

FLORIDA

BOB MARTINEZ
GOVERNOR



DEPARTMENT OF TRANSPORTATION

605 Suwannee Street, Tallahassee, Florida 32399-0450

BEN G. WATTS
SECRETARY

MEMORANDUM

DATE: September 18, 1990

TO: Plans Preparation Manual Owners

FROM: Ray E. Reissener, State Roadway Design Engineer

A handwritten signature in black ink, appearing to read "Ray E. Reissener", written over the printed name in the "FROM:" field.

COPIES:

SUBJECT: REVISIONS TO THE 1989 PLANS PREPARATION MANUAL

Attached are the revisions and additions to the Plans Preparation Manual that have been approved by the District Design Engineers. The minor changes are "pen and ink" revisions to be made by the manual owner. When major changes were made, the page or chapter was reprinted. Chapter 24, Certification Acceptance, was added to Volume 1.

RER:LS:bg

Attachments

VOLUME I

Page I-1

Section 2 3 3 should be
~~Geometry of~~ Side Slope and Side Ditches

Page 111

Add section
4 6 5 Bus Benches and Transit Shelters

Page I-iv

Correct Index to add section
7 2 2 Wind Loading Criteria - Signs
7 2 3 Project Coordination
7 3 7 Wind Loading Criteria - Lighting
7 3 9 Voltage Drop Criteria
7 4 9 Wind Loading Criteria - Traffic Signals

Page I-v

Delete Section 10 9 5 Construction Identification Signs

Page I-v11

Correct misspelled word
14 4 List of Requests and ~~Contracts~~ Contacts

Page I-v111

Change section title
15 3 6 Right-of-Way ~~Engineering~~ Surveying and Mapping

Page I-x11

Correct misspelled word
~~Proposed~~ Proposed Typical Section (In-House)

Pages I-xiv through I-xv11

Replace pages This section was revised to add information on obtaining references from FDOT

Page I-1-4 0

In the second paragraph, fifth line, remove "in 1986"

Page I-2-2 0

In the third sentence of the second paragraph, replace the word elements with values

The minimum design ~~elements~~ values are

Page I-2-6 0 - 7 0

Beginning with the last sentence on 6 0, change the text to read

For those projects that require additional right-of-way for the construction of the road, the additional width to provide wide curb lanes will be acquired unless the additional cost is ~~excessive~~ excessive ~~with/severe/right-of-way/limitations~~

Plans Prep Manual Errors and Omissions

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Page 2 of 14

In these cases 11 foot continuous two-way turn lanes or painted medians may be used under interrupted flow operating conditions at ~~100~~ speeds up through 40 MPH

Page I-2-13 0

The shoulder pavement tapers are incorrect The 100' dimension should be at the end of the taper

Page I-2-14 0

Change section title

2 3 3 Geometry of Side Slope and Side Ditches

Page I-2-15 0

Add phrase to (2)

Existing right-of-way is not adequate for construction of desirable border widths,

Page I-2-20 0

Replace page - paragraph inserted (re compound curve radii)

Phrase inserted in last paragraph

Transitions have been developed and included in the Roadway and Traffic Design Standards

Page I-2-21 0

In the last sentence of the second paragraph, replace structures manual with Structures Design Guidelines

In the last paragraph the reference to Roadway Design Standards should read Roadway and Traffic Design Standards.

In the last paragraph, delete the word pipe

Page I-2-25 0

In the fourth paragraph the minimum distance to the ramp median opening should be 660 feet rather than 600 feet

Page I-2-27 0

The first paragraph should read

Established clearance between the bottom of the base and design high water (DHW) must be maintained Superelevation of curves must be taken into account The required clearance criteria is contained in Chapter 6, Volume 2A of the Drainage Manual

Page I-2-30 0

The first sentence of the first paragraph should refer to Section 2 10 rather than 2 9

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Page 3 of 14

Page I-2-33.0

Add "K" to formula for recognition of factor and
correct formula

$$(L/A = K \leq 167)$$

Page I-2-35 0 Section 2 11 4

First sentence should read

Cross sections are prepared in a similar manner as
described in Section 2 10.2 for rural projects.

Page I-4-2.0

Add to last paragraph of Section 4 1 2

This Index should not be referenced on the Key
Sheet, but used only to establish design criteria
for projects being developed.

Page I-4-6.0

Add pavement edges to the middle figure on Exhibit EX
I-4-C

Page I-4-20 0

Add

4.6 5

Bus Benches and Transit Shelters

Design criteria for these features are
discussed in Section III of the Florida
Green Book

Page I-5-8 0

Replace page to delete last paragraph (repeats
information on page I-5-4 0) and add a paragraph
concerning coordination at 100% plans stage

Exhibit I-5-A

Add form referred to in paragraph added to I-5-8.0

Page I-7-3 0

Correct spelling in 2nd paragraph

The Traffic

Add heading to last paragraph on page

7 2 2

Wind Loading Criteria - Signs

Page I-7-5 0

Change section number to 7 2 3

Page I-7-8 0

The fourth sentence of the last paragraph should read
High mast lighting poles should be located as far
from the traveled way as possible and in no case
WITHIN 40 FEET OF THE EDGE OF THE TRAVELED WAY
shall they be within the clear zone unless the
pole is protected by barrier wall or guardrail.

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Page 4 of 14

Page I-7-10 0

Add to

7 3 7

Wind Loading Criteria - Lighting

Page I-7-12 0

Correct spelling in 2nd paragraph
son should be soon

Revise the section on drainage to read

o Drainage - ~~THE LOCATION OF HIGH MAST POLES IS A MINIMUM OF 40 FEET FROM THE EDGE OF THE TRAVELED WAY/~~ When the locations of high mast poles are established, they

Page I-7-13 0

Add section

7 3 9 Voltage Drop Criteria

When determining conductor sizes for lighting circuits, the maximum allowable voltage drop from the service point on any one circuit is 7%

Page I-7-21 0

Correct formula

$$L = \frac{20 (DHV) (25)}{N}$$

Page I-7-22.0

Add to

7 4 9

Wind Loading Criteria - Traffic Signals

Page I-8-1 0 through I-8-4 0

Replace pages to correct errors

Page I-8-5 0

Add colon to end of first paragraph

In the next to last paragraph, change the reference to the AASHTO Green Book to the AASHTO Policy on Geometric Design

Page I-10-14 0

Add phrase to last paragraph

Every employee, including consultants, whose activities

Page I-10-18.0

Delete Section 10.9 5 Construction Identification Signs

Page I-10-31 0

Correct spelling of sheriffs

Plans Prep Manual Errors and Omissions
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Page 5 of 14

Page I-10-47 0
Correct the third sentence of the last paragraph (fifth line)
Detour signing is not required for minor shifts ~~to~~ from the direct or regular route.

Page I-10-49 0
The first paragraph of Section 10.15 10 should read
are detailed in Standard Index 600

Page I-10-55 0
The first paragraph should read:
zone as close to normal conditions as possible.
The regulatory speed should not be reduced more than 20 MPH below the posted speed without the approval of the District Traffic Operations Engineer and the appropriate District Director. [See Index 600] Speed reduction is to be done in 10 MPH per 500 feet (minimum) increments.

Page I-13-2 0
Correct
13 2 2 PD&E Process not progress
In the ninth line of the second paragraph and the second line of the third paragraph PD&E study should be PD&E phase

Page I-14-1 0
Correct spelling
Second line of 1st paragraph form should be forms
Last line of 1st paragraph source should be sources

Page I-14-4 0
Revise title
e) Right-of-Way Location Survey

Page I-14-5 0
The first sentence of the last paragraph should read:
During the PD&E phase of a project, studies are made to evaluate the impact of the project on the environment

Page I-14-7 0
A-1 should read
Request ~~flexible~~ pavement design (18 KIPS)

Page I-14-9 0
Revise title
H) R/W Engineering Surveying and Mapping

Page I-15-1 0

Correct first line of second paragraph
department's, not departments
Correct last sentence
comments, not coments

Page I-15-2 0

The second line of the first paragraph should read 60%
and the 100% rather than 60-100%
The second sentence of the last paragraph should read
The use of ~~ancient~~ accident history ..

Page I-15-6 0

The paragraph should read.
Coordination of Final Plans - The District will
request prints of bridge plans prior to submittal
of the final roadway plans to Tallahassee to
ensure roadway and bridge plans are consistent,
i e , widths, superelevation transitions, vertical
and horizontal alignment, work zone traffic
control

Page I-15-8 0

Add to the beginning paragraph of Section 15.3.3
All projects require approval of the typical
section
Line five of this paragraph should read
8 1/2" X 14" sheets,

Page I-15-15 0

Revise section title
15 3 6 Right of Way Engineering Surveying and
Mapping
In the paragraph on the final (100%) phase, the DOT
procedure number should be 575-010-000, rather than
575-010-001 thru 007

Page I-15-16 0

Revise first sentence
Title search ~~should will~~ be ordered as soon as ~~the~~
~~right-of-way/limits/are/reasonably/established~~
feasible alternatives are determined
Revise the third paragraph
The instruments are . by the design consultant's
surveyor

Page I-16-1 0

The last sentence of the first paragraph should refer
to the Design and Construction Training Aids manual

Page I-17-2 0

At the bottom of the page, add to the list of functions
to be monitored.
6 Contract Plans

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Page 7 of 14

Page I-17-5.0

#2 should read

. Director of Production or the District Secretary

Page I-18-1 0

Delete the word "previously" from the first line of the third paragraph

Page I-18-2.0

In the first paragraph, computations book should be: computation book

Chapter I-19

Replace chapter Text was revised to expand and clarify signing and sealing requirements

Page I-20-1 0

In the first paragraph, the second word is misspelled revisions should be revisions

Page I-20-4.0

Replace page

Page I-20-7 0

In the last sentence of # 13, "Void, Preserved for Record Copies" should read "Void, Preserve for Plans Record"

Page I-20-10 0

In the last line, Station 60+00 + 72+00 should be Station 60+00 to 72+00

Page I-20-11 0

The first item # should be 120-1 rather than 20-1

Page I-21-1 0

Delete the last phrase in the paragraph - "Presently under revision" The revised manual is now available.

Page I-21-3 0

Reword the last sentence in 21.3 for clarity

Each of these are further explained in the Project Management Guidelines and in the procedures of the Contractural Services Office.

Page I-21-4 0

The ninth line of section 21.6 should be revised.

Functional area managers as well as representatives of other agencies

Page I-21-5 0

Replace page to revise first paragraph

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Page 8 of 14

Page I-23-2.0

The last paragraph should read

For non federal aid projects, it is recommended...

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VOLUME II

Page II-11

Correct section title

3 2 2 Work ~~Project~~ Program Item Number and
Fiscal Year

Page II-111

Replace sheet Chapter 5 was revised

Page II-x

Add Exhibits under Drainage Map

Flood Data Summary Box

II-5-A-1

Bridge Hydraulic Recommendation Sheet

II-5-C

Page II-x11

Under Selective Clearing and Grubbing, the sheet name
should be

Legend Sheet rather than Key Sheet

Page II-x111

The last four exhibits do not have a title Add in
bold

Highway Landscape

Page II-1-2 0

In the fourth paragraph

add word in third line - not be so dark as

Page II-1-3 0

The sixth line of the last paragraph should read

"FDOT title, approval signature (responsible
professional engineer, in-house or consultant) and
date and the sheet title "

Page II-1-4 0

Add a paragraph

"For alternate title block formats, see exhibit
I-1-A "

Page II-1-5 0

Under Plan and Profile uses, delete drainage map.

Page II-1-6 0

Add a section

Drainage Map

Material - Mylar or vellum

Format - Top portion profile grid, bottom portion plan
(See Chapter 5)

Use - Drainage Map

Chapter II-1

Add Exhibit ~~I~~-1-A with alternate title blocks

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Page 10 of 14

Page II-2-2 0

In the first line of the last paragraph, correct spelling of surrvey to survey

Page II-2-3 0

The title of section 2 2 2 should be
Proposed Typical Section Package

Page II-2-5 0

The last sentence of the next-to-last paragraph should read

Q C review shall be incorporated into the plans .

Page II-2-7 0

The second sentence of the first paragraph should read
For this procedure, a computer generated checklist will be completed and submitted with the plans.

Page II-2-8 0

Section 2 5 1 KEY SHEET should be corrected
Begin and end project station with begin milepost
Add

Exceptions
Equations
County name
State road number
Project manager's name

Page II-2-14 0

Remove DOT from the first line of the first paragraph
The second sentence should read the same as that on
II-2-7 0

Page II-2-23.0

Page II-2-24 0

Page II-2-25 0

Under the Key Sheet, correct the title
Roadway and Traffic Design Standards

Page II-2-25 0

The fourth line under POLE DATA AND LEGEND SHEET
ratios is misspelled

Page II-2-27 0

The second sentence of the last paragraph should read
the same as the revision for II-2-7 0

Page II-3-4 0

The last sentence on the page should read
The ~~beginning~~ and end of projects, ~~begin/end~~
~~of/condition/~~ any station equations, ~~beginning~~
and end of proposed bridges, bridge

Plans Prep Manual Errors and Omissions

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Page 11 of 14

Page II-3-6 0

The last word in section 3 5 should be components

Add to Section II-3 6

This Index (700) should not be referenced on the
Key Sheet It is intended as a matrix of design
criteria and guidance for those involved with
making safety related design decisions

Page II-3-7 0

Correct misspelling on last line

"Formatted" should be "formatted"

Page II-4-1 0

Correct misspellings in first paragraph

"Transferred" should be "transferred"

"Formatted" should be "formatted"

Exhibit II-4-B

Sheet name should be "Summary of Pay Items" rather than
CES

Chapter II-5

Replace chapter and add exhibits The text on BHRS
preparation was revised and moved

Page II-6-3 0

3-c should read

" in urban curb and gutter sections "

Exhibit II-6-A thru G

Revise base group options

C - Lane width, notes revised

Page II-7-1 0

The last paragraph should not be a "shall" condition,
use "may"

Page II-7-2 0

On the last line, "formatted" should be "formatted"

Page II-7-6 0

Add to #8

(To be used when no soil survey is available)

Includes

The pay item number for #9 should be 120-2-1

Page II-8-2 0

Replace sheet to correct spelling and for clarity

Page II-8-4 0

Add sheet Information was moved from II-14-6 0

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Page 12 of 14

Page II-9-1 0

Correct misspelling in first line
"shhows" should be "shows".

Exhibit II-9-A

Replace to correct sheet layout.

Page II-10-3 0

Paragraph should begin "P C and P T points "

Page II-10-5 0

The third paragraph should read

All the survey reference points shall be shown (if layout sheet is not included in the 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~~

Page II-10-6 0

Number 1 should begin

~~Beginning~~ and end of project, and ~~beginning~~ and end of construction

Page II-10-7 0

Replace sheet and add II-10-7 1

The second sentence of the first paragraph should read

"Box culverts . and shall be identified by both a bridge number and a drainage structure number "

The last two paragraphs were revised for clarity

Page II-10-11 0

Change the first sentence of the last paragraph to read

"For vertical curves, the profile grade appropriate, at 20' ~~and~~ or 50' intervals "

Page II-10-14.0

Replace sheet to revise last two paragraphs.

Page II-10-15.0

Add

V_h = Verified Horizontal Location

Page II-10-16 0

The last paragraph should end
included ~~in~~ on the layout sheet.

Exhibit II-10-B

Remove the note beginning "Show reference points "

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Page 13 of 14

Page II-11-3 0

The next to last sentence of the second paragraph should read

Each return profile shall be identified and its PC and PT stations shown

Page II-12-3 0

The third paragraph should read

"Floor elevations for buildings between the building limits The numeric elevation shall be shown, as well as the offset (distance and side) from centerline of project to the face of the building Entrances to buildings . "

Exhibit II-12-A

Replace exhibit

Page II-13-3 0

Add to the second paragraph

Interchange ramps shall be identified by the use of letters or a combination of letters and numbers

Page II-13-5 0

#5 under required worksheet information should read

Frontage roads should be assigned ~~numeric nomenclature~~ a unique alpha or numeric designation to avoid confusion with ramp nomenclature

Page II-13-7 0

Correct the third line of the first paragraph

"and extent of proposed cross sections This is of special importance "

Chapter II-14

Replace chapter Sheets 1, 3, 4 and 6 were revised

Page II-15-1 0

The second sentence of the first paragraph should be reworded

"The purpose of the ditch is to provide drainage to or from areas which lie outside of the immediate project limits, but which are involved by the proposed roadway project "

Page II-15-4 0

On the fourth line, the last word, "separate", is misspelled

Page II-15-6 0

The last sentence of the first paragraph should read

~~However~~ Regardless of the horizontal scale used, the vertical scale shall always be 1" = 5' "

Plans Prep Manual Errors and Omissions

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Page 14 of 14

Exhibit II-17-A

Correct exhibit.

Page II-18-2 0

The third paragraph should read

"Existing parallel underground utilities which lie
within the horizontal limits of the project shall
be shown Small distribution "

Page II-22-1 0

Add a paragraph

The Roadway Design Engineer must insure that the
appropriate pay items are included in the CES.

Page II-23-2 0

Remove the last sentence in the last paragraph The
general notes are not shown on the exhibit

Exhibit II-23-A

Correct exhibit The vertical line for S-9 has been
omitted

Page II-25-2 0

Delete the last sentence of the first paragraph

Page II-26-1 0

In the last line of the first paragraph, consecutively
is misspelled

Remove the quotes around the last paragraph

Page II-A-10

The definition of PC Station should read

Point of curvature Station - The station at the
beginning of a horizontal curve

PLANS PREPARATION MANUAL
APPROVED CHANGES (REVISION 2)

Page I-22-8.0

Revise paragraph 22 3 A as follows

All drawings shall be 24" x 35" or 36" ~~23" x 34" (D-size)~~.
For border size and other sheet format information, see
paragraph 1 4 (II-1-3.0) of this manual.

Page II-11

Revise Table of Contents to include:

3 12 R-R-R Projects

Page II-3-11 0

Revised sheet attached

Exhibit II-3-A

Revised exhibit included

Page II-20-2 0

Revised sheet attached

Exhibit II-20-A

Revised exhibit included.

Plans Prep Manual Revisions
September 05, 1990
Page 1 of 2

VOLUME I

Pages I-2-15 0 - 16 0
Replace sheets

Page I-13-9 0
Replace sheet

Page I-13-10 0
Replace sheet

Pages I-13-12 0 - 15 0

Pages I-17-4 0, 5 0

These 6 pages should be voided due to changes in Chapter 20

Page I-15-3 0

The last paragraph should read

The 60% plans are used for the signing and marking design, roadway lighting design, signalization design, traffic control sheets, other component plans preparation, permit package preparation and updating of the WPA system

Chapter I-19

Add permit documentation to the list of Engineering Documents to be signed and sealed

Chapter I-20

Replace chapter This chapter was changed to 1) keep the signed and sealed plan set in Tallahassee, 2) implement changes due to CA

Chapter I-23

Replace chapter Revised due to CA implementation

Chapter I-24

Add chapter on Certification Acceptance

VOLUME II

Page II-3-6.0

Section 3 6 should read

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 plan sheets on its respective key sheet. The note showing the booklet date of the "Roadway and Traffic Design Standards" shall be shown. Relevant indexes shall be shown on the appropriate plan sheets, but a listing of the indexes by number is not required on the key sheet.

Page II-1-5 0

Key Sheet Material can be mylar or vellum

Page II-1-6 0

Omit last sentence It is not necessary for first and last sheets to be mylar.

Page II-2-5 0

Add a sentence

Figure 2 1 summarizes the requirements for each submittal. No phase is complete until response has been made to all review comments.

Page II-2-27 0

Under requirements for the phase III submittal, the second paragraph should read

All plan sheets and computation books are complete and the WPA system has been updated. Final drainage tabulations shall also be submitted for review.

Page II-4-1 0

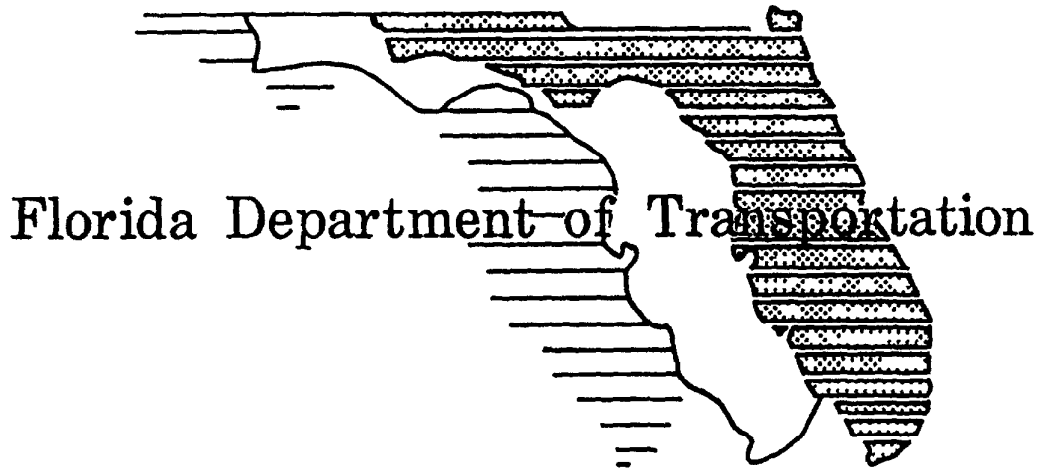
Add sentence

placed directly behind the lead key sheet. The CES output from all design groups should be numbered consecutively. As an alternate, the CES file...

ROADWAY PLANS PREPARATION MANUAL

VOLUME II

PLANS PREPARATION AND ASSEMBLY



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

TALLAHASSEE, FLORIDA

1989

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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 2nd generation copies of photo sheets are to be used. Aerial photo images should not be ^{so} 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, ^(responsible professional engineer, in-house or consultant) 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.

For alternate title block formats, see exhibit I-1-A.

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 or vellum

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~~ 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 plan set of reproducible shall be mylar sheets.~~

Drainage Map

material - mylar or vellum

Format - Top portion profile grid, bottom portion plan (see chapter 5)

Use - Drainage Map

1.6 Material Purchasing

1.6.1 Partial List of Vendors and Products

Statewide Vendor	Roll Mylar	Roll Vellum	Bond Paper
<hr/>			
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)

SAMPLE (A)

DATE	FLORIDA DEPARTMENT OF TRANSPORTATION	JOHN G. PUBLIC ENGINEERING COMPANY	TABULATION OF QUANTITIES
	APPROVED BY :		
	DATE :		

SAMPLE (B)

DATE	FLORIDA DEPARTMENT OF TRANSPORTATION	JOHN G. PUBLIC ENGINEERING COMPANY	TABULATION OF QUANTITIES
	APPROVED BY :		
	DATE :		

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 ~~XXXXXXXX~~

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. *No phase is complete until response has been made to all review comments.*

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 the 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	PHASE	PHASE	PHASE
	I 30-35%	II 60-65%	III 90-95%	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. ^{For this procedure a} ~~checklist is followed for this procedure which~~ computer generated checklist 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 ^{begin} 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
Exceptions
Equations
County name
State road number
Project manager's name

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 ~~the~~ plans checking team will perform a formal checking of the design plans submitted for the formal phase review. ^{For this procedure a} computer generated checklist ~~is used in the procedure~~ [^] 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 ^{and} 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

2.7.24 SIGNALIZATION PLANS: (Chapter 24)

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 ^{and} 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^{and} 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 ^{and computation books} are completed ^{and the WPA system has been updated.} Final drainage tabulations shall also be ^{submitted} ~~submitted~~ for review.

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. ^{For this procedure a} computer generated checklist ~~will be used 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~~ and end of projects, ~~begin and end of construction,~~ any station equations, beginning ~~and~~ 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 components.

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 ^{plan} sheets on ^{its} ~~each~~ respective key sheet. ~~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.~~

II-3-6.0

This Index (200) should not be referenced on the key sheet. It is intended as a matrix of design criteria and guidance for those involved ~~in~~ with making safety related design decisions.

The note showing the booklet date of the "Roadway and Traffic Design Standards" shall be shown. Relevant indexes shall be shown on the appropriate plan sheets, but a listing of the indexes by number is not required on the key sheet.

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 ~~printed~~ ^{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

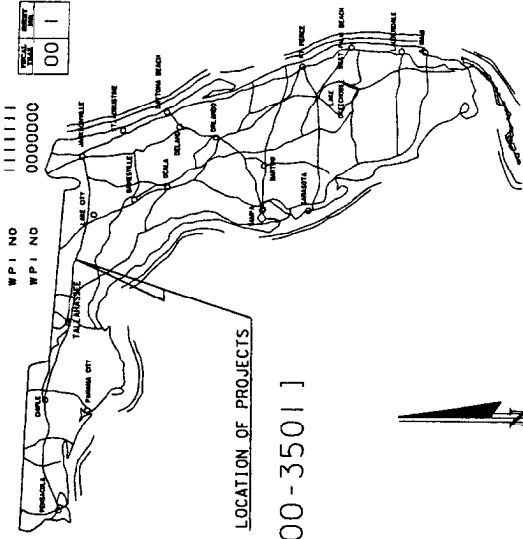
The lead key sheet (usually roadway) shall show a complete record of all plans revisions. This record shall list the component (such as roadway structures, signing and pavement marking), the sheet numbers involved and the revision date. This record shall be shown directly below the list of standard drawings.

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.

3.12 R-R-R Projects

If applicable, a note stating that the plans were prepared according to R-R-R criteria shall be shown on the right side of the sheet.

