

# PLANS PREPARATION MANUAL

## VOLUME 2

### PLANS PREPARATION AND ASSEMBLY

The collage features several key elements:
 

- Top Left:** A technical drawing showing a road profile with stationing (STA 100+25.44) and project boundaries.
- Top Right:** A photograph of a road with a cyclist and cars, overlaid with technical drawing lines and dimensions.
- Center:** A large map of Florida with a highlighted project area.
- Bottom Left:** A photograph of the Daytona Beach bridge at night, with a technical drawing of a pipe section (18" PIPE, FL 28.4) overlaid.
- Bottom Center:** A technical drawing of a road profile with various elevations (EL. 33.0, EL. 32.6) and stationing (124+00 to 127+00).
- Bottom Right:** A photograph of a 'ROAD WORK AHEAD' sign, with a technical drawing of a 'SPECIAL SWALE RT.' overlaid.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT ID.	
70	MANATEE	196058-1-52-01	14

PLAN-PROFILE  
SR 70 (EVAN FRANCIS BLVD.)

NOTE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SAVED AND SEALED UNDER RULE 605-33.001, F.A.C.

# FDOT



# DESIGN



January 2016

# PLANS PREPARATION MANUAL

## VOLUME

# 2

## PLANS PREPARATION & ASSEMBLY



# PLANS PREPARATION MANUAL

## VOLUME 2



**ROADWAY DESIGN OFFICE**

TALLAHASSEE, FLORIDA

JANUARY 1, 2016 EDITION

<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>

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# Introduction

## Plans Preparation Manual, Volume 2

### PURPOSE:

This *Plans Preparation Manual, Volume 2* 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:

Sections 20.23(4)(a) and 334.048(3), 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 334.048(3)**, 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 1** of the **Plans Preparation Manual (PPM) (Topic No. 625-000-007)**.

Special requirements for Non-Conventional Projects, e.g., Design – Build Projects and all Non-Design-Bid-Build Public-Private-Partnership Projects, may be shown in a “Modification for Non-Conventional Projects” box as shown in the following example:

Modification for Non-Conventional Projects:
Delete <b>PPM 27.3</b> .

These boxes are located at the beginning of the chapter or after a section, paragraph or table which is to be modified. The requirements listed within these boxes are only applicable to Non-Conventional Projects.

The Author of a Request for Proposal (RFP) for a Non-Conventional project must use the standard boilerplate language as a starting point in developing RFPs on all Department Design-Build projects. **Section V** of the **Design-Build Boilerplate** establishes Department, FHWA and AASHTO criteria, procedures, guidelines and design codes that serve as design constraints to be used in the performance of the work. The governing regulations list in **Section V** cannot be modified without the approval of the State Construction Office. The standard boilerplate language is available at the FDOT Construction Office website:

<http://www.dot.state.fl.us/construction/DesignBuild/DBDocuments/DBDocsMain.shtm>

Pre-scoping questions have been developed to aid in the establishment of project constraints and requirements to be included in the RFP. The Pre-scoping questions can be found at:

<http://www.dot.state.fl.us/construction/DesignBuild/DBRules/DBRulesMain.shtm>

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 2 - 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 1** contained design criteria and process requirements, while **Volume 2** addressed plans preparation and assembly.

This English version of **Volume 2** was produced using the same basic format, and closely paralleling, **Volume 2 - 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 2* 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 available electronically on the PPM web page:

<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtml>

**PPM** users can register to receive notification of updates and *Roadway Design Bulletins* online through the Department's Contact Management Database at:

<http://www2.dot.state.fl.us/contactmanagement/>

For information on updates and *Roadway Design Bulletins*, contact:

Roadway Design Office, Mail Station 32

Telephone (850) 414-4310

FAX Number (850) 414-5261

<http://www.dot.state.fl.us/rddesign/>

## 3. REVISIONS AND UPDATES

*Plans Preparation Manual (PPM)* users are encouraged to submit comments and suggestions for changes to the manual to the State 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. Items warranting immediate change will

be made with the approval of the State Roadway Design Engineer and/or State Structures Design Engineer in the form of a **Design Bulletin**.

**Roadway Design Bulletins** are numbered based on the two digit calendar year and bulletin number (YY-##). Notices are sent to all users who are registered to receive notifications for **Roadway Design Bulletins** and updates to the **PPM**. **Design Bulletins** affecting the **PPM** will remain effective until either:

1. an official manual revision is published; or
2. the **Design Bulletin** is made void.

**Roadway Design Bulletins** are posted online at:

<http://www.dot.state.fl.us/rddesign/bulletin/>

Structures design issues which are subject to modification and revision will be processed in coordination with the State Structures Design Office. See the **Structures Manual** for more information on this process.

Proposed revisions are distributed in draft form to each District's Roadway Design Engineer or Structures Design Engineer. These experienced engineers provide the necessary technical and practical input on how the revision will potentially affect their District's operations and customers. Periodically, these engineers meet collectively with the State Roadway Design Office or the State Structures Design Office to discuss comments on the proposed revisions. Proposed revisions with comments are then presented to the District Design Engineers (DDE) for review and comment. Once the comments are addressed, the Florida FHWA Division Office is given the opportunity to review the revisions as per the Department's Partnership Agreement with FHWA.

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

Revisions and updates are adopted or rejected by the State Roadway Design Engineer (for Roadway Design issues) or the State Structures Design Engineer (for Structures Design issues). Requirements mandated by FHWA or State Rules will be coordinated with the DDEs and affected offices within the Central Office and are considered compulsory.

All revisions and updates will be coordinated with the Forms and Procedures Office prior to publishing to ensure conformance with and incorporation into the Department's Standard Operating System. The standard interval for publishing updates to the **PPM** is yearly, in January, when notification of the adopted revisions and addenda will be distributed to registered users of the manual through the Department's Contact Management Database.

## **TRAINING:**

None required.

## **FORMS ACCESS:**

Documents marked as **Exhibits** provide only a starting point allowing users to change or alter the document as needed to fit specific situations. These Exhibits or Figures are not official forms of the Department. Templates for these documents are available online at:

<http://www.dot.state.fl.us/rddesign/PPMManual/NForms/PPMForm.shtm>

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# Chapter 1

## Production of Plans

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# Chapter 1

## Production of Plans

### 1.1 General

Use this volume in conjunction with **Volume 1** of the **Plans Preparation Manual (PPM)**. Close attention must be paid to the harmonizing of design criteria and processes outlined in **Volume 1** 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. 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, 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 Manual** for such features as line weight, style, color, and level.

Many of the chapters in this volume contain "Generic" exhibits to provide examples of the sheets covered in those chapters. These exhibits are examples which were developed using FDOT criteria/standards in force at the time of their creation; however they are not to be used as a source for criteria unless specified elsewhere in the **PPM**. See **Volume 1** 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. A list of standard abbreviations is given in the ***Design Standards, Index No. 001***. Slight deviations from the standard abbreviations are allowed, provided that the abbreviation used is clear and easily understood.

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 2 decimal places.
  - 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 or Three-sided 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:

$$1 \text{ foot} = \frac{12 \text{ inches/foot}}{39.37 \text{ inches/meter}} = 0.30480061 \text{ meters}$$

For other direct mathematical conversions use the SI definition:

$$1 \text{ foot} = 0.3048 \text{ meters}$$

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.

Further information that may be useful in the converting Metric to English may be found in **Appendix A** of this volume.

## 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 as shown below:

**Figure 1.1 Project Information Block**

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

The road number box is intended for the state road number; i.e. same state road number that is shown on the Key Sheet. Place the prefix "SR" before the number for clarification. When a county road is shown in the box use the prefix "CR". The box should remain blank when the facility is neither a state nor county road.

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 1**.

Print contract plans to scale to size B (11" X 17"). These prints are to be generated from CADD design files in accordance with the **CADD Manual**. Sheets that feature grids (cross sections, plan-profile, etc.) can be printed with minor grid lines turned off or on. If the minor grids are printed, they are to be half-toned. The FDOT Engineering/CADD System Software provides plot example configuration files for this task.

Plan sheets other than Drainage Maps may use photography (aerial or other) when approved by the District Design Engineer. Using photography for Drainage Maps or SWPPP supplemental site maps do not require approval.

## **1.5 Plan Notes**

Plan notes are intended to be used to clarify design detail, construction practices or method for payment. In general, plan notes should be kept to a minimum. Only those notes that are job specific should be used. Plan notes should only be used to detail uniqueness and not to broaden or curtail requirements in the specifications. Do not use notes that restate the standard specifications or standard indexes. This will help to place proper emphasis on those notes that are job specific and avoid discrepancy of documents.

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

1. Signing and Pavement Marking Plans
2. Signalization Plans
3. Intelligent Transportation Systems (ITS) Plans
4. Lighting Plans
5. Landscape Plans
6. Architectural Plans
7. Structures Plans
8. Toll Facility Plans

Do not use components other than those listed above.

Modification for Non-Conventional Projects:

Delete the last sentence of the above paragraph and see RFP for requirements.

Utility Work by Highway Contractor Agreement Plans have a separate Financial Project ID and are typically treated as a strung project. When utility work is minimal, the District may decide to include these plans as a component set to the lead plans set.

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

If the plans are structures plans and there is no work on the approach roadway, the structures plans become the lead project. Any other sheets incidental to the project typically found within the roadway plans or other component plans (i.e., traffic control plans, signing and marking, etc.), may be included in the structures plans and numbered consecutively in accordance with the **Structures Manual, Volume 2 – Structures Detailing Manual**.

Prepare Toll Facility Plans in accordance with the Florida's Turnpike Enterprise current **General Tolling Requirements (GTR)**. The **GTR** and **Addendum(s)** to the **GTR** can be downloaded from the following link:

[http://www.floridasturnpike.com/design/prod\\_design/tppph/tppph.html](http://www.floridasturnpike.com/design/prod_design/tppph/tppph.html)

## 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 available. Begin all projects with a record search of available data and a field review by the Engineer of Record to determine additional data requirements such as supplemental survey needs, traffic data, utility information, etc.

Modification for Non-Conventional Projects:

See RFP for available data.

Additional information can be found in **Chapters 13-16** of **Volume 1**. 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.

Show data pertaining to topography, horizontal location of existing utilities and drainage structures 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. Specific requirements for typical section sheets are presented in **Chapter 6** of this Volume.

## 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 must 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

Modification for Non-Conventional Projects:

Delete **PPM 2.3** and follow **PPM 2.4**.

### 2.3.1 General

Requirements relating to the design process for various submittals are given in **Chapter 16, Volume 1** 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 1**.

## 2.3.2 Phases

The remainder of this section 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 1**: "The number of submittals and phase reviews is determined on a project-by-project basis and 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, which will be defined in the Scope of Services.

**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) must conduct an internal Quality Control (Q/C) review to ensure technically correct and complete plans. Revisions or corrections noted during the Q/C review must 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**  
 Provide the sheets listed as applicable

<b>ITEM</b>	<b>PHASE I</b>	<b>PHASE II*</b>	<b>PHASE III</b>	<b>PHASE IV</b>
Key Sheet	P	P	C	F
Signature Sheet		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
Summary of Drainage Structures		P	C	F
Optional Materials Tabulation		P	C	F
Project Layout	P	C	C	F
Roadway Plan-Profile	P	P	C	F
Traffic Monitoring Site		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
Three-Sided/Box Culvert Details			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	C	F
Temporary Traffic Control Plans	P	P	C	F
Utility Adjustments		P	C	F
Project Network Control Sheets	P	C	C	F
Selective Clearing and Grubbing		P	C	F
Developmental Design Standards		C	C	F
Mitigation Plans		P	C	F
Miscellaneous Structures Plans		P	C	F
Signing and Pavement Marking Plans		P	C	F
Signalization Plans		P	C	F
Intelligent Transportation System (ITS) Plans		P	C	F
Lighting Plans		P	C	F
Landscape Plans	P	P	C	F
Utility Work by Highway Contractor Agreement Plans			C	F
Contract Time			P	F
<b>Toll Facility Plans</b>				
Site/Civil	P	P	C	F
Architectural	P	P	C	F
Structural	P	P	C	F
Electrical		P	C	F
Mechanical		P	C	F
Plumbing		P	C	F
Communications		P	C	F
Systems		P	C	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 Department, 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, construction,  
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

**BACK-OF-SIDEWALK PROFILE (Worksheet) (con't)**

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

**TEMPORARY 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 Department, the following elements are required for a Phase II set of plans.

### **KEY SHEET**

Index of sheets  
Contract plans and component plans list

### **SIGNATURE SHEET**

(Signature Sheet is not part of the Classical Electronic Delivery)  
Sections for each Professional of Record  
Index of sheets for each Professional of Record  
Image of the seal(s)  
Appearance of the Digital Signature only to be applied in Phase IV  
(Note: Digital Signatures are not to be applied in this Phase)

### **SUMMARY OF PAY ITEMS**

Item numbers with descriptions

### **DRAINAGE MAP - PLAN VIEW**

Proposed structures with structure numbers  
Proposed storm drain 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 drain 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

### **OPTIONAL MATERIALS TABULATION**

Material type  
Structure number station and description  
Durability, cover requirements  
Optional culvert material application  
Culvert service life estimator  
Design service life

### **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  
Limits of wetlands

### **PLAN AND PROFILE - PROFILE VIEW**

Final profile grades and vertical curve data  
Mainline storm drain 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



**TRAFFIC MONITORING SITE**

Project Specific

**INTERCHANGE DRAINAGE MAP**

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

**TYPICAL SECTIONS**

Pavement Design

**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 drain pipes including sizes

**INTERSECTION LAYOUT (con't)**

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 drain 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 drain pipes  
Ditch PI stations with deflection angle left or right  
Proposed drainage structures with structure numbers  
Existing topography, drainage structures, utilities  
Limits of wetlands

**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 drain 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

**RETENTION/DETENTION POND DETAILS**

North arrow and scale  
Roadway centerline ties  
Proposed pond centerline with stationing  
Begin and end pond stations  
Side slopes, dimensions, and elevations  
R/W lines  
Berm, fence and gate locations  
Soil boring information  
Proposed pond drainage structures with structure numbers  
Existing topography, drainage structures, utilities  
Pond sections (2 perpendicular to each other)  
Pond Typical Section  
Limits of wetlands

**RETENTION/DETENTION POND CROSS  
SECTIONS**

Horizontal and vertical scale  
Existing ground line  
Station numbers  
Begin and end pond stationing  
Pond centerline and elevations  
R/W  
Soil borings  
Water table  
Extent of unsuitable material  
Earthwork quantities  
Existing utilities  
Proposed template with 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)

**TEMPORARY TRAFFIC CONTROL PLANS**

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

**UTILITY ADJUSTMENTS**

All existing utilities highlighted

**SELECTIVE CLEARING AND GRUBBING**

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

**MITIGATION PLANS**

Project Specific

**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)  
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)  
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

**ITS 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)  
Engineer of Record  
Consultants name & address, if applicable

**ITS PLANS - TABULATION OF QUANTITIES**

Project Specific

**ITS PLANS - PLAN SHEETS**

Project Specific, but must include:  
North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions  
Station equations  
Conflicting utilities, lighting or drainage  
Applicable pay items

**ITS PLANS - DETAIL SHEETS**

Project Specific

**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)  
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  
Fiscal year and sheet number  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Landscape Architect of Record name and registration number  
Consultants name, address, and contract number, if applicable  
Index of landscape plans

**LANDSCAPE PLANS - TABULATION OF QUANTITIES AND PLANT SCHEDULE**

Project Specific

**LANDSCAPE PLANS - TABULATION OF QUANTITIES AND SCHEDULE FOR IRRIGATION AND SITE AMENITIES**

Project Specific

**LANDSCAPE PLANS – PLANTING PLAN SHEETS**

Project centerline  
Edge of pavement (edge of traffic lanes)  
Curbs or curb and gutter  
Drainage systems  
Guardrails  
Right of way and/or limited access fence line  
Sidewalks or other planned or existing structures  
Lighting, signs, and signal poles  
Intersections and driveways which are noted in the plans  
Existing and proposed overhead and underground utility locations  
Clear Zone/Lateral offset (should be plotted or safety setback distances noted frequently on each plan sheet)  
View zones for permitted outdoor advertising signs  
Canopy limits  
Existing vegetation (to remain or be removed)

**LANDSCAPE PLANS – PLANTING PLAN SHEETS (con't)**

Existing off site features and conditions that affect or are affected by the project  
Fence and gate locations  
Setbacks from structural elements or drainage system  
Limits of clear sight  
Transit facilities  
Proposed Planting Plan (Plant symbols and Plant quantities)

**LANDSCAPE PLANS - IRRIGATION PLAN SHEETS**

(if applicable)  
Type of system  
Location and size of mainlines and lateral lines  
Type and location of spray heads and rotors  
Type and location of valves, sleeves, controllers, water sources/point of connection, backflow preventers, and isolation valves

**LANDSCAPE PLANS – DETAILS SHEET**

Applicable landscape details  
Irrigation symbology with associative descriptions (if applicable)

### 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 must 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 plan set. 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 must be revised as necessary based on the established construction duration.

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

Utility Work by Highway Contractor (UWHC) Agreement 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 must 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. Plans are electronically or digitally signed and sealed after this phase.

**Note:** Sometimes there are more submittals after Phase IV – Specifications (First Mail) and Plans Processing (Second Mail/CD Submittal). Usually plans are not “final” or signed & sealed until Plans Processing Second Mail/CD Submittal.

### 2.3.3 Roundabout Review and Submittal

Roundabout designs are to be approved by the State Roadway Design Engineer. Provide the 45% Roundabout Submittal Package to Central Office Roadway Design for review and comment.

The 45% Roundabout Submittal Package includes the following:

1. 45% plans (PDF and CADD)
  - Key Sheet with location map
  - Typical sections
  - Plan sheets showing roundabout layout, including;
    - dimensions for all major geometric components including splitter islands, circulatory roadway, truck apron, central island, bypass lanes, landscape buffers, sidewalks/multi-use paths, cross walks, bicycle bail-out ramps, etc.
    - existing and proposed right of way lines
    - significant topographic features including buildings, driveways, drainage structures, utilities, bicycle, pedestrian, and transit facilities.
  - Profile sheets
2. Traffic Forecast for Design Year (PDF)
  - AM and PM peak hourly through and turning volumes
  - AM and PM peak pedestrian crossing movements
  - Peak hour factor
  - Percentage of heavy vehicles
  - Volume distribution across lanes for multi-lane entries
3. Operational Analysis input and output (PDF)
4. Fastest Path Speed Checks in accordance with NCHRP 672 Section 6.7.1 (PDF and CADD)
5. Swept Path of the Design Vehicle in accordance with NCHRP 672 Section 6.7.2 (PDF and CADD)
6. Sight Distance Checks in accordance with NCHRP 672 Section 6.7.3 (PDF and CADD)

Central Office Roadway Design will provide review comments and schedule a meeting with the project team to resolve all issues regarding the comments. Provide Central Office Roadway Design a copy of the Phase III Plans submittal for verification of changes. An approval memorandum will then be issued by the State Roadway Design Engineer.

## 2.4 Design-Build Phase Submittals

**Section 2.4** applies exclusively to Design-Build projects.

### 2.4.1 General

Requirements relating to the design process for various submittals are given in **Chapter 16, Volume 1** 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 1**.

### 2.4.2 Phases

The remainder of this section 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 phase submittals.

For Design-Build projects, the standard submittal phases are as follows:

#### SUBMITTAL PHASES

- Technical Proposal
- 90% Component Plans
- Final Component Plans

**Figure 2.2** summarizes the plans sheet status required for each submittal.

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, consultant, or Design-Build Firm) must conduct an internal Quality Control (Q/C) review to ensure technically correct and complete plans. Any revisions or corrections noted during the Q/C review must 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 Department, 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 2.2 Summary of Design-Build Phase Submittals**  
 Provide the sheets listed as applicable

<b>ITEM</b>	<b>TECHNICAL PROPOSAL</b>	<b>90% PLANS</b>	<b>FINAL PLANS</b>
Key Sheet		P	F
Signature Sheet		P	F
Drainage Map	P	C	F
Interchange Drainage Map	P	C	F
Typical Section	P	C	F
Summary of Drainage Structures		C	F
Project Layout		C	F
Roadway Plan-Profile	P	C	F
Traffic Monitoring Site	P	C	F
Special Profile		C	F
Back-of-Sidewalk Profile		C	
Interchange Layout	P	C	F
Intersection Layout/Detail	P	C	F
Drainage Structures		C	F
Three-Sided/Box Culvert Details		C	F
Lateral Ditch Plan-Profile		C	F
Lateral Ditch Cross Section		C	F
Retention/Detention Pond Details		C	F
Roadway Soil Survey		C	F
Cross Sections		C	F
Temporary Traffic Control Plans	P	C	F
Utility Adjustments		C	
Project Network Control Sheets	P	C	F
Selective Clearing and Grubbing		C	
Developmental Design Standards		C	F
Mitigation Plans		C	F
Miscellaneous Structures Plans		C	F
Signing and Pavement Marking Plans	P	C	F
Signalization Plans		C	F
Intelligent Transportation System (ITS) Plans		C	F
Lighting Plans		C	F
Landscape Plans		C	F
Utility Work by Highway Contractor Agreement Plans		C	F
<b>Toll Facility Plans</b>			
Site/Civil	P	P	F
Architectural	P	P	F
Structural	P	P	F
Electrical		P	F
Mechanical		P	F
Plumbing		P	F
Communications		P	F
Systems		P	F

**Status Key:**

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

## 2.4.2.1 Requirements for Technical Proposal Submittal

For the Technical Proposal only, the Design Build team must submit a complete set of 11" X 17" plan sheets. As a supplement to the plan set, the team may submit select plan sheets no larger than 24" X 36" or roll plot(s) no larger than 24" X 96". Supplemental plan sheets or roll plots are desirable for such roadway features that cannot be presented adequately on 11" X 17" sheets, such as complex interchanges, Maintenance of Traffic phases and large complex intersections. Unless otherwise directed by the Department, the following elements are required for a Technical Proposal Submittal:

### **DRAINAGE MAP - PLAN VIEW**

Drainage divides and flow direction arrows  
High water information as required  
Preliminary horizontal alignment with stationing  
State, Federal, County highway numbers (as appropriate)  
Proposed storm drain trunk line and outfall locations  
Proposed Retention/Detention Pond Locations

### **INTERCHANGE DRAINAGE MAP - PLAN VIEW**

Preliminary interchange drainage with drainage areas and flow direction arrows

### **TYPICAL SECTIONS**

Mainline and crossroad typical sections  
R/W lines  
Traffic data  
Pavement Design

### **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 and stations of equations and exceptions  
Existing utilities  
Guide sign locations  
Limits of wetlands

### **PLAN AND PROFILE - PROFILE VIEW**

North arrow and scale  
Appropriate existing utilities  
Preliminary profile grade line  
Existing ground line with elevations at each end of sheet  
Begin and end stations for the project and stations of equations and exceptions  
Final profile grades and vertical curve data  
High water elevations

### **INTERCHANGE LAYOUT**

Curve data including superelevation and design speed  
Stationing and ties  
Access and/or frontage roads with dimensions and R/W  
Ramp identification

### **INTERSECTION LAYOUT**

North arrow and scale  
Existing topography (if applicable)  
Proposed R/W limits  
Length of turn lanes  
Geometric dimensions (radii, offsets, widths)  
Limits of proposed construction along side roads

### **TEMPORARY TRAFFIC CONTROL PLANS**

Project specific  
Other worksheets as necessary to convey concept and scope  
Preliminary traffic control plan  
Detour plan  
Phasing plan  
R/W – existing and additional if required

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

Preliminary layout of multi-column and overhead  
guide sign worksheets

**TOLL FACILITY PLANS**

Site/Civil  
Architectural  
Structural

## 2.4.2.2 Requirements for 90% Plans Component Submittal

Unless otherwise directed by the Department, the following elements are required for a 90% Plans Component Submittal:

### 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)  
Index of sheets  
Contract plans and component plans list

### SIGNATURE SHEET

(Signature Sheet is not part of the Classical  
Electronic Delivery)  
Sections for each Professional of Record  
Index of sheets for each Professional of Record  
Image of the seal(s)  
(Note: Digital Signatures are not to be applied  
in this Phase)

### 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

### DRAINAGE MAP – PLAN VIEW (con't)

Begin & end stations of project, bridge, bridge  
culverts & exceptions  
Existing structures & pipes with relevant  
information  
Proposed structures with structure numbers  
Proposed storm drain 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)  
State, Federal, county highway numbers (as  
appropriate)

### DRAINAGE MAP - PROFILE VIEW

Horizontal & vertical scale  
Begin & end stations of project, bridges, bridge  
culverts & exceptions  
Equations  
Ditch gradients including DPIs  
Final roadway profile grade line  
Mainline storm drain 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

North arrow and scale  
Stationing along baselines  
Ramp baselines with nomenclature  
Begin and end bridge stationing  
Final interchange configuration  
R/W lines

**INTERCHANGE DRAINAGE MAP (con't)**

Final Interchange drainage with drainage areas and flow direction arrows  
Final geometrics including PC and PT  
Proposed structures with structure numbers  
Proposed storm drain pipes  
Special ditches with DPI and elevation

**TYPICAL SECTIONS**

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

**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 drain 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 flow line elevations

**PROJECT LAYOUT**

Reference points (if layout sheet is required)

**ROADWAY PLAN 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 survey control sheet not included in plans set)

**ROADWAY PLAN PROFILE – PLAN VIEW (con't)**

Curb return numbers, station ties and elevations  
Proposed drainage structures with structure nos.  
Proposed R/W lines  
Existing utilities  
Limits of wetlands  
Flood data if not shown elsewhere  
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)

**ROADWAY PLAN PROFILE - PROFILE VIEW**

Begin and end stations for the project and stations of equations and exceptions  
Existing ground line with elevations at each end of sheet  
Final profile grades and vertical curve data  
High water elevations  
Appropriate existing utilities  
Mainline storm drain pipes  
Proposed special ditches  
Ditch gradients with DPI station and elevation  
Non-standard superelevation transition details  
High water elevations  
Mainline drainage structures with structure numbers  
Cross drains with structure number, size and flow line elevations

**TRAFFIC MONITORING SITE**

Project Specific

**SPECIAL PROFILE**

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

### **BACK-OF-SIDEWALK PROFILE**

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  
Grade line notation: Specifically the numeric difference relative to roadway profile grade line

### **INTERCHANGE LAYOUT**

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

Ramp identification  
Final geometrics  
Radii, transition/taper lengths

### **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)  
Limits of proposed construction along side roads  
Applicable notes

### **INTERSECTION LAYOUT (con't)**

Cross drains with structure numbers and pipe sizes  
Storm drain pipes including sizes  
Final geometrics including dimensions, radii, offsets, station pluses and taper/transition lengths

### **THREE-SIDED/BOX CULVERT DETAILS**

Complete

### **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 drain pipes  
Ditch PI stations with deflection angle left or right  
Proposed drainage structures with structure numbers  
Existing topography, drainage structures, utilities  
Limits of wetlands

### **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 drain 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



**LATERAL DITCH CROSS SECTIONS (con't)**

Survey centerline and elevation  
R/W  
Begin and end ditch stations  
Begin and end excavation stations  
Existing utilities  
Proposed template with ditch bottom elevation

**RETENTION/DETENTION POND DETAILS**

North arrow and scale  
Roadway centerline ties  
Proposed pond centerline with stationing  
Begin and end pond stations  
Side slopes, dimensions, and elevations  
R/W lines  
Berm, fence and gate locations  
Soil boring information  
Proposed pond drainage structures with structure numbers  
Existing topography, drainage structures, utilities  
Pond sections (2 perpendicular to each other)  
Pond Typical Section  
Limits of wetlands

**RETENTION/DETENTION POND CROSS SECTIONS**

Horizontal and vertical scale  
Existing ground line  
Station numbers  
Begin and end pond stationing  
Pond centerline and elevations  
R/W  
Soil borings  
Water table  
Extent of unsuitable material  
Earthwork quantities  
Existing utilities  
Proposed template with bottom elevation

**ROADWAY SOIL SURVEY**

Soil data  
Project specific

**CROSS SECTIONS**

Scale  
Existing ground line  
Existing survey baseline elevations  
Station numbers

**CROSS SECTIONS (con't)**

Baseline of survey labeled  
Existing utilities  
Proposed template with profile grade elevations along mainline and cross-streets as necessary

**TEMPORARY TRAFFIC CONTROL PLANS**

Project specific  
Other worksheets as necessary to convey concept and scope.  
Final traffic control plan  
Detour plan  
Phasing plan  
R/W - existing and additional if required  
Existing Utilities

**UTILITY ADJUSTMENTS**

All existing utilities highlighted

**SELECTIVE CLEARING AND GRUBBING**

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

**MITIGATION PLANS**

Project Specific

**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)  
Engineer of Record  
Consultants name & address, if applicable

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

North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions

**SIGNING AND PAVEMENT MARKING**

**PLANS - PLAN SHEETS (con't)**

Station equations  
Conflicting utilities, lighting or drainage  
Pavement markings  
Sign locations

**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)  
Engineer of Record  
Consultants name & address, if applicable

**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

**SIGNALIZATION PLANS - POLE SCHEDULE**

Pole location, number, type  
Pole dimensions  
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

**ITS 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)  
Engineer of Record  
Consultants name & address, if applicable

**ITS PLANS - PLAN SHEETS**

Project Specific, but must include:  
North arrow and scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions  
Station equations  
Conflicting utilities, lighting or drainage

**ITS PLANS - DETAIL SHEETS**

Project Specific

**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)  
Engineer of Record  
Consultants name & address, if applicable

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

Each pole by number with location, arm length,  
mounting height and luminaire wattage  
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

**LIGHTING PLANS - PLAN SHEETS (con't)**

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  
Fiscal year and sheet number  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/end stations & exceptions  
Station Equations (if location map is shown)  
Landscape Architect of Record name and registration number  
Consultants name, address, and contract number, if applicable  
Index of landscape plans

**LANDSCAPE PLANS – PLANTING PLAN SHEETS**

Project centerline  
Edge of pavement (edge of traffic lanes)  
Curbs or curb and gutter  
Drainage systems  
Guardrails  
Right of way and/or limited access fence line  
Sidewalks or other planned or existing structures  
Lighting, signs, and signal poles  
Intersections and driveways which are noted in the plans  
Existing and proposed overhead and underground utility locations  
Clear Zone/Lateral offset (should be plotted or safety setback distances noted frequently on each plan sheet)  
View zones for permitted outdoor advertising signs  
Canopy limits  
Existing vegetation (to remain or be removed)  
Existing off site features and conditions that affect or are affected by the project  
Fence and gate locations

**LANDSCAPE PLANS – PLANTING PLAN SHEETS (con't)**

Setbacks from structural elements or drainage system  
Limits of clear sight  
Transit facilities  
Proposed Planting Plan

**LANDSCAPE PLANS - IRRIGATION PLAN SHEETS**

(if applicable)  
Type of system  
Location and size of mainlines and lateral lines  
Type and location of spray heads and rotors  
Type and location of valves, sleeves, controllers, water sources/point of connection, backflow preventers, and isolation valves

**LANDSCAPE PLANS – DETAILS SHEET**

Applicable landscape details  
Irrigation symbology with associative descriptions (if applicable)

### **2.4.2.3 Final Plans Submittal**

Ordinarily, the only other remaining work to be done will be to comply with comments received as a result of the 90% review.

All plan sheets and the Financial Management (FM) system must be updated. Final drainage tabulations must also be furnished for review.

Utility Work by Highway Contractor (UWHC) Agreement Plans, consisting of a key sheet, and mainline plan-profile showing proposed utility horizontal and vertical locations, are also to be included in the Final submittal.

A "marked up" set of the plans and review comments must 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.

### **2.4.2.4 Released For Construction Plans**

After all corrections noted in the Final Plans submittal have been satisfactorily resolved as determined by the Department, the Department's Project Manager will initial, date and stamp each submittal as "Released for Construction". Only signed and sealed plans stamped "Released for Construction" by the Department's Project Manager are valid. All work performed by the Design-Build Firm prior to the Department's release of Plans will be at the Design-Build Firm's risk.

## Chapter 3

### Key Sheet and Signature Sheet

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## Chapter 3

### Key Sheet and Signature Sheet

#### 3.1 General

The key sheet is the first sheet of the contract plans. This sheet describes the project and the contents of the plans. The key sheet cell can be found in the FDOT Engineering/CADD Systems Software.

See *Exhibits KS-1 and 2* for examples of a key sheet.

The signature sheet is the second sheet of the contract plans. This sheet defines a professional's area of responsibility for those portions of the document being digitally signed. The signature sheet shows the Digital Signature Appearance of the Professional(s) of Record.

See *Exhibits SS-1 and 2* for examples of a signature sheet.

#### 3.2 Key Sheet

##### 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. Place the number immediately under the heading "CONTRACT PLANS" in the top center of the sheet. When the project involves Federal funds, place the words "(Federal Funds)" under the Financial Project ID. Place the county name and the state road number under the Financial Project ID or "(Federal Funds)". Place within parentheses the county and roadway section number associated with the Straight Line Diagrams to the right of the county name.

When strung projects are independently prepared but are let in the same construction contract, place the strung project note, as shown in *Section 3.2.13*, on the right side of the key sheet. The strung project note is to be shown only on the lead component key sheet.

On projects which have one Contract plans set, but multiple Financial Project ID's, place all of the Financial Project ID's immediately under the heading "CONTRACT PLANS" on the key sheet. On all other plan sheets, show only the lead Financial Project ID in the title block.

### **3.2.2 Fiscal Year and Sheet Number**

Place the fiscal year for which the Letting is scheduled in the fiscal year box on the bottom right corner. For example, enter 16 for a project that has a Letting date during the July 2015 to June 2016 fiscal year.

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**

Place the length of roadway, bridges, bridge culverts, exceptions, and the net and gross lengths of the project 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 (not including bridge culverts)
3. Gross = End Project - Begin Project (adjusted for Equations)

Compute the roadway and bridge lengths in feet and converted to miles, rounded to three decimal places. Use the baseline of survey to compute the length of the project unless:

- the construction line is substantially different in length (100 feet or more), or
- the baseline of survey is outside the right of way, or
- the baseline of survey bridge length is different from the baseline or centerline of construction bridge length.

When a line other than the baseline of survey is used to compute the length of a project, a note stating which line was used must be placed adjacent to the length of the project box.



If divided highways have significantly different lengths for the left and right roadways, base the project length on the longer roadway. A note stating which roadway was used must 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.

The length of project box is to be shown only on the lead component key sheet.

### 3.2.4 Project Location Map

Place the project location map in the center of the key sheet. The map consists of a reproduced portion of one or more county maps showing the project location. County maps in Microstation (\*.dgn) format or in Portable Document Format (PDF) can be downloaded at:

<http://www.dot.state.fl.us/surveyingandmapping/countymap.shtm>

A utility to download the county map and clip out the project location area is provided in the **FDOT Engineering/CADD Systems Software**.

The intent of the project location map is to provide enough information so that the project location is easily understood. Show Section, Township, and Range lines and numbers to provide clarity and scale to the project location map. Show county, city and urban limits where applicable.

Designate roads by name and State Road number or U.S. Highway number. Show the name of the next incorporated city at the edge of the map to which these roads lead. Use standard symbols as shown in the **Design Standards, Index 002** and FDOT Engineering/CADD Systems Software.

Indicate project location using a heavy solid line of substantial width. It is sometimes advantageous to show station numbers at regular intervals, particularly with city street projects. Flag and station the following:

- Begin and end project limits. Provide milepost, correct to three decimals, under the project stations.
- Begin and end limits of bridges and bridge culverts. When an existing structure is being replaced, indicate the proposed structure and not the existing.
- Station equations

- Project exception limits (mileposts excluded from project)
- Rail crossings (see **Section 3.2.11** of this chapter)

Calculate the end milepost by adding the distance in miles between begin and end project to the begin milepost. Plans are to be prepared using stationing in linear feet. A project may be prepared using mileposts when linear foot stationing is unavailable. All station information is to be consistent with the station information entered into the Work Program Administration system during final design. See **Volume 1, Section 14.2**.

When several projects are covered by the same set of plans, flag and station begin and end project limits for each Financial Project ID.

The project location map is to be shown only on the lead component key sheet.

Show a small-scale state map at the upper right portion of the lead key sheet and indicate the location of the project thereon. Show the Construction Contract Number in the upper right corner above the State Map.

### **3.2.5 North Arrow**

Place a north arrow on the right side of the project location map. An optional map scale may be shown directly below the north arrow. If provided, use a bar scale with the scale distance shown between the ticks. Orient the map so that the north arrow points toward the top of the sheet. If the north arrow cannot be oriented toward the top of the sheet, then orient the map so that the north arrow points to the right.

### **3.2.6 Components of Contract Plans Set**

List component plans included in the contract plans set in the upper left corner in the following order:

1. Roadway
2. Signing and Pavement Marking
3. Signalization
4. Intelligent Transportation Systems (ITS)
5. Lighting
6. Landscape

7. Architectural
8. Structures
9. Toll Facilities

When sheets covering items such as signing and pavement markings, signalization, ITS, lighting and landscape are included and numbered consecutively within the roadway plans (or structures plans if lead project), do not show these as components of the contract plans set.

Structure plans may become the lead plans set when there is no work on the approach roadway. Any other sheets incidental to the project typically found within the roadway plans or other component plans (e.g. traffic control plans, signing and marking, etc.), may be included in the structures plans and numbered consecutively in accordance with the ***Structures Manual, Volume 2 – Structures Detailing Manual***.

Another component set of plans (e.g. signals, landscaping, etc.), may become the lead plans set when there is no Roadway component. Any sheets incidental to the project typically found within the roadway plans or other component plans, may be included in the lead plans set and numbered consecutively. Sheet number prefixing is not required for the lead plans set; i.e. "IT-#" not required for ITS Plans when they are the lead plans set.

### **3.2.7 Index of Roadway Plans**

Place an index of roadway plan sheets on the left side of the key sheet. Each component plans set will have an index of sheets on its respective key sheet.

Assemble roadway plans in the following order:

1. Key Sheet
2. Signature Sheet
3. Summary of Pay Items
4. Drainage Map
5. Interchange Drainage Map
6. Typical Section
7. Summary of Quantities
8. Summary of Drainage Structures
9. Optional Materials Tabulation
10. Project Layout

11. Project Notes
12. Roadway Plan-Profiles
13. Traffic Monitoring Site
14. Special Profiles
15. Back-of-Sidewalk Profiles
16. Interchange Layout
17. Ramp Terminal Details
18. Intersection Layout/Detail
19. Drainage Structures
20. Three-Sided/Box Culvert Details
21. Outfall/Lateral Ditch Plan-Profiles
22. Outfall/Lateral Ditch Cross Sections
23. Special Details
24. Cross Section Pattern
25. Roadway Soil Survey
26. Cross Sections
27. Stormwater Pollution Prevention Plans (SWPPP)
28. Temporary Traffic Control Plan
29. Utility Adjustments
30. Project Network Control Sheet
31. Selective Clearing and Grubbing
32. Developmental Design Standards
33. Signing and Pavement Marking Plans\*
34. Signalization Plans\*
35. ITS Plans\*
36. Lighting Plans\*
37. Landscape Plans\*
38. Mitigation Plans
39. Miscellaneous Structures Plans
40. Toll Facilities\*

\* When not separate component plans.

The roadway plans may contain sheets which were prepared separately (perhaps by a sub-consultant) and incorporated into the roadway plans early in the design process (prior to the establishment of sheet numbering). As an option, these may be identified with the following prefixes and placed at the end of the numbered sequence of the roadway plans:

CTL-# Project Survey Control Sheets

GR-# Soil Survey and Report of Core Borings normally associated with the roadway plans set (including miscellaneous structures but excluding bridges and walls)

TR-# Tree Survey Sheets

UTV-# Verified Utility Locate Sheets

Note: Other component plans may also utilize the sheet prefixes defined in their respective chapters.

### **3.2.8 List of Revised Index Drawings**

When Design Standards Revisions (DSR) are released by Design Bulletin, the engineer must determine which revised Index drawings apply to the project and incorporate those index drawings into the plan set. Those revised index drawings must be listed on the lead Key Sheet beneath the “List of Revised Index Drawings” header. If no applicable revised index drawings are included in the plans, the “List of Revised Index Drawings” header on the Key Sheet is not required.

### **3.2.9 Professional Responsibility**

Place the name of the Engineer of Record, Architect or Landscape Architect of Record and registration number on the right side of the sheet.

When applicable, place the name, address, consultant contract number, certificate of authorization number, and vendor number of the consultant firm on the right side of the sheet.

Place the name of the Department Project Manager below the length of project. For key sheets where length of project is not required, show the name in the same relative location on the key sheet.

Place the name and address of the Delegated Engineer for shop drawing reviews on the right side of the sheet.

### 3.2.10 Governing Standards and Specifications

Insert the year of the governing **Design Standards** and the month and year of the governing **Standard Specifications for Road and Bridge Construction** in a note at the lower left corner of the contract plans lead key sheet. Do not show the Governing Specifications and Standards note on the key sheet of component plans. Show the note only on the lead key sheet and the Structures General Notes (see the **Structures Detailing Manual, Section 5.2 Typical General Notes**).

The **Design Standards** are published and released annually on July 1, as an **eBook** posted on the Roadway Design Office web site. The release of the **Design Standards eBook (DSeB)** is announced by **Design Bulletin** which specifies the effective date for implementation of January 1, each year.

Revisions to the **DSeB** produced by the Department between regularly scheduled releases are implemented by issuing **Design Bulletins** for all applicable revised **Index Drawings**. List the appropriate revised Index drawing number with associated sheet number on the lead key sheet.

Revisions to the **DSeB** will be issued by Design Bulletin on an “as needed” basis to affect changes of immediate concern. The Design Bulletin will specify effective date of implementation. The revised **Index Drawings**, any applicable **Instructions for Design Standards (IDS)** and the **Design Bulletin** which implement these revisions are issued and posted on the Roadway Design Office web site under the **Design Standards** webpage and under the Design Standards Revisions (DSR).

Insert **Developmental Design Standards (DDS)** at the end of each component plan sets as applicable. When included in bridge plan sets, insert **DDSs** before existing bridge plans if they are present. List **DDSs** in the index of sheets for the plans component in which they are included. Follow the process shown in the “Developmental Design Standards Usage Process for Design-Bid-Build Projects” located in the link provided on the top of the DDS Webpage for requesting and using a **DDS**.

<http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm>

### **3.2.11 Railroad Crossing**

Flag and station any railroad crossing within the limits of construction on the key sheet, including name of railroad, DOT/AAR crossing number, and railroad milepost.

### **3.2.12 Revisions**

Show a complete record of all plans revisions on the lead key sheet (usually the roadway component) in the lower left corner under the “Revisions” Header. Include the component (such as roadway, structures, signing and pavement marking), the sheet numbers revised, and the date when the sheet was revised. List the unique numbered symbol that corresponds to the Revision Number on the Revision Memo and modified sheets as well.

List revisions to strung project on the lead key sheet in the lower left corner, under the respective Financial Project ID.

If there are no revisions to the plans, the “Revisions” Header is not required.

Show revisions to the Key sheet in a Key Sheet Revisions block placed on the right side of each component key sheet. List the revision date and a brief description of the revision. These revisions will also be noted in the “Revisions” area. If there are no Key Sheet revisions, the Key Sheet Revisions block is not required.

