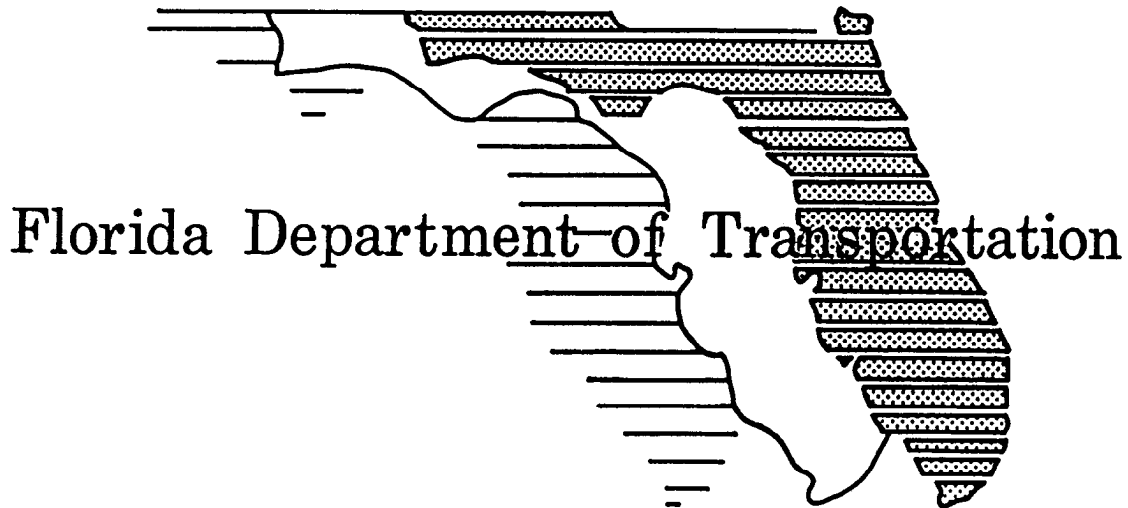


# ROADWAY PLANS PREPARATION MANUAL

VOLUME II

## PLANS PREPARATION AND ASSEMBLY



Florida Department of Transportation

DOCUMENT NO. 625-000-101-B  
ROADWAY DESIGN OFFICE

TALLAHASSEE, FLORIDA

1989

## TABLE OF CONTENTS

### VOLUME II

#### PLANS PREPARATION AND ASSEMBLY

		<u>Page</u>
<u>Introduction</u>		xv
<u>Chapter 1</u>	<b>Production of Plans</b>	II-1-1.0
1.1	General	II-1-1.0
1.2	Legibility Guidelines	II-1-1.0
1.3	Material	II-1-3.0
1.4	Base Sheet Format	II-1-3.0
	1.4.1 Title Block	II-1-3.0
1.5	Plan Sheets	II-1-5.0
1.6	Material Purchasing	II-1-7.0
	1.6.1 Partial List of Vendors and Products	II-1-7.0
	1.6.2 Partial List of Vendors	II-1-8.0
<u>Chapter 2</u>	<b>Sequence of Plans Preparation</b>	II-2-1.0
2.1	General	II-2-1.0
2.2	Data Collection and Presentation	II-2-2.0
2.3	Phase Submittals	II-2-5.0
2.4	Requirements for Phase I-30-35% Complete Plans Submittal	II-2-7.0
2.5	Phase I-30-35% Submittal	II-2-8.0
2.6	Requirements for Phase II-60-65% Complete Plans Submittal	II-2-14.0
2.7	Phase II-60-65% Submittal	II-2-15.0

2.8	Requirements for Phase III-90-95% Complete Plans Submittal	II-2-27.0
2.9	Requirements for Phase IV- 100% Complete Plans Submittal	II-2-28.0
<u>Chapter 3</u>	<b>Key Sheet</b>	II-3-1.0
3.1	General	II-3-1.0
3.2	Project Data	II-3-2.0
	3.2.1 Project Number, County Name and Road Number	II-3-2.0
	3.2.2 Work Project Item Number and Fiscal Year	II-3-2.0
	3.2.3 Length of Project Box	II-3-3.0
3.3	Project Location Map	II-3-4.0
3.4	North Arrow and Scale	II-3-6.0
3.5	Plans in Contract Plans Set	II-3-6.0
3.6	Index of Sheets and Standard Index Reference	II-3-6.0
3.7	Approval Signatures and Consultant's Name	II-3-8.0
	3.7.1 Approval Signature	II-3-8.0
	3.7.2 Consultant's Name	II-3-8.0
3.8	Governing Specifications	II-3-10.0
3.9	State Map	II-3-10.0
3.10	Railroad Crossing	II-3-10.0
3.11	Revision Dates	II-3-10.0
	Exhibits	II-3-A to F
<u>Chapter 4</u>	<b>Summary of Pay Items</b>	II-4-1.0
4.1	General	II-4-1.0
4.2	Summary of Pay Items Sheet Exhibits	II-4-1.0 II-4 A to B

<u>Chapter 5</u>	<b>Drainage Map</b>	II-5-1.0
5.1	General	II-5-1.0
	5.1.1 Flood Data Sheet	II-5-2.0
	5.1.2 Bridge Hydraulic Recommendation Sheet	II-5-2.0
	5.1.3 Required Information on BHRS	II-5-3.0
5.2	Plan Portion	II-5-4.0
5.3	Profile Portion	II-5-6.0
5.4	Interchange Drainage Map Exhibits	II-5-8.0 II-5-A to B
<u>Chapter 6</u>	<b>Typical Sections</b>	II-6-1.0
6.1	General	II-6-1.0
6.2	Mandatory Information	II-6-3.0
6.3	Standard Notes for Typical Section Sheets Exhibits	II-6-5.0 II-6-A to H
<u>Chapter 7</u>	<b>Summary of Quantities</b>	II-7-1.0
7.1	General	II-7-1.0
7.2	Item Quantity "Boxes" and Format	II-7-1.0
7.3	Box Culvert Data Sheets	II-7-2.0
7.4	Standard Notes for Summary of Quantities Sheet	II-7-3.0
7.5	Pay Item Notes Exhibits	II-7-5.0 II-7-A to C
<u>Chapter 8</u>	<b>Summary of Drainage Structures</b>	II-8-1.0
8.1	General	II-8-1.0
8.2	Sheet Setup and Data Exhibits	II-8-2.0 II-8-A to C



<u>Chapter 9</u>	<b>Project Layout</b>	II-9-1.0
9.1	General	II-9-1.0
9.2	Alignment Sheet Sequence	II-9-2.0
9.3	Survey Reference Points	II-9-3.0
9.4	General Notes	II-9-3.0
	Exhibit	II-9-A
<u>Chapter 10</u>	<b>Roadway Plan and Profile</b>	II-10-1.0
10.1	General	II-10-1.0
10.2	Roadway Plan Portion	II-10-2.0
	10.2.1 Centerline	II-10-2.0
	10.2.2 Horizontal Curves	II-10-3.0
	10.2.3 Existing Topography	II-10-4.0
	10.2.4 Reference Data	II-10-5.0
	10.2.5 Construction and Project Limits	II-10-6.0
	10.2.6 Drainage Structures and Bridges	II-10-7.0
	10.2.7 Plan Layout	II-10-8.0
10.3	Roadway Profile Portion	II-10-10.0
	10.3.1 General Data	II-10-10.0
	10.3.2 Vertical Curves	II-10-11.0
	10.3.3 Grades	II-10-12.0
	10.3.4 Superelevation	II-10-12.0
	10.3.5 Drainage Features	II-10-12.0
10.4	General Notes for Plan-Profile Sheets	II-10-16.0
	Exhibits	II-10-A to C

<u>Chapter 11</u>	<b>Special Profiles</b>	II-11-1.0
11.1	General	II-11-1.0
11.2	Intersections	II-11-2.0
11.3	Curb Returns	II-11-3.0
11.4	Ramps	II-11-4.0
11.5	Spline Grade	II-11-5.0
11.6	Superelevation	II-11-6.0
	Exhibits	II-11-A to B
<u>Chapter 12</u>	<b>Back-of-Sidewalk Profiles</b>	II-12-1.0
12.1	General	II-12-1.0
12.2	Required Information	II-12-2.0
12.3	Sheet Setup	II-12-4.0
	Exhibit	II-12-A
<u>Chapter 13</u>	<b>Intersection and Interchange</b>	
	<b>Details/Layout</b>	II-13-1.0
13.1	General	II-13-1.0
13.2	Intersections	II-13-2.0
13.3	Interchanges	II-13-3.0
	13.3.1 Geometric Layout	II-13-3.0
	13.3.2 Ramp Terminal Details	II-13-6.0
	13.3.3 Cross Section Pattern	
	Sheet	II-13-7.0
	Exhibits	II-13-A to F
<u>Chapter 14</u>	<b>Drainage Structures</b>	II-14-1.0
14.1	General	II-14-1.0
14.2	Required Information	II-14-3.0
14.3	Utility Conflicts	II-14-5.0
14.4	Sheet Setup	II-14-6.0
	Exhibits	II-14-A to G

<u>Chapter 15</u>	<b>Outfall/Lateral Ditch System</b>	II-15-1.0
15.1	General	II-15-1.0
15.2	Plan Portion	II-15-2.0
	15.2.1 Lateral Ditch	II-15-2.0
	15.2.2 Outfall	II-15-2.0
15.3	Profile Portion	II-15-3.0
	15.3.1 Lateral Ditch	II-15-3.0
	15.3.2 Outfall	II-15-4.0
15.4	Typical Section	II-15-5.0
15.5	Ditch Cross Sections	II-15-5.6
15.6	Retention or Detention Pond	II-15-7.0
	Exhibits	II-15-A to B
<u>Chapter 16</u>	<b>Special Details</b>	II-16-1.0
16.1	General	II-16-1.0
<u>Chapter 17</u>	<b>Soil Survey</b>	II-17-1.0
17.1	General	II-17-1.0
17.2	Roadway Soil Survey	II-17-2.0
	17.2.1 Method of Compilation and Presentation	II-17-2.0
17.3	Borrow Pit Soil Survey	II-17-3.0
	Exhibits	II-17-A to B
<u>Chapter 18</u>	<b>Roadway Cross Sections</b>	II-18-1.0
18.1	General	II-18-1.0
18.2	Required Information	II-18-2.0
18.3	Sheet Setup	II-18-4.0
	Exhibits	II-18-A to C
<u>Chapter 19</u>	<b>Traffic Control Sheets</b>	II-19-1.0
19.1	General	II-19-1.0
19.2	Required Information	II-19-2.0
19.3	Format and Scale	II-19-4.0
	Exhibits	II-19-A to B

<u>Chapter 20</u>	<b>Utility Adjustment</b>	II-20-1.0
20.1	General	II-20-1.0
20.2	Required Information	II-20-1.0
20.3	Sheet Format and Scale	II-20-2.0
	Exhibit	II-20-A
<u>Chapter 21</u>	<b>Selective Clearing and Grubbing</b>	II-21-1.0
21.1	General	II-21-1.0
21.2	Required Information and Sheet	
	Setup	II-21-1.0
21.3	Standard Symbols and Notes	II-21-2.0
	Exhibits	II-21-A
<u>Chapter 22</u>	<b>Approach Slabs</b>	II-22-1.0
22.1	General	II-22-1.0
<u>Chapter 23</u>	<b>Signing and Pavement Marking Plans</b>	II-23-1.0
23.1	General	II-23-1.0
23.2	Key Sheet	II-23-1.0
23.3	Tabulation of Quantities and	
	Standard Notes	II-23-2.0
23.4	General Notes	II-23-2.0
23.5	Plans Sheets	II-23-3.0
	23.5.1 Format and Scale	II-23-3.0
	23.5.2 Required Information	II-23-4.0
23.6	Guide Sign Work Sheet	II-23-5.0
23.7	Overhead Sign Cross Section and	
	Support Structure	II-23-5.0
23.8	Typical Pavement Marking Sheet	II-23-5.0
	Exhibits	II-23-A to F

<b><u>Chapter 24</u></b>	<b>Signalization Plans</b>	II-24-1.0
24.1	General	II-24-1.0
24.2	Key Sheet	II-24-1.0
24.3	Tabulation of Quantities and Standard Notes	II-24-2.0
24.4	General Notes	II-24-2.0
24.5	Plan Sheets	II-24-3.0
	24.5.1 Format and Scale	II-24-3.0
	24.5.2 Required Information	II-24-4.0
24.6	Pole Schedule	II-24-6.0
24.7	Interconnect/Communication Plan	II-24-7.0
	Exhibits	II-24-A to C
<b><u>Chapter 25</u></b>	<b>Highway Lighting</b>	II-25-1.0
25.1	General	II-25-1.0
25.2	Key Sheet	II-25-2.0
25.3	Tabulation of Quantities and Standard Notes	II-25-2.0
25.4	Pole Data and Legend Sheet	II-25-3.0
25.5	Plan Sheets	II-25-4.0
	25.5.1 Format and Scale	II-25-4.0
	25.5.2 Required Information	II-25-5.0
25.6	Foundations and Boring Detail Sheets	II-25-7.0
	Exhibits	II-25-A to H
<b><u>Chapter 26</u></b>	<b>Highway Landscape</b>	II-26-1.0
26.1	General	II-26-1.0
26.2	Key Sheet	II-26-1.0
26.3	Tabulation of Quantities	II-26-2.0
26.4	Standard Details and Notes	II-26-2.0
26.5	Plan Sheet	II-26-3.0
	26.5.1 Format and Scale	II-26-3.0
	26.5.2 Plan Sheets	II-26-4.0
	Exhibits	II-26-A to D

<u>Chapter 27</u>	<b>Utility Contract Plans</b>	II-27-1.0
27.1	General	II-27-1.0
27.2	Key Sheet	II-27-1.0
27.3	Summary of Quantities	
	Standard Notes and	
	Summary of Pay Items	II-27-1.0
27.4	Plan Sheets	II-27-2.0
<b>Appendix A</b>		II-A-1

## List of Exhibits

<b>Exhibit</b>	<b>Number</b>
<b>Key Sheet</b>	
Roadway Plans	II-3-A
Signing and Pavement Marking Plans	II-3-B
Signalization Plans	II-3-C
Lighting Plans	II-3-D
Landscape Plans	II-3-E
Examples of Key Sheet Titles	II-3-F
<b>Summary of Pay Items</b>	
Computer Output	II-4-A
Plan Sheet	II-4-B
<b>Drainage Map</b>	
Drainage Map (Urban)	II-5-A
Supplementary Drainage Map	II-5-B
<b>Typical Sections</b>	
Rural	II-6-A
Urban with Refuge Lanes	II-6-B
Without Refuge Lanes	II-6-C
Urban Minimum Requirements	II-6-D
Interstate	II-6-E
Interstate Ramps	II-6-F
Widening and Resurfacing	II-6-G
Milling and Resurfacing	II-6-H
<b>Summary of Quantities</b>	
Box Culvert Computer Output	II-7-A
Box Culvert Plan Sheet	II-7-B
Summary of Quantities	II-7-C

<b>Summary of Drainage Structures</b>	
Summary of Drainage Structures	II-8-A
Optional Pipe Materials Tabulation	II-8-B
Optional Pipe Materials Tabulation (Suppl.)	II-8-C
<b>Project Layout</b>	
Project Layout Sheet	II-9-A
<b>Roadway Plan Profile</b>	
Plan - Profile Urban	II-10-A
Plan - Profile Rural	II-10-B
Begin and End Stations	II-10-C
<b>Special Profiles</b>	
Intersection Profiles	II-11-A
Interchange and Ramp Profiles	II-11-B
<b>Back-of-Sidewalk Profile</b>	
Back-of-Sidewalk Profile	II-12-A
<b>Intersection and Interchange Details/Layout</b>	
Intersection Detail	II-13-A
Intersection Detail Plan	II-13-B
Intersection Detail - Profile	II-13-C
Interchange Layout	II-13-D
Interchange Detail	II-13-E
Cross Section Pattern	II-13-F
<b>Drainage Structures</b>	
Drainage Structures (Urban)	II-14-A
Drainage Structures (Urban)	II-14-B
Drainage Structures (Rural)	II-14-C
Drainage Structures	II-14-D
Drainage Structures	II-14-E
Drainage Structures	II-14-F
Typical Drainage Structure	II-14-G



<b>Lateral Ditch</b>	
Lateral Ditch Plan - Profile and Detention Pond Details	II-15-A
Lateral Ditch Cross Section	II-15-B
<b>Soil Survey</b>	
Roadway Soil Analysis	II-17-A
Borrow Pit Soil Survey	II-17-B
<b>Roadway Cross Sections</b>	
Rural Undivided	II-18-A
Urban	II-18-B
Rural Divided	II-18-C
<b>Traffic Control Plans</b>	
Traffic Control Plan	II-19-A
Traffic Control Plan - Phasing	II-19-B
<b>Utility Adjustment</b>	
Utility Adjustment	II-20-A
<b>Selective Clearing and Grubbing</b>	
Key Sheet	II-21-A
<b>Signing and Marking</b>	
Tabulation of Quantities	II-23-A
Tabulation of Quantities Con't.	II-23-B
Typical Marking Plan	II-23-C
Plan Sheet	II-23-D
Sign Detail	II-23-E
Guide Sign Worksheet	II-23-F

**Signalization Plans**

Tabulation of Quantities	II-24-A
Signalization Plan	II-24-B
Interconnect/Communication Cable Plan	II-24-C

**Highway Lighting**

Tabulation of Quantities	II-25-A
Pole Data and Legend Sheet	II-25-B
Lighting Plan Sheet	II-25-C
Lighting Plan Sheet Plan Sheet	II-25-D II-25-E
High Mast Pole Foundations	II-25-F
Boring Locations	II-25-G
Boring Data	II-25-H

Tabulation of Quantities	II-26-A
Standard Details	II-26-B
Landscape Plans	II-26-C
Landscape Plans	II-26-D



**VOLUME II**  
**PLANS PREPARATION AND ASSEMBLY**  
**INTRODUCTION**

The Plans Preparation and Assembly Manual is part of a two volume set of criteria guidelines, standards and techniques used to develop roadway plans for the Florida Department of Transportation.

This volume has been prepared to aid in the development of a set of roadway plans. The first two chapters of this volume are introductory in nature. Following these, there is a chapter for each plan sheet, describing the purpose of the sheet and providing specific instructions on its preparation. Exhibits of sample sheets follow each chapter. A complete glossary can be found at the back of this volume. This volume is specifically written for Computer Aided Drafting and Design (CADD) procedures. If plans are prepared by manual methods, the same information is to be shown using good drafting standards and practices. Reproduction Quality of all plans must be considered during their preparation. The drafting quality and lettering size must be adequate to be read when reduced in size by 50%

In addition to this volume, the DOT's CADD Roadway Standards and Guidelines provides information specifically applicable to CADD. The DOT CADD manual, in conjunction with this volume, provides requirements, techniques, standards and guidelines necessary to prepare and assemble a set of roadway plans. The technician should also have the Roadway and Traffic Design Standards available during the preparation of roadway plans.

Volume I of this manual, "Design Criteria and Process," provides directions on the criteria to be applied to roadway design and the process to be followed in developing a highway project from beginning to completion of design. Volumes I and II, collectively, make up the Roadway Plans Preparation Manual.

## CHAPTER 1

### PRODUCTION OF PLANS

#### 1.1 General

The readability and quality of plans is highly dependent upon the choice of appropriate drafting materials, the utilization of correct drafting techniques and the reproduction processes that are employed. Therefore, these techniques and material choices are of paramount importance for they dictate the degree of success achieved.

It is the responsibility of the technician and drafter to ensure the accuracy, timeliness, legibility and neatness of the plans.

#### 1.2 Legibility Guidelines

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

- (1) Horizontal Line: Read left to right
- (2) Vertical Line: Read bottom to top
- (3) Diagonals: Read left to right

Abbreviations may be used where they save time and space. Abbreviations must be clear and easily understood. A list of standard abbreviations is given in the booklet of Roadway and Traffic Design Standards - Index 001.

Any object which is drafted repeatedly should be symbolized. Symbols are necessary to reduce drafting time, increase legibility, and conserve space.

Standard symbols for Roadway Design are shown in the booklet of Roadway and Traffic Design Standards - Index 002 and in the Roadway CADD Manual.

Bearings should be referenced to the nearest second, station pluses to the nearest 1/100 (two decimal points), coordinates to the nearest 1/1000 (three decimal points, surface elevations on paved surfaces to the nearest 1/100 (two decimal points) and ground elevations to the nearest 1/10 (one decimal point).

When aerial photo sheets are used in plans, they must be original sheets. No 2<sup>nd</sup> generation copies of photo sheets are to be used. Aerial photo images should not be dark as to obscure the drafting. In areas where the photo image may block the drafted image, the photo image must be removed from the back of the sheet.

Black ink must be used on aerial photo sheets, both in the plan and profile portion. No lead or grease pencils are to be used. No colored ink is to be used.

Reverse sepias are not to be used as final plan sheets.

### 1.3 Material

Polyester film (mylar) shall be a highly translucent, 3 mil. minimum thickness, with black imagery. Translucent paper (Vellums) shall be 16 or 17 lb. (medium weight) or .0027" thickness, 100% white rag, fine or medium toothed with 50% transparency.

CADD prepared mylar shall be tested for ink durability, if laser or electrostatic plotters are utilized.

### 1.4 Base Sheet Format

All final plan sheets shall be 24 inches by 35 or 36 inches. The border shall be 1 1/2 inch from the top and bottom edge, 1/2 inch from the right edge, and 2 1/2 or 3 1/2 inches from the left edge. Two 1/4" holes on 12" centers shall be punched 6" from the top and bottom and 1/2" (to center of hole) from the left edge. The viewing area for all sheet formats shall be 21" X 32".

#### 1.4.1 Title Block

All sheet formats, except the key sheet, shall have a standard title block at the bottom of the sheet. The title block shall provide for the listing of sheet revisions; date and initials of the designer, the checker, the drafter (CADD operator) and the supervising engineer; name and logo of the design consultant (if applicable), FDOT title, approval signature and date and the sheet title. Initials shall be mechanically produced by CADD. Signing and sealing requirements are discussed in greater detail in Volume I of this manual.

A block shall be provided in the upper right corner to show the project and sheet numbers. For a complete illustration of the sheet format with a title block, see the Exhibits at the end of the chapters.



## 1.5 Plan Sheet Formats

The following is a description of the various plan sheet formats and their use. The CADD Manual contains descriptions of the CADD cells that contain these formats, and their use.

### Key Sheet:

Material - Mylar

Format - See Chapter 3

Use - Key Sheet

### Plan and Profile

Material - Mylar or vellum

Format - The top half for the plan, the bottom half profile grid format (See Chapter 10)

Use - Plan and Profile, Drainage Map, Utilities, Selective Clearing and Grubbing, Traffic Control Sheets, Lateral Ditch or Outfall Ditch Sheet

### Profile (Also used as a Cross Section Sheet):

Material - Mylar or vellum

Format - Cross Section grid format (See Chapter 18)

Use - Roadway Cross Sections, Special Profiles, Superelevation Diagrams (if needed), and Drainage Structure Sheet

Plan:

Material - Mylar or vellum

Format - Border with the project number and sheet number box in the upper right hand corner of the sheet and the signature/revision/title block along the bottom. For base sheet format, see Chapter 9. Use - Typical Sections, Summary of Quantities, Summary of Drainage Structures, Special Details, Design Data, Roadway Soil Survey Sheets, Curve and Coordinate Data Sheet, Interchange Drainage Map, Project Layout, Traffic Control Sheets, Roadway Lighting Sheet, Signing and Pavement Marking and Signalization Sheet.

Bridge Hydraulic Recommendation Sheet:

Material - Mylar

Format - Plan format with 'boxes' (see chapter 5)

Use - Bridge Hydraulic Recommendation Sheet

For safe storage purposes, the first and last sheets in a plans set of reproducibles shall be mylar sheets.

1.6 Material Purchasing

1.6.1 Partial List of Vendors and Products

Statewide Vendor	Roll Mylar	Roll Vellum	Bond Paper
Anderson			
Reprographics	-	-	-
Bruning	X	X	X
Dietzgen	X	X	X
K & E	X	X	X
Teledyne Post	X	X	X
United Paper Co.	X	X	X
Triangle			
Reprographics	X	X	X

1.6.2 Partial List of Vendors

Anderson Reprographics  
250 Park Street  
Jacksonville, FL 32204  
1-800-356-4271

AM International  
Bruning Division  
7151 Lake Eleanor Drive  
Orlando, FL 32809  
(407) 855-7121

Dietzgen Corporation  
4268 L.B. McLeod Road  
Orlando, FL 32811  
1-800-228-5244

Dietzgen Corporation (for Panhandle area west of Tallahassee)  
4920 Lewis Road  
Stone Mountain, GA 30083  
1-800-241-6663

K & E Company  
1604 Sligh Blvd.  
Orlando, FL 32806  
1-800-552-6733  
1-800-552-6734 (FAX)

Teledyne Post  
4210 L.B. McLeod Road  
Suite 109  
Orlando, FL 32811  
(407) 841-1034

Triangle Reprographics  
417 West Gore Street  
Orlando, FL 32806  
1-800-432-6866

United Paper Company  
1090 King Georges Post Road  
Suite 507  
Edison, NJ 08837  
1-800-526-2364  
1-201-417-0897 (FAX)

## CHAPTER 2

### SEQUENCE OF PLANS PREPARATION

#### 2.1 General

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

The set of plans depicting in detail the desired construction work is known as the "Contract Plans Set". This set consists of all sheets pertaining to roadway design, together with "Component Plan Sets." The component plan sets are comprised of:

- Signing and pavement marking plans
- Signalization plans
- Highway lighting plans
- Landscape plans
- Utility contract plans
- Architectural plans
- Structural plans

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

## 2.2 Data Collection and Presentation

Data required for a roadway design project may be obtained from field survey, aerial survey, preliminary engineering reports, plats and utility as-builts. These data are then compiled, reduced and used for roadway design, which in turn, is produced in the form of plan sheets for actual construction.

Initial data required for the production of plans are:

- Existing Topography
- Existing Utilities
- Existing Drainage Structures
- Existing Ground Elevations and Profiles
- Existing R/W
- Preliminary Soils and Foundation Data
- Preliminary Horizontal Geometrics
- Preliminary Vertical Geometrics
- Proposed Typical Sections

### 2.2.1 Existing Topography and Field Data

Existing topography shows the existing characteristics of the project site. This also includes the existing utilities and drainage structures within the limits of the project.

All data pertaining to topography, horizontal location of existing utilities and drainage structures shall be shown on the plan portion of the plan - profile sheets.

Existing ground line along the baseline of survey, vertical location of major existing utilities (refer Chapter 5 Vol. I) and utility structures shall be shown on the profile portion of the plan - profile sheets.

### 2.2.2 Proposed Typical Section Package

Typical sections show the design elements of a roadway in the form of cross sections. Pavement design data should be shown, if available. For some projects typical sections are approved prior to the start of design, for others, typical sections are developed by the design engineer and submitted for approval.

### 2.2.3 Preliminary Geometrics

The design engineer sets the preliminary horizontal and vertical geometrics for a project and provides the production personnel with information to be produced on plans.

Horizontal geometrics consist of the roadway construction centerline and its bearings, curve data, angles at street intersections, pavement widths, taper lengths, left turn lanes, etc., and is plotted on the plan portion of the plan - profile sheets.

Vertical geometrics show the vertical curves and grades of the roadway along the profile grade line. The existing groundline along the baseline of survey and the proposed profile grade line shall be plotted on the profile portion of the plan - profile sheets.



#### 2.2.4 Cross Sections

Information required for drafting existing cross sections is obtained from survey data. Proposed cross sections are compiled from typical sections and proposed vertical geometry. These templates are then superimposed at specified intervals on the existing cross sections to depict "cut" or "fill" along the project. Locations of existing utilities within construction limits shall also be shown in the cross sections.

### 2.3 Phase Submittals

The remainder of this chapter outlines, in detail, the sequence of contract plans preparation and assembly, the review process and the information required to be presented on the various plan sheets at the various phases of submission on a project.

The submittal phases are as follows:

#### SUBMITTAL PHASES

Phase I 30-35% complete

Phase II 60-65% complete

Phase III 90-95% complete

Phase IV 100% complete

Phase review for minor projects (less than \$2 million) shall be held at the 60 and 100% stages at a minimum.

Figure 2.1 summarizes the requirements for each submittal.

Phase submittal stages and number may vary for some projects.

Prior to submitting the plans for a formal DOT Phase review, the design organization shall conduct a "Quality Control" (Q.C.) review to ensure technically correct and complete plans. Any revisions or corrections noted during the Q.C. review shall be incorporate into thew plans before submittal for the formal Phase review.

For consultant prepared plans prior to a formal phase submittal to DOT, the consultants shall conduct a peer review and a Q.C. review to ensure technically correct and complete plans. The Q.C. review should be fully documented and submitted with the plans. This document will be a part of the project documents. Any comments or corrections noted during the reviews shall be incorporated into the plans before submittal to DOT.

FIGURE 2.1

SUMMARY OF PHASE SUBMITTALS

PLANSHEETS	PHASE I 30-35%	PHASE II 60-65%	PHASE III 90-95%	PHASE IV 100%
Key Sheet	P	P	C	F
Summary of Pay Items		P	C	F
Drainage Map	P	P	C	F
Interchange Drainage Map	P	P	C	F
Typical Section	P	C	C	F
Summary of Quantities and Box Culvert Data			C	F
Summary Drainage Structures		P	C	F
Project Layout	P	C	C	F
Roadway Plan-Profile	P	P	C	F
Special Profile	P	P	C	F
Back-of-Sidewalk Profile	P	C	C	F
Interchange Layout	P	P	C	F
Ramp Terminal Details		P	C	F
Intersection Layout/ Detail	P	P	C	F
Drainage Structures		P	C	F
Lateral Ditch Plan-Profile		P	C	F
Lateral Ditch Cross Section		P	C	F
Cross Section Pattern Sheet		P	C	F
Borrow Pit Soil Survey		P	C	F
Roadway Soil Survey		P	C	F
Cross Sections	P	P	C	F
Traffic Control Plans	P	P	C	F
Utility Contract Plan-Profile		P	C	F
Utility Adjustment		P	C	F
Selective Clearing and Grubbing		P	C	F
Approach Slabs		P	C	F
Signing and Marking Plans		P	C	F
Signalization Plans		P	C	F
Roadway Lighting Plans		P	C	F
Landscape Plans	P	P	C	F

Status Key:

P - Preliminary

C - Complete but subject to change

F - Final

#### 2.4 Requirements for Phase I - 30-35% Complete Plans Submittal

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. A computer generated checklist is followed for this procedure, which will be completed and submitted with the plans. The plans will be checked for completeness and conformance to DOT Standards and criteria. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans shall be returned to the design team for incorporation into the plans. Once this is accomplished, the plans are ready to proceed to the next phase of completion.

A conceptual plan which outlines the proposed drainage design to be developed, should accompany the phase I plan submittal.

## 2.5 Phase I-30-35% Submittal

The following elements are required for a Phase I - 30-35% complete set of plans.

### 2.5.1 KEY SHEET: (Chapter 3)

Location Map

Begin and end project station with milepost

Begin and end bridge and bridge culvert stations

All applicable project numbers

Length of project box

North arrow and scale

Consultant's name (for consultant prepared projects)

Approval signature lines

Location of project on map

Railroad crossing (if applicable)

Revision box

Standards date

## 2.5.2 DRAINAGE MAP: (Chapter 5)

### PLAN VIEW

North arrow and scale

Drainage divides and ground elevations

Drainage areas and flow direction arrows

Begin and end stations of project, bridge and  
exceptions

Equations

High water information as required

Existing structures and pipes with relevant information

Preliminary horizontal alignment

Section, township, range lines

Street names

State, Federal, county highway numbers (as appropriate)

### PROFILE VIEW

Horizontal scale

Vertical scale

Begin and end stations of project, bridges and  
exceptions

Equations

Preliminary profile grade and existing ground line

2.5.3 INTERCHANGE DRAINAGE MAP: (Chapter 5)

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

2.5.4 TYPICAL SECTIONS: (Chapter 6)

Mainline and crossroad typicals  
Special details (bifurcated sections, high fills, etc.)  
Standard Notes  
Traffic data

2.5.5 PROJECT LAYOUT: (Chapter 9)

Plan-profile sheet sequence (mainline and crossroads)  
Reference points

2.5.6 PLAN AND PROFILE: (Chapter 10)

PLAN VIEW

North arrow and scale

Baseline of survey

Centerline of construction (if different from the  
baseline of survey)

Curve data (including superelevation)

Begin and end stations for the project, bridges, bridge  
culverts and exceptions

Equations

Existing topography including utilities

Preliminary horizontal geometrics

Proposed R/W lines (if available)

Reference points (if project layout sheet not included  
in plans set)

PROFILE VIEW

Scale

Appropriate existing utilities

Bench mark information

Existing ground line with elevations at each end of  
sheet

Preliminary profile grade line

Equations

Begin and End Stations for the Project, bridges, bridge  
culverts and exceptions.

2.5.7 SPECIAL PROFILE: (Chapter 11)

Scale

Ramp profile worksheet including nose sections

Existing ground line of cross-street

Proposed grade line of cross-street



2.5.8 BACK-OF-SIDEWALK PROFILE (Worksheet): (Chapter 12)

Scale

Begin and end project stations

Begin and end sidewalk stations

Cross-street locations and elevations

Drainage flow direction arrows

Mainline equations

Final back-of-sidewalk profile grades and vertical  
curve information

Building floor elevations with offset distance left and  
right

Existing driveway locations and details

Superelevation details

Gradeline notation: Specifically the numeric  
difference relative to roadway profile gradeline

2.5.9 INTERCHANGE DETAIL: (Chapter 13)

North arrow and scale

Preliminary configuration and geometrics

Proposed bridge limits

R/W lines

Schematic of traffic flow and volumes

2.5.10 INTERSECTION LAYOUT: (Chapter 13)

North arrow and scale

Existing topography (if applicable)

Proposed R/W limits

Length of turn lanes

Taper lengths

Geometric dimensions (radii, offsets, widths)

Existing Utilities

2.5.11 CROSS SECTIONS: (Chapter 18)

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

2.5.12 TRAFFIC CONTROL SHEETS: (Chapter 19)

Project specific

## 2.6 Requirements for Phase II-60-65% Complete Plans Submittal

A DOT plans checking team will perform a formal checking of the design plans submitted for the formal phase review. A computer generated checklist is followed for this procedure, which will be completed and submitted with the plans. The plans will be checked for completeness and conformance to DOT Standards and criteria. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans shall be returned to the design team for incorporation into the plans. Once this is accomplished, the plans are ready to proceed to the next phase of completion.

## 2.7 PHASE II-60-65% Submittal

The following elements are required for a Phase II - 60-65% complete set of plans.

### 2.7.1 KEY SHEET: (Chapter 3)

Index of sheets

Contract plans and component plans list

List of standard indexes

Date of governing specifications

### 2.7.2 SUMMARY OF PAY ITEMS: (Chapter 4)

Item numbers with descriptions

2.7.3 DRAINAGE MAP: (Chapter 5)

PLAN VIEW

Proposed structures with structure numbers  
Proposed storm sewer pipes  
Flood data (if applicable - may be shown in either plan  
or profile)  
Flow arrows along proposed ditches  
Retention/Detention ponds and area size  
Cross drains with pipe sizes and structure numbers  
Bridges/bridge culverts with begin and end stations  
Standard alternate materials note (may be shown in  
profile portion)

PROFILE VIEW

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

2.7.4 INTERCHANGE DRAINAGE MAP: (Chapter 5)

Final geometrics including P.C. and P.T  
Proposed structures with structure numbers  
Proposed storm sewer pipes  
Special ditches with DPI and elevation

2.7.5 TYPICAL SECTIONS: (Chapter 6)

Pavement Design

2.7.6 PROJECT LAYOUT: (Chapter 9)

Complete

2.7.7 PLAN AND PROFILE: (Chapter 10)

PLAN VIEW

Final geometrics and dimensions including radii,

station pluses, widths, taper/transition lengths

Curb return numbers, station ties and elevations

Proposed drainage structures with structure numbers

Proposed storm sewer pipes including size

Proposed side drain pipe requirements (including size)  
for access and crossroads

Proposed R/W lines

General notes (if project layout sheet not included)  
may be shown in profile portion

PROFILE VIEW

Final profile grades and vertical curve data

Mainline drainage structures with structure numbers

Mainline storm sewer pipes

Proposed special ditches

Cross drains with structure number, size and flow line  
elevations

Ditch gradients with DPI station and elevation

Non-standard superelevation transition details

High water elevations

2.7.8 SPECIAL PROFILE: (Chapter 11)

Final ramp profile grades including nose sections  
Final intersection profile grades  
Curb return profiles (if applicable)  
Preliminary access and frontage road profiles  
(Note: Projects may contain one or more types of  
special profiles.)  
Non-Standard Superelevation Diagram

2.7.9 BACK-OF-SIDEWALK PROFILE: (Chapter 12)

Complete

2.7.10 INTERCHANGE LAYOUT: (Chapter 13)

Curve data including superelevation and design speed  
Coordinate data  
Fence location  
Access and/or frontage roads with dimensions and R/W

2.7.11 RAMP TERMINAL DETAILS: (Chapter 13)

Preliminary geometrics  
Radii, transition/taper lengths

2.7.12 INTERSECTION LAYOUT: (Chapter 13)

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

2.7.13 DRAINAGE STRUCTURES: (Chapter 14)

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



2.7.14 OUTFALL/LATERAL DITCH SYSTEM: (Chapter 15)

PLAN VIEW

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

PROFILE VIEW

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

2.7.15 LATERAL DITCH CROSS SECTIONS: (Chapter 15)

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

2.7.16 CROSS SECTION PATTERN SHEET: (Chapter 13)

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

2.7.17 BORROW PIT SOIL SURVEY: (Chapter 17)

Soil data  
Project specific

2.7.18 ROADWAY SOIL SURVEY: (Chapter 17)

Soil data  
Project specific

2.7.19 CROSS SECTIONS: (Chapter 18)

Proposed template with profile grade elevation

R/W

Begin and end stationing for project, construction and earthwork, bridge and bridge culvert

Special ditch bottom elevations

Equivalent stations for ramps and mainline

Mainline equation stations

Soil borings

Water table

Extent of unsuitable material

2.7.20 TRAFFIC CONTROL SHEETS: (Chapter 19)

Preliminary traffic control plan

Detour plan

Phasing plan

R/W - existing and additional if required

Existing Utilities

2.7.21 UTILITY ADJUSTMENT: (Chapter 20)

All existing utilities highlighted

2.7.22 UTILITY CONTRACT PLANS: (Chapter 27)

Key Sheet

Mainline plan-profile

Proposed utility horizontal and vertical locations

2.7.23 SIGNING AND PAVEMENT MARKING PLANS: (Chapter 23)

KEY SHEET

W.P.I. Number  
State Project Number  
Federal Aid Project Number  
State Road Number  
County Name  
FDOT Project Managers Name  
Begin/End Stations  
Begin/End Exceptions  
Station Equations  
Roadway Traffic Design Standards Date & Index Nos.  
Engineer of Record

PLAN SHEET

North Arrow  
Scale  
Basic Roadway Geometrics  
Begin/End Stations  
Begin/End Exceptions  
Conflicting utilities, lighting or drainage  
Pavement Markings  
Sign Locations  
Applicable Pay Items

KEY SHEET

W.P.I. Number  
State Project Number  
Federal Aid Project Number  
State Road No.  
County Name  
FDOT Project Managers Name  
Begin/End Stations  
Begin/End Exceptions  
Station Equations  
Roadway Traffic Design Standards Date & Index Nos.  
Engineer of Record

PLAN SHEET

North Arrow  
Scale  
Basic Roadway Geometrics  
Begin/End Stations  
Begin/End Equations  
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

2.7.25 HIGHWAY LIGHTING PLANS: (Chapter 25)

KEY SHEET

W.P.I. Number  
State Project Number  
Federal Aid Project Number  
State Road Number  
County Name  
FDOT Project Managers Name  
Begin/End Stations and Exceptions  
Station Equations  
Roadway Traffic Design Standards Date & Index Nos.  
Engineer of Record

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
- \* Sheet Title

PLAN SHEETS

North Arrow and Scale  
Basic Roadway Geometrics  
Begin/End Stations and Exceptions  
Station Equations  
Conflicting utilities, lighting or drainage  
Sheet Title  
Applicable Pay Items  
Pole Symbols shown at correct station location and approximate offset

2.7.26 LANDSCAPE PLANS: (Chapter 26)

Key sheet

Standard detail sheet

Applicable standard details

Plan sheets

Roadway and sidewalk plan

Plant placement by symbol

Legend for plant symbols

IRRIGATION PLAN (if applicable)

Type of system

Location of pipes

Size of pipes

Type and location of heads

SPECIFICATIONS PLAN SHEET

Project specific

2.7.27 SELECTIVE CLEARING AND GRUBBING: (Chapter 21)

Limits by station and dimension of selective clearing  
and grubbing

2.7.28 APPROACH SLABS: (Chapter 22)

Project specific

## 2.8 Requirements For Phase III - 90 - 95% Complete Plans Submittal

The only other remaining work to be done will be to comply with comments received as a result of the review. The Work Zone Traffic Control items paid for on a 'per day' basis shall be estimated by the design organization and included in the Phase III - 90-95% complete submittal. The DOT construction department will establish construction duration as a part of the phase III review. This information shall be included in the phase III review comments transmitted back to the design organization. The estimated pay items for Work Zone Traffic Control shall be revised as necessary based on the established construction duration.

All plan sheets are complete. Final drainage tabulations shall also be furnished for review.

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. A computer generated checklist is followed for this procedure, which will be completed and submitted with the plans. The plans will be checked for completeness and conformance to DOT Standards and criteria. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans shall be returned to the design team for incorporation into the plans. Once this is accomplished, the plans are ready to proceed to the next phase of completion.



## 2.9 Requirements For Phase IV - 100 % Complete Plans Submittal

After all corrections noted in the 90% submittal are complete and the cost estimate is complete, the plans are considered 100% complete. Volume I of this manual contains instructions for the final plans submittal.

## CHAPTER 3

### KEY SHEET

#### 3.1 General

This is the first sheet in the plans set. It contains general information concerning the project and the plans themselves. Section 4 of the DOT CADD manual - Plans Procedures - contains the formatted sheet with information common to all projects. Levels and fonts for additional data can also be found in the CADD manual.

For complete illustrations of key sheets, see Exhibits II-3-A thru F.

### 3.2 Project Data

All general project data are shown on the key sheet in the following manner:

#### 3.2.1 Project Number, County Name and Road Number

These are in the form of a title in large heavy letters. They are positioned above the location map. (see Exhibit II-3-A).

Where Federal project numbers are involved, the corresponding State project number is placed to the right of the Federal project number, within brackets.

Projects that are independently prepared but are to be let in the same construction contract shall have the additional project numbers (Federal and State) noted on the key sheet.

