

# Florida Department of Transportation

JEB BUSH  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450  
MS-32

THOMAS F. BARRY, JR.  
SECRETARY

**DATE:** October 14, 2002

**TO:** Registered Plans Preparation Manual Holders

**FROM:** Brian Blanchard, P.E.  
State Roadway Design Engineer

**CC:** Bob Greer, William Nickas, Jim Mills

**SUBJECT:** IMPLEMENTATION - PLANS PREPARATION MANUAL  
JANUARY 2003 UPDATES

The January 2003 Updates include:

1. Plans Preparation Manual, Volume I, January 2003 – Complete Reprint.
2. Plans Preparation Manual, Volume II, January 2003 – Complete Reprint.

The major changes in design requirements are to be implemented as follows:

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## **Volume I, Chapter 1, Section 1.9 Design Speed**

### **SUMMARY OF CHANGE:**

The phrase “necessary for safe operation” in the second paragraph is deleted to be consistent with the definition of design speed in the 2001 AASHTO Green Book.

### **IMPLEMENTATION:**

This change is for clarification and effective immediately.

This change applies to both Metric and English Projects.

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## **Volume I Chapter 2, Section 2.1.5 Cross Slopes and Figure 2.1.1 Standard Pavement Cross Slopes**

### **SUMMARY OF CHANGE:**

Section 2.1.5 and Figure 2.1.1 have been revised to allow the maximum number of lanes with

cross slope in one direction for curb and gutter roadways to be four lanes.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.5 Borders and Table 2.5.1 Borders Highways with Flush Shoulders**

SUMMARY OF CHANGE:

A provision has been added to reduce border width requirements for ramps in areas of crossroad terminal as long as design meets requirements for clear zone, horizontal clearance, drainage, maintenance access, etc.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.6 Grades and Table 2.6.3 Criteria for Grade Datum**

SUMMARY OF CHANGE:

“Base Clearance Water Elevation” replaces the term “design high water for roadway base courses”.

IMPLEMENTATION:

This change in terms is made to avoid confusion with other design water elevations and is effective on all projects beginning design as of January 1, 2003.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.7 Sight Distance, Table 2.7.1 Minimum Stopping Sight Distance and Table 2.7.2 Minimum Passing Sight Distance**

SUMMARY OF CHANGE:

Sight Distances have been revised for consistency with the 2001 AASHTO Green Book.

IMPLEMENTATION:

This change is effective on all projects beginning design as of January 2003.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.8 Curves, Table 2.8.4 Horizontal Curves**

SUMMARY OF CHANGE:

Maximum curvature for  $e_{max} = 0.05$  has been added to Table 2.8.4

IMPLEMENTATION:

This change involves an expansion of an existing table to include information previously available in Table 2.9.2, Superelevation.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.8 Curves, Table 2.8.5 Minimum Lengths of Crest Vertical Curves and Table 2.8.6 Minimum Lengths of Sag Vertical Curves**

SUMMARY OF CHANGE:

New vertical curve K values are provided. The new K values for crest vertical curves are based on the 2001 AASHTO Green Book Stopping Sight Distances but using a drivers eye height = 3.5' and object height = 6".

IMPLEMENTATION:

This change is effective on all projects beginning design as of January 2003.

This change applies to English Projects.

---

**Volume I Chapter 2, Section 2.10.1 Vertical Clearance, Table 2.10.4**

SUMMARY OF CHANGE:

The minimum vertical clearance for Overhead Dynamic Message Signs (DMS) has been added.

IMPLEMENTATION:

This change was previously implemented by memorandum dated February 8, 1995 from the State Structures Design Engineer.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.10.2 Airspace Obstructions and Table 2.10.5 FAA Notification Requirements**

SUMMARY OF CHANGE:

Criteria for addressing airspace obstructions and FAA notification requirements have been added.

IMPLEMENTATION:

This change is a user enhancement to address requirements previously in effect.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.11**

SUMMARY OF CHANGE:

The requirement for adjusting clear zone widths on the outside of horizontal curves in accordance with Table 2.11.10 for new construction and reconstruction projects has been deleted.

IMPLEMENTATION:

This change is effective on all projects beginning design as of January 2003 and, at the District's discretion, may be applied to design projects previously underway.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.13. Table 2.14.1 Ramp Widths – Turning Roadways**

SUMMARY OF CHANGE:

Traveled way widths for selected radii have been revised for consistency with changes in the 2001 AASHTO Green Book.

IMPLEMENTATION:

This change is effective on all projects beginning design as of January 2003 and, at the District's discretion, may be applied to design projects previously underway.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.14.1 Limited Access Right of Way Limits at Interchanges**

SUMMARY OF CHANGE:

A provision has been added to reduce or omit limited access limits along crossroads overpassing limited access facilities with no interchange where driveway sight distance is adequate.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 2, Section 2.16 Four Lane High Speed Suburban Sections**

SUMMARY OF CHANGE:

A new section has been added providing special design criteria for four lane high-speed suburban sections.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 4, Section 4.1 Clear Zone**

SUMMARY OF CHANGE:

Section 4.1 Clear Zone has been changed to include edits intended to clarify clear zone concepts and to provide consistency with the Utility Accommodation Manual.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 7, Section 7.2.7 Signing for Bridges with Steel Decks**

SUMMARY OF CHANGE:

Section 7.2.7 is a new section to address the requirement for Slippery When Wet Signs (W8-5) in

advance of all movable and non-movable bridges with steel decks.

IMPLEMENTATION:

The requirement for Slippery When Wet Signs in advance of bridges with steel decks was implemented September 27, 1999.

This change applies to both Metric and English Projects.

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**Volume I Chapter 7, Section 7.4.12.1 Mast Arm Supports**

SUMMARY OF CHANGE:

Section 7.4.12.1 Mast Arm Supports has been changed to reflect revised Design Standards for Mast Arms recently issued.

IMPLEMENTATION:

Implementation instructions were provided in the April 1, 2002 Basis of Estimates update. The new mast arm design standards may be used on projects beginning with the January 2003 letting. These new designs are mandated for use on projects beginning with the July 2003 letting.

This change applies to both Metric and English Projects.

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**Volume I Chapter 8 Pedestrian and Bicycle Facilities**

SUMMARY OF CHANGE:

Chapter 8 changes includes edits to address transit considerations, a reference to an example typical design for shared use paths, and a new section (8.6.13) on Signing, Pavement Marking, and Signalization of shared use paths.

IMPLEMENTATION:

These changes are effective immediately.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 9 Landscaping**

SUMMARY OF CHANGE:

Chapter 9 has been completely revised. Changes include improved guidance for developing landscape plans, appropriate references to Rule 14-40, FAC regarding permitted outdoor advertising signs, and a new section (9.2) on the requirement that a comprehensive maintenance plan must accompany landscape plans.

IMPLEMENTATION:

These changes are effective on all projects beginning design as of January 2003.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 10, Section 10.13 Barrier Walls (Temporary)**

SUMMARY OF CHANGE:

Section 10.3 was changed to include edits to clarify requirements for portable concrete barriers on bridges. Also, a reference to water filled barriers has been added.

IMPLEMENTATION:

These changes involve clarification of previously implemented requirements.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 10, Section 10.13.6 Temporary Curb**

SUMMARY OF CHANGE:

Section 10.3.6 Temporary Curb is deleted.

IMPLEMENTATION:

Temporary Curb as detailed in Index 600 cannot be used on projects let to contract after September 30, 2002.

This change applies to both Metric and English Projects.

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**Volume I Chapter 10, Section 10.16 Law Enforcement Services**

SUMMARY OF CHANGE:

Section 10.16 has been changed to reflect the requirements of Section 102 of the Specifications and corresponding pay item changes for the use of Speed and Law Enforcement Officers, and Traffic Control Officers.

IMPLEMENTATION:

Implementation instructions were provided in the April 1, 2002 Basis of Estimates update that stated these changes are effective beginning with the January 2003 letting.

These changes apply to both Metric and English Projects.

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### **Volume I Chapter 11 Stormwater Pollution Prevention Plan**

#### SUMMARY OF CHANGE:

Chapter 11 changes include new discussion and clarification on SWPPP requirements and documentation and moves SWPPP plan sheet requirements to a new Chapter in Volume II (Chapter 28).

#### IMPLEMENTATION:

These changes are user enhancements to address requirements previously in effect.

This change applies to both Metric and English Projects.

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### **Volume I Chapter 13, Section 13.5.1 Aviation Office Coordination**

#### SUMMARY OF CHANGE:

Section 13.5.1 changes include new discussion and clarification on responsibility for notification of airspace obstructions and Aviation Office Coordination. Table 13.5.1 is added to address notification requirements.

#### IMPLEMENTATION:

These changes are user enhancements to address requirements previously in effect.

These changes apply to both Metric and English Projects.

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### **Volume I Chapters 14 Final Engineering Design Process, 15 Update Engineering Design Process, and 17 Engineering Design Estimates Process**

#### SUMMARY OF CHANGE:

Changes to Chapters 14, 15 and 17 include edits associated with the implementation of TRNS\*PORT.

#### IMPLEMENTATION:

The use of TRNS\*PORT was implemented on all projects let in Central Office beginning with the October 2002 Letting.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 19 Sealing Design Documents, Section 19.1 General**

SUMMARY OF CHANGE:

Section 19.1 includes a new statement that all landscape plans, specifications, and reports for the Department shall be sealed by a registered landscape architect.

IMPLEMENTATION:

This change was previously implemented by the State Highway Engineer and was effective on all projects involving landscaping beginning design as of July 2002.

This change applies to both Metric and English Projects.

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**Volume I Chapter 19 Sealing Design Documents, Section 19.2 Sealing of Contract Plans/Record Set**

SUMMARY OF CHANGE:

Section 19.2 is changed to comply with Florida Board of Professional Engineers Rules for sealing engineering documents.

IMPLEMENTATION:

This change was previously implemented by the Florida Board of Professional Engineers.

This change applies to both Metric and English Projects.

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**Volume I Chapter 19 Sealing Design Documents, Section 19.2.2 Electronic Sealing**

SUMMARY OF CHANGE:

Section 19.2.2 was changed to provide a standard note to be used on electronically signed and sealed documents stating the official record is an electronic file.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 20 Plans Processing and Revisions**

SUMMARY OF CHANGE:

Chapter 20 changes include edits to address plans processing changes associated with the implementation of TRNS\*PORT and Electronic Specification Packages.

IMPLEMENTATION:

The use of TRNS\*PORT was implemented on all projects let in Central Office beginning with the October 2002 Letting. The implementation of Electronic Specification Packages is effective beginning with the January 2003 letting.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 23 Design Exceptions and Variations, Section 23.1 General**

SUMMARY OF CHANGE:

Section 23.1 General is changed to provide clarification on the responsible party for design variations or exceptions where the Department enters into an agreement with a Utility for joint use utility poles.

IMPLEMENTATION:

This change is a clarification of existing requirements and is effective immediately.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 23 Design Exceptions and Design Variations, Section 23.4 AASHTO Criteria for Critical Design Elements**

SUMMARY OF CHANGE:

Section 23.4 is completely revised to address the implementation of the 2001 AASHTO Green Book.

IMPLEMENTATION:

Use of the 2001 AASHTO Green Book as the minimum threshold for Design Exceptions is effective on all projects beginning design as of January 2003.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 25 Florida's Design Criteria for Resurfacing, Restoration and Rehabilitation, Section 25.4.10 Vertical Alignment**

SUMMARY OF CHANGE:

Section 25.4 changes include revised stopping sight distance requirements and vertical curve K-values for consistency with the 2001 AASHTO Green Book

IMPLEMENTATION:

These changes are effective on all RRR projects beginning design as of January 2003.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 25 Florida's Design Criteria for Resurfacing, Restoration and Rehabilitation, Section 25.4.11.1 Horizontal Curves**

SUMMARY OF CHANGE:

Section 25.4.11.1 is changed to include a definition for significant crash history (3 or more crashes within the most recent 5 year).

IMPLEMENTATION:

This change is effective on all RRR projects beginning design as of January 2003.

This change applies to both Metric and English Projects.

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**Volume I Chapter 25 Florida's Design Criteria for Resurfacing, Restoration and Rehabilitation, Section 25.4.12 Stopping Sight Distance**

SUMMARY OF CHANGE:

Table 24.4.11.2 was deleted and replaced by Table 24.4.12 Stopping Sight Distance. New stopping sight distances based on the 2001 AASHTO Green Book are provided.

IMPLEMENTATION:

This change is effective on all RRR projects beginning design as of January 2003.

This change applies to both Metric and English Projects.

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**Volume I Chapter 25 Florida's Design Criteria for Resurfacing, Restoration and Rehabilitation, Section 25.4.17 Intersections**

SUMMARY OF CHANGE:

Section 25.4.17 was changed to include a requirement for corrective measures at T-intersections with significant crash histories.

IMPLEMENTATION:

This change is effective on all RRR projects beginning design as of January 2003.

This change applies to both Metric and English Projects.

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**Volume I Chapter 25 Florida's Design Criteria for Resurfacing, Restoration and Rehabilitation, Section 25.4.25.3 Bridge Railing**

SUMMARY OF CHANGE:

Section 25.4.25.3 Bridge Railing was changed to clarify requirements and address the use of Thrie Beam Guardrail retrofits and Vertical Face retrofit Structures Standards.

IMPLEMENTATION:

This change is primarily a clarification of previously implemented requirements. New Structures Design Standards and Design Standards will be published soon. Until these are published, the State Roadway Design Office and the State Structures Design Office will provide project specific details on request.

This change applies to both Metric and English Projects.

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**Volume I Chapter 28 Shop and Erection Drawings**

SUMMARY OF CHANGE:

Chapter 28 changes include updates to clarify the roles and responsibilities of the Department, the Department's consultant, and Specialty Engineers and revisions to copy and distribution requirements. There are now allowances for the Districts to delegate shop drawing responsibilities to the EOR. These changes are consistent with recent changes to Specifications regarding shop drawings.

IMPLEMENTATION:

These changes are effective beginning with the January 2003 letting.

These changes apply to both Metric and English Projects.

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**Volume I Chapter 29 Miscellaneous Structures, Section 29.3 Design of Mast Arm Assemblies and Foundations**

SUMMARY OF CHANGE:

Section 29.3 has been changed to reflect revised Design Standards for Mast Arms recently issued.

IMPLEMENTATION:

Implementation instructions were provided in the April 1, 2002 Basis of Estimates update. The new mast arm design standards may be used on projects beginning with the January 2003 letting. These new designs are mandated for use on projects beginning with the July 2003 letting.

This change applies to both Metric and English Projects.

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**Volume I Chapter 29 Miscellaneous Structures, Section 29.3.5 Anchor Bolt Installation on Existing Foundations**

SUMMARY OF CHANGE:

Section 29.3.5 is a new section added to address requirements for anchor bolt installation on existing foundations.

IMPLEMENTATION:

This change is effective immediately.

This change applies to both Metric and English Projects.

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**Volume I Chapter 29 Miscellaneous Structures, Section 29.6 Design of Sound Barrier Walls**

SUMMARY OF CHANGE:

Section 29.6 has been changed to include maximum deflection requirements and horizontal clearance requirements.

IMPLEMENTATION:

These changes are effective immediately.

This change applies to both Metric and English Projects.

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### **Volume II Chapter 6 Typical Sections**

#### SUMMARY OF CHANGE:

Chapter 6 changes include 3 new Typical Section plan sheet exhibits: 2 Suburban Typicals and 1 Shared Use Path.

#### IMPLEMENTATION:

These changes are user enhancements to address requirements previously in effect.

These changes apply to English Projects.

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### **Volume II Chapter 26 Landscape Plans**

#### SUMMARY OF CHANGE:

Chapter 26 changes include expanded requirements for planting plan sheets, and a statement requiring that maintenance requirements for the plant establishment period must be included in the construction contract documents.

#### IMPLEMENTATION:

These changes are effective on projects beginning design as of January 2003.

These changes apply to both Metric and English Projects.

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### **Volume II Chapter 28 Stormwater Pollution Prevention Plan**

#### SUMMARY OF CHANGE:

Chapter 28 is a new chapter based on information previously provided in Volume I, Chapter 11. Three new exhibits containing examples of SWPPP narrative requirements are added.

#### IMPLEMENTATION:

These changes are user enhancements to address requirements previously in effect.

This change applies to both Metric and English Projects.

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### **Volume II Sample Plan Exhibits**

#### SUMMARY OF CHANGE:

A new set of Sample Plan exhibits is provided, which includes edits to existing exhibits and several new exhibits.

IMPLEMENTATION:

These changes are user enhancements to address requirements previously in effect.

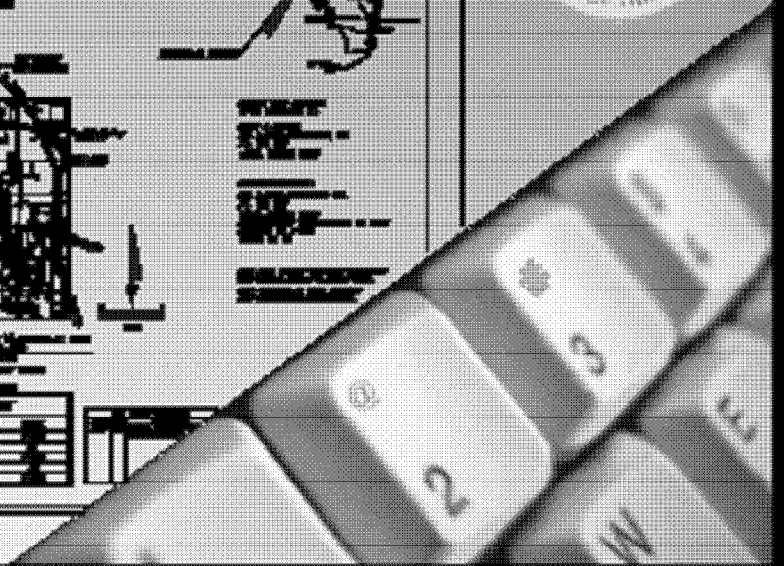
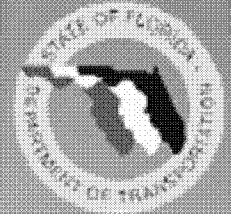
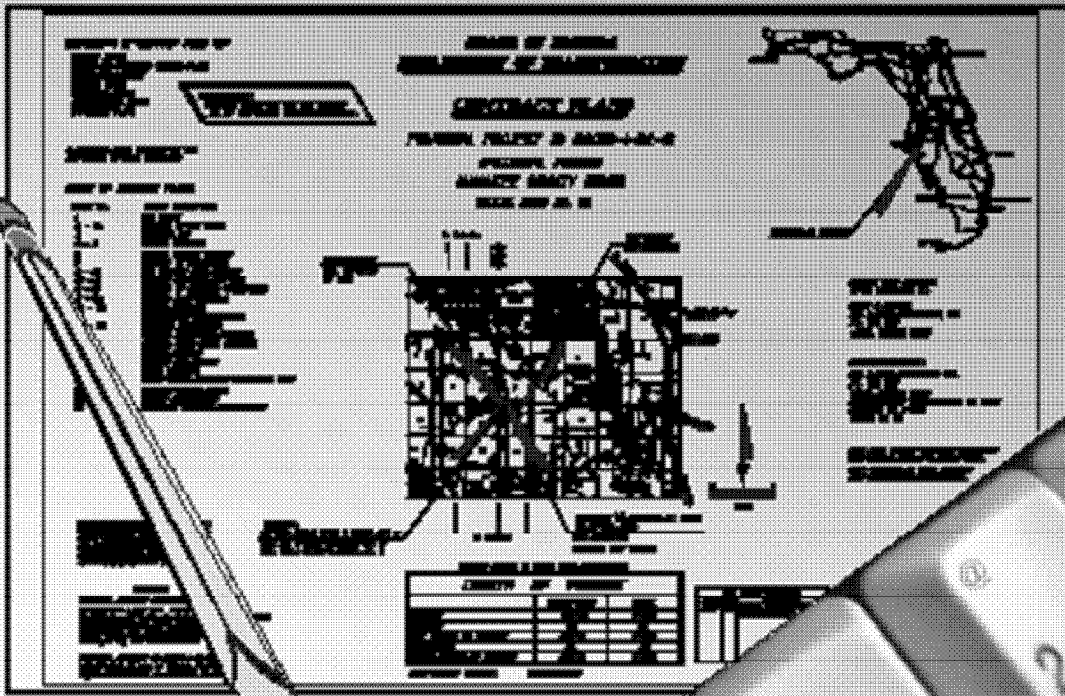
These changes apply to English Projects.

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All other changes in the July, 2003 Plans Preparation Manual updates package primarily consist of edits for clarification and/or error corrections.

If you have any questions please contact this office, 850-414-4318, Suncom 994-4318.

# PLANS PREPARATION AND ASSEMBLY



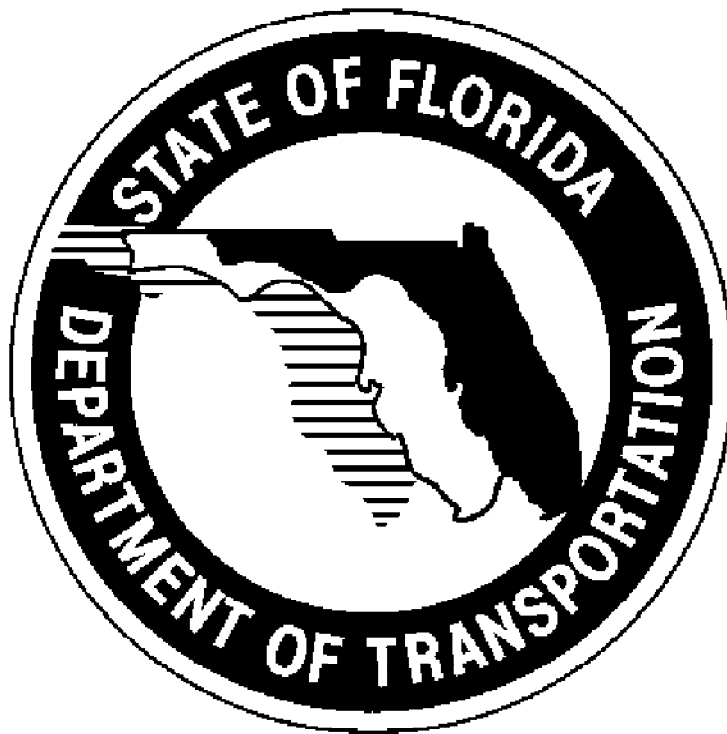
**FDOT**  
**DESIGN**

Volume  
**II**



# PLANS PREPARATION MANUAL

## VOLUME II



**ROADWAY DESIGN OFFICE**

TALLAHASSEE, FLORIDA

JANUARY 2003

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## Introduction

# Plans Preparation Manual, Volume II

### PURPOSE:

This *Plans Preparation Manual, Volume II* sets forth requirements for the preparation and assembly of contract plans for Florida Department of Transportation (FDOT) projects. The information contained herein applies to the preparation of contract plans for both roadways and structures.

### AUTHORITY:

*Section 334.044(2), Florida Statutes.*

### SCOPE:

This procedure impacts anyone preparing roadway and structures contract plans for the Department.

### GENERAL INFORMATION:

*Chapter 334* of the *Florida Statutes*, as part of the Florida Transportation Code, establishes the responsibilities of the State, counties, and municipalities for the planning and development of the transportation systems serving the people of Florida, with the objective of assuring development of an integrated, balanced statewide system. The Code's purpose is to protect the safety and general welfare of the people of the State and to preserve and improve all transportation facilities in Florida. Under *Section 334.044*, the Code sets forth the powers and duties of the Department of Transportation including to adopt rules, procedures and standards for the conduct of its business operations and the implementation of any provisions of law for which the Department is responsible.

## PROCEDURE:

The standards and applications contained in this volume of the *Plans Preparation Manual* are requirements for the design and preparation of contract plans used in the construction of FDOT projects. This volume is to be used in conjunction with *Volume I* of the *Plans Preparation Manual (PPM) (Topic No. 625-000-007)*.

The preparation of roadway and structures plans is primarily a matter of sound application of acceptable engineering criteria, standards and presentation techniques. While the requirements contained in this volume provide a basis for uniformity in plans preparation, precise formatting and presentation standards which apply to individual situations must rely on good engineering practice and judgment. The use of these requirements does not relieve the engineer from the professional responsibility for the accuracy and completeness of the contract plans set(s).

### 1. **PLANS PREPARATION MANUAL, VOLUME II - MANUAL ORGANIZATION**

#### a. Background

The Florida Department of Transportation's *Plans Preparation Manual* was previously published as a two volume set in 1989. The manual preceded Department requirements for use of the Metric System, and featured only English units. *Volume I* contained design criteria and process requirements, while *Volume II* addressed plans preparation and assembly.

This English version of *Volume II* was produced using the same basic format, and closely paralleling, *Volume II - Metric*. This was due in large part to the outdated information in the 1989 English version for such areas as Computer Aided Design Drafting (CADD), plans processing, sheet sizes, etc.

#### b. Organization

The *Plans Preparation Manual, Volume II* contains specific requirements for plans production and assembly. The manual consists of individual chapters, each addressing the requirements for a plan sheet or component, and is ordered according to the way a standard plans set would be assembled.

## 2. DISTRIBUTION

This document is distributed through **FDOT Maps and Publications Sales**.

Copies may be obtained from:

Florida Department of Transportation  
Maps and Publications Sales, Mail Station 12  
605 Suwannee Street  
Tallahassee, FL 32399-0450  
Telephone (850) 414-4050 SUNCOM 994-4050  
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For updates and manual registration information contact:

Roadway Design Office, Mail Station 32  
Telephone (850) 414-4310 SUNCOM 994-4310  
FAX Number (850) 922-9293  
<http://www11.myflorida.com/rddesign/>

## 3. REVISIONS AND UPDATES

**Plans Preparation Manual** holders are encouraged to submit comments and suggestions for changes to the manual to the Roadway Design Office. When ideas or suggestions are received they will be reviewed by appropriate Roadway and/or Structures Design staff in a timely manner and will be coordinated with other offices affected by the proposed change.

Structures design issues which are subject to modification and revision will be processed in coordination with the Structures Design Office.

Proposed revisions are distributed in draft form to the District Design Engineers (DDE). The DDE coordinates the review of the proposed revisions with other affected district offices such as Structures Design. The goal is to obtain a majority opinion before revisions are made.

The Roadway Design Office will also coordinate proposed revisions or additions with affected offices within the Central Office. Substantive revisions that result in policy change will be coordinated with the Executive Committee for concurrence.

Revisions are voted on jointly by the District Design Engineers and the State Roadway Design Engineer (for Roadway Design issues) or the State Structures Design Engineer (for Structures Design issues). Each district will have one vote and the central office will have two votes; for a total of ten votes. Requirements mandated by FHWA or State Rules will not be subject to this majority vote.

All revisions and updates will be coordinated with the Organization and Procedures Office prior to distribution to ensure conformance with and incorporation into the Department's Standard Operating System. The standard interval for issuing updates to the **PPM** is yearly, in January, when the adopted revisions and addenda will be distributed to registered holders of the manual.

Items warranting immediate change will be made with the approval of the State Roadway Design Engineer in the form of a Design Bulletin.

## **TRAINING:**

None required.

## **FORMS ACCESS:**

Documents marked as **SAMPLES** provide only a starting point allowing users to change or alter the document as needed to fit specific situations. Samples are not official forms of the Department.



# Chapter 1

## Production of Plans

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# Chapter 1

## Production of Plans

### 1.1 General

This volume shall be used in conjunction with **Volume I - English** of the **Plans Preparation Manual**. Close attention must be paid to the harmonizing of design criteria and processes outlined in **Volume I** with the related areas of plans preparation and presentation required in this volume.

The contract plans set and the specifications are the key documents for project construction and on which the contractor bases his bid. Hence, it is imperative that the contract plans and specifications set forth the work to be done in a clear and concise manner.

The Engineer of Record (EOR) must provide quality control of plans, CADD files and deliverables as outlined in the Department's **CADD Manual, Topic No. 625-050-001** (or latest version) and this volume. These resources, in conjunction with district and project scope requirements, shall form the basis for contract plans format and assembly.

Plan sheets content and appearance will follow the requirements of this volume. Refer to the FDOT CADD Production Criteria Guide for such features as line weight, style, color, and level.

The exhibits shown in this volume were developed using FDOT criteria/standards in force at the time of their creation. See **Volume I** for criteria.

## 1.2 Legibility Guidelines

Normally, all letters and figures should be readable from either the bottom or right edge of the sheet. The guide for reading is as follows:

1. Horizontal Line: Read left to right
2. Vertical Line: Read bottom to top
3. Diagonals: Read left to right

Abbreviations may be used where they save time and space. Abbreviations must be clear and easily understood. A list of standard abbreviations is given in the ***Design Standards, Index No. 001***.

Standard symbols for Roadway Design are shown in the ***Design Standards, Index No. 002***, the Symbol Cell Library, and other CADD sources.

## 1.3 Displaying Information and Data

The following rules apply for displaying information and data in the plans:

1. Dimensioning Requirements:
  - a. Typical Section Elements, including lane widths and shoulder widths - in feet, generally as a whole number.
  - b. Horizontal control points on plans, including survey centerline, baseline, intersections and alignment - in feet to 2 decimal places.
  - c. Vertical alignment control points, (PVC, PVI, PVT) and profile grade elevations - in feet to 2 decimal places.
  - d. Profile Grade - in percent to 3 decimal places.
  - e. Proposed flow lines - in feet to 1 decimal place.
  - f. Manhole tops and grate elevations - in feet to 2 decimal places.
  - g. Ditch elevations - in feet to 1 decimal place (to nearest 0.05 when controlled by percent of grade).
  - h. Box Culvert Spans and Heights - (Show feet as a whole number using the span by height format: e.g., 10 x 6 means the span is 10 feet and the height is 6 feet): In feet as a whole number for new construction; in feet to 2 decimal places for extensions of existing box culverts.
2. Display alignment bearings, degree of curve and delta angles for curve data in degrees, minutes and seconds, rounded to the nearest second.
3. Express slope ratios in vertical to horizontal (V:H) format. For example, show roadside slopes as 1:6, 1:4, etc.

### 1.3.1 Converting from Metric to English

1. When converting metric values related to surveys, right of way and other geometric alignment use the U.S. Survey Foot taken to a minimum of 8 decimal places:

$$1 \text{ foot} = \frac{12 \text{ inches/foot}}{39.37 \text{ inches/meter}} = 0.304 \ 800 \ 61 \text{ meters}$$

For other direct mathematical conversions use the SI definition: 1 foot = 0.3048 meters

2. Display direct mathematical (soft) converted values to 2 decimal places.
3. On resurfacing projects where the original construction was done in metric, hard convert typical section dimensions (lane widths, shoulder widths, etc.) where existing conditions permit.

Use direct mathematical (soft) conversion for existing pavement widths in curbed sections, existing right of way widths, and existing median widths.

## 1.4 Base Sheet Format

All plan sheet formats are contained in the FDOT Engineering/CADD Systems Software. Sheet borders include a place for the Financial Project ID. For those projects that still have a State Project Number, the number must be added to each sheet in the plans. A separate cell is available for placement above the Financial Project ID as shown below:

**Figure 1.1 Project Information Block**

	<i>STATE PROJECT NO.</i>		
	<i>STATE OF FLORIDA</i> <i>DEPARTMENT OF TRANSPORTATION</i>		
	<i>ROAD NO.</i>	<i>COUNTY</i>	<i>FINANCIAL PROJECT ID</i>

The blank space immediately left of the box for Financial Project ID information is provided for the Engineer of Record information as required in **Section 19.2, Volume I**.

Contract plans shall be plotted to scale on size B (11" X 17") multipurpose paper. These plots are to be generated from image files in accordance with the **CADD Manual, Section 3.8.3**. Care must be taken in setting up plotting equipment and software to center the sheet border and provide a minimum 3/4" margin at each end of the sheet. This is necessary to maintain plan sheet scales and to facilitate the reproduction process used for providing contract plan sets for advertisement and construction.

Sheets that feature grids (cross sections, plan-profile, etc.) can be plotted with minor grid lines turned off or on. If the minor grids are plotted, they are to be half-toned. The FDOT Engineering/CADD System Software provides Microstation system plot drivers for this task. Pen tables for half-toning, using CAD Net plotting, are also available from the FDOT Engineering/CADD Systems Office.

No aerial photography of any type is permitted in final contract plans.

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## Chapter 2

### Sequence of Plans Preparation

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## Chapter 2

### Sequence of Plans Preparation

#### 2.1 General

The set of plans depicting in detail the desired construction work is known as the "Contract Plans Set". This set consists of all sheets pertaining to roadway design (Roadway Plans), and component plans. The component plans are comprised of:

1. Signing and Pavement Marking Plans
2. Signalization Plans
3. Lighting Plans
4. Landscape Plans
5. Architectural Plans
6. Structures Plans

Utility Joint Participation Agreement Plans have a separate Financial Project ID and are placed in the back of the contract plans set.

The contract plans set should be prepared systematically, undergoing phases of review and revision to ensure technically correct and clear plans.

## 2.2 Data Collection and Presentation

### 2.2.1 Type of Project

The type and amount of data required for each project depends on the project. For new construction and reconstruction projects which have had a Project Development and Environment (PD&E) phase the data to be used for plans preparation could include the following:

1. Preliminary Engineering Report
2. Project Scope
3. Project schedule
4. Field survey and/or CADD files (including existing features such as topography, ground elevations, drainage structures, and right of way)
5. R/W requirements
6. Soils information
7. Commitments for environmental permits or mitigation
8. Typical Section Package
9. Traffic Data
10. Pedestrian and bicycle considerations
11. Structural design requirements
12. Commitments to local government(s)

For projects without the PD&E phase, such as RRR or Safety projects, some of the items listed will not be required. Regardless of type, all projects should begin with a field review to determine other requirements such as additional survey needs, utility information, etc.

Additional information can be found in **Chapters 13-16** of **Volume I**. These chapters contain a comprehensive discussion of the critical issues and major activities for the design process, from initial to final engineering.

## **2.2.2 Presentation of Existing Data**

CADD files generated from the field survey will contain existing topography and other characteristics of the project site. These also include the existing utilities and drainage structures within the limits of the project.

All data pertaining to topography, horizontal location of existing utilities and drainage structures shall be shown on the plan portion of the appropriate sheets (whether they are plan view only, or plan-profile).

## **2.2.3 Proposed Typical Section**

Typical sections show the cross sectional design elements of a roadway. In addition to the Typical Section Sheet, certain elements of the typical section are shown on various other plan sheets, such as the Plan-Profile Sheets and Cross Sections. The various chapters for individual plan sheets address the specific requirements for displaying data (including typical section elements) on those sheets.

## **2.2.4 Geometrics**

The Engineer of Record (EOR) sets the horizontal and vertical geometrics for a project and develops or supervises development of the CADD files used in the production of various plans sheets.

Horizontal geometrics include the baseline survey/centerline construction with bearings, curve data, angles or bearings at street intersections, pavement widths, taper lengths, left turn lanes, and other geometric elements. These elements are plotted on the plan portion of the plan-profile sheets, as well as other appropriate plan sheets.

Vertical geometrics show the vertical curves and grades of the roadway along the profile grade line. On municipal projects back-of-sidewalk profiles are developed to provide a vertical alignment which addresses drainage requirements and harmonizes connections to adjacent properties. The back-of-sidewalk profiles may be included in the roadway plans as directed by the district.

On all projects which include the development of a vertical alignment the existing ground line along the baseline of survey and the proposed profile grade line shall be plotted on the profile portion of appropriate sheets in the roadway or structures plans.

## 2.2.5 Cross Sections

Information required for plotting existing cross sections is obtained from survey data and CADD files. These data, along with existing utilities and proposed templates, are shown on the cross sections. Refer to **Chapter 18** of this volume for additional information.

## 2.3 Phase Submittals

### 2.3.1 General

Requirements relating to the *design process* for various submittals are given in **Chapter 16, Volume I** of this manual. Refer to that chapter for additional guidance in preparing submittals for review by the Department.

For bridge submittal requirements see **Chapter 26, Volume I**.

### 2.3.2 Phases

The remainder of this chapter outlines, in detail, the sequence for contract plans preparation and assembly, as well as the information required to be presented on the various plan sheets which are included in design phase submittals.

As stated in **Section 16.4** of **Volume I**... "The number of submittals and phase reviews shall be determined on a project-by-project basis and shall be defined in the scope. Submittals allow functional areas to review the development of the project as contained in the scope."

Standard submittal phases are as follows:

#### SUBMITTAL PHASES

- Phase I
- Phase II
- Phase III
- Phase IV

Minor projects should typically have two phase reviews.

**Figure 2.1** summarizes the plans sheet status for each submittal. No phase is complete until all review comments have been resolved and documented.

The technical accuracy required for the design is the responsibility of the Engineer of Record. Prior to submitting the plans for a formal FDOT Phase review, the design organization (in-house or consultant) shall conduct a review to ensure technically correct and complete plans. Any revisions or corrections noted during the review shall be incorporated into the plans before submittal for the formal Phase review.

When deemed necessary by the Engineer of Record, or as requested by the district, phase submittals may include an additional plan sheet titled "Notes for Reviewers." This sheet is placed as the second sheet in the submittal package. It contains information pertinent to design criteria and special project requirements, as well as other details or notes which call the reviewer's attention to issues and features unique to the project design. The sheet is to be used only in the review process and is not included in the final plans.



**Figure 2.1 Summary of Phase Submittals**

ITEM	PHASE	PHASE*	PHASE	PHASE
	I	II	III	IV
Key Sheet	P	P	C	F
Summary of Pay Items		P	C	F
Drainage Map	P	P	C	F
Interchange Drainage Map	P	P	C	F
Typical Section	P	C	C	F
Summary of Quantities			C	F
Box Culvert Data			C	F
Summary of Drainage Structures			C	F
Project Layout	P	C	C	F
Roadway Plan-Profile	P	P	C	F
Special Profile	P	P	C	F
Back-of-Sidewalk Profile	P	C	C	F
Interchange Layout	P	P	C	F
Ramp Terminal Details		P	C	F
Intersection Layout/Detail	P	P	C	F
Drainage Structures		P	C	F
Lateral Ditch Plan-Profile		P	C	F
Lateral Ditch Cross Section		P	C	F
Retention/Detention Ponds		P	C	F
Cross Section Pattern		P	C	F
Roadway Soil Survey		P	C	F
Cross Sections	P	P	C	F
Stormwater Pollution Prevention Plan	P	P	C	F
Traffic Control Plans	P	P	C	F
Utility Adjustment		P	C	F
Selective Clearing and Grubbing		P	C	F
Miscellaneous Structures Plans		P	C	F
Signing and Pavement Marking Plans		P	C	F
Signalization Plans		P	C	F
Lighting Plans		P	C	F
Landscape Plans	P	P	C	F
Utility Joint Participation Agreement Plans			C	F
Mitigation Plans		P	C	F
Computation Book			C	F
Contract Time			P	F

**Status Key:**

- P** - Preliminary
- C** - Complete but subject to change
- F** - Final

\* Projects which have a structures plans component are required to submit the latest set of structures plans with the Phase II roadway submittal.

## 2.3.2.1 Requirements for Phase I Submittal

Unless otherwise directed by the district, the following elements are required for a Phase I set of plans.

### KEY SHEET

Location Map w/ location of project on map  
All applicable Financial Project ID's  
(Federal Funds) notation, if applicable  
Exceptions & Equations  
County Name  
State Road Number  
Length of project box  
North arrow and scale  
Approval signature lines  
Railroad crossing (if applicable)  
Revision box  
Governing Standards & Specifications dates  
Project Manager's Name  
Begin & end project station and begin mile post  
Begin & end bridge stations  
Consultant's name, address, contract number,  
Certificate of Authorization number and vendor  
number (if applicable)

### DRAINAGE MAP - PLAN VIEW

North arrow and scale  
Drainage divides and ground elevations  
Drainage areas and flow direction arrows  
Equations  
High water information as required  
Preliminary horizontal alignment  
Section, township, range lines  
Street names  
Begin & end stations of project, bridge, bridge  
culverts & exceptions  
Existing structures & pipes with relevant  
information

State, Federal, county highway numbers (as  
appropriate)

### DRAINAGE MAP - PROFILE VIEW

Preliminary profile grade & existing ground line  
Horizontal & vertical scale  
Begin & end stations of project, bridges, bridge  
culverts & exceptions  
Equations

### INTERCHANGE DRAINAGE MAP

North arrow and scale  
Stationing along baselines  
Ramp baselines with nomenclature  
Begin and end bridge stationing  
Preliminary interchange configuration  
R/W lines  
Preliminary interchange drainage with drainage  
areas and flow direction arrows

### TYPICAL SECTIONS

Mainline and crossroad typicals  
R/W lines  
Special details (bifurcated sections, high fills,  
etc.)  
Traffic data

### PROJECT LAYOUT / Reference Points

Plan-profile sheet sequence (mainline and  
crossroads)  
Reference points (if layout sheet is required)

**PLAN AND PROFILE - PLAN VIEW**

North arrow and scale  
Baseline of survey, equations  
Curve data (including superelevation)  
Existing topography including utilities  
Preliminary horizontal geometrics/dimensions  
Existing & proposed R/W lines (if available)  
Centerline of construction (if different from the baseline of survey)  
Begin and end stations for the project, bridges, bridge culverts and exceptions  
Reference points (if project layout sheet not included in plans set)

**PLAN AND PROFILE - PROFILE VIEW**

Scale  
Appropriate existing utilities  
Bench mark information  
Preliminary profile grade line  
Equations  
Existing ground line with elevations at each end of sheet  
Begin and End Stations for the Project, bridges, bridge culverts and exceptions.

**SPECIAL PROFILE**

Scale  
Ramp profile worksheet including nose sections  
Existing ground line of intersections  
Preliminary grade line of intersections  
Preliminary curb return profiles, if applicable

**BACK-OF-SIDEWALK PROFILE (Worksheet)**

Scale  
Begin and end project stations  
Begin and end sidewalk stations  
Cross-street locations and elevations  
Drainage flow direction arrows  
Mainline equations  
Existing driveway locations and details

Superelevation details  
Back-of-sidewalk profile grades and vertical curve information  
Building floor elevations with offset distance left and right  
Gradeline notation: Specifically the numeric difference relative to roadway profile gradeline

**INTERCHANGE DETAIL**

North arrow and scale  
Schematic of traffic flow and volumes  
Proposed bridge limits  
R/W lines  
Preliminary configuration and geometrics  
Quadrant Identification  
Ramp Labels

**INTERSECTION LAYOUT**

North arrow and scale  
Existing topography (if applicable)  
Proposed R/W limits  
Length of turn lanes  
Taper lengths  
Existing Utilities  
Geometric dimensions (radii, offsets, widths)

**CROSS SECTIONS\***

Scale  
Existing ground line  
Existing survey baseline elevations  
Station numbers  
Baseline of survey labeled  
Existing utilities  
Proposed template with profile grade elevations along mainline and cross-streets as necessary

**TRAFFIC CONTROL PLANS**

Project specific  
Other worksheets as necessary to convey concept and scope.

**LANDSCAPE PLANS**

Conceptual landscape plan

\*May require accompanying cross section pattern sheet

## 2.3.2.2 Requirements for Phase II Submittal

Unless otherwise directed by the district, the following elements are required for a Phase II set of plans.

### KEY SHEET

Index of sheets  
Contract plans and component plans list

### SUMMARY OF PAY ITEMS

Item numbers with descriptions (on 8 1/2" x 11" paper until the project proposal has been created)

### DRAINAGE MAP - PLAN VIEW

Proposed structures with structure numbers  
Proposed storm sewer pipes  
Flow arrows along proposed ditches  
Retention/Detention ponds, pond number and area size  
Cross drains with pipe sizes and structure numbers  
Bridges/bridge culverts with begin and end stations  
Flood data (if applicable)

### DRAINAGE MAP - PROFILE VIEW

Ditch gradients including DPis  
Final roadway profile grade line  
Mainline storm sewer pipes  
Mainline flow line elevations  
Mainline structures with structure numbers and pipes  
Bridge, Bridge Culvert  
Cross drains with pipe sizes, structure numbers and flow line elevation

### INTERCHANGE DRAINAGE MAP

Final geometrics including PC and PT  
Proposed structures with structure numbers  
Proposed storm sewer pipes  
Special ditches with DPI and elevation

### TYPICAL SECTIONS

Pavement Design

### PROJECT LAYOUT

Complete

### PLAN AND PROFILE - PLAN VIEW

Curb return numbers, station ties and elevations  
Proposed drainage structures with structure no.  
Proposed R/W lines  
Existing utilities  
Proposed side drain pipe requirements (including size) for access and intersections  
Final geometrics and dimensions including radii, station pluses, offsets, widths, taper/transition lengths, curve data  
General notes (if project layout sheet not included)  
Flood data if not shown elsewhere

**PLAN AND PROFILE - PROFILE VIEW**

Final profile grades and vertical curve data  
Mainline storm sewer pipes  
Proposed special ditches  
Ditch gradients with DPI station and elevation  
Non-standard superelevation transition details  
High water elevations  
Existing utilities  
Mainline drainage structures with structure numbers  
Cross drains with structure number, size and flow line elevations

**SPECIAL PROFILE**

Final intersection profile grades  
Final curb return profiles (if applicable)  
Superelevation diagrams as required  
Final ramp profile grades including nose sections  
Preliminary access and frontage road profiles (may contain one or more types of special profiles.)

**BACK-OF-SIDEWALK PROFILE**

Complete

**INTERCHANGE LAYOUT**

Curve data including superelevation and design speed  
Coordinate data, stationing and ties  
Access and/or frontage roads with dimensions and R/W  
Fence location  
Ramp identification

**RAMP TERMINAL DETAILS**

Preliminary geometrics  
Radii, transition/taper lengths  
Ramp identification

**INTERSECTION LAYOUT**

Limits of proposed construction along side roads  
Applicable notes  
Cross drains with structure numbers and pipe sizes  
Storm sewer pipes including sizes  
Final geometrics including dimensions, radii, offsets, station pluses and taper/transition lengths

**DRAINAGE STRUCTURES**

Vertical and horizontal scale  
Roadway template with profile grade elevation  
Underground utilities  
Special sections at conflict points  
R/W lines (at critical locations)  
Storm sewer construction notes  
Flow arrows  
Applicable notes  
Structure numbers and location station along right side of sheet  
Drainage structures with numbers in numerical order, type, size, location and flowline elevations

**OUTFALL / LATERAL DITCH SYSTEM - PLAN VIEW**

North arrow and scale  
Roadway centerline  
Existing and/or survey ditch centerline  
Proposed ditch centerline with stationing  
Begin and end ditch stations  
Equations  
Ditch centerline intersection stations  
R/W lines  
Bearings of ditch and mainline centerlines  
Proposed storm sewer pipes  
Ditch PI stations with deflection angle left or right  
Proposed drainage structures with structure numbers  
Existing topography, drainage structures, utilities

**OUTFALL / LATERAL DITCH SYSTEM - PROFILE VIEW**

Bench mark information  
Scale  
Existing ground line  
Proposed ditch profile with grades  
Begin and end ditch stations  
High water elevations  
Proposed storm sewer pipes with size  
Existing Utilities  
Overland flow or overtopping elevations  
Proposed drainage structures with structure numbers  
Typical section can be placed in either plan or profile

**LATERAL DITCH CROSS SECTIONS**

Horizontal and vertical scale  
Existing ground line  
Station numbers  
Survey centerline and elevation  
R/W  
Begin and end ditch stations  
Begin and end excavation stations  
Earthwork quantities  
Existing utilities  
Total earthwork quantity in cubic yards (CY)  
Proposed template with ditch bottom elevation

**CROSS SECTION PATTERN**

North arrow and scale  
Interchange layout  
Access and frontage roads  
Mainline and ramp stationing  
Begin and end bridge stations  
Cross section location lines  
Ramp baselines with nomenclature and stationing

**ROADWAY SOIL SURVEY**

Soil data  
Project specific

**CROSS SECTIONS**

R/W  
Special ditch bottom elevations  
Equivalent stations for ramps and mainline  
Mainline equation stations  
Soil borings  
Water table  
Extent of unsuitable material  
Proposed template with profile grade elevation  
Earthwork Columns  
Begin and end stationing for project, construction and earthwork, bridge and bridge culvert  
Existing utilities affected by the template and where unsuitable materials are present

**STORMWATER POLLUTION PREVENTION PLANS (SWPPP)**

Narrative Description (with supplemental topographic maps, when used)

**TRAFFIC CONTROL PLANS**

Preliminary traffic control plan  
Detour plan  
Phasing plan  
R/W - existing and additional if required  
Existing Utilities

**UTILITY ADJUSTMENT**

All existing utilities highlighted

**SELECTIVE CLEARING AND GRUBBING**

Limits of construction by station and type of selective clearing and grubbing

**MISCELLANEOUS STRUCTURES PLANS**

Retaining walls (Cast in place, proprietary, temporary) if required

**SIGNING AND PAVEMENT MARKING PLANS - KEY SHEET**

Financial Project ID  
(Federal Funds) notation, if applicable  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Governing Standards & Specifications Date  
Engineer of Record  
Consultants name & address, if applicable

**SIGNING AND PAVEMENT MARKING PLANS - TABULATION OF QUANTITIES**

Project Specific

**SIGNING AND PAVEMENT MARKING PLANS - PLAN SHEETS**

North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions  
Station equations  
Conflicting utilities, lighting or drainage  
Pavement markings  
Sign locations  
Applicable pay items

**SIGNING AND PAVEMENT MARKING PLANS - SIGN DETAIL SHEETS**

GUIDE SIGN WORK SHEETS  
Project Specific

**SIGNALIZATION PLANS - KEY SHEET**

Financial Project ID  
(Federal Funds) notation, if applicable  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Governing Standards & Specifications Date  
Engineer of Record  
Consultants name & address, if applicable

**SIGNALIZATION PLANS - TABULATION OF QUANTITIES**

Project Specific

**SIGNALIZATION PLANS - PLAN SHEET**

North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions  
Station Equations  
Conflicting utilities, lighting or drainage  
Signal Pole Location  
Type and location of loops  
Type and location of signal heads  
Pedestrian Signal  
Location of Stop Bars  
Location of Pedestrian Crosswalks  
Sheet Title  
Applicable pay items

**SIGNALIZATION PLANS - POLE SCHEDULE**

Pole location, number, type  
Pole dimensions  
Pay item number and quantity  
Joint use pole details, if applicable  
Foundation design

**SIGNALIZATION PLANS - INTERCONNECT/ COMMUNICATION CABLE PLAN**

Placement of interconnect/communication cable  
Conflicting utilities, lighting or drainage  
Other project specific details

**LIGHTING PLANS - KEY SHEET**

Financial Project ID  
(Federal Funds) notation, if applicable  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Governing Standards & Specifications Date  
Engineer of Record  
Consultants name & address, if applicable

**LIGHTING PLANS - TABULATION OF QUANTITIES**

Project Specific

**LIGHTING PLANS - POLE DATA AND LEGEND SHEET**

Each pole by number with location, arm length, mounting height and luminaire wattage noted.  
Design value for light intensities and uniformity ratios shown.  
Legend and sheet title

**LIGHTING PLANS - PLAN SHEETS**

North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Equations  
Station Equations  
Conflicting utilities, drainage, signal poles, etc.  
Sheet title  
Applicable pay items  
Pole symbols shown at correct station location and approximate offset

**LIGHTING PLANS - HIGH MAST**

Foundation detail sheets (project specific)  
Boring data sheets (project specific)  
Conflicting utilities, drainage, lighting

**LANDSCAPE PLANS - KEY SHEET**

Financial Project ID  
(Federal Funds) notation, if applicable  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Governing Standards & Specifications Date  
Engineer of Record  
Consultants name & address, if applicable

**LANDSCAPE PLANS - TABULATION OF QUANTITIES**

Project Specific

**LANDSCAPE PLANS - STANDARD DETAIL SHEET**

Applicable standard details

**LANDSCAPE PLANS - PLAN SHEETS**

Roadway and sidewalk plan  
Component plans features (signing, signalization, lighting, etc.)  
Plant placement by symbol  
Legend for plant symbols  
Existing utilities  
Limits of clear sight  
Canopy limits/location of existing vegetation  
Billboard view zones

**LANDSCAPE PLANS - IRRIGATION PLAN (if applicable)**

Type of system  
Location and size of pipes  
Type and location of heads

**LANDSCAPE PLANS - SPECIFICATIONS PLAN SHEET**

Project specific

**MITIGATION PLANS**

Project Specific



### **2.3.2.3 Phase III Plans Submittal**

Ordinarily, the only other remaining work to be done will be to comply with comments received as a result of the review. The Work Zone Traffic Control items paid for on a 'per day' basis shall be estimated and included in the Phase III submittal.

The FDOT construction department will make a biddability review and will establish construction duration as a part of the Phase III review after receiving the computation book. This information should be included in the Phase III review comments transmitted back to the EOR. The estimated pay items for Work Zone Traffic Control shall be revised as necessary based on the established construction duration.

All plan sheets and computation books are complete and the Financial Management (FM) system has been updated. Final drainage tabulations shall also be furnished for review.

Utility Joint Participation Agreement (JPA) Plans, consisting of a key sheet, and mainline plan-profile showing proposed utility horizontal and vertical locations, are also to be included in the Phase III submittal.

A "marked up" set of the plans and review comments shall be returned to the EOR for incorporation of the comments into the plans. When the review comments have been resolved and documented by the designer, the plans are ready to proceed to completion.

### **2.3.2.4 Phase IV Plans Submittal**

After all corrections noted in the Phase III submittal are complete and the cost estimate is complete, the plans are considered final.

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## Chapter 3

### Key Sheet

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## Chapter 3

### Key Sheet

#### 3.1 General

This is the first sheet in the contract plans. It describes the project, the contents of the plans, and identifies those responsible for preparing the plans. The key sheet cell can be found in the FDOT Engineering/CADD Systems Software. Levels and fonts for additional data can be found in the FDOT ***CADD Production Criteria Handbook***.

For key sheet example, see ***Exhibit KS-1***.

## 3.2 Project Identification

Background: On May 21, 1997, the State Highway Engineer, instructed District Secretaries on the implementation of the Financial Management System. This system replaces the Work Program Administration, the Job Cost Reporting and the Federal Project Accounting systems. Once implemented, all contract documents/sheets that historically had shown project or WPI numbers were to have the new project number on every sheet. Beginning March 16, 1998, a Financial Project ID was assigned to each old project, and from then on new projects have been assigned the Financial Project ID only. In his memorandum to the District Design Engineers dated April 22, 1998, the State Roadway Design Engineer requested that, starting with the plans packages mailed to Tallahassee for the January 1999 letting, the new number be printed on all sheets. On June 30, 1998, the Secretary instructed the Department to use the Financial Project ID in all project documents.

### 3.2.1 Financial Project ID, Federal Funds, County Name and State Road Number

The Financial Project ID is the main number identifying each individual project within the Department. On the key sheet, this number is located immediately under the heading "CONTRACT PLANS", as shown in the exhibits. Where Federal funds are involved, the words "(Federal Funds)" are to be placed under the Financial Project ID. The county name and the state road number will be included under the Financial Project ID. Also, the "county and roadway section number" associated with Straight Line Diagrams will be placed within parentheses to the right of the county name, as shown on **Exhibit KS-1**.

| Strung projects, those that are independently prepared but are to be let in the same construction contract, shall have the additional Financial Project IDs noted on the right side of the key sheet.

On projects which have one Contract plans set, but multiple Financial Project ID's, all of the Financial Project ID's are located immediately under the heading "CONTRACT PLANS" on the key sheet. However, on all other plan sheets, only the lead Financial Project ID is to be shown.

## 3.2.2 Fiscal Year and Sheet Number

The construction fiscal year to be entered in the fiscal year box on the bottom right corner is the second year in the fiscal year, i.e., enter 01 for fiscal year beginning July 2000 and ending June 2001. The key sheet of each component of the plans set will be numbered as the first sheet of that component.

## 3.2.3 Length of Project Box

Lengths of roadway, bridges, bridge culverts, exceptions, and net and gross lengths of the project shall be shown in a box in the center of the sheet below the location map. The length of the project is computed as follows:

1. Roadway = End Project - Begin Project - Exceptions - Bridges (not including bridge culverts) adjusted for Equations
2. Net = Roadway + Bridges
3. Gross = End Project - Begin Project (adjusted for Equations)

The roadway and bridge length shall be computed in feet and converted to miles, to three decimal places, without rounding off. The roadway and/or bridge mileage shall then be rounded so that their total equals the net length. The survey line should be used to compute the length of the project unless: the construction line is substantially different in length (100 feet or more), or the survey line is outside the right of way, or the survey line bridge length is different from the construction line bridge length. The use of the survey line will generally result in fewer equations on the key map.

If divided highways have significantly different lengths for the left and right roadways, the project length shall be based on the longer roadway. A note stating which roadway was used shall be placed adjacent to the project length box.

The "Begin Project" and "End Project" stations are the basis for computing the length. Begin and end construction stations are not to be used in computing the length of the project.

A length of project box is not required on component key sheets.

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### 3.3 Project Location Map

This map is placed in the center of the sheet and consists of a reproduced portion of one or more maps showing the project location. The map may be a county map or other appropriate map. County maps in raster format (\*.cal) are available from the Survey and Mapping Office on CD or can be individually downloaded by county through MicroStation or AutoCAD as a raster reference attachment. Information on the county maps is available at:

<http://www11.myflorida.com/surveyingandmapping/geographic.htm>

A utility to download the raster county map and clip out the project location area is provided in the **FDOT CADD Software version fdot2000.02.04**. Requests for county maps on CD should be in writing and include the county requested, the purpose for the use, the anticipated duration of the use, the Department of Transportation project manager's name and a CD upon which to copy the data. Requests should be directed to:

Florida Department of Transportation  
Survey & Mapping Office  
605 Suwannee Street, MS 5L  
Tallahassee, Florida 32399-0450  
(850) 414-7924

The intent of the location map is to provide enough information so that the project location is easily understood. This may make it necessary to show the Section, Township, Range and County lines together with Section, Township and Range numbers to make the location clear. City and urban limits should be shown where applicable. The begin milepost, correct to three decimal places, shall be shown under the begin project station.

Streets shall be designated by name and State Road number or U.S. Highway number, if appropriate. The name of the next incorporated city to which these roads lead shall be placed at the edge of the map. Roads and topography shall be indicated by standard symbols as shown in the **Design Standards, Index 002** and FDOT Engineering/CADD Systems Software.

Project location shall be shown by a heavy solid line of substantial width. It is sometimes advantageous to show station numbers at regular intervals, particularly with city street projects. The begin and end of projects, any station equations, begin and end of proposed bridges along the state project, bridge culverts and exceptions shall be stationed and flagged.

When several projects are covered by the same set of plans, the beginning and end of each project shall be indicated clearly by the Financial Project ID and stationing. The beginning of each project shall also be indicated by a milepost correct to three decimal places.

The scale of the location map should be chosen so that it will not interfere with other features on the key sheet. A common error is to position the location map on the sheet and then discover that insufficient space remains for the index of sheets, project title or the length of project box.

A location map is not required on component key sheets.

## **3.4 North Arrow and Scale**

The north arrow shall be placed on either side of the location map, preferably to the right. The map scale shall be shown directly below the north arrow. The scale shall be indicated by using a bar scale. The scale distance shall be shown between the ticks. The map shall be oriented so that the arrow will point toward the top of the sheet. If the arrow cannot be oriented to the top, then it must be oriented to point to the right.

### **3.5 Component Plans in Contract Plans Set**

A list of component plans included in the contract plans set shall be shown in the upper left corner. The order of listing shall be:

1. Roadway
2. Signing and Pavement Marking
3. Signalization
4. Lighting
5. Landscape
6. Architectural
7. Structures

If sheets covering items such as signing and pavement markings, signalization, lighting and landscape are included and numbered consecutively within the roadway plans, these are not to be shown as components of the contract plans set.

## 3.6 Index of Sheets

A complete index of roadway plan sheets shall be placed on the left side of the key sheet under the heading. When projects contain component plans, each plans set shall have an index of sheets on its respective key sheet.

Roadway plans sheets shall be assembled as follows:

1. Key Sheet
2. Summary of Pay Items
3. Drainage Map (optional)
4. Interchange Drainage Map
5. Typical Section
6. Summary of Quantities
7. Box Culvert Data Sheet (if **PSTDN55** design)
8. Summary of Drainage Structures
9. Project Layout (optional)
10. Roadway Plan-Profiles
11. Special Profiles
12. Back-of-Sidewalk Profiles (optional)
13. Interchange Layout
14. Ramp Terminal Details
15. Intersection Layout/Detail
16. Drainage Structures
17. Box Culvert Details (if **LRFD** design)
18. Outfall/Lateral Ditch Plan-Profiles
19. Outfall/Lateral Ditch Cross Sections
20. Special Details
21. Cross Section Pattern
22. Roadway Soil Survey
23. Cross Sections

24. Stormwater Pollution Prevention Plans (SWPPP)
25. Traffic Control Plans
26. Utility Adjustments
27. Selective Clearing and Grubbing
28. Signing and Pavement Marking Plans (when included as part of roadway plans)
29. Signalization Plans (when included as part of roadway plans)
30. Lighting Plans (when included as part of roadway plans)
31. Landscape Plans (when included as part of roadway plans)
32. Miscellaneous Structures Plans
33. ***Interim Standards*** (as required)

## 3.7 Professional Responsibility

The name of the Engineer of Record, Architect or Landscape Architect of Record and registration number shall be included on the right side of the sheet. For specific instructions on sealing plans see ***Volume I, Chapter 19***.

For plans prepared by a consulting firm, the name, address, consultant contract number, certificate of authorization number and vendor number of the firm shall be shown on the right side of the sheet.

The Department Project Manager's name shall be shown below the length of project box for consultant and Department prepared plans. For key sheets where length of project is not required, the Department Project Manager's name shall be shown in the same relative location on the sheet.

If shop drawings are anticipated for a project, the name(s) and address(es) of the Delegated Engineer(s) for shop drawing review(s) shall be shown on the right side of the sheet.

### **3.8 Governing Specifications and Standards**

The date of the governing ***Standard Specifications for Road and Bridge Construction*** and of the ***Design Standards*** shall be inserted in a note at the lower left corner of the key sheet.

### **3.9 State Map**

A small-scale state map shall be shown at the upper right portion of the key sheet. The location of the project shall be indicated thereon.



### **3.10 Railroad Crossing**

The location of any railroad crossing within the limits of construction will be identified on the key sheet as follows: DOT/AAR crossing number, railroad milepost, name of railroad, and the highway project station number.

### **3.11 Revisions**

The lead key sheet (usually roadway) shall show a complete record of all plans revisions. The component (such as roadway, structures, signing and pavement marking), the sheet numbers involved, and the date when the sheet was revised shall be listed.

A newly sealed lead key sheet is required when any sheet is revised.

Revisions shall be shown on the lower left corner of the key sheet. Revisions to strung project sheets shall be listed here, under the respective Financial Project ID.

A key sheet revision box shall be shown on the right side of each component key sheet that shall contain a record of all revisions particular to that sheet. It shall list the revision date, the initials of the person responsible for the revision and a brief description of the revision.

If the changes to a key sheet only involve notes in the Revisions area, no entry is made in the key sheet revisions block at the lower right corner. The Key Sheet Revisions Block is only used to record changes other than revisions notes.

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### COMPONENTS OF CONTRACT PLANS SET

- ROADWAY PLANS
- SIGNING AND PAVEMENT MARKING PLANS
- SIGNALIZATION PLANS
- LIGHTING PLANS
- LANDSCAPE PLANS
- ARCHITECTURAL PLANS
- STRUCTURE PLANS

EXAMPLE ONLY: CONTRACT PLANS SET  
MAY NOT CONTAIN ALL OF THE  
LISTED COMPONENTS/SHEETS.

A DETAILED INDEX APPEARS ON THE  
KEY SHEET OF EACH COMPONENT

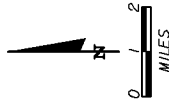
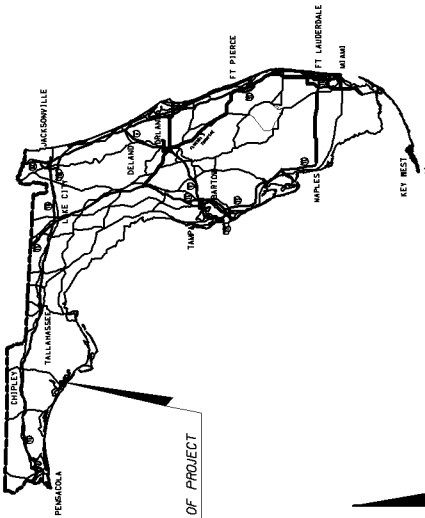
### INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2 - 2A	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4 - 5	TYPICAL SECTIONS
6	SUMMARY OF QUANTITIES
8 - 14	BOX CULVERT DATA SHEETS
15 - 16	SUMMARY OF DRAINAGE STRUCTURES
17	PROJECT LAYOUT
18 - 22	ROADWAY PLAN-PROFILES
23	SPECIAL PROFILES
25	INTERSECTION LAYOUT/DETAIL
26 - 32	DRAINAGE STRUCTURES
33	LATERAL DITCH PLAN-PROFILES
34	LATERAL DITCH CROSS SECTIONS
35	SPECIAL DETAILS
36	ROADWAY SOIL SURVEY
37 - 47	CROSS SECTIONS
48 - 52	TRAFFIC CONTROL PLANS
53 - 57	UTILITY ADJUSTMENTS
58 - 62	SELECTIVE CLEARING AND GRUBBING

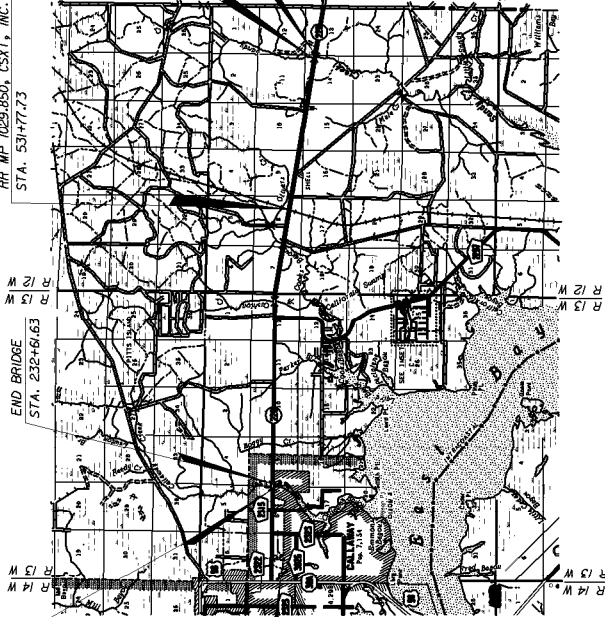
## STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

### CONTRACT PLANS

FINANCIAL PROJECT ID 000001-1-52-01  
(FEDERAL FUNDS)  
BAY COUNTY (46001)  
STATE ROAD NO. 220



DOT/AMR CROSSINGS NO. 628323-W  
RR MP 1029-8801 CSXT, INC.  
STA. 53+77.73



ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:

NAME(S) AND ADDRESS(ES) OF  
ENGINEER(S) RESPONSIBLE FOR REVIEW  
OF SHOP DRAWINGS, WHEN REQUIRED.

PLANS PREPARED BY:

NAME, ADDRESS, CONTRACT NUMBER, VENDOR NUMBER  
AND CERTIFICATE OF AUTHORIZATION NUMBER OF  
THE CONSULTANT FIRM WHEN THE PLANS ARE  
PREPARED BY A CONSULTANT.

NOTE: THIS PROJECT TO BE LET TO CONTRACT  
WITH FINANCIAL PROJECT ID 000001-52-02.

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

EXHIBIT KS-1  
Date: 1/1/03

DATE	BY	DESCRIPTION
3-96	JBM	Revised sequence of contract plans.

LENGTH OF PROJECT		MILES
ROADWAY	LIN. FT.	12.060
BRIDGES		0.052
NET LENGTH OF PROJ.		12.122
EXCEPTIONS		
GROSS LENGTH OF PROJ.		12.122

ROADWAY PLANS  
ENGINEER OF RECORD:

P.E. NO. :

FISCAL YEAR	SHEET NO.
-------------	-----------

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

#### REVISIONS

FINANCIAL PROJECT ID 000001-52-01  
Roadway Sheets 1, 6, 7 & 13 (Revised 3-30-96)  
Signaling & Pavement Marking Sheets 5-2 & 5-3 (Revised 3-30-96)  
Signalization Sheets T-1 & T-2 (Revised 11-30-96)  
Roadway Sheets 14 & 33 (Revised 3-31-97)  
Summary of Pay Items (Revised 3-31-97)

FINANCIAL PROJECT ID 000001-52-04

Roadway Sheets 1, 8 & 10 (Revised 3-31-97)  
Structure Sheets B-1 & C-1 thru C-10 (Revised 11-30-97)

FDOT PROJECT MANAGER :

## Chapter 4

### Summary of Pay Items

4.1	General.....	4-1
4.2	Summary of Pay Items Sheet.....	4-2

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## Chapter 4

### Summary of Pay Items

#### 4.1 General

The summary of pay items sheet is generated from information provided by the Engineer of Record (EOR) and input into TRNS\*PORT. In TRNS\*PORT, there are differences in producing the Project Summary of Pay Items and the Proposal Summary of Pay Items. Use the appropriate report, based on the project's phase:

For early phase reviews (up to Phase III, or until the proposal has been created), the Project Summary of Pay Items Report must be used (No proposal, no proposal report). If multiple projects are anticipated to be let together, the designer should be sure to print each project's Summary of Pay Items for review. These reports may be printed on standard 8.5" by 11" paper. It is not necessary to put in CADD sheet format for phase review submittals.

For later phase reviews (Phase III or after the proposal has been created), the Proposal Summary of Pay Items Report should be used. After the designer submits the report from the designer interface menu, the output will be sent to the CADD ftp site in 5-10 minutes.

The output shall be transferred to a graphics design file and placed on a standard formatted plan sheet available in the FDOT Engineering/CADD Systems Software. The TRNS\*PORT file must be established and kept current with the quantities listed in the plans. It is critical that any revisions to the TRNS\*PORT file be transferred to update the graphics design file. The TRNS\*PORT file is used to prepare the bid documents and must match the plans.

## 4.2 Summary of Pay Items Sheet

The summary of pay items sheet(s) show all items and quantities for all components (PES Categories) for the project, or projects, in a contract. CADD produced summary of pay items sheets are placed directly behind the lead key sheet and must include:

1. All the summaries for all component plans listed for the project.

These should be placed in the same order as the contract plans listed on the key sheet. They should be numbered consecutively. Alpha suffixes may be used for numbering to allow for the insertion of additional sheets without renumbering the Index of Sheets.

Note: Only the lead key sheet for the entire contract should contain reference to summary of pay items.

2. All projects let under this contract.

Projects that are let under the same contract should be combined in the same Proposal ID.

Summary of pay items notes may be included on this sheet if they do not fit on the summary of quantities sheet. For small projects, the summary or pay item sheet(s) may be combined with the summary of quantities sheet.

A summary of pay items sheet without quantities is required at the Phase II submittal, and a complete summary of pay items sheet with quantities is required at the Phase III and Phase IV submittals. Refer to **Chapter 2** for requirements of phase submittals.

For a list of standard pay item notes see **Chapter 7, Exhibit 7-1** of this volume.

## Chapter 5

# Drainage Map and Bridge Hydraulic Recommendation Sheet

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5.1.2	Profile Portion .....	5-3
5.1.3	Flood Data Summary Box.....	5-4
5.1.4	Interchange Drainage Map .....	5-4
5.2	Bridge Hydraulic Recommendation Sheet .....	5-5
5.2.1	Required Information on BHRS.....	5-5
5.2.1.1	Plan View .....	5-6
5.2.1.2	Profile View .....	5-6
5.2.1.3	Location Map, Drainage Map, and Existing Structures.....	5-7
5.2.1.4	Hydraulic Design Data, and Hydraulic Recommendations .....	5-7
Exhibits		
Exhibit 5-1	Drainage Map Notes .....	5-9



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## Chapter 5

# Drainage Map and Bridge Hydraulic Recommendation Sheet

### 5.1 Drainage Map

When a drainage map is required (see FDOT *Drainage Manual, Topic No. 625-040-002*) it shall be prepared and included in the project file. Inclusion of a drainage map in the contract plans set is optional at the district's discretion.

Preformatted drainage map sheet cells are located in the FDOT Engineering/CADD Systems Software. The upper (grid) portion of each sheet is used for plotting the project profile, which is optional at the discretion of the district. The standard grid pattern for the profile portion of the sheet is five lines per inch, both in the horizontal and vertical. This will accommodate most scales. An optional grid with four lines per inch is available. This sheet may be used if approved by the district.

Topography of the project area shall be located in the remaining portion of the sheet. Aerial photography may be used to develop a drainage map but must not be used in the contract plans set.

The horizontal and vertical scales of the profile should be such that the stations and elevations can be read directly from the grid without the use of a scale. The horizontal scale must be the same for both the plan and profile views. Recommended scales for facility types are as follows:

<u>Type of Facility</u>	<u>Horizontal Scale</u>	<u>Vertical Scale</u>
Interstate Urban	1" = 500'	1" = 5'/1"=10'
Interstate & Other Rural	1"=1000'/2000'	1" = 10'/1"=20'
Municipal & Other	1"=200'/500'	1"= 5'/1" =10'

## 5.1.1 Plan Portion

The plan portion shall comply with the following requirements:

1. Stationing shall be shown every 500 feet for scales of 1" = 100'/200', every 1000 feet for a scale of 1" = 500' and every 5000 feet for scales of 1" = 1000'/2000'. For additional information see **Figure 10.1** in **Chapter 10** of this volume.

Station equations and exceptions shall be shown. Begin and end stations of project, construction, bridge and bridge culverts shall also be shown.

2. Existing physical land features affecting drainage, such as lakes, streams and swamps, shall be clearly labeled by name and direction of flow. Past high water elevations and date of occurrence, if available, and present water elevations along with the dates the readings were taken shall be shown.

Drainage divides and other information (such as pop-off elevations and spot elevations) shall be shown, where applicable, to indicate the overland flow of water. Drainage areas on maps shall be shown in acres.

Inserts shall be used to show areas that are of such magnitude that the boundaries cannot be plotted at the selected scale.

3. Existing road numbers and street names, drainage structures with type, size, flow line elevations, flow arrows and any other pertinent data shall be shown. Refer to the FDOT Engineering/CADD Systems Software and the **Design Standards, Index No. 002** for correct symbols for existing drainage facilities. In a situation of limited space, all data relating to existing drainage structures and pipes may be compiled in a table format and shown in either the plan or profile portion of the sheet. Should the space limitations be such that a table will not fit within the plan or profile view, a supplemental drainage data sheet is acceptable.
4. Proposed drainage structures, pipes, outfall structures and retention/detention pond locations, shall be shown. Structures and pipes shall be noted by structure number, and ponds by pond number. Arrows shall be shown to indicate direction of flow along proposed ditches.
5. Section, Township, Range and county lines shall be indicated for rural and urban projects when occurring within the project limits.
6. A north arrow and graphic scale shall be shown, preferably in the upper right corner of the plan view.
7. If the drainage map is to be included in the contract plans set, include Note No. 1 (see **Exhibit 5-1**).

## 5.1.2 Profile Portion

The profile portion, if shown, shall comply with the following requirements:

1. The recommended vertical scale for rural and urban projects is 1" = 5' in level terrain and 1" = 10' in rolling terrain. A scale of 1" = 20' may sometimes be used for rural projects through rough terrain to avoid numerous profile breaks. The profile can be broken for rolling terrain in urban areas. However, a scale of 1" = 20' should never be used at locations of proposed storm sewer systems.
2. Elevation datum shall be shown at each side of the sheet. In cases where the profile block is insufficient and excess space is available on the plan portion of the sheet, the profile block may be expanded.
3. The profile of the existing natural ground shall be plotted and labeled and the existing elevation noted at each end.
4. The proposed profile grade line shall be plotted. Percent of grade need not be shown. The PC, PI, and PT of vertical curves shall be plotted using their respective standard symbols; however, no data (station, elevation, length of curve) needs be noted. Begin and end project, bridge and bridge culvert stations, station equations and exceptions shall be flagged. Profile grade line elevations shall be shown at begin and end project stations and at the beginning and end of each additional drainage sheet.
5. Proposed cross drains shall be plotted and identified by structure number. Do not show skew or pipe slope in plotting, but plot to elevation and location at point of crossing the construction centerline.
6. For projects with storm sewer systems, only the mainline structure and pipes shall be shown. Laterals need not be shown. Each structure shall be flagged with its appropriate structure number, and flow line elevations noted for the incoming and outgoing pipes.
7. All high water elevations affecting base clearance or roadway grades shall be shown.

### 5.1.3 Flood Data Summary Box

The flood data shall be shown on the drainage map, either in the plan or in the profile portion. If the drainage map is not included in the plans the flood data shall be shown on the summary of quantities sheet or on the first plan-profile sheet.

Design, base and overtopping or greatest flood discharge and stage values are required for all cross structures (culverts and bridges), regardless of size, under the following conditions:

1. All new cross structures
2. All cross structures that are being modified (extended, new end section, replaced, etc.)
3. All cross structures that have a history of flooding or other hydraulic problems, even if the structure is not to be modified; or
4. Cross structures that are not being modified but are being impacted by the modification of another cross structure within the same drainage basin.

A "disclaimer" and definitions are required to avoid misuse and possible responsibility for changes in the flood information values over which the FDOT has no control (see **Exhibit 5-1**). A preformatted summary box with disclaimer and definitions is located in the FDOT Engineering/CADD Systems Software.

The project drainage engineer shall provide the information required to complete the box.

### 5.1.4 Interchange Drainage Map

If projects include interchanges or rest areas, a drainage map on a 1" = 200' or 1" = 500' scale shall be included. The purpose of this detail is to show the small areas needed to calculate pipe sizes for the tabulation of drainage structures within these special areas. Should major drains pass through one of these areas, a cross reference note should indicate the proper sheet which reflects the drainage area for that through-structure.

## 5.2 Bridge Hydraulic Recommendation Sheet

When a Bridge Hydraulic Recommendation Sheet (BHRS) is required (see FDOT *Drainage Manual, Topic No. 625-040-002*), it shall be prepared on a preformatted sheet. The cell for this sheet is located in the FDOT Engineering/CADD Systems Software.

The inclusion of this sheet in the plans set is optional at the discretion of the district. When included in the plans, the BHRS shall be placed in the structures plans. If the BHRS is not included in the plans, sufficient details to show the location and extent of bottom and slope protection shall be contained in the plans.

Parallel (dual) bridges may be shown on one sheet, although a second sheet should be used, if necessary, to clearly convey the fit of the bridge to the stream bank. When two sheets are used, only the plan and profile information needs to be furnished on the second sheet.

A completed Bridge Hydraulic Recommendation Sheet is shown as *Exhibit BHD-1*.

### 5.2.1 Required Information on BHRS

The preformatted BHRS is divided into the four areas listed below. The required information for each area is described in the following sections.

1. Plan View
2. Profile View
3. Location Map, Drainage Area and Existing Structures
4. Hydraulic Design Data, and Hydraulic Recommendations

### **5.2.1.1 Plan View**

1. Stationing, scale, and north arrow.
2. Existing topography (i.e., including existing bridge) and contours (i.e., show elevations). Sufficient detail shall be shown in the vicinity of the proposed bridge to depict how the structure will tie to natural ground.
3. Label the name of the water body (i.e., St. Johns River).
4. Arrows showing the direction of the flow.
5. Proposed bridge begin and end station.
6. Limits of riprap.

### **5.2.1.2 Profile View**

1. Stationing and scale.
2. One cross section which most represents the section at the proposed crossing.
3. Road profile for the proposed structure (i.e., stationing and elevation).
4. Proposed bridge with low member, and pier locations (when practical).
5. Abutment locations (i.e., toe of slope).
6. Flood elevations. For non-tidal crossings, the Normal High Water (NHW) and Design Flood elevations shall be shown. For tidal crossings, the Mean Higher High Water (MHHW) and Design Flood Stage elevations shall be shown.
7. Present water elevation with month, day and year of survey.

### 5.2.1.3 Location Map, Drainage Map, and Existing Structures

1. A north arrow.
2. The range and township.
3. An arrow showing the project location.
4. A location map similar to that used on the key sheet for most projects. The map shall be of a scale so that the entire drainage area for the proposed structure is shown. (For projects with very large drainage areas, the map shall be of a scale that clearly shows the project location rather than a scale that shows the entire drainage area).

The drainage area boundaries shall be shown using a very heavy, broken line, with the area (in acres or square miles) shown within the boundary. The proposed structure location should be shown. Existing structures over the same water body and those structures that affect the hydraulics of the proposed structure should be located and numbered and corresponding existing structure information listed in the appropriate columns.

### 5.2.1.4 Hydraulic Design Data, and Hydraulic Recommendations

The *Cross Drain Handbook* provides guidance for filling out this section.



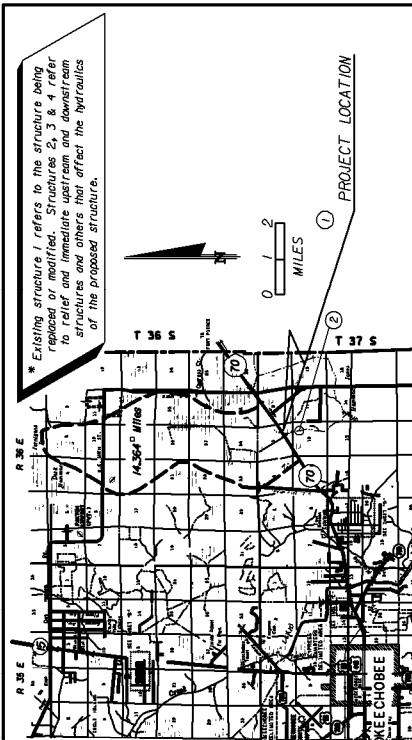
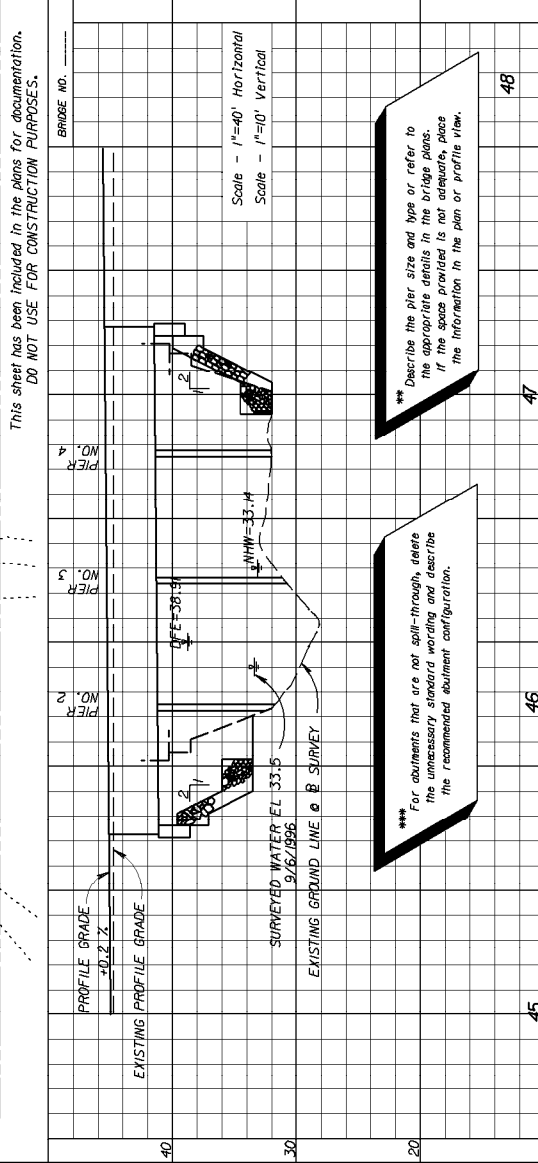
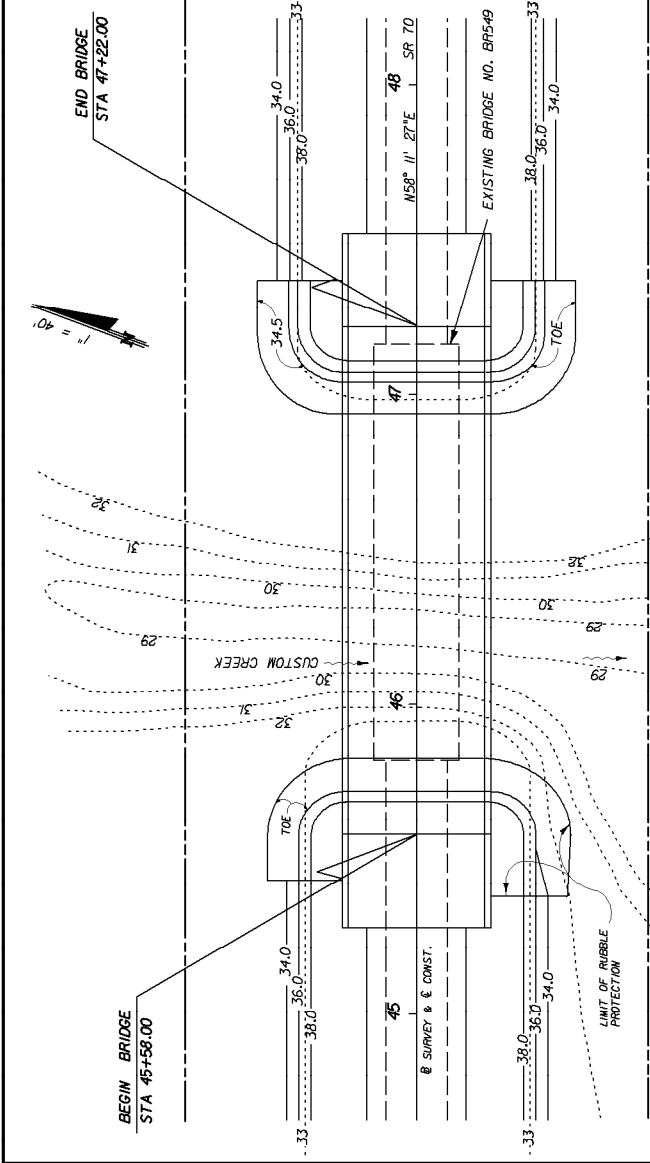
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### **Exhibit 5-1 Drainage Map Notes**

Below are standard notes which shall be placed on the drainage map as applicable.

1. (To be placed on the drainage map when it is to be included in the plans):  
*DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. This sheet is in the plans for documentation and to assist construction personnel with drainage concerns.*
2. (To be placed under Flood Data Box):  
Note: The hydraulic data is shown for informational purposes only, to indicate the flood discharges and water surface elevations which may be anticipated in any given year. This data was generated using highly variable factors determined by a study of the watershed. Many judgments and assumptions are required to establish these factors. The resultant hydraulic data is sensitive to changes, particularly of antecedent conditions, urbanization, channelization and land use. Users of this data are cautioned against the assumption of precision which can not be attained. Discharges are in cubic feet per second (cfs) and stages are in feet, NGVD, 1929 or NAVD 88, as appropriate.

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EXISTING STRUCTURES

NO.	TYPE	DATE
(1)	Concrete Piers	1952
(2)	Timber	1952
(3)	Concrete Piers	1952
(4)	Concrete	1952

PROPOSED STRUCTURE

Concrete Piers	1952
Concrete	1952

**HYDRAULIC DESIGN DATA**

NOTE: The hydraulic data is shown for informational purposes only to indicate the flood discharge and water surface elevations. It is not intended to be used for design purposes. Many judgments and assumptions are required to establish these factors. The resulting hydraulic data is sensitive to changes, particularly antecedent conditions, urbanization, channelization and land use. Users of this data are cautioned against the assumption of precision which cannot be obtained.

TERMS:

Design Flood: Utilized to assure a desired level of hydraulic performance.

Base Flood: Has a 1% chance of being exceeded in any given year (100 year frequency).

Overtopping Flood: Exceeds the design flood, or a watershed divide, or thru emergency relief structures.

Worst Case Flood: The most severe that can be predicted where overtopping is not practicable.

WATER SURFACE ELEVATIONS: M.H.W. (Mean-Tidal) 33.4 M.L.H. (Tidal) 33.4

FLOOD DATA:

MAX. EVENT OF RECORD	DESIGN FLOOD	BASE FLOOD	OVERTOPPING OR GREATEST FLOOD
39.91	39.27	39.57	39.57
DISCHARGE (CFS)	3950	4630	4630
AVERAGE VELOCITY (FT/S)	3.22	3.58	4.13
EXCEEDANCE PROB. (%)	1	1	0.2
FREQUENCY (YR.)	100	100	500

SCOUR PREDICTIONS FOR PROPOSED STRUCTURE DESCRIBED ABOVE:

LONG TERM SCOUR ELEV.	WORST CASE < 100 YR. FREQ. (FT.)	WORST CASE < 500 YR. FREQ. (FT.)
N/A	16.4	16.4
N/A	27.8	25.6

**HYDRAULIC RECOMMENDATIONS**

- BEGIN BRIDGE STATION 45+58.00
- END BRIDGE STATION 47+22.00
- CLEARANCE PROVIDED: MAX. HORIZ. 38.0 VERT. 8.04 ABOVE EL. 33.4
- MINIMUM CLEARANCE: MAX. HORIZ. 10.0 VERT. 5.0 ABOVE EL. 33.4
- ADJUSTMENTS: BEGIN BRIDGE Bank and Shore
- END BRIDGE Bank and Shore

REMARKS: (1) Bridge lengthened to accommodate preferred channel migration to the west.  
 (2) Based on data provided by local residents of 33 years.  
 (3) Due to predicted channel migration to the west and lack of meander control, Pier No. 4 will not experience main channel scour conditions.

