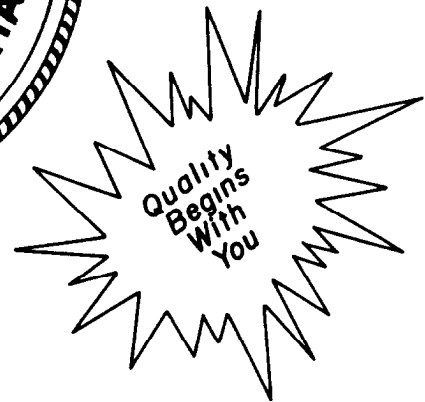
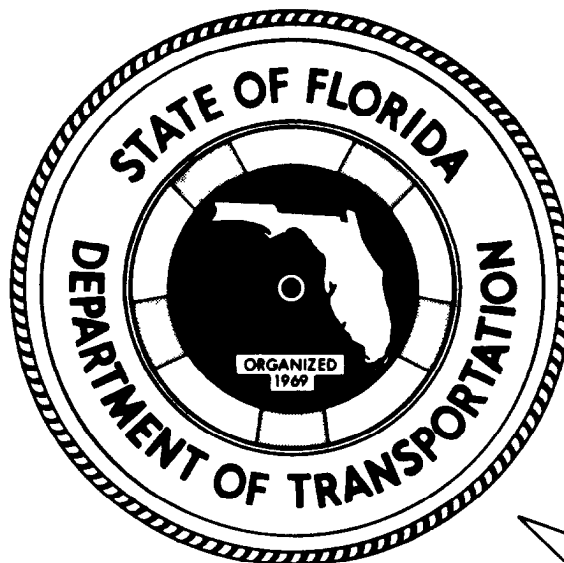


Kirby T. McBee, Jr.

PLANS PREPARATION MANUAL

PROCEDURE NUMBERS 625-000-101 THROUGH 145



ROADWAY DESIGN OFFICE

TALLAHASSEE, FLORIDA

1985

PLANS PREPARATION

QUALITY POLICY

We will produce good plans

- On schedule and within budget if at all possible
- Late and/or over budget if unavoidable

But Always Good Plans

PREFACE

This manual is intended for use as a guide to the preparation of plans for highway construction projects. Its purpose is to promote good engineering practice and good drafting techniques with the ultimate objective of providing a quality set of plans with a high degree of uniformity and maximum readability.

It is designed for use by both engineers and technicians, Department of Transportation employees and consulting firms, engaged in the production of plans for the Florida Department of Transportation.

The manual is divided into five (5) sections. Section I deals with the preparation and assembly of roadway plans, covering the materials and techniques for presenting engineering plans in a uniform and understandable format. Also covered, by reference, are roadway design criteria and procedures.

Sections II, III and IV address the preparation of Structure, Utility and Traffic plans respectively.

Section V contains the role of Value Engineering in Plans Preparation.

Section VI contains appropriate examples of completed plan sheets to illustrate the correct procedures as described in previous sections.

The Department has just begun to utilize a Computer Aided Design and Drafting (CADD) System in plans preparation. A separate manual will be developed for use in conjunction with this manual when utilizing the Department's CADD System. The basic guidelines presented in this manual (i.e., sheet types, lettering and line sizes and types, data to be shown, standard notes, etc.) are to be followed whether the plans are prepared with or without the assistance of the CADD System.

With the implementation of these guidelines it is the intent that all plans be prepared according to the material outlined in the six sections of this manual.

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SECTION I: PREPARATION AND ASSEMBLY OF ROADWAY PLANS








CHAPTER 1
 DRAFTING MATERIALS

1.1 General

1. Introduction - The readability and quality of plans is highly dependent upon the drafting techniques, the drafting materials, and the reproduction processes that are employed. Since the degree of success achieved with any reproduction process is also highly dependent upon the drafting materials used, the choice of appropriate drafting materials is of paramount importance.

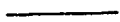





2. Engineering Graphics Requirements - The following drafting practices are to be reflected on all drawings.

	<u>Size</u>	<u>Examples</u>
Character height	8½" x 14" - 120 Guide 22 " x 36" - 140 Guide (Desirable) - 120 Guide (Minimum)	<i>123Abc</i> <i>123Abc</i> <i>123Abc</i>
Spacing between adjacent characters	0.050 inch minimum	<i>abc</i> 
Spacing between lines of characters	½ to 1 times character height minimum	<i>abc</i> 
Shape of Characters	Open, well rounded, uniform width, avoid crowding	<i>Shape</i>
Character Style	Gothic upper or lower case	<i>UPPER or Lower</i>
Density of Characters	Dense and uniform on a high contrast background	
Line width	0.012 inch minimum (Pen Size 00)	
Open space between lines	0.050 inch minimum	
Typed data	12 characters per inch maximum (12 point)	Roadway
Fractions	The total height of the fraction shall be twice that of the integer	<i>1/2</i> 

Recommended ink or pencil Line weight to be equivalent to F or H pencil.

Background of Document Free of undesirable background in all areas that contain information content. No 3rd generation copies. This is particularly a concern on aerial photosheets. Striving for the maximum contrast between the linework and the background will give the best reproduction.

RECOMMENDED WEIGHT OF INK LINES SOLID OR BROKEN

<u>Line and Letter Weight</u>	<u>Template Size (Leroy)</u>	<u>Pen Size (Rapidograph)</u>	<u>Examples</u>
Light		0	
Medium		1	
Heavy		2 or 3	
Very Heavy		4	
Existing Ground		0	
Existing & Point Elevations	140	0	25 2
Datum Elevations	175	1 or 2	30
Sta. No. Plan-Profile	175 or 200	2 or 2½	50 + 00
Sta. No. X-Section	200	2 or 2½	50 + 00
Dimension Line		00	

3. Description of Plan Sheets - all plan sheets shall be 22 inches by 36 inches. The border line shall be ½ inch from the top, bottom and right side, and 1½ inches from the left side, with two ½ inch holes on 12 inch centers punched 5 inches from the top and bottom and ½ inch from left edge and format preprinted. Film sheet shall be polyester film, 3 mil. thickness, double-matte with black imagery. The only exception shall be the plan and profile, profile or cross section sheets which shall have dark green imagery when preprinted on film and a non-erasable green ink on the front side when paper vellum is used.

The Department has no objections to the use of polyester film for plan and profile, profile or cross section sheets.

Key:

Material - Polyester film, black imagery

Format - as adopted (See exhibit 1)

Use - Key Sheet

Drainage Map:

Material - Polyester film, black imagery

Format - 5" depth grid of 1" square blocks, of 10 x 10 units per square inch with I.D. box upper right corner and signature/revision block along the bottom.

(See exhibit 3)

Use - Drainage Map Sheet

Plan and Profile:

Material - Paper vellum or polyester film with green imagery

Format - The top half for the plan, the bottom half containing a 9" depth grid of 1" square blocks of 10 x 10 units per square inch for the profile, with I.D. box upper right hand corner and signature/revision block along the bottom.

(See exhibit 21)

Use - Plan and Profile, Lateral Ditch or Outfall Ditch Sheet

Profile (Also used as Cross Section Sheet):

Material - Paper vellum or polyester film with green imagery

Format - A 19" depth by 32" width grid 1" square of 5 x 25 units per square, with I.D. box upper right hand corner and signature/revision block along the bottom

(See exhibit 35)

Use - Roadway Cross-section, Special Profiles, Mass Diagrams,
and Drainage Structures Sheets

Plan:

Material - Paper vellum or polyester film with green imagery

Format - Border with I.D. box upper right hand corner of sheet and
signature/revision block along the bottom

(See exhibit 41)

Use - Typical Sections, Summary of Quantities, Summary of Drainage
Structures, Special Details, Design Data, and Roadway Survey
Sheets.

Bridge Design Data:

Material - Polyester film with black imagery

Format - As adopted (See exhibit 48)

Use - For Hydraulic Data in the Design of Bridges and Bridge
Culverts

Borrow Pit Soil Survey:

Material - Paper vellum or polyester film with green imagery

Format - As adopted (See exhibit 32)

Use - Borrow Pit Soil Survey

Utility:

Material - Film or reverse - sepia

Format - An intermediate from plan-profile sheets

Use - Utility Adjustment Sheets

Miscellaneous Construction Details:

Material - Intermediate film polyester film

Format - An intermediate of a plan-profile, cross-section, or special detail sheet.

Use - Construction Details, Detour Plan Sheets or Maintenance of Traffic Plan.

Clearing and Grubbing:

Material - Polyester Film

Format - Aerial photo sheet

Use - Selective clearing and grubbing details

Right of Way

Material - Polyester film with black imagery

Format - Border with I.D. box lower right hand corner of sheet

Use - Right of Way Maps (Right of way maps are not normally part of the construction plans, however, they are a basis for or may be part of the legal description of parcels which are acquired for the project.)

1.2 Drafting Media

1. Drafting Films - Shall be a highly translucent, 3 mil. thickness double-matte polyester film.

2. Tracing and Drafting Cloth - No longer used in the preparation of plans.

3. Drafting Vellums - Shall be 16 or 17 lb. (medium weight) or .0027" thickness, 100% white rag, fine or medium toothed with 50% transparency.

4. List of Approved Drafting Media

DOT STOCK
NUMBER

621-965 Plan and Profile Vellum Sheets.

621-963 Profile Vellum Sheets and Cross Section Sheets.

621-973 Plan Film Sheets

1.3 Intermediates

1. Intermediate Film - Shall be double-matte, 3 mil. thickness, polyester film, with black imagery, standard exposure speed for ammonia-developing printmakers.

2. Intermediate Paper - Shall be an erasable, 100% rag paper, standard speed with either sepia or black imagery.

3. Applique Film - Shall be a clear or matted polyester, heat resistant, adhesive-back film with a black reproducible imagery.

Note: Applique film is designed to reduce repetitive drafting of recurring drawing elements such as Location Maps. Because of problems in the reproduction process, any stick-on must be made of a heat resistant adhesive.

1.4 Xerographic Technical Products

1. Erasable Xerographic Vellum - Should be a high-quality translucent vellum yielding a black, well-defined, high-contrast xerographic image which will produce a highly readable reprint.

2. Erasable Xerographic Bond - Should be a high-quality bond paper and yield a black, well-defined, high-contrast xerographic image.

3. Erasable Xerographic Film - Should be a matte or clear-surfaced polyester drafting film that is specially designed to accept an erasable xerographic image.

4. Xerographic Drafting Applique Film - Should be 1.5 mil., matte-surfaced polyester film with a heat-resistant adhesive back. The matte drafting surface yields black, well-defined, highly reproducible xerographic copies and will accept pencil, ink or typewritten images.

1.5 Graphic Aids

1. Graphic Aid Requirements - All graphic aids must reflect the following standards.

- a. Sharp printing which assures quality reproduction.
- b. Must transfer quickly and adhere easily to a variety of surfaces.
- c. Must be able to resist abrasion and cracking.
- d. Their adhesive must be heat resistant for copying.
- e. An intermediate film or photocopy of the final original should be made and inserted in the plans to reduce problems during reproduction.

2. Graphic Films - A pressure sensitive film either an acetate or mylar base film for shading and patterns.

3. Graphic Tapes- Are available in a variety of different types and sizes.

1.6 Ordering Information

1. Plan Sheet Supply Sources (for Department Offices):

Photo Positives - Standard plan sheet formats are available from the Florida Department of Transportation Photo Lab, Tallahassee, Florida, upon request via reproduction order form 301. Aerial Photo Sheets are also available from the Photo Lab. Be sure to specify one of the following types of matte finishes when ordering:

Clearview Matte - Used as an intermediate to run film sheets.

Note: Special care should be used to avoid any dark background.

Single-Matte - Not recommended for use in plan preparations.

Double-Matte - Used as an original sheet.

Department of Transportation's supply unit will provide the following sheets upon request via a requisition form 244-01.

621-965 Plan and Profile (Vellum)

621-963 Profile or Cross Sections (Vellum)

621-973 Plan (Film)

2. List of Recommended Products:

Intermediate Film

<u>Vendor</u>	<u>Catalog No.</u>
Ozalid	102 PC3
Dietzgen	F 247 ME 3
K & E	23 5203
Teledyne Post	14B3

Intermediate Paper (Sepia)

Ozalid	402Zt
Dietzgen	N 244 P
K & E	21 2145
Teledyne Post	14AA

Vellum

Ozalid	880-250
Dietzgen	196M
K & E	10 9155
Teledyne Post	1843

Diazo Applique Film

Ozalid 402 AP2

Dietzgen GF247 E2

Xerographic Applique Film

Ozalid 802

Intermediate Film Eradicator

K & E 58-0246

3. List of Vendors :

AM Addressograph Multigraph Corporation

Bruning Division

7151 Lake Elenor Drive

Orlando, Florida 32809

1-800-432-5008

Dietzgen Corporation

P.O. Box 25

Tucker, Georgia 30085

(404) 934-5240

K & E Company

P.O. Box 8907

Orlando, Florida 32856

(305) 423-1641

Ozalid Corporation

7445 Exchange Drive
Orlando, Florida 32809
1-800-432-2916

Teledyne Post
4000 Pleasantdale Road
Atlanta, Georgia 30340
(404) 447-5850

1.7 Troubleshooting

1. Key Sheets - Avoid drafting the map portion of the Key Sheet. Instead, use an existing map of the project area and combine with the basic Key Sheet format (carrying title, index of sheets, etc.) to produce the finished Key Sheet. Suggested methods of accomplishing this are as follows:

- a. Use a xerographic applique film or xerographic film to make a transparent positive from a map of the project area (note: must be free of undesirable background). Place map on the basic Key Sheet format and make Diazo Intermediate Film by exposing in an ozalid machine to produce the finished base Key Sheet.
- b. Use a photo positive of the location map in conjunction with a photo positive of the basic Key Sheet format and make an Intermediate Film by exposing in an ozalid machine to produce the finished base Key Sheet.
- c. Attach an opaque or translucent copy of the location map to a similar copy of the basic Key Sheet format and forward to Tallahassee where the finished Key Sheet will be made by our Photogrammetry department. (For in-house plans preparation.)

Do not use an Intermediate film or paper to make the Location Map to be placed on the Key Sheet.

2. Aerial Photo Plan Sheets - Use ink only. Do not put notes in the dark areas of the Aerial Photo sheets without using a photographic eradiator to remove the emulsion behind the note.

3. Drafting Tips:

Erasing - The erasing of pencil lines and ink lines is a necessary technique to learn. When changing a detail a technician should use a soft pencil eraser so as not to damage the finish of the paper. Heavier lines are best removed with a Ruby pencil eraser. If the paper has been grooved by the line, it may be rubbed over with a burnisher or even with the back of the thumbnail. In erasing an ink line, hold the paper down firmly and rub lightly and patiently with a Ruby pencil eraser, first along the line and then across it, until the ink is removed. A triangle slipped under the sheet acts as a good backing surface.

When an erasure is made close to other lines, select an opening of the best shape on the erasing shield and rub through it, holding the shield down firmly, first seeing that both of it's sides are clean. Wipe the eraser crumbs off the paper with a dustcloth or brush. Never scratch out a line or blot with a knife or razor blade, and use so-called ink erasers sparingly, if at all.

For extensive erasing, an electric erasing machine is a great convenience.

Film Erasing - For small areas dampen eraser for ease of erasing cleanly on drafting film without removing the emulsion.

For larger areas use a cloth, water, and an abrasive to remove the ink from the film.

Inking - To prevent ink from smearing use a piece of drafting tape on the lower edges of square, circle symbol templates, and triangles.

Pens - Keep pens in humidified system. When in use, wipe pen points with damp cheesecloth to clean points off.

Points Worth Noting:

Never use the scale as a ruler for drawing lines.

Never cut paper with a knife and the edge of the triangle as a guide.

Never work with a dull pencil.

Never sharpen a pencil over the drawing board.

Never jab the dividers into the drawing board.

Never oil the joints of compasses.

Never use the dividers as reamers, pinchers, or picks.

Never use a blotter on inked lines.

Never hold the pen over the drawing while filling.

Never try to use the same thumbtack holes in either paper or board when putting paper down a second time.

Never scrub a drawing all over with an eraser after finishing. It takes the life out of the lines.

Never begin work without wiping off the table and instruments.

Never put instruments away without cleaning them. This applies with particular force to pens.

Never fold a drawing or tracing.

1.8 Glossary

Applique film - a polyester material attached by an adhesive glue.

Background density - the density of that portion of the negative

image in which no inscription appears.

Blackline - an ozalid print with white background and black lines.

Blueline - an ozalid print with white background and blue lines.

Blueprint - a photographic reproduction with white lines on a blue background.

Brownline print - a sepia line print with a white background made on a silver-sensitized paper by printing through a negative.

Burnisher - a tool used to rub or polish.

Cloth - a woven or pressed fabric of fibrous material as cotton, wool, synthetic fiber, etc. for drafting.

Diazo - a film or paper sensitive to ultraviolet light or an ozalid copying machine.

Drawing (reproducible) - a translucent drawing that can be used to make copies by any contact process.

Film - a sheet or roll of a polyester translucent material.

Film pencil - a pencil with a thin stick of plastic for use on polyester.

Generation - a photographic reproduction made from an original for another reproducible, i.e., original camera negative is first generation, copy obtained from original camera negative is second generation, copy from this copy, third generation, etc.

Guide - a semi-rigid, warp resistant white plastic, engraved with symbols through the surface, exposing the inner black layer for permanent color contrast. To be used with a scribe for controlled lettering.

Ink - a finely ground carbon in suspension, with natural or synthetic gum added to make the mixture waterproof. Non-waterproof ink flows more freely but smudges easily.

Intermediate - that print which is used as a master for further reproductions.

Lead pencil - a pencil with a thin stick of graphite.

Leroy - a Keuffel & Esser Company trademark for lettering equipment.

Mylar - a Dupont Co. trademark for a polyester made in extremely thin sheets of great tensile strength or a commonly used name for a film reproduction.

Nonreproducible - a term generally used to denote a document which, because of its material, is not capable of a satisfactory reproduction.

Ozalid - a trademark for a machine or process for producing positive prints made directly from original drawings or printed material and developed dry in the presence of ammonia vapor.

Paper - a thin flexible material made usually in sheets from pulp, prepared from rags, wood or other fibrous materials and used for writing or printing on.

Pen - a device used in writing or drawing with ink.

Photopositive (or photocopy) - a positive image produced by the chemical action of light using photography via a negative or direct projection or contact on a material which has a photosensitive surface.

Print - a copy of a drawing. Conventionally, this term is considered to mean a full or reduced size copy made by projection or contact.

Rapidograph - a Koh-I-Noor trade name for technical drawing equipment

Right reading - an image which is readable from the front or image side of the material.

Scriber - a precision-made instrument, designed to receive a pen, and

in conjunction with the scribe guide make uniform letters.

Sepia - a dark reddish-brown color, or a print of sepia color.

Template - a pattern usually in the form of a thin metal, wooden or plastic plate, for forming an accurate copy of an object or shape.

Tracing paper - a natural or transparentized sheet of paper on which drawings are traced.

Translucent - admitting the passage of light; partially transparent

Vellum - a fine kind of parchment prepared from calfskin, lambskin, or kidskin or a strong paper made to resemble vellum used for reproduction purposes.

Xerography - a process for copying printed material, pictures, etc., by means of a dry ink copier, i.e., xerox copy.

Approved:



Effective: August 15, 1985
Sequence No.: 4
Responsible Office: Roadway Design
Topic No.: 625-000-102-a

CHAPTER 2

KEY SHEET

This sheet is the first one in the plans and contains general information concerning the project and the plans themselves. It is prepared on standard printed polyester film, as noted in Chapter 1, with the following information listed.

2.1 Location Map

This map is placed in the center of the sheet and consists of a reproduced portion of one or more county maps showing the project locations. City maps usually are used for municipal projects. Any convenient scale may be used for rural projects. Avoid drafting the map portion of the Key Sheet. Instead it is suggested that one of the methods described in Chapter 1, Section 1.7, be used. This will reduce drafting effort and expedite sheet preparation.

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 limits are shown, as are urban limits where applicable. The population of incorporated towns and cities and census year is not required.

If a city map is used, streets should be shown and named, State highways are shown by State Road number and U.S. highway number if appropriate, the name of the next principal city to which these roads lead is placed at the edge of the map. Roads and topography are indicated by standard symbols as shown in the Roadway and Traffic Design Standards.

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

When several projects are covered by the same set of plans, the beginning and end of each project must be indicated clearly by Project Number and stationing.

The scale of the location map should be chosen so it will not interfere with other features of the Key Sheet. A common error is to place 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.

Sometimes project flags are inked in advance of completion of the Key Sheet and when it is completed, interference with these flags is encountered. The flags should be arranged whenever possible to lie outside the body of the map.

2.2 North Arrow and Scale

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

2.3 Project Number, County Name and Road Number

These are in the form of a title and large heavy letters are used. They are placed above the location map.

Where Federal Project numbers are involved, the corresponding State Project number is placed adjacent to the Federal Project number in brackets. Project numbers, road number and name of county should be inked with a mechanical lettering device. All of the remaining lettering on the Key Sheet may be free hand.

Projects that are independently prepared and are to be let in the same contract must have the additional project numbers (Federal and State) noted in the lower right hand corner of each Key Sheet.

2.4 Work Project Item Number and Fiscal Year

The work project item number is placed adjacent to the sheet number box. The Fiscal Year that is to be entered in the Fiscal Year box is the first year in the Fiscal year, i.e., enter 85 for Fiscal Year 85/86.

2.5 Length of Project Box

Lengths of roadway, bridges, bridge culverts, exceptions, net and gross lengths are shown in a box at center of sheet below the location map. The net length of project is computed by taking the total length of roadway and bridges in feet and converting to miles, dropping all numbers past the thousandth of a mile, without rounding off. The roadway and/or bridge mileage will then be rounded so that their total equals the net length. Usually the baseline is used for calculating the project length. For divided highways with significantly different lengths for the left and right roadways, project length should be based on the longest. A note stating which roadway was used should be placed adjacent to the project length box.

The Begin Project and End Project points are the basis for estimating length; Begin and End Construction points are not to be used for computing the length of the project.

2.6 Plans in Contract Plans Set

A listing of plans included in the contract plans set shall be shown in the upper left corner. Order of listing will be Summary of Pay Items, Box Culvert Design Data, Flood Data (when computerized, see page 40), Roadway, Signing and Pavement Marking, Signalization, Lighting, Landscaping, Architectural, and Structure. The total number of Summary of Pay Item and Box Culvert Design Data Sheets are to be shown. If signing and pavement markings, signalization, etc., are numbered consecutively with Roadway Plans, they will not be required to be shown as separate contract plan sets.

2.7 Index of Sheets and Standard Index Reference

A complete index of roadway plans sheets must be placed on the left side of the Key Sheet under the printed heading. When projects contain plan sets such as Structures, Signing, Signalization, etc., each plan set will have an index of sheets on their respective Key Sheets. Standard Index drawings necessary for the project(s) are listed under Roadway and Traffic Design Standards (with booklet date shown). Listing the indexes by number is all that is required. Plan details or notes which require the use of one or more of the standard indexes are to include specific reference to these indexes in addition to listing them on the key sheet. Listing the standard index on the key sheet only, does not convey adequately where or when the index is to be used. Approach slab details, any standards revised between publication of booklets or any other drawing

or special details not included in the booklets will be numbered and included in the index of plans.

The order of placing the sheets in the roadway plans set is as follows:

Key Sheet

Summary of Pay Items

Box Culvert Design Data

Drainage Map

Typical Section

Summary of Quantities

Summary of Drainage Structures

Mass Diagram

Back of Sidewalk Profiles

Roadway Plan-Profiles

Intersection/Interchange Details

Intersection/Interchange Profiles

Drainage Structures

(Lateral Ditch) Plan-Profiles

(Lateral Ditch) Cross-Sections

Cross-Section Pattern Sheet

Borrow Pit Soil Survey

Roadway Soil Survey

Cross Sections

Maintenance of Traffic Details

Utility Contract Plan-Profiles

Utility Adjustments

Approach Slabs

Traffic Plans (when included as part of Roadway Plans)

Special Box Culvert Details (when required)

Bridge Design Data Sheets (For Bridge Culverts when there
are no structure plans)

Selective Clearing and Grubbing Details

2.8 Governing Specifications

The date of the governing specifications is inserted in the printed note at the lower right corner of the Key Sheet and supplement note added.

2.9 State Map

A small scale map is printed at the upper right portion of the Key Sheet. The location of the project shall be indicated thereon.

2.10 Railroad Crossing

When the project involves a railroad crossing, a sketch will be shown on the Key Sheet showing the station of crossing, railroad company name and FDOT/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 Key Sheets for resurfacing projects or mini plans.

2.11 Consultant's Name

For plans prepared by a consultant firm, the name of that firm will be shown on the right hand side of the sheet. The consultant name should also be shown on each sheet within the plans. Proper location would be the lower right just above the title box or utilize a portion of title box reserved for the sheet title.

2.12 Approval Signature

For in-house and consultant prepared plans the responsible Professional

Engineer's approval signature must be included on the Key Sheet. For specific instructions on signing and sealing plans, see Chapter 30.

2.13 Revision Dates

The lead Key Sheet (usually Roadway) will show a complete record of all plan revisions. This includes not only the roadway revisions but revisions to the components (Structures, Signing and Pavement Markings, Lighting, Architectural, Summary of Pay Items, etc.) as well. This record of plan sheet revisions will be shown directly below the list of Standard Index drawings and will give revision date and sheet number.

EXHIBIT 1 - Illustrates a completed Key Sheet

EXHIBIT 2 - Illustrates various Key Sheet Titles

Approved:



Effective August 15, 1985
Sequence No.: 5
Responsible Office: Roadway Design
Topic No.: 625-000-103-a

CHAPTER 3

SUMMARY OF PAY ITEMS AND BOX CULVERT DESIGN DATA SHEETS

3.1 General

The summary of Pay Item sheets are computer generated and show all items and estimated quantities for the project or projects in a contract. These sheets are part of the contract plan set and are placed directly behind the lead Key Sheet (usually roadway). This includes all summaries for the component parts, i.e. structures, signing and pavement markings, etc., as well as for additional projects in the contract. These sheets should be inserted in the same order of listing that is used for a contract plans set (see Section 2.6). For additional information on coding procedures for CES sheets, see the CES and LRE manual.

3.2 Summary of Pay Item Worksheet

After plans are complete, a worksheet summary of pay items or coding forms will be prepared by the design section. These will be used for input into CES and generating the summary of pay item plan sheet.

3.3 Pay Item Footnotes

Footnotes for the appropriate items will be shown on the summary of quantities sheet or the typical section sheet for small projects.

3.4 Mini Plans

Summary of pay item sheets will have to be trimmed to 8½" x 14" for use in mini plans.

3.5 CES Input and Generation of Summary of Pay Item Plan Sheet

The CES coordinator will input data by using the worksheets or coding forms furnished by the design section. When printouts of summaries are obtained, plans can be sent to Tallahassee. Copies should be made from the original and retained in the District office.

Summary of pay items for contracts containing more than one project shall be obtained by requesting only the lead project number. Projects are to be strung in the same order as they appear above the location map on the Key Sheet.

The Tallahassee Structures section will input bridge summaries for structure plans prepared in Tallahassee. Structures should be loaded individually by structure number. The computer summary will print out individual structure quantities and a composite total for all structures on a project or a contract. The Tallahassee Roadside Development section will input landscaping summaries for plans prepared by their office.

Lighting plans prepared in Tallahassee will be loaded by Tallahassee Traffic Plans section.

All projects will be left open in the computer file until the initial estimate is prepared by the Preliminary Estimates Office. Usually this occurs just after the plans are sent to reproduction. This allows the design section to make any necessary changes to their summary of pay item sheets until final printing. Each time a revision is made to the summary of Pay Item sheet, a new computer printout must be obtained and inserted in the plans. If the District office desires to change plans that are in Tallahassee, a new printout must be obtained and sent to Tallahassee for insertion in the plans. After plans are sent to reproduction, the file will be locked.

Special attention is to be given in the identification of pay items for utility work by the highway contractor. Refer to the Utilities Master Pay Item List or consult with the Preliminary Estimates Section for appropriate application.

3.6 New Pay Item Numbers

New pay items must be requested not less than two weeks before plans to Tallahassee date, so that they can be placed in the system. New Roadway Pay Items are to be requested through the Roadway Design Office in Tallahassee.

3.7 Revision Dates

When summary of pay items are revised, revision dates should be shown across the top of the sheet. When printouts are obtained for revisions, existing revision dates plus the new revision date must be added to the new summary.

3.8 Significant Figures in Estimating Quantities

In estimating the quantity amounts, the accuracy (significant figures) should be as indicated in the "Basis of Estimate and Computations" manual. The majority of items are rounded to the nearest whole number with a few items calculated to tenths.

3.9 Box Culvert Design Data Sheets

When these are included in the plans they are placed directly behind the summary of Pay Items. They are handled just like summary of Pay Items sheets when included in mini plans or when revisions are necessary.

Sheets 27 thru 35 illustrate various Summary of Pay Items.

Sheets 36 thru 37 illustrate Box Culvert Design Data Sheets.

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3/22/85
13.09.48

ITEM NUMBER	SUMMARY OF ROADWAY	PAY ITEMS	CONTRACT ITEMS CONTINUED		QUANTITY TOTAL
			00000-0000	00000-0000	
ITEM NUMBER	ITEM	UNIT	FA PART	IFA NON PART	
425-3	JUNCTION BOXES (P-7NT)	(10")	1.000		1.000
425-7	JUNCTION BOXES (J-7NT)	(10")	1.000		1.000
430-8	CORR ALUM PIPE	(15" SS)	1308.000		1308.000
430-9	CORR ALUM PIPE	(18" SS)	1987.000		1987.000
430-10	CORR ALUM PIPE	(24" SS)	2172.000	148.000	2320.000
430-11	CORR ALUM PIPE	(30" SS)	1935.000		1935.000
430-12	CORR ALUM PIPE	(36" SS)	2177.000	56.000	2233.000
430-13	CORR ALUM PIPE	(42" SS)	709.000		709.000
430-14	CORR ALUM PIPE	(48" SS)	1200.000		1200.000
430-15	CORR ALUM PIPE	(54" SS)	1264.000		1264.000
430-16	CORR ALUM PIPE	(60" SS)	282.000		282.000
430-17	CORR ALUM PIPE	(60" CD)	146.000		146.000
430-18	CORR ALUM PIPE	(78" CD)	100.000		100.000
430-19	CAST IRON PIPE	(24")	36.000		36.000
430-20	FLARE END SECTION				
430-21	PIPE HANDRAIL				
430-22	FLARE END SECTION				
515-1	PIPE HANDRAIL				
515-2	FLARE END SECTION				
570-1	WATER FOR GRASS				
575-1	SODDING				
533-1	TYPE ASPH CONC (INC BIT)	(FC-1 OR FC-4)	753.000	23.000	776.000
533-2	TYPE ASPH CONC (INC BIT)	(FC-1 OR FC-4)	6525.000		6525.000
400-1	ASPH CONC		30.000	1.100	31.100
400-2	GLASS CONC		67.000		67.000
400-3	REFINISH		5938.000		5938.000
415-1	INLETS (CURB)	(10")	33.000		33.000
425-1	INLETS (CURB)	(10")	9.000		9.000
425-2	INLETS (CURB)	(10")	4.000		4.000
425-3	INLETS (CURB)	(10")	3.000		3.000
425-4	INLETS (CURB)	(10")	8.000		8.000
425-5	INLETS (CURB)	(10")	19.000		19.000
425-6	INLETS (CURB)	(10")	4.000		4.000
425-7	INLETS (CURB)	(10")	4.000		4.000
425-8	INLETS (DI BOT)	(10")	3.000		3.000
425-9	INLETS (DI BOT)	(10")	7.000		7.000
425-10	INLETS (DI BOT)	(10")	1.000		1.000
425-11	INLETS (DI BOT)	(10")	1.000		1.000
425-12	MANHOLES (J-7NT)	(10")	1.000		1.000
425-13	JUNCTION BOXES (P-7NT)	(10")	2.000		2.000
430-14	CORR STEEL PIPE	(15" SS)	1.000		1.000
430-15	CORR STEEL PIPE	(18" SS)	758.000		758.000
430-16	CORR STEEL PIPE	(24" SS)	1253.000		1253.000
430-17	CORR STEEL PIPE	(30" SS)	654.000		654.000
430-18	CORR STEEL PIPE	(36" SS)	638.000		638.000
430-19	CORR STEEL PIPE	(42" SS)	684.000		684.000
430-20	CORR STEEL PIPE	(48" SS)	684.000		684.000
430-21	CORR STEEL PIPE	(54" SS)	669.000		669.000
430-22	CORR STEEL PIPE	(60" SS)	665.000		665.000
430-23	BIT COATED CORR STEEL	(18" SS)	1654.000	148.000	1802.000
430-24	BIT COATED CORR STEEL	(24" SS)			

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13,622.82

ITEM NUMBER	SUMMARY	UF	ROADWAY	PAY ITEMS	ITEM	CONTRACT ITEMS CONTINUED		QUANTITY
						UNIT	FA PART	
430-3-125	BIT COATED CORR STEEL			(30"	SS)	LF	315.000	315.000
430-3-126	BIT COATED CORR STEEL			(36"	SS)	LF	1125.000	1125.000
430-3-127	BIT COATED CORR STEEL			(42"	SS)	LF	1161.000	1161.000
430-3-128	BIT COATED CORR STEEL			(48"	SS)	LF	480.000	480.000
430-3-129	BIT COATED CORR STEEL			(54"	SS)	LF	760.000	760.000
430-3-130	BIT COATED CORR STEEL			(60"	SS)	LF	1192.000	1192.000
430-3-131	BIT COATED CORR STEEL			(66"	SS)	LF	1482.000	1482.000
430-3-132	BIT COATED CORR STEEL			(72"	SS)	LF	1872.000	1872.000
430-3-133	BIT COATED CORR STEEL			(78"	SS)	LF	2262.000	2262.000
430-20-1	FLARE END SECTION			(24"	CD)	EA	1.000	1.000
430-20-2	FLARE END SECTION			(24"	CD)	EA	1.000	1.000
430-90-1	PIPE HANDRAIL					LF	36.000	36.000
430-90-2	PIPE HANDRAIL					LF	36.000	36.000
430-90-3	PIPE HANDRAIL					LF	36.000	36.000
430-90-4	PIPE HANDRAIL					LF	36.000	36.000
430-90-5	PIPE HANDRAIL					LF	36.000	36.000
430-90-6	PIPE HANDRAIL					LF	36.000	36.000
430-90-7	PIPE HANDRAIL					LF	36.000	36.000
430-90-8	PIPE HANDRAIL					LF	36.000	36.000
430-90-9	PIPE HANDRAIL					LF	36.000	36.000
430-90-10	PIPE HANDRAIL					LF	36.000	36.000
430-90-11	PIPE HANDRAIL					LF	36.000	36.000
430-90-12	PIPE HANDRAIL					LF	36.000	36.000
430-90-13	PIPE HANDRAIL					LF	36.000	36.000
430-90-14	PIPE HANDRAIL					LF	36.000	36.000
430-90-15	PIPE HANDRAIL					LF	36.000	36.000
430-90-16	PIPE HANDRAIL					LF	36.000	36.000
430-90-17	PIPE HANDRAIL					LF	36.000	36.000
430-90-18	PIPE HANDRAIL					LF	36.000	36.000
430-90-19	PIPE HANDRAIL					LF	36.000	36.000
430-90-20	PIPE HANDRAIL					LF	36.000	36.000
430-90-21	PIPE HANDRAIL					LF	36.000	36.000
430-90-22	PIPE HANDRAIL					LF	36.000	36.000
430-90-23	PIPE HANDRAIL					LF	36.000	36.000
430-90-24	PIPE HANDRAIL					LF	36.000	36.000
430-90-25	PIPE HANDRAIL					LF	36.000	36.000
430-90-26	PIPE HANDRAIL					LF	36.000	36.000
430-90-27	PIPE HANDRAIL					LF	36.000	36.000
430-90-28	PIPE HANDRAIL					LF	36.000	36.000
430-90-29	PIPE HANDRAIL					LF	36.000	36.000
430-90-30	PIPE HANDRAIL					LF	36.000	36.000
430-90-31	PIPE HANDRAIL					LF	36.000	36.000
430-90-32	PIPE HANDRAIL					LF	36.000	36.000
430-90-33	PIPE HANDRAIL					LF	36.000	36.000
430-90-34	PIPE HANDRAIL					LF	36.000	36.000
430-90-35	PIPE HANDRAIL					LF	36.000	36.000
430-90-36	PIPE HANDRAIL					LF	36.000	36.000
430-90-37	PIPE HANDRAIL					LF	36.000	36.000
430-90-38	PIPE HANDRAIL					LF	36.000	36.000
430-90-39	PIPE HANDRAIL					LF	36.000	36.000
430-90-40	PIPE HANDRAIL					LF	36.000	36.000
430-90-41	PIPE HANDRAIL					LF	36.000	36.000
430-90-42	PIPE HANDRAIL					LF	36.000	36.000
430-90-43	PIPE HANDRAIL					LF	36.000	36.000
430-90-44	PIPE HANDRAIL					LF	36.000	36.000
430-90-45	PIPE HANDRAIL					LF	36.000	36.000
430-90-46	PIPE HANDRAIL					LF	36.000	36.000
430-90-47	PIPE HANDRAIL					LF	36.000	36.000
430-90-48	PIPE HANDRAIL					LF	36.000	36.000
430-90-49	PIPE HANDRAIL					LF	36.000	36.000
430-90-50	PIPE HANDRAIL					LF	36.000	36.000
430-90-51	PIPE HANDRAIL					LF	36.000	36.000
430-90-52	PIPE HANDRAIL					LF	36.000	36.000
430-90-53	PIPE HANDRAIL					LF	36.000	36.000
430-90-54	PIPE HANDRAIL					LF	36.000	36.000
430-90-55	PIPE HANDRAIL					LF	36.000	36.000
430-90-56	PIPE HANDRAIL					LF	36.000	36.000
430-90-57	PIPE HANDRAIL					LF	36.000	36.000
430-90-58	PIPE HANDRAIL					LF	36.000	36.000
430-90-59	PIPE HANDRAIL					LF	36.000	36.000
430-90-60	PIPE HANDRAIL					LF	36.000	36.000
430-90-61	PIPE HANDRAIL					LF	36.000	36.000
430-90-62	PIPE HANDRAIL					LF	36.000	36.000
430-90-63	PIPE HANDRAIL					LF	36.000	36.000
430-90-64	PIPE HANDRAIL					LF	36.000	36.000
430-90-65	PIPE HANDRAIL					LF	36.000	36.000
430-90-66	PIPE HANDRAIL					LF	36.000	36.000
430-90-67	PIPE HANDRAIL					LF	36.000	36.000
430-90-68	PIPE HANDRAIL					LF	36.000	36.000
430-90-69	PIPE HANDRAIL					LF	36.000	36.000
430-90-70	PIPE HANDRAIL					LF	36.000	36.000
430-90-71	PIPE HANDRAIL					LF	36.000	36.000
430-90-72	PIPE HANDRAIL					LF	36.000	36.000
430-90-73	PIPE HANDRAIL					LF	36.000	36.000
430-90-74	PIPE HANDRAIL					LF	36.000	36.000
430-90-75	PIPE HANDRAIL					LF	36.000	36.000
430-90-76	PIPE HANDRAIL					LF	36.000	36.000
430-90-77	PIPE HANDRAIL					LF	36.000	36.000
430-90-78	PIPE HANDRAIL					LF	36.000	36.000
430-90-79	PIPE HANDRAIL					LF	36.000	36.000
430-90-80	PIPE HANDRAIL					LF	36.000	36.000
430-90-81	PIPE HANDRAIL					LF	36.000	36.000
430-90-82	PIPE HANDRAIL					LF	36.000	36.000
430-90-83	PIPE HANDRAIL					LF	36.000	36.000
430-90-84	PIPE HANDRAIL					LF	36.000	36.000
430-90-85	PIPE HANDRAIL					LF	36.000	36.000
430-90-86	PIPE HANDRAIL					LF	36.000	36.000
430-90-87	PIPE HANDRAIL					LF	36.000	36.000
430-90-88	PIPE HANDRAIL					LF	36.000	36.000
430-90-89	PIPE HANDRAIL					LF	36.000	36.000
430-90-90	PIPE HANDRAIL					LF	36.000	36.000
430-90-91	PIPE HANDRAIL					LF	36.000	36.000
430-90-92	PIPE HANDRAIL					LF	36.000	36.000
430-90-93	PIPE HANDRAIL					LF	36.000	36.000
430-90-94	PIPE HANDRAIL					LF	36.000	36.000
430-90-95	PIPE HANDRAIL					LF	36.000	36.000
430-90-96	PIPE HANDRAIL					LF	36.000	36.000
430-90-97	PIPE HANDRAIL					LF	36.000	36.000
430-90-98	PIPE HANDRAIL					LF	36.000	36.000
430-90-99	PIPE HANDRAIL					LF	36.000	36.000
430-90-100	PIPE HANDRAIL					LF	36.000	36.000

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SUMMARY OF ROADWAY PAY ITEMS		CONTRACT ITEMS CONTINUED		QUANTITY	
ITEM NUMBER	ITF M	UN IT	00000-0000 FA PART	00000-0000 FA NON PART	TOTAL
575-1-	SODDING	SY	672.000	19.000	691.000
430-15-	CAST IRON PIPE CULV (STANDARD)	LF	100.000		100.000
430-96-	POLYVINYL CHLORIDE PIPE (4")	LF	100.000		100.000
300-72-	BUT MAIL (BACK COAT)	CA	16433.000		16433.000
5337-1-	TYPE S ASPH CONC (INC BIT) (3")	SY	112426.000		112426.000
300-72-	TYPE S ASPH CONC (INC BIT) (1") (FC-1 OR 4)	SY	113534.000		113534.000
300-1-	ASPH CONC FRICTION COURSE (JACK COAT)	GA	16433.000		16433.000
5337-1-	BUT MAIL	SY	112426.000		112426.000
300-72-	TYPE S ASPH CONC (INC BIT) (3 1/2")	SY	113534.000		113534.000
5337-1-	ASPH CONC FRICTION COURSE (INC BIT) (5/8") (FC-2)	SY	113534.000		113534.000

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ITEM NUMBER	SUMMARY OF SIGNING	PAY ITEMS	UNIT	00000-0000		QUANTITY
				FA	PART	
						TOTAL
630-1-12	CONDUIT		LF	4.000		4.000
630-1-12	SPEED LIMIT SIGN		LF	4.000		4.000
700-1-1	ROADSIDE SIGN	ASSEMBLY (FIELD)	LF	2.000		2.000
700-1-3	ROADSIDE SIGN	(RT MARKER SINGLE)	LF	14.000		14.000
700-1-4	ROADSIDE SIGN	(RT MARKER DOUBLE)	LF	2.000		2.000
700-1-10	ROADSIDE SIGN	(3 SQ FT OR LESS)	LF	4.000		4.000
700-1-11	ROADSIDE SIGN	(SIGN 3-4)	LF	14.000		14.000
700-1-12	ROADSIDE SIGN	(SIGN 4-5)	LF	10.000		10.000
700-1-13	ROADSIDE SIGN	(SIGN 5-6)	LF	4.000		4.000
700-1-14	ROADSIDE SIGN	(SIGN 6-6.25)	LF	4.000		4.000
700-1-15	ROADSIDE SIGN	(SIGN 6-25-4)	LF	2.000		2.000
700-1-16	ROADSIDE SIGN	(SIGN 9-12)	LF	2.000		2.000
700-1-17	ROADSIDE SIGN	(SIGN 12-16)	LF	2.000		2.000
700-1-18	ROADSIDE SIGN	(SIGN 20-32)	LF	2.000		2.000
700-1-19	ROADSIDE SIGN	(DESTINATION, 1 LINE)	LF	2.000		2.000
700-1-20	ROADSIDE SIGN	(SIGN 40-45)	LF	2.000		2.000
700-1-31	ROADSIDE SIGN	(SIGN 95-100)	LF	1.000		1.000
700-1-43	OVHD SIGN	(TRUSS 79-92)	LF	1.000		1.000
700-2-12	OVHD CTLVR SIGN	(SIGN 350-425)	LF	1.000		1.000
700-3-12	OVHD CTLVR SIGN	(TRUSS 10-15)	LF	1.000		1.000
700-3-17	OVHD CTLVR SIGN	(TRUSS 15-20)	LF	1.000		1.000
700-4-17	LT+D OVHD SIGN	(TRUSS 40-53)	LF	1.000		1.000
700-4-27	LT+D OVHD SIGN	(TRUSS 53-66)	LF	1.000		1.000
700-5-33	LT+D OVHD SIGN	(TRUSS 20-25)	LF	1.000		1.000
700-72-1	RELUCATE SIGN	(ONE POST)	LF	19.000		19.000
700-72-2	RELUCATE SIGN	(TWO POST)	LF	2.000		2.000
700-72-3	RELUCATE SIGN	(OVERHEAD TRUSS)	LF	2.000		2.000
700-72-4	RELUCATE SIGN	(OVERHEAD CANTILEVER)	LF	1.000		1.000
700-73-1	RELOCATE SIGN	(OVERHEAD TRUSS)	LF	42.000		42.000
700-73-2	RELOCATE SIGN	(ONE POST)	LF	2.000		2.000
700-73-3	RELOCATE SIGN	(TWO POST)	LF	2.000		2.000
700-84-1	REMOVE EXISTING SIGN	(SU FT 0 TO 10)	LF	2.000		2.000
705-70-9	SIGN PANEL INSTALLATION	(9 BUTTON)	EA	9.000		9.000
706-1-12	DELINEATOR, DOUBLE UNIT	(ISLAND NOSE)	EA	85.000		85.000
710-1-1	REFLECTIVE PAINT	THERMOPLASTIC	SY	3.300		3.300
711-1-1	SKIP TRAFFIC STRIPE	THERMOPLASTIC	LF	69.000		69.000
711-1-3	PAVT MESSAGE	THERMOPLASTIC	LF	4.000		4.000
711-4-1	DIRECTIONAL ARROWS	THERMOPLASTIC	LF	73.000		73.000
711-6-41	SOLID TRAFFIC STRIPE	(8")	LF	603.000		603.000
711-6-121	SOLID TRAFFIC STRIPE	(12")	LF	3496.000		3496.000
711-6-181	SOLID TRAFFIC STRIPE	(18")	LF	350.000		350.000
711-6-241	SOLID TRAFFIC STRIPE	(24")	LF	898.000		898.000
711-72-1	RFM EXISTING MARKING	THERMOPLASTIC	LF	177.500		177.500
711-73-41	SOLID TRAFFIC STRIPE	THERMOPLASTIC	LF	17.500		17.500

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SUMMARY OF LIGHTING PAY ITEMS		UNIT	00000-0000	FA PART	QUANTITY
ITEM NUMBER	ITEM	IT			TOTAL
400-7	CLASS II CONC	CY	43.000		43.000
415-7	BRIDGE STEEL	LB	3600.000		3600.000
435-85	DRIP PELL SHAFT	LF	44.000		44.000
455-111	CORE	LF	5.000		5.000
455-122	UNCLASSIFIED SHAFT EXCAVATION (42" DIA)	LF	44.000		44.000
715-125	UNCLASSIFIED EXTRA DEPTH (42" DIA)	LF	5.000		5.000
715-70	GALV STEEL CONDUIT	LF	250.000		250.000
715-71	GALV STEEL CONDUIT	LF	400.000		400.000
715-73	INSTALL NEW POLE	EA	2.000		2.000
715-74	CONDUCTORS, CONDUIT & PULL BOXES	EA	1.000		1.000
715-75	CONDUCTORS (NO 2)	EA	50.000		50.000
715-77	RELOCATE POLES	EA	1.000		1.000
715-80	CONCRETE BASES	EA	10.000		10.000
715-81	RESET EXIST LIGHTING POLE	EA	13.000		13.000
715-84-130	DOUBLE ARM LIGHTING POLE COMPLETE (ALUMINUM)	EA	12.000		12.000
715-84-145	DOUBLE ARM LIGHTING POLE COMPLETE (ALUMINUM)	EA	16.000		16.000
715-86-124	LIGHTING POLE COMPLETE (ALUMINUM)	EA	9.000		9.000
715-86-130	LIGHTING POLE COMPLETE (ALUMINUM)	EA	25.000		25.000
715-86-140	LIGHTING POLE COMPLETE (ALUMINUM)	EA	12.000		12.000
715-90	RFWORK POLES	EA	10.000		10.000
715-92	LUMINAIRE & BRACKFT ARM (REMOVE & INSTALL)	EA	10.000		10.000
715-94	LUMINAIRE & BRACKFT ARM (2" PVC SCHEDULE 40)	EA	100.000		100.000
715-95	LUMINAIRE & BRACKFT ARM (SECONDARY VOLTAGE)	EA	1.000		1.000
715-96	LUMINAIRE (PIER CAP MOUNTED)	EA	3.000		3.000
715-98	UNDERDECK LUMINAIRE (PENDANT HUNG)	EA	1.000		1.000
715-99-120	HIGH MAST LIGHTING UNIT (MOULDED)	EA	16.000		16.000
715-103	PULL BOX	EA	1.000		1.000
715-107	RFWORK LOAD CENTER SHIELD	EA	10.000		10.000
715-107-1	HIGH MAST LUMINAIRE SHIELD	EA	10.000		10.000
715-107-3	HIGH MAST LUMINAIRE SHIELD	EA	10.000		10.000
715-107-4	HIGH MAST LUMINAIRE SHIELD	EA	10.000		10.000

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ITEM NUMBER	SUMMARY OF SIGNAL ITEM	UNIT	00000-0000		QUANTITY
			FA	PART	
					TOTAL
620-1	GROUNDING ELECTRODE	LF	520.000		520.000
630-1	CONDUIT	LF	190.000		190.000
630-13	CONDUIT	LF	111.000		111.000
632-7	CABLE	PFI	4.000		4.000
632-4	CABLE	PFI	2.000		2.000
632-11	WIRE ASSEMBLY	PFI	140.000		140.000
634-4	WIRE ASSEMBLY	PFI	3.000		3.000
634-11	WIRE ASSEMBLY	PFI	4.000		4.000
634-7	ADJUST CABLE	EA	2.000		2.000
634-11	ADJUST CABLE	EA	17.000		17.000
634-13	ADJUST CABLE	EA	1.000		1.000
635-1	ADJUST CABLE	EA	4.000		4.000
635-11	ADJUST CABLE	EA	1.000		1.000
635-13	ADJUST CABLE	EA	20.000		20.000
639-1	ELECTRICAL POWER SERVICE	ASL	4.000		4.000
639-11	ELECTRICAL POWER SERVICE	ASL	20.000		20.000
639-2	ELECTRICAL POWER SERVICE	ASL	4.000		4.000
641-15	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-38	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-42	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-44	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-48	ELECTRICAL SERVICE WIRES	LF	2.000		2.000
641-50	ELECTRICAL SERVICE WIRES	LF	2.000		2.000
641-51	ELECTRICAL SERVICE WIRES	LF	3.000		3.000
641-52	ELECTRICAL SERVICE WIRES	LF	3.000		3.000
641-53	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-54	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-55	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-56	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-57	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-58	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-59	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-60	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-61	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-62	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-63	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-64	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-65	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-66	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-67	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-68	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-69	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-70	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-71	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-72	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-73	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-74	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-75	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-76	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-77	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-78	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-79	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-80	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-81	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-82	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-83	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-84	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-85	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-86	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-87	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-88	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-89	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-90	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-91	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-92	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-93	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-94	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-95	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-96	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-97	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-98	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-99	ELECTRICAL SERVICE WIRES	LF	1.000		1.000
641-100	ELECTRICAL SERVICE WIRES	LF	1.000		1.000

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ITEM NUMBER	SUMMARY OF LANDSCAPE PAY ITEMS	ITEM	UNIT	000000-0000		QUANTITY TOTAL
				FA	PART	
522-1-	CONC SIDEWALK	(4" THICK)	SY	267.000		267.000
575-1-	WATER FOR PLANT ESTABLISHMENT		MG	41.000		41.000
580-201-	STAKING & GUYING	(TRFES)	SY	951.000		951.000
580-301-	STAKING & GUYING	(PALS)	EA	4.000		4.000
581-18-	SHREDED CYPRESS BARK		EA	7.000		7.000
581-20-	JASMINE SIMPLICIFOLIUM	(JASMINUM VOLUBILE)	SY	156.000		156.000
582-46-	SHORE JUNIPER	(JUNIPERUS CONFERTA)	PL	90.000		90.000
583-89-	JAPANESE PRIVET	(LIGUSTRUM JAPONICUM)	PL	6.000		6.000
584-16-	HIND-OF-PARADISE	(STRELTIZIA REGINAE)	PL	34.000		34.000
584-16-	CIPRIMSON ROTTLEBRUSH	(CALLISTEMON CITRINUS)	PL	24.000		24.000
584-16-	SARAL PALM	(MYRTICA CERTIFERA)	PL	100.000		100.000
584-16-	SARAL PALM	(SARAL PALMETTO)	PL	2.000		2.000
584-16-	SARAL PALM	(SARAL PALMETTO)	PL	6.000		6.000
584-16-	SARAL PALM	(SARAL PALMETTO)	PL	2.000		2.000
584-16-	SARAL PALM	(SARAL PALMETTO)	PL	1.000		1.000
584-16-	SARAL PALM	(SARAL PALMETTO)	PL	1.000		1.000
721-72-	RFSL SERVICE CONNECTION		LS	1.000		1.000
750-79-	ELECTRICAL BUTLIDING		LS	1.000		1.000
750-80-	ELECTRICAL POWER SUPPLY		LS	1.000		1.000
750-81-	RADIO WEATHER SERVICE		EA	1.000		1.000
755-70-	ISWAGE TREAT PLANT	RECTIFIER	PL	1.000		1.000
760-70-	PICNIC PAVILION, TYPE A		EA	11.000		11.000

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BOX CULVERT DESIGN FLORIDA DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER 00000-0000 LOCATION DESCRIPTION STA 0+00 S-1 C/L SURVEY S.R. 00

MATERIAL PROPERTIES

STEEL YIELD STRENGTH 60000. P.S.I.
 CONCRETE 28 DAY STRENGTH 34000. P.S.I.
 CONCRETE COVER FOR RE-BAR
 BARREL EXTERIOR COVER 2.00 INCHES
 TOP SLAB 3.00 INCHES
 BOTTOM SLAB 2.00 INCHES
 WALL 2.00 INCHES
 INTERIOR COVER 2.00 INCHES
 ALL LOCATIONS 2.00 INCHES
 WINGWALL FRONT FACE OF WALL 3.00 INCHES
 ALL OTHER LOCATIONS 3.00 INCHES

PROPERTIES OF ELEMENTS

BARREL NUMBER OF BARREL(S) 1
 SPAN 10.00 FEET
 HEIGHT 8.00 FEET
 DEPTH OF FILL 5.00 FEET
 LENGTH AT CENTERLINE BOX 100.00 FEET
 LEFT SIDE SKEW ANGLE 0 DEGREES
 RIGHT SIDE SKEW ANGLE 0 DEGREES
 THICKNESS TOP SLAB 9.50 INCHES
 BOTTOM SLAB 11.00 INCHES
 EXTERIOR WALL 8.00 INCHES
 INTERIOR WALL 0.0 INCHES
 WINGWALL NUMBER OF WINGWALL(S) BOTH LEFT AND RIGHT SIDES
 NUMBER OF HEADWALL(S) BOTH LEFT AND RIGHT SIDES
 TOP REVEL 6.00 INCHES
 END WINGWALL LENGTH (LEFT) 17.00 FEET
 END WINGWALL LENGTH (RIGHT) 17.00 FEET
 TOTAL WINGWALL LENGTH (LEFT) 45 FEET
 TOTAL WINGWALL LENGTH (RIGHT) 45 FEET
 WALL HEIGHT 4 FEET
 FOOTING WITH 9 FEET
 FEEEL DIMENSION 3 FEET
 TOE DIMENSION 1 FEET
 THICKNESS 0 FEET
 WALL FOOTING 0 FEET
 TOE PRESSURE (APPROXIMATELY) 1337. LBS./FOOT SQUARED

CONCRETE QUANTITIES

BARREL QUANTITIES:
 POUR 1 (BOTTOM SLAB) 0.393 C.Y./FOOT
 POUR 2 (WALLS) 0.379 C.Y./FOOT
 POUR 3 (TOP SLAB) 0.342 C.Y./FOOT
 POUR 4 (HEADWALL(S)) 1.049 C.Y.
 TOTAL 1.11 C.Y./FOOT
 WINGWALL QUANTITIES:
 POUR 1 (FOOTING) 0.233 C.Y./FOOT
 POUR 2 (WALLS) 0.297 C.Y./FOOT
 TOTAL 0.53 C.Y./FOOT
 TOTAL CONCRETE QUANTITIES
 BARREL 112.366 C.Y.
 WINGWALL 37.945 C.Y.
 TOTAL 150.31 C.Y.

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	219		5	5.5	1	11-0	2513			
ROD SLAB		A200	185		6	6.5	10	11-4	3057			
CORNER (TOP)		A1	370		4	6.5	10	4-2	1071	2-1	2-3	
CORNER (BOTTOM)		A2	370		4	6.5	10	4-2	1030	1-10	2-4	
EXTERIOR WALL (INSIDE)		H1	370		4	6.5	1	9-2	2286			
EXTERIOR WALL (OUTSIDE)		H2	370		4	6.5	1	7-2	1771			
LONGITUDINAL		C1	126	(3)	4	18.0	1	34-1	2869			
HEADWALL BOTH SIDES		G1	4	(1)	4	SEE INDEX	1	1-0	29			
HEADWALL BOTH SIDES		P	24		4	12.0	11	2-4	37	0-11	1-5	1-5
PPF FOOT BARREL STEEL QUANTITY									145	LBS./FOOT		
TOTAL BARREL STEEL QUANTITY									14663	LBS.		

WINGWALL QUANTITIES

WINGWALL QUANTITIES	LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH
STEM		F	88		6	9.5	10	12-3	1619	2-1	10-2
STEM BOTH SIDES		J	88		4	9.5	1	10-2	228		
STEM/FOOT. -BOT 1 SIDES		K3	48		4	12.0	1	16-6	528		
FOOTING BOTH SIDES		L	15		4	SEE INDEX	1	16-6	176		
SYSTEM TO BARREL DOWELS		M1	88	(2)	4	9.5	1	5-10	343		
FOOTING SPILLWAY		N*	28		5	SFF INDEX	10	23-2	124	2-6	2-6
		R	22		4	12.0	1	5-0	146		
								3-0	44		
PER FOOT WINGWALL STEEL QUANTITY									50	LBS./FOOT	
TOTAL WINGWALL STEEL QUANTITY									3579	LBS.	
TOTAL STEEL QUANTITIES											
BARREL WINGWALL									14663	LBS.	
TOTAL									3579	LBS.	
									14242	LBS.	

* FOR SKEWED WINGS, BEND BARS N TO ACCOMMODATE SKEW.



CHAPTER 4

DRAINAGE MAP

4.1 General

The Drainage Map is prepared on preformed sheets which have a cross section grid printed across the upper portion used for plotting the project profile. It is plotted to some convenient scale according to need. Horizontal scales such as 1" = 200', 1" = 500', or 1" = 1000' generally should be used to simplify plotting the profile. For municipal projects, the horizontal scale should be no smaller than 1" = 200'. The horizontal and vertical scales of the drainage map profile must always be such that the stations and elevations can be read directly from the grid without use of a scale. For projects involving interchanges, rest areas, etc., a supplemental drainage map on a 1" = 100' or 1" = 200' scale will 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 note should refer to the proper sheet for drainage area for the through structure.

4.2 Plan Portion

The plan portion shall include the following data:

1. Centerline of project with begin and end project stations, station equations and exceptions. Stationing should be shown at regular intervals.
2. Physical land features affecting drainage, such as lakes, streams, swamps, etc., together with past high water and date of occurrence, if available, and present water elevations along with the dates of the readings.

3. Existing roads, streets and drainage structures, showing type, size, flow line, flow direction and any other pertinent data.

4. Drainage divides and information, where applicable, to indicate the overland flow of water. Drainage areas on maps of municipal and rural sections should show areas to the accuracy necessary depending on system involved. A guide to the appropriate accuracy is provided by the following table.

SIZE DRAINAGE AREA (Ac.)	ACCURACY	
	MAINLY IMPERVIOUS (Ac.)	MAINLY PERVIOUS (Ac.)
0.00 - 0.50	.05	.1
0.5 - 5.0	.1	.2
5 - 10.0	.2	.5
10 - 20	.5	1
20 - 50	1	2
50 - 100	2	5
100 - 200	5	10
200 - 600	10	25

Inserts are used to show areas that are of such magnitude that the boundaries cannot be plotted at the regular scale. Proposed drainage structures are plotted by symbol only in the plan portion and noted by structure number.

5. Sections, Township, Range and County lines are indicated for rural projects and, when possible, urban projects.

6. A north arrow and scale are included on the plan.

7. Aerial photography is desirable for the plan portion since it will document the development and often the drainage pattern which existed at time of design.

8. Design, base and overtopping or greatest flood discharge and stage values are required on all Federal Aid Projects for all cross structures that would back flood water outside the right-of-way, regardless of structure size. A "disclaimer" and definitions are required to avoid misuse and possible responsibility for changes in the flood information values over which the D.O.T. has no control.

This flood data may be either drafted on the Drainage Map or placed in the computer so that it can be printed on standard output paper and placed in the plans. A data set can be set up on the computer outlining the Flood Data Chart and notes, with the data block left blank so that it can be filled out for individual projects. This would then be printed on standard output paper and placed in the plans behind the Summary of Pay Item Sheets. Also, on the key sheet in the upper left hand corner under "This contract set includes", you will have to add "Flood Data sheets (___ sheets). Designed by, approved by, etc., will have to be placed on this sheet.

9. Minimum culvert backfill values for PH, resistivity, sulfates and chlorides for the various alternate culvert materials shall be shown on the Drainage Map. This may be shown in either the plan or profile portion.

10. Add the following note filling in the materials as appropriate: "Drainage Alternates include _____, _____, and _____ materials. Only the _____ alternate is shown on the Drainage map profiles". This may be shown in either the plan or profile portion.

4.3 Profile Portion

The profile portion shall include the following data.

1. The horizontal scale must be the same used for the plan portion. The standard 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' sometimes is used for rural projects through rough terrain to avoid numerous profile breaks. However, a scale 1" = 20' should never be used at locations of proposed storm sewer systems.

2. The existing ground is plotted with a light solid line.

3. Show elevation datum on each side of sheet. At times the 5" deep profile block is insufficient while the space available in the plan portion is in excess of need. Tallahassee can supply drainage map sheets with either 8" or 10" deep profile blocks (for in-house use).

4. The proposed profile grade line is plotted on the profile with a heavy solid line and percents of grade are not shown. The profile grade is plotted along vertical curves, but no V.C. data is shown.

5. All proposed special ditches, except median, are plotted in the profile when horizontal and vertical scales permit. They are indicated with a heavy broken line (long dashes).

6. Proposed cross drains are plotted in the profile section and are 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, show elevation at each end of structure. Median drains are not plotted in the profile section.

7. For municipal projects, only the storm sewer and mainline structures are plotted in the profile. Laterals are not plotted. Flow line elevations are posted along the main.

8. All high waters affecting construction must be shown (including year) in the profile. Any high water that is to be lowered should be so noted and the design high water elevation given. A light broken line is plotted at the high water elevation, and the elevation is given.

EXHIBITS 3 thru 5 illustrate completed Drainage Maps.

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CHAPTER 5 TYPICAL SECTIONS

5.1 General

Typical sections show the design elements of the proposed roadway and are drawn in the form of cross sections depicting the work which is standard or typical. Usually this sheet is not drawn to scale.

The typical section shall be complete in every detail and shall show clearly all work to be done. Typical sections should show typical conditions only. Non-standard construction or conditions that prevail for short distances only should not be shown in typical sections. Aesthetics should be considered when preparing typical section.

When more than one typical section is necessary for a project, they should be placed consecutively, in order of stationing, from top to bottom of sheet. The station limits of each typical are shown below the typical section title. Typical section stationing should cover the entire project. Transitions from one typical to another should be included in the stationing of one or the other typical sections. Each sheet should carry a title in the lower right hand corner.

When partial sections are necessary to cover other details, these sections should be shown near the main typical section to which they apply.

5.2 Mandatory Information

Typical sections for all projects must include the following data:

1. Design speed for each typical
2. Traffic Data (2-way ADT)
 - a. Current year

b. Design year

New Construction - 20 years

Overlay - 8-12 years

Milling & Resurfacing - 10-12 years

c. For skid hazard projects only, the current year or expected year of construction traffic is required.

d. K, D and T factors

The data shown should be consistent with the data used for pavement design.

3. Cross Slopes

a. Cross slopes of roadway pavement and shoulder surfaces and bridge decks are to be expressed as a decimal part of a foot vertically per foot horizontally. These cross slopes will be rounded to two decimal places, i.e., .02, .06, etc.

b. Median and outer slopes are to be shown by ratio, horizontal to vertical, i.e., 4:1.

c. Feathering details and/or notes should be shown when resurfacing in urban gutter areas is specified.

4. Reference to all standard indexes necessary for construction of proposed typical section is to be shown.

5. The scope of work should be described in a clear, precise manner by indicating the LBR requirement and thickness of the subgrade stabilization, subbase or base, structural course, friction course and shoulder pavement; any pavement structure information should be obtained from the approved pavement design; grassing, curbs and gutters, and sidewalks, if any, should be shown.

6. Template Dimensions

5.3 Standard Notes for Typical Section Sheets

Below are standard notes which should be shown on typical section sheets when applicable.

1. "All permanent grass areas are to receive a ^{6"}4 inch muck blanket or topsoil treatment."
2. "For details and limits of selective clearing and grubbing see sheets ____."
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. "For median stabilizing see Standard Index No. 500."
6. "For stabilizing at intersections, turnouts, and graded connections see Standard Index No. 515. See typical section for depth and LBR."
7. (For shell or limerock stabilized base) "Construct trench as required. (Est ____' deep for purpose of earthwork computations.) Add approximately ____" loose measure of _____. Mix, shape and compact ____" deep and prime."
8. "Characteristics of the local subgrade may be of such nature that more ____ will be required than indicated above. The amount to be used will be specified by the engineer."
9. "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."
10. "The contractor shall bid on only one friction course alternate."

11. (Under paved shoulders) "At the contractor's option. This area may be constructed of base material at no additional compensation."
12. (Under stabilized area) "Minimum LBR ____"
13. (Under stabilized area) "Type ____ stabilization."
14. (When black base is called for with no stabilizing item, other than widening projects) "The subgrade shall be firm, unyielding and in such condition that undue distortion will not occur."
15. "Only one dense graded friction course FC-1 or FC-4 is to be used throughout the limits of the project."
16. (When no Pavement Marking Plans included)
"The contractor shall be responsible for documenting the existing pavement markings before resurfacing work is started and this information is to be used in conjunction with temporary striping and finished striping."
17. (Used on Resurfacing with Design Speed Change)
"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 1978 MUTCD. 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."
18. (Used on Resurfacing Projects with Rework Shoulders, Widening, New Shoulder Build-up etc.)
"All existing D.O.T. signs within the proposed construction limits are to be taken down by the contractor and stockpiled for future relocation by others."

19. (Used on Resurfacing Projects with Rework Shoulders, Widening, New Shoulder Build-up etc.)

"Caution should be exercised while relocating existing signs to prevent unnecessary damage to signs. If the signs are damaged beyond use, as determined by the engineer, signs shall be replaced by the contractor at his expense."

20. "Any mail box within the limits of construction is to be taken down and reset in accordance with postal requirements by the contractor. Cost to be included under clearing and grubbing."

5.4 Approval of Typical Sections

All typical sections require only District Design Engineer and FHWA approval, if Federal Aid. Central Office approval is no longer required.

All typical section packages shall include as a minimum:

- (1) Typical Section Data Sheets
- (2) Proposed Typical Section

All supporting data should be filed in the project file, along with the approved data sheet and typical section.

The District Office shall be responsible for obtaining approval from the FHWA with the Central Office copied in on the transmittal. The FHWA will return approved typicals to the Central Office Area Design Engineer, who will return them to the Districts.

EXHIBITS 6 thru 13 illustrate some of the common typical section situations. These sections are for illustration only and are meant to be taken only as a guide as to what information is required in preparing typicals for contract plans.

EXHIBITS 14 thru 16 illustrate the current slope criteria utilized in conjunction with typical section and cross section development.

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CHAPTER 6

SUMMARY OF QUANTITIES

6.1 General

The Summary of Quantities sheet shows the summaries of guardrail, sodding, ditch pavement, sidedrain and earthwork when applicable. Tabulations for resurfacing projects showing widths, lengths, and area when different widths are involved, should be shown, if not documented in Computation Book. Pay item footnotes for roadway plans may be shown on this sheet. As noted in Chapter 3, the necessary pay items and the estimated quantities are shown on the Summary of Pay Items sheet. Many change orders and supplemental agreements are the result of incorrect quantity calculations. Part of any quality set of plans is a well documented computations book. See Basis of Estimates Manual for further details.

6.2 Summary of Drainage Structures

A summary of drainage structures sheet is required for all projects having drainage improvements. This sheet is separate from the Summary of Quantity sheet described in Section 6.1. However, on smaller projects the Summary of Quantities sheet and the Summary of Drainage Structures could be combined on one sheet. Quantities for bridge length culverts listed on the summary of drainage are noted by symbol and footnote.

A Summary of Drainage Structures shall be prepared for each general culvert material determined by the designers to be suitable for that project, usually aluminum, galvanized steel and concrete materials.

Each summary shall include all items, other than earthwork, which are affected by the use of different culvert materials.

Certain items may be identical for more than one alternate. However, this information should be shown for each alternate.

6.3 Standard Notes for Summary of Quantities Sheet

Below are standard notes which should be used on the Summary of Quantities sheet when applicable:

1. (Under Summary of Guardrail) "Guardrail limits and location 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 Summary of Drainage Structures Having Bridge Culverts) Show an asterick (*) by the concrete and steel quantities and the following footnote: "*Denotes Bridge Culvert Quantity."
5. (Under Estimate of Turnouts and Side Drain) "Turnouts and sidedrain are to be constructed at locations designated by the engineer in accordance with Index No. 515."
6. (Under Summary of Earthwork - Embankment Projects) "There is no direct pay for roadway, lateral ditch or channel excavation. Any suitable material may be used in the embankment at the option of the contractor."
7. "Embankment is fill in place with no shrinkage applied."

8. "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 by the plan quantity or to the final dressing pay quantity."
9. "Estimated ____ C. Y. of unclassified material to be displaced by the storm sewer (or drainage structure) system not included in quantities shown above."
10. "All (or ____ C. Y. of) A-8 material to be stockpiled in areas designated by the engineer for use in muck blanket operations."
11. The contractor shall bid on only one complete drainage alternate, either Alternate ____, Alternate ____, or Alternate ____.

6.4 Standard Pay Item Footnotes

Below are standard pay item footnotes which should be shown on the Summary of Quantities sheet when applicable:

- 102-1 Includes all items of maintenance of traffic not included for payment under separate items.
- 102-4 (Calcium Chloride) is a contingent item and may be increased, decreased or omitted as directed by the Engineer.
- 102-72 (Conc. Barrier-Temp. Type E) (Only if State furnished) Department owned barrier wall is available at _____
_____.
- 102-74 Barricades will be paid for on the basis of per barricade per day in use. The quantity shown is based on an estimated average of ____ barricades for ____ days.
- 102-75 Signs will be paid for on the basis of per sign per day in use. The quantity shown is based on an estimated average of ____ signs for ____ days.

102-76 Flashing Arrow Boards will be paid for on the basis of per arrow board per day in use. The quantity shown is based on an estimated average of ____ arrow boards for ____ days.

102-77 Flashing lights will be paid for on the basis of per flashing light per day in use. The quantity shown is based on an estimated average of ____ flashing lights for ____ days.

102-92-1 (Temporary Pavement Marking) The contractor shall provide &/or

102-92-1 temporary pavement markings indicating lane lines and storage areas for turning movements throughout the project.
or

The contractor shall provide temporary pavement markings indicating lane lines and storage areas for turning movements, arrows and pavement messages to completely define traffic during and at the end of each days operation.

104-1 Are estimated for prevention, control and abatement of erosion thru
104-12 and water pollution and are to be used at locations designated by the plans or as directed by the engineer.

110-3 (Removal of existing structures) All salvageable material as determined by the engineer is to be stockpiled within the right-of-way for removal by D.O.T. Forces.

or

Material has no salvage value for the Department and will become the property of the contractor.

120-1 (Regular Excavation, when used with widening) Includes the cost of removal and disposal of unsuitable material that may be encountered during excavation for widening strips as directed by the engineer.

- 120-2 To be furnished by the contractor from areas provided by him. Measurement shall be based on 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.
- 120-2-1 To be furnished by the contractor from areas provided by him.
- 120-2-2 To be furnished by the contractor from areas provided by him.
- 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.
- 120-8 (For Resurfacing Projects) The price and payment for this item shall also include all roadway excavation necessary to shape shoulders and front slopes and necessary compaction.
- 120-8 (For Widening and Resurfacing Projects) Price and payment for this item shall also include excavation for trenches for widening and all roadway excavation necessary to shape shoulders and front slopes and necessary compaction.
- 300-1-1 (For Milling Projects) Included for prime in areas where milling exposes existing limestone base. Contingent quantity to be increased, decreased or omitted as directed by the engineer.
- 325-75 (Reworking Exist. Asphalt Surface)
or
327-70 (Milling Exist. Asphalt Pavement) Includes removal of existing raised reflective pavement markers prior to starting operations.
- 5331-2 Included (or includes ____ tons) for adjustment of connections to existing drives, streets, etc. as directed by the Engineer.
- 339-1 Included for pavement under guardrail.
- 400-1-15 Includes ____ C.Y. for miscellaneous construction as directed by engineer.

- 400-2-1 Includes ___ C. Y. for bridge culverts.
- 415-1-1 Includes ___ LBS. for bridge culverts.
- 522-2 Estimated quantity to be constructed at locations designated by the engineer in accordance with Index No. 515.
- 536-73 (Removal of Exist Guardrail) Existing guardrail has no salvage value for the Department and will become the property of the contractor.
- or
- Existing guardrail to be dismantled and stockpiled within the right of way in areas designated by the engineer for removal by D.O.T. maintenance forces.
- 550-2 Includes ___ Lin. Ft. of fence with barb wire attachment.
- 570-4 Includes ___ tons for temporary mulching.
- 570-5 Based on ___ applications.
- 575-1 Includes ___ S. Y. for temporary sodding.

EXHIBIT 17 illustrates a completed Summary of Quantity Sheet.

EXHIBIT 18A illustrates a completed Summary of Drainage Structure Sheet for Aluminum Alternate.

EXHIBIT 18B illustrates a completed Summary of Drainage Structure Sheet for Steel Alternate.

EXHIBIT 18C illustrates a completed Summary of Drainage Structure Sheet for Concrete Alternate.

EXHIBIT 19A through 19D illustrate how to extend the Summary of Drainage Structure Sheet both horizontally and vertically when additional space is required.



CHAPTER 7

MASS DIAGRAM

7.1 General

Mass diagrams are to be prepared for plans having roadway cross sections except for projects which pay for earthwork by the embankment pay item. For projects such as intersections, small parking areas, short approaches to bridges, etc., a mass diagram would be meaningless.

When the fill volume (without shrinkage) equals at least 60% of the total earthwork on a project, the payment will be embankment in place; and a mass diagram is not required.

The mass diagram is prepared on standard cross section sheets. Project stationing is used for horizontal datum and mass ordinates for vertical datum.

The length of project influences the horizontal scale. For long projects, a maximum ten stations per inch is allowable. For short projects, a horizontal scale should be chosen so that the mass diagram will occupy a major portion of the sheet. Stations numbers will be placed across the top and/or bottom of the sheet.

When shrinkage factors vary throughout the project, the shrinkage factors will be shown across the top of the sheet.

The extremes of the mass ordinates dictate the vertical scale to a great extent. The vertical scale should be such that few or no equations in vertical datum will be necessary. Where the difference between the greatest and least mass ordinate is small, a fairly large scale should be used.

The mass ordinate datum is to be placed on both the right and left sides of the sheet. The mass ordinate of each station is plotted and the

points connected by a medium weight solid line. This line generally can be drawn free hand instead of connecting points with a straight-edge.

The beginning and end of project or construction, station equations, bridge stationing and station of balance points are indicated. Horizontal balance lines are indicated between balance points, and earthwork quantities are given for balance earthwork but datum lines other than zero may be used.

Excavation and fill of materials other than A-2, A-3 and A-2-4 generally are indicated with a dimension line between the extremes of cut and fill, together with the stations at the beginning and end of the section and the quantities. However, mass diagrams should be computed and plotted for this earthwork when the haul is significant.