#### 3.2.2. Work Program Item Number and Fiscal Year

The work program item number shall be placed adjacent to the sheet number box in the top right corner. The construction fiscal year that is to be entered in the fiscal year box is the first year in the fiscal year, i.e., enter 89 for fiscal year beginning July 1989 and ending June 1990.

### 3.2.3 Length of Project Box

Lengths of roadway, bridges, bridge culverts, exceptions, and net and gross lengths of the project shall be shown in a box in the center of the sheet below the location map. The net length of the project is computed by taking the total length of roadway and bridges in feet and converting it to miles, dropping all decimals past a thousandth of a mile, without rounding off. The roadway and bridge mileage shall then be rounded so that their total equals the net length. The survey line should be used to compute the length of the project unless: the construction line is substantially different in length (100' or more), or the survey line is outside the right-of-way, or the survey line bridge length is different from the construction line bridge length. The use of the survey line will generally result in less equations on the key map. If divided highways have significantly different lengths for the left and right roadways, the project length shall be based on the longest roadway. A note stating which roadway was used shall be placed adjacent to the project length box.

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

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

### 3.3. Project Location Map

This map is placed in the center of the sheet and consists of a reproduced portion of one or more maps showing the project location. The map may be a county or other appropriate map. "Clippings" of digitized county maps are available upon request, from the District CADD manager by supplying him with the lower left and upper right-corner coordinates of the required area. The coordinates shall be on the State Plane coordinate system. For consultant prepared plans, the Consultant Project Manager shall request the District Project Manager, who in turn shall request the District CADD manager for the map "clipping". The map clippings shall be made available to the consultant on a tape or diskette for a fee.

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

Streets shall be designated by name and State road number or U.S. Highway number, if appropriate. The name of the next incorporated city to which these roads lead shall be placed at the edge of the map. Roads and topography shall be indicated by standard symbols as shown in the Roadway and Traffic Design Standards booklet - Index No. 002.

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

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

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

A location map is not required on component key sheets.

### 3.4 North Arrow and Scale

The north arrow shall be placed on either side of the location map, preferably to the right. The map scale shall be shown directly below the north arrow. The scale shall be indicated by using a bar scale 1" long with "ticks" at each end. The scale distance shall be shown between the ticks. The map shall be oriented so that the arrow will be either toward the top of the sheet or to the right.

### 3.5 Plans in Contract Plans Set

A listing of plans included in the contract plans set shall be shown in the upper left corner. The order of listing shall be: roadway, signing and pavement marking, signalization, lighting, landscaping, architectural, and structure. If the summary of pay items, box culvert data, and flood data sheets are included as computer outputs rather than the plan sheets, they should be listed after the roadway component.

If sheets covering items such as signing and pavement markings, signalization, lighting and landscaping are numbered consecutively with roadway plans, they are not required to be shown as separate contract plans set componentss.

### 3.6 Index of Sheets and Standard Index Reference

A complete index of roadway plan sheets shall be placed on the left side of the key sheet under the heading. When projects contain plan components, each plan set shall have an index of sheets on their respective key sheets. Standard drawings necessary for the project shall be listed by index numbers under "Roadway and Traffic Design Standards" (with booklet date shown). Listing the indexes by number is all that is required. However, listing the standard indexes on the key sheet only does not convey adequately where or when the index is to be used, hence relevant indexes shall also be listed on plan sheets.

Roadway plan sheets shall be assembled as follows:

Sequence of Plans Assembly:

Key Sheet

- \* Summary of Pay Items
- \* Box Culvert Data Sheet
- Drainage Map (optional)
- Interchange Drainage Map
- Typical Section
- Summary of Quantities
- Summary of Drainage Structures
- Project Layout (optional)
- Roadway Plan-Profiles
- Special Profiles
- Back-of-Sidewalk Profiles (optional)
- Interchange Layout
- Ramp Terminal Details
- Intersection Layout/Detail
- Drainage Structures (optional)
- Outfall/Lateral Ditch Plan-Profiles
- Outfall/Lateral Ditch Cross Sections
- Special Details
- Cross Section Pattern Sheet
- Borrow Pit Soil Survey
- Roadway Soil Survey
- Cross Sections
- Traffic Control Sheets
- Utility Contract Plan-Profiles
- Utility Adjustments
- Selective Clearing and Grubbing

\* Represents computer output transferred to a graphics design file and placed on a normally formatted plan sheet.



Signing and Marking Plans (when included as part of roadway plans)

Signalization Plans (when included as part of roadway plans)

Roadway Lighting Plans (when included as part of roadway plans)

Landscape Plans (when included as part of Roadway plans)

Approach Slabs

NOTE: Contract/Construction Plans set may or may not contain all of the above listed sheets.

### 3.7 Approval Signatures and Consultant's Name

#### 3.7.1 Approval Signature

For in-house and consultant prepared plans, the responsible Professional Engineer's approval signature shall be included on the right side of the sheet... For specific instructions on signing and sealing plans, see Volume I, Chapter 19.

#### 3.7.2. Consultant's Name

For plans prepared by a consulting firm, the name and address of the firm shall be shown on the right side of the sheet with the responsible registered, Professional Engineer's name below it.

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

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

### 3.8 Governing Specifications

The date of the governing specifications shall be inserted in a note at the lower right corner of the key sheet. The supplement note available in the CADD cell library shall be added.

### 3.9 State Map

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

### 3.10 Railroad Crossing

When the project involves a railroad crossing which falls within the limits of an exception, a sketch shall be shown on the key sheet showing the station of crossing, railroad company name and DOT/AAR National Inventory Crossing Number. A location sketch on the key sheet is not required on any project containing plan - profile sheets that cover crossing locations. A sketch should be included on the key sheet for resurfacing projects.

### 3.11 Revision Dates

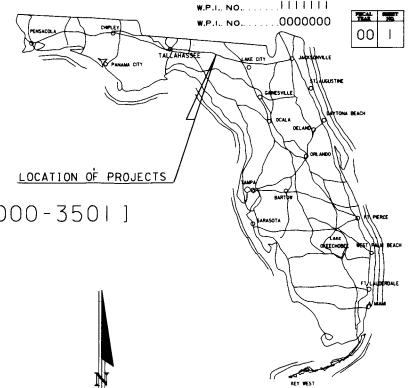
The lead key sheet (usually roadway) shall show a complete record of all plans revisions. This record shall list the component (such as roadway structures, signing and pavement marking), the sheet numbers involved and the revision date. This record shall be shown directly below the list of standard drawings.

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

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED  
STATE HIGHWAY

F. A. PROJ. NO. F-123-4(5) [STATE PROJ. NO. 00000-3501]  
AND STATE PROJ. NO. 00001-3502  
BROWN COUNTY  
STATE ROAD NOS. 201 & 102



THIS CONTRACT PLAN SET INCLUDES

- ROADWAY PLANS
- SIGNING AND PAVEMENT MARKING PLANS
- STRUCTURE PLANS

A DETAILED INDEX APPEARS ON KEY SHEET OF EACH GROUP OF PLANS

INDEX OF ROADWAY PLANS

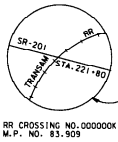
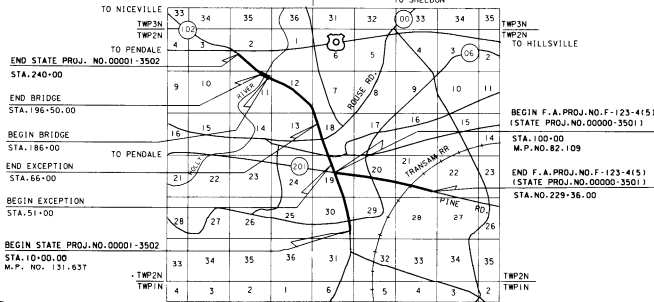
SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4-5	TYPICAL SECTIONS
6-7	SUMMARY OF QUANTITIES AND BOX CULVERT DATA SHEET
8	SUMMARY OF DRAINAGE STRUCTURES
9	PROJECT LAYOUT SHEET
10-14	PLAN AND PROFILE SHEETS
15	SPECIAL PROFILES
16	BACK OF SIDEWALK PROFILES
17-19	INTERSECTION LAYOUTS / DETAILS
20-24	DRAINAGE STRUCTURES
25	LATERAL DITCH PLAN-PROFILE
26	LATERAL DITCH CROSS SECTION
27	SPECIAL DETAILS
28-44	ROADWAY CROSS-SECTIONS
45-49	TRAFFIC CONTROL SHEETS
50-54	UTILITY ADJUSTMENTS
55	SELECTIVE CLEARING AND GRUBBING
56	APPROACH SLAB

ROADWAY AND TRAFFIC DESIGN STANDARDS  
(BOOKLET DATED JANUARY, 0000)

LISTING OF INDEX  
TITLES OPTIONAL

- 001
- 002
- 230
- 250
- 261
- 280
- 281
- 290
- 400
- 506
- 510
- 513
- 515
- 560

- REVISIONS
- Roadway sheets 1, 6, 7, 13 (Revised 11-9-88)
  - Signing and Pavement Marking Sheets S-2 & S-3 (Revised 11-13-88)
  - Signalization Sheets T-1 & T-2 (Revised 11-13-88)
  - Roadway Sheets 14 & 33 (Revised 12-3-88)



REQUIRED WHEN NOT SHOWN ON PLAN-PROFILE SHEET

	00000-3501		00001-3502		TOTAL
	LN. FT.	MILES	LN. FT.	MILES	
ROADWAY	12,436.00	2.450	20,450.00	4.473	33,386.00 6.323
BRIDGES	0.00	0.000	1,000.00	0.188	1,000.00 0.188
NET LENGTH OF PROJECT	12,436.00	2.450	21,450.00	4.661	34,586.00 6.511
EXCEPTIONS	0.00	0.000	1,500.00	0.284	1,500.00 0.284
GROSS LENGTH OF PROJECT	12,436.00	2.450	23,000.00	4.355	35,936.00 6.895

D O T PROJECT COORDINATOR/MANAGER, \_\_\_\_\_

REVISIONS	
DATE	DESCRIPTION
11-88	Project layout sheet added to index

NAME(S) & ADDRESS(ES) OF ENGINEER(S) OF RECORD IF APPLICABLE.

NAME AND ADDRESS OF CONSULTANT FIRM WHEN PLANS PREPARED BY CONSULTANT

NOTE: THESE PROJECTS TO BE LET TO CONTRACT WITH STATE PROJECT NOS. 00000-6501 AND 00001-6502 (UTILITY PLANS)

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA

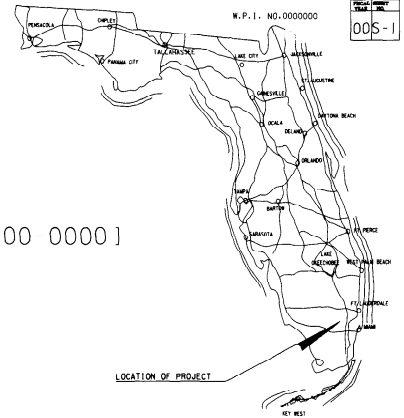
GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 0000, AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

ROADWAY PLANS  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

CONTRACT PLAN SET INFORMATION NOT REQUIRED WHEN INFORMATION SHOWN ON LEAD KEY SHEET OF PLAN SET.

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
PLANS OF PROPOSED  
STATE HIGHWAY



F. A. PROJECT NO. ACI-00-0(00) [STATE PROJECT NO. 00000 0000]  
DADE COUNTY  
STATE ROAD 00

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.	SHEET DESCRIPTION
S-1	KEY SHEET
S-2	TABULATION OF QUANTITIES
S-3	GENERAL NOTES SHEET
S-4-6	PLAN SHEETS
S-7	SIGN CROSS SECTIONS

SIGNING AND PAVEMENT MARKING PLANS

ROADWAY AND TRAFFIC DESIGN STANDARDS  
(BOOKLET DATED JANUARY, 2000.)

- 9535
- 10965
- 11024
- 11201
- 11226
- 11860
- 11864
- 11926
- 13417
- 17302
- 17320
- 17345
- 17346
- 17349
- 17352
- 17355
- 17505

LISTING OF TITLES OPTIONAL

LOCATION MAP NOT REQUIRED WHEN MAP SHOWN ON LEAD KEY SHEET OF PLAN SET

NAME(S) & ADDRESS(ES) OF ENGINEER(S) OF RECORD, IF APPLICABLE.

NAME & ADDRESS OF CONSULTANT FIRM WHEN PLANS PREPARED BY CONSULTANT.

THIS PROJECT TO BE LET TO CONTRACT WITH STATE PROJECT NO. 00000-0000.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS, STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS DATED 2000, AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

LENGTH OF PROJECT INFORMATION NOT REQUIRED FOR INTERSECTIONS, INTERCHANGES, AND SIMILAR SITES UN WHEN INFORMATION SHOWN ON LEAD KEY SHEET OF PLAN SET

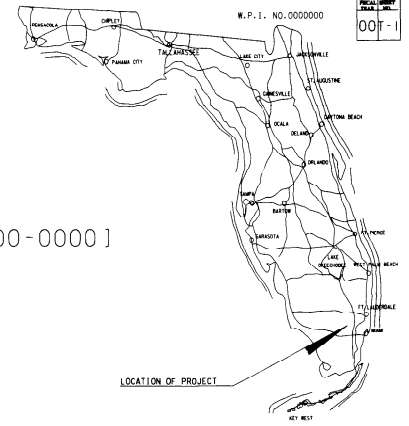
NAME OF DOT PROJECT COORDINATOR OR PROJECT MANAGER.

SIGNING AND PAVEMENT MARKING PLANS  
APPROVED BY \_\_\_\_\_  
DATE \_\_\_\_\_

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

CONTRACT PLAN SET INFORMATION NOT REQUIRED WHEN INFORMATION SHOWN ON LEAD KEY SHEET OF PLAN SET.

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
PLANS OF PROPOSED  
STATE HIGHWAY



F.A. PROJECT NO. ACI-00-0(00) [STATE PROJECT NO. 00000-0000]  
DADE COUNTY  
STATE ROAD 93  
SIGNALIZATION PLANS

INDEX OF SIGNALIZATION PLANS

SHEET NO.	SHEET DESCRIPTION
T-1	KEY SHEET
T-2	TABULATION OF QUANTITIES
T-3	GENERAL NOTES SHEET
T-4-6	PLAN SHEETS

ROADWAY AND TRAFFIC DESIGN STANDARDS  
(BOOKLET DATED JANUARY, 0000 )

- 17721
- 17727
- 17756
- 17756
- 17764
- 17781
- 17784
- 17841
- 17870
- 17881
- 17882
- 17890

LISTING OF TITLES OPTIONAL

LOCATION MAP NOT REQUIRED WHEN MAP SHOWN ON LEAD KEY SHEET OF PLAN SET

LENGTH OF PROJECT INFORMATION NOT REQUIRED FOR INTERSECTIONS, INTERCHANGES, AND SIMILAR SITES OR WHEN INFORMATION SHOWN ON LEAD KEY SHEET OF PLAN SET

NAME OF DOT PROJECT COORDINATOR OR PROJECT MANAGER.

NAME(S) & ADDRESS(ES) OF ENGINEER(S) OF RECORD, IF APPLICABLE

NAME & ADDRESS OF CONSULTANT FIRM WHEN PLANS PREPARED BY CONSULTANT

THIS PROJECT TO BE LET TO CONTRACT WITH STATE PROJECT NO. 00000-0000.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS, STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 0000, AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

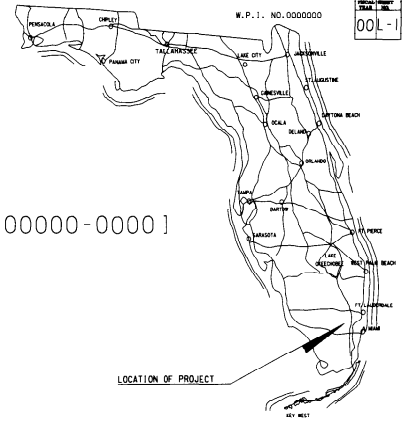
SIGNALIZATION PLANS APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

EX II-3-C

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

CONTRACT PLAN SET INFORMATION NOT REQUIRED WHEN INFORMATION SHOWN ON LEAD KEY SHEET OF PLAN SET.

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
PLANS OF PROPOSED  
STATE HIGHWAY



F.A. PROJECT NO. IR-000-0(000)0 [STATE PROJECT NO. 00000-0000]  
DADE COUNTY  
I-000 AT S.R. 00  
LIGHTING PLANS

INDEX OF LIGHTING PLANS

SHEET NO.	SHEET DESCRIPTION
L-1	KEY SHEET
L-2	TABULATION OF QUANTITIES
L-3	POLE DATA AND LEGEND SHEET
L-4	PLAN SHEET
L-5	HIGHMAST POLE FOUNDATIONS
L-6 & L-7	BORING DATA

ROADWAY AND TRAFFIC DESIGN STANDARDS  
BOOKLET DATED JANUARY, 2000

17501  
17502  
17503  
17504

LISTING OF TITLES OPTIONAL

LOCATION MAP NOT REQUIRED WHEN MAP SHOWN ON LEAD KEY SHEET OF PLAN SET

LENGTH OF PROJECT INFORMATION NOT REQUIRED WHEN SHOWN ON LEAD KEY SHEET OF PLAN SET.

NAME OF DOT PROJECT COORDINATOR OR PROJECT MANAGER.

NAME(S) & ADDRESS(ES) OF ENGINEER(S) OF RECORD, IF APPLICABLE.

NAME & ADDRESS OF CONSULTANT FIRM WHEN PLANS PREPARED BY CONSULTANT.

THIS PROJECT TO BE LET TO CONTRACT WITH STATE PROJECT NO. 00000-0000.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS, STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 2000, AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

LIGHTING PLANS  
APPROVED BY \_\_\_\_\_

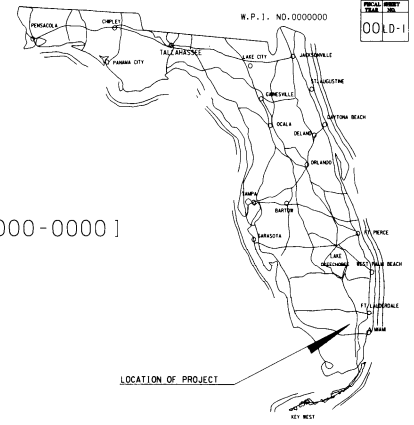


THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

CONTRACT PLAN SET INFORMATION NOT  
REQUIRED WHEN INFORMATION SHOWN ON  
LEAD KEY SHEET OF PLAN SET.

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION  
PLANS OF PROPOSED  
STATE HIGHWAY

F. A. PROJECT NO. IR-000-0(000) [STATE PROJECT NO. 00000-0000]  
DADE COUNTY  
I-000 AT S.R. 00  
LANDSCAPE PLANS



INDEX OF LANDSCAPE PLANS

SHEET NO.	SHEET DESCRIPTION
LD-1	KEY SHEET
LD-2	TABULATION OF QUANTITIES
LD 3	STANDARD DETAILS SHEET
LD 4-6	PLAN SHEETS

LOCATION MAP NOT REQUIRED WHEN MAP  
SHOWN ON LEAD KEY SHEET OF PLAN SET.

NAME & ADDRESS OF CONSULTANT FIRM  
WHEN PLANS PREPARED BY CONSULTANT.

LENGTH OF PROJECT INFORMATION NOT REQUIRED  
WHEN SHOWN ON LEAD KEY SHEET OF PLAN SET.

NAME OF DOT PROJECT COORDINATOR OR  
PROJECT MANAGER.

THIS PROJECT TO BE LET TO CONTRACT  
WITH STATE PROJECT NO. 00000-0000.

ATTENTION IS DIRECTED TO THE FACT THAT  
THESE PLANS MAY HAVE BEEN REDUCED IN  
SIZE BY REPRODUCTION. THIS MUST BE CON-  
SIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS, STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION, STANDARD  
SPECIFICATIONS, DATED 0000, AND SUPPLEMENTS  
THERE TO IF NOTED IN THE SPECIAL PROVISIONS  
FOR THIS PROJECT.

LANDSCAPE PLANS  
APPROVED BY \_\_\_\_\_  
DATE \_\_\_\_\_

EX 11-3-E

STATE PROJ. NO. 00000-0000  
EARLY COUNTY  
STATE ROAD NO. 000

STATE PROJECT  
ONLY

STATE PROJ. NOS. 00000-0000 AND 00000-0000  
UPSON AND HURST COUNTY  
STATE ROAD NO. 000

TWO STATE PROJECTS  
(TWO COUNTIES SHOWN)

F.A.PROJ. NO. M-000-0(00) [STATE PROJ. NO. 00000-0000]  
RUSH COUNTY  
STATE ROAD NO. 000

F.A. PROJECT AND  
STATE PROJECT

F.A. PROJ. NO. BR-000-0(00) [STATE PROJ. NOS. 00000-0000  
AND 00000-0000]  
PIKE COUNTY  
STATE ROAD NO. 000

F.A. PROJECT AND TWO STATE PROJECTS  
(ONE COUNTY SHOWN)

F.A.PROJ. F-0000-0(00) [STATE PROJ. NO. 00000-0000]  
AND STATE PROJ. NO. 00000 0000  
BARNES COUNTY  
STATE ROAD NOS. 000 & 000

F.A. PROJECT AND STATE PROJECT  
AND SEPARATE STATE PROJECT

F.A. PROJ. NO. U-000-0(00) [STATE PROJ. NO. 00000-0000 ]  
F.A. PROJ. NO. T-000-0(00) [STATE PROJ. NO. 00000-0000 ]  
HALL COUNTY  
STATE ROAD NO. 000

TWO F.A. PROJECTS AND  
TWO STATE PROJECTS

F.A. PROJ. NO. I-00-0(00)00 [STATE PROJ. NO. 00000-0000]  
BOONE COUNTY  
STATE ROAD NO. 000

F.A. PROJECT-INTERSTATE

EXAMPLES OF KEY SHEET TITLES

## CHAPTER 4

### SUMMARY OF PAY ITEMS

#### 4.1 General

The summary of pay items sheet is generated from information input by the designer into the CES system. This sheet may be the output generated by the CES system, and placed directly behind the lead key sheet. As an alternate, the CES file may be transferred to a graphics design file and placed on a normally formatted plan sheet. In all cases, the CES file must be established and kept current with the quantities listed in the plans.

#### 4.2 Summary of Pay Items Sheet

The summary of pay items shows all items and estimated quantities for the project, or projects, in a contract. This includes all summaries for the component parts, such as structures, signing and pavement markings, etc.; as well as for additional projects in the contract.

Summary of pay items notes may be included on this sheet when a normally formatted plan sheet is used, or on the summary of quantities sheet when the computer output is placed directly in the plans. For small projects, the two sheets may be combined into one sheet.

Summary of pay items sheet without quantities is required at the 60% phase submittal and a complete summary of pay items sheet with quantities is required at the 90% and 100% phase submittals. Refer to Chapter 2 for "requirements of phase submittals".

00000-0000

SUMMARY		OF		ROADWAY		PAY ITEMS		00000-0000		QUANTITY	
A	S	L	P	C	I	ITEM	UN	FA PART	TI	TOTAL	
ITEM	NUMBER	DESCRIPTION	UNIT	FA PART	ITEM	UN	TI	TOTAL	ITEM	QUANTITY	
101-1	1	MOBILIZATION	LS	1.000				1.000		1.000	
102-1	1	MAINT OF TRAFFIC	LS	1.000				1.000		1.000	
102-3	1	COMMERCIAL MATL FOR DRIVEWAY MAINT	CY	121.000				121.000		121.000	
102-72	2	CONC BARRIER (TEMPORARY)	LF	6387.000				6387.000		6387.000	
102-74	1	BARRICADE (TEMPORARY)(TYPES 1, 11, VP & DRUM)	ED	81348.000				81348.000		81348.000	
102-74	2	BARRICADE (TEMPORARY)(TYPE 11)	ED	1312.000				1312.000		1312.000	
102-75	2	CONSTRUCTION SIGNS (TEMP - POST MOUNTED)	ED	18596.000				18596.000		18596.000	
102-76	2	ADVANCE WARNING ARROW PANELS	ED	132.000				132.000		132.000	
102-77	2	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)	ED	6679.000				6679.000		6679.000	
102-78	2	REFLECTIVE PAVT MARKER (TEMPORARY)	EA	1128.000				1128.000		1128.000	
102-81	2	VEHICULAR IMPACT ATTENUATOR (INERTIA) (TEMP)	EA	2.000				2.000		2.000	
102-82	2	RELOCATE TEMPORARY VEHICULAR IMPACT ATTENUATOR	EA	2.000				2.000		2.000	
102-83	2	TEMPORARY CONC BARRIER WALL	LF	6387.000				6387.000		6387.000	
102-92	3	TEMPORARY PAVEMENT MARKING (SKIP)	GM	.902				.902		.902	
102-92	4	TEMPORARY PAVEMENT MARKING (SOLID)	NM	16.175				16.175		16.175	
102-96	2	TEMPORARY REGULATORY SIGNS (POST-MOUNTED)	ED	7572.000				7572.000		7572.000	
104-5	1	SANDBAGGING	CY	3.000				3.000		3.000	
104-6	1	SLOPE DRAINS (TEMPORARY)	LF	30.000				30.000		30.000	
104-10	1	BALED HAY OR STRAW	TN	19.400				19.400		19.400	
105-70	2	TRAINEE MANHOURS	MH	4000.000				4000.000		4000.000	
110-2	1	CLEARING & GRUBBING	AC	34.206				34.206		34.206	
110-7	1	MAILBOX	EA	52.000				52.000		52.000	
120-1	1	REGULAR EXCAVATION	CY	64493.000				64493.000		64493.000	
120-2	2	BORROW EXCAVATION	CY	36098.000				36098.000		36098.000	
120-4	1	SUBSOIL EXCAVATION	CY	18718.000				18718.000		18718.000	
160-4	1	TYPE B STABILIZATION	SY	85918.000				85918.000		85918.000	
162-2	2	TOPSOIL	SY	28211.000				28211.000		28211.000	
285-705	1	OPTIONAL BASE	SY	10380.000				10380.000		10380.000	
285-706	1	OPTIONAL BASE	SY	12443.000				12443.000		12443.000	
285-709	1	OPTIONAL BASE	SY	72398.000				72398.000		72398.000	
285-716	1	OPTIONAL BASE	SY	4512.000				4512.000		4512.000	
286-1	1	TURNOUT CONSTRUCTION	SY	4132.000				4132.000		4132.000	
286-2	1	TURNOUT CONSTRUCTION	TN	142.400				142.400		142.400	
339-1	1	MISC ASPHALT PAVEMENT	TN	301.000				301.000		301.000	
400-1	1	CLASS I CONC	CY	11.840				11.840		11.840	
400-1	11	CLASS I CONC	CY	195.300				195.300		195.300	
400-2	1	CLASS II CONC	CY	38.970				38.970		38.970	
400-2	11	CLASS II CONC	CY	552.000				552.000		552.000	
415-1	1	REINF STEEL	LB	4210.000				4210.000		4210.000	
415-1	3	REINF STEEL	LB	42805.000				42805.000		42805.000	
425-1	1	INLETS (CURB) (TYPE P-1)	EA	49.000				49.000		49.000	
425-1	315	INLETS (CURB) (TYPE P-1)	EA	2.000				2.000		2.000	
425-1	321	INLETS (CURB) (TYPE P-2)	EA	2.000				2.000		2.000	
425-1	351	INLETS (CURB) (TYPE P-5)	EA	2.000				2.000		2.000	
425-1	411	INLETS (CURB) (TYPE J-1)	EA	7.000				7.000		7.000	
425-1	421	INLETS (CURB) (TYPE J-2)	EA	5.000				5.000		5.000	
425-1	471	INLETS (CURB) (TYPE 7)	EA	4.000				4.000		4.000	
425-1	521	INLETS (DT BOT) (TYPE C)	EA	1.000				1.000		1.000	
425-1	541	INLETS (DT BOT) (TYPE D)	EA	5.000				5.000		5.000	
425-1	543	INLETS (DT BOT) (TYPE D)	EA	2.000				2.000		2.000	

6/01/89  
 CES0152

CESP015-0  
 PAGE 01 OF 02

6/01/89  
 CES0152

CESP015-2  
 PAGE 02 OF 02

00000-0000

00000-0000

A S L P T C	ITEM NUMBER	SUMMARY OF ROADWAY PAY ITEMS ITEM	UN IT	00000-0000 FA PART	QUANTITY	TOTAL
1	101-1	MOBILIZATION	LS	1,000	1,000	
1	102-1	MAINT OF TRAFFIC	LS	1,000	1,000	
1	102-3	COMMERCIAL MAIL FOR DRIVEWAY MAINT	CT	121,000	121,000	
2	102-12	CONC BARRIER (TEMPORARY)	LF	6387,000	6387,000	
2	102-74-1	BARRICADE (TEMPORARY) (TYPE 1) (11" VP & DRUM)	EA	8198,000	8198,000	
2	102-74-2	BARRICADE (TEMPORARY) (TYPE 1) (11" VP & DRUM)	EA	1312,000	1312,000	
2	102-75	CONSTRUCTION SIGNS (TEMP - POST MOUNTED)	EA	18598,000	18598,000	
2	102-76	ADVANCE WARNING ARROW PANELS	EA	132,000	132,000	
2	102-77	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)	EA	6679,000	6679,000	
2	102-78	REFLECTIVE PAVT MARKER (TEMPORARY)	EA	1128,000	1128,000	
2	102-81	VEHICULAR IMPACT ATTENUATOR (INERTIA) (TEMP)	EA	2,000	2,000	
2	102-82	RELOCATE TEMPORARY VEHICULAR IMPACT ATTENUATOR	EA	2,000	2,000	
2	102-83	RELOCATE TEMPORARY CONC BARRIER WALL	LF	6387,000	6387,000	
2	102-92-3	TEMPORARY PAVEMENT MARKING (S&P)	SM	992	992	
2	102-92-4	TEMPORARY PAVEMENT MARKING (SOLID)	SM	16,115	16,115	
2	102-96	TEMPORARY REGULATORY SIGNS (POST MOUNTED)	EA	7512,000	7512,000	
1	104-5	SANDBAGGING	LN	3,000	3,000	
1	104-6	SLOPE DRAINS (TEMPORARY)	LF	30,000	30,000	
1	104-10	BALED MAT ON STRAW	TN	18,400	18,400	
2	105-70	TRAINING MANHOUSRS	MM	4000,000	4000,000	
1	110-2	CLEANING & GRUBBING	AC	34,206	34,206	
2	110-7-1	MULLBOX (SINGLE)	EA	52,000	52,000	
1	120-1	REGULAR EXCAVATION	CY	84493,000	84493,000	
1	120-2-2	BORROW EXCAVATION (TRUCK MEASURE)	CY	36098,000	36098,000	
1	120-4	SUBSOIL EXCAVATION	CY	18718,000	18718,000	
1	160-4	TYPE B STABILIZATION	SY	85918,000	85918,000	
3	162-2	TOPSOIL	SY	281,000	281,000	
1	185-705	OPTIONAL BASE (BASE GROUP 05)	SY	10380,000	10380,000	
1	185-706	OPTIONAL BASE (BASE GROUP 06)	SY	12443,000	12443,000	
1	185-709	OPTIONAL BASE (BASE GROUP 09)	SY	72398,000	72398,000	
1	185-716	OPTIONAL BASE (BASE GROUP 16)	SY	4512,000	4512,000	
1	286-1	TURNOUT CONSTRUCTION	SY	4132,000	4132,000	
1	286-2	TURNOUT CONSTRUCTION (ASPHALT)	LN	142,400	142,400	
1	338-1	MISC ASPHALT PAVEMENT	TN	301,000	301,000	
1	400-1-2	CLASS I CONC (ENDWALLS)	CY	11,840	11,840	
1	400-1-11	CLASS II CONC (RETAINING WALLS)	CY	195,300	195,300	
1	400-2-1	CLASS II CONC (CULVERTS)	TN	38,970	38,970	
1	400-2-11	CLASS II CONC (RETAINING WALLS)	CY	552,000	552,000	
1	415-1-1	REINF STEEL (ROADWAY)	LB	4210,000	4210,000	
1	415-1-3	REINF STEEL (RETAINING WALL)	LB	4280,000	4280,000	
1	425-1-31	INLETS (OT BOT) (TYPE P-1)	(10') EA	2,000	2,000	
1	425-1-32	INLETS (CURB) (TYPE P-2)	(PARTIAL) EA	2,000	2,000	
1	425-1-35	INLETS (CURB) (TYPE P-5)	(10') EA	2,000	2,000	
1	425-1-41	INLETS (CURB) (TYPE P-1)	(10') EA	7,000	7,000	
1	425-1-42	INLETS (CURB) (TYPE P-2)	(10') EA	5,000	5,000	
1	425-1-47	INLETS (CURB) (TYPE T)	(10') EA	4,000	4,000	
1	425-1-52	INLETS (OT BOT) (TYPE C)	(10') EA	1,000	1,000	
1	425-1-54	INLETS (OT BOT) (TYPE D)	(10') EA	8,000	8,000	
1	425-1-543	INLETS (OT BOT) (TYPE D)	(J BOT) (10') EA	2,000	2,000	

A S L P T C	ITEM NUMBER	SUMMARY OF ROADWAY PAY ITEMS ITEM	UN IT	00000-0000 FA PART	QUANTITY	TOTAL
1	425-1-55	INLETS (OT BOT) (TYPE E)	(10') EA	4,000	4,000	
1	425-1-56	INLETS (OT BOT) (TYPE F)	(10') EA	5,000	5,000	
1	425-2-41	MANHOLES (P-T)	(10') EA	2,000	2,000	
1	425-2-51	MANHOLES (J-T)	(10') EA	7,000	7,000	
1	425-2-81	MANHOLES (J-T)	(PARTIAL) EA	8,000	8,000	
1	425-2-83	MANHOLES (J-T)	(PARTIAL) EA	2,000	2,000	
1	425-3-43	JUNCTION BOXES (P-T)	(10') EA	1,000	1,000	
1	425-3-71	JUNCTION BOXES (J-T)	(10') EA	1,000	1,000	
1	430-11-323	CONC PIPE CULV (CLASS III)	(15" SS) LF	529,000	529,000	
1	430-11-326	CONC PIPE CULV (CLASS III)	(18" SS) LF	4617,000	4617,000	
1	430-11-329	CONC PIPE CULV (CLASS III)	(24" SS) LF	473,000	473,000	
1	430-11-333	CONC PIPE CULV (CLASS III)	(30" SS) LF	2393,000	2393,000	
1	430-11-338	CONC PIPE CULV (CLASS III)	(36" SS) LF	2446,000	2446,000	
1	430-11-340	CONC PIPE CULV (CLASS III)	(48" SS) LF	420,000	420,000	
1	430-21-243	CORR STEEL PIPE CULV (GAUGE 12) (60" SS) LF		651,000	651,000	
3	430-200-25	FLARED END SECTION (CONCRETE)	(18") EA	1,000	1,000	
3	430-200-28	FLARED END SECTION (CONCRETE)	(24") EA	1,000	1,000	
3	430-200-33	FLARED END SECTION (CONCRETE)	(30") EA	1,000	1,000	
3	430-982-233	MITERED END SECTION (CONC PIPE ROUND)	(30" CD) EA	2,000	2,000	
3	430-982-240	MITERED END SECTION (CONC PIPE ROUND)	(42" CD) EA	1,000	1,000	
3	430-982-243	MITERED END SECTION (CONC PIPE ROUND)	(60" CD) EA	2,000	2,000	
1	440-1-10	UNDURDRAIN, TYPE J	LF	12776,000	12776,000	
2	500-7-1	ALUM HANDRAIL	LF	1828,000	1828,000	
1	520-1-7	CONC CURB & GUTTER (TYPE E)	LF	1536,440	1536,440	
1	520-1-10	CONC CURB & GUTTER (TYPE F)	LF	1882,000	1882,000	
1	520-5-11	CONC TRAF SEP (TYPE I) (4" WIDE)	LF	1010,000	1010,000	
1	520-5-12	CONC TRAF SEP (TYPE II)	LF	684,000	684,000	
1	522-1	CONC SIDEWALK (4" THICK)	SY	717,000	717,000	
1	522-2	CONC SIDEWALK (6" THICK)	SY	994,000	994,000	
1	524-1-1	CONC DITCH PAVT (8")	SY	28,310	28,310	
2	530-70-1	RIPRAP (BROKEN CONCRETE) (ROADWAY)	SY	118,000	118,000	
1	536-1-1	GUARDRAIL (ROADWAY)	LF	5815,000	5815,000	
1	536-9	END ANCHORAGE ASSEM TYPE IV	EA	2,000	2,000	
1	570-2	SEED & MULCH (PERMANENT TYPE)	LN	583,000	583,000	
1	570-3	MULCH MULCH	TN	23,300	23,300	
1	570-5	FERTILIZER	TN	5,400	5,400	
1	570-9	WATER FOR GRASS	MG	365,000	365,000	
1	570-10	GRASS SEED (QUICK-GROWING TYPE)	LB	405,000	405,000	
1	575-1	SOODING	SY	37126,000	37126,000	
2	5331-2	TYPE 5 ASPH CONC INC BIT (1")	TN	0,000	0,000	
2	5331-72-10	TYPE 5 ASPH CONC INC BIT (1")	SY	1429,000	1429,000	
2	5331-72-20	TYPE 5 ASPH CONC INC BIT (2")	SY	22825,000	22825,000	
2	5331-72-24	TYPE 5 ASPH CONC INC BIT (2 1/2")	SY	62715,000	62715,000	
2	5331-72-40	TYPE 5 ASPH CONC INC BIT (4")	SY	14760,000	14760,000	
2	5331-1-5	ASPH CONC FRICTION COURSE (INC BIT) (HFC-1 OR 4)	SY	100519,000	100519,000	

NOTE: \* IDENTIFIES ITEMS NORMALLY REQUIRING SHOP DRAWINGS - CONTRACTOR SHALL DETERMINE OTHER ITEMS REQUIRING SHOP DRAWINGS.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 CES  
 EX 11-4-B

## CHAPTER 5

### DRAINAGE MAP

#### 5.1 General

The drainage map shall be prepared and included in the project file. Inclusion of a drainage map in the plans set is optional at the District's discretion.

The drainage map shall be prepared on sheet format having a profile format across the upper 5" - 10" portion. This area shall be used for plotting the project profile. Topography of the project area shall be located in the remaining portion of the sheet. For inclusion in the plans set, only digitized topography drainage maps shall be used.

If the drainage map is included in the plans set, the presentation of the profile portion is optional, to be prepared at the discretion of the District.

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

<u>Type of Facility</u>	<u>Horizontal Scale</u>	<u>Vertical Scale</u>
Interstate Urban	1" = 200'/400'	1" = 5'/1" = 10'
Interstate Rural	1" = 500'/1,000'	1" = 10'/1" = 20'
Municipal & Other	1" = 100'/200'	1" = 5'/1" = 10'

#### 5.1.1 Flood Data Summary Box

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

Design, base and overtopping or greatest flood discharge and stage values are required on all federal-aid projects for all cross structures, regardless of size. A "disclaimer" and definitions are required to avoid misuse and possible responsibility for changes in the flood information values over which the DOT has no control.

#### 5.1.2 Bridge Hydraulic Recommendation Sheet

A bridge hydraulic recommendation sheet (BHRS) shall be prepared on preformatted sheet for all projects involving bridge culverts connecting bodies of water or bridges spanning a body of water, except for non-federal aid and minor bridge widening projects. Preformatted sheets can be obtained from the DOT Project Manager/Coordinator or CADD cell library. The inclusion of this sheet in the plans set will be at the discretion of the District. When included in the plans the BHRS for bridges shall be placed in the structure plans and in the Bridge Hydraulics Report. For bridge culverts it shall be placed in the roadway plans. If the BHRS is not included in the plans, sufficient details showing the location and extent of scour and slope protection shall be contained in the plans.

In addition to the hydraulic design data, plan and profile of the bridge structure, existing topography, site location, and

drainage areas shall also be shown. The effective area of opening should be shown for existing structures within a reasonable proximity on the same waterway. 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.

#### 5.1.3 Required Information on BHRS

1. Sufficient existing topography and contours shall be shown in the vicinity of the bridge to depict how the structure ties to natural ground. Hydraulic and other data on existing structures shall be provided. On bridge culverts, in some cases such as in level topography with a cut canal, the contours may be omitted.
2. High water information shall be shown on the BHRS. The elevation measured at the time of the survey with month, day and year should be shown in the profile.
3. The drainage area and location map section should include a map with a north arrow. The map shall be of a scale so that the entire drainage area for the proposed structure is shown. The drainage area boundaries should be shown using a very heavy broken line with the area in acres or square miles shown within the boundary. The proposed structure location should be shown. Existing structures over the same water body should be located and numbered and corresponding existing structure information listed in the appropriate columns.
4. Proposed bridges shall be shown indicating abutments, slope protection and other recommendations.



## 5.2 Plan Portion

The plan portion shall include the following data:

1. Stationing shall be shown every 500 feet for all recommended scales except 1" = 1000', for which stationing shall be shown every 5000 feet. Centerline of project with begin and end project stations, station equations, begin and end stations for exceptions and bridge/bridge culverts shall be flagged.
2. Physical land features affecting drainage, such as lakes, streams, and swamps shall be clearly labeled by name and direction of flow. Past high water elevations and date of occurrence, if available, and present water elevations along with the dates the readings were taken shall be shown.
3. Existing road numbers and street names, drainage structures, showing type, size, flow line elevations, flow arrows and any other pertinent data. Refer to Standard 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 would not fit within the plan or profile view, a supplemental drainage data sheet would be acceptable.
4. Drainage divides and information where applicable, to indicate the overland flow of water. Drainage areas on maps shall be shown in acres.

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

5. Proposed drainage structures, pipes, outfall structures and retention/detention pond locations shall be shown and noted by structure number. Refer to Standard Index No. 002 for correct symbols. Arrows shall be shown to indicate direction of flow along proposed ditches.
6. Section, Township, Range and county lines shall be indicated for rural projects and when possible, urban projects.
7. A north arrow and graphic scale, preferably in the upper right corner.
8. For culvert backfill values, for pH, resistivity, sulfates and chlorides for the various optional culvert materials shall be shown in either the plan or profile portion.
9. Add the following note filling in the materials as appropriate:

"Drainage Options for Cross-drain, Storm Sewer, (etc.) include \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ materials. Only the \_\_\_\_\_ options are shown on the drainage map profiles."

This may be shown in either the plan or profile portion.