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION

ROAD NO. \_\_\_\_\_ COUNTY \_\_\_\_\_ FINANCIAL PROJECT ID \_\_\_\_\_

BRIDGE HYDRAULIC RECOMMENDATIONS

EXHIBIT BHD-1  
 Date: 1/1/03

SHEET NO. \_\_\_\_\_

## Chapter 6

### Typical Sections

6.1	General .....	6-1
6.2	Mandatory Information .....	6-3
Exhibits		
Exhibit 6-1	Standard Notes for Typical Section Sheets .....	6-5

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## Chapter 6

# Typical Sections

### 6.1 General

Typical sections are detailed cross section depictions of the highway's principal elements that are standard between certain station or milepost limits. These sections are the basis for construction details and information shown on the various plan sheets throughout the plans package.

Typical sections should show typical conditions only. Non-standard conditions that prevail for short distances only should not be shown. Existing elements that are to be incorporated into the highway's final section are depicted in conjunction with the proposed elements.

When more than one typical section is necessary for a project, the station limits of each section shall be shown below the typical section title. Typical section stationing shall cover the entire project. Transitions from one typical to another shall be included in the stationing of one or the other typical section. Sheets that feature more than one typical section should read from the top down, with the sections in the order in which they occur within the project.

The hierarchy for typical sections shall be as follows:

1. Project mainline
2. Ramps and service roads (for projects which include an interchange)
3. Crossing side roads
4. Minor side streets

Half sections and details which supplement or support various typical sections should be placed on the same sheet as the typical section to which they apply. In the event that this is not possible, additional sheets for details should be placed behind the typical section sheet(s).

Half sections are necessary when changes occur that affect several typical section elements such as number of lanes, border width, ditch/drainage features, clearing and grubbing, R/W width, etc.

Details and partial sections are necessary for the clarification of construction techniques or sequence, and to show alternates, such as the placement of shoulder gutter in high fill areas, changes in sidewalk location, etc. Judgment will be necessary in making decisions about when and where details should be shown.

The Department Engineering/CADD Systems Software contains a number of typical sections that can be used and adjusted to suit the conditions of a particular project. Usually typical sections are not created to scale, but the horizontal dimensions should be proportionate.

For illustrations of various typical sections, see ***Exhibits TYP-1*** thru ***TYP-15***.



## 6.2 Mandatory Information

Typical sections for all projects shall include the following data:

1. Design speed for each typical section
2. Traffic data (description, date and 2-way AADT)
  - a. Current Year
  - b. Estimated Opening Year
  - c. Estimated Design Year
  - d. K, D and T factors. Distinguish between T(peak hour) and T(24 hour)

For skid hazard projects, only the current year or estimated opening year for traffic data (AADT) is required to be noted.

All traffic data shown shall be consistent with the data used for pavement design.

3. Cross Slopes
  - a. Cross slopes of roadway pavement, shoulder surfaces, sidewalks and bridge decks shall be expressed as a decimal part of a foot vertical per foot horizontal. These cross slopes shall be rounded to two decimal places, i.e., 0.02, 0.06. (See **Volume I, Chapter 2**).
  - b. Median and outer slopes shall be shown by ratio, vertical to horizontal, i.e., 1:4, 1:2. (See **Volume I, Chapter 2**).
  - c. Either feathering details or notes (or both) shall be shown when resurfacing without milling in urban curb and gutter sections is specified or when milling depth is less than the overlay thickness.
  - d. When cross slope correction is necessary, special milling and layering details showing the method of correction shall be shown in the plans. (See **Exhibits TYP- 9** thru **9B**).
4. Profile grade point shall be flagged.
5. Pavement construction shall be described in a clear, precise manner by indicating the LBR requirement and the thickness of the subgrade stabilization, subbase or base, as well as spread rates for structural course, friction course and shoulder pavement. Use 4 inches for both base extension on rural sections and for stabilization extension on curbed sections.

Pavement structure information shall be obtained from the approved pavement design and shall be described in the order of construction, i.e. starting with bottom

layer and ending with friction course. Show pavement spread rate descriptions for leveling, overbuild, structural course and friction course in pounds per square yard (lbs/sy).

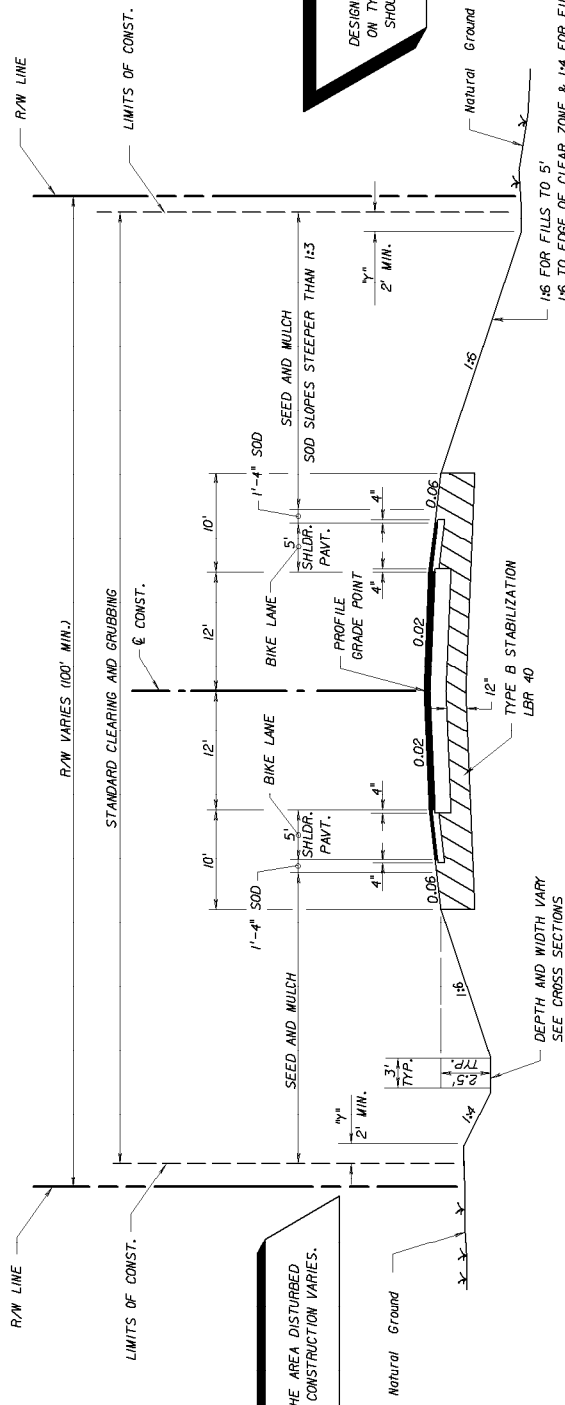
6. Limits of grassing.
7. Sidewalk location and width.
8. Curb and gutter location and type (show Type "E" or "F", not the dimension).  
On new construction curb and gutter projects which include Asphalt Base, Type B-12.5 Only, the asphalt curb pad shall be indicated on the typical section and a detail provided. (See **Exhibit TYP – 6A**)
9. Limits of clearing and grubbing, where applicable.
10. R/W, where applicable.
11. Template dimensions:  
For widening projects, the existing pavement width shall be shown as a +/- dimension, and the base widening width shall be shown with an asterisk. Note 3, of **Standard Notes for Typical Section Sheets (Exhibit 6-1)**, shall be shown as near to this noted asterisk as possible.  
**NOTE:** For typical sections with varying dimensions, the dimensions shall be clearly indicated on the plan-profile sheets.
12. Standard notes for typical sections are shown on **Exhibit 6-1**.

### **Exhibit 6-1 Standard Notes for Typical Section Sheets**

Below are standard notes that shall be shown on typical section sheets as applicable.

1. For details and limits of selective clearing and grubbing see \_\_\_\_\_.
2. (Under paved shoulders):  
At the contractor's option, this area may be constructed of base material at no additional compensation.
3. (On widening projects):  
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.

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2-LANE (2-WAY)  
ARTERIAL/COLLECTOR  
NEW CONSTRUCTION  
RURAL  
WITH DESIGNATED BIKE LANE  
DESIGN SPEED 55 MPH  
OR GREATER  
WITH PROJECTED  
20 YR. AADT OF 1500  
OR GREATER

Y" THE AREA DISTURBED  
BY CONSTRUCTION VARIES.

DESIGNATED BIKE LINES SHALL BE LABELED  
ON TYPICAL UNDESIGNATED BIKE LINES  
SHOULD NOT BE LABELED ON TYPICAL.

**TRAFFIC DATA**

CURRENT YEAR = 1998 AADT = 6800  
ESTIMATED OPENING YEAR = 2000 AADT = 7600  
ESTIMATED DESIGN YEAR = 2020 AADT = 15000  
K = 6% D = 55% T = 2% (24 HOUR)  
DESIGN HOUR T = 1%  
DESIGN SPEED = 45 MPH

**TYPICAL SECTION**

SR 10 (U.S. 90-A)  
STA. 10+00.00 TO STA. 267+34.89

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP B WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (200 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

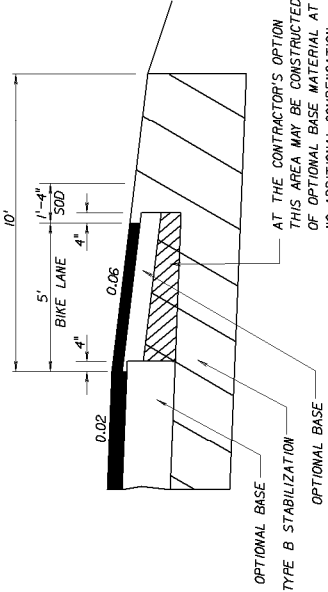
**SHOULDER PAVEMENT**

OPTIONAL BASE GROUP I WITH  
FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR  
CURRENT YEAR, OPENING YEAR AND DESIGN YEAR.  
POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES  
REFER TO EXHIBIT 6-1, THIS CHAPTER.

NOTE:  
HEIGHT OF FILL IS THE VERTICAL DISTANCE  
FROM THE EDGE OF THE OUTSIDE TRAVEL LANE  
TO TOE OF FRONT SLOPE.



**SHOULDER PAVEMENT DETAIL**

EXHIBIT TYP-1  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY	ROAD NO.	COUNTY

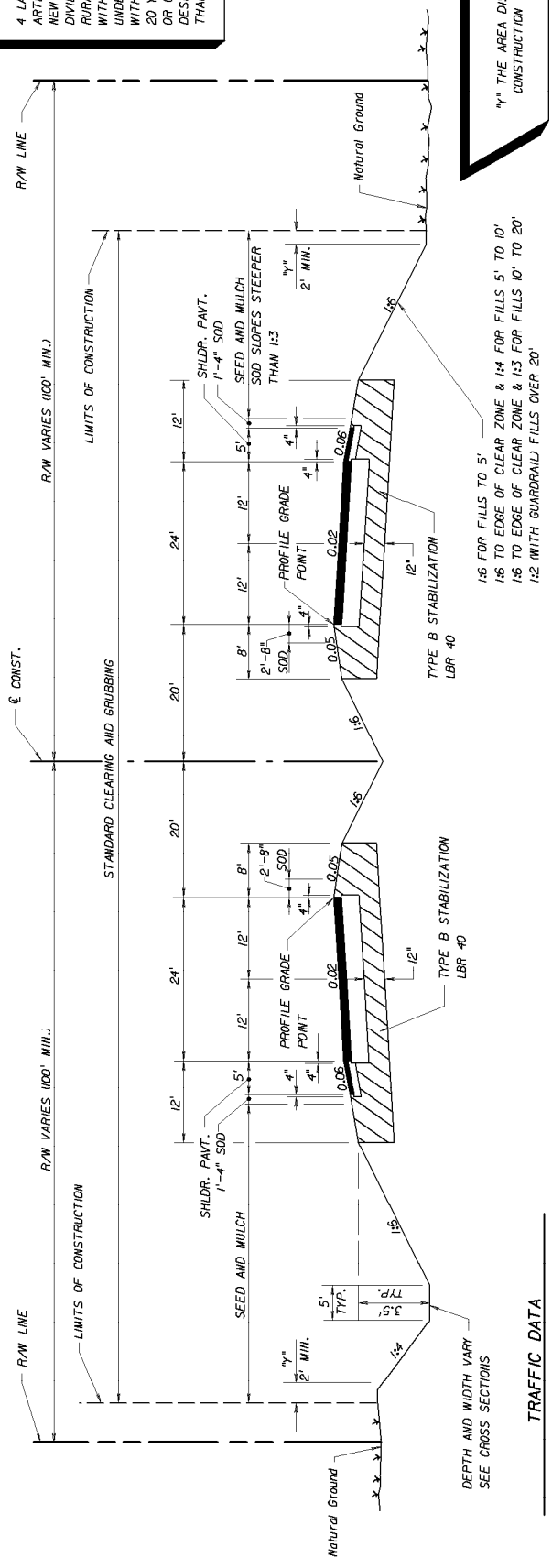
  

REVISIONS	
DATE	DESCRIPTION

SHEET NO.	
<b>TYPICAL SECTION</b>	

4 LANE ARTERIAL/COLLECTOR NEW CONSTRUCTION DIVIDED RURAL WITH DESIGNATED OR UNDESIGNATED BIKE LANE WITH PROTECTED 20 YR. ADT OF 1500 OR GREATER DESIGN SPEED GREATER THAN 50 MPH



**TRAFFIC DATA**

CURRENT YEAR = 1998 ADT = 22300  
 ESTIMATED OPENING YEAR = 2000 ADT = 23300  
 ESTIMATED DESIGN YEAR = 2020 ADT = 51500  
 K = 9% D = 5% T = 10% (64 HOUR)  
 DESIGN HOUR T = 5%  
 DESIGN SPEED = 70 MPH

**TYPICAL SECTION SR 500**

**STA. 63+65.42 TO STA. 328+65.14**

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (350 LBS./SY)  
 AND FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

**SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS./SY)  
 AND FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.

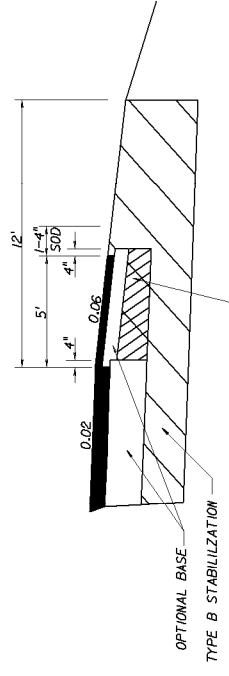
TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR, AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

NOTE: HEIGHT OF FILL IS THE VERTICAL DISTANCE FROM THE EDGE OF THE OUTSIDE TRAVEL LANE TO TOE OF FRONT SLOPE.

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

\*THE AREA DISTURBED BY CONSTRUCTION VARIES.



AT THE CONTRACTOR'S OPTION THIS AREA MAY BE CONSTRUCTED OF OPTIONAL BASE MATERIAL AT NO ADDITIONAL COMPENSATION

**SHOULDER PAVEMENT DETAIL**

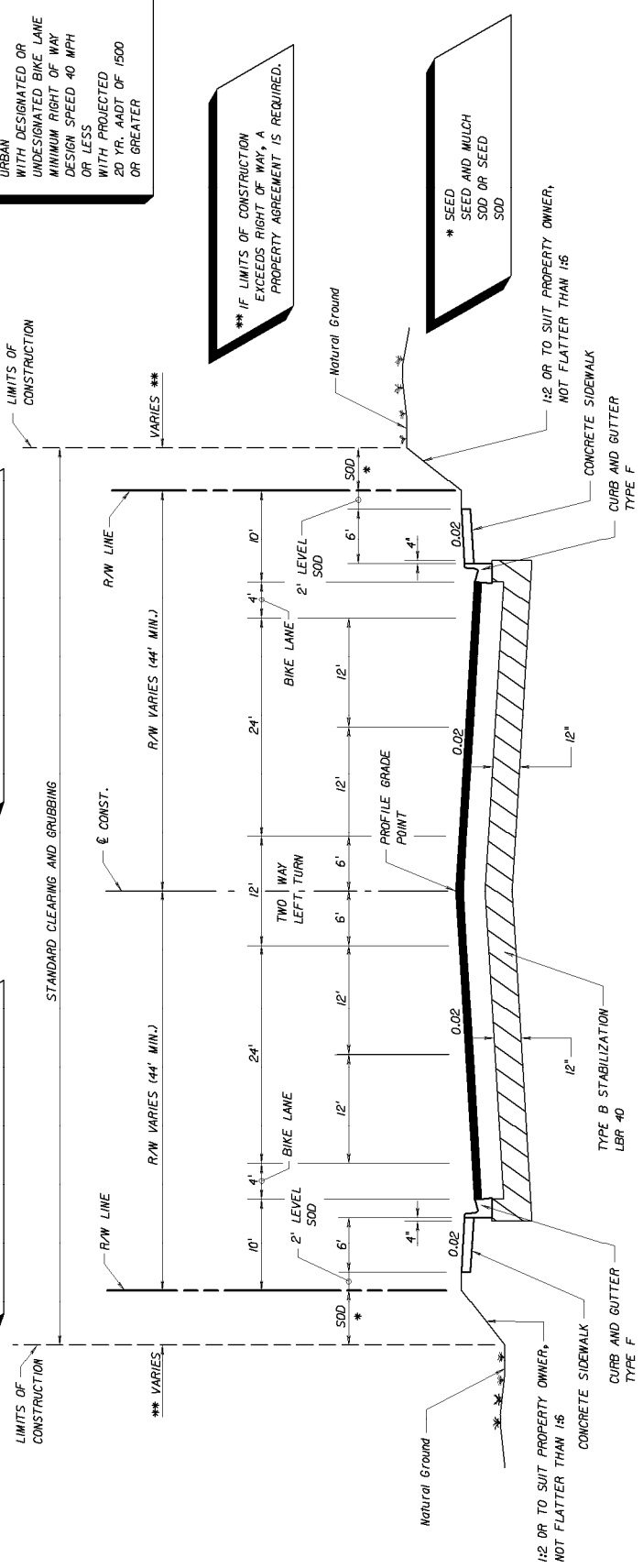
EXHIBIT TYP-2  
 Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY				
<b>TYPICAL SECTION</b>					
SHEET NO.					

5-LANE ARTERIAL/COLLECTOR NEW CONSTRUCTION UNDIVIDED URBAN WITH DESIGNATED OR UNDESIGNATED BIKE LANE MINIMUM RIGHT OF WAY DESIGN SPEED 40 MPH OR LESS WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER

5-LANE SECTIONS ARE TO INCLUDE SECTIONS OF RAISED OR RESTRICTIVE MEDIAN. SEE FPM TABLE 2-2.1.

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.



\*\* IF LIMITS OF CONSTRUCTION EXCEEDS RIGHT OF WAY, A PROPERTY AGREEMENT IS REQUIRED.

\* SEED AND MULCH SOD OR SEED SOD

1:2 OR TO SUIT PROPERTY OWNER, NOT FLATTER THAN 1:6

**TYPICAL SECTION**  
**SR 00 (DUVAL STREET)**  
**STA. 252+12.00 TO STA. 323+19.42**

**TRAFFIC DATA**  
 CURRENT YEAR = 1998 AADT = 9900  
 ESTIMATED OPENING YEAR = 2000 AADT = 10600  
 ESTIMATED DESIGN YEAR = 2020 AADT = 14000  
 K = 62 D = 552 T = 21 (24 HOUR)  
 DESIGN HOUR T = 12  
 DESIGN SPEED = 45 MPH

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

**EXHIBIT TYP-3**  
 Date: 1/1/03

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
DATE	DESCRIPTION	ROAD NO.	FINANCIAL PROJECT ID

**TYPICAL SECTION**

SHEET NO.

5-LANE ARTERIAL/COLLECTOR NEW CONSTRUCTION UNDIVIDED URBAN WITH DESIGNATED OR UNDESIGNATED BIKE LANE DESIGN SPEED 40 MPH OR LESS WITH PROJECTED 20 YR. ADOT OF 1500 OR GREATER

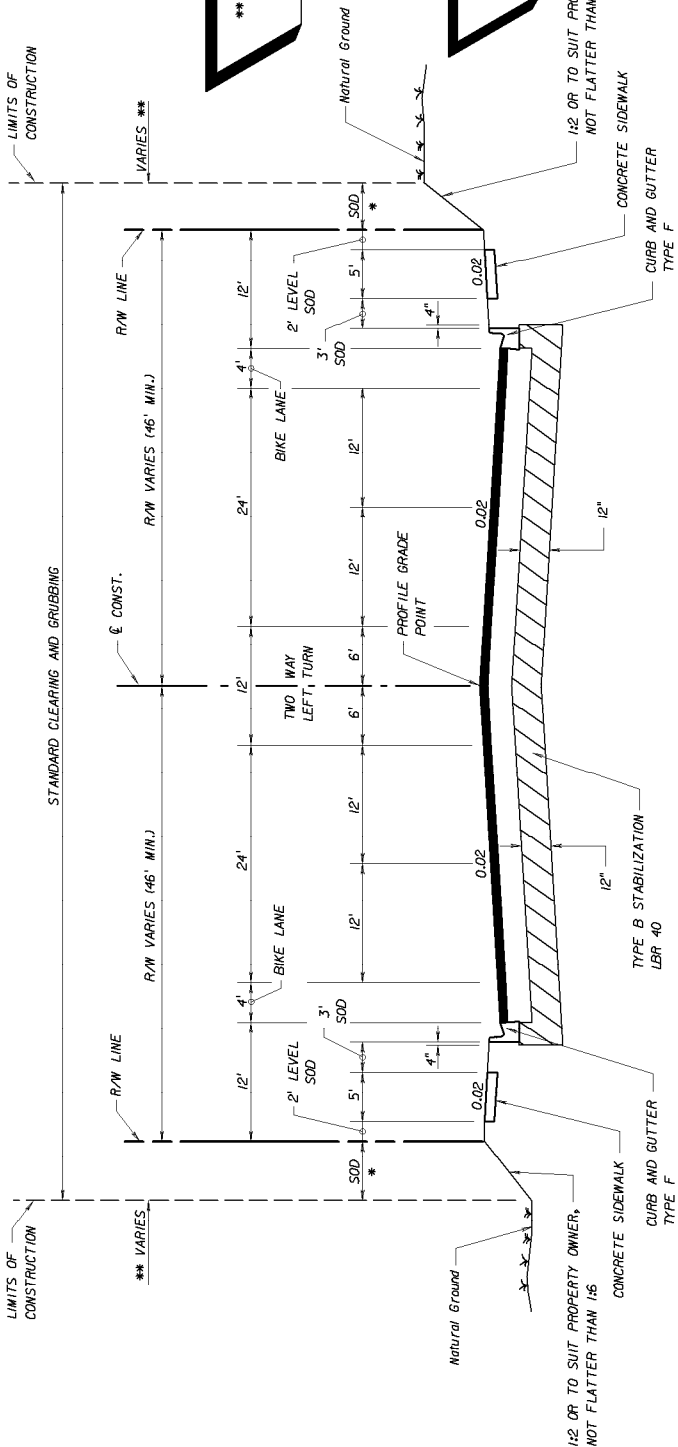
\*\* IF LIMITS OF CONSTRUCTION EXCEEDS RIGHT OF WAY, A PROPERTY AGREEMENT IS REQUIRED.

\* SEED AND MULCH SOD OR SEED SOD

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

EXHIBIT TYP-4 Date: 1/1/03

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL. SEE PPM TABLE 2.2.1.



**TYPICAL SECTION**  
**SR 00 (MATTHEWS STREET)**  
**STA. 202+42.00 TO STA. 263+29.68**

NEW CONSTRUCTION

OPTIONAL BASE GROUP B WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 LBS/SY)  
 AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

**TRAFFIC DATA**

CURRENT YEAR	= 1998 ADOT = 2009
ESTIMATED OPENING YEAR	= 2003 ADOT = 2400
ESTIMATED DESIGN YEAR	= 2023 ADOT = 24900
K	= 9% D = 60% T = 2% (24 HOUR)
DESIGN HOUR	T = 2%
DESIGN SPEED	= 40 MPH

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
<b>TYPICAL SECTION</b>			
SHEET NO.			



DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.

4-LANE ARTERIAL NEW CONSTRUCTION DIVIDED URBAN WITH DESIGNATED OR UNDESIGNATED BIKE LANE DESIGN SPEED 45 MPH OR LESS

\*\* IF LIMITS OF CONSTRUCTION EXCEED RIGHT OF WAY, A PROPERTY AGREEMENT IS REQUIRED.

\* SEED SEED AND MULCH SOD OR SEED SOD

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

EXHIBIT TYP-5  
Date: 1/1/03

TYPICAL SECTION  
SR 00 WILSON STREET  
STA. 98+40.00 TO STA. 202+33.00

NEW CONSTRUCTION

OPTIONAL BASE GROUP 9 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

TRAFFIC DATA  
CURRENT YEAR = 1998 ADT = 22800  
ESTIMATED OPENING YEAR = 2000 ADT = 25800  
ESTIMATED DESIGN YEAR = 2020 ADT = 30600  
K = 6% D = 55% T = 2% (24 HOUR)  
DESIGN HOUR T = IX  
DESIGN SPEED = 45 MPH

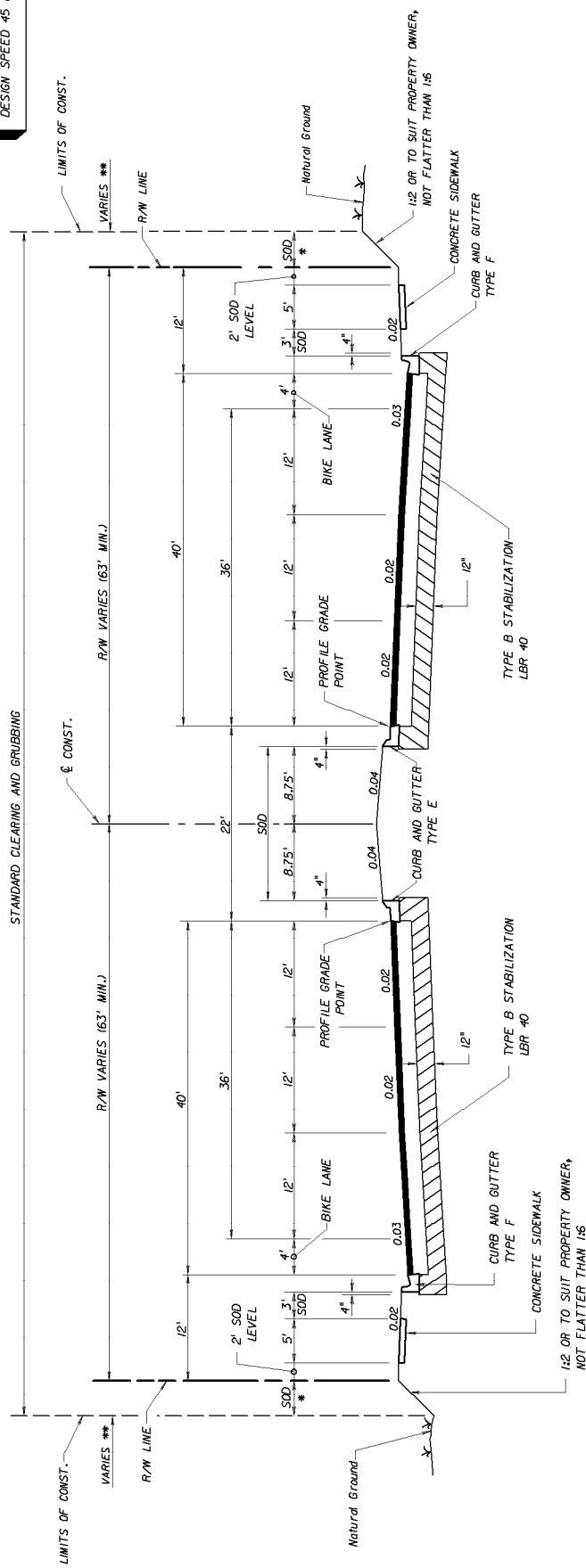
TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
<b>TYPICAL SECTION</b>			
SHEET NO.			

6-LANE  
ARTERIAL  
NEW CONSTRUCTION  
DIVIDED  
URBAN  
WITH DESIGNATED OR  
UNDESIGNATED BIKE LANE  
DESIGN SPEED 45 MPH OR LESS

\*\* IF LIMITS OF CONSTRUCTION  
EXCEED RIGHT OF WAY, A  
PROPERTY AGREEMENT IS REQUIRED.

DESIGNATED BIKE LANES SHALL BE LABELED  
ON TYPICAL. UNDESIGNATED BIKE LANES  
SHOULD NOT BE LABELED ON TYPICAL.



**TYPICAL SECTION**  
**SR 00 (JACKSON STREET)**  
**STA. 101+21.00 TO STA. 221+44.00**

**NEW CONSTRUCTION**  
OPTIONAL BASE GROUP 9 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (200 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

**TRAFFIC DATA**  
CURRENT YEAR = 1988 ADOT = 22800  
ESTIMATED OPENING YEAR = 2000 ADOT = 25800  
ESTIMATED DESIGN YEAR = 2020 ADOT = 30600  
K = 6% D = 55% T = 2% (24 HOUR)  
DESIGN HOUR T = 1%  
DESIGN SPEED = 45 MPH

TRAFFIC DATA IS REQUIRED TO BE  
NOTED FOR CURRENT YEAR, OPENING  
YEAR AND DESIGN YEAR.

\* SEED,  
SEED AND MULCH,  
SOD OR SEED  
SOD

FOR STANDARD TYPICAL SECTION NOTES  
REFER TO EXHIBIT 6-1, THIS CHAPTER.

**EXHIBIT TYP-6**  
Date: 1/1/03

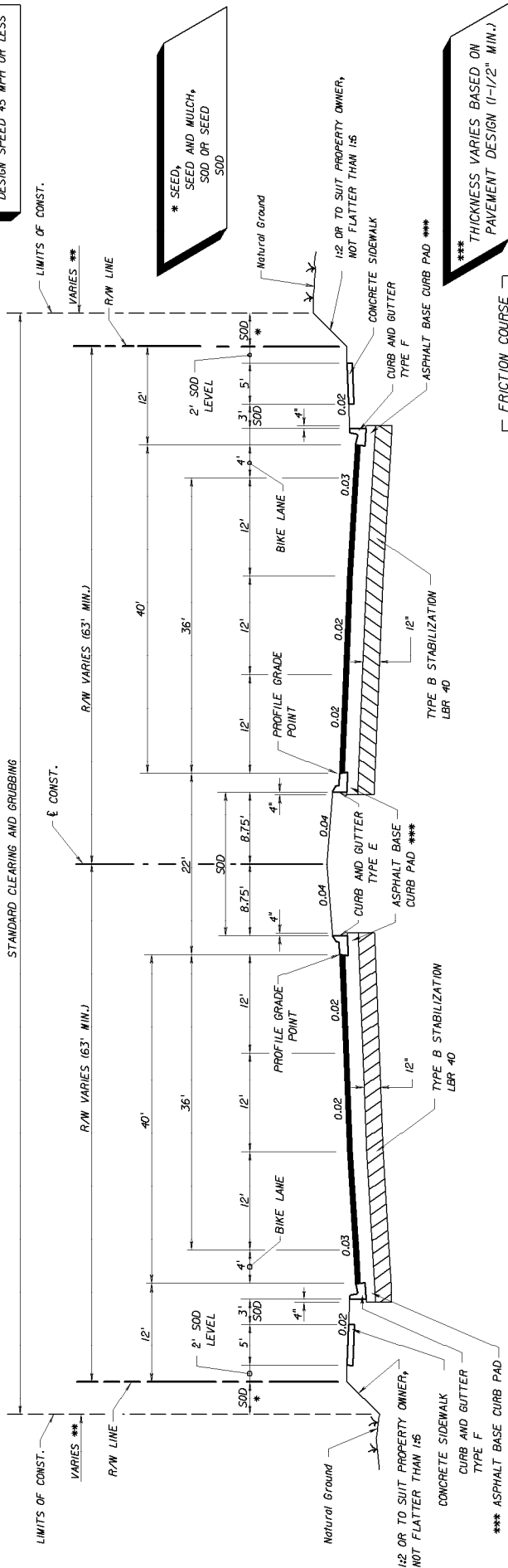
REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	ROAD NO.	FINANCIAL PROJECT ID	

**TYPICAL SECTION**

6-LANE  
ARTERIAL  
NEW CONSTRUCTION  
DIVIDED  
URBAN  
WITH DESIGNATED OR  
UNDESIGNATED BIKE LANE  
DESIGN SPEED 45 MPH OR LESS

\*\* IF LIMITS OF CONSTRUCTION  
EXCEED RIGHT OF WAY, A  
PROPERTY AGREEMENT IS REQUIRED.

DESIGNATED BIKE LANES SHALL BE LABELED  
ON TYPICAL. UNDESIGNATED BIKE LANES  
SHOULD NOT BE LABELED ON TYPICAL.



THICKNESS VARIES BASED ON  
PAVEMENT DESIGN (1-1/2" MIN.)

**TYPICAL SECTION**  
**SR 00 (JACKSON STREET)**  
**STA. 101+21.00 TO STA. 221+44.00**  
**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9, TYPE B-12.5 (6") ONLY, WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (300 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (60 LBS/SY) (RUBBER)

**TRAFFIC DATA**  
CURRENT YEAR = 1988 AADT = 22800  
ESTIMATED OPENING YEAR = 2000 AADT = 25800  
ESTIMATED DESIGN YEAR = 2020 AADT = 30600  
K = 6% D = 55% T = 2% (24 HOUR)  
DESIGN HOUR T = 1%  
DESIGN SPEED = 45 MPH

FOR STANDARD TYPICAL SECTION NOTES  
REFER TO EXHIBIT 6-1, THIS CHAPTER

TRAFFIC DATA IS REQUIRED TO BE  
NOTED FOR CURRENT YEAR, OPENING  
YEAR AND DESIGN YEAR.

DETAIL OF ASPHALT BASE CURB PAD

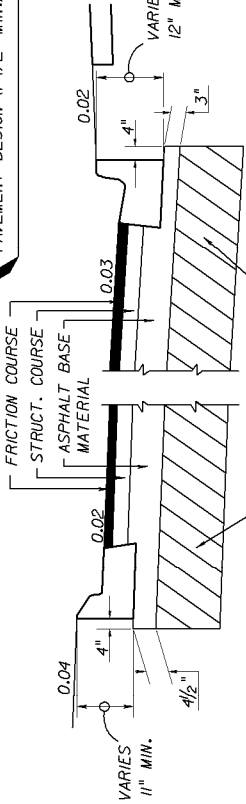


EXHIBIT TYP-6A  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. COUNTY FINANCIAL PROJECT ID	
REVISIONS		TYPICAL SECTION	
DATE	DESCRIPTION	DATE	BY

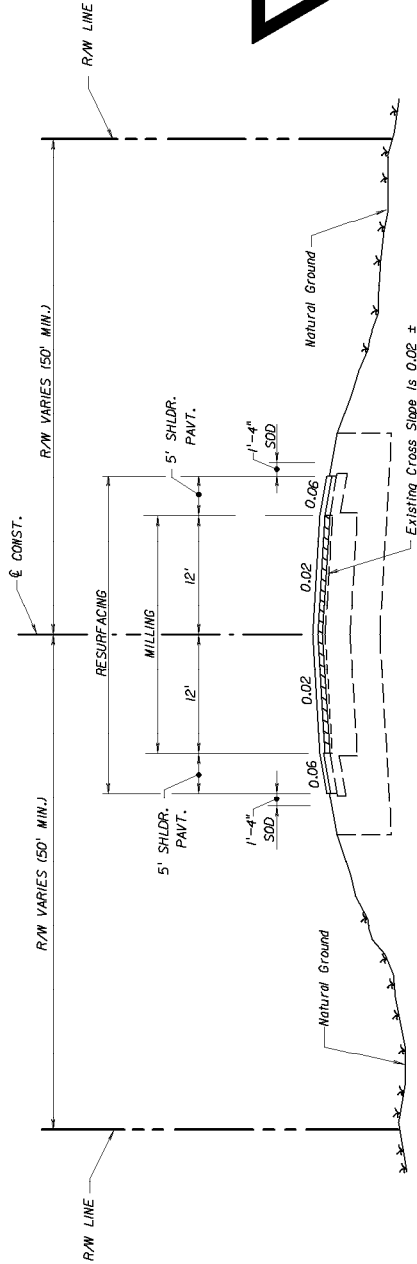
SHEET NO.

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICALS, UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.

EXISTING 2-LANE (2-WAY) ARTERIAL/COLLECTOR MILLING AND RESURFACING NO CROSS SLOPE CORRECTION REQUIRED UNDIVIDED RURAL (WITH DESIGNATED OR UNDESIGNATED BIKE LAWE EXISTING) WITH PROJECTED 20 YR. ADT OF 1500 OR GREATER

SOME PROJECTS MAY REQUIRE SHOULDER WORK. WHEN REQUIRED THIS SHOULD BE IDENTIFIED ON THE TYPICAL SECTION SHEET.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.



**TRAFFIC DATA**  
**STA. 10+53.00 TO STA. 130+77.00**  
 CURRENT YEAR = 1998 AADT = 9670  
 ESTIMATED OPENING YEAR = 2000 AADT = 11900  
 ESTIMATED DESIGN YEAR = 2010 AADT = 20200  
 K = 10% D = 60% T = 7% (24 HOUR)  
 DESIGN HOUR T = 3%  
 DESIGN SPEED = 55 MPH

**STA. 206+82.28 TO 368+41.21**  
 CURRENT YEAR = 1998 AADT = 6835  
 ESTIMATED OPENING YEAR = 2000 AADT = 8600  
 ESTIMATED DESIGN YEAR = 2010 AADT = 15100  
 K = 10% D = 65% T = 7% (24 HOUR)  
 DESIGN HOUR T = 3%  
 DESIGN SPEED = 55 MPH

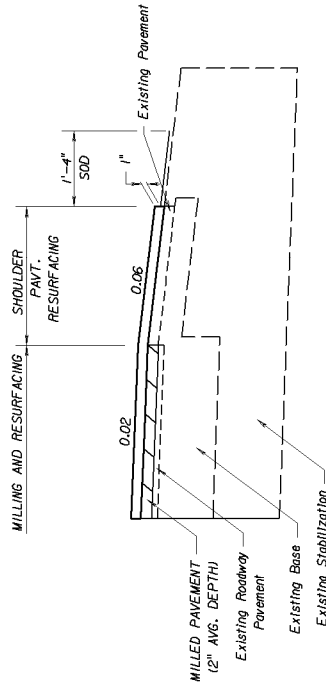
**TYPICAL SECTION**  
**SR 00**

**STA. 10+53.00 TO STA. 130+77.00**  
**STA. 206+82.28 TO STA. 368+41.21**

**MILLING**  
 MILL EXISTING ASPHALT PAVEMENT (2" AVG. DEPTH)

**RESURFACING**  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (200 LBS/SY)  
 AND FRICTION COURSE FC-9.5 (110 LBS/SY) (RUBBER)

**SHOULDER PAVEMENT RESURFACING**  
 FRICTION COURSE FC-9.5 (110 LBS/SY) (RUBBER)



**SHOULDER PAVEMENT DETAIL**

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR.

**EXHIBIT TYP-7**  
 Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

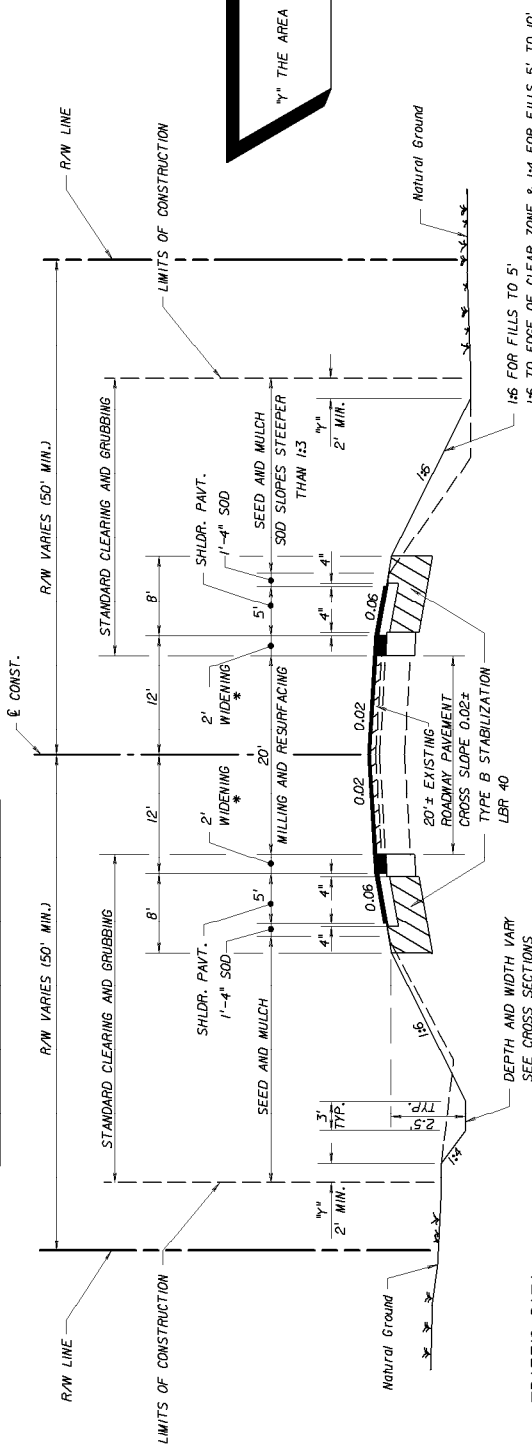
**TYPICAL SECTION**

SHEET NO.

EXISTING 2-LANE (2-WAY) ARTERIAL/COLLECTOR WIDENING AND RESURFACING UNDIVIDED RURAL CONST. 5' SHOULDER PAVEMENT OR BIKE LANE WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER DESIGN SPEED GREATER THAN 50 MPH

THE AREA DISTURBED BY CONSTRUCTION VARIES.

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.



**TYPICAL SECTION**  
SR 000  
STA. 20+25.00 TO STA. 48+16.56  
STA. 57+82.78 TO STA. 93+41.21

**TRAFFIC DATA**  
STA. 20+25.00 TO STA. 48+16.56  
CURRENT YEAR = 1998 AADT = 8700  
ESTIMATED OPENING YEAR = 2000 AADT = 9200  
ESTIMATED DESIGN YEAR = 2020 AADT = 23600  
K = 10% D = 56% T = 5% (24 HOUR)  
DESIGN HOUR T = 3%  
DESIGN SPEED = 55 MPH

**TRAFFIC DATA**  
STA. 57+82.78 TO STA. 93+41.21  
CURRENT YEAR = 1998 AADT = 6835  
ESTIMATED OPENING YEAR = 2000 AADT = 8600  
ESTIMATED DESIGN YEAR = 2020 AADT = 17200  
K = 10% D = 65% T = 7% (24 HOUR)  
DESIGN HOUR T = 3%  
DESIGN SPEED = 55 MPH

- MILLING  
MILL EXISTING ASPHALT PAVEMENT (2" AVG. DEPTH)
- RESURFACING  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (150 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)
- WIDENING  
OPTIONAL BASE GROUP II WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (300 LBS/SY)  
AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

NOTE: HEIGHT OF FILL IS THE VERTICAL DISTANCE FROM THE EDGE OF THE OUTSIDE TRAVEL LANE TO TOE OF FRONT SLOPE.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

\* SEE SHEET 2 OF 2 FOR WIDENING AND SHOULDER PAVEMENT DETAIL

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR.

EXHIBIT TYP-8  
Date: 1/1/03

SHEET 1 OF 2

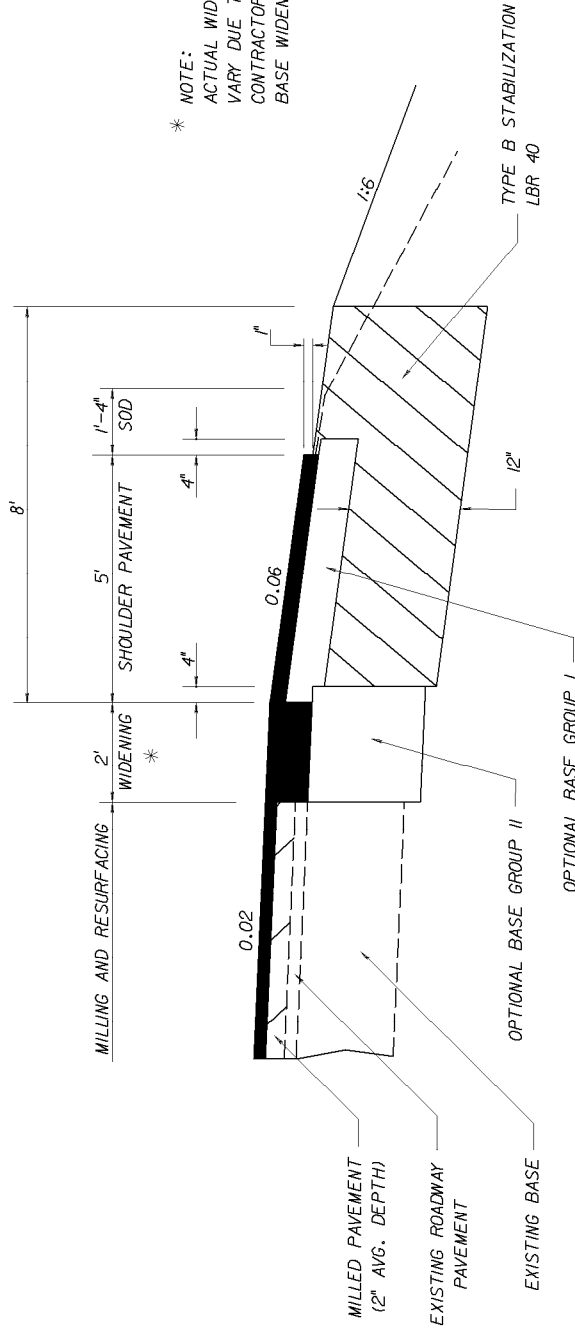
REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
DATE	DESCRIPTION	ROAD NO.	FINANCIAL PROJECT ID

**TYPICAL SECTION**

SHEET NO.

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.

THE NEED FOR STABILIZATION IN THE SHOULDER AREA ON PRR PROJECTS IS SITE SPECIFIC AND NOT ALWAYS REQUIRED. THE USE OF STABILIZING IN NARROW TRENCH WIDENING STRIPS IS NOT RECOMMENDED GENERALLY. SEE THE FLEXIBLE PAVEMENT DESIGN MANUAL FOR FURTHER CRITERIA.



\* NOTE:  
ACTUAL WIDTH OF BASE WIDENING MAY VARY DUE TO ACTUAL PAVEMENT WIDTH. CONTRACTOR MAY ELECT TO PLACE UNIFORM BASE WIDENING AT NO ADDITIONAL COST.

**WIDENING & SHOULDER PAVEMENT DETAIL**

**WIDENING**

OPTIONAL BASE GROUP II WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (300 LBS/SY) AVG.  
FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

**SHOULDER PAVEMENT**

OPTIONAL BASE GROUP I WITH  
FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

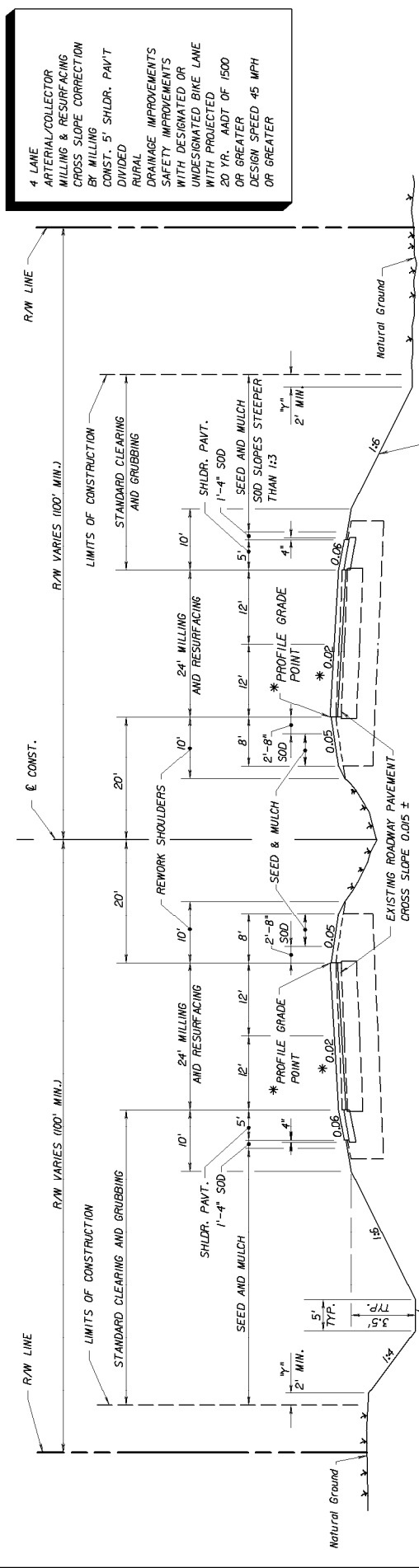
EXHIBIT TYP-8A  
Date: 1/1/03

SHEET 2 OF 2

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

SHEET NO.

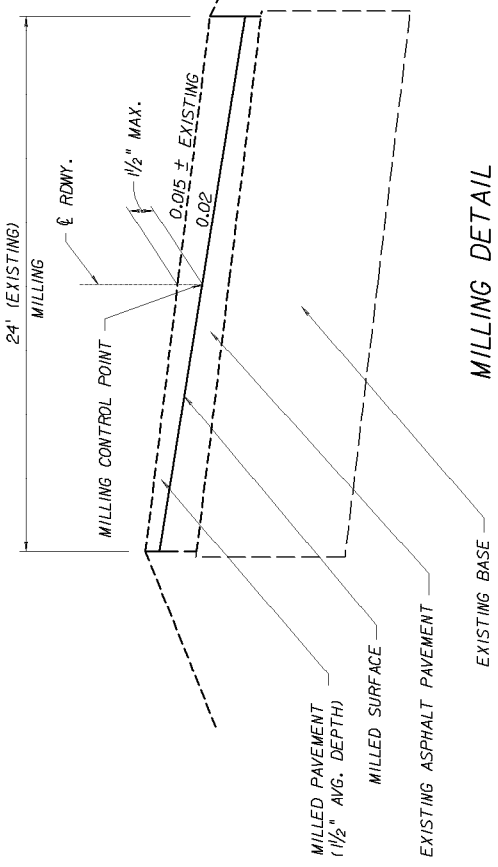
**TYPICAL SECTION**



**TYPICAL SECTION**  
**SR 500**  
**STA. 204+34.58 TO STA. 288+95.16**

- MILLING**  
MILL EXISTING ASPHALT PAVEMENT (1/2" AVG. DEPTH)
- RESURFACING**  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS/SY AVG.)  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS/SY AVG.) PG 76-22  
AND FRICTION COURSE FC-5 (80 LBS/SY) (RUBBER)
- SHOULDER PAVEMENT**  
OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS/SY AVG.) PG 76-22  
AND FRICTION COURSE FC-5 (80 LBS/SY) (RUBBER)
- MILLING**  
MILL EXISTING ASPHALT PAVEMENT (2" AVG. DEPTH)
- RESURFACING**  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (200 LBS/SY AVG.)  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS/SY AVG.) PG 76-22  
AND FRICTION COURSE FC-5 (80 LBS/SY) (RUBBER)
- SHOULDER PAVEMENT**  
OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS/SY AVG.) PG 76-22  
AND FRICTION COURSE FC-5 (80 LBS/SY) (RUBBER)

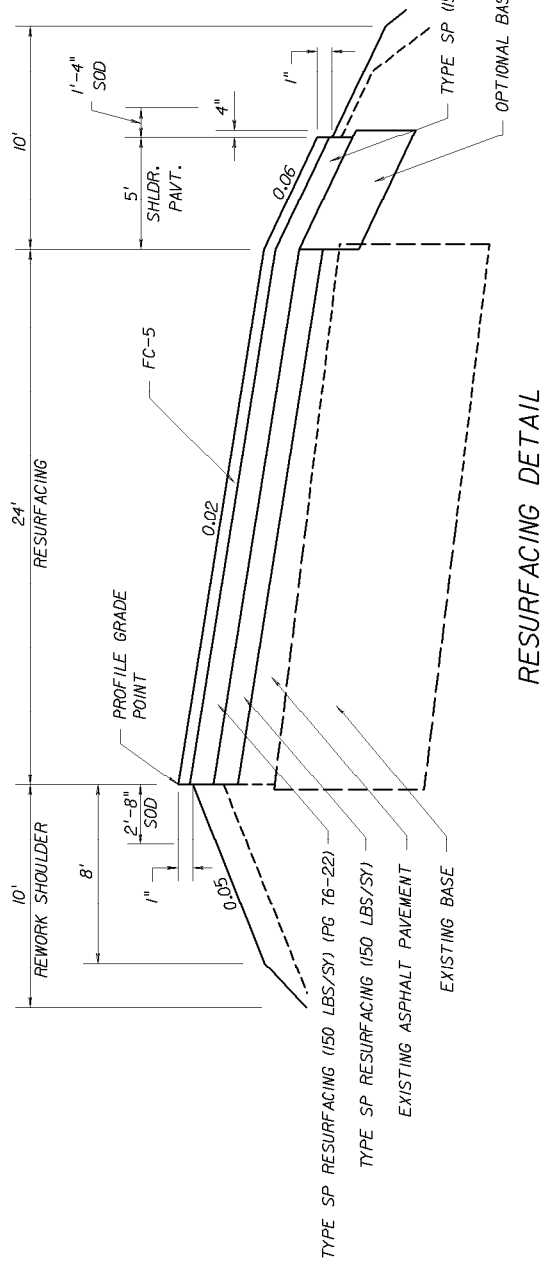
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
REVISIONS			
DATE	DESCRIPTION	BY	
<b>TYPICAL SECTION</b>			



\* WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING AND LAYERING DETAILS MUST BE PROVIDED TO SUPPLEMENT TYPICAL SECTION. THE NEED FOR AND LOCATION OF PROFILE GRADE POINTS WILL DEPEND ON SITE SPECIFIC CONDITIONS.

EXAMPLE OF CROSS SLOPE CORRECTION BY MILLING.

MILLING DETAIL



FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

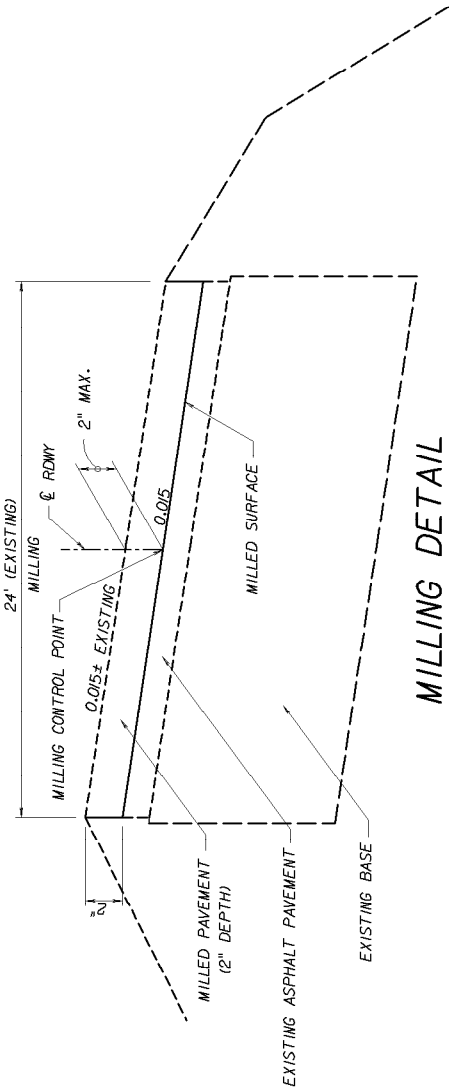
STA. 204+34.58 TO STA. 288+95.16

EXHIBIT TYP-9A  
Date: 1/1/03

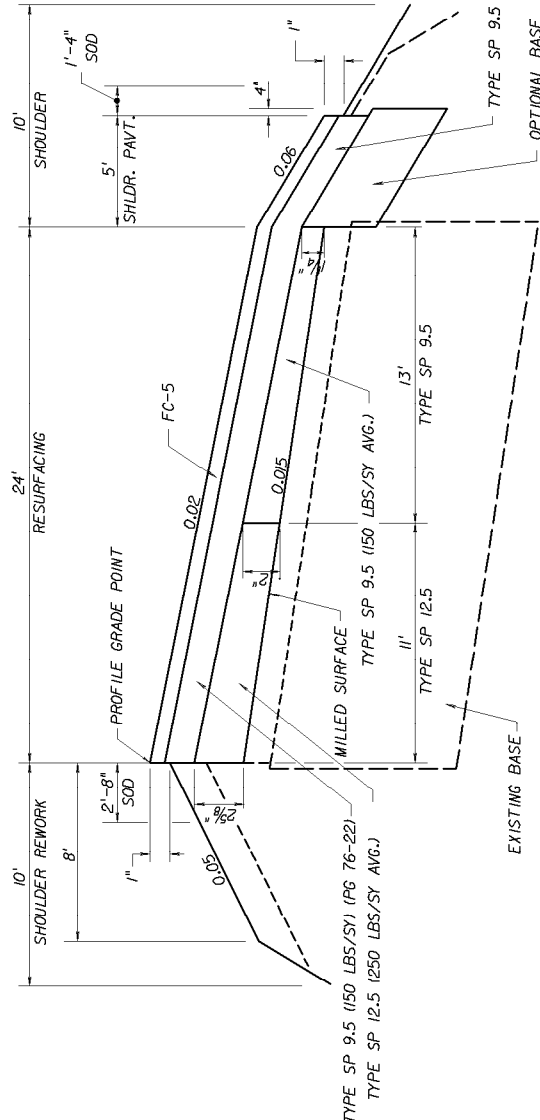
SHEET 2 OF 3

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION DETAILS		SHEET NO.
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	





**MILLING DETAIL**



**RESURFACING DETAIL**

WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING AND LAYERING DETAILS MUST BE PROVIDED TO SUPPLEMENT TYPICAL SECTION.

\* WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING AND LAYERING DETAILS MUST BE PROVIDED TO SUPPLEMENT TYPICAL SECTION. THE NEED FOR AND LOCATION OF PROFILE GRADE POINTS WILL DEPEND ON SITE SPECIFIC CONDITIONS.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

TRAFFIC LEVEL D ON THIS TYPICAL REQUIRES COARSE GRADED MIXES.

SUGGESTED CONSTRUCTION SEQUENCES SHOWN. OTHER SEQUENCES THAT MEET SPECIFICATIONS, THICKNESS AND CROSS SLOPE REQUIREMENTS MAY BE CONSIDERED BY THE ENGINEER.

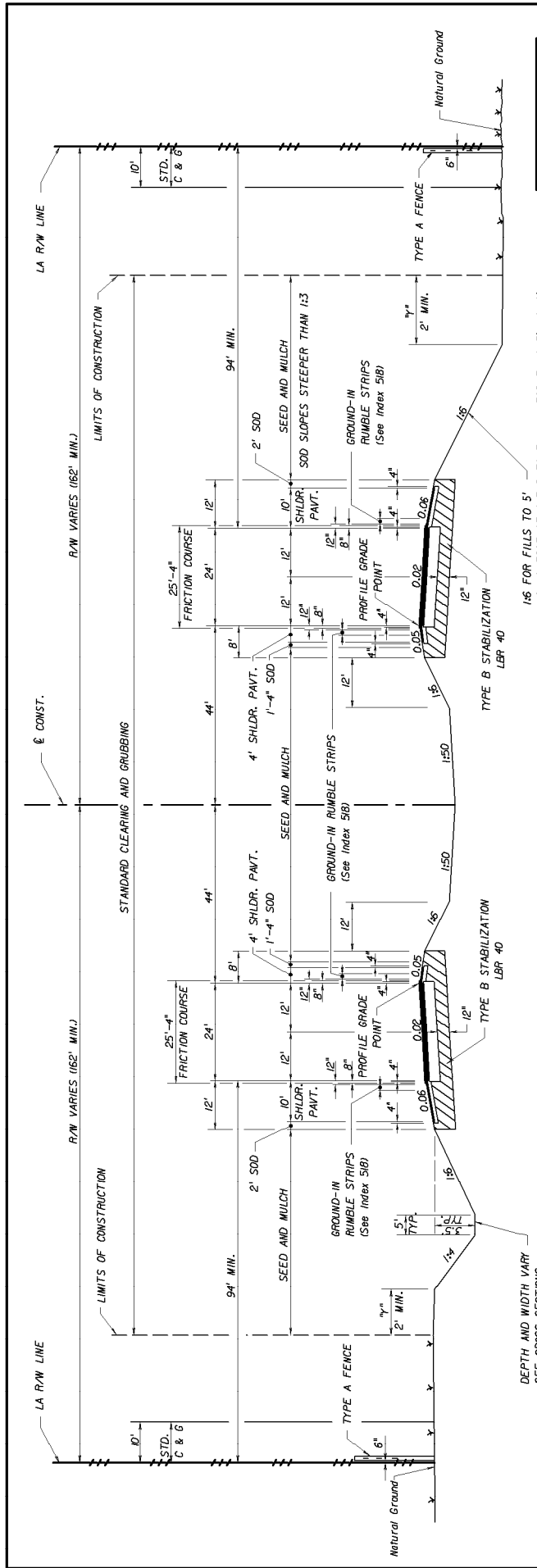
STA. 316+53.67 TO STA. 527+82.00

EXHIBIT TYP-9B  
Date: 1/1/03

SHEET 3 OF 3

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID

**TYPICAL SECTION DETAILS**



4 LANE INTERSTATE SYSTEM  
NEW CONSTRUCTION  
DIVIDED  
RURAL  
WITH PROJECTED  
20 YR. AADT OF 1500  
OR GREATER  
DESIGN SPEED  
70 MPH

NOTE:  
HEIGHT OF FILL IS THE VERTICAL DISTANCE FROM THE EDGE OF THE OUTSIDE TRAVEL LANE TO TOE OF FRONT SLOPE.

\* THE AREA DISTURBED BY CONSTRUCTION VARIES.

EXHIBIT TYP-10  
Date: 1/1/03

**TYPICAL SECTION  
SR 8  
STA. 567+25.67 TO STA. 1056+84.35**

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (400 LBS./SY) AND  
FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

**MEDIAN SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (150 LBS./SY) AND  
FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

**OUTSIDE SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (150 LBS./SY) AND  
FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

**TRAFFIC DATA**

CURRENT YEAR = 1998 AADT = 22300  
ESTIMATED OPENING YEAR = 2000 AADT = 23300  
ESTIMATED DESIGN YEAR = 2020 AADT = 51500  
K = 9 % D = 56 % T = 10 % (24 HOUR)  
DESIGN HOUR T = 5 %  
DESIGN SPEED = 70 MPH

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR, AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER

REVISIONS		STATE OF FLORIDA	
DATE	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	FINANCIAL PROJECT ID
		ROAD NO.	COUNTY

**TYPICAL SECTIONS**

SHEET NO.



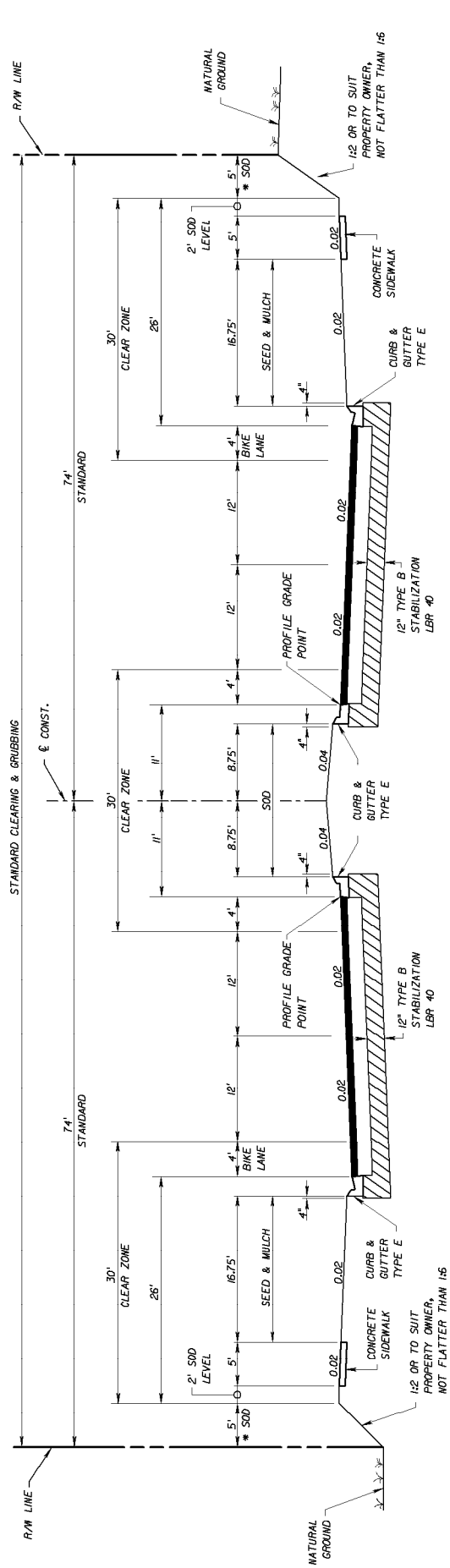


4-LANE ARTERIAL NEW CONSTRUCTION DIVIDED SUBURBAN WITH DESIGNATED OR UNDESIGNATED BIKE LANE DESIGN SPEED 55 MPH

SEED AND MULCH SLOPES FLATTER THAN 1:3 \* SOD SLOPES 1:3 OR STEEPER

IF LANDSCAPING IS DESIRED, TREES SHALL BE TYPES THAT WILL NOT HAVE AN EXPECTED GROWTH GREATER THAN 4" IN DIAMETER MEASURED 6" ABOVE THE GROUND.

DESIGNATED BIKE LANES SHALL BE LABELED ON TYPICAL. UNDESIGNATED BIKE LANES SHOULD NOT BE LABELED ON TYPICAL.



**TRAFFIC DATA**

CURRENT YEAR = 1999 AADT = 22800  
 ESTIMATED OPENING YEAR = 2002 AADT = 25800  
 ESTIMATED DESIGN YEAR = 2022 AADT = 30600  
 K = 6% D = 55% T = 2% (24 HOUR)  
 DESIGN HOUR T = 1%  
 DESIGN SPEED = 55 MPH

TRAFFIC DATA IS REQUIRED TO BE NOTED FOR CURRENT YEAR, OPENING YEAR AND DESIGN YEAR. POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

**SUBURBAN TYPICAL SECTION  
 SR 00 (SARA AVE.)  
 STA. 50+40.00 TO STA. 125+50.00**

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC C) (350 LBS/SY)  
 AND FRICTION COURSE FC-5 (80 LBS/SY) (RUBBER)

EXHIBIT TYP-13  
 Date: 1/1/03

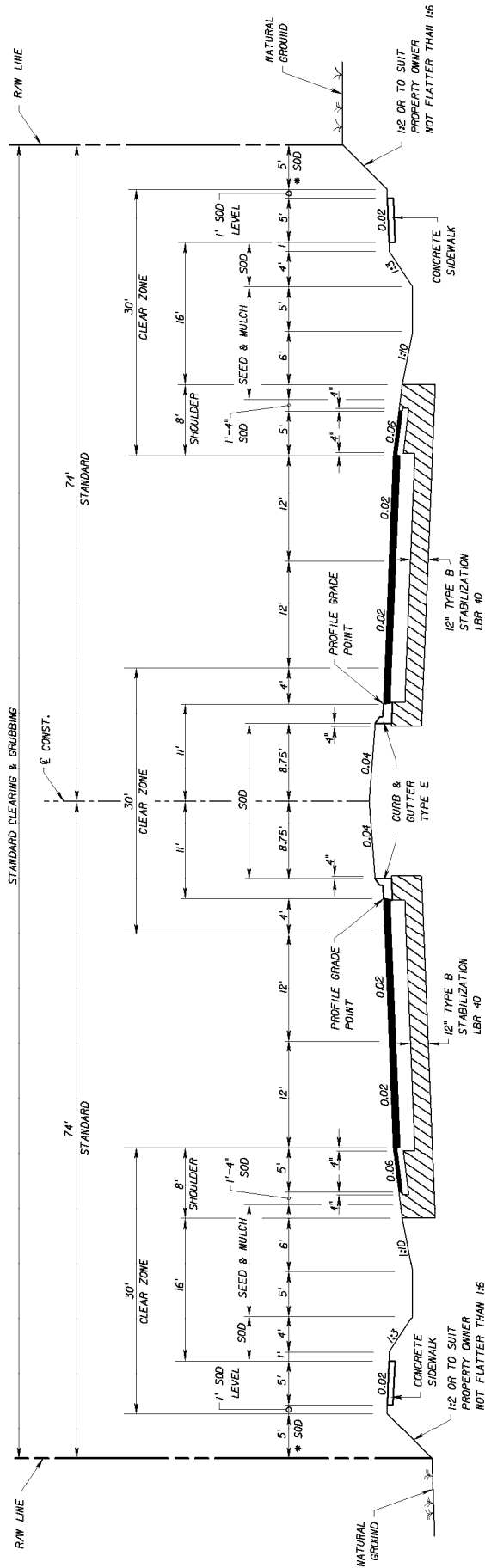
REVISIONS		STATE OF FLORIDA	
DATE	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	FINANCIAL PROJECT ID

**SUBURBAN TYPICAL SECTION**

SHEET NO.

4-LANE  
ARTERIAL  
NEW CONSTRUCTION  
DIVIDED  
SUBURBAN  
WITH DESIGNATED BIKE LANE  
UNDESIGNATED BIKE LANE  
DESIGN SPEED 55 MPH OR LESS

DESIGNATED BIKE LANES SHALL BE LABELED  
ON TYPICAL. UNDESIGNATED BIKE LANES  
SHOULD NOT BE LABELED ON TYPICAL.



SEED AND MULCH SLOPES  
FLATTER THAN 1:3  
\* SOD SLOPES 1:3 OR STEEPER

IF LANDSCAPING IS DESIRED, TREES SHALL BE  
TYPES THAT WILL NOT HAVE AN EXPECTED  
GROWTH GREATER THAN 4" IN DIAMETER  
MEASURED 6" ABOVE THE GROUND.

**SUBURBAN TYPICAL SECTION**  
SR 00 (CODY ROAD)  
STA. 100+40.00 TO STA. 225+50.00

NEW CONSTRUCTION

OPTIONAL BASE GROUP 9 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (350 LBS./SY)  
AND FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (50 LBS./SY)  
AND FRICTION COURSE FC-5 (80 LBS./SY) (RUBBER)

**TRAFFIC DATA**

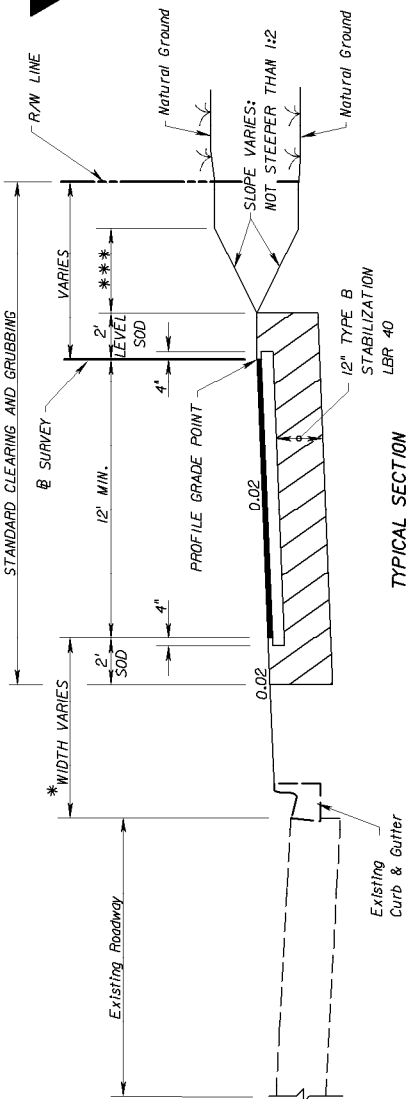
CURRENT YEAR = 1999 AADT = 22800  
ESTIMATED OPENING YEAR = 2002 AADT = 25600  
ESTIMATED DESIGN YEAR = 2022 AADT = 30600  
K = 6% D = 55% T = 2x (24 HOUR)  
DESIGN HOUR T = 1x  
DESIGN SPEED = 55 MPH

TRAFFIC DATA IS REQUIRED TO BE  
NOTED FOR CURRENT YEAR, OPENING  
YEAR AND DESIGN YEAR.  
POSTED SPEED (MPH) IS OPTIONAL.

FOR STANDARD TYPICAL SECTION NOTES  
REFER TO EXHIBIT 6-1, THIS CHAPTER.

EXHIBIT TYP-14  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY	-	
REVISIONS			
DATE	DESCRIPTION	DATE	BY
SHEET NO.		SUBURBAN TYPICAL SECTION	



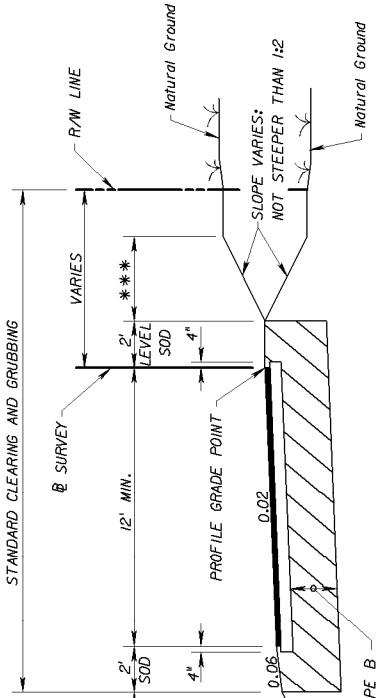
TYPICAL SECTION  
 SHARED USE PATH  
 SR 00 (WILLOW WAY)  
 STA. 122+00.000 TO STA. 210+65.000

PATH  
 OPTIONAL BASE GROUP I WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC A) 100 LBS./SY

\* FOR ROADWAYS WITH CURBS, A MINIMUM SEPARATION OF 5 FEET MEASURED FROM THE OUTSIDE EDGE OF TRAVELED WAY TO THE INSIDE EDGE OF THE SHARED USE PATH SHOULD BE PROVIDED.

\*\*\* SEEDS,  
 SEED AND MULCH,  
 SOD OR SEED  
 SOD

NOTE:  
 THE DESIGN SPEED FOR SHARED USE PATHS IS 20 MPH.



TYPICAL SECTION  
 SHARED USE PATH  
 SR 00 (DEXTON HEIGHTS)  
 STA. 22+00.000 TO STA. 51+65.000

PATH  
 OPTIONAL BASE GROUP I WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC A) 100 LBS./SY

\*\* FOR ROADWAYS WITH FLUSH SHOULDERS, A MINIMUM SEPARATION OF 5 FEET MEASURED FROM THE OUTSIDE EDGE OF SHOULDER TO THE INSIDE EDGE OF THE SHARED USE PATH SHOULD BE PROVIDED.

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 ROAD NO. COUNTY FINANCIAL PROJECT ID

SHARED USE PATH

EXHIBIT TYP-15  
 Date: 1/1/03

SHEET NO.

## Chapter 7

### Summary of Quantities

7.1	General .....	7-1
7.2	Item Quantity "Boxes" and Format.....	7-2
7.3	Box Culvert Data Sheet.....	7-3
Exhibits		
Exhibit 7-1	Standard Notes for Summary of Quantities Sheet.....	7-5



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## Chapter 7

### Summary of Quantities

#### 7.1 General

The summary of quantities sheet shows individual summaries of guardrail, fence, turnouts, sodding, ditch pavement, side drains, mitered end sections, underdrains, and earthwork when applicable. The tabulation shall show location and quantities in the plan quantity column (P). The final quantity column (F) is reserved for construction and final estimates. As noted in **Chapter 4**, the necessary pay items and the quantities shall be shown on the summary of pay items sheet.

For examples of summary of quantities sheets see **Exhibits SQ-1** thru **3**.

## 7.2 Item Quantity "Boxes" and Format

The various "boxes" used for each type of summary are contained in the FDOT Engineering/CADD Systems Software. Each box is identified by the appropriate Form Number required for the Computation Book. The arrangement of these "boxes" on the sheet is dependent on the number used and the size each one must be to contain all of the necessary information.

On contracts with multiple Financial Project ID's or federal aid and non-federal aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

Standard notes (see **Exhibit 7-1**) shall be shown under the appropriate box.

Applicable pay item notes, listed in **Exhibit 7-1**, shall also be included on this sheet.

## 7.3 Box Culvert Data Sheet

The structural design of box culverts may be done by one of two computer programs. The first program (***PSTDN55***) designs the culvert based on the details shown on ***Index 290*** of the ***Design Standards***. When this is used, the program output (data sheets) showing the concrete and steel quantities shall be transferred to a graphics design file and placed on a normally formatted plan sheet. The plan sheet shall be placed in the contract plans directly behind the Summary of Quantities Sheet(s).

The second program is the ***LRFD Box Culvert Program***. When this is used, ***Index 290*** does not apply. The program generates detail plan sheets, with quantities, for constructing culverts. These sheets should be placed together, behind the drainage structure sheets in the contract plans.

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**Exhibit 7-1 Standard Notes for Summary of Quantities Sheet  
Sheet 1 of 2**

Below are standard notes that should be used on the summary of quantities sheet, as applicable:

(Under Summary of Earthwork):

Earthwork has been calculated using the \_\_\_\_\_ base option. If another option is constructed, there shall be no revision to the earthwork quantities for which payment is made by plan quantity.

**Pay Item Notes**

1. 102- 1- Includes approximately \_\_\_\_\_ SY of Temporary Pavement.
2. 104- 10- 1 Based on replacement every 3 months.
3. 104- 13- 1 Based on replacement every 12 months.
4. 110- 86- All salvageable material designated to be delivered by the contractor shall be delivered to:  
(Provide address of nearest FDOT Maintenance Yard.)
5. 331- 2 or 334- 1  
Includes \_\_\_\_\_ TN for turnouts, connections to existing drives, streets, etc., as directed by the Engineer.
6. 400- 1- 15 Includes \_\_\_\_\_ CY for miscellaneous construction, as directed by the Engineer.
7. (For new construction projects with Asphalt Base, Type B-12.5 Only):  
510-1-7 or 510-1-10  
Cost of asphalt curb pad and additional curb thickness required to be included in the cost of curb and gutter.
8. 536- 73- (To be used for the removal of existing guardrail when FDOT Maintenance wants materials).  
Existing guardrail to be dismantled and stockpiled within the right of way in areas designated by the Engineer for removal by FDOT maintenance forces.
9. 538- 1- This is to include replacement of \_\_\_\_\_ panels, \_\_\_\_\_ regular posts and \_\_\_\_\_ special posts which have been determined to be non-salvageable. Additional posts and panels determined to be non-salvageable during resetting shall be paid for under Section 538-5 of the Specifications.

**Exhibit 7-1 Standard Notes for Summary of Quantities Sheet  
Sheet 2 of 2**

10. Temporary Grassing: When required by the project design, these items shall be included in the cost of the Permanent Grassing items. A pay item note should show the approximate quantities. For example:
  - 570- 1- Includes approximately \_\_\_\_\_ SY Seeding for temporary grassing.
  - 570- 2- Includes approximately \_\_\_\_\_ SY Seed and Mulch for temporary grassing.
  - 570- 3- Includes approximately \_\_\_\_\_ lbs Grass Seed (Permanent Type) for temporary grassing.
  - 570- 4- Includes approximately \_\_\_\_\_ Tons Mulch Material for temporary grassing.
  - 570- 5- Includes approximately \_\_\_\_\_ Tons Fertilizer for temporary grassing.
  - 570- 9- Includes approximately \_\_\_\_\_ Gallons Water for temporary grassing.
  - 570- 10- Includes approximately \_\_\_\_\_ lbs Grass Seed (Quick Growing) for temporary grassing.
  - 575- 1- Includes approximately \_\_\_\_\_ SY Sodding for temporary grassing.
11. 570- 5- Based on \_\_\_\_\_ applications.
12. 639- 2- 1 Payment shall be based on the linear feet of a single conductor.
13. The following pay item note should be shown in the Roadway Plans:
  - 710- The totals shown on the Summary of Roadway Pay Items include the quantities for pavement markings used for Traffic Control Pavement Markings (as shown in the Roadway Plans) and for final pavement markings (as shown on the Signing and Pavement Marking Plans.)The following pay item note should be shown on the Signing and Pavement Markings Tabulation of Quantities Sheet:
  - 710- All pavement markings shall be paint unless otherwise noted in the plans. The quantities for pavement markings indicated in the Signing and Pavement Marking Plans are included in the quantities for Pavement Markings shown in the Summary of Roadway Pay items.

FORM 625-000-29 ROADWAY DESIGN 01-2000

### SUMMARY OF SODDING

LOCATION STA. TO STA.	SIDE	P			SY			F			FIELD BOOK REFERENCE
		L	W	SY	L	W	SY	L	W	SY	
MB 1-00											
570+00 - 580+62	MED	1062	1.33	157							
570+00 - 574+57	RT	457	1.33	68							
575+45 - 576+80	RT	135	1.33	20							
576+80 - 579+95	RT	315	56	1960							
579+95 - 580+62	RT	67	32	238							
580+62 - 586+37	MED	575	1.33	85							
580+62 - 586+37	RT	575	1.33	85							
SB 1-00											
570+00 - 580+62	MED	1062	1.33	157							
570+00 - 574+57	LT	457	1.33	68							
575+45 - 577+25	LT	180	1.33	27							
577+25 - 580+34	LT	309	48	1648							
580+34 - 580+62	LT	28	37	115							
580+62 - 586+37	MED	575	1.33	85							
580+62 - 586+37	LT	575	1.33	85							
RAMP A											
182+99 - 187+24	LT	425	1.33	63							
180+87 - 187+74	RT	687	1.33	102							
RAMP B											
276+62 - 281+75	LT	513	1.33	76							
274+47 - 280+29	RT	582	1.33	86							
RAMP C											
382+45 - 386+88	RT	443	1.33	65							
381+95 - 388+30	LT	635	1.33	94							
RAMP D											
481+05 - 485+63	LT	458	1.33	68							
480+64 - 487+31	RT	667	1.33	99							
DRAINAGE STRUCTURES				807							
PAVED DITCHES				278							
TOTAL				6536							

FORM 625-000-30 ROADWAY DESIGN 01/2000

### SUMMARY OF SIDEDRAIN & MITERED END SECTIONS

LOCATION STA. TO STA.	SIDE	PIPE LENGTH (LF)											
		15"	18"	MES (EA)	24"	MES (EA)	30"	MES (EA)	36"	MES (EA)			
150+10 - 150+50	RT	40	2										
160+85 - 161+21	LT		36	2									
176+36 - 176+78	LT					42	2						
181+46 - 181+98	RT				52	2							
192+46 - 192+82	LT	36	2										
194+50 - 195+14	RT									64	2		
TOTAL		76	4	36	2	52	2	42	2	64	2		

EXHIBIT SQ-1  
Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID		SHEET NO.	
ROAD NO.	COUNTY						
<b>SUMMARY OF QUANTITIES</b>							

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY





SUMMARY OF EARTHWORK		FORM 625-000-08 ROADWAY DESIGN 01/2002	
DESCRIPTION	P	F	F
	CY	CY	CY
ROADWAY EXCAVATION, MAINLINE	10,000		
ROADWAY EXCAVATION, ADAMS ST.	800		
REGULAR EXCAVATION, POND #1	1,005		
REGULAR EXCAVATION FROM LATERAL DITCHES	5,000		
TOTAL REGULAR EXCAVATION	16,805		
EMBANKMENT, MAINLINE	20,000		
EMBANKMENT, ADAMS ST.	7,000		
TOTAL EMBANKMENT	27,000		
SUBSOIL EXCAVATION, MAINLINE	2,080		
SUBSOIL EXCAVATION, ADAMS ST.	1,000		
TOTAL SUBSOIL EXCAVATION	3,080		

Earthwork has been calculated using the \_\_\_\_\_ base option.  
 If another option is constructed, there shall be no revision to the  
 earthwork quantities for which payment is made by Plan quantity.

**FOR PROJECTS WITH CROSS SECTIONS**

SUMMARY OF EARTHWORK		FORM 625-000-08 ROADWAY DESIGN 01/2002	
DESCRIPTION	P	F	F
	CY	CY	CY
FILL, MAINLINE	253		
FILL, GUARDRAIL LOCATIONS	70		
FILL, CROSS DRAINS	100		
SUB-TOTAL FILL	423		
FILL ADJUSTMENT (20%) (423 x 0.20)	+85		
SUB-TOTAL WITH FILL ADJUSTMENT	508		
TRUCK ADJUSTMENT (25%) (571 x 0.25)	+127		
TOTAL BORROW EXCAVATION	635		

**FOR PROJECTS WITHOUT CROSS SECTIONS**

Adjustment percentages shown are for example only.  
 Contact District Materials Office or Construction  
 for actual percentages to be used for each project.

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
FINANCIAL PROJECT ID	

**SUMMARY OF QUANTITIES**

SHEET NO.

EXHIBIT SQ-3  
 Date: 1/1/03

## Chapter 8

### Summary of Drainage Structures and Optional Materials Tabulation

8.1	Summary of Drainage Structures .....	8-1
	8.1.1 Sheet Setup and Data .....	8-2
8.2	Optional Materials Tabulation .....	8-4

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## Chapter 8

# Summary of Drainage Structures and Optional Materials Tabulation

### 8.1 Summary of Drainage Structures

The summary of drainage structures sheet shows the location, size, length, number and type of drainage structures used in a project. The sheet format is available in the FDOT Engineering/CADD Systems Software. Specific levels and fonts which shall be used are given in the FDOT CADD Production Criteria Guide.

For an illustration of the summary of drainage structures sheet, see *Exhibit SDS-1a*.

## 8.1.1 Sheet Setup and Data

A summary of drainage structures shall be prepared and included in the plans. The structures shall be listed by structure number in numerical order. The location of each structure shall be identified by station along the construction centerline (**Exhibit SDS-1a**).

For cross drains, and storm sewer the summary of drainage structures shall be tabulated by structure number, providing the station, size, length and incidental quantities appropriate for the material detailed in the plans. Optional culvert material will be provided and a tabulation form shall be prepared and included (see **Section 8.2**).

Various drainage elements shall be shown in columns. This information shall be obtained from drainage structure sheets or plan-profile sheets. The order in which the elements are listed should be as follows:

1. Pipe Sizes for
  - a. Cross Drains
  - b. Storm Sewer
  - c. Gutter Drain
2. Curb Inlets
3. Manholes
4. Junction Boxes
5. Ditch Bottom Inlets
6. Gutter Inlets
7. Flared End Sections
8. Mitered End Sections
9. Sod
10. Class of Concrete
11. Reinforcing Steel
12. Riprap

The "Description" column shall be used to specify the type of structure, the outgoing pipe and the end treatment of that pipe, if applicable.

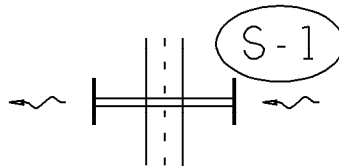
The remarks column shall contain all special notes pertaining to the structure. The "Final Quantity" line is for construction to use and shall be left blank.

On smaller projects the summary of quantities and the summary of drainage structures may be combined on one sheet.

It is recommended that structure numbers be established using the convention shown in the exhibits and described as follows:

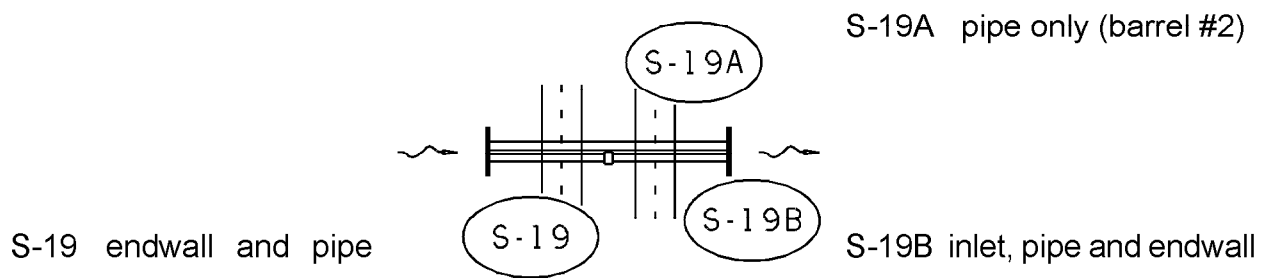
1. For simple cross drains, one structure number is appropriate for the inlet and outlet treatments and the pipe.