A summary of earthwork is placed on the last mass diagram sheet for borrow projects and a summary of earthwork is placed on the summary of quantities sheet for an embankment project. Quantity breakdowns are required when two or more projects are in one contract.

EXHIBIT 20 illustrates a completed Mass Diagram.

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CHAPTER 8

ROADWAY PLAN-PROFILES

8.1 General

Roadway plan and profiles are prepared on standard 22" x 36" plan-profile sheets. Standard scales for rural construction are 1" = 100' in the plan and 1" = 100' horizontally and 1" = 10' vertically in the profile. Scales for municipal construction are usually 1" = 20' in the plan and 1" = 20' horizontally and 1" = 2' vertically in the profile.

At times it is advantageous to use scales other than those mentioned above. Such as 1" = 50' horizontally and 1" = 5' vertically. The plan scale is noted in the lower right corner of the plan portion or along the north arrow.

8.2 Roadway Plan Portion (Rural Construction)

The centerline of survey is centered in the plan portion of the sheet, with stationing running from left to right. When horizontal curves are involved, the centerline is positioned on the sheet to avoid breaks or match lines.

Thirty stations per sheet are used when the horizontal scale is 1" = 100' and each sheet should begin on an even 10 station. A "tick" mark is placed on the upper side of the centerline at every station. "Tick" marks on the even 5 stations are made 0.2" long and the station number shown above the "tick" mark outside of the R/W lines. The remaining "tick" marks are made 0.1" long with no station numbers shown.

P.C., P.T. points of horizontal curves are indicated by small circles. Short radial lines are drawn from these points and labeled. P.I.'s are plotted using a small circle or triangle with a short section of tangent on either side.

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

CURVE DATA

P. I. Station

Δ (Delta Angle)

D (Degree of Curvature)

T (Tangent Length)

L (Length of Curve)

R (Radius Length)

e (Superelevation Rate)

P. C. Station

P. T. Station

In cases where the construction centerline does not coincide with the survey centerline, the construction centerline is to be indicated, with complete alignment data and ties to the survey centerline. As an exception to this, the construction centerline need not be shown when it is offset uniformly from the survey centerline for the entire length of the project.

All station equations must be included. These include equations occurring on the survey centerline and those equating survey and construction centerlines.

When aerial photography is not used for the plan portion, all existing topography is shown. All existing roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges and drainage structures are plotted and labeled. Streams, ponds, lakes, wooded areas, ditches and all other physical features are shown. Existing pavement edges, curbs, sidewalks, pipes,

etc. are plotted using a light broken line. See Index 002 for standard symbols.

Bearings are shown for all tangents in the direction of stationing. A north arrow is placed on every plan-profile sheet, drawn with a medium weight line and placed near the upper center or in the right hand portion of the plan sheet.

Station equations and angles are shown for all roads and streets intersecting or crossing the project.

All reference points are indicated by sketches (not to scale) and placed at locations removed from the centerline, giving station and intersecting angle. Also public land corner references are to be shown.

County, city and urban limits are shown and tied to centerline by station and angle for projects crossing these boundaries.

The proposed construction limits for a rural project are indicated in the plans. The limits to be flagged and stationed are:

1. Beginning and end of project, also beginning and end of construction where construction limits are outside project limits. If plans cover more than one project, the limits of each must be clearly shown by station and project number. These should be shown both in plan and 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, bridges, and widening.
4. Stations for beginning and end exceptions.

Proposed cross drain pipes and culverts are indicated in the plan by plotted symbol and are identified by drainage structure number only. Box

culverts (single or multiple) having a length between inside faces of end supports of 20' or more along the center of the roadway are designated as bridge culverts and are identified by both drainage structure number and bridge number. The beginning and ending stations (outside wall to outside wall) are shown.

Proposed bridges and approach slabs are plotted by simple outline. The beginning and ending station of bridges and approach slabs are noted. Approach slabs are noted by their index number. The beginning and ending stations of bridges are noted by station flags. The beginning and ending stations of approach slabs are noted by station pluses (plus stations). Bridge numbers should also be shown.

Avoid showing detailed information regarding crossovers or intersections when these are of a type which can be handled by a standard detail. Merely identify the type of crossover and show its station location.

Lateral ditch details are usually shown on plan-profile sheets separate from the roadway plan-profiles. A short section of lateral ditch centerline is plotted on the roadway plan-profile sheet together with a note referring to lateral ditch sheets.

Right-of-way lines are shown and are dimensioned from the survey centerline or baseline if survey and construction lines are parallel, otherwise dimension from construction line. Dimensions are shown at both ends of the sheet and must always be placed outside the beginning and ending station for each sheet.

Aesthetic considerations should be given for the plan view such as meandering the sidewalk, if possible, providing green areas and smooth alignments.

8.3 Roadway Profile Portion (Rural Construction)

General notes for the project are normally placed in the upper left hand portion of the profile grid on the first plan-profile sheet. (See Sec. 8.6). Also included on the first plan-profile sheet is a tabulation of future side drain pipe requirements, see Section 8.6. for example of tabulation. This can be placed in either the plan or profile.

The horizontal scale is the same as that used for the plan portion, and station limits of the profile must correspond to those of the plan of each sheet. Station numbers are placed across the bottom of the sheet just above the title block. Full station number is shown for even ten stations and single digit numbers for the remaining stations. For a horizontal scale of 1" = 100', a vertical scale of 1" = 10' is normally used; and for a horizontal scale of 1" = 50', a vertical scale of 1" = 5' is normally used.

The vertical elevation datum is selected with due regard for the extremes of elevation which will occur on each individual sheet, so that the profile will not crowd either the upper or lower limits of the profile grid.

Elevation datum is shown on both the left and right sides of the sheet and placed so that even 10-foot elevations will be on the inch lines for a 1" = 10' vertical scale and even 5-foot elevations will be on the inch lines for a 1" = 5' vertical scale.

Existing groundline elevations on the survey line are lettered vertically just above the station numbers at each end of the sheet only.

The existing groundline profile is plotted and inked, using a light solid line. When the centerline of construction is different from the survey centerline, the profile along the construction centerline may be plotted and shown with a light broken line.

A-8 (muck) strata limits may be plotted in the profile and cross hatched when not adequately covered in the cross sections. Strata boundaries of other unsuitable materials may also be plotted in the profile and labeled.

High water conditions are shown by the use of a light broken line (long dashes) at the high water elevation, with the elevation indicated numerically, and the year of the indicated high water given. If high water is to be lowered, the design high water elevation must be given.

Bench mark data is normally given just below the upper margin of the profile grid, but may be placed in the plan portion just above the upper profile margin at the appropriate corresponding station.

The proposed profile grade is shown by a heavy solid line. Vertical curve P.C.'s and P.T.'s are indicated by small circle and P.I.'s are indicated by a small circle or triangle. Short sections of tangent are drawn with a light line each side of the P.I. and the intersecting grades posted on the tangent. Vertical lines are extended from the P.C. and P.T. points and a dimension line placed between these lines indicating the length of the vertical curve.

For vertical curves, the profile grade elevations are given on even stations and are placed between the dimension line and the grade line. The length dimension and the profile grade elevations are placed above the grade line for sag vertical curves, and below the grade line for crest vertical curves. The dimensions and elevations should be placed reasonably near the grade line whenever possible.

The P.I. elevation is lettered vertically above the P.I. symbol for crest curves and below for sag curves. When the P.I. does not fall on the even station, the plus station is given. The profile grade elevation of the beginning and ending station of each sheet is lettered vertically just

above the grade line, except when the beginning or ending station is on a vertical curve.

Percents of grades are indicated for each tangent on every sheet. In cases where the beginning or ending station of the sheet is on a vertical curve, the P.I. of which falls within the sheet, the percent of grade of the tangent extending from the adjacent sheet is indicated.

Station equations and exceptions shall be shown.

Special ditches are indicated in the profile with a medium or light broken line (long dashes) and the percent of grade and a beginning or ending (Ditch P.I.) elevation given. In plans for four-lane projects, three special ditch grades (right and left roadway ditches and median ditch) sometimes will occur at the same location. In this case, it may be necessary to plot the median ditch against separate elevation datum for clarity.

Uniform ditches of non-standard depth shall be indicated by a dimension line in the lower portion of the grid and noted as a special ditch with location and depth.

Proposed cross drain pipes and culverts are plotted in section with a heavy solid line. The section should be at the proposed location and grade of the structure crossing the centerline of construction. These cross drains are indicated by structure number only. Bridges and bridge culverts are noted as such and the beginning and ending stations given.

The project limits on applicable sheets are given in the same manner as in the plan portion of the sheet.

8.4 Roadway Plan Portion (Urban Construction)

The centerline is laid out on a scale of 1" = 20', and six stations are used for each sheet. Each sheet should begin and end with a whole station.

Each station is marked by a "tick" mark 0.2" long, and the station number is placed near this mark. "Ticks" 0.1" long are placed at every 20' point between stations, but no plus station numbers are shown.

When aerial photo plan sheets are used, the utilities and other pertinent data must be shown in the plan portion using the proper symbols. Existing gas storage tanks for service stations must be located and plotted in the plan portion.

When aerial photography is not used existing topography is plotted from field survey notes along with existing utilities.

Utility adjustment sheets are usually made from reproducibles of the plan-profile sheets. Do not use reproducibles of aerial photo plan sheets.

Alignment data, reference points, north point, bearings, project limits, etc., are shown as in the plan portion for rural construction plans.

Plans for urban construction include:

1. Pavement, curb, curb and gutter, traffic separators, sidewalks, curb cut ramps, bridges, approach slabs, retaining walls, etc.
2. Station of return points with grade elevations of gutter or pavement edge at these points.
3. Station of radius points of traffic separator or median curb at median openings.
4. Station of end of curb and gutter at side street intersections, (when end is not at a return point) with proposed gutter grade elevation at these points. No station need be shown when the curb and gutter on returns is terminated three feet back of the right-of-way line, as the point of termination is set by the right-of way width.

5. Limits of pavement and grading at side street intersections.
6. Control radii for traffic turns when these set median nose locations.
7. The proposed drainage system is indicated by plotting storm sewer pipes with a single line and plotting the outline of inlets, manholes and junction boxes. Where plans are prepared utilizing alternate pipe materials, the concrete pipe alternate shall be the one plotted in plan and profile. Lengths are shown when drainage structure sheets are not included in plans. Proposed inlets, manholes, junction boxes and special structures are noted only by structure numbers when drainage structure sheets are included in the plans. Bridge and bridge culverts shall be shown as in rural construction.
8. When construction extends beyond the right-of-way lines for incidental construction temporary construction easements will be required and are to be shown on the plan sheets.

8.5 Roadway Profile Portion (Urban Construction)

The profile portion of plan and profile sheets showing urban construction is prepared similar to that for rural construction. The standard scales are 1" = 20' horizontally and 1" = 2' vertically, although a vertical scale of 1" = 5' has been used satisfactorily for some projects in hilly terrain.

When a 1" = 2' vertical scale is used, the vertical elevation datum should be placed so that numerically even elevations fall on the inch lines and only the elevations for the even two-foot intervals are shown. When a 1" = 5' scale is used, only even 5' and 10' elevations are shown, and these are placed on the inch line.

Existing ground line profiles and elevations, proposed profile grade line, vertical curve elevations, high waters, station equations, exceptions, reference points, bench mark notes, project limits and general notes are indicated exactly as in plans for rural construction.

Existing utility lines and mains are plotted by using light broken lines and symbols in accordance with Index Number 002. Buried service connections less than four inches in diameter need not be shown. All surveyed elevations of utility lines should be plotted regardless of line size.

For normal construction, proposed gutter line profiles are not necessary. However, when gutters are not at normal grade, the gutter profile grades should be indicated as special gutter, unless shown on other special profile sheets.

When the plans do not include separate sheets of profile grades and sections for street intersections, prolongations of gutter profile grades across street intersections should be included.

Bridges, bridge culverts, cross drain pipes and culverts are plotted and stationed as in rural construction. The storm sewer pipe, inlets and manholes along the main line are shown. Pipes are noted by size, inlets and manholes by structure number, and flow line elevations are indicated. If complete information is shown elsewhere in plans proposed structures can be shown by structure number only. Proposed drainage structures are plotted with a medium heavy line.

8.6 Standard Notes For Plan-Profile Sheets (Rural and Urban)

Below are standard notes which should be shown on the first plan profile sheet when applicable.

1. Grades shown are finished grades.

2. Utilities are to be adjusted by others as directed by the Engineer.
3. B. M. Datum is National Geodetic Vertical Datum of 1929 (NGVD-'29).
4. Buildings to be removed by others unless otherwise noted.
5. Existing drainage structures within construction limits shall be removed (or remain) unless otherwise noted.
6. (Railroad and Utility Agencies, Names, addresses and emergency phone numbers.)
7. Any NGVD-'29 monument within the limits of construction is to be protected. If in danger of damage, the project engineer should notify:

01/29/86
D. C. BULLARD
CORRECTION
MEMO

~~Mr. Charlie Novac~~

Geodetic Information Center
ATTN: MAINTENANCE SECTION
ATTN: ~~172~~ N/CG-162
6001 EXECUTIVE BOULEVARD
Rockville, Maryland 20852

Telephone No. (301) 443-8319

8. If there are no utility adjustment sheets in the plans, the following notes should be on the first plan-profile sheet:
 - a. The location of the proposed utilities shown in the plans are approximate only; The exact location shall be determined by the ~~Contractor~~ ^{ENGINEER} during construction.
 - b. For utility adjustment symbols, see Index No. 002.
9. If there are no drainage structure sheets in the plans, the following note should be on the first plan-profile sheet:
 - 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 locations.

2/24/86
K.N. MOREFIELD
CORRECTION
MEMO

10. 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 remainder property unless access rights are acquired. Access shall be provided to such property whenever construction interferes with the existing means of access.
11. 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.
12. (Under future sidedrain box). The sidedrain pipe dimensions are presented in standard diameters. The Department's engineer shall determine if the effective ditch depth and back slope requires an equivalent pipe arch or elliptical pipe.

Example Future Sidedrain Box:

FUTURE SIDEDRAIN REQUIREMENTS		
<i>Station To Station</i>	<i>Side</i>	
	<i>Left</i>	<i>Right</i>
<i>10 + 15 - 12 + 30</i>	<i>30"</i>	<i>18"</i>
<i>12 + 30 - 16 + 50</i>	<i>36"</i>	<i>18"</i>
<i>16 + 50 - 16 + 75</i>	<i>48"</i>	<i>24"</i>

13. Drainage structure alternatives include aluminum, steel and concrete materials. Unless otherwise noted on the plan-profile sheets, only concrete pipe sizes are identified in the plan and only concrete pipe is plotted and identified in the profile. Unless otherwise noted on the drainage structure sheets, only the concrete pipe alternate is plotted, but all alternates are described.

EXHIBITS 21 thru 24 illustrate completed Plan-Profile Sheets.

Approved:



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Topic No.: 625-000-109-a

CHAPTER 9

LATERAL DITCH PLAN-PROFILE

9.1 General

Lateral ditch plan-profiles are prepared on standard plan-profile sheets. The standard horizontal scale is 1" = 100'. If storm sewer construction is proposed for a portion of the ditch, a scale of 1" = 20', 40' or 50' may be used.

Plotting in the plan portion should be oriented to run the ditch centerline parallel to the long side of the sheet. The direction of the project centerline is to run from bottom to top of sheet.

9.2 Plan Portion

The plan portion shall include the following data:

1. The centerline of ditch and project are plotted and stationed as indicated in the roadway plan-profiles (Chapter 8). Alignment data and topography are placed on the plan. The bearing and/or curve points of the project centerline are shown; also, the north arrow.

2. All proposed drainage structures are plotted by symbol with structure numbers indicated. The project and ditch right-of-way lines are plotted and dimensioned.

3. The location station of the ditch is given in the lower right hand portion of the plan.

9.3 Profile Portion

The profile portion shall include the following data:

1. The profile section is prepared in the same manner as the profile portion of the roadway plan-profile sheets (Chapter 8). Existing ground line profile, high water elevations, underground utilities, bench mark information and elevation datum are shown as described for roadway plan-profiles.

2. When the ditch survey centerline does not follow the flow line of the existing ditch or channel, the existing channel profile is shown with a broken line and so identified.

3. The limits and width of proposed clearing and grubbing are indicated by a dimension line above the profile. The limits and quantity of proposed ditch excavation are shown by a dimension line above the profile when lateral ditch cross sections are not included in the plans.

4. The proposed ditch bottom width and rate of side slopes are shown by dimension in the profile grid.

5. When storm sewer construction is proposed along a lateral ditch, all of the proposed structures are plotted in the profile showing flow line elevations, pipe or culvert size and structure numbers.

6. Plot the natural ground or overtopping elevation where overland flow would occur. To be shown as a broken line and labeled as overtopping elevation.

EXHIBIT 25 illustrates a completed Lateral Ditch Plan-Profile Sheet.



CHAPTER 10

DRAINAGE STRUCTURES

10.1 General

Structures are plotted simply as sections along the centerline of the structure. The sections must be spaced to avoid overlapping of structures and notes. Sections are plotted successively by stations, beginning at the bottom of the sheet. All drainage structures are to be numbered sequentially, from beginning to end of the project. If for some reason a structure is plotted out of order, a note should be placed in the correct place in sequence referring to the sheet where the structure is plotted.

Drainage structure sections may be eliminated from a set of plans provided sufficient information can be shown on the plan-profile, Summary of Drainage Structures and cross section sheets. The elimination of structure plotting is the option of the District Office. In some cases, it will be necessary to plot enough information on work sheets to identify and resolve conflicts between pipe and utilities. It is necessary to plot sections for special structures and include these special sections in the plans.

10.2 Rural Projects

For plotting cross drain structure sections on rural projects, the following procedures should be followed:

1. The cross section at each proposed drainage structure should be drawn on standard cross section sheets, usually to the same scale as roadway cross sections, with the centerline of construction placed near the center of the sheet. The structure number shall be shown near the right border of the sheet.

2. The existing ground line is plotted at the location of the structure and is inked with a light solid line. The existing ground line elevation is placed immediately below the groundline at the survey line. Only an existing structure which is to be incorporated into the proposed drainage system should be plotted using a medium broken line.

3. The roadway template and proposed structure are plotted in pencil using a heavy solid line, and the proposed profile grade elevation is given above the grade point. The ends of the proposed structure are dimensioned from the edge of pavement. Station and flowline information is provided at each structure and at each culvert end.

4. Sections for skewed cross drains must be plotted along the centerline of the structure. Clear zone distances are to be measured at right angles to the project for all structures.

5. On projects where alternate culvert materials are suitable, only one alternate must be drawn. Typically the concrete alternate is drawn. All alternates must be noted.

6. All necessary information shall be shown by note for each alternate including size, length, class or gage or thickness, protective coatings, corrugation size restriction, end treatments and flow lines. The note is placed below the plotted structure. Standard index numbers are shown for endwalls, inlets or other accessory structures and details. Elevations are given for manhole tops and ditch bottom inlet grates and slots. Alternate "G" or other special grate treatment should be included with the inlet note. Additional details such as special bedding should be indicated. Flow direction arrows are drawn.

7. The same underground utilities as shown in the profile section of the roadway plan profile sheets are plotted in conjunction with each structure so that conflicts may be detected and to also alert the

construction forces of near conflicts. In the case of underground utilities other than minor service lines, a partial section or insert should be plotted for each location of crossing. The external dimension of the alternate culvert which represents the worst case should be used to identify areas of possible conflicts.

10.3 Urban Projects

The procedure in plotting structures for urban projects is similar to that for rural projects.

1. The ground line should be plotted for cross drains, stubs to inlets or endwalls outside the right-of-way and for ditch bottom inlets on side streets only. Where storm sewers run laterally or diagonally across the project, plotting must be in such a manner as to assure that minimum cover will result over pipes.

2. Structures for storm sewer mains along the project should be plotted in proper sequence and without interruptions. Inlets should not be located on radius returns and shall not be located in the way of sidewalks, crosswalks, and curb cut ramps. Inlets located beyond the returns of side streets are to be plotted as sections on the side street. These sections can usually be placed to the side of the sheet without interrupting continuity of plotting, but if not, these structures should be plotted on separate sheets with the appropriate cross-reference notes given.

3. The same underground utilities shown in the profile sections of the roadway plan profile sheets are plotted in conjunction with each structure so that conflicts may be detected and to also alert the construction forces of near conflicts. In the case of underground utilities other than minor service lines, a partial section or insert should be plotted for each location of crossing. The external dimension of the alternate culvert

which represents the worst case should be used to identify areas of possible conflict.

4. On projects where alternate culvert materials are suitable, only one alternate must be drawn. Typically the concrete alternate is drawn. All alternates must be noted.

5. Notes for cross drains are to conform to those of rural construction. For storm sewer systems the proposed inlets, manholes, junction boxes, endwalls, etc. are indicated by note as to station, type, flow line elevation and index numbers. Elevations are given for manhole tops and for ditch bottom inlet grates and slots. Alternate "G" or other special grate treatment should be included with the inlet note. Notes for pipes are to include size, length, class or gage or thickness, protective coatings if any, and corrugation size restrictions for metal culvert alternate material. Additional details such as special bedding should be indicated.

6. Flow line elevations are provided by note for each structure and each culvert end. Information for each alternate culvert material should be given. Flow direction arrows are shown for storm sewer systems and cross drains.

7. Existing structures, which are to be abandoned but are to be plugged and remain in place, must be plotted along with the proposed template at that location.

EXHIBITS 26 through 31 illustrate completed Drainage Structure sheets.

Approved.



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CHAPTER 11
BORROW PIT SOIL SURVEY

11.1 General

The present policy of the Department is to require contractors to furnish their own source of borrow material. All additional materials required in the subgrade portion of the roadway will meet all requirements as prescribed by the soil testing laboratory.

11.2 Exceptions

Special conditions could dictate furnishing of borrow by the Department. For information to be shown and sheet format see Exhibit 32. When borrow sites are provided by the Department, no clearing and grubbing of borrow pits is to be done within three (3) feet of the property lines, and no excavation is to be done within five (5) feet of the property line.

Approved:



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CHAPTER 12 ROADWAY SOIL SURVEY

12.1 General

Roadway soil survey information will be shown in roadway plans as a Test Analysis Sheet listing mechanical analysis for all samples of materials tested and recommended use for each. Soils having identical characteristics are assigned to the same stratum and group for identification and recommendation purposes. The Test Analysis Sheet will be signed by the District Materials Engineer. See Chapter 30 for signing and sealing procedures.

12.2 Method of Compiling and Presentation

Upon completion of the proposed typical section, and after placing alignment and proposed grades on the plan/profile sheets, prints of these sheets will be sent to the District Materials Engineer for use by his department for collecting samples of soil for testing and classifications. These classification and test results including pH, resistivity, sulfides and chlorides will be shown on the Test Analysis Sheet.

Water table elevation will be shown when encountered and weather conditions noted at time of sampling.

After completion of soils testing, the original cross sections will be sent to the District Materials Engineer for posting test boring data on the originals.

Test borings will be shown on the original cross section where the samples were taken by either of two methods acceptable to the Department.

1. Show test hole columns (approximately 0.4" wide) below the ground line with stratum limits and numbers inside the columns.

2. Use heat resistant adhesive legend tape in column in lieu of stratum lines and numbers. Tape must have prior approval of the Department.

If there is need to connect the strata lines between test holes, it should be accomplished by use of a light pink pencil. The pink pencil will not normally show on Xerox prints.

EXHIBIT 33 illustrates a completed Roadway Soil Survey cover sheet.

EXHIBIT 34 illustrates a completed Test Analysis Sheet.

Approved



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Sequence No. 15
Responsible Office Roadway Design
Topic No. 625-000-113-a

CHAPTER 13
ROADWAY CROSS SECTIONS

13.1 General

Standard cross section sheets are used for plotting roadway cross sections. The standard scale is 1" = 5' vertically and horizontally. Plans being prepared for multi-lane construction may make the 1" = 5' horizontal scale impractical to use and in such cases a scale of 1" = 10' or 1" = 20' horizontally may be used. The vertical scale of 1" = 5' will be used in all cases. The scale will be shown at the bottom right corner of the sheet above the title box.

Cross sections are plotted with stations increasing from bottom to top of sheet. Usually, only one column of sections is placed on a sheet.

Sections are normally centered on the sheet, using the heavy vertical grid line at the center of the sheet as the survey or base line. In cases of multi-lane construction by building a new roadway adjacent to an existing one, centering the sections will depend upon the location of the survey line and the side on which the new construction is to be placed. One of the heavy vertical grid lines is selected for the survey centerline so that the complete ultimate section will be centered approximately on the sheet. When the centerline of construction and survey are not parallel, the distance between each should be shown.

A heavy horizontal grid line is selected as an elevation datum line on an even five foot elevation for each section. As many sections as possible should be placed on a sheet spaced to avoid overlapping sections.

Existing ground lines are plotted and then inked with a light solid line. The existing ground line elevation at the centerline is inked just

below the ground line at the centerline. The station number of the section is inked in heavy numerals opposite the ground line on the right side of the sheet.

Existing construction such as pavements, curbs, sidewalks, etc. must be plotted using a light broken line to indicate the bottom of the pavement, curbs, sidewalks, etc.

Existing longitudinal underground utility transmission and duct lines should be shown when lying within the horizontal limits of the project and within twelve inches below the ground surface or the excavation surface on which construction equipment is to be operated or within twelve inches below bottom of any stabilizing course called for on the plans. Small distribution or service lines need not be plotted.

Earthwork columns for A-2 or A-3 material are to be provided at the right side of the sheet, and columns for all other materials are placed on the left side of the sheet.

Earthwork columns are inked with heavy solid lines.

Soil data is plotted on cross sections at the location of the soil boring and shown by columns with the stratum number noted in each column. The soils information is plotted on the cross sections by the District Materials Engineer's office.

The proposed roadway template is plotted using a heavy solid line. The proposed grade elevation is placed vertically just above the template grade reference point. Cut and fill areas are indicated in pencil in the area column opposite the station number, and volumes are penciled in the volume column midway between the area values.

Station equations are shown even though a cross section may not be plotted at that point.

Balance points are shown to the nearest even foot, and earthwork totals for the balance are given.

These lettering sizes and weights are recommended.

Station Numbers - 0.2" high, No. 2 or 2½ Rapidograph Pen

Earthwork Figures - No. 5 Ames Guide or 140 Leroy Guide

All lettering on cross section sheets should be between the horizontal 0.2" grid lines. The exception to this is that Profile Grade elevations may be written along the vertical grid lines or at an angle to the horizontal grid lines.

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

With the increased use of the computer, many design sections are utilizing their capability to plot existing terrain and proposed templates to reduce the manhours required to produce a finished cross section sheet. The programs available and their applications are discussed in Chapter 27, entitled "Computer Application in Plans Preparation".

The beginning and ending earthwork stations are shown. On projects with grade separations, intersections, interchanges, etc., the earthwork is 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.

EXHIBITS 35 thru 37 illustrate completed Cross Section Sheets.



CHAPTER 14

LATERAL DITCH CROSS SECTIONS

14.1 General

Lateral ditch cross sections are prepared in a manner almost identical to that of roadway cross sections (Chapter 13). The same type cross section sheet is used, and the scale generally is the standard 1" = 5', vertically and horizontally. However, regardless of the horizontal scale used, the vertical scale shall always be 1" = 5'.

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

A heavy vertical grid line should be chosen as the centerline or base line of each column of ditch cross sections, and a heavy horizontal grid line for the elevation datum for each section, as with roadway cross sections.

Soil surveys usually are not made on the lateral ditch locations except when a large amount of material is expected to be excavated and when the suitable material is to be used in the roadway. However, excavation is tabulated whether the material is classified or unclassified.

All other points mentioned in "Roadway Cross Sections" (Chapter 13) are applicable equally to lateral ditch cross sections.

EXHIBIT 38 illustrates a completed Lateral Ditch Cross Section sheet.



CHAPTER 15

BACK OF SIDEWALK PROFILES

15.1 General

Profiles for use in establishing back-of-sidewalk grades are prepared on standard cross section sheets. They consist of two profiles, one along each ~~right-of-way~~ line, and are plotted against the same elevation datum. They are plotted with light broken lines, different line patterns being employed for the two profiles to distinguish between the right and left right-of-way lines.

The standard scale is 1" = 100' horizontally and 1" = 5' vertically. This combination works very well for projects having few locations where the grade would be critical. In business districts, however, it is often advantageous to use a vertical scale of 1" = 2' and a horizontal scale of 1" = 50' or 1" = 20'.

The elevation datum is shown on both right and left sides of the sheet. Station numbers are given below the profile. Full station numbers are shown at each even five stations and single digit numbers at every other station when the horizontal scale is 1" = 100'. For all other horizontal scales, the full station numbers are given at each station.

Existing pavement such as parking areas and service station drives, which should be matched if possible with the proposed sidewalk grade, is indicated by dimension lines for each profile. The centerline for each intersecting street is indicated with a vertical line at the proper station, noting the station and street name. Intersecting streets on the right are shown by name below the profile, and those on the left are shown by name above the profile.

Drainage arrows to indicate slope of the ground at the right-of-way line are shown at each station and at plusses, when the information is available, and the drainage at that location significant.

Drainage arrows for the right right-of-way line are placed below the profile and those for the left right-of-way line are placed above. Arrows pointing away from the profile indicate drainage away from the project.

Building floor elevations for buildings along the project are indicated by a horizontal line drawn at the floor elevation and between the stations of the building limits. The elevation is shown numerically and the distance from centerline to face of building and side (right or left) are given. Entrances to buildings also are indicated if it appears this information would influence the grade selection. Top of existing utilities and the water table elevation may also be shown.

The proposed sidewalk grade line is plotted in pencil. Percents of grade are shown, P.I. stations and elevations are given and vertical curves, if any, are dimensioned. No elevations around V.C.'s need be given.

Since grades shown on this sheet are at the back of proposed sidewalk, and grades shown on plan-profile sheets are centerline grade profiles, the difference in elevation between the two is noted on the sheet.

Too much stress cannot be placed on the necessity for accuracy and completeness of information contained on this sheet, as it must embrace all information necessary, and be utilized wholly, in establishment of grades for the project.

EXHIBIT 39 illustrates Back of Sidewalk Profiles

CHAPTER 16
INTERSECTIONS AND INTERCHANGE LAYOUTS16.1 Intersections

It is usually necessary to show details for intersections on separate sheets when it is impossible to show all details on regular 1" = 100' scale plan-profile sheets.

In cases of simple intersections covering relatively small areas, regular plan-profile sheets can be used, placing the intersection layout in the plan portion and the necessary profile grades in the profile block.

For larger, more complicated intersections involving channelization or long connections, the layout should be placed on standard mylar sheets using match lines when more than one sheet is used. The profiles are prepared on standard cross section sheets.

Existing topography is not plotted on these details if it is covered elsewhere in the plans, unless pertinent to design. In most cases, information is given exactly as in the plan portion of municipal construction. Pavement edges, curb and gutter, channelizing and median curbs, drainage structures, pavement dimensions, radii and appropriate notes are included.

All intersection layouts must be dimensioned completely, stationed adequately and must include all pertinent construction notes and alignment data. Design speed data is given when appropriate. Extra pavement area and curb and gutter quantities should be given for each intersection. A north arrow is indicated, and a title and scale is shown at the bottom right hand corner of the plan.

The scale used should be sufficient to cover all necessary details. A scale of 1" = 40' is the smallest that should be used for intersection

layouts. Turning path templates are used to check the widths of turning lanes, and possible encroachments or conflicts. A scale suitable for such a check should be used. The templates are cut for scales of 1" = 20', 1" = 40' and 1" = 50'.

16.2 Interchanges

Interchange layouts are prepared on standard size mylar sheets. The entire interchange should 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 for the layout. Appropriate match lines must be shown. Blow-ups of ramp terminals and channelized areas are plotted using a scale of 1" = 40'. Layouts must be dimensioned and stationed completely, with all alignment data and construction notes included. All curves are assigned a number and the curve data presented in tabular form. The curve data and coordinate data may be placed on the same sheet but separate of the layout.

Interchange ramps are to be identified by use of letters. Location of ramp baselines are usually on the right edge of pavement with relation to the direction of traffic and are clearly indicated. Stationing of ramps is to be in the same direction as the project and must be equated to project and crossroad stationing at ramp terminals.

A topographic worksheet for all interchanges will be required and will be considered as the Preliminary Layout of the interchange. This worksheet is prepared on a standard polyester film sheet or on aerial photo positives both on a scale of 1" = 200'. The following information should be shown:

1. All topography such as existing roads, property lines, utilities, houses, drives, drainage, right-of-way, etc.

2. Preliminary interchange geometrics and proposed right-of-way limits.
3. Proposed reconstruction of the crossroad, and all access roads and/or frontage roads within the interchange.
4. Contours, unless terrain is relatively flat.
5. Traffic diagram with ADT, DHV and K, D and T values.
6. The length of speed change lanes should be shown.
7. Design speed for ramps and crossroads.
8. Proposed bridge limits.
9. Proposed L.A. right-of-way limits.
10. Pavement transitions.
11. Limits of construction along the crossroad.

The preliminary interchange layout along with typical sections, signalization analysis, alternate studies, ramp profiles, plan profile sheets along main line and crossroads and detail of ramp terminals will be reviewed by the Department and FHWA and will be considered a 10% complete submittal. After alignment, grades, drainage and conceptual data are confirmed, another more detailed submittal will be required. This will be a 50% complete review. At this time final approval of the interchange layout, including right-of-way requirements, will be given. The Department may also request intermediate submittals at any time during the design stage. The date of each submittal should be noted on the original layout.

In the final plans, it will be necessary to have the following sheets showing the interchange as listed below:

1. Interchange geometric layout.
2. Interchange drainage map.
3. Interchange topographic map. (May be combined with other layout sheets when aerial photos used.)

4. Interchange cross section pattern sheet.

5. Ramp terminal details.

Interchanges offer an excellent opportunity to provide aesthetically pleasing features since they usually have in-field areas associated with ramps.

EXHIBITS 40 through 42 illustrate completed Interchange Layout and Interchange Detail Sheets.

EXHIBIT 45 illustrates a completed cross section pattern sheet.



CHAPTER 17

INTERSECTION AND INTERCHANGE PROFILES

17.1 Intersections

In addition to normal profile grade lines, supplemental profiles and sections may be necessary at intersections to define edge of pavement profiles other than those controlled by the profile grade line. It is important to develop accurate profiles and sections at locations of curbed channelization to ensure proper drainage. Pavement surface sections are plotted at nose points and other critical locations.

When intersections are detailed on plan-profile sheets, the horizontal scale in the profile is to be the same scale as the plan portion. A vertical scale of 1" = 1' for the profile portion is satisfactory, enabling elevations to be picked up from the profile with sufficient accuracy.

For intersections having the plan detailed on a separate sheet, a standard cross section sheet is used for developing the profiles and sections.

For street intersections of municipal projects, scale of 1" = 10' horizontally and 1" = 1' vertically are satisfactory.

17.2 Interchanges

Ramp profile grades are developed along the baseline of each ramp. The edge of pavement profile opposite the baseline is also plotted. These profiles are plotted on standard cross section sheets.

The most common scales used for ramp profiles are 1" = 10' horizontally and 1" = 1' vertically or 1" = 50' horizontally and 1" = 1'

or 1" = 2' vertically. These combinations are satisfactory and it is recommended that one of them be used throughout the plans.

Sections at nose points are usually plotted on a scale of 1" = 10' horizontally and 1" = 1' vertically.

EXHIBIT 43 illustrates Intersection Profiles.

EXHIBIT 44 illustrates Ramp Profiles.



CHAPTFP 18

MAINTENANCE OF TRAFFIC DETAILS

18.1 General

Under the Federal Highway Administration Notice N 500.7 dated October 13, 1978, State and local agencies were instructed to create a meaningful maintenance of traffic program by the preparation of a maintenance of traffic plan for every project, creation of separate pay items for maintenance of traffic work, provide training to employees who design or set up maintenance of traffic sites and to evaluate the effectiveness of such a program.

In response the Florida Department of Transportation adopted the above as guidelines for all Federal-Aid and State funded projects. The program has been in effect since August 1979 and has been accepted as a standard portion of the plans package.

18.2 Types of Maintenance of Traffic Plans

The type of maintenance of traffic plan depends on the type of project. The types are basically broken down into three categories:

1. Resurfacing, widening, signal, signing and lighting projects should be referred to specific cases as shown in the "Manual on Traffic Control and Safe Practices (MTCSP)".
2. Rural and municipal construction projects, including structure replacement projects, that can be referenced to the 600 series index drawings of the Roadway and Traffic Design Standards.
3. Complex rural and urban projects requiring unique details with or without MTCSP and indexed drawings.

When maintenance of traffic details are prepared they should show signing and construction phasing for each step in the maintenance of traffic operation. These sheets should be placed in the plans as maintenance of traffic details and not as a separate set of plans with a Key Sheet, etc.

It is realized that no two projects can be handled in the same manner and the above is only a guide for plan preparation. During the design phase of all projects, the type, extent of details and method of presentation in the PS&E will be jointly determined by the District Office and the FHWA Area Engineer.

Detours at railroad crossings are to be considered at the pre-design conference. Maintenance of railroad traffic for over/under pass projects should be considered even if maintenance of existing highway traffic is not a factor.

Contractors will be permitted to develop their own maintenance of traffic plan and it may be accepted if it is equal or superior to the Department's plan as determined by the Department and FHWA.

The person who will have the primary responsibility for assuring that the maintenance of traffic plan and other safety aspects are effectively administered will be assigned during the preconstruction conference and the name will be included in the minutes of the conference and a copy will be sent to the FHWA.

18.3 Maintenance of Traffic Items and Basis of Estimates

Items for maintenance of traffic are required to be broken out individually to ensure better control over the type and quantity of items used to maintain traffic. These individual items fall under the 102 series of the master pay item list.

The maintenance of traffic (lump sum) item includes all items and services not included in individual bid items (Flaggers, Paddles, Flags, Off-duty Police, Maintaining Existing Pavement, Cones, Advisory Speed Signs, Temporary Route Markers).

For items which are paid for per each day (ED), usually barricades, flashing lights and construction signs, an estimate has to be made by the designer (usually with help from construction) on how many are required for how many calendar days to arrive at a quantity. The plan quantity is the sum of all the quantities for the various times.

Different quantities of per each day items may be required for various lengths of time, in which case the plan quantity is the sum of all the quantities for the various times.

18.4 Training

The Department currently has an ongoing Traffic Control and Safe Practices Training Program which includes training of persons responsible for developing and designing traffic control plans, as well as those responsible for implementation and inspection of traffic control layouts.

18.5 Review and Evaluation

Random projects will be selected for review and a report of the findings and recommendations will be made to correct any deficiencies in our procedures. Designers should constantly be aware of any changes which may result from these reviews.

EXHIBIT 46 illustrates a completed Maintenance of Traffic Plan.



CHAPTER 19

PREPARATION OF UTILITY ADJUSTMENT SHEETS

19.1 General

The purpose of Utility Adjustment Sheets is to provide coordination between the contractor and the affected utility companies. These sheets will show the contractor approximate locations of existing, proposed and relocated utilities. This will aid the contractor in avoiding possible conflicts and/or damage to the utilities involved.

19.2 Design Procedures

1. After existing utilities are plotted on project plan-profile sheets, furnish all the utility companies involved with a set of prints for verification of existing utilities and for location of proposed and/or relocated utilities. These are usually marked on the set of blue-line prints furnished by the Department.

2. Upon receipt of verification from the utility companies the existing utilities, as plotted on the plan-profiles, should be reviewed to ensure that they are consistent with the marked prints returned by the utility company. Differences should be called to the attention of both the affected utility company and the design section. Appropriate corrections should be determined and corrected on the plan-profile sheets.

3. Film or reverse sepias should be obtained of the original plan-profile sheets, blocking out the general notes. The existing utilities should be highlighted with a heavy dashed line.

4. Draw or trace, using a very heavy solid line, the proposed and/or relocated utilities as accurately as possible from the marked blue-lines onto the reverse sepias. Use the standard utility symbols as shown on

Index 002. The Designer should look for conflicts between proposed utilities and relocated utilities, also making sure there is no interference with proposed storm sewer or other roadway appurtenances. The Designer should notify Utilities and Design if conflicts do occur.

5. Indicate on the reverse sheets the disposition of all existing utilities, i.e. (TO BE REMOVED, TO REMAIN, TO BE RELOCATED, TO BE ADJUSTED, TO BE ABANDONED). Label proposed utilities to avoid confusion on reduced plans with extensive utility adjustments.

6. Add standard notes to the first sheet in the clear areas where plan profile general notes were blocked out. Refer to Chapter 8 for standard notes.

Number these sections consecutively after roadway cross sections. Label each sheet in lower right hand corner as 'UTILITY ADJUSTMENTS' and insert into plans.

7. The utilities should stand out boldly when these sheets are reproduced. Since these sheets are schematic in nature and reflect approximate locations, details of the roadway design may be eradicated to bring utility lines into sharp relief. Be certain that survey lines and stations are always clear.

EXHIBIT 47 illustrates a completed Utility Adjustment sheet.

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CHAPTER 20

BRIDGE HYDRAULIC RECOMMENDATION (BHR) SHEET

20.1 General Requirements

The Bridge Hydraulic Recommendation (BHR) sheet is an approved standard form for summarizing the hydraulic design data and recommendations used in bridge design. A BHR sheet is required for each bridge and bridge culvert over water and railroad overheads. Exceptions to the above occur for non-Federal Aid bridge culverts and some minor bridge widening projects. For Bridges this is placed in the Structure Plans. For Bridge Culverts the BHR sheet is placed in the Roadway Plans.

Along with the hydraulic design data, plan and profile of the bridge structure, existing topography, site location, and drainage areas are also shown. The effective area of opening should be shown for existing structures on the same waterway. The Bridge Number shall also be shown on this sheet. Parallel (dual) bridges may be shown on one sheet, although a second sheet might be necessary. When Two sheets are necessary, only the plan and profile information need be furnished on the second sheet.

The District Drainage Office reviews and concurs with each Bridge Design Data Sheet prepared by consultants. The Tallahassee Drainage Office reviews and concurs with the completed Bridge Data Sheet prior to developing the bridge preliminary plans. Consultants should be reminded of the necessity to submit BHR sheets as early as possible to preclude later delays and reworking of Bridge preliminaries.

20.2 Design Procedure for Use of BDDS for Bridges and Bridge Culverts

Over Water

1. Obtain a blank film copy of the Standard BHR sheet.

2. Using ink, draw all available existing topography, contours, hydraulic and other data on existing structures. On bridge culverts, in some cases, such as in level topography with a cut canal, the contours may be omitted. If aerial plan sheets of the area are available, these aeriols may be reproduced in the plan portion of the BHRS.

3. High water information shall be shown on the BHRS. The elevation measured at the time of survey with month, day and year should be shown in the profile.

4. The Drainage Area and Location Map section should include a map with north arrow, of sufficient scale to show entire drainage area for the proposed structure. The drainage area boundaries should be inked using a very heavy broken line and the area given within the boundary. The proposed structure location should be shown. Existing structures over the same water body should be located and numbered with corresponding existing structure information listed in the appropriate columns.

5. Using film pencil, draw proposed bridge indicating abutments and other recommendations. Fill in recommendations.

20.3 Design Procedure for Railroad Overpass (Grade Separation)

1. The plan section should include contours to demonstrate the existing features such as ditches, backslopes, drainage structures, and railroad roadbed or existing roadway. Other specially pertinent information that shall be shown are railroad and D.O.T. right-of-way lines (existing or proposed), railroad mile post tie and labeled with F.D.O.T./A.A.R. federal inventory crossing number.

2. The profile section shall show existing track profile and side ditch profiles along the railroad.

3. To substantiate proposed drainage facilities at the crossing, the location map section shall show the drainage boundaries in the vicinity of the crossing. When the existing drainage features will be impacted by the proposed bridge a hydraulic study is required. This data shall be summarized on the BHRS, as appropriate.

EXHIBIT 48 illustrates a completed Bridge Hydraulic Recommendations Sheet.



CHAPTER 21

DESIGN PROCEDURES AND CRITERIA

21.1 General

In preparing highway construction plans, a designer is usually designated as squad leader and is responsible for the execution of work. The squad leader should be a designer with considerable experience, capable of directing the design and assembly of plans with minimum supervision.

The squad leader must keep himself up-to-date on all design criteria and have available to him all necessary design manuals, pamphlets, memorandums and guides to ensure that the design meets all applicable state, local and federal requirements for engineering and safety.

21.2 Design Procedures

The designer usually has two approaches to a project, preparation as a rural project or preparation as a municipal project. Both have similar aspects in actual plans preparation but design criteria differs widely from rural to municipal projects.

To ensure that the design meets all pertinent criteria, the designer should follow the procedures for preparation of rural projects (Chapter 22) or procedures for preparation of municipal projects (Chapter 23).

Projects are jointly reviewed by Design, Construction, and Maintenance at different stages of completion. On-site reviews are held, value engineering analysis are conducted and quality assessments are made.

Specific details of how and where these reviews, etc., are conducted is given in Chapter 25.

21.3 Design Criteria and References

Available to the roadway designer are many excellent publications on design criteria. In lieu of presenting all the criteria in this plans preparation manual, only the titles of the most widely used references are given providing the designer with the basic references he should have access to; for specialty projects he should seek out specific publications for reference.

1. Florida Department of Transportation Published References
 - a. "Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways" (Green Book)
 - b. "Flexible Pavement Rehabilitation Manual"
 - c. "Drainage Manual"
 - d. "Right of Way Engineering Manual"
 - e. "Basis of Estimates and Computations"
 - f. "Utility Manual - Volume I (Utilities) and Volume II (Railroads)"
 - g. "Utility Accommodation Guide"
 - h. Current "Standard Specifications for Road and Bridge Construction" and Supplements
 - i. "Manual on Traffic Control and Safe Practices"
 - j. Current "Roadway and Traffic Design Standards"

- k. "Florida's Geometric Design Guide for Resurfacing, Restoration and Rehabilitation of Streets and Highways" (Orange Book)
- l. "Utilities Master Pay Item Manual" G.
- m. "Bicycle Facilities Planning and Design Manual"
- n. Value Engineering Manual
- 2. ^{O.} American Association ^{F.} of State Highway and Transportation Officials (AASHTO) Published References
 - a. A Policy on Geometric Design of Highways and Streets (1984)
 - b. "Geometric Design Guide for Resurfacing, Restoration, and Rehabilitation (R-R-R) of Highways and Streets" (Purple Book)
 - c. "Highway Design and Operational Practices Related to Highway Safety"
 - d. "A Guide on Safety Rest Areas for the National System of Interstate and Defense Highways"
 - e. "A Policy on the Accommodation of Utilities on Freeway Right-of-Way"
 - f. "A Guide for Bicycle Routes"
 - g. "A Guide for Accommodating Utilities on Highway Rights-of-Way"
 - h. "A Policy on Access Between Adjacent Railroads and Interstate Highways"
 - i. "Guide for Selecting, Locating, and Designing Traffic Barriers"
 - j. "A Guide on Erecting Mailboxes on Highways"
- 3. Federal Highway Administration Published References
 - a. "Manual on Uniform Traffic Control Devices"

- b. "Handbook of Highway Safety Design and Operational Practices"
- c. "Accommodation of Utility Plant Within the Right-of-Way of Urban Streets and Highways" - FHWA-RD-75-8 and 9.

4. Other Published References

- a. "Capacity Manual" by National Research Council
- b. "Policies for Accommodation of Utilities on Highway Rights-of-Way" by Transportation Research Board.

21.4 Design Criteria Memorandums

Often specific subjects or criteria are not presented in any publication or an official interpretation is needed to make clear the intent of specific design parameters. When such a situation arises official interpretations in the form of Design Criteria Memorandums will be sent to all the District offices and design consultants for their information and files.

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CHAPTER 22

PREPARATION OF PLANS FOR RURAL PROJECTS

22.1 General

The procedures as outlined apply to conventional methods of plan preparation for rural projects of considerable length and may be varied for shorter projects. All plans no matter the complexity should be prepared with quality in mind.

22.2 Preliminary Preparation

All field books should be indexed. A check of level notes and horizontal curve data should be made. All field notes should be reduced. A work typical section should be drawn. The alignment, topography and centerline profile may be plotted on a continuous "hard roll" for ease of handling and plotting proposed alignment.

22.3 Preliminary Geometrics

When aerial photography is used for plan-profile sheets, the alignment and the profile are plotted on the original sheets. Blue-line prints can now be made. Separate the plan from the profile by cutting along the profile border, and fasten each sheet together, matching the end station of the preceding sheet with the begin station of the following sheet for both the plan portion and the profile portion, thus producing two separate "hard rolls". (This method eliminates a bulky roll) These two rolls may be used simultaneously for establishing the proposed grade.

All alignments should be reviewed for undesirable alignment and aesthetic effect such as broken back curves, curves in opposite directions with insufficient intervening tangent, curvature exceeding the maximum for

the design speed, etc., and a study made of possible remedial measures by realignment. A check should also be made of undesirable horizontal-vertical curve combinations.

The rate of superelevation, based on the design speed, is indicated in conjunction with the curve data for each horizontal curve. In cases where no superelevation is required, this should be noted. Superelevation rates are obtained from charts on the appropriate standard drawing or from AASHTO.

22.4 Preliminary Profiles

After determining that the horizontal alignment is satisfactory, a tentative grade can be established on the continuous roll. Several factors influence the choice of grades and are listed below

1. A minimum stopping sight distance, based on the design speed, must be approved throughout the entire project. The minimum length of vertical curves will be adhered to. (See Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways - the "Green Book".) It is recommended that values approaching or at the upper limit of the range be used for design wherever conditions permit.

2. Definite clearances between the bottom of base and design high water elevations must be maintained. The standard clearance is 3' for interstate and hightype 4-lane primaries, 2' for 2-lane primary and 1' for secondary. Superelevation of curves must be taken into account so that the required clearance will be obtained at the low edge of pavement.

3. Grades should not exceed established maximum for type of facility.

4. Soils data should be examined for the possibility of eliminating or reducing the undercutting of unsuitable material, when this data becomes available.

5. Avoid secondary dips in the proposed grade, which, when not apparent to the driver, results in reduced passing zones on two lane roads.

6. Sizes of existing drainage structures may give some indication of drainage requirements and allow establishment of grades that will provide the required cover.

7. When railroads are crossed at grade, the proposed grade must meet the rail elevations. The grades of intersecting streets or highways also should be matched as closely as possible. The District Railroad Coordinator can determine if a railroad track adjustment is necessary or planned by the railroad company.

8. Economy of construction is an important factor in establishing grades. Total earthwork should be held to a minimum. When practical, cuts should produce sufficient material for construction of fills.

22.5 Preliminary Cross Sections

After the tentative grade is completed on the "hard roll", the existing ground line can be plotted and inked in the profile portion of the plan-profile sheets. The tentative grade is now shown on prints of these sheets. The roadway cross section ground lines can be plotted using the tentative grade for spacing the sections. The ground line, ground line elevation at the centerline of survey, and the station number are inked.

The cross sections and prints of the plan-profile sheets can be sent to the District Soils Engineer for use in obtaining soils data.

Outfall and in-fall ditch surveys now can be plotted on a "hard roll". Alignment, topography and profile for each ditch are plotted. Cross sections are plotted after it has been determined at which locations outfall ditches will be constructed. The profile is inked, and the remainder of the plotting is to remain in pencil. Existing structures,

including major utility facilities, are plotted in both plan and profile. Show property lines on "hard roll" to assure field consideration of R/W takings, including access. This roll will be used in the field inspection of drainage and later in establishing lateral ditch grades.

The roadway cross section templates are plotted now. When there is a possibility that numerous grade changes will be required to balance the earthwork, the templates should be plotted on prints of the cross sections. Grade changes also can be plotted on these prints, thus providing a record of the development of final grades. Any special ditches should be planned at this stage.

On superelevated curves in well drained soils, the same elevation for both ditches need not be maintained unless drainage considerations dictate otherwise. The standard depth ditch is 3.5' deep, measured from the shoulder point. Special ditch grades must be used when necessary to avoid water pockets.

When plotting templates it is not necessary to indicate the thickness of surfacing. Only the total thickness of the base and surface need to be plotted.

22.6 Preliminary Review

The grades can now be re-examined for possible improvements such as:

1. Can poor grade alignment combinations be eliminated?
2. Can passing sight distance be improved?
3. Can unnecessary handling of unsuitable material be avoided?
4. Are grade changes necessary by any special conditions revealed by examinations of the plotted roadway cross sections?

5. Are truck climbing lanes necessary? Check traffic data and warrants for truck climbing lanes.

The preliminary drainage map should be prepared as soon as the necessary information is available and must be as complete as possible for the preliminary field inspection.

Geometric layouts for intersections, pavement transitions, etc. are made prior to the field inspection. Intersection profiles should not be completed until the grade is finalized, but sufficient work profiles should be prepared to establish that satisfactory operation of the intersection is possible and general knowledge of property lines and ownerships of certain key parcels that could influence design decisions are shown.

The centerline of an intersection or connection should be centered on the centerline of right-of-way or dedication of the side road. Offset, if any, to the centerline of pavement should be shown.

During the preparation of plans to this stage, it is desirable to make a list of questions of design which arise that should be resolved at the time of the field inspection. As many such questions as possible should be resolved at this point, to minimize future changes in the completed plans.

The preliminary on-site inspection or grade review is made by the highway designer, the drainage engineer, the location engineer, R/W engineer and a representative of the Federal Highway Administration if a Federal-Aid project. All preliminary plans (or prints), continuous rolls, aerial photographs are taken and the inspection is made by walking or riding to the location.

Design features developed thus far are checked. The location, sizes and skew angles of proposed drainage structures are determined. The necessity for outfall ditches is determined and ditch sizes set. The validity of high water elevations is verified. Conditions requiring

special design features such as special or interceptor ditches, rim ditches, erosion control requirements, maintenance berms, irregular shaped parcels, etc., are examined for potential to "fit" or match requirements to available whole parcels or undamaged remainders and consider retaining walls where future development will be detrimental to the project drainage.

Comments concerning design details or changes may be placed on the continuous rolls or prints for a detailed review in the office.

Upon completion of the field inspection and receipt of any necessary additional survey information, the design and plan details are revised by making all changes and corrections that were noted on the field review.

If a railroad crossing is involved, the Diagnostic Team evaluation report should have been completed by the District Railroad Coordinator for the designer's information and guidance.

22.7 Final Design

Grades can now be finalized. Any grade or ditch revision resulting from the field check such as proper clearance over proposed drainage structures is made first. Earthwork is now computed and a preliminary mass diagram is prepared. (At this stage, the soil data must be available).

End areas are obtained by computing the cut and fill areas. Earthwork volumes are computed by the average end area method. Muck, plastic materials and A-2, A-3 materials are computed separately. Material in each category is separated into roadway and subsoil excavation when both designations occur. The person computing the areas must be completely familiar with excavation classifications.

If extensive muck pockets occur it must be determined if a muck blanket is to be used on the project or if the muck will be used in fill areas to flush slopes. When plastic material is encountered in cuts, a check should

be made for its use in fills. Refer to Standard Index 505 for details. Only after the use of these two materials has been established can the preliminary mass diagram for A-2, A-3 material be prepared. A-2, A-3 materials are to be used whenever possible in the subgrade.

Correction for earthwork shrinkage is accomplished by adding an amount to the fill quantity. This is called the "shrinkage factor" and is expressed as a percentage. Shrinkage factors for various material vary considerably and should be established by the District Office for each project.

In rolling terrain, where balancing grades are possible, it is often helpful to plot the grade profile on the mass diagram sheet (or print). Balance lines are introduced at proper points to insure balances at peaks of hills which provides for downhill haul in both directions. Excessively long hauls must be avoided.

Necessary grade changes now should be made, earthwork revised, and the preliminary mass diagram (or applicable portion) recomputed and plotted. After no further improvement can be made in grades, the remaining work on earthwork computations, except for the approximate location of borrow sections with the resulting amounts of borrow, may be deferred until the plans have been detailed completely. This will eliminate the necessity of last minute changes, etc.

Grades should be placed on the drainage map and the necessary corrections made on the plan-profile work sheets.

Intersection layouts should be completed and proposed profile grades and sections plotted. Although the layout may have been detailed on a work sheet for tracing later, grade profiles and sections usually can be developed on the sheet which will be placed in the completed plans. Roadway cross sections and earthwork must be corrected, when necessary, to reflect proposed intersection construction.

22.8 Drainage

Locations of shoulder gutter inlets and down pipes, median drains and intersection drainage should be determined, and the drainage structure cross sections plotted. The standard minimum cover over pipes is 12" from bottom of the base to the outside shell of the pipe. Reference must be made to the roadway cross sections to insure that the proper side slopes are used on the drainage structure sections. When substandard clearance between base and structure cannot be avoided, special treatment must be employed, using extra base material around the structure as indicated on Standard Index 205.

In case of skewed structures, the cross section is plotted along the centerline of the structure, correcting for pavement and shoulder width and side slopes on the skew.

When a pipe is placed under a railroad, care must be taken that the proper minimum cover is obtained and the limits of the special pipe accurately determined. For details of installations under railroads see Standard Index 280.

Flow lines of drainage structures having been established, the required lateral ditches can be developed. Cross sections are plotted for the ditches to be excavated, drainage structures are plotted in the plan and profile and ditch grades are established. Ditch templates are plotted, and earthwork is computed.

Proposed drainage structures are to be indicated by structure number in the plan and profiles of the remainder of the plan, e.g., drainage map, plan profiles, and intersection and special detail sheets.

22.9 Right-of-Way

Right-of-way requirements must be checked. Roadway cross sections are reviewed, and if the limits of construction lie outside the established right-of-way, additional right-of-way must be requested, or cut and fill slopes revised so all proposed construction will be within the right-of-way. Retaining walls may be justified to avoid damaging key parcel remainders.

Close cooperation and coordination of activities is to be maintained with the Right-of-Way Office in the selection of corridors for location of the improvement and establishment of reasonable right-of-way limits based on property ownerships, economics, alignment, grades, land use, typical sections, etc. As the preliminary layouts progress, the Engineer of Right-of-Way is to be constantly contacted, on-site reviews held, and rough appraisals obtained where necessary in order to assure a reasonable and practical facility that can be economically, esthetically and operationally justified.

The Right-of-Way Office should be involved in the development of the approximate right-of-way requirements as early as possible in the plans preparation stage in order that title search may be initiated and the final requirements furnished immediately after firm establishment of the requirements.

If for any reason the requirements are altered after having been developed with the Right-of-Way Office, that office must be notified immediately in writing. The right-of-way check of completed plans is made jointly by representatives of the Design Office and the Right-of-Way Office.

The right-of-way shown on the plans must be in exact agreement with that shown on the right-of-way map. *

A reasonable berm width should be provided between the top of cut slope or toe of fill slope and the right-of-way line, especially in the case of heavy cuts and high fills. A minimum of 10' is desirable between limits of construction and the right-of-way line in moderate cuts and fills. A berm of 15' to 20' should be provided in areas of heavy cuts and fills.

In some cases, it may be less expensive to obtain a construction easement rather than right-of-way in fill sections where the toe of slope is outside the right-of-way. In these cases, however, a careful check should be made to determine if future development to the right-of-way line by the property owner would be detrimental to drainage of the project.

Lateral ditch cross sections are examined, and right-of-way requirements for the ditches established. A reasonable distance will be required between top of slope and right-of-way line, on one side, at least, if maintenance equipment cannot be operated in the ditch.

After right-of-way requirements are determined, this data is referred to the Right-of-Way Office for completion of the right-of-way maps.

22.10 Plans Assembly

If it becomes necessary to revise or add roadway or other ditches during the development of the drainage structures, roadway cross sections and earthwork must be revised.

Earthwork can now be finalized. The mass diagram is recomputed or revised to reflect earthwork changes. Balance lines are drawn as described and balance points computed to the nearest foot. Earthwork quantities between balance points are added, and the balance quantities shown at the proper place on the roadway cross section sheets. These balances and quantities are placed on the mass diagram sheets and are added to the summary of earthwork which is placed on the last mass diagram sheet.

Quantities can be computed and tabulations placed on the quantities sheet. Quantity sheets are prepared in pencil on standard cross section sheets or prints of blank tabulation sheets. A careful check must be made to insure all construction is covered by pay items and payment for all work is set up in accordance with the Standard Specifications.

The Key Sheet can now be prepared and completed, with the exception of the Index of Sheets. The drafting and tracing of the plan sheets should be complete. Final drafting consists of tracing the plan portion of the plan-profile sheets from the continuous roll and placing the profile grade line and the special ditch grade lines in the profile, transferring cross section templates to the tracings if prints were used as work sheets, completing intersection and special detail sheets, etc. The typical section should be corrected, if necessary, to reflect special conditions encountered during the final design of the project.

When final drafting has been completed, plans are assembled in proper order. The sheets now are numbered and cross referenced in the body. Unnecessary cross referencing is discouraged.

The Index of Sheets is prepared on a work sheet and is attached to the Key Sheet. It is extremely important that all Standard Drawings necessary for construction of the project be included.

The plans are now complete and ready for final field inspection and checking. In case of state projects, a final field inspection usually is not necessary. If the project is to be financed wholly or partially with Federal funds, the Area Engineer of the Federal Highway Administration will usually request a field inspection of completed plans in company with Department personnel.

The construction notes placed in the plans should be clear and to the point. Vague and muddled notes with uncertain or ambiguous meaning have no

place in construction plans. Any note, the intent of which is not perfectly clear, is not satisfactory. Care must be taken that notes do not conflict with Standard Specifications.

The scope of all work must be indicated, clearly and fully, either by drawing or by note.

Once a change or revision is initiated, it must be carried throughout the plans on all sheets affected.

After the final field inspection and final corrections, plans are subject to a complete check. This encompasses both a complete design and engineering review and a rigid routine check and cross check of details.

After checking has been completed, the Index of Sheets, typical sections, summary and special detail sheets, etc., can be inked to complete the final plans assembly.

Each set of plans prepared by the District Office or consultants and submitted to the Tallahassee Office for processing should be accompanied by a letter outlining any special design features in the plans assembly. Reasons for non-standard design should be explained as well as the basis for design. In the case of plans prepared in the Tallahassee office, documentation of design will be required.

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CHAPTER 23

PREPARATION OF PLANS FOR MUNICIPAL PROJECTS

23.1 General

Many procedures followed in the Preparation of Plans for Rural Projects (Chapter 22) also are applicable to the Preparation of Plans for Urban Projects. Since these procedures have been discussed, complete descriptions will not be repeated. Opportunities for blending roadways into an urban environment for aesthetic effect should not be overlooked. Quality in plans preparation should also be remembered.

23.2 Preliminary Preparation

The first several steps in urban plans preparation are the same as the rural projects:

1. Familiarization of the squad leader with pertinent project data.
2. Indexing field notes.
3. Checking field notes.
4. Drawing proposed typical section or sections.
5. Plotting alignment, existing topography, underground utilities and ground line profile in the plan and profile portions of the continuous roll.
6. Outlining the drainage map.
7. Plotting alignment, topography and profile of outfalls. (The location of outfalls for municipal projects frequently cannot be determined until the storm sewer system is designed, so this operation may be deferred.)

Roadway cross section ground lines are plotted on cross section sheets. In municipal type construction, there is usually relatively little

departure of grade from the existing ground, so variation in spacing of cross sections seldom is necessary. The plotting is the same as for rural projects. Existing pavement must be plotted. It is especially important to show existing pavement such as service station drives, parking areas and similar construction at the right-of-way line.

Underground utilities are plotted using symbols from Standard Index No. 002 as in rural preparation design. Front of buildings and other improvements near the right-of-way line are indicated at the correct distance from the centerline, and existing floor elevations are shown. Also underground gas storage tanks should be shown.

23.3 Preliminary Geometrics

The geometric layout is plotted on the continuous roll. This includes proposed sidewalk, curb and gutter, returns at cross street intersections, median curbs, traffic separators and left turn storage and other auxiliary lanes. Proposed right-of-way lines are indicated. Care must be exercised to insure conformance of geometrics to the approved typical section and design criteria for the project.

✓ Intersections to side streets are centered on the street dedications, except in rare cases when an existing street with curb and gutter is off center and proposed construction must meet existing construction. Offset, if any, to the centerline of pavement should be shown. A minimum width of 33' face to face of curbs is used for side street connections. Standard widths should be used for side streets except when connections must conform to existing curb and gutter sections.

23.4 Preliminary Profiles

Profiles used for establishing back-of-sidewalk grades now are plotted.

Grade requirements for municipal projects are quite different from those for rural projects. The ideal grade for municipal projects is one in which the proposed grade for the back of the sidewalk matches the existing ground profile in elevation. This condition rarely occurs except for short distances if back-of-sidewalk grades are established in accordance with design criteria, and compromise grades are selected which will minimize damage to adjacent property and reduce drainage complications.

To establish back-of-sidewalk grades, profiles along each right-of-way line are plotted against the same elevation datum. These profiles usually are plotted from elevations obtained from roadway cross sections at the right-of-way line. This method is satisfactory when sufficient cross sections or part sections are available to produce a reasonably accurate profile. (See Chapter 15 for specifics.)

Cross sections will be used to establish direction of drainage arrows which are placed above and below the profile. Care must be taken to avoid plotting invalid or misleading elevations, which would be the case if the right-of-way line were to fall in an existing ditch. In this event, the ground line immediately beyond the ditch limits should be plotted.

Elevations and limits of floors, locations of building entrances, and limits of existing pavements along the right-of-way line are indicated. Limits of private drives and entrance walks need not be shown. Although the different colors will not be reproduced, they are a help to the designer.

Tentative grades now are established. On a print of the back-of-sidewalk profile are drawn grade lines which match as well as possible existing ground at the right-of-way line, using these criteria.

1. The desirable minimum tangent length of the grade line is 300', with an absolute minimum of 250' unless otherwise specifically authorized.

2. A minimum gutter grade of 0.5 percent is to be used where the terrain is rolling enough for such use. A minimum grade of 0.30 percent may be used for high type pavements accurately crowned and supported on a firm subgrade. For the flat terrain conditions that exist in much of Florida the designer should attempt to utilize a minimum grade of 0.30 percent. For sag vertical curves a minimum grade of 0.30 percent should be provided within 50 ft. of the level point. Under adverse conditions of very flat terrain or when widening an existing pavement that is on a very flat or level grade a minimum grade of 0.20 percent may be used. Inlets spacing must be adjusted accordingly.
3. Vertical curves will be required for breaks in grade as shown in Manual of Uniform Minimum Standards.
4. The high point should be at or near the centerlines of cross streets where possible.
5. The placing of low points in the grade at locations which would be detrimental to existing development should be avoided.
6. Standard clearance above high water elevations should be provided and/or a suitable method of controlling highwater such as underdrain.

The grade must be such that the back of the sidewalk will not be above building floor elevations at entrances, particularly in the case of buildings at or near the right-of-way line. The grade should be sufficiently lower than floor elevations to allow for provision of adequate drainage away from the entrance. If at all practical, the grade of the sidewalk should be such that water will not be ponded behind it at locations where ground slopes toward the project. It is generally undesirable to have fill sections at the back of the proposed sidewalk. In

case of a definite cross slope of the ground from one side of the project to the other, a compromise grade, compatible to the property development is established, with cut on one side and fill on the other.

At the location of superelevated curves separate profiles must be used for establishing grades for the right and left back of sidewalk.

Occasionally, a situation will arise where extensive development exists on both sides of the street and the ground or development on one side is somewhat higher than on the other. In this situation a grade line fitting existing development on one side may cause extensive property damage on the opposite side. In such cases, a reversed crown section may be used, on one roadway. Separate profile grades would be required for each side. During transitions from reverse crown to normal sections and in superlevation transitions, care must be taken to avoid gutter grades flatter than the minimums given in Section 23.4

When preliminary back-of-sidewalk grades have been established, proposed sidewalks are plotted on prints of roadway cross section sheets. The prints are examined carefully for every possible improvement of grades, and revised if necessary.

23.5 Preliminary Cross Sections

Preliminary cross sections are prepared in a similar manner as described in section 22.5 for rural projects. However, special emphasis should be placed on matching existing streets, business drives, etc. and allowing for proper drainage.

23.6 Preliminary Review

The preliminary on-site review is now in order, the primary purpose of which is to determine feasibility of the geometrics and to make a careful

review of proposed grades. A preliminary drainage inspection also may be made at this time, designating possible outfalls. However, the final drainage system design naturally will depend upon the final grades adopted.

The review party should consist of the designers in charge of the plans preparation, the District Design Engineer or his designated substitute, and representatives from Construction and Maintenance. At times, it might be helpful to have the District Drainage Engineer in the party, but usually the drainage review might be deferred until the grades are established. The Federal Highway Administration should be represented on all Federal Aid projects. The continuous plan and profile rolls, prints of the sheets covering proposed back-of-sidewalk grades, roadway cross sections with the proposed sidewalks plotted, skeleton drainage map and aerial mosaics are taken on this inspection.

The most important function of the party is the review of the proposed grades. The grades are reviewed carefully, and any possible improvements noted. Of particular importance is the matching of grades at entrances of commercial buildings, parking areas, service station drives, etc. Matching of grade at side street intersections also is reviewed carefully. Conditions not evident in location field notes should receive careful attention, and notes concerning possible improvements made directly on the continuous roll or cross section prints.

Frequently, state highways slated for municipal improvement are in fast growing areas. Notes of development that has taken place subsequent to the location survey should be made, and the District Location Surveyor notified so pertinent additional field information can be obtained.

The proposed geometrics at street intersections must be reviewed. This includes the location and appropriate width of side street connections and median openings, left turn storage lanes, and design of channelized intersections, railroad crossings, etc.

23.7 Final Design

In this procedure, the major portion of design is developed on the continuous roll and prints of roadway cross sections. Tracing and transferring of information to the plan-profile and cross section sheets is deferred until the design is practically completed.

In some cases, however, this procedure cannot be followed exactly due to requests for alignment and layout information by property owners, city officials and others. Drafting on the original sheets prior to completion of design should be maintained at a practical minimum.

Following the preliminary field inspection, all necessary changes and corrections in proposed grades, additional topography, etc., are made on the continuous roll, back of sidewalk profile grades, and cross sections.

At this point, back of proposed sidewalk grades, and proposed grades of gutters on superelevated curves and median curbs are plotted where applicable.

Profile grades for street intersections are established. Profiles of existing cross street dedication lines are plotted, and probable future back-of-sidewalk grades for a short section on the cross streets are established.

The centerline profile grade of the cross street is established. The normal cross slope for curb and gutter projects of .02 ft./ft. should be maintained for 1 to 3 lanes, with the outside lane being on a .03 ft./ft. slope (see exhibits 7, 8, & 8A).

If it is an arterial street or state highway with present or future high volume traffic potential, special consideration should be given to the proposed grade through the intersection. The prime considerations of these intersections should be drainage, grade, sight distances, and the distance construction must extend up the side street.

Proposed return profiles and sections now are plotted. The minimum 33' width, face to face, is attained at the end of the return on cross streets. The drop from the proposed centerline grade of the cross street to the gutter line is computed in the standard manner. In cases where widths of existing cross streets are greater than 33', special studies may be required in order to better match existing conditions.

A minimum draining gutter grade as noted in Section 23.4 must be maintained around returns as well as along the project. If a low point occurs on a return, care must be taken to avoid placing it in line with an existing or probable future sidewalk. Unnecessary sags must be avoided.

The steepness of grades on returns should be limited to a maximum desirable grade of 5% with 10% the absolute maximum. The steepness of grades around returns can be reduced by warping the crowns of both project and side street.

Diagonal sections are plotted through the intersection returns to check the adequacy of drainage to gutters on the returns, and to reveal possible undesirable dished sections. Return profiles and sections are not required in plans.

Templates and earthwork quantities may be transferred now or later to the roadway cross section sheets.

23.8 Drainage

After necessary grades have been established, the Drainage Section will then proceed with the design of the proposed drainage system. Drainage tabulation sheets are used by the designer in plotting the drainage system on the various plan sheets.

It is recommended that the planned storm sewers and appurtenances not be drafted in final form on the roadway plan profiles until after the pre-design conference with involved utilities and railroads.

Proposed inlets, manholes and pipes first are plotted in plan, omitting any construction notes. Locations of proposed structures are reviewed carefully. Inlets must be placed at low gutter points along the project and on returns and side street connections. When inlets are located within the limits of sag vertical curves, a minimum gutter grade of 0.3% should be provided within 50 feet of the level point using special gutter grades and a warped crown when necessary.

Inlets should intercept significant flows prior to a curb return, especially on relatively steep slopes in order to minimize bypass and heavy flows within the intersection. "Corner clipping" by pipes connecting the main system with structures on cross street connections or returns to cross streets should be avoided whenever possible if "clipping" necessitates more right-of-way. Inlets which would obstruct existing driveways or which fall in line with the proposed sidewalk or crosswalk must be shifted to eliminate undesirable conditions. Care must be used to avoid creating a heavy flow across crosswalks and curb drops.

The drainage structures are plotted as cross sections on standard cross section sheets with structure description. The standard minimum cover between the outside shell of the proposed pipe and the bottom of the proposed base is 12", 18" of cover is preferable. Existing underground utilities are plotted on the sections and a check is made for possible conflicts. All drainage structures are to be numbered.

Every effort should be made to avoid conflicts between the proposed storm sewer and existing major facilities such as sanitary sewers, large water mains, trunk telephone duct systems and high voltage underground electrical cables.

If conflicts cannot be avoided, or if an isolated conflict would result in lowering a considerable length of the proposed drainage system, it is

advisable usually to provide a manhole for passing of storm water around the conflicting installation.

In the case of a sanitary sewer conflict, plans should indicate that a length of cast iron pipe is to be constructed through the inlet or manhole by the owner of the sewer. Conflicts and remedial installations are referred to the Drainage Section and the Utilities Section for final approval.

Gas mains may not be passed through the storm sewer system. Extreme or totally unavoidable situations can be handled by seamless and jointless casing pipe around the gas carrier main.

A check should be made to assure that longitudinal pipes behind the curb will have sufficient cover at driveways. Proposed flow line grades are noted to the nearest 0.1 foot, except in the case of a very flat pipe grades when the flow lines are indicated to the nearest 0.05 foot.

Proposed outfall plan sheets are completed. Ditches are treated in the same manner as for rural construction. When pipe outfalls are provided, pipes, inlets, manholes, and endwalls are plotted in the plan and in the profile. Structure numbers for inlets and manholes are shown with pipe size. It is possible sometimes, in cases of very short outfalls, to plot them in plan on the plan-profile sheets and to include the structures on the drainage structure sheets.

23.9 Right-of-Way

When the right-of-way line for urban projects is along the back of proposed or future sidewalks, construction easements must be obtained for any work outside of these lines. Additional right-of-way beyond the normal width is frequently necessary at intersecting streets due to encroachment of returns and storm sewer stub pipes, especially in cases of existing narrow dedications for side streets.

In addition to right-of-way necessary for construction, right-of-way limits sufficient for pedestrian traffic must be established. The right-of-way line at street corner returns should be set a minimum of five feet back of the back of curb.

Ample right-of-way for outfalls is established so it will contain the proposed construction. Knowledge of property lines aid in matching right of way requirements to available parcels. Right-of-way requirements should be established in close coordination with the Right-of-Way Office for completion of the right-of-way map.

23.10 Plans Assembly

Drafting work on the plan-profile sheets now can be completed, and the Key Sheet prepared. Defer as much drafting as possible on the plan-profile sheets until final designs are completed to minimize thinning of lines due to wear and to minimize the necessity for last minute "touching up". Any other incompletd drafting is concluded at this time.

When film photo plan sheets are used, all drafting should be in ink.

The Summary of Quantities and various tabulations are prepared in the same manner as described under "Preparation of Plans for Rural Projects" (Chapter 22).

Plans sheets are assembled in order, the sheets numbered and cross referenced (when necessary) and the Index of Sheets completed as described for rural projects, and at this stage plans are ready for final checking.



CHAPTER 24

PREPARATION OF MINI PLANS (8½" x 14")

24.1 General

The mini plan preparation procedure as described in this Chapter is approved for use on all State funded resurfacing, normal skid hazard projects and Federal Aid resurfacing projects, if safety modifications are not extensive. This procedure shall not be used for projects that include the addition of lanes (either thru or turning lanes) or for projects that require plotted cross sections.

The intent of mini plans is to provide a plan preparation format for minor projects that will be more convenient for reproducing, handling and storing; improve readability; and save drafting time since a large portion of the information can be typed on the 8½"x14" sheets. This method of preparing plans is not an attempt to reduce the amount of information shown but to present the same information as a normal set of plans in a different format. Mini plans are to completely describe the work to be accomplished. Adequate typical sections must be drawn if widening is included or if work extends outside of the existing shoulders. Special details must be drawn in some cases in order to adequately describe the work. Details must be large enough to be easily understood and limits of work (beginning and ending points on main line and cross roads) must be given.

24.2 Mini Plan Format

The preparation of a mini set of plans should follow the guidelines as shown below.

