



MEMORANDUM

**DATE:** December 8, 1992

**TO:** Plans Preparation Manual Owners

**FROM:** Linda Seigle, Roadway Design Documents and Training

**COPIES:**

**SUBJECT:** REVISIONS TO THE 1989 PLANS PREPARATION MANUAL

Enclosed are the revisions to the Plans Preparation Manual that were reviewed by the District Design Engineers in their December 1992 meeting. The revisions were approved with recommended editorial changes. These changes were incorporated into the revisions. The major changes made are as follows:

- Volume I, was revised to reflect the elimination of the design checklists (previously contained in the Roadway and Construction Training Aids Manual) and the change of terminology from 30%-60%-etc to Phase I, Phase II, etc
- Volume I, Chapter 2 was revised as a result of publication of the new Drainage Manual
- Volume I, Chapter 3 was revised to add a new pay item and to revise terminology
- The above changes are also reflected in Volume II
- Volume II, Chapters 7 & 10 were revised to add new pay item and plan notes

Included with the revisions is a list of the pages revised, with a brief description of the section revised. All revised sheets except indexes have been reprinted.

Plans Preparation Manual Revisions  
December 8, 1992  
Page 2 of 2

Also included with these Plans Preparation Manual revisions  
are copies of Special Provisions modifying the Roadway and Traffic  
Design Standards

Attachments

## VOLUME I

Table of Contents and List of Exhibits  
Updated and reprinted

Page xvi

Revised to delete 2 FDOT publications that are no longer available  
Design & Construction Training Aids Manual  
Transportation Engineering Quality Assurance Plan

Pages I-2-27 0 - 29 0

Revised to add design high water clearances that are not in the new Drainage Manual on page 27; the other pages are reprinted due to re-pagination

Page I-2-33 0

Revised to show minimum gutter grade of 0.3% in accordance with Drainage Manual

Chapter 3

The pages revised are due to the addition of the pay item for Regular Excavation (3-R Projects) and removal of "shrinkage" and "bulkage" terminology

Chapter 10

Revised lane closure analysis to use highest PMF due to lack of knowledge of actual month of lane closure (This revision was approved at the June Design Engineers Meeting and was distributed with the meeting minutes, but has not been transmitted to all PPM holders )

Pages I-14-7.0 - 10 0

Revised to change terminology from 30%, 60%, etc to Phase I, Phase II, etc

Chapter 15

Changes due to elimination of design checklists and change to Phase I, etc terminology

Chapter 16

Revised due to elimination of design checklists

Page I-18-2 0

Revised due to change to Phase I, etc

Page I-20-4 0

Revised to add components to Contract File

Page I-20-7 0

Revised to indicate non-CA, non-exempt projects (those with continued FHWA review)

Page I-20-22 0

Changed to require S&S copies of revisions made during construction to be sent to the responsible professional engineer rather than the District Design Engineer



## VOLUME II

Page II-1-2 0

Revised to show grades on plans to 3 decimal places rather than 4

Page II-1-10 0

Added information on use of Regular Excavation - Lump Sum

Chapter 2

Revised due to change in terminology to Phase I, etc , and due to elimination of design checklists

Page II-5-1 0

Revised to allow rural non-interstate drainage maps to be at same scale as rural interstate

Page II-7-4 0

Added pay item note to be used when minor sections of a project are restricted to black base and pay item note for geogrid

Page II-10-1 0

Added paragraph on true scale for CADD produced plans

Page II-10-12 0

Revised to show percent of grade to 3 decimal places

Page II-10-18 0

Added plan note regarding treatment of driveways under Access Management (Voids Design Bulletin 92-5)

# B0050036.D01

## REVISIONS TO ROADWAY AND TRAFFIC DESIGN STANDARDS. ( ) (REV 2-11-93)

INDEX NO. 199 (Sheet 1 of 1) - Geotextile Criteria is deleted and INDEX NO. 199 (Sheet 1 of 1) - Geotextile Criteria, attached hereto, is substituted.

INDEX NO. 200 (Sheet 1 of 2) - GENERAL NOTES: The text of General Note No. 9 is deleted and the following substituted:

Except for precast circular units manufactured under ASTM C76 or ASTM C78, all steel bars shall have 1 1/2" minimum cover unless otherwise shown. Horizontal steel splices in rectangular structures shall be lapped a minimum of 24 bar diameters.

INDEX NO. 200 (Sheet 2 of 2) - The tabular chart for WALL DESIGNS-RECTANGULAR STRUCTURES is expanded as follows:

(a) An asterisk is added to the subheading SIZE 3'-6", (b) The following asterisk notation is added "Precast structures 3'-6" x 3'-6" may be cast with 6" thick walls for structures with depths of 15 feet or less", and (c) The following footnote is added, "SIZE is the inside length of a structure wall".

INDEX NO. 201 (Sheet 2 of 6) - The TYPE 7-T (TRAFFIC) (H-20) Manhole Top is deleted and the TYPE 7 Manhole Top as detailed on the modification to Index No. 201, attached hereto, is substituted.

INDEX NO. 201 (Sheet 3 of 6) - OPTIONAL CONSTRUCTION JOINTS. The text of Note No. 5 is deleted and the following substituted: Minimum cover on reinforcing bars is 1 1/2".

INDEX NO. 205 (Sheet 4 of 4) is deleted and the INDEX NO. 205 (Sheet 4 of 4), attached hereto, is substituted.

INDEX NO. 249 (Sheet 1 of 1) - All reference to Index No. 274 and data (bottom line of chart) is deleted.

INDEX NO. 272 (Sheet 6 of 6) - General Note No. 11. The last line is deleted and "for Mitered End Section (BO), Each" is substituted.

INDEX NO. 273 (Sheet 6 of 6) - General Note No. 7. The text is deleted and the following substituted: "In addition to the requirements of 430-4, side drain culverts shall comply with the cover requirements of Index No. 205."

INDEX NO. 280 (Sheet 4 of 4) - EXTRA BASE FOR CROSS BOX CULVERTS UNDER FLEXIBLE PAVEMENT, ASPHALTIC CONCRETE BASE. The following sentence is added: "The cost of furnishing and installing the coarse aggregate and filter fabric shall be included in the cost of

the box culvert."

INDEX NO. 282 (Sheet 1 of 1)- INLET TYPE C (MODIFIED). Note No. 3 is expanded by the following: "Handrail to be paid for at the contract unit price for Pipe Handrail, LF."

INDEX NO. 301 (Sheet 1 of 1)- Expanded to include double left turn lanes per DOUBLE LEFT TURN LANES (FULL SHADOW) details, attached hereto.

INDEX NO. 304 (Sheet 2 of 2)- GENERAL NOTES. General Notes Numbers 1, 2, 4, and 5 are deleted and the following notes are substituted:

1. Curbed facilities with sidewalks and those without sidewalks are to have curb cut ramps constructed at all street intersections and at turnouts that have curbed returns. Partial curb returns shall extend to the limit prescribed by Index No. 515 to accommodate curb cut ramps.

2. The location and orientation of curb cut ramps shall be as shown in the plans.

4. The ramps shall have a detectable warning surface. The detectable surface shall be an integral part of the ramp and can be either built in or applied. The detectable surface shall not be constructed on the transition slopes (side slopes) unless called for in the plans.

Detectable warnings shall consist of raised truncated domes with a diameter of nominal 0.9 inch (23mm), a height of nominal 0.2 inch (5mm) and a center-to-center spacing of nominal 2.35 inches (60mm) and shall contrast visually with adjoining surfaces, either light-on-dark, or dark-on-light.

5. When crosswalk markings are required, curb ramp locations and orientations are to be coordinated with markings shown in the plans.

INDEX NO. 305 (Sheet 1 of 5)- LONGITUDINAL JOINTS, TIE BAR SPACING. The following notation is added below the table: "Tie bars are deformed NO. 4 or NO. 5 reinforcing steel bars meeting the requirements of Section 931."

INDEX NO. 439 (Sheet 1 of 4)- General Note No. 13. The last line is deleted and "price for Impact Attenuator, Vehicular (GREAT) (TEMP), Each" is substituted.

INDEX NO. 500 (Sheet 1 of 2)- The following Design Note is added:

## DESIGN NOTE:

At locations where muck or other soft soil deposits persist to such depth that removal is impractical, the construction of a geogrid foundation over those soils should be considered. The Engineer of Record should request guidance from the District Geotechnical Engineer and solicit geogrid foundation designs from geogrid manufacturers when pursuing geogrid alternates.

INDEX NO. 510 (Sheet 1 of 2)- Chart at the bottom center of the sheet. The two values "0.21" are deleted and "0.021" are substituted.

INDEX NO. 514 (Sheet 1 of 2)- OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS. The column headed " ABC-1" and 4" Bank Run Coquina Subbase LBR 100 " is changed to " ABC-1" and 4" Bank Run Shell Subbase LBR 100 ".

INDEX NO. 514 (Sheet 2 of 2)- OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS. These base types are for limited use and will be designated in the plans when allowed.

INDEX NOS. 600-651 SYMBOLS. The sentence, "Cones or Tubular markers may be used during daylight only" is changed to read, "Tubular Markers May be Used During Daylight Only."

INDEX NO. 600 (Sheet 3 of 10)- CHANNELIZING AND LIGHTING DEVICES and DROPOFFS IN WORK ZONES. Reference to "Sheet 5 of 9" is changed to "Sheet 5 of 10".

INDEX NO. 600 (Sheet 5 of 10)- OPTIONAL SHOULDER TREATMENT. Reference to "Slope 6:1 Or Flatter" is changed to "Slope 4:1 Or Flatter".

INDEX NO. 600 (Sheet 6 of 10)- TEMPORARY CURB, Note 3, first sentence: Delete "(asphalt curb only)".

INDEX NO. 600 (Sheet 7 of 10)- CONES detail. Delete notation "Cones To Be Used During Daylight Only" change minimum diameter for plastic drums to 18 inches in lieu of 24 inches.

Note 5: Revise to read, "During hours of darkness, warning lights shall be used on drums, vertical panels, Type I, Type II or Type III Barricades".

Add Note 9: "When used at night, cones shall:

1. Be used only in active work zones, such as milling and resurfacing or other moving operations where cones can be monitored.

2. Be 36 inches tall, with a minimum weight of 12 pounds and be reflectorized as per the MUTCD.

3. Be used only with Department approved reflective collars."

INDEX NO. 600 (Sheet 10 of 10) -

APPLICATION.

CLASS D, Add: "Maximum spacing 5' center to center".

CLASS E, Add: "Maximum spacing 5' Center to Center".

NOTES.

Note 1, Add: "Class A or B" before "RPM's".

Note 3, After the word paint in the first sentence, add: "however, tape or paint must be used in all transition areas"

Note 4, first line, Add: "and light Asphalt" after "Concrete Pavement".

INDEX NO. 605 (Sheet 1 of 1) - General Note 4, first line: Add "warning" before "signs".

INDEX NO. 607 (Sheet 1 of 1) - General Note 4: Add "The first two warning" to beginning of note.

INDEX NO 608. (Sheet 1 of 4) - General Note 5: Add "warning" before "signs".

Add Note 14: "Span wire signals are to be used only in active work zones, where the contractor can monitor signal operation and maintain traffic with flaggers in the event of a power failure."

INDEX NO. 608 (Sheet 3 of 4) - Top Center, under notation for "Side Road": Change "See General Note No. 13" to see General Note No. 12."

INDEX NO. 608 (Sheet 4 of 4) - Bottom right of detail: Change "See General Note No. 10" to "See General Note No. 9."

INDEX NO. 614 (Sheet 1 of 2) - DETAIL OF TEMPORARY ASPHALT SEPARATOR. The notation "Entire Separator Shall Be Painted Reflectorized Yellow" is changed to "Entire Separator Shall Be Painted Reflectorized Yellow (included in cost of separator)".

INDEX NO. 9535 (Sheet 2 of 4 and 4 of 4) - SIGN COL & STUB COL ELEVATION I-BEAM SHAPES. The 2x12 bevel is deleted; the slip plane plates shall be fabricated normal to the I-Beam axis and the column installed with the slip plane in the horizontal position.

INDEX NO. 11860 - Expanded as follows: The Gore Exit Panel (FTP-31, Index 17355, Sheet 1 of 4), Sign Identification Number 88, can be installed on a single column with the following stipulations:

1. Maximum height to bottom of sign is 14 feet.
2. Column size is 6" aluminum round tube with 1/4" wall.
3. 3 Type II Brackets require for attachment.

4. For Type II Bracket details, Attachment, and General Notes see Index No. 11860.

5. For Footing size and Slip Base Details, see Index No. 11863.

INDEX NOS. 11861 through 11864 (Sheet 1 of 1) - Note 4: "3 x 1/2" is deleted and "3 1/2 x 3/16" substituted.

SLIP BASE DETAILS table: Information for 3 1/2 x 3/16 column size is deleted.

Sign Post table, COL. SIZE 3 1/2 x 3/16: FOOTING dimension 1-6 x 2-6 is deleted and 0 x 2-6 substituted.

INDEX NO. 17302 (Sheet 1 of 1) - The sheet title is changed from "TYPICAL SECTIONS FOR ONE COLUMN SIGN PLACEMENT" to "TYPICAL SECTIONS FOR PLACEMENT OF SINGLE & MULTI-COLUMN SIGNS".

INDEX NO. 17346 (Sheet 1 of 8) - PAVEMENT ARROW AND MESSAGE DETAILS, Add the following areas: Thru arrow - 12 S.F., Left arrow - 16 S.F. and Combination arrow - 27 S.F.

INDEX NO. 17346 (Sheet 1 of 8) - PAVEMENT MARKINGS FOR INTERSECTIONS WITH MAJOR AND MINOR ROADS: Add note "Delineators optional."

INDEX NO. 17346 (Sheet 2 of 8) - PAINTED LEFT TURN STORAGE LANE(S) DETAILS. The notation "With each additional 50 ft. of turn lane add one arrow." is changed to "With each additional 100 ft. of turn lane, add one arrow."

INDEX NO. 17346 (Sheet 2 of 8) - PAINTED LEFT TURN STORAGE LANE(S) DETAILS, Add Note: "Pavement message 'ONLY' is not required for created (shadowed) turn lanes, single or dual, where the driver must exit the thru lane to enter a turn lane."

INDEX NO. 17346 (Sheet 3 of 8) - TYPICAL INTERSECTIONS 2 THRU LANES PLUS LEFT TURN LANE, WITH CROSSWALK: Delete dimension line and notation upper right of detail.

INDEX NO. 17349 (Sheet 1 of 1) - Add the following note: 4. Case I installations - the arrow panels and object markers shall be located approximately 20 feet, but not less than 12 feet from the edge of the travel lane.

INDEX NO. 17355 (Sheet 2 of 4) - RIGHT TURN ONLY sign: Change sign number from "FTP - 47" to "FTP - 1".

LEFT TURN ONLY sign: change sign number from "FTP - 48" to "FTP - 2".

INDEX NO. 17357 (Sheet 1 of 1) - Signs 1, 2, 3 and NOTE. The following sign numbers changed: "FTP - 41" to "FTP - 50", "FTP - 42" to "FTP - 51", and "FTP - 43" to "FTP - 52".

INDEX NO. 17358 (Sheet 1 of 1) - PAVEMENT MARKING FOR CURB CUT RAMPS IN REST AREAS. All details deleted and the details on the attachments labeled PAVEMENT MARKING FOR CURB CUT RAMPS IN REST AREAS, INDEX NO. 17358 and sign detail labeled R7-8a, INDEX NO. 17358 substituted.

INDEX NO. 17500 (Sheet 1 of 1) - METAL POLE DETAIL and METAL POLE WIRING DETAIL, notation for U.L. Approved Grounds, second parenthesis: Delete wording and substitute "Resistance to Ground Not To Exceed 25 OHMS."

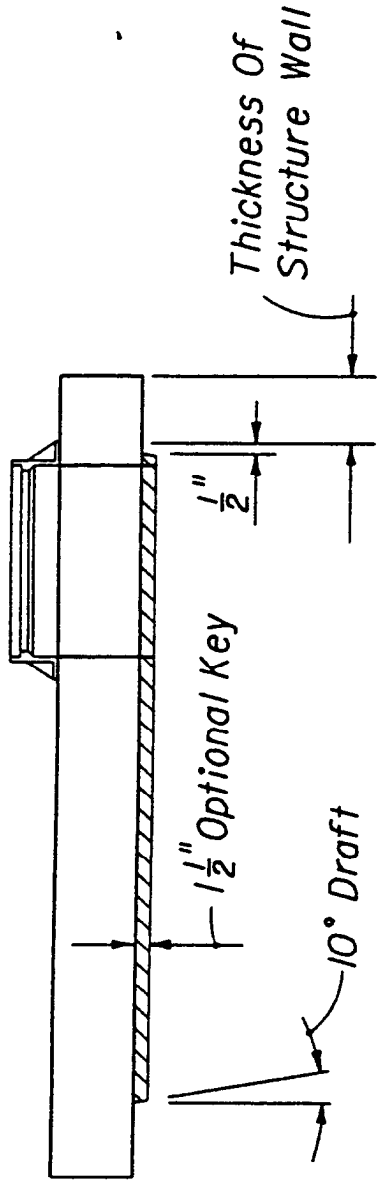
INDEX NO. 17503 (Sheet 1 of 1) - METAL POLE CONCRETE FOUNDATION DETAIL, notation for anchor bolts: Change specification date from 1986 to 1991; "SCREW TYPE FOUNDATION DETAIL": Change tip dimension from 9" to 6" min.

INDEX NO. 17504 (Sheet 1 of 1) - DETAIL A and DETAIL B: Change Pole type from Type II to Type N-II.

INDEX NO. 17781 (Sheet 1 of 2) - GENERAL NOTES. Add Note No. 6: "Splice Connections in pull boxes may be made with U.L. Listed, watertight, insulated connectors in lieu of the details above. The lead-in cable insulation shall be sealed using electrical tape or heat shrinkable tubing (refer to Step 5 above). The seal shall extend approximately 1" either side of the lead-in cable outer cover."







**SECTION**

*Note: See Slab Designs Index 200.*

**TYPE 7**

**MANHOLE TOPS**

Index No.

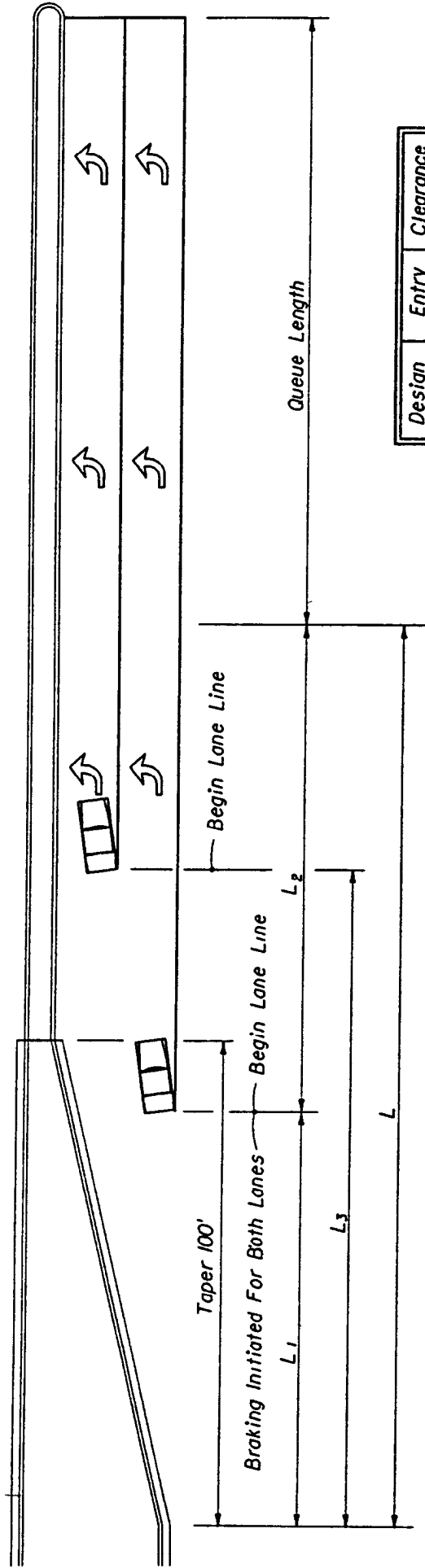
**201**

**ROUND PIPE - 2 1/2" x 1/8" CORRUGATION**

D (in)	Area (Sq Ft)	Maximum Height Of Fill (ft)				Min Cover (ft)
		Sheet Thickness in inches (Gage)				
		0.060 (16)	0.075 (14)	0.085 (12)	0.135 (10)	0.64 (8)
12	0.8	NA	NA	NA	NA	NA
14	1.0	NA	NA	NA	NA	NA
16	1.2	NA	NA	NA	NA	NA
18	1.4	NA	NA	NA	NA	NA
20	1.6	NA	NA	NA	NA	NA
22	1.8	NA	NA	NA	NA	NA
24	2.0	NA	NA	NA	NA	NA
26	2.2	NA	NA	NA	NA	NA
28	2.4	NA	NA	NA	NA	NA
30	2.6	NA	NA	NA	NA	NA
32	2.8	NA	NA	NA	NA	NA
34	3.0	NA	NA	NA	NA	NA
36	3.2	NA	NA	NA	NA	NA
38	3.4	NA	NA	NA	NA	NA
40	3.6	NA	NA	NA	NA	NA
42	3.8	NA	NA	NA	NA	NA
44	4.0	NA	NA	NA	NA	NA
46	4.2	NA	NA	NA	NA	NA
48	4.4	NA	NA	NA	NA	NA
50	4.6	NA	NA	NA	NA	NA
52	4.8	NA	NA	NA	NA	NA
54	5.0	NA	NA	NA	NA	NA
56	5.2	NA	NA	NA	NA	NA
58	5.4	NA	NA	NA	NA	NA
60	5.6	NA	NA	NA	NA	NA
62	5.8	NA	NA	NA	NA	NA
64	6.0	NA	NA	NA	NA	NA
66	6.2	NA	NA	NA	NA	NA
68	6.4	NA	NA	NA	NA	NA
70	6.6	NA	NA	NA	NA	NA
72	6.8	NA	NA	NA	NA	NA
74	7.0	NA	NA	NA	NA	NA
76	7.2	NA	NA	NA	NA	NA
78	7.4	NA	NA	NA	NA	NA
80	7.6	NA	NA	NA	NA	NA
82	7.8	NA	NA	NA	NA	NA
84	8.0	NA	NA	NA	NA	NA
86	8.2	NA	NA	NA	NA	NA
88	8.4	NA	NA	NA	NA	NA
90	8.6	NA	NA	NA	NA	NA
92	8.8	NA	NA	NA	NA	NA
94	9.0	NA	NA	NA	NA	NA
96	9.2	NA	NA	NA	NA	NA
98	9.4	NA	NA	NA	NA	NA
100	9.6	NA	NA	NA	NA	NA

**ROUND PIPE - 3" x 1" CORRUGATION**

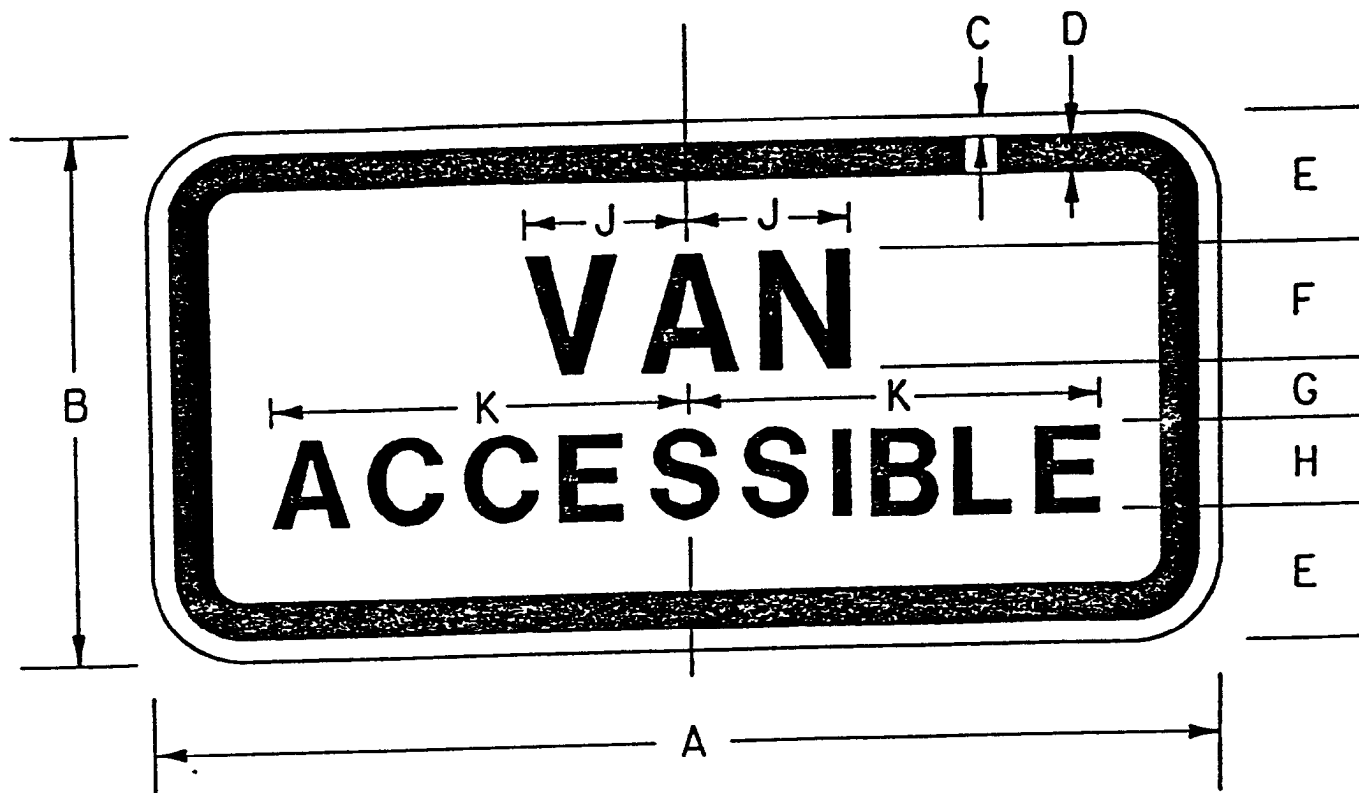
D (in)	Area (Sq Ft)	Maximum Height Of Fill (ft)				Min Cover (ft)
		Sheet Thickness in inches (Gage)				
		0.060 (16)	0.075 (14)	0.105 (12)	0.135 (10)	0.64 (8)
36	7.2	33	42	60	NA	NA
42	8.6	38	48	68	NA	NA
48	10.0	44	56	78	NA	NA
54	11.4	50	64	88	NA	NA
60	12.8	56	72	98	NA	NA
66	14.2	62	80	108	NA	NA
72	15.6	68	88	118	NA	NA
78	17.0	74	96	128	NA	NA
84	18.4	80	104	138	NA	NA
90	19.8	86	112	148	NA	NA
96	21.2	92	120	158	NA	NA
102	22.6	98	128	168	NA	NA
108	24.0	104	136	178	NA	NA
114	25.4	110	144	188	NA	NA
120	26.8	116	152	198	NA	NA
126	28.2	122	160	208	NA	NA
132	29.6	128	168	218	NA	NA
138	31.0	134	176	228	NA	NA
144	32.4	140	184	238	NA	NA
150	33.8	146	192	248	NA	NA
156	35.2	152	200	258	NA	NA
162	36.6	158	208	268	NA	NA
168	38.0	164	216	278	NA	NA
174	39.4	170	224	288	NA	NA
180	40.8	176	232	298	NA	NA
186	42.2	182	240	308	NA	NA
192	43.6	188	248	318	NA	NA
198	45.0	194	256	328	NA	NA
204	46.4	200	264	338	NA	NA
210	47.8	206	272	348	NA	NA
216	49.2	212	280	358	NA	NA
222	50.6	218	288	368	NA	NA
228	52.0	224	296	378	NA	NA
234	53.4	230	304	388	NA	NA
240	54.8	236	312	398	NA	NA
246	56.2	242	320	408	NA	NA
252	57.6	248	328	418	NA	NA
258	59.0	254	336	428	NA	NA
264	60.4	260	344	438	NA	NA
270	61.8	266	352	448	NA	NA
276	63.2	272	360	458	NA	NA
282	64.6	278	368	468	NA	NA
288	66.0	284	376	478	NA	NA
294	67.4	290	384	488	NA	NA
300	68.8	296	392	498	NA	NA
306	70.2	302	400	508	NA	NA
312	71.6	308	408	518	NA	NA
318	73.0	314	416	528	NA	NA
324	74.4	320	424	538	NA	NA
330	75.8	326	432	548	NA	NA
336	77.2	332	440	558	NA	NA
342	78.6	338	448	568	NA	NA
348	80.0	344	456	578	NA	NA
354	81.4	350	464	588	NA	NA
360	82.8	356	472	598	NA	NA
366	84.2	362	480	608	NA	NA
372	85.6	368	488	618	NA	NA
378	87.0	374	496	628	NA	NA
384	88.4	380	504	638	NA	NA
390	89.8	386	512	648	NA	NA
396	91.2	392	520	658	NA	NA
402	92.6	398	528	668	NA	NA
408	94.0	404	536	678	NA	NA
414	95.4	410	544	688	NA	NA
420	96.8	416	552	698	NA	NA
426	98.2	422	560	708	NA	NA
432	99.6	428	568	718	NA	NA
438	101.0	434	576	728	NA	NA
444	102.4	440	584	738	NA	NA
450	103.8	446	592	748	NA	NA
456	105.2	452	600	758	NA	NA
462	106.6	458	608	768	NA	NA
468	108.0	464	616	778	NA	NA
474	109.4	470	624	788	NA	NA
480	110.8	476	632	798	NA	NA
486	112.2	482	640	808	NA	NA
492	113.6	488	648	818	NA	NA
498	115.0	494	656	828	NA	NA
504	116.4	500	664	838	NA	NA
510	117.8	506	672	848	NA	NA
516	119.2	512	680	858	NA	NA
522	120.6	518	688	868	NA	NA
528	122.0	524	696	878	NA	NA
534	123.4	530	704	888	NA	NA
540	124.8	536	712	898	NA	NA
546	126.2	542	720	908	NA	NA
552	127.6	548	728	918	NA	NA
558	129.0	554	736	928	NA	NA
564	130.4	560	744	938	NA	NA
570	131.8	566	752	948	NA	NA
576	133.2	572	760	958	NA	NA
582	134.6	578	768	968	NA	NA
588	136.0	584	776	978	NA	NA
594	137.4	590	784	988	NA	NA
600	138.8	596	792	998	NA	NA
606	140.2	602	800	1008	NA	NA
612	141.6	608	808	1018	NA	NA
618	143.0	614	816	1028	NA	NA
624	144.4	620	824	1038	NA	NA
630	145.8	626	832	1048	NA	NA
636	147.2	632	840	1058	NA	NA
642	148.6	638	848	1068	NA	NA
648	150.0	644	856	1078	NA	NA
654	151.4	650	864	1088	NA	NA
660	152.8	656	872	1098	NA	NA
666	154.2	662	880	1108	NA	NA
672	155.6	668	888	1118	NA	NA
678	157.0	674	896	1128	NA	NA
684	158.4	680	904	1138	NA	NA
690	159.8	686	912	1148	NA	NA
696	161.2	692	920	1158	NA	NA
702	162.6	698	928	1168	NA	NA
708	164.0	704	936	1178	NA	NA
714	165.4	710	944	1188	NA	NA
720	166.8	716	952	1198	NA	NA
726	168.2	722	960	1208	NA	NA
732	169.6	728	968	1218	NA	NA
738	171.0	734	976	1228	NA	NA
744	172.4	740	984	1238	NA	NA
750	173.8	746	992	1248	NA	NA
756	175.2	752	1000	1258	NA	NA
762	176.6	758	1008	1268	NA	NA
768	178.0	764	1016	1278	NA	NA
774	179.4	770	1024	1288	NA	NA
780	180.8	776	1032	1298	NA	NA
786	182.2	782	1040	1308	NA	NA
792	183.6	788	1048	1318	NA	NA
798	185.0	794	1056	1328	NA	NA
804	186.4	800	1064	1338	NA	NA
810	187.8	806	1072	1348	NA	NA
816	189.2	812	1080	1358	NA	NA
822	190.6	818	1088	1368	NA	NA
828	192.0	824	1096	1378	NA	NA
834	193.4	830	1104	1388	NA	NA
840	194.8	836	1112	1398	NA	NA
846	196.2	842	1120	1408	NA	NA
852	197.6	848	1128	1418	NA	NA
858	199.0	854	1136	1428	NA	NA
864	200.4	860	1144	1438	NA	NA
870	201.8	866	1152	1448	NA	NA
876	203.2	872	1160	1458	NA	NA
882	204.6	878	1168	1468	NA	NA
888	206.0	884	1176	1478	NA	NA
894	207.4	890	1184	1488	NA	NA
900	208.8	896	1192	1498	NA	NA
906	210.2	902	1200	1508	NA	NA
912	211.6	908	1208	1518	NA	NA
918	213.0	914	1216	1528	NA	NA
924	214.4	920	1224	1538	NA	NA
930	215.8	926	1232	1548	NA	NA
936	217.2	932	1240	1558	NA	NA
942	218.6	938	1248	1568	NA	NA
948	220.0	944	1256	1578	NA	NA
954	221.4	950	1264	1588	NA	NA
960	222.8	956	1272	1598	NA	NA
966	224.2	962	1280	1608	NA	NA
972	225.6	968	1288	1618	NA	NA
978	227.0	974	1296	1628	NA	NA
984	228.4	980	1304	1638	NA	NA
990	229.8	986	1312	1648	NA	NA
996	231.2	992	1320	1658	NA	NA
1002	232.6	998	1328	1668	NA	NA
1008	234.0	1004	1336	1678	NA	NA
1014	235.					



Design Speed (mph)	Entry Speed (mph)	Clearance Distance $L_3$
65	55	270'
55	45	205'
45	35	135'
35	25	110'

Note: For  $L$ ,  $L_1$  &  $L_2$  values see table 'TURN LANES - CURBED AND UNCURBED MEDIANS' Sheet No. 1 of 1 Index No. 301. For pavement markings see Sheet No. 2 of 8 Index No. 17346.

## DOUBLE LEFT TURN LANES ( FULL SHADOW ) INDEX NO. 301



SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
MIN.	12	6	$\frac{3}{8}$ "	$\frac{3}{8}$ "	$1\frac{1}{2}$ "	$1\frac{1}{2}$ "	$\frac{1}{2}$ "	1	$2\frac{1}{2}$ "	4	$1\frac{1}{2}$ "
STD.	18	9	$\frac{3}{8}$ "	$\frac{5}{8}$ "	$2\frac{1}{4}$ "	2	1	$1\frac{1}{2}$ "	$2\frac{3}{4}$ "	7	$1\frac{1}{2}$ "

COLORS

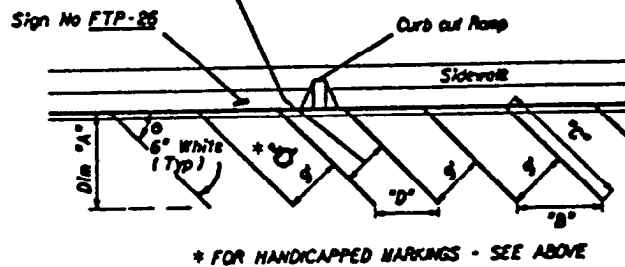
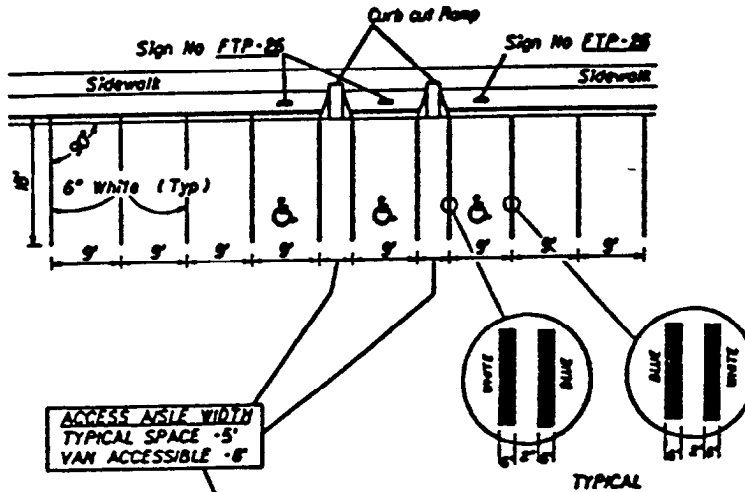
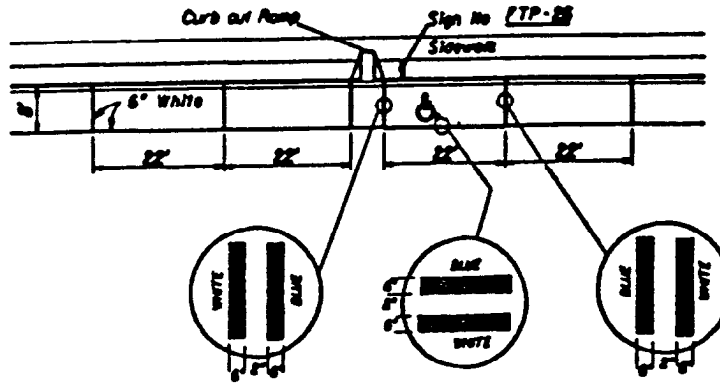
REGULATORY  
 LEGEND - BLACK  
 BACKGROUND - WHITE

DIRECTIONAL  
 LEGEND - WHITE  
 BACKGROUND - BLUE

ALL LETTERS SERIES "D"

R7-80

INDEX NO. 17358



Δ°	"DIMENSIONS"		
	"A"	"B"	"C"
45°	15'-1"	12'-9"	21'-0"
60°	20'-1"	10'-5"	23'-2"

DIMENSION "D"	"DIMENSIONS"	
	"A"	"B"
45°	7'-0"	11'-4"
60°	5'-9"	9'-3"

**NOTES:**

1. An Access Aisle is required for each handicapped space when angle parking is used.
2. For Van Accessible Spaces Sign No. FTP-25 and the 10'-8" supplemental panel replaces Sign No. FTP-25.
3. Criteria for pavement markings only, not curb cut ramp locations. For ramp locations refer to plans.
4. Blue pavement markings shall be tinted to match shade 15B0 of Federal Standards 555a.

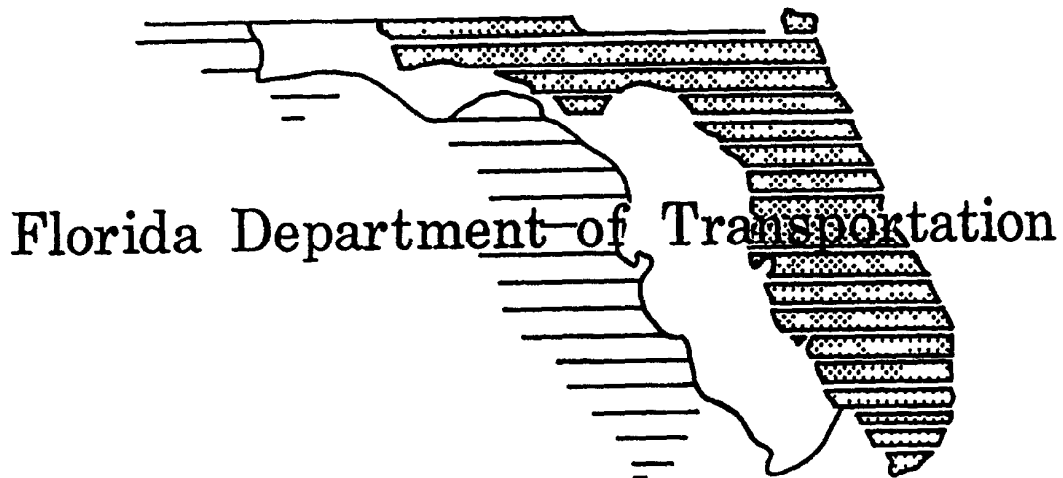
**PAVEMENT MARKING FOR CURB CUT  
RAMPS IN REST AREAS**

INDEX NO. 17358

# ROADWAY PLANS PREPARATION MANUAL

VOLUME II

## PLANS PREPARATION AND ASSEMBLY



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

TALLAHASSEE, FLORIDA

1989

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VOLUME II  
PLANS PREPARATION AND ASSEMBLY  
INTRODUCTION

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

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

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

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

## CHAPTER 1

### PRODUCTION OF PLANS

#### 1.1 General

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

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

#### 1.2 Legibility Guidelines

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

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

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

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

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

Bearings should be shown on plans to the nearest second, station pluses to the nearest one hundredth (0.01), coordinates to the nearest one thousandth (0.001), percent of grade to the nearest one thousandth (0.001), surface elevations on paved surfaces to the nearest one hundredth (0.01) and ground elevations to the nearest one tenth (0.1).

Aerial photo sheets are not to be used in plans. If there are existing plans in which they are included, they must be original sheets. No 2nd generation copies of photo sheets are to be used. Aerial photo images should not be so dark as to obscure the drafting. Xerographic prints of aerial photo sheets shall be reviewed to ensure legibility. If the photocopies are too dark, the aerials should be remade. In areas where the photo image may block the drafted image, the photo image must be removed from the back of the sheet. (Make sure the emulsion is removed behind all notes so areas will not be burned out.) Black ink must be used on aerial photo sheets, both in the plan and profile portion. No lead or grease pencils are to be used. No colored ink is to be used.

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

### **1.3 Material**

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

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

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

CADD prepared plan sheets may also be 20 lb opaque paper or 18 lb semi-translucent paper

#### 1.4 Base Sheet Format

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

Final plots and xerographic signed and sealed prints of CADD prepared plans may be plotted to true scale on 11" X 17" bond

#### 1.4.1 Title Block

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



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

For alternate title block formats, see Exhibit II-1-A

### 1.5 Plan Sheet Formats

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

#### Key Sheet:

Material - Mylar or vellum

Format - See Chapter 3

Use - Key Sheet

#### Plan and Profile

Material - Mylar or vellum

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

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

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

Material - Mylar or vellum

Format - Cross Section grid format (See Chapter 18)

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

Plan:

Material - Mylar or vellum

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

Bridge Hydraulic Recommendation Sheet:

Material - Mylar

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

Use - Bridge Hydraulic Recommendation Sheet

~~For safe storage purposes, the first and last sheets in a plan set of reproductions shall be mylar sheets.~~

Drainage Map

material - mylar or vellum

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

Use - Drainage Map

1.6 Material Purchasing

1.6.1 Partial List of Vendors and Products

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

1.6.2 Partial List of Vendors

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

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

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

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

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

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

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

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

## **1.7 Preparation of Letter Plans (8.5" x 14") - General**

The Letter Plan preparation procedure as described in this chapter is approved for use on both State funded and Federal Aid participating projects. Projects such as Resurfacing, Intersection Improvements, Sidewalk Construction, Signal Installations, and Guardrail Construction are all candidates for this format.