If the only change to a key sheet is a recorded revision under the “Revisions” Header, no entry is made in the Key Sheet Revisions block. The Key Sheet Revisions block is only used to record changes to the Key Sheet other than “Revisions” area notes.

### 3.2.13 Key Sheet Notes

Include the following notes on the Key Sheet as applicable:

1. The following note to be used for strung projects:

NOTE: THIS PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID(S) \_\_\_\_\_.

2. The following note to be used on all projects:

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

3. The following notes to be used on all projects:

GOVERNING STANDARDS AND SPECIFICATIONS:

Florida Department of Transportation, 20\_\_ Design Standards and revised Index Drawings as appended herein, and \_\_\_ 20\_\_ Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the “Design Standards” link at the following web site:

<http://www.dot.state.fl.us/rddesign/>

For the Standard Specifications for Road and Bridge Construction click on the “Standard Specifications” link at the following web site:

<http://www.dot.state.fl.us/programmanagement/>



### 3.3 Signature Sheet

A Signature Sheet is required for all contract plan sets, even when there is only one Professional of Record. The title block of this sheet is to contain the information for the EOR that is designated on the Key Sheet, showing either:

1. The printed name, address, and license number of the engineer, or
2. If practicing through a duly authorized engineering business, the name and license number of the engineer, and the name, address and certificate of authorization number of the engineering business.

#### 3.3.1 Digital Signature Placement

By placing a digital signature on the Signature Sheet of a multi-sheet plan set, the Professional of Record associates their professional signature with the entire plan set. The Signature Sheet provides a Statement of Responsibility delineating the extent of the professional's responsibility and identifies the component set and specific sheets for which the professional is accepting responsibility. See the ***FDOT CADD Manual*** for more details.

Large or complex projects may be delivered as individual signed and sealed components of the contract plans set (e.g. Roadway plans, Signing and Pavement Marking Plans, Structure Plans, etc.). With this option, each component must have a Signature Sheet following the component Key Sheet. Coordinate this option with the District Specifications and Plans Processing Offices.

In cases where time of delivery necessitates that a sheet be signed and sealed in advance of plans assembly, the Professional of Record will place their Digital Signature on the sheet being signed and sealed in a separate PDF document. This separate PDF must be included in the Digital Delivery. The Digital Signature for this sheet will not appear on the Signature Sheet of the lead project. Coordinate this process with the District Specifications and Plans Processing Offices.

#### 3.3.2 Digital Signature Appearance

A Digital Signature Appearance is the visual representation of a Digital Signature applied to a document. The Digital Signature Appearance is composed of combinations of informational fields (such as dates or text) and other information. The Digital Signature Appearance must include the professional's name and the date/time of signing stamp as the minimum. See ***Exhibit SS-1*** for an example of Digital Signature Appearance.

### **3.3.3 Seal**

The professional(s) will include a representation of their Seal next to the Digital Signature Appearance. Seal representations are provided with the FDOT Engineering/CADD Systems Software which may be modified for use by Signatories. Each respective Board of Professional Regulation has enacted in their section of the Florida Administrative Code the requirements for the size and representation of a Seal. See **Exhibit SS-1** for Seal representations.

### **3.3.4 Statement of Responsibility**

The Statement of Responsibility is used to define the professional's limits of responsibility and any exculpatory language. Place this statement below the Seal and Digital Signature Appearance and above the sheet index. The Statement of Responsibility must indicate the applicable Rule of the Florida Administrative Code (F.A.C.). The Notice of Official Record note, as described in **Section 19.2** of Volume I, will not be placed on the right border for the Signature Sheet. See **Exhibit SS-1** for an example of Statement of Responsibility.

Exculpatory language may be included in cases where Signatories share responsibility for content on any given sheet. In those cases additional text must include the limitations of their responsibility.

### **3.3.5 Index**

The Index is a list of sheets that the professional is responsible for signing and sealing. Place a separate Index below the Statement of Responsibility for each Professional of Record. A Signature Sheet may bear more than one Index, depending upon the number of Professionals of Record responsible for the plans. See **Exhibit SS-1** for Index examples.

There may be sheets common to more than one Professional of Record, and in such cases, exculpatory language should be used to differentiate each area of responsibility.

### **3.3.6 Revisions**

A revision Signature Sheet is created for revisions and is numbered using an alpha suffix (2A, 2B, etc.). Since revisions to digitally delivered plans only include added, removed and modified sheets, only the affected Signatories need to be included on the revision Signature Sheet. See **Exhibit SS-2** for an example of a revision Signature Sheet.

**COMPONENTS OF CONTRACT PLANS SET**

- ROADWAY PLANS
- SIGNING AND PAVEMENT MARKING PLANS
- SIGNALIZATION PLANS
- INTELLIGENT TRANSPORTATION SYSTEMS PLANS
- LIGHTING 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	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS
4	DRAINAGE MAP
5-6	TYPICAL SECTIONS
7	TYPICAL SECTION DETAILS
501 - 50-6	SUMMARY OF QUANTITIES
8	SUMMARY OF DRAINAGE STRUCTURES
9	OPTIONAL MATERIALS TABULATION
10	PROJECT LAYOUT
11	PROJECT NOTES
12-15	ROADWAY PLAN-PROFILES
16	TRAFFIC MONITORING SITE
17	SPECIAL PROFILES
18	INTERSECTION LAYOUT/DETAIL
19-25	DRAINAGE STRUCTURES
26-32	BOX CULVERT DETAILS
33	LATERAL DITCH PLAN-PROFILES
34	LATERAL DITCH CROSS SECTIONS
35	SPECIAL DETAILS
36	ROADWAY SOIL SURVEY
37-47	CROSS SECTIONS
48	STORMWATER POLLUTION PREVENTION PLANS
49-52	TEMPORARY TRAFFIC CONTROL PLANS
53-57	UTILITY ADJUSTMENTS
58-62	SELECTIVE CLEARING AND GRUBBING

**LIST OF REVISED INDEX DRAWINGS**

INDEX NO.	SHEET NO.
400	ALL
420	1 and 3 of 4
852	1-5 of 8
11871	1 of 2

**GOVERNING STANDARDS AND SPECIFICATIONS:**

Florida Department of Transportation, 2016 Design Standards and revised Index Drawings as appended herein, and January 2016 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

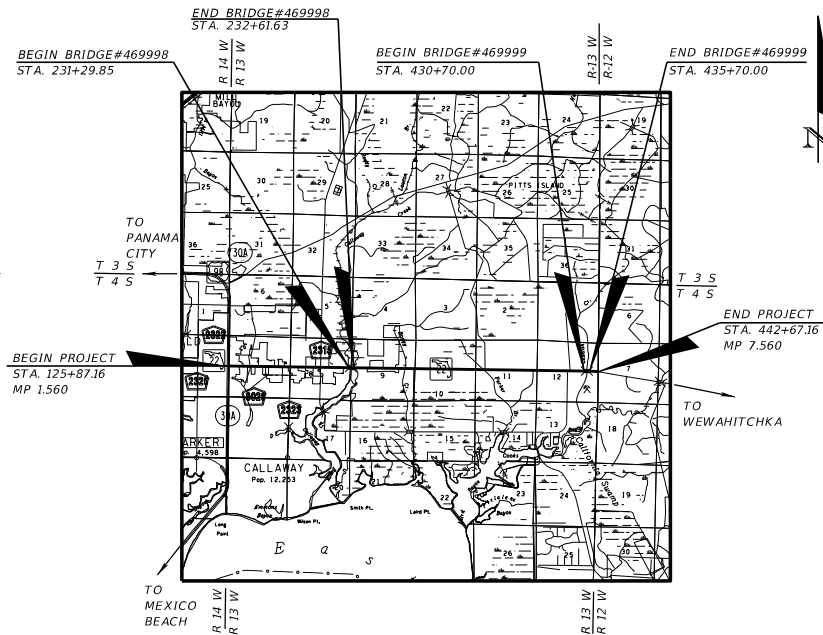
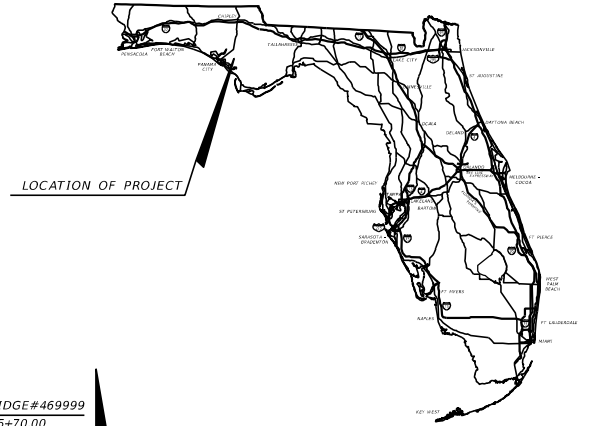
For Design Standards click on the "Design Standards" link at the following web site: <http://www.dot.state.fl.us/rddesign/>

For the Standard Specifications for Road and Bridge Construction click on the "Standard Specifications" link at the following web site: <http://www.dot.state.fl.us/programmanagement/>

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

FINANCIAL PROJECT ID 000001-1-52-01  
(FEDERAL FUNDS)  
BAY COUNTY (46080)  
STATE ROAD NO. 22



LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	31,048.22	5.880
BRIDGES	631.78	0.120
NET LENGTH OF PROJECT	31,680.00	6.000
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	31,680.00	6.000

FDOT PROJECT MANAGER: George Jetson, P.E.

**ROADWAY SHOP DRAWINGS  
TO BE SUBMITTED TO:**

JOHN ALAN DOE, P.E. NO. 99991  
ROADWAY ENGINEERS, INC.  
123 MAIN STREET  
TALLAHASSEE, FL 32301

**PLANS PREPARED BY:**

ROADWAY ENGINEERS, INC.  
123 MAIN STREET  
TALLAHASSEE, FL 32301  
CERTIFICATE OF AUTHORIZATION: 12345

NOTE: THIS PROJECT TO BE LET TO CONTRACT  
WITH FINANCIAL PROJECT ID 000002-1-52-02

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

**EXHIBIT KS-1**  
Date: 1/1/16

ROADWAY PLANS ENGINEER OF RECORD: John Alan Doe

P.E. NO.: 99991

FISCAL YEAR	SHEET NO.
15	1

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

**COMPONENTS OF CONTRACT PLANS SET**

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

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT

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

**INDEX OF ROADWAY PLANS**

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2A	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS
4	DRAINAGE MAP
5-6	TYPICAL SECTIONS
7	TYPICAL SECTION DETAILS
SO1 - SO-6	SUMMARY OF QUANTITIES
8	SUMMARY OF DRAINAGE STRUCTURES
9	OPTIONAL MATERIALS TABULATION
10	PROJECT LAYOUT
11	PROJECT NOTES
12-15	ROADWAY PLAN-PROFILES
16	TRAFFIC MONITORING SITE
17	SPECIAL PROFILES
18	INTERSECTION LAYOUT/DETAIL
19-25	DRAINAGE STRUCTURES
26-32	BOX CULVERT DETAILS
33	LATERAL DITCH PLAN-PROFILES
34	LATERAL DITCH CROSS SECTIONS
35/35A	SPECIAL DETAILS
36	ROADWAY SOIL SURVEY
37-47	CROSS SECTIONS
48	STORMWATER POLLUTION PREVENTION PLANS
49-52	TEMPORARY TRAFFIC CONTROL PLANS
53-57	UTILITY ADJUSTMENTS
58-62	SELECTIVE CLEARING AND GRUBBING

**LIST OF REVISED INDEX DRAWINGS**

INDEX NO.	SHEET NO.
400	ALL
420	1 and 3 of 4
852	1-5 of 8
11871	1 of 2

**GOVERNING STANDARDS AND SPECIFICATIONS:**

Florida Department of Transportation, 2014 Design Standards and revised Index Drawings as appended herein, and July 2014 Standard Specifications for Road and Bridge Construction, as amended by Contract Documents.

For Design Standards click on the "Design Standards" link at the following web site: <http://www.dot.state.fl.us/rddesign/>

For the Standard Specifications for Road and Bridge Construction click on the "Standard Specifications" link at the following web site: <http://www.dot.state.fl.us/programmanagement/>

**REVISIONS**

FINANCIAL PROJECT ID 000001-1-52-01

- △ Roadway Sheets 1, 6, 7 & 13 (Revised 1-10-14)
- △ Landscape Plans (Revised 1-10-14)
- △ Signing & Pavement Marking Sheets 5-2 & 5-3 (Revised 3-10-14)
- △ Signalization Sheets T-1 & T-2 (Revised 3-10-14)
- △ Roadway Sheets 14 & 33 (Revised 3-31-14)
- △ Summary Of Pay Items (Revised 3-31-14)
- △ Roadway Sheet 1, 2A, & 35A (Revised 10-14-14)

FINANCIAL PROJECT ID 000002-1-52-02

- △ Roadway Sheets 1, 8 & 10 (Revised 1-30-14)
- △ Structure Sheets B-1 & C-1 thru C-10 (Revised 1-30-14)

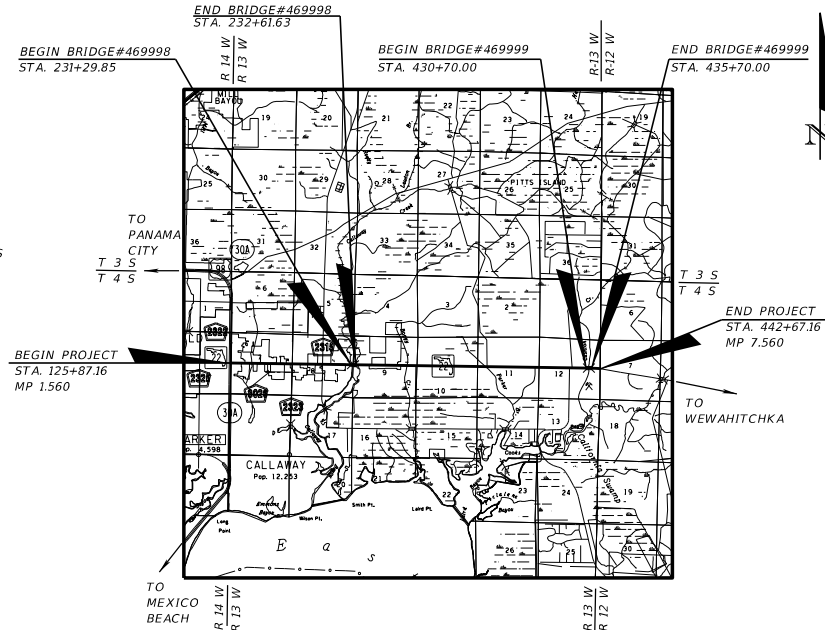
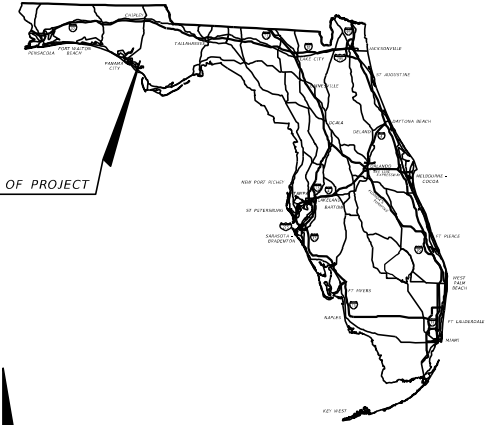
STATE OF FLORIDA  
**DEPARTMENT OF TRANSPORTATION**

**CONTRACT PLANS**

FINANCIAL PROJECT ID 000001-1-52-01

(FEDERAL FUNDS)  
**BAY COUNTY (46080)**

STATE ROAD NO. 22



LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	31,048.22	5.880
BRIDGES	631.78	0.120
<b>NET LENGTH OF PROJECT</b>	<b>31,680.00</b>	<b>6.000</b>
EXCEPTIONS	0.00	0.000
<b>GROSS LENGTH OF PROJECT</b>	<b>31,680.00</b>	<b>6.000</b>

KEY SHEET REVISIONS	
DATE	DESCRIPTION
1-10-14	Added Landscape Plans to list of Component Plans
10-14-14	Added Sheet Numbers 2A & 35A

**EXHIBIT KS-2**  
Date: 1/1/16

ROADWAY PLANS ENGINEER OF RECORD: **John Alan Doe**

P.E. NO.: **99991**

FISCAL YEAR	SHEET NO.
15	1

**ROADWAY SHOP DRAWINGS TO BE SUBMITTED TO:**

JOHN ALAN DOE, P.E. NO. 99991  
 ROADWAY ENGINEERS, INC.  
 123 MAIN STREET  
 TALLAHASSEE, FL 32301

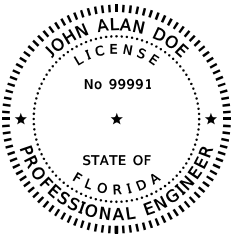
**PLANS PREPARED BY:**

ROADWAY ENGINEERS, INC.  
 123 MAIN STREET  
 TALLAHASSEE, FL 32301  
 CERTIFICATE OF AUTHORIZATION: 12345

NOTE: THIS PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID 000002-1-52-02

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

FDOT PROJECT MANAGER: George Jetson, P.E.



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**JOHN ALAN DOE**  
Date: 2013.10.09  
16:52:48 - 4'00'

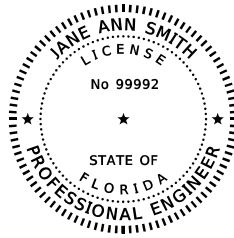
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ROADWAY ENGINEERS, INC.  
123 MAIN STREET  
TALLAHASSEE, FL 32301  
CERTIFICATE OF AUTHORIZATION: 12345  
JOHN ALAN DOE, P.E. NO. 99991

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 6G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SIGNATURE SHEET
3 - 3A	SUMMARY OF PAY ITEMS
4	DRAINAGE MAP
5	TYPICAL SECTIONS
6	TYPICAL SECTION DETAILS
SQ-1 - SQ-37	SUMMARY OF QUANTITIES
7 - 10	SUMMARY OF DRAINAGE STRUCTURES
12 - 16	ROADWAY PLAN-PROFILES
17 - 18	SPECIAL PROFILES
19	INTERSECTION LAYOUT/DETAIL
20 - 26	DRAINAGE STRUCTURES
27	LATERAL DITCH PLAN-PROFILES
28	LATERAL DITCH CROSS SECTIONS
29	SPECIAL DETAILS
30	ROADWAY SOIL SURVEY
31 - 42	CROSS SECTIONS
43 - 45	STORM WATER POLLUTION PREVENTION PLAN
46 - 50	TEMPORARY TRAFFIC CONTROL PLANS
51 - 54	UTILITY ADJUSTMENTS
55 - 59	SELECTIVE CLEARING AND GRUBBING



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**JANE ANN SMITH**  
Date: 2013.10.09  
16:40:48 - 4'00'

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ROADWAY ENGINEERS, INC.  
123 MAIN STREET  
TALLAHASSEE, FL 32301  
CERTIFICATE OF AUTHORIZATION: 12345  
JANE ANN SMITH, P.E. NO. 99992

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 6G15-23.004, F.A.C.

ROADWAY PLANS

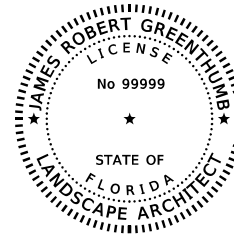
SHEET NO. SHEET DESCRIPTION

2 SIGNATURE SHEET

SIGNING & PAVEMENT MARKING PLANS

SHEET NO. SHEET DESCRIPTION

S-1 KEY SHEET  
S-2 TABULATION OF QUANTITIES  
S-3 GENERAL NOTES  
S-4 - S-14 PLAN SHEETS  
S-15 GUIDE SIGN DETAILS



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**JAMES ROBERT GREENTHUMB**  
Date: 2013.10.09  
15:35:13 - 4'00'

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENTS.

LANDSCAPERS, LLC.  
345 IVY LANE  
ORLANDO, FL 32801  
CERTIFICATE OF AUTHORIZATION: 98765  
JAMES ROBERT GREENTHUMB, L.A. NO. 99999

THE ABOVE NAMED LANDSCAPE ARCHITECT SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 6G10-11.001, F.A.C.

ROADWAY PLANS

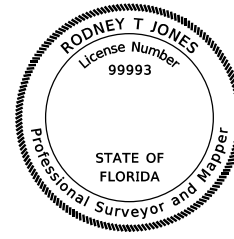
SHEET NO. SHEET DESCRIPTION

2 SIGNATURE SHEET

LANDSCAPE PLANS

SHEET NO. SHEET DESCRIPTION

LD-1 KEY SHEET  
LD-2 - LD-3 TABULATION OF QUANTITIES / PLANT SCHEDULE  
LD-4 - LD-17 PLAN SHEETS  
LD-18 - LD20 DETAIL SHEETS



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**RODNEY T JONES**  
Date: 2013.09.12  
09:42:38 - 4'00'

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MAPS R US, INC.  
678 COMPASS ROAD  
MIAMI, FL  
LICENSED BUSINESS NO.: 9999  
RODNEY T JONES, P.S.M. NO. 99993  
(305) 999-8888

THE ABOVE NAMED PROFESSIONAL SURVEYOR AND MAPPER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 5J-17.062, F.A.C.

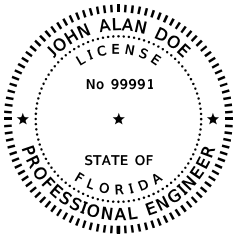
ROADWAY PLANS

SHEET NO. SHEET DESCRIPTION

2 SIGNATURE SHEET  
11 PROJECT LAYOUT SHEET

Signature Sheet  
EXHIBIT SS-1  
Date: 1/1/16

REVISIONS				JOHN ALAN DOE, P.E. P.E. NO.: 99991 ROADWAY ENGINEERS, INC. 123 MAIN STREET TALLAHASSEE, FL 32301 CERTIFICATE OF AUTHORIZATION: 12345	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SIGNATURE SHEET	SHEET NO.  2
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 22	BAY	000001-1-52-01		



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**JOHN ALAN DOE**  
**Date: 2013.12.09**  
**13:50:13 - 04'00'**

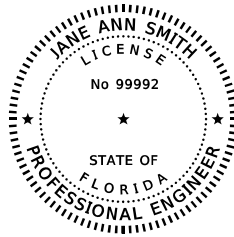
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENTS.

ROADWAY ENGINEERS, INC.  
 123 MAIN STREET  
 TALLAHASSEE, FL 32301  
 CERTIFICATE OF AUTHORIZATION: 12345  
 JOHN ALAN DOE, P.E. NO. 99991

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 6G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2A	SIGNATURE SHEET
3	SUMMARY OF PAY ITEMS
SQ-12 - SQ-13	SUMMARY OF QUANTITIES
14	ROADWAY PLAN-PROFILES



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

**JANE ANN SMITH**  
**Date: 2013.12.09**  
**13:13:27 - 04'00'**

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRONIC DOCUMENTS.

ROADWAY ENGINEERS, INC.  
 123 MAIN STREET  
 TALLAHASSEE, FL 32301  
 CERTIFICATE OF AUTHORIZATION: 12345  
 JANE ANN SMITH, P.E. NO. 99992

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 6G15-23.004, F.A.C.

ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
2A	SIGNATURE SHEET

SIGNING & PAVEMENT MARKING PLANS

SHEET NO.	SHEET DESCRIPTION
S-1	KEY SHEET
S-2	TABULATION OF QUANTITIES
S-6	PLAN SHEETS

Revisions Signature Sheet  
 EXHIBIT SS-2  
 Date: 1/1/16

DATE		DESCRIPTION		REVISIONS		JOHN ALAN DOE, P.E. P.E. NO.: 99991 ROADWAY ENGINEERS, INC. 123 MAIN STREET TALLAHASSEE, FL 32301 CERTIFICATE OF AUTHORIZATION: 12345	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<i>SIGNATURE SHEET</i>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY		FINANCIAL PROJECT ID	SHEET NO.			
12-09-13	△ ADDED SHEET			SR 22	BAY	000001-1-52-01		2A			

## 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

Modification for Non-Conventional Projects:

Delete *PPM* Chapter 4.

#### 4.1 General

The summary of pay items sheet is generated from information provided by the Engineer of Record (EOR) and input into Designer Interface. The Summary of Pay Items Report is generated in AASHTOWare Project™ Webgate Reporting (formerly Trns\*port Reports Menu).

For early phase reviews (up to Phase III, or until the proposal has been created), the Summary of Pay Items Report will include the summary of pay items for the individual project number selected. If multiple projects are anticipated to be let together, download the XML file for each project's Summary of Pay Items sheet(s) in the plans. Once the proposal has been created, the report will generate all the pay items for multiple projects combined using the lead project financial project number, and the extra downloads will not be required.

Transfer the downloaded XML file to a graphics design file and place on a standard plan sheet available in the FDOT Engineering/CADD Systems Software. Designer Interface must be kept current with the quantities in the plans. It is critical that any revisions to the quantities be updated in the Designer Interface. Once updated, the Summary of Pay Items Report must be rerun to download the new XML to update the graphics design file. The Summary of Pay Items Report file is used to prepare the bid documents and must match the pay items and quantities shown in the plans.

## 4.2 Summary of Pay Items Sheet

The summary of pay items sheet(s) lists all pay items and quantities for all components for the project, or projects, in a contract.

Place summary of pay items sheets directly behind the lead signature sheet. Place the summary of pay items on the sheet(s) in the order generated in the AASHTOWare Project™ WebGate Reporting menu (formerly Trns\*port Reports Menu), Summary of Pay Items Report XML file which the Engineering/CADD Systems Software uses to automate the creation of the sheet(s), or in the same order as the components of contract plans set shown on the lead key sheet. Alpha suffixes may be used for sheet numbering to allow for the insertion of additional sheets without renumbering the Index of Sheets.

Strung projects, those that are independently prepared but are to be let in the same construction contract, must combine all pay items and quantities into a single Proposal Summary of Pay Items Report to be placed in the lead project. If the Proposal has not been created for the project yet, the Summary of Pay Items must contain the Summary Reports for all of the individual project numbers included in the strung project.

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

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 **Section 7.2.2** of this volume.

## Chapter 5

# Drainage Map and Bridge Hydraulic Recommendation Sheet

5.1	Drainage Map .....	5-1
5.1.1	Plan View .....	5-2
5.1.2	Profile View .....	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 and Drainage Area .....	5-7
5.2.1.4	Existing Structures Data, Hydraulic Design Data, and Hydraulic Recommendations.....	5-7
Exhibits		
Exhibit 5-1	Drainage Map Notes .....	5-8

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## Chapter 5

# Drainage Map and Bridge Hydraulic Recommendation Sheet

### 5.1 Drainage Map

Drainage maps are required for all projects that add mainline capacity or changes to the drainage hydraulics. Maps may be developed using a photographic (aerial or other) base map and included in the construction plans.

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. 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 optional grid may be used if appropriate for scale.

Locate the topography of the project area in the remaining portion of the sheet. Utilize a horizontal and vertical scale of the profile so 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 View

The plan view must comply with the following requirements:

1. Show stationing 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.

Show horizontal alignment station equations and exceptions. Also show begin and end stations of project, construction, bridge, and bridge culverts.

2. Clearly label existing physical land features affecting drainage, such as lakes, streams, and swamps, by name and direction of flow. Show past high water elevations with date of occurrence, if available, and present water elevations with date of reading.

Where applicable, show drainage divides and other information (such as pop-off elevations and spot elevations) to indicate the overland flow of water. Show drainage areas on maps in acres.

Use inserts to show areas that are of such magnitude that the boundaries cannot be plotted at the selected scale.

3. Label existing road numbers and street names, drainage structures with type, size, flow line elevations, flow arrows and any other pertinent data. 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. Show proposed drainage structures, cross drains, storm drain pipes, outfall structures and retention/detention pond locations. Label cross drains by pipe size and structure number. Label structures by structure number, storm drain pipes by pipe size, and ponds by pond number and area size. Show arrows to indicate direction of flow along proposed ditches.
5. Label Section, Township, Range, and county lines for rural and urban projects when occurring within the project limits.
6. Include a north arrow and scale, 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 View

The profile view, if shown, must 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 drain systems.
2. Station numbers are to be shown along the bottom edge of the profile view.
3. Show elevation datum 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.
4. The profile of the existing natural ground must be plotted and labeled, and the existing elevation noted at each end, just above the station numbers.
5. Plot the proposed profile grade line. Percent of grade need not be shown. Plot the PC, PI, and PT of vertical curves using their respective standard symbols; however, no data (station, elevation, length of curve) needs be noted. Label begin and end project, construction, bridge and bridge culvert stations, station equations, and exceptions. Show profile grade line elevations at begin and end project stations and at the beginning and end of each additional drainage sheet.
6. Plot proposed cross drains and identify 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.
7. For projects with storm drain systems, show only the mainline structure and pipes. Laterals need not be shown. Label each structure with its appropriate structure number, and flow line elevations noted for the incoming and outgoing pipes.
8. Show all high water elevations affecting base clearance or roadway grades.

### 5.1.3 Flood Data Summary Box

Show flood data on the drainage map, either in the plan or in the profile portion. If the drainage map is not included in the plans, show the flood data 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, where modifications affect the existing hydraulic calculations.
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 must provide the information required to complete the box.

### 5.1.4 Interchange Drainage Map

If projects include interchanges or rest areas, include a drainage map on a 1" = 200' or 1" = 500' scale. 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, include a cross reference note indicating 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 must 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 contract plans set is required. Place the BHRS in the structures plans for bridges and in the roadway plans for bridge culverts.

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 regions listed below. The required information for each region is described in the following sections.

1. Plan View
2. Profile View
3. Location Map and Drainage Area
4. Existing Structures, 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). Show sufficient detail 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, show the Normal High Water (NHW) and Design Flood elevations. For tidal crossings, show the Mean High Water (MHW) and Design Flood Stage elevations.
7. Present water elevation with month, day and year of survey.
8. Bridge Number. The bridge number should be for the new (proposed) structure.

### 5.2.1.3 Location Map and Drainage Area

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 must 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 must be of a scale that clearly shows the project location rather than a scale that shows the entire drainage area).

Show the drainage area boundaries 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 Existing Structures Data, Hydraulic Design Data, and Hydraulic Recommendations

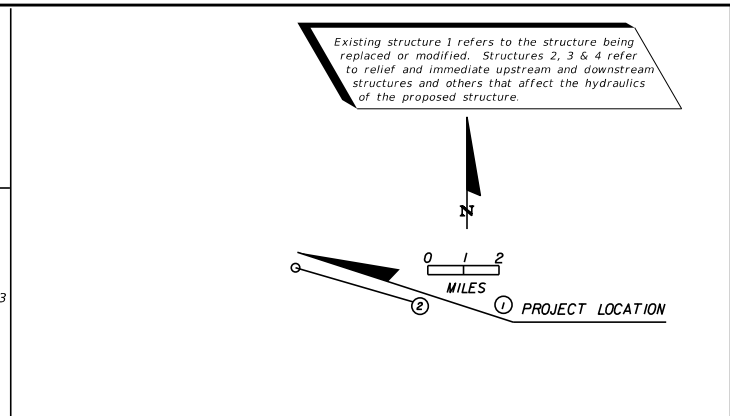
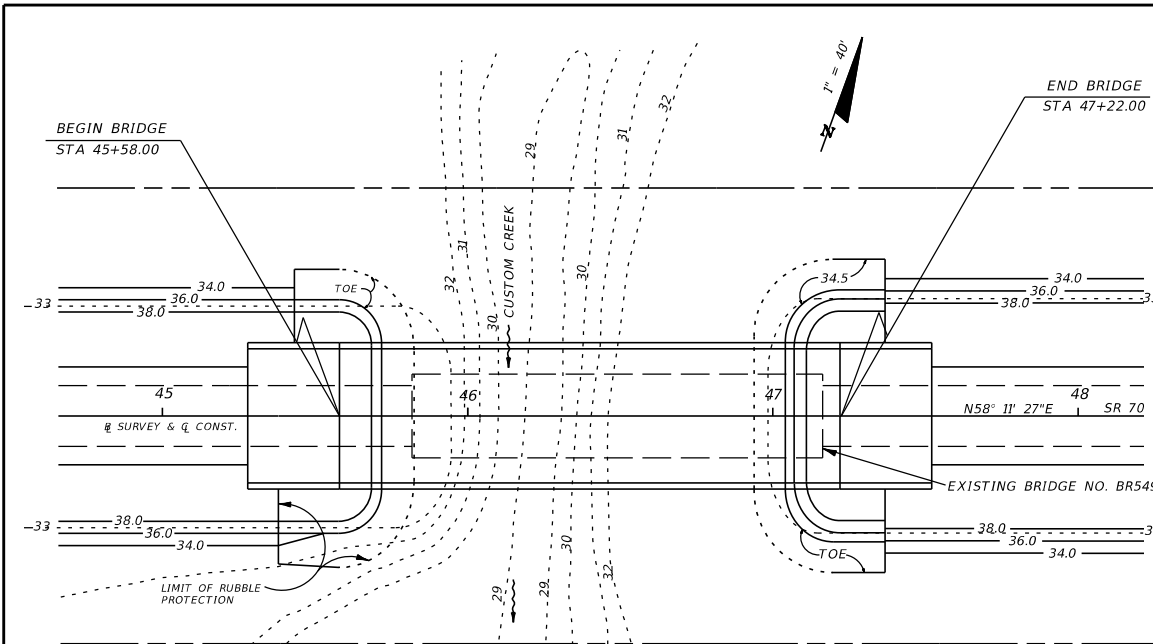
The *BHR Handbook* provides guidance for filling out this section.

### Exhibit 5-1 Drainage Map Notes

Place the following standard notes 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):

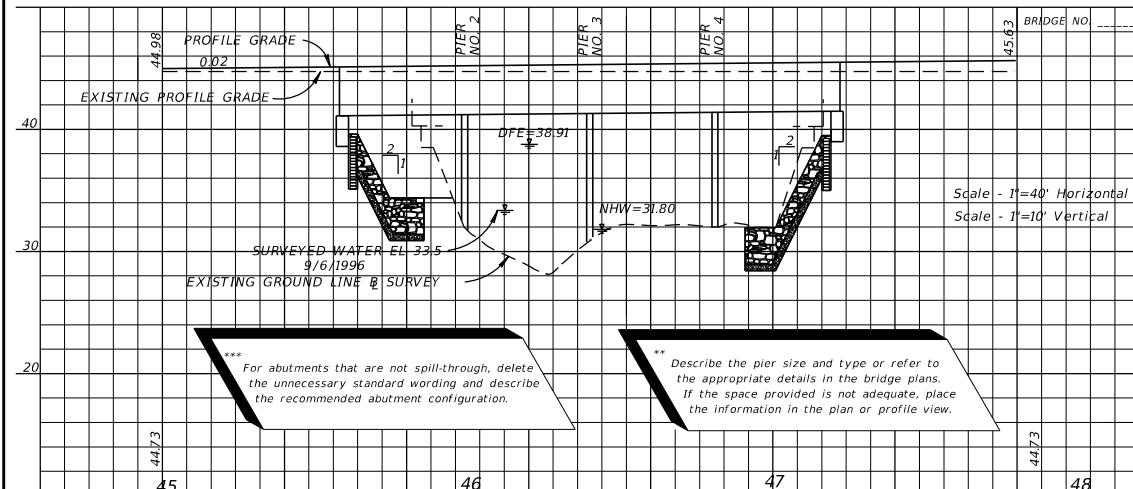
Note: The hydraulic data is shown for informational purposes only, to indicate the flood discharges and water surface elevations which may be anticipated in any given year. This data was generated using highly variable factors determined by a study of the watershed. Many judgments and assumptions are 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 cannot be attained. Discharges are in cubic feet per second (cfs) and stages are in feet, NAVD 88.



(REFERENCE)	* EXISTING STRUCTURES				PROPOSED STRUCTURE
	( 1 )	( 2 )	( 3 )	( 4 )	
FOUNDATION	Conc. Piles	Timber			Conc. Piles
OVERALL LENGTH	135	200			164 (rem. #1)
SPAN LENGTH	5 @ 27	20 @ 10			4 @ 41
TYPE CONSTRUCTION	Concrete	Timber			Concrete
AREA OF OPENING @ D.F.	1000	Unknown			1020
BRIDGE WIDTH	28	Railroad (South)			44
ELEV. LOW MEMBER	40.35	38.32			41.7

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

This sheet has been included in the plans for documentation.  
 DO NOT USE FOR CONSTRUCTION PURPOSES.



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

WATER SURFACE ELEVATIONS:	N.H.W. (Non-Tidal)	31.80	M.H.W. (Tidal)	
CONTROL (Non-Tidal)			M.L.W. (Tidal)	

FLOOD DATA:	MAX. EVENT OF RECORD	DESIGN FLOOD	BASE FLOOD	GREATEST FLOOD
STAGE ELEV. NAVD (ft)	38.7 (rem. #2)	38.91	39.27	39.57
DISCHARGE ( cfs)	unknown	3280	3950	4630
AVERAGE VELOCITY (ft/s)	+	3.22	3.58	4.13
EXCEEDANCE PROB. (%)	+	2	1	0.2
FREQUENCY ( yr.)	+	50	100	500

SCOUR PREDICTIONS FOR PROPOSED STRUCTURE DESCRIBED ABOVE:			
PIER INFORMATION	LONG TERM SCOUR ELEV.	WORST CASE < 100 yr. FREQ. (yr.)	WORST CASE < 500 yr. FREQ. (yr.)
NUMBERS * * SIZE AND TYPE			
2 & 3 24" Conc. Piles	N/A	18.4	16.4
4 (rem. #3) 24" Conc. Piles	N/A	27.6	25.6

HYDRAULIC RECOMMENDATIONS			
1. BEGIN BRIDGE STATION	45+58.00	END BRIDGE STATION	47+22.00
2. CLEARANCE PROVIDED: NAV: HORIZ. 39.0	VERT. 8.04	ABOVE EL. 3314	DRIFT: HORIZ. 39.0
3. MINIMUM CLEARANCE: NAV: HORIZ. 10.0	VERT. 6.0	ABOVE EL. 3314	DRIFT: HORIZ. N/A
4. ABUTMENTS:	BEGIN BRIDGE	END BRIDGE	
*** RUBBLE GRADE:	Bank and Shore	Bank and Shore	
SLOPE:	Non-Buried	Non-Buried	
BURIED OR NON-BURIED HORIZ. TOE:	10	10	
TOE HORIZ. DISTANCE:	15' Lt., 20' Rt.	15' Lt. and Rt.	

**REMARKS:**  
 (1) Bridge lengthened to accommodate predicted channel migration to the west.  
 (2) Based on mark provided by local resident of 43 years.  
 (3) Due to predicted channel migration to the west and lack of meander cutoff, Pier No. 4 will not experience main channel scour depths.

**EXHIBIT BHD-1**  
 Date: 1/1/13

REVISIONS		STATE OF FLORIDA		BRIDGE HYDRAULIC RECOMMENDATIONS		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	
				70	LEON	

## Chapter 6

### Typical Sections

6.1	General .....	6-1
6.2	Mandatory Information .....	6-2
Exhibits		
Exhibit 6-1	Standard Notes for Typical Section Sheets .....	6-4

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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, show the station limits of each section below the typical section title. Typical section stationing must cover the entire project. Include transitions from one typical to another 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 is 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 FDOT 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-21*.

## 6.2 Mandatory Information

Include the following data on typical sections:

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 must be consistent with the data used for pavement design.

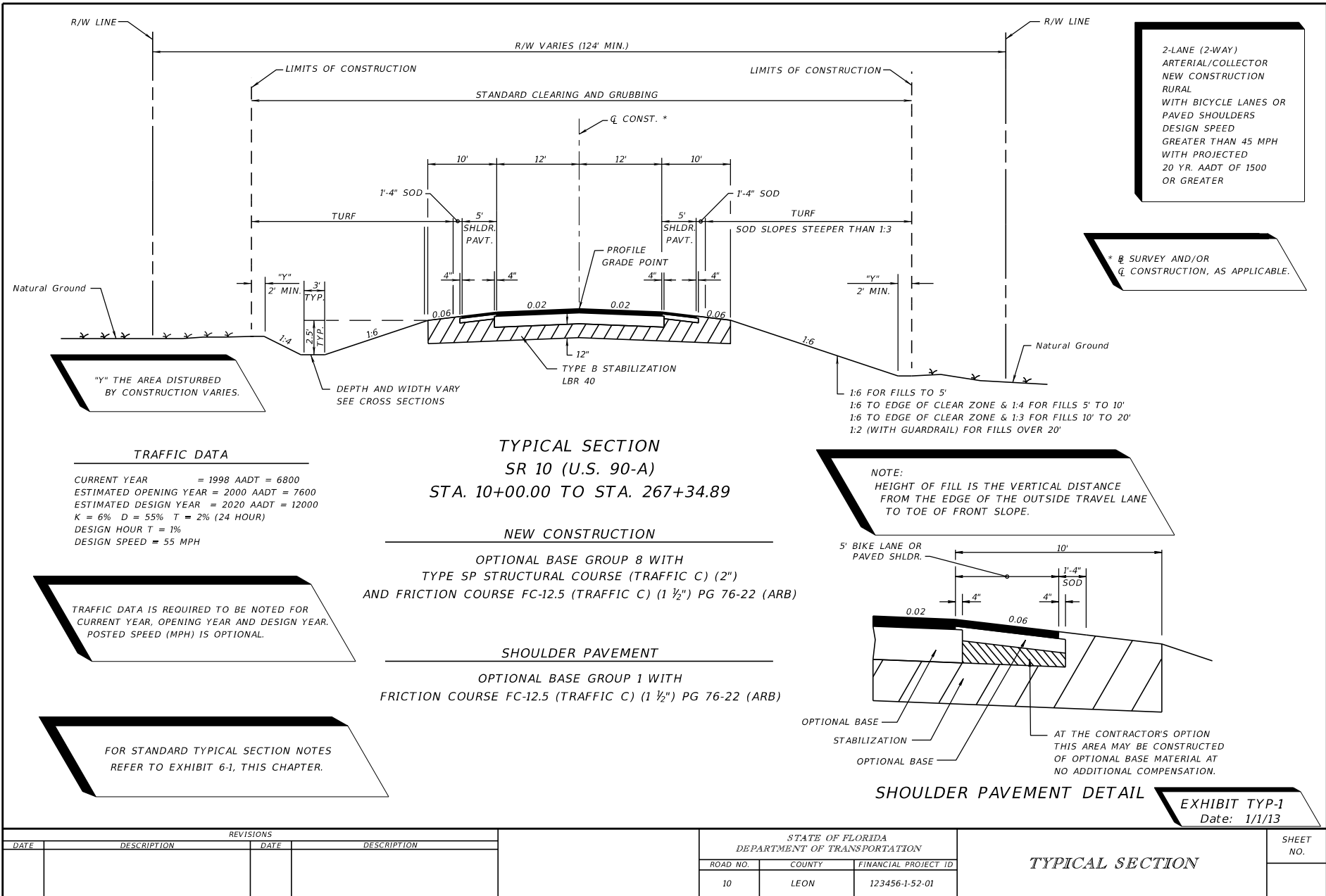
3. Cross Slopes
  - a. Express cross slopes of roadway pavement, shoulder surfaces, sidewalks and bridge decks as a decimal part of a foot vertical per foot horizontal. These cross slopes should be rounded to two decimal places, i.e., 0.02, 0.06. (See *Chapter 2* of *Volume 1*).
  - b. Show median and outer slopes by ratio, vertical to horizontal, i.e., 1:4, 1:2. (See *Chapter 2* of *Volume 1*).
  - c. Include either feathering details or notes (or both) 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 must be shown in the plans. (See **Exhibits TYP- 13** thru **13C**).
4. Flag profile grade point when applicable.
5. Describe pavement construction in a clear, precise manner by indicating the LBR requirement and the thickness of the subgrade stabilization, subbase or base, as well as thickness 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.  
  
