Facility Expansion	Amended Date:	
Land Use:	Commercial	Agency Action Comp/Inc. Date:	11/04/2008
Tot. Acres Owned:	204.85	Agency Action Default Date:	02/02/2009
Wetland Acreage:	0.00		
Project Size:	204.85		
County:	Polk		
S/T/R (all acres):	07/26S/27E		

Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve

*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Modification: ● No ○ Yes

**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Incidental Site Activities: ● No ○ Yes

Fee Information:	Permit	Sov. Lands
Fee Required:	2,500.00	Fee Required:
Fee Paid:	2,500.00	Fee Paid:
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 ISA receipt # BA08-01612A and the other for the amount of 2,500.00 Ind. Const. receipt # BA08-01613A	

Mitigation	☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14 ☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial		

	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☒ 36 ☒ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☒ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: 005
2. Related Permit No(s): 44022407.000; 44022407.001; 44022407.002
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): 44022407.000; 44022407.001; 44022407.002 (turns off all tracking)
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION.
USACOE Noticing:	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office:	Tampa (Office is computed from 'County' indicated in Permit Info section.)

Eminent Domain: Required: ○ Yes ● No
Receipt of Application Noticing Complete: ○ Yes ○ No
Brief Project Description:

Request For Additional Info: ☐ New Application Required ☐ Additional Information Required

Coastal Zone Management: ☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM

Reason:

Letter Date:

Letter Number:

State Lands: ○ Yes ● No

Construction Inspection Priority: ● A ○ B ○ C ○ None

Reason:

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:			Teri L. Rhodes		TLR	6005
Environmental Scientist:			Melissa N. McConnell		MNM	6106
Hydrologist:						
Field Services Technician:						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Lat/Long:

Regulation Department: Bartow Regulation Department

Permit Info

Application #: 43022407.003
Temp. App. #: Bar-3069
Application Type: ERP Individual Construction
Project Name: Ritchie Bros. Auction Facility Expansion
Land Use: Commercial
Tot. Acres Owned: 204.85
Wetland Acreage: 0.00
Project Size: ~~193.75~~ 204.85
County: Polk
S/T/R (all acres): 07/26S/27E
Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve
*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Agency Action Received Date: 08/20/2008
Agency Action Issue Date:
Agency Action Expiration Date:
Amended Date:
Agency Action Comp/Inc. Date: 11/04/2008
Agency Action Default Date: 02/02/2009

Modification: ○ No ● Yes
**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Clear Fields Associated with Modification

PREVIOUS PERMIT INFO:
**Permit #: 44022407.000
**Issue Date: 9/27/2001
**Project Name: Ritchie Bros. Auction S.T.E

Incidental Site Activities: ● No ○ Yes

Fee Information:

	Permit	Sov. Lands
Fee Required:	~~3,300.00~~ 2,500.00	
Fee Paid:	~~3,300.00~~ 2,500.00	
Refund (R&D Action):		

Fee Comments: Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A ← IND. CONST.

ISA

Mitigation
☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14
☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15
☒ 4 ☐ 7 ☐ 10 ☐ 13
Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".

Impacts
☐ 16

Conditions for Wetlands
☐ 17 ☐ 19
☐ 18 ☐ 20
Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.

Residential Projects
☐ 21 ☐ 23
☐ 22
Note: Condition 21 may require additional information. You must select the Condition to

	display the fields containing the additional information.	
Industrial /Commercial	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☒ 36 ☒ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☒ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	Required for Condition 40. Sub-Conditions for 40: ○ 40a ○ 40b ● 40c ○ 40d ○ 40e Clear Sub-Conditions for 40.
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Edltable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	90 US WORDING OF 40 A PER DR. "MODIFICATION" 44022407.

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: 005
2. Related Permit No(s): 44022407.000; 44022407.001; 44022407.002
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): 44022407.000; 44022407.002 (turns off all tracking) *.001
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION.
USACOE Noticing:	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office:	Tampa

(Office is computed from 'County' indicated in Permit Info section.)

Eminent Domain: Required: ○ Yes ● No
Receipt of Application Noticing Complete: ○ Yes ○ No
Brief Project Description:

Request For Additional Info: ☐ New Application Required ☐ Additional Information Required

Coastal Zone Management: ☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM

Reason:

Letter Date:

Letter Number:

State Lands: ○ Yes ● No

Construction Inspection Priority: ● A ○ B ○ C ○ None

Reason:

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:			Teri L. Rhodes		TLR	6005
Environmental Scientist:			Melissa N. McConnell		MNM	6106
Hydrologist:						
Field Services Technician:						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Lat/Long:

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003	Agency Action Received Date:	08/20/2008
Temp. App. #:	Bar-3069	Agency Action Issue Date:	
Application Type:	ERP Individual Construction	Agency Action Expiration Date:	
Project Name:	Ritchie Bros. Auction Facility Expansion	Amended Date:	NA
Land Use:	Commercial	Agency Action Comp/Inc. Date:	11/4/2008 ✓
Tot. Acres Owned:	~~205.00~~ 204.85	Agency Action Default Date:	2/2/2009 ✓
Wetland Acreage:	0 ✓		
Project Size:	~~173.40~~ 193.75		
County:	Polk		
S/T/R (all acres):	07/26S/27E		
Consolidated:	● No	Modification:	● No
*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.	○ Yes ○ Yes with Aquatic Preserve	**Field is associated with Modification. If Modification is "No" you will not see the associated fields.	○ Yes 44022407.000
Incidental Site Activities:	● No ○ Yes		

Fee Information:	Permit	Sov. Lands
Fee Required:	3,300.00	Fee Required:
Fee Paid:	3,300.00	Fee Paid:
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A	

Mitigation	☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14 ☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial		

	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☒ 36 ☒ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☒ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	Required for Condition 40. Sub-Conditions for 40: ○ 40a ○ 40b ◉ 40c ○ 40d ○ 40e Clear Sub-Conditions for 40. 43022407.003 Previously issued. - 43022407.000 & *.002 4
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: 005
2. Related Permit No(s): 43022407.000, *.001, *.002 4
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): (turns off all tracking) 43022407.000, 44022407.002
4. Plotting: Property complete with receipt of application: ◉ Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ◉ No
7. Wetlands: ○ Yes ◉ No
8. Mitigation: ○ Yes ◉ No
9. Other Compensation: ○ Yes ◉ No

Permit Reviewer REVIEWER CONFIRM ALL INFORMATION.

USACOE Noticing: Required: ○ Yes ◉ No Completed: ○ Yes ◉ No

USACOE Office: Tampa
(Office is computed from 'County' indicated in Permit Info section.)

Eminent Domain: Required: ○ Yes ● No
Receipt of Application Noticing Complete: ○ Yes ○ No
Brief Project Description:

Request For Additional Info: ☐ New Application Required ☐ Additional Information Required
Coastal Zone Management: ☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM

Reason:

Letter Date:

Letter Number:

State Lands: ○ Yes ● No
Construction Inspection Priority: ● A ○ B ○ C ○ None

Reason:

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:			Teri L. Rhodes		TLR	6005
Environmental Scientist:			Melissa N. McConnell		MNM	6106
Hydrologist:						
Field Services Technician:						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None
Number:

○ Survey ○ Order ○ Other ● None
Number: Date:

Lat/Long:

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003	**Agency Action Received Date:**	08/20/2008
Temp. App. #:	Bar-3069	**Agency Action Issue Date:**	
Application Type:	ERP Individual Construction	**Agency Action Expiration Date:**	
Project Name:	Ritchie Bros. Auction Facility Expansion	**Amended Date:**	
Land Use:	Commercial	**Agency Action Comp/Inc. Date:**	
Tot. Acres Owned:	205.00	**Agency Action Default Date:**	
Wetland Acreage:			
Project Size:	~~205.00~~ 173.40		
County:	Polk		
S/T/R (all acres):	07/26S/27E		
Consolidated:	● No	**Modification:**	● No
*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.	○ Yes ○ Yes with Aquatic Preserve	**Field is associated with Modification. If Modification is "No" you will not see the associated fields.	○ Yes
Incidental Site Activities:	● No ○ Yes		

Fee Information:	**Permit**	**Sov. Lands**
Fee Required:	3,300.00	**Fee Required:**
Fee Paid:	3,300.00	**Fee Paid:**
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A	

Mitigation	☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14 ☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial		

	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☐ 36 ☐ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. **Activity Code:** Commercial **Project Code:** Business **Water Quality Code:** 005
2. **Related Permit No(s):**
3. **Prior Permit/Conditions Being Deleted: Permit & Revision no(s):** (turns off all tracking)
4. **Plotting: Property complete with receipt of application:** ● Yes ○ No
   If NO, correct boundary received on:
5. **Watershed:** Ocklawaha River
6. **ERP Conservation Easement:** ○ Yes ● No
7. **Wetlands:** ○ Yes ● No
8. **Mitigation:** ○ Yes ● No
9. **Other Compensation:** ○ Yes ● No

Permit Reviewer **REVIEWER CONFIRM ALL INFORMATION.**

USACOE Noticing: Required: ○ Yes ● No Completed: ○ Yes ● No

USACOE Office: Tampa
(Office is computed from 'County' indicated in Permit Info section.)