This method is not an attempt to reduce the amount of construction information in the plans but to accurately describe the project in a form that is more convenient for reproducing, handling and storing. The main intent of the Letter Plan format is to reduce the amount of drafting that is normally done with a standard set of plans. It is not intended to compromise good engineering practices. All criteria, engineering responsibility and documentation normally required are applicable to Letter Plans.

The designer must carefully consider the scope of work to determine how much detail is required. If a controlled survey is not needed the project is a candidate for letter plans preparation. Original and final cross sections will not be required on these projects when the pay item Regular Excavation - Lump Sum is used. Items to be considered in determining whether letter plans can be used are:

- 1 Project limits and location of items of work can be located using mile post or straight line diagram
- 2 Project is being designed to 3-R criteria
- 3 Existing typicals are reasonably consistent throughout the project
- 4 If Utility adjustments are a consideration on the project, the designer will need to be sure that sufficient data is available to allow the Utility to be relocated or adjusted
- 5 There are no Right of Way requirements on the project
- 6 No change in the horizontal or vertical alignment
- 7 No major special ditches on the project

- 8 No major intersection modifications |
- 9 No mitigation requirements for the project |
- 10 All normal resurfacing, widening, base course, etc items and work shall |  
be according to the Standard specifications |

Letter size typical sections, detailed sketches, and tabulations of quantities may still be needed in the plans to accurately describe the project. The various components of a set of letter plans are discussed below.

171 Scope of work

Since plan/profile sheets are not used a detailed scope of work narrative is required. It should include any drainage work, signal work, signing, and pavement marking work that will be required. The scope does not necessarily need to be a detailed description of the work but should outline each major operation.

172 Typical Section

Letter plans, like standard plans, are required to have a typical section. For many projects a detailed description can be used in place of a drawing. Cross slopes, proposed pavement widths, ditch slopes, and grassing limits can often be described sufficiently without a drawing of a standard section. The design speed is also required for each Typical.

Along with the typical section the plans are also required to contain the proposed pavement design. This can be done in the same manner as standard size plans. The pavement design shall show thicknesses and/or options for base, structural course, leveling course, and friction course. It shall also include proposed milling depths.



### 1 7 3 Detailed Drawings

On some Letter Plan projects detailed drawings will be needed to show dimensions of certain pavement areas or other special construction information. When details are used they should be legible and free of extraneous information. Too much text on this size sheet can make it difficult to read.

### 1 7 4 Summary of Quantities

In order to document quantity calculations a tabulation may be required in the plans. All tabulations shall be clear and concise. Space shall be provided for both plan and final quantity. Good judgement should be used in determining if a tabulation of a specific item is truly needed for this type of project.

### 1 7 5 Traffic Control Plan

Selecting the letter plan format does not exempt the project from having a well documented traffic control plan. Phasing descriptions, sketches, general notes, and typical sections should still be utilized when construction warrants it.

## 1.8 Letter Plan Format

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

- 1 Use legal size (8 5" x 14") for all sheets
- 2 The F A project number and W P I number shall be shown on the Key Sheet Show the state project number on all sheets
- 3 Space must be provided on the Key Sheet for the designer/Project Manager and approval by the responsible professional engineer
- 4 All railroad crossings shall be shown on the Key Sheet in accordance with chapter 3 10 of Volume II of this manual
- 5 If the project is designed with R-R-R standards this should be noted on the Key Sheet
- 6 All sheets including pay item sheets are to be numbered sheet 1 of \_\_, sheet 2 of \_\_, etc Signing and pavement marking sheets are to be numbered consecutively with the rest of the plans
- 7 The standard governing specifications note used on all plans must be shown on letter plans The Roadway and Traffic Design Standards booklet shall be referenced in the plans also
- 8 All summary of pay item sheets are to be inserted directly behind the Key Sheet Trim the "green bar" computer sheets to proper size, do not reduce by xeroxing
- 9 Revisions to letter plans shall be documented in the same manner as standard size plans Space should be provided on each sheet for a revision log

## CHAPTER 2

### SEQUENCE OF PLANS PREPARATION

#### 2.1 General

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

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

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

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

## 2.2 Data Collection and Presentation

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

Initial data required for the production of plans are:

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

### 2.2.1 Existing Topography and Field Data

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

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

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

### 2.2.2 Proposed Typical Section ~~XXXXXXXX~~

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

### 2.2.3 Preliminary Geometrics

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

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

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

#### 2.2.4 Cross Sections

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

### **2.3 Phase Submittals**

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

The submittal phases are as follows

#### **SUBMITTAL PHASES**

Phase I

Phase II

Phase III

Phase IV

Minor projects shall have a minimum of two phase reviews

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

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

FIGURE 2 1

SUMMARY OF PHASE SUBMITTALS

PLAN SHEETS	PHASE	PHASE	PHASE	PHASE
	I	II	III	IV
Key Sheet	P	P	C	F
Summary of Pay Items		P	C	F
Drainage Map	P	P	C	F
Interchange Drainage Map	P	P	C	F
Typical Section	P	C	C	F
Summary of Quantities and Box Culvert Data			C	F
Summary Drainage Structures		P	C	F
Project Layout	P	C	C	F
Roadway Plan-Profile	P	P	C	F
Special Profile	P	P	C	F
Back-of-Sidewalk Profile	P	C	C	F
Interchange Layout	P	P	C	F
Ramp Terminal Details		P	C	F
Intersection Layout/Detail	P	P	C	F
Drainage Structures		P	C	F
Lateral Ditch Plan/Profile		P	C	F
Lateral Ditch Cross Section		P	C	F
Cross Section Pattern Sheet		P	C	F
Borrow Pit Soil Survey		P	C	F
Roadway Soil Survey		P	C	F
Cross Sections	P	P	C	F
Traffic Control Plans	P	P	C	F
Utility Contract Plan-Profile		P	C	F
Utility Adjustment		P	C	F
Selective Clearing and Grubbing		P	C	F
Roadway Structural Plans		P	C	F
Signing and Marking Plans		P	C	F
Signalization Plans		P	C	F
Roadway Lighting Plans		P	C	F
Landscape Plans	P	P	C	F
Computation Book*			C	F
Contract Time Estimate*		P	F	F

| Status Key  
 P - Preliminary  
 | C - Complete but subject to change  
 F - Final

\*Computation Book and Contract Time Estimate  
 must accompany submittal to the Construction  
 Office for a biddability review at Phase III  
 (See Vol. I, Chapters 13 & 15 )



## **2.4 Phase I Plans Submittal**

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. The plans will be checked for completeness and conformance to DOT Standards and criteria. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans and/or comments shall be returned to the design team for incorporation of the comments into the plans. When the review comments have been resolved and documented, the plans are ready to proceed to the next phase of completion.

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

| **2.5 Requirements for Phase I Submittal**

| The following elements are required for a Phase I set of plans

2 5 1 **KEY SHEET (Chapter 3)**

Location Map

Begin and end project station with begin milepost

Begin and end bridge and bridge culvert stations

All applicable project numbers

Exceptions

Equations

County Name

State Road Number

Length of project box

North arrow and scale

Consultant's name (for consultant prepared projects)

Approval signature lines

Location of project on map

Railroad crossing (if applicable)

Revision box

Standards date

Project Manager's Name

2.5.2 DRAINAGE MAP: (Chapter 5)

PLAN VIEW

North arrow and scale

Drainage divides and ground elevations

Drainage areas and flow direction arrows

Begin and end stations of project, bridge and  
exceptions

Equations

High water information as required

Existing structures and pipes with relevant information

Preliminary horizontal alignment

Section, township, range lines

Street names

State, Federal, county highway numbers (as appropriate)

PROFILE VIEW

Horizontal scale

Vertical scale

Begin and end stations of project, bridges and  
exceptions

Equations

Preliminary profile grade and existing ground line

2.5.3 INTERCHANGE DRAINAGE MAP: (Chapter 5)

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

2.5.4 TYPICAL SECTIONS: (Chapter 6)

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

2.5.5 PROJECT LAYOUT: (Chapter 9)

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

2.5.6 PLAN AND PROFILE: (Chapter 10)

PLAN VIEW

North arrow and scale

Baseline of survey

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

Curve data (including superelevation)

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

Equations

Existing topography including utilities

Preliminary horizontal geometrics

Proposed R/W lines (if available)

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

PROFILE VIEW

Scale

Appropriate existing utilities

Bench mark information

Existing ground line with elevations at each end of  
sheet

Preliminary profile grade line

Equations

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

2.5.7 SPECIAL PROFILE: (Chapter 11)

Scale

Ramp profile worksheet including nose sections

Existing ground line of cross-street

Proposed grade line of cross-street

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

Scale

Begin and end project stations

Begin and end sidewalk stations

Cross-street locations and elevations

Drainage flow direction arrows

Mainline equations

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

Building floor elevations with offset distance left and  
right

Existing driveway locations and details

Superelevation details

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

2.5.9 INTERCHANGE DETAIL: (Chapter 13)

North arrow and scale

Preliminary configuration and geometrics

Proposed bridge limits

R/W lines

Schematic of traffic flow and volumes

2.5.10 INTERSECTION LAYOUT: (Chapter 13)

North arrow and scale

Existing topography (if applicable)

Proposed R/W limits

Length of turn lanes

Taper lengths

Geometric dimensions (radii, offsets, widths)

Existing Utilities

2.5.11 CROSS SECTIONS: (Chapter 18)

Scale

Existing ground line

Existing survey baseline elevations

Station numbers

Baseline of survey labeled

Existing utilities

Proposed template with profile grade elevations along mainline  
and cross-streets as necessary

2.5.12 TRAFFIC CONTROL SHEETS: (Chapter 19)

Project specific

## **2.6 Phase II Plans Submittal**

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. The plans will be checked for completeness and conformance to DOT Standards and criteria and a constructability review shall be performed by Construction. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans and/or review comments shall be returned to the designer for incorporation of the review comments into the plans. When all review comments have been resolved and documented by the designer, the plans are ready to proceed to the next phase of completion.

Drainage tabulations should accompany the Phase II plan submittal. Although not finalized, the tabulations should be complete and comprehensive.



## **2.7 Requirements for Phase II Submittal**

The following elements are required for a Phase II set of plans

### **2 7 1 KEY SHEET (Chapter 3)**

Index of sheets

Contract plans and component plans list

Date of governing specifications

### **2 7 2 SUMMARY OF PAY ITEMS (Chapter 4)**

Item numbers with descriptions

## 2 7 3 DRAINAGE MAP (Chapter 5)

### PLAN VIEW

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

### PROFILE VIEW

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

## 2 7 4 INTERCHANGE DRAINAGE MAP (Chapter 5)

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

2.7.5 TYPICAL SECTIONS: (Chapter 6)

Pavement Design

2.7.6 PROJECT LAYOUT: (Chapter 9)

Complete

2.7.7 PLAN AND PROFILE: (Chapter 10)

PLAN VIEW

Final geometrics and dimensions including radii,  
station pluses, widths, taper/transition lengths

Curb return numbers, station ties and elevations

Proposed drainage structures with structure numbers

Proposed storm sewer pipes including size

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

Proposed R/W lines

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

PROFILE VIEW

Final profile grades and vertical curve data

Mainline drainage structures with structure numbers

Mainline storm sewer pipes

Proposed special ditches

Cross drains with structure number, size and flow line  
elevations

Ditch gradients with DPI station and elevation

Non-standard superelevation transition details

High water elevations

2.7.8 SPECIAL PROFILE: (Chapter 11)

Final ramp profile grades including nose sections

Final intersection profile grades

Curb return profiles (if applicable)

Preliminary access and frontage road profiles

(Note: Projects may contain one or more types of special profiles.)

Non-Standard Superelevation Diagram

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

Complete

2.7.10 INTERCHANGE LAYOUT: (Chapter 13)

Curve data including superelevation and design speed

Coordinate data

Fence location

Access and/or frontage roads with dimensions and R/W

2.7.11 RAMP TERMINAL DETAILS: (Chapter 13)

Preliminary geometrics

Radius, transition/taper lengths

2.7.12 INTERSECTION LAYOUT: (Chapter 13)

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

2.7.13 DRAINAGE STRUCTURES: (Chapter 14)

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

2.7.14 OUTFALL/LATERAL DITCH SYSTEM: (Chapter 15)

PLAN VIEW

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

PROFILE VIEW

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

2.7.15 LATERAL DITCH CROSS SECTIONS: (Chapter 15)

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

2.7.16 CROSS SECTION PATTERN SHEET: (Chapter 13)

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

2.7.17 BORROW PIT SOIL SURVEY: (Chapter 17)

Soil data  
Project specific

2.7.18 ROADWAY SOIL SURVEY: (Chapter 17)

Soil data  
Project specific

2.7.19 CROSS SECTIONS: (Chapter 18)

Proposed template with profile grade elevation

R/W

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

Special ditch bottom elevations

Equivalent stations for ramps and mainline

Mainline equation stations

Soil borings

Water table

Extent of unsuitable material

2.7.20 TRAFFIC CONTROL SHEETS: (Chapter 19)

Preliminary traffic control plan

Detour plan

Phasing plan

R/W - existing and additional if required

Existing Utilities

2.7.21 UTILITY ADJUSTMENT: (Chapter 20)

All existing utilities highlighted

2.7.22 UTILITY CONTRACT PLANS: (Chapter 27)

Key Sheet

Mainline plan-profile

Proposed utility horizontal and vertical locations



KEY SHEET

W P I Number

State Project Number

Federal Aid Project Number

State Road Number

County Name

FDOT Project Manager's Name

Begin/End Stations

Begin/End Exceptions

Station Equations

Roadway and Traffic Design Standards Date

Engineer of Record

PLAN SHEETS

North arrow

Scale

Basic Roadway Geometrics

Begin/End Stations

Begin/End Exceptions

Conflicting utilities, lighting or drainage

Pavement markings

Sign locations

Applicable pay items

**KEY SHEET**

W P I Number

State Project Number

Federal Aid Project Number

State Road Number

County Name

FDOT Project Manager's Name

Begin/End Stations

Begin/End Exceptions

Station Equations

Roadway and Traffic Design Standards Date

Engineer of Record

**PLAN SHEET**

North arrow

Scale

Basic Roadway Geometrics

Begin/End Stations

Begin/End Equations

Station Equations

Conflicting utilities, lighting or drainage

Signal Pole Location

Type and location of loops

Type and location of signal heads

Pedestrian Signal

Location of Stop Bars

Location of Pedestrian Crosswalks

Sheet Title

Applicable pay items

**KEY SHEET**

W P I and State and Federal Aid Project Numbers  
State Road Number  
County Name  
FDOT Project Manager's Name  
Begin/End Stations and Exceptions  
Station Equations  
Roadway and Traffic Design Standards Date  
Engineer of Record

**POLE DATA AND LEGEND SHEET**

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

**PLAN SHEETS**

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

2 7 26     LANDSCAPE PLANS (Chapter 26)

KEY SHEET

STANDARD DETAIL SHEET

Applicable standard details

PLAN SHEETS

Roadway and sidewalk plan

Plant placement by symbol

Legend for plant symbols

IRRIGATION PLAN (if applicable)

Type of system

Location and size of pipes

Type and location of heads

SPECIFICATIONS PLAN SHEET

Project specific

2 7 27     SELECTIVE CLEARING AND GRUBBING (Chapter 21)

Limits by station and dimension of selective clearing and grubbing

|     2 7 28     ROADWAY STRUCTURAL PLANS (Chapter 22)

Project specific

|     MECHANICALLY STABILIZED EARTH (MSE) WALLS

|     Project Specific

## **2.8 Phase III Plans Submittal**

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

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

A plans checking team will perform a formal checking of the design plans submitted for the formal phase review. The plans will be checked for completeness and conformance to DOT standards and criteria. The technical accuracy required for the design is the designer's responsibility. A "marked up" set of the plans and/or review comments shall be returned to the designer for incorporation of the comments into the plans. When the review comments have been resolved and documented by the designer, the plans are ready to proceed to completion.

## **2.9 Phase IV Plans Submittal**

- | After all corrections noted in the Phase III submittal are complete and the cost estimate is complete, the plans are considered complete. Volume I of this manual contains instructions for the final plans submittal.

## CHAPTER 3

### KEY SHEET

#### 3.1 General

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

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

### 3.2 Project Data

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

#### 3 2 1 Project Number, County Name and Road Number

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

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

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

#### 3 2 2 Work Program Item Number and Fiscal Year

The work program item number shall be placed adjacent to the sheet number box in the top right corner. The construction fiscal year that is to be entered in the fiscal year box is the second year in the fiscal year, i e , enter 90 for fiscal year beginning July 1989 and ending June 1990



### 3.2.3 Length of Project Box

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

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

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

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<sup>1</sup> Roadway length = End Project - Begin Project - Exceptions - Bridges  
Net Length = End Project - Begin Project - Exceptions + Bridges  
Gross Length = End Project - Begin Project

### 3.3. Project Location Map

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

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

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

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

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

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

A location map is not required on component key sheets

### **3.4 North Arrow and Scale**

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

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

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

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

### **3.6 Index of Sheets and Standard Index Reference**

A complete index of roadway plan sheets shall be placed on the left side of the key sheet under the heading. When projects contain plan components, each plan set shall have an index of sheets on its respective key sheet. The date of the governing Roadway and Traffic Design Standards shall be inserted in a note at the lower left corner of the key sheet.

Roadway plan sheets shall be assembled as follows

Sequence of Plans Assembly

Key Sheet

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

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

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

Signalization Plans (when included as part of roadway plans)

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

Landscape Plans (when included as part of Roadway plans)

Roadway Structural Plans

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

### **3.7 Engineers Approval and Consultant's Name**

#### **3 7 1 Engineers Approval**

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

#### **3 7 2 Consultant's Name**

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

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

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

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

### **3.8 Governing Specifications**

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

### **3.9 State Map**

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

### **3.10 Railroad Crossing**

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

### **3.11 Revision Dates**

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



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

3.12 R-R-R Projects

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

**THE CONTRACT PLAN SET INCLUDES:**

- ROADWAY PLANS
- SUMMARY OF PAY ITEMS (03 SHEETS)
- BOX CULVERT DATA SHEETS (03 SHEETS)
- STRAINING AND PAVEMENT MARKING PLANS
- SIGNALIZATION PLANS
- ROADWAY LIGHTING PLANS
- LANDSCAPE PLANS
- ARCHITECTURAL PLANS
- STRUCTURE PLANS

CONTRACT/CONSTRUCTION PLAN SET MAY OR MAY NOT CONTAIN ALL OF THE LISTED COMPONENTS/SHEETS

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH COMPONENT SET OF PLANS

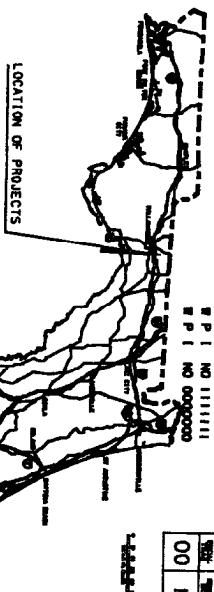
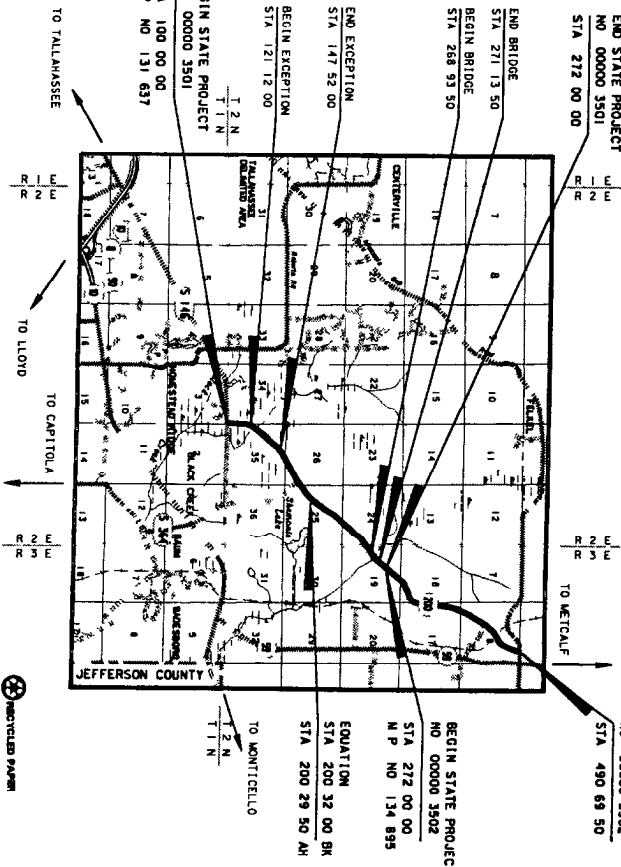
**INDEX OF ROADWAY PLANS**

SHEET NO	SHEET DESCRIPTION
1	KEY SHEET
2	DRAINAGE MAP
3	TYPICAL SECTIONS
4	TYPICAL SECTION DETAILS
5	SUMMARY OF QUANTITIES
6	SUMMARY OF DRAINAGE STRUCTURES
7	PROJECT LAYOUT
8	ROADWAY PLAN PROFILES
9	SPECIAL PROFILES
10	INTERSECTION LAYOUT/DETAIL
11	DEADEND STRUCTURES
12	LATERAL DITCH PLAN PROFILES
13	LATERAL DITCH CROSS SECTIONS
14	SPECIAL DETAILS
15	ROADWAY SOIL SURVEY
16	CROSS SECTIONS
17	TRAFFIC CONTROL SHEETS
18	UTILITY ADJUSTMENTS
19	SELECTIVE CLEARING AND GRUBBING
20	APPROACH SLAB
21	END STATE PROJECT NO 00000 3501 STA 272 00 00
22	END BRIDGE STA 271 13 50
23	END BRIDGE STA 268 93 50
24	END EXCEPTION STA 147 52 00
25	BEGIN EXCEPTION STA 121 12 00
26	BEGIN STATE PROJECT NO 00000 3501 STA 100 00 00
27	M P NO CSK 1029 85
28	M P NO CSK 1029 85
29	END STATE PROJECT NO 00000 3502 STA 272 00 00
30	END BRIDGE STA 272 00 00
31	END BRIDGE STA 200 29 50 BR
32	EQUALIZATION STA 200 32 00 BR
33	END STATE PROJECT NO 00000 3502 STA 490 68 50

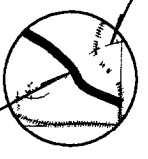
STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED  
STATE HIGHWAY

STATE PROJECT NO. 00000-3501 (FEDERAL FUNDS)  
AND STATE PROJECT NO. 00000-3502  
LEON COUNTY  
STATE ROAD NO. 200



A LOCATION SKETCH ON THE KEY SHEET IS REQUIRED FOR ANY PROJECT THAT COVERS BR CROSSING LOCATIONS



REVISIONS  
ROADWAY SHEETS 1 & 7 & 13 (REVISED 02/28/91)  
SIGNING AND PAVEMENT MAP NO SHEETS 22 & 33 (REVISED 11/14/90)  
ROADWAY SHEETS 14 & 32 (REVISED 12/03/90)

NAME OF DOT PROJECT MANAGER OR COORDINATOR AS APPROPRIATE

**LENGTH OF PROJECT**

ROADWAY	LENGTH PER MILE	MILES	TOTAL
00000 3501	0.0000	3.501	3.502
00000 3502	0.0000	0.000	0.000
TOTAL			3.502

**REVISIONS**

DATE	BY	DESCRIPTION
11 30	MEC	REVISED SEQUENCE OF CONTRACT PLANS
02 92	JDH	REMOVED F A NUMBER

ROADWAY PLANS ENGINEER OF RECORD

PLANS PREPARED BY

NOTE: THESE PROJECTS TO BE LET TO CONTRACT WITH STATE PROJECT NO 00000 8501 AND STATE PROJECT NO 00000 8502 (UTILITY PLANS)

NOTE: THIS PROJECT HAS DESIGNED TO MEET FOOT R R R CRITERIA

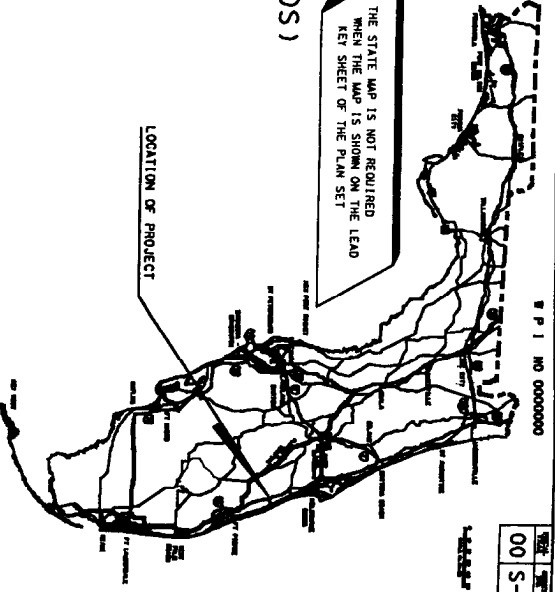
ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN PREPARED IN CONFORMANCE WITH THE LATEST DESIGN STANDARDS WHICH OBTAINED SCALED DATA. GOVERNING SPECIFICATIONS STATE OF FLORIDA SPECIFICATIONS DATED FEB AND SEPTEMBER 1988 ARE APPLICABLE TO THESE PLANS UNLESS OTHERWISE NOTED IN THE SPECIAL PROVISIONS FOR THE PROJECTS

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

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 PLANS OF PROPOSED  
 STATE HIGHWAY

STATE PROJECT NO. 00000-0000 (FEDERAL FUNDS)  
 INDIAN RIVER COUNTY  
 STATE ROAD NO. 000

THE STATE MAP IS NOT REQUIRED WHEN THE MAP IS SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET



# P I NO 00000000  
 00 S-1

INDEX OF SIGNING AND PAVEMENT MARKING PLANS

SHEET NO	SHEET DESCRIPTION
S 1	KEY SHEET
S 2	TABULATION OF QUANTITIES
S 3	GENERAL NOTES
S 4	PLAN SHEETS
S-15	PAVEMENT MARKING DETAILS S R 00
S 16	GUIDE SIGN DETAIL
S 17	SIGN CROSS SECTIONS

SIGNING AND PAVEMENT MARKING PLANS

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

NAME AND ADDRESS OF THE CONSULTANT FIRM WHEN THE PLANS ARE PREPARED BY A CONSULTANT

PLANS PREPARED BY :

NAME(S) AND ADDRESS(ES) OF THE ENGINEER(S) OF RECORD WHEN REVIEW OF SHOP DRAWINGS REQUIRED

SIGNING AND PAVEMENT MARKING PLANS ENGINEER OF RECORD

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STANDARDS AND SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS, PROMULGATED JANUARY 1993.

REVISION INFORMATION IS NOT REQUIRED WHEN SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

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

REVISION BLOCK INFORMATION IS REQUIRED WHEN THE INFORMATION IS REVISED ON THE KEY SHEET OF SIGNING & PAVEMENT MARKING PLANS

NAME OF DOT PROJECT MANAGER OR COORDINATOR AS APPROPRIATE

DOT PROJECT MANAGER :

DATE	BY	REVISIONS
02 92	JDB	REMOVED P A NUMBER

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

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN MADE IN CONFORMANCE WITH OBTAINED SCALED DATA. OBTAINING SPECIFICATIONS, STATE OF FLORIDA, SPECIFICATIONS, DATED FEBRUARY 1993, SHALL BE NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

SHOW AND PAVEMENT MARKING PLANS APPROVED BY :

DATE :

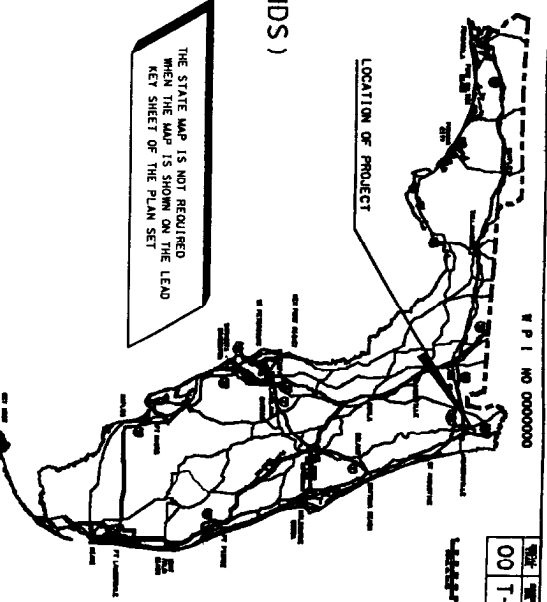
PL NO. :

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

**INDEX OF SIGNALIZATION PLANS**

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

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 PLANS OF PROPOSED  
**STATE HIGHWAY**  
 STATE PROJECT NO. 00000-0000 (FEDERAL FUNDS)  
 DUVAL COUNTY  
 STATE ROAD NO. 0



**SIGNALIZATION PLANS**

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

SIGNALIZATION PLANS  
 ENGINEER OF RECORD

PLANS PREPARED BY :  
 NAME(S) AND ADDRESSES) OF THE ENGINEER(S) OF RECORD WHEN REVIEW OF SHOP DRAWINGS REQUIRED

NAME AND ADDRESS OF THE CONSULTANT FIRM WHEN THE PLANS ARE PREPARED BY A CONSULTANT

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE SPECIFICATIONS AND STANDARDS OF THE DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET DATED JANUARY 1983

REVISION INFORMATION IS NOT REQUIRED WHEN SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

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

REVISION BLOCK INFORMATION IS REQUIRED WHEN THE INFORMATION IS REVISED ON THE KEY SHEET OF SIGNALIZATION PLANS

NAME OF DOT PROJECT MANAGER OR COORDINATOR AS APPROPRIATE

REVISIONS

DATE	BY	DESCRIPTION
09 90	WKC	ADDED SHEET T 6 TO INDEX OF PLANS
02 92	WFS	ADDED (FEDERAL FUNDS) TO STATE PROJECT NO

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

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REPRODUCED IN WHOLE OR IN PART FOR THE PURPOSES OF CONSTRUCTION WITHOUT OBTAINING SCALED DATA. GOVERNMENT OR PRIVATE INDIVIDUALS, STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, DATED 1983 AND SUPPLEMENTARY SHEETS FOR THIS PROJECT

FOOT PROJECT MANAGER :

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

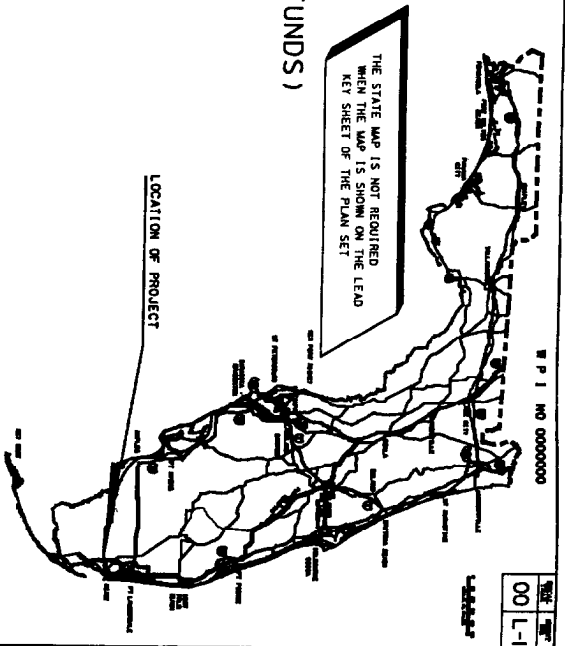
CONTRACT PLAN SET INFORMATION NOT REQUIRED WHEN THE INFORMATION IS SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

**INDEX OF LIGHTING PLANS**

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

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION  
 PLANS OF PROPOSED  
 STATE HIGHWAY

STATE PROJECT NO. 00000-0000 (FEDERAL FUNDS)  
 DADE COUNTY  
 STATE ROAD NO. 00



**LIGHTING PLANS**

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

LIGHTING PLANS  
 ENGINEER OF RECORD

NAME(S) AND ADDRESS(ES) OF THE ENGINEER(S) OF RECORD WHEN REVIEW OF SHOP DRAWINGS REQUIRED

PLANS PREPARED BY  
 NAME AND ADDRESS OF THE CONSULTANT FIRM WHEN THE PLANS ARE PREPARED BY A CONSULTANT

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET DATED JANUARY 1993

REVISION INFORMATION IS NOT REQUIRED WHEN SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

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

REVISION BLOCK INFORMATION IS REQUIRED WHEN THE INFORMATION IS REVISED ON THE KEY SHEET OF LIGHTING PLANS

NAME OF DOT PROJECT MANAGER OR COORDINATOR AS APPROPRIATE

DATE	BY	REVISIONS
02 30 92	LIB	CHANGED FA PROJ NO
02 30 92	JNS	REMOVED F A NUMBER ADDED (FEDERAL FUNDS)

DOT PROJECT MANAGER

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

ATTENTION IS DIRECTED TO THE FACT THAT SIZE BY REPRODUCTION, THEN REDUCED IN CONSIDERED WHEN OBTAINING SCALED DATA. GOVERNING SPECIFICATIONS, STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION, STANDARDS THEREIN TO BE NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT

LIGHTING PLAN APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ P&M

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

**INDEX OF LANDSCAPE PLANS**

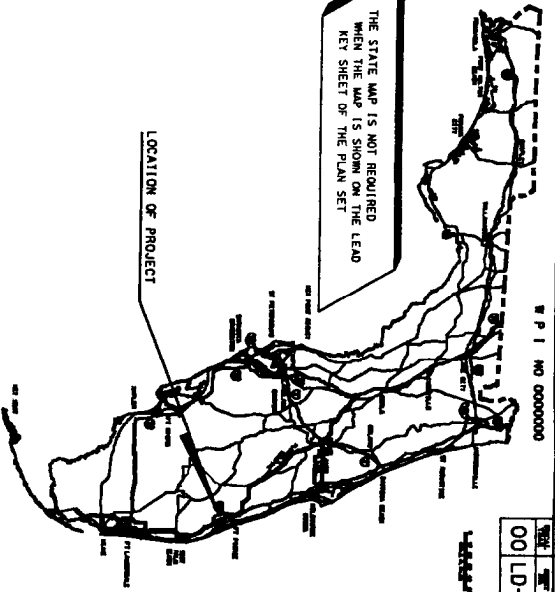
SHEET NO.	SHEET DESCRIPTION
LD 1	KEY SHEET
LD 2	TABULATION OF QUANTITIES
LD 3	GENERAL NOTES
LD 4	PLAN SHEETS
LD 6	STANDARD DETAILS SHEET
LD 7	

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

**PLANS OF PROPOSED  
STATE HIGHWAY**

STATE PROJECT NO. 00000-0000  
PALM BEACH COUNTY  
STATE ROAD NO. 000 (UNIVERSITY BLVD.)

THE STATE MAP IS NOT REQUIRED WHEN THE MAP IS SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET



**LANDSCAPE PLANS**

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

LANDSCAPE PLANS  
ENGINEER OF RECORD

PLANS PREPARED BY:  
NAME AND ADDRESS OF THE CONSULTANT FIRM, WHEN THE PLANS ARE PREPARED BY A CONSULTANT

THESE PLANS HAVE BEEN PREPARED BY THE STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAYS, DIVISION OF DESIGN, UNDER THE SUPERVISION OF THE DIVISION CHIEF, PALM BEACH COUNTY, FLORIDA, PROJECT DATED JANUARY 1958.

REVISION INFORMATION IS NOT REQUIRED WHEN SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

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

REVISION BLOCK INFORMATION IS NOT REQUIRED WHEN THE INFORMATION IS REVISED ON THE KEY SHEET OF LANDSCAPE PLANS

NAME OF DOT PROJECT MANAGER OR COORDINATOR AS APPROPRIATE

DOT PROJECT MANAGER 1

DATE	BY	REVISIONS
08 30 1958	RRR	DELETED PLAN SHEET LD 7 FROM INDEX

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

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REVISED IN CONSIDERED WHEN OBTAINING THE LATEST GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAYS, DIVISION OF DESIGN, PALM BEACH COUNTY, FLORIDA, PROJECT DATED JANUARY 1958 AND SUPPLEMENTARY NOTES FOR THIS PROJECT

LANDSCAPE PLANS  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PL NO: \_\_\_\_\_

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

**INDEX OF BUILDING CONSTRUCTION PLANS**

SHEET NO. SHEET DESCRIPTION

- ARCHITECTURAL DRAWINGS**
- K 1 NET SHEET
  - A 1 SITE PLAN NORTHBOND
  - A 2 SITE PLAN SOUTHBOND
  - A 3 FOUNDATION PLAN NOTES
  - A 4 FLOOR PLAN ROOM FINISH SCHEDULE
  - A 5 ROOF FRAMING PLAN DETAILS
  - A 6 ELEVATIONS DOOR SCHEDULE AND DETAILS
  - A 7 WALL SECTIONS AND DETAILS
  - A 8 1/4" TOILET PLAN AND ELEVATIONS
  - A 9 FINISH SCHEDULE AND DETAILS
  - A 10 STRUCTURAL DETAILS
  - A 11 FINISH SCHEDULE AND DETAILS
- CIVIL DRAWINGS**
- C 1 UTILITY SITE PLAN

- MECHANICAL DRAWINGS**
- M 1 SITE PLAN NORTHBOND
  - M 2 SITE PLAN SOUTHBOND
  - M 3 SCHEDULES NOTES
  - M 4 DUCTWORK LEGEND
  - M 5 H V A C FLOOR PLAN
  - M 6 CONTROL DIAGRAMS
  - M 7 JACKING AND BORING DETAILS

- ELECTRICAL DRAWINGS**
- E 1 SYMBOLS AND ABBREVIATIONS
  - E 2 LIGHTING PLAN
  - E 3 POWER PLAN
  - E 4 SCHEDULES
- SUB-SURFACE INVESTIGATION**
- B 1 SOIL BORINGS NORTHBOND
  - B 2 SOIL BORINGS SOUTHBOND
- PICNIC PAVILIONS**
- PP 1 PICNIC PAVILION DETAILS
  - PP 2 PICNIC PAVILION DETAILS
  - PP 3 PICNIC PAVILION DETAILS
  - PP 4 PICNIC PAVILION DETAILS

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STANDARD BUILDING CODE

REVISION INFORMATION IS NOT REQUIRED WHEN SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET

REFERENCE NOTE IS REQUIRED FOR TOWNWAY AND TRAFFIC DESIGN STANDARDS - WHEN APPLICABLE INDICES ARE INCLUDED (GRADING, PARKING, AND OTHER DETAILS)

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

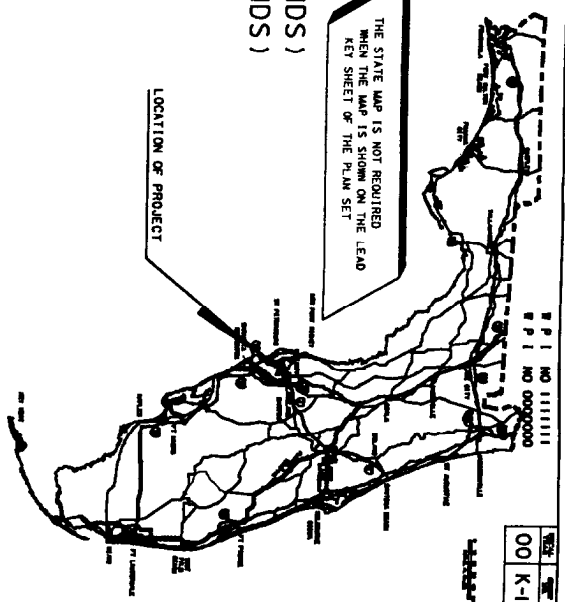
**PLANS OF PROPOSED  
REST AREAS**

STATE PROJECT NO. 13000-0000 (FEDERAL FUNDS)  
STATE PROJECT NO. 15000-0000 (FEDERAL FUNDS)  
MANATEE & PINELLAS COUNTIES  
(MANATEE REST AREA SOUTHBOND)  
(PINELLAS REST AREA NORTHBOND)

**BUILDING CONSTRUCTION PLANS**

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

THE STATE MAP IS NOT REQUIRED WHEN THE MAP IS SHOWN ON THE LEAD KEY SHEET OF THE PLAN SET



P I NO 1111111  
P I NO 0000000

00  
K-1

PLANS PREPARED BY:  
NAME AND ADDRESS OF THE CONSULTANT FIRM WHEN THE PLANS ARE PREPARED BY A CONSULTANT

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

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STANDARD BUILDING CODE. THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STANDARD BUILDING CODE. THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STANDARD BUILDING CODE.