Obtain pavement structure information from the approved pavement design and describe it in the order of construction, i.e., starting with bottom layer and ending with friction course. If Polymer Modified Asphalt (PMA) or Asphalt Rubber Binders (ARB) are specified in any of the structural or friction course layers, include this in the pavement description. Show pavement thickness descriptions for leveling, overbuild, structural course and friction course in inches (and fractions of an inch). The thickness shown should be to the nearest ½" (except for FC-5 which is a standard ¾").
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, indicate the asphalt curb pad on the typical section and provide a detail. (See **Exhibit TYP-6A**)
9. Limits of clearing and grubbing, where applicable.
10. R/W, where applicable.
11. Template dimensions:  
  
For widening projects, show the existing pavement width as a ± dimension, and show the base widening width with an asterisk. Show Note 3, of **Standard Notes for Typical Section Sheets (Exhibit 6-1)**, as near to this noted asterisk as possible.  
  
NOTE: For typical sections with varying dimensions, clearly indicate the dimensions on the plan-profile sheets.
12. Standard notes for typical sections are shown on **Exhibit 6-1**.
13. Identify shoulder treatment where applicable on RRR projects (See **Section 25.4.8** of **Volume 1**)

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

Show the following standard notes on typical section sheets as applicable:

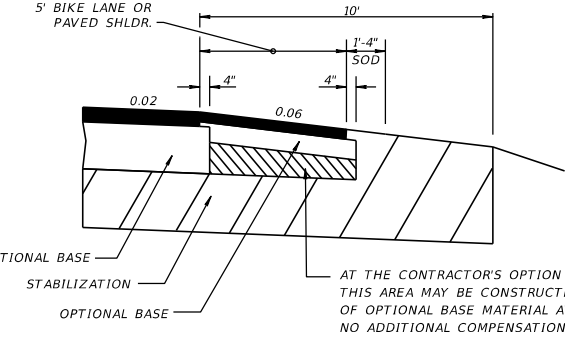
1. For details and limits of selective clearing and grubbing see \_\_\_\_\_.
2. (Under paved shoulders):  
At the contractor's option, this area may be constructed of base material at no additional compensation.
3. (On widening projects):  
Actual width of base widening may vary due to actual existing pavement width. Contractor may elect to place uniform width base widening strip at no additional cost to the Department.



2-LANE (2-WAY)  
 ARTERIAL/COLLECTOR  
 NEW CONSTRUCTION  
 RURAL  
 WITH BICYCLE LANES OR  
 PAVED SHOULDERS  
 DESIGN SPEED  
 GREATER THAN 45 MPH  
 WITH PROJECTED  
 20 YR. AADT OF 1500  
 OR GREATER

\* @ SURVEY AND/OR  
 Q CONST., AS APPLICABLE.

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

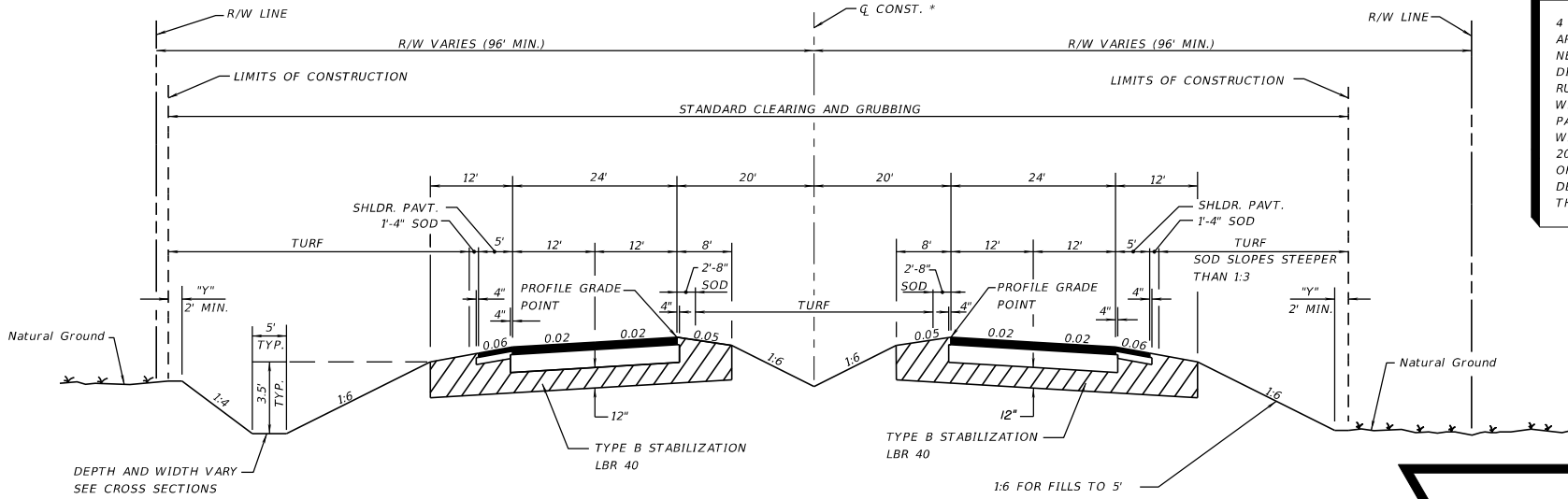


1:6 FOR FILLS TO 5'  
 1:6 TO EDGE OF CLEAR ZONE & 1:4 FOR FILLS 5' TO 10'  
 1:6 TO EDGE OF CLEAR ZONE & 1:3 FOR FILLS 10' TO 20'  
 1:2 (WITH GUARDRAIL) FOR FILLS OVER 20'

DEPTH AND WIDTH VARY  
 SEE CROSS SECTIONS

"Y" THE AREA DISTURBED  
 BY CONSTRUCTION VARIES.

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



4 LANE  
ARTERIAL/COLLECTOR  
NEW CONSTRUCTION  
DIVIDED  
RURAL  
WITH BICYCLE LANES OR  
PAVED SHOULDERS  
WITH PROJECTED  
20 YR. AADT OF 1500  
OR GREATER  
DESIGN SPEED GREATER  
THAN 50 MPH

**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

**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) (2")  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22 (PMA))  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22 (PMA))

**SHOULDER PAVEMENT**  
 OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22 (PMA))  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22 (PMA))

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'

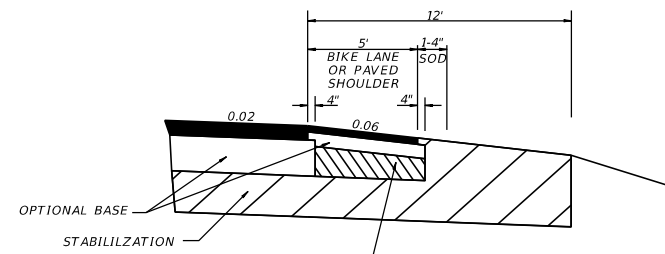
\* @ SURVEY AND/OR  
 Q CONSTRUCTION, AS APPLICABLE.

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

"Y" THE AREA DISTURBED BY  
 CONSTRUCTION VARIES.

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.



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

**SHOULDER PAVEMENT DETAIL**

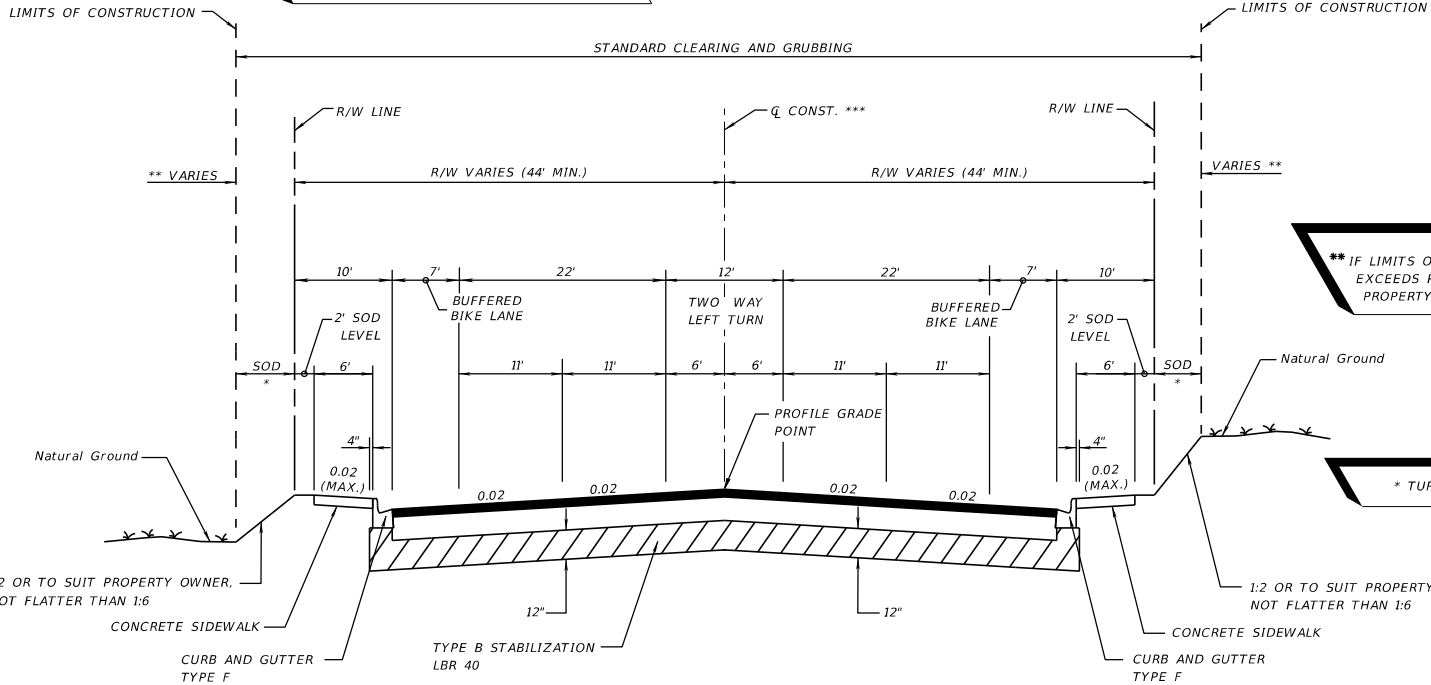
**EXHIBIT TYP-2**  
 Date: 1/1/13

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		

5-LANE SECTIONS ARE TO INCLUDE SECTIONS OF RAISED OR RESTRICTIVE MEDIAN. SEE PPM TABLE 2.2.1.

\*\*\* @ SURVEY AND/OR Q CONSTRUCTION, AS APPLICABLE.

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



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

\* TURF OR SOD

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

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 8 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 1/2")  
AND FRICTION COURSE FC-12.5 (TRAFFIC B) (1 1/2") (PG 76-22)

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

**TRAFFIC DATA**

CURRENT YEAR = 1998 AADT = 9900  
ESTIMATED OPENING YEAR = 2000 AADT = 10600  
ESTIMATED DESIGN YEAR = 2020 AADT = 14000  
K = 6% D = 55% T = 2% (24 HOUR)  
DESIGN HOUR T = 1%  
DESIGN SPEED = 40 MPH

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

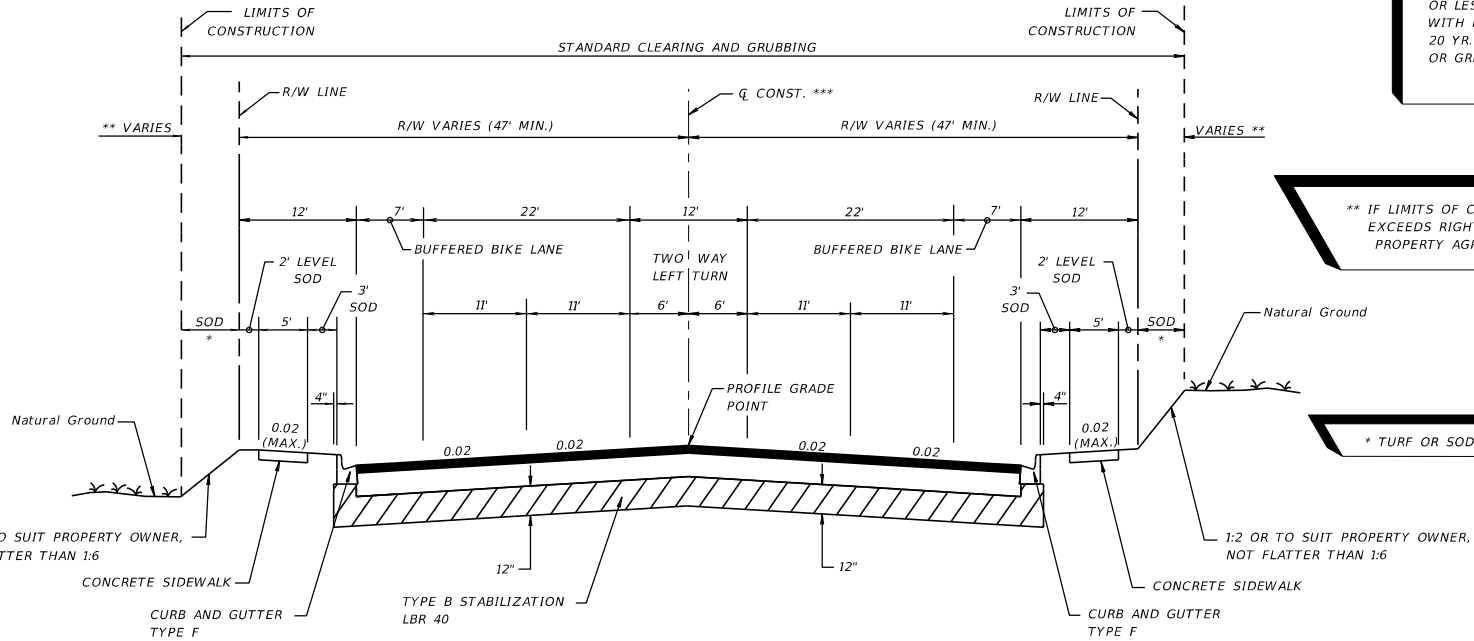
**EXHIBIT TYP-3**  
Date: 1/1/16

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		

5-LANE SECTIONS ARE TO INCLUDE SECTIONS OF RAISED OR RESTRICTIVE MEDIAN. SEE PPM TABLE 2.2.1.

\*\*\*  $\bar{Q}$  SURVEY AND/OR  $\bar{Q}$  CONSTRUCTION, AS APPLICABLE.

5-LANE ARTERIAL/COLLECTOR NEW CONSTRUCTION UNDIVIDED URBAN WITH BICYCLE LANES DESIGN SPEED 40 MPH OR LESS WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER



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

\* TURF OR SOD

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

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

**TRAFFIC DATA**

CURRENT YEAR = 1998 AADT = 20819  
 ESTIMATED OPENING YEAR = 2003 AADT = 24100  
 ESTIMATED DESIGN YEAR = 2023 AADT = 24900  
 K = 9% D = 60% T = 2% (24 HOUR)  
 DESIGN HOUR T = 1%  
 DESIGN SPEED = 40 MPH

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

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

**NEW CONSTRUCTION**  
 OPTIONAL BASE GROUP 8 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 1/2")  
 AND FRICTION COURSE FC-12.5 (TRAFFIC B) (1 1/2") (PG 76-22)

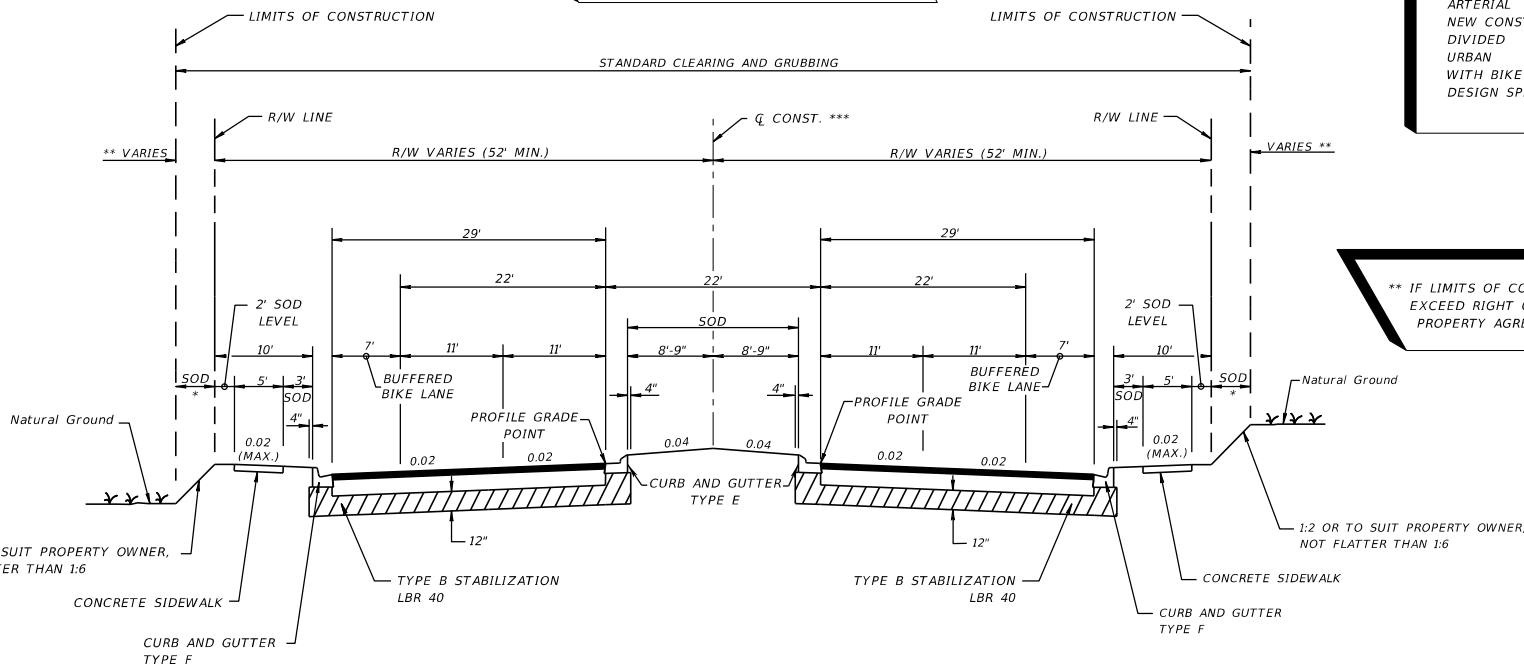
FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

**EXHIBIT TYP-4**  
 Date: 1/1/15

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	
				TYPICAL SECTION
				10 LEON 123456-1-52-01

\*\*\* @ SURVEY AND/OR  
 @ CONSTRUCTION, AS APPLICABLE.

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



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

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

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

**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) (1 1/2")  
 AND FRICTION COURSE FC-12.5 (TRAFFIC B) (1 1/2") (PG 76-22)

\* TURF OR SOD

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

**TRAFFIC DATA**

CURRENT YEAR = 1998 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

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

**EXHIBIT TYP-5**  
 Date: 1/1/15

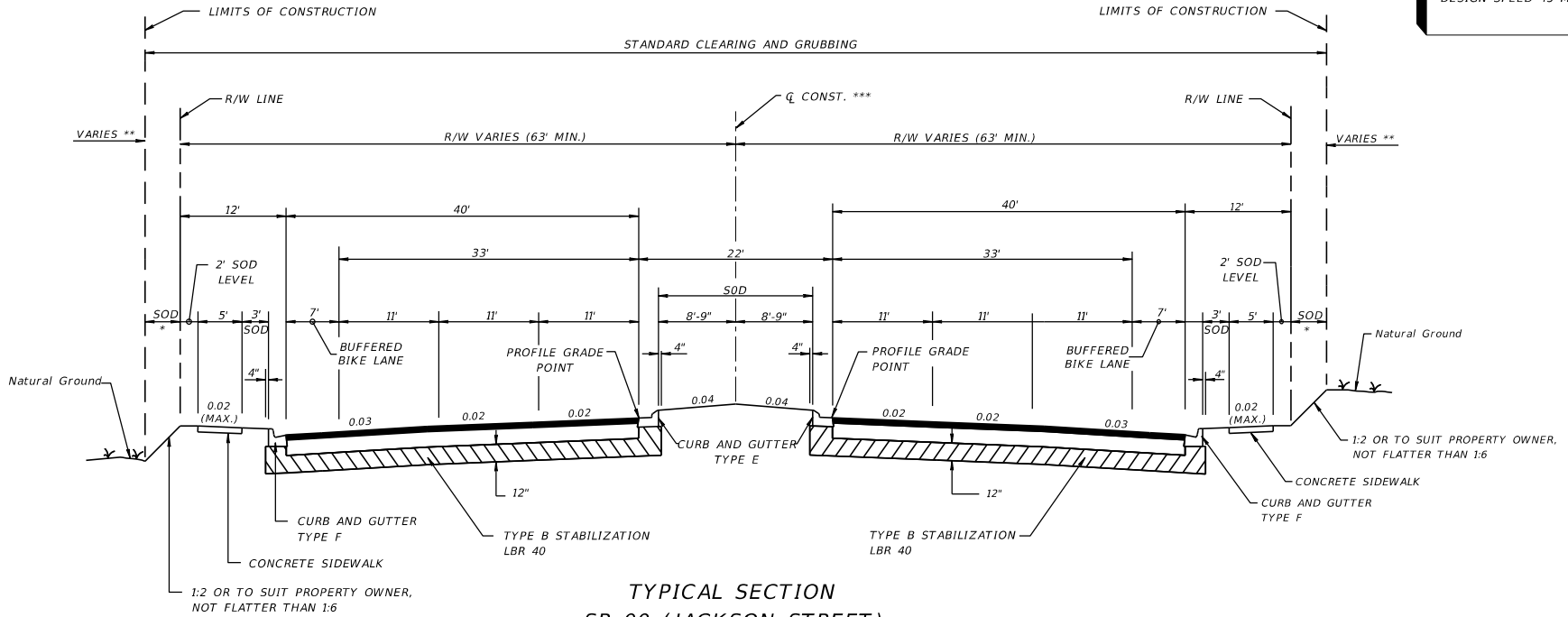
REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-42-01		



\*\*\* R SURVEY AND/OR  
 Q CONST. CONSTRUCTION, AS APPLICABLE.

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

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



**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) (2")  
 AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (PG 76-22)

**TRAFFIC DATA**

CURRENT YEAR = 1998 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

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

\* TURF OR SOD

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

**EXHIBIT TYP-6**  
 Date: 1/1/15

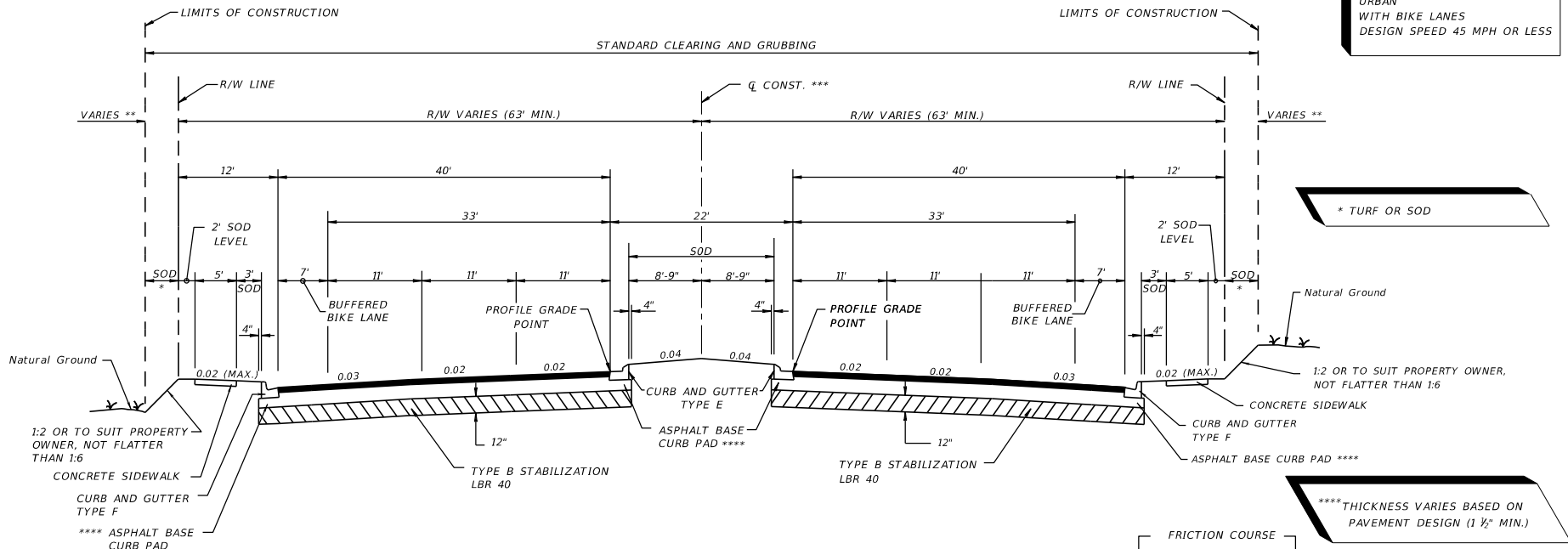
REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	
				TYPICAL SECTION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
10	LEON	123456-5-20-1

\*\*\* @ SURVEY AND/OR  
 CL CONSTRUCTION, AS APPLICABLE.

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

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



\* TURF OR SOD

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

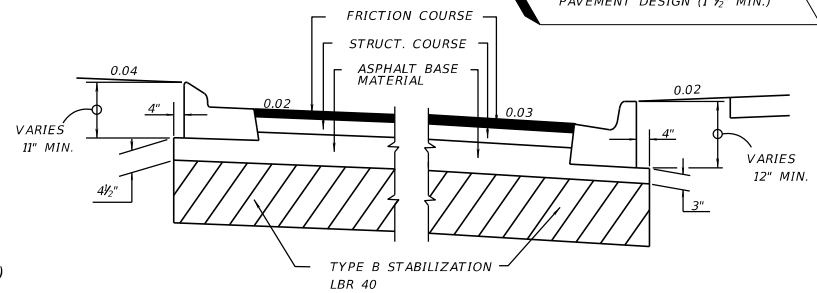
**TRAFFIC DATA**

CURRENT YEAR = 1998 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

**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 ONLY), WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3")  
 AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (PG 76-22)



DETAIL OF ASPHALT BASE CURB PAD

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.

**EXHIBIT TYP-6A**  
 Date: 1/1/13

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		
				10	LEON
				123456-1-52-01	

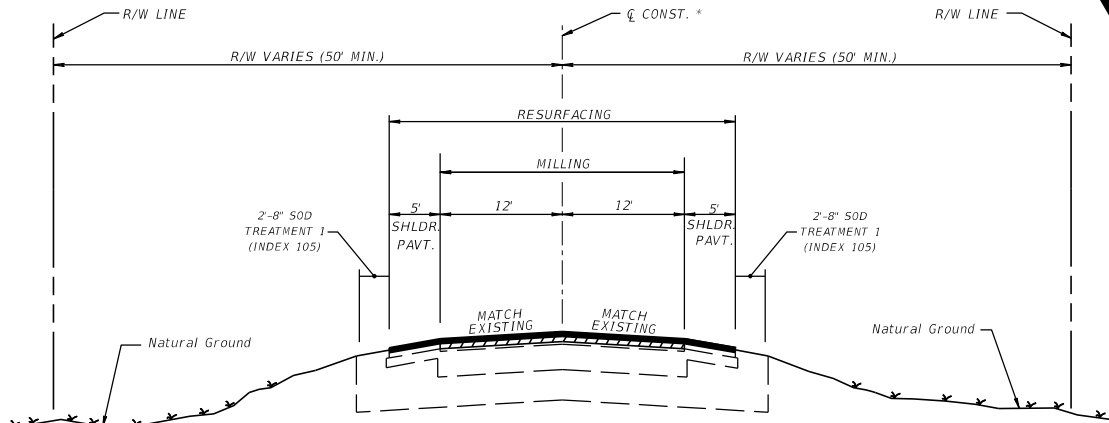
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

\* @ SURVEY AND/OR  
 @ CONSTRUCTION, AS APPLICABLE.

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

NOTES:  
 1. CROSS SLOPE CORRECTION IS REQUIRED IF  
 EXISTING CONDITIONS ARE NOT WITHIN THE RANGES OF  
 PPM VOLUME 1, CHAPTER 25 CRITERIA.  
 2. WHEN CROSS SLOPE CORRECTION IS NECESSARY,  
 SPECIAL MILLING, OVERBUILD, 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.

EXISTING  
 2-LANE (2-WAY)  
 ARTERIAL/COLLECTOR  
 MILLING AND RESURFACING  
 UNDIVIDED  
 RURAL  
 (WITH EXISTING BIKE LANES  
 OR PAVED SHOULDERS)  
 WITH PROJECTED 20 YR.  
 AADT OF 1500 OR GREATER



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

TYPICAL SECTION  
 SR 300B

TRAFFIC DATA  
 STA. 10+53.00 TO STA. 368+41.21  
 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

CONSTANT DEPTH MILLING AND RESURFACING  
 STA. 10+53.00 TO STA. 368+41.21

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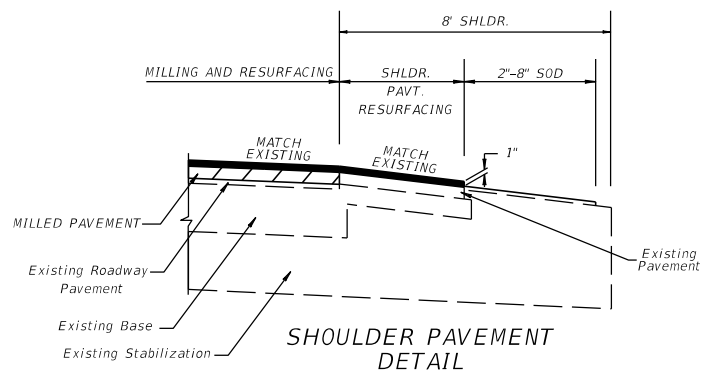
MILLING  
 MILL EXISTING ASPHALT  
 PAVEMENT FOR DEPTH (2")

---

RESURFACING  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")  
 AND FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)

---

SHOULDER PAVEMENT RESURFACING  
 FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)



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

EXHIBIT TYP-7  
 Date: 1/1/14

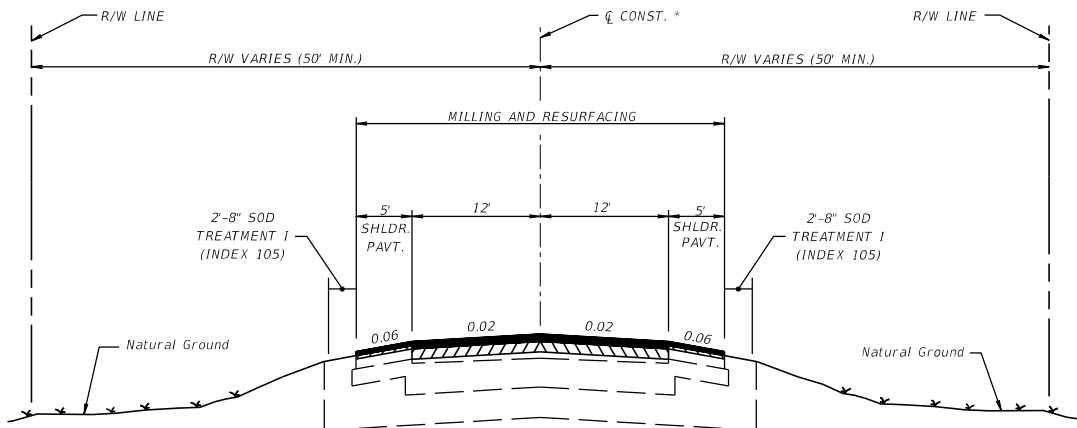
REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	ROAD NO.	COUNTY		
		300B	LEON		

\* @ SURVEY AND/OR  
 @ CONSTRUCTION, AS APPLICABLE.

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

NOTES:  
 1. CROSS SLOPE CORRECTION IS REQUIRED IF  
 EXISTING CONDITIONS ARE NOT WITHIN THE RANGES OF  
 PPM VOLUME 1, CHAPTER 25 CRITERIA.  
 2. WHEN CROSS SLOPE CORRECTION IS NECESSARY,  
 SPECIAL MILLING, OVERBUILD, 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.

EXISTING  
 2-LANE (2-WAY)  
 ARTERIAL/COLLECTOR  
 MILLING AND RESURFACING  
 UNDIVIDED  
 RURAL  
 (WITH EXISTING BIKE LANES  
 OR PAVED SHOULDERS)  
 WITH PROJECTED 20 YR.  
 AADT OF 1500 OR GREATER



TYPICAL SECTION  
 SR 400B

TRAFFIC DATA  
 STA. 130+77.00 TO STA. 206+82.28  
 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

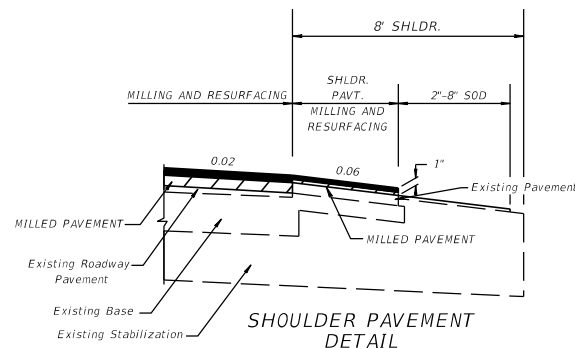
CROSS SLOPE CORRECTION  
 STA. 130+77.00 TO STA. 157+00.00

VARIABLE MILLING  
 MILL EXISTING ASPHALT  
 PAVEMENT FOR SLOPE (2 3/4" AVG. DEPTH)

RESURFACING  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")  
 AND FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)

SHOULDER MILLING  
 MILL EXISTING ASPHALT  
 PAVEMENT (1" AVG. DEPTH)

SHOULDER PAVEMENT RESURFACING  
 FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)

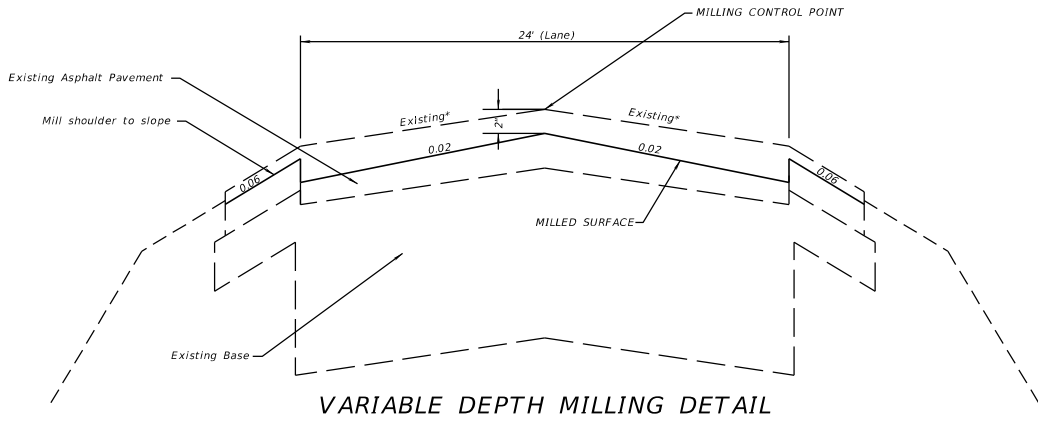


SHOULDER PAVEMENT  
 DETAIL

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

EXHIBIT TYP-8  
 Date: 1/1/14  
 SHEET 1 OF 2

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				400B	LEON	123456-1-52-01		



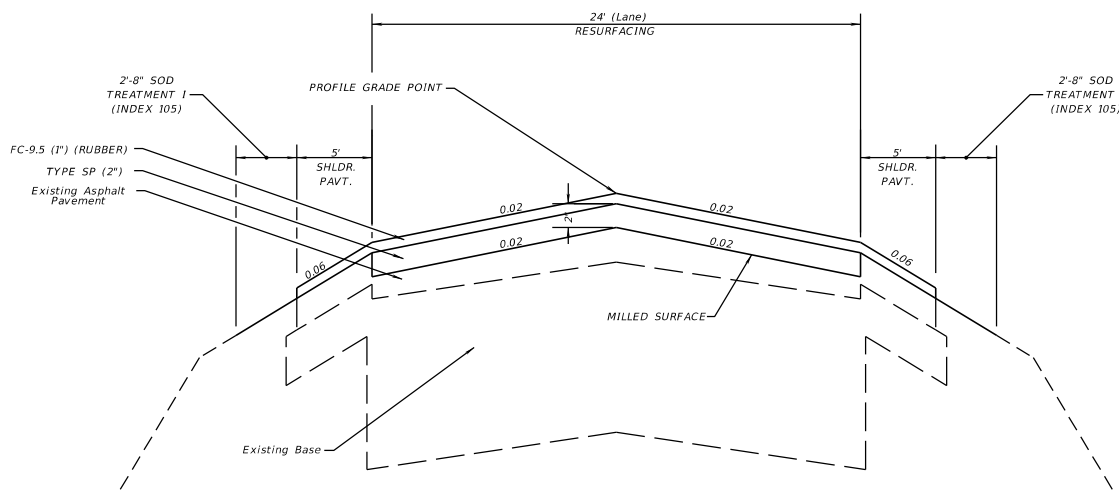
VARIABLE DEPTH MILLING DETAIL

EXAMPLE OF CROSS SLOPE CORRECTION BY VARIABLE DEPTH MILLING AND RESURFACE.

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

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

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



RESURFACING DETAIL

STA. 130+77.00 TO STA. 157+00.00

**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	ROADWAY	
	LT	RT
131+00	0.014	0.014
132+00	0.014	0.014
133+00	0.013	0.013
134+00	0.013	0.012
135+00	0.013	0.013
136+00	0.013	0.013
137+00	0.012	0.013
138+00	0.012	0.013
139+00	0.013	0.014
140+00	0.012	0.013
141+00	0.013	0.011
142+00	0.014	0.011
143+00	0.015	0.011
144+00	0.015	0.011

**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	ROADWAY	
	LT	RT
145+00	0.014	0.010
146+00	0.013	0.010
147+00	0.012	0.010
148+00	0.013	0.012
149+00	0.013	0.012
150+00	0.014	0.012
151+00	0.016	0.012
152+00	0.013	0.012
153+00	0.014	0.012
154+00	0.016	0.012
155+00	0.013	0.012
156+00	0.013	0.012
157+00	0.014	0.012

EXHIBIT TYP-8A  
Date: 1/1/14  
SHEET 2 OF 2

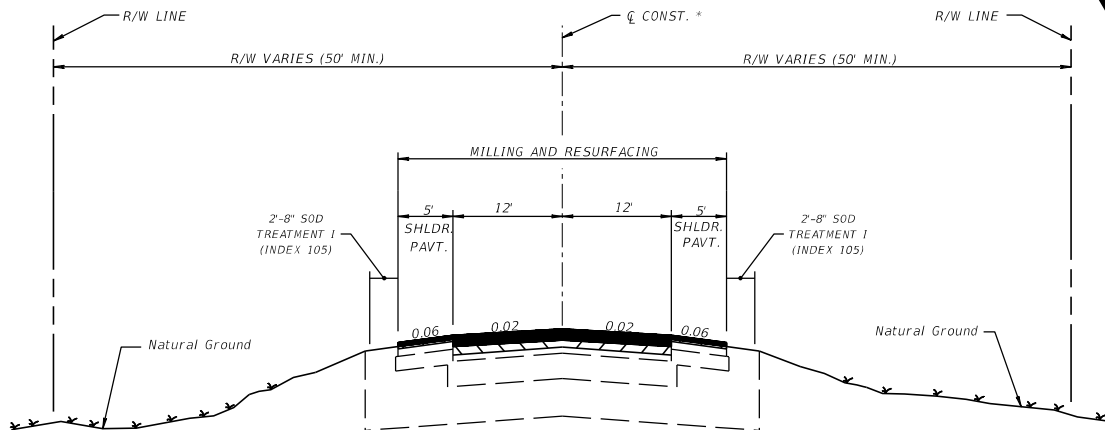
REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				400B	LEON	123456-1-52-01		

\* @ SURVEY AND/OR  
 ☐ CONSTRUCTION, AS APPLICABLE.

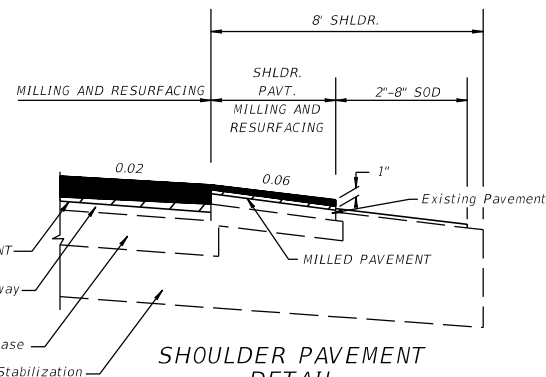
FOR STANDARD TYPICAL SECTION NOTES  
 REFER TO EXHIBIT 6-1, THIS CHAPTER.

NOTES:  
 1. NO CROSS SLOPE CORRECTION REQUIRED IF EXISTING  
 CONDITIONS ARE WITHIN THE RANGES OF PPM VOLUME 1,  
 CHAPTER 25 CRITERIA.  
 2. WHEN CROSS SLOPE CORRECTION IS NECESSARY,  
 SPECIAL MILLING, OVERBUILD, 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.