Eminent Domain:	Required: ○ Yes ● No Receipt of Application Noticing Complete: ○ Yes ○ No Brief Project Description:
Request For Additional Info:	☐ New Application Required ☐ Additional Information Required
Coastal Zone Management:	☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM
Reason:	
Letter Date:	
Letter Number:	
State Lands:	○ Yes ● No
Construction Inspection Priority:	● A ○ B ○ C ○ None
Reason:	

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:	☐	☐	Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:	☐	☐	Terri L. Rhodes		TLR	6005
Environmental Scientist:	☐	☐	Melissa N. McConnell		MNM	6106
Hydrologist:	☐	☐				
Field Services Technician:	☐	☐				

Dave N. Nicholson, President

Contacts

Permittee/Owner ~~Robert Thompson, Director~~ Ritchie Bros. Properties, Inc., a ~~Washington Corporation~~ ~~6500 River Rd.~~ ~~Richmond, BC V6X 4G5~~ ~~801.455.9005~~	Owner's Agent ~~Scott Lennon~~ Ritchie Bros. Properties, Inc., Real Estate Acquisition Manager 6500 River Rd. Richmond, BC V6X 4G5 801.455.9005	O&M Entity Name: Company Address City, FL Zip Phone
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste 220 Virginia Beach, VA 24528 757.463.5000	Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: **Date:**

Lat/Long:

4000 Pine Letterhead
Lincoln, NE 68516

Regulation Department: Bartow Regulation Department

Permit Info

Application #: 43022407.003
Temp. App. #: Bar-3069
Application Type: ERP Individual Construction
Project Name: Ritchie Bros. Auction Facility Expansion
Land Use: Commercial
Tot. Acres Owned: 205.00
Wetland Acreage: ——
Project Size: 205.00
County: Polk
S/T/R (all acres): 07/26S/27E
Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve
*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Agency Action Received Date: 08/20/2008
Agency Action Issue Date:
Agency Action Expiration Date:
Amended Date:
Agency Action Comp/Inc. Date:
Agency Action Default Date:

Modification: ○ No ● Yes
**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Clear Fields Associated with Modification

PREVIOUS PERMIT INFO:
**Permit #:
**Issue Date:
**Project Name:

Incidental Site Activities: ● No ○ Yes

Fee Information: Permit | Sov. Lands

Fee Required: 3,300.00
Fee Paid: 3,300.00
Refund (R&D Action):
Fee Comments: Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A

Sov. Lands
Fee Required:
Fee Paid:

Mitigation	☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14 ☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	

Industrial /Commercial	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☐ 36 ☐ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:
1. Activity Code: Commercial Project Code: Business Water Quality Code: 005
2. Related Permit No(s):
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): (turns off all tracking)
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ochlawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer — REVIEWER CONFIRM ALL INFORMATION.

USACOE Noticing: Required: ○ Yes ● No Completed: ○ Yes ● No

USACOE Office: Tampa
(Office is computed from 'County' indicated in Permit Info section.)

Eminent Domain: Required: ○ Yes ● No
Receipt of Application Noticing Complete: ○ Yes ○ No

Brief Project Description:

Request For Additional Info: ☐ New Application Required ☐ Additional Information Required

Coastal Zone Management: ☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM

Reason:

Letter Date:

Letter Number:

State Lands: ○ Yes ● No

Construction Inspection Priority: ● A ○ B ○ C ○ None

Reason:

	Add	Clear	PE Certification #	Initials:	Ext. #
District Engineer:		FXR			
Permit Coordinator:		Terri L. Rhodes		TLR	6005
Environmental Scientist:		MNM			
Hydrologist:					
Field Services Technician:					

RAI Quesha

Contacts		
Permittee/Owner Robert Thompson, Director Ritchie Bros. Properties, Inc., a Washington Corporation 6500 River Rd. Richmond, BC V6X 4G5 801.455.9005 Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste 220 Virginia Beach, VA 24528 757.463.5000	Owner's Agent Scott Lennon Ritchie Bros. Properties, Inc., Real Estate Acquisition Manager 6500 River Rd. Richmond, BC V6X 4G5 801.455.9005 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	O&M Entity Name:_____ Company_____ Address_____ City_____, FL Zip_____ Phone_____

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Lat/Long:

Ritchie Bros. Auction Facility Expansion

PROJECT NAME

Commercial

PROJECT TYPE

Polk

COUNTY

07/26S/27E

SEC(s)/TWP(s)/RGE(s)

Sandler at Polk County, LLC and Ritchie Bros. Properties, Inc.

PERMITTEE

APPLICATION NO.: 43022407.003

DATE ISSUED: January 26, 2009

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003	Received Date:	08/20/2008
Temp. App #:	Bar-3069	Amended Date:	
Application Type:	ERP Individual Construction	Issue Date:	01/26/2009
Water Quality:	005	Expiration Date:	01/26/2014
Related Permits:	44022407.000; 44022407.001; 44022407.002		
Fee Required:	2,500.00	Comp/Inc. Date:	11/04/2008
Fee Paid:	2,500.00	Default Date:	02/02/2009
Refund:		ISA Recd Date:	
Type SOV:		ISA Issued Date:	
SOV Fee Req:		ISA D/W Date:	
SOV Fee Paid:		ISA Denial or Withdrawl:	● None ○ Denial ○ Withdrawal
Fee Comments:	Two Checks one for the amount of 800.00 ISA receipt # BA08-01612A and the other for the amount of 2,500.00 Ind. Const. receipt # BA08-01613A		

Contacts

Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000
Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	

County:	Polk	OFW / AQP:	No
Activity Code:	Commercial	Project Code:	Business
Project Name:	Ritchie Bros. Auction Facility Expansion	Acres Owned:	204.85
PC, Eng, ES:	TLR, FXR, MNM	Wetland Acreage:	0.00
		Project Size:	204.85
Prior Permit/ Conditions Being Deleted:#	44022407.000; 44022407.001; 44022407.002	S/T/R (all acres):	07/26S/27E

4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No
10. Construction Inspection Priority: ● A ○ B ○ C ○ None

RDBS Record Updated 2/13/09 by TLR

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003J	Received Date:	08/20/2008
Temp. App #:	Bar-3069	Amended Date:	
Application Type:	ERP Individual Construction	Issue Date:	11/18/2008
Water Quality:	008	Expiration Date:	~~11/18/2013~~ 2-16-09 changed Sam
Related Permits:		Comp/Inc. Date:	11/04/2008
Fee Required:	800.00	Default Date:	02/02/2009
Fee Paid:	800.00	ISA Recd Date:	08/20/2008
Refund:		ISA Issued Date:	
Type SOV:		ISA D/W Date:	
SOV Fee Req:		ISA Denial or Withdrawl:	● None ○ Denial ○ Withdrawal
SOV Fee Paid:			

Fee Comments: Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A

Contacts

Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000
Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	

2594

797

County:	Polk	OFW / AQP:	No
Activity Code:	Commercial	Project Code:	Business
Project Name:	Ritchie Bros. Auction Facility Expansion	Acres Owned:	205.00
PC, Eng, ES:	TLR, FXR, MNM	Wetland Acreage:	0.00
		Project Size:	173.40
Prior Permit/ Conditions Being Deleted:#		S/T/R (all acres):	07/26S/27E

4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No
10. Construction Inspection Priority: ● A ○ B ○ C ○ None

Regulation Department: Bartow Regulation Department

Permit Info

Application #: 43022407.003J
Temp. App. #: Bar-3069
Application Type: ERP Individual Construction
Project Name: Ritchie Bros. Auction Facility Expansion
Land Use: Commercial
Tot. Acres Owned: 205.00
Wetland Acreage: 0.00
Project Size: 173.40
County: Polk
S/T/R (all acres): 07/26S/27E
Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve

*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Agency Action Received Date: 08/20/2008
Agency Action Issue Date: 11/18/2008
Agency Action Expiration Date: ~~11/18/2013~~ 2/16/2009
Amended Date:
Agency Action Comp/Inc. Date: 11/04/2008
Agency Action Default Date: 02/02/2009

Modification: ● No ○ Yes

**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Incidental Site Activities: ○ No ● Yes

Clear Fields Associated with Incidental Site Activities

Received Date: 08/20/2008
Issued Date:
Denial or Withdrawl: ● None ○ Denial ○ Withdrawal
Denial/Withdrawal Date:

Fee Information:	Permit	Sov. Lands
Fee Required:	800.00	Fee Required:
Fee Paid:	800.00	Fee Paid:
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A	

Mitigation

☐ 1 ☐ 5 ☐ 8 ☐ 11 ☐ 14
☐ 3 ☐ 6 ☐ 9 ☐ 12 ☐ 15
☒ 4 ☐ 7 ☐ 10 ☐ 13

Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".