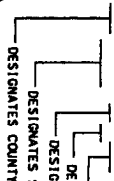
DATE	BY	REVISIONS
04 91	JPH	DELETED SHEET NUMBER
02 92	JPS	REMOVED P A NUMBER

REVISION BLOCK INFORMATION IS REQUIRED WHEN THE INFORMATION IS REVISED ON THE KEY SHEET OF BUILDING CONSTRUCTION PLANS

STATE PROJECT NO. 13120-3521  
 MANATEE COUNTY  
 STATE ROAD NO. 70

STATE PROJECT NO. 00000-0000

STATE PRIMARY CONSTRUCTION WITHIN ONE COUNTY OF ONE STATE ROAD



DESIGNATES COUNTY (EXCEPT TURNPIKE & STATEWIDE ARCHITECTURAL INSTITUTIONAL)

STATE PROJECT NO. 97930-3325  
 PALM BEACH AND MARTIN COUNTIES  
 STATE ROAD NO. 91 (FLORIDA'S TURNPIKE)

IF A N/A1 FLORIDA'S TURNPIKE CONSTRUCTION WITHIN TWO COUNTIES OF ONE STATE ROAD

STATE PROJECT NO. 15170-3427 (FEDERAL FUNDS)  
 PINELLAS COUNTY

INTERSTATE ONE FEDERAL AID PROJECT FOR ONE STATE PRIMARY CONSTRUCTION PROJECT WITHIN ONE COUNTY CONSTRUCTION ALONG STATE ROAD AND INTERSTATE

STATE PROJECT NO. 99007-3519  
 HILLSBOROUGH COUNTY

ARCHITECTURAL INSTITUTIONAL STATE PRIMARY CONSTRUCTION WITHIN ONE COUNTY (STATE ROAD NO. N/A1)

STATE ROAD NO. 55 AND STATE ROAD NO. 93 (1-275)

INTERSTATE ONE FEDERAL AID PROJECT FOR SPLIT FUNDED INTERSTATE CONSTRUCTION WITHIN ONE COUNTY OF ONE STATE ROAD DESCRIPTION LOCATION COUNTY ROAD & NAME

STATE PROJECT NO. 31010-3511 (FEDERAL FUNDS)  
 GILCHRIST COUNTY  
 STATE ROAD NO. 26

FEDERAL AID PROJECT FOR STATE PRIMARY CONSTRUCTION WITHIN ONE COUNTY OF ONE STATE ROAD

STATE PROJECT NO. 86095-3463 (FEDERAL FUNDS)  
 STATE PROJECT NO. 86095-3488 (FEDERAL FUNDS)  
 BROWARD COUNTY  
 STATE ROAD NO. 862 (1-595)

BRIDGE & APPROACHES FEDERAL AID PROJECT STATE SECONDARY CONSTRUCTION WITHIN ONE COUNTY (STATE ROAD NO. N/A1) DESCRIPTION LOCATION COUNTY ROAD & NAME

FEDERAL AID PROJECT WITH STATE SECONDARY CONSTRUCTION AND SEPARATE FEDERAL AID PROJECT WITH STATE SECONDARY CONSTRUCTION DESCRIPTION LOCATION COUNTY ROAD & NAME

STATE PROJECT NO. 03000-3622 (FEDERAL FUNDS)  
 COLLIER COUNTY  
 C.R. 92 (SAN MARCO ROAD)

FEDERAL AID PROJECT WITH STATE PRIMARY CONSTRUCTION AND SEPARATE STATE PRIMARY CONSTRUCTION WITHIN ONE COUNTY OF ONE STATE ROAD

FEDERAL AID PROJECT WITH STATE PRIMARY CONSTRUCTION AND SEPARATE FEDERAL AID PROJECT WITH STATE PRIMARY CONSTRUCTION WITHIN ONE COUNTY OF ONE STATE ROAD

STATE PROJECT NO. 08070-3515 (FEDERAL FUNDS)  
 AND STATE PROJECT NO. 08070-3517  
 HERNANDO COUNTY  
 STATE ROAD NO. 50 (U.S. 98)

STATE PROJECT NO. 90060-3588 (FEDERAL FUNDS)  
 STATE PROJECT NO. 90060-3509 (FEDERAL FUNDS)  
 MONROE COUNTY  
 STATE ROAD NO. 5 (U.S. 1)

**PROJECT LOCATION AND DESCRIPTION EXAMPLES**



## CHAPTER 4

### SUMMARY OF PAY ITEMS

#### 4.1 General

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

#### 4.2 Summary of Pay Items Sheet

The summary of pay items sheet(s) shows all items and estimated quantities for the project, or projects, in a contract. Summary of Pay Items (CES Summaries) attached directly behind the first/lead Key Sheet must include

- 1 all the summaries for all component sets listed

These should be placed in the same order as the contract plans listed on the Key Sheet. They should be numbered consecutively and the total should agree with the number shown on the first/lead Key Sheet.

Note Only the first/lead Key Sheet for the entire contract should contain reference to Summary of Pay Items (XX sheets) (The XX

1 refers to the total number of CES sheets for all components and all  
1 projects included in the contract )

1 2 all projects let under this contract.

1 Projects that are let under the same contract should be "strung"  
1 together (See the CES Manual on how to string jobs ) The lead  
1 project should be the first project on the Summary of Pay Items

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

Summary of pay items sheet without quantities is required at the 60% phase submittal and a complete summary of pay items sheet with quantities is required at the 90% and 100%  
1 phase submittals Refer to Volume II, Chapter 2 of the Plans Preparation Manual for "requirements of phase submittals"

00000-0000

A L T	S I C	ITEM NUMBER	SUMMARY OF ROADWAY ITEM	PAY ITEMS	00000-0000		QUANTITY TOTAL	
					UN IT	FA PART		
1	101	1-	MOBILIZATION		1	000	1	000
1	102	1-	MAINT OF TRAFFIC		1	000	1	000
1	102	3-	COMMERCIAL MAT FOR DRIVEWAY MAINT		121	000	121	000
2	102	72-	CONC BARRIER (TEMPORARY)		6387	000	387	000
2	102	74-	BARRICADE (TEMPORARY) (TYPE I, II, VP & DRUM)		81348	000	8348	000
2	102	74-	BARRICADE (TEMPORARY) (TYPE III) ( 6' )		1312	000	312	000
2	102	75-	CONSTRUCTION SIGNS (TEMP - POST MOUNTED)		18596	000	1596	000
2	102	76-	ADVANCE WARNING ARROW PANELS		132	000	132	000
2	102	77-	HIGH INTENSITY FLASHING LIGHTS (TEMP - TYPE B)		6679	000	679	000
2	102	78-	REFLECTIVE PAVT MARKER		1128	000	128	000
2	102	81-	VEHICULAR IMPACT ATTENUATOR (TEMPORARY)		2	000	2	000
2	102	82-	RELOCATE TEMPORARY VEHICULAR IMPACT ATTENUATOR		2	000	2	000
2	102	83-	RELOCATE TEMPORARY CONC BARRIER WALL		6387	000	387	000
2	102	92-	TEMPORARY PAVEMENT MARKING (SKIP)		902		902	
2	102	92-	TEMPORARY PAVEMENT MARKING (SOLID)		16	175	16	175
2	102	96-	TEMPORARY REGULATORY SIGNS (POST-MOUNTED)		7572	000	572	000
1	104	5-	SANDBAGGING		3	000	3	000
1	104	6-	SLOPE DRAINS (TEMPORARY)		30	000	30	000
2	105	10-	BALED HAY OR STRAW		19	400	19	400
2	105	70-	TRAINEE MANHOURS		4000	000	000	000
2	110	2-	CLEARING & GRUBBING		34	206	34	206
2	110	7-	MALIBOX (F&I)		52	000	52	000
1	120	1-	REGULAR EXCAVATION		64493	000	6493	000
1	120	2-	BORROW EXCAVATION		36098	000	3098	000
1	120	4-	SUBSOIL EXCAVATION		18718	000	1718	000
3	162	2-	TOPSOIL		85918	000	8918	000
1	285	705-	OPTIONAL BASE		28211	000	2211	000
1	285	706-	OPTIONAL BASE		10360	000	1360	000
1	285	709-	OPTIONAL BASE		12443	000	1443	000
1	285	716-	OPTIONAL BASE		72398	000	7398	000
1	286	1-	TURNOUT CONSTRUCTION		4512	000	512	000
1	286	2-	TURNOUT CONSTRUCTION		4132	000	132	000
1	339	1-	MISC ASPHALT PAVEMENT		142	400	142	400
1	400	1-	CLASS I CONC		301	000	301	000
1	400	1-	CLASS II CONC		11	840	11	840
1	400	2-	CLASS III CONC		195	300	195	300
1	400	2-	CLASS III CONC		38	970	38	970
1	415	1-	REINF STEEL		552	000	552	000
1	415	1-	REINF STEEL		4210	000	210	000
1	425	1-311	INLETS (CURB) (TYPE P-1)		42805	000	4805	000
1	425	1-315	INLETS (CURB) (TYPE P-2)		49	000	49	000
1	425	1-351	INLETS (CURB) (TYPE P-5)		2	000	2	000
1	425	1-411	INLETS (CURB) (TYPE J-1)		2	000	2	000
1	425	1-421	INLETS (CURB) (TYPE J-2)		7	000	7	000
1	425	1-471	INLETS (CURB) (TYPE 7)		5	000	5	000
1	425	1-521	INLETS (DT BOT) (TYPE C)		4	000	4	000
1	425	1-541	INLETS (DT BOT) (TYPE D)		1	000	1	000
1	425	1-543	INLETS (DT BOT) (TYPE D)		5	000	5	000
1	425	1-543	INLETS (DT BOT) (TYPE D)		2	000	2	000



## CHAPTER 5

### DRAINAGE MAP

#### 5.1 General

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

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

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

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

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

## 5 1 1 Flood Data Summary Box

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

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

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

## 5 2 Plan Portion

The plan portion shall include the following data

- 1 Stationing shall be shown every 500 feet for all recommended scales except 1" = 1000 for which stationing shall be shown every 5000 feet Centerline of project with begin and end project stations, station equations, begin and end stations for exceptions and bridge/bridge culverts shall be flagged
- 2 Physical land features affecting drainage, such as lakes, streams, and swamps shall be clearly labeled by name and direction of flow Past high water elevations and date of occurrence, if available, and present water elevations along with the dates the readings were taken shall be shown
- 3 Existing road numbers and street names drainage structures, showing type, size, flow line elevations, flow arrows and any other pertinent data shall be shown Refer to Standard Index No 002 for correct symbols for existing drainage facilities In a situation of limited space, all data relating to existing drainage structures and pipes may be compiled in a table format and shown in either the plan or profile portion of the sheet Should the space limitations be such that a table would not fit within the plan or profile view, a supplemental drainage data sheet would be acceptable
- 4 Drainage divides and information, where applicable, to indicate the overland flow of water shall be shown Drainage areas on maps shall be shown in acres

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

- 5 Proposed drainage structures, pipes outfall structures and retention/detention pond locations shall be shown and noted by structure number Refer to Standard Index No 002 for correct symbols Arrows shall be shown to indicate direction of flow along proposed ditches
- 6 Section, Township, Range and county lines shall be indicated for rural projects and when possible, urban projects
- 7 A north arrow and graphic scale shall be drawn, preferably in the upper right corner
- 8 When not provided on the supplemental drainage structure sheet, culvert backfill values for pH, resistivity, sulfates and chlorides for the various optional culvert materials shall be shown in either the plan or profile portion See Section 8 2



### 5 3 Profile Portion

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

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

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

#### 5 4 Interchange Drainage Map

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

## 5 5 Bridge Hydraulic Recommendation Sheet

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

In addition to the hydraulic design data, plan and profile of the bridge structure, existing topography, site location, and drainage areas shall also be shown. The effective area of opening should be shown for existing structures within a reasonable proximity on the same waterway. Parallel (dual) bridges may be shown on one sheet, although a second sheet should be used, if necessary, to clearly convey the fit of the bridge to the stream bank. When two sheets are used, only the plan and profile information needs to be furnished on the second sheet.

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

### 5 5 1 Required Information on BHRS

- 1 Sufficient existing topography and contours shall be shown in the vicinity of the bridge to depict how the structure ties to natural ground. Hydraulic and other data on existing structures shall be provided. On bridge culverts in some cases such as in level topography with a cut canal, the contours may be omitted.

- 2 High water information shall be shown on the BHRS. The elevation measured at the time of the survey with month, day and year should be shown in the profile.
- 3 The drainage area and location map section should include a map with a north arrow. The map shall be of a scale so that the entire drainage area for the proposed structure is shown. The drainage area boundaries should be shown using a very heavy broken line with the area in acres or square miles shown within the boundary. The proposed structure location should be shown. Existing structures over the same water body should be located and numbered and corresponding existing structure information listed in the appropriate columns.
- 4 Proposed bridges shall be shown indicating abutments, slope protection, anticipated scour depths with protective recommendations, if any, and other recommendations.











## CHAPTER 6

### TYPICAL SECTIONS

#### 6.1 General

Typical sections are detailed cross section depictions of the highway's principal elements that are standard between certain station or milepost limits

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

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

Existing elements that are to be incorporated into the highway's final section are depicted in conjunction with the proposed elements.

Typical sections also show the pavement design information for the roadways, ramps and shoulders.

The typical sections for a project are either established prior to starting the final design, or are developed by the responsible engineer. The DOT CADD Manual's Library of Cells contains a number of typical sections that can be used and adjusted to suit the conditions of a particular project. Usually typical sections are not drafted to scale, but the horizontal dimensions should be proportionate.

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

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

## 6.2 Mandatory Information

Typical sections for all projects shall include the following data:

- 1 Design speed for each typical section
  
- 2 Traffic data (description, date and 2-way ADT)
  - a Current year
  - b Estimated Opening Year
  - c Design year
    - New Construction or Reconstruction (including stage construction - 20 years
    - Flexible Pavement Overlay (w/o milling) - 8 - 12 years
    - Flexible Pavement Overlay (w/ Milling) - 10 - 20 years
    - Flexible Pavement Overlay of Concrete Pavement - 8 - 12 years
  - d K, D and T factors

Traffic data (ADT) is required to be noted for the current year or the estimated opening year on skid hazard projects only.

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

## 6.2 Mandatory Information

Typical sections for all projects shall include the following data:

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

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

5. The scope of pavement construction shall be described in a clear, precise manner by indicating the IFR requirement and the thickness of the subgrade stabilization, subbase or base, structural course, friction course and shoulder pavement. Pavement structure information shall be obtained from the approved pavement design and shall be described in the order of construction, i.e. starting with bottom layer and ending with friction course.
  6. Limits of grassing.
  7. Sidewalk location and width.
  8. Curb and gutter location and type.
  9. Reference to all standard indexes necessary for construction of proposed typical section shall be indicated below the pavement description.
  10. Template dimensions. For widening projects, the existing pavement width shall be shown as a +/- dimension, and the base widening width shall be shown with an asterisk. As near to this noted asterisk as possible, the following statement shall be shown: "\*Actual width of base widening may vary due to actual existing pavement width. Contractor may elect to place uniform width base widening strip at no additional cost."
- NOTE: For typical sections with varying dimensions, the dimensions shall be clearly indicated on the plan - profile sheets.
11. Limits of clearing and grubbing, where applicable.
  12. R/W, where applicable.

### 6.3 Standard Notes for Typical Section Sheets

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

- 1 "All seeding and seeding and mulch areas are to receive a 6" muck blanket or topsoil treatment "  
(Note When muck or topsoil is required under sodded areas, the above note shall say "All grass areas are to receive a 6" muck blanket or topsoil treatment ")
2. "For details and limits of selective clearing and grubbing see \_\_\_\_\_ "
- 3 "None of the existing limerock base that is removed is to be used in the construction of the new limerock base "
- 4 "All of the existing limerock base that is removed is to be incorporated in the stabilized portion of the subgrade."
5. "The contractor shall bid on only one friction course alternate " |
- 6 (Under paved shoulders) "At the contractor's option, this area | may be constructed of base material at no additional compensation "
- 7 "Only one dense graded friction course FC-1 or FC-4 is to be | used throughout the limits of the project "

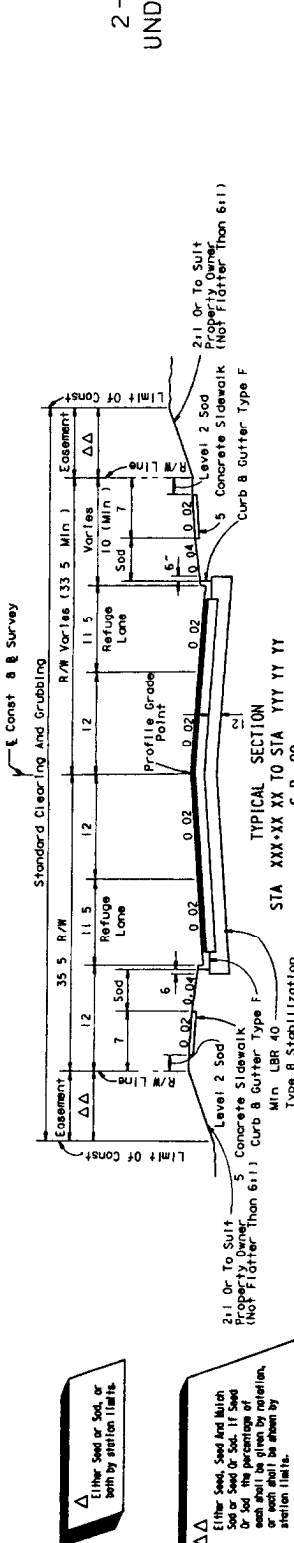
- | 8. (To appear on typical section only when component plans are not included) "It shall be the contractor's responsibility to determine the field location and length of any no-passing zone. No-passing zones shall be established in accordance with Section 3B-3, 3B-4, and 3B-5 of the current MUTCD and chapter 4-6 16 of the Department's Manual on Uniform Traffic Studies. The contractor's proposed method of establishing no-passing zones must be approved in advance of construction by the Engineer. The cost of establishing the no-passing zones shall be considered as incidental to traffic striping items included in the contract "
- | 9. "Actual width of base widening may vary due to actual existing pavement width. Contractor may elect to place uniform width base widening strip at no additional cost "





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

STATE PROJ. NO. 00000 0000 00



2-LANE  
UNDIVIDED

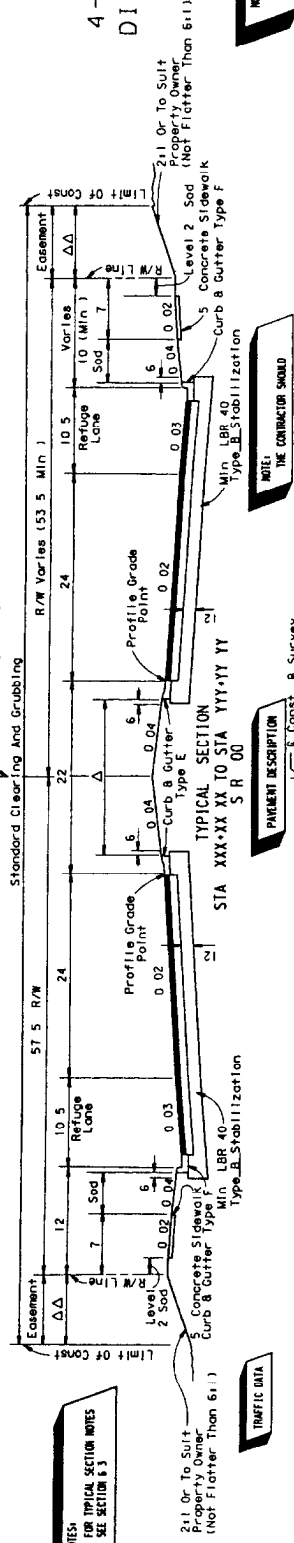
NOTE: The Contractor should identify the proposed option on which his initial bid is based by entering the three digit option code to the right side of the item number of optional base item on the submitted bid proposal.

OPTIONAL BASE GROUP 8 (FOR THICKNESS SEE BELOW) WITH  
TYPE 5 STRUCTURAL COURSE (1 1/2") AND FRICTION COURSE FC 1 OR FC 4 (1 1/2")  
OPTIONAL BASE COURSES PERMITTED: SECTION CODE  
10 LIMESTONE BASE COURSE 990  
6 ASPHALT BASE COURSE 327

Current Design 19 ADT  
Estimated Opening Year 19 ADT  
Design Year 20 ADT  
K 3 D 2 T 1 (24 Hr) FOR ADDITIONAL DETAILS SEE INDEX NOS 300 303 304 500 511 513 & 515  
Design Speed MPH

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

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



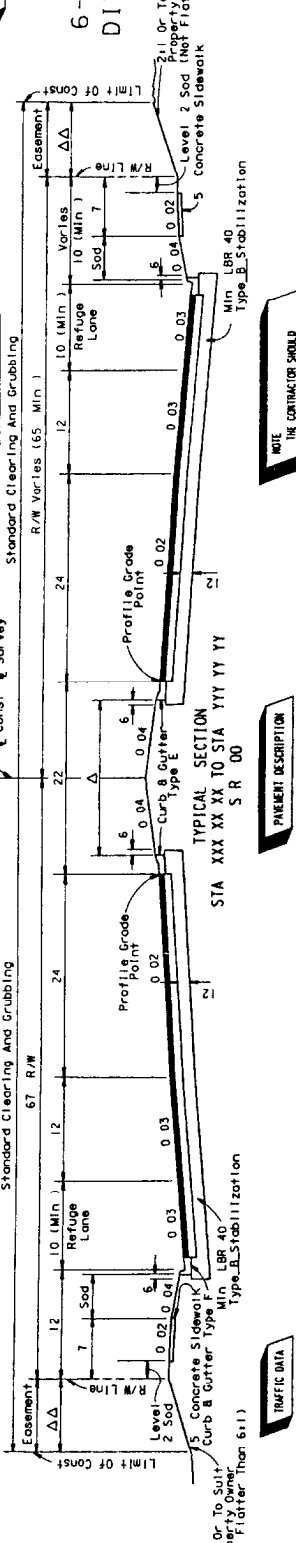
4-LANE  
DIVIDED

NOTE: ALL PAVEMENT DESCRIPTION FOR EXAMPLE ONLY

NOTES FOR TYPICAL SECTION NOTES SEE SECTION 5'S

NOTE: THE CONTRACTOR SHOULD

TRAFFIC DATA



6-LANE  
DIVIDED

NOTE: THE CONTRACTOR SHOULD

TRAFFIC DATA

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTIONS  
URBAN WITH REFUGE LANES

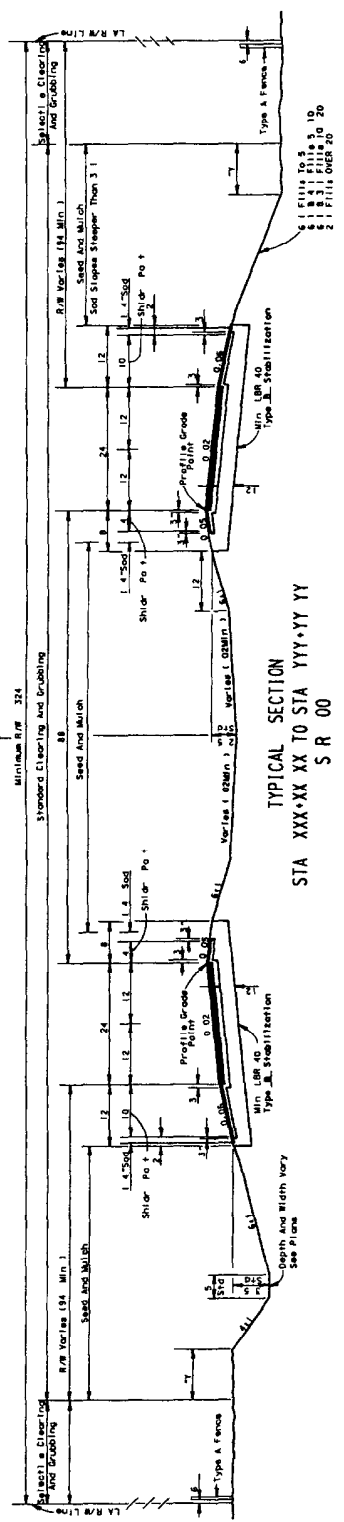
EX-11-6-B





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

STATE PROJ. NO. \_\_\_\_\_  
 00000-0000 00



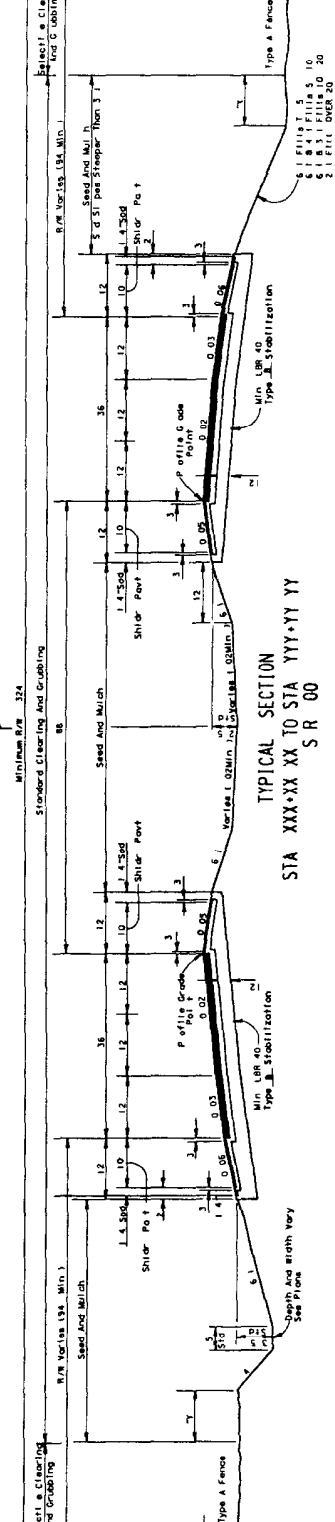
TYPICAL SECTION  
 STA XXX+XX XX TO STA YYY+YY YY  
 S R 00

Current Year 19 \_\_ ADT \_\_\_\_\_  
 Estimated Opening Year 19 \_\_ ADT \_\_\_\_\_  
 Design Year 19 \_\_ ADT \_\_\_\_\_  
 Design Speed \_\_ MPH \_\_\_\_\_

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

NOTES  
 FOR TYPICAL SECTION NOTES  
 SEE SECTION Y 3

NOTES  
 ALL FINISHES DESCRIBED  
 FOR EXAMPLE ONLY



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

Current Year 19 \_\_ ADT \_\_\_\_\_  
 Estimated Opening Year 19 \_\_ ADT \_\_\_\_\_  
 Design Year 19 \_\_ ADT \_\_\_\_\_  
 Design Speed \_\_ MPH \_\_\_\_\_

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

NOTES  
 FOR TYPICAL SECTION NOTES  
 SEE SECTION Y 3

NOTES  
 ALL FINISHES DESCRIBED  
 FOR EXAMPLE ONLY

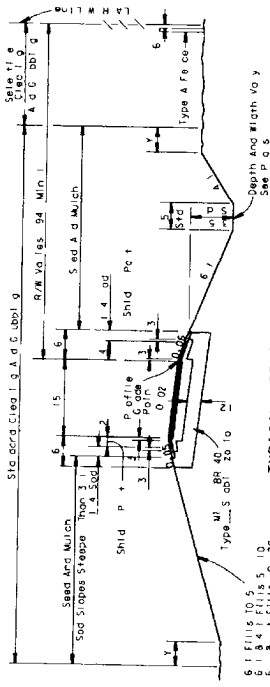
DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION

TYPICAL SECTION(S) (INTERSTATE)

EX-11-6-E

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

STATE PROJ. NO. 00000 00000000

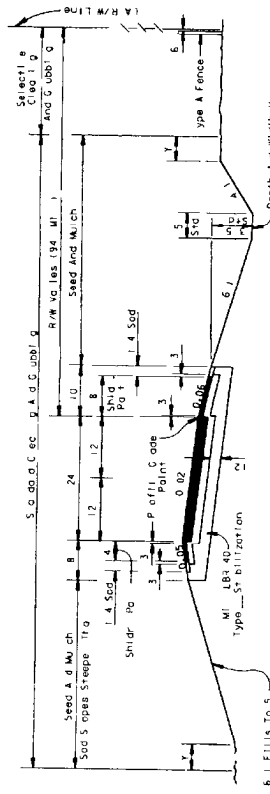


TYPICAL SECTION  
(SINGLE LANE RAMP)

STA XXX·XX XX @ RAMP TO  
STA YYY·YY YY @ RAMP

- OPTIONAL BASE GROUP 8 (FOR THICKNESS SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2 1) AND FRICTION COURSE FC 2 (5/8 1)  
OPTIONAL BASE COURSES PERMITTED  
10 LIMEROCK BASE COURSE  
9 ASPHALT BASE COURSE (TYPE 1)  
6 ASPHALT BASE COURSE (TYPE 3)

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



TYPICAL SECTION  
(TWO LANE RAMP)

STA XXX·XX XX @ RAMP TO  
STA YYY·YY YY @ RAMP

- OPTIONAL BASE GROUP 9 (FOR THICKNESS SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2 1) AND FRICTION COURSE FC 2 (5/8 1)  
OPTIONAL BASE COURSES PERMITTED  
10 LIMEROCK BASE COURSE  
9 ASPHALT BASE COURSE (TYPE 1)  
6 ASPHALT BASE COURSE (TYPE 3)

ROADWAY SHOULDERS

OPTIONAL BASE GROUP 1 (FOR THICKNESS SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (VARIABLE THICKNESS 1 1/2 AVG) OUTSIDE SHOULDER 3

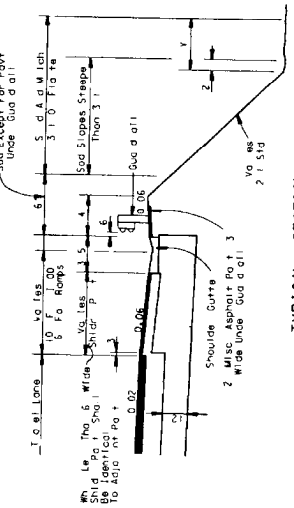
- OPTIONAL BASE COURSES PERMITTED  
4 LIMEROCK BASE COURSE  
4 ASPHALT BASE COURSE (TYPE 1)  
4 ASPHALT BASE COURSE (TYPE 2)  
4 ASPHALT BASE COURSE (TYPE 3)  
4 1/2 BANK RUN SHELL BASE

\*\* FOR SHOULDER WIDTH GREATER  
THAN 4 FEET 1 1/2 AVERAGE THICKNESS

RAMP SHOULDER

OPTIONAL BASE GROUP 2 (FOR THICKNESS SEE BELOW) WITH TYPE 5  
STRUCTURAL COURSE (2 1) AND FRICTION COURSE FC 2 (5/8 1)

- OPTIONAL BASE COURSES PERMITTED  
4 LIMEROCK BASE COURSE  
4 ASPHALT BASE COURSE (TYPE 1)  
4 ASPHALT BASE COURSE (TYPE 2)  
4 ASPHALT BASE COURSE (TYPE 3)  
4 1/2 BANK RUN SHELL BASE



TYPICAL SECTION  
SHOULDER PAVEMENT AND SHOULDER GUTTER

NOTE  
ALL PAVEMENT DESCRIPTIONS  
FOR EXAMPLE ONLY

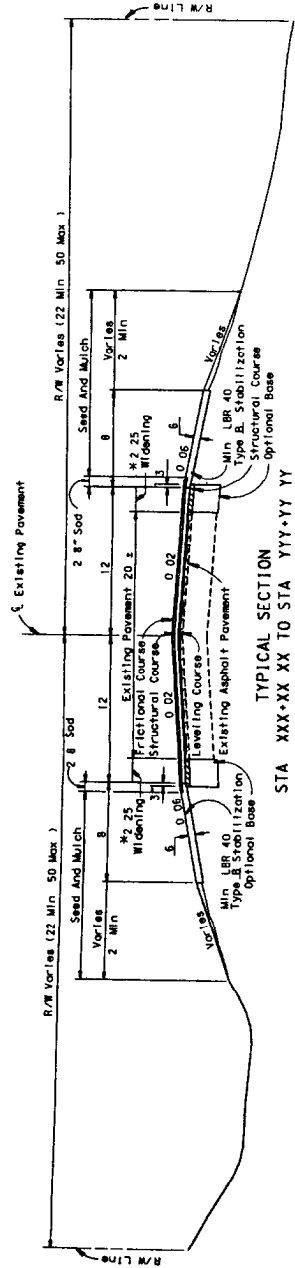
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTION(S)  
INTERSTATE RAMP

EX 11 6 F

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

STATE PROJ NO  
00000 0000 00



2-LANE  
UNDIVIDED

**TYPICAL SECTION**  
STA XXX+XX XX TO STA YYY+YY YY

RESURFACING  
TYPE 5 LEVELING COURSE (75 LBS/SY AVG.) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC 2 (5/8") ALT. AB

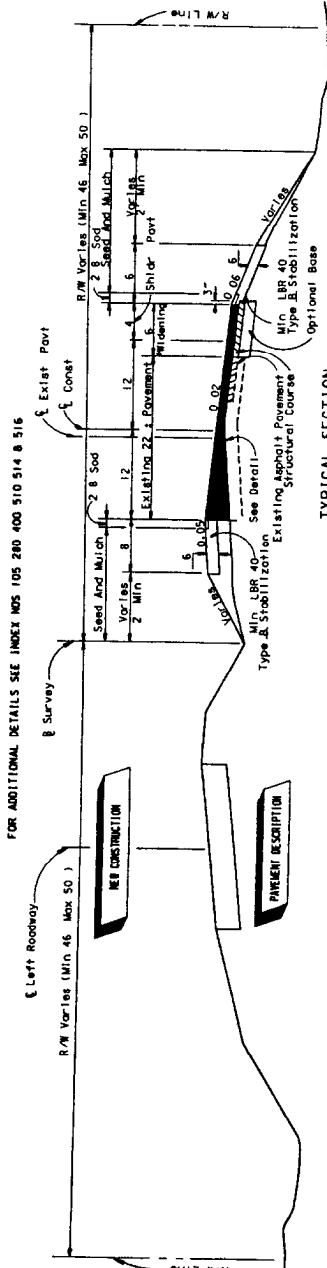
WIDENING  
OPTIONAL BASE GROUP 11 (1) PERMISSIBLE SEE BELOW WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC 2 (5/8") ALT. AB  
OPTIONAL BASE COURSES PERMITTED  
11 1/2 LIMEROCK BASE COURSE (TYPE 3)  
987  
407

FOR ADDITIONAL DETAILS SEE INDEX NOS 105 280 400 510 514 8 516

Current Year  
19 — ADT  
20 — ADT  
K — ADT  
D — ADT  
T — ADT  
Design Speed — MPH

NOTE: Width of base widening may vary due to actual existing pavement width. Contractor shall place uniform width base widening strip at no additional cost.

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



4-LANE  
DIVIDED

**TYPICAL SECTION**  
STA XXX+XX XX TO STA YYY+YY YY

RESURFACING  
TYPE 5 OVERBUILD COURSE (275 LBS/SY AVG. INSIDE LANE) AND  
LEVELING COURSE (75 LBS/SY AVG.) WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC 2 (5/8") ALT. AB

WIDENING  
OPTIONAL BASE GROUP 11 (1) PERMISSIBLE SEE BELOW WITH EITHER  
TYPE 5 STRUCTURAL COURSE (150 LBS/SY) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT. AA OR  
TYPE 5 STRUCTURAL COURSE (200 LBS/SY) AND FRICTION COURSE FC 2 (5/8") ALT. AB  
OPTIONAL BASE COURSES PERMITTED  
11 1/2 LIMEROCK BASE COURSE (TYPE 3)  
987  
407

FOR ADDITIONAL DETAILS SEE INDEX NOS 105 280 400 510 514 515 8 516

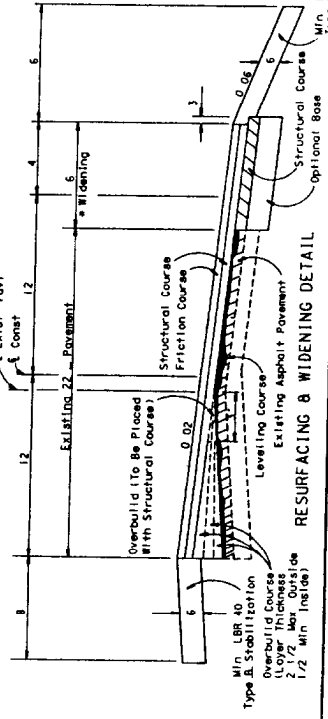
Current Year  
19 — ADT  
20 — ADT  
K — ADT  
D — ADT  
T — ADT  
Design Speed — MPH

NOTE: Width of base widening may vary due to actual existing pavement width. Contractor shall place uniform width base widening strip at no additional cost.

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

NOTE:  
ALL PAVEMENT DESCRIPTIONS  
FOR EXAMPLE ONLY

NOTE:  
THE CONTRACTOR SHOULD



**RESURFACING & WIDENING DETAIL**

Min. LBR 40  
Type B Stabilization  
Overbuild Course  
(Layer Thickness  
1/2 Min. (100 lbs))  
Existing Asphalt Pavement  
Leveling Course  
Friction Course  
Structural Course  
Optional Base

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

FOR ADDITIONAL DETAILS SEE INDEX NOS 105 280 400 510 514 515 8 516

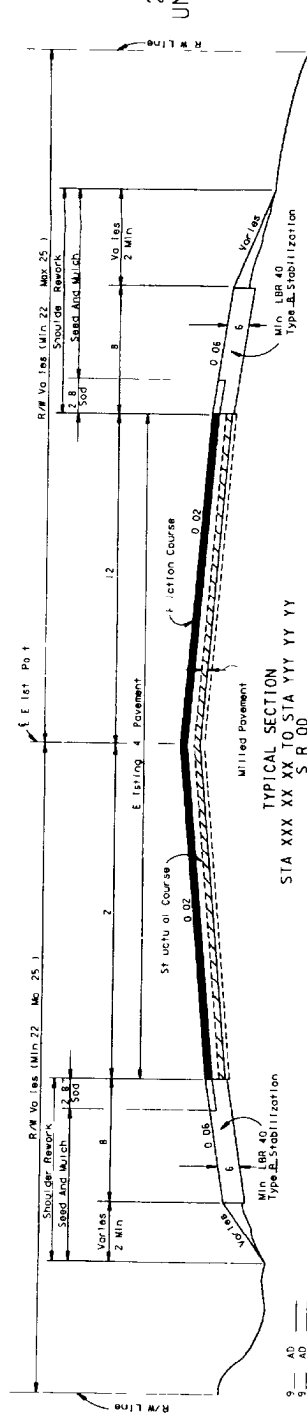
FLORIDA DEPARTMENT OF TRANSPORTATION  
APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PREPARED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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

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

STATE PROJ. NO. 00000 0000 00



Current Year  
Estimated Date of Sign Year

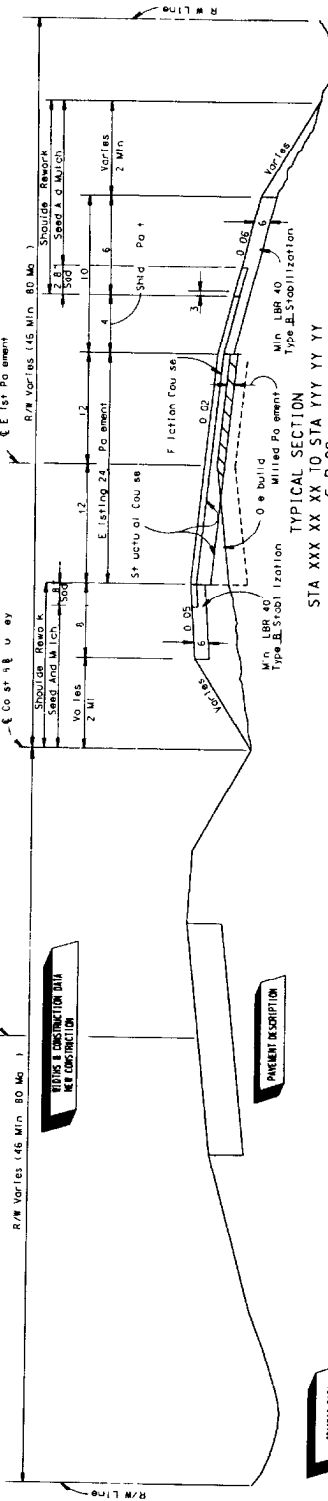
AD  
AD  
AD

Des. d. Sp. d. Ven. 1 2 3 2 4 1

**MILLING AND OVERBUILD**  
**RESURFACING**  
 WILL EXISTING ASPHALTIC CONCRETE PAVEMENT (2" AVERAGE DEPTH)  
 TYPE S STRUCTURAL COURSE (150 LBS/ST) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR  
 TYPE S STRUCTURAL COURSE (200 LBS/ST) AND FRICTION COURSE FC 2 (5/8) ALT AB  
 FOR ADDITIONAL DETAILS SEE INDEX NOS 105 280 400 510 514 8 516

CENTERLINE LEFT SHOULDER

TRAFFIC DATA



**MILLING AND OVERBUILD**  
 WILL EXISTING ASPHALTIC CONCRETE PAVEMENT (2" AVERAGE DEPTH) AND OVERBUILD  
 INNER EXISTING ASPHALTIC CONCRETE WITH TYPE S ASPHALTIC CONCRETE (125 LBS/ST AND )  
 RESURFACING

TYPE S STRUCTURAL COURSE (150 LBS/ST) AND FRICTION COURSE FC 1 OR FC 4 (1) ALT AA OR  
 TYPE S STRUCTURAL COURSE (200 LBS/ST) AND FRICTION COURSE FC 2 (5/8) ALT AB

NOTES FOR TYPICAL SECTION SEE SECTION 5 3

NOTE ALL PAVEMENT DESCRIPTION FOR EXAMPLE ONLY

NOTE THE CONTRACTOR SHOULD

- OPTIONAL BASE COURSES PERMITTED
- 4 LIMEROCK 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 105 280 400 510 514 8 516

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

TYPICAL SECTION RURAL MILLING AND RESURFACING

EX-11-6 H

## CHAPTER 7

### SUMMARY OF QUANTITIES

#### 7.1 General

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

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

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

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

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

Applicable pay item notes, listed in Section 7.5, ~~shall~~<sup>may</sup> also be included on this sheet.



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

### 7.3 Box Culvert Data Sheet

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

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

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

- 1 (Under Summary of Earthwork) "Earthwork has been calculated using the \_\_\_ base option. If another option is constructed, there shall be no revision to the earthwork quantities for which payment is made by plan quantity."
  
- 2 (Under Summary of Earthwork) "Estimated \_\_\_\_\_ C Y of unclassified material to be displaced by the storm sewer (or drainage structure) system not included in quantities shown above."

