Design Standards Interim

2000

English

Office of Design

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Design Standards 2000 Interim

Interim Standard Index Sheets are to be included in FDOT construction plans, maintenance contracts and permits which are used to update the Standard Index Booklet to which they are referenced. They are in **Adobe** format. The default print size is 11x17 on the Page Set-up option. Typical file sizes are between 72kb to 1756kb, with most being under 500k. Entire groups may be printed by selecting the group name when shown as a link. Bentley's Microstation design file format is NOT available for distribution. Other Indexes may be revised by **Design Standards Modifications**.

For questions, please email **Alan Hart, P.E.**

A prefix of "O" indicates a modification to an existing Index or Interim Index which requires a sheet replacement. Index Numbers preceded by an asterisk symbol (*) indicates the dimensions of the drawings are in English units only and will apply to both English and Metric projects.

* ENGLISH *

Index#	Sheet#	Filename	Description	Index Date
0205	2 of 5	ei0205s2of5.pdf	**Cover Height** - Revised 12/05/00: Revised D-Loads for Round Concrete Pipe.	12/05/00
0216	1-3 of 3	ei0216.pdf	**Closed Flume Inlet** - Revised 12/04/00: Added details for multiple barrel flumes to handle large flow situations.	12/04/00
*0304	2 of 5	ei0304s2of5.pdf	**Public Sidewalk Curb Ramps** - Revised 7-10-01 - Added Detail for Pavement Relief at Lip of Curb	07/10/01
0400	13 of 31	ei0400s13of32	Revised 7-10-01 - Detail E - Replacement sheet.	07/10/01
*0400	30 of 31	ei0400s30of31	**End Anchorage Assembly Type FLEAT-350** - Replacement sheet for Index No. 400, sheet No. 30 of 31. Flare rate revised and standard guardrail panel downstream realigned. Restriction for limiting use to one-way and divided multilane facilities removed.	11/28/00
*0400	1 of 1	ei0400s1of1.pdf	**End Anchorage Assembly Type SRT/HBA-6 POST SYSTEM** - This sheet is a supplement to Index No. 400	03/26/01
*0435	2 of 6	ei0435s2of6.pdf	**QuadGuard** - Revised 7-10-01 - Foundation modified	07/10/01

*0440	1-5 of 5	ei0440.pdf	**TRACC Systems** - Revised 02/14/01: Index is a replacement for Index No. 440 and Interim Index No. 0440, sheet 1-4 of 4. This Index expanded to include low and high speed modules. Revised 04/10/01 : Sheet 2 of 5 - Departure Line notation modified. Revised 05/04/01 : Sheet 1 of 5 General Note 7 revised. Design Note 2 revised	05/04/01
0501	1 of 1	ei0501s6of8.pdf	**Geosynthetic Reinforced Soils** - This sheet is a supplement to Interim Index No. 501, sheet 6 of 8	02/28/01
0505	1 of 3	ei0505.pdf	**Embankment Utilization** - Revised 11-14-01 - Double asterisk (**) footnote revised. Index required in plans let to contract beginning January 2003. Use of the index prior to the letting beginning January 2003 will be at the Districts discretion. for projects that do not involve rigid pavement construction, only sheet 1 of 3 needs to be included in the plans.	11/14/01
*0518	2 of 2	ei0518s2of2.pdf	**Ground-In Rumble Strips** - Replacement sheet for Index 518, sheet No. 2 of 2. Rumble strip moved four inches (4") closer to edge of travel lanes. Friction course width on shoulder reduced to eight inches (8"). By general note, rumble strips required on limited access facilities.	11/28/00
*670	1 of 1	ei670.pdf	**Motorist Awareness System** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 10, Section 10.17.	11/28/00
*17515 017515	1-7 of 7 1-7 of 7	ei17515.pdf ei017515r2.pdf	**Aluminum Light Pole** - New Index Revised 7-10-01 - Replaces Index 17515	09/26/00 07/12/01
*17723	1-3 of 3	ei17723.pdf	**Steel Strain Pole** - New Index	09/26/00
*017725	1 of 1	ei017725.pdf ei017725r2.pdf	**Concrete Poles** - Supplement sheet for use when Type VIII poles are called for in the plans. Revised 7-10-01 - Revised Supplement Sheet for use when Type VIII poles are called for in plans.	04/20/00 07/10/01
*17740 017740	1-2 of 2 1-2 of 2	ei17740.pdf ei017740.pdf	**Instructions and Examples for Designers and Fabricators of Standard Mast Arm Assemblies** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17740	04/20/00 Reformatted 08/24/00 07/12/01
*17742 017742	1 of 1 1 of 1	ei17742.pdf ei017742.pdf	**Component Data for Standard Mast Arm Assemblies** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. Revised 05/05/00: POLE, CONNECTION AND SHAFT DESIGN Table, UPRIGHT BASE CONNECTION Field - Column BF specifying anchor bolt embedment depth added. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17742	04/20/00 Revised: 05/05/00 Reformatted 08/24/00 07/12/01
*17744 017744	1-5 of 5 1-5 of 5	ei17744.pdf ei017744.pdf	**Mast Arm Assemblies** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I,	04/20/00

			Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. Revised 01/03/01: Sheet 1 of 5 - Note 18 added Revised 02/20/01: Sheet 2 of 5 - Terminal Compartment details to Section E-E modified. Revised 02/20/01: Sheet 2 of 4 - Section X-X deleted, Section E-E substituted. Revised 02/13/01: Sheet 4 of 5 - Details "O" - Weld symbol modified. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17744	Revised: 01/03/01 Reformatted 08/24/00 07/12/01
*17746 017746	1-4 of 4 1-4 of 4	**ei17746.pdf** **ei017746.pdf**	**Monotube Signal Structure** - New Index Revised 02/20/01: Sheet 1 of 4, Note1 - ASTM revised. Sheet 1 of 4 - Note 16 added. Sheet 1 of 4 - Aluminum Identification Tag description modified. Sheet 2 of 4 - Internally Illuminated Sign size modified. Sheet 4 of 4 - Section X-X deleted, Section E-E substituted. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17746	09/26/00 Reformatted 08/24/00 07/10/01
Special Details - English The following .exe files are self extracting files containing Microstation□design files.				
-	1 of 1	**eiMastArm.exe**	**Mast Arm Tabulation sheets** - Complete and insert sheet(s) when mast arms are called for in the plans.	04/20/00

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

ROUND PIPE DIMENSIONS

Equiv. Dia. (In.)	Area (Sq. Ft.)	Wall Thickness (In.)* Classes II, III, IV, V		
		A WALL	B WALL	C WALL
12	0.8	1 3/4	2	NA
15	1.2	1 7/8	2 1/4	NA
18	1.8	2	2 1/2	NA
24	3.1	2 1/2	3	3 3/4
30	4.9	2 3/4	3 1/2	4 1/4
36	7.1	3	4	4 3/4
42	9.6	3 1/2	4 1/2	5 1/4
48	12.6	4	5	5 3/4
54	15.9	4 1/2	5 1/2	6 1/4
60	19.6	5	6	6 3/4
66	23.8	5 1/2	6 1/2	7 1/4
72	28.3	6	7	7 3/4
78	33.2	6 1/2	7 1/2	8 1/4
84	38.5	7	8	8 3/4
90	44.4	7 1/2	8 1/2	9 1/4
96	50.3	8	9	9 3/4
102	56.7	8 1/2	9 1/2	10 1/4
108	63.7	9	10	10 3/4
114	70.9	9 1/2	—	—
120	78.5	10	—	—

* For Informational Purposes Only
Do Not Specify Wall Thickness
Option B Wall Is Industry Standard

ELLIPTICAL PIPE DIMENSIONS

Nominal Dimensions				Equiv. Dia. (In.)	Area (Sq.Ft.)	Wall Thickness (In.)
Horiz.		Vert.				
Rise (In.)	Span (In.)	Rise (In.)	Span (In.)			Classes HE II, III, IV VE II, III, IV
NA	NA	NA	NA	12	NA	NA
12	18	18	12	15	1.3	2 1/2
14	23	23	14	18	1.8	2 3/4
19	30	30	19	24	3.3	3 1/4
24	38	38	24	30	5.1	3 3/4
29	45	45	29	36	7.4	4 1/2
34	53	53	34	42	10.2	5
38	60	60	38	48	12.9	5 1/2
43	68	68	43	54	16.6	6
48	76	76	48	60	20.5	6 1/2
53	83	83	53	66	24.8	7
58	91	91	58	72	29.5	7 1/2
63	98	98	63	78	34.6	8
68	106	106	68	84	40.1	8 1/2
72	113	113	72	90	46.1	9
77	121	121	77	96	52.4	9 1/2
82	128	128	82	102	59.2	10
87	136	136	87	108	66.4	10 1/2
92	143	143	92	114	74.0	11
97	151	151	97	120	82.0	11 1/2

For Informational Purposes Only

ROUND PIPE INSTALLATIONS

PIPE DIAMETER	Maximum Height of Fill (ft)					
	Class S	Class I	Class II	Class III	Class IV	Class V
12"-30"	9	13	17	24	36	55
36"-54"	8	12	16	22	34	52
60"-78"	7	11	15	21	33	51
84"-96"	6	10	14	20	32	49

Pipe Class S	D-Load = 600 Lbs/Ft/Ft (.01" Crack) D-Load = 900 Lbs/Ft/Ft (Ultimate)
Pipe Class I	D-Load = 800 Lbs/Ft/Ft (.01" Crack) D-Load = 1200 Lbs/Ft/Ft (Ultimate)
Pipe Class II	D-Load = 1000 Lbs/Ft/Ft (.01" Crack) D-Load = 1500 Lbs/Ft/Ft (Ultimate)
Pipe Class III	D-Load = 1350 Lbs/Ft/Ft (.01" Crack) D-Load = 2000 Lbs/Ft/Ft (Ultimate)
Pipe Class IV	D-Load = 2000 Lbs/Ft/Ft (.01" Crack) D-Load = 3000 Lbs/Ft/Ft (Ultimate)
Pipe Class V	D-Load = 3000 Lbs/Ft/Ft (.01" Crack) D-Load = 3750 Lbs/Ft/Ft (Ultimate)

Note: At the option of the pipe supplier or the contractor, a Pipe Class with greater strength may be substituted for the Pipe Class designated in the plans.

ELLIPTICAL PIPE INSTALLATIONS (All Sizes)

Installation	Maximum Height Of Fill (Ft.)	Pipe Class	Bedding Class
Horizontal	1-6* 7-10 11-16 17+	HE II* HE III HE IV Special Design	C C C Modified
Vertical	1-6* 7-10 11-16 17+	VE II* VE III VE IV Special Design	C C C Modified

Pipe Class HE II And VE II	D-Load = 1000 Lbs/Ft/Ft (.01" Crack) D-Load = 1500 Lbs/Ft/Ft (Ultimate)
Pipe Class HE III And VE III	D-Load = 1350 Lbs/Ft/Ft (.01" Crack) D-Load = 2000 Lbs/Ft/Ft (Ultimate)
Pipe Class HE IV And VE IV	D-Load = 2000 Lbs/Ft/Ft (.01" Crack) D-Load = 3000 Lbs/Ft/Ft (Ultimate)

*Note: HE III and VE III pipe required for depths of cover less than 2' for 15", 18" and 24" equivalent.

PIPE DIMENSIONS
CONCRETE PIPE

MAXIMUM COVER HEIGHTS
CONCRETE PIPE

Note: Height of fill (maximum cover) is measured from top of finished grade to outside top of pipe.

POLYETHYLENE PIPE	
DIAMETER	HEIGHT OF MAXIMUM FILL (Ft)
12"-48"	17'

POLYVINYL CHLORIDE PIPE	
DIAMETER	HEIGHT OF MAXIMUM FILL (Ft)
12"-48"	17'

MAXIMUM COVER FOR PLASTIC PIPE

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-05-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

COVER HEIGHT

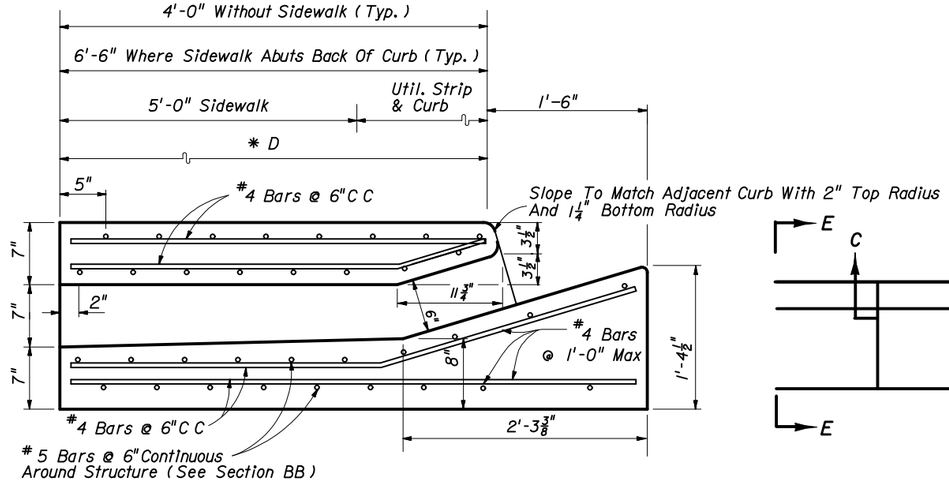
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR SHEET 2 OF 5 INDEX 205 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLETS DATED JANUARY 2000

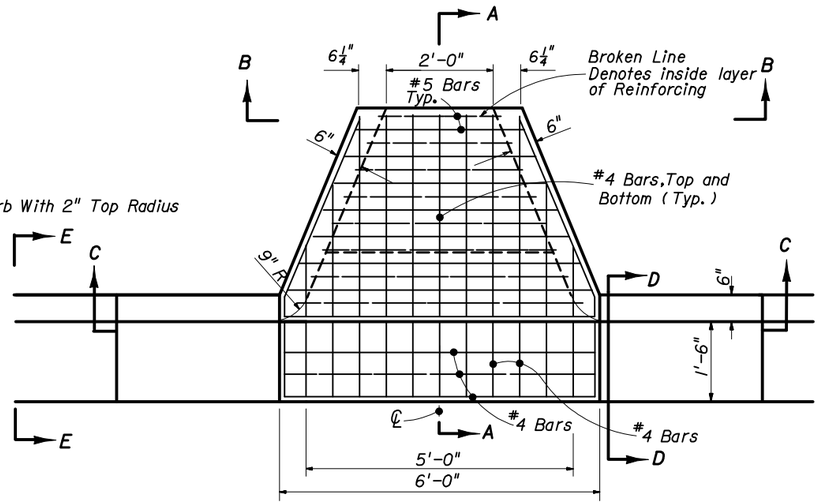
APPROVED BY D. A. McLemore
State Drainage Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 5	0205

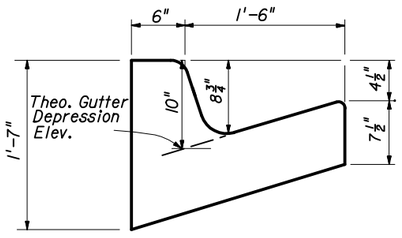
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION AA



TOP VIEW



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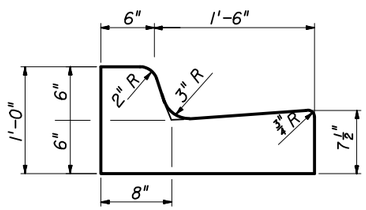
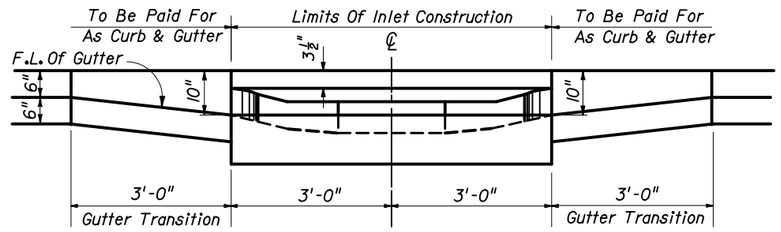


Curb And Gutter Type F

SECTION EE



SECTION CC

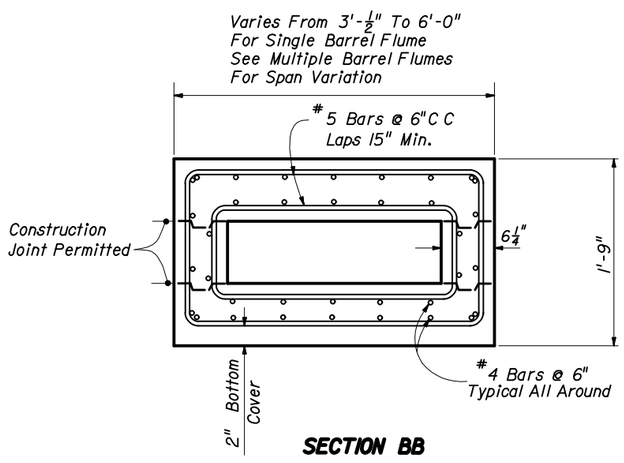
SINGLE BARREL FLUME

GENERAL NOTES

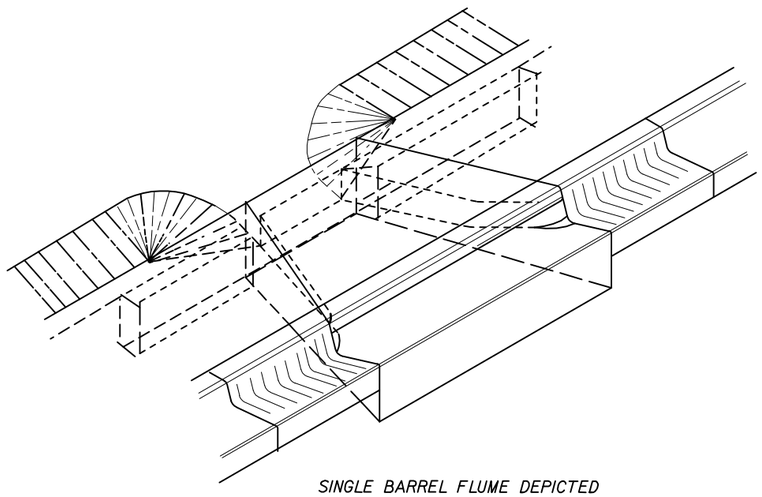
1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. When inlets are to be constructed on a curve, refer to the plans to determine the radius and, where necessary, modify the inlet details accordingly. Bend steel when necessary.
3. All steel shall have 1¼" minimum cover unless otherwise shown. Inlets can be either cast-in-place or precast concrete.
4. All reinforcement is ASTM A615/A615M Grade 60 steel, either smooth or deformed. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.
5. Precasting of this inlet will be permitted. Precast units shall conform to the dimensions shown or in accordance with approved shop drawings. Request for shop drawing approval shall be directed to the State Drainage Engineer.
6. Inlets to be paid for under the contract unit price for Inlets (Closed Flume) EA.

DESIGN NOTES

1. These inlets are designed for use with Type F curb and gutter only. The Single Barrel Flume is intended for locations with light to moderate flows. Multiple Barrel Flumes must be selected to meet design heavy flows.
2. Designer must specify Flume Type, "D" dimension and number of barrels in plans.
3. Designer must specify where energy dissipating bricks are required.



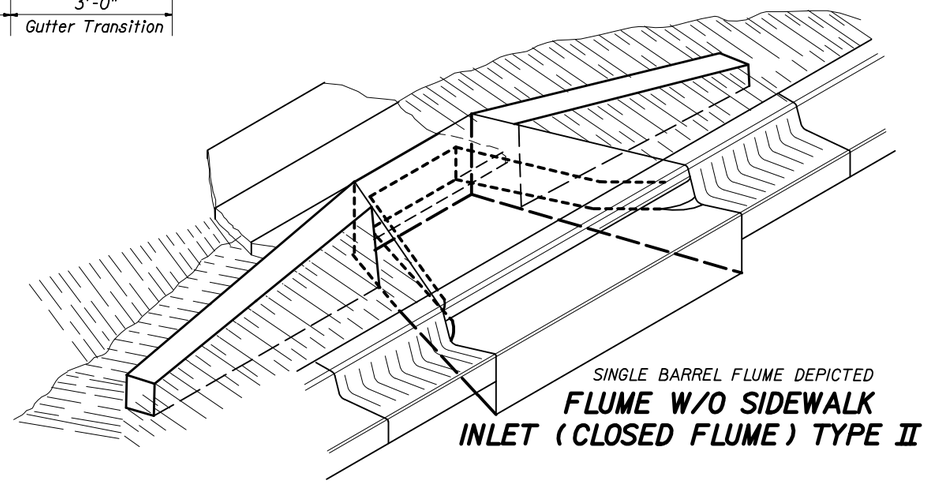
SECTION BB



SINGLE BARREL FLUME DEPICTED

FLUME W/SIDEWALK

INLET (CLOSED FLUME) TYPE I



SINGLE BARREL FLUME DEPICTED

FLUME W/O SIDEWALK

INLET (CLOSED FLUME) TYPE II

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12/04/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CLOSED FLUME INLET

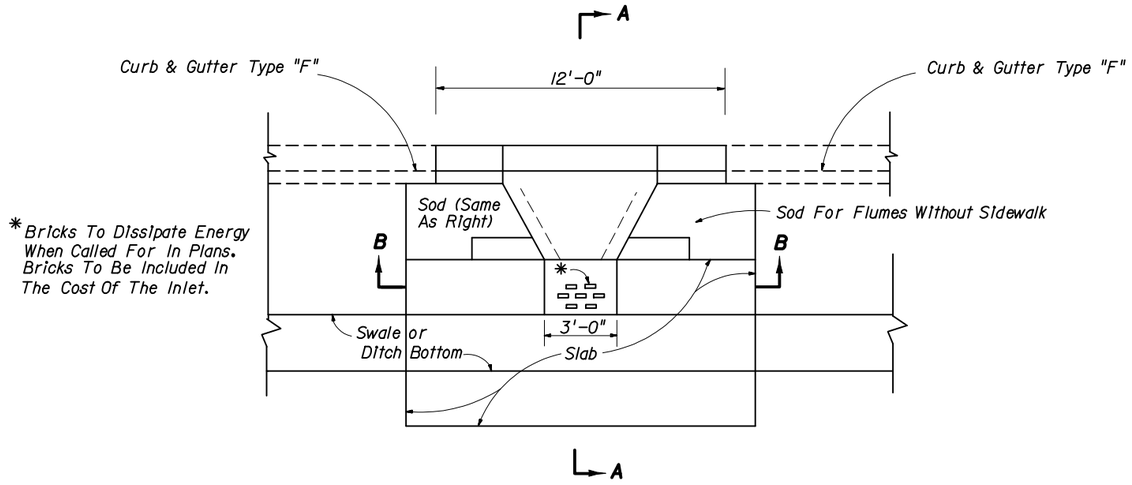
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY S a McLemore
State Drainage Design Engineer

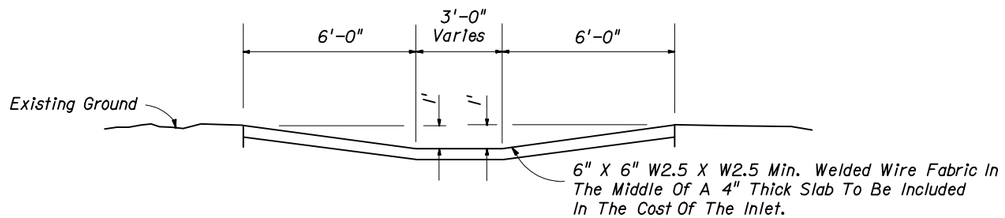
REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 3	0216

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



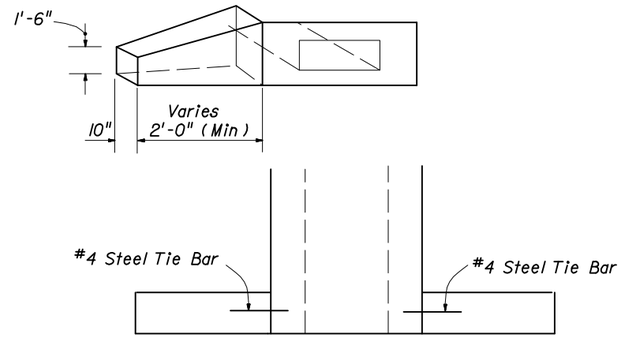
SINGLE BARREL FLUME DEPICTED

PLAN



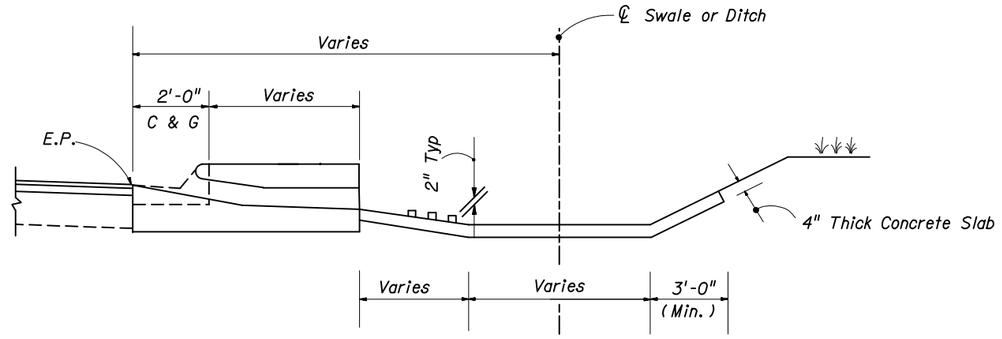
SINGLE BARREL FLUME DEPICTED

SECTION BB



SINGLE BARREL FLUME DEPICTED

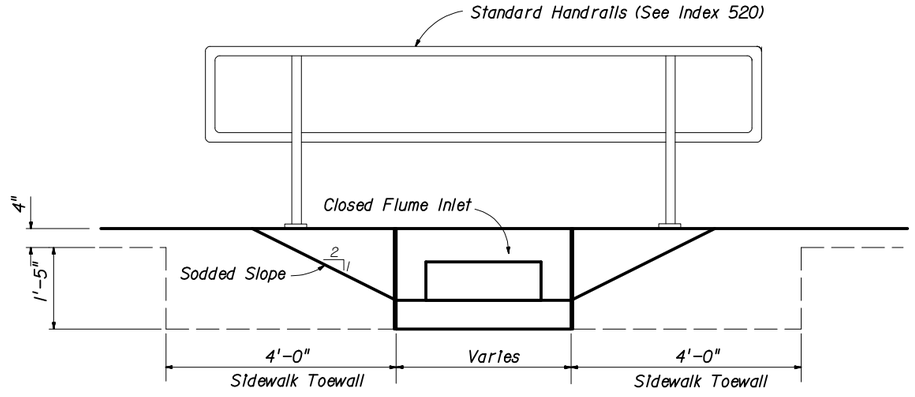
ENDWALL



Ditch Pavement To Be Adjusted When Inlet Present

SECTION AA

SLOPES, DITCH APRON AND ENDWALLS



SINGLE BARREL FLUME DEPICTED

ELEVATION

HANDRAIL FOR FLUME IN SIDEWALK

GENERAL NOTES

1. Chamfer all exposed edges $\frac{3}{4}$"

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

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Revised: 12/04/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CLOSED FLUME INLET

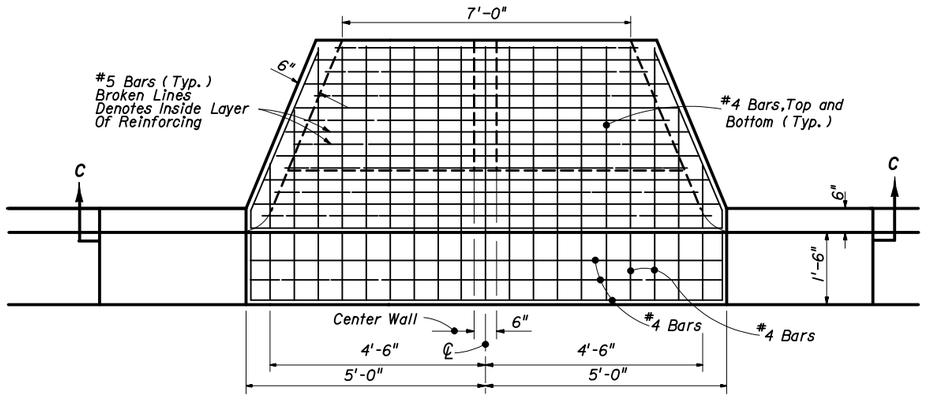
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

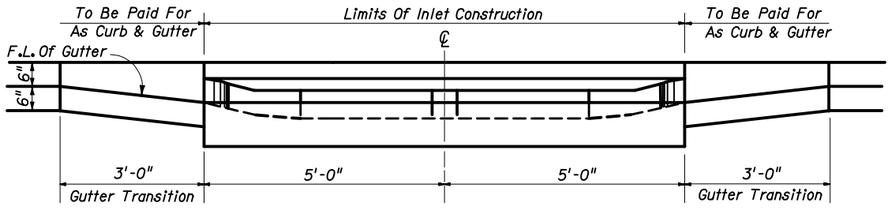
APPROVED BY S. A. McLemore
State Drainage Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 3	0216

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

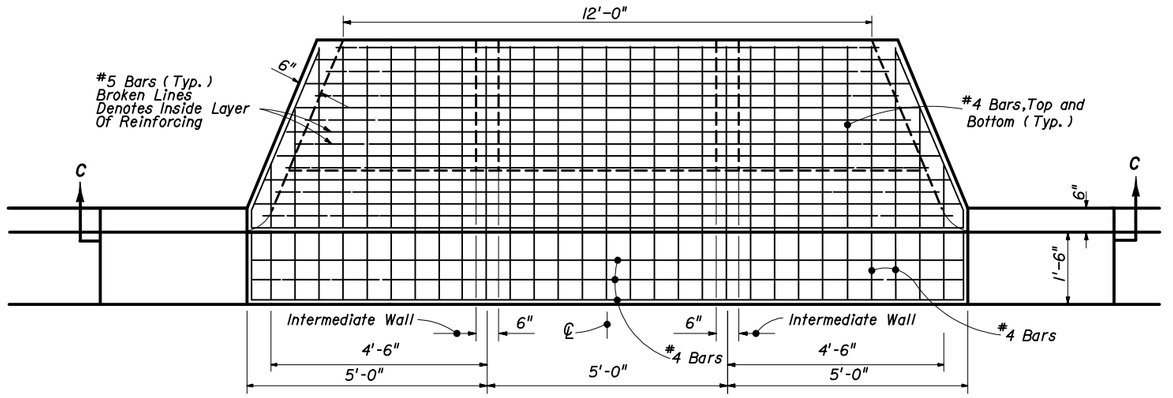


TOP VIEW

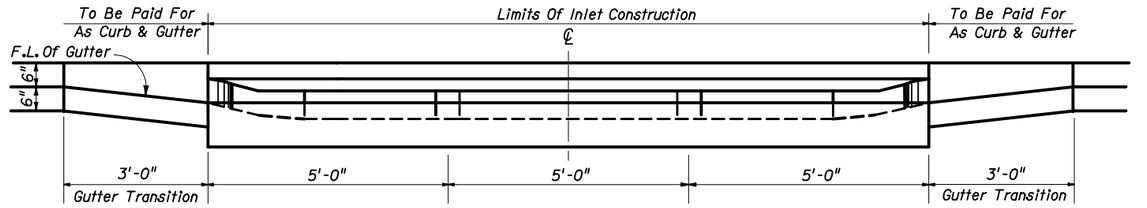


SECTION CC

DOUBLE BARREL FLUME

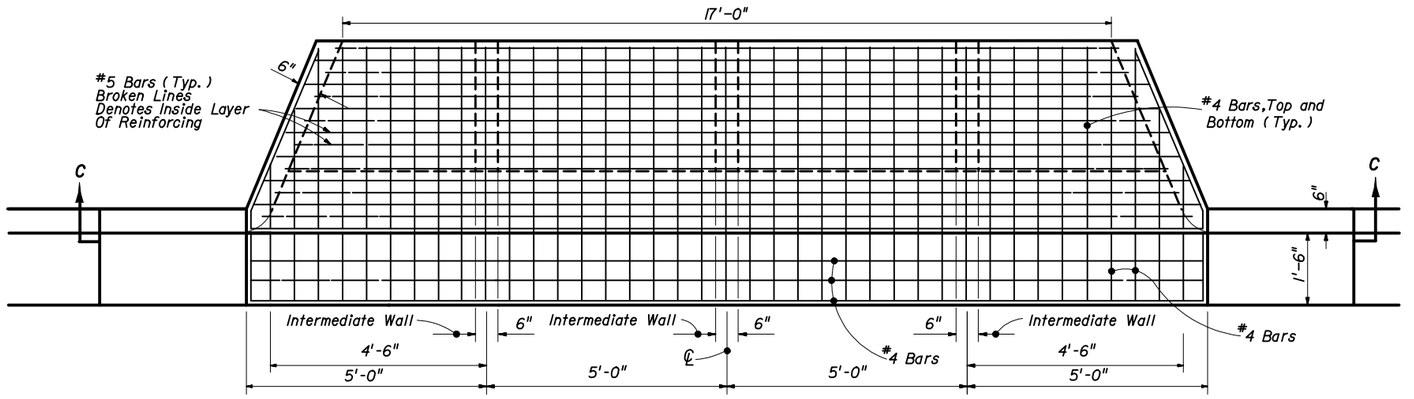


TOP VIEW

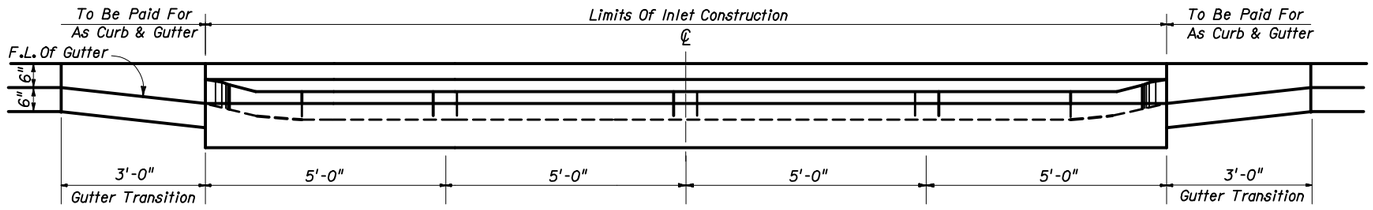


SECTION CC

TRIPLE BARREL FLUME

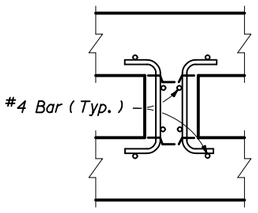


TOP VIEW



SECTION CC

QUADRUPLE BARREL FLUME



INTER WALL REINFORCING

NOTE: See Single Barrel Flume For Base Dimensions.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12/04/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CLOSED FLUME INLET

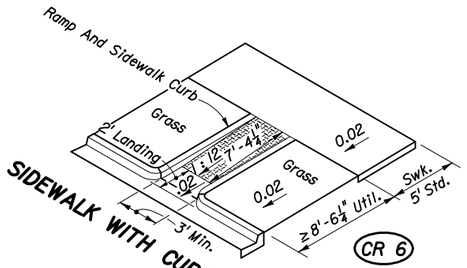
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY S. a. McLemore
State Drainage Design Engineer

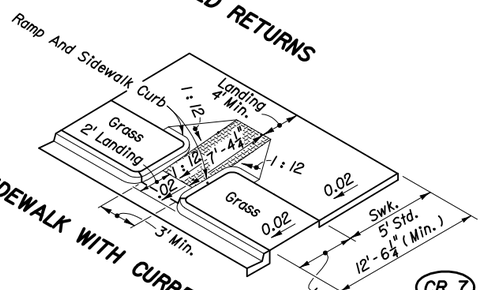
REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 3	0216

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SIDEWALK WITH CURBED RETURNS

CR 6



SIDEWALK WITH CURBED RETURNS

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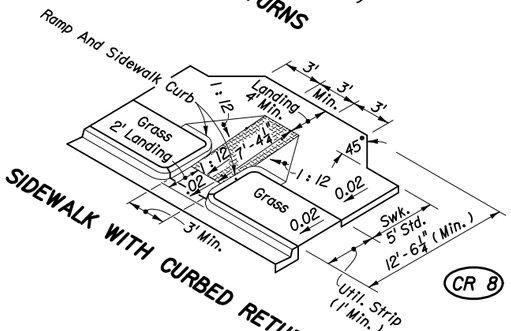

SIDEWALK WITH CURBED RETURNS

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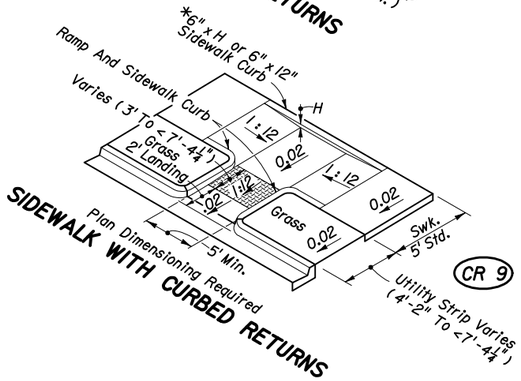
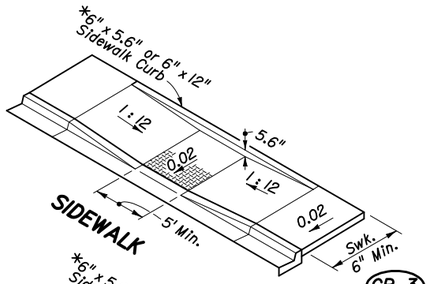


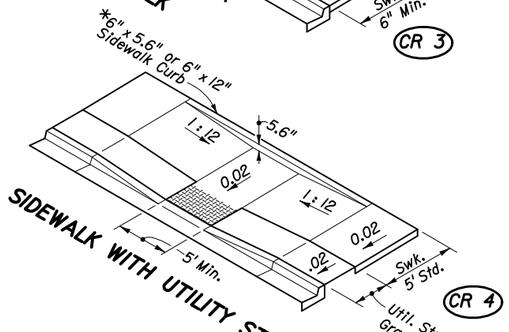
SIDEWALK WITH CURBED RETURNS

CR 9



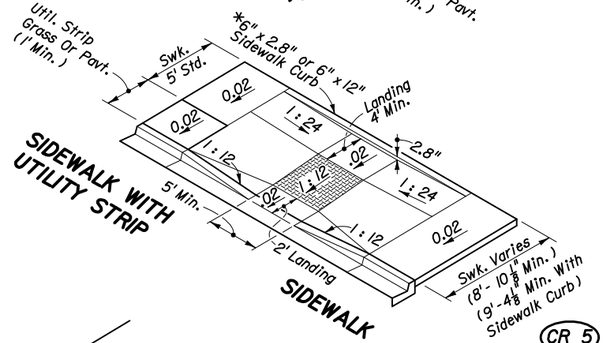
SIDEWALK

CR 3



SIDEWALK WITH UTILITY STRIP

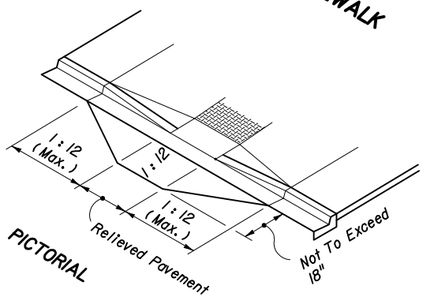
CR 4



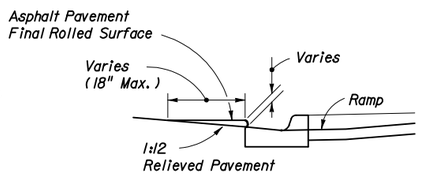
SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 5



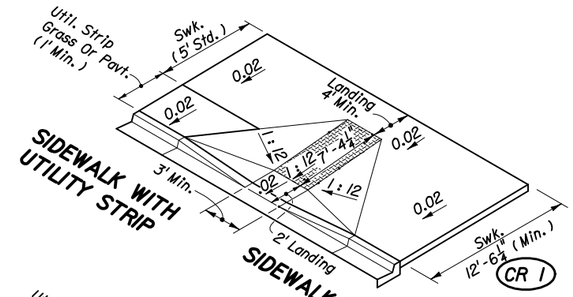
PICTORIAL



Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or, Grinding

SECTION

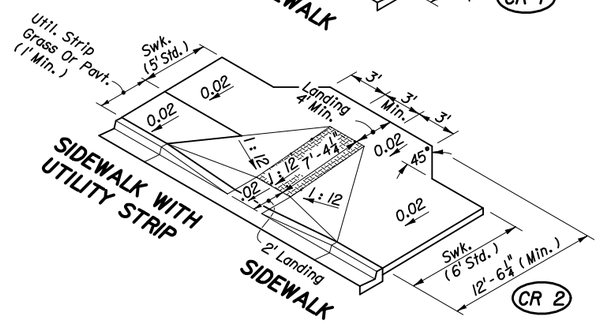
PAVEMENT RELIEF AT LIP OF CURB



SIDEWALK WITH UTILITY STRIP

SIDEWALK

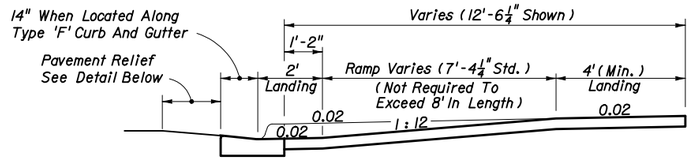
CR 1



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 2



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	0304

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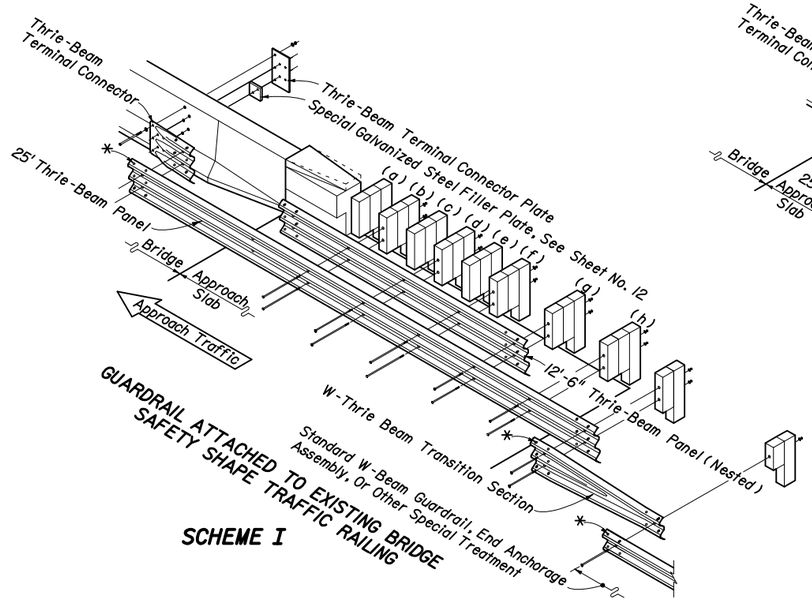
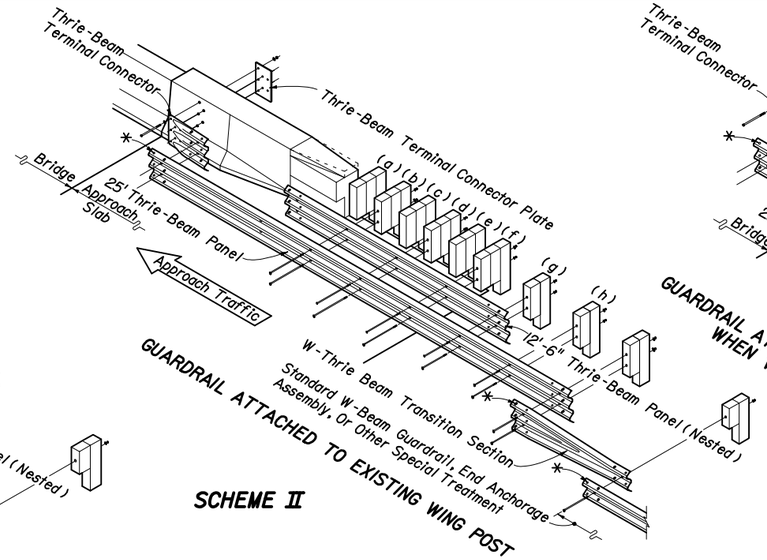


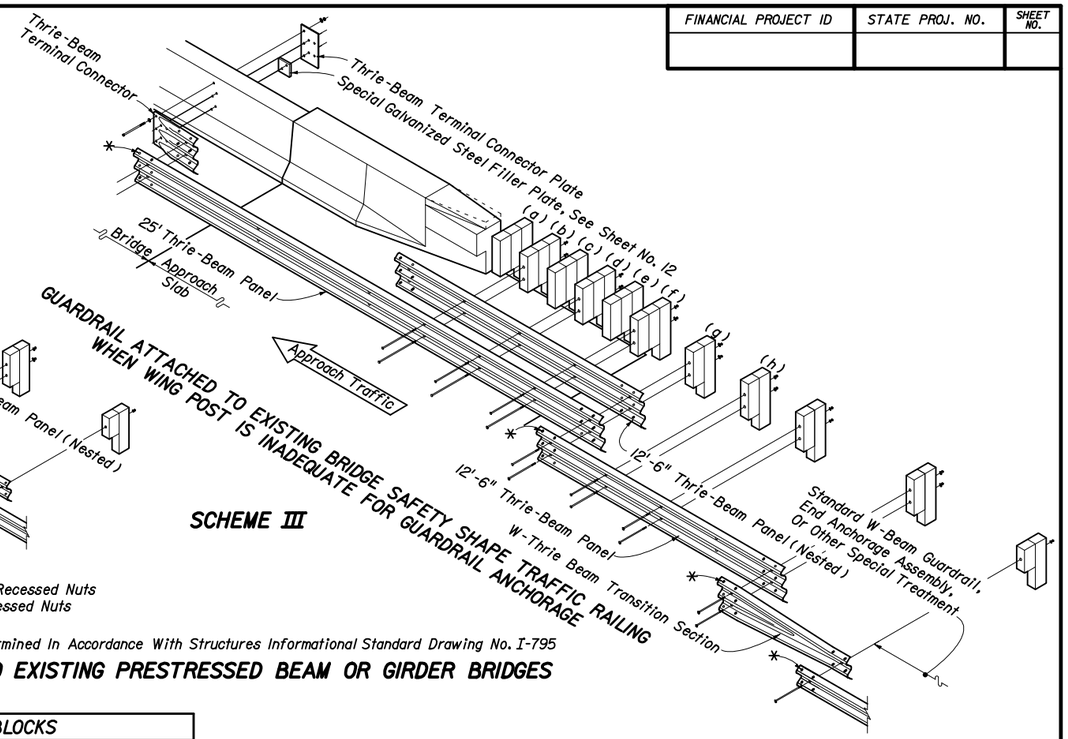
SCHEME I

GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING



SCHEME II

GUARDRAIL ATTACHED TO EXISTING WING POST



SCHEME III

GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING WHEN WING POST IS INADEQUATE FOR GUARDRAIL ANCHORAGE

* Splice Locations: Thrie-Beam - 12 Guardrail Splice Bolts And Recessed Nuts
W-Beam - 8 Guardrail Splice Bolts And Recessed Nuts

Use Of Scheme I Shall Be Determined
In Accordance With Structures Informational Standard Drawing No. I-790

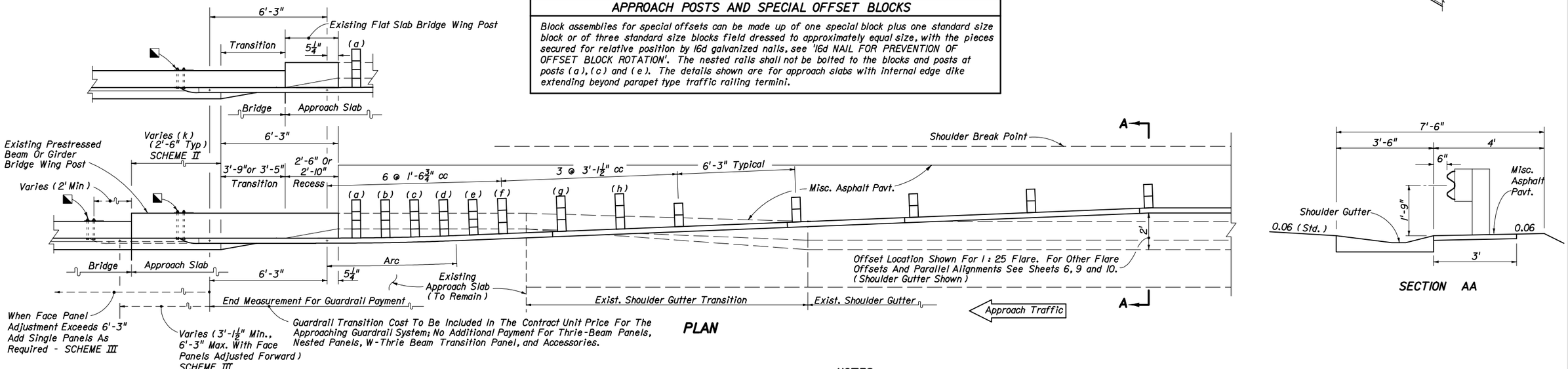
GUARDRAIL TRANSITION TO EXISTING FLAT SLAB BRIDGES

Use Of Schemes II And III Shall Be Determined In Accordance With Structures Informational Standard Drawing No. I-795

GUARDRAIL TRANSITIONS TO EXISTING PRESTRESSED BEAM OR GIRDER BRIDGES

APPROACH POSTS AND SPECIAL OFFSET BLOCKS

Block assemblies for special offsets can be made up of one special block plus one standard size block or of three standard size blocks field dressed to approximately equal size, with the pieces secured for relative position by 16d galvanized nails, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION'. The nested rails shall not be bolted to the blocks and posts at posts (a), (c) and (e). The details shown are for approach slabs with internal edge dike extending beyond parapet type traffic railing termini.



PLAN

SECTION AA

◥ 21" x 12" x ⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞"Ø x 18" Long (15" Long For Bridge Safety Shape Railing) HS Hex Bolts And Nuts (5 Reqd.) With 2¼" OD Plain Round Washers Under Heads And Nuts. (When Attaching Guardrail To Existing Wing Posts Or Bridge Rails, Care Should Be Exercised To Avoid Damaging Conduits And Their Utilities That May Be Routed Through Wing Posts Or Bridge Rails. When Conduits And Their Utilities Are Encountered, At Least Five ⅞" HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.)

NOTES

1. When the existing wing post is to be replaced with a bridge traffic railing barrier in accordance with Structure Standard Drawings No. I-790 or No. I-795, the thrie-beam guardrail connection shall be in accordance with Detail J.
2. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR EXISTING FLAT SLAB, PRESTRESSED BEAM AND GIRDER BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

DETAIL E

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GUARDRAIL

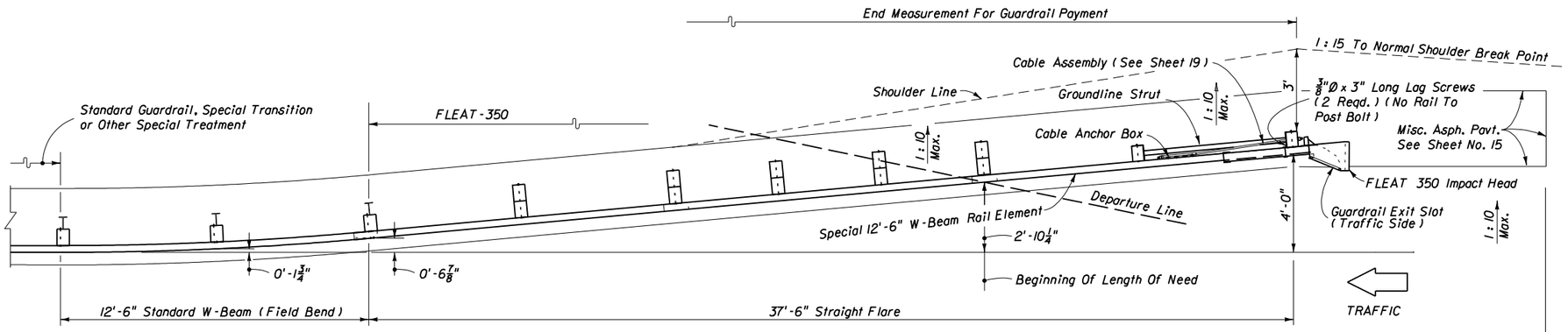
INTERIM STANDARD

THIS SHEET REPLACES SHEET 13 of 31 OF INDEX 400 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

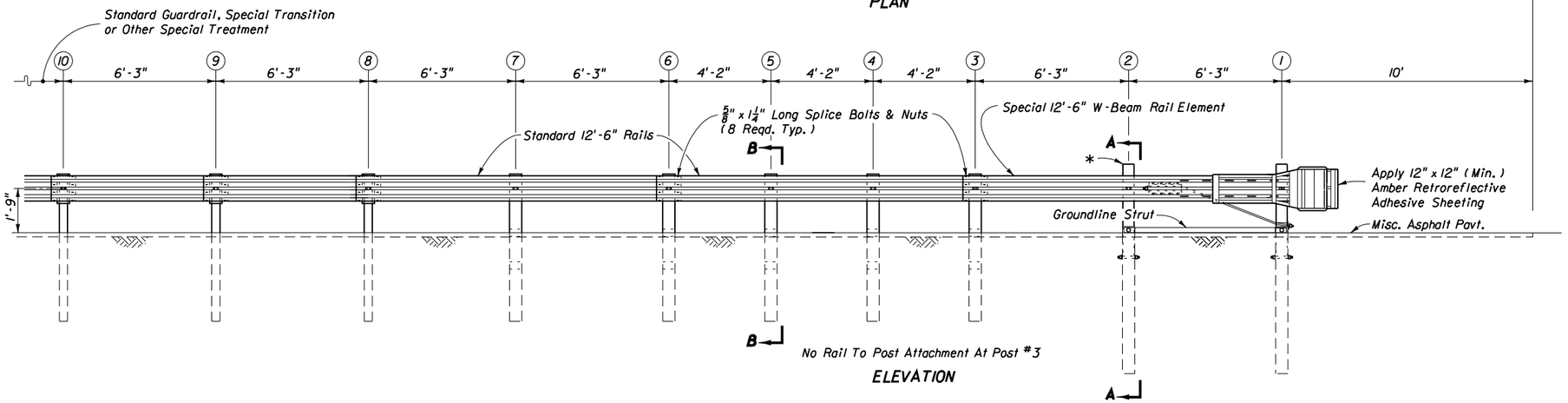
REVISION NO.	SHEET NO.	INDEX NO.
	13 of 31	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



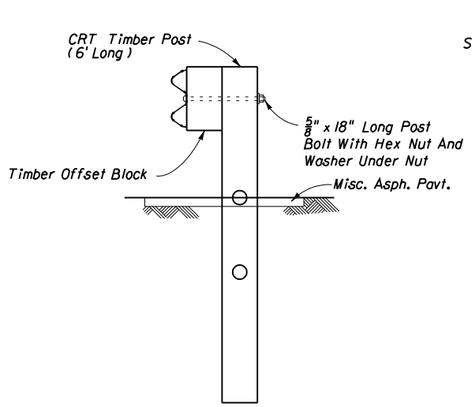
No Rail To Post Attachment At Post #3

PLAN



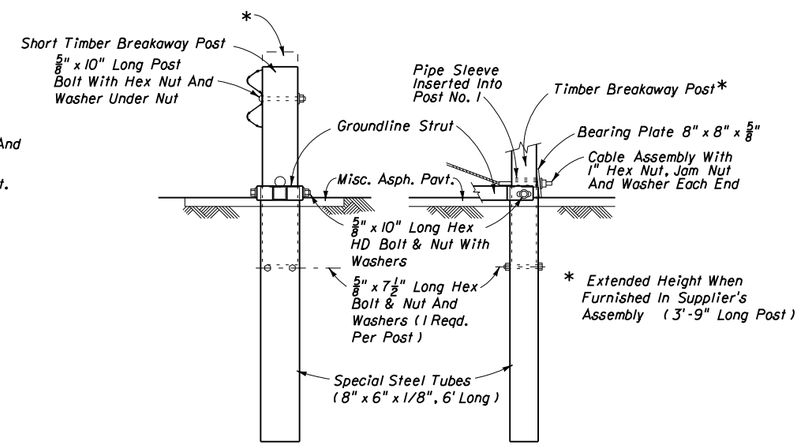
No Rail To Post Attachment At Post #3

ELEVATION



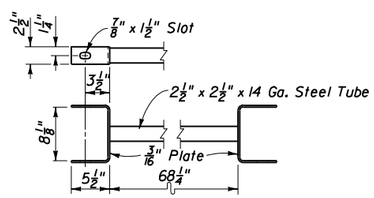
Note: Do not attach rail to block at post location 3.

SECTION BB
TYPICAL POST NOS. 3, 4, 5, 6 AND 7

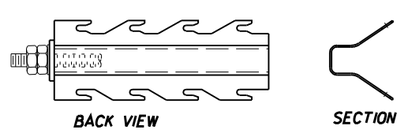


SECTION AA
POST NO. 2

PARTIAL VIEW
POST NO. 1



GROUNDLINE STRUT



BACK VIEW **SECTION**

Cable Anchor Bracket Is Attached To W-Beam Panel By 8 Shoulder Bolts

CABLE ANCHOR BOX

'FLEAT-350' NOTES

1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Road Systems, Inc. and marketed under the trade name FLEAT-350. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the FLEAT-350 and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the FLEAT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The FLEAT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The FLEAT-350 is intended for use as an approach end guardrail anchorage for shoulder guardrail. The effective length of the FLEAT-350 is 37.5' including one 12.5' special W-Beam panel plus two 12.5' standard W-Beam panels outside of any other standard guardrail, guardrail transitions or other special treatments. The alignment of the FLEAT-350 is a straight flare with an upstream offset of 4' and a downstream offset of 0'-6 7/8" from the normal guardrail alignment.
5. The FLEAT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
6. Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6, and 7 shall be CRT timber posts.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'FLEAT-350' at a specific location, substitution with other end anchorage assemblies will not be permitted unless approved by the Engineer . If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The FLEAT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

DESIGN NOTES

1. The FLEAT-350 is suitable for all design speeds.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

END ANCHORAGE ASSEMBLY TYPE FLEAT-350

REVISED 11/27/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GUARDRAIL

INTERIM STANDARD

APPROVED BY
Roadway Design Engineer

THIS SHEET IS A REPLACEMENT FOR SHEET NO. 30 OF 31 OF INDEX NO. 400 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
00	30 of 31	0400

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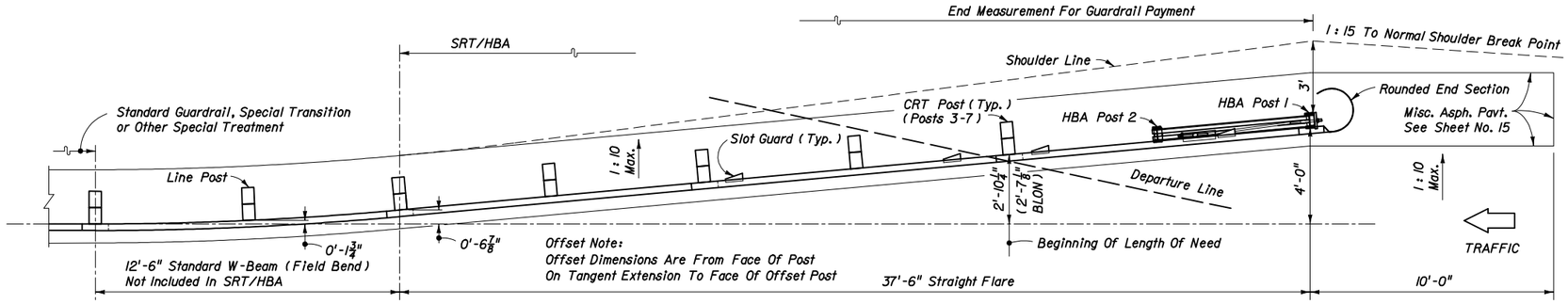
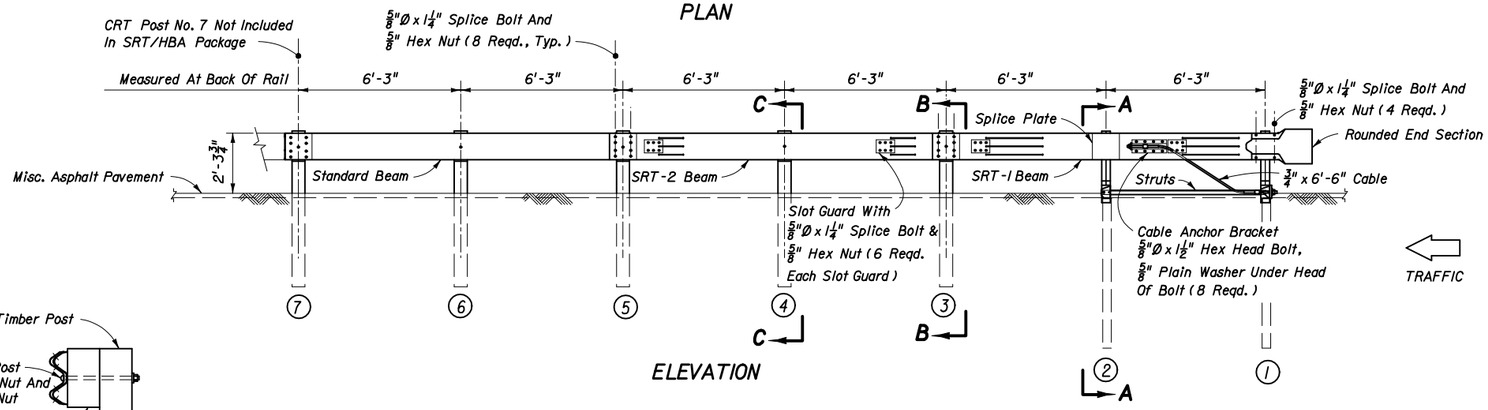
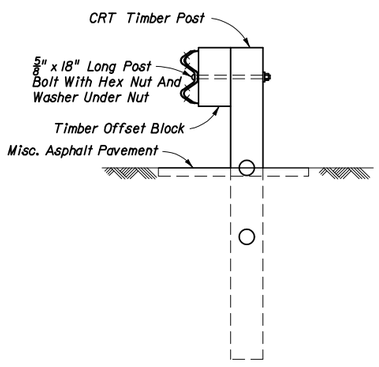


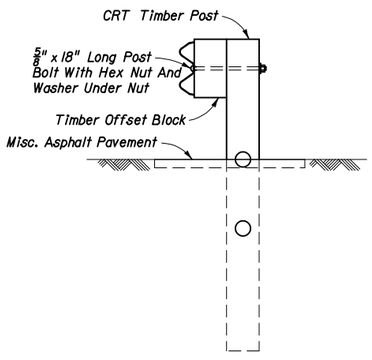
PLAN



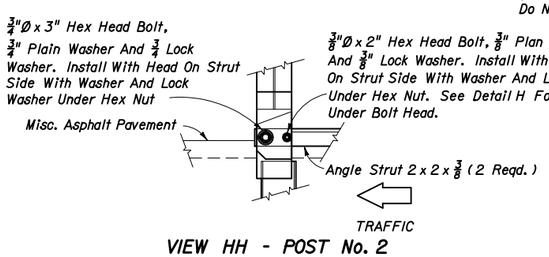
ELEVATION



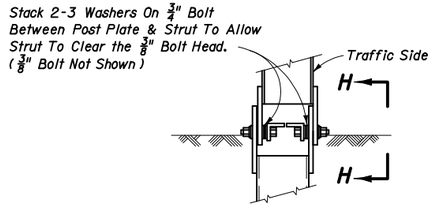
SECTION BB
POST Nos. 3 & 5



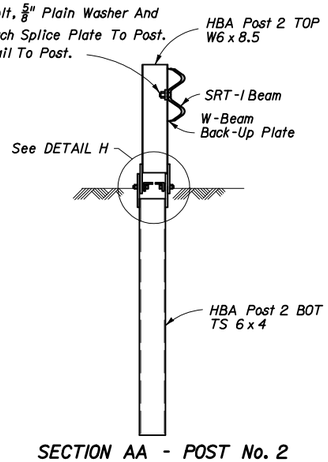
SECTION CC
POST Nos. 4 & 6



VIEW HH - POST No. 2



DETAIL H - POST No. 2



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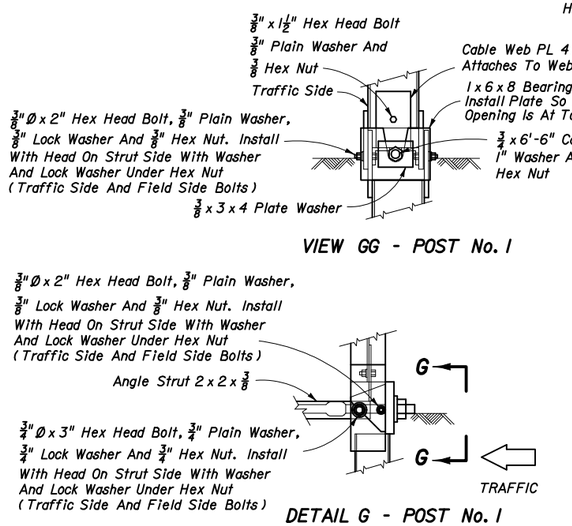
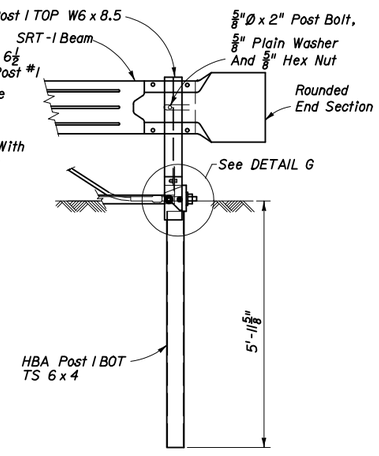


VIEW GG - POST No. 1

DETAIL G - POST No. 1



HBA POST 1

SRT/HBA 6 POST SYSTEM NOTES

1. The guardrail end anchorage system represented on this drawing is a proprietary six (6) post design by Trinity Industries, Inc. and marketed by Syro, Inc. under the trade name SRT/HBA 6 Post. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SRT/HBA 6 Post and their incorporation into a whole system.
3. This drawing is sufficient for plan details for the SRT/HBA 6 Post when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless called for elsewhere in the plans. The SRT/HBA 6 Post shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The SRT/HBA 6 Post can not be used in medians where horizontal clearance requires the use of a backrail.
5. The SRT/HBA 6 Post is suitable for all design speeds. The SRT/HBA 6 Post is intended for use as an approach end anchorage for shoulder guardrail. Its alignment is a straight flare from the normal guardrail alignment with an effective length of 37.5' including two special slotted W-Beam panels and one standard W-Beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
6. Posts 1 and 2 must be hinged breakaway steel posts. CRT breakaway posts shall be used at all other locations within the system.
7. See the General Notes for galvanizing requirements of metallic component.
8. If the plans call for the SRT/HBA 6 Post at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The SRT/HBA 6 Post shall be paid for under the contract unit price for Guardrail End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

SRT/HBA-6 POST SYSTEM

DATE: 03-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

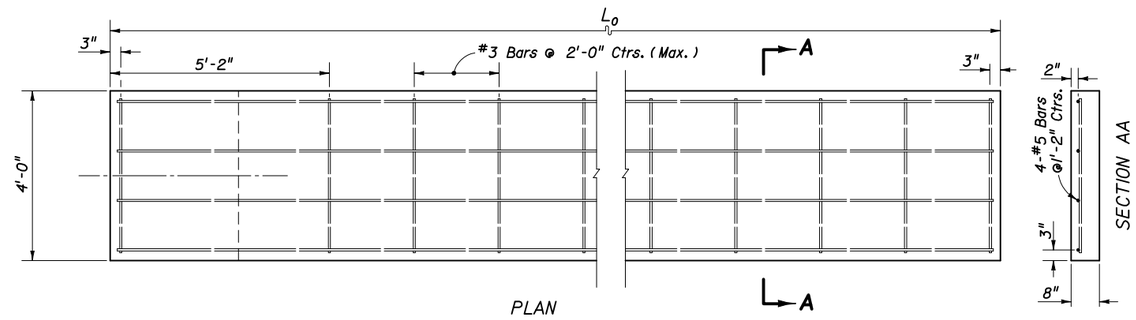
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO INDEX 400 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY Roadway Design Engineer

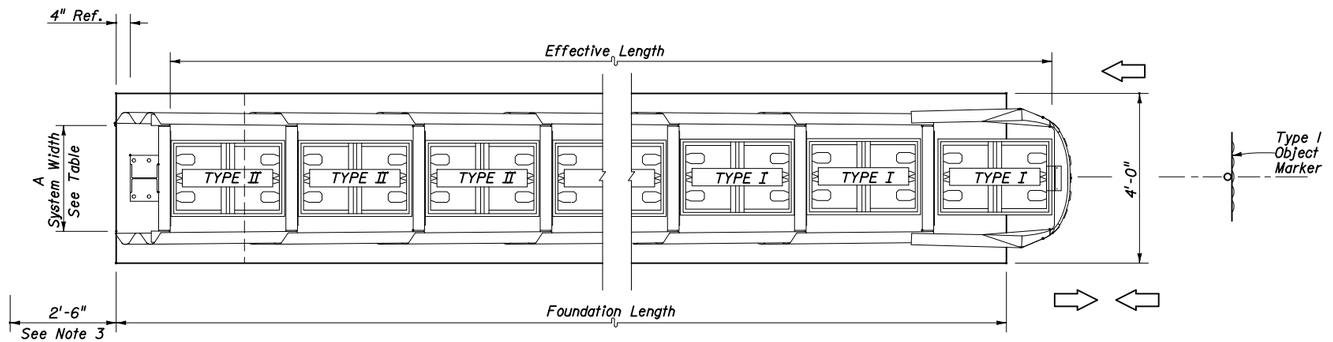
REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 1	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

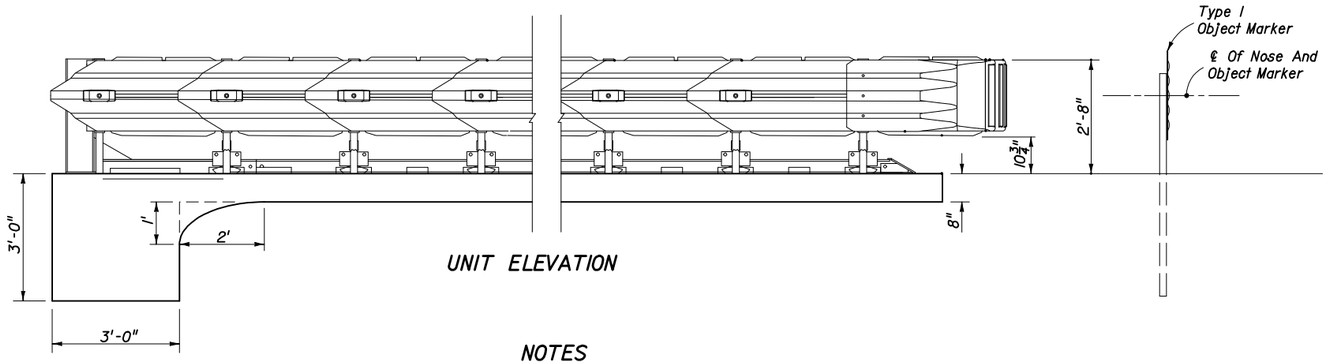


PLAN

FOUNDATION



UNIT PLAN



UNIT ELEVATION

Nominal System Width	A (Backup Width)
2'-0"	2'-0"
2'-6"	2'-6"
3'-0"	3'-0"
5'-9"	5'-3 3/4"
7'-6"	6'-10 5/8"

ESTIMATED FOUNDATION QUANTITIES
For Informational Purposes Only

No. Of Bays	L_o	REINFORCEMENT #3	REINFORCEMENT #5	CONCRETE (CY)
2	9'-0"	14'-8"	34'-8"	2.0
3	12'-0"	22'-0"	46'-8"	2.3
4	15'-0"	25'-8"	58'-8"	2.6
5	18'-0"	33'-0"	70'-8"	2.9
6	21'-0"	36'-8"	82'-8"	3.2
7	24'-0"	44'-0"	94'-8"	3.5
9	30'-0"	55'-0"	118'-8"	4.1

Note: Monorail anchorage bolt spacing to be in accordance with the manufacturer's installation drawings and specifications.

NOTES

1. The foundation depicted on this sheet is applicable to QuadGuard systems for both narrow and wide hazards, 2'-6" system shown.
2. For the number of bays required see table, Sheet 1.
3. Provision shall be made for rear fender panels to slide rearward upon impact 2'-6" min.
4. For barrier connections see 'TRANSITIONS', Sheet Nos. 4 and 5.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

PERMANENT FOUNDATION FOR TENSION STRUT BACKUP ASSEMBLY

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

QuadGuard

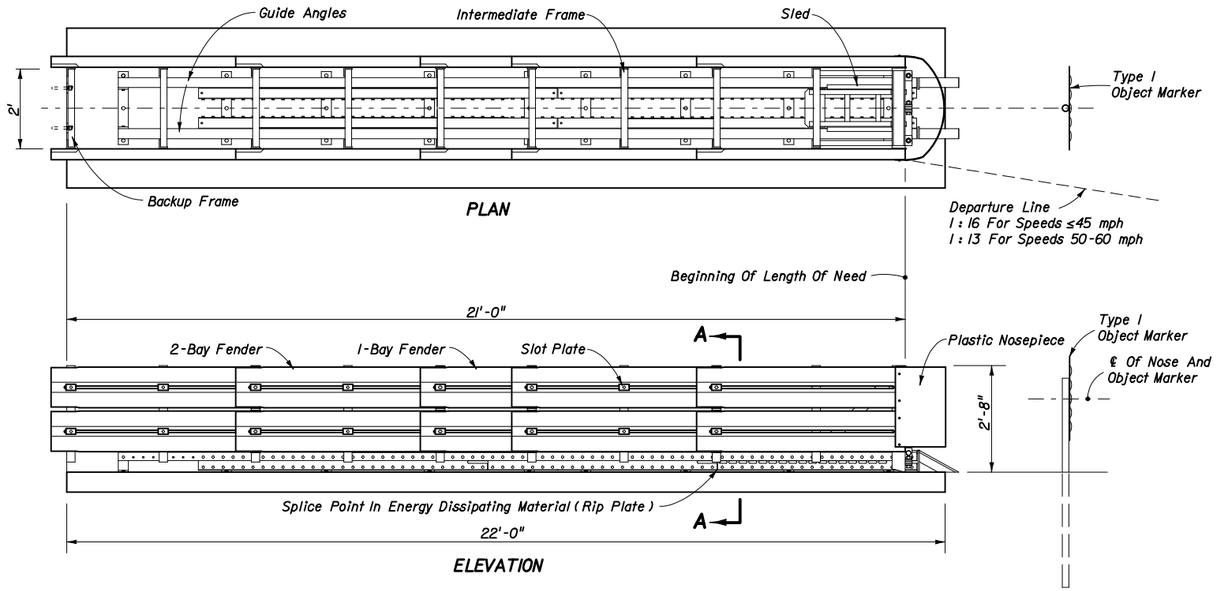
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

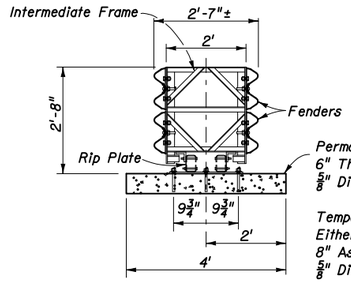
APPROVED BY Brian Blanchard
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 6	0435

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



TRACC



Permanent Pad:
6" Thick Reinforced Concrete Or 8" Nonreinforced Concrete With Twenty-Seven $\frac{5}{8}$" Dia. $7\frac{1}{2}$" Long Chemical Anchor Studs With Flat And Lock Washers And Hex Nuts

Temporary Pad:
Either 8" Nonreinforced Concrete With The Above Anchor Hardware, Or,
8" Asphalt (Or 6" Ashpalt Over 6" Compacted Subbase) With Twenty-Seven $\frac{5}{8}$" Dia. 18" Long Chemical Anchor Studs With Flat And Lock Washers And Hex Nuts.

SECTION AA

TRACC MODULE GUIDELINES		
Speed (mph)	Manufacture's Naming Convention	Length (Feet)
≤45	SHORTRACC	14'-1"
>45 ≤60	TRACC	21'-0"
>60 ≤70	FASTRACC	26'-0"

GENERAL NOTES

1. The energy absorbing system represented on this standard drawing is a proprietary design by Trinity Industries, Inc. and marketed under the trade names SHORTRACC, TRACC, and FASTRACC. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of TRACC Systems and their incorporation into a whole system. This standard drawing is sufficient for plan details, and precludes the requirement for shop drawing submittals unless the plans call for such submittals.
3. TRACC Systems shall be installed in accordance with the manufacturer's detailed drawings, procedures and specifications, except that transition section posts will be set to connect to guardrail at standard W-beam center bolt height (1'-9").
4. TRACC Systems include pre-assembled energy absorbing modules that are available in three sizes. Larger modules can be substituted for smaller modules. See selection table below.
5. When TRACC Systems are installed at permanent locations they shall be anchored to either a reinforced 6" thick concrete pad or a nonreinforced 8" thick concrete pad with twenty-seven $7\frac{1}{2}$" long $\frac{5}{8}$" dia. chemical anchor studs, flat and lock washers, and, hex nuts. When TRACC Systems are installed at temporary locations they shall be anchored to a nonreinforced 8" thick concrete pad with the above mentioned anchor hardware, or a 8" thick asphalt pad (or a 6" thick asphalt over 6" of compacted subbase) using twenty-seven 18" long $\frac{5}{8}$" dia. Grade 5 threaded chemical anchor studs, flat and lock washers, and, hex nuts.
6. TRACC Systems shall be located parallel to the approach travel lane(s), on 1 : 10 or flatter cross slopes.
7. In-place repairs on TRACC modules are limited to (a) end-on impacts which cause the sled to stroke 54" or less, and (b) side impacts where permanent distortion is limited to fender panels and where distortion of the intermediate frame(s) can be restored manually and (c) end on impacts that cause the sled to stroke more than 54", yet where repair can be accomplished in a period not to exceed 24 continuous hours. Unit replacement is required when damage exceeds these conditions. Temporary construction units and units under Maintenance responsibility may be shop repaired units utilizing new or salvaged parts which will produce condition new units. All permanent units shall be factory new at completion of construction.
8. A yellow Type 1 Object Marker shall be centered 3' in front of the nose of the TRACC System. Mounting hardware shall be in conformance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the TRACC System.
9. Permanent TRACC Systems will be paid for under the contract unit price for Vehicular Impact Attenuator (TRACC), EA. Temporary TRACC Systems will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (TRACC), LO. However, when a TRACC system is used as an option in accordance with Index No. 415, it will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (Redirective Option), LO.

DESIGN NOTES AND GUIDELINES

1. TRACC Systems are designed to cushion automobile end-on hits and to redirect automobiles from side hits within the length of need while shielding the ends of permanent or temporary concrete barrier walls or double faced guardrails.
2. The TRACC System is not field-restorable for all impacts. Repairs or replacement will be in accordance with GENERAL NOTE 7 above.

   Until additional replacement and repair experience is available, the TRACC System should not be permanently installed in gores of freeways and expressway mainline ramp terminals; gores of roadway forks; or other gore locations where the Engineer of Record has identified a specific history of high frequency vehicle departure from the roadway or the potential exists for such departures.

   The TRACC can be used in any temporary location identified in the plans for optional redirective crash cushion in accordance with Index No. 415, and will be used as a temporary crash cushion in any location identified in the plans for Vehicle Impact Attenuator (Temporary) (TRACC); likewise the TRACC is not to be substituted when the plans call for other crash cushion systems at specified locations.
3. Currently the Department does not recognize other proprietary items as being equally suitable alternatives to TRACC Systems, and until such alternatives are available, the TRACC Systems need not be bid against other proprietary items. However, where the TRACC Systems and other approved temporary redirective crash cushions meet or exceed the minimum requirements for a specific location, the approved crash cushions will be considered optional systems and paid for as described in General Note 9 above.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GENERAL SYSTEM FEATURES AND GUIDELINES

Revised: 05-04-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

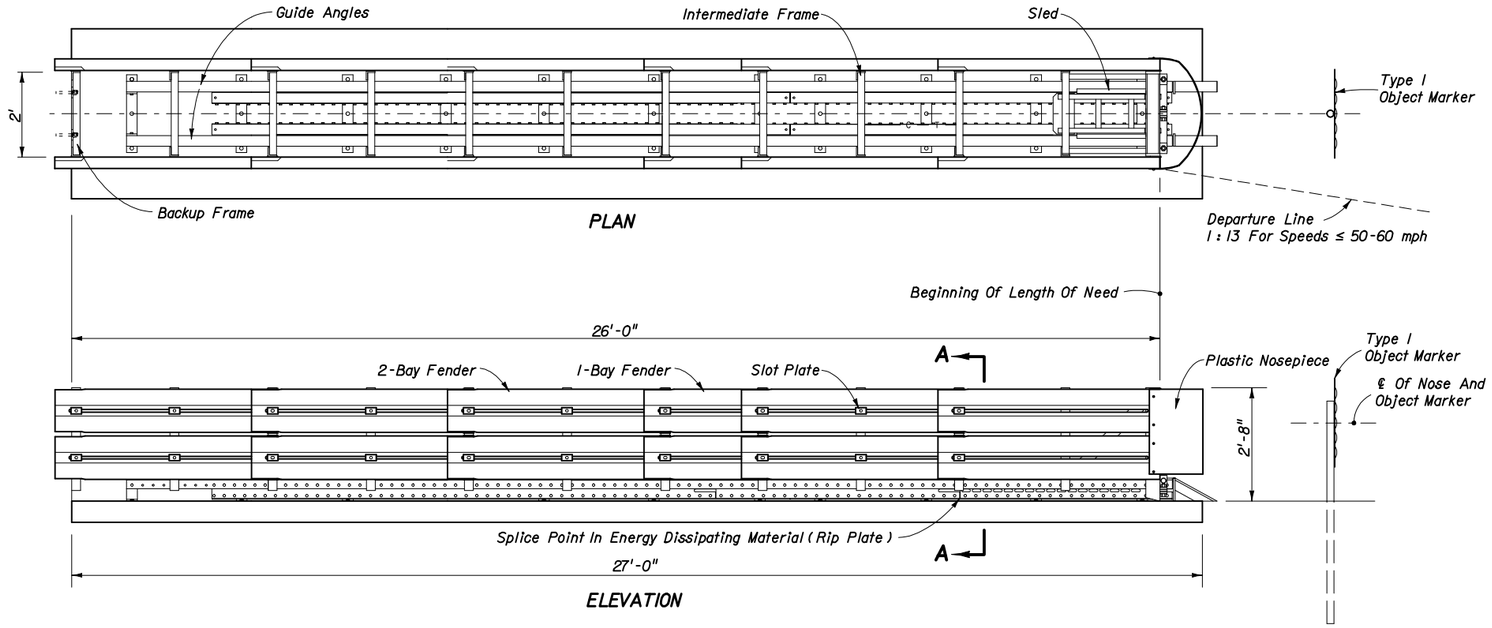
INTERIM STANDARD

THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

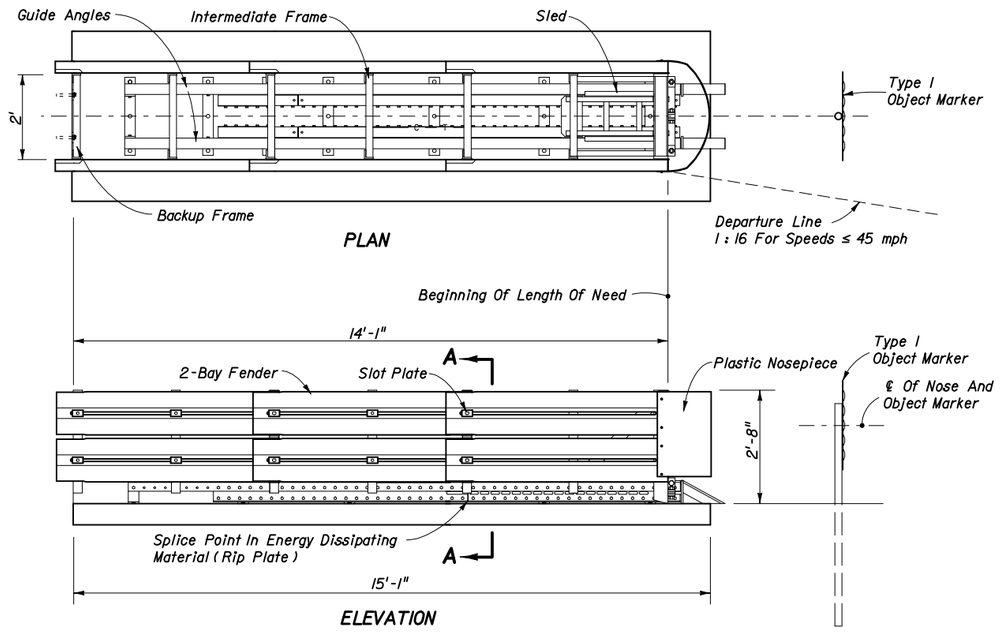
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FASTRACC



SHORTRACC

REVISED: 04-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

INTERIM STANDARD

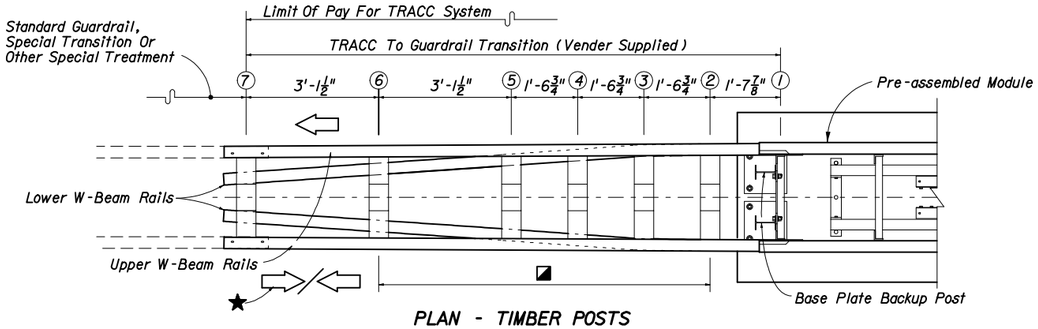
THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

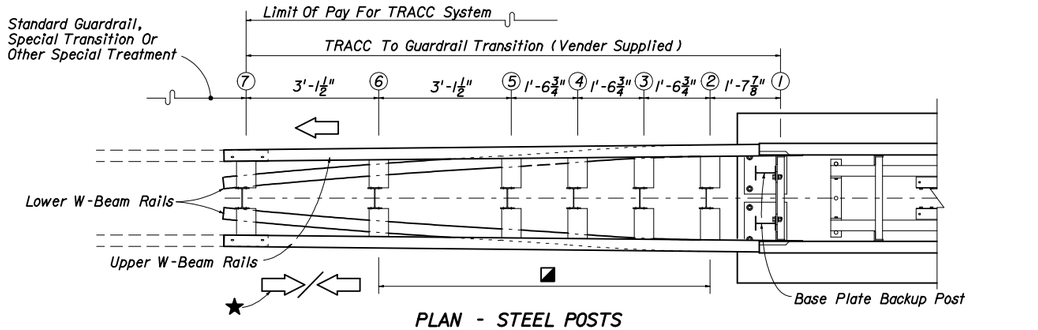
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	2 of 5	0440

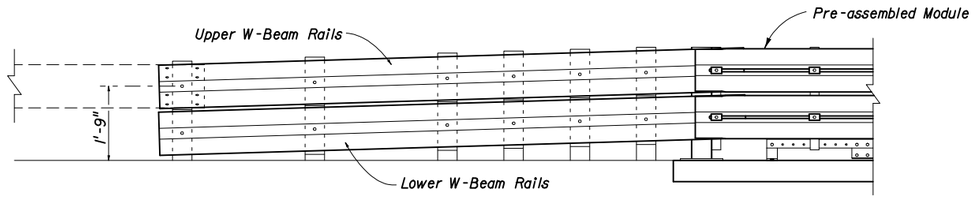
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN - TIMBER POSTS



PLAN - STEEL POSTS



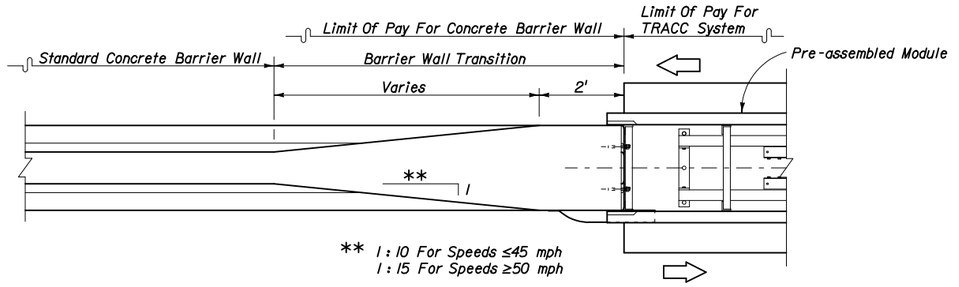
ELEVATION

★ *Lap rail splice in direction of traffic for guardrail bidirectional applications. See GENERAL NOTE 3 and DESIGN NOTE 1 for information on pending approval for bidirectional installations.*

◪ *Offset blocks that exceed standard block depth can be made up of blocks of special size or multiple standard blocks field trimed to approximately equal size to achieve full transition width. Offset blocks for lower W-beam that are less in depth than standard blocks may be field trimed standard blocks. All blocks are to be secured to plan position by 16d galvanized nails.*

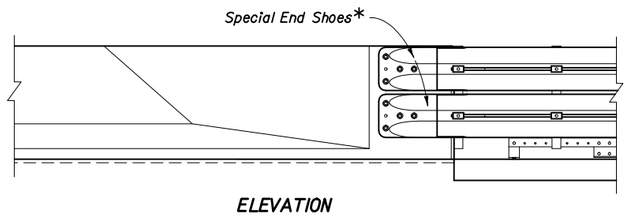
Transitions are required when connecting the TRACC to any guardrail system.

TRANSITION SECTION FOR CONNECTION TO DOUBLE FACED GUARDRAIL



** l : 10 For Speeds ≤45 mph
l : 15 For Speeds ≥50 mph

PLAN



ELEVATION

* To Be Included In Cost Of TRACC System

CONNECTION TO CONRETE BARRIER WITH INTEGRAL WALL TRANSITION

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

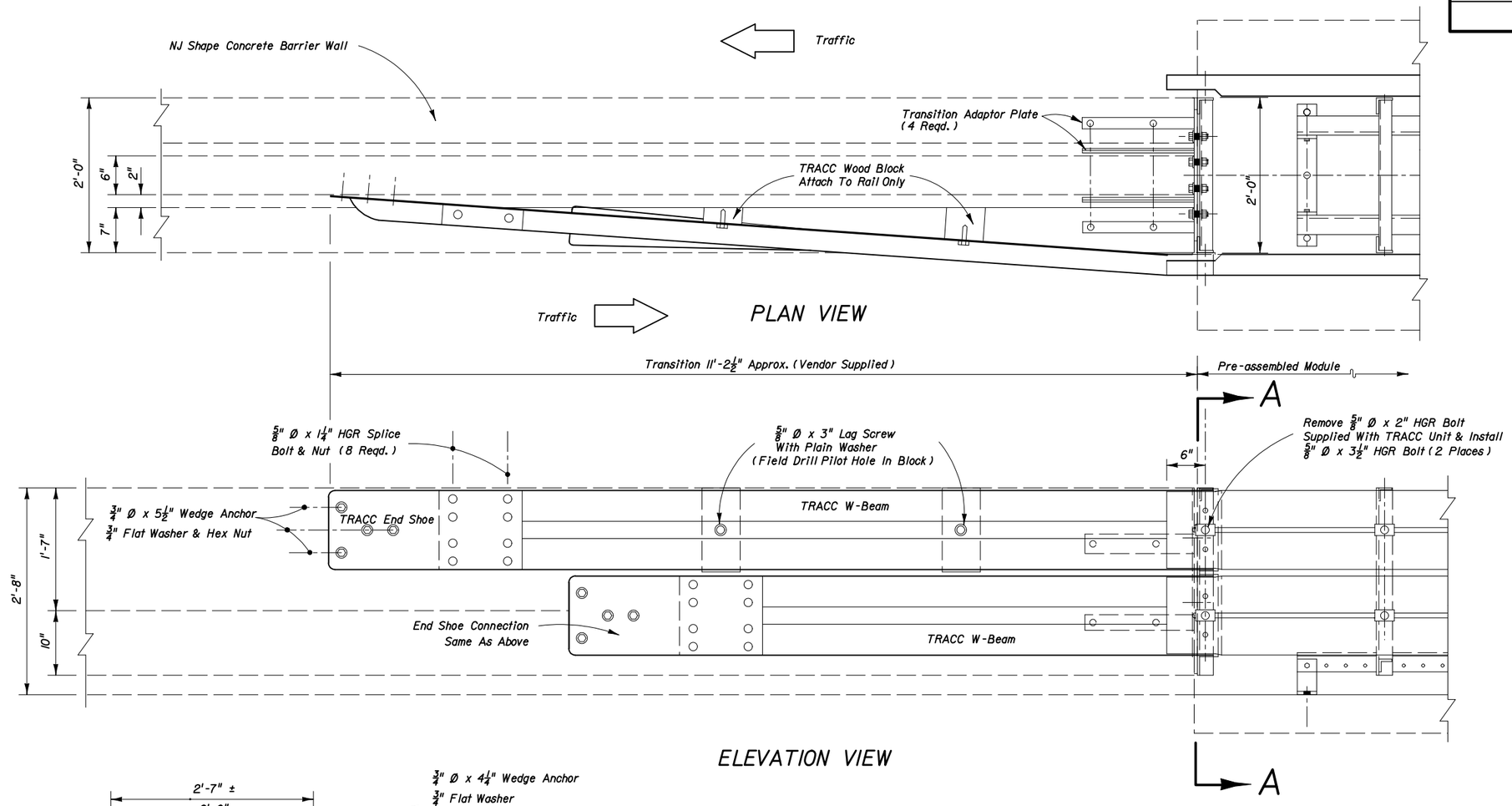
INTERIM STANDARD

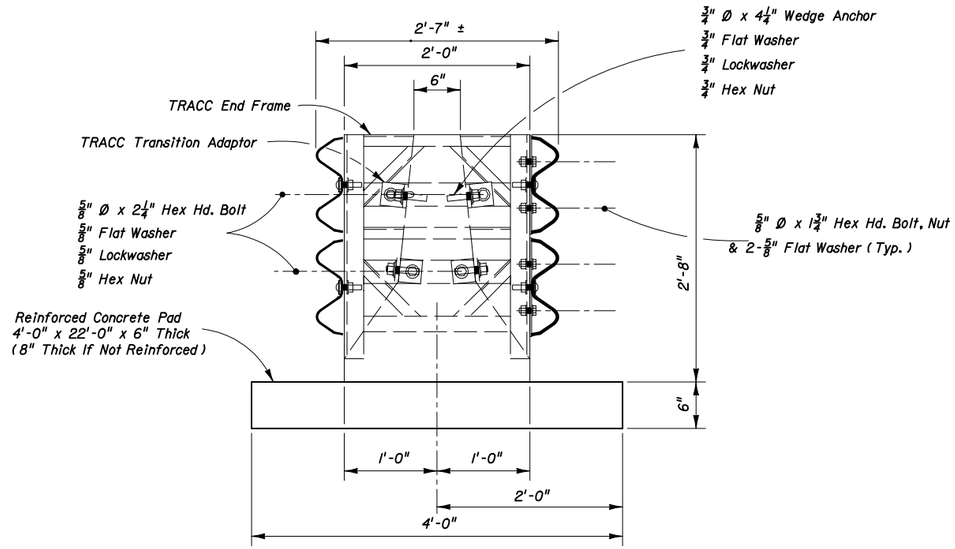
THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





SECTION AA

BIDIRECTIONAL TRANSITION FOR CONNECTION TO NJ SHAPE CONCRETE BARRIER WALL

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

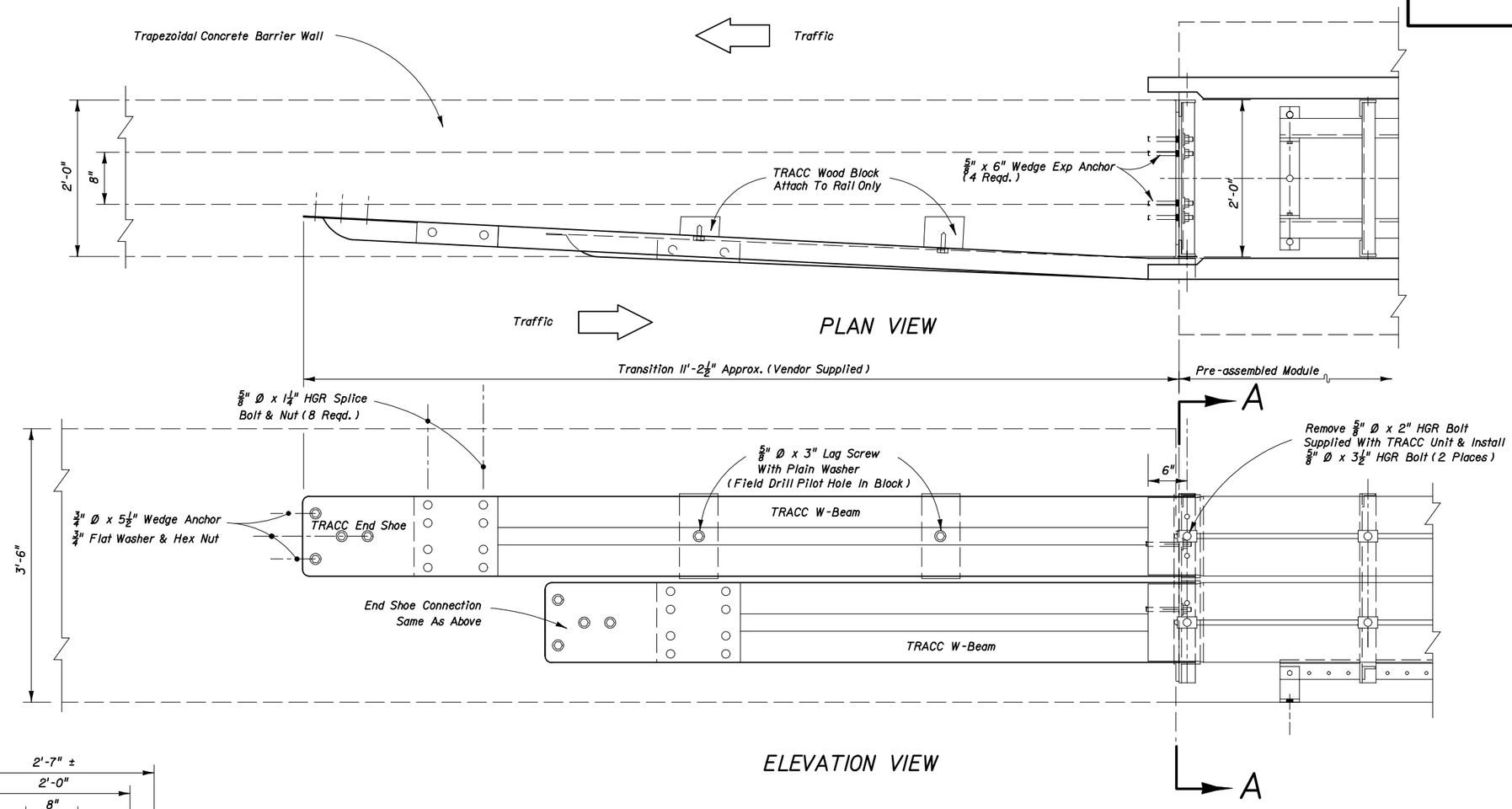
INTERIM STANDARD

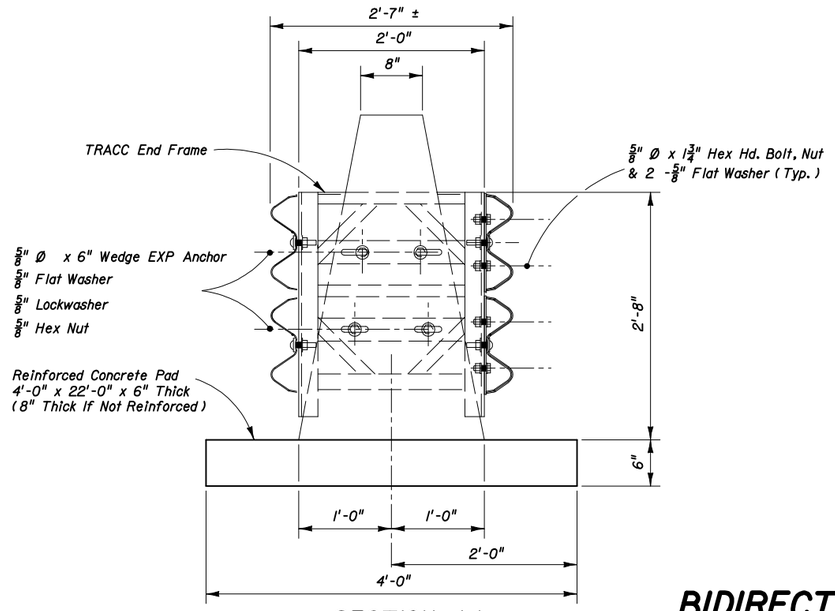
THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	4 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





SECTION AA

BIDIRECTIONAL TRANSITION FOR CONNECTION TO TRAPEZOIDAL SHAPE CONCRETE BARRIER WALL

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

INTERIM STANDARD

THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	5 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	Raugrid 3/13	Raugrid 4/12	Raugrid 6/13	Raugrid 8/13	Raugrid 10/13					
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	95%	95%	95%	95%	95%					
Tensile Strength (lb/ft)		ASTM D 4595										
Machine Direction	Ultimate		2,233	2,843	4,350	5,288	6,590					
	2% Ultimate		397	555	960	987	1,302					
	5% Ultimate		712	767	1,144	1,165	1,582					
Cross Direction	Ultimate		2,213	1,459	1,959	2,089	2,192					
	2% Ultimate		377	274	336	390	390					
	5% Ultimate		541	356	452	534	534					
Strain @ Ultimate Tensile Strength		ASTM D 4595	10.8%	11.8%	13.1%	12.2%	11.2%					
Secant Modulus @ (lb/ft)	2% strain		———	———	———	———	———					
	5% strain		———	———	———	———	———					
	10% strain		———	———	———	———	———					
Junction Strength (lb/ft)		GRI : GG2	N/A	617	1139	961	833					
Soil- Geosynthetic Friction		GRI : GG5, GT7	———	———	———	———	———					
Creep Resistance- T_{creep} (lb/ft)		ASTM D 5262	1,469	1,870	2,862	3,479	4,335					
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.52	1.52	1.52	1.52	1.52					
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.10					
	Limestone		1.14	1.14	1.14	1.14	1.14					
Durability (RF_d)	Chemical	ASTM D 5322	1.15	1.15	1.15	1.15	1.15					
	Biological	ASTM D1987, D3083, G21 & G22										
Joint Strength (RF_J)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	———	———	———	———	———					
	Overlap	GRI : GG5 & GT6	———	———	———	———	———					
Approved Application Usage			3	3	3	3	3					

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRID) APPLICATION AND PROPERTIES

Revised: 02-02-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

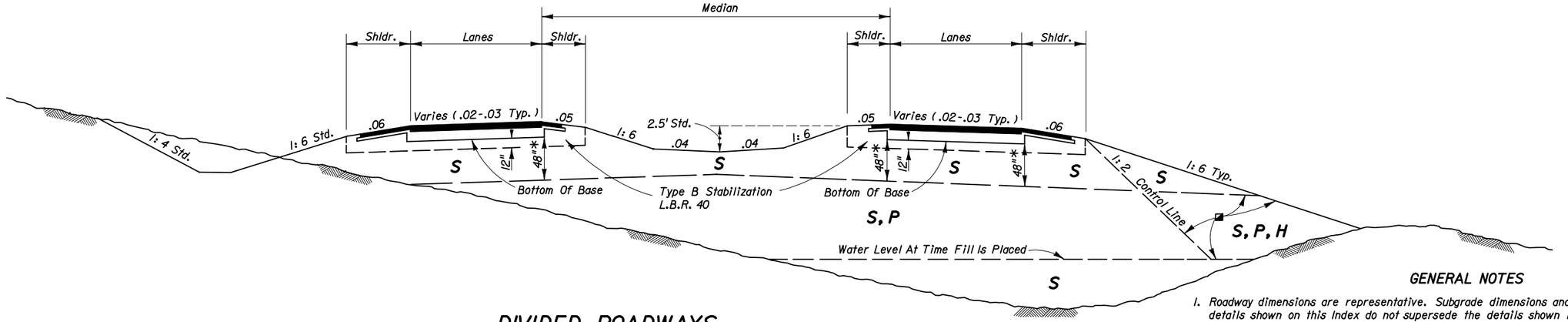
INTERIM STANDARD

THIS SHEET IS A SUPPLEMENT TO INDEX NO. 501, SHEET 6 OF 8 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET IN ENGLISH UNITS, DATED JANUARY 2000.