### 5.3 Profile Portion

The profile portion, if shown, shall include the following data:

1. The recommended vertical scale for rural and urban projects is 1" = 5' in level terrain and 1" = 10' in rolling terrain, although a scale of 1" = 20' may sometimes be used for rural projects through rough terrain to avoid numerous profile breaks. Profile can be broken for rolling terrain in urban areas. However, a scale of 1" = 20' should never be used at locations of proposed storm sewer systems.
2. Elevation datum shall be shown at each side of the sheet. In cases where the 5" profile block is insufficient and excess space is available on the plan portion of the sheet, the profile block may be expanded from a 5" depth to a 8" or 10" depth.
3. The existing natural ground shall be plotted with a light, solid line and the existing elevation noted at each end of the profile.
4. The proposed profile grade line shall be plotted using a heavy, solid line. Percents of grade need not be shown. The P.C., P.I., and P.T. of vertical curves shall be plotted using their respective standard symbols; however, no data (station, elevation, length of curve) needs be noted. Begin and end project bridge and bridge culvert stations, station equations and exceptions shall be flagged and noted. Profile grade line elevations shall be shown at begin and end project stations and at the beginning and end of each additional drainage sheet.
5. When horizontal and vertical scales permit, all proposed special ditches, except median, shall be plotted and indicated with a heavy, broken line (long dashes) and D.P.I. elevations and stations noted.

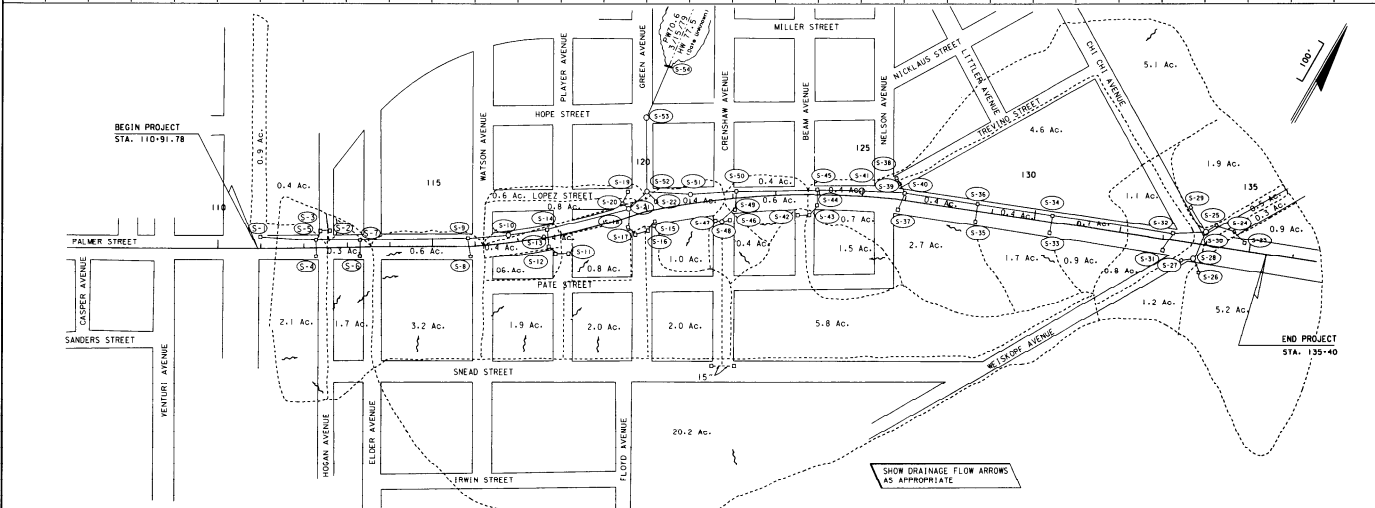
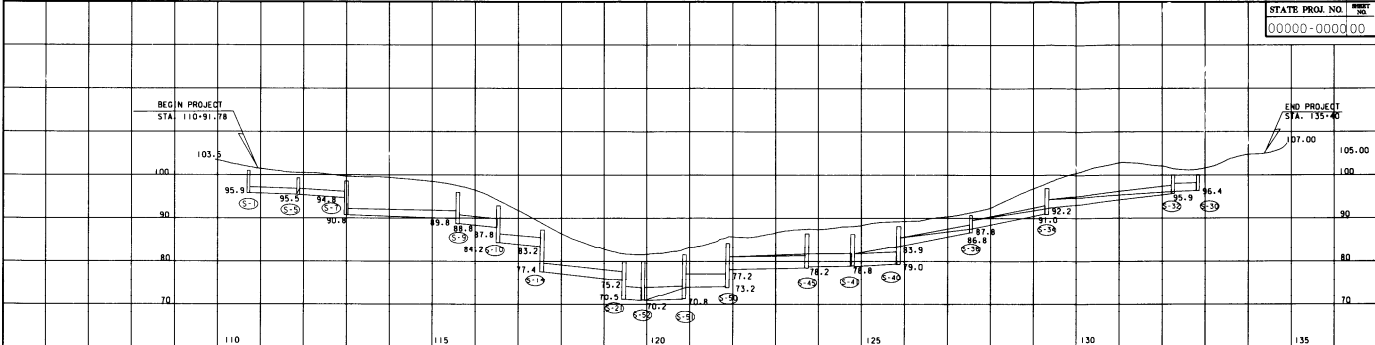
6. Proposed cross drains shall be plotted and identified by structure number. Do not attempt to show skew or pipe slope in plotting but merely plot to elevation and location at point of crossing the construction centerline. In cases of more than usual slope, the elevation at each end of the structure shall be shown. Median drains need not be shown.
7. For projects with storm sewer systems, only the mainline structure and pipes shall be shown. Laterals need not be shown. Each structure shall be flagged with its appropriate structure number, and flow line elevations noted for the incoming and outgoing pipes.
8. All high waters affecting construction shall be shown (including year). Any high water that is to be lowered shall be so noted and the design high water elevation given. A light, broken line shall be drafted at the high water elevation, and the elevation noted.

#### 5.4 Interchange Drainage Map

If projects involve interchanges or rest areas, a supplemental drainage map on a 1" = 100' or 1" = 200' scale shall be required, showing only the plan portion on a sheet, without a profile grid. The purpose of this detail is to show the small areas needed to calculate pipe sizes for the tabulation of drainage structures within these special areas. Should major drains pass through one of these areas, a cross reference note should indicate the proper sheet which reflects the drainage area for that through-structure.

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

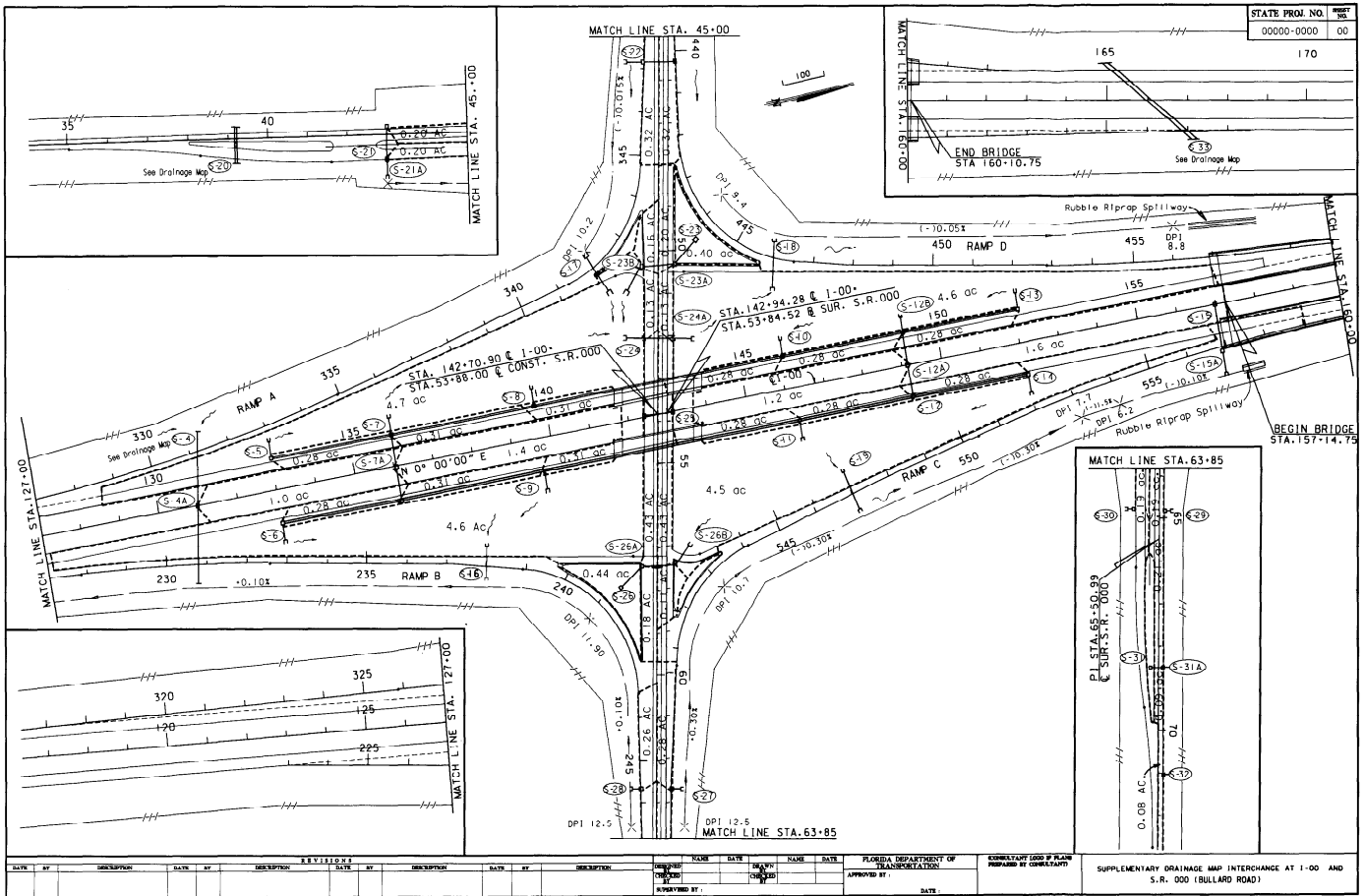
STATE PROJ. NO. 15320  
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REVISIONS										APPROVED BY		DATE		FLORIDA DEPARTMENT OF TRANSPORTATION		APPROVED BY		DATE		CONSULTANT LOGO IF PLANS PREPARED BY CONSULTANTS		
NO.	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE

DRAINAGE MAP (URBAN)  
EX 11-5-A

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.



STATE PROJ. NO.	SHEET NO.
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CONSULTANT GOOD & PLAIN  
 PREPARED BY CONSULTANT

SUPPLEMENTARY DRAINAGE MAP INTERCHANGE AT I-00 AND S.R. 000 (BULLARD ROAD)

## CHAPTER 6

### TYPICAL SECTIONS

#### 6.1 General

Typical sections depict the design elements of the proposed roadway, and shall be shown in the form of cross sections depicting the work which is standard or typical within certain station-to-station limits.

The typical sections for a project are either established prior to starting the final design, or are developed by the design engineer. The DOT CADD Manual's Library of Cells 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 drafted to scale, but the horizontal dimensions should be proportionate.

Typical sections should show typical conditions only. Non-standard conditions that prevail for short distances only should not be shown.

When more than one typical section is necessary for a project, the station limits of each section shall be shown below the typical section title. Typical section stationing shall cover the entire project. Transitions from one typical to another shall be included in the stationing of one or the other typical section.



When partial sections are necessary to cover the details, these sections shall be shown near the main typical section to which they apply. If space is not available, they may be grouped on a separate sheet.

For complete illustrations of typical sections, see (Exhibits II-6A thru H.)

## 6.2 Mandatory Information

Typical sections for all projects shall include the following data:

1. Design speed for each typical section
2. Traffic data (2-way ADT)
  - a. Current year
  - b. Post construction year
  - c. Design year
    - New Construction - 20 years
    - Overlay - 8 - 12 years
    - Milling & Resurfacing - 10 - 12 years
  - d. Traffic data (ADT) is required to be noted for the current year or the post construction year on skid hazard project only.
  - e. K, D and T factors

The data shown shall be consistent with the data used for pavement design.
3. Cross Slopes
  - a. Cross slopes of roadway pavement, shoulder surfaces, sidewalks and bridge decks shall be expressed as a decimal part of a foot vertical per foot horizontal. These cross slopes shall be rounded to two decimal places, i.e., .02, .06.
  - b. Median and outer slopes shall be shown by ratio, horizontal to vertical, i.e., 4:1., 2:1.
  - c. Either feathering details or notes (or both) shall be shown when resurfacing in urban gutter areas is specified.
4. Profile grade point shall be flagged.

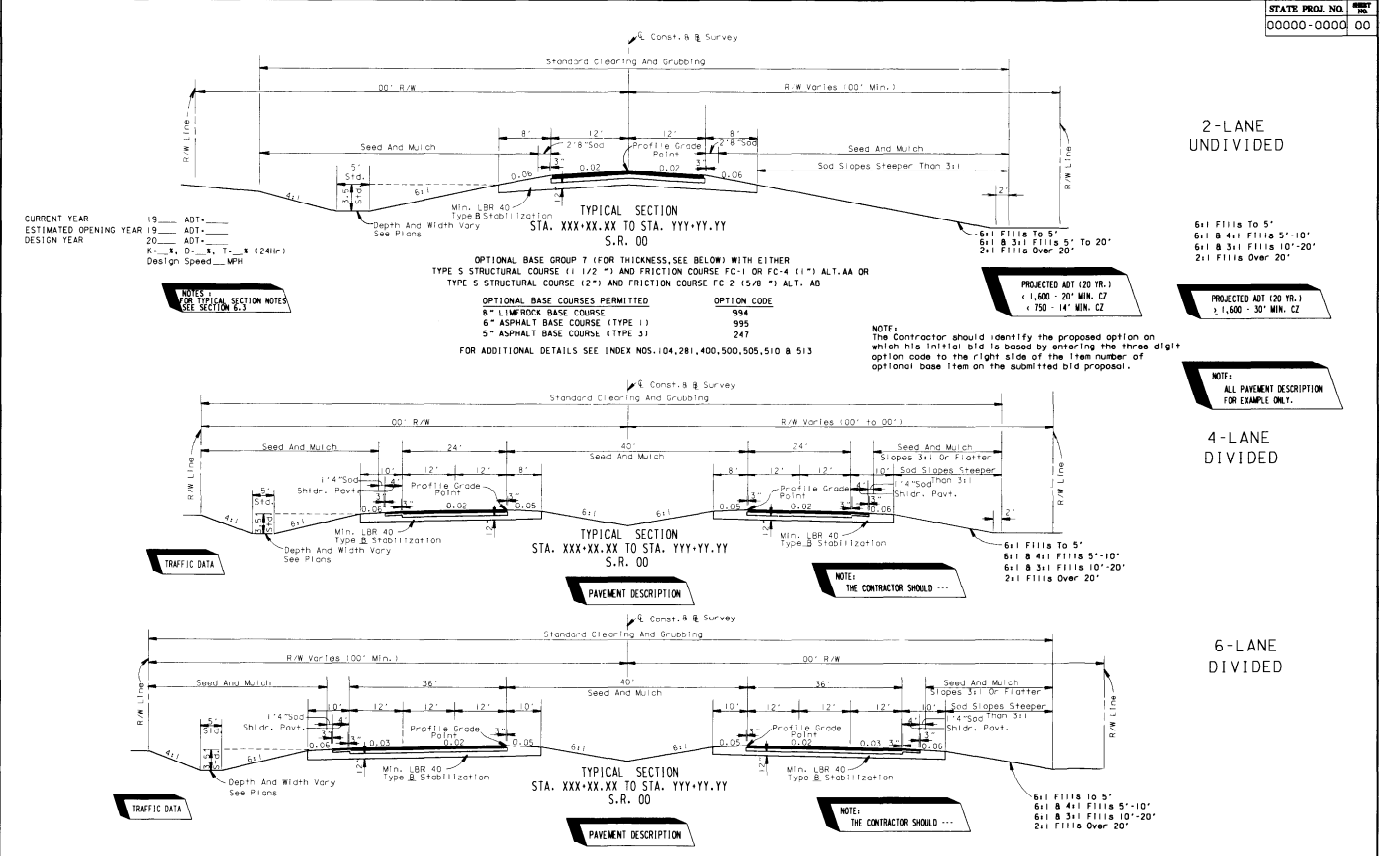
5. The scope of pavement construction shall be described in a clear, precise manner by indicating the LBR requirement and the thickness of the subgrade stabilization, subbase or base, structural course, friction course and shoulder pavement. Pavement structure information shall be obtained from the approved pavement design and shall be described in the order of construction, i.e. starting with bottom layer and ending with friction course.
  6. Limits of grassing.
  7. Sidewalk location and width.
  8. Curb and gutter location and type.
  9. Reference to all standard indexes necessary for construction of proposed typical section shall be indicated below the pavement description.
  10. Template dimensions. For widening projects, the existing pavement width shall be shown as a +/- dimension, and the base widening width shall be shown with an asterisk. As near to this noted asterisk as possible, the following statement shall be shown: "\*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."
- NOTE: For typical sections with varying dimensions, the dimensions shall be clearly indicated on the plan - profile sheets.
11. Limits of clearing and grubbing, where applicable.
  12. R/W, where applicable.

### 6.3 Standard Notes for Typical Section Sheets

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

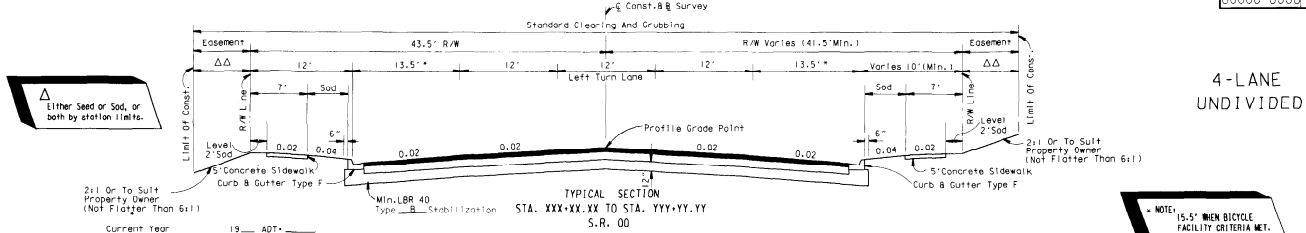
1. "All seeding and seeding and mulch areas are to receive a 6" muck blanket or topsoil treatment."  
(Note: When muck or topsoil is required under sodded areas, the above note shall say "All grass areas are to receive a 6" muck blanket or topsoil treatment.")
2. "For details and limits of selective clearing and grubbing see \_\_\_\_\_."
3. "None of the existing limerock base that is removed is to be used in the construction of the new limerock base."
4. "All of the existing limerock base that is removed is to be incorporated in the stabilized portion of the subgrade."
5. (If only certain options are allowed) "The contractor should identify the 'PROPOSED' option on which his initial bid is based by entering the three digit option code to the right side of the item number of each of the optional base items on the submitted bid proposal."
6. (If all options are allowed) "For optional base group(s) \_\_\_\_\_ the contractor shall bid on one of the options for this (these) group(s) as shown on standard Index No. 514. "The contractor should identify the 'PROPOSED' option on which his initial bid is based by entering the three digit option code to the right side of the item number of each of the optional base items on the submittal bid proposal."
7. "The contractor shall bid on only one friction course alternate."

8. (Under paved shoulders) "At the contractor's option, this area may be constructed of base material at no additional compensation."
9. (When asphalt base is called for with no stabilization item, other than widening projects) "The subgrade shall be firm, unyielding and in such condition that undue distortion will not occur."
10. "Only one dense graded friction course FC-1 or FC-4 is to be used throughout the limits of the project."
11. (To appear on typical section only when component plans are not included). "It shall be the contractor's responsibility to determine the field location and length of any no-passing zone. No-passing zones shall be established in accordance with Section 3B-3, 3B-4, and 3B-5 of the current MUTCD and chapter 1.6 of the Department's Manual on Uniform Traffic Studies. The contractor's proposed method of establishing no-passing zones must be approved in advance of construction by the Engineer. The cost of establishing the no-passing zones shall be considered as incidental to traffic striping items included in the contract."
12. 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.



REVISIONS										FLORIDA DEPARTMENT OF TRANSPORTATION		TYPICAL SECTIONS RURAL		
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION





4-LANE UNDIVIDED

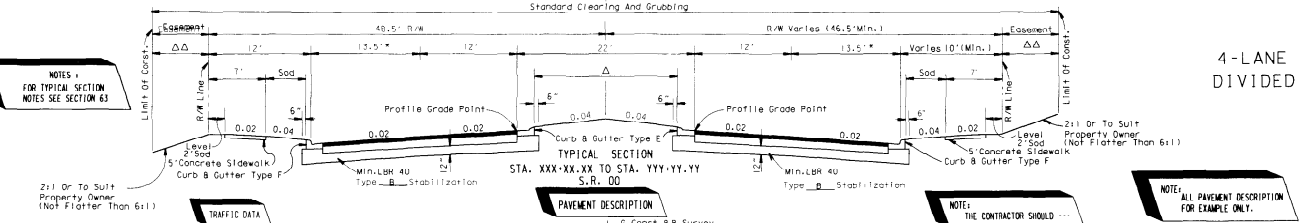
NOTE: 15.5' BIEN BI-CYCLE FACILITY CRITERIA MET.

NOTE: The Contractor should identify the proposed option on which his initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the submitted proposal.

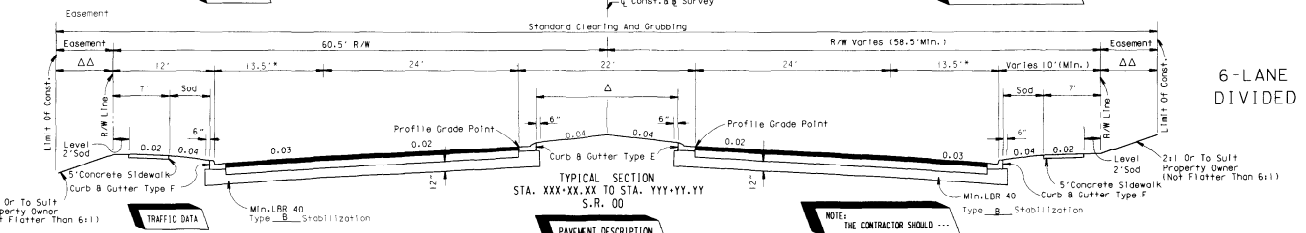
OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH EITHER  
 TYPE S STRUCTURAL COURSE (11/2") AND FRICTION COURSE FC-1 OR FC-4 (1") ALT. AA OR  
 TYPE S STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (5/8") ALT. AB  
 OPTIONAL BASE COURSES PERMITTED

OPTION CODE	990
	995
	997

FOR ADDITIONAL DETAILS SEE INDEX NOS. 300,303,304,500,511,513,514 & 515



4-LANE DIVIDED



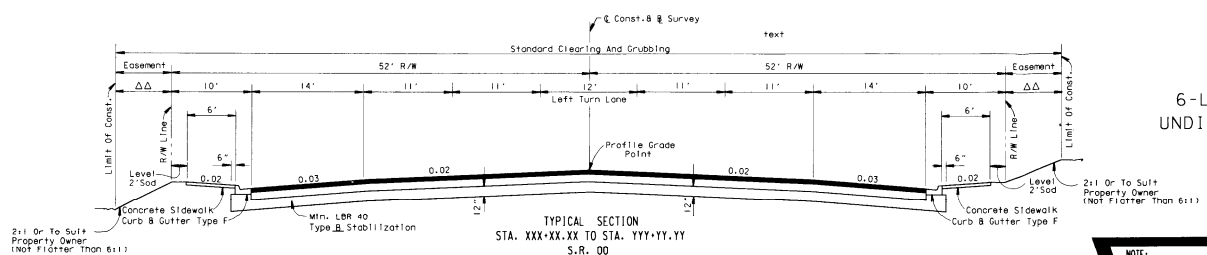
6-LANE DIVIDED

DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION

TYPICAL SECTIONS WITHOUT REFUGE LANES  
EX 11-6-C



STATE PROJ. NO. 00000-0000 00



6-LANE UNDIVIDED

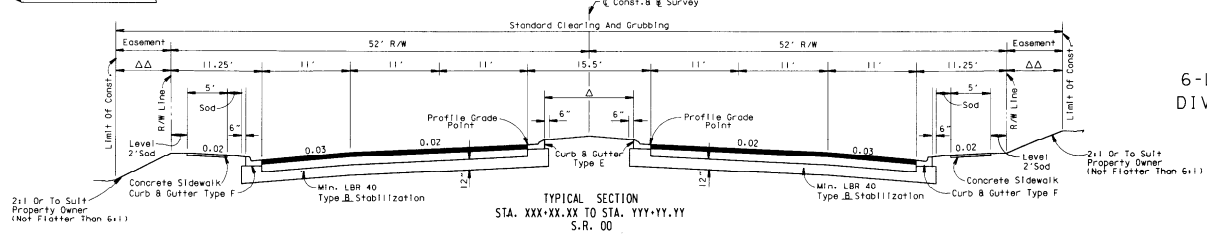
2:1 Or To Suit Property Owner (Not Flatter Than 6:1)  
 Current Year 19 ADT \_\_\_\_\_  
 Estimated Opening Year 19 ADT \_\_\_\_\_  
 Design Year 19 ADT \_\_\_\_\_  
 K<sub>s</sub> 1.0 1.1 1.2 1.3 1.4 1.5 (124 Hr.)  
 Design Speed \_\_\_\_\_ MPH

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH EITHER  
 TYPE 5 STRUCTURAL COURSE (11/2") AND FRICTION COURSE FC-1 OR FC-4 (11") ALT. AA OR  
 TYPE 5 STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (5/8") ALT. AB  
 OPTIONAL BASE COURSES PERMITTED OPTION CODE  
 10" LIMEROCK BASE COURSE 990  
 6" ASPHALT BASE COURSE (TYPE 1) 995  
 6" ASPHALT BASE COURSE (TYPE 3) 327  
 FOR ADDITIONAL DETAILS SEE INDEX NOS. 300,303,304,500,511,513,514 & 515

NOTE: The Contractor should identify the proposed option on which his initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the submitted bid proposal.

NOTE: ALL PAVEMENT DESCRIPTION FOR EXAMPLE ONLY.

NOTES:  
 For Typical Section Notes See Section 6.3



6-LANE DIVIDED

△ Either Seed or Sod, or both by station limits.

TRAFFIC DATA

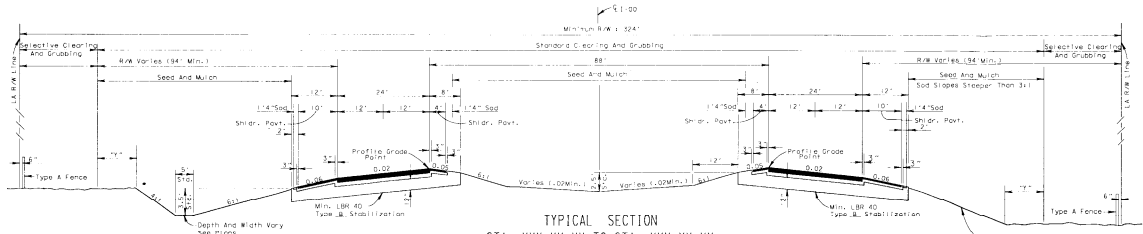
PAVEMENT DESCRIPTION

NOTE: THE CONTRACTOR SHOULD ...

△△ Either Seed, Seed And Mulch, Sod or Seed Or Sod. If Seed Or Sod, the percentage of each shall be given by notation, or each shall be shown by station limits.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTIONS URBAN MINIMUM REQUIREMENTS EX-11-6-D



4-LANE

TYPICAL SECTION  
STA. XXX+XX.XX TO STA. YYY+YY.YY  
S.R. 00

Current Year 19 \_\_\_ ADT: \_\_\_\_\_  
Estimated Opening Year 19 \_\_\_ ADT: \_\_\_\_\_  
Design Year 19 \_\_\_ ADT: \_\_\_\_\_  
K<sub>1</sub> = 1.0, K<sub>2</sub> = 1.7, K<sub>3</sub> = 1.1, S124 Hr. 1  
Design Speed \_\_\_ MPH

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH  
TYPE 5 STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (5/8")  
OPTIONAL BASE COURSES PERMITTED      OPTIONAL CODE  
10" LIMELOCK BASE COURSE                      990  
6" ASPHALT BASE COURSE (TYPE 1)            995  
6" ASPHALT BASE COURSE (TYPE 3)            327

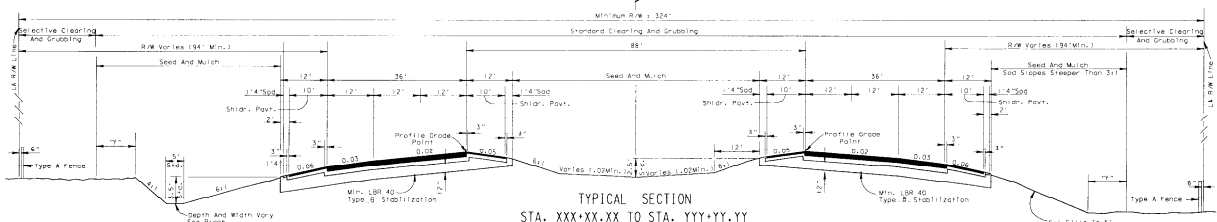
7'-\_\_\_ OR AREA DISTURBED DURING CONSTRUCTION.

FOR ADDITIONAL DETAILS SEE INDEX NOS. 104,281,400,450,451, 500,505,510,513,514 & 525

NOTE: The Contractor should identify the proposed option on which the Initial bid is based by entering the three digit optional code to the right side of the item number of optional base item on the submitted bid proposal.

NOTE: ALL PAYMENT DESCRIPTION FOR EXAMPLE ONLY.

NOTES FOR TYPICAL SECTION NOTES SEE SECTION 6.3



6-LANE

TYPICAL SECTION  
STA. XXX+XX.XX TO STA. YYY+YY.YY  
S.R. 00

Current Year 19 \_\_\_ ADT: \_\_\_\_\_  
Estimated Opening Year 19 \_\_\_ ADT: \_\_\_\_\_  
Design Year 19 \_\_\_ ADT: \_\_\_\_\_  
K<sub>1</sub> = 1.0, K<sub>2</sub> = 1.7, K<sub>3</sub> = 1.1, S124 Hr. 1  
Design Speed \_\_\_ MPH

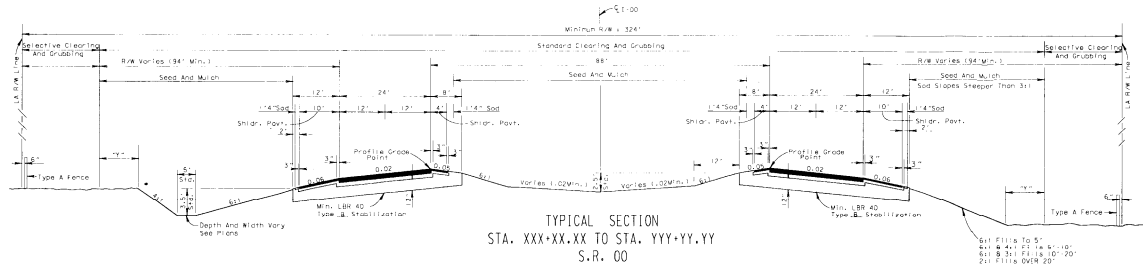
OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH  
TYPE 5 STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (5/8")  
OPTIONAL BASE COURSES PERMITTED      OPTIONAL CODE  
10" LIMELOCK BASE COURSE                      990  
6" ASPHALT BASE COURSE (TYPE 1)            995  
6" ASPHALT BASE COURSE (TYPE 3)            327

7'-\_\_\_ OR AREA DISTURBED DURING CONSTRUCTION.

FOR ADDITIONAL DETAILS SEE INDEX NOS. 104,281,400,450,452,505,510,513,514 & 525

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTION(S) (INTERSTATE)



4-LANE

Current Year 19... AD1...  
 Estimated Opening Year 19... AD1...  
 Design Year 19... AD1...  
 K... 1.0... 1.1... 1.1... 1.24 HP...  
 Design Speed... MPH

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH  
 TYPE S STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (5/8")  
 OPTIONAL BASE COURSES PERMITTED  
 10" LIMELOCK BASE COURSE 990  
 6" ASPHALT BASE COURSE (TYPE 1) 995  
 6" ASPHALT BASE COURSE (TYPE 3) 327

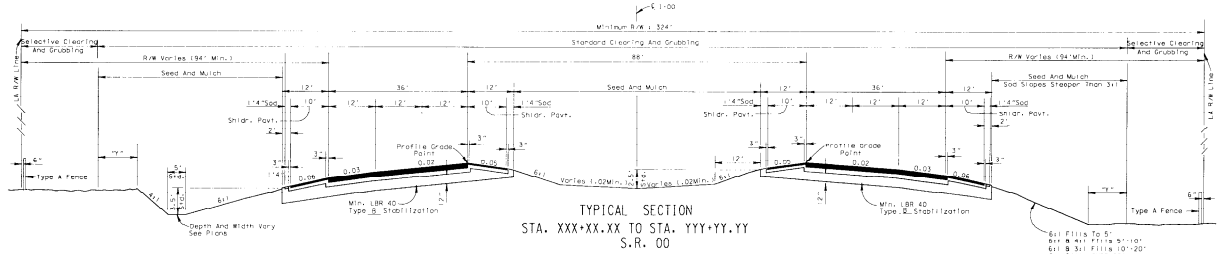
\*... OR AREA DISTURBED DURING CONSTRUCTION.

NOTES:  
 FOR TYPICAL SECTION NOTES  
 SEE SECTION 6.3

FOR ADDITIONAL DETAILS SEE INDEX NOS. 104,281,400,450,451, 500,505,510,513,514 & 525

NOTE:  
 The Contractor should identify the proposed option  
 on which his initial bid is based by entering the three  
 digit option code to the right side of the item number  
 of optional base item on the submitted bid proposal.

NOTES:  
 ALL PAYMENT DESCRIPTION  
 FOR EXAMPLE ONLY.



6-LANE

Current Year 19... AD1...  
 Estimated Opening Year 19... AD1...  
 Design Year 19... AD1...  
 K... 1.0... 1.1... 1.1... 1.24 HP...  
 Design Speed... MPH

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH  
 TYPE S STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (5/8")  
 OPTIONAL BASE COURSES PERMITTED  
 10" LIMELOCK BASE COURSE 990  
 6" ASPHALT BASE COURSE (TYPE 1) 995  
 6" ASPHALT BASE COURSE (TYPE 3) 327

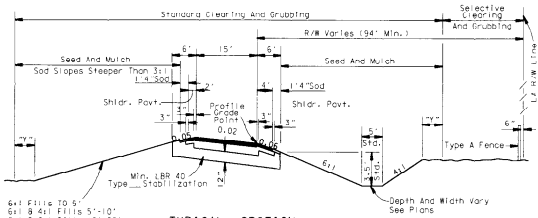
\*... OR AREA DISTURBED DURING CONSTRUCTION.

FOR ADDITIONAL DETAILS SEE INDEX NOS. 104,281,400,450,452,505,510,513,514 & 525

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTION(S) (INTERSTATE)

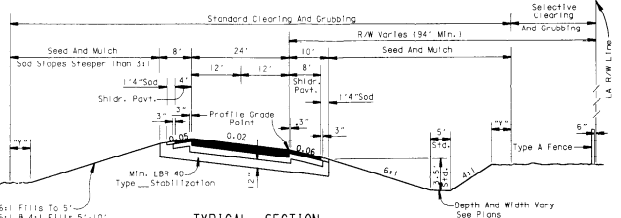
STATE PROJ. NO. 00000-0000 000



**TYPICAL SECTION**  
(SINGLE LANE RAMP)  
STA. XXX+XX.XX @ RAMP TO  
STA. YYY+YY.YY @ RAMP

OPTIONAL BASE GROUP 3 (FOR THICKNESS, SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (5/8")

OPTIONAL BASE COURSES PERMITTED	OPTION CODE
10" LIMEROCK BASE COURSE	990
9" ASPHALT BASE COURSE (TYPE 1)	325
6" ASPHALT BASE COURSE (TYPE 3)	327



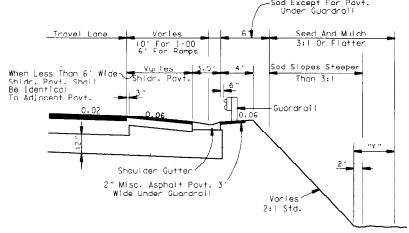
**TYPICAL SECTION**  
(TWO LANE RAMP)  
STA. XXX+XX.XX @ RAMP TO  
STA. YYY+YY.YY @ RAMP

OPTIONAL BASE GROUP 3 (FOR THICKNESS, SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (5/8")

OPTIONAL BASE COURSES PERMITTED	OPTION CODE
10" LIMEROCK BASE COURSE	990
9" ASPHALT BASE COURSE (TYPE 1)	325
6" ASPHALT BASE COURSE (TYPE 3)	327

NOTE: THE CONTRACTOR SHOULD IDENTIFY THE PROPOSED OPTION ON WHICH HIS INITIAL BID IS BASED ON BY ENTERING THE THREE DIGIT OPTION CODE TO THE RIGHT SIDE OF THE ITEM NUMBER OF OPTIONAL BASE ITEM ON THE SUBMITTED BID PROPOSAL.

**ROADWAY SHOULDERS**



**TYPICAL SECTION**  
SHOULDER PAVEMENT AND SHOULDER GUTTER

OPTIONAL BASE GROUP 1 (FOR THICKNESS, SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (VARIABLE THICKNESS, 1 1/2" AVE. OUTSIDE SHOULDER++)  
AND FRICTION COURSE FC-2 (5/8")

OPTIONAL BASE COURSES PERMITTED	OPTION CODE
4" LIMEROCK BASE COURSE	001
4" ASPHALT BASE COURSE (TYPE 1)	005
4" ASPHALT BASE COURSE (TYPE 2)	006
4" ASPHALT BASE COURSE (TYPE 3)	007
4" SAND ASPHALT HOT MIX	014
4 1/2" BANK RUN SHELL BASE	004

++ FOR SHOULDER WIDTH GREATER THAN 4 FEET, 1-1/2" AVERAGE THICKNESS

**RAMP SHOULDER**

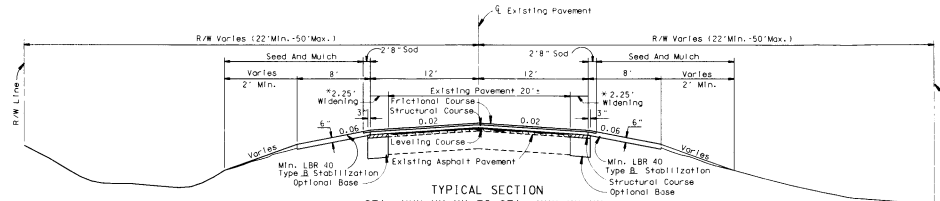
OPTIONAL BASE GROUP 1 (FOR THICKNESS, SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2" OUT SIDE AND INSIDE SHOULDER )  
AND FRICTION COURSE FC-2 (5/8")

OPTIONAL BASE COURSES PERMITTED	OPTION CODE
4" LIMEROCK BASE COURSE	001
4" ASPHALT BASE COURSE (TYPE 1)	005
4" ASPHALT BASE COURSE (TYPE 2)	006
4" ASPHALT BASE COURSE (TYPE 3)	007
4" SAND ASPHALT HOT MIX	014
4 1/2" BANK RUN SHELL BASE	004

NOTE: ALL PAVEMENT DESCRIPTION FOR EXAMPLE ONLY.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

TYPICAL SECTION(S)  
INTERSTATE RAMPS



2-LANE UNDIVIDED

Current Year 19 ADT  
Estimated Opening Year 19 ADT  
Design Year 20 ADT  
K=1, D=1, T=1, T=1 (24 Hr)  
Design Speed MPH

**TYPICAL SECTION STA. XXX+XX.XX TO STA. YYY+YY.YY**  
RESURFACING  
TYPE 5 LEVELING COURSE (175 LBS/SY AVG.) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC-1 OR FC-4 (1") ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC-2 (5/8") ALT. AB

**WIDENING**  
OPTIONAL BASE GROUP 11 ( FOR THICKNESS, SEE BELOW) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (350 LBS/SY) AND FRICTION COURSE FC-1 OR FC-4 (1") ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (400 LBS/SY) AND FRICTION COURSE FC-2 (5/8") ALT. AB

**OPTIONAL BASE COURSES PERMITTED**

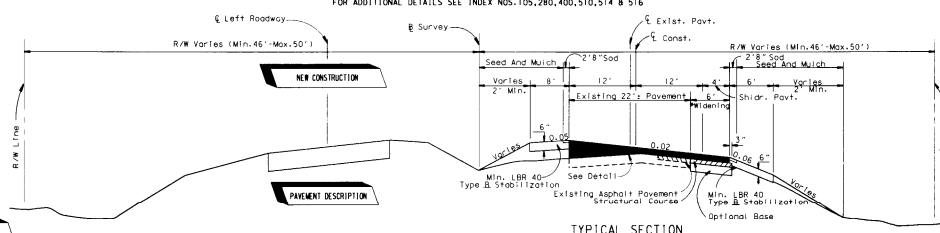
1 1/2" LIMEROCK BASE COURSE	(TYPE 1)	987
6" ASPHALT BASE COURSE	(TYPE 3)	995
7" ASPHALT BASE COURSE	(TYPE 3)	407

FOR ADDITIONAL DETAILS SEE INDEX NOS. 105, 280, 400, 510, 514 & 516

**NOTE:**  
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.

**NOTE:**  
The Contractor should identify the proposed option on which his initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the submitted bid proposal.

NOTE: FOR TYPICAL SECTION NOTES SEE SECTION 6.3



4-LANE DIVIDED

**TYPICAL SECTION STA. XXX+XX.XX TO STA. YYY+YY.YY**  
RESURFACING  
TYPE 5 OVERBUILD COURSE (275 LBS/SY AVG. INSIDE LANE) AND  
LEVELING COURSE (175 LBS/SY AVG.) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC-1 OR FC-4 (1") ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC-2 (5/8") ALT. AB

**WIDENING**  
OPTIONAL BASE GROUP 11 ( FOR THICKNESS, SEE BELOW) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (350 LBS/SY) AND FRICTION COURSE FC-1 OR FC-4 (1") ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (400 LBS/SY) AND FRICTION COURSE FC-2 (5/8") ALT. AB

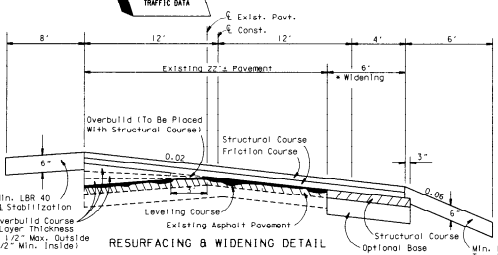
**OPTIONAL BASE COURSES PERMITTED**

1 1/2" LIMEROCK BASE COURSE	(TYPE 1)	987
6" ASPHALT BASE COURSE	(TYPE 3)	995
7" ASPHALT BASE COURSE	(TYPE 3)	407

FOR ADDITIONAL DETAILS SEE INDEX NOS. 105, 280, 400, 510, 514, 515 & 516

NOTE: ALL PAYMENT DESCRIPTION FOR EXAMPLE ONLY.