Impacts

☐ 16

Conditions for Wetlands

☐ 17 ☐ 19
☐ 18 ☐ 20

Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.

Residential

E-1812

Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	
Industriai /Commerciai	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☐ 36 ☐ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Misceilaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☐ 62 ☐ 42 ☐ 46 ☐ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibiiity	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: 008
2. Related Permit No(s):
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): (turns off all tracking)
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION.
USACOE Noticing:	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office:	Tampa (Office is computed from 'County' indicated in Permit Info section.)
Eminent Domain:	Required: ○ Yes ● No Receipt of Application Noticing Complete: ○ Yes ○ No Brief Project Description:
Request For Additional Info:	☐ New Application Required ☐ Additional Information Required
Coastal Zone Management:	☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM
Reason:	
Letter Date:	
Letter Number:	
State Lands:	○ Yes ● No
Construction Inspection Priority:	● A ○ B ○ C ○ None
Reason:	

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:			Teri L. Rhodes		TLR	6005
Environmental Scientist:			Melissa N. McConnell		MNM	6106
Hydrologist:						
Field Services Technician:						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Regulation Department: Bartow Regulation Department

Permit Info

Application #:	43022407.003J	Agency Action Received Date:	08/20/2008
Temp. App. #:	Bar-3069	Agency Action Issue Date:	
Application Type:	ERP Individual Construction	Agency Action Expiration Date:	
Project Name:	Ritchie Bros. Auction Facility Expansion	Amended Date:	
Land Use:	Commercial	Agency Action Comp/Inc. Date:	11/04/2008
Tot. Acres Owned:	205.00	Agency Action Default Date:	02/02/2009
Wetland Acreage:	0.00		
Project Size:	173.40		
County:	Polk		
S/T/R (all acres):	07/26S/27E		

Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve

*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Modification: ● No ○ Yes

**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Incidental Site Activities: ○ No ● Yes

Clear Fields Associated with Incidental Site Activities

Received Date: 08/20/2008
Issued Date:
Denial or Withdrawl: ● None ○ Denial ○ Withdrawal
Denial/Withdrawal Date:

Fee Information:	Permit	Sov. Lands
Fee Required:	~~3,300.00~~ 800.00	Fee Required:
Fee Paid:	~~3,300.00~~ 800.00	Fee Paid:
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A	

Mitigation	☐ 1 ☐ 5 ☐ 8 ☐ 11 ☐ 14 ☐ 3 ☐ 6 ☐ 9 ☐ 12 ☐ 15 ☒ 4 ☐ 7 ☐ 10 ☐ 13 Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".	
Impacts	☐ 16	
Conditions for Wetlands	☐ 17 ☐ 19 ☐ 18 ☐ 20 Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.	
Residential		

Projects	☐ 21 ☐ 23 ☐ 22 Note: Condition 21 may require additional information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
Water Quality Code 002	☐ 33	
Water Quality Code 003 & 004	☐ 34 ☐ 35	
Water Quality Code 005 & 006	☐ 36 ☐ 37	
Manatee Areas	☐ 38 ☐ 39 Note: Additional information is required if you select Condition 39.	
Miscellaneous	☐ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☐ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	001070
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☐ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS:
Construction Tracking Conditions Revision Number:
As Built / Statement Of Completion: ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number:

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS/GIS ENTRY:

1. Activity Code: Commercial Project Code: Business Water Quality Code: ~~005~~ 008
2. Related Permit No(s):
3. Prior Permit/Conditions Being Deleted: Permit & Revision no(s): (turns off all tracking)
4. Plotting: Property complete with receipt of application: ● Yes ○ No
   If NO, correct boundary received on:
5. Watershed: Ocklawaha River
6. ERP Conservation Easement: ○ Yes ● No
7. Wetlands: ○ Yes ● No
8. Mitigation: ○ Yes ● No
9. Other Compensation: ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION.
USACOE Noticing:	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office:	Tampa (Office is computed from 'County' indicated in Permit Info section.)
Eminent Domain:	Required: ○ Yes ● No Receipt of Application Noticing Complete: ○ Yes ○ No Brief Project Description:
Request For Additional Info:	☐ New Application Required ☐ Additional Information Required
Coastal Zone Management:	☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM
Reason:	
Letter Date:	
Letter Number:	
State Lands:	○ Yes ● No
Construction Inspection Priority:	● A ○ B ○ C ○ None
Reason:	

	Add	Clear		PE Certification #	Initials:	Ext. #
District Engineer:	☐	☐	Frank X. Ritchie	46563	FXR	6100
Permit Coordinator:	☐	☐	Teri L. Rhodes		TLR	6005
Environmental Scientist:	☐	☐	Melissa N. McConnell		MNM	6106
Hydrologist:	☐	☐				
Field Services Technician:	☐	☐				

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC, ~~a Virginia Limited Liability Company~~ 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC, ~~a Virginia Limited Liability Company~~ 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Regulation Department : Bartow Regulation Department

Permit Info

Application #:	43022407.003 J	Agency Action Received Date:	08/20/2008
Temp. App. #:	Bar-3069	Agency Action Issue Date:	
Application Type:	ERP Individual Construction	Agency Action Expiration Date:	
Project Name:	Ritchie Bros. Auction Facility Expansion	Amended Date:	
Land Use:	Commercial	Agency Action Comp/Inc. Date:	11/04/2008
Tot. Acres Owned:	205.00	Agency Action Default Date:	02/02/2009
Wetland Acreage:	0.00		
Project Size:	173.40		
County:	Polk		
S/T/R (all acres):	07/26S/27E		

Consolidated: ● No ○ Yes ○ Yes with Aquatic Preserve

*Field is associated with Consolidated. If Consolidated is "No" you will not see the associated fields.

Modification: ● No ○ Yes

**Field is associated with Modification. If Modification is "No" you will not see the associated fields.

Incidental Site Activities: ● Yes

Fee Information:	Permit	Sov. Lands
Fee Required:	3,300.00	Fee Required:
Fee Paid:	3,300.00	Fee Paid:
Refund (R&D Action):		
Fee Comments:	Two Checks one for the amount of 800.00 receipt # BA08-01612A and the other for the amount of 2,500.00 receipt # BA08-01613A	

Mitigation

use 4 →

☒ 1 ☒ 5 ☐ 8 ☐ 11 ☐ 14
☒ 3 ☒ 6 ☐ 9 ☐ 12 ☐ 15
☒ 4 ☐ 7 ☐ 10 ☐ 13

Note: Conditions 10 and 14 require you to provide additional information. You must select the Condition to display the fields containing the additional information. Also, conditions 5 is not valid for "ERP Conceptual" or "MSSW Conceptual".

Impacts

☐ 16

Conditions for Wetlands

☐ 17 ☐ 19
☐ 18 ☐ 20

Note: Condition 18 requires additional information. You must select the Condition to display the fields containing the additional information.

Residential Projects

☐ 21 ☐ 23
☐ 22

Note: Condition 21 may require additional

	information. You must select the Condition to display the fields containing the additional information.	
Industrial /Commercial	☐ 24 ☐ 27 ☐ 25 ☐ 28 ☐ 26 Note: Condition 24 may require additional information. You must select the Condition to display the fields containing the additional information.	
Road Projects	☐ 29 ☐ 30	
Water Quality Code 001	☐ 31 ☐ 32	
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Miscellaneous	☒ 40 ☐ 44 ☐ 48 ☐ 61 ☐ 41 ☐ 45 ☐ 49 ☒ 62 ☐ 42 ☐ 46 ☒ 50 ☐ 63 ☐ 43 ☐ 47 ☐ 51 ☐ 64 Note: Conditions 40 & 48 require additional information. You must select the Condition to display the fields containing the additional information.	Required for Condition 40. Sub-Conditions for 40: ○ 40a ○ 40b ○ 40c ○ 40d ○ 40e Clear Sub-Conditions for 40.
WRP Specific Condition	☐ 52 Note: This condition must be selected for all WRP permits.	
Financial Responsibility	☐ 53 ☐ 55 ☐ 57 ☐ 59 ☐ 54 ☐ 56 ☐ 58 ☐ 60 Note: Condition 60 is used only when financial responsibility instrument will be a letter of credit of preformance bond.	
Blank Editable Conditions	☒ 90 ☐ 92 ☐ 95 ☐ 98 ☐ 90a ☐ 93 ☐ 96 ☐ 99 ☐ 91 ☐ 94 ☐ 97	