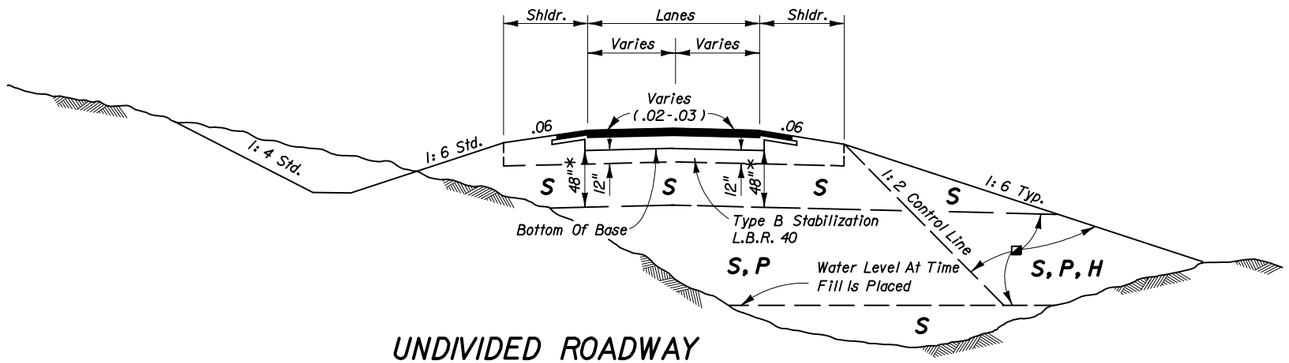
APPROVED BY
State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 1	0501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Geotechnical Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500.
For minor collectors and local facilities this dimension may be reduced to 18".

FLEXIBLE PAVEMENT

GENERAL NOTES

1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this Index do not supersede the details shown in the plans or on Index Nos. 500 or 506.

2. Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.

3. High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this Index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.

4. Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, shall not be used in the subgrade portion of the roadbed.

   Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, shall not be used in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the plans or otherwise specified in the plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer.

   Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.

5. Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, shall be designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M).

   Highly organic soils shall not be used within the subgrade or embankment portion of the roadbed, with the exception of muck used as a supplement to construct a finish soil layer as described in Section 162 of the FDOT Standard Specifications.

DESIGN NOTE

1. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated, specify in the plans the utilization of Select (S), Plastic (P) and/or High Plastic (H) soils classified as organic material, in the embankment outside the control line.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Revised: 11-14-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

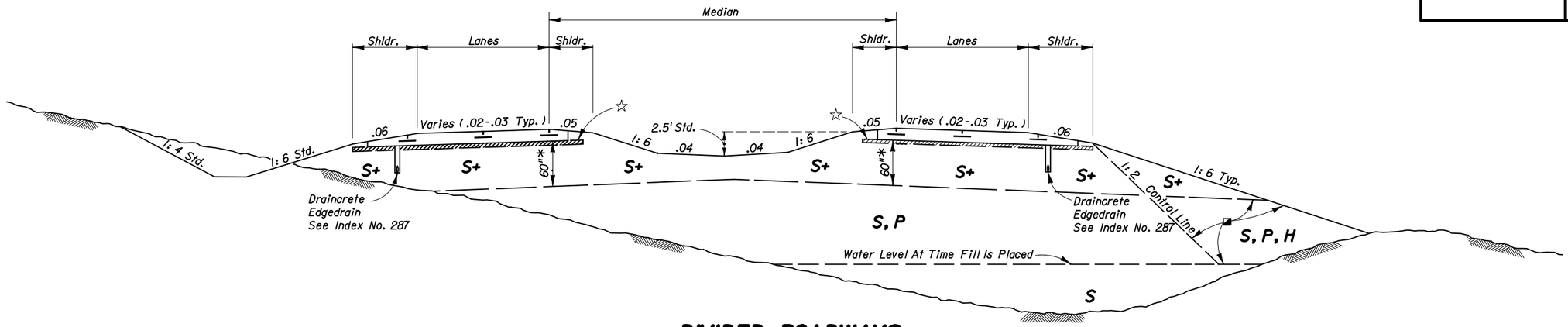
INTERIM STANDARD

SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE ENGLISH ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

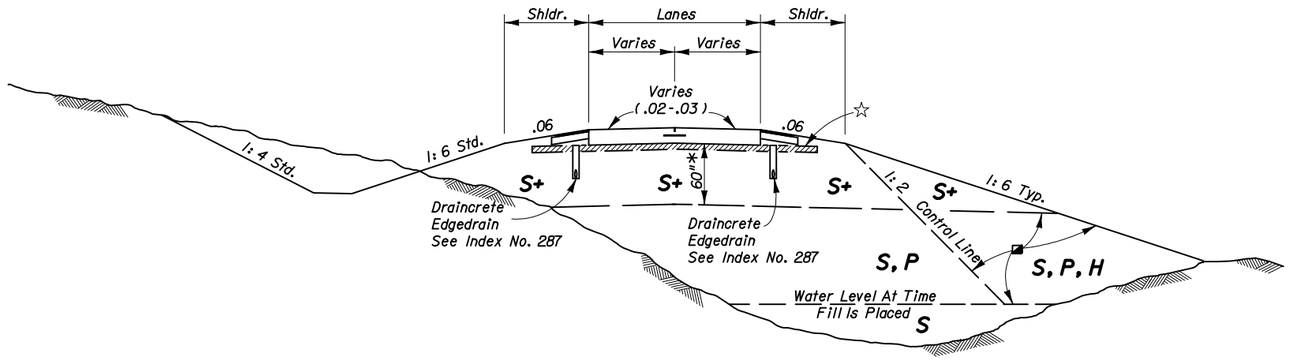
APPROVED BY
State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 3	0505

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of $5x10^{-5}$ cm/sec (0.14 ft./day) as per FM 1-T215
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

*** When allowed by the plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer. This material must meet the minimum lab permeability requirement, be non-plastic, and not exceed 12% passing the No. 200 U.S. Standard sieve.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

☆ 3" of #57 Coarse Aggregate Mixed Into Top 6".

RIGID PAVEMENT - SPECIAL SELECT SOIL

Revised: 11-14-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

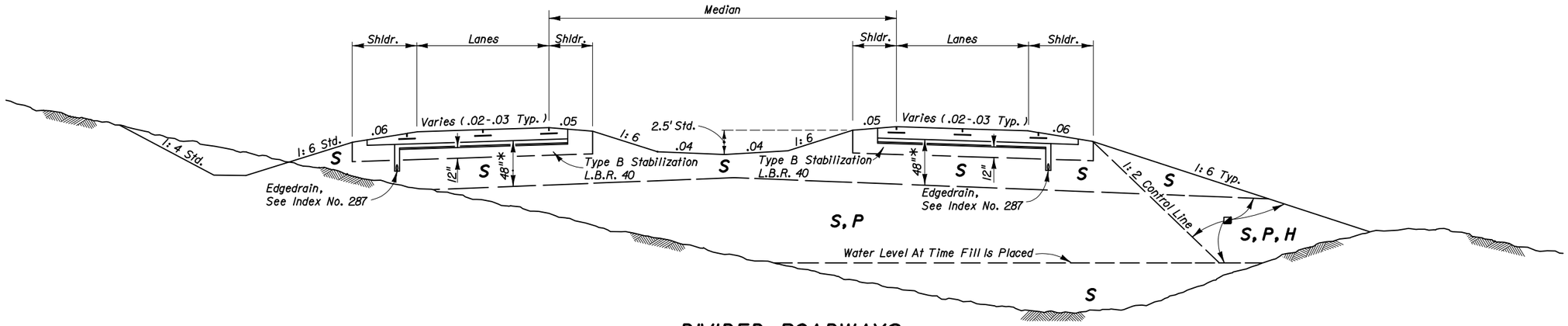
INTERIM STANDARD

SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE ENGLISH ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

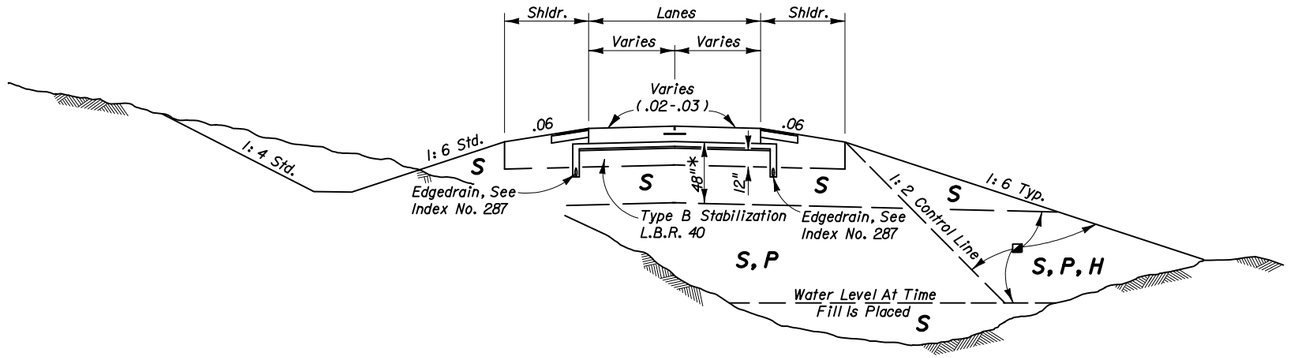
APPROVED BY
State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 3	0505

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Geotechnical Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500.
For minor collectors and local facilities this dimension may be reduced to 18".

DESIGN NOTE

1. Concrete pavement is to be placed over 4" of Asphalt Treated Permeable Base (ATPB) or Cement Treated Permeable Base (CTPB) as identified in the plans. This will be placed on an aggregate separator layer using 1" Type SP (Traffic C). This will be placed on a working platform using 12" of Type B Stabilization.

RIGID PAVEMENT - TREATED PERMEABLE BASE

Revised: 11-14-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

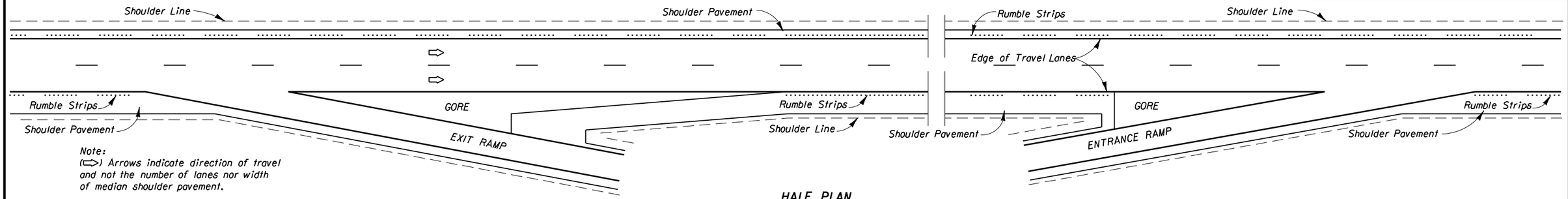
INTERIM STANDARD

SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE ENGLISH ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 3	0505

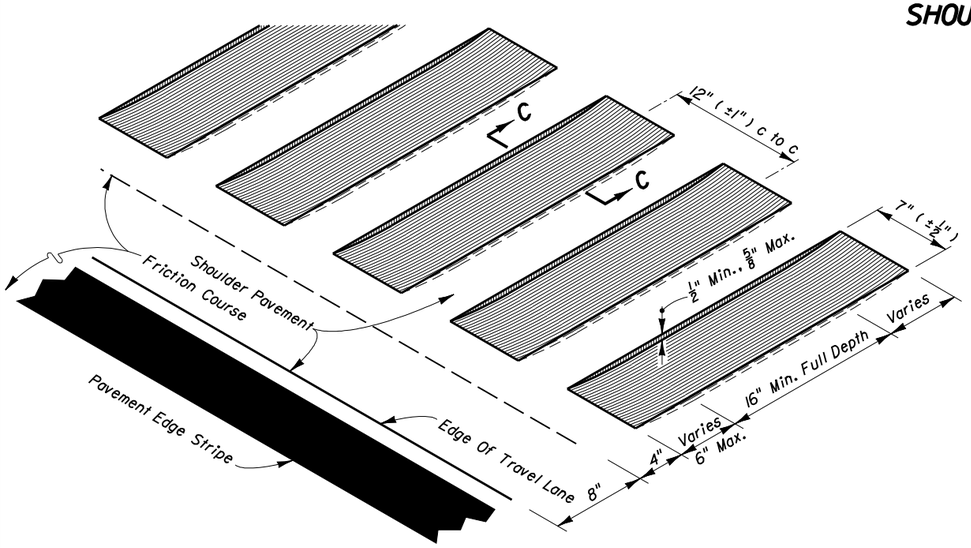
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



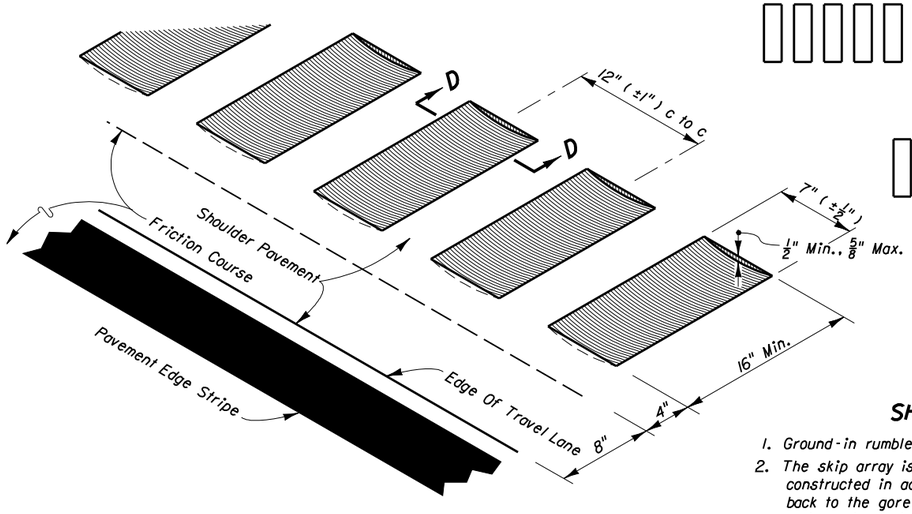
Note:
(⇨) Arrows indicate direction of travel and not the number of lanes nor width of median shoulder pavement.

HALF PLAN
LIMITED ACCESS FACILITIES

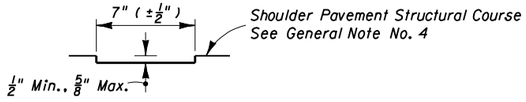
SHOULDER GROUND-IN RUMBLE STRIP PLACEMENT



ISOMETRIC - TRANSVERSE CUT

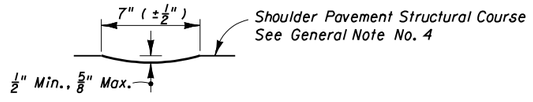


ISOMETRIC - LONGITUDINAL CUT



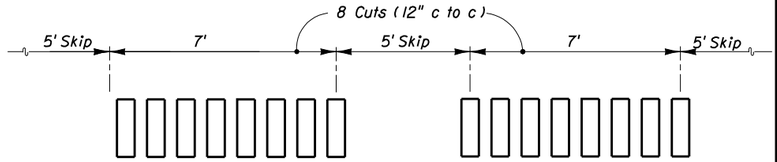
SECTION CC

TRANSVERSE CUT



SECTION DD

LONGITUDINAL CUT



SKIP ARRAY

Continuous Cuts (12" c to c)

CONTINUOUS ARRAY

ARRAYS

GENERAL NOTES FOR SHOULDER GROUND-IN RUMBLE STRIPS

1. Ground-in rumble strips shall be constructed on limited access facilities.
2. The skip array is the standard array. The continuous array shall be constructed in advance of bridge ends for a distance of 1000', or back to the gore recovery area for mainline interchange bridges; and constructed at other specific locations as called for in the plans.
3. Ground-in rumble strips are to be constructed in accordance with Section 546 of the Specifications.
4. When friction course extends more than 8" beyond the edge of the travel lane, the extended friction course shall be bladed off back to the 8" line, prior to rumble strip grinding.
5. Both arrays shall be paid for under the contract unit price for Rumble Strips (Ground-In), PM. Such price and payment shall be full compensation for all work and materials required.

DESIGN NOTE

1. The rumble strips described on this sheet are intended for use on flexible pavement shoulders. When constructing ground-in rumble strips on existing rigid (concrete) shoulders, no rumble strips shall be located closer than 6" from any pavement joint. When specifying ground-in rumble strips on existing rigid shoulders their location and array shall be detailed in the plans.
2. Other methods and types of applications shall not be used unless approved in writing by the State Roadway Design Engineer. Approval will be considered only with sufficient documented justification for variance from this standard.

LOCATION ALONG SHOULDER (FLEXIBLE PAVEMENT)

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

SHOULDER GROUND-IN RUMBLE STRIPS

REVISED 11/27/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

RUMBLE STRIPS

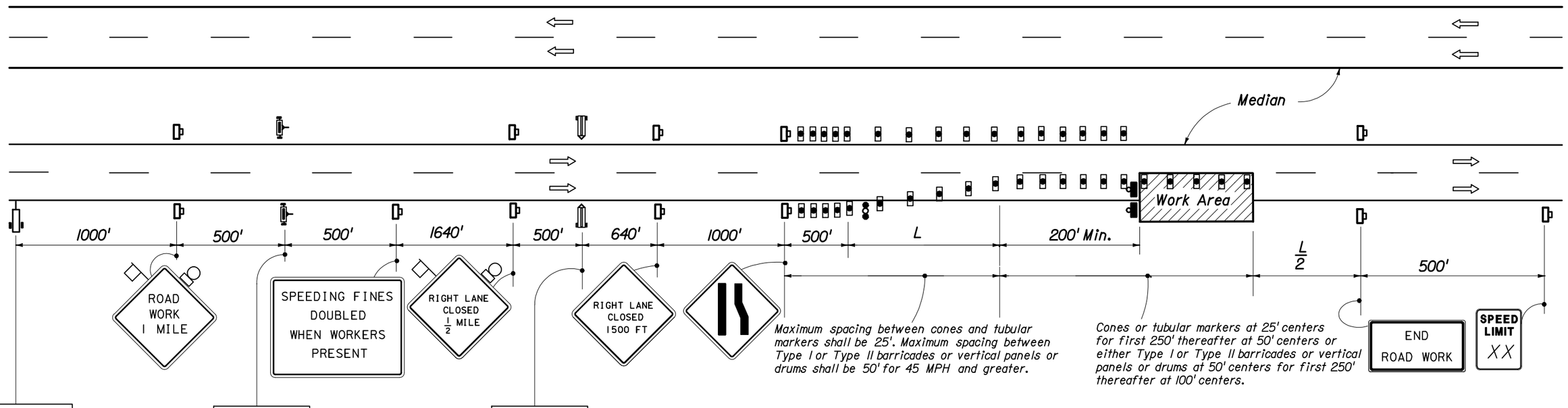
INTERIM STANDARD

THIS SHEET REPLACES SHEET 2 OF 2 OF INDEX 518 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000

APPROVED BY _____
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 2	0518

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: VMS to be used when HAR is used. See note II

FHP Law Enforcement Officer Should Patrol The Active Work Area on 15 to 20 Minute Intervals

SYMBOLS

- Work Area
- Sign With 18"x18" (Min.) Orange Flag And Type B Light
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only). (Tubular Markers May Be Used During Daylight Only. Cones May Be Used -See Index 600).
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Flashing Light)
- Work Zone Sign
- Advance Warning Arrow Panel
- (1) VMS = Variable Message Sign (When Called For In Plans)
- (1) HAR = Highway Advisory Radio (When Called For In Plans)
- (2) PRS = Portable Regulatory Sign - Speed Limit When Flashing
- (2) RSDU = Radar Speed Display Unit
- (1) LEO = Law Enforcement with Flashing Lights and Radar Paid As: FHP (Contract) (Do Not Bid)

VMS Display

Message 1: TUNE TO XXX AM
Message 2: FOR CONST INFO

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the adjacent lanes open to traffic.
2. All vehicles, equipment, workers and their activities are restricted at all times to one side of the roadway.
3. The first two warning signs, each side, shall have a 18" x 18"(min.) orange flag and a Type B light attached and operating at all times.
4. All signs shall be post mounted if the closure time exceeds 12 hours.
5. When work is performed in the median lane on divided highways the barricading plan is inverted and left lane closed and lane reduction signs substituted for the right lane closed and lane reduction signs.
6. L (min.) = Length of taper in feet:
   = WS for speeds ≥ 45 mph

   Where:
   W = Width of lateral transition in feet
   S = Posted speed limit (mph)
7. Arrows denote direction of traffic only and do not reflect pavement markings.
8. Longitudinal dimensions are to be adjusted to fit field conditions. See Index No. 600.
9. When work is being performed on a multilane undivided roadway the signs normally mounted in the median (as shown) shall be omitted.
10. For general TCZ requirements and additional information refer to Index No. 600.

11. Highway Advisory Radio may be considered as a supplement to the Motorist Awareness System.

    The following operating parameters must be adhered to when using an Highway Advisory Radio:

    A. Daytime construction periods only

    B. Per CFR 90.242 (a)(5) the transmitting site of the HAR is restricted to the immediate vicinity of the folowing specified areas:

    Air, Train, Bus Transportation Terminals, Public Parks, Historical Sites, Bridges and Tunnels.

    Any Intersection of the following Federal Interstate Highway with any other Interstate, Federal, State, or Local Highway: I-4, I-10, I-75, I-275, I-95 and I-295

Conditions

1. The MAS is intended for use on rural high-speed high volume highways, which have lane closures with no more than two lanes open to traffic, and when the active work zone is less than one mile in length.
2. The MAS should be considered on projects where the likelihood of excessive speeds in the work area needs to be controlled.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

NEW INDEX 11/27/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

MOTORIST AWARENESS SYSTEM

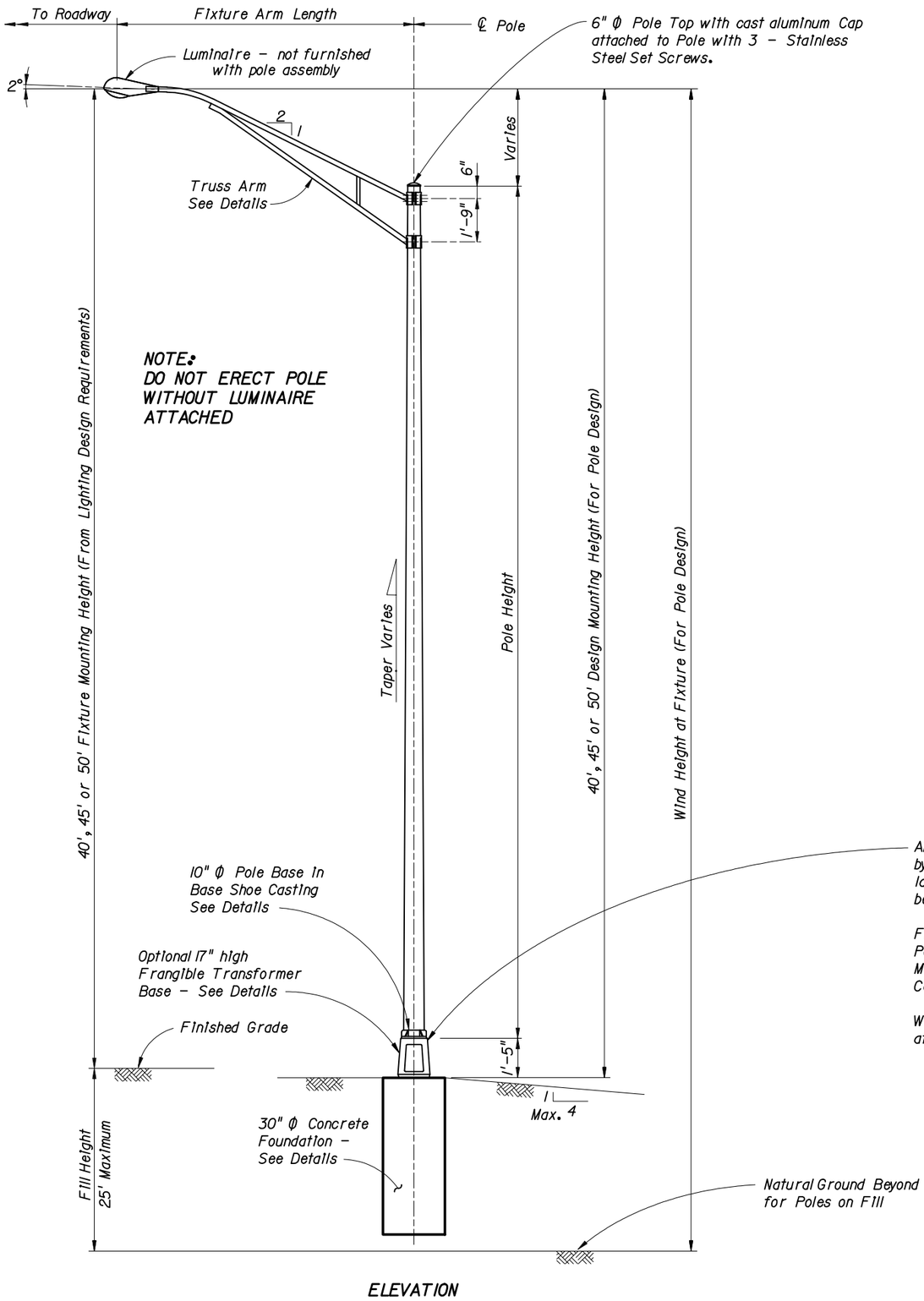
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	670

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

ALUMINUM LIGHT POLE NOTES

1. Light Pole Materials shall be as follows:

Poles	->	ASTM B221 - ALLOY 6063-T6
Arm Pipes or Pipe Extrusions	->	ASTM B221 - ALLOY 6063-T6
Arm Connection Extrusions, Bars and Plates	->	ASTM B221 - ALLOY 6061-T6
Shoe Base Casting	->	ASTM B26 - ALLOY 356-T6
Aluminum Caps and Covers	->	ASTM B26 - ALLOY 356-T6
Frangible Transformer Base Casting	->	ASTM B26 - ALLOY 356-T6
Weld Metal	->	ER4043
Shoe Base Connection Bolts and Anchor Bolts	->	ASTM F1554 Grade 55
Nuts for Connection Bolts and Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Connection Bolts and Anchor Bolts	->	ASTM F436 Type 1
Stainless Steel Fasteners and Hardware	->	A.I.S.I. Grade 316

2. Aluminum alloys 6063, 6061 and 356 are to be furnished in T4 condition and heat treated to T6 condition after welding
3. Shoe Base Connection Bolts, Anchor Bolts, Nuts and Washers shall be galvanized in accordance with ASTM A153.
4. Foundation concrete shall be Class I (Special) with a minimum 28-day Compressive Strength (f'c) of 3,000 psi for all environmental classifications.
5. Reinforcing Steel shall be ASTM A615-96 Grade 60.
6. A design wind speed of 80, 100 or 110 mph with a 30% gust factor for wind loading on the pole is included in the design.
7. The pole shall be tapered as required to provide a top outside diameter (O.D.) of 6" with a base O.D. of 10". Portions of the shaft near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication .
8. All bolt hole diameters shall be equal to the bolt diameter plus $1/16$".
9. The pole shall be free of transverse welds except at the base.
10. Poles constructed out of two or more sections with overlapping splices are not permitted.
11. All welding shall conform to American Welding Society Structural Welding Code (Aluminum) ANSI/AWS D1.2 (current edition).
12. See Standard Index No. 17500 for grounding and wiring details.
13. The pole and arms shall be furnished with a 100 grit satin rubbed finish.
14. All designs to be in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs , Luminaires and Traffic Signals.
15. The optional Transformer Base is to be a Certified FHWA approved breakaway device meeting the requirements of Section 7 of the 1994 issue of the referenced AASHTO Specifications.

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Transformer Base by 0.125" Stainless Steel rivets or screws. Fabricator to provide details for approval. Identification Tag Located on inside of base visible from door opening. Tag to be stamped with the following information :

Financial Project ID
Pole Design Designation (ie. Pole Pay Item Number)
Manufacturer's Name
Certification No.

Where the optional Transformer Base is omitted, the Identification Tag shall be attached to the Pole Base. Fabricator to provide details for approval.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

ELEVATION AND NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

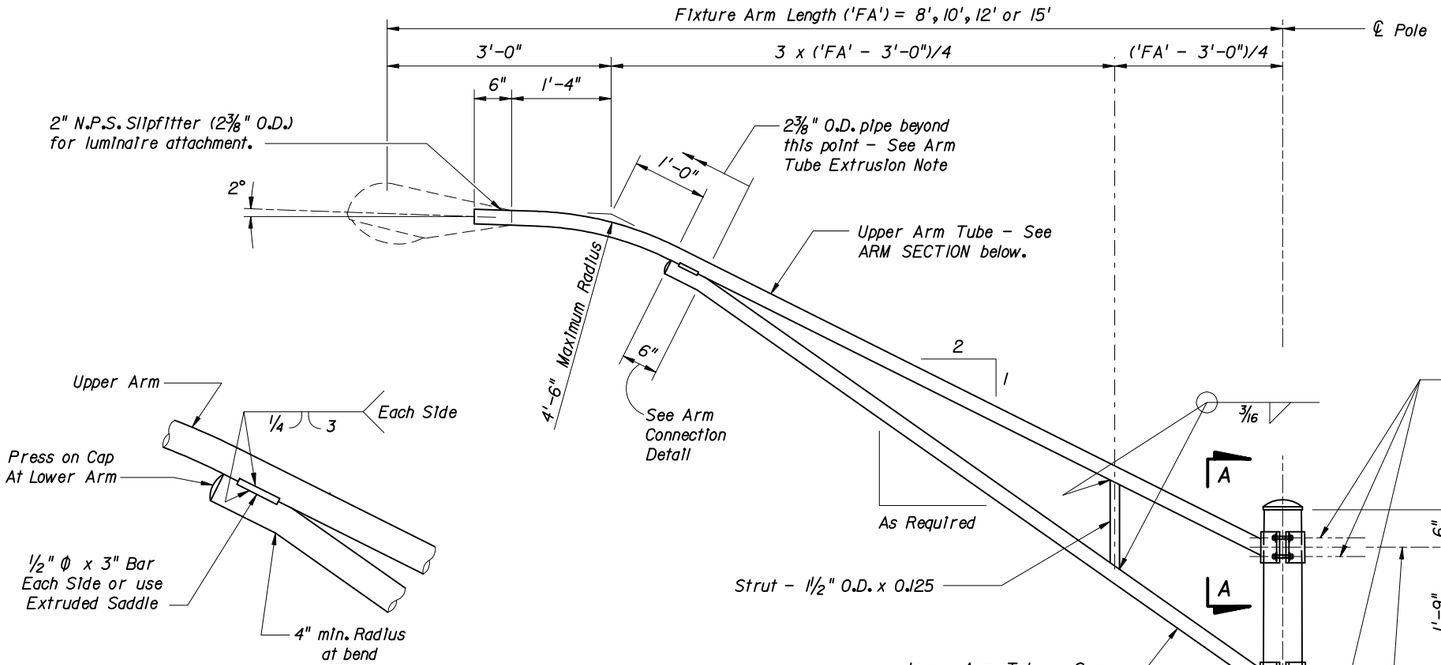
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

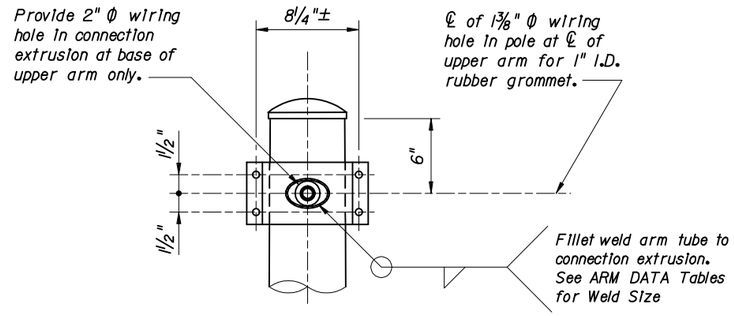


Provide ½" ϕ S.S. H.H. Bolts with 2- 1¼" O.D. flat washers and a split lockwasher each side of pole where shown.

ARM CONNECTION DETAIL

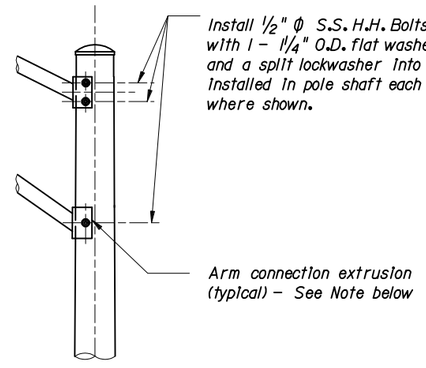
Note:
Provide 3/16" ϕ drain holes in underside of arm tubes 1½" from the base weld.

ARM ELEVATION



SECTION A-A

(Connection At Lower Arm Similar)



ALTERNATE ARM TO POLE CONNECTION

(See Section A-A for holes in pole and arm connection extrusion and vertical spacing of bolts at the upper arm)

ARM TUBE EXTRUSIONS:

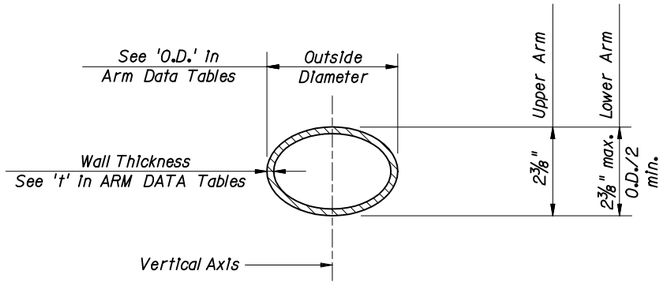
At the pole connection provide elliptical arm extrusions with dimensions as shown in the ARM SECTION and as tabulated in the ARM DATA Tables. Uniformly transition elliptical extrusions to a cylindrical section at the arm connection.

The pole fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equals or exceeds that of the required section, and provided the wall thickness is a minimum of ⅛".

The outside diameter about the minor axis should be held at 2⅜" at the upper arm and should not exceed 2⅜" at the lower arm.

ARM CONNECTION EXTRUSIONS:

Arm connection extrusions furnished by the pole fabricator are to be certified to be capable of transfering the arm connection forces shown in the ARM DATA Table for the required arm.



ARM SECTION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 9-26-00

ARM DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

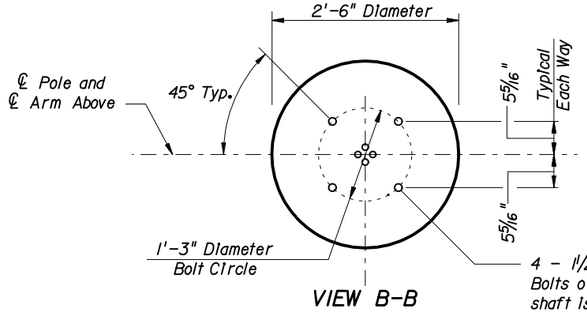
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

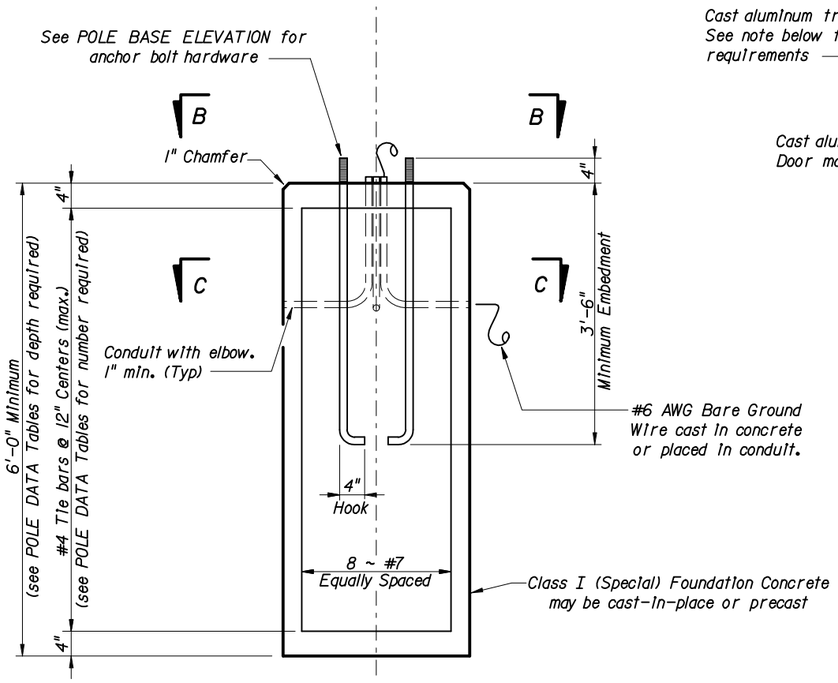
APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 7	17515

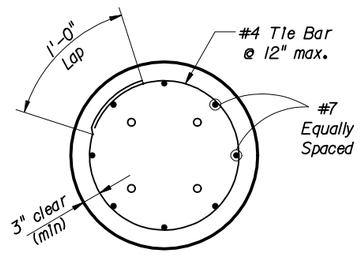
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



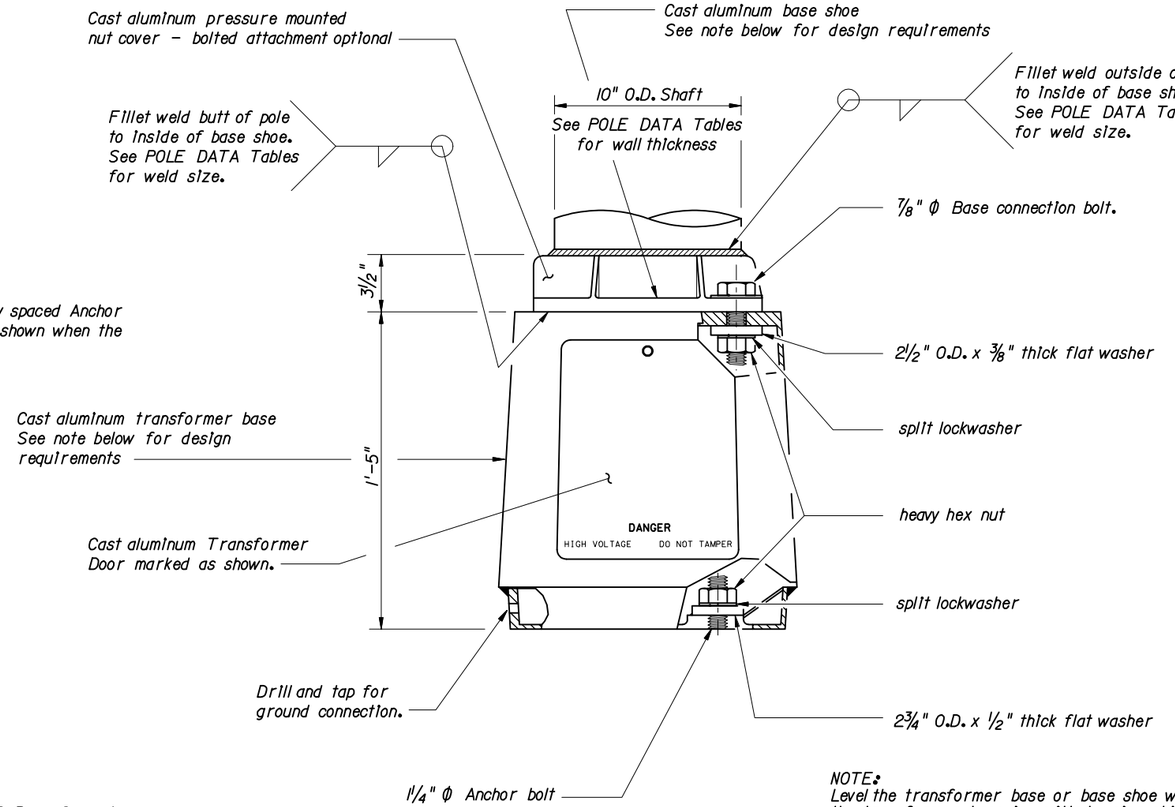
VIEW B-B



FOUNDATION

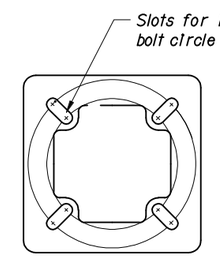


SECTION C-C

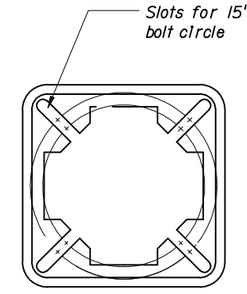


NOTE:
Level the transformer base or base shoe when the transformer base is omitted, using shims provide by the Pole Supplier.
Do not use leveling nuts.

POLE BASE ELEVATION



TOP VIEW
TRANSFORMER BASE



BOTTOM VIEW
TRANSFORMER BASE

BASE SHOE and TRANSFORMER BASE:
The fabricator shall provide a base shoe casting and transformer base casting capable of transmitting the design forces shown in the POLE DATA Tables.

The base shoe height shown is the minimum permitted.

Where the optional Transformer Base is omitted, the Base Shoe shall accommodate the 1'-3" bolt circle and 1¼" ϕ anchor bolts.

FOUNDATION NOTES:
The foundations for Aluminum Light Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated)
Unit Weight	=	112 lbs./cu. ft (assumed dry) for pole on fill.

Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties. In any event only the soil identification is required.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

BASE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

Date: 9-26-00

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

8 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.125	0.250	0.429	0.107	0.253	2.375	0.125	0.250	0.160	0.040	0.253
2	40	100	2.375	0.125	0.375	0.671	0.158	0.253	2.375	0.125	0.250	0.250	0.059	0.253
3	45	80	2.375	0.125	0.250	0.437	0.109	0.253	2.375	0.125	0.250	0.163	0.041	0.253
4	45	100	2.375	0.125	0.375	0.682	0.160	0.253	2.375	0.125	0.250	0.255	0.060	0.253
5	50	80	2.375	0.125	0.250	0.443	0.110	0.253	2.375	0.125	0.250	0.166	0.041	0.253
6	50	100	2.375	0.125	0.375	0.693	0.163	0.253	2.375	0.125	0.250	0.259	0.061	0.253
7	55	110	3.125	0.125	0.375	0.940	0.212	0.255	2.375	0.125	0.250	0.182	0.041	0.255
8	60	110	3.125	0.125	0.375	0.952	0.214	0.255	2.375	0.125	0.250	0.185	0.042	0.255
9	65	110	3.125	0.125	0.375	0.963	0.217	0.255	2.375	0.125	0.250	0.187	0.042	0.255
10	70	110	3.125	0.125	0.375	0.973	0.219	0.255	2.375	0.125	0.250	0.189	0.042	0.255
11	75	110	3.125	0.125	0.375	0.983	0.221	0.255	2.375	0.125	0.250	0.191	0.043	0.255

10 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.125	0.375	0.605	0.121	0.327	2.375	0.125	0.250	0.262	0.052	0.327
2	40	100	3.000	0.125	0.375	0.798	0.146	0.334	3.000	0.125	0.250	0.415	0.076	0.334
3	45	80	2.375	0.125	0.375	0.616	0.123	0.327	2.375	0.125	0.250	0.266	0.053	0.327
4	45	100	3.000	0.125	0.375	0.812	0.148	0.334	3.000	0.125	0.250	0.422	0.077	0.334
5	50	80	2.375	0.125	0.375	0.625	0.125	0.327	2.375	0.125	0.250	0.270	0.054	0.327
6	50	100	3.000	0.125	0.375	0.824	0.150	0.334	3.000	0.125	0.250	0.429	0.078	0.334
7	55	110	3.125	0.125	0.438	1.042	0.186	0.335	3.000	0.125	0.313	0.492	0.088	0.335
8	60	110	3.125	0.125	0.438	1.055	0.188	0.335	3.000	0.125	0.313	0.498	0.089	0.335
9	65	110	3.125	0.125	0.438	1.068	0.191	0.335	3.000	0.125	0.313	0.504	0.090	0.335
10	70	110	3.125	0.125	0.438	1.079	0.192	0.335	3.000	0.125	0.313	0.509	0.091	0.335
11	75	110	3.125	0.125	0.438	1.090	0.194	0.335	3.000	0.125	0.313	0.514	0.092	0.335

12 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.000	0.125	0.375	0.673	0.110	0.416	3.000	0.125	0.250	0.379	0.062	0.416
2	40	100	3.125	0.125	0.438	1.033	0.159	0.419	3.125	0.125	0.313	0.600	0.092	0.419
3	45	80	3.000	0.125	0.313	0.685	0.112	0.416	3.000	0.125	0.250	0.386	0.063	0.416
4	45	100	3.125	0.125	0.438	1.051	0.161	0.419	3.125	0.125	0.313	0.611	0.094	0.419
5	50	80	3.000	0.125	0.313	0.695	0.113	0.416	3.000	0.125	0.250	0.392	0.064	0.416
6	50	100	3.125	0.125	0.438	1.068	0.164	0.419	3.125	0.125	0.313	0.620	0.095	0.419
7	55	110	3.500	0.125	0.438	1.250	0.188	0.425	3.500	0.125	0.313	0.789	0.119	0.425
8	60	110	3.500	0.125	0.438	1.266	0.190	0.425	3.500	0.125	0.313	0.799	0.120	0.425
9	65	110	3.500	0.125	0.438	1.280	0.192	0.425	3.500	0.125	0.375	0.808	0.121	0.425
10	70	110	3.500	0.125	0.438	1.294	0.194	0.425	3.500	0.125	0.375	0.817	0.123	0.425
11	75	110	3.500	0.125	0.438	1.307	0.196	0.425	3.500	0.125	0.375	0.825	0.124	0.425

15 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.500	0.125	0.313	0.896	0.119	0.565	3.500	0.125	0.250	0.605	0.080	0.565
2	40	100	4.000	0.125	0.375	1.322	0.165	0.580	4.000	0.125	0.313	0.979	0.122	0.580
3	45	80	3.500	0.125	0.313	0.912	0.120	0.565	3.500	0.125	0.250	0.616	0.081	0.565
4	45	100	4.000	0.125	0.375	1.345	0.167	0.580	4.000	0.125	0.313	0.996	0.124	0.580
5	50	80	3.500	0.125	0.313	0.927	0.122	0.565	3.500	0.125	0.250	0.625	0.082	0.565
6	50	100	4.000	0.125	0.375	1.366	0.170	0.580	4.000	0.125	0.313	1.012	0.126	0.580
7	55	110	4.500	0.125	0.375	1.596	0.195	0.595	4.500	0.125	0.313	1.278	0.156	0.595
8	60	110	4.500	0.125	0.375	1.617	0.197	0.595	4.500	0.125	0.313	1.294	0.158	0.595
9	65	110	4.500	0.125	0.375	1.636	0.199	0.595	4.500	0.125	0.313	1.309	0.159	0.595
10	70	110	4.500	0.125	0.375	1.654	0.201	0.595	4.500	0.125	0.313	1.324	0.161	0.595
11	75	110	4.500	0.125	0.375	1.670	0.203	0.595	4.500	0.125	0.313	1.337	0.163	0.595

* 'N' equals force normal to face of connection due to axial force in the arm - tension upper arm - compression lower arm.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

ARM DATA

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Blank
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.259	0.508	0.590	0.199	6.000	7
2	40	100	0.156	0.250	0.250	17.946	0.689	0.921	0.231	6.333	7
3	45	80	0.125	0.250	0.250	13.573	0.529	0.600	0.199	6.000	7
4	45	100	0.156	0.250	0.250	18.401	0.719	0.937	0.231	6.333	7
5	50	80	0.125	0.250	0.250	13.845	0.544	0.609	0.199	6.000	7
6	50	100	0.156	0.250	0.250	18.762	0.740	0.951	0.231	6.000	7
7	55	110	0.188	0.250	0.250	21.571	0.873	1.122	0.265	6.000	7
8	60	110	0.188	0.250	0.250	21.901	0.890	1.136	0.265	6.000	7
9	65	110	0.188	0.250	0.250	22.209	0.906	1.149	0.265	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.898	0.525	0.867	0.199	6.000	7
2	40	100	0.156	0.250	0.250	17.512	0.677	1.213	0.234	6.333	7
3	45	80	0.140	0.250	0.250	14.243	0.547	0.882	0.214	6.333	7
4	45	100	0.156	0.250	0.250	17.919	0.707	1.234	0.234	6.333	7
5	50	80	0.140	0.250	0.250	14.508	0.561	0.896	0.214	6.000	7
6	50	100	0.156	0.250	0.250	18.308	0.728	1.253	0.234	6.000	7
7	55	110	0.188	0.250	0.250	21.718	0.876	1.534	0.267	6.000	7
8	60	110	0.188	0.250	0.250	22.039	0.893	1.553	0.267	6.000	7
9	65	110	0.188	0.250	0.250	22.338	0.908	1.571	0.267	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.268	0.508	1.052	0.203	6.000	7
2	40	100	0.156	0.250	0.250	18.120	0.693	1.633	0.234	6.333	7
3	45	80	0.125	0.250	0.250	13.566	0.529	1.071	0.203	6.000	7
4	45	100	0.156	0.250	0.250	18.592	0.724	1.662	0.234	6.333	7
5	50	80	0.125	0.250	0.250	13.861	0.545	1.087	0.203	6.000	7
6	50	100	0.156	0.250	0.250	18.935	0.744	1.688	0.234	6.000	7
7	55	110	0.188	0.250	0.250	22.294	0.890	2.038	0.269	6.000	7
8	60	110	0.188	0.250	0.250	22.644	0.908	2.064	0.269	6.000	7
9	65	110	0.188	0.250	0.250	22.973	0.924	2.088	0.269	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.584	0.516	1.501	0.209	6.000	7
2	40	100	0.156	0.250	0.250	18.612	0.705	2.300	0.243	6.333	7
3	45	80	0.140	0.250	0.250	13.907	0.538	1.528	0.224	6.333	7
4	45	100	0.156	0.250	0.250	19.069	0.736	2.341	0.243	6.333	7
5	50	80	0.140	0.250	0.250	14.190	0.553	1.552	0.224	6.000	7
6	50	100	0.188	0.250	0.250	19.435	0.757	2.378	0.273	6.000	7
7	55	110	0.188	0.250	0.250	22.933	0.906	2.874	0.277	6.000	7
8	60	110	0.188	0.250	0.250	23.305	0.924	2.911	0.277	6.000	7
9	65	110	0.250	0.250	0.250	23.622	0.940	2.945	0.335	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA - 40 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Phillips
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	16.364	0.567	0.600	0.234	6.000	7
2	45	100	0.188	0.250	0.250	22.019	0.765	0.937	0.291	6.667	7
3	50	80	0.140	0.250	0.250	16.727	0.589	0.609	0.234	6.333	7
4	50	100	0.188	0.250	0.250	22.500	0.796	0.951	0.291	7.000	8
5	55	110	0.250	0.250	0.250	25.899	0.944	1.122	0.364	6.000	7
6	60	110	0.250	0.250	0.250	26.318	0.965	1.136	0.364	6.000	7
7	65	110	0.250	0.250	0.250	26.705	0.983	1.149	0.364	6.000	7
8	70	110	0.250	0.250	0.250	27.024	0.998	1.162	0.364	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	17.118	0.584	0.882	0.234	6.333	7
2	45	100	0.188	0.250	0.250	21.476	0.753	1.234	0.293	6.667	7
3	50	80	0.156	0.250	0.250	17.473	0.606	0.896	0.253	6.333	7
4	50	100	0.188	0.250	0.250	21.988	0.784	1.253	0.293	6.667	7
5	55	110	0.250	0.250	0.250	26.065	0.947	1.534	0.364	6.000	7
6	60	110	0.250	0.250	0.250	26.474	0.967	1.553	0.364	6.000	7
7	65	110	0.250	0.250	0.250	26.852	0.985	1.571	0.364	6.000	7
8	70	110	0.250	0.250	0.250	27.206	1.002	1.588	0.364	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.156	0.250	0.250	13.366	0.567	1.071	0.256	6.333	7
2	45	100	0.188	0.250	0.250	22.236	0.770	1.662	0.293	7.000	8
3	50	80	0.156	0.250	0.250	16.740	0.589	1.087	0.256	6.333	7
4	50	100	0.188	0.250	0.250	22.697	0.800	1.688	0.293	7.000	8
5	55	110	0.250	0.250	0.250	26.717	0.961	2.038	0.365	6.000	7
6	60	110	0.250	0.250	0.250	27.159	0.982	2.064	0.365	6.000	7
7	65	110	0.250	0.250	0.250	27.571	1.001	2.088	0.365	6.000	7
8	70	110	0.250	0.250	0.250	27.917	1.017	2.111	0.365	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	16.731	0.575	1.528	0.243	6.333	7
2	45	100	0.250	0.250	0.250	22.775	0.782	2.341	0.366	7.000	8
3	50	80	0.156	0.250	0.250	17.106	0.597	1.552	0.261	6.333	7
4	50	100	0.250	0.250	0.250	23.262	0.813	2.378	0.366	7.000	8
5	55	110	0.250	0.250	0.250	27.441	0.977	2.874	0.370	6.000	7
6	60	110	0.250	0.250	0.250	27.909	0.999	2.911	0.370	6.000	7
7	65	110	0.250	0.250	0.250	28.307	1.017	2.945	0.370	6.000	7
8	70	110	0.250	0.313	0.313	28.682	1.034	2.977	0.370	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA-45 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Blank
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	19.823	0.627	0.609	0.318	6.333	7
2	50	100	0.250	0.250	0.250	26.487	0.842	0.951	0.399	7.333	8
3	55	110	0.250	0.313	0.313	30.543	1.008	1.122	0.399	7.667	8
4	60	110	0.313	0.313	0.313	31.073	1.035	1.136	0.480	6.000	7
5	65	110	0.313	0.313	0.313	31.556	1.057	1.149	0.480	6.000	7
6	70	110	0.313	0.313	0.313	31.954	1.076	1.162	0.480	6.000	7
7	75	110	0.313	0.313	0.313	32.373	1.093	1.173	0.480	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	20.652	0.644	0.896	0.316	6.667	7
2	50	100	0.250	0.250	0.250	25.919	0.830	1.253	0.399	7.000	8
3	55	110	0.250	0.313	0.313	30.729	1.011	1.534	0.399	7.667	8
4	60	110	0.313	0.313	0.313	31.248	1.038	1.553	0.478	6.000	7
5	65	110	0.313	0.313	0.313	31.720	1.060	1.571	0.478	6.000	7
6	70	110	0.313	0.313	0.313	32.158	1.079	1.588	0.478	6.000	7
7	75	110	0.313	0.313	0.313	32.568	1.096	1.604	0.478	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	19.834	0.627	1.087	0.318	6.667	7
2	50	100	0.250	0.250	0.250	26.709	0.846	1.688	0.397	7.333	8
3	55	110	0.313	0.313	0.313	31.457	1.026	2.038	0.477	7.667	8
4	60	110	0.313	0.313	0.313	32.013	1.053	2.064	0.477	6.000	7
5	65	110	0.313	0.313	0.313	32.523	1.075	2.088	0.477	6.000	7
6	70	110	0.313	0.313	0.313	32.951	1.094	2.111	0.477	6.000	7
7	75	110	0.313	0.313	0.313	33.353	1.111	2.132	0.477	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	20.238	0.635	1.552	0.322	6.667	7
2	50	100	0.250	0.250	0.250	27.340	0.859	2.378	0.401	7.333	8
3	55	110	0.313	0.313	0.313	32.267	1.041	2.874	0.480	7.667	8
4	60	110	0.313	0.313	0.313	32.852	1.069	2.911	0.480	6.000	7
5	65	110	0.313	0.313	0.313	33.346	1.091	2.945	0.480	6.000	7
6	70	110	0.313	0.313	0.313	33.807	1.111	2.977	0.480	6.000	7
7	75	110	0.313	0.313	0.313	34.197	1.128	3.008	0.480	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA - 50 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

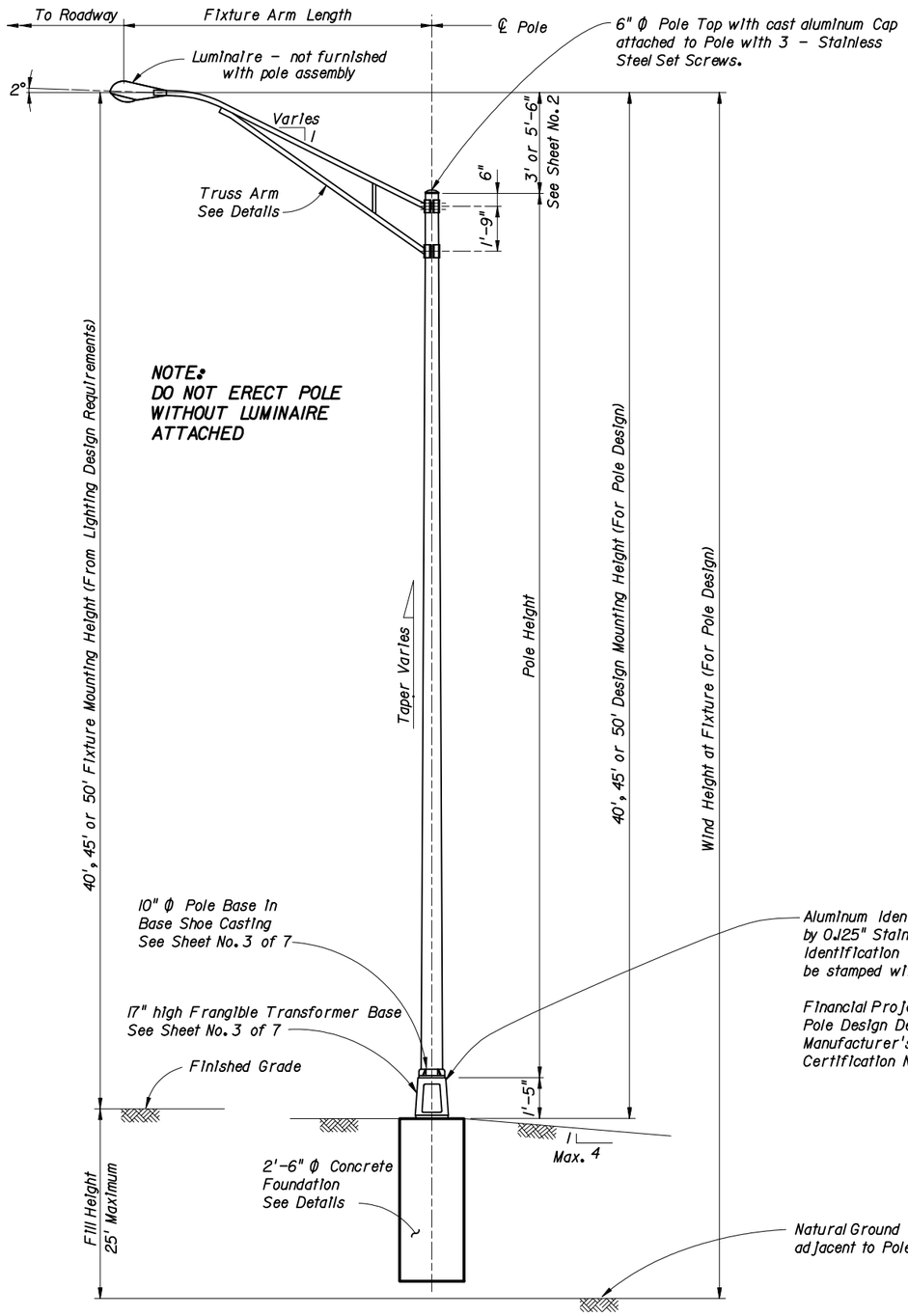
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. M. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

ALUMINUM LIGHT POLE NOTES

1. Light Pole Materials shall be as follows:

Poles	->	ASTM B221 - ALLOY 6063-T6
Arm Pipes or Pipe Extrusions	->	ASTM B221 - ALLOY 6063-T6
Arm Connection Extrusions, Bars and Plates	->	ASTM B221 - ALLOY 6061-T6
Shoe Base Casting	->	ASTM B26 - ALLOY 356-T6 or ASTM B108 - ALLOY 356-T6
Aluminum Caps and Covers	->	ASTM B26
Frangible Transformer Base Casting	->	ASTM B26 - ALLOY 356-T6 or ASTM B108 - ALLOY 356-T6
Weld Metal	->	ER4043
Anchor Bolts	->	ASTM F1554 Grade 55
Shoe Base Connection Bolts	->	ASTM A325 Type 1
Nuts for Connection Bolts and Anchor Bolts	->	ASTM A563 Grade DH
Washers for Connection Bolts and Anchor Bolts	->	ASTM F436 Type 1
Stainless Steel Fasteners and Hardware	->	A.I.S.I. Grade 304

2. Aluminum alloy 6063 is to be furnished in T4 condition and heat treated in accordance with ASTM B597.
3. Shoe Base Connection Bolts, Anchor Bolts, Nuts and Washers shall be galvanized in accordance with ASTM A153. Lock Washers shall galvanized in accordance with ASTM B695 Class 50
4. Foundation concrete shall be Class I (Special) with a minimum 28-day Compressive Strength (f'c) of 3,000 psi for all environmental classifications.
5. Reinforcing Steel shall be ASTM A615-96 Grade 60.
6. A design wind speed of 80 or 100 mph with a 30% gust factor for wind loading on the pole is included in the design.
7. The pole shall be tapered as required to provide a top outside diameter (O.D.) of 6" with a base O.D. of 10". Portions of the shaft near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication .
8. The pole shall be free of transverse welds except at the base.
9. Poles constructed out of two or more sections with overlapping splices are not permitted.
10. All welding shall conform to American Welding Society Structural Welding Code (Aluminum) ANSI/AWS D1.2 (current edition).
11. See Standard Index No. 17500 for grounding and wiring details.
12. The pole and arms shall be furnished with a 50 grit satin rubbed finish.
13. All designs to be in accordance with the 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs , Luminaires and Traffic Signals.
14. All Light Poles within 5 miles of the coastline shall be equipped with a damping device. Information, details and performance data on the damping device shall be included with the Manufacturer's Qualified Products List (QPL) application.
15. The manufacturer's Qualified Product List (QPL) application shall include test reports certifying that the Arm and Base Connection components, including the breakaway transformer base, are capable of resisting the forces (axial, shear, torsion, and moment, as applicable) shown in the data tables for the arm and pole.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

ELEVATION AND NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

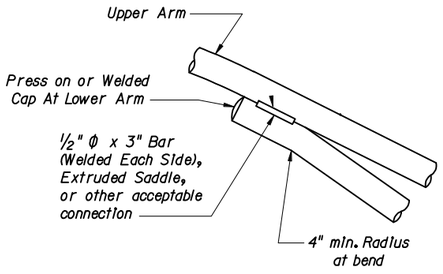
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Watts
State Structures Design Engineer

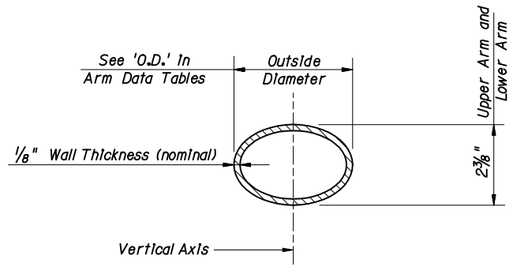
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 7	017515

Revised: 7-10-01

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ARM CONNECTION DETAIL



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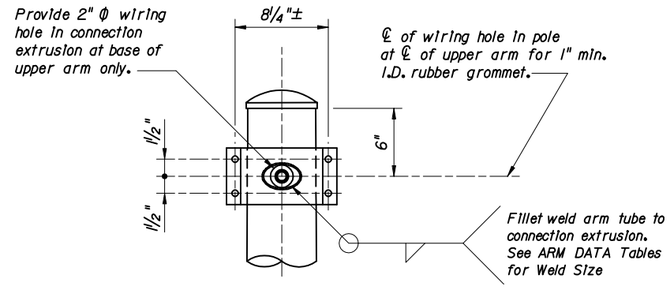
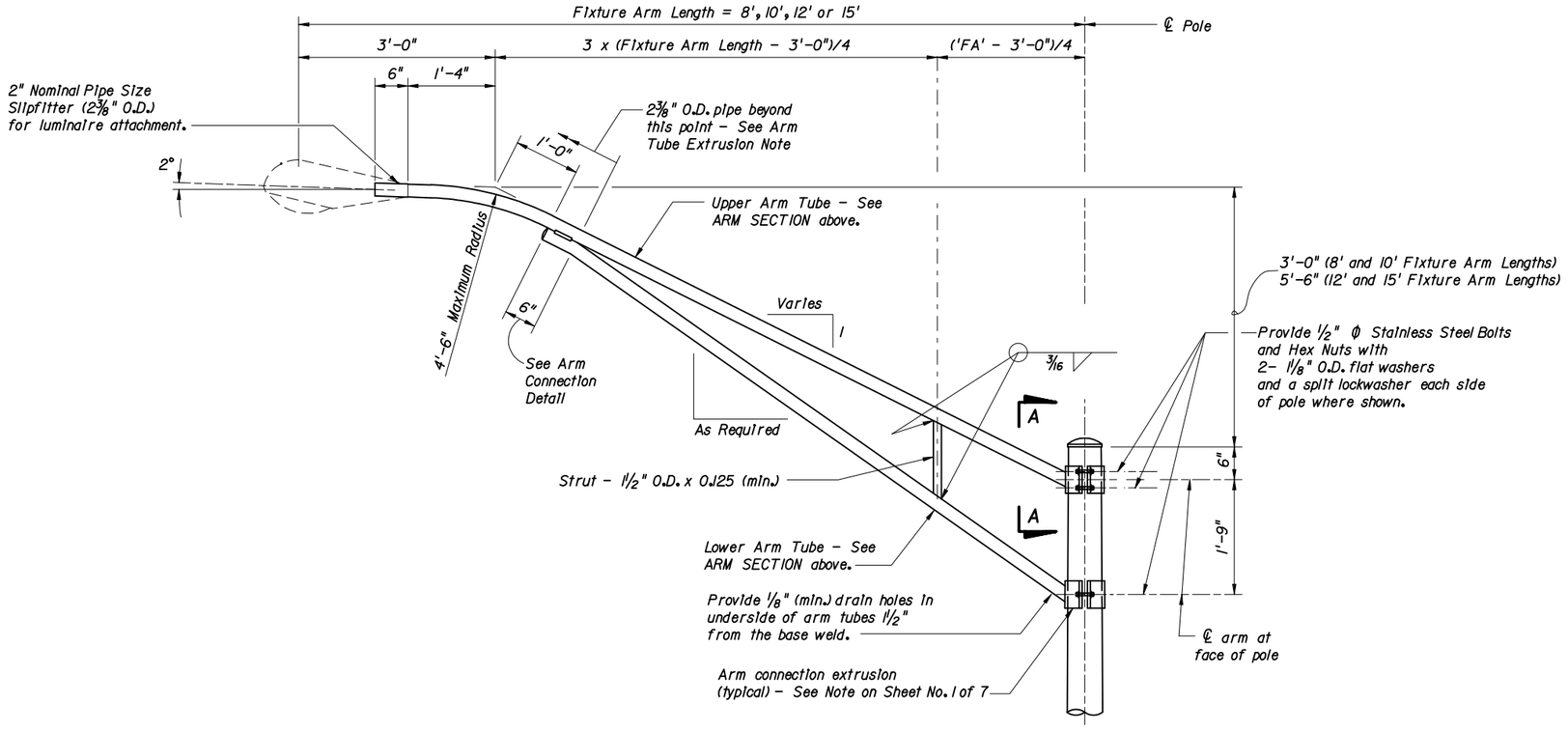


SECTION A-A

(Connection At Lower Arm Similar)



ARM ELEVATION

ARM TUBE EXTRUSIONS NOTES:

At the pole connection, provide arm extrusions with dimensions as shown in the ARM SECTION and as tabulated in the ARM DATA Tables. Uniformly transition elliptical extrusions to a cylindrical section at the arm connection.

The pole fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equal or exceed that of the required section, and provided the wall thickness is a minimum of ⅛" nominal and within the Aluminum Association Tolerances.

The outside diameter about the minor axis should be held at 2⅜" at the upper and lower arms.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

ARM DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

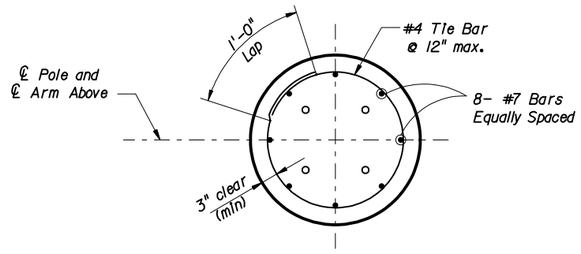
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

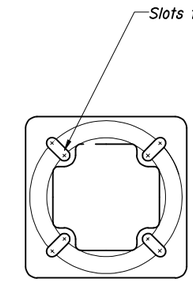
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 7	017515

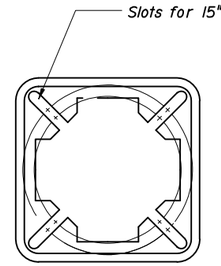
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION C-C



TOP VIEW
TRANSFORMER BASE

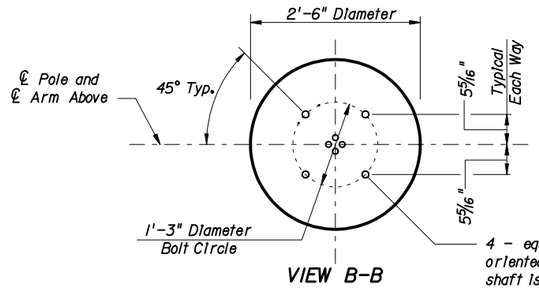


BOTTOM VIEW
TRANSFORMER BASE

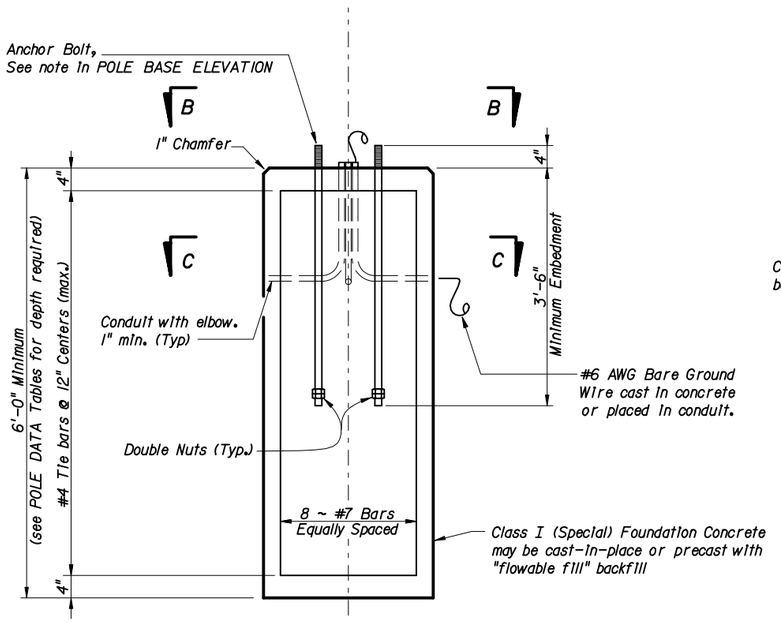
FOUNDATION NOTES:
The foundations for Aluminum Light Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated) for poles on fill ≤ 6 feet.
Unit Weight	=	112 lbs./cu. ft (assumed dry) for poles on fill > 6 feet.

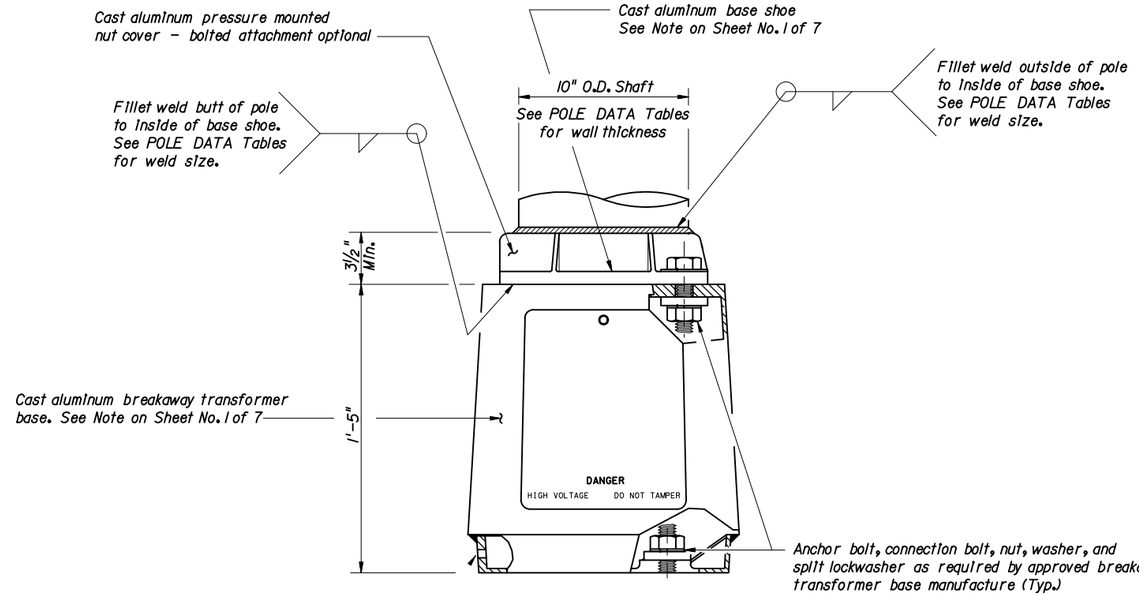
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties. In any event only the soil identification is required.



VIEW B-B



FOUNDATION



POLE BASE ELEVATION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

BASE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

8 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.250	0.392	0.100	0.162	2.375	0.188	0.218	0.056	0.090
2	40	100	3.625	0.250	0.755	0.178	0.212	2.375	0.188	0.152	0.036	0.043
3	45	80	2.375	0.250	0.392	0.100	0.162	2.375	0.188	0.218	0.056	0.090
4	45	100	3.625	0.250	0.755	0.178	0.212	2.375	0.188	0.152	0.036	0.043
5	50	80	2.375	0.250	0.424	0.104	0.162	2.375	0.250	0.236	0.058	0.090
6	50	100	3.625	0.250	0.819	0.186	0.212	2.375	0.188	0.165	0.037	0.043
7	55	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
8	60	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
9	65	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
10	70	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
11	75	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043

10 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.625	0.188	0.669	0.134	0.269	2.375	0.188	0.150	0.030	0.060
2	40	100	3.625	0.188	0.651	0.118	0.182	3.625	0.188	0.556	0.101	0.155
3	45	80	3.625	0.188	0.669	0.134	0.269	2.375	0.188	0.150	0.030	0.060
4	45	100	3.625	0.188	0.651	0.118	0.182	3.625	0.188	0.556	0.101	0.155
5	50	80	3.625	0.250	0.720	0.138	0.269	2.375	0.188	0.161	0.031	0.060
6	50	100	3.625	0.250	0.703	0.123	0.182	3.625	0.250	0.601	0.105	0.155
7	55	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
8	60	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
9	65	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
10	70	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
11	75	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155

12 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.625	0.188	0.593	0.099	0.235	3.625	0.188	0.486	0.081	0.192
2	40	100	4.625	0.250	1.150	0.179	0.299	3.625	0.188	0.518	0.081	0.135
3	45	80	3.625	0.188	0.593	0.099	0.235	3.625	0.188	0.486	0.081	0.192
4	45	100	4.625	0.250	1.150	0.179	0.299	3.625	0.188	0.518	0.081	0.135
5	50	80	3.625	0.188	0.634	0.102	0.235	3.625	0.188	0.520	0.084	0.192
6	50	100	4.625	0.250	1.230	0.185	0.299	3.625	0.188	0.554	0.084	0.135
7	55	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
8	60	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
9	65	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
10	70	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
11	75	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135

15 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	4.625	0.250	1.02	0.137	0.388	3.625	0.188	0.484	0.065	0.184
2	40	100	4.625	0.250	1.15	0.145	0.293	4.625	0.250	1.170	0.146	0.296
3	45	80	4.625	0.250	1.02	0.137	0.388	3.625	0.188	0.484	0.065	0.184
4	45	100	4.625	0.250	1.15	0.145	0.293	4.625	0.250	1.170	0.146	0.296
5	50	80	4.625	0.250	1.09	0.140	0.388	3.625	0.188	0.514	0.066	0.184
6	50	100	4.625	0.250	1.23	0.149	0.293	4.625	0.313	1.240	0.151	0.296
7	55	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
8	60	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
9	65	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
10	70	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
11	75	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296

Note:
All tables were developed assuming the following Luminaire properties:
Area = 1.5 ft^2 (Includes wind drag coefficient)
Weight = 51 pounds

** 'N' equals force normal to face of connection due to axial force in the arm - tension upper arm - compression lower arm.*

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

ARM DATA

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.5	0.522	0.611	0.227	6
2	40	100	0.156	0.188	0.156	17.6	0.690	0.907	0.229	7
3	45	80	0.156	0.188	0.156	13.8	0.539	0.611	0.227	6
4	45	100	0.156	0.188	0.156	18.0	0.713	0.907	0.229	7
5	50	80	0.156	0.188	0.156	14.3	0.563	0.660	0.227	6
6	50	100	0.156	0.188	0.156	18.6	0.747	0.985	0.229	6
7	55	100	0.156	0.188	0.156	19.7	0.790	1.030	0.229	6
8	60	100	0.188	0.188	0.188	20.1	0.805	1.030	0.261	6
9	65	100	0.188	0.188	0.188	20.4	0.825	1.030	0.261	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.7	0.528	0.819	0.233	6
2	40	100	0.156	0.188	0.156	17.8	0.694	1.210	0.236	7
3	45	80	0.156	0.188	0.156	14.0	0.545	0.819	0.233	6
4	45	100	0.156	0.188	0.156	18.2	0.717	1.210	0.236	7
5	50	80	0.156	0.188	0.156	14.5	0.569	0.881	0.233	6
6	50	100	0.156	0.188	0.156	18.8	0.751	1.300	0.236	6
7	55	100	0.188	0.188	0.188	19.9	0.795	1.370	0.268	6
8	60	100	0.188	0.188	0.188	20.3	0.810	1.370	0.268	6
9	65	100	0.188	0.188	0.188	20.6	0.830	1.370	0.268	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.1	0.514	1.08	0.232	6
2	40	100	0.156	0.188	0.156	17.9	0.699	1.66	0.235	7
3	45	80	0.156	0.188	0.156	13.4	0.530	1.08	0.232	6
4	45	100	0.156	0.188	0.156	18.2	0.721	1.66	0.235	7
5	50	80	0.156	0.188	0.156	13.8	0.553	1.15	0.232	6
6	50	100	0.156	0.188	0.156	18.9	0.753	1.78	0.235	6
7	55	100	0.188	0.188	0.188	19.9	0.796	1.89	0.265	6
8	60	100	0.188	0.188	0.188	20.4	0.814	1.89	0.265	6
9	65	100	0.188	0.188	0.188	20.7	0.832	1.89	0.265	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.9	0.533	1.51	0.242	6
2	40	100	0.156	0.188	0.156	19.1	0.728	2.32	0.246	7
3	45	80	0.156	0.188	0.156	14.2	0.550	1.51	0.242	6
4	45	100	0.188	0.188	0.188	19.4	0.750	2.32	0.276	7
5	50	80	0.156	0.188	0.156	14.6	0.572	1.60	0.242	6
6	50	100	0.188	0.188	0.188	20.1	0.782	2.46	0.276	6
7	55	100	0.188	0.188	0.188	21.3	0.829	2.63	0.276	6
8	60	100	0.188	0.188	0.188	21.7	0.847	2.63	0.276	6
9	65	100	0.188	0.188	0.188	22.0	0.865	2.63	0.276	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 40 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.6	0.582	0.611	0.249	6
2	45	100	0.188	0.188	0.188	21.5	0.767	0.907	0.288	7
3	50	80	0.156	0.188	0.156	17.2	0.608	0.660	0.249	7
4	50	100	0.188	0.188	0.188	22.4	0.803	0.985	0.288	7
5	55	100	0.250	0.188	0.250	23.6	0.844	1.030	0.359	6
6	60	100	0.250	0.188	0.250	24.2	0.876	1.030	0.359	6
7	65	100	0.250	0.188	0.250	24.6	0.894	1.030	0.359	6
8	70	100	0.250	0.188	0.250	24.9	0.913	1.030	0.359	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.9	0.588	0.819	0.255	7
2	45	100	0.188	0.188	0.188	21.8	0.771	1.210	0.294	7
3	50	80	0.156	0.188	0.156	17.5	0.614	0.881	0.255	7
4	50	100	0.250	0.188	0.250	22.6	0.807	1.300	0.366	7
5	55	100	0.250	0.188	0.250	23.9	0.849	1.370	0.366	6
6	60	100	0.250	0.188	0.250	24.4	0.881	1.370	0.366	6
7	65	100	0.250	0.188	0.250	24.8	0.899	1.370	0.366	6
8	70	100	0.250	0.188	0.250	25.2	0.917	1.370	0.366	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.2	0.573	1.08	0.255	6
2	45	100	0.188	0.188	0.188	21.9	0.775	1.66	0.291	7
3	50	80	0.156	0.188	0.156	16.7	0.594	1.15	0.255	7
4	50	100	0.250	0.188	0.250	22.7	0.804	1.78	0.358	7
5	55	100	0.250	0.188	0.250	23.9	0.851	1.89	0.358	6
6	60	100	0.250	0.188	0.250	24.5	0.884	1.89	0.358	6
7	65	100	0.250	0.188	0.250	24.9	0.898	1.89	0.358	6
8	70	100	0.250	0.188	0.250	25.2	0.918	1.89	0.358	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	17.1	0.592	1.51	0.264	7
2	45	100	0.250	0.188	0.250	23.2	0.804	2.32	0.370	7
3	50	80	0.156	0.188	0.156	17.6	0.613	1.60	0.264	7
4	50	100	0.250	0.188	0.250	24.0	0.833	2.46	0.370	7
5	55	100	0.250	0.188	0.250	25.4	0.885	2.63	0.370	6
6	60	100	0.250	0.250	0.250	26.0	0.918	2.63	0.370	6
7	65	100	0.250	0.250	0.250	26.4	0.931	2.63	0.370	6
8	70	100	0.250	0.250	0.250	26.7	0.952	2.63	0.370	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 45 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Bitter
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.4	0.650	0.660	0.312	7
2	50	100	0.250	0.250	0.250	26.4	0.856	0.985	0.394	8
3	55	100	0.250	0.250	0.250	27.9	0.899	1.030	0.394	8
4	60	100	0.250	0.250	0.250	28.5	0.930	1.030	0.394	6
5	65	100	0.250	0.250	0.250	29.1	0.965	1.030	0.394	6
6	70	100	0.250	0.250	0.250	29.5	0.981	1.030	0.394	6
7	75	100	0.250	0.250	0.250	29.8	0.998	1.030	0.394	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.7	0.656	0.881	0.317	7
2	50	100	0.250	0.250	0.250	26.7	0.860	1.300	0.400	8
3	55	100	0.250	0.250	0.250	28.1	0.904	1.370	0.400	8
4	60	100	0.250	0.250	0.250	28.8	0.934	1.370	0.400	6
5	65	100	0.250	0.250	0.250	29.4	0.970	1.370	0.400	6
6	70	100	0.250	0.250	0.250	29.8	0.986	1.370	0.400	6
7	75	100	0.250	0.250	0.250	30.1	1.000	1.370	0.400	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	19.9	0.640	1.15	0.315	7
2	50	100	0.250	0.250	0.250	26.8	0.863	1.78	0.393	8
3	55	100	0.250	0.250	0.250	28.2	0.906	1.89	0.393	8
4	60	100	0.250	0.250	0.250	28.8	0.935	1.89	0.393	6
5	65	100	0.250	0.250	0.250	29.5	0.972	1.89	0.393	6
6	70	100	0.250	0.250	0.250	29.9	0.987	1.89	0.393	6
7	75	100	0.250	0.250	0.250	30.1	1.000	1.89	0.393	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.9	0.660	1.60	0.324	7
2	50	100	0.250	0.250	0.250	28.2	0.892	2.46	0.404	8
3	55	100	0.250	0.250	0.250	29.9	0.940	2.63	0.404	8
4	60	100	0.313	0.250	0.313	30.5	0.968	2.63	0.479	6
5	65	100	0.313	0.250	0.313	31.2	1.000	2.63	0.479	6
6	70	100	0.313	0.250	0.313	31.5	1.020	2.63	0.479	6
7	75	100	0.313	0.250	0.313	31.8	1.040	2.63	0.479	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 50 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

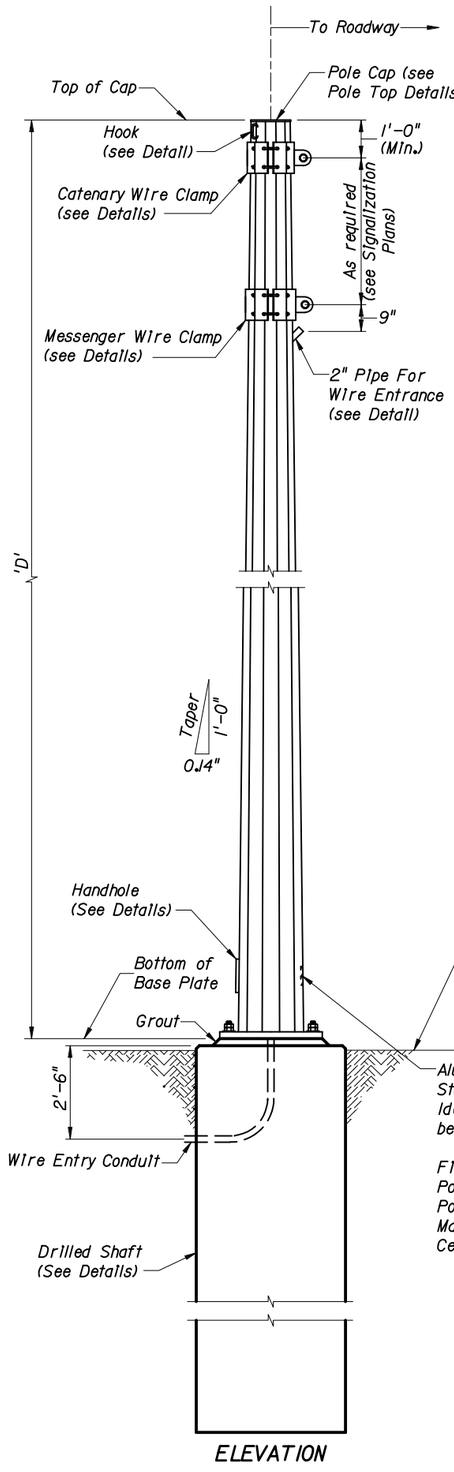
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY *W. N. Bhatt*
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on Inside of Pole visible from handhole. Tag to be stamped with the following information :

Financial Project ID
Pole Type
Pole Height
Manufacturer's Name
Certification No.

SELECTION PROCEDURE

1. Determine the required pole height and bending moment at the pole base using a design wind speed in conformance with the "Plans Preparation Manual", Chapter 29, with a 30 percent gust factor.
2. Enter the Pole Moment Capacity Table, and determine the required Pole Type and wall thickness.
3. Enter the Pole Type and height designation in the signalization Plans for each strain pole.
   Example: From design: required height = 23'-6",
   base moment = 198.0 kip-ft
   From table: use NS-VII-24
4. Refer to the Table of Variables for the required pole diameter, base plate and drilled shaft dimensions.

MINIMUM REQUIRED MOMENT CAPACITY (kip-ft)

	TYPE OF POLE						
D (ft.)	NS-IV	NS-V	NS-VI	NS-VII	NS-VIII	NS-IX	NS-X
20	33.0	106.0	152.0	210.0	266.0	330.0	390.0
22	36.8	111.2	158.7	218.0	274.9	340.3	401.7
24	40.6	116.4	165.3	226.0	283.9	350.7	413.3
26	44.4	121.6	172.0	234.0	292.8	361.0	425.0
28	48.2	126.8	178.7	242.0	301.7	371.3	436.7
30	52.0	132.0	185.3	250.0	310.7	381.7	448.3
32	55.8	137.2	192.0	258.0	319.6	392.0	460.0
34	59.6	142.4	198.7	266.0	328.5	402.3	471.7
36	63.4	147.6	205.3	274.0	337.5	412.7	483.3
38	67.2	152.8	212.0	282.0	346.4	423.0	495.0
40	71.0	158.0	218.7	290.0	355.3	433.3	506.7
42	74.8	163.2	225.3	298.0	364.3	443.7	518.3
44	78.6	168.4	232.0	306.0	373.2	454.0	530.0
46	82.4	173.6	238.7	314.0	382.1	464.3	541.7
48	86.2	178.8	245.3	322.0	391.1	474.7	553.3
50	90.0	184.0	252.0	330.0	400.0	485.0	565.0

0.239 Inch Wall Thickness

0.313 Inch Wall Thickness

STEEL STRAIN POLE NOTES

1. Signal Structure Materials shall be as follows:
   Poles --> ASTM A607 Grade 50, 55 or 60 (less than 1/4") or ASTM A572 Grade 50 or 60 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   Steel Plates -> ASTM A709 Grade 36
   Weld Metal -> E70XX
   Bolts (except Anchor Bolts) -> ASTM A325, Type I
   Anchor Bolts -> ASTM F1554 Grade 55
   Nuts for Anchor Bolts -> ASTM A563 Grade A Heavy Hex
   Washers for Anchor Bolts -> ASTM F436 Type I
   Handhole Frame -> ASTM A709 Grade 36
   Handhole Cover -> ASTM A607 Grade 50, 55 or 60
   Aluminum Caps and Covers -> ASTM B26 (356-T6)
   Stainless Steel Screws -> AISI Type 316
2. All Steel Items shall be Galvanized as follows:
   All Nuts, Bolts and Washers -> ASTM A153 Class C or D depending on size
   All other Steel Items -> ASTM A123
3. Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day Compressive Strength (f'c) of 4,000 psi for all environmental classifications.
4. Reinforcing Steel shall be ASTM A615-96 Grade 60.
5. Grout shall have a minimum 28-day Compressive Strength of 5,000 psi and shall meet the requirements of Section 934. Grout after pole is set and properly plumbed.
6. A design wind speed of 100 mph with a 30% gust factor for wind loading on the pole was included in the design.
7. The Pole shall be tapered with the diameter changing at a rate of 0.14 inch per foot.
8. Except for anchor bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for anchor bolts shall not exceed the bolt diameter plus 1/2".
9. The foundation for the Strain Pole Structure shall be constructed in accordance with Section 455 of the FDOT Specifications except that no payment for the foundation shall be made under Section 455. The cost of providing the foundation shall be included in the pay item for providing the complete Strain Pole Structure. For foundation design assumptions, refer to the Foundation Notes
10. The pole shall be free of transverse welds except at the base.
11. Poles constructed out of two or more sections with overlapping splices are not permitted.
12. The strain pole shall not be erected until the foundation concrete has been allowed to cure for a minimum of seven days.
13. No field welding on any part of the pole is permitted.
14. For clamp spacing, cable sizes and forces, signal and sign mounting locations and details see the Signalization Plans.
15. All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).
16. See Standard Index No. 17727 for grounding detail and span wire installation details.
17. Locate handhole 180° from 2 inch wire entrance pipe.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE ELEVATION AND NOTES

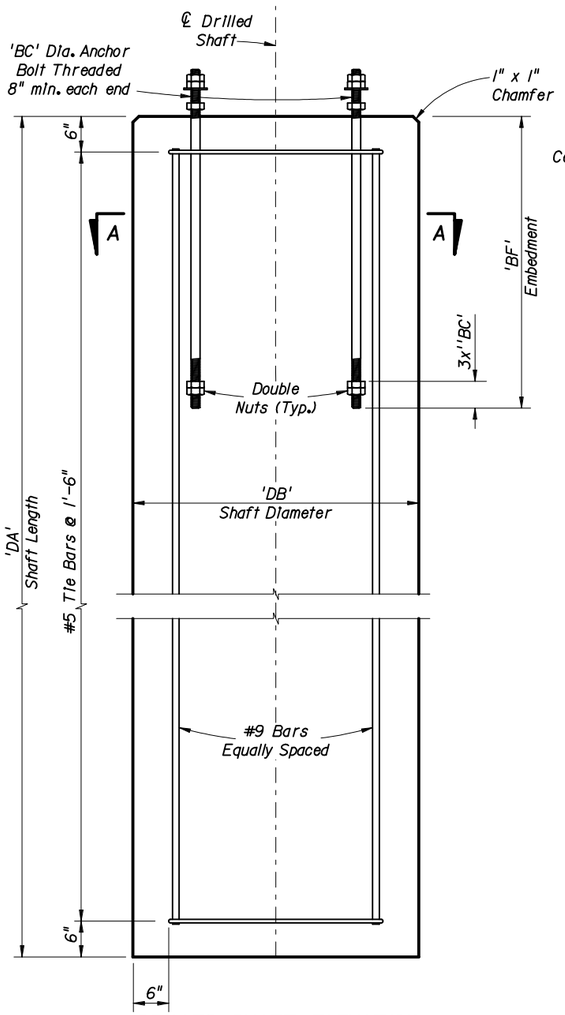
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

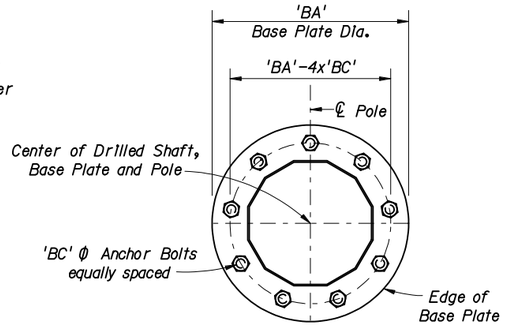
APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 3	17723

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

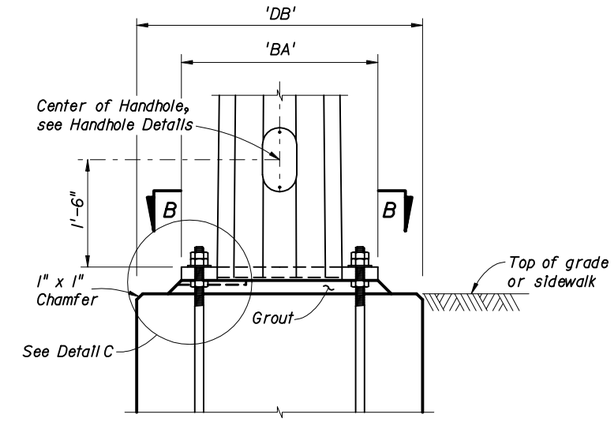


DRILLED SHAFT ELEVATION
(See Table for number of #9 bars.)