NOTE: THE CONTRACTOR SHOULD ...



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTION RURAL WIDENING AND RESURFACING EX-11-6-G



## CHAPTER 7

### SUMMARY OF QUANTITIES

#### 7.1 General

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

For a complete illustration of summary of quantities see Exhibit II-7-A.

#### 7.2 Item Quantity "Boxes" and Format

The various "boxes" used for each type of summary are contained in the cell library, found in the DOT CADD manual. The arrangement of these "boxes" on the sheet is dependent on the number used and the size each one must be to contain all of the necessary information. Aesthetics should be considered.

Standard notes, listed in Section 7.4, shall be shown under the appropriate box.

Applicable pay item notes, listed in Section 7.5, shall also be included on this sheet.

On contracts with multiple project numbers or federal aid and non-federal aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

### 7.3 Box Culvert Data Sheet

Box culvert data sheets are obtained by computer design of the box culvert. Only the hard copy of data sheets showing concrete and steel quantities shall be included in the construction plans. Station numbers shall be inserted for cross reference. This sheet may be the output for concrete and steel quantities generated by the box culvert program, and placed behind the CES computer summary of pay items. As an alternate, the concrete and steel output files may be transferred to a graphics design file and placed on a normally formatted plan sheet.



#### 7.4 Standard Notes for Summary of Quantities Sheet

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

1. (Under Summary of Guardrail) "Guardrail limits and locations along the project may be varied based on actual project conditions at the time of construction".
2. (Under Summary of Sodding) "The limits of sodding indicated above are approximate and are to be adjusted where necessary, as directed by the Engineer, to provide for continuity of construction or to suit the actual requirements."
3. (Under Summary of Underdrains and Ditch Pavement) "Stationing shown above is approximate. Exact stations to be determined by the Engineer during construction."
4. (Under Estimate of Turnouts and Sidedrain) "Turnouts, sidedrain and mitered end sections are to be constructed at locations designated by the Engineer in accordance with Index No. 515."
5. (Under Summary of Earthwork on embankment projects) "Embankment is fill in place with no shrinkage applied."
6. (Under Summary of Earthwork) "Earthwork has been calculated using the \_\_\_\_ base option. If another option is constructed, there shall be no revision to the earthwork quantities for which payment is made by plan quantity."
7. (Under Summary of Earthwork) "Estimated \_\_\_\_ C. Y. of unclassified material to be displaced by the storm sewer (or drainage structure) system not included in quantities shown above."

8. (Under Summary of Earthwork) "All (or \_\_\_\_ C. Y. of) A-8 material to be stockpiled in areas designated by the Engineer for use in muck blanket operations."
9. (Under Summary of Earthwork - Embankment Projects) "There is no direct payment for roadway, lateral ditch or channel excavation. Any suitable material may be used in the embankment in accordance with Index No. 505 at the option of the contractor."
10. No Clearing and Grubbing of borrow pits is to be done within three feet of the property lines, and no excavation is to be done within five feet of the property lines.

7.5 Pay Item Notes

1. 102-74 Will be paid for on the basis of per unit  
thru per day of use. The quantity is based on an  
102-77 estimated average.

102-74 \_\_\_ Barricades for \_\_\_ days

102-75 \_\_\_ Signs for \_\_\_ days

102-76 \_\_\_ Arrow Pannels for \_\_\_ days

102-77 \_\_\_ Flashing Lights for \_\_\_ days

2. 102-92-3 Is based on \_\_\_ pavement lifts, consisting  
of \_\_\_ G.M. of striping per lift.

3. 102-92-4 Is based on \_\_\_ pavement lifts, consisting  
of \_\_\_ N.M. of striping per lift.

4. 104-\_\_\_ (Note: Use pay items as required per each  
set of plans.) Are estimated for  
prevention, control and abatement of erosion  
and water pollution and are to be used at  
locations designated by the plans or as  
directed by the Engineer.

5. 105-70 A total of \_\_\_\_\_ trainee(s) is (are) required on this project. Total manhours were estimated at an average of 1000 manhours per trainee.
6. 110-3 All salvageable material as determined by the project engineer is to be stockpiled within the right-of-way for removal by DOT forces.
7. 110-3 Material has no salvage value for the DOT and will become the property of the contractor.
8. 120-1 Includes the cost of removal and disposal of unsuitable material that may be encountered during excavation for widening strips as directed by the Engineer.
9. 120-2 To be furnished by the contractor from areas provided by him. Measurement shall be based on the measurement of the borrow pit. At the contractor's option, measurement may be based on loose truck volume, in which case payment will be made on \_\_\_\_% of the truck measured quantity.
10. 120-2-1 To be furnished by the contractor from areas provided by him.
11. 120-2-2 To be furnished by the contractor from areas provided by him.

12. 120-6 Any borrow excavation required shall be furnished by the contractor from areas provided by him and the cost of furnishing such material is to be included in the price for embankment.
13. 300-1-1 (Note: To be used for milling projects.)  
Included for prime in areas where milling exposes existing base. Estimated quantity to be increased, decreased or omitted as directed by the Project Engineer.
14. 325-75 Includes removal of existing reflective pavement markers prior to starting milling operations.
15. 327-70 Includes removal of existing raised reflective pavement markers prior to starting milling operations.
16. 400-1-15 Includes \_\_\_\_\_ C.Y. for miscellaneous construction as directed by the Project Engineer.
17. 536-73 Existing guardrail has no salvage value for the DOT and will become the property of the contractor.
18. 536-73 Existing guardrail to be dismantled and stockpiled within the right-of-way in areas designated by the Project Engineer for removal by DOT maintenance forces.

19.           538-1       This is to include furnishing and installing \_\_\_\_ panels, \_\_\_\_ regular posts and \_\_\_\_ special posts which have been determined to be non-salvageable. Additional posts and panels determined to be non-salvageable during resetting shall be paid for under Section 538-5 of the standard specifications.
20.           538-1       Posts and panels determined to be non-salvageable during resetting shall be paid for per Section 538-5 of the Standard Specification.
21.           570-5       Based on \_\_\_\_ applications.
22.           5331-2       Included (or includes \_\_\_\_ tons) for adjustment of connections to existing drives, streets, etc. as directed by the Engineer.

FLORIDA DEPARTMENT OF TRANSPORTATION

BOX CULVERT AND WINGWALL DESIGN

VERSION NO. 2.1

PROJECT NUMBER : 00000-0000

LOCATION DESCRIPTION : STA 000+00.00  
ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE

MATERIAL PROPERTIES

CONCRETE COVER FOR REINFORCING BARS

STEEL YIELD STRENGTH = 60000. PSI  
CONCRETE 28 DAY STRENGTH = 3400. PSI  
BARREL EXTERIOR COVER: TOP SLAB = 0.17 FT.; BOTTOM SLAB = 0.17 FT.; WALL = 0.17 FT.  
BARREL INTERIOR COVER: ALL LOCATIONS = 0.17 FT.  
WINGWALL :  
ALL LOCATIONS = 0.17 FT.

PROPERTIES OF ELEMENTS

BARREL : NO. OF BARREL(S) = 1; SPAN = 10.00 FT.; HEIGHT = 6.50 FT.; DEPTH OF FILL = 7.14 FT.  
LENGTH AT BOX CENTER LINE = 83.00 FT.; LEFT SIDE SKEW ANGLE = 0 DEGREE; WIDTH = 11.50 FT.  
THICKNESS: TOP SLAB = 0.83 FT.; BOTTOM SLAB = 0.88 FT.; EXTERIOR WALL = 0.75 FT.; INTERIOR WALL = 0.00 FT.

WINGWALL: NO. OF WINGWALL(S) BOTH LEFT AND RIGHT SIDES

NO. OF HEADWALL(S) BOTH LEFT AND RIGHT SIDES  
TOP BEVEL = 0.50 FT.; SIDE BEVEL = 0.50 FT.; HEEL DIMENSION = 3.08 FT.  
WALL HEIGHT = 8.33 FT.; FOOTING WIDTH = 5.25 FT.; FOOTING THICKNESS = 0.67 FT.  
TOE DIMENSION = 1.35 FT.; WALL THICKNESS = 0.83 FT.;  
TOE PRESSURE = 1209. LB/SQ.FT.

SKEW ANGLE : LEFT FRONT = 0 DEGREE; LEFT BACK = 160 DEGREE;  
RIGHT FRONT = 0 DEGREE; RIGHT BACK = 160 DEGREE;  
LENGTH = 15.00 FT. \* ( 0.00 FT.\*\*); FRONT TIP HEIGHT = 8.333 FT.  
WALL = 3.781 C.Y.; FOOTING = 2.577 C.Y.  
TOTAL = 6.358 C.Y.

TOTAL WINGWALL LENGTH WITH BARREL WIDTH : LEFT = 41.50 FT.; RIGHT = 41.50 FT.

CONCRETE QUANTITIES

BARREL : POUR 1 (BOTTOM SLAB) = 0.382 C.Y./FT.; POUR 2 (WALLS) = 0.343 C.Y./FT.; POUR 3 (TOP SLAB) = 0.365 C.Y./FT.  
POUR 4 (HEADWALL(S)) = 1.065 C.Y. TOTAL (EXCLUDE HEADWALL) = 1.090 C.Y./FT.

TOTAL CONCRETE QUANTITIES

WINGWALL: POUR 1 (FOOTING\*\*\*) = 11.918 C.Y.; POUR 2 (WALLS) = 15.123 C.Y.; TOTAL = 27.041 C.Y.

BARREL = 91.515 C.Y.; WINGWALL = 27.041 C.Y.; TOTAL = 118.556 C.Y.

\* SKEWED WINGWALL LENGTH MEASURED ON CENTER LINE FROM CONSTRUCTION JOINT

\*\* DISTANCE FROM OUTSIDE EDGE OF BARREL EXTERIOR WALL TO CONSTRUCTION JOINT ON CENTER LINE OF WINGWALL

\*\*\* INCLUDE TOE AND KEY AT BARREL ENDS

FLORIDA DEPARTMENT OF TRANSPORTATION

VERSION NO. 2.1

BOX CULVERT AND WINGWALL DESIGN

PROJECT NUMBER : 00000-0000

LOCATION DESCRIPTION : STA 000+00.00  
ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE

STEEL QUANTITIES AND BAR SCHEDULE

BARREL QUANTITIES:

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH	D LENGTH
TOP SLAB	A100	166	5		0.500	1	11- 2	1933			
BOT SLAB	A200	133	6		0.625	1	11- 2	2231			
CORNER (TOP)	A1	308	4		0.542	10	4- 5	909	2- 1	2- 4	
CORNER (BOTTOM)	A2	308	4		0.542	10	4- 5	909	2- 1	2- 4	
EXTERIOR WALL (INSIDE)	B1	308	4		0.542	1	7-10	1612			
EXTERIOR WALL (OUTSIDE)	B2	308	4		0.542	1	5- 8	1166			
LONGITUDINAL	C1	120 ( 3)	4		1.500	1	28- 8	2298			
HEADWALL BOTH SIDES	G1	4 ( 1)	4		SEE INDEX	1	11- 2	30			
HEADWALL BOTH SIDES	P	24	4		1.000	11	3- 7	57	0-11	1- 6	1- 2

PER FOOT BARREL STEEL QUANTITY 132 LBS./FOOT  
TOTAL BARREL STEEL QUANTITY 11145 LBS.

WINGWALL QUANTITIES:

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH
STEM	F	48	5		1.208	10	10- 5	520	1- 9	8- 8
STEM	J	48	4		1.208	1	8- 8	276		
STEM	K	48	4		1.500	1	14- 8	472		
FOOTING	KF	16	4		SEE INDEX	1	14- 8	156		
FOOTING	L	52	4		1.208	1	4-10	168		
FOOTING LEFT SIDE	M1	2 ( 1)	4		SEE INDEX	1	41- 2	55		
FOOTING RIGHT SIDE	M2	2 ( 1)	4		SEE INDEX	1	41- 2	55		
STEM TO BARREL DOWELS	N **	36	6		1.000	10	6- 0	324	3- 0	3- 0
FOOTING SPILLWAY	R	24	4		1.000	1	2- 7	41		

PER FOOT WINGWALL STEEL QUANTITY 29 LBS./FOOT  
TOTAL WINGWALL STEEL QUANTITY 2067 LBS.

TOTAL STEEL QUANTITIES

BARREL 11145 LBS.  
WINGWALL 2067 LBS.  
TOTAL 13212 LBS.

\* LENGTH IS THE SUM OF BAR LENGTH AT BEGINNING/TOP AND ENDING/BOTTOM OF WINGWALL, NUMBER OF BAR IS THE AMOUNT REQUIRED FOR THIS SUMMATION OF LENGTH. B AND C LENGTH IS FOR THE FIRST BAR OF WINGWALL CLOSE TO THE JOINT OF WINGWALL AND BARREL.  
\*\* FOR SKEWED WINGS BEND BARS N TO ACCOMMODATE SKEW, PROVIDE FOR 3 FT. OF BAR IN THE WINGWALL AND HEADWALL.



STATE PROJ. NO. 00000-0000  
 SHEET NO. 00

FLORIDA DEPARTMENT OF TRANSPORTATION  
 BOX CULVERT AND WINDMILL DESIGN  
 PROJECT NUMBER : 00000-0000  
 LOCATION DESCRIPTION : 650-00 LT ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE  
 VERSION NO. 2.1

FLORIDA DEPARTMENT OF TRANSPORTATION  
 BOX CULVERT AND WINDMILL DESIGN  
 PROJECT NUMBER : 00000-0000  
 LOCATION DESCRIPTION : 650-00 LT ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE  
 VERSION NO. 2.1

**MATERIAL PROPERTIES**  
 CONCRETE COVER FOR REINFORCING BARS  
 STEEL YIELD STRENGTH : 60000 PSI  
 CONCRETE 28 DAY STRENGTH : 3400 PSI  
 BARREL EXTERIOR COVER: TOP SLAB : 0.17 FT., BOTTOM SLAB : 0.17 FT., WALL : 0.17 FT.  
 BARREL INTERIOR COVER: ALL LOCATIONS : 0.11 FT.  
 ALL LOCATIONS : 0.17 FT.

**PROPERTIES OF ELEMENTS**  
 BARREL : NO. OF BARRELS(S) : 2 | SPAN : 6.00 FT. | HEIGHT : 3.00 FT. | DEPTH OF FILL : 5.00 FT.  
 LENGTH AT BOX CENTER LINE : 19.50 FT. | LEFT SIDE SKEW ANGLE : 0 DEGREE | WIDTH : 14.25 FT.  
 RIGHT SIDE SKEW ANGLE : 0 DEGREE | WIDTH : 14.25 FT.  
 THICKNESS: TOP SLAB : 0.75 FT., BOTTOM SLAB : 0.75 FT., EXTERIOR WALL : 0.75 FT., INTERIOR WALL : 0.75 FT.

**WINDMILL** NO. OF WINDMILLS: BOTH LEFT AND RIGHT SIDES  
 NO. OF HEADWALL(S): BOTH LEFT AND RIGHT SIDES  
 TOP BEVEL : 0.50 FT. | SIDE BEVEL : 0.50 FT. | HEEL DIMENSION : 2.42 FT.  
 WALL HEIGHT : 4.75 FT. | FOOTING WIDTH : 3.90 FT. | FOOTING THICKNESS : 0.58 FT.  
 TOE DIMENSION : 0.75 FT. | WALL THICKNESS : 0.75 FT.  
 TOE PRESSURE : 614 LB/SQ.FT.

**SKEW ANGLE**  
 LEFT FRONT : 0 DEGREE | LEFT BACK : 90 DEGREE  
 RIGHT FRONT : 0 DEGREE | RIGHT BACK : 90 DEGREE  
 LENGTH : 10.00 FT. + 0.00 FT.\*\*\* | FRONT TIP HEIGHT : 4.75 FT.  
 WALL : 1.23 C.Y. | FOOTING : 1.286 C.Y.  
 TOTAL : 2.516 C.Y.

**CONCRETE QUANTITIES**  
 BARREL : POUR 1 (BOTTOM SLAB) : 0.410 C.Y. (FT.) | POUR 2 (WALLS) : 0.222 C.Y. (FT.) | POUR 3 (TOP SLAB) : 0.412 C.Y. (FT.)  
 POUR 4 (HEADWALLS) : 0.000 C.Y. | TOTAL (EXCLUDE HEADWALLS) : 1.044 C.Y. (FT.)  
 WINDMILL : POUR 1 (FOOTING) : 6.727 C.Y. | POUR 2 (WALLS) : 5.093 C.Y. | TOTAL : 11.820 C.Y.  
 TOTAL CONCRETE QUANTITIES : BARREL : 20.353 C.Y. | WINDMILL : 11.820 C.Y. | TOTAL : 32.172 C.Y.

\* SKEWED WINDMILL LENGTH MEASURED ON CENTER LINE FROM CONSTRUCTION JOINT  
 \*\* DISTANCE FROM OUTSIDE EDGE OF BARREL EXTERIOR WALL TO CONSTRUCTION JOINT ON CENTER LINE OF WINDMILL  
 \*\*\* INCLUDES TOP AND KEY AT BARREL CHAMF

**STEEL QUANTITIES 2ND BAR SCHEDULE**

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH	D LENGTH
TOP SLAB	A100	24	4	0.835	1	13-11	223				
BOT SLAB	A100	24	4	0.792	1	13-11	232				
TOP SLAB	A100	12	4	1.667	1	13-11	112				
TOP SLAB	B100	12	4	1.667	1	13-11	112				
BOT SLAB	A100	12	4	1.585	1	13-11	112				
BOT SLAB	B100	12	4	1.585	1	13-11	112				
CORNER (TOP)	A1	44	4	0.917	10	4-6	132	1-11	2-7		
CORNER (BOTTOM)	A2	44	4	0.917	10	4-6	132	1-11	2-7		
EXTERIOR WALL (INSIDE)	B1	44	4	0.917	10	4-6	132				
INTERIOR WALL	B2	44	4	0.917	10	4-6	132				
LONGITUDINAL	C1	52	1	1-5	1	13-11	58				
HEADWALL LEFT SIDE	C2	4	1	1-5	1	13-11	58				
HEADWALL RIGHT SIDE	C2	4	1	1-5	1	13-11	58				
HEADWALL RIGHT SIDE	C2	30	4	1-5	1	13-11	88	0-11	1-5	1-1	

PER FOOT BARREL STEEL QUANTITY : 99.9 LBS./FOOT  
 TOTAL BARREL STEEL QUANTITY : 2098 LBS.

**WINDMILL QUANTITIES**

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH
STEM	F	24	4	1.458	10	6-1	96	1-2	4-11	
STEM	G	24	4	1.458	10	6-1	80			
STEM	H	24	4	1.500	10	6-1	156			
FOOTING	K	16	4	SEE INDEX			104			
FOOTING	L	28	4	1.458	10	6-1	68			
FOOTING LEFT SIDE	M	2	1	1-5	1	13-11	45			
FOOTING RIGHT SIDE	N	2	1	1-5	1	13-11	45			
STEM TO BARREL CORNERS	N**	20	6	1-5	10	6-0	180	3-0	3-0	
FOOTING SPILLWAY	R	28	4	1-5	1	13-11	39			

PER FOOT WINDMILL STEEL QUANTITY : 99.9 LBS./FOOT  
 TOTAL WINDMILL STEEL QUANTITY : 813 LBS.

\* LENGTH IS THE SUM OF BAR LENGTH AT BEGINNING/TOP AND ENDING/END OF WINDMILL. NUMBER OF BAR IS THE HIGHEST REQUIRED FOR THIS SUMMATION OF LENGTH. B AND C LENGTH IS FOR THE FIRST BAR OF WINDMILL. D LENGTH IS THE JOINT OF WINDMILL AND BARREL.  
 \*\* FOR SKEWED WINDS BEND BARS N TO ACCOMMODATE SKEW. PROVIDE FOR 6 FT. OF BAR IN THE WINDMILL AND HEADWALL.  
 TOTAL : 2911 LBS.

REVISIONS												APPROVED BY		DATE		FLORIDA DEPARTMENT OF TRANSPORTATION		APPROVED BY		DATE	
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION	NAME	DATE	NAME	DATE	NAME	DATE				

BOX CULVERT



## CHAPTER 8

### SUMMARY OF DRAINAGE STRUCTURES

#### 8.1 General

The summary of drainage structures sheet shows the location, size, length, number, type of drainage structures and index numbers of standard details used in a project. The sheet format is available in the CADD cell library. Specific levels and fonts which shall be used are also explained in the DOT CADD Manual. Provision shall be made to show both the plan and final quantities.

For a complete illustration of summary of drainage structures see Exhibit II-8-A thru C.

## 8.2 Sheet Setup and Data

A summary of drainage structures shall be prepared and included in the plans. The structures shall be listed by structure numbers in numerical order. Location of each structure shall be identified by station along construction centerline (Exhibit II-8-A).

For cross drains, the summary of drainage structures shall be tabulated by structure number, providing the station, size, length and incidental quantities appropriate for the material detailed in the plans. Usually, optional culvert material will be provided and a supplemental tabulation form shall be prepared and included, which provides information for the optional pipe materials by structure number providing design service life (DSL), size, length, flow line elevations, thickness or class, corrugation requirements if necessary, and protective coatings if any. The optional material which was plotted and used to establish the pay quantities shall be identified. A table giving maximum and minimum backfill soil value shall be provided (Exhibits II-8-B and II-8-C).

For storm sewer, the summary of drainage structures shall be tabulated by structure number, providing station, location, size, length, type, and incidental quantities. Usually, only one culvert material will be designed for storm sewer. If optional materials are designed, a sheet supplemental to the summary of drainage structures sheet shall be provided using the format for cross drains.

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

- Pipe Sizes for
  - Cross Drains
  - Storm Sewer
  - Gutter Drain
  - Curb Inlets
  - Manholes
  - Ditch Bottom Inlets
  - Gutter Inlets
  - Flared End Sections
  - Mitered End Sections
- Sod
- Class of Concrete
- Reinforcing Steel
- Rip Rap

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

The remarks column shall contain all special notes pertaining to the structure.

The "F" line is for construction to document the final quantity and should be left blank by the designer.

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



GENERAL NOTES

- The Contractor shall bid on the structures and optional pipe material plotted in the plans and the optional pipe material indicated as "plotted" on this sheet.
- The Contractor may use any of the optional pipe materials tabulated for a given structure, however payment will be made only under the pay item number that applies to the material indicated under "plotted" on this sheet and the associated quantities appropriate for the "plotted" material.
- Adjustment to the bid quantities, prices and payment will not be allowed due to increase or decrease in structure size, shape, length, width, depth or accessory construction necessary to accommodate the use of an optional pipe material other than the "plotted" option; likewise there will be no added or reduced compensation for structure alterations required to relieve utility conflicts which arise from the use of an optional material other than the "plotted" option.
- Adjustment to the bid quantities, prices and payment will not be allowed due to increased or decreased excavation, bedding, borrow, backfilling, compaction, special installation requirements or disposal of excess materials due to use of any of the pipe optional materials. Likewise, adjustment in the quantities, prices and payment will not be allowed due to differences in end treatment size or types, pipe length, alternate joining and connecting materials, saddles, cradles, filter fabrics, shoring or similar features due to the use of an optional material other than the "plotted" option.
- If adjustments are required due to plan errors or omissions or authorized field changes, the "plotted" material and not the material elected by the Contractor would be used to establish new pay quantities.
  - For steel pipe, the pH and resistivity values must be considered in combination (Figure II-2).
  - For aluminum pipe, the pH and resistivity values must be considered in combination (Section II.3.1 & Table II-3.1).
  - For concrete pipes, the pH, chloride and sulfate values must be considered in combination (Figure II-1).
- The Contractor shall verify that backfill from sources outside the limits covered by the soil survey have values which satisfy both the minimum and maximum limits shown in the table and when combined as indicated, provide the design service life (DSL) shown for the structure:
  - For steel pipe, the pH and resistivity values must be considered in combination (Figure II-2).
  - For aluminum pipe, the pH and resistivity values must be considered in combination (Section II.3.1 & Table II-3.1).
  - For concrete pipes, the pH, chloride and sulfate values must be considered in combination (Figure II-1).

Figure reference is to the Department's Drainage Manual, 1987 Edition, Volume 2, Chapter II.

Material Option	Design Service Life	pH		Resistivity Ohm-Cm		Chloride mg/L	Sulfates mg/L
		min	max	min	max		
Steel	100	5.0	9.0	1500			
	50	5.0	9.0	1500			
Aluminum	100	5.5	8.5	1500			
	50	5.5	8.5	500			
Concrete	100	5.0 to 5.5	8.5 to 9.0	1500	2000	1500	
	50	4.5	9.0		22000	10000	

Str. No.	DSL	SIZE (INCHES)	LENGTH (FEET)	QUANTITY	MATERIAL & THICKNESS	F.L.	F.L.	UNIT	REMARKS
14	100	30	72	X	RCP Class III	6.0	5.9		
		36	71		CAP, 16 ga, 3 x 1	6.0	5.9		
		30	72		CSP, Type 1-R, 14 ga, Bit Coat	6.0	5.9		
		36	71		CSP, 14 ga	6.0	5.9		
14A	100	30	50	X	RCP Class III	5.9	5.8		
		36	49		CAP, 16 ga, 3 x 1	5.9	5.8		
		30	50		CSP, Type 1-R, 14 ga, Bit Coat	5.9	5.8		
		36	49		CSP, 14 ga	5.9	5.8		
16	100	36	169		RCP Class II	9.6	9.4		Dbl. Pipe
		48	158		CAP, 3 x 1, 16 ga	9.6	9.4		Dbl. Pipe
		36	160		CSP, Type 1-R, 14 ga, Bit Coat	9.6	9.4		Dbl. Pipe
		48	158	X	CSP, 14 ga, Bit Coat	9.6	9.4		Dbl. Pipe
17	50	18	8		RCP Class II	11.8	10.8		Median Drain
		18	8		CAP, 16 ga	11.8	10.8		
		18	8		CSP, Type 1-R, 14 ga, Bit Coat	11.8	10.8		
		18	8	X	CSP, 14 ga, Bit Coat	11.8	10.8		
18	50	18	178	X	RCP Class II	12.5	11.0		
		18	178		CAP, 16 ga	12.5	11.0		
		18	178		CSP, Type 1-R, 14 ga, Bit Coat	12.5	11.0		
		18	178		CSP, 14 ga, Bit Coat	12.5	11.0		
19	100	48	136		RCP Class III	9.5	9.4		Use Index 250, Dbl. 48" Endwall
		60	100		CAP, 16 ga, 3 x 1	9.5	9.4		
		48	136		CSP, Type 1-R, 14 ga, Bit Coat	9.5	9.4		Use Index 250, Dbl. 48" Endwall
		60	100	X	CSP, 3 x 1, 14 ga, Bit Coat	9.5	9.4		
19A	100	48	111		RCP Class III	9.4	9.3		Use Index 250, Dbl. 48" Endwall
		60	98		CAP, 16 ga, 3 x 1	9.4	9.3		
		48	111		CSP, Type 1-R, 14 ga, Bit Coat	9.4	9.3		Use Index 250, Dbl. 48" Endwall
		60	98	X	CSP, 3 x 1, 14 ga, Bit Coat	9.4	9.3		
19B	100	48	231		RCP Class III	9.5	9.3		
		60	200		CAP, 16 ga, 3 x 1	9.5	9.3		
		48	231		CSP, Type 1-R, 14 ga, Bit Coat	9.5	9.3		
		60	200	X	CSP, 3 x 1, 14 ga, Bit Coat	9.5	9.3		
20	50	24	41	X	RCP Class II	14.9	11.3		Const. Collar
		24	40		CAP, 16 ga	14.9	11.3		Const. Collar or fabricated Tee fitting
		24	40		CSP, Type 1-R, 14 ga, Bit Coat	14.9	11.3		Const. Collar or fabricated Tee fitting
		24	40		CSP, 14 ga, Bit Coat	14.9	11.3		Const. Collar or fabricated Tee fitting
21	50	18	84	X	RCP Class II	15.9	15.2		
		28 x 20	85		CAPA, 14 ga	15.9	15.2		
		18	84		CSP, Type 1-R, 14 ga, Bit Coat	15.9	15.2		
		28 x 20	85		CSPA, 14 ga, Bit Coat	15.9	15.2		
22	100	15	87	X	RCP Class II	17.0	16.9		
		15	87		CAP, 16 ga	17.0	16.9		
		15	87		CSP, Type 1-R, 14 ga, Bit Coat	17.0	16.9		
		15	87		CSP, 14 ga, Bit Coat	17.0	16.9		
23	100	15	89	X	RCP Class II	16.2	15.0		
		15	89		CAP, 16 ga	16.2	15.0		
		15	89		CSP, Type 1-R, 14 ga, Bit Coat	16.2	15.0		
		15	89		CSP, 14 ga, Bit Coat	16.2	15.0		

THIS SHEET USED TO TABULATE OPTIONAL STORM SEWER AND/OR CROSS DRAIN PIPE MATERIALS. CROSS DRAIN EXAMPLE SHOWN.

REVISIONS										FLORIDA DEPARTMENT OF TRANSPORTATION				CROSS DRAIN OPTIONAL MATERIALS TABULATION	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	APPROVED BY	DATE	APPROVED BY	DATE	SHEET
															Sheet
															2 of 2





## CHAPTER 9

### PROJECT LAYOUT

#### 9.1 General

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

The layout sheet shall be prepared on a standard plan format. Scale shall be such that clarity and legibility are preserved even if the plans are reduced to half size. North arrow and graphic scale shall be shown at a point of maximum visibility on the sheet. For large, complicated projects, more than one sheet may be required to clearly depict all required information. Appropriate match lines shall be shown if more than one sheet is required.

## 9.2 Alignment Sheet Sequence

Complete project alignment with centerline of construction shall be shown. Edge of pavements shall be shown if scale permits. Outlines of the plan, or plan - profile sheets shall be superimposed on the alignment to depict the sheet sequence with relation to the alignment stationing. Match lines and match line stations shall be shown on the plans, or plan - profile sheet outline with sheet numbers shown in the upper, right-hand corner. The order of plan/plan - profile sheet numbering shall be as follows:

Mainline (for widely separated roadways, the right roadway in the direction of stationing takes precedence, see Exhibit II-9-A).

Crossroads

Ramps

Frontage roads

Access roads

Beginning and ending stations for project, construction and ramps shall be flagged and labeled.

### 9.3 Survey Reference Points

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

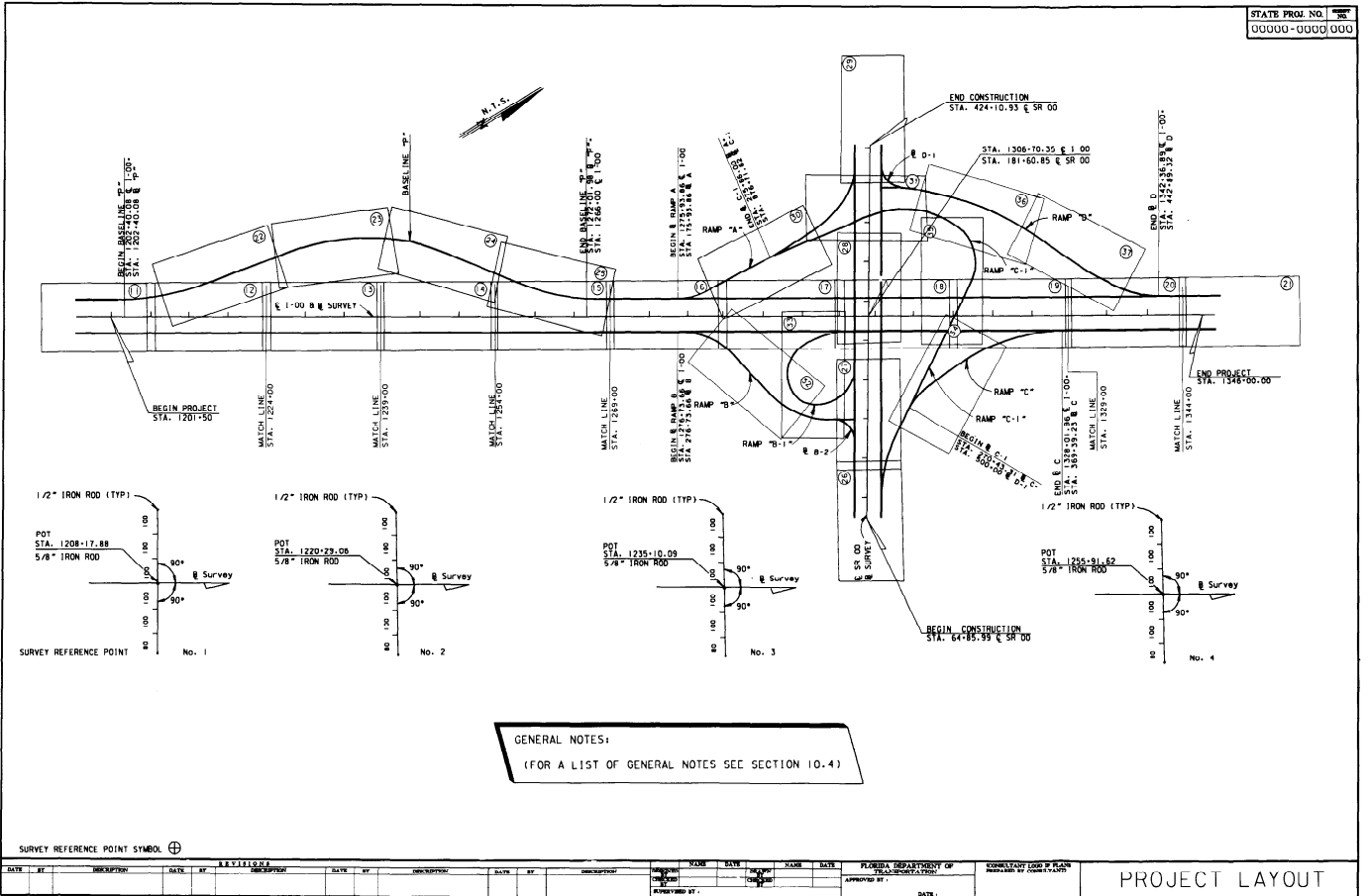
### 9.4 General Notes

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

For a list of general notes, refer to Section 10.4 of Roadway Plan and Profile Chapter 10 of this Volume.

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 30  
00000-0000 000



GENERAL NOTES:  
(FOR A LIST OF GENERAL NOTES SEE SECTION 10.4)

SURVEY REFERENCE POINT SYMBOL ⊕

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION  
CONSULTANT LOG & PLAN  
PROJECT LAYOUT

EX-11-9-A

**CHAPTER 10**  
**ROADWAY PLAN AND PROFILE**

**10.1 General**

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

Roadway plan - profiles shall be prepared on standard plan-profile format. Scales used should be such that the sheet is legible when reduced to half size. Standard scales for rural construction are 1" = 100' in the plan and 1" = 100' horizontally and 1" = 10' vertically in the profile. Scales for urban construction are usually 1" = 20' in the plan and 1" = 20' horizontally and 1" = 2' vertically in the profile. To provide additional clarity, scales other than these standards may be used, such as, 1" = 50' horizontally and 1" = 5' vertically. The scale shall be shown graphically along the north arrow. The north arrow shall be placed on the plan portion at a point of maximum visibility. The usual position is near the top right corner of the plan portion.

CADD Roadway Standards and Guidelines explains in detail the production of the plan - profile sheet.

If a project layout sheet is not included in the plans set, then provision shall be made on the first plan - profile sheet to show applicable general notes. Refer to Section 10.4 for a list of general notes.

## 10.2 Roadway Plan Portion

### 10.2.1 Centerline

The centerline of construction should be centered in the plan portion of the sheet, with stationing running from left to right. When horizontal curves are involved, the centerline shall be positioned on the sheet such as to avoid breaks or match lines.

A "tick" mark shall be placed on the upper side of the centerline at every station. "Tick" marks at every 5" (true scale) shall be 0.2" long and the station number should be shown above the "tick" mark, usually outside of the R/W lines. The remaining "tick" marks at every 1" (true scale) shall be 0.1" long with no station numbers shown. Station numbers may be shown inside the R/W.

Thirty stations per sheet should be shown when the horizontal scale is 1" = 100' and if a scale of 1" = 20' is used, six stations per sheet should be shown. Each sheet shall begin and end with a whole station and shall begin on an even 10 station for a scale of 1"=100'. The first and last plan-profile sheets may be exceptions.

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

### 10.2.2 Horizontal Curves

P.C., P.T. points of horizontal curves shall be indicated by small circles. Short radial lines shall be drawn from these points and identified. P.I.'s shall be noted by the use of a small triangle with a short section of tangent on either side. In cases where the curve extends over more than one sheet, the curve data shall be repeated on each sheet showing the curve.

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

#### **CURVE DATA**

P.I. Station

$\Delta$  (Delta Angle with Direction)

D (Degree of Curvature)

T (Tangent Length)

L (Length of Curve)

R (Radius Length)

P.C. Station

P.T. Station

e (Superelevation Rate)

### 10.2.3 Existing Topography

All existing topography shall be shown. Existing roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges, drainage structures and similar items shall be drafted and labeled. Streams, ponds, lakes, wooded areas, ditches and all other physical features shall also be shown. Existing curbs, sidewalks, pipes, etc. shall be drafted using a light broken line; existing pavement edges shall be shown by a different broken line pattern (longer dashes). All existing utilities shall be shown on the plan and noted by an appropriate symbol (see Index 002 for standard symbols). If the type of utility pipe is unknown it should be labeled as such. Existing gasoline storage tanks within limits of topographical survey shall be located and illustrated by broken lines on the plan.



#### 10.2.4 Reference Data

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

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

All the survey reference points shall be shown (if layout sheet not included in plans set) at locations removed from the centerline. If the layout sheet is included in the plans set, the reference points shall be shown by symbol and number only.

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

#### 10.2.5 Construction and Project Limits

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

1. Beginning and end of project, and beginning and end of construction where construction limits are other than project limits. If plans cover more than one project, the limits of each shall be clearly identified by station and project number. Limits identification shall be shown both in plan and in profile.
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, resurfacing, bridging, widening, and milling.
4. The begin and end of exceptions.

#### 10.2.6 Drainage Structures and Bridges

Proposed cross drain pipes and culverts shall be indicated in the plan by a symbol and identified by a drainage structure number only. Box culverts (single or multiple) of 20' total span or more between inside faces of end supports, measured along the center of the roadway, shall be designated as bridge culverts and shall be identified by a drainage structure number. The beginning and ending stations (outside wall to outside wall) shall be flagged.

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

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

The proposed drainage system is indicated by drafting storm sewer pipes with a single line, and the outline of inlets, manholes and junction boxes. The pipe size between structures shall be given. Structure numbers shall be provided for inlets, manholes, junction boxes and special structures. When drainage structure sheets are included in the plans, no further information shall be noted. When drainage structures are not included in the plans, a complete description of the pipes and drainage structures shall be shown.

When plans are prepared utilizing optional pipe materials for storm sewer or cross drain, the size of the most logical option shall be the pipe size shown, together with a sheet similar to the "Optional Cross-Drain Tabulation Sheet", or a complete description of all pipe options shall be shown on the plan-profile sheet.

### 10.2.7 Plan Layout

1. Right-of-way lines shall be shown. Right-of-way shall be dimensioned only if the applicable typical section shows a varying dimension from the baseline or centerline. Dimensions of the R/W line shall be from the centerline or baseline, if survey and construction lines are parallel; otherwise it shall be dimensioned from the construction centerline.
2. The showing of detailed information regarding crossovers or intersections should be avoided when they are of a type which can be handled by a standard detail. Crossover and intersections shall be identified by station location.
3. At locations along the alignment where travelway dimensions change, or begin to change, the station and dimensions of the travelway shall be shown. For rural projects the edges of pavement may not be shown in the plan if shown in typical section projects.
4. Curb, curb and gutter, traffic separators, sidewalks, curb cut ramps, retaining walls, etc. shall be shown.
5. Stations of return points, shall be shown in tabular form (see Exhibit II-10-A) or shown on the plan, unless shown on the intersection details. Offsets shall also be shown, if not governed by a typical.
6. Station of radius points of traffic separator or median curb at median openings shall be shown in the plan. Elevation of these points shall also be shown if not shown in the intersection details sheet or unobtainable in plans.
7. Control radii for traffic turns that set median nose locations shall be indicated, unless shown on the intersection detail sheet.

8. Station of end of curb and gutter at side street intersections, (when end is not at a return point) shall be shown with proposed gutter grade elevation of these points. No station needs to be shown for driveways when the curb and gutter on the returns is terminated five feet back of the sidewalk or the right-of-way line, since the point of termination is set by the back of sidewalks or project right-of-way.

9. Limits of pavement and grading at side street intersections shall be indicated.

10. When incidental construction extends beyond the right-of-way lines, construction easements or restoration agreements may be required and should be shown on the plan sheets.

11. All utilities shall be shown in the plan. Elevations of utilities less than 4 inches in diameter shall be flagged in the plan view. All major utilities that have been field verified shall be labeled in accordance with the following symbols:

$V_h$  = Verified Horizontal Location

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

### 10.3 Roadway Profile Portion

#### 10.3.1 General Data

The horizontal scale for the profile portion of the sheet shall be the same as that used for the plan portion. Station limits of the profile shall correspond to those of the plan of each sheet. Station numbers shall be placed across the bottom of the sheet just above the title block. The full station number should be shown every five inches, regardless of scale, and the first and last stations on a sheet. Single digit numbers may be shown for other stations. A general guideline for horizontal and vertical scale is the vertical scale should be 10% of the horizontal scale.

Vertical elevation datum selected shall be such that the profile will not crowd either the upper or lower limits of the profile format. Elevation datum shall be shown on both the left and right sides of the sheet.

The existing groundline profile at baseline of survey (regardless of the location of profile gradeline) shall be drafted using a light solid line. Existing groundline elevations on the survey line shall be noted vertically, just above the station numbers at each end of the sheet only.

High water elevations shall be shown by use of a light broken line (long dashes) at the high water elevation, with the elevation and the year of the indicated high water identified. If high water is to be lowered, the design high water elevation shall be stated.

Bench mark data shall normally be given just below the upper margin of the profile portion. However, if space permits, it may be placed in the plan portion just above the upper profile margin at the appropriate corresponding station. Refer to Exhibit II-10-A for correct format.

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

### 10.3.2 Vertical Curves

The proposed profile grade shall be shown by a heavy solid line. Vertical curve P.C.'s and P.T.'s shall be indicated by small circles and P.I.'s by a small triangle with short sections of tangent drafted with a light line on each side. Percents of grade to 4 significant decimal places shall be shown on the tangent line (zeros need not be shown). Vertical lines shall be extended from the P.C. and P.T. points and a dimension line placed between these lines indicating the length of the vertical curve. The P.C. and P.T. stations and elevations shall be indicated on the vertical lines.