## 7.5 Pay Item Notes

- |   |                       |   |
|---|-----------------------|---|
| 1 | 110-3                 | <u>(To be used when maintenance indicates a desire for the salvageable material)</u> All salvageable material as determined by the project engineer is to be stockpiled within the right-of-way for removal by DOT forces   |
| 2 | 120-2-1               | To be furnished by the contractor from areas provided by him Measurement shall be based on the measurement of the borrow pit At the contractor's option, measurement may be based on loose truck volume, in which case payment will be made on ___% of the truck measured quantity                      |
| 3 | 145- 74,<br>  145- 75 | The geogrid alternate bid shall be the alternate built No substitution of other company's geogrid shall be allowed  |
| 4 | 285-7aa-bbb           | (To be used when a minor portion of the project is restricted to black base only) The quantities shown and price bid for Optional Base includes the construction of ___ S Y ABC-3 (Min Marshall Stability 1000) between Sta _____ to Sta _____ as shown on the plans and/or as directed by the engineer |

- 5            331-2            Includes removal of existing raised reflective pavement markers prior to starting operations Included (or includes \_\_\_ tons) for adjustment of connections to existing drives, streets, etc as directed by the Engineer
- 6            400-1-15            Included (or Includes \_\_\_\_\_ C Y) for miscellaneous construction as directed by the Project Engineer
- 7            536-73            (To be used only when material is to become the property of DOT) Existing guardrail to be dismantled and stockpiled within the right-of-way in areas designated by the Project Engineer for removal by DOT maintenance forces.
- 8            538-1            This is to include furnishing and installing \_\_\_ panels, \_\_\_ regular posts and \_\_\_ special posts which have been determined to be non-salvageable Additional posts and panels determined to be non-salvageable during resetting shall be paid for under Section 538-5 of the standard specifications
- 9            570-5            Based on \_\_\_ applications

PROJECT NUMBER : 00000-0000  
 FLORIDA DEPARTMENT OF TRANSPORTATION  
 BOX CULVERT AND WINGWALL DESIGN  
 LOCATION DESCRIPTION : STA 000+00 00  
 ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE  
 VERSION NO 2 1

MATERIAL PROPERTIES  
 -----  
 STEEL YIELD STRENGTH = 60000 PSI  
 CONCRETE 28 DAY STRENGTH = 3400 PSI  
 CONCRETE COVER FOR REINFORCING BARS  
 -----  
 BARREL EXTERIOR COVER TOP SLAB = 0 17 FT , BOTTOM SLAB = 0 17 FT , WALL = 0 17 FT  
 BARREL INTERIOR COVER ALL LOCATIONS = 0 17 FT  
 WINGWALL ALL LOCATIONS = 0 17 FT

PROPERTIES OF ELEMENTS  
 -----  
 BARREL NO OF BARREL(S) = 1, SPAN = 10 00 FT ,  
 LENGTH AT BOX CENTER LINE = 83 00 FT ,  
 THICKNESS TOP SLAB = 0 83 FT , BOTTOM SLAB = 0 88 FT , EXTERIOR WALL = 0 75 FT , INTERIOR WALL = 0 00 FT  
 WINGWALL:NO OF WINGWALL(S) BOTH LEFT AND RIGHT SIDES  
 NO OF HEADWALL(S) BOTH LEFT AND RIGHT SIDES

TOP BEVEL = 0 50 FT ,  
 WALL HEIGHT = 8 33 FT ,  
 TOE DIMENSION = 1 33 FT ,  
 TOE PRESSURE = 1209 LB/SQ FT  
 SKEW ANGLE = 0 DEGREE,  
 LENGTH WALL = 15 00 FT \* ( 0 00 FT \*\*),  
 = 3 781 C Y ,  
 LEFT FRONT = 0 DEGREE,  
 RIGHT FRONT = 0 DEGREE,  
 LEFT BACK = 180 DEGREE,  
 RIGHT BACK = 180 DEGREE,  
 FRONT TIP HEIGHT = 8 333 FT  
 FOOTING = 2 577 C Y  
 TOTAL = 6 358 C Y  
 HEEL DIMENSION = 3 08 FT  
 FOOTING THICKNESS = 0 67 FT  
 LEFT BACK = 180 DEGREE,  
 RIGHT BACK = 180 DEGREE,  
 FRONT TIP HEIGHT = 8 333 FT  
 FOOTING = 2 577 C Y  
 TOTAL = 6 358 C Y  
 TOTAL WINGWALL LENGTH WITH BARREL WIDTH LEFT = 41 50 FT , RIGHT = 41 50 FT

CONCRETE QUANTITIES  
 -----  
 BARREL POUR 1 (BOTTOM SLAB) = 0 382 C Y /FT ,  
 POUR 4 (HEADWALL(S)) = 1 065 C Y  
 WINGWALL: POUR 1 (FOOTING\*\*) = 11 918 C Y ,  
 POUR 2 (WALLS) = 15 123 C Y ,  
 POUR 3 (TOP SLAB) = 0 365 C Y /FT ,  
 TOTAL (EXCLUDE HEADWALL) = 1 090 C Y /FT  
 TOTAL CONCRETE QUANTITIES = 15 123 C Y , TOTAL = 27 041 C Y

BARREL = 91 515 C Y , WINGWALL = 27 041 C Y , TOTAL = 118 556 C Y  
 \* SKEWED WINGWALL LENGTH MEASURED ON CENTER LINE FROM CONSTRUCTION JOINT  
 \*\* DISTANCE FROM OUTSIDE EDGE OF BARREL EXTERIOR WALL TO CONSTRUCTION JOINT ON CENTER LINE OF WINGWALL  
 \*\*\* INCLUDE TOE AND KEY AT BARREL ENDS

FLORIDA DEPARTMENT OF TRANSPORTATION

BOX CULVERT AND WINGWALL DESIGN

PROJECT NUMBER 00000-0000

LOCATION DESCRIPTION STA 000+00 00  
ENVIRONMENT : SLIGHTLY AGGRESSIVE, USE CLASS II CONCRETE

STEEL QUANTITIES AND BAR SCHEDULE

BARREL QUANTITIES

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH	D LENGTH
TOP SLAB	A100	166	5	5	0 500	1	11- 2	1933			
BOT SLAB	A200	133	6	6	0 625	1	11- 2	2231			
CORNER (TOP)	A1	308	4	4	0 542	10	4- 5	909	2- 1	2- 4	
CORNER (BOTTOM)	A2	308	4	4	0 542	10	4- 5	909	2- 1	2- 4	
EXTERIOR WALL (INSIDE)	B1	308	4	4	0 542	1	7-10	1612			
EXTERIOR WALL (OUTSIDE)	B2	308	4	4	0 542	1	5- 8	1166			
LONGITUDINAL	C1	120	( 3)	4	1 500	1	28- 8	2298			
HEADWALL BOTH SIDES	G1	4	( 1)	4	SEE INDEX	1	11- 2	30			
HEADWALL BOTH SIDES	P	24	( 1)	4	1 000	11	3- 7	57	0-11	1- 6	1- 2
								132	LBS /FOOT		
								11145	LBS		

WINGWALL QUANTITIES

LOCATION	BAR	NUMBER	SETS	SIZE	SPACING	TYPE	LENGTH	WEIGHT	B LENGTH	C LENGTH	
STEM	F	48	5	5	1 208	10	10- 5	520	1- 9	8- 0	
STEM	J	48	4	4	1 208	1	8- 0	276			
STEM	K	48	4	4	1 500	1	14- 8	472			
FOOTING	KF	16	4	4	SEE INDEX	1	14- 8	156			
FOOTING	L	52	4	4	1 208	1	8-10	168			
FOOTING LEFT SIDE	M1	2	( 1)	4	SEE INDEX	1	41- 2	55			
FOOTING RIGHT SIDE	M2	2	( 1)	4	SEE INDEX	1	41- 2	55			
STK TO BARREL DOMELS	M **	36		6	1 000	10	6- 0	324	3- 0	3- 0	
FOOTING SPILLWAY	R	24	4	4	1 000	1	2- 7	41			
								29	LBS /FOOT		
								2067	LBS		

\* LENGTH IS THE SUM OF BAR LENGTH AT BEGINNING/TOP AND ENDING/BOTTOM OF WINGWALL. NUMBER OF BAR IS THE AMOUNT REQUIRED FOR THIS SUMMATION OF LENGTH B AND C LENGTH IS FOR THE FIRST BAR OF WINGWALL CLOSE TO THE JOINT OF WINGWALL AND BARREL

\*\* FOR SKEWED WINGS BLEND BARS N TO ACCOMODATE SKEW, PROVIDE FOR 3 FT OF BAR IN THE WINGWALL AND HEADWALL

TOTAL STEEL QUANTITIES

BARREL	11145	LBS
WINGWALL	2067	LBS
TOTAL	13212	LBS

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

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

FLORIDA DEPARTMENT OF TRANSPORTATION  
BOX CULVERT AND WINDMILL DESIGN  
VERSION NO. 2

PROJECT NUMBER 00000 0000 0000  
LOCATION DESCRIPTION 650 00 L T  
ENVIRONMENT SLOPELY AGGRESSIVE USE CLASS II CONCRETE

FLORIDA DEPARTMENT OF TRANSPORTATION  
BOX CULVERT AND WINDMILL DESIGN  
VERSION NO. 2

PROJECT NUMBER 00000 0000 0000  
LOCATION DESCRIPTION 650 00 L T  
ENVIRONMENT SLOPELY AGGRESSIVE USE CLASS II CONCRETE

STEEL QUANTITIES NO BAR SC ENDAE

BAR	NUMBER	SETS	SIZE	SPACING	TYP	LEN TH	HEIG T	B LENG T	C LENG T	D LENG T
A00	2	1	0.833			13.1	232			
A200	25	1	0.750			13.1	232			
B000	12	1	0.833			3.8	23			
B200	12	1	0.833			3.8	23			
B400	12	1	0.833			3.8	23			
B600	12	1	0.833			3.8	23			
B800	12	1	0.833			3.8	23			
C00	44	1	0.917			6	132	1.1	2.7	
C2	44	1	0.917			6	132	1.1	2.7	
C4	44	1	0.917			6	132	1.1	2.7	
C6	44	1	0.917			6	132	1.1	2.7	
C8	44	1	0.917			6	132	1.1	2.7	
C10	44	1	0.917			6	132	1.1	2.7	
C12	44	1	0.917			6	132	1.1	2.7	
C14	44	1	0.917			6	132	1.1	2.7	
C16	44	1	0.917			6	132	1.1	2.7	
C18	44	1	0.917			6	132	1.1	2.7	
C20	44	1	0.917			6	132	1.1	2.7	
C22	44	1	0.917			6	132	1.1	2.7	
C24	44	1	0.917			6	132	1.1	2.7	
C26	44	1	0.917			6	132	1.1	2.7	
C28	44	1	0.917			6	132	1.1	2.7	
C30	44	1	0.917			6	132	1.1	2.7	
C32	44	1	0.917			6	132	1.1	2.7	
C34	44	1	0.917			6	132	1.1	2.7	
C36	44	1	0.917			6	132	1.1	2.7	
C38	44	1	0.917			6	132	1.1	2.7	
C40	44	1	0.917			6	132	1.1	2.7	
C42	44	1	0.917			6	132	1.1	2.7	
C44	44	1	0.917			6	132	1.1	2.7	
C46	44	1	0.917			6	132	1.1	2.7	
C48	44	1	0.917			6	132	1.1	2.7	
C50	44	1	0.917			6	132	1.1	2.7	
C52	44	1	0.917			6	132	1.1	2.7	
C54	44	1	0.917			6	132	1.1	2.7	
C56	44	1	0.917			6	132	1.1	2.7	
C58	44	1	0.917			6	132	1.1	2.7	
C60	44	1	0.917			6	132	1.1	2.7	
C62	44	1	0.917			6	132	1.1	2.7	
C64	44	1	0.917			6	132	1.1	2.7	
C66	44	1	0.917			6	132	1.1	2.7	
C68	44	1	0.917			6	132	1.1	2.7	
C70	44	1	0.917			6	132	1.1	2.7	
C72	44	1	0.917			6	132	1.1	2.7	
C74	44	1	0.917			6	132	1.1	2.7	
C76	44	1	0.917			6	132	1.1	2.7	
C78	44	1	0.917			6	132	1.1	2.7	
C80	44	1	0.917			6	132	1.1	2.7	
C82	44	1	0.917			6	132	1.1	2.7	
C84	44	1	0.917			6	132	1.1	2.7	
C86	44	1	0.917			6	132	1.1	2.7	
C88	44	1	0.917			6	132	1.1	2.7	
C90	44	1	0.917			6	132	1.1	2.7	
C92	44	1	0.917			6	132	1.1	2.7	
C94	44	1	0.917			6	132	1.1	2.7	
C96	44	1	0.917			6	132	1.1	2.7	
C98	44	1	0.917			6	132	1.1	2.7	
C100	44	1	0.917			6	132	1.1	2.7	
C102	44	1	0.917			6	132	1.1	2.7	
C104	44	1	0.917			6	132	1.1	2.7	
C106	44	1	0.917			6	132	1.1	2.7	
C108	44	1	0.917			6	132	1.1	2.7	
C110	44	1	0.917			6	132	1.1	2.7	
C112	44	1	0.917			6	132	1.1	2.7	
C114	44	1	0.917			6	132	1.1	2.7	
C116	44	1	0.917			6	132	1.1	2.7	
C118	44	1	0.917			6	132	1.1	2.7	
C120	44	1	0.917			6	132	1.1	2.7	
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C126	44	1	0.917			6	132	1.1	2.7	
C128	44	1	0.917			6	132	1.1	2.7	
C130	44	1	0.917			6	132	1.1	2.7	
C132	44	1	0.917			6	132	1.1	2.7	
C134	44	1	0.917			6	132	1.1	2.7	
C136	44	1	0.917			6	132	1.1	2.7	
C138	44	1	0.917			6	132	1.1	2.7	
C140	44	1	0.917			6	132	1.1	2.7	
C142	44	1	0.917			6	132	1.1	2.7	
C144	44	1	0.917			6	132	1.1	2.7	
C146	44	1	0.917			6	132	1.1	2.7	
C148	44	1	0.917			6	132	1.1	2.7	
C150	44	1	0.917			6	132	1.1	2.7	
C152	44	1	0.917			6	132	1.1	2.7	
C154	44	1	0.917			6	132	1.1	2.7	
C156	44	1	0.917			6	132	1.1	2.7	
C158	44	1	0.917			6	132	1.1	2.7	
C160	44	1	0.917			6	132	1.1	2.7	
C162	44	1	0.917			6	132	1.1	2.7	
C164	44	1	0.917			6	132	1.1	2.7	
C166	44	1	0.917			6	132	1.1	2.7	
C168	44	1	0.917			6	132	1.1	2.7	
C170	44	1	0.917			6	132	1.1	2.7	
C172	44	1	0.917			6	132	1.1	2.7	
C174	44	1	0.917			6	132	1.1	2.7	
C176	44	1	0.917			6	132	1.1	2.7	
C178	44	1	0.917			6	132	1.1	2.7	
C180	44	1	0.917			6	132	1.1	2.7	
C182	44	1	0.917			6	132	1.1	2.7	
C184	44	1	0.917			6	132	1.1	2.7	
C186	44	1	0.917			6	132	1.1	2.7	
C188	44	1	0.917			6	132	1.1	2.7	
C190	44	1	0.917			6	132	1.1	2.7	
C192	44	1	0.917			6	132	1.1	2.7	
C194	44	1	0.917			6	132	1.1	2.7	
C196	44	1	0.917			6	132	1.1	2.7	
C198	44	1	0.917			6	132	1.1	2.7	
C200	44	1	0.917			6	132	1.1	2.7	
C202	44	1	0.917			6	132	1.1	2.7	
C204	44	1	0.917			6	132	1.1	2.7	
C206	44	1	0.917			6	132	1.1	2.7	
C208	44	1	0.917			6	132	1.1	2.7	
C210	44	1	0.917			6	132	1.1	2.7	
C212	44	1	0.917			6	132	1.1	2.7	
C214	44	1	0.917			6	132	1.1	2.7	
C216	44	1	0.917			6	132	1.1	2.7	
C218	44	1	0.917			6	132	1.1	2.7	
C220	44	1	0.917			6	132	1.1	2.7	
C222	44	1	0.917			6	132	1.1	2.7	
C224	44	1	0.917			6	132	1.1	2.7	
C226	44	1	0.917			6	132	1.1	2.7	
C228	44	1	0.917			6	132	1.1	2.7	
C230	44	1	0.917			6	132	1.1	2.7	
C232	44	1	0.917			6	132	1.1	2.7	
C234	44	1	0.917			6	132	1.1	2.7	
C236	44	1	0.917			6	132	1.1	2.7	
C238	44	1	0.917			6	132	1.1	2.7	
C240	44	1	0.917			6	132	1.1	2.7	
C242	44	1	0.917			6	132	1.1	2.7	
C244	44	1	0.917			6	132	1.1	2.7	
C246	44	1	0.917			6	132	1.1	2.7	
C248	44	1	0.917			6	132	1.1	2.7	
C250	4									





## CHAPTER 8

### SUMMARY OF DRAINAGE STRUCTURES

#### 8.1 General

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

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

## 8.2 Sheet Setup and Data

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

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

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

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

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

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

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

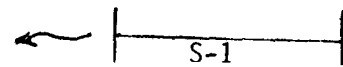
The "F" line is for construction to document the final quantity and should be left blank by the designer

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

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

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

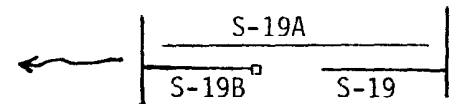
Example #1 (cross drain  
w/o median inlet)



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

Example #3 (double pipe CD & median inlet)

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









## CHAPTER 9

### PROJECT LAYOUT

#### 9.1 General

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

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



## 9.2 Alignment Sheet Sequence

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

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

Crossroads

Ramps

Frontage roads

Access roads

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

### 9.3 Survey Reference Points

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

### 9.4 General Notes

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

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



## CHAPTER 10

### ROADWAY PLAN AND PROFILE

#### 10.1 General

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

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

For CADD produced plans (i.e., originals are 11" X 17"), plotting should be done at a horizontal true scale of 1" = 40' for urban jobs. For rural jobs, the true scale could be from 1" = 80' to 1" = 200' horizontally, depending on project specific details.

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

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

## 10.2 Roadway Plan Portion

### 10.2.1 Centerline

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

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

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

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

### 10.2.2 Horizontal Curves

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

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

#### **CURVE DATA**

P.I. Station

$\Delta$  (Delta Angle with Direction)

D (Degree of Curvature)

T (Tangent Length)

L (Length of Curve)

R (Radius Length)

P.C. Station

P.T. Station

e (Superelevation Rate)

### 10.2.3 Existing Topography

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

#### 10.2 4 Reference Data

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

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

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

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



## 10 2 5 Construction and Project Limits

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

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

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

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

### 10.2.6 Drainage Structures and Bridges

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

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

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

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

When plans are prepared utilizing optional pipe materials, the most logical option, as specified by the drainage engineer, shall be the pipe size shown, and the "Optional Cross-Drain Tabulation Sheet", shall be prepared. If the tabulation sheet is not prepared, a complete description of all pipe options shall be shown on the plan-profile sheet.

## 10 2 7 Plan Layout

1 Right-of-way lines shall be shown Right-of-way shall be dimensioned only if the applicable typical section shows a varying dimension from the baseline or centerline Dimensions of the R/W line shall be from the centerline or baseline, if survey and construction lines are parallel, otherwise it shall be dimensioned from the construction centerline

2 The showing of detailed information regarding crossovers or intersections should be avoided when they are of a type which can be handled by a standard detail Crossover and intersections shall be identified by station location

3 At locations along the alignment where travelway dimensions change, or begin to change, the station and dimensions of the travelway shall be shown For rural projects the edges of pavement may not be shown in the plan if shown in typical section projects

4 Curb, curb and gutter, traffic separators, sidewalks, curb cut ramps, retaining walls, etc shall be shown

5 Stations of return points, shall be shown in tabular form (see Exhibit II-10-A) or shown on the plan, unless shown on the intersection details Offsets shall also be shown, if not governed by a typical

6 Station of radius points of traffic separator or median curb at median openings shall be shown in the plan Elevation of these points shall also be shown if not shown in the intersection details sheet or unobtainable in plans

7 Control radii for traffic turns that set median nose locations shall be indicated, unless shown on the intersection detail sheet

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

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

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

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

$V_v$  = Verified Vertical Location

$V_h$  = Verified Horizontal Location

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

11 All traffic monitoring sites on or within 0.5 mile of the project shall be identified with the following notation

**Traffic Monitoring Site Number (XXXX)**  
**Roadway Identifying Number (RCI Section #) Milepost (XX.XXX)**  
**Site includes vehicle detectors in roadway and pedestal mounted metal cabinet, buried cable, and solar power unit on right-of-way.**

### **10.3 Roadway Profile Portion**

#### **10 3 1 General Data**

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

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

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

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

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

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

### 10.3.2 Vertical Curves

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

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

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

### 10 3 3 Grades

1  
1  
Percents of grades to 3 decimal places shall be indicated for each tangent section on every sheet (trailing zeros need not be shown) When two tangent grades intersect and no vertical curve is required the P I station and elevation shall be labeled vertically, using the same criteria as for vertical curves

### 10 3 4 Superelevation

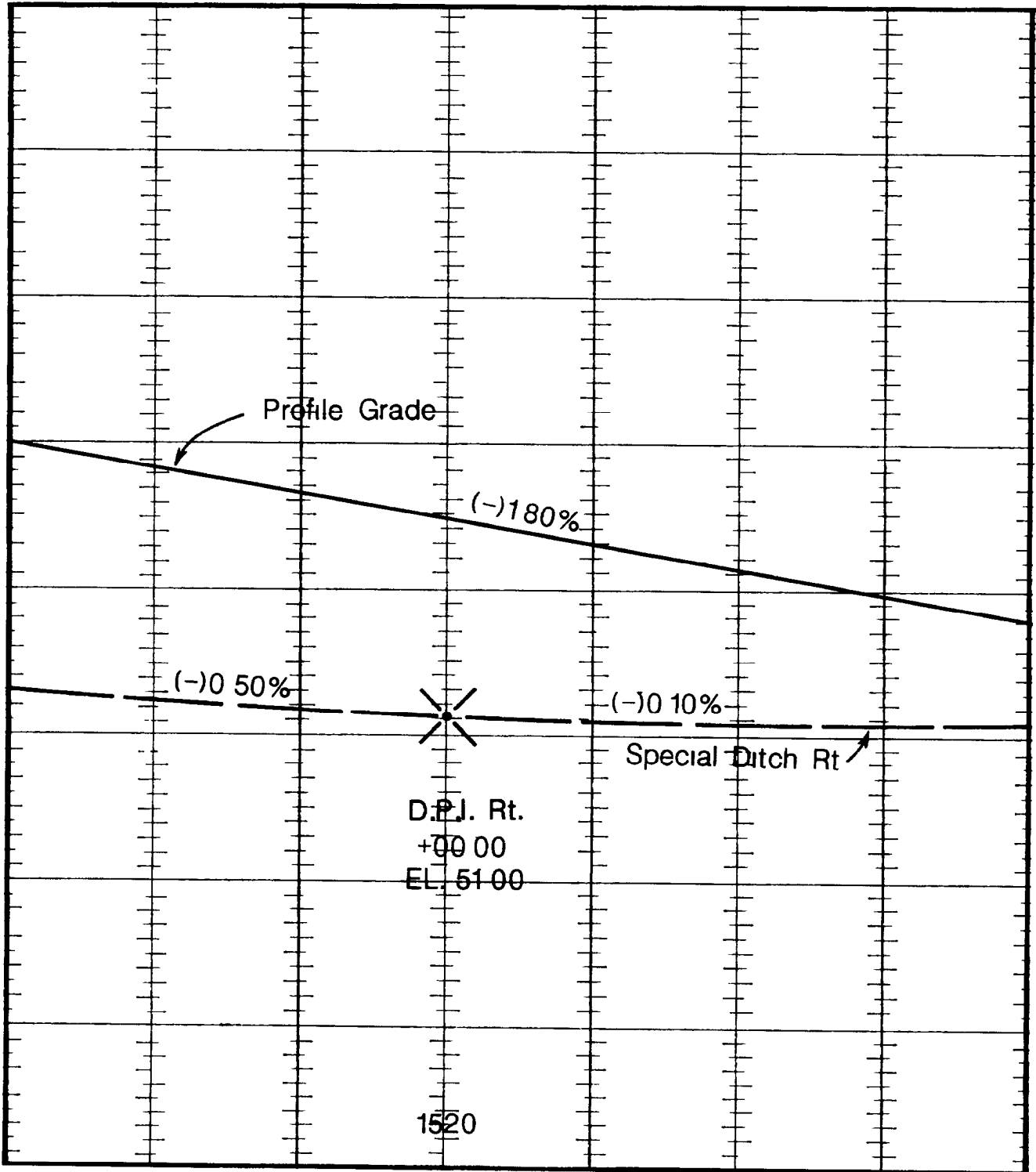
For non-standard superelevated sections of the project, the begin and end superelevation stations should be indicated on the profile with a note "For Superelevation details see sheet \_\_" (special profiles sheet)

### 10 3 5 Drainage Features

For rural construction projects, special ditches shall be indicated in the profile with a medium light broken line (long dashes) Percent of ditch grade and a beginning or ending ditch P I with symbol (see figure 10 1), and elevation and station plus shall be shown For multi-lane divided projects, three special ditch grades (right and left roadway ditches and median ditch) sometimes occur at the same location In such cases it may be advantageous to show the median ditch at a convenient location on the sheet with a separate elevation datum

# FIG. 10.1

## DITCH POINT INTERSECTION (D.P.I.)





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

Special gutter grades shall be shown in profile for cases where the gutter grades are not controlled by the typical section and "special profiles" are not included in the plans set.

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

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

Proposed cross drain pipes and culverts shall be plotted in section with a heavy solid line. The section shall be shown at the correct location and elevation of the proposed structure crossing the centerline of construction. If drainage structures are drawn, cross drains shall be identified by structure number only. If optional materials are provided, only the structure number is shown and the optional material cross drain tabulation sheet is provided. Bridges and bridge culverts shall be noted as such and their beginning and ending stations shown.

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

All major underground utilities<sup>1</sup> located in the field shall be shown to scale in profile and labeled in accordance with the following symbols

$v_v$  = Verified Vertical Elevation

$v_h$  = Verified Horizontal Location

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

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<sup>1</sup> Note "Major Utilities" are defined as water mains (4" or larger), all gas lines except service lines, telephone ducts (50 pair or larger), sanitary lines (all gravity flow mains), sanitary force mains (4" or larger) and electric power cable (all buried electric transmission cables - not service lines)

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

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

List of General Notes.

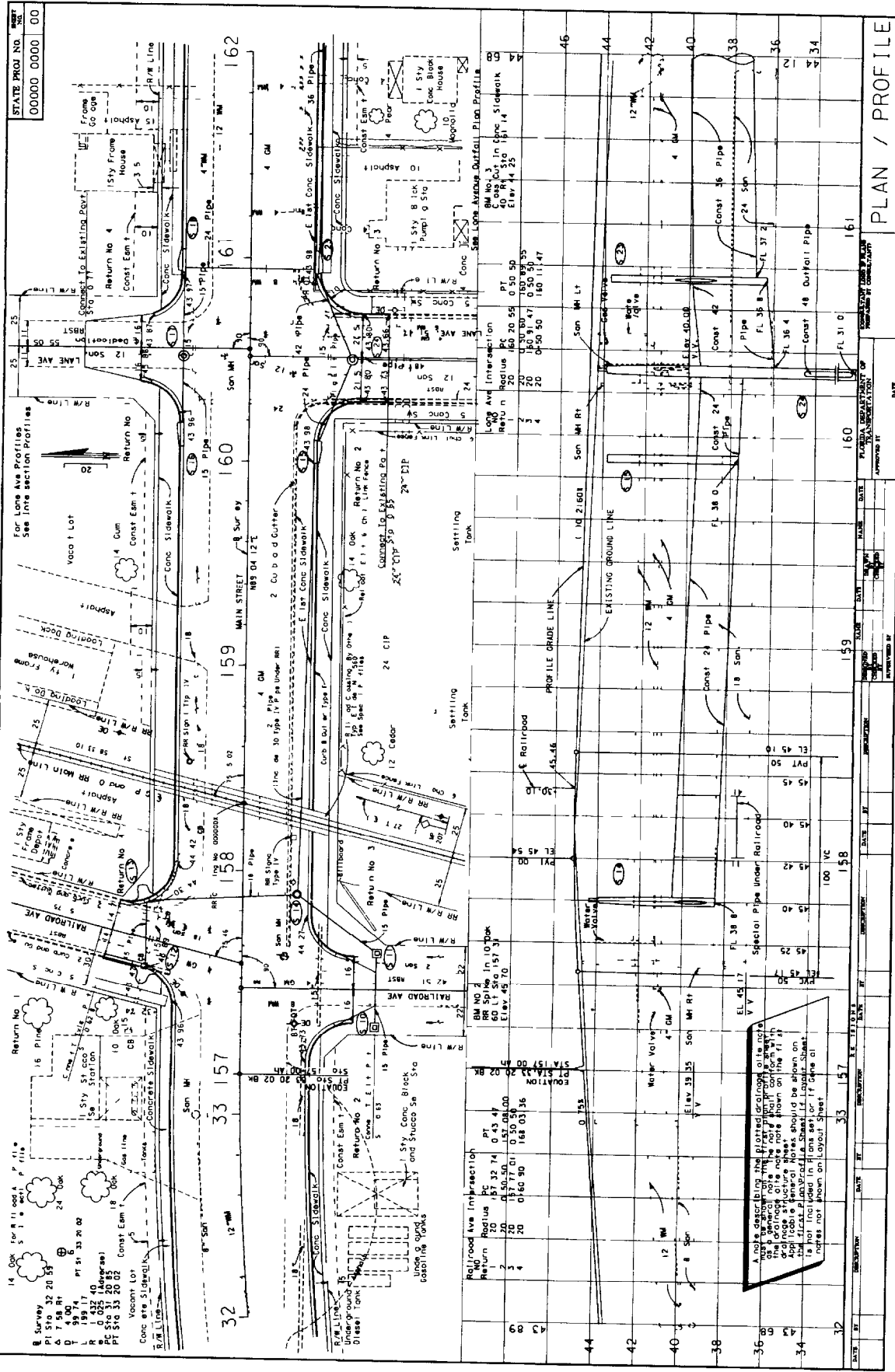
- 1 Buildings to be removed by others, unless otherwise noted
- 2 Existing drainage structures within construction limits shall be removed (or remain) unless otherwise noted
- 3 If there are no utility adjustment sheets in the plans, the following notes shall be included in the general notes
  - a The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

Companies

Telephone Nos

- 4 If there are no drainage structure sheets in the plans, the following notes shall be included in the general notes, if applicable
- a Special attention is directed to the fact that portions of some drainage structures extend into the stabilized portion of the road bed and extreme caution will be necessary in stabilization operations at these location
  - b To be used when optional materials are provided)  
  
(Some) (All) \_\_\_\_\_ of the drainage structures have optional culvert materials One of the optional materials has been used as the basis of the pay quantities. All optional materials are described, and design information has been provided in the tabulation of optional cross drain (and/or storm sewer) pipe culvert materials
5. Any public land corner within the limits of construction is to be protected If a corner monument is in danger of being destroyed and has not been properly referenced, the project engineer should notify the district location surveyor without delay by telephone
- 6 Existing driveways within the limits of this project have been evaluated for conformance with FAC Rule 14-97 003(1)(b) Those that are in substantial conformance with the rule and that are to remain at their existing location, are not shown on the plans but are to be reconstructed in conformance to standards Those that are to be relocated or closed are detailed on the plans

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



PLAN / PROFILE

EX IT-10-A

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/10/88	...	...	11/10/88	...	...	11/10/88	...	...
11/10/88	...	...	11/10/88	...	...	11/10/88	...	...
11/10/88	...	...	11/10/88	...	...	11/10/88	...	...

Each structure shown on this sheet shall be constructed in accordance with the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 1988 Edition, Section 200, unless otherwise noted. The Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 1988 Edition, Section 200, shall apply to all structures shown on this sheet. The Florida Department of Transportation Standard Specifications for Road and Bridge Construction, 1988 Edition, Section 200, shall apply to all structures shown on this sheet.





## CHAPTER 11

### SPECIAL PROFILES

#### 11.1 General

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



## 11.2 Intersections

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

When plan - profile format is used for intersection details, the profile's horizontal scale shall be the same as that for the plan portion. A vertical scale of 1" = 1' for the profile portion is recommended as it enables intermediate elevations to be determined from the profile with reasonable accuracy. The existing ground line and/or curb line may be shown by a light broken line.

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

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

### 11.3 Curb Returns

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

Curb return profiles shall be shown on standard cross section format. They shall be included in the plans set if the required information cannot clearly be shown on the plan - profile sheet or intersection detail sheet, or if extreme grades are involved rendering the standard curb return profiles (Index 303) inadequate. Standard scale used should be 1"=20' horizontally and 1"=2' vertically. Other scales may be used provided all construction details are clearly and legibly shown, when the plans are reduced to half size. Each return profile shall be identified and its PC <sup>and</sup> PT stations ~~indicated~~ <sup>shown</sup>. Elevations should be shown at 20' intervals and low and high spots shall be identified by location and elevation.

#### 11.4 Ramps

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

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

Sections at nose points are required. They may be shown using a scale of 1"=10' horizontally and 1"=1' vertically.

### 11.5 Spline Grade

Intersections of ramp pavement with mainline pavement and other sections of pavement within special superelevated zones need special attention, not only during the design phase of the project, but also during the construction phase. Hence, all construction details pertaining to these areas should be clearly and accurately shown in the plans. Spline grade shows the interconnection and interrelation of the edges of pavement with the mainline edge of pavement. This profile proves to be valuable especially if the mainline pavement is superelevated or within the superelevation transition zone.

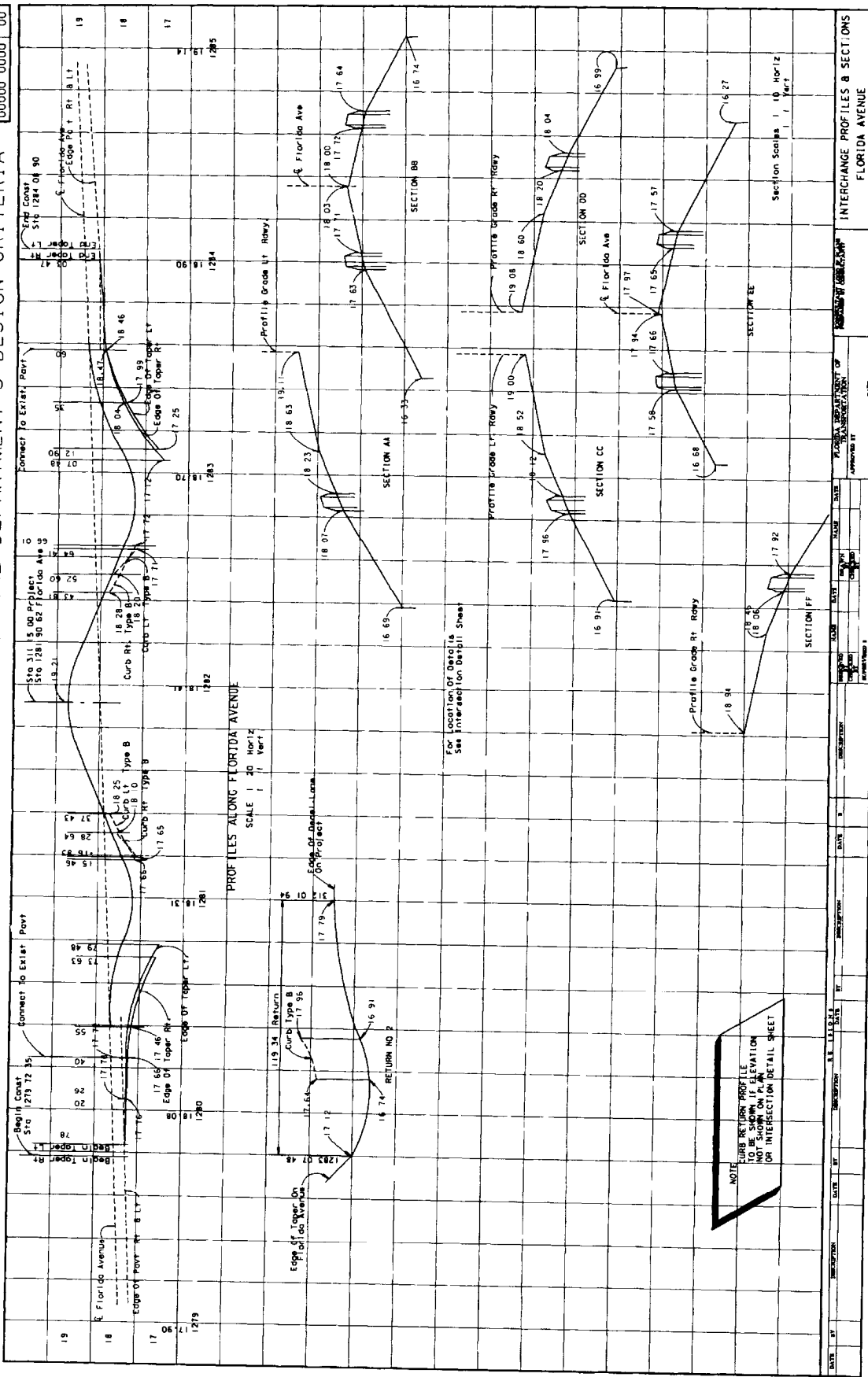
Spline grade shall show the elevations at a minimum of 20' and a maximum of 100' intervals of the outer edge of mainline pavement and inner and outer edges of the ramp pavement at the nose areas. Grades of the three pavement edges shall be shown on a standard cross section format; recommended scales: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

## 11.6 Superelevation

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

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STATE PROJ. NO. 00000 00000 00



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

APPROVED BY: [Signature]

DATE: [Date]

PROJECT: INTERCHANGE PROFILES & SECTIONS FLORIDA AVENUE

EX 11-11-A



## CHAPTER 12

### BACK-OF-SIDEWALK PROFILES

#### 12.1 General

Back-of-sidewalk/right of way line profiles are used to establish the profile grade and hence play an important role in plan preparation, especially if the project site is located in a built-up urban area. Profiles help determine the constructability of the project within the right-of-way without excessive disturbance or rework of adjoining properties. Back-of-sidewalk profiles are also used for checking of storm water trapped behind the sidewalks and as a major input for establishing centerline grade profiles. Grades shown on this sheet are at the back of the proposed sidewalk, and grades shown on plan - profile sheets are centerline grade profiles.

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



## 12.2 Required Information

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

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

Percents of grade for the sidewalk profile, P.I. stations and elevations shall be shown. Vertical curves, if any, shall be dimensioned. Elevations along vertical curves are not required.

Begin and End project and sidewalk stations shall be flagged and labeled. Mainline station equations within the limits of the sidewalk profile shall also be flagged and labeled.

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

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

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

Floor elevations for buildings shall be indicated by a horizontal line drawn at the floor elevation between the building limits.

~~Building~~ (and side) The numeric elevation shall be shown, as well as the *offset* (distance) from centerline of project to face of building. ~~distance~~ ~~(distance) from centerline of project~~. Entrances to buildings, elevations of top of existing utilities, and water table elevation may be shown when appropriate. Stations and elevations of intersecting side streets shall also be shown.