Permit Coordinator

Permit Coordinator Enter in RDBS :
Construction Tracking Conditions Revision Number :
As Built / Statement Of Completion : ○ Yes ○ No
Operation & Maintenance / Inspection: ○ Yes ○ No
Performance Monitoring Conditions Revision Number :

REGULATION DEPARTMENT MUST COMPLETE FOR RDBS /GIS ENTRY:

1. **Activity Code:** Commercial **Project Code:** Business **Water Quality Code:** 005
2. **Related Permit No (s):**
3. **Prior Permit/Conditions Being Deleted : Permit & Revision no (s):** (turns off all tracking)
4. **Plotting: Property complete with receipt of application :** ● Yes ○ No
   If NO, correct boundary received on :
5. **Watershed:** Ocklawaha River
6. **ERP Conservation Easement :** ○ Yes ● No
7. **Wetlands:** ○ Yes ● No
8. **Mitigation:** ○ Yes ● No

9. **Other Compensation :** ○ Yes ● No

Permit Reviewer	REVIEWER CONFIRM ALL INFORMATION .
USACOE Noticing :	Required: ○ Yes ● No Completed: ○ Yes ● No
USACOE Office :	Tampa (Office is computed from 'County' indicated in Permit Info section.)
Eminent Domain :	Required: ○ Yes ● No Receipt of Application Noticing Complete: ○ Yes ○ No Brief Project Description:
Request For Additional Info :	☐ New Application Required ☐ Additional Information Required
Coastal Zone Management :	☒ None ☐ Sea Turtles ☐ Manatees ☐ Wetlands CZM
Reason:	
Letter Date :	
Letter Number :	
State Lands :	○ Yes ● No
Construction Inspection Priority :	● A ○ B ○ C ○ None
Reason:	

	Add	Clear		PE Certification #	initials:	Ext. #
District Engineer :			Frank X. Ritchie	46563	FXR	6100
Permit Coordinator :			Teri L. Rhodes		TLR	6005
Environmental Scientist :			Melissa N. McConnell		MNM	6106
Hydrologist :						
Field Services Technician :						

Contacts		
Permittee/Owner Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000 Engineer/Consultant Kriss Y. Kaye, P.E. Envisors, LLC 2105 Dundee Road Winter Haven, FL 33883 863.324.1112	Permittee/Owner Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516 O&M Entity Dave N. Nicholson, President Ritchie Bros. Properties, Inc. 4000 Pine Lake Road Lincoln, NE 68516	O&M Entity Nathan D. Benson Sandler at Polk County, LLC, a Virginia Limited Liability Company 448 Viking Dr., Ste. 220 Virginia Beach, VA 24528 757.463.5000

○ Inquiry ○ CT ● None

Number:

○ Survey ○ Order ○ Other ● None

Number: Date:

Lat/Long:

This form has not been approved for distribution to the public.

LEGAL ACTION REQUEST
(Administrative Deficiency)

RECEIVED
NOV 22 2010
OFFICE OF GENERAL COUNSEL

DATE: 11-19-2010

TO: SERVICE OFFICE ATTORNEY - Amy Wells

FROM: Laura V. Howe, Senior Field Tech. EXTENSION: 6127

REGULATION DEPARTMENT [•] Bartow [ ] Brooksville [ ] Sarasota [ ] Tampa

[✓] **Environmental Resource** [ ] **Water Use** [ ] **Well Construction**

SUBJECT OF REQUEST:

NON-SUBMITTAL OF DOCUMENTATION: (Please mark one below)

- [✓] SOC/AS-BUILT
- [ ] O&M RECERTIFICATION
- [ ] CONSERVATION EASEMENT/TITLE POLICY
- [ ] METER READINGS
- [ ] CROP REPORTING
- [ ] OWNERSHIP CHANGES/TRANSFERS
- [ ] OTHER: PLEASE SPECIFY_____

WMIS COMPLIANCE INFORMATION AND MANAGER APPROVAL

PROJECT NAME: Ritchie Bros. Auction Family Expansion

PERMITTEE/PROPERTY OWNER'S NAME: Ritchie Bros. Properties, Inc.

RELATED PERMIT NUMBER: 43022407.003 COMPLIANCE NUMBER: 331538

APPROVED: _____ 11/15/10
Regulation Department Director or Designee Date

FOR USE BY SERVICE OFFICE ADMINISTRATIVE STAFF

DATE FILE SENT TO LEGAL: 11-19-2010	WMIS UPDATED: YES [✓] NO [ ]	INITIALS:

All Files with Administrative Deficiencies will be sent directly to Legal Updated in WMIS with the DATE SENT TO LEGAL.

DO NOT SEND TO THE STRATEGIC PROGRAM OFFICE

SPO-001.00 (06/10)

E-1822

CHRONOLOGY OF EVENTS/CORRESPONDENCE INDEX

FILE NAME	Ritchie Bros. Auction Family Expansion
PERMIT / CT NO.	43022407.003 / 331538

DATE	SUMMARY OF CHRONOLOGY INCLUDING CORRESPONDENCE	INITIALS	DUE DATE
06/29/10	Construction Inspection Checklist		
07/21/10	Request for Statement of Completion/As-Built Drawings letter sent		
08/25/10	2nd Request for Statement of Completion/As-Built Drawings letter sent		
11/18/2010	Processing Notice Sent		

PROJECT NARRATIVE

Executive Summary:

The District issued Environmental Resource Permit No. 43022407.003 to Ritchie Bros. Properties, Inc. and Sandler at Polk County, LLC. The District sent letters to the permittee requesting they submit Statement of Completion forms and as-built drawings. Unfortunately these items remain outstanding.

Detailed Chronological Narrative:

On January 26, 2009, the District issued Environmental Resource Permit No. 43022407.003 to Ritchie Bros. Properties, Inc. and Sandler at Polk County, LLC for the construction of a surface water management system serving an expansion to a 204.85-acre commercial project. (See Permit)

On June 29, 2010, District staff conducted a site inspection and determined that construction of the project was complete. (See Correspondence #1 and photos)

On July 21, 2010, the District sent David Nicholson, with Ritchie Bros. Properties, Inc., a letter requesting Statement of Completion forms and as-built drawings. (See Correspondence #2)

On August 25, 2010, the District sent David Nicholson a second letter requesting Statement of Completion forms and as-built drawings. (See Correspondence #3)

On October 22, 2010, staff reviewed the file and noted that the District has not received Statement of Completion forms and as-built drawings.

Recommended Action:

Please ensure the permittee submits Statement of Completion forms with as-built drawings as delineated in District letters.

References:

Rule 40D-4.351(2), F.A.C. (Transfer of Permits - Conversion to Operation Phase)
Section 373.419, F.S. (Completion Report)

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)

January 26, 2009

Imaged as Received

Nathan D. Benson
Sandler at Polk County, LLC
448 Viking Dr., Ste. 220
Virginia Beach, VA 24528

Dave N. Nicholson, President
Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Subject: **Notice of Final Agency Action for Approval**
ERP Individual Construction
Permit No.: 43022407.003
Project Name: Ritchie Bros. Auction Facility Expansion
County: Polk
Sec/Twp/Rge: 07/26S/27E

Dear Gentlemen:

The Environmental Resource permit referenced above was **approved** by the District Governing Board subject to all terms and conditions set forth in the permit.

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 Frank X. Ritchie, at the Bartow Service Office, extension 6100.

Sincerely,

Paul W. O'Neil, Jr., P.E., Department Director
Regulation Performance Management

PWO:kmh
Enclosures: Approved Permit w/Conditions Attached
Approved Construction Drawings
Statement of Completion
Notice of Authorization to Commence Construction
cc/enc: File of Record 43022407.003
Kriss Y. Kaye, P.E., Envisors, LLC

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 43022407.003

Expiration Date: January 26, 2014 PERMIT ISSUE DATE: January 26, 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: Ritchie Bros. Auction Facility Expansion

GRANTED TO: Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Sandler at Polk County, LLC
448 Viking Dr., Ste. 220
Virginia Beach, VA 24528

ABSTRACT: This permit authorization is for the construction of a surface water management system serving an expansion to a 204.85-acre commercial project as named above and as shown on the approved construction drawings. An Incidental Site Activities Permit was issued on November 18, 2008, authorizing installation of erosion control measures, clearing, grading, placement of fill and excavation within the project boundaries. The project site is located at the northeast corner of the intersection of U.S. Highway 27 and Interstate 4, Polk County. Information regarding the surface water management systems, 100-year floodplain and wetlands is contained within the tables and comments below.