For vertical curves, the profile grade elevations shall be given on even stations and, where appropriate, at 20' and 50' intervals. The elevations shall be placed between the dimension line and the grade line. The curve length, dimension and the profile grade elevations shall be placed above the grade line for sag vertical curves and below the grade line for crest vertical curves. The dimensions and elevations shall be placed reasonably near the grade line whenever possible. The P.I. station and elevation shall be noted, lettered vertically above the P.I. symbol for crest curves and below for sag curves.

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

#### 10.3.3 Grades

Percents of grades to 4 significant decimal places shall be indicated for each tangent section on every sheet (zeros need not be shown). When two tangent grades intersect and no vertical curve is required the P.I. station and elevation shall be labeled vertically, using the same criteria as for vertical curves.

#### 10.3.4 Superelevation

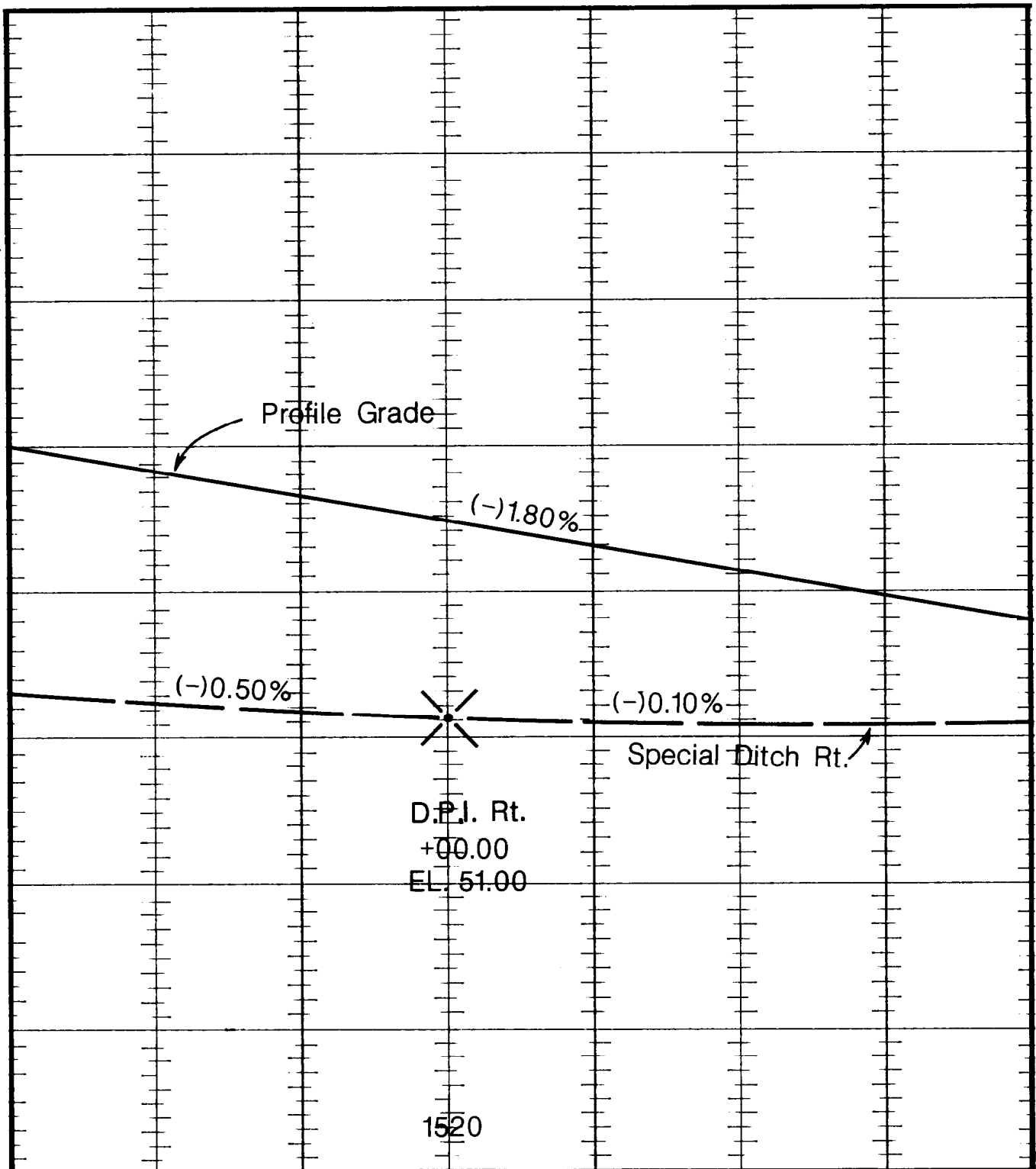
For non-standard superelevated sections of the project, the begin and end superelevation stations should be indicated on the profile with a note "For Superelevation details see sheet \_\_\_" (special profiles sheet).

#### 10.3.5 Drainage Features

For rural construction projects, special ditches shall be indicated in the profile with a medium light broken line (long dashes). Percent of ditch grade and a beginning or ending ditch P.I. with symbol (see figure 10.1), and elevation and station plus shall be shown. For multi-lane divided projects, three special ditch grades (right and left roadway ditches and median ditch) sometimes occur at the same location. In such cases it may be advantageous to show the median ditch at a convenient location on the sheet with a separate elevation datum.



FIG. 10.1  
DITCH POINT INTERSECTION (D.P.I.)



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

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

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

Storm sewer pipe, inlets and manholes along the main line shall be shown. Pipes shall be noted by size. If drainage structure sheets are included in the plans, proposed structures may be shown by structure number only. Proposed drainage structures shall be drafted with a medium heavy line. If drainage structure sheets are not included in the plans, sufficient information to construct the structure should be given. This information would be type, index gage or class, corrugation, protective features, grate and flow line elevations for all pipes entering and leaving the structure.

Proposed cross drain pipes and culverts shall be plotted in section with a heavy solid line. The section shall be shown at the correct location and elevation of the proposed structure crossing the centerline of construction. If drainage structures are drawn, cross drains shall be identified by structure number only. If drainage structure sheets are not included in the plans, the size, length, flow lines and pipe material, including gage or class, corrugation and protective features, must be given. If optional materials are provided, only the structure number is shown and the optional material cross drain tabulation sheet is provided. Bridges and bridge culverts shall be noted as such, and their beginning and ending stations shown.

For road/railroad under bridge situations, the cross-section template of the road/railroad under the bridge shall be shown at the appropriate location in profile.

All major underground utilities located in the field shall be shown to scale in profile and labeled in accordance with the following symbols:

$V_v$  = Verified Vertical Elevation

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

Note: "Major Utilities" are defined as water mains (4" or larger), all gas lines except service lines, telephone cables and ducts (50 pair or larger), sanitary lines (all gravity flow mains), sanitary force mains (4" or larger) and electric power cable (all buried electric transmission cables - not service lines).

#### 10.4 General Notes for Plan - Profile Sheets

General notes for the project shall be placed on the left portion of the first plan - profile sheet if a layout sheet is not included in the plans set, otherwise, they shall be included in the layout sheet.

List of General Notes:

1. Grades shown are finished grades.
2. B.M. Datum is National Geodetic Vertical Datum of 1929 (NGVD-'29).
3. Buildings to be removed by others, unless otherwise noted.
4. Existing drainage structures within construction limits shall be removed (or remain) unless otherwise noted.
5. If there are no utility adjustment sheets in the plans, the following notes shall be included in the general notes:
  - a. The location of the utilities shown in the plans are approximate only. The exact location shall be determined by the Contractor during construction.
  - b. For utility adjustment symbols, see Index No. 002
  - c. Utilities are to be adjusted by others as directed by the Engineer.
  - d. Utility Owners: (Note: Should have names and emergency phone numbers.)

Companies

Telephone Nos.

6. If there are no drainage structure sheets in the plans, the following notes shall be included in the general notes:

a. Special attention is directed to the fact that portions of some drainage structures extend into the stabilized portion of the road bed and extreme caution will be necessary in stabilization operations at these location.

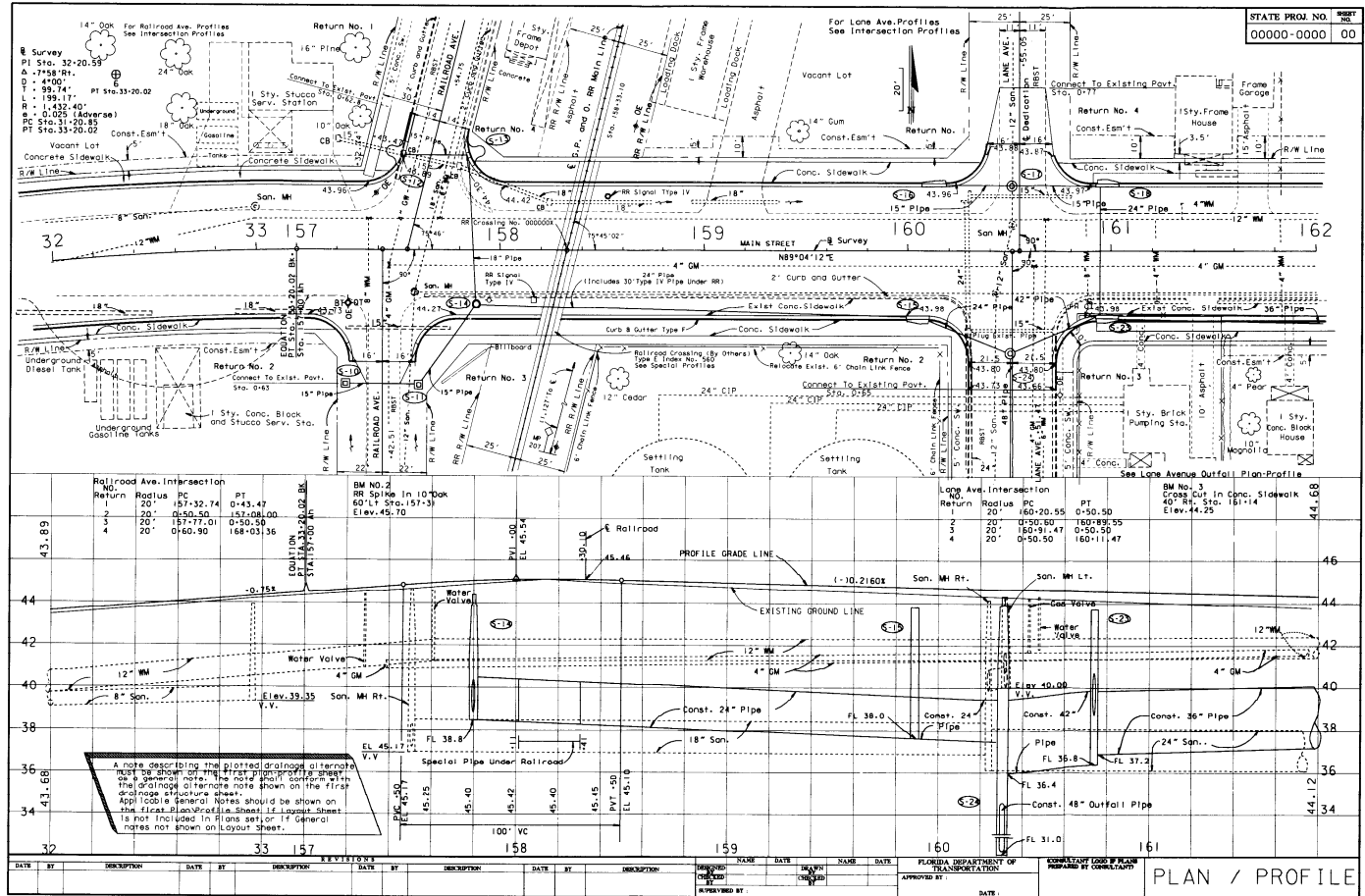
b. (To be used when optional materials are provided)

(Some) (All) \_\_\_\_\_ of the drainage structures have optional culvert materials. One of the optional materials has been used as the basis of the pay quantities. All optional materials are described, and design information has been provided in the tabulation of optional cross drain (and/or storm sewer) pipe culvert materials.

7. Permanent turnouts and driveway connections to private property that lie outside the limits of limited access right-of-way and where access rights have not been acquired shall be constructed in accordance with the turnout details and State Standard Specifications referenced on the key sheet of these plans. The Department, or the Department's contractor, shall not isolate adjacent and/or the remainder of the property unless access rights are acquired. Access shall be provided to such property whenever the construction interferes with the existing means of access.

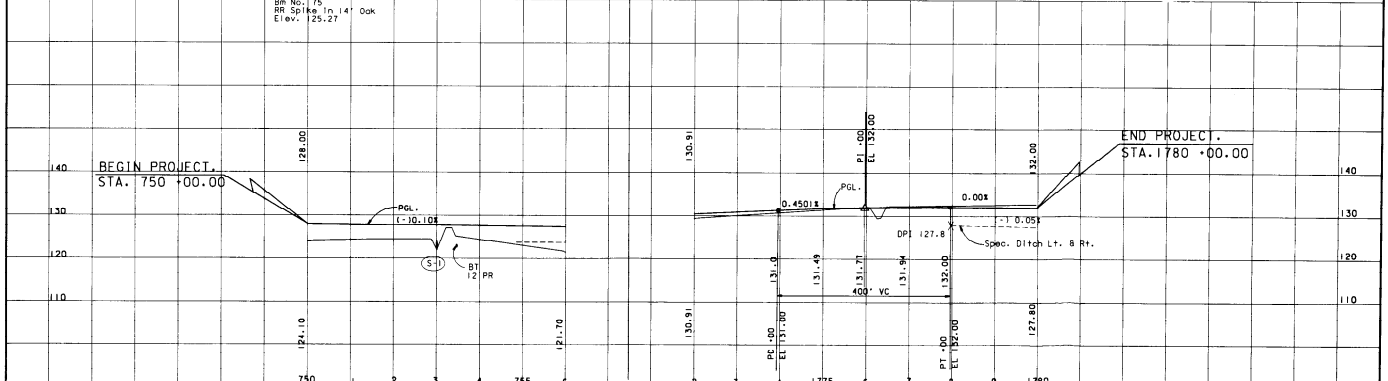
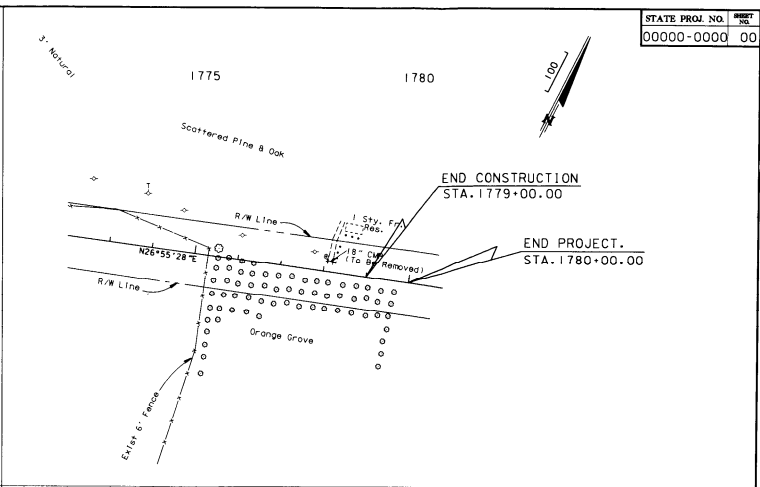
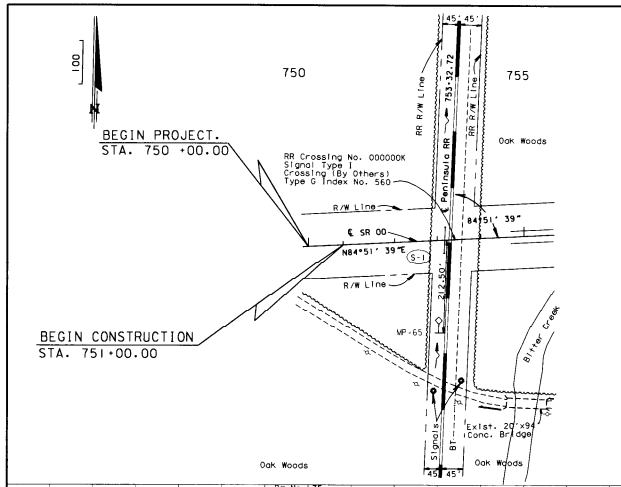
8. Any public land corner within the limits of construction is to be protected. If a corner monument is in danger of being destroyed and has not been properly referenced, the project engineer should notify the district location surveyor without delay by telephone.

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EX 11-10-A





DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

NAME	DATE	NAME	DATE
DESIGNED BY		CHECKED BY	
APPROVED BY		APPROVED BY	

FLORIDA DEPARTMENT OF TRANSPORTATION  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

BEGIN AND END STATION



## CHAPTER 11

### SPECIAL PROFILES

#### 11.1 General

The special profiles sheet shows profile of pavement edges or gutter flowline at street intersections, ramp termini, curb returns, railroad crossings and roadway sections requiring special superelevation details. These areas require special analysis and design to ensure a safe, efficient, water free, and smooth roadway system. The special profiles sheet shall show details at close intervals and at a scale large enough to clearly identify all construction details within these areas.

## 11.2 Intersections

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

When plan - profile format is used for intersection details, the profile's horizontal scale shall be the same as that for the plan portion. A vertical scale of 1" = 1' 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 may be shown by a light broken line.

For intersections detailed on separate plan format, the profile and sections shall be shown on standard cross section format.

For street intersections of municipal projects, a scale of 1" = 10' horizontal, and 1" = 1' vertical is recommended.

### 11.3 Curb Returns

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

Curb return profiles shall be shown on standard cross section format. They shall be included in the plans set if the required information cannot clearly be shown on the plan - profile sheet or intersection detail sheet, or if extreme grades are involved rendering the standard curb return profiles (Index 303) 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, when the plans are reduced to half size. Each return profile shall be identified and its PC, PT station indicated. Elevations should be shown at 20' intervals and low and high spots shall be identified by location and elevation.

#### 11.4 Ramps

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

Recommended scales for ramp profiles are 1"-10' horizontally and 1" = 1' vertically, or 1"=50' horizontally and 1"=1' or 2' vertically.

Sections at nose points are required. They may be shown using a scale of 1"=10' horizontally and 1"=1' 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 the construction phase. Hence, all construction details pertaining to these areas should be clearly and accurately shown in the plans. Spline grade shows the interconnection and interrelation of the edges of pavement with the mainline edge of pavement. This profile proves to be valuable especially if the mainline pavement is superelevated or within the superlevation transition zone.

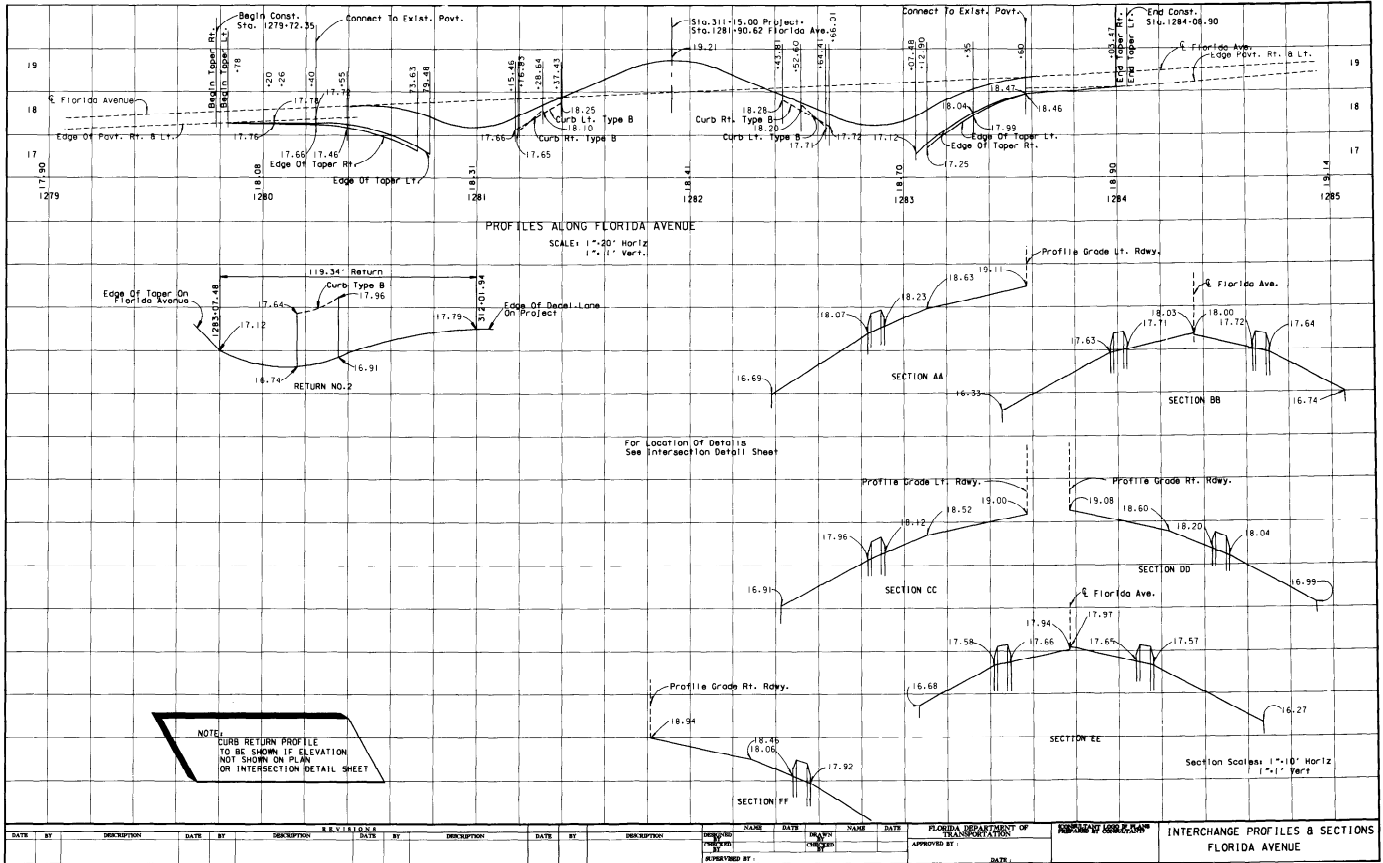
Spline grade shall show the elevations at a minimum of 20' and a maximum of 100' intervals of the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas. Grades of the three pavement edges shall be shown on a standard cross section format; recommended scales: 1"=10' horizontally, 1"=1' vertically or 1"=20' horizontally and 1"=2' vertically. Grades of each pavement edge shall be joined by smooth spline or simple curve. The three grade profiles shall be clearly labeled and all equality stations indicated. Nose stations shall be flagged and labeled. Scale shall be indicated in close proximity of the profile and shall be clearly visible.

## 11.6 Superelevation

For projects involving simple curves, no superelevation diagram shall be required as it is covered in the Roadway and Traffic Design Standards. For projects involving reverse curves, or compound curves or any other situation requiring special superelevation not covered in the standards, the superelevation diagram shall be shown in the plans. Complete profile grade line and right and left edges of pavement within the superelevation zone shall be shown on the cross section format. A scale of 1"=10' horizontally and 1"=1' vertically is recommended for clarity. The begin and end superelevation stations shall be labelled and indicated by a solid vertical line of medium weight at the appropriate station. A horizontal dimension line shall be utilized to indicate a section in full superelevation.

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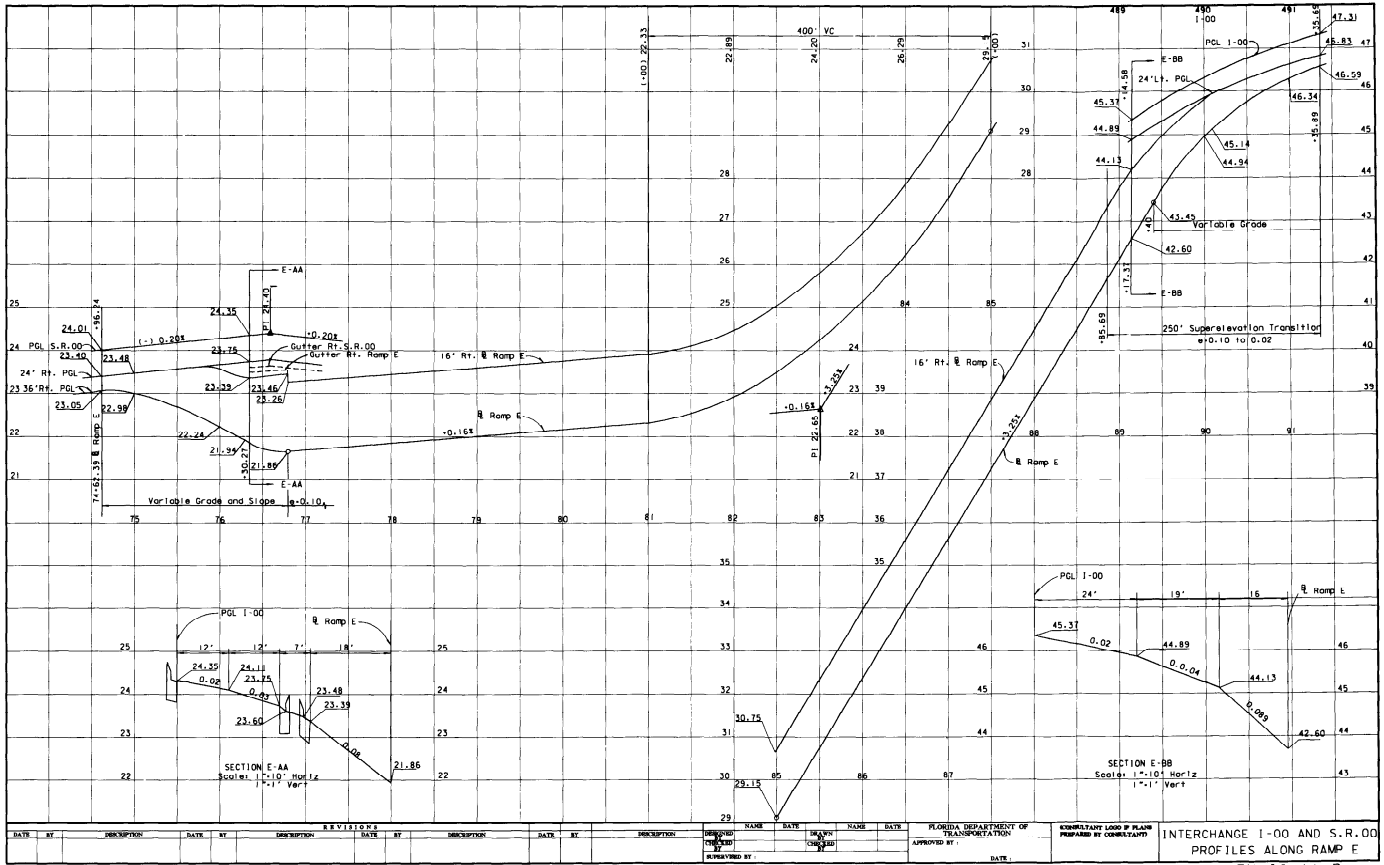
STATE PROJ. NO. 00000-0000  
 SHEET NO. 00



EX 11-11-A

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STATE PROJ. NO. 00000-0000  
 SHEET NO. 00





## CHAPTER 12

### BACK-OF-SIDEWALK PROFILES

#### 12.1 General

Back-of-sidewalk/right of way line profiles are used to establish the profile grade and hence play an important role in plan preparation, especially if the project site is located in a built-up urban area. Profiles help determine 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 storm water 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 plan - profile sheets are centerline grade profiles.

The inclusion of the back-of-sidewalk profiles in the plans set is optional - at the discretion of the District Office, but work sheets must be submitted with phase reviews.

## 12.2 Required Information

Profiles for use in establishing back-of-sidewalk grades consist of profiles along the outside edge of each sidewalk, drafted against the same elevation datum. The profiles shall be drafted with light broken lines, using different line patterns and labels to distinguish between the right and left sidewalk profiles.

The standard scale is 1" = 100' horizontally and 1" = 5' vertically. This combination works well for projects having few locations where back-of-sidewalk grades would be critical. For clarity, it may be advantageous to use a vertical scale of 1" = 2' and a horizontal scale of 1' = 50' or 1" = 20' for projects located in business and commercial areas. Elevation datum shall be shown on both sides of the sheet with station numbers below the profile. If a horizontal scale of 1" = 100' is used, full station numbers shall be shown at each even ten stations and single digit numbers at the remaining stations. For other horizontal scales, full station numbers shall be given at each station.

Percents of grade for the sidewalk profile, P.I. stations and elevations shall be shown. Vertical curves, if any, shall be dimensioned. Elevations along vertical curves are not required. Begin and End project and sidewalk stations shall be flagged and labeled. Mainline station equations within the limits of the sidewalk profile shall also be flagged and labeled.

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

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

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

Floor elevations for buildings shall be indicated by a horizontal line drawn at the floor elevation between the building limit stations. The numeric elevation shall be shown, as well as the distance from centerline of project to face of building and side (right or left) specified. Entrances to buildings, elevations of top of existing utilities, and water table elevation may be shown when appropriate. Stations and elevations of intersecting side streets shall also be shown.

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

### 12.3 Sheet Set Up

Back-of-sidewalk profiles shall be prepared on standard cross section format. For simple projects which do not involve many cross streets or driveways, the sheet may be sectioned horizontally to maximize usage. Stationing shall progress from left to right and top to bottom. Match lines shall be at even stations. Care should be taken to preserve clarity and legibility even when the plans are reduced to half scale. For normal projects, the profiles shall be drafted as shown in Exhibit II-12-A.



## CHAPTER 13

### INTERSECTION AND INTERCHANGE DETAILS/LAYOUTS

#### 13.1 General

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

Intersection/interchange layout sheets shall show all necessary details of channelization, tapers, turn lanes, special drainage, grading, and radii. The sheets shall be prepared on a standard plan format using a scale large enough to show details clearly and legibly, at both full and half size.

## 13.2 Intersections

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

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

For larger, more complicated intersections involving channelization, signalization or long connections, the layout shall be placed on a standard plan format using match lines when more than one sheet is required. The profiles shall be presented separately on a standard cross section format. (See Chapter 11 - Special Profiles).

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

All intersection layouts shall be dimensioned, stationed adequately, and shall include all pertinent construction notes and alignment data. Design speed data shall be given when appropriate. A north arrow and graphic scale shall be shown at a point of maximum visibility on the plan.

The scale used shall be sufficient to cover all necessary details, preferably 1"=20'. The scale shall not be smaller than 1" = 40'. Widths of turning lanes and turning paths shall be checked for possible encroachments or conflicts.

### 13.3 Interchanges

#### 13.3.1 Geometric Layout

Interchange layouts shall be prepared on a standard plan format. The entire interchange shall be placed on one sheet when possible, using a scale of 1" = 200'. In cases of large cloverleaf or directional interchanges, more than one sheet may be required. Appropriate match lines shall be shown. Layouts shall be dimensioned and completely stationing, with all alignment data and construction notes included. All curves shall be assigned a number and curve data presented in a tabular form. It is preferred that the tabular curve and coordinate data be placed on the same sheet as the interchange layout.

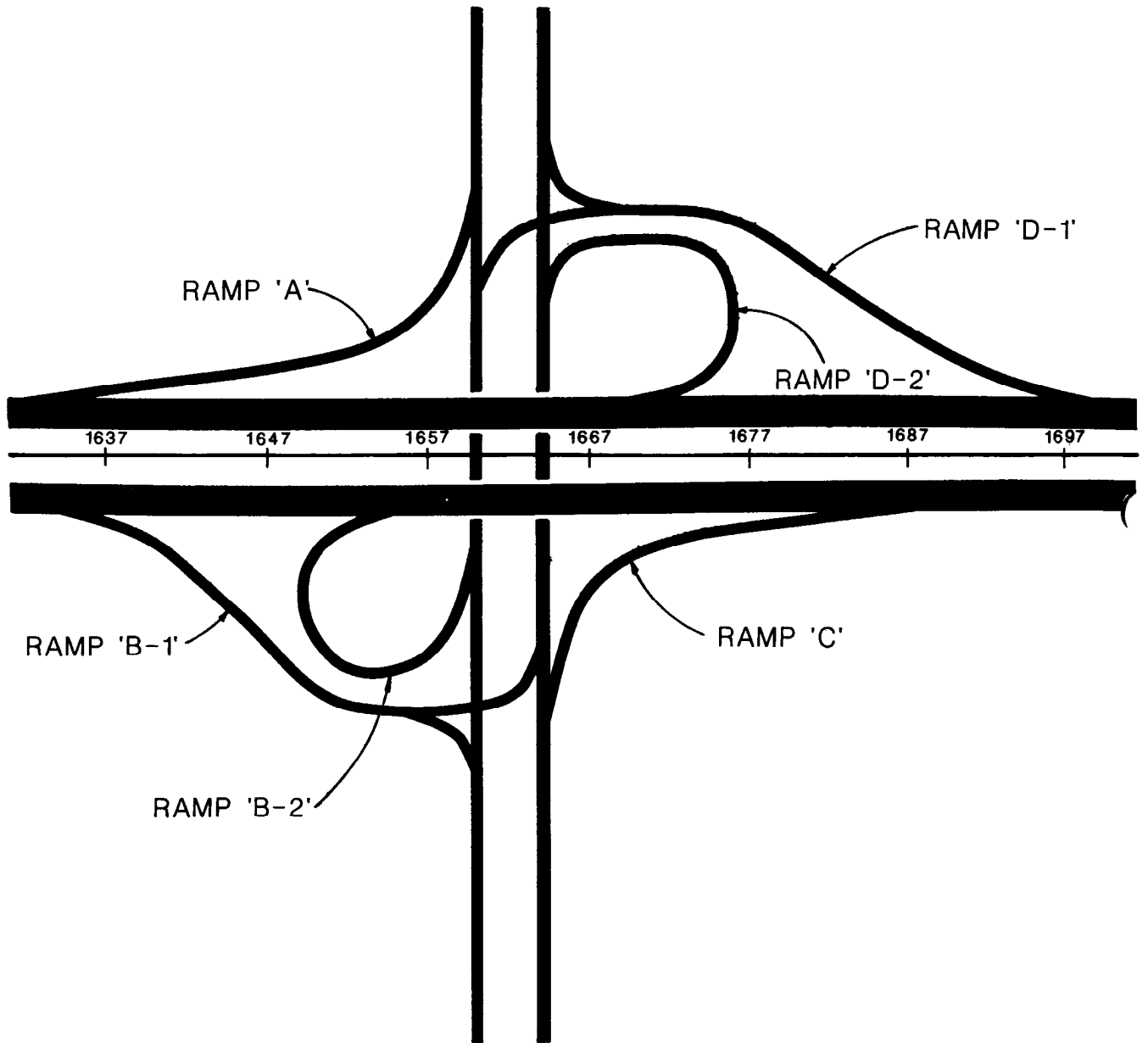
Interchange ramps shall be identified by the use of letters. The recommended practice for assigning ramp names is as follows:

Ramps in the first left quadrant along mainline stationing should be assigned first. Name assignments shall progress in an counterclockwise direction around the interchange (See Figure 13.1). For projects with two or more interchanges, continue name assignments with the next letter and in same counter clockwise direction noted above.

Ramp baselines are usually located on the right edge of the pavement with relation to the direction of traffic, and shall be clearly indicated. Stationing of ramps should be in the same direction as the project.



FIG. 13.1



II-13-4.0

A topographic worksheet for all interchanges is required and will be considered as the preliminary layout of the interchange. This worksheet shall be prepared on a standard plan format on a scale of 1" = 200'. The following information shall be shown:

1. All topography, such as existing roads, property lines, utilities, houses, and driveways, etc.
2. Preliminary interchange geometrics and proposed right-of-way limits.
3. Drainage right-of-way.
4. Proposed reconstruction of the crossroad, and all access roads and frontage roads within the interchange.
5. Frontage roads should be assigned numeric nomenclature.
6. Contours, unless the terrain is relatively flat.
7. Traffic diagram with ADT, DHV, K, D and T values.
8. The length of speed change lanes.
9. Design speed for ramps and crossroads.
10. Proposed bridge limits.
11. Pavement transitions.
12. Limits of construction along the crossroad.

The final plans set shall include the following interchange sheets:

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

### 13.3.2 Ramp Terminal Details

Details of ramp terminals with mainline and crossroads shall be shown on separate plan sheets. The scale used shall not be smaller than 1" = 40'. Standard scale 1"=20' is preferred. Complete details of the terminal shall be shown including:

Curve data

Station equality to mainline or crossroad at critical ramp locations

Turning radii, taper/transition lengths, curb/curb and gutter (if any)

Channelization (if any)

Ramp and crossroad intersection station and angle

Median nose data (if any)

Limits of construction

R/W

Limited Access R/W and fence location

Drainage structures

Spot elevations (as needed)

Roadway dimensions

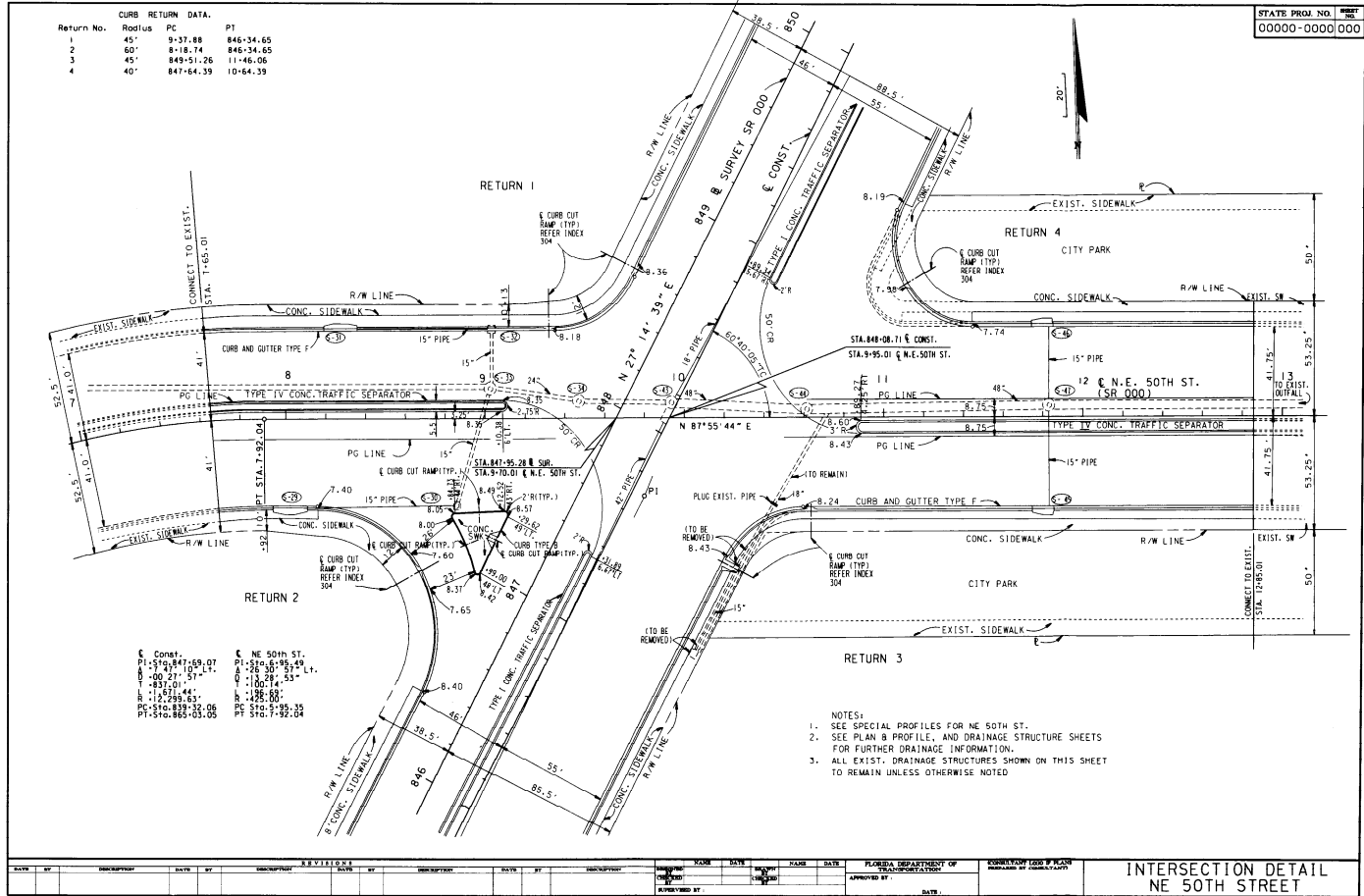
Station pluses and offsets

### 13.3.3 Cross Section Pattern Sheet

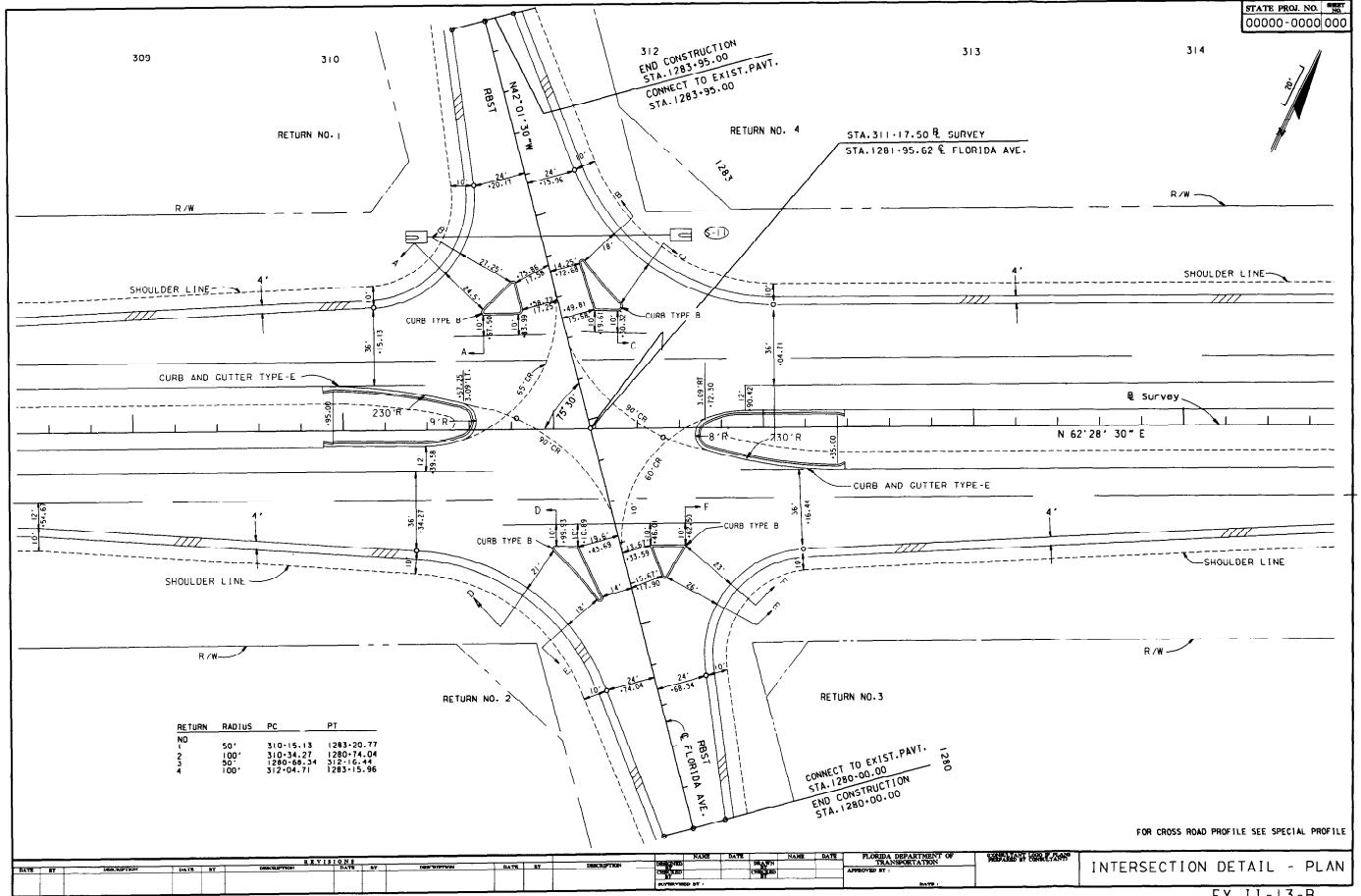
The cross section pattern sheet shows the entire interchange layout including frontage and access roads, if any, with location and extent of proposed cross sections. This information has special importance for projects involving new interchanges located in rural, undeveloped areas. Information to be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

- North arrow and scale
- Interchange layout
- Access and frontage roads (if any)
- Centerline construction and baseline survey
- Ramp base lines
- Stationing along mainline, crossroads, ramps, access and frontage roads
- P.C. and P.T. points by symbol
- Bridge outline
- Cross section pattern

This sheet shall be prepared on a standard plan format. The scale shall be such that the complete interchange is shown on one plan sheet, with care taken to ensure clarity and legibility if the plans are reduced to half size. Normal scale is 1" = 200'. North arrow and graphic scale shall be located at a point of maximum visibility.