Example #1 (cross drain w/o median inlet)



2. For complex cross drains, it is suggested that the first and all intermediate structure numbers identify the hydraulically upper end treatment and pipe. The last structure number should identify the hydraulically upper end treatment, pipe and hydraulically lower end treatment.

Example #2 (Double pipe CD and median inlet)



## 8.2 Optional Materials Tabulation

An optional materials tabulation shall be prepared and included in the plans (see **Exhibits SDS-2a** and **SDS-3a**). The sheet format is available in the FDOT Engineering Systems Software.

As a minimum, the optional pipe material tabulation should include size, thickness or class, corrugation requirements, if necessary, and protective coating, if any. Additional information such as structure number, design service life (DSL), length, and flow line information may be included.

The general notes shown on the exhibits are also required.





STR. NO.	DSI (feet)	SIZE (inches)	PLOTTED	MATERIAL & THICKNESS	FL	FL	AS BUILT	REMARKS
1	100	18	X	RCP CLASS II				
2	100	18	X	RCP CLASS II				
3	100	15	X	RCP CLASS II	7.0			
4	100	36	X	RCP CLASS II	5.7			
				SRAP, 12 GA.				
				SRAP, 14 GA.				
				SRAP, 16 GA.				
5	100	15	X	RCP CLASS II	7.7			
				SRAP				
6	100	36	X	RCP CLASS II	6.4	5.7		
				SRAP, 12 GA.				
				SRAP, 14 GA.				
				SRAP, 16 GA.				
7	100	36	X	RCP CLASS II	6.5	6.4		
				SRAP				
8	100	42	X	RCP CLASS II	7.9	7.7		
				SRAP				
				SRAP				
9	100	30	X	RCP CLASS II	6.8	6.5		
				SRAP, 16 GA.				
				SRAP, 18 GA.				
10	100	18	X	RCP CLASS II	7.6	7.2		
				SRAP, 16 GA.				
				SRAP, 14 GA.				
				SRAP, 12 GA.				
				SRAP, 10 GA.				
11	100	18	X	RCP CLASS II	8.0	7.6		
				SRAP, 16 GA.				
				SRAP, 14 GA.				
				SRAP, 12 GA.				
				SRAP, 10 GA.				
12	100	24	X	RCP CLASS III				ENDWALL
13	100	24x36	X	RCP CLASS II	10.4	10.3		
		36x24		ASPA, 14 GA.				
14	50	30	X	RCP CLASS III	6.0	5.9		
				SRAP, 14 GA.				
				SRAP, 12 GA.				
				PVC				
		36		CAF, 16 GA.	5.9	5.8		
		36		ESP, 16 GA. BIT. COATED	5.9	5.8		
14A	50	19x30	X	RCP CLASS III	5.9	5.8		
		28x20		ASPA 14 GA.				

EXHIBIT SDS-2a  
Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		OPTIONAL MATERIALS		SHEET NO.	
ROAD NO.		COUNTY		FINANCIAL PROJECT ID		TABULATION	
REVISIONS		DESCRIPTION		DATE		BY	

**GENERAL NOTES**

- The Contractor may use any of the optional pipe materials tabulated for a given structure. Only the material options tabulated for a given structure can be used.
- Adjustment to the bid quantities, prices and payment will not be allowed due to increase or decrease in structure size, shape, length, width, depth or necessary construction necessary to accommodate the use of optional pipe material other than the "plotted" option; likewise there will be no added or reduced compensation for structure alterations required to relieve utility conflicts which arise from the use of an optional material other than the "plotted" option.
- Adjustment to the bid quantities, prices and payment will not be allowed due to increased or decreased excavation, bedding, borrow, backfilling, compaction, special installation requirements or disposal of excess materials due to use of any of the pipe optional materials. Likewise, adjustment in the quantities, prices and payment will not be allowed due to differences in end treatment size or types, pipe length, alternate fitting and connecting materials, saddles, cradles, pipe fabrics, splicing or similar features due to the use of an optional material other than the "plotted" option.
- If adjustments are required due to plan errors or omissions or authorized field changes, the "plotted" material and not the material elected by the Contractor would be used to establish new pay quantities.
- The Contractor shall notify the Department in writing as to which optional pipe materials he chooses to use at the preconstruction conference. Once identified the Contractor may not change pipe material selected without the approval of the Engineer.
- Pipe shapes other than round (Elliptical/Arch) are summarized and paid for using equivalent round pipe diameter.

THIS EXAMPLE SHOULD BE USED WHEN PIPE FLOW LINES, AND/OR SIZES FOR INDIVIDUAL OPTIONS ARE NOT THE SAME (SEE STRUCTURE NO. 14) OR WHEN NUMEROUS EXCEPTIONS OCCUR.



## Chapter 9

### Project Layout

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9.2	Alignment Sheet Sequence.....	9-2
9.3	Survey Reference Points .....	9-3
9.4	General Notes .....	9-4

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## Chapter 9

# Project Layout

### 9.1 General

The project layout sheet (or sheets) shows the horizontal alignment and plan or plan-profile sheet sequence and numbering for the project. This is an optional sheet, to be included in the plans set at the discretion of the district. The project layout sheet can prove to be of great advantage for large or complicated projects involving large interchanges with a number of diverging routes. If included in the plans set, this sheet should also show all survey reference points and list all general notes applicable to the project.

The layout sheet shall be prepared on a standard plan format sheet in the FDOT Engineering/CADD Systems Software. Scale shall be such that clarity and legibility are preserved. North arrow and scale shall be shown at a point of maximum visibility on the sheet. For large, complicated projects, more than one sheet may be required to clearly depict all required information. Appropriate match lines shall be shown if more than one sheet is required.

## 9.2 Alignment Sheet Sequence

Complete project alignment with baseline of survey and/or centerline of construction shall be shown. Edge of pavements shall be shown if scale permits. Outlines of the plan, or plan-profile sheets shall be superimposed on the alignment to depict the sheet sequence with relation to the alignment stationing. Each sheet outline shall contain the appropriate plan sheet number. The order of plan/plan-profile sheet numbering shall be as follows:

1. Mainline (for widely separated roadways, the right roadway in the direction of stationing takes precedence)
2. Crossroads
3. Ramps
4. Frontage roads
5. Access roads

Beginning and ending stations for project, construction and ramps shall be flagged and labeled, including equations and/or exceptions.

### **9.3 Survey Reference Points**

Generally, survey reference points should be shown on the project layout sheet just beneath the alignment sheet sequence plan or where other space allows. Baseline survey and reference points, with all ties, shall be clearly indicated. Complete length of survey baseline between two consecutive reference points need not be shown. Each reference point shall be clearly labeled, beginning at the first reference point within the limits of the project, and progressing in the direction of stationing. Usually, reference points need not be drawn to any particular scale, but distances and angles shown shall be proportionate. Care should be taken to ensure that clarity and legibility are maintained.



## 9.4 General Notes

When the layout sheet is included in the plans set, applicable general notes should be included on the layout sheet instead of the first plan-profile sheet to help simplify the plan-profile sheets.

For a list of general notes, refer to ***Exhibit 10-1*** in ***Chapter 10*** of this volume.

## Chapter 10

### Roadway Plan and Roadway Plan-Profile

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## Chapter 10

### Roadway Plan and Roadway Plan-Profile

#### 10.1 General

The roadway plan sheet shows the project's complete horizontal alignment. The plan-profile sheet shows the project's complete horizontal and vertical alignments. Various roadway elements such as pavement width, medians, paved shoulders, curbs, drainage elements, tapers, turn provisions, and intersecting roadways, are also shown on these sheets.

Roadway plan and roadway plan-profile sheets shall be prepared on standard formatted sheets that are contained in the FDOT Engineering/CADD Systems Software. Plotting should typically be done at a horizontal scale of 1" = 40' or 1" = 50' for urban jobs. For rural jobs, the scale should typically be from 1" = 100' or 1" = 200' horizontally, depending on the project specific details.

If a project layout sheet is not included in the plans set, provision shall be made on the first plan-profile sheet to show applicable general notes. Refer to **Exhibit 10-1** for a list of general notes.

## 10.2 Roadway Plan Portion

### 10.2.1 Centerline

The baseline survey and/or centerline of construction should be centered in the plan portion of the sheet, with stationing running from left to right. When alignment includes horizontal curves, the centerline should be positioned on the sheet to avoid breaks or match lines (except at the beginning or end of the sheet).

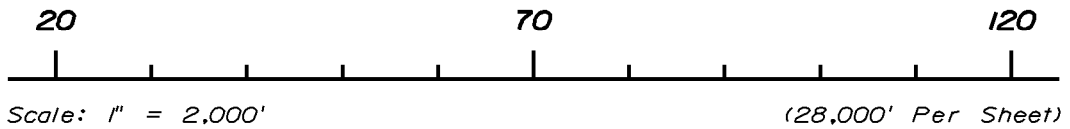
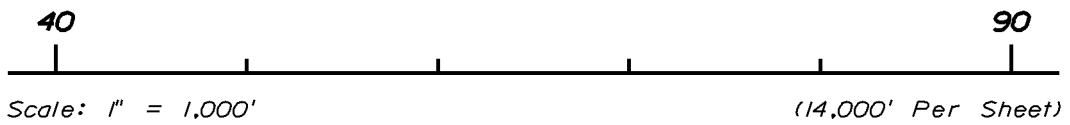
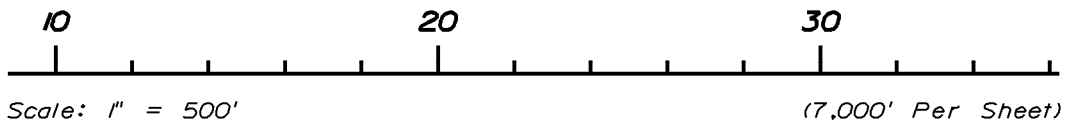
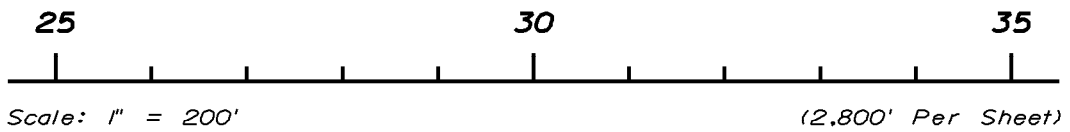
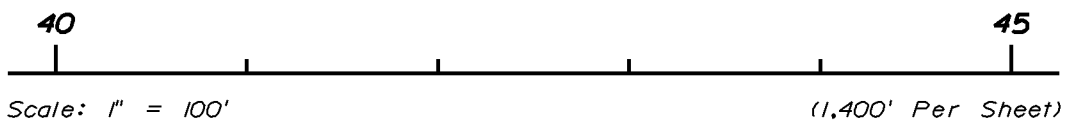
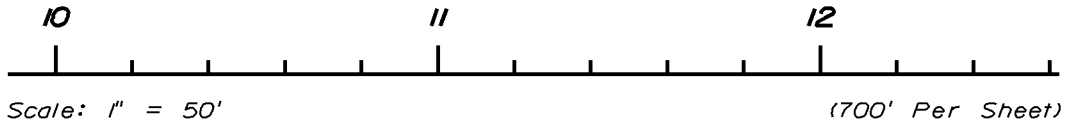
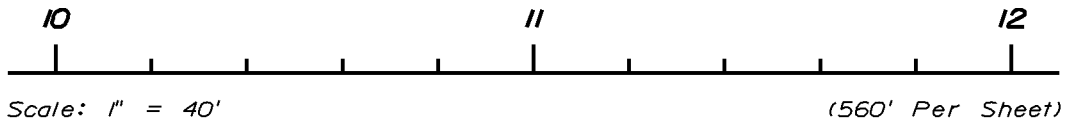
A "tick" mark shall be placed on the upper side of the centerline at every station. In addition, intermediate ticks shall be placed as shown in **Figure 10.1**. Intermediate ticks should be about half the length of those at each station.

Station numbers should be placed close to tick marks for scales up to and including 1" = 50' and outside the R/W lines for smaller scales.

In cases where the construction centerline does not coincide with the survey baseline, the construction centerline shall be identified with complete alignment data and ties to the survey baseline. However, the construction centerline need not be shown when it is uniformly offset from the survey baseline for the entire length of the project, and is shown on the typical sections. All station equations shall be included. These include equations occurring on the survey baseline and those equating the survey baseline and construction centerline.

A north arrow and scale shall be shown at a point of maximum visibility, preferably in the upper right portion of the plan view.

**Figure 10.1 Centerline Station Numbering and Tick Marks**



## 10.2.2 Horizontal Curves

PC and PT points of horizontal curves shall be indicated by small circles. Short radial lines shall be drawn from these points and identified. PI's shall be noted by the use of a small triangle with a short section of tangent on either side. Care must be taken in the clipping of plan sheets to properly orient the horizontal curves within the plan view. In cases where the curve extends over more than one sheet, the curve data shall be repeated on each sheet showing the curve.

Complete curve data shall be shown for each horizontal curve using the following format:

### **CURVE DATA**

- PI (Station)
- $\Delta$  (Delta Angle with Direction)
- D (Degree of Curve)
- T (Tangent Length)
- L (Length of Curve)
- R (Radius Length)
- PC (Station)
- PT (Station)
- e (Superelevation Rate)

### 10.2.3 Existing Topography

All existing topography shall be shown. Existing roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges, drainage structures and similar items shall be plotted and labeled. Streams, ponds, lakes, wooded areas, ditches and all other physical features shall also be shown.

All existing utilities shall be shown on the plan and noted by an appropriate symbol (see the ***Design Standards, Index 002*** and the FDOT Engineering/CADD Systems Software for standard symbols). If the type of utility is unknown it should be labeled as such. Existing gasoline storage tanks within limits of topographical survey shall be located and illustrated.



## 10.2.4 Reference Data

Bearings, in the direction of stationing, shall be shown for all tangent sections.

Station equivalencies, angles with mainline centerline and/or bearings in the direction of stationing of the crossroad shall be shown for all roads and streets intersecting or crossing the project.

All the survey reference points shall be shown (if layout sheet is not included in plans set) at locations removed from the centerline.

If section lines or city limits are encountered within the limits of the project, the intersection shall be tied by station and angle/bearings to the baseline of survey.

## 10.2.5 Construction and Project Limits

Proposed construction and project limits shall be indicated in the plans. The limits to be flagged and stationed are:

1. Begin and end of project, and begin and end of construction where construction limits are other than project limits. If plans cover more than one project, the limits of each shall be clearly identified by station and Financial Project ID. Limits identification shall be shown both in plan and in profile.

It is the responsibility of the Engineer of Record (EOR) to set the project and construction limits. If the plans cover more than one project or are part of a corridor improvement, the project limits should be at the beginning of the full typical sections, with any construction (transitions, etc.) outside these limits being within the construction limits. Examples of types of work that may fall within construction limits but outside project limits are feathering, friction course, guardrail, drainage work and signing and marking work.

2. The limits of project breakdown necessary for separation of length and quantities for federal aid and non-federal aid projects.
3. The limits of each type of construction classification where more than one type is involved, such as, new construction, resurfacing, bridge work, widening, and milling.
4. The begin and end of exceptions and equations.

## 10.2.6 Drainage Structures and Bridges

Proposed cross drain pipes and box culverts shall be indicated in the plan by a symbol and identified by a drainage structure number. Cross drain pipe sizes and lengths shall be shown. (Box culvert lengths shall be shown on the drainage structure sheets).

Box culverts (single or multiple) of 20 feet total span or more between inside faces of end supports, measured along the center of the roadway, shall be designated as bridge culverts and shall be identified by both a bridge number and a drainage structure number. The beginning and ending stations (outside wall to outside wall) shall be flagged.

Proposed bridges and approach slabs shall be shown by simple outline. Bridges shall be identified by bridge number and their beginning and ending stations noted by station flags. The beginning and ending stations of approach slabs shall be noted.

A short section of lateral ditch/outfall centerline shall be shown, when appropriate, on the roadway plan-profile sheet, together with a note referring to lateral ditch/outfall sheets for details.

The proposed drainage system is indicated by showing storm sewer pipes with a single line, and the outline of inlets, manholes and junction boxes. The outline of structure bottoms may be shown at the designer's discretion. The pipe size and length between structures shall be given. Structure numbers shall be provided for inlets, manholes, junction boxes and special structures.

## 10.2.7 Plan Layout

1. Right of way lines shall be shown. Right of way shall be dimensioned only if the applicable typical section shows a varying dimension from the baseline or centerline. Dimensions of the R/W line shall be from the centerline or baseline, if survey and construction lines are parallel; otherwise it shall be dimensioned from the construction centerline.
2. The showing of detailed information regarding median openings or intersections should be avoided when they are of a type that can be detailed and grouped on a separate sheet. When this is the case, median openings and intersections shall be identified by station location.
3. At locations along the alignment where traveled way dimensions change, or begin to change, the station and dimensions of the traveled way shall be shown.

4. Curb, curb and gutter, traffic separators, sidewalks, curb ramps, retaining walls, etc. shall be shown. Driveways shall be shown as required by **Volume I, Section 1.8**.
5. Stations of return points shall be shown in tabular form or shown on the plan, unless shown on an intersection detail sheet. Offsets shall also be shown, if not governed by a typical.
6. Station of radius points of traffic separator or median curb at median openings shall be shown in the plan. Elevation of these points shall also be shown if not shown in the intersection details sheet or unobtainable in plans.
7. Control radii for traffic turns that set median nose locations shall be indicated, unless shown on the intersection detail sheet.
8. Station of end of curb and gutter at side street intersections (when end is not at a return point) shall be shown with proposed gutter grade elevation of these points.
9. Limits of pavement and grading at side street intersections shall be indicated.
10. When incidental construction extends beyond the right of way lines, construction easements or license agreements may be required and should be shown on the plan sheets.
11. Limits of wetlands shall be shown based on permit or regulatory requirements.
12. All utilities shall be shown in the plan. All major utilities that have been field verified (see *Level "A" locates*, **Volume I, Chapter 5**) shall be labeled in accordance with the following symbol:

$V_{vh}$  = Verified Vertical Elevation and Horizontal Location

13. All traffic monitoring sites on or within one-half mile of the project shall be identified with the following notation:

Traffic Monitoring Site Number (XXXX)

Roadway Identifying Number (RCI Section #) Milepost (XX.XXX)

Site includes vehicle detectors in roadway and pedestal, pole or base mounted cabinet, buried cable, and solar power unit on right of way.

Inquiries about monitoring sites should be addressed to the Traffic Data Section Manager of the Transportation Statistics Section, Office of Planning.

## 10.3 Roadway Profile Portion

### 10.3.1 General Data

Preformatted plan-profile sheets are located in the FDOT Engineering/CADD Systems Software. The grid portion of each sheet is used for plotting the project profile. The standard grid pattern for the profile portion of the sheet is five lines per inch, both in the horizontal and vertical. This will accommodate most scales. An optional grid with four lines per inch is available. This sheet may be used if approved by the district.

The horizontal scale for the profile portion of the sheet shall be the same as that used for the plan portion. Station limits of the profile shall correspond to those of the plan portion of each sheet. Station numbers shall be placed across the bottom of the sheet just above the title block. Intervals for profile stations shall be the same as those in the plan view.

Vertical elevation datum selected shall be such that the profile will not crowd either the upper or lower limits of the profile format. A general guideline is the vertical scale should be 10% of the horizontal grid. Elevation datum shall be shown on both the left and right sides of the sheet in the space provided adjacent to the grid.

The existing ground line profile shall be shown and labeled. Existing ground line elevations shall be noted vertically, just above the station numbers at each end of the sheet only.

All high water elevations affecting base clearance or roadway grades shall be shown and labeled.

Benchmark data shall normally be given just below the upper margin of the profile portion. However, if space permits, it may be placed in the plan portion just above the upper profile margin at the appropriate corresponding station. Refer to **Exhibit PP-2** for correct format.

Station equations and exceptions shall be shown. Begin and end stations of project, construction, bridge and bridge culverts shall also be shown.

## 10.3.2 Vertical Alignment

The proposed profile grade shall be shown and labeled. Vertical curve PC's and PT's shall be indicated by small circles and PI's by a small triangle with short sections of tangent shown on each side. Percents of grade to 3 significant decimal places shall be shown on the tangent line (trailing zeros need not be shown). Vertical lines shall be extended from the PC and PT points and a dimension line placed between these lines indicating the length of the vertical curve. The PC and PT stations and elevations shall be indicated on the vertical lines.

For vertical curves, the profile grade elevations shall be given on even stations and at appropriate intervals. The elevations shall be placed between the dimension line and the grade line. The curve length, dimension lines and the profile grade elevations shall be placed above the grade line for sag vertical curves and below the grade line for crest vertical curves. The dimensions and elevations shall be placed reasonably near the grade line whenever possible. The PI station and elevation shall be noted, lettered vertically above the PI symbol for crest curves and below for sag curves.

The profile grade elevation of the beginning and ending station of each sheet shall be shown vertically just above the grade line, except when the beginning or ending station on the sheet is on a vertical curve.

## 10.3.3 Grades

Percents of grades to 3 decimal places shall be indicated for each tangent section on every sheet (trailing zeros need not be shown). When two tangent grades intersect and no vertical curve is required the PI station and elevation shall be labeled vertically, using the same criteria as for vertical curves.

## 10.3.4 Superelevation and Special Profiles

For non-standard superelevated sections of the project, the begin and end superelevation stations should be indicated on the profile with a note: "For Superelevation details see sheet \_\_\_\_\_" (special profiles sheet).

Other special profiles that cannot be clearly shown on the plan-profile sheets shall be referenced in a similar manner to non-standard superelevated sections. For additional information regarding special profiles see **Chapter 11** of this volume.

## 10.3.5 Other Profile Features

For rural construction projects, special ditches shall be indicated in the profile and labeled. Percent of ditch grade and a beginning or ending ditch PI with elevation and station plus shall be shown. For multi-lane divided projects, three special ditch grades (right and left roadway ditches and median ditch) sometimes occur at the same location. In such cases it may be advantageous to show the median ditch at a convenient location on the sheet with a separate elevation datum.

Uniform ditches of non-standard depth should be indicated by a dimension line in the lower portion of the grid and noted as a special ditch with location and depth, or they should be indicated by flagging the DPI's at each end with station elevation and side. Standard depth ditches are not shown.

Special gutter grades shall be shown in profile for cases where the gutter grades are not controlled by the typical section and no "special profiles" are included in the plans set.

Prolongations of gutter profile grades across street intersections shall be included on plan-profile sheets if an inlet is not provided before the intersection.

Storm sewer pipe, inlets and manholes along the main line shall be shown. Pipes shall be noted by size. Proposed structures may be shown by structure number only. Flow line elevations shall be shown for all pipes entering and leaving the structure.

Proposed cross drain pipes and culverts shall be plotted. The section shall be shown at the correct location and elevation of the proposed structure crossing the centerline of construction. Cross drains shall be identified by structure number only.

Where the project overpasses a road or railroad, the cross section template of the road/railroad under the bridge shall be shown at the appropriate location in profile.

All field-located (Level "A"), major underground utilities, as defined in **Volume I, Chapter 5**, shall be shown to scale in profile and labeled in accordance with the following symbol:

$V_{vh}$  = Verified Vertical Elevation and Horizontal Location.

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## 10.4      **General Notes for Roadway Plan and Roadway Plan-Profile Sheets**

General notes for the project shall be placed on the left portion of the first plan-profile sheet if a project layout sheet is not included in the plans set, otherwise, they shall be included on the layout sheet. See ***Exhibit 10-1*** for a list of General Notes required.

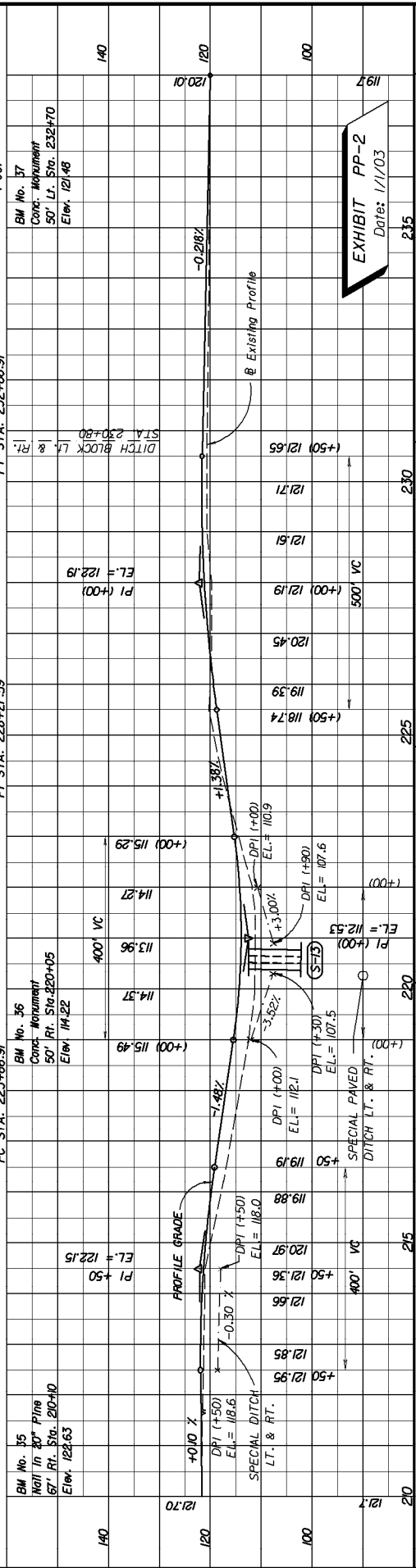
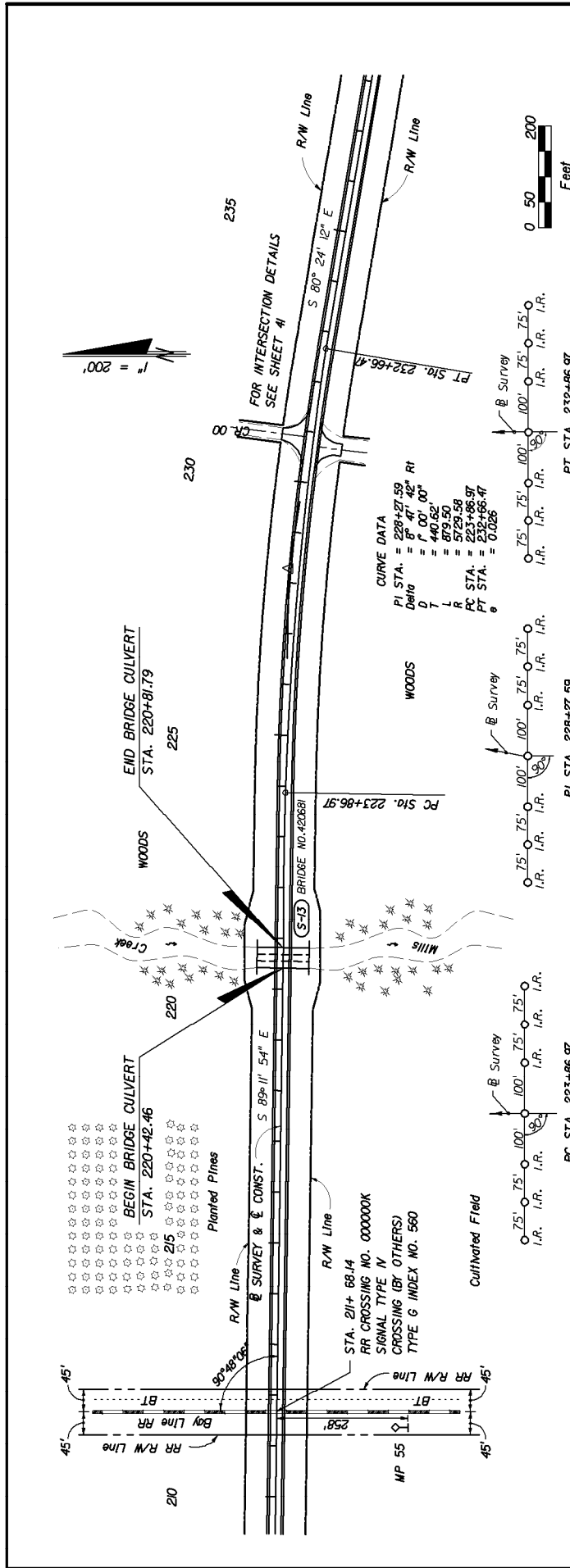


### **Exhibit 10-1 General Notes for Roadway Plan and Roadway Plan-Profile Sheets**

The bench mark datum used for the plans (whether NGVD 29, NAVD 88 or other) shall be noted in the first General Note. Other notes are as follows:

1. Buildings to be removed by others, unless otherwise noted.
2. Existing drainage structures within construction limits shall (be removed/remain) unless otherwise noted.
3. (When there are no utility adjustment sheets in the plans, the notes shown in **Exhibit 20-1** shall be included here as part of the general notes).
4. (If there are no drainage structure sheets in the plans, the following notes shall be included in the general notes, if applicable):
  - a. Special attention is directed to the fact that portions of some drainage structures extend into the stabilized portion of the roadbed and extreme caution will be necessary in stabilization operations at these locations.
  - b. (To be used when there are cross drain pipe and/or storm sewer pipe and optional materials are provided for one or both):

Some/All of the drainage structures have optional culvert materials. When optional materials are allowed, one of the optional materials has been used as the basis of the pay quantities. The material selected as the basis of pay quantities is identified on the Tabulation of (Cross Drain, Storm Sewer, or Cross Drain/Storm Sewer) Optional Materials Sheet. All options are described and design and installation information for each option is provided on this sheet.
5. Any public land corner within the limits of construction is to be protected. If a corner monument is in danger of being destroyed and has not been properly referenced, the Engineer should notify the District Location Surveyor, without delay, by telephone.
6. Existing driveways within the limits of this project are to be replaced at the same location and width, unless otherwise shown in the plans.



DATE	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

STATES OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	

BM No. 35 Nail in 30" Pine 50' RT. Sta. 210+10 Elev. 122.63	BM No. 36 Conc. Monument 50' RT. Sta. 220+05 Elev. 114.22	BM No. 37 Conc. Monument 50' Lt. Sta. 232+70 Elev. 121.48
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121.70	121.7	121.7	120.01	120.01	100	100	140
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**PLAN-PROFILE**

**EXHIBIT PP-2**  
 Date: 1/1/03

# Chapter 11

## Special Profiles

11.1	General .....	11-1
11.2	Intersections.....	11-1
11.3	Curb Returns.....	11-2
11.4	Ramps.....	11-3
11.5	Spline Grade .....	11-4
11.6	Superelevation .....	11-5
11.7	At-Grade Railroad Crossings .....	11-6

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# Chapter 11

## Special Profiles

### 11.1 General

The special profiles sheet shows profiles of pavement edges or gutter flow lines. Special profiles occur at street intersections, ramp termini, curb returns, railroad crossings and roadway or bridge sections requiring special superelevation details. Vertical transitions between roadways and bridges may also require special profiling. All of these areas require special analysis and design to ensure a safe, efficient, well drained, and smooth roadway/bridge system. The special profiles sheet shall show details at close intervals and at a scale large enough to clearly identify all construction details within these areas.

### 11.2 Intersections

In addition to normal profile grade lines, supplemental profiles and sections at intersections may be necessary to define edge of pavement profiles. Sections showing pavement surface elevations shall be shown for nose points and other critical locations. It is important to develop accurate profiles and sections at locations of curbed channelization to ensure proper drainage.

When plan-profile format is used for intersection details, the profile's horizontal scale shall be the same as that for the plan portion. A vertical scale of 1" = 2' for the profile portion is recommended as it enables intermediate elevations to be determined from the profile with reasonable accuracy. The existing ground line and/or curb line shall be as called for in the FDOT CADD Production Criteria Guide.

For intersections detailed on a plan only format, the profile and sections shall be shown on a separate grid sheet. The standard cross section sheet, available in the FDOT Engineering/CADD Systems Software, should be used. This sheet features a standard grid of five lines per inch, both in the vertical and horizontal. The vertical scale can be altered to ten lines per inch by utilizing a toggle feature in the CADD software.

For street intersections of municipal projects, a scale of 1" = 20' horizontally and 1" = 2' vertically, or 1" = 50' horizontally and 1" = 5' vertically is recommended.

## 11.3 Curb Returns

Curb return profiles show the profiles of the gutter flow line from the PC to the PT point of the return at an intersection.

Curb return profiles shall be shown on a grid format. They shall be included in the plans set if the required information cannot clearly be shown on the plan-profile sheet or intersection detail sheet, or if extreme grades are involved, rendering the standard curb return profiles (***Index 303*** of the ***Design Standards***) inadequate.

Standard scale used should be 1" = 20' horizontally and 1" = 2' vertically. Other scales may be used provided all construction details are clearly and legibly shown. Each return profile shall be identified and its PC and PT stations shown. Elevations should be shown at appropriate intervals and low and high spots shall be identified by location and elevation.

## 11.4 Ramps

Ramp profile grades shall be developed along the baseline of each ramp. A profile of the edge of the pavement opposite the baseline shall also be shown. These profiles shall be shown on a grid format. Data required to be shown shall be similar to that required for roadway profile (**Chapter 10** of this volume).

Recommended scales for ramp profiles are: 1" = 20' horizontally and 1" = 2' vertically, or 1" = 40' or 50' horizontally and 1" = 4' or 5' vertically.

Sections at nose points are required. They may be shown using a scale of 1" = 20' horizontally and 1" = 2' vertically.

## 11.5 Spline Grade

Intersections of ramp pavement with mainline pavement and other sections of pavement within special superelevated zones need special attention, not only during the design phase of the project, but also during construction. Hence, all construction details pertaining to these areas should be clearly and accurately shown in the plans.

Spline grades are often used to show the interconnection and interrelation of the edges of pavement with the mainline edge of pavement. This profile proves to be especially helpful if the mainline pavement is superelevated or within the superelevation transition zone.

A spline grade shall show the elevations at intervals of 20 to 100 feet, depending on the scale. Elevations shall be shown for the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas.

Grades of the three pavement edges shall be shown on a grid format. Recommended scales are: 1"=20' horizontally, 1"=2' vertically, or 1"= 40' or 50' horizontally and 1"= 4' or 5' vertically.

Grades of each pavement edge shall be joined by smooth splines or simple curves. The three grade profiles shall be clearly labeled and all equality stations indicated. Nose stations shall be flagged and labeled. Scale shall be indicated in close proximity of the profile and shall be clearly visible.



## 11.6 Superelevation

The standard superelevation details (***Indexes 510*** and ***511*** of the ***Design Standards***) may be used for projects which include simple curves. For projects which include reverse curves, or compound curves, or any other situation requiring special superelevation not covered in the standards, the superelevation diagram shall be shown in the plans. Special profile details may be used to design superelevation on multilane facilities, when a simple diagram will not be sufficient.

Complete profile grade line and right and left edges of pavement within the superelevation zone shall be shown on the grid format. A scale of 1"= 20' horizontally and 1"= 2' vertically is recommended for clarity. The begin and end superelevation stations shall be labeled and indicated by a solid vertical line at the appropriate station. A horizontal dimension line shall be utilized to indicate a section in full superelevation.

## 11.7 At-Grade Railroad Crossings

In addition to normal profile grade lines, supplemental profiles for at-grade railroad crossings may be necessary to define lane lines, edges of pavement, and/or gutter flow lines. It is important to develop accurate profiles to ensure proper drainage.

For at-grade railroad crossings that cannot be adequately detailed on the plan-profile sheets, the profiles shall be shown on a separate grid format. A horizontal scale of 1" = 20' and a vertical scale of 1" = 2' are recommended.

## Chapter 12

### Back-of-Sidewalk Profiles

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## Chapter 12

### Back-of-Sidewalk Profiles

#### 12.1 General

Back-of-sidewalk profiles are used to establish the profile grade and therefore play an important role in plan preparation, especially if the project site is located in a built-up urban area. Profiles help ensure the constructability of the project within the right of way without excessive disturbance or rework of adjoining properties. Back-of-sidewalk profiles are also used for checking of stormwater trapped behind the sidewalks and as a major input for establishing centerline grade profiles.

Grades shown on this sheet are at the back of the proposed sidewalk, and grades shown on roadway plan-profile sheets are at the profile grade line (PGL) denoted on the typical section.

The inclusion of the back-of-sidewalk profiles in the plans set is optional - at the discretion of the district. Work sheets may be required with phase reviews.

## **12.2 Sheet Setup**

Back-of-sidewalk profiles shall be prepared on standard cross section format. For simple projects which do not involve many cross streets or driveways, the sheet may be divided horizontally to maximize usage. Stationing shall progress from left to right and top to bottom. Match lines shall be stationed. Care should be taken to preserve clarity and legibility.

## 12.3 Required Information

Profiles for use in establishing back-of-sidewalk grades consist of existing profiles along the back edge of each proposed sidewalk. The existing profiles shall be shown so as to distinguish between the profiles for the right and left sidewalk, and in accordance with the ***FDOT CADD Production Criteria Handbook***.

The standard scales are 1" = 100' horizontally and 1" = 5' vertically. This combination works well for projects having few locations where back-of-sidewalk grades would be critical. It may be advantageous to use a vertical scale of 1" = 2' and a horizontal scale of 1" = 50' for projects located in business and commercial areas, or where greater clarity is required. Elevation datum shall be shown on both sides of the sheet, with station numbers below the profile.

Limits of existing pavement, such as parking areas and drives, which should be matched as closely as possible, shall be identified on all sidewalk profiles. The centerline for each intersecting street and driveway shall be indicated with a vertical line at the proper station and the street name and station noted. Intersecting streets and driveways on the right shall be shown below the profile, and those on the left above the profile.

At each station, as well as locations of significant drainage, arrows shall be drawn to indicate the slope of ground at the outer edges of the sidewalk.

Drainage arrows shall be placed below the profile line for the right profile and above the profile line for the left profile. Arrows pointing outwards from the profile indicate drainage away from the project, while arrows pointing inwards indicate drainage to the project.

Floor elevations for buildings shall be indicated by a horizontal line drawn at the floor elevation between the building limits. The numeric elevation shall be shown, as well as the offset (distance and side) from centerline of project to the face of the building. Entrances to buildings, elevations of top of existing major utilities (as defined in ***Chapter 5*** of ***Volume I***), and water table elevation may be shown when appropriate.

Once the proposed back-of-sidewalk profile has been developed, percents of grade, PI stations and elevations shall be shown. Vertical curves, if any, shall be dimensioned. Elevations along vertical curves are not required. Stations for begin and end project, exceptions, and back-of-sidewalk special profiles shall be flagged and labeled. Mainline station equations within the limits of the sidewalk profile shall also be flagged and labeled.

The difference in elevation between the profile grade and back-of-sidewalk profile grade shall be noted on the sheet. Superelevation notes, if applicable, shall also be noted on the sheet.



## Chapter 13

### Intersection and Interchange Details/Layouts

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## **Chapter 13**

### **Intersection and Interchange Details/Layouts**

#### **13.1 General**

These sheets provide layouts and details for intersections and interchanges, with consideration for turning and weaving movements of vehicular traffic. For a safe and efficient roadway system (including provisions for bicycles and pedestrians), these areas must be designed with special attention to channelization, turning movements, signalization, drainage and vertical alignment. The various design details shall be shown explicitly for accurate construction.

Intersection and interchange layout sheets shall show all necessary details and geometric controls/access management features, including channelization, tapers, turn lanes, special drainage, and grading. The sheets shall be prepared on a standard plan format using a scale large enough to show details clearly and legibly.

## 13.2 Intersections

Intersection details shall be shown on separate plan sheet format if they cannot be shown clearly on the plan-profile sheet format.

In cases of simple, nonsignalized intersections covering relatively small areas, regular plan-profile format may be used. The intersection layout shall be placed, using an appropriate scale, in the plan portion, and the necessary profile grades in the profile portion.

For larger, more complicated intersections involving channelization, signalization or tapered connections, the layout shall be placed on a standard plan format. Match lines should be used when more than one sheet is required.

The profiles shall be presented separately on a grid format. (See **Chapter 11 - Special Profiles**).

Existing topography need not be shown on these details if it is shown elsewhere in the plans. Information given is generally the same as in the plan portion. Pavement edges, R/W lines, curb and gutter, channelizing and median curbs, driveways, drainage structures, pavement dimensions, radii and appropriate notes shall be included.

All intersection layouts shall be dimensioned, stationed adequately, and shall include all pertinent construction notes and alignment data. Design speed data shall be given when appropriate. Widths of turning lanes and turning paths shall be checked for possible encroachments or conflicts.

A north arrow and scale shall be shown at a point of maximum visibility on the plan. The scale used shall be sufficient to cover all necessary details, preferably 1" = 40'. The scale shall not be smaller than 1" = 50'.

## 13.3 Interchanges

### 13.3.1 Geometric Layout

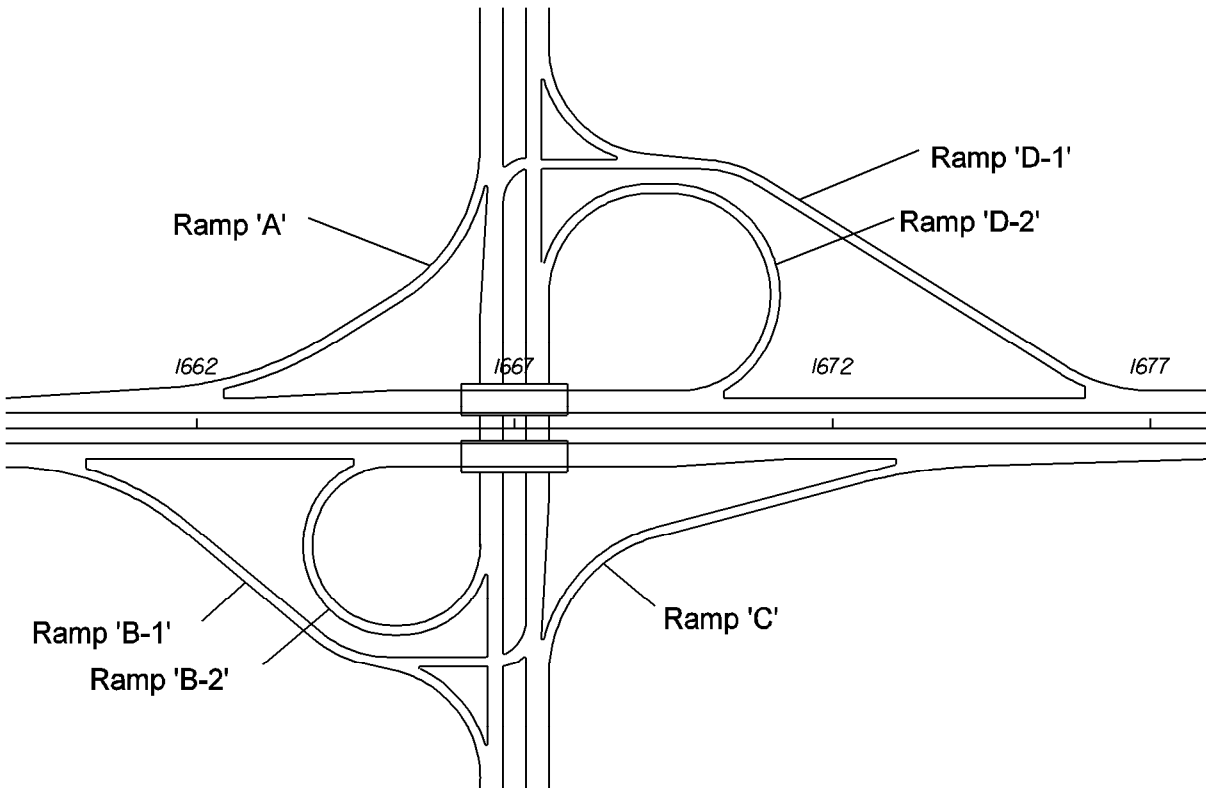
Interchange layouts shall be prepared on a standard plan format. The entire interchange shall be placed on one sheet when possible, using a scale not smaller than 1" = 400'. In cases of large cloverleaf or directional interchanges, more than one sheet may be required. Appropriate match lines shall be shown.

Layouts shall be dimensioned and completely stationed, with all alignment data and construction notes included. All curves shall be assigned a number and curve data presented in a tabular form. It is preferred that the tabular curve and coordinate data be placed on the same sheet as the interchange layout.

Interchange ramps shall be identified by the use of letters or a combination of letters and numbers. The recommended practice for assigning ramp names is as follows:

1. Ramps in the first left quadrant along mainline stationing should be assigned first. Name assignments shall progress in a counterclockwise direction around the interchange (see **Figure 13.1**). For projects with two or more interchanges, continue name assignments with the next letter and in same counter clockwise direction noted above.
2. Ramp baselines are usually located on the right edge of the pavement with relation to the direction of traffic, and shall be clearly indicated. Stationing of ramps should be in the same direction as the project.

**Figure 13.1 Interchange Layout**



A topographic worksheet for all interchanges is required and will be considered as the preliminary layout of the interchange. This worksheet shall be prepared on a standard plan format on a scale not smaller than 1" = 400'. The following information shall be shown:

1. All topography, such as existing roads, property lines, utilities, buildings, driveways, etc.
2. Preliminary interchange geometrics and proposed right of way limits.
3. Drainage right of way and easements.
4. Proposed reconstruction of the crossroad, and all access roads and frontage roads within the interchange.
5. Frontage roads should be assigned a unique alpha or numeric designation to avoid confusion with ramp nomenclature.
6. Contours, unless the terrain is relatively flat.
7. Traffic diagram with AADT, DHV, K, D and T values.
8. The length of speed change lanes.

9. Design speed for ramps and crossroads.
10. Proposed bridge limits.
11. Pavement transitions.
12. Limits of construction along the crossroad.

The contract plans set shall include the following interchange sheets:

1. Interchange geometric layout.
2. Interchange drainage map.
3. Interchange topographic map.
4. Interchange cross section pattern sheet.
5. Ramp terminal details.
6. Ramp cross sections.

### **13.3.2 Ramp Terminal Details**

Details of ramp terminals with mainline and crossroads shall be shown on separate plan sheets. The scale used shall not be smaller than 1" = 50'. Standard scale 1" = 40' is preferred. Complete details of the terminal shall be shown including:

1. Curve data.
2. Station equality and horizontal tie to mainline or crossroad at critical ramp locations.
3. Turning radii, taper/transition lengths, curb/curb and gutter (if any).
4. Channelization (if any).
5. Ramp and crossroad intersection station and angle.
6. Median nose data (if any).
7. Limits of construction.
8. R/W.
9. Limited Access R/W and fence location.
10. Drainage structures.
11. Spot elevations (as needed).
12. Roadway dimensions.
13. Station pluses and offsets.

### **13.3.3 Cross Section Pattern Sheet**

The cross section pattern sheet shows the entire interchange layout including frontage and access roads, if any, with location and extent of proposed cross sections. This information is of special importance for projects involving new interchanges located in rural, undeveloped areas. Information to be shown shall include:

1. North arrow and scale.
2. Interchange layout.
3. Access and frontage roads (if any).
4. Centerline construction and baseline survey.
5. Ramp base lines.
6. Stationing along mainline, crossroads, ramps, access and frontage roads.
7. PC and PT points by symbol.
8. Bridge outline.
9. Cross section pattern.

This sheet shall be prepared on a standard plan format. The scale shall be such that the complete interchange is shown on one plan sheet, with care taken to ensure clarity and legibility. Normal scale is 1" = 400'. North arrow and scale shall be located at a point of maximum visibility.



# Chapter 14

## Drainage Structures

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# Chapter 14

## Drainage Structures

### 14.1 General

Drainage structure sheets show the drainage structures, their location, cross section, flow line elevations of all weirs or slots, top of grates, culverts and top of manhole elevations, and similar data. Drainage structure sheets also show the vertical relationships of the entire drainage system. During the process of design/placement of the drainage structures, potential conflicts with existing or proposed utilities shall be identified and resolved early, thereby avoiding costly time delays during the construction phases.

All projects require the plotting of drainage structures. When only cross drains are to be constructed or modified, drainage structures may be plotted on the cross section sheets. Otherwise drainage structures should be plotted on separate drainage structure sheets, utilizing the cross section sheet cell available in the FDOT Engineering/CADD Systems Software (see *Exhibit DS-2*).

### 14.2 Required Information

The existing ground line for rural projects shall be shown at the location of the structure, with the existing elevation placed immediately below the ground line at the survey baseline. No existing structures shall be shown except those to be incorporated into the proposed drainage system or otherwise modified. These shall be shown and their flow line elevations noted. Where storm sewers run laterally or diagonally across the project, the drawing should show the pipe cover.

The roadway template and proposed structures shall be shown, with the proposed profile grade elevation placed above the grade point. The structure shall be located by station and offset to the centerline of construction. Flow line information shall be provided at each structure and at each culvert end. Structures are to be plotted in detail according to the applicable index of the *Design Standards*, with walls, grates, tops, pipes, etc. shown.

Cross drain sections shall include the size and length for each proposed structure.

Sections for skewed cross drains shall be depicted along the centerline of the structure. Clear zone distances are to be measured at right angles to the traffic lane for all structures.

All structure locations should be checked and R/W shown where the R/W may have potential impact on construction of a structure.

For each drainage structure, all necessary information shall be shown by note, including, as appropriate: size, end treatment and flow lines, as well as structure, index and station number. The note shall be placed as close to the structure as possible, preferably below the plotted structure. Elevations shall be given for manhole tops, and ditch bottom inlet grates and slots. Grate elevations for shoulder gutter and edge of pavement elevations for curb and gutter inlets shall be shown.

Alternate "G" or other special grate treatment shall be included with the inlet note. Additional details, such as special bedding, 36" manhole rings, etc., shall be indicated. Flow direction arrows shall be shown.

Material options shall be shown on the Optional Material Tabulation Sheet. (See **Exhibits SDS-2a** and **SDS-3a** at the back of **Chapter 8** of this volume).

If existing structures are to be filled and/or plugged and are to remain in place, they should be shown in the plans with an appropriate note.

Applicable notes to be shown on the first drainage structure sheet are given in **Exhibit 14-1**.

## 14.3 Utility Conflicts

All major underground utilities, as defined in **Chapter 5** of **Volume I**, shall be plotted in conjunction with the structures so that conflicts may be detected during design, and to alert construction forces of potential conflicts.

In the case of longitudinal pipes, a section should be plotted for each location of a crossing of any major underground line.

Utilities that have been verified (Level A locate) shall be noted and plotted to scale in the appropriate locations on the Drainage Structure Sheets, Cross Section Sheets and bridge foundation plans. These utilities should be labeled with the following symbol:

$V_{vh}$  = Verified Vertical Elevation and Horizontal Location

## 14.4 Sheet Setup

Structures should be plotted as sections along the centerline of the structure. They should be shown on a standard cross section format with the sections spaced sufficiently apart to avoid overlapping of structures or notes. Beginning at the bottom of the sheet, the sections should be shown successively by stations and should be numbered sequentially, from the beginning to the end of the project. The structure number and location station should be shown near the right border of the sheet.

If a structure must be shown out of order, a note shall be placed in the correct sequence, referring to the sheet where the structure is shown. The scale shall be the same as that used for roadway cross sections, with the centerline of construction placed near the center of the sheet.

### **Exhibit 14-1 Drainage Structure Notes**

These notes, when required, are to be placed on the first drainage structure sheet.

1. Special attention is directed to the fact that portions of some drainage structures extend into the stabilized portion of the roadbed and extreme caution will be necessary in stabilization operations at these locations.
2. (To be used when there are Cross Drain Pipe and/or Storm Sewer Pipe and optional materials are provided for one or both):

Some/All of the drainage structures have optional culvert materials. When optional materials are allowed, one of the optional materials has been used as the basis of the pay quantities. The material selected as the basis of pay quantities is identified on the Tabulation of (Cross Drain, Storm Sewer, or Cross Drain/Storm Sewer) Optional Materials Sheet. All options are described and design and installation information for each option is provided on the Tabulation of Optional Materials Sheet.



## Chapter 15

### Lateral Ditch/Outfalls, Retention/Detention and Mitigation Areas

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## Chapter 15

# Lateral Ditch/Outfalls, Retention/Detention and Mitigation Areas

### 15.1 General

Drainage systems that convey stormwater from the roadway may be made up of many components such as inlets, manholes, pipes, ditches, and retention/detention areas. Usually, these systems require additional right of way and/or easements.

Mitigation areas, although not usually a component of the highway drainage system, may have drainage components in them.

If space permits, drainage components adjacent to the roadway may be shown on the roadway plan-profile sheets. Drainage components not adjacent to the roadway may require separate plan view sheets. In either case, profile views and/or cross sections may also be needed to provide enough detail to construct the components.

Plans for drainage components can generally be grouped into three categories:

1. Lateral ditch/outfalls
2. Retention/detention areas
3. Mitigation areas

## 15.2 Lateral Ditch/Outfall

Lateral ditch plans and profiles shall be prepared on a standard plan-profile format using a horizontal scale of 1" = 100'. However, if storm drain construction is proposed for a portion of the ditch, a scale of 1" = 40' or 1" = 50' may be used.

### 15.2.1 Plan Portion

Data presentation in the plan portion shall be oriented so that the lateral ditch/outfall centerline is parallel to the long side of the sheet. Information shall be shown in a manner similar to that described in **Chapter 10, Roadway Plan and Roadway Plan-Profile**.

Right of way (or easement) alignment data and topography shall be shown in the plan portion. An alignment tie between the lateral ditch/outfall and the project shall also be shown. The north arrow and graphic scale shall be placed at the proper location on the sheet (refer to **Chapter 10** of this volume).

### 15.2.2 Profile Portion

The profile portion shall be prepared in the same manner as the profile portion of the roadway plan-profile sheets (**Chapter 10**). Existing ground line profiles, high water elevations, underground utilities, benchmark information and elevation datum shall be shown as described for roadway plan-profiles.

Where the lateral ditch/outfall survey baseline does not follow the flow line of the existing ditch or channel, the existing ditch or channel profile shall be shown with a broken line and identified.

If storm drain construction is proposed along a lateral ditch/outfall, the proposed structures shall be plotted on the drainage structures sheets, or in the lateral ditch/outfall profile. Structures shown in the profile will include flow line, structure numbers, pipe or culvert sizes, and utilities (if applicable).

The normal water elevation of the receiving system shall be indicated and labeled.

### 15.2.3 Typical Section

A typical section showing the width of proposed clearing and grubbing, right of way, ditch bottom width and side slopes shall be shown on the lateral ditch plan and profile sheet. This section does not need to be to scale, but shall be dimensionally proportionate. If the width of clearing and grubbing is variable for a lateral ditch/outfall, the various widths and their respective station limits shall be noted below the typical section.

### 15.2.4 Ditch Cross Sections

Lateral ditch cross section sheets are included in the plans. These sheets show the right of way required, the extent of clearing and grubbing required and the amount of earthwork.

Lateral ditch cross sections shall be prepared in a manner similar to that of roadway cross sections (**Chapter 18** of this volume). The scale, generally, should be 1" = 10', vertical and horizontal. Regardless of the horizontal scale used, the vertical scale shall always be 1" = 10'.

Often it is possible to place two or more columns of ditch cross sections on one sheet. They shall be plotted with the stationing progressing from the bottom of the sheet to the top, and from left to right.

Usually, soil surveys are made along the lateral ditch only when a large amount of material is expected to be excavated.

Guidance given in **Roadway Cross Sections (Chapter 18)** shall be applicable equally to lateral ditch cross sections.

## **15.3 Retention or Detention Areas**

### **15.3.1 Pond Detail Sheet**

The retention or detention pond, including the outlet structure, is usually the end point of the drainage system for a particular project. The retention/detention pond detail sheet shall show the pond in plan view, with station and offset ties to the project centerline of construction. The plan view shall also include the following:

1. Locations of pond sections.
2. Side slopes and base dimensions.
3. Bottom and top elevations.
4. Location of maintenance berm.
5. Fence and gate locations.
6. Right of way.
7. Pond drainage structures with structure numbers.
8. Soil boring locations, and
9. Any other necessary data pertaining to the pond.

The pond sections shall show the bottom width and elevation, side slopes, normal water depth, if applicable, as well as soil borings. A minimum of two (2) sections, taken in directions perpendicular to each other, shall be shown.

## 15.3.2 Typical Section

A typical section is required when the pond sections do not represent the *typical* design features of the pond. Following is a list of appropriate information to be shown on the typical section:

1. Limits of clearing and grubbing
2. Typical side slopes
3. Bottom and top elevations
4. Details of maintenance berm
5. Fence location
6. Right of way
7. Water level information
8. Vegetation requirements

The typical section does not need to be to scale, but shall be dimensionally proportionate. It should be shown on the pond detail sheet, if room allows, or on a separate sheet when necessary.

## 15.3.3 Pond Cross Sections

Pond cross sections shall be prepared in a manner similar to that for roadway cross sections (**Chapter 18** of this volume). As with lateral ditches, the standard scale is 1" = 10' vertical. The standard horizontal scale is also 1" = 10', although another scale may be used if necessary.

If material is to be excavated from the pond the data from the soil survey sheet shall be shown on the cross sections.

Guidance given in **Roadway Cross Sections (Chapter 18)** shall be applicable to pond cross sections.

## **15.4 Mitigation Areas**

If construction details for mitigation areas are included in the plans, follow the requirements for retention/detention areas.

# Chapter 16

## Special Details

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# Chapter 16

## Special Details

### 16.1 General

Special details sheets are usually included in the plans set if the project contains areas that require special attention to some construction elements. Construction details that are not covered in the ***Design Standards*** booklet or elsewhere in the plans set shall be shown on the special details sheet.

This sheet shall be prepared on a standard plan format. Any convenient scale may be used, provided the information shown is clear and legible. Details shown shall be clear, legible, labeled, completed in all respects and should be adequately cross-referenced in the plans set.

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## Chapter 17

### Soil Survey

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## **Chapter 17**

### **Soil Survey**

#### **17.1 General**

The soil survey sheet, essentially a soil test analysis sheet, depicts the various types of soils encountered within the limits of the project. This sheet also shows the classification, mechanical properties and recommended usage of those soils. A preformatted CADD sheet can be found in the FDOT Engineering/CADD Systems Software.

Soils having identical characteristics shall be assigned to the same stratum and group for identification and recommendation purposes. The test analysis sheet shall be signed by the responsible Engineer.

## 17.2 Roadway Soil Survey

### 17.2.1 Method of Compilation and Presentation

Upon completion of the proposed typical section, and after placing alignment, proposed grades and existing utilities on the plan-profile sheets and preliminary sections, prints of these sheets shall be utilized for determining the location and depth of borings for the sampling of soils for testing and classifications. These classification and test results, including pH, resistivity, sulfides and chlorides shall be shown on the test analysis sheet. Date and weather conditions at the time of sampling shall also be shown. Refer to **Exhibit SS-1** for an example of soil survey sheet.

After completion of soils testing, the boring data shall be shown on cross sections by columns approximately 1/4 inch wide below the ground line at test sample locations. Stratum limits and numbers shall be shown inside the column. This information shall be transmitted to the appropriate responsible materials engineer for verification. One hard copy of the soils information, including cross sections with soils information, shall be retained in the Soils Engineer's Record.

## **17.3 Other Soil Surveys**

Soil surveys other than those for roadway plans are required for various plans components. Included in these are soil surveys/borings for retention/detention ponds, overhead sign structures, high mast poles and traffic signal mast arms.

Soil survey sheets generated for such components are generally located in the plans set with the other details and information for each component. Requirements for the soil survey sheets are similar to those prepared for the roadway soil survey, showing such things as the location of test holes, various strata encountered, soil properties, classification and recommended usage.



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**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
MATERIALS AND RESEARCH**

DATE OF SURVEY : 2/15/95 -5/1/95  
 SURVEY MADE BY : HARTFORD TESTING COMPANY  
 SUBMITTED BY : LARRY BALLARD, P.E.

DISTRICT : 3  
 ROAD NO : S.R. 29  
 COUNTY : HOUSTON

FINANCIAL PROJECT ID : \_\_\_\_\_

**CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS**

SURVEY BEGINS STA. : 400+00 SURVEY ENDS STA. : 554+00

STRATUM NO.	SIEVE ANALYSIS RESULTS % PASS				ATTERBERG LIMITS (%)				NO. OF TESTS	DESCRIPTION	CORROSION TEST RESULTS							
	NO. OF TESTS	% ORGANIC	MOISTURE CONTENT	NO. OF TESTS	10 MESH	40 MESH	60 MESH	100 MESH			200 MESH	LIQUID LIMIT	PLASTIC INDEX	ASHTO GROUP	NO. OF TESTS	RESISTIVITY OHMS CM	CHLORIDE PPM	SULFATES PPM
1																		
2	4		98-97	93-77	82-59	55-44	10-3											
3	7	3.5-2.5	100-94	94-86	71-65	45-34	21-15											
4	3	1.5-1.9	100-84	93-71	90-60	82-53	45-37	4										
5	3		100	100-99	98-96	80-75	34-30	3										
6	3	18.2-40	20-60				46-30	3										
7	3		100	92-88	79-73	69-60	55-51	3										
8	3	15.5- 20	20-58	100-99	99-97	80-77	15-10											

EM BANKMENT AND SUBGRADE MATERIAL  
 STRATA BOUNDARIES ARE APPROXIMATE MAKE FINAL CHECK AFTER GRADING  
 SW - WATER TABLE ENCOUNTERED  
 GNE - GROUND WATER NOT ENCOUNTERED.

The material from Stratum Number 1 is Rock Base under Asphaltic Concrete.  
 The material from Stratum Number 2 appears satisfactory for use in the embankment when utilized in accordance with Index 505.  
 The material from Stratum Number 3 appears satisfactory for use in the embankment when utilized in accordance with Index 505. However, this material is likely to retain excess moisture and be difficult to dry and compact. It should be used in the embankment above the water level existing at the time of construction. This material may not be used in the subgrade portion of the roadbed due to its organic content.  
 The materials from Stratum Numbers 4 and 5 are plastic materials and shall be removed in accordance with Index 500. They may be placed above the existing water level at the time of construction, to within 4 Feet of the proposed base. They should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depths for short distances.  
 The material from Stratum Numbers 6 and 8 is ORGANIC/A-B material and shall be removed in accordance with Index 500.  
 The material from Stratum Number 7 is Highly Plastic material and shall be removed in accordance with Index 500. It may be used within the project limits as indicated in Index 505 only when excavated within the project limits and is not to be used when obtained from outside the project limits.

**EXHIBIT SS-1**  
 Date: 1/1/03

DATE		REVISIONS		STATE OF FLORIDA		SHEET NO.	
DATE	BY	DESCRIPTION	DATE	BY	DEPARTMENT OF TRANSPORTATION	ROADWAY SOILS SURVEY	
					ROAD NO.	FINANCIAL PROJECT ID	
					COUNTY		

## Chapter 18

### Roadway Cross Sections

18.1	General.....	18-1
18.2	Required Information.....	18-1
18.3	Sheet Set Up.....	18-3

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# Chapter 18

## Roadway Cross Sections

### 18.1 General

Cross sections depict the existing ground conditions, including all manmade features, as sections perpendicular to the respective stations along a survey baseline or construction centerline. The proposed cross-sectional outline of the new facility with all its functional elements is also shown on cross sections. Standard cross section sheets shall be used for showing roadway cross sections. The preformatted sheet cell is located in the FDOT Engineering/CADD Systems Software. This sheet features a standard grid of five lines per inch, both in the vertical and horizontal. The vertical scale can be altered to ten lines per inch by utilizing a toggle feature in the CADD software.

The recommended vertical scale is 1" = 10'. The horizontal scale shall be such that the entire roadway R/W is shown on the sheet (generally 1" = 10' or 1" = 20'), but shall not be smaller than 1" = 40' horizontal. If the entire R/W cannot be shown on one sheet, more sheets may be utilized and appropriate match lines shall be shown with referenced sheet numbers. The scale shall be shown at the bottom right corner of the sheet above the title box.

### 18.2 Required Information

Existing ground lines shall be shown and the existing elevation at the centerline shall be noted just below the ground line at the centerline. The station number of the section shall be indicated opposite the ground line on the right side of the sheet and location baseline of survey indicated along the top and bottom of the sheet. Lines parallel to the baseline of survey should show station equivalencies to the baseline of survey.

The surface, as well as the below ground portions of existing features such as pavements, curbs and sidewalks, shall be shown.

Existing parallel underground utilities which lie within the horizontal limits of the project shall be shown along with verification notation for those locations which have been verified. Utilities that have been verified should be labeled as shown in **Section 14.3** of this volume. Small distribution or service lines need not be drafted.

Soil data and water table shall be shown on cross sections as described in **Section 17.2.1** of this volume. If it is determined that an organic or plastic material must be removed below the finished grading template, the lower limits of removal of organic or plastic material will be shown to determine the area and volume of subsoil excavation.

The proposed roadway template shall be shown. The proposed profile grade elevation shall be placed vertically or at an angle to the horizontal, just above the profile grade line. Special ditch elevations shall also be shown.

Station equations shall be shown, even though a cross section may not be plotted at that point. For ramp cross sections equivalent mainline stations shall also be shown.

The right of way limits shall be symbolically shown for each cross section.

The begin and end stations for project, construction, exceptions, bridge/bridge culvert and the toe of slope under the bridge shall be shown. The beginning and ending earthwork stations shall be shown.

On projects with grade separations, intersections, interchanges, etc., the earthwork shall be totaled on the last cross section sheet for each of the above and noted as to the station in which the earthwork is included on the project cross sections. Earthwork quantities shall be indicated in the appropriate columns on the right side of the sheet. Earthwork summaries shall be shown on the last cross section sheet of each roadway, ramp, etc. The grand total shall be tabulated in the Summary of Earthwork and shown on the Summary of Quantities Sheet.

The order of assembling the cross sections in the plans set shall be:

1. Mainline
2. Side streets
3. Ramps

## 18.3 Sheet Set Up

Cross sections shall be shown on a standard preformatted cross section sheet (available in the FDOT Engineering/CADD Systems Software) with stations increasing from the bottom to the top of the sheet. Usually, only one column of sections shall be placed on a sheet.

The interval selected for showing sections on the cross section sheet will vary according to project specific factors. For new construction and reconstruction, the normal interval for cross sections is 100 feet for rural projects and 50 feet for urban projects. These intervals may also be appropriate on RRR projects, depending on the variability of earthwork along the project. Other factors that may influence the frequency of cross sections include the presence of intersections, extent of driveway and turnout construction or reconstruction, ADA related work, drainage improvements, etc.

Sections shall be centered on the sheet with the survey baseline or the construction centerline placed vertically in the center. In cases where additional lanes are to be constructed adjacent to existing lanes, centering the sections will depend upon the location of the survey line and the side on which the new construction is to be placed. Sections shall be oriented such that the complete ultimate section will be approximately centered on the sheet. When the centerlines of construction and survey are not parallel, the distance between the two at each cross section shall be shown.

As many sections as possible shall be placed on a sheet with sections being spaced to avoid overlapping. The soil profile should be checked for possible unsuitable material below existing ground which may cause overlapping of sections.

When right of way is narrow enough and a horizontal scale of 1" = 20' is used, two columns of cross sections may be placed on a sheet. Cross section placement progresses from the left to the right as well as from the bottom to the top of the sheet. The sheet shall be set up to provide earthwork columns for each column of sections.

For additional information on cross sections see ***Volume I, Chapter 3.***

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## Chapter 19

### Work Zone Traffic Control

19.1	General.....	19-1
19.2	Required Information.....	19-1
19.3	Levels of Complexity to be Anticipated for Traffic Control Plans .....	19-2
19.3.1	Level I.....	19-2
19.3.2	Level II.....	19-2
19.3.3	Level III.....	19-3
19.4	Format.....	19-4

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## Chapter 19

### Work Zone Traffic Control

#### 19.1 General

A Traffic Control Plan (TCP) will accompany all plans for a construction project. The TCP is the final document that summarizes the considerations and investigations made in the development of a comprehensive plan for maintaining traffic through a work zone.

The TCP is used to describe the actions to be taken by the contractor to minimize traffic impacts while conveying traffic safely through a work zone. The traffic control plans may include, but are not limited to, general notes, phase notes, phase typical sections, phase plan-profile sheets, special details, and temporary cross sections.

#### 19.2 Required Information

Specific traffic control plans are required on all projects. The information provided on the traffic control plans may consist of nothing more than notes and references to the ***Design Standards, Series 600*** or may be as elaborate as detailed individual phase layouts using profile sheets and interchange and intersection layout sheets. Information shall be provided to inform the contractor of the following:

1. location of the centerline, pavement edge, curb line, shoulder;
2. placement of temporary pavement markings;
3. lane configurations;
4. locations of work zone signs and any other temporary work zone traffic control devices (including variable message signs, advanced warning arrow panels, barriers, crash cushions, temporary signals, etc.);
5. layouts and placement of channelizing devices;
6. work to be accomplished during the individual phases of construction,
7. lane closures and other restrictions that apply;
8. regulatory speed limits for each phase;
9. project specific requirements such as school zones, railroads, waterborne vessels, etc.

When a project requires more than one phase of construction, the traffic control plans should address each individual phase.

## **19.3 Levels of Complexity to be Anticipated for Traffic Control Plans**

The following guidelines have been developed to assist in determining the level of detail and complexity that may be required for a project.

### **19.3.1 Level I**

**Application** - Simple projects where method of construction is straight forward. (Examples: RRR, Enhancements, Resurfacing, Minor Widening).

#### **Components of the TCP**

1. General Notes (including references to the applicable indexes in the ***Design Standards***)
2. Phase Typical Section(s)
3. Special Details - MINIMAL - where unique situations for the project exist

### **19.3.2 Level II**

**Application** - Moderately complex Construction projects, such as reconstruction of roadways. (Examples: Urban or rural widening projects, Projects with Diversions or Detours)

#### **Components of the TCP**

1. General Notes
2. Phase Notes (including references to the applicable indexes in the ***Design Standards***)
3. Phase Typical Section(s)
4. Detailed plan sheets (when an index in the ***Design Standards*** does not apply)
5. Cross Sections as determined necessary (Example: diversions, temporary drainage, temporary bridge structure)
6. Special Details - As necessary for constructability (Example: temporary drainage, slope requirements due to diversions, temporary signalization, railroad work, etc.)

### **19.3.3 Level III**

**Application** - Complex projects.

#### **Components of the TCP**

1. General Notes
2. Phase Notes (including any references to the applicable standard indexes)
3. Phase Typical Section(s)
4. Detailed Plan Sheets
5. Cross Sections
6. Special Details may include - Temporary Drainage; Temporary Signalization; Intersection Details; etc.

## 19.4 Format

TCP=s will be prepared on standard plan sheet format. A scaled drawing is not always required; however, clarity and legibility are critical. When scaled drawings are required, the scale shall not be less than 1" = 100' for plan sheets and 1" = 40' for special details. Levels, fonts and line weights shall be in accordance with the ***FDOT CADD Production Criteria Handbook***.

Tools are available in FDOT Engineering/CADD Systems Software to assist in the development of Traffic Control Plans.

## Chapter 20

### Utility Adjustments

20.1	General.....	20-1
20.2	Required Information.....	20-2
20.3	Sheet Format.....	20-3
Exhibits		
Exhibit 20-1	General Notes for Utility Adjustments .....	20-4

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## **Chapter 20**

### **Utility Adjustments**

#### **20.1 General**

The purpose of utility adjustment sheets is to provide coordination between the contractor and the affected utility companies. These sheets show the contractor the approximate locations of existing, proposed and relocated utilities, and thus aid the contractor in avoiding possible conflicts or damage to the utilities involved.

## 20.2 Required Information

Locations of all existing and proposed utilities within the project limits shall be shown on the plans.

All proposed and relocated utilities shall be clearly shown on the plan using lines and standard utility symbols, and shall be labeled (see **Index No. 002** of the **Design Standards** and the **FDOT CADD Production Criteria Handbook**). Disposition of all existing utilities shall be clearly indicated: for example "To Be Removed", "To Be Adjusted", "To Be Relocated", "To Remain", etc. All proposed utilities shall be appropriately labeled.

Applicable general notes shall also be shown on the first utility adjustment sheet (see **Exhibit 20-1**).

## 20.3 Sheet Format

The utility adjustment sheets shall be prepared from CADD files generated for the plan or plan-profile sheets. Levels, fonts and line weights shall be in accordance with the ***FDOT CADD Production Criteria Handbook***.

Information and graphic data that is not necessary for utility adjustment sheets may be removed by turning off the appropriate level(s) on which the data is stored. This will help ensure that information pertinent to utility adjustments is more easily seen. However, the utility adjustment sheets shall show the following information as a minimum:

1. Baseline and/or centerline of survey.
2. Curb and gutter or edge of pavement.
3. Drainage structures (existing and proposed).
4. Right of way lines.
5. Station numbers.
6. Street names.
7. Location of existing utilities.
8. Disposition of existing utilities, and
9. Location of new or relocated utilities.

### **Exhibit 20-1 General Notes for Utility Adjustments**

The following notes shall be placed on the first Utility Adjustment Sheet. (If there are no utility adjustment sheets in the plans, these notes shall be included in the General Notes shown on **Exhibit 10-1**).

1. The location(s) of the utilities shown in the plans (including those designated  $V_v$ ,  $V_h$  and  $V_{vh}$ ) are based on limited investigation techniques and should be considered approximate only. The verified locations/elevations apply only at the points shown. Interpolations between these points have not been verified.
2. Utility Owners:

#### **Companies**

#### **Telephone Numbers**

(Note: If there is a traffic-monitoring site on the project or within 2 mile of the construction, the Transportation Statistics Office in Tallahassee shall be added to the list of utility owners. The contact person is the Traffic Data Section Manager. Refer to **Chapter 10, Section 10.2.7, Item No. 12** for plan requirements involving traffic-monitoring sites).

## Chapter 21

### Selective Clearing and Grubbing

21.1	General.....	21-1
21.2	Required Information and Sheet Set Up.....	21-2
21.3	Standard Symbols and Notes.....	21-3

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## **Chapter 21**

### **Selective Clearing and Grubbing**

#### **21.1 General**

Selective clearing and grubbing plans show the extent and type of clearing operation required within the project right of way limits. This information may be shown on the plan-profile sheet, if no substantial clutter of the sheet results. Otherwise, selective clearing and grubbing shall be shown on a separate plan sheet.

## 21.2 Required Information and Sheet Set Up

When separate selective clearing and grubbing sheets are required, they shall be shown on a standard plan format. Complete existing topography shall be shown together with centerline of construction with stationing, R/W lines and limits of construction. The type of selective clearing and grubbing operation to be performed shall be clearly shown by symbol (refer to **Section 21.3**).

A north arrow and graphic scale shall be placed at a point of maximum visibility on the sheet. Any convenient scale may be used provided clarity and legibility are preserved. However, it is recommended that the selective clearing and grubbing plans be prepared at the same scale as the roadway plan-profile sheets. Appropriate match lines shall be used when necessary.

For an illustration of a selective clearing and grubbing sheet, see **Exhibit SCG-2**.



## 21.3 Standard Symbols and Notes

The amount and type of notes required for selective clearing and grubbing will vary depending on the project. It may be desirable to provide a separate detail sheet in the plans to display the notes, symbols and details that are applicable to the project. An example of such a sheet is given in ***Exhibit SCG-1***.

All areas that are not included in one of the selective clearing and grubbing categories, as shown on the detail sheet or elsewhere in the plans, shall be standard clearing and grubbing.

Undesirable exotic pest plants, including Australian Pine, Brazilian Pepper, Malaleuca and Chinese Tallow trees, as well as Cogon grass should be labeled to be totally removed, regardless of size or location within the project limits.

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**SELECTIVE CLEARING AND GRUBBING - GENERAL NOTES**



DESIGNATES AREAS TO REMAIN NATURAL. NO CLEARING OR GRUBBING IN THESE AREAS. NO EQUIPMENT SHALL ENTER THESE AREAS. NO STAGING, STORAGE OR DUMPING IN THIS AREA.



DESIGNATES AREAS WHERE TREES AND STUMPS OVER 3" IN DIAMETER SHALL BE CUT FLUSH WITH THE GROUND OR REMOVED, AND ALL UNDERGROWTH IS TO REMAIN NATURAL. NO EQUIPMENT SHALL ENTER THESE AREAS THAT WOULD IN ANY WAY DAMAGE THE PLANT MATERIAL TO REMAIN. NO STAGING, STORAGE OR DUMPING IN THIS AREA.



DESIGNATES AREAS WHERE TREES OF 3" IN DIAMETER OR GREATER ARE TO REMAIN AND ALL UNDERGROWTH IS TO BE REMOVED. ONLY RUBBER TIRE EQUIPMENT SHALL ENTER THESE AREAS, AND REMAINING TREES SHALL BE PROTECTED FROM ROOT AND TRUNK DAMAGE. NO STAGING, STORAGE OR DUMPING IN THIS AREA.



DESIGNATES AREAS WHERE THE TYPE AND EXTENT OF CLEARING AND GRUBBING SHALL BE DETERMINED BY THE ENGINEER ACCORDING TO FIELD CONDITIONS.



DESIGNATES AREAS THAT SHALL REMAIN NATURAL WHEN, IN THE OPINION OF THE ENGINEER, ADEQUATE AND DESIRABLE NATURAL VEGETATION OR GRASS EXIST. WHERE THIS TYPE VEGETATION DOES NOT EXIST, ONLY HARROWING, DISKING, LEVELING, AND/OR CLEAN-UP SHALL BE UNDERTAKEN, TO A DEGREE SUFFICIENT TO PREPARE THE AREA FOR GRASSING OPERATIONS.



AREAS WHERE EQUIPMENT IS NOT ALLOWED AND OTHER LOCATIONS, AS DIRECTED BY THE ENGINEER, MUST BE PROTECTED BY TREE GUARDS. THE LOCATION FOR TREE GUARDS SHALL BE SHOWN IN THE PLANS.

ALL OTHER AREAS NOT INCLUDED IN ONE OF THE ABOVE CATEGORIES, OR THOSE DESIGNATED BY THE TYPICAL SECTIONS, SHALL BE STANDARD CLEARING AND GRUBBING.

WHERE UNFORSEEN SITE CONDITIONS EXIST, ADJUSTMENTS OR EXCEPTIONS MAY BE MADE TO THE ABOVE PROCEDURE AT THE DIRECTION OF THE ENGINEER.

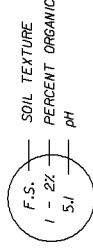
REVISIONS		DATE	BY	DESCRIPTION

**FINISH SOIL LAYER - GENERAL NOTES**

STOCKPILING OF FINISH SOIL LAYER MATERIAL IS TO BE DONE ONLY IN AREAS REQUIRING STANDARD CLEARING AND GRUBBING AND/OR AREAS DESIGNATED AS TYPE 5 (SEE SELECTIVE CLEARING AND GRUBBING - GENERAL NOTES).

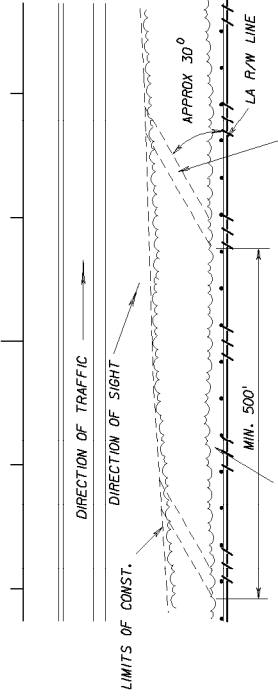
TYPE 4 AREAS MAY BE USED FOR STOCKPILING OF FINISH SOIL LAYER MATERIAL ONLY WHERE SUCH AREAS HAVE BEEN CLEARED, AT THE DIRECTION OF THE ENGINEER DURING CONSTRUCTION OPERATIONS.

SUFFICIENT AREA HAS BEEN DESIGNATED SO THAT ALL STOCKPILING MAY BE DONE IN ACCORDANCE WITH THE REQUIREMENTS LISTED ABOVE.



**SOIL INFORMATION DETAIL**  
EXPLANATION OF SYMBOLS & SOIL TEXTURE ABBREVIATIONS

265



10' STRIP WHICH MAY BE CLEARED FOR FENCE CONSTRUCTION WITH SELECTED DESIRABLE TREES ALLOWED TO REMAIN, AS DIRECTED BY THE ENGINEER.

AT THE DIRECTION OF THE ENGINEER, DIAGONAL PATH MAY BE CUT IN AREAS TO REMAIN NATURAL, AS SHOWN ABOVE, FOR THE REMOVAL OF TIMBER AND STUMPS FROM THE AREA CLEARED FOR FENCE CONSTRUCTION.

**ACCESS FOR FENCE CONSTRUCTION**  
(APPLIES TO ALL TYPES OF SELECTIVE CLEARING AND GRUBBING)

**EXHIBIT SCG-1**  
Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	STATE OF FLORIDA	DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SELECTIVE CLEARING AND GRUBBING	SHEET NO.
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## Chapter 22

### Miscellaneous Structures Plans

22.1	General.....	22-1
22.2	Approach Slabs .....	22-2
22.3	Retaining Walls (Cast in Place, Proprietary, Temporary) .....	22-3

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## Chapter 22

### Miscellaneous Structures Plans

#### 22.1 General

Miscellaneous structures not included in the bridge plans shall be included in the appropriate component plans. This includes box culvert details, high mast lighting supports, traffic mast arm supports, signal strain poles, overhead sign supports, rest area structures or buildings, barrier walls (traffic or sound), retaining walls and toll facilities.

For guidelines on structural detailing, refer to the ***Structures Detailing Manual (Topic No. 625-020-200)***.

## **22.2 Approach Slabs**

As of the July, 1999 letting, approach slab details sheets are included in the structures plans. However, some roadway elements may need to be carried onto the approach slab, and in these cases special attention must be given to clarifying in the plans which elements are to be included as part of the roadway.

The stabilization required under the approach slabs shall be paid for using the standard roadway pay item and the quantity included in the roadway plans. In addition, roadway elements such as guardrail, earthwork, sidewalks, approach slab surfacing, etc., which are part of the roadway approaches to the bridge and which interface with the approach slabs areas, will also be included and paid for in the roadway quantities.



## 22.3 Retaining Walls (Cast in Place, Proprietary, Temporary)

When cast in place retaining walls other than standard gravity walls are required, complete design and construction details, including pay items and quantities are required in the contract plans. The same is true for steel or concrete sheet piles for either permanent or temporary retaining walls.

Proprietary walls are handled differently than cast in place, steel and concrete sheet pile retaining walls. A set of control plan details must be developed for retaining walls. (See **Chapter 30, Volume I** for a discussion concerning the requirements for control plan details).

On projects with bridges the control plan details shall be included in the bridge plans. When there are no bridge plans the control plan details shall be included in the appropriate component plans. Examples of control plan details are included as exhibits at the back of this chapter.

Standard drawings from the preapproved wall companies are included in the **Design Standards** (available as Interim Index Drawings).

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**GENERAL NOTES**

1. CONSTRUCTION SPECIFICATIONS: Standard Specifications for Road and Bridge Construction, 1993, and supplements thereto.
2. DESIGN SPECIFICATIONS: Design shall be in accordance with the following specifications:
  - AASHTO "Standard Specifications for Highway Bridges", 16th Edition, and applicable interim specifications.
  - Florida Department of Transportation "Structures Design Guidelines".
  - "In Situ Soil Improvement Techniques" AASHTO-ABC-ARTEBA Task Force 27 Ground Modification Techniques, January 1990.
3. MATERIAL STRESSES: All allowable stresses shall be in accordance with the current AASHTO Specifications for all the materials shown on the plans.
  - a. Concrete Compressive Strength:
    - Panel: Class II,  $f'_c = 5500$  psi min.
    - C.I.P.: Class II,  $f'_c = 3400$  psi min.
    - Leveling Pad: Class I,  $f'_c = 2500$  psi min.
  - b. Reinforcing Steel: ASTM A615, Grade 60.
4. DESIGN METHOD: Load Factor, except that internal and external stability shall be designed for service loads.
  - The following minimum factors of safety shall be utilized in the design of the walls:
    - Overturning  $F.S. = 2.0$
    - Sliding  $F.S. = 1.5$
    - Bearing Capacity  $F.S. = 2.5$
    - Internal Pullout  $F.S. = 1.5$  (Allowable Deflection =  $\frac{3}{8}$ " )
    - Overall Stability  $F.S. = 1.5$
    - 0.55 Fy (Straps)
    - 0.47 Fy (Wire Mat or Grid)
    - 0.19 Fu (HDPE) (Permanent Walls)
    - 0.29 Fu (Polyester and HDPE) (Temporary Walls)
    - See AMSHTO Specifications

5. DESIGN LOADS:
  - Live Loading: HS20-44
  - Sidewalk Loading: 85 lbs. per square foot
6. For Typical Sections through roadway, see Roadway Plans.
7. Concrete facing panel surface treatment shall be a fluted, trapezoidal, V-Groove, fractured rib  $\frac{3}{8}$ " on  $\frac{1}{2}$ " centers similar to Burke Form Liner, Pattern No. B6312, Waterfall.
8. Longitudinal dimensions shown in the plans are measured along the exterior face of the wall. Elevations shown are to the top of coping, top of leveling pad or top of wall footing.
9. Leveling Pad: The leveling pad shall be 1'-8" min. below final ground line.
10. A structural extension of the connection of the wall panel to the soil reinforcement shall be used whenever necessary to avoid the cutting or crushing of soil reinforcement at an angle of more than 15 degrees to the soil reinforcement at piles or other obstructions.
11. The soil reinforcement and fasteners (if required) for the abutment backwall shall be designed and furnished by the MSE wall company. The soil reinforcement shall be designed to resist a horizontal load of 3.5 kips per foot of backwall width. The cost of the soil reinforcement and fasteners is to be included in the cost of the Retaining Wall System. Installation shall be by the contractor.
12. These walls are to be designed for the settlements noted for each wall. Long term settlement is measured from the beginning of wall construction.

**GEOTECHNICAL INFORMATION**

Depth Below Existing Ground Line for:	Reinforced Soil & Random Backfill	Loose Fine Sand	Firm Fine Sand	Loose Clayey Fine Sand	Firm Clayey Fine Sand
Walls 1 & 2	-	0'-6"	6'-33"	33'-39'	-
Walls 3	-	0'-10"	10'-26"	-	26'-39'
Unit Weight:	110 pcf Moist Weight In-Place	118 pcf	118 pcf	120 pcf	110 pcf
Cohesion:	0	0	0	122 pcf	122 pcf
Internal Friction:	30°	30°	32°	18°	18°

If the unit weight and/or  $\phi$  angle of the fill proposed by the Contractor differs from the above, the Project Engineer shall contact both the District Geotechnical Engineer and the Wall Designer for a possible redesign.

Design Based Internal Friction Angle = 30 degrees (Sand Backfill)  
34 degrees (Limerock/Dade/Monroe Co.)

Refer to Plan and Elevation sheets of individual walls for minimum reinforcement strip/mesh length, allowable bearing capacities, minimum wall embedment and anticipated long term and differential settlements.

**SOIL REINFORCEMENT LENGTHS FOR EXTERNAL STABILITY (0.7M):**

Walls 1 and 2

Wall Height (ft.)	0-11	12	13-14	15	16-17	18	19-20	21	22-23	24	25
* Reinforcement Length (ft.)	8	9	10	11	12	13	14	15	16	17	18
Bearing Pressure (psf)	1984	2295	2546	2857	3108	3419	3671	3980	4233	4543	4851

Wall 3

Wall Height (ft.)	0-11	12	13-14	15	16-17	18	19-20
* Reinforcement Length (ft.)	8	9	10	11	12	13	14
Bearing Pressure (psf)	2467	2467	2467	2467	2467	2467	2467

\* The reinforcement strap lengths shown in this column are minimum lengths required for external stability. The proprietary wall companies are responsible for internal stability of the retaining walls. The reinforcement lengths used in the construction of the retaining walls shall be the longer of that required for internal or external stability.

The applicable wall systems for each wall location are listed below. Wall systems not listed have been deemed unacceptable for use at the specific site, due to the environmental conditions and the nature of the soils, and will not be considered for future substitution during construction.