1. Use legal size (8½"x14") for all sheets.
2. Show state project number on all sheets.

3. Do not use xerox sheets for originals.
4. All sheets including pay item sheets are to be numbered sheet 1 of 9, sheet 2 of 9, etc. Signing and pavement marking sheets are to be numbered consecutively with the rest of the plans. Do not prepare a separate Key Sheet for signing.
5. Approval signature and F.A. project number must be shown on the cover sheet.
6. All summary of pay item sheets are to be inserted directly behind the Key Sheet (including signing and pavement markings). Trim originals to proper size, do not reduce by xeroxing.
7. Typical sections shall be drawn if widening is included and/or if work extends beyond the existing shoulder edges. This is necessary to indicate existing pavement, shoulder or ditch locations in respect to proposed construction.
8. Space must be provided on the Key Sheet for approval by the Director of Preconstruction and Design and the Division Administrator, FHWA.
9. The standard governing specifications note used on all plans must be shown on main plans.
10. Tabulations of resurfacing (when width varies considerably), or tabulations of drainage structures may be necessary on some projects.
11. All projects involving railroads should include specific notation as to the type of grade crossing to be worked and the type and class of railroad signal work anticipated according to the Standard Indexes by reference. If railroad crossing work is involved, pay items must include all reconstruction work to be performed by the highway contractor. A special sketch will be required to identify

schematically the approximate alignment, location and FDOT/AAR National Inventory Crossing Number.

12. Earthwork payment is to be borrow since cross sections are required to calculate plan quantity for the embankment item.
13. For placing Professional Seal see Chapter 30.

SHEETS 130 thru 136 illustrate a completed set of mini plans.

● ESCAMBIA COUNTY
STATE PROJECT NO.

00000-0000

F. A. PROJECT NO.

● XX-00000(0)

<u>SHEET NO.</u>	<u>DESIGNED BY /DATE</u>	<u>SUPERVISED BY /DATE</u>	<u>APPROVED BY /DATE</u>
1 OF 7	_____	_____	_____
2 OF 7	_____	_____	_____
3 THRU 7 OF 7	_____	_____	_____

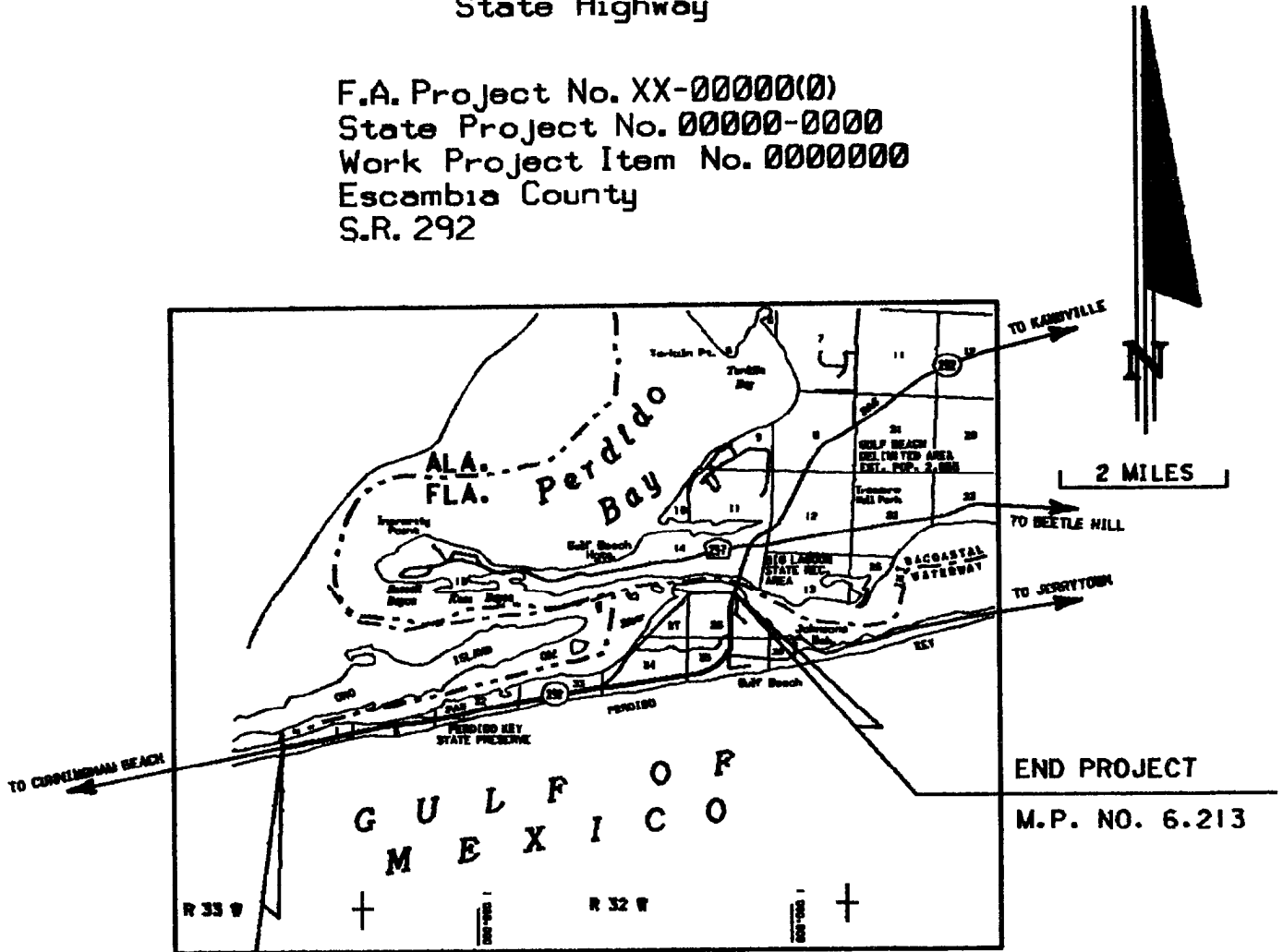
ROADWAY PLANS APPROVED BY: _____

● DATE: _____

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

Plans For Proposed
State Highway

F.A. Project No. XX-00000(0)
State Project No. 00000-0000
Work Project Item No. 0000000
Escambia County
S.R. 292



BEGIN PROJECT
M.P. NO. 0.000

END PROJECT
M.P. NO. 6.213

Length of Project (Miles)

Roadway	6.213
Bridges	0.000
Net Length	6.213
Exceptions	0.000
Gross Length	6.213

Submitted By: _____
(Director-Preconstruction and Design)

Approved By: _____
(Division Administrator, FHWA)

8/35/82

00000-0000

SUMMARY OF ROADWAY PAY ITEMS		UN	FA PART	QUANTITY
ITEM NUMBER	ITEM	IT	FA PART	TOTAL
101-1	MOBILIZATION	LS	1.000	1.000
102-1	MAINT OF TRAFFIC	LS	1.000	1.000
102-74	HARBORDE TEMPORARY - CLASSES A, B & D)	ED	1500.000	1500.000
102-75	CONSTRUCTION SIGNS (TEMP POST MOUNTED)	ED	900.000	900.000
102-77	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)	ED	600.000	600.000
102-92	TEMPORARY PAVEMENT MARKING (SOLID)	NH	26.852	26.852
104-10	BALED HAY OR STRAW (TRUCK MEASURE)	CY	100.000	100.000
120-2	BORROW EXCAVATION	LS	1.000	1.000
286-1	FINAL DRESSING	SY	429.000	429.000
300-1	TURNOUT CONSTRUCTION	GA	13089.000	13089.000
400-1	BIT MATL CONC (TACK COAT)	LF	7.000	7.000
430-1	CONC PIPE CULV (ENDWALLS)	CY	50.000	50.000
524-1	CONC DITCH PAVT (3")	SY	50.700	50.700
570-1	FERTILIZER FOR GRASS	MG	15.000	15.000
575-1	SOIL MUL	SY	14580.000	14580.000
575-2	TYPE II ASPH CONC (INC BIT) (500 LB STAB)	SY	2175.000	2175.000
575-3	TYPE S ASPH CONC (INC BIT)	TN	86935.000	86935.000
575-4	ASPH CONC FRICTION COURSE (INC BIT) (1") (FC-1 OR 4)	SY	8700.000	8700.000
575-5	ASPH CONC FRICTION COURSE (INC BIT) (FC-1 OR FC-4)	TN	86935.000	86935.000
575-6	TYPE S ASPH CONC (INC BIT)	SY	8700.000	8700.000
575-7	ASPH CONC FRICTION COURSE (INC BIT) (FC-2)	SY	86935.000	86935.000
575-8	ASPH CONC FRICTION COURSE (INC BIT) (FC-2)	TN	75.000	75.000

A
4

AA
AA
AB
AB
AB
AB

Project No. 00000-0000

PROJECT LOCATION

The project is located on S.R. 292 in southwest Escambia County, beginning at the Alabama State Line and proceeding east to end at the bridge pavement. The project begins at M.P. 0.000 and ends at M.P. 6.213, a distance of 32,804.64 feet (6.213 miles).

SCOPE OF WORK

The project consists of resurfacing the existing 24' pavement up to M.P. 5.741 and then resurfacing the existing 22' pavement for the remainder of the job up to M.P. 6.213. Also includes pavement markings and lengthening certain crossdrain structures in order to provide for safe recovery area between edge of pavement and ends of structure.

TYPICAL SECTION

Construct Type II Leveling Course (50 lbs. per s.y. Avg.) (500 lbs. stability), with either Type S Structural Course (150 lbs. per s.y.) and Asphalt Concrete Friction Course FC-1 or FC-4 (1" thick) (Alt.AA) or Type S Structural Course (200 lbs. per s.y.) and Asphalt Concrete Friction Course FC-2 (5/8" thick) (Alt.AB). Place 2' sod strip adjacent to pavement per standard index 105, Type R-1.

ROADWAY AND TRAFFIC DESIGN STANDARDS - BOOKLET DATED JANUARY, 1985

001
002
103
104
105
205
250
280
281
500
510
516
17346
1735?

GOVERNING SPECIFICATIONS

State of Florida Department of Transportation Standard Specifications dated 1982 and supplements thereto if noted in the Special Provisions for this project.

Project No. 00000-0000

NOTES:

1. All existing DOT signs within the limits of construction are to be taken down by the Contractor and stockpiled and the appropriate maintenance unit notified so they may be picked up.
2. The Maintenance of Traffic for the project will be done in accordance with the Manual on Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operation.
3. Permanent signing to be done by others in accordance with M.U.T.C.D. and approved standards.
4. Maintenance of traffic shall be as in Case VI of the Manual on Traffic Control and Safe Practices.
5. Resurfacing to be tapered in 5 feet at cross roads.
6. "It shall be the contractor's responsibility to determine the field location and length of any no-passing zones. No-passing zones shall be established in accordance with Section 3B-3, 3B-4 and 3B-5 of the 1978 M.U.T.C.D. 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 the traffic stripping items included in the contract."

NOTES FOR PAY ITEMS

- | | |
|------------------|--|
| Item No. 102-74 | Barricades will be paid for on the Basis of per Barricade per day in use. The quantity shown is based on an estimated average of 10 barricades for 150 days. |
| Item No. 102-75 | Signs will be paid for on the Basis of per sign per day in use. The quantity shown is based on an estimated average of 6 signs for 150 days. |
| Item No. 102-77 | Flashing lights will be paid for on the Basis of per flashing light per day in use. The quantity shown is based on an estimated average of 4 flashing lights for 150 days. |
| Item No. 104-10 | To be placed if and where necessary as directed by the Engineer. |
| Item No. 120-2-2 | To be furnished by the Contractor from areas provided by him. |
| Item No. 120-8 | Price and pavement for this item shall also include all roadway excavation necessary to shape shoulders and front slopes and necessary compaction. |

Project No. 00000-0000

Item No. 286-1 Included for new construction. Payment includes excavation and base. Structural course included in Roadway resurfacing item.

BASIS OF ESTIMATE

300-1-3 0.03 Gal. per s.y. per layer

CURVE DATA

All curves to be superelevated for 55 M.P.H. as directed by the Engineer.

<u>P.I. Mile Post</u>	<u>Degree of Curve</u>	<u>Superelev Design Speed</u>
M.P. 1.1013	0° 30'	55 MPH
M.P. 1.522	0° 30'	55 MPH
M.P. 2.121	0° 30'	55 MPH
M.P. 3.513	0° 30'	55 MPH
M.P. 5.209	2° 00'	55 MPH
M.P. 5.587	5° 00'	55 MPH

TRAFFIC DATA

1985 ADT = 3,000
1993 EST. ADT = 4,200
2005 EST. ADT = 6,500
DESIGN SPEED - 55 MPH

SUMMARY OF DRAINAGE STRUCTURES

<u>MILE POST</u>	<u>DESCRIPTION</u>	<u>SIZE</u>	<u>LENGTH</u>		<u>PIPE CONC.</u>	<u>SOD</u>	<u>CONC. CLASS I</u>	<u>INDEX NO.</u>
			<u>LT.</u>	<u>RT.</u>	<u>24"</u>	<u>SY</u>	<u>CY</u>	
5.55	Extend Exist. Pipe & Endwall	24"	20'	0'	20'	43	2.2	250 & 280
5.68	Extend Exist. Pipe & Endwall	24"	19'	0'	19'	43	2.2	250 & 280
5.85	Extend Exist. Pipe & Endwall	24"	21'	0'	21'	43	2.2	250 & 280
	TOTAL				<u>60'</u>	<u>129</u>	<u>6.6</u>	

7 of 7



CHAPTER 25

PLANS REVIEW AND QUALITY CONTROL

25.1 General

Every effort must be made to eliminate as many revisions, change orders, and supplemental agreements to plans as possible due to incompleteness of plan details and field condition changes that occur after initial surveys are made. Sufficient details must be shown by the designer to convey to all plan users and especially to the contractor, the intent of the design and scope of work to be constructed.

To this end it is of paramount importance that all major projects have phase reviews at 30-60-90% complete and a final plans review at 100% prior to transmittal to Tallahassee. Minor projects, resurfacing and other projects with a construction cost of less than \$2,000,000 must have as a minimum the 60% and 100% review. The 100% final plans review should be by a checking squad different from the squad doing the design. These reviews are mandatory for every project. The Squad assigned the duties of final plans review can be a squad assigned the full time duties of checking (this is the preferred method) or another design squad who checks designs other than their own. Quality must come first.

Consultants and Department staff are to follow these guidelines. The Districts are reminded that Design Consultants are held responsible for their work, including plans review. Detailed checking of consultant plans or assisting in designing portions of the project for the consultant is not the intent of having outside design consultants. Consultant plan reviews should be to ensure that consultant plans follow the plan preparation procedures outlined in this manual, that state and federal design criteria are followed, with the Departments concept and that the consultant

submittals are complete. It is the Department's Project Manager's Engineer's responsibility to see that the above is followed for consultant prepared plans.

25.2 Phase Review

On minor projects, less than \$2,000,000, reviews must be held at the 60-100% complete stages. One of these reviews must be an on-site review. These reviews must include personnel from Design, Construction, Maintenance, FHWA (when Federal Aid) and any other office representatives who can provide review input. It is desirable to have an on-site visit before design starts by at least the senior designer and the more formal on-site review at 100% to ensure the design is appropriate and that no physical features have been altered or added.

On major projects, those greater than \$2,000,000, reviews must be held at the 30-60-90% stages as well as the 100% final check. Two on-site reviews will be required. These will be held at 30% and 90% complete with personnel from the offices noted under minor project reviews. Also an on-site visit before design by the senior designer is again desirable.

For phase reviews which are not held on-site construction, maintenance and FHWA (when Federal Aid) offices must be sent copies of the plans and requested to furnish comments.

An additional update review, including an on-site review, will be required on all projects that have been delayed and shelved more than nine months since the final 100% review.

The District Safety Engineer should be given an opportunity to be included in these reviews. The use of accident history is required on all reconstruction, intersection improvements and RRR type projects to ensure that all accident problems have been addressed.

The District Design Engineer is responsible for seeing that the above reviews are held on each project.

For consultant projects each review will require the submittal of 5 sets of blueprints and one set of sepia prints of the plans. Districts which would like to specify a different number of prints must do so in the consultants scope of services.

25.3 Checklist for Phase Reviews

Included in this chapter are checklists for a 30%, 60% and 90% review and an on-site inspection checklist. These shall be filled out for each review and placed in the project file. The cover sheet which includes information on when, where and who attended is part of the check list and must be placed in the project file with the checklist.

The checklists contain the minimum items to be checked. Each Design Section should add additional items which they feel should be checked or items which are valid for specialty projects.

25.4 Checklist Generation

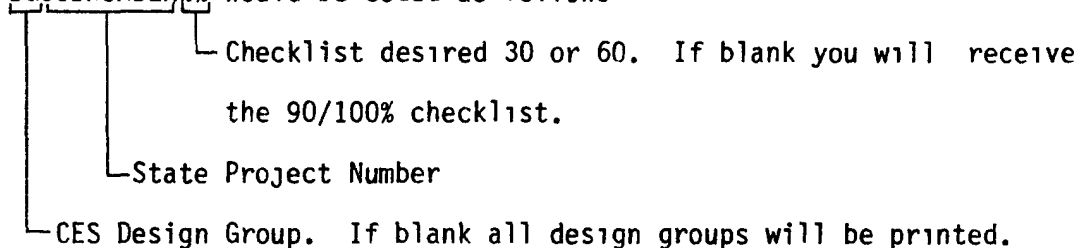
The checklists noted in section 25.3 are automated and can be generated from any TSO terminal. These checklists are generated by Specific job number, CES Design group and % checklist desired. The following control cards are required to run this procedure: (For assistance see District IS&S personnel)

```
//FE980LKDBYJOBBY(5570968,7000,000000000),'CESCKLST,_____ ',CLASS=L,  
//MSGLEVEL=0,TIME=(1,15),MSGCLASS=A  
//ABYEXECBYPROC=GISBATCH  
/*ROUTEBYPRINTBYRMT_
```

```
//SYSINDD*  
DLI=BMP  
DAS=30K  
MEM=512K  
SEC=DATABASE  
HSP=Y,RTE=_  
PRT=N,N,N,N  
TAB=126  
JCL=(5570968,7000,000000000),'CESCKLST,_____ ',0,A,2,5  
//MTINDDDATA  
CALLDDCESQNO4
```

DGJOBNUMBER%%

Where DGJOBNUMBER%% would be coded as follows:



Design Groups are

- 10 Structures
- 20 Roadway
- 30 Signing and Pavement Markings
- 40 Lighting
- 50 Signals
- 60 Landscaping

25.5 30% Checklist

By requesting design group 20, specific job number and 30% checklist under the procedures outlined in 25.4, the following output would be

generated:

- (1) Plans Review Cover Sheet
- (2) On-Site Inspection Checklist
- (3) 30% Plans Checklist

Sheets 142 through 147 illustrate items (1), (2) and (3) above.

If at the 30% review no on-site review is to be held, the on-site checklist can be discarded. No item numbers need to be loaded in the CES Design Group prior to requesting the checklists. The CES file must be established in order for the sheet headings (WPI number, Project Number, etc.) to print.

DATE 05MAR85

PAGE 2

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

ON-SITE INSPECTION CHECKLIST

PERCENT COMPLETE 30% ___ 60% ___ 90% ___ 100% ___

- ___ 1 REVIEW DESIGN AND CONSTRUCTION SCHEDULE FOR FEASIBILITY
- ___ 2 HOW WILL TRAFFIC BE HANDLED?
- ___ 3 CAN TRAFFIC BE DETOURED OVER EXISTING STREETS?
- ___ 4 ANY SELECTIVE CLEARING AND GRUBBING REQUIRED?
- ___ 5 CAN ANY OF THE LARGER TREES BE PRESERVED BY DESIGN ALTERATIONS?
- ___ 6 HOW IS BORROW TO BE MEASURED?
- ___ 7 IS THE PERCENT SHRINKAGE USED SATISFACTORILY?
- ___ 8 ANY CONCRETE PAVEMENT TO BE REMOVED?
- ___ 9 CHECK EXISTING DRAINAGE PATTERNS AND ANY HIGHWAY INDICATIONS
- ___ 10 LIMITS OF OBLITERATION OF EXISTING ROADWAY CORRECT?
- ___ 11 CHECK EXISTING DRAINAGE STRUCTURES
- ___ 12 ANY TEMPORARY SAFETY DEVICE REQUIRED, I E , GUARDRAIL, ATTENUATORS, EARTHMOUNDS, ETC ?
- ___ 13 CHECK TYPICAL SECTION AGAINST EXISTING/PROPOSED R/W
- ___ 14 VERIFY BEGIN AND END CONSTRUCTION STATIONS
- ___ 15 IF LIMITED ACCESS WHAT TYPE FENCE TO BE USED AND LIMITS
- ___ 16 LIST UTILITY OWNERS AND ANY KNOWN CONFLICTS
- ___ 17 DETERMINE WHO IS TO RELOCATE UTILITIES
- ___ 18 ESTIMATE QUANTITIES FOR SIDE DRAINS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

- ___ 19 CHECK LOCATION AND TYPE OF PAVED DITCHES
- ___ 20 ANY DRAINAGE EASEMENT REQUIRED?
- ___ 21 DETERMINE OUTFALL LOCATIONS
- ___ 22 CHECK SIDE STREET RETURNS AND WIDTH
- ___ 23 CHECK LOCATIONS OF DRIVEWAYS
- ___ 24 WHERE SIDEWALKS INCLUDED ESTIMATE AMOUNT OF 6" SW REQUIRED FOR DRIVEWAYS
- ___ 25 FOR MEDIANS DETERMINE MINIMUM CROSSOVER LOCATIONS
- ___ 26 SHOULD CUL-DE-SACS BE CONSTRUCTED ON EXISTING ROADS WHICH ARE TERMINATED?
- 27 ANY WALLS OR SPECIAL ACCESS REQUIRED TO ADJACENT PROPERTY?
- 28 ANY ADDITIONAL EARTHWORK REQUIRED, SUCH AS REMOVING STOCKPILED DIRT, SANITARY LAND FILLS, MUCK, ETC
- 29 ANY SIGNS OR ROAD MARKERS TO BE REMOVED AND STOCKPILED BY THE CONTRACTOR?
- 30 ANY LANDSCAPING REQUIRED?
- 31 DETERMINE EROSION CONTROL MEASURES REQUIRED
- 32 VERIFY EXISTING TOPO
- 33 DETERMINE TRAFFIC OPERATION REQUIREMENTS, I E, SIGNING, PAVEMENT MARKINGS, SIGNAL, ETC
- 34 ARE WHEELCHAIR RAMP AND/OR HANDICAPPED PARKING PROVIDED?
- 35 ANY SUGGESTIONS ON HOW TO REDUCE COST OF PROJECT?
- 36 ANY LOAD RESTRICTIONS ON STREETS OR STRUCTURES WHICH WILL EFFECT THE CONTRACTOR HAULING IN EQUIPMENT OR MATERIALS?
- 37 DOES THE PROFILE FIT THE EXISTING TERRAIN?

DATE 05MAR85

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

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EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

--- 38 INVESTIGATE ALL BRIDGE SITES

--- 39 DETERMINE TYPE OF SHOULDER TREATMENT REQUIRED FOR
RESURFACING, RESURFACING AND WIDENING PROJECTS IS THE
CURRENT STAND OF GRASS IN GOOD CONDITION?

--- 40 HAS BICYCLE TRAFFIC BEEN CONSIDERED?

--- 41 DOES THE DEPARTMENT WANT ANY SALVAGEABLE MATERIAL? IF SO
WHERE IS IT TO BE STOCKPILED?

--- 42 ARE ALL FEASIBLE OPTIONAL BASES INCLUDED?

--- 43 ARE ALL BUILDINGS TO BE TAKEN NOTED? CAN ANY BE AVOIDED?

--- 44 DOES ANY CONSTRUCTION REQUIRE SPECIAL PROVISIONS?

DATE 05MAR85

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

30%
PLANS CHECK LIST

I KEY SHEET

- ___ 1 LOCATION MAP, BEGIN AND END STATIONS AND EQUATIONS
- ___ 2 PROJECT NUMBERS, STATE AND FEDERAL

II DRAINAGE MAPS

- ___ 1 EXISTING DATA, RIDGE LINES, ELEVATIONS, STRUCTURES, ETC
- ___ 2 BEGIN/END STATIONS, EQUATIONS
- ___ 3 HIGH WATER INFORMATION
- ___ 4 DRAINAGE AREAS AND FLOW INDICATION
- ___ 5 HORIZONTAL ALIGNMENT
- ___ 6 INTERCHANGE/INTERSECTION CONFIGURATIONS
- ___ 7 PRELIMINARY PROFILE AND EXISTING GROUNDLINE

III TYPICAL SECTIONS

- ___ 1 MAINLINE AND CROSS ROAD TYPICALS - DIMENSIONS AND PAVEMENT STRUCTURE
- ___ 2 SPECIAL DETAILS
- ___ 3 GENERAL NOTES

IV PLANS/PROFILE SHEETS

- ___ 1 REFERENCE POINTS

DATE 05MAR85

- ___ 2 B M DATUM
- ___ 3 BASELINE OF SURVEYS, CURVE DATA, BEARINGS
- ___ 4 BEGIN/END STATIONS, EQUATIONS
- ___ 5 EXISTING TOPOGRAPHY
- ___ 6 GEOMETRIC DIMENSIONS (RADIUS, OFFSETS, WIDTHS, ETC)
- ___ 7 PROPOSED R/W LINES
- ___ 8 PRELIMINARY PROFILE GRADE
- ___ 9 EXISTING GROUND LINE

V CROSS SECTIONS

- ___ 1 EXISTING GROUND LINE
- ___ 2 PRELIMINARY TEMPLATE AT CRITICAL LOCATIONS OR EVERY 500 FT

VI INTERCHANGE LAYOUT AND RAMP PROFILES

- ___ 1 GEOMETRIC DIMENSIONS (RADIUS, OFFSETS, WIDTHS, ETC)
- ___ 2 PRELIMINARY PROFILES

25.6 60% Checklist

By requesting Design Group 20, specific job number and 60% checklist under the procedures outlined in 25.4, the following output would be generated:

- (1) Plans Review Cover Sheet
- (2) On-Site Inspection Checklist
- (3) 60% Plans Checklist

Sheets 149 through 154 illustrate items (1), (2) and (3) above.

If at the 60% review no on-site review is to be held, the on-site checklist can be discarded. No item numbers need to be loaded in the CES Design Group prior to requesting the checklists. The CES file must be established in order for the sheet heading (WPI number, project number, etc.) to print.

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

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EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PLANS REVIEW SUMMARY AND CHECK LIST

DATE _____ % COMPLETE 30 60 90 100
DESIGNER RESPONSIBLE FOR REVIEW COMMENTS _____
LOCATION ON-SITE _____ OFFICE _____

ATTENDEES
NAME _____ OFFICE _____

COMMENTS AND DISPOSITION (USE ADDITIONAL SHEETS AS NECESSARY)

DATE 05MAR85

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

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COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

ON-SITE INSPECTION CHECKLIST

PERCENT COMPLETE 30% — 60% — 90% — 100% —

- ___ 1 REVIEW DESIGN AND CONSTRUCTION SCHEDULE FOR FEASIBILITY
- ___ 2 HOW WILL TRAFFIC BE HANDLED?
- ___ 3 CAN TRAFFIC BE DETOURED OVER EXISTING STREETS?
- ___ 4 ANY SELECTIVE CLEARING AND GRUBBING REQUIRED?
- ___ 5 CAN ANY OF THE LARGER TREES BE PRESERVED BY DESIGN ALTERATIONS?
- ___ 6 HOW IS BORROW TO BE MEASURED?
- ___ 7 IS THE PERCENT SHRINKAGE USED SATISFACTORILY?
- ___ 8 ANY CONCRETE PAVEMENT TO BE REMOVED?
- ___ 9 CHECK EXISTING DRAINAGE PATTERNS AND ANY HIGHWATER INDICATIONS
- ___ 10 LIMITS OF OBLITERATION OF EXISTING ROADWAY CORRECT?
- ___ 11 CHECK EXISTING DRAINAGE STRUCTURES
- ___ 12 ANY TEMPORARY SAFETY DEVICE REQUIRED, I E , GUARDRAIL, ATTENUATORS, EARTHMOUNDS, ETC ?
- ___ 13 CHECK TYPICAL SECTION AGAINST EXISTING/PROPOSED R/W
- ___ 14 VERIFY BEGIN AND END CONSTRUCTION STATIONS
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
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COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

- ___ 19 CHECK LOCATION AND TYPE OF PAVED DITCHES
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- ___ 21 DETERMINE OUTFALL LOCATIONS
- ___ 22 CHECK SIDE STREET RETURNS AND WIDTH
- ___ 23 CHECK LOCATIONS OF DRIVEWAYS
- ___ 24 WHERE SIDEWALKS INCLUDED ESTIMATE AMOUNT OF 6" SW REQUIRED FOR DRIVEWAYS
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- ___ 26 SHOULD CUL-DE-SACS BE CONSTRUCTED ON EXISTING ROADS WHICH ARE TERMINATED?
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- 28 ANY ADDITIONAL EARTHWORK REQUIRED, SUCH AS REMOVING STOCKPILED DIRT, SANITARY LAND FILLS, MUCK, ETC
- 29 ANY SIGNS OR ROAD MARKERS TO BE REMOVED AND STOCKPILED BY THE CONTRACTOR?
- 30 ANY LANDSCAPING REQUIRED?
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- 36 ANY LOAD RESTRICTIONS ON STREETS OR STRUCTURES WHICH WILL EFFECT THE CONTRACTOR HAULING IN EQUIPMENT OR MATERIALS?
- 37 DOES THE PROFILE FIT THE EXISTING TERRAIN?

DATE 05MAR85

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

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- 38 INVESTIGATE ALL BRIDGE SITES
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

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COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

60%
PLANS CHECK LIST

I KEY SHEET

- ___ 1 CORRECT STATE AND FEDERAL PROJECT NUMBERS SHOWN
- ___ 2 CORRECT WORK PROJECT ITEM NUMBER SHOWN
- ___ 3 LOCATION OF PROJECT CLEARLY UNDERSTOOD
- ___ 4 BEGINNING AND ENDING STATIONS, EQUATIONS, EXCEPTIONS AND BRIDGE STATIONS CORRECT
- ___ 5 CORRECT STATE ROAD NUMBER SHOWN
- ___ 6 NORTH ARROW AND SCALE SHOWN
- ___ 7 DESIGNER OR CONSULTANT AND D O T PROJECT MANAGER INDICATED
- ___ 8 DESIGN STANDARDS LISTED WITH THE CURRENT BOOKLET DATED

ALL INDEXES CALLED FOR IN PLANS SHOWN

II DRAINAGE MAPS AND DRAINAGE STRUCTURES

- ___ 1 CHECK COMPATIBILITY OF STATIONING WITH ALL SHEETS
- ___ 2 CHECK STRUCTURE NUMBERS FOR COMPATIBILITY
- ___ 3 CHECK BASE FLOOD DATA
- ___ 4 COMPLETE PROFILE AND DITCH GRADES
- ___ 5 CROSS DRAINS SHOWN
- ___ 6 BRIDGES SHOWN WITH BEGINNING AND END STATIONS
- ___ 7 CHECK PLOTTING OF DRAINAGE STRUCTURES

III PLAN/PROFILE SHEETS

- ___ 1 CHECK COMPATIBILITY OF STATIONING ON ALL SHEETS
- ___ 2 CHECK TO INSURE ALL RIGHT-OF-WAY LINES ARE SHOWN AND NO WORK EXTENDS BEYOND RIGHT-OF-WAY OR EASEMENT LINES

IV TYPICAL SECTIONS

- ___ 1 MAINLINE AND CROSS ROAD TYPICAL ARE COMPLETE
- ___ 2 R/W LINES SHOWN
- ___ 3 DESIGN TRAFFIC SHOWN
- ___ 4 REQUIRED SPECIAL DETAIL SHOWN IF NEEDED

V CROSS SECTIONS

- ___ 1 R/W LINES SHOWN
- ___ 2 TEMPLATES AT ALL STATIONS
- ___ 3 NOTES WERE NEEDED

VI INTERCHANGE LAYOUTS AND RAMP PROFILES

- ___ 1 GEOMETRIC DATA SHOWN
- ___ 2 PROFILES FINALIZED
- ___ 3 COORDINATE DATA SHOWN
- ___ 4 R/W LINES SHOWN
- ___ 5 CURVE DATA SHOWN
- ___ 6 BRIDGES SHOWN, WITH BEGIN/END STATIONS
- ___ 7 BEARINGS SHOWN
- ___ 8 FRONTAGE ROAD OR ACCESS ROADS COMPLETE

25.7 90/100% Checklist

By leaving the Design Group and % checklist blank under the procedures outlined in 25.4, the following output would be generated.

- (1) Plans Review Cover Sheet
- (2) On-Site Inspection Checklist
- (3) 90/100% Checklist for Roadway Plans
- (4) Roadway Pay Item Checklist
- (5) 90/100% of checklist for signing and pavement marking plans
- (6) Signing and pavement marking pay item checklist
- (7) 90/100% checklist for lighting plans
- (8) Lighting pay item checklist
- (9) 90/100% checklist for signal plans
- (10) Signal pay item checklist

Sheets 157 through 197 illustrate items (1) through (10) above.

This is a dual purpose checklist. The 90% and 100% checklists are the same except that the 90% phase review is to be done by the design squad doing the actual design and the 100% final plans review is to be done by the final plans review squad or another design squad.

As noted in section 25.4 if the design group is left blank all checklists for all design groups will print out. If only one design group checklist is desired such as roadway, 20 should be coded as the design group. All valid design groups are listed in the Department's CES Manual, or refer to page 140 of this Manual.

If at the 90 or 100 percent review no on-site review is to be held, the on-site checklist can be discarded. Pay items will have to be loaded in order to receive the Pay Item Checklists. The Pay Items and quantities must be loaded for review at 90%.

There is no 30 or 60% Checklist for Signing and Pavement Marking, Signalization or Lighting Plans. If these plans are to be reviewed at the 30% or 60% stage, a 90% checklist should be utilized for this purpose.

DATE 04MAR85

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
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W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PLANS REVIEW SUMMARY AND CHECK LIST

DATE _____ % COMPLETE 30 60 90 100

DESIGNER RESPONSIBLE FOR REVIEW COMMENTS _____

LOCATION ON-SITE _____ OFFICE _____

ATTENDEES

NAME

OFFICE

COMMENTS AND DISPOSITION (USE ADDITIONAL SHEETS AS NECESSARY)

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

ON-SITE INSPECTION CHECKLIST

PERCENT COMPLETE 30% ___ 60% ___ 90% ___ 100% ___

- ___ 1 REVIEW DESIGN AND CONSTRUCTION SCHEDULE FOR FEASIBILITY
- ___ 2 HOW WILL TRAFFIC BE HANDLED?
- ___ 3 CAN TRAFFIC BE DETOURED OVER EXISTING STREETS?
- ___ 4 ANY SELECTIVE CLEARING AND GRUBBING REQUIRED?
- ___ 5 CAN ANY OF THE LARGER TREES BE PRESERVED BY DESIGN ALTERATIONS?
- ___ 6 HOW IS BORROW TO BE MEASURED?
- ___ 7 IS THE PERCENT SHRINKAGE USED SATISFACTORILY?
- ___ 8 ANY CONCRETE PAVEMENT TO BE REMOVED?
- ___ 9 CHECK EXISTING DRAINAGE PATTERNS AND ANY HIGHWATER INDICATIONS
- ___ 10 LIMITS OF OBLITERATION OF EXISTING ROADWAY CORRECT?
- ___ 11 CHECK EXISTING DRAINAGE STRUCTURES
- ___ 12 ANY TEMPORARY SAFETY DEVICE REQUIRED, I E , GUARDRAIL, ATTENUATORS, EARTHOUNDS, ETC ?
- ___ 13 CHECK TYPICAL SECTION AGAINST EXISTING/PROPOSED R/W
- ___ 14 VERIFY BEGIN AND END CONSTRUCTION STATIONS
- ___ 15 IF LIMITED ACCESS WHAT TYPE FENCE TO BE USED AND LIMITS
- ___ 16 LIST UTILITY OWNERS AND ANY KNOWN CONFLICTS
- ___ 17 DETERMINE WHO IS TO RELOCATE UTILITIES
- ___ 18 ESTIMATE QUANTITIES FOR SIDE DRAINS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS REVIEW, ON-SITE INSPECTION & CHECKLIST

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COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

- ___ 19 CHECK LOCATION AND TYPE OF PAVED DITCHES
- ___ 20 ANY DRAINAGE EASEMENT REQUIRED?
- ___ 21 DETERMINE OUTFALL LOCATIONS
- ___ 22 CHECK SIDE STREET RETURNS AND WIDTH
- ___ 23 CHECK LOCATIONS OF DRIVEWAYS
- ___ 24 WHERE SIDEWALKS INCLUDED ESTIMATE AMOUNT OF 6" SW REQUIRED FOR DRIVEWAYS
- ___ 25 FOR MEDIANS DETERMINE MINIMUM CROSSEVER LOCATIONS
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- 33 DETERMINE TRAFFIC OPERATION REQUIREMENTS, I E, SIGNING, PAVEMENT MARKINGS, SIGNAL, ETC
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- 35 ANY SUGGESTIONS ON HOW TO REDUCE COST OF PROJECT?
- 36 ANY LOAD RESTRICTIONS ON STREETS OR STRUCTURES WHICH WILL EFFECT THE CONTRACTOR HAULING IN EQUIPMENT OR MATERIALS?
- 37 DOES THE PROFILE FIT THE EXISTING TERRAIN?

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
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W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

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EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

- 38 INVESTIGATE ALL BRIDGE SITES
- 39 DETERMINE TYPE OF SHOULDER TREATMENT REQUIRED FOR
RESURFACING, RESURFACING AND WIDENING PROJECTS IS THE
CURRENT STAND OF GRASS IN GOOD CONDITION?
- 40 HAS BICYCLE TRAFFIC BEEN CONSIDERED?
- 41 DOES THE DEPARTMENT WANT ANY SALVAGEABLE MATERIAL? IF SO
WHERE IS IT TO BE STOCKPILED?
- 42 ARE ALL FEASIBLE OPTIONAL BASES INCLUDED?
- 43 ARE ALL BUILDINGS TO BE TAKEN NOTED? CAN ANY BE AVOIDED?
- 44 DOES ANY CONSTRUCTION REQUIRE SPECIAL PROVISIONS?

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
DESIGN 90% OR 100% CHECK LIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

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COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PROJECT CHECK LIST - DESIGN GROUP= 20
ROADWAY

I CHECK ROADWAY KEY SHEET FOR THE FOLLOWING

___ A W P I NUMBER - SHOULD MATCH WPA FILES AND BE ADJACENT TO BOX
TOP RIGHT CORNER

___ B STATE PROJECT NUMBER - SHOULD MATCH WPA FILES AND BE BESIDE
FAP NUMBER IN BRACKETS

___ C IS FAP NUMBER CORRECT?

___ D STATE ROAD NUMBER AND COUNTY NAME

___ E LENGTH OF PROJECT - IS LENGTH CORRECT ACCORDING TO STATIONING
ON LOCATION MAP? DOES IT MATCH MILE POST NUMBERS IN WPA?
MILEAGE SHOULD BE TRUNCATED AT THREE DECIMAL PLACES

___ F THE PROJECT MANAGER OR DESIGNERS NAME SHOULD BE UNDERNEATH
THE LENGTH OF PROJECT BOX IF CONSULTANT, CONSULTANT'S NAME
AND F O T PROJECT MANAGER'S NAME SHOULD BE NOTED

___ G CHECK LOCATION MAP FOR

___ (1) ROAD DESTINATIONS

___ (2) RANGE AND TOWNSHIP LINES, SECTION LINES AND NUMBER

___ (3) PROJECT LOCATION SHOWN WITH HEAVY INKED LINE

___ H CHECK NOTES AT TOP LEFT FOR PLAN CONTENTS INSURE THAT ALL
SETS ARE COMPLETE, INCLUDING APPROACH SLAB INDEX & BOX
CULVERT DATA

___ I CHECK ROADWAY AND TRAFFIC DESIGN STANDARDS FOR CURRENT DATE

___ J CHECK FOR JOINT CONTRACTS SHOULD BE NOTED ABOVE THE
GOVERNING SPECIFICATION NOTE

___ K IS RAILROAD CROSSING SKETCH SHOWN WITH MILE POST TIE,

DATE 04MAR85

NAME & NUMBER IF NOT INCLUDED ON DETAIL SHEET ON PLANS

___ L GOVERNING SPECIFICATION NOTE SHOULD INCLUDE DATE REFERENCE TO SUPPLEMENTAL SPECIFICATIONS

___ M REVISION DATE NOTED?

___ N CHECK FOR OVERLAPPING PROJECTS

___ O HAVE APPROPRIATE SHEETS BEEN SIGNED AND SEALED

___ P NORTH ARROW AND SCALE SHOWN

II CHECK THROUGHOUT PLANS FOR THE FOLLOWING

___ A ROADWAY PORTION

___ (1) STATE PROJECT NUMBER

___ (2) HAVE ALL SHEETS BEEN INITIALED, SIGNED, AND DATED?

___ (3) ALL STATIONING INCLUDING BEGIN AND END PROJECT AND CONSTRUCTION EXCEPTIONS, BRIDGE STATIONS, EQUATIONS, ETC

___ (4) NORTH ARROW AND SCALE

___ (5) BEARING - SHOULD BE ROUNDED TO EVEN SECOND OR AGREE WITH R/W MAP

___ (6) CHECK FOR CONSTRUCTION OUTSIDE R/W

___ (7) ARE NOTES AND LINE WORK HEAVY ENOUGH FOR GOOD REPRODUCTION?

___ (8) ARE ALL APPROPRIATE INDEXES SHOWN ON KEY SHEET?

___ (9) CHECK PLANS FOR SAFETY HAZARDS AND COMPLIANCE WITH STANDARD INDEX 700

___ B BICYCLE FACILITIES (GEOMETRY PORTION)

___ (1) MINIMUM WIDTHS ARE PROVIDED

___ (A) BICYCLE LANE - 4 FT TO 5 FT , 4 FT PAVED SHOULDER OR 14 FT OUTSIDE LANE

___ (B) BICYCLE PATH - 8 FT TWO-WAY, 5 FT ONE-WAY

___ (C) BICYCLE ROUTE - A AND/OR B ABOVE DESIGNATED BY INFORMATION SIGNS

___ (2) MINIMUM HORIZONTAL OFFSETS TO HAZARDS PROVIDED

___ (3) TWO FOOT GRADED AREA PROVIDED ON EACH SIDE OF BICYCLE PATH

___ (4) ADEQUATE SIGHT DISTANCES PROVIDED - BOTH FOR BICYCLISTS

AND MOTORISTS

- ___ (5) BICYCLISTS DO NOT RIDE FACING TRAFFIC
- ___ (6) RAILROAD CROSSINGS ARE AT 90 DEGREES
- ___ (7) BEGIN AND END OF BICYCLE FACILITY PROVIDES SAFE TRANSITIONING OF BICYCLISTS TO EXISTING SYSTEM
- ___ (8) NO OBSTRUCTIONS, SUCH AS LIGHT POLES, IN RIDING WIDTH
- ___ (9) BICYCLE FACILITY IS CONTINUOUS OVER STRUCTURES
- ___ (10) ADEQUATE SIGNING AND PAVEMENT MARKING PROVIDED
- ___ (11) PROPER LOOP DETECTORS SPECIFIED, AS APPLICABLE
- ___ (12) FOR UNPAVED HIGHWAY OR DRIVEWAY CROSSINGS OF BICYCLE PATHS, HIGHWAY OR DRIVEWAY IS PAVED 10 FT ON EITHER SIDE
- ___ (13) MAXIMUM GRADES AND LENGTH ARE NOT EXCEEDED
- ___ (14) BICYCLE FACILITIES ARE NOT IN THE MEDIAN

III CHECK DRAINAGE MAP FOR

- ___ A ROADWAY PORTION
- ___ (1) DRAINAGE DIVIDES (RIDGE LINES)
- ___ (2) DRAINAGE AREAS
- ___ (3) OVERLAND FLOW (FLOW ARROWS)
- ___ (4) PROPOSED DRAINAGE STRUCTURES PLOTTED & LABELED WITH STRUCTURE NUMBER?
- ___ (5) SECTION, RANGE, TOWNSHIPS, AND COUNTY LINES
- ___ (6) IS EXISTING GROUND LINE & PROPOSED GRADE PLOTTED IN PROFILE PORTION ARE EXISTING GROUND ELEVATION PLOTTED AT BEGINNING AND END OF SHEET?
- ___ (7) ELEVATION DATUM
- ___ (8) STORM SEWER MAIN PLOTTED IN PROFILE (INCLUDING CROSS DRAINS)
- ___ (9) HIGH WATER INFORMATION AND DESIGN HIGH WATER
- ___ (10) FLOOD DATA SHOWN OR FLOOD DATA SHEETS INCLUDED IN PLAN CONTENTS
- ___ (11) A SUPPLEMENTAL DRAINAGE MAP SHOULD BE INCLUDED IF THERE IS AN INTERCHANGE ON THE PROJECT

- ___ (12) CHECK STRUCTURE FOR COMPATIBILITY ON ALL SHEETS
- ___ (13) GAGE FOR STRUCTURE ARCH PIPE NOTED ON PLANS
- ___ B BICYCLE FACILITIES PORTION
 - ___ (1) WATER WILL NOT POND OR SPREAD ONTO BICYCLE RIDING SURFACE
 - ___ (2) BICYCLE SAFETY GRATES ARE PROVIDED
 - ___ (3) DITCHES ARE PROVIDED ON UPHILL SIDE OF FACILITY TO PREVENT WATER FROM FLOWING ACROSS FACILITY, WHERE APPLICABLE
 - ___ (4) GRASSING ITEMS PROVIDED TO PREVENT EROSION
 - ___ (5) MINIMUM CROSS SLOPE OF 2% PROVIDED

IV CHECK TYPICAL SECTION SHEET FOR

- ___ A ROADWAY PORTION
 - ___ (1) DOES IT SHOW CLEARLY ALL WORK TO BE DONE? IS DETAIL COMPLETE?
 - ___ (2) DESIGN SPEED
 - ___ (3) DESIGN TRAFFIC DATA
 - ___ (4) CROSS SLOPES
 - ___ (5) IS PAVEMENT DESIGN SHOWN? ARE ALTERNATES PROVIDED (BASE & FRICTION COURSE), ROADWAY AND SHOULDER?
 - ___ (6) SHEET TITLE IN LOWER RIGHT CORNER
 - ___ (7) BASE EXTENSION AT PAVEMENT EDGES
 - ___ (8) SEPARATE DETAIL FOR LEVELING & OVERBUILD WHERE RESURFACING IS INCLUDED
 - ___ (9) IS PROPOSED TRAFFIC CONTROL PLAN SHOWN (IF NO MAINTENANCE OF TRAFFIC DETAILS ARE INCLUDED)
 - ___ (10) ARE ALL APPLICABLE NOTES COMPLETE, INCLUDING REFERENCES TO THE APPROPRIATE STANDARD INDEXES
 - ___ (11) R/W DIMENSIONS SHOWN
 - ___ (12) LBR VALUE FOR SUBGRADE SHOWN
 - ___ (13) TYPICAL SECTIONS COVER ALL STATION LIMITS
 - ___ (14) WHERE THE SAME OPTIONAL BASE GROUP IS USED ON MORE THAN ONE TYPICAL, THE SAME BASE COURSES SHOULD BE PERMITTED FOR ALL TYPICALS USING THIS BASE GROUP
 - ___ (15) REFERENCE TO THE APPROPRIATE STANDARD INDEXES

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- ___ B BICYCLE FACILITIES PORTION ARE INCLUDED
- ___ (1) ALL SECTIONS ARE COVERED EITHER BY SEPARATE TYPICALS OR INCLUDED IN ROADWAY TYPICALS
 - ___ (2) ASPHALT RIDING SURFACES ARE NOTED TO BE PLACED AND ROLLED BY MACHINE
 - ___ (3) IF FEASIBLE, 4" CONCRETE SIDEWALK IS PROVIDED AS AN ALTERNATE TO ASPHALT
 - ___ (4) IF 4" CONCRETE SIDEWALK IS USED, 6" CONCRETE SIDEWALK IS USED AT DRIVEWAYS
 - ___ (5) IF 4" CONCRETE SIDEWALK IS USED, JOINTS ARE SPECIFIED TO BE SAWED
 - ___ (6) TYPICAL SECTIONS CONFORM TO MINIMUM SECTIONS GIVEN IN THE DEPARTMENT'S BICYCLE FACILITIES DESIGN MANUAL
 - ___ (7) ADEQUATE SLOPE FOR DRAINAGE PROVIDED
 - ___ (8) ADEQUATE HORIZONTAL AND VERTICAL CLEARANCE PROVIDED

V CHECK PLAN & PROFILES FOR

- ___ A ROADWAY PLAN PORTION
- ___ (1) TICK MARKS, SIZE AND SPACING
 - ___ (2) PC, PI, & PT FLAGGED AND LABELED
 - ___ (3) REFERENCE POINTS
 - ___ (4) COUNTY, CITY, AND URBAN LIMITS MARKED
 - ___ (5) PAVEMENT EDGES AND CROSS-OVERS DEFINED
 - ___ (6) ROADWAY DIMENSIONS
 - ___ (7) PROPOSED DRAINAGE PLOTTED
 - ___ (8) STATION OF GEOMETRIC CONTROL POINTS
 - ___ (9) LIMITS OF PAVEMENT & GRADING AT SIDE STREET INTERSECTIONS
 - ___ (10) UNDERGROUND PLOTTED
 - ___ (11) R/W LINES PLOTTED AND DETAILED
 - ___ (12) ANGLE AND STATION ON ALL INTERSECTIONS
 - ___ (13) RAILROAD CROSSING NUMBER, TYPE, AND MILE POST TIES
 - ___ (14) CURVE DATA (SURVEY AND CONSTRUCTION)

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- ___ (15) CHECK MINIMUM CLEAR RECOVERY
- ___ (16) SHOW BRIDGE NUMBER AND APPROACH SLAB INDEX NUMBER
- ___ (17) ARE BASELINES ADEQUATELY REFERENCED TO CONTROL LINES?
- ___ (18) ARE BASELINE CURVE POINTS REFERENCED TO CONTROL LINES?
- ___ (19) FOR NON-STANDARD SUPERELEVATION TRANSITIONS, IS A DIAGRAM INCLUDED?
- ___ (20) VERIFY ALL PAVEMENT AND BITUMINOUS QUANTITIES AS BEING CORRECT FOR THE TYPICAL SECTION, BASIS OF ESTIMATE AND SIZE OF PROJECT

___ B BICYCLE PLAN PREPARATION PORTION

- ___ (1) ADEQUATE EARTHWORK ITEMS PROVIDED
- ___ (2) CORRECT TERM APPLIED TO FACILITY, I E , BICYCLE LANE, PATH OR ROUTE
- ___ (3) ALL ADDITIONAL QUANTITIES SHOWN
- ___ (4) CURB CUTS PROVIDED WHERE FACILITY CROSSES CURB & GUTTER
- ___ (5) EXTRA HIGH RAILING PROVIDED OVER BRIDGES, CULVERTS AND HIGH FILLS
- ___ (6) PAVING ALTERNATES SHOWN, IF APPLICABLE
- ___ (7) BICYCLE FACILITIES PLANNING AND DESIGN MANUAL CRITERIA FOLLOWED FOR THIS PROJECT

___ C PROFILE PORTION

- ___ (1) GENERAL NOTES
- ___ (2) VERTICAL DATUM
- ___ (3) BENCH MARK DATUM
- ___ (4) EXISTING GROUND ELEVATIONS (BEGINNING & END OF SHEET ONLY)
- ___ (5) UNDERGROUND PLOTTED (4 INCHES OR GREATER)
- ___ (6) DRAINAGE DITCH NOTES AT BOTTOM OF SHEET
- ___ (7) SPECIAL DITCHES PLOTTED (INCLUDING MEDIAN)
- ___ (8) ELEVATIONS ON VERTICAL CURVE
- ___ (9) PI STATION AND ELEVATION
- ___ (10) PERCENT OF GRADE

____ (11) REFERENCE PROPOSED GRADE ELEVATION AT BEGINNING AND END OF SHEET

VI MASS DIAGRAMS

- ____ A CHECK VOLUME AND BALANCE POINTS WITH CROSS SECTIONS AND SUMMARY OF EARTHWORK
- ____ B WHEN SPECIAL DETOUR ITEM IS USED ESTIMATED QUANTITIES, BY PLAN NOTE, SHOULD BE GIVEN
- ____ C ON F A PROJECTS WHEN ITEM 110-3, 110-75 ARE USED AND MATERIAL IS TO BE SALVAGED, PLAN NOTES MUST BE ADDED SPECIFYING WHAT MATERIALS ARE TO BE SALVAGED
- ____ D MAJOR ROADSIDE CANALS REQUIRE GUARDRAIL WHEN WITHIN 60 FT OF THE EDGE OF THE ROADWAY

VII DETAILED INFORMATION FOR DRAINAGE STRUCTURES

- ____ A EXISTING STRUCTURES REQUIRING WORK SHOULD BE PLOTTED
- ____ B DRAINAGE STRUCTURE NOTES INCLUDE STRUCTURE NUMBER, INDEX NUMBER, AND FLOW LINE ELEVATION
- ____ C STRUCTURE NUMBER & STATION FOR EACH STRUCTURE SHOULD BE PLACED ALONG RIGHT BORDER OF SHEET
- ____ D UNDERGROUND UTILITIES SHOULD BE SHOWN SPECIAL ATTENTION SHOULD BE GIVEN TO GAS MAINS RUNNING THROUGH CONFLICT BOXES IT IS NO LONGER ALLOWED
- ____ E WHERE DRAINAGE STRUCTURES EXTEND INTO BASE, IS EXTRA BASE MATERIAL INCLUDED IN PLANS AND A NOTE THAT CARE SHOULD BE TAKEN AROUND THIS STRUCTURE DURING THE STABILIZING OPERATION
- ____ F IS DESIGN FILL HEIGHTS FOR BOX CULVERTS SHOWN ON DRAINAGE STRUCTURE SHEETS? (INCLUDES TOP SLAB THICKNESS)

VIII CHECK LATERAL DITCH PLAN SHEET FOR

- ____ A PLAN PORTION
 - ____ (1) CENTERLINE OF PROJECT RUNS FROM BOTTOM TO TOP OF SHEET
 - ____ (2) CENTERLINE OF DITCH AND PROJECT PLOTTED AND STATIONED
 - ____ (3) UNDERGROUND UTILITIES SHOULD BE PLOTTED
 - ____ (4) R/W PLOTTED AND ADEQUATELY DETAILED
 - ____ (5) DIRECTION OF FLOW INDICATED
 - ____ (6) LIMITS AND WIDTH OF PROPOSED CLEARING AND GRUBBING OUTSIDE

THE ROADWAY R/W LINE

- ___ (7) DIMENSIONS OF DITCH SHOWN
- ___ B PROFILE PORTION
- ___ (1) BENCH MARK DATA
- ___ (2) ELEVATION DATUM
- ___ (3) CHANNEL PROFILE SHOWN WITH BROKEN LINE (WHEN DIFFERENT FROM DITCH SURVEY)
- ___ (4) UNDERGROUND UTILITIES PLOTTED
- ___ (5) REQUIRED DITCH BOTTOM WIDTH AND RATE OF SIDE SLOPES
- ___ (6) LIMITS AND QUANTITY OF PROPOSED DITCH EXCAVATION
- ___ (7) SHEET TITLE IN LOWER RIGHT HAND CORNER.
- ___ (8) HIGH WATER ELEVATIONS SHOWN

IX ROADWAY AND BORROW PIT SOIL SURVEY

- ___ A ROADWAY SOIL SURVEY, WHEN INCLUDED, SHOULD INCLUDE A SOIL ANALYSIS SHEET AND THE BORINGS SHOULD BE PLOTTED ON THE CROSS SECTIONS
- ___ B BORROW PIT SOIL SURVEYS SHOULD INCLUDE A LAYOUT OF THE BORROW PIT, SOILS ANALYSIS AND BORING DATA BE SURE TO CHECK THAT ENOUGH SUITABLE MATERIAL IS AVAILABLE TO PRODUCE THE REQUIRED BORROW

X CHECK CROSS SECTION SHEET FOR

- ___ A ROADWAY AND LATERAL DITCH AND INTERSECTION
- ___ (1) VERTICAL SCALE ALWAYS 1 5, IS HORIZONTAL SCALE SHOWN?
- ___ (2) EXISTING GROUND LINE PLOTTED
- ___ (3) STATION NUMBERS INKED IN HEAVY NUMERALS
- ___ (4) EXISTING CONDITIONS AND FEATURES SHOWN, PAVEMENT, CURBS, SIDEWALKS, AND ETC
- ___ (5) SPECIAL DITCH GRADE ELEVATIONS SHOWN
- ___ (6) UNDERGROUND UTILITIES PLOTTED
- ___ (7) GOOD MATERIAL IS ADDED IN FILL COLUMN TO REPLACE THE SUBSOIL EXCAVATION
- ___ (8) SOIL BORINGS SHOWN

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- ___ (9) ALL VOLUMES AND END AREAS SHOWN
- ___ (10) PROFILE GRADE ELEVATION SHOWN

XI INTERSECTION AND INTERCHANGE LAYOUT

- ___ A SHOW ALL PROPOSED DESIGN AND FEATURES
- ___ B SHOW DESIGN SPEED
- ___ C SHEET TITLE AND SCALE IN BOTTOM RIGHT CORNER
- ___ D ANGLE AND STATION, BENCH MARK, REFERENCE POINTS, R/W
- ___ E CURVE DATA SHOWN FOR INTERSECTION FOR INTERCHANGES, CURVES SHOULD BE NUMBERED AND DATA SHOWN IN TABULAR FORM ALSO SHOW COORDINATE DATA
- ___ F RAILROAD CROSSING INFORMATION, CROSSING NUMBER, MILE POST TIES, CROSSING TYPE, BRIDGE NO , APPROACH SLAB INDEX NO
- ___ G UNDERGROUND UTILITIES PLOTTED
- ___ H TRAFFIC DATA OR TRAFFIC SCHEMATIC FOR INTERCHANGES

XII UTILITY ADJUSTMENTS

- ___ A ARE PROPOSED UTILITIES PLOTTED CLEARLY AND COMPLETELY
- ___ B ARE STANDARD NOTES AND EMERGENCY CALL NUMBERS SHOWN
- ___ C SHEET TITLES SHOWN

XIII MAINTENANCE OF TRAFFIC DETAILS

- ___ A IS REFERENCE TO MANUALS AND DATE NOTED
- ___ B ARE CASE NUMBERS AND STAGING CLEAR AND UNDERSTANDABLE

XIV CHECK LIST FOR FLEXIBLE PAVEMENT DESIGN

- *** NOTE ALL ITEMS NOT MARKED WITH A CHECK SHOULD BE EXPLAINED IN COMMENTS SECTION OR MARKED N/A IF APPLICABLE
- ___ A ALL PAVEMENT CONSTRUCTION HAS AN APPROVED (SIGNED & SEALED) PAVEMENT DESIGN IN THE PROJECT FILE
- ___ B FEDERAL-AID PROJECTS HAVE FHWA APPROVED PAVEMENT DESIGN IN THE PROJECT FILE
- ___ C PAVEMENT MATERIALS AND THICKNESSES SHOWN IN THE PLANS COMPLY WITH APPROVED DESIGN CHECK EACH COURSE FOR EACH TYPICAL SHOWN IN THE PLANS

	TYPICAL SECTION NO									COURSE
	1	2	3	4	5	6	7	8	9	
	()	()	()	()	()	()	()	()	()	FRICTION OR SURFACE
	()	()	()	()	()	()	()	()	()	STRUCTURAL
	()	()	()	()	()	()	()	()	()	OVERBUILD
	()	()	()	()	()	()	()	()	()	LEVELING
	()	()	()	()	()	()	()	()	()	INTERLAYER
	()	()	()	()	()	()	()	()	()	BASE-ALL FEASIBLE OPTIONS SHOWN
	()	()	()	()	()	()	()	()	()	SUBASE
	()	()	()	()	()	()	()	()	()	SUBGRADE STABILIZATION

- ___ D TYPICAL SECTION NOTES REGARDING PAVEMENT CONSTRUCTION ARE EASILY UNDERSTOOD
- ___ E FRICTION COURSE(S) ARE CORRECT FOR DESIGN SPEED, ADT AND NUMBER OF LANES SHOWN IN PLANS AND COMPLY WITH FRICTION COURSE POLICY FRICTION COURSE LIMITS ARE PROPERLY DELINEATED
- ___ F WHERE ASPHALT LAYER THICKNESSES ARE SPECIFIED IN THE PLANS, THEY ARE CONSISTENT WITH REQUIREMENTS FOR MAXIMUM & MINIMUM THICKNESSES SPECIFIED IN INDEX 513, OR IN THE STANDARD SPECIFICATIONS
- ___ G OVERBUILD DETAILS ARE PROVIDED APPROPRIATE
- ___ H WHERE FEATHERING IS SPECIFIED
 - ___ (1) FEATHERING DETAILS ARE PROVIDED AS APPROPRIATE
 - ___ (2) ASPHALT MATERIALS SPECIFIED FOR FEATHERING ARE NOT FEATHERED TO THICKNESSES LESS THAN ESTABLISHED MINIMUMS
 - ___ (3) FULL DESIGN THICKNESS IS PROVIDED IN WHEEL PATH AREAS
 - ___ (4) THE CROSS SLOPE IN ANY TRAVEL LANE DOES NOT EXCEED 0.05 FT / FT
- ___ I CURB AND GUTTER REHABILITATION PROJECTS
 - ___ (1) A DETAIL OF PAVEMENT TREATMENT AT THE CURB IS PROVIDED
 - ___ (2) DROP OFF AT CURB LIP DOES NOT EXCEED 1/2"(5/8" FOR FC-2)
 - ___ (3) GUTTER SECTIONS ARE NOT FILLED, SUFFICIENT CURB HEIGHT IS PROVIDED FOR PROPER DRAINAGE AND SAFETY
 - ___ (4) WHERE FC-2 (OPEN GRADED FRICTION COURSE) IS SPECIFIED, PROPER DRAINAGE OF MATERIAL IS PROVIDED FOR (FC-2 LAYER SHOULD BE SET ABOVE CURB LIP ELEVATION)

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___ J MILLING PROJECTS

- ___ (1) A COMPOSITION REPORT IS PROVIDED WHERE MILLING IS CALLED FOR THE COMPOSITION REPORT COVERS THE DEPTH TO BE MILLED
- ___ (2) MILLING DETAILS ARE PROVIDED AS APPROPRIATE (E.G., LIMITS ARE IDENTIFIED, SPECIAL TREATMENT AT BRIDGE ENDS, BRIDGE OVERPASSES, ETC.)

___ K WIDENING AREAS SPECIFIED TO BE STABILIZED HAVE BEEN REVIEWED WITH CONSTRUCTION AND MATERIALS OFFICES AND ARE CONSIDERED APPROPRIATE FOR STABILIZING

___ L ADT AND % TRUCKS INFORMATION SHOWN IN THE PLANS ARE CONSISTENT WITH THE 18 KIP ESAL DATA USED IN PAVEMENT DESIGN YEAR SHOWN IN PLANS COINCIDES WITH DESIGN YEAR FOR PAVEMENT DESIGN

___ M THE CROSS SECTIONS HAVE BEEN CHECKED FOR WATER TABLE ELEVATION AND SUFFICIENT CLEARANCE TO PAYMENT MATERIALS IS PROVIDED FOR BASE MATERIALS ARE PROPER FOR THE CONDITIONS ENCOUNTERED

COMMENT (EXCEPTIONS NOTED ABOVE SHOULD BE EXPLAINED)

(SIGNATURE) _____

XV CES CHECK

- ___ A CHECK NUMBER OF CES SHEETS
- ___ B CHECK TABULATION AGAINST CES PAY ITEMS AND QUANTITIES
- ___ C CHECK QUANTITIES FOR FEDERAL AND NON-FEDERAL PARTICIPATION
- ___ D VERIFY ALL QUANTITIES AND ITEM NUMBERS
- ___ E IF MULTI PROJECT IS CES STRUNG?
- ___ F MAKE SURE NO STRAY QUANTITIES HAVE BEEN PLACED IN ODD DESIGN GROUPS OR DUPLICATED ON OTHER CES OUTPUT FOR COMPONENT PLAN SETS
- ___ G ARE EROSION CONTROL ITEMS INCLUDED
- ___ H DO THE ASPHALT QUANTITIES COVER PAVING OVER PRECAST SLAB STRUCTURES, IF THIS TYPE BRIDGE IS USED
- ___ I DO ASPHALT QUANTITIES COVER PAVING OVER THE APPROACH SLAB
- ___ J IS STABILIZING INCLUDED FOR APPROACH SLAB?
- ___ K IF THERE IS A BRIDGE CULVERT ON THE PROJECT THE PLANS SHOULD INCLUDE A PAY ITEM FOOTNOTE BREAKING OUT CONCRETE AND STEEL FOR THESE STRUCTURES
- ___ L ALL QUANTITIES SHOULD MATCH THOSE SHOWN ON SUMMARY OF QUANTITIES

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- M IS PROJECT LOADED UNDER F A PARTICIPATING IF FEDERAL AID?
- N IS PROJECT LOADED UNDER F A NON-PARTICIPATING IF NOT FEDERALLY FUNDED?
- O IS CES INCLUDED FOR EACH COMPONENT SET OF PLANS?
- P ARE MAINTENANCE OF TRAFFIC ITEMS INCLUDED?

101 1	MOBILIZATION	LS	1 000
102 1	MAINT OF TRAFFIC PAY ITEM FOOTNOTES SHOWN SHOULD INDIVIDUAL MAINT OF TRAFFIC PAY ITEMS BE SHOWN MAINT OF TRAFFIC DETAILS OR PROPOSED T C P DESCRIPTION SHOWN IN PLANS	LS/DA	540 000
102 2 1	SPECIAL DETOUR (DETOUR 1)	LS	1 000
102 3	COMMERCIAL MATL FOR DRIVEWAY MAINT INCLUDE BASIS OF ESTIMATE (IF OTHER THAN STANDARD IS USED) QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK	CY	102 000
102 4	CALCIUM CHLORIDE FOR DUST CONTROL	TN	22 100
102 72	CONC BARRIER(TEMP-TYPE E) QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK	LF	5,400 000
102 74	BARRICADE (TEMPORARY - CLASSES A, B & D) PAY ITEM FOOTNOTES SHOWN CALENDAR DAYS SHOWN AGREE WITH CES	ED	43,680 000
102 75	CONSTRUCTION SIGNS (TEMP - POST MOUNTED)	ED	33,040 000
102 76	FLASHING ARROW BOARD (TEMPORARY)	ED	1,120 000
102 77	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)	ED	3,360 000
102 78	REFLECTIVE PAVT MARKER (TEMPORARY) QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK	EA	863 000
102 81	VEHICULAR IMPACT ATTENUATOR (INERTIA) (TEMP)	EA	2 000
102 82	RELOCATE TEMPORARY VEHICULAR IMPACT ATTENUATOR	EA	16 000
102 83	RELOCATE TEMPORARY CONC BARRIER WALL	LF	16,400 000

REMARKS

PLAN QUANTITY

PAY ITEM CHECK LIST

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DATE	DESCRIPTION	UNIT	PLAN QUANTITY	REMARKS
102 86	2 BARRICADE PAY ITEM FOOTNOTES SHOWN CALENDAR DAYS SHOWN AGREE WITH CES (TEMPORARY-CLASS H)(12')	ED	1,980 000	
102 91	2 REMOVABLE PAVEMENT MARKING QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK (SOLID)	LF	6,680 000	
102 92	1 TEMPORARY PAVEMENT MARKING (SKIP)	LF	7,948 000	
102 92	2 TEMPORARY PAVEMENT MARKING (SOLID)	LF	106,276 000	
104 10	BALED HAY OR STRAW QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK PAY ITEM FOOTNOTES SHOWN INDEX 103 SHOWN ON KEY SHEET	TN	4 900	
104 11	FLOATING SILT BARRIER QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK PAY ITEM FOOTNOTES SHOWN INDEX 104 SHOWN ON KEY SHEET	LF	30 000	
110 1	CLEARING & GRUBBING QUANTITY AGREES WITH COMPUTATION BOOK LIMITS DETAILED IN THE PLANS DETAIL SHEETS ARE INCLUDED FOR SELECTIVE CLEARING AND GRUBBING DETAILED CALCULATIONS ARE REQUIRED	LS/AC	15 002	
110 3	REM OF EXIST STRUCTURES QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK DETAILED CALCULATIONS ARE REQUIRED	LS/SF	26 500	
110 4	REM OF EXIST PAVT QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK	SY	13,325 000	
120 6	EMBANKMENT EARTHWORK TOTALS ON LAST CROSS SECTION SHEET QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK SUMMARY OF EARTHWORK SHOWN INDEX 500 & 505 SHOWN ON KEY SHEET & TYPICAL SECTION PAY ITEM FOOTNOTES SHOWN	CY	6,789 000	

DATE	285	PAY ITEM CHECK LIST	LS/SY	PLAN QUANTITY	REMARKS	PAC
120 8		FINAL DRESSING		11,615 000		
		QUANTITY AGREES WITH COMPUTATION BOOK HAS THIS PAY ITEM BEEN THOROUGHLY INVESTIGATED TO DETERMINE WEATHER FOOTNOTES ARE APPLICABLE				
125 77 1		SHEETING (ONE SIDE)	LF	6,320 000		
		QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK				
160 4		TYPE B STABILIZATION	SY	44,048 000		
		QUANTITY AGREES WITH COMPUTATION BOOK REQUIRED LBR SHOWN ON TYPICLA SECTION ALL QUANTITIES IN COMPUTATION BOOOK MUST REFER TO TRAVERSE NO OR PAGE NO WHERE DERIVED				
162 2		TOPSOIL	SY	11,679 000		
		QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK				
175 1		RESEAT CONC PAVT	SY	12,958 000		
285709		OPTIONAL BASE (BASE GROUP 09)	SY	40,446 000		
		INDEX 514 SHOWN ON KEY SHEET QUANTITY AGREES WITH COMPUTATION BOOK TYPICAL SECTION NOTES OPTION CODES SHOWN AND AGREE THICKNESS SHOWN AND AGREE DETAILED CALCULATIONS ARE REQUIRED ALL QUANTITIES IN COMPUTATION BOOOK MUST REFER TO TRAVERSE NO OR PAGE NO WHERE DERIVED				
300 1 1		BIT MATL (PRIME COAT)	GA	6,065 000		
		INCLUDE BASIS OF ESTIMATE (IF OTHER THAN STANDARD IS USED) QUANTITY AGREES WITH COMPUTATION BOOK				
300 1 3		BIT MATL (TACK COAT)	GA	4,568 000		
339 1		MISC ASPHALT PAVEMENT	TN	30 000		
		QUANTITY AGREES WITH COMPUTATION BOOK				
400 2 11		CLASS II CONC (RETAINING WALLS)	CY	92 800		
		QUANTITY AGREES WITH PLANS QUANTITY AGREES WITH COMPUTATION BOOK DETAILED CALCULATIONS ARE REQUIRED				
400 2 15		CLASS II CONC (MISCELLANEOUS)	CY	18 100		
		QUANTITY AGREES WITH PLANS				

DATE	DESCRIPTION	PLAN QUANTITY	REMARKS
415 1 6	REINF STEEL (MISCELLANEOUS)	1,637 000	
425 1331	INLETS (CURB) (TYPE P-3)	3 000	
	INCLUDE SUMMARY OF DRAINAGE STRUCTURES PERMITS		
	INDEX 200, 201 & 210 SHOWN ON KEY SHEET		
	NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES, STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS		
	STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK IF APPLICABLE		
	PROPOSED LOCATION SHOWN ON PLAN SHEET DRAINAGE MAP		
	DETAIL SHEET		
425 1341	INLETS (CURB) (TYPE P-4)	2 000	
425 1351	INLETS (CURB) (TYPE P-5)	26 000	
	INCLUDE SUMMARY OF DRAINAGE STRUCTURES PERMITS		
	INDEX 200, 201 & 211 SHOWN ON KEY SHEET		
	NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES, STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS		
	STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK IF APPLICABLE		
	PROPOSED LOCATION SHOWN ON PLAN SHEET DRAINAGE MAP		
	DETAIL SHEET		
425 1361	INLETS (CURB) (TYPE P-6)	9 000	
425 1451	INLETS (CURB) (TYPE J-5)	1 000	
425 1481	INLETS (CURB) (TYPE 8)	1 000	
	INCLUDE SUMMARY OF DRAINAGE STRUCTURES PERMITS		
	INDEX 200, 201 & 213 SHOWN ON KEY SHEET		
	NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES, STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS		
	STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK IF APPLICABLE		
	PROPOSED LOCATION SHOWN ON PLAN SHEET DRAINAGE MAP		
	DETAIL SHEET		
425 1521	INLETS (DT BOT) (TYPE C)	2 000	
	INCLUDE SUMMARY OF DRAINAGE STRUCTURES		

REMARKS

PLAN QUANTITY

PAY ITEM CHECK LIST

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--- QUANTITY AGREES WITH PLANS
 --- QUANTITY AGREES WITH COMPUTATION BOOK PERMITS
 --- INDEX 200, 201 & 232 SHOWN ON KEY SHEET
 --- NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES,
 --- STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS
 --- STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK
 --- IF APPLICABLE

425 1531 INLETS (DT BOT) (TYPE C MODIFIED) (<10') EA 1 000

425 2 41 MANHOLES (P-7T) (<10') EA 6 000

--- QUANTITY AGREES WITH PLANS
 --- QUANTITY AGREES WITH COMPUTATION BOOK PERMITS
 --- INDEX 200 & 201 SHOWN ON KEY SHEET
 --- NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES,
 --- STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS
 --- STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK
 --- IF APPLICABLE

425 2 51 MANHOLES (P-7NT) (<10') EA 4 000

425 2 71 MANHOLES (J-7T) (<10') EA 17 000

425 2 72 MANHOLES (J-7T) (>10') EA 12 000

425 2 82 MANHOLES (J-7NT) (>10') EA 1 000

425 2101 MANHOLES (SPECIAL) (<10') EA 22 000

425 2103 MANHOLES (SPECIAL) (PARTIAL) EA 4 000

425 5 ADJ MANHOLES EA 5 000

425 72 MODIFYING INLETS EA 6 000

--- QUANTITY AGREES WITH PLANS
 --- QUANTITY AGREES WITH COMPUTATION BOOK PERMITS
 --- SPECIAL DETAIL REQUIRED
 --- NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES,
 --- STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS
 --- STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK
 --- IF APPLICABLE

425 76 YARD DRAINS EA 4 000

--- INCLUDE SUMMARY OF DRAINAGE STRUCTURES

DATE CHANGES FOR ITEM CHECK LIST

INDEX 280 SHOWN ON KEY SHEET
INDEX 200, 201 & 230 SHOWN ON KEY SHEET
INDEX 200 & 201 SHOWN ON KEY SHEET
NOTE PLACED BELOW STRUCTURE CONTAINING STATION, FLOW LINES,
STANDARD INDEX NUMBERS, AND STRUCTURE NUMBERS
STORM SEWER DISPLACEMENT SHOWN UNDER SUMMARY OF EARTHWORK
IF APPLICABLE
PROPOSED LOCATION SHOWN ON PLAN SHEET DRAINAGE MAP
DETAIL SHEET

NO.	DESCRIPTION	UNIT	QUANTITY
430 1125	CONC PIPE CULV (30" SS)	LF	192 000
430 1126	CONC PIPE CULV (36" SS)	LF	558 000
430 1127	CONC PIPE CULV (42" SS)	LF	289 000
430 1128	CONC PIPE CULV (48" SS)	LF	750 000
430 1132	CONC PIPE CULV (66" SS)	LF	2,363 000
430 1133	CONC PIPE CULV (72" SS)	LF	844 000
430 1152	CONC PIPE CULV (CLASS IV) (15" SS)	LF	167 000
430 1158	CONC PIPE CULV (CLASS IV) (48" SS)	LF	60 000
430 1222	CONC PIPE CULV (15" CD)	LF	1,390 000
430 1223	CONC PIPE CULV (18" CD)	LF	337 000
430 1224	CONC PIPE CULV (24" CD)	LF	429 000
430 14122	ELLIP CONC PIPE CULV (CLASS HE 111)(12"X18" SS)	LF	89 000
430 14201	ELLIP CONC PIPE CULV (CLASS HE 111)(14"X23" CD)	LF	54 000
430 15 1	CAST IRON PIPE CULV (STANDARD) (4")	LF	40 000

--- QUANTITY AGREES WITH PLANS
--- QUANTITY AGREES WITH COMPUTATION BOOK

444 70 8 DEEP WELL OPEN HOLE (18") LF 80 000

--- QUANTITY AGREES WITH PLANS
--- QUANTITY AGREES WITH COMPUTATION BOOK
--- PERMITS
--- NOMINAL MANUFACTURERS LENGTHS CONSIDERED
--- PROPOSED LOCATION SHOWN ON PLAN SHEET
--- DRAINAGE MAP
--- DETAIL SHEET

444 70 11 DEEP WELL OPEN HOLE (24") LF 100 000

444 70 14 DEEP WELL OPEN HOLE (30") LF 60 000

444 70 17 DEEP WELL OPEN HOLE (36") LF 180 000

444 71 8 DEEP WELL CASING (18") LF 320 000

444 71 11 DEEP WELL CASING (24") LF 400 000

444 71 14 DEEP WELL CASING (30") LF 240 000

444 71 17 DEEP WELL CASING (36") LF 720 000

455 14 2 CONC SHEET PILING (8"X30") LF 474 000

500 71 ALUM HANDRAIL LF 57 000

--- QUANTITY AGREES WITH PLANS
--- QUANTITY AGREES WITH COMPUTATION BOOK
--- PROPOSED LOCATION SHOWN ON PLAN SHEET
--- INDEX 520 SHOWN ON KEY SHEET
--- DETAIL SHEET

520 1 10 CONC CURB & GUTTER (TYPE F) LF 20,702 000

--- QUANTITY AGREES WITH PLANS
--- QUANTITY AGREES WITH COMPUTATION BOOK
--- PROPOSED LOCATION SHOWN ON PLAN SHEET
--- INDEX 300 SHOWN ON KEY SHEET.
--- DETAIL SHEET

520 5 41 CONC TRAF SEP (TYPE IV) (4' WIDE) LF 192 000

--- QUANTITY AGREES WITH PLANS
--- QUANTITY AGREES WITH COMPUTATION BOOK
--- PROPOSED LOCATION SHOWN ON PLAN SHEET
--- INDEX 302 SHOWN ON KEY SHEET
--- DETAIL SHEET

PAY ITEM CHECK LIST

PLAN QUANTITY

REMARKS

4,118 000

SY

CONC SIDEWALK (4" THICK)

QUANTITY AGREES WITH PLANS.
QUANTITY AGREES WITH COMPUTATION BOOK
PROPOSED LOCATION SHOWN ON PLAN SHEET
INDEX 304 SHOWN ON KEY SHEET

DETAIL SHEET

522 2 CONC SIDEWALK (6" THICK)

556 000

SY

536 1 1 GUARDRAIL (ROADWAY)

900 000

LF

INCLUDE SUMMARY BOXES FOR GUARDRAIL
QUANTITY AGREES WITH PLANS
PROPOSED LOCATION SHOWN ON PLAN SHEET
INDEX NUMBER SHOWN ON PLANS SHEET
INDEX 400 SHOWN ON KEY SHEET
IS MISCELLANEOUS ASPHALT REQUIRED?
ARE SPECIAL POSTS REQUIRED?