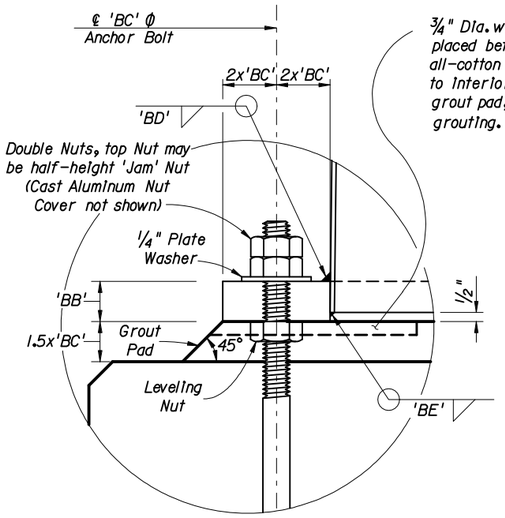


VIEW B-B

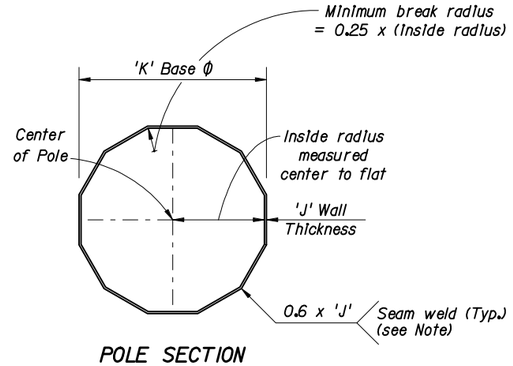
NOTE: Number of bolts shown for illustration purposes only. (See Tabel for actual quantity)



PARTIAL ELEVATION
(Showing Base Plate, Anchor bolts and Handhole)

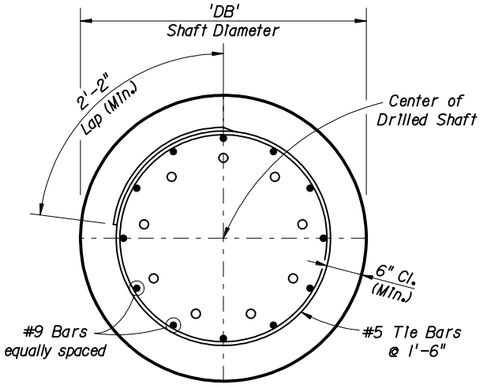


DETAIL C



POLE SECTION

NOTE: Longitudinal seam welds within 6" of circumferential welds shall be complete penetration welds.



SECTION A-A

FOUNDATION NOTES:
The foundations for Steel Strain Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.

TABLE OF STRAIN POLE VARIABLES

POLE TYPE	POLE		BASE CONNECTION							SHAFT		
	J (In.)	K (In.)	No. of Bolts	BA (In.)	BB (In.)	BC (In.)	BD (In.)	BE (In.)	BF (In.)	DA (ft)	DB (ft)	No. of #9 bars
NS-IV	J = 0.239	14	6	25	2.125	1.375	0.313	0.188	36	10	3.5	14
NS-V		16	8	27	2.250	1.375	0.375	0.188	47	12.5	3.5	14
NS-VI		18	8	30	2.375	1.500	0.438	0.188	54	14	3.5	14
NS-VII		21	10	33	2.250	1.500	0.375	0.188	49	15	4	19
NS-VIII		23	12	34	2.250	1.375	0.375	0.188	52	16	4	19
NS-IX		25	12	37	2.250	1.500	0.375	0.188	50	16	4.5	23
NS-X		27	12	39	2.375	1.500	0.375	0.188	52	17	4.5	23
NS-V	J = 0.313	16	8	28	2.375	1.500	0.438	0.250	47	12.5	3.5	14
NS-VI		18	10	30	2.375	1.500	0.500	0.250	54	14	3.5	14
NS-VII		21	12	33	2.375	1.500	0.500	0.250	49	15	4	19
NS-VIII		23	12	35	2.500	1.500	0.500	0.250	52	16	4	19
NS-IX		25	12	39	2.625	1.750	0.500	0.250	50	16	4.5	23
NS-X		27	12	41	2.750	1.750	0.500	0.250	52	17	4.5	23

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE
BASE DETAILS AND TABLE OF VARIABLES

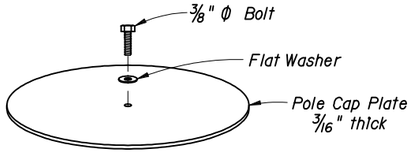
INTERIM STANDARD

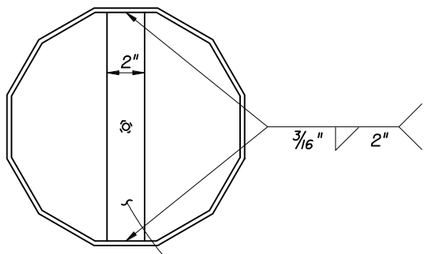
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 3	17723

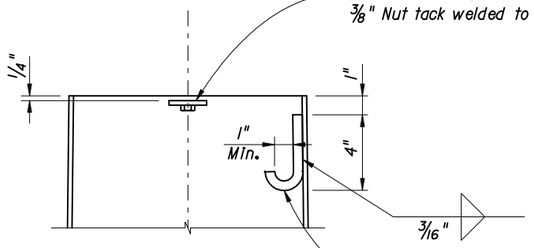
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





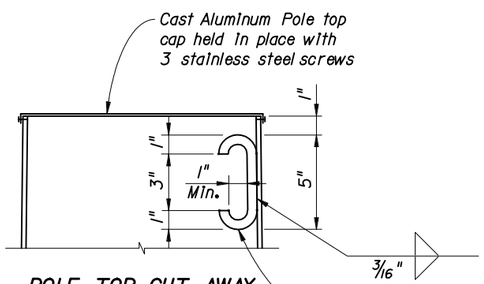
TOP VIEW

1/4" x 2" Lifting Bar with 5/16" ϕ hole and 3/8" Nut tack welded to underside of bar



POLE TOP CUT-AWAY
(Option 'a')

'J' Hook for wiring, 1/2" ϕ commercial grade hot rolled bar welded to inside of pole.

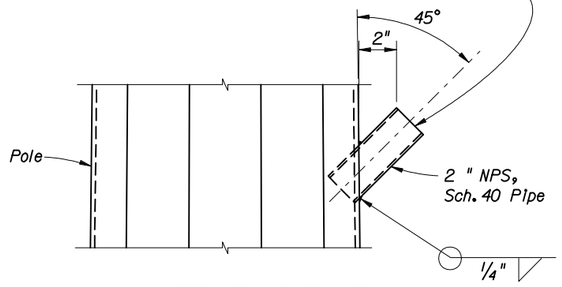


POLE TOP CUT-AWAY
(Option 'b')

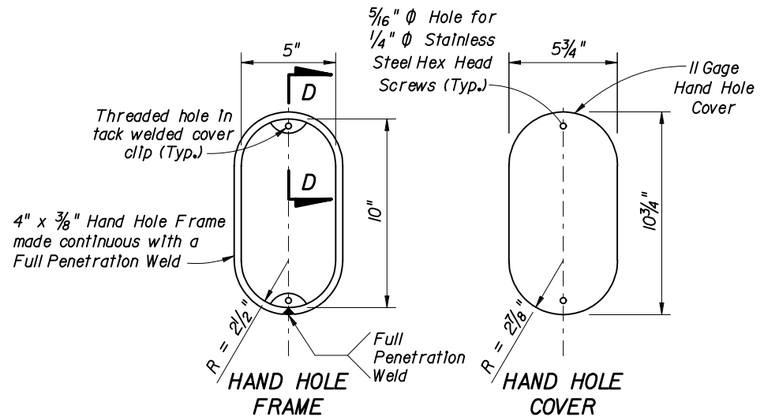
'C' Hook for wiring and lifting, 1/2" ϕ commercial grade hot rolled bar welded to inside of pole.

POLE TOP NOTE:
Any combination of the above two options may be used, provided both lifting and wiring is accommodated.

NOTE: A properly sized Service Head (Weather Head), shall be installed and fastened securely on to the standard pipe for each pole location. At locations other than service entrance, the service head face is to be left closed to outside atmosphere. Service entrance installation per Index No. 17727.

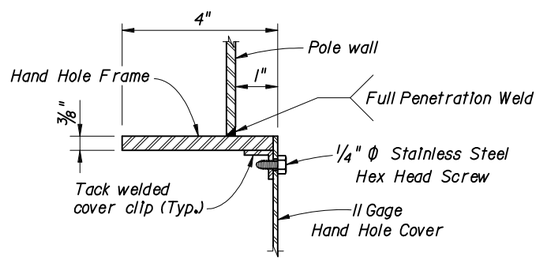


WIRE ENTRANCE DETAILS

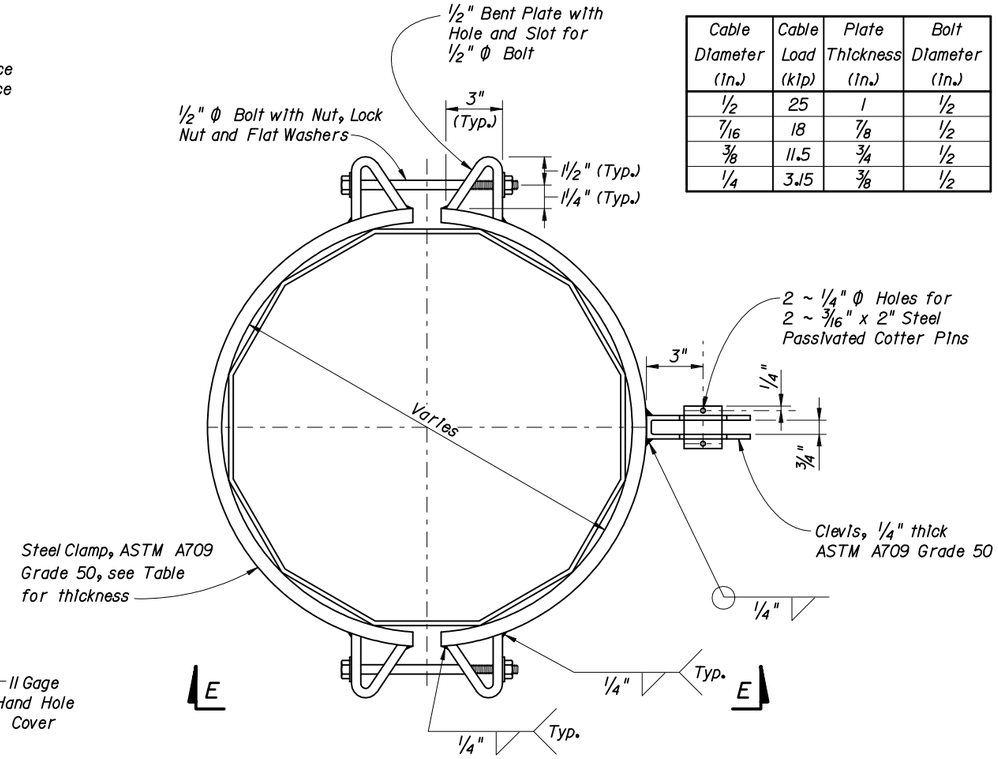


HAND HOLE FRAME

HAND HOLE COVER



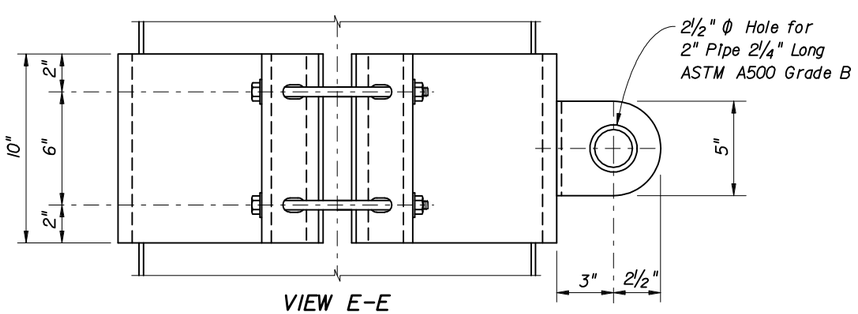
SECTION D-D
(thru Hand Hole)



Cable Diameter (In.)	Cable Load (klp)	Plate Thickness (In.)	Bolt Diameter (In.)
1/2	25	1	1/2
7/16	18	7/8	1/2
3/8	11.5	3/4	1/2
1/4	3.15	3/8	1/2

CATENARY AND MESSENGER WIRE CLAMPS

NOTE: Clamps have been sized for Design Cable Loads shown in the Table, and a Maximum Pole Diameter at the Clamp location of 2'-1".



VIEW E-E

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE ATTACHMENT DETAILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. H. Boyle
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 3	17723

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

NOTES:

Design Poles (Concrete and Strain Poles) in accordance with the latest edition of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and Supplement thereto. For allowable unit stresses, meet the requirements of Section 6.

Place the prestressing symmetrically. Supply a sufficient amount of prestressing to provide a calculated compressive stress of 2.2 ksi for Type N-II and 3 ksi for Type N-III at the top of pole after all losses.

Concrete Strength shall be 6 ksi minimum at 28 days and 4 ksi minimum at transfer of the Prestressing force.

Reinforcing steel shall be A615 Grade 60. Provide a minimum area of non-prestressed reinforcement equal to 0.33% of the concrete area.

Prestressed Strands shall be A416 Grade 270 stress relieved or low relaxation.

One turn required for spiral splices and two turns required at the top and bottom of poles. Spiral shall be manufactured from cold-drawn steel wire meeting the requirements of ASTM A82.

Attach span wire assemblies (consisting of the catenary wire, the messenger wire, and the tether wire) to the concrete poles in accordance with Section 634.

If a two point attachment is required by the plans, provide an eye bolt hole for the messenger wire, or field drill one at the location indicated in the plans. Field drill the eyebolt hole for the tether wire, when required, prior to installation.

Use cover plates made of non-corrosive materials and attached to the pole using lead anchors or threaded inserts embedded in the pole and round head chrome plated screws.

Attach ground wires to the reinforcing steel in the pole as necessary to prevent the ground wire from being displaced during concreting operations.

Identify concrete poles as to pole manufacturer, Department's pole type, length and Qualified Product List qualification number by inset numerals 1" in height inscribed on the same face of the pole as the handhole and ground wire.

Provide a Class 3 Surface Finish as Specified in 400-15.2.4.

Provide a minimum cover of 1".

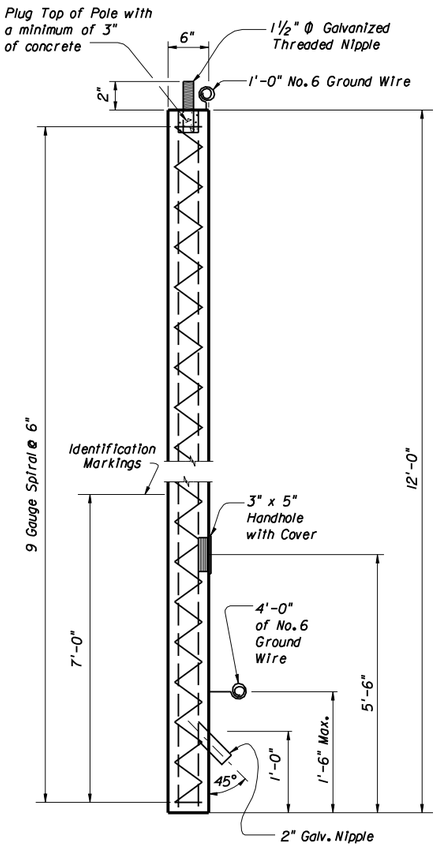
Provide all poles with total taper of 0.052 IN/FT.

**MINIMUM REQUIRED MOMENT CAPACITY					
D (feet)	TYPE OF POLE				
	N-IV (k-ft)	N-V (k-ft)	N-VI (k-ft)	N-VII (k-ft)	N-VIII (k-ft)
20	33	106	152	210	266
22	37	111	159	218	275
24	41	116	163	226	284
26	44	121	172	234	293
28	48	127	179	242	302
30	52	132	185	250	311
32	56	137	192	258	320
34	60	142	199	266	329
36	63	148	205	274	338
38	67	153	212	282	346
40	71	158	219	290	355
42	75	163	225	298	364
44	79	168	232	306	373
46	82	173	239	314	382
48	86	177	245	322	391
50	90	180	252	330	400

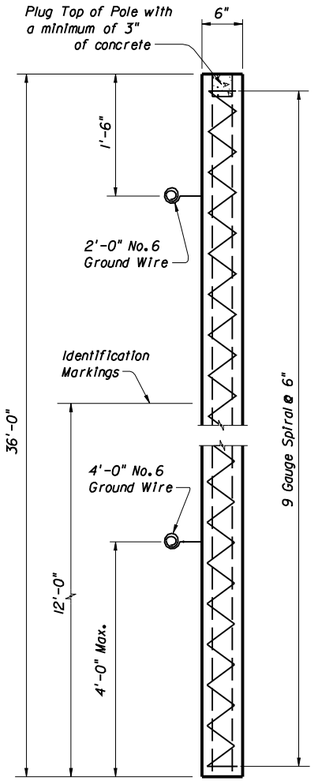
** Service Conditions: Design poles to carry the "Minimum Required Moment Capacity." These moments are based on a dead load plus wind load combinations, therefore obtain the allowable stresses by multiplying those for normal exposure conditions given in Section 6 by the applicable factor from Section 2 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The ultimate moment capacity of each pole shall be a minimum of 1.3 times the "Minimum Required Moment Capacity."

TYPE OF POLE	CONCRETE POLE	
	SIZE AT TOP (T)	SHEAR REINFORCING
Type II	6" x 6"	9 Gauge Spiral @ 6"
Type III	6" x 6"	6 Gauge Spiral @ 6"
Type IV	8" x 8"	5 Gauge Spiral @ 6"
Type V	10" x 10"	5 Gauge Spiral @ 6"
Type VI	12" x 12"	5 Gauge Spiral @ 6"
Type VII	14" x 14"	5 Gauge Spiral @ 6"
Type VIII	16" x 16"	5 Gauge Spiral @ 6"

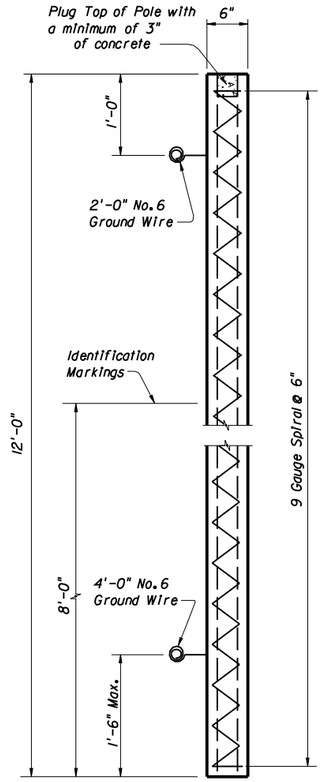


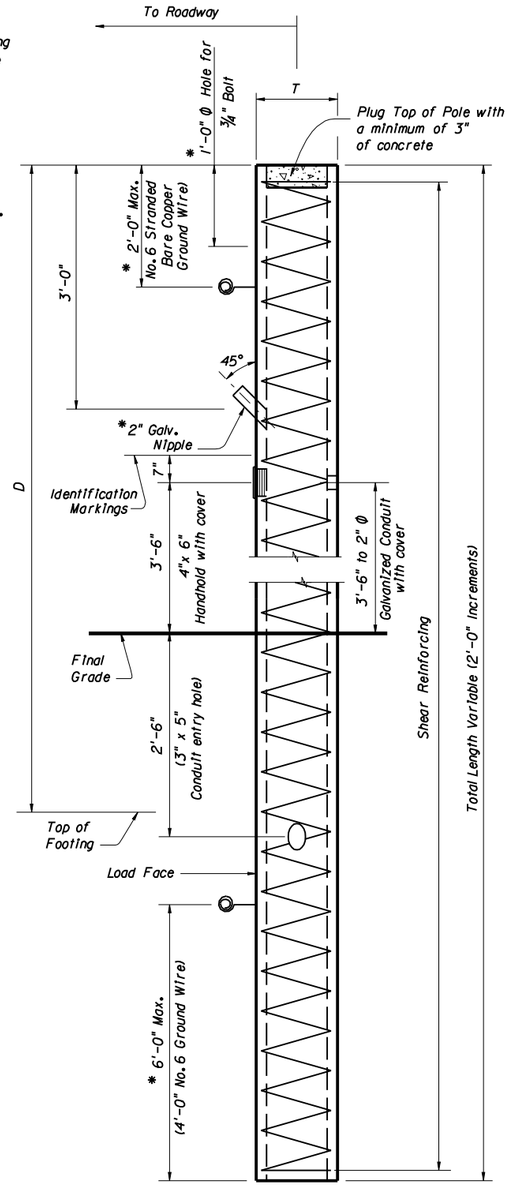
TYPE N-II POLE ON CONCRETE PEDESTAL



SERVICE POLES - TYPE N-II

(For Installation, refer to Roadway and Traffic Design Standard, Index No. 17504)





POLE TYPES N-III THROUGH N-VIII

* Do not apply these items to Type N-III. Establish bolt hole locations, ground wire location and conduit location as shown in the plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CONCRETE POLES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET REPLACES SHEET NO. 1 OF 1 OF INDEX NO. 17725 OF THE ENGLISH ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	017725

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

NOTES:

Design Poles (Concrete and Strain Poles) in accordance with the latest edition of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and Supplement thereto. For allowable unit stresses, meet the requirements of Section 6.

Place the prestressing symmetrically. Supply a sufficient amount of prestressing to provide a calculated compressive stress of 2.2 ksi for Type N-II and 3 ksi for Type N-III at the top of pole after all losses.

Concrete Strength shall be 6 ksi minimum at 28 days and 4 ksi minimum at transfer of the Prestressing force.

Reinforcing steel shall be A615 Grade 60. Provide a minimum area of non-prestressed reinforcement equal to 0.33% of the concrete area.

Prestressed Strands shall be A416 Grade 270 stress relieved or low relaxation.

One turn required for spiral splices and two turns required at the top and bottom of poles. Spiral shall be manufactured from cold-drawn steel wire meeting the requirements of ASTM A82.

Attach span wire assemblies (consisting of the catenary wire, the messenger wire, and the tether wire) to the concrete poles in accordance with Section 634.

If a two point attachment is required by the plans, provide an eye bolt hole for the messenger wire, or field drill one at the location indicated in the plans. Field drill the eyebolt hole for the tether wire, when required, prior to installation.

Use cover plates made of non-corrosive materials and attached to the pole using lead anchors or threaded inserts embedded in the pole and round head chrome plated screws.

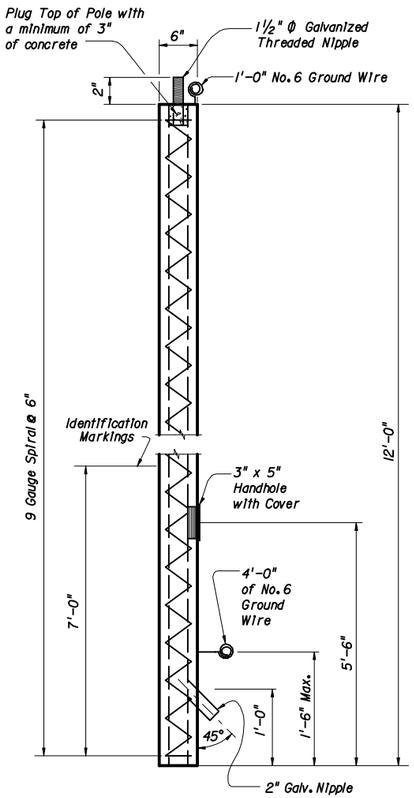
Attach ground wires to the reinforcing steel in the pole as necessary to prevent the ground wire from being displaced during concreting operations.

Identify concrete poles as to pole manufacturer, Department's pole type, length and Qualified Product List qualification number by inset numerals 1" in height inscribed on the same face of the pole as the handhole and ground wire.

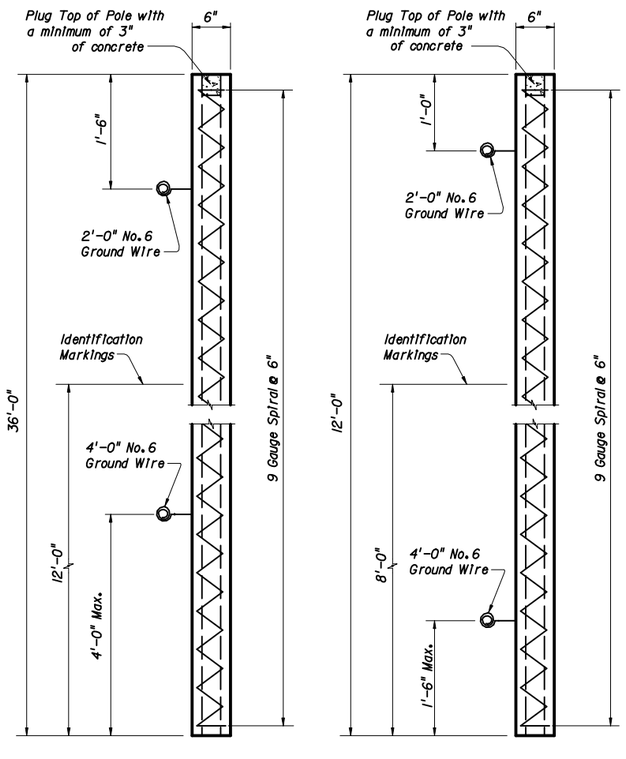
Provide a Class 3 Surface Finish as Specified in 400-15.2.4.

Provide a minimum cover of 1".

Provide all poles with total taper of 0.152 IN/FT.

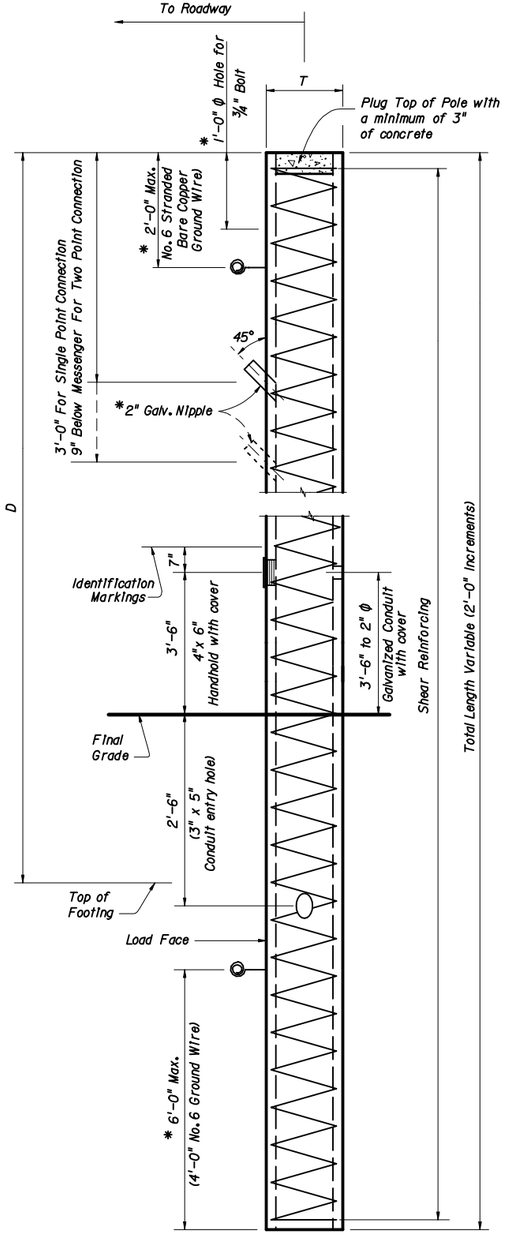


TYPE N-II POLE ON CONCRETE PEDESTAL



SERVICE POLES - TYPE N-II

(For Installation, refer to Roadway and Traffic Design Standard, Index No. 17504)



POLE TYPES N-III THROUGH N-VIII

* Do not apply these items to Type N-III Establish bolt hole locations, ground wire location and conduit location as shown in the plans.

Ref. Index 17900 and Sec. 744 for modifications to Type N-III poles used at traffic monitoring sites.

**MINIMUM REQUIRED MOMENT CAPACITY					
D (feet)	TYPE OF POLE				
	N-IV (k-ft)	N-V (k-ft)	N-VI (k-ft)	N-VII (k-ft)	N-VIII (k-ft)
20	33	106	152	210	266
22	37	111	159	218	275
24	41	116	163	226	284
26	44	121	172	234	293
28	48	127	179	242	302
30	52	132	185	250	311
32	56	137	192	258	320
34	60	142	199	266	329
36	63	148	205	274	338
38	67	153	212	282	346
40	71	158	219	290	355
42	75	163	225	298	364
44	79	168	232	306	373
46	82	173	239	314	382
48	86	177	245	322	391
50	90	180	252	330	400

** Service Conditions: Design poles to carry the "Minimum Required Moment Capacity." These moments are based on a dead load plus wind load combinations, therefore obtain the allowable stresses by multiplying those for normal exposure conditions given in Section 6 by the applicable factor from Section 2 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The ultimate moment capacity of each pole shall be a minimum of 1.3 times the "Minimum Required Moment Capacity."

TYPE OF POLE	CONCRETE POLE	
	SIZE AT TOP (T)	SHEAR REINFORCING
Type II	6" x 6"	9 Gauge Spiral @ 6"
Type III	6" x 6"	6 Gauge Spiral @ 6"
Type IV	8" x 8"	5 Gauge Spiral @ 6"
Type V	10" x 10"	5 Gauge Spiral @ 6"
Type VI	12" x 12"	5 Gauge Spiral @ 6"
Type VII	14" x 14"	5 Gauge Spiral @ 6"
Type VIII	16" x 16"	5 Gauge Spiral @ 6"

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE POLES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	017725

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

1. This Index, 17740, is for use in preparing signalization plans when single arm and double arm mast arm assemblies are required. This standard establishes the requirements of mast arm components listed on the Qualified Products List (QPL). When using components on the QPL, the "Mast Arm Assemblies Design Table", will be the only information required in the Contract Plans, and shop drawings are not required.

2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

4. The Data for Standard Mast Arm Assemblies on Index No. 17742, includes four different mast arm types and eleven different pole types. The arm classes are used regardless of single or double arm configurations. The poles are for either single or double arm configurations without luminaires or single arm configurations with luminaires.

5. Four standard arm configurations are provided. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required. The Arm Design Table on Index No. 17742 shows the variables for standard arm types A1 through A4.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Eleven standard poles are provided. Pole types P1 through P7 may be used with both single arm and double arm structures without luminaires. Pole types P21 Lum through P24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17742.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles P1 through P7 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles P21 Lum through P24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Differing arm configurations or pole mounting heights will require a Special Pole Design.

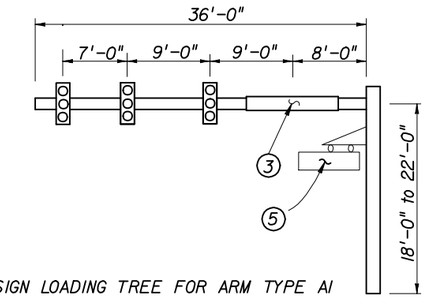
12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm: A#-P# = Arm Type - Pole Type
Double Arm: A#-A#-P# = First Arm Type - Second Arm Type - Pole Type

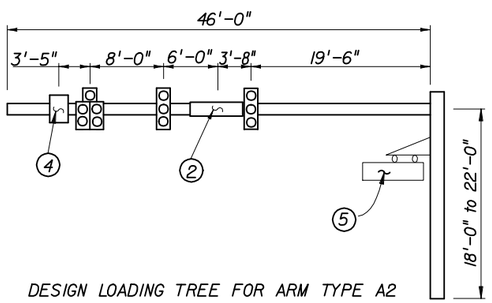
13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degress (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

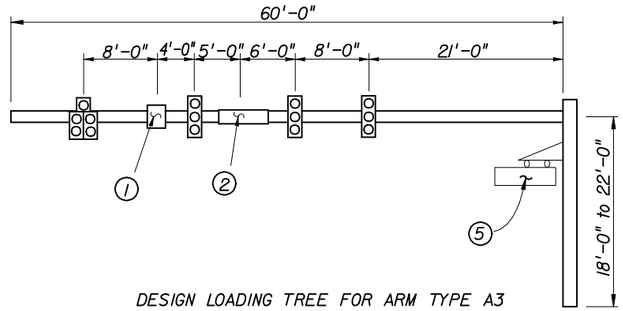
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT brings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.



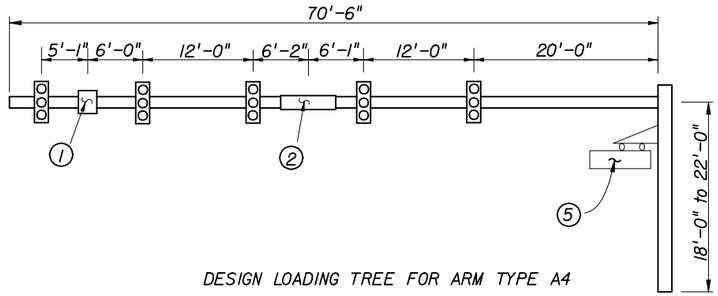
DESIGN LOADING TREE FOR ARM TYPE A1



DESIGN LOADING TREE FOR ARM TYPE A2



DESIGN LOADING TREE FOR ARM TYPE A3



DESIGN LOADING TREE FOR ARM TYPE A4

(1) Denotes a 2'-0" x 2'-6" Sign.

(2) Denotes a 1'-6" x 6'-0" Sign.

(3) Denotes a 1'-6" x 10'-0" Sign.

(4) Denotes a 2'-0" x 3'-0" Sign.

(5) Denotes a 2'-0" x 6'-0" max Internally Illuminated sign on a hinged bracket attached to pole.

Signal Notes:

1. Signal Backplates are included in the design of Standard Arms

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1 & 2 OF 2 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

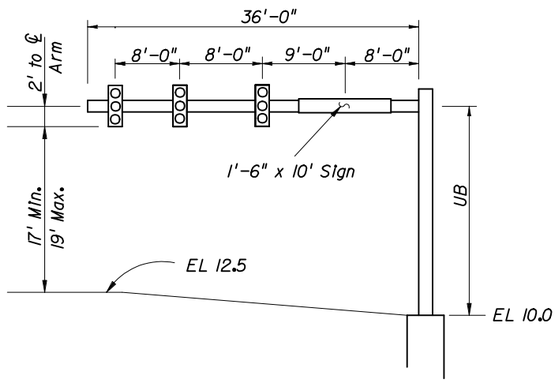
Date: 8-24-00

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 2	17740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown

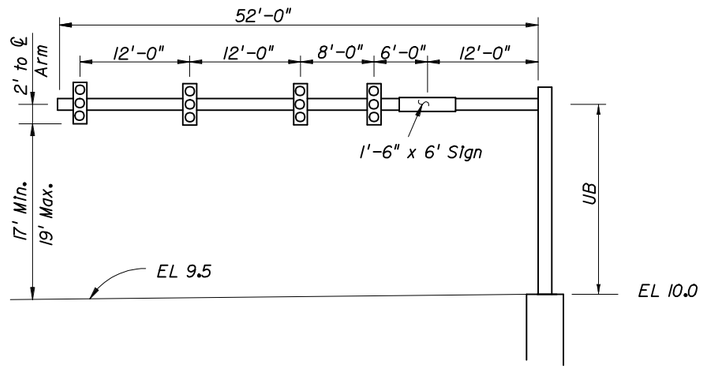


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the loading tree. A 36' Arm is adequate. Enter Arm Type A1 in the "Standard Mast Arm Assemblies Design Table" on Index No. 17742.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) with Arm Type A1, and select Pole Type 'P1'. Enter Pole Type 'P1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17' (Min.) + 2'
   'UB' = 21.5' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   A1 - P1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown
Second Arm same as Example 1



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, Investigate Arm A3 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type A3 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Index No. 17742.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'A3' is not required, enter the actual length of 52' under 'FAA' for the first Arm.
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 9.75" + 8' (0.14"/ft) = 10.87"
   Enter 10.87" for FBA under First Arm.
3. Select Second Arm Type - See Example Arm.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) with Arm Types 'A3' and 'A1', and select Pole Type 'P3'. Enter Pole Type 'P3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17' (Min.) + 2'
   'UB' = 18.5' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'P3' Pole.
   UCA = 17.75" - (24' - 22')X0.14"/ft.) = 17.47"
   Enter 17.47 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   A3 - A1 - P3
   First Arm Type - Second Arm Type - Pole Type

EXAMPLE SEE CONTRACT PLANS

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (in.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	A1 - P1	A1	.	.	.	.	.	.	P1	.	22	.	.	.	.	.
Example 2	A3 - A1 - P3	A3	52	10.87	A1	.	.	270	P3	22	20	17.47	.	.	.	.
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TABLE NOTES:

(1) Assembly Number Legend
   Single Arm
   A# - P# = Arm Number - Pole Number
   Double Arm
   A# - P# = First Arm Number - Second Arm Number - Pole Number

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the are tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

   Classification = Cohesionless (Fine Sand)
   Friction Angle = 30 Degrees (30°)
   Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Date: 8-24-00

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1 & 2 OF 2 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY W. H. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 2	17740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

1. This Index, 17740, is for use in preparing signalization plans when single arm and double arm mast arm assemblies are required. This standard establishes the requirements of mast arm components listed on the Qualified Products List (QPL). When using components on the QPL, the "Mast Arm Assemblies Design Table", will be the only information required in the Contract Plans, and shop drawings are not required.

2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

4. The Data for Standard Mast Arm Assemblies on Index No. 17742, includes four different mast arm types and eleven different pole types. The arm classes are used regardless of single or double arm configurations. The poles are for either single or double arm configurations without luminaires or single arm configurations with luminaires.

5. Four standard arm configurations are provided. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required. The Arm Design Table on Index No. 17742 shows the variables for standard arm types A1 through A4.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Eleven standard poles are provided. Pole types P1 through P7 may be used with both single arm and double arm structures without luminaires. Pole types P21 Lum through P24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17742.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles P1 through P7 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles P21 Lum through P24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Differing arm configurations or pole mounting heights will require a Special Pole Design.

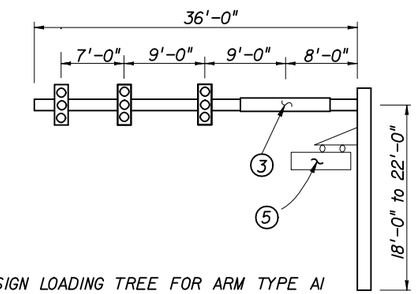
12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm: A#-P# = Arm Type - Pole Type
Double Arm: A#-A#-P# = First Arm Type - Second Arm Type - Pole Type

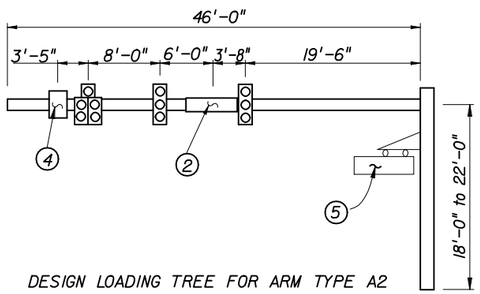
13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degress (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

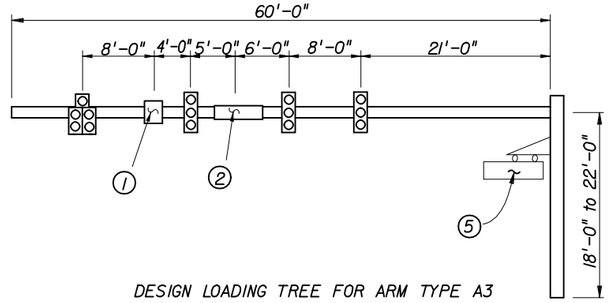
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT brings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.



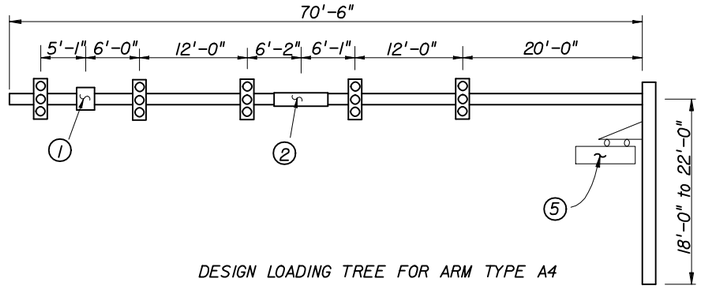
DESIGN LOADING TREE FOR ARM TYPE A1



DESIGN LOADING TREE FOR ARM TYPE A2



DESIGN LOADING TREE FOR ARM TYPE A3



DESIGN LOADING TREE FOR ARM TYPE A4

1. Denotes a 2'-0" x 2'-6" Sign.
2. Denotes a 1'-6" x 6'-0" Sign.
3. Denotes a 1'-6" x 10'-0" Sign.
4. Denotes a 2'-0" x 3'-0" Sign.
5. Denotes a 12 sq. ft. (max) internally illuminated sign on a hinged bracket attached to pole. See Index 17744, Sheet No. 1 of 5, for limitations on use.

Signal Notes:

1. Signal Backplates are included in the design of Standard Arms

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

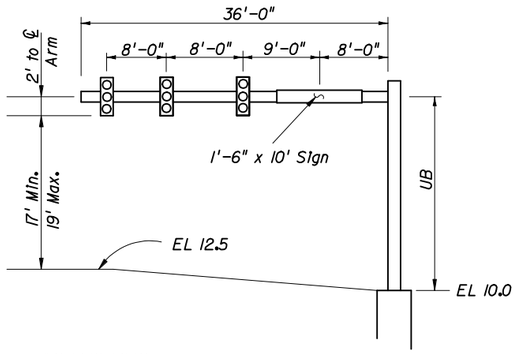
APPROVED BY W. V. Bhat
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown

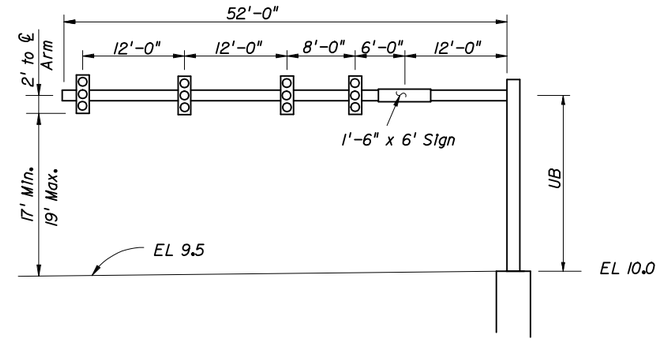


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the loading tree. A 36' Arm is adequate. Enter Arm Type A1 in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) with Arm Type A1, and select Pole Type 'P1'. Enter Pole Type 'P1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17' (Min.) + 2'
   'UB' = 21.5' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   A1 - P1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown
Second Arm same as Example 1



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, investigate Arm A3 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type A3 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'A3' is not required, provide the required 52' arm by entering an actual length of 28' under 'FAA' for the first Arm ('FAA' + 'FE'-Splice = 28' + 26'-2'=52').
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 9.75" + 8' (0.14"/ft) = 10.87"
   Enter 10.87" for FBA under First Arm.
3. Select Second Arm Type - See Example Arm.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) with Arm Types 'A3' and 'A1', and select Pole Type 'P3'. Enter Pole Type 'P3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17' (Min.) + 2'
   'UB' = 18.5' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'P3' Pole.
   UCA = 17.75" + (24' - 22')X0.14"/ft.) = 18.03"
   Enter 18.03 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   A3 - A1 - P3
   First Arm Type - Second Arm Type - Pole Type

EXAMPLE
SEE CONTRACT
PLANS

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (in.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	A1 - P1	A1			·	·	·	·	P1	·	22	·	·	·	·	·
Example 2	A3 - A1 - P3	A3	28	10.87	A1	·	·	270	P3	22	20	18.03	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·

TABLE NOTES:

(1) Assembly Number Legend
   Single Arm
   A# - P# = Arm Number - Pole Number
   Double Arm
   A# - P# = First Arm Number - Second Arm Number - Pole Number

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the are tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

   Classification = Cohesioless (Fine Sand)
   Friction Angle = 30 Decrees (30°)
   Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

APPROVED BY W. N. [illegible]
State Structures Design Engineer

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE				
Arm Length	A1	A2	A3	A4
Pole Type	P1 & P21 Lum	P2 & P22 Lum	P3 & P23 Lum	P4 & P24 Lum

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths *	A1 - A1	A2 - A1	A3 - A1	A4 - A1	A2 - A2	A3 - A2	A4 - A2	A3 - A3	A4 - A3	A4 - A4
Pole Type	P1	P2	P3	P5	P3	P4	P5	P5	P6	P7

* Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES											
		MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS	
ARM TYPE	ARM LENGTH	FA(ft)	FB(In)	FC(In)	FD(In)	FE(ft)	FF(In)	FG(In)	FH(In)	FM/SM(In)	FQ/SQ(In)
A1	36'-0"	36	7.5	12.5	0.1793	0	0	0	0	0.125	0.313
A2	46'-0"	36	7.9	13	0.1793	12	12.38	14	0.2391	0.188	0.438
A3	60'-0"	36	9.75	14.75	0.1793	26	14.12	17.75	0.25	0.188	0.438
A4	70'-6"	39.5	9.25	14.88	0.1793	33	14.25	18.75	0.313	0.313	0.438

Arm Camber Angle = 2 degrees.

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																								
POLE TYPE	UA(ft)	UC(In)	UD(In)	UE(In)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA									DRILLED SHAFT DATA			
						No. Bolts	BA (In)	BB (In)	BC (In)	BD (In)	BE (In)	BF (In)	HT (In)	FJ/SJ (In)	FK/SK (In)	FL/SL (In)	FN/SN (In)	FO/SO (In)	FP/SP (In)	FR/SR (In)	FS/SS (In)	FT/ST (In)	DA(ft)	DB(ft)	RA	RB
P1	24	13.75	17	0.2391	-	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P2	24	15.75	19	0.2391	-	6	33	2.375	1.75	0.25	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P3	24	17.75	21	0.313	-	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P4	24	19.75	23	0.313	-	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19
P5	24	20.75	24	0.313	-	8	38	2.125	1.75	0.375	0.313	36	30	33	2.75	0.563	0.438	18.75	1.25	1.75	12.5	0.438	17	4.5	9	23
P6	24	21.75	25	0.313	-	8	39	2.125	1.75	0.375	0.313	36	30	34	2.375	0.625	0.375	19.25	1.25	1.75	12.5	0.375	18	4.5	9	23
P7	24	23.75	27	0.313	-	8	41	2.125	1.75	0.375	0.313	36	30	36	2.5	0.625	0.375	20.75	1.25	1.75	12.5	0.375	19	4.5	9	23
P21 Lum	39	11.625	17	0.2391	37.5	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P22 Lum	39	13.625	19	0.2391	37.5	6	33	2.375	1.75	0.25	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P23 Lum	39	15.625	21	0.313	37.5	6	35	2.25	1.75	0.375	0.375	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P24 Lum	39	17.625	23	0.313	37.5	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19

LUMINAIRE AND LUMINAIRE CONNECTION										
LA(ft)	LB(ft)	LC(In)	LD(In)	LE	LF(ft)	LG(In)	LH(In)	LJ(In)	LK(In)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.375	0.625	0.250	0.188	37.5

GENERAL NOTE

1. Work this Index with Index No. 17744.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

REVISED: 5-5-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	17742

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE				
Arm Length	A1	A2	A3	A4
Pole Type	P1 & P21 Lum	P2 & P22 Lum	P3 & P23 Lum	P4 & P24 Lum

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths *	A1 - A1	A2 - A1	A3 - A1	A4 - A1	A2 - A2	A3 - A2	A4 - A2	A3 - A3	A4 - A3	A4 - A4
Pole Type	P1	P2	P3	P5	P3	P4	P5	P5	P6	P7

* Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES											
		MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS	
ARM TYPE	ARM LENGTH	FA(ft)	FB(In)	FC(In)	FD(In)	FE(ft)	FF(In)	FG(In)	FH(In)	FM/SM(In)	FQ/SQ(In)
A1	36'-0"	36	7.5	12.5	0.1793	0	0	0	0	0.125	0.313
A2	46'-0"	36	7.9	13	0.1793	12	12.38	14	0.2391	0.188	0.438
A3	60'-0"	36	9.75	14.75	0.1793	26	14.12	17.75	0.25	0.188	0.438
A4	70'-6"	39.5	9.25	14.88	0.1793	33	14.25	18.75	0.313	0.313	0.438

Arm Camber Angle = 2 degrees.

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																									
POLE TYPE	UA(ft)	UC(In)	UD(In)	UE(In)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA										DRILLED SHAFT DATA			
						No. Bolts	BA (In)	BB (In)	BC (In)	BD (In)	BE (In)	BF (In)	HT (In)	FJ/SJ (In)	FK/SK (In)	FL/SL (In)	FN/SN (In)	FO/SO (In)	FP/SP (In)	FR/SR (In)	FS/SS (In)	FT/ST (In)	DA(ft)	DB(ft)	RA	RB
P1	24	13.75	17	0.2391	-	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P2	24	15.75	19	0.2391	-	6	33	2.25	1.75	0.313	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P3	24	17.75	21	0.313	-	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P4	24	19.75	23	0.313	-	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19
P5	24	20.75	24	0.313	-	8	38	2.125	1.75	0.375	0.313	36	30	33	2.75	0.563	0.438	18.75	1.25	1.75	12.5	0.438	17	4.5	9	23
P6	24	21.75	25	0.313	-	8	39	2.125	1.75	0.375	0.313	36	30	34	2.375	0.625	0.375	19.25	1.25	1.75	12.5	0.375	18	4.5	9	23
P7	24	23.75	27	0.313	-	8	41	2.125	1.75	0.375	0.313	36	30	36	2.5	0.625	0.375	20.75	1.25	1.75	12.5	0.375	19	4.5	9	23
P21 Lum	39	11.625	17	0.2391	37.5	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P22 Lum	39	13.625	19	0.2391	37.5	6	33	2.25	1.75	0.313	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P23 Lum	39	15.625	21	0.313	37.5	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P24 Lum	39	17.625	23	0.313	37.5	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19

LUMINAIRE AND LUMINAIRE CONNECTION										
LA(ft)	LB(ft)	LC(In)	LD(In)	LE	LF(ft)	LG(In)	LH(In)	LJ(In)	LK(In)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.375	0.625	0.250	0.188	37.5

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GENERAL NOTE

1. Work this Index with Index No. 17744.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

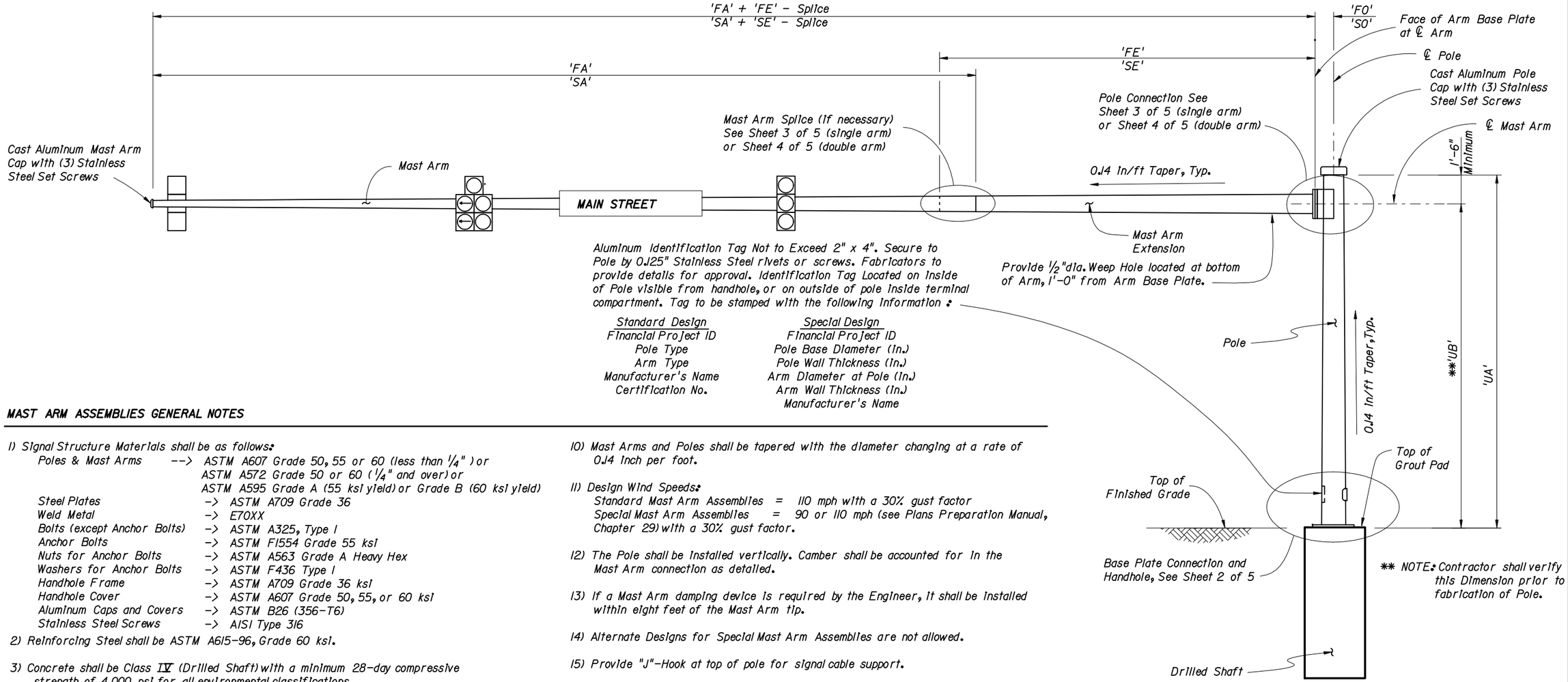
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	017742

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Pole by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Pole Base Diameter (in.)
Arm Type	Pole Wall Thickness (in.)
Manufacturer's Name	Arm Diameter at Pole (in.)
Certification No.	Arm Wall Thickness (in.)
	Manufacturer's Name

MAST ARM ASSEMBLIES GENERAL NOTES

1) Signal Structure Materials shall be as follows:

Poles & Mast Arms	-->	ASTM A607 Grade 50, 55 or 60 (less than 1/4") or ASTM A572 Grade 50 or 60 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
Steel Plates	->	ASTM A709 Grade 36
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325, Type 1
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type 1
Handhole Frame	->	ASTM A709 Grade 36 ksi
Handhole Cover	->	ASTM A607 Grade 50, 55, or 60 ksi
Aluminum Caps and Covers	->	ASTM B26 (356-T6)
Stainless Steel Screws	->	AISI Type 316

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All steel items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Mast Arm)	->	ASTM A123

7) Locate handhole 180° from arm on single arm poles or 180° from first arm of double arm poles or see special Instructions on Mast Arm Tabulation Sheet.

8) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" , prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

9) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed 3/4" in diameter.

10) Mast Arms and Poles shall be tapered with the diameter changing at a rate of 0.14 inch per foot.

11) Design Wind Speeds:
Standard Mast Arm Assemblies = 110 mph with a 30% gust factor
Special Mast Arm Assemblies = 90 or 110 mph (see Plans Preparation Manual, Chapter 29) with a 30% gust factor.

12) The Pole shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

13) If a Mast Arm damping device is required by the Engineer, it shall be installed within eight feet of the Mast Arm tip.

14) Alternate Designs for Special Mast Arm Assemblies are not allowed.

15) Provide "J"-Hook at top of pole for signal cable support.

16) Do not erect pole until foundation concrete has cured for a minimum of seven days.

17) First and Second Arm Camber Angle = 2°.

18) Each standard Mast Arm pole has been designed for one free swinging internally illuminated street sign which is acceptable by Contractor Certification provided it meets the applicable requirements of Specification Section 699, weighs no more than 75 lbs. and is no more than 12 Sq. Ft. in area.

Note: Details for the Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit are not shown for clarity.

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 2 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 2, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL ELEVATION AND NOTES

REVISED: 01/03/01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

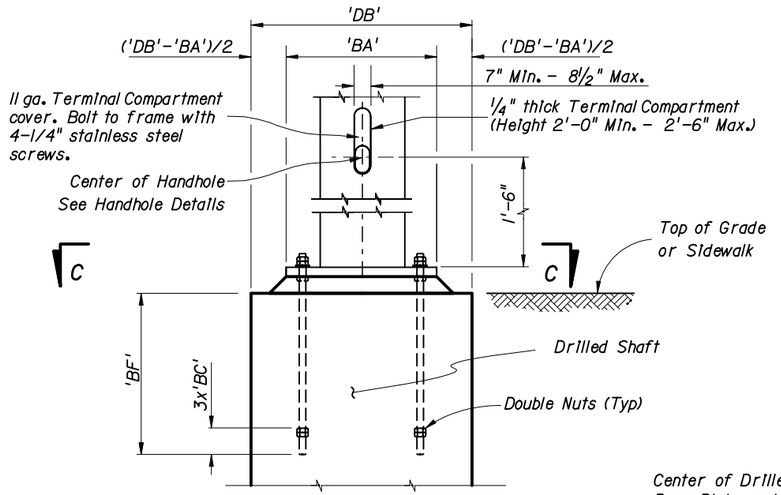
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000. THIS SHEET REPLACES SHEET NO. 1 OF 5 DATED 'REVISED 6/19/00'.

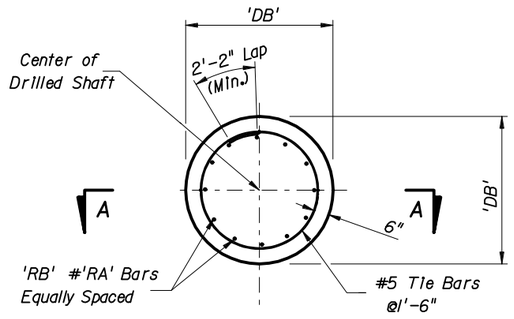
APPROVED BY W. V. Bane
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 5	17744

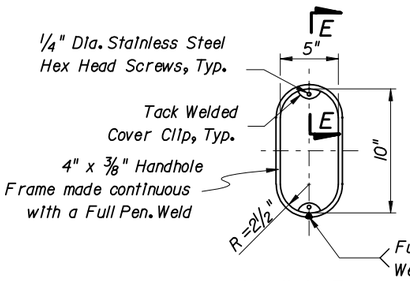
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



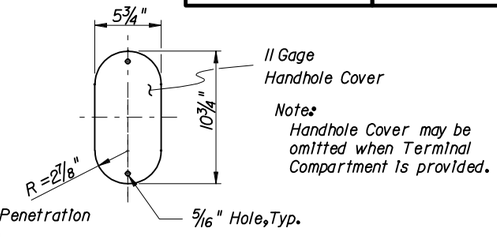
BASE PLATE AND ANCHORAGE ELEVATION
(Reinforcement Not Shown)



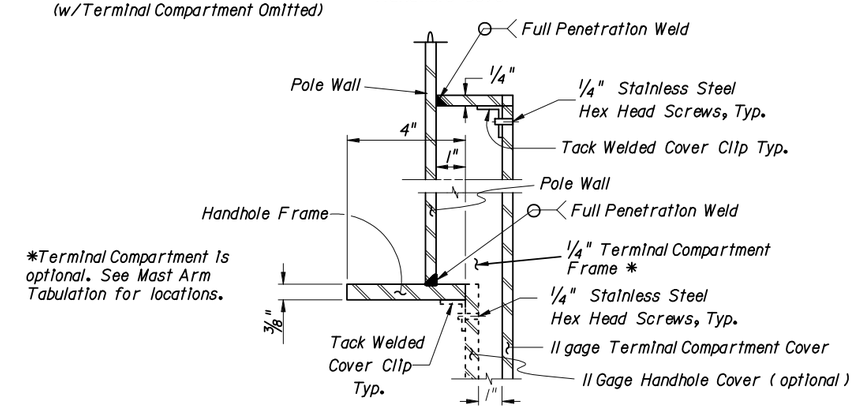
FOUNDATION PLAN
Note: 6" min. cover on Shaft Reinforcement



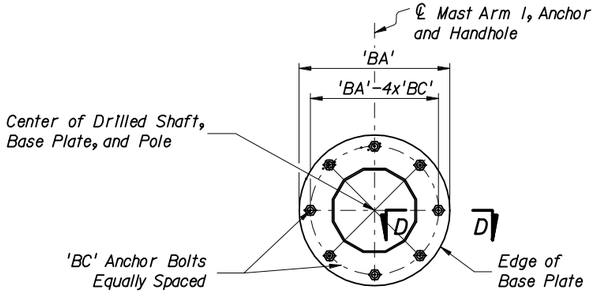
Handhole Frame
(w/Terminal Compartment Omitted)



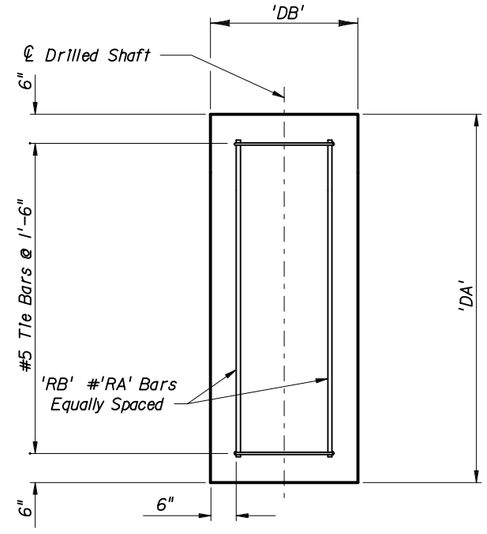
Handhole Cover



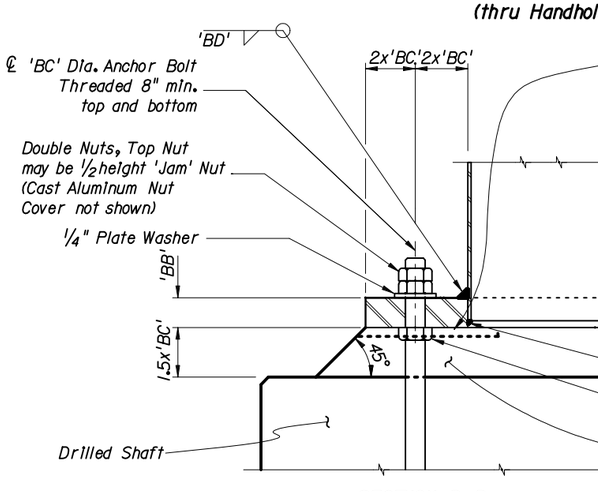
SECTION E-E
(thru Handhole & Terminal Compartment)



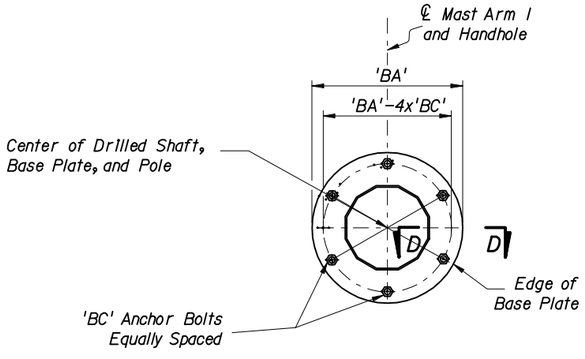
SECTION C-C
(8 Anchor Bolts shown, See Structures Standard Drawings S-1700 or S-1710 for actual quantity of bolts)



SECTION A-A



SECTION D-D



SECTION C-C
(6 Anchor Bolts)

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 1 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 1, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL FOUNDATION AND BASE PLATE DETAILS

REVISED: 2-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

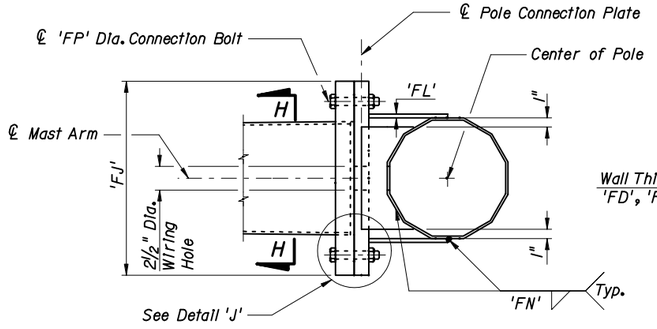
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000. THIS SHEET REPLACES SHEET NO. 2 OF 5.

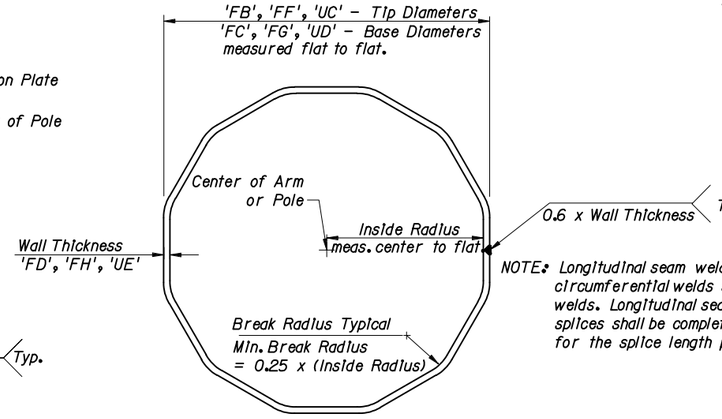
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	2 of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

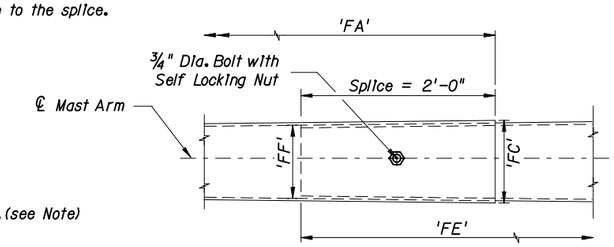


SECTION F-F



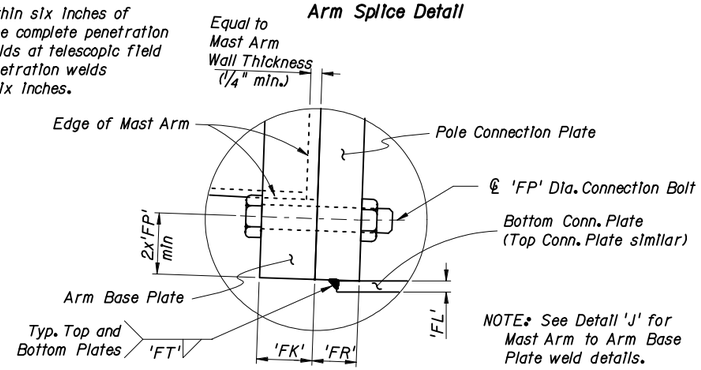
SECTION H-H

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.



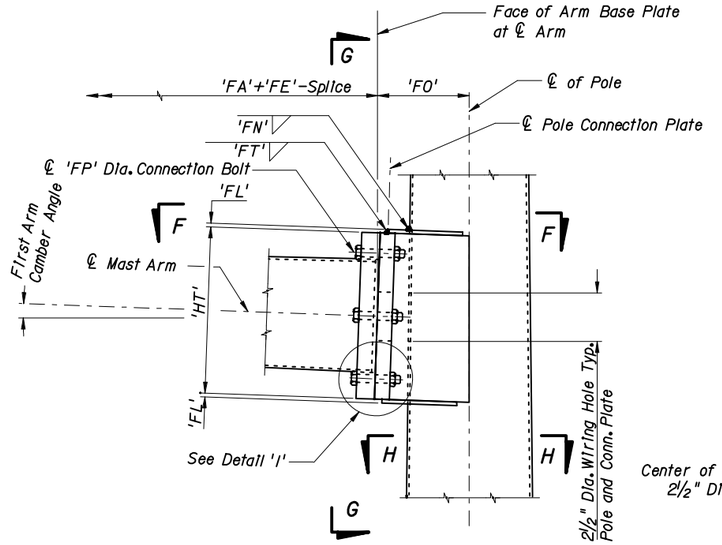
Arm Splice Detail

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

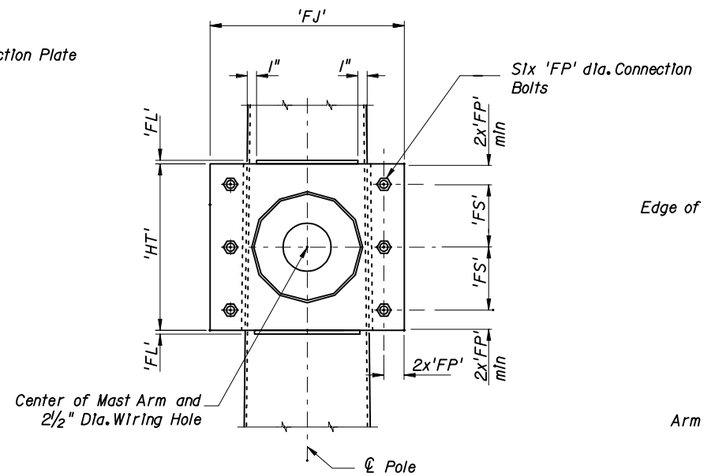


DETAIL 'I'

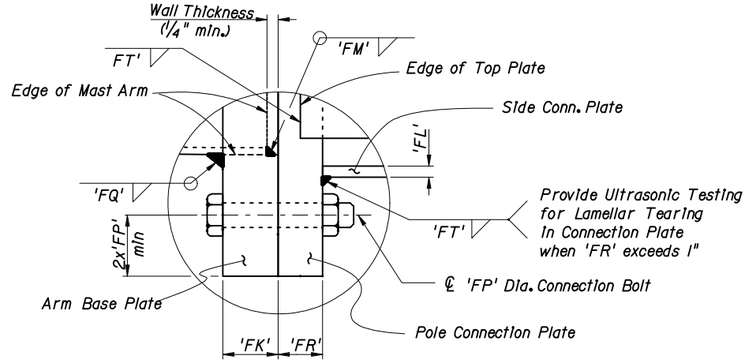
NOTE: See Detail 'J' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Single Arm Connection)



SECTION G-G



DETAIL 'J'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR SINGLE MAST ARMS WITH LUMINAIRES:

Work this Drawing with Sheets Nos. 1, 2 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

TYPICAL SINGLE ARM CONNECTION DETAILS

Date: 4-20-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

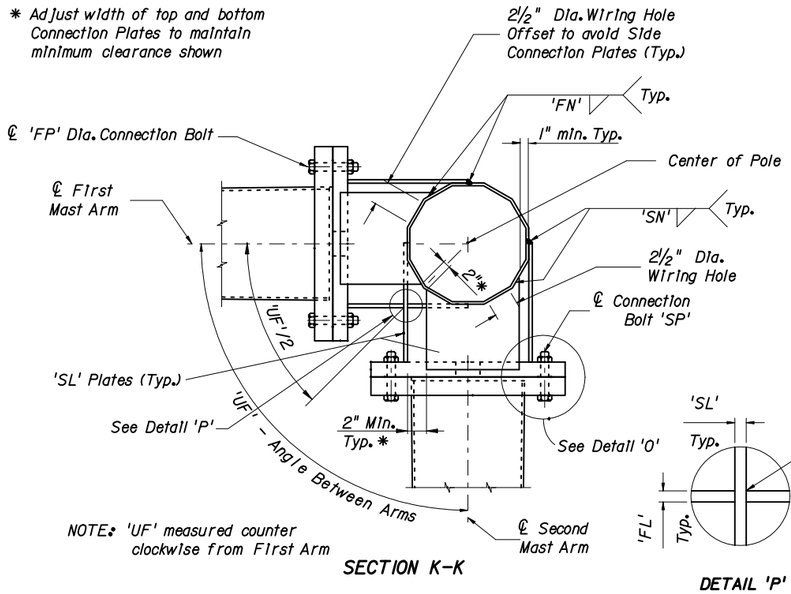
INTERIM STANDARD

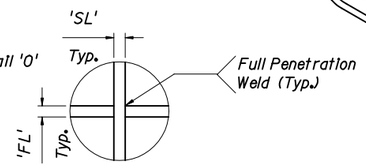
SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

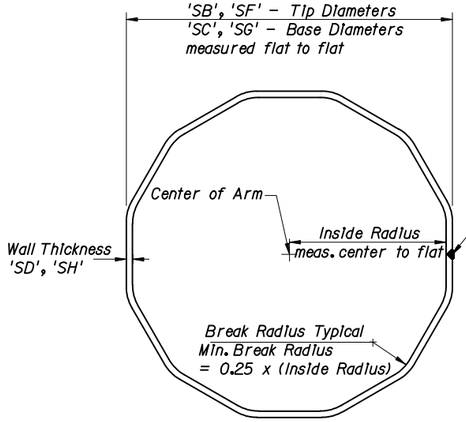
REVISION NO.	SHEET NO.	INDEX NO.
00	3 Of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





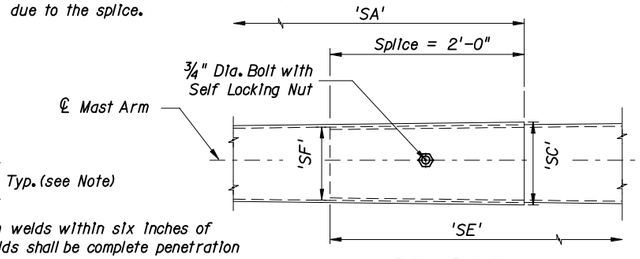
DETAIL 'P'



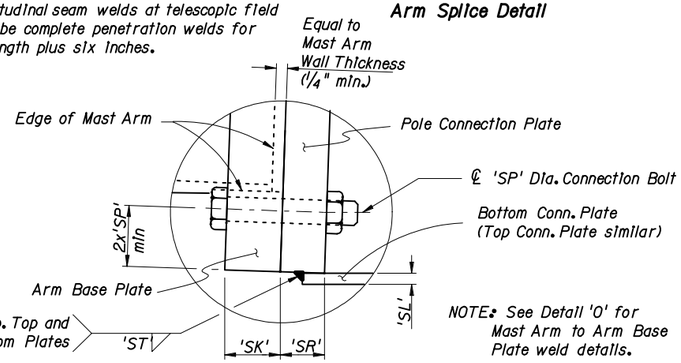
SECTION M-M

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.

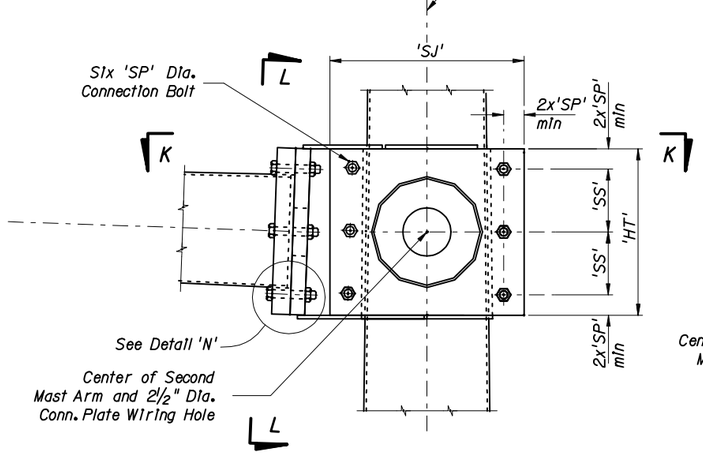


Arm Splice Detail

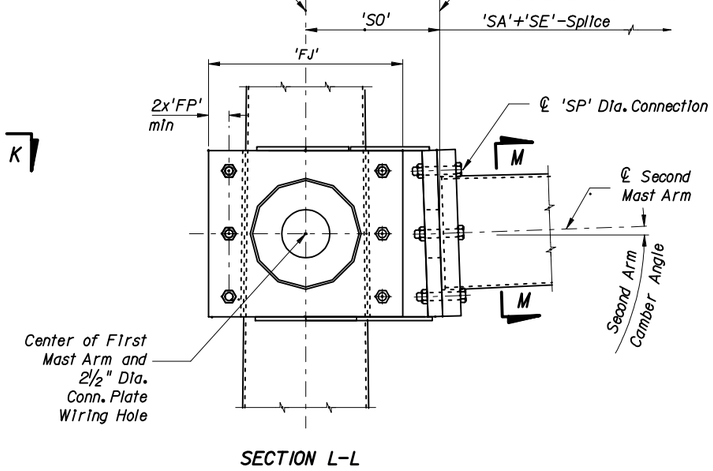


DETAIL 'N'

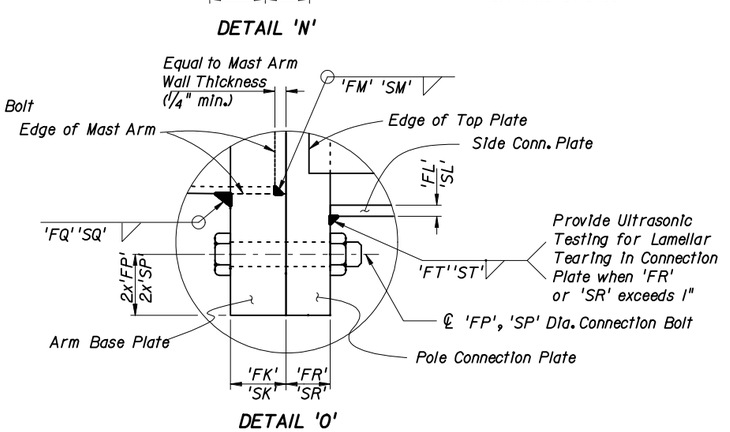
NOTE: See Detail 'O' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Double Arm Connection)



SECTION L-L



DETAIL 'O'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR DOUBLE MAST ARMS:

Work this Drawing with Sheets Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL DOUBLE ARM CONNECTION DETAILS

REVISED: 02-13-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

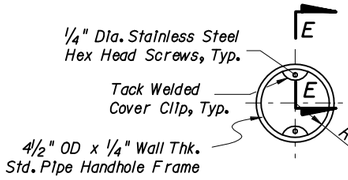
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

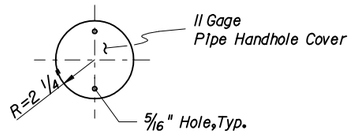
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	4 of 5	17744

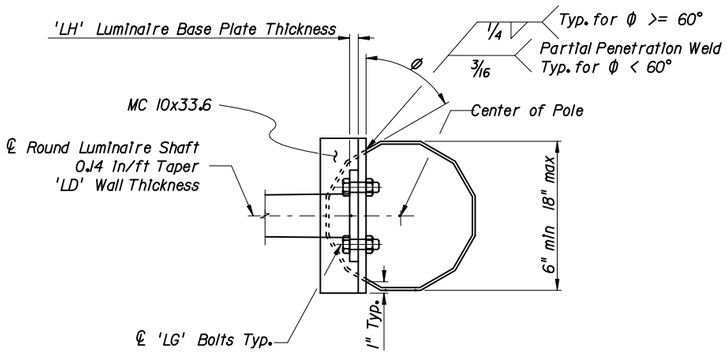
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



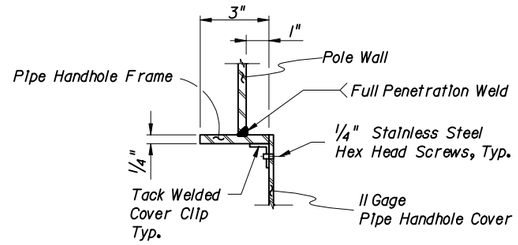
Pipe Handhole Frame



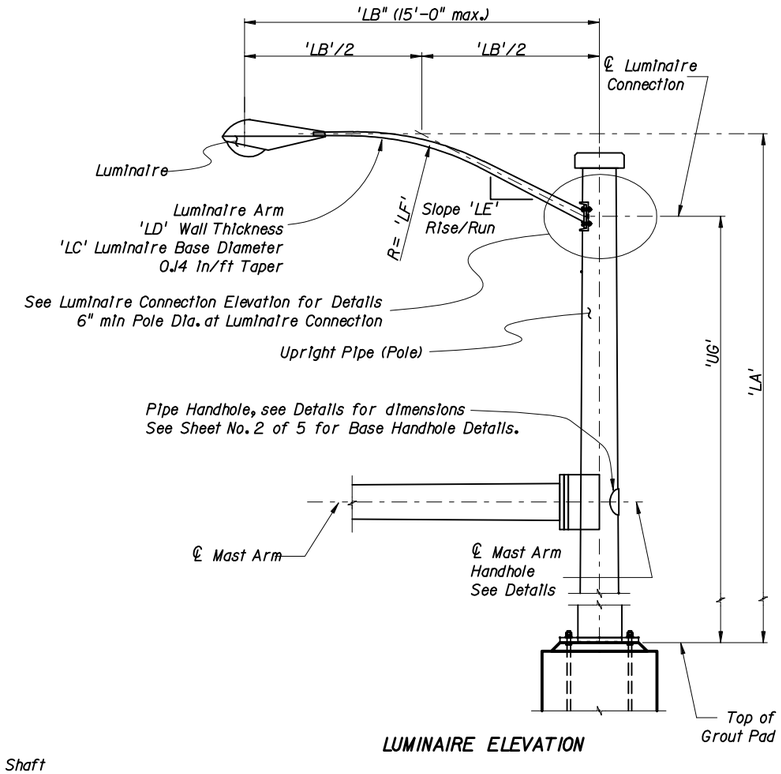
Pipe Handhole Cover



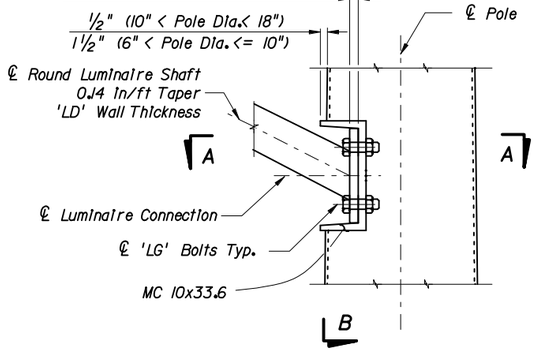
SECTION A-A



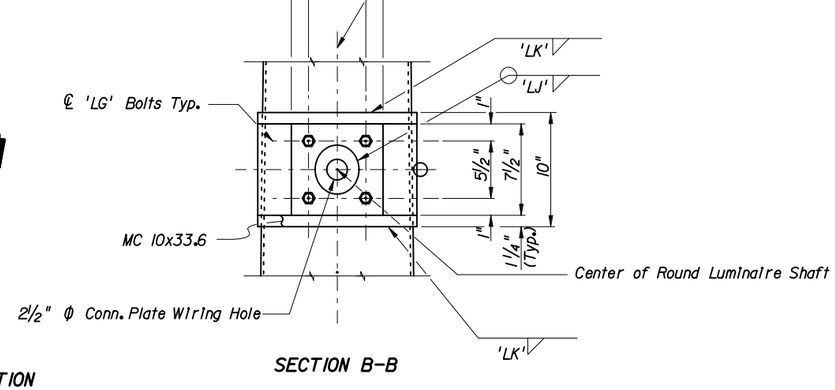
SECTION E-E
(thru Pipe Handhole)



LUMINAIRE ELEVATION



LUMINAIRE CONNECTION ELEVATION



SECTION B-B

NOTE: The Pole shown on this sheet is a 12 sided section. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced

NOTE: The Fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.

NOTES:

1. Work this Drawing with Sheet Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.
2. Luminaire type and Luminaire to Arm Connection Details can be found elsewhere.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

TYPICAL LUMINAIRE ARM AND CONNECTION DETAILS

Date: 4-20-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

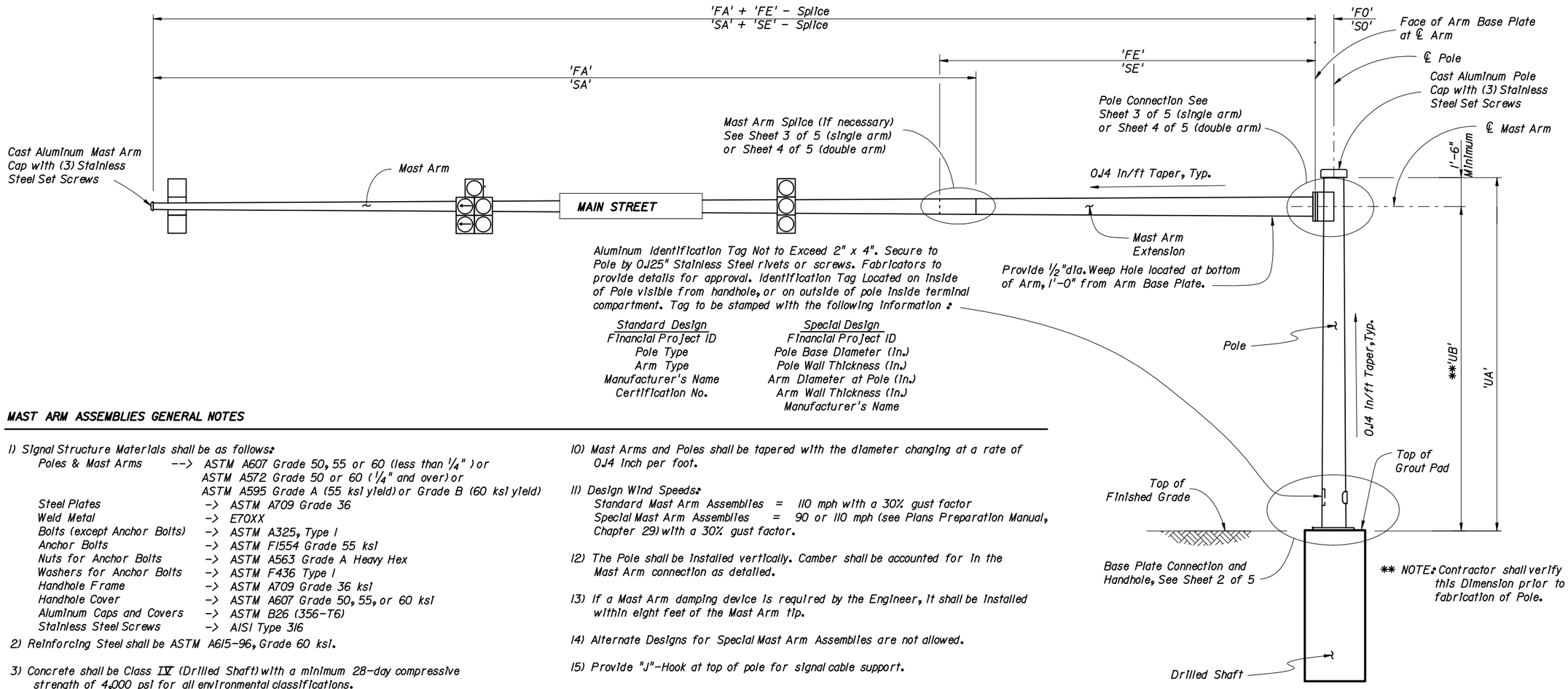
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	5 of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Pole by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Pole Base Diameter (In.)
Arm Type	Pole Wall Thickness (In.)
Manufacturer's Name	Arm Diameter at Pole (In.)
Certification No.	Arm Wall Thickness (In.)
	Manufacturer's Name

MAST ARM ASSEMBLIES GENERAL NOTES

1) Signal Structure Materials shall be as follows:

Poles & Mast Arms	-->	ASTM A607 Grade 50, 55 or 60 (less than ¼") or ASTM A572 Grade 50 or 60 (¼" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
Steel Plates	->	ASTM A709 Grade 36
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325, Type 1
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type 1
Handhole Frame	->	ASTM A709 Grade 36 ksi
Handhole Cover	->	ASTM A607 Grade 50, 55, or 60 ksi
Aluminum Caps and Covers	->	ASTM B26 (356-T6)
Stainless Steel Screws	->	AISI Type 316

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All steel items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Mast Arm)	->	ASTM A123

7) Locate handhole 180° from arm on single arm poles or 180° from first arm of double arm poles or see special instructions on Mast Arm Tabulation Sheet.

8) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" , prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus ½".

9) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed ¾" in diameter.

10) Mast Arms and Poles shall be tapered with the diameter changing at a rate of 0.14 inch per foot.

11) Design Wind Speeds:
Standard Mast Arm Assemblies = 110 mph with a 30% gust factor
Special Mast Arm Assemblies = 90 or 110 mph (see Plans Preparation Manual, Chapter 29) with a 30% gust factor.

12) The Pole shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

13) If a Mast Arm damping device is required by the Engineer, it shall be installed within eight feet of the Mast Arm tip.

14) Alternate Designs for Special Mast Arm Assemblies are not allowed.

15) Provide "J"-Hook at top of pole for signal cable support.

16) Do not erect pole until foundation concrete has cured for a minimum of seven days.

17) First and Second Arm Camber Angle = 2°.

18) Each standard Mast Arm pole has been designed for one free swinging internally illuminated street sign which is acceptable by Contractor Certification provided it meets the applicable requirements of Specification Section 699, weighs no more than 75 lbs. and is no more than 12 Sq. Ft. in area.

Note: Details for the Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit are not shown for clarity.

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 2 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 2, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL ELEVATION AND NOTES

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

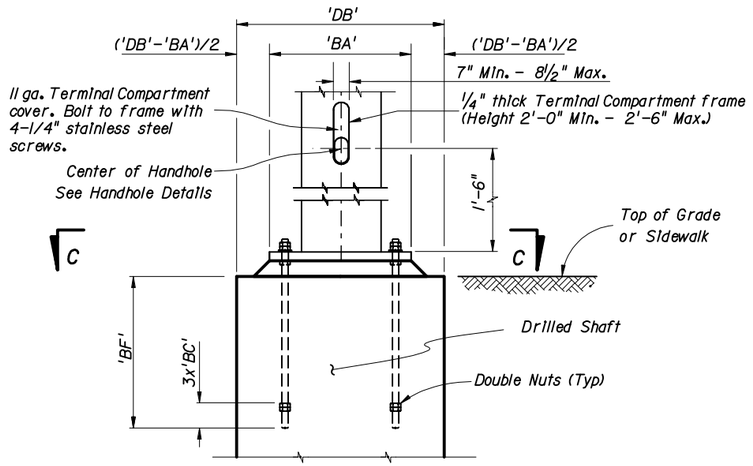
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

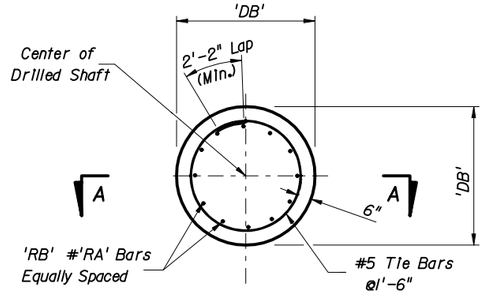
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	017744

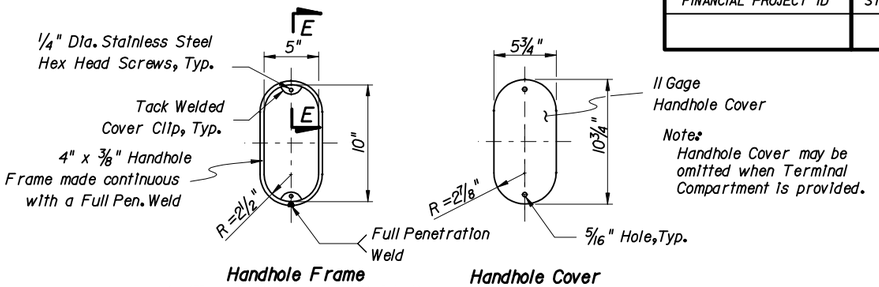
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



BASE PLATE AND ANCHORAGE ELEVATION
(Reinforcement Not Shown)

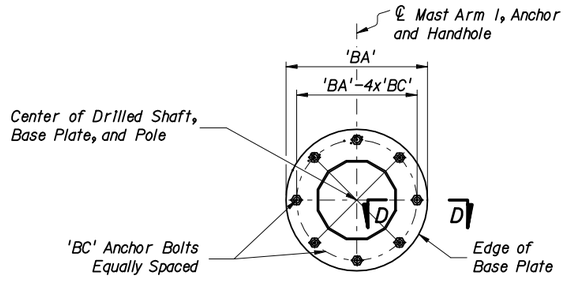


FOUNDATION PLAN
Note: 6" min. cover on Shaft Reinforcement

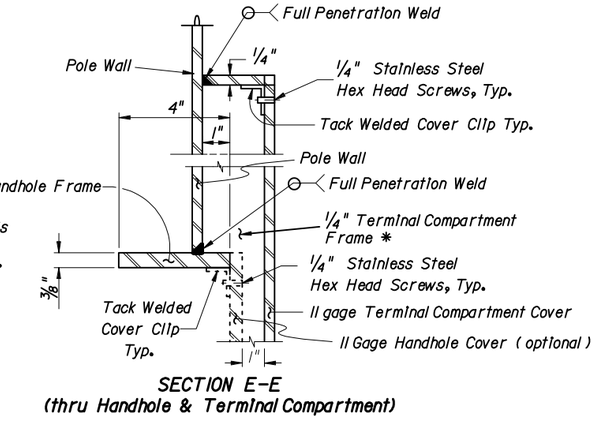


Handhole Frame
(w/Terminal Compartment Omitted)

Handhole Cover

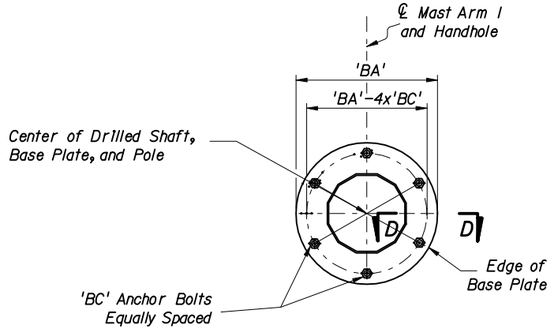


SECTION C-C
(8 Anchor Bolts shown, See Structures Standard Drawings S-1700 or S-1710 for actual quantity of bolts)

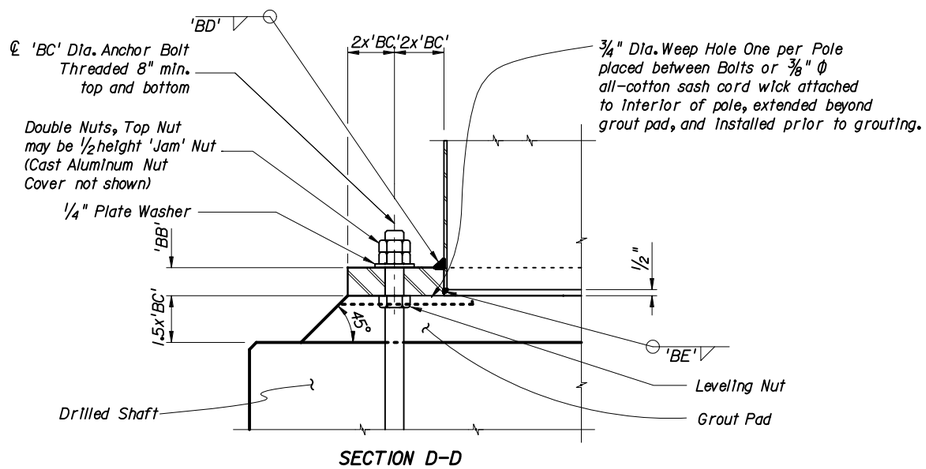


SECTION E-E
(thru Handhole & Terminal Compartment)

SECTION A-A



SECTION C-C
(6 Anchor Bolts)



SECTION D-D

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 1 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 1, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL FOUNDATION AND BASE PLATE DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

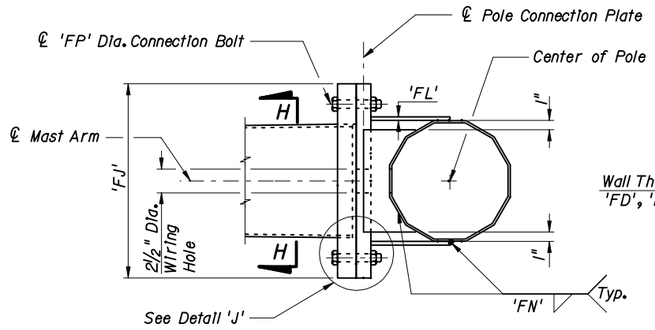
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

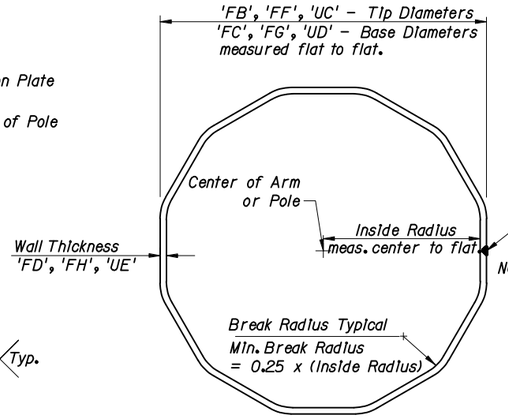
APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	017744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



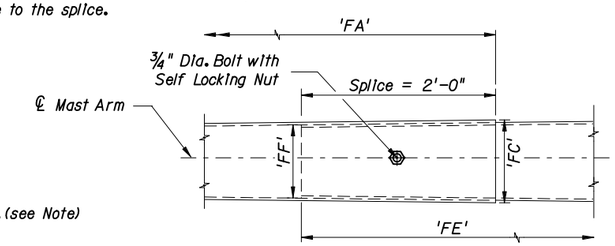
SECTION F-F



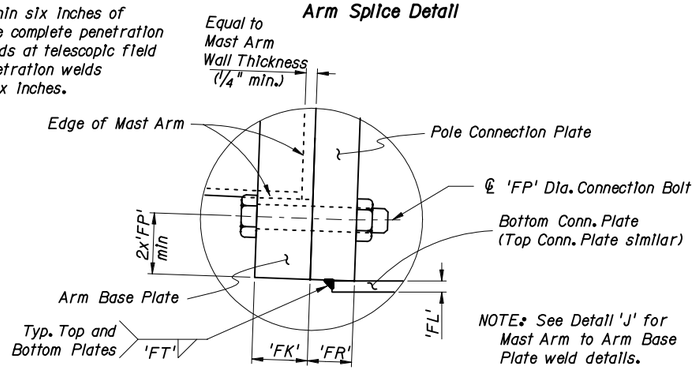
SECTION H-H

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.

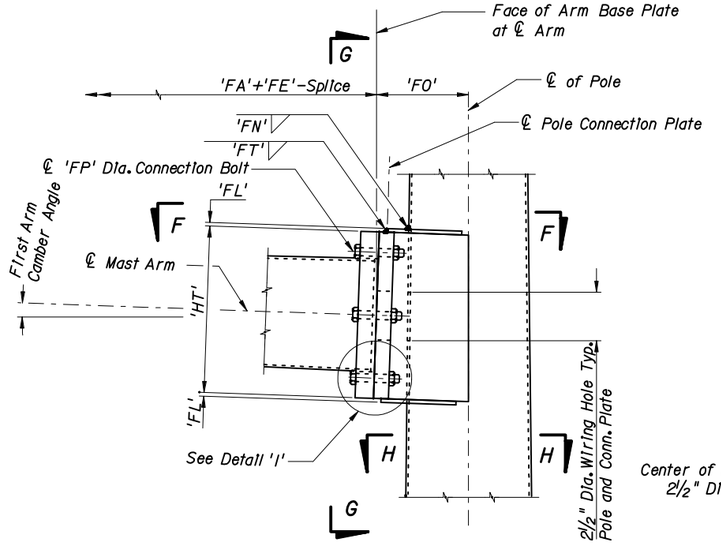


Arm Splice Detail

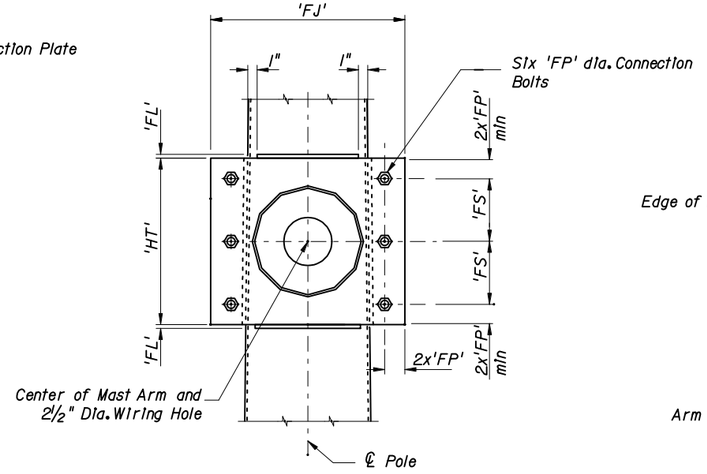


NOTE: See Detail 'J' for Mast Arm to Arm Base Plate weld details.