Wall Nos. 1 & 2	Environment: Slightly Aggressive
Long Term Settlement	2" to 3"
Short Term Settlement	1" to 2"
Differential Settlement	1/16"/1'

Wall No. 3	Environment: Slightly Aggressive
Long Term Settlement	2" to 3"
Short Term Settlement	1" to 2"
Differential Settlement	1/16"/1'

The following wall systems are acceptable for use at this location:

- Brand X
- Brand Y
- Brand Z

**EXHIBIT CP-1**  
Date: 1/1/03

DATE	BY	DESCRIPTION	REVISIONS	DATE	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY	CHECKED BY	APPROVED BY	ENGINEER OF RECORD

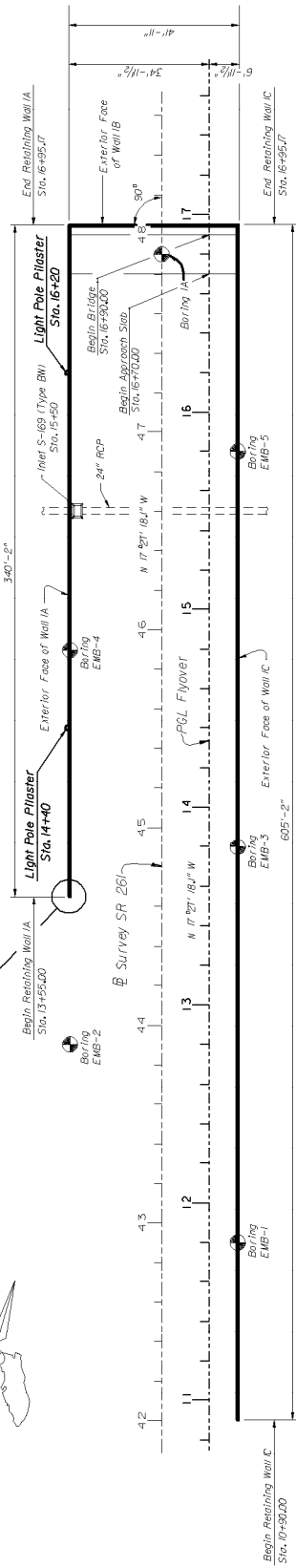
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INDEX NO. S-825, SHEET 1 OF 1	ROAD NO.
PROJECT NAME	COUNTY
PROJECT NO.	

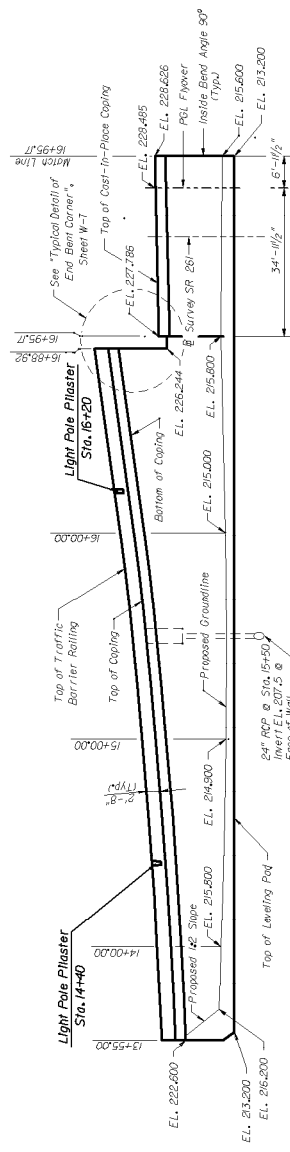
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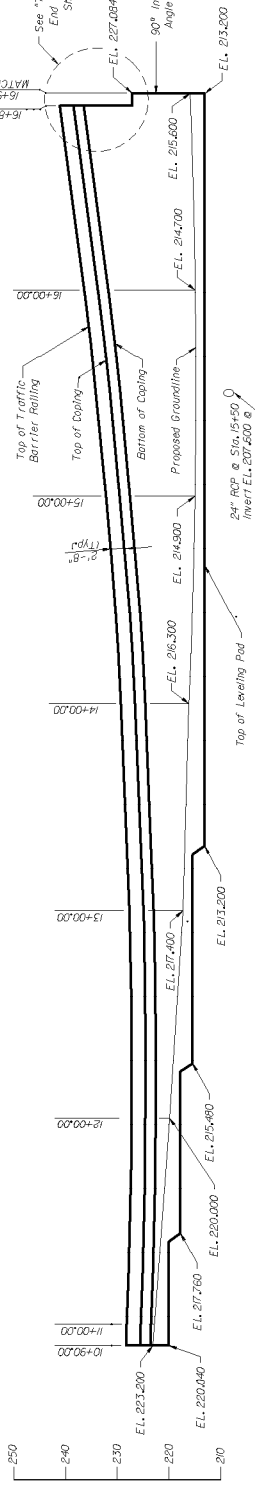
Provide concrete wedge for guardrail attachment. See Roadway Standards.



**PLAN**



**ELEVATION - WALLS IA AND IB  
(REFLECTED VIEW)**



**ELEVATION - WALL IC**

- NOTES:**
1. For Top of Coping Elevations see sheet W-6.
  2. Top of footing embedment depth shall be a minimum of 1'-6". (See Sheet W-1 for details).
  3. Provide 3/4" open joints in Traffic Rolling Barrier at a maximum of 90 ft. intervals.
  4. Indicated Soil Borings. See Sheets B-8 thru B-12a for boring data.
  5. CPT Sounding Locations are not shown. See Sheets B-12a thru B-12c for CPT data.
  6. For Additional information regarding proposed structures and Utility Locations, See Roadway Plans.

**EXHIBIT CP-2**  
Date: 1/1/03

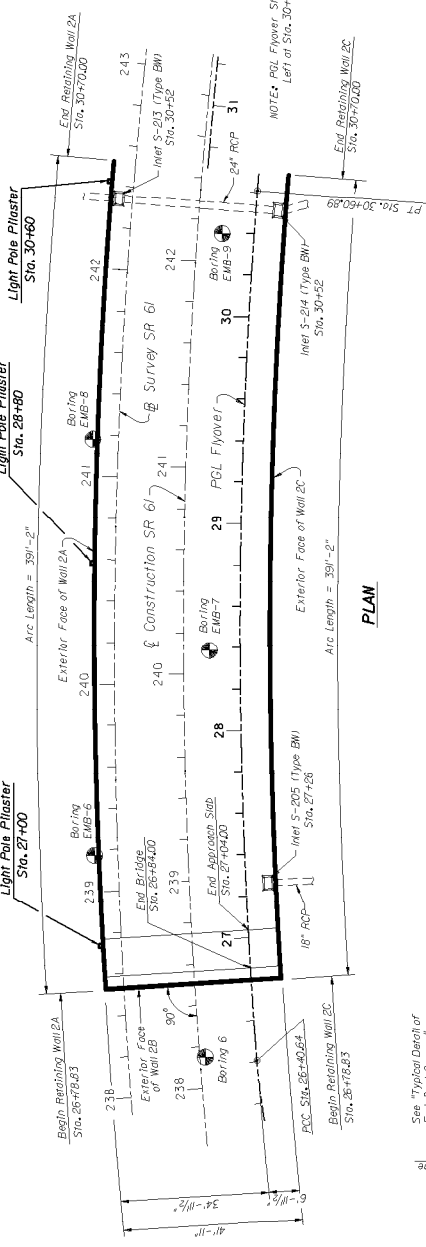
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAWN BY		CHECKED BY		APPROVED BY	
DESIGNED BY		CHECKED BY		APPROVED BY	

ENGINEER OF RECORD		DATE		SHEET TITLE	
FLORIDA DEPARTMENT OF TRANSPORTATION				RETAINING WALL NO. 1	
ROAD NO.		COUNTY		PROJECT NAME	
PROJECT NO.		PROJECT NAME		SHEET NO.	

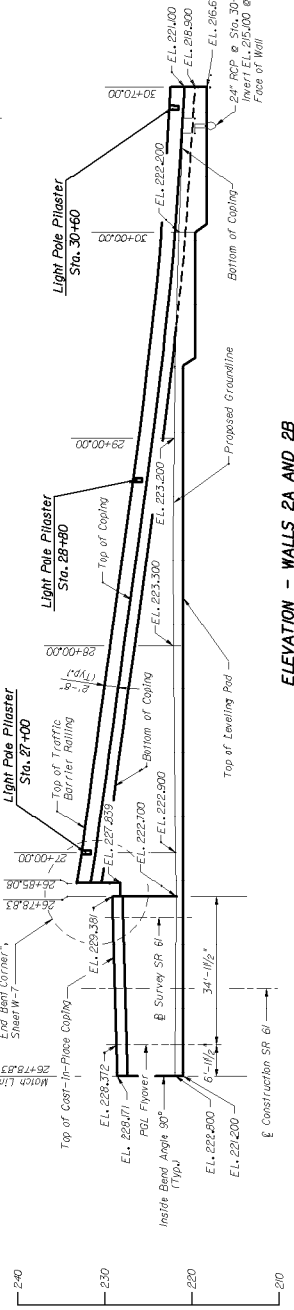


**HORIZONTAL CURVE DATA**

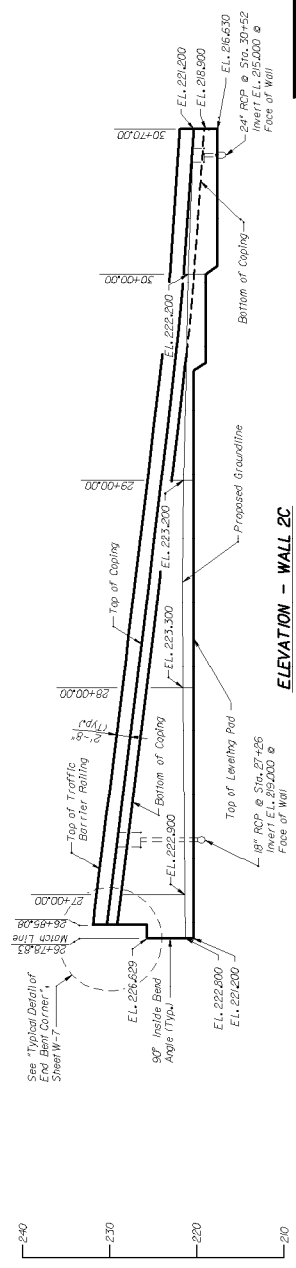
PI Sta. = 28+59.87  
 Δ = 28° 13' 31" R.  
 D = 1'02' 54"  
 T = 210.23'  
 L = 420.23'  
 R = 5,386.25'  
 PC Sta. = 25+40.64  
 PT Sta. = 30+66.89

**STATE PLANE COORDINATES**

PCC	N	E
PI	(Not Available)	
PT		



**ELEVATION - WALLS 2A AND 2B**  
(REFLECTED VIEW)



**ELEVATION - WALL 2C**

- NOTES:**
- For Top of Capping Elevations see sheet W-6.
  - Top of footing embedment depth shall be a minimum of 1'-6" (See Sheet W-1 for details).
  - Provide 3/4" open joints in Traffic Barrier at a maximum of 90 ft. intervals.
  - Indicates Soil Boring. See Sheets B-9 thru B-29 for boring data.
  - CPT Sounding Locations are not shown. See Sheets B-12a thru B-12g for CPT data.
  - For Additional information regarding proposed structures and utility locations, see Recovery Plans.

**EXHIBIT CP-3**  
Date: 1/17/03

DATE:	BY:	DESCRIPTION:	DATE:	BY:	DESCRIPTION:	DATE:	BY:	DESCRIPTION:	DATE:	BY:	DESCRIPTION:	DATE:	BY:	DESCRIPTION:

REVISIONS	DATE	DESCRIPTION	ENGINEER OF RECORD:	FLORIDA DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	PROJECT NAME:

SHEET TITLE:	RETAINING WALL NO. 2
PROJECT NO.:	
ROAD NO.:	
COUNTY:	
PROJECT NAME:	

**WALL NO. 1A**

PQL Flyover Station	Exposed Face of Wall 1A Offset From PQL Flyover (ft)	Top of Coping Elevation @ Wall 1A (ft)
13+55.00	34.958	224.600
13+75.00	34.958	224.969
14+00.00	34.958	225.503
14+25.00	34.958	226.116
14+50.00	34.958	226.809
14+75.00	34.958	227.581
15+00.00	34.958	228.436
15+25.00	34.958	229.370
15+50.00	34.958	230.383
15+75.00	34.958	231.477
16+00.00	34.958	232.650
16+25.00	34.958	233.900
16+50.00	34.958	235.224
16+75.00	34.958	236.634
16+88.92	34.958	237.615
16+93.50	34.958	

**WALL NO. 2A**

PQL Flyover Station	Exposed Face of Wall 2A Offset From PQL Flyover (ft)	Top of Coping Elevation @ Wall 2A (ft)
26+78.83	34.958	239.246
26+85.08	34.958	239.427
27+00.00	34.958	235.448
27+25.00	34.958	235.969
27+50.00	34.958	236.550
27+75.00	34.958	237.191
28+00.00	34.958	237.882
28+25.00	34.958	238.623
28+50.00	34.958	239.414
28+75.00	34.958	240.255
29+00.00	34.958	241.146
29+25.00	34.958	242.087
29+50.00	34.958	243.078
29+75.00	34.958	244.119
30+00.00	34.958	245.210
30+25.00	34.958	246.341
30+50.00	34.958	247.512
30+70.00	34.958	248.733

**WALL NO. 3**

SR Station	Exposed Face of Wall 3 Offset From Construction (ft)	Top of Coping Elevation @ Wall 3 (ft)
255+40.00	69.708	212.650
255+40.00	69.708	212.210
265+42.48	69.708	212.160
265+60.00	68.550	211.810
265+80.00	67.227	211.400
266+00.00	65.904	211.000
266+20.00	64.582	210.590
266+40.00	63.260	210.190
266+60.00	61.938	209.780
266+80.00	60.615	209.380
267+00.00	59.293	208.980
267+20.00	57.970	208.580
267+40.00	56.648	208.180
267+60.00	55.326	207.780
267+80.00	54.004	207.380
268+00.00	52.682	206.980
268+20.00	51.360	206.580
268+40.00	50.038	206.180
268+60.00	48.716	205.780
268+80.00	47.394	205.380
269+00.00	46.072	204.980
269+20.00	44.750	204.580
269+40.00	43.428	204.180
269+60.00	42.106	203.780
269+80.00	40.784	203.380
270+00.00	39.462	202.980
270+20.00	38.140	202.580
270+40.00	36.818	202.180
270+60.00	35.496	201.780
270+80.00	34.174	201.380
271+00.00	32.852	200.980
271+20.00	31.530	200.580
271+25.00	30.208	200.180

**WALL NO. 1C**

PQL Flyover Station	Exposed Face of Wall 1C Offset From PQL Flyover (ft)	Top of Coping Elevation @ Wall 1C (ft)
10+90.00	6.958	225.647
11+00.00	6.958	225.486
11+25.00	6.958	225.139
11+50.00	6.958	224.812
11+75.00	6.958	224.504
12+00.00	6.958	224.216
12+25.00	6.958	223.947
12+50.00	6.958	223.698
12+75.00	6.958	223.469
13+00.00	6.958	223.250
13+25.00	6.958	223.041
13+50.00	6.958	222.842
13+75.00	6.958	222.653
14+00.00	6.958	222.474
14+25.00	6.958	222.305
14+50.00	6.958	222.146
14+75.00	6.958	221.997
15+00.00	6.958	221.858
15+25.00	6.958	221.729
15+50.00	6.958	221.610
15+75.00	6.958	221.501
16+00.00	6.958	221.402
16+25.00	6.958	221.313
16+50.00	6.958	221.234
16+75.00	6.958	221.165
16+88.92	6.958	221.106
16+93.50	6.958	221.057

**WALL NO. 2C**

PQL Flyover Station	Exposed Face of Wall 2C Offset From PQL Flyover (ft)	Top of Coping Elevation @ Wall 2C (ft)
26+78.83	6.958	238.015
26+85.08	6.958	237.310
27+00.00	6.958	236.055
27+25.00	6.958	234.800
27+50.00	6.958	233.545
27+75.00	6.958	232.290
28+00.00	6.958	231.035
28+25.00	6.958	229.780
28+50.00	6.958	228.525
28+75.00	6.958	227.270
29+00.00	6.958	226.015
29+25.00	6.958	224.760
29+50.00	6.958	223.505
29+75.00	6.958	222.250
30+00.00	6.958	221.000
30+25.00	6.958	219.750
30+50.00	6.958	218.500
30+70.00	6.958	217.250

**NOTES:**

1. Offsets are given to the exterior face of the proprietary wall/See Sheet W-1 for details.
2. Top of Coping Elevation detail shown on Sheet W-1.
3. For existing and proposed ground elevations for all walls, see Sheets W-2 thru W-5.

**EXHIBIT CP-4**  
Date: 1/1/03

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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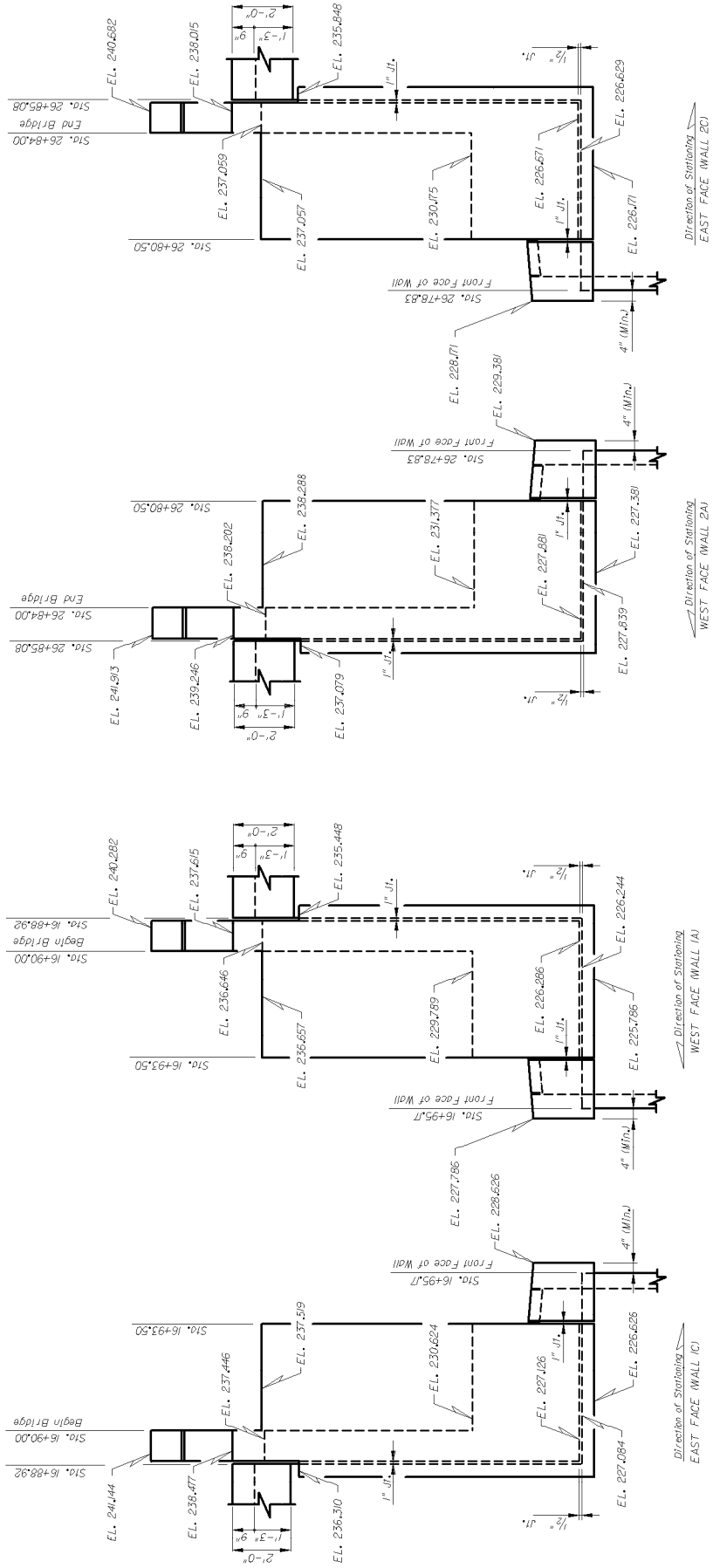
ENGINEER OF RECORD	DATE	NAME

FLORIDA DEPARTMENT OF TRANSPORTATION	PROJECT NO.

ROAD NO.	COUNTY	PROJECT NAME

SHEET TITLE	SHEET NO.
PROPRIETARY WALL ELEVATIONS	

SHEET NO.



END BENT NO. 1

END BENT NO. 7

**EXHIBIT CP-5**  
Date: 1/1/03

DATE	BY	DESCRIPTION	REVISIONS	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION

DESIGNED BY	CHECKED BY	APPROVED BY

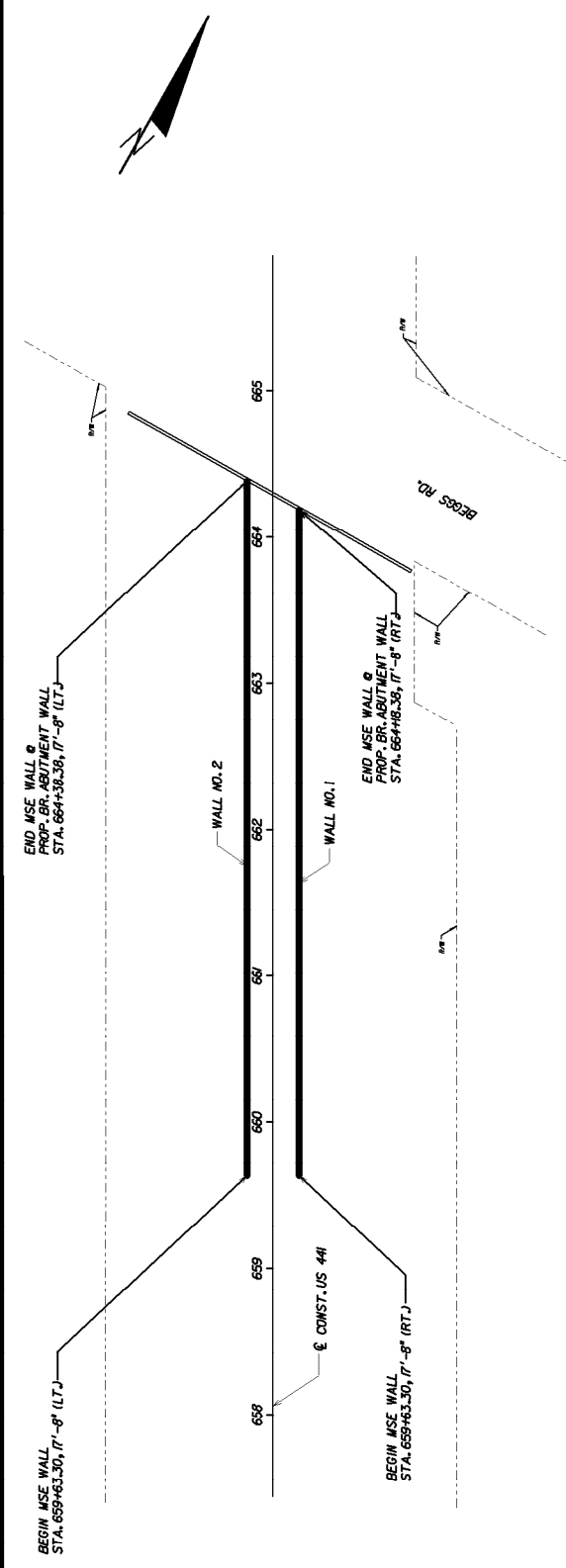
ENGINEER OF RECORD	DATE

FLORIDA DEPARTMENT OF TRANSPORTATION	SHEET TITLE
PROJECT NAME	MISCELLANEOUS DETAILS
ROAD NO.	PROJECT NO.
COUNTY	COUNTY

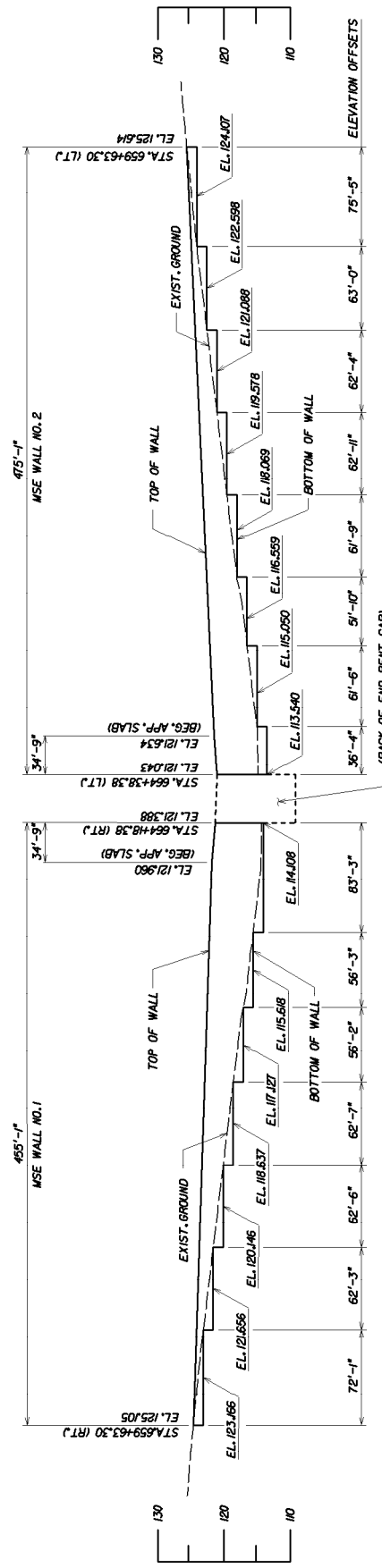
SHEET NO.







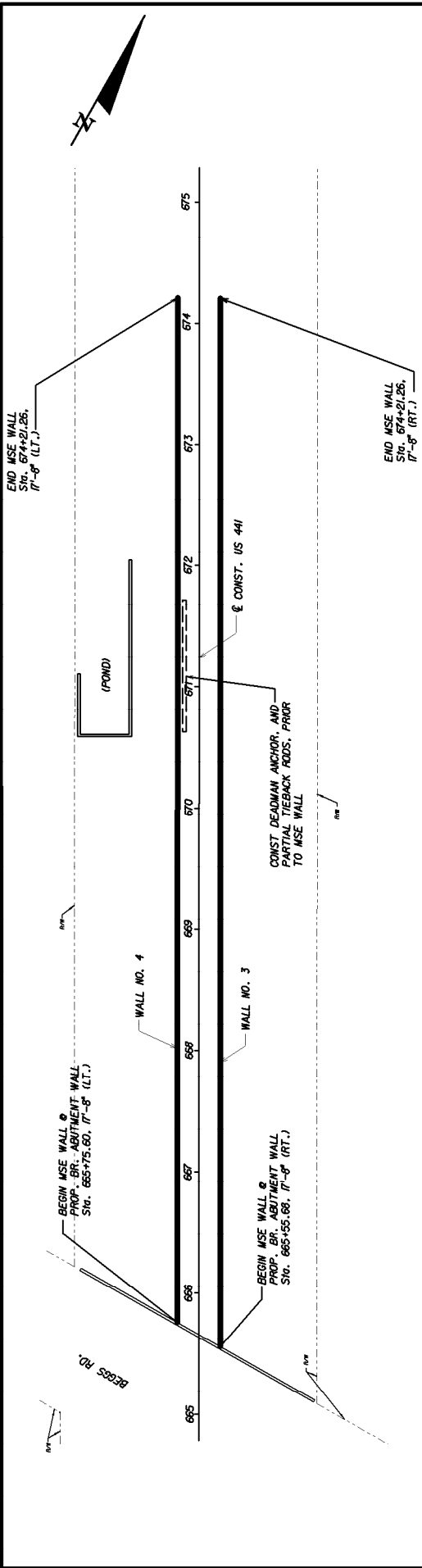
PLAN VIEW TEMP. MSE WALL NOS. 1 & 2



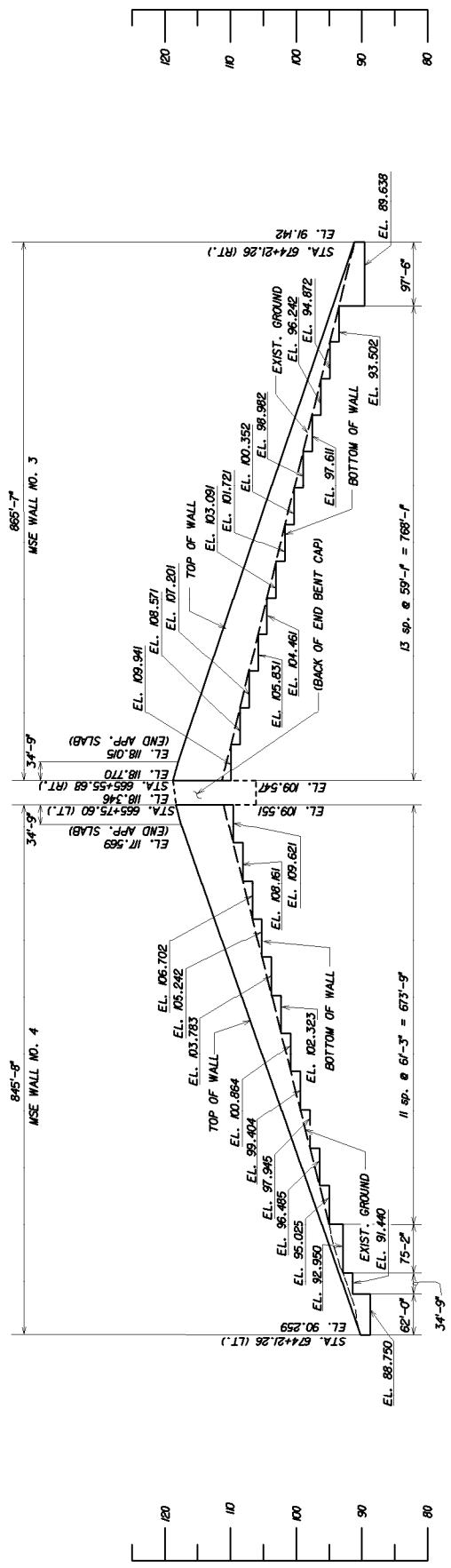
EXPANDED ELEVATION VIEWS (TEMP. MSE WALL NOS. 1 & 2, LOOKING AT FRONT FACE OF WALL)

EXHIBIT CP-7  
Date: 1/1/03

DATE		BY		CHECKED BY		DATE		BY		CHECKED BY		DATE		BY	
PRELIMINARY		DESIGN		CHECKED BY		DATE		CHECKED BY		DATE		CHECKED BY		DATE	
ENGINEER OF RECORD				FLORIDA DEPARTMENT OF TRANSPORTATION				PROJECT NO.				SHEET NO.			
ROAD NO.				COUNTY				PROJECT NAME				TEMPORARY RETAINING WALL SYSTEM			



PLAN VIEW TEMP. MSE WALL NOS. 3 & 4



EXPANDED ELEVATION VIEWS (TEMP. MSE WALL NOS. 3 & 4, LOOKING AT FRONT FACE OF WALL)

REVISED		DATE		BY		DESCRIPTION	

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

ENGINEER OF RECORD	DATE	NAME	

FLORIDA DEPARTMENT OF TRANSPORTATION	PROJECT NO.	COUNTY	PROJECT NAME

SHEET TITLE	TEMPORARY RETAINING WALL SYSTEM
EXHIBIT CP-8	DATE: 1/1/03

SHEET NO.	
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## Chapter 23

### Signing and Pavement Marking Plans

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## Chapter 23

### Signing and Pavement Marking Plans

#### 23.1 General

Signing and pavement marking plans are usually a component set of plans. Projects with minor signing and pavement markings may include these features on sheets in the roadway plan set or detailed on roadway sheets. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other signing and pavement marking sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter "S".

A complete set of signing and pavement marking plans shall include the following sheets:

1. Key Sheet
2. Tabulation of Quantities
3. Plan Sheets
4. Guide Sign worksheet (if required)
5. Overhead Sign Cross Section Sheet (if required)
6. Overhead Sign Support Design (if required)
7. Foundation Details (if required)
8. Boring Data Sheets (if required)

Pavement marking material on projects that include new asphalt surfaces will generally be paint, rather than thermoplastic. This is based on the requirement of a 90-day curing period for new asphalt. Thermoplastic markings on these projects must be placed using a separate contract. Exceptions must be coordinated with the District Construction Office.

**Section 23.9** provides guidance for preparation of separate plans for Thermoplastic Markings.

Thermoplastic may be called for in the plans on those projects that are exclusively of concrete pavement surfaces.

## 23.2 Key Sheet

The key sheet is the first sheet in the set and shall be prepared on a standard key sheet format as described in **Chapter 3** of this volume. Contract plans set information, location map and length of project box are not required on this sheet when shown on the lead key sheet. A complete index of signing and pavement marking plans shall be shown on the left side of the sheet. The date of the governing **Standard Specifications for Road and Bridge Construction** and **Design Standards** shall be inserted in a note at the lower left corner of the key sheet.

Other data, including name, consultant contract number, vendor number, and certificate of authorization number of the firm (when plans are prepared by a consultant) shall be shown as described in **Chapter 3** of this volume.

If shop drawings are anticipated, the name(s) and address(es) of the Delegated Engineer(s) for shop drawing review(s) shall be shown on the right side of the sheet.

## 23.3 Tabulation of Quantities and Pay Item Notes

The tabulation of quantities sheet shall be prepared on the standard plan format and shall show quantities, standard sign numbers, pay item numbers and size of sign for all pay items. The sign size is not required if shown in the plans sheets. Pay items shall be listed in numerical order and quantities shall be tabulated per sheet. Provisions shall be made to show the original and final quantities. Pay item notes shall also be shown on this sheet (see **Exhibit 23-1**).

On contracts with multiple Financial Project ID's or federal aid and nonfederal aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

## **23.4      General Notes**

General notes pertaining to signing and pavement markings may be shown on a separate plan format sheet. This sheet shall be placed behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.



## 23.5 Plan Sheets

### 23.5.1 Format and Scale

The plan sheets shall be prepared on a standard plan format. The scale shall be such that all details are clear and legible. See the requirements of **Section 10.1** as a guide. For simple projects, or sections of a project, it may be possible to "stack" two plans on one sheet, one below the other. Stationing shall progress from left to right and top to bottom. Clarity and legibility shall be preserved in all cases.

A north arrow and scale shall be shown at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, then each plan portion shall contain a north arrow and scale.

### 23.5.2 Required Information

The basic information pertaining to roadway geometrics and project limits required on the signing and pavement marking plan sheets is the same as that required on the plan portion of the plan-profile sheets (**Chapter 10** of this volume). Topography and construction details need not be shown. Utilities, drainage, lighting, sidewalks, driveways, landscape features, etc. shall be checked for conflicts. Those that may cause conflicts with sign placement shall be shown.

All pavement markings shall be clearly shown and labeled with their widths, color and spacing specified. Either the begin and end pavement marking stations, with offset or the begin pavement marking station with offset and the total length of roadway for pavement marking shall be shown. The location of raised pavement markers and delineators shall be indicated by specifying the type, color, spacing, and limits of application by stations.

All regulatory, warning and directional signs shall be shown at the proper locations. Each sign face shall be shown in close proximity to its respective sign with a leader line connecting the sign location and sign face. Each sign face shall be oriented on the plan sheet to be read as viewed from the direction of travel along the roadway. The location of all signs shall be indicated by station or milepost.

The pay item number and standard sign designation, or assigned number if nonstandard, shall be shown for each sign.

Any signs to be mounted on signal span wires should be shown and listed on the signalization plan for illustration and placement purposes. Sign details should be included on the signing plans.

Begin and end stations shall be shown.

## 23.6 Guide Sign Worksheet

The sign face, with the complete message layout with legend spacing (vertical and horizontal), margins, border widths and corner radii shall be shown on the guide sign worksheet.

For multi-support roadside signs, cross sections are not required in the plans set, but the support data (size and average length) for each sign shall be tabulated on the guide sign worksheet.

This sheet should be prepared on the standard plan sheet format to any convenient scale that will preserve clarity and legibility. The number of signs that may be shown on a single sheet depends on the sign size and complexity. The format of the sheet is flexible as long as the information listed above is shown. The output from the Transoft **GuidSign** Program or a similar format may be used for the sheet.

## 23.7 Sign Supports

### 23.7.1 Multi-Post Signs

Standard foundations for multi-post signs are provided in the **Design Standards**. These foundations are based on the sign support size. However, the post size and length are not included in the **Design Standards** and must be included as a part of the design and shown in the plans.

### 23.7.2 Overhead Sign Cross Section and Support Structure

The sign cross section sheet shows the location of overhead sign(s) in cross section. A standard profile format should be utilized. The cross section of the roadway at the sign location shall be shown and fully dimensioned. The recommended scale for the cross section is 1" = 10' horizontally and vertically.

For overhead signs, the design of the support truss, columns and foundations, along with the boring data information, shall be included in the signing and marking plans. The **Structures Design Office Standard Drawings (Topic No. 625-020-300)** should be used. **S-2004**, a Semi-Standard for cantilever sign supports, is used with **2001**, **2002** and **2003**; **S-2012**, a Semi-Standard for truss sign supports, is used with **2011**. These standards include the information noted above and should be completed by the Structures Design Engineer of Record and inserted as a sheet in the plans.

A computer program for the design of overhead cantilever sign structures and a program for the design of overhead span sign structures are available. The programs were developed by the Structures Design Office and may be downloaded from the Structures Design web site.

The design of the attachment system for signs mounted on bridge structures shall be the responsibility of the Structures Design Engineer of Record. The design shall be included in the structures plans if bridge work is included in the project. If bridge work is not in the project, design details shall be included in the signing and pavement marking plans.

## **23.8 Typical Pavement Marking Sheet**

For simple projects, or sections of a project, it may be possible to show signing and pavement marking plan details schematically using straight-line format and typical markings. All signs shall be properly identified and shown at their graphic location on the straight-line diagram. Pavement markings shall be shown and labeled on a typical marking plan.

## 23.9 Plans for Thermoplastic Markings

As discussed under **Section 23.1**, placement of thermoplastic markings on most projects will require a separate contract to be let after original construction (and striping with paint) is complete. For convenience and economy several projects may be let under one contract.

As a minimum, contract plans will consist of a Key Sheet, Summary of Pay Items, Tabulation of Quantities and details about the areas to be marked. This will include any changes in pavement markings that may have occurred since completion of the original project. The scope and final content of the plans shall be as directed by the district.

### **Exhibit 23-1 Standard Notes for Signing and Pavement Marking Plans**

The following pay item note should be shown on the Signing and Pavement Marking Plans Tabulation of Quantities Sheet:

- 710- All pavement markings shall be paint unless otherwise noted in the plans. Pavement marking quantities shown on the Signing and Pavement Marking Tabulation Sheet are for one application. Two applications of pavement markings will be required. The quantities for these two applications are included in the total quantities for pavement markings shown in the Roadway Summary of Pay Items.

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## Chapter 24

### Signalization Plans

24.1	General.....	24-1
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24.4	General Notes .....	24-4
24.5	Plan Sheets .....	24-5
	24.5.1    Format and Scale.....	24-5
	24.5.2    Required Information.....	24-5
24.6	Interconnect/Communication Plan.....	24-7
24.7	Mast Arm Sheets.....	24-8
24.8	Monotube Sheets .....	24-11

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## Chapter 24

# Signalization Plans

### 24.1 General

Signalization Plans are usually a component set of plans. Projects with minor signalization may include these features on sheets in the roadway plans set or on the roadway sheets. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant signal sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter "T".

The signalization plans show the construction details, electrical circuits, signal phasing and other relevant data.

A complete set of signalization plans shall include the following sheets:

1. Key Sheet
2. Tabulation of Quantities
3. Plan Sheets
4. Mast Arm Details (if required)
5. Foundation Details - Mast Arms (if required)
6. Boring Data Sheets - Mast Arms (if required)

## 24.2 Key Sheet

The key sheet is the first sheet in the component plans set and shall be prepared as described in **Chapter 3** of this volume. The location map, length of project box and contract plans set information are not required on this sheet when shown on the lead key sheet. The index of signalization plans shall be shown on the left of the sheet. The date of the governing **Standard Specifications for Road and Bridge Construction** and **Design Standards** shall be inserted in a note below the Index of Plan Sheets. Other data, including name, consultant contract number, vendor number, and certificate of authorization number of the firm (when plans are prepared by a consultant), shall be shown as described in **Chapter 3** of this volume.

If shop drawings are anticipated, the name(s) and address(es) of the Delegated Engineer(s) for shop drawing review(s) shall be shown on the right side of the sheet.

## **24.3      Tabulation of Quantities and Standard Notes**

The tabulation of quantities sheet lists the item numbers, description and quantity of materials. This sheet shall be placed behind the key sheet in plans assembly.

The tabulation of quantities sheet shall follow the key sheet. Pay item numbers shall be listed in numerical order. Provisions shall be made to show the original and final quantities per sheet. Pay item notes and general notes that refer to item numbers, description of work to be performed and quantity estimates shall also be shown on this sheet. If space is limited, notes may be shown on the General Notes Sheet.

On contracts with multiple Financial Project ID's, or Federal Aid and non-Federal Aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

## **24.4 General Notes**

The general notes sheet lists special signal design information such as controller operations, loop installations, signal heads, interconnect cable, and computer interface that is generally not covered in the FDOT Standard Specifications, Supplement or Special Provisions. This sheet shall be placed behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.

## 24.5 Plan Sheets

### 24.5.1 Format and Scale

Signalization Plans shall be prepared on standard plan format at a scale large enough to show all details clearly and legibly. The recommended scale is 1" = 40' or 1" = 50'. Usually, the complete intersection shall be shown on one plan sheet. However, for large intersections more sheets may be used with appropriate match lines. A north arrow and scale shall be shown at a point of maximum visibility on the sheet.

### 24.5.2 Required Information

The basic information requirements include roadway geometrics, street names, construction stationing or milepost, curb and gutter, drainage inlets, sidewalks and right of way lines as similarly required on the plan portion of the roadway plan-profile sheets. Those underground and overhead utilities, signing structures, and lighting structures that may cause construction conflicts with signal components shall be shown. All locations, including existing trees, should be checked for potential conflicts.

The plan sheet shall also show:

1. Signal head locations with directional arrows and movements (movements 2 and 6 shall be the major streets).
2. Details of signal heads in tabular form with pay item numbers.
3. Phasing diagram/signal operating plan (NOTE: If the SOP conforms to the ***Index No. 17870*** of the ***Design Standards***, then the reference to the index is all that is required. For all other operating plans, the plan shall be shown).
4. Signal controller timing chart.
5. Loop detectors.
6. Electrical service location.
7. Location of signal poles and span wires (ground elevation and elevation of roadway crown).
8. Signal wire signs.
9. Pedestrian signals.
10. Turning radii.

11. Median nose locations.
12. Location of "stop bars" and pedestrian crosswalks.
13. Coordination unit-timing chart.
14. Lane lines with directional arrows.

All equipment shown on the plan shall be clearly labeled and their respective pay item numbers and quantity indicated.

A separate signalization plan shall be prepared for each signalized intersection included in the construction project.

Any span wire or mast arm mounted signs shall be coordinated with the appropriate signing and pavement marking plans to avoid duplication.

The sign details for signs must be included on the signalization plans, if signing and pavement markings are not included in the plans package.



## 24.6 Interconnect/Communication Plan

The interconnect/communication plan is required when signal equipment is being coordinated with other signal installations or with a computerized system. The interconnect/communication plan shows pictorially the placement of interconnect/communication cable, either underground or aerial, and tabulates all related interconnect quantities. The interconnect/communication plan sheet shall indicate all signal poles, service poles, and/or joint-use poles to which interconnect/communication cable will be attached.

The interconnect/communication plan shall be prepared on standard plan format. Unless otherwise approved, the preferred scale of the interconnect/communication plan shall be 1" = 100' for underground cable, and 1" = 200' for aerial cable. For simple projects, or sections of a project, "stacking" two plans on one sheet is generally permitted if clarity and legibility are maintained. Stationing shall progress from left to right and top to bottom.

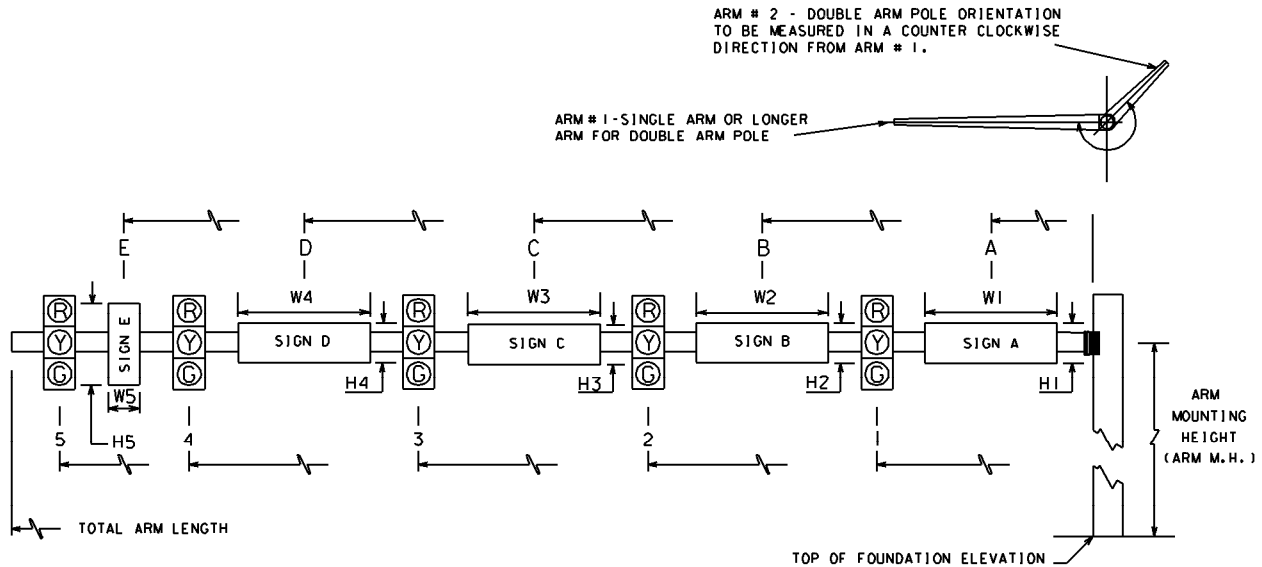
A north arrow and scale shall be shown at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, each plan portion shall contain a north arrow and scale.

The basic plan information requirements include roadway schematic, showing cross streets and driveways, cable information, pole location, pole number, utility pole identification number, pay item number and quantity.

## 24.7 Mast Arm Sheets

The Mast Arm Tabulation Sheet, completed by the signal designer, and the Standard Mast Arm Assemblies Design Table, **Structures Standard Drawings S-1700**, completed by the structures designer, will be included in the plans. These and the applicable **Interim Standard Indexes** are the only plan sheets required for mast arm assemblies which meet the Department's Standard and are included on the Qualified Products List. The structures data table may be placed on a signal plan sheet, if space permits. Mast arm assemblies that do not meet the mast arm standard will require a special design. The completed Table of Signal Structures Variables, **Structures Standard Drawings S-1710**, will be included in the plans for special designs.

The following instructions are for use with the mast arm tabulation sheet:



1. Each mast arm assembly is identified by a unique ID number.
2. Dimensions 1-5 are for signals and dimensions A-E are for signs. Record the distance from the edge of the pole, at ground level, to the center of the signal or sign.
3. Signals may be mounted vertically or horizontally. Indicate the mounting in the appropriate column in the table.
4. The entire line for arm #2 and the space for the angle between dual arms are left blank for single arm assemblies.
5. All arms and poles will be galvanized. If a color is required, indicate the color in the table, otherwise leave blank.
6. Starting at the pole, select the signals and/or signs that match the configuration you are tabulating. The spaces representing the signs or signals not used will be blank. Example 1: If no sign is located between the pole and signal 1, the spaces for Sign A would be blank. Example 2: A configuration for three signals and one sign between signal 1 and signal 2 - Only the spaces for signals 1, 2, 3 and sign B would be completed; the others will be blank.
7. Record the number of sections in each signal head in the space following the distance to that head.
8. Record the height and width of each sign in the space following the distance to the sign.



## 24.8 Monotube Sheets

The Monotube Tabulation Sheet, completed by the signal designer, and the Standard Monotube Signal Structure Design Table, **Structures Standard Drawings S-1720**, completed by the structures designer will be included in the plans. These and the applicable **Interim Standard Indexes** are the only plan sheets required for mast arm assemblies which meet the Department's Standard and are included on the Qualified Products List. The structures data table may be placed on a signal plan sheet, if space permits. Monotube assemblies which do not meet the mast arm standard will require a special design. The Structures Design Engineer will provide all design details for a special design to be included in the plans. Shop drawings will be required for a special design.

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## Chapter 25

### Lighting Plans

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## Chapter 25

### Lighting Plans

#### 25.1 General

Lighting Plans are usually a component set of plans. Projects with minor lighting may include these features on sheets in the roadway plan set or detailed on the roadway plans. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant lighting sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter "L".

The lighting plans shall show the construction details, electrical circuits, pole data, conduits, service points, luminaires, foundations, boring details and other relevant data.

A complete set of lighting plans shall include the following sheets:

1. Key Sheet
2. Tabulation of Quantities
3. Pole Data and Legend Sheet
4. Plan Sheets or Layout Sheets
5. Foundation Details - High Mast (if required)
6. Boring Data Sheets - High Mast (if required)

## 25.2 Key Sheet

The key sheet is the first sheet in the component plans set and shall be prepared as described in **Chapter 3**. The location map, length of project box and contract plans set information are not required on this sheet when shown on the lead key sheet. Index of lighting plans shall be shown on the left of the sheet. The date of the governing **Standard Specifications for Road and Bridge Construction** and **Design Standards** shall be inserted in a note below the index of plan sheets. Other data, including name, consultant contract number, vendor number, and certificate of authorization number of the firm (when plans are prepared by a consultant), shall be shown as described in **Chapter 3**.

If shop drawings are anticipated, the name(s) and address(es) of the Delegated Engineer(s) for shop drawing review(s) shall be shown on the right side of the sheet.

## **25.3      Tabulation of Quantities and Standard Notes**

The tabulation of quantities sheet lists the item numbers, description and quantity of materials. This sheet shall be placed behind the key sheet in plans assembly.

The tabulation of quantities sheet shall follow the key sheet. Pay item numbers shall be listed in numerical order. Provisions shall be made to show the original and final quantities per sheet.

On contracts with multiple Financial Project ID's, or Federal Aid and non-Federal Aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

Pay item notes and standard notes that refer to item numbers shall also be shown on this sheet. General notes shall be shown on a separate plan format sheet. This sheet shall be placed behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.

## **25.4 Pole Data and Legend Sheet**

The pole data sheet shall be prepared on a standard plan format and shall include details and notes pertaining to pole placement and construction.

This sheet shall provide a listing of each pole by pole number. The following information shall also be given for each pole:

1. Circuit Number
2. Roadway Station and Offset
3. Arm Length
4. Luminaire Wattage
5. Mounting Height
6. Pay Item Number

The pay item number will indicate if the pole is a standard pole or a special design. Two pay item numbers are utilized: one for standard poles and one for non-standard poles.

The design values for light intensities and uniformity ratios shall be shown together with a legend and description of the symbols used on the plan sheets.

## 25.5 Plan Sheets

### 25.5.1 Format and Scale

The plan sheets shall be prepared on a standard plan format. The scale shall be such that all details are clear and legible. However, the scale shall not be smaller than 1" = 100'. For simple projects, or for narrow sections of a project, it may be possible to "stack" two plans on one sheet, one below the other. Stationing shall progress from left to right and top to bottom. Clarity and legibility shall be preserved in all cases.

A north arrow and scale shall be shown at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, each plan portion shall contain a north arrow and scale.

### 25.5.2 Required Information

The basic information pertaining to roadway geometrics and project limits required on the lighting plan sheets is the same as that required on the plan portion of the roadway plan-profile sheets. Topography and construction details need not be shown. Utilities, drainage, signal structures, sign structures, landscape features, sidewalks, driveways, etc. shall be checked for conflicts. Those that may cause conflicts shall be shown.

The lighting layout shall be shown on the plan format. This shall be accomplished by symbols which represent poles, conduits and service points. The symbols used shall be in accordance with the requirements of the FDOT Engineering/CADD Systems Software and shall be used throughout the plans. A flag or note shall be used to identify conduit runs with conductor size or numbers different than that shown on the pole data sheet legend.

The beginning and ending of the lighting limits shall be shown on the appropriate plan sheet(s). The symbols for poles shall be shown at the correct baseline or centerline station and the approximate offset from the roadway noted.

The poles shall be flagged and specific information for each pole shall be shown. The pole number, baseline or centerline station, circuit number and offset from baseline or centerline (for high mast) shall be shown.

The service point locations shall be shown on the plan sheets as determined through utility negotiations. **Index No. 17504** of the **Design Standards** provides details for the service

point. The service point shall be shown at the location where it is to be installed. The following information is not covered on the index and must be shown on the plan sheet:

Description--voltages, phases, etc. Ex: 240/480 Volt, 3 wire, Overhead Breaker sizes--The main breaker size and the number of branch circuits and the breaker size of each.

## 25.6 Foundations and Boring Detail Sheets

The foundation design for standard conventional poles is shown in the ***Design Standards, Index 17515, Sheet 3 of 8*** and ***Index 17503*** for non-standard conventional poles. These foundations do not need to be shown in the plans. Foundations for high mast poles are not in the Standards and must be designed by the responsible structures design engineer of record.

Plans showing the foundation details and boring data for high mast poles shall be included in the lighting plans.



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## Chapter 26

### Landscape Plans

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## Chapter 26

### Landscape Plans

#### 26.1 General

“Landscape” or “landscaping” means any vegetation, mulches, irrigation systems, and any site amenities, such as street furniture, decorative paving, fences, and lighting (excluding public utility street and area lighting). Landscape plans may be a component set of plans, or be prepared independently. Projects with minor landscaping may include these features on separate sheets in the roadway plans set or features may be detailed on roadway plans sheets. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant landscape sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letters “LD”.

A complete set of landscape plans shall include the following:

1. Key Sheet
2. Tabulation of Quantities
3. Planting Sheets
4. Irrigation Layout
5. Details Sheet
6. Other relevant plan sheets as outlined in this chapter

## 26.2 Key Sheet

The key sheet is the first sheet in the component plans set and shall be prepared as described in **Chapter 3**. The location map, length of project box and contract plans set information are not required if shown on the lead key sheet. The index of landscape plans shall be shown on the left of the sheet. The date of the governing **Standard Specifications for Road and Bridge Construction** and **Design Standards** shall be inserted in a note below the Index of Landscape Plans. Other data, including name, consultant contract number, vendor number, and certificate of authorization number of the firm (when plans are prepared by a consultant) shall be shown as described in **Chapter 3**.

## **26.3      Tabulation of Quantities**

The tabulation of quantities sheet shall be prepared on a standard plan format and shall show all pay items, the breakdown of plants or materials within each pay item as applicable, the quantities of each, and the total quantities for all pay items. Pay items shall be listed in numerical order. Plant quantities may be tabulated by sheet either on this or on a separate sheet of "Quantities by Sheet".

Notes referring to specific pay items should be shown on this sheet. Notes of a more general nature may be shown on this sheet or on the details sheet.

The tabulation of quantities sheet or a similar sheet should also be utilized to tabulate the materials required for the construction of irrigation systems.

On contracts with multiple Financial Project ID's or Federal Aid and non-Federal Aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

## **26.4 Details Sheet**

This sheet shall show all details which are applicable to the project. General notes and additional landscape and/or irrigation detail drawings may also be shown on this sheet.

## **26.5 Planting and Irrigation Plan Sheets**

### **26.5.1 Format and Scale**

Plan sheets shall be prepared on a standard plan sheet format. The scale shall be such that all details are clear and legible. However, the scale shall not be smaller than 1" = 100'. For simple projects, or narrow sections of a project, it may be possible to "stack" two plans on one sheet, one below the other. Stationing shall progress from left to right and top to bottom. Clarity and legibility shall be preserved in all cases.

A north arrow and scale shall be shown, as applicable, at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, each plan portion shall contain a north arrow and scale.

### **26.5.2 Requirements for Planting Plan Sheets**

The base information required is as follows:

1. Project Centerline
2. Edge of Pavement (edge of traffic lanes)
3. Curbs or Curb and Gutter
4. Drainage Systems
5. Guardrails
6. Right of way and/or Limited Access Fence Line
7. Sidewalks or other planned or existing structures
8. Lighting, signs and signal poles
9. Intersections and driveways which are noted in the plans
10. Overhead and Underground Utility Locations
11. Clear Zone/Horizontal Clearance (should be plotted or safety setback distances noted frequently on each plan sheet)
12. Vegetation Management Zones for permitted outdoor advertising signs
13. Canopy limits
14. Existing vegetation (to remain or be removed)



15. Existing off site features and conditions that affect or are affected by the project
16. Fence and gate locations
17. Setbacks from structural elements or drainage system
18. Limits of clear sight (***Index No. 546*** of the ***Design Standards***)
19. Transit Facilities

All plants shall be located on the plans, with the following information provided in the plant schedule:

1. Common name
2. Botanical name, including variety or cultivar
3. Quantity
4. Size when installed (height, spread, container size, clear trunk, multi-trunk, caliper, etc.)
5. Maximum maintained or typical mature height, spread and trunk diameter (6 inches above the ground) of normal mature specimens

Maintenance requirements for the plant establishment period must be noted on the plans and will be part of the construction contract documents.

### **26.5.3 Requirements for Irrigation Plan Sheets**

These sheets shall be prepared using the planting plan sheets (devoid of unnecessary text and labeling) and shall contain all details and information pertaining to the irrigation system.

## Chapter 27

### Utility Joint Participation Agreement Plans

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27.4	Plan Sheets .....	27-4

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## Chapter 27

### Utility Joint Participation Agreement Plans

#### 27.1 General

Most utility adjustment work is performed by the utility owners or their contractor. In some cases it is advantageous to the FDOT and Utility to include the utility work as part of the roadway contract. In such cases the FDOT will enter into an agreement with a Utility for this purpose. These agreements are called Joint Participation Agreements or JPAs. The highway contractor is required to construct or relocate the specified utilities in accordance with the plans and special provisions developed by the Utility and incorporated as part of the bid package. More than one utility plans set may be included. For example, the contract plans may include separate plans for a gas utility and a water utility. It is also possible for the utilities to combine their individual facilities into one plans set and supply them to the FDOT. It is essential that the Engineer of Record (EOR) be aware which method is to be used. This is necessary because reimbursable costs and quantities must be separated and identified in each utility project.

Occasionally utility work may extend outside the normal construction limits of the project. When this is the case the limits of the utility work shall be shown or noted on the plans.

For JPAs, the utility plans shall be prepared in the same basic format as FDOT plans and as a separate plans set. The plans shall contain the following:

1. Key Sheet
2. Tabulation of Quantities
3. Plan-Profile Sheets
4. Cross Sections (as required)
5. Detail Sheets (as required)

The plans shall also reflect any special technical or relocation agreement provisions. In some cases it may not be practical or reasonable to develop separate plans sets for incidental construction under a JPA. The EOR should consult with the District Utility Engineer to determine the requirements in these cases. For further guidance, the FDOT's ***Utility User's Handbook*** and the ***JPA Handbook*** should be used.

## 27.2 Key Sheet

The key sheet, which shall be the first sheet in the set, shall be prepared on a standard key sheet format as described in **Chapter 3** of this volume. Contract plans set information, location map and length of project box are not required if shown on the lead key sheet (usually roadway). An index of plan sheets shall be shown on the left side of the utility plans key sheet. The date of the governing **Standard Specifications for Road and Bridge Construction** and the **Design Standards** shall be inserted in a note at the lower left corner of the key sheet.

In the Financial Project ID, the phase number 56 indicates reimbursable work, and 52 indicates non-reimbursable work. All other data shall be as described in **Chapter 3** of this volume.

## 27.3 Tabulation of Quantities

The tabulation of quantities sheet shall be prepared in standard FDOT format and should show any quantities tabulated for location, size, quantity, etc. Standard notes referring to item numbers shall also be shown on this sheet or on plan sheets.

Summary of pay item sheets will be prepared as noted in **Chapter 4** of this volume.

## 27.4 Plan Sheets

Utility plans shall show full construction details for all utilities to be relocated or constructed by the contractor as covered by the JPA. A plan-profile sheet format should be utilized where appropriate. All underground utilities shall be shown in the plan portion, and those which equal or exceed 4" shall also be shown in the profile portion. All above ground Utilities shall be shown in the plan portion (inclusive of underground connections).

When the construction limits are restricted such as when a power line is above and near a sanitary or water facility, either the facility (overhead lines) must be identified and shown in profile, or the minimum available vertical clearances, along with the type facility, stated on the plans. Applicable project information shall be shown similar to that described in **Chapter 10** of this volume. Utilities to be relocated or constructed shall be shown in plan and profile and in accordance with the FDOT Engineering/CADD Systems Software. When practical, the scale used should be the same as that used for the roadway plan-profile sheets.

## **Chapter 28**

### **Stormwater Pollution Prevention Plan**

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## Chapter 28

### Stormwater Pollution Prevention Plan

#### 28.1 General

The Stormwater Pollution Prevention Plan (SWPPP) sheets document the designer's site evaluation and selection of control measures and other items to comply with the terms and conditions of the General Permits discussed in **Volume I, Chapter 11**. The SWPPP includes several items: a narrative description, the documents referenced in the narrative, a site map, the contractor's approved Erosion and Sediment Control Plan required by **Specification Section 104**, and reports of inspections made during construction.

For examples of SWPPP sheets, see **Exhibits SWP-1** thru **3**.

## 28.2 Narrative Description

The SWPPP sheets include a narrative that refers to other documents such as the **Standard Specifications** or the **Design Standards** as necessary. Use the following outline to prepare the narrative:

1. Site Description
  - a. A Description of the Construction Activity
  - b. Sequence of Major Soil Disturbing Activities
  - c. Area Estimates (The total project area and the area expected to be disturbed.)
  - d. Runoff Data consisting of:
    - 1) Rational runoff coefficient before, during, and after construction,
    - 2) The size of the drainage area for each outfall,
    - 3) The location of each outfall, in terms of latitude and longitude (to the nearest 15 seconds),
    - 4) Existing data describing the soil or the quality of discharge from the site
  - e. Site Map (Include a narrative of the site map as described in **Section 28.3**)
  - f. Receiving Waters (The name of the receiving waters for each outfall and the wetland area on the site.)
2. Controls
  - a. Erosion and Sediment Controls
    - 1) Stabilization Practices
    - 2) Structural Practices
  - b. Stormwater Management
  - c. Other Controls
    - 1) Waste Disposal
    - 2) Off-Site Vehicle Tracking & Generation of Dust
    - 3) State or Local Regulations
    - 4) Application of Fertilizers and Pesticides
    - 5) Toxic Substances
  - d. State and Local Plans

3. Maintenance
4. Inspection
5. Non-Stormwater Discharges

The sheets may also include supplemental design details and plan views of the location of the controls. Additional information for preparing the SWPPP sheets can be found in the ***FDOT Erosion and Sediment Control Handbook***.

## 28.3 Site Map

The following information shall be shown on a site map:

1. Drainage patterns
2. Approximate slopes
3. Areas of soil disturbance
4. Areas that are not to be disturbed
5. Locations of controls identified in the plan
6. Areas that are to be stabilized against erosion
7. Surface waters (including wetlands)
8. Locations where stormwater is discharged to a surface water

The above information is shown in a typical set of construction plans. A narrative description of the site map shall be prepared which identifies the construction plan sheets where the site map information required by the General Permits can be found.

The locations of the temporary controls may be shown on SWPPP sheets, Erosion Control sheets, Plan-Profile sheets, or Traffic Control Plan (TCP) sheets. For projects where plan view sheets are not available, the locations of the controls shall be summarized in a tabular format.

If an optional Drainage Map is included in the construction plans, then the drainage patterns will be shown on it. If the Drainage Map is not included, a topographic map (for example, a USGS quadrangle map) showing contour lines shall be prepared. This map will supplement the construction plan sheets that show the other site map requirements. If this supplemental site map is not in aerial format, include it in the SWPPP sheets. If this supplemental site map is in aerial format, it cannot be placed in the contract plans set and must be delivered to the resident engineer to have available on site.

## 28.4 Controls

The SWPPP shall include a description of the controls that will be implemented at the construction site. For each of the major activities identified in **Part 1.b** of the **Narrative**, describe the timing of the implementation of control measures during the construction process. Also describe the stormwater management measures that will be installed during construction to control pollutants in the stormwater discharges that will occur after construction.

Details should be prepared for all controls that are not detailed in the **Design Standards**. The details should show the work intended, where and how the control is to be placed, and any other special design details. Any Technical Special Provisions required by the erosion control items of work should be prepared for the specification package.

The narrative for some of the other controls will be supplied by the contractor at the preconstruction conference. A plan for off-site vehicle tracking is an exception and must be included in the SWPPP prepared during design.

Any Water Management District or Local Water Management permits obtained in connection with the project should be noted.

## 28.5 Maintenance, Inspection and Non-Stormwater Discharges

Include a description of any maintenance requirements that are not stated in the standard specifications. Include the inspection requirements, which will be either requirements of EPA or the applicable requirements of another regulatory agency, whichever is more stringent. If special procedures have been developed to minimize turbidity associated with normal construction dewatering, include a description of those procedures.

Special monitoring requirements described in the EPA General Permit may apply where the project discharges to waters listed in **Section 303(d)** of the **Clean Water Act**. Consult with the district environmental permitting staff to determine if the monitoring requirements apply. If applicable, describe the special monitoring requirements in the inspection section of the narrative.

THIS EXHIBIT IS AN EXAMPLE NARRATIVE OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR A MAJOR RECONSTRUCTION PROJECT. ACTUAL PROJECT CONDITIONS OFTEN DICTATE DIFFERENT APPROACHES THAN SHOWN HERE. THE ENGINEER IS RESPONSIBLE FOR DEVELOPING A SITE SPECIFIC SWPPP THAT COMPLIES WITH VOLUME I CHAPTER II OF THE PLANS PREPARATION MANUAL.

The following narrative of the Stormwater Pollution Prevention Plan contains references to the Standard Specifications for Road and Bridge Construction, the Design Standards, and other sheets of these construction plans. The first sheet of the construction plans (called the Key Sheet) contains an index to the other sheets. The complete Stormwater Pollution Prevention Plan includes several items: this narrative description, the documents referenced in this narrative, the contractor's approved Erosion Control Plan required by Specification Section 104, and reports of inspections made during construction.

**1.0 SITE DESCRIPTION:**

**1.a. Nature of Construction Activity:**  
The project is the reconstruction of SR 007 (James Bond Boulevard) to a major urban roadway. This involves constructing roadway surface, curb and gutter, sidewalks, underground storm sewer systems, and stormwater management facilities. The project extends from north of Paul Russell Road to Perkins Street, a distance of approximately 1.1 miles.

**1.b. Sequence of Major Soil Disturbing Activities:**

In the Section 104 Erosion Control Plan, the contractor shall provide a detailed sequence of construction for all construction activities. The contractor shall follow the sequence of major activities described below, unless the contractor proposes a different sequence that is equal or better at controlling erosion and trapping sediment and is approved by the Engineer.

For each construction phase, install perimeter controls after clearing and grubbing necessary for installation of controls but before beginning other work for the construction phase. Remove perimeter controls only after all upstream areas are stabilized.

1. Clearing and grubbing, earthwork, and storm sewer construction for the outfall from the ponds.
2. Clearing and grubbing, earthwork for pond construction.
3. Storm sewer and roadway underdrain construction. Construct the storm drain pipe in the upstream direction.
4. Earthwork associated with roadway, and construction of gravity wall, curb, subgrade, base, pavement, and sidewalk.
5. Construct underdrain in pond bottom.

**1.c. Area Estimates:**

Total site area: 19.6 acres.  
Total area to be disturbed: 19.6 acres.

**1.d. Runoff Data:**

**Runoff Coefficients:** Before: 0.62.  
During: varies from 0.62 to 0.76.  
After: 0.76.

**Soils Data:** The results of the soil borings along the roadway are shown in the Roadway Soil Survey Sheets. The results of soil borings done in the ponds are shown on the Pond Detail Sheets. The numbers for these are identified on the Key Sheet of these construction plans. In general, the soils are clayey sands.

**Outfall Information:** There are 4 outfalls.

**#1 Description:** Existing pond at Laura Lee.  
**Location:** Latitude 30° 24' 30", Longitude 84° 16' 45".  
**Est. Drainage Area Size:** 13.6 acres.  
**Receiving Water Name:** Not applicable.

**#2 Description:** Pond 1. This discharges to the storm sewer system that runs under Orange Avenue. This system in turn discharges to the box culvert at Sta. 531+00.  
**Location:** Latitude 30° 24' 45", Longitude 84° 17' 00".  
**Est. Drainage Area Size:** 7.3 acres.  
**Receiving Water Name:** East Ditch.

**#3 Description:** Box culvert at Sta. 531+00.  
**Location:** Latitude 30° 24' 45", Longitude 84° 17' 00".  
**Est. Drainage Area Size:** 4.2 square miles.  
**Receiving Water Name:** East Ditch.

**#4 Description:** Pond 2. This discharges to the SR 007 storm sewer system that drains to the box culvert at Sta. 531+00.  
**Location:** Latitude 30° 25' 00", Longitude 84° 17' 00".  
**Est. Drainage Area Size:** 15.4 acres.  
**Receiving Water Name:** East Ditch.

**1.e. Site Map:**

The construction plans are being used as the site maps. The location of the required information is described below. The sheet numbers for the plan sheets referenced are identified on the Key Sheet of these construction plans.

**\* Drainage Patterns:** The drainage basin divides and flow directions are shown on the Drainage Maps. The Back of Sidewalk Profile Sheets show overland flow direction at the right of way line. The arrows above and below the profile represent the flow direction at the left and right property line, respectively. Arrows pointing to the profile indicate runoff coming to the site. Pointing away from the site indicate runoff leaving the site.

**\* Approximate Slopes:** The slopes of the site can be seen in the Cross Section Sheets and the Plan-Profile Sheets. There are pond cross sections located with the Pond Detail Sheets.

**\* Areas Of Soil Disturbance:** The areas to be disturbed are indicated on the Plan-Profile Sheets, the Cross Section Sheets, and the Pond Detail Sheets. Any areas where permanent features are shown to be constructed above or below ground will be disturbed.

**\* Areas Not To Be Disturbed:** Essentially the whole project will be disturbed during construction.

**\* Locations of Temporary Controls:** These are shown on the Erosion Control Sheets except for the controls associated with the box culvert replacement which are shown on the Box Culvert Construction Detail Sheet. Tables providing summaries of temporary erosion and sediment control items are provided in the Summary of Quantity Sheets.

**\* Locations of Permanent Controls:** The stormwater ponds are the primary permanent stormwater management controls. These are shown on the Pond Detail Sheets.

**\* Areas To Be Stabilized:** Temporary stabilization practices are shown in the same location as the temporary controls mentioned above. Permanent stabilization is shown on the Typical Section Sheets, the Plan-Profile Sheets and the Pond Detail Sheets.

**\* Surface Waters:** The only surface water within the site is the East Ditch, which flows through the culvert at Station 531+00. This is located on the Plan-Profile Sheets and the Box Culvert Construction Detail Sheet.

**\* Discharge Points To Surface Waters:** There is only one. This is shown on the Plan-Profile Sheets at the East Ditch culvert at Station 531+00.

**1.f. Receiving Waters:**

See Item 1.d for the outfall locations and receiving water names. There are no wetland areas on the project site.

EXHIBIT SWP-I  
DATE: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.	
ROAD NO.		FINANCIAL PROJECT ID	
COUNTY		-	
<b>STORMWATER POLLUTION PREVENTION PLAN</b>			
DATE	BY	DESCRIPTION	REVISIONS
			DATE
			BY
			DESCRIPTION



THIS EXHIBIT IS AN EXAMPLE NARRATIVE OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR A MAJOR RECONSTRUCTION PROJECT. ACTUAL PROJECT CONDITIONS OFTEN DICTATE DIFFERENT APPROACHES THAN SHOWN HERE. THE ENGINEER IS RESPONSIBLE FOR DEVELOPING A SITE SPECIFIC SWPPP THAT COMPLIES WITH VOLUME I CHAPTER 11 OF THE PLANS PREPARATION MANUAL.

**2.0 CONTROLS:**

**2.a. Erosion And Sediment Controls:**

In the Section 104 Erosion Control Plan, the contractor shall describe the proposed stabilization and structural practices based on the contractor's proposed Traffic Control Plan. The following recommended guidelines are based on the Traffic Control Plan (TCP) outlined in the construction plans. Where following the Traffic Control Plan (TCP) outlined in these construction plans, the contractor may elect to accept the following guidelines or modify them in the Section 104 Erosion Control Plan, subject to approval of the Engineer. As work progresses, the contractor shall modify the plan to adapt to seasonal variation, changes in construction activities, and the need for better practices.

For each construction phase, install perimeter controls after clearing and grubbing necessary for installation of controls but before beginning other work for the construction phase. Remove perimeter controls only after all upstream areas are stabilized.

**Phase 1 of Traffic Control Plans.**

Roadway, Station 50+10 to 520+40 Right: Immediately after constructing the temporary pavement, stabilize the entire area between the temporary pavement and the right of way line using temporary sod.

Outlet of Pond 1:  
Construct the outlet pipe from S-106 towards the pond. The contractor shall have sandbags available at all times during the pipe construction to substantially back runoff in the trench from entering the pipe. Construct pipe to the pond and construct the outlet structure of the pond.

Pond 1 Construction:  
Clear and grub the pond site. Initially excavate the pond only enough to construct Type IV Silt Fence as detailed in the TCP. Then excavate the pond to approximate proposed dimensions. Seed (quick growing) and mulch all disturbed areas of the pond site above elevation 51.0. Final grading will be done at the end of phase two of the TCP.

Roadway, Station 510+10 to 523+70 Left:  
Construct the storm sewer from the pond to the roadway and then in the upstream direction along the left side of the project. During the subsoil excavations, and construction of the roadway underdrain, storm sewer, and walls, use S-19 as the primary inlet for conveyance to the pond. Stage construct the inlet as detailed in the TCP.

Roadway, Station 50+10 to 510+40 Left:  
During the subsoil excavation, and construction of the underdrain, storm sewer, and wall, use S-12 as the primary inlet for conveyance to the Laura Lee pond. S-12 should be constructed before disturbing soil upstream. Stage construct and protect the inlet as detailed in the TCP.

**Phase 2 of the Traffic Control Plan:**

**Roadway, Station 510+10 to 523+10 Right:**

During the subsoil excavation, and construction of the roadway underdrain, and storm sewer, use S-20 as the primary inlet for conveyance to Pond 1. Stage construct and protect the inlet in a manner similar to S-19 in Phase 1 of the TCP.

**Roadway, Station 50+10 to 510+40 Right:**

During the subsoil excavation, and construction of the underdrain, storm sewer, and walls, use S-10 as the primary inlet for conveyance to the Laura Lee pond. Stage construct and protect the inlet in a manner similar to S-12 in Phase 1 of the TCP.

**Pond 1 Construction:**

After entire basin is permanently stabilized, construct underdrain in the pond bottom.

**2.a.1 Stabilization Practices:**

In the Section 104 Erosion Control Plan, the contractor shall describe the stabilization practices proposed to control erosion. The contractor shall initiate all stabilization measures as soon as practical, but in no case more than 14 days, in portions of the site where construction activities have temporarily or permanently ceased. The stabilization practices shall include at least the following, unless otherwise approved by the Engineer.

THE PARAGRAPH ABOVE REFERS TO A 14 DAY LIMIT BEFORE INITIATING STABILIZATION. THE GENERAL NPDES PERMIT SPECIFIES 14 DAYS, BUT STRICTER REQUIREMENTS FROM OTHER PERMITTING AGENCIES WILL OFTEN APPLY AND SHOULD BE NOTED. FOR EXAMPLE, ST. JOHNS RIVER WATER MANAGEMENT DISTRICT HAS A 7 DAY LIMIT IN 400-42 F.A.C.

**Temporary:**

- \* Artificial coverings in accordance with Specification Section 104.
- \* Seed and mulch, and sod in accordance with Specification Section 104.
- \* Asphalt or concrete surface.
- \* Sod in accordance with Specification Section 575.

**2.a.2 Structural Practices:**

In the Section 104 Erosion Control Plan, the contractor shall describe the proposed structural practices to control or trap sediment and otherwise prevent the discharge of pollutants from exposed areas of the site. Sediment controls shall be in place before disturbing soil upstream of the control. The structural practices shall include at least the following, unless otherwise approved by the Engineer.

**Temporary:**

- \* Silt fence in accordance with Design Standard 102 and Specification Section 104.
- \* Baled hay or straw in accordance with Design Standard 102 and Specification Section 104.
- \* Sandbags to control erosion and trap silt.
- \* Inlet protection in accordance with Design Standard 102 and special details shown in the TCP.
- \* Sediment Basin. The permanent stormwater ponds will be temporarily modified according to the details in the TCP.

**Permanent:**

- \* Stormwater ponds.
- \* Sod.
- \* Stormwater Management:

Several storm sewer systems will be constructed to convey runoff to three (3) stormwater retention / detention ponds. The facilities have been permitted by the Florida Department of Environmental Protection (FDEP) and the City of Narcoossee and comply with applicable design standards.

EXHIBIT SWP-2  
DATE: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DATE	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	

STORMWATER POLLUTION PREVENTION PLAN		SHEET NO.

THIS EXHIBIT IS AN EXAMPLE NARRATIVE OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR A MAJOR RECONSTRUCTION PROJECT. ACTUAL PROJECT CONDITIONS OFTEN DICTATE DIFFERENT APPROACHES THAN SHOWN HERE. THE ENGINEER IS RESPONSIBLE FOR DEVELOPING A SITE SPECIFIC SWPPP THAT COMPLIES WITH VOLUME I CHAPTER 11 OF THE PLANS PREPARATION MANUAL.

**2.c. Other Controls:**

**2.c.1 Waste Disposal:**

In the Section 104 Erosion Control Plan, the contractor shall describe the proposed methods to prevent the discharge of solid materials, including building materials, to waters of the United States. The proposed methods shall include at least the following, unless otherwise approved by the Engineer.

- \* Providing litter control and collection within the project during construction activities.
- \* Disposing of all fertilizer or other chemical containers according to EPA's standard practices as detailed by the manufacturer.
- \* Disposing of solid materials including building and construction materials off the project site but not in surface waters, or wetlands.

**2.c.2 Off-Site Vehicle Tracking & Dust Control:**

In the Section 104 Erosion Control Plan, the contractor shall describe the proposed methods for minimizing offsite vehicle tracking of sediments and generating dust. The proposed methods shall include at least the following, unless otherwise approved by the Engineer.

- \* Covering loaded haul trucks with tarpaulins.
- \* Removing excess dirt from roads daily.
- \* Stabilizing construction entrances according to Design Standard 106.
- \* Using roadway sweepers during dust generating activities such as excavation and milling operations.

**2.c.3 State and Local Regulations For Waste Disposal, Sanitary Sewer, Or Septic Tank Regulations:**

In the Section 104 Erosion Control Plan, the contractor shall describe the proposed procedures to comply with applicable state and local regulations for waste disposal, and sanitary sewer or septic systems.

**2.c.4 Fertilizers and Pesticides:**

In the Section 104 Erosion Control Plan, the contractor shall describe the procedures for applying fertilizers and pesticides. The proposed procedures shall comply with applicable subsections of either Section 570 or 577 of the Specifications.

**2.c.5 Toxic Substances:**

In the Section 104 Erosion Control Plan, the contractor shall provide a list of toxic substances that are likely to be used on the job and provide a plan addressing the generation, application, migration, storage, and disposal of these substances.

**2.d.4 Approved State and Local Plans and Permits:**

- \* FDEP Rule Chapter 62-25 F.A.C.
- \* City of Narcoossee Environmental Management Ordinance Number 90-0-0040a.

**3.0 MAINTENANCE:**

In the Section 104 Erosion Control Plan, the contractor shall provide a plan for maintaining all erosion and sediment controls throughout construction. The maintenance plan shall at a minimum, comply with the following.

- \* Silt Fence: Maintain per Section 104. The contractor should anticipate replacing silt fence on 12 month intervals.
- \* Baled Hay or Straw: Remove sediment when it reaches 1/2 height of bales or when water ponds in unacceptable amounts or areas. The contractor should anticipate replacing straw bales on 3-month intervals.
- \* Ponds One and Two: The ponds are temporary sediment basins until the areas that drain to them are stabilized, so until then, remove sediment from the pond when it becomes 1.5' deep at any point.

**4.0 INSPECTIONS:**

Qualified personnel shall inspect the following items at least once every seven calendar days and within 24 hours of the end of a storm that is 0.25 inches or greater. To comply, the contractor shall install and maintain rain gauges and record the daily rainfall. Where sites have been permanently stabilized, inspections shall be conducted at least once every month. The contractor shall also inspect that controls installed in the field agree with the latest Stormwater Pollution Prevention Plan.

- \* Points of discharge to waters of the United States.
  - \* Points of discharge to municipal separate storm sewer systems.
  - \* Disturbed areas of the site that have not been finally stabilized.
  - \* Areas used for storage of materials that are exposed to precipitation.
  - \* Structural controls.
  - \* Stormwater management systems.
  - \* Locations where vehicles enter or exit the site.
- The contractor shall initiate repairs within 24 hours of inspections that indicate items are not in good working order.
- If inspections indicate that the installed stabilization and structural practices are not sufficient to minimize erosion, retain sediment, and prevent discharging pollutants, the contractor shall provide additional measures, as approved by the Engineer.

**5.0 NON-STORMWATER DISCHARGES:**

In the Section 104 Erosion Control Plan, the contractor shall identify all anticipated non-stormwater discharges (except flows from fire fighting activities). The contractor shall describe the proposed measures to prevent pollution of these non-stormwater discharges. If the contractor encounters contaminated soil or groundwater, contact Dave Letterman, District Hazardous Materials Coordinator at 305-638F549.

EXHIBIT SWP-3  
DATE: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID		SHEET NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

**STORMWATER  
POLLUTION PREVENTION PLAN**

**COMPONENTS OF CONTRACT PLANS SET**

- ROADWAY PLANS
- SIGNING AND PAVEMENT MARKING PLANS
- SIGNALIZATION PLANS
- LIGHTING PLANS
- LANDSCAPE PLANS

EXAMPLE ONLY:  
CONTRACT PLANS SET MAY NOT CONTAIN  
ALL OF THE LISTED COMPONENTS/SHEETS.

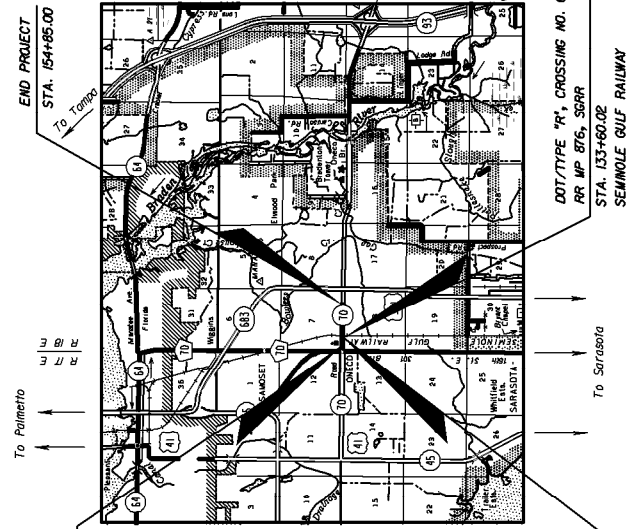
A DETAILED INDEX APPEARS ON THE  
KEY SHEET OF EACH COMPONENT

**INDEX OF ROADWAY PLANS**

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2 - 2A	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4	TYPICAL SECTION
5	PROJECT LAYOUT SHEET
6	BENCH MARKS & REFERENCE POINTS
7	SUMMARY OF QUANTITIES
8 - 12	BOX-CULVERT DATA SHEETS
13 - 15	BACK-OF-SIDEWALK PROFILES
16 - 17	ROADWAY OF DRAINAGE STRUCTURES
18 - 23	ROADWAY PLAN-PROFILES
24	SPECIAL PROFILES
25	MEDIAN DETAILS
26 - 40	DRAINAGE STRUCTURES
41	LATERAL DITCH PLAN-PROFILE
42 - 43	LATERAL DITCH CROSS SECTIONS
44 - 46	POND SHEETS
47	ROADWAY SOIL SURVEY
48 - 63	CROSS SECTIONS
64 - 66	STORMWATER POLLUTION PREVENTION PLAN
67 - 71	TRAFFIC CONTROL PLANS
72 - 76	UTILITY ADJUSTMENTS
77 - 80	SELECTIVE CLEARING AND GRUBBING

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
CONTRACT PLANS**

FINANCIAL PROJECT ID 196058-1-52-01  
(FEDERAL FUNDS)  
MANATEE COUNTY (13160)  
STATE ROAD NO. 70



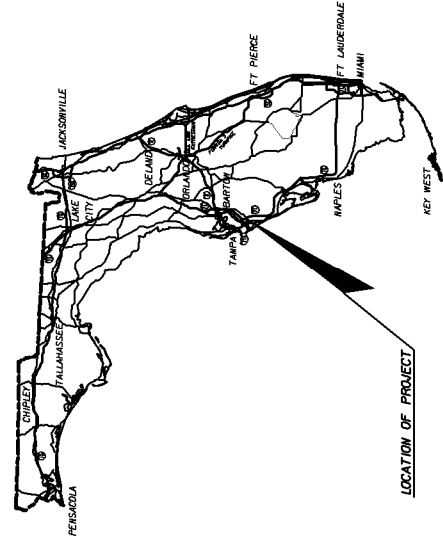
PROJECT LENGTH IS BASED ON  $\text{€}$  CONSTRUCTION

LENGTH OF PROJECT	
LINEAR FEET	MILES
ROADWAY	3460.79
BRIDGES	0.655
NET LENGTH OF PROJECT	3460.79
EXCEPTIONS	0.655
GROSS LENGTH OF PROJECT	3460.79

FOOT PROJECT MANAGER: THOMAS DULFER

EQUATIONS:  
PT. STA. 132 + 52.26  $\text{€}$  CONST. BK. =  
STA. 32 + 50.03  $\text{€}$  SURVEY AH. =  
STA. 132 + 50.03  $\text{€}$  CONST. AH. =

REVISIONS  
FINANCIAL PROJECT ID 196058-1-52-01  
Roadway Sheets 1, 6, 7 & 15 (Revised 3-0-00)  
Signing & Pavement Marking Sheets 3-1 & 3-2 (Revised 3-0-00)  
Signalization Sheets 18 & 30 (Revised 10-0-00)  
Summary of Pay Items (Revised 3-30-00)  
FINANCIAL PROJECT ID 196058-1-52-02  
Roadway Sheets 13, 20 & 21 (Revised 3-30-00)  
Signalization Sheets 1-4 & 1-2 (Revised 3-30-00)



ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:  
HARRY P. GILMER  
HILL & DALE ENGINEERING, INC.  
P.O. BOX 2851  
TAMPA, FLORIDA 33755

PLANS PREPARED BY:  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2851  
TAMPA, FLORIDA 33755  
CONTRACT NO. C-8001  
VENDOR NO. 38  
CERTIFICATE OF AUTHORIZATION NO. 999966

NOTE: THIS PROJECT TO BE LET TO CONTRACT  
WITH FINANCIAL PROJECT ID 196058-1-52-02

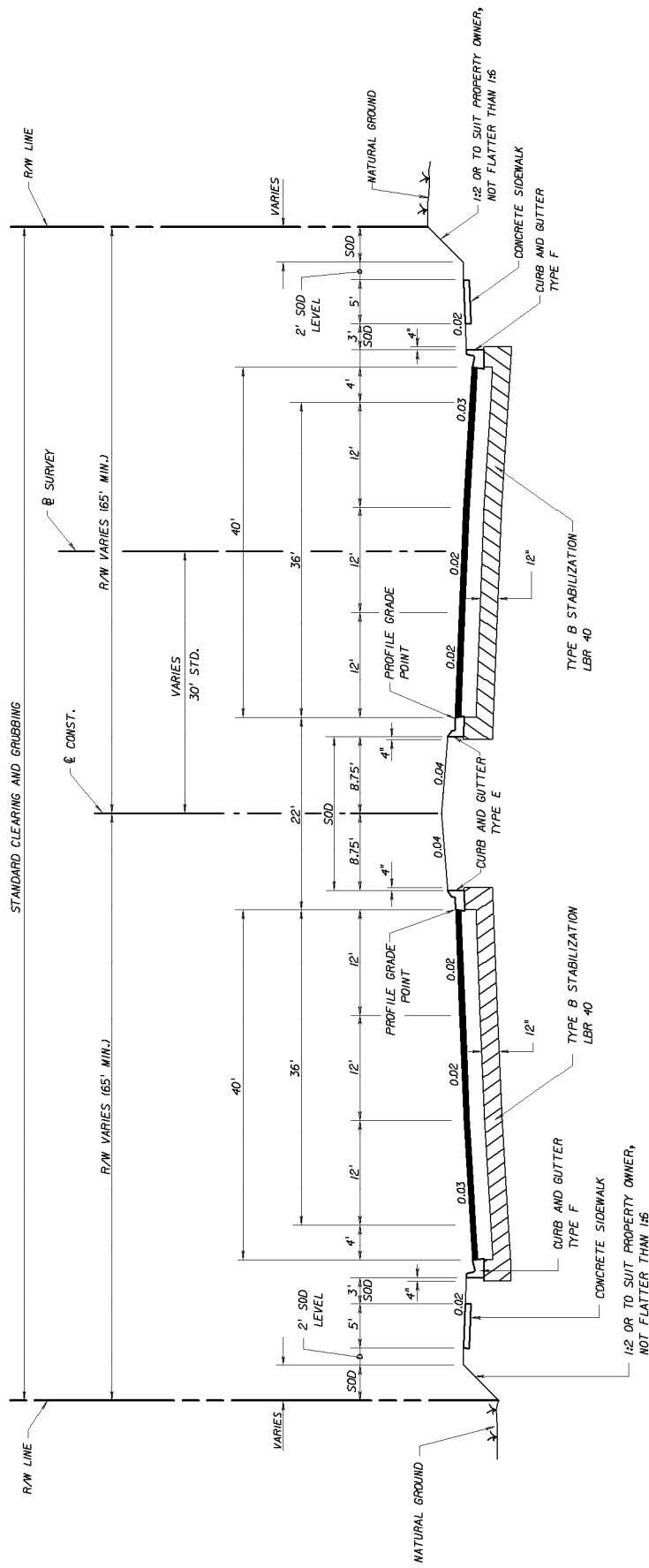
NOTE: THE SCALE OF THESE PLANS MAY  
HAVE CHANGED DUE TO REPRODUCTION.