EXISTING  
 2-LANE (2-WAY)  
 ARTERIAL/COLLECTOR  
 MILLING AND OVERBUILD  
 FOR SLOPE  
 UNDIVIDED  
 RURAL  
 (WITH EXISTING BIKE LANES  
 OR PAVED SHOULDERS)  
 WITH PROJECTED 20 YR.  
 AADT OF 1500 OR GREATER



TYPICAL SECTION  
 SR 500B



SHOULDER PAVEMENT  
 DETAIL

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

CROSS SLOPE CORRECTION  
 STA. 10+53.00 TO STA. 130+77.00  
 MILLING FOR DEPTH  
 MILL EXISTING ASPHALT  
 PAVEMENT FOR DEPTH (2")

OVERBUILD FOR SLOPE  
 TYPE SP OVERBUILD (TRAFFIC B)  
 THICKNESS VARIES (3/8" TO 1 1/2")

RESURFACING  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2")  
 AND FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)

SHOULDER MILLING  
 MILL EXISTING ASPHALT  
 PAVEMENT (1" AVG. DEPTH)

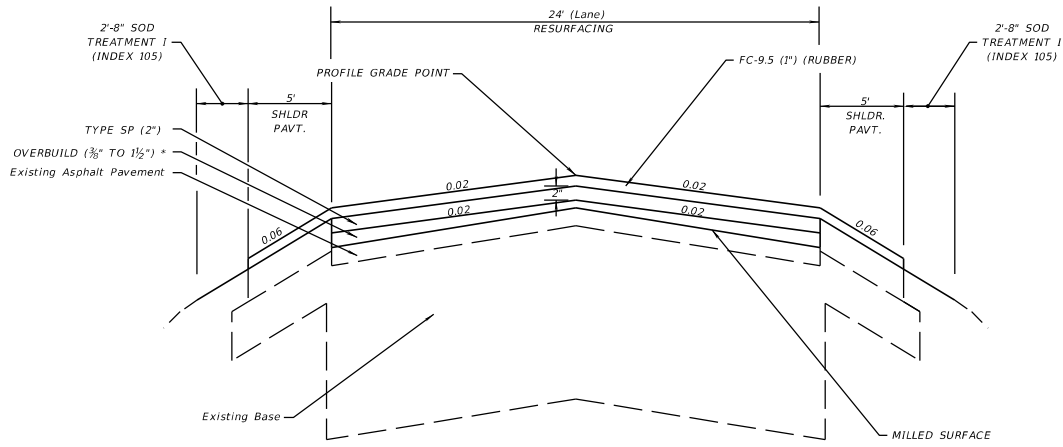
SHOULDER PAVEMENT RESURFACING  
 FRICTION COURSE FC-9.5  
 (TRAFFIC B) (1") (RUBBER)

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

EXHIBIT TYP-9  
 Date: 1/1/16

SHEET 1 OF 2

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	ROAD NO.	COUNTY		
		500B	LEON		



**OVERBUILD AND RESURFACING DETAIL**

\* TYPE SP OVERBUILD THICKNESSES (PER FDOT SPECIFICATION 334)

EXAMPLE OF CROSS SLOPE CORRECTION BY CONSTANT DEPTH MILLING AND OVERBUILD.

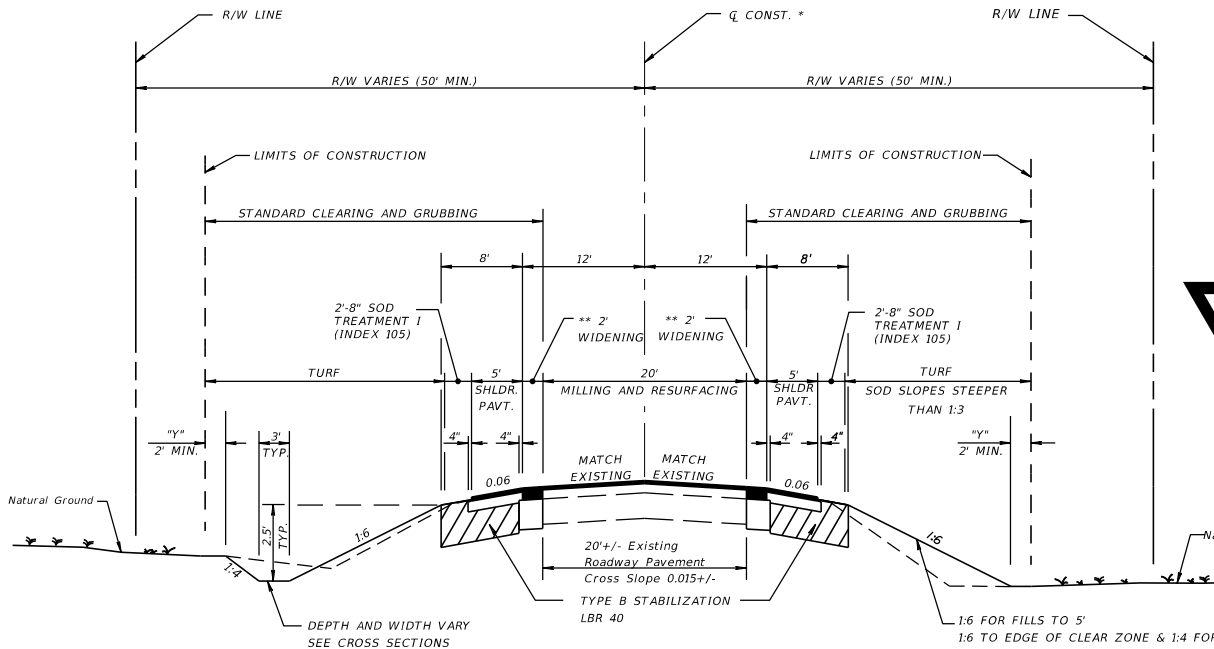
WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING, OVERBUILD AND LAYERING DETAILS MUST BE PROVIDED TO SUPPLEMENT TYPICAL SECTION. THE NEED FOR AND LOCATION OF PROFILE GRADES POINTS WILL DEPEND ON SITE SPECIFIC CONDITIONS.

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

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

**EXHIBIT TYP-9A**  
Date: 1/1/14  
SHEET 2 OF 2

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				500B	LEON	123456-1-52-01		



EXISTING  
2-LANE (2-WAY)  
ARTERIAL/COLLECTOR  
WIDENING  
MILLING 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

NOTES:  
1. NO CROSS SLOPE CORRECTION REQUIRED IF EXISTING CONDITIONS ARE WITHIN THE RANGES OF PPM VOLUME 1, CHAPTER 25 CRITERIA.  
2. WHEN CROSS SLOPE CORRECTION IS NECESSARY, SPECIAL MILLING, OVERBUILD, 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.

\*  $\bar{Q}$  SURVEY AND/OR  
 $\bar{Q}$  CONSTRUCTION, AS APPLICABLE.

"Y" THE AREA DISTURBED  
BY CONSTRUCTION VARIES.

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**  
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

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

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

**TYPICAL SECTION**  
SR 000

STA. 20+25.00 TO STA. 48+16.56  
STA. 57+82.78 TO STA. 93+41.21

**MILLING**

MILL EXISTING ASPHALT PAVEMENT FOR DEPTH (2")

**RESURFACING**

TYPE SP STRUCTURAL COURSE (TRAFFIC C) (1 1/2")  
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (RUBBER)

**WIDENING**

OPTIONAL BASE GROUP II WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3")  
AND FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (RUBBER)

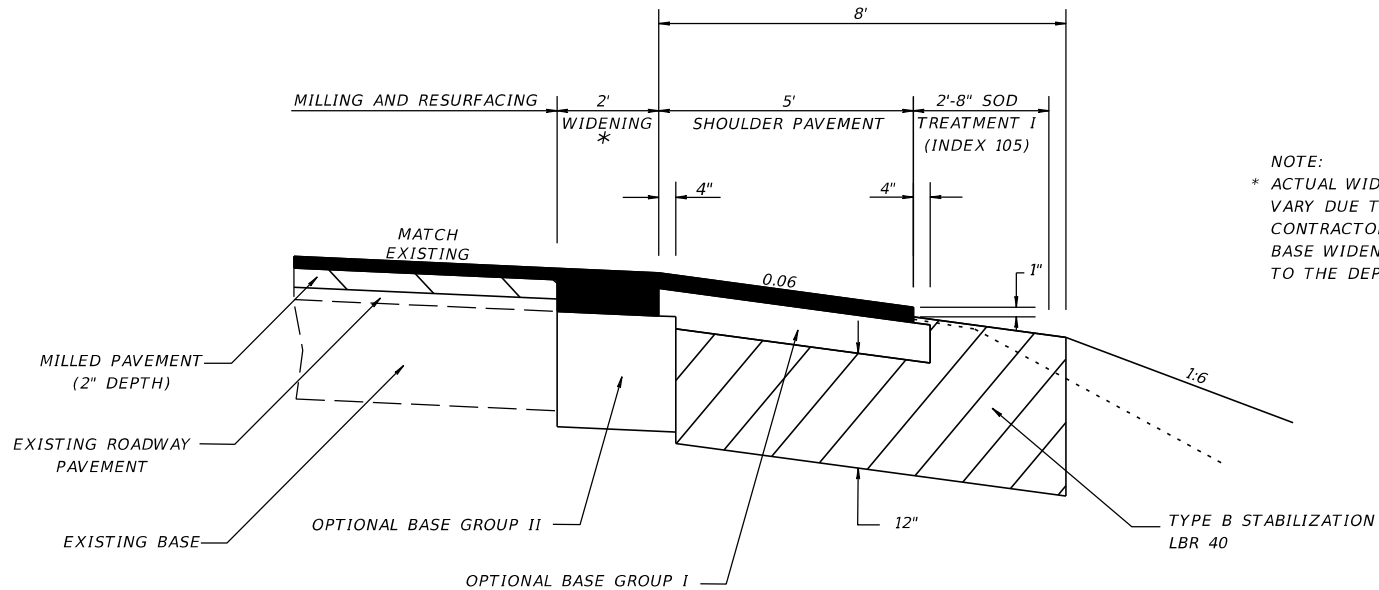
**EXHIBIT TYP-10**  
Date: 1/1/13  
SHEET 1 OF 2

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	
				TYPICAL SECTION

ROAD NO. 10 COUNTY LEON FINANCIAL PROJECT ID 123456-1-52-01



THE NEED FOR STABILIZATION IN THE SHOULDER AREA ON RRR 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 TO THE DEPARTMENT.

**WIDENING & SHOULDER PAVEMENT DETAIL**

**WIDENING**

OPTIONAL BASE GROUP II WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3")  
FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (RUBBER))

**SHOULDER PAVEMENT**

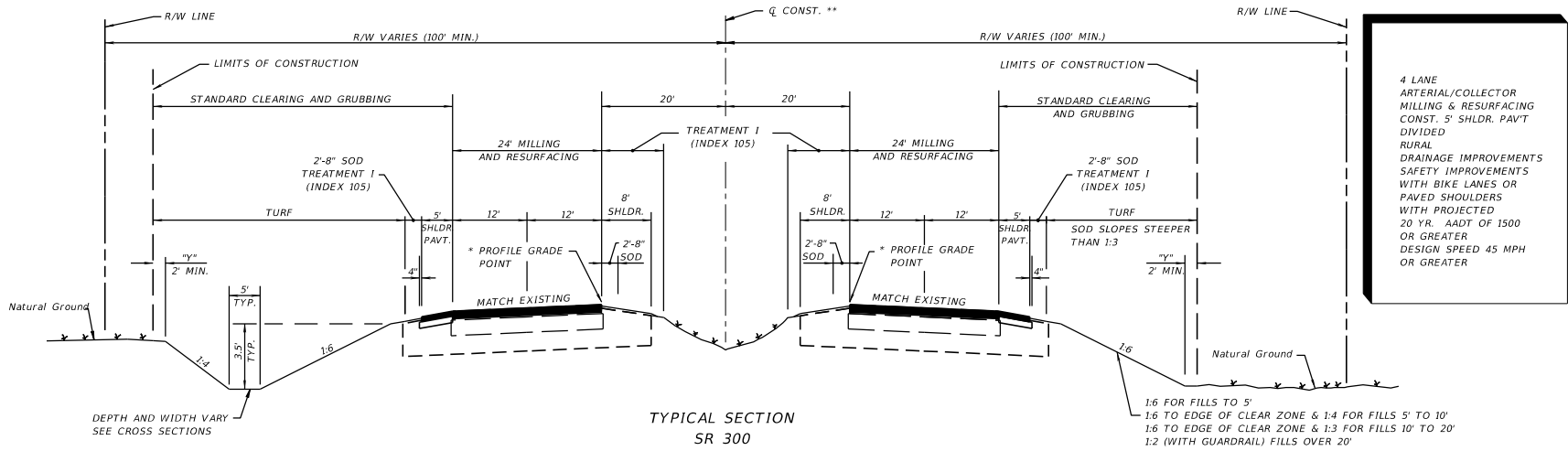
OPTIONAL BASE GROUP I WITH  
FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (RUBBER))

NOTES:  
1. NO CROSS SLOPE CORRECTION REQUIRED IF EXISTING CONDITIONS ARE WITHIN THE RANGES OF PPM VOLUME I, CHAPTER 25 CRITERIA.  
2. WHEN CROSS SLOPE CORRECTION IS NECESSARY, SPECIAL MILLING, OVERBUILD, 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

**EXHIBIT TYP-10A**  
Date: 1/1/14

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		
				ROAD NO. COUNTY FINANCIAL PROJECT ID	
				10 LEON 123456-1-52-01	



4 LANE ARTERIAL/COLLECTOR MILLING & RESURFACING CONST. 5' SHLDR. PAVT DIVIDED RURAL DRAINAGE IMPROVEMENTS SAFETY IMPROVEMENTS WITH BIKE LANES OR PAVED SHOULDERS WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER DESIGN SPEED 45 MPH OR GREATER

TYPICAL SECTION SR 300

CONSTANT DEPTH MILLING AND RESURFACING STA. 190+00.00 TO STA. 204+34.58

- MILLING  
MILL EXISTING ASPHALT PAVEMENT FOR DEPTH (1 1/2")
- RESURFACING  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2")  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
AND FRICTION COURSE FC-5 (3/4") (PG 76-22)
- SHOULDER PAVEMENT  
OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
AND FRICTION COURSE FC-5 (3/4") (PG 76-22)

**TRAFFIC DATA**  
 CURRENT YEAR = 1998 AADT = 18100  
 ESTIMATED OPENING YEAR = 2000 AADT = 21000  
 ESTIMATED DESIGN YEAR = 2012 AADT = 38900  
 K = 11% D = 58% T = 22% (24 HOUR)  
 DESIGN HOUR T = 11%  
 DESIGN SPEED = 60 MPH  
 POSTED SPEED = 55 MPH

\*\*  $\square$  SURVEY AND/OR  $\square$  CONSTRUCTION, AS APPLICABLE.

"Y" THE AREA DISTURBED BY CONSTRUCTION VARIES.

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

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

\* WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING, OVERBUILD 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.

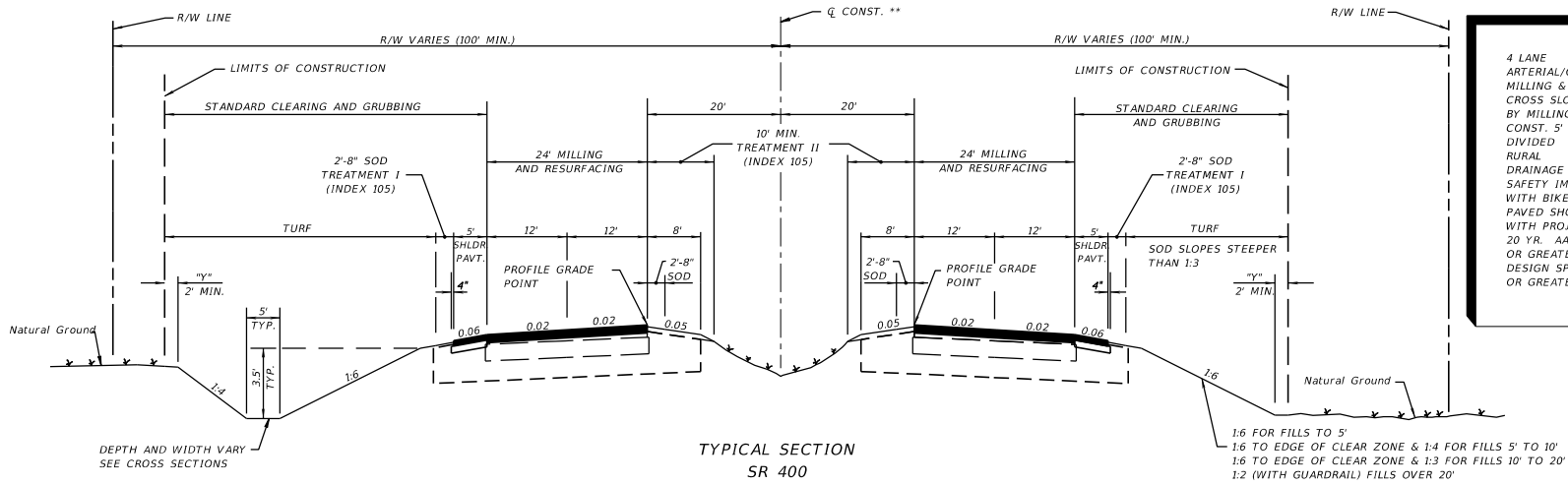
FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 6-1, THIS CHAPTER.

FOR MILLING AND RESURFACING DETAILS SEE TYPICAL SECTION DETAILS SHEET 2-5

EXHIBIT TYP-II  
Date: 1/1/14

SHEET 1 OF 1

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.	
DATE	DESCRIPTION	DATE	DESCRIPTION			
						ROAD NO. 300



4 LANE ARTERIAL/COLLECTOR MILLING & RESURFACING CROSS SLOPE CORRECTION BY MILLING CONST. 5' SHLDR. PAVT DIVIDED RURAL DRAINAGE IMPROVEMENTS SAFETY IMPROVEMENTS WITH BIKE LANES OR PAVED SHOULDERS WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER DESIGN SPEED 45 MPH OR GREATER

TYPICAL SECTION SR 400

CROSS SLOPE CORRECTION STA. 204+34.58 TO STA. 225+00.00 VARIABLE DEPTH MILLING

MILL EXISTING ASPHALT PAVEMENT FOR SLOPE (1 1/2" AVG. DEPTH)

RESURFACING

TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2")  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
AND FRICTION COURSE FC-5 (3/4") (PG 76-22)

SHOULDER PAVEMENT

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
AND FRICTION COURSE FC-5 (3/4") (PG 76-22)

NOTES:  
1. CROSS SLOPE CORRECTION IS REQUIRED IF EXISTING CONDITIONS ARE NOT WITHIN THE RANGES OF PPM VOLUME 1, CHAPTER 25 CRITERIA.  
2. WHEN CROSS SLOPE CORRECTION IS NECESSARY, SPECIAL MILLING, OVERBUILD, 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.

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

FOR MILLING AND RESURFACING DETAILS SEE TYPICAL SECTION DETAILS SHEET 2-5

EXHIBIT TYP-12  
Date: 1/1/14

SHEET 1 OF 2

"y" THE AREA DISTURBED BY CONSTRUCTION VARIES.

TRAFFIC DATA

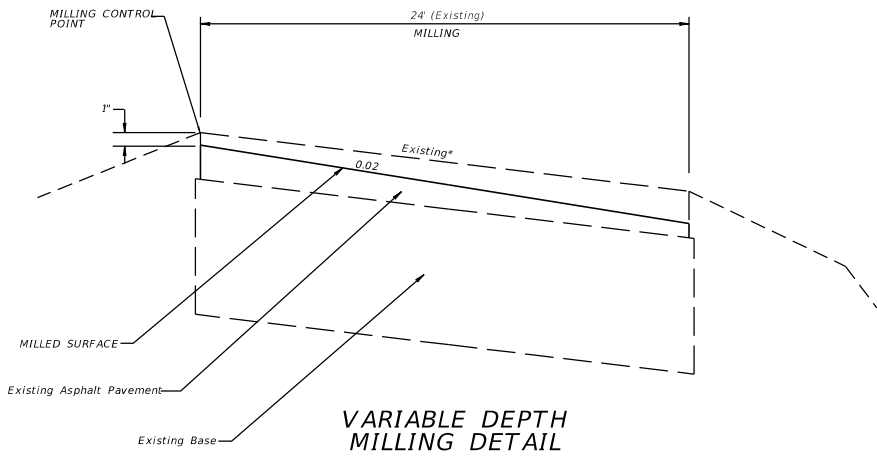
CURRENT YEAR = 1998 AADT = 18100  
ESTIMATED OPENING YEAR = 2000 AADT = 21000  
ESTIMATED DESIGN YEAR = 2012 AADT = 38900  
K = 11% D = 58% T = 22% (24 HOUR)  
DESIGN HOUR T = 11%  
DESIGN SPEED = 60 MPH  
POSTED SPEED = 55 MPH

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

\*\* @ SURVEY AND/OR Q CONSTRUCTION, AS APPLICABLE.

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

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		
				ROAD NO. 400	
				COUNTY LEON	
				FINANCIAL PROJECT ID 123456-1-52-01	

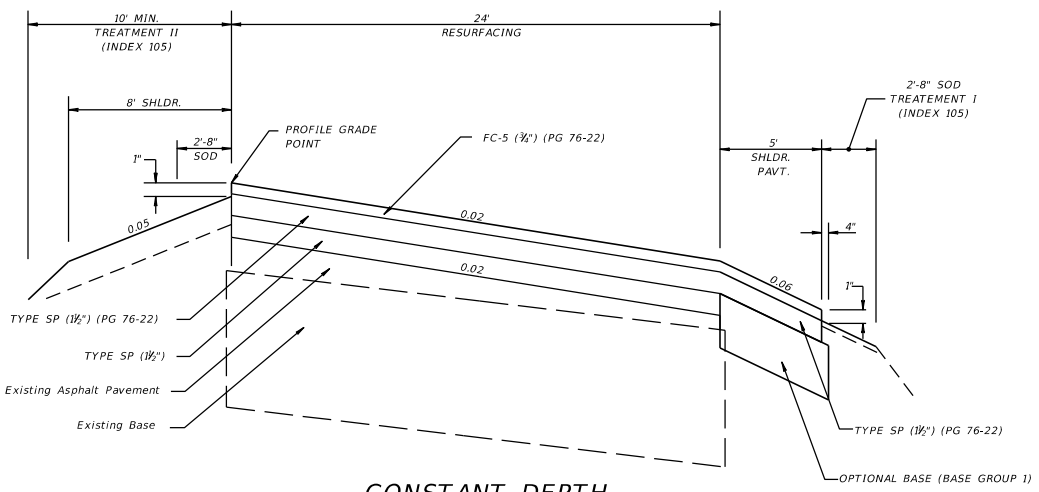


**VARIABLE DEPTH MILLING DETAIL**

EXAMPLE OF CROSS SLOPE CORRECTION BY MILLING AND PAVING WITH CONSTANT DEPTH.

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.



**CONSTANT DEPTH RESURFACING DETAIL**

STA. 204+34.58 TO STA. 225+00

**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
205+00	0.014	0.013
206+00	0.012	0.012
207+00	0.013	0.013
208+00	0.011	0.012
209+00	0.013	0.014
210+00	0.013	0.015
211+00	0.014	0.015
212+00	0.013	0.013
213+00	0.012	0.012
214+00	0.012	0.011
215+00	0.013	0.011
216+00	0.014	0.012
217+00	0.015	0.013

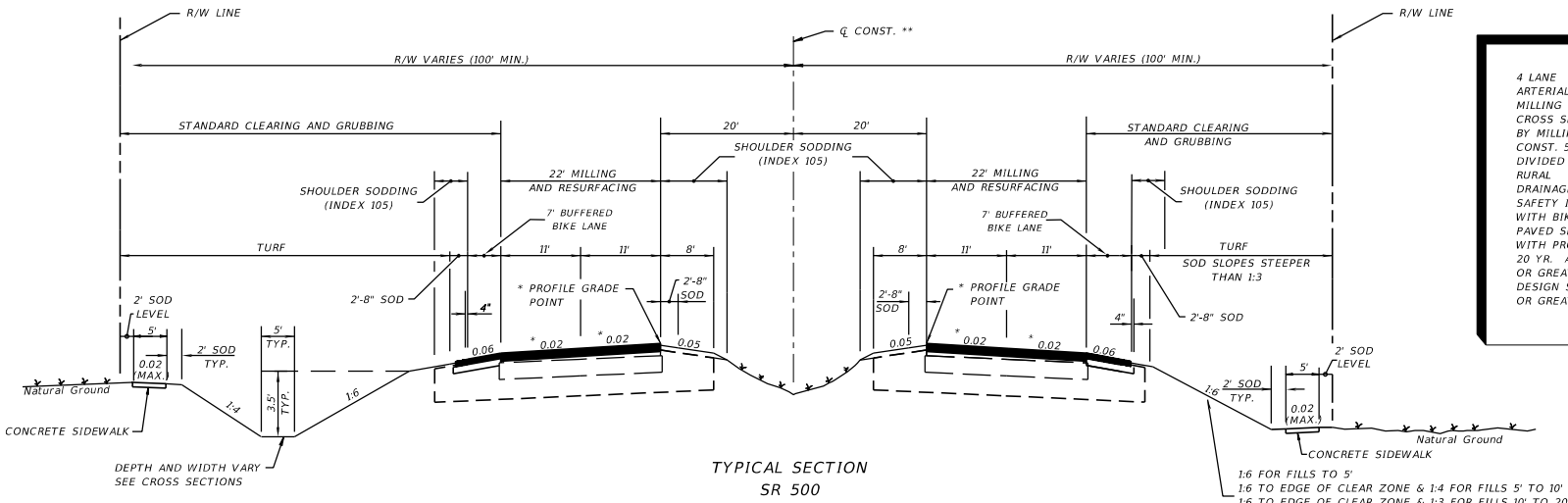
**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
218+00	0.015	0.013
219+00	0.014	0.014
220+00	0.013	0.016
221+00	0.012	0.015
222+00	0.013	0.014
223+00	0.013	0.013
224+00	0.014	0.013
225+00	0.016	0.016

EXHIBIT TYP-12A  
Date: 1/1/14

SHEET 2 OF 2

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				400	LEON	123456-1-52-01		



4 LANE ARTERIAL/COLLECTOR MILLING & RESURFACING CROSS SLOPE CORRECTION BY MILLING OR OVERBUILD CONST. 5' SHLDR. PAVT DIVIDED RURAL DRAINAGE IMPROVEMENTS SAFETY IMPROVEMENTS WITH BIKE LANES OR PAVED SHOULDERS WITH PROJECTED 20 YR. AADT OF 1500 OR GREATER DESIGN SPEED 45 MPH OR GREATER

TYPICAL SECTION SR 500

STA. 316+53.67 TO STA. 347+00.00  
**VARIABLE DEPTH MILLING**  
 MILL EXISTING ASPHALT PAVEMENT (1 1/2" AVG. DEPTH)  
**OVERBUILD**  
 TYPE SP OVERBUILD (TRAFFIC D) THICKNESS VARIES (1" TO 1 1/2")  
**RESURFACING**  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2")  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22)  
**SHOULDER PAVEMENT**  
 OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22)

STA. 600+10.00 TO STA. 620+00.00  
**CONSTANT DEPTH MILLING**  
 MILL EXISTING ASPHALT PAVEMENT (1 1/2" DEPTH)  
**OVERBUILD**  
 TYPE SP OVERBUILD (TRAFFIC D) THICKNESS VARIES (1" TO 2 1/2")  
**RESURFACING**  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2")  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22)  
**SHOULDER PAVEMENT**  
 OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22)  
 AND FRICTION COURSE FC-5 (3/4") (PG 76-22)

TRAFFIC DATA

CURRENT YEAR = 1998 AADT = 18100  
 ESTIMATED OPENING YEAR = 2000 AADT = 21000  
 ESTIMATED DESIGN YEAR = 2012 AADT = 38900  
 K = 11% D = 58% T = 22% (24 HOUR)  
 DESIGN HOUR T = 11%  
 DESIGN SPEED = 60 MPH  
 POSTED SPEED = 55 MPH

\*\*  $\square$  SURVEY AND/OR  $\square$  CONSTRUCTION, AS APPLICABLE.

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

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

\* WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING, OVERBUILD 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.

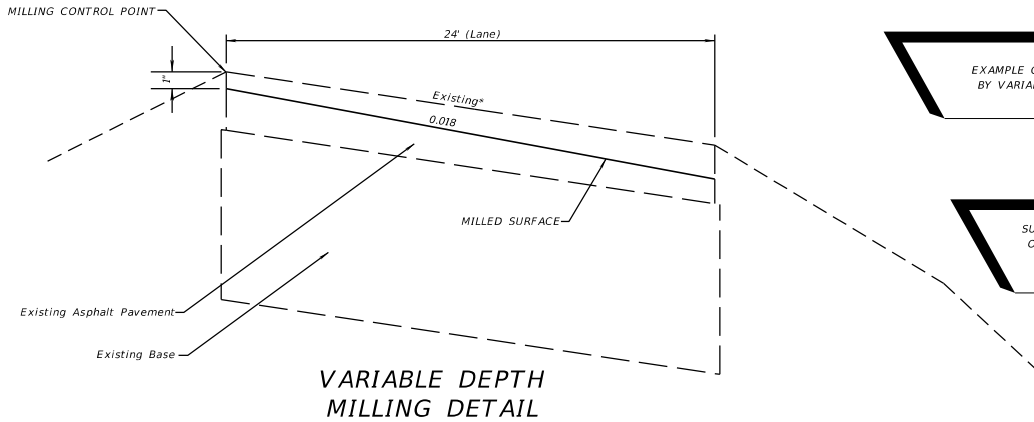
FOR MILLING AND RESURFACING DETAILS SEE TYPICAL SECTION DETAILS SHEET 2-4

EXHIBIT TYP-13  
 Date: 1/1/15

SHEET 1 OF 4

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		
				FINANCIAL PROJECT ID 123456-1-52-01	

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



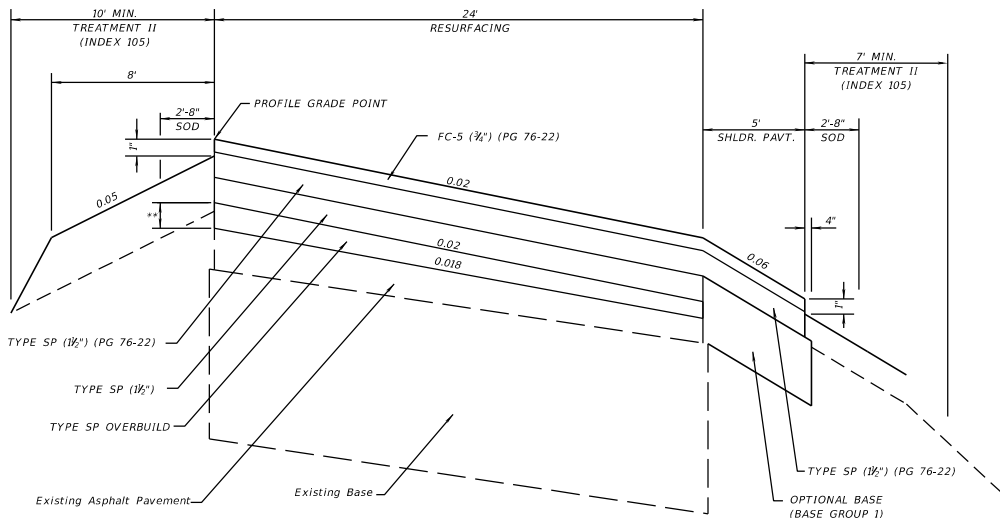
**VARIABLE DEPTH MILLING DETAIL**

EXAMPLE OF CROSS SLOPE CORRECTION BY VARIABLE MILLING AND OVERBUILD.

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

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

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



**VARIABLE DEPTH OVERBUILD AND RESURFACING DETAIL**

\*\* TYPE SP OVERBUILD THICKNESSES (PER FOOT SPECIFICATION 334)

STA. 316+53.67 TO STA. 347+00.00

**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
317+00	0.014	0.013
318+00	0.012	0.012
319+00	0.013	0.013
320+00	0.011	0.012
321+00	0.013	0.014
322+00	0.013	0.015
323+00	0.014	0.015
324+00	0.013	0.013
325+00	0.012	0.012
326+00	0.012	0.011
327+00	0.013	0.011
328+00	0.014	0.012
329+00	0.015	0.013
330+00	0.015	0.013
331+00	0.014	0.014
332+00	0.013	0.016

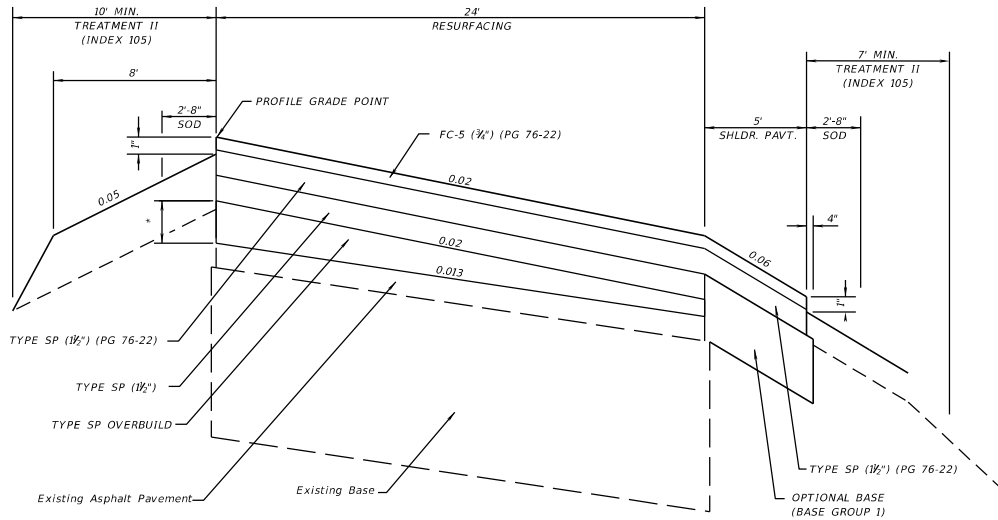
**\*EXISTING PAVEMENT CROSS SLOPES**

STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
333+00	0.012	0.015
334+00	0.013	0.014
335+00	0.013	0.013
336+00	0.014	0.012
337+00	0.016	0.015
338+00	0.015	0.015
339+00	0.012	0.014
340+00	0.013	0.013
341+00	0.014	0.013
342+00	0.016	0.014
343+00	0.013	0.014
344+00	0.013	0.012
345+00	0.014	0.013
346+00	0.016	0.015
347+00	0.016	0.016

EXHIBIT TYP-13A  
Date: 1/1/14

SHEET 2 OF 4

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				500	LEON	123456-1-52-01		



**OVERBUILD AND RESURFACING DETAIL**

\* TYPE SP OVERBUILD THICKNESSES (PER FDOT SPECIFICATION 334)

EXAMPLE OF CROSS SLOPE CORRECTION BY CONSTANT DEPTH MILLING AND OVERBUILD.

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

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

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

STA. 600+10.00 TO STA. 620+00.00

EXISTING PAVEMENT CROSS SLOPES		
STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
600+00	0.015	0.015
601+00	0.014	0.014
602+00	0.013	0.013
603+00	0.013	0.012
604+00	0.013	0.013
605+00	0.013	0.015
606+00	0.012	0.015
607+00	0.012	0.015
608+00	0.013	0.014
609+00	0.012	0.013
610+00	0.013	0.011

EXISTING PAVEMENT CROSS SLOPES		
STATION	EASTBOUND LANES	
	INSIDE	OUTSIDE
611+00	0.014	0.011
612+00	0.015	0.012
613+00	0.015	0.013
614+00	0.014	0.014
615+00	0.013	0.016
616+00	0.012	0.015
617+00	0.013	0.014
618+00	0.013	0.013
619+00	0.014	0.013
620+00	0.016	0.016

EXHIBIT TYP-13B  
Date: 1/1/14  
SHEET 3 OF 4

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				500	LEON	123456-1-52-01		

EXISTING PAVEMENT SUPERELEVATION				
STATION	WESTBOUND LANES		EASTBOUND LANES	
	INSIDE	OUTSIDE	INSIDE	OUTSIDE
400+10	0.018	0.020	0.015	0.018
P.C. STA 400+60	0.023	0.024	0.025	0.026
401+10	0.036	0.038	0.038	0.040
404+00	0.035	0.036	0.036	0.041
407+00	0.036	0.034	0.036	0.039
409+50	0.033	0.034	0.034	0.036
P.T. STA. 412+00	0.024	0.023	0.026	0.024
STA 412+50	0.021	0.020	0.018	0.021

THIS TABLE CAN BE USED TO TABULATE EXISTING PAVEMENT SUPERELEVATION IN THE PLANS FOR AREAS NEEDING SUPERELEVATION CORRECTION.

EXISTING PAVEMENT SUPERELEVATION				
STATION	WESTBOUND LANES		EASTBOUND LANES	
	INSIDE	OUTSIDE	INSIDE	OUTSIDE
699+50	0.015	0.018	0.018	0.019
PC STA 700+00	0.018	0.021	0.022	0.023
700+50	0.031	0.032	0.033	0.038
704+00	0.032	0.034	0.032	0.031
707+00	0.033	0.036	0.029	0.033
709+50	0.030	0.031	0.030	0.033
PT STA 710+00	0.020	0.021	0.023	0.021
STA 710+50	0.017	0.018	0.020	0.019

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

EXHIBIT TYP-13C  
Date: 1/1/13

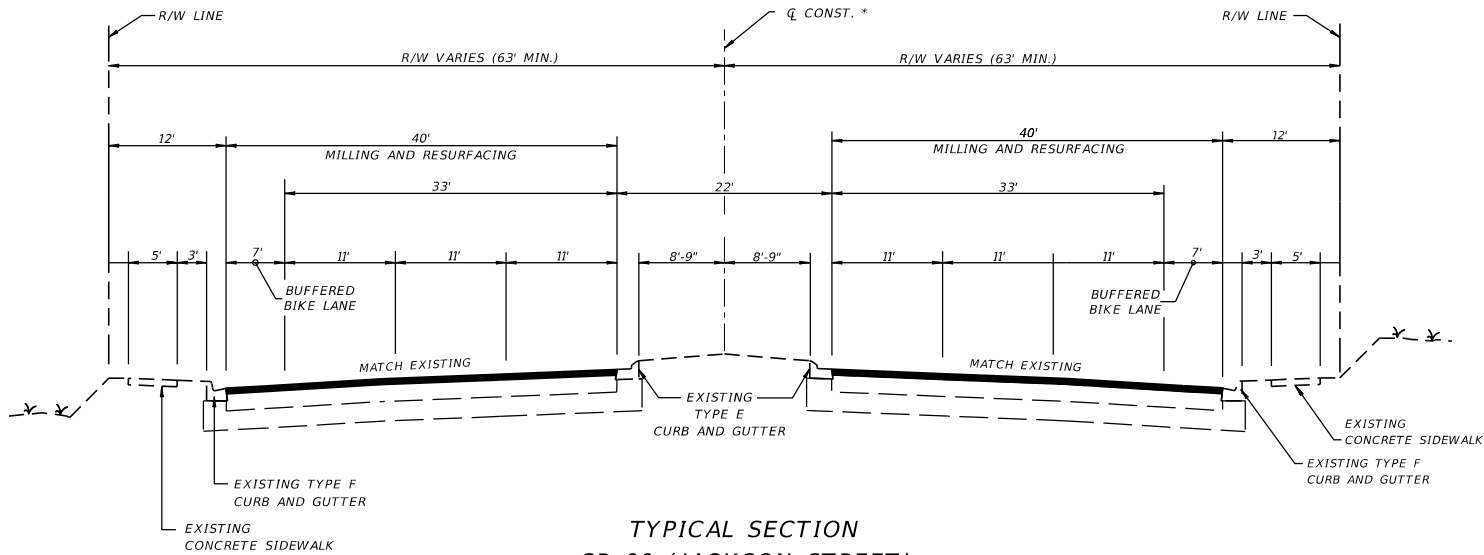
SHEET 4 OF 4

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION DETAILS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				500	LEON	123456-1-52-01		



\* @ SURVEY AND/OR  
 Q CONSTRUCTION, AS APPLICABLE.

6-LANE  
 ARTERIAL  
 MILLING AND RESURFACING  
 DIVIDED  
 URBAN  
 WITH BIKE LANES  
 DESIGN SPEED 45 MPH OR LESS



**TYPICAL SECTION  
 SR 00 (JACKSON STREET)**

CONSTANT DEPTH MILLING AND RESURFACING  
 STA. 101+21.00 TO STA. 221+44.00

MILLING  
 MILL EXISTING ASPHALT PAVEMENT (1 1/2" AVG. DEPTH)

RESURFACING  
 FRICTION COURSE FC-12.5 (TRAFFIC C) (1 1/2") (PG 76-22)

**TRAFFIC DATA**

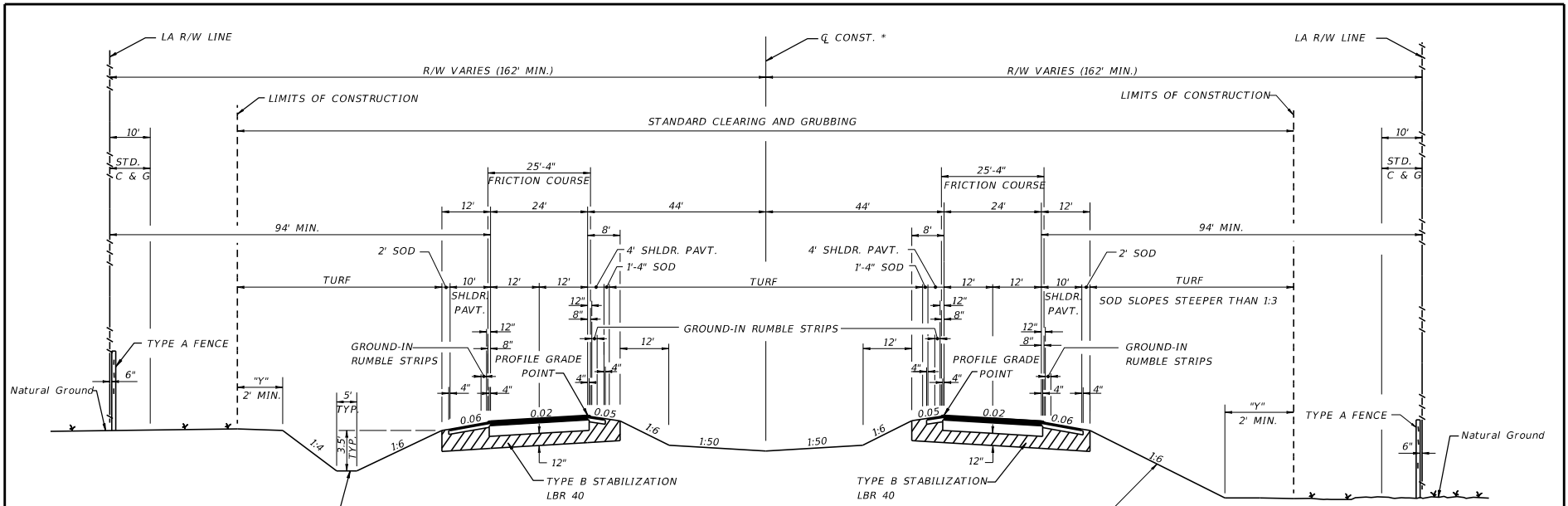
CURRENT YEAR = 1998 AADT = 22800  
 ESTIMATED OPENING YEAR = 2000 AADT = 25800  
 ESTIMATED DESIGN YEAR = 2020 AADT = 30600  
 K = 6% D = 55% T = 2% (24 HOUR)  
 DESIGN HOUR T = 1%  
 DESIGN SPEED = 45 MPH

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

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

EXHIBIT TYP-14  
 Date: 1/1/15

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		
				ROAD NO. COUNTY FINANCIAL PROJECT ID	
				10 LEON 123456-5-20-1	



DEPTH AND WIDTH VARY  
SEE CROSS SECTIONS

**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

**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) (2 1/2")  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22) AND  
 FRICTION COURSE FC-5 (3/4") (PG 76-22)

**MEDIAN SHOULDER PAVEMENT**  
 OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2")  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (1 1/2") (PG 76-22) AND  
 FRICTION COURSE FC-5 (3/4") (PG 76-22)

**OUTSIDE SHOULDER PAVEMENT**  
 OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 1/2") AND  
 FRICTION COURSE FC-5 (3/4") (PG 76-22)

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'

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

\* SURVEY AND/OR  
 Q CONSTRUCTION, AS APPLICABLE.