DETAIL SHEET

536 6 END ANCHORAGE ASSEM TYPE II

2 000

EA

536 8 BRIDGE ANCHORAGE ASSEM

4 000

EA

536 9 END ANCHORAGE ASSEM TYPE IV

1 000

EA

536 73 REM OF EXISTING GUARDRAIL

160 000

LF

570 5 FERTILIZER

1 100

TN

INCLUDE BASIS OF ESTIMATE (IF OTHER THAN STANDARD IS USED)
PAY ITEM FOOTNOTES SHOWN

570 9 WATER FOR GRASS

72 000

MG

575 1 SODDING

12,013 000

SY

INCLUDE SUMMARY BOXES FOR SODDING
QUANTITY AGREES WITH PLANS
MOWING PAY ITEM REQUIRED

730 76226A STEEL CASING (JACK&BORE)

60 000

LF

(66")

730 76227B STEEL CASING (JACK&BORE)

60 000

LF

(64")

5331 2 TYPE S ASPH CONC(INC BIT)

689 800

TN

INDEX 513 SHOWN ON KEY SHEET
QUANTITY AGREES WITH COMPUTATION BOOK
DETAILED CALCULATIONS ARE REQUIRED

DATE	85	PAY ITEM CHECK LIST	PLAN QUANTITY	REMARKS	PAGE
5331 72 20B		TYPE S ASPH CONC(INC BIT)(2")	13,188 000		
5331 72 24A		TYPE S ASPH CONC(INC BIT)(2 1/2")	13,188 000		
5331 72 30		TYPE S ASPH CONC(INC BIT)(3")	2,045 000		
5333 2 9		TYPE III ASPH CONC(INC BIT) (1000 LB STAB)	3,173 400		
5337 1 2		ASPH CONC FRICTION COURSE(INC BIT)(5/8") (FC-2)	2,045 000		
5337 1 5B		ASPH CONC FRICTION COURSE(INC BIT)(1")(FC-1 OR 4)	13,188 000		

CHECKED BY _____
 SIGNED BY _____ CREW CHIEF
 SUPERVISED BY _____ PROJECT MANAGER
 APPROVED BY _____ DISTRICT DESIGN ENGINEER

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
DESIGN 90% OR 100% CHECK LIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PROJECT CHECK LIST - DESIGN GROUP= 30
SIGNING & PAVEMENT MARKING

I CHECK KEY SHEET FOR THE FOLLOWING

- ___ A W P I NUMBER - SHOULD MATCH WPA FILES AND BE ADJACENT TO BOX TOP RIGHT CORNER
- ___ B STATE PROJECT NUMBER - SHOULD MATCH WPA FILES AND FOLLOW FAP NUMBER IN BRACKETS
- ___ C IS FAP NUMBER CORRECT?
- ___ D STATE ROAD NUMBER AND COUNTY NAME
- ___ E LENGTH OF PROJECT - IS LENGTH CORRECT ACCORDING TO STATIONING ON LOCATION MAP? DOES IT MATCH MILE POST NUMBERS IN WPA? MILEAGE SHOULD BE TRUNCATED AT THREE DECIMAL PLACES
- ___ F THE PROJECT MANAGER OR DESIGNERS NAME SHOULD BE UNDERNEATH THE LENGTH OF PROJECT BOX IF CONSULTANT, CONSULTANT'S NAME AND F D O T PROJECT MANAGER'S NAME SHOULD BE NOTED
- ___ G CHECK LOCATION MAP FOR
 - ___ (1) ROAD DESTINATIONS
 - ___ (2) RANGE AND TOWNSHIP LINES, SECTION LINES AND NUMBER
 - ___ (3) PROJECT LOCATION SHOWN WITH HEAVY INKED LINE
- ___ H CHECK NOTES AT TOP LEFT FOR PLAN CONTENTS INSURE THAT ALL SETS ARE COMPLETE
- ___ I CHECK ROADWAY & TRAFFIC DESIGN STANDARDS FOR CURRENT DATE
- ___ J CHECK FOR JOINT CONTRACTS SHOULD BE NOTED ABOVE THE GOVERNING SPECIFICATION NOTE
- ___ K GOVERNING SPECIFICATION NOTE SHOULD INCLUDE DATE REFERENCE TO SUPPLEMENTAL SPECIFICATIONS

DATE 04MAR85

- ___ L REVISION DATE NOTED?
 - ___ M CHECK FOR OVERLAPPING PROJECTS
 - ___ N HAVE APPROPRIATE SHEETS BEEN SIGNED AND SEALED?
- II SIGNING AND PAVEMENT MARKING
- ___ A BEGIN AND END STATIONS, EQUATIONS EXCEPTIONS ARE CORRECT AND AGREE WITH ROADWAY PLANS
 - ___ B CHECK INDEX WITH PLAN SHEETS TO INSURE ALL SHEETS ARE INCLUDED AND NUMBERED
 - ___ C DESIGN STANDARDS LISTED WITH CURRENT BOOKLET DATE, ALL INDEXES APPLICABLE TO PLANS ARE CALLED FOR
 - ___ D CHECK PLAN SHEETS FOR PROPER LAYOUT OF PAVEMENT MARKINGS, SIGN LOCATION AND MESSAGES
 - ___ E CHECK PAY ITEMS AND SIGN IDENTIFICATION NUMBERS
 - ___ F REVIEW GUIDE SIGN DETAILS CHECK BACKGROUND MATERIAL, LEGEND & BORDER FOR SIZE, TYPE AND COLOR TO INSURE THEY CONFORM TO LATEST PROCEDURES
 - ___ G CHECK ALL STRUCTURES FOR PROPER DIMENSIONS & SETBACK, STATIONING AND CROSS SECTION DATA MAKE SURE COLUMN SIZES AND LENGTH ARE GIVEN
 - ___ H CHECK POWER DROP FOR LIGHTED OVERHEAD SIGNS, IS POWER SOURCE SHOWN, IS CONDUIT SHOWN FOR POWER?
 - ___ I READ PLAN NOTES TO INSURE CLARITY AND INTENT
 - ___ J REVIEW PACKAGE FOR GOOD LEGIBILITY TO INSURE QUALITY
- III CHECK THROUGHOUT PLANS FOR THE FOLLOWING
- ___ A STATE PROJECT NUMBER
 - ___ B HAVE ALL SHEETS BEEN INITIALED, SIGNED, AND DATED?
 - ___ C NORTH ARROW AND SCALE
 - ___ D IF PROJECT IS TO BE LET TO CONTRACT WITH ANOTHER JOB, IT SHOULD BE NOTED
 - ___ E READ PLAN NOTES TO INSURE CLARITY AND INTENT
 - ___ F CHECK PLAN SHEETS FOR ELECTRICAL POWER SERVICE AND NECESSARY CONDUIT
 - ___ G ARE ALL APPROPRIATE INDEXES SHOWN ON KEY SHEET?

DATE

MAR85

PAC

IV ADDITIONAL SIGNING & PAVEMENT MARKING PLANS CHECKS

- A READ COMPLETE PROJECT FILE TO INSURE ALL SPECIFIC AGREEMENTS ARE COMPLIED WITH
- B SPECIFICATION NOTES AND DATES ARE SHOWN
- C ALL COMPONENTS ARE INCLUDED UNDER CONTRACT PLAN SETS

V CES CHECK

- A CHECK NUMBER OF CES SHEETS
- B CHECK TABULATION AGAINST CES PAY ITEMS AND QUANTITIES
- C CHECK QUANTITIES FOR FEDERAL AND NON-FEDERAL PARTICIPATION
- D VERIFY ALL QUANTITIES AND ITEM NUMBERS
- E IF MULTI PROJECT IS CES STRUNG?
- F MAKE SURE NO STRAY QUANTITIES HAVE BEEN PLACED IN ODD DESIGN GROUPS OR DUPLICATED ON OTHER CES OUTPUT FOR COMPONENT PLAN SETS
- G ALL QUANTITIES SHOULD MATCH THOSE SHOWN ON SUMMARY OF QUANTITIES
- H IS PROJECT LOADED UNDER F A PARTICIPATING IF FEDERAL AID?
- I IS PROJECT LOADED UNDER F A NON-PARTICIPATING IF NOT FEDERALLY FUNDED?
- J IS CES INCLUDED FOR EACH COMPONENT SET OF PLANS?
- K ARE MAINTENANCE OF TRAFFIC ITEMS INCLUDED?

PAG

REMARKS

PLAN QUANTITY

PAY ITEM CHECK LIST

DATE MAR85

700 1 2	ROADSIDE SIGN (RAILROAD)	AS	5 000
--- QUANTITY AGREES WITH PLANS --- INDICES 11860 AND 17302 AND (11861 OR 11862 OR 11863 OR 11864) --- SHOWN ON KEY SHEET			
700 1 3	ROADSIDE SIGN (STOP)	AS	11 000
700 1 4	ROADSIDE SIGN (RT MARKER SINGLE)	AS	4 000
700 1 10	ROADSIDE SIGN (3 SQ FT OR LESS)	AS	4 000
700 1 11	ROADSIDE SIGN (SIGN 3-4)	AS	1 000
700 1 12	ROADSIDE SIGN (SIGN 4-5)	AS	16 000
700 1 13	ROADSIDE SIGN (SIGN 5-6)	AS	4 000
700 1 14	ROADSIDE SIGN (SIGN 6-6 25)	AS	9 000
700 1 15	ROADSIDE SIGN (SIGN 6 25-9)	AS	8 000
700 1 17	ROADSIDE SIGN (SIGN 12-16)	AS	12 000
700 72 1	RELOCATE EXISTING SIGN (ONE POST)	AS	15 000
--- QUANTITY AGREES WITH PLANS			
700 84 1	SIGN PANEL INSTALLATION (SQ FT 0 TO 10)	EA	27 000
700 84 3	SIGN PANEL INSTALLATION (SQ FT 15 TO 20)	EA	4 000
705 70 9	DELINEATOR, BUTTON (9 BUTTON)	AS	9 000
--- QUANTITY AGREES WITH PLANS --- INDEX 17349 SHOWN ON KEY SHEET			
706 1 12	REFLECTIVE PAVEMENT MARKER	EA	739 000
--- QUANTITY AGREES WITH PLANS --- INDEX 17352 SHOWN ON KEY SHEET			
710 4 41	SOLID TRAFFIC STRIPE (4")	LF	300 000

--- QUANTITY AGREES WITH PLANS
--- INDEX 17345 AND/OR 17346 SHOWN ON KEY SHEET

DATE	DESCRIPTION	PLAN QUANTITY	REMARKS
710	4181 SOLID TRAFFIC STRIPE (18")	88 000	LF
711	1 SKIP TRAFFIC STRIPE THERMOPLASTIC	3 788	GM
711	3 PAVT MESSAGES THERMOPLASTIC	22 000	EA
711	4 DIRECTIONAL ARROWS THERMOPLASTIC	56 000	EA
711	5 GUIDE LINES THERMOPLASTIC (4"DOTTED)	449 000	LF
---	--- QUANTITY AGREES WITH PLANS		
711	6121 SOLID TRAFFIC STRIPE THERMOPLASTIC (12")	2,959 000	LF
---	--- QUANTITY AGREES WITH PLANS --- INDEX 17345 AND/OR 17346 SHOWN ON KEY SHEET		
711	6181 SOLID TRAFFIC STRIPE THERMOPLASTIC (18")	136 000	LF
711	6241 SOLID TRAFFIC STRIPE THERMOPLASTIC (24")	1,280 000	LF
711	72 REM EXIST PAVT MARKING THERMOPLASTIC	162 000	SF
---	--- QUANTITY AGREES WITH PLANS		
711	73 41 SOLID TRAFFIC STRIPE THERMOPLASTIC (4")	5 360	NM
---	--- QUANTITY AGREES WITH PLANS --- INDEX 17345 AND/OR 17346 SHOWN ON KEY SHEET		

CHECKED BY _____
 SIGNED BY _____ CREW CHIEF
 SUPERVISED BY _____ PROJECT MANAGER
 APPROVED BY _____ DISTRICT DESIGN ENGINEER

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
DESIGN 90% OR 100% CHECK LIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
FROM OLETA RIVER TO 194TH STREET
EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PROJECT CHECK LIST - DESIGN GROUP= 40
LIGHTING

I CHECK KEY SHEET FOR THE FOLLOWING

- A W P I NUMBER - SHOULD MATCH WPA FILES AND BE ADJACENT TO BOX TOP RIGHT CORNER
- B STATE PROJECT NUMBER - SHOULD MATCH WPA FILES AND FOLLOW FAP NUMBER IN BRACKETS
- C IS FAP NUMBER CORRECT?
- D STATE ROAD NUMBER AND COUNTY NAME
- E LENGTH OF PROJECT - IS LENGTH CORRECT ACCORDING TO STATIONING ON LOCATION MAP? DOES IT MATCH MILE POST NUMBERS IN WPA? MILEAGE SHOULD BE TRUNCATED AT THREE DECIMAL PLACES
- F THE PROJECT MANAGER OR DESIGNERS NAME SHOULD BE UNDERNEATH THE LENGTH OF PROJECT BOX IF CONSULTANT, CONSULTANT'S NAME AND F D O T PROJECT MANAGER'S NAME SHOULD BE NOTED
- G CHECK LOCATION MAP FOR
 - (1) ROAD DESTINATIONS
 - (2) RANGE AND TOWNSHIP LINES, SECTION LINES AND NUMBER
 - (3) PROJECT LOCATION SHOWN WITH HEAVY INKED LINE
- H CHECK NOTES AT TOP LEFT FOR PLAN CONTENTS INSURE THAT ALL SETS ARE COMPLETE
- I CHECK ROADWAY & TRAFFIC DESIGN STANDARDS FOR CURRENT DATE
- J CHECK FOR JOINT CONTRACTS SHOULD BE NOTED ABOVE THE GOVERNING SPECIFICATION NOTE
- K GOVERNING SPECIFICATION NOTE SHOULD INCLUDE DATE REFERENCE TO SUPPLEMENTAL SPECIFICATIONS

- ___ L REVISION DATE NOTED?
- ___ M CHECK FOR OVERLAPPING PROJECTS
- ___ N HAVE APPROPRIATE SHEETS BEEN SIGNED AND SEALED?

II CHECK THROUGHOUT PLANS FOR THE FOLLOWING

- ___ A STATE PROJECT NUMBER
- ___ B HAVE ALL SHEETS BEEN INITIALED, SIGNED, AND DATED?
- ___ C NORTH ARROW AND SCALE
- ___ D IF PROJECT IS TO LET TO CONTRACT WITH ANOTHER JOB, IT SHOULD BE NOTED
- ___ E READ PLAN NOTES TO INSURE CLARITY AND INTENT
- ___ F CHECK PLAN SHEETS FOR ELECTRICAL POWER SERVICE AND NECESSARY CONDUIT
- ___ G ARE ALL APPROPRIATE INDEXES SHOWN ON KEY SHEET?

III ADDITIONAL LIGHTING PLANS CHECKS

- ___ A PROJECT MEETS JUSTIFICATION WARRENTS
- ___ B ALL COMPONENTS ARE INCLUDED UNDER CONTRACT PLAN SETS
- ___ C CHECK FOR ELECTRICAL POWER SERVICE FROM POWER COMPANY IS LOCATION AND VOLTAGE CORRECT?
- ___ D IS MAINTENANCE AGREEMENT CLEAR?

IV CES CHECK

- ___ A CHECK NUMBER OF CES SHEETS
- ___ B CHECK TABULATION AGAINST CES PAY ITEMS AND QUANTITIES
- ___ C CHECK QUANTITIES FOR FEDERAL AND NON-FEDERAL PARTICIPATION
- ___ D VERIFY ALL QUANTITIES AND ITEM NUMBERS
- ___ E IF MULTI PROJECT IS CES STRUNG?
- ___ F MAKE SURE NO STRAY QUANTITIES HAVE BEEN PLACED IN ODD DESIGN GROUPS OR DUPLICATED ON OTHER CES OUTPUT FOR COMPONENT PLAN SETS
- ___ G ALL QUANTITIES SHOULD MATCH THOSE SHOWN ON SUMMARY OF QUANTITIES
- ___ H IS PROJECT LOADED UNDER F A PARTICIPATING IF FEDERAL AID?

PAGE

DATE 01/18/85

- I IS PROJECT LOADED UNDER F A NON-PARTICIPATING IF NOT
FEDERALLY FUNDED?
- J IS CES INCLUDED FOR EACH COMPONENT SET OF PLANS?
- K ARE MAINTENANCE OF TRAFFIC ITEMS INCLUDED?

DATE	DESCRIPTION	LS/LF	PLAN QUANTITY	REMARKS
715 73	INSTALL NEW CONDUCTORS, CONDUIT & PULL BOXES --- QUANTITY AGREES WITH PLANS --- INDICES 17500, 17501 AND 17503 SHOWN ON KEY SHEET	LS/LF	1 000	
715 77	RELOCATE POLES --- QUANTITY AGREES WITH PLANS --- INDEX 17500 SHOWN ON KEY SHEET	EA	26 000	
715 86145	LIGHTING POLE COMPLETE (ALUMINUM) --- QUANTITY AGREES WITH PLANS --- INDICES 17500, 17501 AND 17503 SHOWN ON KEY SHEET	EA	6 000	
715103	REWORK LOAD CENTER --- QUANTITY AGREES WITH PLANS	EA	1 000	

CHECKED BY _____
 SIGNED BY _____ CREW CHIEF
 SUPERVISED BY _____ PROJECT MANAGER
 APPROVED BY _____ DISTRICT DESIGN ENGINEER

DATE

85

PAGE

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION
 DESIGN 90% OR 100% CHECK LIST

W P NO 6113271 STATE JOB NO 87030-3553 FAP JOB NO

DESCRIPTION ADD THRU LANE(S)
 FROM OLETA RIVER TO 194TH STREET
 EXTRA DESCR ADD LANES & RE-CONSTRUCTION

COUNTY DADE STATE ROAD NO 0005 U S ROAD NO 0001
 LENGTH 1 3 PROJECT MANAGER HOCKENSMITH

PROJECT CHECK LIST - DESIGN GROUP= 50
 SIGNALS

I CHECK KEY SHEET FOR THE FOLLOWING

- A W P I NUMBER - SHOULD MATCH WPA FILES AND BE ADJACENT TO BOX TOP RIGHT CORNER
- B STATE PROJECT NUMBER - SHOULD MATCH WPA FILES AND FOLLOW FAP NUMBER IN BRACKETS
- C IS FAP NUMBER CORRECT?
- D STATE ROAD NUMBER AND COUNTY NAME
- E LENGTH OF PROJECT - IS LENGTH CORRECT ACCORDING TO STATIONING ON LOCATION MAP? DOES IT MATCH MILE POST NUMBERS IN WPA? MILEAGE SHOULD BE TRUNCATED AT THREE DECIMAL PLACES
- F THE PROJECT MANAGER OR DESIGNERS NAME SHOULD BE UNDERNEATH THE LENGTH OF PROJECT BOX IF CONSULTANT, CONSULTANT'S NAME AND F D O T PROJECT MANAGER'S NAME SHOULD BE NOTED
- G CHECK LOCATION MAP FOR
 - (1) ROAD DESTINATIONS
 - (2) RANGE AND TOWNSHIP LINES, SECTION LINES AND NUMBER
 - (3) PROJECT LOCATION SHOWN WITH HEAVY INKED LINE
- H CHECK NOTES AT TOP LEFT FOR PLAN CONTENTS INSURE THAT ALL SETS ARE COMPLETE
- I CHECK ROADWAY & TRAFFIC DESIGN STANDARDS FOR CURRENT DATE
- J CHECK FOR JOINT CONTRACTS SHOULD BE NOTED ABOVE THE GOVERNING SPECIFICATION NOTE
- K GOVERNING SPECIFICATION NOTE SHOULD INCLUDE DATE REFERENCE TO SUPPLEMENTAL SPECIFICATIONS

- ___ L REVISION DATE NOTED?
 - ___ M CHECK FOR OVERLAPPING PROJECTS
 - ___ N HAVE APPROPRIATE SHEETS BEEN SIGNED AND SEALED?
- II TRAFFIC SIGNALS
- ___ A ALL COMPONENTS ARE INCLUDED UNDER CONTRACT PLAN SETS
 - ___ B ROADWAY & TRAFFIC DESIGN STANDARDS LISTED WITH CURRENT DATE, ALL INDEXES APPLICABLE TO PLANS ARE CALLED FOR
 - ___ C IF PROJECTS TO BE LET TO CONTRACT WITH ANOTHER JOB, IT SHOULD BE NOTED
 - ___ D READ PLAN NOTES TO INSURE CLARITY AND INTENT
 - ___ E REVIEW PACKAGE FOR GOOD LEGIBILITY TO INSURE QUALITY REPRODUCTION
 - ___ F CHECK PLAN SHEETS FOR ELECTRICAL POWER SERVICE AND NECESSARY CONDUIT
 - ___ G CHECK LOCATION OF SIGNAL POLES, TYPE & LOCATION OF SIGNAL HEAD
 - ___ H CHECK TYPE AND LOCATION OF LOOPS
 - ___ I IF SIGNALS ARE TO BE INTERCONNECTED - REVIEW INTERCONNECT PLAN SHEET FOR DETAILS - ARE ALL THE POLES SHOWN - HAVE THE LOCATION OF CONDUIT UNDER PAVEMENT BEEN SHOWN?
- III CHECK THROUGHOUT PLANS FOR THE FOLLOWING
- ___ A STATE PROJECT NUMBER
 - ___ B HAVE ALL SHEETS BEEN INITIALED, SIGNED, AND DATED?
 - ___ C NORTH ARROW AND SCALE
 - ___ D IF PROJECT IS TO BE LET TO CONTRACT WITH ANOTHER JOB, IT SHOULD BE NOTED
 - ___ E READ PLAN NOTES TO INSURE CLARITY AND INTENT
 - ___ F CHECK PLAN SHEETS FOR ELECTRICAL POWER SERVICE AND NECESSARY CONDUIT
 - ___ G ARE ALL APPROPRIATE INDEXES SHOWN ON KEY SHEET?
- IV ADDITIONAL SIGNAL PLANS CHECKS
- ___ A READ COMPLETE PROJECT FILE AND INSURE ALL SPECIFIC AGREEMENTS ARE COMPLIED WITH

DATE

AR85

___ B CHECK TYPE AND LOCATION OF LOOPS

V CES CHECK

___ A CHECK NUMBER OF CES SHEETS

___ B CHECK TABULATION AGAINST CES PAY ITEMS AND QUANTITIES

___ C CHECK QUANTITIES FOR FEDERAL AND NON-FEDERAL PARTICIPATION

___ D VERIFY ALL QUANTITIES AND ITEM NUMBERS

___ E IF MULTI PROJECT IS CES STRUNG?

___ F MAKE SURE NO STRAY QUANTITIES HAVE BEEN PLACED IN ODD DESIGN GROUPS OR DUPLICATED ON OTHER CES OUTPUT FOR COMPONENT PLAN SETS

___ G ALL QUANTITIES SHOULD MATCH THOSE SHOWN ON SUMMARY OF QUANTITIES

___ H IS PROJECT LOADED UNDER F A PARTICIPATING IF FEDERAL AID?

___ I IS PROJECT LOADED UNDER F A NON-PARTICIPATING IF NOT FEDERALLY FUNDED?

___ J IS CES INCLUDED FOR EACH COMPONENT SET OF PLANS?

___ K ARE MAINTENANCE OF TRAFFIC ITEMS INCLUDED?

PAC

PLAN QUANTITY	REMARKS	PAY ITEM CHECK LIST	DATE
620 1 1	GROUNDING ELECTRODE	LF	1,000 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17736 OR 17764 OR 17784 OR 17841 SHOWN ON KEY SHEET		
630 1 12	CONDUIT	LF	1,955 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17721 OR 17727 OR 17736 OR 17864 OR 17781 OR 17784 SHOWN ON KEY SHEET		
630 1 13	CONDUIT	LF	670 000
632 7 1	CABLE (SIGNAL)	PI	6 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17721 AND 17727 SHOWN ON KEY SHEET		
632 7 3	CABLE (SIGNAL)	PI	1 000
632 8112	CABLE (INTERCONNECT)	LF	800 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17721, 17727 AND 17733 SHOWN ON KEY SHEET		
634 4111	SPAN WIRE ASSEMBLY	PI	1 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17727 AND 17733 SHOWN ON KEY SHEET		
634 4112	SPAN WIRE ASSEMBLY	PI	1 000
634 4113	SPAN WIRE ASSEMBLY	PI	4 000
634 5 1	FIBERGLASS INSULATOR	LF	50 000
635 1 11	PULL AND JUNCTION BOXES	EA	51 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17721 OR 17733 OR 17764 OR 17781 OR 17841 OR 17881 OR 17882 OR 17890 SHOWN ON KEY SHEET		
639 2 1	ELECTRICAL SERVICE WIRE	LF	130 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17736 SHOWN ON KEY SHEET		
---	GROUNDING ELECTRON INCLUDED IN PLANS		
641 14 40	CONCRETE STRAIN POLES (TYPE V)	EA	2 000

--- QUANTITY AGREES WITH PLANS
 --- ALL DETAIL DIMENSIONS SHOWN ON POLE SCHEDULE SHEET

641 14 42	CONCRETE STRAIN POLES (TYPE V)	EA	2 000
641 15 42	CONCRETE STRAIN POLES (TYPE VI)	EA	10 000
641 16 44	CONCRETE STRAIN POLES (TYPE VII)	EA	2 000
650 1131	TRAFFIC SIGNAL, 12" STD (3 SECT 1 WAY)	AS	15 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17727 AND 17870 SHOWN ON KEY SHEET		
---	FINAL REVIEW SIGNAL HEADS TO MATCH SIGNAL OPERATION		
650 1141	TRAFFIC SIGNAL, 12" STD (4 SECT 1 WAY)	AS	2 000
650 1331	TRAFFIC SIGNAL, 12" STD (3 SECT 1 WAY)	AS	32 000
650 1332	TRAFFIC SIGNAL, 12" STD (3 SECT 2 WAY)	AS	2 000
650 1341	TRAFFIC SIGNAL, 12" STD (4 SECT 1 WAY)	AS	7 000
653171	PEDESTRIAN SIGNALS (NEON INT SYM LOW WATT)	AS	2 000
---	QUANTITY AGREES WITH PLANS		
---	INDICES 17764 AND 17784 SHOWN ON KEY SHEET		
659109	SIGNAL HEAD AUXILIARIES (CONC PEDESTAL TYPE II)	EA	3 000
---	QUANTITY AGREES WITH PLANS		
---	CHECK ALL AUXILIARY EQUIPMENT, TUNNEL VISORS AND DISCONNECT HANGERS ETC		
660 1102	INDUCTIVE LOOP DETECTOR	EA	2 000
---	QUANTITY AGREES WITH PLANS		
---	CHECK NUMBER OF DETECTORS AND TYPES, TO MATCH NUMBER OF LOOPS		
660 1108	INDUCTIVE LOOP DETECTOR	EA	3 000
660 2101	LOOP ASSEMBLY	AS	25 000
---	QUANTITY AGREES WITH PLANS		
---	REVIEW LATEST REQUEST FROM LOCAL GOVERNMENT		
---	INDEX NUMBER 17781 AND VERIFY ALL LOOPS LOCATIONS, SIZE, AND TYPE TO MATCH SIGNAL OPERATIONS		
660 2102	LOOP ASSEMBLY	AS	6 000

DATE 8/28/85

PAY ITEM CHECK LIST

PLAN QUANTITY

REMARKS

PAGE

DATE	DESCRIPTION	PLAN QUANTITY	REMARKS	PAGE
665 11	PEDESTRIAN DETECTOR	EA 10 000		
	--- QUANTITY AGREES WITH PLANS INDEX 17784 SHOWN ON KEY SHEET --- VERIFY THE LOCATIONS FOR EACH PEDESTRIAN CROSS WALKS			
670113131	ACTUATED SOLID STATE CONTROLLER ASSEMBLY	AS 2 000		
670113231	ACTUATED SOLID STATE CONTROLLER ASSEMBLY	AS 2 000		
	--- QUANTITY AGREES WITH PLANS			
685120	SYSTEM AUXILIARIES (TELEMETRY TRANSCIEVER)	EA 4 000		
685124	SYSTEM AUXILIARIES (UNIVERSAL ADAPTER)	EA 4 000		
685127	SYSTEM AUXILIARIES (TELEPHONE CONNECTION BOX)	EA 4 000		
685128	SYSTEM AUXILIARIES (INTERFACE PANEL)	EA 4 000		
690 10	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA 6 000		
	--- QUANTITY AGREES WITH PLANS --- ALL EQUIPMENT TO BE REMOVED HAS BEEN FIELD CHECKED FOR OWNERSHIP AND DELIVERY LOCATIONS			
690 20	REMOVE PEDESTRIAN SIGNAL ASSEMBLY	EA 6 000		
690 30	REMOVE POLES	EA 17 000		
690 50	REMOVE CONTROLLER ASSEMBLY	EA 5 000		
690 80	REMOVE SPAN WIRE ASSEMBLY	EA 5 000		
690 90	REMOVE CABLING & CONDUIT	PI 2 000		
690100	REMOVE MISCELLANEOUS SIGNAL EQUIPMENT	PI 5 000		
700 84 1	SIGN PANEL INSTALLATION (SQ FT 0 TO 10)	EA 11 000		
	--- QUANTITY AGREES WITH PLANS			
700 89 2	ELEC POWERED SIGN (BLANK-OUT)	EA 1 000		
	--- QUANTITY AGREES WITH PLANS --- POWER SOURCE HAS BEEN SUPPLIED AND CLEARED			

CHECKED BY _____
 SIGNED BY _____ CREW CHIEF
 SUPERVISED BY _____ PROJECT MANAGER
 APPROVED BY _____ DISTRICT DESIGN ENGINEER

Approved



Effective: August 15, 1985
Sequence No. 28
Responsible Office. Roadway Design
Topic No. 625-000-126-a

CHAPTER 26
PLAN REVISIONS

26.1 General

Plan revisions are occasionally made to plan sheets/sets after they have been printed for the bid package. These revisions are to ensure that a correct set of plans, with the scope of work clearly defined, is advertised and let to contract. The plan sheet revisions and the revision letters should be clear and concise so that persons involved in handling the revisions understand how the plans are affected.

Any office can initiate a plan revision, however, all revisions for all component plan sets, i.e. Roadway, Structures, Architectural, etc., must be sent to the specifications office through the Tallahassee Roadway Design Office. This Office acts as a clearing house for all revisions after plans have been processed.

The procedures outlined in this chapter are to be followed by Central, District and Consultant Offices.

As an effort to give sufficient bid preparation time to the contractors no revisions to plans and specifications will be allowed without approval of the Assistant Secretary within 21 days of the projects scheduled letting date. The Assistant Secretary will consider such requests when jointly recommended by the Deputy Assistant Secretary for Technical Policy and Engineering Services, the Director of Preconstruction and Design and the Director of Construction. No plan revisions shall be made within 10 days of the scheduled letting date. Minor specification revisions can be made within 48 hours of the scheduled letting date if notification to prospective bidders can be transmitted by a single telegram message.

26.2 Revised Plan Sheets

Original plans shall be used in all cases when revisions are made. In no case will reproduction (sepias, etc.) or xerox copies of Mini Plans be used for making revisions.

When design plans are to be revised; all requests for original roadway plans will be made to the Roadway Design Office in Tallahassee, all requests for original bridge/structures plans will be made in writing to the Office of Structures Design.

The revision box in the title block shall be utilized for both Department and consultant plans any time there is a change to that sheet after the approved by date, regardless of whether the plans have or have not been printed. The only difference would be that revisions would be listed on the key sheet if the plans have been processed, printed, etc. The By Column in the revision block will also be initialed. These will be either Department or consultant employees, depending on who is physically making the revisions.

For Mini plans, (8½x14") revision dates will be placed on each sheet with date, initials of employee making the change and description of change. (No revision box required.) Revision dates, etc., will be required any time there is a change to that sheet after the Approved by date listed on the cover sheet, regardless of whether the plans have or have not been printed. The only difference would be that revisions would be listed on the key sheet if the plans have been processed, printed, etc.

All revised dates on the computer printout summary of pay item sheets and box culvert design data sheets shall be shown at the top of each sheet.

The exception to showing a revised date on all sheets is when the plan set is completely revised, then only the Key Sheet is dated.

The lead key sheet (usually roadway) will show a complete record of all plan revisions made after processing, printing, etc. and will include not only the roadway revisions, but revisions to the components (structures, signing and pavement markings, lighting, summary of pay items, etc.) as well. This is necessary to ensure that Reproduction Office prints all revised sheets. It will be the responsibility of the office making the revisions to ensure that not only the component sheets are revised but that the lead key sheet shows a record of all revisions. The record of all plan revisions will be shown directly below the list of Standard Index Drawings and will give the revised date and sheet number (See Exhibit 1).

If major revisions due to errors, or omissions are required to consultant prepared plans, the originals are to be returned to the consultant for correction. When the production schedule does not permit the originals to be returned, the consultant should be requested to send personnel to the appropriate Department office to make the corrections.

When the consultant can not provide the necessary manpower for major revisions as noted above, Department personnel may make the required changes. The Division Director's, or District Engineer's approval must be obtained in writing prior to initiating the changes. All Department expenses must be itemized so that the consultant can be backcharged. Whenever the Department's personnel makes these major revisions, these actions must be documented as to the individual authorizing the change, description, justification and date changes were completed. This should be placed in the project file. Also, the consultant must indicate his approval with these changes or document his position to the contrary in writing. This also should be placed in the project file. Prints of the revised sheets are to be sent to the consultant firm.

Minor Plan Revisions to consultant prepared plans are to be considered routine processing and do not require the approvals as outlined above. Minor revisions are considered to be those which can be done in a half a days time, i.e., four hours or less and which do not involve consultant errors or omissions.

Examples of this type work would be:

- (1) Changing project numbers.
- (2) Updating for standard index changes.
- (3) FHWA requested revisions which are minor in nature.
- (4) Revisions to Department furnished details.
- (5) Correcting spelling, rewording notes, adding clarifying wording, etc.
- (6) Minor quantity changes.
- (7) Minor drafting changes.

Upon completion of these minor revisions, the consultant firm and the Department's Project Manager are to be sent blue-line prints of the revised sheets with a list of changes so that they may update their record set and maintain a file of changes made by others.

Changes which may be considered major which would not be required to follow the procedures above are considered to be those which take more than a half days time, i.e., greater than four hours and which do not involve consultant errors or omissions.

Examples of this type work would be:

- (1) Plans on the shelf for a long period of time and need a complete update.
- (2) Splitting the plans into two or more projects.
- (3) Shortening the project.
- (4) Lengthening the project.

- (5) Other changes not covered above that do not involve consultant errors or omissions.

If the consultant contract is not closed out an attempt to negotiate this work with the consultant should be made before committing Department personnel to make the revisions. Upon completion of these major revisions, the consultant firm and the Department's Project Manager are to be sent blue-line prints of the revised sheets with a list of changes so that they may update their record set and maintain a file of changes made by others.

Plan changes for construction supplemental agreements to consultant projects due to errors or omissions must also be approved in advance in writing by the Director or the District Engineer. Plan changes are to be done as noted above for major projects. Minor and major changes which do not involve consultant errors or omissions are to be handled as noted above.

All additional preliminary engineering and construction costs due to these errors or omissions are to be documented and handled as noted above so that the consultant can be backcharged.

Department offices which find these major errors or omissions on consultant plans are responsible for notifying the Department's project manager for that job. The project manager will be supplied a list of the specific errors or omissions and he will be responsible for contacting the consultant, Director, District Engineer, etc., and seeing that the plans are revised.

The procedures and guidelines noted above also apply to projects the Department is going to let to contract for city and county governments and utility companies, which were either prepared by the governmental agency/company or their consultant.

26.3 Revision Letters

All plans that have been printed for advertisement of bids and require revisions shall have a revision letter, explaining the revisions, accompanying the revised plan sheets. All plan revisions of this type shall be processed through the Tallahassee Roadway Design Office. The Tallahassee Office shall review all revision letters prior to forwarding the letter and plans to the Specifications Office.

All revision letters must document the changes made on each sheet and why each revision is necessary. Revision letters will be returned to the originator for corrections when these letters do not itemize the revisions per sheet, provide reasons for changes, omitted necessary approvals, etc. The Specification Office will not accept any revisions that have not been reviewed by the Tallahassee Design Office.

For Federal Aid projects that have been authorized for letting by the F.H.W.A. the revision letter must give the name of the F.H.W.A. Engineer that authorized the changes and the date of authorization. When changes are made in Tallahassee offices on District plans, the letter should also indicate who made the request for the change.

Revision letters should be addressed to the Engineer of Specifications with copies to the State Design Engineer-Roadways, Engineer of Contracts, Engineer of Federal Aid (F.A. projects only), State Estimates Engineer, Reproduction, District Design Engineer or District Traffic Operations Engineer and the Roadway Design File. All revisions affecting railroad or utility facilities are to be reported to the District Utility Engineer.

The revision letter to the Engineer of Specifications and the copies to Contracts, Federal Aid and Reproduction will accompany the revised plan sheets when they are transmitted to Specifications. The copies to Estimates and the District will be mailed separately within seven calendar days.

Sheet 205 Illustrates how revisions should be noted on a mini plans sheet.

Sheet 206 Illustrates how to fill out a revision letter.

Sheets 207 & 208 Are a blank revision letter form.

Project No. 00000-0000

PROJECT LOCATION

The project is located on S.R. 292 in southwest Escambia County, beginning at the Alabama State Line and proceeding east to end at the bridge pavement. The project begins at M.P. 0.000 and ends at M.P. 6.213, a distance of 32,804.64 feet (6.213 miles).

SCOPE OF WORK

The project consists of resurfacing the existing 24' pavement up to M.P. 5.741 and then resurfacing the existing 22' pavement for the remainder of the job up to M.P. 6.213. Also includes pavement markings and lengthening certain crossdrain structures in order to provide for safe recovery area between edge of pavement and ends of structure. Joints and cracks in the existing concrete pavement are to be sealed, as directed by the Engineer, in accordance with Section 356 of the Special Provisions for this project, prior to the leveling and resurfacing operation.

Typical Section

Construct Sand Asphalt Hot Mix Leveling Course (125 lbs. per sq. yd. avg.) (500 lbs. stability), with Asphaltic Concrete Friction Course, either FC-1 or FC-4 (1" Thick) (Alt. AA) or FC-2 (5/8" Thick) (Alt. AB). Flush existing 10' shoulders with shell material from M.P. 0.000 to M.P. 5.741. Rework existing 6' shoulders from M.P. 5.741 to M.P. 6.213.

ROADWAY AND TRAFFIC DESIGN STANDARDS - BOOKLET DATED JANUARY, 1985

001
002
250
280
500
510
516
17346
17352

"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-5 of the 1978 M.U.T.C.D. The Contractor's

Revised 1/4/85
KNM
Index 500 Added.

MEMORANDUM
State of Florida Department of Transportation

Date: (This date to be the same date as shown on the revised plan sheets)
To: Mr. R. B. Revell, Engineer of Specifications
FROM (Person initiating Revision)

COPIES TO: Messrs. J. T. Barefield, A. B. Burke, E. T. Dady,
K. N. Morefield, J. B. Alford,
(District Design Engineer's Name)

SUBJECT: Plan Revisions
W.P.I. No. 000000
State Project No. 00000-0000
F. A. Project No. M-0000(0)
County S.R. No. 00

ROADWAY SIGNING SIGNALS LIGHTING
CC 000 CC CC CC 000 CC
SHTS 2 SHTS SHTS SHTS 1 SHTS

PREPARED BY: (Person making revisions)
REQUESTED BY: (Person initiating revisions)
APPROVED BY: CENTRAL OFFICE (Engineer of Final Plans) DATE
FHWA (FHWA Area Engineer) DATE

This will advise you that the following sheet(s) of the subject plans has (have) been revised:

- These are the only sheets that need reprinting.
- A complete reprinting of the entire package will be necessary.

<u>SHEET NO(S)</u>	<u>DESCRIPTION OF REVISION</u>
<u>List Each</u>	<u>Beside each sheet number write an explanation of the</u>
<u>sheet</u>	<u>revision and why the revision was made. Indicate what</u>
<u>which</u>	<u>it was changed to.</u>
<u>has a</u>	<u> </u>
<u>revision</u>	<u> </u>
<u>made to</u>	<u> </u>
<u>it.</u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

MEMORANDUM
State of Florida Department of Transportation

Date: _____

To: Mr. R. B. Revell, Engineer of Specifications

FROM: (Person initiating Revision)

COPIES TO: Messrs. J. T. Barefield, A. B. Burke, E. T. Dady,
J. B. Alford, _____

SUBJECT: Plan Revisions
 W.P.I. No. _____
 State Project No. _____
 F. A. Project No. _____
 County S.R. No. _____

ROADWAY	SIGNING	SIGNALS	LIGHTING	
CC _____	CC _____	CC _____	CC _____	CC _____
SHTS _____	SHTS _____	SHTS _____	SHTS _____	SHTS _____

PREPARED BY: _____
 REQUESTED BY: _____
 APPROVED BY: _____
 CENTRAL OFFICE _____ DATE _____
 FHWA _____ DATE _____

This will advise you that the following sheet(s) of the subject plans has (have) been revised:

- ___ These are the only sheets that need reprinting.
- ___ A complete reprinting of the entire package will be necessary.

<u>SHEET NO(S)</u>	<u>DESCRIPTION OF REVISION</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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_____	_____



CHAPTER 27

COMPUTER APPLICATION IN PLANS PREPARATION

27.1 General

The computer is relied on more and more by the designer to aid him in the preparation of plans, both rural and municipal.

There are available to the designer a variety of computer programs from which he may choose to aid in plans preparation, each one having specific areas of concern, with some having duplication of other programs.

The most efficient use of these programs comes when they are integrated into the conventional methods of plans preparation as discussed in Chapters 22 and 23 (Preparation of Rural and Municipal Projects). The designer should use his experience and knowledge of design procedures to know how and when the computer should be used. Consultation with the District Computer Engineer or other experienced users will be helpful in determining which projects are or are not suitable for computer applications.

27.2 Main Programs Available to the Designer for Preparation of Roadway Plans

The primary programs available at this time for use in plans preparation are:

1. COGO (Coordinate Geometry)
2. ROADS (Roadway Analysis and Design System)
3. Contour Plot
4. CES (Contract Estimating System)
5. Box Culvert Design
6. 18 Kip Loadings

7. Plans Checklist

As noted in section 27.1, each of these programs aid the designer in specific areas. In the following sections some of the main areas they are programmed for use in will be described, keeping in mind that, by far, these are not the only applications and that the designer should apply these programs to fit his situation.

27.3 COGO (Coordinate Geometry)

1. Is used on the majority of projects. This program can calculate the horizontal and vertical geometry.
2. Special details, intersection and interchange details can be computer plotted to any scale for tracing onto original sheets.
3. Canned COGO can be used to solve typical design situations such as return radius, intersection details, median noses, etc.
4. COGO can also aid in calculation of quantities which are based on area computations.

27.4 ROADS (Roadway Analysis and Design System)

1. Can reduce, edit and plot existing ground lines from field books onto cross section sheets.
2. Can input subsurface data in the form of borings, soundings or depth of cover contours to allow subsoil excavation quantities to be calculated.
3. Plots the proposed roadway templates on the same cross section sheets used to plot the existing ground lines.
4. Calculates earthwork quantities, including subsoils if present.
5. Calculates superelevation, ditch and median profiles and all other elevations necessary to create the templates from R/W to R/W.

6. Also available are computer plots of the profile portion of the plan and profile sheet and plots of the mass diagram.

27.5 Contour Plot

1. This program creates, from field cross sections or an existing ROADS file with existing or proposed cross sections, a contour map to any scale and at any contour interval desired.

27.6 CES (Contract Estimating System)

1. This program is discussed in detail in Chapter 3.

27.7 Box Culvert Program

1. This program designs the Box Culvert walls, top, bottom and thickness; endwall dimensions and thickness; calculates concrete and reinforcing quantities.

27.8 Summary

These programs can be utilized independently or in combination to achieve the desired results. The designer should keep himself abreast of new programs and changes in the old ones to achieve optimum utilization of the computer.

Any information, training and assistance in coding or processing of any computer programs can be obtained from the District Computer Engineer.

27.9 Computer Aided Design and Drafting (CADD)

The Department has just begun to convert from conventional plans preparation methods to CADD methods. The Department has just received its first CADD system (June 1984) and is in the process of training and

developing plans preparation procedures on the CADD system at the time of publication of this revised manual. When completed the procedures will be documented and made available to all Department and consultant offices.

Approved



Effective: August 15, 1985
Sequence No.. 30
Responsible Office. Roadway Design
Topic No. 625-000-128-a

CHAPTER 28
PLANS RETENTION

28.1 Introduction

The Department's plan retention policy is that the original plans are to be microfilmed three years following project completion, i.e., three years after the final project payment.

All original plans except Interstate, Expressway and Turnpike plans are destroyed. Secondary plans are offered to the appropriate county, if declined they are also destroyed.

A microfilm record is retained in Tallahassee and a copy is sent to the appropriate District, with the master sent to the State Archives.

28.2 Plan Changes During Construction

Any significant changes made to projects during construction should be shown on the plans. The originals should be requested from Tallahassee and revised accordingly by the Design Office and returned. These revisions should follow the guidelines as outlined in Chapter 26, Plan Revisions.

Approved



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Sequence No. 31
Responsible Office: Roadway Design
Topic No. 625-000-129-a

CHAPTER 29
CRASH CUSHIONS

29.1 General

Crash Cushions are approved for state and federal aid projects where hazards cannot feasibly be removed or conventional treatments such as guardrails cannot be used safely. FHWA has requested that appropriate space for crash cushions be provided at hazardous gores and that no project be open to traffic unless the cushions are in place. FHWA will also participate in the placement of crash cushions on existing facilities providing the hazard cannot be removed. Specific federal requirements are given in the FHWA instructional memorandum 40-5-72, dated November 8, 1972.

29.2 Design Responsibility

The Central Office no longer designs, inspects or accepts crash cushions. Design responsibility for these devices lies with the District or Consultant. The Central Office will provide the necessary training, manuals, criteria, etc. to district personnel in order to have qualified designers in this area.



CHAPTER 30
SIGNING AND SEALING PLANS

30.1 General

The Florida State Board of Engineers has reviewed this chapter and is in concurrence with its requirements. To assure continued concurrence, the Board should have the opportunity to review future changes.

Section 334.175 of the Florida Statutes, requires that all design plans prepared by or for the Department be signed, sealed and certified by the Professional Engineer in responsible charge of the project work, in accordance with Chapter 471, Rules 21H-19 and 21H-23. Such Professional Engineer must be duly registered in this State. Responsible charge means direct control and personal supervision of engineering work done by oneself or by others over which the engineer exercises supervisory authority. This chapter will outline the proper procedures of signing and sealing roadway, signing and pavement marking, signalization and lighting plans.

30.2 Title Block

All plan sheets shall have a title box along the bottom of each sheet. This box shall have space for noting revisions, names of individuals responsible for designing, checking, drawing, supervising and approving each sheet. Exhibit 3 shows the approved title box to be used on these sheets. Designed by, checked by, drawn by, supervised by are to be handwritten initials. Approval may be by a facsimile signature for each sheet within the plans if the signature on the key sheet is an original handwritten signature. The "Approved By" signature must be that of the Professional Engineer in responsible charge of the work. See Section 30.6 for procedure on placing Professional Seal.

30.3 Signing Key Sheet

The key sheet for each component set (i.e., roadway, signing, etc.) shall be signed by the Professional Engineer in responsible charge. The following shall be the format for the signature.

Roadway Plans Approved By: _____

Date: _____

For the other components the above would read Signing and Pavement Marking Plans Approved By ... etc. See Section 30.6 for procedure on placing Professional Seal.

30.4 Older Plans

For plans which have been prepared for some time and the title block is being added and the person responsible for designing, checking, drawing or supervising the sheet is (1) no longer with the Department/firm, or (2) unknown, the following shall be the procedure.

- (1) Division Director will certify that the originating P.E. is:
 - a) not reasonably available to Florida D.O.T. 30.4 is invoked to allow another P.E. to review, sign and seal.
 - b) No Longer with Department or Firm - Print or Leroy initials and date.
 - c) Unknown - Write in unknown and date.
- (2) When the above is the case, 30.4 is invoked to allow another P.E. to review, sign and seal; providing there is a note on the plan that the plans were not prepared by, but were reviewed by P.E. who is signing and sealing.

The "Approved By" must always be the Professional Engineer in responsible charge of the work.

30.5 Multi Plans

For multi plans (8½" x 14") the appropriate signatures will be placed on the cover sheet in tabulated form in lieu of on each sheet. It will not be necessary to list each sheet separately if the same group of individuals were responsible for design, supervision and approval for a series of sheets, i.e., sheets 3 through 7 of 7, etc. Page 130 shows a completed multi plans cover sheet. This cover sheet will also be signed as noted in Section 30.3 See Section 30.6 for procedure on placing Professional Seal.

30.6 Sealing Plans

Consultants are to provide one record set of full size prints of the final plans as submitted to the Department. Each sheet is to be signed, sealed with an impression type metal seal and dated by the responsible engineer in charge. These record sets are to be retained by the District Offices or by the Central Office for projects managed by them. For Department prepared plans, one record set of full size prints of the final plans with each sheet signed, sealed and dated by the responsible Professional Engineer, shall be retained for record.

30.7 Plans Done by Others

The procedures and guidelines as noted in this chapter also apply to projects the Department is going to let to contract for city and county governments and utility companies, which were either prepared by the governmental agency/company or their consultant.

30.8 Compliance

It shall be the District Design Engineer's responsibility (or State Design Engineer-Roadways for projects prepared by them) to ensure the plans are properly signed and sealed. The plans will be randomly reviewed by the Central Design Office to ensure compliance.

30.9 Revisions

All plan sheets which are revised after original signing and sealing shall have the revisions noted along the bottom of the sheet and a record copy of the revised sheet signed, sealed and filed with the record set of prints.

30.10 Supplement Specifications and Special Provisions

The professional engineer who prepares or has prepared under his direct supervision and control, supplemental specifications and/or special provisions must affix his signature and seal. This is required for Department and consultant prepared specifications.

In cases of many disciplines (civil, electrical, etc.) it may require more than one seal, however, this can be done on an index sheet indicating the pages of specifications which were the responsibility of each engineer in his discipline. This does not mean that a civil engineer who has expertise in traffic signals or highway lighting cannot seal the signal plans or lighting plans or specifications as it is entirely possible that a civil engineer could have that expertise. If, however, an electrical engineer was used to prepare those documents, he should seal them.

30.11 SIGNING AND SEALING OTHER ENGINEERING DOCUMENTS

Engineering documents that influence and/or limit the Design Engineer's decisions in the development of design plans shall be signed and sealed by the responsible Professional Engineer. The following documents fall in this category. Signing and sealing P.E. will note number of pages in each document.

<u>Document</u>	<u>Placement of Seal</u>
1. Specifications & Special Provisions	First Sheet of Official Copy
2. Pavement Design	All Sheets of Official Copy
3. Typical Section Package	All Sheets of Official Copy
4. Drainage Computations	All Sheets of Official Copy
5. Bridge Design Data Sheet	Official Copy
6. Hydraulic Reports	First Sheet of Official Copy
7. Traffic Operation Reports and Recommendations that provide input into development of plans	First Sheet of Official Copy
8. Engineering Reports	First Sheet of Official Copy
9. Environmental Documents	First Sheet of Official Copy
10. Planning Documents	First Sheet of Official Copy
11. Traffic Data	All Sheets of Official Copy
12. 18 Kip Wheel Load Data	All Sheets of Official Copy
13. Soil Surveys	All Sheets of Official Copy
14. Foundation Analysis	First Sheet of Official Copy
15. Value Engineering Studies	First Sheet of Official Copy
16. Standard Index Drawings	First Sheet of Official Copy

Approved



Effective: August 15, 1985
Sequence No. 33
Responsible Office. Roadway Design
Topic No. 625-000-131-a

CHAPTER 31

PLANS TRANSMITTAL TO TALLAHASSEE

31.1 General

When plans are complete and are ready for mailing to Tallahassee, a Plans Transmittal Memorandum must be attached. This memorandum must include all pertinent information concerning the plans package, i.e., number of sheets, permit status, utility status, attachments, etc. At the end of this chapter you will find a sample transmittal letter which includes the minimum items required.

In addition to the transmittal letter several other items must be sent with the plans package, these are:

1. Special Provisions (If any)
2. Quality Assessment Evaluation Forms.
3. Copy of all permits (if not previously submitted to Tallahassee).

Plan packages which do not include a complete transmittal letter or attached items as noted may be either returned to the District or held until the missing items are received.

Plans should be rolled in such a manner that the front of the sheets are facing outward of the roll so that they will lay flat when unrolled. This applies to originals and prints.

For those projects which will be randomly reviewed by Tallahassee to insure compliance to design standards and criteria, the districts will be required to furnish Quantity Booklets and copies of the phase reviews and summaries. Districts will be contacted by Tallahassee when these items are necessary.

M E M O R A N D U M

DATE: _____

TO: State Design Engineer - Roadways

FROM: Deputy District Engineer

SUBJECT: W.P.I. No. _____
State Project No. _____
F. A. No. _____
Description _____

The subject project is scheduled for "Plans to Tallahassee" on _____ (date). The District Preferred Letting Date is _____. The information contained in this transmittal and checklist has been checked as needed with offices in Tallahassee and reflects the status agreed upon by both. Under separate cover, I am forwarding the Plans Package consisting of the following:

For Plans (Indicate Number of Sheets)

1. Roadway Plans (____ sheets)
2. Summary of Pay Items (____ sheets)
3. Utility Plans (All Urban and F.A. Projects as Required (____) ("X" if included in Item 1)
4. Signing & Pavement Marking Plans (____ sheets) ("X" if included in Item 1)
5. Signing & Pavement Marking Plans N.I.C. Included for Information Only. (____ sheets)
6. Signal Plans (____ sheets)
7. Lighting Plans (____ sheets)
8. Structure Plans (____ sheets)
9. Landscaping Plans (____ sheets)
10. Other (Type _____) (____ sheets)

Page 1 of 3

To: See Sheet 1

Project No. _____
W.P.I. No. _____

- 11. Recommendation for Contract Time (Including Utilities) _____ calendar days. (Attach copy of contract time calculation form)
- 12. Recommendation for Special Provisions including Maintenance of Traffic, delays for Demolition, etc. _____ ("X" if attached)

The remainder of the Items accurately reports the condition of this Plans Package with respect to its being ready for processing through Central Office.

		CLEAR	
13.	All Plans Elements Have Been Checked for Errors		
14.	30-60-90-100% reviews conducted and summaries and checklists placed in project file.		
15.	R/W Status	DATE EXPECTED TO CLEAR	
	Acquisition (a) Fee Parcels-Last O.T.		
	(b) Easements		
	Relocation (a) People		
	(b) Business		
	Demolition-Bldgs., etc.		
16.	Utility Agreements List if not Clear		
17.	Railroad Agreements Easement Deeds		
18.	Utility/Railroad Certification to FHWA Date		
19.	Railroad crossing to be replaced by Index 560 or surface feathered to obtain satisfactory approach profiles		
20.	Permits: (If applicable)	REQUIRED	FORWARDED OR WILL FW'D TO F.A.
		YES	NO
	a. Dept. of Envirn. Reg.		
	b. Dept. of Natural Resour.		
	c. Coast Guard		
	d. Water Manage. Dist.		
	e. Corp. of Engineers		
	g. Co. Appr. for Permits		
	h. Noise (Study)		
	i. Others (FCC, FAA, etc.)		
21.	Traffic Signal and/or Lighting Maintenance Agreement		
22.	Local Fund Agreements		
23.	Justification Reports (Lighting, etc.)		

To: See Sheet 1

Project No. _____
W.P..I. No. _____

CLEAR _____

24. Special Structures (Attenuators, Walls, etc.)		
25. Has Maintenance Agreement been executed with city or county involved? (Required for F.A. Proj. on other State Primary System.) 2 copies to Federal Aid		
26. Environmental Requirements		
a. Finding of No Significant Impact approved		
b. Final Environmental Impact Statement approved		
c. FHPM 7-7-2 re-evaluation submitted		
d. FHPM 7-7-3 (Noise) re-evaluation submitted		
e. In accordance with Volume 7, Chapter 7, Section 2, Paragraph 9, of the FHPM, the subject project has been determined to be classified as a "categorical exclusion" on		
27. On Safety Projects - Has Design concept been reviewed by State Design Office & FHWA		
28. 100% Blueprints forwarded to FHWA and Comments incorporated into plans		
29. Utility and/or RR Adjustment Schedules _____ ("X" if attached)		
THE FOLLOWING HAVE BEEN SENT TO TALLAHASSEE OR (ARE ATTACHED)	ATTACHED (X) SENT (DATE)	
1. Preliminary Cost Estimate to Central Office		
2. Copy of Approved Typical Section		
3. Design Approval		
4. Copy of Approved Pavement Design		
5. Special Construction Noise		
6. R/W Maps to Tallahassee		
30. THE FOLLOWING ARE ATTACHED	Yes	No
1. Quality Assessment Evaluation Form (2 copies)		
31. A Value Engineering review has been accomplished for this project.		
32. Bicyclist's needs have been reviewed with the District Bicycle Coordinator and addressed in the plans package.		
33. Plans have been signed by a registered professional engineer and title blocks of each sheet filled out completely. A record set has been signed and sealed.		
34. This project requires special community awareness/involvement communications activities.		
Yes _____ ; No _____		
If yes, such special activities have been adequately considered.		
Yes _____ ; No _____		

SIGNATURE _____

Deputy District Engineer

Distribution:

DATE _____

ESTIMATE OF CONTRACT TIME
 FEDERAL AID PROJECT NO. _____
 STATE PROJECT NO. _____
 COUNTY _____
 B.I. NO. _____

<u>Work Involved on Project</u>		<u>Number of Working Days</u>
1. Clearing and Grubbing	_____ acres @ _____ day	(Max) (20) _____
2. Excavation (Resurfacing either cy or 1 m/day)	_____ cubic yards	_____
3. Stabilizing	_____ square yards	(10) _____
4. Base Construction	_____ square yards	_____
5. Surface Treatment	_____ cubic yards	_____
6. S.B.R.M. or Concrete Pavement	_____ square yards	_____
7. Milling Existing Pavement	_____ square yards	(20) _____
8. Plant Mix	_____ tons	_____
9. Storm Sewer, etc. (300 L.F., Municipal)	_____ L.F. @ _____ day	_____
10. Curb and Gutter	_____ L.F. @ _____ day	_____
11. Sidewalk	_____ square yards	_____
12. Sprigging (Incl.: Sod & reworking shldr.)	_____ square yards	(15) _____
13. Guardrail (When significant)	_____ L.F.	_____
14. Breaking and Compacting Existing Concrete Pavement	_____ square yards	_____
15. Utility Delays		_____
Total estimated working days		_____
General Time: (15 days Normal, 25 days Resurfacing) (Moving in preparatory to commencing work, etc.)		_____
Bridge Working Time: (Only if significant part of contract)		_____
TOTAL TIME FOR CONTRACT _____ WD x 1.85 =		_____ <u>Cal. Day</u>
Special Acquisition Period allowed prior to beginning charging of Contract Time _____ Cal. Days	D.O. _____ Per _____	C.D. Const. _____

SECTION II · PREPARATION AND ASSEMBLY OF STRUCTURE PLANS

Before a consulting Engineering firm can do structural design work for the State of Florida, Department of Transportation, it is desirable for the firm to be prequalified for such work.

The following forms have to be completed and submitted to the Bureau of Contractual Services, Florida Department of Transportation, 605 Suwannee Street, Tallahassee, Florida, 32301.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN
CONSULTANT QUALIFICATION REVIEW FORM

Category

4.01 Minor Bridge Design : Non-complex bridges such as simple supported spans, and continuous flat-slabs.

4.02 Major Bridge Design : High level structures; interchange structures with curved girders or other complex non-movable bridge structure.

4.03 Movable Span Bridges Design : Bascule or other movable span bridges

For D.O.T. Use Only		
<input type="checkbox"/> Qualified	<input type="checkbox"/> Unqualified	<input type="checkbox"/> Additional Information Required
Approved Categories		
<input type="checkbox"/> 4.01	<input type="checkbox"/> 4.02	<input type="checkbox"/> 4.03
D.O.T. Reviewer _____		
Signature _____		Date _____

Consultant Name : _____			
Street/P.O. Box No. _____			
City _____		County _____ State _____	
Telephone No. _____		Zip Code _____	
Responsible Principal of the Company _____			

Current Projects (within the past 48 months)

Note: Copy of design calculations must be submitted if deemed necessary by the DOT

Name of Engineer _____			For D.O.T. Use Only		
Florida Registration No. _____					
Categories requested <input type="checkbox"/> 4.01 <input type="checkbox"/> 4.02 <input type="checkbox"/> 4.03					
Project* Location Owner Category	Date	Design		Percent of Project Involvement	Please submit one set of design calculations on items checked below
		Sub	Super Structure		

Name of Engineer _____				For D.O.T. Use Only	
Florida Registration No. _____					
Categories requested <input type="checkbox"/> 4.01 <input type="checkbox"/> 4.02 <input type="checkbox"/> 4.03					
Project* Location Owner Category	Date	Design Sub Super Structure		Percent of Project Involvement	Please submit one set of design calculations on items checked below

Name of Engineer _____				For D.O.T. Use Only	
Florida Registration No. _____					
Categories requested <input type="checkbox"/> 4.01 <input type="checkbox"/> 4.02 <input type="checkbox"/> 4.03					
Project* Location Owner Category	Date	Design Sub Super Structure		Percent of Project Involvement	Please submit one set of design calculations on items checked below

*Project
Horizontal Alignment: _____

Vertical Alignment: _____

Skew Angle: _____

Bridge Length: _____

Spans: _____

Superstructure Type _____

Substructure Type _____

Water Crossing ? Yes _____ No _____

Navigation Clearances:
Horizontal _____
Vertical _____

Other: _____

CHAPTER 32
STRUCTURAL PLANS ASSEMBLY32.1 General

1. Drawing Material

All drawings in plans shall be drawn on a high quality polyester film material and be easily capable of producing sharp, legible prints. Drawings shall be made on standard size (36"x22"). Title blocks and borders shall conform to sheets used by FDOT structures section. The original film drawings (not paper sepia's) of the Bridge Design Data Sheet and Boring Sheets should be included with the Bridge Plans; however, the title block for these sheets are not required to conform with the Structure Section title block.

2. Standard Drawings

Standard drawings are drawings produced and furnished by FDOT structures section intended for repeated use with little or no modifications. Standard drawings shall retain their drawing numbers and index numbers unless the drawings have been modified. See, also, 3(c) and 5(a).

3. Indexing of Sheets

- a. Index numbers are assigned by FDOT structures section after the final composition of the plans is known.
- b. All non-standard drawings in a set of plans, regardless of number of structures will be assigned a single unique index number.
- c. All standard drawings shall retain their index number. Standard drawings that are modified shall be given the same considerations given to non-standard drawings. See 3(b).

d. Bridge plans when let to contract with Roadway plans do not require a Key Sheet as described in Section I, Chapter 2, however, when Bridge plans are let to contract separately a Key Sheet, as described in Section I, Chapter 2 is required.

4. Drawing Numbers

The drawing number refers to the sheet assigned a particular index number. Example Dwg. 1 of 3 (Index 9999) would be the first drawing of a total of three drawings assigned to the index number 9999.

5. Sheet Numbers

a. All sheets listed with the bridge plans shall be given a sheet number with an alphabetical prefix. Do not use the letters L, S or T. Plan sheets should be arranged in alphabetical order. Sheet numbers are independent from index numbers and drawing numbers.

b. Single site (single or dual structures): All sheet numbers should use the prefix 'B'.

c. Multiple sites: The cover sheet and all standard and common sheets should use the prefix 'G'. The sheets for each site shall utilize a single unique prefix beginning with 'A'.

d. Approach slab sheets: The approach slab sheets are usually included with the roadway plan and, therefore, should not be given a bridge plans sheet number. However, the approach slab sheets are processed by the Structures Section and are assigned a unique index number.

6. Federal Aid Project Number (if applicable) shall be shown on the first sheet of the set of plans only. This number is to be located within the top right block.

7. Work Project Item Number (W.P.I. No.) shall be shown near the title block on the cover sheet only.
8. Bridge Numbers shall be shown in the title block below the site description on the cover and elevation sheets only. This number(s) is the new number of the existing bridge. The new number shall be obtained through FDOT Structures Section.
9. Summary of Bridge Pay Items. This sheet will be a computer printout. It is numbered by the computer and should not be given a drawing, sheet, or index number.
10. Consultant name should be shown on each sheet that is prepared by a consultant.
11. Drawing Scales
 - a. General
Select a scale for all sheets that is large enough to clearly depict necessary details keeping in mind that half size prints of these sheets will be made.
 - b. Plan and Elevation (Engineers Scale)
Plan and Elevation (Engineers Scale)
1"=10' if space permits, otherwise as large as possible.
 - c. Substructure Units (Architects Scale)
 1. Plan Elevation views 3/8" = 1' (desirable).
 2. Section and Details 3/4" = 1' or larger.
 - d. Superstructure (Architects Scale)
 1. Plan View - 1/4" = 1'.
 2. Sections - 3/8" = 1'
 3. Details - 3/4" = 1' or larger.
 - e. Pile Layout (Engineers Scale)

1. 1" = 10' or to fit sheet. (Note longitudinal and lateral scales may be different. Piling may be exaggerated in size for clarity.)
12. Preferred Order of Bridge Plans Sheets
- a. Single structures (one Bridge Site)
 - B-1 Coversheet (if used)
 - B- Plan and Elevation
 - B- Bridge Design Data Sheet
 - B- Borings
 - B- Pile Layout
 - B- Construction Data (Finish Grades)
 - B- End Bents
 - B- Intermediate Bents or Piers
 - B- Superstructure Sheets
 - B- Beam Sheets
 - B- Reinforcing Bar List
 - B- Detour Bridge Plan and Elevation
 - B- Detour Bridge Details
 - B- Retaining Wall Sheets
 - B- Existing Bridge Sheets (if needed)
Approach Slabs
 - b. Multiple structures (more than one Bridge Site)
 - A-1 Cover Sheet
 - B- Plan and Elevation
 - B- Borings
 - B- Pile Layout
 - B- Construction Data (Finish Grades)
 - B- End Bents

- B- Intermediate Bents or Piers
- B- Superstructure Sheets
- B- Beam Sheets
- B- Reinforcing Bar List
- B- Detour Bridge Plan and Elevation
- B- Detour Bridge Details
- B- Retaining Wall Sheets
- B- Existing Bridge Sheets (if needed)
- Approach Slabs
- C-1 Plan and Elevation
- C- Bridge Design Data Sheets
- Etc.

32.2 Summary of Bridge Pay Items

Summary of Bridge Pay Items (computer output sheet, see Chapter 3, Section I).

32.3 Quantities

Concrete and reinforcing quantities are to be calculated for each pour and tabulated for each unit of the structure and located on the design sheets for each unit.

Approved



Effective: August 15, 1985
Sequence No.: 35
Responsible Office Roadway Design
Topic No. 625-000-133-a

CHAPTER 33

PRELIMINARY STRUCTURAL PLANS

33.1 Preliminary Plan Contents

1. Plan and Elevation Views should reflect:
 - a. Proposed minimum vertical clearance.
 - b. Minimum horizontal clearance.
 - c. Point of minimum vertical clearance.
 - d. Bridge plans when let to contract with Roadway plans do not require a Key Sheet, as described in Section I, Chapter 2, however when bridge plans are let to contract separately a key sheet as described in Section I Chapter 2 is required.
 - e. Design speed.
 - f. North arrow.
 - g. Bearings fixed and expansion.
 - h. Roadway width, curb width, shoulder width, sidewalk width.
 - i. Slope of embankment.
 - j. Perm width.
 - k. Limits of slope pavement or riprap.
 - l. Profile grade line, vertical and horizontal alignment.
 - m. Environment.
 - n. Horizontal curve data.
 - o. Vertical curve data.
 - p. Span lengths, overall length of bridge.
 - q. Labels plan-elevation.
 - r. Elevation scale (vertical) on side of drawing.
 - s. Edge of shoulder.
 - t. Toe of slope.

- u. Station at begin and end of bridge and approach slabs. Station at centerline of bents or piers. Station at centerline of intersection of roads. Stations on lower roadway or streams show the location on the structure in plan where the stationing line applies.
 - v. Distance to mile post from intersection of railroads.
 - w. Utilities, sanitary and storm sewers, telephones, etc.
 - x. Existing ground, and finished ground profile.
 - y. Guardrail in plan and elevation.
 - z. Lighting.
 - aa. Test piles location, length and size.
 - bb. Location of borings.
 - cc. Skew angle.
 - dd. Rubble riprap (if required).
2. General Notes
 3. Superstructure cross section show lanes, shoulders, handrails, slab thickness, girder type and spacing. For plate girders, show web depth.
 4. Pier - show cap, column size, spacing and type foundations.
 5. Intermediate bents - show cap, spacing, number and size of either piles or drilled shafts.
 6. Approved bridge design data sheet.
 7. Soils data, if available.
 8. Prints of approved typical section for approaches and roadway plan-profile sheets in vicinity of structure.

If the project has federal funding, the plans at the completion of the preliminary stage require submitting to the FHWA for approval. The plan assembly will consist of:

1. Roadway Profile Sheets
2. Roadway Cross Section Sheets
3. BDDS Sheet (For Stream or R.R. Crossings)
4. Soils data if available (Foundation Report if available)
5. Preliminary Structural Plan Sheet

Consulting Engineers will submit three sets of the plan assembly to the Bureau of Structures in Tallahassee for approval by the Bureau and FHWA if the project has federal funding. If no federal funding is involved, two sets of the preliminary plan assembly shall be submitted to the Bureau of Structures in Tallahassee for approval.

Approved



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Sequence No. 36
Responsible Office: Roadway Design
Topic No. 625-000-134-a

CHAPTER 34
FINAL STRUCTURAL PLANS

34.1 Final Plan Contents

The following shows the suggested composition of individual sheets; however, all sheets shown below may not be required. Additional sheets might be necessary, such as stage construction sheets, retaining walls, bulkheads, etc.

1. Cover Sheet (this sheet not always required)
 - a. Index of Sheets
Prefix sheet numbers with an alphabetical letter for each structure (do not use the letters L, S or T).
 - b. Work Project Item Number
 - c. Bridge Number
 - d. Loading
 - e. F.A.P. Number (first sheet only)
 - f. Name of Consultant
 - g. Key Map (if necessary)
2. Standard Drawings (applicable to more than one structure on the project)
 - a. Reinforcing steel standard bar bending details
Index No. 10527.
 - b. See structure standards for concrete barrier handrails, piling, gravity wall, bearing pads.
3. Sheet of General Notes (this sheet not always required)
 - a. Sketch showing surface finish details.
 - b. Pile loads.
 - c. Number of each type of neoprene pads provided by FDOT.

- d. Slope pavement or riprap details.
- e. Bid Item Notes.

4. Plan and Elevation Sheet

If cover sheet and/or general sheet is not used, then material listed above under these sheets should preferably be included on this sheet.

- a. Actual minimum vertical clearance.
- b. Minimum horizontal clearance.
- c. Point of actual minimum vertical clearance.
- d. Traffic count, % trucks, ADT year, ADT year +20.
- e. Design speed.
- f. North arrow.
- g. Bearings fixed and expansion.
- h. Roadway width, curb width, shoulder width, sidewalk width.
- i. Slope of embankment.
- j. Berm width.
- k. Limits of slope pavement or riprap.
- l. Profile grade line.
- m. Environment.
- n. Horizontal curve data.
- o. Vertical curve data.
- p. Span lengths, overall length of bridge.
- q. Labels plan-elevation.
- r. Elevation scale on side of drawing.
- s. Edge of shoulder.
- t. Toe of slope.
- u. Station and begin and end of bridge and approach slabs.
Station at centerline of bents or piers.

Station at centerline of intersection of roads.

Stations at lower roadway or streams.

- v. Distance to mile post from intersection of railroads.
- w. Utilities, sanitary and storm sewers, telephones, etc.
- x. Existing ground and finished ground profile.
- y. Guardrail in plan and elevation.
- z. Lighting.
- aa. Water elevations.
- bb. Locations of borings.
- cc. Bridge number on each bridge and in title block on plan and elevation drawing.
- dd. Skew angle.
- ee. Rubble riprap (if required).

5. Design Data Sheet

Must be signed by Drainage Engineer. Plot proposed bridge on plan and elevation.

6. Soils Data

- a. Borings, date and by whom taken.
- b. Type of rig.
- c. Casing size.
- d. Sample size.
- e. Hammer weight and drop.
- f. Ground water elevation.
- g. Blow count at elevation taken on casing and spoon.
- h. Existing ground elevation.

7. Foundation Plans

On pile layout sheets, the piles in each bent, pier, end bent and abutment will be numbered sequentially, beginning with 1. The piles will be numbered from left to right - relative to the direction of stationing. Piles are to be located with respect to the centerline of construction and centerline of piers or begin (end) bridge line. The pile layout shall be tied to the project Intersection by the centerline piles or begin (end) bridge line and stationing line. Dimensions between piles to be given on a grid system.

- a. Test piles location, lengths, size or sizes.
- b. Summary of pile lengths if pile length is preset (generally widening jobs).

8. Construction Data

Finish grade elevations to be given at 10' increments maximum at diaphragm locations, at construction joints, at ends of spans along centerline beams or girders, at centerline roadway, at profile grade line, at gutter lines, at outside edge of copings along bridge and wingwall ends.

Typical Section through spans showing locations of elevation points.

9. Substructure

All substructures for each bridge - including end bents, intermediate bents and piers - will be numbered sequentially in order of increasing stationing.

- a. End bents.
- b. Piers or intermediate bents.
- c. Details.