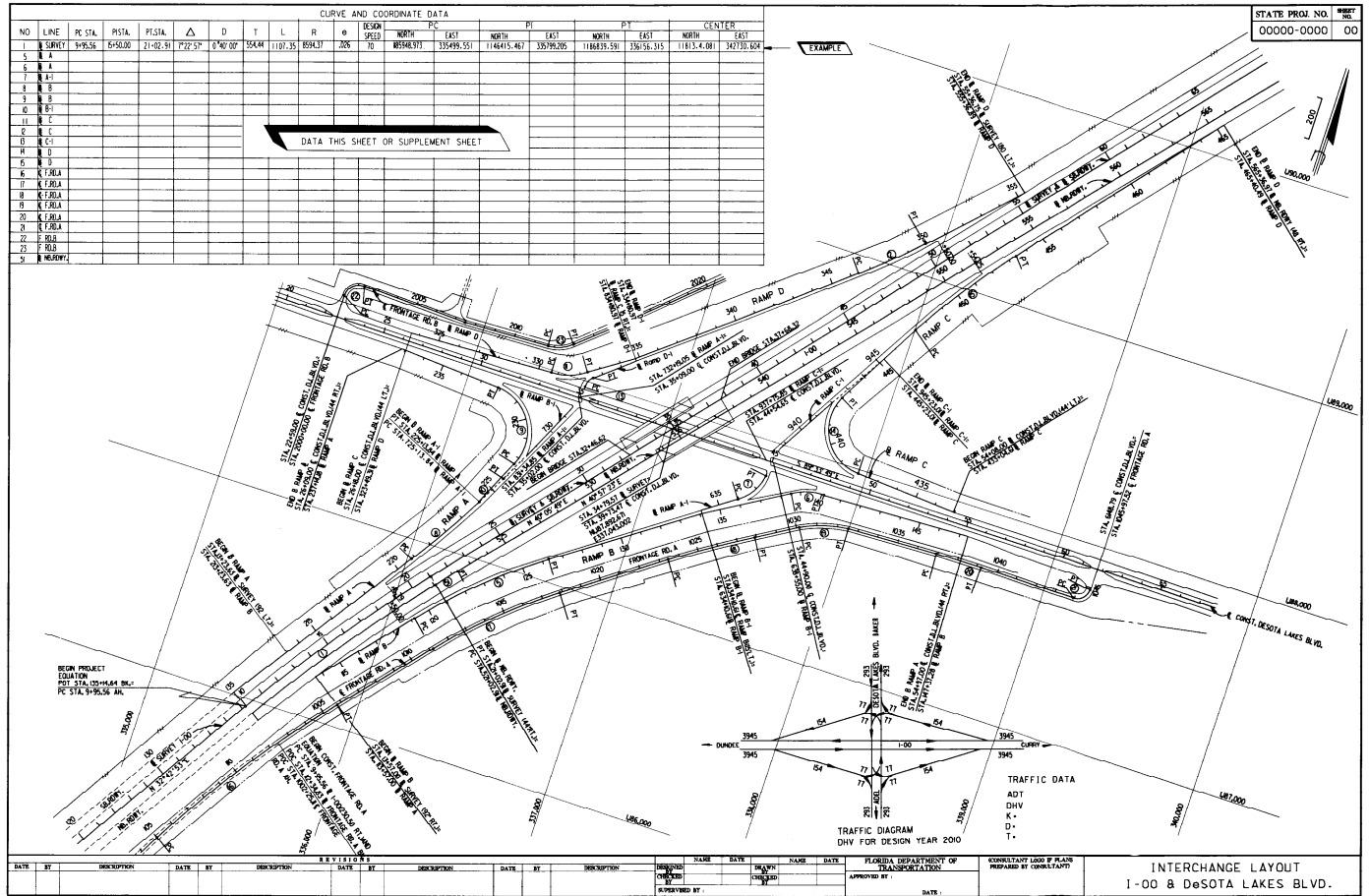


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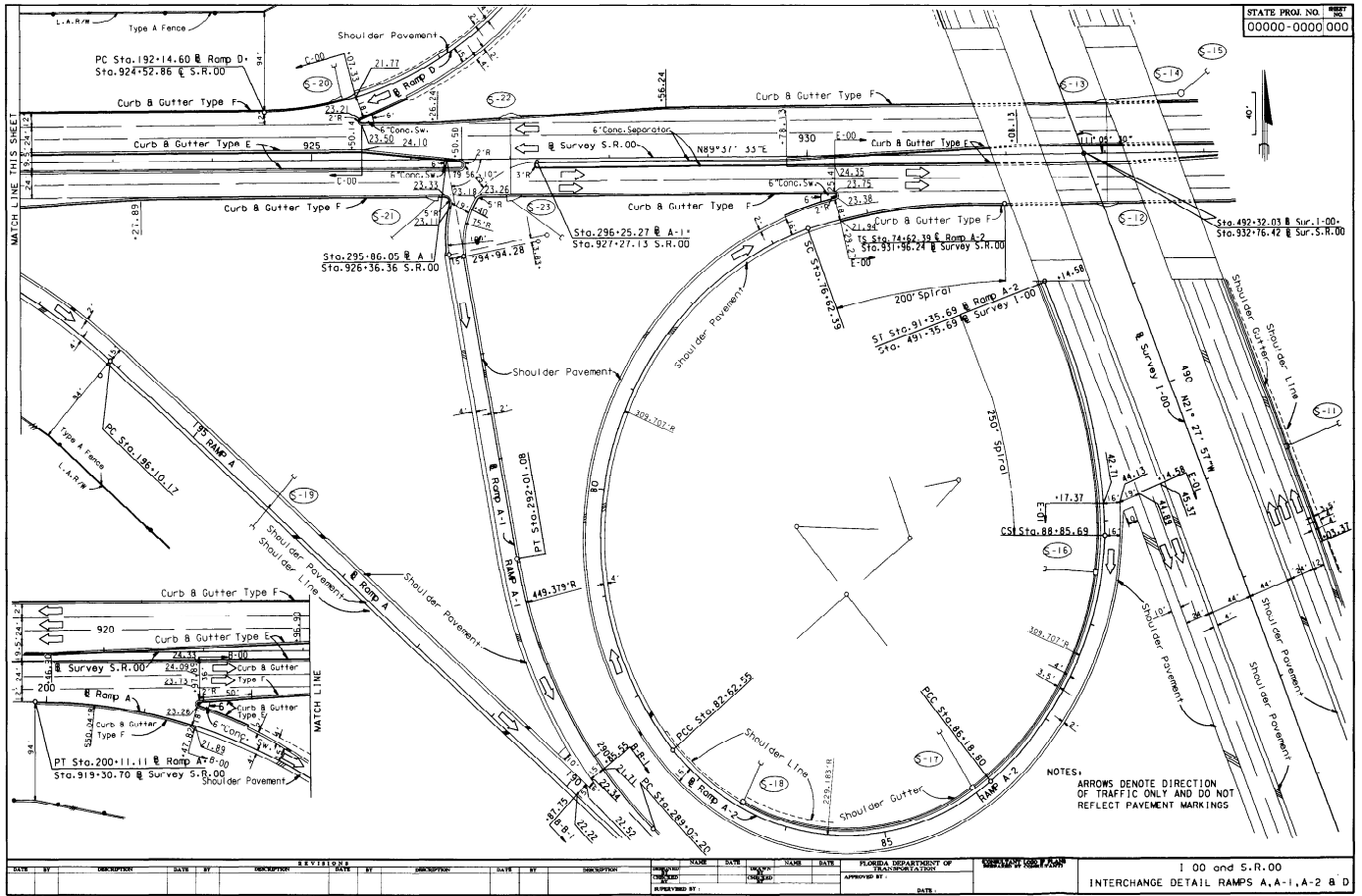


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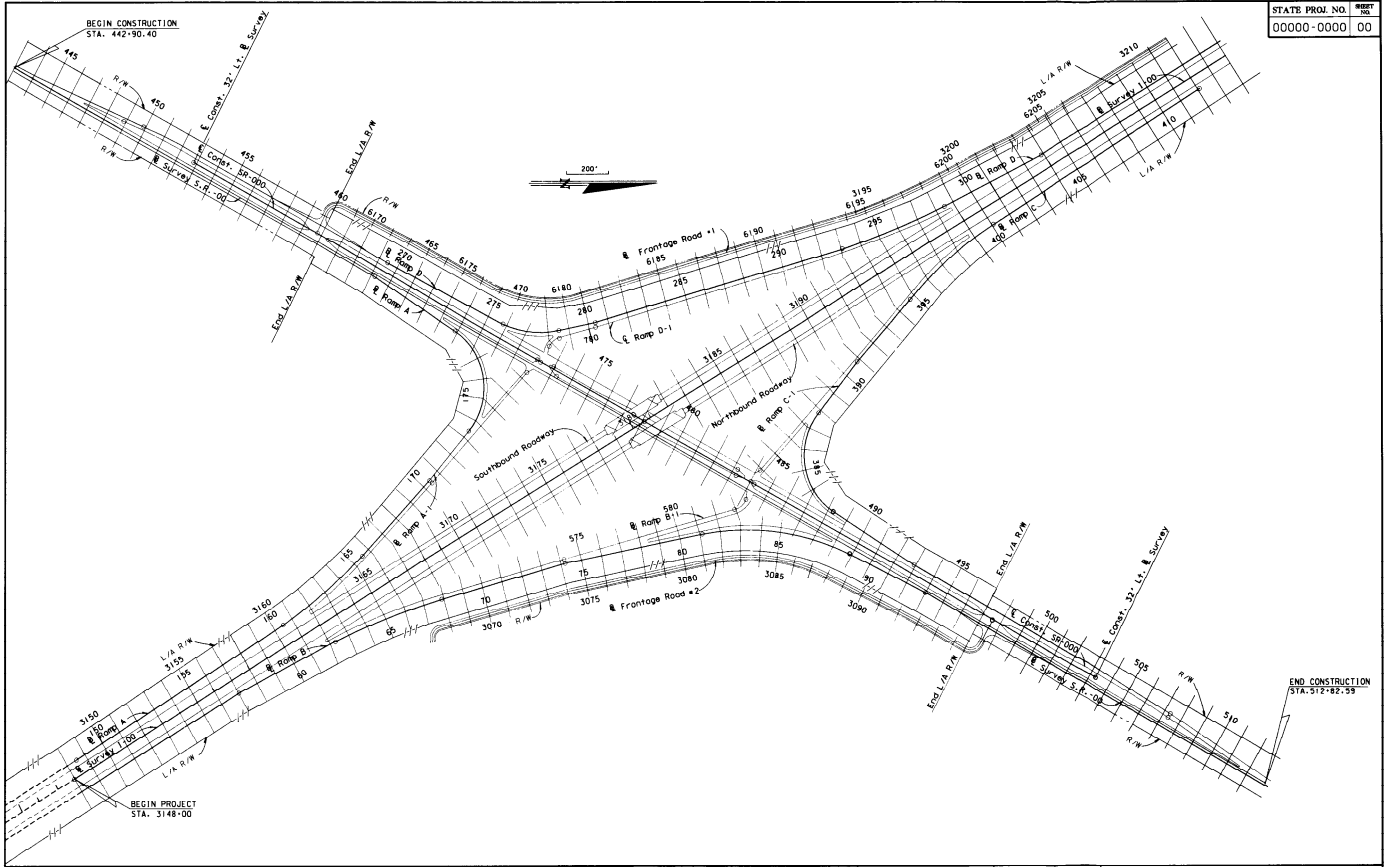




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STATE PROJ. NO. 00000-0000 00

REVISIONS												FLORIDA DEPARTMENT OF TRANSPORTATION		CONSULTANT LOGS & PLANS PURCHASE BY CONSULTANT	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DESIGNED	CHECKED	APPROVED BY	DATE

CROSS SECTION PATTERN

EX-11-13-F

## CHAPTER 14

### DRAINAGE STRUCTURES

#### 14.1 General

Drainage structure sheets show all the drainage structures, their location, cross section, flowline elevations of all weirs or slots, top of grates and top of manhole elevations, index numbers of standard details used and similar data. Drainage structure sheets also show the vertical relationships of the entire drainage system. During the process of drafting the drainage structures, potential conflicts with existing or proposed utilities shall be identified and resolved early, thereby avoiding costly time delays during the construction phases.

The inclusion of the drainage structure sheets in the plans set is a District option. Most projects require the plotting of drainage structures to avoid utility conflicts. One of the following options shall be required for a project:

- 1) All drainage structures shall be plotted and included in the plan set.
- 2) A "Typical Drainage Structure Sheet" shall be prepared, and included in the plans set if the construction details can be shown in tabular form. This sheet shall show the typical cross section for the various types of drainage structures and their structure numbers, types, sizes, flow line elevations, flow lengths, end treatments and locations in tabular form (See Exhibit II-14-G). Only drainage structures with potential conflicts shall be drawn and included in the plan set. A work sheet may be required to show cross sections at all structure locations. Worksheets shall be prepared to show drainage structures at potential conflicts.

- 3) No drainage structures shall be plotted. Information concerning structures shall be shown in the plan view. A work sheet shall be prepared which shall show the cross sections at all structure locations. All information pertaining to drainage structures and the drainage system shall be available elsewhere in the plans package for this option. When optional culvert materials are provided, the required information must be plotted or tabulated elsewhere

## 14.2 Required Information

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

Roadway template and proposed structures shall be drafted using a heavy solid line, with the proposed profile grade elevation shown above the grade point. The structure shall be located by station and offset to the centerline of construction. Flowline information shall be provided at each structure and at each culvert end.

Sections for skewed cross drains shall be drafted along the centerline of the structure. For all structures, clear zone distances shall be measured at right angles to the project centerline and noted on the sheet.

One material shall be selected and shown for projects where optional culvert materials are proposed. It is appropriate to show the material which is estimated to be the most economical selection and most likely to be selected by the contractor. Other options shall be noted on the plans.

Right of way should be checked at all structure locations and shown where there is a potential impact on the construction of a structure.

For each drainage structure which does not have options, all necessary information shall be shown by note, including, as appropriate: size, length, class or gauge (thickness), corrugation size restriction, protective coatings, end treatments and flow lines. The note shall be placed as close to the structure as possible, preferably below the plotted structure. Standard index numbers shall be shown for endwalls, inlets, and other accessory structures and details. Elevations shall be given for manhole tops, and ditch bottom inlet grates and slots. Grate elevations for shoulder gutters, and curb and gutter inlets shall be shown if not controlled by typical section. For drainage structures which have options, the Optional Cross Drain material tabulation sheet should be used, and only the structure number with size and length of the selected option shall be shown. Elevations shall be given appropriate for the option shown.

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

For urban projects, structures for storm sewer mains along the project shall be shown in proper sequence and without interruption. Inlets should not be located on return radii. Inlets shall not be located in the way of sidewalks, crosswalks, and curb cut ramps. Inlets located beyond the returns of side streets shall be drafted as sections on the side street. If possible, these sections should be placed on the sheet without interrupting the continuity of presentation. Otherwise, they shall be shown on separate sheets with appropriate cross-reference notes.

If existing structures are to be plugged and abandoned, they shall be shown with an appropriate note.

### 14.3 Utility Conflicts

All underground utilities as shown in the profile section of the roadway plan - profile sheets shall be plotted in conjunction with the structures so that conflicts may be detected, and to alert construction forces of close conflicts. The external dimension of the alternate culvert which represents the worst case shall be used to identify areas of possible conflicts. A partial section or insert shall be shown for each crossing location of utilities laying in close proximity of the normal excavation limits of the drainage structures.

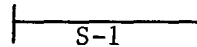
#### 14.4 Sheet Set Up

Structures shall be drafted as sections along the centerline of the structure. They shall be drafted on a standard cross section format with the sections spaced sufficiently apart to avoid overlapping of structures or notes. Beginning at the bottom of the sheet, the sections shall be shown successively by stations and shall be numbered sequentially, from the beginning to the end of the project. The structure number and location station shall be shown near the right border of the sheet. If a structure must be shown out of order, a note shall be placed in the correct sequence, referring to the sheet where the structure is shown. The scale shall be the same as that used for roadway cross sections, with the centerline of construction placed near the center of the sheet.

It is recommended that structure numbers be established using the convention shown in the exhibits which is described below.

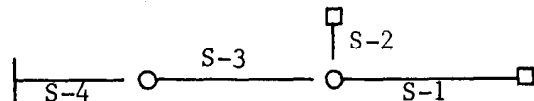
1. For simple cross-drains, one structure number is appropriate for the inlet and outlet treatments and the pipe.

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



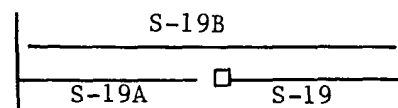
2. For complex cross drains (and storm sewers with optional materials), it is suggested that the first structure number identify the inlet end treatment, pipe, and lower end treatment. All subsequent structure numbers identify the pipe and lower end treatment only.

Example #2 (storm sewer)

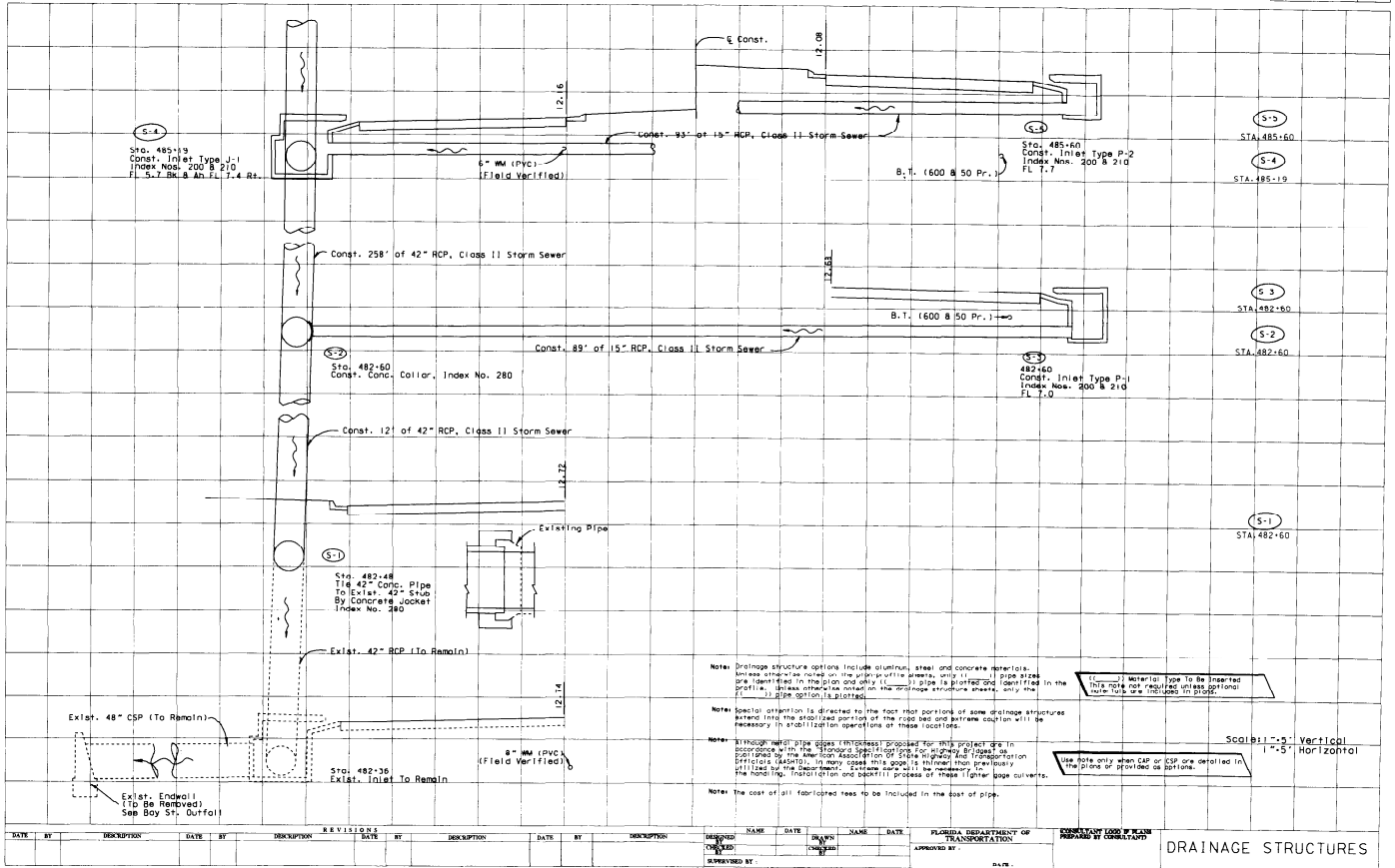


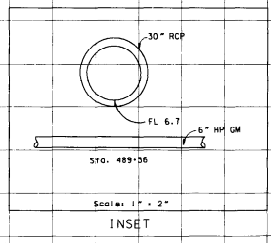
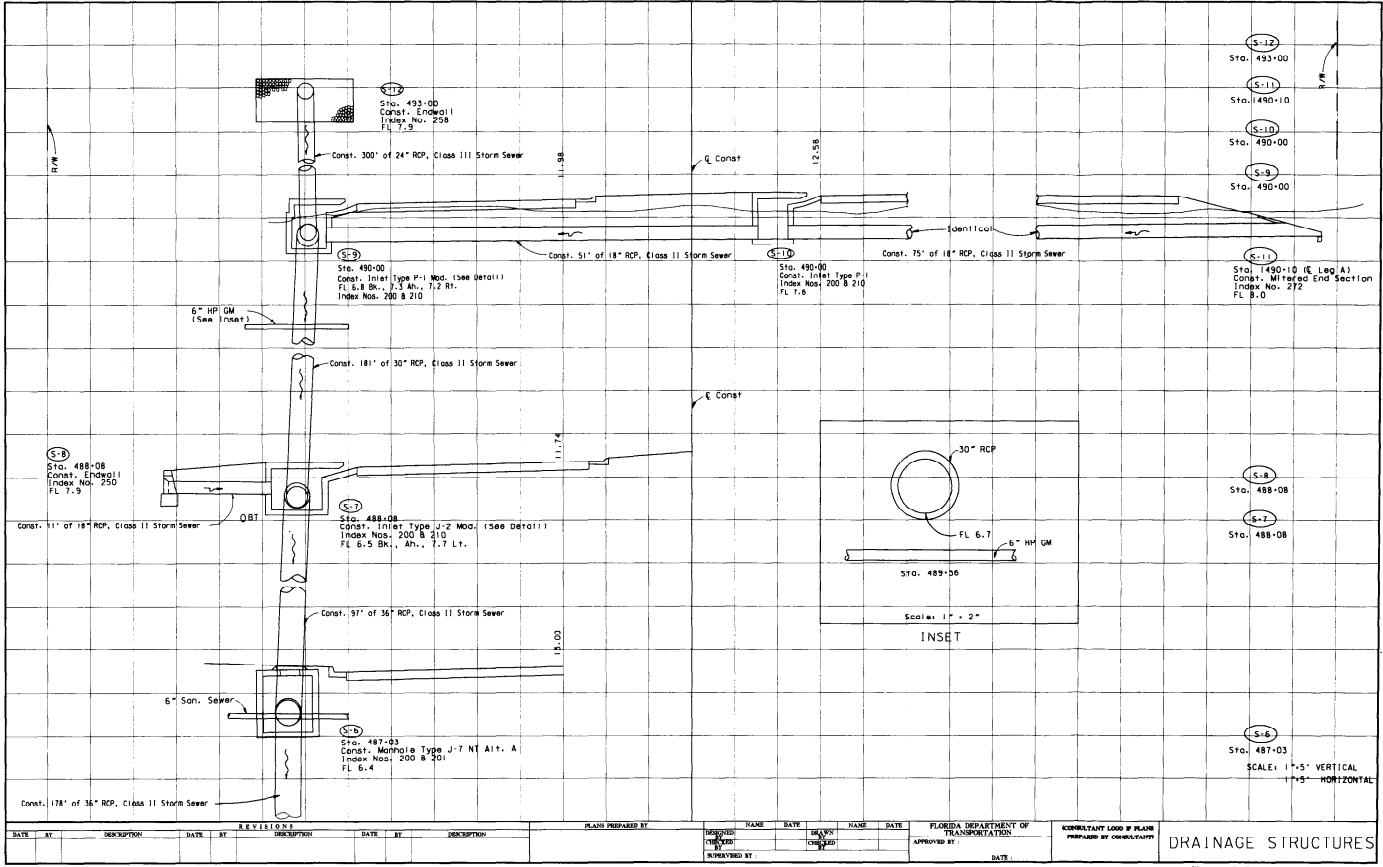
Example #3 (double pipe CD & median inlet)

S-19 endwall, pipe, inlet  
S-19A pipe & endwall  
S-19B pipe only (barrel # 2)

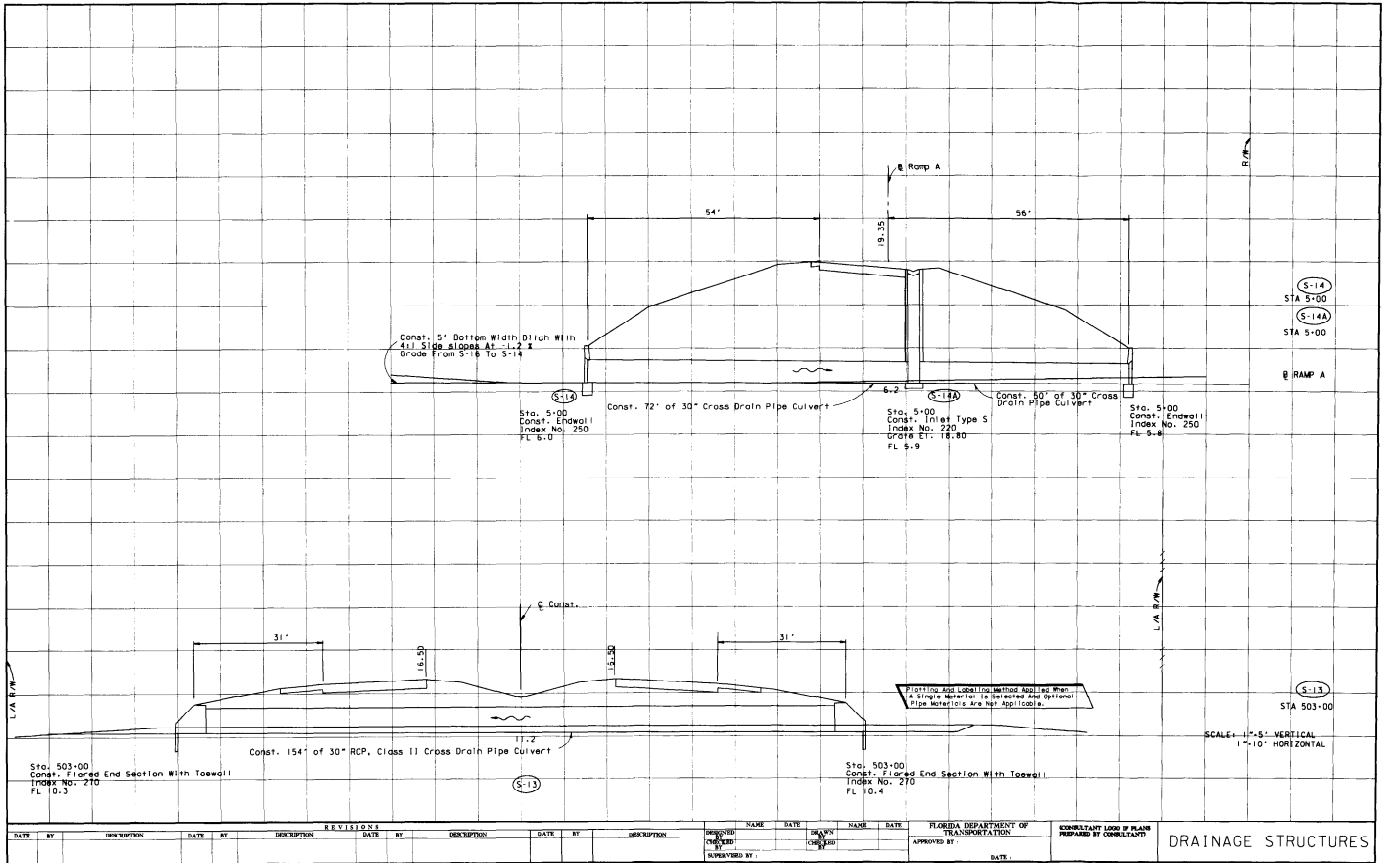








DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	PLANS PREPARED BY	NAME	DATE	NAME	DATE	FLORIDA DEPARTMENT OF TRANSPORTATION	EXHIBIT/STAFF LOAD # PLANS PREPARED BY CONSULTANT

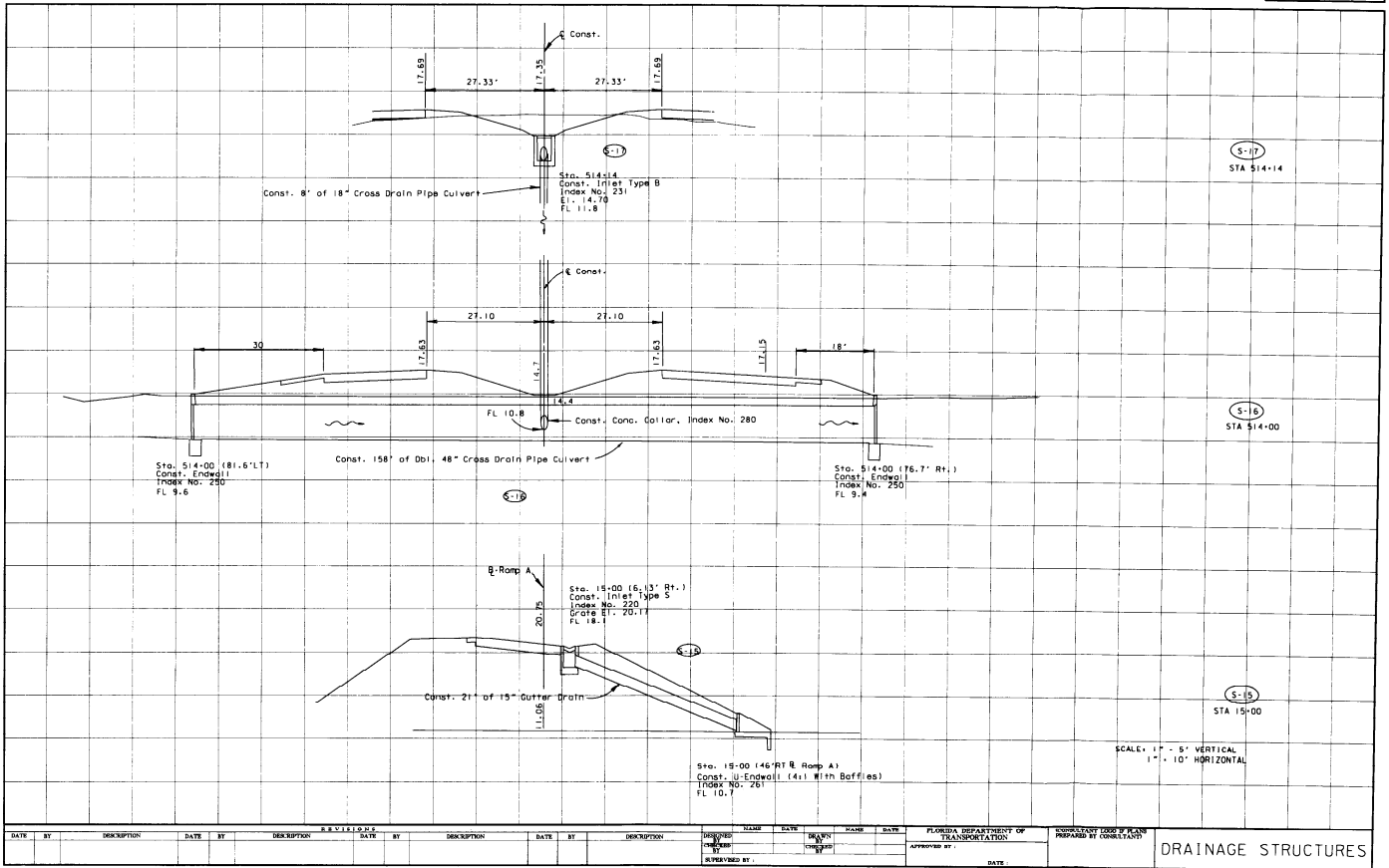


DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	NAME	DATE	NAME	DATE	FLORIDA DEPARTMENT OF TRANSPORTATION	APPROVED BY	DATE	FLORIDA DEPARTMENT OF TRANSPORTATION	APPROVED BY	DATE

DRAINAGE STRUCTURES

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000  
 SHEET NO. 00

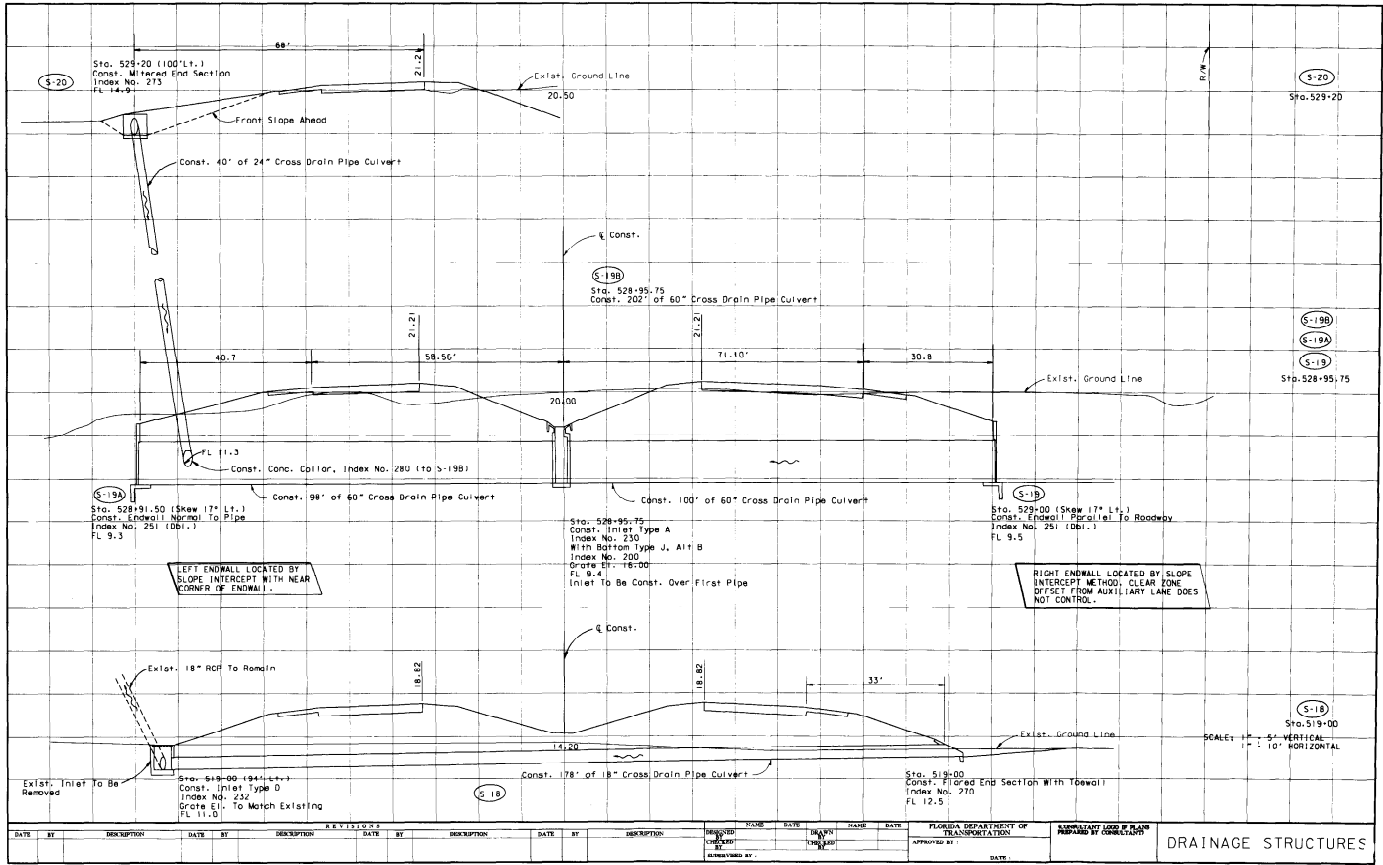


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DRAINAGE STRUCTURES  
 EX 11-14-D

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000  
 MEET NO. 00

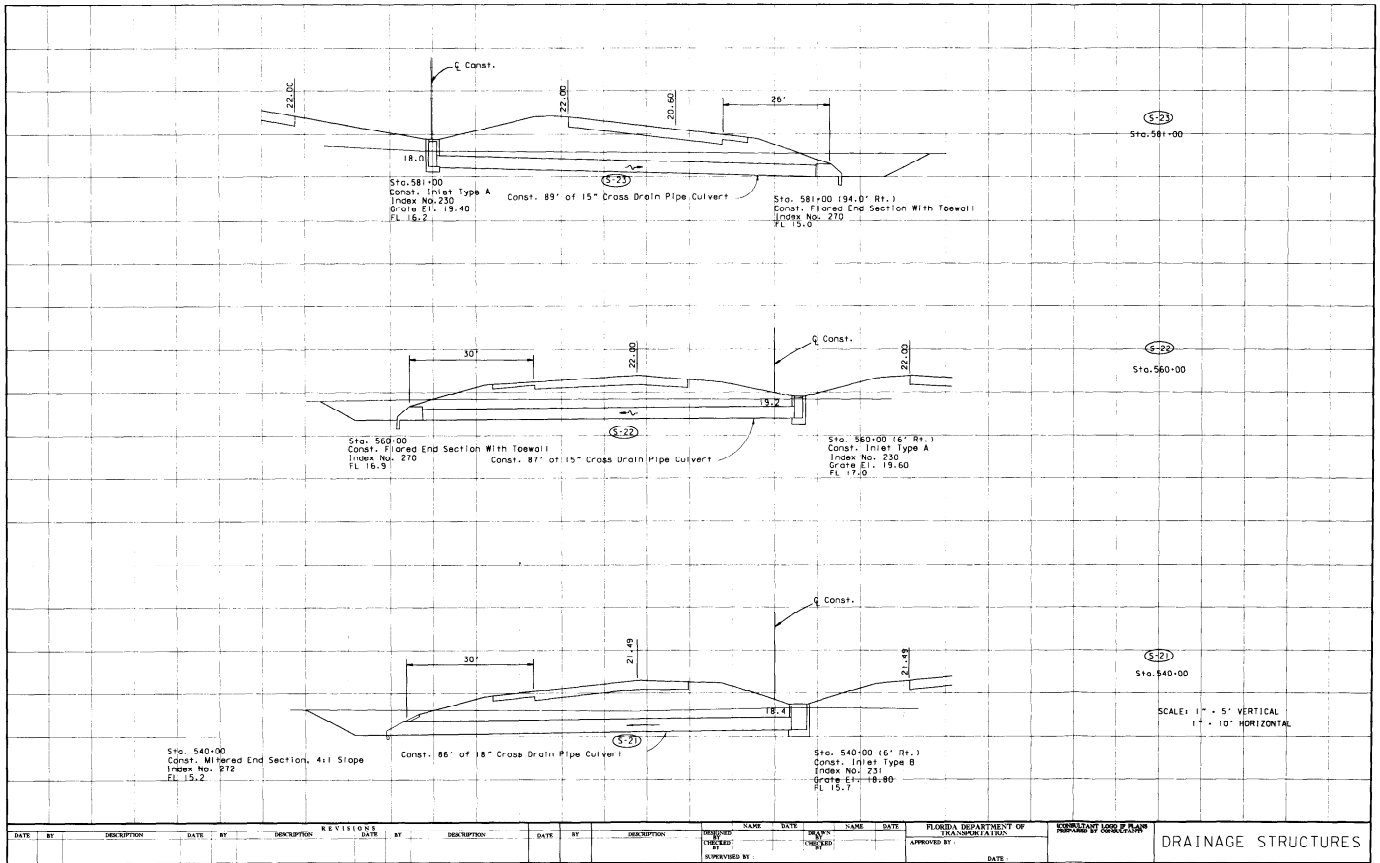


DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 PREPARED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

DRAINAGE STRUCTURES

EX II-14 E

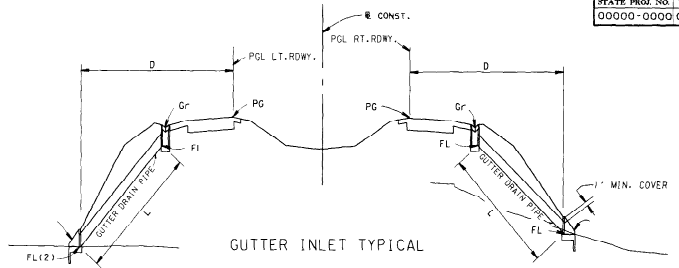
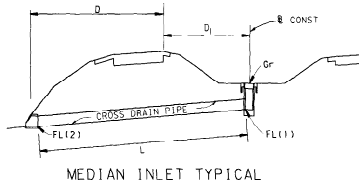


DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

FLORIDA DEPARTMENT OF TRANSPORTATION  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CONSULTING ENGINEER: \_\_\_\_\_  
**DRAINAGE STRUCTURES**  
 EX II-14-F

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000 000



MEDIAN INLETS																
STR. NO.	STA.	TYPE	INDEX	SLOT			PIPE TYPE	SIZE	LENGTH	ENDWALL TYPE	INDEX	D	D <sub>1</sub>	GR	FL(1)	FL(2)
				TYPE	DEPTH	OR. ELEV.										
1	1172+00	A	230				OPT	18	108	FES	270	72.2	44	14.64	11.6	11.4
2	1186+00	B	231				OPT	24	104	FES	270	68.3	44	14.81	11.8	11.6
3	1200+00	A	230				OPT	18	104	FES	270	68.2	44	14.88	11.9	11.7
4	1213+00	A	230				OPT	18	104	FES	270	67.8	44	14.98	12.0	11.8
6	1235+00	B	231				OPT	24	100	FES	270	63.4	44	15.90	12.9	12.7
11	1250+00	A	230				OPT	18	98	FES	270	62.2	44	16.69	13.7	13.5
12	1264+00	A	230				OPT	18	104	FES	270	66.6	44	15.34	12.7	12.1
14	1289+00	A	230				OPT	18	106	FES	270	69.9	44	17.82	14.8	14.6
20	1321+00	A	230				OPT	18	102	FES	270	66.1	44	15.43	12.4	12.2
22	1343+00	A	230				OPT	18	114	FES	270	76.7	44	20.72	17.7	17.5
27	1350+00	A	230				OPT	18	112	FES	270	74.5	44	20.07	17.1	16.9
29	1360+00	A	230				OPT	15	102	MES	272	65.0	44	15.69	10.7	10.5
32	1372+00	E	232	T	STD	16	OPT	18	85	MES	272	52.0	22	14.72	10.7	10.5
33	1381+00	E	232	NT	16	16	OPT	24	73	MES	272	104.0	22	13.85	10.1	9.9
34	1387+00	C	232	NT	16	16	OPT	15	55	MES	272	76.0	22	15.70	11.0	10.9

GUTTER DRAIN INLETS																
STR. NO.	STA.	SIDE	INLET TYPE	"S" INLET INDEX 220				PIPE		ENDWALL						
				OR. ELEV.	GR. ELEV.	FL. ELEV.	INDEX	SIZE	LENGTH	TYPE	INDEX	SIZE	SLOPE	BAFFLES	F.L.	D
7	1241+95	RT	NO	24.45	23.30	20.0	15	34	U	261	15	24	YES	14.1	67.7	
8	1241+95	LT	NO	24.64	23.30	20.8	15	36	U	261	15	24	YES	13.4	69.9	
9	1244+05	RT	NO	24.45	23.30	20.8	15	32	U	261	15	44	YES	14.5	65.9	
10	1244+05	LT	NO	24.64	23.30	20.8	15	34	U	261	15	44	YES	14.4	66.9	
15	1293+95	RT	NO	24.55	23.40	20.9	15	44	U	261	15	24	YES	12.5	78.2	
15	1294+95	LT	NO	24.80	23.40	20.9	15	40	M	261	15	24	YES	12.5	72.9	
17	1296+05	RT	NO	24.55	23.40	20.9	15	44	M	261	15	24	YES	12.5	78.2	
18	1296+05	LT	NO	24.80	23.40	20.9	15	40	M	261	15	24	YES	12.5	72.9	
23	434+95	RT	RECT	NO	24.95	23.80	21.3	15	40	M	261	15	24	YES	12.3	74.0
24	434+95	LT	RECT	NO	25.19	23.80	21.3	15	40	M	261	15	24	YES	12.8	73.2
25	437+05	RT	RECT	NO	24.95	23.80	21.3	15	38	M	261	15	24	YES	13.3	71.0
26	437+05	LT	RECT	NO	25.19	23.80	21.3	15	38	M	261	15	24	YES	13.3	71.7
30	1387+14	RT	NO	39.08	37.93	35.4	15	60	M	261	15	24	YES	13.5	83.1	
31	1387+14	LT	NO	39.08	37.69	35.2	15	58	M	261	15	24	YES	13.5	82.8	

## CHAPTER 15

### OUTFALL/LATERAL DITCH SYSTEM

#### 15.1 General

A lateral ditch is one that runs more or less perpendicular to the centerline of roadway. The purpose of the ditch is to provide drainage to or from areas outside of the immediate project limits that are involved by the proposed roadway project. The lateral ditch plan and profile sheets shall provide the necessary details for the construction of the ditch.