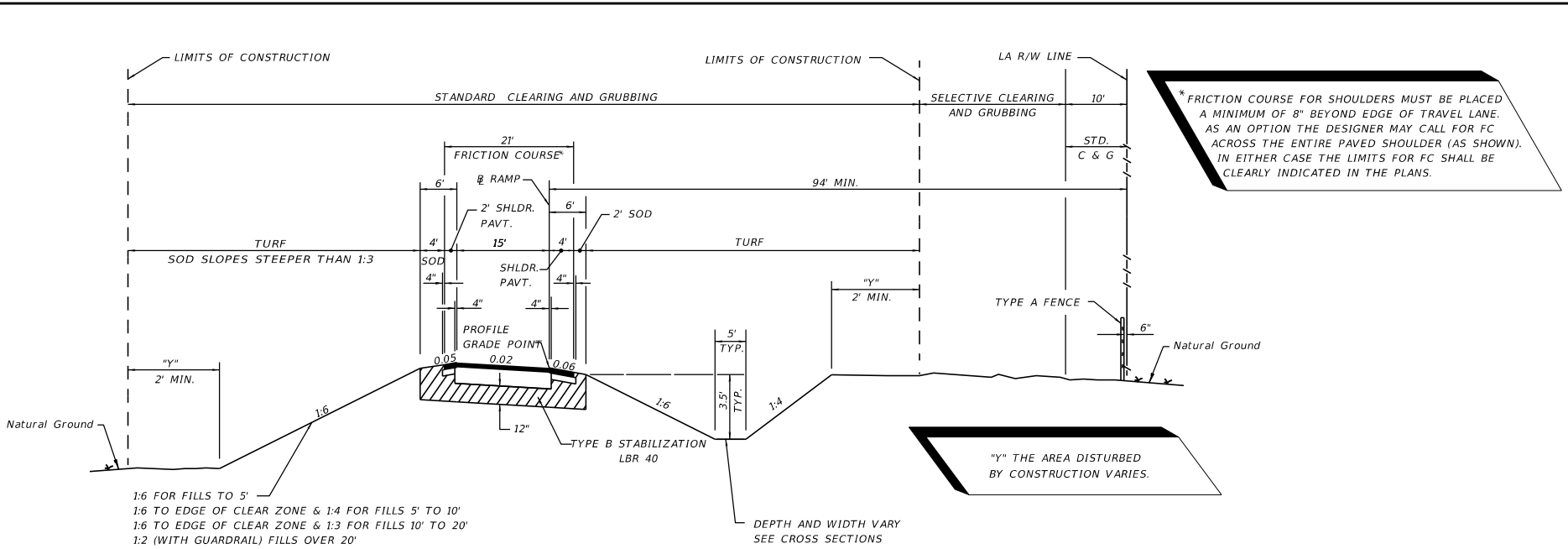
4 LANE  
 INTERSTATE SYSTEM  
 NEW CONSTRUCTION  
 DIVIDED  
 RURAL  
 WITH PROJECTED  
 20 YR. AADT OF 1500  
 OR GREATER  
 DESIGN SPEED  
 70 MPH

"Y" THE AREA DISTURBED BY  
 CONSTRUCTION VARIES.

**EXHIBIT TYP-15**  
 Date: 1/1/15

DATE		DESCRIPTION		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
						10	LEON	123456-1-52-01	

**TYPICAL SECTION**



\* FRICTION COURSE FOR SHOULDERS MUST BE PLACED A MINIMUM OF 8" BEYOND EDGE OF TRAVEL LANE. AS AN OPTION THE DESIGNER MAY CALL FOR FC ACROSS THE ENTIRE PAVED SHOULDER (AS SHOWN). IN EITHER CASE THE LIMITS FOR FC SHALL BE CLEARLY INDICATED IN THE PLANS.

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'

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

**TYPICAL SECTION  
 RAMP "B"  
 STA. 415+67.28 TO STA. 421+23.68  
 (SINGLE LANE RAMP)**

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (2 1/2") (PG 76-22) AND  
 FRICTION COURSE FC-5 (3/4") (PG 76-22)

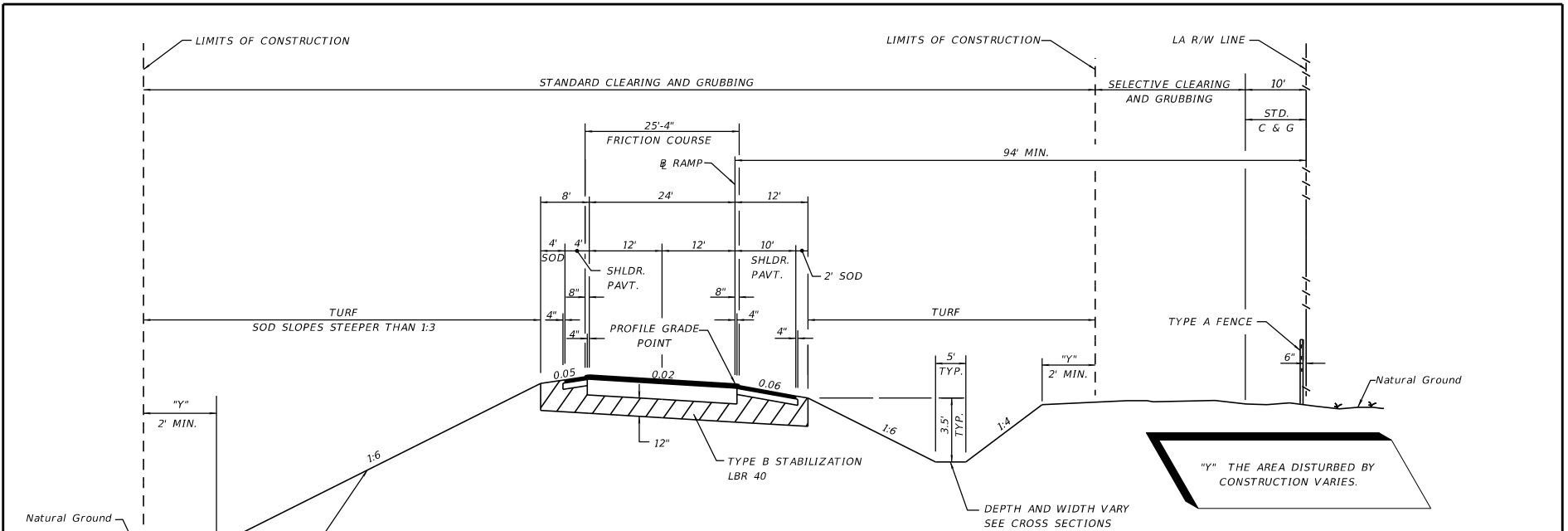
**SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC D) (2 1/2") (PG 76-22) AND  
 FRICTION COURSE FC-5 (3/4") (PG 76-22)

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

**EXHIBIT TYP-16**  
 Date: 1/1/15

DATE		DESCRIPTION		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	RAMP TYPICAL SECTION		
				10	LEON	123456-1-52-01			



**TYPICAL SECTION  
RAMP "C"  
STA. 623+28.64 TO STA. 629+13.78**

**(TWO LANE RAMP)**

**NEW CONSTRUCTION**

OPTIONAL BASE GROUP 9 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (2") (PG 76-22) AND  
FRICTION COURSE FC-5 (¾") (PG 76-22)

**LEFT SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC D) (2") (PG 76-22) AND  
FRICTION COURSE FC-5 (¾") (PG 76-22)

**RIGHT SHOULDER PAVEMENT**

OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2") AND  
FRICTION COURSE FC-5 (¾") (PG 76-22)

**EXHIBIT TYP-17**  
Date: 1/1/15

**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

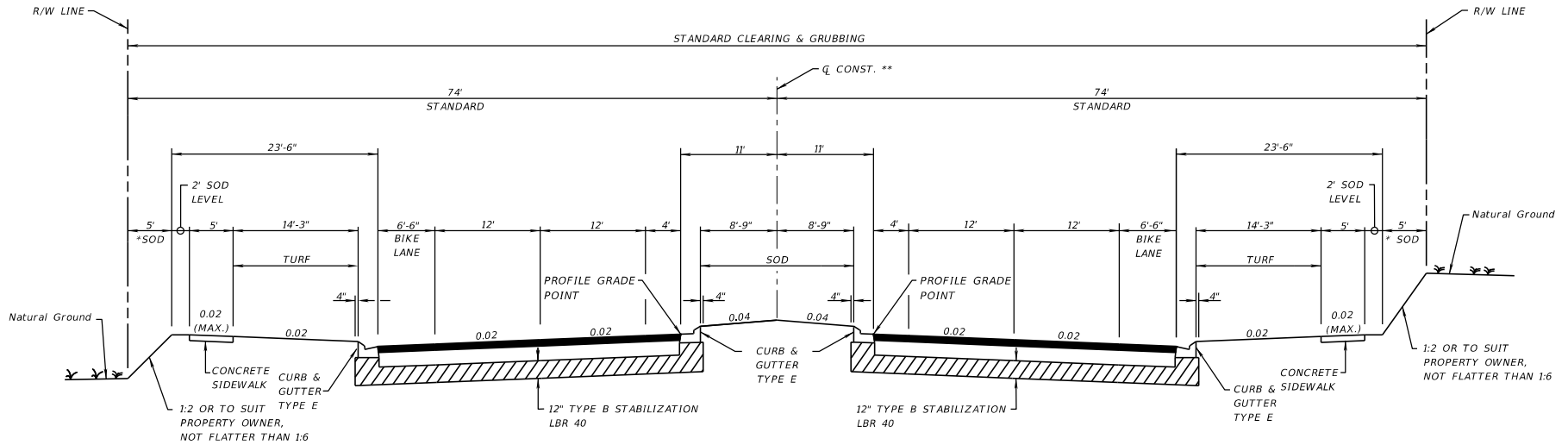
REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			RAMP TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		

\*\* SURVEY AND/OR  
 Q CONSTRUCTION, AS APPLICABLE.

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.

TURF SLOPES 1:3 OR FLATTER  
 \* SOD SLOPES STEEPER THAN 1:3

4-LANE  
 ARTERIAL  
 NEW CONSTRUCTION  
 DIVIDED  
 URBAN AND SUBURBAN  
 WITH BIKE LANES  
 DESIGN SPEED 50-55 MPH



**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.

**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) (3 1/2")  
 AND FRICTION COURSE FC-5 (3/4") (RUBBER)

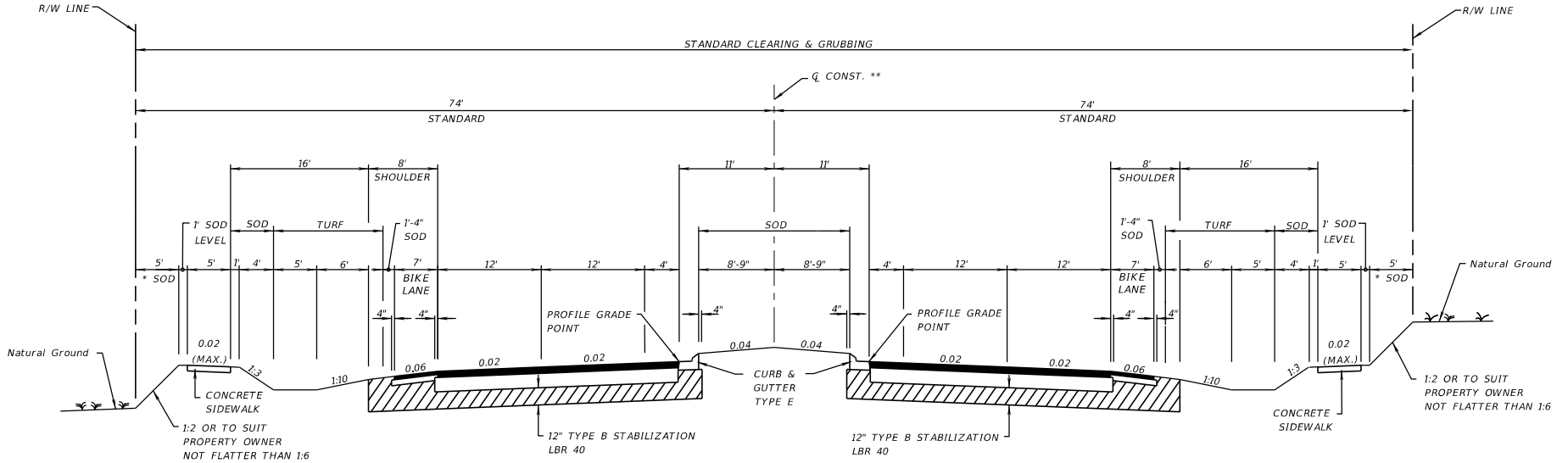
**EXHIBIT TYP-18**  
 Date: 1/1/15

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		

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\*\*  $\overline{B}$  SURVEY AND/OR  
 $\overline{C}$  CONSTRUCTION, AS APPLICABLE.

4-LANE  
 ARTERIAL  
 NEW CONSTRUCTION  
 DIVIDED  
 SUBURBAN  
 WITH BIKE LANES  
 DESIGN SPEED 50-55 MPH



**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.

**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) (3 1/2")  
 AND FRICTION COURSE FC-5 (3/4") (RUBBER)

**SHOULDER PAVEMENT**

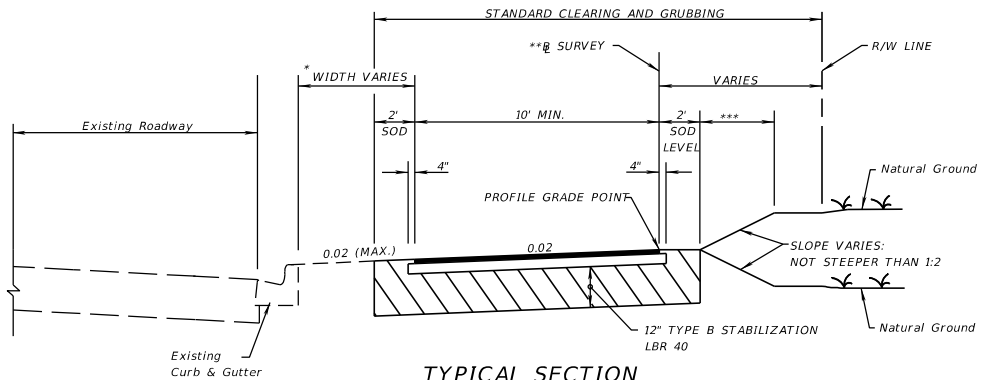
OPTIONAL BASE GROUP 1 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC C) (1 1/2")  
 AND FRICTION COURSE FC-5 (3/4") (RUBBER)

TURF SLOPES 1:3 OR FLATTER  
 \* SOD SLOPES STEEPER THAN 1:3

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.

**EXHIBIT TYP-19**  
 Date: 1/1/16

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 10	LEON	123456-1-52-01		



PATH DESIGN SPEED = 18 MPH

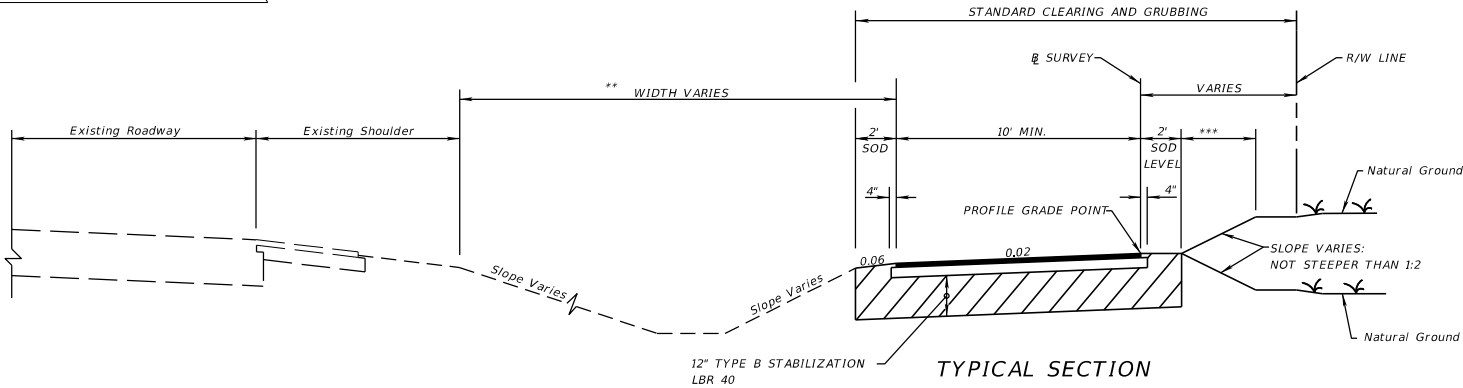
**TYPICAL SECTION  
SHARED USE PATH  
SR 00 (WILLOW WAY)  
STA. 122+00.000 TO STA. 210+65.000**

**PATH**  
OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC A) (1")

\* FOR ROADWAYS WITH CURBS, A MINIMUM SEPARATION OF 4 FEET MEASURED FROM THE BACK OF CURB SHOULD BE PROVIDED.

\*\*\* TURF OR SOD

\*\* B SURVEY AND/OR  
C CONSTRUCTION, AS APPLICABLE.



PATH DESIGN SPEED = 18 MPH

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

**PATH**  
OPTIONAL BASE GROUP 1 WITH  
TYPE SP STRUCTURAL COURSE (TRAFFIC A) (1")

**EXHIBIT TYP-20**  
Date: 1/1/16

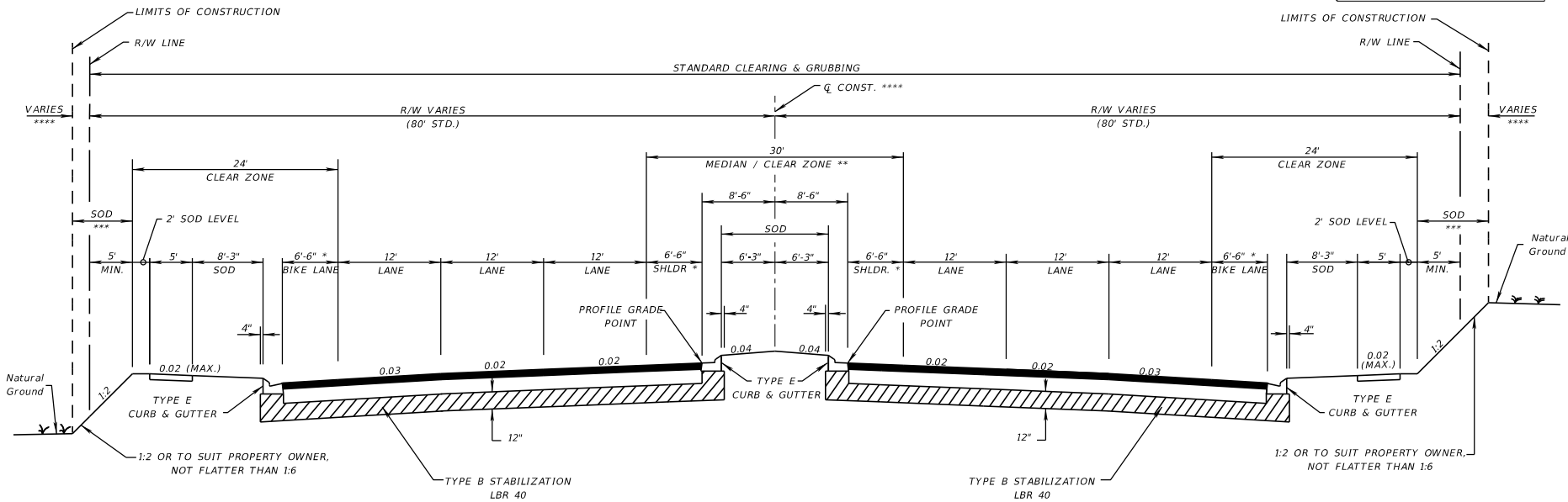
\*\* FOR ROADWAYS WITH FLUSH SHOULDERS, A MINIMUM SEPARATION OF 5 FEET MEASURED FROM THE OUTSIDE EDGE OF SHOULDER TO THE INSIDE EDGE OF THE SHARED USE PATH SHOULD BE PROVIDED.

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	SHARED USE PATH	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION			
				SR 10 LEON 123456-1-52-01		

\*\*\* @ SURVEY AND/OR  
 C CONSTRUCTION, AS APPLICABLE.

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

6-LANE  
 ARTERIAL  
 NEW CONSTRUCTION  
 DIVIDED  
 URBAN AND SUBURBAN  
 WITH BIKE LANES  
 DESIGN SPEED 50-55 MPH



**TYPICAL SECTION**  
**SR 00 (SOUTH INDEPENDENCE STREET)**  
**STA. 401+30.00 TO STA. 788+66.00**

**TRAFFIC DATA**  
 CURRENT YEAR = 1998 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 = 50 MPH

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

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

**NEW CONSTRUCTION**  
 OPTIONAL BASE GROUP 9 WITH  
 TYPE SP STRUCTURAL COURSE (TRAFFIC C) (3/2")  
 AND FRICTION COURSE FC-5 (3/4") (RUBBER)

\* PROVIDES FOR 8' OF USABLE SHOULDER

\*\* THE 30' MEDIAN AREA PROVIDES SUFFICIENT WIDTH FOR:  
 - 24' CLEAR ZONE  
 - DUAL LEFT TURN LANES (11' lanes, 4' separator in median shoulder)  
 - DIRECTIONAL MEDIAN OPENING (4' separators in median shoulder)

\*\*\* TURF OR SOD

**EXHIBIT TYP-21**  
 Date: 1/1/16

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 10	LEON	123456-7-15-20		



## Chapter 7

### Summary of Quantities

7.1	General .....	7-1
7.2	Plan Summary Boxes and Format.....	7-2
	7.2.1 Standard Notes .....	7-2
	7.2.2 Pay Item Notes.....	7-3
7.3	Box Culvert .....	7-4
7.4	Litter Removal and Mowing.....	7-4

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## Chapter 7

# Summary of Quantities

Modification for Non-Conventional Projects:

Delete **PPM** Chapter 7.

### 7.1 General

The Summary of Quantities sheets contain plan summary boxes for all work to be performed on the project with the exception of work provided for on the Summary of Drainage Structure sheet(s). The summary boxes must document the quantities by location.

The Summary of Quantities sheets are to be numbered SQ-1, SQ-2, SQ-3, etc.

Consider providing an index for the summary boxes as shown in **Exhibit SQ-1** when there are more than 10 Summary of Quantities sheets.

The Summary of Quantities sheets is the only location where quantities are to be documented. Do not place plan summary boxes in any other location in the plan set.

Include the electronic shape file (QTDSRD.dgn) and other documentation (i.e. calculations, sketches, or spreadsheets) that supports the quantities shown in the summary boxes with phase submittals, beginning with Phase III.

For an example of a Summary of Quantities sheet see **Exhibit SQ-1**.

## 7.2 Plan Summary Boxes and Format

The plan summary boxes are provided in the FDOT Engineering/CADD Systems Software. The “boxes” should be placed on the sheets in order of pay item numbers. A continuation of a “box” onto subsequent plan sheets may be necessary. Refer to Chapter 8 of the *Basis of Estimates Manual* for further guidance.

On contracts with multiple Financial Project ID’s or federal aid and non-federal aid quantities, provisions must be made to tabulate and summarize their respective quantities. Refer to Chapter 8 of the *Basis of Estimates Manual* for further guidance.

### 7.2.1 Standard Notes

Place the following standard note below the Summary of Earthwork box:

Earthwork has been calculated using the \_\_\_\_\_ base option(s).

Place the following standard note below the Summary of Monitor Existing Structures box:

This list includes existing structures (as determined by the Department) located outside the limits specified in Article 108-2 of the FDOT Specifications that are required to be monitored. This list should not be considered all-inclusive and does not contain existing structures to be monitored that are located within the distances specified in Article 108-2.

## 7.2.2 Pay Item Notes

Place the following applicable pay item notes on the first Summary of Quantities sheet;

1. 110- 86- All salvageable material designated to be delivered by the contractor shall be delivered to:

(Provide address of nearest FDOT Maintenance Yard.)

(On applicable Utility Work by Highway Contractor (UWHC) Agreement plans, also include the following note):

All utility infrastructure designated in the utility plans to be salvaged and delivered by the contractor shall be delivered to:

(Provide applicable Utility/Agency Owner address.)

2. (For new construction projects with Asphalt Base):

520-1-7 or 520-1-10

Cost of asphalt curb pad and additional curb thickness required to be included in the cost of curb and gutter.

3. 536- 73- (To be used for the removal of existing guardrail when FDOT Maintenance wants materials).

Existing guardrail is to be dismantled and stockpiled within the right of way in areas designated by the Engineer for removal by FDOT maintenance forces.

4. Temporary Turf: When required by the project design, these items shall be included in the cost of the Performance Turf items. A pay item note should show the approximate quantities. For example:

570- 1- 1 Includes approximately \_\_\_\_\_ SY Turf for temporary erosion control.

570- 1- 2 Includes approximately \_\_\_\_\_ SY Sod for temporary erosion control.

## 7.3 Box Culvert

The structural design of box culverts may be done by computer program as described in **Chapter 33 of Volume 1**.

The **LRFD Box Culvert Program** designs the culvert based on the details shown on **Index 289** of the **Design Standards**. When this program is used, the Box Culvert Data Table (from the Structures FDOT CADD Menu cells) and the Reinforcing Bar List must be completed and placed on normally formatted plan sheets. These sheets should be placed behind the drainage structure sheets in the contract plans.

Place the quantity totals from the **LRFD Box Culvert Program** on the Box Culvert section of the Summary of Structure Quantities or in the Summary of Box Culverts in the Roadway plans.

## 7.4 Litter Removal and Mowing

Provide the estimated litter removal and mowing areas in the Summary of Litter Removal and Mowing. For each construction phase, provide the phase duration, frequency, number of cycles, area per cycle, and total area (See **Exhibit SQ-1**).

The construction office estimates the duration for each construction phase (based on the Temporary Traffic Control Plans) during the Phase III Plans Review. The litter removal and mowing cycle frequency should be estimated at 30 days for the duration of the project (with a minimum of one cycle per phase). If the area does not vary by phase, note "all phases" for the tabulation column. It is not necessary to adjust the estimated number of cycles for growing season, special events, or project location.

The litter removal and mowing areas for each construction phase are based on areas from the edge of travel to the right of way. Mowing and litter removal for new landscape areas is included in **Section 580** of the **Specifications**; payment is incidental to the landscape pay items. Existing landscape areas will be included in the litter removal areas. It is not necessary to adjust for inlets, drains, slopes, ditch pavement, turnouts, driveways, sidewalks, small variations in tree lines, or other similar areas.

The litter removal and mowing areas are multiplied by the number of cycles in each phase to determine the estimated total area per construction phase.



## 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 .....	8-1
8.2	Optional Materials Tabulation.....	8-3



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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 are in the FDOT **CADD Manual**.

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

#### 8.1.1 Sheet Setup and Data

Prepare and include a summary of drainage structures in the plans. List the structures in numerical order of structure number. Identify the location of each structure by station along the centerline of construction (**Exhibit SDS-1a**).

Tabulate storm and cross drains in the summary of drainage structures by structure number, providing the station, size, length and incidental quantities appropriate for the material detailed in the plans. Prepare and include a tabulation form for optional culvert material (see **Section 8.2**).

Modification for Non-Conventional Projects:

Delete the last sentence of the above paragraph and replace with the following:

See **Chapter 6** of the **Drainage Manual** for Optional Material requirements. Designate installed material on the Optional Materials Sheet, Summary of Drainage Structures or on the as-built plan view.

Information for the drainage elements in the columns is obtained from drainage structure sheets and plan-profile sheets. The order in which the elements are listed should be as follows:

1. Pipe Sizes for
  - a. Storm and Cross Drains
  - b. 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. Performance Turf, Sod
10. Class of Concrete
11. Reinforcing Steel
12. Riprap

Use the "Description" column to specify the type of structure, the outgoing pipe and the end treatment of that pipe, if applicable.

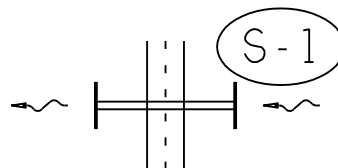
The remarks column contains special notes pertaining to the structure. The "Final Quantity" line is for construction to use and must be left blank.

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.

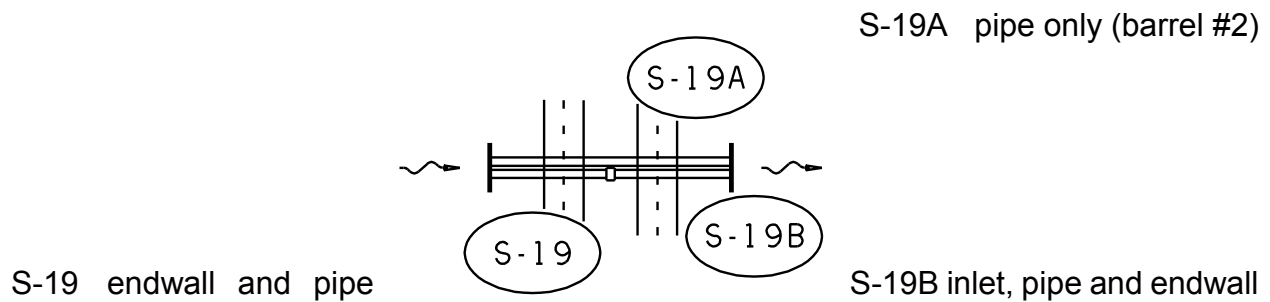
Example #1 (cross drain w/o median inlet)



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 cross drain and median inlet)



## 8.2 Optional Materials Tabulation

All culverts, with the exception of pipe extensions and end section replacements, require an Optional Pipe Materials Analysis. Prepare and include an optional materials tabulation in the plans (see **Exhibits SDS-2a** and **SDS-3a**). The sheet format is available in the FDOT Engineering/CADD Systems Software.

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.

Modification for Non-Conventional Projects:

Delete **PPM 8.2** and see **Chapter 6** of the **Drainage Manual** for Optional Material requirements. Designate installed material on the Optional Materials Sheet, Summary of Drainage Structures, or on the as-built plan view.

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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.

STR. NO.	DSL YEARS	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 SRAP	7.0			
4	100	36	X	RCP CLASS II SRSP, 12 GA. SRAP, 12 GA. SRASP, 16 GA.	5.7			
5	100	15	X	RCP CLASS II SRAP	7.7			
6	100	36	X	RCP CLASS II SRSP, 12 GA. SRAP, 12 GA. SRASP, 16 GA.	6.4	5.7		
7	100	36	X	RCP CLASS II	6.5	6.4		
8	100	42	X	RCP CLASS II SRAP SRSP	7.9	7.7		
9	100	30	X	RCP CLASS II SRAP, 16 GA. SRSP, 16 GA.	6.8	6.5		
10	100	18	X	RCP CLASS II SRAP, 16 GA. SRSP, 14 GA. SRASP, 16 GA.	7.6	7.2		
11	100	18	X	RCP CLASS II SRAP, 16 GA. SRSP, 14 GA. SRASP, 16 GA.	8.0	7.6		
12	100	24	X	RCP CLASS III				ENDWALL
13	100	24x38 35x24	X	ERCP CLASS II ASPA, 14 GA.	10.4	10.3		
14	50	30	X	RCP CLASS III SRASP 14 GA. SRAP, 14 GA. HDPE-I PVC 36 CAP, 16 GA. 36 CSP, 16 GA. BIT. COATED	6.0	5.9		
14A	50	19x30 28x20	X	ERCP CLASS III ASPA 14 GA.	5.9	5.8		

EXHIBIT SDS-2a  
Date: 1/1/15

REVISIONS		DESCRIPTION		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			OPTIONAL MATERIALS TABULATION	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		





## Chapter 9

### Project Layout

9.1	General .....	9-1
9.2	Alignment Sheet Sequence .....	9-2
9.3	Survey Reference Points.....	9-3

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## Chapter 9

# Project Layout

### 9.1 General

The project layout sheet is an optional sheet that the district may choose to include in the plans set. This sheet shows the horizontal alignment and plan or plan-profile sheet sequence and numbering for the project. The project layout sheet provides clarity and detailed information on complex projects involving interchanges with many connecting routes. If included in the plans set, this sheet should also show all survey reference points.

Modification for Non-Conventional Projects:

Delete the above paragraph and replace with the following:

The project layout sheet shows the horizontal alignment and survey reference points for the project.

Use the standard plan format sheet provided in the FDOT Engineering/CADD Systems Software to prepare the project layout sheet. Use a scale that provides clarity and legibility. Place a north arrow and scale in a conspicuous location, typically in the upper right portion of the sheet. For large or complicated projects, more than one sheet may be required to clearly depict all required information. Use match lines when multiple project layout sheets are needed.

## 9.2 Alignment Sheet Sequence

Show complete project alignment with baseline of survey and/or centerline of construction. Show edge of pavements if scale permits. Superimpose on the alignment the outlines of the plan, or plan-profile sheets to depict the sheet sequence with relation to the alignment stationing. Include the appropriate plan sheet number on each sheet outline. Plan or plan-profile sheet numbering must be in the following order:

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

Flag and label beginning and ending stations for project, construction and ramps, including equations and/or exceptions.

Modification for Non-Conventional Projects:

Delete **PPM** 9.2 and replace with:

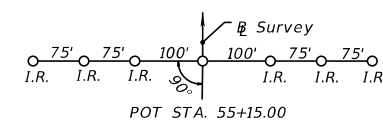
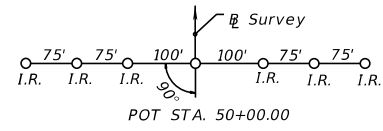
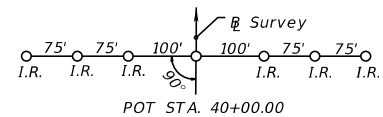
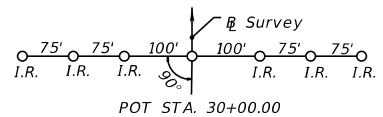
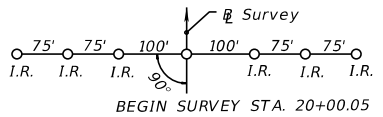
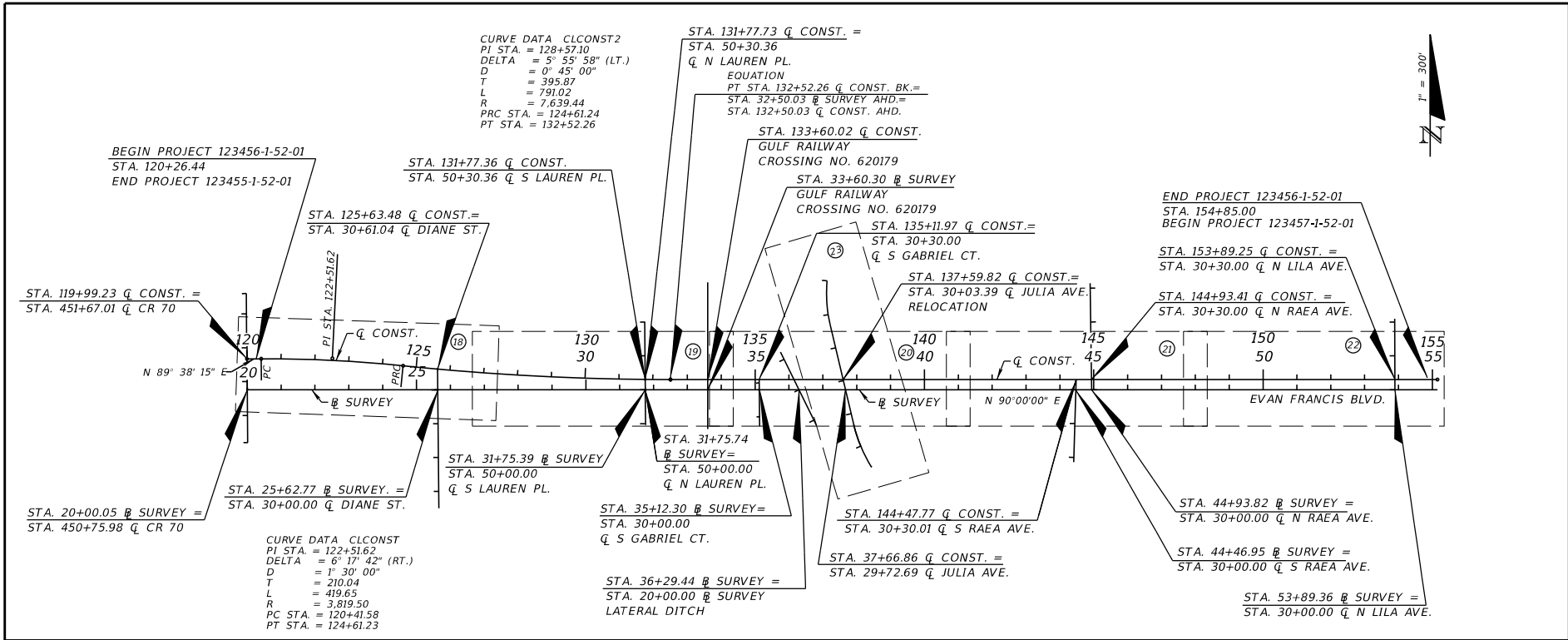
### **9.2 Alignment Sheet Sequence**

Show complete project alignment with baseline of survey and/or centerline of construction. Flag and label beginning and ending stations for project, construction and ramps, including equations.

### **9.3 Survey Reference Points**

Place survey reference points on the project layout sheet just beneath the alignment sheet sequence plan or where other space allows. Clearly indicate the baseline of survey and reference points, including all ties. Complete length of survey baseline between two consecutive reference points need not be shown. Clearly label each reference point, beginning at the first reference point within the limits of the project, and progressing in the direction of stationing. Reference points need not be drawn to any particular scale, but distances and angles shown must be proportionate.

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**EXHIBIT: EX-PL-1**  
Date: 1/1/13

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		PROJECT LAYOUT	SHEET NO.	
DATE	DESCRIPTION	DATE	DESCRIPTION			
						ROAD NO. 10

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

## Chapter 10

### Roadway Plan-Profile and Project Notes

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## Chapter 10

### Roadway Plan-Profile and Project Notes

#### 10.1 General

The roadway plan-profile sheet provides the complete horizontal and vertical alignments for the project. Various roadway elements such as pavement width, medians, paved shoulders, curbs, drainage elements, tapers, turn provisions, and intersecting roadways, are shown on this sheet.

Prepare the roadway plan-profile sheet according to the standard formatted sheets that are contained in the FDOT Engineering/CADD Systems Software. For urban jobs, the plotting scale is typically 1" = 40' or 1" = 50' horizontally. For rural jobs, the scale is typically 1" = 100' or 1" = 200' horizontally.

When appropriate, the plan-profile sheet may be divided into separate plan sheets and profile sheets.

The project notes sheet is an optional sheet that provides project specific information as described in **Section 10.4**.

## 10.2 Roadway Plan Portion

### 10.2.1 Centerline

Place the baseline of survey and/or centerline of construction in the center of the plan portion of the sheet, with stationing increasing from left to right. For resurfacing projects, simple projects, or sections of a project without a profile view, "stacking" multiple plans on one sheet is optional if clarity and legibility are maintained. When multiple plan views are shown on a plan sheet, they must be stacked from top to bottom. When the alignment includes horizontal curves, lay the centerline on the sheet in such a manner to avoid breaks or match lines (except at the beginning or end of the sheet).

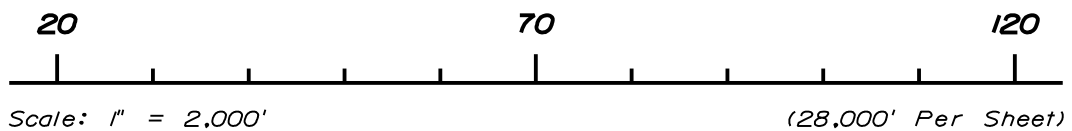
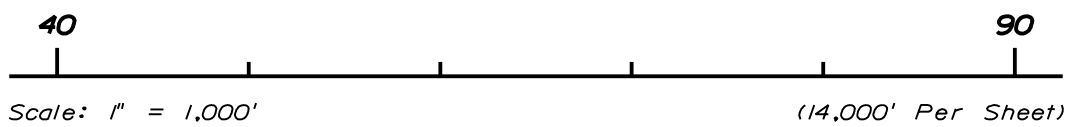
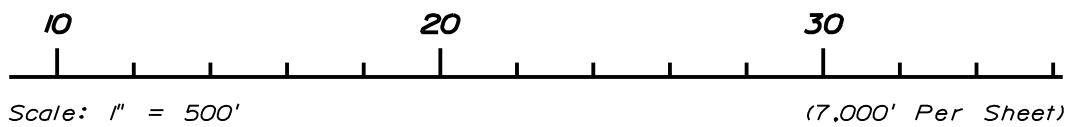
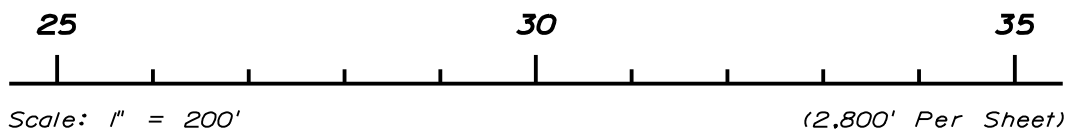
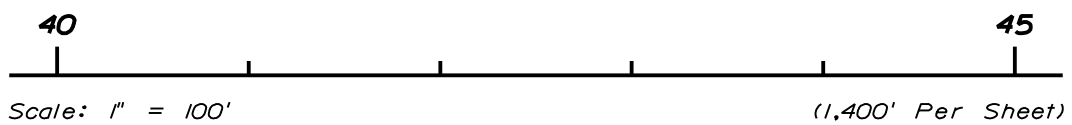
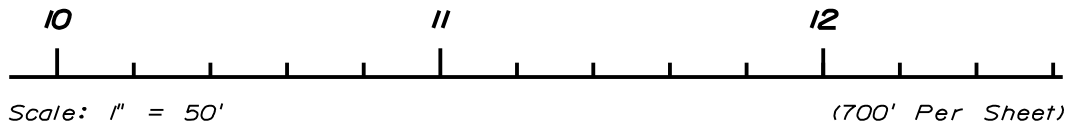
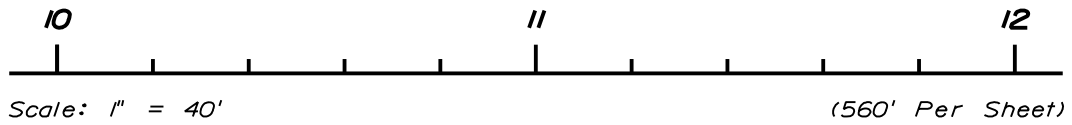
Place "tick" marks on the upper side of the centerline at every station as shown in **Figure 10.1**. Place intermediate ticks between the station ticks. Intermediate ticks should be approximately half the length of station ticks.