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



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
- STRUCTURE AND PAVEMENT MARKING PLANS
- STRUCTURE PLANS

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

INDEX OF ROADWAY PLANS

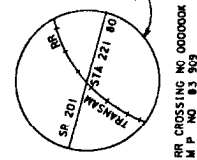
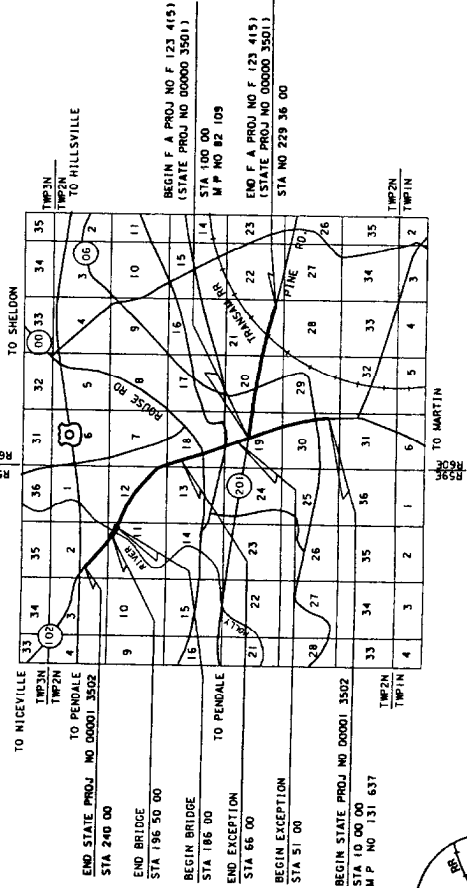
SHEET NO	SHEET DESCRIPTION
1	KEY SHEET
2	SUMMARY OF PAY ITEMS
3	DRAINAGE MAP
4	TYPICAL SECTIONS
5	STRUCTURE AND PAVEMENT MARKING PLANS
6	STRUCTURE PLANS
7	PROJECT LAYOUT SHEET
8	AND PROFILE SHEETS
9	BACK OF SIDEWALK PROFILES
10	INTERSECTION LAYOUTS / DETAILS
11	LATERAL DITCH CROSS SECTION
12	ORIGINAL DETAILS
13	TRAFFIC CONTROL SHEETS
14	UTILITY ADJUSTMENTS
15	SELECTIVE CLEARING AND GRUBBING
16	APPROACH SLAB

ROADWAY AND TRAFFIC DESIGN STANDARDS
(BOOKLET DATED JANUARY 0000)

LISTING OF INDEX
TITLES OPTIONAL

001	600
002	604
230	608
250	609
261	
280	
281	
290	
400	
505	
510	
513	
515	
560	

REVISIONS
Roadway sheets 1 & 7813 (Revised 11 9 88)
Signaling 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
RR CROSSING NO. 0000000
M.P. NO. 83 95

LENGTH OF PROJECT

	00000-3501	00001-3502	TOTAL
ROADWAY	12,430.00	2,150.00	14,580.00
BRIDGES	0.00	0.00	0.00
NET LENGTH OF PROJECT	12,430.00	2,150.00	14,580.00
EXCEPTIONS	0.00	0.000	0.000
GROSS LENGTH OF PROJECT	12,430.00	2,150.00	14,580.00

REVISIONS

DATE BY	DESCRIPTION
11 88 JG	1. met layout the + cones to road

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)

NOTE: THIS PROJECT WAS DESIGNED TO
FDOT R R R CRITERIA

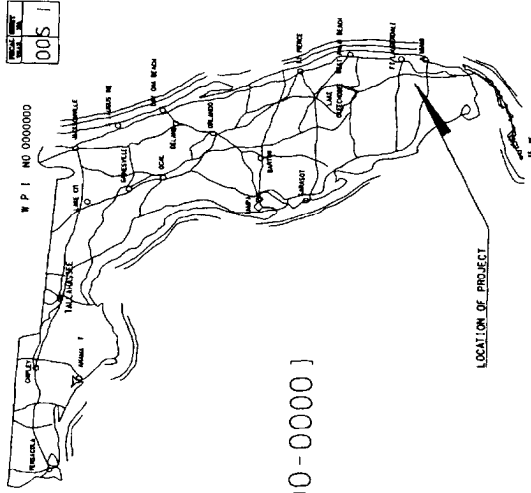
ATTENTION IS DIRECTED TO THE FACT THAT
THESE PLANS MAY HAVE BEEN REDUCED IN
SIZE BY REPRODUCTION. THIS MUST BE
CONSIDERED WHEN OBTAINING SCALED DATA

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

SCALE: PLANS
AS SHOWN

DATE: _____

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



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
 SIGNING AND PAVEMENT MARKING PLANS

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

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

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

ROADWAY AND TRAFFIC DESIGN STANDARDS
 (BOOKLET DATED JANUARY 2000)

9535
 10965
 11034
 11201
 11226
 11860
 11864
 11926
 13417
 17302
 17320
 17445
 17346
 17349
 17352
 17355
 17355

LISTING OF TITLES OPTIONAL

LOCATION IMP NOT REQUIRED WHEN IMP
 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

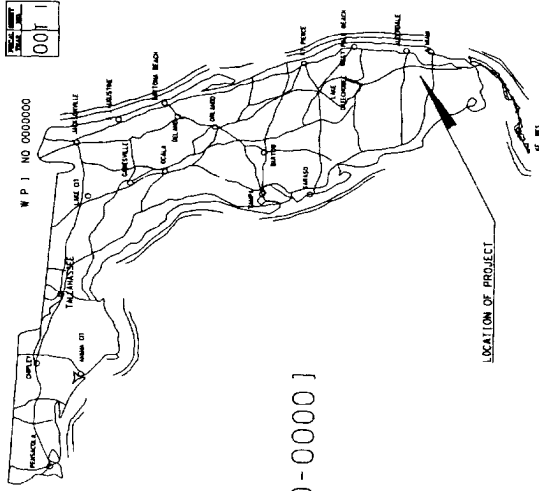
NAME & ADDRESS OF CONSULTANT FIRM
 WHEN PLANS PREPARED BY CONSULTANT

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 CON-
 SIDERED WHEN OBTAINING SCALED DATA
 GOVERNING SPECIFICATIONS STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION STANDARD
 SPECIFICATIONS ON ROADWAYS AND SUPPLEMENTS
 THERETO IF NOTED IN THE SPECIAL PROVISIONS
 FOR THIS PROJECT

SIGNING AND PAVEMENT MARKING PLANS
 APPROVED BY _____
 DATE _____

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



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

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

ROADWAY AND TRAFFIC DESIGN STANDARDS
 (BOOKLET DATED JANUARY 2008...)

- 17721
- 17727
- 17736
- 17756
- 17764
- 17781
- 17784
- 17841
- 17870
- 17881
- 17882
- 17950

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 REVISED IN
 SIZE BY REPRODUCTION THIS MUST BE CON-
 SIDERED WHEN OBTAINING SCALED DATA
 GOVERNING SPECIFICATIONS STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION STANDARD
 SPECIFICATIONS FOR ROADWAY SIGNALIZATION
 DATED 0000 AND SUPPLEMENTS
 THERETO IF NOTED IN THE SPECIAL PROVISIONS
 FOR THIS PROJECT

NAME OF DOT PROJECT COORDINATOR OR
 PROJECT MANAGER

SIGNALIZATION PLANS
 APPROVED BY _____
 DATE _____

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

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

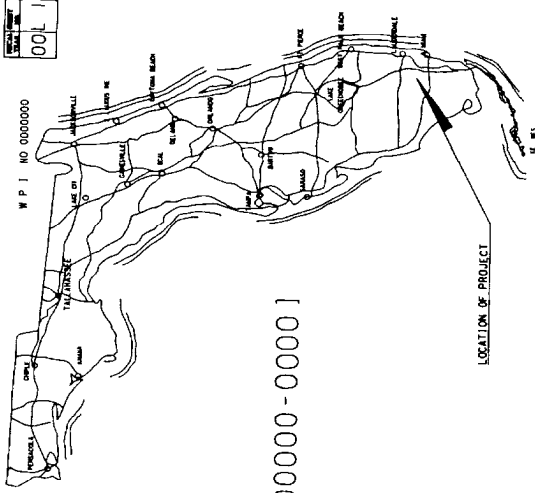
PLANS OF PROPOSED

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



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

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)

LISTING OF TITLES OPTIONAL

17501
 17502
 17503
 17504

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

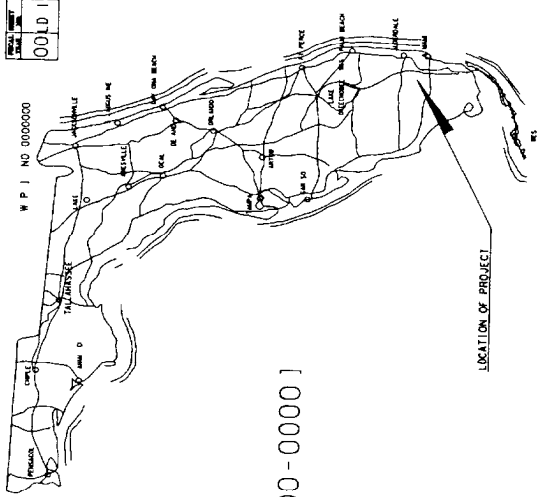
NAME & ADDRESS OF CONSULTANT FIRM
 WHEN PLANS PREPARED BY CONSULTANT

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

ATTENTION IS DIRECTED TO THE FACT THAT
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 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
 THEREON APPLICABLE IN THE SPECIAL PROVISIONS
 FOR THIS PROJECT

LICENSING PLANS
 APPROVED BY _____

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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

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

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

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

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 SIDERED WHEN OBTAINING SCALED DATA
 GOVERNING SPECIFICATIONS STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION STANDARD
 SPECIFICATIONS DATED 0000 AND SUPPLEMENTS
 THEREON ARE TO BE USED IN THE SPECIAL PROVISIONS
 FOR THIS PROJECT

NAME OF DOT PROJECT COORDINATOR OR
 PROJECT MANAGER

LANDSCAPE PLANS
 APPROVED BY _____ DATE _____

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

STATE PROJ NO 0000 0000
 EARLY COUNTY
 STATE ROAD NO 000

STATE PROJECT ONLY

STATE PROJ NOS 0000-0000 AND 0000 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 0000 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

The CES output from all design groups should be numbered consecutively.

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

A L T	S P C	ITEM NUMBER	SUMMARY OF ROADWAY PAY ITEMS	ITEM	UN IT	00000-0000		QUANTITY TOTAL
						FA	PART	
1	101	1-	MOBILIZATION		LS	1	000	1 000
1	102	1-	MAINT OF TRAFFIC		LS	1	000	1 000
1	102	3-	COMMERCIAL MATL FOR DRIVEWAY MAINT		CY	121	000	121 000
2	102	72-	CONC BARRIER (TEMPORARY)		LF	6387	000	387 000
2	102	74-	1 BARRICADE (TEMPORARY){TYPES 1,11,VP & DRUM}		ED	81348	000	8348 000
2	102	74-	2 BARRICADE (TEMPORARY){TYPE 111} (6')		ED	1312	000	312 000
2	102	75-	CONSTRUCTION SIGNS (TEMP - POST MOUNTED)		ED	18596	000	1596 000
2	102	76-	ADVANCE WARNING ARROW PANELS		ED	132	000	132 000
2	102	77-	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)		ED	6679	000	679 000
2	102	78-	REFLECTIVE PAVT MARKER (TEMPORARY)		EA	1128	000	128 000
2	102	81-	VEHICULAR IMPACT ATTENUATOR (INERTIA) (TEMP)		EA	2	000	2 000
2	102	82-	RELOCATE TEMPORARY CONC BARRIER WALL		EA	2	000	2 000
2	102	83-	RELOCATE TEMPORARY CONC BARRIER WALL		LF	6387	000	387 902
2	102	92-	TEMPORARY PAVEMENT MARKING (SKIP)		GM	16	175	16 175
2	102	92-	TEMPORARY PAVEMENT MARKING (SOLID)		ED	7572	000	572 000
2	102	96-	TEMPORARY REGULATORY SIGNS (POST-MOUNTED)		ED	3	000	3 000
1	104	5-	SANDBAGGING		LF	30	000	30 000
1	104	6-	SLOPE DRAINS		TN	19	400	19 400
1	104	10-	BALED HAY OR STRAW		TN	19	400	19 400
2	105	70-	TRAINEE MANHOURS		HM	4000	000	000 000
1	110	2-	CLEARING & GRUBBING		AC	34	206	34 206
2	110	7-	1 MAILBOX (F&I)		EA	52	000	52 000
1	120	1-	REGULAR EXCAVATION		CY	64493	000	6493 000
1	120	2-	BORROW EXCAVATION		CY	36098	000	3098 000
1	120	4-	SUBSOIL EXCAVATION		CY	18718	000	1778 000
3	162	2-	TYPE B STABILIZATION		SV	85918	000	8918 000
1	285	705-	OPTIONAL BASE		SV	28211	000	2211 000
1	285	706-	OPTIONAL BASE (BASE GROUP 05)		SV	10380	000	1380 000
1	285	709-	OPTIONAL BASE (BASE GROUP 06)		SV	12443	000	1443 000
1	285	716-	OPTIONAL BASE (BASE GROUP 09)		SV	72398	000	7398 000
1	286	1-	TURNOUT CONSTRUCTION (BASE GROUP 16)		SV	452	000	512 000
1	286	2-	TURNOUT CONSTRUCTION (ASPHALT)		SV	4132	000	132 000
1	339	1-	MISC ASPHALT PAVEMENT		TN	142	400	142 400
1	400	1-	CLASS 1 CONC		TN	301	000	301 000
1	400	1-	CLASS 1 CONC (ENDWALLS)		CY	11	840	11 840
1	400	2-	CLASS 11 CONC (RETAINING WALLS)		CY	195	300	195 300
1	400	2-	CLASS 11 CONC (CULVERTS)		CY	38	970	38 970
1	415	1-	REINF STEEL (RETAINING WALLS)		CY	552	000	552 000
1	415	1-	REINF STEEL (ROADWAY)		LBI	4210	000	210 000
1	425	1-311	INLETS (CURB) (TYPE P-1)		LBI	42805	000	4805 000
1	425	1-315	INLETS (CURB) (PARTIAL)		EA	49	000	49 000
1	425	1-321	INLETS (CURB) (TYPE P-2)		EA	2	000	2 000
1	425	1-351	INLETS (CURB) (TYPE P-5)		EA	2	000	2 000
1	425	1-411	INLETS (CURB) (TYPE J-1)		EA	7	000	7 000
1	425	1-421	INLETS (CURB) (TYPE J-2)		EA	5	000	5 000
1	425	1-471	INLETS (CURB) (TYPE 7)		EA	4	000	4 000
1	425	1-521	INLETS (DT BOT) (TYPE C)		EA	7	000	7 000
1	425	1-541	INLETS (DT BOT) (TYPE D)		EA	5	000	5 000
1	425	1-543	INLETS (DT BOT) (TYPE D) (J BOT)		EA	2	000	2 000

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.

The drainage designer should provide the information required to complete the box. An example of a completed box is shown on Exhibit EX II-5-A-1.

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 shall be shown 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 shall be shown 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 shall be drawn, preferably in the upper right corner.
- 8 When not provided on the supplemental drainage structure sheet, 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. See Section 8.2.

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 mainline 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.

5 5 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 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 is optional at the discretion of the District. When included in the plans the BHRS for bridges shall be placed in the structure plans. For bridge culverts it shall be placed in the roadway plans. If the BHRS is not included in the plans, sufficient detail to show the location and extent of bottom 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.

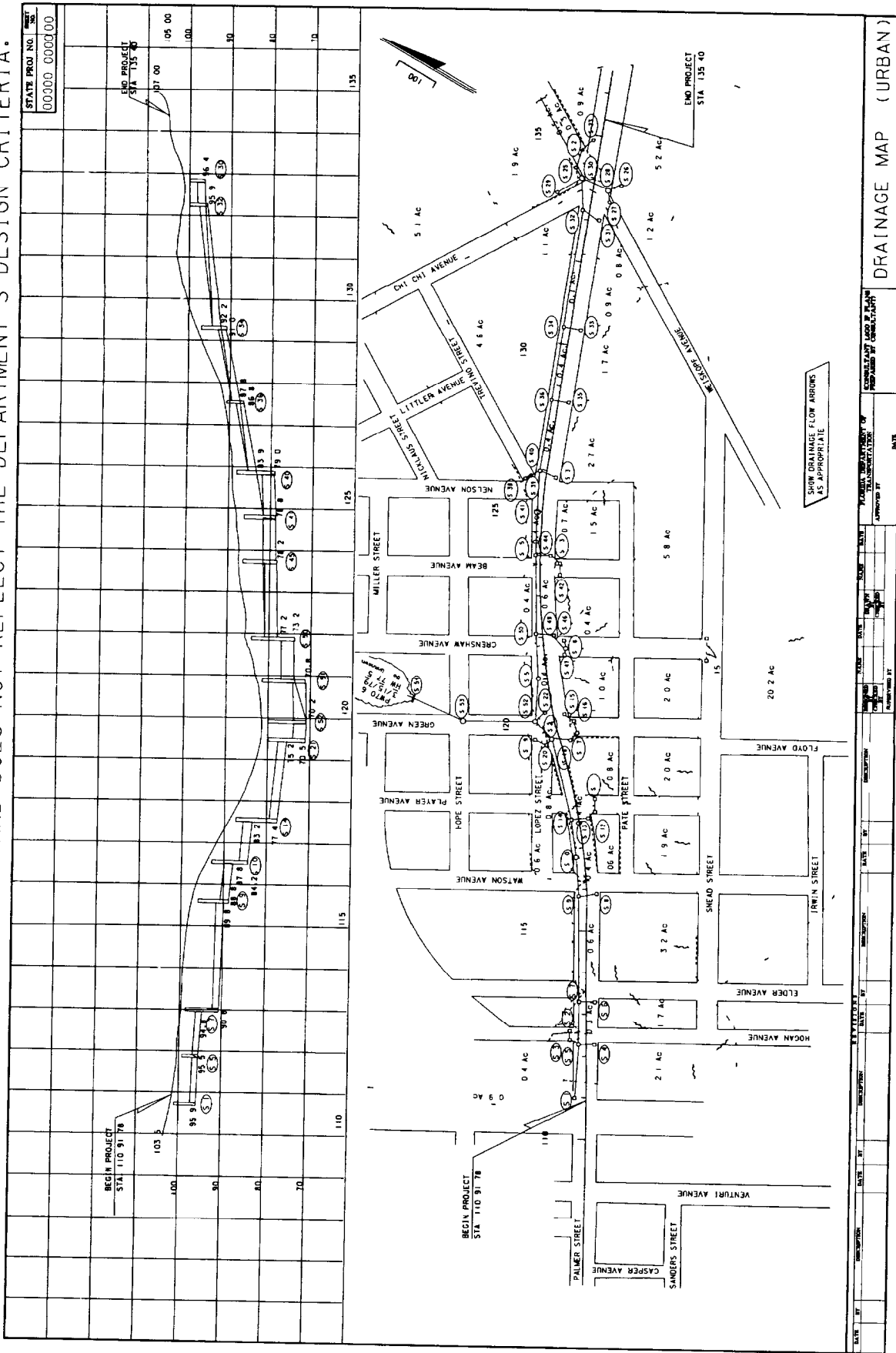
A completed Bridge Hydraulic Recommendation Sheet is shown as Exhibit EX II-5-C.

5 5 1 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, anticipated scour depths with protective recommendations, if any, and other recommendations.

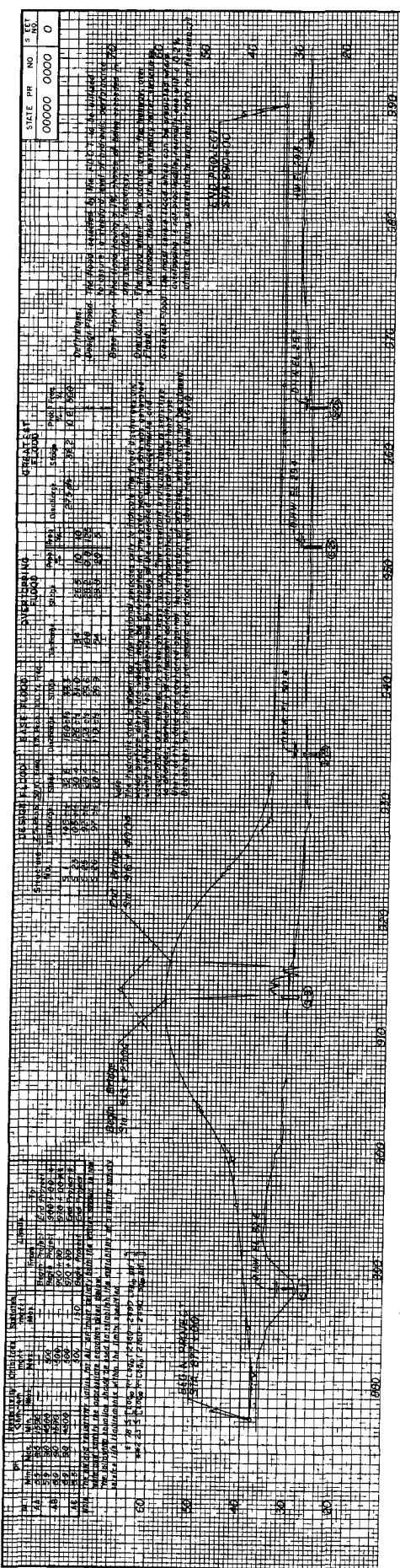
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PROJECT NO.	000000
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CHECKED BY	
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FOR THE DEPARTMENT OF	
APPROVED BY	
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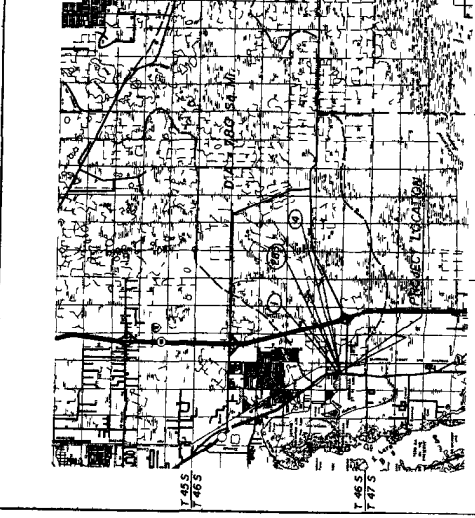
DRAINAGE MAP (URBAN)

EX II 5 A



NO.	DATE	DESCRIPTION
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3	12/05/20	REVISED
4	01/20/21	REVISED
5	02/15/21	REVISED
6	03/10/21	REVISED
7	04/05/21	REVISED
8	05/01/21	REVISED
9	06/01/21	REVISED
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152	05/01/33	REVISED
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154	07/01/33	REVISED
155	08/01/33	REVISED
156	09/01/33	REVISED
157	10/01/33	REVISED
158	11/01/33	REVISED
159	12/01/33	REVISED
160	01/01/34	REVISED
161	02/01/34	REVISED
162	03/01/34	REVISED
163	04/01/34	REVISED
164	05/01/34	REVISED
165	06/01/34	REVISED
166	07/01/34	REVISED
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171	12/01/34	REVISED
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175	04/01/35	REVISED
176	05/01/35	REVISED
177	06/01/35	REVISED
178	07/01/35	REVISED
179	08/01/35	REVISED
180	09/01/35	REVISED
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182	11/01/35	REVISED
183	12/01/35	REVISED
184	01/01/36	REVISED
185	02/01/36	REVISED
186	03/01/36	REVISED
187	04/01/36	REVISED
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317	02/01/47	REVISED
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319	04/01/47	REVISED
320	05/01/47	REVISED

STATE PROJ NO 00000-0000
 SHEET NO 00
 BRIDGE NO 000000



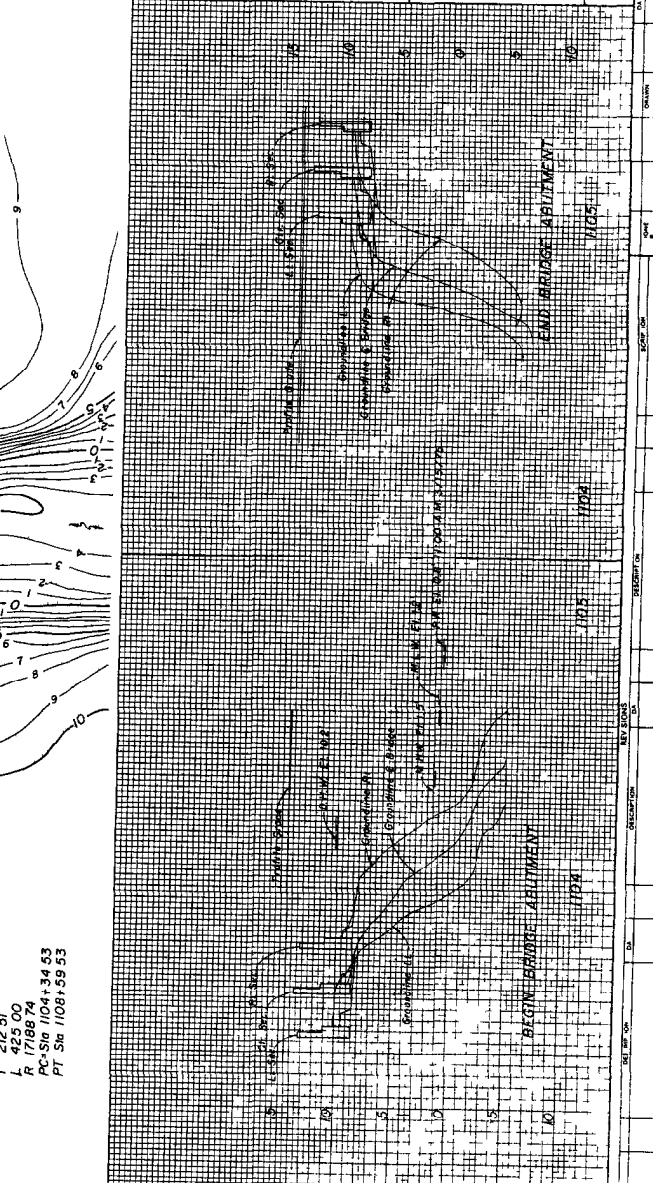
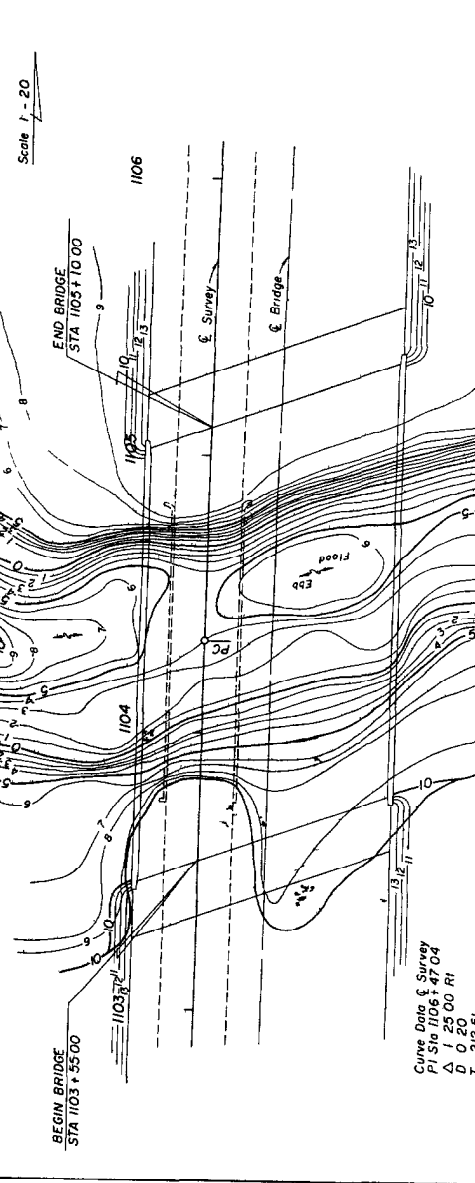
(1) Temp. (F)	(2) C. (F)	(3) P. (F)	(4) T. (F)	(5) G. (F)	(6) H. (F)	(7) L. (F)	(8) S. (F)	(9) W. (F)	(10) N. (F)
70	70	70	70	70	70	70	70	70	70

EXISTING STRUCTURES
 FOUNDATION: ...
 OVERALL LENGTH: ...
 TYPE CONSTRUCTION: ...
 AREA OF OPENING @ HW: ...
 ELEV LOW MEMBER: ...