OP. & MAINT. ENTITY: Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Sandler at Polk County, LLC
448 Viking Dr., Ste. 220
Virginia Beach, VA 24528

COUNTY: Polk

SEC/TWP/RGE: 07/26S/27E

TOTAL ACRES OWNED OR UNDER CONTROL: 204.85

PROJECT SIZE: 204.85 Acres

LAND USE: Commercial

DATE APPLICATION FILED: August 20, 2008

AMENDED DATE: N/A

I. Water Quantity/Quality

POND NO.	AREA ACRES @ TOP OF BANK	TREATMENT TYPE
1	3.11	Retention
2	4.14	Retention
3	1.33	Retention
4	4.41	Retention
NRS	0.14	Retention
TOTAL	13.13	

A mixing zone is not required.
A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*		Encroachment Result**(feet)	
0.00	0.00	NE	X	Depth	N/A

***Codes** [X] for the type or method of compensation provided are as follows:
NE = **N**o 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

No wetlands or other surface waters exist within the project area.

A regulatory conservation easement is not required.

A proprietary conservation easement is not 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:

Bartow Regulation Department
Southwest Florida Water Management District
170 Century Boulevard
Bartow, FL 33830-7700

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 Bartow 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. For dry bottom retention systems, the retention areas shall become dry within 72 hours after a rainfall event. If a retention area is regularly wet, this situation shall be deemed to be a violation of this permit.

7. 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.

8. 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.

9. 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.

10. This Construction Permit No. 43022407.003, amends the previously issued Construction Permit Nos. 44022407.000, 44022407.001, and 44022407.002, and all conditions are replaced by the conditions 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. 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.

CONSTRUCTION INSPECTION CHECKLIST - ENVIRONMENTAL RESOURCE PERMITTING

(FOR STAFF USE ONLY)

Permit No. 43022407.003 **CT #** 301588 **Project Name** Ritchie Bros. Auction Fac. Exp

Name of Inspector: Latasha Wilson **Date of Inspection:** 06.29.2010 (mm/dd/year)

The verification questions listed below are to be answered by District staff during inspection of the project. If needed, notations, references or explanations should be supplied on attached reference pages.

1. Permit Issued? {✓} YES { } NO { } N/A Permit expiration date: 01.26.2014

2. Construction Status: { } Not started { } Underway {✓} Complete

3. **CONSTRUCTION OBSERVATIONS:** At the time of inspection, did the following components of the surface water management system appear to be underway substantially in accordance with the permit; and any minor deviations form the permitted construction plans and information are not expected to prevent the system from functioning in compliance with the applicable District permitting rules.

A. Construction phase surface water management -project activities are not causing erosion and sediment deposition or flooding offsite, wetlands damage, or water quality violations?	{✓} Yes	{ } No (Explain)	{ } N/A
B. Discharge structures - Locations, dimensions and elevations of weirs, orifices, gates, pumps, pipes, and oil and grease skimmers?	{✓} Yes	{ } No (Explain)	{ } N/A
C. Under drain filters, or exfiltration trenches - Locations, dimensions and elevations of clean-outs, collector pipes, connections to control structures and points of discharge downstream?	{ } Yes	{ } No (Explain)	{✓} N/A
D. Storage areas for treatment and attenuation (wet or dry, as permitted) - dimensions, elevations, water levels, contours or cross-sections sufficient to contain storage volume as designed?	{✓} Yes	{ } No (Explain)	{ } N/A
E. System grading - dimensions, elevations, contours, final grades or cross-sections of runoff around or through the new system?	{✓} Yes	{ } No (Explain)	{ } N/A
F. Diversions/Conveyances - dimensions, elevations, contours, final grades or cross-sections of system facilities used to divert or convey runoff around or through the new system?	{ } Yes	{ } No (Explain)	{✓} N/A
G. Areas Reserved for Water Management - designated special use areas for continuing O&M purposes, set as permitted?	{✓} Yes	{ } No (Explain)	{ } N/A
H. Floodplain Compensation Areas – Identified with no impacts?	{ } Yes	{ } No (Explain)	{✓} N/A
I. Wetland mitigation or restoration areas - buffers in-tact, spatial distribution of planting, listed species planted in each zone, numbers of each species, sizes, live plants; and suitable elevations, dimensions, contours in accordance with designed cross-sections?	{ } Yes	{ } No (Explain)	{✓} N/A

Latasha Wilson LCW, FST IV 06.30.2010

REVIEWER'S SIGNATURE PRINTED NAME&TITLE DATE

CONSTRUCTION INSPECTION CHECKLIST - ENVIRONMENTAL RESOURCE PERMITTING

(FOR STAFF USE ONLY)

REFERENCE INSPECTION NOTES, SPECIFIC COMMENTS & ATTACHMENTS (i.e., file reference information, site observations, measurements, photos, other field notes, etc.	
REFERENCE COMPONENT NO.:	**DECRIPTION OF NOTES, DRAWINGS, SKETCHES & OTHER DOCUMENTATION RELATIVE TO THIS INSPECTION REPORT**

06.29.2010 Conducted a CIP inspection.
This permit authorization is for the construction of a surface water management system serving an expansion to a 204.85-acre commercial project as named above and as shown on the approved construction drawings. An Incidental Site Activities Permit was issued on November 18, 2008, authorizing installation of erosion control measures, clearing, grading, placement of fill and excavation within the project boundaries.
Per Specific condition #10 of the permit: This Construction Permit No. 43022407.003, amends the previously issued Construction Permit Nos. 44022407.000, 44022407.001, and 44022407.002, and all conditions are replaced by the conditions herein.
All proposed work is complete. I spoke with Dennis Criss, Yard Manager with Ritchie Bros. to inform him the District will be requesting as-builts and he is okay with that.
The existing well on site has been abandon under WCOP 780589.

07.01.2010 Forwarding file to LVH to request as-builts.

Inspection follow-up items needed:

4. **Reinspection?** { } Yes { } No { } N/A **IF YES, DATE:** _____

Notes/Comments: _____

5. **SOC/As- built letter?** { } Yes { } No { } N/A
6. **Construction Insp. Letter?** { } Yes { } No { } N/A
7. **Copy Engineer of Record?** { } Yes { } No { } N/A
8. **Expiration Date?** { }Yes { }No { }N/A
9. **Refer to Enforcement?** { }Yes { }No { }N/A
10. **Deficiency letter?** { }Yes { }No { }N/A

Notes/ Comments:

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing Southwest

The additional parking for the handicap is now complete

Comments: Facing North

Proposed pavement for heavy duty equipment is complete

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing North

Standing along the western boundary in the vicinity of the proposed equipment display area.

Comments: Facing Northeast

Proposed equipment display area is complete.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing East

Standing along the northern boundary in the vicinity of the proposed equipment display area.

Comments: Facing East

Proposed equipment display area is complete.

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing Southwest

The expansion the building is complete and along with additional paving.

Comments: Facing South

Same area different view.

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing West

The 29 proposed paved parking is complete

Comments: Facing West

Pond 1 is exisiting

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing South

Pond is existing

Comments:

Continuation of Pond 2

[redacted] [redacted]

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BARTOW REGULATION DEPARTMENT
INSPECTION/INVESTIGATION REPORT PHOTOGRAPHS

Investigator: Latasha Wilson **Date: 06.29.2010** **Permit #: 44 22407.003** **CT# 301588**
Investigation Type: CIP
Project Name: Ritchie Bros. Auction Facility Expansion

Comments: Facing South

Pond 3 is existing

Comments: Facing East

Pond 4 is exisiting

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
TDD only: 1-800-231-6103 (FL only)
On the Internet at WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

July 21, 2010

David Nicholson
Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Subject: **Request for Statement of Completion/As-Built Drawings**

Project Name:	Ritchie Bros. Auction Family Expansion
Permit No.:	43022407.003
Compliance No.:	331538
S/T/R:	07/26S/27E
County:	Polk

Dear Mr. Nicholson:

On January 26, 2009, the District issued a permit as referenced above to for the construction of a surface water management system serving an expansion to a 204.85-acre commercial project. A condition in the permit requires that within 30 days after completion of the permitted activity (or beneficial occupancy), the Permittee shall submit Statement of Completion forms and as-built drawings to the Bartow Service Office.

During a recent site visit, District staff determined the construction of the project referenced above is complete (or has beneficial occupancy) and that the required forms and drawings have not been received. As stated in the permit, please submit two completed "Statement of Completion And Request For Transfer To Operation Entity" forms and two sets of as-built drawings to the Bartow Service Office. Failure to comply with this requirement constitutes a violation of Section 373.419, Florida Statutes and Rule 40D-4.381(1)(m), Florida Administrative Code.

The District requests that you complete and forward the required documents or inform us in writing of your intentions in this matter, no later than **August 20, 2010**. If this matter is not brought into compliance in a timely manner at the staff level, this case may be forwarded to the District's Legal Department for further enforcement action. If you have any questions concerning this issue, please contact me at the Bartow Service Office.