EXHIBIT EX-KS  
Date: 1/1/03

ROADWAY PLANS  
ENGINEER OF RECORDS: HARRY P. GILMER  
PE NO.: 906655

FISCAL YEAR	01
SHEET NO.	1

DATE	BY	REVISION DESCRIPTION
3-00	Tom	Revised Utility Adjustment Sheets.



**TYPICAL SECTION**  
**SR 70 (EVAN FRANCIS BLVD)**  
**STA. 120+25.69 TO STA. 154+85.00**

NEW CONSTRUCTION

OPTIONAL BASE GROUP 9 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC C) (200 LBS/SY)  
 AND FRICTION COURSE FC-12.5 (FC-6) (160 LBS/SY) (RUBBER)

**TRAFFIC DATA**

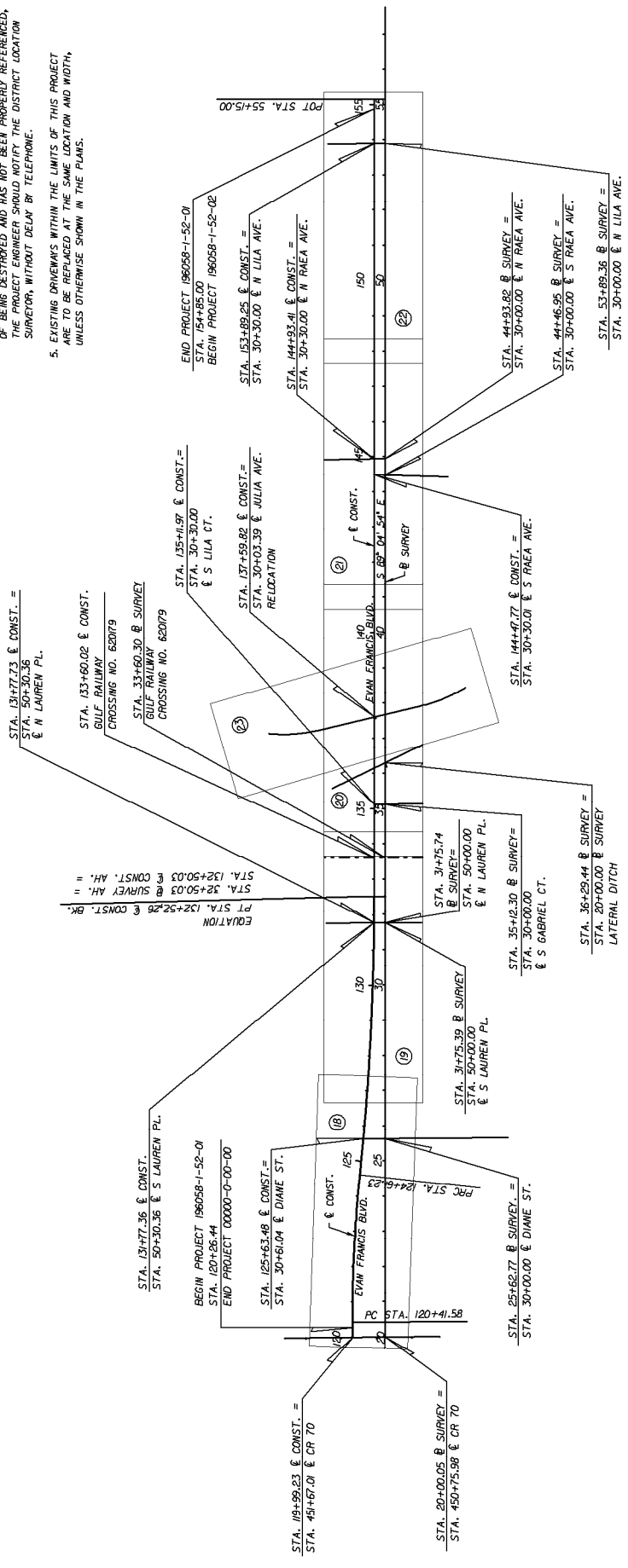
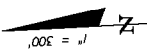
CURRENT YEAR = 1998 AADT = 22,950  
 ESTIMATED OPENING YEAR = 2001 AADT = 25,070  
 ESTIMATED DESIGN YEAR = 2020 AADT = 30,600  
 K = 6%, D = 55%, T = 2% (124 HOUR)  
 DESIGN HOUR T = 1%  
 DESIGN SPEED = 45 MPH

**EXHIBIT EX-TYP**  
 Date: 1/1/03

REVISIONS			STATE OF FLORIDA		SHEET NO.
DATE	BY	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	FINANCIAL PROJECT ID	NO.
			ROAD NO.	COUNTY	
			70	MANATEE	
			196058-1-52-01		4
			HARRY P. GILMER P.E. LICENSE NO. 946655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99966		
<b>TYPICAL SECTION</b>					

**GENERAL NOTES**

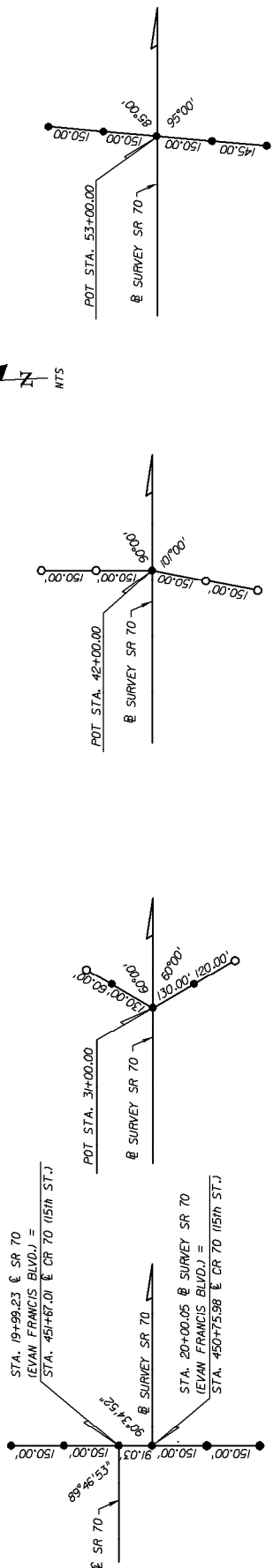
1. BENCHMARK DATUM IS NAVD 88.
2. BUILDINGS TO BE REMOVED BY OTHERS UNLESS OTHERWISE NOTED.
3. EXISTING DRAINAGE STRUCTURES WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED.
4. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE PROJECT ENGINEER SHOULD NOTIFY THE DISTRICT LOCATION SURVEYOR, WITHOUT DELAY BY TELEPHONE.
5. EXISTING DRIVEWAYS WITHIN THE LIMITS OF THIS PROJECT ARE TO BE REPLACED AT THE SAME LOCATION AND WIDTH, UNLESS OTHERWISE SHOWN IN THE PLANS.



**EXHIBIT: EX-PL-1**  
**DATE: 1/1/03**

<b>PROJECT LAYOUT</b>		SHEET NO. 5
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO. SR 70	COUNTY MANATEE	FINANCIAL PROJECT ID 196058-1-52-01
HARRY P. GUMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99886		
<b>REVISIONS</b>	<b>DESCRIPTION</b>	
DATE	BY	DESCRIPTION

REFERENCE POINTS ALONG @ SURVEY



REFERENCE POINT NO. 1

BM NO. 01  
 FDOT CM  
 140.0' RT.  
 STA. 19+35.00 (@ SURVEY)  
 EL. 35.728

REFERENCE POINT NO. 2

BM NO. 02  
 FDOT CM  
 56.0' RT.  
 STA. 29+47.00 (@ SURVEY)  
 EL. 32.545

REFERENCE POINT NO. 3

BM NO. 03  
 FDOT CM  
 50.7' RT.  
 STA. 40+14.00 (@ SURVEY)  
 EL. 30.850

REFERENCE POINT NO. 4

BM NO. 04  
 FDOT CM  
 50.0' RT.  
 STA. 50+45.00 (@ SURVEY)  
 EL. 34.682

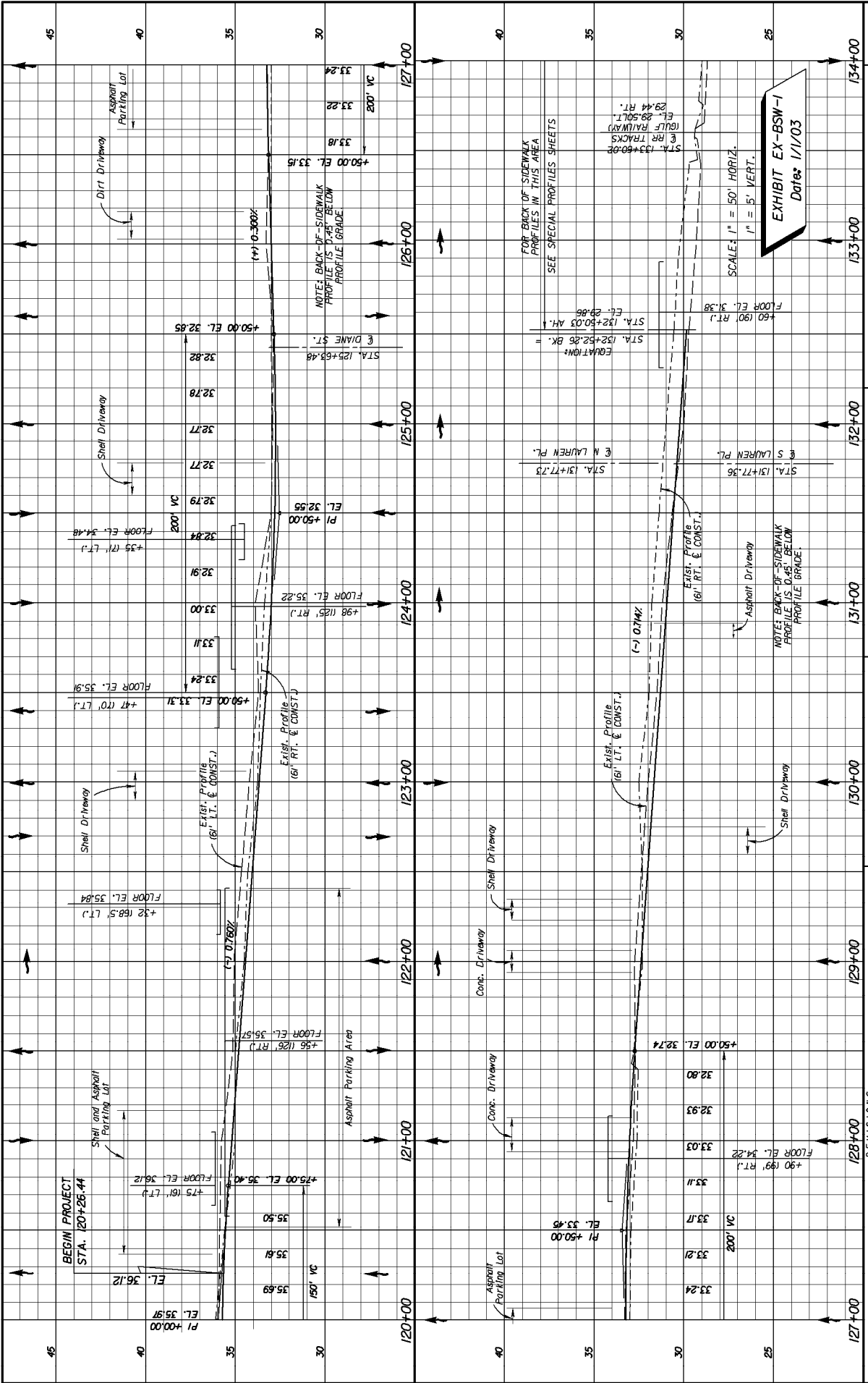
BENCHMARKS ALONG PROJECT

BENCHMARK DATUM IS NAVD 88.

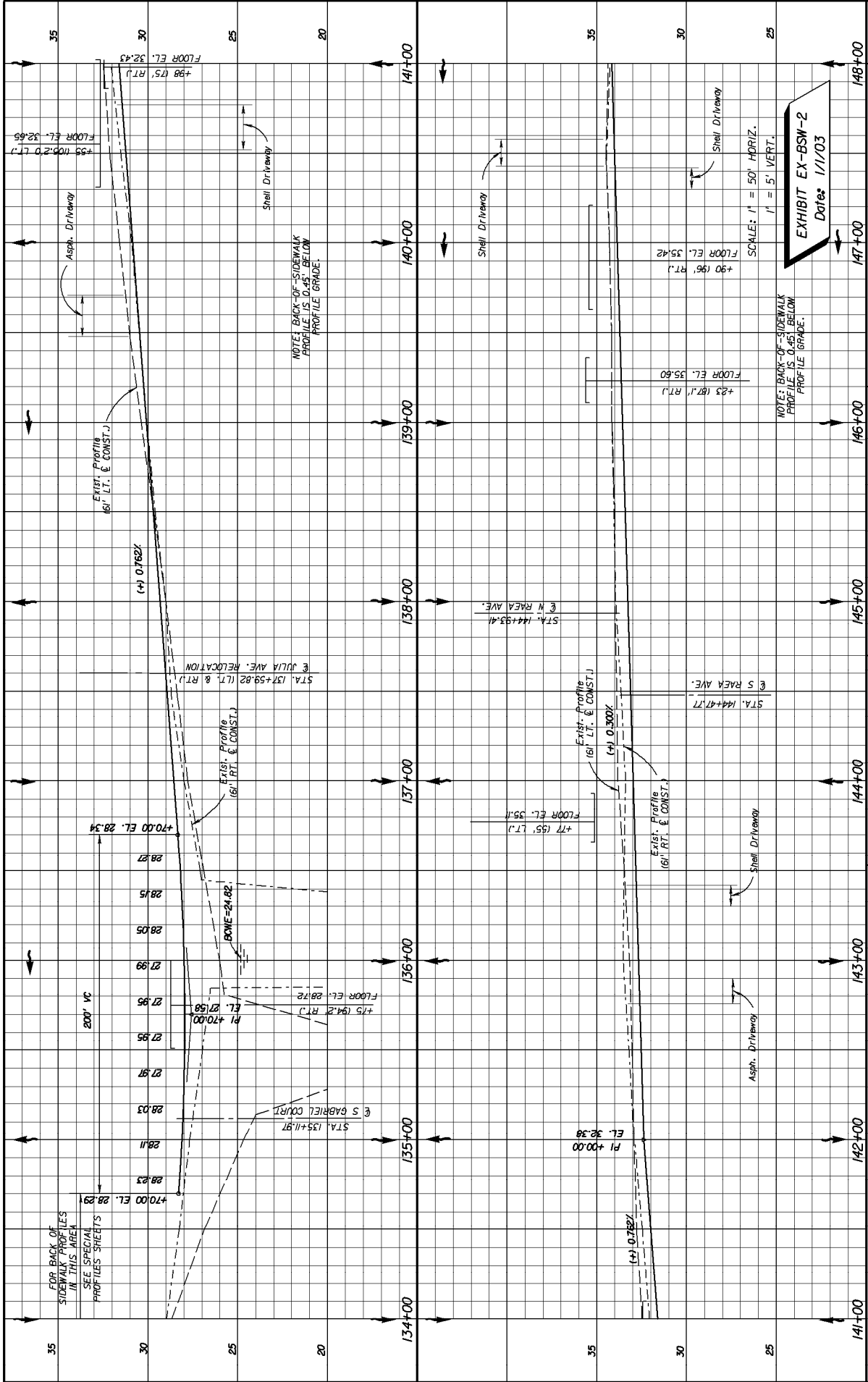
- - N & S - SET NAIL & SHIMER
- - I R - SET 5/8" IRON ROD

EXHIBIT: EX-BMRP-1  
 DATE: 1/1/03

REVISIONS				STATE OF FLORIDA				BENCHMARKS & REFERENCE POINTS		SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						SR 70	MANATEE	196058-1-52-01		
				HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33705 CERTIFICATE OF AUTHORIZATION NO. 99968						6



DATE		DESCRIPTION		REVISIONS	
HARRY P. GUMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERING INC. P.O. BOX 8651 TAMPA, FLORIDA 33785 CERTIFICATE OF AUTHORIZATION NO. 99966					
ROAD NO.		COUNTY		FINANCIAL PROJECT ID	
70		MANATEE		196058-1-52-01	
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION					
BACK-OF-SIDEWALK PROFILES					
SHEET NO.					
13					



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61B5-23.003, F.A.C.

DATE	DESCRIPTION	BY	DATE	REVISIONS

HARRY P. GUMER  
P.E. LICENSE NO. 99655  
HILL & DALE ENGINEERING INC.  
P.O. BOX 9659  
TAMPA, FLORIDA 33755  
CERTIFICATE OF AUTHORIZATION NO. 99966

ROAD NO. 70  
COUNTY MANATEE  
FINANCIAL PROJECT ID 196058-1-52-01

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

**BACK-OF-SIDEWALK PROFILES**

SHEET NO. 14

EXHIBIT EX-BSW-2  
Date: 1/1/03

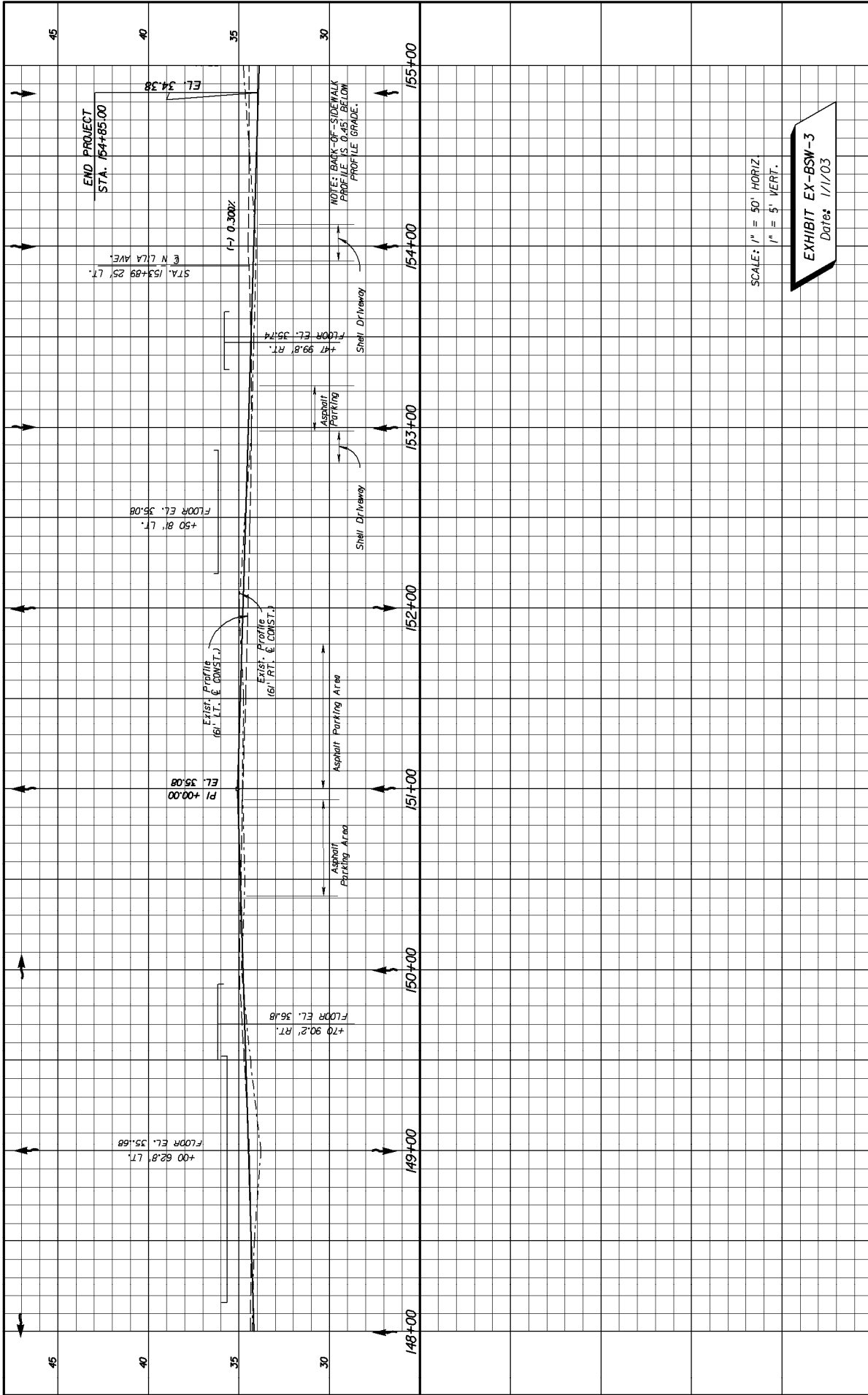
NOTE: BACK-OF-SIDEWALK  
PROFILE IS 0.45' BELOW  
PROFILE GRADE.

SCALE: 1" = 50' HORIZ.  
1" = 5' VERT.

NOTE: BACK-OF-SIDEWALK  
PROFILE IS 0.45' BELOW  
PROFILE GRADE.

FOR BACK OF  
SIDEWALK PROFILES  
IN THIS AREA  
SEE SPECIAL  
PROFILES SHEETS





SCALE: 1" = 50' HORIZ  
1" = 5' VERT.

EXHIBIT EX-BSW-3  
Date: 1/1/03

DATE		DESCRIPTION		BY		DATE		DESCRIPTION		BY	
HARRY P. GUMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99866				ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			
<b>BACK-OF-SIDEWALK PROFILES</b>											
SHEET NO.										15	

STR. NO.	STATION	SIDE	DESCRIPTION	BARRELS	STORM DRAIN OPTIONAL MATERIAL		CURB INLETS			MANHOLES			DITCH BOTTOM INLETS			CROSS DRAIN MITERED END SECTION	SOD	CLASS I CONC.	CLASS II CONC.	REINF. STEEL	REMARKS					
					15"	18"	24"	30"	36"	P-5	P-6	P-7	J-5	P-2	J-8							SPECIAL	C	C-MID	F	
P 1	122+40	RT.	Inlet, Pipe	1	15"	18"	24"	30"	36"	<0'	<0'	<0'	<0'	<0'	<0'	<0'	Sr	Ct	Ct	LBS						
P 2	122+40	RT.	Inlet, Pipe	1	25"																					
P 3	122+40	LT.	Inlet, Pipe	1	10"																					
P 4	124+85	RT.	Inlet, Pipe	1	24"																					
P 5	124+85	RT.	Inlet, Pipe	1	18"																					
P 6	124+85	LT.	Inlet, Pipe	1	10"																					
P 6A	125+17	LT.	Straight Conc. Endwall	1	55'												38	2.2			10' LT. & CONST.					
P 7	126+30	RT.	Inlet, Pipe	1	4'																					
P 8	126+30	RT.	Inlet, Pipe	1	14'																					
P 9	128+80	RT.	Inlet, Pipe	1	13'																					
P 10	128+80	RT.	Inlet, Pipe	1	10"																					
P 11	128+80	LT.	Inlet, Pipe	1	235'																					
P 12	131+20	RT.	Inlet, Pipe	1	10"																					
P 13	131+20	LT.	Inlet, Pipe	1	16"																					
P 14	132+90	LT.	Inlet, Pipe	1	10"																					
P 15	132+90	RT.	Inlet, Pipe	1	27'																					
P 16	133+9	RT.	Manhole	1																	Connect Elish. 30" Pipe					
P 17	134+22	RT.	Manhole, Pipe	1																						
P 18	134+60	RT.	Inlet, Pipe	1	46"																					
P 19	29+30 & S GABRIEL CT.	LT.	Straight Conc. Endwall	1																						
P 20	25+70 & S GABRIEL CT.	LT.	Inlet, Pipe	1																						
P 21	25+70 & S GABRIEL CT.	LT.	Manhole, Pipe	1																						
P 22	27+10 & S GABRIEL CT.	LT.	Manhole, Pipe	1																						
P 23	28+57 & S GABRIEL CT.	LT.	Inlet, Pipe	1																						
P 24	134+74	RT.	Manhole, Pipe	1																						
P 25	135+65	RT.	Inlet, Pipe	1																						
P 26	135+74.78	LT.	DN 8"10" Conc. Box Culv. Ext.	2																						
P 27	135+65	LT.	Inlet, Pipe	1	12'																					
P 28	136+30	RT.	Manhole, Pipe	1																						
P 29	137+20	RT.	Manhole, Pipe	1																						
P 30	138+05	LT.	Inlet, Pipe	1	116"																					
P 31	138+10	RT.	Manhole, Pipe	1																						
P 32	139+38	RT.	Inlet, Pipe	1	60'	41'	82'	81'	0'	11	3	0	1	3	6	1	3	1	1	1	0	0	0	84	5.5	

FORM 625-000-04  
ROADWAY DESIGN 01/2002

REMARKS

EXHIBIT EX-SDS-1  
Date: 1/1/03

INCLUDES COST OF CONNECTION TO CBC  
SKEW 30°/55°/12" LT.  
INCLUDES COST OF CONNECTION TO CBC  
INCLUDES COST OF CONNECTION TO CBC

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
COUNTY: MANATEE  
ROAD NO.: SR 70  
FINANCIAL PROJECT ID: 196058-1-52-01

HARRY P. GILMER  
P.E. LICENSE NO. 96655  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2651  
TAMPA, FLORIDA 33555  
CERTIFICATE OF AUTHORIZATION NO. 99966

STATION TOTALS - PLAN QUANTITY  
FINAL QUANTITY

REVISIONS

DATE DESCRIPTION DATE BY

SHEET NO. 16

**SUMMARY OF DRAINAGE STRUCTURES**

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 6105-23.003, F.A.C.

STR. NO.	QUANTITY	STATION	SIDE	DESCRIPTION	BARRELS	STORM DRAIN OPTIONAL MATERIAL		CURB INLETS			MANHOLES			DITCH BOTTOM INLETS			CROSS DRAIN MITERED END SECTION		SOD	CLASS I CONC.	CLASS II CONC.	REINF. STEEL	REMARKS														
						15'	18"	24"	30"	36"	P-5	P-6	P-7	J-5	J-6	J-7	J-8	SPECIAL						C	C-MOD	F	30'	36'									
P 32A	F	138+57	RT.	MES, Pipe	1		15'	18"	24"	30"	36"																										
P 33	F	138+55	RT.	Inlet, Pipe	1		100'																														
P 34	F	138+60	RT.	Manhole, Pipe	1																																
P 35	F	138+60	RT.	MES	1																																
P 36	F	140+90	RT.	Inlet, Pipe	1			126'																													
P 37	F	140+90	LT.	Inlet, Pipe	1			101'																													
P 38	F	142+50	RT.	Inlet, Pipe	1			10'																													
P 39	F	142+50	LT.	Inlet, Pipe	1																																
P 40	F	143+30	LT.	Inlet, Pipe	1			10'																													
P 41	F	145+05	RT.	Inlet, Pipe	1			25'																													
P 42	F	145+23.15	RT.	Inlet, Pipe	1			58'																													
P 43	F	146+42.5	LT.	Inlet, Pipe	1			149'																													
P 44	F	146+30	RT.	Inlet, Pipe	1			101'																													
P 45	F	146+30	LT.	Inlet, Pipe	1			144'																													
P 46	F	149+15	RT.	Inlet, Pipe	1			101'																													
P 47	F	149+15	LT.	Inlet, Pipe	1			122'																													
P 48	F	151+00	LT.	Manhole, Pipe	1			182'																													
P 49	F	151+05	RT.	Inlet, Pipe	1			124'																													
P 50	F	153+00	LT.	Inlet, Pipe	1			*																													
P 51	F	153+20	RT.	Inlet, Pipe	1			103'																													
P 52	F	29+00 E JULIA AVE.	LT.	Inlet, Pipe	1			23'																													
P 53	F	29+00 E JULIA AVE.	RT.	Inlet, Pipe	1			27'																													
P 54	F	31+00 E JULIA AVE.	LT.	Inlet, Pipe	1			48'																													
P 55	F	31+00 E JULIA AVE.	RT.	Inlet, Pipe	1			70'																													
P 56	F	32+20 E JULIA AVE.	RT.	Inlet, Pipe	1			105'																													
P																																					
P																																					
P																																					
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P																																					
SHEET TOTALS -																						PLAN QUANTITY	15	1	1	0	1	1	1	0	3	0	1	1	1	25	0
GRAND TOTAL -																						PLAN QUANTITY	26	4	1	1	4	6	1	6	1	2	1	1	109	5.5	

EXHIBIT EX-SDS-2  
Date: 1/1/03

\*18" Pipe to be paid for under FID 196058-1-52-02

HARRY P. GILMER  
P.E. LICENSE NO. 906655  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2851  
TAMPA, FLORIDA 33755  
CERTIFICATE OF AUTHORIZATION NO. 99886

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
ROAD NO. SR 70  
COUNTY MANATEE  
FINANCIAL PROJECT ID 196058-1-52-01

FORM 625-000-04  
ROADWAY DESIGN 01/2002  
REMARKS

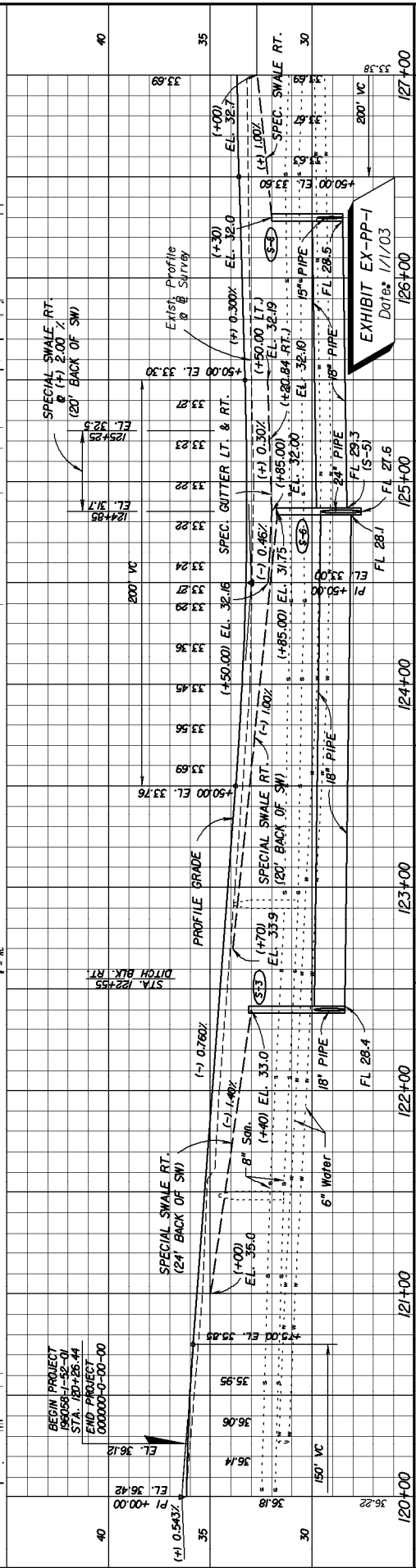
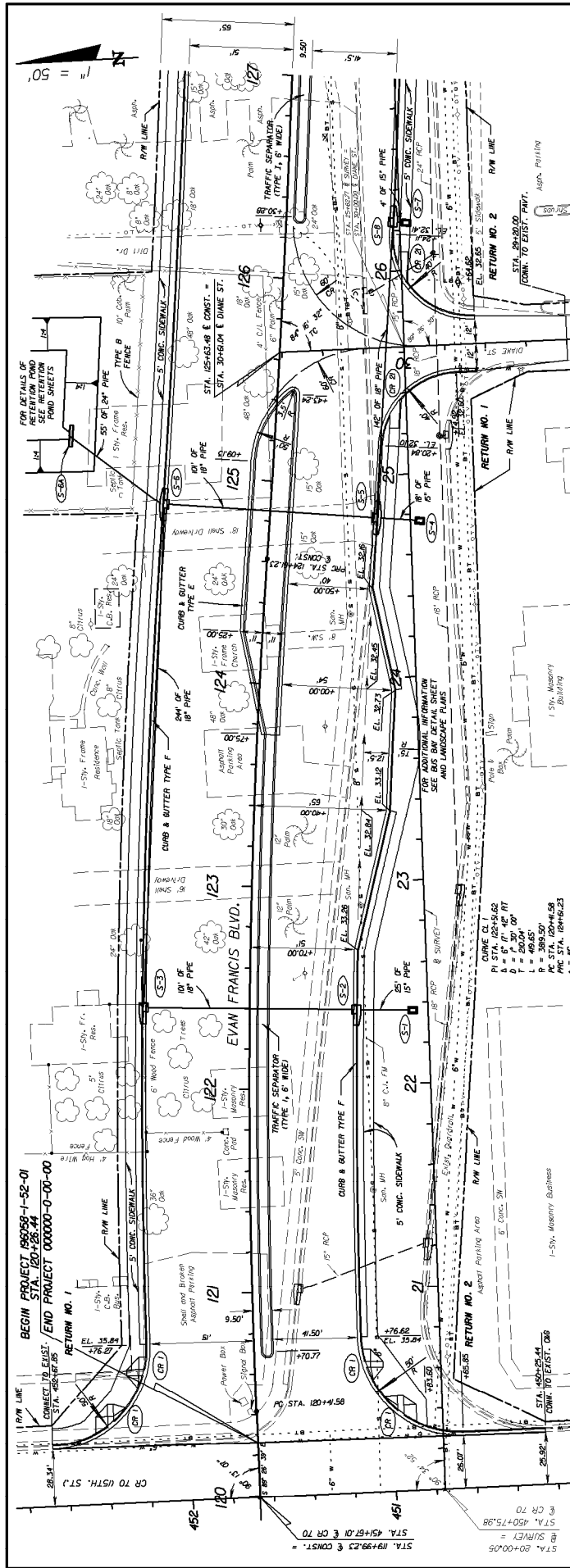
SUMMARY OF  
DRAINAGE STRUCTURES

REVISIONS

DATE BY DESCRIPTION

DATE BY DESCRIPTION

SHEET NO. 17



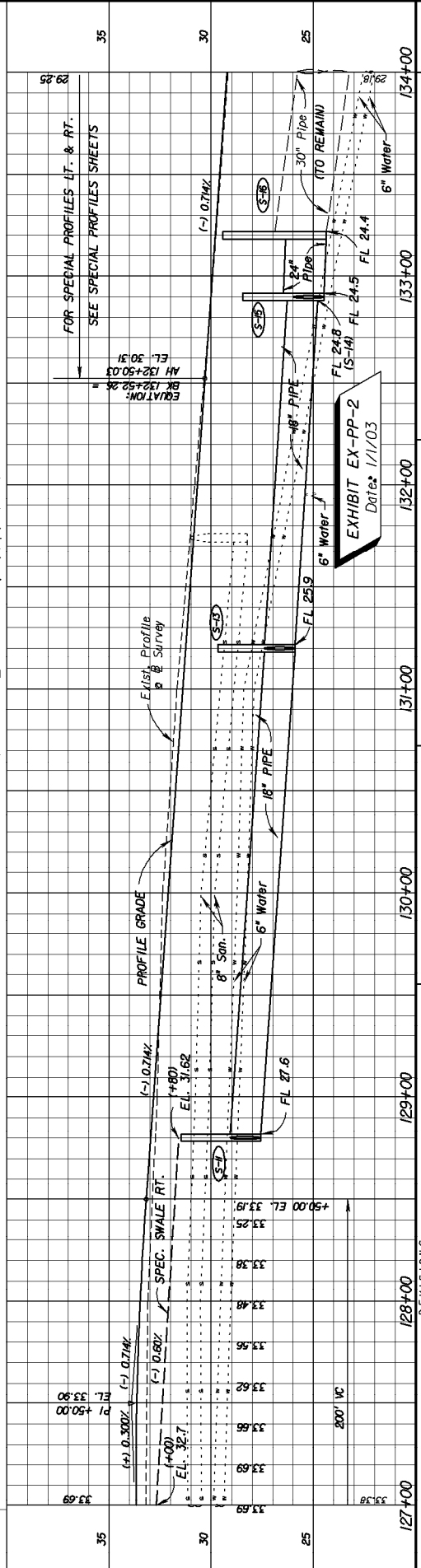
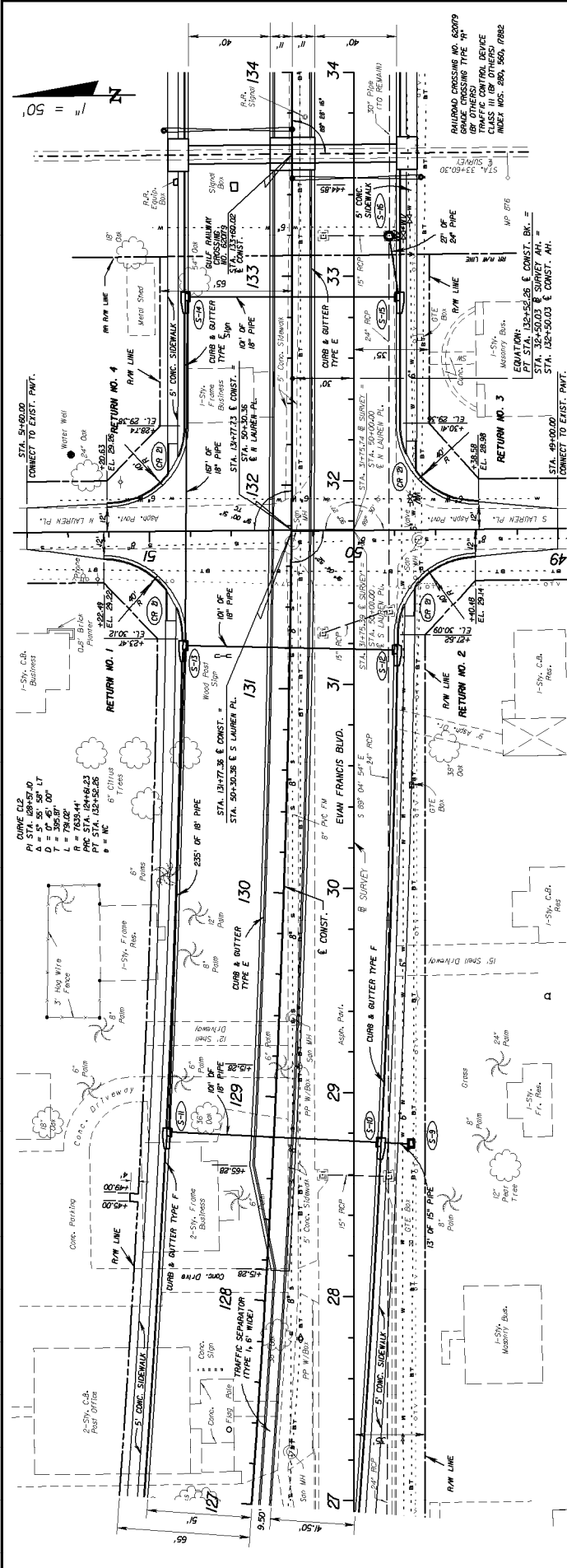
DESCRIPTION	DATE	BY
REVISIONS		

HARRY P. GUMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERS INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99886	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	ROAD NO. 70	COUNTY MANATEE	FINANCIAL PROJECT ID 196058-1-52-01
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SR 70 (EVAN FRANCIS BLVD)	PLAN PROFILE	SHEET NO. 18
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DATE	BY	DESCRIPTION	REVISIONS

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99886		ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01	
SR 70 (EVAN FRANCIS BLVD.)		PLAN-PROFILE	
127+00		134+00	
SHEET NO. 19			

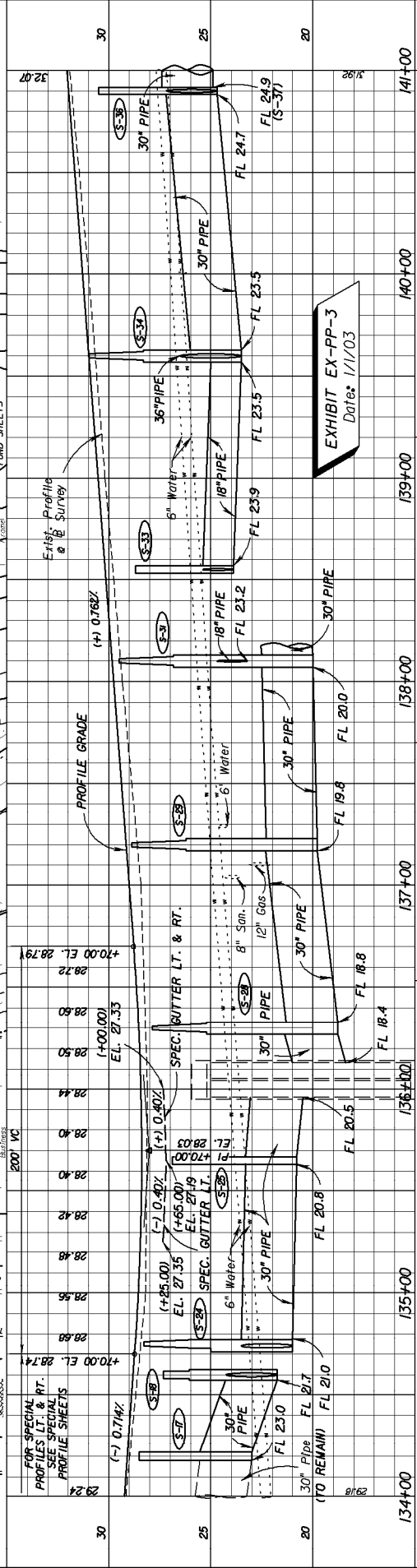
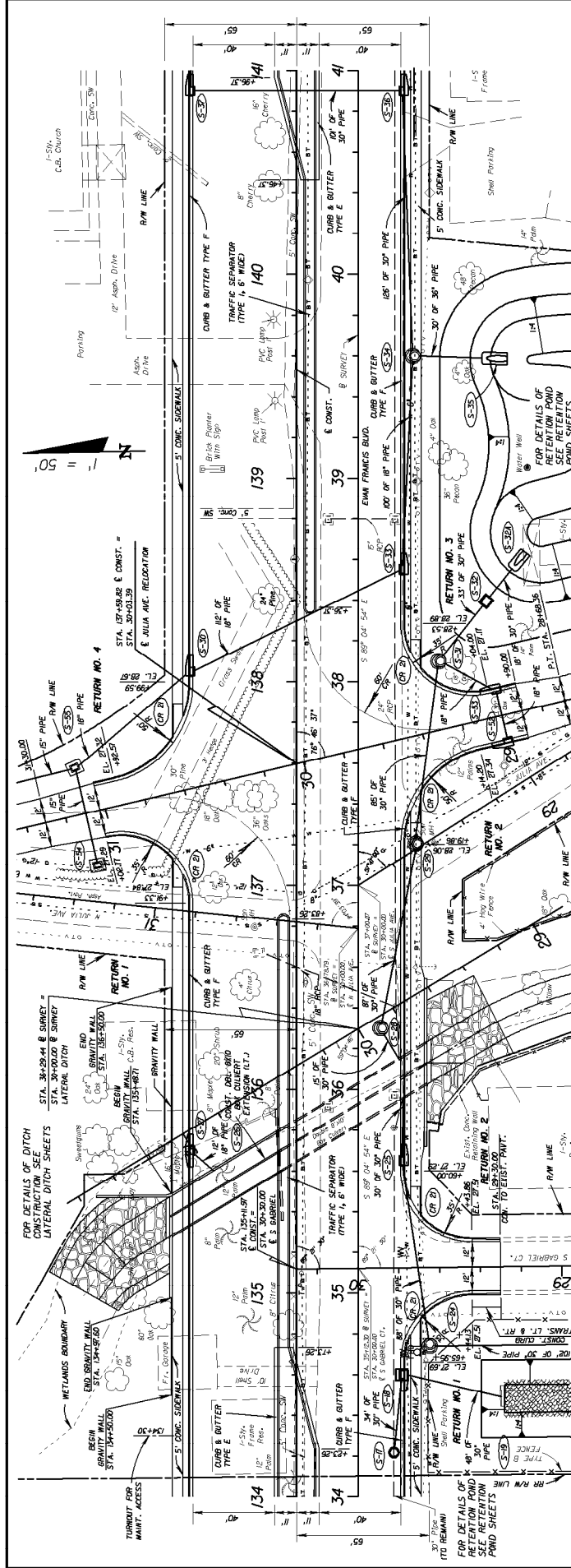


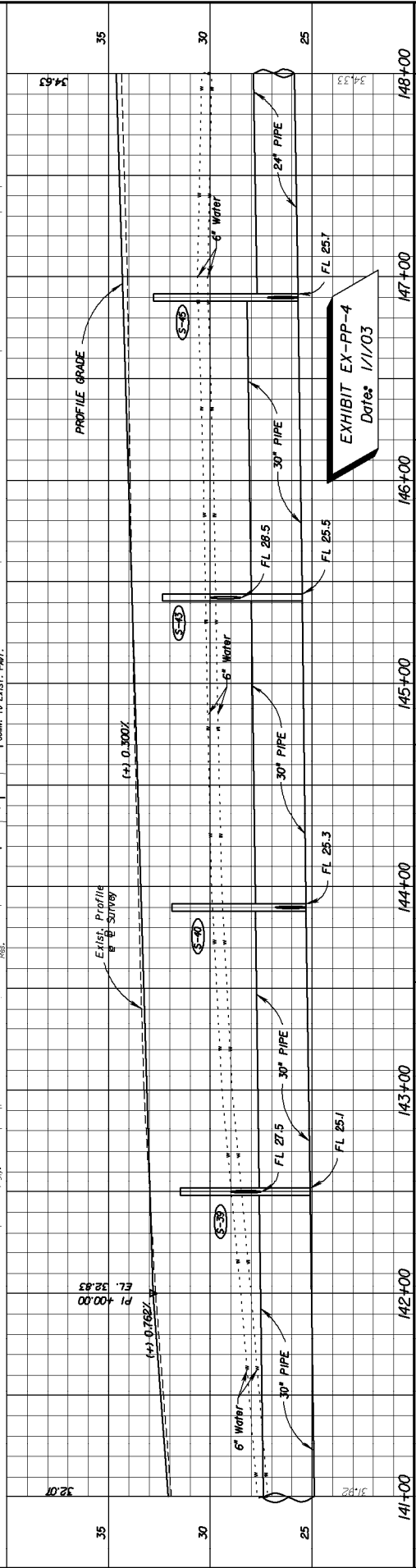
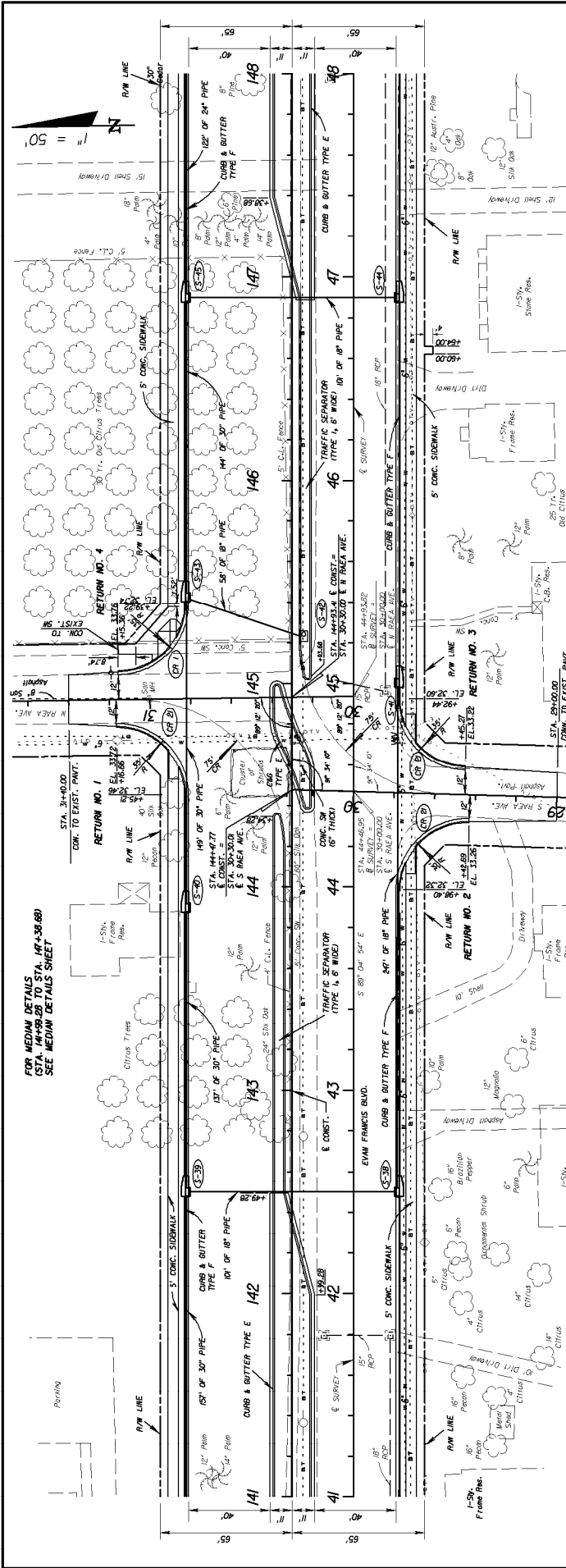
EXHIBIT EX-PP-3  
Date: 1/1/03

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
134+00			135+00		
137+00			138+00		
139+00			140+00		
141+00					

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
COUNTY: MANATEE  
ROAD NO.: 70  
FINANCIAL PROJECT ID: 196058-1-52-01

HARRY P. GUMER  
P.E. LICENSE NO. 90655  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2851  
TAMPA, FLORIDA 33755  
CERTIFICATE OF AUTHORIZATION NO. 99886

PLAN-PROFILE  
SR 70 (EVAN FRANCIS BLVD.)  
SHEET NO. 20



FOR MEDIAN DETAILS  
 STA. 144+99.225 TO STA. 147+35.80  
 SEE MEDIAN DETAILS SHEET

EXHIBIT EX-PP-4  
 Date: 1/1/03

DATE	BY	DESCRIPTION	REVISIONS

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
HARRY P. GUNER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755		FINANCIAL PROJECT ID 196058-152-01	
ROAD NO.	70	COUNTY	MANATEE
SR 70 (EVAN FRANCIS BLVD.)		SHEET NO. 21	

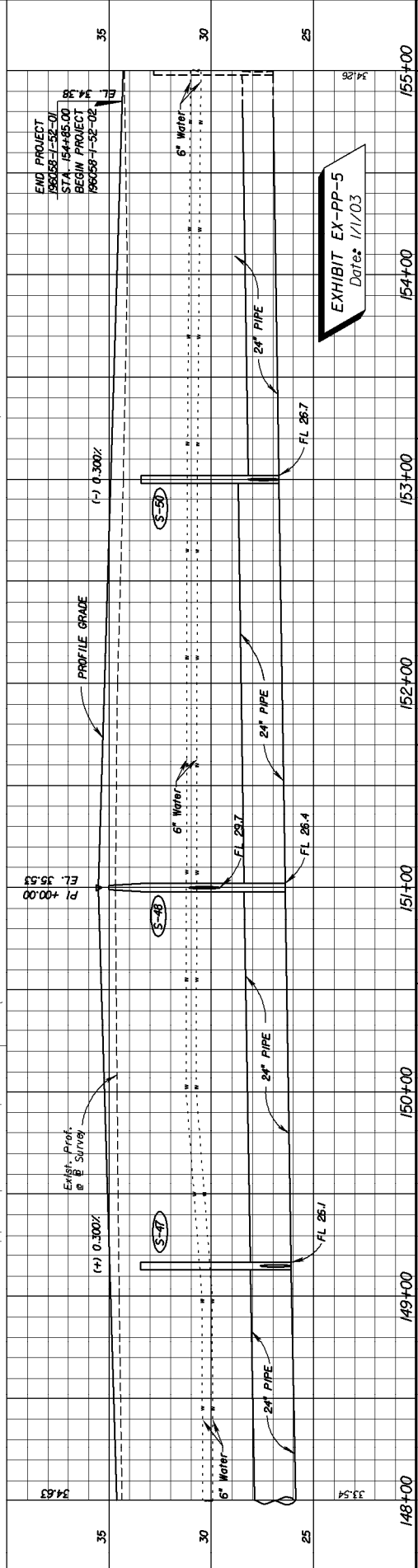
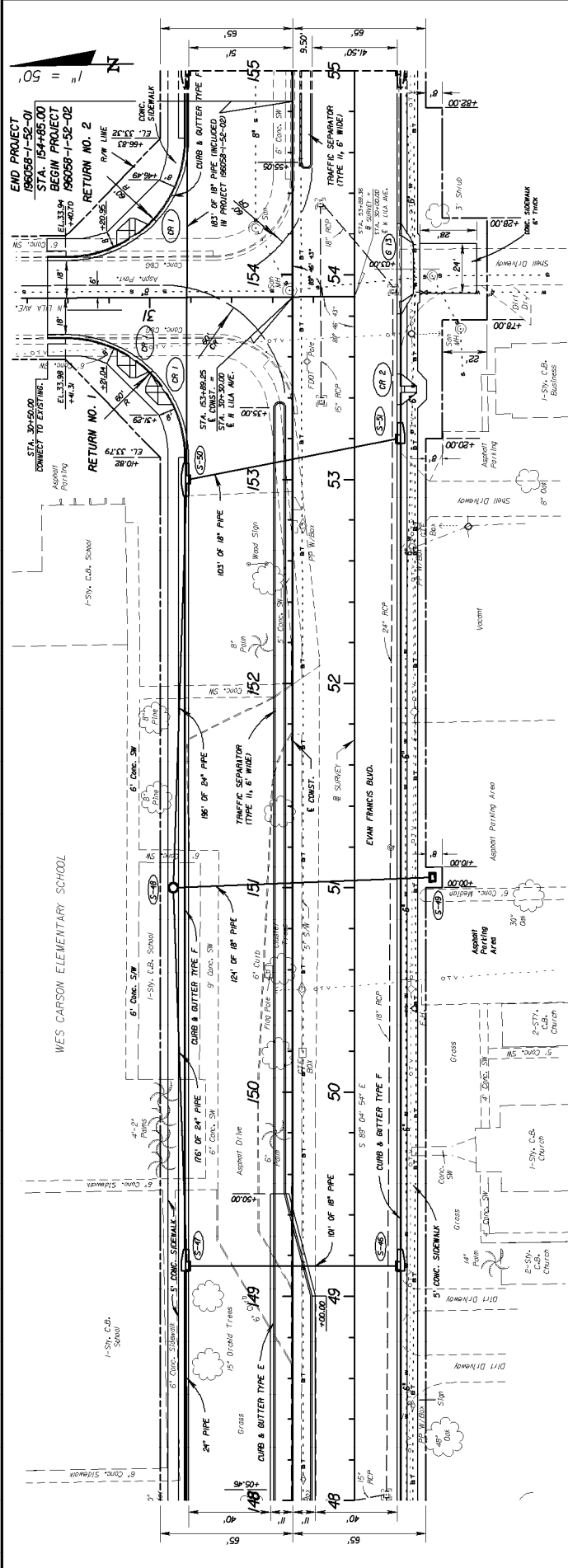


EXHIBIT EX-PP-5  
Date: 1/1/03

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

HARRY P. GILMER P.E. LICENSE NO. 90665 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99966	151+00	152+00	153+00	154+00	155+00
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PLAN-PROFILE	SHEET NO.
SR 70 EVAN FRANCIS BLVDJ	22

END PROJECT  
196058-1-52-01  
STA. 154+85.00  
BEGIN PROJECT  
196058-1-52-02  
STA. 148+00.00

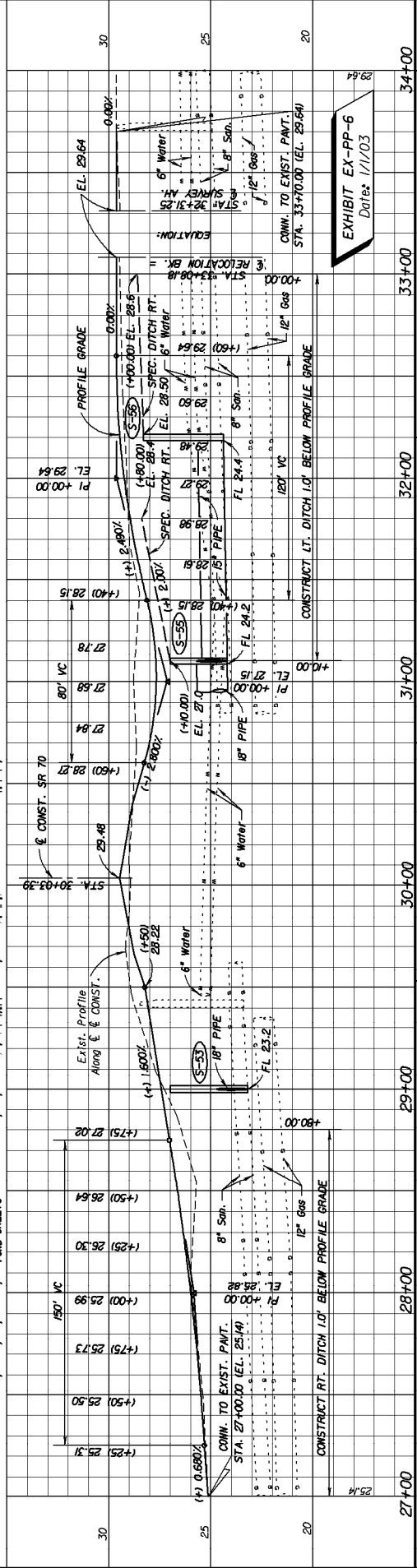
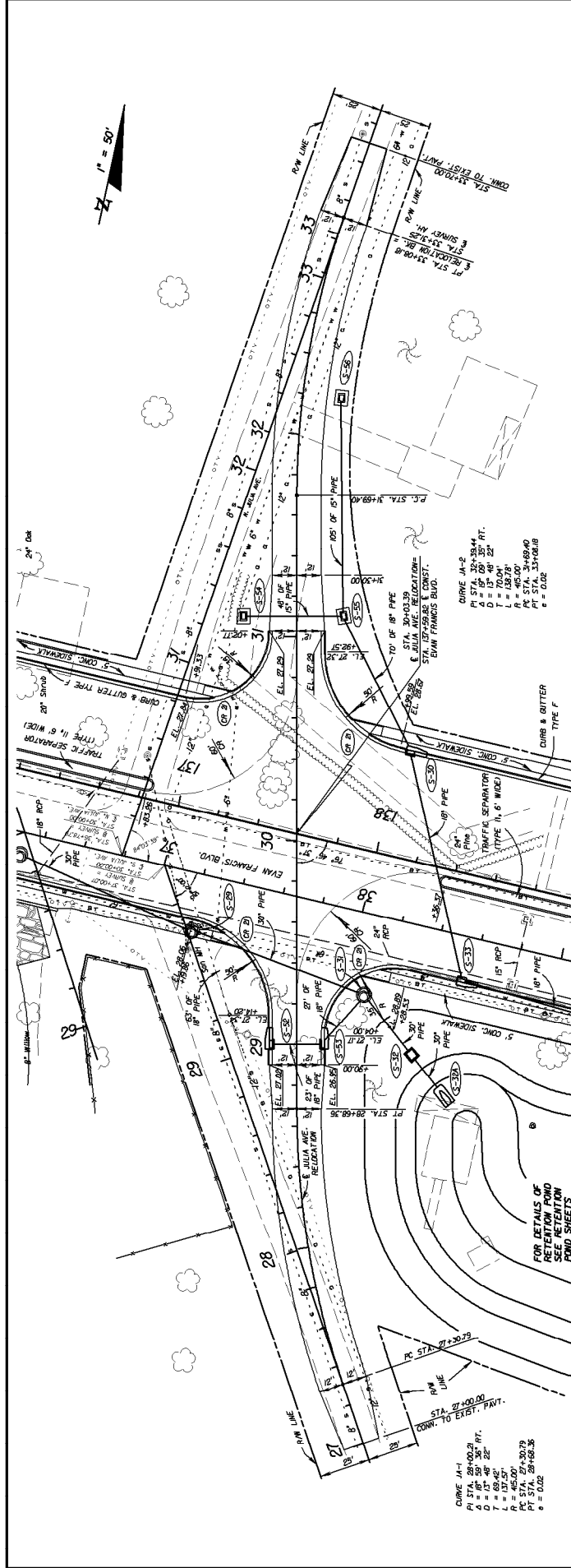
END PROJECT  
196058-1-52-01  
STA. 154+85.00  
BEGIN PROJECT  
196058-1-52-02  
STA. 148+00.00

WES CARSON ELEMENTARY SCHOOL

EVAN FRANCIS BLVD.

HARRY P. GILMER  
P.E. LICENSE NO. 90665  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2851  
TAMPA, FLORIDA 33655  
CERTIFICATE OF AUTHORIZATION NO. 99966





DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

HARRY P. GUMER		P.E. LICENSE NO. 906655	
HILL & DALE ENGINEERING INC.		P.O. BOX 8881	
TAMPA, FLORIDA 33655		CERTIFICATE OF AUTHORIZATION NO. 99986	

PLAN PROFILE		JULIA AVENUE RELOCATION	
SHEET NO.		23	

CURVE M-1  
 P1 STA. 28+00.29  
 D = 137.57'  
 L = 137.57'  
 PC STA. 27+30.79  
 PT STA. 28+60.36  
 E = 0.02

CURVE M-2  
 P1 STA. 30+03.39  
 D = 137.57'  
 L = 137.57'  
 PC STA. 29+33.82  
 PT STA. 30+63.40  
 E = 0.02

FOR DETAILS OF  
 RETENTION POND  
 SEE RETENTION  
 POND SHEETS

EXHIBIT EX-PP-6  
 DATE: 1/1/03

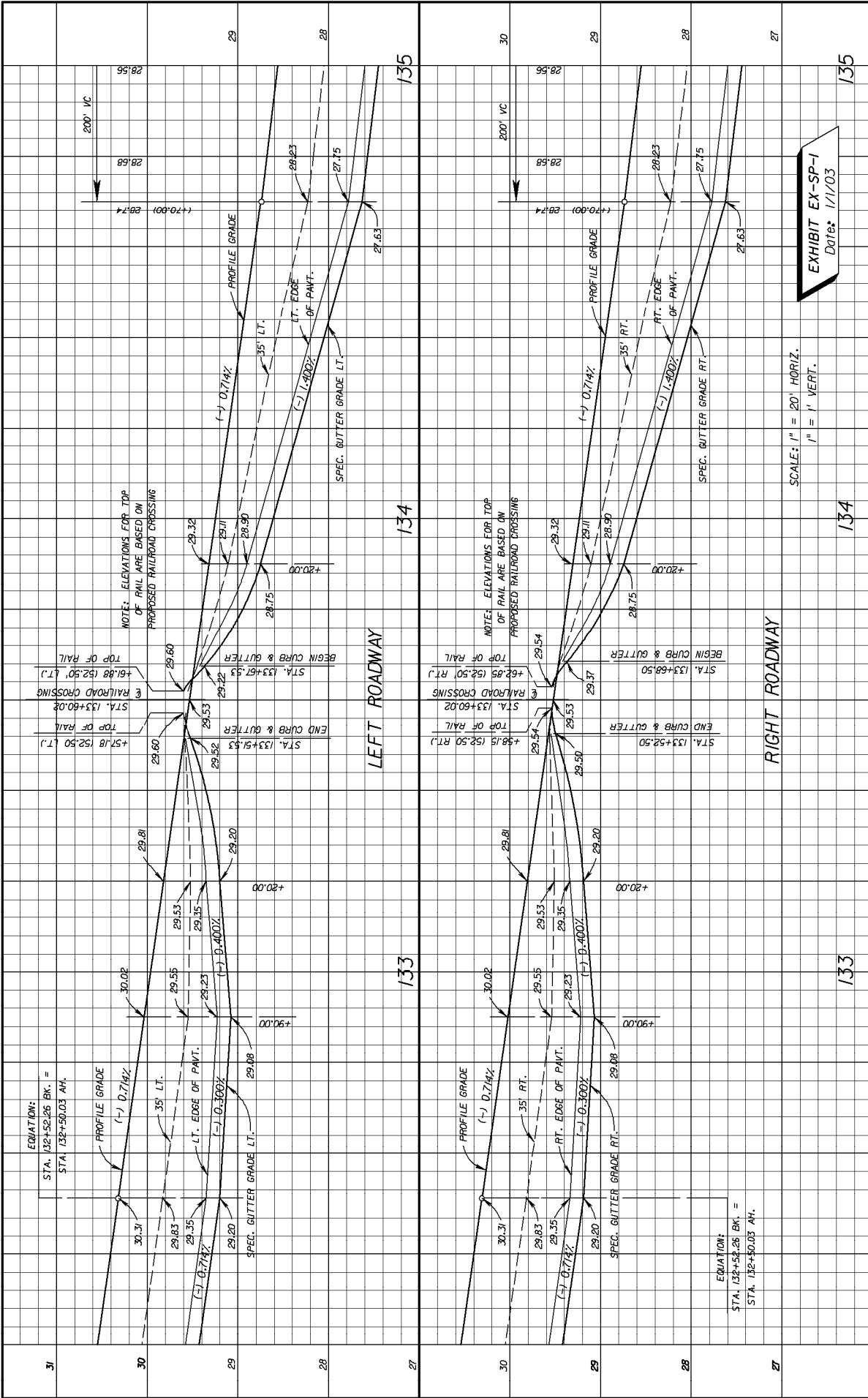
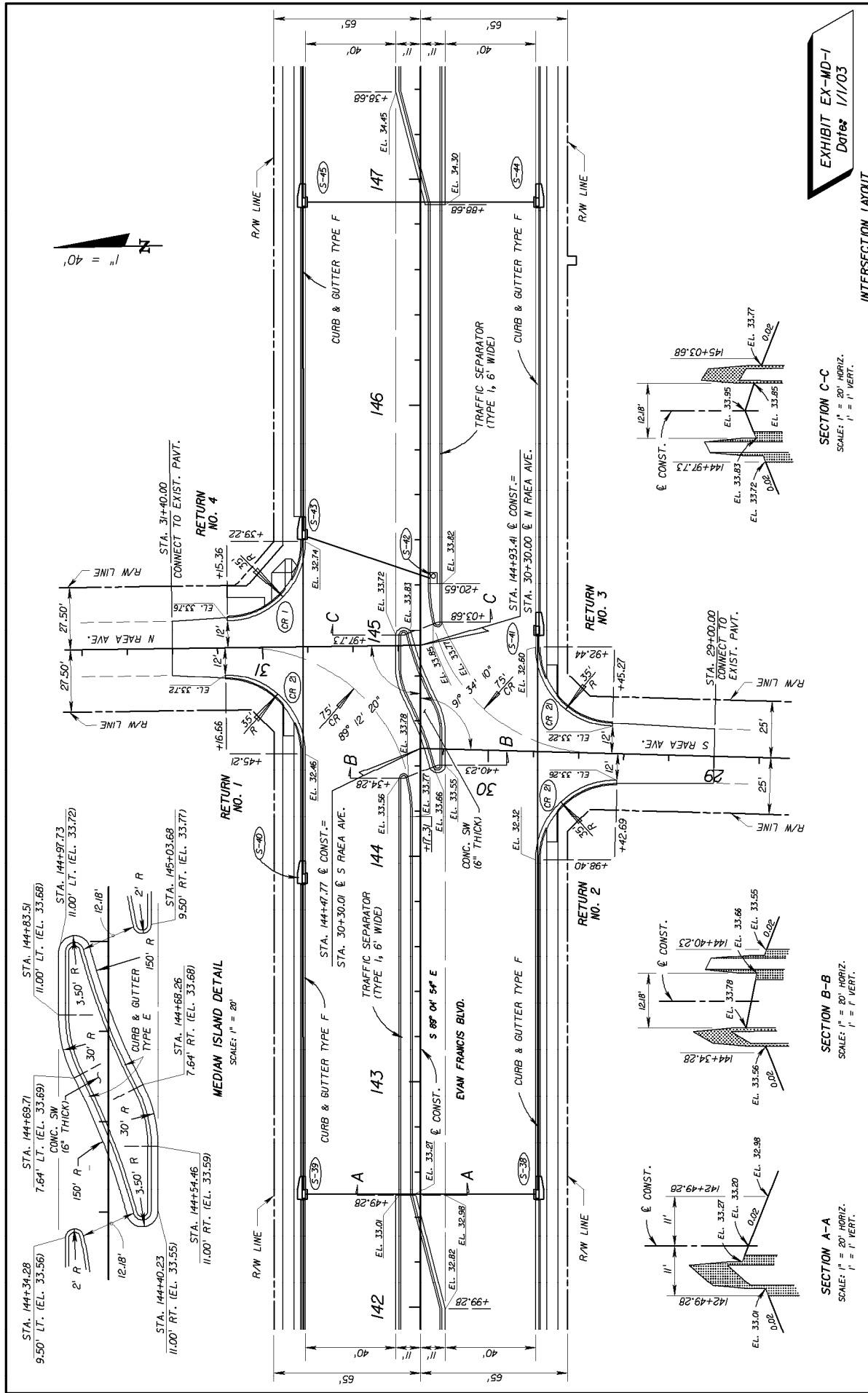


EXHIBIT EX-SP-1  
 Date: 1/1/03

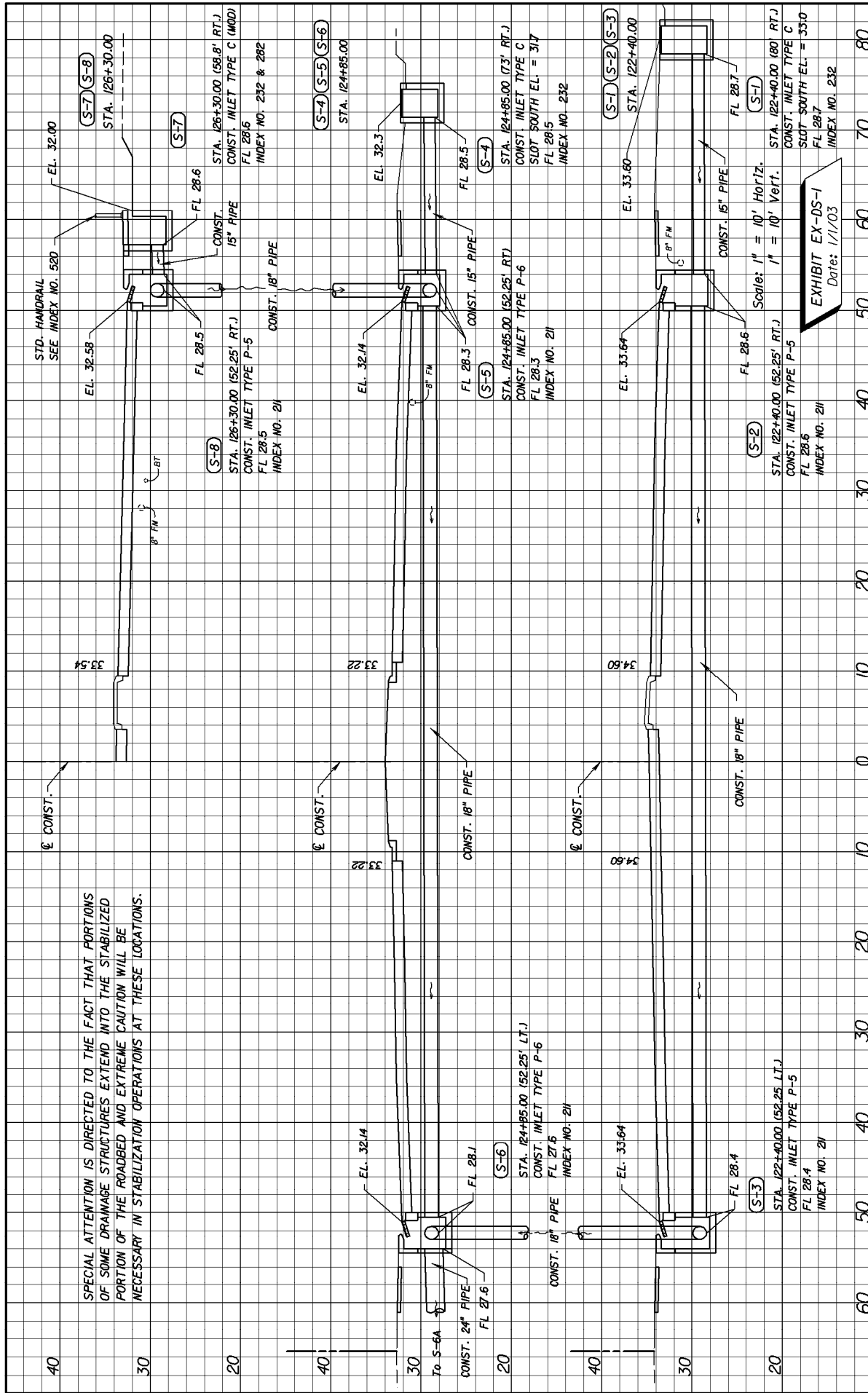
SCALE: 1" = 20' HORIZ.  
 1" = 1' VERT.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
REVISIONS					
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION					
ROAD NO. 70		COUNTY MANATEE		FINANCIAL PROJECT ID 196058-1-52-01	
HARRY P. GUMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99966					
<b>SPECIAL PROFILES</b>					
<b>AT GULF RAILROAD CROSSING</b>					
					SHEET NO. 24



DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION
<b>SECTION A-A</b> SCALE: 1" = 20' HORIZ. 1" = 1' VERT.						
<b>SECTION B-B</b> SCALE: 1" = 20' HORIZ. 1" = 1' VERT.						
<b>SECTION C-C</b> SCALE: 1" = 20' HORIZ. 1" = 1' VERT.						
<b>STATE OF FLORIDA</b> <b>DEPARTMENT OF TRANSPORTATION</b>			<b>INTERSECTION LAYOUT</b>			
ROAD NO. 70		COUNTY MANATEE		FINANCIAL PROJECT ID 196056-T-52-01		
<b>SR 70 EVAN FRANCIS BLVD</b>						
<b>MEDIAN DETAILS</b>						
<b>EXHIBIT EX-MD-1</b> Date: 1/1/03						
SHEET NO.						25

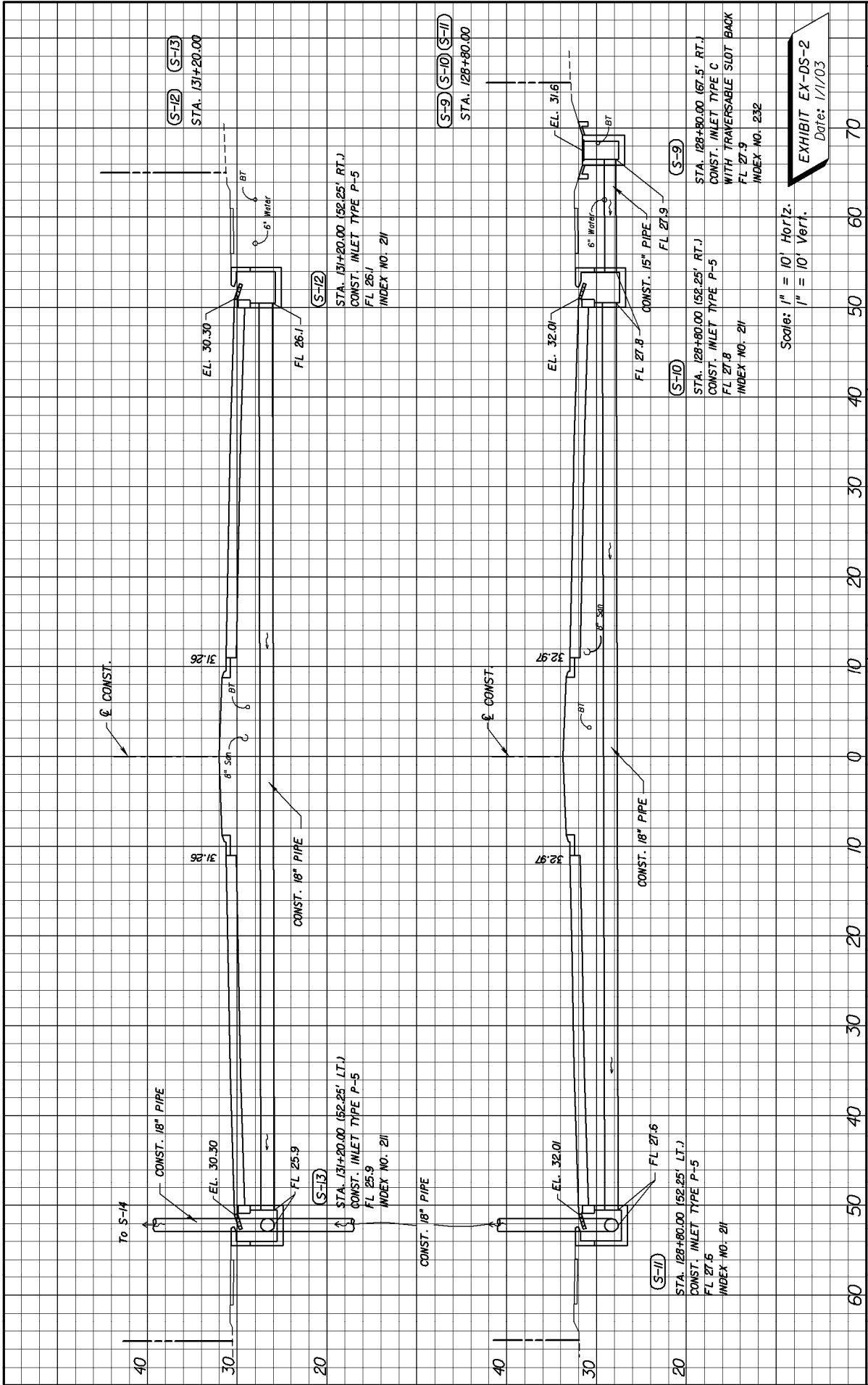
NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 6105-23.003, F.A.C.



REVISIONS		DESCRIPTION			DATE			BY		

HARRY P. GUMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99586		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION COUNTY MANATEE ROAD NO. 70		FINANCIAL PROJECT ID 196058-1-52-01	
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<b>DRAINAGE STRUCTURES</b>				SHEET NO.
				26



REVISIONS		DESCRIPTION		DATE		BY	

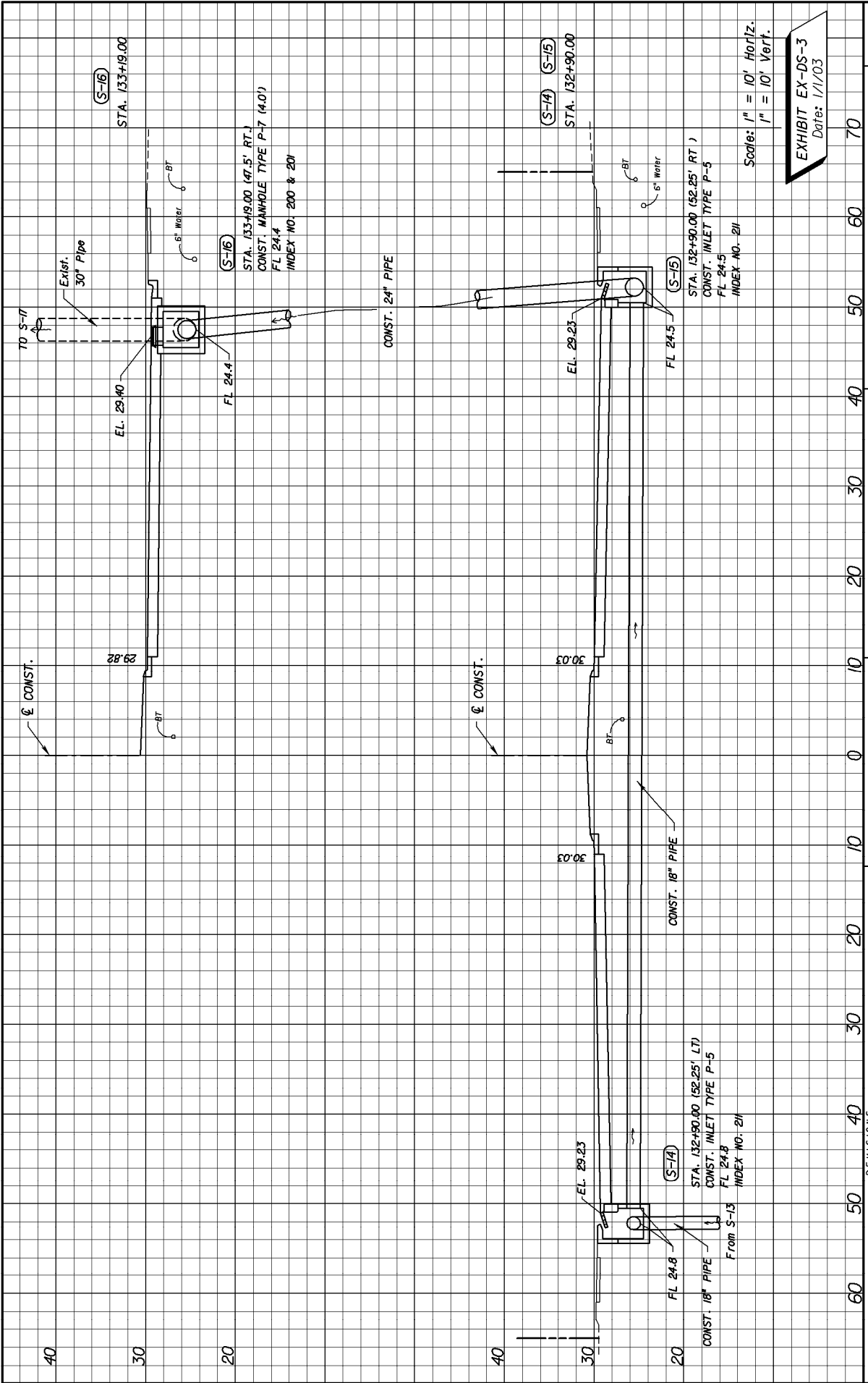
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
COUNTY		MANATEE		196058-1-52-01	
ROAD NO.		70			

HARRY P. GUMER		P.E. LICENSE NO. 90655			
HILL & DALE ENGINEERING INC.		P.O. BOX 2651			
TAMPA, FLORIDA 33755		CERTIFICATE OF AUTHORIZATION NO. 99866			

SHEET NO.		27	
<b>DRAINAGE STRUCTURES</b>			



Scale: 1" = 10' Horiz.  
1" = 10' Vert.

EXHIBIT EX-DS-3  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DATE	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

HARRY P. GILMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33635 CERTIFICATE OF AUTHORIZATION NO. 99866		ROAD NO. 70	
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SHEET NO.		28	
DRAINAGE STRUCTURES			

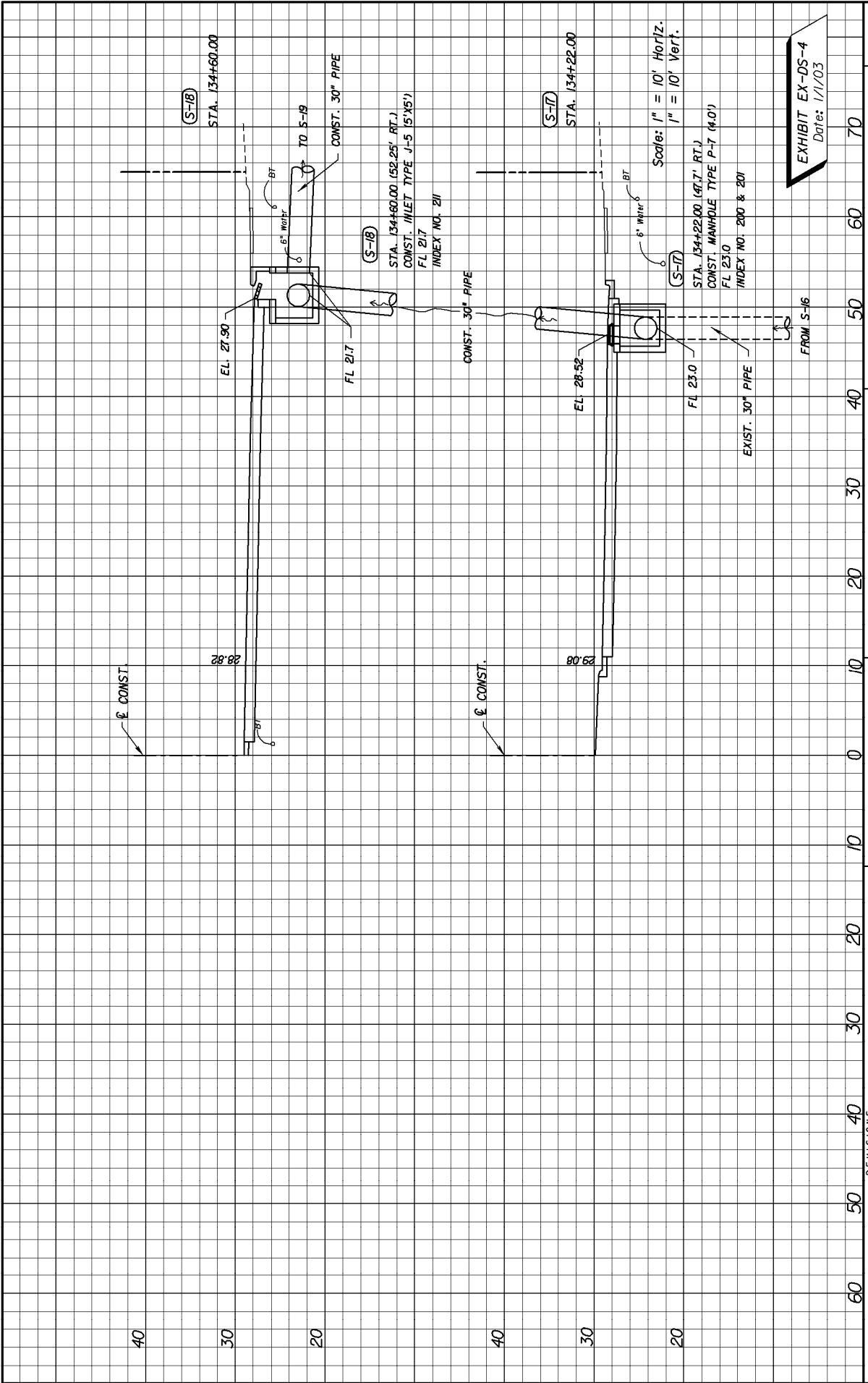


EXHIBIT EX-DS-4  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	MANATEE	196058-1-52-01	FINANCIAL PROJECT ID
			70	MANATEE			

SHEET NO. 29

**DRAINAGE STRUCTURES**

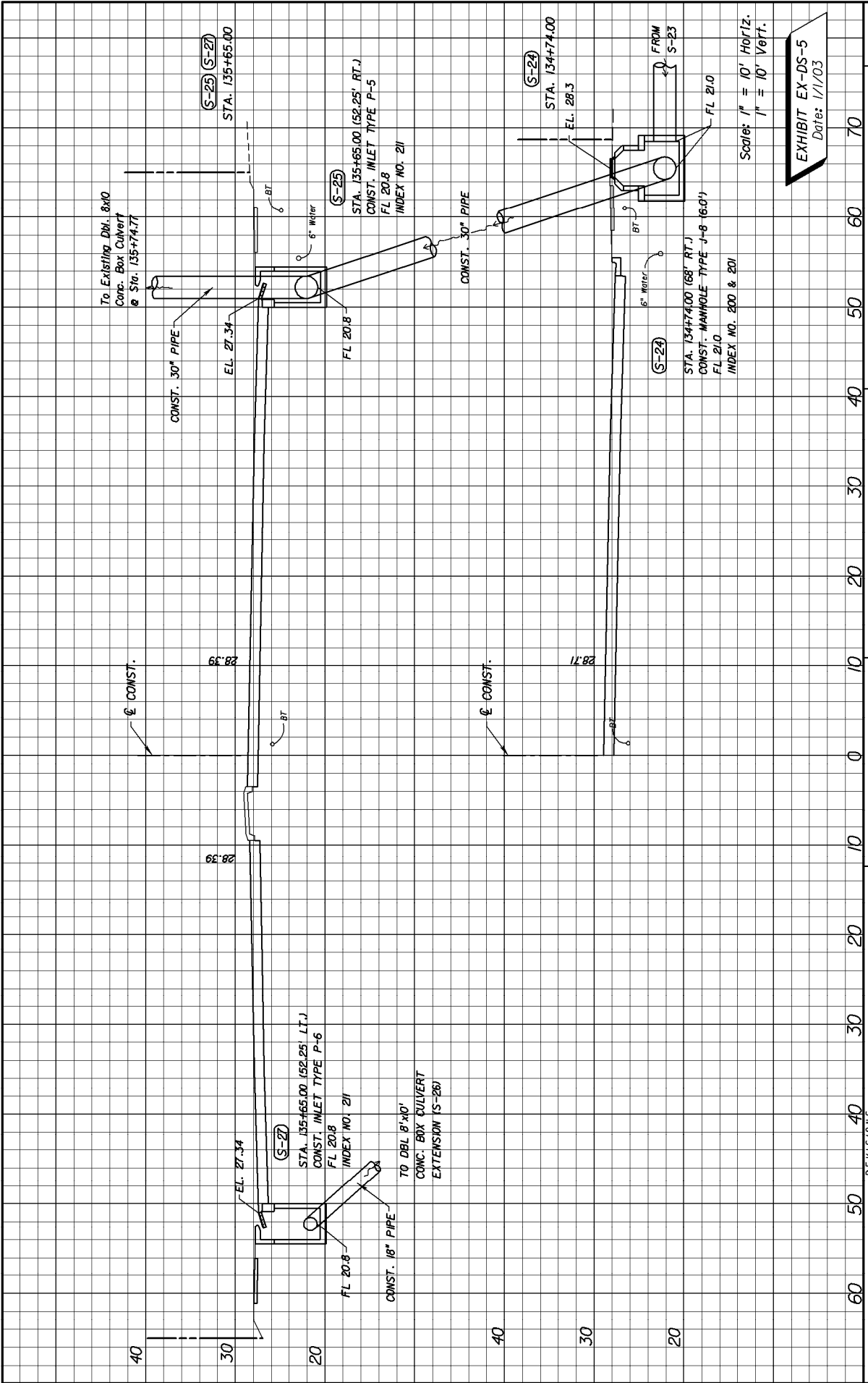
HARRY P. GUMER  
P.E. LICENSE NO. 90655  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2651  
TAMPA, FLORIDA 33755  
CERTIFICATE OF AUTHORIZATION NO. 99666

Scale: 1" = 10' Horiz.  
1" = 10' Vert.  
STA. 134+60.00 (52.25' RT.)  
CONST. INLET TYPE J-5 (5'x5')  
FL 21.7  
INDEX NO. 211

STA. 134+22.00 (47.7' RT.)  
CONST. MANHOLE TYPE P-7 (4.0)  
FL 23.0  
INDEX NO. 200 & 201

Scale: 1" = 10' Horiz.  
1" = 10' Vert.  
STA. 134+60.00 (52.25' RT.)  
CONST. INLET TYPE J-5 (5'x5')  
FL 21.7  
INDEX NO. 211

STA. 134+22.00 (47.7' RT.)  
CONST. MANHOLE TYPE P-7 (4.0)  
FL 23.0  
INDEX NO. 200 & 201



Scale: 1" = 10' Horiz.  
1" = 10' Vert.