HYDRAULIC DESIGN DATA
 NOTE: The hydraulic design is based on the following assumptions:
 1. The bridge is a simple span bridge.
 2. The water surface elevation is based on the design flood.
 3. The channel is straight and uniform.
 4. The bridge is a rigid structure.

STAGE ELEV (NGVD)	DESIGN FLOOD	BASE ELEV (NGVD)	OVERTOPPING FLOOD
100.0	100.0	100.0	0.0
101.0	101.0	101.0	0.0
102.0	102.0	102.0	0.0
103.0	103.0	103.0	0.0
104.0	104.0	104.0	0.0
105.0	105.0	105.0	0.0
106.0	106.0	106.0	0.0
107.0	107.0	107.0	0.0
108.0	108.0	108.0	0.0
109.0	109.0	109.0	0.0
110.0	110.0	110.0	0.0

HYDRAULIC RECOMMENDATIONS
 1. BEGIN BRIDGE STATION 1103+55.00
 2. END BRIDGE STATION 1105+10.00
 3. LIMITS OF CHANNEL EXCAVATION 1103+55.00 TO 1105+10.00
 4. CLEARANCE NAVIGATION HORIZ. 25 - VERT. 25.5 ABOVE EL. 100.00
 5. CHANNEL WIDTH AT 1104+00.00 25.0 FT. AT 1105+00.00 25.0 FT.
 6. SLOPE PROTECTION 1:1
 7. DECK DRAINAGE 1:1
 8. OTHER 1:1



REMARKS
 1. THIS BRIDGE IS A RIGID STRUCTURE.
 2. THE DESIGN FLOOD IS BASED ON THE 100-YEAR FLOOD.
 3. THE CHANNEL EXCAVATION IS NECESSARY TO MAINTAIN THE DESIGN FLOOD.
 4. THE CLEARANCE NAVIGATION HORIZ. IS 25 FEET ABOVE EL. 100.00.
 5. THE CHANNEL WIDTH AT 1104+00.00 IS 25.0 FEET.
 6. THE CHANNEL WIDTH AT 1105+00.00 IS 25.0 FEET.
 7. THE SLOPE PROTECTION IS 1:1.
 8. THE DECK DRAINAGE IS 1:1.
 9. OTHER 1:1

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 ^{(curb and sections} 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

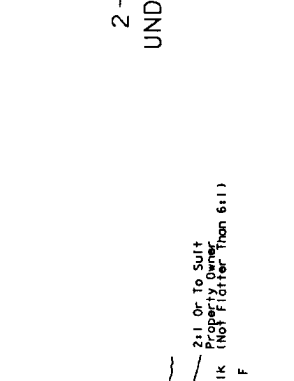
Below are standard notes which shall be shown on typical section sheets as applicable.

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.

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

STATE PROJ. NO. 00000 0000 00



2-LANE
UNDIVIDED

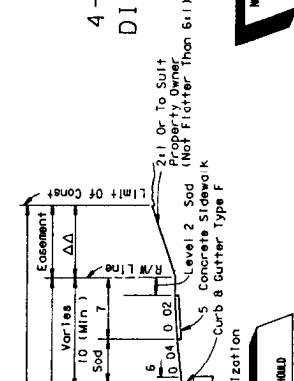
NOTE: The Contractor should identify the proposed option on which his initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the submitted bid proposal.

OPTIONAL BASE GROUP 8 (FOR THICKNESS SEE BELOW) WITH TYPE 5 STRUCTURAL COURSE (1 1/2") AND FRICTION COURSE FC 1 OR FC 4 (1")
 10 LIME ROCK BASE COURSE PERMITTED. DETAIL CODE 990
 6" ASPHALT BASE COURSE (TYPE 3)
 FOR ADDITIONAL DETAILS SEE INDEX NOS. 300 303 304 500 511 513 8 515

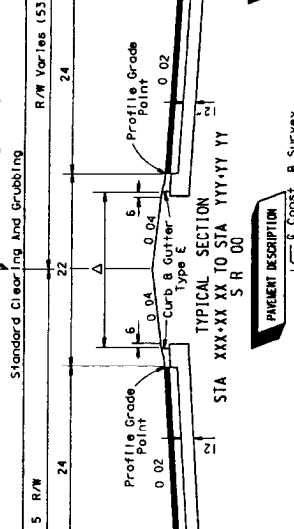
Current Design Year 19 ADT _____
 Estimated Opening Year 19 ADT _____
 Design Year 20 ADT _____
 K _____ T _____ S _____ T _____
 Design Speed _____ MPH

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

△△ Either Sod, Sod and Match Sod or Sod or Sod. If Sod or Sod the percentage of each shall be given by station, or each shall be shown by station limits.



4-LANE
DIVIDED



6-LANE
DIVIDED

NOTE: ALL PAVEMENT DESCRIPTIONS FOR EXAMPLE ONLY

NOTE: THE CONTRACTOR SHOULD

NOTE: THE CONTRACTOR SHOULD

NOTES FOR TYPICAL SECTION NOTES SEE SECTION 8.3

TRAFFIC DATA

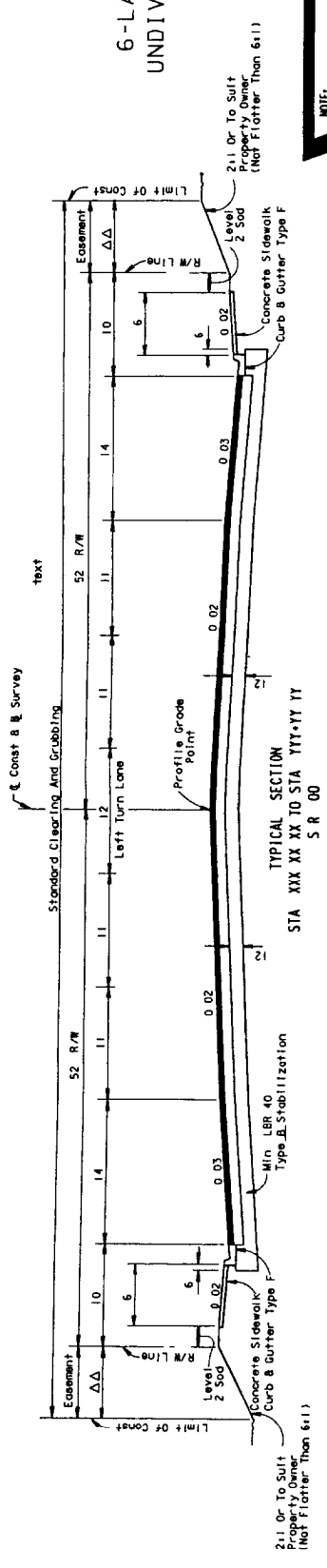
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTIONS
URBAN WITH REFUGE LANES

EX-11-6-B

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

STATE PROJ. NO. 00000.00001.00



6-LANE
UNDIVIDED

NOTE:
ALL PAVEMENT DESCRIPTION
FOR EXAMPLE ONLY

2.1.1 Or To Suit Property Owner (Not Flatter Than 6:1)

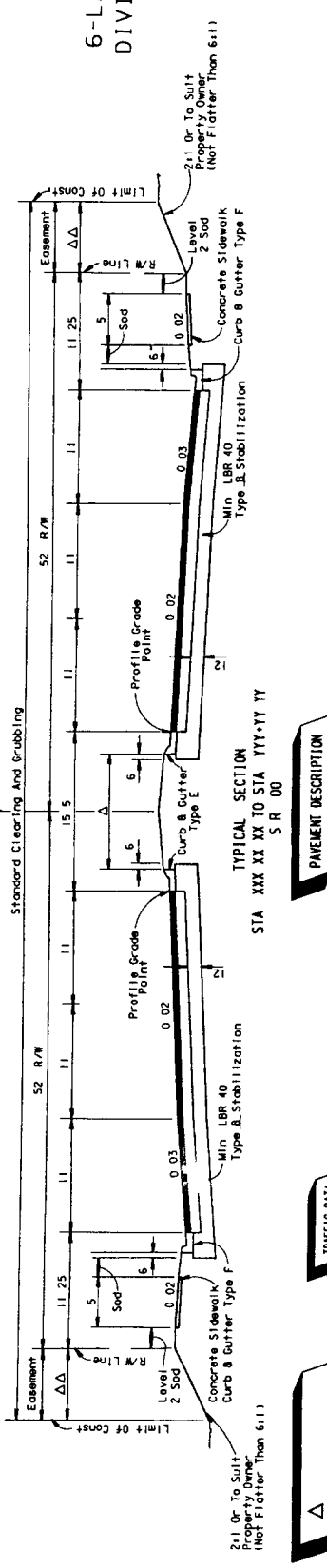
NOTE: The Contractor should identify the proposed option on which the initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the admitted bid proposal.

OPTIONAL BASE GROUP 9 (FOR THICKNESS SEE BELOW) WITH EITHER
TYPE 5 SUBGRADE COURSE (11/2") AND FRICTION COURSE FC 1 OR FC 4 (1") ALT. AA OR
TYPE 5 SUBGRADE COURSE (2") AND FRICTION COURSE FC 2 (5/8") ALT. AB
OPTIONAL BASE COURSES PERMITTED
OPTION CODE
10 - LIME ROCK BASE COURSE 990
6 - ASPHALT BASE COURSE 327

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

Current Year 19 ___ ADT ___
Estimated Opening Year 19 ___ ADT ___
Design Year 19 ___ ADT ___
K ___ X ___ D ___ X ___ T ___ X ___ T ___ (124 Hr.)
Design Speed ___ MPH

NOTES:
For Typical Section Notes
See Section 6.3



6-LANE
DIVIDED

NOTE:
THE CONTRACTOR SHOULD

PAVEMENT DESCRIPTION

TRAFFIC DATA

△ Either Sod or Sod or both by station limits

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

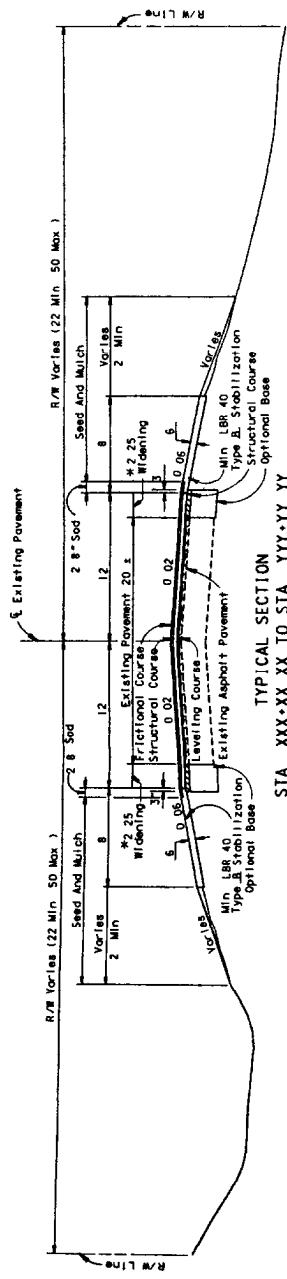
2.1.1 Or To Suit Property Owner (Not Flatter Than 6:1)

DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION

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

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

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



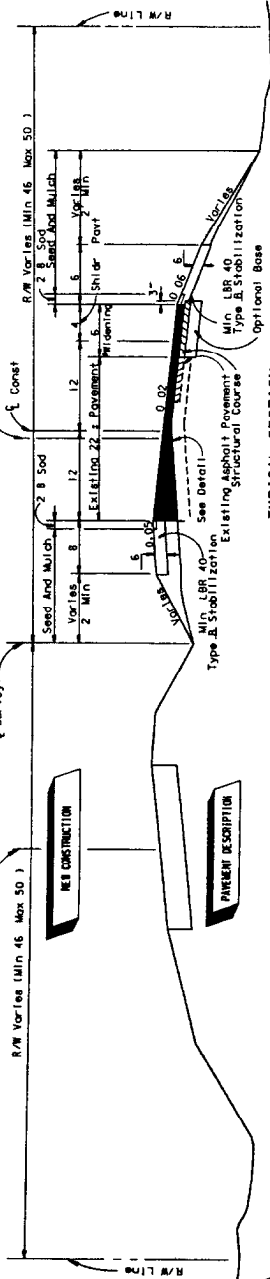
NOTE: Actual width of base widening may vary, due to actual existing pavement conditions, or to place uniform width base widening strip at no additional cost.

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.

- RESURFACING
- TYPE 5 LEVELING COURSE (175 LBS/STY AVG.) WITH EITHER
 - TYPE 5 STRUCTURAL COURSE (150 LBS/STY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR
 - TYPE 5 STRUCTURAL COURSE (200 LBS/STY) AND FRICTION COURSE FC 2 (15/8) ALT AB
- WIDENING
- OPTIONAL BASE GROUP 11 (1) FOR THICKNESS SEE BELOW WITH EITHER
 - TYPE 5 STRUCTURAL COURSE (350 LBS/STY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR
 - TYPE 5 STRUCTURAL COURSE (400 LBS/STY) AND FRICTION COURSE FC 2 (15/8) ALT AB
- OPTIONAL BASE COURSES PERMITTED
- 11 1/2 LIME BASE COURSE (TYPE 3)
 - 987
 - 407
 - 7 ASPHALT BASE COURSE (TYPE 3)

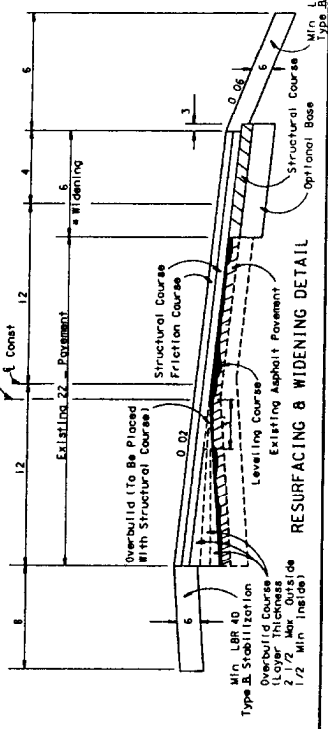
Current Year _____ ADT _____
 Estimated Opening Year _____ ADT _____
 Design Year _____ ADT _____
 Design Speed _____ MPH

NOTE: FOR TYPICAL SECTION NOTES SEE SECTION 6.3



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

- RESURFACING
- TYPE 5 OVERBUILD COURSE (275 LBS/STY AVG. INSIDE LANE) AND
 - LEVELING COURSE (175 LBS/STY AVG.) WITH EITHER
 - TYPE 5 STRUCTURAL COURSE (150 LBS/STY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR
 - TYPE 5 STRUCTURAL COURSE (200 LBS/STY) AND FRICTION COURSE FC 2 (15/8) ALT AB
- WIDENING
- OPTIONAL BASE GROUP 11 (1) FOR THICKNESS SEE BELOW WITH EITHER
 - TYPE 5 STRUCTURAL COURSE (350 LBS/STY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR
 - TYPE 5 STRUCTURAL COURSE (400 LBS/STY) AND FRICTION COURSE FC 2 (15/8) ALT AB
- OPTIONAL BASE COURSES PERMITTED
- 11 1/2 LIME BASE COURSE (TYPE 3)
 - 987
 - 407
 - 7 ASPHALT BASE COURSE (TYPE 3)
- FOR ADDITIONAL DETAILS SEE INDEX NOS 105 280 400 510 514 515 & 516



NOTE: ALL PARMENT DESCRIPTIONS FOR EXAMPLE ONLY

NOTE: THE CONTRACTOR SHOULD

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FOR TYPICAL SECTION NOTES SEE SECTION 6.3

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

APPROVED BY _____ DATE _____

APPROVED BY _____ DATE _____

APPROVED BY _____ DATE _____

APPROVED BY _____ DATE _____

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~~^{may} 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. (To be used when no soil survey is available)
9. 120-2 -1 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 33 FT , WALL THICKNESS = 0 83 FT ,
TOE PRESSURE = 1209 LB/SQ FT
SKEW ANGLE : LEFT FRONT = 0 DEGREE, LEFT BACK = 180 DEGREE,
LENGTH WALL = 15 00 FT * (0 00 FT **), RIGHT FRONT = 0 DEGREE, RIGHT BACK = 180 DEGREE,
TOTAL WINGWALL LENGTH WITH BARREL WIDTH LEFT = 41 50 FT , RIGHT = 41 50 FT
TOTAL CONCRETE QUANTITIES

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
WINGWALL : POUR 1 (FOOTING**) = 11 918 C Y , POUR 2 (WALLS) = 15 123 C Y , TOTAL = 27 041 C Y

TOTAL CONCRETE QUANTITIES

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

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

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	5	0 500	1	11- 2	1933			
BOT SLAB	A200	133	6	6	0 625	1	11- 2	2231			
CORNER (TOP)	A1	308	4	4	0 542	10	4- 5	904	2- 1	2- 4	
CORNER (BOTTOM)	A2	308	4	4	0 542	10	4- 5	909	2- 1	2- 4	
EXTERIOR WALL (INSIDE)	B1	308	4	4	0 542	1	7-10	1612			
EXTERIOR WALL (OUTSIDE)	B2	308	4	4	0 542	1	5- 8	1166			
LONGITUDINAL	C1	120 (3)	4	4	1 500	1	28- 8	2298			
HEADWALL BOTH SIDES	G1	4 (1)	4	4	SEE INDEX	1	11- 2	50			
HEADWALL BOTH SIDES	P	24	4	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	5	1 208	10	10- 5	520	1- 9	8- 8
STEM	J	48	4	4	1 208	1	8- 8	276		
STEM	K	48	4	4	1 500	1	14- 8	472		
FOOTING	KF	16	4	4	SEE INDEX	1	14- 8	156		
FOOTING	L	52	4	4	1 208	1	4-10	168		
FOOTING LEFT SIDE	M1	2 (1)	4	4	SEE INDEX	1	41- 2	55		
FOOTING RIGHT SIDE	M2	2 (1)	4	4	SEE INDEX	1	41- 2	55		
STEM TO BARREL DOWELS	N **	36	6	6	1 000	10	6- 0	324	3- 0	3- 0
FOOTING SPILLWAY	R	24	4	4	1 000	1	2- 7	41		

PER FOOT WINGWALL STEEL QUANTITY 29 LBS /FOOT
TOTAL WINGWALL STEEL QUANTITY 2067 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 BLIND BARS N TO ACCOMMODATE SKEW, PROVIDE FOR 3 FT OF BAR IN THE WINGWALL AND HEADWALL

TOTAL STEEL QUANTITIES
BARREL 11145 LBS
WINGWALL 2067 LBS
TOTAL 13212 LBS

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. Optional culvert material will usually be provided and a supplemental tabulation form shall be prepared and included. Information for the optional pipe materials, which will be shown by structure number on the form, includes 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 values shall be provided (Exhibits II-8-B and II-8-C). The general notes shown on Exhibit II-8-B are required when optional culvert materials are provided.

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 a storm sewer. If optional materials are designed a sheet supplemental to the summary of drainage structures sheet shall be provided.

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

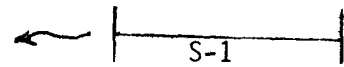
The "F" line is for construction to document the final quantity and should be left blank by the designer

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

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

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

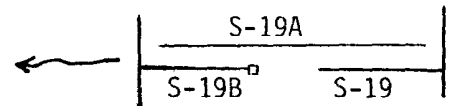
Example #1 (cross drain
w/o median inlet)



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

Example #3 (double pipe CD & median inlet)

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



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

Sta. No.	Station Location	Type	Curb		Road Slope		Cross Drain		Curb		Road Slope		Cross Drain		Curb		Road Slope		Cross Drain		Remarks
			Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	
P 1	200+00	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 2	200+20	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 3	200+40	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 4	200+60	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 5	200+80	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 6	200+100	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 7	200+120	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 8	200+140	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 9	200+160	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 10	200+180	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 11	200+200	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 12	200+220	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 13	200+240	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 14	200+260	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 15	200+280	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 16	200+300	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 17	200+320	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 18	200+340	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 19	200+360	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 20	200+380	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 21	200+400	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 22	200+420	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 23	200+440	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 24	200+460	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 25	200+480	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 26	200+500	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 27	200+520	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 28	200+540	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 29	200+560	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 30	200+580	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 31	200+600	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 32	200+620	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 33	200+640	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 34	200+660	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 35	200+680	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 36	200+700	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 37	200+720	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 38	200+740	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 39	200+760	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 40	200+780	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 41	200+800	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 42	200+820	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 43	200+840	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 44	200+860	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 45	200+880	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 46	200+900	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 47	200+920	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 48	200+940	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 49	200+960	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 50	200+980	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
P 51	200+1000	48" Dia. Pipe	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	00000 0000 00
SUB TOTALS																					
TOTALS																					

SUMMARY OF DRAINAGE STRUCTURES

EX II-8-A

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

STATE PROJ. NO. 00000 0000
SHEET NO. 00

SIT No	SIZE (INCHES)	LENGTH (FEET)	MATERIAL & THICKNESS	F.L.	F.L.	REMARKS
14	30	72	RCP Class III	6.0	5.9	
	36	71	CAP 16 ga 3' I	6.0	5.9	
	30	72	CSP Type I R 14 ga B 1 Coat	6.0	5.9	
	36	71	CSP 14 ga	6.0	5.9	
14A	30	50	RCP Class III	5.9	5.8	
	36	49	CAP 16 ga 3' I	5.9	5.8	
	30	50	CSP Type I R 14 ga B 1 Coat	5.9	5.8	
	36	49	CSP 14 ga	5.9	5.8	
16	36	169	RCP Class II	9.6	9.4	Dist. P. pt.
	42	158	CAP 16 ga 3' I	9.6	9.4	Dist. P. pt.
	36	169	CSP Type I R 14 ga B 1 Coat	9.6	9.4	Dist. P. pt.
	42	158	CSP 14 ga B 1 Coat	9.6	9.4	Dist. P. pt.
17	30	72	RCP Class II	11.8	10.8	Med. on Dra. n
	36	71	CAP 16 ga 3' I	11.8	10.8	
	30	72	CSP Type I R 14 ga B 1 Coat	11.8	10.8	
	36	71	CSP 14 ga B 1 Coat	11.8	10.8	
18	30	72	RCP Class II	12.5	11.0	
	36	71	CAP 16 ga 3' I	12.5	11.0	
	30	72	CSP Type I R 14 ga B 1 Coat	12.5	11.0	
	36	71	CSP 14 ga B 1 Coat	12.5	11.0	
19	48	118	RCP Class III	9.5	9.4	Use Index 250, Dbl. 48. Endwall
	60	100	CAP 16 ga 3' I	9.5	9.4	
	48	118	CSP Type I R 14 ga B 1 Coat	9.5	9.4	Use Index 250, Dbl. 48. Endwall
	60	100	CSP 14 ga B 1 Coat	9.5	9.4	
19A	48	111	RCP Class III	9.4	9.3	Use Index 250, Dbl. 48. Endwall
	60	93	CAP 16 ga 3' I	9.4	9.3	
	48	111	CSP Type I R 14 ga B 1 Coat	9.4	9.3	Use Index 250, Dbl. 48. Endwall
	60	93	CSP 14 ga B 1 Coat	9.4	9.3	
19B	48	237	RCP Class III	9.5	9.3	
	60	202	CAP 16 ga 3' I	9.5	9.3	
	48	237	CSP Type I R 14 ga B 1 Coat	9.5	9.3	
	60	202	CSP 14 ga B 1 Coat	9.5	9.3	
20	24	40	RCP Class II	14.9	11.3	Coast. Collar
	24	40	CAP 16 ga 3' I	14.9	11.3	Coast. Collar or Fair coated Tee I II Rq.
	24	40	CSP Type I R 14 ga B 1 Coat	14.9	11.3	Coast. Collar or Fair coated Tee I II Rq.
	24	40	CSP 14 ga B 1 Coat	14.9	11.3	Coast. Collar or Fair coated Tee I II Rq.
21	18	84	RCP Class II	15.9	15.2	
	28	20	CAP 14 ga	15.9	15.2	
	18	84	CSP Type I R 14 ga B 1 Coat	15.9	15.2	
	28	20	CSP 14 ga B 1 Coat	15.9	15.2	
22	15	87	RCP Class II	17.0	16.9	
	15	87	CAP 16 ga 3' I	17.0	16.9	
	15	87	CSP Type I R 14 ga B 1 Coat	17.0	16.9	
	15	87	CSP 14 ga B 1 Coat	17.0	16.9	
23	15	69	RCP Class II	16.2	15.0	
	15	69	CAP 16 ga 3' I	16.2	15.0	
	15	69	CSP Type I R 14 ga B 1 Coat	16.2	15.0	
	15	69	CSP 14 ga B 1 Coat	16.2	15.0	

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

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 structure. However, payment will be made only under the pay item number indicated for 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 necessary 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 material. The use of any of the pipe optional materials, likewise adjustments to the quantities, prices and payment will not be allowed due to differences in bedding, bedding materials, bedding, alternate joining and connecting materials, sodities, cracks, pipe fabric, alternate 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.
- The Contractor shall verify that backfill from sources outside the 1m is 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).
 - For concrete pipe, 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 Sulfates mg/L	
		min	max	min	max	max	max
Steel	100	5.0	9.0	1500	1500		
	50	5.0	9.0	1500	1500		
Aluminum	100	5.5	8.5	1500	1500		
	50	5.0	8.5	1500	1500		
Concrete	100	5.5	9.0	1500	1500	2000	1500
	50	4.5	9.0	1500	1500	20000	10000

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.