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

### 12.3 Sheet Set Up

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



## CHAPTER 13

### INTERSECTION AND INTERCHANGE DETAILS/LAYOUTS

#### 13.1 General

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

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

### 13.2 Intersections

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

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

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

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

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

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

### 13.3 Interchanges

#### 13.3.1 Geometric Layout

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

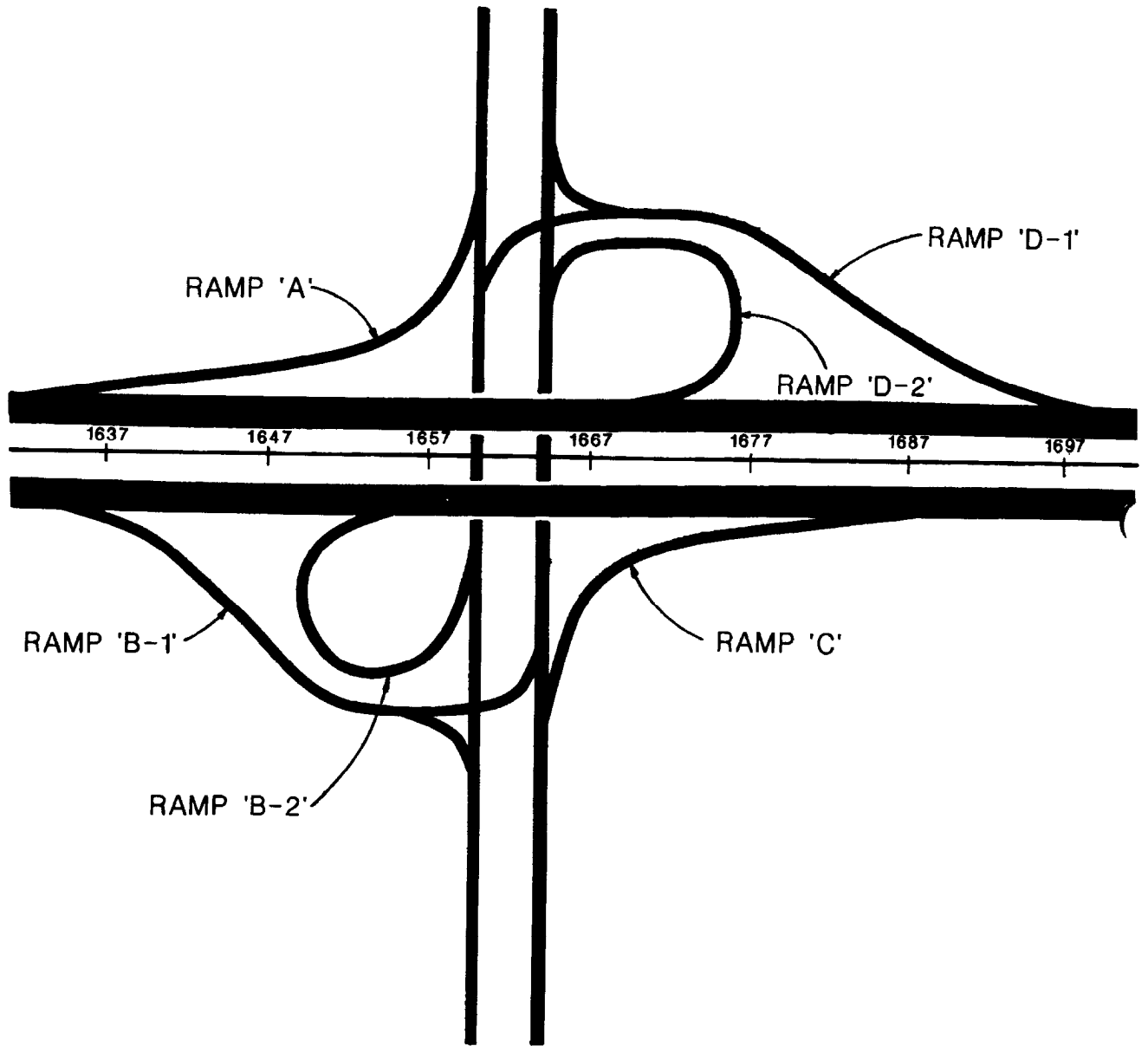
Interchange ramps shall be identified by the use of letters. The recommended practice for assigning ramp names is as follows:

*or a combination of letters and numbers.*

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

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

FIG. 13.1



II-13-4 0



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

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

The final plans set shall include the following interchange sheets:

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

### 13.3.2 Ramp Terminal Details

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

Curve data

Station equality to mainline or crossroad at critical ramp locations

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

Channelization (if any)

Ramp and crossroad intersection station and angle

Median nose data (if any)

Limits of construction

R/W

Limited Access R/W and fence location

Drainage structures

Spot elevations (as needed)

Roadway dimensions

Station pluses and offsets

### 13.3.3 Cross Section Pattern Sheet

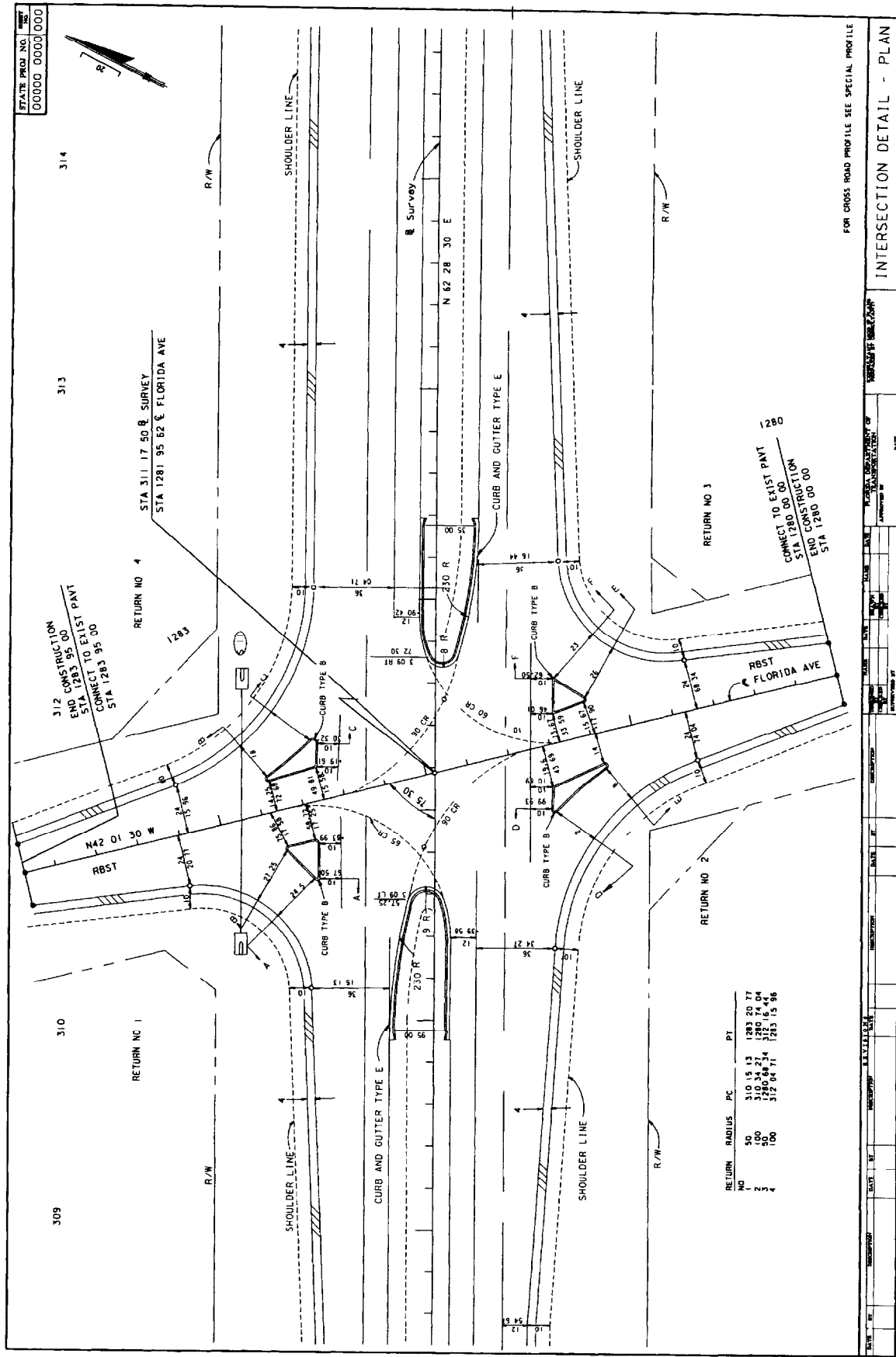
The cross section pattern sheet shows the entire interchange layout including frontage and access roads, if any, with location and extent of proposed cross sections. This is of ~~the~~ <sup>a</sup> special importance for projects involving new interchanges located in rural, undeveloped areas. Information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

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

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



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RETURN NO	RADIUS	PC	PT
1	50	310 15 13	1283 20 74
2	100	310 34 21	1283 70 00
3	50	1280 08 24	312 16 44
4	100	312 04 71	1283 15 96

FOR CROSS ROAD PROFILE SEE SPECIAL PROFILE

STATE PROJ. NO. 00000 00000 000

DATE: \_\_\_\_\_

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

SCALE: \_\_\_\_\_

PROJECT: \_\_\_\_\_

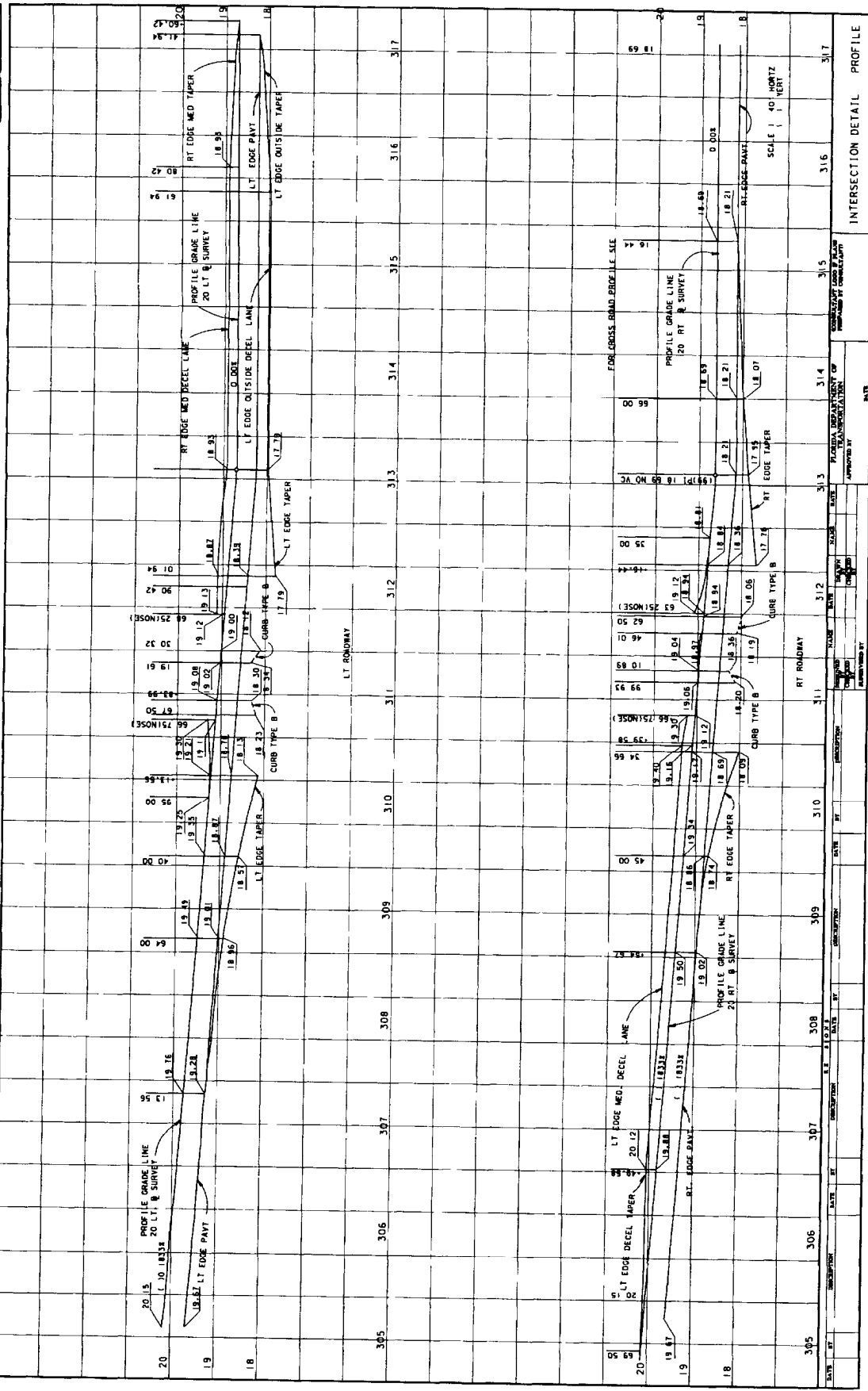
DATE: \_\_\_\_\_

INTERSECTION DETAIL - PLAN

EX 11-13-B

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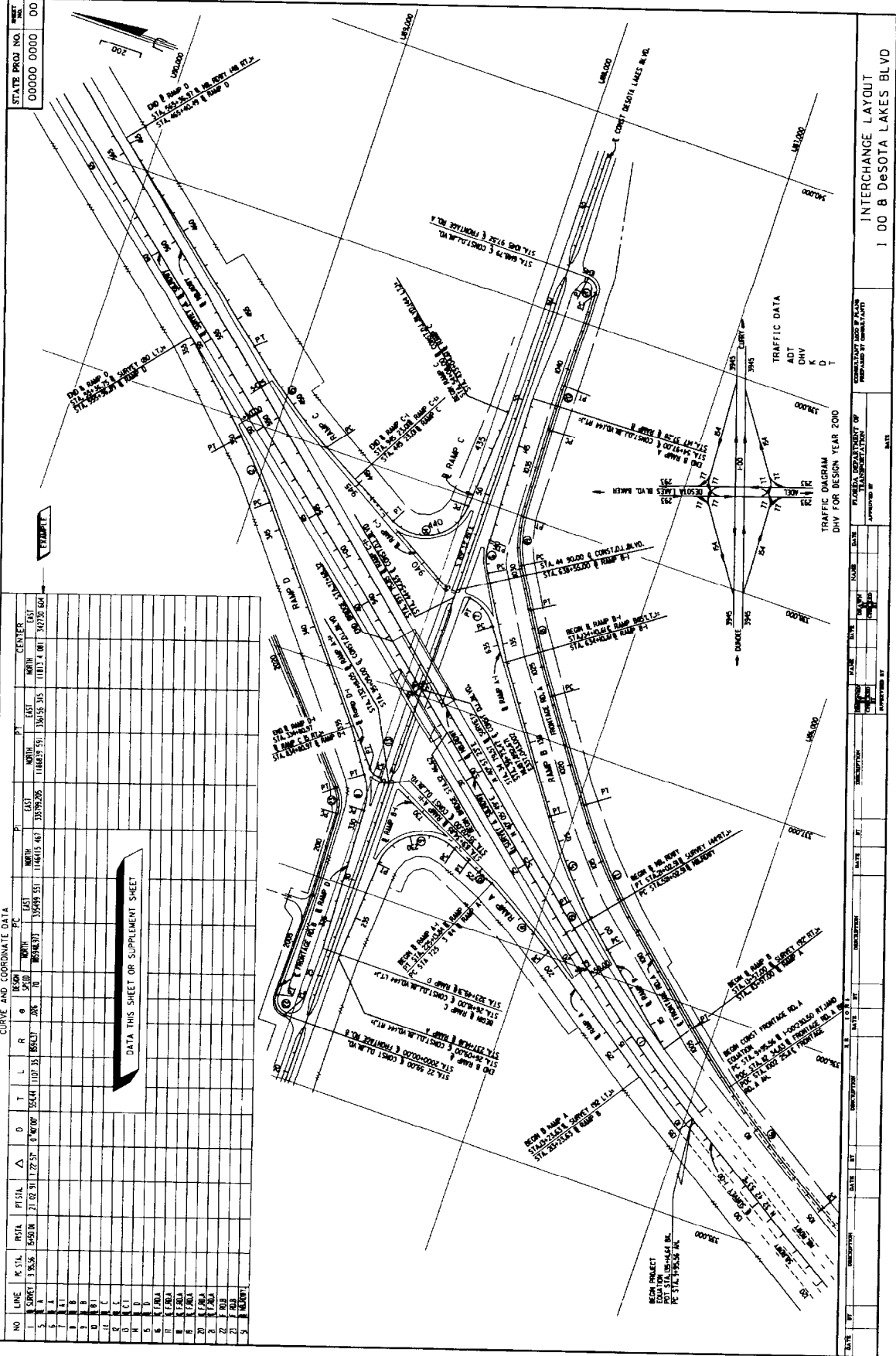
STATE PROJ. NO. 00000 0000 00



INTERSECTION DETAIL PROFILE

EX 11-13-C

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CURVE AND COORDINATE DATA

NO	LINE	PC STA	PT STA	Δ	D	T	L	R	PC	PT	CE	CH	CV	CH	CV	CH	CV
1	1	1385.6	1450.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
2	2	1450.0	1514.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
3	3	1514.4	1578.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
4	4	1578.8	1643.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
5	5	1643.2	1707.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
6	6	1707.6	1772.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
7	7	1772.0	1836.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
8	8	1836.4	1900.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
9	9	1900.8	1965.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
10	10	1965.2	2029.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
11	11	2029.6	2094.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
12	12	2094.0	2158.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
13	13	2158.4	2222.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
14	14	2222.8	2287.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
15	15	2287.2	2351.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
16	16	2351.6	2416.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
17	17	2416.0	2480.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
18	18	2480.4	2544.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
19	19	2544.8	2609.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
20	20	2609.2	2673.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
21	21	2673.6	2738.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
22	22	2738.0	2802.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
23	23	2802.4	2866.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
24	24	2866.8	2931.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
25	25	2931.2	2995.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
26	26	2995.6	3060.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
27	27	3060.0	3124.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
28	28	3124.4	3188.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
29	29	3188.8	3253.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
30	30	3253.2	3317.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
31	31	3317.6	3382.0	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
32	32	3382.0	3446.4	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
33	33	3446.4	3510.8	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
34	34	3510.8	3575.2	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51
35	35	3575.2	3639.6	21.02	117.22	57.1	107.35	58.02	35499.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51	35499.51	114627.51

DATA THIS SHEET OR SUPPLEMENT SHEET

STATE PROJ. NO. 00000 0000 00

INTERCHANGE LAYOUT  
I 00 B DESOTA LAKES BLVD

TRAFFIC DIAGRAM  
DIV FOR DESIGN YEAR 2010

TRAFFIC DATA  
ADT  
DHY  
K  
K  
D  
D

DATE: 11/13/10

PROJECT: I-00 B DESOTA LAKES BLVD

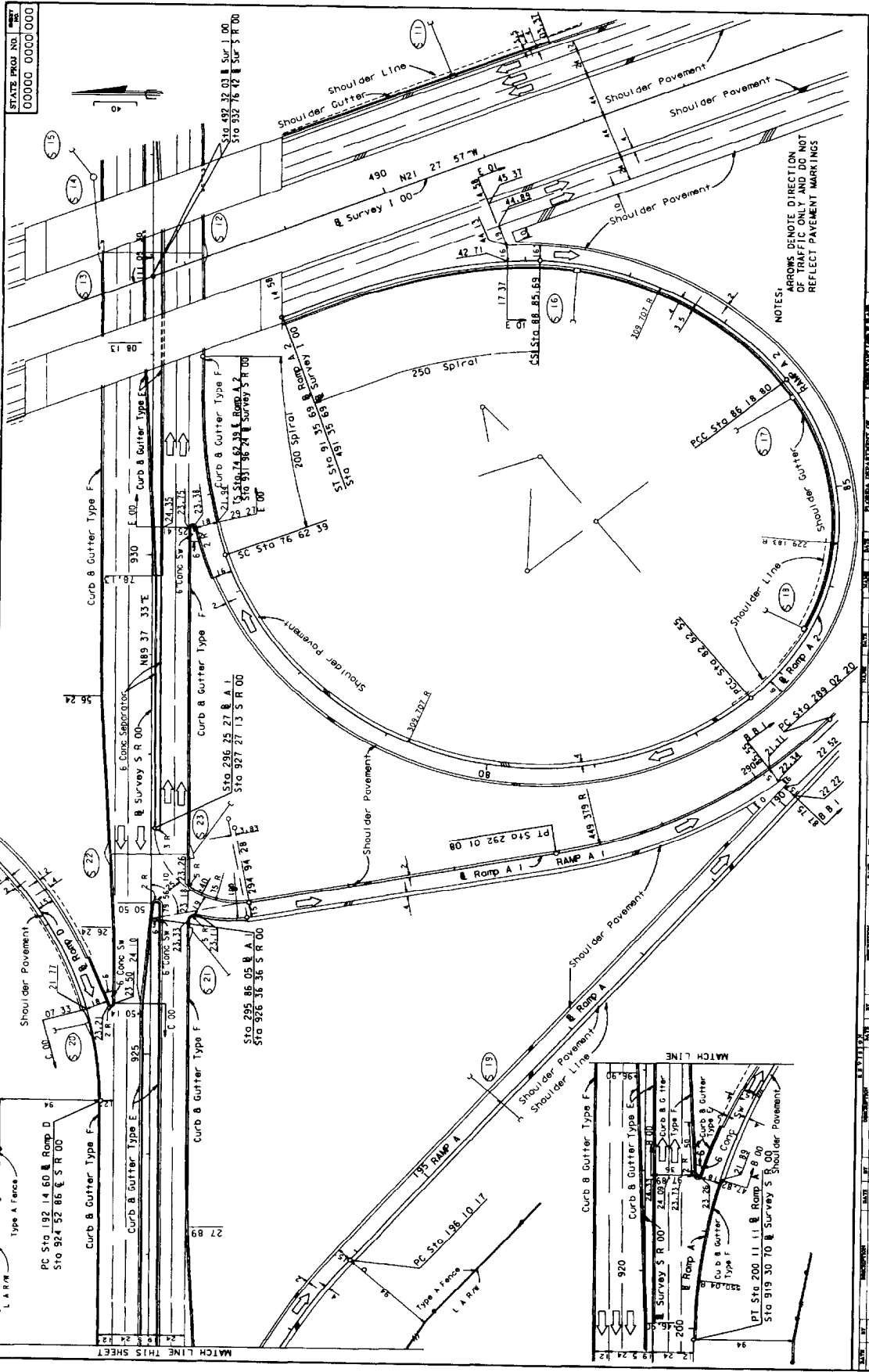
DESIGNER: [Name]

CHECKED BY: [Name]

APPROVED BY: [Name]

EX 11 13 D

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NOTES:  
ARROWS DENOTE DIRECTION  
OF TRAFFIC ONLY AND DO NOT  
REFLECT PAVEMENT MARKINGS

STATE PROJ. NO. 100000  
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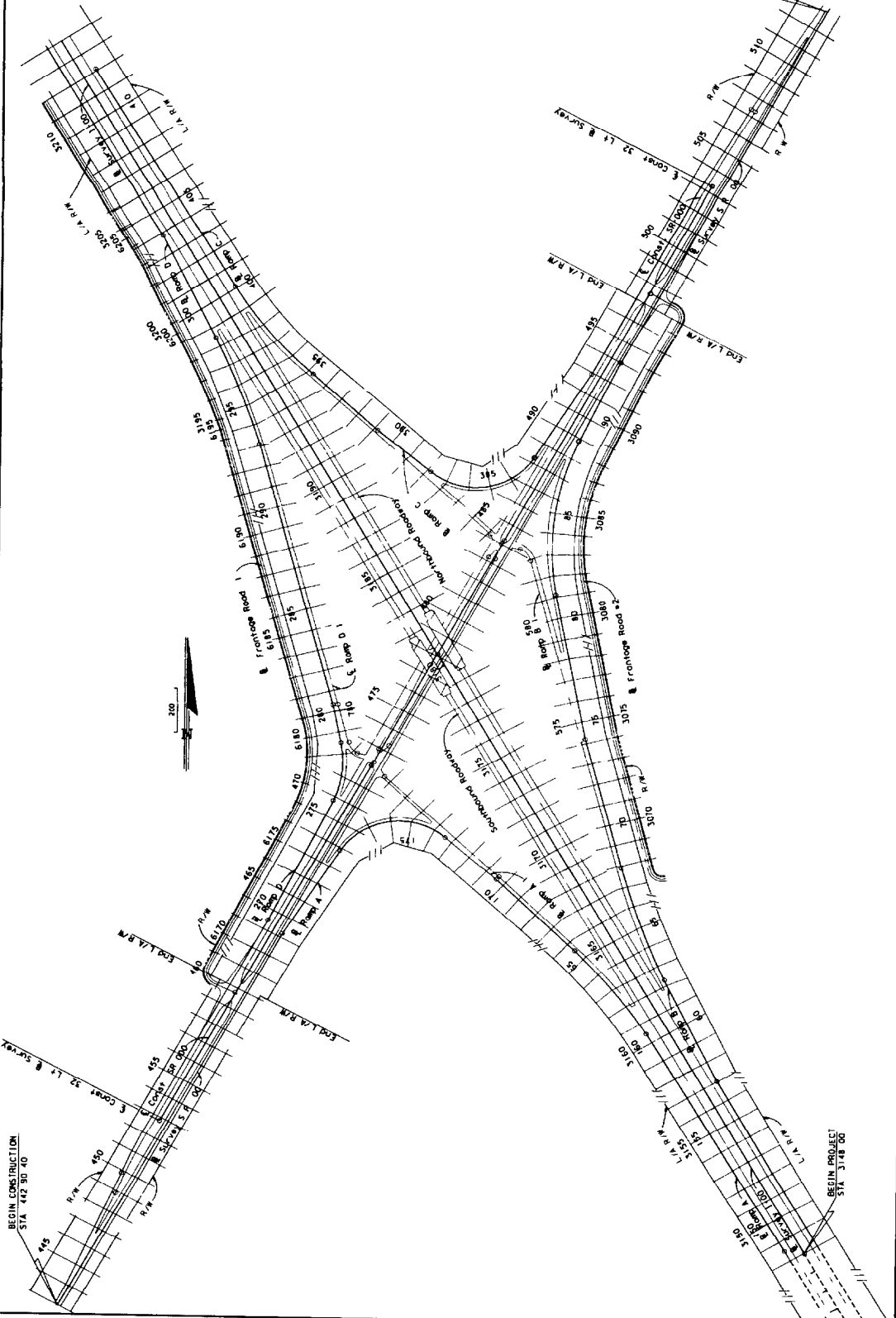
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DRAWN BY: [Name]  
CHECKED BY: [Name]  
APPROVED BY: [Name]  
DATE: 07/11/00  
PROJECT: INTERCHANGE DETAIL RAMP A A I A 2 B D  
DRAWN BY: [Name]  
CHECKED BY: [Name]  
APPROVED BY: [Name]

EX 11-13-E



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



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
FLORIDA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT NO. 00000 0000 00 SHEET NO. 00 CROSS SECTION PATTERN EX-11 13-F											

## DRAINAGE STRUCTURES

### 14.1 General

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

The inclusion of the drainage structure sheets in the plans set is a District option. Most projects require the plotting of drainage structures to avoid utility conflicts. One of the following options shall be required for each structure on a project. A mix of these options can be used on a single project.

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

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

## 14.2 Required Information

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

Roadway template and proposed structures shall be drafted using a heavy solid line, with the proposed profile grade elevation shown above the grade point. The structure shall be located by station and offset to the centerline of construction. Flowline information shall be provided at each structure and at each culvert end. Structures are to be plotted in detail according to the applicable Index, with walls, grates, tops, pipes, etc. shown.

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

All structure locations should be checked and right-of-way shown where the right-of-way may have potential impact on construction of a structure.

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

For drainage structures which have material options, the Optional Cross Drain Material Tabulation sheet should be used, and only the structure number with size and length of the selected option shall be shown. Elevations shall be given appropriate for the option shown.

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

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

| Applicable notes are to be shown on the first drainage structure sheet. These  
| notes are listed in the Design Aids section of the Basis of Estimates Manual and  
| are shown on the exhibits in this chapter.

### 14.3 Utility Conflicts

All major underground utilities shall be plotted in conjunction with the structures so that conflicts may be detected during design, and to alert construction forces of close conflicts

Utilities that have been positively verified should be noted and plotted to scale in the appropriate locations on the Drainage Structure Sheets, Cross Section Sheets and bridge foundation plans. These utilities should be labeled with the following symbols

- $V_v$  = Verified Vertical Location
- $V_h$  = Verified Horizontal Location
- $V_{vh}$  = Verified Vertically and Horizontally

#### 14.4 Sheet Set Up

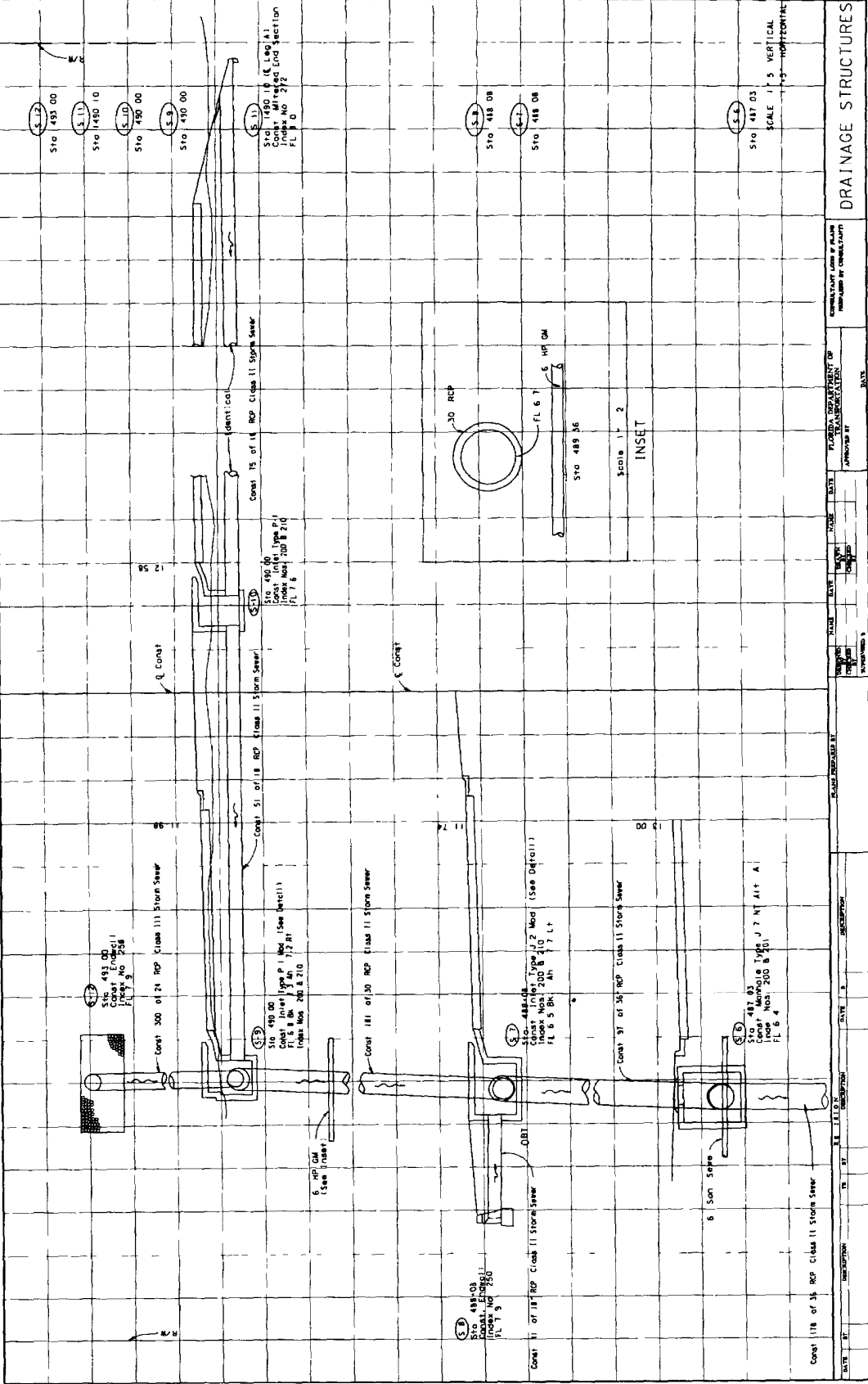
Structures should be drafted as sections along the centerline of the structure. They should be drafted on a standard cross section form, with the sections spaced sufficiently apart to avoid overlapping of structures or notes. Beginning at the bottom of the sheet, the sections should be shown successively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





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SCALE 1" = 5' VERTICAL  
1" = 10' HORIZONTAL

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DRAINAGE STRUCTURES  
EX II-14-B

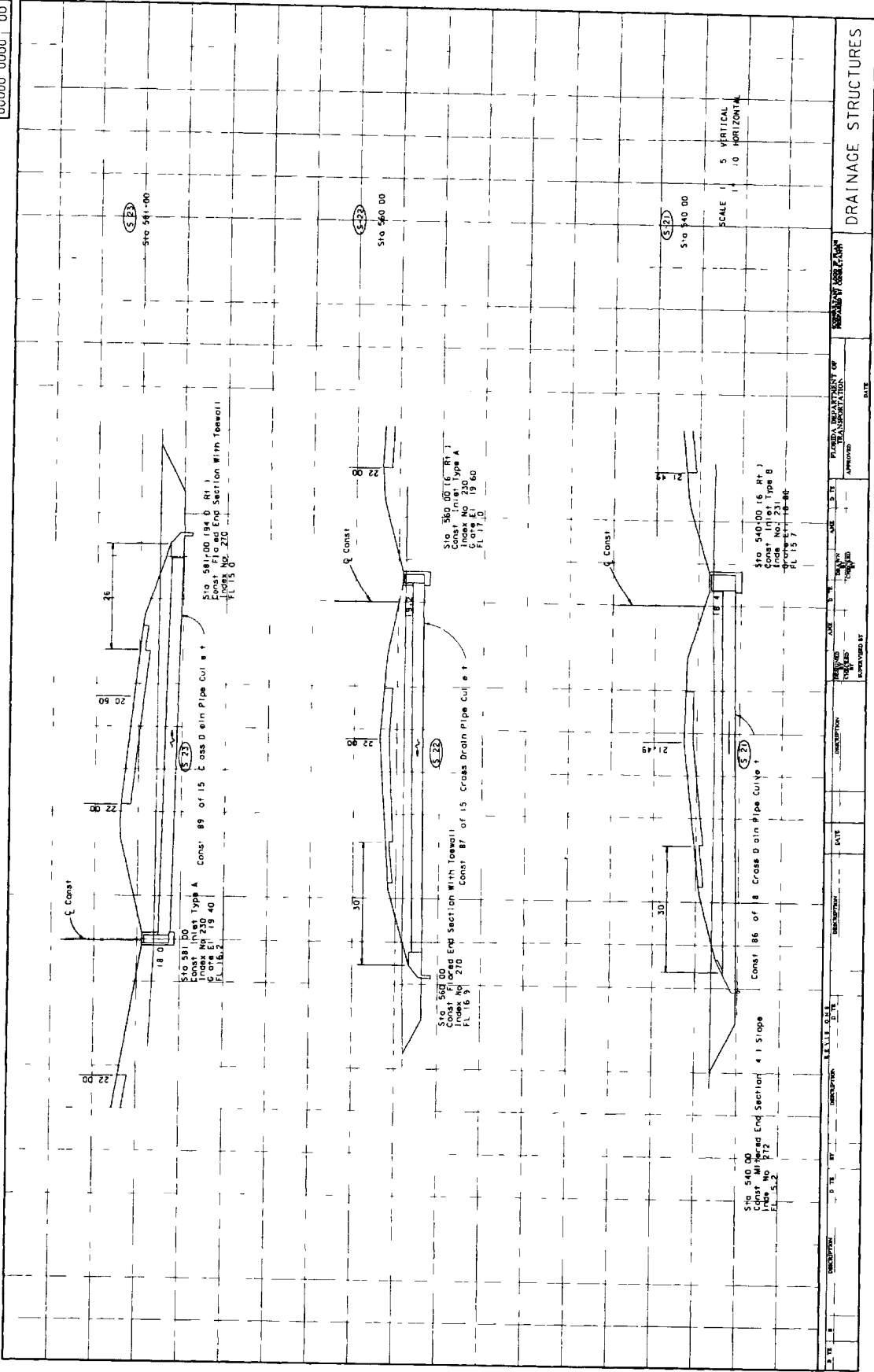






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DRAINAGE STRUCTURES

EX II 14 F



## CHAPTER 15

### OUTFALL/LATERAL DITCH SYSTEM

#### 15.1 General

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

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

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

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

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

## 15.2 Plan Portion

### 15.2.1 Lateral Ditch

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

### 15.2.2 Outfall

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



### 15.3 Profile Portion

#### 15.3.1 Lateral Ditch

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

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

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

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

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

### 15.3.2 Outfall

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

#### 15.4 Typical Section

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

### 15.5 Ditch Cross Sections

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

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

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

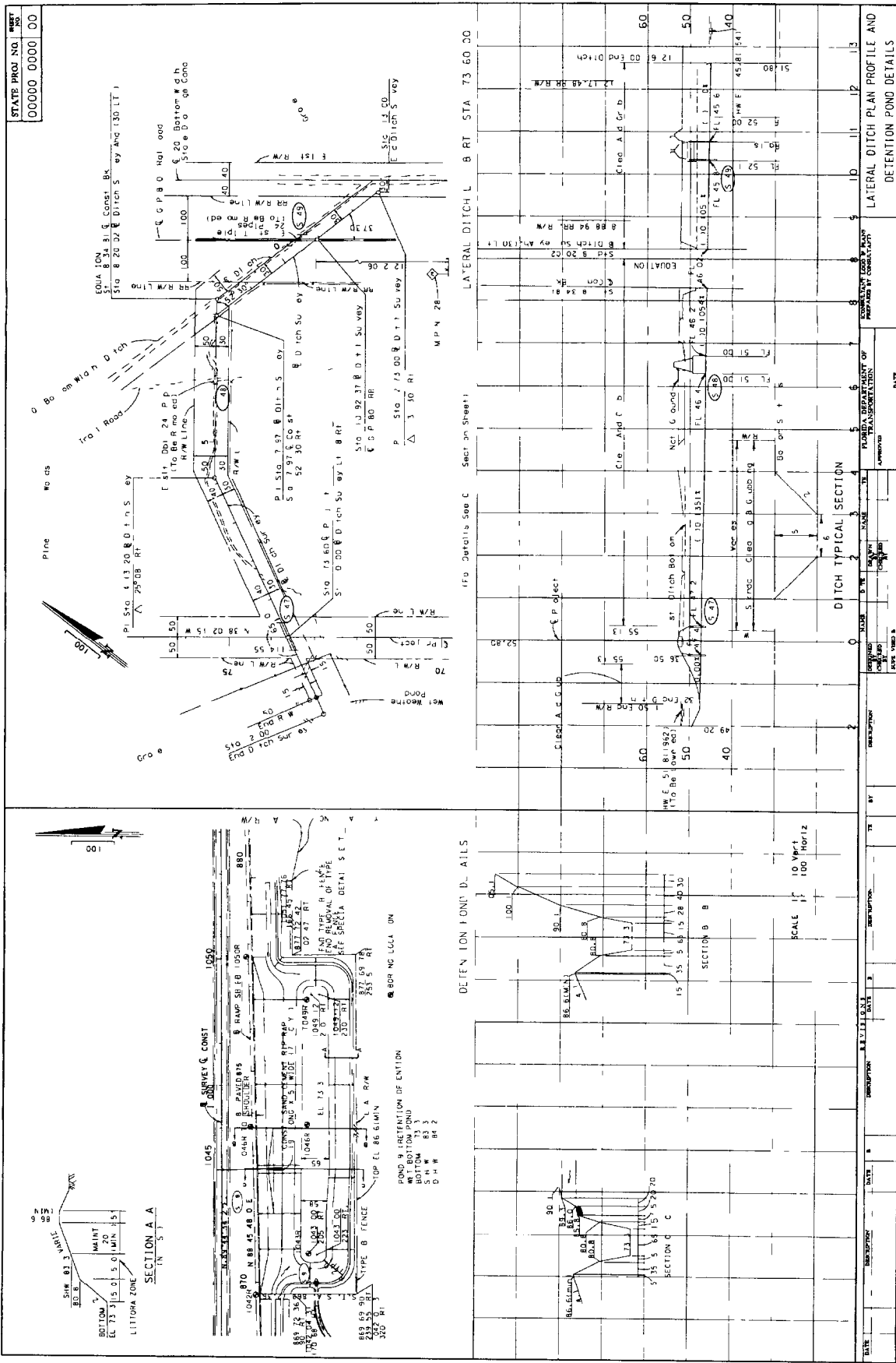
All other points mentioned in "Roadway Cross Sections" (Chapter 18) shall be applicable equally to lateral ditch cross sections.

#### 15.6 Retention or Detention Pond

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

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

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EX-11-15-A



## CHAPTER 16

### SPECIAL DETAILS

#### 16.1 General

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



## CHAPTER 17

### SOIL SURVEY

#### 17.1 General

The soil survey sheet, essentially a soil test analysis sheet, depicts the various types of soils encountered within the limits of the project. This sheet also shows the classification, mechanical properties and recommended usage of those soils. Soils having identical characteristics shall be assigned to the same stratum and group for identification and recommendation purposes. The test analysis sheet shall be signed by the responsible Engineer, (the District Materials Engineer for in-house projects, and a Registered Professional Engineer for consultant prepared plans).

## 17. 2 Roadway Soil Survey

### 17.2.1 Method of Compilation and Presentation

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

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

### 17.3 Borrow Pit Soil Survey

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

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

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

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

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





## CHAPTER 18

### ROADWAY CROSS SECTIONS

#### 18.1 General

Cross sections depict the existing ground conditions, including all manmade features, as sections perpendicular to the respective stations along a survey baseline or construction centerline baseline. The proposed cross-sectional outline of the new facility with all its functional elements is also shown on cross sections. Standard cross section sheets shall be used for showing roadway cross sections. The recommended scale is 1" = 5' vertical. The horizontal scale shall be such that the entire roadway R/W is shown on the sheet, but shall not be smaller than 1" = 20' horizontal. If the entire R/W cannot be shown on one sheet, more sheets may be utilized and appropriate match lines shall be shown with referenced sheet numbers. The scale shall be shown at the bottom right corner of the sheet above the title box.

## 18.2 Required Information

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

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

| Existing parallel underground utilities which lie within the horizontal limits of the project shall be shown along with verification notation for those locations which have been verified. Utilities that have been verified should be labeled as shown in Section II-14.3 (page II-14-5.0). Small distribution or service lines need not be drafted.

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

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

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

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

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

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

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

Mainline  
Side streets  
Ramps



### 18.3 Sheet Set Up

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

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

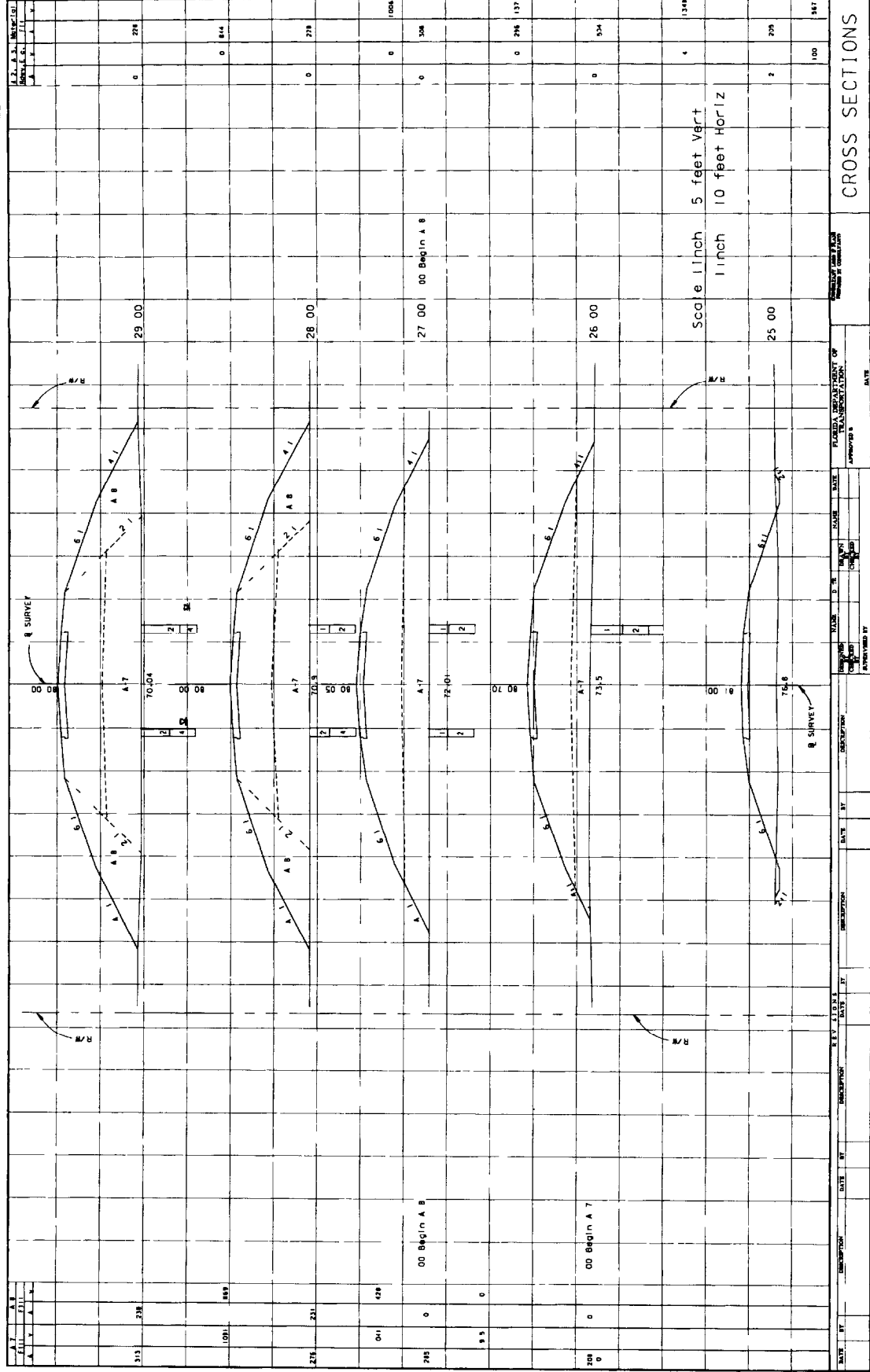
As many sections as possible shall be placed on a sheet with sections being spaced to avoid overlapping. The soil profile should be checked for possible unsuitable material below existing ground which may cause overlapping of sections.