- 1) Plan - showing steps, elevations, piles and bearing locations.
- 2) Elevation - showing half concrete lines and half reinforcing steel.
- 3) Sections - cap, columns, footings, pile locations or drilled shaft locations and details.

10. Superstructure

a. Superstructure spans

- 1) Plan of superstructure.
- 2) Half section through roadway and half end elevation.
- 3) Pouring schedule.
- 4) Quantities.

b. Superstructure Details

- 1) Section through diaphragms.
- 2) Construction joints.
- 3) Deflections during pour.
- 4) Buildups over top of beams.
- 5) Section at end bents and intermediate supports.
- 6) Drain details.
- 7) Section at end bent showing end block details.
- 8) Special details that are required by the design.

11. Beam Details (framing plans as required)

a. Prestressed Beams

- 1) Strand type, size, and pull.
- 2) Stirrup spacing and size.
- 3) Skew angles.
- 4) Bearing plate details.
- 5) Shielding details.

- 6) Concrete strength.
- 7) Release strength of concrete.
- 8) The use of strands pulled to 5,000 pounds in lieu of reinforcing steel to hold stirrup in position.

12. Miscellaneous Details

- a. Armor joint details and expansion joint details.

13. Existing Structures, as required:

Existing structure sheets should always follow the respective bridge plans, should be titled on each sheet in capital letters 'Existing Plans' and should carry sheet numbers with Prefix 'E'.

14. Repeat 5 to 14 for other structures as required for project.

15. Revisions:

All revisions shall be made on the original tracings. After the project has been let to contract, no erasures on the original will be permitted; all changes shall be circled and changes noted in the Revision Block.

At the completion of the Final Structure Plans stage the following number of sets of blue line prints shall be submitted to the Bureau of Structures Tallahassee for approval:

Non-Federal Participation - 2 Sets

Federal Participation - 3 Sets

Ship Impact Design Methodology

All new bridges over navigable waters will include in their design consideration for possible vessel collision with supporting members.

Therefore, ship impact design criteria will have to be developed taking into consideration the risk of collision and the forces occurring during a collision. The Bureau of Structures Design will generate the design collision forces where it has been decided that a structure should be designed for Ship Impact, the following methodology should be used as of June 12, 1984.

Ship Impact Criteria Notes

1. Methodology shall be the equivalent static load method applied at the magnitude, elevation and range of direction specified by the Department. Skewed loads shall be geometrically resolved into transverse and longitudinal components which shall be applied simultaneously.
2. One iteration of secondary effects in columns shall be included, i.e., axial load times the initial lateral deflection. Further secondary effects need not be considered.
3. Only positive (steel or concrete) connections of the superstructure to the substructure shall be considered in the analysis for transfer of lateral force up to the superstructure. Analysis of force transfer through mechanisms at the superstructure/substructure interface shall be evaluated using generally accepted practice.
4. Ultimate strength analysis methods shall be used for the ship impact load case. The load case shall be Dead Load plus Ship Impact with a

load factor and material factor = 1.0. Plastic hinges may be utilized in the analysis to account for redistribution effects.

5. Location of hinges formed in piles below the ground or mudline shall be determined by elastic concepts utilizing a subgrade modulus provided or approved by the Department.
6. The path of impact distribution shall be checked so that all members and their connections remain within their ultimate capacity.



CHAPTER 35

COMPUTER PROGRAMS FOR STRUCTURAL DESIGN

35.1 Available Programs

1. Cogo - solution of geometric problems.
2. Strudl - structural design and analysis.
3. Roadway ground signs - design of ground mounted sign structures (two or three columns).
4. Steel truss - design of overhead signing truss.
5. Aluminum truss - design of overhead signing truss.
6. Type 'C' frangible tubes - design of single pole ground sign.
7. Aluminum cantilever (4 post) - design of overhead signing truss.
8. Aluminum butterfly (4 post) - design of overhead signing truss.
9. Bridge elevation - tabulation of finished grade elevations.
10. Bearing pad elevation - tabulation of elevations of bearing pads on bents.
11. Skewed bridge - three dimensional bridge geometry.
12. Reinforcing steel - tabulation and plot and weight estimation of reinforcing bars.
13. Simon - plate girder and box girder steel bridges.
14. Continuous beam (Georgia) - general program steel and concrete two (2) to eight (8) spans.
15. BC (beam construction program) - post-tensioned, segmental, cantilever design program.
16. TTI piling - TTI pile driving analysis wave equation.
17. Weap piling - wave equation analysis wave equation.
18. Pier - design and analysis bridge piers.
19. R/C column analysis - bi-axial analysis.

20. PCA R/C column - load factor bi-axial.
21. Prestressed concrete beam - design and analysis of pre-stress concrete beams.
22. Cugar II - steel curved girder analysis.
23. Curvbr- curve bridge girder analysis.

Approved



Effective August 15, 1985
Sequence No. 38
Responsible Office Roadway Design
Topic No. 625-000-136-a

CHAPTER 36

CONSTRUCTION PLANS (SHOP DRAWINGS)

36.1 Shop Drawing Submittals

1. Construction drawings, consisting of complete field erection plans and any other working plans, showing details, dimensions, sizes of material and other information and data necessary for the complete fabrication and erection of the structure shall be submitted to the engineer for review and approval, all in accordance with the standard specifications and the provisions listed below.
 - a. Shop fabrication drawings for concrete reinforcing steel, which is detailed and listed on the project design drawings, are not required.
 - b. The F.D.O.T. allows and encourages the subcontractors to use reproducible sepias of the contract design drawings, where possible, as part of their construction drawings. Where sepias are used, the contractor is requested to change title block and clearly mark-up or indicate any changes made on the sepias when changing from design drawings to shop drawings.
 - c. Contractors and subcontractors have been urged to have their construction drawings prepared by and checked by qualified and experienced personnel, maintaining a high degree of accuracy, anything less is considered a basis for rejection of the drawings.
 - d. Each construction drawing should contain the following items, as a minimum requirement: complete State Project Number, Drawing Title, Drawing Number, Date, and Place of Fabrication.

- e. Construction drawings for prestressed concrete products shall include complete shop fabrication details, a complete detensioning schedule, elongation calculations and calculations for any strand design change.
- f. Construction drawings for steel structures should include complete field and shop details and welding procedures for all prequalified welds.

2. Submittal of Drawings

- a. All construction drawings pertaining to structures which are transmitted to D.O.T., Tallahassee, should be addressed to.

State Design Engineer - Structures
Florida Department of Transportation
Haydon Burns Building, Mail Station 33
Tallahassee, Florida 32301

- b. On projects where the designer is a consulting engineer, the construction drawings may be transmitted directly to the consultant with a copy of the letter of transmittal being forwarded to the State Design Engineer -Structures.
 - c. The contractor should submit his construction drawings for the approval of the engineer with such promptness as to cause no delay in his fabrication schedule. Only in emergency cases should special consideration be requested.
 - d. Construction drawings should be submitted for approval in the following quantities and conditions.:
- 1) Prestressed concrete/items - eight (8) sets construction drawings/including beam bearing plates and four (4) sets of detensioning schedules, design calculations and elongation calculations.

- 2) Post tensioning systems - eight (8) sets of construction drawings (including calculations).
- 3) Structural steel - eight (8) sets construction drawings and four (4) copies of weld procedures.
- 4) Cofferdams constructed on railroad property - six (6) sets of cofferdam construction drawings should be submitted to the State Design Engineer - Structures, D.O.T., Tallahassee. (Construction drawings for other types of cofferdams are not required unless specifically required by the contract design plans or special provisions.)
- 5) Movable bridges - eight (8) sets of construction drawings for structural steel, machinery, counterweight details and calculations, and eight (8) sets of descriptive literature and performance data for mechanical and electrical equipment and eight (8) sets of mechanical and electrical field assembly and completed assembly check-out procedures.
- 6) Overhead sign support structures - eight (8) sets of construction drawings and four (4) sets of redesign calculations if the contractor elects to use this option.
- 7) Miscellaneous items (grating, metal handrail, impact attenuators, ladders, platforms, expansion joint armor angles, etc.) - six (6) sets of construction drawings.
- 8) Integral pile jackets - eight (8) sets of construction drawings.
- 9) Any other unusual special construction items or materials should be submitted for approval as directed by the contract design drawings or the special provisions.

10) The Contractor shall stamp each sheet of the shop drawings prior to transmitting to the engineer for review and approval. If the shop drawings reflect changes in the design, shown in the contract plans, each sheet with changes shall be sealed by a consultant engineer who is prequalified by the FDOT to do such work.

3. Approval

a. The approval of the construction drawings by the D.O.T. shall be for compliance with the general design of the work as shown on the project contract drawings. The contractor shall make any corrections or resubmittals required by the D.O.T. approval, and shall be responsible for accuracy of details, dimensions compliance with contract specifications and satisfactory fit in the field.

b. The approval or non-approval of the construction drawings by the D.O.T. will be indicated by one of the following designations.

1) Approved; approved as submitted, no exceptions taken.

2) Approved as noted; approved as corrected, make corrections noted.

3) Resubmit; revise and resubmit.

4) Disapproved; rejected, not approved.

4. The approval designation shall be indicated on each and every drawing sheet by the use of an ink stamp. This stamp shall also identify the approved (F.D.O.T. and/or Consulting Engineer firm) and the date. All notations or corrections

made on the approval prints should be consistently marked on all drawings, using a red pencil or pen.

5. Distribution of Approved Drawings

- a. If the initial approval is performed by a Consulting Engineer, upon completion, he should retain one approved set of prints for his file and transmit all other sets to F.D.O.T., Tallahassee for review, stamping and distribution.
- b. Final distribution is made in accordance with the following schedule:

D.O.T. Tallahassee Office File	- 1 set
D.O.T. Assigned Resident Engineer	- 2 sets
Prime Contractor	- 1 set
Subcontractor (Fabricator)	- 1 set

When prestressed concrete is involved the D.O.T. assigned Yard Inspector is furnished 2 sets; and when structural steel is involved, the D.O.T. assigned commercial testing laboratory is furnished with 2 sets.

SECTION III. PREPARATION AND ASSEMBLY OF UTILITY PLANS

CHAPTER 37
CONTRACT UTILITY WORK37.1 General

Most utility relocation work is performed by the utility owner on a force account basis. Other situations are best handled by competitive bidding under the terms of the Department's contract with the highway contractor. Such cases therefore require the proposed utility work to be included in the plans, specifications and general provisions in the same general manner and conditions as the other elements of the highway contract.

37.2 Advantages

The scheduling and coordination of utility relocation work in such a fashion as not to delay or disrupt the highway contractor in the performance of the major roadway and bridge contract requirements is required by both Department and Federal Highway Administration regulations. When utility relocation work is totally controlled by the utility owner, obvious problems can arise. Arranging for contract utility work to be done by the Department's contractor will normally:

1. Reduce the quantity of personnel, equipment and material cluttering the work area at any given time.
2. Give the contractor total control of maintenance of traffic.
3. Eliminate conflicts between the contractor's schedule and the utility work schedule, thereby cancelling delay and damage claims against the Department by virtue of options under the standard specifications.

4. Reduce the cost to the Department and utility owner by eliminating duplication of charges for moving to projects and setting up construction operations, as well as separate charges for cleanup and vacating the project at the end of the contract.
5. Result in lower unit bids as compared to the alternative of a negotiated force account project.

Utility relocation work by the highway contractor is most successful when specified for projects containing work assignments most compatible with the experience and equipment common to construction of highways, storm sewers and bridges. Utility systems for water and sewer are the most adaptable. Manholes, underground duct and conduit construction for telephone and power cables can also be handled with little difficulty. Electrical and telephone systems can be covered under the Department's Contract Procedures, but such work is usually subcontracted with resulting increases in bid prices. Gas and petroleum pipe distribution systems can also be handled, but require very special attention in the specifications, plus advance approval of the Florida Public Service Commission.

37.3 Scheduling Procedures

Negotiations for Utility Joint Project Contracts are the responsibility of the District Utility Engineer according to Department Procedure 722-503. The normal sequence of activities and events is:

1. Activity/Event 264 - Initial Statute Notice to utility owners using very preliminary construction plans and/or right of way maps.
2. Return of utility confirmation of facilities and property ownership for inclusion in roadway plans.
3. A/E 265 - The Predesign Conference should be scheduled according to Section I, Chapter 21.

4. Final development of the roadway plans with notice to the District Utility Engineer at the seventy-five (75) percent completion stage for his use in providing prints to each utility agency.
5. A/E 266 - Negotiations are completed with utility agencies who now provide the specified type, size and number of utility contract drawings to the Department. These drawings are positioned correctly in the project plans assembly in conformance to Section I, Chapters 22 and 23. The designer proceeds with checking the inserted plans according to Section I, Chapter 25.
6. The Summary of Pay Items is completed with attention to the correct utility job number being noted on both the Summary of Quantity Sheet and the Key Sheet. This should be a 6000 series job number, as opposed to the standard 3000 series job number for the highway elements of the project.
7. The completed project plan, including the utility work portion, is submitted to the Central Office for routine processing by Design, Specifications and Contract Offices.
8. Following project letting and selection of apparent low bidder the utility owner is advised by the District Utility Engineer of the recommended unit prices. The owner can accept, or reject, this bid. If accepted, processing continues on to award and issue of the work order. If rejected, the owner must make separate arrangements for the work while still liable for delays to the contractor's schedule. Field supervision begins with the Preconstruction Conference.

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Topic No. 625-000-138-a

CHAPTER 38 UTILITY RESPONSIBILITY

38.1 Engineering

Following the Predesign Conference, the utility owner prepares the detail design and plans for all of the owners "utility work", and will furnish the Department complete original plans on standard size sheets (22" x 36"), all suitable for reproduction by the Department, together with a complete set of specifications covering all construction requirements for the "utility work". The final "utility work" plans shall be complete in every detail and will include a Summary of Quantities and Pay Item Sheet. The project scheduling system determines the latest date acceptable to the Department for receipt of the "utility work" plans and this date is to be incorporated in the legal agreement with the utility (Form 722-23 series) by the District Utility Engineer at the time of execution. Special attention at the Predesign Conference to scheduling dates, an acceptable plan format, and standardized pay item identification will eliminate delays at A/E 212 - Plans to Tallahassee.

38.2 Utility Pay Items

All utility owners and their consultants wishing to incorporate utility adjustment pay items into a Department contract must use the Department's standardized "Utility Pay Item Manual".

38.3 Utility Specifications

The Department's "Utility Pay Item Manual" provides sample specifications package and diagrams. Standardizing routine specifications

for normal utility fixtures and appurtenances is important both to the clarifying of the highway contract documents, as well as assuring the receipt of well balanced and competitive bids at the contract letting. Utilization of computer matched items considerably reduces the usual excess and unrelated specifications normally furnished by consultants in their attempt to cover "standard" projects with preprinted formats.

38.4 Utility Cost Estimates

The Department's Joint Project Agreement with the utility owner will specify the estimated cost of "utility work". The owner is required to submit a detailed cost estimate with the plans package for review by the Department.

38.5 Utility Cost Allocation

Reimbursement to the utility owner for the cost of "utility work" is established by State Statute for nonreimbursable projects. The utility owner is required to deposit in advance of award of contract the estimated cost of such work, as the Department is prohibited from extending credit by advance financing. Both State and Federal projects must clearly distinguish which items of utility work are reimbursable to the owner and which items are not. Limits of Federal participation should be identified in the plans, as well as on the Pay Item Sheet.

CHAPTER 39
PLANS PREPARATION AND ASSEMBLY39.1 General

Utility Contract Plans are processed in the same manner as any other section of the Department's standard construction plans. The routines specified in Chapters 22, 23, and 36 should be followed in principal when processing drawings for utility work as a part of the highway contract.

39.2 Assembly - When combined under same project numbers as the roadway construction

Section 22.10 and 23.9 describe the assembly routine to be followed when inserting Utility Contract Plans and Quantity Sheets in the Department's project plans. Careful attention to sheet numbering and job number assignment is important. The Utility Contract Plan - Profiles, when combined under the same Department contract as the roadway construction, will be assigned the position immediately following the Roadway Cross Section sheets. The Utility of Pay Items will be positioned in the Roadway Summary of Pay Item Sheet(s). The Utility Summary of Quantities should follow the Roadway Summary of Quantities Sheet.

On occasions, the amount of utility contract work to be performed by the highway contractor is small. Where reasonable, both the Utility Pay Item and Quantity Listings can be included directly on the respective sheets for the roadway work, provided reasonable space and separation is available to maintain clarity of definition between the different job numbers and federally participating items.

The proposed contract work must also be shown on the Utility Adjustment Sheets as outlined in Chapter 19. As the base sheets normally prepared

from the roadway plan - profiles will not show the utility contract work, it will be necessary to draft utility work on the sepias in the same manner and using the same symbols as utility relocations being performed by others. Any conflicts in space allocation of the utility work with either elements of the roadway work, or utility work by others, should be immediately reported to the District Utility Engineer.

39.3 Assembly - When separate set of utility plans prepared under the 6000 series project.

When the utility plans are to be prepared separately under a 6000 series project number, they should be prepared as though they were a separate set of plans. The plans should contain a Key Sheet, Summary of Pay Items, Summary of Quantities, Plan Sheets, Detail Sheets and Cross Sections if required.

When the proposed contract is being assembled (3000 series and 6000 series project number) they should be prepared as though they were a separate set of plans. The plans should contain a Key Sheet, Summary of Pay Items, Summary of Quantities, Plan Sheets, Detail Sheets and Cross Sections if required.

When the proposed contract is being assembled (3000 series and 6000 series projects) the utility plans (6000 series) are placed after the last component of the 3000 series project. The Summary of Pay Items must be strung with the 3000 series projects and placed after the lead Key Sheet of the 3000 series project.

A note on the lead Key Sheet of the 3000 series project should be shown indicating that the 6000 series project is to be let in that contract.

Appropriate cross reference of utility plan details should be included in the 3000 series project and shown as proposed construction.

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CHAPTER 40

CHECKING AND PAY ITEM ASSIGNMENTS

40.1 General

Utility Contract Plans are processed in the same manner as any other section of the Department's standard construction plans. The routine specified in Chapter 25 should be followed when checking utility contract plans that are an integral part of the highway project plans. Chapter 36 is an excellent guide for utility work involving buildups, pumping stations or other utility work of a structural nature.

40.2 Plans

Following the normal checking procedure for agreement between plan dimensions and specified quantities, a further general review of each plan-profile sheet must be completed to locate any possible conflicts with:

1. The project designed storm sewer system.
2. Other utilities that are designated either to remain in place or proposed as new facilities.
3. Proposed right of way limits for the project.
4. The design typical section and roadway construction template including sub-base and stabilization zones.

Any such conflicts located are to be immediately brought to the attention of the District Utility Engineer with the design file so noted that such action has been completed.

40.3 Pay Items

All consultants, private and public utilities, cities, counties, or others that proceed to incorporate utility adjustment pay items into a Department contract must use the Department's standard "Utility Master Pay Item Manual". This Manual is available in the office of District Design Engineers. Any problems concerning Pay Items should be first approached jointly by the District Contract Estimating System (C.E.S.) Coordinator, the District Utility Engineer and the Design Squad Chief responsible for the project in question. If still unresolved, contact should be made with the Preliminary Estimates Engineer at the Central Office.

The "Utility Pay Item Manual" must be utilized in checking the Summary of Pay Items Sheets(s), before releasing the plans to the Central Office. All Utility Pay Items should be loaded into the CES System for any utility construction contract. Design Group 29 should be used for all such pay items.

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CHAPTER 41
PROCESSING FOR CONTRACT

41.1 General

Utility Contract Plans are processed in the same manner as any other type of Department construction contracts. Scheduling problems will arise if constant control over the utility owner's plans is not maintained. Continuous communication with the owner and/or consultant is required to maintain prescribed scheduling dates. The biweekly update of the MPSS reporting system should be gauged to complete Activity/Event 212 (Plans & R/W to Tallahassee) on time.

41.2 Pre-Letting

The design squad must insure the utility estimate is complete. The estimate is next compared with an independent estimate from the Department's Contract Estimating System to see if both estimates favorably compare prior to further processing of the plans package under A/E 212.

Special Provisions submitted with the owner's Utility Contract Plans are edited in accordance with the "Utility Master Pay Item Manual" and forwarded to the Central Office with the complete plans package.

A separate check set of utility contract prints, including project Key Sheet, plus a copy of any revised specifications is furnished the District Utility Engineer for his transmittal to the owner for final concurrence simultaneously with release of the original plans package to the Central Office. The District Utility Engineer must immediately provide this information to the owner and thereafter coordinate any last changes following the guidelines in Chapter 26.

41.3 Bid Review

The Utility Joint Project Agreement (Form 722-23 Series) provides for final review of the utility owner prior to award of contract. The bid tabulations involving utility contract pay items are reviewed with the utility owner by the District Utility Engineer as promptly as possible following compilation of bids by the Department's Contract Officer. (Note The tabulations are not for public release and are not authorized to be copied and distributed.)

Following acceptance by the owner, the Award of Contract is issued and responsibility turned to the District Office to proceed with the scheduling of the Preconstruction Conference and issuance of the Contract Work Order.

41.4 Pre-Construction Conference

A complete copy of the legal agreement with the utility owner is provided the District Construction Office by the District Utility Engineer. The Department's Construction Personnel set the Preconstruction Conference date when all aspects of the utility work and scheduling will be reviewed jointly with the project contractor and utility owner. On complex utility work, the Department's District Design and Utility Office may be invited to furnish representatives to this conference to settle questions on limits of reimbursement, record keeping and design work required by any field changes.

SECTION IV · PREPARATION AND ASSEMBLY OF TRAFFIC PLANS

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Topic No. 625-000-142-a

CHAPTER 42

SIGNING AND PAVEMENT MARKING PLANS

42.1 Key Sheet

The key sheet is the first original sheet in the plans package. It is a most important sheet, since it provides all the necessary information that identifies the entire plans package. It is prepared on standard printed polyester film, as noted in Chapter 1. For detailed features and requirements for key sheets, see Section I, Chapter 2; Preparation and Assembly of Roadway Plans. For example of signing and pavement marking key sheet see Exhibit No. 49.

42.2. Summary of Pay Items (CES)

This sheet is computer generated and shows all items and estimated quantities for the project or projects in a contract. These sheets are part of the contract plan set and are placed directly behind the lead key sheet (usually roadway). This includes summaries for the component parts, i.e., structure, signing and pavement markings, signalization, lighting, etc., as well as for additional projects in the contract package. These sheets should be inserted in the same order of listing that is used for a contract plans set (see Section 2.6). For additional information on Summary of Pay Item Sheets, see Section I, chapter 3.

42.3 Tabulation of Quantities

The Tabulation of Quantities sheet lists the item numbers, description, and quantity of material, type of work, etc.. Pay item footnotes should also be shown on this sheet.

42.4 Standard Notes

The Tabulation of Quantities sheet should also carry any standard notes referring to item numbers, description of work to be performed and quantity estimates. For example of Tabulation of Quantities sheet see Exhibit No. 50.

42.5 Cross Sections

A plans package for Highway Signing and Pavement Markings may include cross sections where a large overhead sign structure is located. In some instances, a cross section may be required for a multi-post ground sign. This will occur when the Engineer is faced with an unusual condition that may be in conflict with other features. The scale for cross sections showing sign installation will be 1"=5' Vert. and 1"=5' horizontal. For example of cross sections and structural data sheet, see exhibit numbers 54 and 55.

42.6 Intersection Layouts

Signing and Pavement Marking Plan sheets on intersection layouts should cover the entire limits of the project as shown on the Key Sheet. Usually, projects for intersections are isolated locations at grade level. These sheets should show straight roadway sections as well as the intersections. If the project covers this type, Signing and Pavement Marking, Centerlines, Right-of-way limits, Station Number, equations or exceptions, and conflict with utilities shall be shown on the Plan Sheets.

For larger, more complicated intersections involving channelizations as long connecting sections, the layout should be placed on standard mylar sheets using match lines when more than one sheet is used.

Existing topography is not plotted on these details if it is covered elsewhere in the plans, unless pertinent to design. In most cases, information is given exactly as in the plan portion of municipal construction, with pavement edges, curb and gutter, channelization, median curbs, pavement dimensions, radii and appropriate notes included. A north arrow shall be indicated, with a title and scale shown at the bottom of the plan sheet.

The scale used should be sufficient to cover all necessary details; however, a scale of 1"=100' should be the smallest used for intersection layouts. A scale of 1"=20' may be used for intersections requiring detailed information.

42.7 Interchange Layouts

Signing and Pavement Markings for interchange layouts are usually designed to expressway standards.

In addition to the requirements for intersections, plan sheets for interchanges shall have the following information:

1. Topography such as existing roads, utilities (where needed), drives, houses or business, and drainage.
2. Interchange geometrics and proposed right-of-way limits.
3. Proposed reconstruction of the crossroad, and all access roads and/or frontage roads within the interchange vicinity.
4. The full length of speed change lanes.
5. Proposed bridge limits.
6. Pavement transition lanes.

7. Limits of construction along crossroads.

Most projects having expressway type design considerations will have FHWA funds and must be submitted for their review. The submittal procedure will be in accordance with Section I, Chapter 16 covering Preparation and Assembly of Roadway Plans.

EXHIBITS 51 through 53 illustrates details for Intersections and/or Interchanges for Signing and Pavement Markings.

42.8 Maintenance of Traffic

Under the Federal Highway Administration notice N 5000.7, dated October 13, 1978, State and local agencies were instructed to develop a meaningful maintenance of traffic program by the preparation of a maintenance of traffic plan for every project, creation of separate pay items for maintenance of traffic work, provide training to employees who design or set up maintenance of traffic sites and to evaluate the effectiveness of such programs.

In response, the Florida Department of Transportation adopted the above guidelines for all Federal Aid and State funded projects. The program has been in effect since August 1979 and has been accepted as a standard portion of the plans package. Maintenance of Traffic Plans will normally be a portion of the Roadway Plans.

If signing and Pavement Marking plans are part of the Roadway Plans package, the Maintenance of Traffic items will be in the Roadway Plans, however, if Signing and Pavement Marking Plans are to go as a separate contract, maintenance of traffic shall be included as part of that contract.

Maintenance of Traffic details and procedures shall be in accordance with Section I, Chapter 18.

42.9 Utility Adjustment Sheets

In most cases, Signing and Pavement Marking projects will not require utility adjustments. If utility adjustments are required, the engineer should generally follow procedures as outlined in Section I, Chapter 19.

42.10 Mini-Plans

The mini-plan preparation procedures are for projects such as; resurfacing, skid hazard and upgrading traffic plans. This procedure should not be used for projects that include the addition of lanes (either thru or turning lanes).

When the mini-plan procedure is used, the project must still be shown in a form to include a location map.

All work should be clearly indicated and a statement on the scope of work must be included. A strip map may be substituted for a detailed roadway layout.

For details on preparation of mini-plans, see Section I, Chapter 24.

42.11 Quality Control in Plan Preparation

Every effort must be made to ensure a high quality plans package. Revisions, change orders, and supplemental agreements to plans due to incompleteness or errors should not be allowed. Sufficient details and information should be shown by the designer to convey to all plan users and especially to the contractor, the intent of the design and scope of work to

be constructed. A simple check list and a review of the plans would make changes unnecessary. A check list for Signing and Pavement Marking Plans follows and should be considered as a minimum requirement. An indepth evaluation and checking of some projects may be necessary to insure completeness.

42.12 Checklist

The checklist for signing and pavement marking plans as shown in Section I, Chapter 25, shall be used on all signing and pavement marking plans.

CHAPTER 43
TRAFFIC SIGNAL PLANS43.1 Key Sheet

The key sheet is the first original sheet in the plan package. It is a most important sheet, since it provides all the necessary information that identifies the entire plans package. It is prepared on standard printed polyester film as noted in Chapter 1. For detailed features and requirements for key sheets for signal plans, see Section I, Chapter 2, "Preparation and Assembly of Roadway Plans". For sample key sheet for signal plans see Exhibit No. 56.

43.2 Summary of Pay Items (CES)

This sheet is computer generated and shows all items and estimated quantities for the project or projects in a contract. These sheets are a part of the construction plan set and are placed directly behind the lead key sheet (usually roadway). This includes summaries for the component parts, i.e., structures, traffic signals, signing and pavement marking, highway lighting, etc., as well as additional projects in the contract package. These sheets should be inserted in the same order of listing that is used for the contract plans set (See Section 2.6). For additional information on summary of pay item sheets, see Section I, Chapter 3.

43.3 Tabulation of Quantities

The Tabulation of Quantities sheet lists the item numbers, description and quantity of materials, type of work, i.e., (type signal equipment, and labor). Special pay item footnotes shall also be shown on this sheet.

43.4 Standard Notes

The Tabulation of Quantities sheet should also carry any standard notes that refer to item numbers, description of work to be performed and quantity estimates. For sample tabulation of quantities sheet see Exhibit No. 57.

43.5 Cross Sections

Generally, traffic signal plans will not include cross sections unless some special condition exists. If cross sections are needed, i.e., through the intersection to set strain poles, the scale should be 1"=5' vertical and 1"=5' horizontal. For sample foundation sheet for poles see Exhibit 58.

43.6 Intersection Layouts

Traffic signal plan sheets for intersection layouts should cover the entire limits of the intersection to be signalized. Projects involving intersections normally are isolated locations and at grade. These sheets show the straight sections of roadway, if needed, as well as the intersection layout. The layout plan sheets should show centerlines, right-of-way limits, station numbers, equations or exceptions and any conflicts with utilities as well as signal design layout. See Exhibit No. 58.

The drawing should be placed on standard mylar sheets using match lines when more than one (1) sheet is used.

Existing topography is not normally plotted on these sheets if it is covered elsewhere in the plans, unless it is pertinent to the design. In

most cases, information is given exactly as in the plan portion of municipal construction, with pavement edges, curb and gutter, channelizing and median curbs, pavement dimensions, radii and appropriate notes included.

A north arrow shall be indicated and a title and scale shown at the bottom of the plan sheet.

The scale used should be sufficient to cover all necessary details; however, a scale of 1"=20' is considered standard.

43.7 Interchange Layouts

Traffic signal layouts for interchanges are usually prepared in a similar manner as for intersections. In addition to the requirements for intersections, plan sheets for interchange signalization may require the following:

- 1.) Topography such as existing roads, utilities (where needed), driveways, homes or businesses and drainage.
- 2.) Interchange geometrics and proposed right-of-way limits.
- 3.) Proposed reconstruction of the crossroad, and all access roads and/or frontage roads within the interchange vicinity.
- 4.) Proposed bridge limits.
- 5.) Pavement transition lanes.

Most projects having expressway type design considerations will have FHWA funds and must be submitted for their review. The submittal procedure will be in accordance with Section I, Chapter 16, covering Preparation and Assembly of Roadway Plans.

43.8 Maintenance of Traffic

Under the Federal Highway Administration notice 15000.7 dated October 13, 1978, state and local agencies were instructed to develop a meaningful maintenance of traffic program by the preparation of a maintenance of traffic plan for every project, creation of separate pay items for maintenance of traffic work, provide training to employees who design or set up maintenance of traffic sites and to evaluate the effectiveness of such a program.

In response the Florida Department of Transportation adopted the above guidelines for all Federal Aid and State funded projects. The program has been in effect since August 1979 and has been accepted as a standard portion of the plans package. Maintenance of traffic items will normally be a portion of the roadway plans.

If traffic signals are part of the roadway plan package the maintenance of traffic items will be shown with the roadway plans items; however, if traffic signals are to go as a separate contract, the maintenance of traffic items and layout will be part of that contract. Maintenance of traffic details and procedures shall be in accordance with Section I, Chapter 18.

43.9 Utility Adjustment Sheets

The purpose of Utility Adjustment Sheets is to provide some type of coordination between the contractor and affected utility companies. These sheets will show the contractor approximate locations of existing proposed and relocated utilities. This will aid the contractor in avoiding possible conflicts and/or damage to the utilities involved.

In most cases utility adjustments will not be necessary for Traffic Signal installations; however, if adjustments are needed, design procedures will be in accordance with Section I, Chapter 19.

43.10 Minor-Plans

The minor-plan preparation procedures are for projects such as, resurfacing, skid hazard and upgrading traffic plans. This procedure should not be used for projects that include the addition of lanes (either thru or turning lanes).

When the minor-plan procedure is used, the project must still be shown in a form to include a location map.

All work should be clearly indicated and a statement on the scope of work must be included. A strip map may be substituted for a detailed roadway layout.

For details on preparation of minor-plans, see Section I, Chapter 24.

43.11 Quality Control in Plan Preparation

Every effort must be made to ensure a high quality plans package. Revisions, change orders, and supplemental agreements to plans due to incompleteness or error should not be allowed. Sufficient details and information should be shown by the designer to convey to all plan users and especially to the contractor the intent of the design and scope of work to be constructed. A simple check list and a review of the plans would make changes unnecessary. A check list for traffic signals follows and should be considered as a minimum requirement. An in-depth evaluation and checking of some projects may be necessary to ensure completeness.

43.12 Checklist

The checklist for signalization plans as shown in Section I, Chapter 25, shall be used on all signalization plans.

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CHAPTER 44 HIGHWAY LIGHTING

44.1 Key Sheet

The Key sheet is the first original sheet in the plans package. It is a most important sheet, since it provides all the necessary information that identifies the entire plans package. It is prepared on standard printed polyester film as noted in Chapter 1. For detailed features and requirements for key sheets for Highway Lighting Plans, see Section I, Chapter 2 "Preparation and Assembly of Roadway Plans". For example of highway lighting see Exhibit No. 59.

44.2 Summary of Pay Items (CES)

This sheet is computer generated and shows all items and estimated quantities for the project or projects in a contract. These sheets are a part of the construction plan set and are placed directly behind the lead key sheet (usually roadway). This includes summaries for the component parts, i.e., structures, traffic signals, signing and pavement marking, highway lighting, etc., as well as additional projects in the contract package. These sheets should be inserted in the same order of listing that is used for the contract plans set. (See Section 2.6). For additional information on summary of pay item sheets, see Section I, Chapter 3.

44.3 Tabulation of Quantities

The Tabulation of Quantities sheet lists the item numbers, description and quantity of materials, type of work, i.e., type lighting equipment, and labor. Special pay item footnotes shall also be shown on this sheet.

44.4 Standard Notes

The tabulation of quantities sheet should also carry any standard notes that refer to item numbers, description of work to be performed and quantity estimates. For example of Tabulation of Quantities see Exhibit No. 60.

44.5 Cross Sections

Generally, Highway Lighting Plans will not include cross sections unless some special condition exists. If cross sections are needed. (i.e., High mast poles within interchange) the scale should be 1"=5' vertical and 1"=5' horizontal. Exhibit 61 shows an example pole data sheet.

44.6 Intersection Layouts

Highway lighting plan sheets for intersection layouts should cover the entire limits of the project as shown on the key sheet. Projects involving intersections normally are isolated locations and at grade.

These sheets should show the straight sections of roadway, if needed as well as the intersection layout. If the project includes intersections and straight roadway sections, the plan sheets should show centerlines, right-of-way limits, station numbers, equations or exceptions and any conflicts with utilities as well as lighting design layout.

The drawing should be placed on standard mylar sheets using match lines when more than one(1) sheet is used.

Existing topography is not normally plotted on these sheets if it is covered elsewhere in the plans, unless it is pertinent to the design. In most cases, information is given exactly as in the plan portion of

municipal construction, with pavement edges, curb and gutter, channelizing and median curbs, pavement dimensions, radii and appropriate notes included.

A north arrow shall be indicated and a title and scale shown at the bottom of the plan sheet.

The scale used should be sufficient to cover all necessary details; however, a scale of 1"-20' is considered standard.

44.7 Interchange Layouts

Highway lighting plans for interchanges are usually designed to expressway standards. In addition to the requirements for intersections, interchange layouts shall have the following information.

- 1.) Topography such as existing roads, utilities (where needed), driveways, homes or businesses and drainage.
- 2.) Interchange geometrics and proposed right-of-way limits.
- 3.) Proposed reconstruction of the crossroad, and all access roads and/or frontage roads within the interchange vicinity.
- 4.) The full length of speed change lanes.
- 5.) Proposed bridge limits.
- 6.) Pavement transition lanes.
- 7.) Limits of construction along crossroads.

Most projects having expressway type design consideration will have FHWA funds and must be submitted for their review. The submittal procedure will be in accordance with Section I, Chapter 16, covering Preparation and Assembly of Roadway Plans.

Exhibit 62 illustrates details for intersection and/or interchanges for highway lighting.

Exhibits 63, 64 and 65 show an example of Soil Boring Layouts, Soils Data and Footing Design for Drill Shaft Footings.

44.8 Maintenance of Traffic

Under the Federal Highway Administration notice N5000.7 dated October 13, 1978, state and local agencies were instructed to develop a meaningful maintenance of traffic plan for every project, creation of separate pay items for maintenance of traffic work, provide training for employees who design or set up maintenance of traffic sites and to evaluate the effectiveness of such programs.

In response, the Florida Department of Transportation adopted the above guidelines for all Federal aid and State funded projects. The program has been in effect since August 1979 and has been accepted as a standard portion of the plans package. Maintenance of traffic items will normally be a portion of the roadway plans.

If Highway Lighting plans are part of the Roadway Plans Package, the maintenance of traffic items will be in the Roadway Plans; however, if Highway Lighting plans are to go as a separate contract, maintenance of traffic shall be included as part of the Highway Lighting contract. Maintenance of traffic details and procedures shall be in accordance with Section I, Chapter 18.

44.9 Utility Adjustment Sheets

In most cases, Highway Lighting projects will not require utility adjustments; however, if utility adjustments are required the designer should generally follow procedures as outlined in Section I, Chapter 19.

44.10 Mini-Plans

The mini-plan preparation procedures are for projects such as; resurfacing, skid hazard and upgrading traffic plans. This procedure should not be used for projects that include the addition of lanes (either thru or turning lanes).

When the mini-plan procedure is used, the project must still be shown in a form to include a location map.

All work should be clearly indicated and a statement on the scope of work must be included. A strip map may be substituted for a detailed roadway layout.

For details on preparation of mini-plans, see Section I, Chapter 24.

44.11 Quality Control in Plan Preparation

Every effort must be made to ensure a high quality plans package. Revisions, change orders, and supplemental agreements to plans due to incompleteness or error should not be allowed. Sufficient details and information should be shown by the designer to convey to all plan users, (especially to the contractor), the intent of the design and scope of work to be constructed. A simple check list and a review of the plans would make changes unnecessary.

A check list for Highway Lighting follows and should be considered as a minimum requirement. An in-depth evaluation and checking of some projects may be necessary to ensure completeness.

44.12 Checklist

The checklist for Lighting plans as shown in Section I, Chapter 25, shall be used on all Lighting plans.

SECTION V: VALUE ENGINEERING



CHAPTER 45

VALUE ENGINEERING IN PLANS PREPARATION

45.1 General

The engineer, designer or consultant engaged in the plans preparation process is to a great extent "boxed-in" by predetermined criteria.

Design standards, specifications, safety considerations and traditional methods leave little room for innovative ideas or new concepts. Above all, there is always that plans production "crunch" - too many projects in too short a time period. This Plan Preparation Manual is one attempt to promote techniques and practices that will ensure the highest degree of quality that can be attained in this environment. A second more direct attempt is through the Value Engineering Review Program.

45.2 The Value Engineering Program

Value Engineering is a quality improvement technique used in the preliminary engineering and plans production phase of transportation facility construction where multidiscipline teams are used to review projects and identify high cost functions.

A VE study is the systematic application of VE techniques to transportation projects by a multidiscipline team in an attempt to improve the quality and value of each project. The time and effort spent on the review and study of a project will vary with the complexity of the project and the opportunity for improvement. The following is a general outline of the activities that go into the Value Engineering Program.

1. The Value Engineering Coordinator (VEC) with the assistance of a selection team or committee determines which projects in the work program will be reviewed by a VE Team.
2. A schedule is made and tentative dates are set for the VE review, both in the PD&E phase and in the final design phases.
3. The Value Engineering Coordinator selects a VE Study team or teams, as required by the number of projects scheduled for review.
4. The VEC organizes and manages the VE study.
5. It is important that every review and VE study follow the VE Job Plan. This systematic approach will ensure positive and creative results in value improvement.
6. Each member of the VE Study team should have an opportunity to review plans and project data prior to VE Review meetings. No attempt should be made to evaluate or judge the ideas at this time, but do try to generate as many as possible.
7. When the VE study team meets, the individual ideas should be listed using a flip chart or chalkboard. This visual exposure will almost always generate additional ideas that should be added to the list. Then the VE team should go through the evaluation process and the functional analysis to identify ideas with the highest potential for improvement.
8. Each VE Study should be documented in the Value Engineering Workbook.
9. The VE Study team should prepare an outline of the steps required to implement all VE proposals. A systematic, creative VE job plan develops alternatives that will provide the needed functions at the

best life-cycle cost, consistent with requirements for quality,
performance, operation, maintenance, safety and aesthetics.

Kirby T. McBee, Jr.

SECTION VI: EXHIBITS

INDEX OF EXHIBITS

EXHIBIT NO.	DESCRIPTION
Roadway Plans	
1	Key Sheet
2	Key Sheet Example Titles
3-5	Drainage Maps
6-13	Typical Sections
14-16	Slope Criteria
17	Summary of Quantities
18A-19D	Summary of Drainage Structures
20	Mass Diagram
21-23	Plan Profiles
24	Intersection Detail-Rural
25	Outfall and Lateral Ditch Plan-Profile
26-31	Drainage Structure Sheets
32	Borrow Pit Soil Survey
33-34	Roadway Soil Survey
35-37	Roadway Cross Sections
38	Lateral Ditch Cross Sections
39	Back-of-Sidewalk Profiles
40	Intersection Detail-Urban
41	Interchange Layout
42	Interchange Detail
43	Intersection Profiles
44	Ramp Profiles
45	Cross Section Pattern
46	Maintenance of Traffic Plan
47	Utility Adjustment Sheet
48	Bridge Hydraulic Recommendations
Signing and Pavement Marking Plans	
49	Key Sheet
50	Tabulation of Quantities
51-53	Roadway Locations
54	Cross Sections
55	Overhead Sign Structure
Signalization Plans	
56	Key Sheet
57	Tabulation of Quantities
58	Signalization Plan
Lighting Plans	
59	Key Sheet
60	Tabulation of Quantities
61	Pole Tabulation
62	Plan Sheet
63	High Mast Pole Foundations
64-65	Boring Data

THIS CONTRACT PLAN SET INCLUDES
 SUMMARY OF PAY ITEMS (4 SHEETS)
 BOX CULVERT DATA SHEETS (2 SHEETS)
 ROADWAY PLANS
 SIGNING AND PAVEMENT MARKING PLANS
 STRUCTURE PLANS

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

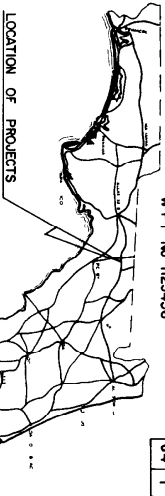
INDEX OF ROADWAY PLANS

- SHEET NO SHEET DESCRIPTION
- 1 KEY SHEET
 - 2 DRAINAGE MAP
 - 3 TYPICAL SECTION
 - 4-5 SUMMARY OF QUANTITIES
 - 6-10 PLAN AND PROFILE SHEETS
 - 11-13 INTERSECTION DETAILS
 - 14-17 DRAINAGE STRUCTURES
 - 18-33 ~~ROADWAY~~ CROSS SECTIONS
 - 34-38 UTILITY ADJUSTMENTS
 - 39-44 SELECTIVE CLEARING AND GRUBBING
 - 45-46 MISCELLANEOUS CONSTRUCTION DETAILS

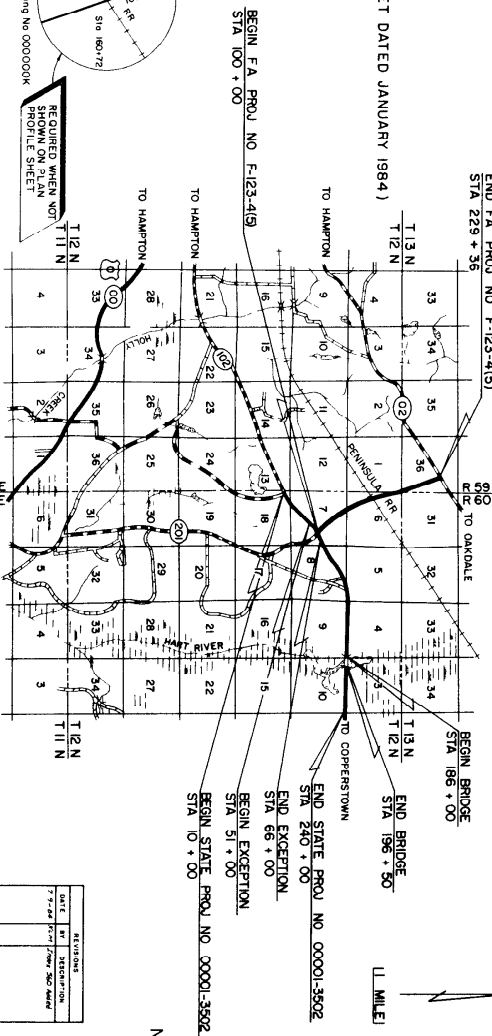
STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION

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**



DATE: 7-24-84
 SHEET NO: 84 1

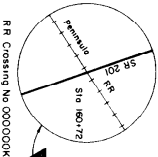


LISTING OF INDEX TITLES OPTIONAL

REVISIONS

- Roadway Sheets 02 1 & 7 & 13 (Revised 7-9-83)
- Signing and Pavement Marking Sheets 01 5 & 2 & 5 & 3 (Revised 7-13-83)
- Structure Sheets 01 1 & 6 & 7 & 2 (Revised 7-13-83)
- Utility Sheets 01 1 & 2 & 3 (Revised 7-13-83)
- Roadway Plans Completely Revised 1-24-84 (04-84)
- Roadway Sheets 02 14 & 33 (Revised 1-30-84)

	LENGTH OF PROJECT		TOTAL	
	LN. FT.	MILES	LN. FT.	MILES
ROADWAY	12,956.00	2,450	20,490.00	3,873
BRIDGES	0.00	0.000	1,050.00	0.198
NET LENGTH OF PROJECT	12,956.00	2,450	21,540.00	4,072
EXCEPTIONS	0.00	0.000	1,500.00	0.284
GROSS LENGTH OF PROJECT	12,956.00	2,450	23,040.00	4,356
			35,988.00	6,806



REQUIRED WHEN NOT SHOWN ON PROJECT SHEET

DATE	BY	EXTENSION
7-24-84	W.P.I.	FROM 502 ADDED

NAME OF CONSULTANT FIRM WHEN PLANS PREPARED BY CONSULTANT

NOTE THESE PROJECTS TO BE LET TO CONTRACT WITH STATE PROJECTS NOS 00000-6501 AND 00001-6902 (UTILITY PLANS)

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

GOVERNING SPECIFICATIONS, STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, ORDERED TO BE NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT

DESIGNED BY: _____
 CHECKED BY: _____
 IN CHARGE: _____
 DIRECTOR OF PRECONSTRUCTION AND DESIGN

ROADWAY PLANS APPROVED BY _____
 DATE _____

APPROVED: _____
 DIRECTOR ADMINISTRATION
 FEDERAL HIGHWAY ADMINISTRATION

STATE PROJ. NO. 00000-0000
EARLY COUNTY

100 LEAF GUIDE
REV. SIZE 6

STATE ROAD NO 000

350 LEAF GUIDE
REV. SIZE 3

STATE PROJECT
ONLY

STATE PROJ. NOS. 00000-0000 AND 00000-0000
UPSON AND HURST COUNTY

STATE ROAD NO 000

TWO STATE PROJECTS
(TWO COUNTIES SHOWN)

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

F.A. PROJECT AND
STATE PROJECT

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

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

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

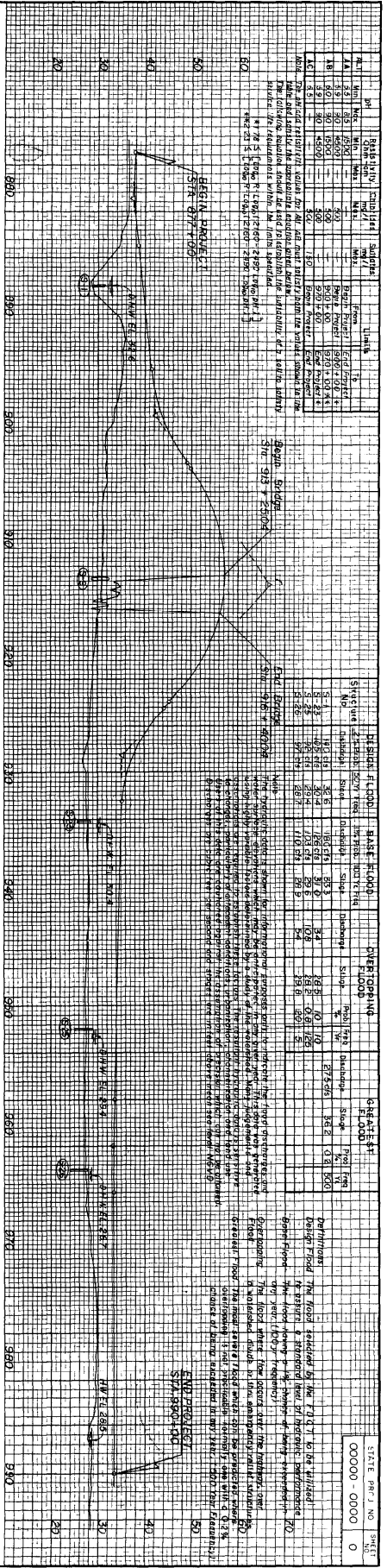
F.A. PROJECT AND STATE PROJECT
AND SEPARATE STATE PROJECT

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

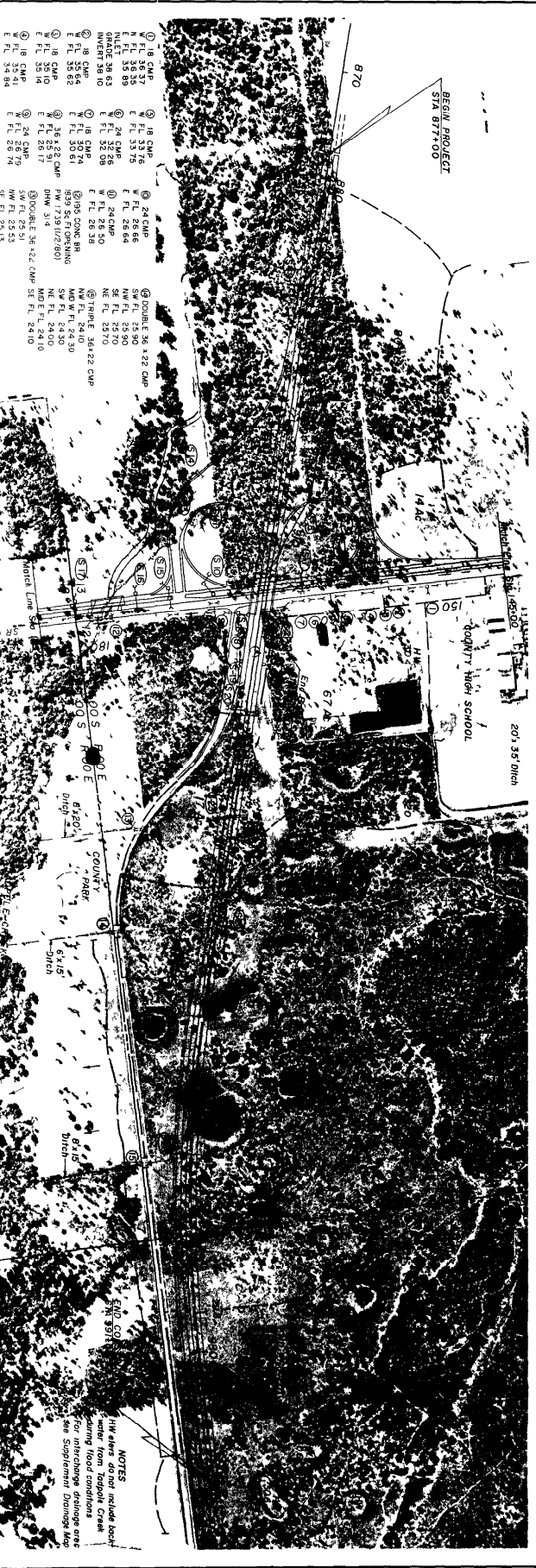
TWO F.A. PROJECTS AND
TWO STATE PROJECTS

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

F.A. PROJECT - INTERSTATE



Sta	Elev	Area	Perim	Slope		Flow		Velocity		Time		Remarks
				ft/100	%	ft ² /sec	ft ³ /sec	ft/sec	min			
870	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
880	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
890	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
900	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
910	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
920	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
930	100.0	100.0	100.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		



NOTES

1. The above drainage map shows the drainage pattern for the project area. It is based on the topographic map and field observations.

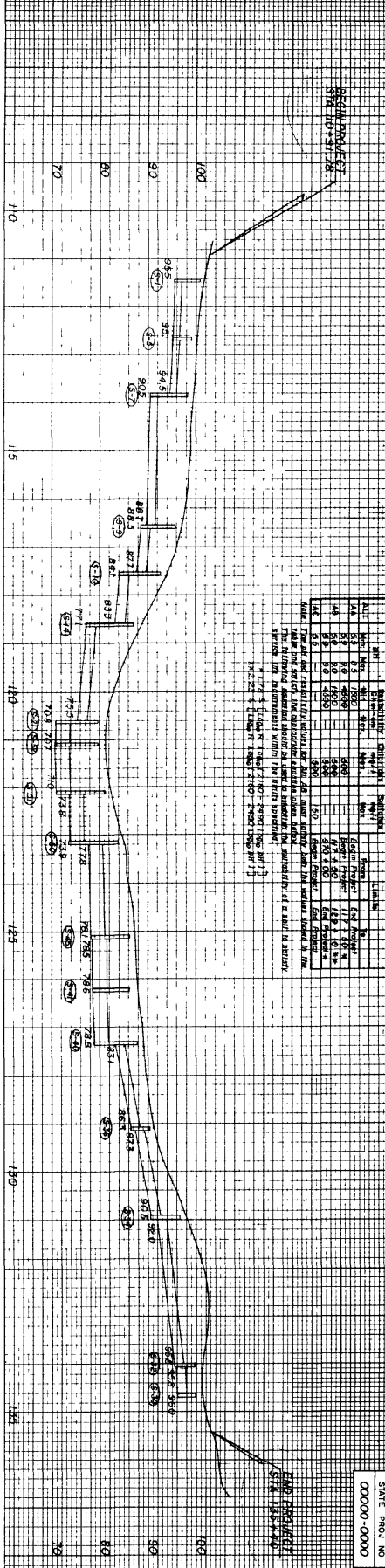
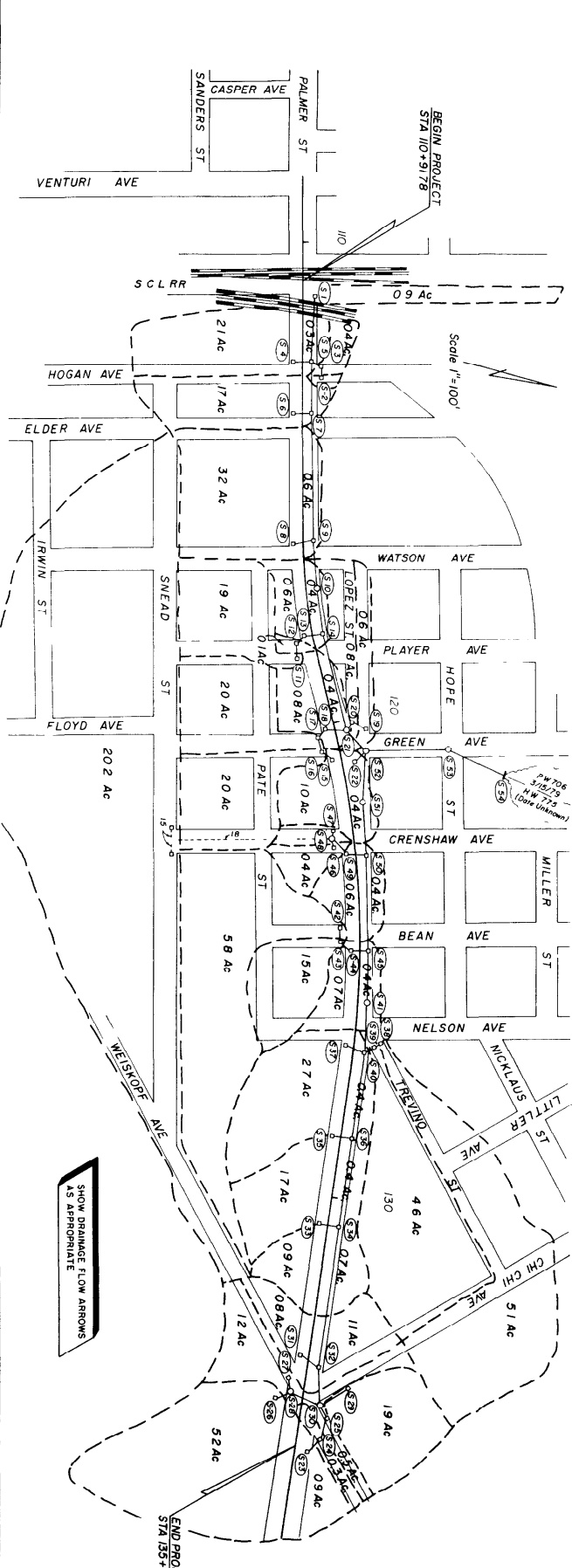
2. The drainage structures shown on this map are for informational purposes only. They are not to be used for design or construction purposes.

3. The drainage structures shown on this map are for informational purposes only. They are not to be used for design or construction purposes.

4. The drainage structures shown on this map are for informational purposes only. They are not to be used for design or construction purposes.

DRAINAGE MAP

DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS

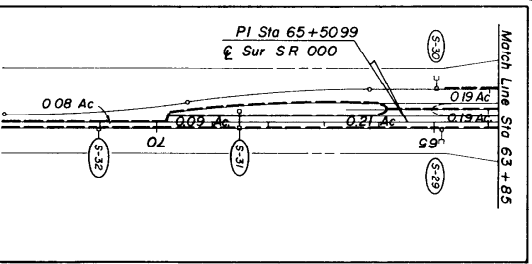
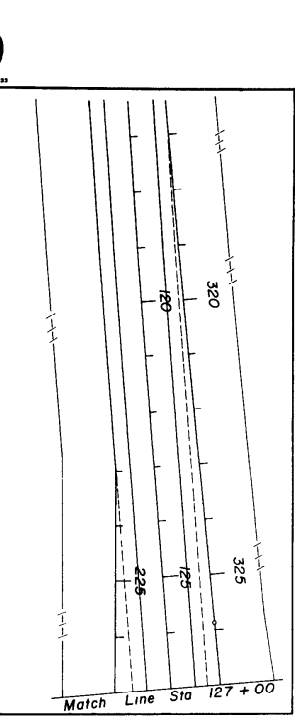
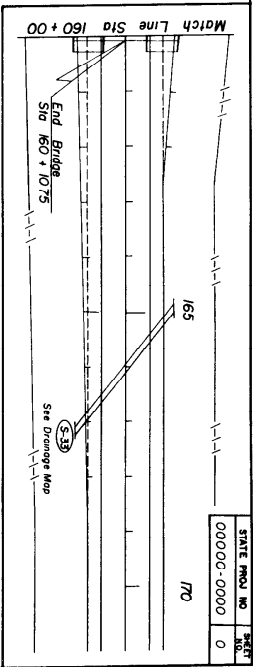
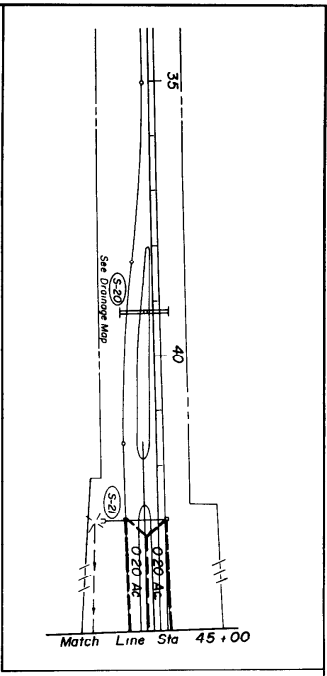
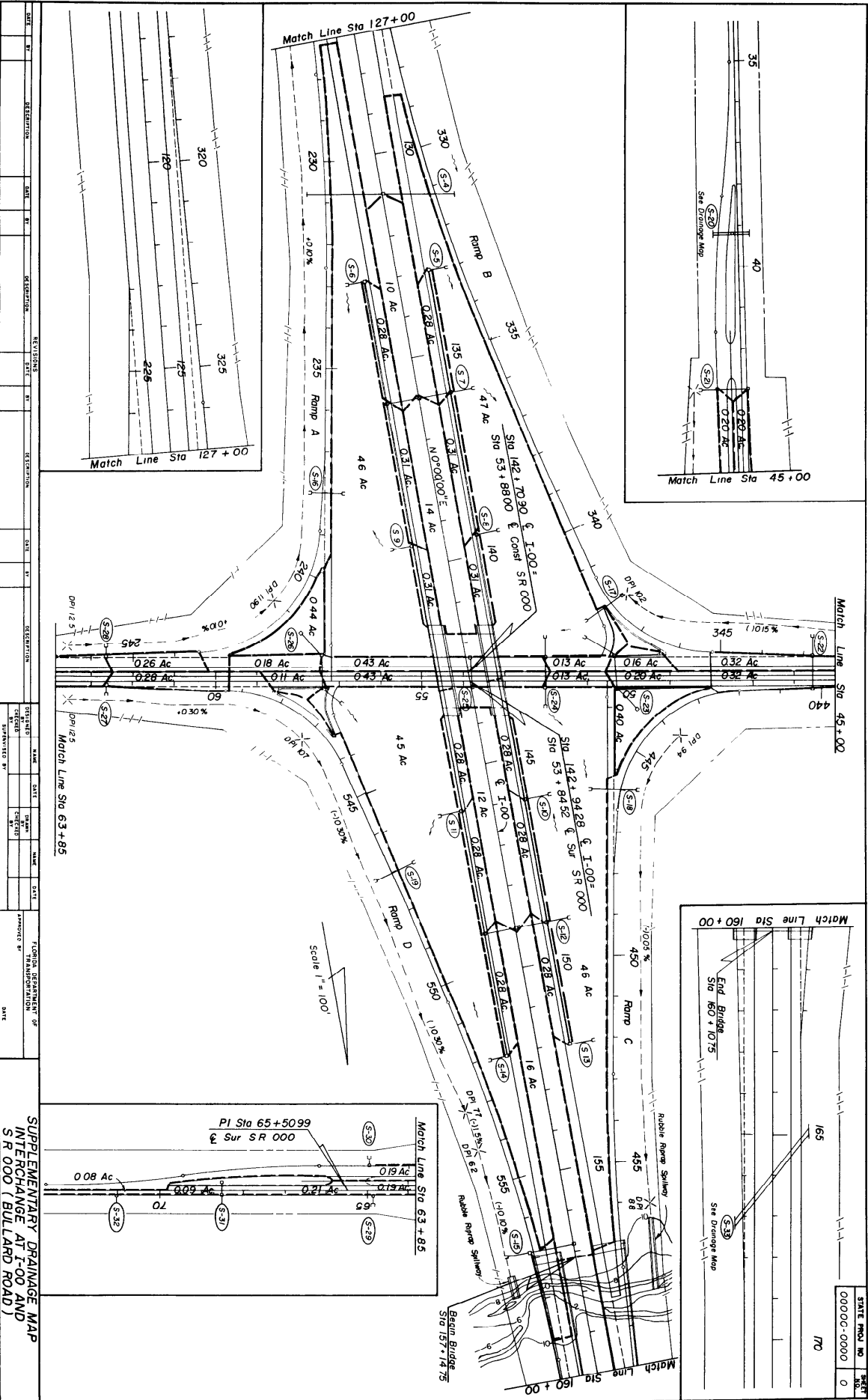


FLORIDA DEPARTMENT OF
TRANSPORTATION
DESIGNED BY
APPROVED BY
DATE

DRAINAGE MAP

EXHIBIT 4

STATE PROJ NO	DATE	BY	REVISIONS
00000-0000	0		



DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION

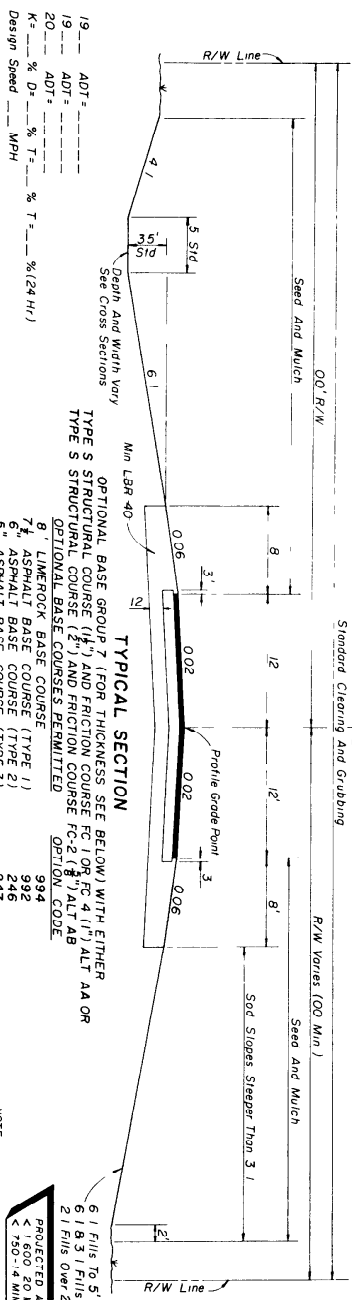
STATE ROAD NO. 00000-0000
 SHEET NO. 0

SUPPLEMENTARY DRAINAGE MAP
 INTERCHANGE AT I-100 AND
 SR 000 (BULLARD ROAD)

EXHIBIT 5

STATE PROJ. NO.	00000 0000
NO.	0

2-LANE UNDIVIDED



6 | Fills To 5'
1 | 8 | 4 | Fills 5'-10'
2 | Fills Over 20'

PROJECTED ADT (20 YR.)
1 1500 - 20 MIN C.Z.
2 1500 - 4 MIN C.Z.

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

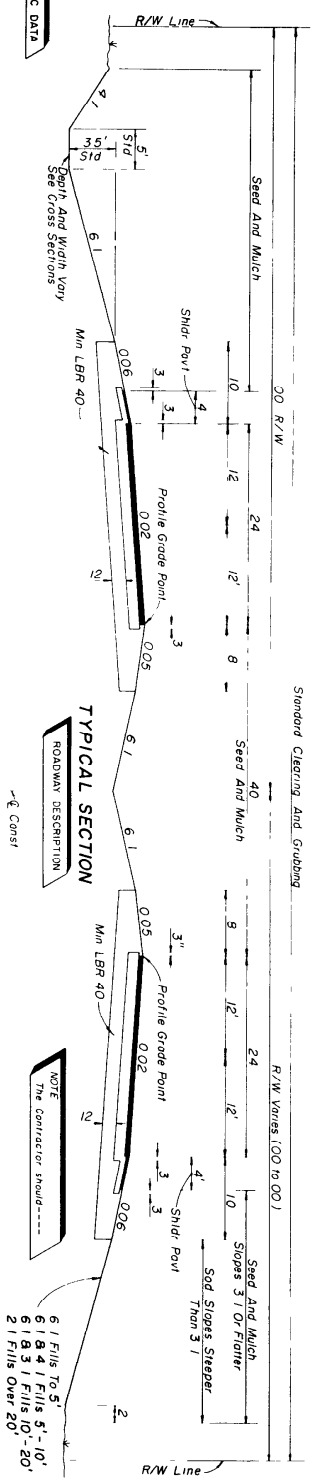
NOTE: ALL PAYMENT DESCRIPTION FOR EXAMPLE ONLY

OPTIONAL BASE GROUP 7 (FOR THICKNESS SEE BELOW) WITH EITHER
TYPE S STRUCTURAL COURSE (1 1/2") AND FRICTION COURSE FC 1 OR FC 4 (1 1/2") ALT AA OR
TYPE S STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (8") ALT AB
OPTIONAL BASE COURSES PERMITTED

8" LIMEROCK BASE COURSE (TYPE 1)	994
7" ASPHALT BASE COURSE (TYPE 2)	992
5" ASPHALT BASE COURSE (TYPE 2)	246
5" ASPHALT BASE COURSE (TYPE 2)	246

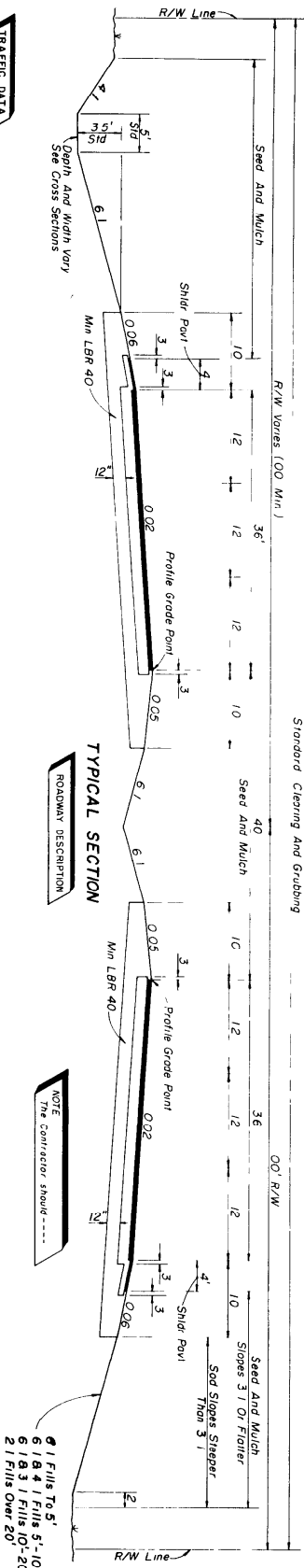
FOR ADDITIONAL DETAILS SEE INDEX NOS 281 400, 500, 505, 510 B 513

4-LANE DIVIDED



6 | Fills To 5'
1 | 8 | 4 | Fills 5'-10'
2 | Fills Over 20'

6-LANE DIVIDED



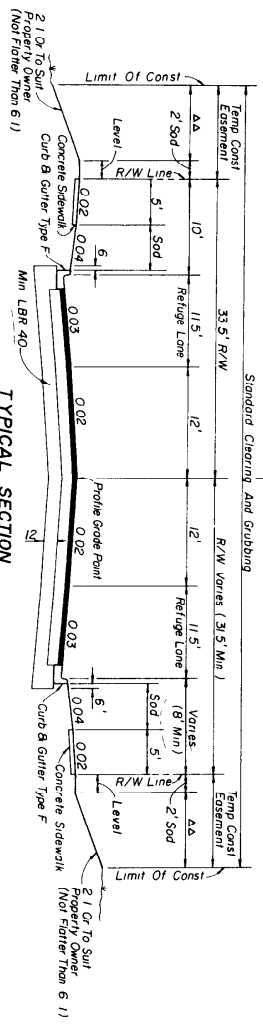
6 | Fills To 5'
1 | 8 | 4 | Fills 5'-10'
2 | Fills Over 20'

TYPICAL SECTION(S)

RURAL

STATE PROJ. NO.	00000-0000
NO.	0

2-LANE
UNDIVIDED

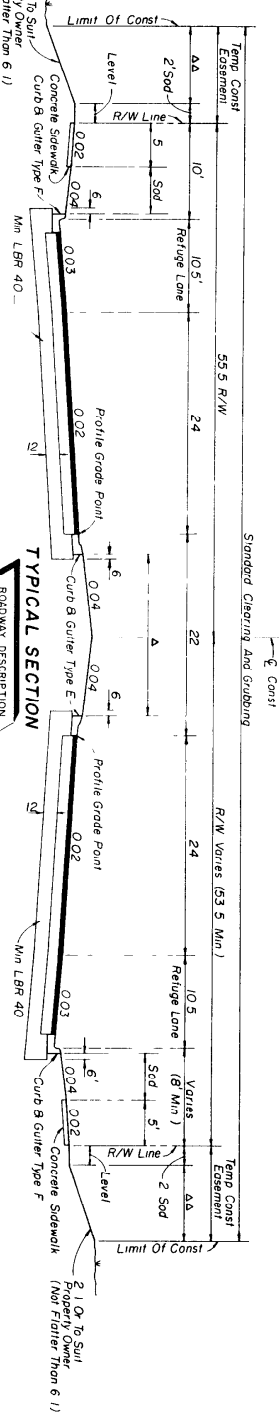


19. ADT =
20. ADT =
K = %
D = %
T = %
T = % (24 Hr.)
Design Speed = MPH

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH
TYPE S STRUCTURE AT EQUAL TO EQUAL FRICTION COURSE PC-1 OR PC-4 (1")
OPTIONAL BASE COURSE PERMITTED
OPTIONAL CODE
9" LINER/CH BASE COURSE (TYPE 1)
9" ASPHALT BASE COURSE (TYPE 2)
6" ASPHALT BASE COURSE (TYPE 3)
327
356
356
357

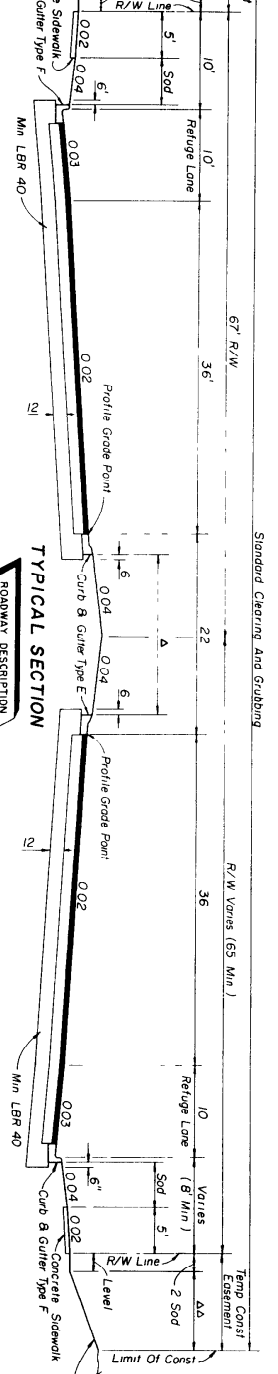
NOTE
The contractor should identify the proposed option on which the design is based. This should be done on the right side of the item number of optional base item as the submitted bid proposal.