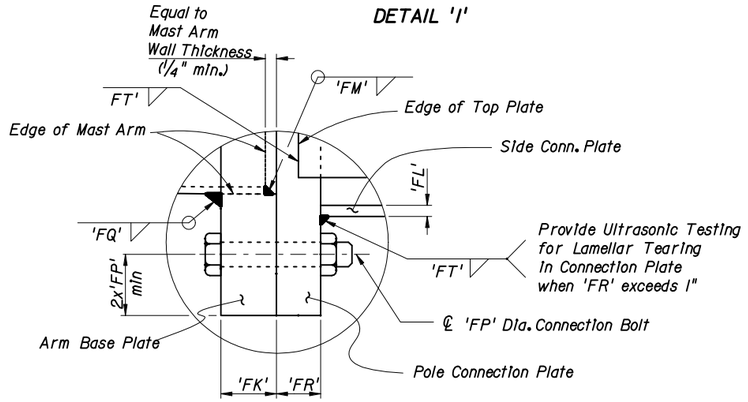
DETAIL 'I'



ELEVATION
(Single Arm Connection)



SECTION G-G



DETAIL 'J'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR SINGLE MAST ARMS WITH LUMINAIRES:

Work this Drawing with Sheets Nos. 1, 2 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL SINGLE ARM CONNECTION DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

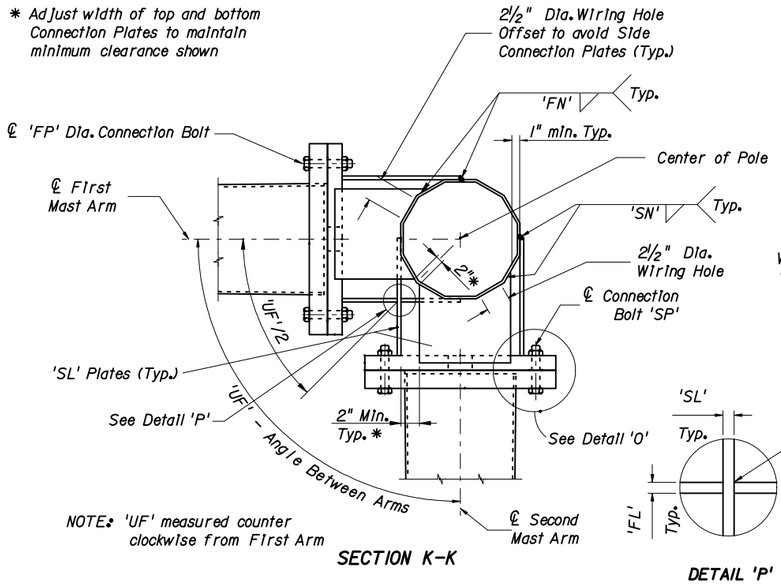
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

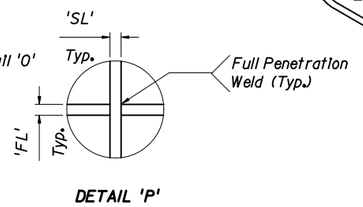
APPROVED BY W. N. Blatt
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 5	017744

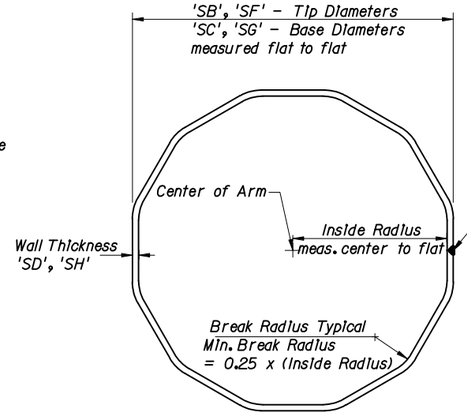
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION K-K

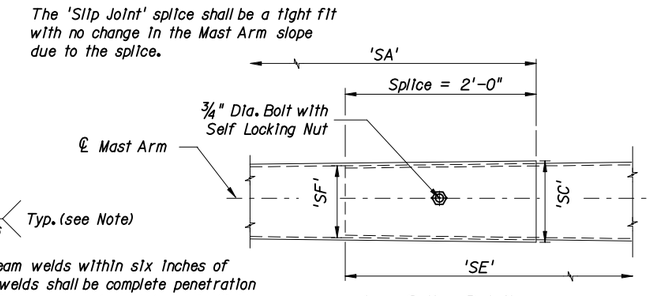


DETAIL 'P'

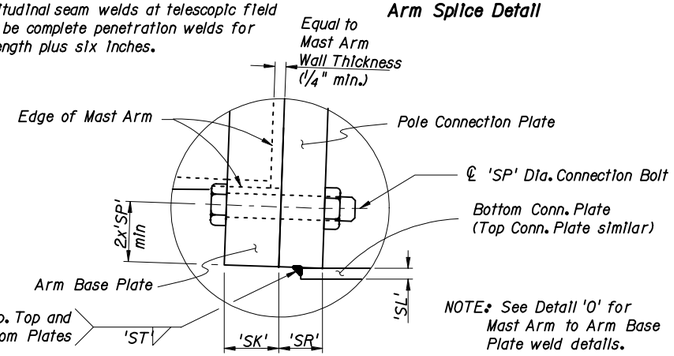


SECTION M-M

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

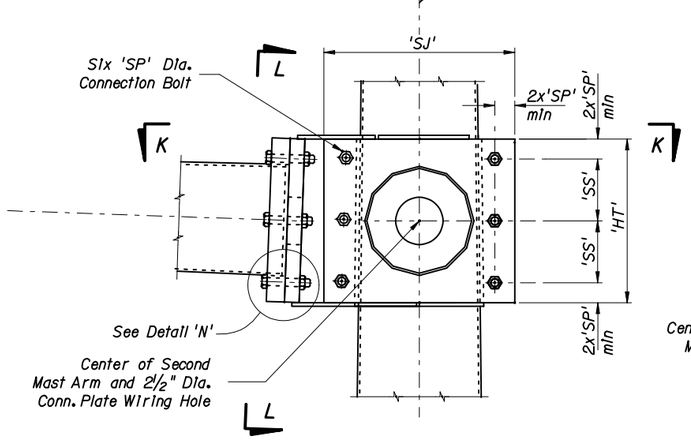


Arm Splice Detail

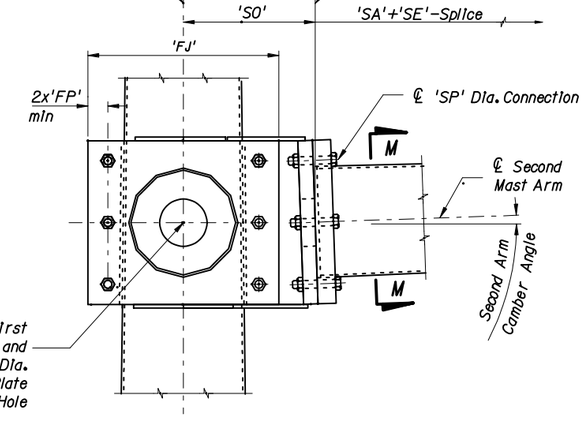


DETAIL 'N'

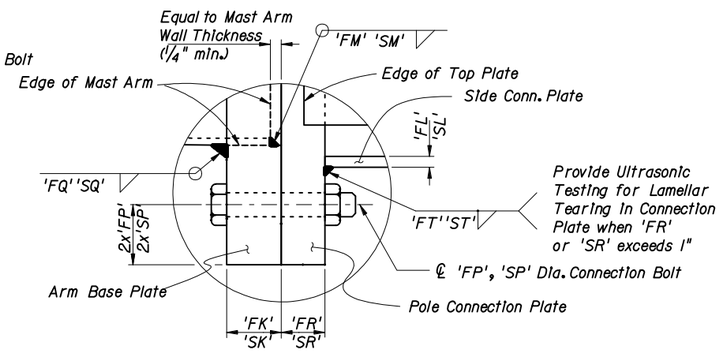
NOTE: See Detail 'O' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Double Arm Connection)



SECTION L-L



DETAIL 'O'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR DOUBLE MAST ARMS:

Work this Drawing with Sheets Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL DOUBLE ARM CONNECTION DETAILS

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

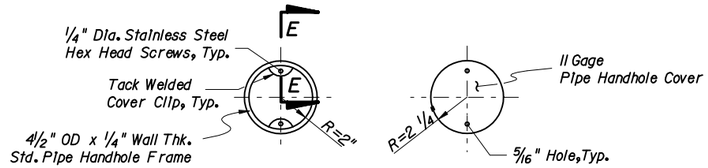
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

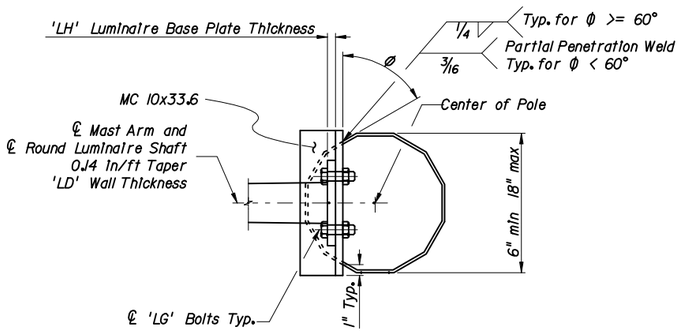
APPROVED BY W. N. Blatt
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 5	017744

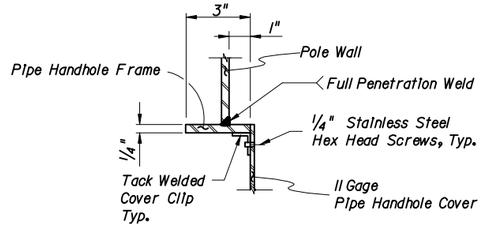
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



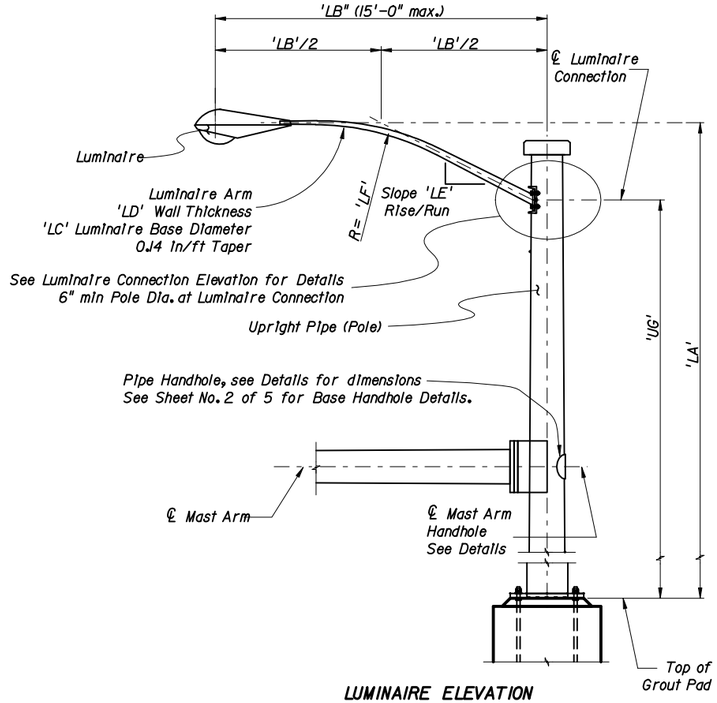
Pipe Handhole Frame **Pipe Handhole Cover**



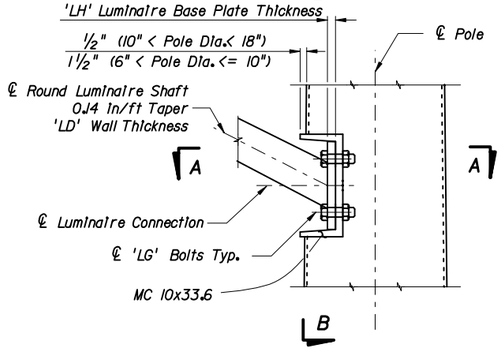
SECTION A-A



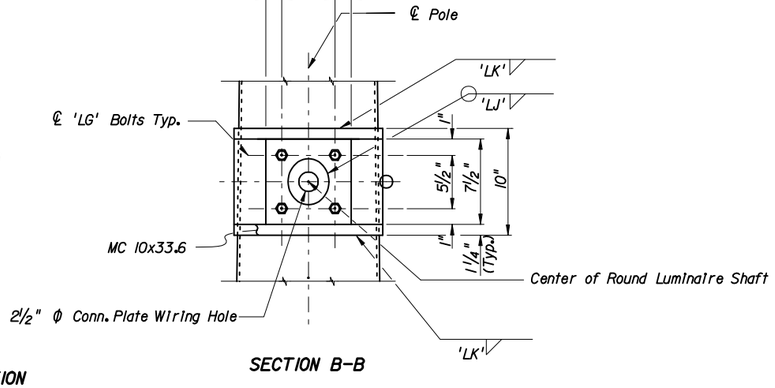
SECTION E-E
(thru Pipe Handhole)



LUMINAIRE ELEVATION



LUMINAIRE CONNECTION ELEVATION



SECTION B-B

NOTE: The Pole shown on this sheet is a 12 sided section. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced

NOTE: The Fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.

NOTES:

1. Work this Drawing with Sheet Nos. 1,2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.
2. Luminaire type and Luminaire to Arm Connection Details can be found elsewhere.
3. Align Luminaire Arm with single Mast Arm or Primary Arm of Double Mast Arm Assembly.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL LUMINAIRE ARM AND CONNECTION DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

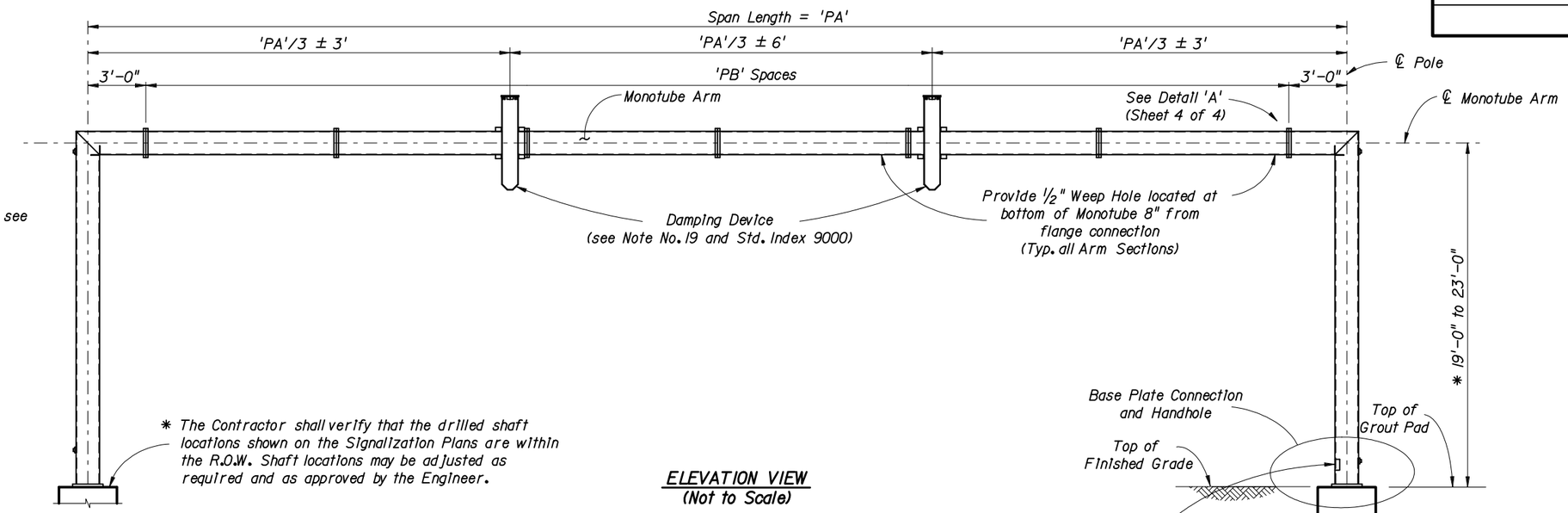
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 5	017744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

* The Contractor shall verify that the drilled shaft locations shown on the Signalization Plans are within the R.O.W. Shaft locations may be adjusted as required and as approved by the Engineer.

ELEVATION VIEW
(Not to Scale)

* NOTE: Contractor shall verify these Dimensions Prior to Fabrication of Pole.

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on Inside of Pole visible from handhole, or on outside of pole Inside terminal compartment. Tag to be stamped with the following Information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Span Length	Pole Diameter (In.)
Manufacturer's Name	Pole Wall Thickness (In.)
Certification No.	Arm Diameter (In.)
	Arm Wall Thickness (In.)
	Manufacturer's Name

MONOTUBE SIGNAL STRUCTURE NOTES

1) Signal Structure Materials shall be as follows:

Poles & Monotube Arm	->	API-5L-X42 (42 ksi yield) or ASTM A618 Grade II
Handhole Frame	->	ASTM A709 Grade 36
Handhole Cover	->	ASTM A607, Grade 50, 55 or 60 ksi
Steel Plates	->	ASTM A709 Grade 50
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325 Type I
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type I
Stainless Steel Screws	->	AISI Type 316
Aluminum Nut Cover	->	ASTM B26 (356-T6)

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934 of the Specifications. Grout at the base of uprights shall be installed a minimum of 7 days prior to the installation of signals or sign panels.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Monotube Arm)	->	ASTM A123

7) The Design Wind Speed is 110mph with a 30 percent gust factor.

8) Alternate Designs for this Structure are not allowed.

9) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

10) Sign Panels and Signals attached to the Monotube shall be located as shown on the Traffic Signal Plans. Wire access holes shall not exceed 3/4" in diameter.

11) The Pole shall be installed vertically. Arm Camber shall be accounted for in the Flange Connections.

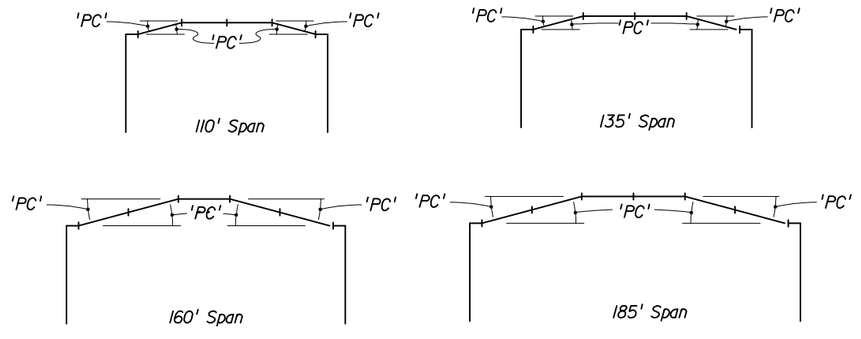
12) Locate handhole 180° from monotube arm.

13) All signals shall be installed vertically.

14) Monotube Arm & Poles shall be fabricated from round pipe.

15) If damping devices are required by the Engineer, they shall be installed within 3'-0" ± of the third points of the Span Length.

16) Each Standard Monotube Signal Structure has been designed for two free swinging Internally Illuminated street signs, per pole, which are acceptable by Contractor certification provided they meet the applicable requirements of Specification Section 699, weigh no more than 75 lbs. (each) and are no more than 12 sq. ft. in area (each).



CAMBER DETAILS

Note: Fabricate with rolling camber up.

REVISED: 2-20-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ELEVATION, NOTES AND CAMBER DETAILS

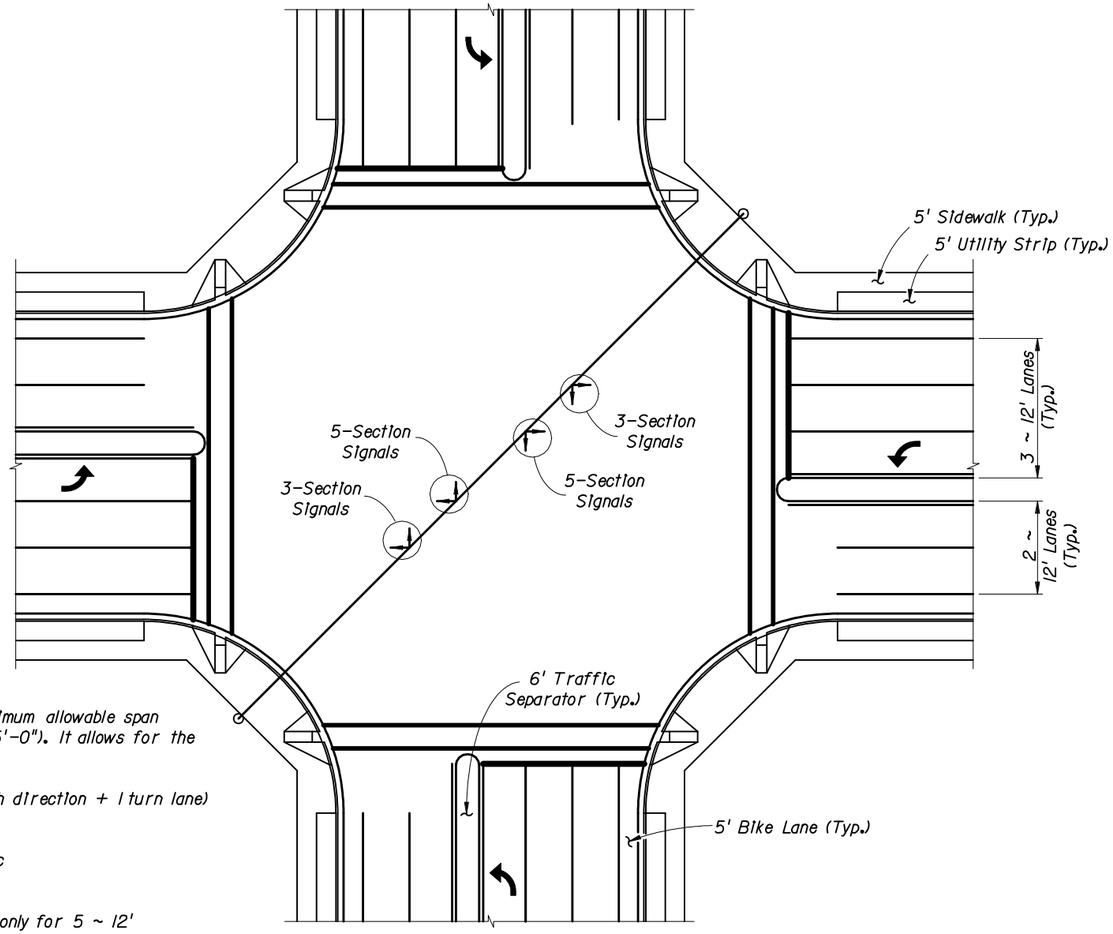
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. V. [signature]
STATE STRUCTURES DESIGN ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 4	17746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW - MONOTUBE DESIGN INTERSECTION

Note:

The signal configuration shown represents the maximum allowable span for which this monotube standard is applicable (185'-0"). It allows for the following components:

a. 5 ~ 12' traffic lanes (2 thru lanes in each direction + 1 turn lane)
b. 1 ~ 6' traffic separator
c. 1 ~ 5' bike lane per direction of traffic
d. 1 ~ 5' utility strip per direction of traffic
e. 1 ~ 5' sidewalk per direction of traffic

The minimum monotube design span (110'-0") allows only for 5 ~ 12' traffic lanes (item "a" above). It is assumed that for this case there are no traffic separators, bike lanes, utility strips or sidewalks.

INSTRUCTIONAL NOTES:

1. This Index, 17746, is for use in preparing signalization plans when monotube assemblies are required. This standard establishes the requirements of monotube components listed on on the Qualified Products List (QPL). When using components on the QPL, the span length and heights of each pole will be the only information required in the Contract Plans, and Shop Drawings are not required.

2. If a monotube configuration does not meet the requirements stated below, a special design and shop drawing submittal is required.

3. Four standard monotube configurations are provided. The standard arm length and the signal locations used for design of the arm are shown on the monotube design loading tree on this sheet. If the same arrangement of signals is used with one or more signals closer to the nearest pole, the standard monotube may be used. If the same arrangement is used but one or more signals are further from the nearest pole, or if a different configuration of signals is used, a special design is required. If any signs are to be attached to the monotube arm, a special design is required.

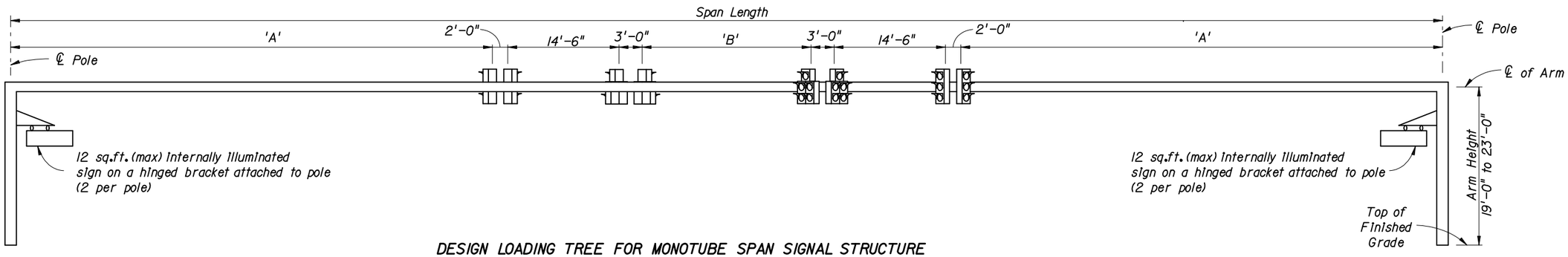
4. Standard monotube span lengths of 110'-0", 135'-0", 160'-0" and 185'-0" are shown. For other required span lengths with the same configuration of signals in the same loations or closer to the poles, the standard monotube design with the next largest standard span length may be used. The difference in length shall be removed from the center horizontal segment(s) of the span. If a span longer than 185'-0" is to be used, a special design is required.

5. The standard monotube is valid for an arm heights between 19' and 23', inclusive. A special design is required for all heights greater than 23'. If an arm height of less than 19' is to be utilized with the same configuration of signals in the same locations or closer to the poles, the standard monotube may be used, provided that minimum required clearances to the roadway are maintained.

6. The foundations for the standard monotube are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types of the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilitzed as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several founations. Furthermore, borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.



DESIGN LOADING TREE FOR MONOTUBE SPAN SIGNAL STRUCTURE

Note: Signal Backplates on 4 of the 8 signals are included in the design of Standard Arms.

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

REVISED: 2-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE DESIGN INTERSECTION AND DESIGN LOAD TREE

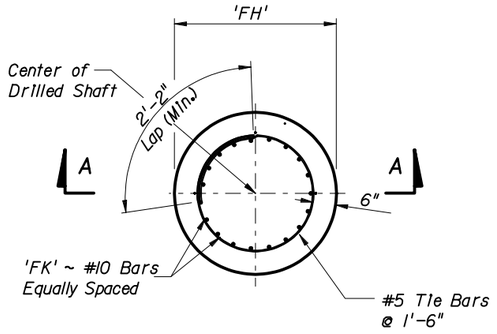
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Thomas
STATE STRUCTURES DESIGN ENGINEER

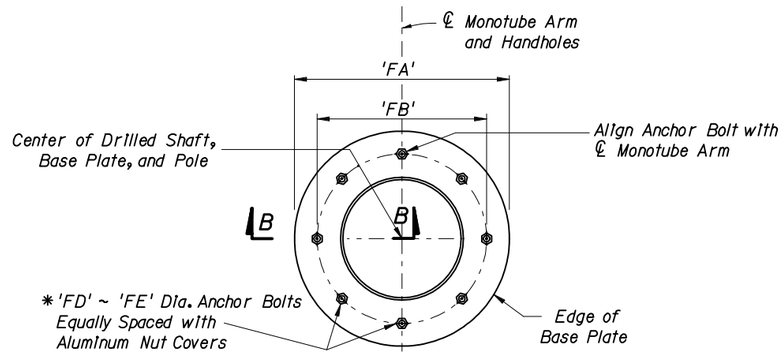
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 4	17746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FOUNDATION PLAN

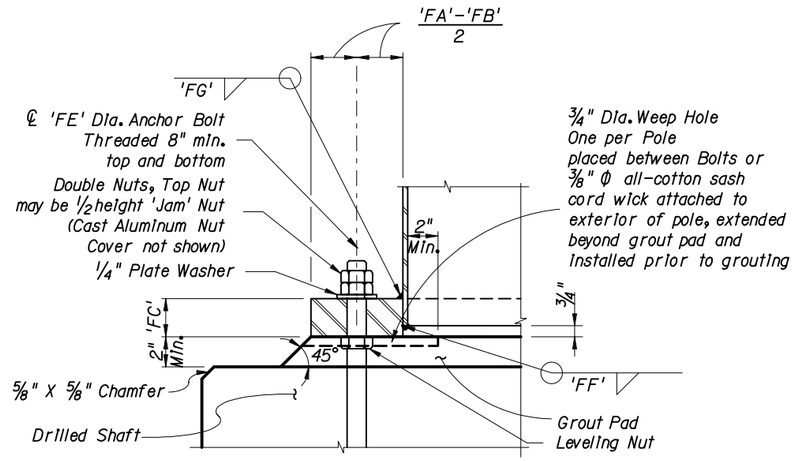
Note: 6" min. cover on Shaft Reinforcement



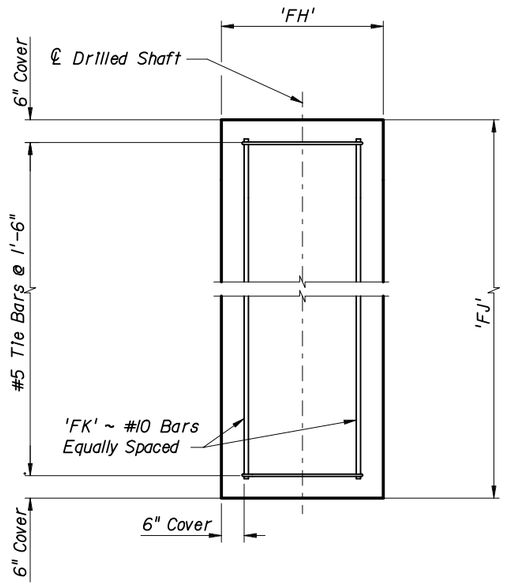
SECTION C-C

Note: Concrete and Reinforcement not shown.

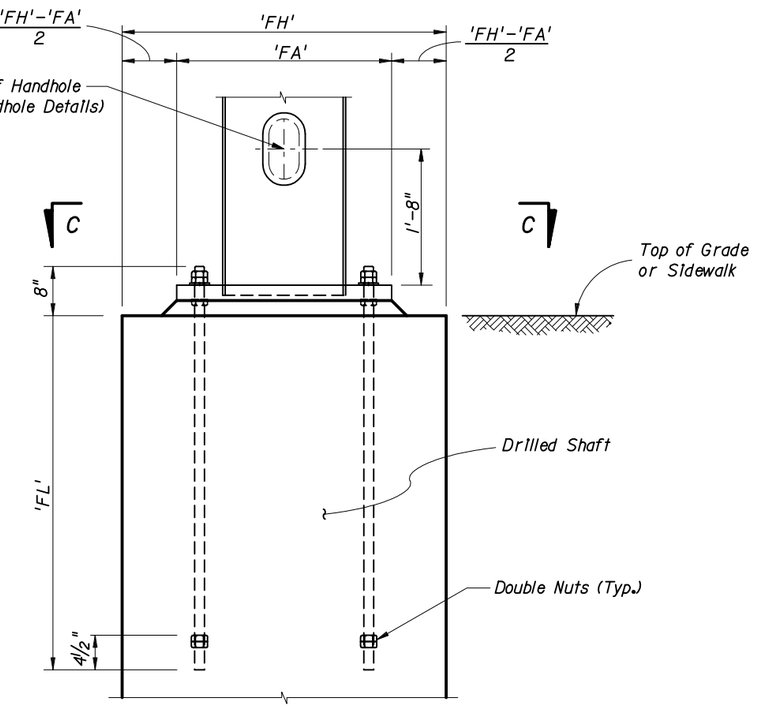
* Anchor Bolt Group locations may be ± ½" in the direction of the span



SECTION B-B



SECTION A-A



BASE PLATE AND ANCHORAGE ELEVATION

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE FOUNDATION AND BASE PLATE DETAILS

INTERIM STANDARD

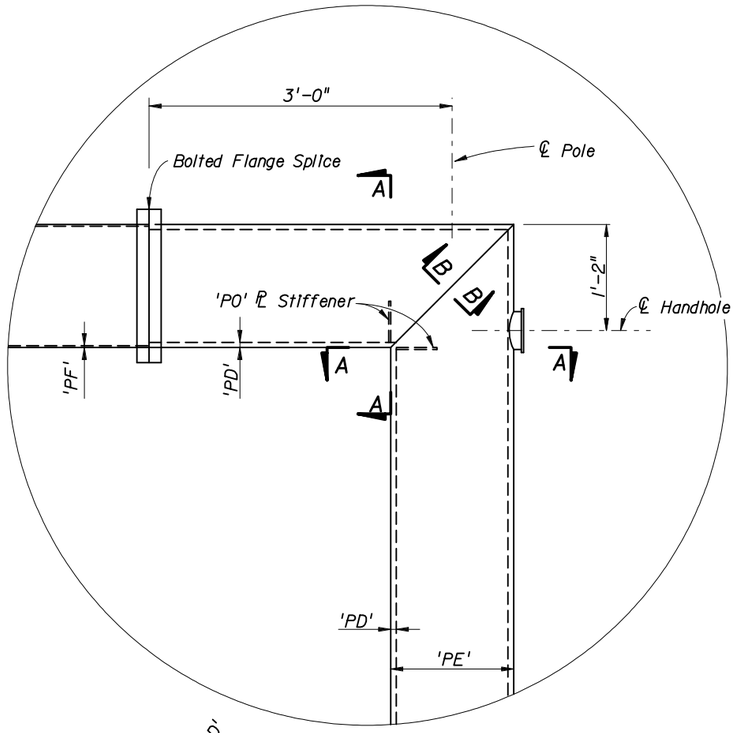
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. V. Stanley
STATE STRUCTURES DESIGN ENGINEER

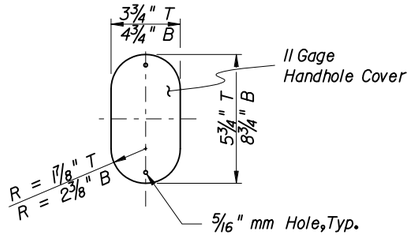
REVISION NO.	SHEET NO.	INDEX NO.
	3 of 4	17746

Date: 9-26-00

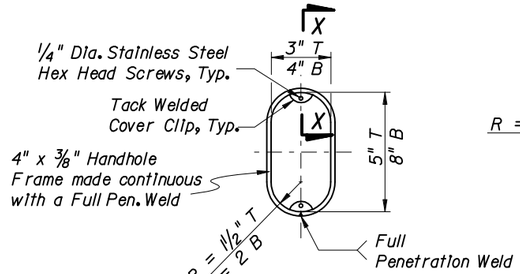
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DETAIL 'A'

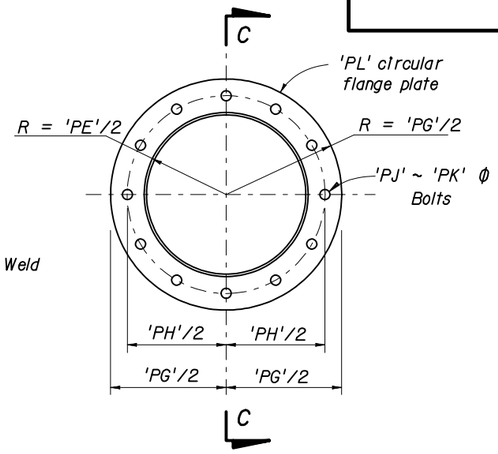


HANDHOLE COVER

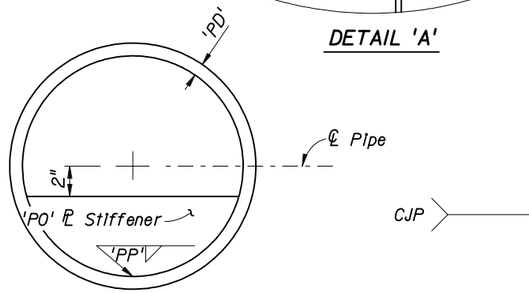


HANDHOLE FRAME

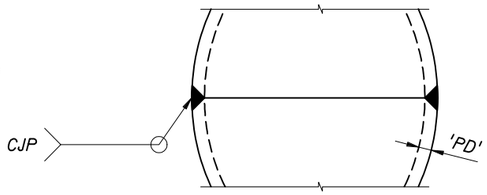
T - denotes top 3" x 5" handhole
B - denotes bottom 4" x 8" handhole



FLANGE SPLICE DETAILS

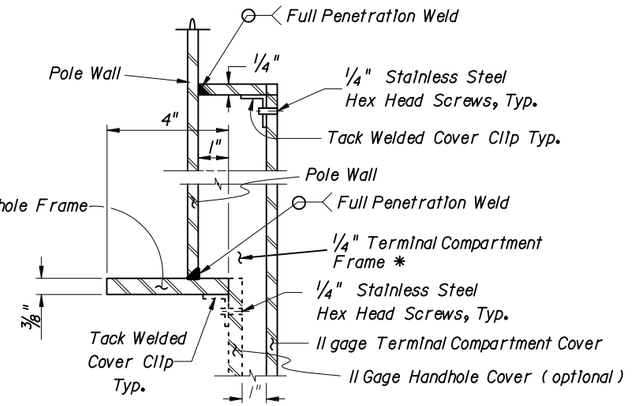


SECTION A-A

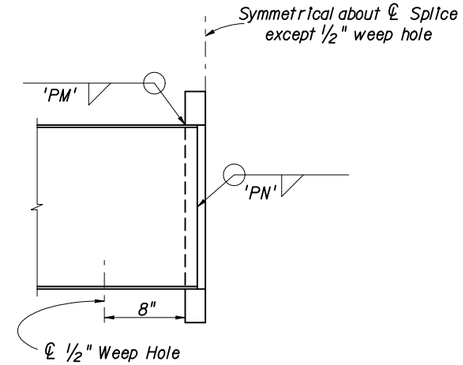


SECTION B-B

*Terminal Compartment is optional. See Mast Arm Tabulation for locations.



SECTION E-E
(thru Handhole & Terminal Compartment)



SECTION C-C

TABLE OF MONOTUBE VARIABLES

MONOTUBE ARM & POLES															FOUNDATION & BASE PLATE										SIGNAL LAYOUT	
'PA' (ft)	'PB'	'PC' (deg)	'PD' (In)	'PE' (In)	'PF' (In)	'PG' (In)	'PH' (In)	'PJ'	'PK' (In)	'PL' (In)	'PM' (In)	'PN' (In)	'PO' (In)	'PP' (In)	'FA' (In)	'FB' (In)	'FC' (In)	'FD'	'FE' (In)	'FF' (In)	'FG' (In)	'FH' (ft)	'FJ' (ft)	'FK'	'FL' (In)	Dim. 'A' (ft)	Dim. 'B' (ft)
110	4	1.5	1.093	14	⅜	21 ½	17¾	8	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	21 ½	17¾	1 ⅞	8	1 ½"	5/16"	5/16"	3	12	10	45	29	13
135	4	1.5	1.031	16	⅜	23 ½	19¾	10	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	23 ½	19¾	2	8	1 ½"	5/16"	5/16"	3.5	13	12	45	40	16
160	5	1.25	1.156	18	⅜	25 ½	21¾	12	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	25 ½	21¾	2⅛	8	1 ½"	5/16"	5/16"	3.5	14	12	45	51	19
185	6	1.75	1.125	22	⅜	29 ½	25¾	14	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	29 ½	25¾	2¼	10	1 ½"	5/16"	5/16"	4	16	16	45	62	22

Note: For additional variable definitions see Sheets 1 and 3 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

REVISED: 02-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ARM CONNECTION DETAILS & TABLE OF VARIABLES

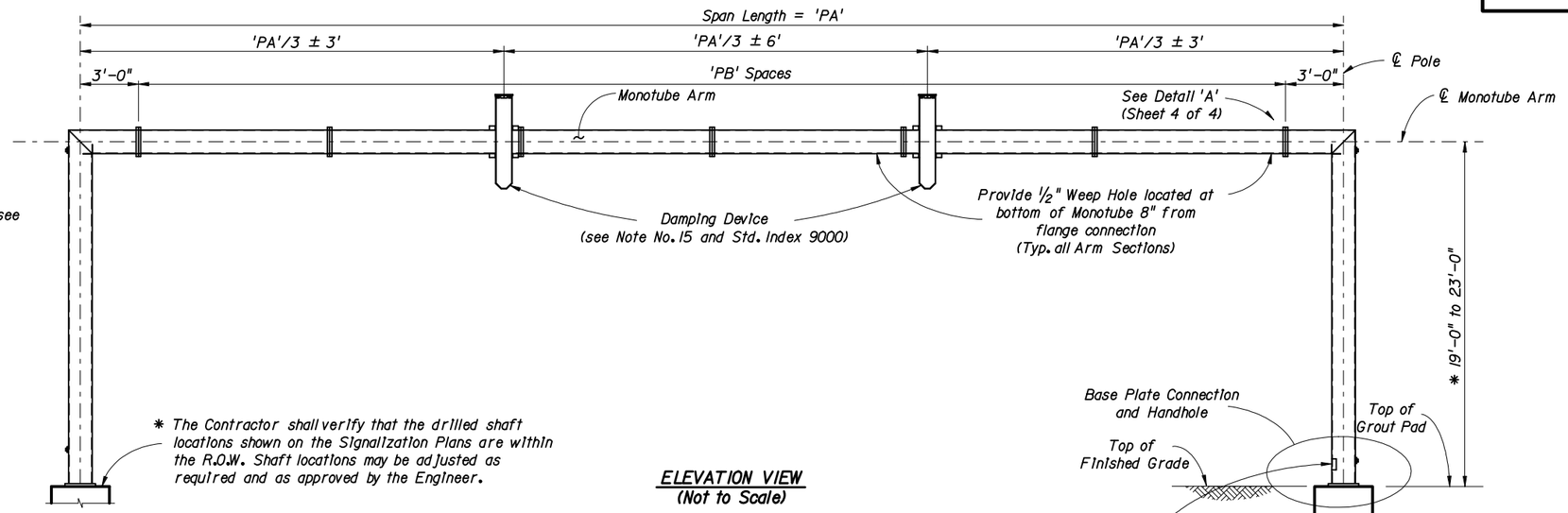
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
STATE STRUCTURES DESIGN ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 4	17746

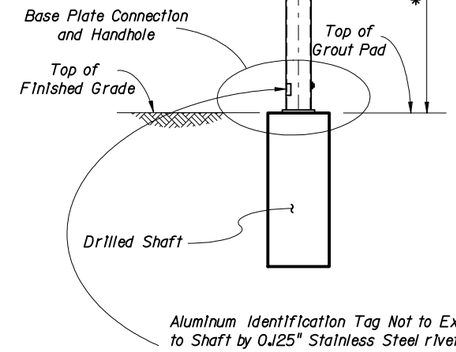
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

ELEVATION VIEW
(Not to Scale)

* NOTE: Contractor shall verify these Dimensions Prior to Fabrication of Pole.



Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Span Length	Pole Diameter (In.)
Manufacturer's Name	Pole Wall Thickness (In.)
Certification No.	Arm Diameter (In.)
	Arm Wall Thickness (In.)
	Manufacturer's Name

MONOTUBE SIGNAL STRUCTURE NOTES

1) Signal Structure Materials shall be as follows:

Poles & Monotube Arm	->	API-5L-X42 (42 ksi yield) or ASTM A618 Grade II
Handhole Frame	->	ASTM A709 Grade 36
Handhole Cover	->	ASTM A607, Grade 50, 55 or 60 ksi
Steel Plates	->	ASTM A709 Grade 50
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325 Type I
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type I
Stainless Steel Screws	->	AISI Type 316
Aluminum Nut Cover	->	ASTM B26 (356-T6)

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934 of the Specifications. Grout at the base of uprights shall be installed a minimum of 7 days prior to the installation of signals or sign panels.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Monotube Arm)	->	ASTM A123

7) The Design Wind Speed is 110mph with a 30 percent gust factor.

8) Alternate Designs for this Structure are not allowed.

9) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

10) Sign Panels and Signals attached to the Monotube shall be located as shown on the Traffic Signal Plans. Wire access holes shall not exceed 3/4" in diameter.

11) The Pole shall be installed vertically. Arm Camber shall be accounted for in the Flange Connections.

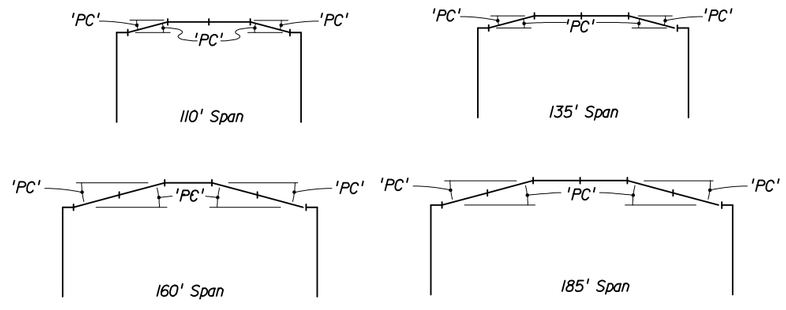
12) Locate handhole 180° from monotube arm.

13) All signals shall be installed vertically.

14) Monotube Arm & Poles shall be fabricated from round pipe.

15) If damping devices are required by the Engineer, they shall be installed within 3'-0" ± of the third points of the Span Length.

16) Each Standard Monotube Signal Structure has been designed for two free swinging internally illuminated street signs, per pole, which are acceptable by Contractor Certification provided they meet the applicable requirements of Specification Section 699, weigh no more than 75 lbs. (each) and are no more than 12 sq. ft in area (each).



CAMBER DETAILS

Note: Fabricate with rolling camber up.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ELEVATION, NOTES AND CAMBER DETAILS

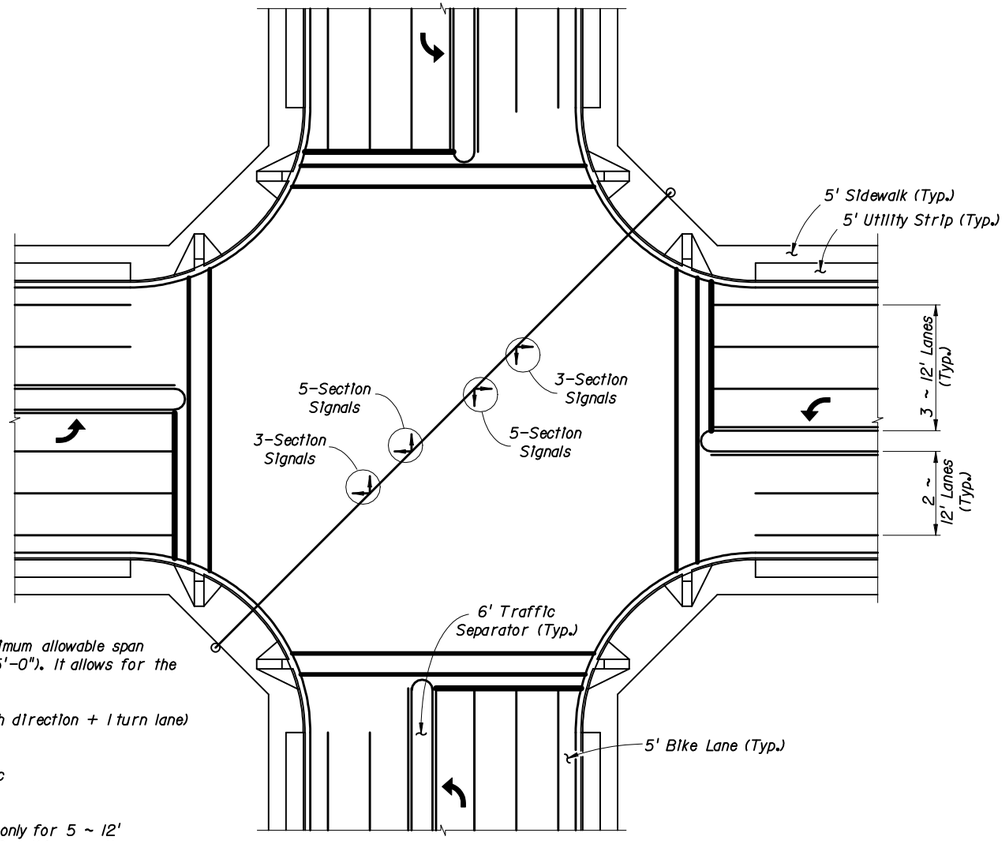
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 4	017746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW - MONOTUBE DESIGN INTERSECTION

Note:

The signal configuration shown represents the maximum allowable span for which this monotube standard is applicable (185'-0"). It allows for the following components:

a. 5 ~ 12' traffic lanes (2 thru lanes in each direction + 1 turn lane)
b. 1 ~ 6' traffic separator
c. 1 ~ 5' bike lane per direction of traffic
d. 1 ~ 5' utility strip per direction of traffic
e. 1 ~ 5' sidewalk per direction of traffic

The minimum monotube design span (110'-0") allows only for 5 ~ 12' traffic lanes (item "a" above). It is assumed that for this case there are no traffic separators,bike lanes, utility strips or sidewalks.

INSTRUCTIONAL NOTES:

1. This Index, 17746, is for use in preparing signalization plans when monotube assemblies are required. This standard establishes the requirements of monotube components listed on on the Qualified Products List (QPL). When using components on the QPL, the span length and heights of each pole will be the only information required in the Contract Plans, and Shop Drawings are not required.

2. If a monotube configuration does not meet the requirements stated below, a special design and shop drawing submittal is required.

3. Four standard monotube configurations are provided. The standard arm length and the signal locations used for design of the arm are shown on the monotube design loading tree on this sheet. If the same arrangement of signals is used with one or more signals closer to the nearest pole, the standard monotube may be used. If the same arrangement is used but one or more signals are further from the nearest pole, or if a different configuration of signals is used, a special design is required. If any signs are to be attached to the monotube arm, a special design is required.

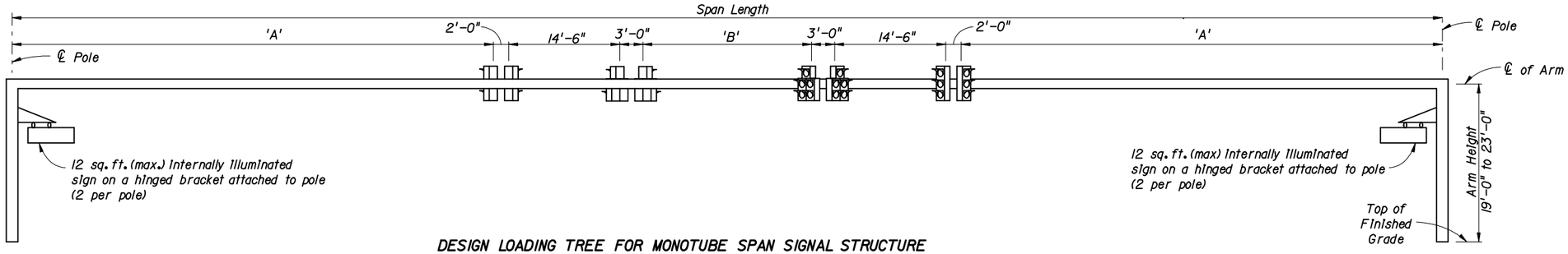
4. Standard monotube span lengths of 110'-0", 135'-0", 160'-0" and 185'-0" are shown. For other required span lengths with the same configuration of signals in the same loations or closer to the poles, the standard monotube design with the next largest standard span length may be used. The difference in length shall be removed from the center horizontal segment(s) of the span. If a span longer than 185'-0" is to be used, a special design is required.

5. The standard monotube is valid for an arm heights between 19' and 23', inclusive. A special design is required for all heights greater than 23'. If an arm height of less than 19' is to be utilized with the same configuration of signals in the same locations or closer to the poles, the standard monotube may be used, provided that minimum required clearances to the roadway are maintained.

6. The foundations for the standard monotube are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types of the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilitzed as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several founations. Furthermore, borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.



DESIGN LOADING TREE FOR MONOTUBE SPAN SIGNAL STRUCTURE

Note: Signal Backplates on 4 of the 8 signals are included in the design of Standard Arms.

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE DESIGN INTERSECTION AND DESIGN LOAD TREE

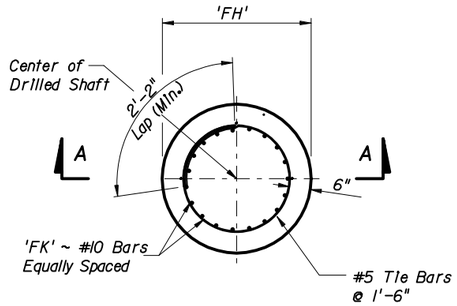
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

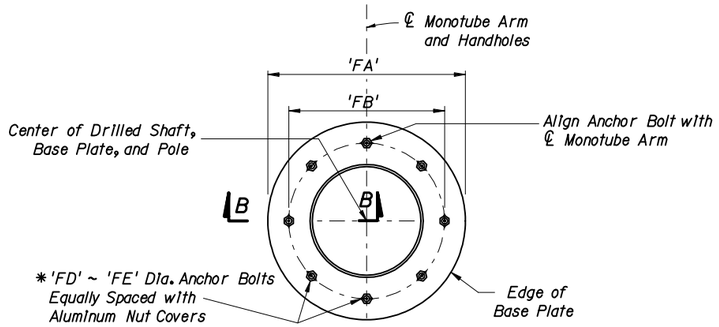
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 4	017746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FOUNDATION PLAN

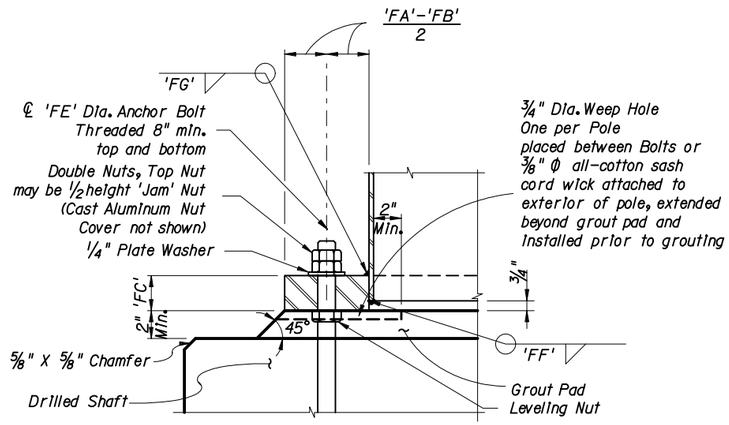
Note: 6" min. cover on Shaft Reinforcement



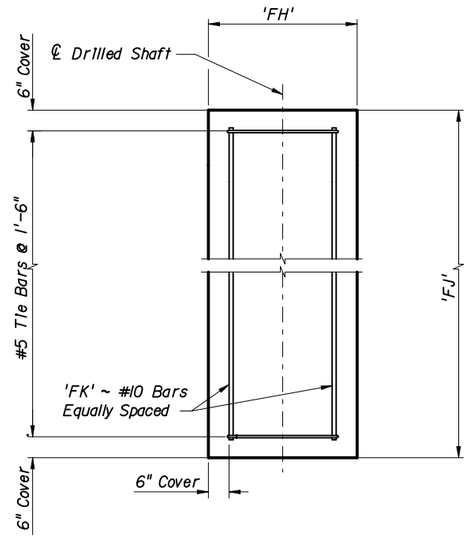
SECTION C-C

Note: Concrete and Reinforcement not shown.

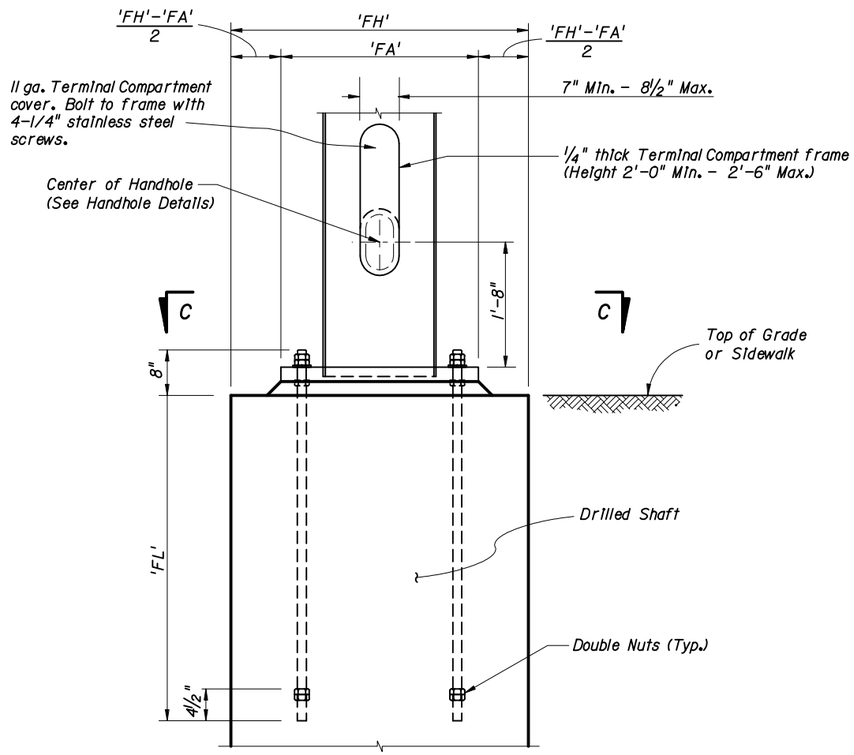
* Anchor Bolt Group locations may be ± ½" in the direction of the span



SECTION B-B



SECTION A-A



BASE PLATE AND ANCHORAGE ELEVATION

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE FOUNDATION AND BASE PLATE DETAILS

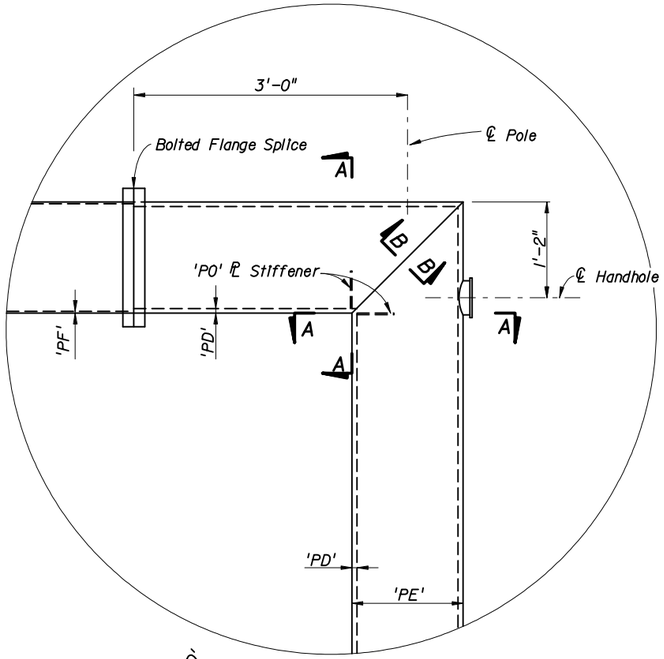
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

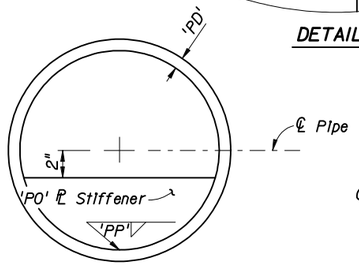
APPROVED BY W. W. Hall
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 4	017746

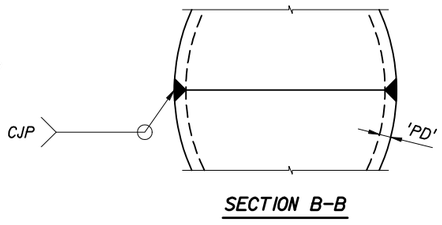
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DETAIL 'A'

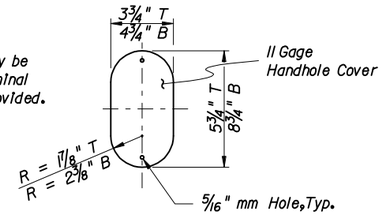


SECTION A-A

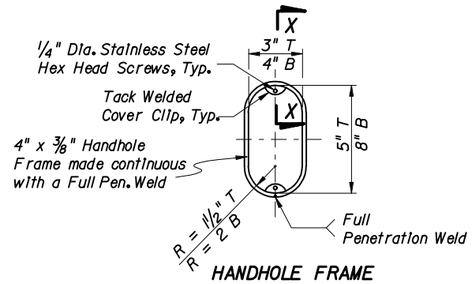


SECTION B-B

Note:
Handhole Cover may be omitted when Terminal Compartment is provided.

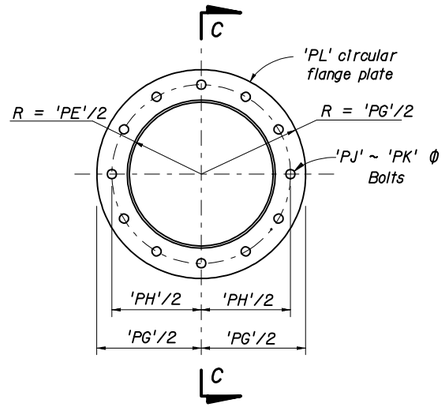


HANDHOLE COVER

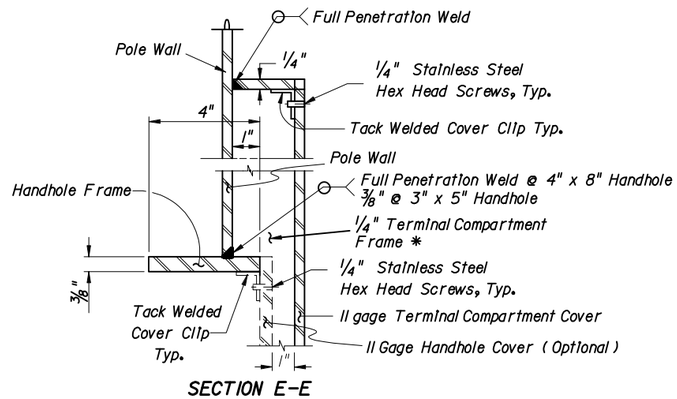


HANDHOLE FRAME
(w/Terminal Compartment omitted)

T - denotes top 3" x 5" handhole
B - denotes bottom 4" x 8" handhole

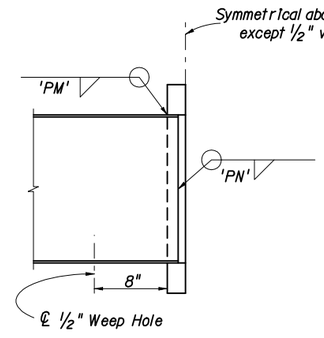


FLANGE SPLICE DETAILS



SECTION E-E
(thru Handhole & Terminal Compartment)

*Terminal Compartment is optional. See Monotube Tabulation for locations.



SECTION C-C

TABLE OF MONOTUBE VARIABLES

MONOTUBE ARM & POLES															FOUNDATION & BASE PLATE											SIGNAL LAYOUT	
'PA' (ft)	'PB'	'PC' (deg)	'PD' (In)	'PE' (In)	'PF' (In)	'PG' (In)	'PH' (In)	'PJ'	'PK' (In)	'PL' (In)	'PM' (In)	'PN' (In)	'PO' (In)	'PP' (In)	'FA' (In)	'FB' (In)	'FC' (In)	'FD'	'FE' (In)	'FF' (In)	'FG' (In)	'FH' (ft)	'FJ' (ft)	'FK'	'FL' (In)	Dim. 'A' (ft)	Dim. 'B' (ft)
110	4	1.5	1.093	14	⅜	21 ½	17¾	8	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	21 ½	17¾	1 7/8	8	1 ½"	5/16"	5/16"	3	12	10	45	29	13
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Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ARM CONNECTION DETAILS & TABLE OF VARIABLES

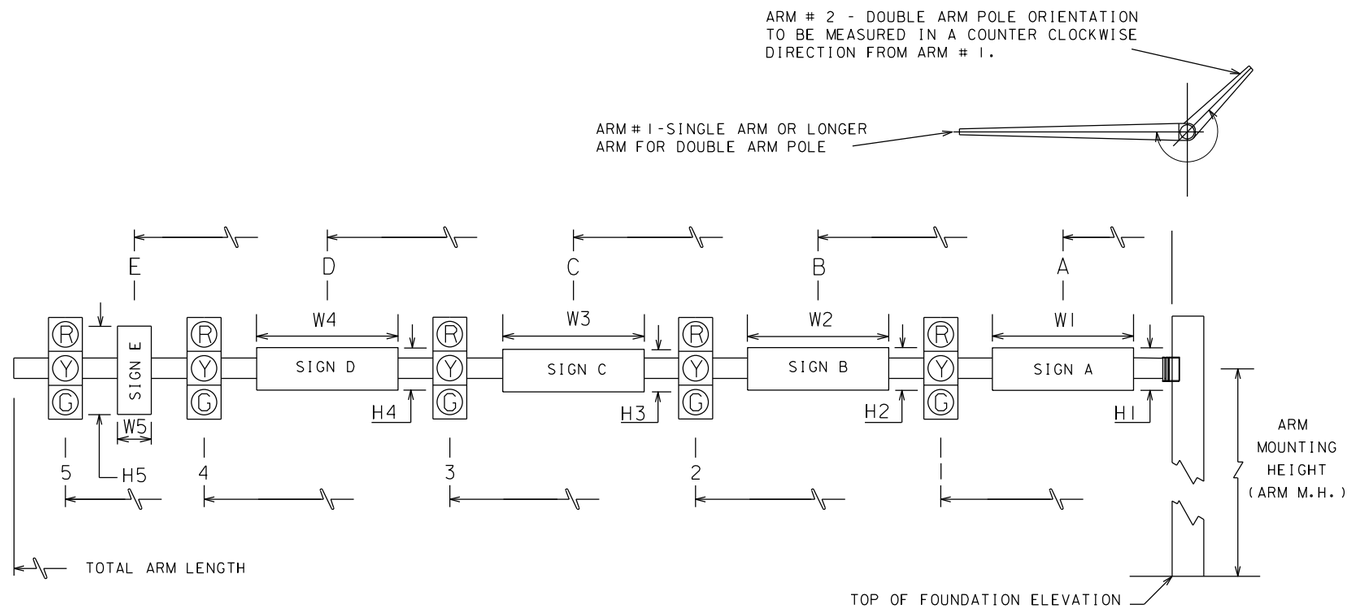
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 4	017746

SPECIAL INSTRUCTIONS					
ID NO.	PED. BUTTON		PED. SIGNALS		HANDHOLE LOCATION



* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY.

ID NO.	SHEET NO.	LOCATION BY STA.	TOP OF FOUNDATION ELEVATION	RDWY ARM NO.	CROWN ELEV.	SIGNAL DATA													SIGN DATA																PAINT COLOR
						SIGNAL V/H	BACK PLATES Y/N	PED. SIGNAL Y/N	DISTANCE FROM POLE										TOTAL ARM LENGTH	ARM M.H.	∠ BETWEEN DUAL ARMS 90/270	DISTANCE FROM POLE / HEIGHT AND WIDTH OF SIGN																
									1	*	2	*	3	*	4	*	5	*				A	HI	W1	B	H2	W2	C	H3	W3	D	H4	W4	E	H5	W5	
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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

MAST ARM TABULATION

SHEET NO.

* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY.

ID NO.	SHEET NO.	LOCATION BY STA.	TOP OF FOUNDATION ELEVATION	ROWY ARM NO.	CROWN ELEV.	SIGNAL DATA												SIGN DATA																PAINT COLOR
						SIGNAL V/H	BACK PLATES Y/N	PED. SIGNAL Y/N	DISTANCE FROM POLE									TOTAL ARM LENGTH	ARM M.H.	∠ BETWEEN DUAL ARMS 90/270	DISTANCE FROM POLE / HEIGHT AND WIDTH OF SIGN																	
									1	*	2	*	3	*	4	*	5	*				A	H1	W1	B	H2	W2	C	H3	W3	D	H4	W4	E	H5	W5	
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SPECIAL INSTRUCTIONS					
ID NO.	PED. BUTTON		PED. SIGNALS		HANDHOLE LOCATION

SPECIAL INSTRUCTIONS					
ID NO.	PED. BUTTON		PED. SIGNALS		HANDHOLE LOCATION

SPECIAL INSTRUCTIONS					
ID NO.	PED. BUTTON		PED. SIGNALS		HANDHOLE LOCATION

SPECIAL INSTRUCTIONS					
ID NO.	PED. BUTTON		PED. SIGNALS		HANDHOLE LOCATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

MAST ARM TABULATION

SHEET NO.

$$$$$$$$DGNSPECIFICATION$$$$$$$$
$$$$$$$$TIME$$$$$$$$
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Design Standards Interim

2000 Metric

Office of Design

Design Standards 2000 Interim

Interim Standard Index Sheets are to be included in FDOT construction plans, maintenance contracts and permits which are used to update the Standard Index Booklet to which they are referenced. They are in **Adobe** format. The default print size is 11x17 on the Page Set-up option. Typical file sizes are between 72kb to 1756kb, with most being under 500k. Entire groups may be printed by selecting the group name when shown as a link. Bentley's Microstation design file format is NOT available for distribution. Other Indexes may be revised by **Design Standards Modifications**.

For questions, please email **Alan Hart, P.E.**

A prefix of "O" indicates a modification to an existing Index or Interim Index which requires a sheet replacement. Index Numbers preceded by an asterisk symbol (*) indicates the dimensions of the drawings are in English units only and will apply to both English and Metric projects.

* METRIC *

Interim Standards Sheets to the Metric Edition of the 2000 Roadway and Traffic Design Standards

Index No.	Sheet No.	Filename	Description	Index Date
0104	1-2 Of 2	mi0104.pdf	**Permanent Erosion Control** - 12-14-01 - Expanded to two sheets.	12/14/01
0199	1 of 1	mi0199.pdf	**Geotextile Criteria** - Table expanded to include Plastic Erosion Mat under Class E for turf reinforcement. Design Note 3 added. Reference to ASTM D-4595 added to Table 1.	08/24/00
0201	4 & 5 of 6	0201.pdf	**Supplementary Details For Manholes And Inlets** - Dated 07-01-05 - These sheets replace sheets 4 And 5 in the existing 2004 Booklet.	07/01/05
0205	2 of 5	mi0205s2of5.pdf	**Cover Height** - Revised: 12-05-00 - D-load values revised.	12/05/00
0216	1-3 of 3	mi216.pdf	**Closed Flume Inlet** - Date: 12/04/00: New index.	12/04/00
0232	1 of 5	0232.pdf	**Ditch Bottom Inlets Types C,D,E & H** - Dated 07-01-05 - These sheets replaces sheets 1 in the existing 2004 Booklet.	07/01/05
*0301	1 of 1	mi301s01.pdf	**Turn Lanes** - Date:12-06-02 - Replaces Index No. 301.	12/06/02
*0304	1 of 5	mi0304s1of5.pdf		04/11/02

		mi0304s1of5r1.pdf	**Public Sidewalk Curb Ramps** - Revised: 04-11-02 - Expanded to include curb ramp detectable warning. See flag on drawing for implementation information. Revised: 06-06-02: Detectable surface coloring requirement added.	06/06/02
*0304	2 of 5 2 of 5	mi0304s2of5.pdf mi0304s2of5r2.pdf	**Public Sidewalk Curb Ramps** - Revised 7-10-01 - Added Detail for Pavement Relief at Lip of Curb. Revised: 12-18-01 - sheet duplicated. No change to the contents of this sheet.	07/10/01 12/18/01
0304	1-5 of 5	mi0304.pdf	**PUBLIC SIDEWALK CURB RAMPS** - Revised 7-24-02 - Replaces Index No. 304.	07/24/02
*0304	1-6 of 6	mi0304r1.pdf	**Public Sidewalk Curb Ramps** - Date: 01-01-05 – Index expanded and replaces previous.	01/01/05
0310	1-2 of 2	mi0310.pdf	**CONCRETE SIDEWALK** - Revised 7-24-02 - Replaces Index No. 310.	07/24/02
0400	12 of 31	mi0400s12of31.pdf	**Guardrail** - Revised: 12-28-01 - Notations revised and Field Trimmed Thrie Beam Offset Block dimension table added.	12/18/01
0400	13 of 31 13 of 31 1-2 of 2	mi0400s13of31.pdf mi0400s13of31r2.pdf mi0400s1-2of2.pdf	**Guardrail** - Detail E - Replacement sheet. Revised 12-28-01 - Replacement sheet Date: 01-28-02 - Sheet Nos. 1-2 of 2 is a supplement to Interim Index No. 0400, Sheet 13 of 31. No longer available as of 12/31/02. See 0400, Sheets 1-25 of 25, Guardrail, thrie-beam transition details for bridge traffic railing barrier retrofits dated 12-31-02 on the 2002 Interim Standards web page.	08/24/00 12/28/01 01/28/02
0400	26 of 31	mi0400s26of31.pdf	**Guardrail** - SRT350 (8 Post) End Terminal - Replacement sheet for Sheet No. 26 of 31 Revised 05/05/00: Washers under nuts of SLOTGUARD deleted.	08/24/00 Revised: 05/05/00
*0400	30 of 31 30 of 31	mi0400s30of31.pdf mi0400s30of31r2.pd	**End Anchorage Assembly Type FLEAT-350** - Replacement sheet for Index No. 400, sheet No. 30 of 31. Flare rate revised and standard guardrail panel downstream realigned. Restriction for limiting use to one-way and divided multilane facilities removed. Revised: 01-30-02 - Post spacing modified.	11/28/00 01/30/02
*0400	1 of 1	mi0400s1of1.pdf	**End Anchorage Assembly Type SRT/HBA-6 POST SYSTEM** - This sheet is a supplement to Index No. 400	03/26/01
403	1-2 of 2	403.pdf	**Guardrail Transitions For Existing Bridge Traffic Railing Retrofits** - Dated 07-01-05 - This is a new Index to detail upgrading the guardrail approaches to existing bridge rail retrofits.	07/01/05
*412	1-5 of 5	mi412.pdf mi412r1.pdf	**Portable Temporary Low Profile Barrier For Roadside Safety** - Date: 07-18-03 - This barrier is applicable for design speeds of 45 mph or less where a low profile is desired to maintain sight distance at intersections and driveways. This Interim may be used beginning immediately. Please note that availability of the device will be limited initially, since the precast industry will need time for mobilizing and tooling up to begin fabrication. This should be considered in establishing project schedules when calling for this device. Revised: 09-29-03 - Sheet 1 of 5 revised to show drain slot.	07/18/03 09/29/03
*0413	1 of 1	mi413.pdf	**Proprietary Temporary Concrete Barrier** - Date: 07-01-03 - New Index, duplicating and replacing Interim Index No. 0415 (Sheet 1 of 1)	07/01/03

			dated 11-04-02. Use of the J-J Hook units shall be in accordance with the requirements of Interim Index No. 0415, dated 07-01-03.	
*0415	1-10 of 10	mi0415.pdf	**Temporary Concrete Barrier** - Date: 07-01-03 - Replaces Index No. 415. This Interim Index shall be included in all plans calling for temporary barrier wall beginning with the January 2004 letting, and on all projects prior to the January 2004 letting where the plans call for Type K barrier wall.	07/01/03
*0415	1 of 1	mi0415.pdf	**Precast Concrete Temporary Barrier Wall** - Date: 11-04-02. This standard is produced only for the purposes of field identification of the proprietary J-J Hook temporary concrete barrier wall units and to permit their immediate use on Florida highways in accordance with Index No. 415 and the plans.	11/04/02
0416	1 of 1	mi0416s1of1.pdf	**Temporary Water Filled Barriers** - Dated: 3-13-03 - This sheet is an addition to Index No. 416.	03/31/03
430	1-2 of 2	430.pdf	**Optional Crash Cushion Details** - Dated 07-01-05 - This is a new Index to provide details for allowing the use of an optional crash cushion pay item..	07/01/05
*0435	2 of 6	mi0435s2of6.pdf	**QuadGuard** - Revised 7-10-01 - Foundation modified.	07/10/01
0439	1-6 of 6	mi0439.pdf	**Construction Zone GREAT** - This standard drawing is a supplement to the 2000 Roadway and Traffic Design Standards. The GREATcz may be used in work zones with speeds of 45 mph or less, and is to be included as a redirective option under Index No. 415. The GREATcz can be used on projects let to contract prior to June 30, 2004 for the life of the project or until the unit reaches the end of its service life, whichever comes first.	10/12/01
*0440	1-5 of 5	mi0440.pdf	**TRACC Systems** - Revised 02/14/01: Index is a replacement for Index No. 440 and Interim Index No. 0440, sheet 1-4 of 4. This Index expanded to include low and high speed modules. Revised 05/04/01 : Sheet 1 of 5 General Note 7 revised. Design Note 2 revised.	05/04/01
0441	1-8 of 8	mi441.pdf	**TAU-II** - Date 11-14-02 - Replaces Index No. 441 dated 03-18-02.	11/14/02
0501	1-8 of 8 6 of 8 6 of 8	mi501.pdf mi0501s6of8.pdf mi0501s6of8r2.pdf	**Geosynthetic Reinforced Soils** - New Index. This sheet is a supplement to Interim Index No. 501, sheet 6 of 8. Revised: 02-01-02 - Replacement sheet. Geogrid product added.	08/24/00 02/28/01 02/01/02
0505	1-3 of 3	mi0505.pdf	**Embankment Utilization** - Revised 11-14-01 Double Asterisk (**) footnote revised.	11/14/01
*0518	2 of 2	mi0518s2of2.pdf	**Ground-In Rumble Strips** - Replacement sheet for Index 518, sheet No. 2 of 2. Rumble strip moved four inches (4") closer to edge of travel lanes. Friction course width on shoulder reduced to eight inches (8"). By general note, rumble strips required on limited access facilities.	11/28/00
0631	2 of 2	mi0631s2of2.pdf	**Temporary Crossover** - Replacement sheet.	08/24/00
*670	1 of 1	mi670.pdf	**Motorist Awareness System** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 10, Section 10.17.	11/28/00

0670	1 of 1	0670.pdf	**Motorist Awareness System** - Date 07-01-05 Note: Replaces Index No. 670. Tables for buffer space and taper length and for device spacing added. For information on implementation prior to January 1, 2006 refer to the Construction Office webpage at: http://www.dot.state.fl.us/construction/memos/2005/DCE06005.pdf	07/01/05
700	1-2 of 2	mi700.pdf	**Roadside Offsets** - Date: 11-22-02 - New index for immediate use. This interim drawing is intended to aid users in determining the standard offsets to typical roadside objects or features. It is consistent with existing horizontal clearance criteria and typically does not need to be inserted into contract plans; however, this interim may be inserted into contract plans when the user deems its inclusion necessary.	11/22/02
*05015	1-14 of 14	mi05015.pdf	**Retaining Wall Systems, The Reinforced Earth Company, Reinforced Earth Wall** – Date: 01-01-05 –Replaces Index 5015.	01/01/05
*05025	1-16 of 16	mi05025.pdf	**Retaining Wall Systems, Tensar Earth Technologies, MSE Retaining Wall** – Date 01-01-05 – Replaces Index 5025.	01/01/05
*5035	1-14 of 14	mi5035.pdf	**Retaining Wall Systems, SSL, MSE Plus Wall Systems** – Date: 01-01-05 – This is a permanent wall system that can be used in slightly to moderately aggressive environments.	01/01/05
*05115	1-6 of 6	mi05115.pdf	**Retaining Wall Systems, The Reinforced Earth Company, Terratrel Wire Wall** – Date: 01-01-05 – Replaces Index 50115	01/01/05
*05125	1-5 of 65	mi05125.pdf	**Retaining Wall Systems, Tensar Earth Technologies, Temporary Retaining Wall** – Date: 01-01-05 – Replaces Index 5125	01/01/05
*5110	1-5 of 65	mi5110.pdf	**Retaining Wall Systems, T & B Structural Systems, Inc., Gabion Wire Wall** – Date: 01-01-05 – This is a wire face wall that can be used in all environments.	01/01/05
017344	1-3 of 6	mi017344s1-3of6.pdf	**School Signs & Markings** - Revised: 12-26-01 - Sheets 1-3 of 6 revised in accordance with the 2000 MUTCD.	12/26/01
017345	3 of 4	mi017345s3of4.pdf	**Interchange Marking** - Revised: 12-26-01 - "Typical Lane Drop Markings At Exit Ramps' detail added.	12/26/01
017346	1-13 of 13	mi017346.pdf	**Special Marking Areas** - Revised: 12-26-01 - Index expanded.	12/26/01
*017346	5 of 13	mi017346s5of13.pdf	**Special Marking Areas** – Date: 01-01-05 – Sign distance table modified and transition distance formulas modified.	01/01/05
017355	8-14 of 14	mi017355s8-14of14.pdf	**Special Sign Details** - Revised: 12-27-01 - Sheet 8-14 of 14 added. Index revised in accordance with the 2000 MUTCD.	12/27/01
*017500	1 of 3	mi017500s1of3.pdf	**Conventional Lighting** – Date: 01-01-05 – Wiring method changed and sheet completely redrawn.	01/01/05
*17515 017515	1-7 of 7 1-7 of 7	mi17515.pdf mi017515r2.pdf	**Aluminum Light Pole** - New Index. Revised 7-10-01 - Replaces Index 17515.	09/26/00 07/10/01
*17723	1-3 of 3	mi17723.pdf	**Steel Strain Pole** - New Index.	09/26/00

*017725	1 of 1	mi017725.pdf mi017725r2.pdf	**Concrete Poles** - Supplement sheet for use when Type VIII poles are called for in the plans. Revised 7-10-01 - Revised supplement sheet for use when Type VIII poles are called for in plans.	08/24/00 07/10/01
*17740 017740 017740	1-2 of 2 1-2 of 2 1-2 of 2	mi17740.pdf mi017740.pdf mi017740r2.pdf	**Instructions and Examples for Designers and Fabricators of Standard Mast Arm Assemblies** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. Revised 7-10-01 - Replaces Index 17740. Revised: 10-12-01 - sheet 2 of 2 revised. Signal head height revised. See Interim Index No. 17741 for optional replacement.	08/24/00 07/10/01 10/12/01 07/22/02
17741	1-2 of 2	mi17741.pdf	**INSTRUCTIONS AND EXAMPLES FOR DESIGNS AND FABRICATORS OF STANDARD MAST ARM "B & C" ASSEMBLIES** - Date: 7-17-02 - New Index. NOTE: Either group Index Nos. 17740, 17742 and 17744 or group Interim Index Nos. 17741, 17743, and 17745 are optional groups to be included in the plans for projects let to contract January 2003 through June 2003. For projects let to contract July 2003 through June 2004 only group Interim Index Nos. 177745, 17743 and 17745 will be applicable; and group Index Nos. 17740, 17742 and 17744 will be deleted from the Design Standards on June 30, 2003.	07/17/02
*17742 017742	1 of 1 1 of 1	mi17742.pdf mi017742.pdf	**Component Data for Standard Mast Arm Assemblies** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. Revised 05/05/00: POLE, CONNECTION AND SHAFT DESIGN Table, UPRIGHT BASE CONNECTION Field - Column BF specifying anchor bolt embedment depth added. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17742 See note on Interim Index NO. 17741.	04/20/00 Revised: 05/05/00 Reformatted 08/24/00 07/10/01 07/22/02
17743	1-2 of 2	mi17743.pdf	**COMPONENT DATA FOR STANDARD MAST ARM "B & C" ASSEMBLIES** - Date: 7-17-02 - New Index. See note on Interim Index No. 17741.	07/17/02
*17744 017744	1-5 of 5 1-5 of 5	mi17744.pdf mi017744.pdf	**MAST ARM ASSEMBLIES** - New Index See July, 2000 revisions to the Plans Preparation Manual Vol. I, Chapter 7, Section 7.4.12, Vol. I, Chapter 29, Section 29.3, and Vol. II, Chapter 24, Section 24.7. Use in conjunction with Structures Design Office Standard Drawing S-1700 and/or S-1710. Revised 01/03/01: Sheet 1 of 5 - Note 18 added Revised 02/20/01: Sheet 2 of 5 - Terminal Compartment details to Section E-E modified. Revised 02/20/01: Sheet 2 of 4 - Section X-X deleted, Section E-E substituted. Revised 02/13/01: Sheet 4 of 5 - Details "O" - Weld symbol modified. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17744. See note on Interim Index No. 17741.	04/20/00 Revised: 01/03/01 Reformatted 08/24/00 07/10/01 07/22/02
17745	1-5 of 5	mi17745.pdf	**MAST ARM ASSEMBLIES** - Date: 7-17-02 - New Index. See note on Interim Index No. 17741.	07/17/02

*17746 017746	1-4 of 4 1-4 of 4	mi17746.pdf mi017746.pdf	**Monotube Signal Structure** - New Index Revised 02/20/01: Sheet 1 of 4, Note1 - ASTM revised. Sheet 1 of 4 - Note 16 added. Sheet 1 of 4 - Aluminum Identification Tag description modified. Sheet 2 of 4 - Internally Illuminated Sign size modified. Sheet 4 of 4 - Section X-X deleted, Section E-E substituted. This Index was reformatted on 08/24/00. No changes were made to contents of this Index. Revised 7-10-01 - Replaces Index 17746	09/26/00 Reformatted 08/24/00 07/10/01
017748	1 of 1	mi17748.pdf	**Free-Swinging, Internally-Illuminated Street sign Assemblies** - Date: 12-27-01 - New Index.	12/27/01
017900	1 of 1	mi017900.pdf	**Traffic Monitoring Site** - Supplemental sheet to Index No. 17900 for inclusion in the plans when Microwave Radar Vehicle Sensors, Type II used.	08/24/00
017900	3 of 9	mi017900s3of9.pdf	**Traffic Monitoring Site** - Revised: 12-27-01 - Sheet 3 of 9 - Backplane circuit modified.	12/27/02
017900	5 of 9	mi017900s5of9.pdf	**Traffic Monitoring Site** - Revised: 12-27-01 - Sheet 5 of 9 - 'Speed / Classification Loop Assembly With Axle Sensors Placement Detail' modified.	12/27/01
*017900	5 of 9	mi017900s5of9r1.pdf	**Traffic Monitoring Site** – Date: 01-01-05 –Added pull box detail, revised spacing of vehicle sensors and revised loop details.	01/01/05

Special Details - Metric
The following .exe files are self extracting files containing Microstation design files.

Index No.	Sheet No.	Filename	Description	Index Date
-	1 of 1	miMastArm.exe	**Mast Arm Tabulation sheets** - Complete and insert sheet(s) when mast arms are called for in the plans.	08/24/00

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Florida Department of Transportation
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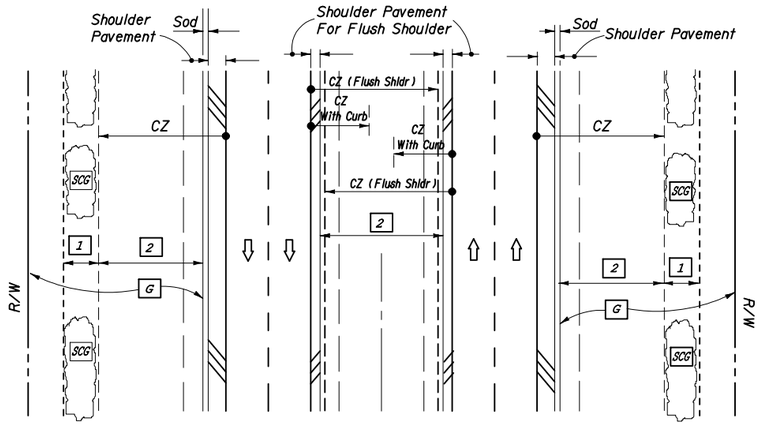
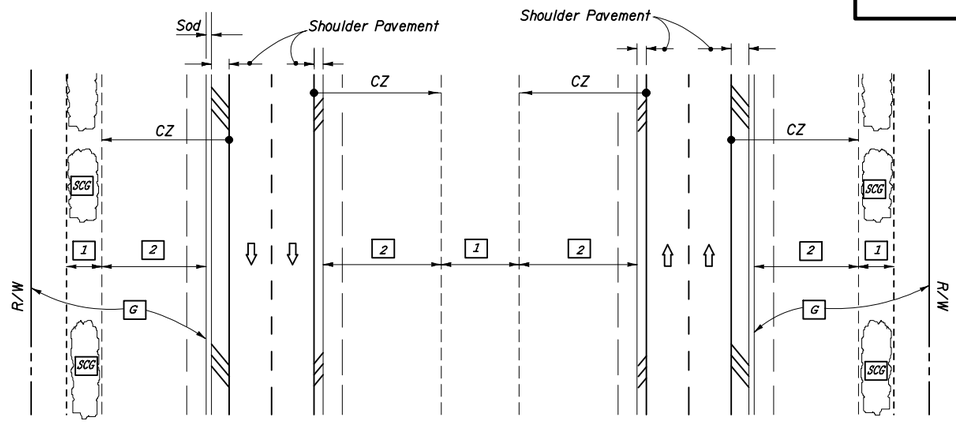
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED NARROW MEDIAN WITH OR WITHOUT CURBED MEDIAN



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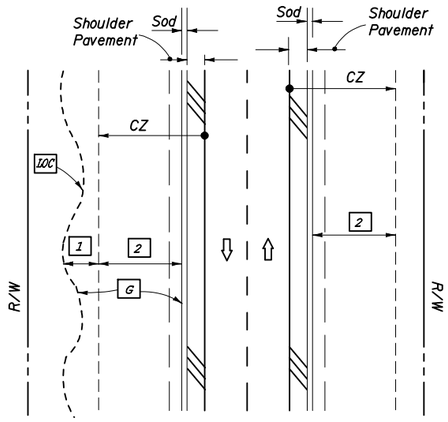
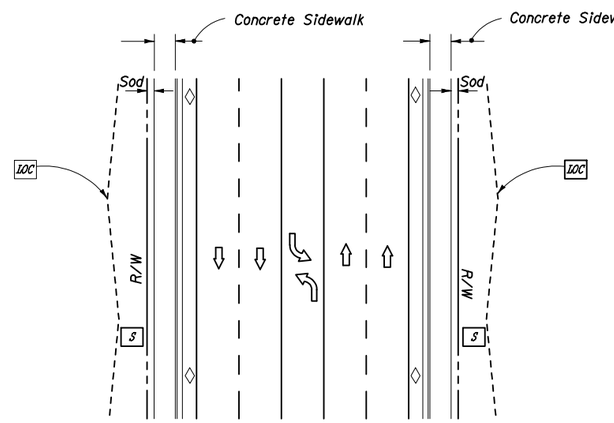
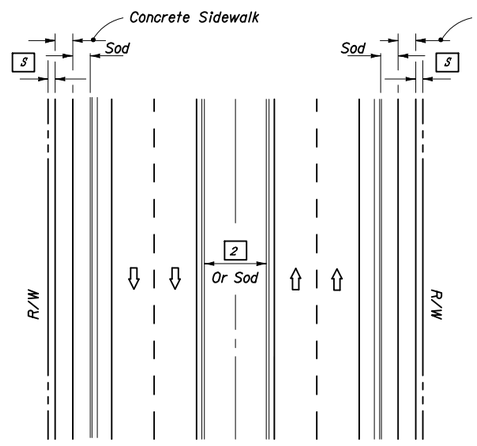


UNDIVIDED FLUSH SHOULDER



UNDIVIDED CURBED



DIVIDED CURBED

LEGEND

- 1 Wildflower Group #1
- 2 Wildflower Group #2
- G Grass-Seed/Seed & Mulch (To Limit of Construction)
- SCG Selective Clearing And Grubbing
- LOC Limits Of Construction
- S Seed, Seed And Mulch, Sod Or Seed, Sod

WILDFLOWERS SEEDING RATE	
Common Name (Botanical Name)	lbs/ac
#1 Group	
Black-Eyed Susan (Rudbeckia hirta)	2
Tickseed (Coreopsis tinctoria)	
Lance-Leaf Tickseed (Coreopsis lanceolata)	10
Indian Blanket (Gaillardia pulchella)	10
#2 Group	
Annual Phlox (Phlox drummondii)	10
Moss Verbena (Berbena tenuisecta)	6

SEEDING RATES (Lbs/Ac) FOR NEW SHOULDERS AND SLOPES*

TYPE OF SEED	ZONE I				ZONE II			
	COASTAL		INLAND		COASTAL		INLAND	
	Mar. To Nov.	Nov. To Mar.	Mar. To Oct.	Oct. To Mar.	Feb. To Dec.	Dec To Feb.	Feb. To Dec.	Dec. To Feb.
PERMANENT GRASSES								
Unhulled Bermuda	20	20	20	20	20	20	20	20
Bahia Argentina Or Pensacola Bahia			80	80			80	80
QUICK GROWING GRASS								
Annual Rye		20		20		20		20
TOTAL Lbs/ PER ACRE	20	40	100	120	20	40	100	120

Note: The seeding rates shown in this table apply only when seed is spread by an approved mechanical spreader meeting the requirements of Section 570 and 577 of the Standard Specifications.

*See Index No. 105 for zone boundaries and seeding rates for shoulder reworking.

SEEDING FOR PERMANENT GRASSING AND WILDFLOWERS

Date: 12-14-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PERMANENT EROSION CONTROL

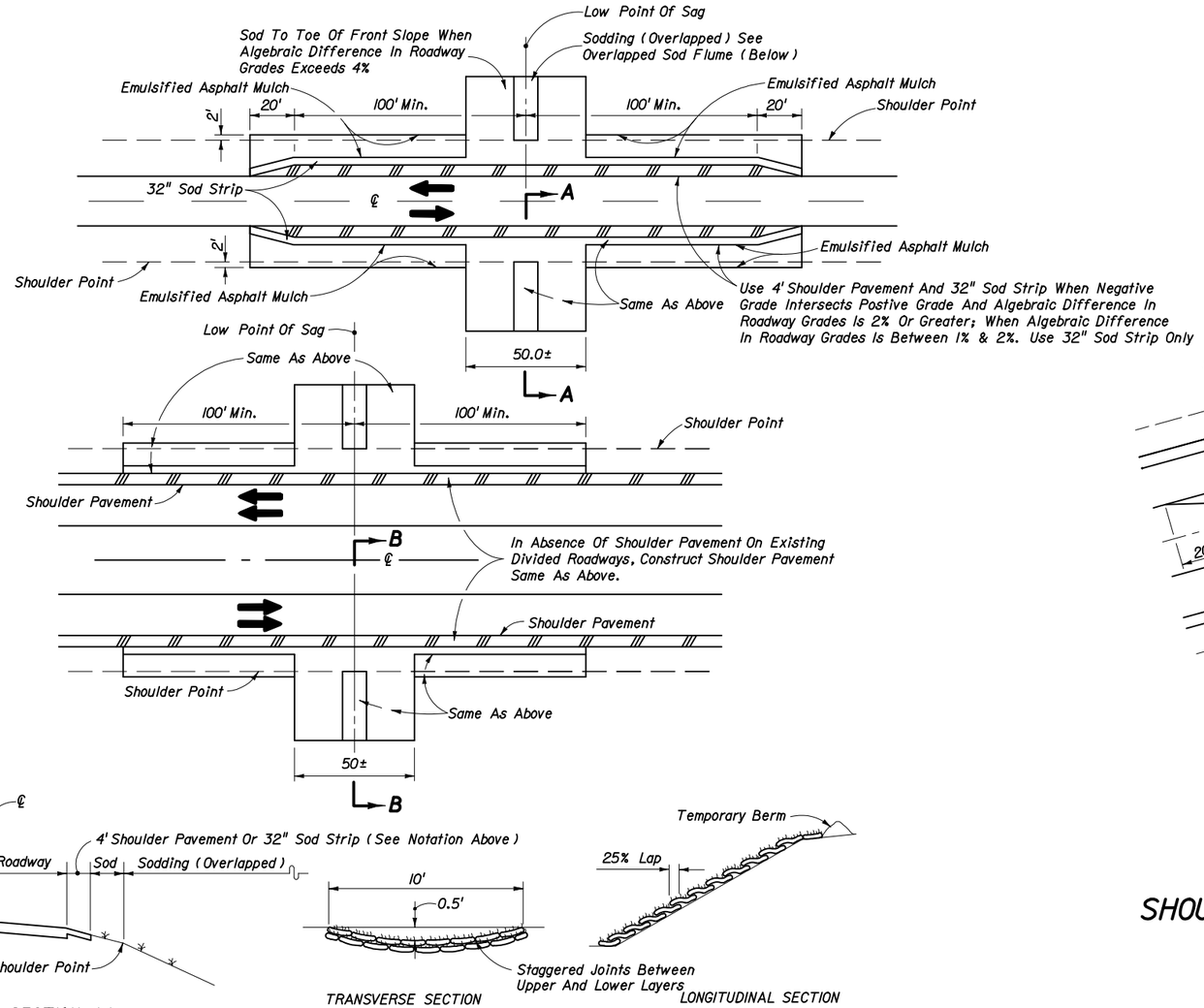
INTERIM STANDARD

SHEETS NOS. 1 & 2 OF 2 REPLACE INDEX NO. 104, (SHEET 1 OF 1) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

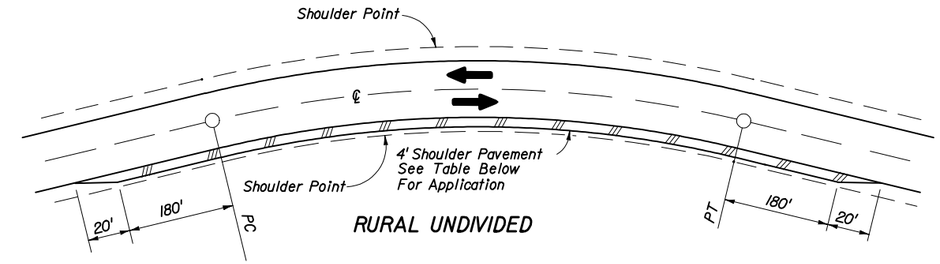
APPROVED BY S. A. McNeeve
State Drainage Engineer

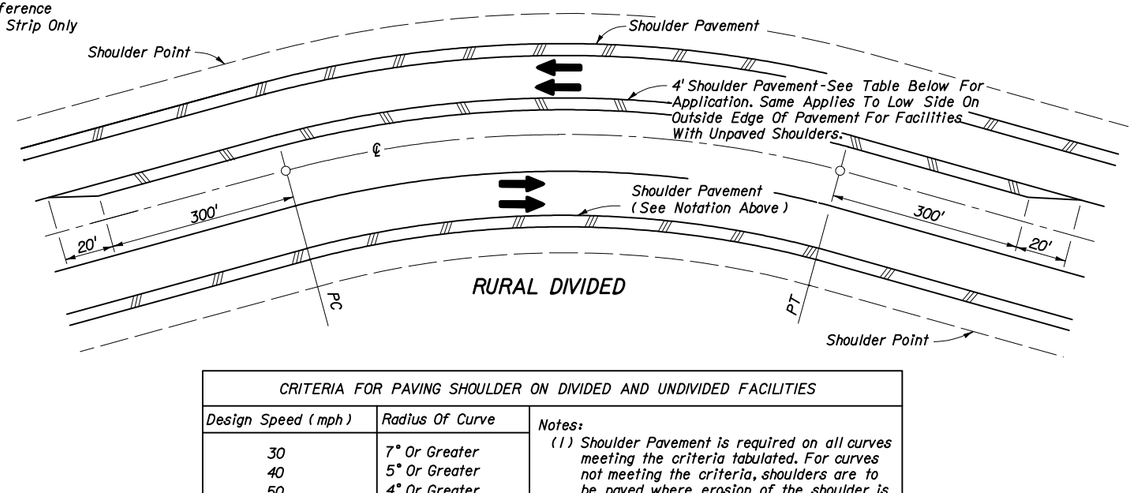
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	0104

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SHOULDER AND SLOPE TREATMENT IN SAG VERTICAL CURVES





CRITERIA FOR PAVING SHOULDER ON DIVIDED AND UNDIVIDED FACILITIES		
Design Speed (mph)	Radius Of Curve	Notes:
30	7° Or Greater	(1) Shoulder Pavement is required on all curves meeting the criteria tabulated. For curves not meeting the criteria, shoulders are to be paved where erosion of the shoulder is evident or anticipated.
40	5° Or Greater	
50	4° Or Greater	
60	3° Or Greater	
65	3° Or Greater	(2) If outside shoulder is paved as designated bike lane, the paved width within curves shall match the bike lane width.
70	2° Or Greater	

SHOULDER AND SLOPE TREATMENT FOR SUPERELEVATED ROADWAYS

NOTES

1. These treatments are applicable to new construction, reconstruction and RRR projects. Project requirements for shoulder pavement and sodding that exceed the limits of this standard take precedence.
2. For sodding adjacent to ditches and at headwalls, see Index No. 281.
3. All front slopes steeper than 1:3 are to be sodded.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TREATMENTS FOR PROTECTION FROM CONCENTRATED ROADWAY RUNOFF EROSION AND SHOULDER RAVELING

Date: 12-14-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PERMANENT EROSION CONTROL

INTERIM STANDARD

SHEETS NOS. 1 & 2 OF 2 REPLACE INDEX NO. 104, (SHEET 1 OF 1) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY D. A. McLemore
State Drainage Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	0104

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

STANDARD CRITERIA

CLASS	TYPE (1)	APPLICATION DESCRIPTION	STANDARD INDEX NO.	PERMITTIVITY SEC $^{-1}$	A. O. S. SIEVE #	GRAB TENSILE STRENGTH N	SEWN STRENGTH N	PUNCTURE N	TRAPEZOIDAL TEAR N	WIDE WIDTH TENSILE STRENGTH KN/M	U V RESISTANCE (Min. Allowed) %	U V RESISTANCE (Min. Allowed) Time (Hrs.)	COMMENTS
DRAINAGE (D)	D-1	Revetment (Special)		(See D-2)	(See D-2)	1400	1260	500	500		50	500	Woven Monofilament Geotextiles only (Elongation < 50%) Provide 6" thick aggregate bedding layer.
	D-2	Revetment (Standard) Articulating Block Gabions Rock, Rubble, Broken Concrete	281	% SOIL PASSING No. 200 SIEVE < 15% 0.7 15% to 50% 0.2 > 50% 0.1	% SOIL PASSING No. 200 SIEVE < 15% 40 15% to 50% 60 > 50% 70 *	Woven Monofilament 1100 Other Geotextiles: Elongation < 50% 1400 > 50% 900	Woven Monofilament 990 Other Geotextiles: Elongation < 50% 1200 > 50% 810	Woven Monofilament 400 Other Geotextiles: Elongation < 50% 500 > 50% 350	Woven Monofilament 250 Other Geotextiles: Elongation < 50% 500 > 50% 350		50	500	Woven Geotextiles only. No Slit Film Geotextiles allowed. Provide 150 mm thick aggregate bedding layer for revetment (standard). The bedding layer may be omitted if a D-1 fabric is used with revetment (standard). * For cohesive soils with a plasticity index > 7, maximum average role value for AOS is number 50 sieve.
	D-3	Underdrain * * * French Drain Sheet Piling Filter Filter Fabric Jacket (Culvert) Concrete Pavement Subdrainage	286 285 280 287	% SOIL PASSING No. 2000 SIEVE < 15% 0.5 15% to 50% 0.2 > 50% 0.1	% SOIL PASSING No. 2000 SIEVE < 15% 40 15% to 50% 60 > 50% 70 *	Elongation < 50% 1100 > 50% 700	Elongation < 50% 990 > 50% 630	Elongation < 50% 400 > 50% 250	Elongation < 50% 400 ** > 50% 250		50	500	No woven slit film fabrics allowed. * For cohesive soils with a plasticity index > 7, maximum average role value for AOS is number 50 sieve. ** Required Trapezoidal tear for woven monofilament is 250. *** See Index No. 286 for the permittivity and AOS values of the internal filter fabric of type V underdrain.
	D-4	Slope Pavement (Sand-Cement) Ditch Pavement (Sand-Cement)	281	0.5	40	800	720	220	155		50	500	Nonwoven only. Min. Thickness 90 Mils Elongation ≥ 50%
	D-5	Mechanical Stabilized Retaining Wall Cast-In-Place Retaining Wall		0.5	40	400	360	220	175		50	500	
	D-6	Slope Pavement (Concrete) Ditch Pavement (Concrete)	281	0.5	40	800	720	220	155		50	500	Nonwoven only. Min. Thickness 120 Mils Elongation ≥ 50%
EROSION (E)	E-1	Staked Silt Fence	102	0.5	NA	400	360	NA	155		80	500	Minimum Filtration Efficiency of 75% and minimum flow rate of 0.3 gal.
	E-2	Wind Screen		0.5	NA	400	360	NA	NA		80	150	
	E-3	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 1)	NA	NA	NA	NA	NA	NA	NA	15 x 11	80	2,000	Maximum Permissible design velocity 3.0 M/Sec
	E-4	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 2)	NA	NA	NA	NA	NA	NA	NA	29 x 21	80	2,000	Maximum Permissible design velocity 4.3 M/Sec
	E-5	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 3)	NA	NA	NA	NA	NA	NA	NA	44 x 32	80	2,000	Maximum Permissible design velocity 5.5 M/Sec
STABILIZATION (R)	R-1	Reinforcement		0.05	30	880	800	400	400		80	150	
	R-2	Separation		0.05	30	800	720	355	220		—	—	

(1) Type refers to FDOT class and application.