EXHIBIT EX-DS-5  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DESCRIPTION	DATE

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

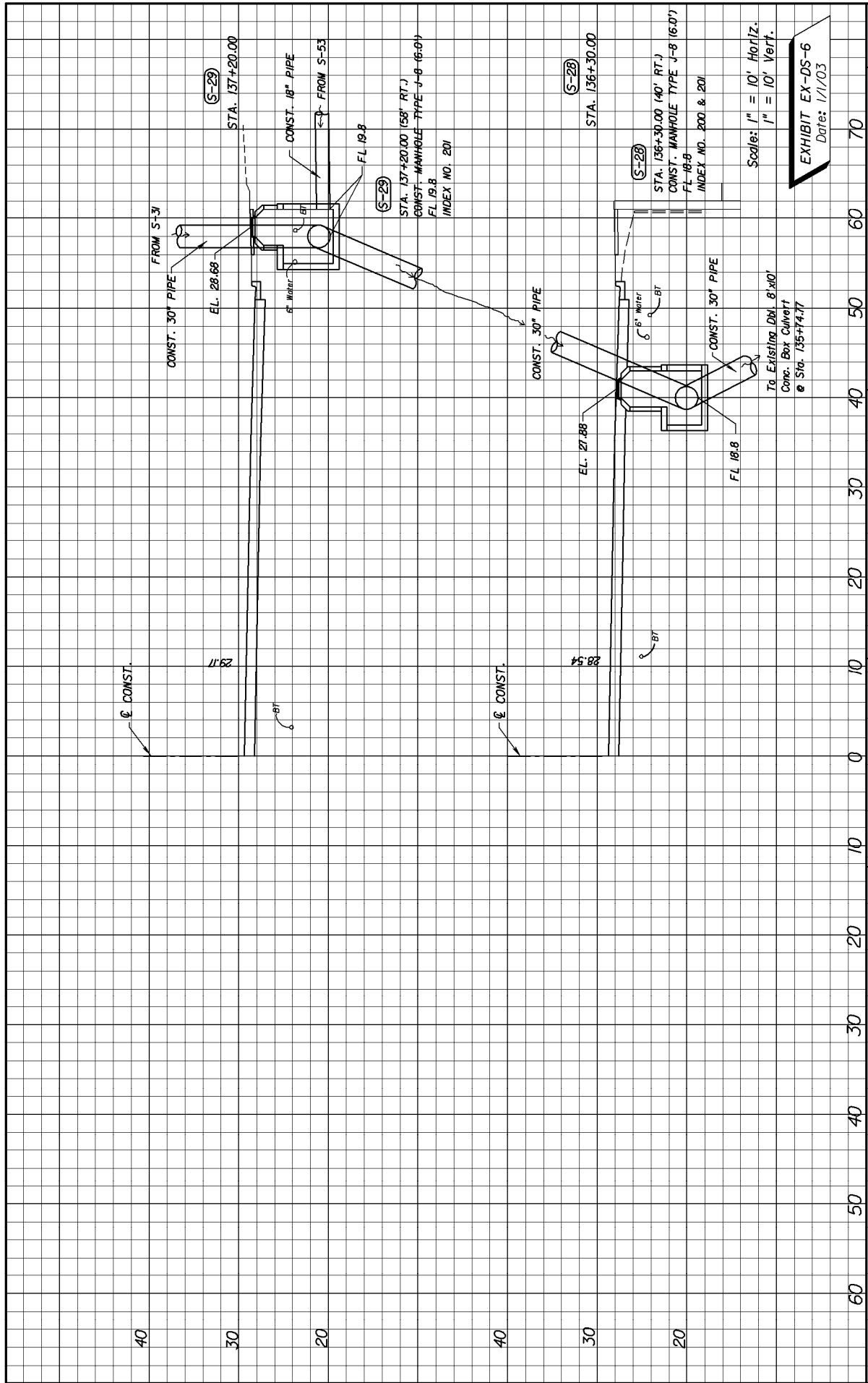
HARRY P. CUMER		P.E. LICENSE NO. 98655	
HILL & DALE ENGINEERING INC.		P.O. BOX 985	
TAMPA, FLORIDA 33755		CERTIFICATE OF AUTHORIZATION NO. 99866	

SHEET NO.		30
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**DRAINAGE STRUCTURES**



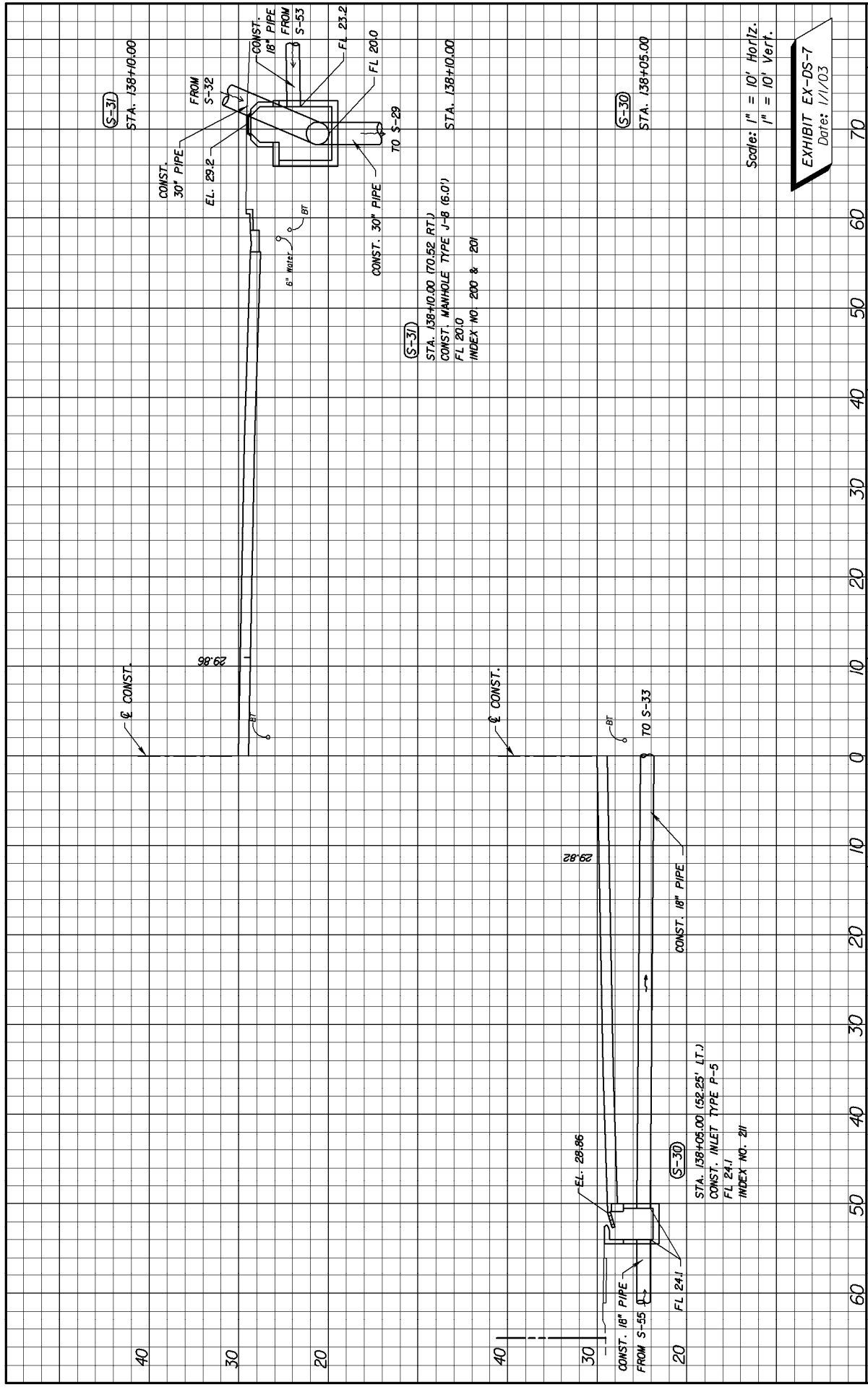


Scale: 1" = 10' Horiz.  
 1" = 10' Vert.  
**EXHIBIT EX-DS-6**  
 Date: 1/11/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		COUNTY		MANATEE		FINANCIAL PROJECT ID		SHEET NO.	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	PROJECT ID	ROAD NO.	COUNTY	PROJECT ID	PROJECT ID	PROJECT ID	PROJECT ID	PROJECT ID	PROJECT ID
			70	MANATEE	196058-1-52-01								31

HARRY P. GILMER  
 P.E. LICENSE NO. 90665  
 HILL & DALE ENGINEERING INC.  
 P.O. BOX 2651  
 TAMPA, FLORIDA 33755  
 CERTIFICATE OF AUTHORIZATION NO. 99966

**DRAINAGE STRUCTURES**



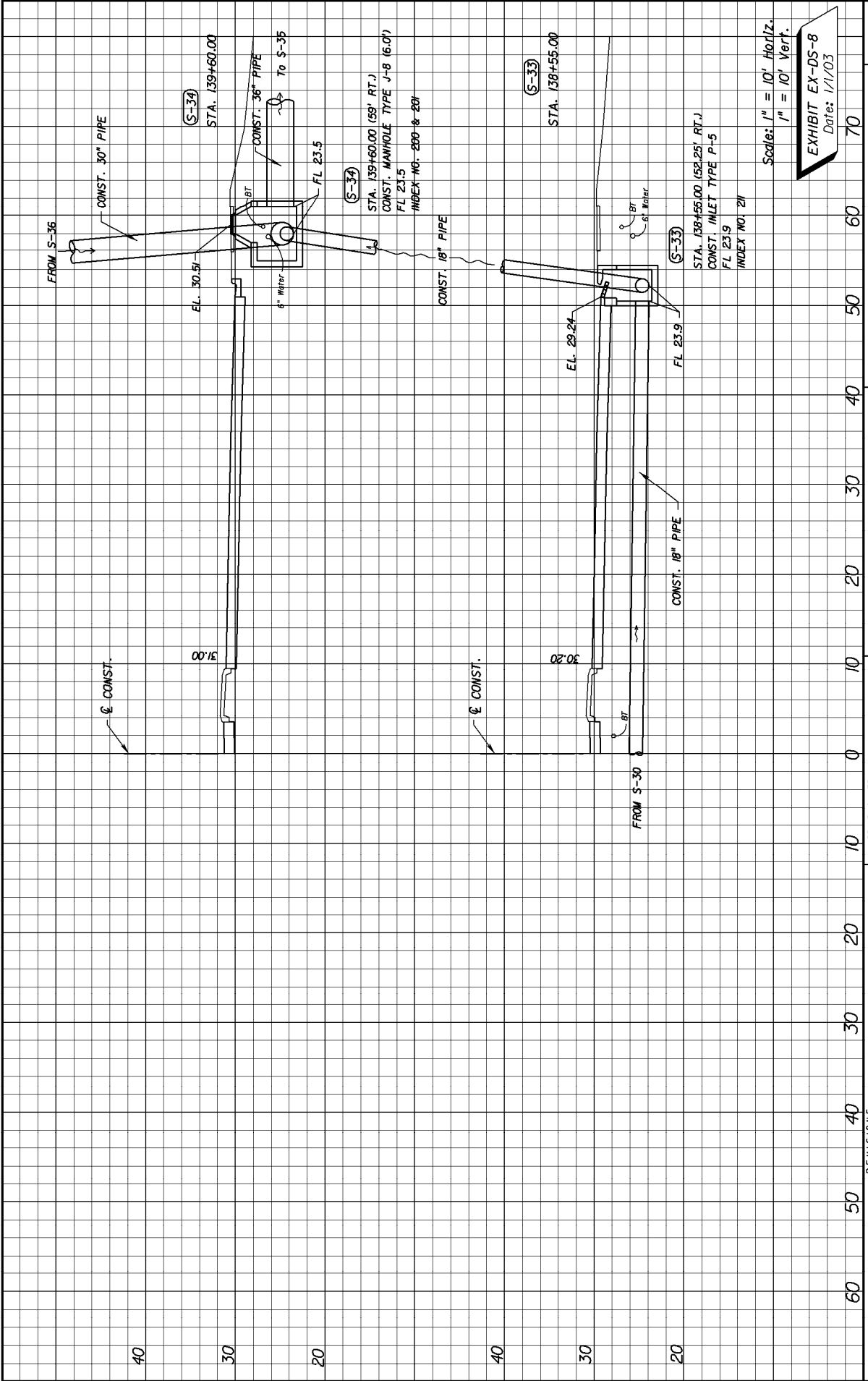
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
<b>REVISIONS</b>					
HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99966		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION COUNTY MANATEE	ROAD NO. 70	FINANCIAL PROJECT ID 196058-1-52-01	
EXHIBIT EX-DS-7 Date: 1/1/03					SHEET NO. 32

Scale: 1" = 10' Horiz.  
1" = 10' Vert.

### DRAINAGE STRUCTURES

60 50 40 30 20 10 0 10 20 30 40 50 60 70

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G5-23.003, F.A.C.



Scale: 1" = 10' Horiz.  
 1" = 10' Vert.  
**EXHIBIT EX-DS-8**  
 Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	MANATEE	196058-1-52-01	FINANCIAL PROJECT ID
			70	MANATEE			
HARRY P. GIMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERING INC. P.O. BOX 6851 TAMPA, FLORIDA 33635 CERTIFICATE OF AUTHORIZATION NO. 99566			STA. 139+60.00 CONST. MANHOLE TYPE J-8 (6.0') FL 23.5 INDEX NO. 200 & 201				
STA. 138+55.00 (52.25' RT.) CONST. INLET TYPE P-5 FL 23.9 INDEX NO. 211			STA. 139+60.00 CONST. 30" PIPE EL. 30.57 6" Water BT FL 23.5 CONST. 36" PIPE To S-35				
STA. 139+60.00 (59' RT.) CONST. MANHOLE TYPE J-8 (6.0') FL 23.5 INDEX NO. 200 & 201			STA. 138+55.00 CONST. 18" PIPE EL. 29.24 6" Water BT FL 23.9 CONST. 18" PIPE				
FROM S-36 CONST. 30" PIPE EL. 30.57 6" Water BT FL 23.5 CONST. 36" PIPE To S-35			FROM S-30 CONST. 18" PIPE EL. 29.24 6" Water BT FL 23.9 CONST. 18" PIPE				

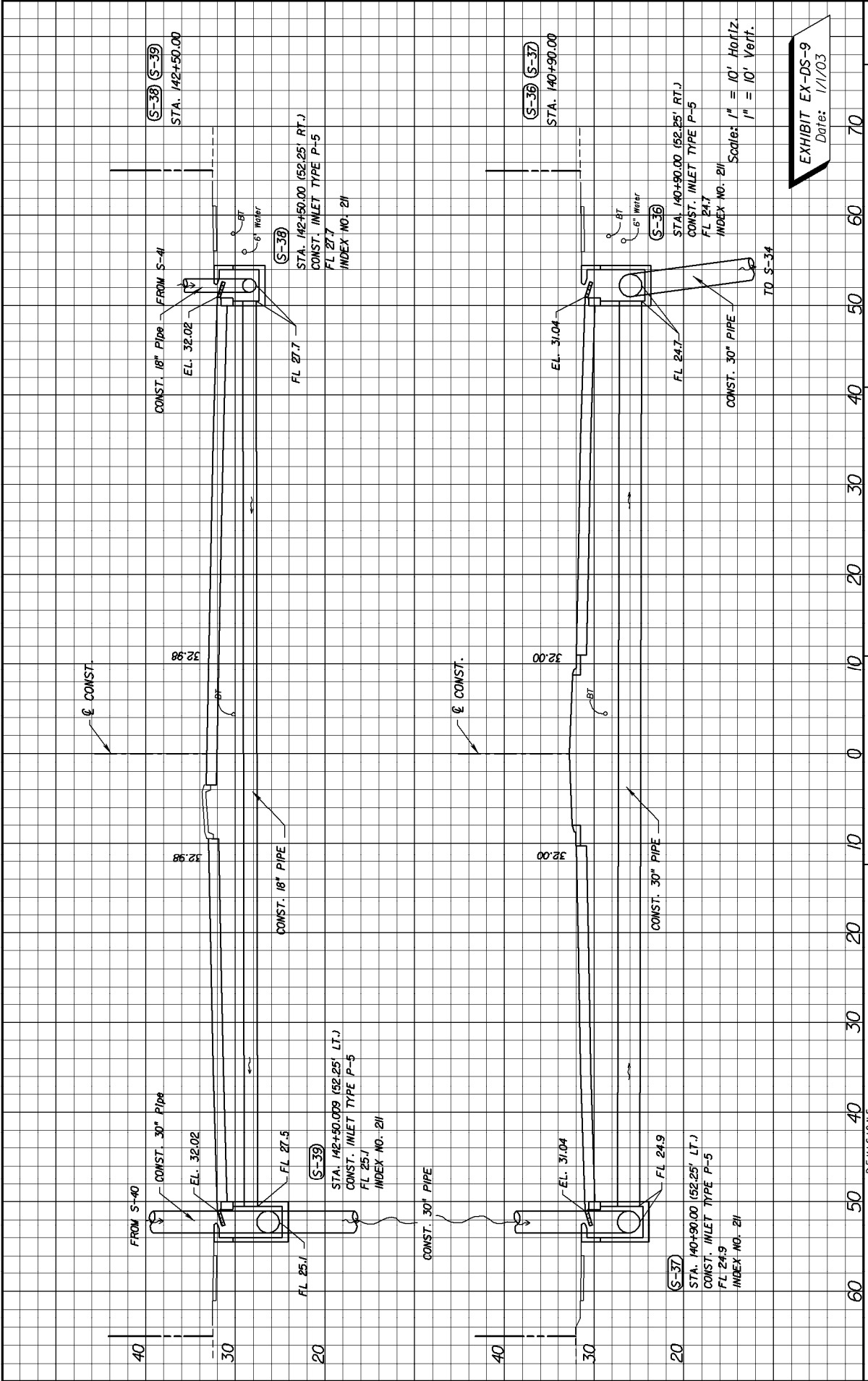


EXHIBIT EX-DS-9  
Date: 1/1/03

REVISIONS		DATE		DESCRIPTION	
NO.	BY	DATE	BY	DESCRIPTION	

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
MANATEE	70	196058-1-52-01	

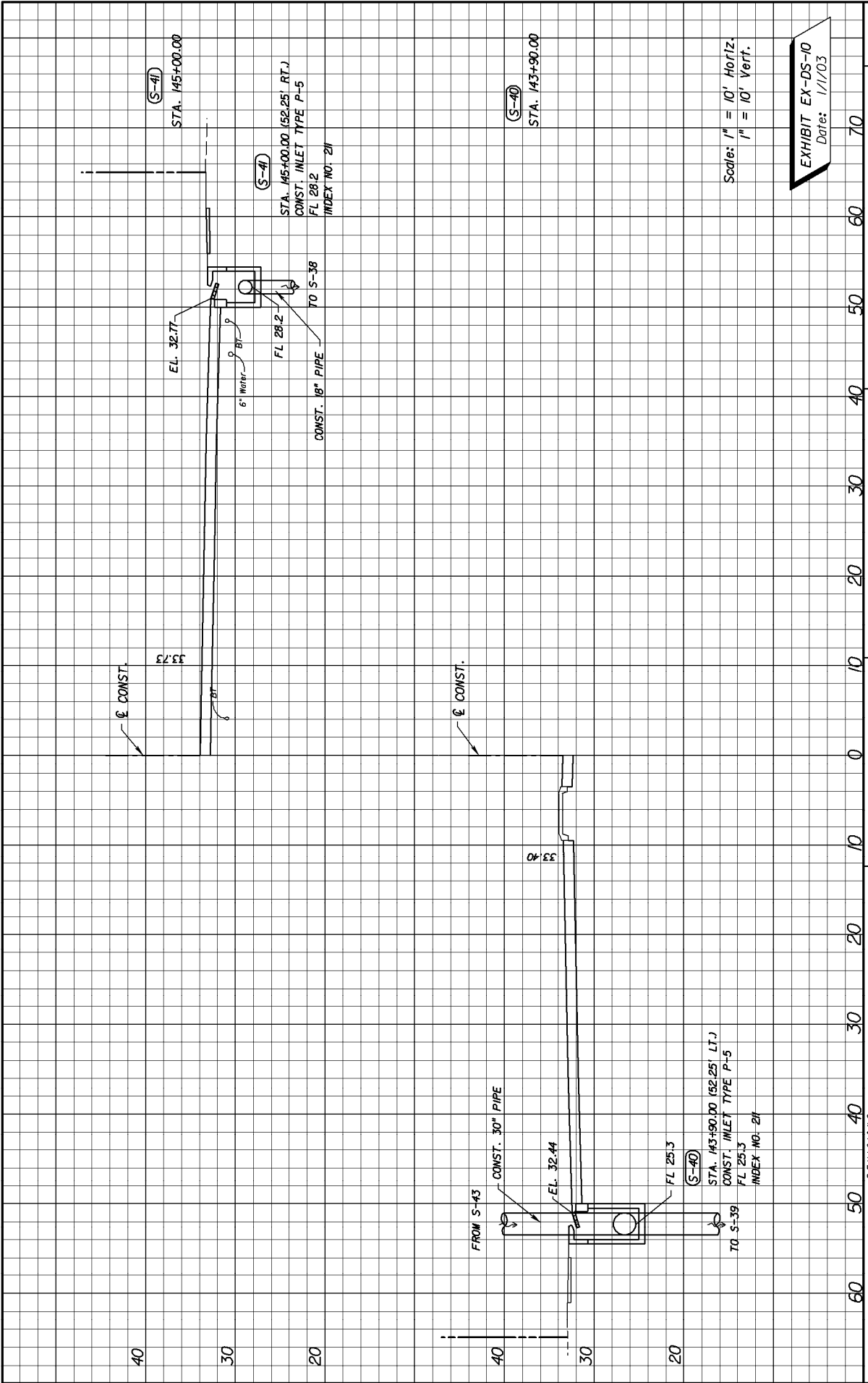
MARK P. GILMER	196655
P.E. LICENSE NO. 96655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2659	
TAMPA, FLORIDA 33755	
CERTIFICATE OF AUTHORIZATION NO. 96966	

ROAD NO.	70
COUNTY	MANATEE
FINANCIAL PROJECT ID	196058-1-52-01

STATE SHEET NO.	34
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Slope: 1" = 10' Horiz.  
1" = 10' Vert.

EXHIBIT EX-DS-10  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DATE	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

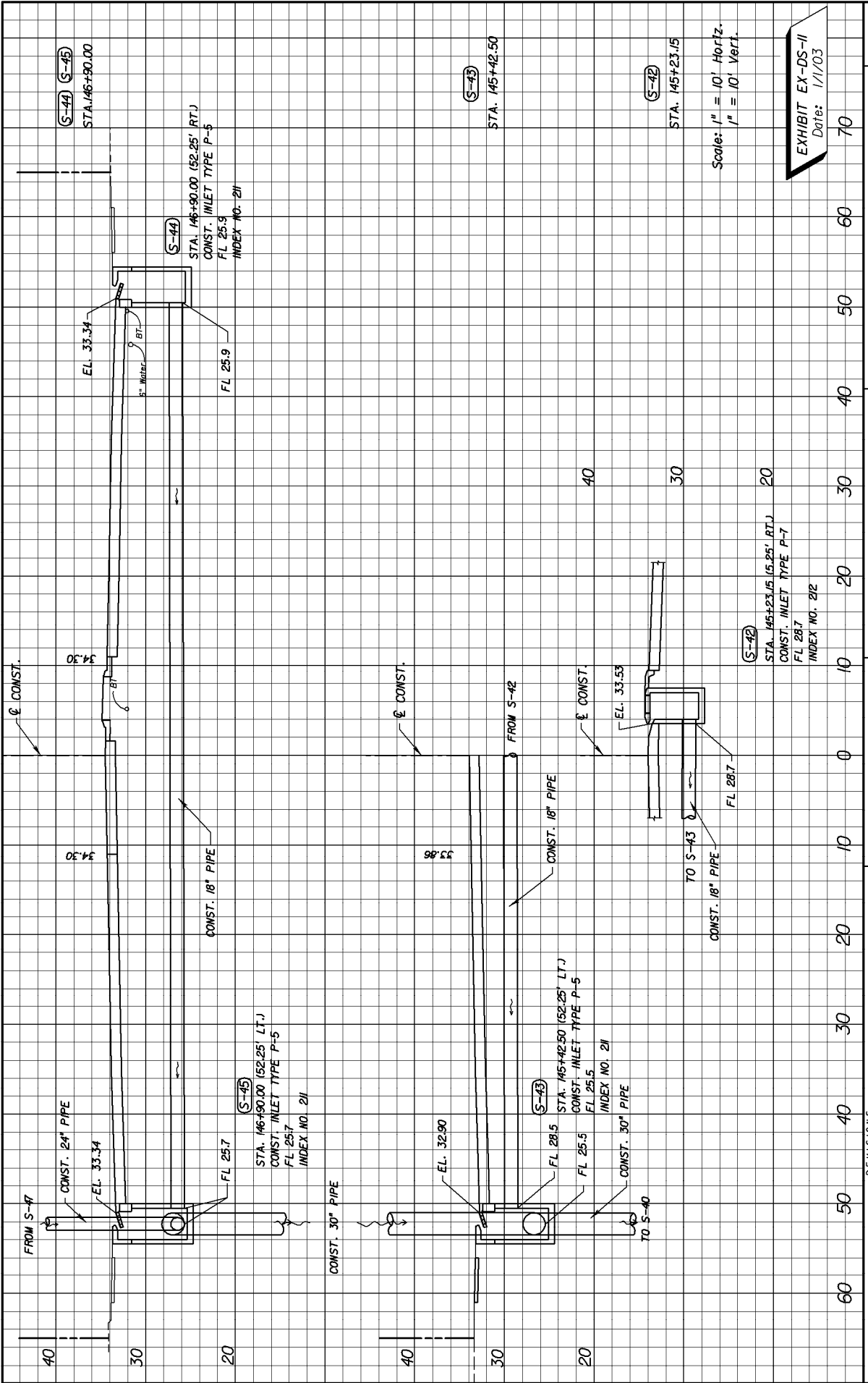
HARRY P. GILMER P.E. LICENSE NO. 906685 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99966		ROAD NO. 70	
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DATE	BY	DATE	DESCRIPTION

**DRAINAGE STRUCTURES**

SHEET NO. 35



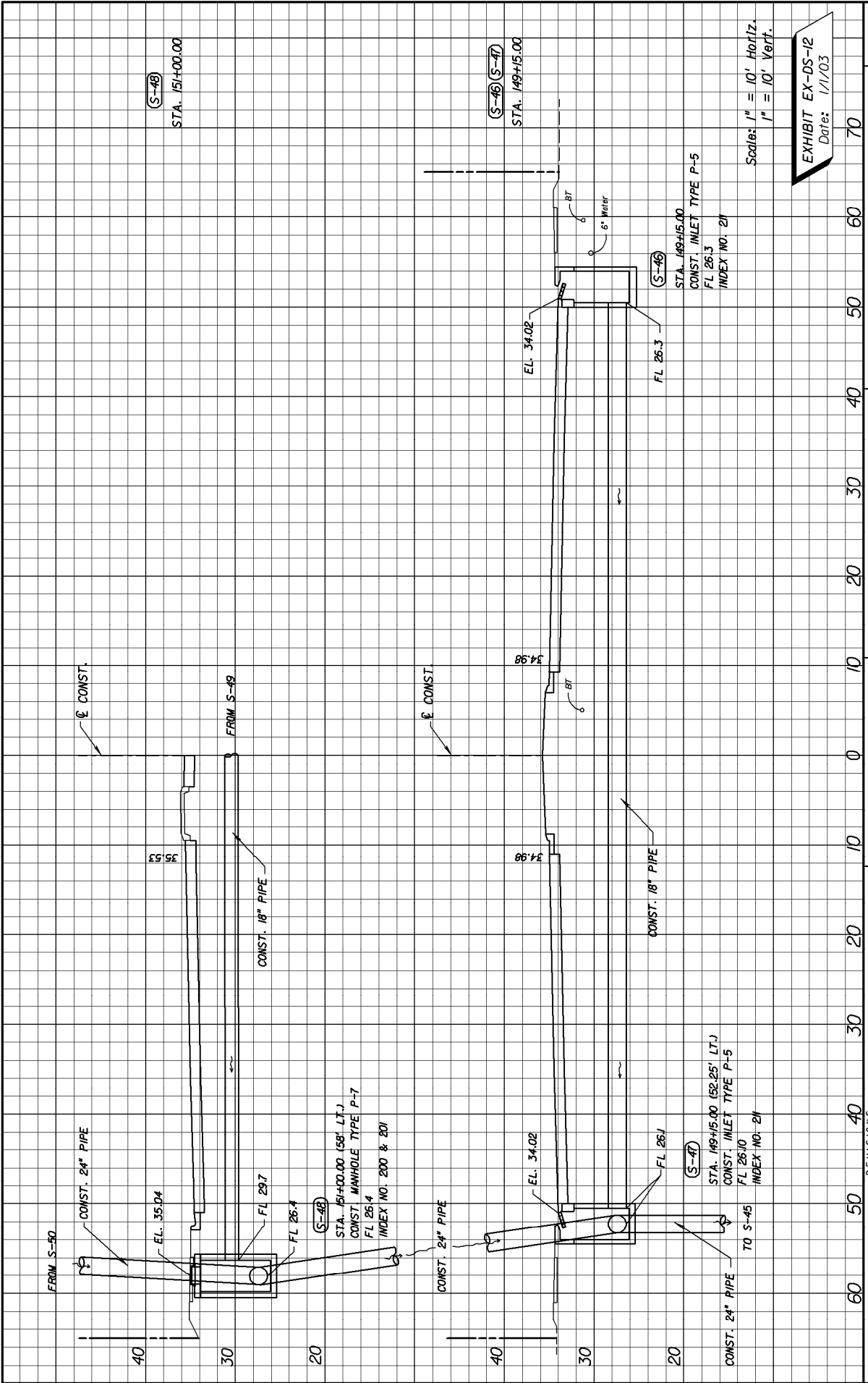
REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99966		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

DRAINAGE STRUCTURES		SHEET NO.
		36



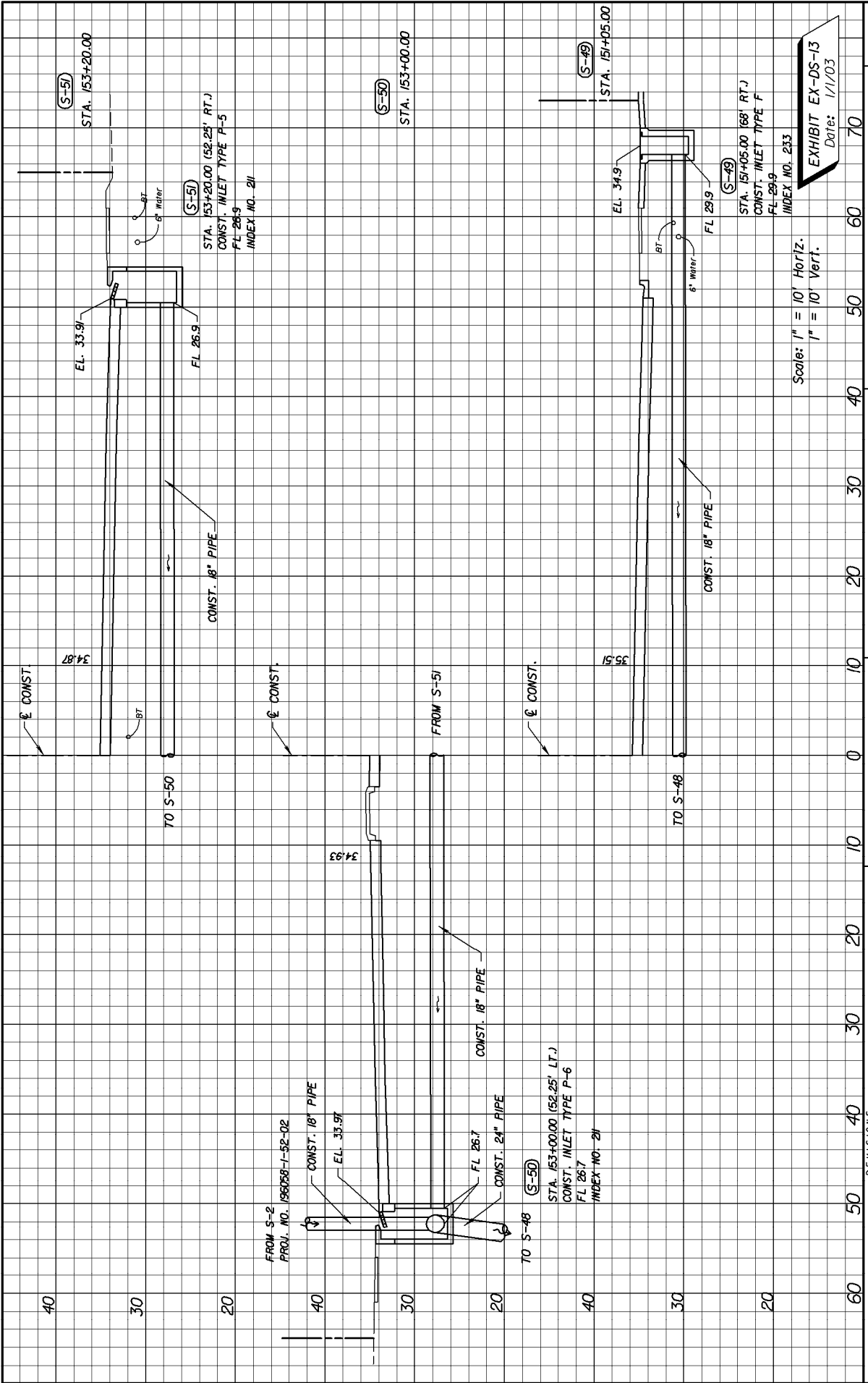
REVISIONS		DESCRIPTION	
DATE	BY	DESCRIPTION	DATE

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	

HARRY P. GILMER P.E. LICENSE NO. 90665 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33785 CERTIFICATE OF AUTHORIZATION NO. 99966		SHEET NO.
DRAINAGE STRUCTURES		37



Scale: 1" = 10' Horiz.  
1" = 10' Vert.

EXHIBIT EX-DS-13  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DESCRIPTION	DATE

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY	MANATEE	196058-1-52-01
70	MANATEE		

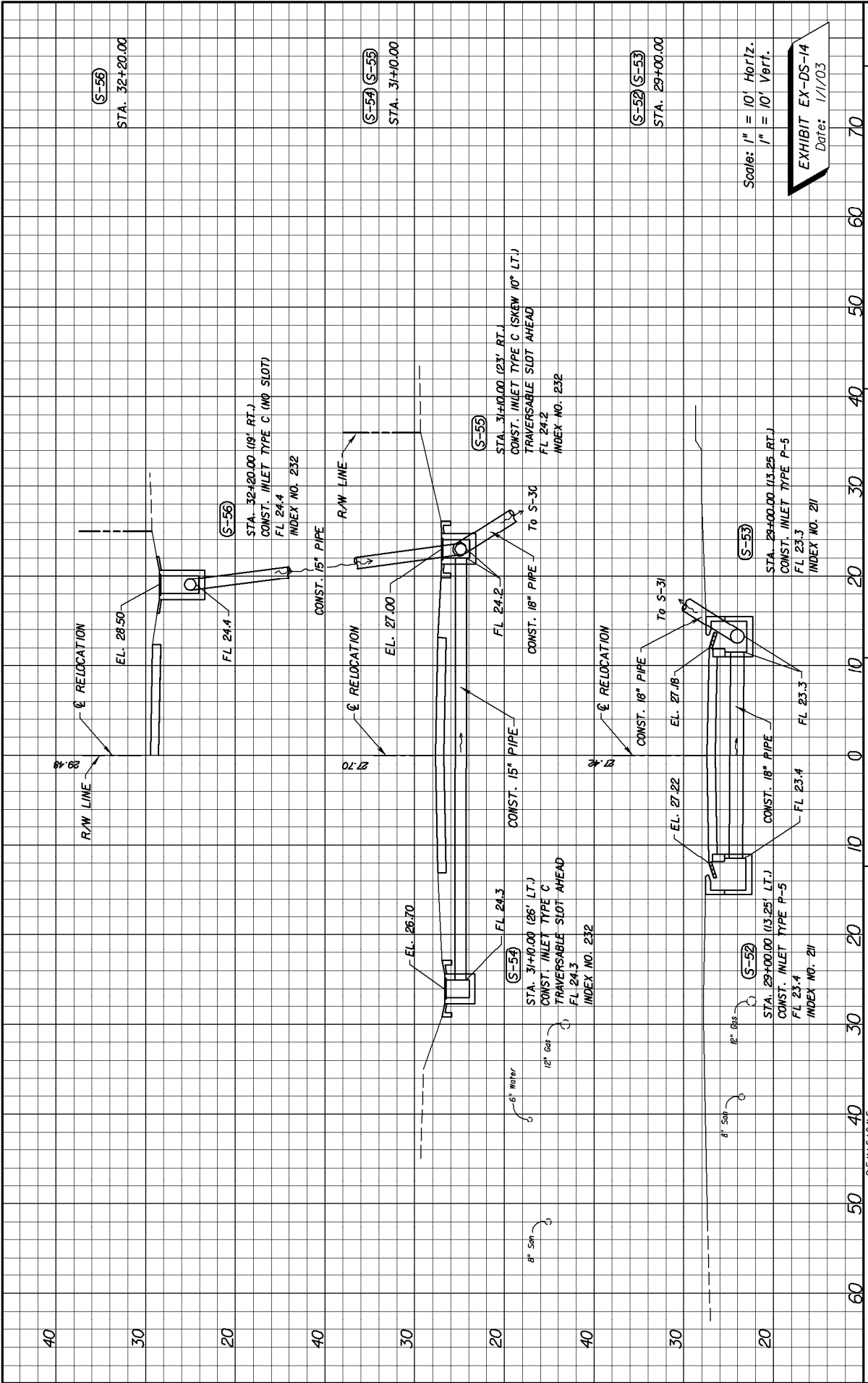
  

HARRY P. GILMER		CERTIFICATE OF AUTHORIZATION NO. 99866	
P.E. LICENSE NO. 90665			
HILL & DALE ENGINEERING INC.			
P.O. BOX 2651			
TAMPA, FLORIDA 33755			

**DRAINAGE STRUCTURES**

SHEET NO. 38





Scale: 1" = 10' Horiz.  
 1" = 10' Vert.  
 EXHIBIT EX-DS-14  
 Date: 1/1/03

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
HARRY P. GILMER P.E. LICENSE NO. 90665 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99866		ROAD NO.	70
COUNTY	MANATEE	FINANCIAL PROJECT ID	190058-1-52-01

STA. 32+20.00	(S-56)
STA. 31+10.00	(S-55)
STA. 29+00.00	(S-54)

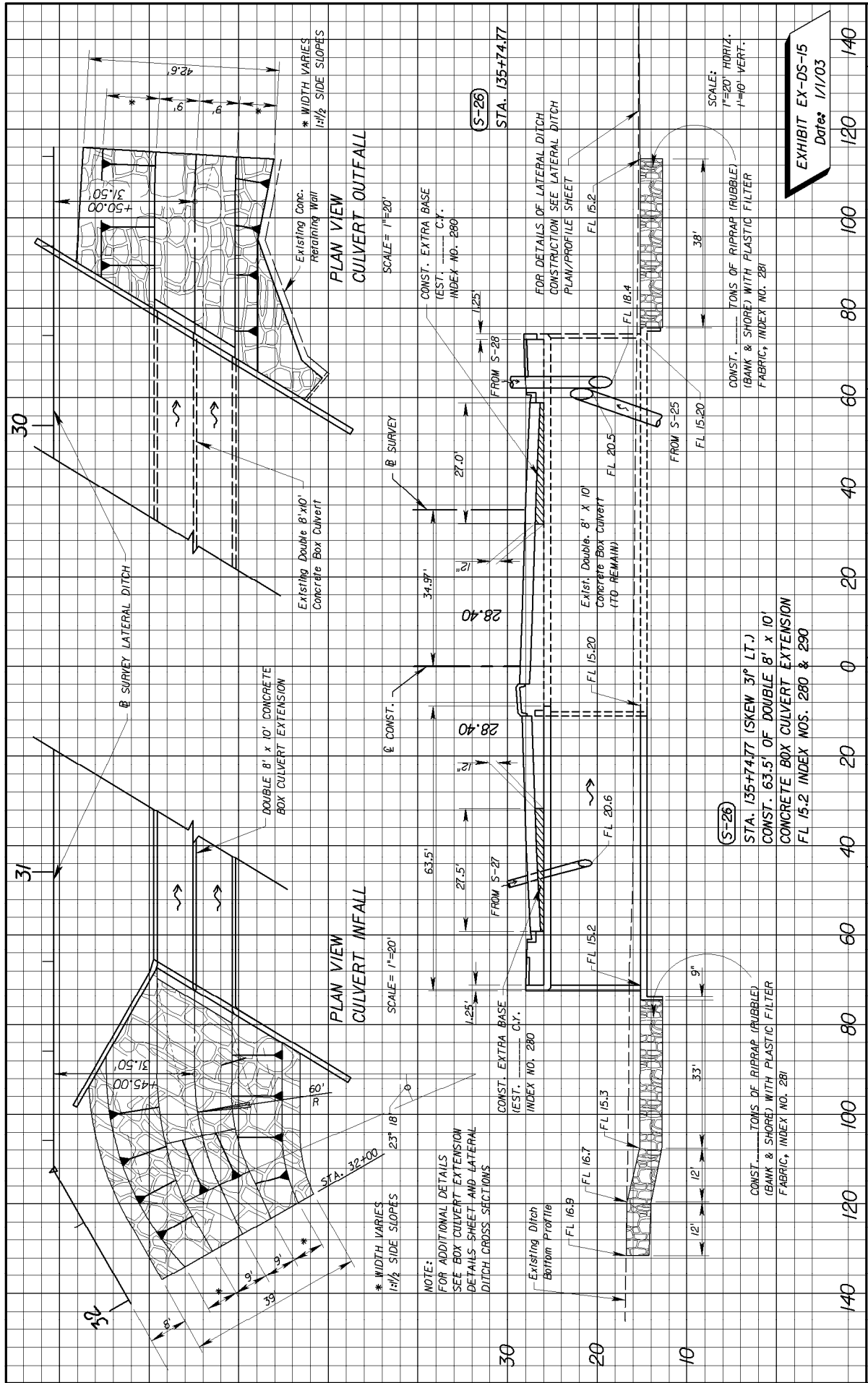
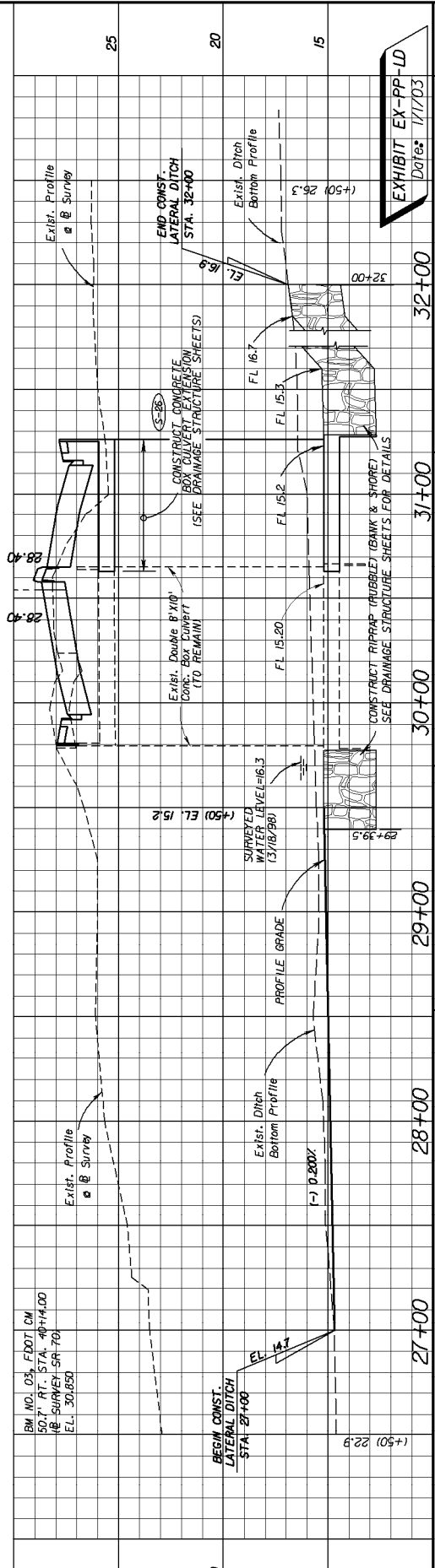
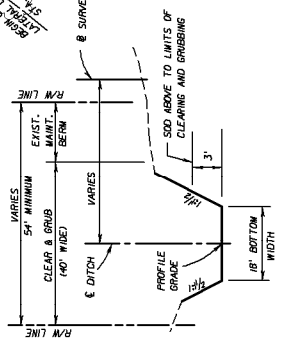
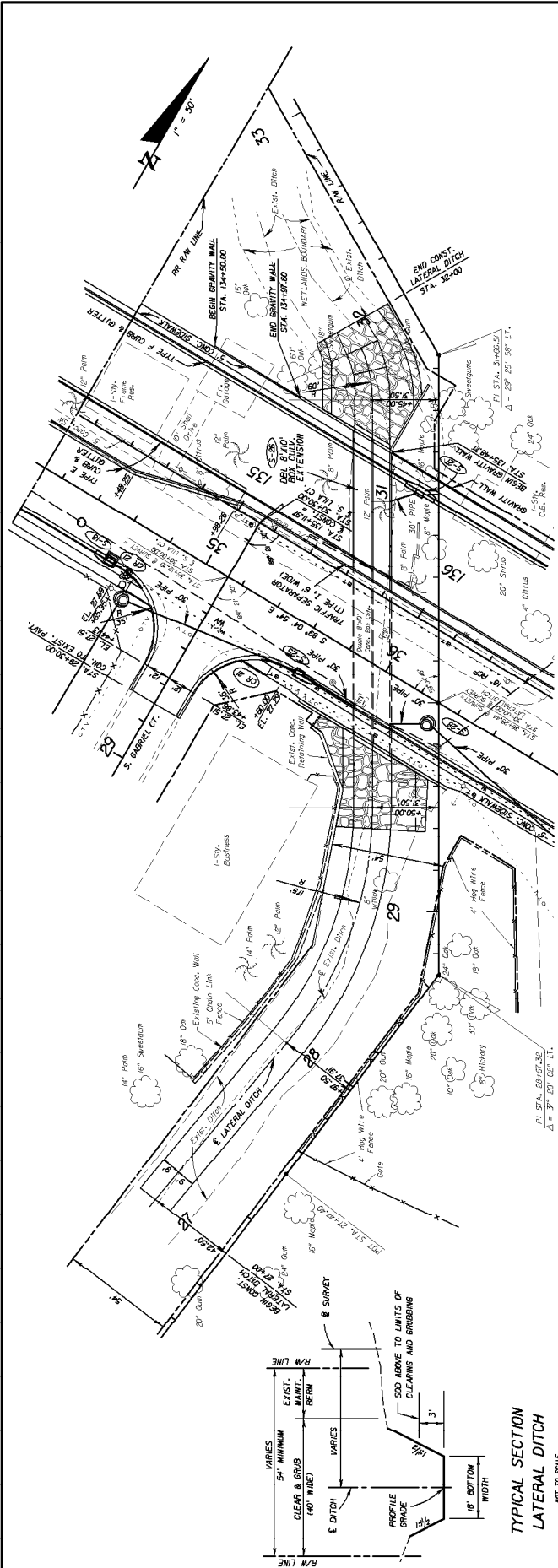


EXHIBIT EX-DS-15  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	MANATEE	FINANCIAL PROJECT ID	SHEET NO.
			70	MANATEE	196058-1-52-01		40

**BOX CULVERT EXT.  
DRAINAGE STRUCTURE**

HARRY P. GILMER  
P.E. LICENSE NO. 90665  
HILL & DALE ENGINEERING INC.  
P.O. BOX 2651  
TAMPA, FLORIDA 33655  
CERTIFICATE OF AUTHORIZATION NO. 99666



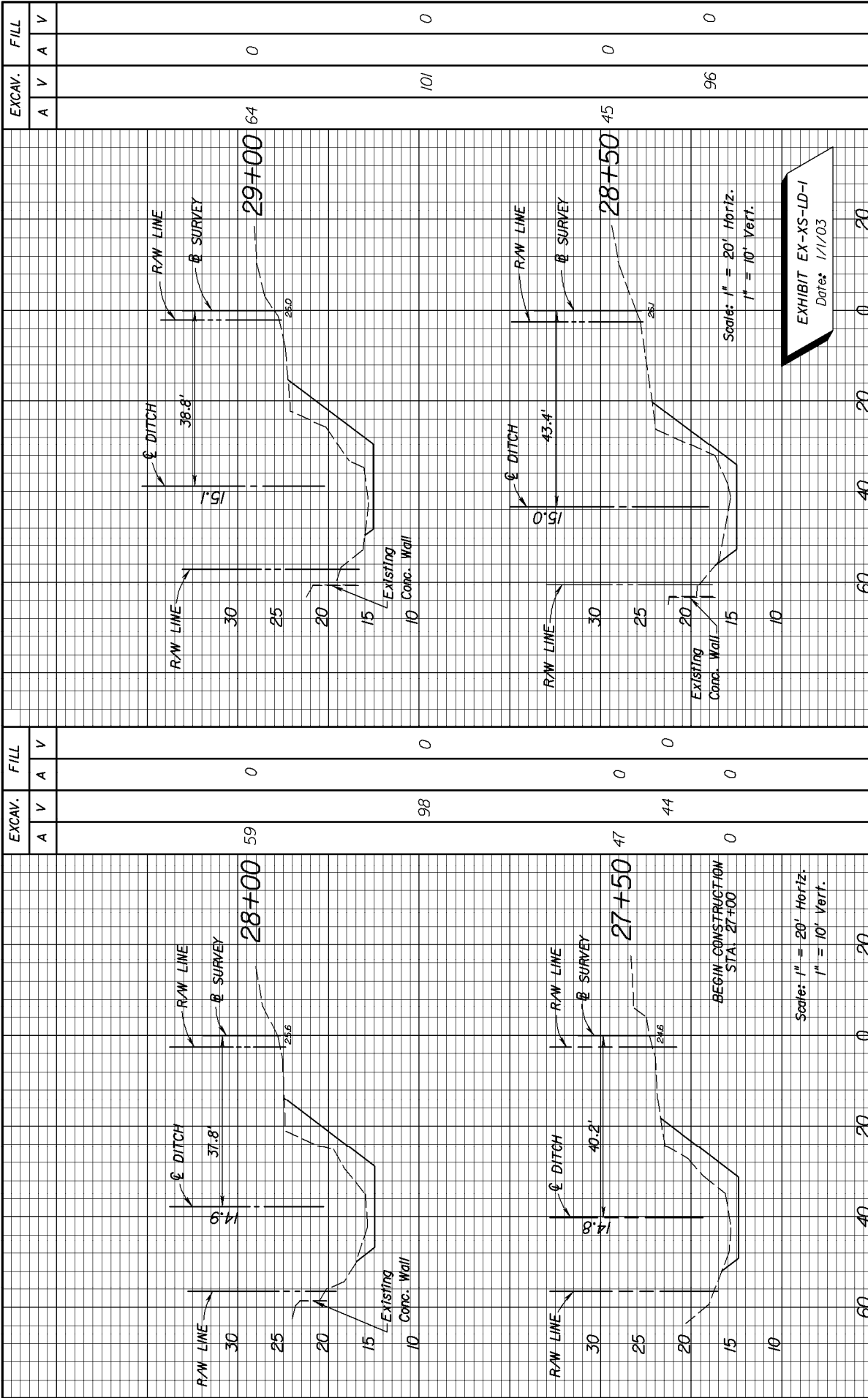
DATE	BY	DESCRIPTION	DATE	BY	REVISIONS

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
HARRY P. GILMER P.E. LICENSE NO. 90665 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99986		FINANCIAL PROJECT ID 196058-1-52-01	
ROAD NO.	COUNTY	MANATEE	70

PLAN-PROFILE		SHEET NO.	41
LATERAL DITCH		EXHIBIT EX-PP-LD DATE: 1/17/03	

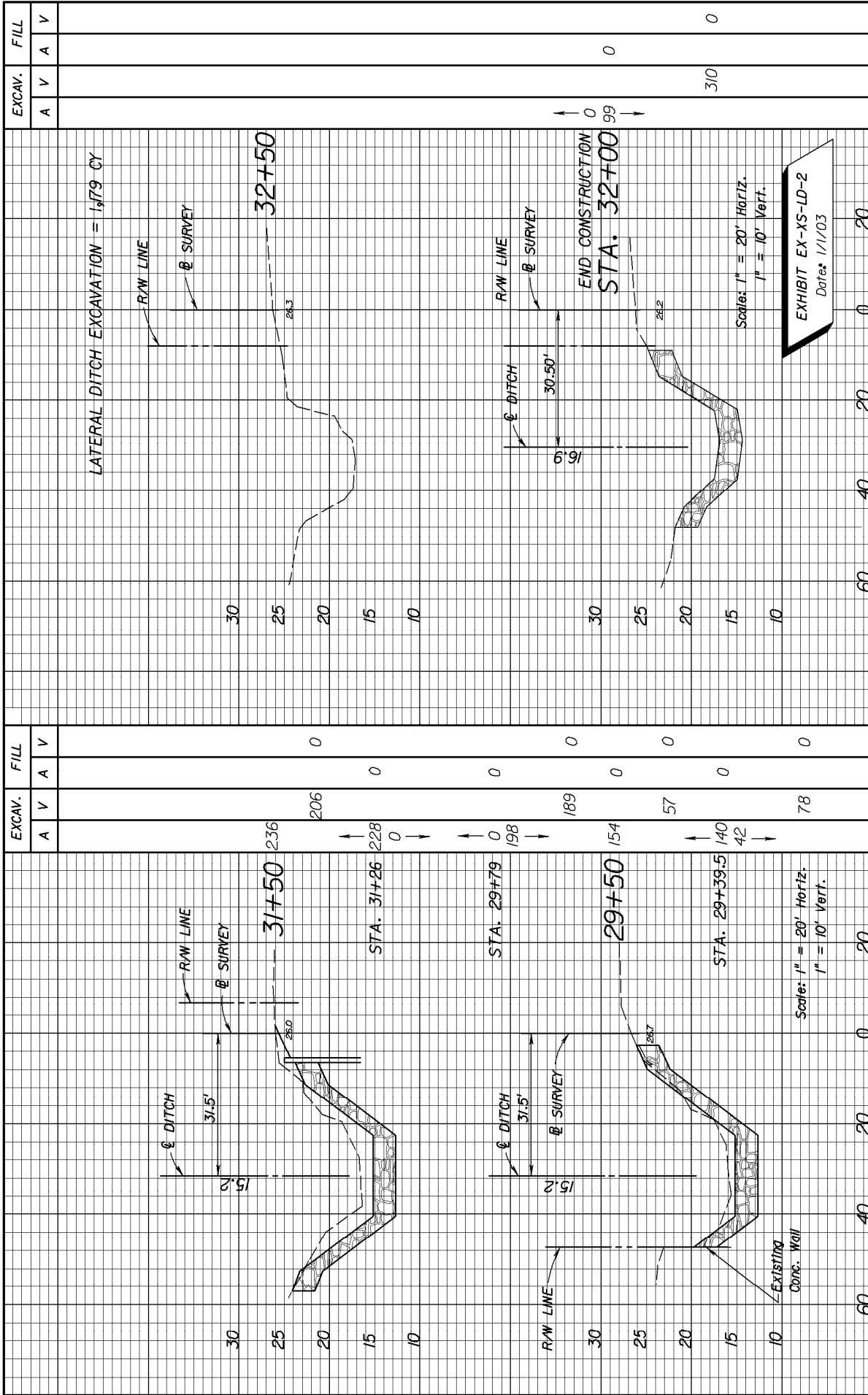


Scale: 1" = 20' Horiz.  
1" = 10' Vert.

EXHIBIT EX-XS-LD-1  
Date: 1/1/03

EXCAV.	FILL		EXCAV.	FILL	
	A	V		A	V
0	0	0	0	0	0
98	0	0	101	0	0
44	0	0	96	0	0
0	0	0	0	0	0

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		CROSS SECTIONS		LATERAL DITCH		SHEET NO.	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	MANATEE	196058-1-52-01			42	
			70	MANATEE	196058-1-52-01						
			HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99986								



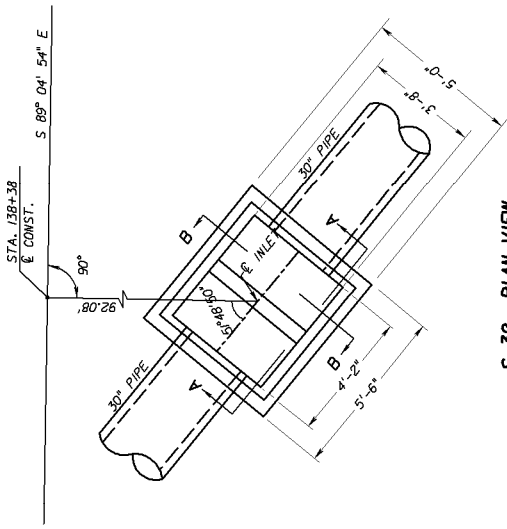
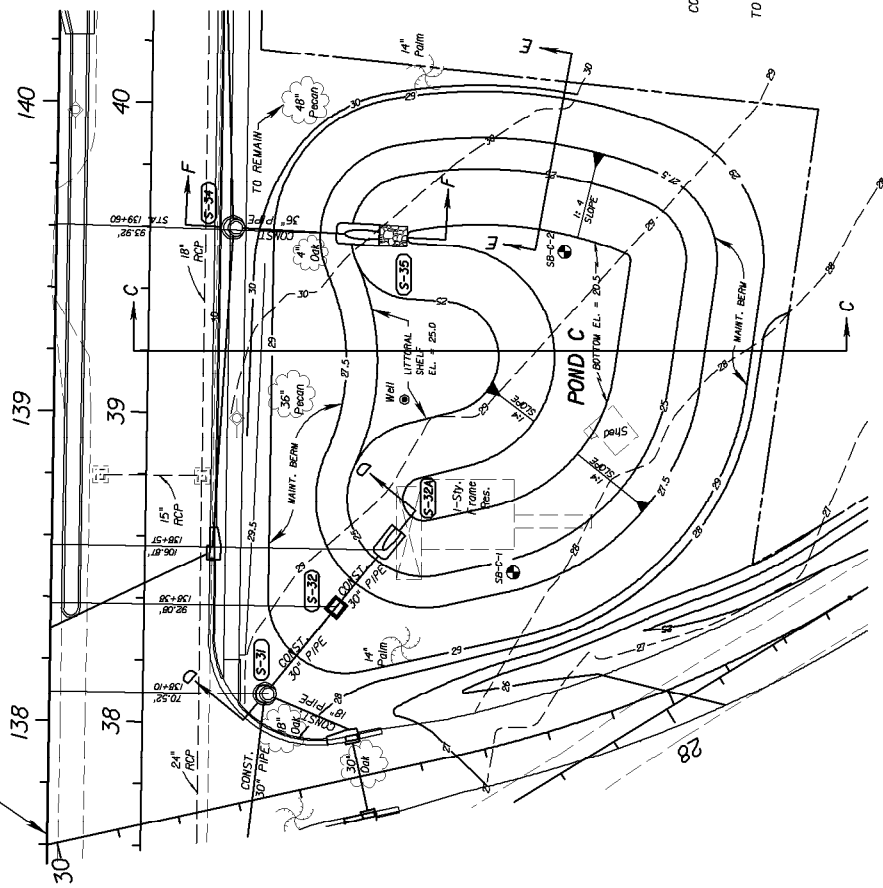
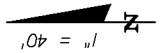
LATERAL DITCH EXCAVATION = 1,179 CY

EXHIBIT EX-XS-LD-2  
 Date: 1/1/03

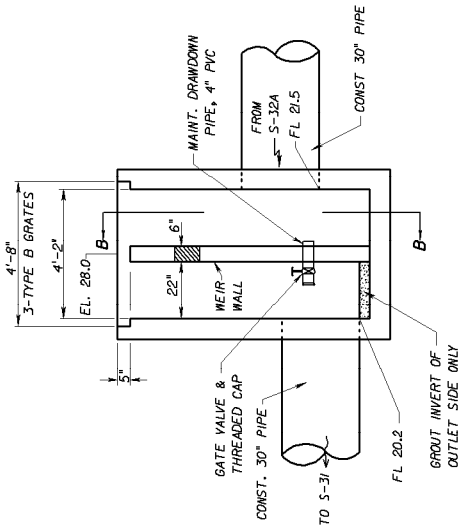
REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		COUNTY		FINANCIAL PROJECT ID		CROSS SECTIONS		SHEET NO.	
DATE	BY	DESCRIPTION	DATE	MANATEE	ROAD NO.	MANATEE	70	86058-1-52-01	LATERAL DITCH		A	V	43

MARRY P. GILMER  
 P.E. LICENSE NO. 96865  
 HILL & DALE ENGINEERING INC.  
 P.O. BOX 2651  
 TAMPA, FLORIDA 33755  
 CERTIFICATE OF AUTHORIZATION NO. 99866

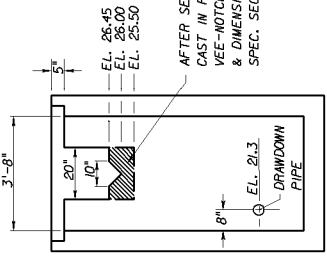
POND C  
 Treatment provided by Weir Detention.  
 SHWT= Control Elevation = Elev. 26.0  
 25 year / 24 hour Peak Stage = 27.7  
 100 year / 8 hour Peak Stage = 28.0



S-32 PLAN VIEW



SECTION "AA"



SECTION "BB"

AFTER SETTING THE STRUCTURE,  
 CAST IN PLACE THE WEIR INVERT &  
 VEE-NOTCH TO PROPER ELEVATIONS  
 & DIMENSIONS. USE MORTAR MEETING  
 SPEC. SECTION 425.

PLAN VIEW POND C

SEE SHEET P-3 FOR POND LAYOUT DETAILS

S-32 DBI SPECIAL  
 OUTLET CONTROL STRUCTURE DETAILS

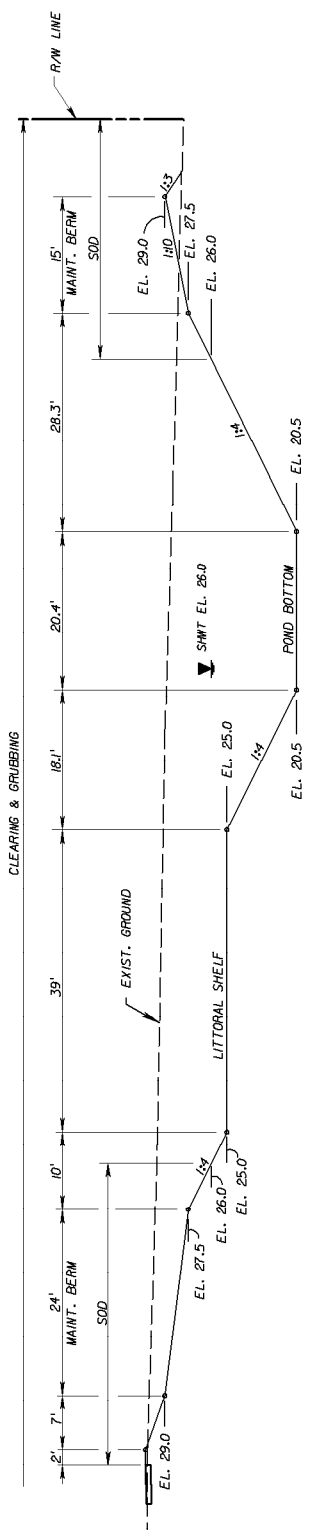
EXHIBIT EX-PP-1  
 DATE: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID		ROAD NO.		COUNTY		MANATEE		SR 70		196058-1-52-01	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

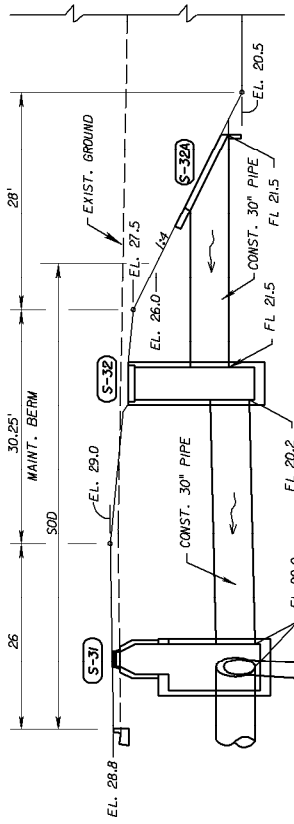
HARRY P. GUMER  
 P.E. LICENSE NO. 90655  
 HILL & DALE ENGINEERING INC.  
 P.O. BOX 9851  
 TAMPA, FLORIDA 33615  
 CERTIFICATE OF AUTHORIZATION NO. 99666

POND C DETAILS

SHEET NO.  
 44



**SECTION "CC"**  
STA. 139+20 RT. & CONST.

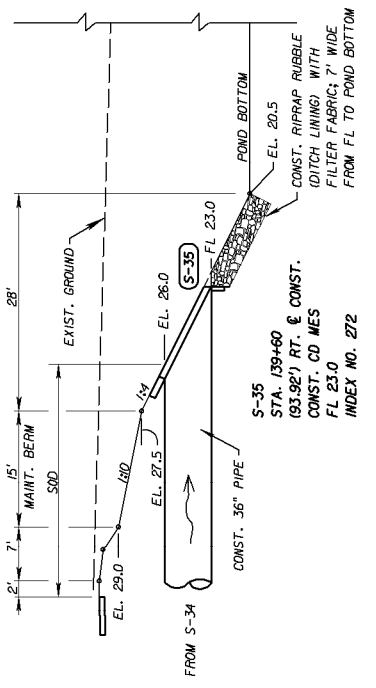


**S-31**  
SEE DRAINAGE  
STRUCTURE SHEETS

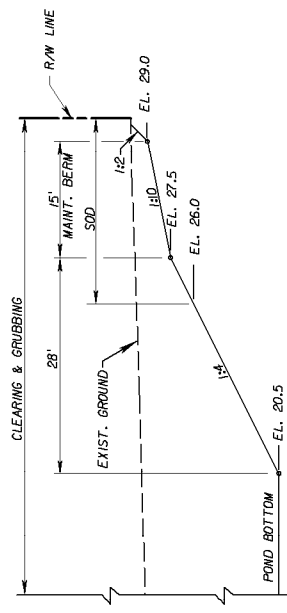
**S-32**  
STA. 139+38  
(92.08') RT. & CONST.  
CONST. DBI SPECIAL  
FL 21.5 SE  
FL 20.2 HW  
SEE OUTLET CONTROL  
STRUCTURE DETAILS

**SECTION "DD"**

SOD ALL DISTURBED AREAS AROUND  
THE POND DOWN TO ELEVATION 26.0



**SECTION "FF"**



**SECTION "EE"**

**EXHIBIT EX-RP-2**  
DATE: 1/1/03

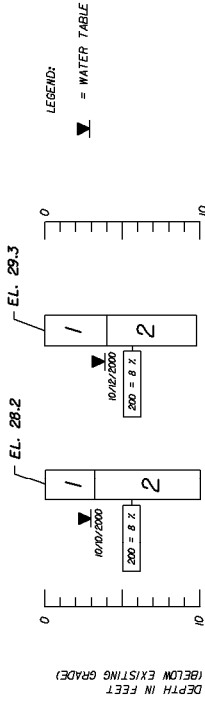
REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			SR 70	MANATEE	196058-152-01		
			HARRY P. GILMER P.E. LICENSE NO. 906655 HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33605 CERTIFICATE OF AUTHORIZATION NO. 99986		<b>POND C DETAILS</b>		
			196058-152-01				
			MANATEE		SHEET NO. 45		

**SOILS INFORMATION**

SB-C-1  
STA. 138+48  
149' RT. & CONST.

SB-C-2  
STA. 139+54  
163.9' RT. & CONST.

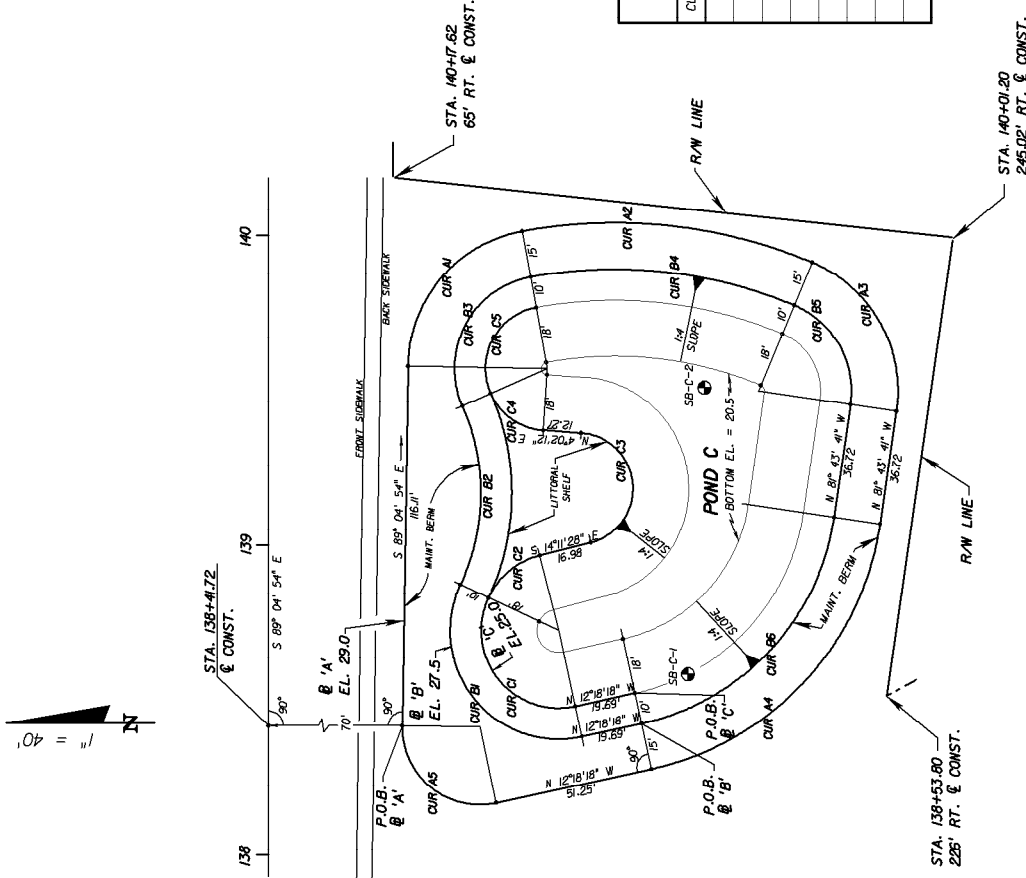
SEE ROADWAY SOIL SURVEY  
FOR SOIL STRATA IDENTIFICATION



**POND 'C' CURVE CRITERIA**

@ 'A' ELEVATION = 29.0			@ 'B' ELEVATION = 27.5			@ 'C' ELEVATION = 25.0		
CURVE NO.	ANGLE	RADIUS	CURVE NO.	ANGLE	RADIUS	CURVE NO.	ANGLE	RADIUS
A1	78°38'29"	45'	B1	127°17'16"	35'	C1	127°17'16"	25'
A2	33°08'27"	165'	B2	48°43'56"	70'	C2	50°49'34"	25'
A3	75°34'17"	45'	B3	78°38'29"	30'	C3	16°46'20"	18'
A4	69°25'22"	95'	B4	33°08'27"	150'	C4	62°12'50"	20'
A5	103°13'24"	25'	B5	75°34'17"	30'	C5	103°18'34"	20'
			B6	69°25'22"	80'			

**POND C LAYOUT**



REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
SR 70	MANATEE	196058-1-52-01	

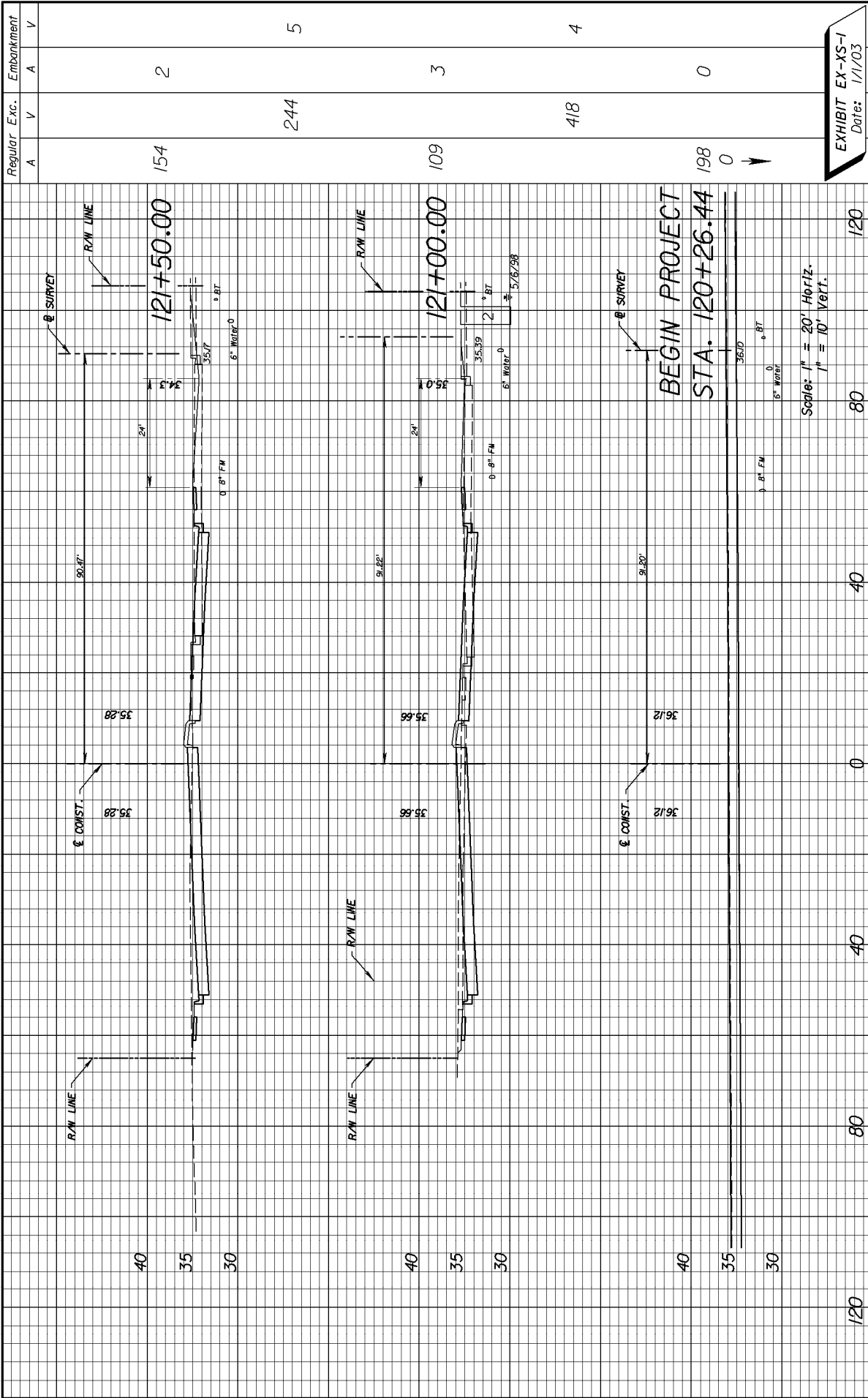
HARRY P. GUMER P.E. LICENSE NO. 99665 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99686	STA. 140+01.20 245.02' RT. & CONST.
---	--

**POND C DETAILS**

EXHIBIT EX-RP-3  
DATE: 1/1/03

SHEET NO. 46





Regular Exc.	Exc.	Embankment
A	V	A
154	244	2
109	418	3
198	0	4
0	0	0

EXHIBIT EX-XS-1  
Date: 1/1/03

DATE	BY	DESCRIPTION

STATE OF FLORIDA	DEPARTMENT OF TRANSPORTATION
MANATEE COUNTY	FINANCIAL PROJECT ID
70	196058-1-52-01

HARRY P. RUMER	P.E. LICENSE NO. 90655
HILL & DALE ENGINEERING INC.	P.O. BOX 2881
TAMPA, FLORIDA 33715	CERTIFICATE OF AUTHORIZATION NO. 99286

120	80	40	0	40	80	120
-----	----	----	---	----	----	-----

40	35	30
40	35	30
40	35	30

120	80	40	0	40	80	120
-----	----	----	---	----	----	-----

198	0
-----	---

120	80	40	0	40	80	120
-----	----	----	---	----	----	-----

40	35	30
40	35	30
40	35	30

CROSS SECTIONS

SHEET NO. 48



Regular Exc.		Embankment	
A	V	A	V
149	0	0	0
188	0	0	0
190	0	0	0
512	0	0	0
205	0	0	0
332	0	0	2

EXHIBIT EX-XS-2  
Date: 1/1/03

REVISIONS		DESCRIPTION		DATE		BY	

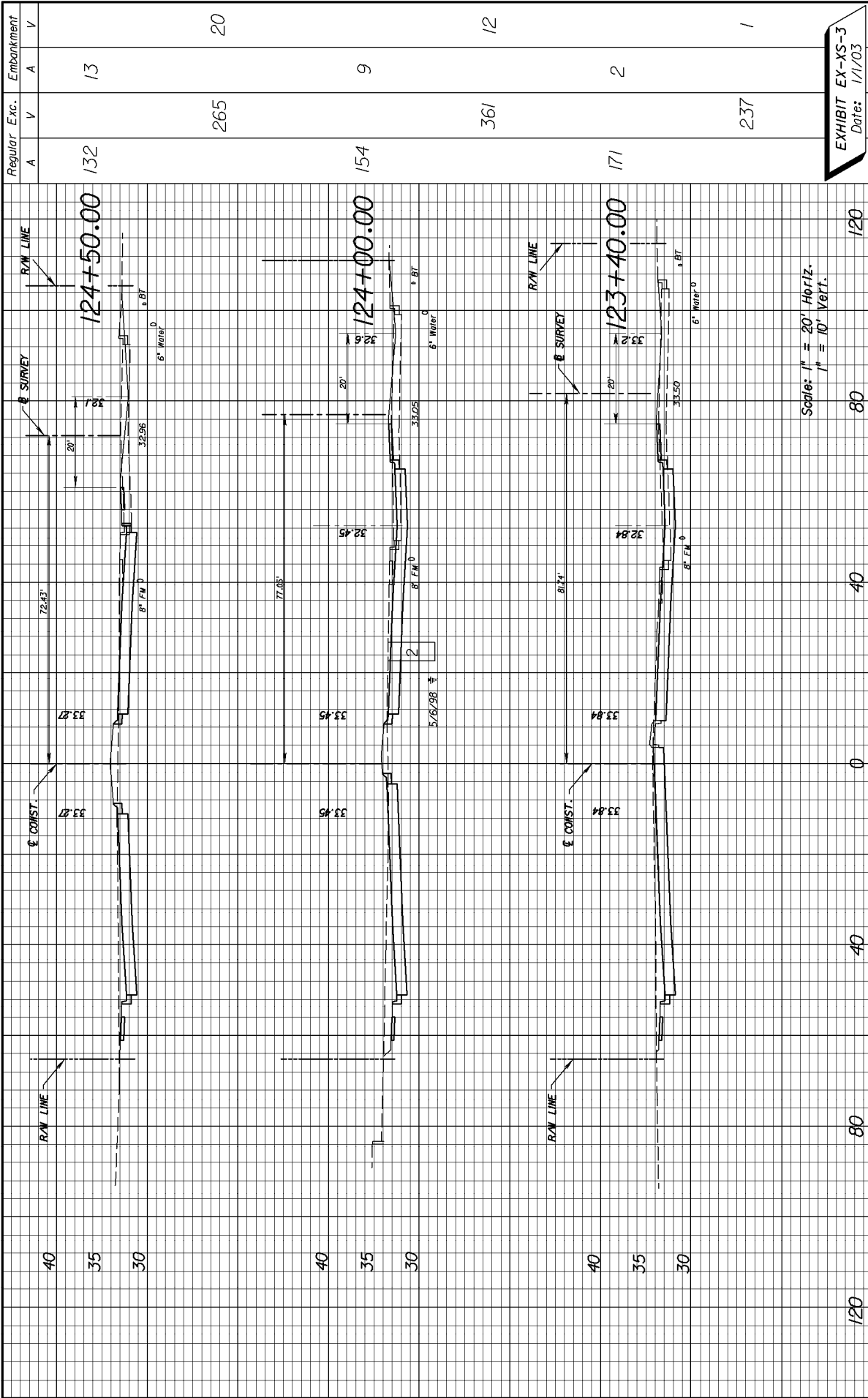
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
MANATEE	70	196058-1-52-01	

HARRY P. GUMER		P.E. LICENSE NO. 90655	
HILL & DALE ENGINEERING INC.		P.O. BOX 9851	
TAMPA, FLORIDA 33735		CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS		SHEET NO.	
		49	



Scale: 1" = 20' Horiz.  
1" = 10' Vert.

EXHIBIT EX-XS-3  
Date: 1/1/03

Regular Exc.	Embankment
A V	A V
132	13
265	20
154	9
361	12
171	2
237	1

DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	MANATEE

HARRY P. GUMER	196058-1-52-01
P.E. LICENSE NO. 90655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2651	
TAMPA, FLORIDA 33745	
CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS	
SHEET NO.	50

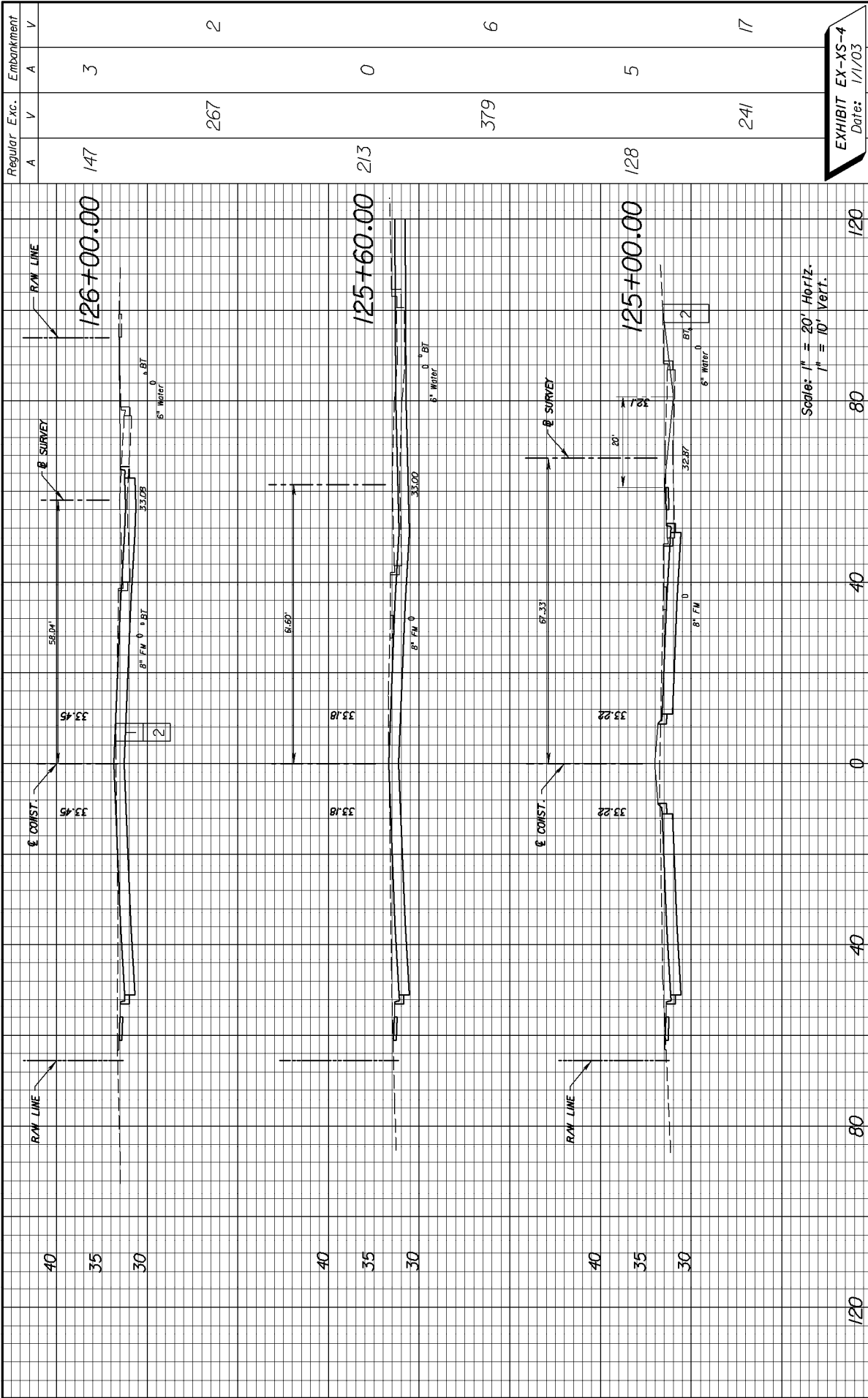


EXHIBIT EX-XS-4  
Date: 1/1/03

Regular Exc.	Embankment
A V 147	A V 3
267	2
213	0
379	6
128	5
241	17

DATE	BY	DESCRIPTION

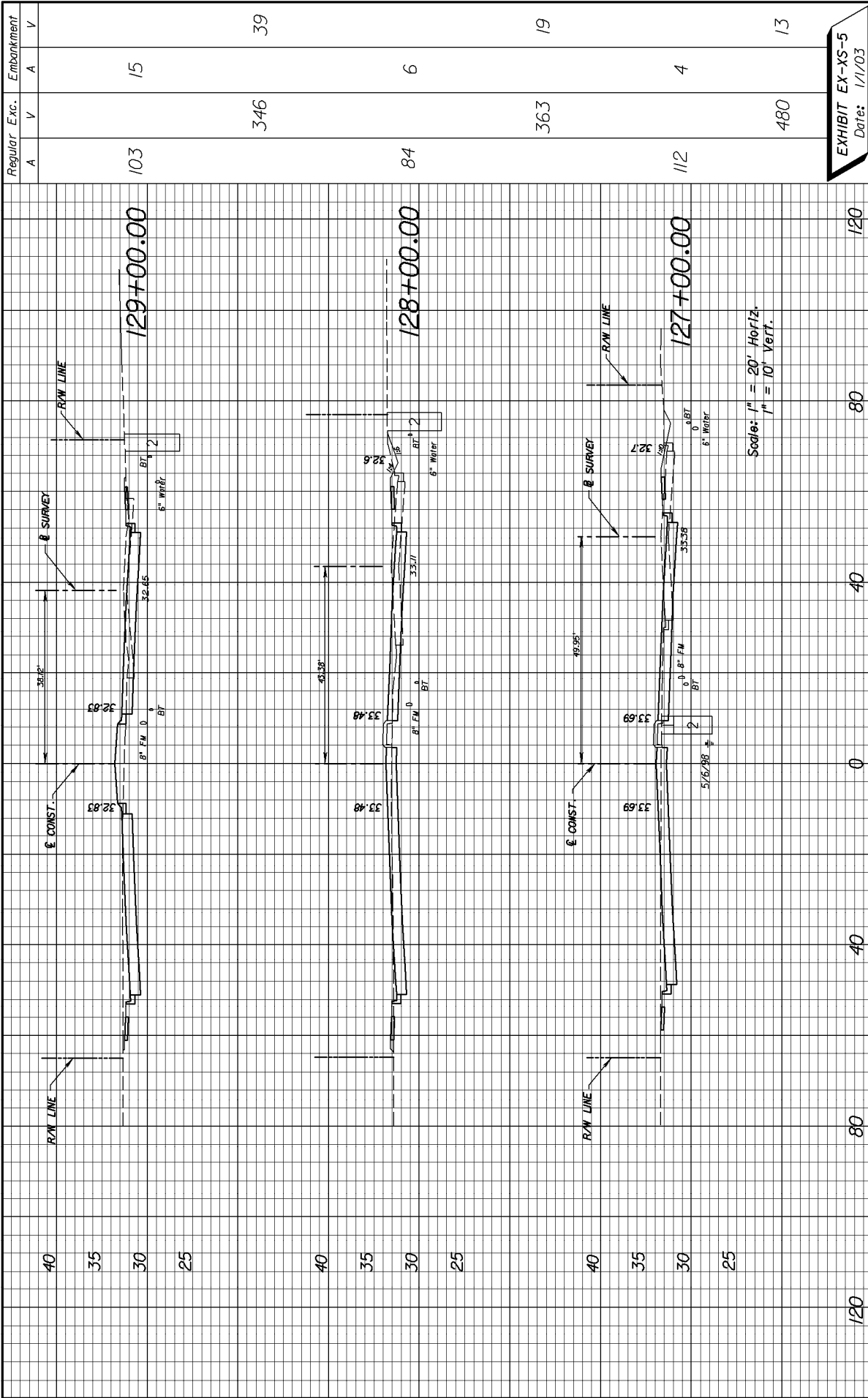
STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

HARRY P. GUMER	
P.E. LICENSE NO. 90665	
HILL & DALE ENGINEERING INC.	
P.O. BOX 6881	
TAMPA, FLORIDA 33745	
CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS	
SHEET NO.	51



Scale: 1" = 20' Horiz.  
1" = 10' Vert.