4-LANE
DIVIDED



NOTE
ALL PAYMENT DESCRIPTION
FOR EXAMPLE ONLY

6-LANE
DIVIDED



URBAN
WITH REFUGE LANES
TYPICAL SECTION(S)

EXHIBIT 7

Asphalt Seed & Sod or Sod by Street Limits
Asphalt Seed & Sod or Sod by Street Limits
Asphalt Seed & Sod or Sod by Street Limits
Asphalt Seed & Sod or Sod by Street Limits

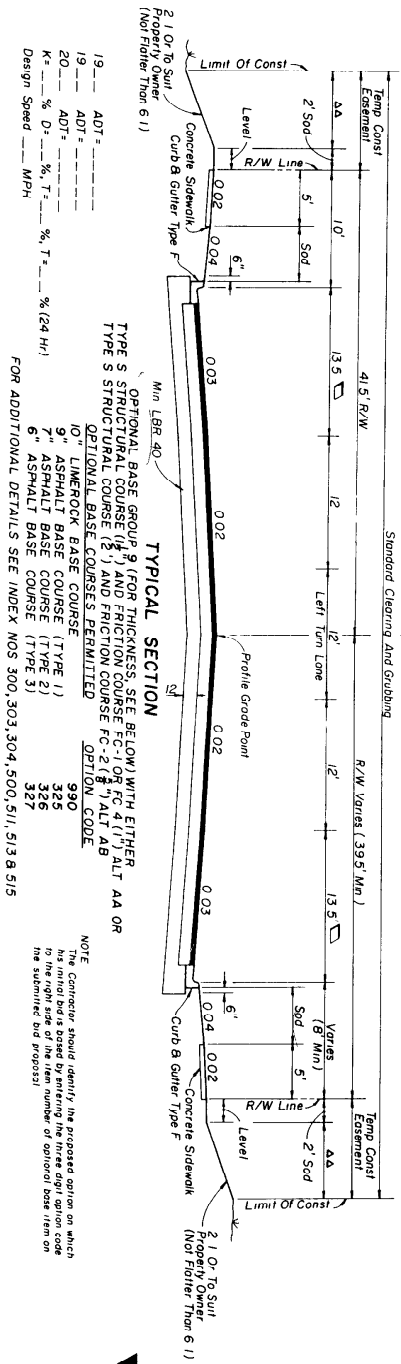
TRAFFIC DATA

NOTE
The Contractor should

STATE PROJ. NO. 00000-0000
 SHEET 0

4-LANE UNDIVIDED

15.5 WHEN BICYCLE FACILITY CRITERIA MET

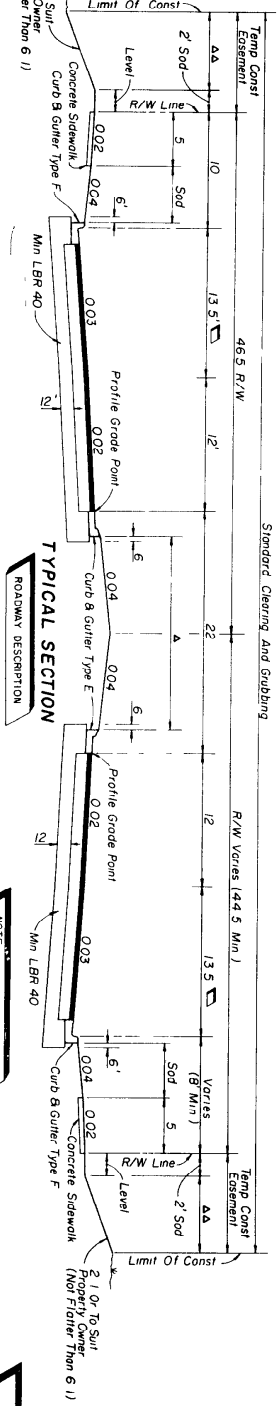


19 ADT =
 20 ADT =
 K = % D = % T = % T =
 Design Speed = MPH

OPTIONAL BASE COURSE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH EITHER TYPE S STRUCTURAL COURSE (1) AND FRICTION COURSE FC-1 OR FC 4 (1") ALT AA OR TYPE S STRUCTURAL COURSE (2) AND FRICTION COURSE FC-2 (1") ALT AB
 OPTIONAL BASE COURSES PERMITTED
 10" LIMEROCK BASE COURSE
 9" ASPHALT BASE COURSE (TYPE 1)
 9" ASPHALT BASE COURSE (TYPE 2)
 6" ASPHALT BASE COURSE (TYPE 3)
 990
 325
 326
 327

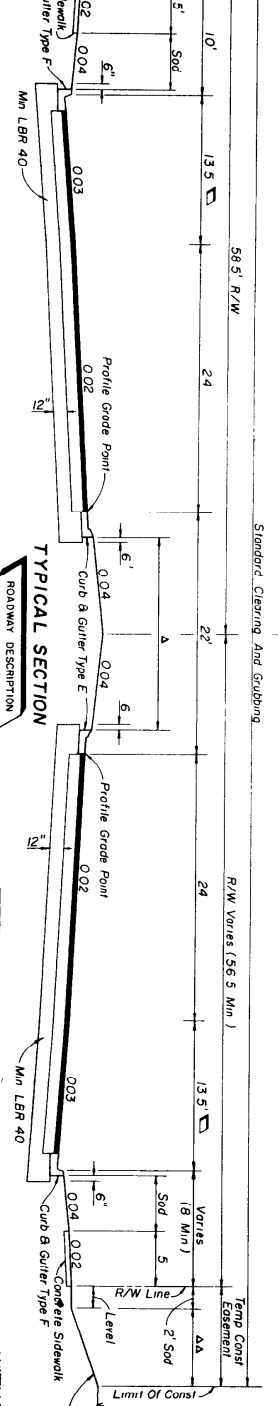
NOTE
 The contractor should identify the proposed option on which his initial bid is based by entering the three digit option code in the appropriate number of optional base items on the submitted bid proposal

4-LANE DIVIDED



NOTE
 ALL PAVEMENT DESCRIPTION FOR EXAMPLE ONLY

6-LANE DIVIDED



URBAN WITHOUT REFUGE LANES

TYPICAL SECTION(S)

A. Either Seed or Sod or both by station limits

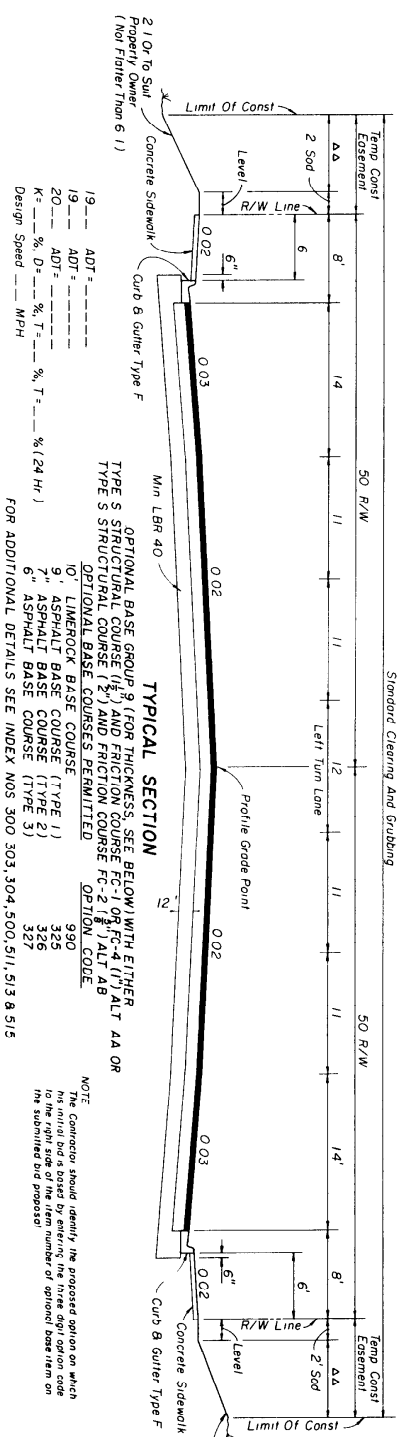
A. Other Seed and Sod or Sod or Seed or Sod if Seed or Sod will be given by station limits or Sod will be given by station limits

TRAFFIC DATA

TRAFFIC DATA

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

6-LANE UNDIVIDED



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

OPTIONAL BASE COURSES PERMITTED

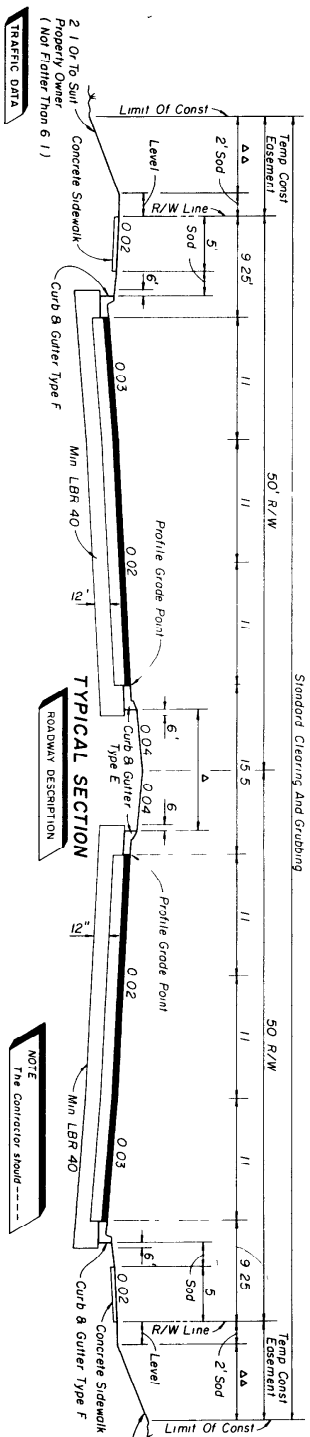
OPTION CODE	990
9' LIMEROCK BASE COURSE (TYPE 1)	325
9' ASPHALT BASE COURSE (TYPE 2)	326
6' ASPHALT BASE COURSE (TYPE 3)	327

NOTE: The Contractor should identify the proposed option on which his material bid is based by entering the three digit option code number of optional description on the submitted bid proposal.

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

TYPICAL SECTION

6-LANE DIVIDED



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

OPTIONAL BASE COURSES PERMITTED

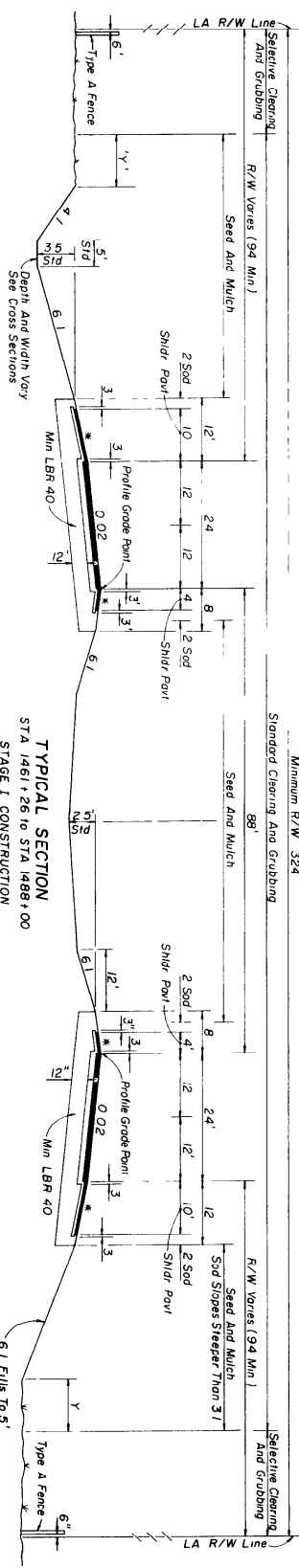
OPTION CODE	990
9' LIMEROCK BASE COURSE (TYPE 1)	325
9' ASPHALT BASE COURSE (TYPE 2)	326
6' ASPHALT BASE COURSE (TYPE 3)	327

NOTE: The Contractor should identify the proposed option on which his material bid is based by entering the three digit option code number of optional description on the submitted bid proposal.

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

TYPICAL SECTION

URBAN MINIMUM REQUIREMENTS TYPICAL SECTION (S)



TYPICAL SECTION
STA 1461+26 to STA 1489+00

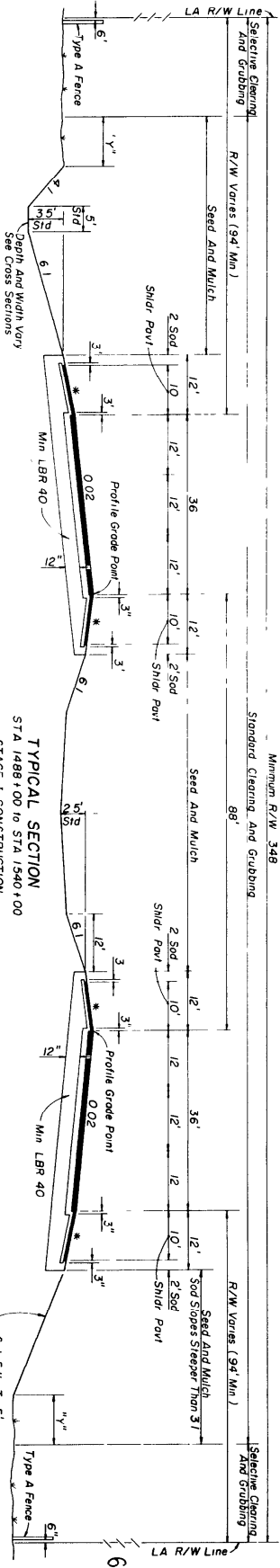
19 - AOT =
20 - AOT =
K - % D = % T = % (24 H /)

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH TYPE S STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (1/8")
OPTIONAL BASE COURSES PERMITTED
10' LIMEROCK BASE COURSE 990
9' ASPHALT BASE COURSE (TYPE 1) 325
7' ASPHALT BASE COURSE (TYPE 2) 326
6' ASPHALT BASE COURSE (TYPE 3) 327

FOR ADDITIONAL DETAILS SEE INDEX NOS 281, 400, 430, 451, 500, 505, 510, 513 B 525

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

NOTE: PAVEMENT DESCRIPTION FOR EXAMPLE ONLY



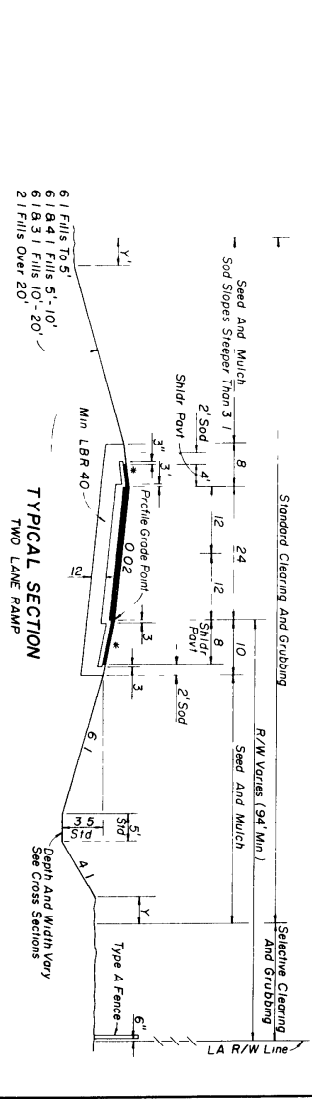
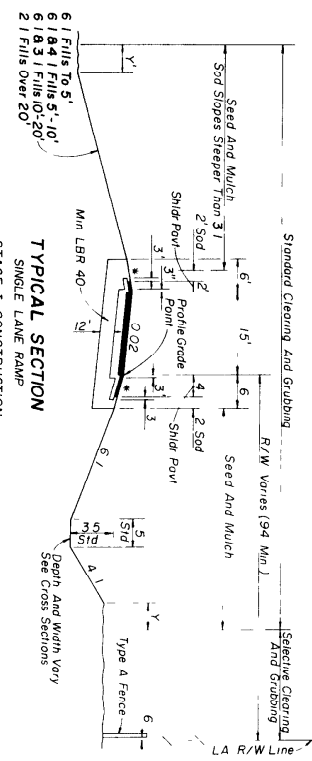
TYPICAL SECTION
STA 1488+00 to STA 1540+00

19 - AOT =
20 - AOT =
K - % D = % T = % (24 H /)

OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH TYPE S STRUCTURAL COURSE (4") AND FRICTION COURSE FC-2 (1/8")
OPTIONAL BASE COURSES PERMITTED
10' LIMEROCK BASE COURSE 990
9' ASPHALT BASE COURSE (TYPE 1) 325
7' ASPHALT BASE COURSE (TYPE 2) 326
6' ASPHALT BASE COURSE (TYPE 3) 327

FOR ADDITIONAL DETAILS SEE INDEX NOS 281, 400, 430, 451, 500, 505, 510, 513 B 525

INTERSTATE
TYPICAL SECTIONS)



TYPICAL SECTION
SINGLE LANE RAMP

STAGE I CONSTRUCTION

OPTIONAL BASE GROUP 9 (FOR THICKNESS SEE BELOW) WITH TYPE S STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (1/8")

OPTIONAL BASE COURSES PERMITTED

OPTIONAL CODE	THICKNESS
990	10" LIME ROCK BASE COURSE
325	9" ASPHALT BASE COURSE (TYPE 1)
326	7" ASPHALT BASE COURSE (TYPE 2)
327	6" ASPHALT BASE COURSE (TYPE 3)

STAGE II CONSTRUCTION (NOT IN CONTRACT)

LEVELING COURSE (TYPE III AC, 100 LBS/SY AVG.) WITH TYPE S STRUCTURAL COURSE (1 1/2") AND FRICTION COURSE FC 2 (1/8")

TYPICAL SECTION
TWO LANE RAMP

STAGE I CONSTRUCTION

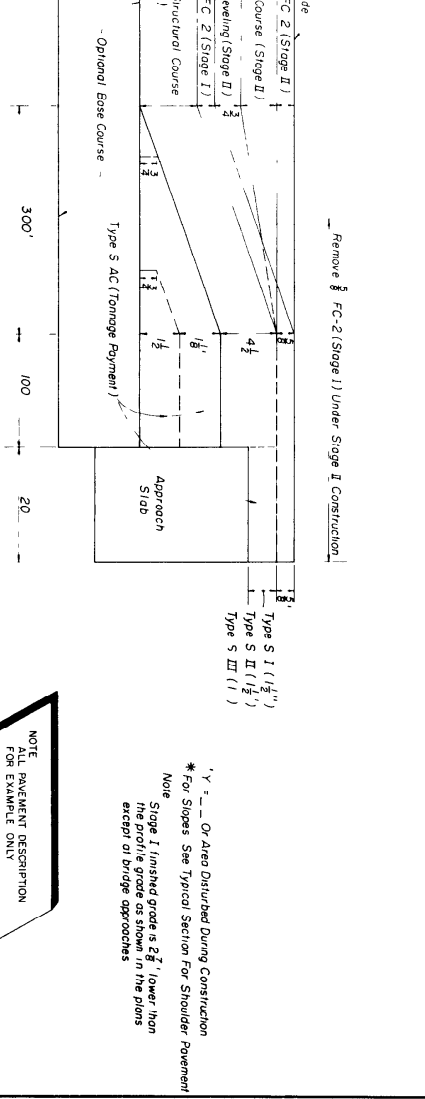
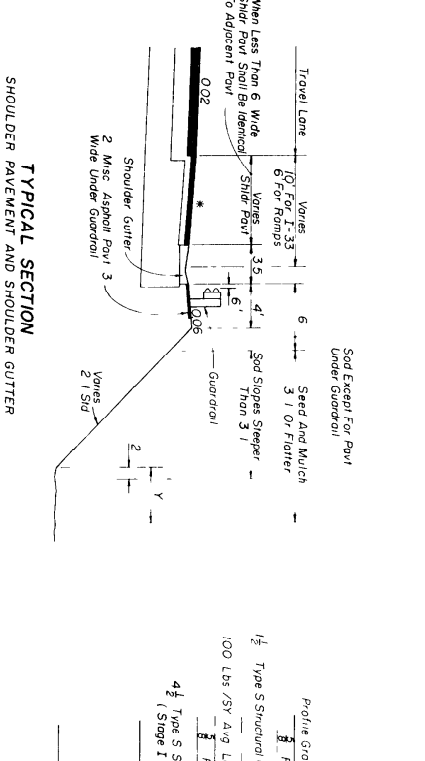
OPTIONAL BASE GROUP 9 (FOR THICKNESS, SEE BELOW) WITH TYPE S STRUCTURAL COURSE (2") AND FRICTION COURSE FC-2 (1/8")

OPTIONAL BASE COURSES PERMITTED

OPTIONAL CODE	THICKNESS
990	10" LIME ROCK BASE COURSE
325	9" ASPHALT BASE COURSE (TYPE 1)
326	7" ASPHALT BASE COURSE (TYPE 2)
327	6" ASPHALT BASE COURSE (TYPE 3)

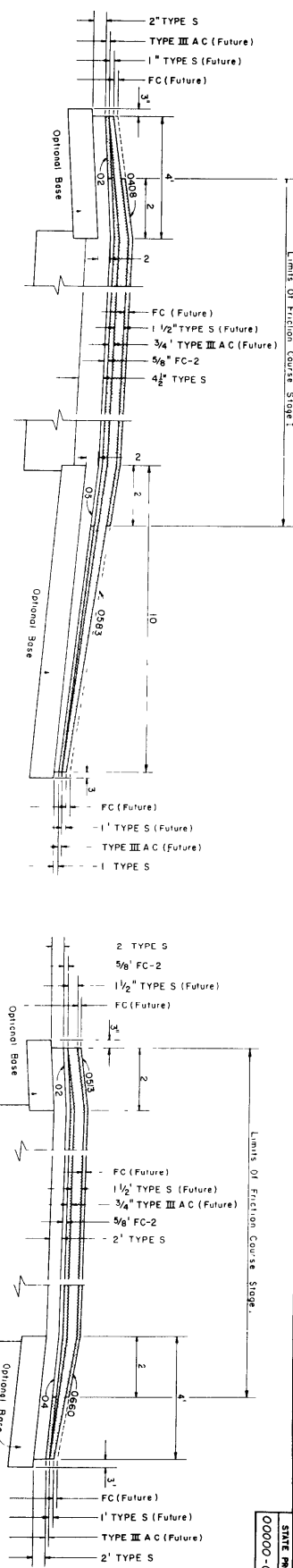
STAGE II CONSTRUCTION (NOT IN CONTRACT)

LEVELING COURSE (TYPE III AC, 100 LBS/SY AVG.) WITH TYPE S STRUCTURAL COURSE (1 1/2") AND FRICTION COURSE FC 2 (1/8")

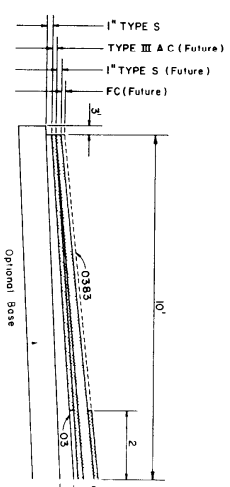


NOTE
ALL PAVEMENT DESCRIPTION
FOR EXAMPLE ONLY

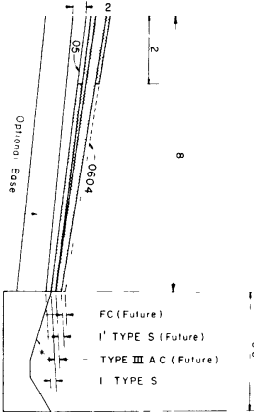
* Y = Or Area Disturbed During Construction
* For Slopes See Typical Section For Shoulder Pavement
Note: Stage I finished grade is 2' higher than the finished grade shown in the plans except at bridge approaches



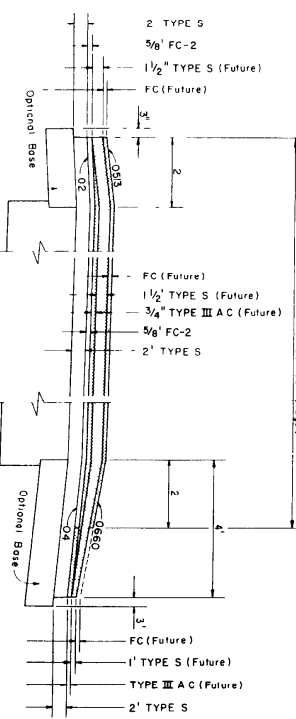
ROADWAY SHOULDERS I-00



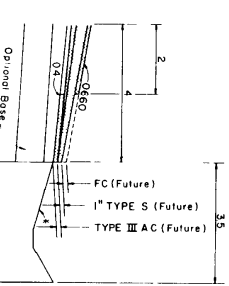
ROADWAY SECTION FOR 10' PAVED MEDIAN SHOULDER



ROADWAY SECTION AT SHOULDER GUTTER



RAMP SHOULDERS



RAMP SECTION AT SHOULDER GUTTER

OPTIONAL BASE GROUP 1 (FOR THICKNESS, SEE BELOW) WITH TYPE S STRUCTURAL COURSE (VARIABLE THICKNESS, 1 1/4" AVG., OUTSIDE SHOULDER) (2" INSIDE SHOULDER*) AND FRICTION COURSE FC 2 (3/8")

**For Shoulder Width Greater Than 4 Feet, 1 1/2" Average Thickness

- OPTIONAL BASE COURSES PERMITTED
- 4" LIMEROCK BASE
 - 4" ASPHALT BASE COURSE (TYPE 1)
 - 4" ASPHALT BASE COURSE (TYPE 2)
 - 4" ASPHALT BASE COURSE (TYPE 3)
 - 4" SAND ASPHALT HOT MIX
 - 4 1/2" BANK RUN SHELL BASE

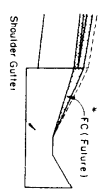
- OPTION CODE
- 001
 - 005
 - 006
 - 007
 - 014
 - 004

NOTE
 The Contractor should identify the proposed option on which his intent 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 COURSES PERMITTED
- 4" LIMEROCK BASE
 - 4" ASPHALT BASE COURSE (TYPE 1)
 - 4" ASPHALT BASE COURSE (TYPE 2)
 - 4" ASPHALT BASE COURSE (TYPE 3)
 - 4" SAND ASPHALT HOT MIX
 - 4 1/2" BANK RUN SHELL BASE

- OPTION CODE
- 001
 - 005
 - 006
 - 007
 - 014
 - 004

OPTIONAL BASE GROUP 1 (FOR THICKNESS, SEE BELOW) WITH TYPE S STRUCTURAL COURSE (2" OUTSIDE AND 1 1/2" INSIDE SHOULDERS) AND FRICTION COURSE FC 2 (3/8")



NOTE
 ALL PAYMENT DESCRIPTIONS ON EXHIBIT ONLY

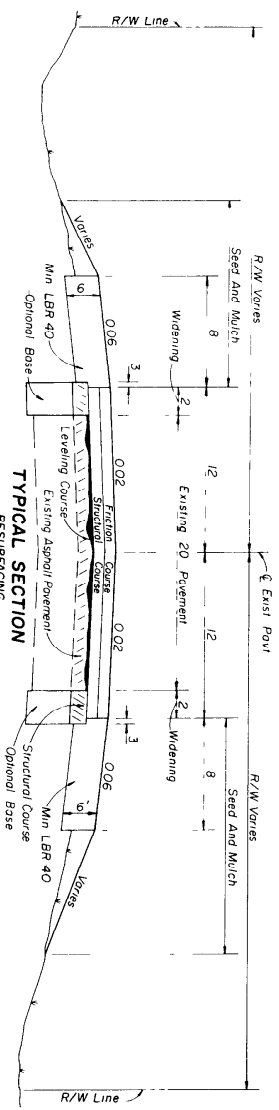
TYPICAL SECTIONS FOR SHOULDER PAVEMENT I-00 AND RAMPS

NOT TO SCALE

STATE PROJ. NO.	00000 0000
SHEET NO.	0

2-LANE
UNDIVIDED

19 --- AOT =
19 --- AOT =
20 --- AOT =
K+ --- % D =
Design Speed --- MPH



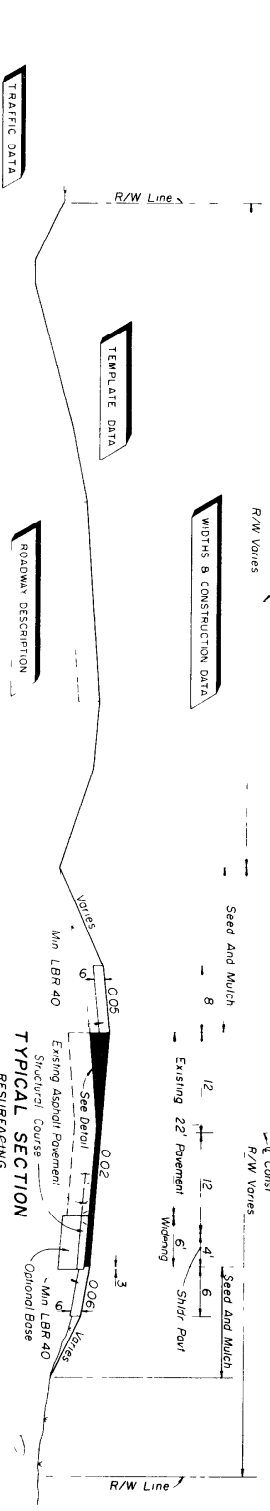
TYPE 5 LEVELING COURSE (75 LBS./SY ANG) WITH EITHER
TYPE 5 STRUCTURAL COURSE (150 LBS./SY) AND FRICTION COURSE FC 1 OR FC 4 (1") ALT AA OR
TYPE 5 STRUCTURAL COURSE (200 LBS./SY) AND FRICTION COURSE FC 2 (3/8") ALT AB

OPTIONAL BASE GROUP II (FOR THICKNESS, SEE BELOW) WITH EITHER
TYPE 5 STRUCTURAL COURSE (300 LBS./SY) AND FRICTION COURSE FC 1 OR FC 4 (1") ALT AA OR
TYPE 5 STRUCTURAL COURSE (400 LBS./SY) AND FRICTION COURSE FC 2 (3/8") ALT AB

OPTIONAL BASE COURSES PERMITTED
1 1/2 LIMEROCK BASE COURSE (TYPE 1) 405
1 1/2 ASPHALT BASE COURSE (TYPE 2) 406
7 ASPHALT BASE COURSE (TYPE 3) 407

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

NOTE
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



TYPE 5 OVERBUILD COURSE (275 LBS./SY ANG INSIDE LANE) AND
TYPE 5 STRUCTURAL COURSE (150 LBS./SY) AND FRICTION COURSE FC 1 OR FC 4 (1") ALT AA OR
TYPE 5 STRUCTURAL COURSE (200 LBS./SY) AND FRICTION COURSE FC 2 (3/8") ALT AB

OPTIONAL BASE GROUP II (FOR THICKNESS, SEE BELOW) WITH EITHER
TYPE 5 STRUCTURAL COURSE (300 LBS./SY) AND FRICTION COURSE FC 1 OR FC 4 (1") ALT AA OR
TYPE 5 STRUCTURAL COURSE (400 LBS./SY) AND FRICTION COURSE FC 2 (3/8") ALT AB

OPTIONAL BASE COURSES PERMITTED
1 1/2 LIMEROCK BASE COURSE (TYPE 1) 405
1 1/2 ASPHALT BASE COURSE (TYPE 2) 406
7 ASPHALT BASE COURSE (TYPE 3) 407

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

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

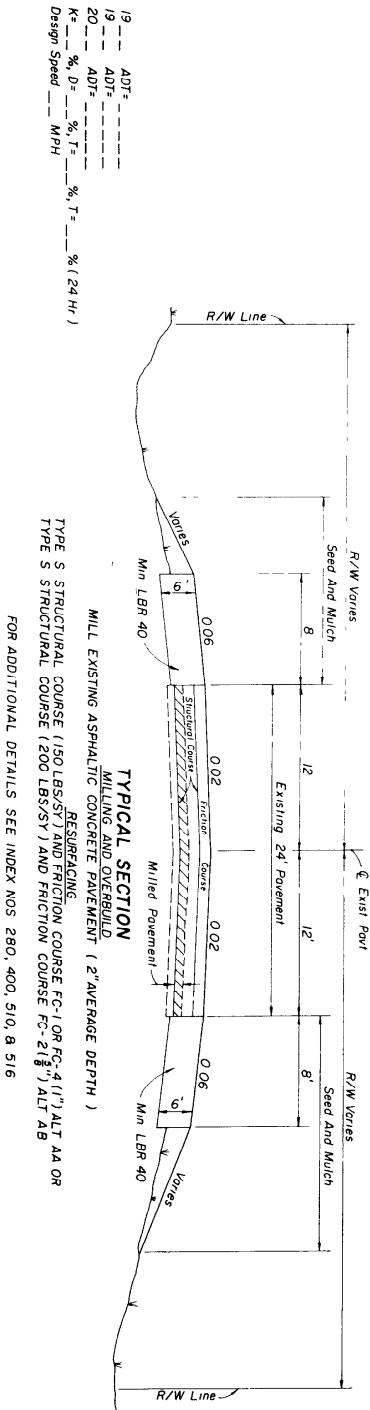
NOTE
THE CONTRACTOR SHOULD

RESURFACING & WIDENING DETAIL

RURAL
WIDENING AND RESURFACING
TYPICAL SECTION(S)

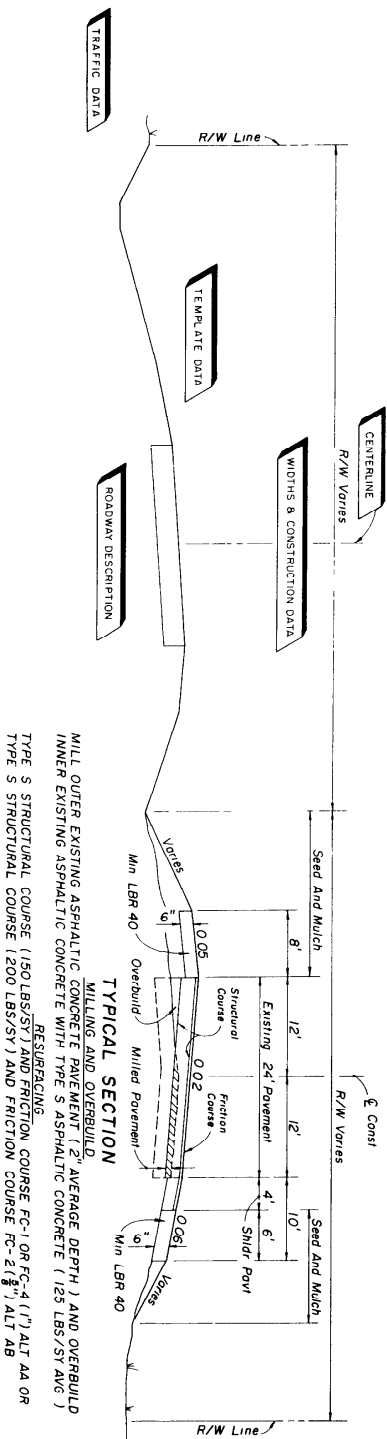
EXHIBIT 12

2-LANE
UNDIVIDED



19 --- ADT⁺ ---
19 --- ADT⁻ ---
20 --- ADT⁺ ---
K₊ --- % D₊ --- % T₊ ---
Design Speed --- MPH --- % T₊ --- % (24 H)

4-LANE
DIVIDED

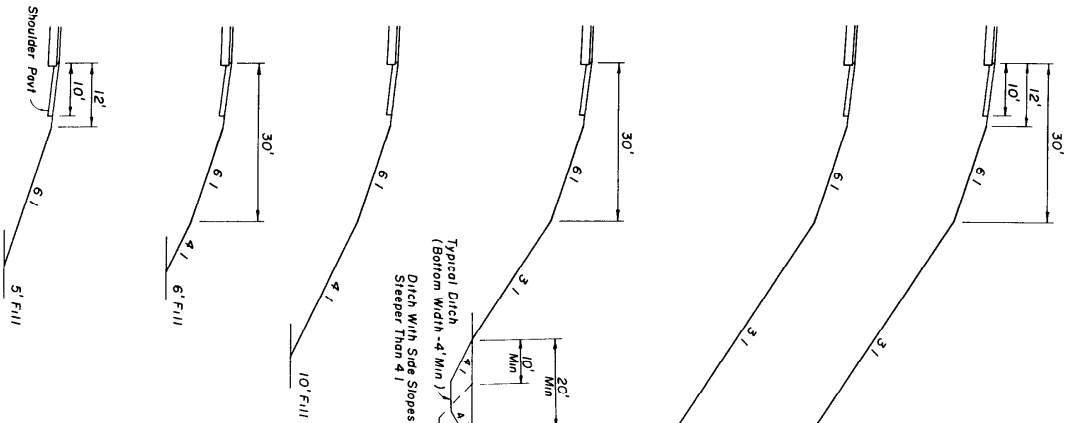


NOTE
ALL PAVEMENT DESCRIPTION
FOR EXAMPLE ONLY

NOTE
The Contractor should -----

- SHOULDER PAVEMENT**
OPTIONAL BASE GROUP 16 (FOR THICKNESS SEE BELOW) WITH
TYPE S ASPHALTIC CONCRETE (100 LBS/SY) AND ASPHALTIC
FRICION COURSE FC-1 OR FC-4 (1") ALT AA OR
FC-2 (1 1/2") ALT AB
- OPTIONAL BASE COURSES PERMITTED**
- | OPTIONAL BASE COURSE | OPTION CODE |
|-----------------------------------|-------------|
| 3 1/2" LIMEROCK BASE COURSE | 601 |
| 3" ASPHALTIC BASE COURSE (Type 1) | 604 |
| 3" ASPHALTIC BASE COURSE (Type 2) | 605 |
| 3" ASPHALTIC BASE COURSE (Type 3) | 606 |
- FOR ADDITIONAL DETAILS SEE INDEX NOS 280, 400, 510, B 516

RURAL
MILLING AND RESURFACING
TYPICAL SECTION(S)



Note Ditch and canal detail applies to various fill heights. For additional design criteria on ditches, see Section 107.01, Section 107.02, and Section 107.03. See also Directive No. DOT31-17, dated December 1, 1981.

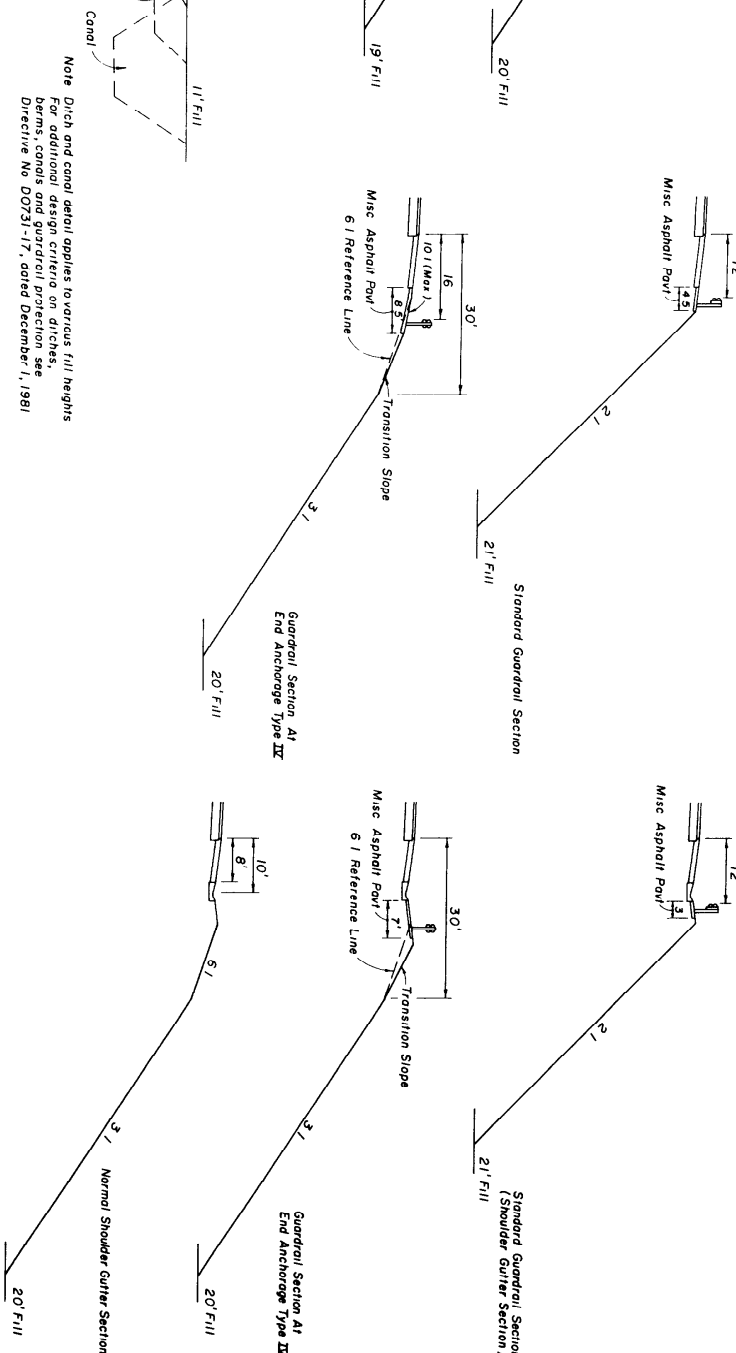
GENERAL NOTES
1 Height of fill is vertical distance from outside edge of pavement to toe of front slope

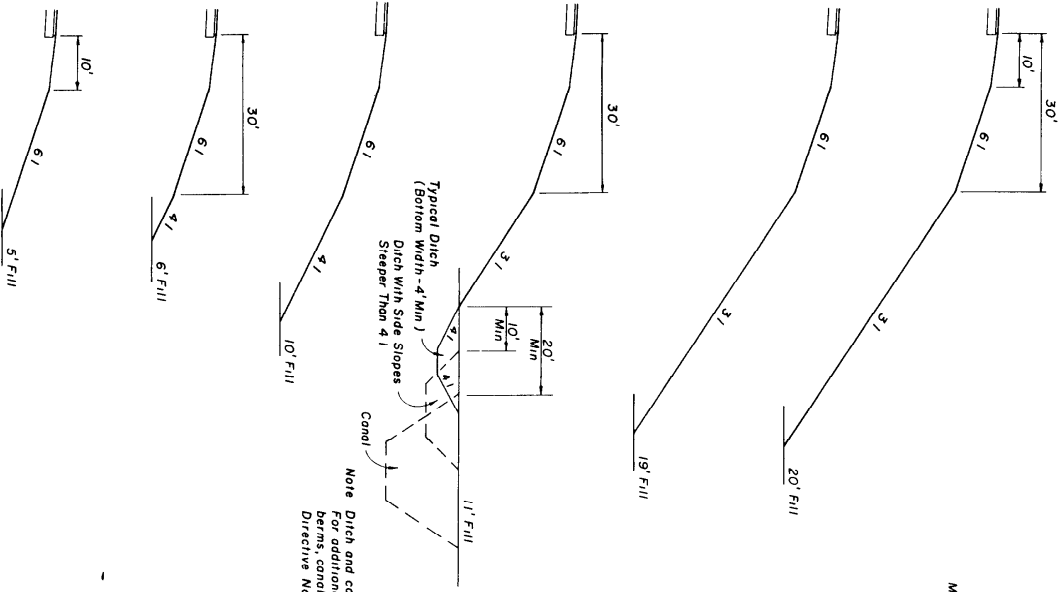
FILL HEIGHTS AND SLOPES
6:1 Fills To 5'
6:1 & 4:1 Fills 5'-10'
6:1 & 3:1 Fills 10'-20'
2:1 Fills Over 20'

SLOPE CRITERIA

INTERSTATE & EXPRESSWAYS

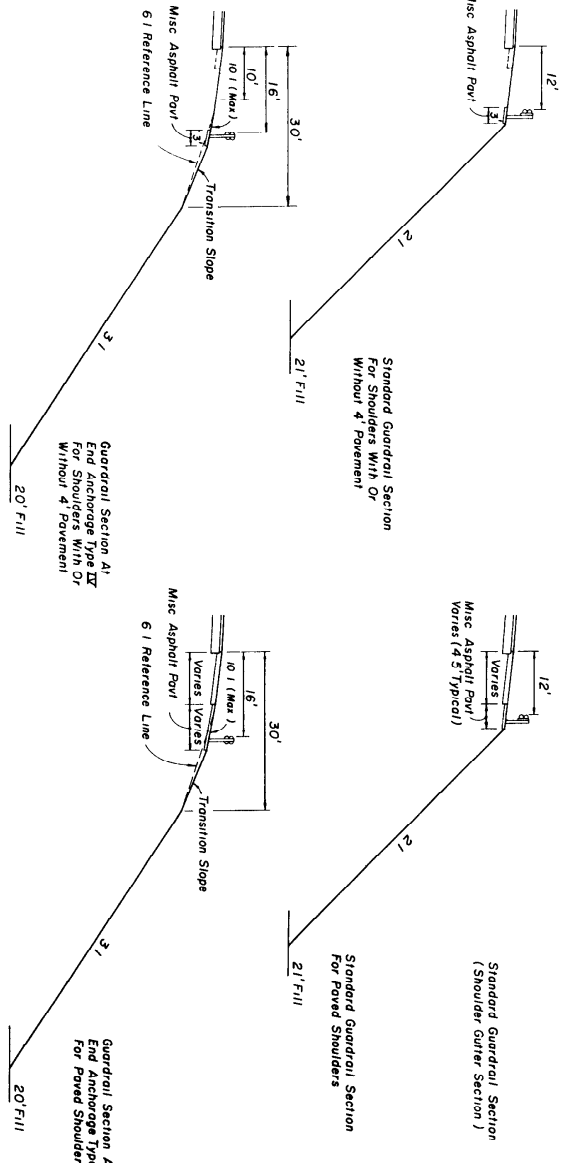
Design Speed 50 mph Or Greater
30' Clear Zone
(12' Shoulder Shown)





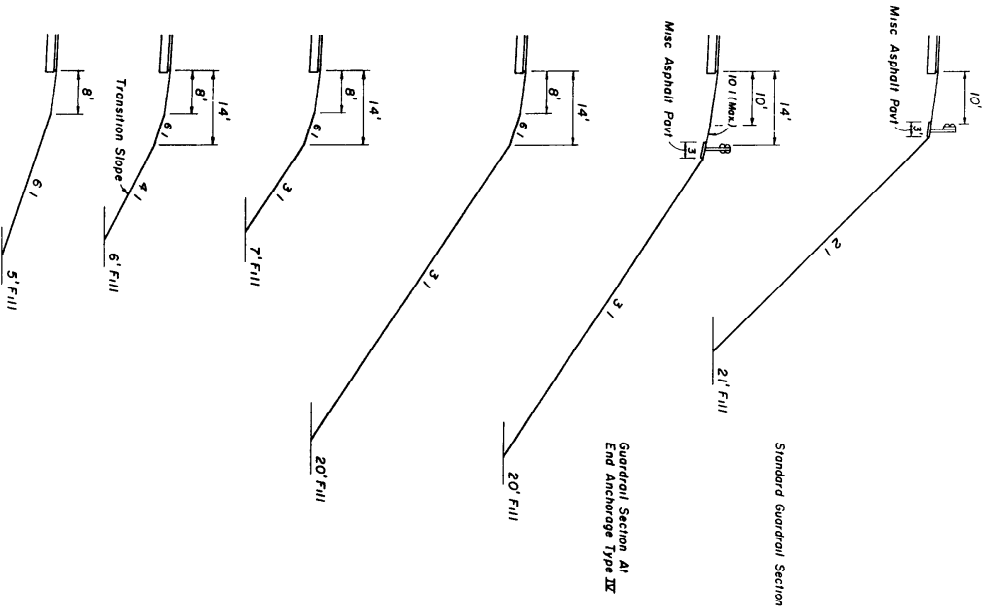
Note Ditch and canal detail applies to various fill heights. For additional design criteria on ditches, berms, canals and guardrail protection see Directive No DOT31-17, dated December 1, 1981

GENERAL NOTES
1 Height of fill is vertical distance from outside edge of pavement to toe of front slope

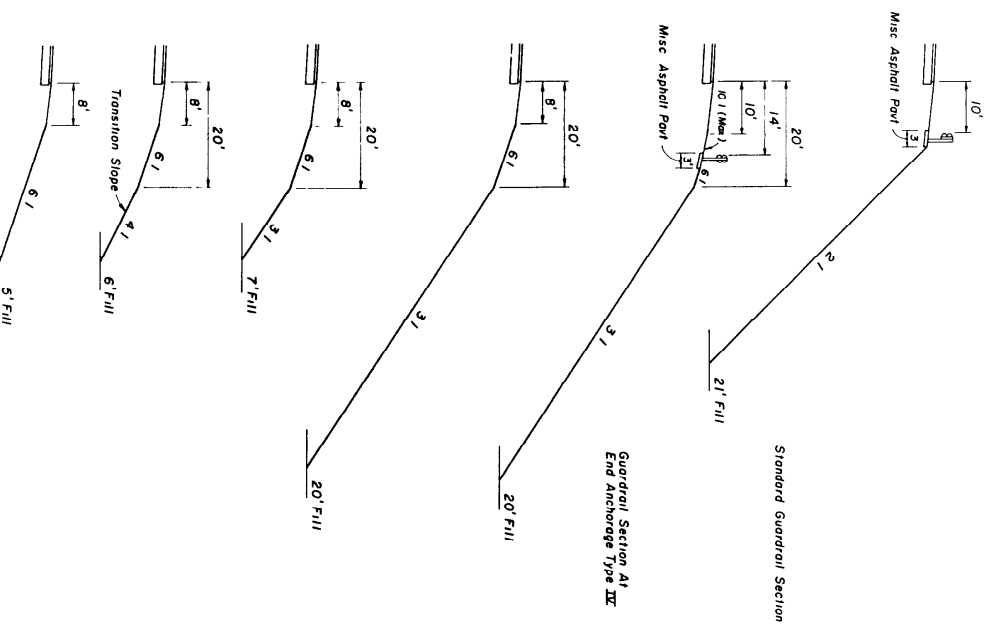


FILL HEIGHTS AND SLOPES
6:1 Fills To 5'
6:1 & 4:1 Fills 5'-10'
6:1 & 3:1 Fills 10'-20'
2:1 Fills Over 20'

SLOPE CRITERIA
RURAL HIGHWAY
Design Speed 50mph Or Greater
30' Clear Zone
Paved And Unpaved Shoulders
(10' Shoulder Shown)



PROJECTED ADT < 750
14' Clear Zone
(8' Shoulders Shown)



PROJECTED ADT 750-1600
20' Clear Zone
(8' Shoulders Shown)

GENERAL NOTES
1 Height of fill is vertical distance from outside edge of pavement to toe of front slope

- FILL HEIGHTS AND SLOPES
- 6:1 Fills To 5'
 - 6:1 & 3:1 Permitted When R/W Is Restricted)
 - 6:1 & 3:1 Fills 5'-20'
 - 2:1 With Guardrail Permitted When R/W Is Restricted)
 - 2:1 Fills Over 20'

SLOPE CRITERIA
RURAL HIGHWAY - UNDIVIDED
Design Speed 50 mph Or Greater

SUMMARY OF SIDEDRAIN PIPE AND MITERED END SECTIONS

LOCATION	SIDE	SIZE	PIPES				SECTIONS						
			P	F	EA	EA	P	F	EA	EA			
SR 00													
130+45 - 131+25	L	24"	80			2							
131+65 - 132+45	L	24"	83			2							
133+05 - 133+65	L	24"	65			2							
SR 44 (00th St)	L	18"	84										
SR 45 (00th St)	R	18"	76										
SR 46 (00th St)	L	18"	64										
TOTALS													
Description			Quantity										
18 Pipe			6 EA										
18 M.E.S.			6 EA										
24 Pipe			228 EA										
24 M.E.S.			6 EA										

Note: Turnouts and sidebars are to be constructed at locations designated by the Engineer in accordance with Index No. 515

SUMMARY OF SODDING

LOCATION	SIDE	SY	SY	
			P	F
NB 100				
570+00 - 604+84	Mtd	774		
570+00 - 593+00	R	333		
593+00 - 604+00	R	396		
604+00 - 605+00	R	678		
605+00 - 605+10	R	10		
607+53 - 613+00	R	3933		
607+14 - 630+00	Mtd	952		
613+00 - 622+47	R	210		
624+00 - 630+00	R	578		
SB 100				
570+00 - 604+84	Mtd	774		
570+00 - 593+13	L	292		
594+34 - 592+50	L	181		
596+50 - 598+65	L	32		
600+32 - 604+50	L	2667		
607+14 - 630+00	L	4244		
607+14 - 630+00	Mtd	952		
618+50 - 630+94	L	353		
624+34 - 630+00	L	570		
Ramp A				
82+99 - 108+24	L	962		
39189 - 108+80	R	134		
Ramp B				
895+11 - 893+00	L	175		
897+00 - 900+32	L	1977		
Ramp C				
654+48 - 603+43	L	3369		
785+48 - 803+82	R	4445		
Ramp D				
5100 - 38+90	R	857		
7+59 - 33+35	L	905		
Parade Ditches				
			104	
TOTAL			37,180	

SUMMARY OF GUARDRAIL

LOCATION	SIDE	CY	GUARDRAIL				END ANCHORAGE					
			P	F	EA	EA	P	F	EA	EA		
NB 100												
592+00 - 604+33	R	900										
607+82 - 607+35	Mtd	137.5										
603+98 - 604+57.5	R	372.5										
SB 100												
600+34.5 - 603+84.5	L	350										
608+97.5 - 612+37.5	L	600										
607+20 - 608+37.5	Mtd	137.5										
SR 00												
171+81.3 - 173+06.3	Mtd	659										
Ramp A												
896+947 - 900+32.2	L	337.5										
Ramp B												
797+00 - 803+81.98	R	687.5										
797+00 - 801+00	L	400										
TOTAL			1481.5			2						9

Note: Guardrail limits and locations along the project may be varied based on actual project conditions at time of construction

SUMMARY OF DITCH PAVEMENT AND SODDING

LOCATION	SIDE	CY	RIBBAP SAND CEMENT		CONCRETE		SODDING	
			P	F	P	F	P	F
613+00 - 613+50	L	24						
613+50 - 613+50	R	28						
S 12	L	28						
S 24	L	37						
S 25	L	126						
S 27	L	39						
S 31	L	28						
S 33	L	57						
S 44	R	16						
S 45	L	15						
TOTAL		50			346			104

Note: Stationing shown above is approximate. Exact stations to be determined by the Engineer during construction.

Note: The limits of sodding indicated are approximate and are to be adjusted where necessary as directed by the Engineer. It is provided for continuity of construction of 10' still, the actual requirements.

SUMMARY OF EARTHWORK

DESCRIPTION	CY	
	P	F
Roadway Excavation (A 2 A 3 Material)	4,482.3	
Roadway Excavation (B Muck)	340	
Total Roadway Excavation	4,822.3	
Embankment	1,053.322	
Subtotal Excavation (A B Material)	1,658.6	

- 1 There is no direct pay for roadway, lateral ditch or channel excavation. Any suitable material may be used in the embankment at the option of the contractor.
- 2 Embankment is fill in place with no shrinkage applied.
- 3 12 345 CY of A B material to be stockpiled in areas designated by the Engineer for use in muck blower operations.
- 4 Earthwork quantities were calculated using the Linearized Base option. If another embankment contractor, there shall be no revision to earthwork quantities for which payment is by the plan quantity, or to the final dressing pay quantity.

NOTE: EARTHWORK AND NOTES FOR AN EMBANKMENT PROJECT ARE SHOWN IN THE EXAMPLE SUMMARY. EARTHWORK AND NOTES FOR A BORROW PRACTICE PROJECT ARE NOT SHOWN. WHEN MASS DIAGRAM NOT INCLUDED IN PLANS.

PAY ITEM NOTES

- Item No. 102-1 Includes all items of maintenance of traffic not included for payment under separate items. Barricades will be paid for on the basis of per barricade per day in use. The quantity shown is based on an estimated average of 35 Class A barricades for 200 days.
- Item No. 102-75 Signs will be paid for on the basis of per sign per day in use. The quantity shown is based on an estimated average of 15 signs for 400 days and 4 signs for 200 days.
- Item No. 102-77 Flashing lights will be paid for on the basis of per flashing light per day in use. The quantity shown is based on an estimated average of 75 flashing lights for 200 days, 16 for 100 days and 9 for 10 days.
- Item No. 102-86-2 Barricades will be paid for on the basis of per barricade per day in use. The quantity shown is based on an estimated average of 28 barricades for 200 days.
- Item No. 104-1 Estimated quantities for prevention, control and abatement of erosion and water pollution are to be used at locations designated by the plan or as directed by the Engineer.
- Item No. 120-6 Any borrow excavation required shall be furnished by the contractor from areas provided by him and the cost of furnishing such materials is to be included in the cost for embankment. The rate of spread shall be 4 loose masses. The rate may be increased if directed by the District Materials Engineer.
- Item No. 533-1 Includes 10 tons for adjustments of connections to existing stress drives, etc. as directed by the Engineer.
- Item No. 339-1 Includes 160 tons for pavement under guardrail and 83 tons for pavement under bridges.
- Item No. 570-5 Based on two (2) applications.

Sht. Index No	Station - Location	Type	Borrels	Length (Ft)	RCP - Cross Drain			RCP - Storm Sewer			Curb Inlets	MH	Ditch Bottom Inlets	Gutter Inlet	Finger End Section	Mitered End Section	Sod	Class 1 Reinf. Cement Report	Sod Report	REMARKS																
					Class III	Class IV	Class V	Class III	Class IV	Class V																										
P 1	482+48	Pipe	1	42	15'																															
P 2	482+60	Pipe	1	42	18'																															
P 3	482+60	Inlet Pipe	1	69	24'			89'																												
P 4	485+19	Inlet Pipe	1	36																																
P 5	485+60	Inlet Pipe	1	93				93'																												
P 6	487+03	M.H. Pipe	1	36				97'																												
P 7	488+08	Inlet Pipe	1	30																																
P 8	488+08	EW Pipe	1	18																																
P 9	490+00	Inlet Pipe	1	24																																
P 10	490+00	Inlet Pipe	1	18																																
P 11	490+00	ME/S. Pipe	1	18																																
P 12	493+00	EW	1	24																																
P 13	503+00	FES. Pipe	1	30																																
P 14	5+00 Ramp A	EW Pipe, Inlet	1	30																																
P 15	250+261	Inlet Pipe, EW	1	117																																
P 16	250+280	EW Pipe	2	36																																
P 17	514+14	Inlet Pipe	1	18																																
P 18	519+00	Inlet Pipe, ME/S	1	18																																
P 19	520+230	EW Pipe, Inlet	2	48																																
P 20	528+20	ME/S. Pipe	1	24																																
P 21	530+270	ME/S. Pipe	1	18																																
P 22	530+270	FES. Pipe, Inlet	1	15																																
P 23	531+00	Inlet Pipe, FES	1	15																																
SUB TOTALS					P (Plan Quantity)	F (Final Quantity)																														
TOTALS					176	270	40	194	338	482	117	182	137	300	181	275	270	21	3	1	1	1	1	1	1	2	1	2	1	2	2	1	588	39	99	22

SUMMARY OF DRAINAGE STRUCTURES

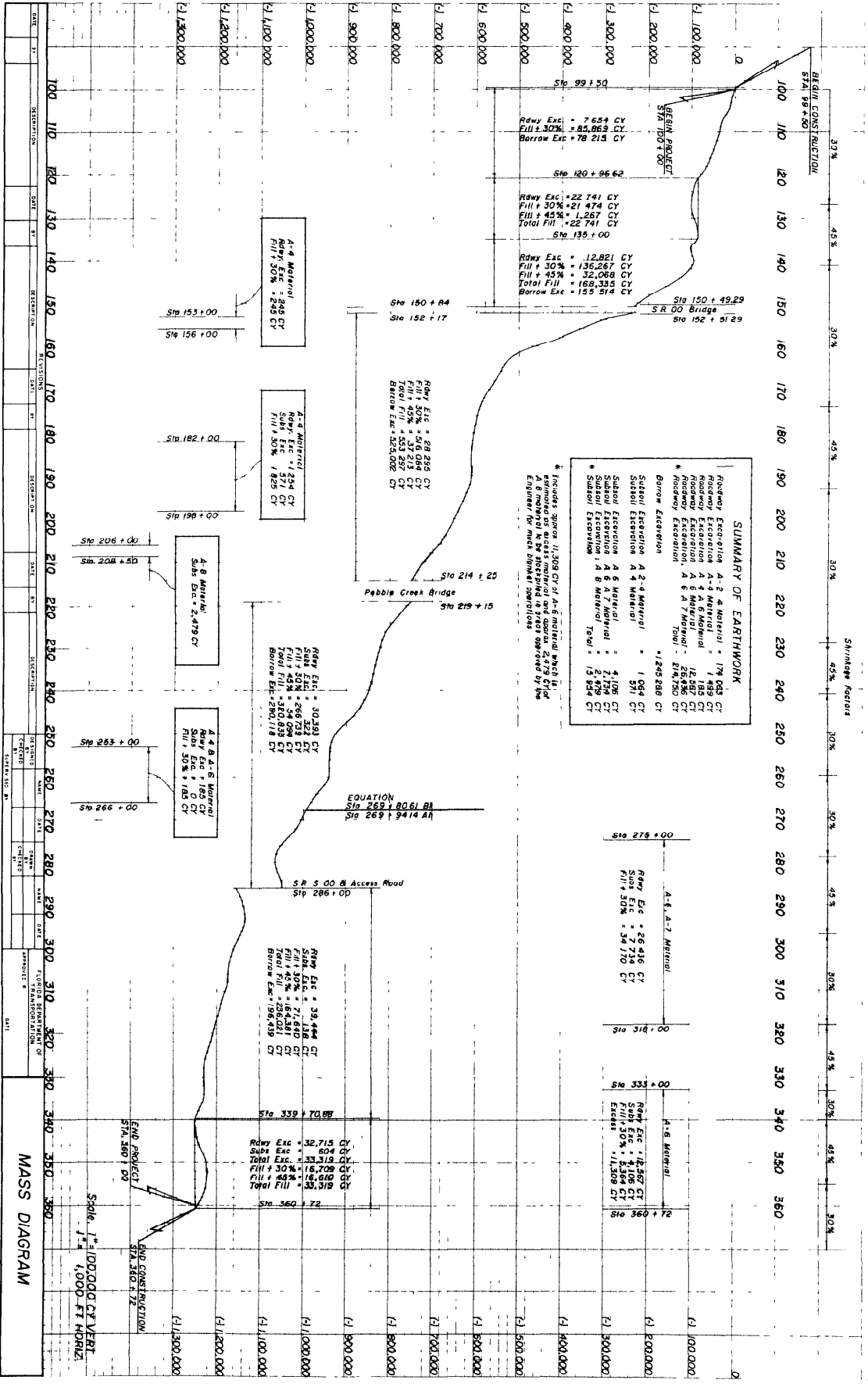
STATE PROJ NO: 00000-0000
 SHEET NO: 00

ALTERNATE
AC

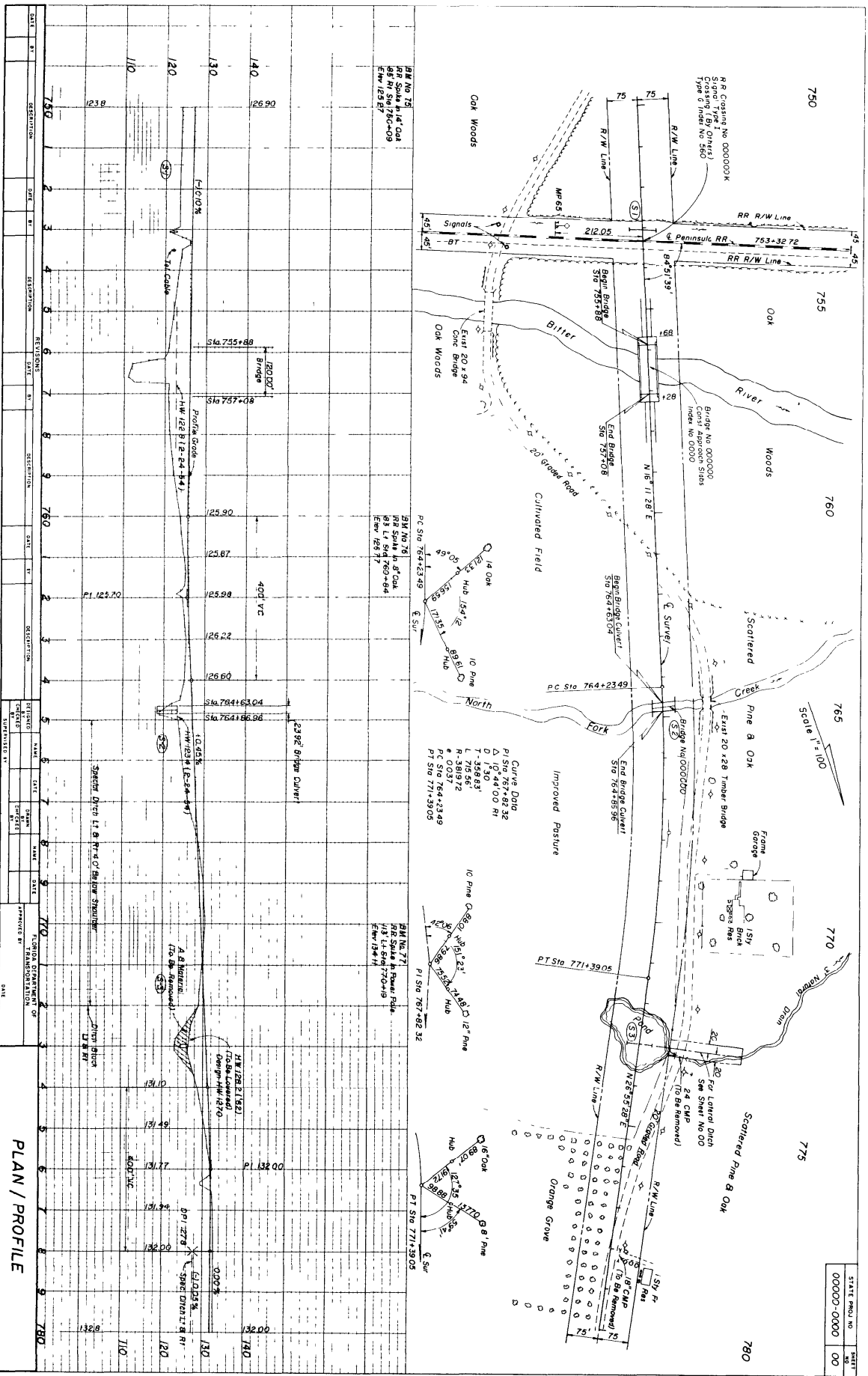
EXHIBIT 18C

Sheet No.	DATE	DESCRIPTION	DATE	BY	REVISION	CSP BH Coated (Storm Sewer)		CSP BH Coated (Cross Drain)		CSPA	Curb Inlets	Ditch Bottom Inlet	Gutter Inlet	Manhole	Forest End Section	STATE PROJ. NO	SHEET NO
						14ga	12ga	14ga	12ga								
P288	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	00000-0000	00
P289	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200		
P290	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200		
P291	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200		
SUBTOTALS																	
TOTALS																	
P (Plan Quantity) 50' 250' 250' 175' 800' F (Final Quantity) 89 363 187' 570' 250' 937' 1220' 00' 20' 120' 120' 89' 273' 40' 257' 316' 396' 95' 21' 3 2 4 1 2 1 2 1 1 1 1 4 1 2 1 1 1 1 2																	

SUMMARY OF DRAINAGE STRUCTURES
 ALTERNATE AB
 Sheet 3 of 4
 EXHIBIT 19C



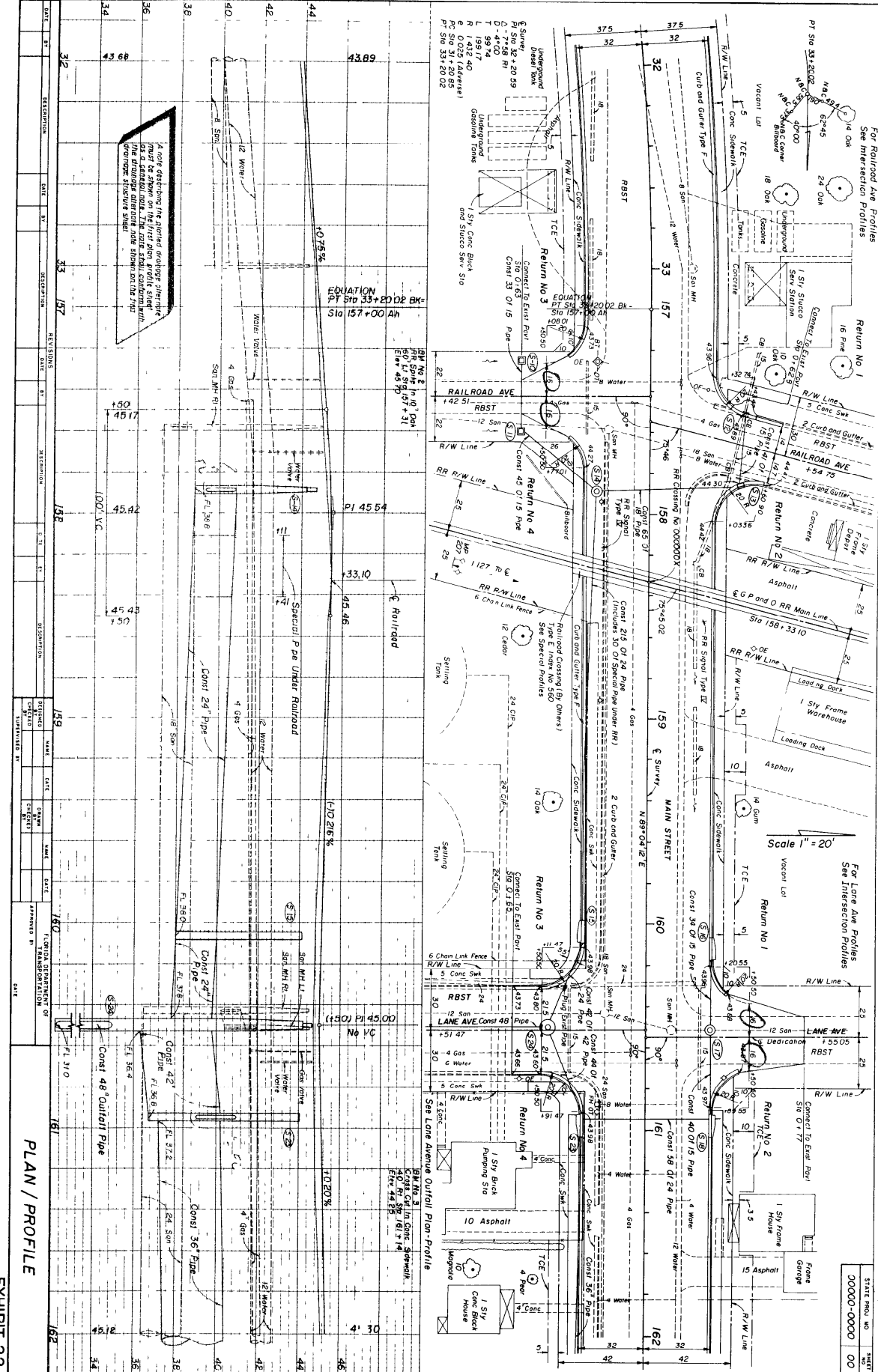
STATE PROJ. NO.
00000-0000
SHEET NO.
00



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

DESIGNED BY	DATE	CHECKED BY	DATE
DRAWN BY	DATE	APPROVED BY	DATE

DATE	BY	DESCRIPTION



For Railroad Ave Profiles
See Intersection Profiles

For Lane Ave Profiles
See Intersection Profiles

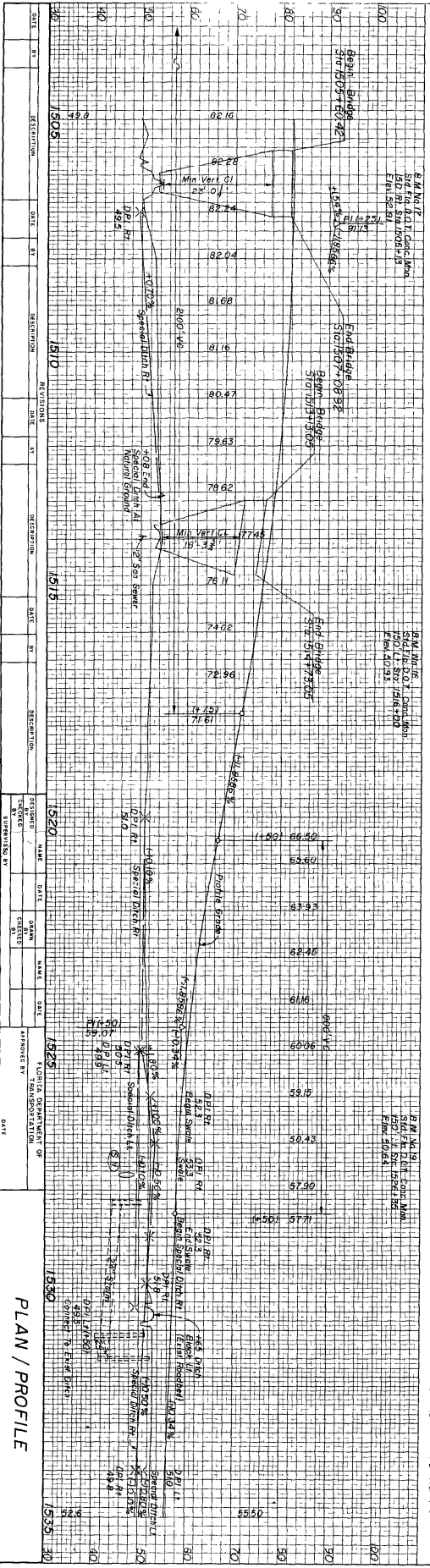
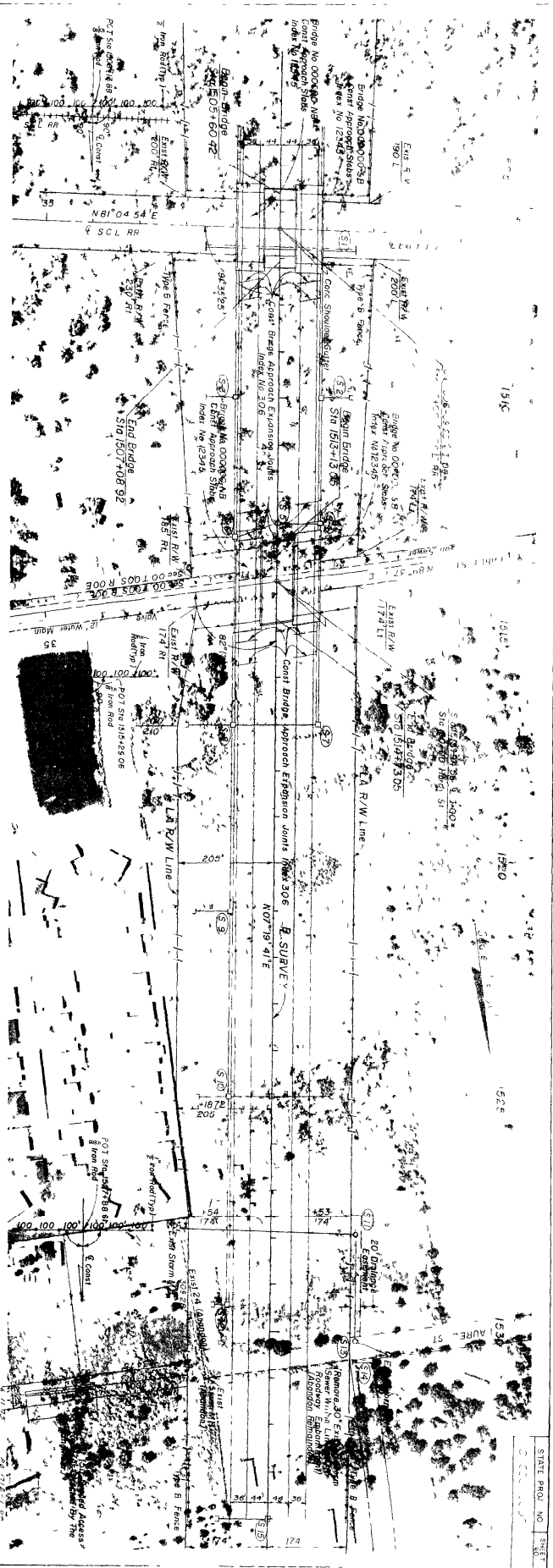
Scale 1" = 20'

STATE PROJ. NO.	30000-0000
SHEET NO.	00

A copy existing the original design drawings must be shown on the first open profile sheet as a general note. The note should contain with appropriate descriptive details.