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. ^{and} 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

Δ (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 is not included in plans set) at locations removed from the centerline. ~~In 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 both a bridge number and a drainage structure number. The beginning and ending stations (outside wall to outside wall) shall be flagged.

Proposed bridges and approach slabs shall be shown by simple outline. Bridges shall be identified by bridge number and their beginning and ending stations noted by station flags. The beginning and ending stations of approach slabs shall be noted 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, the most logical option as specified by the drainage engineer shall be the pipe size shown, and the "Optional Cross-Drain Tabulation Sheet" shall be prepared. If the tabulation sheet is not prepared, 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' ^{or} ~~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.

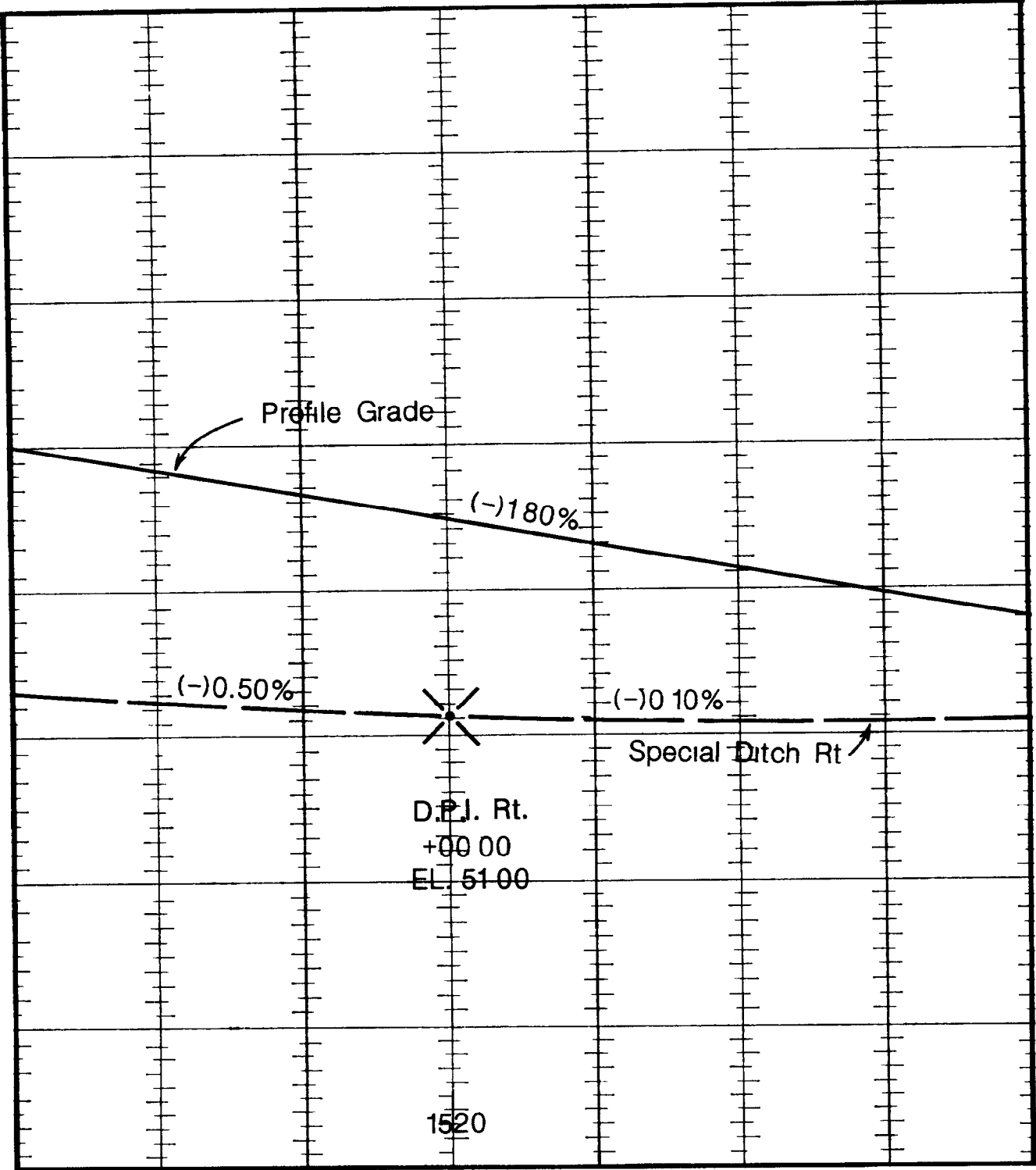
10.3.4 Superelevation

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 "special profiles" are not 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. The grate elevation and flow line elevations shall be shown for all pipes entering and leaving the structure. If drainage structure sheets are not included in the plans, sufficient information to construct the structure should be given.

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 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).

V_h = Verified Horizontal Location

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 ^{on} ~~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.

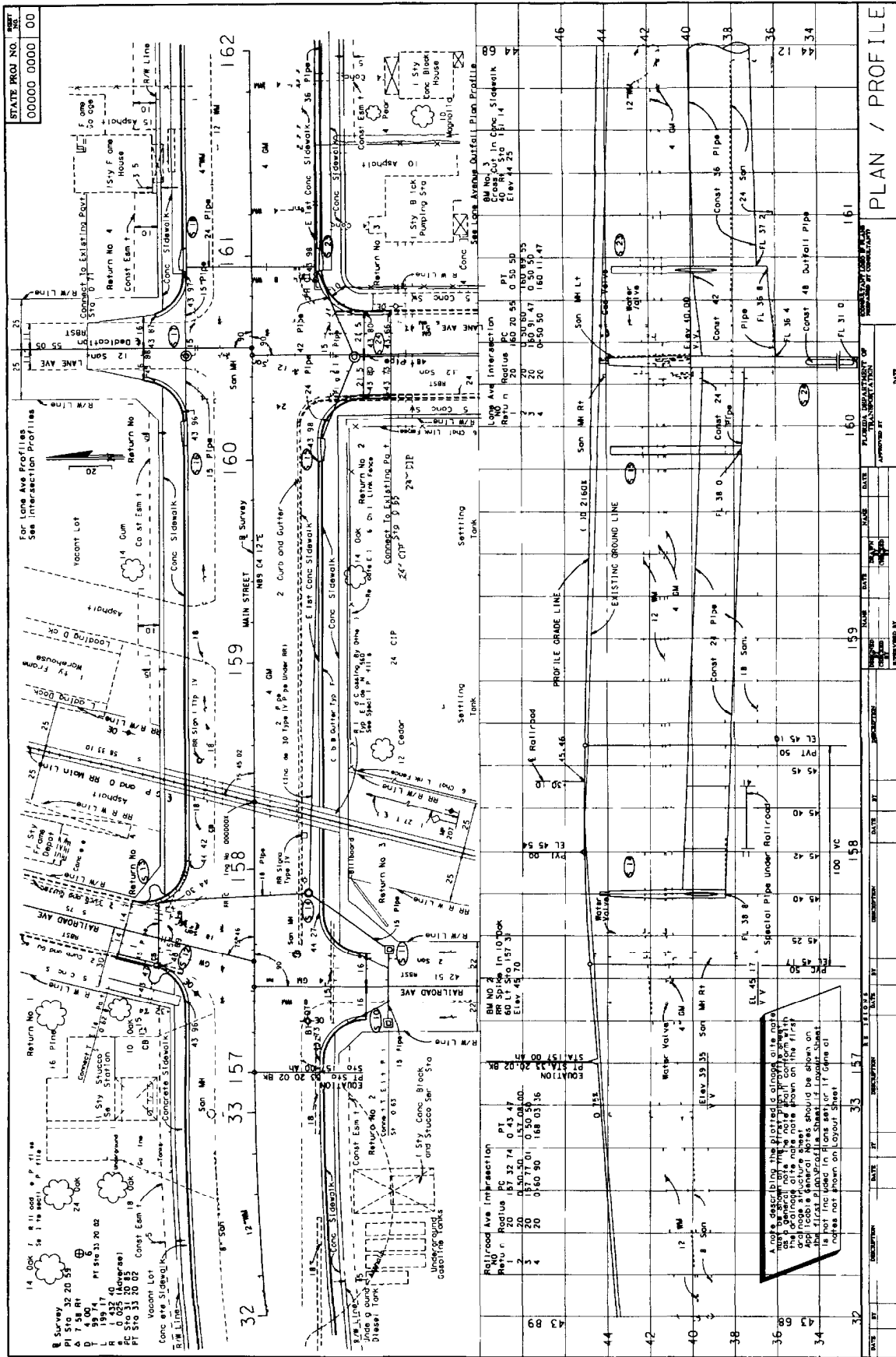
b. (To be used when optional materials are provided)

(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.

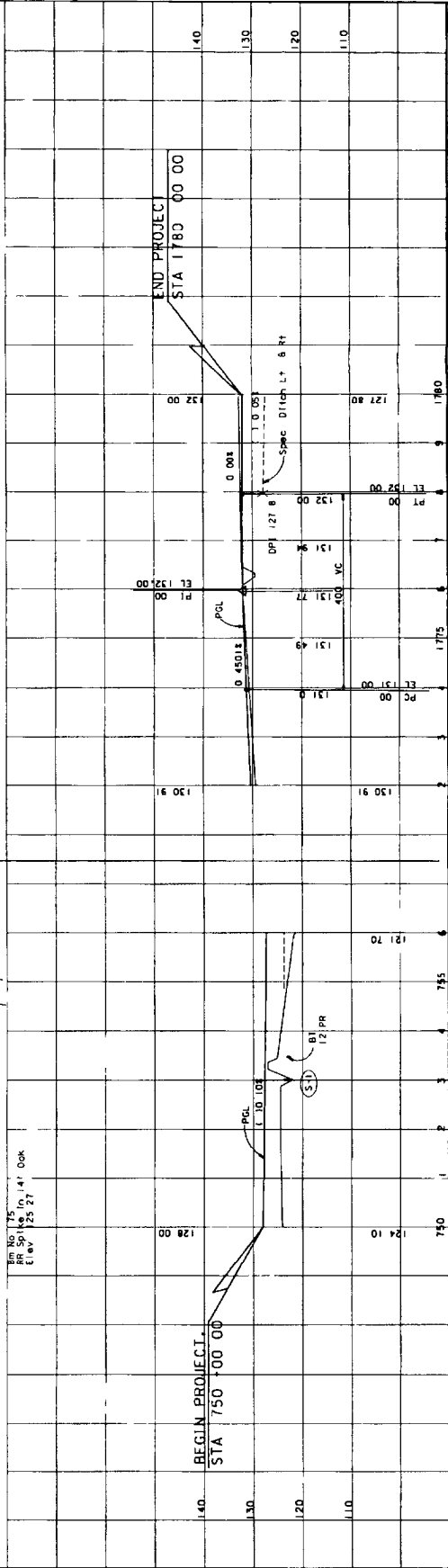
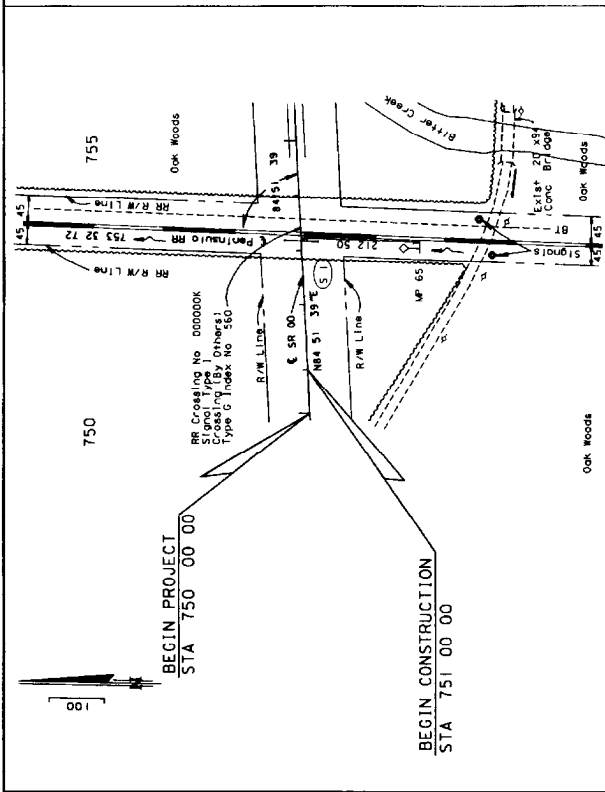
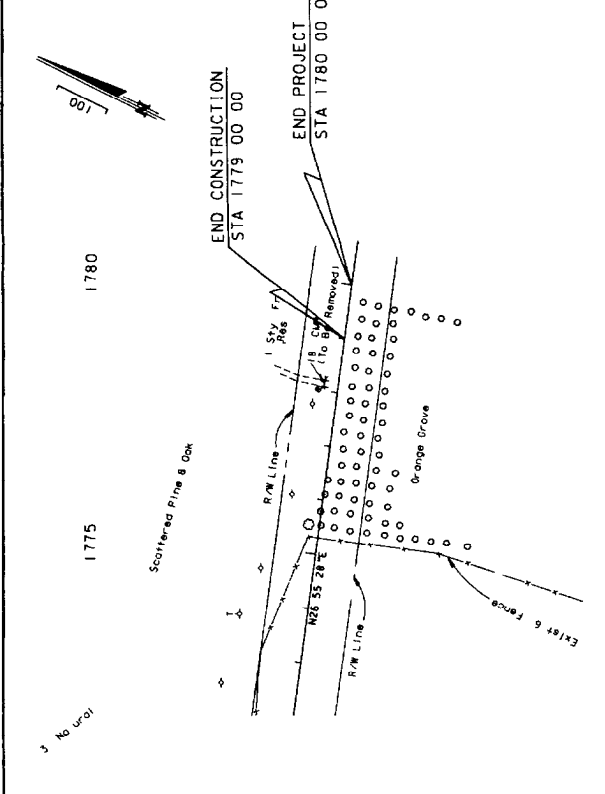
7. Permanent turnouts and driveway connections to private property that lie outside the limits of limited access right-of-way and where access rights have not been acquired shall be constructed in accordance with the turnout details and State Standard Specifications referenced on the key sheet of these 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.

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



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



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

APPROVED BY: _____
 DATE: _____
 FLORIDA DEPARTMENT OF TRANSPORTATION
 PROJECT NO. _____
 SHEET NO. _____

BEGIN AND END STATION
 EX 11 10 C

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 ^{and} PT stations ~~indicated~~ ^{shown}. 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 superelevation transition zone.

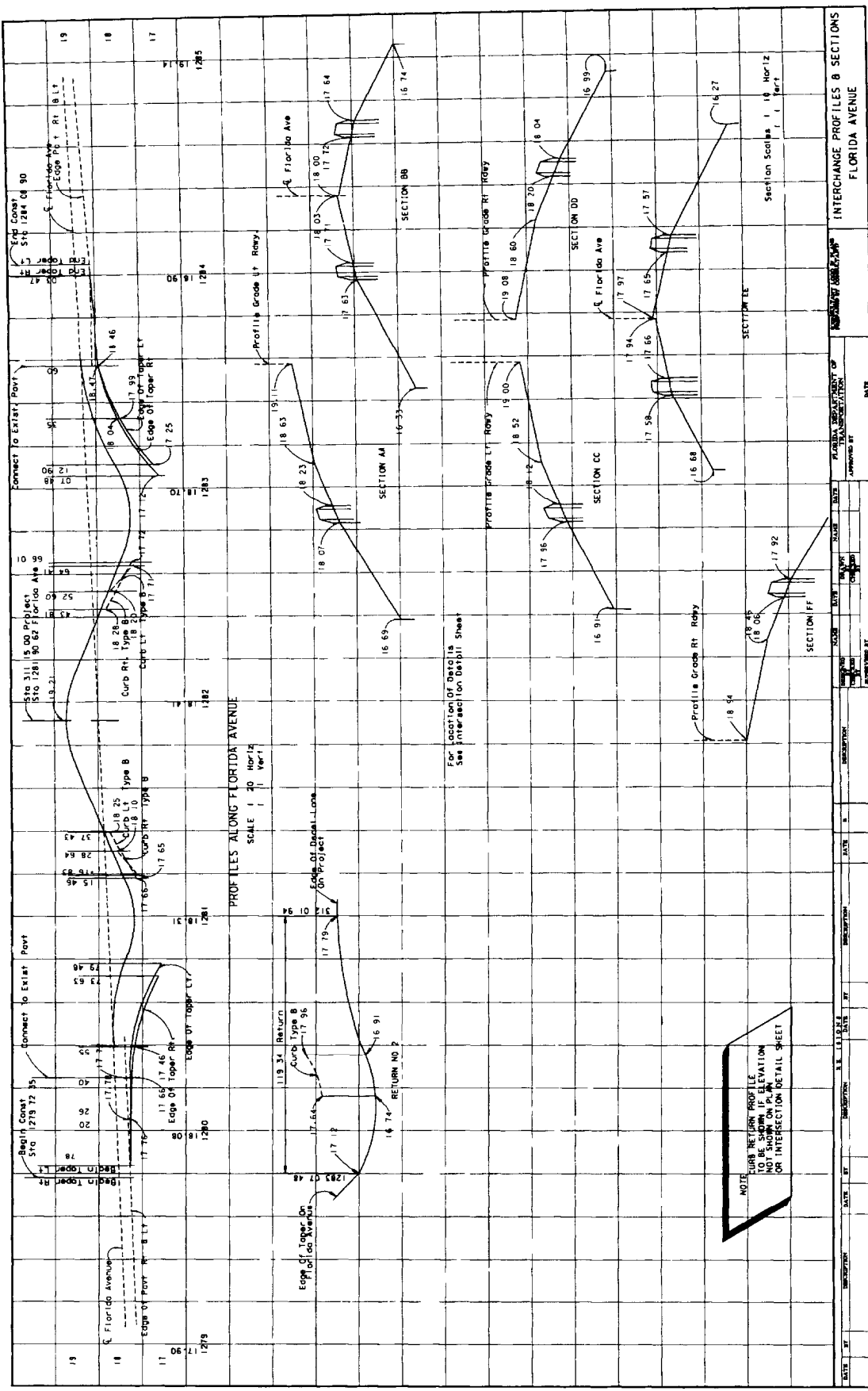
Spline grade shall show the elevations at a minimum of 20' and a maximum of 100' intervals of the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas. Grades of the three pavement edges shall be shown on a standard cross section format; recommended scales: 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.

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

STATE PROJ. NO. 00000 0000 00



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY: _____
DATE: _____

INTERCHANGE PROFILES B SECTIONS
FLORIDA AVENUE
EX 11-11-A

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.

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

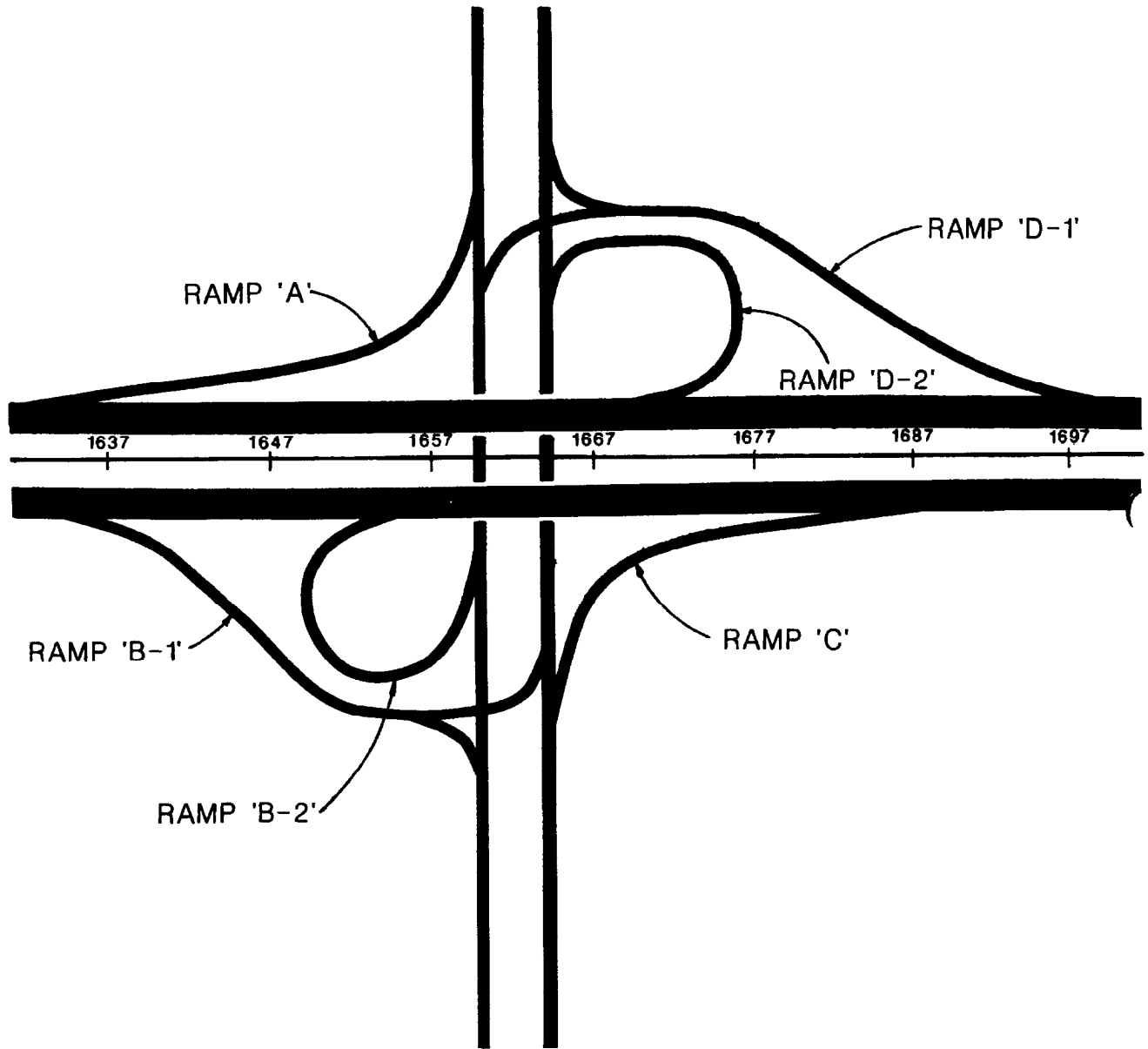
Interchange ramps shall be identified by the use of letters. The recommended practice for assigning ramp names is as follows:

or a combination of letters and numbers.

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 ~~unique alpha or numeric designations~~ *a unique alpha or numeric designation* to avoid confusion with ramp 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 is of ~~a~~ ^{the} 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.