TABLE 1

Test	Unit	Test Method
Permittivity	sec $^{-1}$	ASTM-D-4491
AOS	mm	ASTM-D-4751
Elongation	%	ASTM-D-4632
Grab Tensile Strength	N	ASTM-D-4632
Wide With Tensile Strength	kN/M	ASTM-D-4595
Maximum Design Velocity	M/sec	See Design Note 3
Sewn Strength	N	ASTM-D-4884
Puncture	N	ASTM-D-4833
Trapezoidal Tear	N	ASTM-D-4533
Ultra Violet Resistance	% Retained In Strength	ASTM-D-4355
Filtration Efficiency	%	ASTM-D-5141
Flow Rate	L ^{3}/min.	ASTM-D-5141

GENERAL NOTES

1. Specifications for geotextiles are in Section 985. Physical criteria for each application is provided by this standard, in conjunction with those sections.
2. All values except AOS are MINIMUM AVERAGE ROLL values in the weakest principal direction. Values for AOS are MAXIMUM AVERAGE ROLL values.
3. Test soil or fill material adjacent to the geotextile for gradation to select values for permittivity and AOS.
4. Unless specifically restricted in COMMENTS column, any type of material may be used.

DESIGN NOTES

1. The Designer shall review this criteria and adjust the values as necessary to satisfy project requirements. These adjustments shall be called for in the plans or contained in the project special provisions.
2. U V Resistance: The value represents the percent of minimum textile strength retained (ASTM-D-4632) after weathering per ASTM-D-4355 for the test period (hours).
3. Maximum design velocity for plastic erosion mats shall be determined by tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the State Drainage Engineer.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOTEXTILE CRITERIA

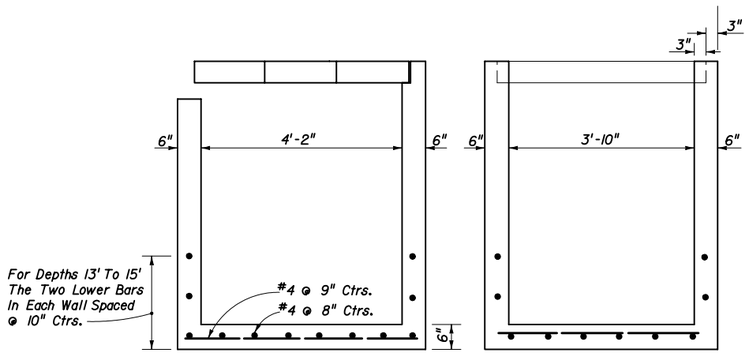
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 199 (SHEET 1 OF 1) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY S. A. McInerney
STATE DRAINAGE ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	0199

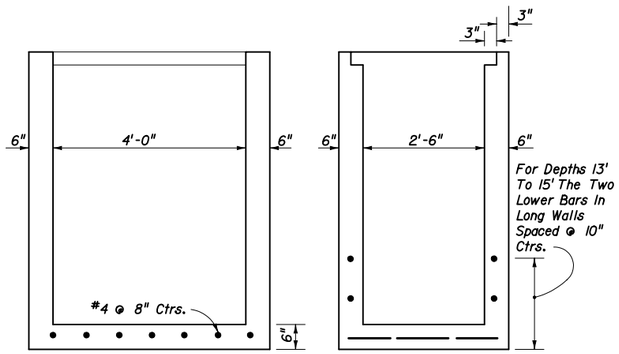
FINANCIAL PROJECT ID	SHEET NO.



PARTIAL SECTION AA PARTIAL SECTION BB

DITCH BOTTOM INLET TYPE B

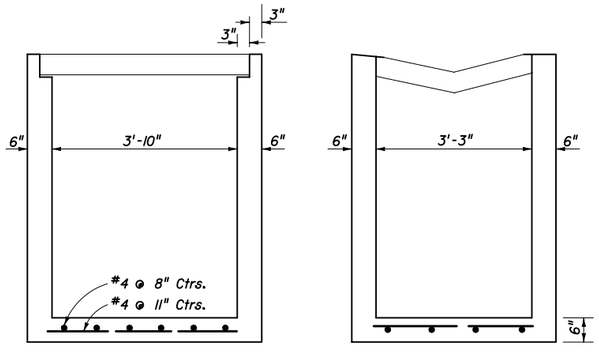
INDEX NO. 231



PARTIAL SECTION AA PARTIAL SECTION BB

DITCH BOTTOM INLET TYPE F

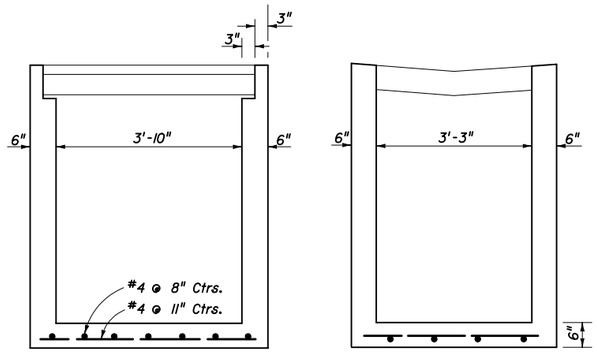
INDEX NO. 233



PARTIAL SECTION AA PARTIAL SECTION BB

GUTTER INLET TYPE S

INDEX NO. 220



PARTIAL SECTION AA PARTIAL SECTION BB

GUTTER INLET TYPE V
AND DITCH BOTTOM INLET TYPE J

INDEX NO. 221 & 234

NOTES FOR THIN-WALL PRECAST OPTIONS

1. The details on Sheets 4, 5 & 6 are optional for precast inlet construction up to depths of 15'. These inlets can be used with Alt. "B" Bottoms, Index No. 200. Cast-in-place construction must adhere to the details contained on the referenced indexes.

2. Only the dimensions and reinforcement changes or other modifications are indicated. For all other dimensions and details, the referenced index drawings apply. When these precast units are used in conjunction with Alt "B" Structure Bottoms, Index No. 200, the interior dimensions of an Alt. "B" Bottom can be adjusted to reflect these inlet interior dimensions.

3. Concrete which meets the requirements of ASTM C478 shall be used for structures constructed to these details.

4. Reinforcement can be either deformed bar reinforcement or welded wire fabric. Bar reinforcement other than 40 ksi may be used, however only two grades are recognized; Grade 40 and Grade 60. Welded wire fabric, including deformed welded wire fabric, will be recognized as having a design strength of 65 ksi. The area of reinforcement required may be reduced in accordance with the Equivalent Steel Area Table provided. For bars and spacings not given, the steel area required can be determined by the following equations:

$$\text{Grade 60 Steel Area} = A_{s\,60} = \frac{40}{60} \times A_{s\,40}$$
$$\text{Welded Wire Fabric Steel Area} = A_{s\,65} = \frac{40}{65} \times A_{s\,40}$$

In no case will fabric with wires smaller than W3.1 or spacings greater than 8" be permitted. Bar reinforcement shall show the minimum yield designation grade mark of either the number 60 or one (1) grade mark line to be acceptable at the higher value. Maximum bar spacing shall not be greater than two (2) times the slab thickness with a maximum spacing of 12" or three (3) times the wall thickness, with a maximum spacing of 18".

EQUIVALENT STEEL AREA TABLE

GRADE 40 REINFORCING BAR		EQUIVALENT GRADE 60 REINFORCING BAR		EQUIVALENT 65 Ksi WELDED WIRE FABRIC	
Bar Size & Spacing	Steel Area	Bar Size & Spacing	Min. Steel Area	Style Designation	Min. Steel Area
#4 @ 12" CCEW (For Walls & Slabs ≤ 6" Thickness)	0.20	#3 @ 9½" CCEW	.1333	3" x 3"-W3.1 x W3.1 or 4" x 4"-W4.5 x W4.5 or 6" x 6"-W6.5 x W6.5	.1230
#4 @ 12" CCEW (For Walls & Slabs > 6" Thickness)	0.20	#3 @ 7½" CCEW	0.1730*	3" x 3"-W4.0 x W4.0 or 4" x 4"-W5.5 x W5.5 or 6" x 6"-W8.0 x W8.0	.1600*
#4 @ 9" CCEW	0.267	#4 @ 13½" CCEW or #3 @ 7" CCEW	.1778	3" x 3"-W4.5 x W4.5 or 4" x 4"-W5.5 x W5.5 or 6" x 6"-W8.5 x W8.5	.1641
#6 @ 6" CCEW	0.88	#5 @ 6" CCEW or #6 @ 9" CCEW	.5867	4" x 4"-W20 x W20 or 6" x 6"-W30 x W30	.5415
#7 @ 6" CCEW	1.20	#6 @ 6½" CCEW or #7 @ 9" CCEW	.80	4" x 4"-W26 x W26	.7385

* Modified minimum steel area to satisfy temperature and shrinkage reinforcing requirements.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTION

SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

INTERIM STANDARD

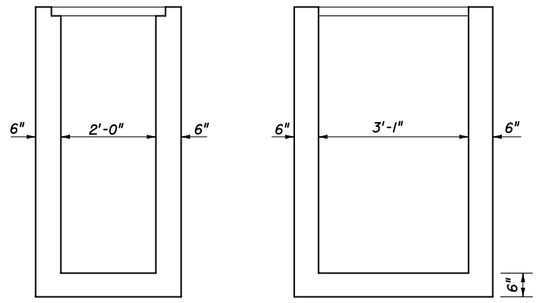
THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004.

APPROVED BY
STATE DRAINAGE ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
05	4 of 6	0201

$$$$$$$$STIME$$$$$$$$ $$$$$$$$DGNSPECIFICATION$$$$$$$$

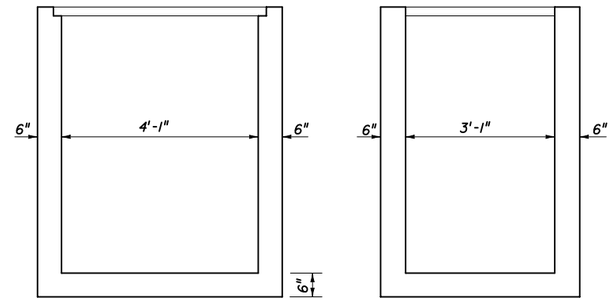
FINANCIAL PROJECT ID	SHEET NO.



PARTIAL SECTION BB PARTIAL SECTION CC

DITCH BOTTOM INLET C

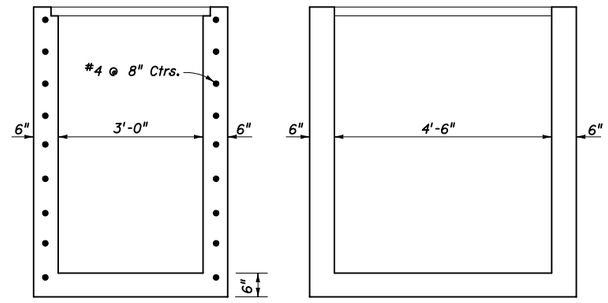
INDEX NO. 232



PARTIAL SECTION BB PARTIAL SECTION CC

DITCH BOTTOM INLET D

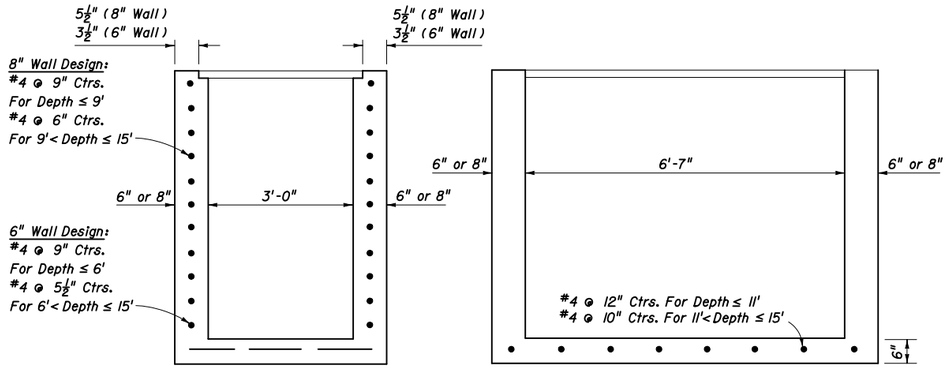
INDEX NO. 232



PARTIAL SECTION BB PARTIAL SECTION CC

DITCH BOTTOM INLET E

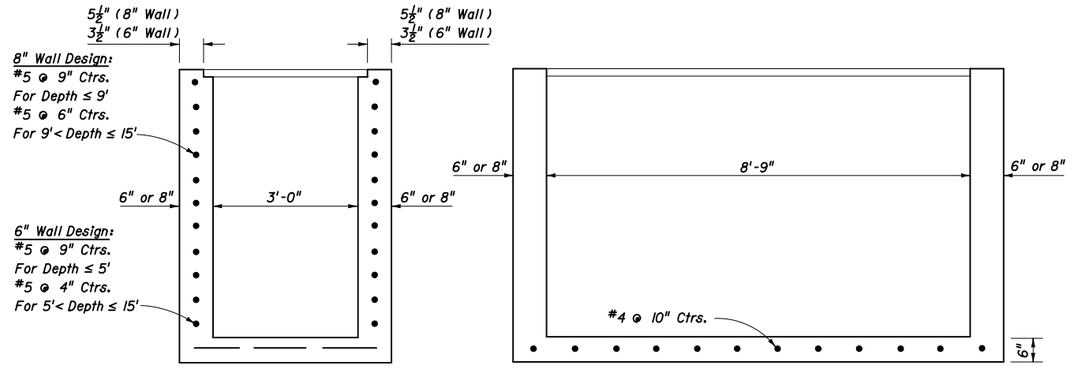
INDEX NO. 232



PARTIAL SECTION BB PARTIAL SECTION CC

DITCH BOTTOM INLET H (3-GRATE)

INDEX NO. 232



PARTIAL SECTION BB PARTIAL SECTION CC

DITCH BOTTOM INLET H (4-GRATE)

INDEX NO. 232

INTERIM STANDARD IN ENGLISH UNITS
APPLICABLE TO DESIGN STANDARDS
BOOKLET PUBLISHED IN ENGLISH UNITS.

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004

APPROVED BY
STATE DRAINAGE ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
05	5 of 6	0201

#######STIME###### ########DONSPECIFICATION########

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

ROUND PIPE DIMENSIONS

Equiv. Dia. (In.)	Area (Sq. Ft.)	Wall Thickness (In.)* Classes II, III, IV, V		
		A WALL	B WALL	C WALL
12	0.8	1 3/4	2	NA
15	1.2	1 7/8	2 1/4	NA
18	1.8	2	2 1/2	NA
24	3.1	2 1/2	3	3 3/4
30	4.9	2 3/4	3 1/2	4 1/4
36	7.1	3	4	4 3/4
42	9.6	3 1/2	4 1/2	5 1/4
48	12.6	4	5	5 3/4
54	15.9	4 1/2	5 1/2	6 1/4
60	19.6	5	6	6 3/4
66	23.8	5 1/2	6 1/2	7 1/4
72	28.3	6	7	7 3/4
78	33.2	6 1/2	7 1/2	8 1/4
84	38.5	7	8	8 3/4
90	44.4	7 1/2	8 1/2	9 1/4
96	50.3	8	9	9 3/4
102	56.7	8 1/2	9 1/2	10 1/4
108	63.7	9	10	10 3/4
114	70.9	9 1/2	—	—
120	78.5	10	—	—

* For Informational Purposes Only
Do Not Specify Wall Thickness
Option B Wall Is Industry Standard

ELLIPTICAL PIPE DIMENSIONS

Nominal Dimensions				Equiv. Dia. (In.)	Area (Sq.Ft.)	Wall Thickness (In.)
Horiz.		Vert.				Classes HE II, III, IV VE II, III, IV
Rise (In.)	Span (In.)	Rise (In.)	Span (In.)			
NA	NA	NA	NA	12	NA	NA
12	18	18	12	15	1.3	2 1/2
14	23	23	14	18	1.8	2 3/4
19	30	30	19	24	3.3	3 1/4
24	38	38	24	30	5.1	3 3/4
29	45	45	29	36	7.4	4 1/2
34	53	53	34	42	10.2	5
38	60	60	38	48	12.9	5 1/2
43	68	68	43	54	16.6	6
48	76	76	48	60	20.5	6 1/2
53	83	83	53	66	24.8	7
58	91	91	58	72	29.5	7 1/2
63	98	98	63	78	34.6	8
68	106	106	68	84	40.1	8 1/2
72	113	113	72	90	46.1	9
77	121	121	77	96	52.4	9 1/2
82	128	128	82	102	59.2	10
87	136	136	87	108	66.4	10 1/2
92	143	143	92	114	74.0	11
97	151	151	97	120	82.0	11 1/2

For Informational Purposes Only

ROUND PIPE INSTALLATIONS

PIPE DIAMETER	Maximum Height of Fill (ft)					
	Class S	Class I	Class II	Class III	Class IV	Class V
12"-30"	9	13	17	24	36	55
36"-54"	8	12	16	22	34	52
60"-78"	7	11	15	21	33	51
84"-96"	6	10	14	20	32	49

Pipe Class S	D-Load = 600 Lbs/Ft/Ft (.01" Crack) D-Load = 900 Lbs/Ft/Ft (Ultimate)
Pipe Class I	D-Load = 800 Lbs/Ft/Ft (.01" Crack) D-Load = 1200 Lbs/Ft/Ft (Ultimate)
Pipe Class II	D-Load = 1000 Lbs/Ft/Ft (.01" Crack) D-Load = 1500 Lbs/Ft/Ft (Ultimate)
Pipe Class III	D-Load = 1350 Lbs/Ft/Ft (.01" Crack) D-Load = 2000 Lbs/Ft/Ft (Ultimate)
Pipe Class IV	D-Load = 2000 Lbs/Ft/Ft (.01" Crack) D-Load = 3000 Lbs/Ft/Ft (Ultimate)
Pipe Class V	D-Load = 3000 Lbs/Ft/Ft (.01" Crack) D-Load = 3750 Lbs/Ft/Ft (Ultimate)

Note: At the option of the pipe supplier or the contractor, a Pipe Class with greater strength may be substituted for the Pipe Class designated in the plans.

ELLIPTICAL PIPE INSTALLATIONS (All Sizes)

Installation	Maximum Height Of Fill (Ft.)	Pipe Class	Bedding Class
Horizontal	1-6* 7-10 11-16 17+	HE II* HE III HE IV Special Design	C C C Modified
Vertical	1-6* 7-10 11-16 17+	VE II* VE III VE IV Special Design	C C C Modified

Pipe Class HE II And VE II	D-Load = 1000 Lbs/Ft/Ft (.01" Crack) D-Load = 1500 Lbs/Ft/Ft (Ultimate)
Pipe Class HE III And VE III	D-Load = 1350 Lbs/Ft/Ft (.01" Crack) D-Load = 2000 Lbs/Ft/Ft (Ultimate)
Pipe Class HE IV And VE IV	D-Load = 2000 Lbs/Ft/Ft (.01" Crack) D-Load = 3000 Lbs/Ft/Ft (Ultimate)

*Note: HE III and VE III pipe required for depths of cover less than 2' for 15", 18" and 24" equivalent.

PIPE DIMENSIONS
CONCRETE PIPE

MAXIMUM COVER HEIGHTS
CONCRETE PIPE

Note: Height of fill (maximum cover) is measured from top of finished grade to outside top of pipe.

POLYETHYLENE PIPE	
DIAMETER	HEIGHT OF MAXIMUM FILL (Ft)
12"-48"	17'

POLYVINYL CHLORIDE PIPE	
DIAMETER	HEIGHT OF MAXIMUM FILL (Ft)
12"-48"	17'

MAXIMUM COVER FOR PLASTIC PIPE

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-05-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

COVER HEIGHT

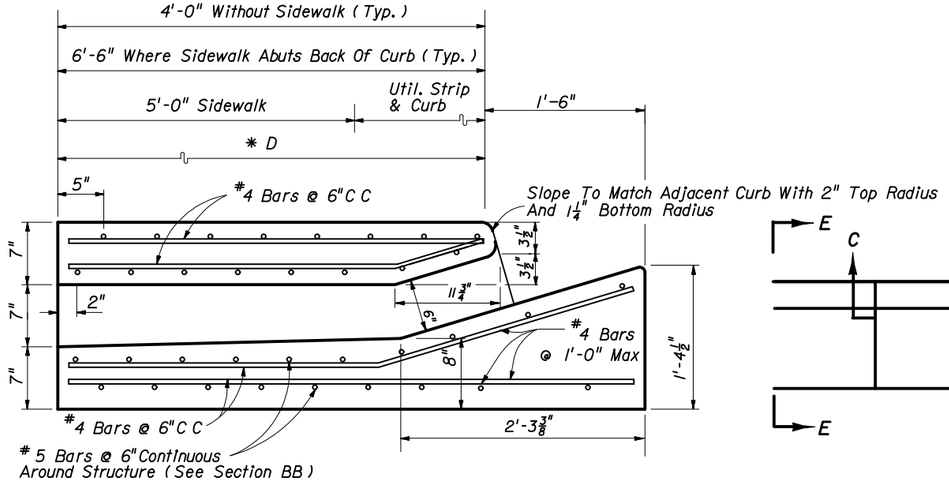
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 205, (SHEET 2 OF 5) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

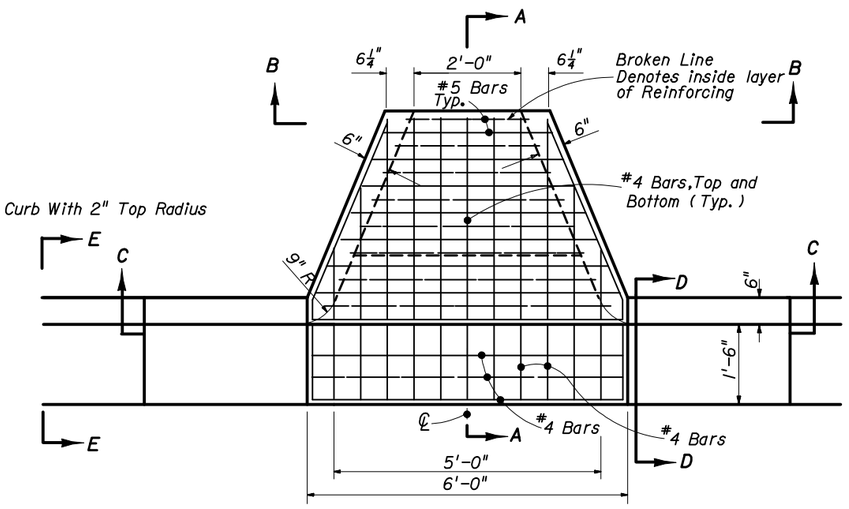
APPROVED BY S. A. McInerney
State Drainage Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	0205

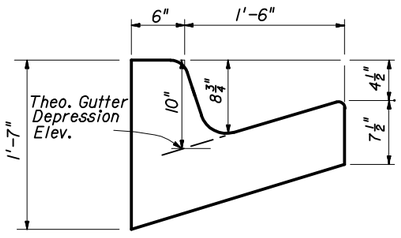
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION AA



TOP VIEW



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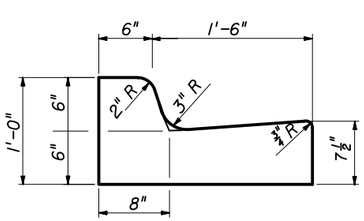
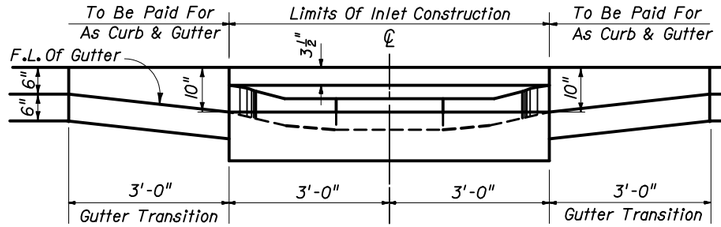


Curb And Gutter Type F

SECTION EE



SECTION CC

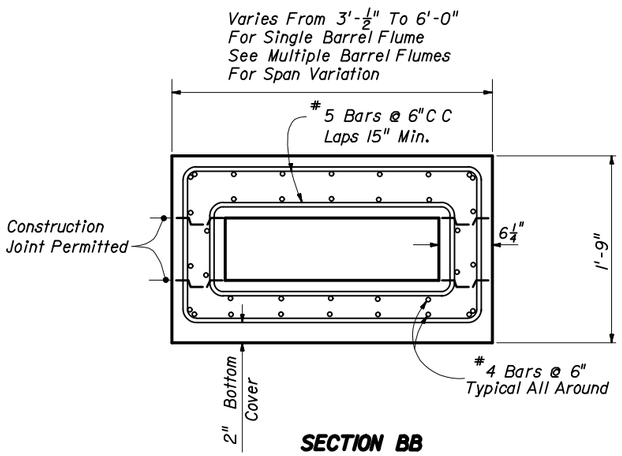
SINGLE BARREL FLUME

GENERAL NOTES

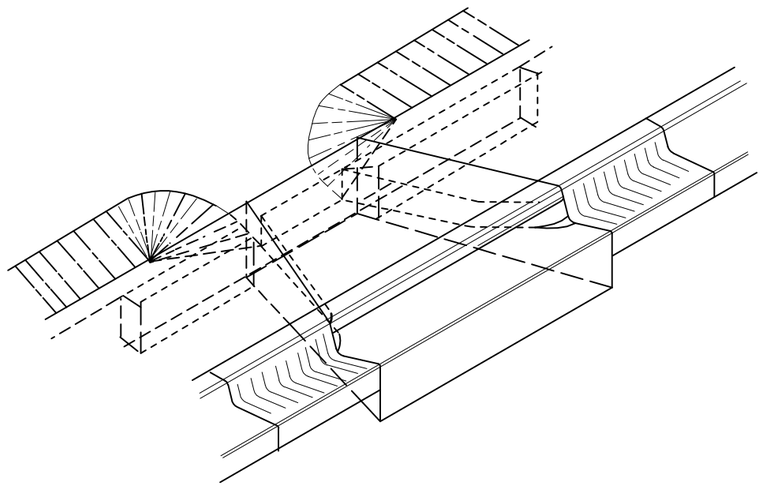
1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. When inlets are to be constructed on a curve, refer to the plans to determine the radius and, where necessary, modify the inlet details accordingly. Bend steel when necessary.
3. All steel shall have 1¼" minimum cover unless otherwise shown. Inlets can be either cast-in-place or precast concrete. Chamfer all exposed edges ¾".
4. All reinforcement is ASTM A615/A615M Grade 60 steel, either smooth or deformed. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.
5. Precasting of this inlet will be permitted. Precast units shall conform to the dimensions shown or in accordance with approved shop drawings. Request for shop drawing approval shall be directed to the State Drainage Engineer.
6. Inlets to be paid for under the contract unit price for Inlets (Closed Flume) EA.

DESIGN NOTES

1. These inlets are designed for use with Type F curb and gutter only. The Single Barrel Flume is intended for locations with light to moderate flows. Multiple Barrel Flumes must be selected to meet design heavy flows.
2. Designer must specify Flume Type, "D" dimension and number of barrels in plans.
3. Designer must specify where energy dissipating bricks are required.



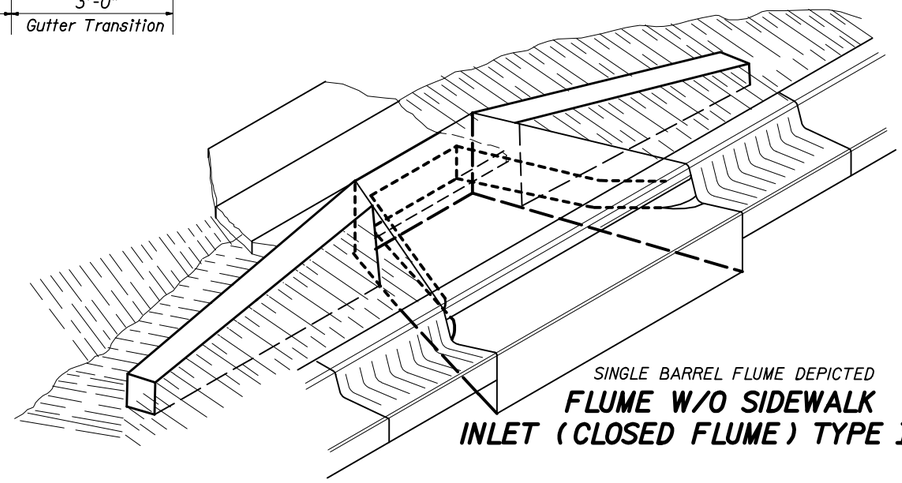
SECTION BB



SINGLE BARREL FLUME DEPICTED

FLUME W/SIDEWALK

INLET (CLOSED FLUME) TYPE I



SINGLE BARREL FLUME DEPICTED

FLUME W/O SIDEWALK

INLET (CLOSED FLUME) TYPE II

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 12-04-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CLOSED FLUME INLET

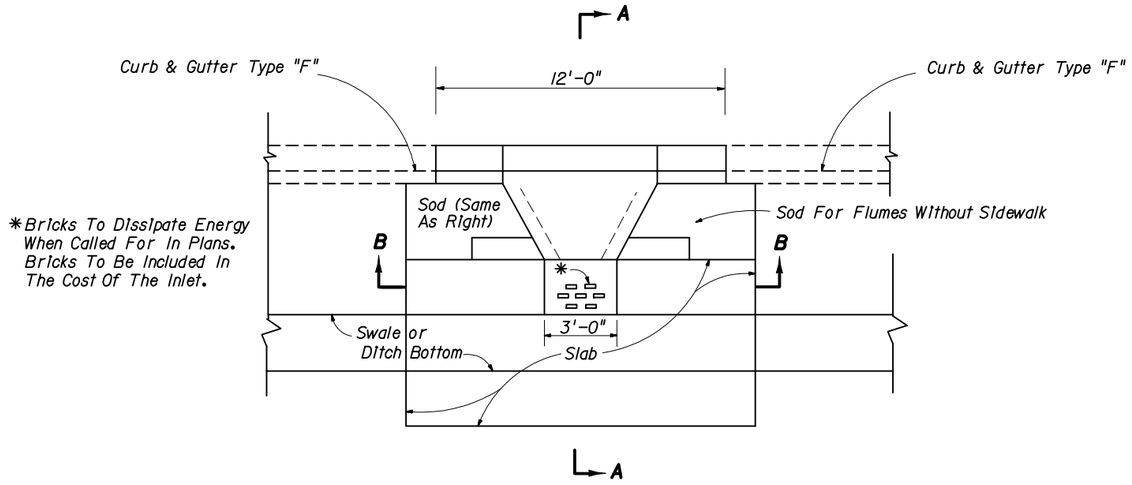
INTERIM STANDARD

INDEX NO. 216 (SHEETS 1-3 OF 3) IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY S. a. McInerney
State Drainage Engineer

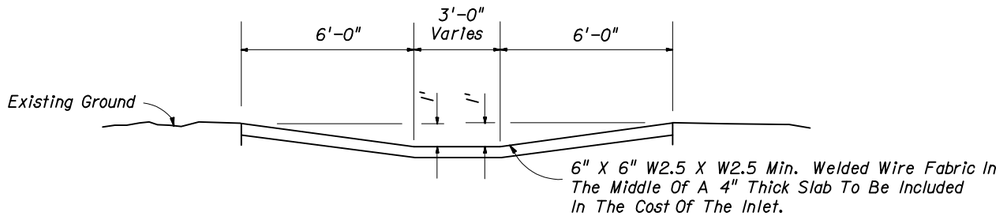
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 3	216

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



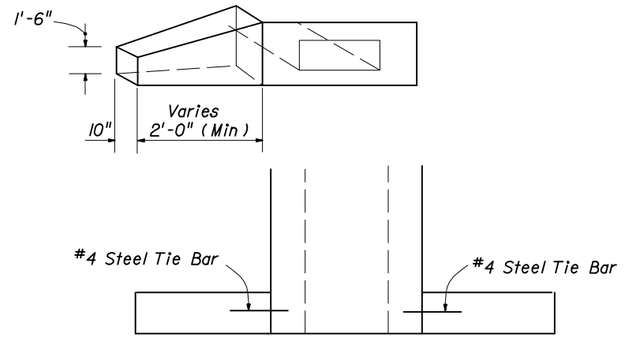
SINGLE BARREL FLUME DEPICTED

PLAN



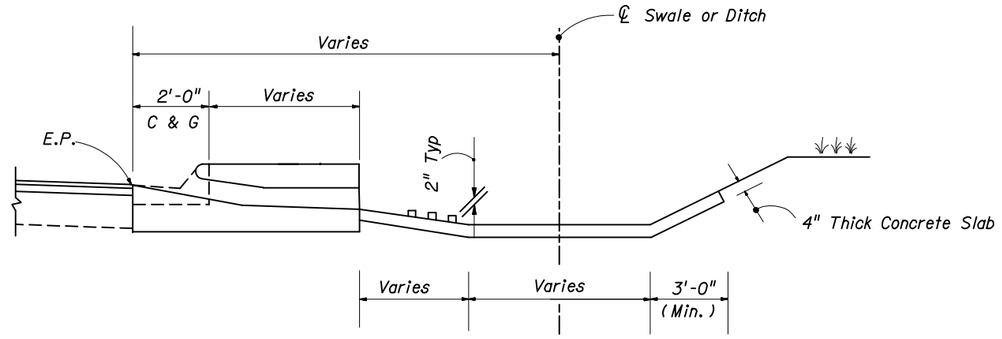
SINGLE BARREL FLUME DEPICTED

SECTION BB



SINGLE BARREL FLUME DEPICTED

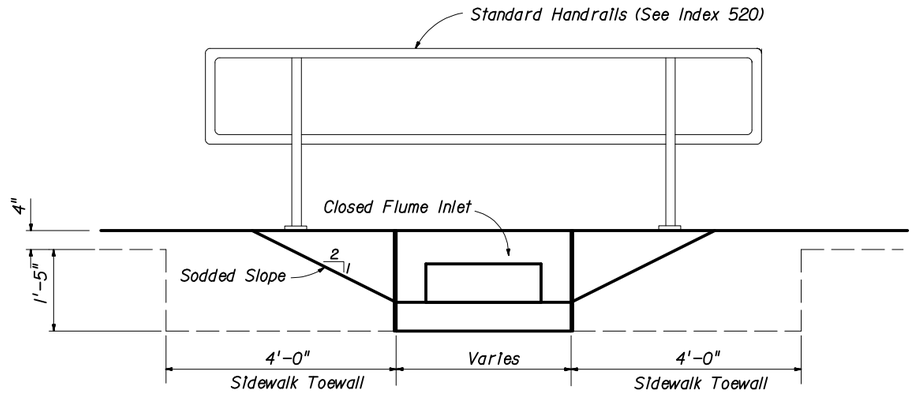
ENDWALL



Ditch Pavement To Be Adjusted When Inlet Present

SECTION AA

SLOPES, DITCH APRON AND ENDWALLS



SINGLE BARREL FLUME DEPICTED

ELEVATION

HANDRAIL FOR FLUME IN SIDEWALK

GENERAL NOTES

1. Chamfer all exposed edges $\frac{3}{4}$"

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 12-04-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CLOSED FLUME INLET

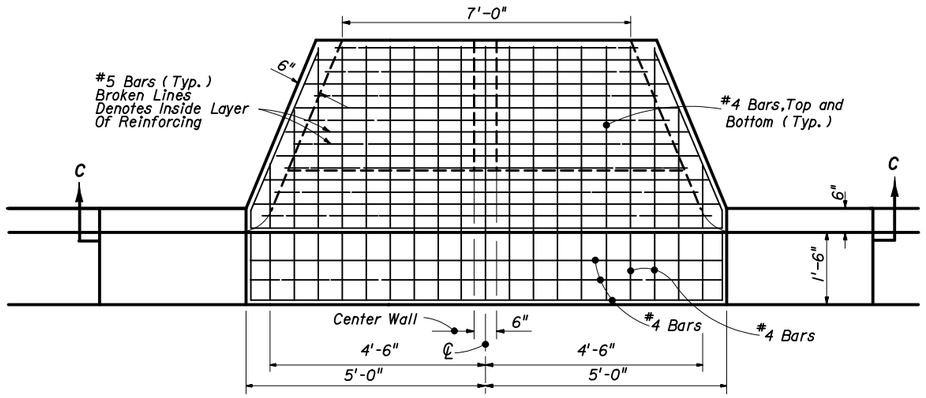
INTERIM STANDARD

INDEX NO. 216 (SHEETS 1-3 OF 3) IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

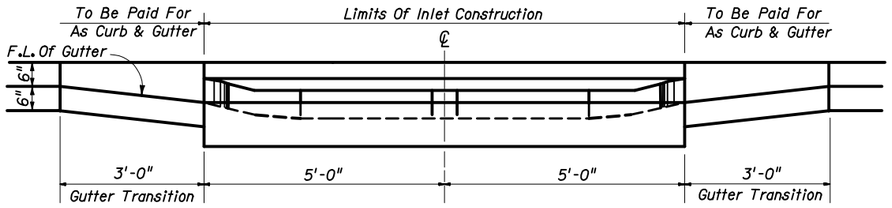
APPROVED BY S a McNeeson
State Drainage Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 3	216

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

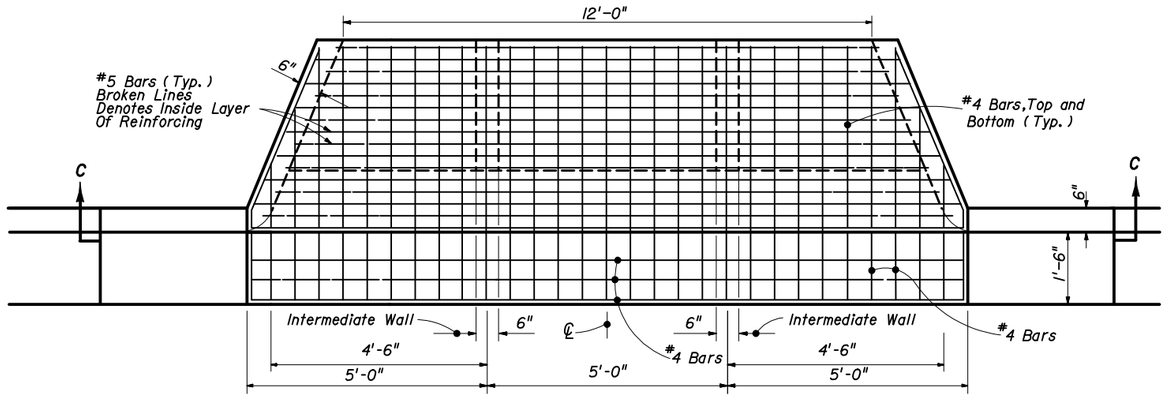


TOP VIEW

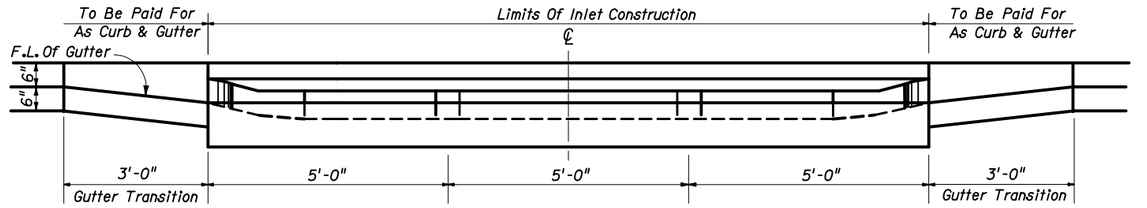


SECTION CC

DOUBLE BARREL FLUME

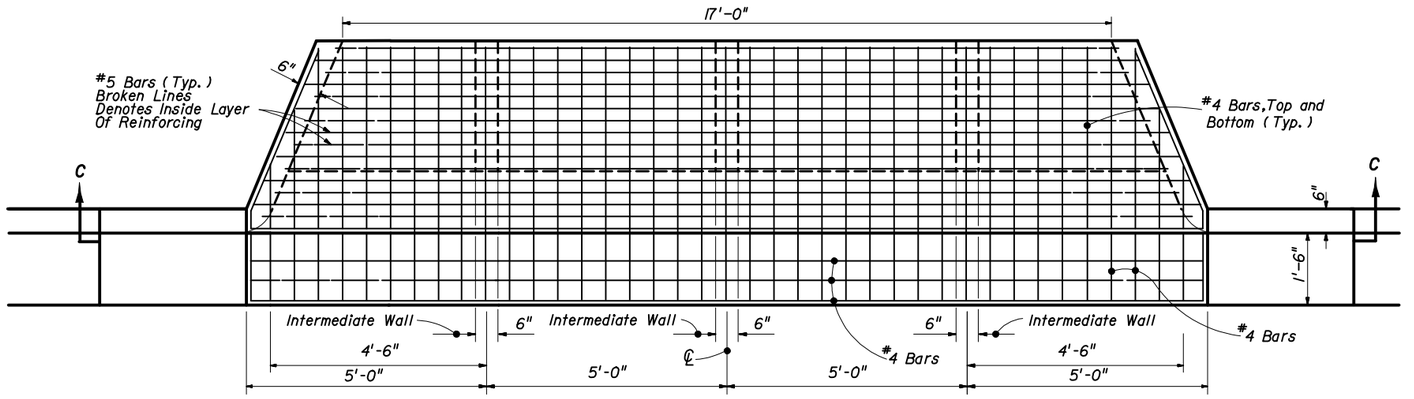


TOP VIEW

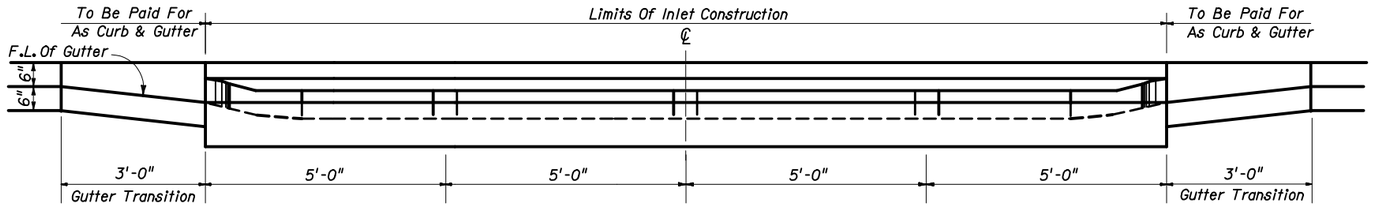


SECTION CC

TRIPLE BARREL FLUME

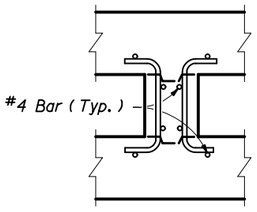


TOP VIEW



SECTION CC

QUADRUPLE BARREL FLUME



INTER WALL REINFORCING

NOTE: See Single Barrel Flume For Base Dimensions.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CLOSED FLUME INLET

INTERIM STANDARD

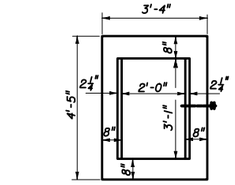
INDEX NO. 216 (SHEETS 1-3 OF 3) IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY S. A. McInerney
State Drainage Engineer

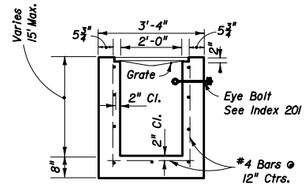
Date: 12-04-00

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 3	216

FINANCIAL PROJECT ID	SHEET NO.



PLAN



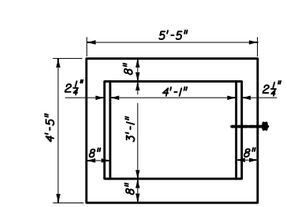
SECTION

TYPE C

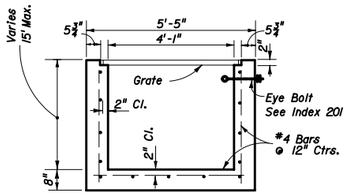
Recommended Maximum Pipe Size:

2'-0" Wall 18" Pipe

3'-1" Wall 24" Pipe (18" where an 18" pipe enters a 2'-0" wall)



PLAN



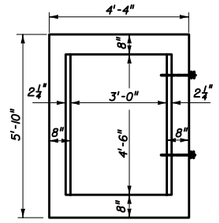
SECTION

TYPE D

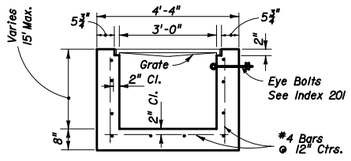
Recommended Maximum Pipe Size:

3'-1" Wall-24" Pipe

4'-1" Wall-36" Pipe



PLAN



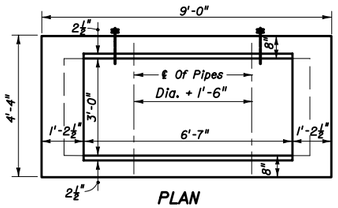
SECTION

TYPE E

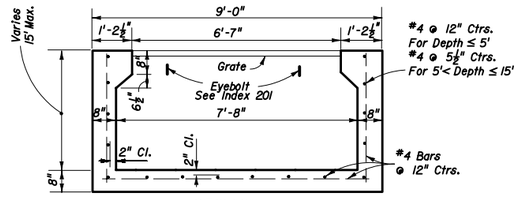
Recommended Maximum Pipe Size:

3'-0" Wall-24" Pipe

4'-6" Wall-36" Pipe



PLAN



SECTION

TYPE H

Recommended Maximum Pipe Size:

3'-0" Wall-24" Pipe

7'-8" Wall-1-66" Pipe

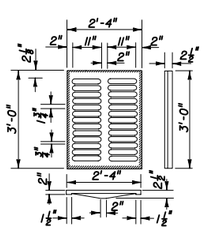
2-30" Pipe

INLETS

GENERAL NOTES

1. These inlets are suitable for bicycle traffic and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and areas subject to bicycles and/or pedestrians shall have traversable slots. The traversable slot modification is not adaptable to inlet Type H. Slots may be constructed at either or both ends as shown on plans.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dipped galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Size for other types of pipe must be checked for fit.
5. All exposed corners and edges of concrete are to be chamfered ¾".
6. Concrete inlet pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans; but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial. For conversion work and method of payment see 'TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS'.
8. Sodding to be used on all inlets not located in paved areas and paid for under contract concrete inlet pavement unit price for Sodding, SY.
9. For supplementary details see Index No. 201.

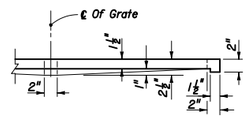
INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.



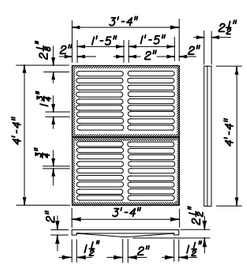
TYPE C

Approx. Weight 235 Lbs.

CAST IRON GRATE NOT PERMITTED ON INLET TYPE D

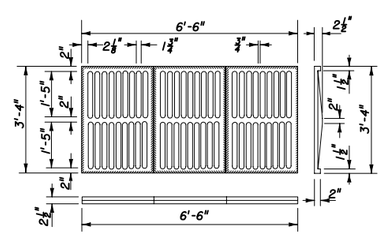


HALF SECTION CAST IRON GRATES



TYPE E

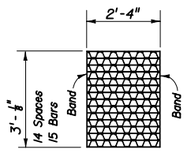
Approx. Weight 465 Lbs.



TYPE H

Approx. Weight 725 Lbs.

CAST IRON GRATES



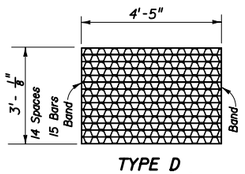
TYPE C

Straight Bars 2"x¼"

Reticuline Bars 1¼" x 3/16"

Bands 2"x¼"

Approx. Weight 104 Lbs.



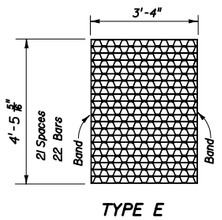
TYPE D

Straight Bars 2"x¼"

Reticuline Bars 1¼" x 3/16"

Bands 2"x¼"

Approx. Weight 190 Lbs.



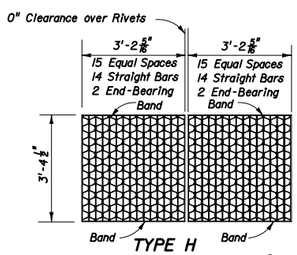
TYPE E

Straight Bars 2"x¼"

Reticuline Bars 1¼" x 3/16"

Bands 2" x¼"

Approx. Weight 215 Lbs.



TYPE H

Straight End-Bearing Bars 2"x⅜"

Straight Bearing Bars 2"x¼"

Reticuline Bars 1¼" x 3/16"

Banding Bars 2" x ¼"

Approx. Total Weight 310 Lbs.

NOTICE: Steel Grates Are Required On Inlets With Traversable Slots And On Inlets where Bicycle Traffic Is Anticipated.

STEEL GRATES

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

DITCH BOTTOM INLETS TYPES C, D, E & H

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004

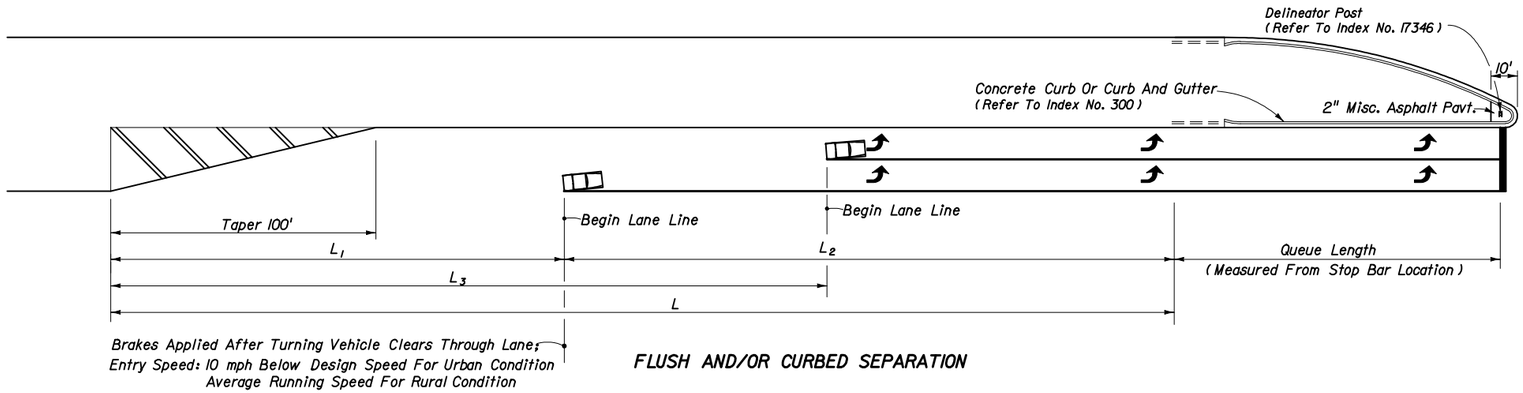
APPROVED BY

STATE DRAINAGE ENGINEER

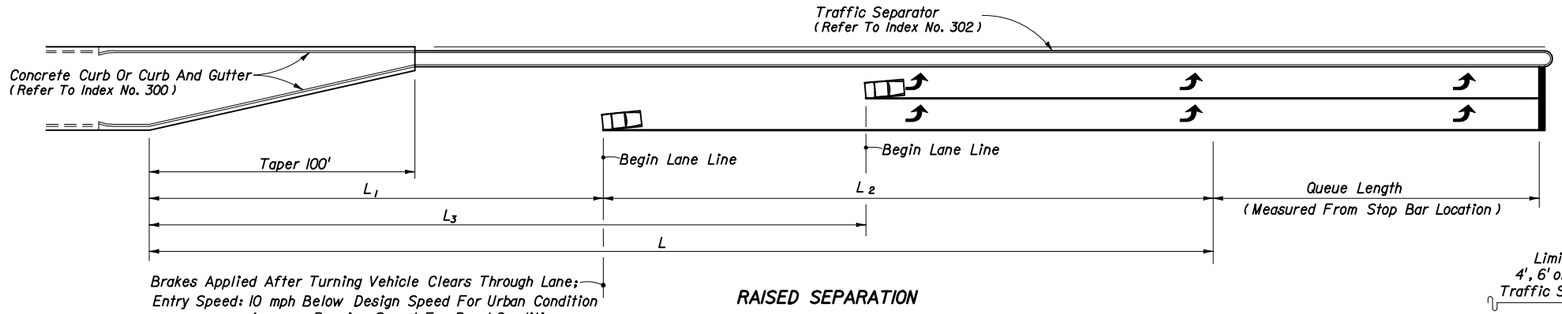
REVISION NO.	SHEET NO.	INDEX NO.
05	1 of 5	0232

********STIME******** ********DGNSPECIFICATION********

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

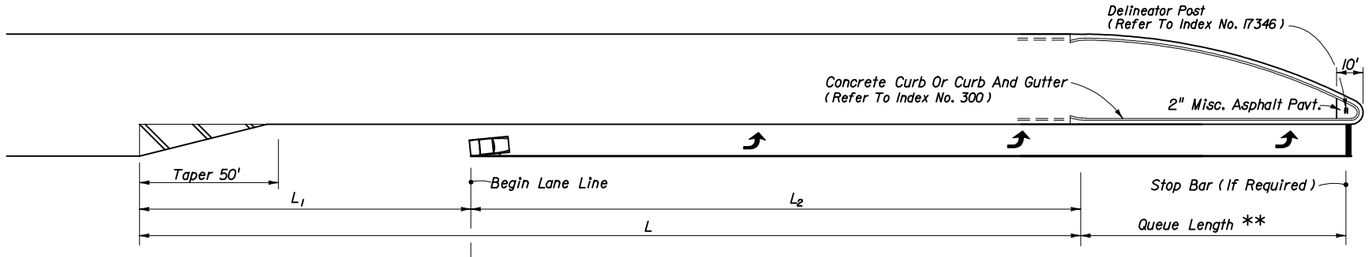


FLUSH AND/OR CURBED SEPARATION

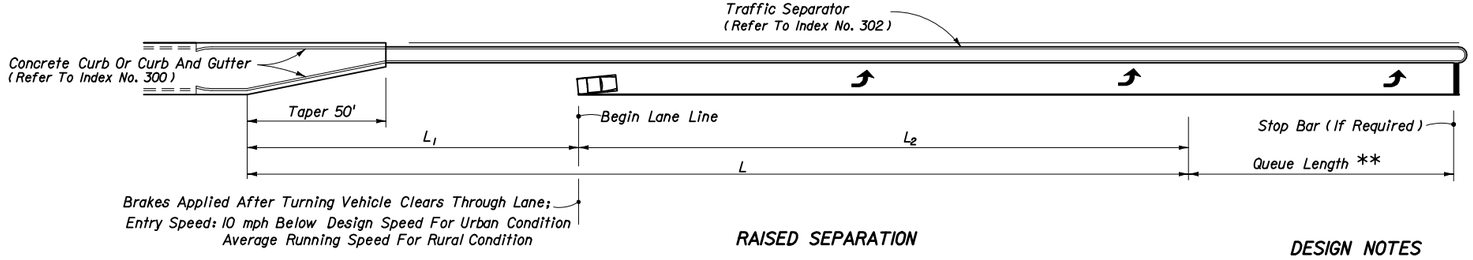


RAISED SEPARATION

DOUBLE LEFT TURNS



FLUSH AND/OR CURBED SEPARATION



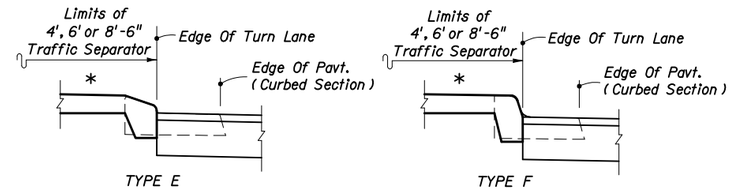
RAISED SEPARATION

SINGLE LEFT TURNS

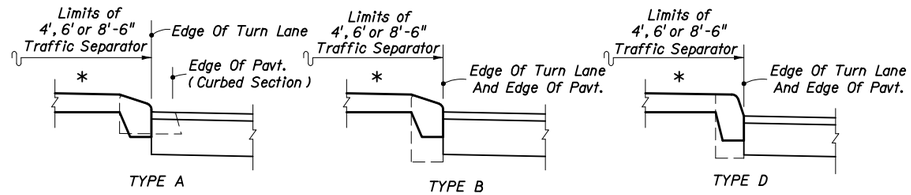
** Queue Length Is Measured From The Median Nose Radial Point Or, When A Stop Bar Is Required, From The Stop Bar.

TURN LANES

TURN LANES • CURBED AND UNCURBED MEDIANS								
			URBAN CONDITITONS			RURAL CONDITITONS		
Design Speed (mph)	Entry Speed (mph)	Clearance Distance L_1	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3
35	25	70'	75'	145'	110'	——	——	——
40	30	80'	75'	155'	120'	——	——	——
45	35	85'	100'	185'	135'	——	——	——
50	40/44	105'	135'	240'	160'	185'	290'	160'
55	48	125'	——	——	——	225'	350'	195'
60	52	145'	——	——	——	260'	405'	230'
65	55	170'	——	——	——	290'	460'	270'



CURB AND GUTTER



CURB

For Curb And Curb & Gutter Types, See Index No. 300

* Option I Separators Shown (Refer To Index No. 302)

MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

GENERAL NOTES

1. The plan views shown are for turn lane taper shapes and dimensional purposes only, they do not prescribe the use of curb, curb and gutter, shoulders nor separators specifically to either rural or urban conditions.
2. Total deceleration distances must not be reduced except where lesser values are imposed by unrelocatable control points.
3. Right turn lane tapers and distances identical to left turn lanes under stop control conditions. Right turn lane tapers and/or distances are site specific under free flow or yield conditions.
4. These left turn configurations apply to continuous left turn lanes only where specifically called for in the plans.
5. For pavement markings see Index No. 17346.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

DESIGN NOTES

1. Basis for turn lane configurations:
   - Informed Driver.
   - Stop condition (With Or Without Stop Control).
   - Wet Pavement.
   - Reaction preceeding entry point.
   - Minimum braking distance for urban conditions.
   - 75' min. for L_2.
   - Comfortable deceleration rates for rural conditions (AASHTO 2001 threshold rate of 11.2 ft/s^2).

Date: 12-06-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TURN LANES

INTERIM STANDARD

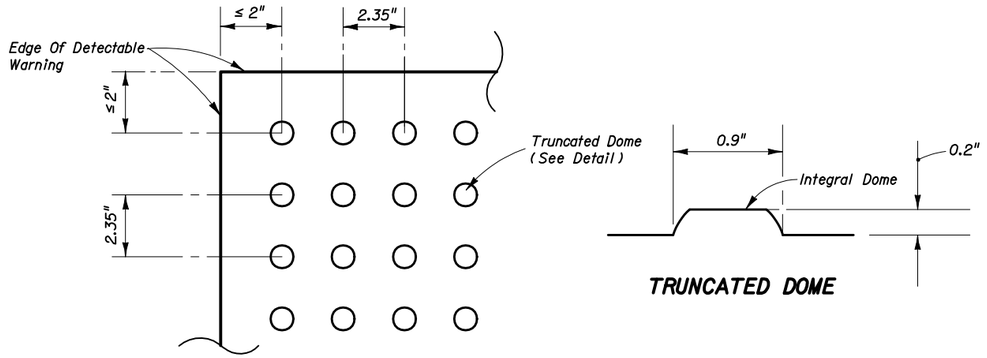
THIS SHEET REPLACES INDEX NO. 301 OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	0301

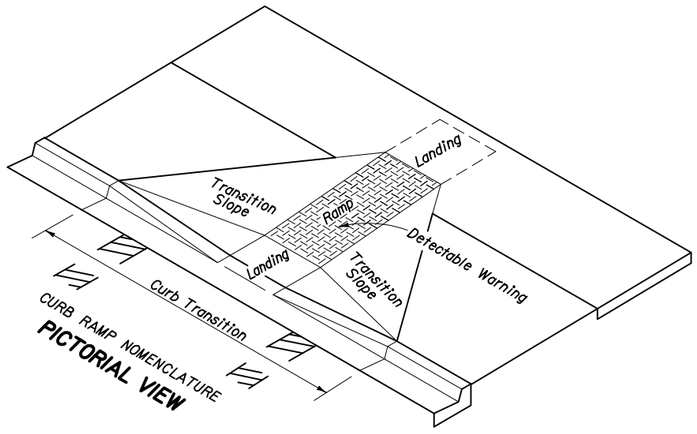
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



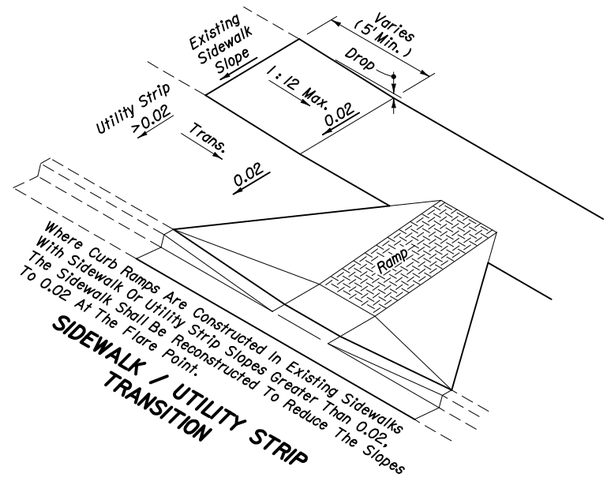
PLAN VIEW

TRUNCATED DOME

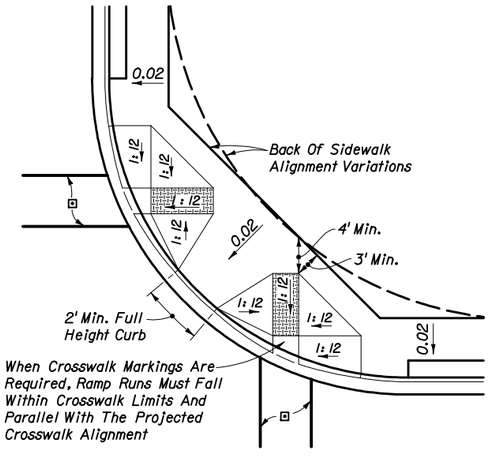
CURB RAMP DETECTABLE WARNING



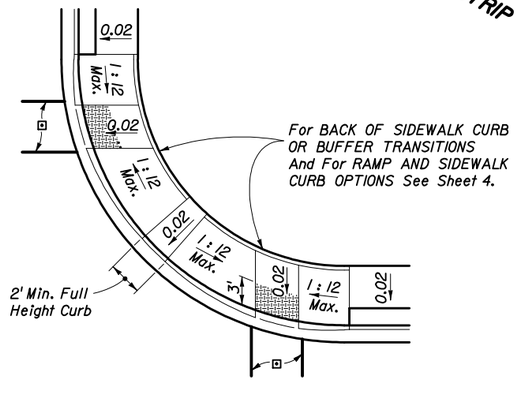
CURB RAMP NOMENCLATURE
PICTORIAL VIEW



SIDEWALK / UTILITY STRIP TRANSITION



⊡ Crosswalk widths and configuration vary; must conform to Index No. 17344 and 17346.



Note: A portion of one or both ramps may extend outside the return.

TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb 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 ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.

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

3. Curb ramp running slopes at unrestrained sites shall not be steeper than 1 : 12 and cross slope shall be 0.02 or flatter. Transition slopes shall not be steeper than 1 : 12.

   When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1 : 12, a running slope between 1 : 12 and 1 : 10 is permitted for a rise of 6" maximum and a running slope of between 1 : 10 and 1 : 8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.

   Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.

4. If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1 : 12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk; improvements for guidance are not required at curb ramps for linear pedestrian traffic.

5. When perpendicular curb ramps abut the back of curb a detectable warning shall be applied to the full width and length of the ramp. When landings of parallel curb ramps abut the back of curb the detectable warning shall extend full width and 3' back of the curb. The detectable warning on curb ramps for linear pedestrian traffic and for corner ramps under conditions of infeasibility are to conform with the details in this Index for those specific ramp types. Detectable warnings shall be constructed by texturing a truncated dome pattern in conformance with U.S. Department of Justice A.D.A. Standards For Accessibe Design, A.D.A. Accessibility Guidelines, Section 4.29.2, (detail shown above left). Transition slopes are not to have detectable warnings.

6. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long.

7. Alpha-numeric identifications are for reference (plans, permits, etc.).

8. Public sidewalk curb ramps are to be paid for as follows:
   Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (__" Thick), SY. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type __), LF or Curb and Gutter Conc., (Type __), LF.

   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

Use of this interim index is discretionary through the December 2002 project letting date; use is mandatory beginning with projects let to contract in January 2003.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revisions To Index No. 304 (Sheet 1 of 5):
- (a) Note 3, paragraph 1, sentences 3 and 4- Sentences deleted.
- (b) Note 5-Tactile surface references deleted and detectable warning requirements substituted.
- (c) Pictorial View-Ramp surface notation revised.
- (d) 'CURB RAMP DETECTABLE WARNING' detail added.

Revised: 4-11-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

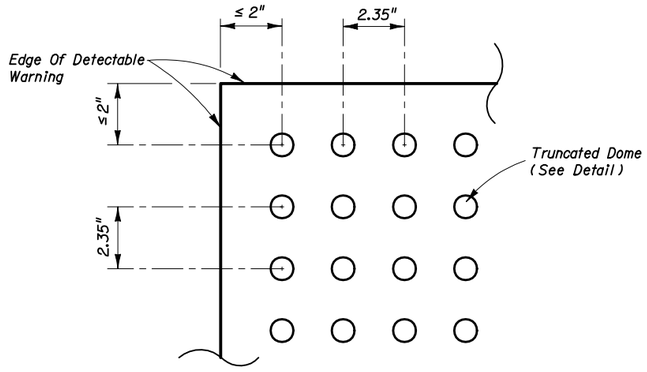
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 304, (SHEET 10F 5) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

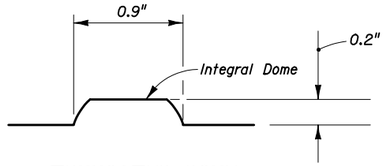
APPROVED BY
Brian Blanchard
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

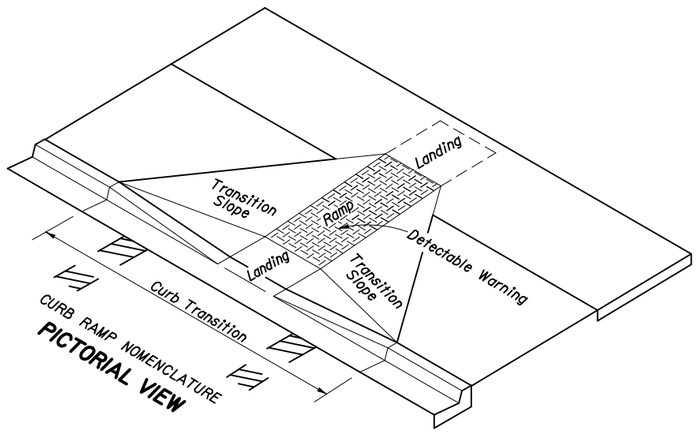


PLAN VIEW

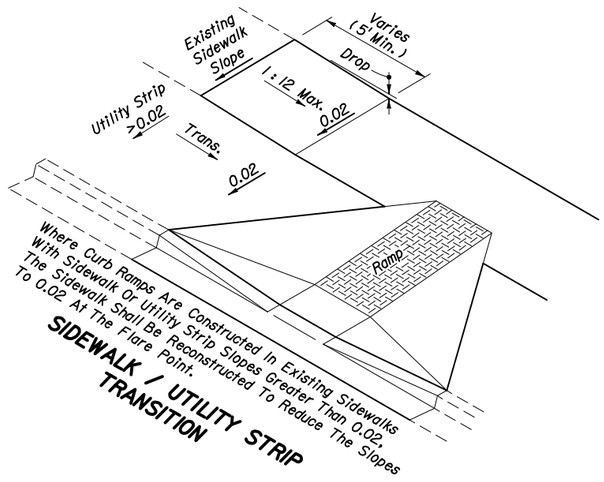


TRUNCATED DOME

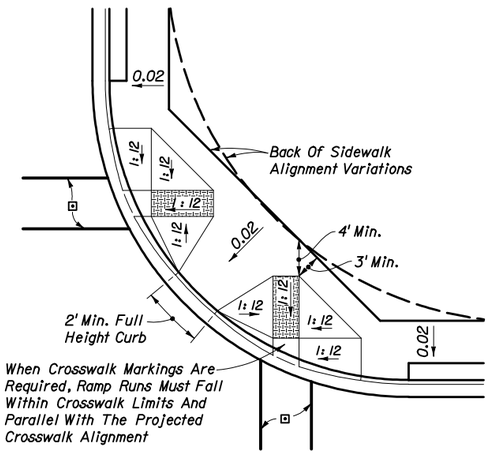
CURB RAMP DETECTABLE WARNING



CURB RAMP NOMENCLATURE
PICTORIAL VIEW



SIDEWALK / UTILITY STRIP TRANSITION



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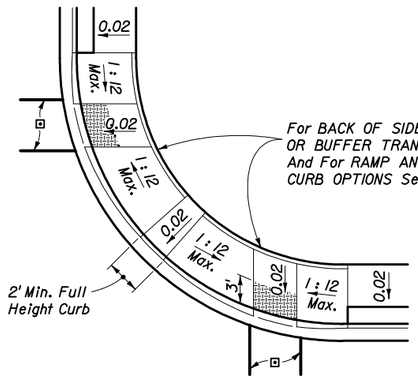

For BACK OF SIDEWALK CURB OR BUFFER TRANSITIONS And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

Note: A portion of one or both ramps may extend outside the return.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Use of this interim index is discretionary through the December 2002 project letting date; use is mandatory beginning with projects let to contract in January 2003.

Revisions To Index No. 304 (Sheet 1 of 5):
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- (b) Note 5-Tactile surface references deleted and detectable warning requirements substituted.
- (c) Pictorial View-Ramp surface notation revised.
- (d) 'CURB RAMP DETECTABLE WARNING' detail added.
- (e) Notes 6,7 & 8: Renumbered 7, 8 & 9: New Note 6 inserted.
- (f) Design Notes added.

TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

Revised: 6-06-02

GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb 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 ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.

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6. Unless otherwise called out in the plans, the ramp detectable surface shall be colored in accordance with Section 351 of the Standard Specifications.

7. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long.

8. Alpha-numeric identifications are for reference (plans, permits, etc.).

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   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

DESIGN NOTES

1. The color requirement in General Note 6 is applicable for curb ramps adjoining non-colored sidewalks constructed with standard Class I Portland Cement Concrete in accordance with Section 522 of the Standard Specifications. Where adjoining sidewalks are colored or are constructed with materials other than standard Class I Portland Cement Concrete, the plans must provide for curb ramp surface colors or materials that contrast with the adjoining surfaces by at least 70 %. Contrast is determined by:

   Contrast = [(B1 - B2)/B1] x 100

   Where B1 = light reflectance value (LRV) of the lighter area and B2 = light reflectance value (LRV) of the darker area.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

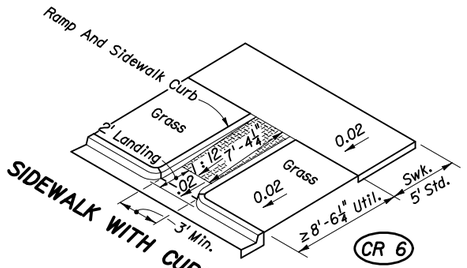
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 304 (SHEET 1 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY Brian Blanchard
State Roadway Design Engineer

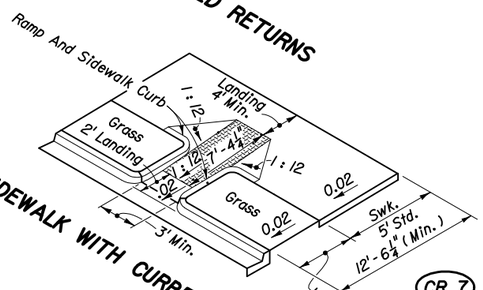
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



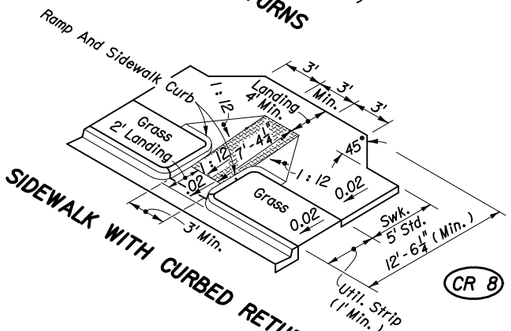
SIDEWALK WITH CURBED RETURNS

CR 6



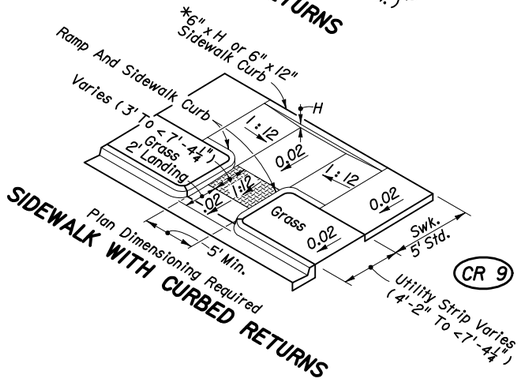
SIDEWALK WITH CURBED RETURNS

CR 7



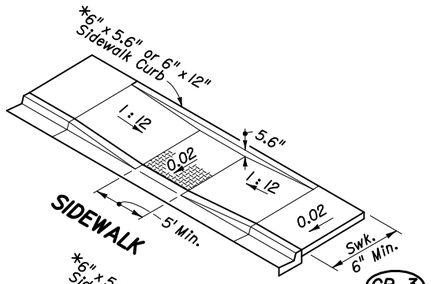
SIDEWALK WITH CURBED RETURNS

CR 8



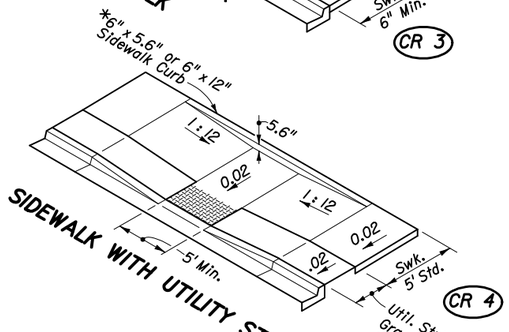
SIDEWALK WITH CURBED RETURNS

CR 9



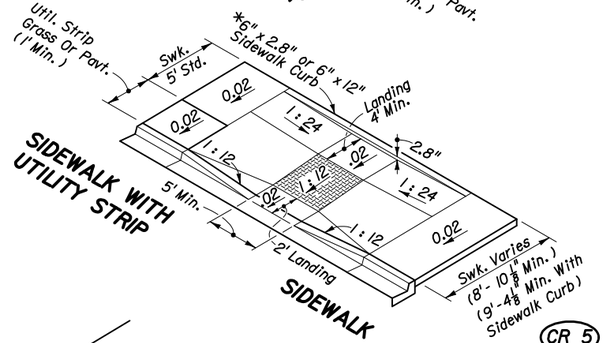
SIDEWALK

CR 3



SIDEWALK WITH UTILITY STRIP

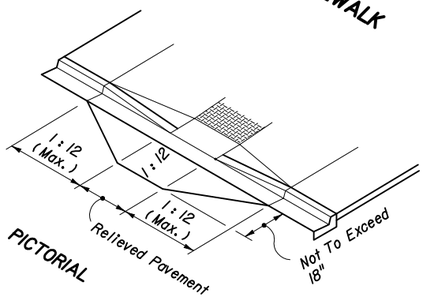
CR 4



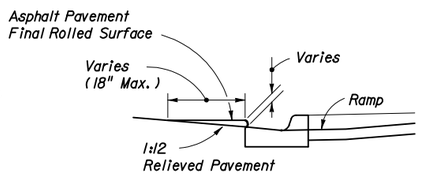
SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 5



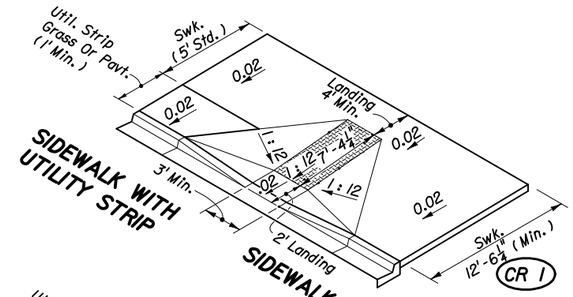
PICTORIAL



Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or, Grinding

SECTION

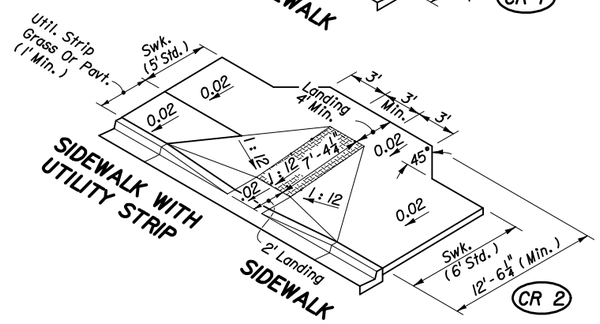
PAVEMENT RELIEF AT LIP OF CURB



SIDEWALK WITH UTILITY STRIP

SIDEWALK

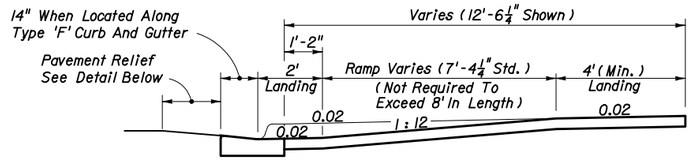
CR 1



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 2



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

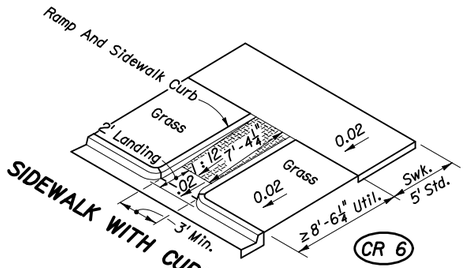
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Roadway Design Engineer

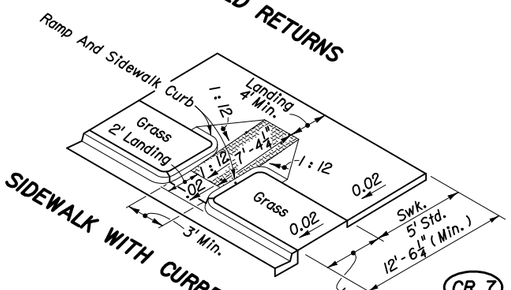
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



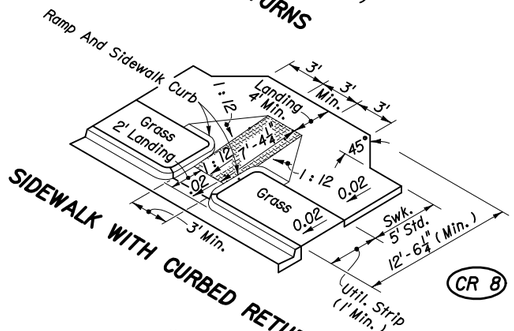
SIDEWALK WITH CURBED RETURNS

CR 6



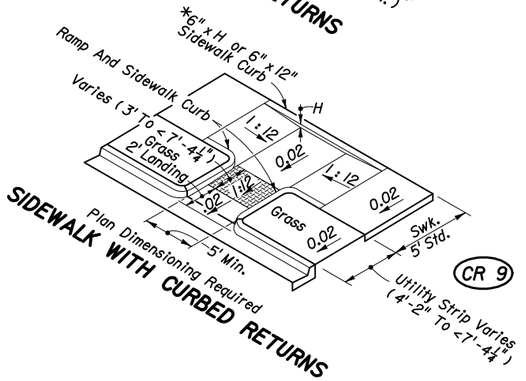
SIDEWALK WITH CURBED RETURNS

CR 7



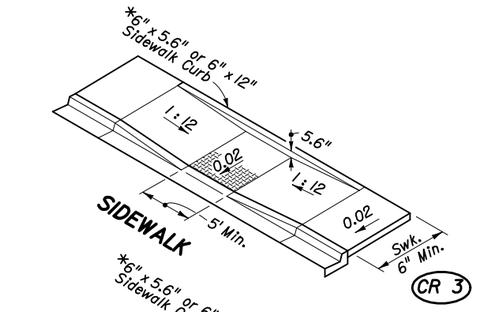
SIDEWALK WITH CURBED RETURNS

CR 8



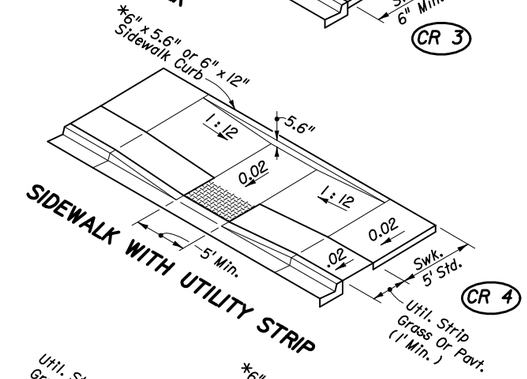
SIDEWALK WITH CURBED RETURNS

CR 9



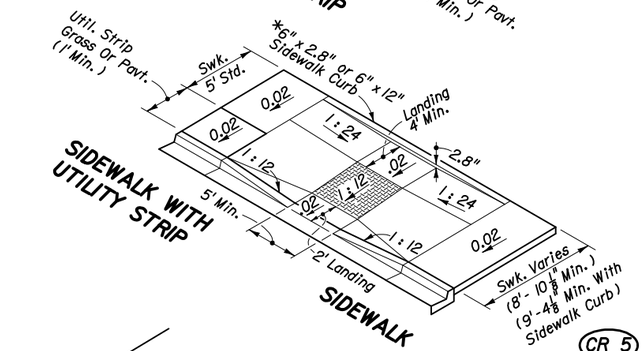
SIDEWALK

CR 3



SIDEWALK WITH UTILITY STRIP

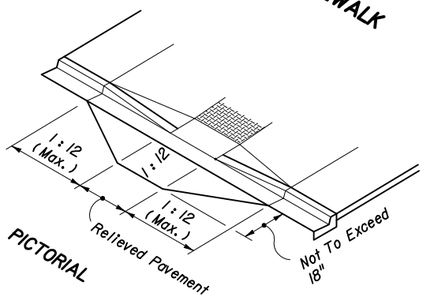
CR 4



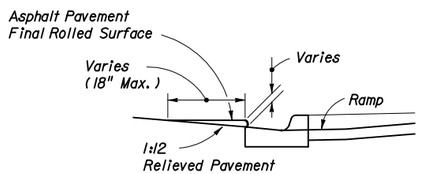
SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 5



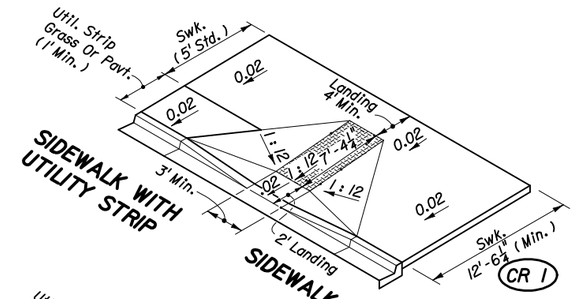
PICTORIAL



Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or, Grinding

SECTION

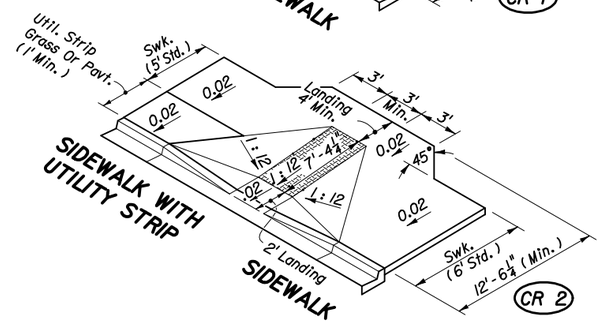
PAVEMENT RELIEF AT LIP OF CURB



SIDEWALK WITH UTILITY STRIP

SIDEWALK

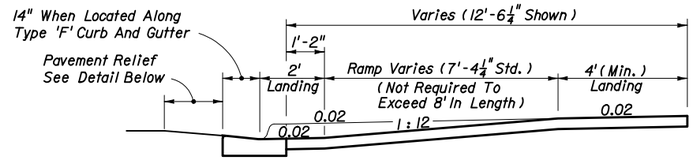
CR 1



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 2



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

Revised: 12-18-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

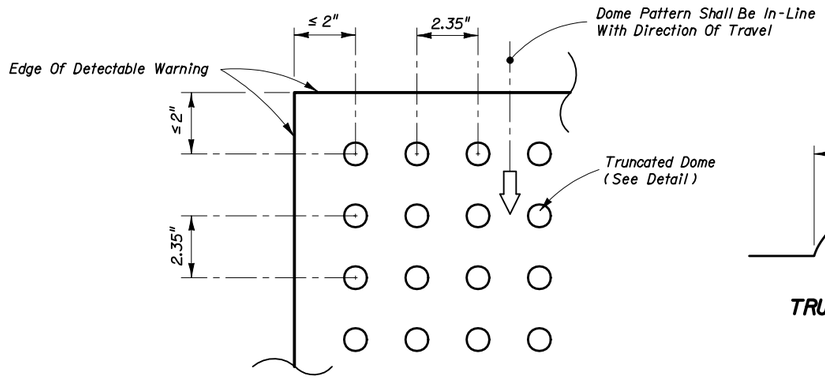
THIS SHEET IS A REPLACEMENT FOR INDEX NO. 304, (SHEET 2 OF 5) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

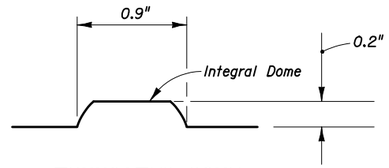
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



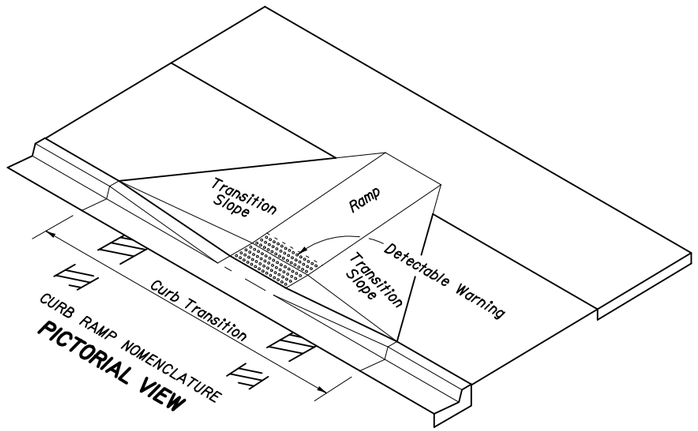
PLAN VIEW



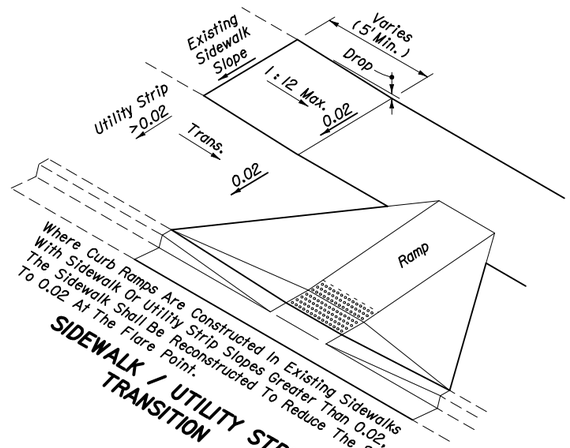
TRUNCATED DOME

All Sidewalk Curb Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 24 Inches (610 mm) From The Back Of Curb.

CURB RAMP DETECTABLE WARNING

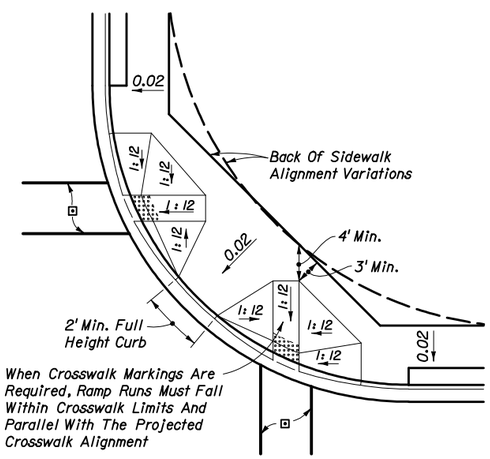


CURB RAMP NOMENCLATURE
PICTORIAL VIEW

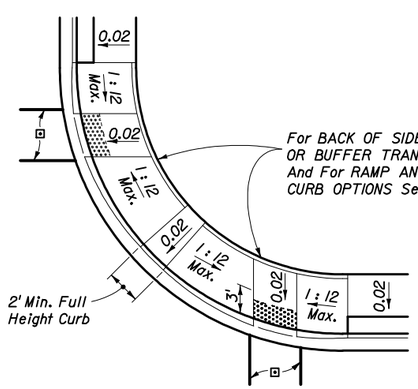


Where Curb Ramps Are Constructed In Existing Sidewalks With Sidewalk Or Utility Strip Slopes Greater Than 0.02, The Sidewalk Shall Be Reconstructed To Reduce The Slopes To 0.02 At The Flare Point.

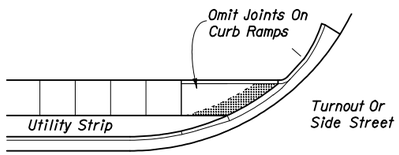
SIDEWALK / UTILITY STRIP TRANSITION



⊡ Crosswalk widths and configuration vary; must conform to Index No. 17344 and 17346.



Note: A portion of one or both ramps may extend outside the return.



LINEAR SIDEWALK RAMPS

TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb 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 ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.

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

3. Curb ramp running slopes at unrestrained sites shall not be steeper than 1:12 and cross slope shall be 0.02 or flatter. Transitiion slopes shall not be steeper than 1:12.

   When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1:12, a running slope between 1:12 and 1:10 is permitted for a rise of 6" maximum and a running slope of between 1:10 and 1:8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.

   Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.

4. If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1:12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk; improvements for guidance are not required at curb ramps for linear pedestrian traffic.

5. Curb ramp detectable warning surfaces shall extend the full width of the ramp and in the direction of travel 24" from the back of curb. Detectable warning surfaces shall be constructed by texturing a truncated dome pattern in conformance with U.S. Department of Justice A.D.A. Standards For Accessible Design, A.D.A. Accessibility Guidelines, Section 4.29.2, (detail shown above left). Transition slopes are not to have detectable warnings.

6. Unless otherwise called out in the plans, the ramp detectable warning surface shall be colored in accordance with Section 351 of the Standard Specifications.

7. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long.

8. Alpha-numeric identifications are for reference (plans, permits, etc.).

9. Public sidewalk curb ramps are to be paid for as follows:
   Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (__" Thick), SY. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type __), LF or Curb and Gutter Conc., (Type __), LF.

   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

DESIGN NOTES

1. The color requirement in General Note 6 is to provide a dark-on-light visual contrast between the detectable warning surface and the adjacent walking surface. Where adjacent walking surfaces are colored or are constructed with materials other than standard Class I Portland Cement Concrete in accordance with Section 522 of the Standard Specifications, the plans must provide for detectable warning surface colors or materials that provide the necessary contrast, either dark-on-light or light-on-dark.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN METRIC UNITS.

Use of this interim index is discretionary through the December 2002 project letting date; use is mandatory beginning with projects let to contract in January 2003.

Revisions To Index No. 304 (Sheet 1 of 5):
- (a) Note 3, paragraph 1, sentences 3 and 4- Sentences deleted.
- (b) Note 5-Tactile surface references deleted and detectable warning requirements substituted.
- (c) Pictorial View-Ramp surface notation revised.
- (d) 'CURB RAMP DETECTABLE WARNING' detail added.
- (e) Notes 6,7 & 8: Renumbered 7, 8 & 9: New Note 6 inserted.
- (f) Design Notes added.

Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

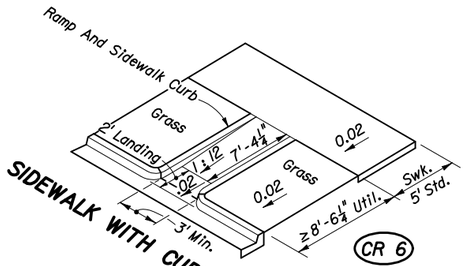
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 304 (SHEET 1 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY James D. Miller
Roadway Design Engineer

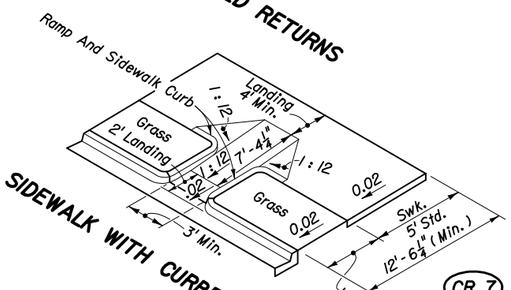
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



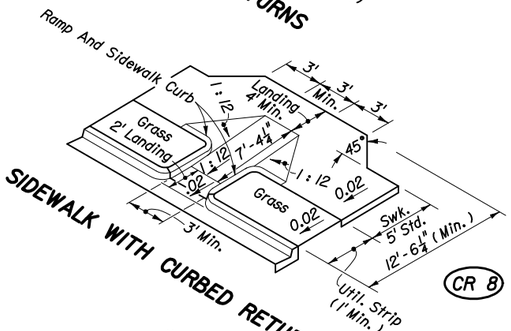
SIDEWALK WITH CURBED RETURNS

CR 6



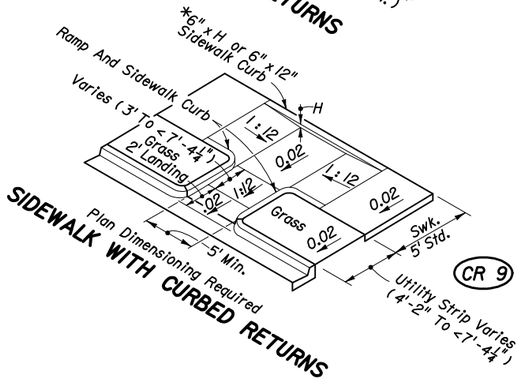
SIDEWALK WITH CURBED RETURNS

CR 7



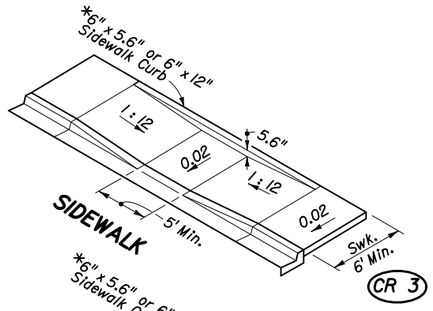
SIDEWALK WITH CURBED RETURNS

CR 8



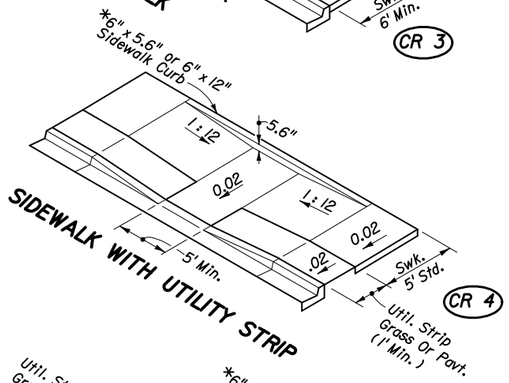
SIDEWALK WITH CURBED RETURNS

CR 9



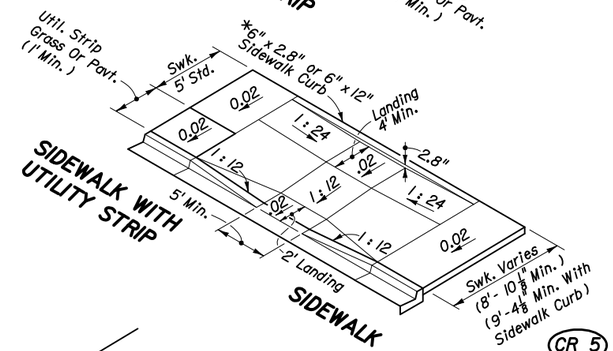
SIDEWALK

CR 3



SIDEWALK WITH UTILITY STRIP

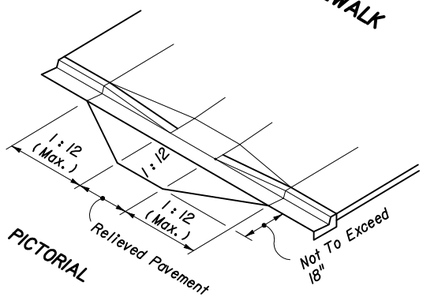
CR 4



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 5



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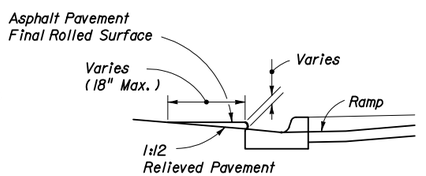
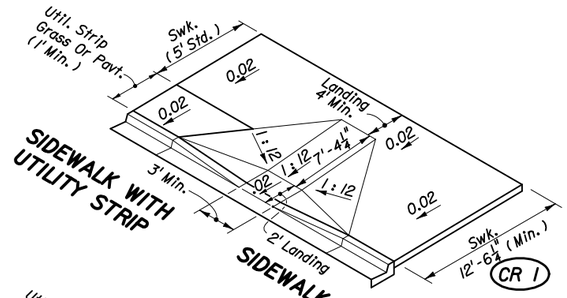


Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or, Grinding

SECTION

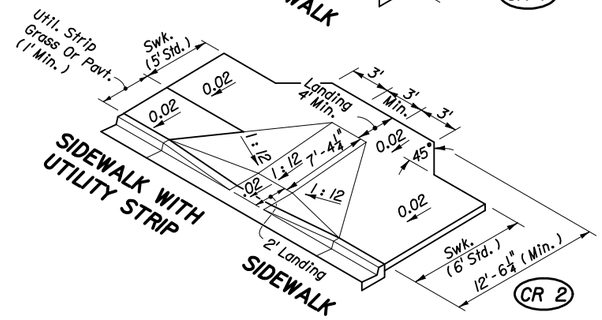
PAVEMENT RELIEF AT LIP OF CURB



SIDEWALK WITH UTILITY STRIP

SIDEWALK

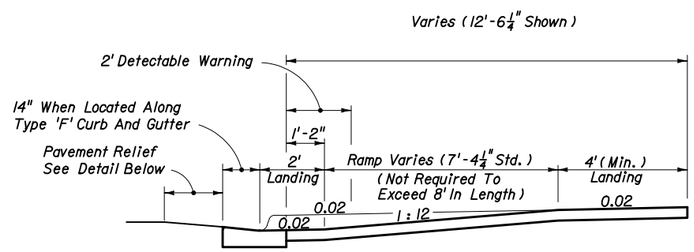
CR 1



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 2



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

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Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

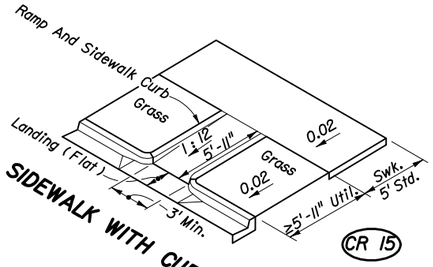
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 304 (SHEET 2 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY James D. Wolf
Roadway Design Engineer

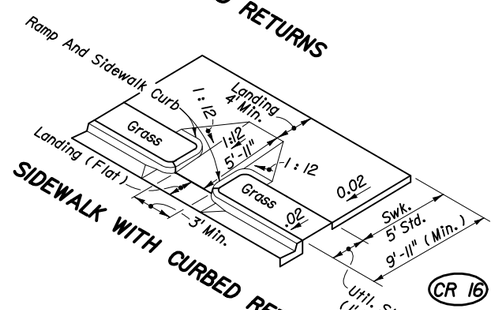
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



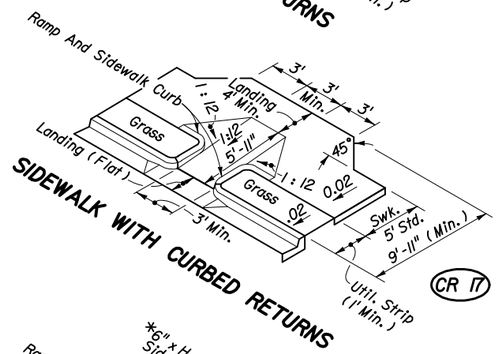
SIDEWALK WITH CURBED RETURNS

CR 15



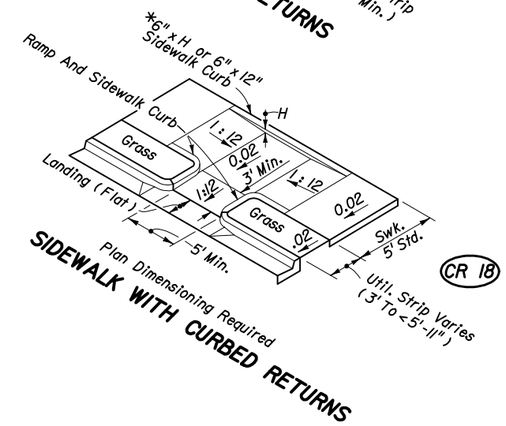
SIDEWALK WITH CURBED RETURNS

CR 16



SIDEWALK WITH CURBED RETURNS

CR 17



SIDEWALK WITH CURBED RETURNS

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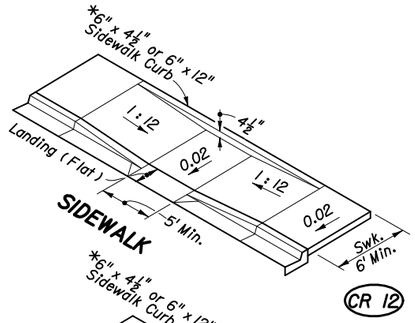
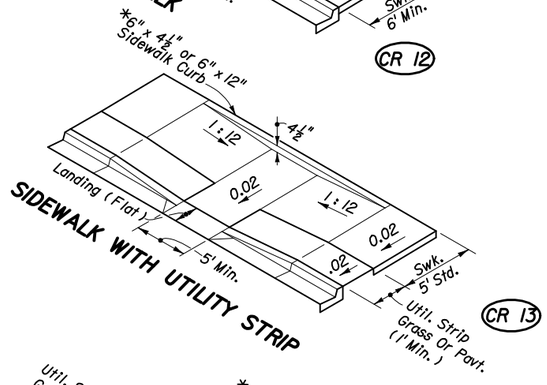


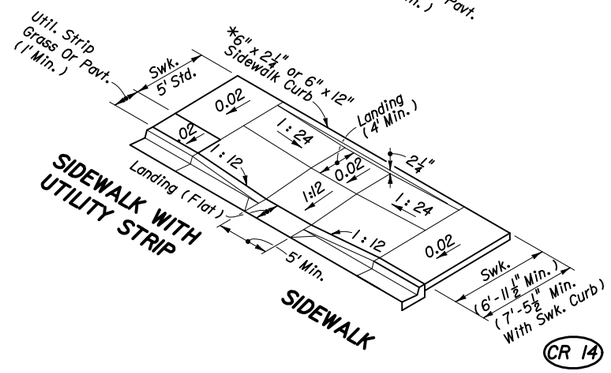
SIDEWALK

CR 12



SIDEWALK WITH UTILITY STRIP

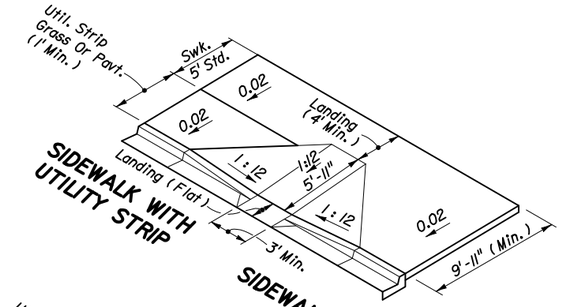
CR 13



SIDEWALK WITH UTILITY STRIP

SIDEWALK

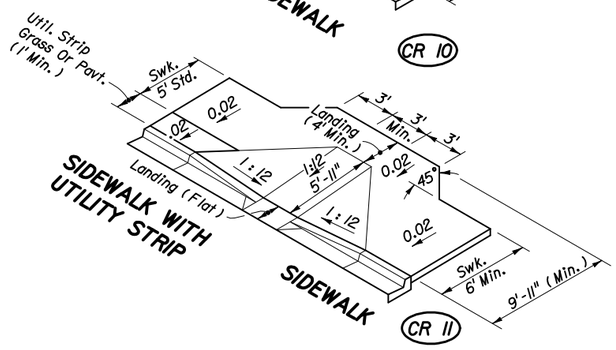
CR 14



SIDEWALK WITH UTILITY STRIP

SIDEWALK

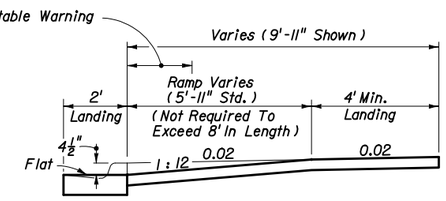
CR 10



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 11



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Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 304 (SHEET 3 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 5	0304

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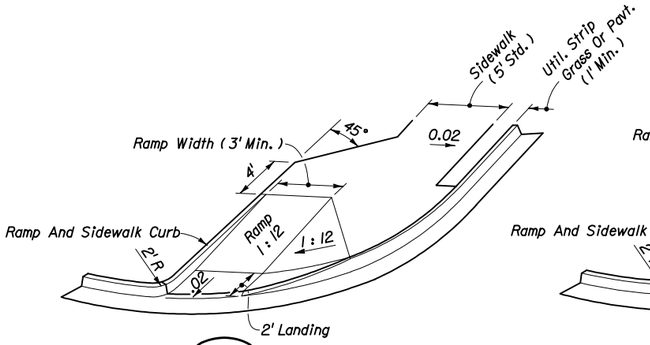

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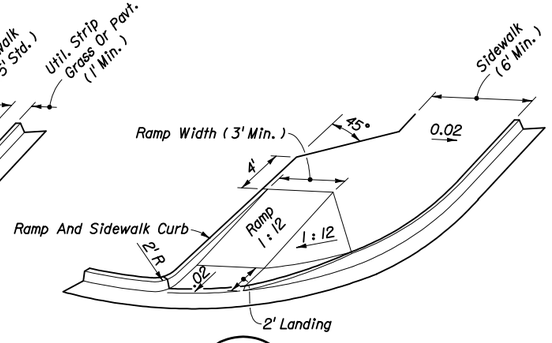

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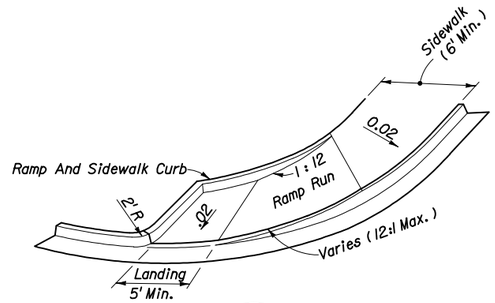

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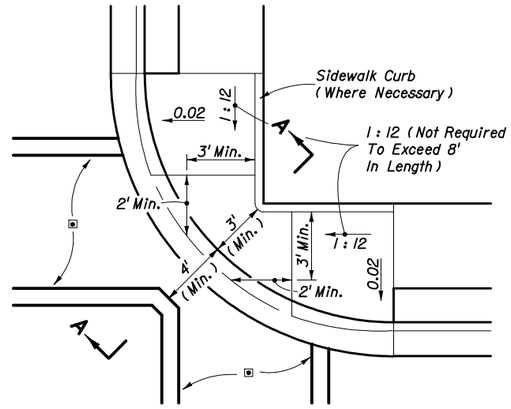
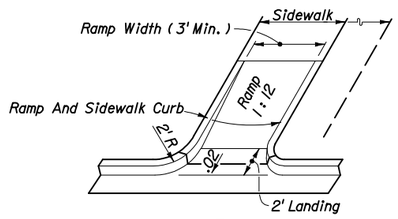


▣ Crosswalk width and configuration vary; must conform to Index No. 17344 and 17346.

PLAN



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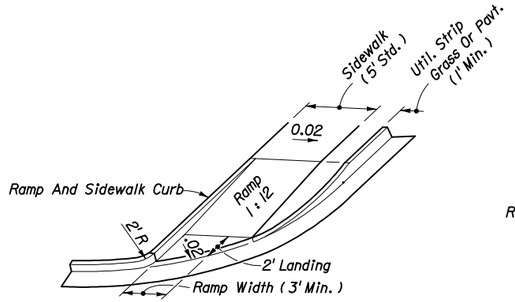

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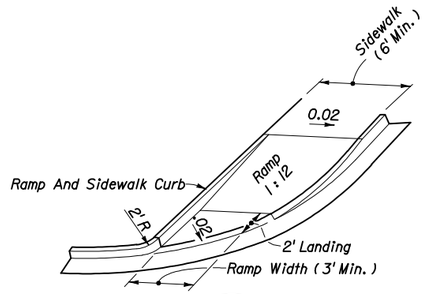

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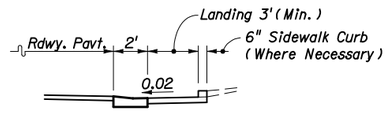
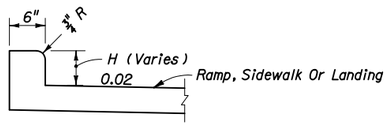


SECTION AA

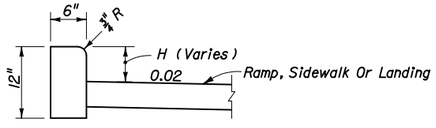
CR 26

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK COMBINED CORNER RAMPS UNDER CONDITIONS OF INFEASIBILITY

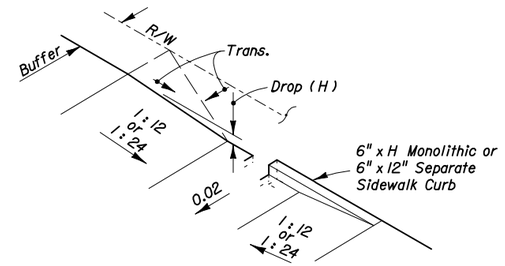


MONOLITHIC CAST CURB



SEPARATELY CAST CURB

RAMP AND SIDEWALK CURB OPTIONS



Construct Sidewalk Curb In Absence Of Adequate Buffer, Maintainable Surface Contour, Abuting Structure, Or When Called For In The Plans Or Standards

BACK OF SIDEWALK CURB OR BUFFER TRANSITION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN METRIC UNITS.

Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

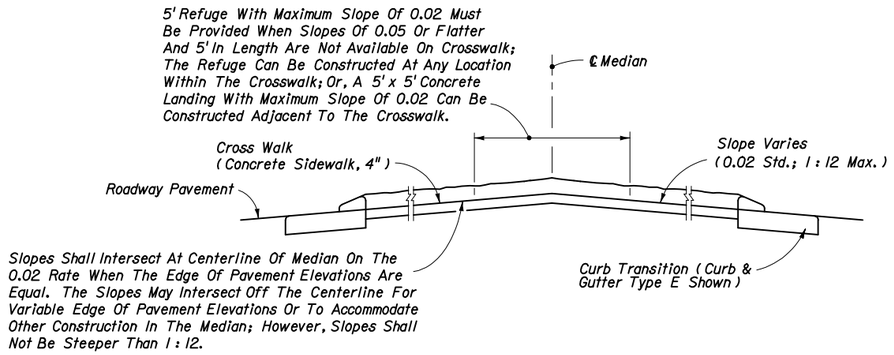
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 304 (SHEET 4 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

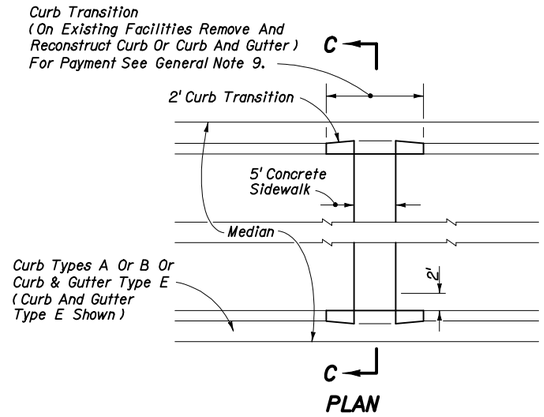
APPROVED BY James D. Mills
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

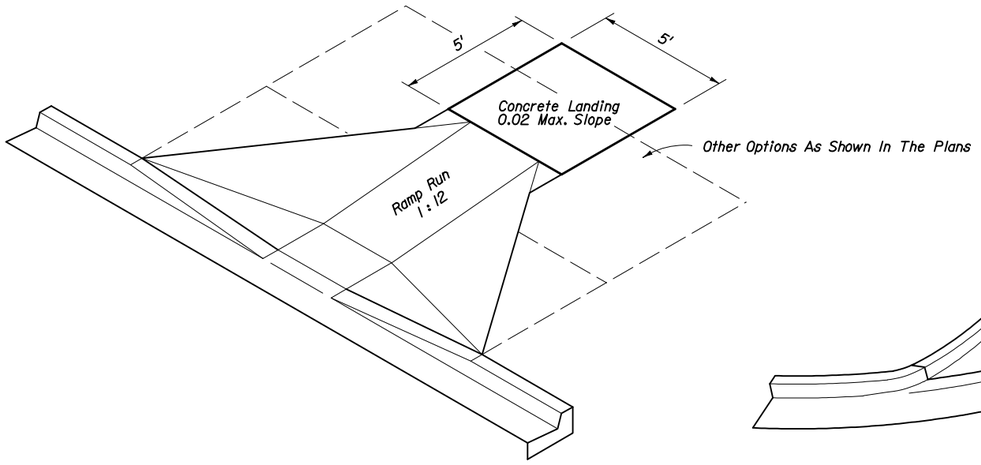


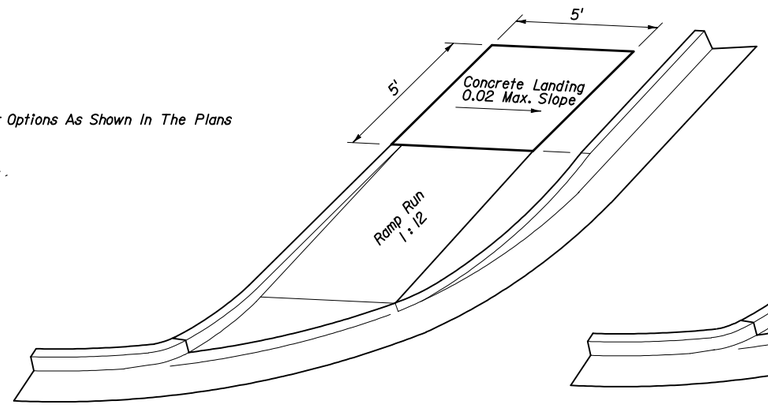
SECTION CC

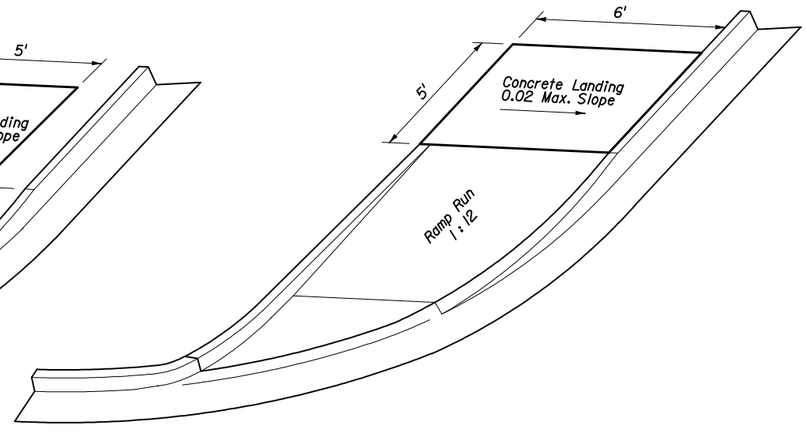


PLAN

MEDIAN CROSSWALKS







LANDINGS FOR RAMPS WITHIN PUBLIC RIGHT OF WAY CONSTRUCTED AT LOCATIONS WHERE FUTURE SIDEWALKS ARE PROPOSED, WHERE STABLE SURFACES OTHER THAN SIDEWALKS ARE PART OF A CONTINUOUS PASSAGE OR WHERE A CURB FALLS ALONG THE CIRCULATION PATH TO PEDESTRIAN ROUTES ON ADJACENT SITES

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN METRIC UNITS.

Revised: 01-30-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

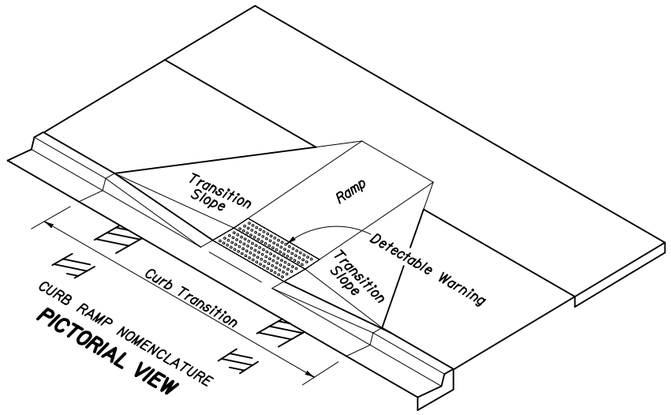
INTERIM STANDARD

APPROVED BY James D. Stroll
Roadway Design Engineer

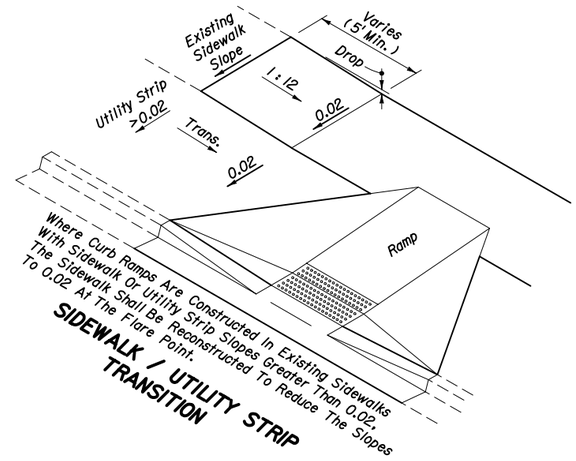
THIS SHEET REPLACES INDEX NO. 304 (SHEET 5 OF 5) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 5	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PICTORIAL VIEW



SIDEWALK / UTILITY STRIP TRANSITION

GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb 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 ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.

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

3. Curb ramp running slopes at unrestrained sites shall not be steeper than 1:12 and cross slope shall be 0.02 or flatter. Transition slopes shall not be steeper than 1:12.

   When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1:12, a running slope between 1:12 and 1:10 is permitted for a rise of 6" maximum and a running slope of between 1:10 and 1:8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.

   Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.

4. If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1:12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk; improvements for guidance are not required at curb ramps for linear pedestrian traffic.

5. Curb ramp detectable warning surfaces shall extend the full width of the ramp and in the direction of travel 24" from the back of curb. Detectable warning surfaces shall be constructed in accordance with Specification 527. See Sheet 6 of 6 for detectable warning layouts. Transition slopes are not to have detectable warnings.

6. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long. For details of Concrete Sidewalk see Index 310.

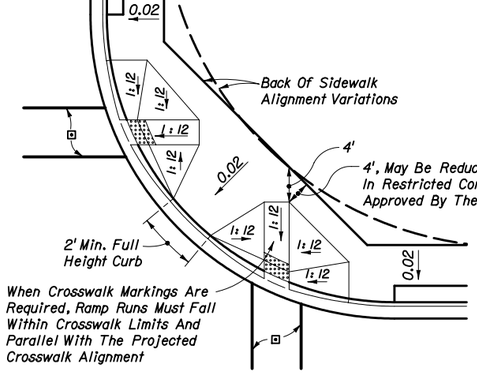
7. Alpha-numeric identifications are for reference (plans, permits, etc.).

8. Public sidewalk curb ramps are to be paid for as follows:
   Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (__" Thick), SY. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type __), LF or Curb and Gutter Conc., (Type __), LF.

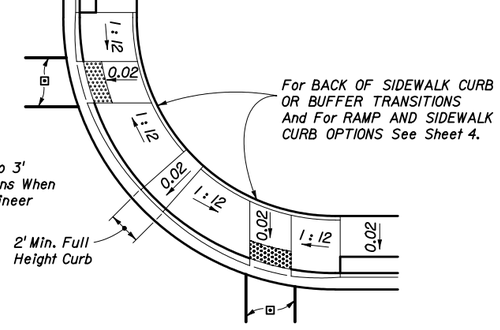
   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

9. Acceptance Criteria for Detectable Warnings:
   (a) The ramp detectable warning surface shall be complete and uniform in color and texture
   (b) 90% of the individual truncated domes must comply with the design criteria
   (c) There may be no more than 4 non-complying domes in any one square foot of surface
   (d) No two adjacent domes may be non-compliant
   (e) Surface may not deviate more than 0.10" from a true plane

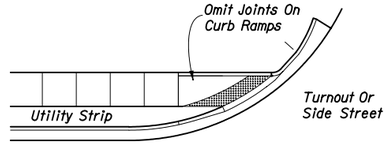
10. All sidewalk surfaces, ramp surfaces, and landings with a cross slope shown in this Index to be 0.02 shall be 0.02 maximum. All ramp surfaces and ramp transition slopes with a slope shown in this Index to be 1:12 shall be 1:12 maximum.



⊡ Crosswalk widths and configuration vary; must conform to Index No. 17344 and 17346.



Note: A portion of one or both ramps may extend outside the return.



LINEAR SIDEWALK RAMPS

TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

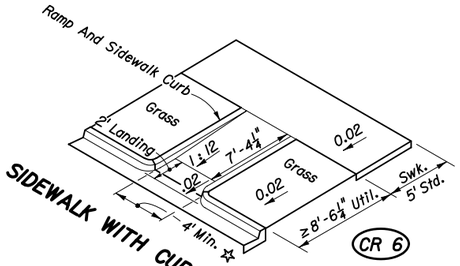
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

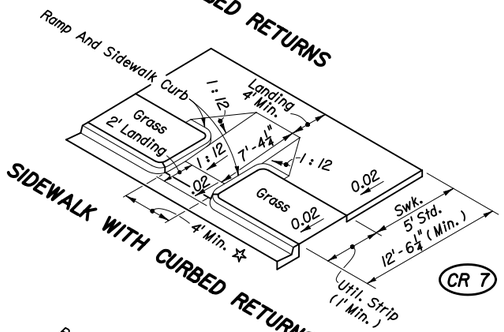
REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 6	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



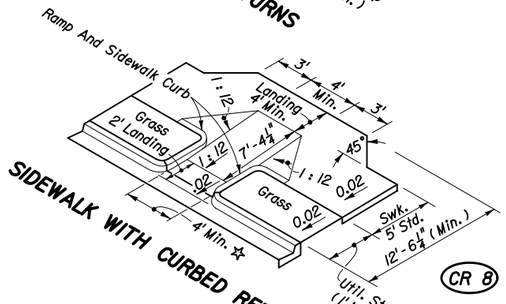
SIDEWALK WITH CURBED RETURNS

CR 6



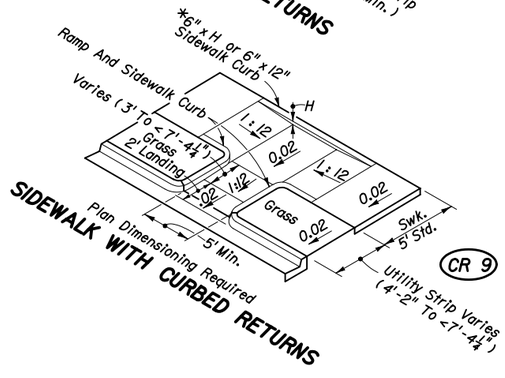
SIDEWALK WITH CURBED RETURNS

CR 7



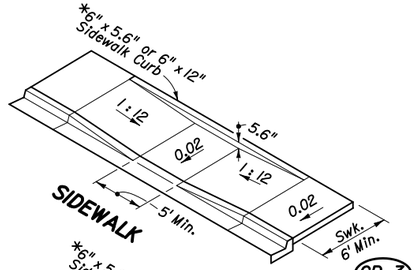
SIDEWALK WITH CURBED RETURNS

CR 8



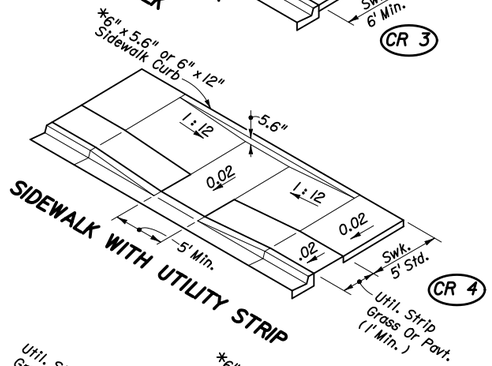
SIDEWALK WITH CURBED RETURNS

CR 9



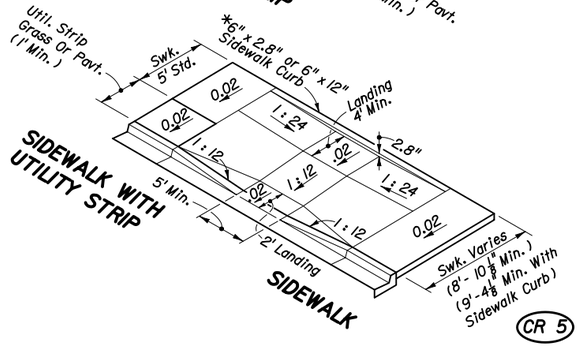
SIDEWALK

CR 3



SIDEWALK WITH UTILITY STRIP

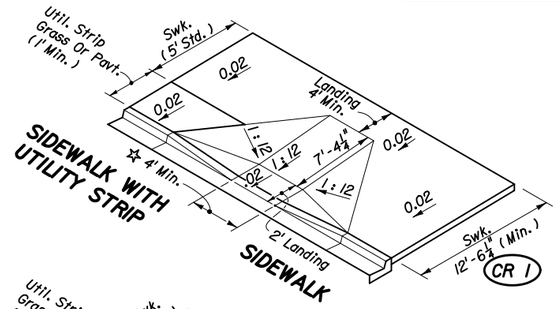
CR 4



SIDEWALK WITH UTILITY STRIP

SIDEWALK

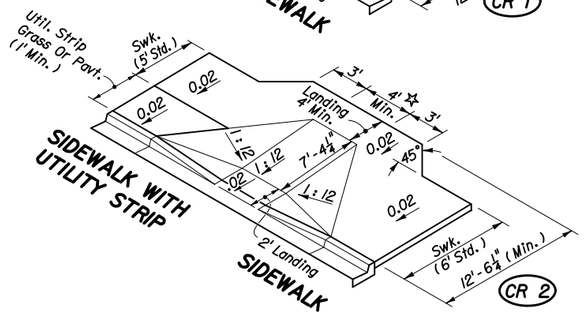
CR 5



SIDEWALK WITH UTILITY STRIP

SIDEWALK

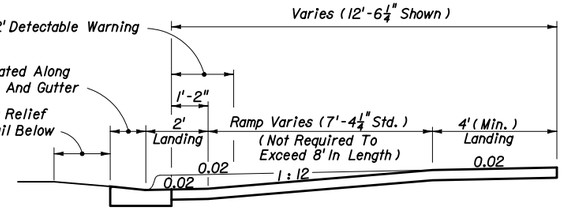
CR 1



SIDEWALK WITH UTILITY STRIP

SIDEWALK

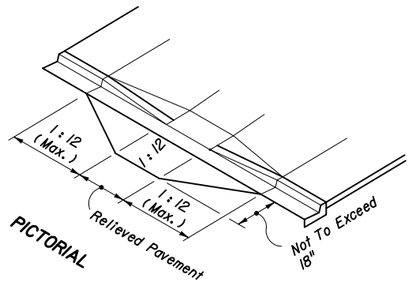
CR 2



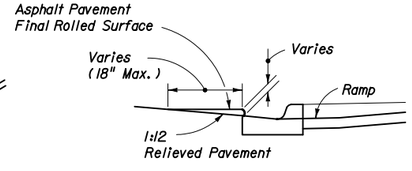
SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

☆ Ramp Widths For Curb Ramps CR 1, CR 2, CR 6, CR 7, And CR 8 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.



PICTORIAL



Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or, Grinding

SECTION

PAVEMENT RELIEF AT LIP OF CURB

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

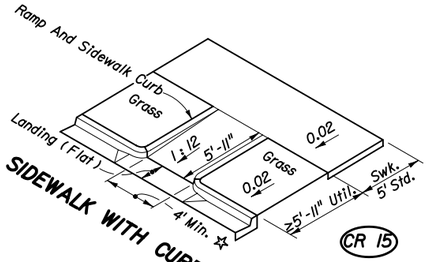
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY _____ Roadway Design Engineer

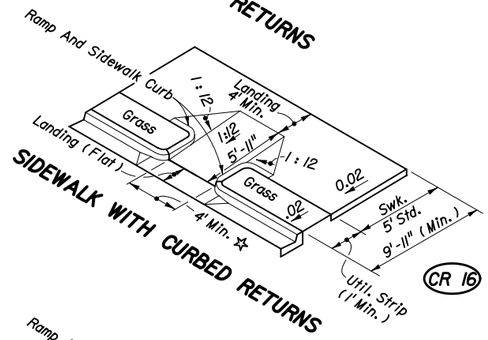
REVISION NO.	SHEET NO.	INDEX NO.
04	2 of 6	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



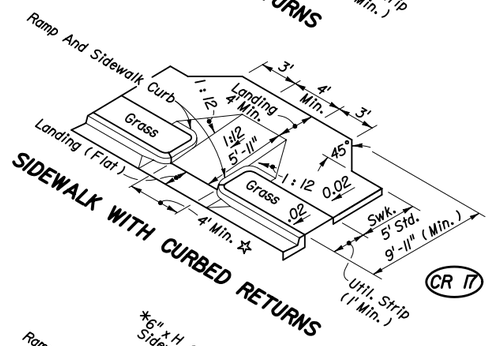
SIDEWALK WITH CURBED RETURNS

CR 15



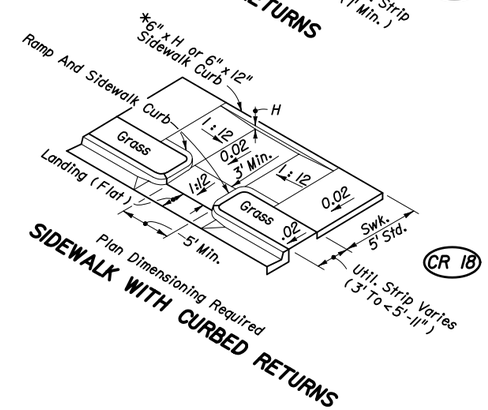
SIDEWALK WITH CURBED RETURNS

CR 16



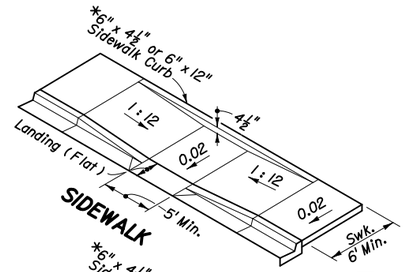
SIDEWALK WITH CURBED RETURNS

CR 17



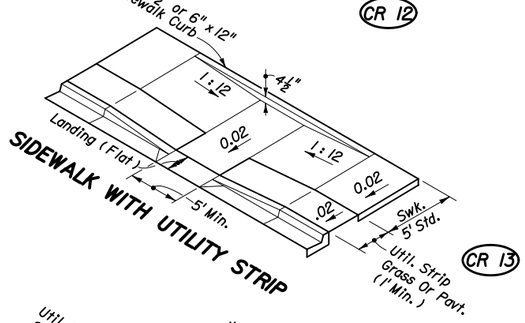
SIDEWALK WITH CURBED RETURNS

CR 18



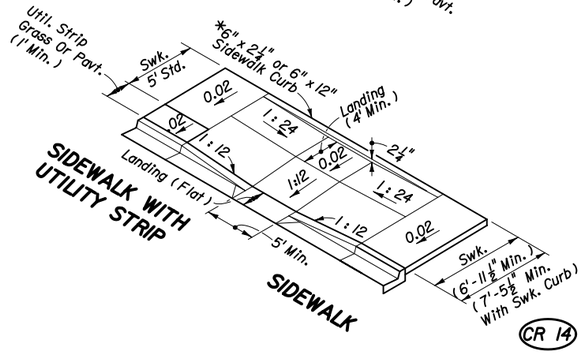
SIDEWALK

CR 12



SIDEWALK WITH UTILITY STRIP

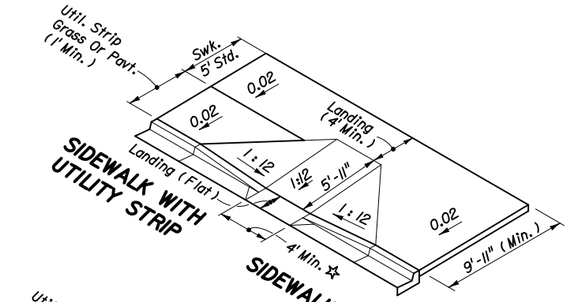
CR 13



SIDEWALK WITH UTILITY STRIP

SIDEWALK

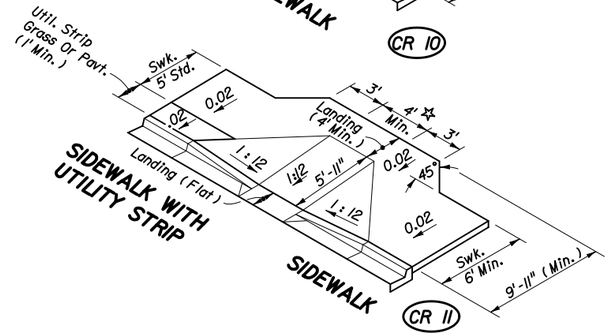
CR 14



SIDEWALK WITH UTILITY STRIP

SIDEWALK

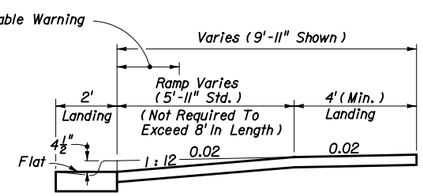
CR 10



SIDEWALK WITH UTILITY STRIP

SIDEWALK

CR 11



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

☆ Ramp Widths For Curb Ramps CR 10, CR 11, CR 15, CR 16, And CR 17 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE RESTRICTED BY RIGHT OF WAY

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

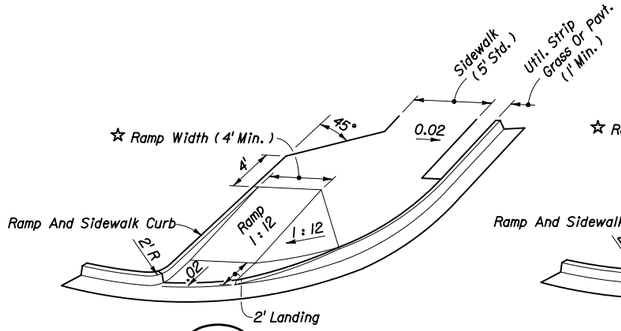
THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 6	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



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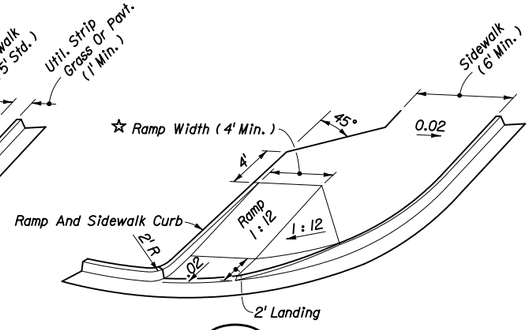

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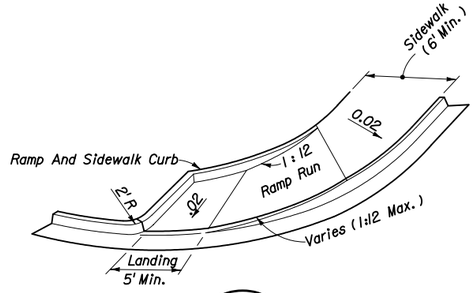

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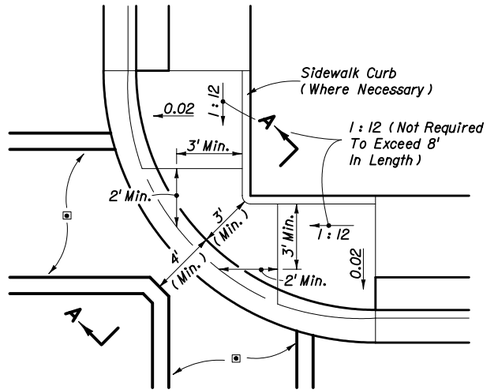
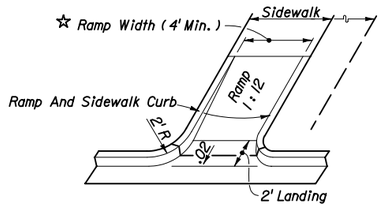


▣ Crosswalk width and configuration vary; must conform to Index No. 17344 and 17346.

PLAN



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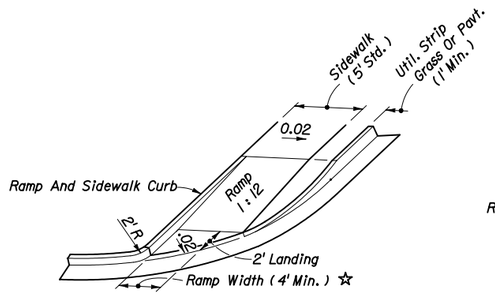

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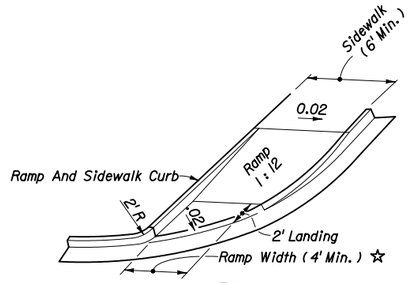

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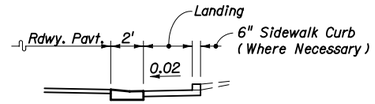


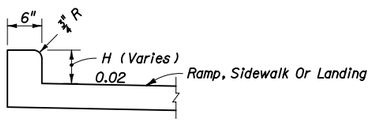
SECTION AA

CR 26

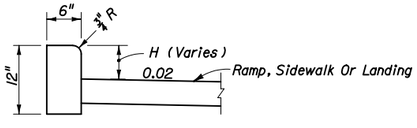
DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK COMBINED CORNER RAMPS UNDER CONDITIONS OF INFEASIBILITY

☆ Ramp Widths For Curb Ramps CR 20, CR 21, CR 22, CR 24, and CR 25 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

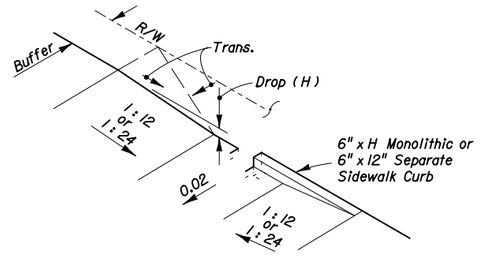


MONOLITHIC CAST CURB



SEPARATELY CAST CURB

RAMP AND SIDEWALK CURB OPTIONS



Construct Sidewalk Curb In Absence Of Adequate Buffer, Maintainable Surface Contour, Abuting Structure, Or When Called For In The Plans Or Standards

BACK OF SIDEWALK CURB OR BUFFER TRANSITION

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

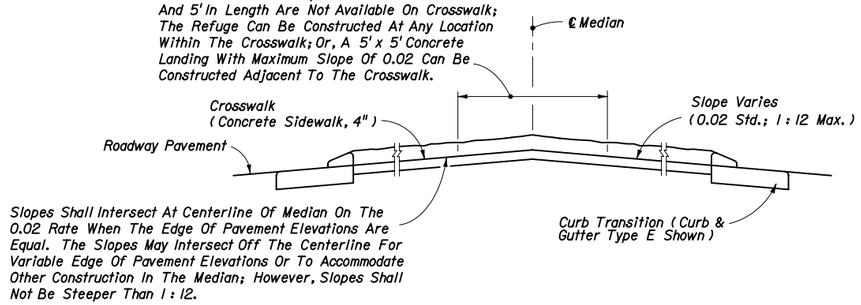
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

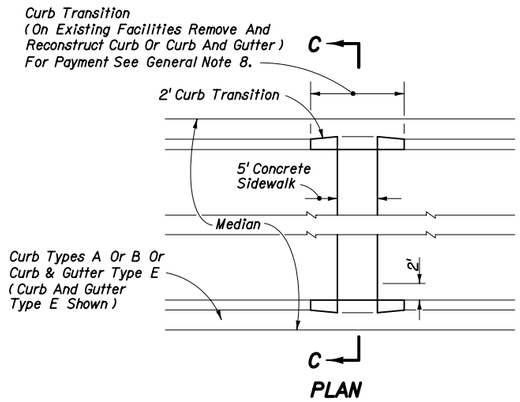
APPROVED BY A.B. Beel
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	4 of 6	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

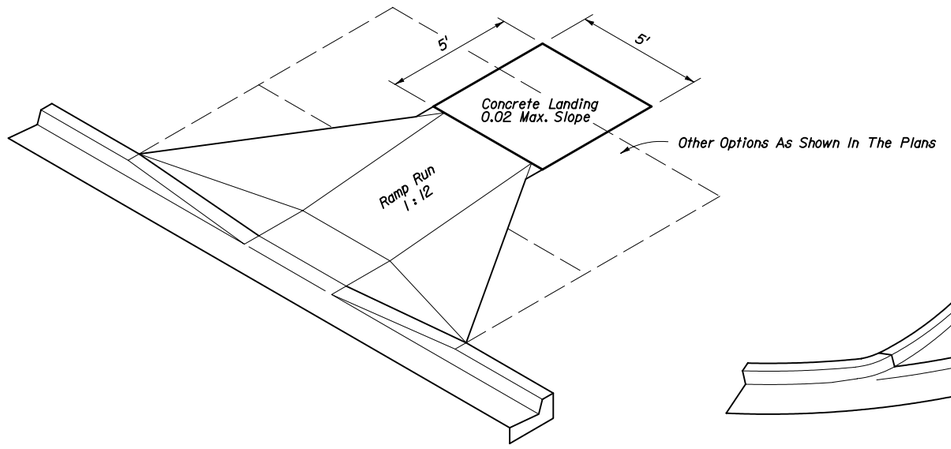


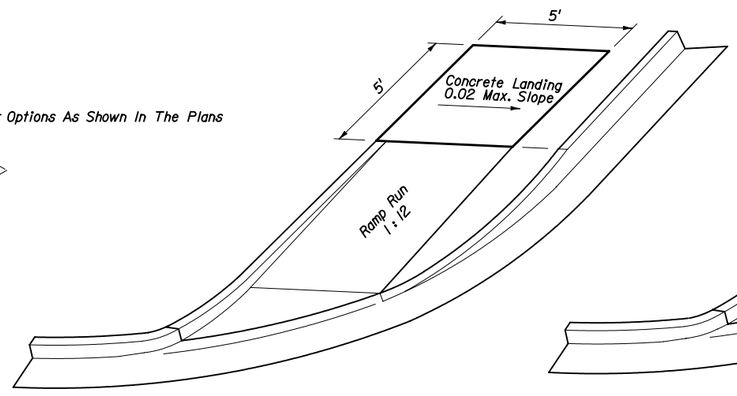
SECTION CC

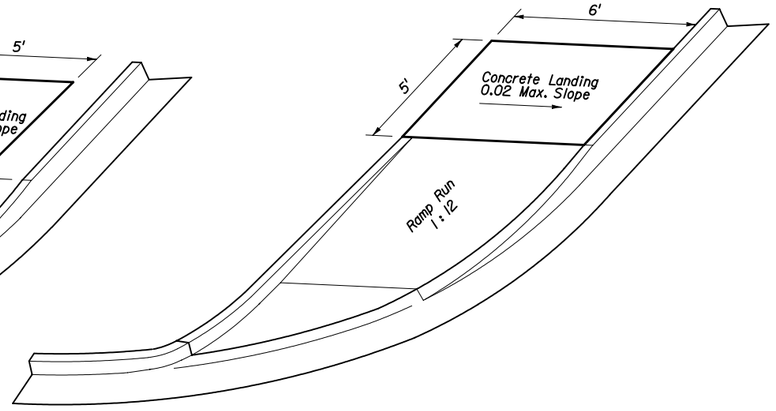


PLAN

MEDIAN CROSSWALKS







LANDINGS FOR RAMPS WITHIN PUBLIC RIGHT OF WAY CONSTRUCTED AT LOCATIONS WHERE FUTURE SIDEWALKS ARE PROPOSED, WHERE STABLE SURFACES OTHER THAN SIDEWALKS ARE PART OF A CONTINUOUS PASSAGE OR WHERE A CURB FALLS ALONG THE CIRCULATION PATH TO PEDESTRIAN ROUTES ON ADJACENT SITES

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

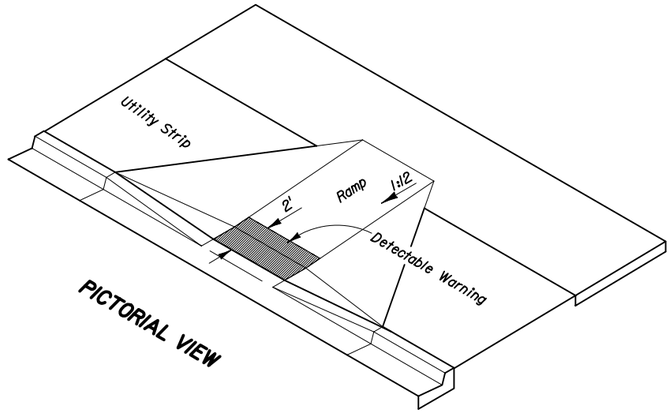
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

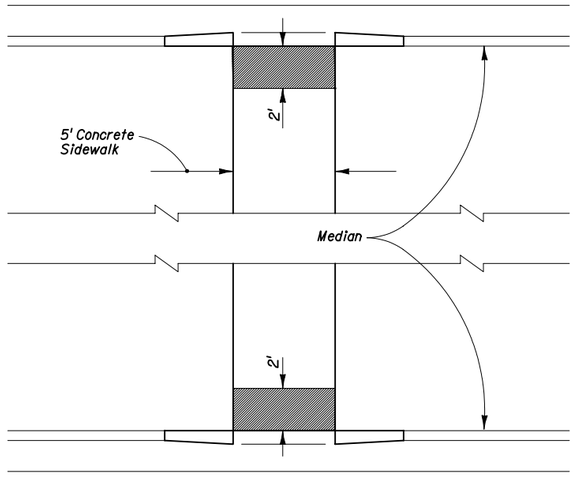
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 6	0304

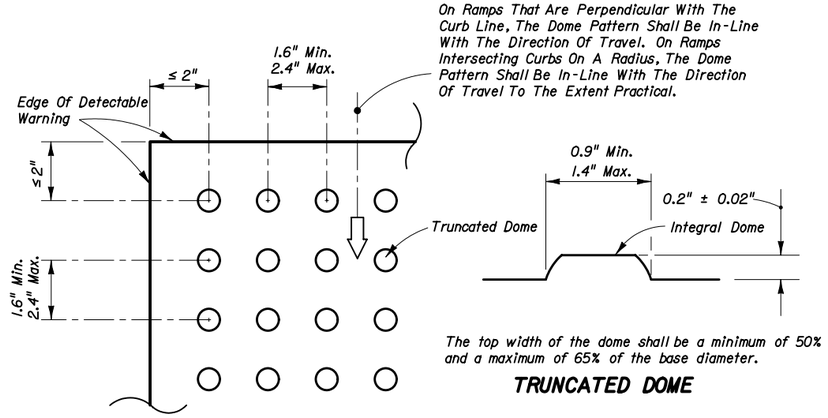
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PICTORIAL VIEW



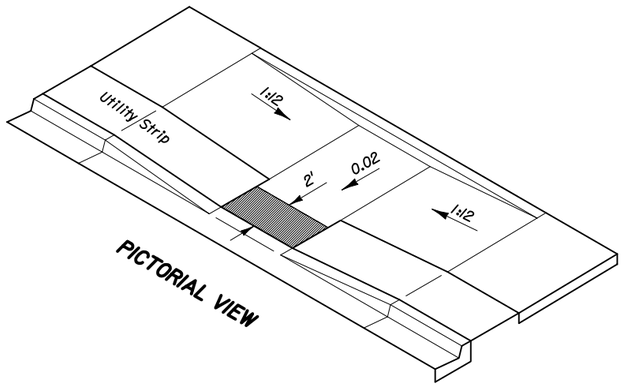
PLAN



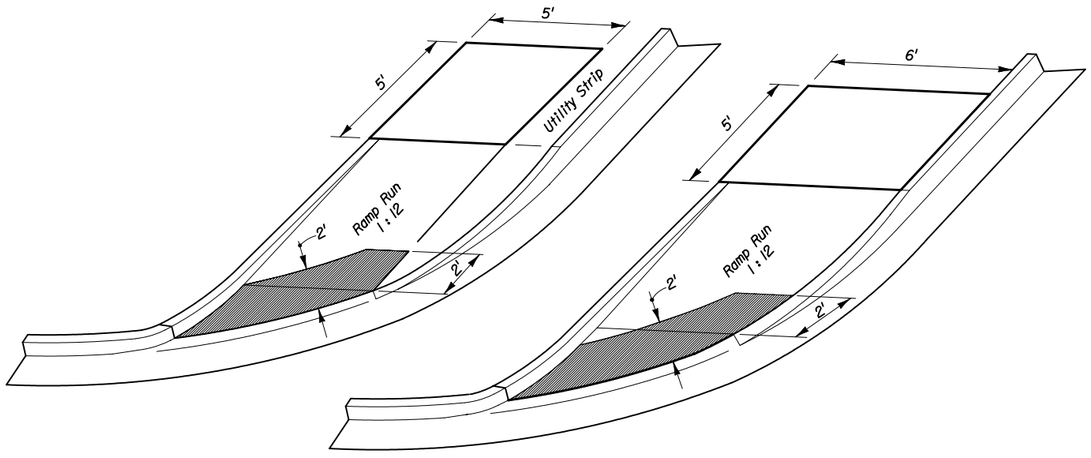
PLAN VIEW

All Sidewalk Curb Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 24 Inches (610 mm) From The Back Of Curb.

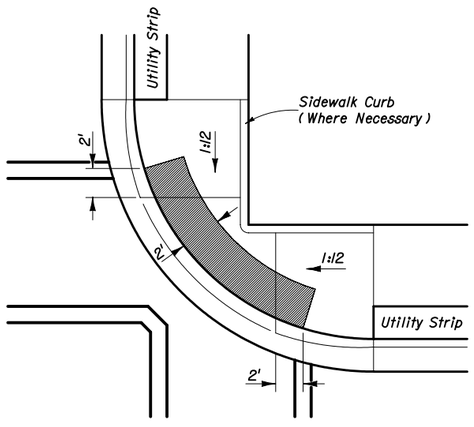
CURB RAMP DETECTABLE WARNING DETAIL



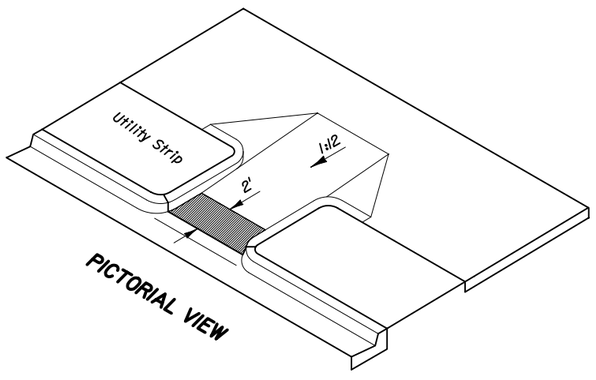
PICTORIAL VIEW



PICTORIAL VIEWS



PLAN



PICTORIAL VIEW

TYPICAL PLACEMENT OF DETECTABLE WARNING ON CURB RAMPS

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER OR METRIC ENGLISH UNITS.

Date: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PUBLIC SIDEWALK CURB RAMPS

INTERIM STANDARD

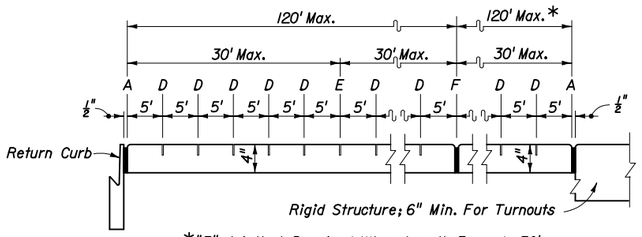
THIS INDEX REPLACES INDEX NO. 304 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

Roadway Design Engineer

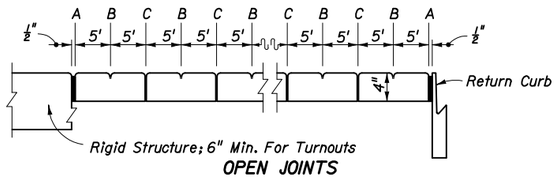
REVISION NO.	SHEET NO.	INDEX NO.
04	6 of 6	0304

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



*"E" Joint(s) Required When Length Exceeds 30'

SAWED JOINTS



OPEN JOINTS

EXAGGERATED SCALE

LONGITUDINAL SECTION

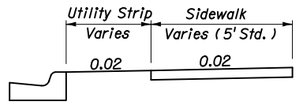
SIDEWALK JOINTS

JOINT LEGEND

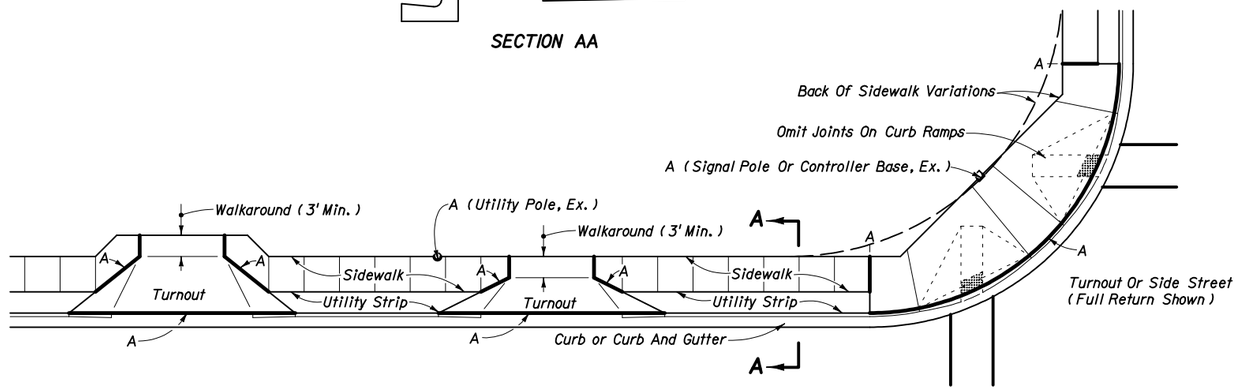
A- 1/2" Expansion Joints (Preformed Joint Filler)
B- 3/8" Dummy Joints, Tooled
C- 1/8" Formed Open Joints
D- 3/16" Saw Cut Joints, 1 1/2" Deep (96 Hour) Max. 5' Centers
E- 3/16" Saw Cut Joints, 1 1/2" Deep (12 Hour) Max. 30' Centers
F- 1/2" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.
G- Cold Joint With Bond Breaker, Tooled

NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

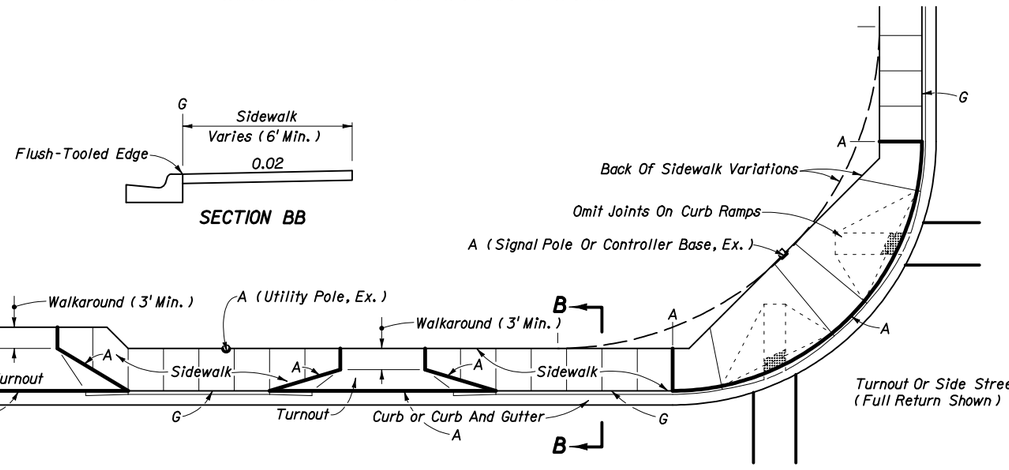
1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications except for public sidewalk curb ramp runs which shall be finished in accordance with Index No. 304.
2. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than 1/2".
3. For public sidewalk curb ramps see Index No. 304.
4. For turnouts see Index No. 515.
5. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), S.Y.



SECTION AA



SIDEWALK WITH UTILITY STRIP



SECTION BB

SIDEWALK WITHOUT UTILITY STRIP

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN METRIC UNITS.

CONCRETE SIDEWALK FOR CURBED ROADWAYS

Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE SIDEWALK

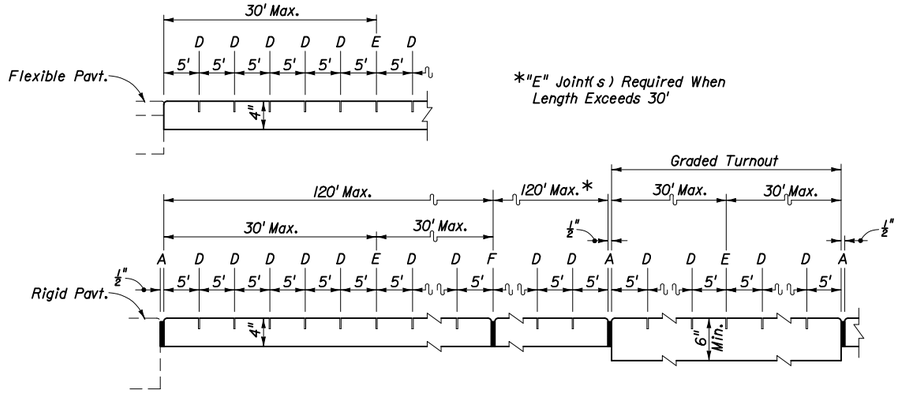
INTERIM STANDARD

THIS INDEX IS A REPLACEMENT FOR INDEX NO. 310 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

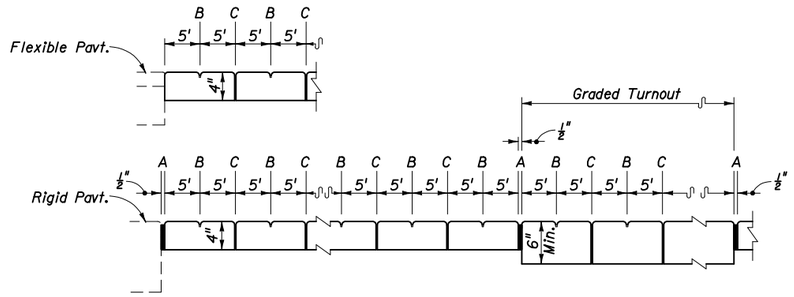
APPROVED BY: Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	0310

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SAWED JOINTS



OPEN JOINTS

EXAGGERATED SCALE

LONGITUDINAL SECTIONS

SIDEWALK JOINTS

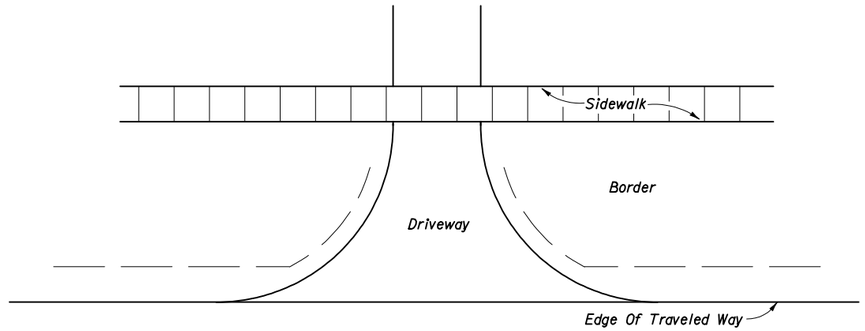
JOINT LEGEND

A- 1/2" Expansion Joints (Preformed Joint Filler)
B- 1/8" Dummy Joints, Tooled
C- 1/8" Formed Open Joints
D- 3/16" Saw Cut Joints, 1 1/2" Deep (96 Hour) Max. 5' Centers
E- 3/16" Saw Cut Joints, 1 1/2" Deep (12 Hour) Max. 30' Centers
F- 1/2" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

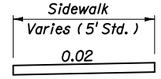
NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications.
2. Sidewalks adjoining driveways 24' and wider, right in-right out composite driveways and side roads and streets shall have a detectable warning surface that extends the full width of the sidewalk and in the direction of travel 24" (610 mm) from the edge of driveways and edge of side roads and streets. Detectable warning surfaces shall conform to the requirements described in the General Notes on Interim Index No. 0304.

   For sidewalks continuous through driveways, detectable warning surfaces are not required.
3. For turnouts see Index No. 515.
4. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), SY.



CONTINUOUS SIDEWALK



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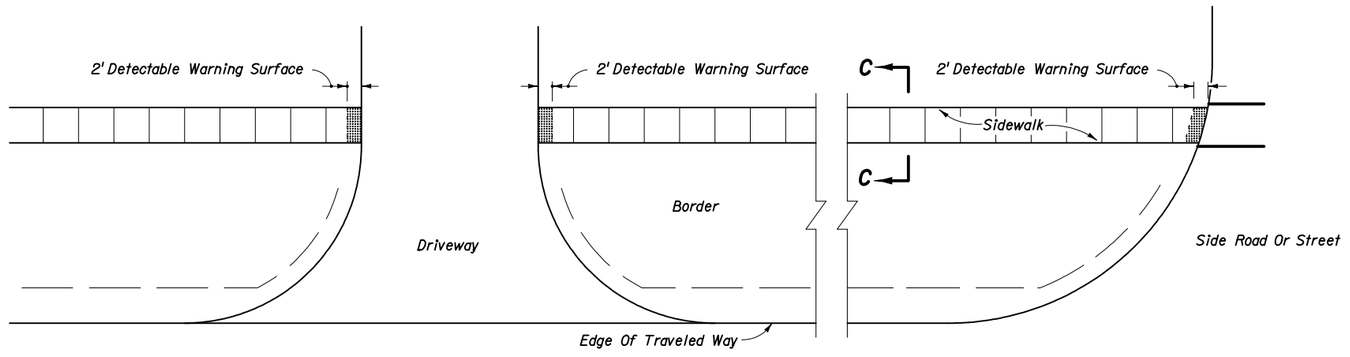


DISCONTINUOUS SIDEWALK

PLAN

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN METRIC UNITS.

CONCRETE SIDEWALK FOR UNCURBED ROADWAYS

Revised: 7-24-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE SIDEWALK

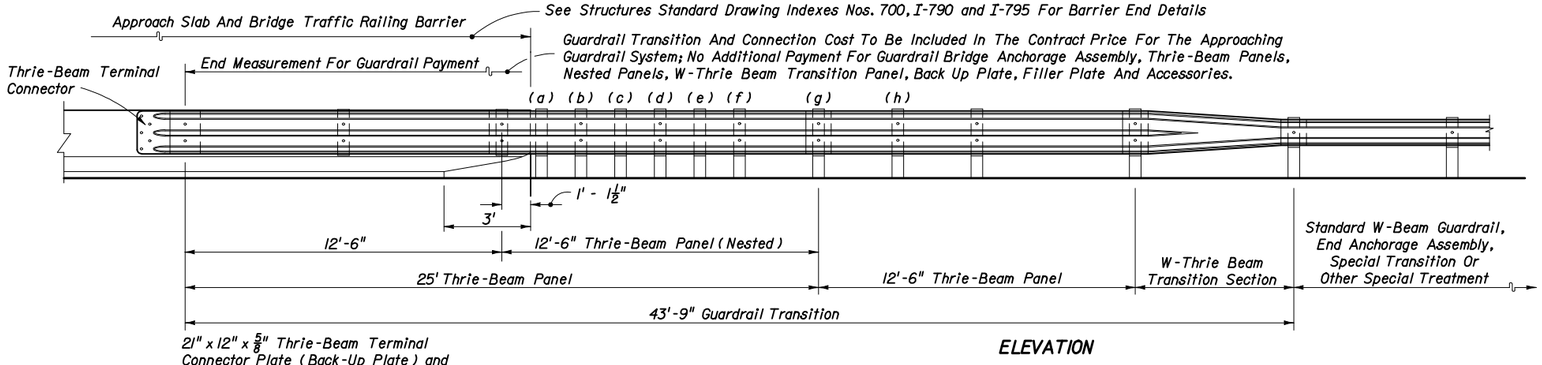
INTERIM STANDARD

THIS INDEX IS A REPLACEMENT FOR INDEX NO. 310 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

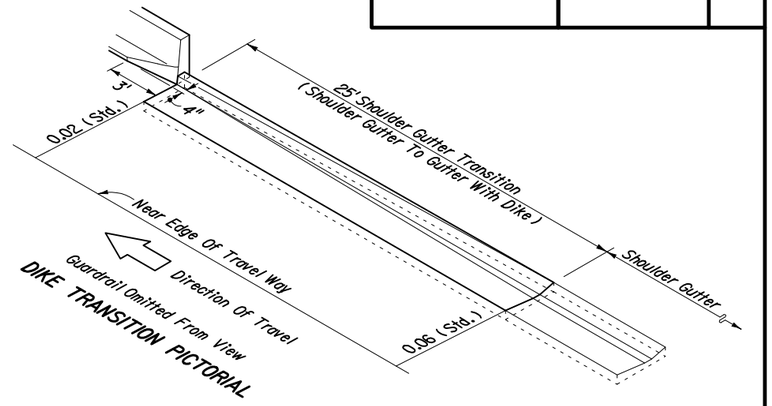
APPROVED BY Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	0310

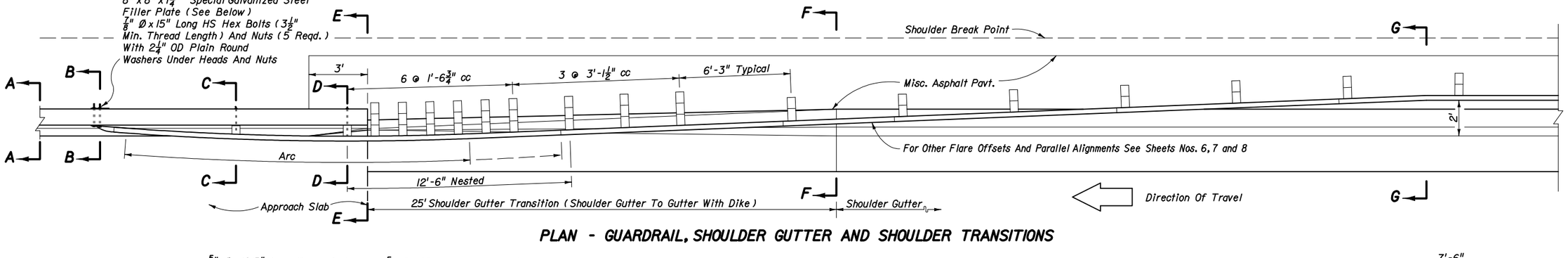
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



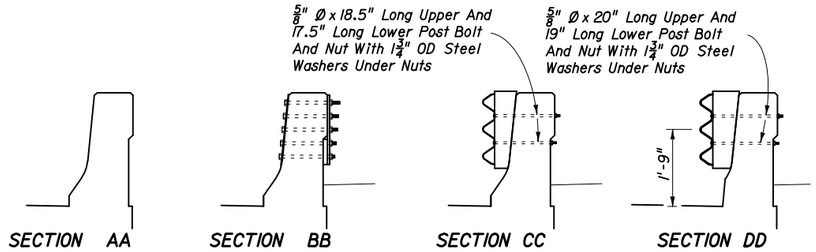
ELEVATION

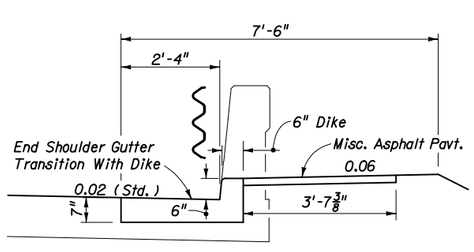


DIKE TRANSITION PICTORIAL

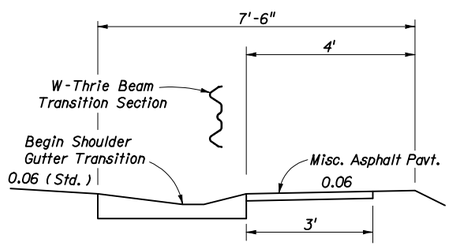


PLAN - GUARDRAIL, SHOULDER GUTTER AND SHOULDER TRANSITIONS





SECTION EE



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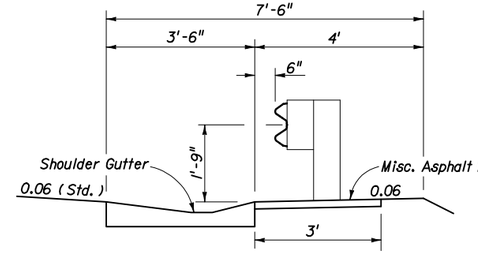
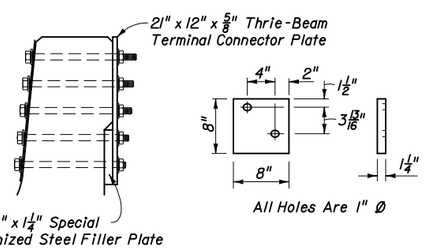
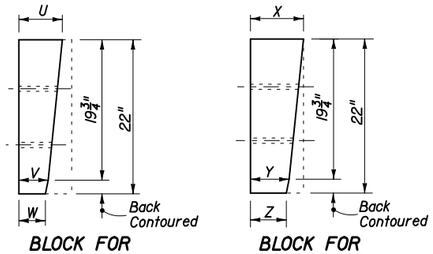


SECTION GG



SPECIAL GALVANIZED STEEL FILLER PLATE FOR USE AT SECTION BB



BLOCK FOR SECTION CC

BLOCK FOR SECTION DD

APPLICATIONS	SECTION CC			SECTION DD		
	U	V	W	X	Y	Z
Single Face Guardrail	6⅛"	4⅛"	3⅝"	7½" nom.	5½" nom.	5" nom.
Double Face Guardrail With Timber Posts	5⅛"	3⅛"	2⅝"	6½" nom.	4½" nom.	4" nom.
Double Face Guardrail With Steel Posts	4⅜"	2⅜"	1⅞"	5¾"	3¾"	3¼"

For Double Face Guardrail Connections To Median Bridge Traffic Railing Barrier, See Index No. 410 'Guardrail Connection To Concrete Barrier Wall Approach Ends'.

THRIE-BEAM OFFSET BLOCKS FIELD TRIMMED FOR USE AT SECTIONS CC & DD

GUARDRAIL TRANSITION NOTE

When shoulder gutter is required, the 25' long dike transition, shown in the 'PLAN' and 'PICTORIAL' above, is required. Double offset blocks are shown for guardrail installations adjacent to shoulder gutter/dike transitions; single offset blocks shall be installed in absence of shoulder gutter. Nested rails shall not be bolted to the blocks and posts at posts (a), (c), and (e). One 16d galvanized nail shall be driven between each post and block, and between double blocks, in order to prevent block rotation, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION', this Index.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GUARDRAIL APPROACH TRANSITION AND CONNECTION FOR BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING BARRIERS EXTENDING FULL LENGTH OF APPROACH SLAB

DETAIL J

Revised: 12-28-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

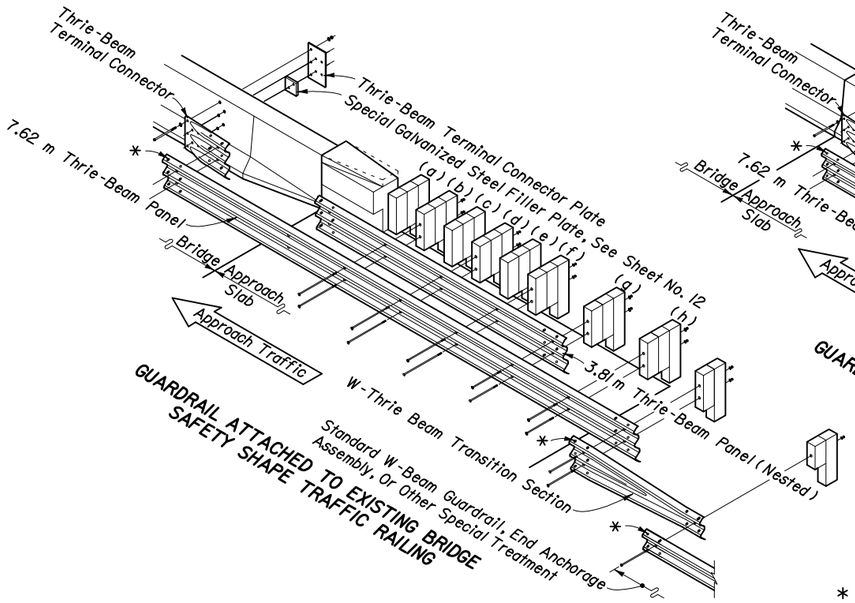
INTERIM STANDARD

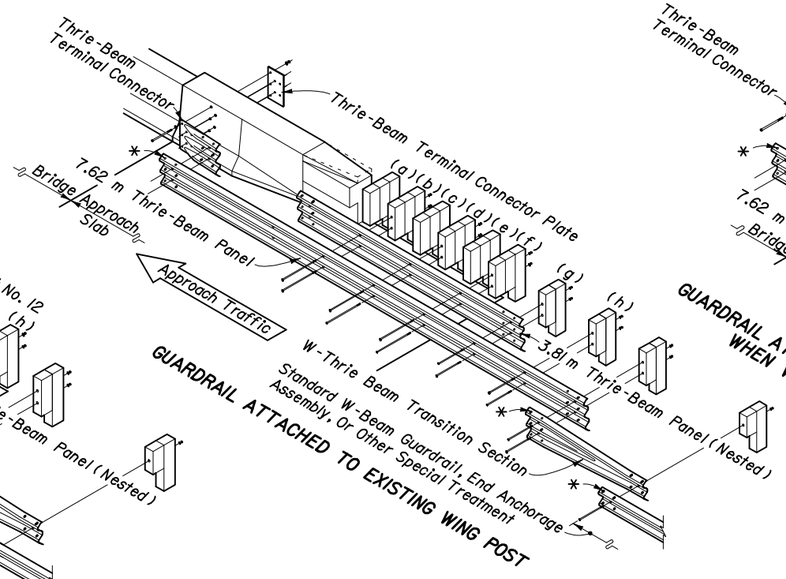
THIS SHEET IS A REPLACEMENT FOR INDEX NO. 400, (SHEET 12 OF 31) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

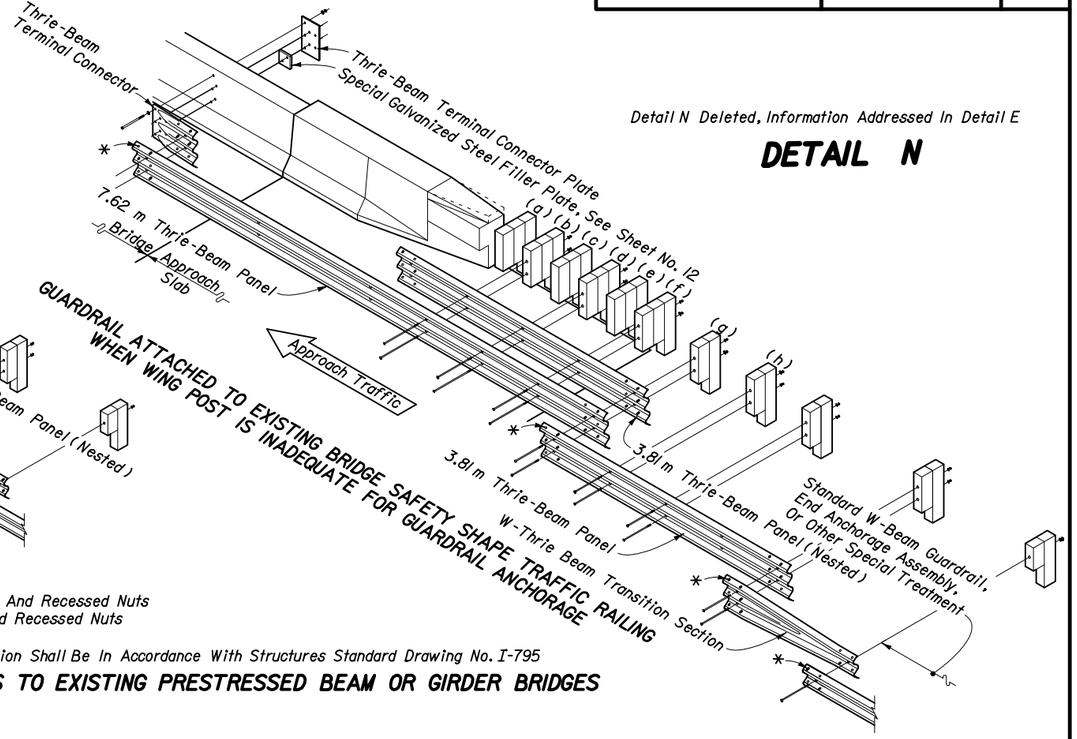
APPROVED BY Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	12 of 31	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.







* Splice Locations: Thrie-Beam - 12 Guardrail Splice Bolts And Recessed Nuts
W-Beam - 8 Guardrail Splice Bolts And Recessed Nuts

Guardrail Attachment Location Shall Be In Accordance With Structures Standard Drawing No. I-790

GUARDRAIL TRANSITION TO EXISTING FLAT SLAB BRIDGES

Guardrail Attachment Location Shall Be In Accordance With Structures Standard Drawing No. I-795

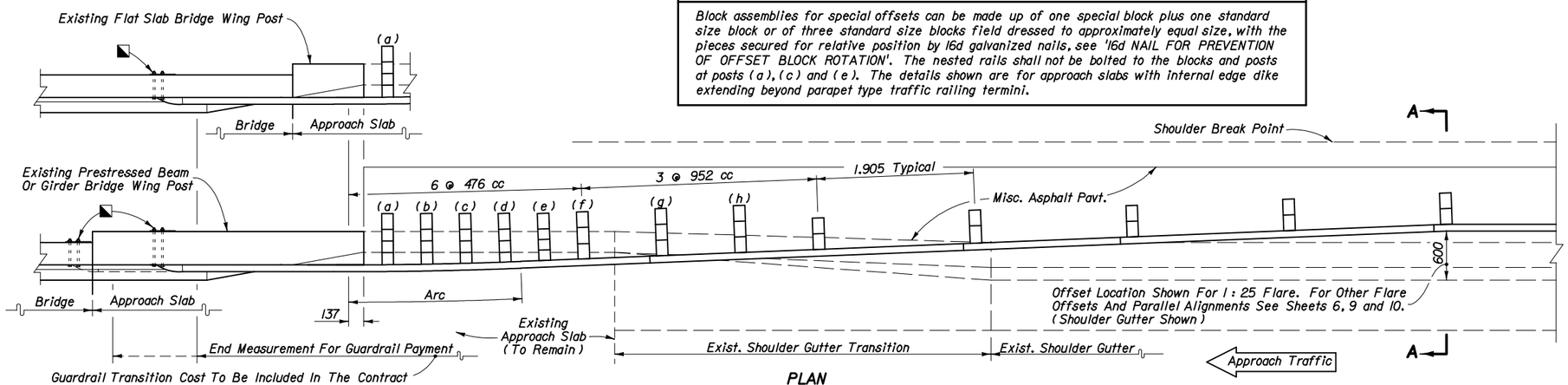
GUARDRAIL TRANSITIONS TO EXISTING PRESTRESSED BEAM OR GIRDER BRIDGES

Detail N Deleted, Information Addressed In Detail E

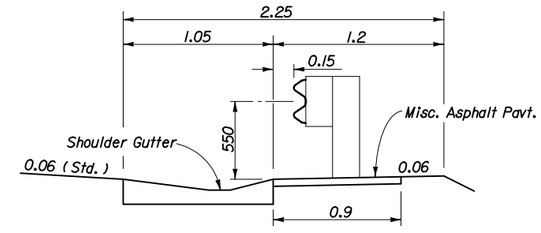
DETAIL N

APPROACH POSTS AND SPECIAL OFFSET BLOCKS

Block assemblies for special offsets can be made up of one special block plus one standard size block or of three standard size blocks field dressed to approximately equal size, with the pieces secured for relative position by 16d galvanized nails, see '16d NAIL FOR PREVENTION OF OFFSET BLOCK ROTATION'. The nested rails shall not be bolted to the blocks and posts at posts (a), (c) and (e). The details shown are for approach slabs with internal edge dike extending beyond parapet type traffic railing termini.



PLAN



SECTION AA

Guardrail Transition Cost To Be Included In The Contract Unit Price For The Approaching Guardrail System; No Additional Payment For Thrie-Beam Panels, Nested Panels, W-Thrie Beam Transition Panel, and Accessories.

◥ 530 x 300 x 16 Thrie-Beam Terminal Connector Plate (Back-Up Plate), And M22 x 2.5 x 460 (18") Long [380 (15") Long With 90 ($3\frac{1}{2}$") Min. Thread Length For Bridge Safety Shape Railing Or 300 (12") Long For Vertical Face Retrofit Barrier] HS Hex Bolts And Nuts (5 Reqd.) With M24 Plain Round Washers Under Heads And Nuts. [When Attaching Guardrail To Existing Wing Posts Or Bridge Rails, Care Should Be Exercised To Avoid Damaging Conduits And Their Utilities That May Be Routed Through Wing Posts Or Bridge Rails. When Conduits And Their Utilities Are Encountered, At Least Five M22 ($\frac{7}{8}$") HS Hex Bolts Shall Be Installed In Any Of The Seven Holes Provided In The Thrie-Beam Terminal Connector.]

NOTES

1. When the existing wing post is to be replaced with a bridge traffic railing barrier in accordance with Structure Standard Drawings No. I-790 or No. I-795, the thrie-beam guardrail connection shall be in accordance with Detail J.
2. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

GUARDRAIL APPROACH TRANSITIONS AND CONNECTIONS FOR EXISTING FLAT SLAB, PRESTRESSED BEAM AND GIRDER BRIDGES WITH SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH

DETAIL E

Revised: 12-28-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GUARDRAIL

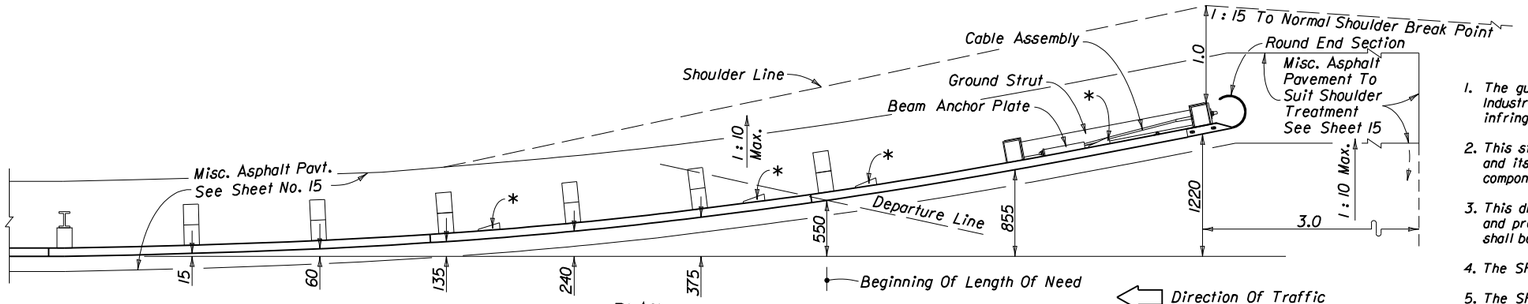
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 400 (SHEET 13 OF 31) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

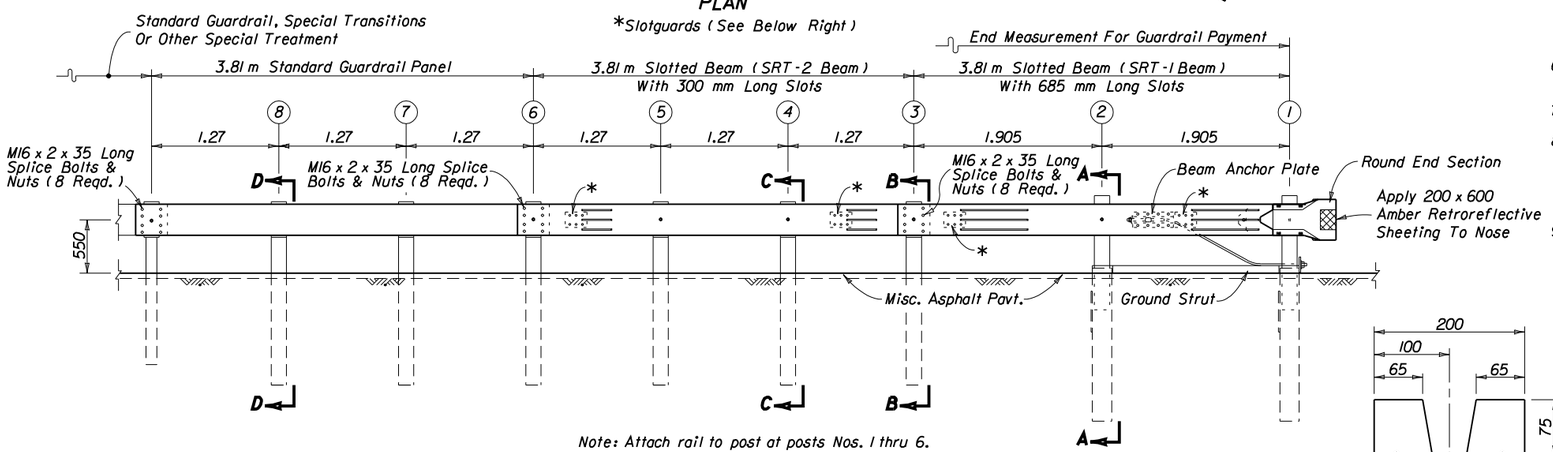
REVISION NO.	SHEET NO.	INDEX NO.
	13 of 31	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN

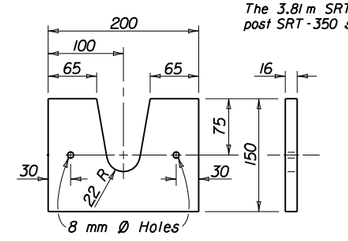
*Slotguards (See Below Right)



Note: Attach rail to post at posts Nos. 1 thru 6.

ELEVATION

** Extended Height When Furnished In Suppliers Assembly (1145 mm Long)



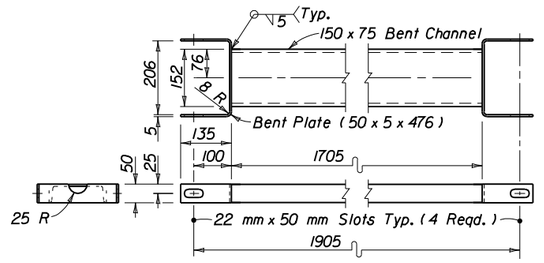
SLOTTED BEARING PLATE

SRT-350 NOTES

1. The guardrail end anchorage system represented on this drawing is a proprietary eight (8) post design by Trinity Industries, Inc. and marketed by Syro, Inc. under the trade name SRT-350, short for Slotted Rail Terminal. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SRT-350 and their incorporation into a whole system.
3. This drawing is sufficient for plan details for the SRT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless called for elsewhere in the plans. The SRT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The SRT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
5. The SRT-350 is suitable for all design speeds. The SRT-350 is intended for use as an approach end anchorage for shoulder guardrail. Its alignment is a parabolic flare from the normal guardrail alignment with an effective length of 11.43 m including two special slotted W-Beam panels and one standard W-Beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
6. Posts 1 and 2 must be timber breakaway posts each with a 19 mm steel strap located approximately 25 mm below the post bolt and a steel foundation tube. CRT breakaway posts shall be used at all other locations within the system.
7. See the General Notes for galvanizing requirements of metallic component.
8. If the plans call for the SRT-350 at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The SRT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

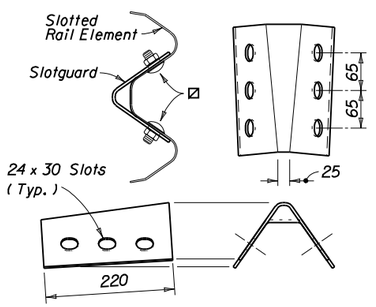
SLOTTED BEAM NOTES

The 3.81 m SRT-1 and SRT-2 beams can be used for the repair or replacement of slotted rails in existing 9 or 10 post SRT-350 systems.



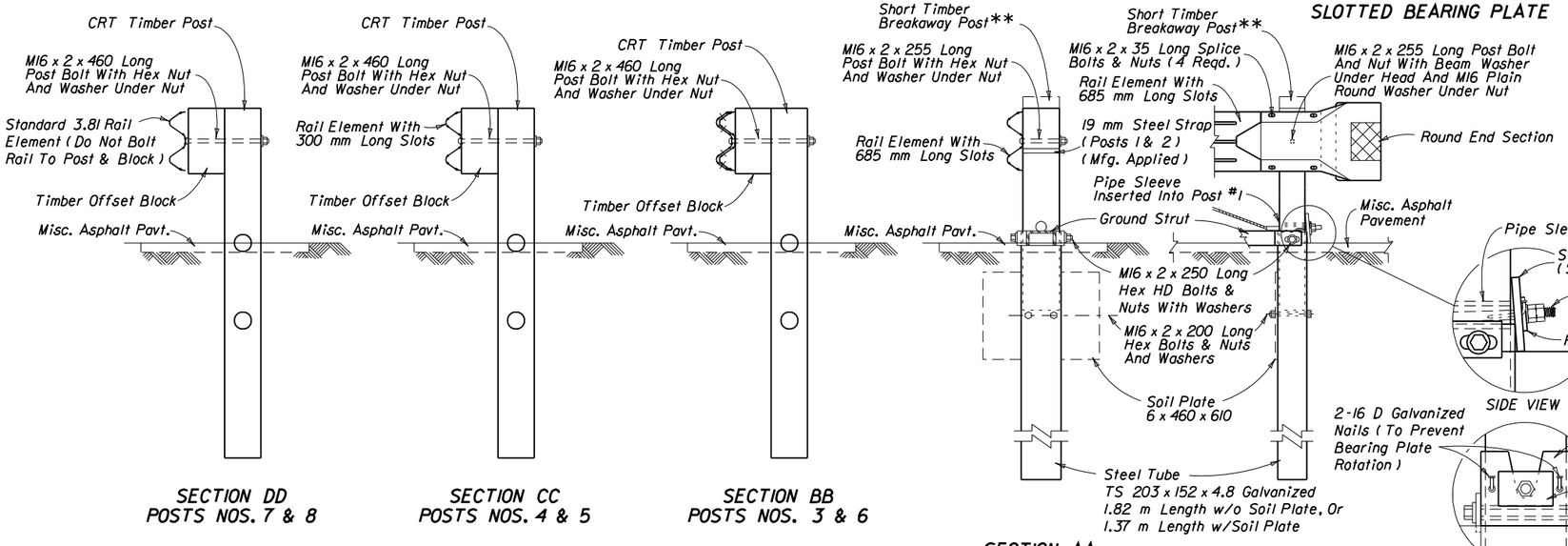
GROUND STRUT

PLATE WASHER



☒ Assemble With M16 x 2 x 35 mm Long Oval Shoulder Button Head Bolts And Nuts (6 Reqd.).