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
1/21			1/21			1/21			1/21		
1/22			1/22			1/22			1/22		
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1/62			1/62			1/62			1/62		

PLAN / PROFILE



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

PLAN / PROFILE

EXHIBIT 23

305

315

STATE PROJ. NO.
00000-0000 00

Extra Quantities
Surface 4,956 SY
Base 4,956 SY
Curb Type B 261 L F
Curb and gutter Type E 325 L F

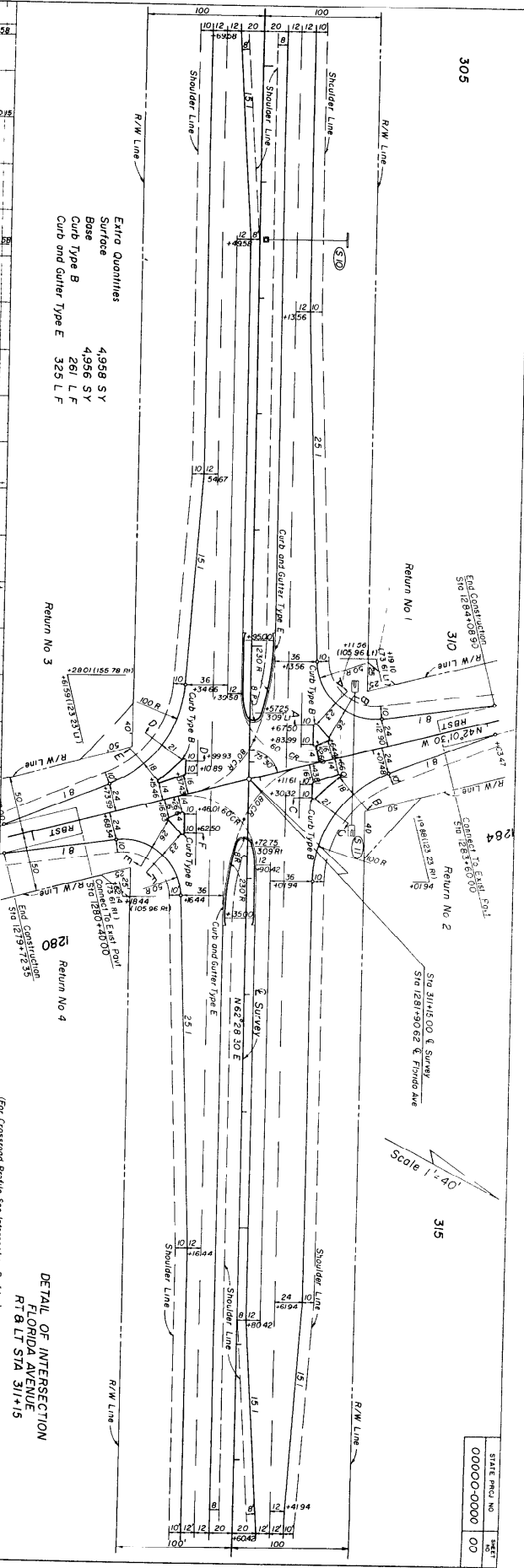
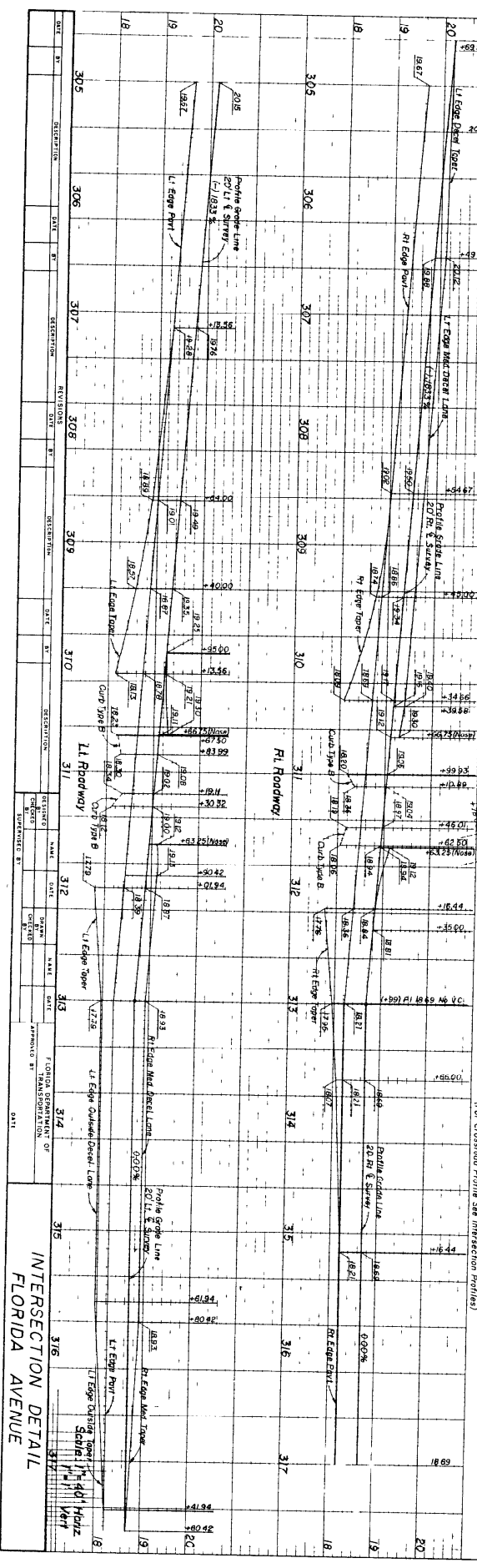
Return No 3

Return No 4

(For Crossroad Profile see Intersection Portals)

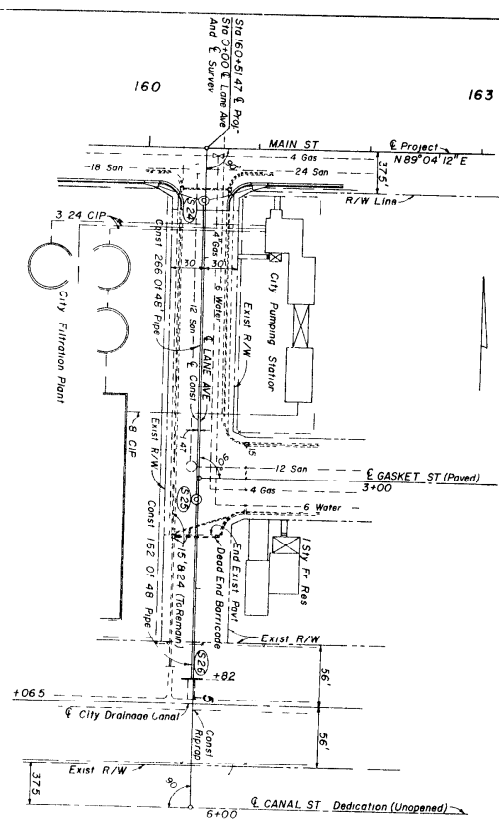
DETAIL OF INTERSECTION
FLORIDA AVENUE
RT 8 LT STA 314+15

Scale 1" = 40'



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
3/12	312		3/12	312		3/12	312	
3/13	313		3/13	313		3/13	313	
3/14	314		3/14	314		3/14	314	
3/15	315		3/15	315		3/15	315	
3/16	316		3/16	316		3/16	316	
3/17	317		3/17	317		3/17	317	

INTERSECTION DETAIL
FLORIDA AVENUE



Scale 1"=50'

LANE AVE OUTFALL RT STA 160+51.47

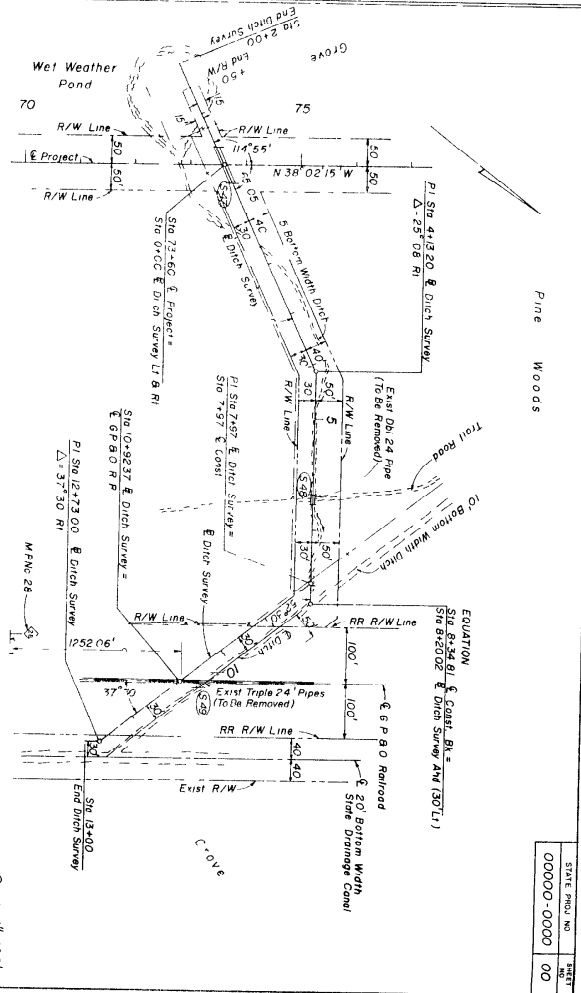
18 San
24 San
12 San
4 Gas
6 Water
3+00

City Pumping Station
City Filtration Plant
City Drainage Canal

MAIN ST
GASKET ST (Paved)
CANAL ST Dedication (Unopened)

160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0

Pine Woods



Scale 1"=100'

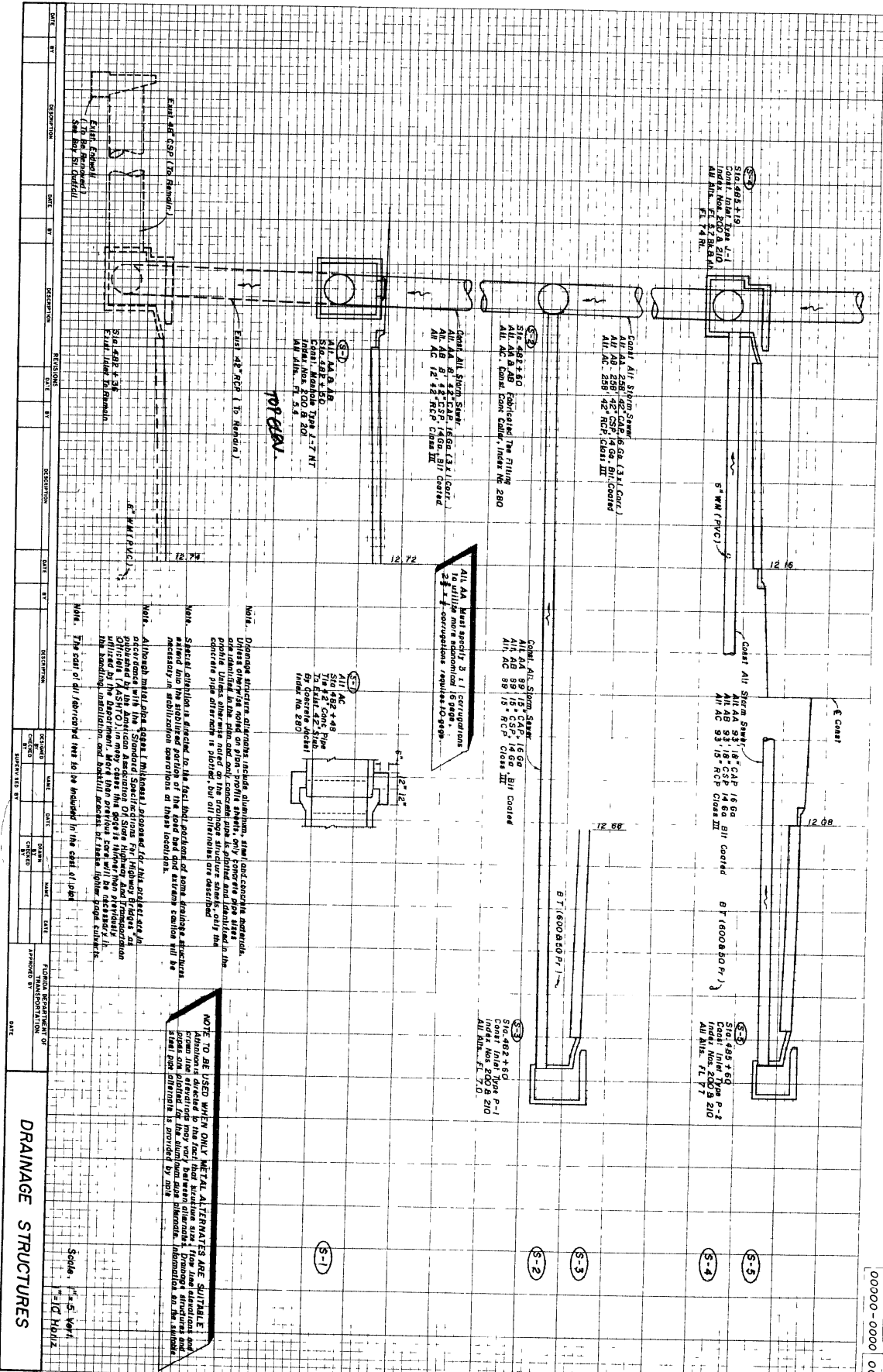
LANE AVE OUTFALL LT & RT STA 73+60.00

Wet Weather Pond
Pine Woods
Trail Road
10' Bottom With Drain

6 P & O Railroad
20 Bottom With Drain
6 P & O Railroad

70
75
80
85
90
95
100
105
110
115
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125
130
135
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975
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985
990
995
1000

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



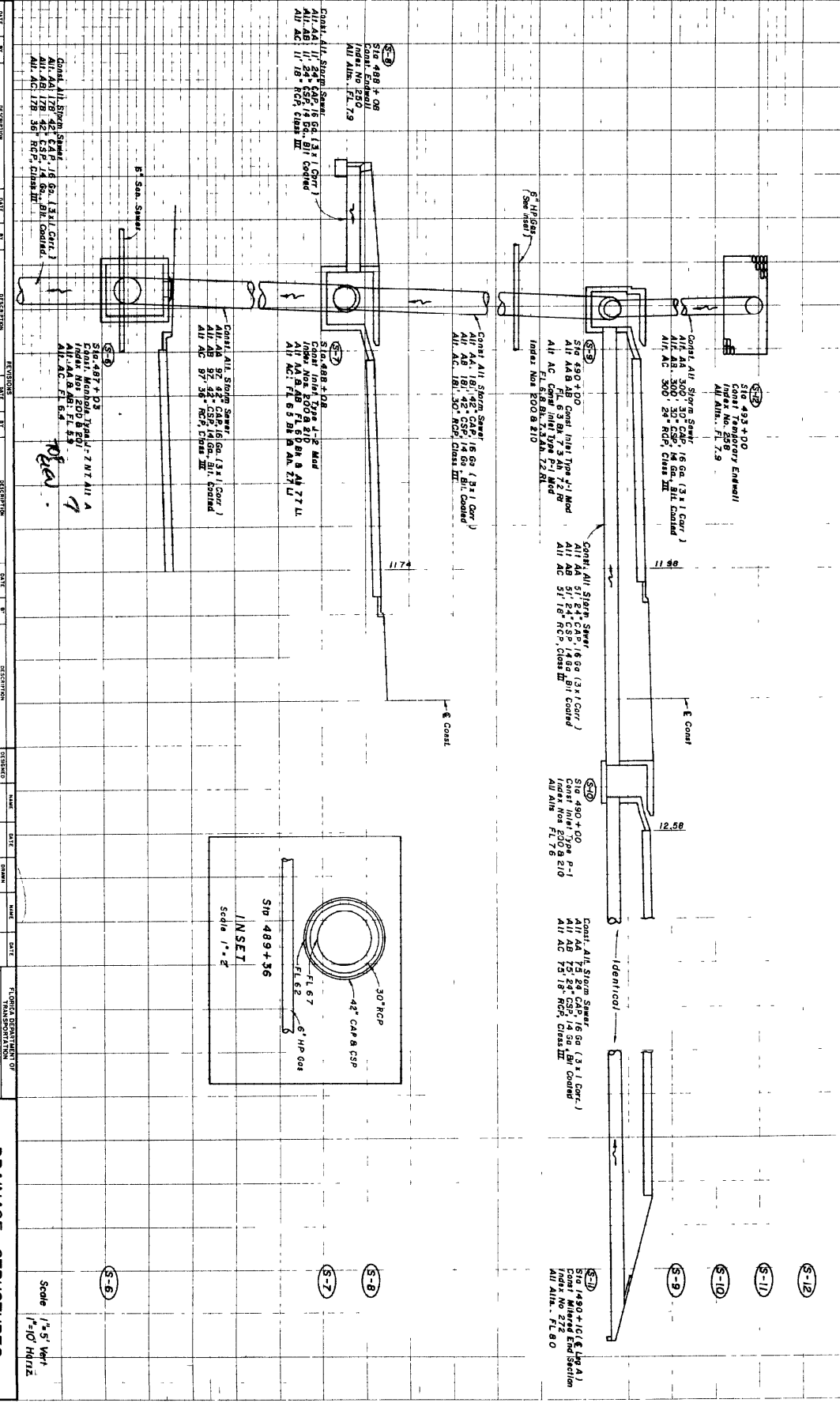
NO.	BY	DESCRIPTION	DATE	NO.	BY	DESCRIPTION	DATE	NO.	BY	DESCRIPTION	DATE	NO.	BY	DESCRIPTION	DATE

DRAINAGE STRUCTURES

NOTE: To be used when ONLY METAL ALTERNATES ARE SUITABLE.
From the floor to the top of the structure, the diameter and height of the structure shall conform to the Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Section 220, and to the Florida Department of Transportation, Standard Specifications for Waterway Construction, Section 100.

NOTE: Although bid items (e.g., manholes) proposed for this project are in compliance with the American Road & Builders Builders Association (ARBA) (ASHTO) in many cases the specific items to be installed in this project may differ from those shown in the drawings. The Florida Department of Transportation will accept alternative proposals for manhole structures, provided they meet or exceed the minimum standards and specifications set forth in the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 220, and in the Florida Department of Transportation Standard Specifications for Waterway Construction, Section 100.

00000-0000 00



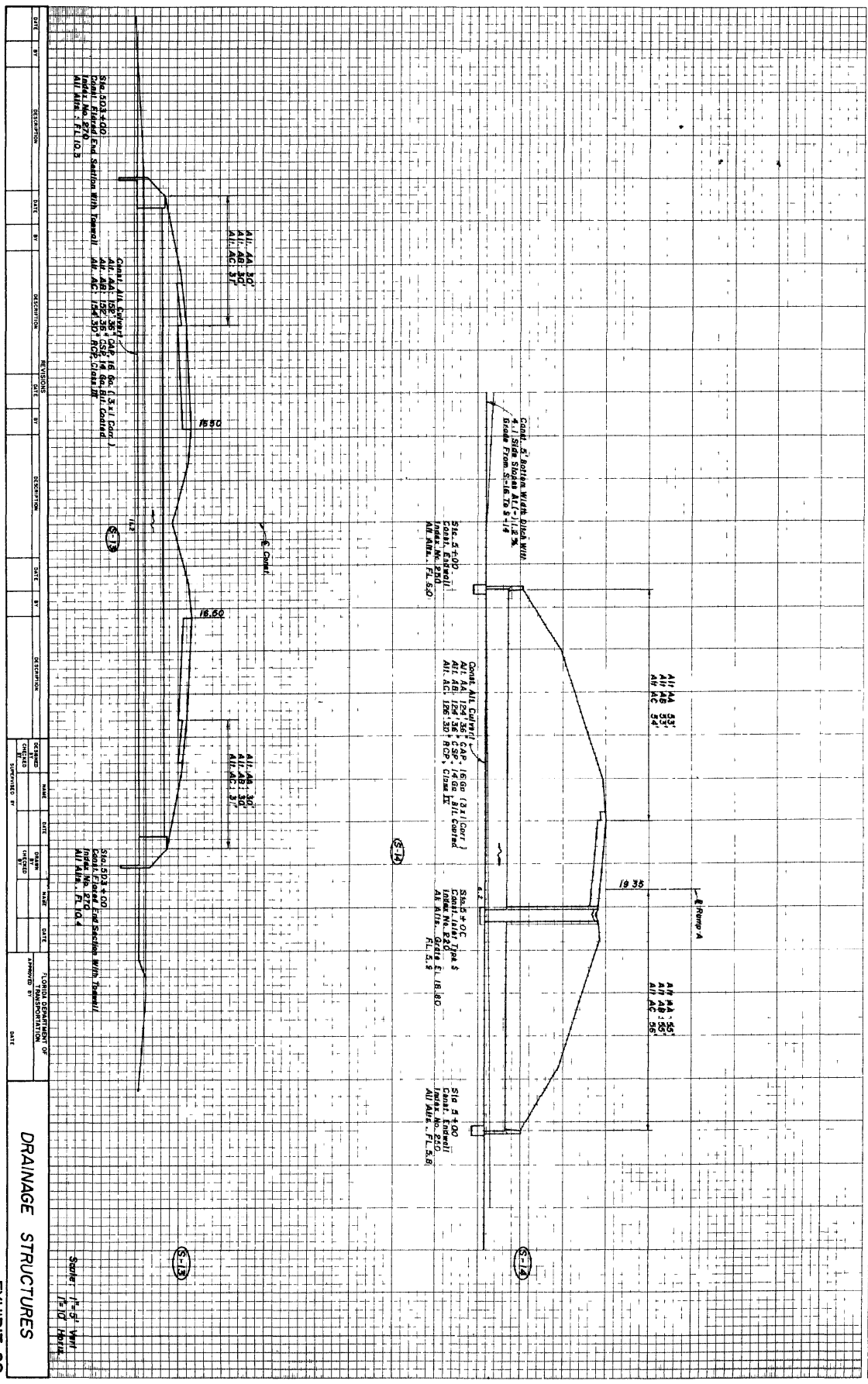
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STANDARD DEPARTMENT OF TRANSPORTATION
 APPROVED BY: _____ DATE: _____

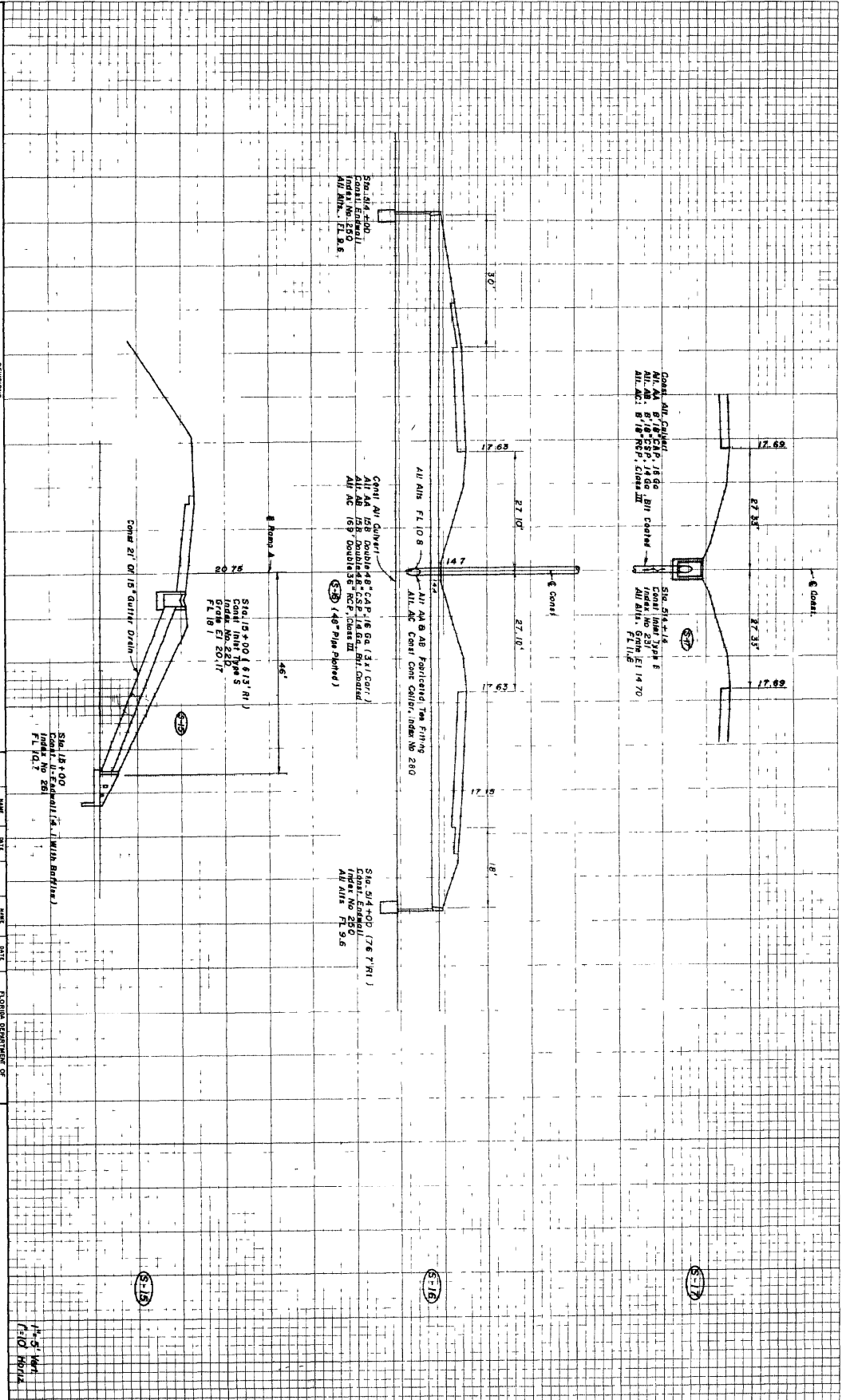
DRAINAGE STRUCTURES

Scale 1" = 5' Vert
 1" = 10' Horiz

STATE PROJ. NO. 00000-0000 00



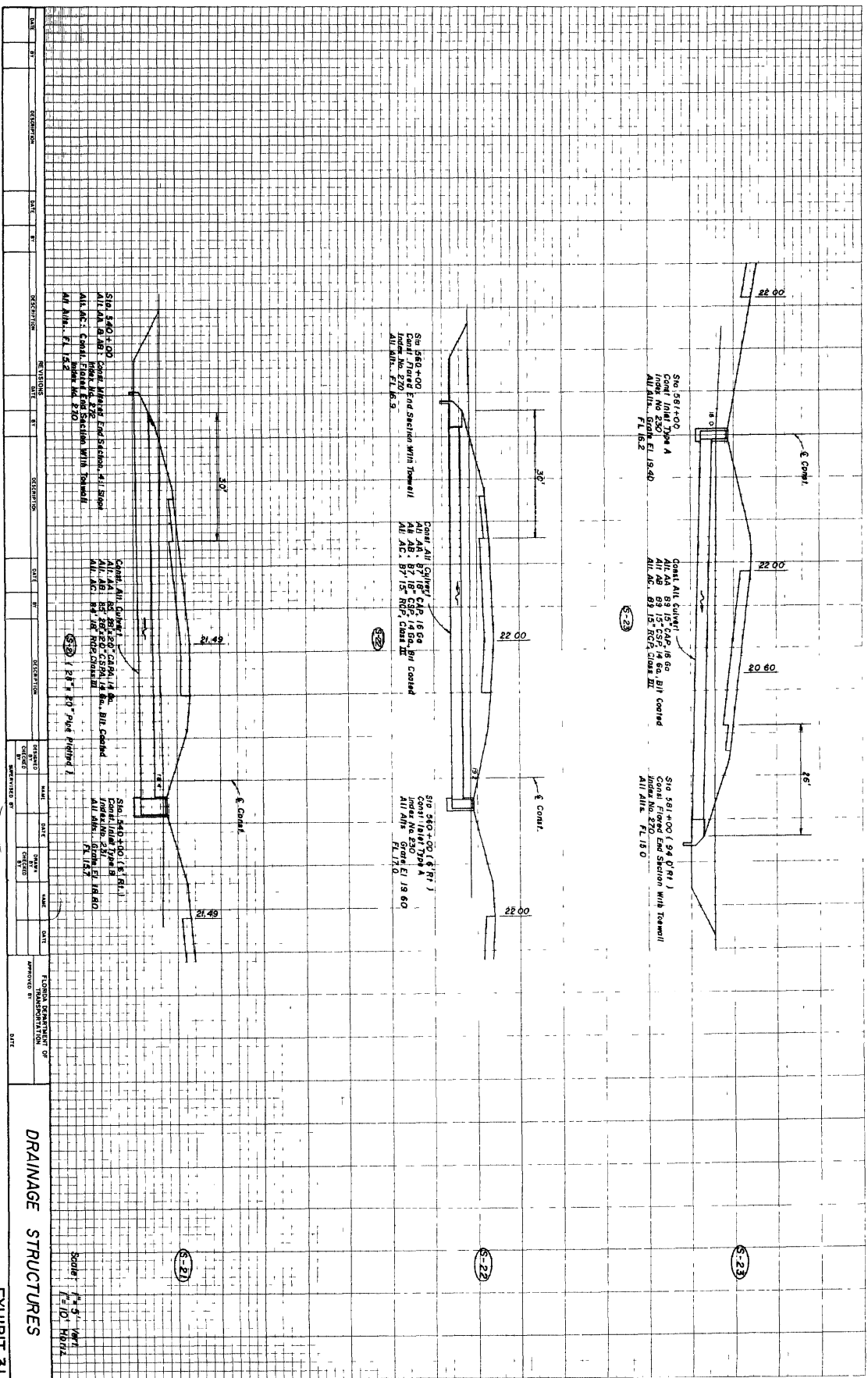
DRAINAGE STRUCTURES



NO.	DATE	DESCRIPTION	BY	CHECKED	DATE	NO.	DATE	DESCRIPTION	BY	CHECKED	DATE	NO.	DATE	DESCRIPTION	BY	CHECKED	DATE	NO.	DATE	DESCRIPTION	BY	CHECKED	DATE

FLORIDA DEPARTMENT OF TRANSPORTATION
 DATE

STATE ROAD NO. 00000-0000 00



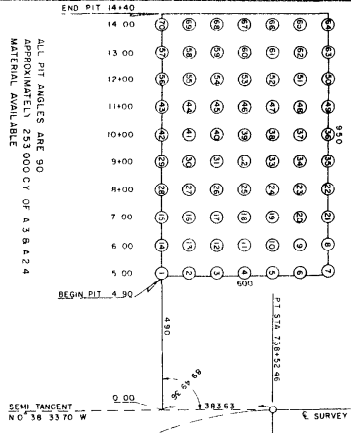
DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	

DRAINAGE STRUCTURES

B M No. 00
DESCRIPTION

ELEV. 19 74

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

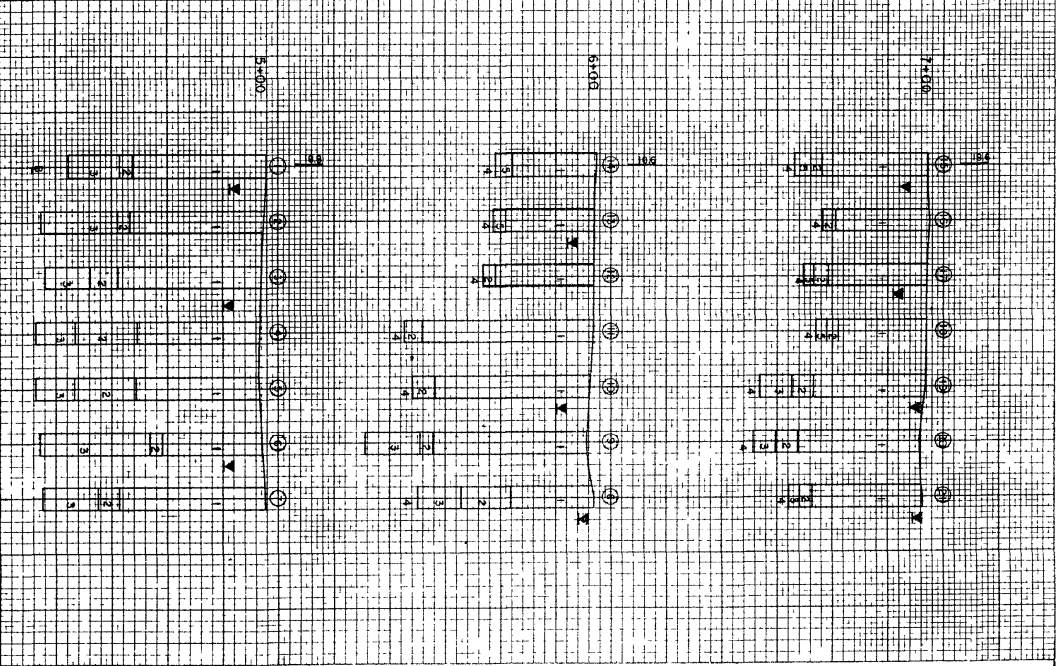


SCALE 1" = 200'
CLEANING & GRUBBING LIGHT SCRUB NE 1/4
APPROX 325 AC
BORROW PIT NO. BE.00-00
ROAD No. SR.00

COUNTY APPLE
T 00 S. R 00 E. NE 1/4 SEC 00

DESCRIPTION OF STRATA

NO. 1. GREY & BROWN SAND, W/LS SILT
NO. 2. GREY SILTY CLAYEY SAND
NO. 3. WHITE TO GREY SANDY SILT W/SHELL & LIMESTONE
NO. 4. ROCK (LIMESTONE)
NO. 5. GREY & BROWN SILTY LIMESTONE CLAY



BORROW PIT No. 00 00
CROSS SECTIONS 1" = 100' HORIZ
1" = 5' VERT

SECTION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION

REPORT OF TESTS OF MATERIAL FROM BR 00 FOR USE IN DRAINAGE AND SUBGRADE

Lab order no. 0001
Project No. 0000-0000
Submitted by J. R. ...

Date analyzed 2/11/60
Date tested 3/15/60
477/1289

CONSTANTS

Series No.	Test No.	Material	Grade	Test Method	Result	Remarks
1	100	100	100	100	100	100

PERCENTAGES

Series No.	Test No.	Material	Grade	Test Method	Result	Remarks
1	100	100	100	100	100	100

PREPARATION AND STORAGE OF MATERIAL

The material was prepared in the laboratory for use in the equipment during construction. The material was stored in the laboratory for use in the equipment during construction.

CONDITIONS FOR PLACEMENT IN FILLS

The material should be placed in the equipment during construction. The material should be placed in the equipment during construction.

REVISIONS

The material should be placed in the equipment during construction. The material should be placed in the equipment during construction.

CONCLUSIONS

The material should be placed in the equipment during construction. The material should be placed in the equipment during construction.

RECOMMENDATIONS

The material should be placed in the equipment during construction. The material should be placed in the equipment during construction.

STATE PROJ NO 00000 0000
 SHEET 00

DATE OF SURVEY 1-4-80 to 1-14 80
 SURVEY MADE BY S. DIGGER, D. MINER, S. BUCK
 SUBMITTED BY J. DOE, DISTRICT MATERIALS ENGINEER

DISTRICT TENTH
 ROAD NO 00(L-00)
 COUNTY CHERRY

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION
 MATERIALS AND RESEARCH
 PROJECT NO. 00000-0000
 CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROADS

SURVEY BEGINS STA 000+00 SURVEY ENDS STA 000+00

NOTE STRATA BOUNDARIES ARE APPROXIMATE
 MAKE FINAL CHECK AFTER GRADING

WEATHER CLEAR

LEGEND * WATER TABLE ENCOUNTERED

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

STATION CONNECTING LINES ARE SHOWN FOR ESTIMATING ESTABLISHMENT ONLY THESE LINES DO NOT INDICATE ACTUAL STATION LIMITS SOIL STRATA ARE REPRESENTED AT BORING LOCATION ONLY

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

APPROVED BY
 FLORIDA DEPARTMENT OF TRANSPORTATION
 DATE

SOIL SURVEY

Laboratory No 00000 5
 Project No 00000 0000
 Road No 1 00
 Submitted by 1 0 99's District Engineer

Date Spec'd 1 4 80 to 1 14 80
 Sample By S Dancy, D H Lee, S Buel
 Date Tested 1 7 80 (District Lab)
 1 24 80 (Central Lab)

REPORT OF TESTS OF MATERIAL FROM PONDWAY
 FOR USE IN EMBANKMENT AND SUBGRADE

Station No	% Pass 60 Mesh	% Pass 100 Mesh	% Pass 200 Mesh	% Pass No. 4	Liquid Limit	Plasticity Index	Group	Description	PH	Relative Density (%)	Cylinder Size (in)	Number of Tests	Soil Status
1	100	99	83	4	17	17	A-3	Grey and brown sand coarse sand w/ gravel subrounded	6.2	13 000	1.5	15	
2	100	91	71	11	17	17	A-2.4	Green to orange brown sand w/ clay & iron scales	6.5	10 500	1.0	10	
3	NOSAMPLE SUBMITTED												
4	93	88	73	5	NP	NP	A-3	Muck Sand and/or fine sand Silty Clay Base Coarse well graded	6.8	11 200	1.250	8	
5	NOSAMPLE SUBMITTED												

EMBANKMENT AND SUBGRADE MATERIAL

The material from Station No. 1 & 2 appears satisfactory to use in the embankment.
 The material from Station No. 3 is muck and is not suitable to use in the embankment, subgrade or as sublayer under any road base.
 The material from Station No. 4 is Sand Asphalt core Sand Silty Clay Base.
 The material from Station No. 5 is Silted Transition (see Spec. Appen).

J. B. Lee
 J. B. Lee District Materials Engineer

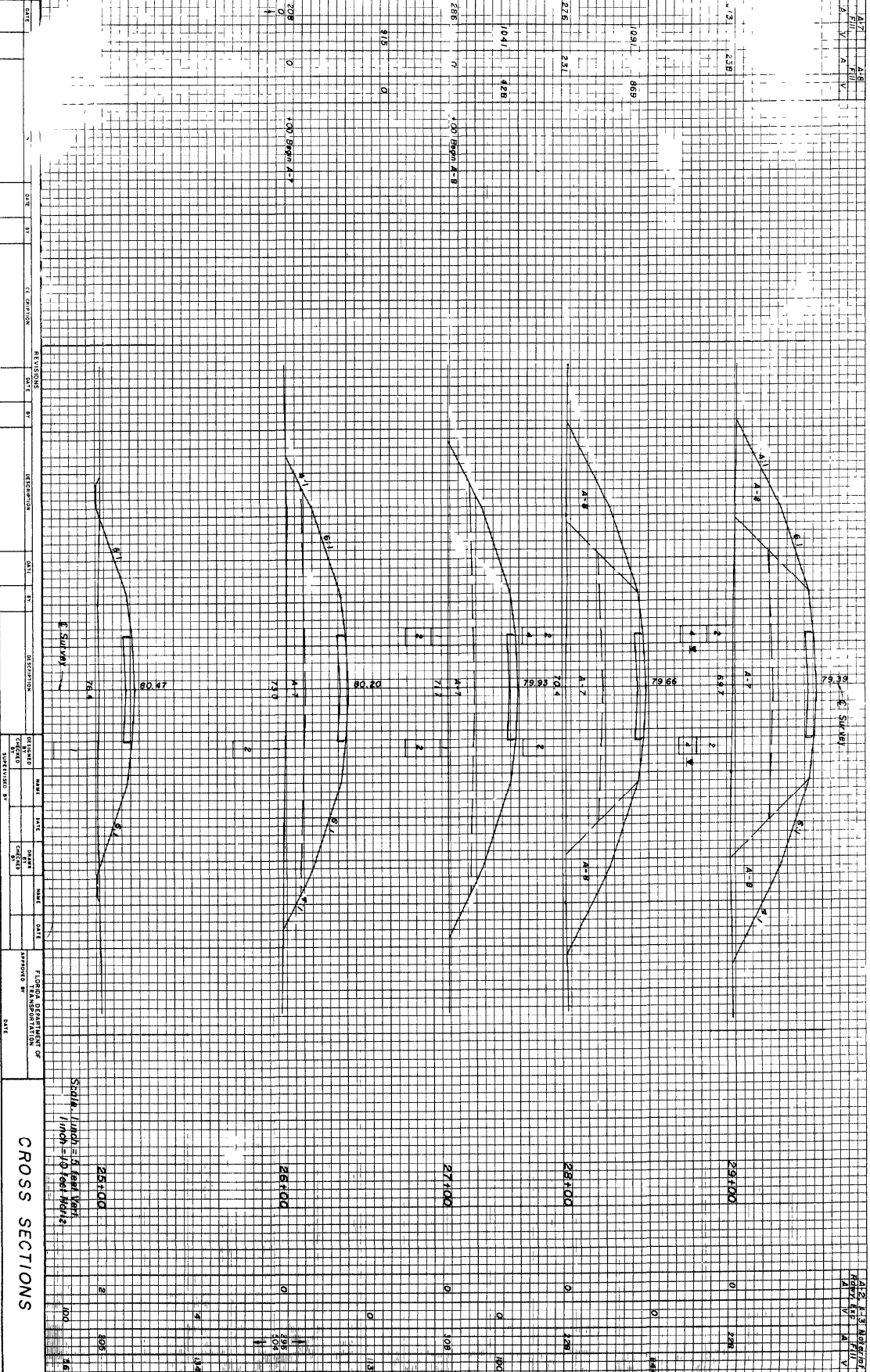
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SOIL SURVEY

A-7	A-8
FILL	FILL
V	V

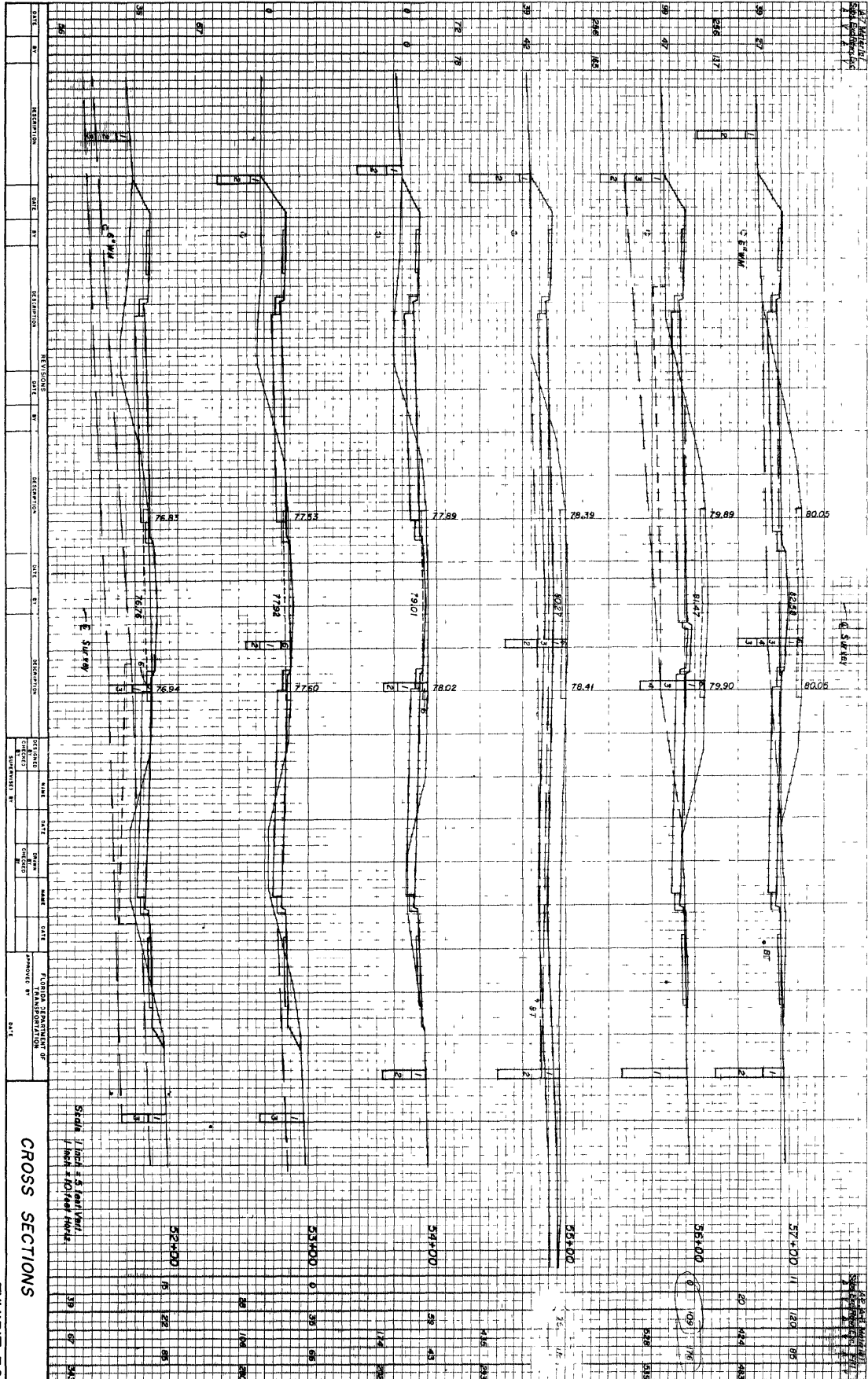
A-7	A-8
FILL	FILL
V	V

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



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

CROSS SECTIONS



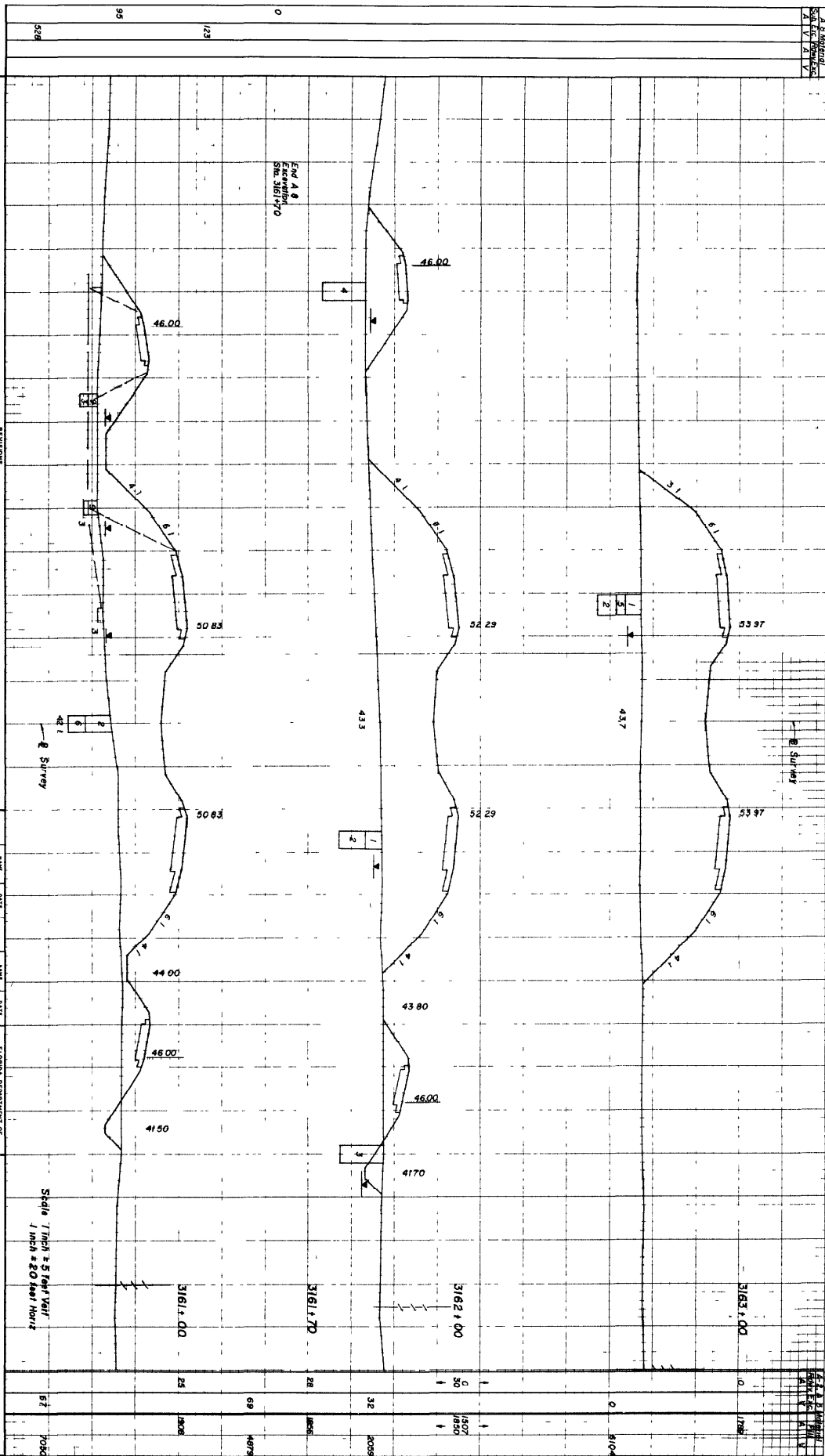
STATE PROJ. NO.
00000 0000
00

CROSS SECTIONS

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION

STATE PROJECT NO.
 00000-0000 00

DATE
 00/00/00



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

EXHIBIT 37

STATE PROJ NO
00000-0000 00

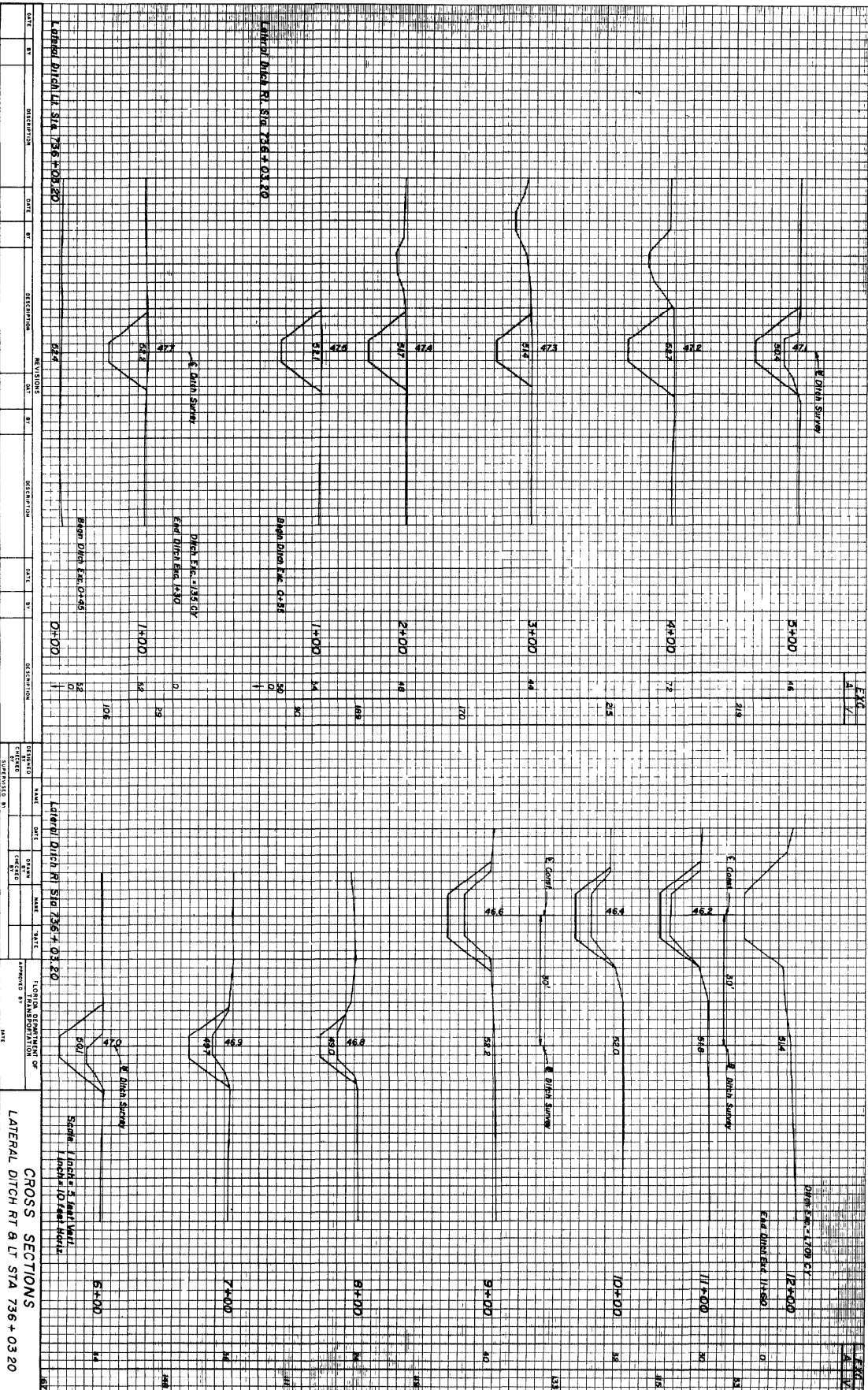
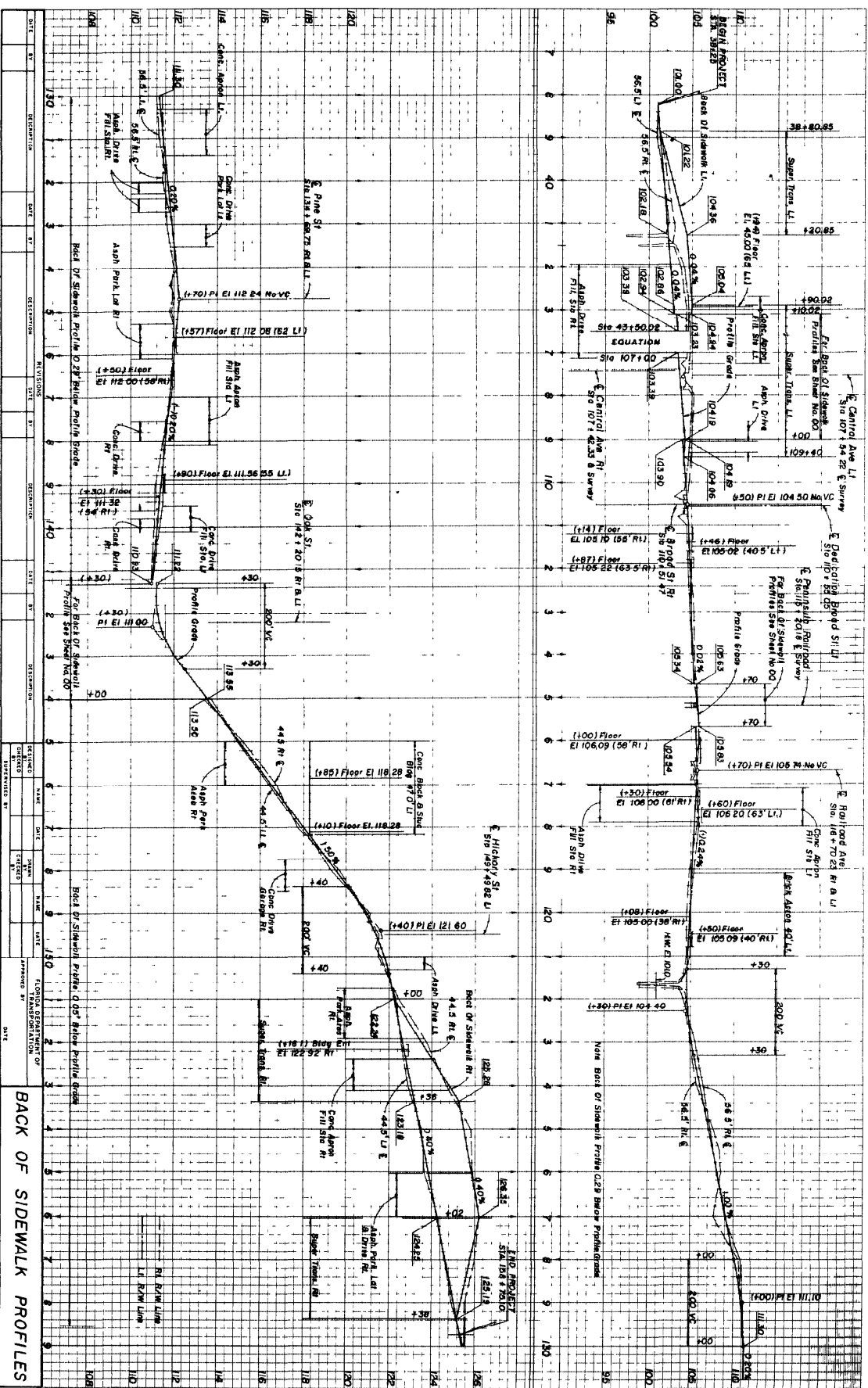


EXHIBIT 38

CRON SECTIONS

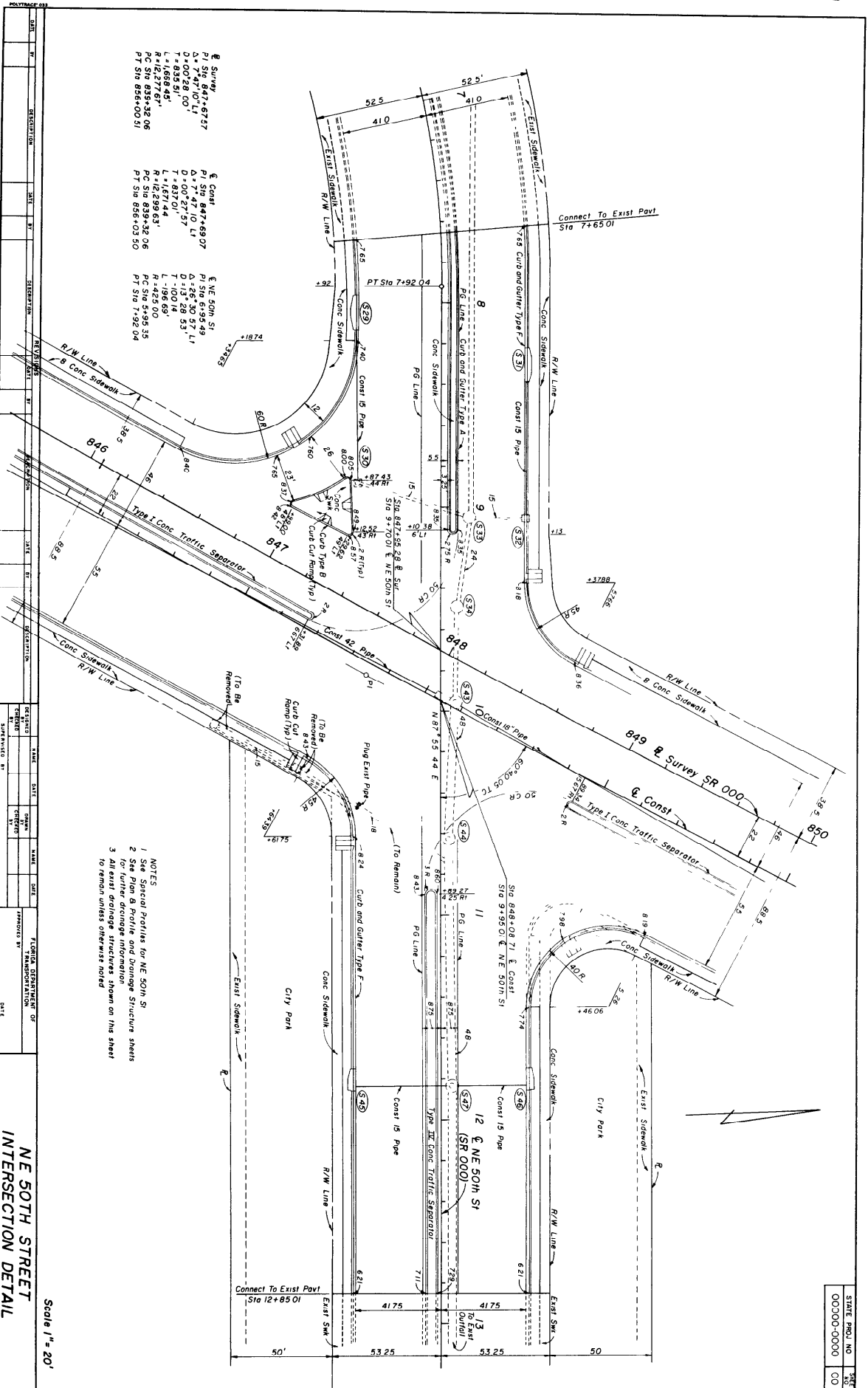
STATE PROJ. NO. 00000-2000
SHEET 03



BACK OF SIDEWALK PROFILES
EXHIBIT 39

STATE PROJ. NO.
00000-0000

SHEET
00



B Survey
 P1 Sta 847+67.37
 P2 Sta 848+00.00
 D = 0°28'00"
 T = 833.51'
 L = 1658.45'
 P1 Sta 847+67.37
 P2 Sta 848+00.00
 P3 Sta 848+00.00

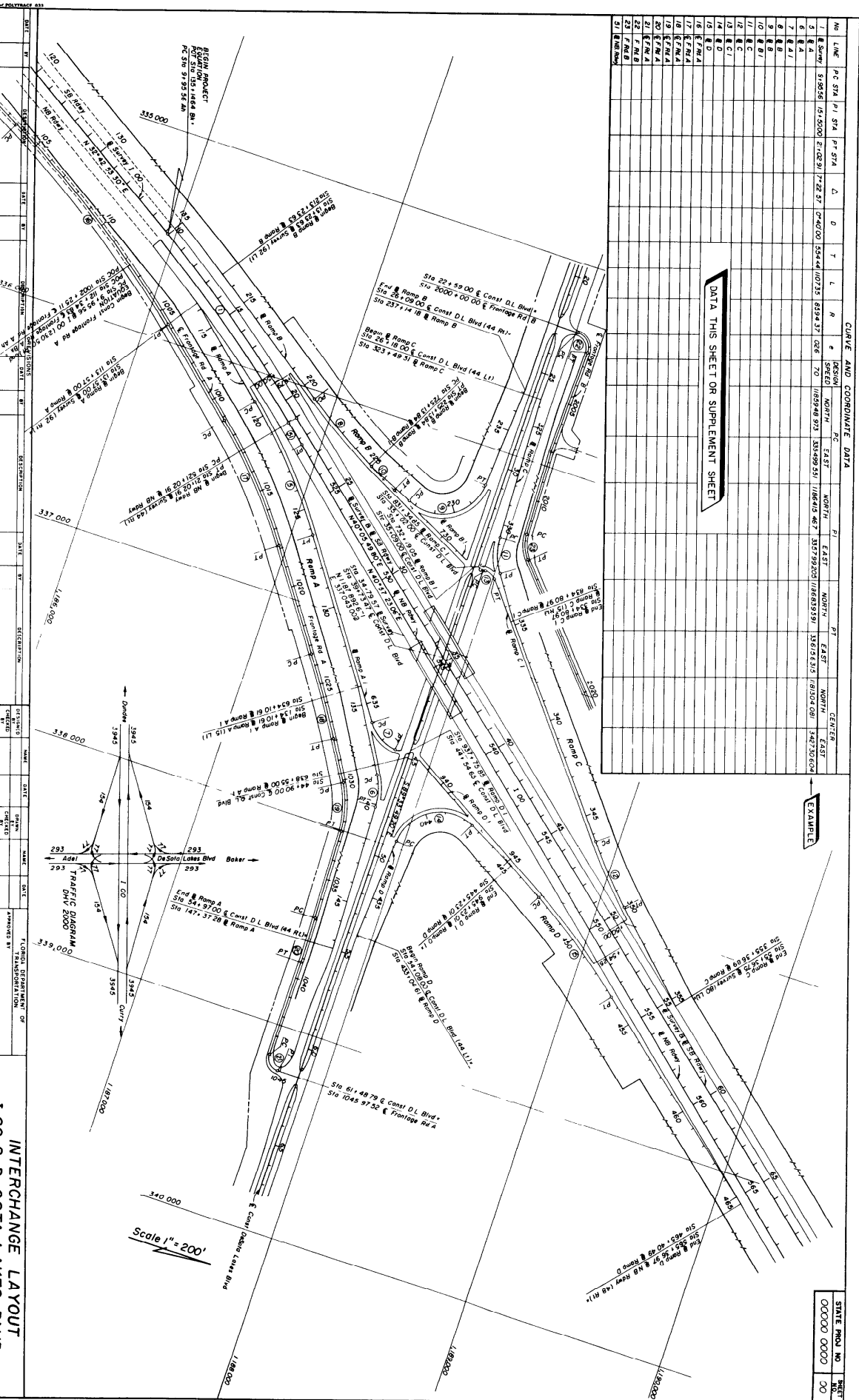
E Const
 P1 Sta 847+69.07
 P2 Sta 848+00.00
 D = 0°27'37"
 T = 837.01'
 L = 1671.44'
 R = 423.00'
 P1 Sta 847+69.07
 P2 Sta 848+00.00
 P3 Sta 848+00.00

E NE 50th St
 P1 Sta 6195.49
 P2 Sta 6200.00
 D = 0°27'57"
 T = 830.53'
 L = 196.69'
 R = 423.00'
 P1 Sta 6195.49
 P2 Sta 6200.00
 P3 Sta 6200.00

- NOTES
- 1 See Special Profiles for NE 50th St
 - 2 See Plan B Profile and Drainage Structure sheets
 - 3 All elevations are in feet unless otherwise noted

NE 50TH STREET
 INTERSECTION DETAIL
 Scale 1" = 20'

NO.	DESCRIPTION	DATE	BY	CHECKED	DATE	BY
1	DESIGN					
2	CONSTRUCTION					
3	AS-BUILT					



NO. LINE	P.C. STA.	P.T. STA.	P.T. - P.C.	Δ	D	T	L	R	e	PERSON		PC		EAST		NORTH		WEST		CENTER	EAST	NORTH	WEST	EAST	NORTH	WEST
										NO.	SPEED	NO.	PC	NO.	EAST	NO.	EAST	NO.	EAST							
1	518258	1515000	2102391	1742237	044000	55444	10731	8594	37	028	70	185948	923	331489	931	118445	467	3579920	116633	919	130152	157	181024	281	142326	629
2																										
3																										
4																										
5																										
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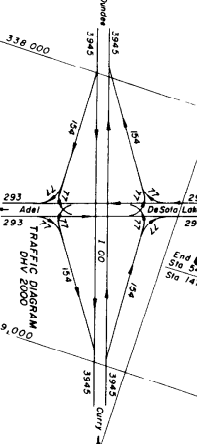
DATA THIS SHEET OR SUPPLEMENT SHEET

EXAMPLE

STATE PROJ. NO. 00000 0000
SHEET NO. 20

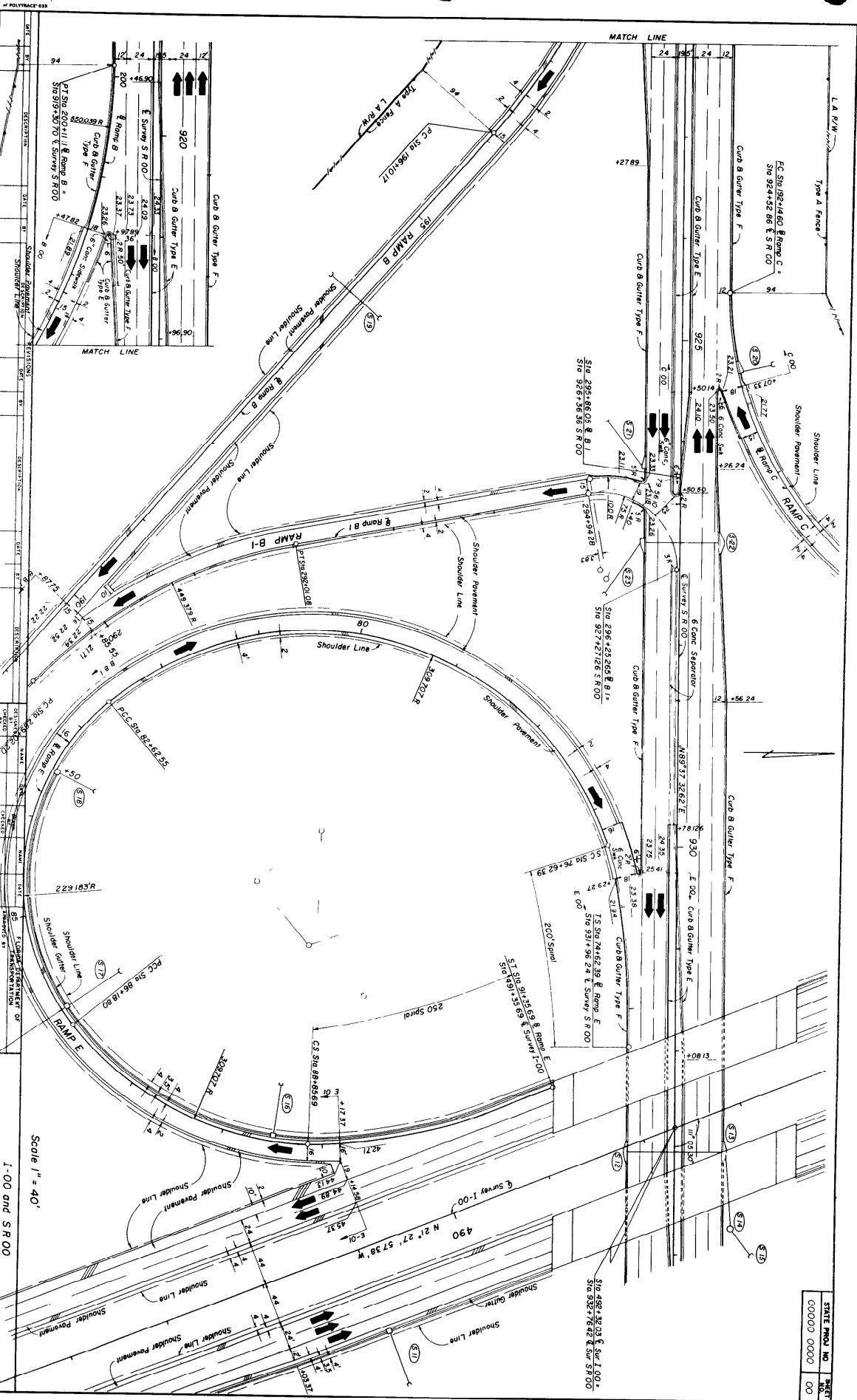
INTERCHANGE LAYOUT
I-00 & DESOTA LAKES BLVD.
EXHIBIT 41

Scale 1" = 200'



NO.	NAME	DATE	SCALE	DATE	BY	FOR
1	DESIGNED					
2	CHECKED					
3	APPROVED BY					

TRAFFIC DIAGRAM
SHEET 2000



STATE PROJ. NO.	00000
SHEET	00

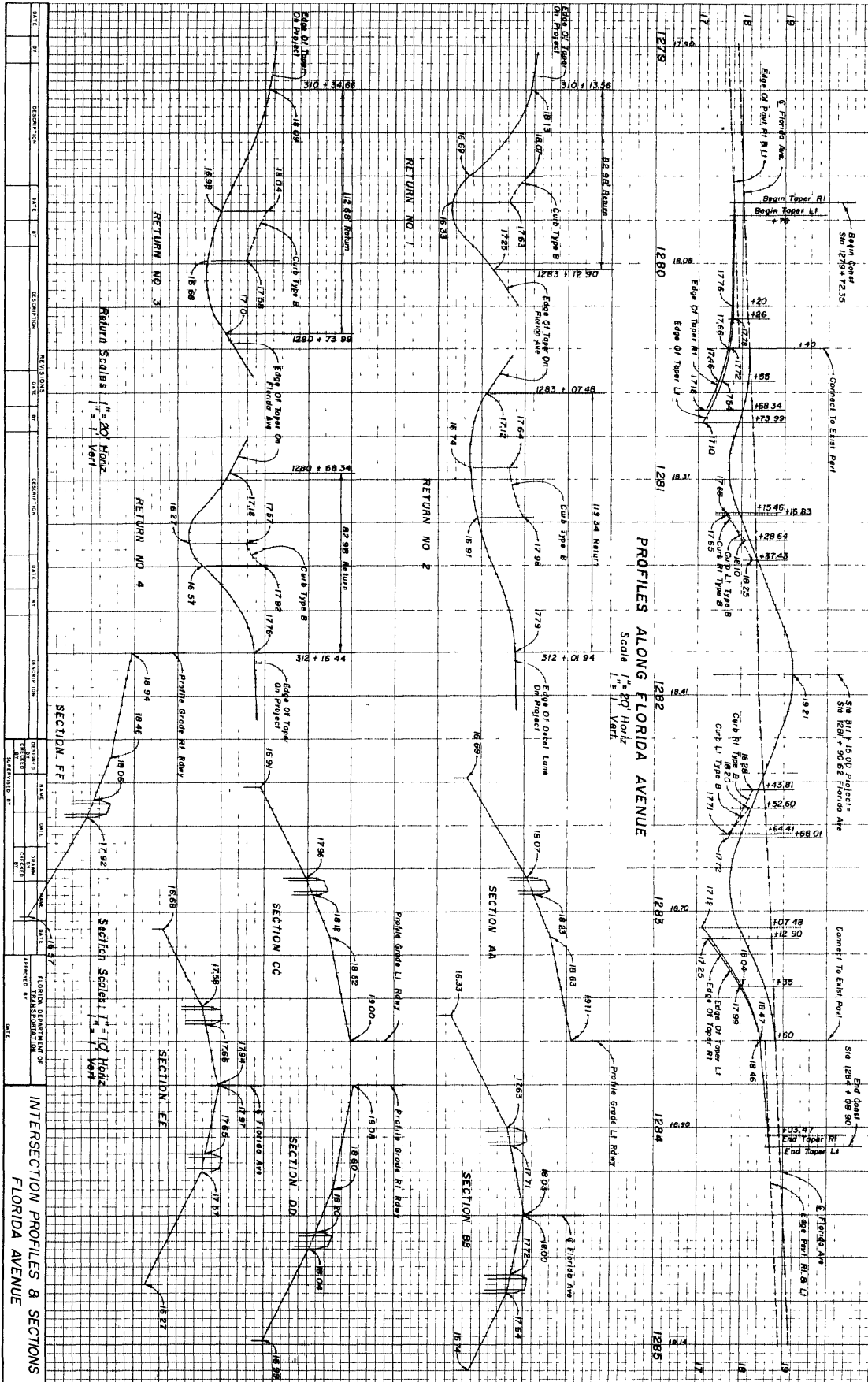
Scale 1" = 40'

1-00 and S R 00

INTERCHANGE DETAIL RAMP B-1, C & E

EXHIBIT 42

STATE PROJ. NO. 00000 0000
 SHEET NO. 00



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

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

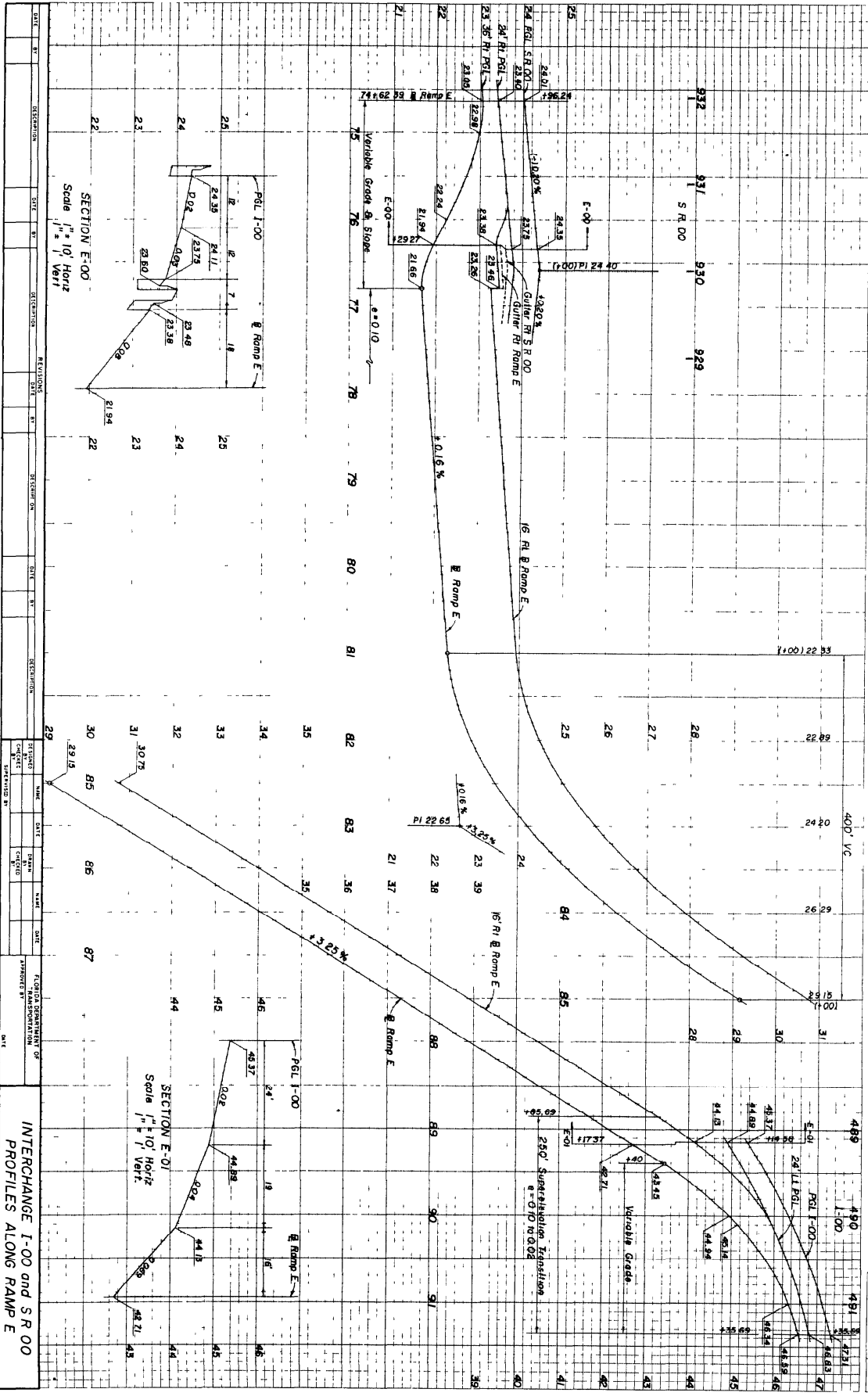
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