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

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

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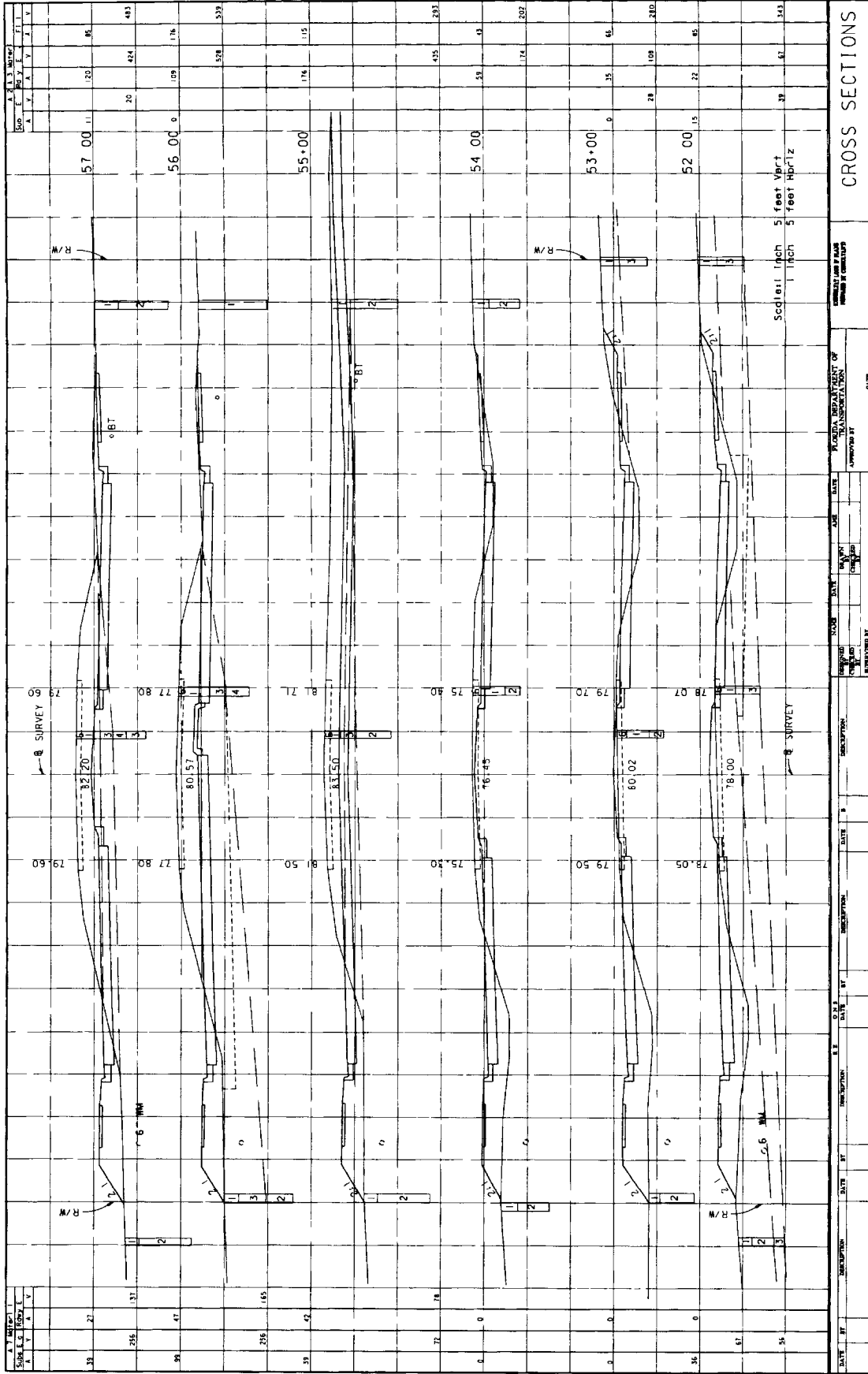
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PLANNED IMPROVEMENT OF ROADWAY APPROVED BY DATE											

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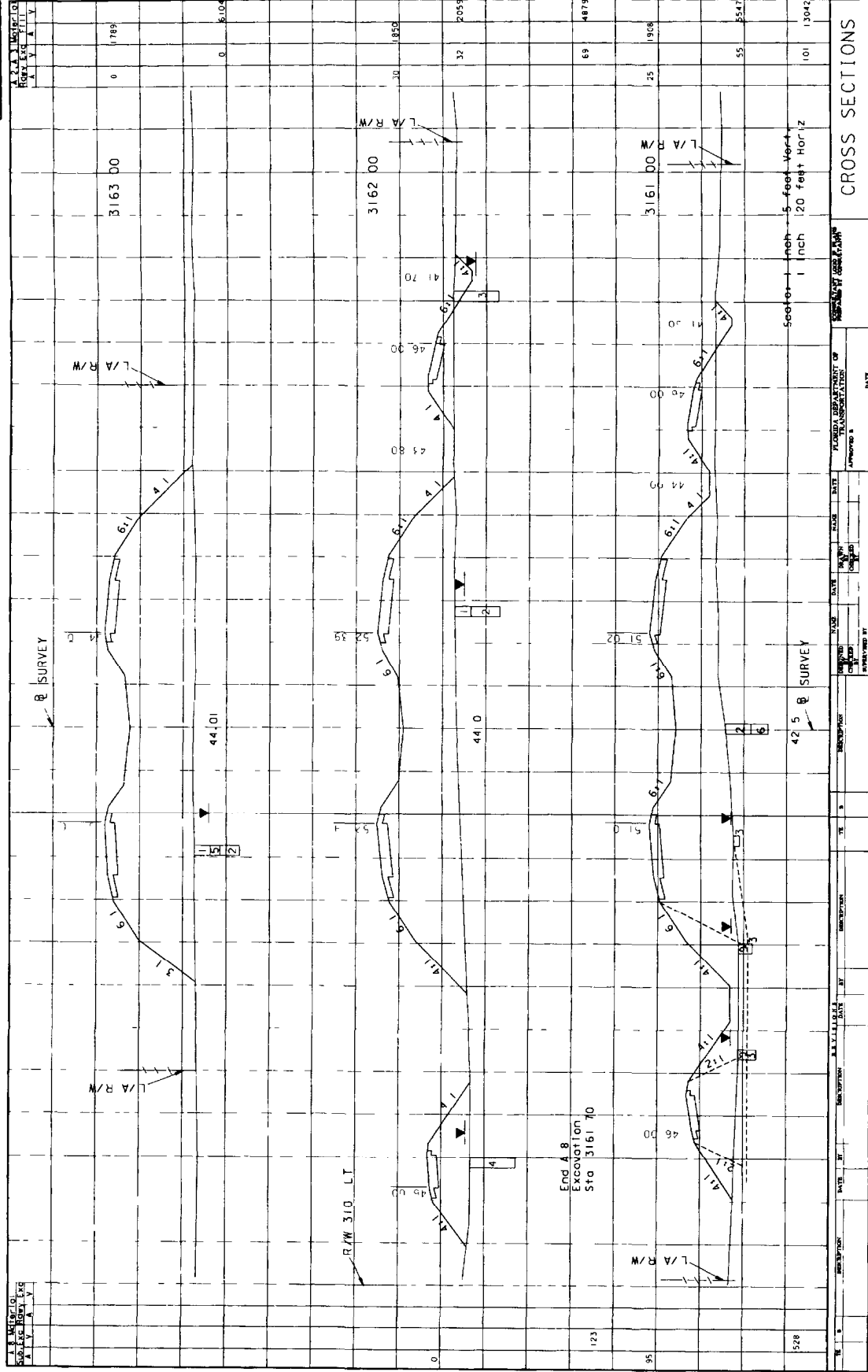


CROSS SECTIONS

EX II-18-B

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CROSS SECTIONS

EX II 18-C

## CHAPTER 19

### TRAFFIC CONTROL SHEETS

#### 19.1 General

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

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

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

## 19.2 Required Information

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

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

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

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

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

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

### 19.3 Format and Scale

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

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







## CHAPTER 20

### UTILITY ADJUSTMENT

#### 20.1 General

The purpose of utility adjustment sheets is to provide coordination between the contractor and the affected utility companies. These sheets show the contractor the approximate locations of existing, proposed and relocated utilities, and thus aids the contractor in avoiding possible conflicts or damage to the utilities involved.

#### 20.2 Required Information

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

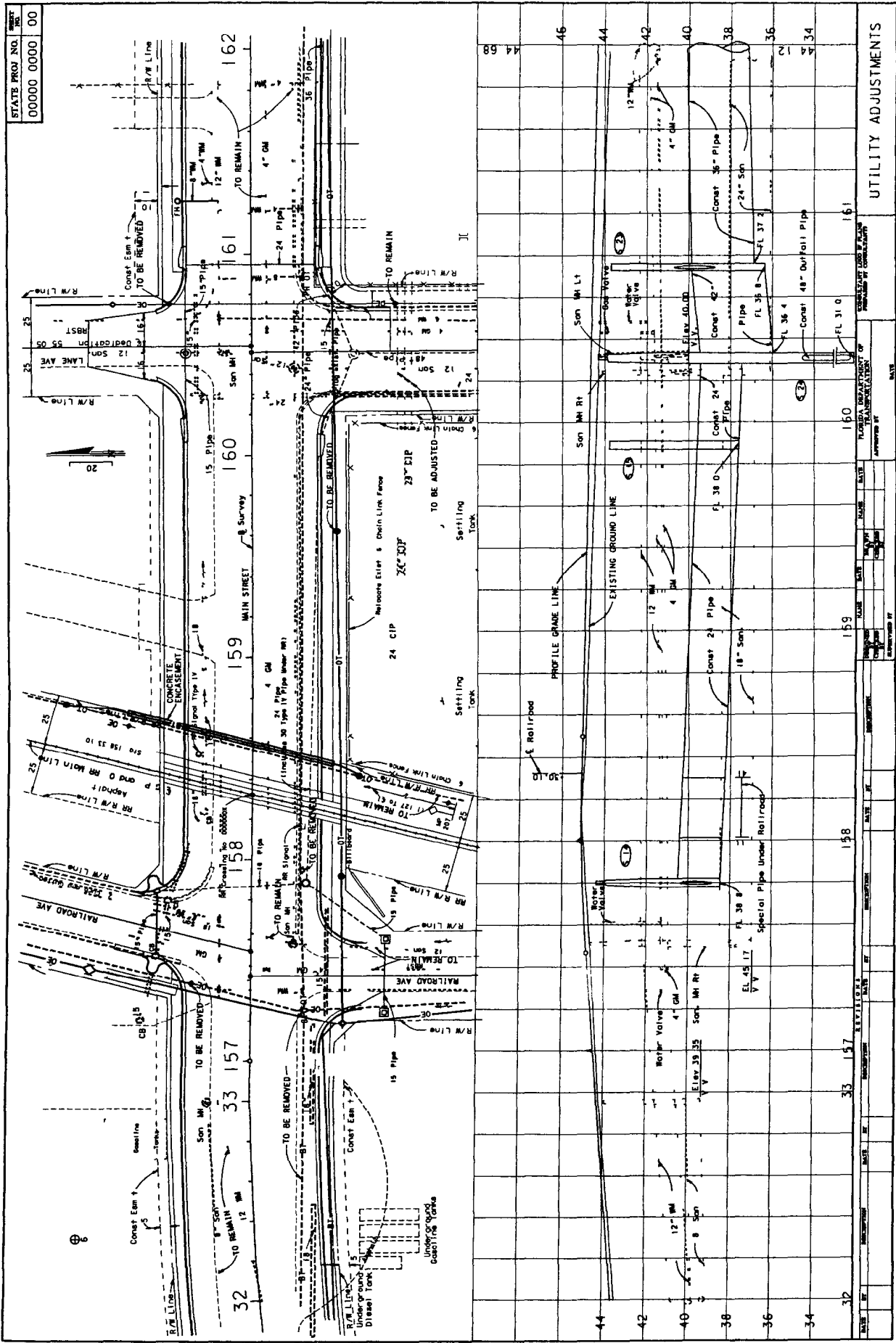
### 20.3 Sheet Format and Scale

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

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

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

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

DESIGNED BY: [ ]  
 CHECKED BY: [ ]  
 APPROVED BY: [ ]

PLANNED OR ADOPTED BY: [ ]  
 AUTHORITY: [ ]

CONTRACT NO. [ ]  
 SHEET NO. [ ]

UTILITY ADJUSTMENTS

FX 11-20-A

## CHAPTER 21

### SELECTIVE CLEARING AND GRUBBING

#### 21.1 General

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

#### 21.2 Required Information and Sheet Set Up

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

Appropriate match lines shall be used when necessary.

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

### 21.3 Standard Symbols and Notes



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



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



Designates areas where trees of 3" caliper or greater are to remain and all undergrowth is to be removed, only rubber tire equipment shall enter these areas, and remaining trees shall be protected from root and trunk damage.



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



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

All other areas not included in one of the above categories, or those designated by the Typical Sections, shall be "standard clearing and grubbing".

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



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TOPSOIL MUCK BLANKET GENERAL NOTES

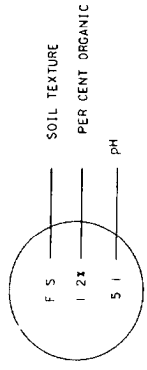
STOCKPILING OF TOPSOIL AND/OR MUCK IS TO BE DONE ONLY IN AREAS DESIGNATED AS TYPE 5 (SEE SELECTIVE CLEARING - GENERAL NOTES) WHERE SUCH AREAS HAVE BEEN CLEARED AT THE DIRECTION OF THE ENGINEER DURING CONSTRUCTION OPERATIONS. SUFFICIENT AREA HAS BEEN DESIGNATED SO THAT ALL STOCKPILING MAY BE DONE IN ACCORDANCE WITH THE REQUIREMENTS LISTED ABOVE.

SELECTIVE CLEARING GENERAL NOTES

- DESIGNATES AREAS TO REMAIN NATURAL. NO CLEARING OR GRUBBING IN THESE AREAS. NO EQUIPMENT SHALL ENTER THESE AREAS.
- DESIGNATES AREAS WHERE TREES AND STUMPS OVER 3 INCHES IN DBH SHALL BE CUSH WITH THE GROUND OR REMOVED AND ALL UNDERGROWTH SHALL BE REMOVED. NO EQUIPMENT SHALL ENTER THESE AREAS TO AVOID ANY WAY DAMAGE THE PLANT MATERIAL TO REMAIN.
- DESIGNATES AREAS WHERE TREES OF 3" CALIBER OR GREATER ARE TO REMAIN AND ALL UNDERGROWTH IS TO BE REMOVED. ONLY RUBBER TIRE EQUIPMENT SHALL ENTER THESE AREAS. REMAINING TREES SHALL BE PROTECTED FROM ROOT AND TRUNK DAMAGE.
- DESIGNATES AREAS WHERE THE TYPE AND EXTENT OF CLEARING AND GRUBBING SHALL BE DETERMINED BY THE ENGINEER ACCORDING TO FIELD CONDITIONS.
- DESIGNATES AREAS THAT SHALL REMAIN NATURAL WHEN IN THE OPINION OF THE ENGINEER THE AVAILABLE AND DESIRABLE NATURAL VEGETATION OR GRASSES EXIST AND WHERE THE LEVELING AND/OR CLEAN UP SHALL BE UNDERTAKEN TO PREPARE THE AREA FOR GRASSING OPERATIONS.
- ALL OTHER AREAS NOT INCLUDED IN ONE OF THE ABOVE CATEGORIES OR THOSE DESIGNATED BY THE TYPICAL SECTIONS SHALL BE STANDARD CLEARING AND GRUBBING.
- WHERE UNDESIRABLE SITE CONDITIONS EXIST ADJUSTMENTS OR EXCEPTIONS MAY BE MADE TO THE ABOVE PROCEDURE AT THE DIRECTION OF THE ENGINEER.

EXPLANATION OF SYMBOLS

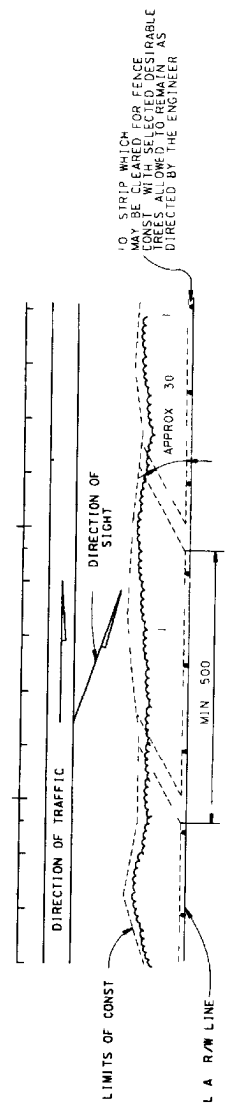
SOIL INFORMATION DETAIL



SOIL TEXTURE ABBREVIATIONS

DETAIL OF EXCEPTION

(APPLIES TO ALL TYPES OF SELECTIVE CLEARING)



AT THE DIRECTION OF THE ENGINEER DIAGONAL PATHS MAY BE CUT IN AREAS TO REMAIN NATURAL AS SHOWN ABOVE FOR THE REMOVAL OF TIMBER AND STUMPS FROM THE AREA CLEARED FOR FENCE CONSTRUCTION.

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

SELECTIVE CLEARING AND GRUBBING

EX-11-21-A

## CHAPTER 22

### ROADWAY STRUCTURAL PLANS

#### 22.1 General

Roadway Structural Plans may include any of the Category I structural details required in the roadway contract when there are not any bridges on the project. Box culvert plans, highmast lighting supports, traffic mast arm supports, signal strain poles, rest area structures or buildings, barrier walls (traffic or sound), retaining walls and toll facilities are all structural details that may need to be included in the roadway plans set.

For detailed guidelines on structural plans, submittals and responsibilities, the reader is referred to the Structures Design Guidelines (Topic 625-020-101) by the Structures Design Office.

| 22.2     Approach Slabs

|  
| All of the approach slab details sheets are included in the roadway plans set  
| when the project contains bridges. These sheets shall be prepared by the  
| responsible professional engineer and the record set copy shall be signed and  
| sealed by that engineer. The Roadway Design Engineer or Project  
| Manager/Coordinator shall be responsible for including the appropriate pay items  
| for the approach slab in the Summary of Pay Items and the CES

22.3 Retaining Walls (C.I.P., Proprietary, Temporary)

When cast in place retaining walls other than standard gravity walls are required, complete design and construction details, including pay items and quantities are required in the final construction plans. The same is true for steel or concrete sheet piles for either permanent or temporary retaining walls.

22.3.1 Mechanically Stabilized Earth (MSE) or proprietary walls are handled somewhat differently, but the details are still to be a part of the roadway plans package. Detailed control plans are developed and sent to all appropriate FDOT prequalified proprietary wall companies at the preliminary plans stage for their use in preparing a competitive bid. The control plans will include all preapproved wall companies standard details. The control plan sheets will be included in the contract set of final roadway plans.

22.3.2 Control Plan Details

- 1 Plan and Elevation Sheet
  - a horizontal and vertical alignment
  - b limits of wall
  - c utility locations
  - d plan view of wall
  - e elevation view of wall (showing existing and proposed ground lines, elevations at top of wall, wall embedment, beginning and end of wall stations and maximum elevation of top of leveling pad)
  - f boring locations
  - g quantity (pay area of wall)
  - h table showing soil reinforcement length vs wall height (for external stability)

- 1 general notes
- j in-situ soil characteristics
- k design parameters - safety factors
- l sections through wall showing offset control point, pay area, ditches, sidewalks and other unusual features.

2 Soil Profile Sheet

3 General Details showing wall/end bent cap interface, barrier and coping to wall interface, pile, inlet and pipe conflicts with soil reinforcement

22 3 3 Geotechnical Requirements

The success of this method of producing and letting wall plans is highly dependent on complete, accurate and informative control plans. The importance of the geotechnical engineer's role in this scheme cannot be emphasized enough. The geotechnical engineer's responsibilities include

- 1 Borings
- 2 Soils Report
- 3 Wall Type Recommendation
- 4 If MSE wall, reinforcement length vs wall height for external stability. This information is to be included in the control plans.
- 5. Review of internal stability design as provided by the wall companies

A computer program "Re-STAB6 EXE" has been written by Jon Foshee, FDOT District 5 Assistant Geotechnical Engineer. This program is in accordance with FHWA Reinforced Soil Structures Vol 1, FHWA RD-89-043, and is used to analyse the wall for external stability. It provides factors of safety for sliding, overturning, and bearing capacity for a given reinforcement length. The global stability can be analyzed by FHWA PC STAB6 and the settlement can be determined by conventional methods. The reinforcement lengths for external stability shall be shown in a table on the control plans.

22 3 4     Bidding Procedure

FDOT projects with MSE walls are bid as alternates. The control plans, including preapproved standard proprietary wall details, comprise the contract plans. Each proprietary wall is assigned a unique bid item number. Notes on the plans instruct the contractor to bid only one alternate, and the alternate he bids shall be the alternate constructed.

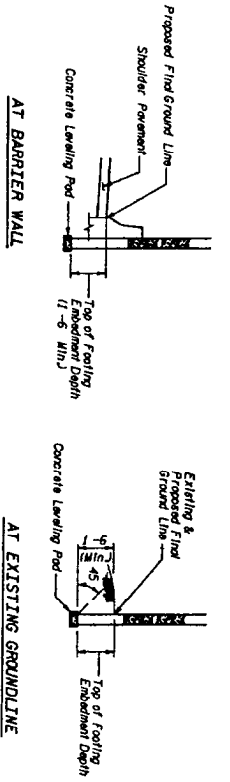
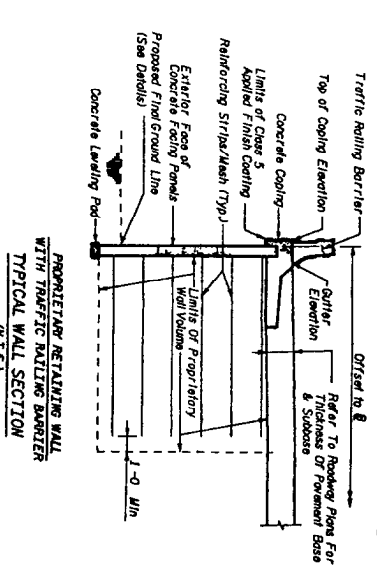
RETAINING WALL GENERAL NOTES

- Area of retaining wall to be used for payment shall be the area bounded by the top of Traffic Rolling Barrier for top of coping in areas where Traffic Barrier is proposed. Final ground line or finished grade shall be used for the proposed Final Ground Line or the top of coping in areas where Traffic Barrier is not proposed. The area of wall and end wall limits as shown on each of these drawings shall be used for payment.
- Proprietary Retaining Walls and Traffic Rolling Barrier shall be used in all areas where they are proposed. The cost of retaining walls shall be included in the unit cost for Retaining Walls. Pay Item No. 528-70 will include the cost of the Traffic Rolling Barrier. Pay Item No. 545-70 will include the cost of the Retaining Walls. Pay Item No. 528-70 will include the cost of the Traffic Rolling Barrier. Pay Item No. 545-70 will include the cost of the Retaining Walls.
- The cost of all foundations, fill material and excavation (required specifically for wall construction) shall be included in the unit cost for Retaining Walls. Pay Item No. 528-70 will include the cost of the Traffic Rolling Barrier. Pay Item No. 545-70 will include the cost of the Retaining Walls.
- The well drainage bid shall be the district bid. No substitution of other materials shall be allowed.
- Reinforced Earths Type 2
- Traffic Rolling Barrier (or coping in areas without Traffic Rolling Barrier) on top of retaining wall shall have a Class 5 Applied Finish Coping.
- Plates within the Reinforced Earth Wall and Retained Earth Wall shall be designed for the following:
  - Maximum Allowable Bearing Pressure = 4000 psf
  - Anticipated Settlements are between 1/4" and 2/4" the majority of which should occur during placement of backfill material
  - Overturning: Min F-S = 2.0, Min F-S = 1.5
  - Sliding Capacity: Min F-S = 1.5, Min F-S = 1.5
  - Overall Stability: Min F-S = 1.5, Min F-S = 1.5
  - Allowable Deflection = 0.75 in.
- Reinforced Soil, Sandy Material Above Wall:
  - Unit Weight: 105 PCF @ 95% AASHTO T-180
  - cohesion: 0
  - Internal Friction: 30°
  - Soil Underlaid by Random Backfill Above Wall: 80 PCF
  - Soil Underlaid by Random Backfill Above Wall: 105 PCF
  - cohesion: 0
  - Internal Friction: 30°

REQUIRED MINIMUM STRAP LENGTHS FOR EXTERNAL STABILITY

Minimum Strap Length	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
WALL HEIGHT (FT.)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Strap lengths provided in table are the minimum strap length which will ensure external stability of wall. Strap lengths may increase due to internal stability requirements of proprietary wall system. Refer to Retaining Wall General Notes for details. Minimum wall height shown is the distance measured from the Top of Coping elevation to the Proposed Final Ground Line.



ESTIMATED QUANTITIES \*

Wall #	Section	Quantity
Wall 1	A	
	B	
	C	
Wall 2	A	
	B	
	C	
Wall 3	A	
	B	
	C	
Wall 4	A	
	B	
	C	
Wall 5	A	
	B	
	C	
TOTAL		

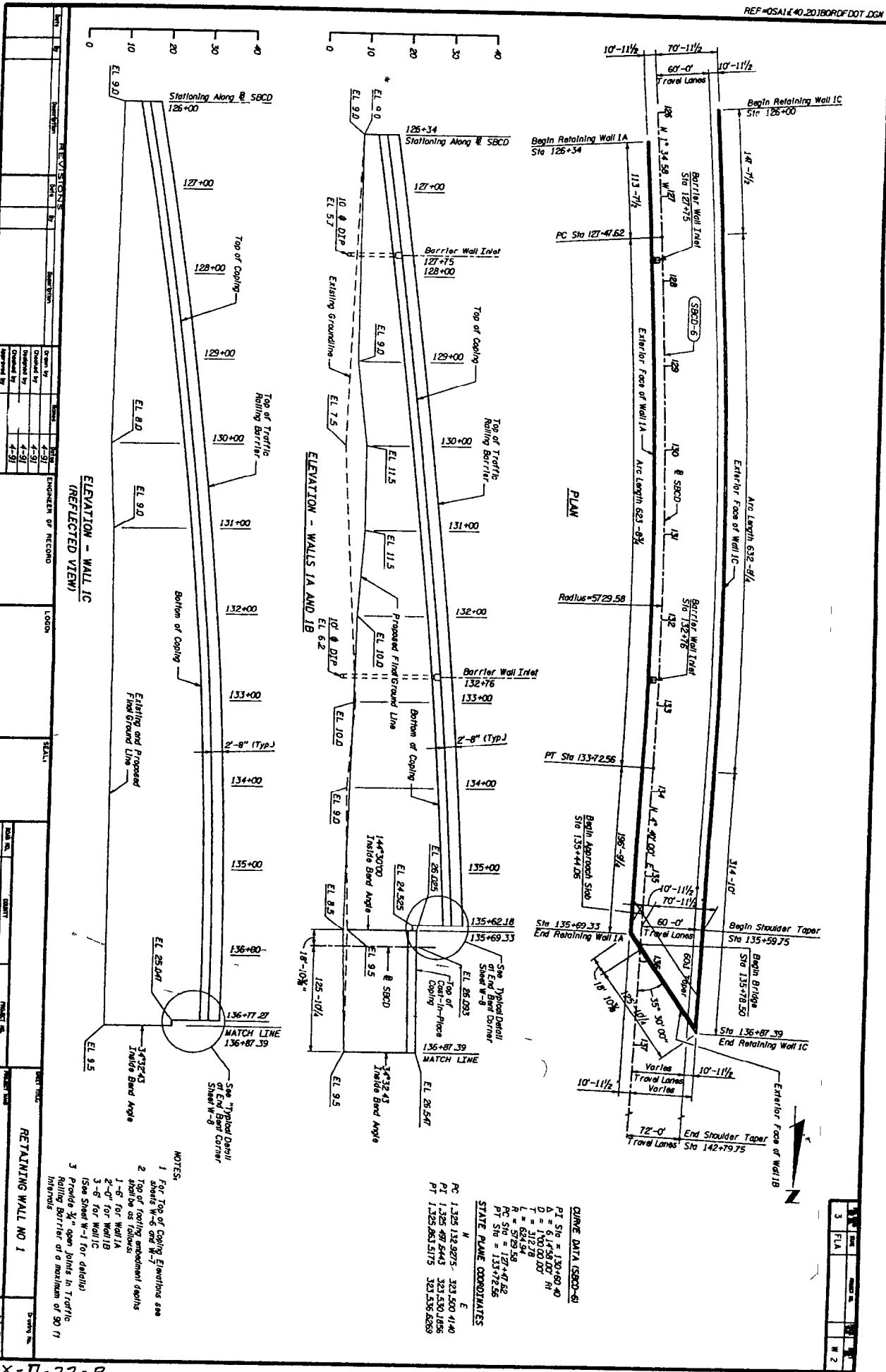
\* See Retaining Wall General Note 1

INDEX OF PROPRIETARY WALL CONTROL DRAWINGS

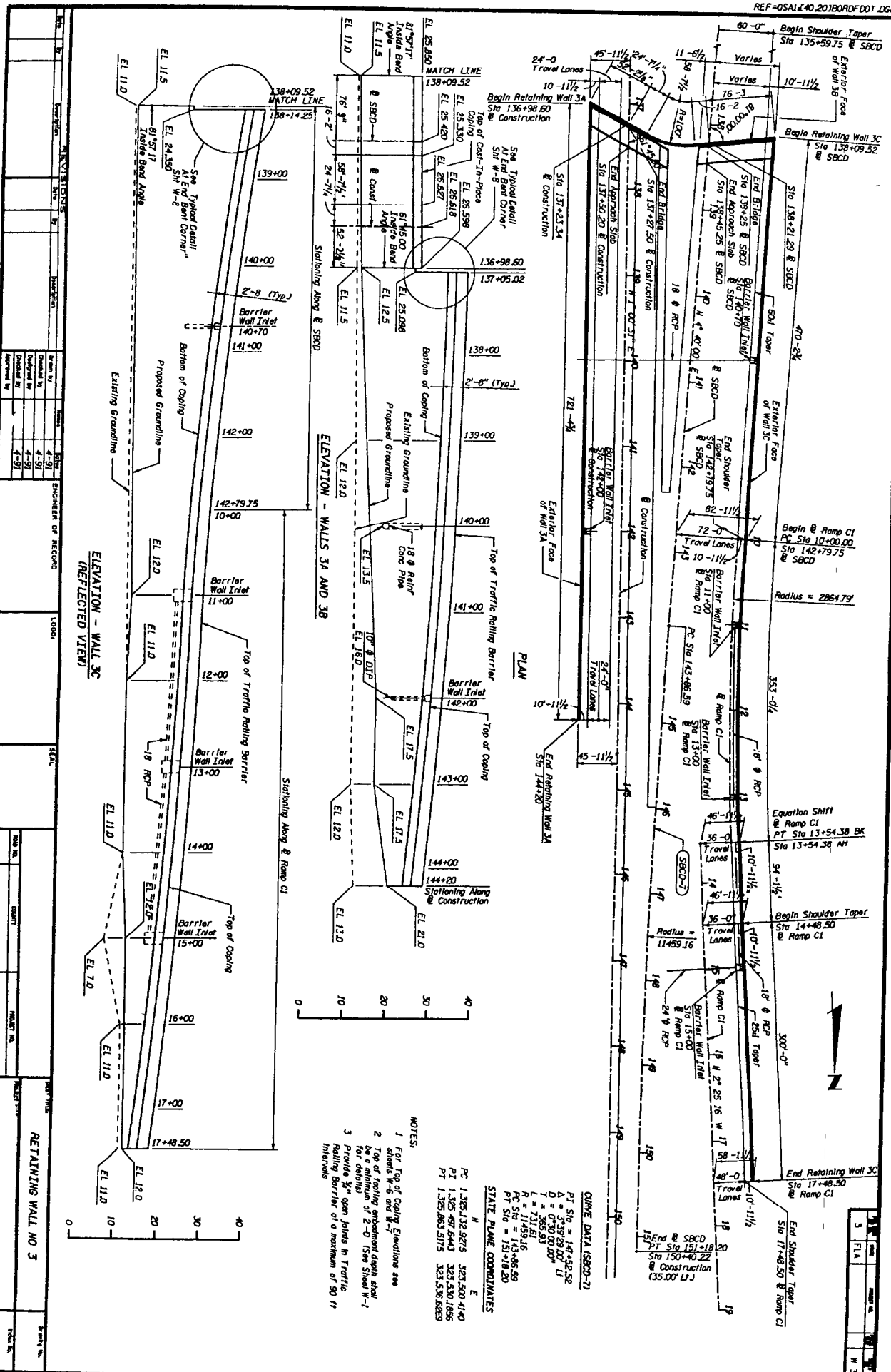
SHEET NO.	TITLE
W-1	GENERAL NOTES AND SECTIONS
W-2	PROPRIETARY WALL 1 PLAN AND ELEVATION
W-3	PROPRIETARY WALL 2 PLAN AND ELEVATION
W-4	PROPRIETARY WALL 3 PLAN AND ELEVATION
W-5	PROPRIETARY WALL 4 PLAN AND ELEVATION
W-6	PROPRIETARY WALL 5 PLAN AND ELEVATION
W-7	PROPRIETARY WALL ELEVATIONS
W-8	TYPICAL PROPRIETARY WALL DETAILS

NO.	DATE	BY	REVISION	ENGINEER OF RECORD	LOGO	SCALE	NO. OF SHEETS	COUNT	TOTAL NO.	DRAWING NO.
1										
2										
3										
4										
5										
6										
7										
8										
9										
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17										
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19										
20										
21										
22										
23										
24										
25										
26										

DATE: 08/23/2018 10:00 AM  
 PROJECT NO.:  
 SHEET NO.:  
 TOTAL SHEETS: 11







REINFORCEMENT OF RECORD

SECTION	NO.	SIZE	EMBEDMENT OR RECORD	SCALE
1	4-91	4-91	10000	
2	4-91	4-91		
3	4-91	4-91		

RETAINING WALL NO 3

NO.	DATE	BY	CHKD.	APP'D.

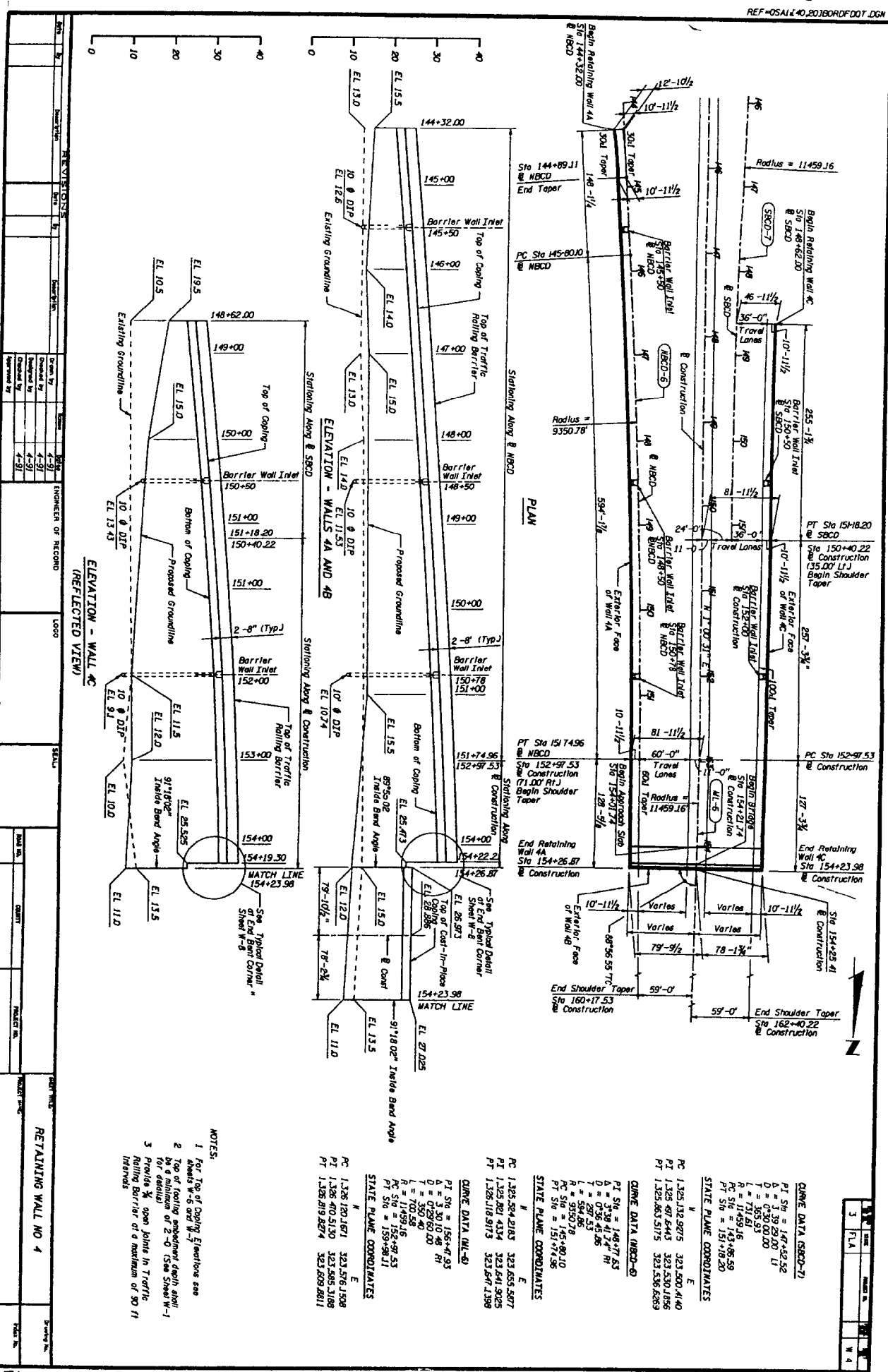
- NOTES:
- 1 For Top of Coping Elevation see sheets W-6 and W-7
  - 2 Top of footing embedment depth shall be a minimum of 2'-0" (See Sheet W-1 for details)
  - 3 Provide 3/4" open joints in Traffic Railing Barrier of a maximum of 90 ft intervals

CURVE DATA (SBCD-7)  
 PI Sta = 147+52.52  
 Δ = 37°39'20.00" U  
 D = 0°30'00.00"  
 L = 73.53  
 R = 11459.16  
 PC Sta = 143+66.59  
 PT Sta = 151+18.20

STATE PLANE COORDINATES

N	E
PC 1,325,132.9275	323,500.4140
PI 1,325,497.2443	323,530.1856
PT 1,323,863.5175	323,536.8269





NO.	DATE	DESCRIPTION	BY	CHKD.
1	4-91	DESIGN		
2	4-91	CHECKED		
3	4-91	DESIGNED		
4	4-91	APPROVED		

ENGINEER OF RECORD  
L000

SCALE

QUANTITY

DATE

RETAINING WALL NO. 4

ELEVATION - WALL 4C  
(REFLECTED VIEW)

Stationing Along & SBOD

Stationing Along & SBOD

Stationing Along & SBOD

Stationing Along & SBOD

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Stationing Along & SBOD

- NOTES:
- 1 For Top of Coping Elevations see sheets W-6 and W-7
  - 2 Top of footing embedment depth shall be a minimum of 2'-0" (See Sheet W-1 for details)
  - 3 Provide 3/4" open joints in Traffic Retaining Barrier at a maximum of 80 ft intervals

STATE PLANE COORDINATES

N E

PC 1,326,120.1671 323,576.1598  
PT 1,326,470.5130 323,585.1088  
PT 1,326,819.8274 323,609.2811

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A = 330.00 ft  
D = 125.00 ft  
L = 702.58  
R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-7)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
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R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-8)

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D = 125.00 ft  
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R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-9)

PT Sta = 148+77.63  
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D = 125.00 ft  
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R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-10)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
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R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-11)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
L = 702.58  
R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-12)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
L = 702.58  
R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-13)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
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R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-14)