SLOTGUARD



SECTION DD
POSTS NOS. 7 & 8

SECTION CC
POSTS NOS. 4 & 5

SECTION BB
POSTS NOS. 3 & 6

SECTION AA
POST NO. 2

POST NO. 1

SIDE VIEW

END VIEW

BEARING PLATE ORIENTATION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

END ANCHORAGE ASSEMBLY TYPE SRT-350 (8 POST SYSTEM)

REVISED 5/5/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GUARDRAIL

INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 400 (SHEET 26 OF 31) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
STATE ROADWAY DESIGN ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	26 of 31	0400

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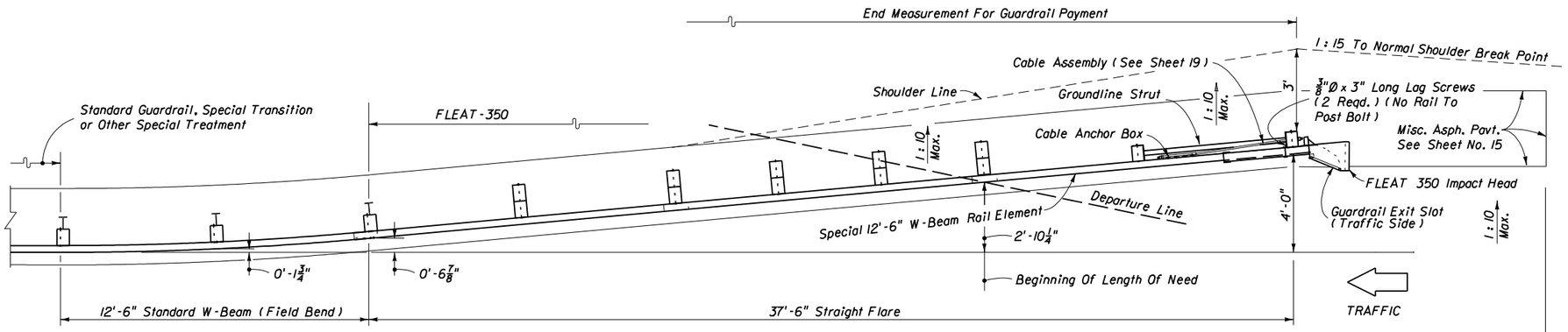
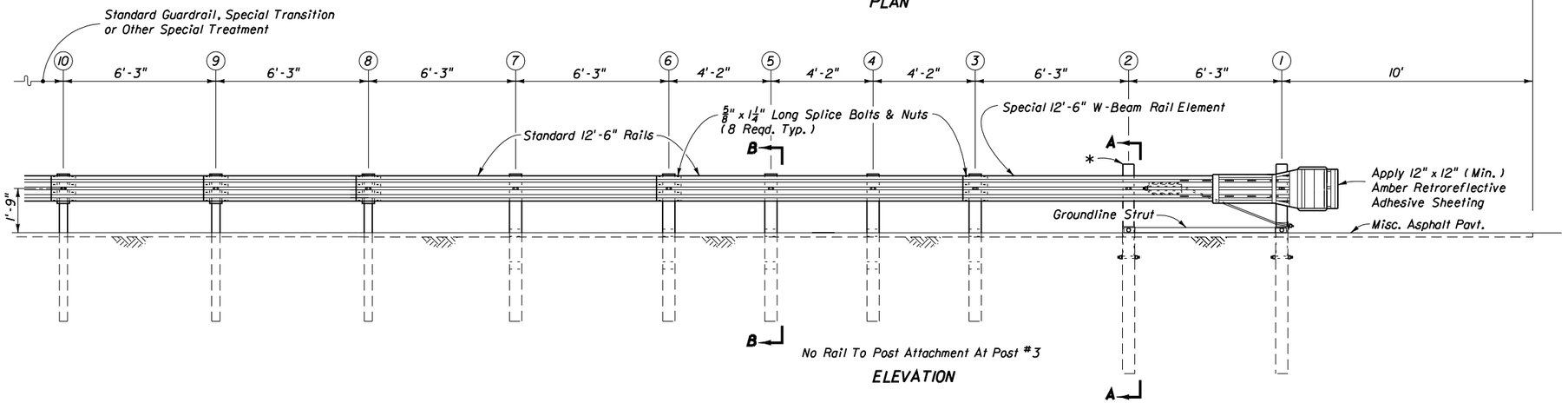


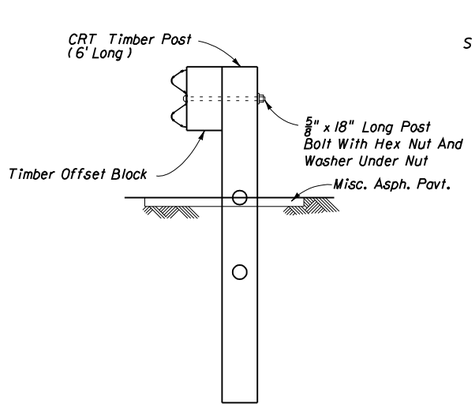
No Rail To Post Attachment At Post #3

PLAN



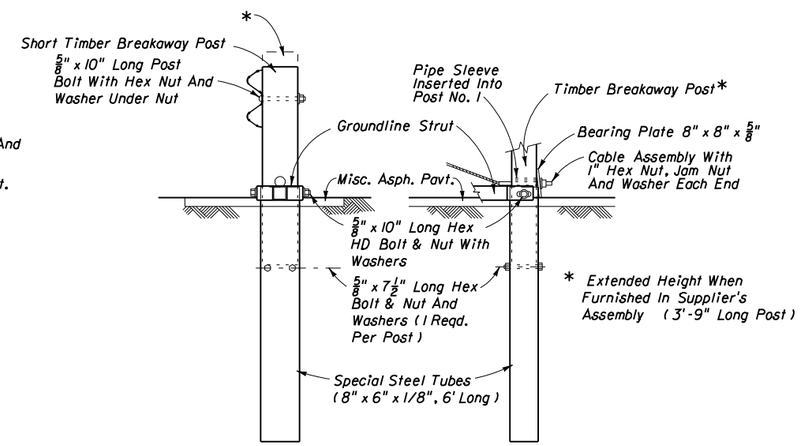
No Rail To Post Attachment At Post #3

ELEVATION



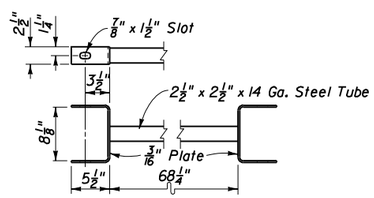
Note: Do not attach rail to block at post location 3.

SECTION BB
TYPICAL POST NOS. 3, 4, 5, 6 AND 7

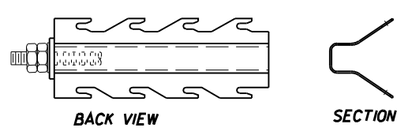


SECTION AA
POST NO. 2

PARTIAL VIEW
POST NO. 1



GROUNDLINE STRUT



BACK VIEW

SECTION

Cable Anchor Bracket Is Attached To W-Beam Panel By 8 Shoulder Bolts

CABLE ANCHOR BOX

'FLEAT-350' NOTES

1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Road Systems, Inc. and marketed under the trade name FLEAT-350. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the FLEAT-350 and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the FLEAT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The FLEAT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The FLEAT-350 is intended for use as an approach end guardrail anchorage for shoulder guardrail. The effective length of the FLEAT-350 is 37.5' including one 12.5' special W-Beam panel plus two 12.5' standard W-Beam panels outside of any other standard guardrail, guardrail transitions or other special treatments. The alignment of the FLEAT-350 is a straight flare with an upstream offset of 4' and a downstream offset of 0'-6 7/8" from the normal guardrail alignment.
5. The FLEAT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
6. Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6, and 7 shall be CRT timber posts.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'FLEAT-350' at a specific location, substitution with other end anchorage assemblies will not be permitted unless approved by the Engineer . If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The FLEAT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

DESIGN NOTES

1. The FLEAT-350 is suitable for all design speeds.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

END ANCHORAGE ASSEMBLY TYPE FLEAT-350

REVISED 11/27/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GUARDRAIL

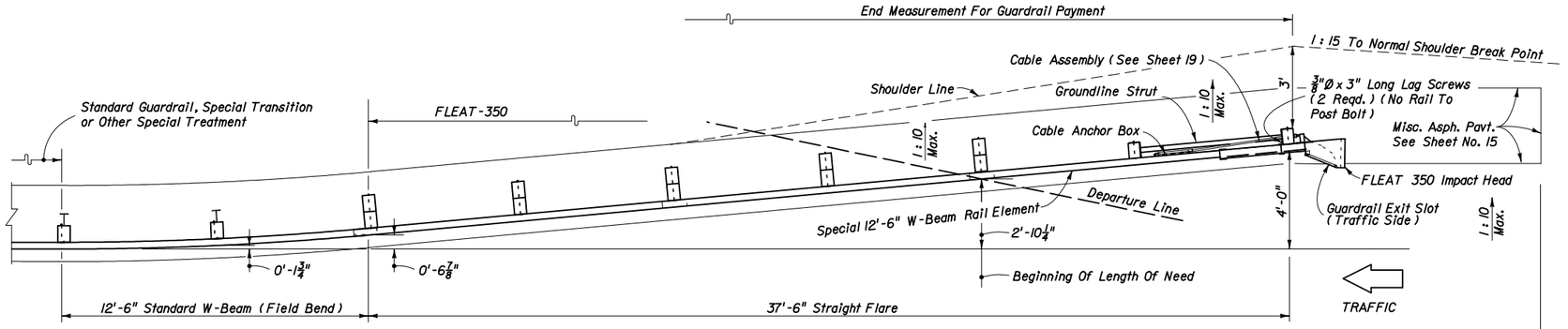
INTERIM STANDARD

APPROVED BY
Roadway Design Engineer

THIS SHEET IS A REPLACEMENT FOR SHEET NO. 30 OF 31 OF INDEX NO. 400 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

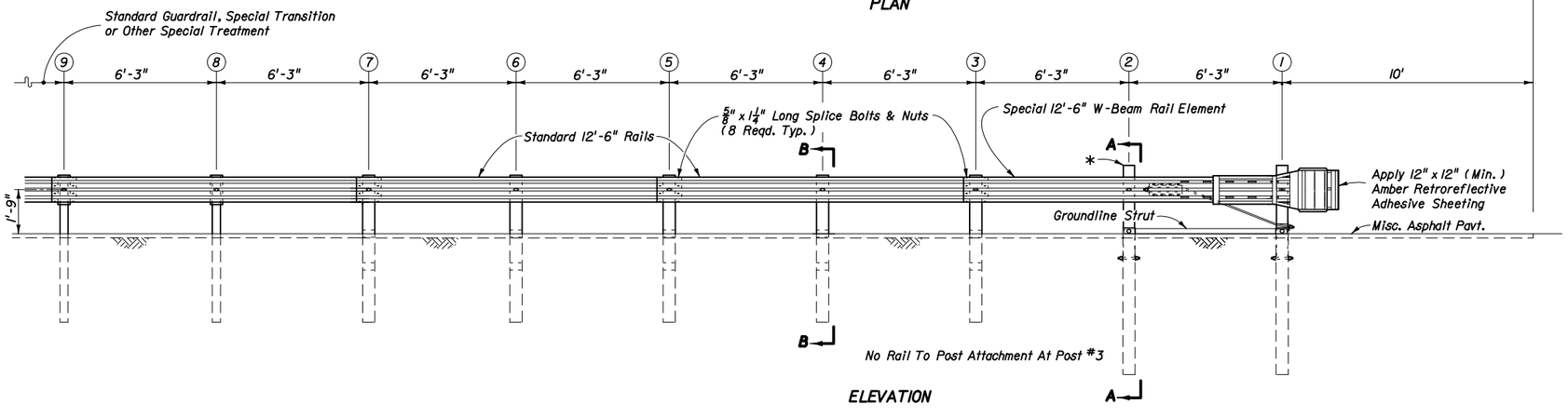
REVISION NO.	SHEET NO.	INDEX NO.
00	30 of 31	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



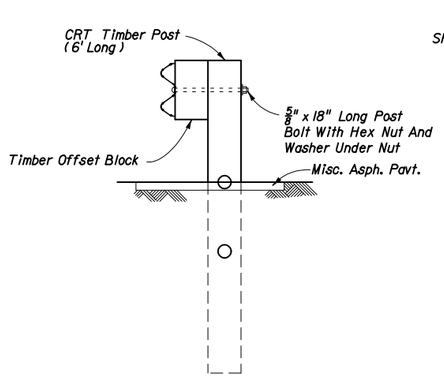
No Rail To Post Attachment At Post #3

PLAN



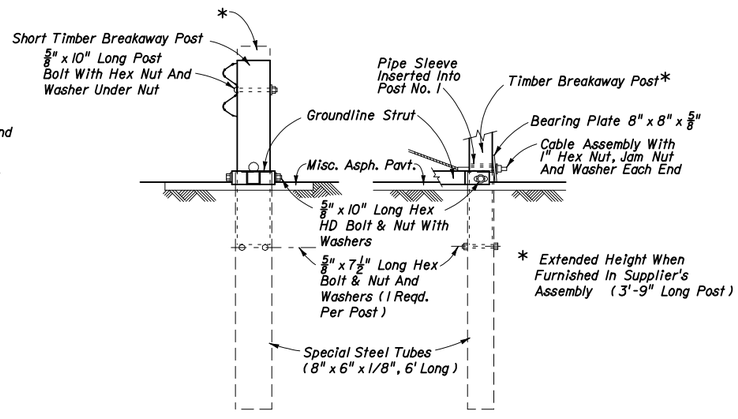
No Rail To Post Attachment At Post #3

ELEVATION



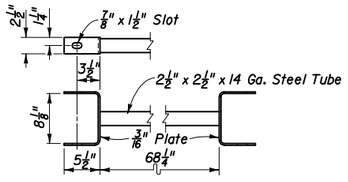
Note: Do not attach rail to block at post location 3.

SECTION BB
TYPICAL POST NOS. 3, 4, 5, 6 AND 7

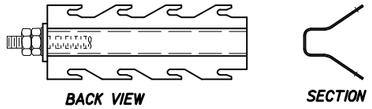


SECTION AA
POST NO. 2

PARTIAL VIEW
POST NO. 1



GROUNDLINE STRUT



Cable Anchor Bracket Is Attached To W-Beam Panel By 8 Shoulder Bolts

CABLE ANCHOR BOX

'FLEAT-350' NOTES

1. The guardrail end anchorage system represented on this standard drawing is a proprietary design by Road Systems, Inc. and marketed under the trade name FLEAT-350. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for the use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the FLEAT-350 and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the FLEAT-350 when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals. The FLEAT-350 shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The FLEAT-350 is intended for use as an approach end guardrail anchorage for shoulder guardrail. The effective length of the FLEAT-350 is 37.5' including one 12.5' special W-Beam panel plus two 12.5' standard W-Beam panels outside of any other standard guardrail, guardrail transitions or other special treatments. The alignment of the FLEAT-350 is a stright flare with an upstream offset of 4' and a downstream offset of 0'-6 7/8" from the normal guardrail alignment.
5. The FLEAT-350 can not be used in medians where horizontal clearance requires the use of a backrail.
6. Posts at location Nos. 1 and 2 must be timber breakaway posts with special length steel foundation tubes without soil plates. The posts at location Nos. 3, 4, 5, 6, and 7 shall be CRT timber posts.
7. See the General Notes for galvanizing requirements of metallic components.
8. If the plans call for the 'FLEAT-350' at a specific location, substitution with other end anchorage assemblies will not be permitted unless approved by the Engineer . If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The FLEAT-350 shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

DESIGN NOTES

1. The FLEAT-350 is suitable for all design speeds.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS

END ANCHORAGE ASSEMBLY TYPE FLEAT-350

Revised: 01-31-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

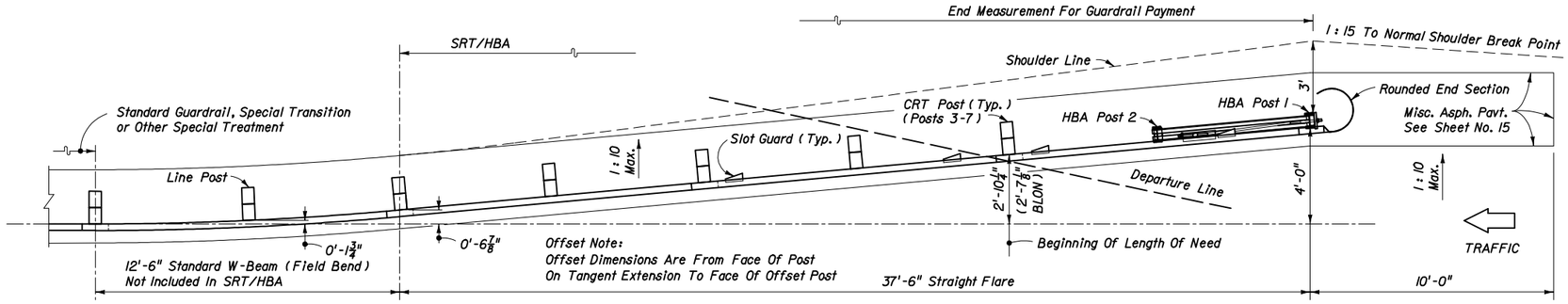
INTERIM STANDARD

THIS SHEET IS A SUPPLEMENT TO INDEX NO. 400 (SHEET 30 OF 31) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	30 of 31	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



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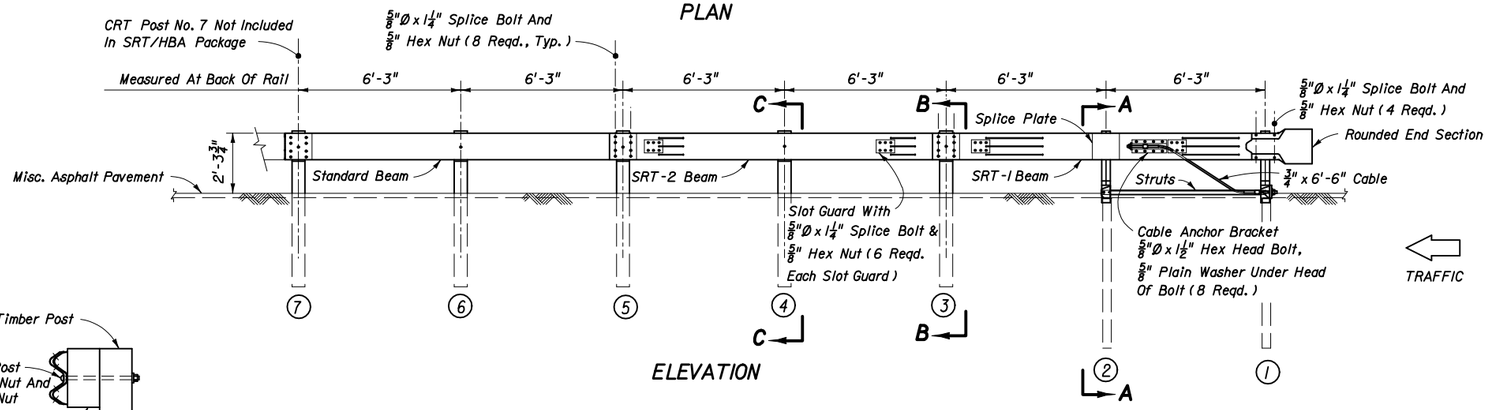
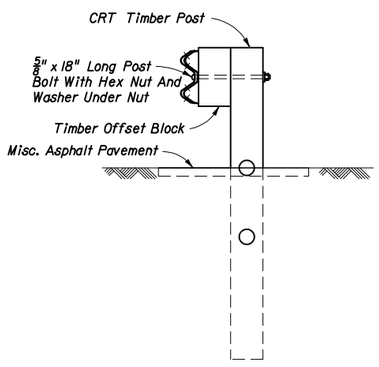
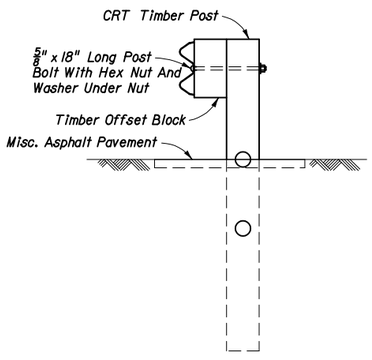


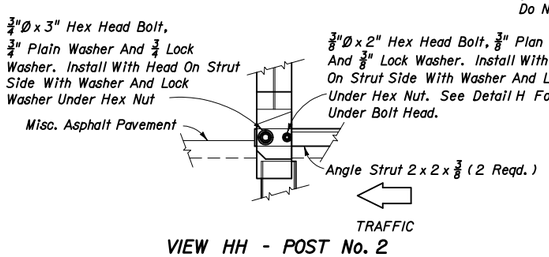
ELEVATION



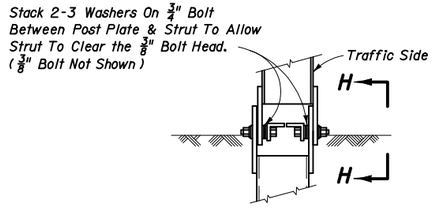
SECTION BB
POST Nos. 3 & 5



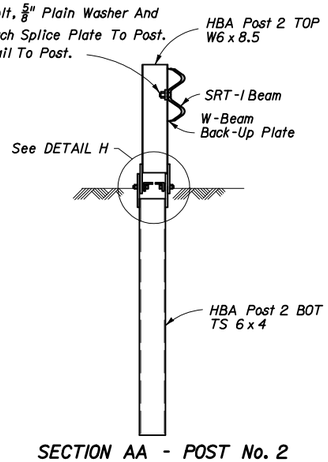
SECTION CC
POST Nos. 4 & 6



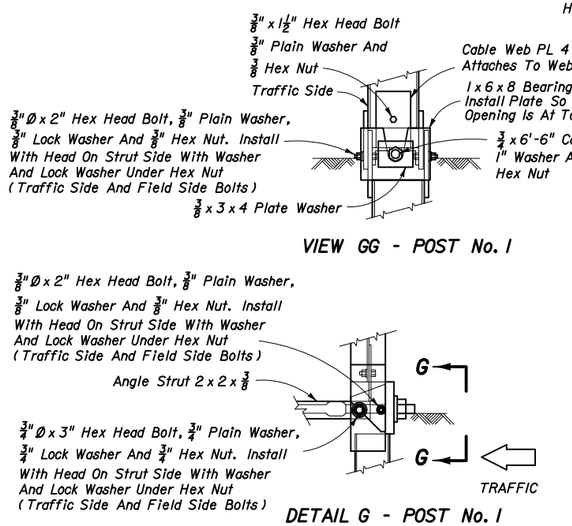
VIEW HH - POST No. 2



DETAIL H - POST No. 2

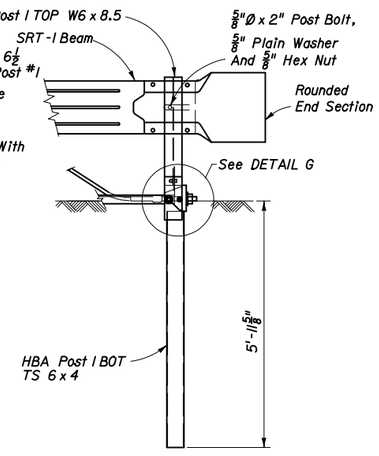


SECTION AA - POST No. 2



VIEW GG - POST No. 1

DETAIL G - POST No. 1



HBA POST 1

SRT/HBA 6 POST SYSTEM NOTES

1. The guardrail end anchorage system represented on this drawing is a proprietary six (6) post design by Trinity Industries, Inc. and marketed by Syro, Inc. under the trade name SRT/HBA 6 Post. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the SRT/HBA 6 Post and their incorporation into a whole system.
3. This drawing is sufficient for plan details for the SRT/HBA 6 Post when installed in connection with shoulder guardrail and precludes the requirement for shop drawing submittals unless called for elsewhere in the plans. The SRT/HBA 6 Post shall be assembled in accordance with the manufacturer's detailed drawings, procedures and specifications.
4. The SRT/HBA 6 Post can not be used in medians where horizontal clearance requires the use of a backrail.
5. The SRT/HBA 6 Post is suitable for all design speeds. The SRT/HBA 6 Post is intended for use as an approach end anchorage for shoulder guardrail. Its alignment is a straight flare from the normal guardrail alignment with an effective length of 37.5' including two special slotted W-Beam panels and one standard W-Beam panel outside of any standard guardrail, guardrail transitions or other special treatments.
6. Posts 1 and 2 must be hinged breakaway steel posts. CRT breakaway posts shall be used at all other locations within the system.
7. See the General Notes for galvanizing requirements of metallic component.
8. If the plans call for the SRT/HBA 6 Post at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'flared' at a specific location, the contractor has the option to construct any FDOT approved flared assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
9. The SRT/HBA 6 Post shall be paid for under the contract unit price for Guardrail End Anchorage Assembly (Flared), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications and this Index.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

SRT/HBA-6 POST SYSTEM

DATE: 03-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

GUARDRAIL

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO INDEX 400 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 1	0400

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

GENERAL NOTES

1. The 'Portable Temporary Low Profile Barrier For Roadside Safety' is a proprietary design by the University Of Florida. Any infringement on the rights of the designer shall be the sole responsibility of the user.

2. This standard drawing (Index No. 412) is provided by the Florida Department Of Transportation solely for use by the Department and its assignees. The purpose for this standard drawing is to indicate the approval of use of the barrier on the State Highway System; to provide sufficient pictorials for identifying the barrier unit; and, to provide general installation geometry for the barrier.

3. Only those barrier units cast by producers licensed by the University Of Florida will be allowed for installation on the State Highway System in Florida.

   Barrier wall units shall be produced in Department approved plants with quality control plans for precasting concrete barrier walls. Each barrier wall unit shall be permanently marked with an identification that is traceable to the manufacturer, the producing precast concrete plant and the date of production. This permanent identification mark will serve as certification that the unit has been manufactured in accordance with University of Florida drawings and specifications, and the approved quality control program.

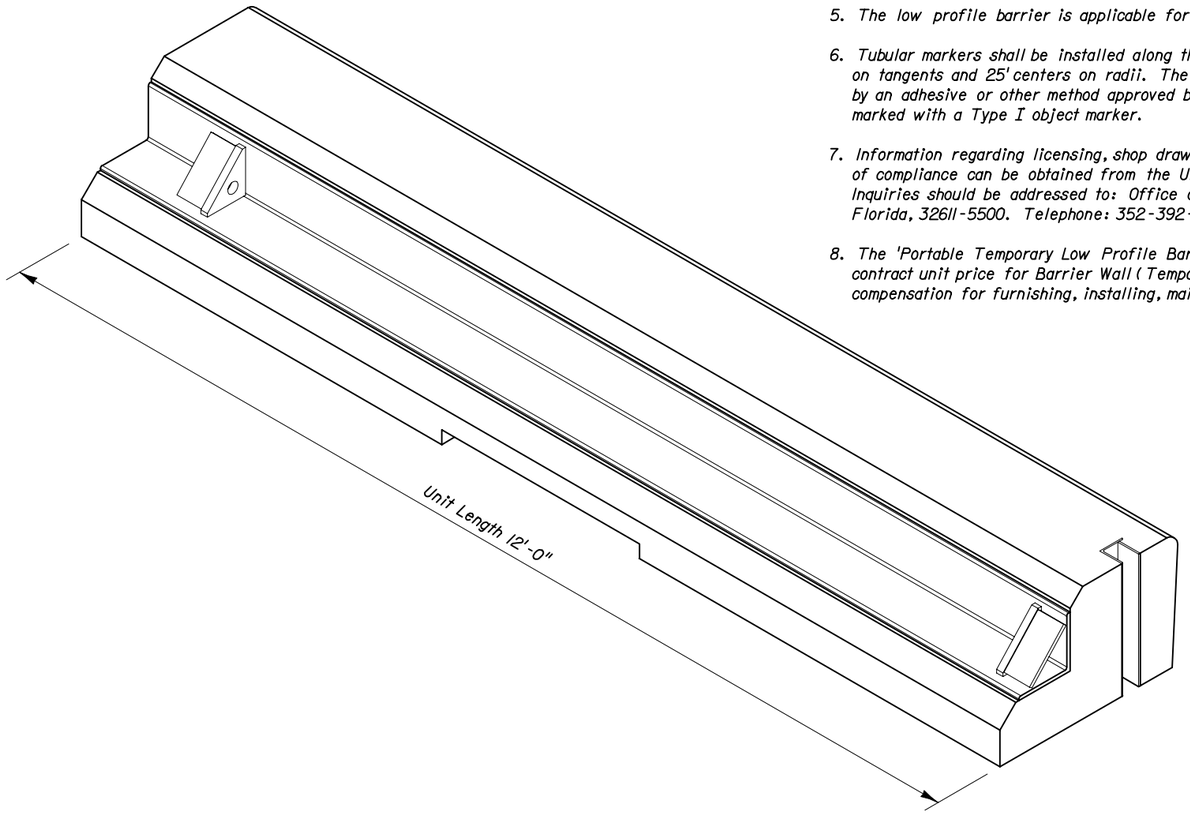
4. The low profile barrier is to be installed only with hardware and accessories furnished by the licensed barrier producer. Units shall be used for no purpose other than as interconnected segments in a run of barrier.

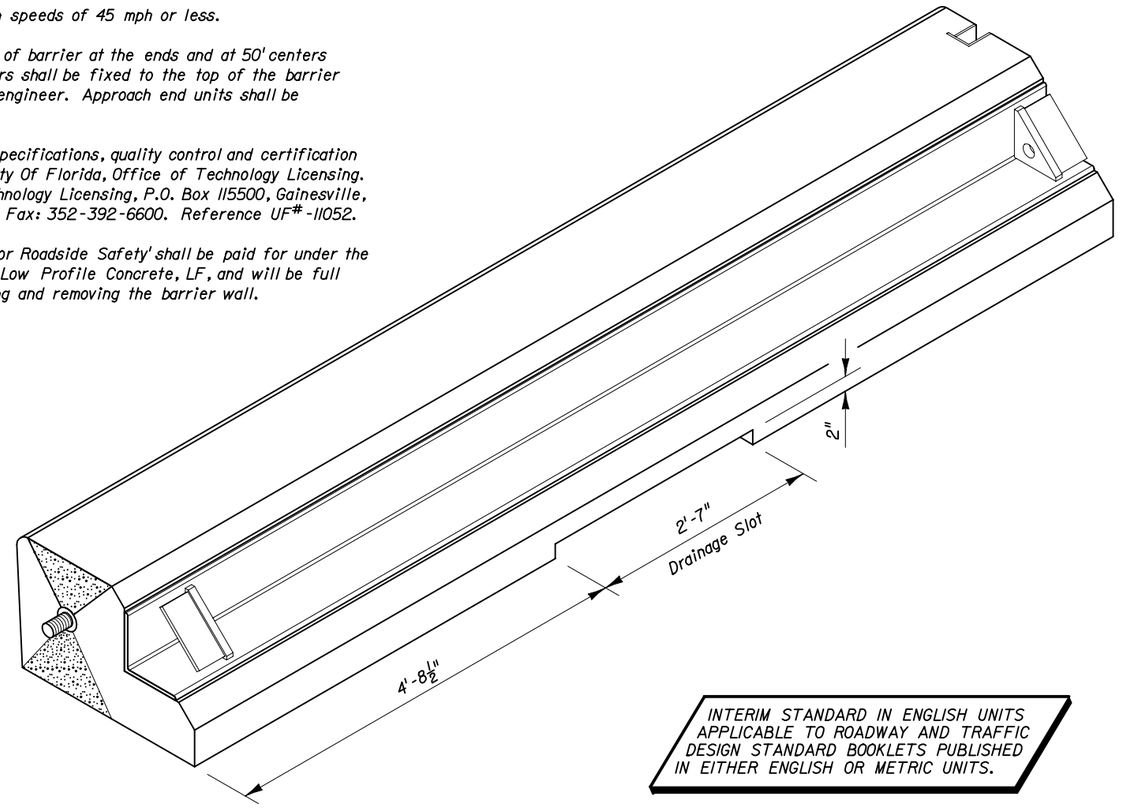
5. The low profile barrier is applicable for design speeds of 45 mph or less.

6. Tubular markers shall be installed along the run of barrier at the ends and at 50' centers on tangents and 25' centers on radii. The markers shall be fixed to the top of the barrier by an adhesive or other method approved by the engineer. Approach end units shall be marked with a Type I object marker.

7. Information regarding licensing, shop drawings, specifications, quality control and certification of compliance can be obtained from the University Of Florida, Office of Technology Licensing. Inquiries should be addressed to: Office of Technology Licensing, P.O. Box 115500, Gainesville, Florida, 32611-5500. Telephone: 352-392-8929, Fax: 352-392-6600. Reference UF#-11052.

8. The 'Portable Temporary Low Profile Barrier For Roadside Safety' shall be paid for under the contract unit price for Barrier Wall (Temporary) Low Profile Concrete, LF, and will be full compensation for furnishing, installing, maintaining and removing the barrier wall.





INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

BACKSIDE AND END PICTORIAL VIEWS

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

Revised: 09-29-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

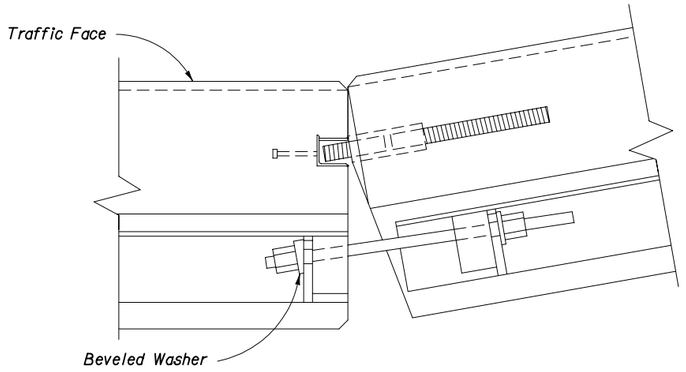
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

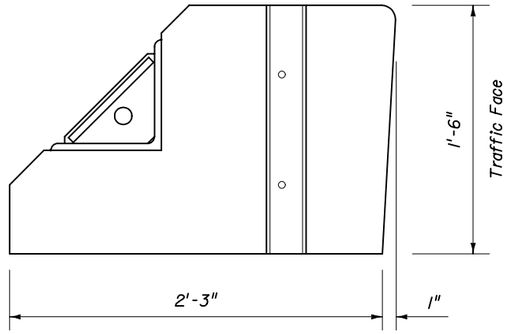
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	412

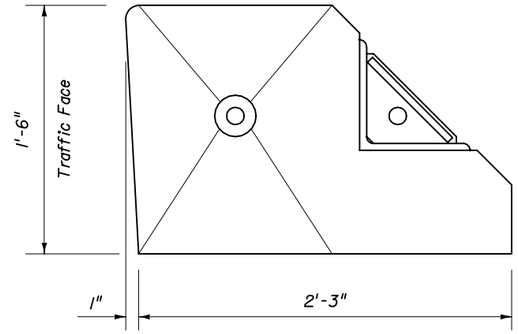
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



CONCAVE CONNECTION

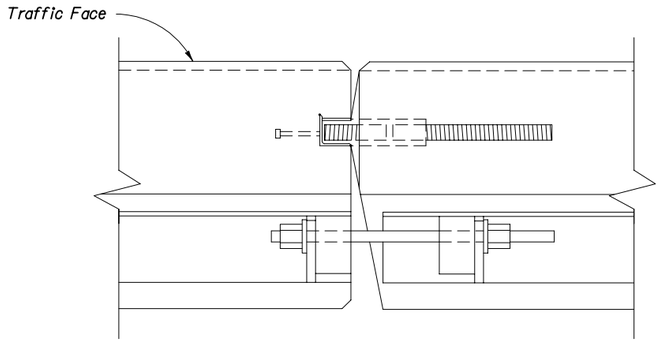


FLAT FACE FEMALE END

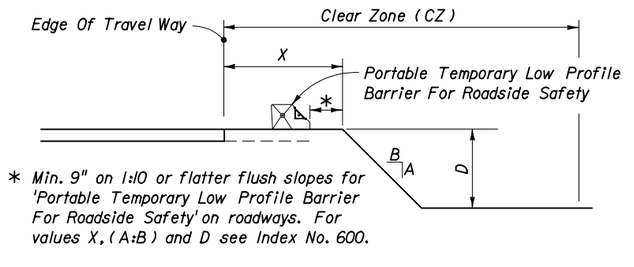


BEVELED FACE MALE END

END VIEWS

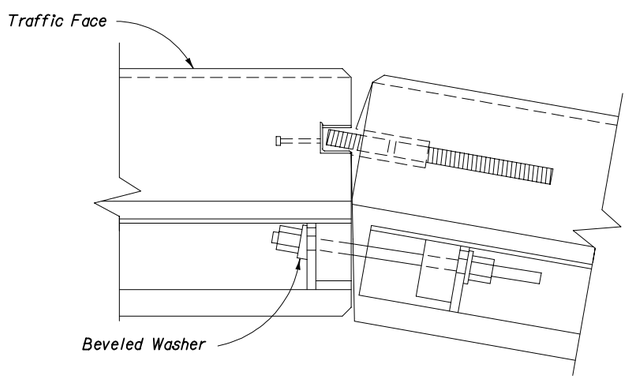


PARALLEL CONNECTION



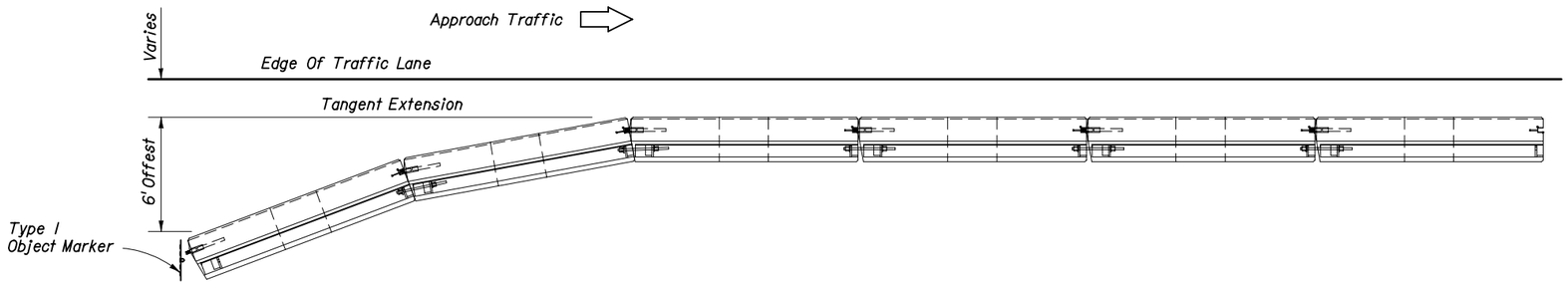
* Min. 9" on 1:10 or flatter flush slopes for 'Portable Temporary Low Profile Barrier For Roadside Safety' on roadways. For values X, (A:B) and D see Index No. 600.

DEFLECTION SPACE AT DROPOFFS



CONVEX CONNECTION

PLAN VIEWS OF CONNECTIONS



PLAN VIEW OF APPROACH END OFFSET

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

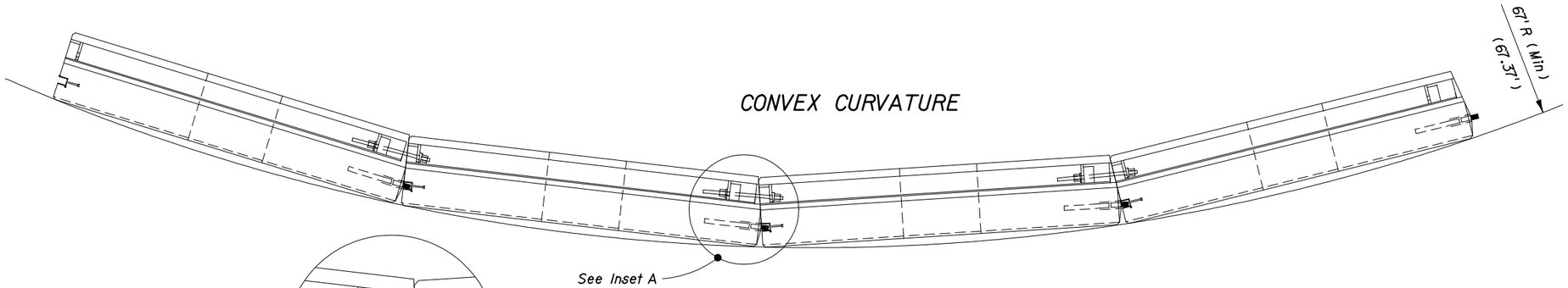
INTERIM STANDARD

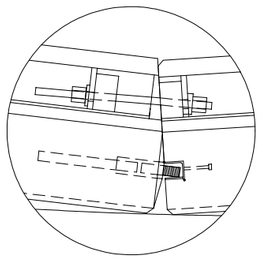
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

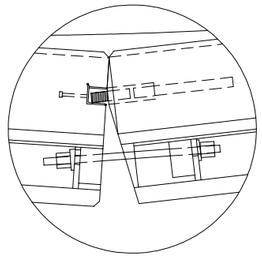
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	412

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





Inset A



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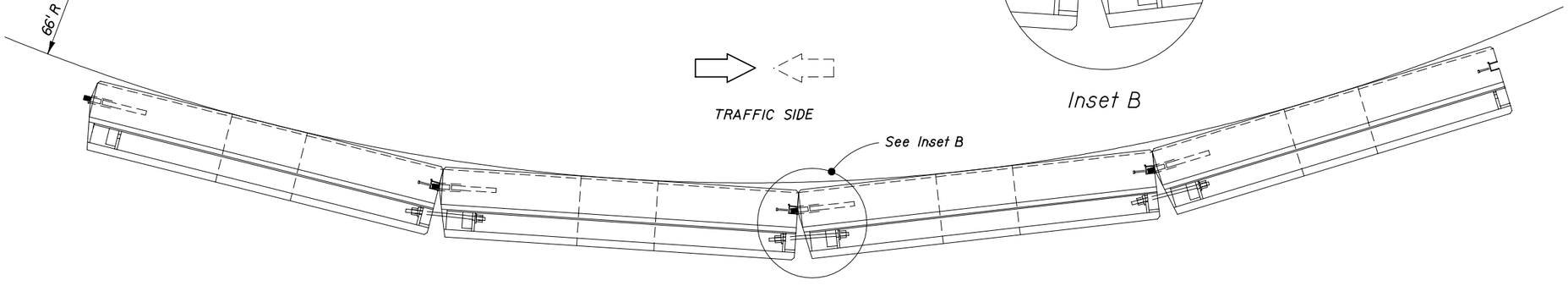


CONCAVE CURVATURE

MAXIMUM CURVATURE • MINIMUM RADIUS

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

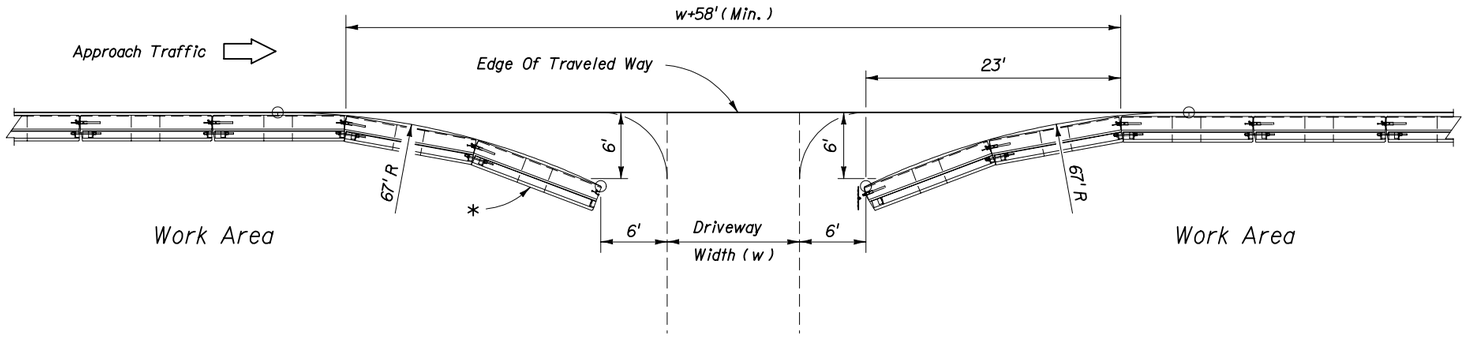
INTERIM STANDARD

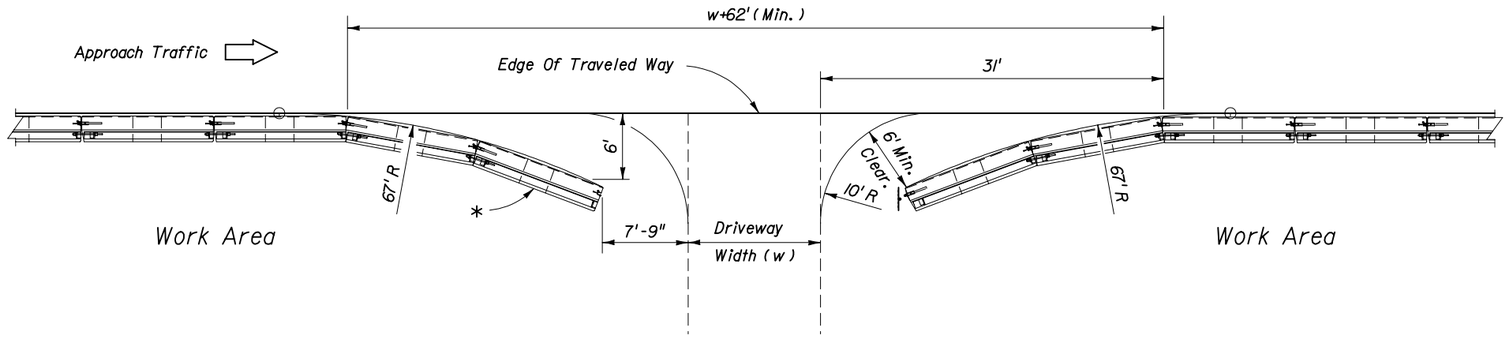
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

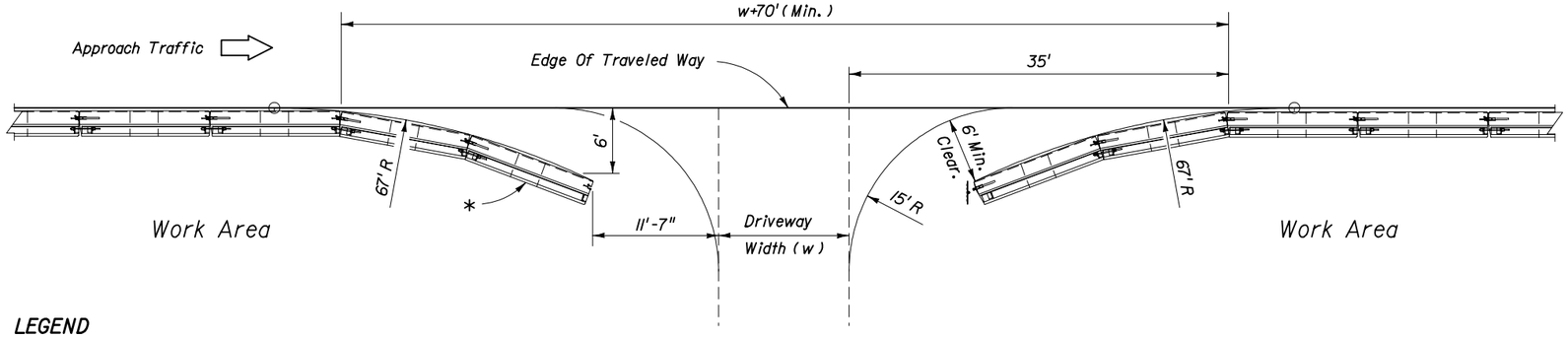
APPROVED BY James A. Mills
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 5	412

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.







LEGEND

Type I Object Marker

* Trailing End Flares Are Not Required When Barrier Located Outside The Clear Zone Of Opposing Traffic

Type I Object Marker To Be Installed When Trailing End Flare Falls Within The Clear Zone Of Opposing Traffic

BARRIER OPENINGS AT DRIVEWAYS

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

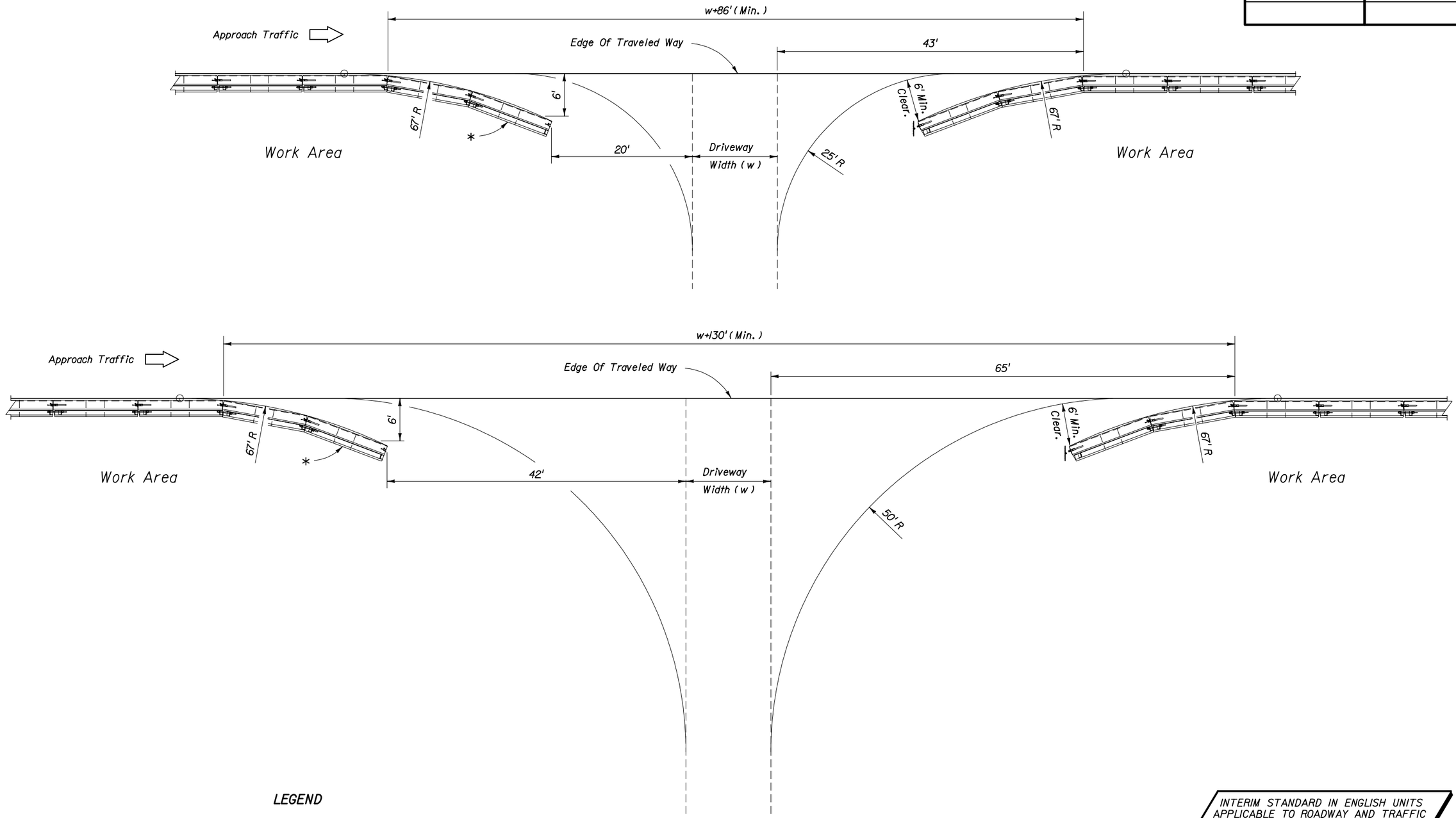
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 5	412

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



LEGEND

Type I Object Marker

* Trailing End Flares Are Not Required When Barrier Located Outside The Clear Zone Of Opposing Traffic

Type I Object Marker To Be Installed When Trailing End Flare Falls Within The Clear Zone Of Opposing Traffic

BARRIER OPENINGS AT DRIVEWAYS

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

Date: 08-21-03

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY

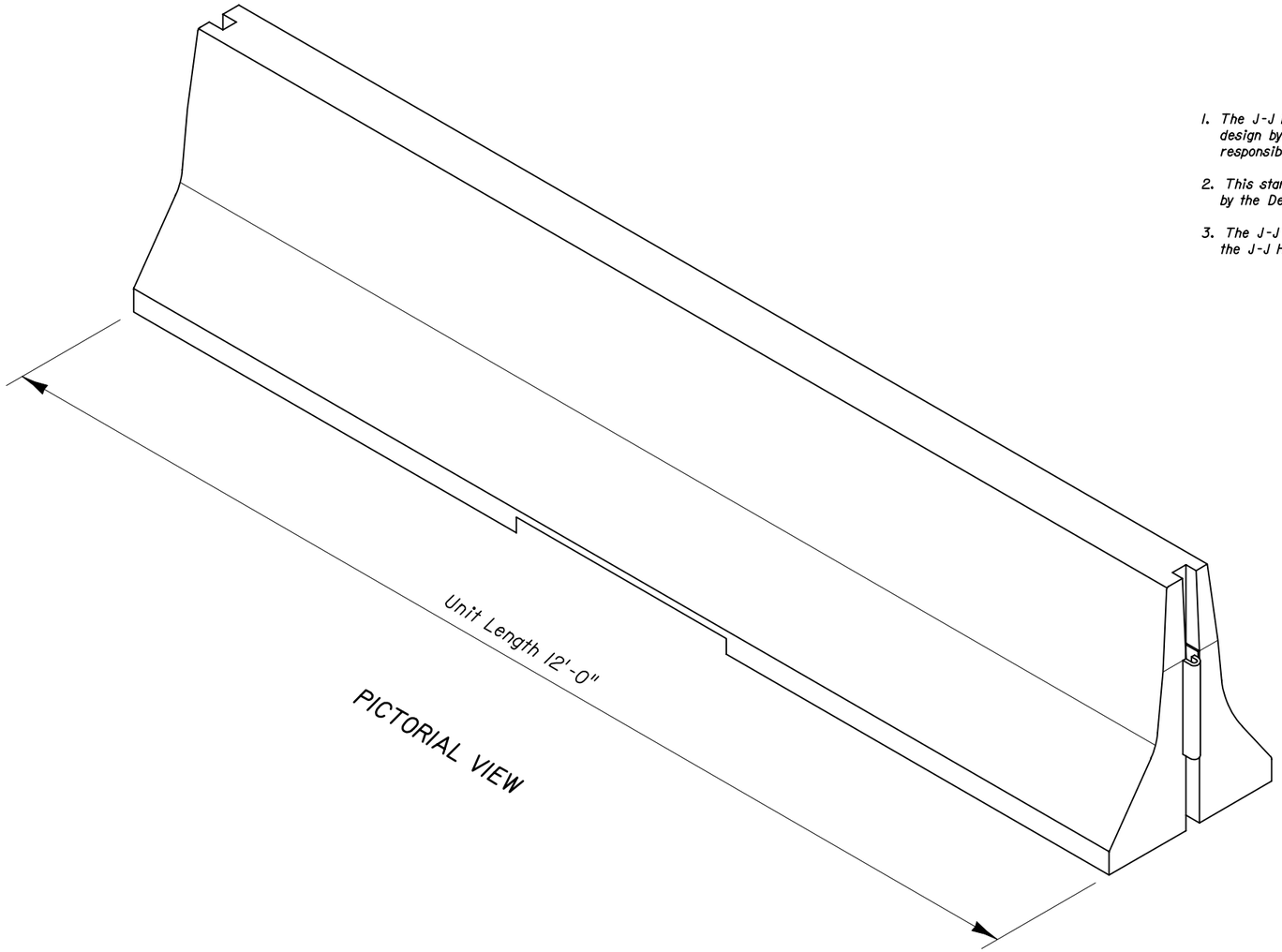
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

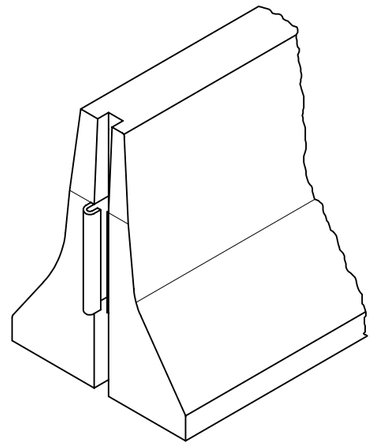
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 5	412

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

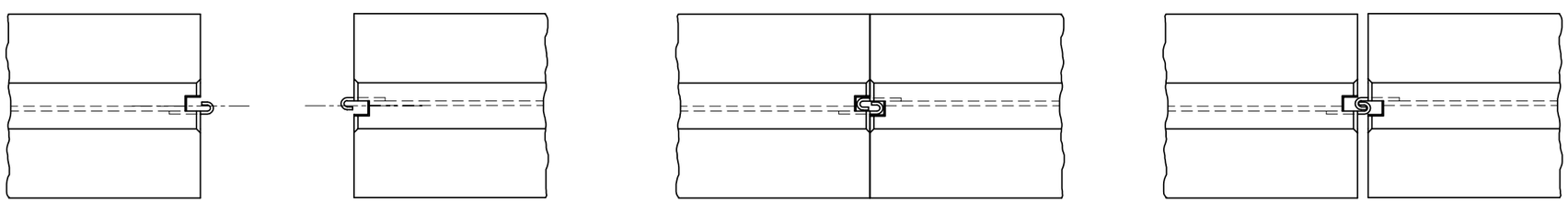


PICTORIAL VIEW



GENERAL NOTES

1. The J-J Hook temporary concrete barrier wall represented on this standard drawing is a proprietary design by Easi-Set Industries. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department of Transportation solely for the use by the Department and its assignees.
3. The J-J Hook barrier meets NCHRP 350 Test Level 3 criteria for longitudinal barrier. Use of the J-J Hook units shall be in accordance with the requirements of Interim Index No. 0415.



Separated | Closed | Maximum Opening

TOP VIEW

J-J HOOK CONNECTED TEMPORARY CONCRETE BARRIER WALL

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PROPRIETARY TEMPORARY CONCRETE BARRIER

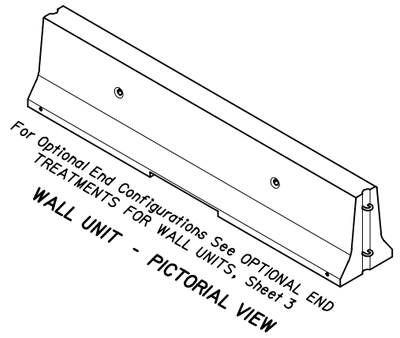
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

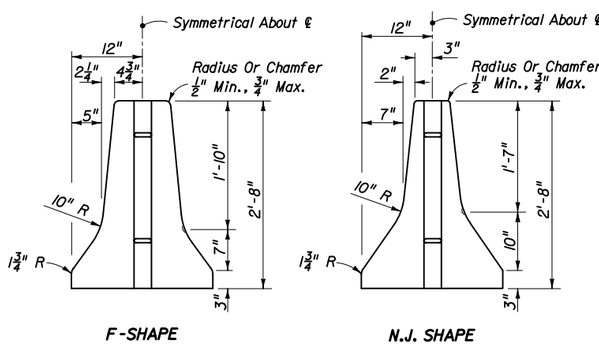
APPROVED BY Donald D. Mill
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	413

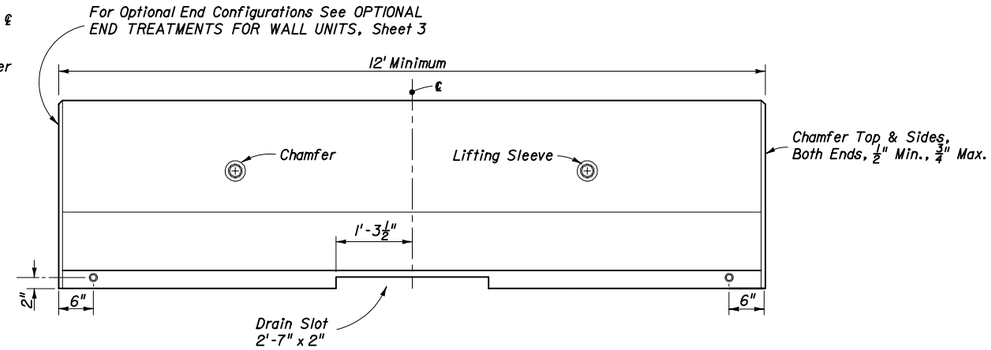
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



WALL UNIT - PICTORIAL VIEW



END VIEWS



SIDE VIEW

REINFORCEMENT AND OTHER UNIT FABRICATION DETAILS NOT SHOWN. SEE 'NOTICE' BELOW.

WALL UNIT

GENERAL NOTES

1. Temporary Concrete Barrier walls on roadways may be any of the following:

   a. The FDOT 415 Temporary Concrete Barrier wall unit shown on Sheets 1 and 3 of this index, if manufactured prior to October 1, 2002, in good condition, and installed in accordance with this index. Units may be either F-Shape or New Jersey Shape. The FDOT 415 unit shown in this index is the design provided in Index No. 415 in prior editions of the Design Standards. See "NOTICE" below. Since units produced after October 1, 2002 cannot be used, complete fabrication details are omitted in this edition of the Design Standards.

   b. The JJ Hook System (Index 413). Units may be either F-Shape or New Jersey Shape unless otherwise noted in the plans.

   c. The FDOT Type K Temporary Concrete Barrier Wall (Structures Design Standard Index 715). F-Shape Units only.

   d. Temporary concrete barrier wall systems meeting NCHRP 350 Test Level 3 criteria and included on the Qualified Products List.

   For temporary concrete barrier walls on bridges see Structures Design Standard Index No. 715.

2. The FDOT 415 units with the optional end connections shown in this index may be interconnected within a run of wall. However, intermixing units with different shapes (F-Shape, New Jersey Shape) and units with dissimilar end connections (415, JJ Hook, Type K, or other) within a continuous run of wall is not permitted. See Sheets 6 through 8 of 10 for required treatment for continuation of runs of barrier with different shapes or dissimilar connectors.

3. Alignment, length of need, anchorage and end treatment shall be in accordance with this index.

4. Wall units shall not be used for permanent barrier wall construction regardless of unit length, unless specifically permitted by the plans.

5. If the plans specify Barrier Wall (Temporary) (Type K), substitution with other barrier types is not permitted.

6. If the plans specify temporary concrete barrier wall, substitution with water filled barriers is not permitted.

7. Type C Steady-Burn Lights are to be mounted on top of temporary concrete barrier walls that are used as barriers along traveled ways in work zones. The lights are to be spaced at 50' centers in transitions, 100' centers on curves and 200' centers on tangent roadways. For additional information refer to Index 600.

8. Wall units used for work zone traffic control and other temporary applications shall be paid for under the contract unit price for Barrier Wall (Temporary), LF. Type C Steady-Burn Lights shall be paid for under the contract unit price for Lights, Temporary, Barrier Wall Mount (Type C, Steady-Burn), ED.

NOTICE

THE TEMPORARY CONCRETE BARRIER WALL UNIT SHOWN ON THIS INDEX THAT WAS PRODUCED PRIOR TO OCTOBER 1, 2002, AND THAT IS IN GOOD CONDITION, CAN BE USED ON STATE HIGHWAY PROJECTS THROUGH SEPTEMBER 30, 2012. TEMPORARY CONCRETE BARRIER UNITS PRODUCED ON AND AFTER OCTOBER 1, 2002 FOR USE ON STATE HIGHWAY PROJECTS MUST MEET NCHRP 350 CRITERIA, AND MUST BE INCLUDED ON THE QUALIFIED PRODUCTS LIST. IF AND WHEN A GENERIC TEMPORARY CONCRETE BARRIER WALL UNIT IS APPROVED FOR USE ON STATE HIGHWAY PROJECTS, THE UNIT DESIGN WILL BE POSTED ON THE ROADWAY DESIGN WEB SITE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

FDOT 415 TEMPORARY CONCRETE BARRIER WALL UNIT AND GENERAL NOTES

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

INTERIM STANDARD

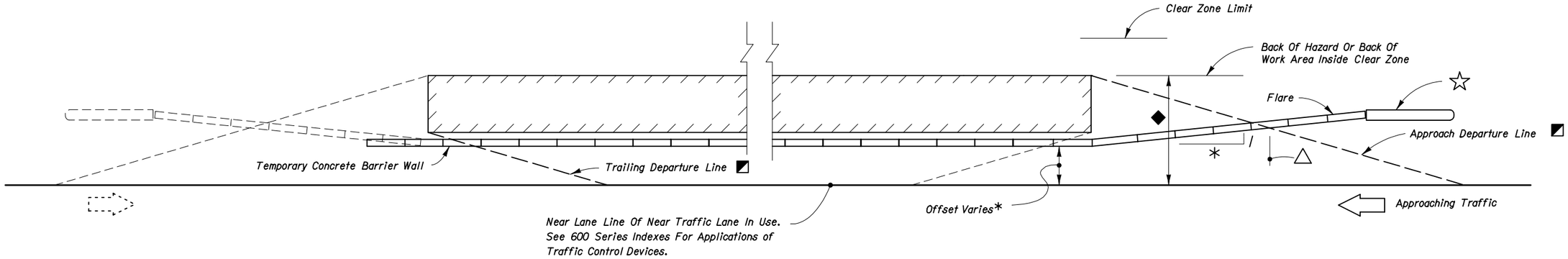
THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

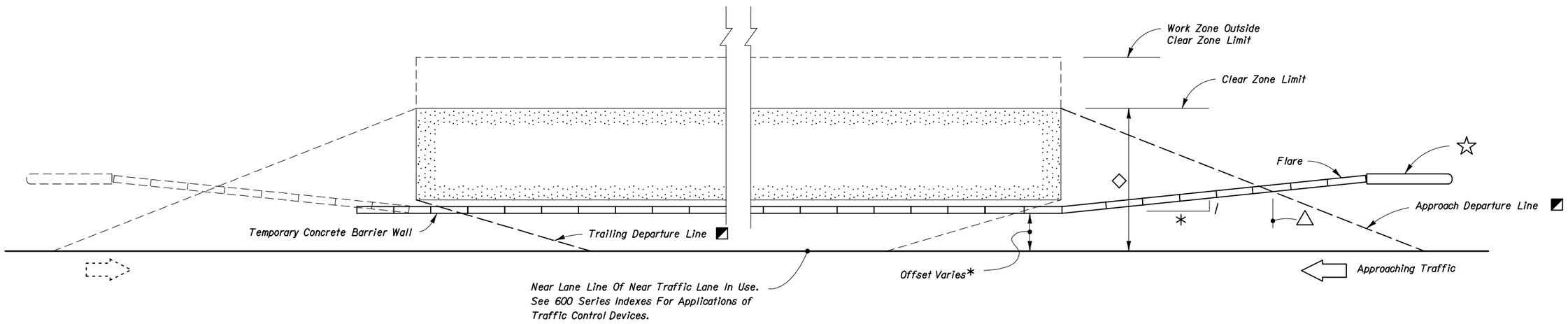
APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





△ The approach departure line location is determined by the line intersect with the back of the hazard or the area to be shielded, however the intersect offset distance is not to be beyond the clear zone limit. The trailing departure line is determined by the line intersect with the front of the downstream end of the hazard or the area to be shielded.

The length of barrier wall need is the distance from the approach departure line intersect with the upstream toe of the temporary concrete barrier wall to the trailing departure line intersect with the downstream toe of the temporary concrete barrier wall.

Where temporary concrete barrier wall end units are not anchored, two and one-half ($2\frac{1}{2}$) wall units (min.) are required beyond the length of barrier need for wall end anchorage. Temporary concrete barrier wall end units shall be located at or outside the clear zone or shielded by other structure, earth embeddment or a crash cushion.

Proprietary redirective crash cushions designed for use with temporary concrete barriers have the beginning length of need and departure line intersect point indicated on the Design Standard drawing for each proprietary crash cushion. Where redirective crash cushions are located on the departure line by their length of need reference point, the wall upstream end unit must be aligned with the crash cushion, and the wall's end unit secured with the anchor plates shown on Sheet 4 of this index. See Sheets 5 through 8 for configurations requiring end unit anchorage.

✳ The wall offset from the near traffic lane, wall flare rate and wall flare length are to be in conformance with the alignment called for in the plans and the alignments called for by Department Design Standards specified in the plans; in absence of either plan requirement, the offset shall be as determined by the Engineer, and, unless other flare rates are approved by the Engineer the flare rates to be applied are 1 : 10 or flatter for speeds ≤ 45 mph and 1 : 15 or flatter for speeds ≥ 50 mph; see Index No. 600 for other flare rates on expressway facilities.

◩ Departure Rates
1 : 16 For Speeds ≤ 45 mph
1 : 13 For Speeds ≥ 50 mph

◆ Area Shielded When Work Zone Hazards Or The Work Area Occupy Space Less Than Clear Zone Width

◇ Area Shielded When Work Zone Hazards Or The Work Area Extend To Or Beyond Clear Zone Limit

☆ Crash Cushion In Absence Of Other Wall End Shielding. See △ Notations And Sheet 5 Through 8 For Varied Locations For Wall End Units And Crash Cushions.

ALIGNMENT AND LENGTH OF NEED

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

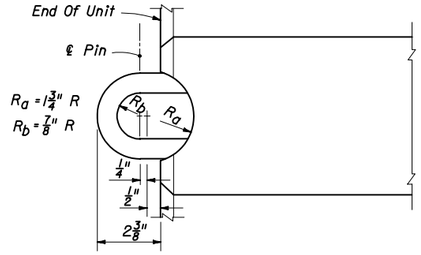
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

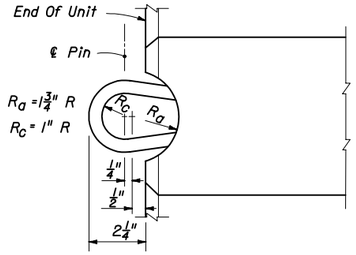
APPROVED BY James D. Mills
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 10	0415

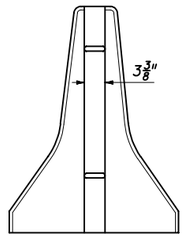
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



TOP VIEW



TOP VIEW



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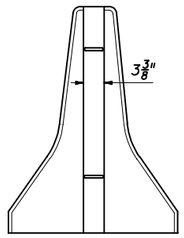

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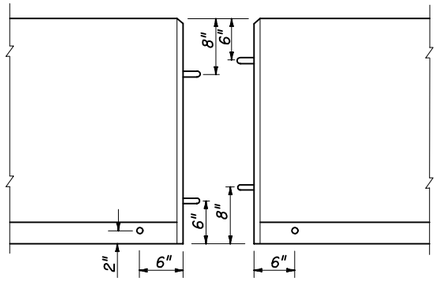
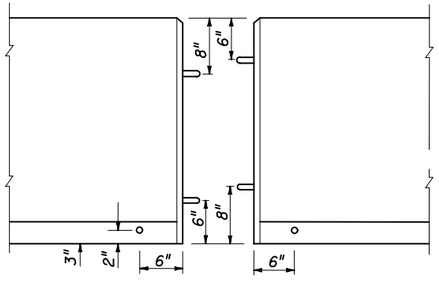
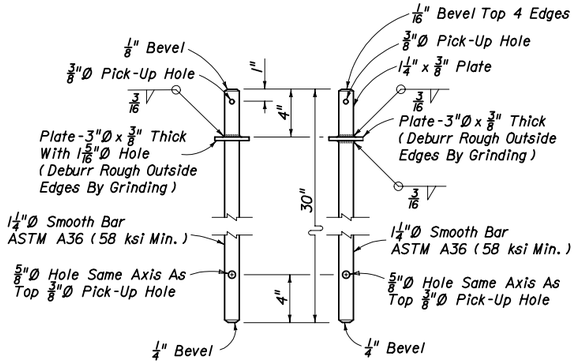


SIDE VIEW
ROUND BAR CONNECTOR



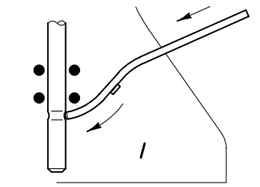
SIDE VIEW
WIRE ROPE CONNECTOR

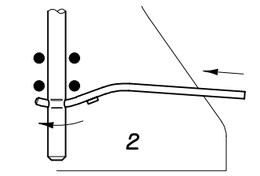
OPTIONAL END TREATMENTS FOR WALL UNITS

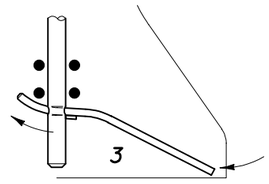


OPTIONAL PINS

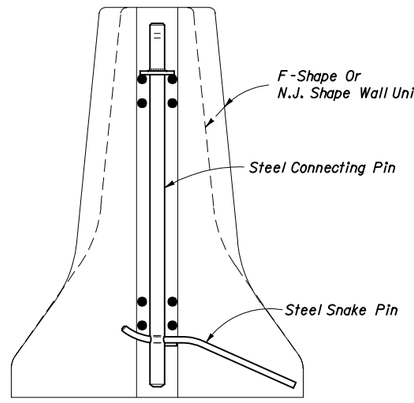
STEEL CONNECTING PIN







INSERTING FDOT SNAKE PIN



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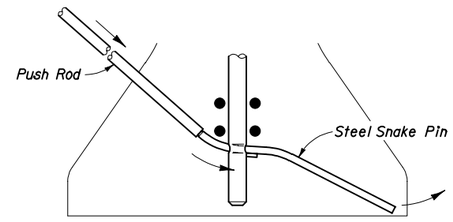
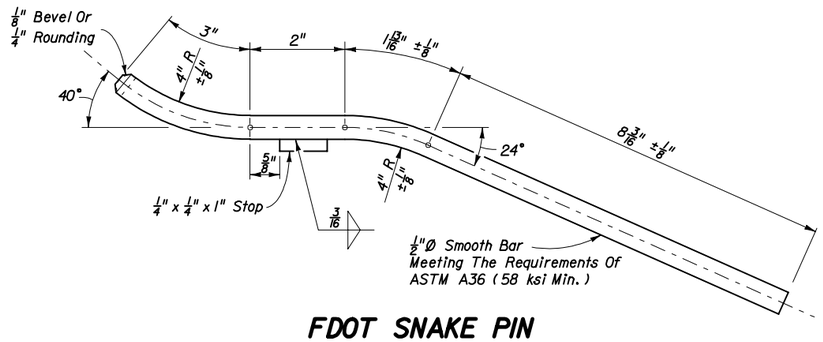


REMOVING FDOT SNAKE PIN

CONNECTING PIN ASSEMBLY



FDOT SNAKE PIN

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

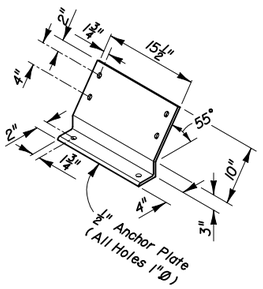
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

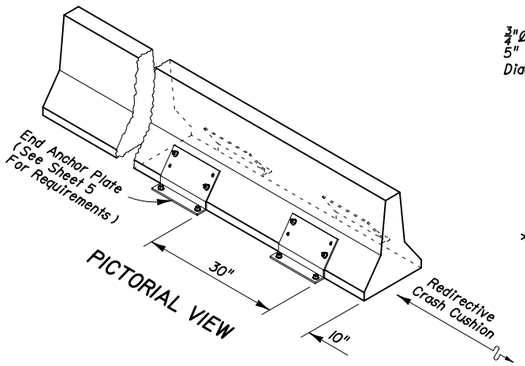
APPROVED BY Ronald D. Miller
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 10	0415

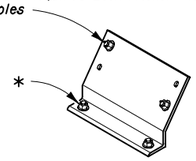
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ANCHOR PLATE

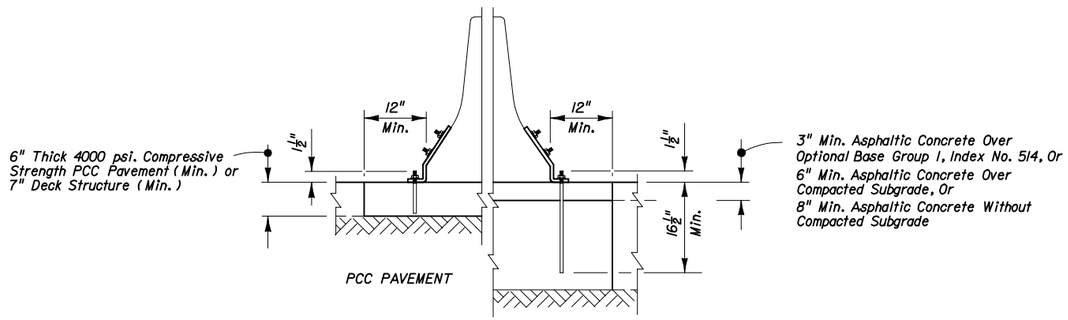


¾"Ø x 6½" Adhesive Bonded Anchor Bolts (EAS MP-3 Or Equal), 5" Embeddment, Two (2) Required Each Anchor Plate Installed In Diagonally Opposing Holes



* ¾"Ø x 6½" Adhesive Bonded Anchor Bolts (EAS MP-3 Or Equal), 5" Embedment Where Installed On Concrete Pavement Or Decking, Two (2) Required Each Anchor Plate. ¾"Ø x 18" MP-3 Threaded Rod Longbolt System Or Other Approved ¾"Ø x 18" Threaded Rod With Chemical Anchorage Full Embedment Depth Where Installed On Asphaltic Concrete Pavement Prescribed Below, Two (2) Required Each Anchor Plate.

ANCHOR PLATE BOLTS



SURFACE ANCHORAGE REQUIREMENTS

NOTES FOR WALL END SHIELDING

1. Redirective crash cushions are the principal (standard) device to be used for shielding approach ends of temporary concrete barrier walls. Except where the plans designate a particular type of redirective crash cushion for a specific location, the contractor has the option to construct either the REACT 350, QuadGuard, ADIEM 350, TRACC or TAU-II crash cushions subject to the uses and limitations described on Index Nos. 434, 435, 436, 440 and 441 respectively. The barrier wall end unit must be anchored to a paved surface using anchor plates in accordance with "Anchor Plate Notes" and the details on this sheet.

2. Temporary redirective crash cushions shall be installed in accordance with the manufacturer's specifications and recommendations. Temporary crash cushions can be either new or functionally sound used devices. Performance of intended function is the only condition for acceptance, whether the crash cushion is new, used, refurbished, purchased, leased, rented, on loan, shared between projects, or made up of mixed new and used components.

3. Inertial crash cushions are not optional systems for locations designated for redirective crash cushions by the plans; can not be substituted for redirective crash cushions, and are not eligible for VECP consideration.

4. A yellow post mounted Type I Object Marker shall be centered 3' in front of the nose of all temporary crash cushions. Mounting hardware shall be in accordance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the crash cushion.

5. Optional temporary redirective crash cushions are to be paid for per location under the contract unit price for Vehicular Impact Attenuator (Temporary) (Redirective Option), LO.

ANCHOR PLATE NOTES

1. For temporary barrier wall end units requiring anchor plates, see sheets 5 through 8.

2. The temporary concrete barrier wall anchor plate depicted above is a proprietary design by Energy Absorption Systems, Inc. Other temporary anchorage methods can be substituted when wall rigidity is assured by any of the following:
   (a) proven by associated crash test of redirective crash cushions, or
   (b) meet anchorage prescribed in 'A Guide To Standardized Highway Barrier Hardware', or
   (c) crash cushion manufacturer's engineered design, or
   (d) approved shop drawings on a case by case basis.

3. The cost for anchoring the wall segment will be included in the cost for the adjoining redirective crash cushion.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

ANCHOR PLATE REQUIREMENTS FOR BARRIER WALL END UNITS ABUTTING CRASH CUSHIONS

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

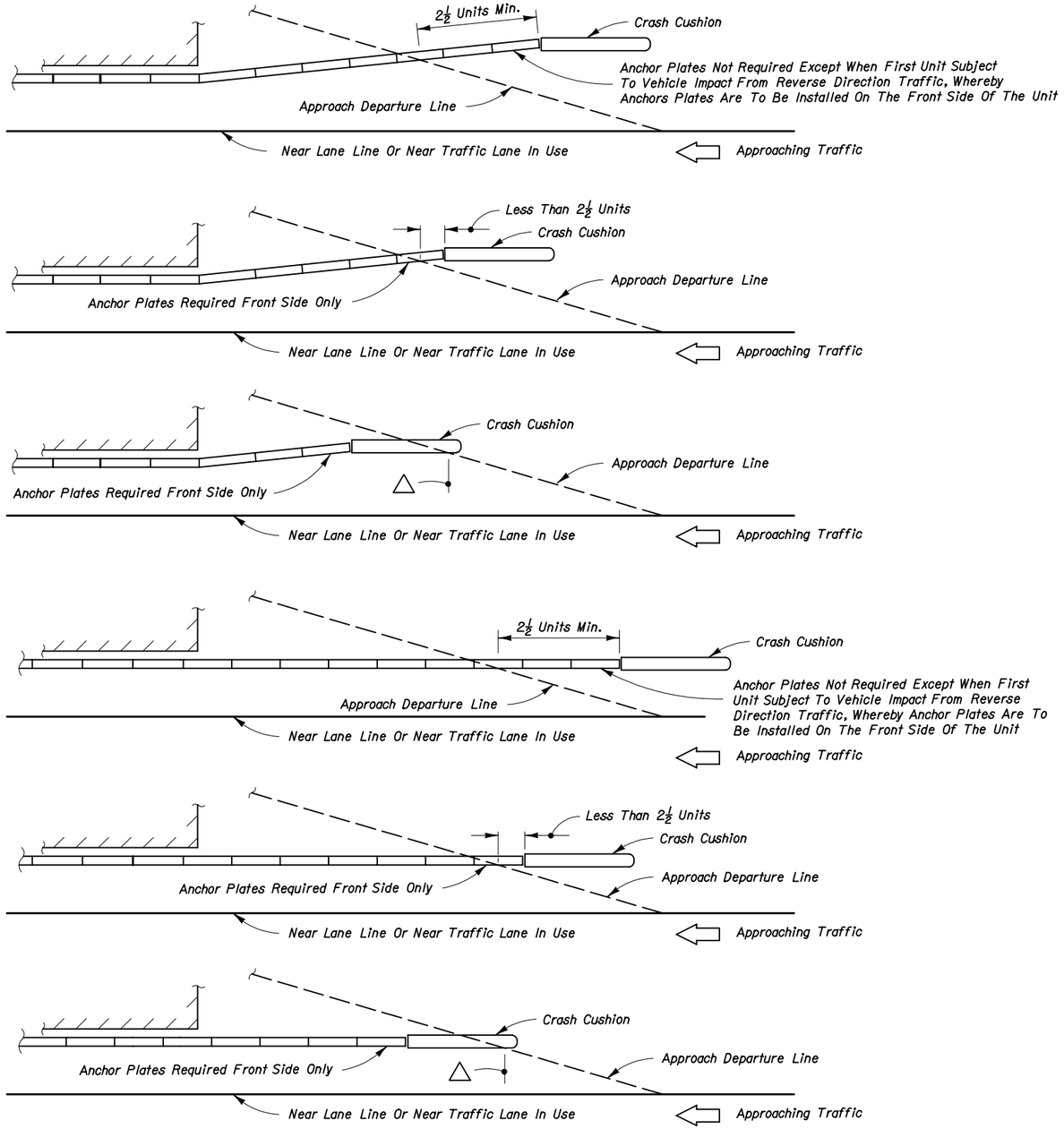
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

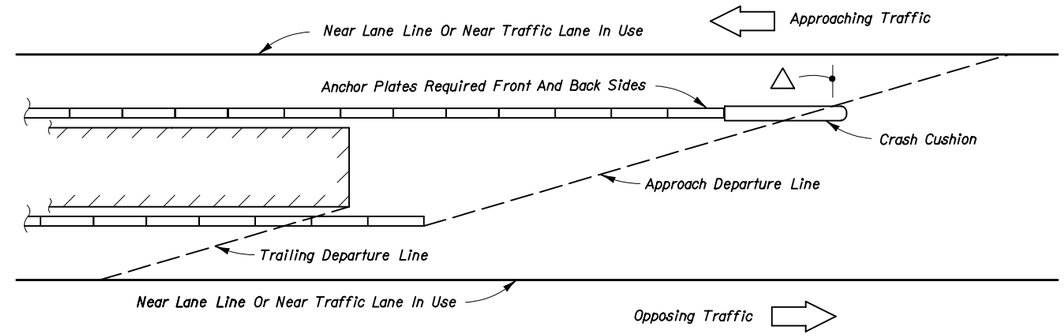
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



BARRIER WALL END UNIT ANCHORAGE



MEDIAN HAZARDS WITHIN CLEAR ZONES BOTH ROADWAYS

MEDIAN HAZARDS EXTENDS TO OR BEYOND CLEAR ZONES BOTH ROADWAYS

Note: Anchor Plates Required Only On End Units Abutting Crash Cushions.

△ See Sheet 2

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

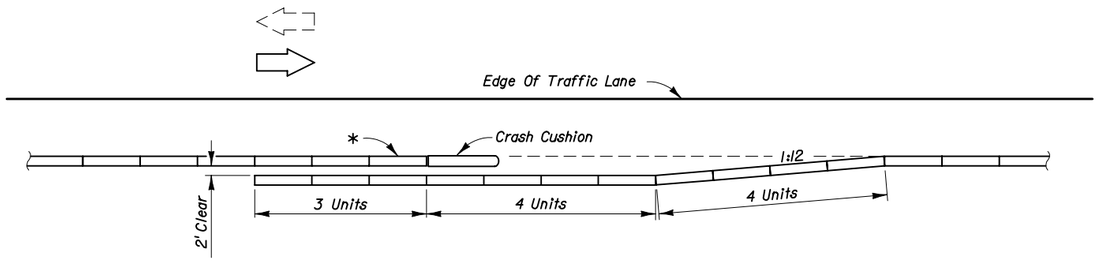
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

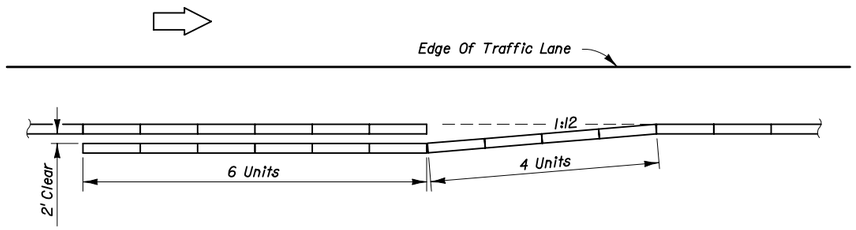
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



45 MPH OR LESS



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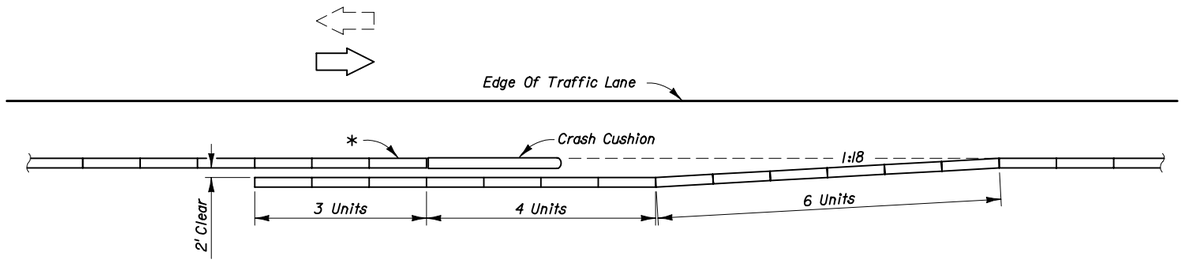
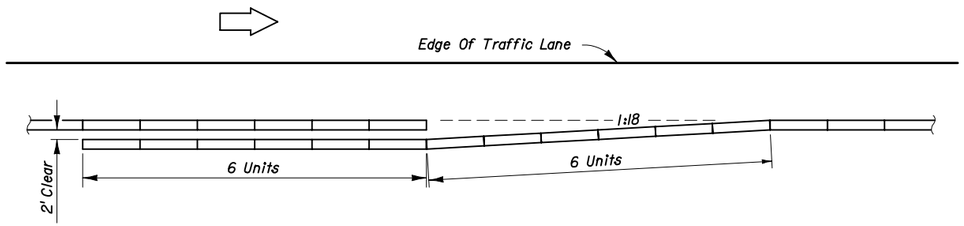


50 MPH OR GREATER

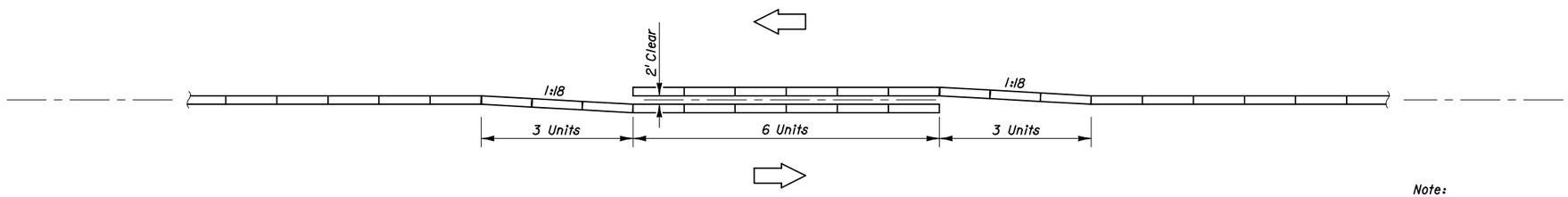
* Anchor Plates Required Front Side Only On Unit Abutting Crash Cushion (See Sheet 4).

SHOULDER BARRIER ON UNDIVIDED FACILITIES



50 MPH OR GREATER

SHOULDER BARRIER ON DIVIDED FACILITIES



INTERIOR MEDIAN BARRIER

Note:
Schemes On This Sheet Based On 12' Units.
See Sheet Nos. 7 & 8 For Bridge Applications With Barrier Type K.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

CONTINUATION OF RUNS OF BARRIER WITH DISSIMILAR CONNECTORS

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

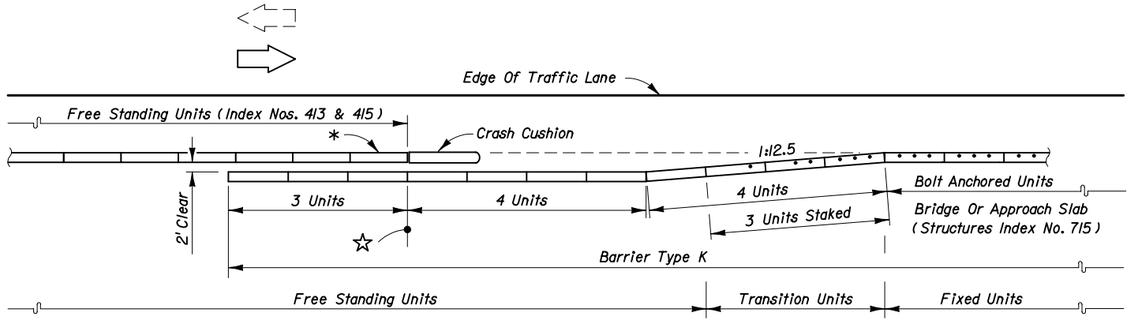
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



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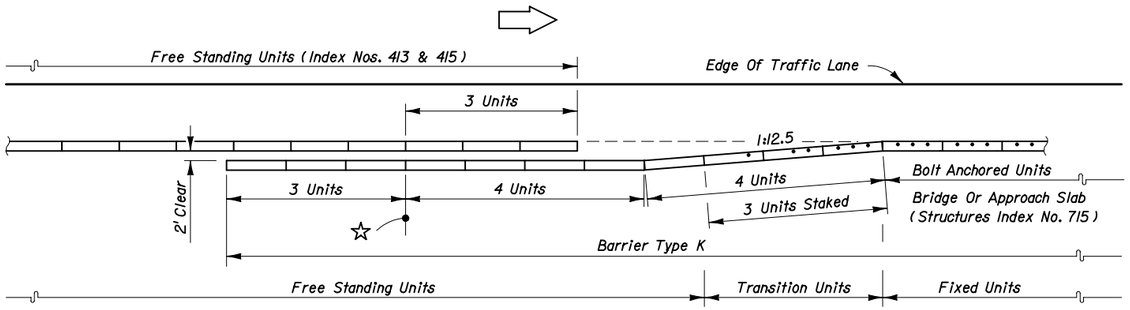
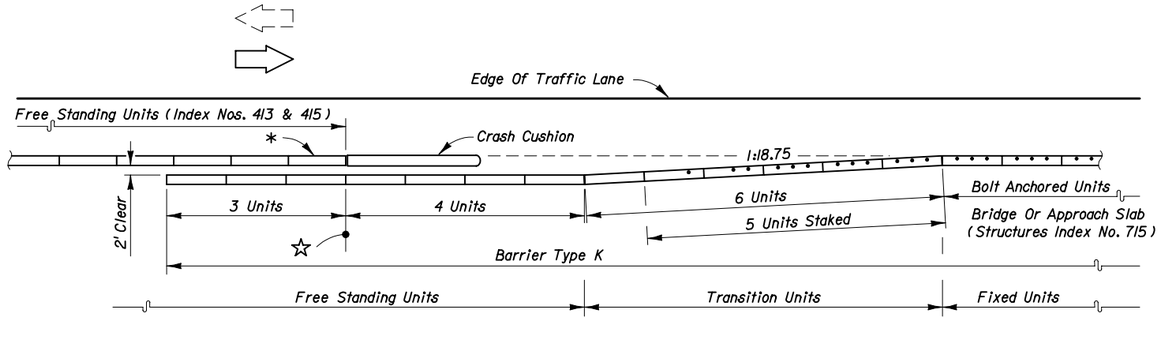


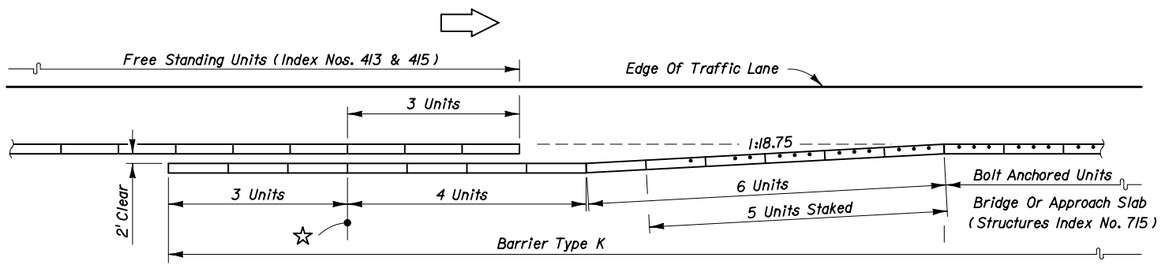
45 MPH OR LESS



50 MPH OR GREATER

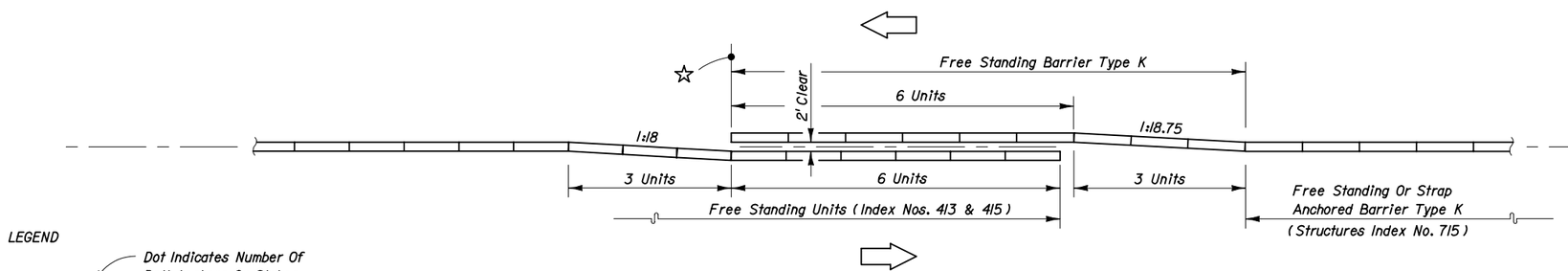
* Anchor Plates Required Front Side Only On Unit Abutting Crash Cushion (See Sheet 4).
☆ Overlap Reference Line

APPROACH SHOULDER BARRIER ON UNDIVIDED FACILITIES



50 MPH OR GREATER

APPROACH SHOULDER BARRIER ON DIVIDED FACILITIES



LEGEND

Dot Indicates Number Of Bolt Anchors Or Stakes

INTERIOR MEDIAN BARRIER

Note:
See Sheet No. 8 For Departure Shoulder Applications.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

CONTINUATION OF BARRIER • INDEX NOS. 413 & 415 BARRIERS TO BARRIER TYPE K

BARRIER TYPE K ON BRIDGES AND APPROACH SLABS

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

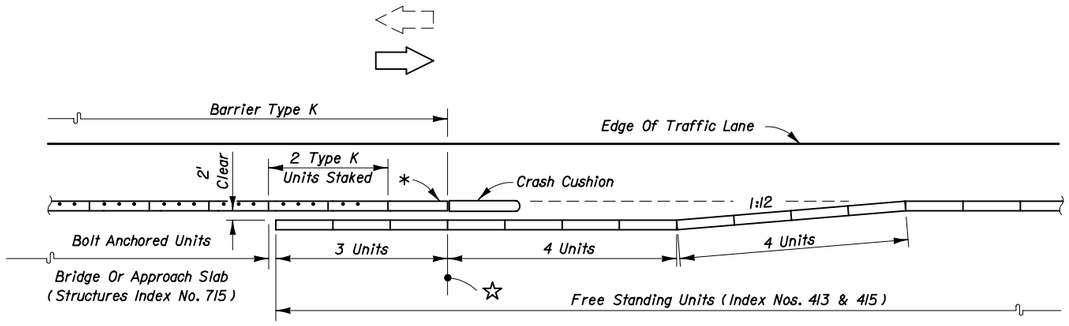
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

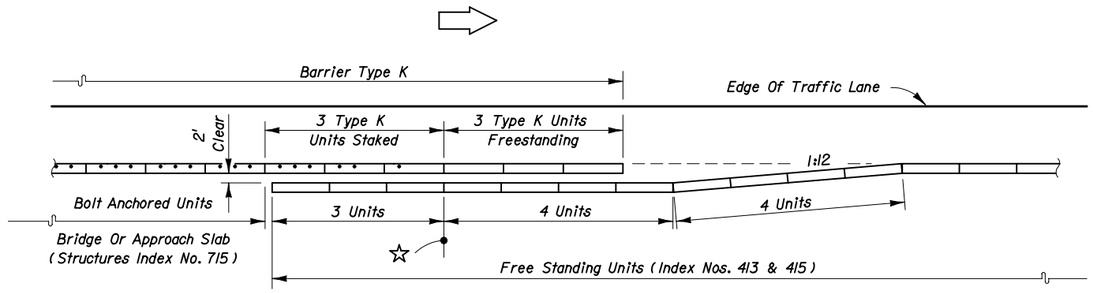
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 10	0415

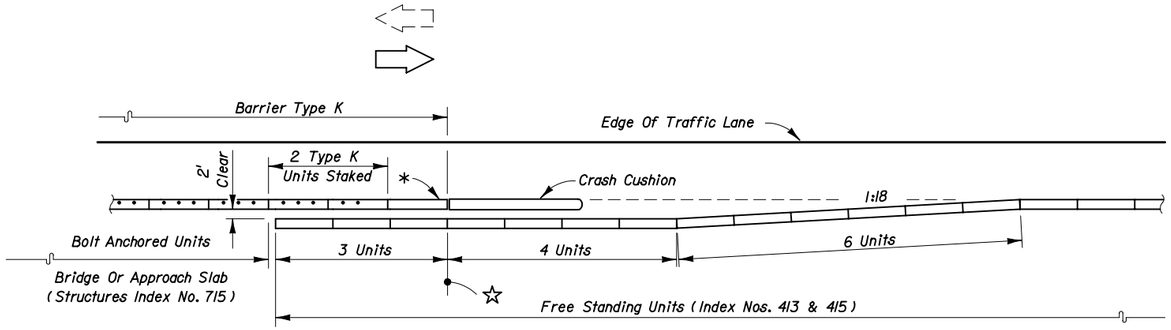
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



45 MPH OR LESS



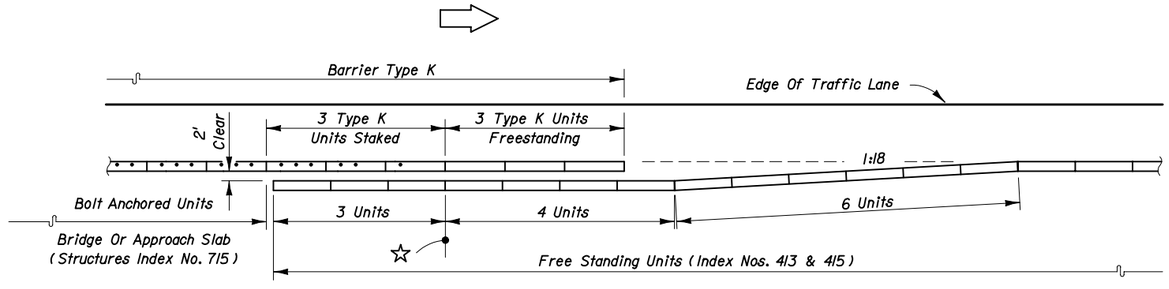
45 MPH OR LESS



50 MPH OR GREATER

* Anchor Plates Required Front Side Only On Unit Abutting Crash Cushion (See Sheet 4).
☆ Overlap Reference Line

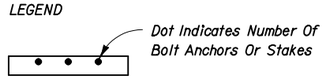
DEPARTURE (TRAILING) SHOULDER BARRIER ON UNDIVIDED FACILITIES



50 MPH OR GREATER

DEPARTURE (TRAILING) SHOULDER BARRIER ON DIVIDED FACILITIES

LEGEND



Note:
See Sheet No. 7 For Approach Shoulder Applications.
See Sheet No. 7 For Interior Median Applications.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

CONTINUATION OF BARRIER • FROM BARRIER TYPE K TO INDEX NOS. 413 & 415 BARRIERS

BARRIER TYPE K ON BRIDGES AND APPROACH SLABS

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

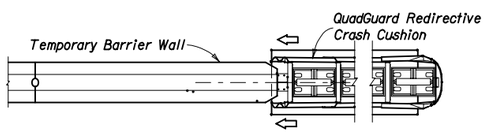
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

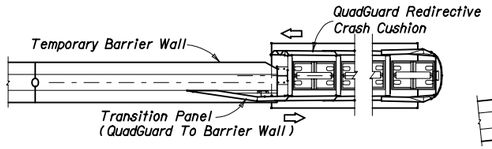
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	8 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



UNIDIRECTIONAL - SEPARATED TRAFFIC



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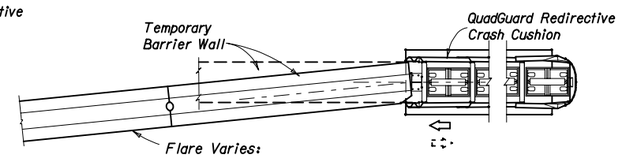
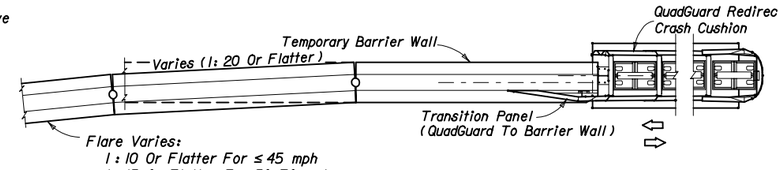


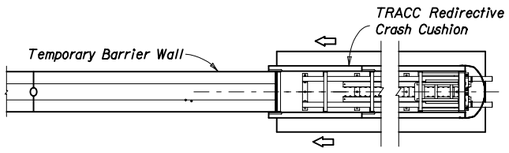
TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED OUTSIDE OPPOSING LANE CLEAR ZONE OR ONE-WAY TRAFFIC



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED WITHIN OPPOSING LANE CLEAR ZONE

SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

WALL END TREATMENT WHEN SHIELDED BY A QuadGuard CRASH CUSHION (INDEX NO. 435)



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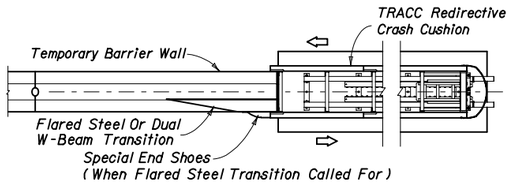
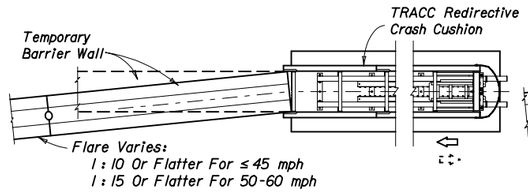
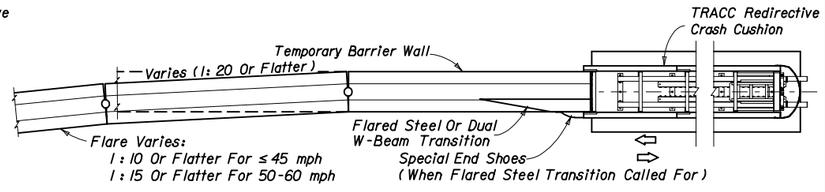


BIDIRECTIONAL - SEPARATED TRAFFIC



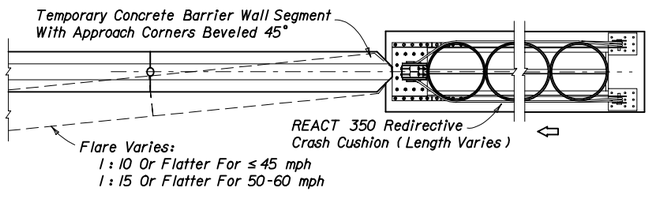
TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED OUTSIDE OPPOSING LANE CLEAR ZONE OR ONE-WAY TRAFFIC



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED WITHIN OPPOSING LANE CLEAR ZONE

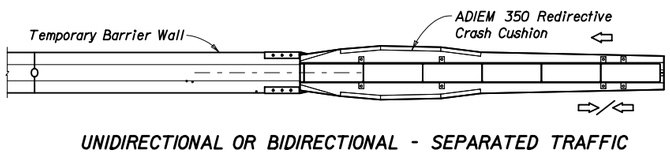
SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

WALL END TREATMENT WHEN SHIELDED BY A TRACC CRASH CUSHION (INDEX NO. 440)

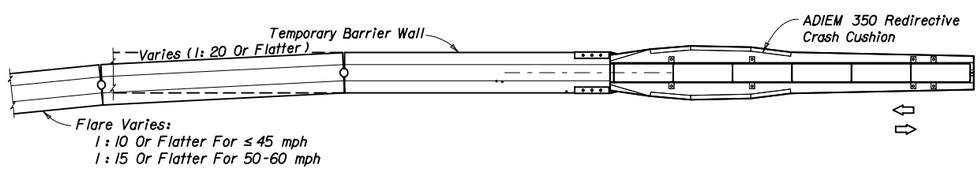


FOR ANY APPROACH CONDITION IN ACCORDANCE WITH INDEX NO. 434

WALL END TREATMENT WHEN SHIELDED BY A REACT 350 CRASH CUSHION (INDEX NO. 434)



UNIDIRECTIONAL OR BIDIRECTIONAL - SEPARATED TRAFFIC



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED OUTSIDE OF OR WITHIN OPPOSING LANE CLEAR ZONE

SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

END TREATMENT WHEN SHIELDED BY AN ADIEM 350 CRASH CUSHION (INDEX NO. 436)

NOTES

1. For alignment and length of need see Sheets 2 and 5 through 8.
2. Anchor plates required only on units abutting crash cushions.