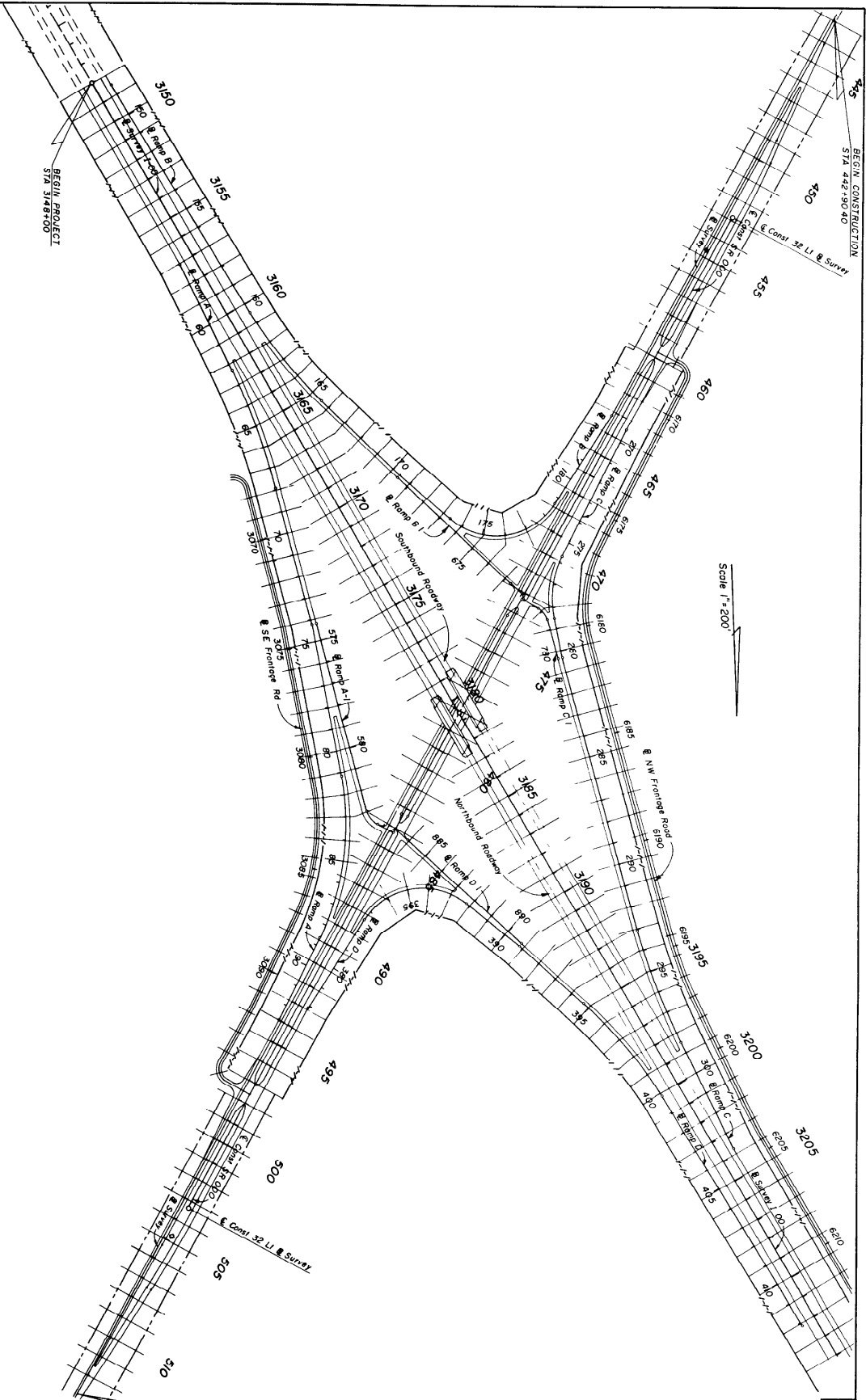
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE PROJ. NO. 00000 0000
 SCALE 00



INTERCHANGE I-00 and S R 00
 PROFILES ALONG RAMP E
 EXHIBIT 44

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

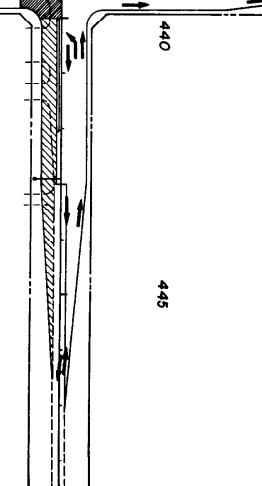
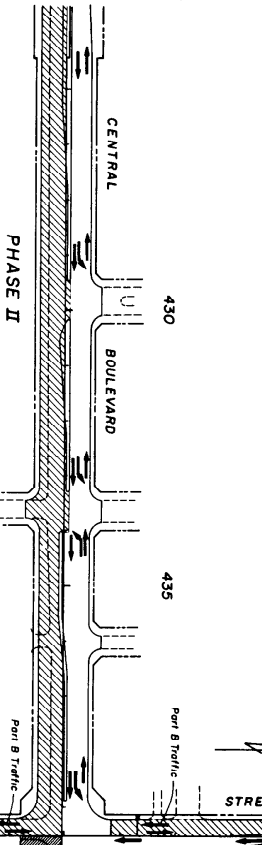
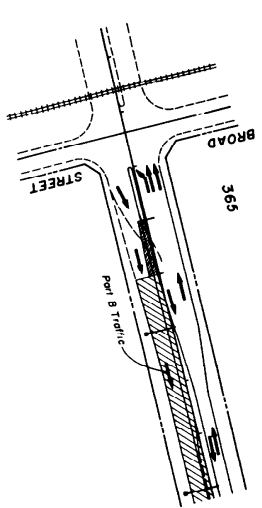
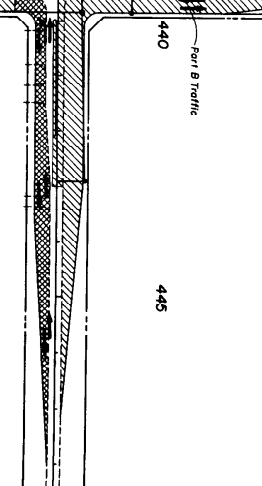
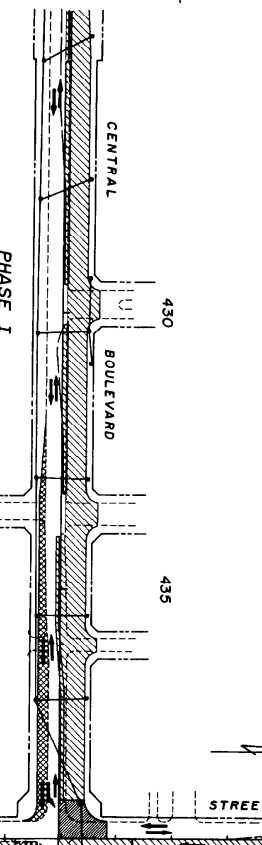
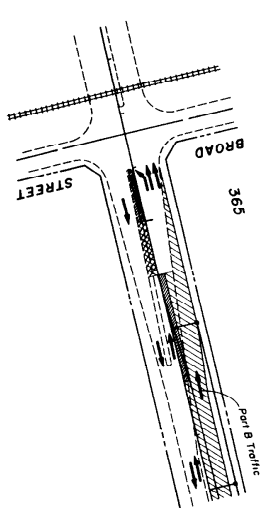


DATE		REVISIONS		DATE		REVISIONS		DATE		REVISIONS		DATE		REVISIONS	
NO.	BY	NO.	BY	NO.	BY	NO.	BY	NO.	BY	NO.	BY	NO.	BY	NO.	BY

DESIGNED BY	CHECKED BY	DATE	APPROVED BY	DATE

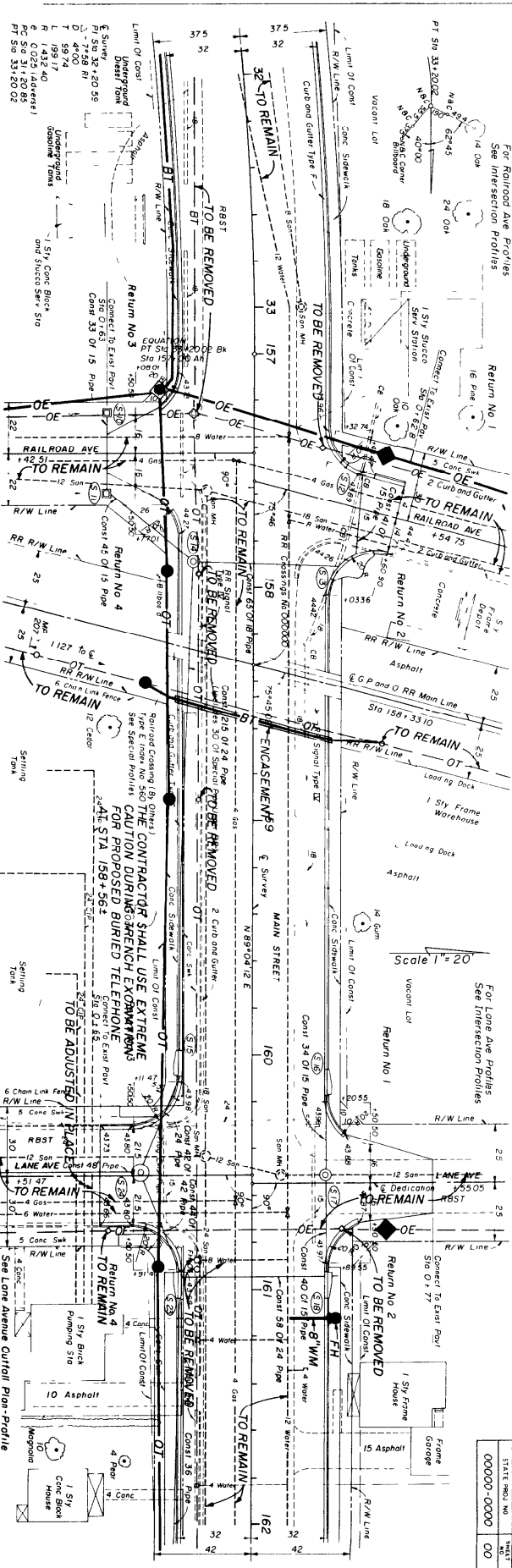
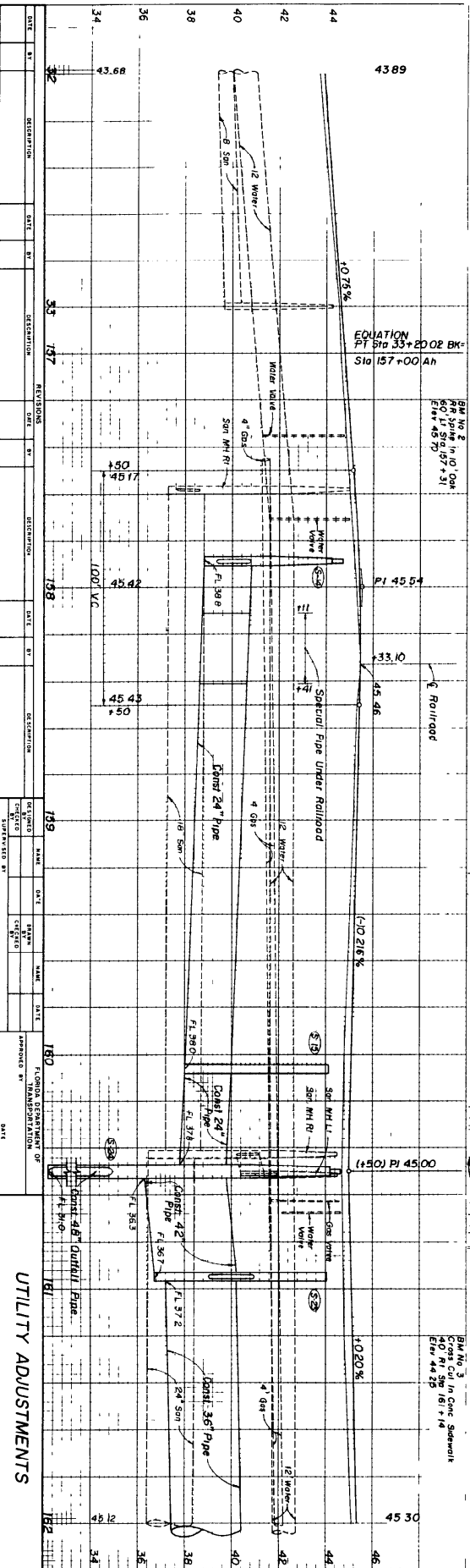
STATE PROJ. NO.	SHEET NO.	TITLE
00000-0000	00	CROSS SECTION PATTERN

EXHIBIT 45



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

MAINTENANCE OF TRAFFIC
Scale 1"=100'

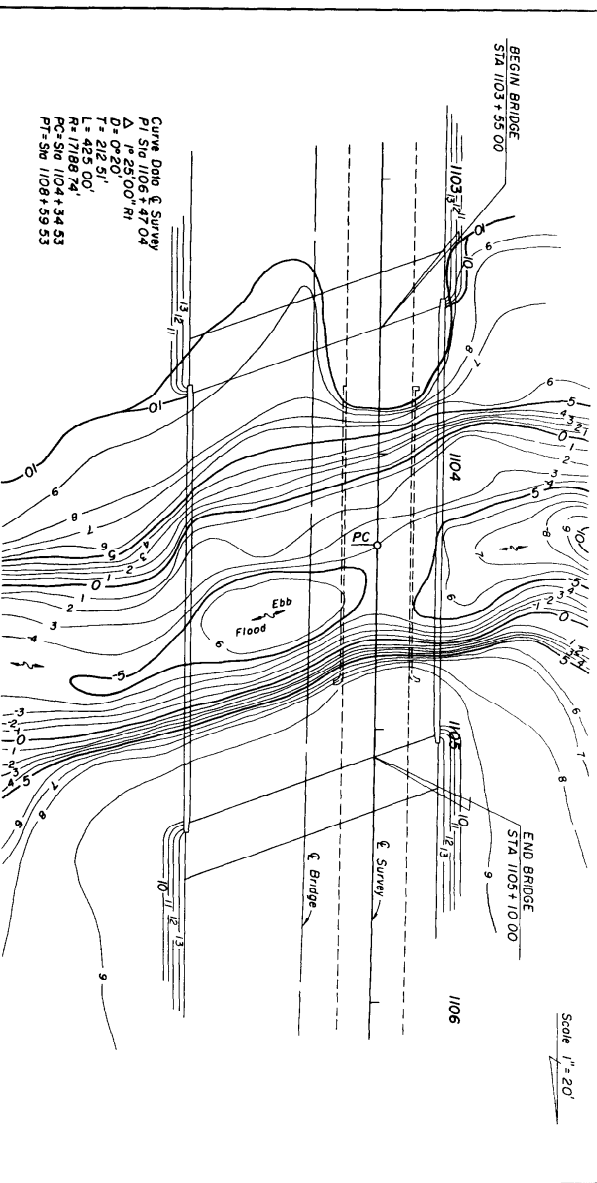


DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
187			187		
188			188		
189			189		
190			190		
191			191		
192			192		

UTILITY ADJUSTMENTS

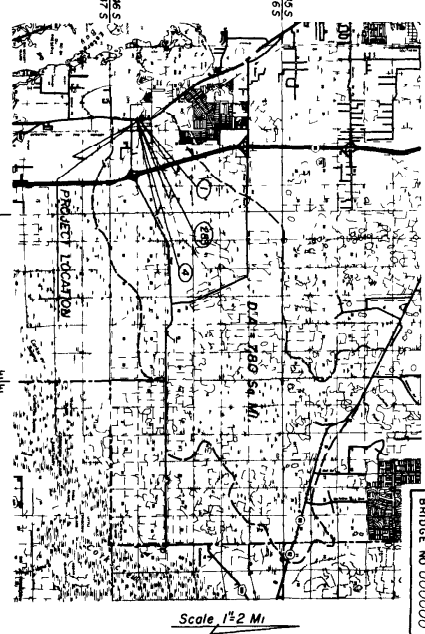
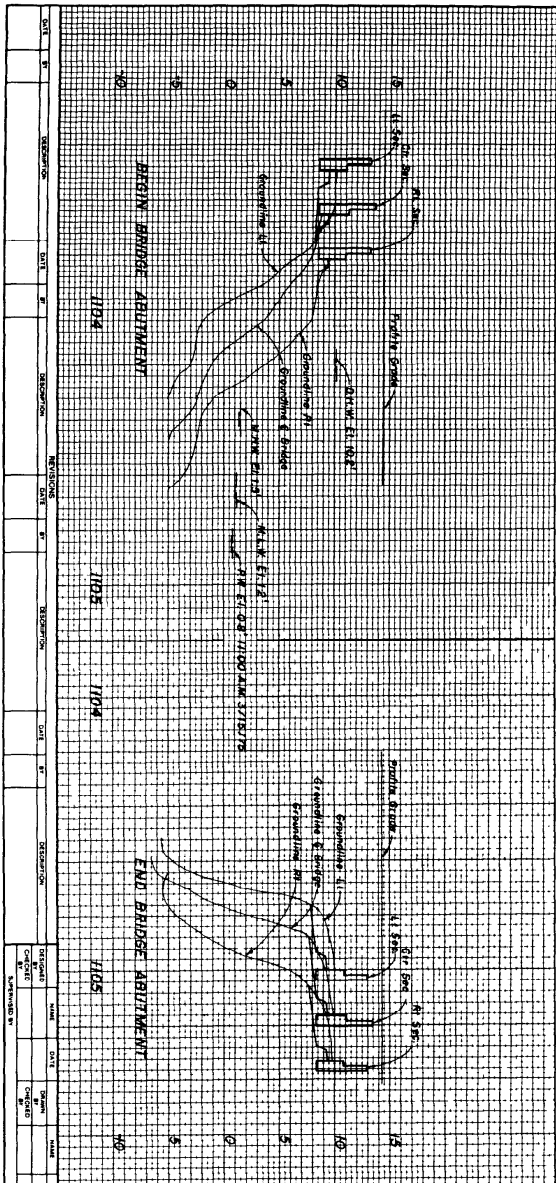
STATE PROJ. NO. 00000-0000 00

EXHIBIT 47



Curve Data @ Survey
 P.I. Sta 1106+47.04
 Δ = 82.00' R
 L = 425.00'
 T = 212.51'
 R = 17188.74'
 PC = Sta 1104+34.53
 PT = Sta 1108+59.53

Scale 1"=20'



STATE PROJ. NO. 00000-0000
 BRIDGE NO. 000000

FOUNDATION	TYPE	CONSTRUCTION	AREA OF OPENING @ HW	ELEV. LOW MEMBER
(1)	Timber Pile	(1)	4.0 x 5.0	7.03
(2)	Concrete Pile	(2)	6.0 x 8.0	11.88
(3)	Timber	(3)	8.0 x 10.0	14.49
(4)	Concrete	(4)	8.0 x 12.0	14.49

NOTE: The hydraulic data shown for informational purposes only to indicate the flow distribution and water surface elevations of the waterbody. Many judgments and assumptions are required to establish these values. The resultant hydraulic data are conditions against the assumption of prismatic flow which should be checked.

DESIGN FLOOD	BASE FLOOD	OVERTOPPING FLOOD
100 Year	100 Year	100 Year
50 Year	50 Year	50 Year
25 Year	25 Year	25 Year
10 Year	10 Year	10 Year
5 Year	5 Year	5 Year
2 Year	2 Year	2 Year
1 Year	1 Year	1 Year

HYDRAULIC RECOMMENDATIONS

1. BEGIN BRIDGE STA 1103+35.00 & SURVEY LINE END BRIDGE STA 1105+10.00 & SURVEY LINE W/ 2.0% SLOPE

2. CHANNEL SECTION EXCAVATION 10.0' AT 1104+00' BOTTOM WIDTH 40.0' ELEV. 11.4.5' SIDE SLOPE 1:1

3. LIMITS OF CHANNEL EXCAVATION 10.0' AT 1104+00' TO 1104+50' ELEV. 11.4.5' SIDE SLOPE 1:1

4. SCOUR PROTECTION NO SIGNIFICANT SCOUR PROBLEMS ARE ANTICIPATED AT THIS SITE (SCOUR PROTECTION SHALL BE PROVIDED AT 10.0' ABUTMENT)

5. SLOPE PROTECTION EXPOSED SLOPES SHALL BE PROTECTED WITH ROCK OR FILL SECTION

6. SLOPE PROTECTION EXPOSED SLOPES SHALL BE PROTECTED WITH ROCK OR FILL SECTION

7. ROCK BRANIKES SUBJECTIVE AND NOT RECOMMENDED

8. OTHER: Specific configuration should show cross of channel. Plans should not be located between M.H.W. and M.L.W.

REMARKS (1) Spring tide (2) Hurricane tide range (3) 1891 (4) Base flood information consists of the non-consultant units

REVISIONS (1) 11/23/81 (2) 11/23/81 (3) 11/23/81 (4) 11/23/81 (5) 11/23/81 (6) 11/23/81 (7) 11/23/81 (8) 11/23/81 (9) 11/23/81 (10) 11/23/81

BRIDGE HYDRAULIC RECOMMENDATIONS

CONTRACT PLAN SET INFORMATION NOT
 TO BE REPRODUCED WITHOUT PERMISSION
 LEAD KEY SHEET OF PLAN SET

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

SHEET NO.	SHEET DESCRIPTION
S1	KEY SHEET
S2	TABULATION OF QUANTITIES
S3 f	PAVEMENT LOCATIONS
S4	SIGN DETAILS AND CROSS SECTIONS
S7	OVERHEAD SIGN STRUCTURAL DATA

ROADWAY AND TRAFFIC DESIGN STANDARDS
 (BOOKLET DATED JANUARY 1964)

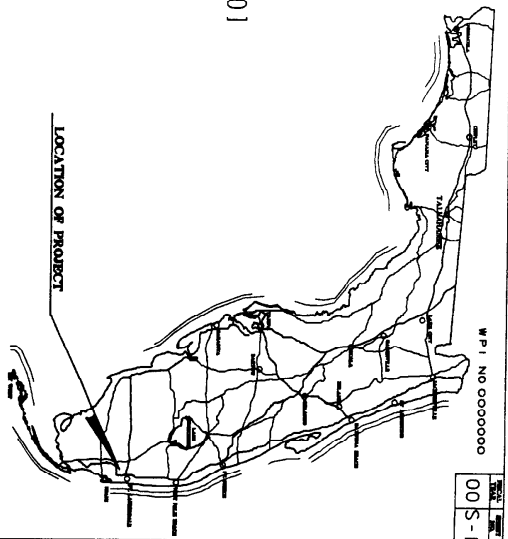
9315	BREAK-AWAY SIGN DETAILS
1065	ASSEMBLY DETAILS FOR TYPE AB & C TRUSS
1107	SIGN FACE AND TRUSS CONNECTIONS
1120	POSTINGS FOR OVERHEAD SIGNS
1126	ALUMINUM CANTILEVER
1160	SIGN PROFILE AND IDENTIFICATION NUMBERS
1164	COLUMN SIZE, HEIGHT AND POSTINGS
1176	BASES FOR OVERHEAD TRUSS AND CANTILEVER
1217	DETAILS FOR MOUNTING EXIT NUMBER PANELS
1230	TYPICAL SECTIONS FOR ONE COLUMN SIGNS
1232	ARROW DETAILS
1234	INTERCHANGE MARKINGS
1246	SPECIAL MARKINGS
1249	TRAFFIC CONTROLS FOR STREET TERMINATIONS
1252	TYPICAL PLACEMENT OF REFLECTIVE MARKERS
1253	SPECIAL SIGN DETAILS
1265	EXTERNAL LIGHTING FOR SIGNS (2 SHEETS)

STATE OF FLORIDA
 DEPARTMENT OF TRANSPORTATION
 PLANS OF PROPOSED
 STATE HIGHWAY

F.A. PROJECT NO. AC1-00-0(00)0 [STATE PROJECT NO. 00000-0000]
 DADE COUNTY
 STATE ROAD 93
 SIGNING AND PAVEMENT MARKING PLANS

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

LENGTH OF PROJECT INFORMATION NOT REQUIRED
 FOR INTERSECTION INFORMATION SHOWN ON LEAD KEY
 SHEET OF PLAN SET



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

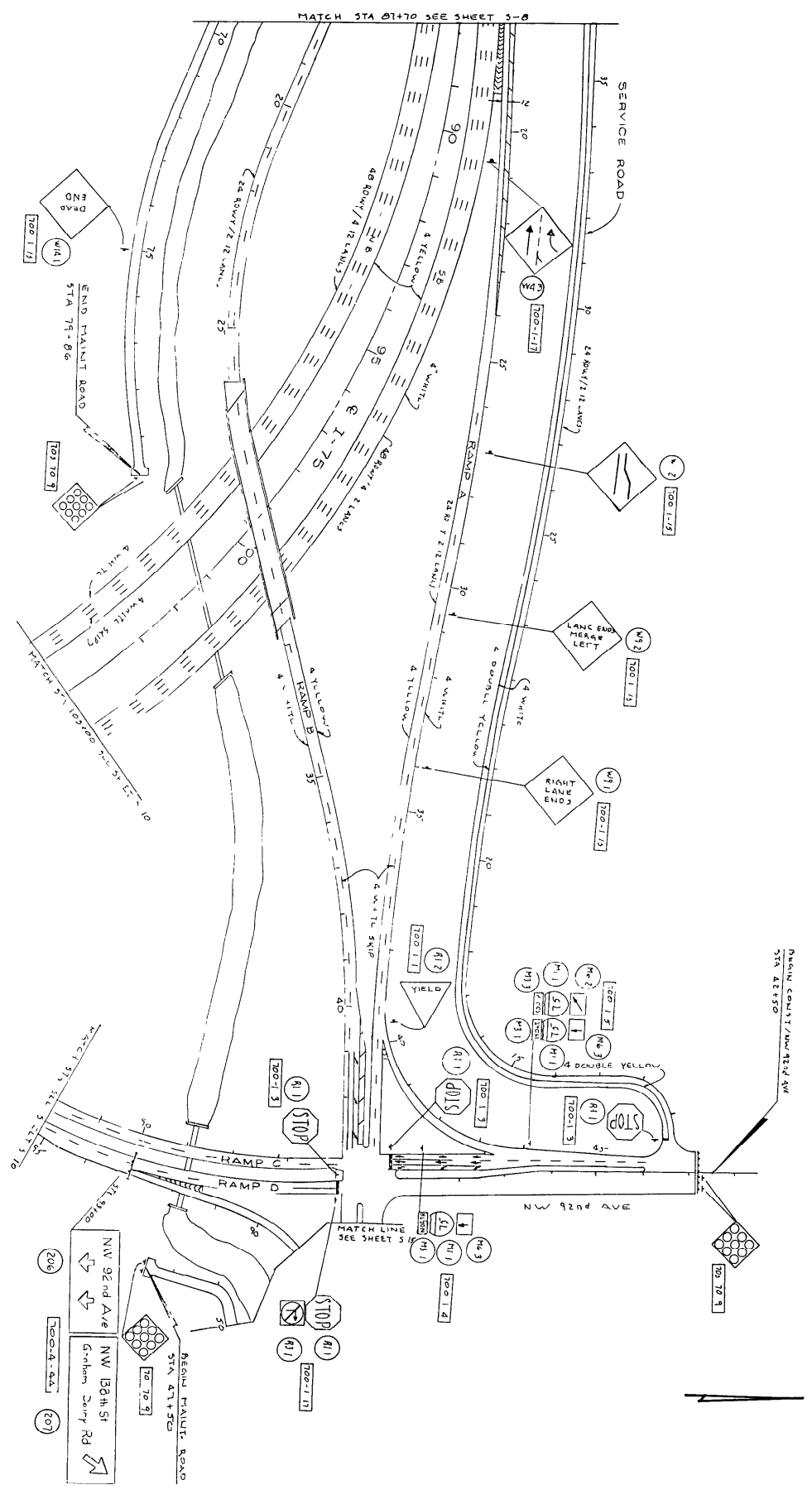
ATTENTION IS DIRECTED TO THE FACT THAT
 THESE PLANS ARE PREPARED IN
 SIZE BY REPRODUCTION, THIS MUST BE CON-
 sidered when OBTAINING SCALED DATA.
 GOVERNING SPECIFICATIONS, STATE OF FLORIDA,
 DEPARTMENT OF TRANSPORTATION, STANDARD
 SPECIFICATIONS, DATED 1962 AND SUPPLEMENTS
 THERETO IF NOTED IN THE SPECIAL PROVISIONS
 FOR THIS PROJECT.

APPROVED BY: _____
 DIVISION ADMINISTRATION, FEDERAL HIGHWAY ADMINISTRATION
 DATE: _____
 SIGNING AND PAVEMENT MARKING PLANS
 DATE: _____

TABLATION OF QUANTITIES

BID ITEM NO	DESCRIPTION	UNIT	SHEET NUMBERS																		TOTAL THIS SHEET	GRAND TOTAL	REFERENCE SHEET						
			5-8	5-9	5-10	5-11	5-12	5-13	5-14	5-15	5-16	5-17	5-18	5-19	5-8	5-9	5-10	5-11	5-12	5-13				5-14	5-15	5-16	5-17	5-18	5-19
			DRG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL				ORIG	FINAL	ORIG	FINAL	ORIG	FINAL
100-1-1	R1 2 (30' x 30' x 36')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-3	R1-1 (30' x 36')	A3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-4	M3-1 (12' x 24'), M1-1 (24' x 24'), M6-3 (15' x 21')	A3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-4	M3-1 (15' x 30'), M1-1 (30' x 30')	A3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-5	M3-1 (12' x 24'), M1-1 (24' x 24'), M6-3 (15' x 21')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-5	M3 3 (12' x 24'), M1-1 (24' x 24'), M6-3 (15' x 21')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	R5-18 (24' x 36')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	W4-2 (30' x 30')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	W4-1 (30' x 30')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	W4-1 (30' x 36')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	W3-18 (30' x 36')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-15	W5-38 (30' x 36')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	W4-3 (48' x 48')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	R1-1 (30' x 30'), R3-1 (24' x 24')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	W4-1 (48' x 48')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	W4-2 (48' x 48')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	W4-1 (48' x 48')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	W3-3 (48' x 48')	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-17	E5-13 (60' x 12)	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-19	R2-15 (48' x 12)	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-19	316N # 101	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-1-19	316N # 100	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-4-44	316N # 200, # 201	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-6-56	316N # 210, # 211, # 218	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-6-73	316N # 215, # 220, # 221, # 222	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-6-71	316N # 205, # 209, # 210	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-13	316N # 225	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-23	316N # 211	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-25	316N # 220	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-38	316N # 212	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-38	316N # 213	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-48	316N # 214	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100-5-48	316N # 228	A3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

STATE PROJ. NO. 00000-0000
 SHEET NO. S-3

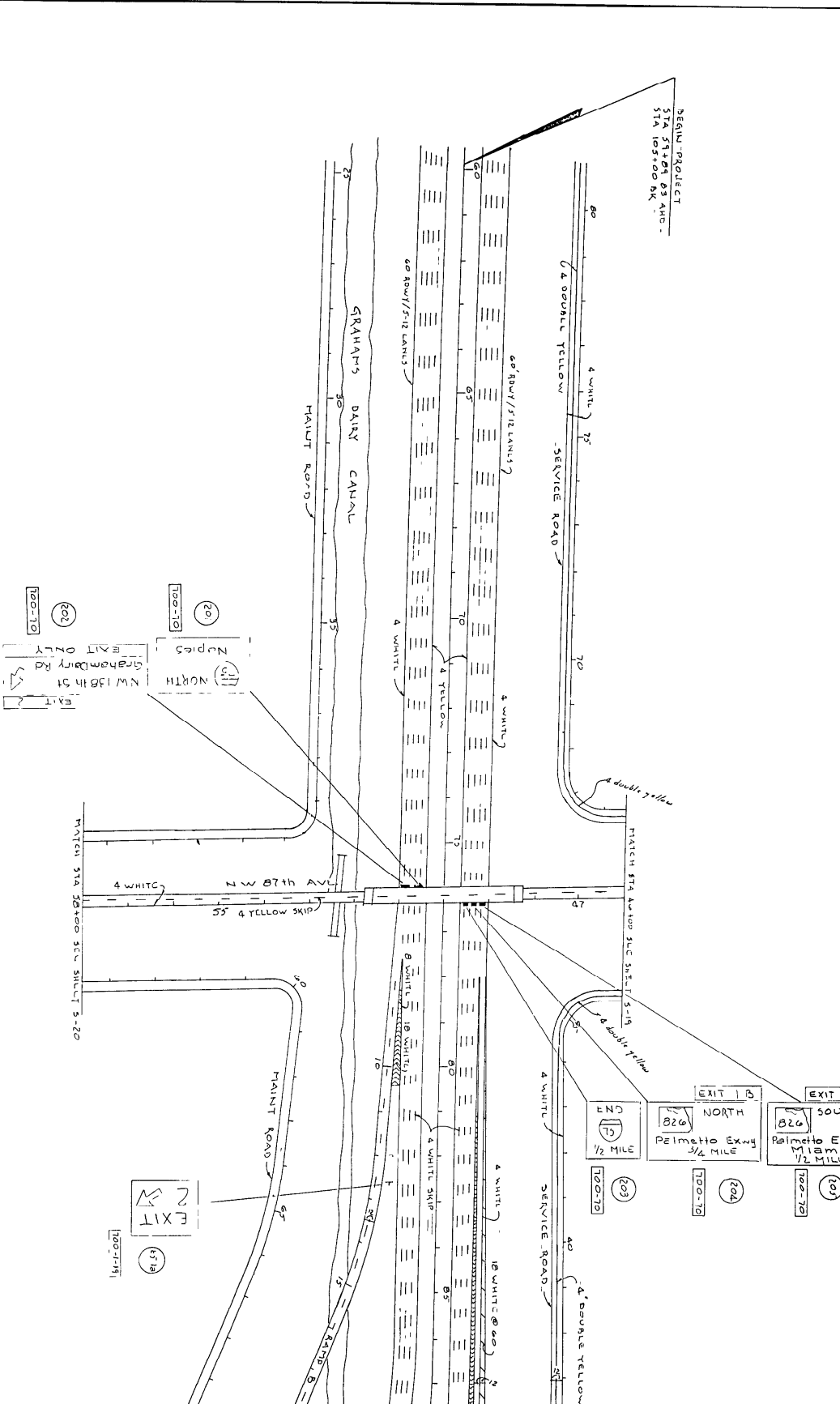


DATE		DESCRIPTION		REVISIONS		DRAWN		CHECKED		APPROVED BY	
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DATE	NO.	DATE	NO.	DATE

ROADWAY LOCATIONS
 SIGNING - PAVEMENT MARKING

EXHIBIT 51

STATE ROAD NO. 10000-0000 S-4



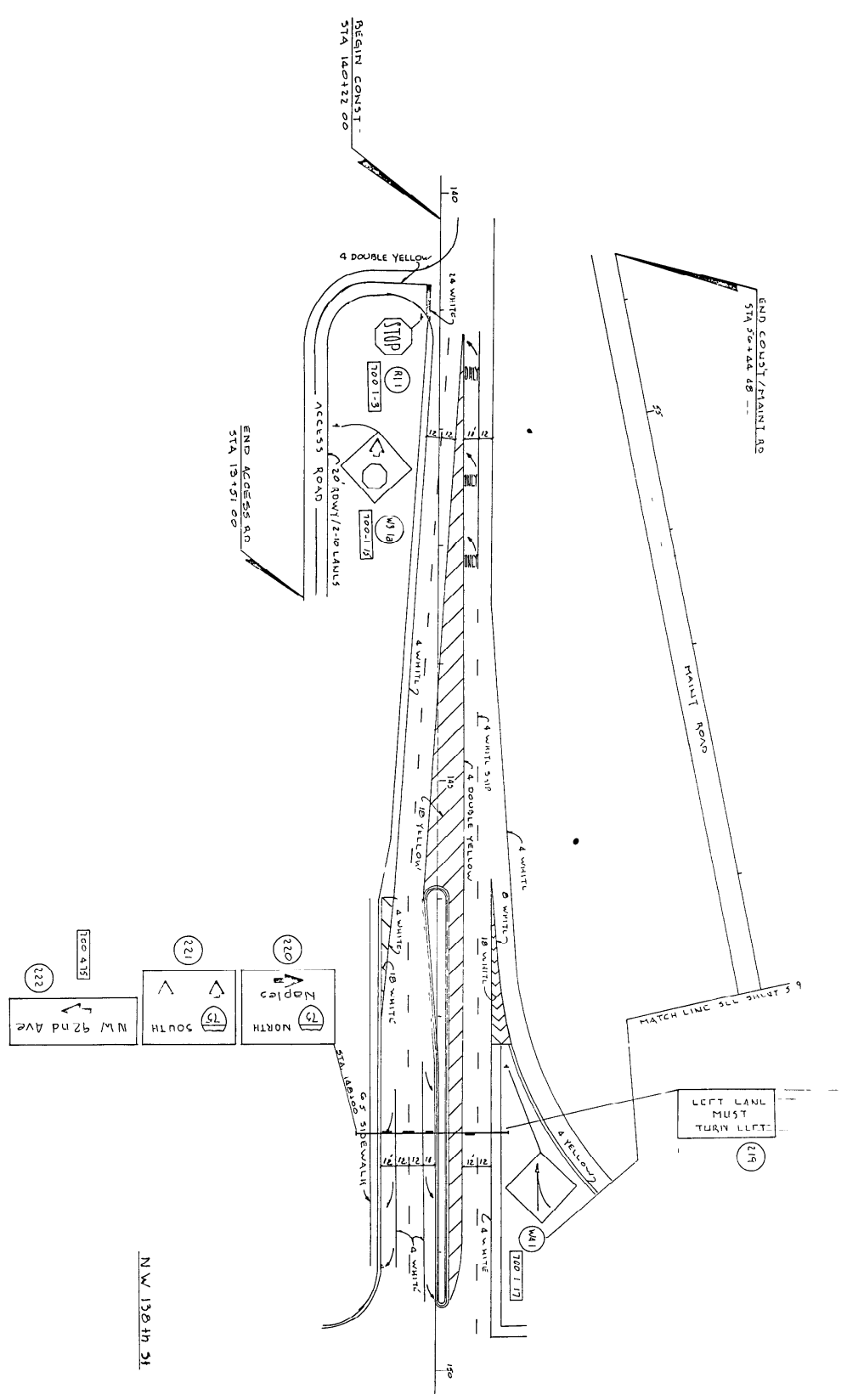
NO.	DESCRIPTION	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS

ROADWAY LOCATIONS
SIGNING - PAVEMENT MARKING
EXHIBIT 52

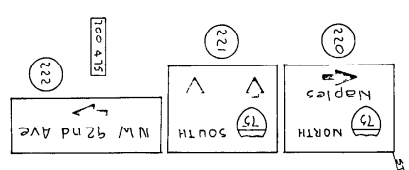
STATE PROJ NO
00000-0000

SHEET
S 5

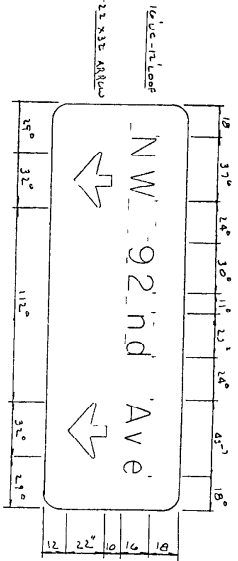
SCALE 1"=40'



N.W. 130th St.

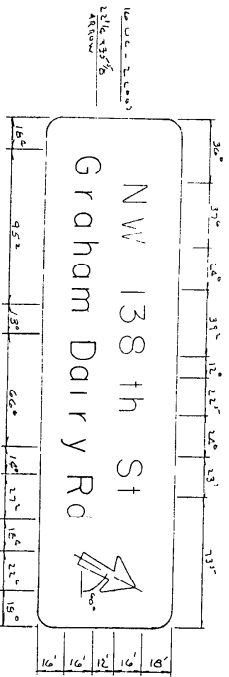


REVISIONS		DESCRIPTION		DATE		BY		CHECKED		DATE	

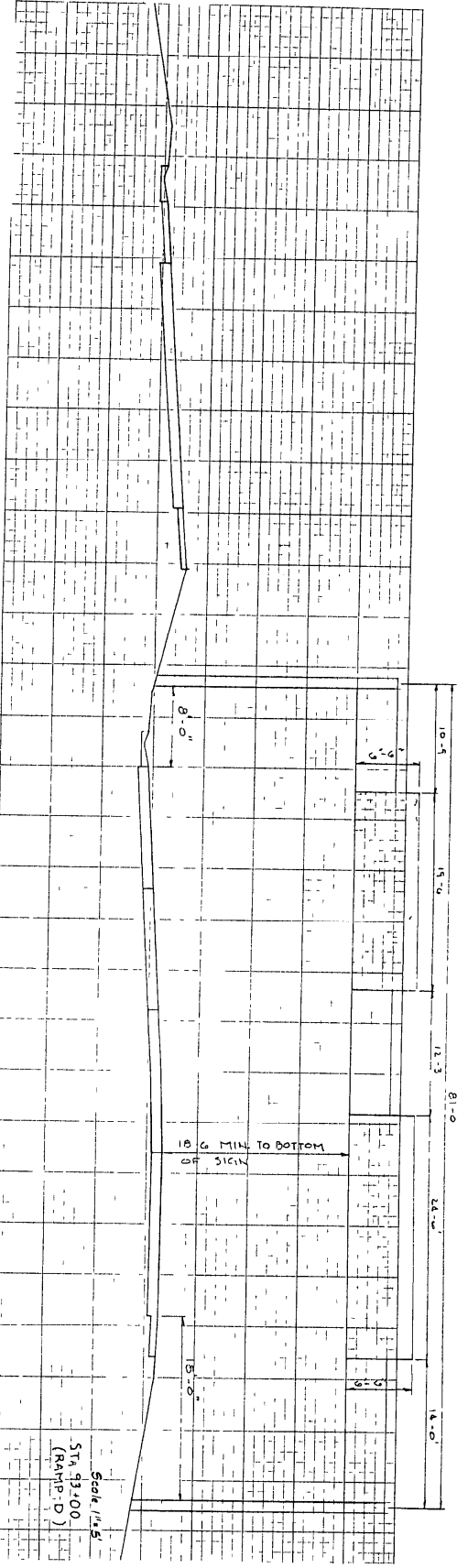


SIGN 206
6'-0" X 11'-0"
3' RADIUS - 9 RAD
1 RECD

COLOR
WHITE ON GREEN



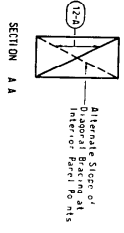
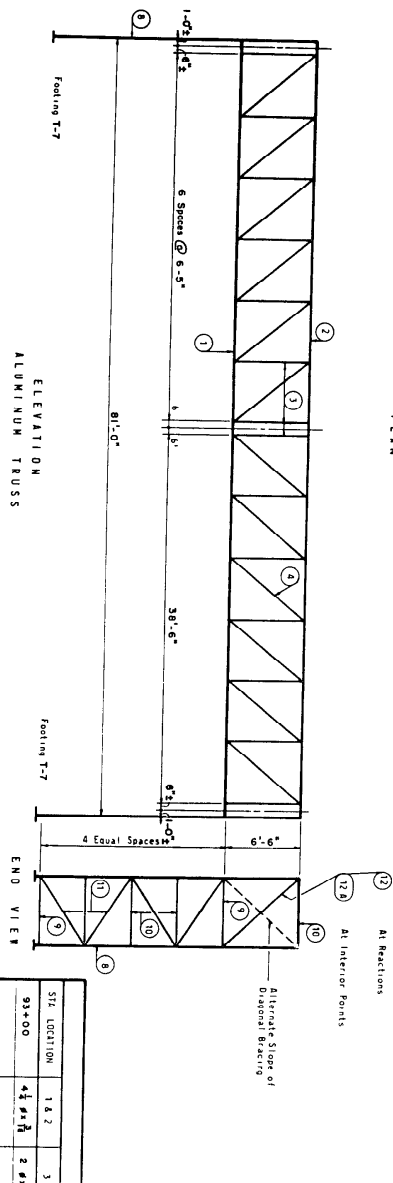
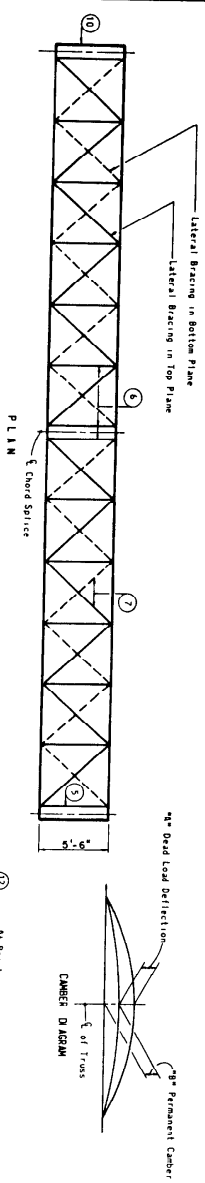
SIGN 207
6'-0" X 11'-0"
3' RADIUS - 9 RAD
1 RECD



Scale 1/4" = 1'-0"
STA 93+00
(RAMP-D)

NOTE GUIDESIGN WORK SHEETS MAY BE USED FOR SIGN DETAILS IN LIEU OF DETAILS ON THIS SHEET

NO.	REV.	DESCRIPTION	DATE	BY	CHECKED	DATE	BY	APPROVED	DATE



CAMBER TABLE

ALUMINUM		TOTAL		TOTAL CAMBER		SIA LOCATION
A	B	A	B	A	B	
1 1/8"	1	2 1/8"				93+00

NOTES

DESIGN USING 1000 POUNDS PER HOUR CHORD SPLICES. CONTRACTOR MAY CHANGE OR OMIT CHORD SPLICES TO FACILITATE FABRICATION OR ERECTION.

COLUMNS: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LENGTH OF COLUMNS. FOR SPECIFICATIONS, GENERAL NOTES, AND CONNECTION DETAILS, SEE DRAWING 1 OF 1 UNDER NUMBER 10855 AND 1 OF 1 UNDER NUMBER 11926.

FOR FOOTING DETAILS, SEE DRAWING 1 OF 1 UNDER NUMBER 10855 AND 1 OF 1 UNDER NUMBER 11926.

SCHEDULE OF MEMBER SIZES

SIA LOCATION	1 & 2	3	4	5 & 6	7	8	10	11	12	12-A
93+00	4 1/2 x 1 1/2"	2 x 1 1/2"	2 1/2 x 1 1/2"	2 1/2 x 1 1/2"	3 x 1 1/2"	3 1/2 x 1 1/2"	4 x 1 1/2"	4 1/2 x 1 1/2"	5 x 1 1/2"	5 1/2 x 1 1/2"

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD.

DESIGNED BY: _____

CHECKED BY: _____

APPROVED BY: _____

DATE: _____

OVERHEAD SIGN STRUCTURE DATA

CONTRACT PLAN SET INFORMATION NOT SHOWN ON THIS SHEET OF PLAN SET
LEAD KEY SHEET OF PLAN SET

INDEX OF SIGNALIZATION PLANS

SHEET NO.	SHEET DESCRIPTION
T 1	KEY MAP
T 2	TABULATION OF SIGNAL EQUIPMENT
T 3	SIGNALIZATION PLAN

**ROADWAY AND TRAFFIC DESIGN STANDARDS
(BOOKLET DATED JANUARY, 1961)**

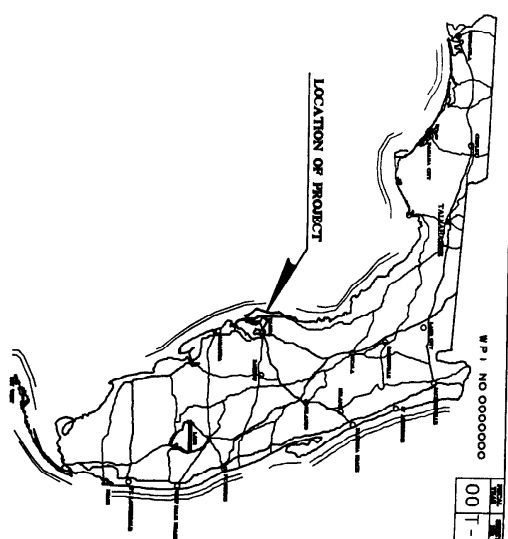
177A	CONDUIT INSTALLATION DETAILS (3 SHEETS)
177Z	SIGNAL CABLE AND SPAN WIRE INSTALLATION DETAILS
177K	ELECTRIC POWER SERVICE
177M	PEDESTRIAN CONTROL SIGNALS INSTALLATION DETAILS
177N	VEHICLE JUMP INSTALLATION DETAILS (3 SHEETS)
177P	PEDESTRIAN DETECTOR ASSEMBLY INSTALLATION DETAILS
177R	CABINET INSTALLATION DETAILS
177S	STANDARD SIGNAL OPERATING PLANS (3 SHEETS)

**STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS OF PROPOSED
STATE HIGHWAY**

F.A. PROJECT NO. M-0000-(0) I STATE PROJECT NO. 00000-00001
PINELLAS COUNTY
STATE ROAD 580
SIGNALIZATION PLANS

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

LENGTH OF PROJECT INFORMATION NOT REQUIRED FOR THIS SHEET OF PLAN SET. LEAD KEY SHEET OF PLAN SET



W.P.I. NO. 00000000
00 | - | 1

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

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE FOR REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
GOVERNING SPECIFICATIONS, STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 1962 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

SUBMITTED BY: _____ DIRECTOR OF PRECONSTRUCTION AND DESIGN
APPROVED BY: _____ DIVISION ADMINISTRATION, FEDERAL HIGHWAY ADMINISTRATION
DATE: _____
SIGNALIZATION PLANS

TABULATION OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	T		4		SHEET NUMBERS		TOTAL THIS SHEET		GRAND TOTAL		REFERENCE SHEET	
			ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL
620-1-1	GROUNDING ELECTRODE	LF	170									170		
630-1-12 #	CONDUIT UNDERGROUND	LF	200									200		
630-1-13 #	CONDUIT UNDER PAVEMENT	LF	328									328		
632-7-1	SIGNAL CABLE	PI	1									1		
634-4-12	SPAN WIRE ASSEMBLY	PI	1									1		
635-1-11	PULL BOXES	EA	5									5		
635-1-12	ELECTRICAL POWER SERVICE ABOVE GROUND	AS	1									1		
64-16-46	CONCRETE STRAIN POLES (TYPE VII)	EA	2									2		
650-1-31	TRAFFIC SIGNAL, 12" (3-SECT, 1-WAY)	AS	6									6		
650-1-32	TRAFFIC SIGNAL, 12" (3-SECT, 2-WAY)	AS	5									5		
653-1-11	PEDESTRIAN SIGNALS (2" INCANDESCENT) 1-WAY	AS	8									8		
659-1-01	SIGNAL HEAD AUXILIARIES (ALUMINUM PEDESTAL)	EA	10									10		
659-1-02	SIGNAL HEAD AUXILIARIES (BACK PLATE, 3-SECTION)	EA	2									2		
660-1-01	VEHICLE DETECTOR (LOOP TYPE) SAW CUTS AND LEAD INS	EA	8									8		
660-2-01	VEHICLE DETECTOR (LOOP TYPE) SAW CUTS AND LEAD INS	EA	20									20		
665-1-1	PEDESTRIAN DETECTOR, POLE OR CABINET MOUNTED	EA	4									4		
665-1-3	PEDESTRIAN DETECTOR, DETECTOR WITH SIGN ONLY	EA	4									4		
670-43000	CONTROLLER, SOLID STATE (ACTUATED) INCL CABINET	AS	1									1		
690-1-0	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA	5									5		
690-3-0	REMOVE POLES	EA	2									2		
690-5-0	REMOVE CONTROLLER ASSEMBLY	EA	1									1		
690-6-0	REMOVE VEHICLE DETECTOR ASSEMBLY	EA	1									1		
690-8-0	REMOVE SPAN WIRE ASSEMBLY	EA	1									1		
690-9-0	REMOVE CABLING AND CONDUIT	PI	1									1		
690-10-0	REMOVE MISCELLANEOUS SIGNAL EQUIPMENT	PI	1									1		

* MEASURED AS LENGTH OF TRENCH FOR MULTIPLE RUNS

DATE: _____ BY: _____

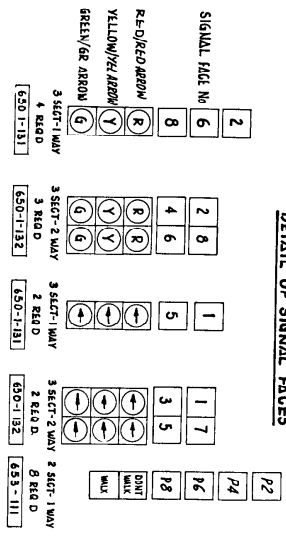
REVISIONS:

NO.	DATE	BY	DESCRIPTION

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT NO. _____ SHEET NO. T-2

TABULATION OF QUANTITIES FOR TRAFFIC SIGNALS
 EXHIBIT 57

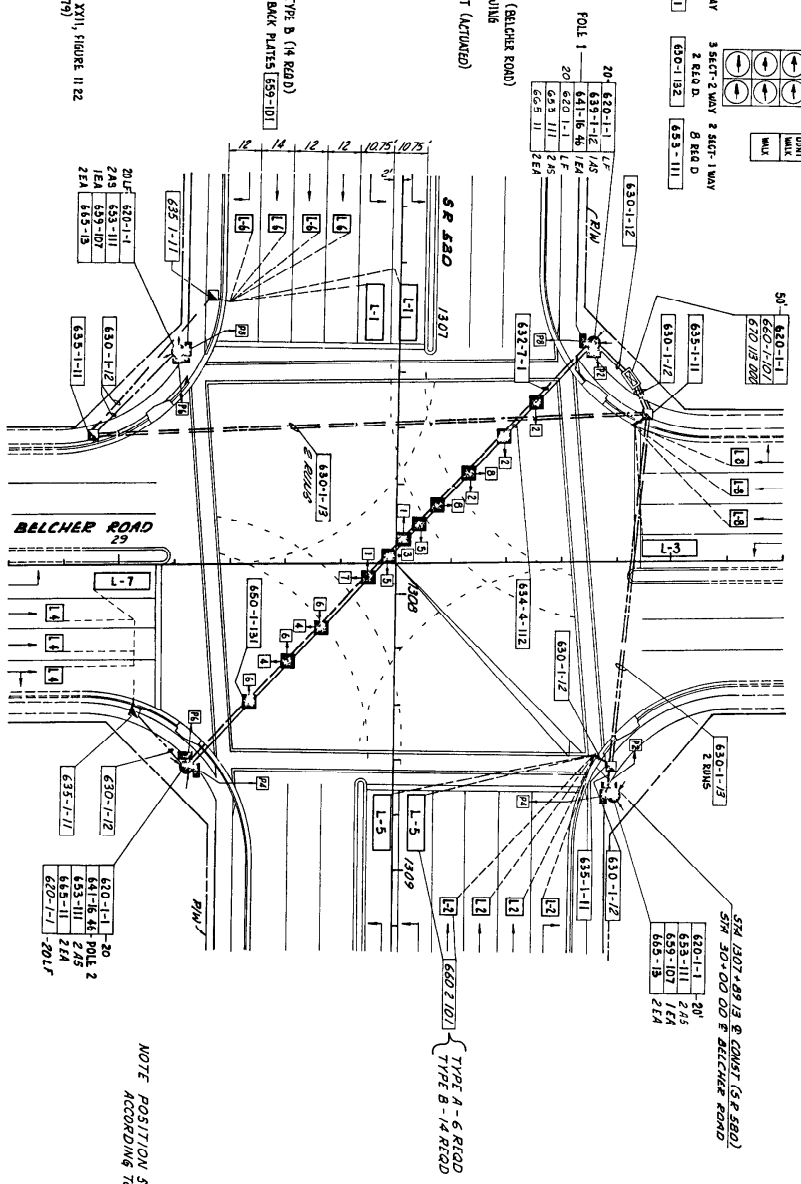
DETAIL OF SIGNAL PAGES



CONTROLLER OPERATION
 1 MAJOR STREET IS SR 580 AND MINOR STREET IS CR TO (BELCHER ROAD)
 2 STANDARD SIGNAL OPERATING PLAN NO. 10 WITH THE FOLLOWING
 a. PEDESTRIAN FLASHES ON PHASE 3 AND 6 CONTINUOUS (ACTUATED)

NOTES
 1 SOUNDING VEHICLE DETECTOR LOOPS-TYPE A (6 READ) AND TYPE B (14 READ)
 2 SIGNAL HEADS 1, 2, 5 AND 6 TO BE EQUIPPED WITH 3 SET BACK PLATES (SS9-101)
 3 MINIMUM CHANNEL SIZE, 1795 X
 4 EXISTING CONCRETE UNDER PINELLAS COUNTY
 5 FIELD LOCATE THE SOUND DIRECTIONS
 6 REMOVE EXISTING SIGNAL EQUIPMENT

TRAFFIC CONTROL PLAN
 MAINTAIN TRAFFIC ON EXISTING ROADWAY BY USE OF CASE NO. XX11, FIGURE 11 B2 OF THE MANUAL ON TRAFFIC CONTROL AND SAFE PRACTICES (1979)



NOTE POSITION SIGNAL HEADS 1, 2, 5 AND 6 ACCORDING TO REVISED LANE LINES

TYPE A - 6 READ
 TYPE B - 14 READ

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

SIGNALIZATION PLAN

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

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PLANS OF PROPOSED
STATE HIGHWAY

F. A. PROJECT NO. IR-000-0(000)0 (STATE PROJECT NO. 00000-00001)

DUVAL COUNTY
1-295 AT S.R. 13
LIGHTING PLANS

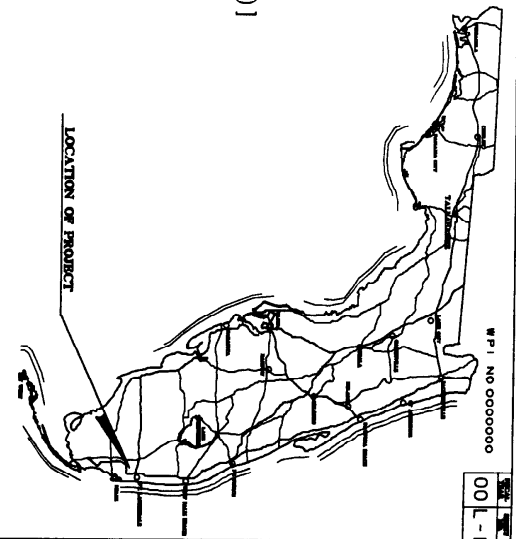
SHEET NO.	SHEET DESCRIPTION
L1	KEY SHEET
L2	TABULATION OF QUANTITIES
L3	POLE TABULATION GENERAL NOTES LEGEND
L4	PLAN SHEET FOR INTERCHANGE AT S.R.13 & 133
L5	HOURLY POLE FOUNDATIONS
L6 & L7	BRIDGE DATA

ROADWAY AND TRAFFIC DESIGN STANDARDS
(BOOKLET DATED JANUARY, 1964)

D790 HIGHWAY LIGHTING GENERAL NOTES
D791 HIGHWAY LIGHTING DETAILS
D792 ROADWAY LIGHTING DETAILS
D793 SERVICE POINT DETAILS

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

LENGTH OF PROJECT INFORMATION NOT REQUIRED
FOR DESIGNATIONS INTERCHANGES, AND SIMILAR
SITES OF DESIGN INFORMATION SHOWN ON LEAD KEY
SHEET OF PLAN SET



RFI NO 0000000
00 L-1

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

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

GOVERNING SPECIFICATIONS, STATE OF FLORIDA,
DEPARTMENT OF TRANSPORTATION, STANDARD
SPECIFICATIONS FOR ROADWAY LIGHTING, 1962
AND SUPPLEMENTS THERE TO, IF NOTED IN THE SPECIAL PROVISIONS
FOR THIS PROJECT.

SUBMITTED BY: _____ DIRECTOR OF RECONSTRUCTION AND DESIGN

APPROVED BY: _____ DIVISION ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION

DATE: _____

APPROVED BY: _____ DIVISION ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION

DATE: _____

LIGHTING PLANS

STATE FUND NO. 00000-0000
SHEET NO. L 2

TABULATION OF QUANTITIES

BID ITEM NO	DESCRIPTION	UNIT	L-4		SHEET NUMBERS		TOTAL THIS SHEET		GRAND TOTAL		REFERENCE SHEET
			ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	ORIG	FINAL	
455-88-4	DRILLED SHAFT (42" DIA)	LF	195					195			
455-III	CORE (SHAFT EXCAVATION)	LF	20					20			
455-422-4	UNCLASSIFIED SHAFT EXCAVATION (42" DIA)	LF	195					195			
455-425-4	UNCLASSIFIED EXTRA DEPTH EXCAVATION (42" DIA)	LF	20					20			
715-73	INSTALL NEW CONDUCTORS, CONDUIT & PULL BOXES	LS	1					1			
715-96-1	LOAD CENTER (SECONDARY)	EA	2					2			
715-96-2	UNDERDECK LUMINAIRES (PENDANT HUNG)	EA	8					8			
715-96-20	HIGH MAST LIGHTING UNIT	EA	13					13			
101-1	MOBILIZATION	LS	1					1			
102-1	MAINTENANCE OF TRAFFIC	LS	1					1			

NOTE: MOBILIZATION AND MAINTENANCE OF TRAFFIC SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND THE FLORIDA MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET LIGHTING

DESCRIPTION	DESCRIPTION	DESCRIPTION	DESCRIPTION
DATE	DATE	DATE	DATE
BY	BY	BY	BY
FLORIDA DEPARTMENT OF TRANSPORTATION			
DATE			

POLE DATA

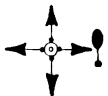
POLE NO.	CKT	STATION	DISTRIBUTION	LUM	MH	POLE SETBACK & NOTES	FIN
1	A-1	387+85	SYM	1000WH	120	112' LT @ I-295	
2	B-1	392+52	SYM	1000WH	120	125' RT @ I-295	
3	A-1	396+83	SYM	1000WH	120	168' LT @ I-295	
4	B-1	401+00	SYM	1000WH	120	152' RT @ I-295	
5	B-3	405+60	SYM	1000WH	120	167' RT @ I-295	
6	B-3	410+43	SYM	1000WH	120	130' RT @ I-295	
7	B-3	418+82	SYM	1000WH	120	145' RT @ I-295	
8	A-2	423+85	SYM	1000WH	120	110' LT @ I-295	
9	A-2	14+50	SYM	1000WH	120	50' RT @ RAMP C	
10	A-2	23+38	SYM	1000WH	120	50' RT @ RAMP C	
11	A-3	188+38	SYM	1000WH	120	65' LT @ S R 13	
12	A-1	19+50	SYM	1000WH	120	40' RT @ RAMP F	
13	B-2	168+90	SYM	1000WH	120	148' LT @ S R 13	

CONVENTIONAL LIGHTING DESIGN CRITERIA
 AVERAGE INITIAL INTENSITY 1.0 FC
 UNIFORMITY RATIO 3/1 TO 4/1
 WIND SPEED LESS THAN 10/1
 M.P.H.

HIGH MAST LIGHTING DESIGN CRITERIA
 AVERAGE INITIAL INTENSITY 0.7 @ 0.9 FC
 UNIFORMITY RATIO 3/1 TO 4/1
 WIND SPEED LESS THAN 10/1
 M.P.H.

CHECKED BOXES UTILIZED IN PLAN PACKAGE

SYMBOL



LEGEND

DESCRIPTION

WATT HIGH PRESSURE SODIUM LUMINAIRE DESIGNED FOR MEDIUM MOUNTING HEIGHT
 - CUTOFF TYPE DISTRIBUTION INTERNAL MAGNETIC
 WATT HIGH PRESSURE SODIUM LUMINAIRE DESIGNED FOR MEDIUM MOUNTING HEIGHT
 - CUTOFF TYPE DISTRIBUTION INTERNAL MAGNETIC
 WATT HIGH MAST TOWER WITH FOLIA (411000) WATT HIGH PRESSURE SODIUM LUMINAIRES WITH INTEGRAL AUTO-REGULATOR TYPE BALLAST WIRE FOR 480 VOLTS. POLES MAY BE GALVANIZED OR WEATHERING STEEL. FINISHED POLES SHALL HAVE A PROTECTIVE COATING OF HOT DIP GALVANIZING APPLIED IN ACCORDANCE WITH ASTM-123 OR SHALL BE FABRICATED USING ASTM A588 ATMOSPHERIC CORROSION RESISTANT STEEL OR ASTM A595 GRADE C WEATHER RESISTANT STEEL OR ANY OTHER STEELS HAVING CORROSION RESISTANT PROPERTIES EQUAL TO OR GREATER THAN ASTM A588 OR A595 GRADE C.

THE ASYMMETRICAL LUMINAIRES SHALL PROVIDE A SEMI CUTOFF LIGHT DISTRIBUTION AND THE SYMMETRICAL LUMINAIRES SHALL PROVIDE A CUT OFF LIGHT DISTRIBUTION AS DEFINED BY IES. SHIELDS MAY BE UTILIZED TO PROVIDE THE CUT OFF VALUES. ARROWS INDICATE THE DIRECTION OF DISTRIBUTION BY THE LUMINAIRE.
 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE ANCHOR BOLT DESIGN WITH FOUNDATION DESIGN.

PENDANT HUNG UNDERDECK LUMINAIRE 55 WATT LOW PRESSURE SODIUM LUMINAIRES EQUIPPED WITH POLYCARBONATE REFRACTOR INTEGRAL BALLAST WIRE FOR 480 VOLTS (50% OF LUMINAIRE TO BE BELOW BRIDGE BEAM) SIMILAR OR EQUAL TO THE NORELCO TUNNEL FIXTURE OR THE AMERICAN LIGHTING CORP SOX L P S 900 SYMMETRICAL DISTRIBUTION
 PER CAP MOUNTED UNDERDECK LUMINAIRE 55 WATT LOW PRESSURE SODIUM LUMINAIRE EQUIPPED WITH POLYCARBONATE REFRACTOR INTEGRAL BALLAST WIRE FOR 480 VOLTS SIMILAR OR EQUAL TO THE NORELCO WALL PACK OR THE AMERICAN LIGHTING CORP WALL LITE ASYMMETRICAL DISTRIBUTION

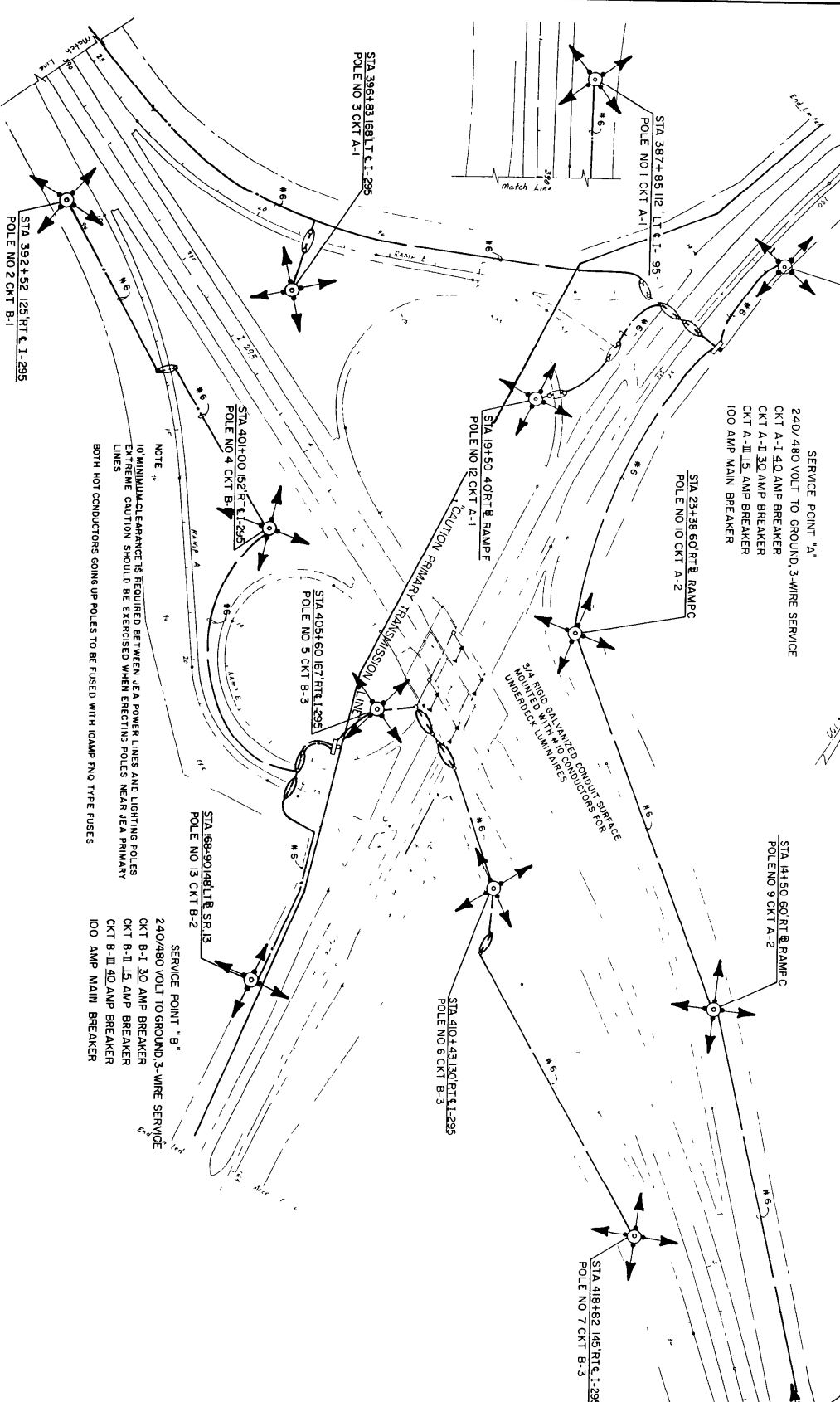
1/2" RIGID GALVANIZED STEEL CONDUIT AT ROADWAY CROSSINGS WITH CONDUCTORS AS SHOWN ON PLAN SHEETS. EXTEND CONDUIT BEYOND EDGE OF PROPOSED PAVEMENT TO PULL BOXES.
 HOOKED UNDER PAVEMENT CONDUIT SHALL BE SCHEDULE 40 PVC CONDUIT WITH AMG THW CONDUCTORS INSIDE (CONDUCTOR SIZE SHOWN ON PLAN SHEETS)

DISTRIBUTION POINT (SEE DETAIL INDEX 17504 ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET DATED JANUARY 1984)
 PULL BOX (SEE INDEX 17503 ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET DATED JANUARY 1984) PULL BOXES ARE REQUIRED AT BOTH ENDS OF CONDUIT AT ROADWAY CROSSINGS AND AS NECESSARY FOR COMPLETION OF THE PROJECT

SERVICE SPECIFICATIONS

- 1 THE ENCLOSURE SHALL BE NEMA 3R POLE MOUNTED NON-METALLIC RAIN-TIGHT INSULATED TO 600 VAC
- 2 THE ENCLOSURE DOOR SHALL BE LOCKABLE AND FOUR KEYS PROVIDED TO THE MAINTAINING AGENCY. THE DOOR SHALL HAVE A CONTINUOUS HINGE AND DRAW DOWN LATCHES. ALL HARDWARE SHALL BE STAINLESS STEEL.
- 3 600V BOLT-IN TYPE BREAKERS SHALL BE USED. ALL COMPONENTS TO BE INTERCHANGEABLE WITH YALON MANUFACTURES
- 4 ALL BUSES TO BE COPPER-225 A RATED ENCLOSED COPPER GROUND BUS INCLUDED
- 5 LOCATE CONTACTOR, 240/120V TRANSFORMER, AND SWITCH INSIDE ENCLOSURE. H O A SWITCH REQUIRED
- 6 A GOOD LIGHTING PROTECTOR SHALL BE WIRE INSIDE THE ENCLOSURE
- 7 ENCLOSURE TO BE SIZED TO ACCOMMODATE AS MANY BREAKERS AS CALLED FOR AND ALL OTHER SERVICE EQUIPMENT
- 8 ENCLOSURE TO BE RIGIDLY ATTACHED TO THE POLE FACE

STATE PROJ NO
00000-0000
SHEET
L-4



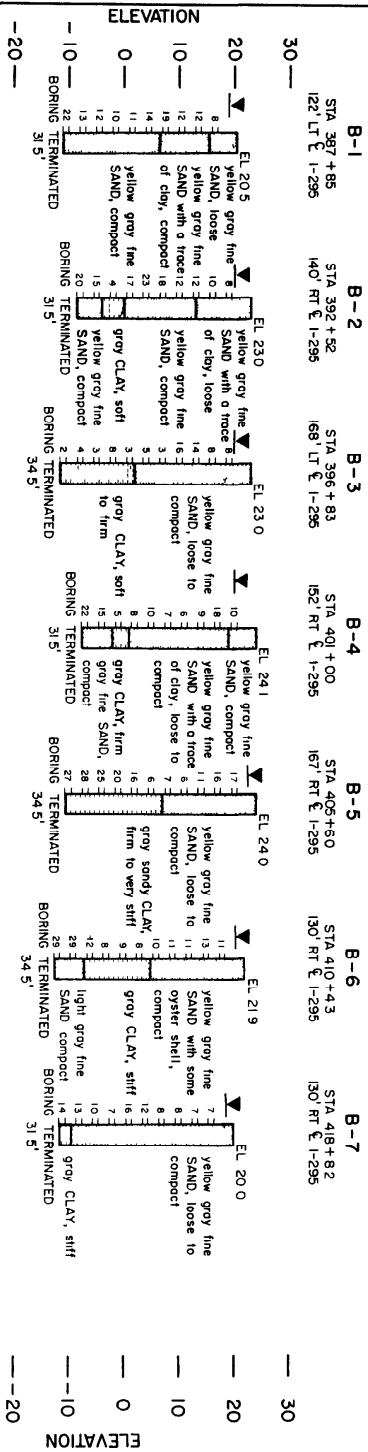
NOTE
10 MINIMUM CLEARANCE IS REQUIRED BETWEEN JEA POWER LINES AND LIGHTING POLES
EXTREME CAUTION SHOULD BE EXERCISED WHEN ERECTING POLES NEAR JEA PRIMARY LINES
BOTH HOT CONDUCTORS GOING UP POLES TO BE FUSED WITH 10AMP FNO TYPE FUSES

SERVICE POINT "B"
240/480 VOLT TO GROUND, 3-WIRE SERVICE
CKT B-I 30 AMP BREAKER
CKT B-II 15 AMP BREAKER
CKT B-III 40 AMP BREAKER
100 AMP MAIN BREAKER

SERVICE POINT "A"
240/480 VOLT TO GROUND, 3-WIRE SERVICE
CKT A-I 40 AMP BREAKER
CKT A-II 30 AMP BREAKER
CKT A-III 15 AMP BREAKER
100 AMP MAIN BREAKER

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

PLAN SHEET
HIGHWAY LIGHTING
EXHIBIT 6.2



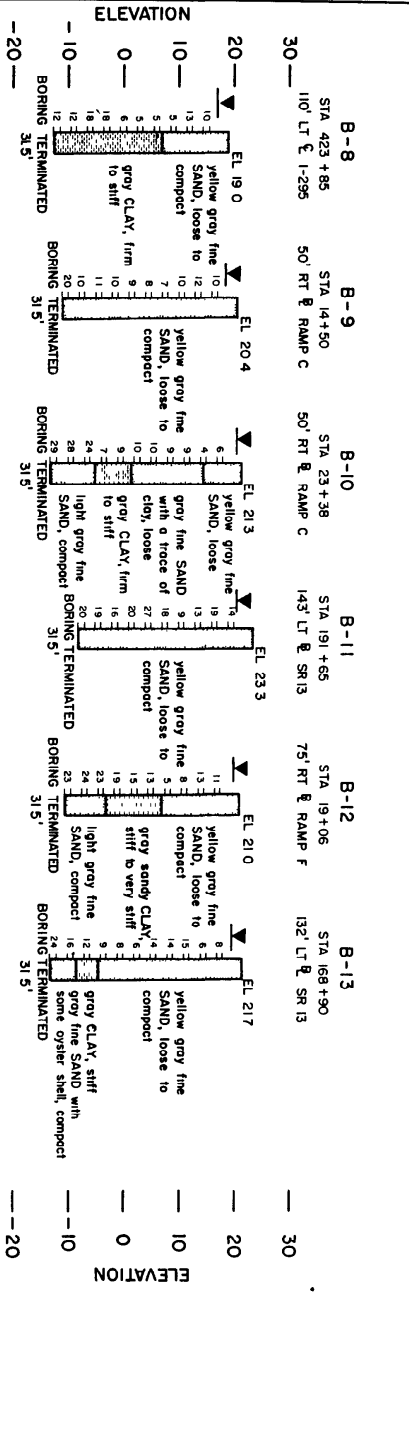
LEGEND
 SAND
 CLAY
 WATER TABLE

SPOON
 Inside diameter 1-3/8"
 Outside diameter 2"

HAMMER
 Weight 140 lbs
 Avg drop 30"

NOTE
 Numbers to left of boring indicate blow on spoon for 12" penetration (unless otherwise noted)

THIS AREA IS MODERATELY CORROSIVE



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 SAND
 CLAY
 WATER TABLE

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NOTE
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PROFILE
 Scale: 1" = 10' Vert

DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION

NO.	NAME	DATE	NO.	NAME	DATE	NO.	NAME	DATE

NO.	NAME	DATE	NO.	NAME	DATE