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 each structure on a project. A mix of these options can be used on a single project.

- 1) All drainage structures can be plotted and included in the plan set.
- 2) A "Typical Drainage Structure Sheet" may 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 should be drawn and included in the plan set. A work sheet may be required to show cross sections at all structure locations. Worksheets should 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 should be prepared which should 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.

All structure locations should be checked and right-of-way shown where the right-of-way may have potential impact on 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 gage (thickness), corrugation size restriction, protective coatings and 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 gutter and curb and gutter inlets shall be shown if not controlled by typical section.

For drainage structures which have material 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.

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

14.3 Utility Conflicts

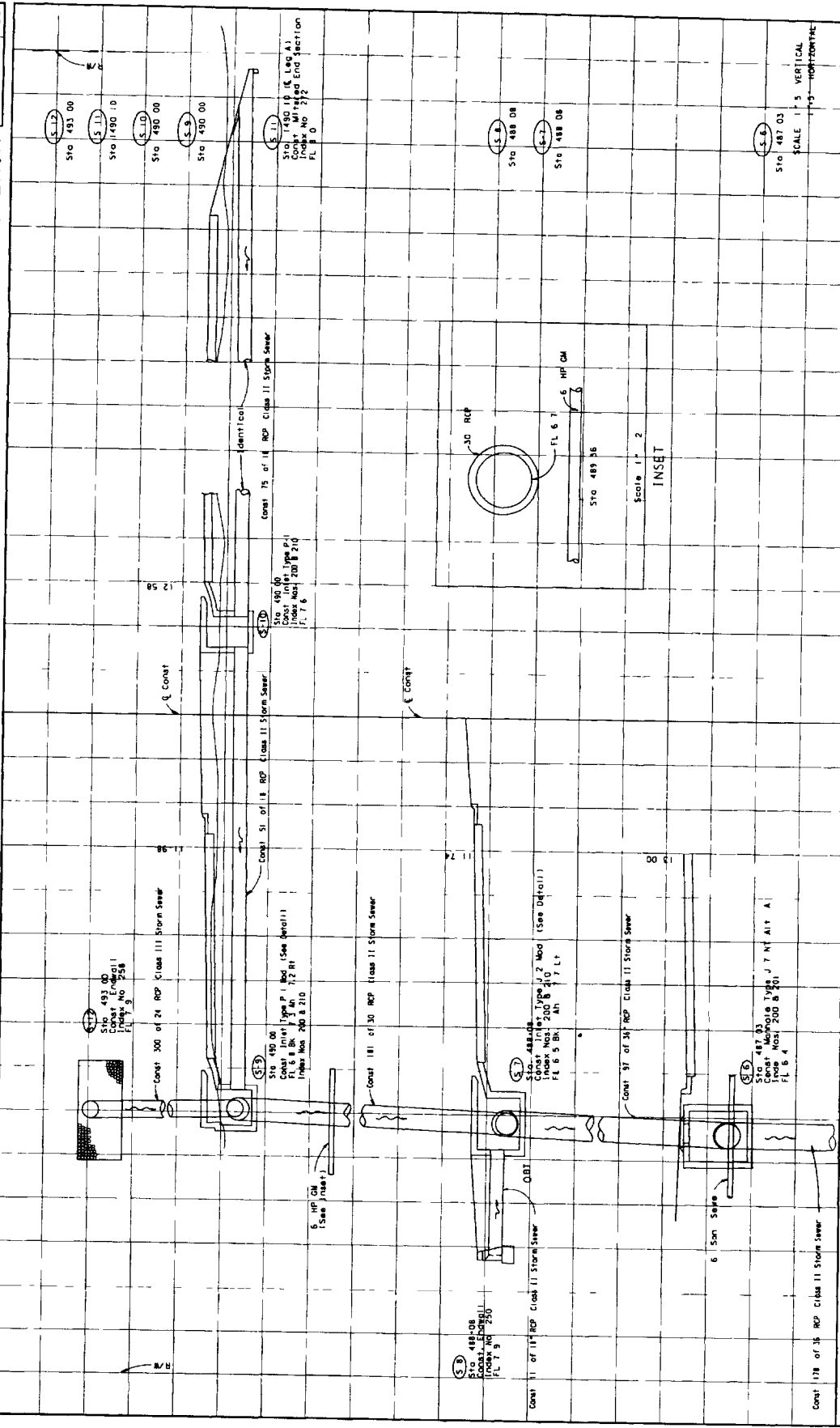
All underground utilities as shown in the profile section of the roadway plan - profile sheets shall be plotted in conjunction with the structures so that conflicts may be detected, and to alert construction forces of close conflicts. The external dimensions of all the optional culvert materials shall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

14.4 Sheet Set Up

Structures should be drafted as sections along the centerline of the structure. They should 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 should be shown successively by stations and should be numbered sequentially, from the beginning to the end of the project. The structure number and location station should be shown near the right border of the sheet. If a structure must be shown out of order, a note shall be placed in the correct sequence, referring to the sheet where the structure is shown. The scale shall be the same as that used for roadway cross sections, with the centerline of construction placed near the center of the sheet.

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



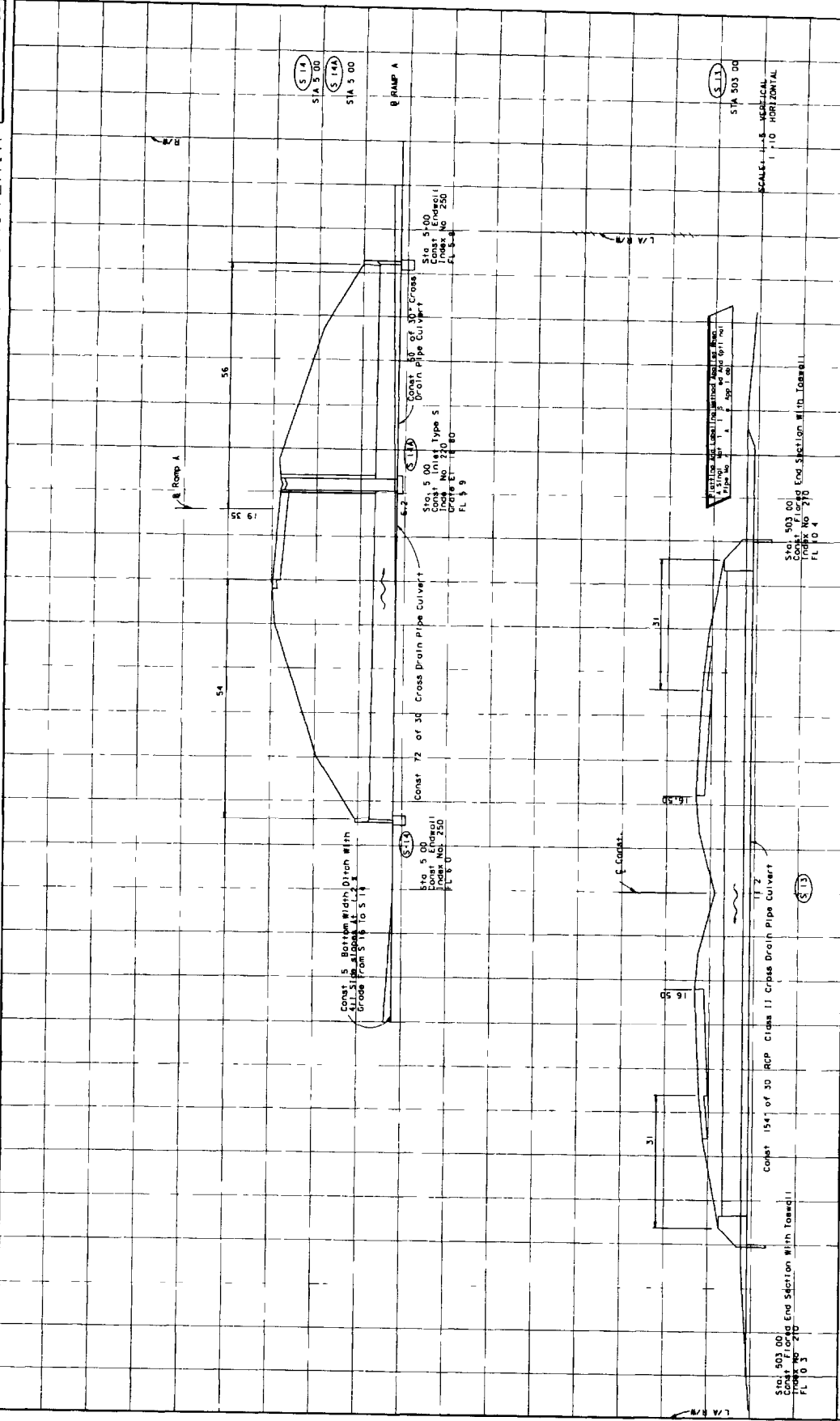
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAINAGE STRUCTURES

EX II-14-B

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

STATE PROJ. NO. 00000 0000 1 00
SHEET NO.



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

SCALE: 1" = 10' HORIZONTAL
1" = 8' VERTICAL

STA 503 00
Const. Flooded End Section with Toward II
FL 6.0

STA 500 00
Const. Flooded End Section with Toward II
FL 6.2

STA 503 00
Const. Flooded End Section with Toward II
FL 6.4

STA 500 00
Const. Flooded End Section with Toward II
FL 6.6

STA 503 00
Const. Flooded End Section with Toward II
FL 6.8

STA 500 00
Const. Flooded End Section with Toward II
FL 7.0

STA 503 00
Const. Flooded End Section with Toward II
FL 7.2

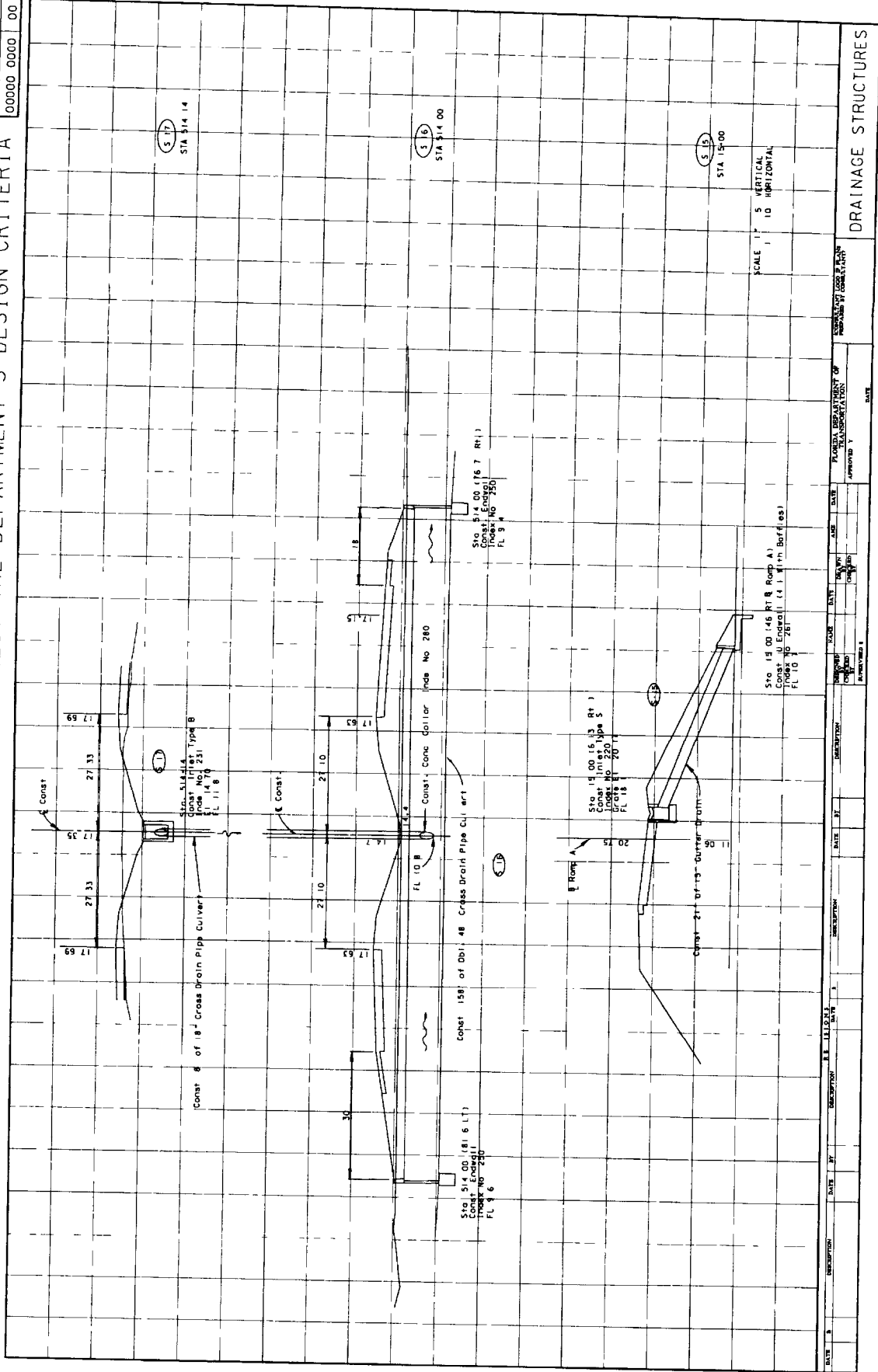
STA 500 00
Const. Flooded End Section with Toward II
FL 7.4

DRAINAGE STRUCTURES

EX 11-14-C

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

STATE PROJ. NO.
00000 0000 00



DRAINAGE STRUCTURES

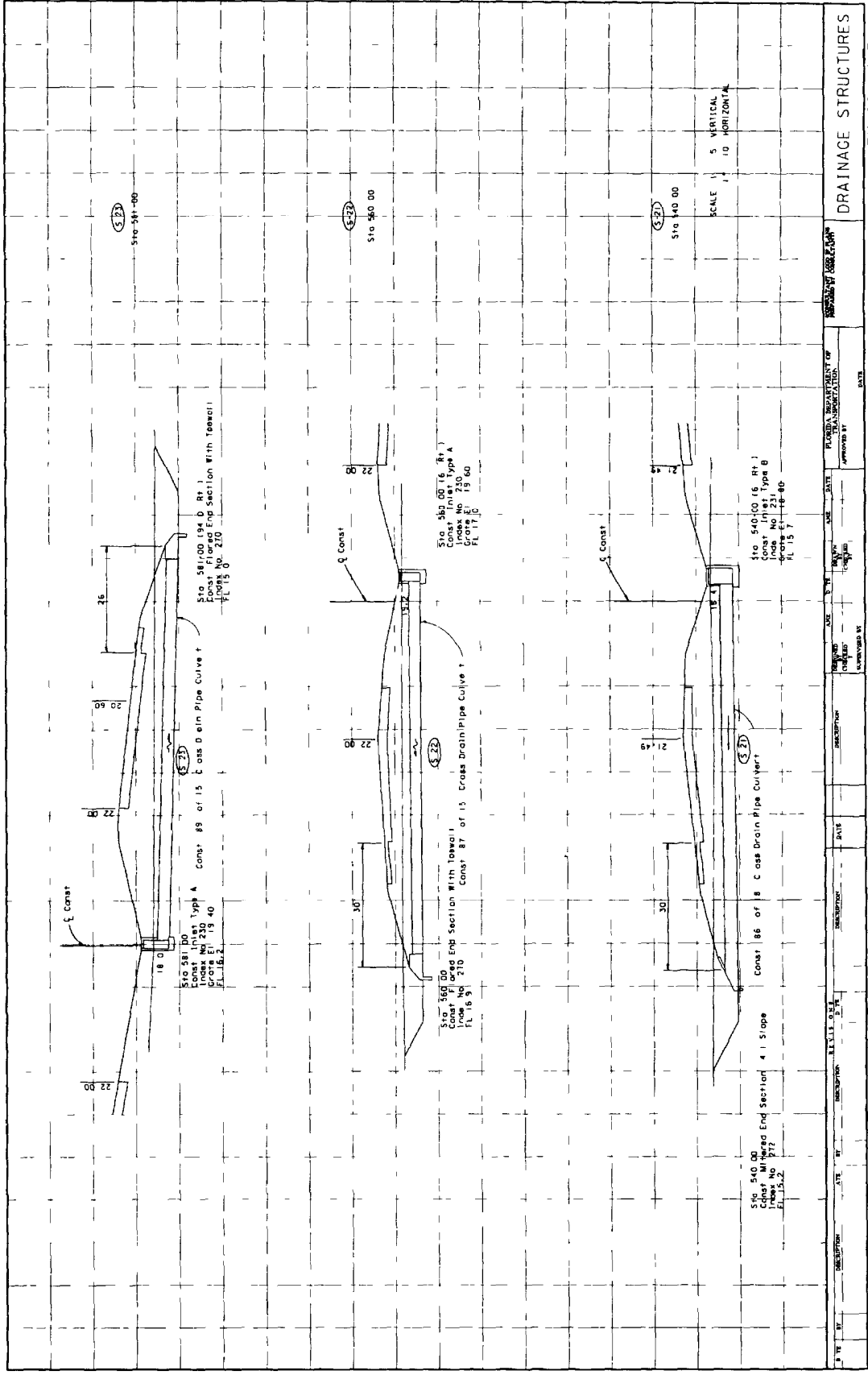
EX II-14-D

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

PROJECT NO. 11-14-00
APPROVED BY
DATE

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

STATE PROJ. NO. 00000 0000 00



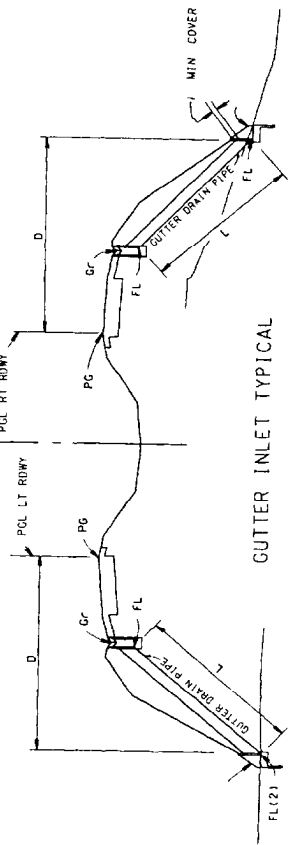
DATE	DESCRIPTION	BY	CHECKED	DATE	DESCRIPTION	BY	CHECKED	DATE	DESCRIPTION	BY	CHECKED	DATE	DESCRIPTION	BY	CHECKED	DATE	DESCRIPTION

PLANS, ELEVATIONS AND PROFILES OF
 DRAINAGE STRUCTURES
 APPROVED BY: _____ DATE: _____

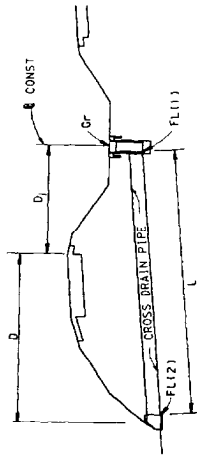
EX 11-14 F

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

STATE PROJ. NO. 00000 0000/000



GUTTER INLET TYPICAL



MEDIAN INLET TYPICAL

STR NO	STA	TYPE	INDEX	INLET		PIPE	ENDWALL	OFFSET		ELEV
				TYPE	LOC			D	D	
1	1172+00	A	230	OPT	18	108	FES 270	72.2	44	14.64
2	1186+00	B	231	OPT	24	104	FES 270	69.3	44	14.81
3	1200+00	A	230	OPT	18	104	FES 270	68.2	44	14.88
4	1213+00	B	231	OPT	18	104	FES 270	67.8	44	14.98
6	1235+00	A	230	OPT	18	98	FES 270	62.2	44	16.69
12	1263+00	A	230	OPT	18	102	FES 270	66.1	44	15.34
14	1289+00	A	230	OPT	18	106	FES 270	69.9	44	17.82
20	1320+00	A	230	OPT	18	102	FES 270	66.1	44	15.43
22	1343+00	A	230	OPT	18	114	FES 270	74.5	44	20.07
27	1350+00	A	230	OPT	15	102	MES 272	65.0	44	15.69
29	1362+00	E	232	STD	18	85	MES 272	52.0	22	14.72
32	1371+00	E	232	NT	16	85	MES 272	104.0	22	13.85
33	1371+00	E	232	NT	16	85	MES 272	76.0	22	15.70
34	1387+00	E	232	NT	16	85	MES 272	76.0	22	15.70

STR NO	STA	SIDE	TYPE	TYPE	INLET	INDEX	EL	FOR	EL	FL	EL	PIPE	LENGTH	TYPE	INDEX	SIZE	SLOPE	ENDWALL	BAFFLES	F	L	D
7	1241+95	RT	230	LT	24	45	23	30	20	8	15	34	U	261	15	21	YES	14	1	67		
8	1241+95	LT	230	RT	24	45	23	30	20	8	15	36	U	261	15	21	YES	14	1	69		
9	1244+05	RT	230	LT	24	45	23	30	20	8	15	32	U	261	15	21	YES	14	1	65		
10	1244+05	LT	230	RT	24	45	23	30	20	8	15	34	U	261	15	21	YES	14	1	66		
15	1233+95	RT	230	LT	24	45	23	30	20	8	15	44	U	261	15	21	YES	12	1	72		
16	1234+95	LT	230	RT	24	45	23	30	20	8	15	40	M	261	15	21	YES	12	1	72		
17	1236+05	RT	230	LT	24	45	23	30	20	8	15	44	M	261	15	21	YES	12	1	72		
18	1236+05	LT	230	RT	24	45	23	30	20	8	15	40	M	261	15	21	YES	12	1	72		
23	434+95	RT	230	LT	24	45	23	30	20	8	15	40	M	261	15	21	YES	12	1	74		
24	434+95	LT	230	RT	24	45	23	30	20	8	15	40	M	261	15	21	YES	12	1	74		
25	437+05	RT	230	LT	24	45	23	30	20	8	15	38	M	261	15	21	YES	13	1	71		
26	437+05	LT	230	RT	24	45	23	30	20	8	15	38	M	261	15	21	YES	13	1	71		
30	1387+14	RT	230	LT	24	45	23	30	35	4	15	60	M	261	15	21	YES	13	1	83		
31	1387+14	LT	230	RT	24	45	23	30	35	2	15	58	M	261	15	21	YES	13	1	82		

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 ^{which lie} outside of the immediate project limits ^{by which} ~~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, ^aseparate 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.

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.

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STATE PROJ NO. 00000 0000 0000

Laboratory No _____
 Project No _____
 Road No _____
 County _____
 Submitted By _____

Date of Survey _____
 Survey Mode 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 No	Test No	Test Name	Result	Remarks
1	100	Moisture	96	
2	99	Moisture	91	
3	98	Moisture	88	
4	97	Moisture	85	
5	96	Moisture	82	
1	95	Moisture	79	
2	94	Moisture	76	
3	93	Moisture	73	
4	92	Moisture	70	
5	91	Moisture	67	

The material from Stratum 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 stabilizer 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

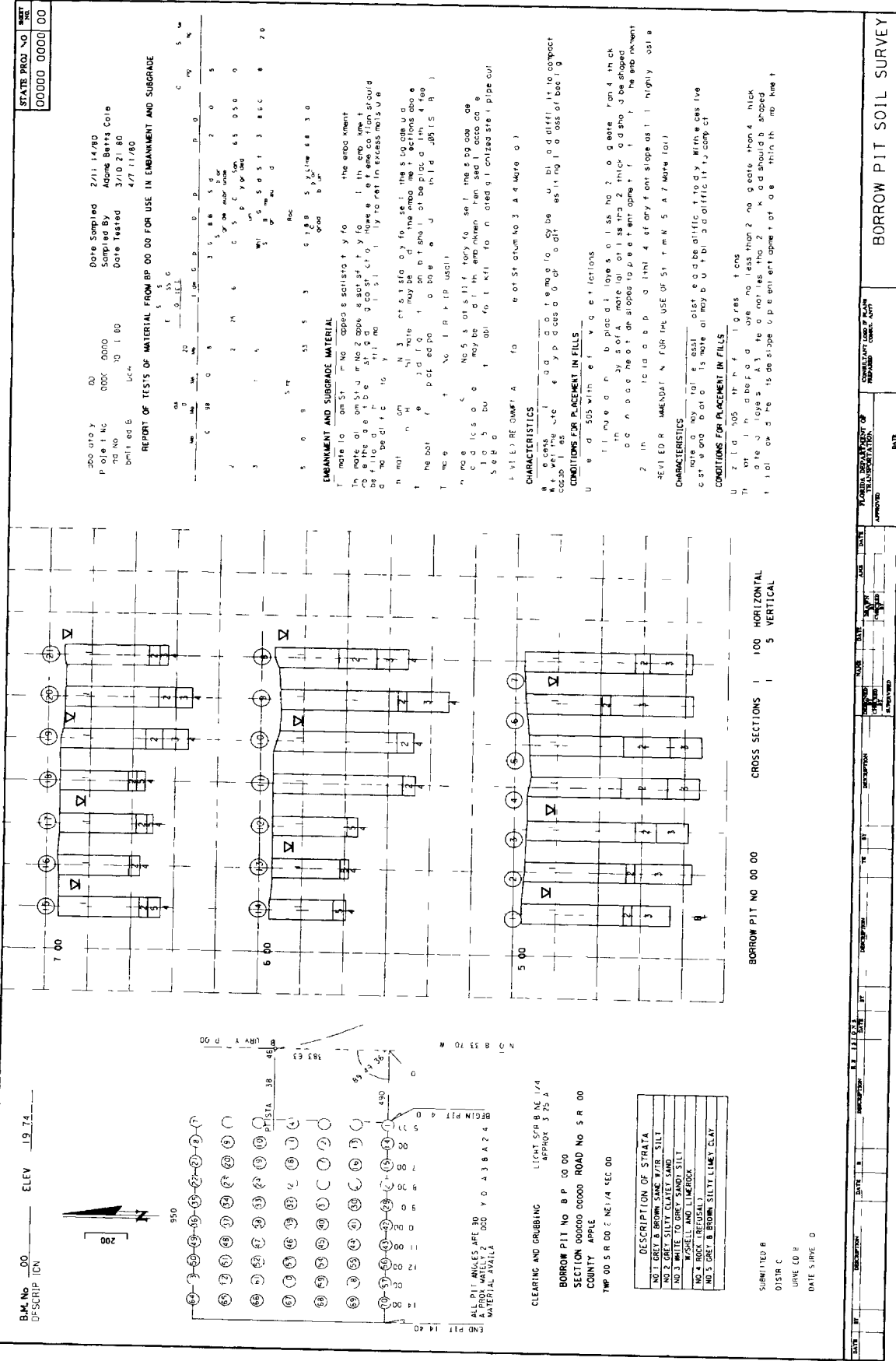
WEATHER CLEAR
 WATER TABLE ENCOUNTERED
 V

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

STATION	TEST NO	TEST NAME	RESULT	REMARKS
1+00	100	Moisture	96	
1+99	99	Moisture	91	
1+98	98	Moisture	88	
1+97	97	Moisture	85	
1+96	96	Moisture	82	
1+95	95	Moisture	79	
1+94	94	Moisture	76	
1+93	93	Moisture	73	
1+92	92	Moisture	70	
1+91	91	Moisture	67	

SOIL SURVEY
 EX 11-17-A

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



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 ^{which lie} ~~shall be shown when lying~~ within the horizontal limits of the project ^{shall be shown.} 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.