Sincerely,

Laura V. Howe
Senior Field Technician
Bartow Regulation Department

LVH:amd
Enclosure: Statement of Completion/Checklist
cc: File of Record 43022407.003 / CT 331538
Kriss Y. Kaye, P.E., Envisors, LLC

E-1842

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*

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Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

August 25, 2010

COPY

David Nicholson
Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Subject: **2nd Request for Statement of Completion/As-Built Drawings**

Project Name:	Ritchie Bros. Auction Family Expansion
Permit No.:	43022407.003
Compliance No.:	331538
S/T/R:	07/26S/27E
County:	Polk

Dear Mr. Nicholson:

On January 26, 2009, the District issued a permit as referenced above to you for the construction of a surface water management system serving an expansion to a 204.85-acre commercial project. A condition on the permit requires that two "Statement of Completion And Request For Transfer To Operation Entity" forms and two sets of as-built drawings be submitted within 30 days following completion of construction or beneficial occupancy. Failure to comply with this requirement constitutes a violation of Section 373.419, Florida Statutes and Rule 40D-4.381(1)(m), Florida Administrative Code.

During a site inspection, District staff concluded the project referenced above was completed or has beneficial occupancy. On July 21, 2010, the District sent a letter to you requesting that two "Statement of Completion and Request For Transfer To Operation Entity" forms and two sets of as-built drawings be submitted. To date, the District has not received these required items.

Please forward the required forms and as-built drawings, or inform us in writing of your intentions in this matter, no later than **September 8, 2010**. If this matter is not brought into compliance in a timely manner at the staff level, the District will proceed with enforcement action that may include monetary penalties and the recovery by the District of its enforcement costs. If you have any questions, please contact me at the Bartow Service Office.

Sincerely,

Laura V. Howe
Senior Field Technician
Bartow Regulation Department

LVH:amd
Enclosure: Statement of Completion And Request For Transfer To Operation Entity form
cc: File of Record 43022407.003 / CT 331538
Kriss Y. Kaye, P.E., Envisors, LLC

Home » Return To Search Results

Parcel Details: 27-26-07-000000-011010

Prt Calc | Pic Report | Trim Notice

Owners

RITCHIE BROS PROPERTIES INC	100%

Mailing Address

Address 1	**4000 PINE LAKE RD**
Address 2	
Address 3	**LINCOLN NE 68516-5484**

Site Address

Address 1	
Address 2	
City	**DAVENPORT**
State	**FL**
Zip Code	**33896**

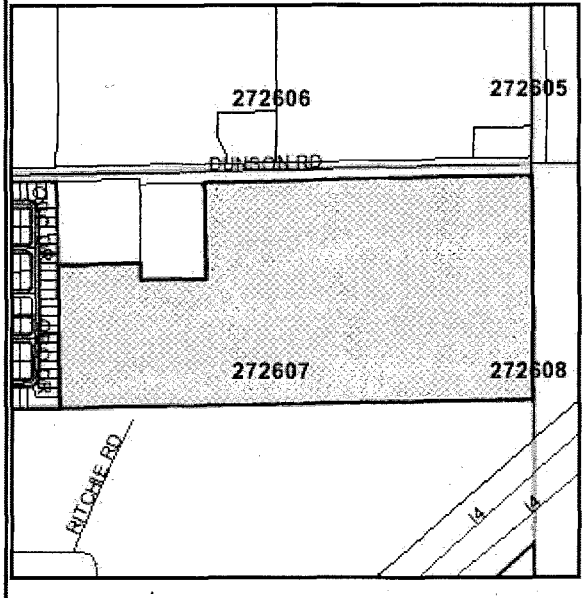
Parcel Information

Neighborhood	**6666.00** Show Recent Sales in this Neighborhood
Subdivision	**NOT IN SUBDIVISION**
Property (DOR) Use Code	**Vacant Commercial (Code: 1000)**
Acreage	**67.40**
Taxing District	**UNINCORP/PEACE RIVER BASIN (Code: 10000)**

Legal Description

COMM NW COR OF NW1/4 OF NE1/4 OF SEC S ALONG W BNDRY 521.3 FT TO POB S ALONG W BNDRY 797.25 E 2656.33 FT N 1296.71 FT TO PT ON R/W OF DUNSON RD W 70.38 FT S88-52-25W 100 FT W 100.02 FT S88-52-25W 100 FT S88-18-02W 100 FT W 200 FT S88-52-25W 100 FT S87-09-19W 100.04 S86-34-59W 100.08 FT S87-43-40W 100.02 FT W 300.03 S88-50-52W 100 FT S88-16-29W 100 FT W 100.02 S88-50-52W 100 FT S88-18-29W 89.03 FT S 16.18 FT TO S R/W OF DUNSON RD S88-38-50W 334.02 FT S 470.59 FT W

Area Map



Mapping Worksheets (plats) for 272607

Mapping Worksheet Info

Section_272607.pdf

Sales History

Note: If the deed does not have a blue link to official records, the deed is not available through the online records of the Clerk of the Circuit Court. In order to obtain a copy of this deed you will need to contact the Clerk's Indexing Department at 863-534-4524.

E-1844

OR Book/Page	Date	Type Inst	Vacant/ Improved	Reason	Grantee	Sales Price
7761/1629	11/2008	C	V	81	RITCHIE BROS PROPERTIES INC	$0
7727/1074	09/2008	W	V	80	RITCHIE BROS PROPERTIES INC	$11,101,800
5716/1908	03/2004	C	V	01		$100
5662/2194	02/2004	W	I	00	SANDLER AT POLK COUNTY LLC	$2,200,800
3207/2122	01/1983	W	I	03		$100
0000/0000	01/1956		E	01		$100

Exemptions

Note: The drop down menus below provide information on the amount of exemption applied to each taxing district. The HX—first $25,000 homestead exemption may be allocated to one or more owners. The HB –second $25,000 amended homestead exemption reflects the name of the first owner only.

Code	Description	% Ownership	Renew Cd	Year	Name	Value

Land Lines (Current)

LN	Land Dscr	Note	Ag/GreenBelt	Land Unit Type	Front	Depth	Units
1	* Commercial/Industrial		N	S	0	0	2936072

* for current use NOT Future Land Use

All above information is current (as of Wednesday, October 20, 2010 at 2:05:58 AM). All below information is 2010 Final, except where otherwise noted.

Value Summary (2010 Final)

Desc	Value
Total Land Value	$6,899,768
Total Building Value	$0
Total Extra Features Value	$0
Land Classified Value	$0
Just Market Value	$6,899,768
*Cap Differential and Portability	$0
Agriculture Classification	$0
Total Assessed Value	$6,899,768

*This property contains a Non Homestead Cap with a differential of $0.

Taxable Value (2010 Final)

District Description	Tax Rate	Assessed Value	Assessed Taxes	Exemption	Tax Savings	Taxable Value	Taxes

Board Of County Commissioners - GF	6.806500	$6,899,768	$46,963.27	$0	$0.00	$6,899,768	$46,963.27
Polk County Parks MSTU	0.421900	$6,899,768	$2,911.01	$0	$0.00	$6,899,768	$2,911.01
Polk County Library MSTU	0.210900	$6,899,768	$1,455.16	$0	$0.00	$6,899,768	$1,455.16
Polk County School Board - State	5.294000	$6,899,768	$36,527.37	$0	$0.00	$6,899,768	$36,527.37
Polk County School Board - Local	2.498000	$6,899,768	$17,235.62	$0	$0.00	$6,899,768	$17,235.62
Peace River Basin	0.182700	$6,899,768	$1,260.59	$0	$0.00	$6,899,768	$1,260.59
South West FLA Water Mgmt Dist	0.377000	$6,899,768	$2,601.21	$0	$0.00	$6,899,768	$2,601.21
Board Of County Commissioners - DS	0.060000	$6,899,768	$413.99	$0	$0.00	$6,899,768	$413.99
		Assessed Taxes:	**$109,368.20**	**Tax Savings:**	**$0.00**	**Total Taxes:**	**$109,368.20**

Taxes

Desc	Last Year	2010 Final
Taxing District	UNINCORP/PEACE RIVER BASIN (Code: 10000)	UNINCORP/PEACE RIVER BASIN (Code: 10000)
Millage Rate	15.6546	15.8510
Ad Valorem Assessments	$138,587.00	$109,368.20
Non-Ad Valorem Assessments	$0.00	
Total Taxes	**$138,587.00**	**$109,368.20**

Your final tax bill may contain Non-Ad Valorem assessments which may not be reflected on this page, such as assessments for roads, drainage, garbage, fire, lighting, water, sewer, or other governmental services and facilities which may be levied by your county, city or any other special district. Use the Property Tax Estimator to estimate taxes for this account.

Note: The tax collector link is not available during tax sale processing. Thank you for your patience.