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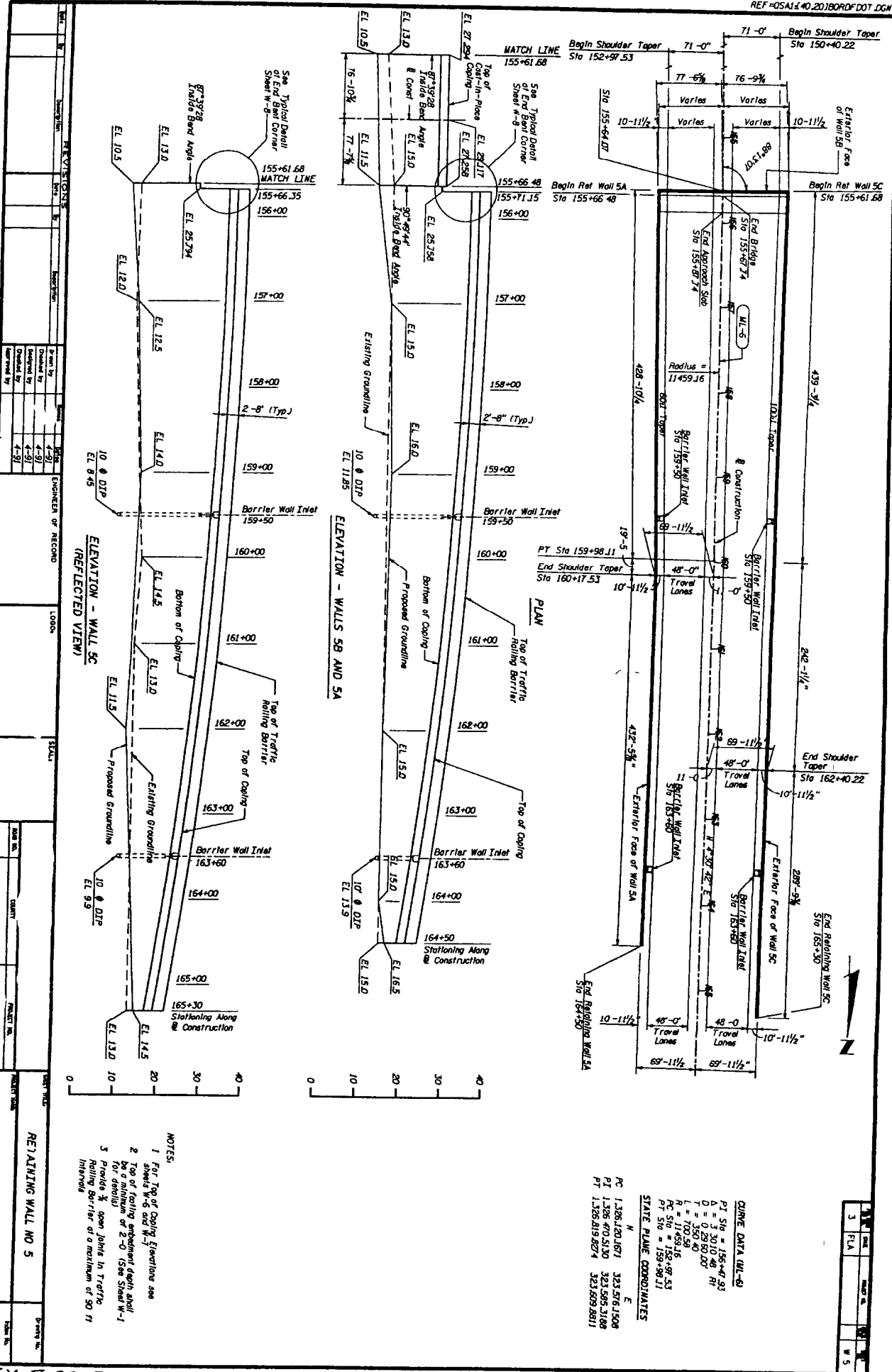
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D = 125.00 ft  
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PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-16)

PT Sta = 148+77.63  
A = 330.00 ft  
D = 125.00 ft  
L = 702.58  
R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11

CURVE DATA (W-17)

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A = 330.00 ft  
D = 125.00 ft  
L = 702.58  
R = 11459.16  
PC Sta = 152+97.45  
PT Sta = 153+98.11



NO.	REVISIONS	DATE	BY	CHKD.
1	As Shown	4-91		
2	As Shown	4-91		
3	As Shown	4-91		

DESIGNED BY: [Blank]  
 CHECKED BY: [Blank]  
 ENGINEER OF RECORD: [Blank]  
 DATE: [Blank]

PROJECT NO.: [Blank]  
 SHEET NO.: [Blank]

DATE: [Blank]  
 SCALE: [Blank]

REMAINING WALL NO 5

- NOTES:
- 1 For Top of Coping Elevations see sheets W-5 and W-7
  - 2 Top of footing embedment depth shall be a minimum of 2'-0" (See Sheet W-1 Pt. details)
  - 3 Provide 3/4" open joints in Traffic Facing Barrier at a maximum of 50 FT intervals

STATE PLANE COORDINATES

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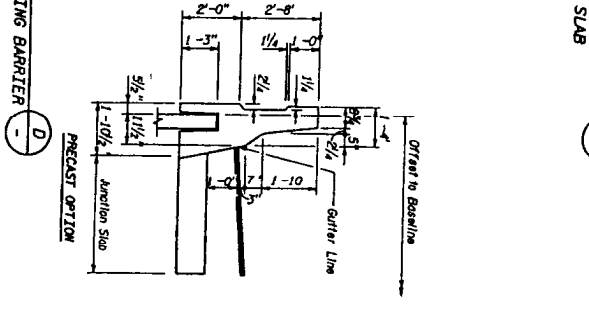
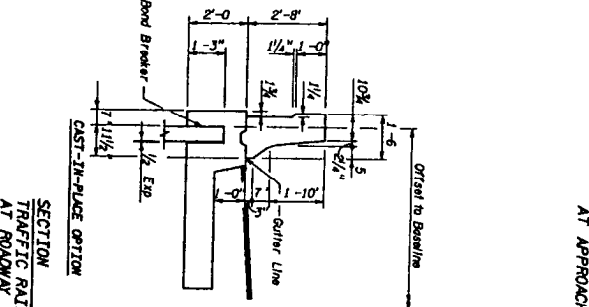
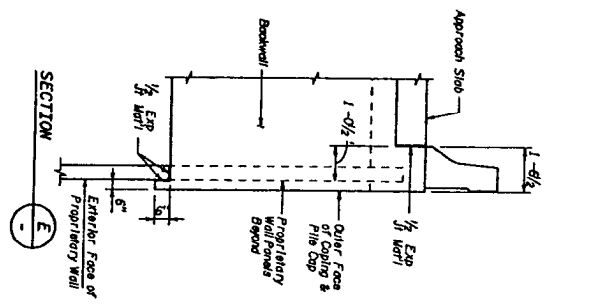
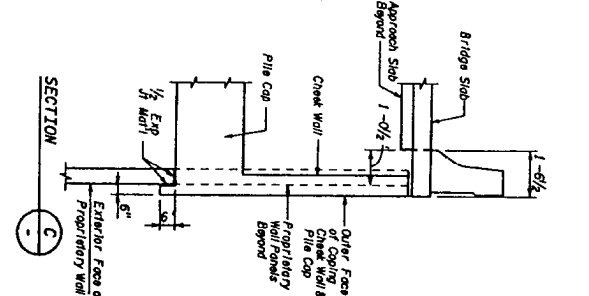
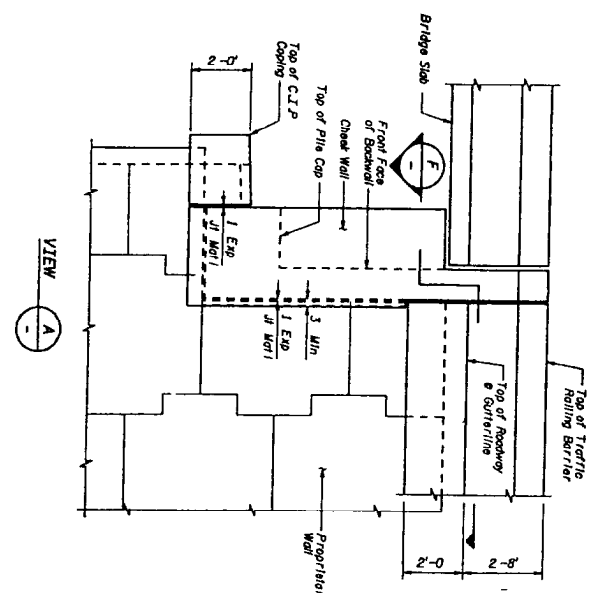
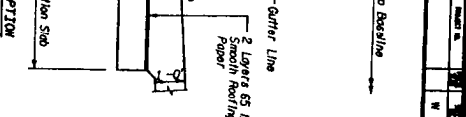
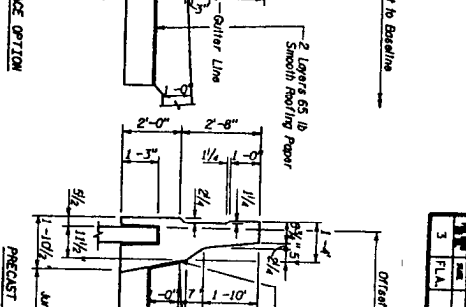
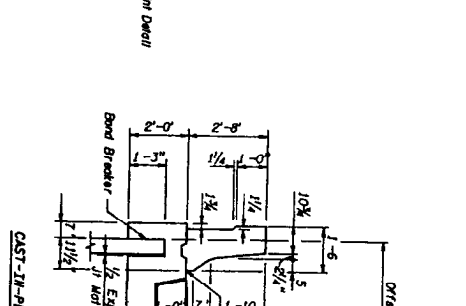
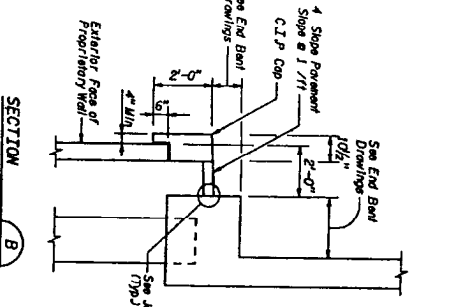
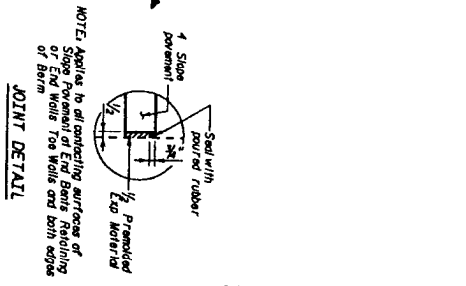
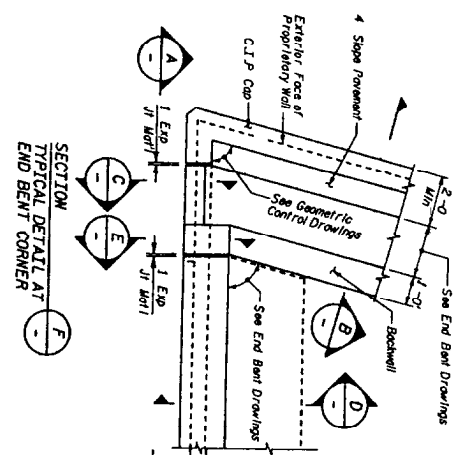
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3	FLA	15	W 5
---	-----	----	-----



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Station	Elevation	Station	Elevation	Station	Elevation
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148 75 00	46 938	150 50 00	46 938	155 88 43	76 696
149 00 00	46 938	151 00 00	46 938	155 71 15	76 649
149 25 00	46 938	151 25 00	46 938	155 75 00	76 602
149 50 00	46 938	151 50 00	46 938	155 78 00	76 555
150 00 00	46 938	152 00 00	46 938	155 81 00	76 508
150 25 00	46 938	152 25 00	46 938	155 84 00	76 461
150 50 00	46 938	152 50 00	46 938	155 87 00	76 414
151 00 00	46 938	153 00 00	46 938	155 90 00	76 367
151 25 00	46 938	153 25 00	46 938	155 93 00	76 320
151 50 00	46 938	153 50 00	46 938	155 96 00	76 273
151 74 36	46 938	154 00 00	46 938	155 99 00	76 226
		154 23 98	46 938	156 02 00	76 179
				156 05 00	76 132
				156 08 00	76 085
				156 11 00	76 038
				156 14 00	75 991
				156 17 00	75 944
				156 20 00	75 897
				156 23 00	75 850
				156 26 00	75 803
				156 29 00	75 756
				156 32 00	75 709
				156 35 00	75 662
				156 38 00	75 615
				156 41 00	75 568
				156 44 00	75 521
				156 47 00	75 474
				156 50 00	75 427
				156 53 00	75 380
				156 56 00	75 333
				156 59 00	75 286
				157 02 00	75 239
				157 05 00	75 192
				157 08 00	75 145
				157 11 00	75 98
				157 14 00	75 51
				157 17 00	75 4
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				157 29 00	78 02
				157 32 00	79 55
				157 35 00	81 08
				157 38 00	82 61
				157 41 00	84 14
				157 44 00	85 67
				157 47 00	87 20
				157 50 00	88 73
				157 53 00	90 26
				157 56 00	91 79
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				158 02 00	94 85
				158 05 00	96 38
				158 08 00	97 91
				158 11 00	99 44
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				161 44 00	198 47
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				162 44 00	221 47
				162 47 00	223 00
				162 50 00	224 13
				162 53 00	225 26
				162 56 00	226 39
				162 59 00	227 52
				163 02 00	229 05
				163 05 00	230 18
				163 08 00	231 31
				163 11 00	232 44
				163 14 00	233 57
				163 17 00	235 10
				163 20 00	236 23
				163 23 00	237 36
				163 26 00	238 49
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				163 50 00	248 33
				163 53 00	249 46
				163 56 00	250 59
				163 59 00	252 12
				164 02 00	253 25
				164 05 00	254 38
				164 08 00	255 51
				164 11 00	257 04
				164 14 00	258 17
				164 17 00	259 30
				164 20 00	260 43
				164 23 00	261 56
				164 26 00	263 09
				164 29 00	264 22
				164 32 00	265 35
				164 35 00	266 48
				164 38 00	268 01
				164 41 00	269 14
				164 44 00	270 27
				164 47 00	271 40
				164 50 00	272 53
				164 53 00	274 06
				164 56 00	275 19
				164 59 00	276 32
				165 02 00	277 45
				165 05 00	278 58
				165 08 00	280 11
				165 11 00	281 24
				165 14 00	282 37
				165 17 00	283 50
				165 20 00	285 03
				165 23 00	286 16
				165 26 00	287 29
				165 29 00	288 42
				165 32 00	289 55
				165 35 00	291 08
				165 38 00	292 21
				165 41 00	293 34
				165 44 00	294 47
				165 47 00	296 00
				165 50 00	297 13
				165 53 00	298 26
				165 56 00	299 39
				165 59 00	300 52
				166 02 00	302 05
				166 05 00	303 18
				166 08 00	304 31
				166 11 00	305 44
				166 14 00	306 57
				166 17 00	



REVISIONS		DATE		BY		CHECKED		APPROVED	
1									
2									
3									
4									
5									

DESIGNED BY	4-51	CHECKED BY	4-51	APPROVED BY	4-51
DATE	4-51	DATE	4-51	DATE	4-51

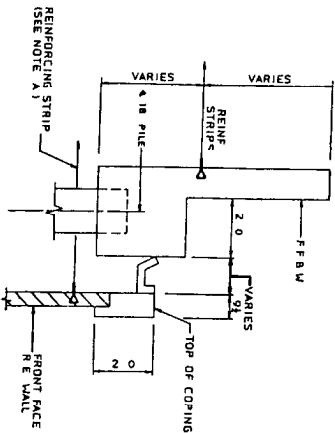
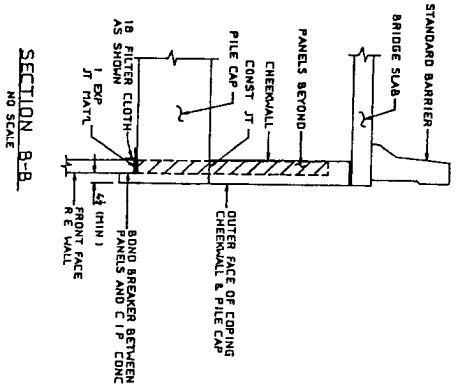
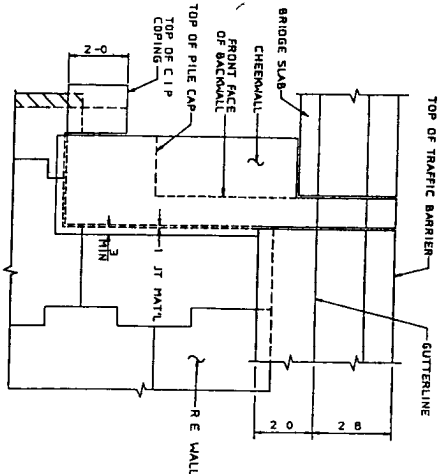
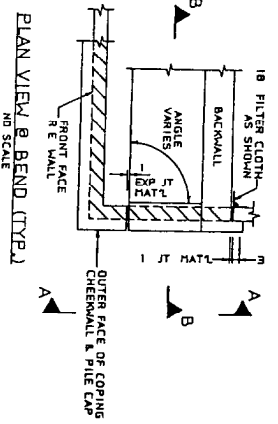
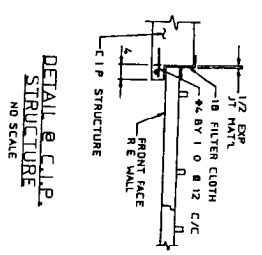
ENGINEER OF RECORD	LOGO	SCALE	ROAD NO.	QUANTITY	PROJECT NO.	DATE	BY

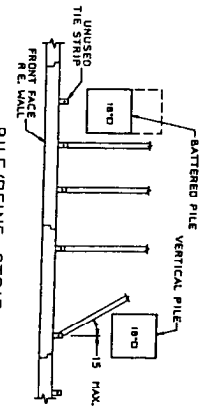
TYPICAL PROPRIETARY WALL	DATE	BY

SHAW-WALKER ENGINEERING  
INC. JUN 1991 1593

Sheet	3	Project No.	
Date	FLA	Scale	



SECTION THRU ABUTMENT  
SCALE 1/2" = 1'-0"



PILE/REIN. STRIP  
LAYOUT DETAIL  
SCALE 1/2" = 1'-0"

NOTE A.1  
IN CASES WHERE THE 15 SPEC IS EXCEEDED  
AND IF PANEL CONNECTIONS OR LENGTH  
WILL BE PROVIDED  
EACH PROJECT WILL BE ANALYZED INDIVIDUALLY

1. Drawing contains information of the design of the structure and is not to be used for construction without the approval of the Engineer. The design is based on information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner.

The design contained on these drawings is based on information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner. The Engineer is not responsible for the accuracy of the information provided by the owner.

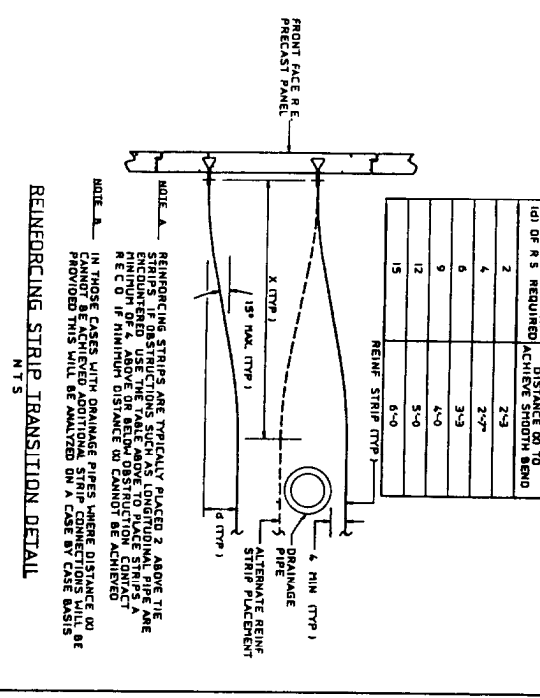
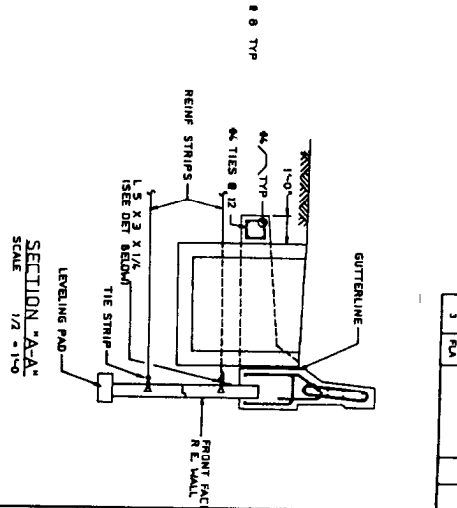
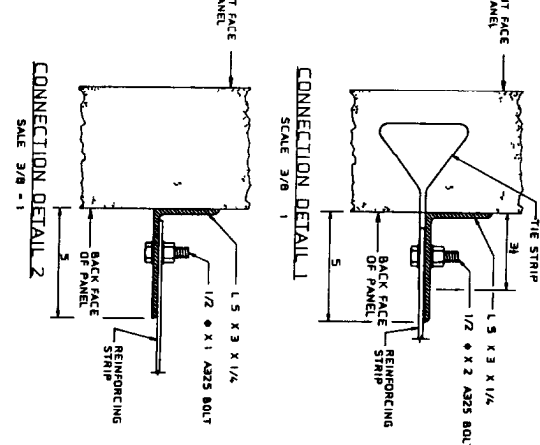
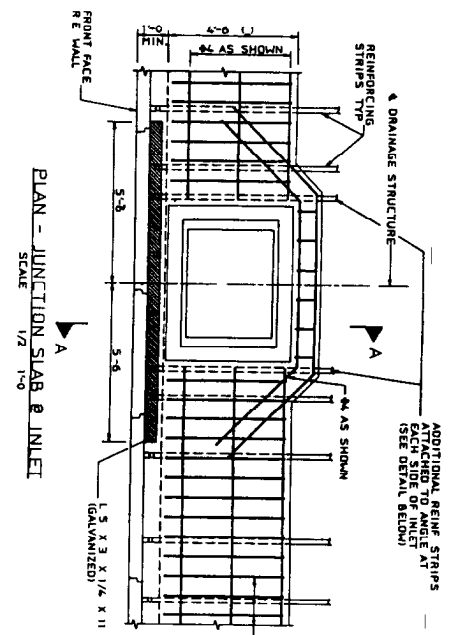
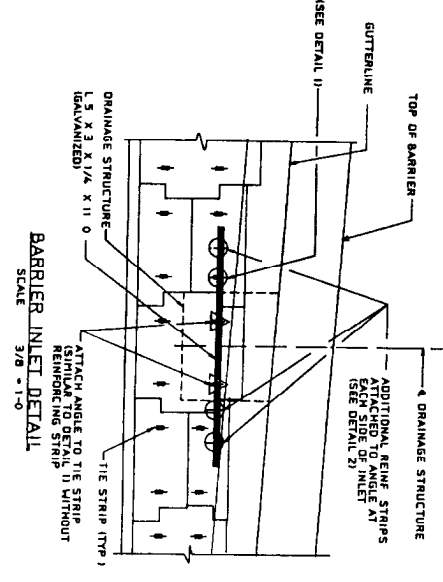
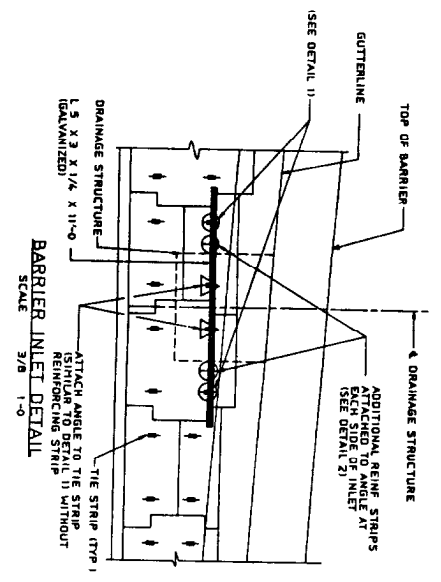
**The Reinforced Earth Company**  
REINFORCED EARTH IS THE REGISTERED TRADE MARK OF THE  
REINFORCED EARTH COMPANY

CERTIFIED WITH  
INTERNAL STABILITY  
OF REINFORCED EARTH

PRELIMINARY FOR REVIEW	PROJECT STATUS
1.1 MIN. LENGTH 1.8 MIN. PERMITS	PRELIMINARY FOR BRIDGING
STRIK (FOR) & IN VISION OFFICE	FINAL FOR CONSTRUCTION
COUNTY	PROJECT NO.
	PROJECT NO.

REINFORCED EARTH  
STANDARD DETAILS

1-22-12-X-10



ADDITIONAL DEPTH (D) OF R.S. REQUIRED TO ACHIEVE SHOULDER BEND	RECOMMENDED MINIMUM LENGTH OF R.S. TO ACHIEVE SHOULDER BEND
2	2'-3"
4	2'-7"
6	3'-3"
9	4'-0"
12	5'-0"
15	6'-0"

NOTE A: REINFORCING STRIPS ARE TYPICALLY PLACED 2" ABOVE THE SURFACE OF THE CONCRETE. IN THOSE CASES WHERE THE MINIMUM OF 2" ABOVE OR BELOW DESTRUCTION CONTACT IS REQUIRED, THE MINIMUM OF 2" ABOVE OR BELOW DESTRUCTION CONTACT SHALL BE MAINTAINED.

NOTE B: IN THOSE CASES WITH DRAINAGE PIPES WHERE DISTANCE TO FINISH SHALL BE ACHIEVED THROUGH THE STRIP CONNECTIONS WILL BE PROVIDED THIS SHALL BE ACHIEVED ON A CASE BY CASE BASIS.

REINFORCING STRIP TRANSITION DETAIL  
N.T.S.

The drawings contain information concerning the Reinforced Earth Company and a being furnished for the use of the contractor. It is the responsibility of the contractor to verify the information contained in these drawings with the Reinforced Earth Company and to obtain any necessary clarifications or amendments in writing. The Reinforced Earth Company is not responsible for any errors or omissions in these drawings. The Reinforced Earth Company is not responsible for any errors or omissions in these drawings. The Reinforced Earth Company is not responsible for any errors or omissions in these drawings.

The design contained on these drawings is based on information provided by the owner. On the basis of the information provided, the Reinforced Earth Company has prepared and is responsible for the general stability of the structure. The Reinforced Earth Company is not responsible for the design of the structure. The Reinforced Earth Company is not responsible for the design of the structure.

**The Reinforced Earth Company**  
REINFORCED EARTH, IS THE REGISTERED TRADE MARK OF THE REINFORCED EARTH COMPANY

CERTIFIED WITH REINFORCED EARTH STRUCTURES ONLY

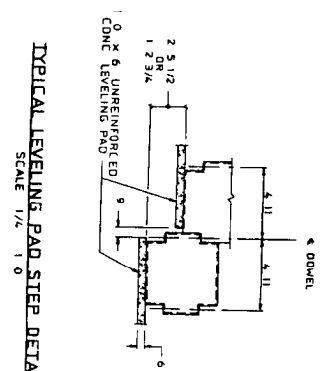
PRELIMINARY FOR REVIEW  
PRELIMINARY FOR RECORD

PROJECT STATUS  
FINAL NON CONSTRUCTION

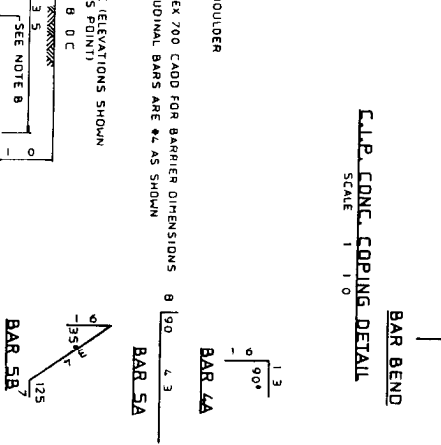
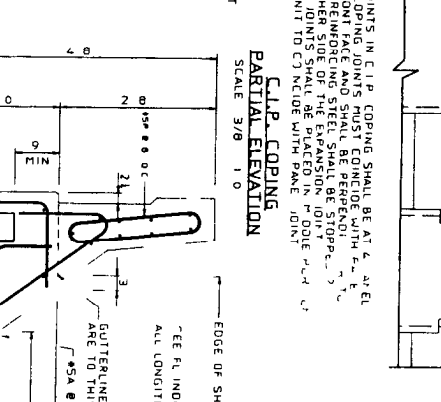
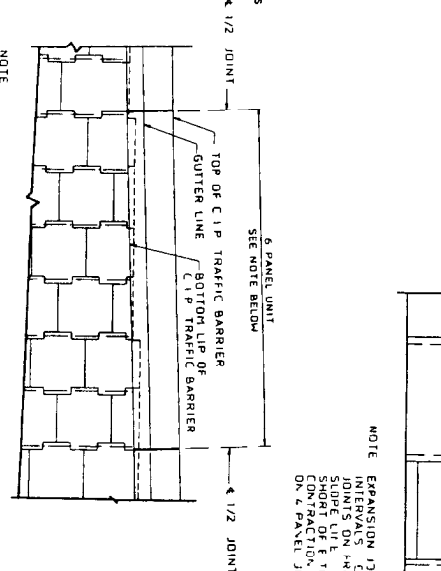
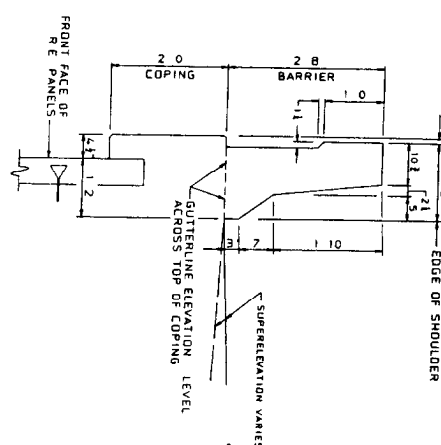
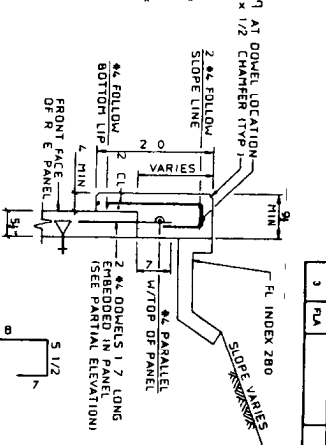
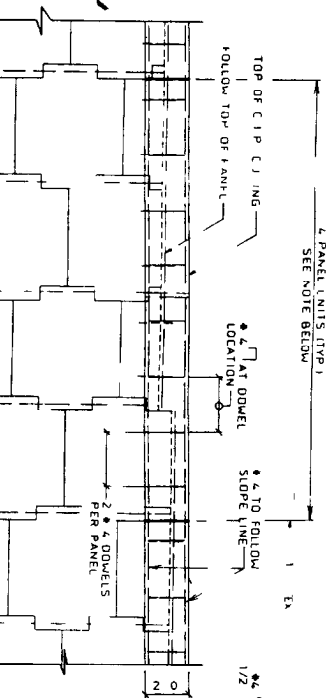
REINFORCED EARTH STANDARD DETAILS

EX-II-22-J



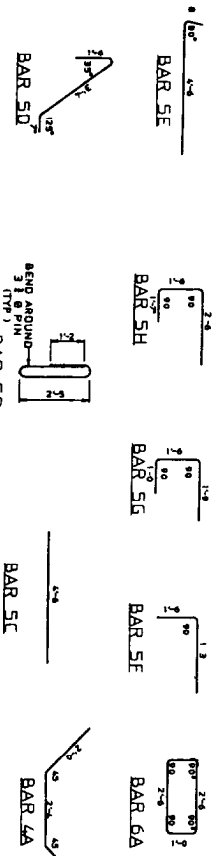
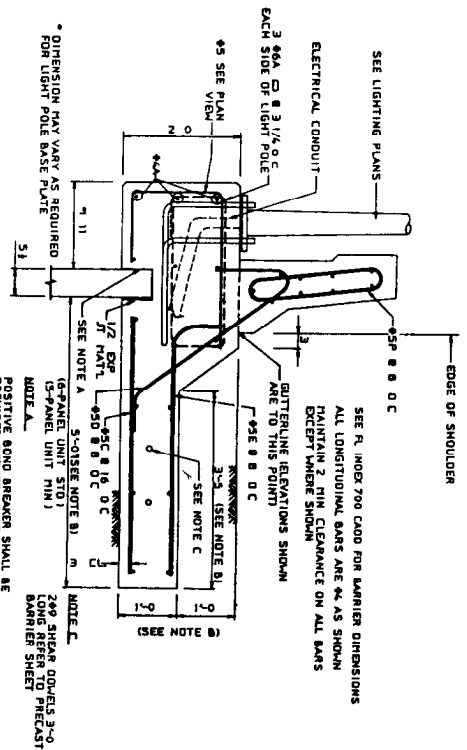
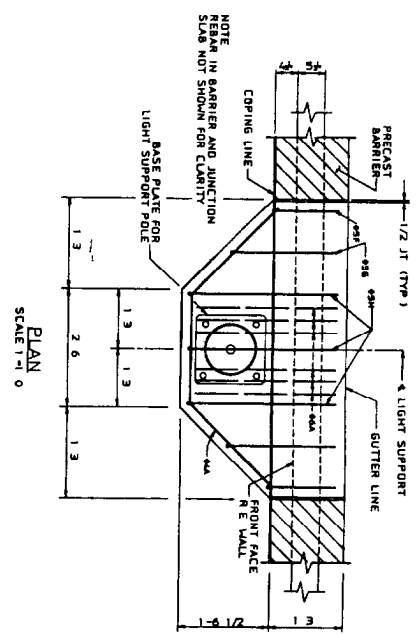
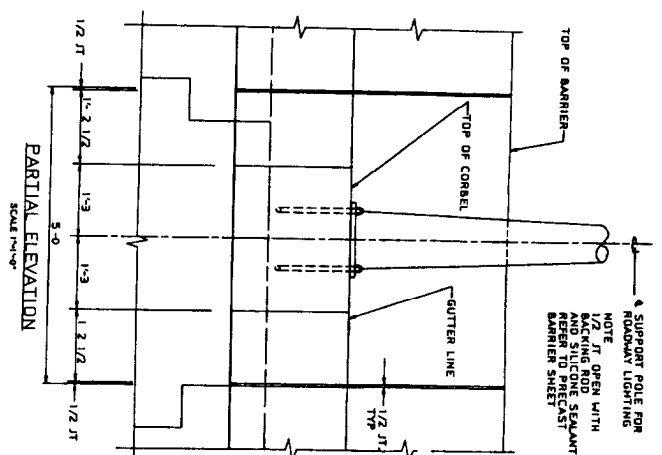


**NOTE**  
LEVELING PAD MUST BE Poured TO THE WALL ELEVATION AND SHOWN ON THE WALL ELEVATION. ALLOWABLE ELEVATION TOLERANCES PERmitted BETWEEN PRECAST PANEL AND LEVELING PAD UNLESS AUTHORIZED BY THE REINFORCED EARTH COMPANY.



<p>The design of this structure is the property of The Reinforced Earth Company and shall not be used for any other project without the written permission of the Reinforced Earth Company. The design of this structure is the property of The Reinforced Earth Company and shall not be used for any other project without the written permission of the Reinforced Earth Company.</p>		<p>The design of this structure is the property of The Reinforced Earth Company and shall not be used for any other project without the written permission of the Reinforced Earth Company. The design of this structure is the property of The Reinforced Earth Company and shall not be used for any other project without the written permission of the Reinforced Earth Company.</p>	
<p><b>The Reinforced Earth Company</b> REINFORCED EARTH COMPANY</p>		<p><b>REINFORCED EARTH COMPANY</b> REINFORCED EARTH COMPANY</p>	
<p><b>CERTIFIED WITH</b> INTERNATIONAL STANDARD OF REINFORCED EARTH STRUCTURES (R.E.S.)</p>		<p><b>PRELIMINARY FOR REVIEW</b></p>	
<p><b>PROJECT STATUS</b></p>		<p><b>PRELIMINARY FOR BIDDING</b></p>	
<p><b>DESIGN OFFICE</b> REINFORCED EARTH COMPANY</p>		<p><b>DESIGN OFFICE</b> REINFORCED EARTH COMPANY</p>	
<p><b>PROJECT NO.</b></p>		<p><b>PROJECT NO.</b></p>	
<p><b>DATE</b></p>		<p><b>DATE</b></p>	
<p><b>SCALE</b></p>		<p><b>SCALE</b></p>	
<p><b>REVISIONS</b></p>		<p><b>REVISIONS</b></p>	

REV	DATE	PROJECT NO.	SHEET NO.
3	P/A		



BAR BENDING DETAILS  
N.T.S.

MARK	QTY
LA	3
SC	3
SD	7
SE	3
SE	2
SG	2
SH	3
SP	7
SA	6

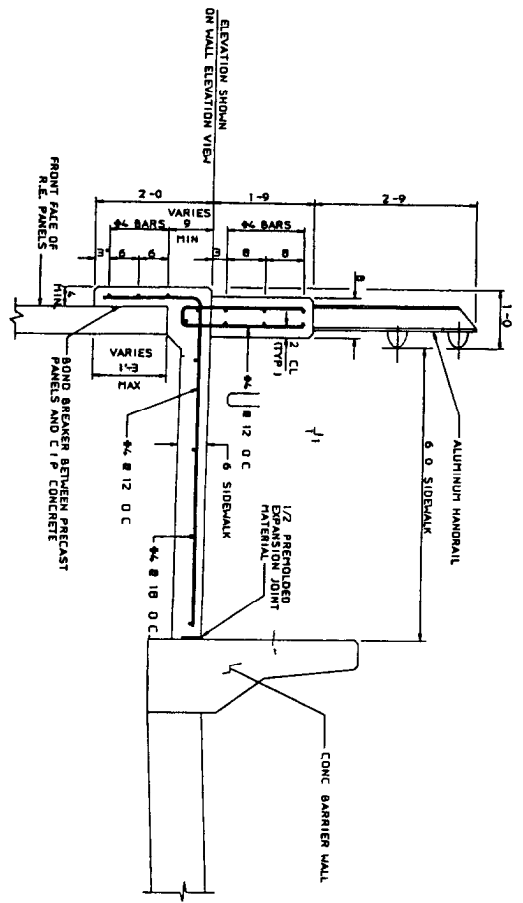
The drawing contains information proprietary to The Reinforced Earth Company and is being furnished to you for your use only. It is not to be distributed to any other organization without specifically authorized in writing by The Reinforced Earth Company. The design is based on information provided by the contractor. On the basis of the information provided, The Reinforced Earth Company has designed and is responsible for the structural safety of the structure. The design is based on information provided by the contractor. On the basis of the information provided, The Reinforced Earth Company has designed and is responsible for the structural safety of the structure.

The design, indicated on these drawings is based on information provided by the contractor. On the basis of the information provided, The Reinforced Earth Company has designed and is responsible for the structural safety of the structure. The design is based on information provided by the contractor. On the basis of the information provided, The Reinforced Earth Company has designed and is responsible for the structural safety of the structure.

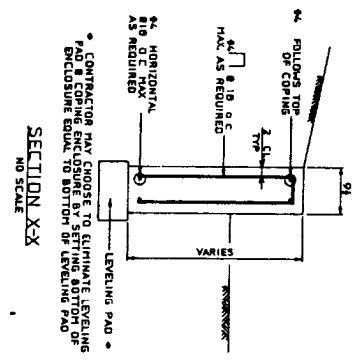
CLASSIFICATION: INTERNAL STABILITY

**The Reinforced Earth Company**  
REINFORCED EARTH & THE REGISTERED TRADE MARK OF THE REINFORCED EARTH COMPANY

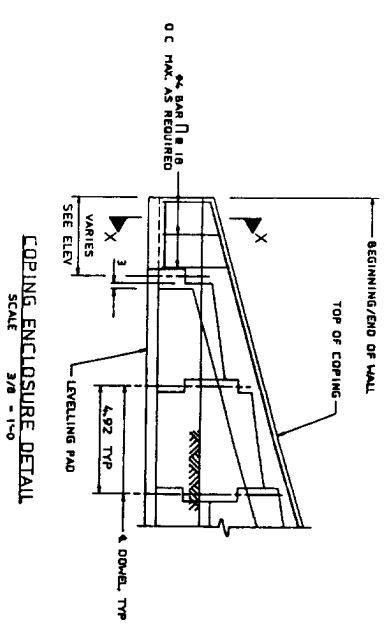
PROJECT NO.	PROJECT NAME	DATE
PRELIMINARY FOR REVIEW	PRELIMINARY FOR DESIGN	SCALE
11 3811 LINDEN 1 & 1/2 VARIATION	STREET LIGHTING OFFICE	REINFORCED EARTH STANDARD DETAILS
ROAD NO.	COUNTY	PROJECT NO.
		PROJECT NAME
		DATE
		DRAWING NO.
		REVISION NO.



C.I.P. PARAPET DETAIL  
SCALE 1/4" = 1'-0"



SECTION X-X  
NO SCALE



COPING ENCLOSURE DETAIL  
SCALE 3/8" = 1'-0"

The drawing contains information proprietary to The Reinforced Earth Company and is being provided to you for your use only. It is not to be retransmitted to any other organization without the written consent of The Reinforced Earth Company. The design is based on information provided by the client. On the basis of the information provided, The Reinforced Earth Company does not warrant the accuracy of the information provided. The Reinforced Earth Company is not responsible for any errors or omissions in this drawing. The Reinforced Earth Company is not responsible for any damage or injury resulting from the use of this drawing. The Reinforced Earth Company is not responsible for any damage or injury resulting from the use of this drawing.

The design contained on these drawings is based on information provided by the client. On the basis of the information provided, The Reinforced Earth Company does not warrant the accuracy of the information provided. The Reinforced Earth Company is not responsible for any errors or omissions in this drawing. The Reinforced Earth Company is not responsible for any damage or injury resulting from the use of this drawing. The Reinforced Earth Company is not responsible for any damage or injury resulting from the use of this drawing.

CERTIFIED WITH  
RESPECT TO  
INTERNAL STABILITY  
STRUCTURES ONLY

PROJECT STATUS		REINFORCED EARTH STANDARD DETAILS	
PRELIMINARY FOR REVIEW	PRELIMINARY FOR BIDDING	FINAL FOR CONSTRUCTION	SCALE
DATE	DATE	DATE	DATE
ALUMINUM DIVISION - 18 INMANWOODEN	STRICTIONS DESIGN OFFICE	PROJECT NUMBER	DRAWING NO.
COUNTY	PROJECT NO.		RECD. BY NO.

**The Reinforced Earth Company**  
REINFORCED EARTH  
REINFORCED EARTH COMPANY

FX-71-22-M







## CHAPTER 23

### SIGNING AND PAVEMENT MARKING PLANS

#### 23.1 General

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

#### 23.2 Key Sheet

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

### **23.3 Tabulation of Quantities and Standard Notes**

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

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

### **23.4 General Notes**

All general notes pertaining to signing and pavement marking may be shown on a separate plan format sheet, if necessary.