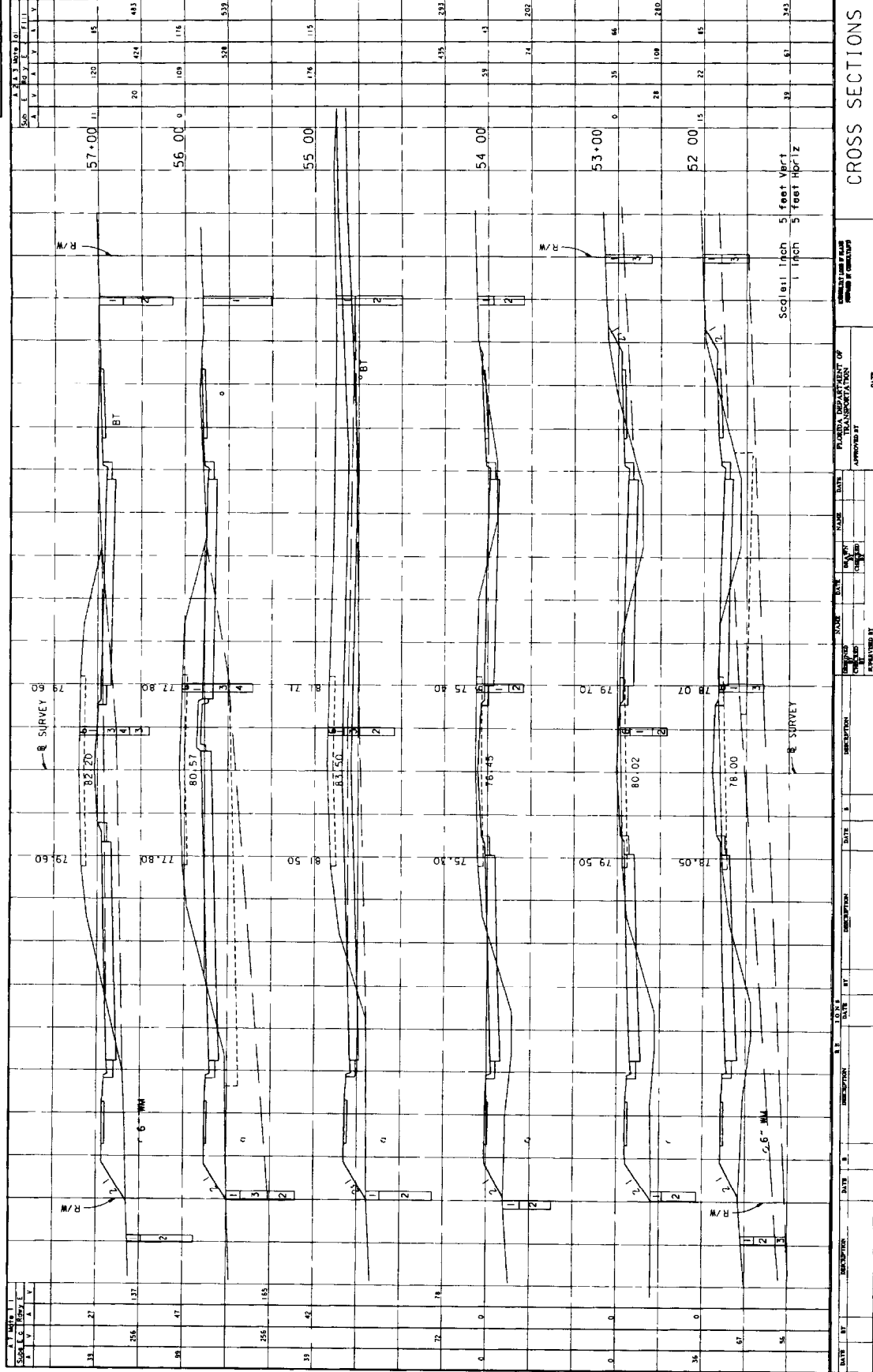
As many sections as possible shall be placed on a sheet with sections being spaced to avoid overlapping. The soil profile should be checked for possible unsuitable material below existing ground which may cause overlapping of sections.

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.

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STATE PROJ. NO. 00000 0000 00



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CROSS SECTIONS

EX II-18-B

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.

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.

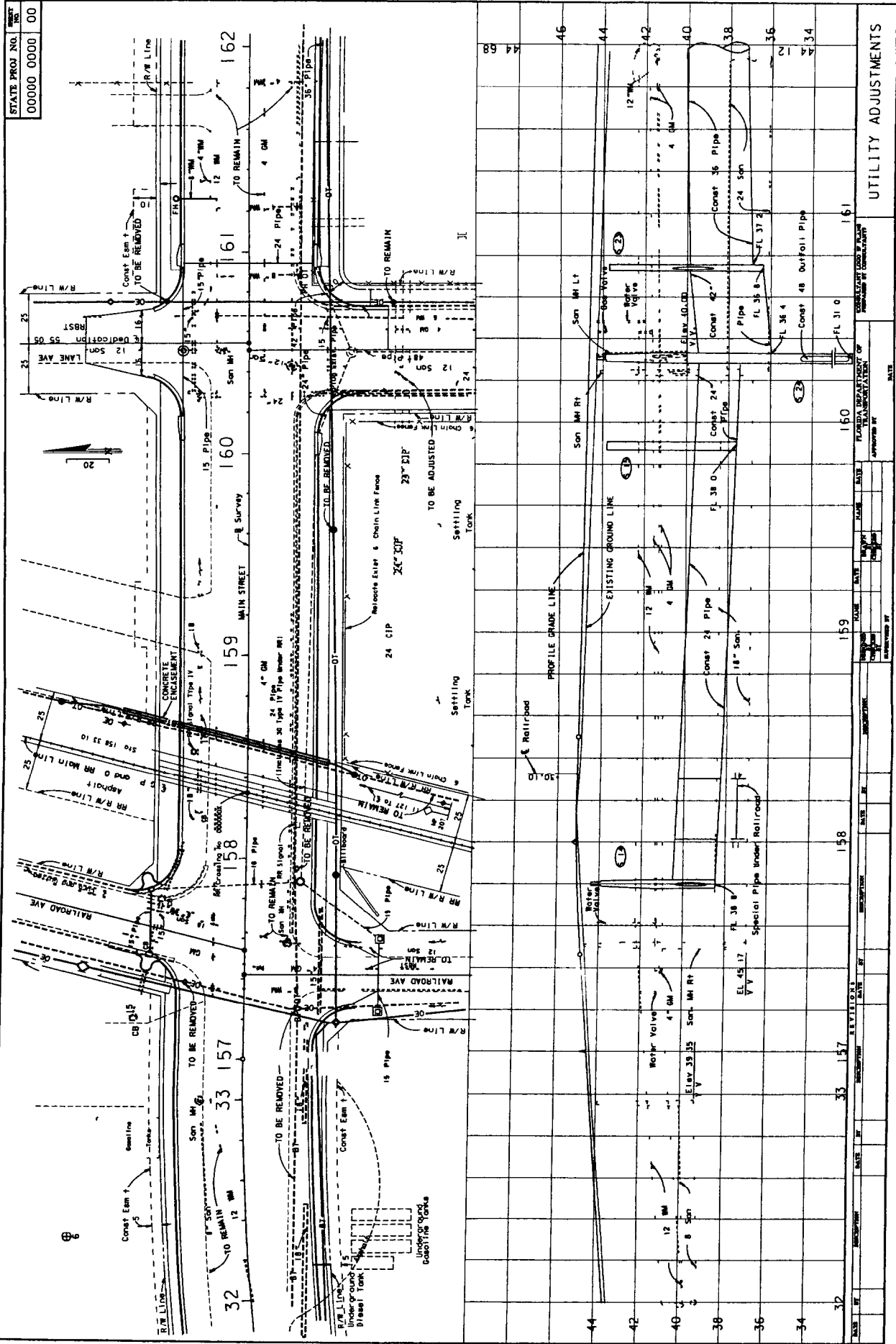
20.3 Sheet Format and Scale

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.

The utility adjustment sheets shall show the following base information as a minimum

- (1) Baseline and/or Centerline of survey,
- (2) Curb and gutter or edge of pavement,
- (3) Drainage structures (existing and proposed),
- (4) Right-of-way lines,
- (5) Station numbers,
- (6) Street names,
- (7) Disposition of existing utilities, and
- (8) Location of proposed utilities

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158			159			160			161		

UTILITY ADJUSTMENTS

EX II-20-A

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.



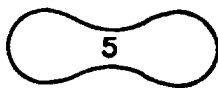
Designates areas where trees and stumps over 3" caliper shall be cut flush with the ground or removed, and all undergrowth is to remain natural. No equipment shall enter these areas that would in any way damage the plant material to remain.



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".

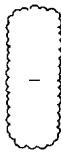
Where unforeseen site conditions exist, adjustments or exceptions may be made to the above procedure at the direction of the Engineer.

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STATE PROJ NO. 00000 0000 SHEET 00

SELECTIVE CLEARING MUCK BLANKET TOPSOIL 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 TO THE GROUND 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 ONLY TO REMAIN AND ALL UNDERGROWTH IS TO BE REMOVED. NO 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.



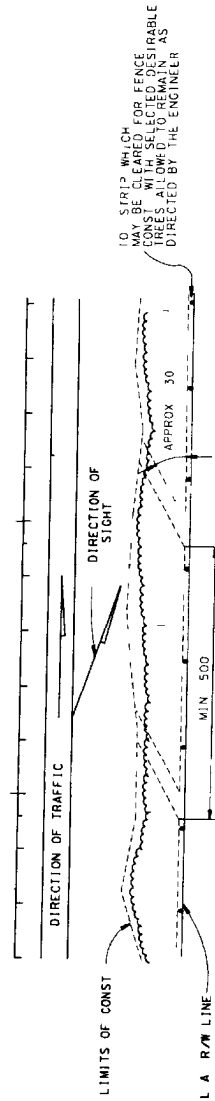
DESIGNATES AREAS THAT SHALL REMAIN NATURAL. WHEN IN THE OPINION OF THE ENGINEER ADEQUATE AND DESIRABLE NATURAL VEGETATION OR GRASS EXISTS. WHERE THIS TYPE VEGETATION DOES NOT EXIST ONLY HARROWING, DISKING AND GRASSING OPERATIONS SHALL BE UNDERTAKEN TO A DEGREE SUFFICIENT TO PREPARE THE AREA FOR GRASSING 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.

DETAIL OF EXCEPTION

(APPLIES TO ALL TYPES OF SELECTIVE CLEARING)



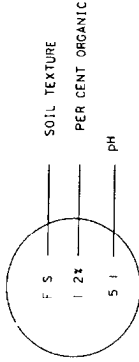
STOCKPILING OF TOPSOIL AND/OR MUCK IS TO BE DONE ONLY IN AREAS DESIGNATED AS TYPE 1 OR TYPE 2. CLEARING AND GRUBBING AREAS REQUIRE STOCKPILING OF TOPSOIL AND/OR MUCK. AREAS DESIGNATED AS TYPE 3, 4, 5 OR 6 ARE NOT TO BE STOCKPILED. (GENERAL NOTES)

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 BE DONE IN ACCORDANCE WITH THE REQUIREMENTS LISTED ABOVE.

EXPLANATION OF SYMBOLS

SOIL INFORMATION DETAIL



SOIL TEXTURE ABBREVIATIONS

SELECTIVE CLEARING AND GRUBBING

EX-11-21-A

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.

The Roadway Design Engineer must insure that the appropriate pay items are included in the CES.

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 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.

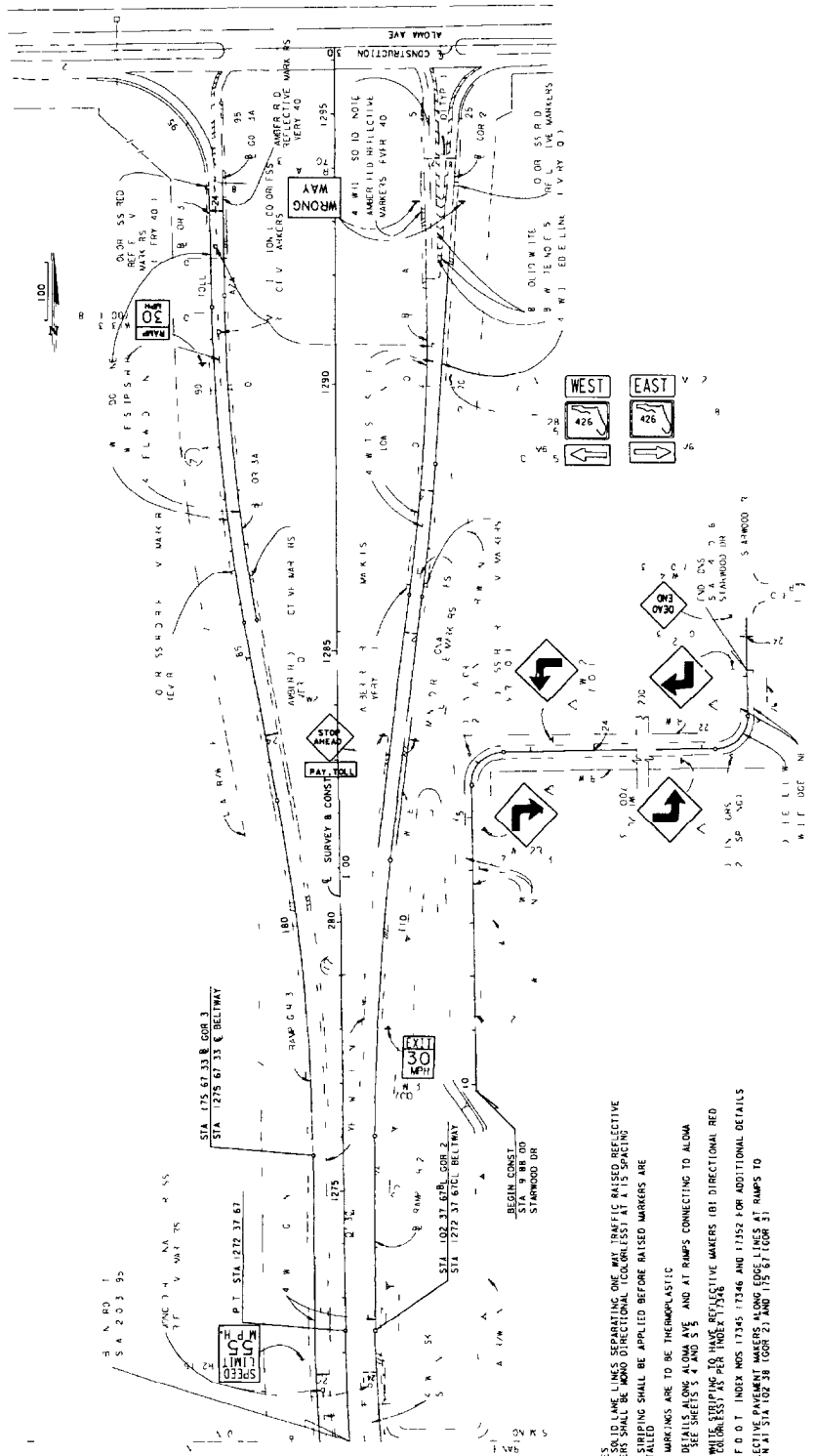
For overhead signs, the support truss and columns and foundations should be designed by the contractor from information shown on the sign cross section sheet.

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).

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STATE PROJ. NO. 00000 0000 S 0



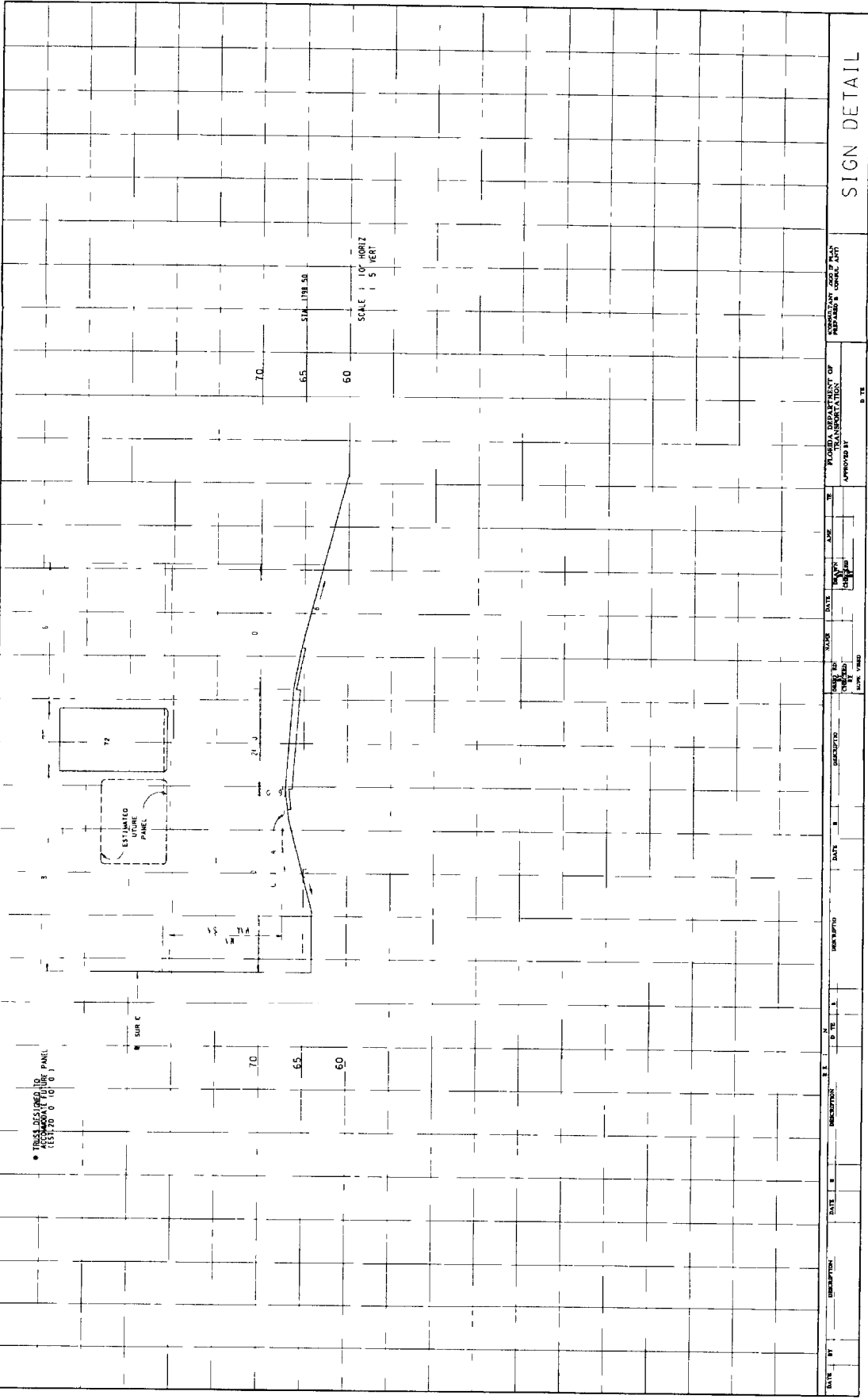
- 1 FOR SOLID LANE LINES SEPARATING ONE WAY TRAFFIC RAISED REFLECTIVE MARKERS SHALL BE MONO DIRECTIONAL (COLORLESS) AT 1' SPACING
- 2 ALL STRIPING SHALL BE APPLIED BEFORE RAISED MARKERS ARE INSTALLED
- 3 ALL MARKERS ARE TO BE THERMOPLASTIC
- 4 FOR BELT LINES ALONG ALOMA AVE AND AT RAMP'S CONNECTING TO ALOMA
- 5 18" WHITE STRIPING TO HAVE REFLECTIVE MARKERS (80' DIRECTIONAL RED AND COLORLESS) AS PER INDEX T-1536
- 6 SEE P.O.T. INDEX NOS 17345, 17346 AND 17352 FOR ADDITIONAL DETAILS
- 7 REFLECTIVE PAVEMENT MARKERS ALONG EDGE LINES AT RAMP'S TO BEGIN AT STA 102 38 (COR 2) AND 175 67 (COR 3)

NO.	DESCRIPTION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION

SIGNING AND MARKING

EX-11-23-D

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 TITLE: _____

DATE: _____
 PREPARED BY: _____
 TITLE: _____

DATE: _____
 PROJECT NO.: _____
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EX II-23-E

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

<p>STATE PROJ NO 00000 0000 00</p> <p>SIGN NUMBER 82A BACKGROUND REFLECTIVE WIDTH 17.0 TYPE GREEN HEIGHT 36 COLOR GREEN BORDER WIDTH 2 LEGEND B BORDER BORDER RADI 1.2 TYPE REFLECTIVE SHIELD SIZE 36 X 45 COLOR WHITE QUANTITY REQ D 1 ARROW SIZE 22 1/4 X 35 5/8</p>	<p>SIGN NUMBER 82B BACKGROUND REFLECTIVE WIDTH 17.0 TYPE GREEN HEIGHT 36 COLOR GREEN BORDER WIDTH 2 LEGEND B BORDER BORDER RADI 1.2 TYPE REFLECTIVE SHIELD SIZE 36 X 45 COLOR WHITE QUANTITY REQ D 1 ARROW SIZE 22 1/4 X 35 5/8</p>	<p>SIGN NUMBER 84A B 84B B 4 KROUND WIDTH 21.6 TYPE REFLECTIVE HEIGHT 36 COLOR GREEN BORDER WIDTH 2 LEGEND B BORDER BORDER RADI 1.2 TYPE REFLECTIVE SHIELD SIZE 36 X 56 COLOR WHITE QUANTITY REQ D 1 ARROW SIZE 22 7/8 X 25</p>	<p>SIGN NUMBER 84B B 84B B 4 KROUND WIDTH 21.6 TYPE REFLECTIVE HEIGHT 36 COLOR GREEN BORDER WIDTH 2 LEGEND B BORDER BORDER RADI 1.2 TYPE REFLECTIVE SHIELD SIZE 36 X 56 COLOR WHITE QUANTITY REQ D 1 ARROW SIZE 22 7/8 X 25</p>
<p>WIDTH 36</p> <p>HEIGHT 60</p> <p>15 CAPS</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 65</p>	<p>WIDTH 36</p> <p>HEIGHT 60</p> <p>15 CAPS</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 58</p>	<p>WIDTH 16</p> <p>HEIGHT 36</p> <p>15 CAPS</p> <p>45</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 78</p>	<p>WIDTH 16</p> <p>HEIGHT 36</p> <p>15 CAPS</p> <p>45</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 78</p>
<p>COPY SPACE 9 0</p> <p>SPACE 36 128</p> <p>COPY L O K B C I T Y</p> <p>SPACE 54 24 49</p> <p>COPY 16 22 18</p> <p>SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p>	<p>COPY SPACE 9 0</p> <p>SPACE 36 128</p> <p>COPY L O K B C I T Y</p> <p>SPACE 54 24 49</p> <p>COPY 16 22 18</p> <p>SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p>	<p>COPY SPACE 9 0</p> <p>SPACE 66 108</p> <p>COPY L I V B O O K</p> <p>SPACE 24 48 24 44 63</p> <p>COPY L O K B C I T Y</p> <p>SPACE 54 24 49</p> <p>COPY 16 22 18</p> <p>SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p>	<p>COPY SPACE 9 0</p> <p>SPACE 66 108</p> <p>COPY L I V B O O K</p> <p>SPACE 24 48 24 44 63</p> <p>COPY L O K B C I T Y</p> <p>SPACE 54 24 49</p> <p>COPY 16 22 18</p> <p>SPACE</p> <p>COPY SPACE</p> <p>COPY SPACE</p>
<p>WIDTH 36</p> <p>HEIGHT 60</p> <p>15 CAPS</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 65</p>	<p>WIDTH 36</p> <p>HEIGHT 60</p> <p>15 CAPS</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 58</p>	<p>WIDTH 16</p> <p>HEIGHT 36</p> <p>15 CAPS</p> <p>45</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 78</p>	<p>WIDTH 16</p> <p>HEIGHT 36</p> <p>15 CAPS</p> <p>45</p> <p>16 U C</p> <p>12 LOOPS</p> <p>700 I 78</p>

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 schedule shall be prepared on standard plan format and shall be set up as shown in Exhibit II-24-B. This sheet shall be placed behind the signal plan sheets in the plans assembly.