EXHIBIT EX-XS-5  
Date: 1/1/03

Regular Exc.	Embankment
A V	A V
103	15
346	39
84	6
363	19
112	4
480	13

DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

HARRY P. GILMER	
P.E. LICENSE NO. 906655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2651	
TAMPA, FLORIDA 33655	
CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS	
SHEET NO.	52

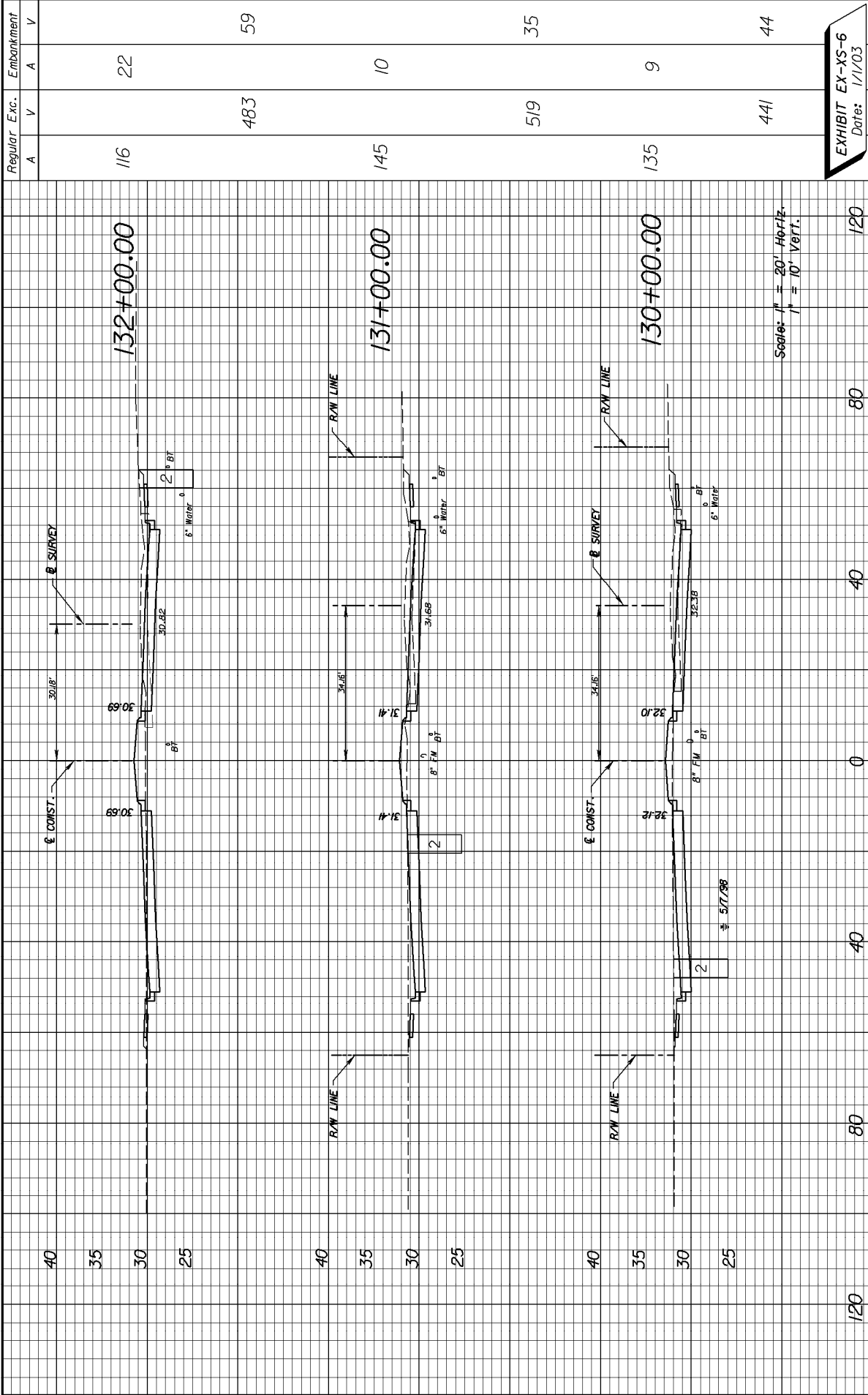


EXHIBIT EX-XS-6  
Date: 1/1/03

Regular Exc.		Embankment	
A	V	A	V
116	22	483	59
145	10	519	35
135	9	441	44

DATE	BY	DESCRIPTION

STATE OF FLORIDA	ROAD NO.	70
DEPARTMENT OF TRANSPORTATION	COUNTY	MANATEE
FINANCIAL PROJECT ID	196058-1-52-01	

HARRY P. GILMER	P.E. LICENSE NO. 906655
HILL & DALE ENGINEERING INC.	P.O. BOX 2851
TAMPA, FLORIDA 33755	CERTIFICATE OF AUTHORIZATION NO. 99966

120	80	40	0	40	80	120
-----	----	----	---	----	----	-----

CROSS SECTIONS

SHEET NO. 53

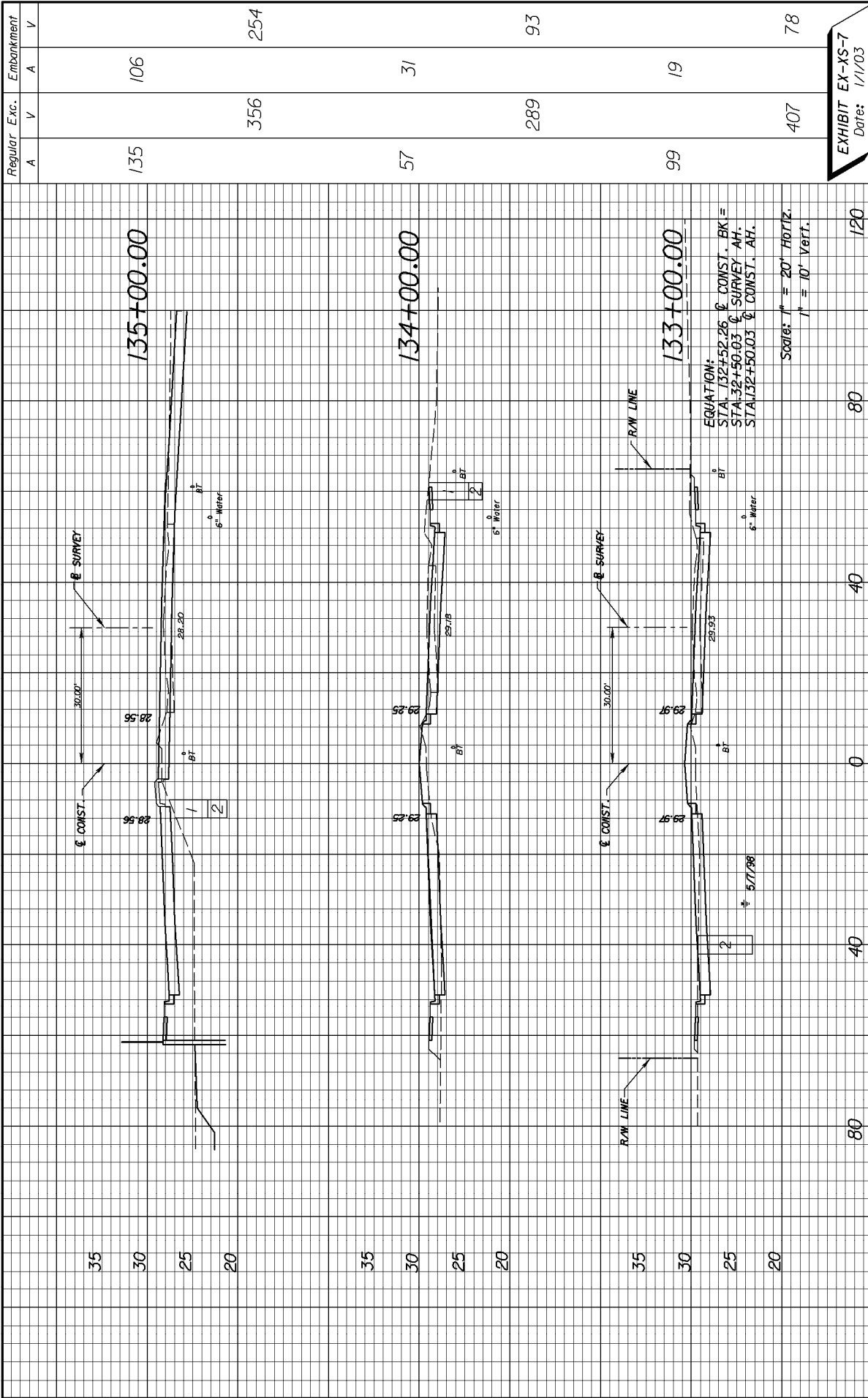


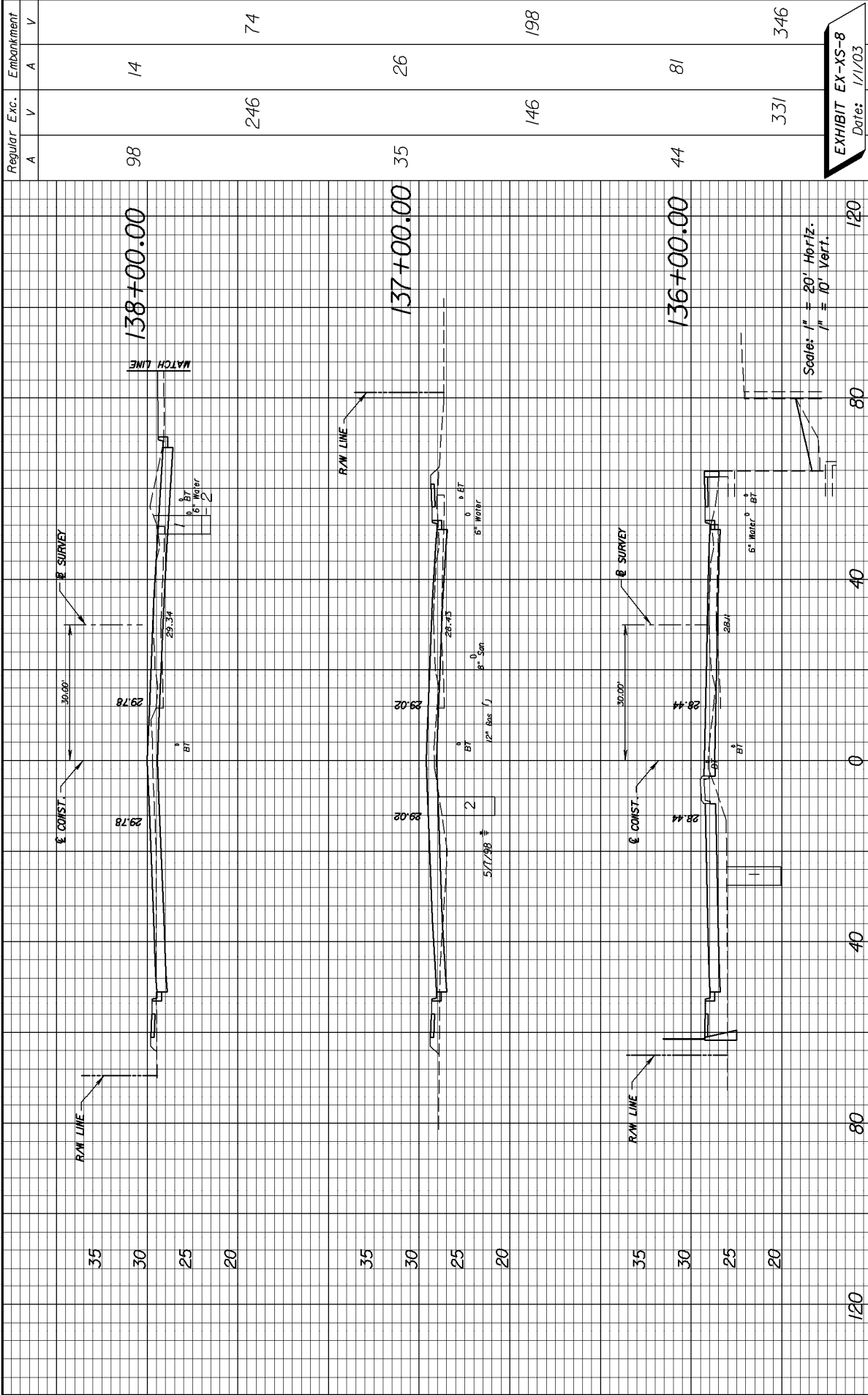
EXHIBIT EX-XS-7  
Date: 1/1/03

Regular Exc.		Embankment	
A	V	A	V
135		106	
	356		254
57		31	
	289		93
99		19	
	407		78

EQUATION:  
STA. 132+52.26 @ CONST. BK. =  
STA. 32+50.03 @ SURVEY AH.  
STA. 132+50.03 @ CONST. AH.

Scale: 1" = 20' Horiz.  
1" = 10' Vert.

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		CROSS SECTIONS		
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.		
			70	MANATEE	196058-1-52-01			
HARRY P. GILMER P.E. LICENSE NO. 90665 HILL & DALE ENGINEERING INC. P.O. BOX 2851 TAMPA, FLORIDA 33655 CERTIFICATE OF AUTHORIZATION NO. 99966								



Regular Exc.		Embankment	
A	V	A	V
98		14	
246		74	
35		26	
146		198	
44		81	
331		346	

EXHIBIT EX-XS-8  
Date: 1/1/03

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

HARRY P. GILMER	
P.E. LICENSE NO. 90665	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2851	
TAMPA, FLORIDA 33735	
CERTIFICATE OF AUTHORIZATION NO. 99866	

<b>CROSS SECTIONS</b>	
SHEET NO. 55	



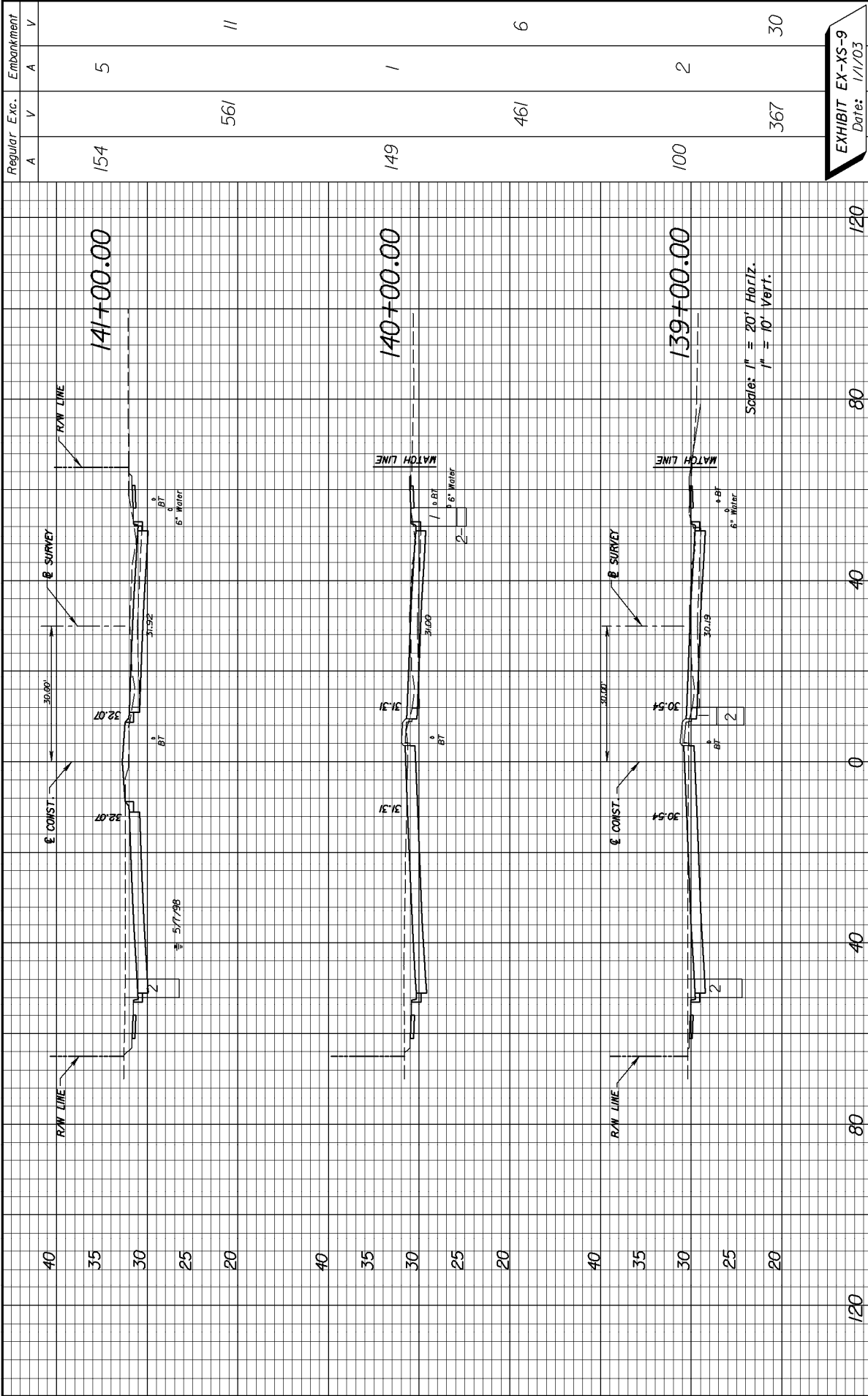


EXHIBIT EX-XS-9  
Date: 1/1/03

DATE	BY	DESCRIPTION

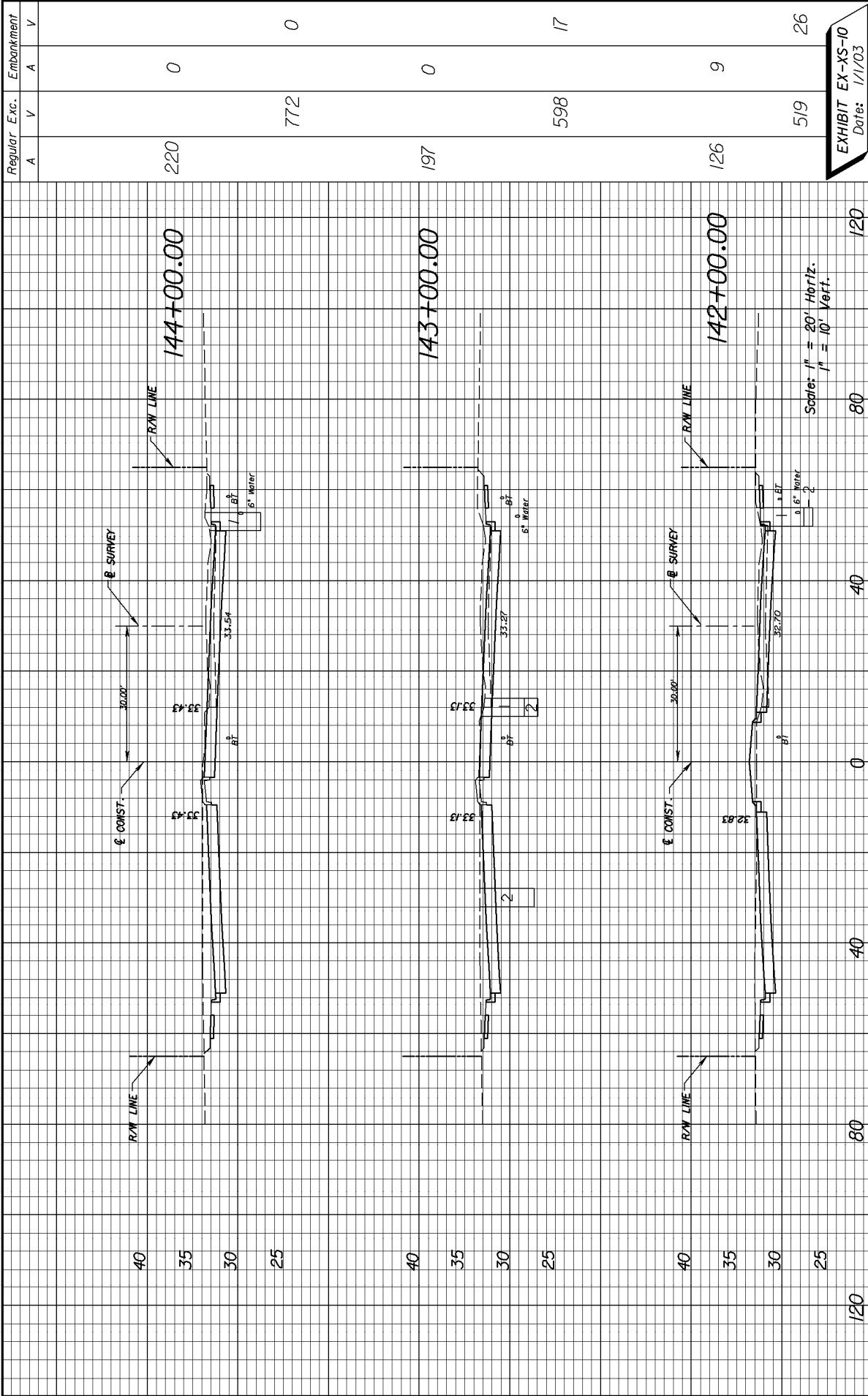
STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	MANATEE

HARRY P. GILMER	
P.E. LICENSE NO. 906655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2651	
TAMPA, FLORIDA 33655	
CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS	
SHEET NO.	56



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

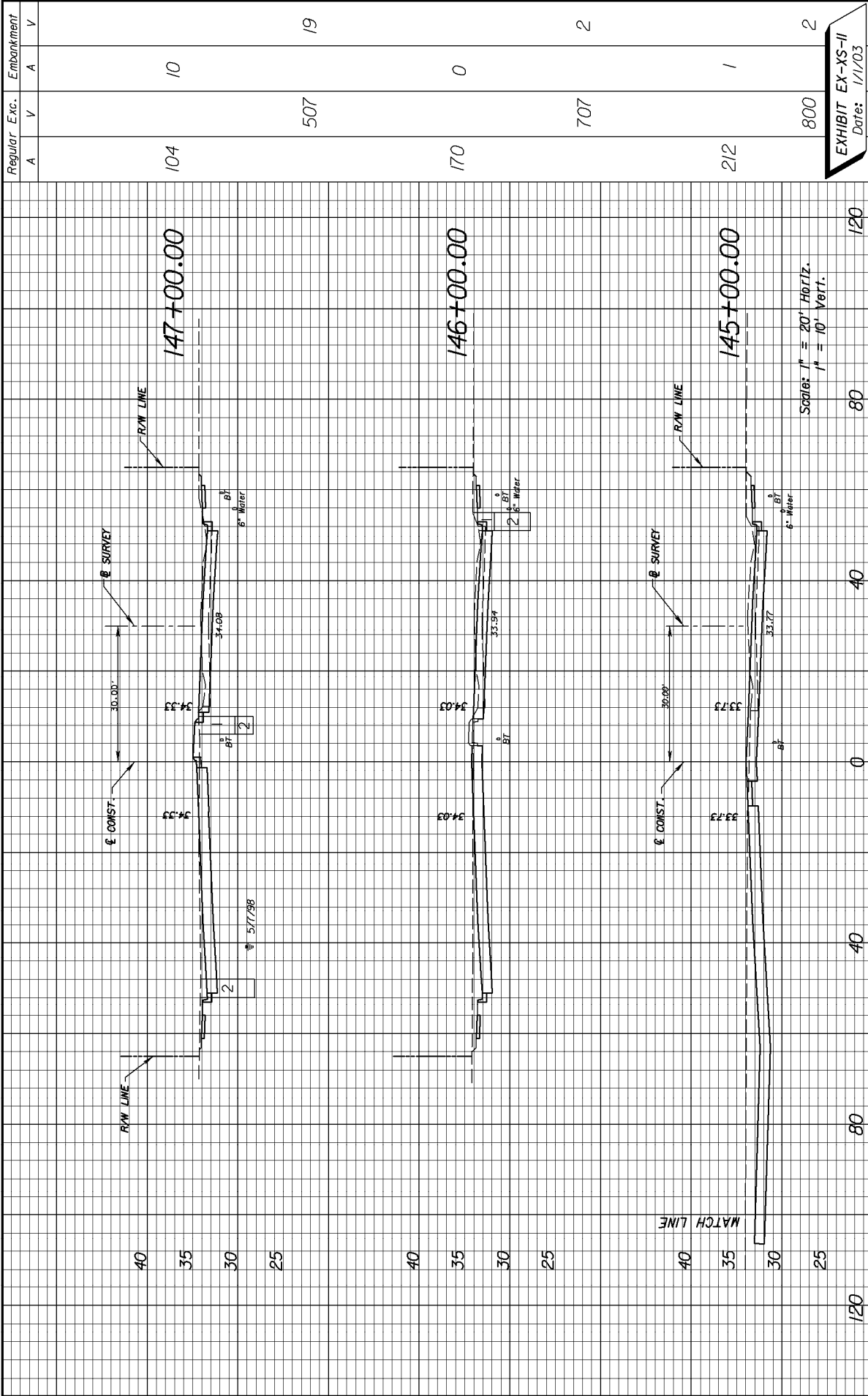
  

HARRY F. GILMER	
P.E. LICENSE NO. 90655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2851	
TAMPA, FLORIDA 33755	
CERTIFICATE OF AUTHORIZATION NO. 99966	

CROSS SECTIONS	
EXHIBIT EX-XS-10	
Date: 1/1/03	

Regular Exc.		Embankment	
A	V	A	V
220	0	0	0
197	0	772	0
126	9	598	17
519	26		



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

HARRY P. GILMER	
P.E. LICENSE NO. 906655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2851	
TAMPA, FLORIDA 33755	
CERTIFICATE OF AUTHORIZATION NO. 99966	

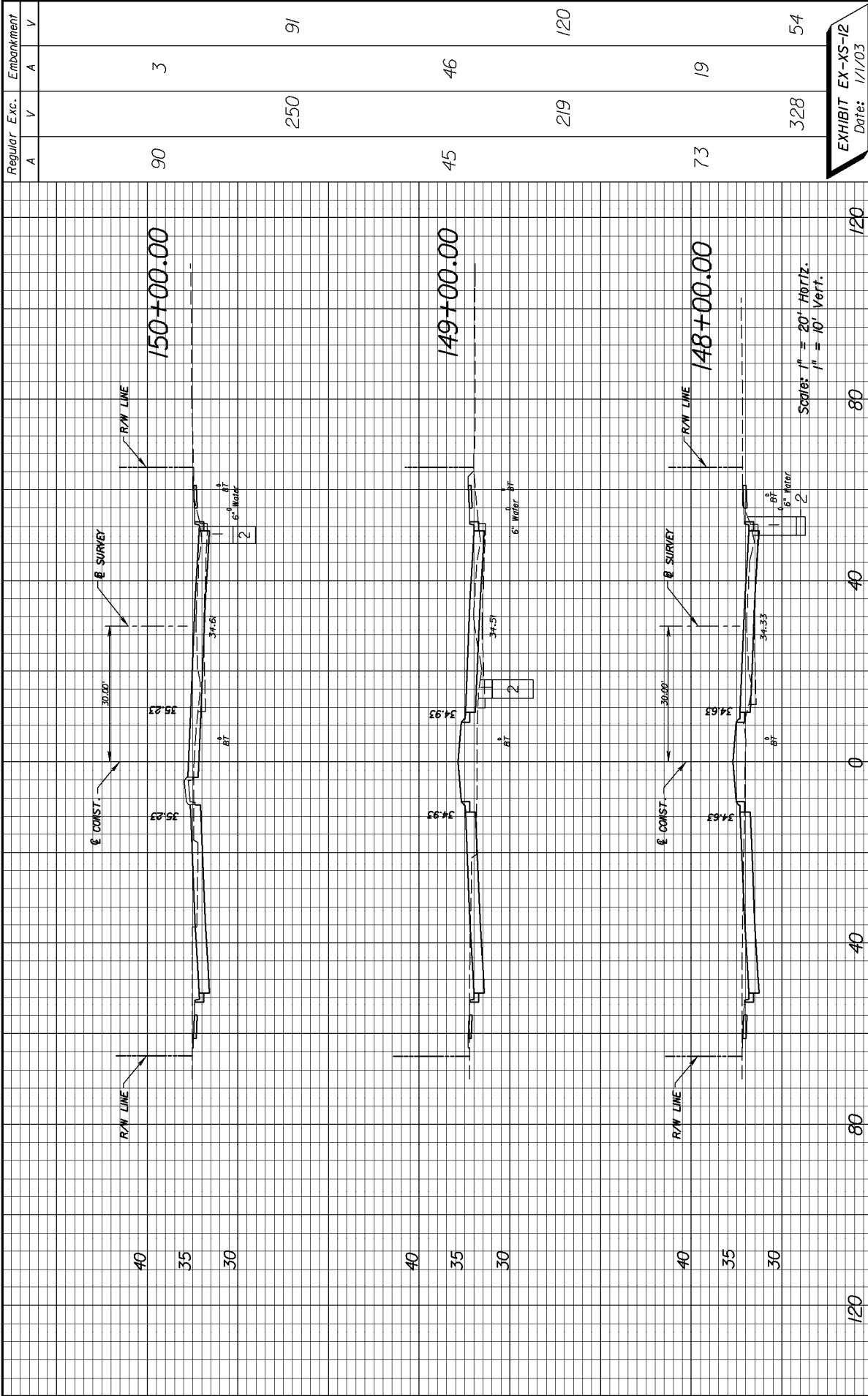
REGULAR EXC.	EMBANKMENT
A	A
V	V
104	10
507	19
170	0
707	2
212	1
800	2

EXHIBIT EX-XS-II	
Date: 1/1/03	

CROSS SECTIONS	
SHEET NO.	58



Scale: 1" = 20' Horiz.  
1" = 10' Vert.

EXHIBIT EX-XS-12  
Date: 1/1/03

Regular Exc.		Embankment	
A	V	A	V
90	3	91	3
45	46	46	46
73	19	73	19
328	54	328	54

DATE	BY	DESCRIPTION

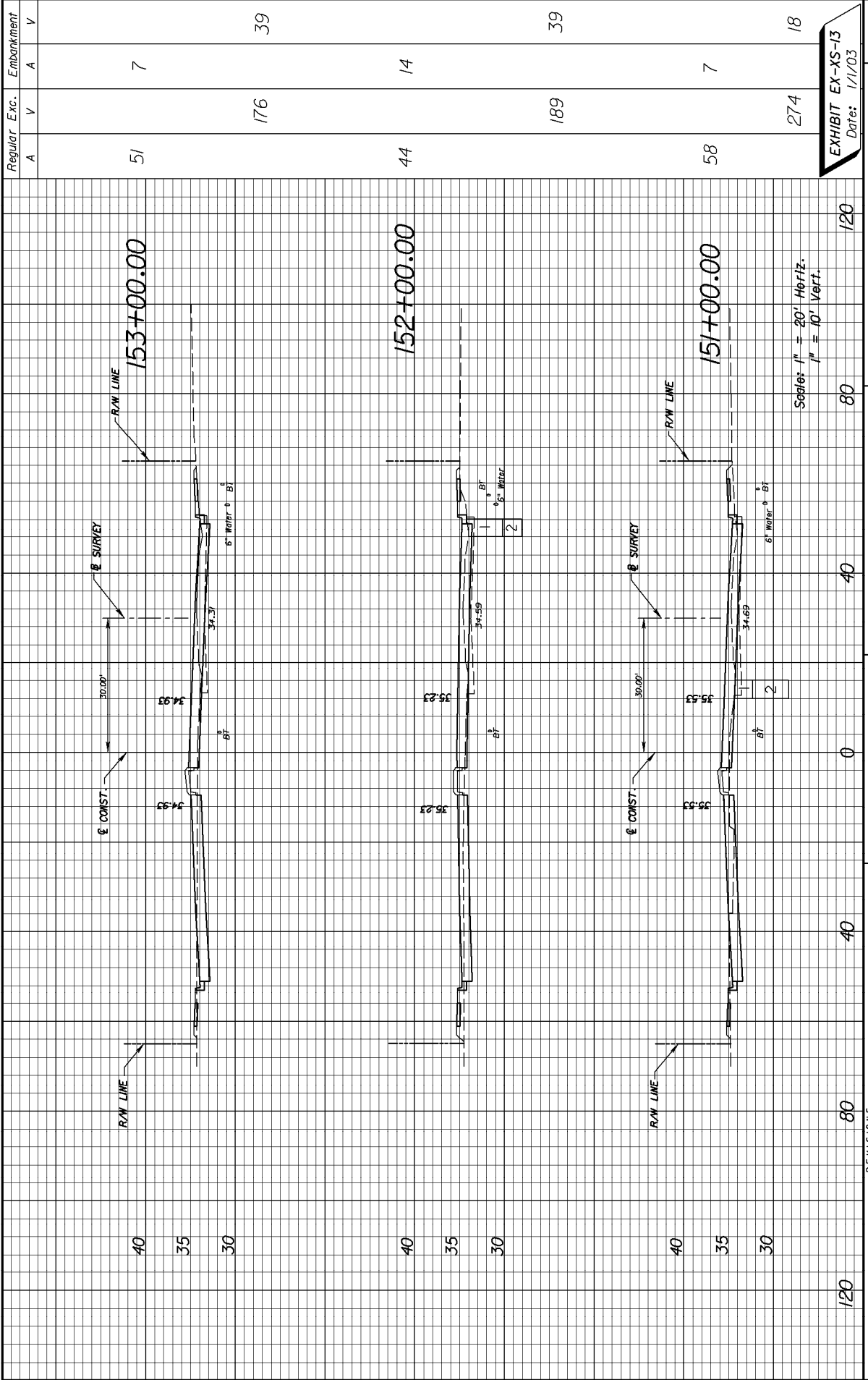
STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

HARRY P. GILMER	
P.E. LICENSE NO. 906655	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2851	
TAMPA, FLORIDA 33755	
CERTIFICATE OF AUTHORIZATION NO. 99866	

CROSS SECTIONS	
SHEET NO.	59



Scale: 1" = 20' Horiz.  
1" = 10' Vert.

EXHIBIT EX-XS-13  
Date: 1/1/03

DATE	BY	DESCRIPTION

STATE OF FLORIDA	ROAD NO.	70
DEPARTMENT OF TRANSPORTATION	COUNTY	MANATEE
FINANCIAL PROJECT ID	196058-1-52-01	

HARRY P. CULMER	
P.E. LICENSE NO. 90665	
HILL & DALE ENGINEERING INC.	
P.O. BOX 2651	
TAMPA, FLORIDA 33655	
CERTIFICATE OF AUTHORIZATION NO. 99966	

REGULAR EXC.	EMBANKMENT
A	A
V	V
5/	7
176	39
44	14
189	39
58	7
274	18

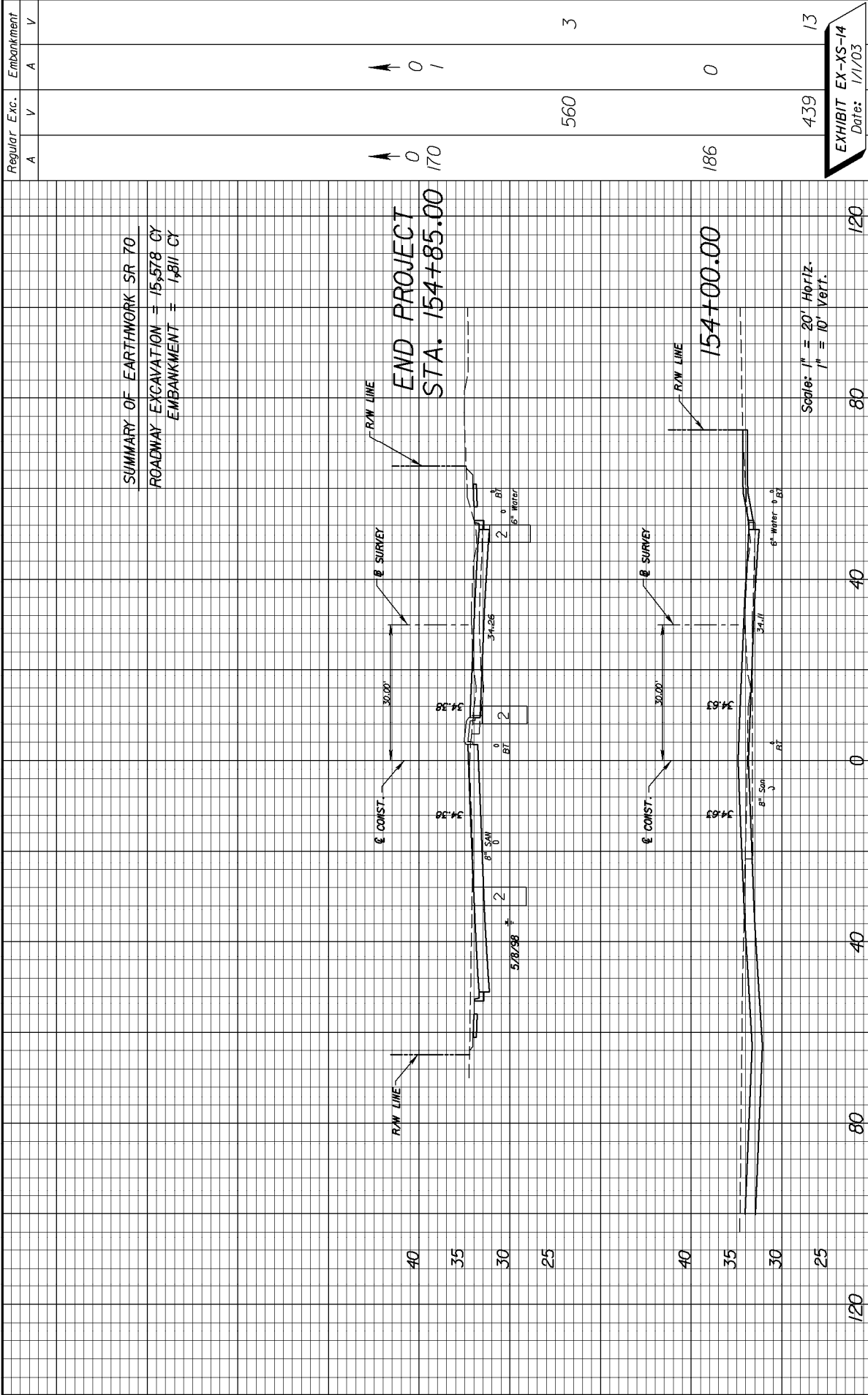
CROSS SECTIONS

REVISIONS

DATE BY DESCRIPTION

DATE BY DESCRIPTION

DATE BY DESCRIPTION



DATE	BY	DESCRIPTION

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO. 70	FINANCIAL PROJECT ID. 196058-1-52-01
COUNTY MANATEE	

HARRY P. GUMER P.E. LICENSE NO. 90655 HILL & DALE ENGINEERING INC. P.O. BOX 9851 TAMPA, FLORIDA 33755 CERTIFICATE OF AUTHORIZATION NO. 99966	
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EXHIBIT EX-XS-14 Date: 1/1/03	
----------------------------------	--

CROSS SECTIONS	
SHEET NO. 61	

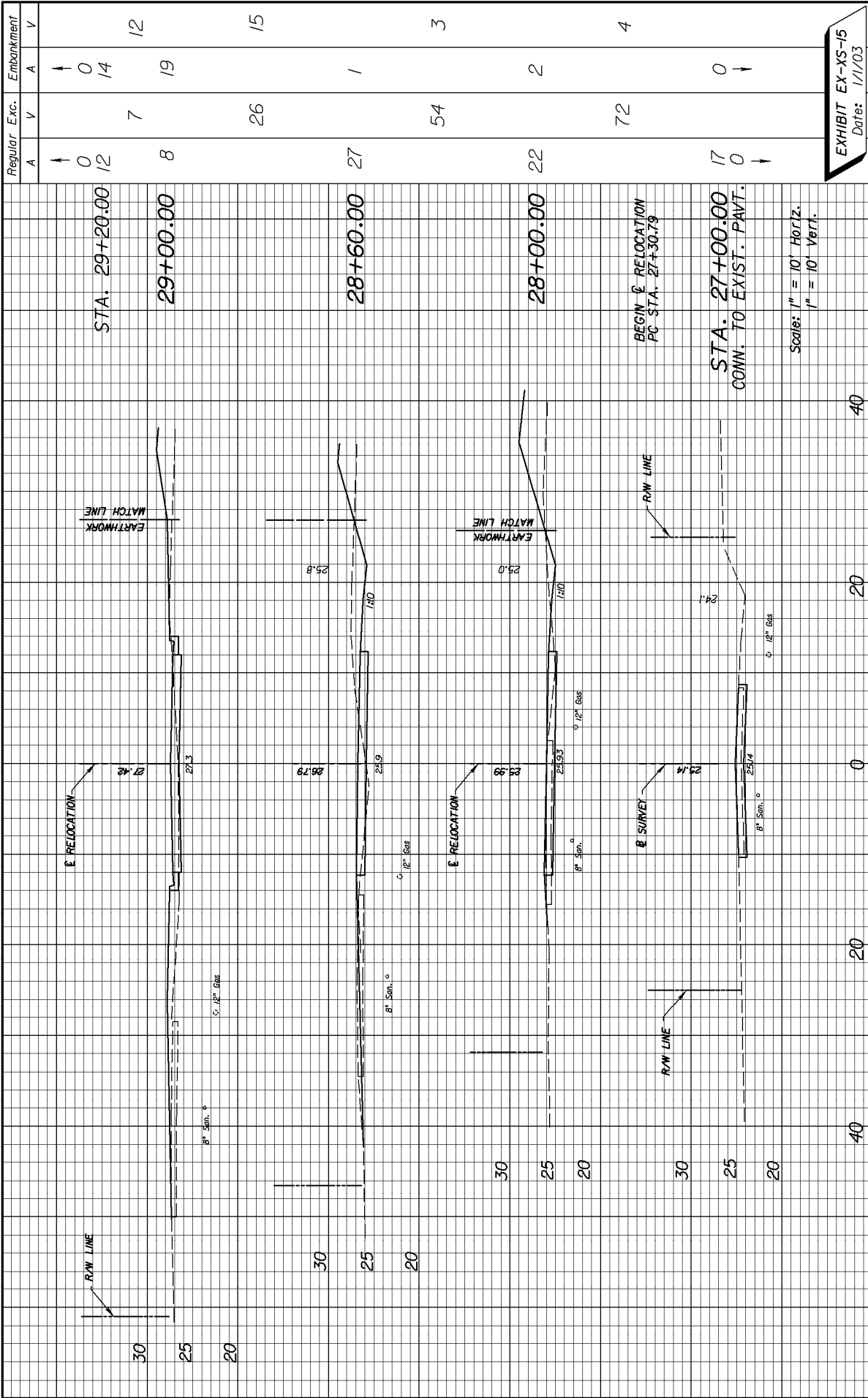


EXHIBIT EX-XS-15  
Date: 1/1/03

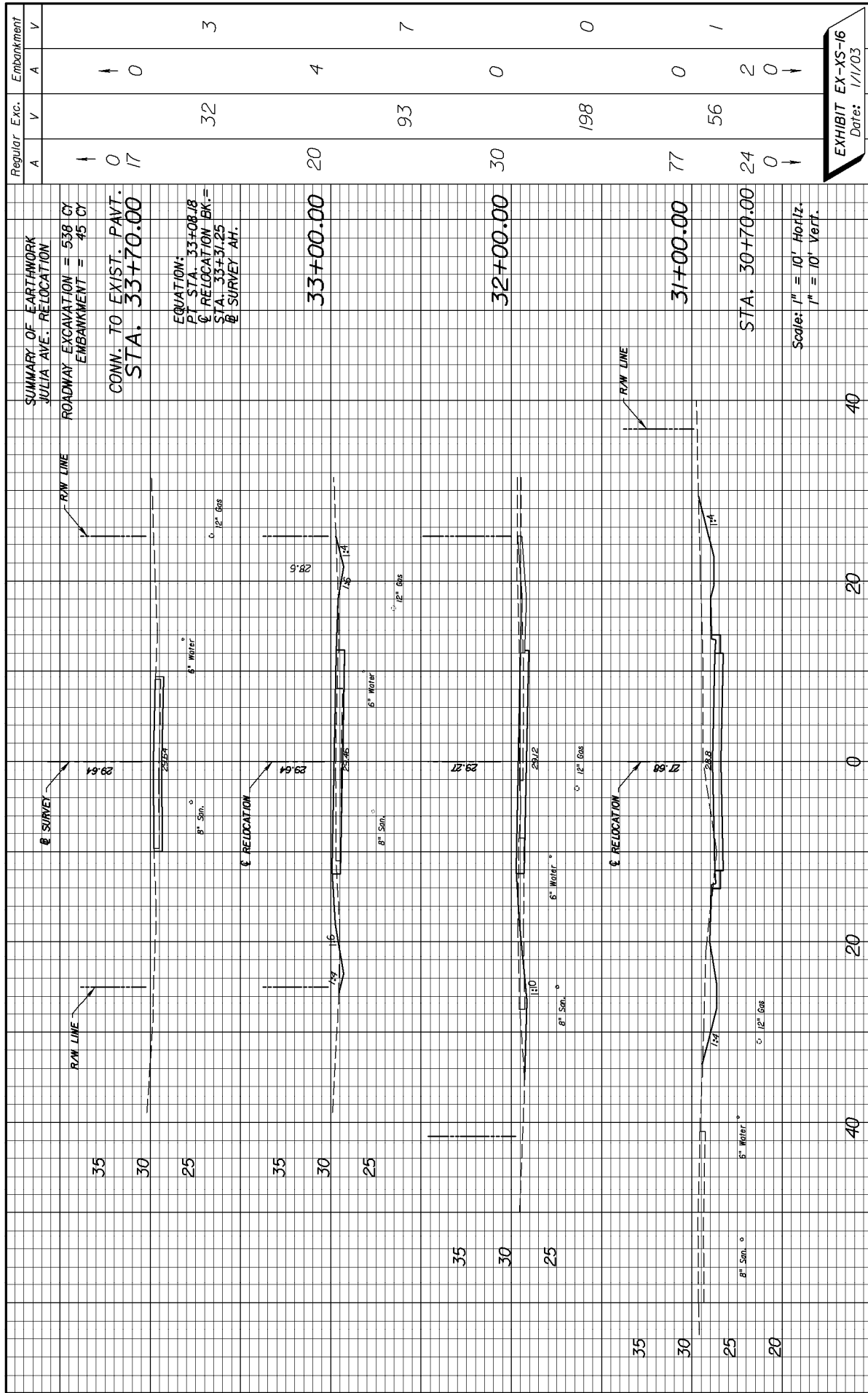
Scale: 1" = 10' Horiz.  
1" = 10' Vert.

BEGIN E RELOCATION  
PC STA. 27+30.79

STA. 27+00.00  
CONN. TO EXIST. PAVT.

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY	MANATEE	
70	MANATEE	196058-1-52-01	
HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755 PE LICENSE NO. 606655		CROSS SECTIONS JULIA AVE. RELOCATION	
		SHEET NO.	
		62	



SUMMARY OF EARTHWORK  
 JULIA AVE. RELOCATION  
 ROADWAY EXCAVATION = 538 CY  
 EMBANKMENT = 45 CY  
 CONN. TO EXIST. PAVT.  
 STA. 33+70.00

EQUATION:  
 PT STA. 33+08.18  
 @ RELOCATION BK. =  
 STA. 33+31.25  
 @ SURVEY AH.

Scale: 1" = 10' Horiz  
 1" = 10' Vert.

Regular Exc.	Embankment	
	A	V
↑ 0	↑ 0	
17	0	
32	↑ 0	
20	4	3
93	7	
30	0	
198	0	
77	0	1
24	2	
0	0	
↓ 0	↓ 0	

EXHIBIT EX-XS-16  
 Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. 70	COUNTY MANATEE	FINANCIAL PROJECT ID 196058-152-01	SHEET NO. 63
HILL & DALE ENGINEERING INC. P.O. BOX 2651 TAMPA, FLORIDA 33755 PE LICENSE NO. 608635		CROSS SECTIONS JULIA AVE. RELOCATION			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

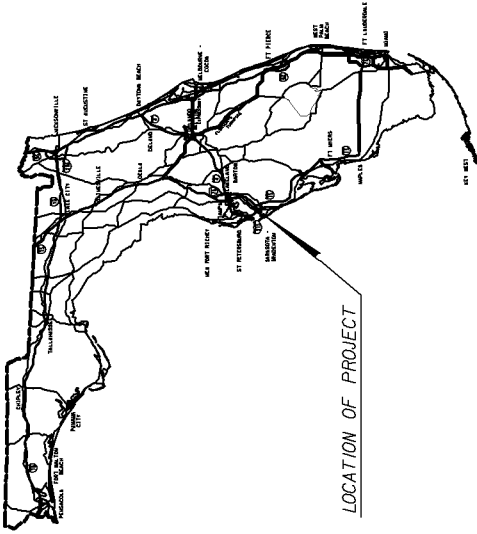
**CONTRACT PLANS**

FINANCIAL PROJECT ID 196058-1-52-01  
(FEDERAL FUNDS)  
MANATEE COUNTY (13160)  
STATE ROAD NO. 70

**SIGNING AND PAVEMENT MARKING PLANS**

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.	SHEET DESCRIPTION
S-1	KEY SHEET
S-2	TABULATION OF QUANTITIES
S-3 THRU S-8	SIGNING AND PAVEMENT MARKING SHEETS
S-9	GUIDE SIGN WORK SHEET



SIGNING AND PAVEMENT MARKING  
SHOP DRAWINGS TO BE SUBMITTED  
TO:

JOHN J. HERSHEL  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32355

PLANS PREPARED BY:  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32355  
CONTRACT NO. C-0679  
VENDOR NO. 45  
CERTIFICATE OF AUTHORIZATION NO. 98888

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

**EXHIBIT EX-S-KS**  
Date: 1/11/03

KEY SHEET REVISIONS	
DATE	DESCRIPTION

SIGNING AND PAVEMENT MARKING PLANS  
ENGINEER OF RECORD: JOHN J. HERSHEL

PE NO. : 98790

FISCAL YEAR	03	SHEET NO.	S-1
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FOOT PROJECT MANAGER: STEWART J. ERVING

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION,  
DESIGN STANDARDS  
DATED JANUARY 2002, AND  
STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE  
CONSTRUCTION, 1995 EDITION,  
AS AMENDED BY CONTRACT DOCUMENTS.

# TABULATION OF QUANTITIES

PN ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS														TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET
			S-3		S-4		S-5		S-6		S-7		S-8		PLAN	FINAL	PLAN	FINAL			
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL							
700-40-1	SIGN SINGLE POST (LESS THAN 12 SQ. FT. )	AS	9		11		9		8		9		8		9		46	46			
700-40-2	SIGN SINGLE POST (12-25 SQ. FT. )	AS		1													1	1			
700-41-0	SIGN MULTI-POST (50 SQ. FT. OR LESS)	AS		1		1		1									4	4			
705-71	TUBULAR DELINEATOR (FLEXIBLE)	EA	2			2		2									8	8			
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	EA	80		60		58		70		40		13				321	321			
710-6	DIRECTIONAL ARROWS, PAINTED	EA	9		5		9		8		6						37	37			
710-7	PAVEMENT MESSAGES, PAINTED	EA	7		7		7		4		6						31	31			
710-21	SKIP TRAFFIC STRIPE (WHITE)	GM	0.375		0.530		0.452		0.532		0.300						2.189	2.189			
710-23-61	SOLID TRAFFIC STRIPE (6") (WHITE)	NM	0.372		0.226		0.193		0.264		0.395						2.189	2.189			
710-25-121	SOLID TRAFFIC STRIPE (12") (WHITE)	LF	320		235		349		206		330						1650	1650			
710-25-241	SOLID TRAFFIC STRIPE (24") (WHITE)	LF	69		192		141		34		129						565	565			
710-24-61	SOLID TRAFFIC STRIPE (6") (YELLOW)	NM	0.246		0.343		0.161		0.280		0.221						1.298	1.298			
710-30	REFLECTIVE PAINT (ISLAND NOSE) (YELLOW)	SY	2.7				2.7		3.6		2.7						11.7	11.7			

EXHIBIT EX-S-TQ-1  
Date: 1/11/03

DATE		BY		DESCRIPTION		REVISIONS	
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01			
JOHN J. HERSHEL PE LICENSE NO. 96780 HERSHEL ENGINEERING INC. P.O. BOX 1825 CLEWISTON FLA. 32335 CERTIFICATE OF AUTHORIZATION NO. 96888				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01			
TABULATION OF QUANTITIES							SHEET NO. S-2

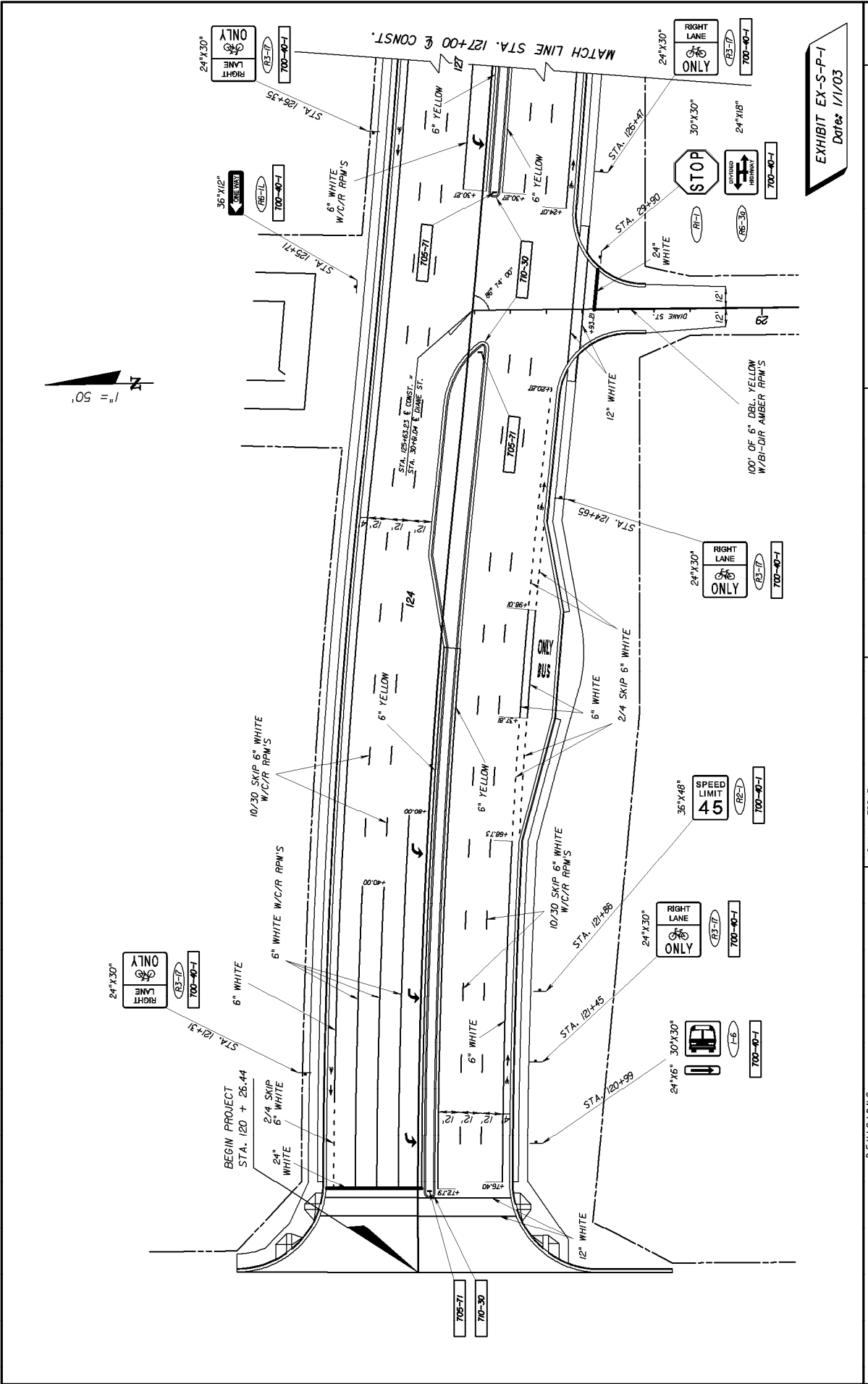
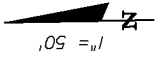
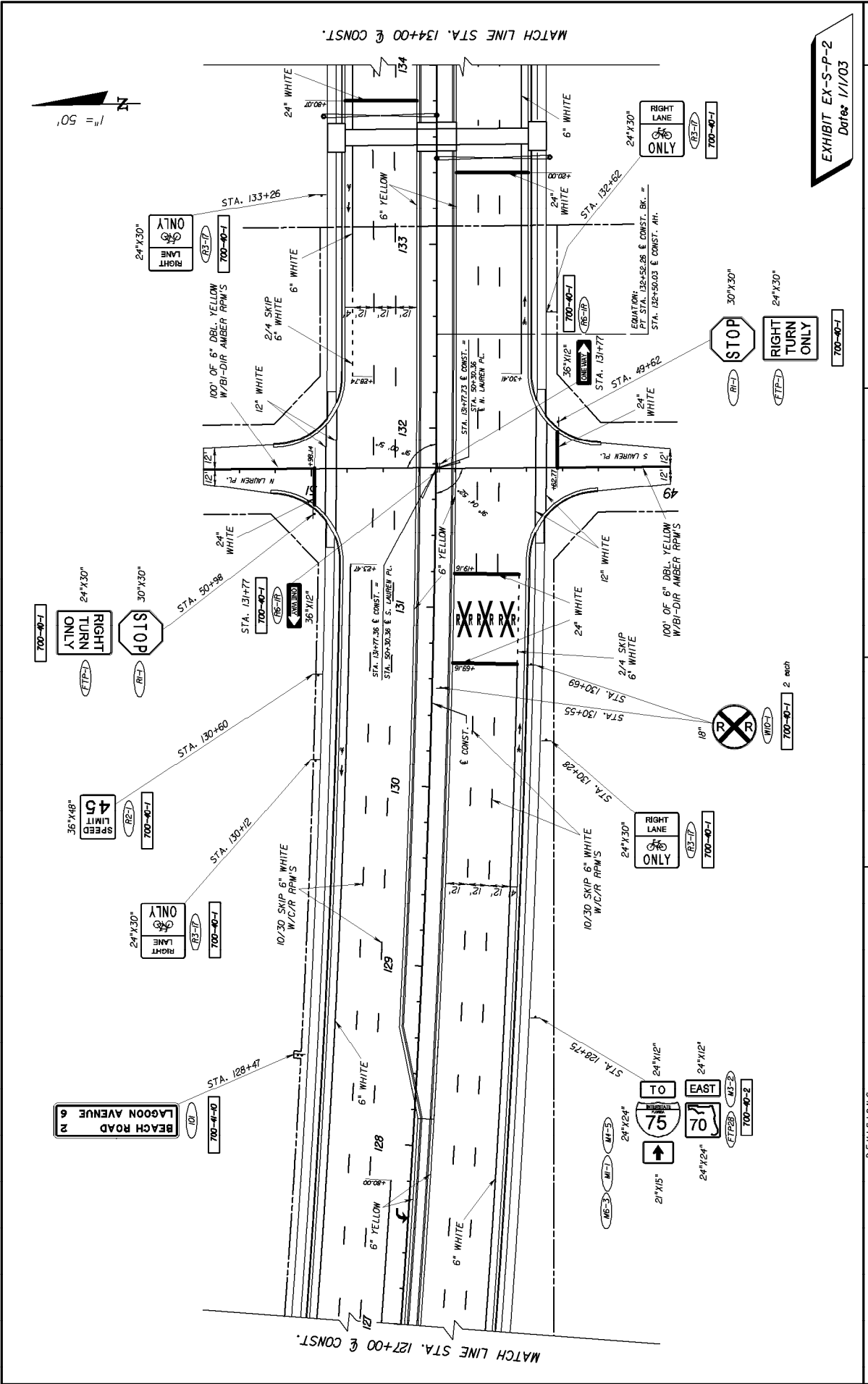


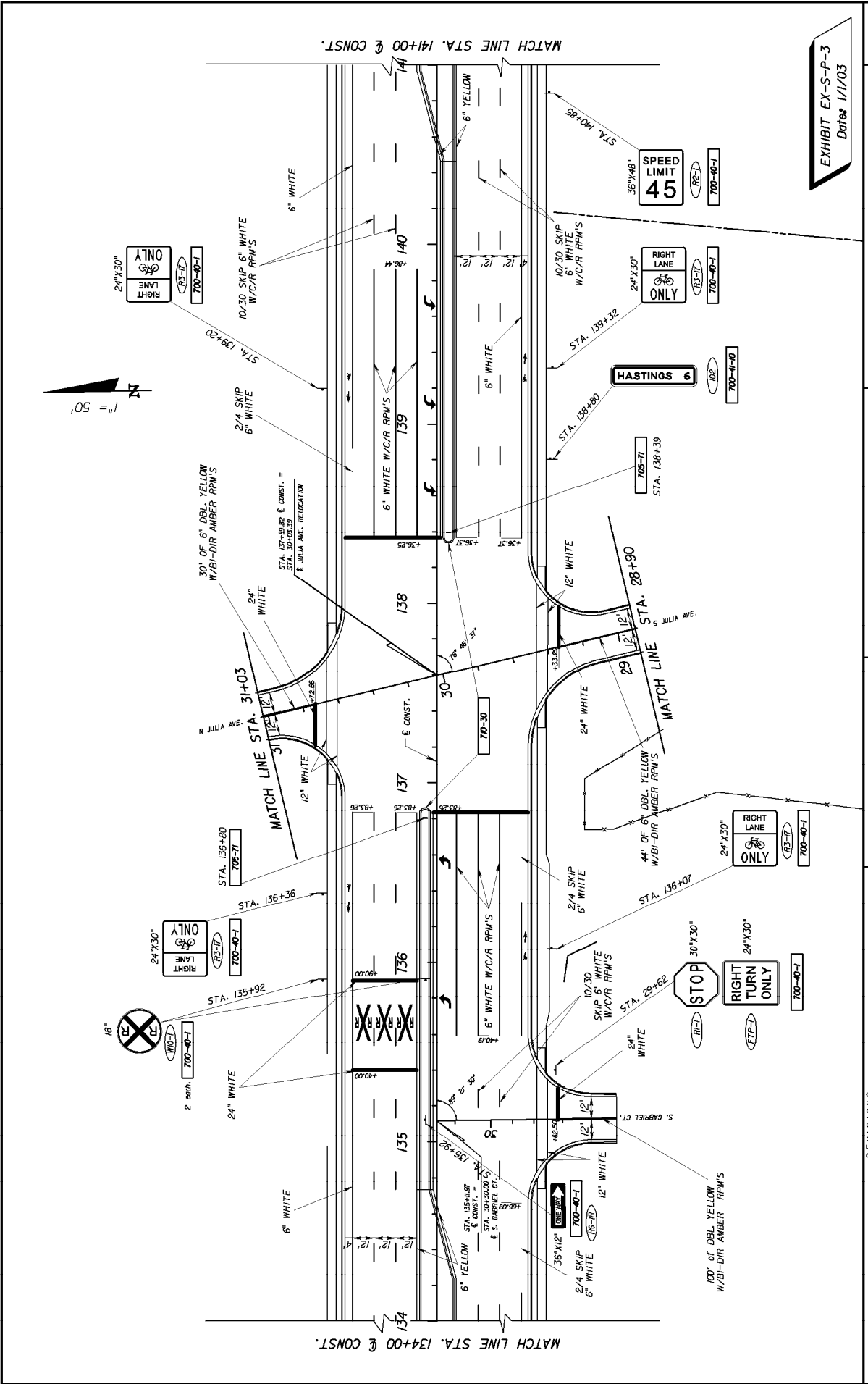
EXHIBIT EX-S-P-1  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
			70	MANATEE	70	MANATEE	196058-1-52-01
		JOHN J. HERSHEL PE LICENSE NO. 96790 HERSHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON FLA. 32335 CERTIFICATE OF AUTHORIZATION NO. 96888					
		SIGNING AND PAVEMENT MARKINGS Date: 1/1/03					
		SHEET NO. S-3					



**EXHIBIT EX-S-P-2**  
Date: 1/1/03

DATE		DESCRIPTION		REVISIONS	
JOHN J. HERSHEL PE LICENSE NO. 96790 HERSHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON FLA. 32335 CERTIFICATE OF AUTHORIZATION NO. 98888					
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
COUNTY		ROAD NO.		COUNTY	
70		MANATEE		196058-1-52-01	
<b>SIGNING AND PAVEMENT MARKINGS</b>					
SHEET NO. S-4					



REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
COUNTY		FINANCIAL PROJECT ID	
70	MANATEE	196058-1-52-01	
JOHN J. HERSHEL PE LICENSE NO. 96790 HERSHEL ENGINEERS INC. P.O. BOX 8825 CLEWISTON FLA. 32385 CERTIFICATE OF AUTHORIZATION NO. 96888			

**SIGNING AND PAVEMENT MARKINGS**

SHEET NO. S-5

EXHIBIT EX-S-P-3  
Date: 1/1/03

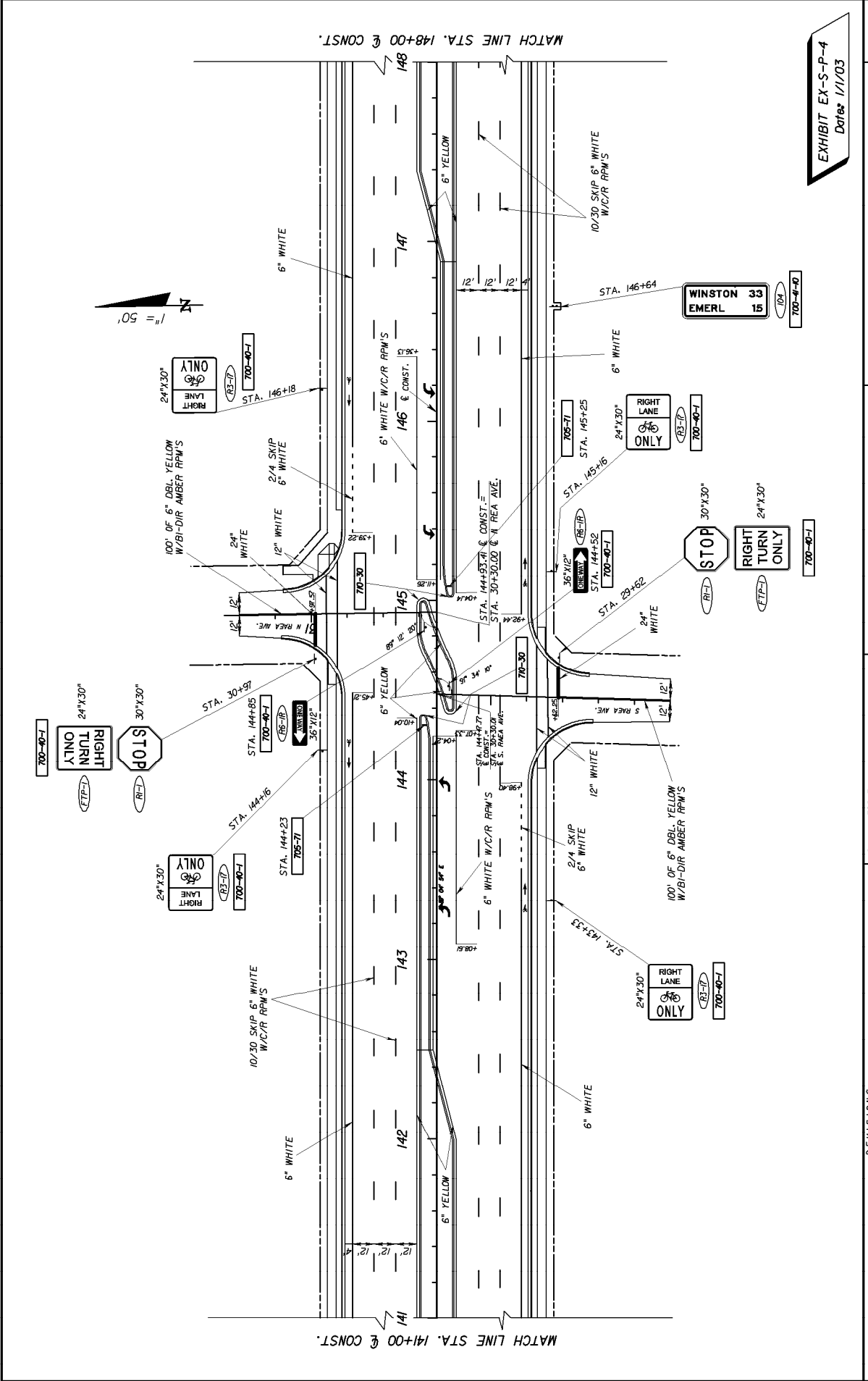


EXHIBIT EX-S-P-4  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

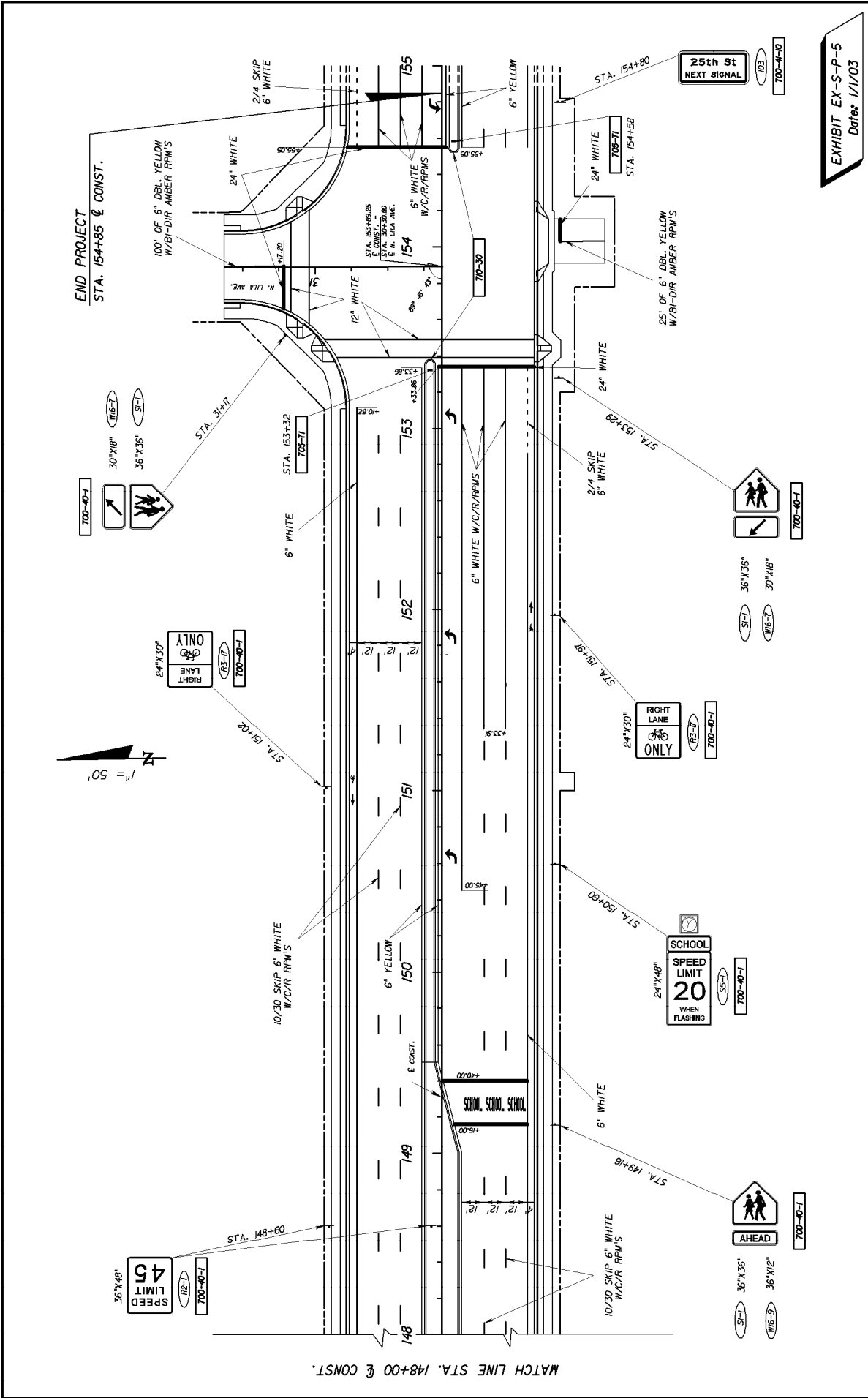
  

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.	COUNTY		
70	MANATEE	196058-1-52-01	

JOHN J. MERSHEL PE LICENSE NO. 967901 MERSHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON FLA. 32355 CERTIFICATE OF AUTHORIZATION NO. 98898		SHEET NO. S-6
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**SIGNING AND PAVEMENT MARKINGS**



REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

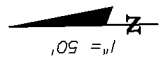
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO. 70		COUNTY MANATEE	
FINANCIAL PROJECT ID 196058-1-52-01			

SIGNING AND PAVEMENT MARKINGS		SHEET NO. S-7	
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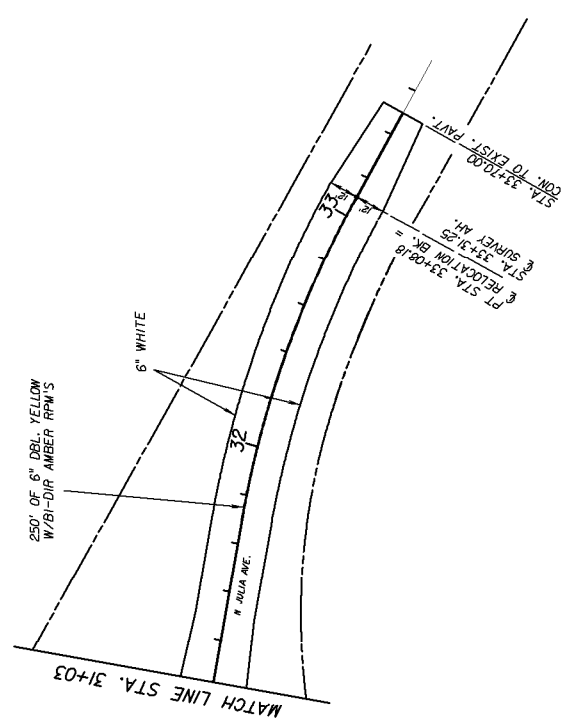
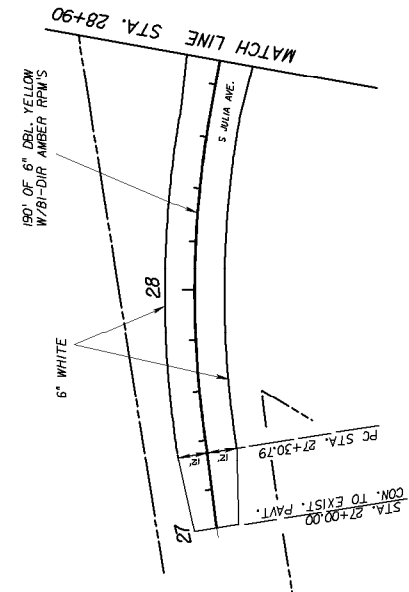
EXHIBIT EX-S-P-5  
Date: 1/1/03

JOHN J. HERSHEL  
PE LICENSE NO. 967901  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32335  
CERTIFICATE OF AUTHORIZATION NO. 99888



END PROJECT  
STA. 154+85 @ CONST.

MATCH LINE STA. 148+00 @ CONST.



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G5-23.003, F.A.C.

**EXHIBIT EX-S-P-6**  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION	
ROAD NO. 70		COUNTY MANATEE	
FINANCIAL PROJECT ID 196058-1-52-01			

JOHN J. HERSHEL PE LICENSE NO. 967901 HERSHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON FLA. 32335 CERTIFICATE OF AUTHORIZATION NO. 99688	<b>SIGNING AND PAVEMENT MARKINGS</b> SHEET NO. S-8
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**SIGN NUMBER** 101  
**QUANTITY** 1  
**WIDTH** 6'-0"  
**HEIGHT** 2'-6"  
**BORDER WIDTH** 0.5"  
**BORDER RADI I** 2"  
**BACKGROUND COLOR** WHITE  
**LEGEND & BORDER COLOR** BLACK  
**STATION(S)** 128+47.1  
**SPACING** 12.5 FT

STATION	CLEARANCE NUMBER	EDGE OF LANE	STREET	COLUMN SIZE	AVERAGE LENGTH
101	11.7	FT	3LB	UC	12.5 FT

COPY	B	E	A	C	H	R	D	L
SPACE	5.4	10.9	15.3	21.4	26.6	36.6	42.1	40.7
COPY	2	L						
SPACE	62.6		4.1					
COPY	L	A	B	D	O	N	A	V
SPACE	5.4	9.4	15.6	20.7	26.1	31.7	41.8	47.2
COPY	5	L						51.1
SPACE	62.6		4.1					
COPY								
SPACE								
COPY								
SPACE								

**SIGN NUMBER** 102  
**QUANTITY** 1  
**WIDTH** 5'-0"  
**HEIGHT** 1'-6"  
**BORDER WIDTH** 0.5"  
**BORDER RADI I** 2"  
**BACKGROUND COLOR** WHITE  
**LEGEND & BORDER COLOR** BLACK  
**STATION(S)** 138+90.7  
**SPACING** 12.5 FT

STATION	CLEARANCE NUMBER	EDGE OF LANE	STREET	COLUMN SIZE	AVERAGE LENGTH
102	10.6	5 FT	3LB	UC	12.5 FT

COPY	H	A	S	T	J	N	G	S	L
SPACE	5.8	11.1	17.1	22.3	27.1	29.4	34.9	40.1	38.3
COPY	6	L							
SPACE	50.2		4.1						
COPY									
SPACE									
COPY									
SPACE									
COPY									
SPACE									

**SIGN NUMBER** 103  
**QUANTITY** 1  
**WIDTH** 4'-6"  
**HEIGHT** 2'-0"  
**BORDER WIDTH** 0.5"  
**BORDER RADI I** 2"  
**BACKGROUND COLOR** WHITE  
**LEGEND & BORDER COLOR** BLACK  
**STATION(S)** 154+80.7  
**SPACING** 12 FT

STATION	CLEARANCE NUMBER	EDGE OF LANE	STREET	COLUMN SIZE	AVERAGE LENGTH
103	11.7	FT	2.5UC		12 FT

COPY	2	5	T	H	L
SPACE	4.5	10.8	21.6	26.5	29.9
COPY	5	L			
SPACE	40.5	46.5	9.1		
COPY	N	E	X	T	S
SPACE	4.5	9	13.1	17.2	26.3
COPY					30.8
SPACE					32.9
COPY					37.5
SPACE					41.7
COPY					46.5
SPACE					45
COPY					
SPACE					
COPY					
SPACE					

**SIGN NUMBER** 104  
**QUANTITY** 1  
**WIDTH** 5'-0"  
**HEIGHT** 2'-6"  
**BORDER WIDTH** 0.5"  
**BORDER RADI I** 2"  
**BACKGROUND COLOR** WHITE  
**LEGEND & BORDER COLOR** BLACK  
**STATION(S)** 146+64.7  
**SPACING** 12.5 FT

STATION	CLEARANCE NUMBER	EDGE OF LANE	STREET	COLUMN SIZE	AVERAGE LENGTH
104	11.6	FT	2.5 UC		12.5 FT

COPY	W	I	N	S	T	O	N	L
SPACE	5.5	11.9	14.2	19.7	24.9	29.7	35.3	33.9
COPY	3	3	L					
SPACE	45.3	50.5	9.2					
COPY	E	L	M	E	R			
SPACE	5.5	10.3	15.1	21.1	25.9	24.5		
COPY	1	5	L					
SPACE	47.6	50.5	7					
COPY								
SPACE								
COPY								
SPACE								

DATE	BY	DESCRIPTION

STATE OF FLORIDA	DEPARTMENT OF TRANSPORTATION
ROAD NO.	COUNTY
70	MANATEE
FINANCIAL PROJECT ID	196058-1-52-01

JOHN J. HERSHEL  
 PE LICENSE NO. 96790  
 HERSHEL ENGINEERING INC.  
 P.O. BOX 4825  
 CLEWISTON FLA. 32385  
 CERTIFICATE OF AUTHORIZATION NO. 96888

**GUIDE SIGN WORK SHEET**  
 EXHIBIT EX-S-65-1  
 Dates: 1/1/03

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

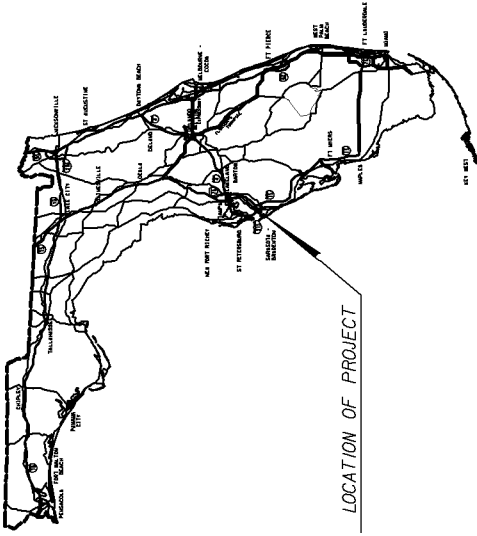
**CONTRACT PLANS**

FINANCIAL PROJECT ID 196058-1-52-01  
(FEDERAL FUNDS)  
MANATEE COUNTY (13160)  
STATE ROAD NO. 70

**SIGNALIZATION PLANS**

INDEX OF SIGNALIZATION PLANS

SHEET NO.	SHEET DESCRIPTION
T-1	KEY SHEET
T-2	TABULATION OF QUANTITIES
T-3 & T-4	SIGNALIZATION PLAN SHEETS
T-5	MAST ARM TABULATION SHEET



LOCATION OF PROJECT

SIGNALIZATION SHOP DRAWINGS  
TO BE SUBMITTED TO:

JEREMY S. HERSHEL  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32335

PLANS PREPARED BY:

HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32335  
CONTRACT NO. C-0679  
VENDOR NO. 45  
CERTIFICATE OF AUTHORIZATION NO. 96888

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

**EXHIBIT EX-T-KS**  
Date: 1/11/03

KEY SHEET REVISIONS	
DATE	DESCRIPTION

SIGNALIZATION PLANS  
ENGINEER OF RECORD: JEREMY S. HERSHEL

PE NO. : 96790

FISCAL YEAR	03	SHEET NO.	T-1
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DOT PROJECT MANAGER: STEWART J. ERVING

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION,  
DESIGN STANDARDS  
DATED JANUARY 2000, AND  
STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE  
CONSTRUCTION, 1994 EDITION,  
AS AMENDED BY CONTRACT DOCUMENTS.

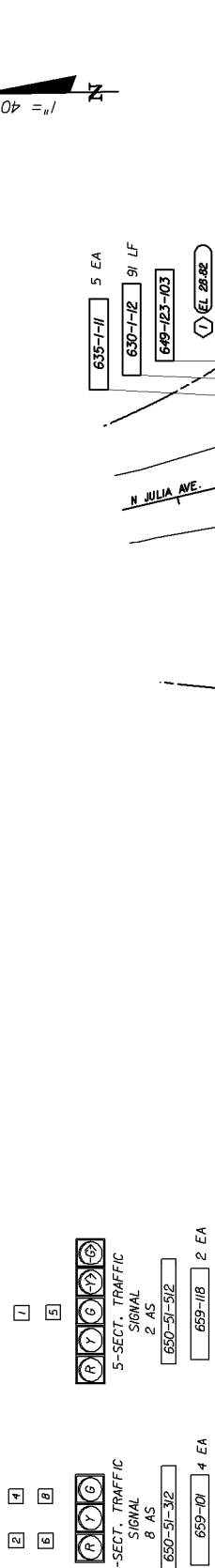
# TABULATION OF QUANTITIES

PN ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET		GRAND TOTAL		REF. SHEET	
			T-3			T-4			T-4			T-4			PLAN	FINAL	PLAN	FINAL		
			PLAN	FINAL	1084	PLAN	FINAL	1084	PLAN	FINAL	1084	PLAN	FINAL	1084						PLAN
630-1-12	CONDUIT (UNDERGROUND)	LF	627																	
630-1-13	CONDUIT (UNDER PAVEMENT)	LF	207																	
632-2-1	SIGNAL CABLE	PI	1																	
635-1-11	PULL AND JUNCTION BOXES	EA	10																	
639-1-22	ELECTRICAL POWER SERVICE	AS	1																	
639-2-1	ELECTRICAL SERVICE WIRE	LF	23																	
641-4-112	CONCRETE STRAIN POLE	EA	1																	
649-11-001	MAST ARM ASSEMBLY	EA	1																	
649-112-002	MAST ARM ASSEMBLY	EA																		
649-113-003	MAST ARM ASSEMBLY	EA	1																	
649-114-004	MAST ARM ASSEMBLY	EA	1																	
649-123-103	MAST ARM ASSEMBLY	EA	1																	
650-51-312	TRAFFIC SIGNAL (3-SECTION)	AS	8																	
650-51-512	TRAFFIC SIGNAL (5-SECTION)	AS	2																	
653-71	PEDESTRIAN SIGNALS	AS	2																	
653-72	PEDESTRIAN SIGNALS	AS	1																	
659-101	SIGNAL HEAD AUXILIARIES	EA	4																	
659-118	SIGNAL HEAD AUXILIARIES	EA	2																	
660-1-103	INDUCTIVE LOOP DETECTOR (2 CHANNEL)	EA	6																	
660-2-101	LOOP ASSEMBLY (TYPE A)	AS	6																	
660-2-106	LOOP ASSEMBLY (TYPE F)	AS	4																	
665-11	PEDESTRIAN DETECTOR	EA	4																	
670-5-110	ACTUATED SOLID STATE CONTROLLER ASSEMBLY	AS	1																	
700-48-18	SIGN PANEL	EA	4																	

EXHIBIT EX-T-7Q-1  
Date: 1/1/03

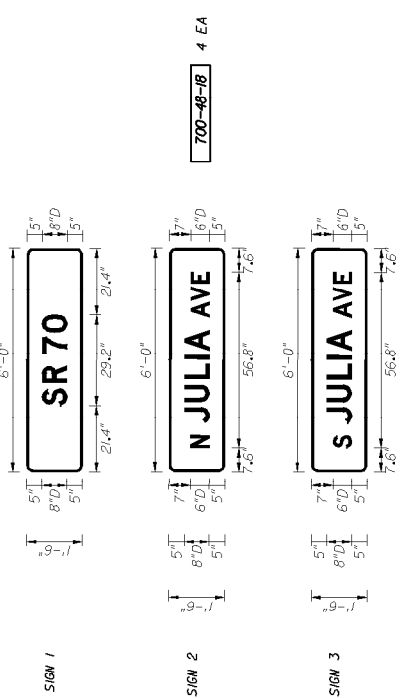
DATE		BY		REVISIONS		DESCRIPTION	
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION				ROAD NO. 70			
COUNTY MANATEE				FINANCIAL PROJECT ID 196058-1-52-01			
JOHN J. HERSHEL PE LICENSE NO. 96790 HERSHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON FLA. 32315 CERTIFICATE OF AUTHORIZATION NO. 98888				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01			
<b>TABULATION OF QUANTITIES</b>							
SHEET NO. T-2							

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 6815-23.003, F.A.C.