"Outfall" is the term used for the conveyance of storm water (by ditch, pipe or other means) from a stormwater collection or cross drain to a stormwater management system such as a retention or detention area, or to a receiving system. The receiving system can be a ditch or a drainage canal with Retention/Detention pond.

Lateral ditch plans and profiles shall be prepared on a standard plan - profile format using a horizontal scale of 1" = 100'. However, if storm sewer construction is proposed for a portion of the ditch, a scale of 1" = 20', 40' or 50' may be used.

Data presentation in the plan portion shall be so oriented that the ditch or outfall centerline is parallel to the long side of the sheet and the project centerline runs from the bottom to the top.

Lateral ditch cross sections are included in the plans set to show details of the lateral ditch within the project limits. This sheet also shows the right-of-way required for the ditch, the extent of clearing and grubbing required and the amount of earthwork. Lateral ditch cross sections are prepared on a standard profile format.



## 15.2 Plan Portion

### 15.2.1 Lateral Ditch

Centerlines of the ditch and roadway shall be plotted and stationed in a manner similar to that described in Chapter 10-Roadway Plan and Profile. Ditch alignment data and topography shall be shown in the plan portion. Bearings and curve points for the project centerline shall also be shown. The north arrow and graphic scale shall be placed at the proper location on the sheet (refer to Chapter 10).

### 15.2.2 Outfall

The drainage system below the portion shown elsewhere on the plans, but at least the last section leading to the outfall structure shall be shown in plan with complete data. The location of the outfall structure shall be clearly shown in the plans and shall be identified by station.

### 15.3 Profile Portion

#### 15.3.1 Lateral Ditch

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

For projects where the ditch survey baseline does not follow the flow line of the existing ditch or channel, the existing channel profile shall be shown with a broken line and identified.

If lateral ditch cross sections are not included in the plans, the limits and quantities of proposed ditch excavation shall be shown by a dimension line above the ditch profile.

If storm sewer construction is proposed along a lateral ditch, all of the proposed structures should be drafted as drainage structures or in the profile showing flow line, structure numbers, pipe or culvert sizes, standard index numbers and utilities (if applicable).

At locations of probable overland flow, natural ground or overtopping elevations shall be shown by a broken line and labeled.

### 15.3.2 Outfall

The discharge end of the drainage system leading to the outfall structure shall be shown in profile when drainage structure sheets are not included in the plans. Flow elevations, flow arrows, pipe or ditch slopes, standard index numbers, separate lateral ditch outfalls, pipe outfalls, structures with their numbers or DPIs etc. of the last section before the outfall shall be shown in profile. The outfall structure shall be shown by a heavy solid line and its station location flagged and labelled. The normal and high water elevations of the receiving system shall be indicated and labelled.

#### 15.4 Typical Section

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

## 15.5 Ditch Cross Sections

Lateral ditch cross sections shall be prepared in a manner almost identical to that of roadway cross sections (Chapter 18). The standard scale, generally, shall be 1" = 5', vertical and horizontal. However, regardless of the horizontal scale used, the vertical scale shall always be 1" = 5'.

Ditch rights-of-way are usually narrow, and often it is possible to place two or more columns of ditch cross sections on one sheet. They shall be drafted exactly as the roadway cross sections with the stationing progressing from the bottom of the sheet to the top, and from left to right.

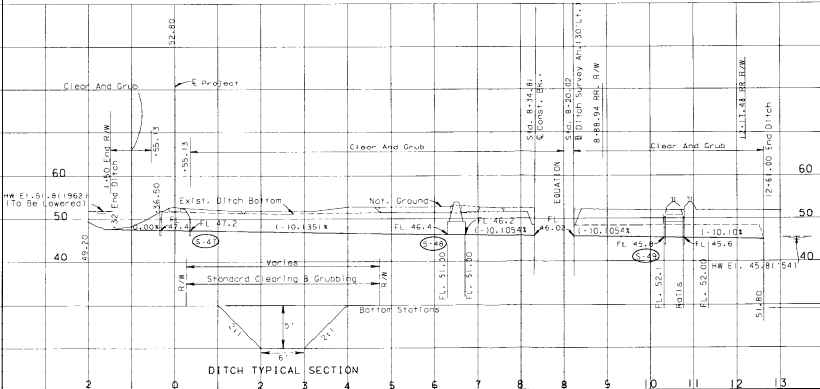
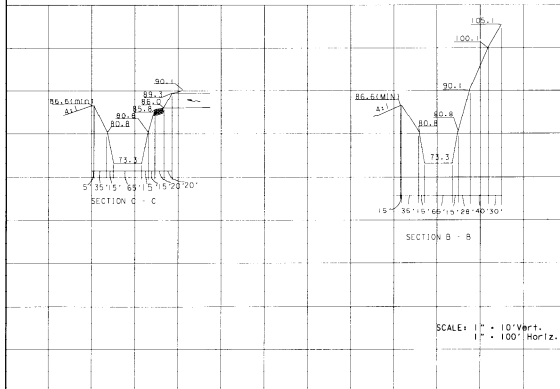
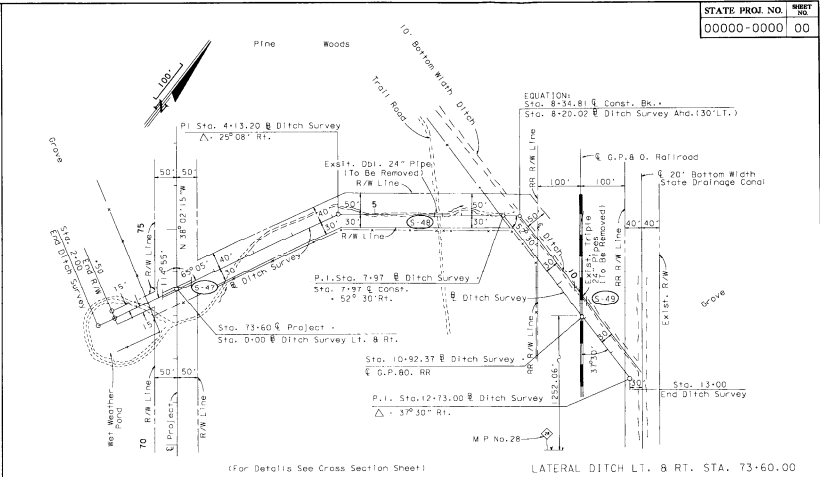
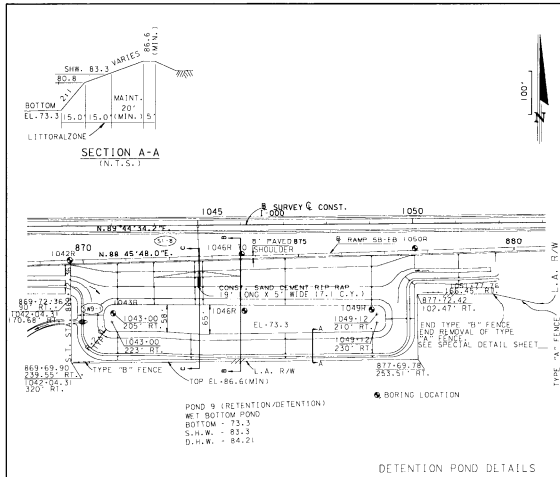
Usually, soil surveys are made along the lateral ditch only when a large amount of material is expected to be excavated and if suitable material is to be used in the roadway. Excavation shall be tabulated whether the material is classified or unclassified.

All other points mentioned in "Roadway Cross Sections" (Chapter 18) shall be applicable equally to lateral ditch cross sections.

## 15.6 Retention or Detention Pond

The retention or detention pond, including the outlet structure, is usually the end point of the drainage system for a particular project. The retention/detention pond detail sheet shall show the pond in plan view, cross sections of the pond, side slopes, fence locations, right-of-way, pond drainage structures (if any) with their locations and cross sections and any other necessary data pertaining to the pond.

The pond location shall be shown by station and offset to the centerline of construction of the project. Side slopes, base dimensions and bottom and top elevations of the pond shall be shown in plan. The pond cross sections shall show the bottom width and elevation, side slopes, normal water depth, if applicable, design highwater and overtopping elevations and soil borings. A minimum of two (2) cross sections, taken in directions perpendicular to each other, shall be shown. Refer to Exhibit II-15-A.



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LATERAL DITCH PLAN-PROFILE AND DETENTION POND DETAILS





## CHAPTER 16

### SPECIAL DETAILS

#### 16.1 General

Special details sheets are usually included in the plans set if the project involves areas which require special attention to some construction elements. Construction details that are not covered in the Roadway and Traffic Design Standards booklet or elsewhere in the plans set shall be shown on the special details sheet. Crash cushion details shall also be shown on this sheet. This sheet shall be prepared on a standard plan format. Any convenient scale may be used, provided the information shown is clear and legible at half size reduction of plans. Details shown shall be clear, legible, labelled, complete in all respects and should be adequately cross-referenced to the plans in the plans set.

## 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. Soils having identical characteristics shall be assigned to the same stratum and group for identification and recommendation purposes. The test analysis sheet shall be signed by the responsible Engineer, (the District Materials Engineer for in-house projects, and a Registered Professional Engineer for consultant prepared plans).

## 17. 2 Roadway Soil Survey

### 17.2.1 Method of Compilation and Presentation

Upon completion of the proposed typical section, and after placing alignment, proposed grades and existing utilities on the plan - profile sheets and preliminary sections, prints of these sheets shall be utilized by the appropriate soil survey group (District Materials Engineer for in-house projects and a Soils and Foundation Engineer for consultant prepared plans) for determining the location and depth of borings for the sampling of soils for testing and classifications. These classification and test results, including pH, resistivity, sulfides and chlorides shall be shown on the test analysis sheet. Date and weather conditions at the time of sampling shall also be shown. Refer to Exhibit EX-II-17-A for an example of soil survey sheet.

After completion of soils testing, the boring data shall be shown on cross sections by columns approximately 0.4" wide below the ground line at test sample locations. Stratum limits and numbers shall be shown inside the column. This information shall be transmitted to the appropriate responsible materials engineer for verification. One hard copy of the soils information, including cross sections with soils information, shall be retained in the Soils Engineer's Record.

### 17.3 Borrow Pit Soil Survey

The borrow pit soil survey shall be included in the roadway plans set only if the borrow material is to be provided to the contractor by DOT. This sheet is similar to the roadway soil survey sheet and shows the location of test holes, various strata encountered, soil properties, classification and recommended usage.

The location of the borrow pit with respect to the project centerline shall be clearly shown. The survey baseline for the borrow pit shall be tied to the project centerline by station and angle. Begin and end borrow pit baseline stations shall be flagged and labelled. The borrow pit shall be completely dimensioned with all internal angles shown clearly. Boring locations shall be indicated and labelled. The north arrow and graphic scale shall be shown at a point of maximum visibility in close proximity to the borrow pit location map. Benchmark information with elevation shall be shown. Complete information with respect to Section, Township, Range and county shall be shown together with the borrow pit number. A description of the soils strata encountered shall also be shown.

The various strata encountered at each boring location shall be placed on a standard cross section format by columns of approximately 0.4" wide. The recommended vertical scale is 1"=5'. Strata shall be identified by number and water table elevation indicated by symbol at the appropriate elevation.

A complete soils analysis report and recommended usage shall be shown including date of survey and date(s) of analysis/test.

For complete sheet set up, see Exhibit II-17-B.

STATE PROJ. NO. \_\_\_\_\_  
 DIST. NO. \_\_\_\_\_  
 00000-0000000

Laboratory No.: \_\_\_\_\_  
 Project No.: \_\_\_\_\_  
 Road No.: \_\_\_\_\_  
 County: \_\_\_\_\_  
 Submitted By: \_\_\_\_\_

Date Of Survey: \_\_\_\_\_  
 Survey Made By: \_\_\_\_\_  
 Survey Begin Sta.: \_\_\_\_\_  
 End Sta.: \_\_\_\_\_

Date Sampled: \_\_\_\_\_  
 Sampled By: \_\_\_\_\_  
 Date Tested: \_\_\_\_\_

## REPORT OF TESTS OF MATERIALS FROM ROADWAY FOR USE IN EMBANKMENT AND SUBGRADE

Stratum Number	No. 1		No. 2		Liquid Limit	Plasticity Index	Classification Group	Description	Ph.	Resiliency (CHI) CM	Chlorides Sulfates	
	Tests	Pass	Tests	Pass							mg/l	mg/l
1	100	94	83	4	N.P.	N.P.	A-1	Gray and Brown sand, coarse, poorly graded, subrounded.	6-2	1300	15	
2	99	91	71	11	N.P.	N.P.	A-1-4	Comp. Fill (Orange & Brown Sand w/ Ir. Clay & Iron Rock) 6-2 coarse, well graded, subrounded.	6-2	1050	10	
3	NO SAMPLE SUBMITTED						A-8	Muck				(Not Suitable)
4	93	88	73	5	N.P.	N.P.	A-3	Sand Asphalt over Sand, Shell & Clay Base, coarse, well graded, subrounded.	6-4	11250	8	
5	NO SAMPLE SUBMITTED							Surface Treatment over Sand Asphalt.				(Not Available)

### EMBANKMENT AND SUBGRADE MATERIAL

The material from Strata No. 1 & 2 appears satisfactory for use in embankment.  
 The material from Stratum No. 3 is muck, and is not suitable for use in the embankment, subgrade, as pipe backfill, or as a soilfiller under any conditions.  
 The material from Stratum No. 4 is Sand Asphalt over Sand, Shell & Clay Base.  
 The material from Stratum No. 5 is Surface Treatment over Sand Asphalt.

WEATHER: CLEAR

WEATHER: V \* WATER TABLE ENCOUNTERED

DESCRIPTION OF STRATA	
NO. 1	GRAY & BROWN SAND
NO. 2	COMP. FILL (ORANGE & BROWN SAND W/IR. CLAY & IRON ROCK)
NO. 3	MUCK
NO. 4	SAND ASPHALT OVER SAND, SHELL & CLAY BASE
NO. 5	SURFACE TREATMENT OVER SAND ASPHALT

REVISIONS										NAME		DATE		FLORIDA DEPARTMENT OF TRANSPORTATION		CONSULTANT LOGS & PLANS PREPARED BY CONSULTANT	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESIGNED	CHECKED	APPROVED BY	DATE	APPROVED BY	DATE	DATE

SOIL SURVEY  
 EX II-17-A



## 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 baseline. The proposed cross-sectional outline of the new facility with all its functional elements is also shown on cross sections. Standard cross section sheets shall be used for showing roadway cross sections. The recommended scale is 1" = 5' vertical. The horizontal scale shall be such that the entire roadway R/W is shown on the sheet, but shall not be smaller than 1" = 20' horizontal. If the entire R/W cannot be shown on one sheet, more sheets may be utilized and appropriate match lines shall be shown with referenced sheet numbers. The scale shall be shown at the bottom right corner of the sheet above the title box.

## 18.2 Required Information

Existing ground lines shall be shown with a light solid line. The existing ground line elevation at the centerline shall be noted just below the ground line at the centerline. The station number of the section shall be indicated in heavy numerals opposite the ground line on the right side of the sheet and location base line of survey indicated along the top and bottom of the sheet. Lines parallel to the baseline of survey should show station equivalencies to the base line of survey.

The surface of existing construction such as pavements, curbs, and sidewalks, shall be shown using a solid line. The bottom of the pavement, curbs and sidewalks, shall be shown by a light broken line.

Existing parallel underground utilities shall be shown when lying within the horizontal limits of the project. Small distribution or service lines need not be drafted.

Soil data and water table shall be shown on cross sections as described in Section 17.2.1 of this volume. Limits of unsuitable material shall also be shown.

The proposed roadway template shall be shown using a heavy solid line. Proposed profile grade elevation shall be placed vertically or at an angle to the horizontal, just above the profile grade line. Special ditch elevations shall also be shown.

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

The right-of-way limits shall be symbolically shown for each cross section.



The begin and end stations for project, construction, bridge/bridge culvert and the toe of slope under the bridge shall be shown.

The beginning and ending earthwork stations shall be shown. On projects with grade separations, intersections, interchanges, etc., the earthwork shall be totaled on the last cross section sheet for each of the above and noted as to the station in which the earthwork is included on the project cross sections. Earthwork quantities for suitable material shall be indicated in the appropriate columns on the right side of the sheet; quantities for all other materials should be indicated in appropriate columns on the left side of the sheet. Earthwork summaries shall be shown on the last cross section sheet of each roadway, ramp, etc. The grand total shall be shown on the last cross section sheet of the plans set.

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

Mainline  
Side streets  
Ramps

### 18.3 Sheet Set Up

Cross sections shall be shown on a standard cross section format with stations increasing from the bottom to the top of the sheet. Usually, only one column of sections shall be placed on a sheet.

Sections shall be centered on the sheet with the survey baseline or the construction centerline placed vertically in the center. In cases where additional lanes are to be constructed adjacent to existing lanes, centering the sections will depend upon the location of the survey line and the side on which the new construction is to be placed. Sections shall be oriented such that the complete ultimate section will be approximately centered on the sheet. When the centerlines of construction and survey are not parallel, the distance between the two at each cross section shall be shown.

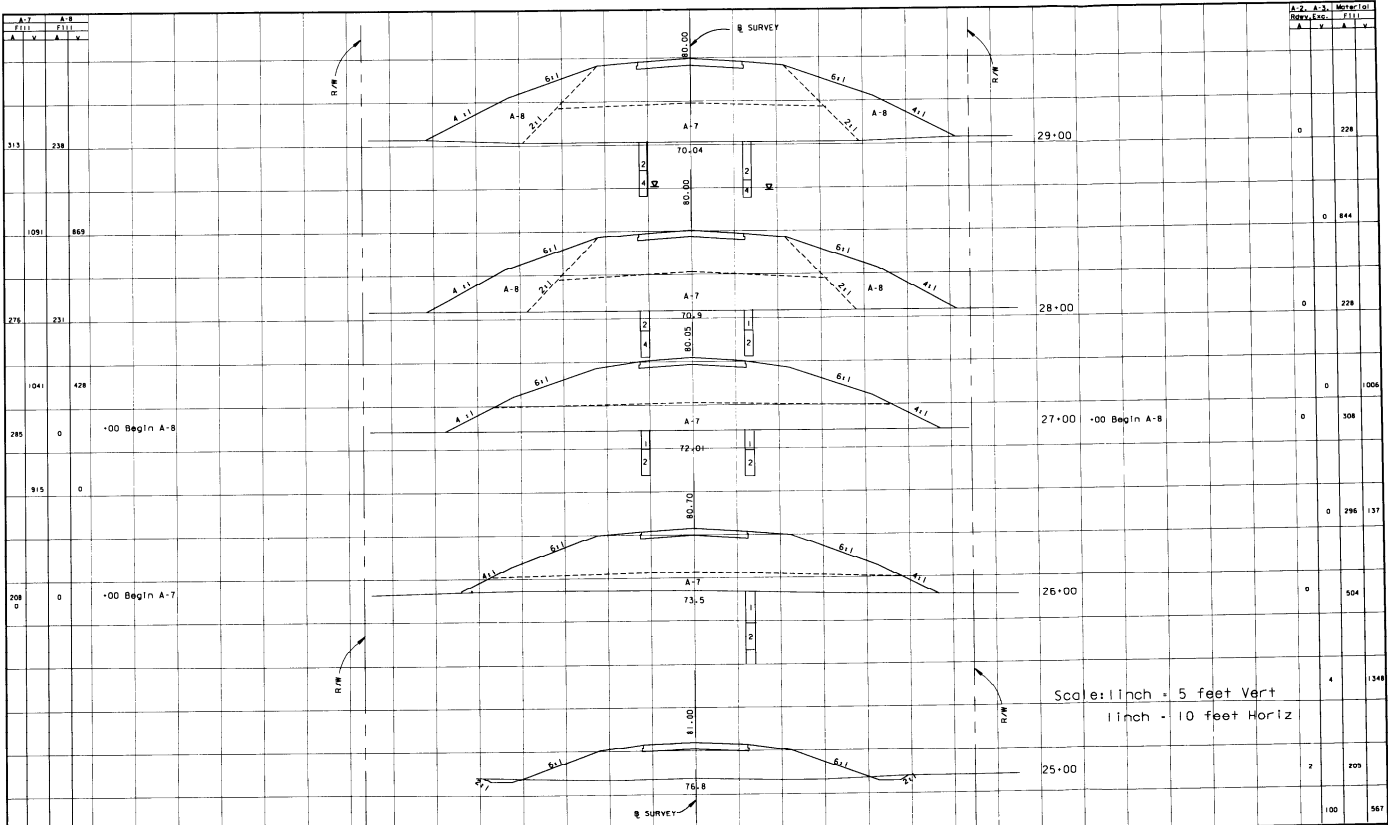
As many sections as possible shall be placed on a sheet with sections being spaced to avoid overlapping. The soil profile should be checked for possible unsuitable material below existing ground which may cause overlapping of sections.

Profile grade elevations shall be shown and may be written vertically or at an angle to the horizontal.

When right-of-way is narrow enough and a horizontal scale of 1" = 10' is used, two columns of cross sections may be placed on a sheet. Cross section placing progresses from the left to the right as well as from the bottom to the top of the sheet. The sheet shall be set up to provide earthwork columns for each column of sections. Usually, access roads and lateral ditches can be plotted in this manner.

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO.	00000-0000
HEET NO.	00

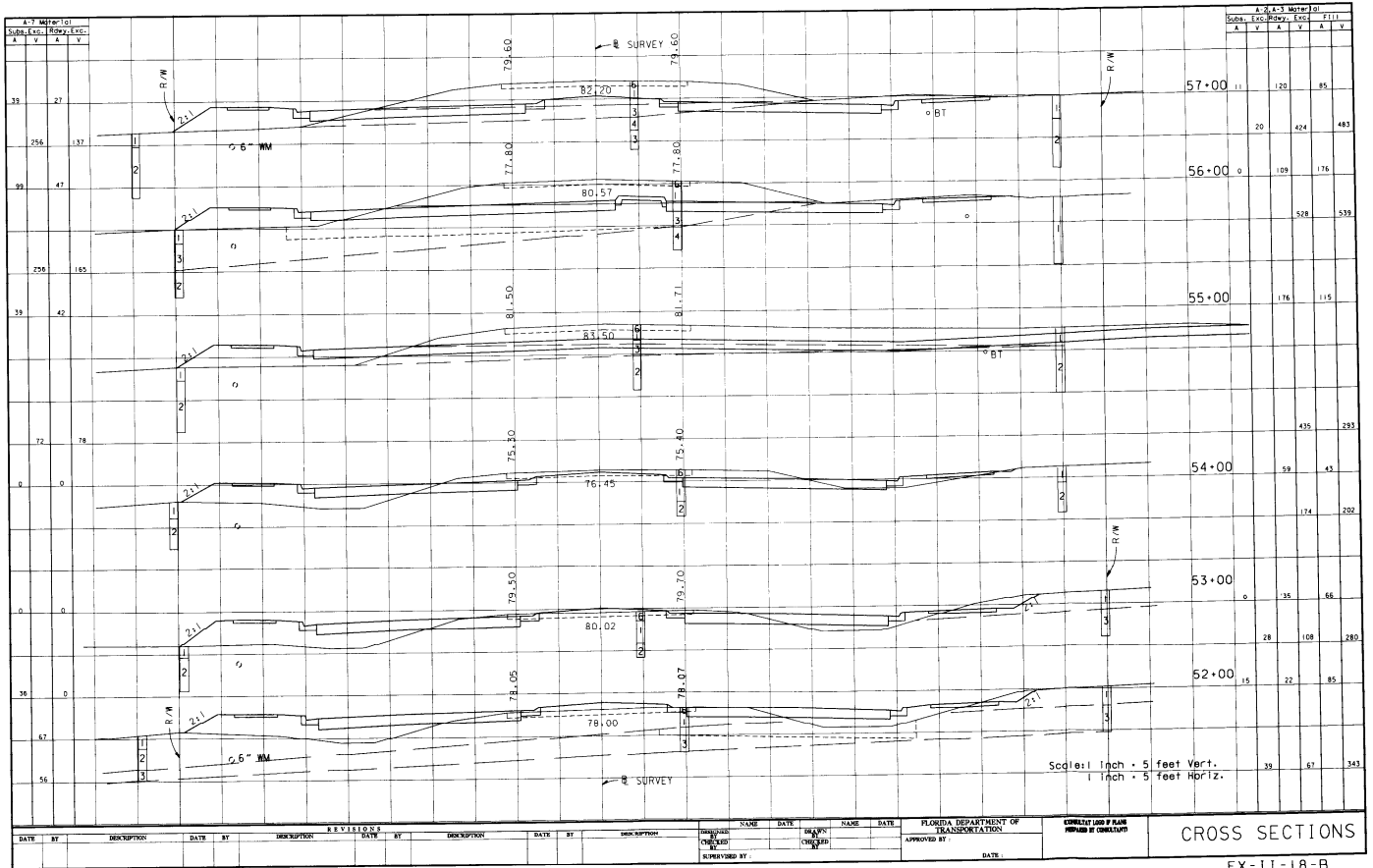


REVISIONS										FLORIDA DEPARTMENT OF TRANSPORTATION		CROSS SECTIONS
NO.	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY	DATE	APPROVED BY	

EX-11-18-A

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000 00



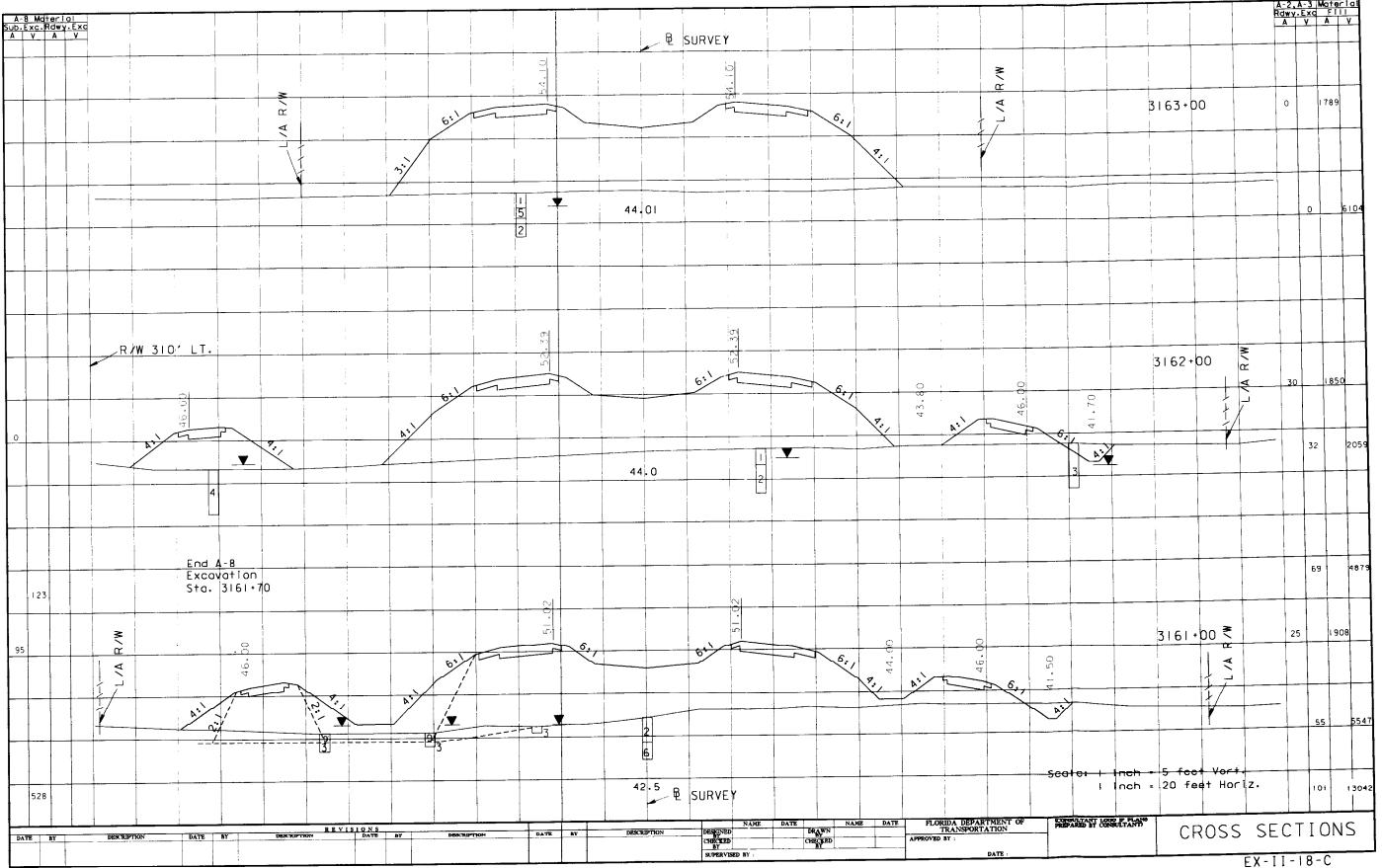
REVISIONS										APPROVALS		DATE			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

CROSS SECTIONS

EX-11-18-B

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STATE PROJ. NO. 00000-0000 00



## CHAPTER 19

### TRAFFIC CONTROL SHEETS

#### 19.1 General

The need to improve the capacity of and to rehabilitate Florida's highways has greatly increased the frequency of highway construction taking place immediately adjacent to or under traffic. The exposure of both the travelling public and construction and inspection personnel, to conflicts that may become hazardous is tremendous. In addition to the safety issue, the potential delays to the public as traffic is interrupted by construction can be significant. As a result, the Florida DOT places a great deal of emphasis upon ensuring that traffic can be accommodated through construction zones with minimum delay and exposure to unsafe conditions.

A Traffic Control Plan (TCP) accompanies the plans and specifications for a construction project. The TCP documents the considerations and investigations made in the development of a comprehensive plan for accommodating traffic through construction work zones.

A TCP describes all actions to be taken to minimize traffic impacts, such as design of the project itself, contract specifications, actions to be taken by DOT personnel and traffic control sheets. It is important to understand that the traffic control sheets which are part of the construction plans are the result of the TCP, and as such, are a part of a comprehensive effort to minimize impacts on traffic.

## 19.2 Required Information

Specific traffic control sheets shall be prepared using information from the plan - profile sheets and interchange and intersection layout sheets, if necessary. The plans shall show the following details:

- Centerline, pavement edge, curb lines, shoulders, lane configurations, intersections, and access openings.
- Locations of construction signs (including variable message signs), advance warning arrow panels, portable concrete barriers, crash cushions, temporary signals, flaggers and all regulatory speed signs.
- Sign faces with leader lines connecting the sign face to the appropriate location, including temporary modifications to permanent signs.
- Location and legends of permanent signs with appropriate notes for their dispositions. (e.g. "To Be Removed" etc.)
- Dimensioned locations of channelizing devices, with notes indicating the type, spacing and lane taper lengths required.
- Pavement markings to be removed and required temporary markings.

Locations of existing utilities that may conflict with construction necessary for traffic control.

- Notes referencing Roadway and Traffic Design Standard Series 600 as applicable, and any others necessary to clarify the plan. Special notes might include instructions for the use of service patrols, police and highway advisory radio.

Plan sheets shall be prepared for each phase of traffic control during construction and each major traffic pattern that will be used during each phase (for example, in the case of night work, the daytime and nighttime traffic patterns shall be shown for a particular traffic phase.)

The traffic control sheets shall use relevant existing or proposed roadway features for the phase being illustrated. Data shall be transferred from the appropriate CADD levels of the plan - profile sheets. Appropriate CADD library cells shall be used for sign faces and standard notes.

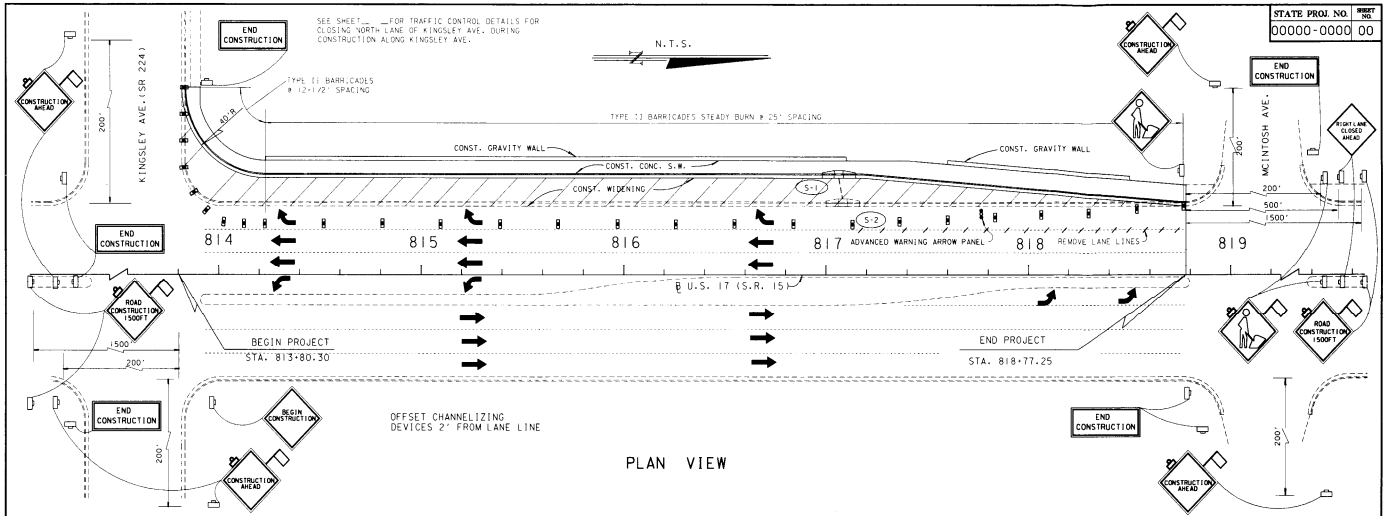


### 19.3 Format and Scale

The plan sheets shall be prepared on standard plan sheets. The scale shall be such that all details are clear and legible at half-size reduction of plans. However, the scale shall not be smaller than 1"=100'. For simple, uncomplicated projects, or sections of a project, it may be possible to "stack" two plans on one sheet, one below the other. Clarity and legibility shall be preserved in all cases.

A north arrow and graphic scale shall be shown at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, then each plan portion shall contain a north arrow and graphic scale.

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**PHASING**

**PHASE 1**  
 CLEAR AND GRUB AREA NECESSARY TO CONSTRUCT NEW CURB AND GUTTER AND DRAINAGE STRUCTURE S-2. LEAVE EXISTING CURB AND GUTTER IN PLACE. AFTER NEW CURB AND GUTTER IS IN PLACE, COMPLETE CLEARING AND GRUBBING OPERATIONS, INCLUDING REMOVAL OF THE EXISTING SIDEWALK AND THE EXISTING CURB AND GUTTER. CONSTRUCT THE PIPE CONNECTING S-1 AND S-2 AND BEGIN BASE EXCAVATION. ONLY THAT EXCAVATION FOR BASE WIDENING THAT CAN BE BACKFILLED BY THE END OF THE WORK DAY WILL BE EXCAVATED. NO OPEN TRENCH WILL BE ALLOWED TO REMAIN AFTER WORK ENDS FOR THE DAY. SPEED THROUGH THE WORKZONE SHALL BE RESTRICTED TO 30 M.P.H.

**PHASE 2**  
 UPON COMPLETION OF THE BASE OPERATIONS, STRUCTURAL COURSE WILL BE PLACED FOLLOWED BY THE FRICTION COURSE AND THE STRIPING.