This sheet shall provide a listing of each pole number. The following information shall be given for each pole:

- Location Number
- Pole Number
- Pole Type
- Pole Dimensions
- Item Number
- Quantity
- Joint Use Pole Details, if applicable

24.7 Interconnect/Communication Plan

The Interconnect/Communication plan is required when signal equipment is being coordinated with other signal installations or with a computerized system. The Interconnect/Communication plan shows pictorially the placement of interconnect/communication cable, either underground or aerial, and tabulates all related interconnect quantities. The Interconnect/Communication plan sheet shall indicate all signal poles, service poles, and/or joint-use poles to which interconnect/communication cable will be attached.

The interconnect/communication plan shall be prepared on standard plan format and shall be set up as shown in Exhibit II-24-C.

Unless otherwise approved, the preferred scale of the interconnect/communication plan shall be 1"=40' for underground cable and 1"=100' for aerial cable. For simple projects, or sections of a project, "stacking" two plans on one sheet is generally permitted if clarity and legibility are maintained.

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.

The basic plan information requirements include roadway schematic showing cross streets and driveways, cable information, pole location, pole number, utility pole identification number, bid item number and quantity.

CHAPTER 25

HIGHWAY LIGHTING

25.1 General

Highway Lighting Plans are usually a component set of plans. Projects with minor or typical highway lighting may include these features on sheets in the roadway plan set or detailed on the roadway plans. When prepared as component plans they shall be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other relevant highway lighting sheets. The sheets shall be numbered consecutively with the sheet numbers prefixed by the letter L. The lighting plans shall show the complete construction details, electrical circuit, pole data, conduits, service points, luminaires, foundations, boring details and other relevant data.

A complete set of highway lighting plans shall include the following sheets:

- Key Sheet
- Tabulation of Quantities
- Pole Data and Legend Sheet
- Plans Sheet or Layout Sheet
- Foundation Details (High Mast)
- Boring Data Sheets (High Mast)

25.2 Key Sheet

The key sheet is the first sheet in the component plans set and shall be prepared as described in Chapter 3 of this manual. The location map, length of project box and contract plans set information need not be shown if it is shown on the lead (usually roadway) key sheet. ~~Index of highway lighting plans shall be shown on the left of the sheet with the Roadway and Traffic Design Standard Indexes listed below it.~~

Index of highway lighting 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.

25.3 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, 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-25-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 standard notes that refer to item numbers, description of work to be performed and quantity estimates shall also be shown on this sheet. General notes shall be shown on a separate plan format 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.

25.4 Pole Data and Legend Sheet

The pole data sheet provides a great deal of information and shall be prepared on a standard plan format and shall be set up as shown in Exhibit II-25-B.

This sheet shall provide a listing of each pole by pole number. The following information shall also be given for each pole:

Circuit Number
Roadway Station and Offset
Arm Length
Luminaire Wattage
Mounting Height

The design values for light intensities and uniformity ratios shall be shown together with a legend and description of the symbols used on the plan sheets.

25.5 Plan Sheets

25.5.1 Format and Scale

The plan sheets shall be prepared on a standard plan format. The scale shall be such that all details are clear and legible at half-size reduction of plans. However, the scale shall not be smaller than 1" = 100'. For simple, uncomplicated projects, or for narrow 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.

25.5.2 Required Information

The basic information pertaining to roadway geometrics and project limits required on the highway lighting plan sheets is the same as that required on the plan portion of the plan - profile sheets. Topography and construction details need not be shown. Utilities, drainage, signal structures, sidewalks, driveways, etc. shall be checked for conflicts. Only those that may cause conflicts shall be shown.

The lighting design or lighting layout shall be shown on the plan format. This shall be accomplished by symbols which represent poles, conduits and service points. The symbols used shall be unique for a particular item and shall be used throughout the plans. A flag or note shall be used to identify conduit runs with conductor size or numbers different than that shown on the pole data sheet legend.

The symbols for poles shall be shown at the correct baseline station and the approximate offset from the roadway noted.

The poles shall be flagged and specific information for each pole shall be shown. The pole number, baseline station, circuit number and offset from baseline (for high mast) shall be shown.

The service point locations shall be shown on the plan sheets as determined through utility negotiations. Design Standard 17504 provides details for the service point. The service point shall be shown at the location where it is to be installed. The following information is not covered on the standard and must be shown on the plan sheet:

Description--voltages, phases, etc.

example: 240/480 Volt, 3 wire, Overhead

Breaker sizes--The main breaker size and the number of branch circuits and the breaker size of each.

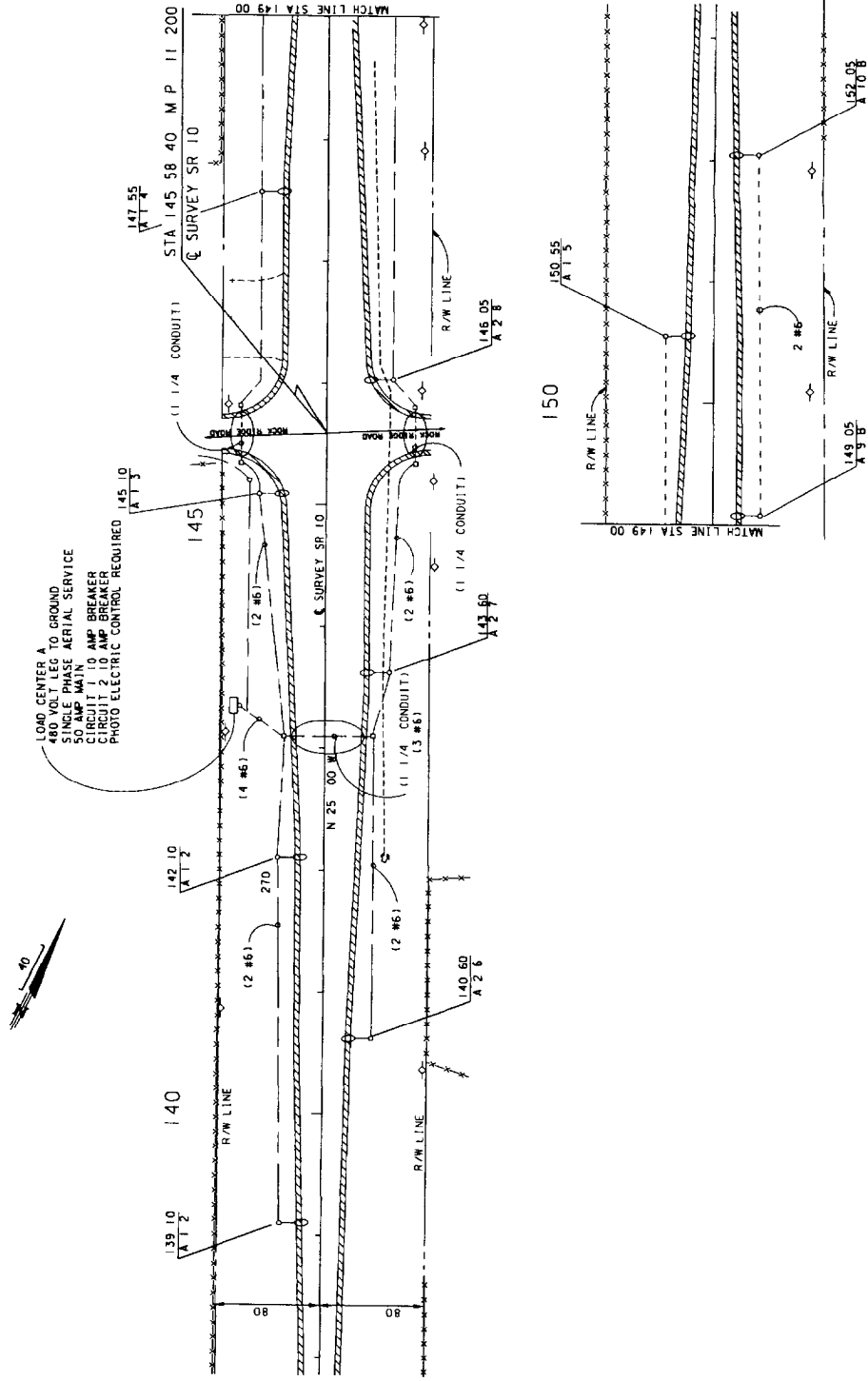
25.6 Foundations and Boring Detail Sheets

The foundation design and the details for the height of conventional poles are shown in the Roadway and Traffic Design Standards and need not be shown in the lighting plans. Foundations for high mast poles are designed by the responsible Structural Engineer's office.

Plans showing the foundation details and boring data for high mast poles shall be included in the lighting plans.

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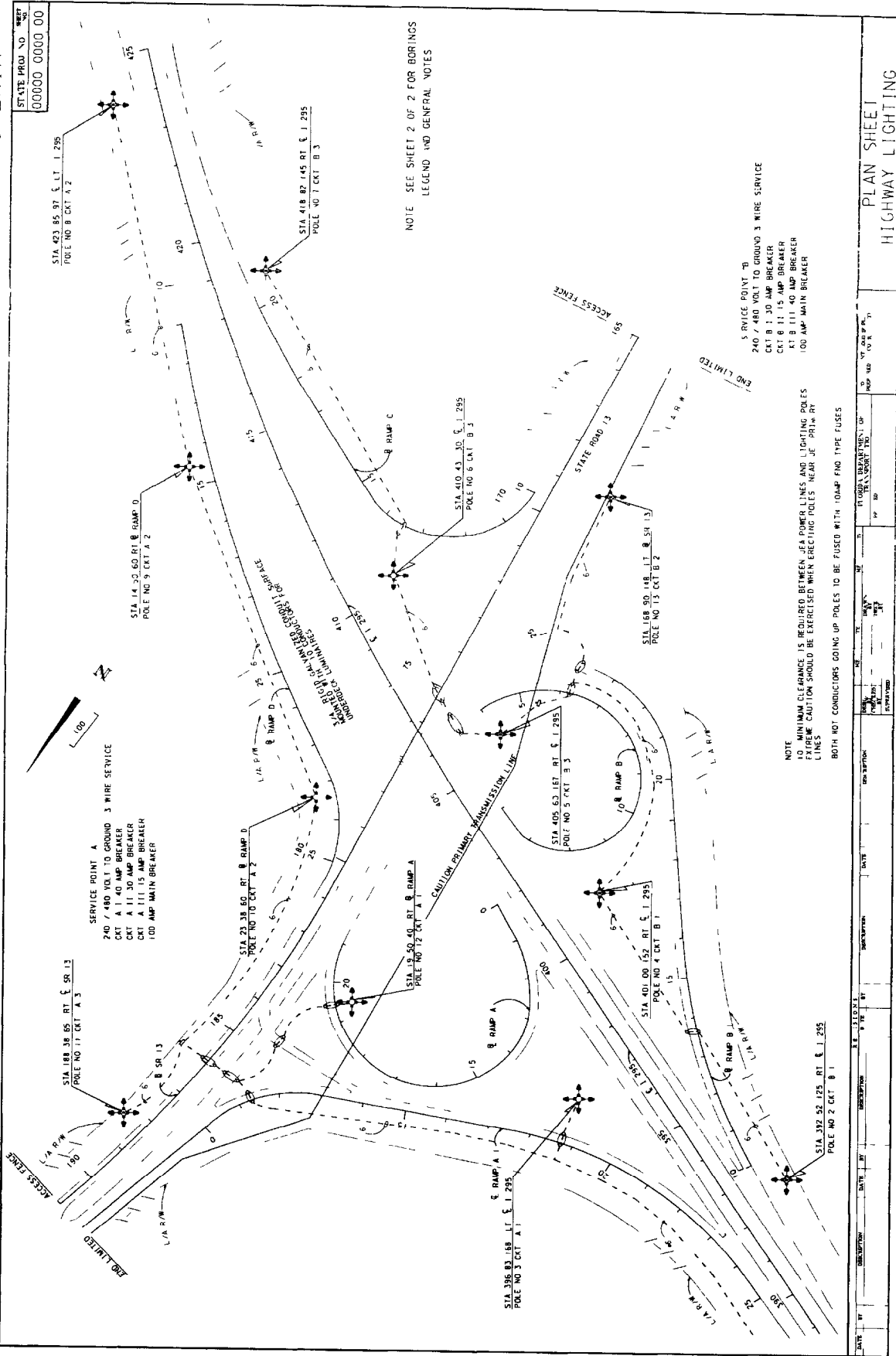


DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

LIGHTING PLANS

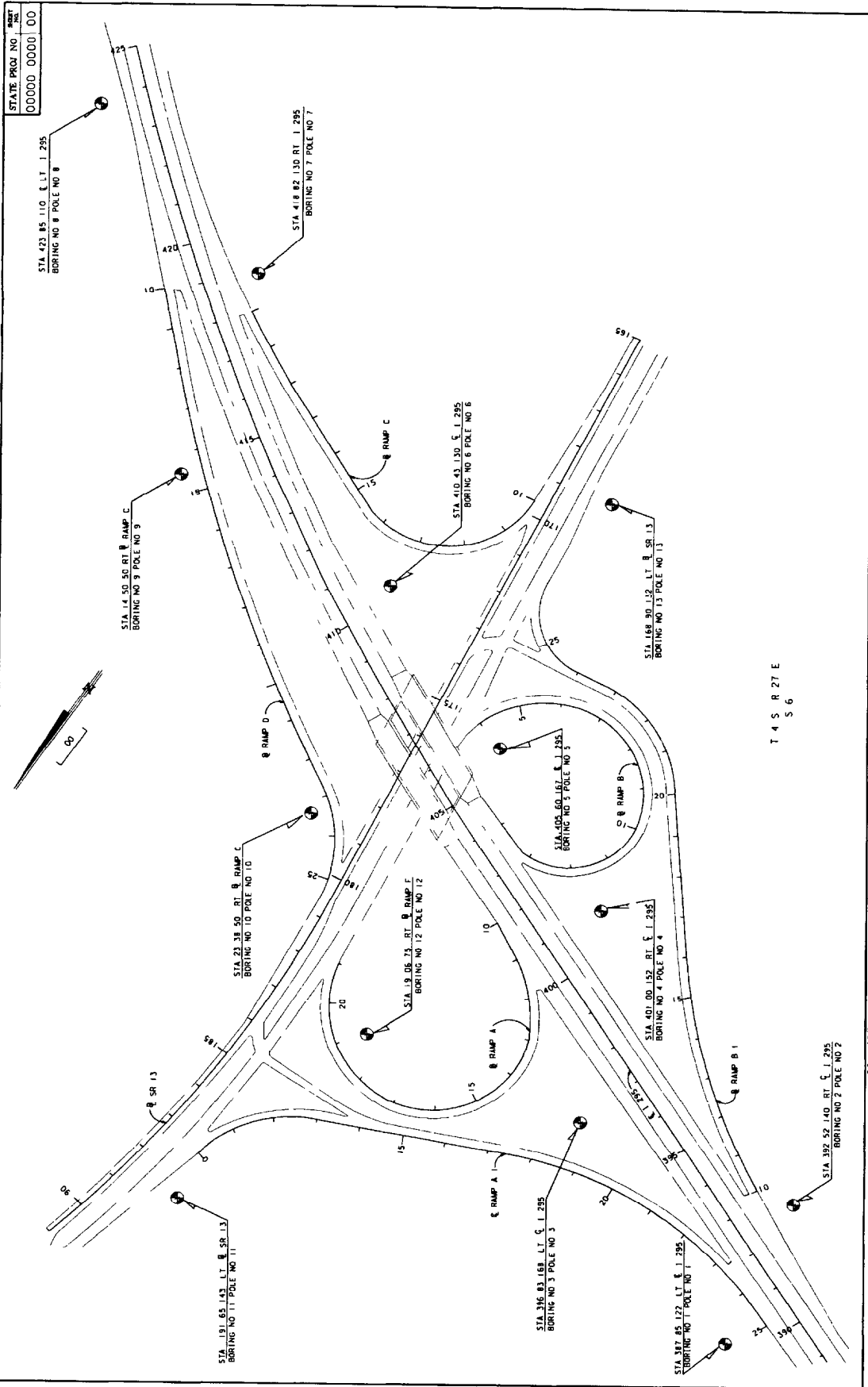
EX 11-25-C

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PLAN SHEET
HIGHWAY LIGHTING
EX 11 25 E

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



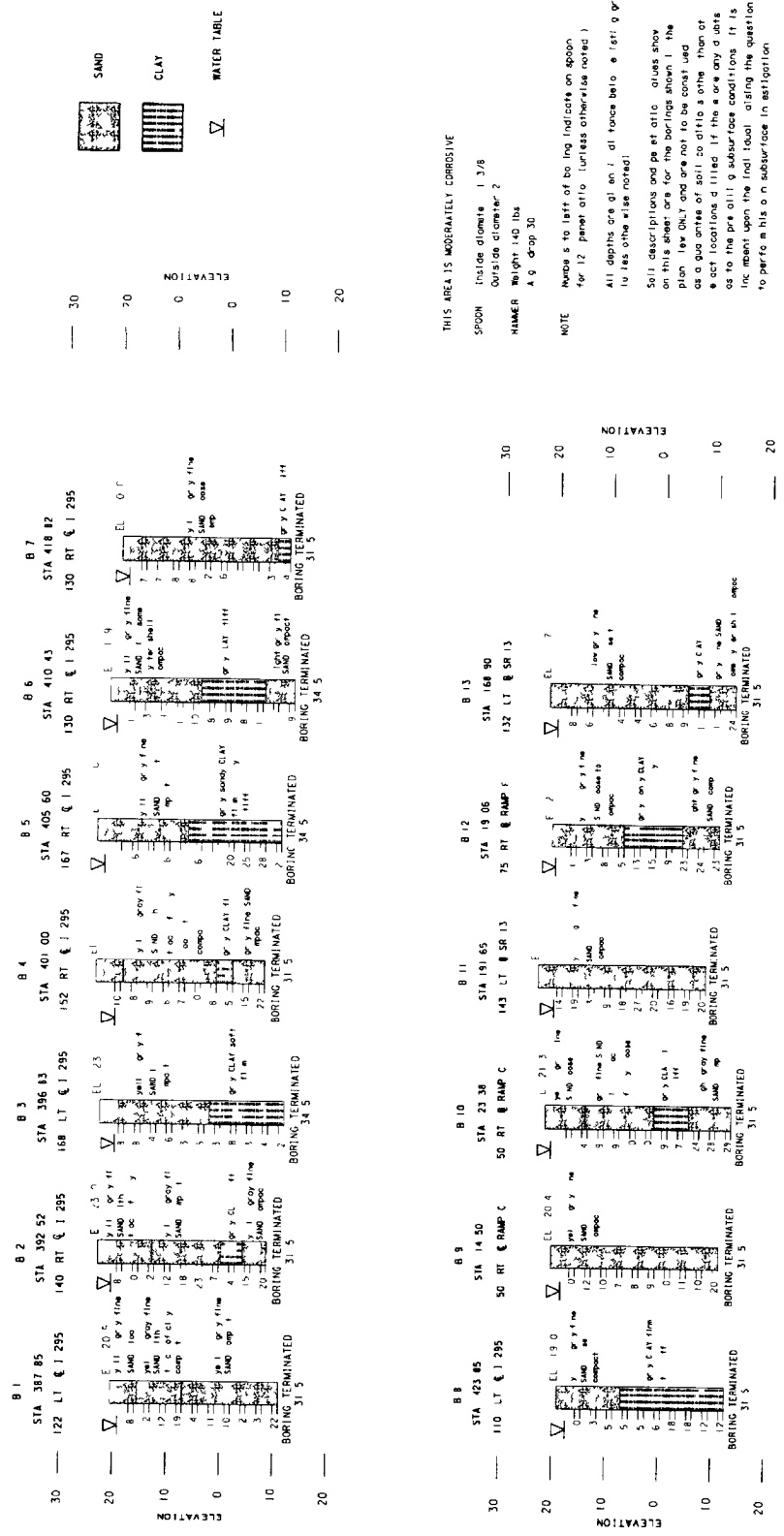
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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE PROJ. NO. 00000 00000 00
 FLORIDA DEPARTMENT OF TRANSPORTATION
 CONSULTANT AND FIELD ENGINEER
 PREPARED BY CONSULTANT
 BORING LOCATIONS
 EX 11-25-G

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

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



PROFILE
SCALE: 1" = 10' 0"

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY: _____

DATE: _____

PROJECT NO.: _____

CONTRACT NO.: _____

SECTION: _____

DATE: _____

BY: _____

DESCRIPTION: _____

DATE: _____

BY: _____

DESCRIPTION: _____

BORING DATA
HIGH MAST LIGHTING

EX-11-25 H

CHAPTER 26

HIGHWAY LANDSCAPE

26.1 General

Highway landscaping plans are usually a component set of plans. Projects with minor or typical landscaping may include these features on sheets in the roadway plans set or detailed on roadway plans. When prepared as a component set they shall include a key sheet, tabulation of quantities sheet, planting details and notes sheet, and other relevant plan sheets as outlined in this chapter. Sheets shall be numbered ~~consecutively~~ with the sheet number prefixed by the letters LD. *consecutively*

26.2 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 (usually roadway). 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 and consultant names shall be shown as described in Chapter 3 of this volume.

Responsible Landscape Architect's approval signature and seal shall be included in appropriate locations on the landscaping plans.

26.3 Tabulation of Quantities

The tabulation of quantities sheet shall be prepared on a standard plan format and shall show all bid items, the breakdown of plants or materials within each bid item as applicable, the quantities of each, and the total quantities for all bid items. Bid items shall be listed in numerical order. Plant quantities may be tabulated by sheet either on this or on a separate sheet of "Quantities by Sheet". Notes referring to specific bid items or plant materials should be shown on this sheet. Notes of a more general nature may be shown on this sheet or on the Planting Details and Notes sheet. This sheet or a similar sheet should also be utilized to tabulate the materials required for the construction of sprinkler irrigation systems. This sheet should be set up similar to that shown in Exhibit II-26-A.

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.

26.4 Standard Details and Notes

This sheet should be included in all landscape plan sets and show all standard details which are applicable to the project. General notes and additional landscaping and/or sprinkler irrigation detail drawings may also be shown on this sheet. The following note should appear on this or the tabulation of quantities sheet:

"The locations of plants, as shown in these plans, are approximate. The final locations may be adjusted to accommodate unforeseen field conditions, to comply with safety setback criteria, to avoid creating unsafe sight conditions, or as otherwise directed or approved by the Engineer."

26.5 Plan Sheets

26.5.1 Format and Scale

The various 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. However, the scale shall not be smaller than 1" = 100'. For simple, uncomplicated projects, or narrow 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 scale shall be shown, as applicable, at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, then each plan portion shall contain a north arrow and scale.

26.5.2 Plan Sheets

Base information required on the plan sheets is as follows:

Project Centerline

Edge of Pavement (edge of driving lanes)

Drainage Structures

Guardrails

Right-of-way and/or Limited Access Fence Line

Sidewalks or other planned or existing structures

Overhead and Underground Utility Locations, if known

Limits of Clear Zone should be plotted or safety setback distances noted frequently on each plan sheet

Plants shall be identified by their common name and quantity, either individually or in groups. Abbreviations of plant names are acceptable, if properly identified on the tabulation of quantities sheet.

For an example of a landscaping plan sheet, see Exhibit II-26-C.