SIGNAL HEADS 1 AND 6, 2 AND 5 REQUIRE BACKPLATES  
**SIGNAL HEAD DETAIL**  
**CONTROLLER OPERATIONS:**

- MAJOR STREET IS SR. 70 MOVEMENTS 2 AND 6A, AND MINOR STREET IS JULIA AVE., MOVEMENTS 4 AND 8.
- STANDARD SIGNAL OPERATING PLAN NO. 7.



CONTROLLER TIMINGS							
MOVEMENT NUMBER	1	2	3	4	5	6	7
MINIMUM GREEN	5	5	4	5	5	6	7
EXTENSION	3	5	3	3	3	5	3
MAXIMUM GREEN 1	20	30	15	20	30	15	15
MAXIMUM GREEN 2	4	4	4	4	4	4	4
YELLOW CLEARANCE	4	4	4	4	4	4	4
ALL RED	1.5	1.5	1.5	1.5	1.5	1.5	1.5
RECALL							

DETECTORS FOR LOOPS			
LOOP	NO. OF NEW DETS.	NO. OF EXIST. DETS.	DELAY TIME (SEC.)
L-2	3	1	
L-5	1	1	
L-4	1	1	
L-6	3	1	
L-1	1	1	
L-8	1	1	

DATE: \_\_\_\_\_ BY: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_ DATE: \_\_\_\_\_ BY: \_\_\_\_\_

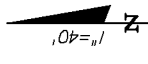
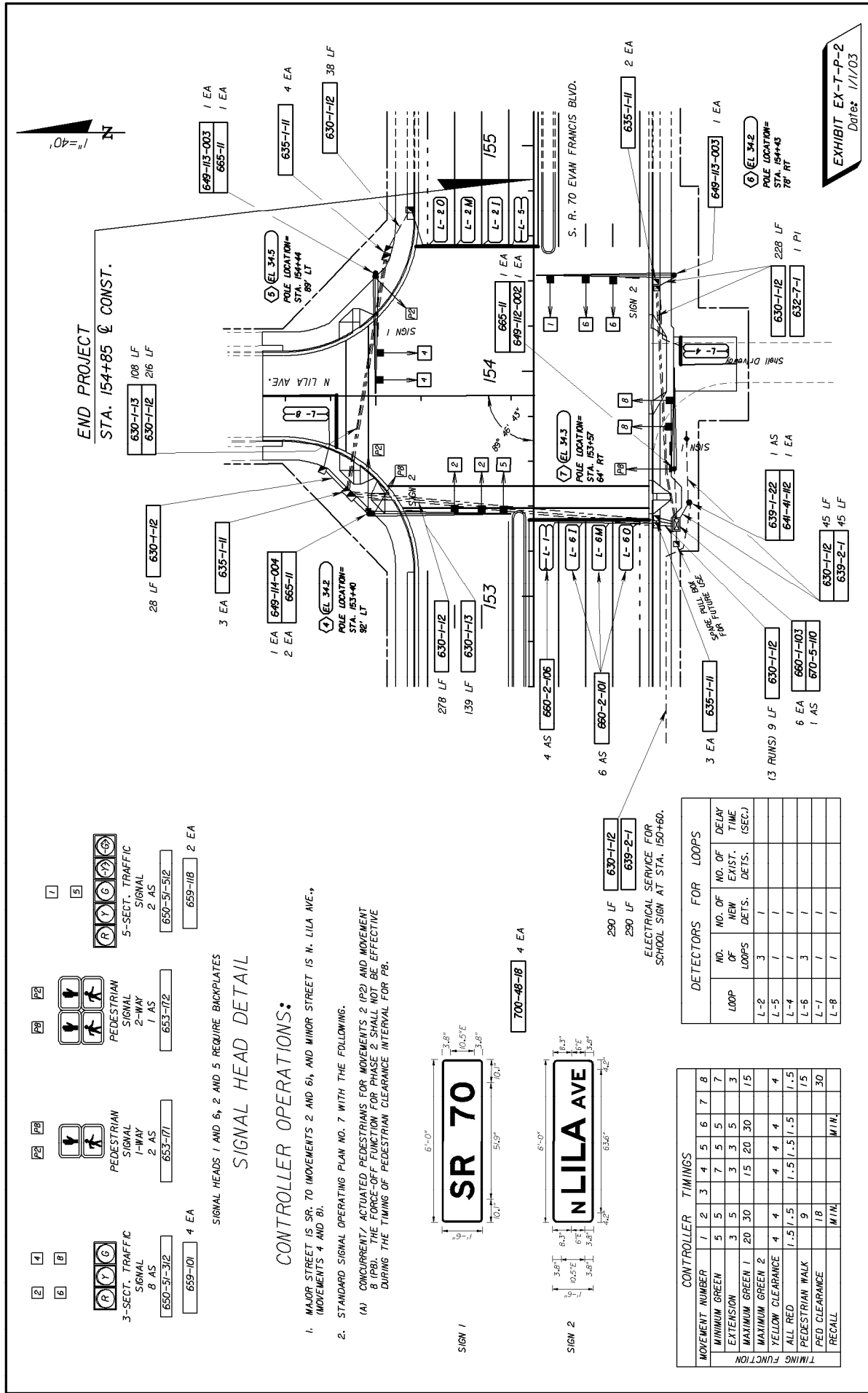
STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01

JOHN J. HERSHEL, SECTO  
 HERSHEL ENGINEERING INC.  
 P.O. BOX 8825  
 CLEWISTON FLA. 32335  
 CERTIFICATE OF AUTHORIZATION NO. 98888

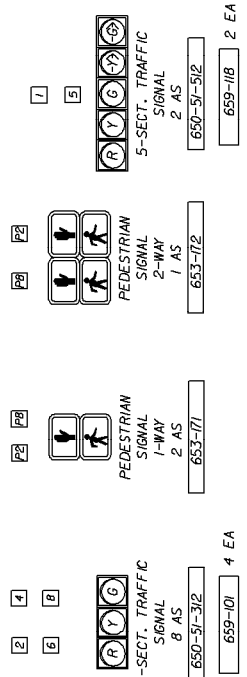
**SIGNALIZATION**

SHEET NO. 7-3

EXHIBIT EX-T-P-1  
 Dates: 1/1/03



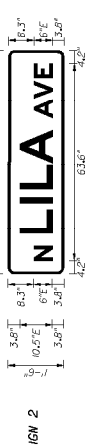
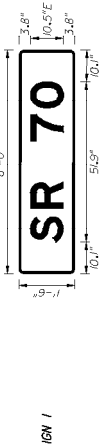
END PROJECT  
STA. 154+85 @ CONST.



SIGNAL HEADS 1 AND 6, 2 AND 5 REQUIRE BACKPLATES  
SIGNAL HEAD DETAIL

**CONTROLLER OPERATIONS:**

- MAJOR STREET IS SR. 70 (MOVEMENTS 2 AND 6), AND MINOR STREET IS N. LILA AVE., (MOVEMENTS 4 AND 8).
- STANDARD SIGNAL OPERATING PLAN NO. 7 WITH THE FOLLOWING.
  - CONCURRENTLY ACTUATED PEDESTRIANS FOR MOVEMENTS 2 (P2) AND MOVEMENT 8 (P8). THE FORCE-OFF FUNCTION FOR PHASE 2 SHALL NOT BE EFFECTIVE DURING THE TIMING OF PEDESTRIAN CLEARANCE INTERVAL FOR P8.



MOVEMENT NUMBER	1	2	3	4	5	6	7	8
MINIMUM GREEN	5	5	7	5	5	7	5	7
EXTENSION	3	5	3	3	5	3	5	3
MAXIMUM GREEN 1	20	30	15	20	30	15	20	30
MAXIMUM GREEN 2	4	4	4	4	4	4	4	4
YELLOW CLEARANCE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
ALL RED	9	9	9	9	9	9	9	9
PEDESTRIAN WALK	18	18	18	18	18	18	18	18
RECALL	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN

LOOP	NO. OF LOOPS	NO. OF NEW DETS.	NO. OF EXIST. DETS.	DELAY TIME (SEC.)
L-2	3	1	1	
L-5	1	1	1	
L-4	1	1	1	
L-6	3	1	1	
L-1	1	1	1	
L-8	1	1	1	

**SIGNALIZATION**

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01

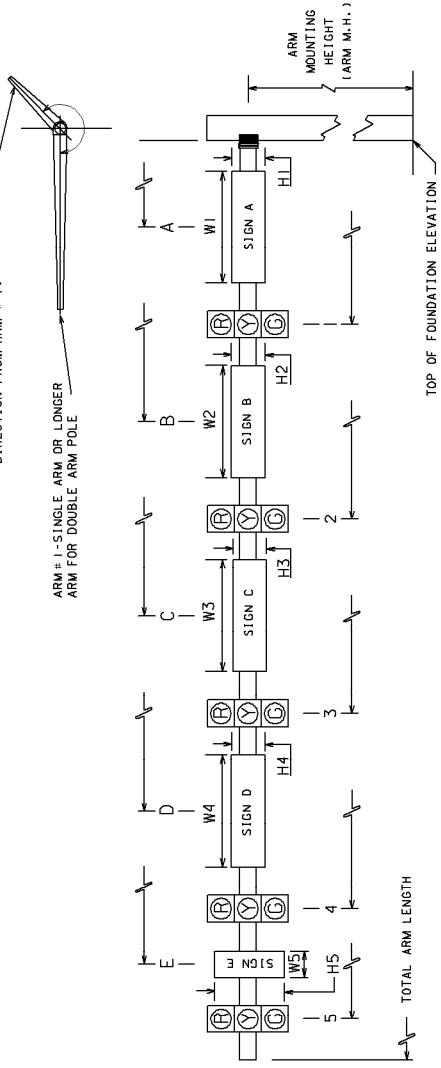
JOHN J. HERSHEL  
PE LICENSE NO. 967901  
HERSHEL ENGINEERING INC.  
P.O. BOX 8025  
CLEWISTON FLA. 32335  
CERTIFICATE OF AUTHORIZATION NO. 96888

EXHIBIT EX-T-P-2  
Date: 1/1/03

SHEET NO. T-4

ARM # 2 - DOUBLE ARM POLE ORIENTATION TO BE MEASURED IN A COUNTERCLOCKWISE DIRECTION FROM ARM # 1.

ARM # 1 - SINGLE ARM OR LONGER ARM FOR DOUBLE ARM POLE



SPECIAL INSTRUCTIONS			
ID NO.	REQ. BUTTIN	REQ. SIGNALS	HANDHOLE LOCATION
4	90	180	0 90
5	270	0	0
7	180	90	90

\* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY.

ID SHEET NO.	LOCATION BY STA.	TOP OF FOUNDATION ELEVATION	SIGNAL DATA										TOTAL ARM LENGTH	ARM M.H.	ANGLE BETWEEN DUAL ARMS 90°/270°	SIGN DATA										PAINT COLOR																	
			ROW NO.	ROW ELEV.	ROW H.	ROW W.	ROW S.	ROW T.	ROW U.	ROW V.	ROW W.	ROW X.				ROW Y.	ROW Z.	ROW AA.	ROW AB.	ROW AC.	ROW AD.	ROW AE.	ROW AF.	ROW AG.	ROW AH.		ROW AI.	ROW AJ.	ROW AK.	ROW AL.	ROW AM.												
1	T-3	137+79	27.25	1	29.02	H	Y	N	26.71	3	39.00	3	51.25	5	*	3	*	4	*	5	62'	19'	270	20'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
2	T-3	138+11	29.02	2	29.02	H	Y	N	17.71	3	25.77	3	52.79	5		3	40.70	3	52.79	5	62'	19'		20'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
3	T-3	137+43	27.25	2	29.02	H	N	N	15.88	3	23.79	3				3	23.79	3			62'	19'		11'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
4	T-4	153+40	34.30	2	35.10	H	Y	Y	37.0	3	47.29	3	57.08	5		3	47.29	3	57.08	5	62'	19'		18'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
5	T-4	154+44	34.30	2	34.90	H	N	Y	32.81	3	44.74	3				3	44.74	3			52'	19'		24'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
6	T-4	154+43	34.30	2	34.75	H	Y	N	24.36	3	36.43	3	52.21	5		3	36.43	3	52.21	5	60'	19'		17'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	
7	T-4	153+57	34.30	2	35.10	H	N	Y	16.11	3	27.83	3				3	27.83	3			44'	19'		8'	1'-6"	6'-0"	W1	H1	E	H4	H3	H2	W2	H5	W3	H4	H3	H2	W4	H5	W5	H5	

EXHIBIT EX-T-MA  
Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		COUNTY		MANATEE		ROAD NO.		70		FINANCIAL PROJECT ID		196058-1-52-01		
REVISIONS																
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

MAST ARM TABULATION

JOHN J. HERSHEL  
PE LICENSE NO. 967901  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32335  
CERTIFICATE OF AUTHORIZATION NO. 96888

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

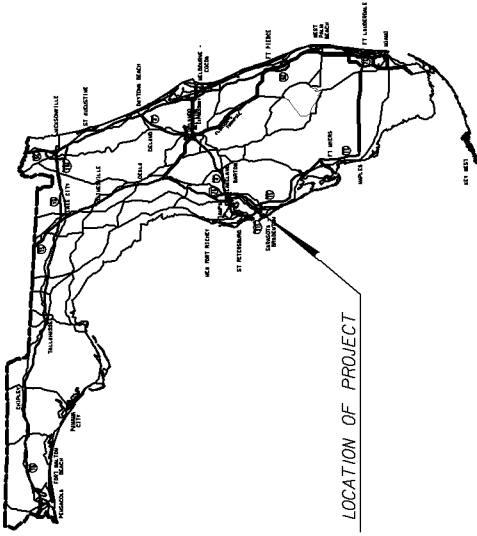
**CONTRACT PLANS**

FINANCIAL PROJECT ID 196058-1-52-01  
(FEDERAL FUNDS)  
MANATEE COUNTY (13160)  
STATE ROAD NO. 70

**LIGHTING PLANS**

**INDEX OF LIGHTING PLANS**

SHEET NO.	SHEET DESCRIPTION
L-1	KEY SHEET
L-2	TABULATION OF QUANTITIES
L-3	POLE DATA AND LEGEND
L-4	LIGHTING DETAILS
L-5 thru L-9	LIGHTING PLAN SHEETS



LOCATION OF PROJECT

LIGHTING SHOP DRAWINGS  
TO BE SUBMITTED TO:  
THURSTON W. HOWELL  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON, FLORIDA 32355

PLANS PREPARED BY:  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON FLA. 32355  
CONTRACT NO. C-0879  
VENDOR NO. 45  
CERTIFICATE OF AUTHORIZATION NO.99999

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

**EXHIBIT EX-L-KS**  
Date: 1/1/03

KEY SHEET REVISIONS	
DATE	DESCRIPTION

LIGHTING PLANS  
ENGINEER OF RECORD: THURSTON W. HOWELL

PE NO. 98999

FISCAL YEAR	SHEET NO.
01	L-1

FOOT PROJECT MANAGER: STEWART J. ERVING

## TABULATION OF QUANTITIES

PN ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET	GRAND TOTAL		REF. SHEET	
			L-5		L-6		L-7		L-8		L-9		PLAN	FINAL		PLAN	FINAL		
			PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL		PLAN	FINAL		
555-1-1	DIRECTIONAL BORE (LESS THAN 6')	LF	55		130		340		120		120					765	765		
715-1-13	CONDUCTOR (FURNISH & INSTALL) (INSULATED NO. 6)	LF	33/5		425		560		4200		39/5					20805	20805		
715-2-14	CONDUIT (FURNISH & INSTALL UNDERGROUND) (PVC SCHEDULE 40) (1/2")	LF	1050		1275		1205		1280		1/55					5965	5965		
715-7-11	LOAD CENTER (FURNISH & INSTALL) (SECONDARY VOLTAGE)	EA	0		0		1		0		0					1	1		
715-14-11	PULL BOX (FURNISH & INSTALL) (ROADSIDE) (MODULED)	EA	12		11		16		13		10					62	62		
715-500-1	POLE CABLE DISTRIBUTION SYSTEM (CONVENTIONAL)	EA	8		7		9		9		8					41	41		
715-612-222	LIGHTING POLE COMPLETE (ALUMINUM, STANDARD) (FURNISH & INSTALL) (MOUNTING HEIGHT 40')	EA	8		7		9		9		8					41	41		

**EXHIBIT EX-L-TQ-1**  
 Date: 1/1/03

DATE		DESCRIPTION		REVISIONS	
THURSTON W. HOWELL P.E. LICENSE NO. 98980 HILL & DALE ENGINEERING INC. P.O. BOX 8825 CLEWISTON, FLORIDA 32555 CERTIFICATE OF AUTHORIZATION NO. 99999		ROAD NO. 70		COUNTY MANATEE	
		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
				198058-1-52-01	
<b>TABULATION OF QUANTITIES</b>					
STATE OF FLORIDA					SHEET NO.
					L-2

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 6105-23.003, F.A.C.



# POLE DATA

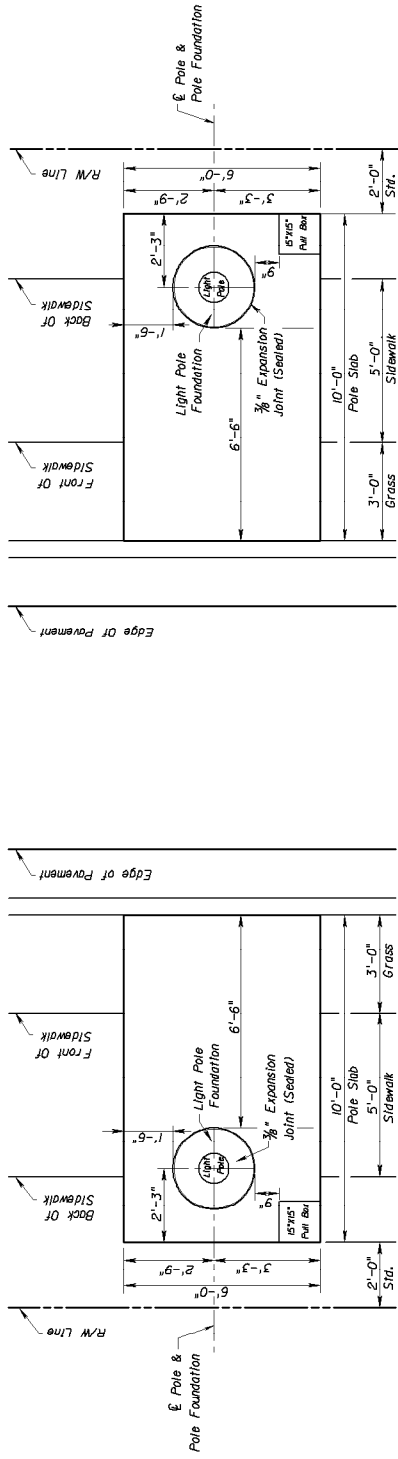
POLE NO.	CIRCUIT	STATION & OFFSET	DIST. OR ARM	LUMINAIRE WATTAGE	MOUNTING HEIGHT	POLE SETBACK FROM EDGE OF PAVEMENT	PAY ITEM
1	A-I	12+00 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
2	A-III	12+80 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
3	A-I	12+60 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
4	A-III	12+30 75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
5	A-I	12+20 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
6	A-III	12+15 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
7	A-I	12+10 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
8	A-III	12+43 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
9	A-I	12+50 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
10	A-III	12+46 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
11	A-I	13+00 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
12	A-III	13+36 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
13	A-I	13+32 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
14	A-III	13+25 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
15	A-I	13+16 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
16	A-III	13+14 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
17	A-I	13+04 63' Lt. $\notin$ Const.	0'	250	40'	12.0'	715-602-222
18	A-III	13+69 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
19	A-I	13+54 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
20	A-III	13+29 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
21	A-I	13+04 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
22	A-III	13+00 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
23	A-I	13+76 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
24	A-III	14+06 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
25	A-I	14+32 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
26	A-III	14+12 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
27	A-I	14+92 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
28	A-III	14+72 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
29	A-I	14+52 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
30	A-III	14+37 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
31	A-I	14+22 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
32	A-III	14+07 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
33	A-I	14+02 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
34	A-III	14+77 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
35	A-I	14+62 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
36	A-III	15+07 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
37	A-I	15+32 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
38	A-III	15+37 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
39	A-I	15+12 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
40	A-III	15+22 60.75' Rt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222
41	A-I	15+02 60.75' Lt. $\notin$ Const.	0'	250	40'	9.75'	715-602-222

CONVENTIONAL LIGHTING DESIGN CRITERIA	HIGH MAST LIGHTING DESIGN CRITERIA (N/A)
Average Initial Intensity Uniformity Ratio Max./Min. Wind Speed	Average Initial Intensity Uniformity Ratio Max./Min. Wind Speed
1.5 F.C. 4:1 Or Less 10:1 Or Less 90 MPH	--- to --- F.C. 3:1 Or Less 10:1 Or Less MPH

### LEGEND

### SYMBOLS



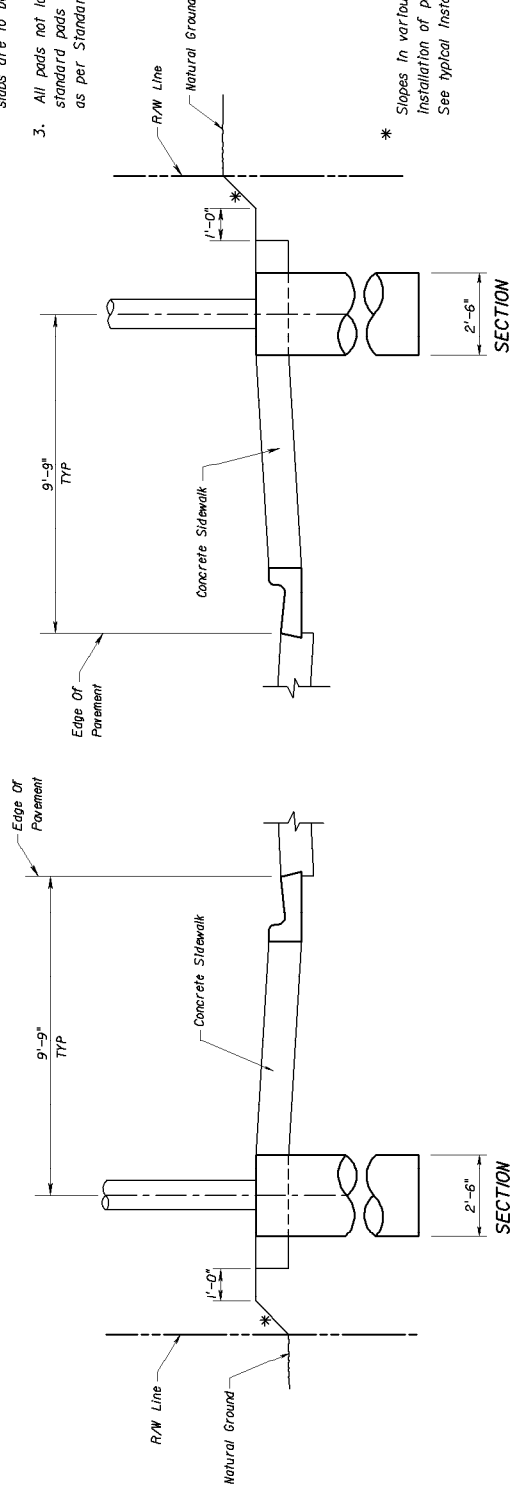


POLE SLAB DETAIL

POLE SLAB DETAIL

NOTES

1. The pole slab details shown on this sheet are for those areas where R/W and/or slopes prevent the use of the standard slab detail, as shown on Index No. 17500.
2. For pole locations in or adjacent to the sidewalk, concrete slabs are to be paid for as Concrete Sidewalk 4" (thick.)
3. All pads not located in sidewalk area, are standard pads for pull boxes and shall be installed as per Standard Index No. 17500, sheet 2 of 3.

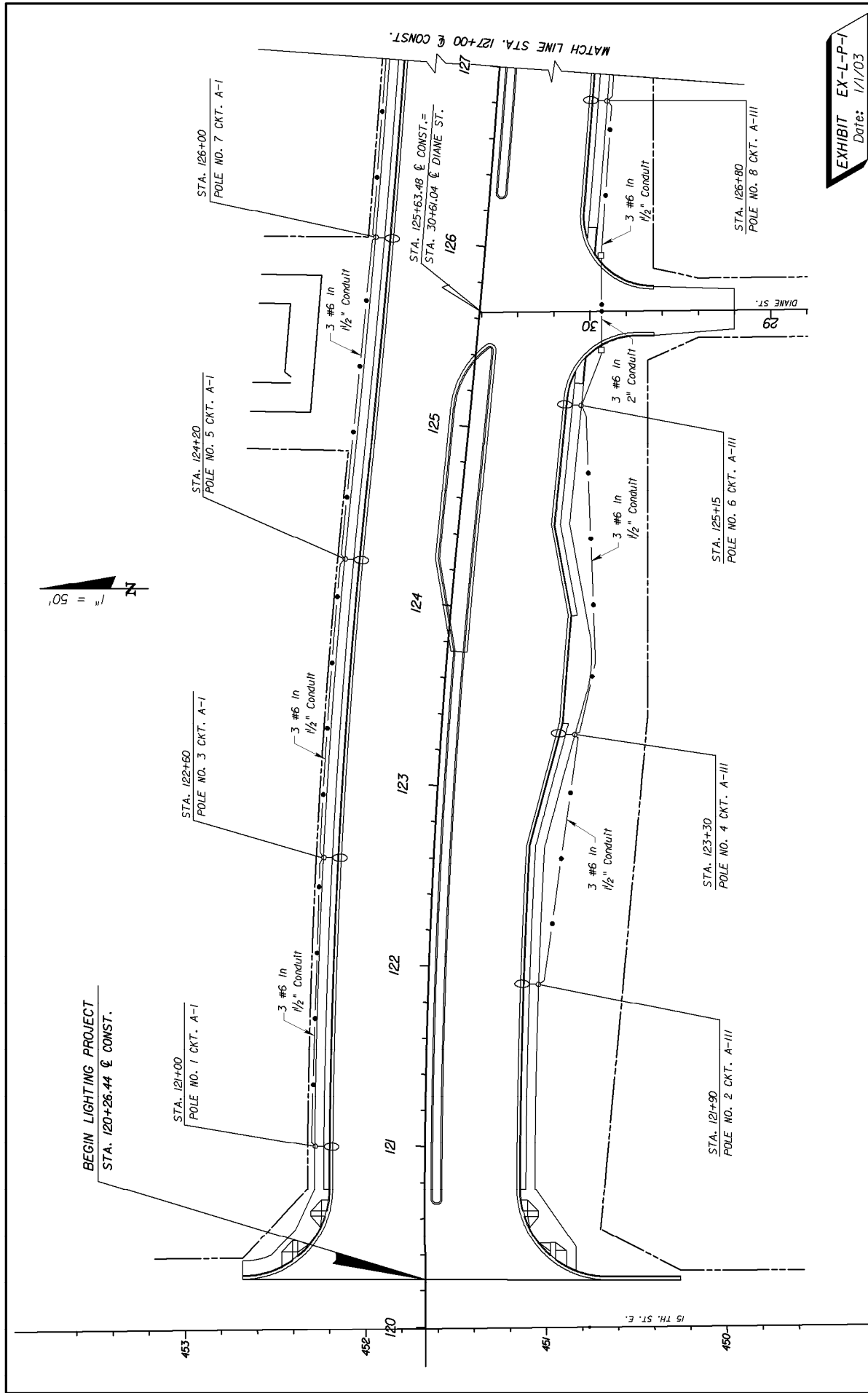


POLE INSTALLATION FOR CUT SECTIONS

POLE INSTALLATION FOR FILL SECTIONS

\* Slopes in various locations are to be adjusted to accommodate installation of poles. Dress slopes 1' back of pole slab. See typical installation details for these adjustments.

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		SHEET NO.		
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	L-4		
			70	MANATEE	196058-1-52-01	L-4		
THURSTON W. HOWELL P.E. LICENSE NO. 969901 HILL & DALE ENGINEERING INC. P.O. BOX 8825 CLEWISTON, FLORIDA 32335 CERTIFICATE OF AUTHORIZATION NO. 98999			<b>LIGHTING DETAILS</b> Date: 1/1/03					



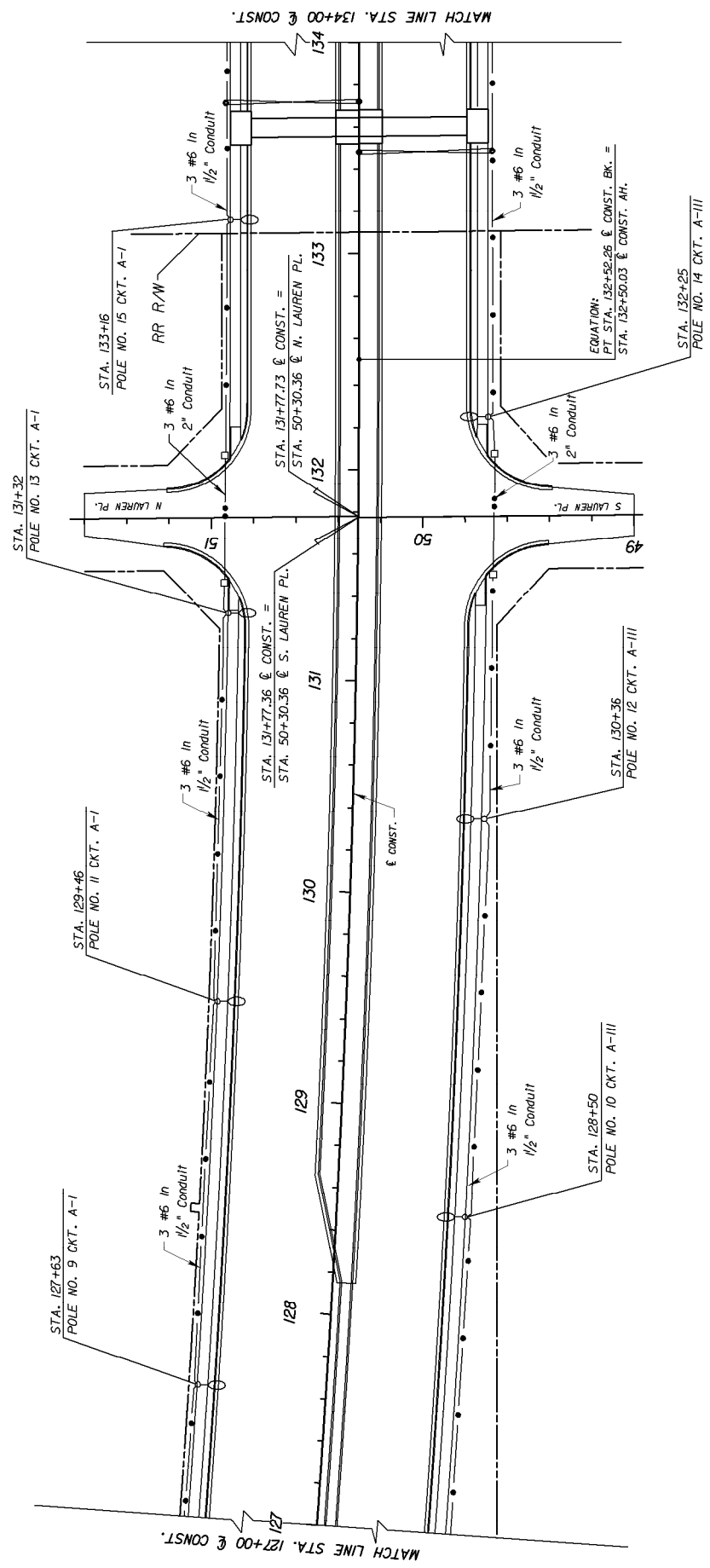
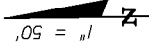
**EXHIBIT EX-L-P-1**  
Date: 1/1/03

STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
COUNTY		MANATEE		196058-1-52-01	
ROAD NO.		70			
THURSTON W. HOWELL		P.E. LICENSE NO. 969901		HERSHEL ENGINEERING INC.	
		P.O. BOX 8825		CLEWISTON, FLORIDA 32355	
				CERTIFICATE OF AUTHORIZATION NO. 99999	
REVISIONS		DATE		DESCRIPTION	
BY	DATE	BY	DATE	DESCRIPTION	

**LIGHTING PLAN**

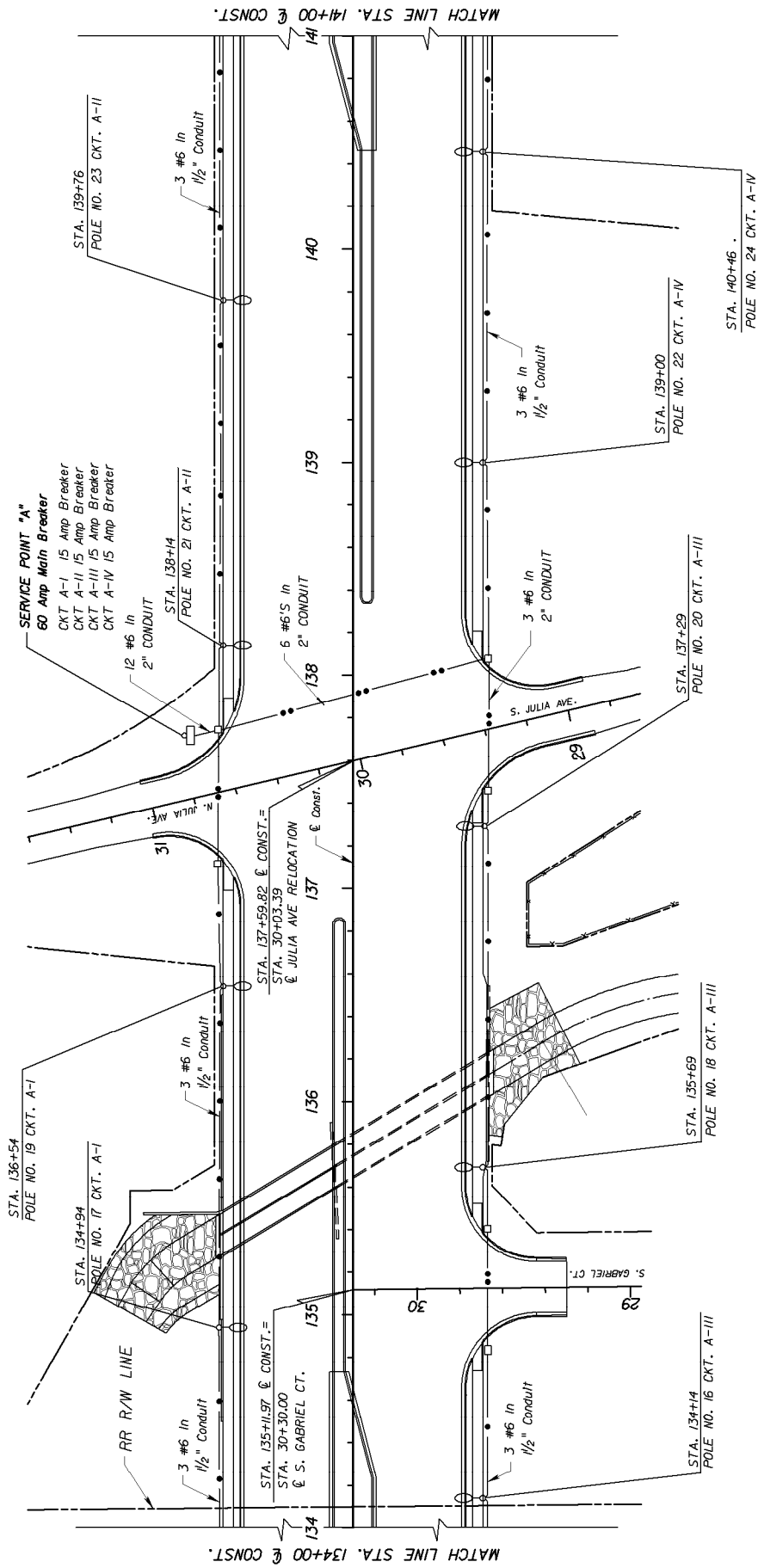
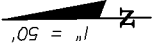
SHEET NO.

L-5



**EXHIBIT EX-L-P-2**  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		SHEET NO.		
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	L-6		
			70	MANATEE	196058-1-52-01			
THURSTON W. HOWELL P.E. LICENSE NO. 96901 HERRHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON, FLORIDA 32355 CERTIFICATE OF AUTHORIZATION NO. 99899								
<b>LIGHTING PLAN</b>								



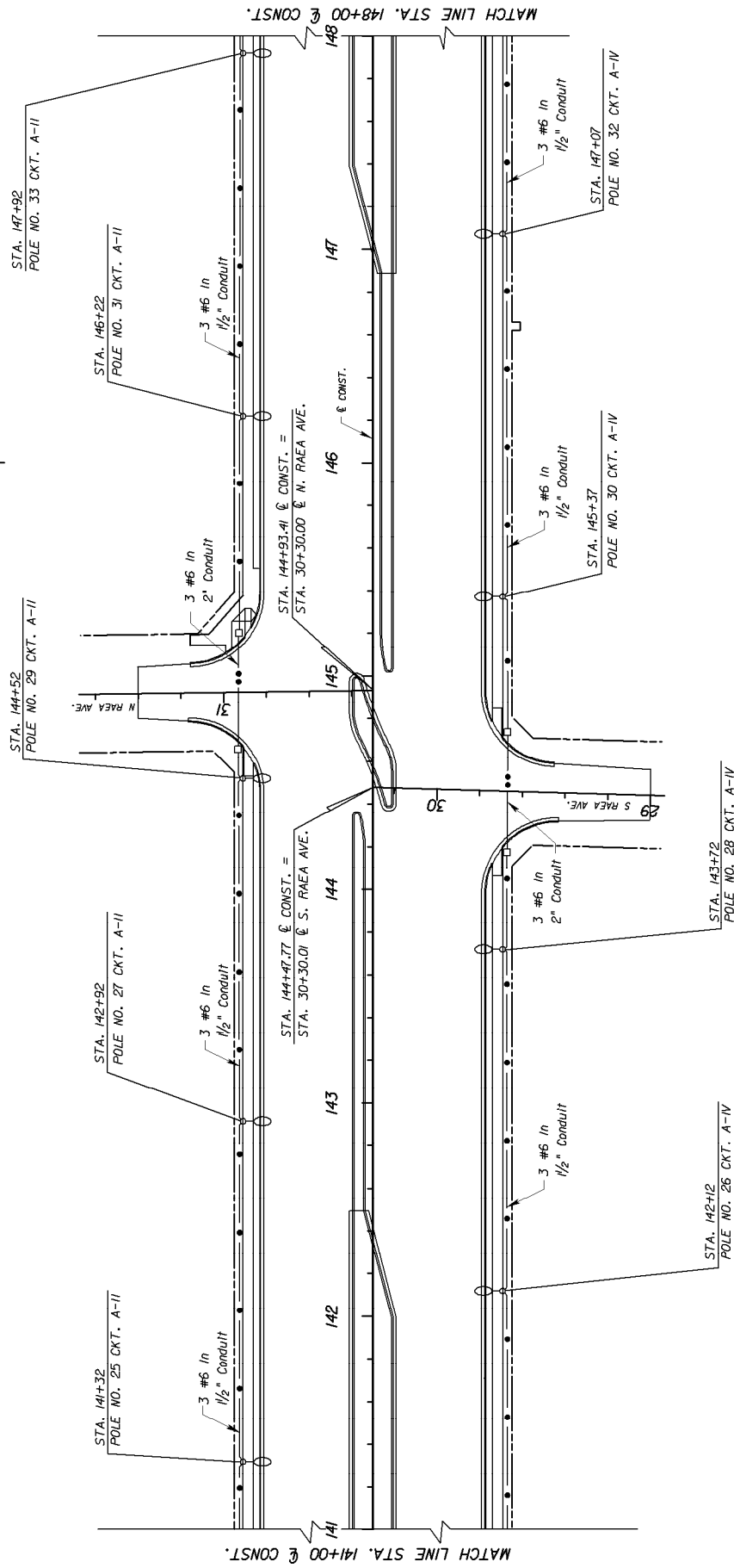
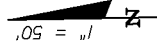
**EXHIBIT EX-L-P3**  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
			70	MANATEE	196058-1-52-01

THURSTON W. HOWELL  
P.E. LICENSE NO. 96990  
HERSHEL ENGINEERING INC.  
P.O. BOX 8825  
CLEWISTON, FLORIDA 32355  
CERTIFICATE OF AUTHORIZATION NO. 98999

**LIGHTING PLAN**

SHEET NO.  
L-7



**EXHIBIT EX-L-P4**  
Date: 1/1/03

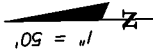
REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
						70	MANATEE	196058-1-52-01			
			THURSTON W. HOWELL P.E. LICENSE NO. 98900 HERSCHEL ENGINEERING INC. P.O. BOX 8825 CLEWISTON, FLORIDA 32355 CERTIFICATE OF AUTHORIZATION NO. 99999								
			STA. 144+52 POLE NO. 29 CKT. A-II STA. 144+92 POLE NO. 27 CKT. A-II STA. 142+92 POLE NO. 27 CKT. A-II STA. 141+32 POLE NO. 25 CKT. A-II STA. 144+47.77 POLE NO. 27 CKT. A-II STA. 144+93.41 POLE NO. 31 CKT. A-II STA. 146+22 POLE NO. 31 CKT. A-II STA. 147+92 POLE NO. 33 CKT. A-II STA. 143+72 POLE NO. 28 CKT. A-IV STA. 145+37 POLE NO. 30 CKT. A-IV STA. 147+07 POLE NO. 32 CKT. A-IV								
			MATCH LINE STA. 141+00 & CONST. MATCH LINE STA. 148+00 & CONST.								
			S RAEVA AVE. N RAEVA AVE.								

**LIGHTING PLAN**

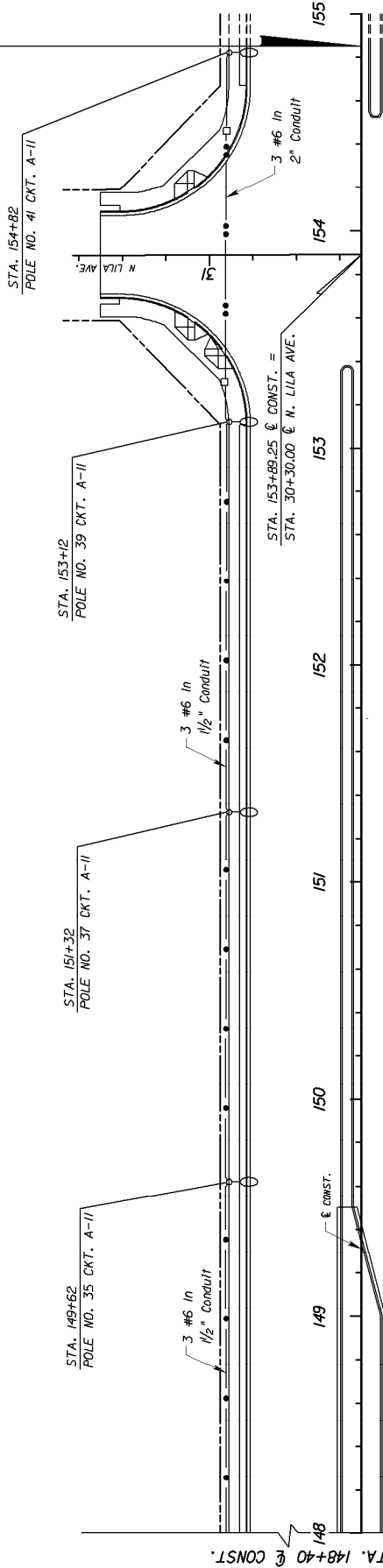
SHEET NO.

L-8

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G5-23.003, F.A.C.



END LIGHTING PROJECT  
STA. 154+85 @ CONST.



MATCH LINE STA. 148+40 @ CONST.

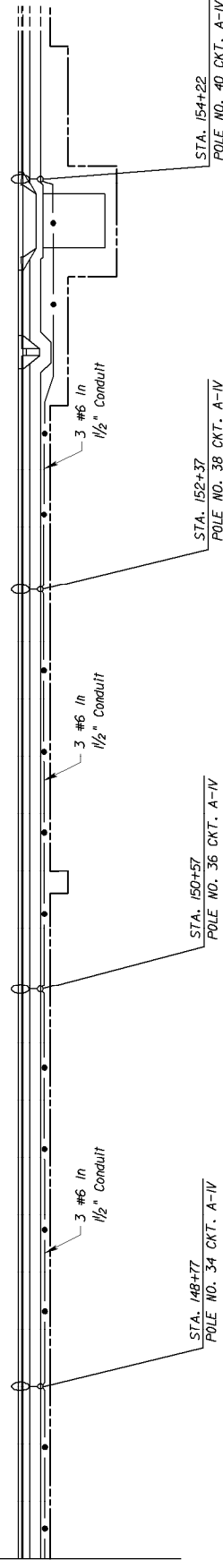


EXHIBIT EX-L-P5  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		SHEET NO.	
DATE	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		70	MANATEE	196058-152-01	L-9

THURSTON W. HOWELL  
P.E. LICENSE NO. 98909  
HERSHEL ENGINEERS INC.  
P.O. BOX 8825  
CLEWISTON, FLORIDA 32555  
CERTIFICATE OF AUTHORIZATION NO. 99989

LIGHTING PLAN

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

**STATE OF FLORIDA**  
**DEPARTMENT OF TRANSPORTATION**

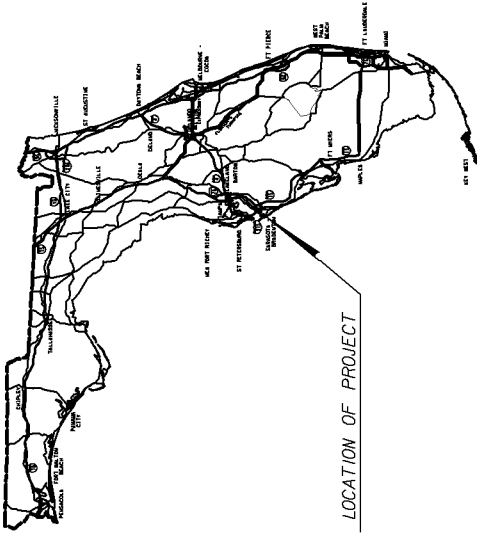
**CONTRACT PLANS**

FINANCIAL PROJECT ID 196058-1-52-01  
(FEDERAL FUNDS)  
MANATEE COUNTY (13160)  
STATE ROAD NO. 70

**LANDSCAPE PLANS**

**INDEX OF LANDSCAPE PLANS**

SHEET NO.	SHEET DESCRIPTION
LD-1	KEY SHEET
LD-2 and LD-3	TABULATION OF QUANTITIES
LD-4	LANDSCAPE NOTES
LD-5 thru LD-11	LANDSCAPE PLANS



LOCATION OF PROJECT

PLANS PREPARED BY:  
MODULL LANDSCAPE ARCHITECTURE, INC.  
13455 S.W. 137TH ST., SUITE 100  
MIAMI, FLORIDA 33166  
CONTRACT NO. C-3099  
VENDOR NO. 86

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

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION,  
DESIGN STANDARDS DATED JANUARY 2002, AND  
STANDARDS SPECIFICATIONS FOR ROAD AND BRIDGE  
CONSTRUCTION DATED 2006, AS AMENDED BY  
CONTRACT DOCUMENTS.

**EXHIBIT EX-LD-KS**  
Date: 1/11/03

KEY SHEET REVISIONS	
DATE	DESCRIPTION

LANDSCAPE PLANS  
LANDSCAPE ARCHITECT OF RECORD: HELENE MODULL, ASLA

PLA. NO. 08654

FISCAL YEAR	01	SHEET NO.	LD-1
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DOT PROJECT MANAGER: ALBERT M. SIMPSON



# TABULATION OF QUANTITIES

PAY ITEM NO.	SYM	DESCRIPTION	SIZE	UNIT	SHEET NUMBERS												TOTAL THIS SHEET		REF. SHEET
					LD-5		LD-6		LD-7		LD-8		LD-9		PLAN	FINAL			
					PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL					
582-3	SOIL	FINISH SOIL LAYER (6")		SY	9		10		12		16		16		5		60		
580-1/3	PREP	BED PREPARATION	FOR SHRUBS AND GROUNDCOVER BEDS-SEE 580-4.4	SY	178		687		130		88		88		500		2763		
580-30-1		STAKING AND CUTTING (TREES)		EA			12		4		16		16		5		37		
580-30-2		STAKING AND CUTTING (PALMS)		EA	9		7		8								24		
580-388-1	MULCH	PINE BARK MULCHETS (3")	FOR TREES OUTSIDE OF BEDS	SY			6				15		15		2		23		
581-1		GROUND COVERS																	
	HT	BLUE FLAG IRIS (IRIS HEXAGONA)	3 BIR MINIMUM	PL							50		50				50		
581-2	GP	GROUND COVERS																	
	HES	BLANKET FLOWER (GALLARDIA PULCHELLA)	1 GAL; 6" SPREAD MINIMUM	PL					900								900		
	LEG	DUNE SUNFLOWER (HELIANTHUS DEBELIS)	1 GAL; 6" SPREAD MINIMUM	PL			3294		1000								4894		
	AJ	EVERGREEN GINNY (LIRIOPE MUSCARI EVERGREEN GINNY)	1 GAL; 9" SPREAD MINIMUM	PL					1555				285		2000		3820		
	LMA	ASIATIC JASMINE (TRACHELOSPERMUM ASIATICUM)	1 GAL; 3-5' 18" RUNNERS MINIMUM	PL	400		723										1123		
		AZTEC GRASS (LIRIOPE MUSCARI)	1 GAL; 9" SPREAD MINIMUM	PL					685								685		
582-2	RI	SHRUBS																	
		INDIAN HAWTHORN (RAPHIOLEPIS INDICA 'ALBA')	3 GAL; 13" HT X 15" SPREAD	PL															
582-3	MC	SHRUBS																	
		WAX MYRTLE (MYRTLE CERIFERA)	7 GAL; 36" HT X 18" SPREAD	PL					24				49				73		
		OLEANDER (NERIUM OLEANDER 'PINK')	7 GAL; 36" HT X 18" SPREAD	PL									90				90		
583-4	IAE	TREES																	
		EAST PALM (OLEA ATTERVATA 'EAST PALM')	100 GAL; 14' HT 6" SPREAD, 3/2" TO 4" CALIPER	PL			5										5		
		MATCHES GRAPE MYRTLE (LAGERSTROEMIA INDICA 'MATCHES')	65 GAL; 18' HT 6" SPREAD, 8" CLEAR TRUNK	PL					4						5		9		
		HERITAGE LIVE OAK (QUERCUS VIRGINIANA 'HIGH RISE')	1 1/2" CALIPER TRUNKS, 3 TO 7 TRUNKS	PL															
		LONGLEAF PINE (PINUS PALUSTRIS)	45 GAL; 18' HT 6" SPREAD, 8 1/2" TO 3" CALIPER	PL			7						1				8		
		BALD CYPRESS (TAXODIUM DISTICHUM)	8" CLEAR TRUNK	PL															
		SINGLE TRUNK PALMS																	
		SABAL PALM (SABAL PALMETTO)	BBB; 8" HT; 2" SPREAD, 1.5" CALIPER	PL											2		7		
		SABAL PALM (SABAL PALMETTO)	30 GAL; 10' HT; 3" SPREAD MIN; 3" CALIPER	PL											10		10		
584-4	SP	SINGLE TRUNK PALMS																	
		SABAL PALM (SABAL PALMETTO)	12" CLEAR TRUNKS, SHOWN IN PLANS	PL	9		7		6								22		
		SABAL PALM (SABAL PALMETTO)	16" CLEAR TRUNKS, SHOWN IN PLANS	PL					1								1		
		SABAL PALM (SABAL PALMETTO)	20" CLEAR TRUNKS, SHOWN IN PLANS	PL					1								1		

EXHIBIT EX-LD-70-1  
Date: 1/1/03

DATE		DESCRIPTION		REVISIONS	
BY				DATE	BY
HELVETIA MCQUILL P.L.A. NO. 06856 MCQUILL LANDSCAPE ARCHITECTURE, INC. 13465 S.W. 13TH ST. SUITE 100 MIAMI, FLORIDA 33166					
STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
ROAD NO.		COUNTY		MANATEE	
70		MANATEE		196058-1-52-01	
<b>TABULATION OF QUANTITIES</b>					
					SHEET NO.
					LD-2

# TABULATION OF QUANTITIES

PAY ITEM NO.	SYM	DESCRIPTION	SIZE	UNIT	SHEET NUMBERS												TOTAL THIS SHEET	GRAND TOTAL	REF. SHEET
					LD-10		LD-11		LD-12		LD-13		LD-14		LD-15				
					PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL			
582-3	SOIL	FINISH SOIL LAYER (6")	FOR SHRUB AND GROUND COVER BEDS-SEE 580-4.4	SY	12														
580-473	PREP	BED PREPARATION		SY	1054														
580-301-1		STAKING AND GUYING (TREES)		EA	5														
580-301-2		STAKING AND GUYING (PALMS)		EA															
580-306-1	MULCH	PINE BARK MUGGETS (3")	FOR TREES OUTSIDE OF BEDS	SY	6														
581-1		GROUND COVERS	3 BIB MINIMUM	PL															
581-2		GROUND COVERS	1 GAL; 6" SPREAD MINIMUM	PL															
582-2	RI	INDIAN HANTHORN (RHAPHIDOPHYS INDICA 'ALBA')	3 GAL; 13" HT X 10" SPREAD	PL	270														
582-3	ME	WAX MYRTLE (MYRTICA CERIFERA)	7 GAL; 36" HT X 18" SPREAD	PL															
583-4	IAE	EAST PALATKA HOLLY (ILEX ATTERMATA 'EAST PALATKA')	100 GAL; 4' HT 6' SPREAD, 3/4" TO 4" CALIPER	PL															
584-4	SP	SABAL PALM (SABAL PALMETTO)	12' CLEAR TRUNK, SHOWN IN PLANS	PL															

EXHIBIT EX-LD-TQ-2  
Date: 1/1/03

DATE		BY		DESCRIPTION		REVISIONS	
HELENE MODULL FLA NO. 06854 MODULL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th St. SUITE 100 MIAMI, FLORIDA 33166				STATES OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. 70 COUNTY MANATEE FINANCIAL PROJECT ID 196058-1-52-01			
<b>TABULATION OF QUANTITIES</b>							
SHEET NO. LD-3							

**GENERAL NOTES**

1. All plantings shall be installed per Index Nos. 544 and 546, as well as Section 580 of the Standard Specifications for Road and Bridge Construction.
2. The Contractor shall avoid, directly or indirectly, any mitigation areas or jurisdictional wetlands as noted while performing specified work.
3. All palms shall be de-booted and hurricane cut prior to planting. Any palm with boots remaining on trunk below the bud will be rejected.
4. All planting areas adjacent to pavement shall have a finish grade of soil no less than 2 1/2" below the top pavement/curb per Standard Index No. 105.

**PAY ITEM NOTES**

1. 580-173 Bed Preparation - Payment for this item includes the cost for mowing, debris removal, herbicides, application of finish soil layer and mulch. Bed preparation shall be performed as follows:
  - A. Mow existing vegetation to 1" height maximum.
  - B. Apply two (2) applications of Post-emergent herbicide within a 14-day period. Post-emergent shall be: XXX or approved equal applied as per manufacturer's recommended application rate and application requirements. Sod root structure shall remain in place.
  - C. Apply (1) one application of an approved granular pre-emergent herbicide.
  - D. Install plantings and backfill pits per Index No. 544 and Specification 580-4.4. Refer to manufacturer's specifications for additional requirements of all herbicides.
2. 580-326-1 Mulch - Payment for this item included the mulch around trees not included in planting beds estimated at 1 SY per free standing tree.
3. 581 and 582 Groundcovers and Shrubs - payment for these items includes an approved fertilizer for all planting beds applied at the rate of 3 pounds per 10 SY of bed area.

REVISIONS	
DATE	DESCRIPTION

HELENE McDULL  
 P.L.A. NO. 06854  
 McDULL LANDSCAPE ARCHITECTURE, INC.  
 13465 S.W. 137th ST. SUITE 100  
 MIAMI, FLORIDA 33166

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	FINANCIAL PROJECT ID
70	196058-1-52-01
COUNTY	
MANATEE	

**LANDSCAPE NOTES**

SHEET NO.  
LD-4

EXHIBIT EX-LD-N  
Date: 1/1/03

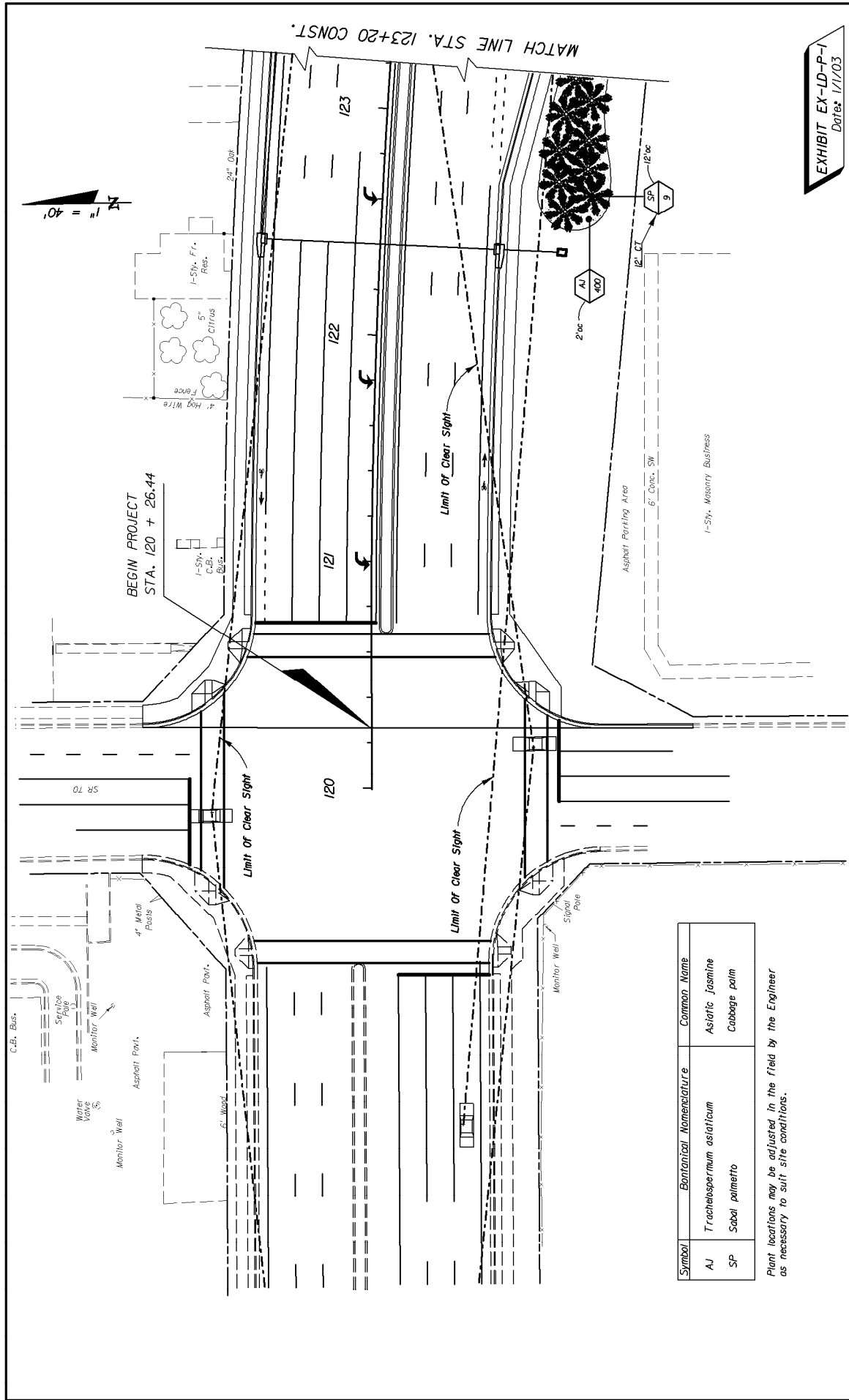
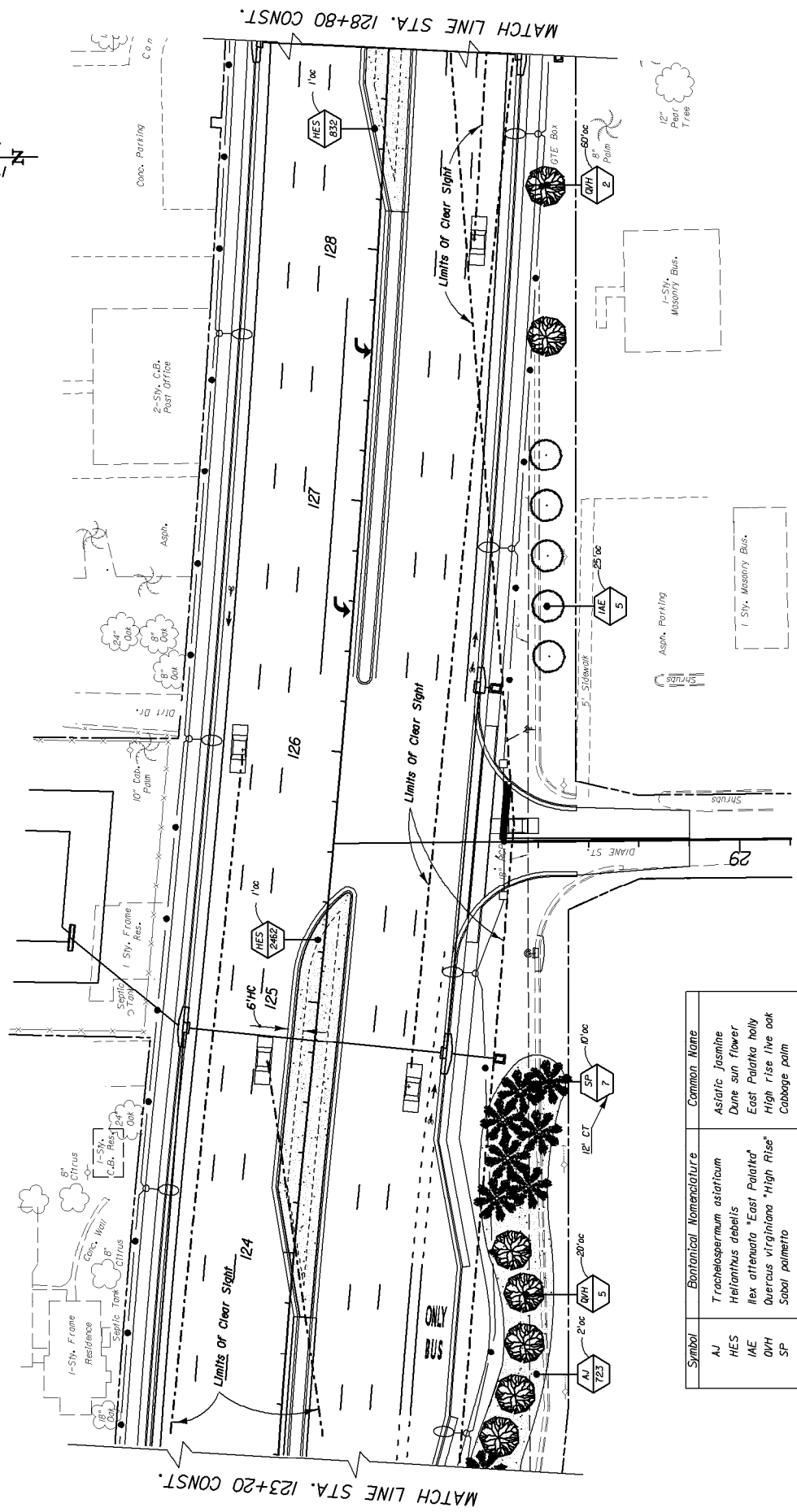
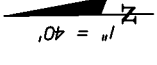


EXHIBIT EX-LD-P-1  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. 70		COUNTY MANATEE		FINANCIAL PROJECT ID 196058-1-52-01	
HELENE MCULL FLA. NO. 06654 MCULL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th St. SUITE 100 MIAMI, FLORIDA 33166		SHEET NO. LD-5					
<b>LANDSCAPE PLAN</b>							
REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

Symbol	Botanical Nomenclature	Common Name
AJ	<i>Trachelospermum asiaticum</i>	Asiatic jasmine
SP	<i>Sabal palmetto</i>	Cabbage palm

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.



MATCH LINE STA. 123+20 CONST.

MATCH LINE STA. 128+80 CONST.

Symbol	Botanical Nomenclature	Common Name
AJ	<i>Trachodesperum asiaticum</i>	Asiatic Jasmine
HES	<i>Helianthus debilis</i>	Dune sun flower
MAE	<i>Ilex attenuata</i> 'East Palatka'	East Palatka holly
DWH	<i>Quercus virginiana</i> 'High Rise'	High Rise live oak
SP	<i>Sabal palmetto</i>	Cabbage palm

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.

**EXHIBIT EX-LD-P-2**  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. 70		COUNTY MANATEE		FINANCIAL PROJECT ID 196058-1-52-01	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

SHEET NO.

**LANDSCAPE PLAN**

LD-6

HELENE McDULL  
P.L.A. NO. 08834  
McDULL LANDSCAPE ARCHITECTURE, INC.  
13465 S.W. 137th St. Suite 100  
MIAMI, FLORIDA 33166

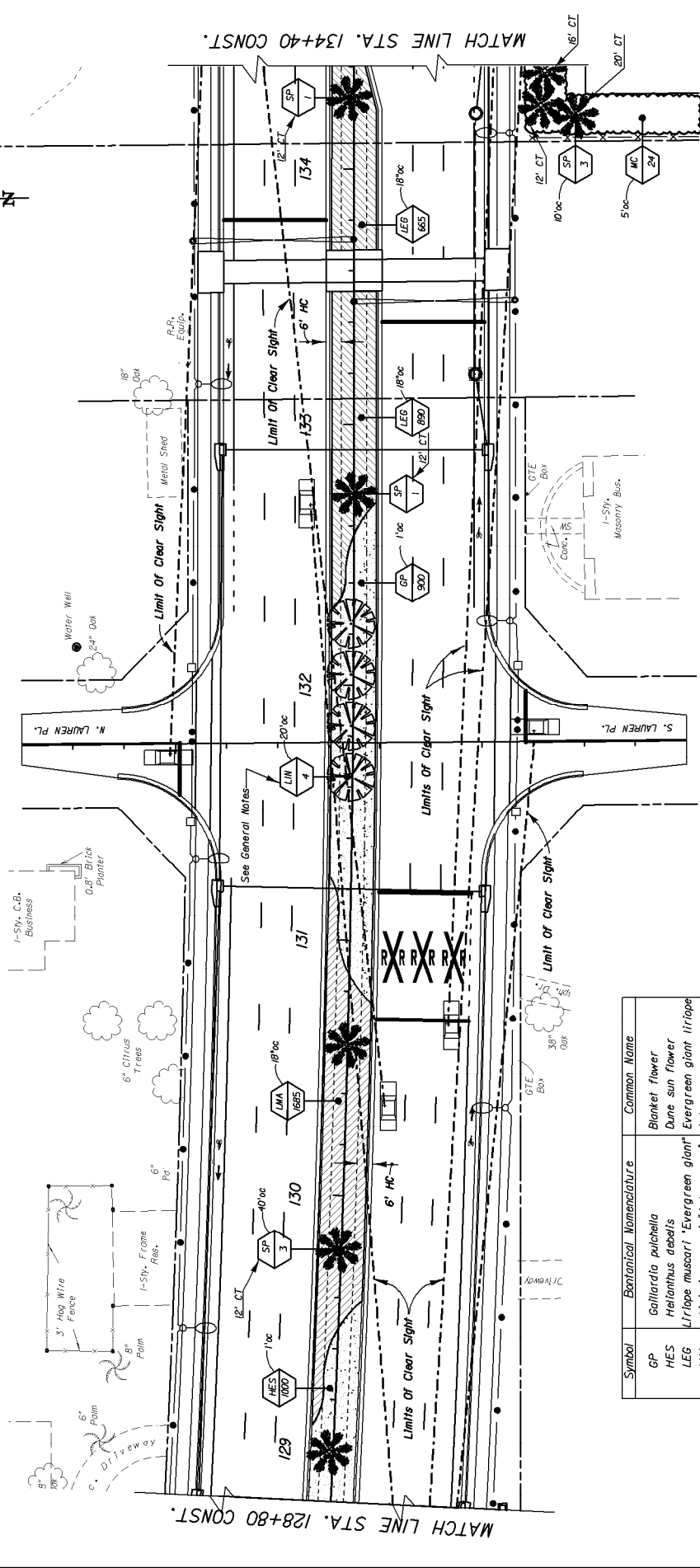
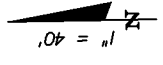


EXHIBIT EX-LD-P-3  
Date: 1/1/03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		ROAD NO. 70		COUNTY MANATEE		FINANCIAL PROJECT ID 196058-152-01	
HELENE MCULL P.L.A. NO. 06834 MCULL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th St. SUITE 000 MIAMI, FLORIDA 33166				SHEET NO. LD-7			
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	REVISIONS	

Symbol	Botanical Nomenclature	Common Name
GP	Gallardia pulchella	Blanket flower
HES	Helianthus abelii	Dune sun flower
LEG	Liriope muscari	Evergreen giant liriope
LMA	Liriope muscari "Aztec grass"	Aztec grass
MC	Myrica cerifera	Wax myrtle
LIN	Lagerstroemia indica "Natchez"	Crape myrtle
SP	Sabal palmetto	Cabbage palm

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.

Symbol	Botanical Nomenclature	Common Name
LEG	<i>Liriodendron tulipifera</i>	Evergreen giant liriage
MC	<i>Myrica cerifera</i>	Wax myrtle
NO	<i>Nerium oleander</i>	Oleander
OVH	<i>Quercus virginiana</i> "Heritage"	Heritage live oak
IH	<i>Iris hexagona</i> "Iridaceae"	Iris
PP	<i>Pinus palustris</i>	Long leaf pine
TD	<i>Taxodium distichum</i>	Bald Cypress

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.

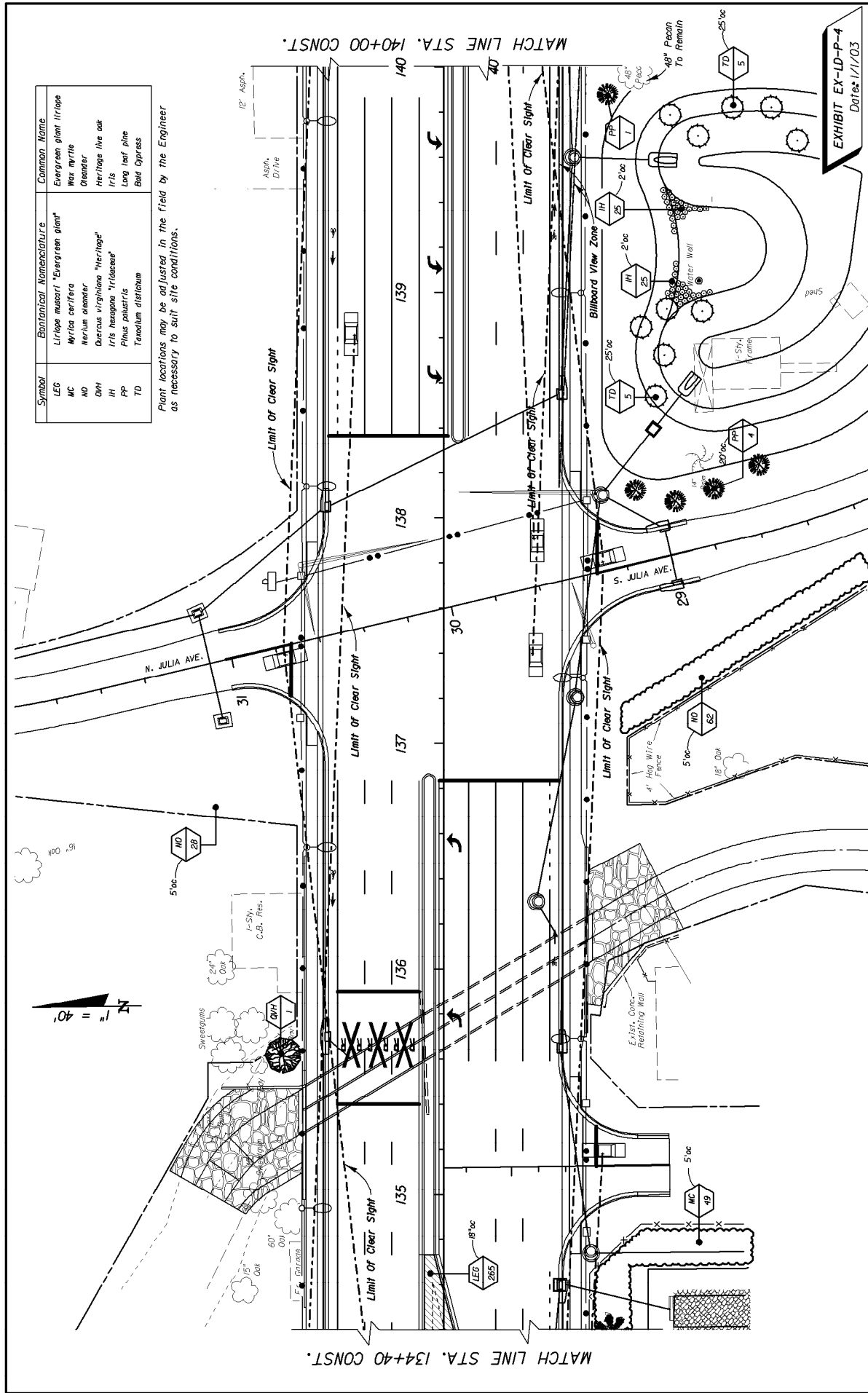
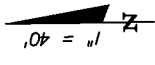


EXHIBIT EX-LD-P-4  
Date: 1/1/03

REVISIONS		DESCRIPTION	
DATE	BY	DESCRIPTION	DATE

HELENE MCQUILL FLA. NO. 06654 MCQUILL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th St. Suite 100 MIAMI, FLORIDA 33166		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	SHEET NO. LD-8
ROAD NO. 70	COUNTY MANATEE	FINANCIAL PROJECT ID 196058-1-52-01	LANDSCAPE PLAN



Symbol	Botanical Nomenclature	Common Name
LEG	<i>Liriodie muscari</i> "Evergreen giant"	Evergreen giant liriopis
LIN	<i>Lagerstroemia indica</i> "Marchez"	Crape myrtle
PP	<i>Pinus palustris</i>	Long leaf pine

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.

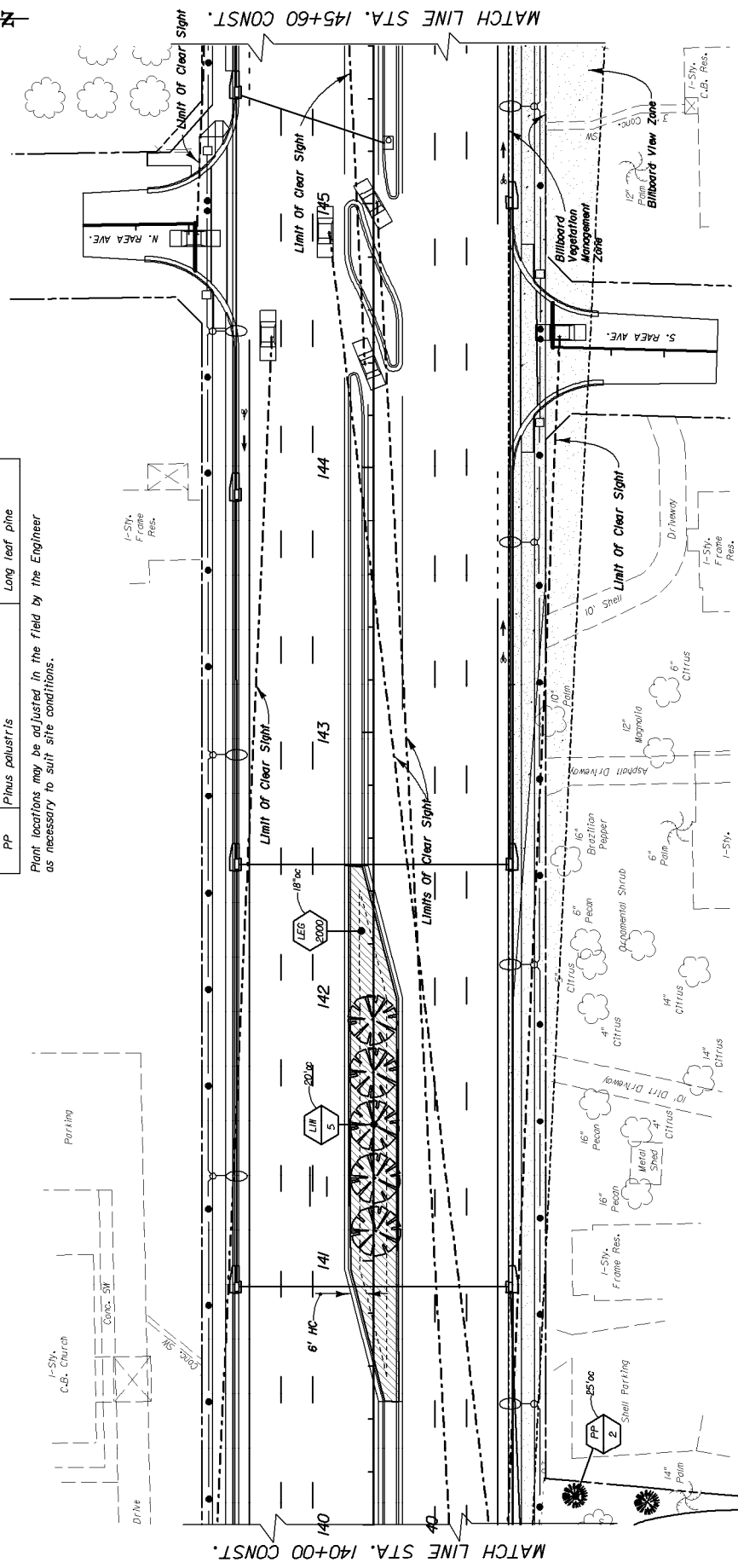
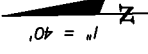


EXHIBIT EX-LD-P-5  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		SHEET NO.	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			70	MANATEE	196058-1-52-01	LD-9	
HELENE MCQUILL P.L.A. NO. 06654 MCQUILL LANDSCAPE ARCHITECTURE, INC. 15465 S.W. 157th St. SUITE 100 MIAMI, FLORIDA 33166			<b>LANDSCAPE PLAN</b>				

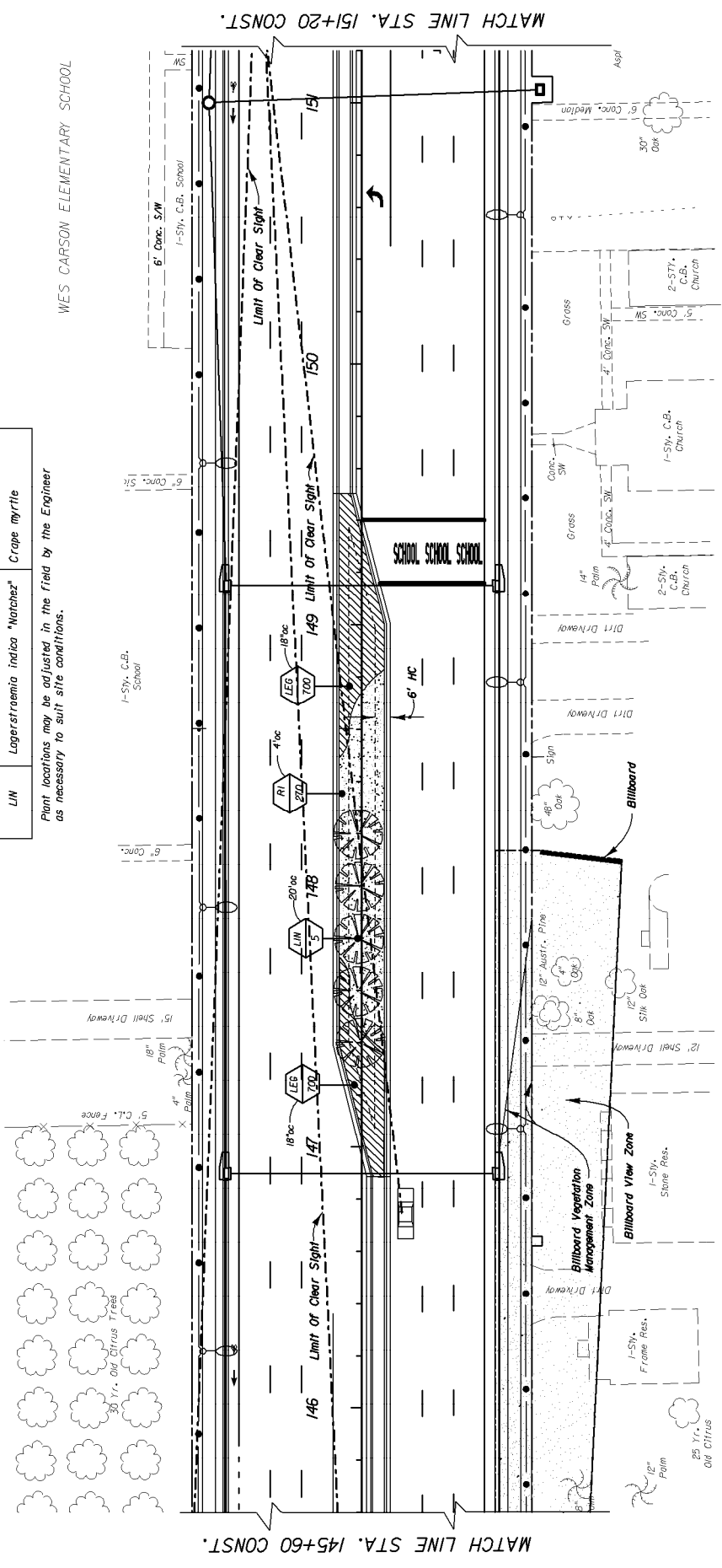




Symbol	Botanical Nomenclature	Common Name
LEG	<i>Liriodendron tulipifera</i>	Flowering dogwood
RI	<i>Rapanea hirsuta</i>	Flowering tree
LIN	<i>Lagerströmia speciosa</i>	Adelphi tree

Plant locations may be adjusted in the field by the Engineer as necessary to suit site conditions.

WES CARSON ELEMENTARY SCHOOL



MATCH LINE STA. 145+60 CONST.

MATCH LINE STA. 151+20 CONST.

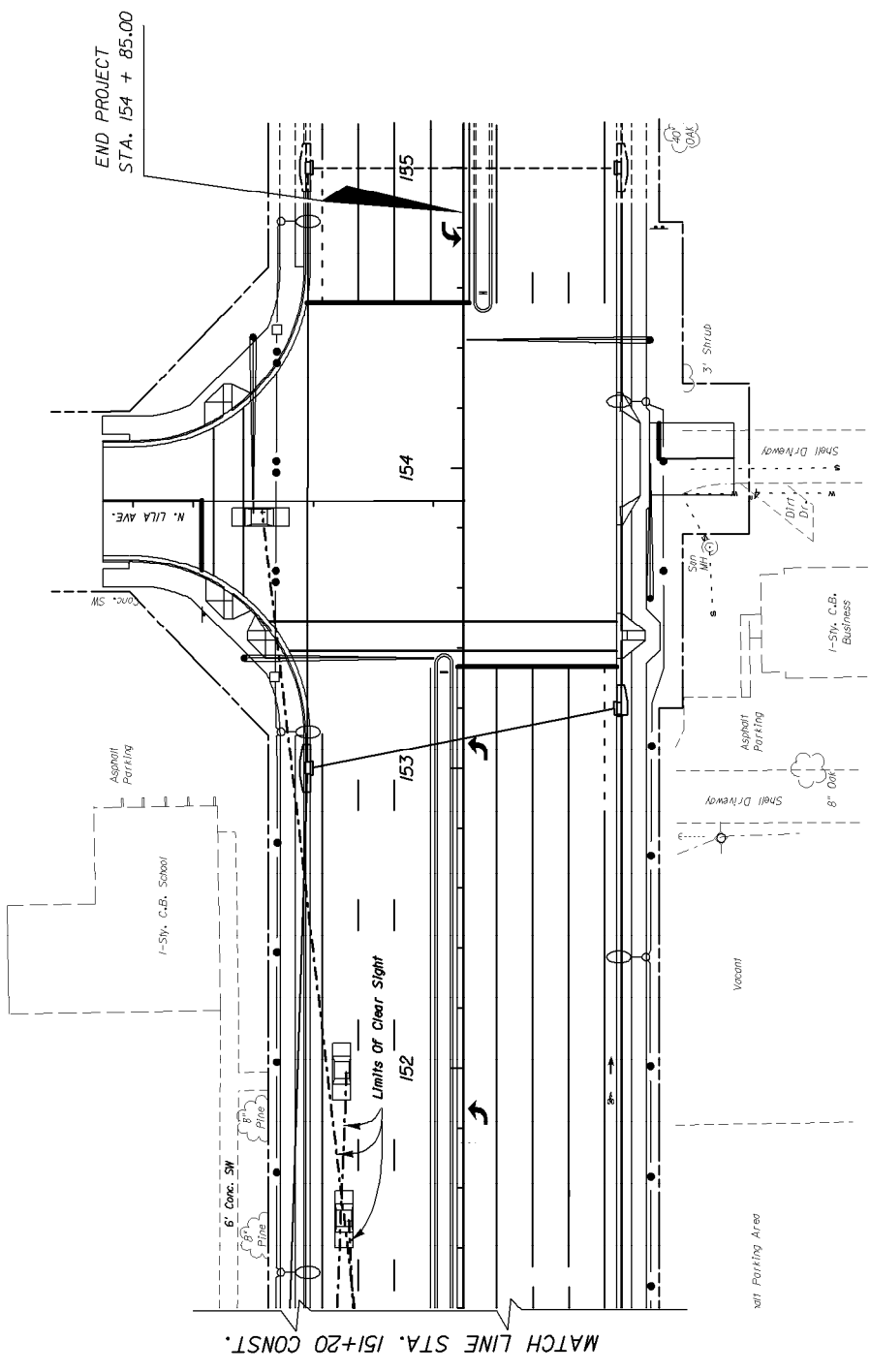
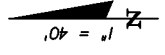
EXHIBIT EX-LD-P-6  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA	
DATE	BY	DESCRIPTION	DEPARTMENT OF TRANSPORTATION

HELENE MCQUILL FLA. NO. 06854 MCQUILL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th St. Suite 600 MIAMI, FLORIDA 33166		ROAD NO. 70	FINANCIAL PROJECT ID 196058-1-52-01
		COUNTY MANATEE	

**LANDSCAPE PLAN**

SHEET NO. LD-10



MATCH LINE STA. 151+20 CONST.

END PROJECT  
STA. 154 + 85.00

EXHIBIT EX-LD-P-T  
Date: 1/1/03

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		SHEET NO.	
DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	LD-II	
			70	MANATEE	196058-152-01		
		HELENE MCQUILL P.L.A. NO. 06854 MCQUILL LANDSCAPE ARCHITECTURE, INC. 13455 S.W. 137th ST. SUITE 600 MIAMI, FLORIDA 33166					

LANDSCAPE PLAN