Prior Year Final Values

2010	
Land Value	$7,361,265.00
Building Value	$0.00

Misc. Items Value	$0.00
Total Just Value (Market)	$7,361,265.00
SOH Deferred Val	$0.00
Assessed Value	$7,361,265.00
Exempt Value	$0.00
Taxable Value	$7,361,265.00

2009

Land Value	$8,852,797.00
Building Value	$0.00
Misc. Items Value	$0.00
Total Just Value (Market)	$8,852,797.00
SOH Deferred Val	$0.00
Assessed Value	$8,852,797.00
Exempt Value	$0.00
Taxable Value	$8,852,797.00

2008

Land Value	$2,217,000.00
Building Value	$0.00
Misc. Items Value	$0.00
Total Just Value (Market)	$2,217,000.00
SOH Deferred Val	$0.00
Assessed Value	$2,217,000.00
Exempt Value	$0.00
Taxable Value	$2,217,000.00

2007

Land Value	$2,217,000.00
Building Value	$0.00
Misc. Items Value	$0.00
Land Classified Value	$0.00
Total Just Value (Market)	$2,217,000.00
SOH Deferred Val	$0.00
Agriculture Classification	$0.00
Assessed Value	$2,217,000.00
Exempt Value	$0.00
Taxable Value	$2,217,000.00

2006

Land Value	$1,625,800.00
Building Value	$0.00
Misc. Items Value	$0.00

Total Just Value (Market)	$1,625,800.00
Assessed Value	$604,100.00
Exempt Value	$0.00
Taxable Value	$604,100.00

2005

Land Value	$1,478,000.00
Building Value	$0.00
Misc. Items Value	$250.00
Total Just Value (Market)	$1,478,250.00
Assessed Value	$556,770.00
Exempt Value	$0.00
Taxable Value	$556,770.00

2004

Land Value	$367,100.00
Building Value	$0.00
Misc. Items Value	$250.00
Total Just Value (Market)	$367,350.00
Assessed Value	$117,720.00
Exempt Value	$0.00
Taxable Value	$117,720.00

Last Updated: Wednesday, October 20, 2010 at 2:05:58 AM

INSTR # 2008194754
BK 07761 PGS 1629-1632 PG(s)4
RECORDED 11/18/2008 04:51:50 PM
RICHARD M WEISS, CLERK OF COURT
POLK COUNTY
RECORDING FEES 35.50
RECORDED BY S Wetzel

Original Poor Quality

Prepared By and Return To:

Corina Castillo-Johnson, Esq.
Broad and Cassel
Bank of America Center
P.O. Box 4961
Orlando, Florida 32802-4961

For Recording Purposes Only

Parcel Identification No. 272607-000000-011010

THIS CORRECTIVE SPECIAL WARRANTY DEED IS BEING RECORDED TO CORRECT A SCRIVENER'S ERROR IN THAT CERTAIN SPECIAL WARRANTY DEED RECORDED SEPTEMBER 29, 2008 IN OFFICIAL RECORDS BOOK 7727, PAGE 1074, IN THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA AND SPECIFICALLY TO REFLECT THE CORRECT GRANTEE OF THE PROPERTY.

CORRECTIVE SPECIAL WARRANTY DEED

THIS CORRECTIVE SPECIAL WARRANTY DEED made and executed this 10th day of November, 2008 by **SANDLER AT POLK COUNTY, LLC**, a Virginia limited liability company authorized to do business in the State of Florida, whose mailing address is 255 Alhambra Circle, Suite 325, Coral Gables, Florida 33134-7471 ("**Grantor**"), to **RITCHIE BROS. PROPERTIES, INC.**, a Washington corporation, whose mailing address is 4000 Pinelake Road, Lincoln, Nebraska 68516 ("**Grantee**").

WITNESSETH:

THAT Grantor, for and in consideration of the sum of Ten Dollars ($10.00) and other valuable consideration, the receipt and adequacy of which is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto Grantee certain real property situate in Polk County, Florida, (the "**Property**"), and as more particularly described as follows:

See **Exhibit "A"** attached hereto and incorporated herein by this reference

Parcel Identification Number:
272607-000000-011010

TOGETHER with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

TO HAVE AND TO HOLD, the same in fee simple forever;

PETERSON & MYERS, PA (LW)
PO BOX 1079
LAKE WALES, FL 33859-1079

ORL1\REALEST\1199787.1
15637/0135 CCJ aw 10/30/2008 9:40 AM

AND Grantor hereby covenants with Grantee that Grantor will warrant and defend the Property against the lawful claims and demands of all persons claiming by, through, or under Grantor, but against none other, and that the Property is free of all encumbrances, except taxes accruing subsequent to December 31, 2007, and matters described on **Exhibit "B"** attached hereto and incorporated herein by this reference, provided that this reference shall not serve to reimpose same.

IN WITNESS WHEREOF, Grantor has signed and sealed these presents the day and year first above written.

Signed, sealed and delivered
in the presence of:

WITNESSES:

Vicki L. Harding
Print Name: Vicki L Harding

Kathy Nall
Print Name: Kathy Nall

SANDLER AT POLK COUNTY, LLC, a Virginia limited liability company

By: _____
Nathan D. Benson, Manager

STATE OF VIRGINIA
CITY OF VIRGINIA BEACH

The foregoing instrument was acknowledged before me this 10th day of November, 2008, by NATHAN D. BENSON, as Manager of **SANDLER AT POLK COUNTY, LLC**, a Virginia limited liability company, on behalf of the company. He is personally known to me or has produced _____ as identification.

Linda J. Todd
Commonwealth of Virginia
Notary Public
Commission No. 210556
My Commission Expires 07/31/2010

Linda J. Todd
(Signature of Notary Public)
Linda J. Todd
(Typed name of Notary Public)
Notary Public, State of Virginia
Commission No.: 210556
My Commission Expires: 07-31-10

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EXHIBIT "A"

LEGAL DESCRIPTION

The North 1/2 of the Northeast 1/4 of Section 7, Township 26 South, Range 27 East, Polk County, Florida, LESS AND EXCEPT: Commence at the Northwest corner of the Northwest 1/4 of the Northeast 1/4 of Section 7, Township 26 South, Range 27 East, Polk County, Florida and run S00°28'57"E along the West boundary thereof, 55.30 feet to the Point of Beginning; thence continue S00°28'57"E along said West boundary, 466.00 feet; thence N89°11'30"E, parallel with the North boundary of said Northeast 1/4, 466.01 feet; thence N00°28'57"W, parallel with said West boundary, 470.44 feet to a point on the South right of way line of Dunson Road; thence S88°38'47"W along said right of way line, 466.05 feet to the Point of Beginning. AND LESS County road right of way.

Also described as:

Commence at the Northwest corner of the Northwest 1/4 of the Northeast 1/4 of Section 7, Township 26 South, Range 27 East, Polk County, Florida and run S00°27'44"E along the West boundary thereof, 521.30 feet to the Point of Beginning; thence continue S00°27'44"E along said West boundary, 797.25 feet; thence N89°10'14"E, 2656.33 feet; thence N00°19'51"W, 1296.71 feet to a point on the South County maintained right of way line of Dunson Road, as recorded in Map Book 10, Pages 54 through 60 of the Public Records of Polk County, Florida; thence along said South right of way line the following nineteen (19) courses and distances: (1) S89°26'47"W, 70.38 feet; (2) S88°52'25"W, 100.00 feet; (3) N89°58'50"W, 100.02 feet; (4) S88°52'25"W, 100.00 feet; (5) S88°18'02"W, 100.00 feet; (6) S89°26'47"W, 100.00 feet; (7) S89°26'47"W, 100.00 feet; (8) S88°52'25"W, 100.00 feet; (9) S87°09'19"W, 100.04 feet; (10) S86°34'59"W, 100.08 feet; (11) S87°43'40"W, 100.02 feet; (12) S89°26'47"W, 100.00 feet; (13) N89°58'50"W, 100.02 feet; (14) N89°59'12"W, 100.01 feet; (15) S88°50'52"W, 100.00 feet; (16) S88°16'29"W, 100.00 feet; (17) S89°59'37"W, 100.02 feet; (18) S88°50'52"W, 100.00 feet; (19) S88°18'29"W, 89.03 feet; thence S00°27'44"E, 16.18 feet to the South right of way line of said Dunson Road; thence S88°38'50"W, 334.02 feet; thence S00°28'43"E, 470.59 feet; thence S89°13'27"W, 466.15 feet to the Point of Beginning.

EXHIBIT "B"

PERMITTED EXCEPTIONS

1. Minor encroachment of county maintained clay road located approximately 423 feet east of the northwest corner along the northern boundary of the subject property as depicted on that certain ALTA/ACSM Land Title Boundary Survey dated April 23, 2003, and last revised January 28, 2004, as prepared by Vandiver Land Surveying, Inc., and identified as Drawing Number 01280.