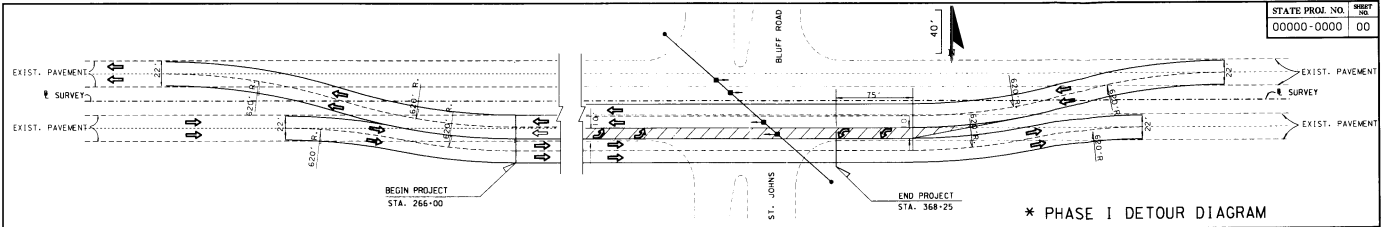
**GENERAL NOTES**

- NO WORK SHALL BE DONE REQUIRING A LANE CLOSURE BETWEEN THE HOURS OF 6:00 A.M. THRU 8:00 P.M. AND 4:00 P.M. THRU 8:30 P.M.
- NO WORK WILL BE DONE DURING THE FOLLOWING PERIODS:  
 MIDNIGHT THURSDAY BEFORE TO MIDNIGHT MONDAY AFTER EASTER SUNDAY.  
 MIDNIGHT JULY 2 TO MIDNIGHT JULY 3.  
 MIDNIGHT DECEMBER 20 TO MIDNIGHT JANUARY 3.  
 THANKSGIVING TUESDAY MIDNIGHT PRIOR THROUGH SUNDAY MIDNIGHT AFTER.  
 SPECIAL EVENTS SUCH AS:  
 MIDNIGHT WEDNESDAY BEFORE TO MIDNIGHT SUNDAY AFTER THE FLORIDA-GEORGIA GAME-GATOR BOWL GAME (TWO DAYS PRIOR TO THROUGH ONE DAY AFTER).  
 T.P.C. GOLF TOURNAMENT (MIDNIGHT TUESDAY BEFORE TO MIDNIGHT MONDAY AFTER).  
 ETC., AND ANY EMERGENCIES DEEMED NECESSARY BY LOCAL LAW ENFORCEMENT AUTHORITIES OR RESIDENT ENGINEER.
- MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PART VI WORK ZONE TRAFFIC CONTROL.
- AN OFF DUTY LAW ENFORCEMENT OFFICER WITH A MARKED LAW ENFORCEMENT VEHICLE WILL BE REQUIRED FOR EACH LANE CLOSURE.
- DESIGN SPEED IS 30 M.P.H.
- ARROW DENOTE DIRECTION OF TRAFFIC ONLY AND DO NOT REFLECT PAVEMENT MARKINGS.
- FOR GENERAL TRAFFIC CONTROL ZONE REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600

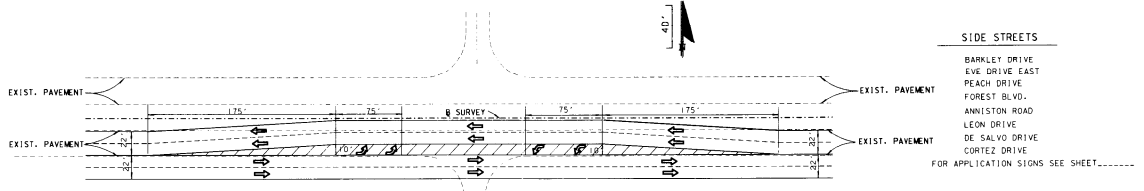
REVISIONS								APPROVED BY:				TRAFFIC CONTROL PLAN		
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THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000 SHEET NO. 00



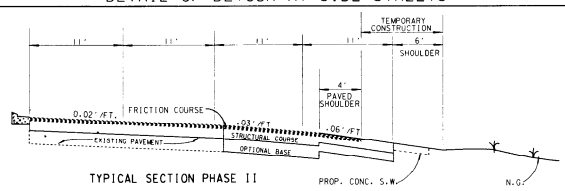
\* PHASE I DETOUR DIAGRAM



DETAIL OF DETOUR AT SIDE STREETS

**PHASING**

- PHASE I**
- (A) REMOVE EXISTING SIDE DRAIN, CONSTRUCT DITCH EXCAVATION AND INSTALL SIDE DRAIN WITH MITERED END SECTIONS ACCORDING TO PLAN SPECIFICATIONS.
  - (B) CONSTRUCT TEMPORARY PIPE EXTENSIONS TO THE SOUTH END OF EXISTING CROSS DRAINS. CONSTRUCT TEMPORARY DETOUR AS SHOWN IN SKETCH.
  - (C) CLOSE WESTBOUND LANES AND REDIRECT TRAFFIC THRU TEMPORARY DETOUR.
  - (D) COVER WEST BOUND SIGNAL HEADS AND REPHASE EAST BOUND SIGNAL HEADS TO SERVE TRAFFIC IN BOTH DIRECTIONS.
- PHASE II**
- (A) EXCAVATE MUCK AND REPLACE CROSSDRAINS UP TO CENTERLINE OF SURVEY. COMPLETE WIDENING OF WESTBOUND LANES. PERFORM MILLING AND RESURFACING OPERATIONS.
  - (B) CONSTRUCT 4" OF TEMPORARY PAVEMENT ADJACENT TO THE BASED SHOULDER, STRIPE WESTBOUND ROADWAY, PERMANENT AND TEMPORARY, FOR FOUR LANES (SEE TYPICAL SECTION THIS SHEET).
  - (C) CLOSE THE EASTBOUND LANES AND REDIRECT TRAFFIC TO THE WESTBOUND LANES.
  - (D) COVER EAST BOUND SIGNAL HEADS AND REPHASE WEST BOUND SIGNAL HEADS TO SERVE TRAFFIC IN BOTH DIRECTIONS.
- PHASE III**
- (A) COMPLETE CONSTRUCTION OF EASTBOUND LANES ACCORDING TO PLAN SPECIFICATIONS.
  - (B) CLOSE THE DETOUR AND REDIRECT TRAFFIC ONTO THE PERMANENT ROADWAY.
  - (C) REMOVE TEMPORARY PAVEMENT ADJACENT TO WESTBOUND LANE AND CONSTRUCT SIDEWALK.
  - (D) REPHASE SIGNAL HEADS FOR NORMAL TRAFFIC.



TYPICAL SECTION PHASE II

**TEMPORARY CONSTRUCTION (PHASE I AND PHASE III)**

OPTIONAL BASE GROUP D4 (FOR THICKNESS SEE BELOW) WITH TYPE 5 ASPHALTIC CONCRETE (1 1/2" THICK)

OPTIONAL BASE COURSES PERMITTED	OPTION CODE
6" LIMEROCK BASE COURSE	985
5" ASPHALT BASE COURSE (TYPE 1)	125
4" ASPHALT BASE COURSE (TYPE 2)	126
4" ASPHALT BASE COURSE (TYPE 3)	127

NOTE: FOR PERMANENT CONSTRUCTION SEE TYPICAL SECTIONS T.C.2 AND SPECIAL DETOUR QUANTITIES SHOWN ON SHEET

**GENERAL NOTES**

1. MAINTAIN FOUR LANES OF TWO-WAY TRAFFIC AT ALL TIMES.
2. ALL SIGNING, PAVEMENT MARKINGS, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. THE TEMPORARY DETOUR FOR PHASE II CONSTRUCTION WILL BE IDENTICAL TO THE PHASE I DIAGRAM.
4. SANDBAGGING MAY BE NECESSARY IN AREAS WHERE CROSSDRAINS ARE TO BE TEMPORARILY EXTENDED. THE COST OF PLACING, RENEWING AND DISPOSING OF SANDBAGGING WILL BE INCLUDED IN THE BID PRICE FOR TEMPORARY DETOURS.
5. EXACT LIMITS OF SANDBAGGING TO BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION.
6. ARROWS DENOTE DIRECTION OF TRAFFIC ONLY AND DO NOT REFLECT PAVEMENT MARKINGS.
7. REGULATORY SPEED OF 35 M.P.H. SHALL BE POSTED WITHIN THE LIMITS OF THE WORK ZONE FOR PHASE I (PHASE II).
8. FOR GENERAL T.C.2 REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TRAFFIC CONTROL PLAN - PHASING

## CHAPTER 20

### UTILITY ADJUSTMENT

#### 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 aids the contractor in avoiding possible conflicts or damage to the utilities involved.

#### 20.2 Required Information

Locations of all existing utilities within the project limits shall be shown on the plans prior to the Phase I submittal. Each of the utility companies shall be provided by DOT, a set of plans at the Phase II submittal. The utility companies shall verify or show by marking up the prints, the location of their respective utilities. Information shown on these marked up prints shall be used by the roadway design office to prepare utility adjustment sheets. All proposed and relocated utilities shall be clearly shown on the plan by a heavy solid line and standard utility symbol and labelled (see Standard Index #002). Disposition of all existing utilities shall be clearly indicated: for example "To Be Removed", "To Be Adjusted", "To Be Relocated", etc. All proposed utilities shall be appropriately labelled. Applicable general notes shall also be shown on the first utility adjustment sheet.

### 20.3 Sheet Format and Scale

The utility adjustment sheets shall be prepared on the same format and base information as that of the plan - profile sheets. Levels, fonts and line weights shall be in accordance with CADD Roadway Standards and Guidelines. Scale shall be the same as that used for the plan - profile sheets.



## CHAPTER 21

### SELECTIVE CLEARING AND GRUBBING

#### 21.1 General

Selective clearing and grubbing plans show the extent and type of clearing operation required within the project right-of-way limits. This information may be shown on the plan - profile sheet, if no substantial clutter of the sheet results. Otherwise, selective clearing and grubbing shall be shown on a separate plan sheet.

#### 21.2 Required Information and Sheet Set Up

When separate selective clearing and grubbing sheets are required, they shall be shown on a standard plan format. Complete existing topography shall be shown together with centerline of construction with stationing, R/W lines and limits of construction. The type of selective clearing and grubbing operation to be performed shall be clearly shown by symbol (refer to Section 21.3 for symbols and notes). A north arrow and graphic scale shall be placed at a point of maximum visibility on the sheet. Any convenient scale may be used provided clarity and legibility are preserved at half size reduction of plans. However, it is recommended that the selective clearing and grubbing plans be prepared at the same scale as the roadway plan - profile sheets.

Appropriate match lines shall be used when necessary.

For a complete illustration of a selective clearing and grubbing sheet, see Exhibit II-21-A.

### 21.3 Standard Symbols and Notes



Designates areas to remain natural. No clearing or grubbing in these areas. No equipment shall enter these areas.



Designates areas where trees and stumps over 3" caliper 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.



Designates areas where trees of 3" caliper 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.



Designates areas where the type and extent of clearing and grubbing shall be determined by the Engineer according to field conditions.



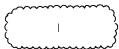
Designates areas that shall remain natural, when, in the opinion of the Engineer, adequate and desirable natural vegetation or grass exists. Where this type vegetation does not exist, only harrowing, disking, leveling, and/or clean-up shall be undertaken, to a degree sufficient to prepare the area for grassing operations.



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.

SELECTIVE CLEARING - GENERAL NOTES



DESIGNATES AREAS TO REMAIN NATURAL. NO CLEARING OR GRUBBING IN THESE AREAS. NO EQUIPMENT SHALL ENTER THESE AREAS.



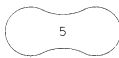
DESIGNATES AREAS WHERE TREES AND STUMPS OVER 3" CALIPER SHALL BE CUT FLUSH WITH THE GROUND OR REMOVED, AND ALL UNDERGROWTH IS TO REMAIN NATURAL. NO EQUIPMENT SHALL ENTER THESE AREAS THAT WOULD IN ANY WAY DAMAGE THE PLANT MATERIAL TO REMAIN.



DESIGNATES AREAS WHERE TREES OF 3" CALIPER 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.



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 EXISTS. 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.

ALL OTHER AREAS NOT INCLUDED IN ONE OF THE ABOVE CATEGORIES, OR THOSE DESIGNATED BY THE TYPICAL SECTIONS, SHALL BE STANDARD CLEARING AND GRUBBING.

WHERE UNFORSEEN SITE CONDITIONS EXIST, ADJUSTMENTS OR EXCEPTIONS MAY BE MADE TO THE ABOVE PROCEDURE AT THE DIRECTION OF THE ENGINEER.

TOPSOIL - MUCK BLANKET - GENERAL NOTES

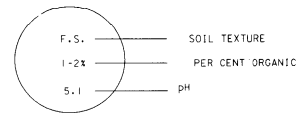
STOCKPILING OF TOPSOIL AND/OR MUCK IS TO BE DONE ONLY IN AREAS REQUIRING STANDARD CLEARING AND GRUBBING AND/OR AREAS DESIGNATED AS TYPE 5 (SEE SELECTIVE CLEARING - GENERAL NOTES)

TYPE 4 AREAS MAY BE USED FOR STOCKPILING OF MUCK 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.

EXPLANATION OF SYMBOLS

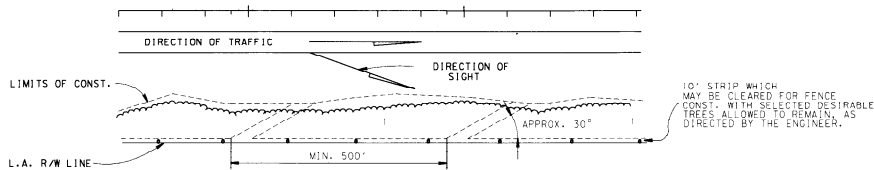
SOIL INFORMATION DETAIL



SOIL TEXTURE ABBREVIATIONS

DETAIL OF EXCEPTION

(APPLIES TO ALL TYPES OF SELECTIVE CLEARING)



AT THE DIRECTION OF THE ENGINEER, DIAGONAL PATHS 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.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SELECTIVE CLEARING AND GRUBBING

## CHAPTER 22

### APPROACH SLABS

#### 22.1 General

The approach slab sheets are included in the plans set for projects involving bridges. These sheets shall be prepared in the responsible structural Design Engineer's office and shall be included in the roadway plans set. Approach slab sheets shall be the last sheets in the plans set, unless proprietary retaining walls are included in the package.

## 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 or typical signing and pavement markings may include these features on sheets in the roadway plan set or detailed on roadway sheets. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant signing and marking sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter S.

#### 23.2 Key Sheet

The key sheet is the first sheet in the set and shall be prepared on a standard key sheet format as mentioned in Chapter 3 of this volume. Contract plans set information shall not be required on this sheet when it is shown on the lead key sheet. A complete index of signing and pavement marking plans shall be shown on the left side of the sheet. The Roadway and Traffic Design Standards referenced in the plans shall be listed by index number on the key sheet, just below the plans index. Location map and length of project box need not be shown if this information is shown on the lead key sheet of the plans set. Other project data, approval signatures, consultant's name and DOT Project Manager/Coordinator's name shall be shown as described in Chapter 3 of this volume.

### 23.3 Tabulation of Quantities and Standard Notes

The tabulation of quantities sheet shall be prepared on the standard plan format and shall show quantities, standard sign numbers, pay item numbers and size of sign if not shown in plan for all bid items. The sheet shall be set up as shown in Exhibit II-23-A. Bid items shall be listed in numerical order and quantities shall be tabulated per sheet. Provision shall be made to show the original and final quantities. Standard notes referring to item numbers shall also be shown on this sheet.

On contracts with multiple project numbers or federal aid and non-federal aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

### 23.4 General Notes

All general notes pertaining to signing and pavement marking may be shown on a separate plan format sheet, if necessary. Refer to Exhibit EX II-23-B for general notes.

## 23.5 Plan Sheets

### 23.5.1 Format and Scale

The plan sheets shall be prepared on a standard plan format. The scale shall be such that all details are clear and legible at half size reduction of plans. The scale shall meet the requirements of Section 10.1 of this volume. For simple, uncomplicated projects, or sections of a project, it may be possible to "stack" two plans on one sheet, one below the other. Clarity and legibility shall be preserved in all cases. Refer to Exhibit Ex-II-23-D for an example of signing and pavement marking plan.

A north arrow and graphic scale shall be shown at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, then each plan portion shall contain a north arrow and graphic scale.

### 23.5.2 Required Information

The basic information pertaining to roadway geometrics and project limits required on the signing and pavement marking plan sheets is the same as that required on the plan portion of the plan - profile sheets. (Chapter 10). Topography and construction details need not be shown. Utilities, drainage, lighting, sidewalks, driveways, etc. shall be checked for conflicts. Only those that may may cause conflicts with sign placement shall be shown.

All pavement markings shall be clearly shown and labelled with their widths, color and spacing specified. Either the begin and end pavement marking stations, with offset or the begin pavement marking station with offset and the total length of roadway for pavement marking shall be shown. The location of raised pavement markers and delineators shall be indicated by specifying the type, color, spacing, and limits of application by stations. All regulatory, warning and directional signs shall be shown at the proper locations. Each sign face shall be shown in close proximity to its respective sign with a leader line connecting the sign location and signface. Each sign face shall be oriented on the plan sheet to be read as viewed from the direction of travel along the roadway. The location of all signs shall be indicated by station or milepost. The Pay Item Number and standard sign designation, or assigned number if non-standard, shall be shown for each sign.

Any signs to be mounted on signal span wires should be shown and listed with the signalization plan.

Begin and end stations shall be shown.

### 23.6 Guide Sign Worksheet

The sign face, with the complete message layout with legend spacing (vertical and horizontal), margins, border widths and corner radii shall be shown on the guide sign worksheet. This sheet should be prepared on the standard plan sheet format to any convenient scale that will preserve clarity and legibility at half-size reduction of plans. For multi-support roadside signs, cross sections may not be included in the plans set, but the pole data shall be tabulated on the guide sign worksheet. Ex-II-23-F is an example of Guide Sign Work Sheet.

### 23.7 Overhead Sign Cross Section and Support Structure

The sign cross section sheet shows the location of overhead sign(s) in cross section. A standard profile format should be utilized. The cross section of the roadway at the sign location shall be shown and fully dimensioned. (See Exhibit II-23-E). The recommended scale for the cross section is 1" = 5' horizontally and vertically.

For overhead signs, the support truss and columns and foundations should be designed by the contractor from information shown on the sign cross section sheet.

### 23.8 Typical Pavement Marking Sheet

For simple, uncomplicated projects, or sections of a project, it may be possible to show signing and pavement marking plan details schematically using straight line diagrams and typical markings plan sheets. All regulatory, warning and directional signs shall be properly identified and shown at their graphic location on the straight line diagram. Pavement markings shall be shown and labelled on a typical marking plan. (see Exhibit II-23-C).



TABULATION OF QUANTITIES

BID ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET	GRAND TOTAL	REF. SHEET								
			S-4		S-5		S-6		S-7		S-8		S-9					S-10		S-11		S-12		S-13	
			PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL				PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL	PLAN.	FINAL
700-1-3	R1-1 (30")	AS																					6		
700-1-12	R4-7 (30"x24")	AS	2																				2		
700-1-13	R3-9B (36"x24")	AS	1																				2		
700-1-15	M4-6 (12"x24") , R3-9B (36"x24")	AS	1																				9		
700-1-17	W4-2 (48")	AS																					1		
	W9-2 (48")	AS																							
	W9-1 (48")	AS																							
700-1-18	SIGN 800	AS																					2		
700-1-30	SIGN 801	AS	1																				1		
700-1-30	SIGN 802	AS																					1		
700-73-1	REMOVE EXISTING SIGN (ONE POST)	AS	2																				16		
706-1-12	REFLECTIVE PAVEMENT MARKER, MONO-DIRECTIONAL/COLORLESS	EA	3																				736		
	REFLECTIVE PAVEMENT MARKER, COLORLESS/RED	EA	10																						
	REFLECTIVE PAVEMENT MARKER, AMBER/AMBER	EA	49																						
	REFLECTIVE PAVEMENT MARKER, MONO-DIRECTIONAL/AMBER	EA																							
	REFLECTIVE PAVEMENT MARKER, AMBER/RED	EA																							
706-74	REMOVAL OF EXISTING PAVEMENT MARKERS	EA																							
710-11	REMOVE EXISTING MARKINGS, PAINT	SF																							
711-1	SKIP TRAFFIC STRIPE, 10' OF 4" WHITE THERMOPLASTIC - 30' SKIP	GM																							
	SKIP TRAFFIC STRIPE, 10' OF 4" YELLOW THERMOPLASTIC - 30' SKIP	GM	-017																				2,042		
	SKIP TRAFFIC STRIPE, 6' OF 4" WHITE THERMOPLASTIC - 10' SKIP	GM																							
	SKIP TRAFFIC STRIPE, 6' OF 4" YELLOW THERMOPLASTIC - 10' SKIP	GM	-016																						
711-3	PAVEMENT MESSAGES THERMOPLASTIC, RXR (89 SF)	EA																					2		
	PAVEMENT MESSAGES THERMOPLASTIC, MERGE (36 SF)	EA																							
	PAVEMENT MESSAGES THERMOPLASTIC, SCHOOL (33 SF)	EA																							
711-4	DIRECTIONAL ARROWS THERMOPLASTIC, THRU-ARROW NON-INTERSTATE (12 SF)	EA																							
	DIRECTIONAL ARROWS THERMOPLASTIC, THRU AND TURN COMBINATION (29 SF)	EA																							
	DIRECTIONAL ARROWS THERMOPLASTIC, RIGHT OR LEFT TURN (16 SF)	EA	1																				42		
	DIRECTIONAL ARROWS THERMOPLASTIC, INTERSTATE RAMP ARROW (35 SF)	EA																							
711-5	GUIDE LINES, 2" OF 4" WHITE THERMOPLASTIC - 4' SKIP	LF																							
711-6-81	SOLID TRAFFIC STRIPE, 8" WHITE THERMOPLASTIC, ISLAND AND GORE MARKINGS	LF																							
711-6-121	SOLID TRAFFIC STRIPE, 12" WHITE THERMOPLASTIC, PEDESTRIAN AND SCHOOL CROSSINGS	LF																							
711-6-181	SOLID TRAFFIC STRIPE, 18" WHITE THERMOPLASTIC, CROSSHATCH	LF	50																				308		
	SOLID TRAFFIC STRIPE, 18" YELLOW THERMOPLASTIC, CROSSHATCH	LF	90																						
711-6-241	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, STOP BAR	LF	21																				369		
	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, RAILROAD BANDS	LF																							
	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, SCHOOL BANDS	LF																							
711-7	REMOVE EXISTING MARKINGS, THERMOPLASTIC	SF																							
711-8-41	SOLID TRAFFIC STRIPE, 4" WHITE THERMOPLASTIC	NM	.22																				5,293		
	SOLID TRAFFIC STRIPE, 4" YELLOW THERMOPLASTIC	NM	.256																						

REVISIONS												NAME DATE				FLORIDA DEPARTMENT OF TRANSPORTATION				CONSULTANT LOG # PLAN NUMBER BY DATE			
DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION	DATE BY	DESCRIPTION		

TABULATION OF QUANTITIES

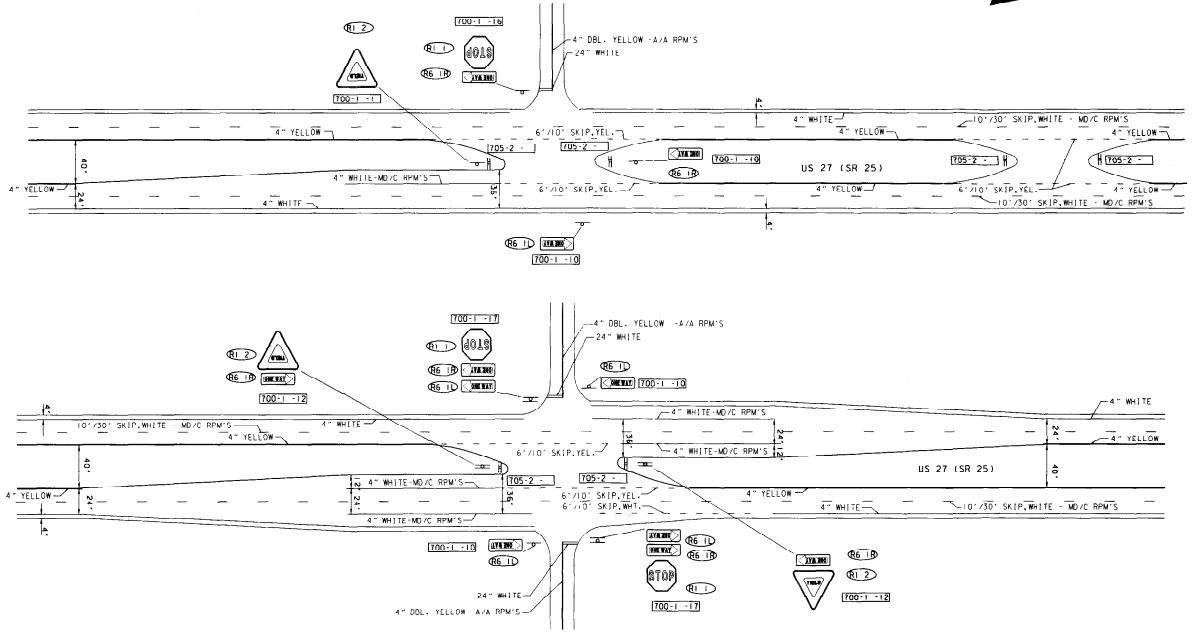
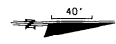
TABULATION OF QUANTITIES

BID ITEM NO.	DESCRIPTION	UNIT	SHEET NUMBERS												TOTAL THIS SHEET	GRAND TOTAL	REF. SHEET	
			S-14 PLAN, FINAL	S-14 FINAL	S-15 PLAN, FINAL	S-15 FINAL	S-16 PLAN, FINAL	S-16 FINAL	S-17 PLAN, FINAL	S-17 FINAL	S-18 PLAN, FINAL	S-18 FINAL	S-19 PLAN, FINAL	S-19 FINAL				
700-1-3	R1-1 (30"x30")	AS														1	7	
700-1-12	R4-7 (30"x24")	AS														1	3	
700-1-13	R3-9B (36"x24")	AS	2													3	12	
700-1-15	M4-6 (12"x24") , R3-9B (36"x24")	AS														1	2	
700-1-17	M4-2 (48")	AS																
	M9-2 (48")	AS														1		
	M9-1 (48")	AS														2		
700-1-18	SIGN 800	AS																
	SIGN 801	AS																2
700-1-30	SIGN 802	AS																1
700-73-1	REMOVE EXISTING SIGN (ONE POST)	AS															6	22
706-1-12	REFLECTIVE PAVEMENT MARKER, MONO-DIRECTIONAL/COLORLESS	EA																
	REFLECTIVE PAVEMENT MARKER, COLORLESS/RED	EA																
	REFLECTIVE PAVEMENT MARKER, AMBER/AMBER	EA	66		66		72		112		16						345	1081
	REFLECTIVE PAVEMENT MARKER, MONO-DIRECTIONAL/AMBER	EA																
	REFLECTIVE PAVEMENT MARKER, AMBER/RED	EA																
706-74	REMOVAL OF EXISTING PAVEMENT MARKERS	EA																
710-11	REMOVE EXISTING MARKINGS, PAINT	SF																
711-1	SKIP TRAFFIC STRIPE, 10' OF 4" WHITE THERMOPLASTIC - 30' SKIP	CM																
	SKIP TRAFFIC STRIPE, 10' OF 4" YELLOW THERMOPLASTIC - 30' SKIP	CM	.25		.25		.25		.053		.076							
	SKIP TRAFFIC STRIPE, 6' OF 4" WHITE THERMOPLASTIC - 10' SKIP	CM															.9	2,942
	SKIP TRAFFIC STRIPE, 6' OF 4" YELLOW THERMOPLASTIC - 10' SKIP	CM																
711-3	PAVEMENT MESSAGES THERMOPLASTIC, RXR (89 SF)	EA																
	PAVEMENT MESSAGES THERMOPLASTIC, ONLY (22 SF)	EA															2	4
	PAVEMENT MESSAGES THERMOPLASTIC, SCHOOL (33 SF)	EA																
711-4	DIRECTIONAL ARROWS THERMOPLASTIC, THRU-ARROW NON-INTERSTATE (12 SF)	EA																
	DIRECTIONAL ARROWS THERMOPLASTIC, THRU AND TURN COMBINATION (29 SF)	EA															2	
	DIRECTIONAL ARROWS THERMOPLASTIC, RIGHT OR LEFT TURN (16 SF)	EA	6		4		6		3									63
	DIRECTIONAL ARROWS THERMOPLASTIC, INTERSTATE RAMP ARROW (35 SF)	EA																
711-5	GUIDE LINES, 2" OF 4" WHITE THERMOPLASTIC - 4' SKIP	LF																
711-6-81	SOLID TRAFFIC STRIPE, 8" WHITE THERMOPLASTIC, ISLAND AND CORE MARKINGS	LF																
711-6-121	SOLID TRAFFIC STRIPE, 12" WHITE THERMOPLASTIC, PEDESTRIAN AND SCHOOL CROSSINGS	LF																
711-6-181	SOLID TRAFFIC STRIPE, 18" WHITE THERMOPLASTIC, CROSSHATCH	LF																
	SOLID TRAFFIC STRIPE, 18" YELLOW THERMOPLASTIC, CROSSHATCH	LF															492	800
711-6-241	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, STOP BAR	LF																
	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, RAILROAD BANDS	LF															10	370
	SOLID TRAFFIC STRIPE, 24" WHITE THERMOPLASTIC, SCHOOL BANDS	LF																
711-7	REMOVE EXISTING MARKINGS, THERMOPLASTIC	SF																
711-8-41	SOLID TRAFFIC STRIPE, 4" WHITE THERMOPLASTIC	NM	.25		.25		.239		.252		.121							
	SOLID TRAFFIC STRIPE, 4" YELLOW THERMOPLASTIC	NM	.25		.25		.288		.381		.157						2,438	7,731

NOTES: 1. BID ITEM NO 711-8-41 INCLUDES 0.221 NM LENGTH OF DOUBLE YELLOW.

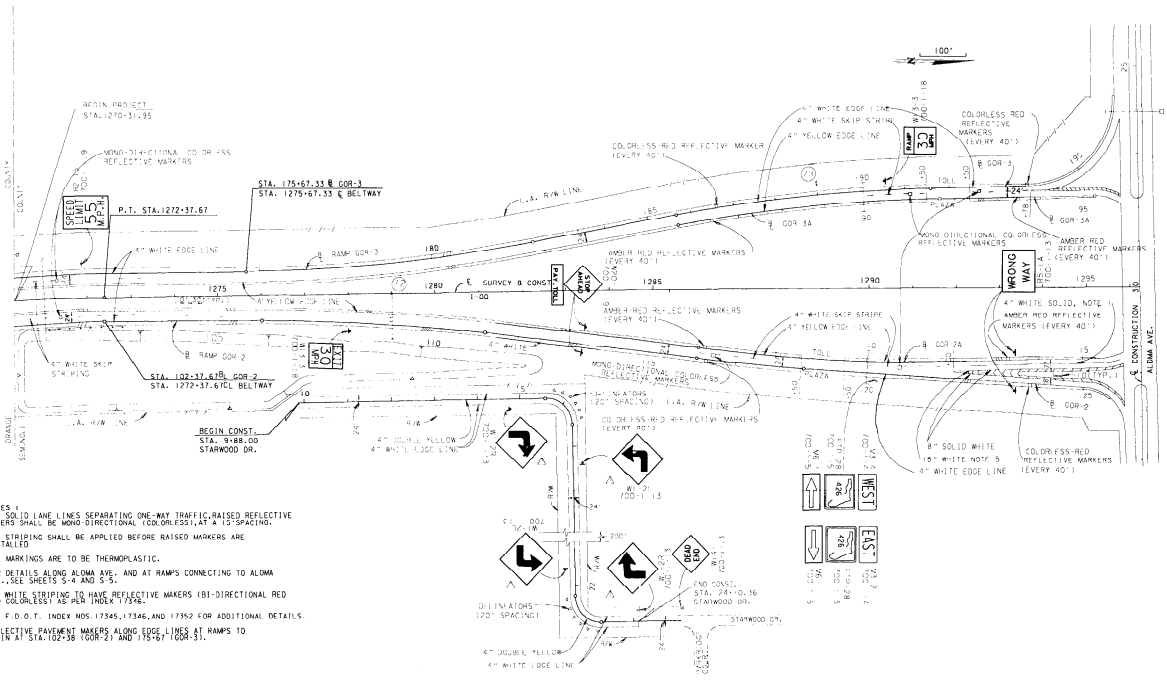
SHEET 2 OF 2

DATE	BY	CHECKED	DATE	BY	CHECKED	DATE	BY	CHECKED	DATE	BY	CHECKED	DATE	BY	CHECKED	DATE	BY	CHECKED	DATE	BY	CHECKED
REVISIONS										FLORIDA DEPARTMENT OF TRANSPORTATION		ESTIMATED COST OF PLAN		TABULATION OF QUANTITIES						
APPROVED BY:										APPROVED BY:		APPROVED BY:		APPROVED BY:						
DATE:										DATE:		DATE:		DATE:						



REVISIONS												FLORIDA DEPARTMENT OF TRANSPORTATION		CONTRACT USER'S PLAN NUMBER OF CORRECTIONS	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	APPROVED BY:	DATE:		

TYPICAL MARKINGS



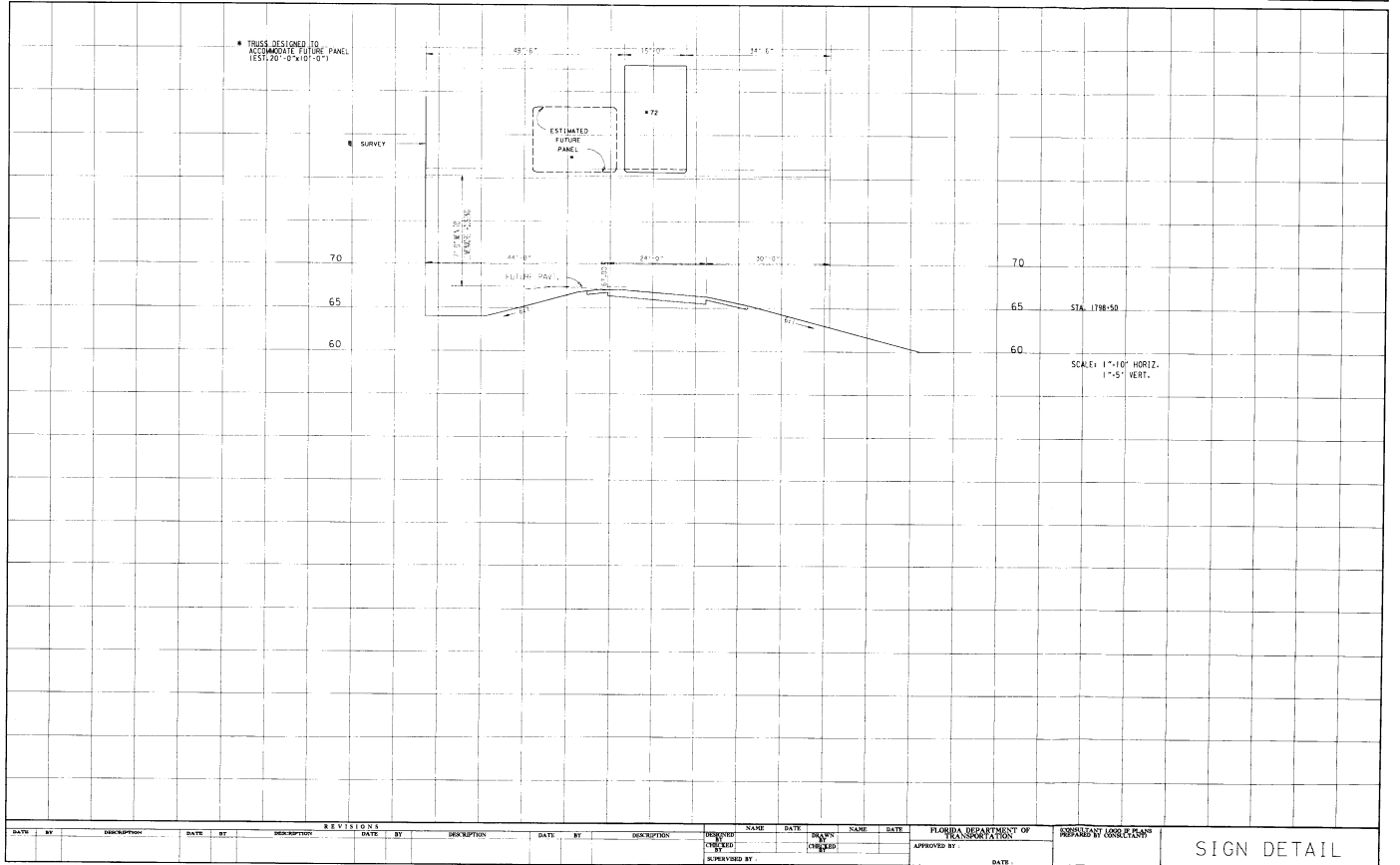
- NOTES:
1. FOR SOLID LANE LINES SEPARATING ONE-WAY TRAFFIC, RAISED REFLECTIVE MARKERS SHALL BE NON-DIRECTIONAL (COLORLESS) AT 4' SPACINGS.
  2. ALL STRIPING SHALL BE APPLIED BEFORE RAISED MARKERS ARE INSTALLED.
  3. ALL MARKINGS ARE TO BE THERMOPLASTIC.
  4. FOR DETAILS ALONG ALMA AVE., AND AT RAMPS CONNECTING TO ALMA AVE., SEE SHEETS S-4 AND S-5.
  5. 18\"/>

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	

SIGNING AND MARKING

THIS EXHIBIT IS FOR EXAMPLE ONLY AND DOES NOT REFLECT THE DEPARTMENT'S DESIGN CRITERIA.

STATE PROJ. NO. 00000-0000  
 SHEET NO. S-0



REVISIONS										NAME		DATE		FLORIDA DEPARTMENT OF TRANSPORTATION		APPROVED BY		DATE		
NO.	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SIGN DETAIL

EX 11-23-E

SIGN NUMBER <u>81</u> BACKGROUND WIDTH <u>16'-6"</u> TYPE REFLECTIVE HEIGHT <u>11'-0"</u> COLOR <u>GREEN</u> BORDER WIDTH <u>2"</u> LEGEND B BORDER BORDER RADIUS <u>9"</u> TYPE REFLECTIVE SHIELD SIZE <u>36"x45"</u> COLOR <u>WHITE</u> QUANTITY REQ'D <u>1</u> ARROW SIZE <u>22-1/4" X 35-5/8"</u>		<p>EXIT 81 15" CAPS 60° 16" U.C. 12" LOOPS 700-1-65</p>		STATE PROJ. NO. <u>00000-0000 00</u> SHEET SIGN NUMBER <u>82A</u> BACKGROUND WIDTH <u>17'-0"</u> TYPE REFLECTIVE HEIGHT <u>8'-6"</u> COLOR <u>GREEN</u> BORDER WIDTH <u>2"</u> LEGEND B BORDER BORDER RADIUS <u>9"</u> TYPE REFLECTIVE SHIELD SIZE <u>36"x36"</u> COLOR <u>WHITE</u> QUANTITY REQ'D <u>1</u> ARROW SIZE <u>22-1/4" X 35-5/8"</u>		<p>EXIT 82 15" CAPS 60° 16" U.C. 12" LOOPS 700-1-58</p>	
COPY SPACE COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K		COPY SPACE COPY L A K E C I T Y COPY L A K E C I T Y COPY L A K E C I T Y COPY L A K E C I T Y COPY L A K E C I T Y COPY L A K E C I T Y		COPY SPACE COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K			
SIGN NUMBER <u>82B</u> BACKGROUND WIDTH <u>17'-0"</u> TYPE REFLECTIVE HEIGHT <u>11'-0"</u> COLOR <u>GREEN</u> BORDER WIDTH <u>2"</u> LEGEND B BORDER BORDER RADIUS <u>9"</u> TYPE REFLECTIVE SHIELD SIZE <u>36"x36"</u> COLOR <u>WHITE</u> QUANTITY REQ'D <u>1</u> ARROW SIZE <u>22-1/4" X 35-5/8"</u>		<p>EXIT 82B 15" CAPS 60° 16" U.C. 12" LOOPS 700-1-67</p>		SIGN NUMBER <u>84A B 84B</u> BACKGROUND WIDTH <u>21'-6"</u> TYPE REFLECTIVE HEIGHT <u>11'-0"</u> COLOR <u>GREEN</u> BORDER WIDTH <u>2"</u> LEGEND B BORDER BORDER RADIUS <u>9"</u> TYPE REFLECTIVE SHIELD SIZE <u>36"x56-5/8"</u> COLOR <u>WHITE</u> QUANTITY REQ'D <u>1</u> ARROW SIZE <u>22-7/8" X 25"</u>		<p>EXIT 84 15" CAPS 45° 16" U.C. 12" LOOPS 700-1-78</p>	
COPY SPACE COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K		COPY SPACE COPY W H I T E S P R I N G S COPY W H I T E S P R I N G S COPY W H I T E S P R I N G S COPY W H I T E S P R I N G S COPY W H I T E S P R I N G S COPY W H I T E S P R I N G S		COPY SPACE COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K COPY L I V E O A K			

WIDTH-HORIZONTAL SPACING (ALL DIMENSIONS ARE IN INCHES AND EIGHTHS OF AN INCH)  
 END DIMENSIONS INCLUDE BORDER WIDTH AND MARGIN. OTHER DIMENSIONS ARE WIDTH OF CHARACTER PLUS SPACE TO FOLLOWING CHARACTER, EXCEPT LAST CHARACTER OF EACH WORD WHICH IS THE WIDTH OF CHARACTER ONLY.

## CHAPTER 24

### SIGNALIZATION PLANS

#### 24.1 General

Traffic Signal Plans are usually a component set of plans. Projects with minor or typical signalization may include these features on sheets in the roadway plan set or on the roadway sheets. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant signal sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter T.

The signalization plans show the complete construction details, electrical circuit, signal phasing and other relevant data.

#### 24.2 Key Sheet

The key sheet is the first sheet in the component plans set and shall be prepared as described in Chapter 3 of this volume. However, the location map, length of project box and contract plans set information need not be shown if it is shown on the lead key sheet. The index of signal plans shall be shown on the left of the sheet with the Roadway and Traffic Design Standard Indexes listed below it. Other data shall be shown as described in Chapter 3 of this volume.

### 24.3 Tabulation of Quantities and Standard Notes

The tabulation of quantities sheet lists the item numbers, description and quantity of materials and type of work (i.e., type signal equipment, and labor). This sheet shall be placed behind the key sheet in plans assembly.

The tabulation of quantities sheet shall be set up as shown in Exhibit II-24-A. Bid item numbers shall be listed in numerical order. Provisions shall be made to show the original and final quantities per sheet. Pay item footnotes and general notes that refer to item numbers, description of work to be performed and quantity estimates shall also be shown on this sheet.

If space is limited, notes may be shown on the general notes sheet.

On contracts with multiple project numbers, or federal-aid and non-federal-aid quantities, provisions shall be made to tabulate and summarize their respective quantities.

### 24.4 General Notes

The general note sheet lists special signal design information such as controller operations, item number descriptions, loop installations, signal heads, signal poles, interconnect cable, maintenance of traffic and computer interface that is generally not covered in the FDOT Standard Specification Supplement or Special Provisions. This sheet shall be placed behind the Tabulations of Quantities in the plans assembly. On minor projects, general notes may be combined with the Tabulations of Quantities Sheet.

The general note sheet shall be set up as shown in Exhibit II-23-B. Bid number descriptions shall be listed in numerical order.



## 24.5 Plan Sheets

### 24.5.1 Format and Scale

Signalization plans shall be prepared on standard plan format at a scale large enough to show all details clearly and legibly at half size reduction of plans. Usually, the complete intersection shall be shown on one plan sheet. However, for large intersections more sheets may be used with appropriate match lines. The standard scale is 1" = 20'. A north arrow and graphic scale shall be shown at a point of maximum visibility on the sheet. Refer to Exhibit Ex-II-24-B for an example of signalization plans.

#### 24.5.2 Required Information

The basic information requirements include roadway geometrics, street names, construction stationing or mileposts curb-and-gutter, drainage inlets, sidewalks and right-of-way lines as similarly required on the plan portion of the roadway plan - profile sheets. Only those underground and overhead utilities, and roadway lighting structures that may cause construction conflicts with signal components shall be shown. All locations should be checked for potential conflicts.

The plan sheet shall also show:

- Signal head locations with directional arrows and movements (movements 2 and 6 shall be the major streets)
- Details of signal head in tabular form with pay item numbers
- Phasing diagram/signal operating plan  
(NOTE: If the SOP conforms to the Standards Index #17870, then the reference to the index is all that is required. For all other operating plans, the plan shall be shown.)
- Signal controller timing chart
- Loop detectors
- Electrical service location
- Location of signal poles (ground elevation and elevation of roadway crown)
- Signal wire signs
- Pedestrian signals
- Turning radii
- Median nose locations
- Location of "stop bars" and pedestrian crosswalks
- Coordination unit-timing chart
- Lane lines with directional arrows

All equipment shown on the plan shall be clearly labelled and their respective item numbers and quantity indicated.

A separate signalization plan shall be prepared for each signalized intersection involved in the construction project.

Any span wire mounted signs shall be shown for information purposes only and cross referenced to the appropriate signing and pavement marking plans.

## 24.6 Pole Schedule

The pole schedule sheet tabulates the pole design data. The pole

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