Place station numbers close to station ticks 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 must 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 section. Show all station equations occurring on the survey baseline and those equating the survey baseline and construction centerline.

Place a north arrow and scale at a point of maximum visibility, typically in the upper right portion of the plan view.

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



## 10.2.2 Horizontal Curves

Designate PC and PT points of horizontal curves by small circles with short radial lines from these points. Designate PI points by a small triangle with a short section of tangent on either side.

Exercise care in the clipping of plan sheets to properly orient the horizontal curves within the plan view. Repeat the curve data on each sheet when a curve extends over more than one sheet. Show horizontal curve data 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

Show and label all existing topography, including roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges, drainage structures and similar items. Also show streams, ponds, lakes, wooded areas, ditches and other physical features. Existing gasoline storage tanks within limits of topographical survey must be shown.

Show and label all existing utilities. If the type of utility is unknown it should be labeled as such. Indicate the line voltage for all overhead electrical power lines. Use standard symbols contained in ***Design Standards, Index 002*** and the FDOT Engineering/CADD Systems Software.

### 10.2.4 Reference Data

Show bearings for all tangent sections, in the direction of stationing. Intersecting roads or streets must be tied by station and angle/bearings to the baseline or centerline. Section lines or city limits must be tied by station and angle/bearings to the baseline or centerline.

If a Project Layout Sheet is not included in the plans set, place survey reference points at locations removed from the centerline.

## 10.2.5 Construction and Project Limits

Flag and station the following limits:

1. Begin project and end project. Project limits should be at the beginning and the end of the full typical sections. Begin construction and end construction where construction limits are other than project limits. Transitions for maintenance of traffic and other construction work such as feathering, friction course, guardrail, drainage work, signing and marking work, and sidewalk may fall outside of the project limits but must be included within the construction limits. If plans include more than one project, identify the limits for each by Financial Project ID. The Engineer of Record (EOR) is responsible for determining project and construction limits.

Modification for Non-Conventional Projects:

Delete the last sentence of the above paragraph and replace with the following:  
The Department will set the project and construction limits.

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 limits of Project exceptions (excluded areas).
5. Station Equations.

## 10.2.6 Drainage Structures and Bridges

Show proposed cross drain pipes, box culverts and three-sided culverts by using a symbol and a drainage structure number. Label cross drain pipe sizes and lengths on plan-profile sheet. Show box and three-sided culvert lengths on drainage structure sheet.

Box and three-sided culverts (single or multiple) are classified as bridge culverts when the total span (measured along the center of the roadway) is 20 feet or greater. Flag and station the begin station and end station for the bridge culvert (outside wall to outside wall). Provide a bridge number and a drainage structure number for all bridge culverts.

Show proposed bridges and approach slabs by simple outline. Flag and station the begin station and end station for the bridge and for the approach slabs. Also provide a bridge number. Show the existing vertical clearance for any construction affecting existing bridges.

When appropriate, show a short section of lateral ditch/outfall centerline on the roadway plan-profile sheet, and include a note referring to lateral ditch/outfall sheets for details.

Show the proposed drainage system by depicting storm drain pipes with a single line, and the outline of inlets, manholes and junction boxes. The outline of structure bottoms may be shown. Label the pipe size and length between structures. Provide structure numbers for inlets, manholes, junction boxes and special structures.

## 10.2.7 Plan Layout

Provide the following dimensions or labeling:

1. Show right of way lines. Dimension the right of way line only if the applicable typical section shows a varying dimension from the baseline or centerline. Dimensions of the right of way line must be from the centerline or baseline, if survey and construction lines are parallel; otherwise dimension the right of way line from the construction centerline.
2. Avoid showing detailed information regarding median openings or intersections when specific details can be grouped on a separate sheet. When this is the case, identify median openings and intersections by station location.
3. Label locations along the alignment where traveled way dimensions change, or begin to change, including the station and dimensions of the traveled way.
4. Show curb, curb and gutter, traffic separators, sidewalks, curb ramps, retaining walls, and driveways.
5. Show stations of return points in tabular form or include on the plan, unless shown on an intersection detail sheet. Also, show offsets, if not governed by a typical.
6. Show station of radius points of traffic separator or median curb at median openings on the plan. Elevation of these points must also be shown if not shown in the intersection details sheet.
7. Indicate control radii for traffic turns when setting median nose locations, unless shown on the intersection detail sheet.



8. Include the station of end of curb and gutter at side street intersections (when end is not at a return point) with proposed gutter grade elevation.
9. Indicate the limits of pavement and grading at side street intersections.
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. Show the limits of wetlands based on permit or regulatory requirements.
12. Show all utilities. Label field verified utilities (see *Quality Level "A" locates, Chapter 5 of Volume 1,*) in accordance with the following symbol:

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

Projects with minor utility work or impacts may include these features on the roadway plan-profile sheet.

13. Identify all traffic monitoring sites in or within one-half mile of the project limits 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 must be the same as that used for the plan portion. Station limits of the profile must correspond to those of the plan portion of each sheet. Station numbers must be placed across the bottom of the sheet just above the title block. Intervals for profile stations must be the same as those in the plan view.

Select the vertical elevation datum such that the profile will not crowd either the upper or lower limits of the profile format. As a general guideline the vertical scale should be 10% of the horizontal grid. Show the elevation datum on both the left and right sides of the sheet in the space provided adjacent to the grid.

Label the existing ground line profile and show the existing ground line elevations vertically, just above the station numbers at each end of the sheet only.

Show and label all high water elevations affecting base clearance or roadway grades. Provide benchmark data just below the upper margin of the profile portion. However, if space permits, place data in the plan portion just above the upper profile margin at the appropriate corresponding station. Refer to **Exhibit PP-2** for correct format.

Show station equations and exceptions. Begin and end stations of project, construction, bridge and bridge culverts must also be shown.

## 10.3.2 Vertical Alignment

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

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

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

## 10.3.3 Grades

Label percent grade to 3 decimal places for each tangent section on every sheet (trailing zeros need not be shown). When two tangent grades intersect and no vertical curve is required, label the PI station and elevation 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 beginning and ending superelevation stations should be indicated on the profile with a note:

"For Superelevation details see Special Profiles Sheet"

Other special profiles that cannot be clearly shown on the plan-profile sheets must 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, show and label special ditches in the profile. Show percent ditch grade and a beginning or ending ditch PI with elevation and station plus. 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.

Depict uniform ditches of non-standard depth by a dimension line in the lower portion of the grid and label as a special ditch with location and depth, or show them by flagging the DPI's at each end with station elevation and side. Standard depth ditches are not labeled.

Show special gutter grades 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 must be included on plan-profile sheets if an inlet is not provided before the intersection.

Show storm drain pipes, inlets and manholes along the main line. Pipes must be noted by size. Proposed structures may be shown by structure number only. Show flow line elevations for all pipes entering and leaving the structure.

Plot proposed cross drain pipes and culverts at the correct location and elevation of the proposed structure crossing the centerline of construction. Identify cross drains by structure number only.

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

Except for transverse utilities, do not show underground utilities in profile.

## 10.4 Project Notes

Project notes are used to clarify design detail, construction practices or method for payment. Project notes should be kept to a minimum. Only those notes that are job specific should be used. Use project notes only to detail uniqueness and not to broaden or curtail requirements in the specifications. Do not use notes that restate the standard specifications or standard indexes. This will help to place proper emphasis on those notes that are job specific and avoid discrepancy of documents.

Place project notes on the left portion of the first plan-profile sheet. As an option, project notes may be placed on a separate project notes sheet. When used, place the project notes sheet before the first roadway plan-profile sheet in the plans set.

See *Exhibit PN-1* for required standard project notes.

### 10.4.1 Bridge Clearance

For projects that propose a minimum design vertical clearance between 16'-0" and 16'-2", place the following project note in the plans:

When construction is complete, submit a certified survey confirming the as-built minimum vertical clearance is equal to or greater than the minimum design vertical clearance called for in the plans.

PROJECT NOTES

1. BENCHMARK ELEVATIONS SHOWN ON THE PLANS ARE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
2. THE LOCATION(S) OF THE UTILITIES SHOWN IN THE PLANS (INCLUDING THOSE DESIGNATED Vv, Vh, AND Vvh) 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.

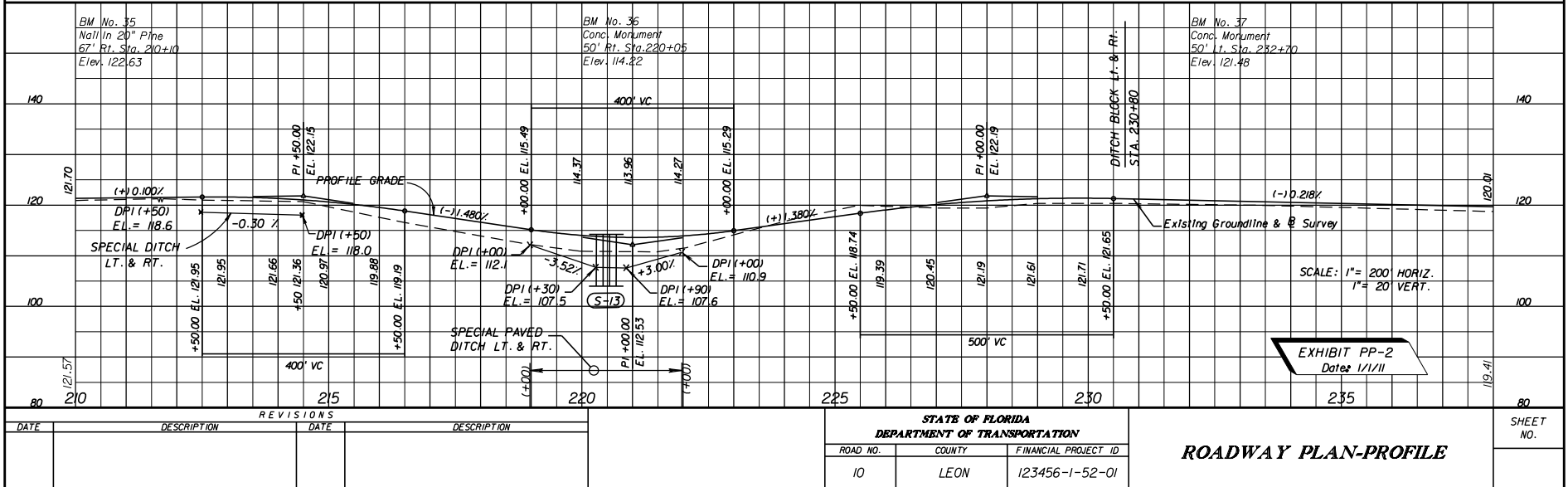
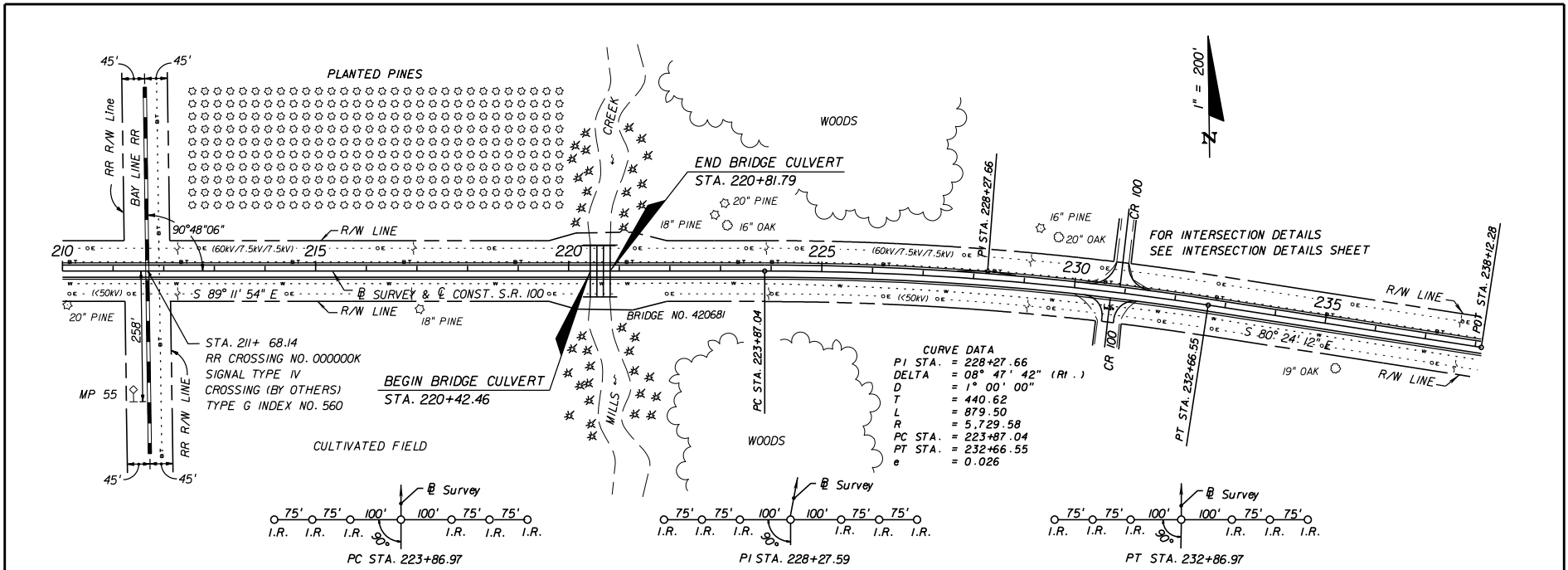
3. UTILITY/AGENCY OWNERS:	COMPANY	CONTACT	TELEPHONE NUMBERS
	SPRINT/FLORIDA, INC.	CHERYL FLORES	(850) 555-1234
	OWEST	JIM WEST	(850) 555-2345
	MCI WORLDCOM	ANDY WORLEY	(407) 555-3456
	SPRINT COMMUNICATIONS	ROB SPRINTER	(404) 555-4567
	CITY OF TALLAHASSEE UTILITIES	CHESTER DIGGER	(850) 555-5678

4. IN ACCORDANCE WITH FDOT SPECIFICATIONS 8-6.4, SPECIAL EVENT DAYS FOR THIS PROJECT INCLUDE:

JACKSONVILLE JAZZ FESTIVAL  
 JACKSONVILLE JAGUARS FOOTBALL GAMES  
 FLORIDA VS. GEORGIA FOOTBALL GAME  
 THE GATOR BOWL PARADE  
 THE MONSTER TRUCK SHOW  
 THE GATE RIVER RUN

**EXHIBIT PN-1**  
 DATE: 01/01/16

REVISIONS				JOHN ALAN DOE, P.E. P.E. NO.: 99991 ROADWAY ENGINEERS, INC. 123 MAIN STREET TALLAHASSEE, FL 32301 CERTIFICATE OF AUTHORIZATION: 12345	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROJECT NOTES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		11
					SR 22	BAY	000001-1-52-01		



THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 68F5-23.004, F.A.C.

# Chapter 11

## Special Profiles

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



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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 must 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. Include sections showing pavement surface elevations 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 must 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 must be as called for in the FDOT **CADD Manual**.

For intersections detailed on a plan only format, show the profile and sections 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.

Show curb return profiles on a grid format. They must 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 (*Design Standards, Index 303*) 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. Identify each return profile and its PC and PT stations shown. Elevations should be shown at appropriate intervals and low and high spots must be identified by location and elevation.

## 11.4 Ramps

Develop ramp profile grades along the baseline of each ramp. A profile of the edge of the pavement opposite the baseline must also be shown. Show these profiles on a grid format. Data required to be shown is 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 must show the elevations at intervals of 20 to 100 feet, depending on the scale. Show elevations for the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas.

Show grades of the three pavement edges 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.

Join the grades of each pavement edge by smooth splines or simple curves. The three grade profiles must be clearly labeled and all equality stations indicated. Flag and label nose stations. Place the scale in close proximity of the profile and ensure that it is clearly visible.

## 11.6 Superelevation

The standard superelevation details (***Design Standards, Indexes 510 and 511***) 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, show the superelevation diagram in the plans. Special profile details may be used to design superelevation on multilane facilities, when a simple diagram will not be sufficient.

Show complete profile grade line and right and left edges of pavement within the superelevation zone on the grid format. A scale of 1"= 20' horizontally and 1"= 2' vertically is recommended for clarity. Label the begin and end superelevation stations with a solid vertical line at the appropriate station. Use a horizontal dimension line 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, show the profiles 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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12.2	Sheet Setup .....	12-1
12.3	Required Information.....	12-1

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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

Prepare back-of-sidewalk profiles using 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 must progress from left to right and multiple profile views must be stacked from top to bottom. Match lines must 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. Show the existing profiles to distinguish between the profiles for the right and left sidewalk, and in accordance with the ***FDOT CADD Manual***.



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. Show elevation datum 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, must be identified on all sidewalk profiles. Indicate the centerline for each intersecting street and driveway with a vertical line at the proper station and the street name and station noted. Intersecting streets and driveways on the right must be shown below the profile, and those on the left above the profile.

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

Place drainage arrows 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.

Indicate floor elevations for buildings with a horizontal line drawn at the floor elevation between the building limits. Show the numeric elevation, 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 1**), and water table elevation may be shown when appropriate.

Once the proposed back-of-sidewalk profile has been developed, show percents of grade, PI stations, and elevations. Vertical curves, if any, must be dimensioned. Elevations along vertical curves are not required. Flag and label stations for begin and end project, exceptions, back-of-sidewalk special profiles, and mainline station equations within the limits of the sidewalk profile.

Note the difference in elevation between the profile grade and back-of-sidewalk profile grade on the sheet. Superelevation notes, if applicable, must also be included on the sheet.

## Chapter 13

### Intersection and Interchange Details/Layouts

13.1	General .....	13-1
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13.3	Interchanges .....	13-2
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13.3.3	Cross Section Pattern Sheet .....	13-5
Figures		
Figure 13.1	Interchange Layout.....	13-3

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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. Explicitly show the various design details for accurate construction.

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

#### 13.2 Intersections

Show intersection details 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. Place the intersection layout, 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, place the layout on a standard plan format. Match lines should be used when more than one sheet is required.

Present the profiles separately on a grid format. (See **Chapter 11** of this Volume).

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. Include pavement edges, R/W lines, curb and gutter, channelizing and median curbs, driveways, drainage structures, pavement dimensions, radii, and appropriate notes.

All intersection layouts must be dimensioned, stationed adequately, and must include all pertinent construction notes and alignment data. Provide design speed data when appropriate. Check widths of turning lanes and turning paths for possible encroachments or conflicts.

Include a north arrow and scale at a point of maximum visibility on the plan. Use a scale that is sufficient to cover all necessary details, preferably 1" = 40'. Do not use a scale smaller than 1" = 50'.

## 13.3 Interchanges

### 13.3.1 Geometric Layout

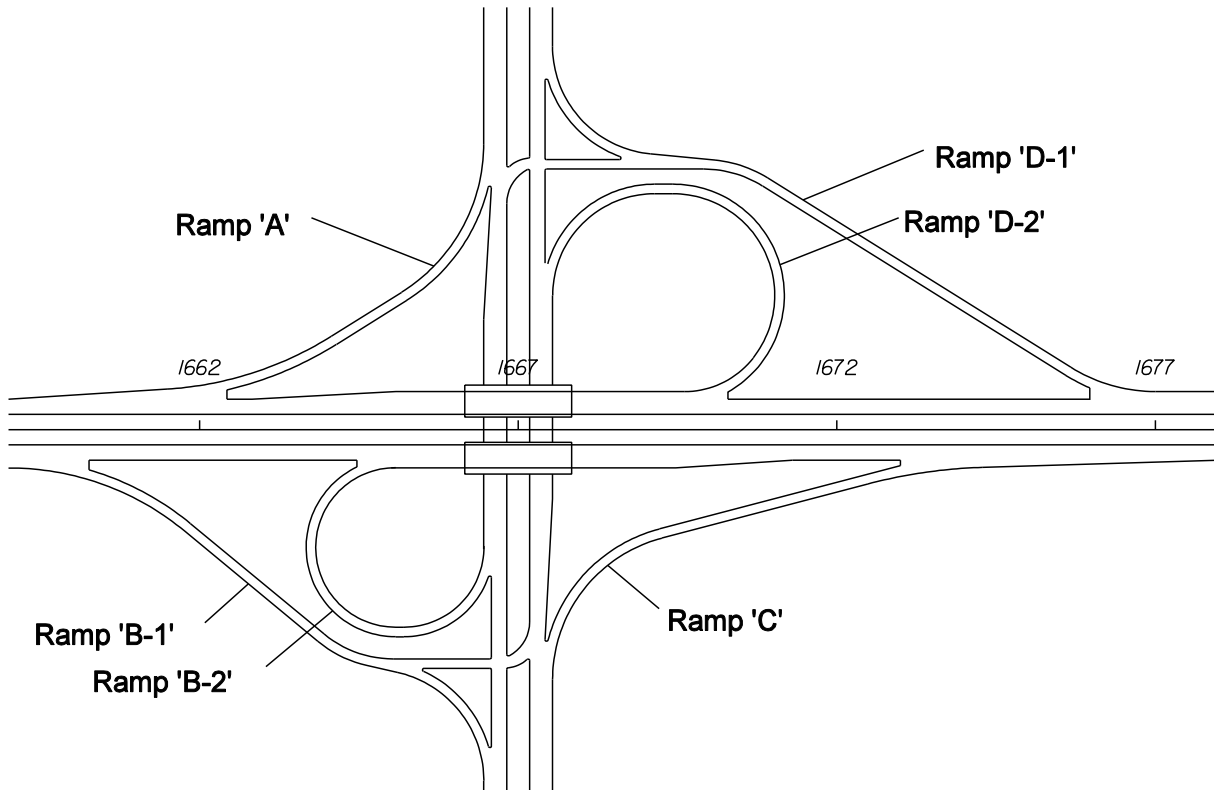
Prepare interchange layouts on a standard plan format. Place the entire interchange on one sheet when possible, using a scale not smaller than 1" = 400'. In cases of large cloverleaf or directional interchanges, more than one sheet may be required. Appropriate match lines must be shown.

Dimension and station layouts with all alignment data and construction notes included. Assign all curves 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.

Identify interchange ramps 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 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 counterclockwise direction noted above.
2. Ramp baselines are usually located on the right edge of the pavement with relation to the direction of traffic, and must 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. Prepare this worksheet on a standard plan format on a scale not smaller than 1" = 400'. Include the following information on the worksheet:

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.

Include the following interchange sheets in the contract plans set:

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**

Show details of ramp terminals with mainline and crossroads on separate plan sheets. Do not use a scale smaller than 1" = 50'. Standard scale 1" = 40' is preferred. Show the following details of the terminal:

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. Include the following information on the cross section pattern sheet:

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.

Prepare this sheet on a standard plan format. Use a scale such that the complete interchange is shown on one plan sheet, with care taken to ensure clarity and legibility. Normal scale is 1" = 400'. Place the north arrow and scale at a point of maximum visibility.



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## Chapter 14

### Drainage Structures

14.1	General .....	14-1
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14.3	Utility Conflicts.....	14-3
14.4	Sheet Setup .....	14-3
Exhibits		
Exhibit 14-1	Drainage Structure Notes.....	14-4

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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 must 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*). See *Chapter 22* of this Volume for additional requirements for box and three-sided culverts utilized as drainage structures.

### 14.2 Required Information

For rural projects, show the existing ground line at the location of the structure, with the existing elevation placed immediately below the ground line at the survey baseline. Do not show existing structures, except those to be incorporated into the proposed drainage system or otherwise modified. These must be shown and their flow line elevations noted. Where storm drains run laterally or diagonally across the project, the drawing should show the pipe cover.

Show the roadway template and proposed structures, with the proposed profile grade elevation, placed above the grade point. Locate the structure by station and offset to the centerline of construction. Provide flow line information 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.

Include the size and length of each proposed structure on the cross drain sections. Box and three-sided culvert lengths must be shown on the drainage structure sheet.

Depict sections for skewed cross drains 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 must be checked and RW shown where the RW may have potential impact on construction of a structure.

For each drainage structure, note all necessary information, including, as appropriate: size, end treatment and flow lines, as well as structure, index and station number. Place the note as close to the structure as possible, preferably below the plotted structure. Provide elevations for manhole tops, and ditch bottom inlet grates and slots. Show grate elevations for gutter inlets and edge of pavement elevations for curb and gutter inlets.

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

Show material options on the Optional Materials Tabulation Sheet. (See **Exhibits SDS-2a** and **SDS-3a** at the back of **Chapter 8** of this Volume).

Modification for Non-Conventional Projects:

Delete paragraph above. See Chapter 6 of the **Drainage Manual** for Optional Material documentation requirements.

If existing structures are to be filled and/or plugged and are to remain in place, show them 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

Plot all major underground utilities, as defined in **Chapter 5 of Volume 1**, 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 (Quality Level "A" locate) must 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

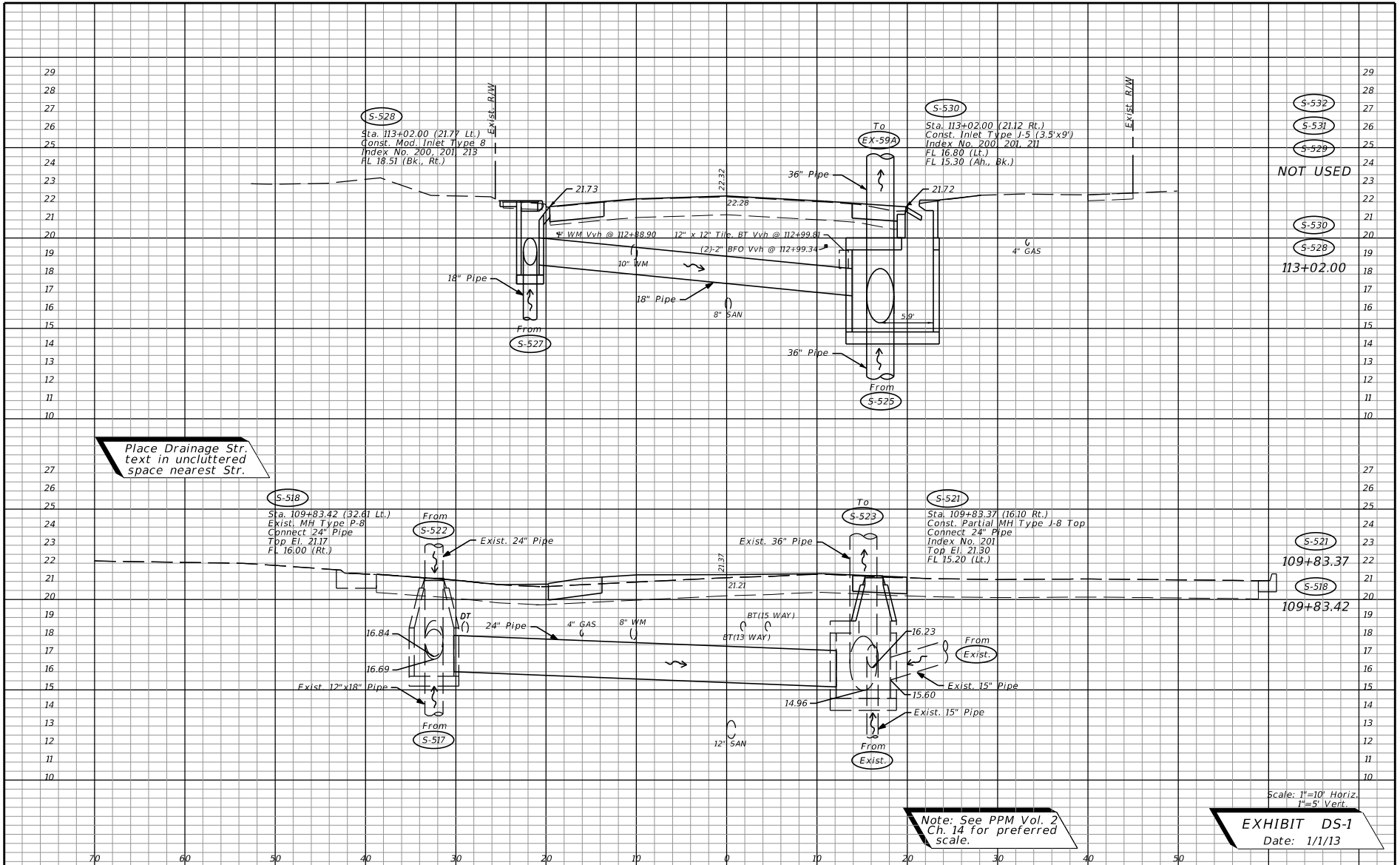
Plot structures as sections along the centerline of the structure. They must be shown on a standard cross section format with the sections spaced sufficiently apart to avoid overlapping of structures or notes. Reference offsets from the appropriate baseline or centerline to the location reference point, which may vary by Index, as indicated in the **Design Standards**. Beginning at the bottom of the sheet, show the sections successively by stations and number them sequentially, from the beginning to the end of the project. Show the structure number and location station near the right border of the sheet.

If a structure must be shown out of order, place a note in the correct sequence, referring to the sheet where the structure is shown. Use the same scale that is 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. All drainage pipes have optional materials. The Optional Materials Tabulation Sheet(s) shows all materials allowed and indicates which material is plotted in the plans and used as the basis for pay quantities.



Place Drainage Str. text in uncluttered space nearest Str.

Note: See PPM Vol. 2 Ch. 14 for preferred scale.

EXHIBIT DS-1  
Date: 1/1/13

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S-531  
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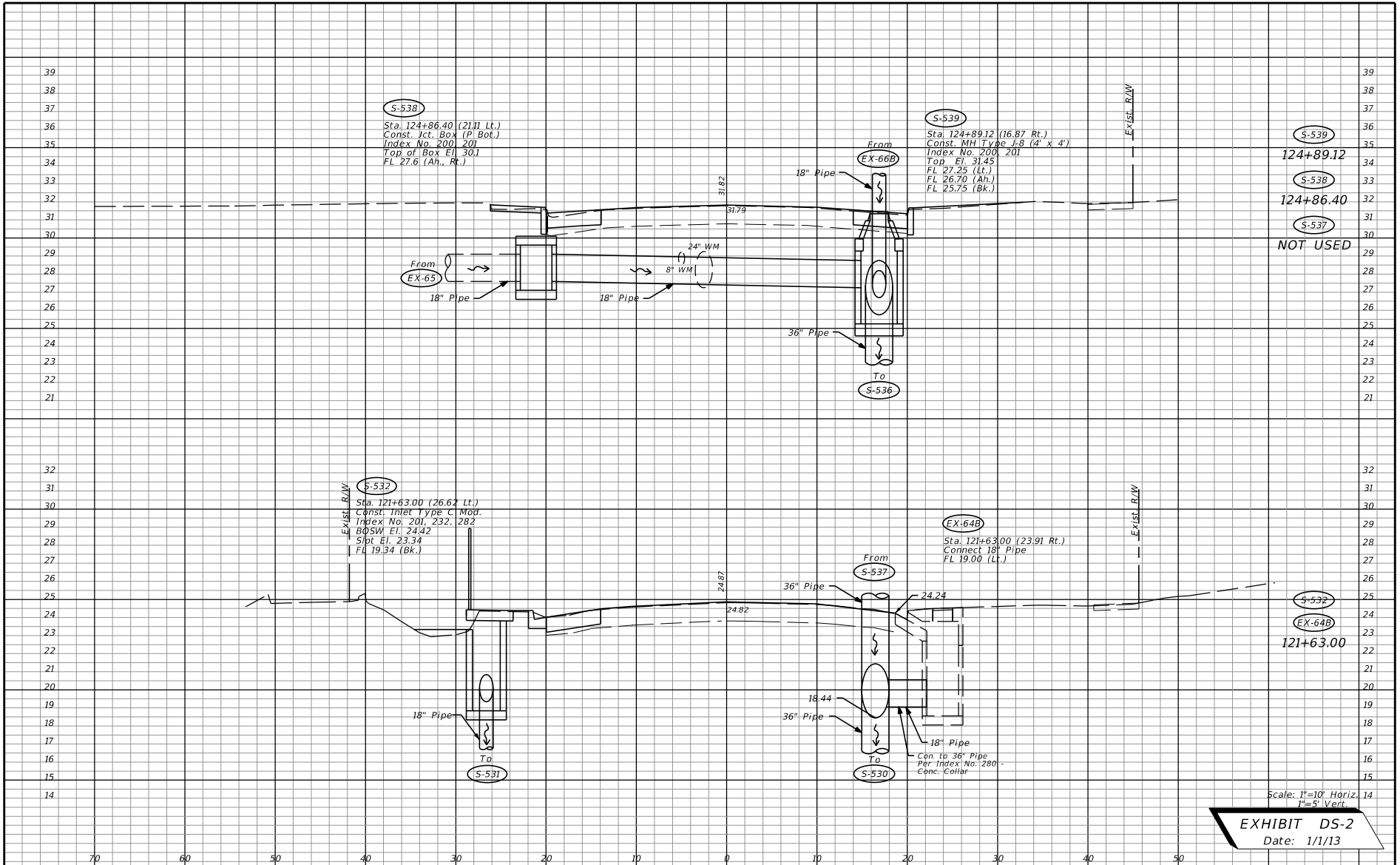
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				ROAD NO. 10	
				COUNTY LEON	
				FINANCIAL PROJECT ID 123456-7-52-01	

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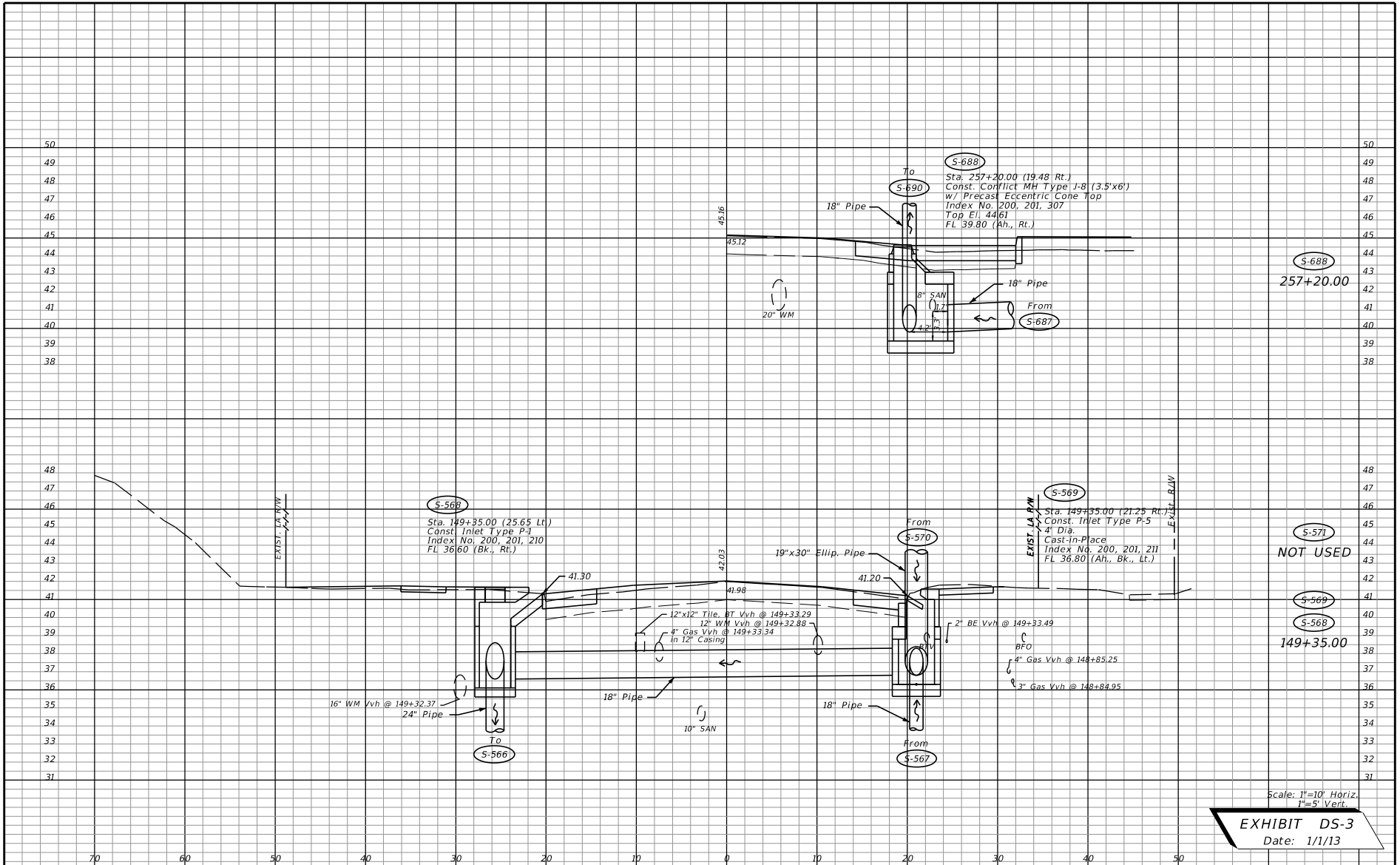




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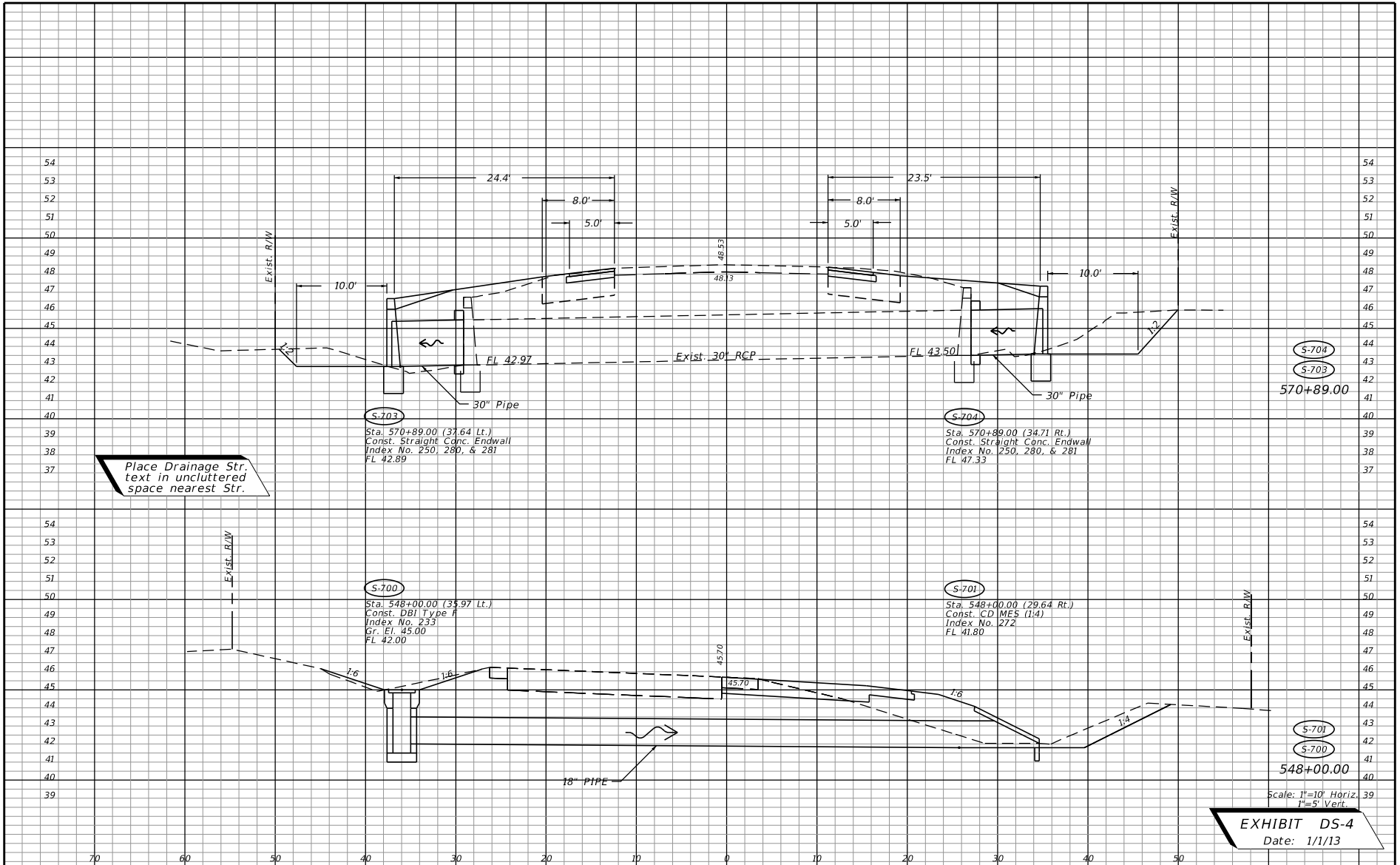


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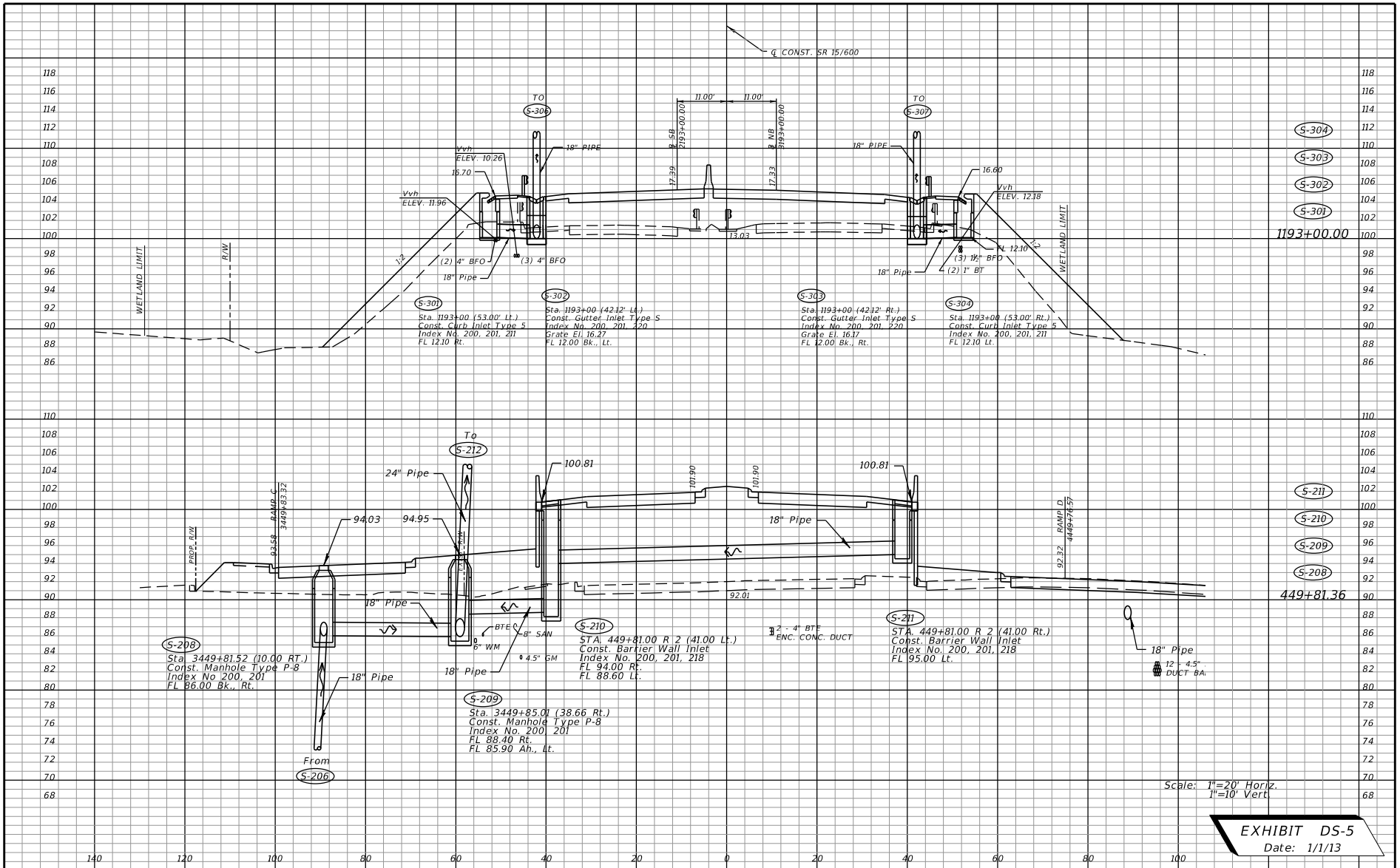
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				FINANCIAL PROJECT ID 123456-7-52-01	



Scale: 1"=20' Horiz.  
1"=10' Vert.