FLORIDA DEPARTMENT OF STATE
DIVISION OF CORPORATIONS

Detail by Entity Name

Foreign Profit Corporation

RITCHIE BROS. PROPERTIES INC.

Filing Information

Document Number	F99000001677
FEI/EIN Number	911830902
Date Filed	03/30/1999
State	WA
Status	ACTIVE

Principal Address

4000 PINE LAKE RD
LINCOLN NE 68516

Changed 02/01/2008

Mailing Address

4000 PINE LAKE RD
LINCOLN NE 68516

Changed 02/01/2008

Registered Agent Name & Address

C T CORPORATION SYSTEM
1200 SOUTH PINE ISLAND ROAD
PLANTATION FL 33324 US

Officer/Director Detail

Name & Address

Title PD

NICHOLSON, DAVID D
4000 PINE LAKE RD
LINCOLN NE 68516

Title S

OLMSTEAD, JAMES J
4000 PINE LAKE RD
LINCOLN NE 68516

Title T

SCHEER, DAVID
4000 PINE LAKE RD
LINCOLN NE 68516

Annual Reports

Report Year	Filed Date
2008	02/01/2008
2009	03/20/2009
2010	01/04/2010

Document Images

01/04/2010 -- ANNUAL REPORT	View image in PDF format
03/20/2009 -- ANNUAL REPORT	View image in PDF format
02/01/2008 -- ANNUAL REPORT	View image in PDF format
02/21/2007 -- ANNUAL REPORT	View image in PDF format
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02/13/2002 -- ANNUAL REPORT	View image in PDF format
01/25/2001 -- ANNUAL REPORT	View image in PDF format
01/26/2000 -- ANNUAL REPORT	View image in PDF format
03/30/1999 -- Foreign Profit	View image in PDF format

Note: This is not official record. See documents if question or conflict.

Previous on List Next on List Return To List

Entity Name Search

No Events **No Name History**

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Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
TDD only: 1-800-231-6103 (FL only)
On the Internet at *WaterMatters.org*

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

November 18, 2010

David Nicholson
Ritchie Bros. Properties, Inc.
4000 Pine Lake Road
Lincoln, NE 68516

Subject: **Processing Notice – Failure to Submit Statement of Completion/As-Built Drawings**

Project Name:	Ritchie Bros. Auction Family Expansion
Permit No.:	43022407.003
Compliance No.:	331538
S/T/R:	07/26S/27E
County:	Polk

Dear Mr. Nicholson:

On July 21, 2010 and August 25, 2010, the Southwest Florida Water Management District (District) sent letters to you (copies enclosed) that identified the unresolved need to submit Statement of Completion forms and as-built drawings, as associated with the permit referenced above.

To date, these issues have not been adequately addressed and you are currently in non-compliance with the conditions of your permit. Due to the time elapsed and lack of complete resolution at the staff level, this matter has been transferred to the District's Legal Department to proceed with further enforcement action.

Should you have any questions or comments, please contact me at the Bartow Service Office.

Sincerely,

Laura V. Howe
Senior Field Technician
Bartow Regulation Department

LVH:amd
Enclosure: District letter dated July 21, 2010 and August 25, 2010
cc: File of Record 43022407.003 / CT 331538
Kriss Y. Kaye, P.E., Envisors, LLC

Amy C. Wells

From: Aleta D. Wells
Sent: Thursday, December 23, 2010 1:45 PM
To: Amy C. Wells
Cc: Judy Passmore
Subject: Ritchie Bros. Auction Facility Expansion 43022407.003

Hey Amy,

We received the AB/SOC submittal for the aforementioned project. CT 331538 was sent to Legal in November. Can you please send the legal file back to Bartow please? Thanks, Dee

Dee Wells
Regulation Processing Specialist
Bartow Regulation Department
170 Century Blvd.
Bartow, FL 33830
1-800-492-7862
863-534-1448 ext. 6007
www.watermatters.org

To be closed.
Thanks!
Amy

E-1856

January 4, 2011

MEMORANDUM

TO: Judy Passmore, Senior Regulation Processing Specialist

FROM: Amy Wells, Staff Attorney

THROUGH: Strategic Programs Office

SUBJECT: Ritchie Bros Auction Family Expansion
ERP No. 43022407.003/CT No. 331538

The above-referenced Legal Action Request was referred to the Office of General Counsel on November 22, 2010, for failure to submit a Statement of Completion and as-built drawings. Staff informed me on December 23, 2010, that the Statement of Completion and as-built drawings were received.

I am hereby returning the attached file to you for incorporation into the File of Record for this Permit. If you require any further action regarding this project, please let me know.

cc (w/o attachment): Brian Starford
Laura Howe
Time' Parkerson

L:\PRIVATE\Amy Wells\Ritchie Bros. Auction Family Expansion-331538\Close Memo.docx

Date Closed 1-12-2011 by

File of Record
Permit No. 43022407003

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT
Courier
JAN 10 2011
RECEIVED
BARTOW, FLORIDA

SWFWMD
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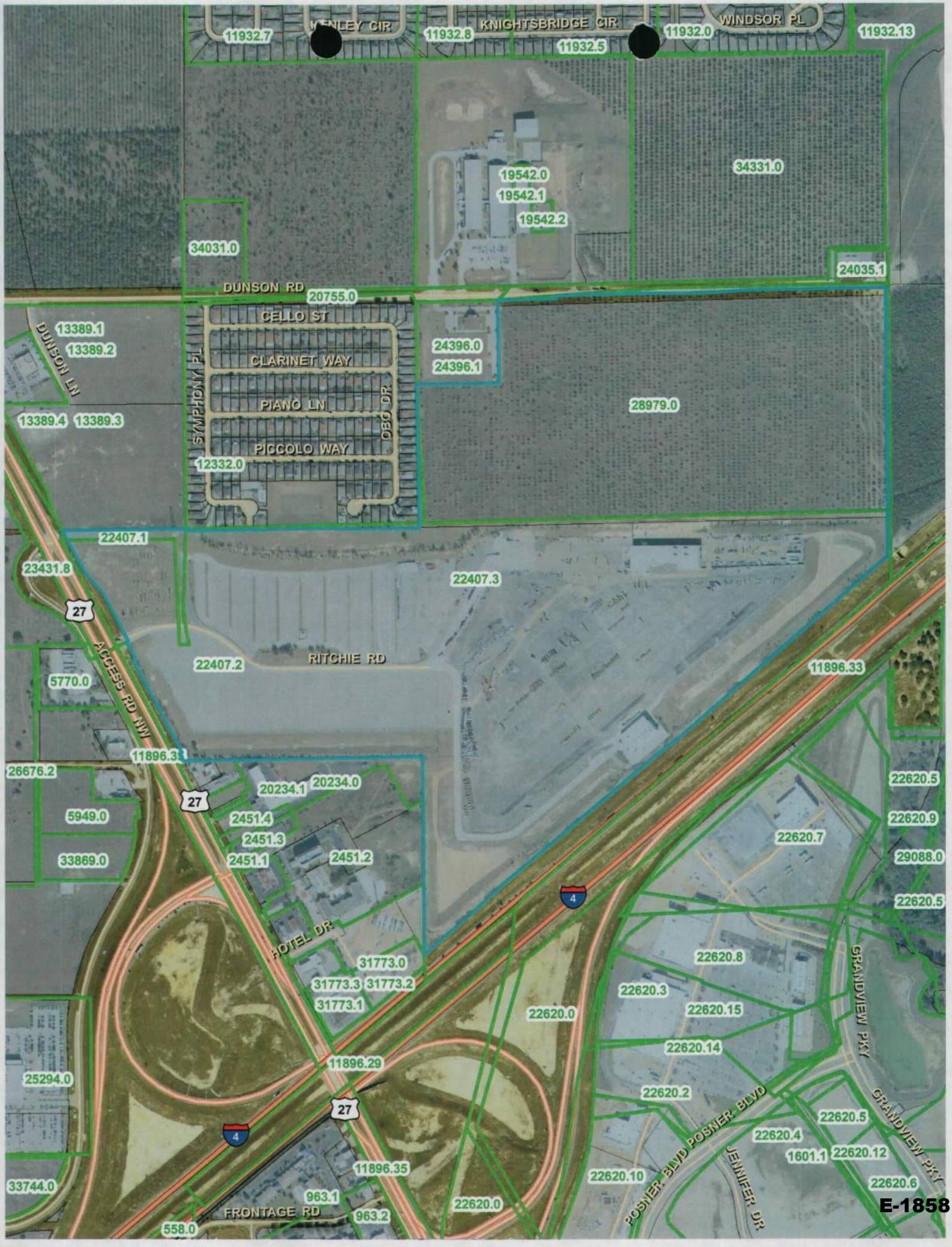
SWFWMD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