## 23.5 Plan Sheets

### 23.5.1 Format and Scale

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

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

## 23 5 2 Required Information

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

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

Any signs to be mounted on signal span wires should be shown and listed on the signalization plan for illustration and placement purposes Sign details should be included on the signing plans

Begin and end stations shall be shown

### 23.6 Guide Sign Worksheet

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

### 23.7 Overhead Sign Cross Section and Support Structure

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

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

### 23.8 Typical Pavement Marking Sheet

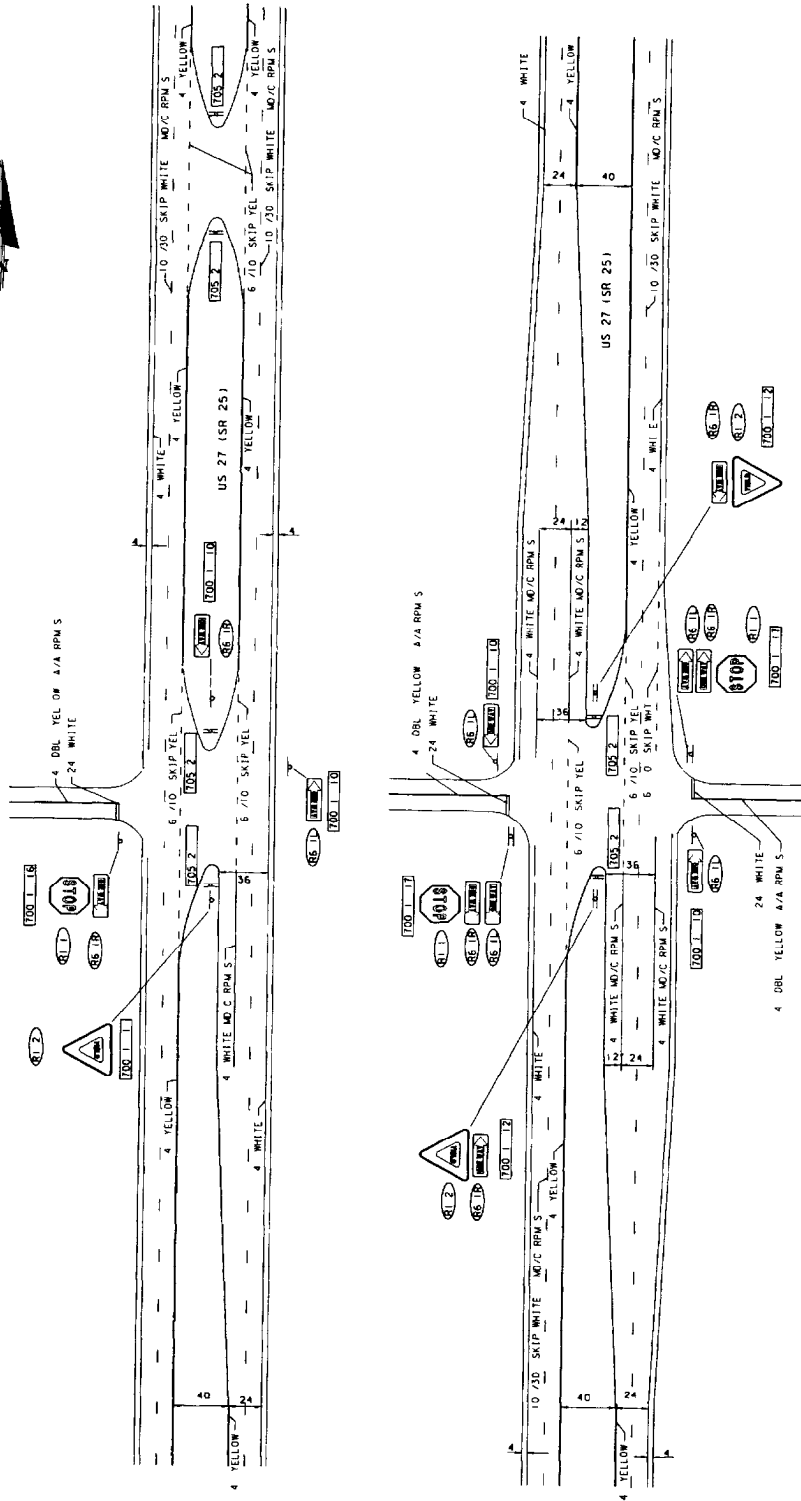
For simple, uncomplicated projects, or sections of a project, it may be possible to show signing and pavement marking plan details schematically using straight line diagrams and typical markings plan sheets. All regulatory, warning and directional signs shall be properly identified and shown at their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





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

STATE PROJ. NO. 1  
00000 00000 S 0



DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

DESIGNED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

PROJECT: \_\_\_\_\_

SCALE: \_\_\_\_\_

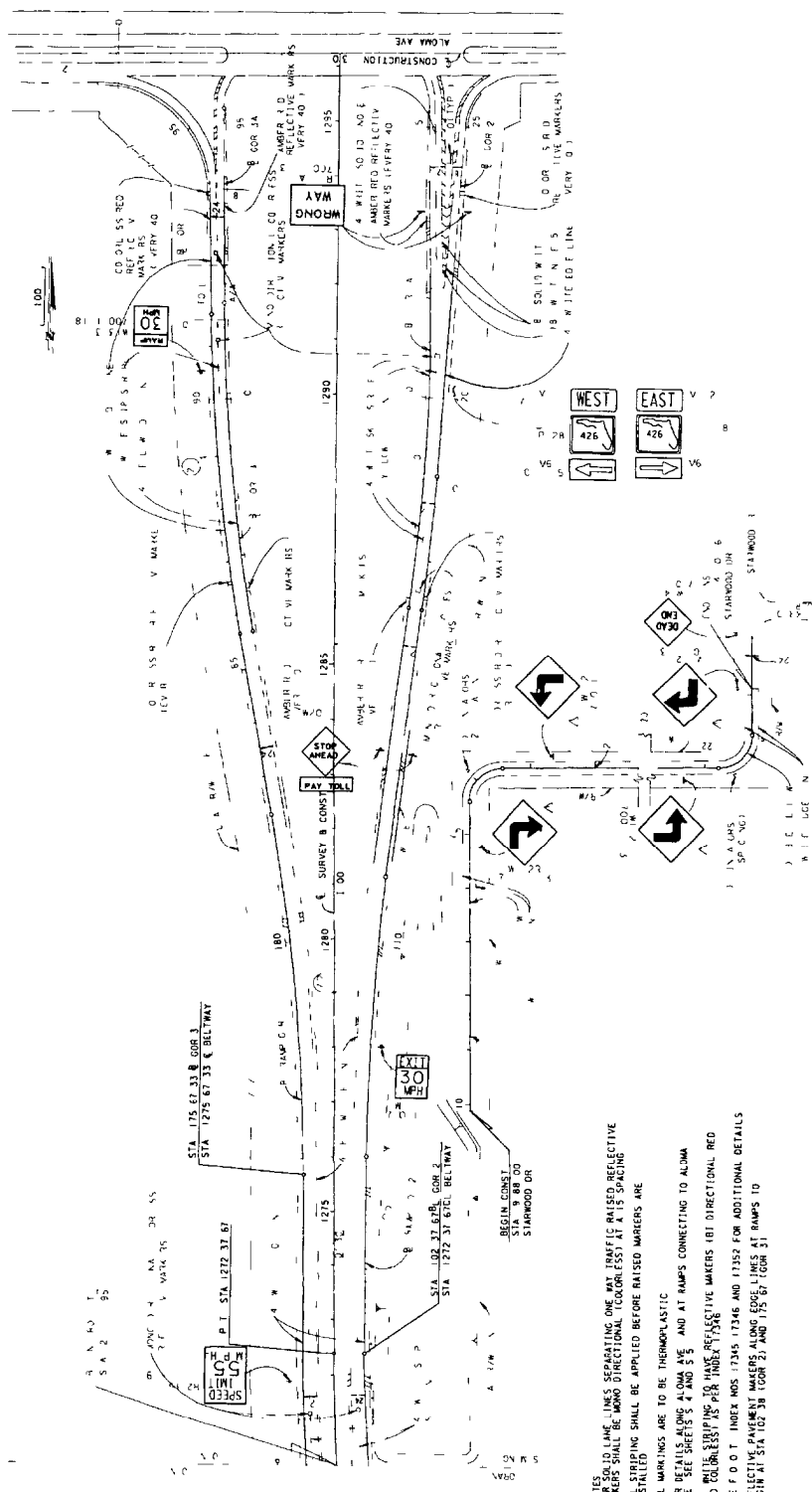
APPROVED BY: \_\_\_\_\_

TYPICAL MARKINGS

EX 11-23-C

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

STATE PROJ NO WEST  
00000 00000 S O



- 1 FOR SOLID LINE LINES SEPARATING ONE WAY TRAFFIC RAISED REFLECTIVE MARKERS SHALL BE MIMO DIRECTIONAL (COLORLESS) AT 15' SPACING
- 2 THE STRIPING SHALL BE APPLIED BEFORE RAISED MARKERS ARE
- 3 ALL MARKINGS ARE TO BE THERMOPLASTIC
- 4 SEE SPECIFICATIONS 4 AND 5 AND AT RAMP CONNECTING TO ALMA
- 5 18" WHITE STRIPING TO HAVE REFLECTIVE MARKERS (BT DIRECTIONAL RED AND COLORLESS) AS PER INDEX 17346
- 6 SEE F O T INDEX NOS 17345 17346 AND 17352 FOR ADDITIONAL DETAILS
- 7 REFLECTIVE PAVEMENT MARKERS ALONG EDGE LINES AT RAMP TO BEGIN AT STA 102 38 (COR 2) AND 175 67 (COR 1)

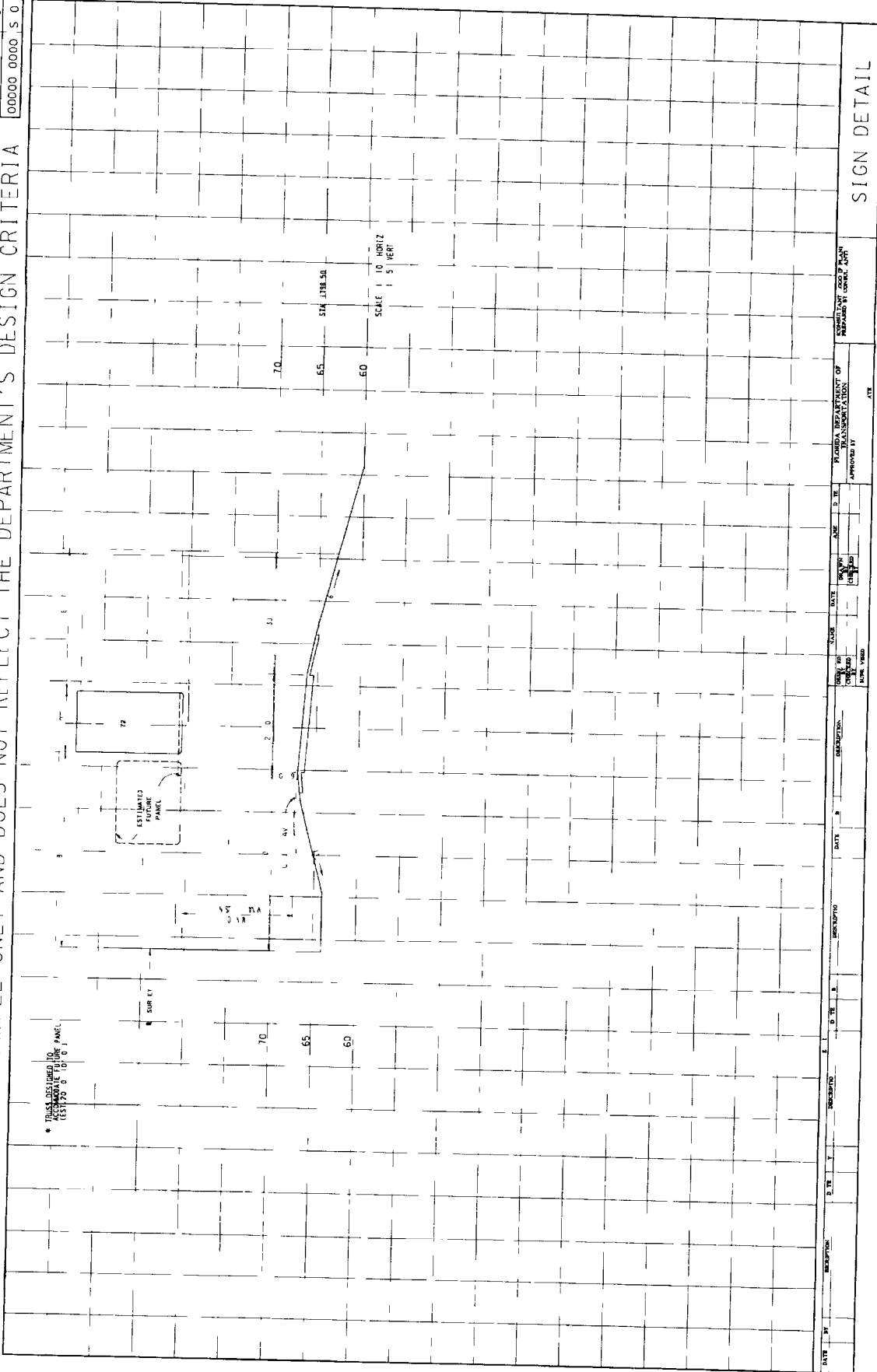
DATE	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

SIGNING AND MARKING

EX-11-23 D

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

STATE PROJ. NO. 00000 0000 S. O.



DATE: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_ DATE: \_\_\_\_\_ DESIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SCALE: \_\_\_\_\_ DATE: \_\_\_\_\_ DATE: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

FLORIDA DEPARTMENT OF TRANSPORTATION

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SIGN DETAIL

EX 11-23-E





## CHAPTER 24

### SIGNALIZATION PLANS

#### 24.1 General

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

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

#### 24.2 Key Sheet

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

### **24.3 Tabulation of Quantities and Standard Notes**

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

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

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

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

### **24.4 General Notes**

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

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

## 24.5 Plan Sheets

### 24.5.1 Format and Scale

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

#### 24.5.2 Required Information

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

The plan sheet shall also show:

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

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

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

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

The sign details for signs must be included on the signalization plans, if signing and marking are not included in the plans package

## 24.6 Pole Schedule

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

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

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

#### 24.7 Interconnect/Communication Plan

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

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

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

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

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



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STATE PROJ. NO. 00000 00000 00

TABULATION OF QUANTITIES

BID ITEM NO	DESCRIPTION	UNIT	SHEET NUMBERS				TOTAL THIS SHEET	GRAND TOTAL	REFERENCE SHEET
			1	4	ORIG. FINAL	ORIG. FINAL			
620 1 1	GROUNDING ELECTRODE	LF	170				170	170	
630 1 12 4	CONDUIT UNDERGROUND	LF	200				200	200	
630 1 13 4	CONDUIT UNDER PAVEMENT	LF	328				328	328	
632 7 1	SIGNAL CABLE	PI							
634 4 112	SPAN WIRE ASSEMBLY	PI							
635 1 11	PULL BOXES	EA	5				5	5	
635 1 12	ELECTRIC POWER SERVICE ABOVE GROUND	AS	1				1	1	
641 16 4B	CONCRETE STRAIN POLES (TYPE V11)	EA	2				2	2	
650 1 131	TRAFFIC SIGNAL 12 13 SECT 1 WAY	AS	6				6	6	
650 1 132	TRAFFIC SIGNAL 12 13 SECT 2 WAY	AS	5				5	5	
659 101	PEDESTRIAN SIGNALS (12 INCANDESCENT) 1 WAY	AS	8				8	8	
659 107	SIGNAL HEAD AUXILIARIES (BLACK PLATE 3 SECTION)	EA	10				10	10	
660 1 101	SIGNAL HEAD AUXILIARIES (ALUMINUM PEDESTAL)	EA	2				2	2	
660 2 101	VEHICLE DETECTOR (LOOP TYPE) AMPLIFIER WITH HARNESS	EA	8				8	8	
665 11	VEHICLE DETECTOR (LOOP TYPE) ISAM CUTS AND LEAD INS	EA	20				20	20	
665 13	PEDESTRIAN DETECTOR POLE OR CABINET MOUNTED	EA	4				4	4	
690 103	PEDESTRIAN DETECTOR WITH SIGN ONLY	EA	4				4	4	
690 10	CONTROLLER SOLID STATE (ACTUATED) INCL CABINET	AS	1				1	1	
690 30	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA	5				5	5	
690 50	REMOVE POLES	EA	2				2	2	
690 60	REMOVE CONTROLLER ASSEMBLY	EA	1				1	1	
690 80	REMOVE VEHICLE DETECTOR ASSEMBLY	EA	1				1	1	
690 90	REMOVE SPAN WIRE ASSEMBLY	EA	1				1	1	
690 100	REMOVE CABLE AND CONDUIT	PI	1				1	1	
690 100	REMOVE MISCELLANEOUS SIGNAL EQUIPMENT	PI	1				1	1	

\* MEASURED AS LENGTH OF TRENCH FOR MULTIPLE RUNS

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE: \_\_\_\_\_

CONTRACT NO. \_\_\_\_\_

PROJECT NO. \_\_\_\_\_

SECTION NO. \_\_\_\_\_

TABULATION OF QUANTITIES

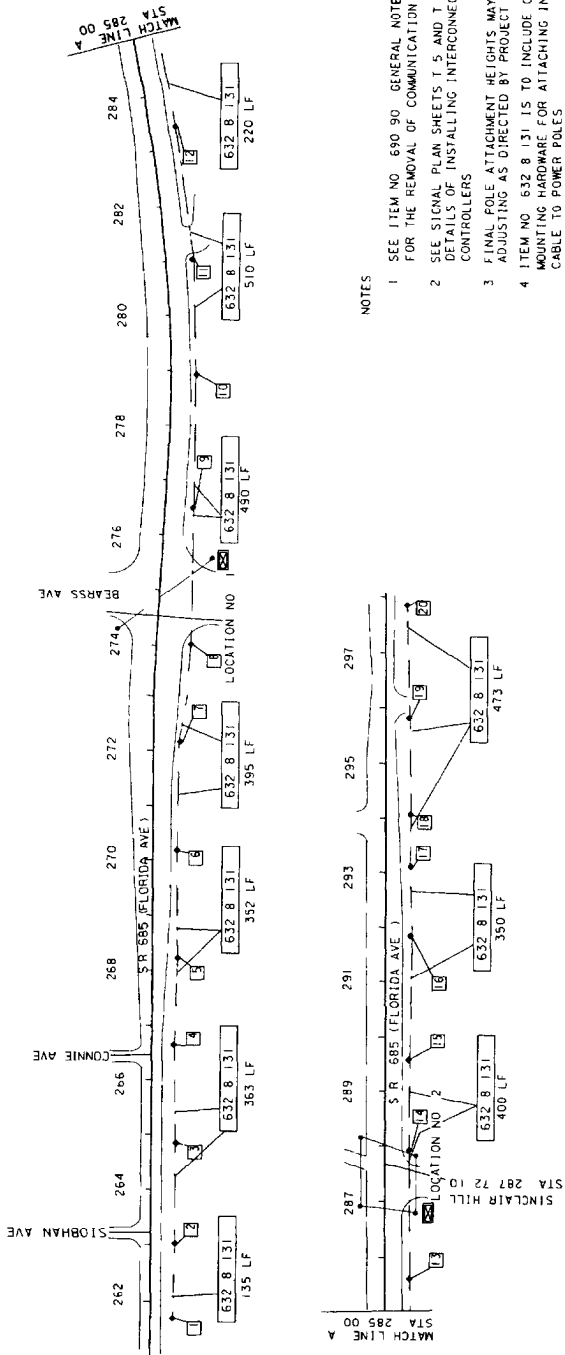
TRAFFIC SIGNALS

EX 11 24 A



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STATE PROJ. NO. 00000 00000 T 0



- NOTES
1. SEE ITEM NO. 680-90 GENERAL NOTE SHEET T 4 FOR THE REMOVAL OF COMMUNICATION CABLE
  2. SEE SIGNAL PLAN SHEETS T 5 AND T 6 FOR ADDITIONAL DETAILS OF INSTALLING INTERCONNECT/COMMUNICATION CABLE TO CONTROLLERS
  3. FINAL POLE ATTACHMENT HEIGHTS MAY REQUIRE FIELD ADJUSTING AS DIRECTED BY PROJECT ENGINEER
  4. ITEM NO. 632 B 131 IS TO INCLUDE CLAMPS AND OTHER MOUNTING HARDWARE FOR ATTACHING INTERCONNECT CABLE TO POWER POLES

INTERCONNECT POLE IDENTIFICATION LISTING

POLE NO.	SIDE OF CORRIDOR STREET	OWNER	POLE ID	USE	MATERIAL	DISTANCE FROM PRECEDING POLE	SPECIAL REMARKS	INTERCONNECT TIE IN
1	EAST	TECO	25179 46443	POWER	STEEL	N/A		18 20
2	EAST	TECO	25179 46444	POWER	STEEL	145		18 20
3	EAST	TECO	25179 46445	POWER	STEEL	180		18 20
4	EAST	TECO	25179 46446	POWER	STEEL	183		18 20
5	EAST	TECO	25179 46447	POWER	STEEL	157		18 20
6	EAST	TECO	25179 46448	POWER	STEEL	200		18 20
7	EAST	TECO	25179 46449	POWER	STEEL	202		18 20
8	EAST	TECO	25179 46501	POWER	STEEL	191		18 20
9	SE CORNER BEARSS AVE	TECO	25179 46502	POWER	STEEL	243	POWER TO RAISE SERVICE	18 20
10	NE CORNER BEARSS AVE	TECO	25179 46520	POWER	STEEL	248		18 20

INTERCONNECT POLE IDENTIFICATION LISTING

POLE NO.	SIDE OF CORRIDOR STREET	OWNER	POLE ID	USE	MATERIAL	DISTANCE FROM PRECEDING POLE	SPECIAL REMARKS	INTERCONNECT TIE IN
11	SE CORNER BUS ENT	TECO	25178 46544	POWER	STEEL	209		18 20
12	EAST	TECO	25173 46558	POWER	STEEL	240		18 20
13	EAST	TECO	25166 46589	POWER	STEEL	222		18 20
14	NE CORNER SINCLAIR HILLS	TECO	25160 46602	POWER	STEEL	242	POWER TO RAISE CC 2	18 20
15	EAST	TECO	25160 46603	POWER	STEEL	165		18 20
16	EAST	TECO	25151 46649	POWER	STEEL	224		18 20
17	EAST	TECO	25151 46651	POWER	STEEL	130		18 20
18	EAST	TECO	25151 46652	POWER	STEEL	95		18 20
19	EAST	TECO	25151 46653	POWER	STEEL	182	POWER TO RAISE CC 1	18 20
20	EAST	TECO	25151 46654	POWER	STEEL	198		18 20

DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION	DATE	DESCRIPTION

REVISION

NO.	DATE	DESCRIPTION

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

FOR THE DESIGNATION OF \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

INTERCONNECT/COMMUNICATION CABLE PLAN

EX II-24-C

## CHAPTER 25

### HIGHWAY LIGHTING

#### 25.1 General

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

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

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

## **25.2 Key Sheet**

The key sheet is the first sheet in the component plans set and shall be prepared as described in Chapter 3 of this manual. The location map, length of project box and contract plans set information need not be shown if it is shown on the lead (usually roadway) key sheet. Index of highway lighting plans shall be shown on the left of the sheet. Other data shall be shown as described in Chapter 3 of this volume.

## **25.3 Tabulation of Quantities and Standard Notes**

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

The tabulation of quantities sheet shall be set up as shown in Exhibit II-25-A. Bid item numbers shall be listed in numerical order. Provisions shall be made to show the original and final quantities per sheet. Pay item footnotes and standard notes that refer to item numbers, description of work to be performed and quantity estimates shall also be shown on this sheet. General notes shall be shown on a separate plan format sheet.

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

#### 25.4 Pole Data and Legend Sheet

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

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

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

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

## 25.5 Plan Sheets

### 25.5.1 Format and Scale

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

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

### 25.5.2 Required Information

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

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

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

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

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



Description--voltages, phases, etc.

example: 240/480 Volt, 3 wire, Overhead

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

## 25.6 Foundations and Boring Detail Sheets

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

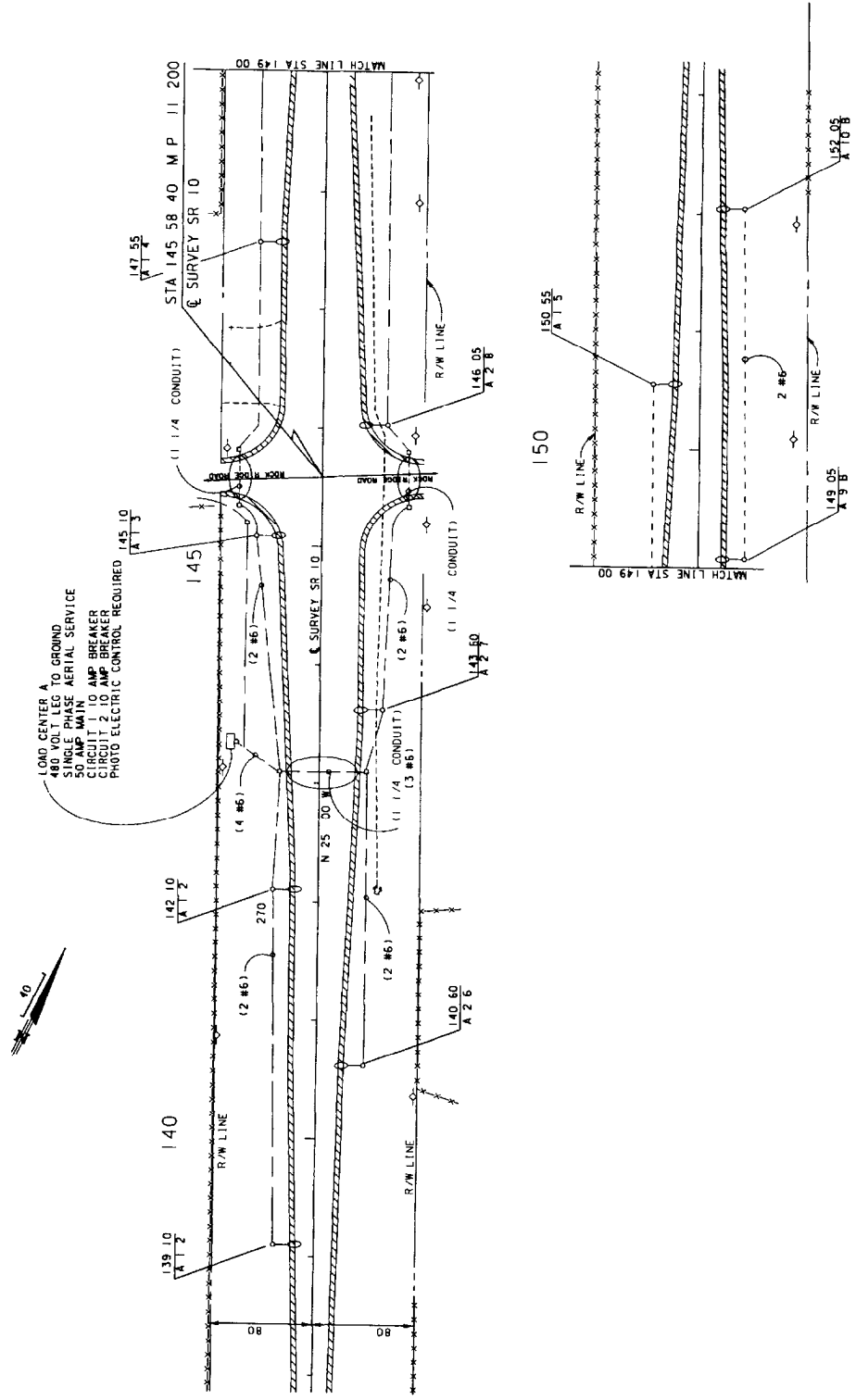
Plans showing the foundation details and boring data for high mast poles shall be included in the lighting plans.





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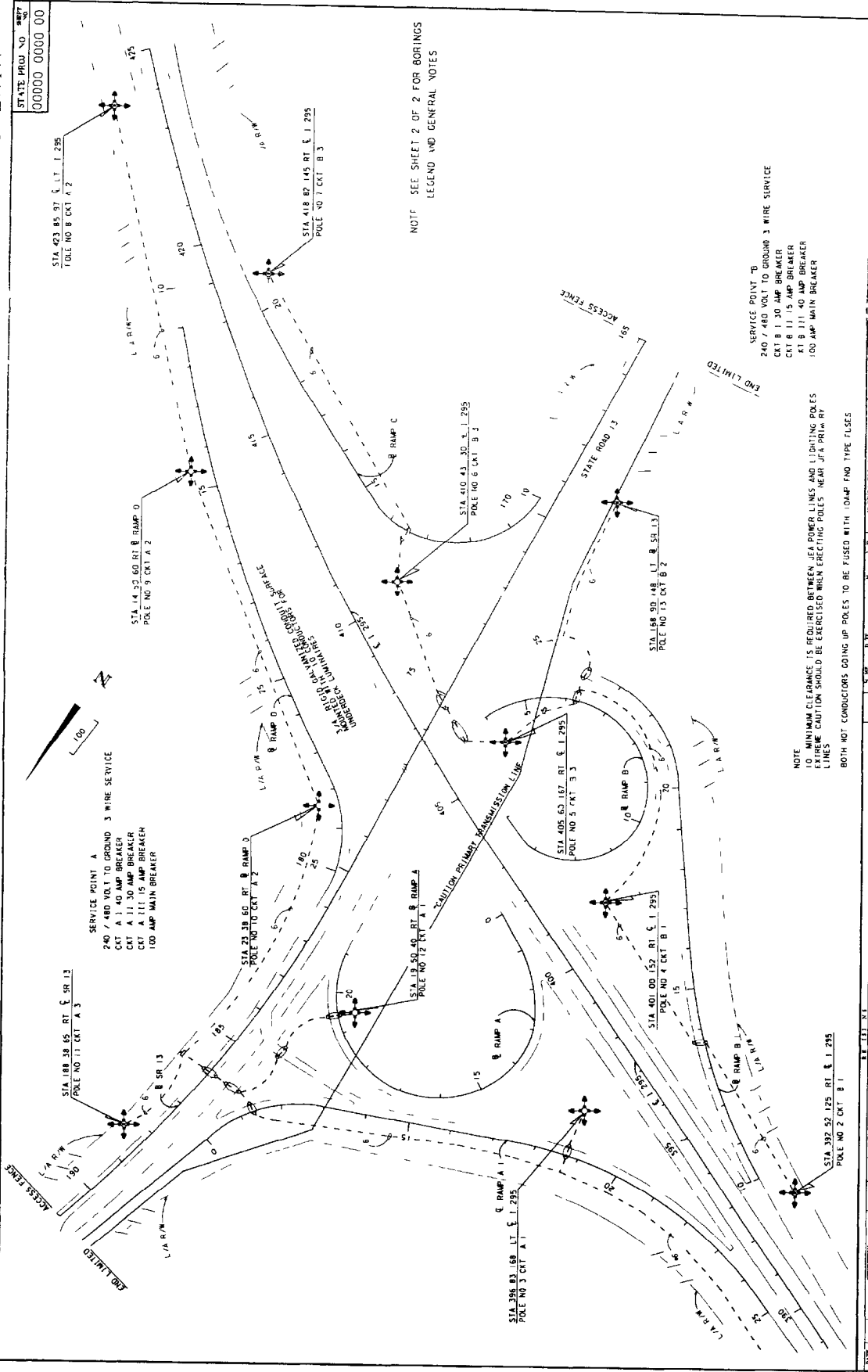
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 PROJECT: \_\_\_\_\_ DRAWING NO.: \_\_\_\_\_ SHEET NO. OF \_\_\_\_\_  
 TITLE: LIGHTING PLANS

EX 11-25-C



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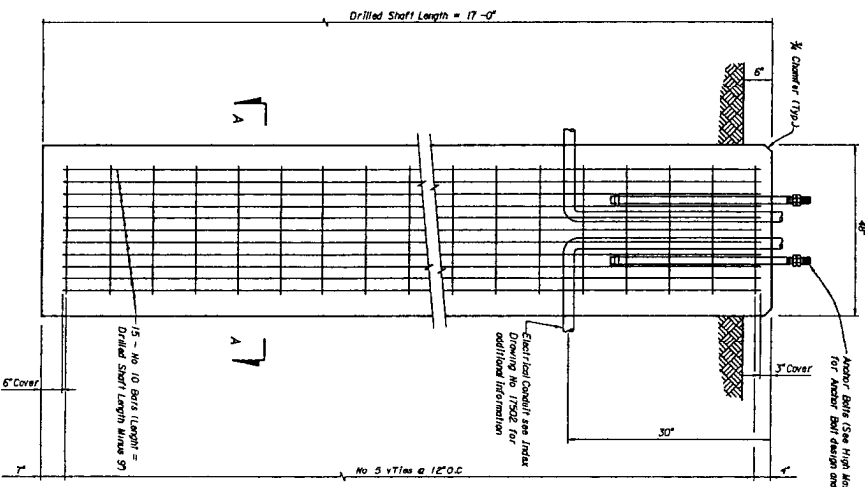
NOT: SEE SHEET 2 OF 2 FOR BORINGS LEGEND AND GENERAL NOTES

NOTE: 10 MINIMUM CLEARANCE IS REQUIRED BETWEEN NEAR POWER LINES AND LIGHTING POLES. THE CAUTION SHOULD BE EXERCISED WHEN ERECTING POLES NEAR JTA PRIMARY LINES. BOTH HOT CONDUCTORS GOING UP POLES TO BE FUSED WITH 10AMP FNO TYPE FUSES

PLAN SHEET  
HIGHWAY LIGHTING  
EX 11 25 E

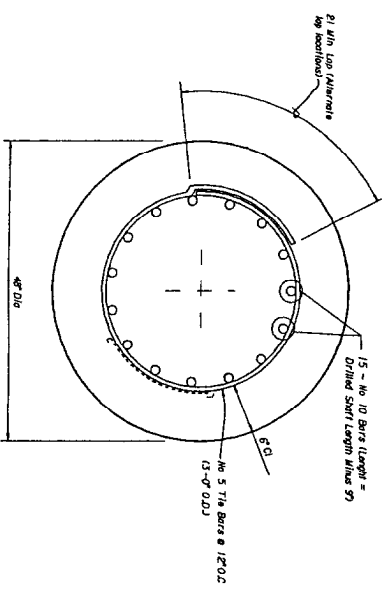
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3	FLA	0000-0000	L-0



DRILLED SHAFT  
10 - REQUIRED

SECTION A-A



QUANTITIES BASED ON CONCRETE = 4639 CY PER LIN FT OF DRILLED SHAFT LENGTH  
REINFORCING STEEL = 1610 LBS PER LIN FT OF DRILLED SHAFT LENGTH

**GENERAL SPECIFICATIONS**  
 Florida Department of Transportation Standard Specifications for Road and Bridge Construction shall apply to all work on this project.  
**DESIGN SPECIFICATIONS**  
 Design in accordance with the 1985 edition of the A.A.S.H.T.O. Standard Specifications for Highway Bridges and Standard Specifications for Structural Steel for Highway Steel Structures and Traffic Signposts with Approved Basic Wind Velocity of 80 M.P.H. on 120 FT High Mast Laminate.  
**MATERIAL STRESSES**  
 Allowable stresses are in accordance with current A.A.S.H.T.O. Standard Specifications for all materials shown in the Plans.  
**CONCRETE**  
 Class III (c=15,000 p.c.i. & 28 Days)  
**REINFORCING STEEL**  
 Reinforcing Steel Shall be Grade 60.  
**ANCHOR BOLTS**  
 For name, diameter, length and load criteria placement of Anchor Bolts See drawing for details. Anchor bolts shall be installed in concrete and shall be galvanized in accordance with ASTM A153, except that anchor bolts fabricated in accordance with ASTM A153 shall be hot-dip galvanized in accordance with ASTM A653.  
**DESIGN REACTIONS**  
 The Contractor shall be responsible for Assuring that the Anchor Bolts fit within the Reinforcing Cage of the Drilled Shaft.  
 The Contractor may increase the Drilled Shaft Foundation Diameter and Reduce Concrete Coverage if required by the High Mast Pole Design at no Additional Cost to the Department of Transportation.  
 The Drilled Shaft is Designed for the following Reaction Applied by the Pole Manufacturer (LDA053) type:  
 If the Contractor Furnishes a Pole which Produces Greater Reactions Under the Drilled Shaft Conditions, the Contractor shall redesign and Submit a Professional Engineer Registered in the State of Florida to the Department for Review and Approval.

REV	DATE	BY	CHKD
3	FLA	0000-0000	L-0

NO.	DESCRIPTION	DATE	BY	CHKD
1	DESIGNED BY			
2	CHECKED BY			
3	APPROVED BY			

FLORIDA DEPARTMENT OF TRANSPORTATION  
 STRUCTURES DESIGN OFFICE  
 HIGH MAST POLE FOUNDATIONS

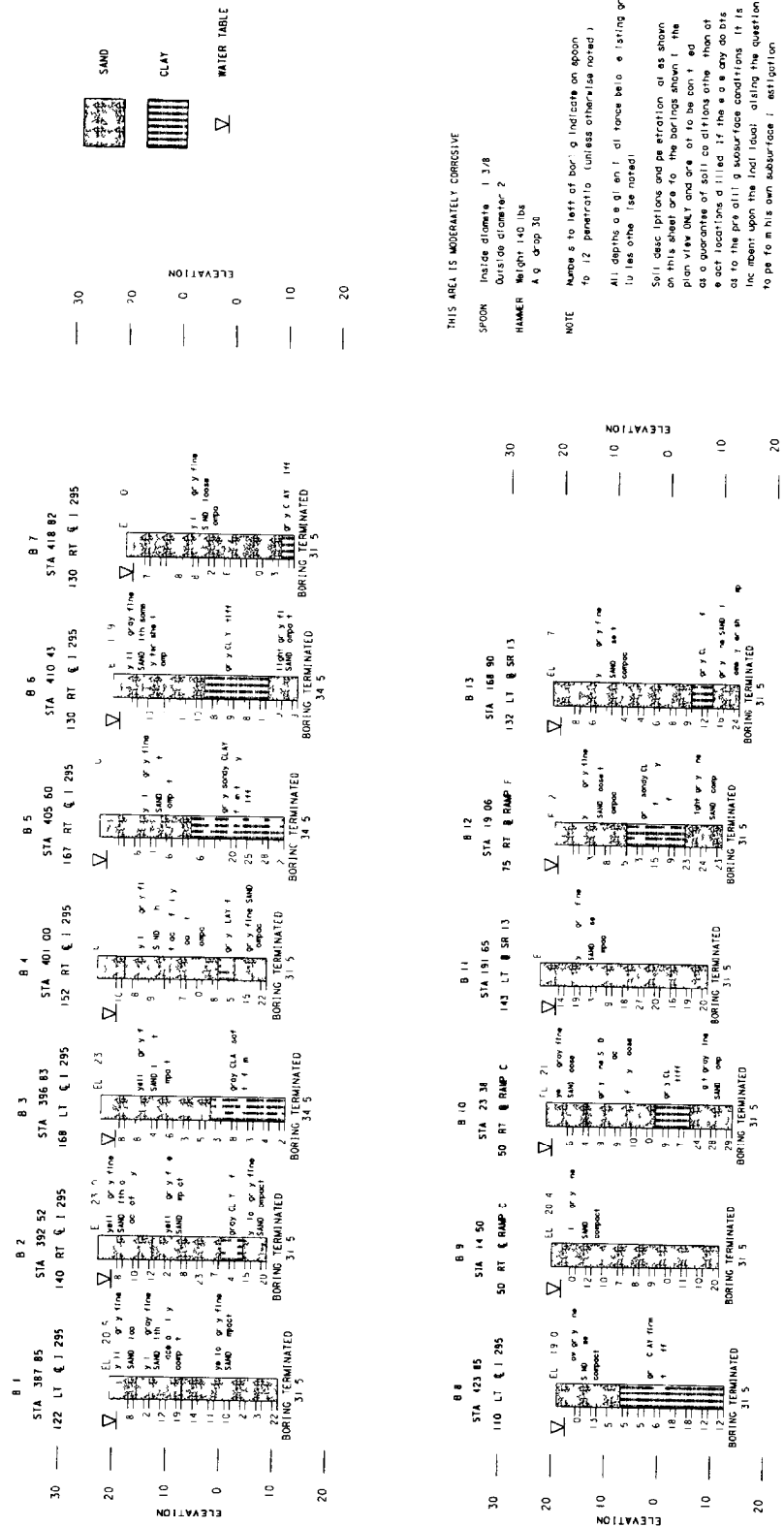
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STATE PROJ. NO. 00000 0000 00



PROFILE  
 SCALE 1" = 10' 0"

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

BORING DATA  
 HIGH MAST LIGHTING

EX-11-25-H

## CHAPTER 26

### HIGHWAY LANDSCAPE

#### 26.1 General

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

#### 26.2 Key Sheet

The key sheet is the first sheet in the set and shall be prepared on a standard key sheet format as mentioned in Chapter 3 of this volume. Contract plans set information shall not be required on this sheet when it is shown on the lead key sheet (usually roadway). Location map and length of project box need not be shown if this information is shown on the lead key sheet of the plans set. Other project data, approval signatures and consultant names shall be shown as described in Chapter 3 of this volume.

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

### 26.3 Tabulation of Quantities

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

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

### 26.4 Standard Details and Notes

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

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

## 26.5 Plan Sheets

### 26.5.1 Format and Scale

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

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

### 26.5.2 Plan Sheets

Base information required on the plan sheets is as follows:

Project Centerline

Edge of Pavement (edge of driving lanes)

Drainage Structures

Guardrails

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

Sidewalks or other planned or existing structures

Overhead and Underground Utility Locations, if known

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

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

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











## CHAPTER 27

### UTILITY CONTRACT PLANS

#### 27.1 General

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

#### 27.2 Key Sheet

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

#### 27.3 Summary of Quantities, Standard Notes and Summary of Pay Items

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

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

#### **27.4 Plan Sheets**

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

## APPENDIX A

### GLOSSARY OF TERMS

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

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

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

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



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

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

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

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

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

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

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

Quality Assurance

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

Quality Control

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

Ramp

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

Range

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

Recovery Area

See "Clear Zone".

Reference Points

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



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

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

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

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

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

Weaving Movement

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

W.P.I. Number

Work Program Item number (assigned by the Department).

## VOLUME II

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