**EXHIBIT DS-5**  
Date: 1/1/13

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## 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

Prepare lateral ditch plans and profiles 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

Orient data in the plan portion so that the lateral ditch/outfall centerline is parallel to the long side of the sheet. Show information in a manner similar to that described in **Chapter 10** of this Volume.

Show right of way (or easement) alignment data and topography in the plan portion. An alignment tie between the lateral ditch/outfall and the project must also be shown. Place the north arrow and scale at the proper location on the sheet (refer to **Chapter 10** of this Volume).

### 15.2.2 Profile Portion

Prepare the profile portion in the same manner as the profile portion of the roadway plan-profile sheets (**Chapter 10**). Show existing ground line profiles, high water elevations, underground utilities, benchmark information, and elevation datum 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 must be shown with a broken line and identified.

If storm drain construction is proposed along a lateral ditch/outfall, plot the proposed structures 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).

Indicate and label the normal water elevation of the receiving system.



### 15.2.3 Typical Section

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

Prepare lateral ditch cross sections 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 must always be 1" = 10'.

Often it is possible to place two or more columns of ditch cross sections on one sheet. They must be plotted with the stationing progressing from the bottom of the sheet to the top, and the columns placed 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 **Chapter 18** of this Volume must 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 must show the pond in plan view, with station and offset ties to the project centerline of construction. The plan view must 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 must 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, must 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 must 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

Prepare pond cross sections 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 must be shown on the cross sections.

Guidance given in **Chapter 18** of this Volume must 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

16.1	General .....	16-1
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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 must be shown on the special details sheet.

Prepare the special details sheet on a standard plan format. Any convenient scale may be used, provided the information shown is clear and legible. Details shown must 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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	17.2.1 Method of Compilation and Presentation.....	17-1
17.3	Other Soil Surveys .....	17-2

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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.

Assign soils having identical characteristics to the same stratum and group for identification and recommendation purposes. The test analysis sheet must 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 must 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 must be shown on the test analysis sheet. Show date and weather conditions at the time of sampling. Refer to **Exhibit RSS-1** for an example of soil survey sheet.

After completion of soils testing, show the boring data on cross sections by columns approximately 1/4 inch wide below the ground line at test sample locations. Show stratum limits and numbers inside the column. Transmit this information to the appropriate responsible materials engineer for verification. Retain one hard copy of the soils information, including cross sections with soils information, 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.



## Chapter 18

### Roadway Cross Sections

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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. Use standard cross section sheets 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 must be such that the entire roadway R/W is shown on the sheet (generally 1" = 10' or 1" = 20'), but must 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 must be shown with referenced sheet numbers. Show the scale at the bottom right corner of the sheet above the title box.

### 18.2 Required Information

Show existing ground lines and the existing elevation at the centerline must be noted just below the ground line at the centerline. Indicate the station number of the section 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.

Show the surface, as well as the below ground portions of existing features such as pavements, curbs and sidewalks.

Existing parallel underground utilities which lie within the horizontal limits of the project must 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 the groundwater table elevation from soil borings must 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.

Show the proposed roadway template. The proposed profile grade elevation must be placed vertically or at an angle to the horizontal, just above the profile grade line. Special ditch elevations must also be shown.

Show station equations, even though a cross section may not be plotted at that point. For ramp cross sections equivalent mainline stations must also be shown.

The right of way limits must 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 must be shown on the right edge of the sheets near the earthwork columns. Show the beginning and ending earthwork stations.

Indicate earthwork quantities in the appropriate columns on the right side of the cross section sheet. Show earthwork summaries in the Summary of Earthwork on the Summary of Quantities Sheet.

The order of assembling the cross sections in the plans set must be:

1. Mainline
2. Side streets
3. Ramps

## 18.3 Sheet Set Up

Show cross sections 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 is 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.

Center sections 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. Orient sections 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 must be shown.

Place as many sections as possible 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 stationing must progress from the bottom to the top of the sheet and multiple columns must be placed from the left to the right. Set up the sheet to provide earthwork columns for each column of sections.

For additional information on cross sections see **Chapter 3** of Volume 1.

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## Chapter 19

### Temporary Traffic Control Plan

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19.3.3	Level III .....	19-3
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# Chapter 19

## Temporary Traffic Control Plan

### 19.1 General

A Temporary Traffic Control (TTC) plan will accompany all plans for a construction project. The TTC plan 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 TTC plan 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 TTC plans may include, but are not limited to, general notes, phase notes, phase typical sections, phase plan-profile sheets, signalization plans, special details, and temporary cross sections.

### 19.2 Required Information

Specific temporary traffic control plans are required on all projects. The information provided on the TTC 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 must 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 changeable 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 temporary traffic control plans should address each individual phase. TTC quantities should be tabulated by phase and shown in the Summary of Quantities sheet.

Modification for Non-Conventional Projects:

Delete the last sentence of the above paragraph.

## 19.3 Levels of Complexity to be Anticipated for Temporary 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 TTC Plan

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 TTC Plan

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. Temporary signalization plans (if required)
7. 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 TTC Plan**

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. Temporary signalization plans (if required)
7. Special Details may include - Temporary Drainage; Temporary Signalization; Intersection Details; etc.

## **19.4 Format**

Prepare TTC plans on a standard plan sheet format. A scaled drawing is not always required; however, clarity and legibility are critical. When scaled drawings are required, the scale must not be less than 1" = 100' for plan sheets and 1" = 40' for special details. Use levels, fonts and line weights in accordance with the ***FDOT CADD Manual***.

Tools are available in FDOT Engineering/CADD Systems Software to assist in the development of Temporary Traffic Control Plans.



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## Chapter 20

### Utility Adjustments

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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. Projects with minor utility work or impacts may include these features on the roadway plan or plan-profile sheets or appropriate component plan sheets.

#### 20.2 Required Information

Locations of all existing and proposed utilities within the project limits must be shown on the plans.

Clearly show and label all proposed and relocated utilities on the plan using lines and standard utility symbols (see ***Design Standards, Index No. 002*** and the ***FDOT CADD Manual***). Disposition of all existing utilities that are not to remain in place and in service must be clearly indicated: for example "To Be Removed", "To Be Adjusted", "To Be Relocated", etc. The disposition of existing utilities that are to remain in place and in service need not be labeled. Label all proposed utilities appropriately. The line voltage for all overhead electrical power lines must be shown on the plans.

Show applicable general notes on the first utility adjustment sheet (see ***Exhibit 20-1***).

## 20.3 Sheet Format

Prepare the utility adjustment sheets from CADD files generated for the plan or plan-profile sheets, and only the plan portion should be shown. Use levels, fonts and line weights in accordance with the **FDOT CADD Manual**.

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 must 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. All major utilities that have been field verified (see *Quality Level "A" locates*, **Chapter 5** of Volume 1) must be labeled in accordance with the following symbol:

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

At the District's option, a table of field verified utilities containing the following information can replace the profile view on each sheet:

V <sub>vh</sub> No.	Utility Description (Owner, Type)	Size	Material	B/L and/or C/L			Existing Ground Elevation	Top Elevation	Comments
				Station	Offset	Lt./Rt.			

8. Disposition of existing utilities that are not to remain in place and in service.
9. Location of new or relocated utilities.

### **Exhibit 20-1 General Notes for Utility Adjustments**

Place the following notes on the first Utility Adjustment Sheet. (If there are no utility adjustment sheets in the plans, these notes must be included in the General Notes shown on **Exhibit PN-1** in **Chapter 10** of this Volume).

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. Existing utilities are to remain in place unless otherwise noted.
3. Utility/Agency Owners:

#### **Companies**

#### **Telephone Numbers**

(Note: The above company names and phone numbers are for emergency utility contacts. Contact information must also be included for persons responsible for the maintenance (by contract or internally) of any FDOT utility infrastructure such as traffic counters, lighting, signal components, and ITS.)

If there is a traffic-monitoring site on the project or within one-half mile of the construction, the Transportation Statistics Office in Tallahassee must be added to the list of Utility/Agency Owners. The contact person is the Traffic Data Section Manager. Refer to **Section 10.2.7, Item No. 13** of this Volume for plan requirements involving traffic-monitoring sites.

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## Chapter 21

### Selective Clearing and Grubbing

21.1	General .....	21-1
21.2	Required Information and Sheet Set Up.....	21-1
21.3	Standard Symbols and Notes.....	21-2



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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, show selective clearing and grubbing on a separate plan sheet.

#### 21.2 Required Information and Sheet Set Up

When separate selective clearing and grubbing sheets are required, they must be shown on a standard plan format. Show complete existing topography 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 must be clearly shown by symbol (refer to **Section 21.3**).

Place a north arrow and graphic scale 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. Use appropriate match lines when necessary.

For an illustration of a selective clearing and grubbing sheet, see **Exhibit SCG-2**.

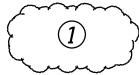
## 21.3 Standard Symbols and Notes

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, must 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.

**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, THAT 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.

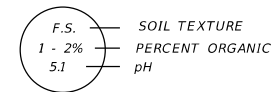
WHERE UNFORESEEN SITE CONDITIONS EXIST, ADJUSTMENTS OR EXCEPTIONS MAY BE MADE TO THE ABOVE PROCEDURE AT THE DIRECTION OF THE ENGINEER.

**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).

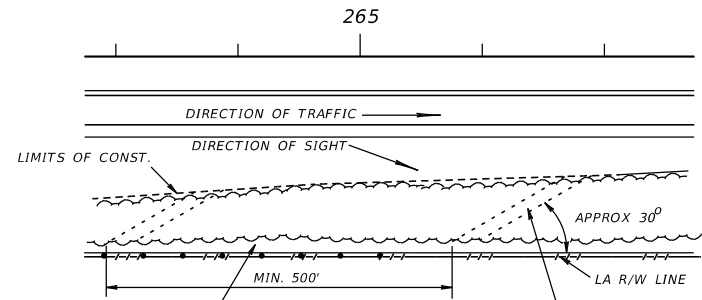
TYPE 4 AREAS MAY BE USED FOR STOCKPILING OF FINISH SOIL LAYER MATERIAL ONLY WHERE SUCH AREAS HAVE BEEN CLEARED, AT THE DIRECTION OF THE ENGINEER DURING CONSTRUCTION OPERATIONS.

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



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.

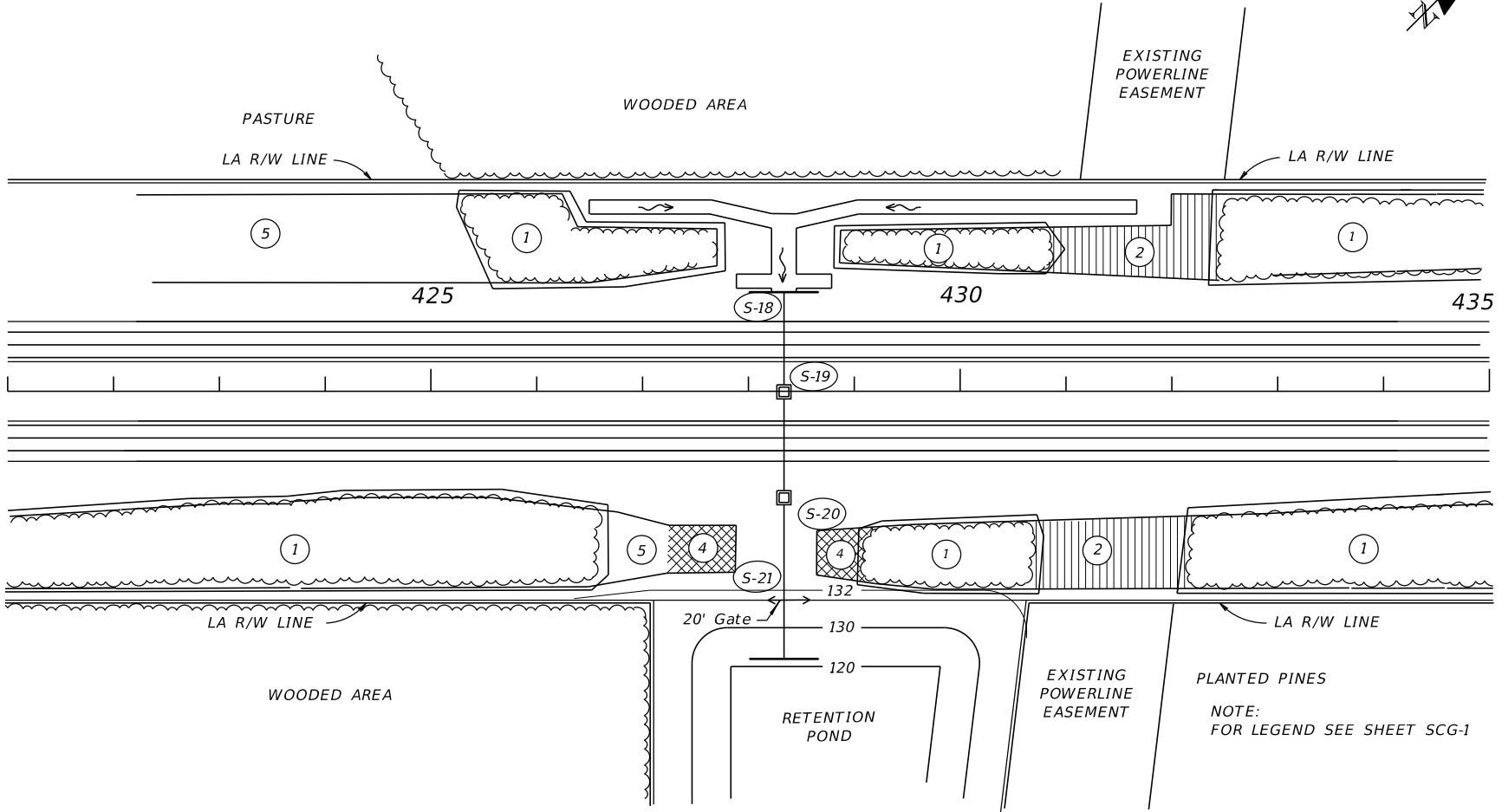
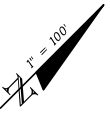
**ACCESS FOR FENCE CONSTRUCTION**

(APPLIES TO ALL TYPES OF SELECTIVE CLEARING AND GRUBBING)

**EXHIBIT SCG-1**  
Date: 1/1/13

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	
				<b>SELECTIVE CLEARING AND GRUBBING</b>

ROAD NO. 10 COUNTY LEON FINANCIAL PROJECT ID 123456-1-52-01



**EXHIBIT SCG-2**  
Date: 1/1/13

REVISIONS	
DATE	DESCRIPTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
10	LEON	123456-1-52-01

**SELECTIVE CLEARING AND GRUBBING**

SHEET NO.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G13-23.004, F.A.C.

## Chapter 22

### Miscellaneous Structures Plans

22.1	General .....	22-1
22.2	Approach Slabs.....	22-1
22.3	Retaining Walls .....	22-2
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Exhibits		
Exhibit 22-1	Three-sided Concrete Culvert Notes .....	22-6

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## Chapter 22

### Miscellaneous Structures Plans

#### 22.1 General

Miscellaneous structures not included in the bridge plans must be included in the appropriate component plans. This includes box or three-sided 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. Box and three-sided culvert details should generally be placed immediately following the Drainage Structures sheets.

For guidelines on structural detailing, refer to the *Structures Detailing Manual*.

#### 22.2 Approach Slabs

Custom approach slab sheets for non-standard designs and supplemental approach slab detail sheets called for by *Design Standards 20900* and *20910* 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 is 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.

Modification for Non-Conventional Projects:

Delete the last paragraph.



## 22.3 Retaining Walls

For non-proprietary retaining walls, complete design and construction details, including pay items and quantities are required in the contract plans.

Modification for Non-Conventional Projects:

Delete the sentence above and replace with:

For non-proprietary retaining walls, complete design and construction details are required in the contract plans.

For proprietary walls, a set of control plan details must be developed and included in the contract plans.

See **Chapter 30, Volume 1** for retaining wall plans submittal procedures. See also the **Structures Manual** for plan content requirements.

On projects with bridges, the control plan details must be included in the bridge plans. When there are no bridge plans the control plan details must be included in the appropriate component plans. Examples of control plan details are included in the **Structures Detailing Manual**.

Vendor Drawings for proprietary wall systems listed on the APL are provided on the Program Management Office website.

## 22.4 Concrete Box Culverts

Complete design and construction details, including pay items and quantities are required in the contract plans for concrete box culverts. Include the following minimum design details:

Modification for Non-Conventional Projects:

Delete the above paragraph and replace with the following:

Complete design and construction details are required in the contract plans for concrete box culverts. Include the following minimum design details:

1. Plan view (usually shown on the Plan-Profile sheet – see **Chapter 10, Exhibit PP-2**) showing: Grid north arrow; scale bar; existing highway boundaries including existing ROW monuments; new right of way line(s) including proposed ROW monuments; culvert or bridge identification number; culvert and highway alignment; survey baseline; profile grade line; direction of stationing; stream channel alignment; stream flow direction; skew angle of the culvert relative to the centerline of roadway; stationing along the profile grade line including begin and end station of culvert (outside face of sidewalls); length of culvert; subsurface exploration locations (e.g., boring locations); culvert end treatment (headwall and wing wall orientation); scour protection; slope protection; limit of stream work; utilities; traffic railing and pedestrian/bicycle railing type.
2. Elevation view (usually shown on the Plan-Profile sheet – see **Chapter 10, Exhibit PP-2**) showing: Elevation vertical scale; profile grade line and vertical data; existing stream bottom and ground line (along PGL); utilities.
3. A longitudinal section along the culvert centerline (usually shown on the Drainage Structures sheet – see **Chapter 14, Exhibit DS-2**) showing: Culvert or bridge identification number; invert elevations; existing stream bottom or original ground; culvert stationing at centerline; typical highway section (including rail treatment); design earth cover height (measured from the top of the top slab to the top of pavement); limits of scour protection (including any keyways or geotextile fabric lining); channel work; culvert end treatments; utility (either attached to the fascia, or in the embankment, traffic railing or sidewalk); wing walls; headwalls; cutoff walls; reference to the appropriate Design Standard Indexes.
4. Data Sheets (see **Chapter 7.3**):  
Box Culvert Data Table and Reinforcing Bar List.

5. Miscellaneous details showing (usually shown on Box Culvert Detail sheets, located after the Drainage Structure sheets): Construction phasing information (affects lengths of precast segments and potential need for skewed segments) including appropriate excavation support and protection systems (e.g., critical temporary walls); traffic railing details including connection details; slope and/or stream bank protection; channel section detail; culvert-end safety grate, guardrail or fencing details when applicable; removal of existing culvert(s); cofferdams or water diversion.
6. Notes (usually on the Box Culvert Data Sheets) indicating: Live loading requirements (HL-93 or HS-25); hydraulic data (show 100-year design flow or the design flow used and the minimum hydraulic area perpendicular to flow below the Design High Water); environmental classification for durability; minimum concrete class and reinforcing steel grade; assumed soil weight, angle of internal friction and nominal bearing capacity; differential soil settlement height and effective length (when significant); precast culvert limitations; any special joint waterproofing requirements; erosion and sediment control and stormwater pollution prevention plan requirements; restrictions for work in streams; estimated quantities.

## 22.5 Three-Sided Concrete Culverts

Complete footing, wingwall and channel lining designs and construction details are required for three-sided culverts. However only conceptual culvert barrel and headwall design details need to be provided. Include the following minimum design details in the roadway plans and place directly after the Drainage Structure sheets:

1. Plan view showing the orientation of the ends of the structure. The two most typical options for culverts on a skew are ends parallel to the centerline of the roadway (skewed ends) or ends perpendicular to the centerline of the structure (square ends). The end treatment depends upon the skew, whether it is in a fill section or at grade, the location within the right of way, conflicts with utilities, phased construction details, the alignment of the feature crossed, and other site limitations.
2. Elevation view showing the configuration of the most appropriate type unit (e.g., frame or arch). Any limitations on using a larger span must be shown. (Some manufacturers only fabricate units at fixed increments of span length, therefore showing the limitations will allow the manufacturers to bid using special units or the next larger span length of their standard units). Show other acceptable structure types in separate partial elevation views. Limiting spans and heights must be shown for all alternatives.
3. No precast manufacturer should be eliminated from consideration for a given project. However, specific project requirements that may exclude some manufacturers must be identified (such as fabrication on a skew or a desired arched appearance).
4. Complete details for a cast-in-place footing design, including design loads and assumptions for the spread footings.
5. Complete details for cast-in-place wingwalls, including geometry and reinforcement details.
6. Estimated quantities for concrete and reinforcing steel for cast-in-place elements, but do not include separate pay items.
7. Payment limits must be identified as the length of the total structure along a longitudinal centerline of the structure.
8. The applicable details in **Section 22.4** must also be included.
9. See **Exhibit 22-1** for a list of applicable notes that may be required.

Modification for Non-Conventional Projects:

Delete Item 6 above.

### **Exhibit 22-1 Three-sided Concrete Culvert Notes**

Place the following notes adjacent to the plan or elevation views, as applicable:

1. The assumed foundation vertical reaction is \_\_\_\_ kips/ft. The assumed foundation horizontal reaction is \_\_\_\_ kips/ft. The Contractor must submit a revised foundation design to the Engineer if the actual loads of the supplied structure exceed these assumed values. Any revised foundation design must be included in the shop drawings and submitted for approval at the same time as the design calculations for the three-sided structure.
  
2. (In cases where squaring of the unit ends would create a geometric conflict with right of way, utilities, phase construction or site geometry, include the following note):  
  
Due to site restrictions, only skewed end units are acceptable.
  
3. (If site constraints do not eliminate the squaring of the ends, include the following note):  
  
Squared end units may be substituted for skewed end units with no change in the payment limits and no additional cost to the Department.
  
4. (When traffic railings are attached to skewed headwalls and site constraints do not eliminate the squaring of the ends, include the following note):  
  
If the Contractor proposes to substitute square ends, details of the traffic railing attachment must be provided in the shop drawings and approved by the Engineer.

## Chapter 23

### Signing and Pavement Marking Plans

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23.3	Signature Sheet .....	23-2
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23.4.1	Standard Notes .....	23-3
23.5	General Notes .....	23-4
23.6	Plan Sheets.....	23-4
23.6.1	Format and Scale.....	23-4
23.6.2	Required Information.....	23-5
23.7	Guide Sign Worksheet .....	23-6
23.8	Sign Supports .....	23-6
23.8.1	Multi-Post Signs .....	23-6
23.8.2	Overhead Sign Cross Section and Support Structure .....	23-6
23.9	Typical Pavement Marking Sheet.....	23-7

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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 must be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other signing and pavement marking sheets. When prepared as component plans, number the sheets consecutively with the sheet numbers prefixed by the letter "S".

Assemble the Signing and Pavement Marking Plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. General Notes (if required)
4. Plan Sheets
5. Guide Sign worksheet (if required)
6. Overhead Sign Cross Section Sheet (if required)
7. Overhead Sign Support Design (if required)
8. Foundation Details (if required)
9. Boring Data Sheets (if required)

Modification for Non-Conventional Projects:
Delete item number 2 above.

In addition, the signing and pavement marking plans may contain sheets which were prepared separately (perhaps by a sub-consultant) and incorporated into the signing and pavement marking plans early in the design process (prior to the establishment of sheet numbering). As an option, these may be identified with the following prefixes and placed at the end of the numbered sequence of the signing and pavement marking plans:

GS-# Soil Survey and Report of Core Borings normally associated with the signing and pavement marking plans set (including miscellaneous structures but excluding bridges and walls)



The requirements in Chapter 7 of Volume 1 will be followed in the selection of the permanent pavement marking materials to be used on projects.

## **23.2 Key Sheet**

The key sheet is the first sheet in the set and is 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. Show the index of signing and pavement marking plans on the left side of the 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) must be shown as described in **Chapter 3** of this Volume.

Place the name and address of the Delegated Engineer for shop drawing reviews on the right side of the sheet.

## **23.3 Signature Sheet**

See **Chapter 3** of this Volume for Signature Sheet requirements.

## 23.4 Tabulation of Quantities and Pay Item Notes

Prepare the tabulation of quantities sheet using the standard plan format showing quantities, standard sign numbers, pay item numbers (except for pavement markings pay items) and size of sign for all pay items. The sign size and standard sign number is not required if shown in the plans sheets. List pay items in numerical order and tabulate quantities per sheet or by station. When the number of pay item numbers to be used exceeds one page, the additional sheet is to be numbered using a suffix (i.e. 3 and 3A, 4 and 4a, etc.). Provisions must be made to show the original and final quantities.

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

Show pay item notes on the tabulation of quantities sheet.

For pay item 710-90 (Painted Pavement Markings (Final Surface) Lump Sum), the Signing and Pavement Marking tabulation of quantities sheet should show the detailed description of the pay item and the quantities for each pay item EXCEPT in lieu of the pay item number substitute an "\*" in the Bid Item Number Column (see **Exhibit 23-1**).

### 23.4.1 Standard Notes

Add the following note at the bottom of the Tabulation of Quantities sheet:

- \* These quantities are paid for under Painted Pavement Markings (Final Surface), Lump Sum - Item No. 710-90. The quantities shown are for one application; see **Specification 710** for the number of applications required.

Modification for Non-Conventional Projects:

Delete **PPM 23.4**

## 23.5 General Notes

General notes pertaining to signing and pavement markings may be shown on a separate plan format sheet. Place this sheet behind the tabulation of quantities sheet(s) in the plans assembly. On minor projects, general notes may be placed on the tabulation of quantities sheet.

Modification for Non-Conventional Projects:

Delete *PPM* 23.5 replace with the following:

### 23.5 General Notes

Signing and pavement marking general notes may be placed on a separate general notes sheet, or if space permits, placed on the first plan sheet. If used, place the general notes sheet behind the key sheet.

## 23.6 Plan Sheets

### 23.6.1 Format and Scale

The plan sheets are to be prepared on a standard plan format. The scale should be such that all details are clear and legible. See the requirements of **Section 10.1** of this Volume as a guide. For simple projects, or sections of a project, “stacking” multiple plans on one sheet is generally permitted if clarity and legibility are maintained. Stationing is to progress from left to right and multiple plan views stacked from top to bottom.

Place a north arrow and scale at a point of maximum visibility on the sheet. If two plans are “stacked” on one sheet, then show a north arrow and scale on each plan portion.

Typical drawings may be used on rural projects with long sections of roadway that show only edge and lane delineation lines. Detail sheets should be used to depict markings at intersections. Signs may be tabulated to indicate location and disposition.

## 23.6.2 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. Show sign placement when there are utilities, drainage, lighting, sidewalks, driveways, and landscape feature conflicts.

Clearly show and label permanent pavement markings specifying width, color and spacing. Indicate begin and end pavement marking stations including offsets, or begin pavement marking station including offset and the total length of roadway pavement marking. The location of raised pavement markers and delineators must be clearly shown and indicated by specifying the type, color, spacing, and limits of application by stations.

All regulatory, warning and directional signs must be shown at the proper locations. Show each sign face in close proximity to its respective sign with a leader line connecting the sign location and sign face. Orient each sign face on the plan sheet to be read as viewed from the direction of travel along the roadway. Indicate the location of all signs by station or milepost.

Indicate for each sign the pay item number, sign size, standard designation, or assigned number if nonstandard.

Modification for Non-Conventional Projects:

Delete the last sentence and replace with the following:

Indicate for each sign the sign size, standard designation, or assigned number if nonstandard.

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.

## 23.7 Guide Sign Worksheet

Show the sign face, with the complete message layout with legend spacing (vertical and horizontal), margins, border widths, and corner radii 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 must 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. Output from the Transoft *GuidSign* Program, or a similar format may be used.

## 23.8 Sign Supports

### 23.8.1 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.

### 23.8.2 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. Show and fully dimension the cross section of the roadway at the sign location. 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, must be included in the signing and marking plans. The "Cantilever Sign Structures Data Table" and the "Span Sign Structures Data Table" work in conjunction with *Index Nos. 11310* and *11320* of the *Design Standards*. These tables 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 is the responsibility of the Structures Design Engineer of Record. Include the design of the attachment system in the structures plans if bridge work is included in the project. If bridge work is not in the project, place the design details in the signing and pavement marking plans.

## **23.9 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 with station limits and typical markings. Show and identify all signs at their graphic location on the straight-line diagram. Show and label pavement markings on a typical marking plan. Include all necessary details for special areas (median crossovers, turn lanes, etc.).

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## Chapter 24

### Signalization Plans

24.1	General .....	24-1
24.2	Key Sheet .....	24-2
24.3	Signature Sheet .....	24-2
24.4	Tabulation of Quantities and Standard Notes .....	24-2
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24.8	Mast Arm Sheets.....	24-6



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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 (or in another component plans set or on that component's sheets when appropriate). When prepared as component plans they must be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other signal sheets. When prepared as component plans, number the sheets 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.

Assemble the Signalization Plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. General Notes
4. Plan Sheets
5. Mast Arm Details
6. Foundation Details - Mast Arms
7. Boring Data Sheets - Mast Arms

Modification for Non-Conventional Projects:

Delete Item 2 from the above paragraph.

In addition, the signalization plans may contain sheets which were prepared separately (perhaps by a sub-consultant) and incorporated into the signalization plans early in the design process (prior to the establishment of sheet numbering). As an option, these

may be identified with the following prefixes and placed at the end of the numbered sequence of the signalization plans:

GT-# Soil Survey and Report of Core Borings normally associated with the signalization plans set

PTM-# Portable Traffic Monitoring Site Sheets

## 24.2 Key Sheet

The key sheet is the first sheet in the component plans set and must 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. Show the index of signalization plans on the left of the 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), must 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) must be shown on the right side of the sheet.

## 24.3 Signature Sheet

See **Chapter 3** of this Volume for Signature Sheet requirements.

## 24.4 Tabulation of Quantities and Standard Notes

The tabulation of quantities sheet lists the item numbers, description and quantity of materials. Place this sheet behind the key sheet in plans assembly.

List pay item numbers in numerical order. Provisions must be made to show the original and final quantities per sheet or by station. Pay item notes and general notes that refer to item numbers, description of work to be performed and quantity estimates must also be shown on this sheet. If space is limited, notes may be shown on a General Notes Sheet.

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

Modification for Non-Conventional Projects:

Delete *PPM* 24.4

## 24.5 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. Place this sheet behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.

Modification for Non-Conventional Projects:

Delete the above paragraph and replace with the following:

## 24.5 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, Supplemental or Special Provisions. Place this sheet behind the key sheet.

## 24.6 Plan Sheets

### 24.6.1 Format and Scale

Prepare Signalization Plans 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 is shown on one plan sheet. However, for large intersections more sheets may be used with appropriate match lines. Place a north arrow and scale at a point of maximum visibility on the sheet.

### 24.6.2 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. Show underground and overhead utilities, signing structures, and lighting structures that may cause construction conflicts with signal components. All locations, including existing trees, should be checked for potential conflicts. A review of the signing and pavement marking plans is necessary to ensure the signal installation does not conflict.

The plan sheet must also show:

1. Signal head locations with orientation arrows and movements (movements 2 and 6 must be the major streets).
2. Details of signal heads in tabular form with pay item numbers.

Modification for Non-Conventional Projects:

Delete Item 2 and replace with the following:

2. Details of signal heads in tabular form.

3. Phasing diagram/signal operating plan (NOTE: If the SOP conforms to the **Design Standards, Index No. 17870**, then a reference to the index is all that is required. For all other operating plans, the plan must 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 orientation arrows.
15. Location of conduits.

Clearly label all equipment shown on the plan with their respective pay item numbers and quantity indicated.

Modification for Non-Conventional Projects:

Delete the above sentence and replace with the following:

Clearly label all equipment shown on the plan.

Prepare a separate signalization plan for each signalized intersection included in the construction project.

Coordinate span wire or mast arm mounted signs with the appropriate signing and pavement marking plans to avoid duplication.

The sign details for traffic signal signs must be included on the signalization plans, if signing and pavement markings are not included in the plans package.

## 24.7 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, pull boxes or aerial junction boxes, and tabulates all related interconnect quantities. The interconnect/communication plan sheet must indicate all signal poles, service poles, and/or joint-use poles to which interconnect/communication cable will be attached.

Modification for Non-Conventional Projects:

Delete the above sentence and replace with the following:

The interconnect/communication plan shows pictorially the placement of interconnect/communication cable, either underground or aerial, and, pull boxes or aerial junction boxes.

Prepare the interconnect/communication plan on standard plan format. Unless otherwise approved, the preferred scale of the interconnect/communication plan is 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 must progress from left to right and multiple plan views be stacked from top to bottom.

Place a north arrow and scale at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, include a north arrow and scale in each plan portion.

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.

## 24.8 Mast Arm Sheets

See **Design Standards, Index 17743** (Standard Mast Arm Assemblies) or **17745** (Special Mast Arm Assemblies) and the associated **IDS**.

## Chapter 25

### Lighting Plans

25.1	General .....	25-1
25.2	Key Sheet .....	25-2
25.3	Signature Sheet .....	25-2
25.4	Tabulation of Quantities and Standard Notes .....	25-2
25.5	Pole Data and Legend Sheet .....	25-3
25.6	Plan Sheets.....	25-4
	25.6.1    Format and Scale.....	25-4
	25.6.2    Required Information.....	25-4
25.7	Foundations and Boring Detail Sheets .....	25-5



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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 must be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other lighting sheets. When prepared as component plans, number the sheets consecutively with the sheet numbers prefixed by the letter "L".

Modification for Non-Conventional Projects:

Delete the third sentence from the above paragraph and replace with the following:

When prepared as component plans they must be assembled as a separate plans set complete with a key sheet and all other lighting sheets identified herein.

The lighting plans must show the construction details, electrical circuits, pole data, conduits, service points, luminaires, foundations, boring details and other relevant data.

Assemble the Lighting Plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. General Notes (if required)
4. Pole Data and Legend Sheet
5. Plan Sheets or Layout Sheets
6. Foundation Details - High Mast (if required)
7. Boring Data Sheets - High Mast (if required)

Modification for Non-Conventional Projects:

Delete Item 2 from the above list.

In addition, the lighting plans may contain sheets which were prepared separately (perhaps by a sub-consultant) and incorporated into the lighting plans early in the design process (prior to the establishment of sheet numbering). As an option, these may be identified with the following prefixes and placed at the end of the numbered sequence of the lighting plans:

GL-#      Soil Survey and Report of Core Borings normally associated with the lighting plans set

## **25.2      Key Sheet**

The key sheet is the first sheet in the component plans set and must 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. Show the index of lighting plans on the left of the 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), must 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) must be shown on the right side of the sheet.

## **25.3      Signature Sheet**

See **Chapter 3** of this Volume for Signature Sheet requirements.

## **25.4      Tabulation of Quantities and Standard Notes**

The tabulation of quantities sheet lists the item numbers, description and quantity of materials. Place this sheet behind the key sheet in plans assembly.

List pay item numbers in numerical order. Provisions must be made to show the original and final quantities per sheet or by station. When the number of pay item numbers to be used exceeds one page, the additional sheet is to be numbered using a suffix (i.e. 3 and 3A, 4 and 4a, etc.).

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

Show pay item notes and standard notes that refer to item numbers on this sheet. Show general notes on a separate plan format sheet. Place this sheet behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.

Modification for Non-Conventional Projects:

Delete **PPM** 25.4.

## 25.5 Pole Data and Legend Sheet

Prepare the pole data sheet on a standard plan format and include details and notes pertaining to pole placement and construction.

Provide a listing of each pole by pole number on this sheet. The following information must 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

Modification for Non-Conventional Projects:

Delete Item 6 from the above list.

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.

Modification for Non-Conventional Projects:

Delete the above paragraph.

Show the design values for light intensities and uniformity ratios together with a legend and description of the symbols used on the plan sheets.

## **25.6 Plan Sheets**

### **25.6.1 Format and Scale**

Prepare the plan sheets on a standard plan format. The scale must be such that all details are clear and legible. However, the scale must 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 must progress from left to right and be stacked from top to bottom. Clarity and legibility must be preserved in all cases.

Place a north arrow and scale at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, include a north arrow and scale in each plan portion.

### **25.6.2 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. Check utilities, drainage, signal structures, sign structures, landscape features, sidewalks, driveways, etc. for conflicts. Those that may cause conflicts must be shown.

Show the lighting layout on the plan format. This must be accomplished by symbols which represent poles, conduits and service points. Use symbols in accordance with the requirements of the FDOT Engineering/CADD Systems Software throughout the plans. A flag or note must be used to identify conduit size, number and conductor sizes.

Show the beginning and ending of the lighting limits on the appropriate plan sheet(s). Show the symbols for poles at the correct baseline or centerline station and note the approximate offset from the roadway.

The poles must be flagged, and specific information for each pole must be shown. The pole number, baseline or centerline station, circuit number, and offset from baseline or centerline (for high mast) must be shown.

Show the service point locations on the plan sheets as determined through utility negotiations. **Design Standards, Index No. 17504** provides details for the service point. The service point must 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 phase, Overhead Breaker sizes--The main breaker size and the number of branch circuits and the breaker size of each.

## 25.7 Foundations and Boring Detail Sheets

The foundation design for standard conventional poles is shown in the **Design Standards, Index 17515**. The foundation design for standard high mast light poles is shown in the **Design Standards, Index 17502**. These foundations do not need to be shown in the plans. Foundations for non-standard high mast poles and foundations in soil conditions weaker than those shown in the **Design Standards** must be designed by the responsible structures design engineer of record.

Plan sheets showing the boring data for high mast poles and non-standard foundation details must be included in the lighting plans.

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## Chapter 26

### Landscape Plans

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26.3	Signature Sheet .....	26-2
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26.4.1	Tabulation of Quantities and Plant Schedule .....	26-2
26.4.2	Tabulation of Quantities and Schedule for Irrigation and Site Amenities .....	26-2
26.5	General Notes .....	26-3
26.6	Plan Sheets .....	26-4
26.6.1	Format and Scale .....	26-4
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26.7	Details Sheet .....	26-6
Tables		
Table 26.1	Example Tabulation of Quantities and Schedule for Irrigation and Site Amenities .....	26-3



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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). The Legislature has requested that the Department commit program dollars to landscaping. In order for the Department to capture that information, it is critical that all landscape pay items be placed in AASHTOWare Project Preconstruction™ (formerly TRNS\*PORT) Category 0600 whether the landscape plans are a component set of plans, or 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 must be assembled as a separate plans set complete with a key sheet, tabulation of quantities, schedule, and all other landscape sheets. When prepared as component plans, number the sheets consecutively with the sheet numbers prefixed by the letters “LD”.

Assemble the Landscape Plans as follows:

1. Key Sheet
2. Tabulation of Quantities and Plant Schedule
3. Tabulation of Quantities and Schedule for Irrigation and Site Amenities
4. General Notes
5. Plan Sheets
6. Details Sheet

Modification for Non-Conventional Projects:

Delete Items 2 and 3 from the above list.

## **26.2 Key Sheet**

The key sheet is the first sheet in the component plans set and must 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 if shown on the lead key sheet. Show the index of landscape plans on the left of the 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) must be shown as described in **Chapter 3** of this Volume.

## **26.3 Signature Sheet**

See **Chapter 3** of this Volume for Signature Sheet requirements.

## **26.4 Tabulation of Quantities and Schedule**

### **26.4.1 Tabulation of Quantities and Plant Schedule**

The tabulation of quantities and plant schedule sheet or a similar sheet should be utilized to tabulate the materials required for the construction of the landscaping and provide the description, size and quantity of materials in a tabular format. The tabulation of quantities and plant schedule sheet is required to conform to the format of **Exhibit LD-1** and must be prepared separately from the tabulation of quantities for irrigation and site amenities.

### **26.4.2 Tabulation of Quantities and Schedule for Irrigation and Site Amenities**

The tabulation of quantities and schedule for irrigation and site amenities must utilize the standard tabulation of quantities sheet and provide the additional information given in the example in **Table 26.1**.

**Table 26.1 Example Tabulation of Quantities and Schedule for Irrigation and Site Amenities**

Symbol	Quantity	Unit	Description / Remarks
LP	1	LS	Irrigation pipe, heads, emitters, etc.
PR	1	LS	Irrigation pumping system.
CM	1	EA	Control module, latching solenoid, run shut-off device & appropriate fittings
ABB	5	EA	Arcata, backless bench, PolySite recycled plastic, Powdercoat 'Frost'
WCB	10	EA	Wausau Conical Bollard TF6071, B1 finish

On contracts with multiple Financial Project IDs or Federal Aid and non-Federal Aid quantities, provisions must be made to tabulate and summarize their respective quantities.

Modification for Non-Conventional Projects:
Delete <b>PPM</b> 26.4.

## 26.5 General Notes

General notes pertaining to landscape plans may be shown on a separate plan format sheet. Place this sheet behind the tabulation of quantities in the plans assembly.

Modification for Non-Conventional Projects:
Delete <b>PPM</b> 26.5 and replace with the following:
<p><b>26.5 General Notes</b></p> <p>General notes pertaining to landscape plans may be shown on a separate plan format sheet. Place this sheet behind the key sheet in the plans assembly. Where space permits, general notes may be placed on the first plan sheet.</p>

## **26.6 Plan Sheets**

Prepare plan sheets in a manner that is consistent with a set of construction documents rather than an illustrative plan. Therefore plan sheets must utilize simplified symbols depicting the location of materials in a legible manner. Plan sets must employ a level of detail and clarity that allows the reviewer to assess the relationship between the proposed landscape design, the roadway plans, utilities, outdoor advertising signs, and adjoining land use.

### **26.6.1 Format and Scale**

Prepare the plan sheets on a standard plan sheet format. The scale must be such that all details are clear and legible. However, the scale must 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 must progress from left to right and be stacked from top to bottom. Irrigation plan sheets may be prepared at a larger scale than the planting plan sheets. Clarity and legibility must be preserved in all cases.