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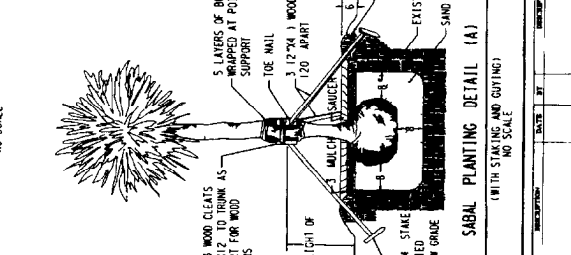
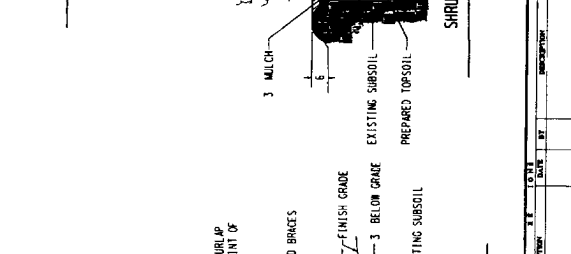
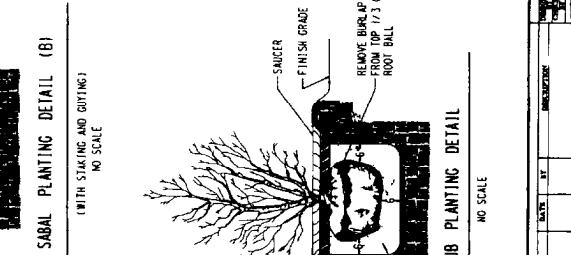
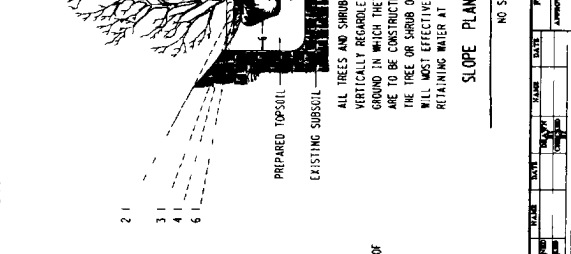
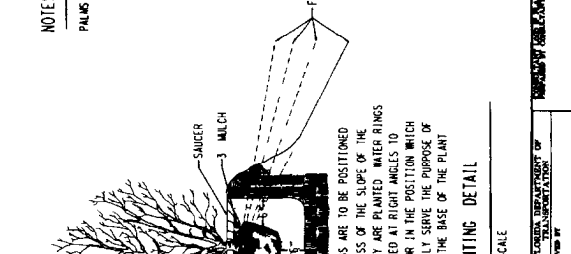
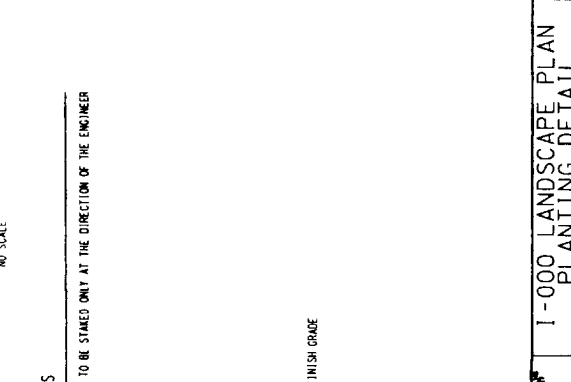
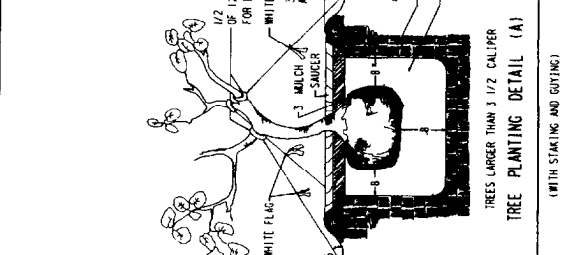
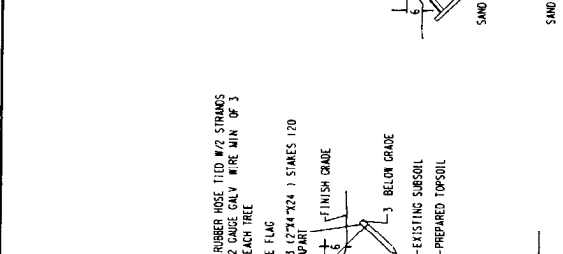
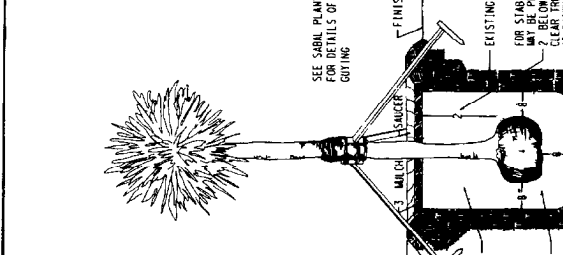
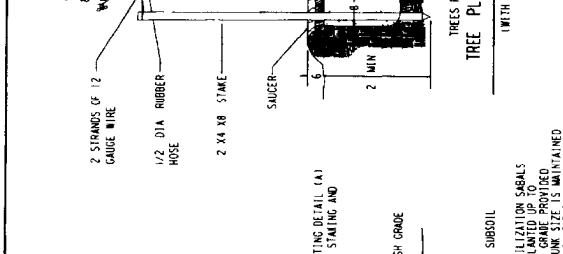
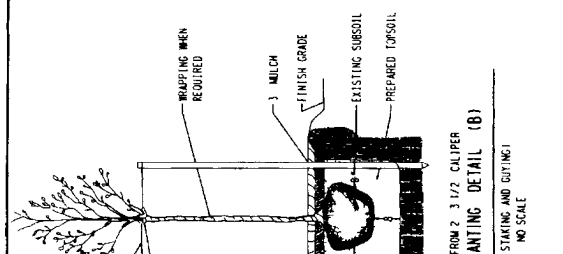
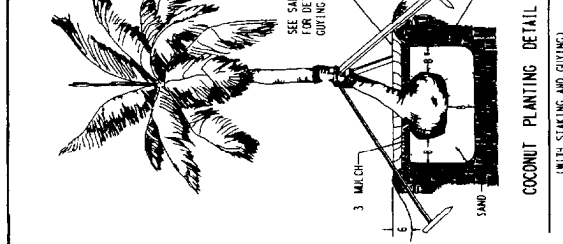
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TABULATION OF QUANTITIES

ITEM	SIZE	UNIT	QUANTITY					TOTAL QUANT				
			15190	3461	15190	3460	15190		3459	15190	3458	
Mobilization		LS										
Maintenance of Traffic		LS										
Water for Plant Establishment		MC	2,462.5									2,462.5
Staking and Layout (1" x 1/2")		EA	35									35
Staking and Layout (1/2" x 1/2")		EA	159									159
Shrub	1 Gal Con or Larger	PL	7,548			72		91				143
Shrub	12 to 15 ht	PL	1,880			2,115		12,833				9,953
Shrub	15 to 18 ht	PL	1,880			1,800		3,600				5,480
Shrub	18 to 24 ht	PL	4,492			880		4,248				8,740
Shrub	24 to 30 ht	PL	2,497			610		1,445				3,942
Shrub	30 to 36 ht	PL	2,497			610		1,445				3,942
Shrub	36 to 42 ht	PL	18			23		21				49
Shrub	42 to 48 ht	PL	35			10		5				40
Shrub	48 to 54 ht	PL	2,629			1,325		2,300				4,929
Shrub	54 to 60 ht	PL	50			18		28				78
Shrub	60 to 66 ht	PL	50			50		109				159
Shrub	66 to 72 ht	PL	177			50		175				352
Shrub	72 to 78 ht	PL	32			27		24				56
Shrub	78 to 84 ht	PL	64			38		44				108
Shrub	84 to 90 ht	PL	70			18		37				107
Shrub	90 to 96 ht	PL	35			6		12				47
Shrub	96 to 102 ht	PL	35			6		12				47
Shrub	102 to 108 ht	PL	35			6		12				47
Shrub	108 to 114 ht	PL	35			6		12				47
Shrub	114 to 120 ht	PL	35			6		12				47
Shrub	120 to 126 ht	PL	35			6		12				47
Shrub	126 to 132 ht	PL	35			6		12				47
Shrub	132 to 138 ht	PL	35			6		12				47
Shrub	138 to 144 ht	PL	35			6		12				47
Shrub	144 to 150 ht	PL	35			6		12				47
Shrub	150 to 156 ht	PL	35			6		12				47
Shrub	156 to 162 ht	PL	35			6		12				47
Shrub	162 to 168 ht	PL	35			6		12				47
Shrub	168 to 174 ht	PL	35			6		12				47
Shrub	174 to 180 ht	PL	35			6		12				47
Shrub	180 to 186 ht	PL	35			6		12				47
Shrub	186 to 192 ht	PL	35			6		12				47
Shrub	192 to 198 ht	PL	35			6		12				47
Shrub	198 to 204 ht	PL	35			6		12				47
Shrub	204 to 210 ht	PL	35			6		12				47
Shrub	210 to 216 ht	PL	35			6		12				47
Shrub	216 to 222 ht	PL	35			6		12				47
Shrub	222 to 228 ht	PL	35			6		12				47
Shrub	228 to 234 ht	PL	35			6		12				47
Shrub	234 to 240 ht	PL	35			6		12				47
Shrub	240 to 246 ht	PL	35			6		12				47
Shrub	246 to 252 ht	PL	35			6		12				47
Shrub	252 to 258 ht	PL	35			6		12				47
Shrub	258 to 264 ht	PL	35			6		12				47
Shrub	264 to 270 ht	PL	35			6		12				47
Shrub	270 to 276 ht	PL	35			6		12				47
Shrub	276 to 282 ht	PL	35			6		12				47
Shrub	282 to 288 ht	PL	35			6		12				47
Shrub	288 to 294 ht	PL	35			6		12				47
Shrub	294 to 300 ht	PL	35			6		12				47
Shrub	300 to 306 ht	PL	35			6		12				47
Shrub	306 to 312 ht	PL	35			6		12				47
Shrub	312 to 318 ht	PL	35			6		12				47
Shrub	318 to 324 ht	PL	35			6		12				47
Shrub	324 to 330 ht	PL	35			6		12				47
Shrub	330 to 336 ht	PL	35			6		12				47
Shrub	336 to 342 ht	PL	35			6		12				47
Shrub	342 to 348 ht	PL	35			6		12				47
Shrub	348 to 354 ht	PL	35			6		12				47
Shrub	354 to 360 ht	PL	35			6		12				47
Shrub	360 to 366 ht	PL	35			6		12				47
Shrub	366 to 372 ht	PL	35			6		12				47
Shrub	372 to 378 ht	PL	35			6		12				47
Shrub	378 to 384 ht	PL	35			6		12				47
Shrub	384 to 390 ht	PL	35			6		12				47
Shrub	390 to 396 ht	PL	35			6		12				47
Shrub	396 to 402 ht	PL	35			6		12				47
Shrub	402 to 408 ht	PL	35			6		12				47
Shrub	408 to 414 ht	PL	35			6		12				47
Shrub	414 to 420 ht	PL	35			6		12				47
Shrub	420 to 426 ht	PL	35			6		12				47
Shrub	426 to 432 ht	PL	35			6		12				47
Shrub	432 to 438 ht	PL	35			6		12				47
Shrub	438 to 444 ht	PL	35			6		12				47
Shrub	444 to 450 ht	PL	35			6		12				47
Shrub	450 to 456 ht	PL	35			6		12				47
Shrub	456 to 462 ht	PL	35			6		12				47
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Shrub	486 to 492 ht	PL	35			6		12				47
Shrub	492 to 498 ht	PL	35			6		12				47
Shrub	498 to 504 ht	PL	35			6		12				47
Shrub	504 to 510 ht	PL	35			6		12				47
Shrub	510 to 516 ht	PL	35			6		12				47
Shrub	516 to 522 ht	PL	35			6		12				47
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Shrub	534 to 540 ht	PL	35			6		12				47
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Shrub	552 to 558 ht	PL	35			6		12				47
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Shrub	570 to 576 ht	PL	35			6		12				47
Shrub	576 to 582 ht	PL	35			6		12				47
Shrub	582 to 588 ht	PL	35			6		12				47
Shrub	588 to 594 ht	PL	35			6		12				47
Shrub	594 to 600 ht	PL	35			6		12				47
Shrub	600 to 606 ht	PL	35			6		12				47
Shrub	606 to 612 ht	PL	35			6		12				47
Shrub	612 to 618 ht	PL	35			6		12				47
Shrub	618 to 624 ht	PL	35			6		12				47
Shrub	624 to 630 ht	PL	35			6		12				47
Shrub	630 to 636 ht	PL	35			6		12				47
Shrub	636 to 642 ht	PL	35			6		12				47
Shrub	642 to 648 ht	PL	35			6		12				47
Shrub	648 to 654 ht	PL	35			6		12				47
Shrub	654 to 660 ht	PL	35			6		12				47
Shrub	660 to 666 ht	PL	35			6		12				47
Shrub	666 to 672 ht	PL	35			6		12				47
Shrub	672 to 678 ht	PL	35			6		12				47
Shrub	678 to 684 ht	PL	35			6		12				47
Shrub	684 to 690 ht	PL	35			6		12				47
Shrub	690 to 696 ht	PL	35			6		12				47
Shrub	696 to 702 ht	PL	35			6		12				47
Shrub	702 to 708 ht	PL	35			6	</					

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STATE PROJ. NO. 1
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NOTES

PALMS TO BE STAKED ONLY AT THE DIRECTION OF THE ENGINEER

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

1-000 LANDSCAPE PLAN PLANTING DETAIL

EX 11-26-B

CHAPTER 27

UTILITY CONTRACT PLANS

27.1 General

Most utility adjustment work is performed by the utility owner. In some cases the highway contractor is required to construct or relocate utilities for the project. In such cases utility plans shall be prepared as a separate plan component, complete with key sheet and summary of pay items.

27.2 Key Sheet

The key sheet, which shall be the first sheet in the set, shall be prepared on a standard key sheet format as described in Chapter 3 of this volume. Contract plan set information, location map and length of project box shall not be required if it is shown on the lead key sheet (usually roadway). An index of plan sheets and a list of Roadway and Traffic Design Standard Indexes shall be shown on the left side of the sheet. The job number shown shall be the 6000 series to indicate utility work. All other data shall be as described in Chapter 3 of this volume.

27.3 Summary of Quantities, Standard Notes and Summary of Pay items

The summary of quantities sheet shall be prepared on standard plan sheets and should show any quantities tabulated for location, size, etc. Standard notes referring to item numbers shall also be shown on this sheet or on plan sheets if no summary of quantities sheet is included.

Summary of pay item sheets are to be prepared the same as noted in Chapter 4.

27.4 Plan Sheets

Utility plans shall show full construction details for all utilities to be relocated or constructed by the contractor. Plan and profile sheet format should be utilized. Project information shown shall be similar to that described in Chapter 10. Utilities to be relocated or constructed shall be shown by a heavy solid line in plan and profile. The scale used should be the same as that used for the plan-profile sheets.

APPENDIX A

GLOSSARY OF TERMS

AA DT	Average Annual Daily Traffic.
ADE	Area Design Engineer
ADT (two way)	Average Daily Traffic.
Approach Slab	A section of a roadway adjacent to, and at the end of a bridge, requiring special design and construction considerations.
Arterial	A general term denoting a highway primarily for through traffic, usually on a continuous route.
A-2 or A-3 Material	Materials consisting of sands deficient in coarse materials and soil binder.
A-8 Material	A national classification of a type of unsuitable material.
Base course	The layer or layers of specified or selected material of design thickness placed on a subbase or subgrade to support a structural course.
Baseline	An accurately measured line from which the position of other points may be determined, or on which a survey may be based.

Benchmark	A relatively permanent object, natural or artificial, bearing a marked point whose elevation above or below an adopted datum is known.
BHRS	Bridge Hydraulic Recommendation Sheet.
Bifurcated Section	A section of a divided roadway separated by a very wide area of natural ground.
Border Width	A term usually used in conjunction with urban roadway cross section denoting the width of cross section from the face of curb to the right-of-way.
Borrow or Borrow Material	Material excavated from designated areas for use as 'fill'.
Borrow Pit	An excavation site outside the limits of a roadway for producing material necessary for roadway construction.
Bridge Culvert	Culverts whose dimensions exceed a 20' distance measured along project centerline between the inside faces of exterior walls..
Bulkage	Increase in soil volume due to manipulation.
CADD	Computer Aided Design and Drafting.

Catagorical Exclusion:	Projects that may be excluded from the Environmental Impact Process due to the type of work involved - example resurfacing projects.
Centerline	The axis along the middle of a road or other facility from which features can be conveniently measured.
CES	Cost Estimating System - The Department's program for estimating construction costs for projects.
Channelization	Usage of traffic islands and other devices to direct traffic into definite paths.
Clear zone	A traversable and unobstructed roadside area available for errant vehicles to safely regain control.
Clearing and Grubbing	Process of clearing the roadway construction site of unwanted features.
Collector	A general term denoting a roadway that links neighborhoods or areas of homogeneous land use with arterial streets.
Compound Curve	A curve consisting of two or more arcs of different radii curving in the same direction and having a common point.

Contract	A legal document stating the terms and conditions of an agreement between the Department and a private company to provide a service.
Contract Time	Number of calendar days allowed for completion of the contract, including authorized time extensions.
Contractor	An individual or company that undertakes to provide service specified in contract documents.
Control Radius	Radius by which a turning vehicle can maneuver with the least amount of difficulty.
Crest Vertical Curve	A convex parabolic curve providing a smooth transition between two grades.
Cross Slopes	Lateral slope given to the pavement to provide adequate drainage.
Cross Drain	A drainage structure utilized to convey water from one side of the roadway to the other, including median drains and culverts under intersecting streets.
Crown Line	The inside top of a culvert.
Culverts	A round or special shaped pipe or box used to convey water, especially under roadways or other facilities.

Curb Returns	The curved portion of the curb at which driveways and cross roads intersect with a roadway.
Cut	That portion of a road site where the formation has been excavated below ground level.
Datum	A known or measured point, line or plane to which others may be referred for vertical or horizontal control.
Delineator	Reflector units capable of clearly reflecting light under normal atmospheric conditions from a distance of 1000 feet when illuminated by the upper beam of standard automobile lights.
Design Speed	A speed determined for design and correlation of the physical features of a highway that influence vehicle operation.
Design Exception	Approved deviation from AASHTO or Department criteria.
Detention Area, Basins, and Pond	Drainage basins specially constructed and used to retard stormwater, discharging at a controlled rate for a specific period of time.
DHV	Design Hourly Volume - the traffic volume on which the functional design of a highway is based.

DPI	Ditch Point of Intersection of ditch grades.
Drainage Areas	The portion of the land surface which drains to a specific point, including paved areas, roofs and unpaved land.
Drainage Divides	The area of higher ground separating drainage areas or basins.
Driver Expectancy	A condition whereby drivers are conditioned, by encounters with repetitive features, to expect a certain driving environment. When that environment is provided, driver reaction is very predictable. When expectancy is violated, drivers may react slowly or improperly.
DHW	Design High Water elevation.
Earthwork	The excavation and filling required to construct embankment.
EIS	Environmental Impact Statement
Embankment	The constructed earth fill and excavation built to carry a road.
ESAL	Equivalent single axle load.
Esthetics	Visual impact of the roadway environment on drivers and other vehicle occupants.

Excavation	Removal of all materials of whatever nature to complete earthen cuts, ditching, sub-excavation and borrow pits.
Exceptions	Those portions of the roadway within the project limits that are excluded.
Fill	A portion of the proposed cross section which falls above the existing groundline and indicating volume of fill.
Flow Line	The inside low point or lowest line of water flow in an open gutter, swale, ditch or other drainage element.
Freeway	An expressway with fully controlled access - the highest type of arterial highway.
Friction Course	The top layer of an asphalt pavement to provide resistance to skidding, traffic abrasions and the disintegrating effects of climate.
Functional Classification	Classification of highways by design types based on the major geometric features.
F.A.	Federal Aid - used in conjunction with projects having Federal Aid funds.
Geometrics	Visible elements of a roadway, such as alignment, grades, sight distances, widths, slopes, etc.

Grade	A rate of rise or fall on any length, with respect to horizontal.
G.M.	Gross Mile.
High mast	Free standing poles or towers of height 80' or more utilized for highway lighting to provide uniform, and glare free, light distribution over large areas of highway.
30th Highest Hourly Volume	The hourly volume that is exceeded by 29 hourly volumes during a designated year.
Imagery	Visible representation of characters, line drawings and symbols.
K, D and T Values	K: Ratio of DHV to ADT. D: Directional distribution of DHV expressed as a percentage. T: Percentage of trucks, inclusive of light delivery, expressed as percentage of DHV.
Lane Taper	Divergence of lane edge for the purpose of adding or dropping lanes.
Lane Transition	Lateral shift of a travel lane.
Lateral Ditch	A ditch which runs more or less perpendicular to the centerline of roadway.

LER	Limerock Bearing Ratio - specifies load bearing capacity of the material, as related to that of limerock.
Level of Service:	A qualitative rating of the effectiveness of a highway in serving traffic, measured in terms of operating conditions.
Leveling Course	One or more layers of asphalt mix used to restore a distorted existing pavement to a uniform cross section and an acceptable level of rideability.
Limited Access R/W	The Right-of-Way wherein the right of owners or occupants of abutting land, or other persons to access a highway facility is limited to designated points, such as interchanges.
May	Permissive condition.
MUTCD	Manual of Uniform Traffic Control Devices.
MUTS	Manual on Uniform Traffic Studies.
Mylar	Polyester film used as reproducible drafting media.
National Sign Code	Code numbers assigned to standard road signs.
N.M.	Net mile.

Overbuild	Multiple layers of asphalt mix used to build up one side of an existing crown to provide a uniform cross-slope.
Overland Flow	Diffused surface flow of water.
Overlay	The construction of a structural course and, if necessary, leveling course and overbuild course, to increase the service life and improve the rideability of an existing pavement.
Overtopping Elevation	Elevation at or above which water will flow over a structure, the highway grade or a drainage divide.
Pavement Design	Description of the types and thicknesses of various layers constituting a pavement structure.
Pay Item Number	Number assigned by the Department to construction components for pay purposes.
PC Station	Point of Curvature Station - The station at the beginning of a horizontal curve.
PD & E Study	Project Development and Environmental Study.

Photogrammetry	Photographic process of topographic mapping using stereographic plotters.
PID	Plans In District.
PI Station	Station of the Point of Intersection of two tangents.
Plans	The approved plans, including reproductions thereof, showing the location, character, dimensions and details of the work to be done.
Posted Speed	Regulatory speed limit established in accordance with department policy and posted on the roadway.
Profile Grade Line	A longitudinal line which controls the vertical geometry of the project, usually the inside edge of a divided highway or the centerline of an undivided highway.
Profile Grade Point	A specific point along the Profile Grade Line.
PS & E	Plans, Specifications and Estimate.
PT Station	Point of Tangent Station - station at the termination of a horizontal curve and at the beginning of the tangent.

Quality Assurance

Is all planned and systematic actions necessary to provide adequate direction so that all resulting design products can meet predetermined requirements. This includes the establishment of design policies, procedures, standards, guidelines, training and monitoring for compliance.

Quality Control

Following established design policies, procedures, standards and guidelines in the preparation of all design products. This includes the checking and review of individual designs for compliance and good engineering practice.

Ramp

That portion of the traveled way connecting two roadways at a grade separated intersection.

Range

An area of 36 square miles enclosed between nationally established survey lines running north-south, six miles apart, and township lines.

Recovery Area

See "Clear Zone".

Reference Points

One of several fixed objects for which measurements are made to enable a point to be accurately located.

Resurfacing	A supplemental or replacement surface placed on an existing pavement to improve its surface or increase its strength.
Retention Area, Basin or Pond	A drainage facility designed to retain runoff without a direct outlet discharge structure.
Returns	That extension of the roadway which allows entrance and exit to sidestreets, parking lots, etc.
Reverse Curve	A combination of two horizontal curves in opposite directions with a common tangent.
3R	Resurfacing, Restoration, Rehabilitation of a roadway.
R/W	The areas, existing or acquired by permanent easement, for highway purposes.
Sag Vertical Curve	A concave parabolic curve providing a smooth transition between two grades.
Section Lines	Established survey grid lines enclosing approximately a one mile square area of land.
Shall	Mandatory condition.
Shop Drawings	Detailed drawings of elements requiring special fabrication.

Should	Advisory condition.
Shoulder	The portion of the roadway contiguous with the traveled way and used for lateral support of base and surface courses, emergencies and safe recovery of errant vehicles.
Shrinkage	Reduction in volume of soil mass.
Sidedrain	A drainage structure placed more or less parallel to the centerline of a roadway for conveyance of water under driveways, and other such obstructions.
Soil Survey	The exploring and recording of soil types and conditions.
Special Ditch	Roadside ditch whose dimensions do not conform to those shown on the typical section.
Special Provisions	Special directions, provisions or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications.
Specifications	Document containing the directions, provisions, requirements and stipulations relating to the method and manner of performing the work.

Speed Change Lanes	Special lanes provided for the use of accelerating or decelerating vehicles.
Station Equations	Station along an alignment where the numerical continuity is broken.
Storm Sewer or Storm Drain	Pipe system or portion thereof used to collect or convey storm water runoff.
Stabilizing	Process by which the subbase is brought up to a bearing value sufficient to support the base.
Structural Course	One or more layers of asphalt mix placed to provide the major structural component of the pavement or to increase the service life of an existing pavement.
Subbase	The layer or layers of specified or selected material of designated thickness placed on a subgrade to support the basecourse.
Subgrade	The top surface of a roadbed upon which the pavement structure and shoulders are constructed.

Superelevation	A tilt given to a road at a horizontal curve to counteract the effect of centrifugal force.
Superelevation Transition	Transition of a cross section from normal cross slope to full superelevated cross slope, or vice versa.
Surface Course	One or more layers of a pavement structure designed to accommodate traffic load.
Survey Reference Points	Same as reference point.
Template	The sum of elements of widths, depths and cross slopes which define the roadway cross section.
Topography	Representation, on a plan, of the existing physical features in an area.
Township	An area of 36 square miles enclosed between nationally established survey lines running east-west, six miles apart, and range lines.
Travelway	The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

Traversable	Crashworthy roadside conditions that would allow an errant vehicle to regain control without serious damage.
Turning Radius	Outside wheel path of a turning vehicle.
Typical Section	Shows the design elements for the cross section of a proposed roadway.
Underdrains	A subsurface drainage system.
Unsuitable Material	Types of dirt that are classified unsuitable for roadway construction.
Value Engineering	An analysis of materials, processes and products in which functions are related to costs and from which a selection may be made for the purpose of achieving the required function at the lowest overall cost consistent with the requirements for performance reliability and maintainability.
Vellum	Translucent paper used as reproducible drafting media.
Vertical Curve	A parabolic curve used to give smooth transition between tangent grade-change.

Weaving Movement

The crossing of traffic streams moving in the same general direction, accomplished by merging and diverging.

W.P.I. Number

Work Program Item number (assigned by the Department).

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