Place a north arrow and scale, as applicable, at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, include a north arrow and scale in each plan portion.

### **26.6.2 Requirements for 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. Existing and proposed overhead and underground utility locations
11. Clear Zone/Lateral offset (should be plotted or safety setback distances noted frequently on each plan sheet)
12. View 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 (***Design Standards, Index No. 546***)
19. Transit Facilities

Where necessary, required sheet elements may be “screened” to provide legibility for the landscape plans, so long as the required elements remain apparent.

Planting plan sheets must also provide at a minimum the plant symbols and the plant quantities. Additional information such as the common name and botanical name of each plant may be provided.

Modification for Non-Conventional Projects:

Delete the above paragraph and replace with the following:

Planting plan sheets must also provide at a minimum the plant symbols, common name and botanical name of each plant.

Include site amenities, such as street furniture, decorative paving, fences, and lighting (excluding public utility street and area lighting) on the planting plan sheets with appropriate annotation.

Prepare irrigation plan sheets using the planting plan sheets (devoid of unnecessary text and labeling) and include information pertaining to the irrigation system. Information on the sheet must include the approximate location of spray heads and rotors, valves, mainlines, lateral lines, sleeves, controllers, water sources / point of connection, backflow preventers, and isolation valves.

## 26.7 Details Sheet

This sheet must show all landscape details, hardscape details and irrigation details, which are applicable to the project and not addressed in the ***Design Standards***.

The details sheet must include a legend clearly depicting the symbology used in the irrigation plan sheets and an associative description for each entry. Additional information such as the nozzle schedule and irrigation zone / lateral schedule can be included on these sheets.

# TABULATION OF QUANTITIES/PLANT SCHEDULE

PAY ITEM NO	PAYSIZESYM	BOTANICAL NAME	COMMON NAME	INSTALLED SIZE	MAX. MAINTAINED SIZE	SPACING	REMARKS	UNIT	SHEET NUMBERS										TOTAL THIS SHEET		GRAND TOTAL		
									LD-5		LD-6		LD-7		LD-8		LD-9		PLAN	FINAL	PLAN	FINAL	
									PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL	PLAN	FINAL					
570-I-2	SOD	STENOTAPHRUM SECUNDATUM	ST. AUGUSTINE GRASS				LAY SOLIDLY IN ALL INDICATED AREAS	SY	330.78		140.89		346.11		4193.44		44		5055.22		5055.22		
580-J1	SMALL	AG	ARACHIS GLABRATA	PERENNIAL PEANUT	1 GAL.	6" HT.	18" OC	MOW REGULARLY TO PROMOTE FLOWERING	EA	1655		1118		2729		0		334		5836		5836	
	SMALL	LEG	LIRIOPE MUSCARI "EVERGREEN GIANT"	EVERGREEN GIANT LIRIOPE	1 GAL.	16" HT.	24" OC	THIN BY PLANT DIVISION EVERY 3-5 YEARS	EA	434		381		0		805		0		1620		1620	
	SMALL	AS	ARISTIDA STRICTA	WIREGRASS	1 GAL.	2'-4" HT.	2' OC	NO SERIOUS PESTS	EA	465		513		0		0		0		978		978	
	SMALL	IVD	ILEX VOMITORIA "SHELLINGS"	DWARF YAUPON	3 GAL.	3'-4" HT.	3' OC	9 FEMALES TO 1 MALE/ MINIMAL PRUNING REOD.	EA	89		134		0		109		0		332		332	
	SMALL	HF	HERMEROCALLIS FULVA	DAYLILY	1 GAL.	4' HT.	24" OC	THIN BY PLANT DIVISION EVERY 3-5 YEARS	EA	131		288		530		0		0		949		949	
	SMALL	TA	TRACHELOSPERMUM ASIATICUM	STAR JASMINE	1 QUART	2' HT.	24" OC	TRIM TO MAINTAIN BEDLINES	EA	0		753		431		0		383		1567		1567	
	SMALL	CL	COREOPSIS	COREOPSIS	1 GAL.	3' HT.	24" OC	REMOVE DEAD STEMS	EA	0		0		0		453		0		453		453	
	SMALL	IV	IRIS VIRGINICA	SOUTHERN BLUE FLAG IRIS	1 GAL.	18" HT.	12" OC	THIN BY PLANT DIVISION EVERY 3-5 YEARS	EA	0		0		0		461		0		461		461	
580-I-2	LARGE	OV	QUERCUS VIRGINIANA	LIVE OAK	14' HT.	40' HT.	AS SHOWN	2" MINIMUM CALIPER/ ON PLANS MINIMAL PRUNING REOD.	EA	7		1		0		9		0		17		17	
	LARGE	VO	VIBURNUM OBOVATUM	WALTER'S VIBURNUM	42" HT.	6' HT.	48" OC	PRUNE TO MAINTAIN NATURAL SHAPE	EA	181		183		0		57		0		424		424	
	LARGE	LIS	LAGERSTROEMIA INDICA	CREPE MYRTLE STANDARD	8'-10' HT.	20' HT.	AS SHOWN	MULTI-TRUNK 3" MINIMUM CALIPER/1" PER BRANCH	EA	0		13		2		0		3		18		18	
	LARGE	IOE	ILEX OPACA "EAST PALATKA"	EAST PALATKA HOLLY	12' HT.	25' HT.	AS SHOWN	9 FEMALES TO 1 MALE/ ON PLANS MINIMAL PRUNING REOD.	EA	0		3		0		0		0		3		3	
	LARGE	TD	TAXODIUM DISTICHUM	BALD CYPRESS	8' HT.	50' HT.	AS SHOWN	2" MINIMUM CALIPER/ ON PLANS MINIMAL PRUNING REOD.	EA	0		0		0		3		0		3		3	
	LARGE	BN	BETULA NIGRA	RIVER BIRCH	12' HT.	50' HT.	AS SHOWN	2" MINIMUM CALIPER/ ON PLANS WELL SHAPED	EA	0		0		0		3		0		3		3	

Pay size in accordance with the Basis of Estimates Manual:

Small plants include:

- All ground covers
- Shrubs to less than 7 gallon
- Trees to less than 7 gallon
- Palms clustering type less than 6 foot overall height
- Cycads to less than 7 gallon

Large plants include:

- Shrubs 7 gallon or greater
- Trees 7 gallon and greater
- All palms single trunk
- Palms clustering type 6 foot overall height and greater
- Cycads 7 gallon or greater
- All sabal palms (a.k.a. sabal palmetto, cabbage palm, state tree)

EXHIBIT: LD-1  
Date: 1/1/13

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TABULATION OF QUANTITIES PLANT SCHEDULE</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				10	LEON	123456-1-52-01		

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



## Chapter 27

### Utility Work by Highway Contractor Agreement Plans

27.1	General .....	27-1
27.2	Key Sheet .....	27-2
27.3	Tabulation of Quantities .....	27-2
27.4	Plan Sheets.....	27-3

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## Chapter 27

### Utility Work by Highway Contractor 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 Utility Work by Highway Contractor (UWHC) Agreements. 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 must be shown or noted on the plans.

For UWHC Agreements, prepare the utility plans in the same basic format as FDOT plans and as a separate plans set. Assemble the plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. Plan-Profile Sheets
4. Cross Sections (as required)
5. Detail Sheets (as required)

Modification for Non-Conventional Projects:

Delete Item 2 from the above list.

The plans must 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 UWHC Agreement. The EOR should consult with the District Utility Engineer to determine the requirements in these cases. For further financial guidance, contact the FDOT Office of Comptroller, General Accounting Office.

## 27.2 Key Sheet

The key sheet is the first sheet in the component plan set and must 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 if shown on the lead key sheet. Show the index of plan on the left side of the 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), must be shown as described in **Chapter 3** of this Volume.

Refer to the [Work Program Instructions \(Section 42\)](#) for guidance on the Financial Project ID phase number identification. All other data must be as described in **Chapter 3** of this Volume.

## 27.3 Tabulation of Quantities

Prepare the tabulation of quantities sheet in standard FDOT format and show any quantities tabulated for location, size, quantity, etc. Standard notes referring to item numbers must 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.

Modification for Non-Conventional Projects:

Delete **PPM 27.3**.

## 27.4 Plan Sheets

Utility plans must show full construction details for all utilities to be relocated or constructed by the contractor as covered by the UWHC Agreement. A plan-profile sheet format should be utilized where appropriate. Show all underground utilities in the plan portion, and those which equal or exceed 4" must also be shown in the profile portion. Show all above ground Utilities 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. Show applicable project information similar to that described in **Chapter 10** of this Volume. Show utilities to be relocated or constructed 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.

The disposition and final ownership of any utility infrastructure that is to be removed by the contractor and salvaged must be identified in the plans. Include the address of the Utility/Agency Owner receiving the salvaged utility infrastructure in the pay item notes on the Summary of Quantity Sheet (see **Section 7.2.2** and **Exhibit SQ-1** of this Volume).

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## Chapter 28

### Stormwater Pollution Prevention Plan

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## Chapter 28

### Stormwater Pollution Prevention Plan

Modification for Non-Conventional Projects:

Delete **PPM** Chapter 28.

#### 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 State of Florida Department of Environmental Protection Generic Permit for Stormwater Discharges from Large and Small Construction Activities (DEP Generic Permit) discussed in **Chapter 11** of Volume 1. 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 **SWP-3**. Additional guidance for developing a SWPPP may be found in the DEP SWPPP template, found on the DEP web page at:

<http://www.dep.state.fl.us/water/stormwater/npdes/swppp.htm>

## 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 [\*State of Florida Erosion and Sediment Control Designer and Reviewer Manual\*](#).

### **28.3 Site Map**

Show the following information 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. Prepare a narrative description of the site map which identifies the construction plan sheets where the site map information required by the DEP Generic Permit can be found.

The locations of the temporary controls may be shown on SWPPP sheets, Erosion Control sheets, Plan-Profile sheets, or Temporary Traffic Control (TTC) Plan sheets. For projects where plan view sheets are not available, summarize the locations of the controls 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, prepare a topographic map (for example, a USGS quadrangle map) showing contour lines. This map will supplement the construction plan sheets that show the other site map requirements. The supplemental site map may use photography (aerial or other). Include this supplemental map in the SWPPP sheets.

## 28.4 Controls

The SWPPP must 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 District 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 the DEP 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 DEP Generic 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 1, CHAPTER 11 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, SIDEWALK, UNDERGROUND STORM DRAIN SYSTEMS, AND STORMWATER MANAGEMENT FACILITIES. THE PROJECT EXTENDS FROM NORTH OF PAUL RUSSELL ROAD TO PERKINS STREET, A DISTANCE OF APPROXIMATELY 11 MILES.

1.B. SEQUENCE OF MAJOR SOIL DISTURBING ACTIVITIES:

IN THE SEDIMENT AND 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 DRAIN CONSTRUCTION FOR THE OUTFALL FROM THE PONDS.

2. CLEARING AND GRUBBING, EARTHWORK FOR POND CONSTRUCTION.

3. STORM DRAIN AND ROADWAY UNDERDRAIN CONSTRUCTION. CONSTRUCT THE STORM DRAIN PIPE IN THE UPSTREAM DIRECTION.

4. EARTHWORK ASSOCIATED WITH THE CONSTRUCTION OF ROADWAY, 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 SHEET(S). 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"N, LONGITUDE, 84° 16' 45"W.  
EST. DRAINAGE AREA SIZE: 13.6 ACRES.  
RECEIVING WATER NAME: NOT APPLICABLE.

#2 DESCRIPTION: POND 1. THIS DISCHARGES TO THE STORM DRAIN SYSTEM THAT RUNS UNDER ORANGE AVENUE. THIS SYSTEM IN TURN DISCHARGES TO THE BOX CULVERT AT STA. 531+00.

LOCATION: LATITUDE 30° 24' 45"N, LONGITUDE 84° 17' 00"W.  
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"N, LONGITUDE 84° 17' 00"W.  
EST. DRAINAGE AREA SIZE: 4.2 SQUARE MILES.  
RECEIVING WATER NAME: EAST DITCH.

#4 DESCRIPTION: POND 2. THIS DISCHARGES TO THE SR 007 STORM DRAIN SYSTEM THAT DRAINS TO THE BOX CULVERT AT STA. 531+00.

LOCATION: LATITUDE 30° 25' 00"N, LONGITUDE 84° 17' 00"W.  
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).

I.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-1  
DATE: 1/1/13

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				7	LEON	123456-1-52-01	

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 1, CHAPTER 11 OF THE PLANS PREPARATION MANUAL.

2.0 CONTROLS:

2.A. EROSION AND SEDIMENT CONTROLS:

IN THE SEDIMENT AND EROSION CONTROL PLAN, THE CONTRACTOR SHALL DESCRIBE THE PROPOSED STABILIZATION AND STRUCTURAL PRACTICES BASED ON THE CONTRACTOR'S PROPOSED TEMPORARY TRAFFIC CONTROL(TTC) PLAN. THE FOLLOWING RECOMMENDED GUIDELINES ARE BASED ON THE TEMPORARY TRAFFIC CONTROL PLAN OUTLINED IN THE CONSTRUCTION PLANS. WHERE FOLLOWING THE TEMPORARY TRAFFIC CONTROL PLAN OUTLINED IN THESE CONSTRUCTION PLANS, THE CONTRACTOR MAY CHOSE TO ACCEPT THE FOLLOWING GUIDELINES OR MODIFY THEM IN THE SEDIMENT AND EROSION CONTROL PLAN, SUBJECT TO APPROVAL BY 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 I OF TEMPORARY TRAFFIC CONTROL PLANS.

ROADWAY, STATION 501+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.

OUTFALL OF POND 1:

CONSTRUCT THE OUTFALL PIPE FROM S-106 TOWARDS THE POND. THE CONTRACTOR SHALL HAVE INLET PROTECTION AVAILABLE AT ALL TIMES DURING THE PIPE CONSTRUCTION TO SUBSTANTIALLY BLOCK 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 SEDIMENT BARRIERS AS DETAILED IN THE TTC PLAN. THEN EXCAVATE THE POND TO APPROXIMATE PROPOSED DIMENSIONS. TURF ALL DISTURBED AREAS OF THE POND SITE ABOVE ELEVATION 51.0. FINAL GRADING WILL BE DONE AT THE END OF PHASE TWO OF THE TTC PLAN.

ROADWAY, STATION 510+10 TO 523+70 LEFT:

CONSTRUCT THE STORM DRAIN FROM THE POND TO THE ROADWAY AND THEN IN THE UPSTREAM DIRECTION ALONG THE LEFT SIDE OF THE PROJECT. DURING THE SUBSOIL EXCAVATION, AND CONSTRUCTION OF THE ROADWAY UNDERDRAIN, STORM DRAIN, AND WALL, USE S-19 AS THE PRIMARY INLET FOR CONVEYANCE TO THE POND. STAGE CONSTRUCT THE INLET AS DETAILED IN THE TTC PLAN.

ROADWAY, STATION 501+10 TO 510+40 LEFT:

DURING THE SUBSOIL EXCAVATION AND CONSTRUCTION OF THE UNDERDRAIN, STORM DRAIN, 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 TTC PLAN.

PHASE II OF THE TEMPORARY TRAFFIC CONTROL PLAN:

ROADWAY, STATION 510+10 TO 523+10 RIGHT:

DURING THE SUBSOIL EXCAVATION AND CONSTRUCTION OF THE ROADWAY UNDERDRAIN AND STORM DRAIN, 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 I OF THE TTC PLAN.

ROADWAY, STATION 501+10 TO 510+40 RIGHT:

DURING THE SUBSOIL EXCAVATION AND CONSTRUCTION OF THE UNDERDRAIN, STORM DRAIN, 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 I OF THE TTC PLAN.

POND 1 CONSTRUCTION:

AFTER ENTIRE BASIN IS PERMANENTLY STABILIZED, CONSTRUCT UNDERDRAIN IN THE POND BOTTOM.

2.A1 STABILIZATION PRACTICES:

IN THE SEDIMENT AND 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 7 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 7 DAY LIMIT BEFORE INITIATING STABILIZATION. THE DEP GENERIC PERMIT SPECIFIES 7 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 40C-42 F.A.C.

TEMPORARY:

- \* ARTIFICIAL COVERINGS IN ACCORDANCE WITH SPECIFICATION SECTION 104.
- \* TURF AND SOD IN ACCORDANCE WITH SPECIFICATION SECTION 104.

PERMANENT:

- \* ASPHALT OR CONCRETE SURFACE.
- \* SOD IN ACCORDANCE WITH SPECIFICATION SECTION 570.

2.A.2 STRUCTURAL PRACTICES:

IN THE SEDIMENT AND 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:

- \* SEDIMENT BARRIERS IN ACCORDANCE WITH DESIGN STANDARD 102 AND SPECIFICATION SECTION 104.

- \* INLET PROTECTION IN ACCORDANCE WITH DESIGN STANDARD 102 AND SPECIAL DETAILS SHOWN IN THE TTC PLAN.

- \* SEDIMENT CONTAINMENT SYSTEM: THE PERMANENT STORMWATER PONDS WILL BE TEMPORARILY MODIFIED ACCORDING TO THE DETAILS IN THE TTC PLAN.

PERMANENT:

- \* STORMWATER PONDS.

- \* SOD.

2.B STORMWATER MANAGEMENT:

SEVERAL STORM DRAIN 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: 1/1/13

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			STORMWATER POLLUTION PREVENTION PLAN	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				7	LEON	123456-1-52-01		

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 1, CHAPTER II OF THE PLANS PREPARATION MANUAL.

2.C OTHER CONTROLS:

2.C.1 WASTE DISPOSAL:

IN THE SEDIMENT AND 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 SEDIMENT AND 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 TARPULINS.
- \* 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 SEDIMENT AND EROSION CONTROL PLAN, THE CONTRACTOR SHALL DESCRIBE THE PROCEDURES FOR APPLYING FERTILIZERS AND PESTICIDES. THE PROPOSED PROCEDURES SHALL COMPLY WITH APPLICABLE SUBSECTIONS OF SECTION 570 OF THE SPECIFICATIONS.

2.C.5 TOXIC SUBSTANCES:

IN THE SEDIMENT AND 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 90-0-0044AA.

3.0 MAINTENANCE:

IN THE SEDIMENT AND 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.
- \* SEDIMENT BARRIERS : REMOVE SEDIMENT AS PER MANUFACTURER'S RECOMMENDATIONS OR WHEN WATER PONDS IN UNACCEPTABLE AMOUNTS OR AREAS.
- \* 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 0.50 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 DRAIN 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) 638-R549.

EXHIBIT SWP-3  
DATE: 1/1/13

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			STORMWATER POLLUTION PREVENTION PLAN	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				7	LEON	123456-1-52-01		

## Chapter 29

### Intelligent Transportation Systems Plans

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## Chapter 29

# Intelligent Transportation Systems Plans

### 29.1 General

The incorporation of Intelligent Transportation Systems (ITS) Plans is required for projects so identified by the Department. This chapter was developed to introduce standards for ITS Plans. ITS Plans are usually a component set of plans. Projects with minor ITS involvement may include these features on sheets in the roadway plans set or on the roadway sheets (or on sheets in the signalization plans set or on the signalization sheets if feasible). When prepared as component plans they must be assembled as a separate plans set complete with a key sheet, plan sheets, detail sheet(s), tabulation of quantities and all other ITS sheets. When prepared as component plans, number the sheets consecutively with the sheet numbers prefixed by the letters "IT".

#### Modification for Non-Conventional Projects:

Delete the fifth sentence from the above paragraph and replace with the following:

When prepared as component plans they must be assembled as a separate plans set complete with a key sheet, plan sheets, details sheet(s) and all other ITS sheets.

Assemble the ITS Plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. General Notes (if required)
4. Plan Sheets or "letter type" plan sets
5. Detail Sheets (as required)

#### Modification for Non-Conventional Projects:

Delete Item 2 from the above list.

The ITS Plans show the construction details, electrical circuits, and other data relevant to an ITS project. Some of the different systems that may be produced under the ITS component set of plans include, but are not limited to, the following:

1. Freeway Management System
2. Incident Management System
3. Arterial Management System
4. Emergency Management Systems
5. Transit Management Systems
6. Electronic Toll Collection
7. Electronic Fare Payment
8. Highway Rail Intersections (under electronic surveillance)
9. Regional Multimodal Traveler Information

In addition, the ITS plans may contain sheets which were prepared separately (perhaps by a subconsultant) and incorporated into the ITS plans early in the design process (prior to the establishment of sheet numbering). As an option, these may be identified with the following prefixes and placed at the end of the numbered sequence of the ITS plans:

GI-#        Soil Survey and Report of Core Borings normally associated with the ITS plans set.

The Districts have been gravitating toward utilizing a modified plans format for ITS projects. The modified plans format would allow for "letter type" plans and include a table to locate the devices by mile post to three decimal places, plus an offset dimension given for each aboveground structure. Global positioning system (GPS) coordinates can be utilized as supplemental information in the table.

For construction purposes the plans should include the following:

1. Table (spreadsheet) to locate devices by milepost to three decimal places.
2. For aboveground installations, give an offset dimension from the edge of the traveled way to the ITS device.
3. For devices such as DMS that require overhead structures, include a cross section.
4. For conduit, include number and sizes.
5. For fiber optic cable, include number of fibers.
6. For twisted pair copper cables, include the size and numbers of pairs.

Regarding as-built records, aerial photographs may be furnished with the table above to provide supplementary information. The aerials will not include the extra features of the ROW, baseline, or roadway edges being drawn in. The aerials are to be used as a base for the as-built plans with the mile post and offset dimensions provided by the Contractor.

## 29.2 Key Sheet

The key sheet is the first sheet in the component plans set and must 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. Show the index of ITS plans on the left of the 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), must 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) must be shown on the right side of the sheet.

## 29.3 Signature Sheet

See **Chapter 3** of this Volume for Signature Sheet requirements.

## 29.4 Tabulation of Quantities and Standard Notes

The tabulation of quantities sheet lists the item numbers, description and quantity of materials. Place this sheet behind the key sheet in plans assembly.

List pay item numbers in numerical order. Provisions must 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 must also be shown on this sheet. If space is limited, notes may be shown on a General Notes Sheet.

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

Modification for Non-Conventional Projects:

Delete **PPM** 29.4.

## 29.5 General Notes

General notes pertaining to ITS may be shown on a separate plan format sheet. The general notes sheet lists special ITS design information that is generally not covered in the FDOT Standard Specifications, Supplemental or Special Provisions. Place this sheet behind the tabulation of quantities in the plans assembly. On minor projects, general notes may be combined with the tabulation of quantities sheet.

Modification for Non-Conventional Projects:

Delete the last two sentences in the above paragraph and replace with the following:

Place this sheet behind the key sheet in the plans assembly. On minor projects where space permits, general notes may be shown on the first plan sheet.

## 29.6 Plan Sheets

### 29.6.1 Format and Scale

Prepare ITS Plans on standard plan format. The scale must be such that all details are clear and legible. See the requirements of **Section 10.1** of this Volume as a guide. Place a north arrow and scale at a point of maximum visibility on the sheet.

### 29.6.2 Required Information

The basic information requirements include roadway geometrics, project limits, 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. Show underground and overhead utilities, signing structures, and lighting structures that may cause construction conflicts with ITS components. All locations, including existing trees, should be checked for potential conflicts. Where details normally shown on roadway plans would obscure ITS features, the details may be screened so long as the details remain plainly legible.

If letter type plans are utilized, the table should include at a minimum the device ID, description, milepost, offset, and a comment field. Add an extra column to the table if GPS coordinates are provided for the devices.

Clearly label all equipment shown on the plan with their respective pay item numbers and quantity indicated. In addition, the following plan elements should be shown:

Modification for Non-Conventional Projects:

Delete the above paragraph and replace with the following:

Clearly label all equipment shown on the plan. In addition, the following plan elements should be shown:

1. Cabling, fiber optic splicing, and interconnects.
2. System communication devices.
3. Electrical power service equipment and interconnects.
4. Grounding and transient voltage protection details.
5. Structure-mounted or ground-mounted field cabinets for system electronics, maintenance service points, and interconnect.

### **29.6.2.1 Dynamic Message Sign**

Plans for a DMS installation should illustrate the location, placement, and typical details of the following components:

1. DMS Housing, including details and notes that identify type of display (monochrome, full-color, or tri-color), size of display matrix (height, width, number of lines, and number of characters per line), and type of mechanical construction (walk-in, front access, or embedded).
2. DMS controller.
3. DMS Uninterruptible Power Supply (UPS) system (if required).
4. DMS support structures (including external walkways, safety railings, ladders, etc.).
5. DMS mounting brackets and hardware.
6. A ground-level cabinet for a DMS controller and associated electronic equipment.
7. Telemetry equipment details for remote sensing and control

### **29.6.2.2 Highway Advisory Radio**

The design for an HAR installation should illustrate the location, placement, and typical details of the following components:

1. HAR operator workstation and central recording facility.
2. HAR antennas.
3. HAR transmitter and electronics.
4. HAR support structures, signage, and beacons.
5. HAR mounting brackets and hardware.

### **29.6.2.3 Video Display Equipment**

Provide mounting and installation plan sheets for each color video monitor, flat panel display, and rear projection video unit in the video display system. Depict in the mounting plans detailed structural mounting information, including support structures, wall attachment methods, and the weights of the display units. Provide cable routing plan sheets and diagrams for the devices, along with maintenance/service points and structural certification.

The plans should illustrate the location, placement, and typical details of the following video display system components:

1. Video display controller.
2. Operator workstations.
3. Encoders, decoders, multiplexers, and routing equipment.

Develop sheets that detail cross-sections and elevations for all modifications to existing wall systems in the TMC facility and submit them to the Engineer.

For the rear projection video unit mounting and installation plans, include details that illustrate stacking configuration and support design, along with a ventilation and climate control plan. Provide cable routing plans that include detailed connection diagrams for individual and stacked configurations.

### **29.6.2.4 Network Devices**

Plans including network devices should illustrate the following system attributes:

1. System diagrams illustrating network and device interconnect.
2. General network topology.
3. Notes regarding any special configurations or options for specific devices that are required to achieve a specific system function.

### **29.6.2.5 Fiber Optic Cable and Interconnect**

The plans for fiber optic cable systems should illustrate the location, placement, and typical details of the following components:

1. Fiber optic conduits.
2. Fiber optic cables.
3. Fiber optic splices and terminations.
4. Fiber optic cable designating system.
5. Fiber optic cable access points.

### **29.6.2.6 Vehicle Detection and Data Collection**

The plans for vehicle detection systems should illustrate the location, placement, and typical details of the following components:

1. Diagrams illustrating detection system interconnect.
2. General network topology.
3. Notes regarding any special configurations or options for specific devices that are required to achieve a specific system function.



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# **APPENDIX A**

## **Metric Practice**

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## METRIC PRACTICE

### GENERAL

This Appendix was originally included in the Metric PPM and was used as guidelines for the development of Metric plans. This was a useful tool especially for the English to Metric conversion of design information. This Appendix has now been included in the English PPM as a tool for use in cases where the designer may need to obtain information from Metric plans. This may provide the designer some insight as to how those Metric plans were developed.

### SUMMARY OF RULES

1. Convert values related to surveys, right of way and other geometric alignment using 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:

$$1 \text{ foot} = 0.3048 \text{ meters}$$

2. Display direct mathematical (soft) converted values to the nearest 0.001 m or 1 mm.
3. Do not use commas to separate digits if a number has more than 4 digits. For numbers with more than 4 digits either right or left of the decimal, leave a space when practical. (Where the displayed number must be used in a mathematical operation on a computer the space may not be recognized properly and should not be used).

Example: 10 000 or 0.609 35 or 13 471.359

4. To the extent practical, use the following rules for dimensioning roadway plans:
  - a. For dimensions in meters, display values to at least one decimal place.
  - b. For dimensions in millimeters, display values as whole numbers with no decimal place.

- c. Do not use the centimeter.
  - d. Using the above rules, do not show the unit symbols "m" and "mm" unless needed for clarification. Show even dimensions in meters with a decimal and following zero digit, e.g. 300.0 to avoid confusion with 300 mm.
5. If a dimensioned item has a numerical quantity that is part of a group of numbers in a different range, select the unit that most adequately covers the range without unduly large or small numbers. For example, if 300 mm is part of a group of numbers shown in meters, show it as 0.3 m.
  6. Show long dimensions, including all horizontal and vertical geometry, wall lengths, bridge span lengths and box or three sided culvert lengths, spans and heights in meters.
  7. In general, show cross section dimensions of structural members in millimeters. This will normally include most drainage structures (except box culverts), drainage pipe, and special drainage structure details. (Note: The actual size of drainage pipe and standard drainage structure boxes will remain the same. However, label these items in nominal size based on 1" = 25 mm. Example: Label 24" pipe as 600 mm pipe; Label a 4' diameter structure as a 1200 mm structure.)
  8. Show pavement thickness descriptions in millimeters.
  9. Use 0.1 m for both base extension on rural sections (formerly 3") and for stabilization extension on curbed sections (formerly 6").
  10. On typical sections, show type of curb, "E" or "F", not the dimension.
  11. As a general rule, display metric dimensions to one more decimal place than the corresponding dimension in English units:
    - a. Typical Section Elements, including lane widths and shoulder widths - in meters, generally to 1 decimal place.
    - b. Horizontal control points on plans, including survey centerline, baseline, intersections and alignment - in meters to 3 decimal places. The normal station interval for centerlines and baselines is 100 meters. (1+00.000 = 100 m)
    - c. Vertical alignment control points, (PVC, PVI, PVT) and profile grade elevations - in meters to 3 decimal places.

- d. Profile Grade - in percent to 4 decimal places.
  - e. Proposed flow lines - in meters to 2 decimal places.
  - f. Manhole tops and grate elevations - in meters to 2 decimal places.
  - g. Ditch elevations - in meters to 2 decimal places.
  - h. Box Culvert or Three-sided Spans and Heights - in meters to 1 decimal for new construction; in meters to 2 decimal places for extensions of existing box culverts originally constructed to English dimensions.
12. Where practical, round short radius curves (<150.0 m), including curb returns and control radii, to the nearest meter. Round longer radius curves to the nearest 5 meters. (See attached tables.)
13. Display alignment bearings and delta angles in curve data in degrees, minutes and seconds, rounded to the nearest second.
14. Omit "degree of curvature" from curve data. It has no definition in the metric system. Instead, use the radius definition. Equations:

$$\text{Tangent } T = R \tan\left(\frac{\Delta}{2}\right)$$

$$\text{Length } T = R (\Delta \text{ in Radians})$$

$$\text{LongChord } LC = 2 R \sin\left(\frac{\Delta}{2}\right)$$

15. On resurfacing projects, hard convert typical section dimensions (lane widths, shoulder widths, etc.) where existing conditions permit. Exception: Use direct mathematical (soft) conversion (Rule Number 2) for existing pavement widths in curbed sections, existing right of way widths, and existing median widths.

16. Continue to post sign messages for speed limits and distances in English units. Note: The posted speed for curb and gutter sections with design speed of 80 km/h (corresponds to 50 mph), should not exceed 45 mph.
17. A "hard" metric project is defined as one where metric standard index drawings and metric specifications are used, and the design complies with adopted metric criteria.
18. Beginning with metric projects express slope ratios in vertical to horizontal (V:H) format. For example, show roadside slopes as 1:6, 1:4, rather than past convention as 6:1 or 4:1.
19. As a general guideline for new construction and reconstruction, show cross sections in 20 meter intervals for urban projects and 50 meter intervals for rural projects. Project specific factors may dictate greater or lesser intervals.
20. When project limits are identified by kilometer point location on the Key Sheet, show the equivalent milepost using direct mathematical conversion.  
  
(example: kp 1.609 = MP 1.000)
21. Label existing and proposed utilities in metric. Use the FDOT **Basis of Estimates Manual** utility pay item list of metric sizes as a guide.

### PLAN SCALES

ENGLISH SCALE	METRIC SCALE
1" = 2'	1: 25
1" = 5'	1: 50
1" = 10'	1: 100
1" = 20'	1: 200
1" = 40'	1: 400 or 1: 500
1" = 50'	1: 500
1" = 100'	1: 1000
1" = 200'	1: 2000
1" = 400'	1: 5000

Plan sheet size will remain the same. The viewing area of a plan sheet will be 800 mm long on "D" size sheets and 400 mm on "B" size sheets. Allowing for open space at each side, this provides a coverage of 140 m at 1:400 scale, 350 m at 1:1000 and 700 m at 1:2000 on "B" size sheets.

**Plan/ Profiles:**

	Sheet Size	Horizontal	Vertical
Rural -	D	1:1000	1:50 or 1:100
	B	1:2000	1:100 or 1:200
Urban -	D	1:200	1:50
	B	1:400 or 1:500	1:50 or 1:100

Show centerline major tick marks at each station. Show centerline minor tick marks at 20 meter intervals when using 1:200 and 1:400 scale, and at 25 meter intervals when using 1:500 scale.

**Cross Sections:**

	Sheet Size	Horizontal	Vertical
Normal	D	1:50	1:25
	B	1:100	1:50
Wide Sections	D	1:100	1:25 or 1:50
	B	1:200	1:50 or 1:100
Narrow Sections	D	1:25	1:25
	B	1:50	1:50

As a guideline, the normal interval for cross sections is 20 meters for urban projects and 50 meters for rural projects.



## COMPARISON OF ENGLISH AND METRIC VALUES

### LANE WIDTHS

CURRENT	SOFT	HARD
8 ft	2.438 m	2.4 m
9 ft	2.743 m	2.7 m
10 ft	3.048 m	3.0 m
11 ft	3.353 m	3.3 m
12 ft	3.658 m	3.6 m
14 ft	4.267 m	4.2 m
15 ft	4.572 m	4.5 m

### BIKE LANE WIDTHS

4 ft	1.219 m	1.2 m
5 ft	1.524 m	1.5 m

### SIDEWALK AND UTILITY STRIP WIDTHS

CURRENT	SOFT	HARD
2 ft	0.610 m	0.6 m
3 ft	0.914 m	0.9 m
4 ft	1.219 m	1.2 m
5 ft	1.524 m	1.5 m
6 ft	1.829 m	1.8 m
7 ft	2.134 m	2.1 m
8 ft	2.438 m	2.4 m
9 ft	2.743 m	2.7 m
10 ft	3.048 m	3.0 m

### CURB AND GUTTER WIDTHS

TYPE	CURRENT	SOFT	HARD
E	2.25 ft	686 mm	675 mm
F	2.00 ft	610 mm	600 mm
Shoulder			
Gutter	3.50	1067 mm	1050 mm

### SHOULDER WIDTHS

CURRENT	SOFT	HARD
2 ft	0.610 m	0.6 m
4 ft	1.219 m	1.2 m
5 ft	1.524 m	1.5 m
6 ft	1.829 m	1.8 m
8 ft	2.438 m	2.4 m
10 ft	3.048 m	3.0 m
12 ft	3.658 m	3.6 m

## COMPARISON OF ENGLISH AND METRIC VALUES

### TRAFFIC SEPARATOR WIDTHS

CURRENT	SOFT	HARD
4 ft	1.219 m	1.2 m
6 ft	1.829 m	1.8 m
8.5 ft	2.591 m	2.6 m

### MEDIAN WIDTHS

CURRENT	SOFT	HARD
15.5 ft	4.724 m	5.0 m
17.5 ft	5.334 m	N/A
19.5 ft	5.944 m	6.0 m
22 ft	6.706 m	6.6 m
26 ft	7.925 m	7.8 m
30 ft	9.144 m	9.0 m
40 ft	12.192 m	12.0 m
50 ft	15.240 m	15.0 m
60 ft	18.288 m	18.0 m
64 ft	19.507 m	19.2 m
88 ft	26.822 m	26.4 m

### DITCH WIDTHS

CURRENT	SOFT	HARD
3 ft	0.914 m	0.9 m
3.5 ft	1.067 m	1.0 m
4 ft	1.219 m	1.2 m
5 ft	1.524 m	1.5 m

### DESIGN SPEED

CURRENT	METRIC
20	30
25	40
30	50
35	60
40	60
45	70
50	80
55	90
60	100
65	110
70	110

## METRIC CONVERSIONS

### RETURN RADII CONTROL RADII SHORT RADIUS CURVE RADII

TURNING SPEED mph	RADIUS (feet)	SOFT (meters)	HARD (meters)	TURNING SPEED km/h	RADIUS (meters)
10	15	4.572	5.0	15 20	7.0 10.0
	20	6.096	6.0		
	25	7.620	8.0		
	30	9.144	9.0		
	35	10.668	11.0		
15	40	12.192	12.0	30	25.0
	45	13.716	14.0		
	50	15.240	15.0		
	60	18.288	18.0		
20	75	22.860	23.0	40	50.0
	90	27.432	27.0		
25	100	30.480	30.0	50	80.0
	150	45.720	46.0		
30	230	70.104	70.0	60	115.0
35	310	94.488	94.0		
40	430	131.064	131.0	60	115.0
	550	167.640	170.0		Small Radii ↑
	690	210.312	210.0		↓ Large Radii
	840	256.032	255.0		
	1040	316.992	315.0		

Note: Selection of appropriate radii should also consider design vehicle.

Conversions on this sheet and the next are accomplished as follows:

1. Radius in feet x (12 ÷ 39.37) = radius in meters (soft)
2. Values for metric turning speeds based on proposed AASHTO metric criteria.

## COMPARISON OF ENGLISH AND METRIC VALUES

<b>DEGREE OF CURVE TO RADIUS VALUES</b>			
<b>DEGREE</b>	<b>RADIUS</b>	<b>RADIUS-Soft (meters)</b>	<b>RADIUS-Hard (meters)</b>
0°-15'	22918.31	6985.515	6985.0
0°-30'	11459.16	3492.758	3495.0
0°-45'	7639.44	2328.505	2330.0
1°-00'	5729.58	1746.379	1745.0
1°-15'	4583.66	1397.103	1395.0
1°-30'	3819.72	1164.253	1165.0
1°-45'	3274.04	997.931	1000.0
2°-00'	2864.79	873.189	875.0
2°-15'	2546.48	776.168	775.0
2°-30'	2291.83	698.552	700.0
2°-45'	2083.48	635.047	635.0
3°-00'	1909.86	582.126	580.0
3°-15'	1762.95	537.347	535.0
3°-30'	1637.02	498.965	500.0
3°-45'	1527.89	465.701	465.0
4°-00'	1432.39	436.595	435.0
4°-15'	1348.14	410.913	410.0
4°-30'	1273.24	388.084	390.0
4°-45'	1206.23	367.659	370.0
5°-00'	1145.92	349.276	350.0
5°-30'	1041.74	317.523	320.0
6°-00'	954.93	291.063	290.0
7°-00'	818.51	249.483	250.0
8°-00'	716.20	218.297	220.0
9°-00'	636.62	194.042	195.0
10°-00'	572.96	174.638	175.0

**Note:** Degree of Curvature is not used in the Metric System.

## GENERAL METRIC INFORMATION

### SI PREFIXES

M mega  $10^6 = 1\,000\,000$   
 k kilo  $10^3 = 1\,000$   
 m milli  $10^{-3} = 0.001$

Base SI Units			Related Units		
Quantity	Unit	Symbol	Unit	Symbol	Relation
length	meter	m	millimeter	mm	=0.001 m ( $10^{-3}$ m)
			kilometer	km	=1000 m ( $10^3$ m)
mass	kilogram	kg	gram	g	=0.001kg ( $10^{-3}$ kg)
			megagram	Mg	=1000 kg ( $10^3$ kg)
			metric ton	t	=1000 kg ( $10^3$ kg)
time	second	s	hour	h	=3600 s

### DERIVED SI UNITS WITH SPECIAL NAMES

Quantity	Unit	Symbol	Formula
force	newton	N	$\text{kg}\cdot\text{m}/\text{s}^2$
pressure	pascal	Pa	$\text{N}/\text{m}^2$
moment	newton meter	$\text{N}\cdot\text{m}$	$\text{N}\cdot\text{m}$
Temperature	degree Celsius	$^{\circ}\text{C}$	---

## GENERAL METRIC INFORMATION

Common Derived Units of SI			Related Units		
Quantity	Unit	Symbol	Unit	Symbol	Relation
acceleration	meter/second <sup>2</sup>	m/s <sup>2</sup>			
area	square meter	m <sup>2</sup>	sq. millimeter	m m <sup>2</sup>	=0.000 001 m <sup>2</sup> (10 <sup>-6</sup> m <sup>2</sup> )
			hectare	ha	=10 000 m <sup>2</sup> (10 <sup>4</sup> m <sup>2</sup> )
			sq. Kilometer	k m <sup>2</sup>	=1 000 000 m <sup>2</sup> (10 <sup>6</sup> m <sup>2</sup> )
density, mass	kilogram/cubic	kg/m <sup>3</sup>			
velocity	meter/second	m/s	kilometer/hour	km/h	=0.2778 m/s
volume	cubic meter	m <sup>3</sup>	liter	L	=0.001 m <sup>3</sup> (10 <sup>-3</sup> m <sup>3</sup> )
			milliliter	mL	=0.000 001 m <sup>3</sup> (10 <sup>-6</sup> m <sup>3</sup> )

## GENERAL METRIC INFORMATION

### SOFT CONVERSION FACTORS

CLASS	MULTIPLY	BY	TO GET
LENGTH	inches	25.400 000	mm
	inches	0.025 400	m
	feet	0.304 800 **	m
	yards	0.914 400	m
	miles	1609.344 000	m
	miles	1.609 344	km
AREA	sq inches	645.160 000	mm <sup>2</sup>
	sq feet	0.092 903	m <sup>2</sup>
	sq yard	0.836 127	m <sup>2</sup>
	acres	4046.873 000	m <sup>2</sup>
	sq miles	2.589 988	km <sup>2</sup>
VOLUME	board feet	0.002 360	m <sup>3</sup>
	cubic feet	0.028 317	m <sup>3</sup>
	cubic yard	0.764 555	m <sup>3</sup>
	gallon (fluid)	3.785 412	L
	ounce (fluid)	29.573 530	ML
	bushels	0.035 239	m <sup>3</sup>
MASS	ounce	0.028 350	kg
	pound	0.453 592	kg
	ton	907.184 700	kg
	lb/ft	1.488 164	kg/m
	lb/ft <sup>2</sup>	4.882 425	kg/m <sup>2</sup>
	lb/ft <sup>3</sup>	16.018 460	kg/m <sup>3</sup>
	ounces/ft <sup>2</sup>	0.305 152	kg/m <sup>2</sup>
FORCE	pound (force)	4.448 222	N
	lb/ft	14.593 900	N/m
	lb/ft <sup>2</sup>	47.880 260	N/m <sup>2</sup>
	lb/ft <sup>3</sup>	157.087 5	n/m <sup>3</sup>
STRESS	psi	6894.757 000	Pa
	kips/in <sup>2</sup>	6.894 757	N/mm <sup>2</sup>
VELOCITY	fps	0.304 800	m/s
	mph	0.447 040	m/s
	mph	1.609 344	km/h
TEMPERATURE	(°F-32) / 1.8 = °C		
ANGLES	(no change)	deg, min, sec	

\*\* For conversion from U.S. Geodetic Survey, the U.S. survey foot equals 0.304 800 610 m