SHIELDING WALL ENDS WITH REDIRECTIVE CRASH CUSHIONS (REDIRECTIVE OPTION)

(CONTINUATION ON SHEET 10)

Date: 08-21-03

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

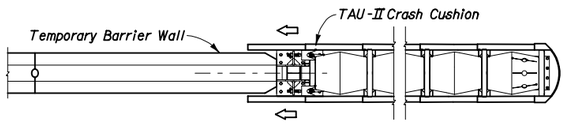
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

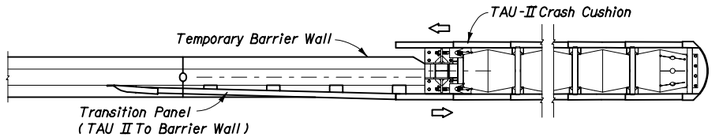
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	9 of 10	0415

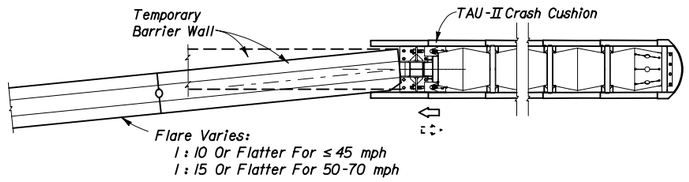
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



UNIDIRECTIONAL - SEPARATED TRAFFIC

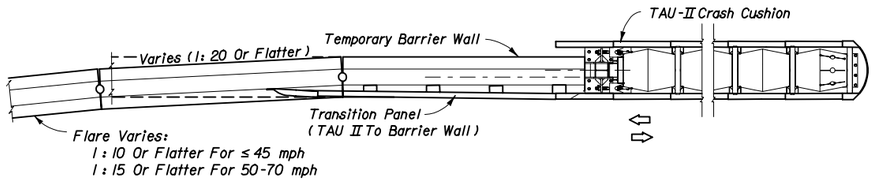


BIDIRECTIONAL - SEPARATED TRAFFIC



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED OUTSIDE OPPOSING LANE CLEAR ZONE OR ONE-WAY TRAFFIC

SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)



TWO-WAY TRAFFIC WITH CRASH CUSHION LOCATED WITHIN OPPOSING LANE CLEAR ZONE

SHOULDER - RIGHT OR LEFT (RIGHT SIDE SHOWN)

WALL END TREATMENT WHEN SHIELDED BY TAU II CRASH CUSHION (INDEX NO. 441)

NOTES

1. For alignment and length of need see Sheets 2 and 5 through 8.
2. Anchor plates required only on units abutting crash cushions.

SHIELDING WALL ENDS WITH REDIRECTIVE CRASH CUSHIONS (REDIRECTIVE OPTION)

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 08-21-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER

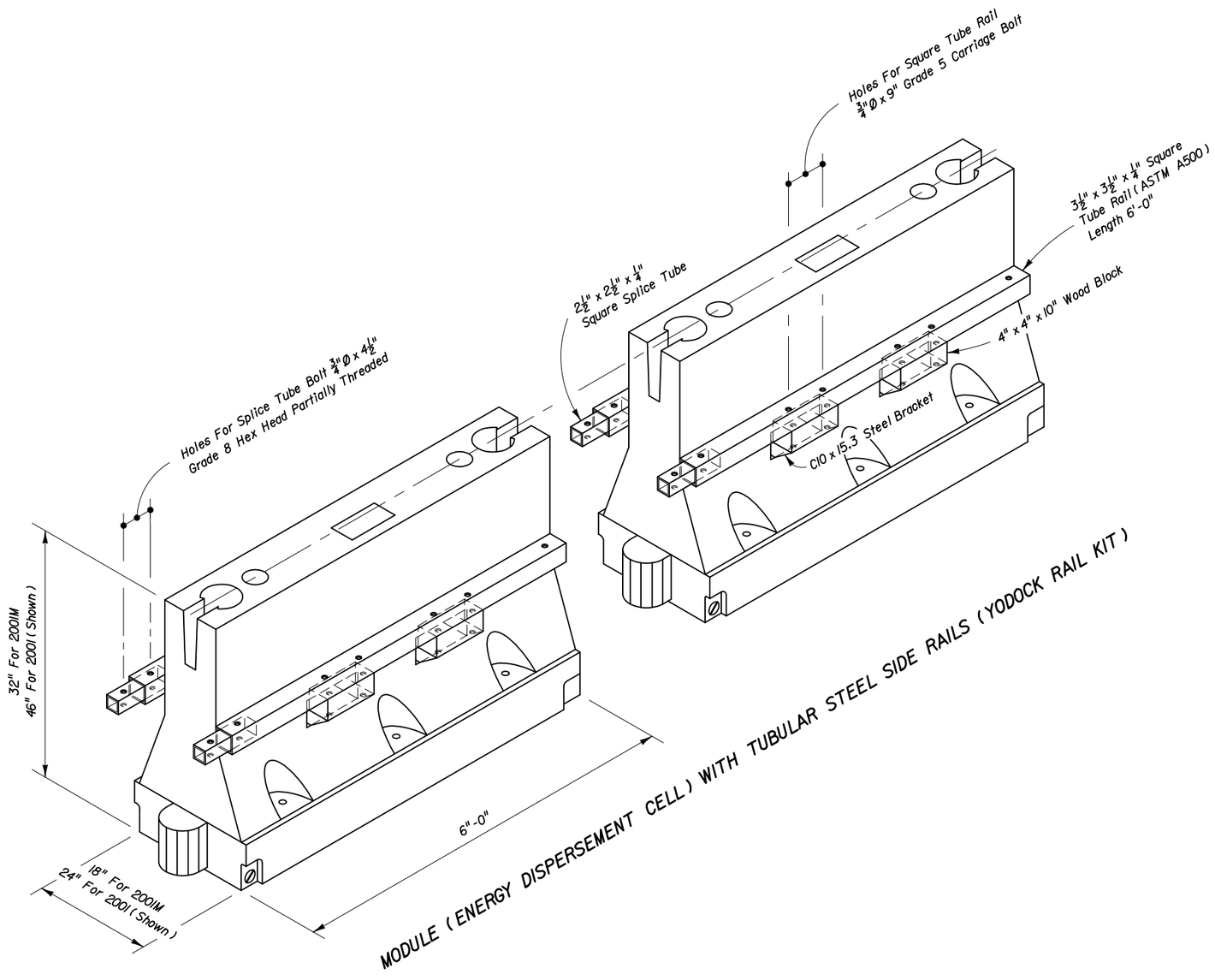
INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 415 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	10 of 10	0415

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



GENERAL NOTES FOR THE YODOCK BARRIER

1. The longitudinal traffic barrier systems presented on this standard drawing (index) and the label YODOCK are proprietary designs by THE YODOCK WALL COMPANY and are marketed under the trade name YODOCK BARRIER.

2. This index provides general schematics and information necessary to field identify the water filled polyethylene segmental barrier module (Energy Dispersement Cell) and the module frame and basic connections, but does not identify the incorporation of the modules and frame connections into a whole system. Any use of the YODOCK Barrier must be in accordance with the details on the plans, or by shop drawing approval or by the Engineer in absence of plan detail.

3. The Model 2001 barrier system is approved for use on highways with all design speeds. The Model 2001M is limited to use on highways with a design speed of 45 mph and less.

4. The YODOCK longitudinal traffic barrier system can by used only in a stand alone system. i.e., not connected to other types of barrier systems.

5. The YODOCK longitudinal traffic barrier system must have a minimum of eight (8) longitudinally connected modules in advance of the length of need; in no case can the longitudinal run of barrier be less than 25 modules.

   The approach end of the YODOCK system must either extend to the outer limit of the clear zone; be shielded by a crash cushion; or, begin behind but not connected to another barrier or shielding feature.

6. The YODOCK longitudinal barrier system must be placed on a cross slope not exceeding 1:10, and located to provide a deflection distance between the system and hazards in accordance with the table below.

BARRIER WITH TUBULAR STEEL SIDE RAILS
ESTIMATED BARRIER DEFLECTIONS (FEET)

Vehicle Speed (mph)	Vehicle Impact Angle (Degrees) 25°	20°	15°	10°	5°
YODOCK 2001M BARRIER					
20	3.0	2.0	1.0	0.5	0.5
25	4.5	3.0	1.5	1.0	0.5
35	8.5	5.5	3.0	1.5	0.5
40	11.0	7.5	4.0	2.0	0.5
45	14.0	9.0	5.5	2.5	0.5
YODOCK 2001 BARRIER					
45	8.0	5.0	3.0	1.5	0.5
50	9.5	6.0	3.5	1.5	0.5
55	11.0	7.5	4.5	2.0	0.5
60	14.0	9.0	5.0	2.5	0.5

7. The YODOCK longitudinal traffic barrier system shall be paid for under the contract unit price for Barrier (Temporary) (Water Filled), LF, and shall be full compensation for furnishing and installing YODOCK barrier in accordance with this index, with the plans and with the manufacturer's detailed drawings, procedures and specifications. Any crashworthy end terminal, crash cushion or other shielding required for use of the YODOCK barrier will not be included in the contract unit price for the barrier.

DESIGN NOTES FOR THE YODOCK BARRIER

1. Systems included in any maintenance of traffic plan will require detailed location and placement information.

2. Currently the Department does not recognize other proprietary items as being equally suitable alternatives to the YODOCK barrier, and until such alternatives are available, the YODOCK barrier need not be bid against other proprietary items.

YODOCK LONGITUDINAL TRAFFIC BARRIER

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

Date: 3-13-03

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY WATER FILLED BARRIERS

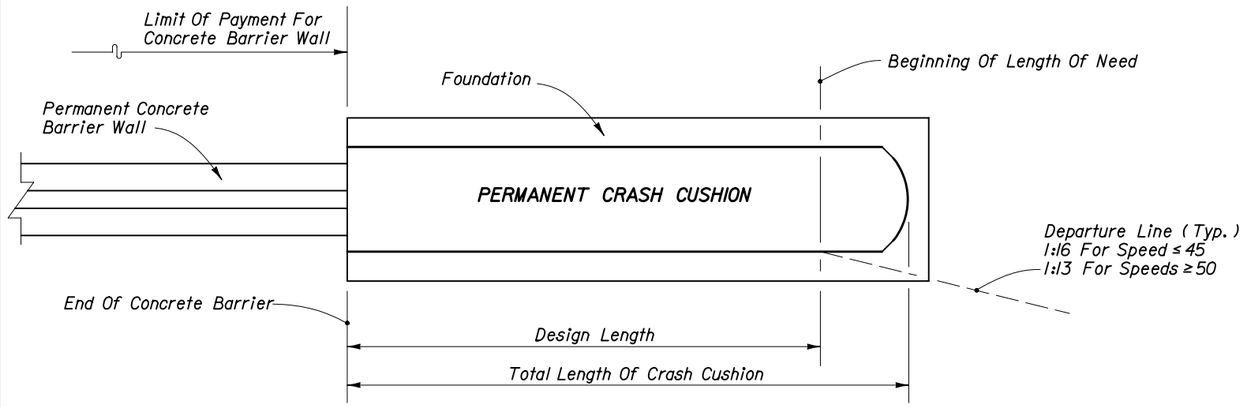
INTERIM STANDARD

THIS SHEET IS A SUPPLEMENT TO INDEX NO. 416 OF THE METRIC ROADWAY AND TRAFFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	0416

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DESIGN NOTES - CONCRETE BARRIER WALL APPLICATION

1. Design length is the length from the beginning of length of need to the end of the crash cushion.
2. Determine length of need for barrier as detailed on Index 400.
3. Establish the end of barrier based on design length of shortest Crash Cushion option for given design speed.
4. Determine that adequate space is available for construction of all options for given design speed. If adequate space is not available, options must be limited to those that will fit. Tabulate selected options in the plans by location and design speed.

GENERAL NOTES FOR OPTIONAL CRASH CUSHIONS

1. Crash Cushions for which the optional item may be used are limited to the systems identified on this index. The Contractor may only use the options identified in the plans.
2. This Index is applicable for permanent installations that shield the ends of Concrete Barrier Walls or Guardrails only.
3. For Crash Cushion details, see drawings posted on Qualified Products List (QPL) web page.
4. For other Crash Cushion applications, see the approved QPL drawings.
5. Crash Cushions shall be assembled and installed in accordance with the manufacturer's specifications and any limiting conditions noted on the approved QPL drawings.
6. Transition Panels may be required from Concrete Barriers to Crash Cushions subject to reverse direction hits; see the Crash Cushion drawings posted on the QPL for details. Transitions are required between the Crash Cushion and guardrail and vary in length depending on the Crash Cushion used; see the Crash Cushion drawings for details.

   The cost of the transition(s) is to be included in the cost of the Crash Cushion.
7. Optional Crash Cushions will be paid for under the contract unit price for Vehicular Impact Attenuator/Crash Cushion (optional) EA, and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications; the drawings posted on the QPL and this Index.

CONCRETE BARRIER WALL APPLICATION

Design Speed	System	Design Length (Ft)	Total Length Of Crash Cushion (Ft)
30	QuadGuard	6.71	9.98
	TAU II	4.61	8.35
	SHORTRACC	14.11	15.06
35	QuadGuard	6.71	9.98
	TAU II	7.45	11.19
	SHORTRACC	14.11	15.06
40	QuadGuard	6.71	9.98
	TAU II	10.30	14.04
	SHORTRACC	14.11	15.06
45	QuadGuard	9.55	12.83
	TAU II	10.30	14.04
	SHORTRACC	14.11	15.06
50	QuadGuard	12.55	15.83
	TAU II	13.14	16.88
	TRACC	21.00	21.98
55	QuadGuard	15.65	18.93
	TAU II	18.82	22.56
	TRACC	21.00	21.98
60	QuadGuard	18.62	21.90
	TAU II	21.67	25.41
	TRACC	21.00	21.98
65	QuadGuard	21.60	24.87
	QuadGuard HS	24.58	29.16
	TAU II	27.36	31.10
	FASTRACC	26.00	26.98
70	QuadGuard	27.55	30.83
	QuadGuard HS	24.58	29.16
	TAU II	27.36	31.10
	FASTRACC	26.00	26.98

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

OPTIONAL CRASH CUSHION DETAILS

INTERIM STANDARD

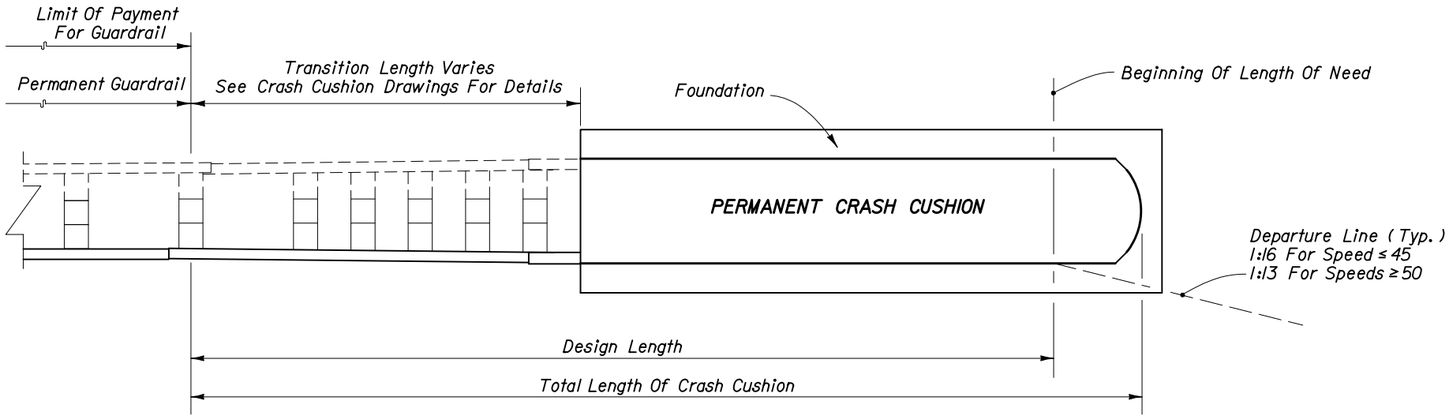
THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004.

APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 2	430

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



GUARDRAIL APPLICATION

Design Speed	System	Design Length (Ft)	Total Length Of Crash Cushion (Ft)
30	QuadGuard	26.29	29.56
	TAU II	18.36	22.10
	SHORTRACC	26.70	27.65
35	QuadGuard	26.29	29.56
	TAU II	21.20	24.94
	SHORTRACC	26.70	27.65
40	QuadGuard	26.29	29.56
	TAU II	24.05	27.79
	SHORTRACC	26.70	27.65
45	QuadGuard	29.13	32.41
	TAU II	24.05	27.79
	SHORTRACC	26.70	27.65
50	QuadGuard	32.13	35.41
	TAU II	26.89	30.63
	TRACC	33.59	34.57
55	QuadGuard	35.23	38.51
	TAU II	32.57	36.31
	TRACC	33.59	34.57
60	QuadGuard	38.20	41.48
	TAU II	35.42	39.16
	TRACC	33.59	34.57
65	QuadGuard	41.18	44.45
	QuadGuard HS	44.16	48.74
	TAU II	41.11	44.85
	FASTRACC	38.59	39.57
70	QuadGuard	47.13	50.41
	QuadGuard HS	44.16	48.74
	TAU II	41.11	44.85
	FASTRACC	38.59	39.57

DESIGN NOTES - GUARDRAIL APPLICATION

1. Design length is the length from the beginning of length of need to the end of the transition section.
2. Determine length of need for barrier as detailed on Index 400.
3. Establish the end of the guardrail based on design length of shortest Crash Cushion option for given design speed.
4. Determine that adequate space is available for construction of all options for given design speed. If adequate space is not available, options must be limited to those that will fit. Tabulate selected options in the plans by location and design speed.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

OPTIONAL CRASH CUSHION DETAILS

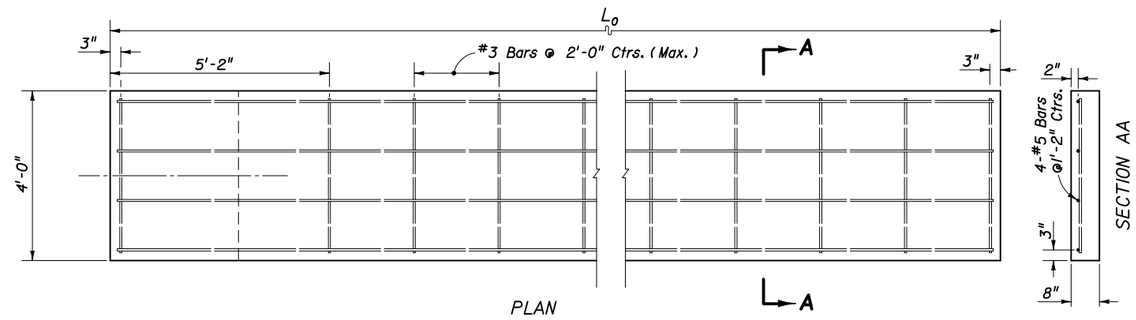
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004.

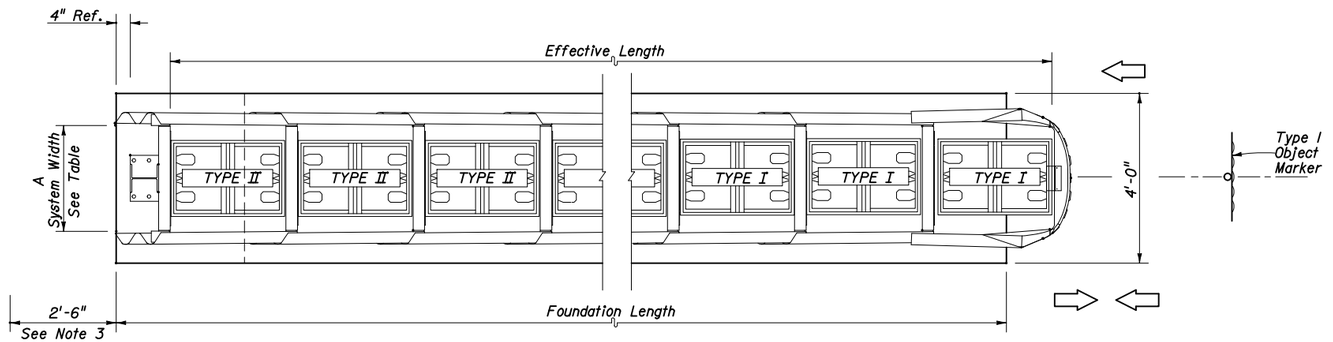
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	2 of 2	430

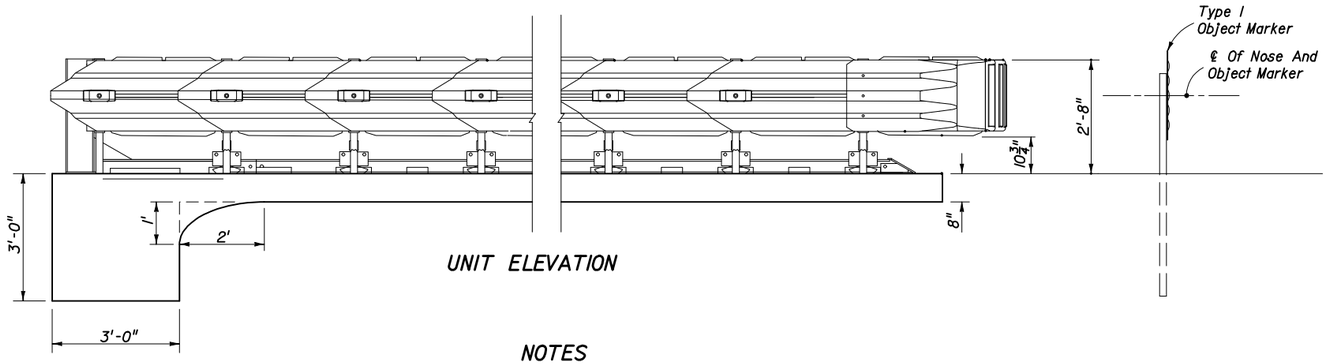
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FOUNDATION



UNIT PLAN



UNIT ELEVATION

Nominal System Width	A (Backup Width)
2'-0"	2'-0"
2'-6"	2'-6"
3'-0"	3'-0"
5'-9"	5'-3 3/4"
7'-6"	6'-10 5/8"

ESTIMATED FOUNDATION QUANTITIES
For Informational Purposes Only

No. Of Bays	L_o	REINFORCEMENT #3	REINFORCEMENT #5	CONCRETE (CY)
2	9'-0"	14'-8"	34'-8"	2.0
3	12'-0"	22'-0"	46'-8"	2.3
4	15'-0"	25'-8"	58'-8"	2.6
5	18'-0"	33'-0"	70'-8"	2.9
6	21'-0"	36'-8"	82'-8"	3.2
7	24'-0"	44'-0"	94'-8"	3.5
9	30'-0"	55'-0"	118'-8"	4.1

Note: Monorail anchorage bolt spacing to be in accordance with the manufacturer's installation drawings and specifications.

NOTES

1. The foundation depicted on this sheet is applicable to QuadGuard systems for both narrow and wide hazards, 2'-6" system shown.
2. For the number of bays required see table, Sheet 1.
3. Provision shall be made for rear fender panels to slide rearward upon impact 2'-6" min.
4. For barrier connections see 'TRANSITIONS', Sheet Nos. 4 and 5.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

PERMANENT FOUNDATION FOR TENSION STRUT BACKUP ASSEMBLY

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

QuadGuard

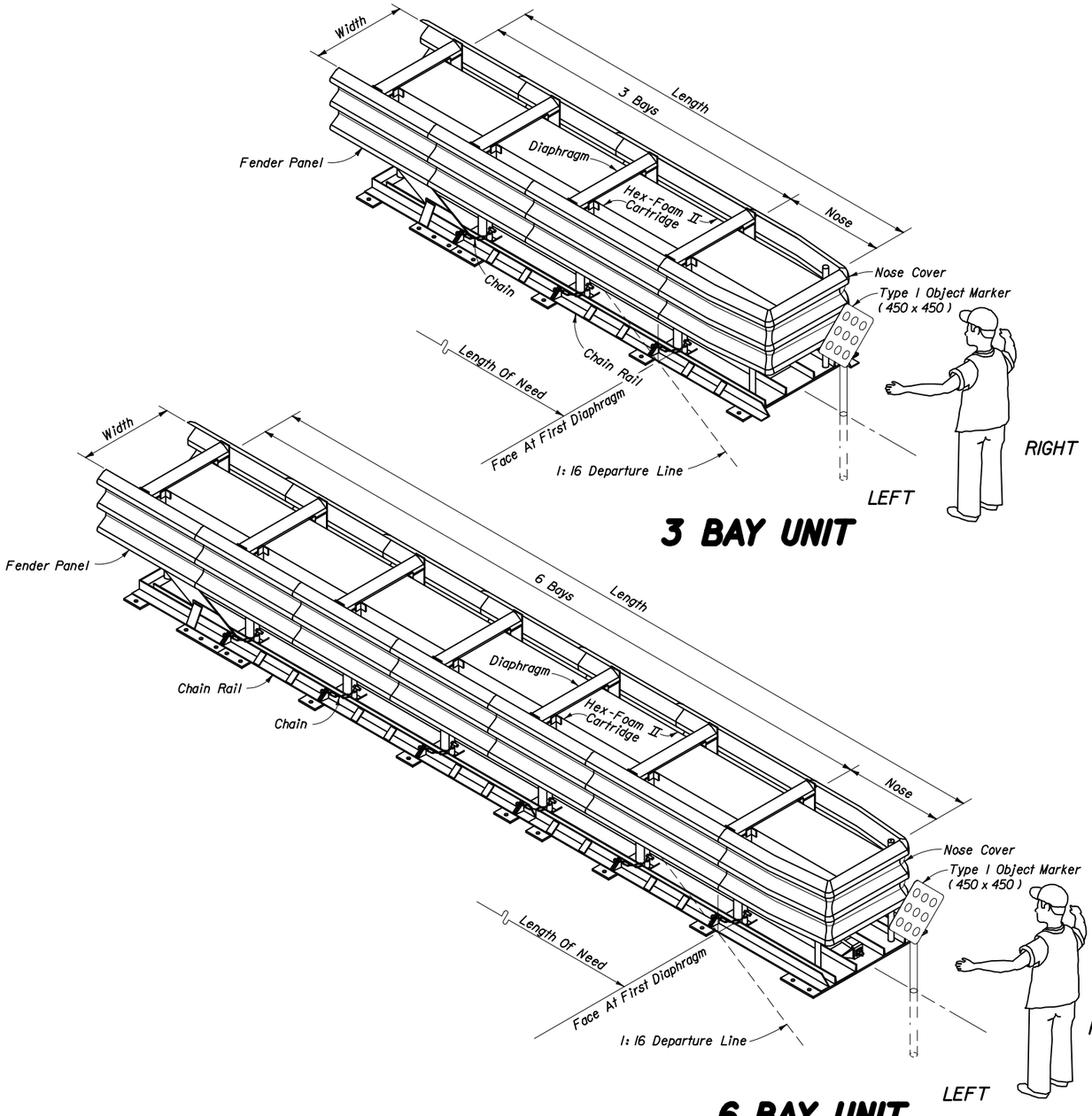
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 435 (SHEET 2 OF 6) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 6	0435

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



3 BAY UNIT

6 BAY UNIT

NOTICE

THE G-R-E-A-Tcz CAN BE USED ON PROJECTS LET TO CONTRACT PRIOR TO JUNE 30, 2004 FOR THE LIFE OF THE PROJECT OR UNTIL THE UNIT REACHES THE END OF ITS SERVICE LIFE, WHICHEVER COMES FIRST.

Revised: 10-10-01

GENERAL NOTES

1. The energy absorbing system represented on this standard drawing is a proprietary design by Energy Absorption Systems, Inc. and marketed under the trade name G-R-E-A-T_{cz} , short for Construction Zone Guard Rail Energy Absorbing Terminal. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of the G-R-E-A-T_{cz} System (G-R-E-A-T_{cz}) and their incorporation into a whole system.
3. This standard drawing is sufficient for plan details for the G-R-E-A-T_{cz} installed as a free standing system or installed in connection with concrete barrier walls and other fixed barrier systems, and precludes the requirement for shop drawing submittals unless the plans otherwise call for such submittals.
4. The G-R-E-A-T_{cz} is suitable for use in work zones with speeds of ≤ 70 km/h (≤ 45 mph).
5. The G-R-E-A-T_{cz} shall be assembled and installed in accordance with the manufacturer's detailed drawings, procedures and specifications.
6. The standard widths for the 3 bay and 6 bay G-R-E-A-T_{cz} are 610 mm and 762 mm; nominal widths 610 mm and 760 mm.
7. Connection between the G-R-E-A-T_{cz} and guardrail shall be as shown on Sheet Nos. 5 and 6.

   For temporary concrete barrier wall with unidirectional traffic there is no connection between the G-R-E-A-T_{cz} and the wall. The G-R-E-A-T_{cz} should abut the end of the wall, but a space not to exceed 280 mm is allowed. For temporary concrete barrier wall with bidirectional traffic, the transitional panel shown on the "Tension Strut Backup Assembly 'INSET'" details shall be the only connection between the G-R-E-A-T_{cz} and the wall; for additional information on use with temporary concrete barrier wall see Index No. 415.

   Variation from the connections described above shall be as detailed in the plans or as prescribed by the manufacturer.
8. Only the G-R-E-A-T_{cz} Hex-Foam II cartridges shall be used in all bays and the nose section.
9. The G-R-E-A-T_{cz} shall be constructed on cross slopes 1: 10 or flatter.
10. All metallic components shall meet the galvanizing requirements for guardrail, Index No. 400.
11. A yellow Type I Object Marker shall be centered 1.0 m in front of the nose of the G-R-E-A-T_{cz}. Mounting hardware shall be in conformance with Index No. 11860 and 11865.
12. Chemical bolt anchors (MP-3 anchors) are supplied with each G-R-E-A-T_{cz} unit purchase. The standard Florida package will not include anchor pins. Anchor pins will be supplied by the manufacturer only when called for in the plans. For units that are relocated and require reset anchorage, the user shall reinstall the unit with manufacturer supplied new MP-3 anchors.
13. Temporary crash cushions can be either new or functionally sound used devices. New G-R-E-A-T_{cz} crash cushions purchased after October 1, 1998 can not be used. Performance of intended function is the only condition for acceptance, whether the crash cushion is new, used, refurbished, purchased, leased, rented, on loan, shared between projects, or made up of mixed new and used components. Units that have been impacted by vehicles can remain in use as long as the unit is economically repairable. Units to be repaired and remain in service shall have design condition anchorages when restorations are complete. Units with disturbed anchors can be repositioned over undisturbed foundation and reset, or, reset in place with the disturbed portions of their foundations restored to design condition. All disturbed anchors are to be replaced with new MP-3 anchors.
14. The G-R-E-A-T_{cz} manufacturer's 'Driveable Pile Anchor System' (DPA system) is not a part of this standard. Any use of the DPA System will require shop drawing approval.
15. Use of the 6 bay G-R-E-A-T_{cz} unit has been discontinued for high speed work zones, but can be substituted for 3 bay unit applications with speeds ≤ 70 km/h (≤ 45 mph).
16. Quantity for payment is based on each independent location as called for in the plans or as directed by the Engineer. The cost for foundations, subgrade preparation and miscellaneous asphalt shown on this index shall be included in the cost for the G-R-E-A-T_{cz} System. The G-R-E-A-T_{cz} System will be paid for under the contract unit price for Vehicle Impact Attenuator (Temporary) (Redirective Option), LO.

DESIGN NOTES AND GUIDELINES

1. The G-R-E-A-T_{cz} System (G-R-E-A-T_{cz}) is designed to cushion automobile end-on hits and to redirect automobiles from side hits. The G-R-E-A-T_{cz} is designed to shield narrow fixed hazards or the ends of other fixed barrier systems.
2. The G-R-E-A-T_{cz} is a restorable system that is particularly suited to shielding hazards subject to high volume traffic, and/or traffic with a history of frequent errant vehicle departures from the roadway or the potential exists for such departures. The G-R-E-A-T_{cz} alone is not suited to shielding a wide hazard. The G-R-E-A-T_{cz} is particularly suited to shielding hazards where the approach space is limited; and, is particularly suited to conditions where the terminal must be located close to the traffic lane.
3. The G-R-E-A-T_{cz} is suitable for the optional applications outlined in the general notes above but is not an equally suitable alternative to other proprietary units due to the range and limitations of applications for accepted systems, and until such alternatives are available, the G-R-E-A-T_{cz} need not be bid against other proprietary items.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE G-R-E-A-T

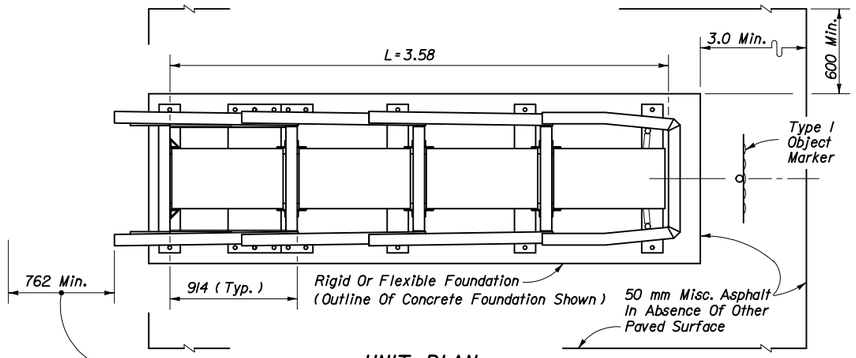
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

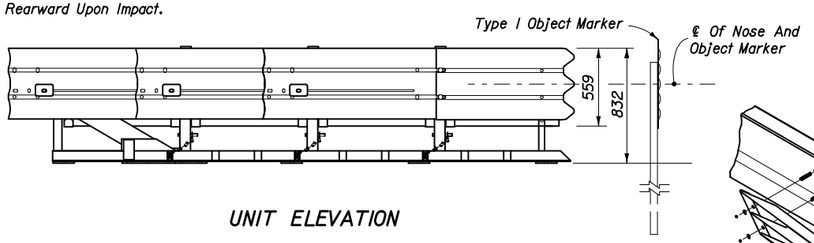
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 6	0439

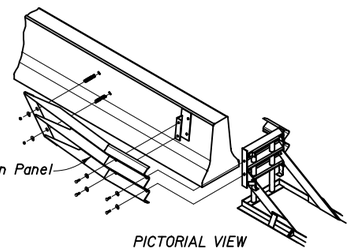
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



UNIT PLAN

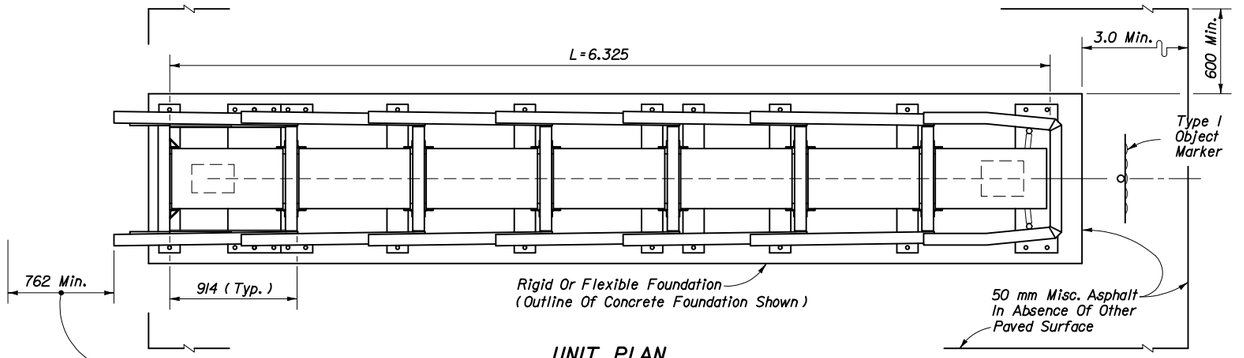


UNIT ELEVATION

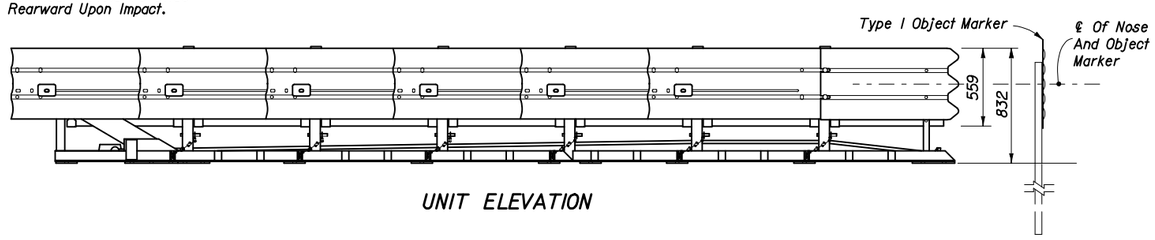


PICTORIAL VIEW

INSET



UNIT PLAN



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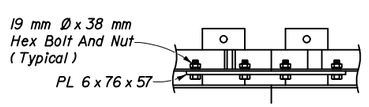
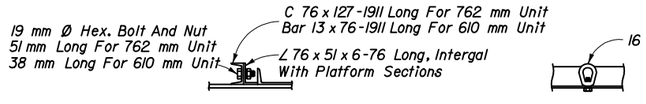
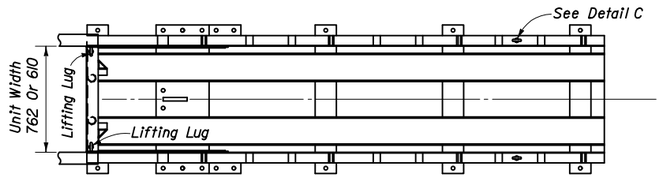


Chain Rail Splice
DETAIL A

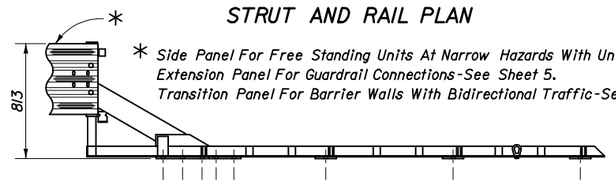


Channel Splice
DETAIL B

Lifting Lug
DETAIL C



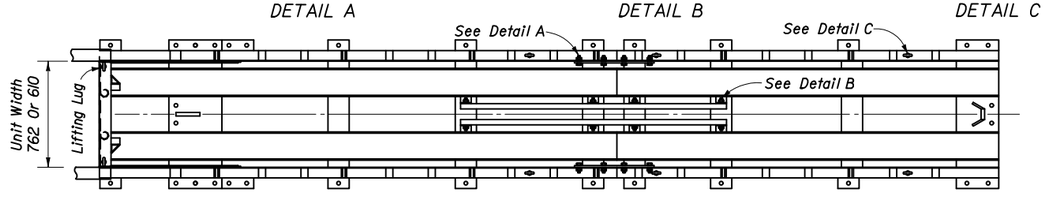
STRUT AND RAIL PLAN



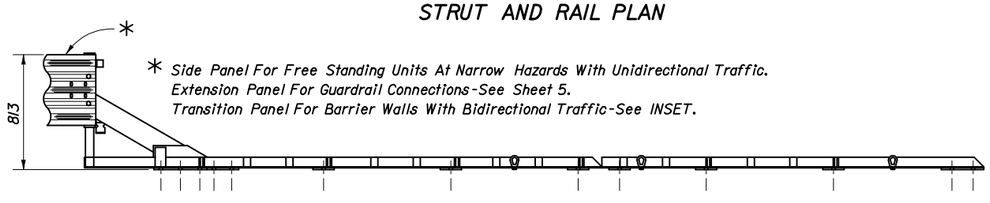
* Side Panel For Free Standing Units At Narrow Hazards With Unidirectional Traffic.
Extension Panel For Guardrail Connections-See Sheet 5.
Transition Panel For Barrier Walls With Bidirectional Traffic-See INSET.

STRUT AND RAIL ELEVATION

3 BAY UNIT



STRUT AND RAIL PLAN



* Side Panel For Free Standing Units At Narrow Hazards With Unidirectional Traffic.
Extension Panel For Guardrail Connections-See Sheet 5.
Transition Panel For Barrier Walls With Bidirectional Traffic-See INSET.

STRUT AND RAIL ELEVATION

6 BAY UNIT

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TENSION STRUT BACKUP ASSEMBLY

Revised: 10-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE G-R-E-A-T

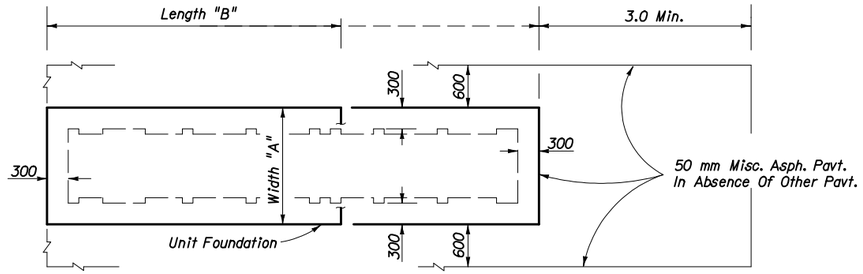
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 6	0439

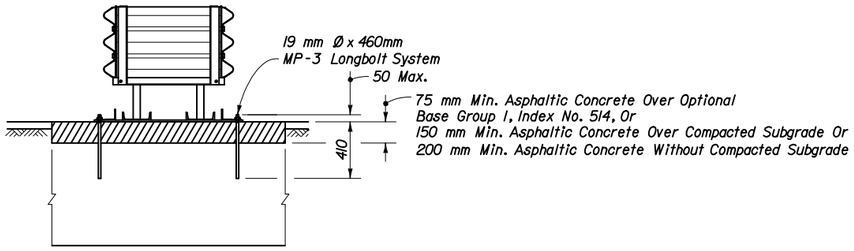
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



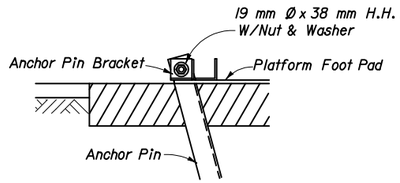
PLAN

FOUNDATION DIMENSIONS			
UNIT		Width "A" (m)	Length "B" (m)
Bays	Width (mm)		
3	610	1.5	4.32
	762	1.7	4.32
6	610	1.5	7.07
	762	1.7	7.07

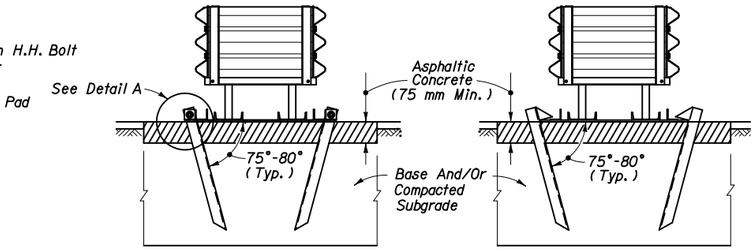
FOUNDATION PAD & MISCELLANEOUS ASPHALT PAVEMENT



SECTION CC

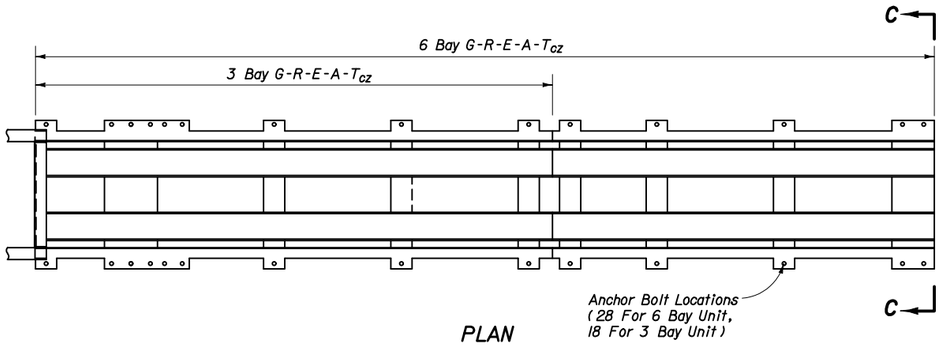


DETAIL A



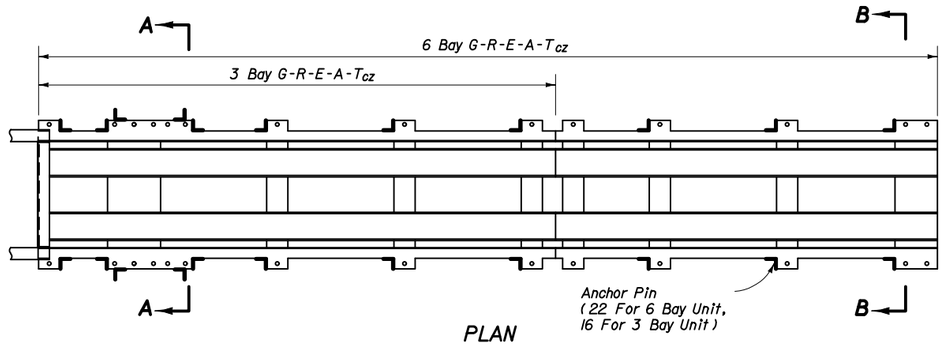
SECTION AA

SECTION BB



PLAN

MP-3 LONGBOLT ANCHOR SYSTEM



PLAN

Note: Anchor pin system is to be used only when called for in the plans. See General Notes Nos. 12 & 13.

ANCHOR PIN SYSTEM

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

FLEXIBLE FOUNDATIONS

Revised: 10-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE G-R-E-A-T

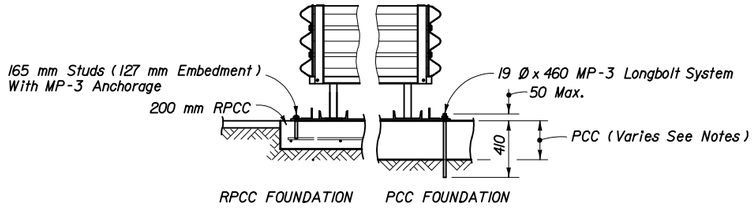
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

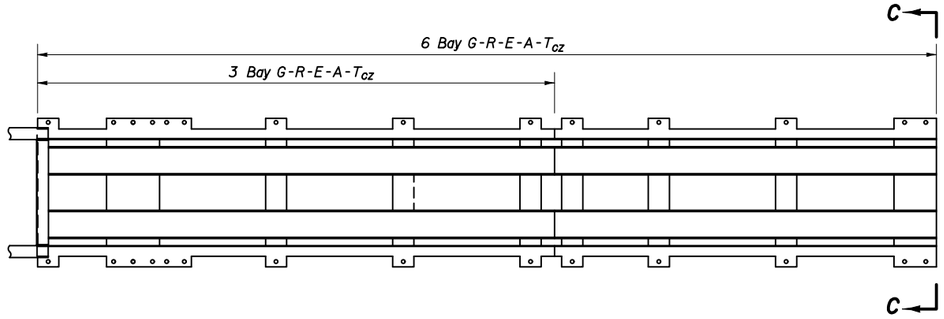
APPROVED BY Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 6	0439

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTIONS CC (HALF SECTIONS)



PLAN

MP-3 ANCHOR SYSTEM

RIGID FOUNDATION NOTES

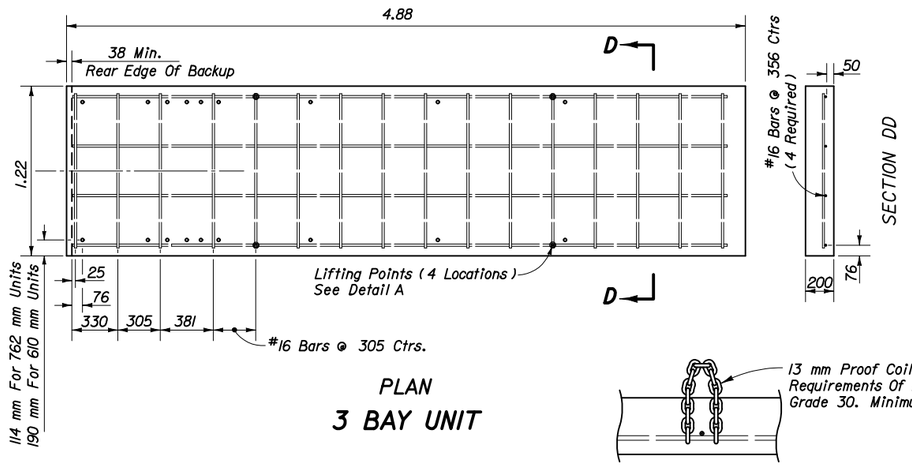
1. The reinforced portland cement concrete (RPCC) foundation is designed to make the G-R-E-A-T_{CZ} a transportable system. The slab foundation shall be constructed with 28 MPa min. compressive strength concrete. The slab shall be seated so the top of the slab is flush with the surface intended for approaching vehicles. The surrounding surface shall be paved as shown in this index on the 'Unit Plan' for the 'Tension Strut Backup Assembly'. The G-R-E-A-T_{CZ} shall be anchored exclusively with the 165 mm MP-3 anchor system supplied with the G-R-E-A-T_{CZ} unit, unless another anchor is supplied or approved by the G-R-E-A-T_{CZ} manufacturer.

2. The nonreinforced portland cement concrete (PCC) foundation shall be Class I concrete, having plan dimensions equal to or greater than those for the RPCC foundation. The PCC foundation utilization options are as follows: (a) Poured in place as an expendable slab, having a thickness of not less than 150 mm; disposal of the slab will be as approved by the Engineer, (b) Project constructed roadway PCC pavement, or, (c) Existing 230 mm PCC roadway pavement.

   The utilization option applied shall be as approved by the Engineer on a site specific basis. The top of the PCC foundation shall be flush with the surface intended for approaching vehicles. In absence of surrounding pavement the surrounding surface shall be paved as shown in this index on the 'Unit Plan' for the 'Tension Strut Backup Assembly'.

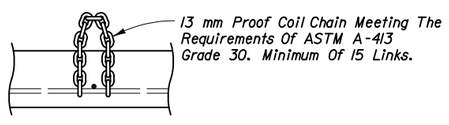
   The G-R-E-A-T_{CZ} installed on PCC pavement shall be anchored only with the MP-3 Longbolt system supplied with the G-R-E-A-T_{CZ} unit. Holes for the 460 mm anchors shall be drilled through both existing and new pavements. When the G-R-E-A-T_{CZ} is removed from the project pavement or from existing pavement that is to remain in place, the longbolt anchor shall be cut off flush with the top of the pavement, unless the plans call for other treatment.

3. For additional information see the General Notes.

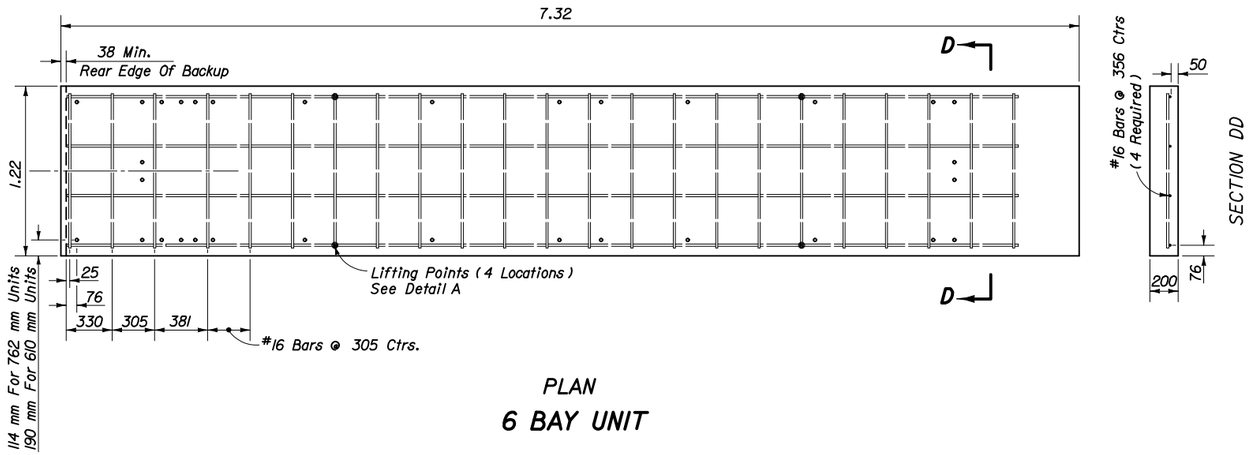


PLAN

3 BAY UNIT



DETAIL A



PLAN

6 BAY UNIT

REINFORCED CONCRETE PAD SYSTEM (RPCC)

RIGID FOUNDATIONS

Revised: 10-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE
G-R-E-A-T

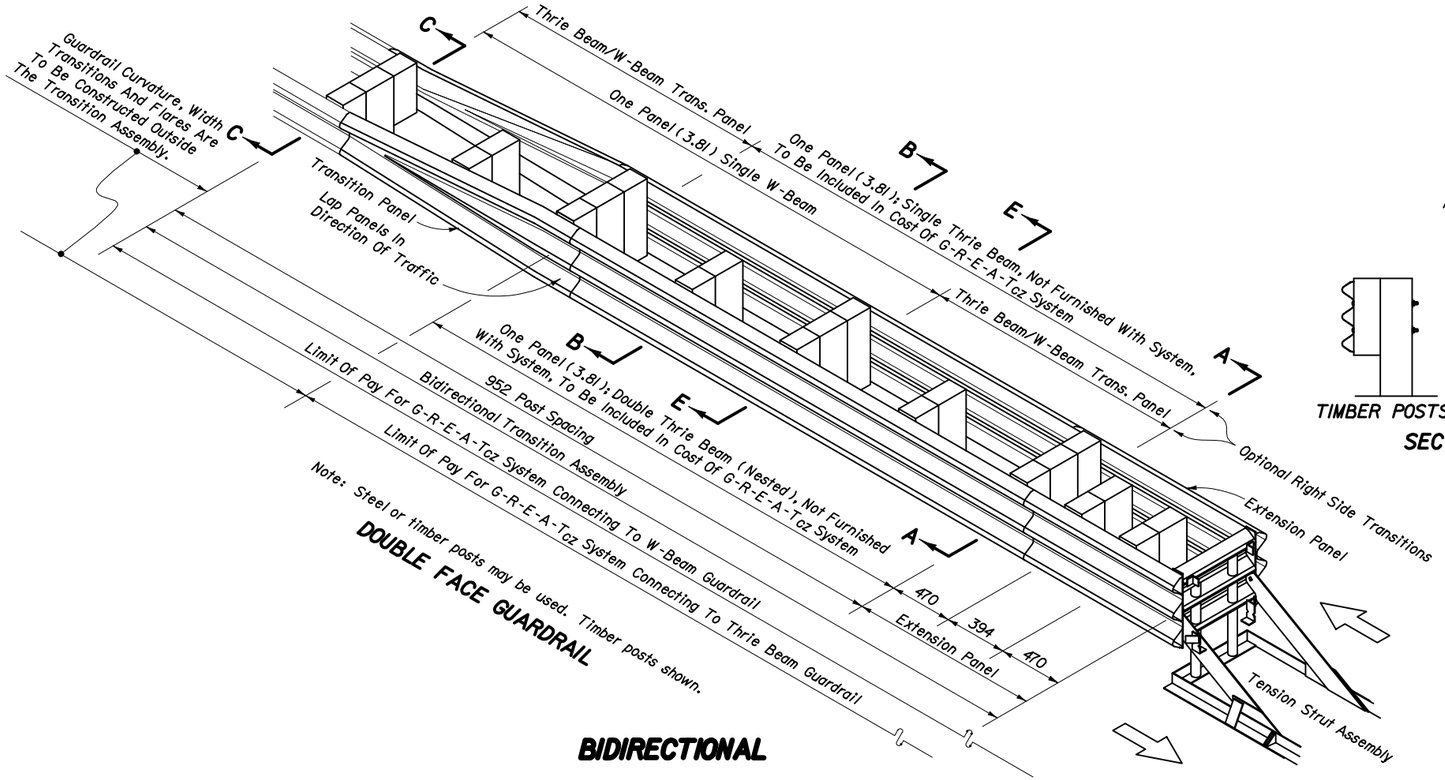
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

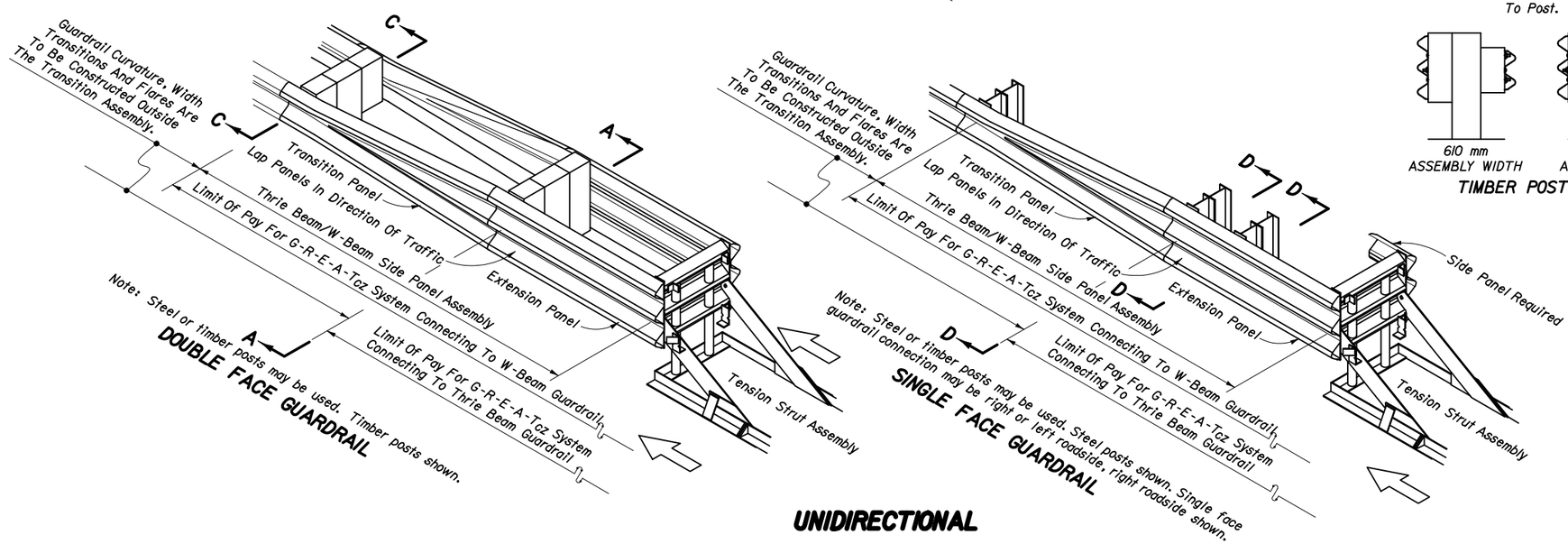
REVISION NO.	SHEET NO.	INDEX NO.
00	4 of 6	0439

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DOUBLE FACE GUARDRAIL

BIDIRECTIONAL



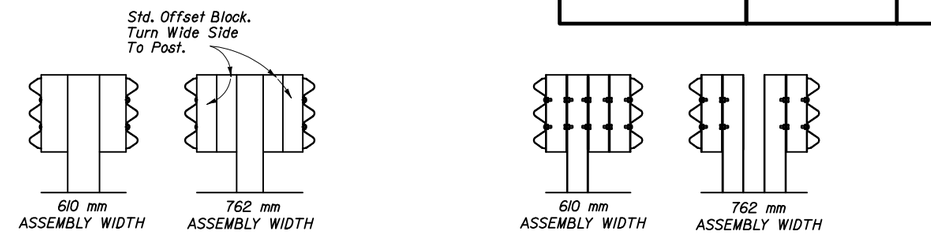
DOUBLE FACE GUARDRAIL

SINGLE FACE GUARDRAIL

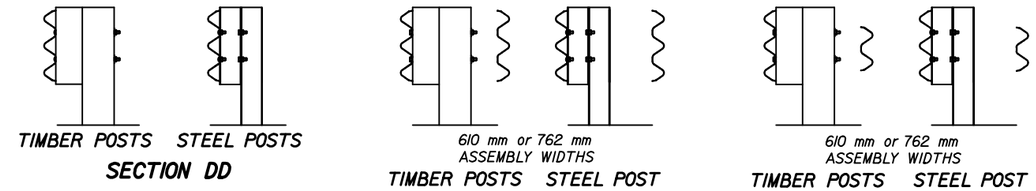
UNIDIRECTIONAL

TRANSITION ASSEMBLIES FOR CONNECTIONS TO GUARDRAIL

Revised: 10-10-01

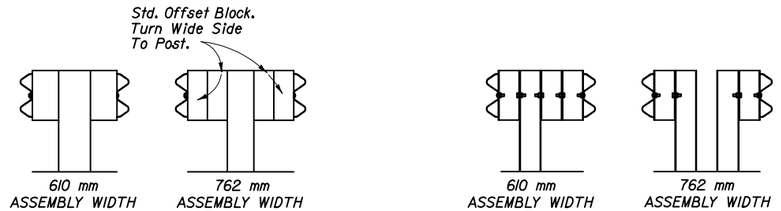


SECTION AA AND THRIE BEAM OPTION SECTION EE

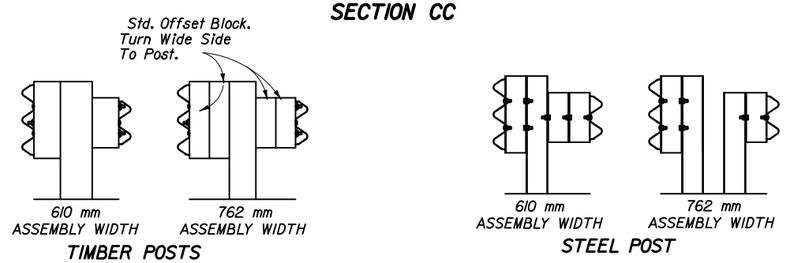


SECTION DD

OPTIONAL SECTION BB



SECTION CC



W-BEAM OPTION SECTION EE

NOTE

1. For additional information see the General Notes and backup assembly details.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE G-R-E-A-T

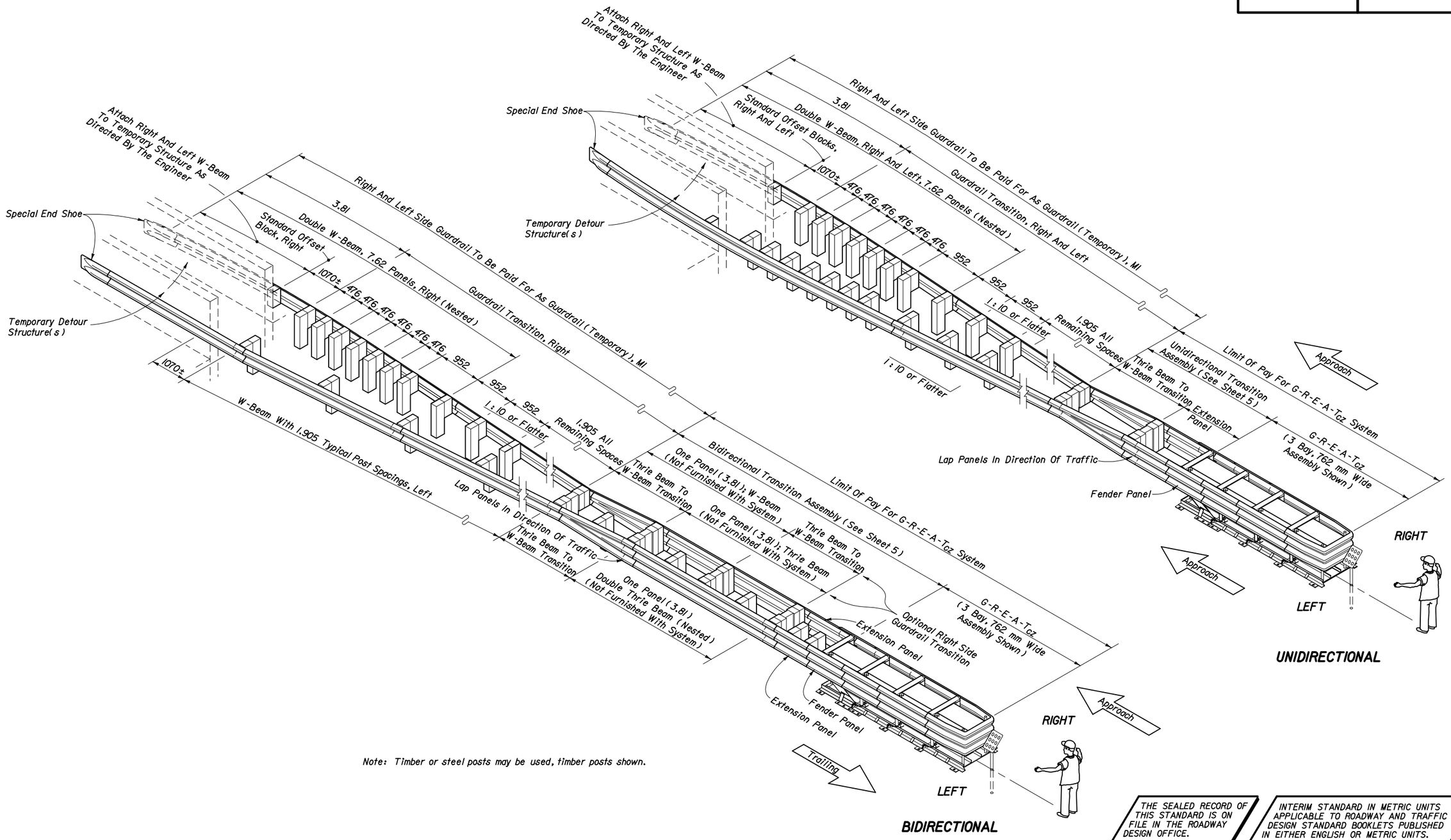
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY James D. Mills
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	5 of 6	0439

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: Timber or steel posts may be used, timber posts shown.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GUARDRAIL TRANSITION TO TEMPORARY DETOUR STRUCTURES

Revised: 10-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ZONE G-R-E-A-T

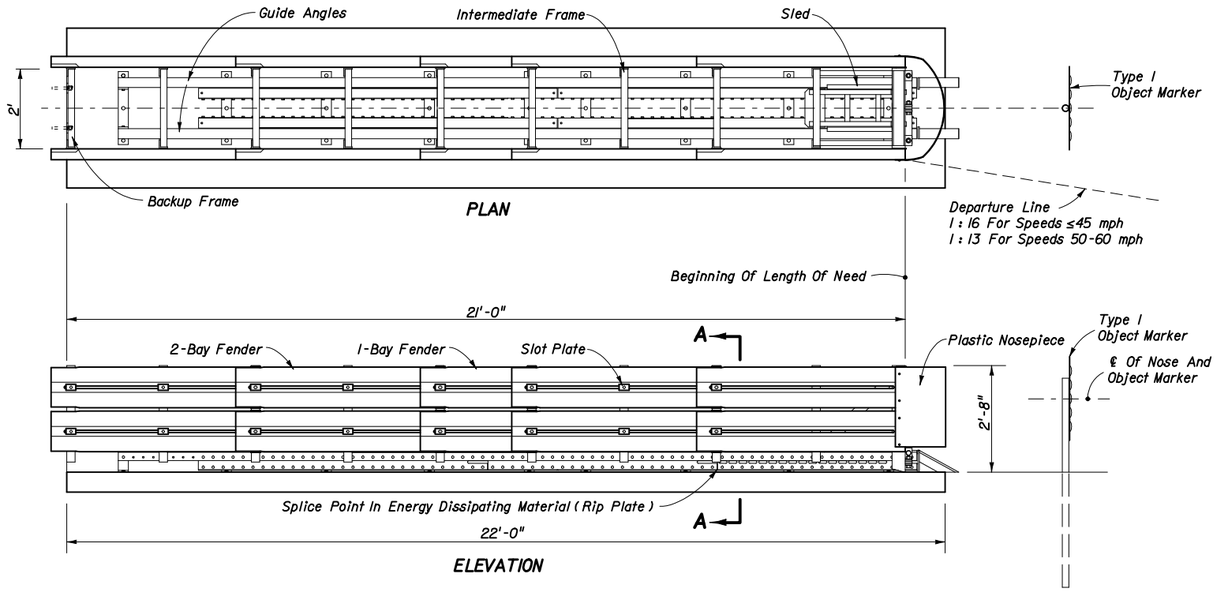
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

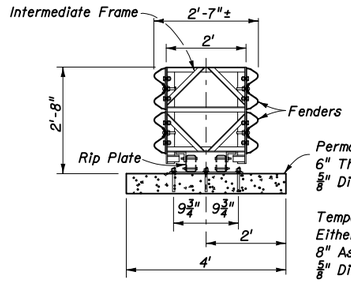
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	6 of 6	0439

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



TRACC



Permanent Pad:
6" Thick Reinforced Concrete Or 8" Nonreinforced Concrete With Twenty-Seven $\frac{5}{8}$" Dia. $7\frac{1}{2}$" Long Chemical Anchor Studs With Flat And Lock Washers And Hex Nuts

Temporary Pad:
Either 8" Nonreinforced Concrete With The Above Anchor Hardware, Or,
8" Asphalt (Or 6" Ashpalt Over 6" Compacted Subbase) With Twenty-Seven $\frac{5}{8}$" Dia. 18" Long Chemical Anchor Studs With Flat And Lock Washers And Hex Nuts.

SECTION AA

TRACC MODULE GUIDELINES		
Speed (mph)	Manufacture's Naming Convention	Length (Feet)
≤45	SHORTRACC	14'-1"
>45 ≤60	TRACC	21'-0"
>60 ≤70	FASTRACC	26'-0"

GENERAL NOTES

1. The energy absorbing system represented on this standard drawing is a proprietary design by Trinity Industries, Inc. and marketed under the trade names SHORTRACC, TRACC, and FASTRACC. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This standard drawing is produced by the Florida Department Of Transportation solely for use by the Department and its assignees. This standard drawing provides the general graphics and information necessary to field identify component parts of TRACC Systems and their incorporation into a whole system. This standard drawing is sufficient for plan details, and precludes the requirement for shop drawing submittals unless the plans call for such submittals.
3. TRACC Systems shall be installed in accordance with the manufacturer's detailed drawings, procedures and specifications, except that transition section posts will be set to connect to guardrail at standard W-beam center bolt height (1'-9").
4. TRACC Systems include pre-assembled energy absorbing modules that are available in three sizes. Larger modules can be substituted for smaller modules. See selection table below.
5. When TRACC Systems are installed at permanent locations they shall be anchored to either a reinforced 6" thick concrete pad or a nonreinforced 8" thick concrete pad with twenty-seven $7\frac{1}{2}$" long $\frac{5}{8}$" dia. chemical anchor studs, flat and lock washers, and, hex nuts. When TRACC Systems are installed at temporary locations they shall be anchored to a nonreinforced 8" thick concrete pad with the above mentioned anchor hardware, or a 8" thick asphalt pad (or a 6" thick asphalt over 6" of compacted subbase) using twenty-seven 18" long $\frac{5}{8}$" dia. Grade 5 threaded chemical anchor studs, flat and lock washers, and, hex nuts.
6. TRACC Systems shall be located parallel to the approach travel lane(s), on 1 : 10 or flatter cross slopes.
7. In-place repairs on TRACC modules are limited to (a) end-on impacts which cause the sled to stroke 54" or less, and (b) side impacts where permanent distortion is limited to fender panels and where distortion of the intermediate frame(s) can be restored manually and (c) end on impacts that cause the sled to stroke more than 54", yet where repair can be accomplished in a period not to exceed 24 continuous hours. Unit replacement is required when damage exceeds these conditions. Temporary construction units and units under Maintenance responsibility may be shop repaired units utilizing new or salvaged parts which will produce condition new units. All permanent units shall be factory new at completion of construction.
8. A yellow Type 1 Object Marker shall be centered 3' in front of the nose of the TRACC System. Mounting hardware shall be in conformance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the TRACC System.
9. Permanent TRACC Systems will be paid for under the contract unit price for Vehicular Impact Attenuator (TRACC), EA. Temporary TRACC Systems will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (TRACC), LO. However, when a TRACC system is used as an option in accordance with Index No. 415, it will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (Redirective Option), LO.

DESIGN NOTES AND GUIDELINES

1. TRACC Systems are designed to cushion automobile end-on hits and to redirect automobiles from side hits within the length of need while shielding the ends of permanent or temporary concrete barrier walls or double faced guardrails.
2. The TRACC System is not field-restorable for all impacts. Repairs or replacement will be in accordance with GENERAL NOTE 7 above.

   Until additional replacement and repair experience is available, the TRACC System should not be permanently installed in gores of freeways and expressway mainline ramp terminals; gores of roadway forks; or other gore locations where the Engineer of Record has identified a specific history of high frequency vehicle departure from the roadway or the potential exists for such departures.

   The TRACC can be used in any temporary location identified in the plans for optional redirective crash cushion in accordance with Index No. 415, and will be used as a temporary crash cushion in any location identified in the plans for Vehicle Impact Attenuator (Temporary) (TRACC); likewise the TRACC is not to be substituted when the plans call for other crash cushion systems at specified locations.
3. Currently the Department does not recognize other proprietary items as being equally suitable alternatives to TRACC Systems, and until such alternatives are available, the TRACC Systems need not be bid against other proprietary items. However, where the TRACC Systems and other approved temporary redirective crash cushions meet or exceed the minimum requirements for a specific location, the approved crash cushions will be considered optional systems and paid for as described in General Note 9 above.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GENERAL SYSTEM FEATURES AND GUIDELINES

Revised: 05-04-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

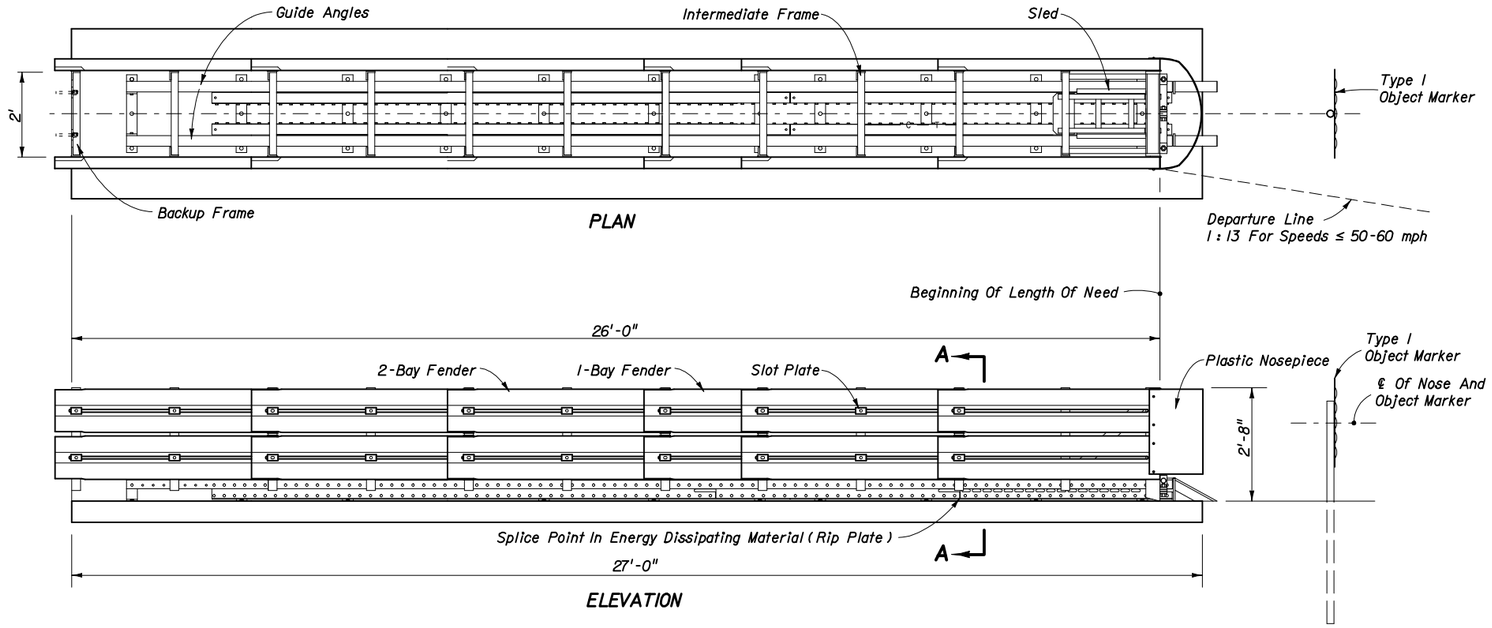
INTERIM STANDARD

THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

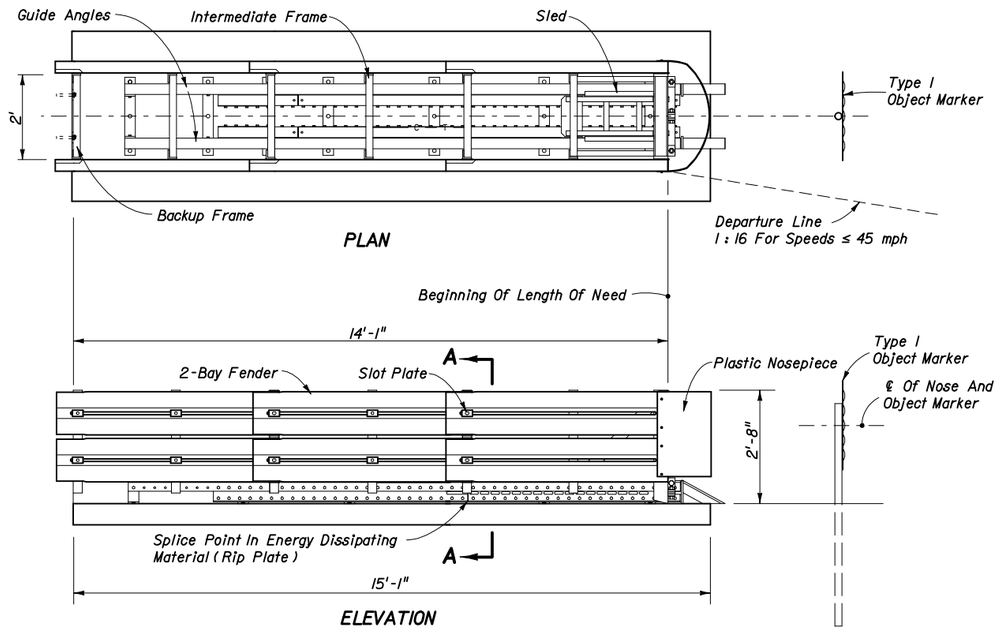
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FASTRACC



SHORTRACC

REVISED: 04-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

INTERIM STANDARD

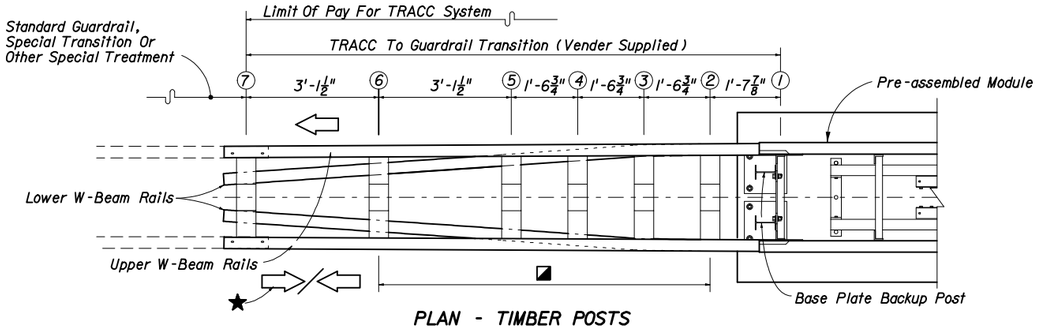
THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

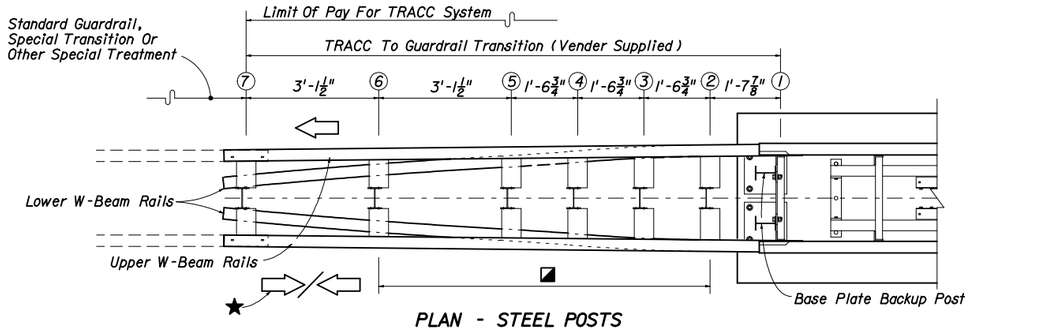
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	2 of 5	0440

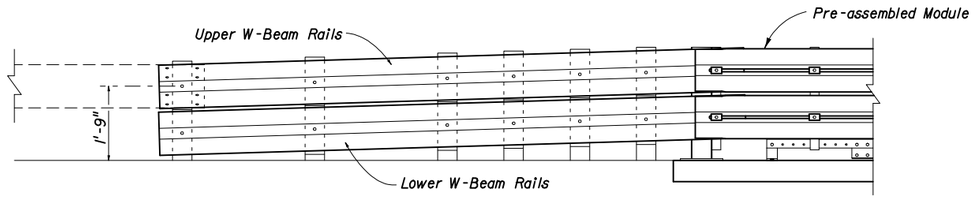
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN - TIMBER POSTS



PLAN - STEEL POSTS



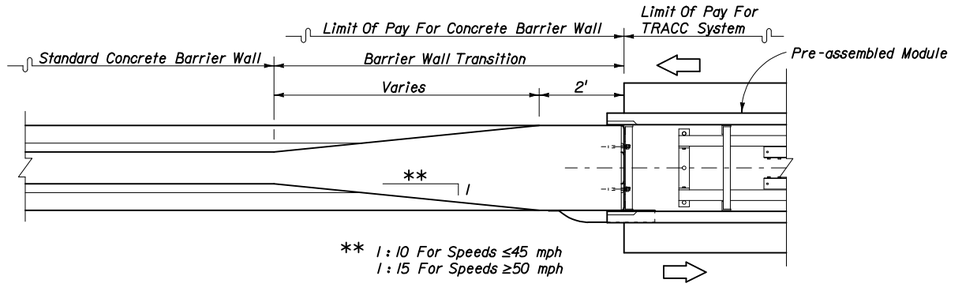
ELEVATION

★ *Lap rail splice in direction of traffic for guardrail bidirectional applications. See GENERAL NOTE 3 and DESIGN NOTE 1 for information on pending approval for bidirectional installations.*

◪ *Offset blocks that exceed standard block depth can be made up of blocks of special size or multiple standard blocks field trimed to approximately equal size to achieve full transition width. Offset blocks for lower W-beam that are less in depth than standard blocks may be field trimed standard blocks. All blocks are to be secured to plan position by 16d galvanized nails.*

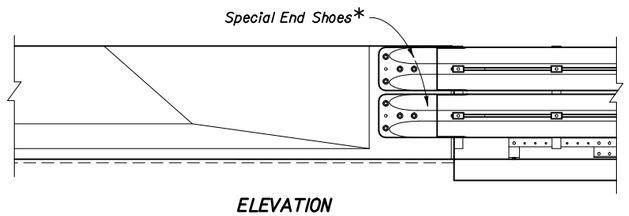
Transitions are required when connecting the TRACC to any guardrail system.

TRANSITION SECTION FOR CONNECTION TO DOUBLE FACED GUARDRAIL



** l : 10 For Speeds ≤45 mph
l : 15 For Speeds ≥50 mph

PLAN



ELEVATION

* To Be Included In Cost Of TRACC System

CONNECTION TO CONRETE BARRIER WITH INTEGRAL WALL TRANSITION

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

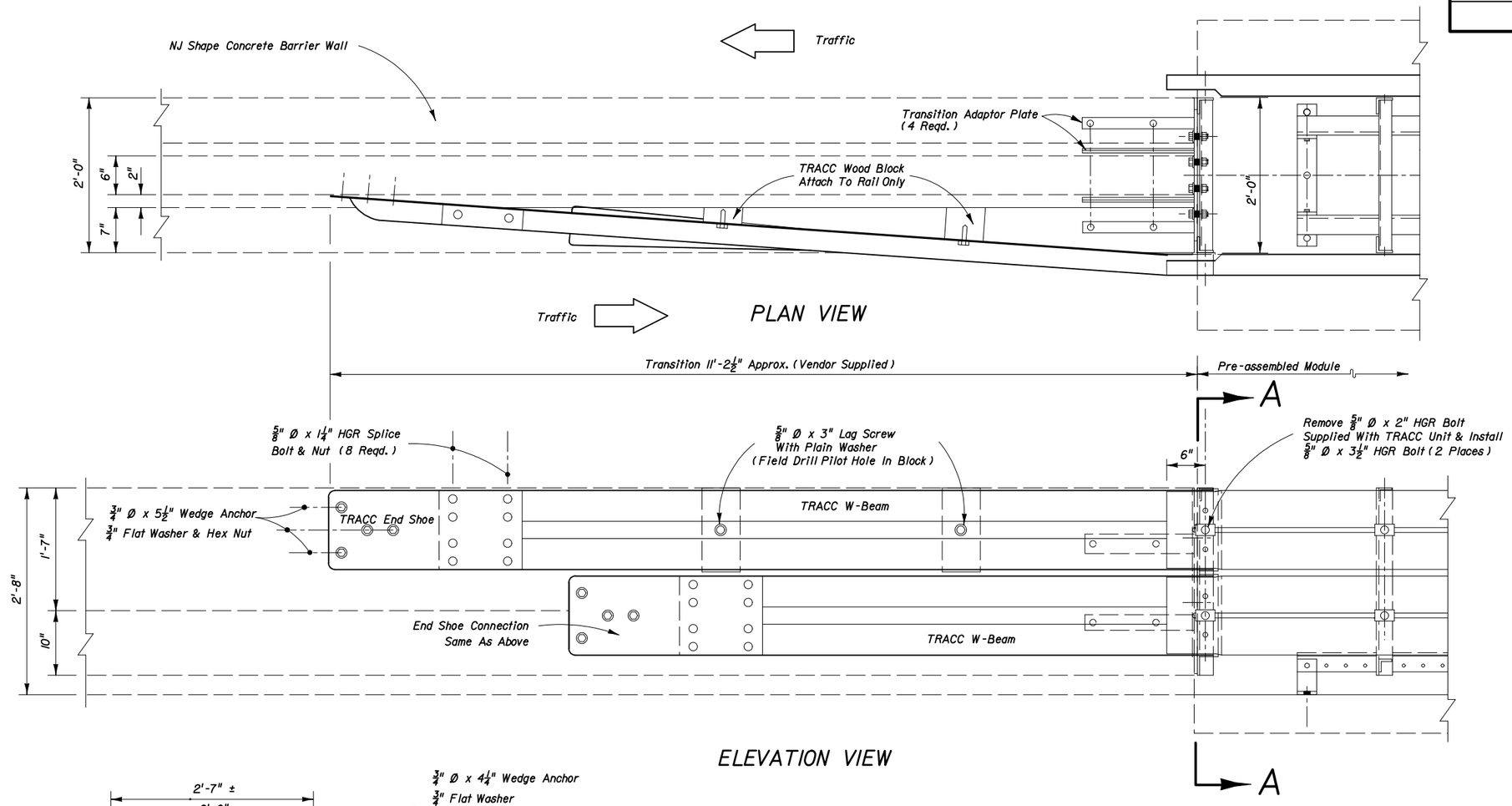
INTERIM STANDARD

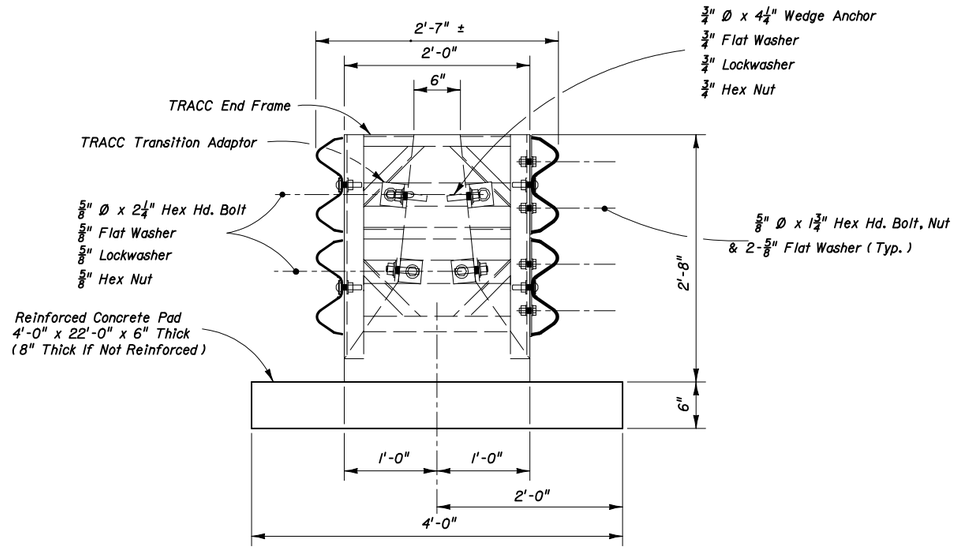
THIS INDEX IS A REPLACEMENT FOR INDEX NO. 440 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 5	0440

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





SECTION AA

BIDIRECTIONAL TRANSITION FOR CONNECTION TO NJ SHAPE CONCRETE BARRIER WALL

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

INTERIM STANDARD

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APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	4 of 5	0440

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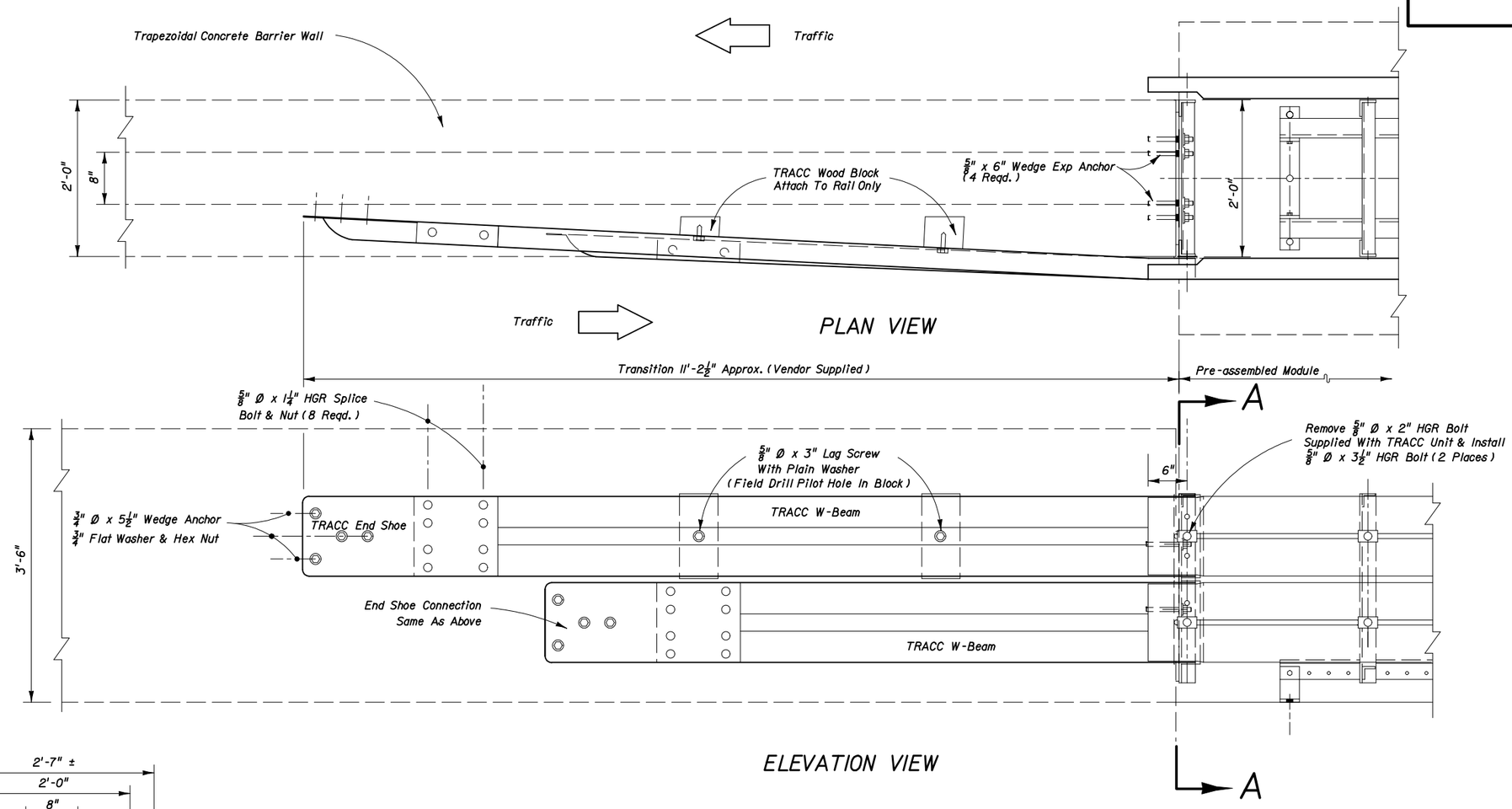

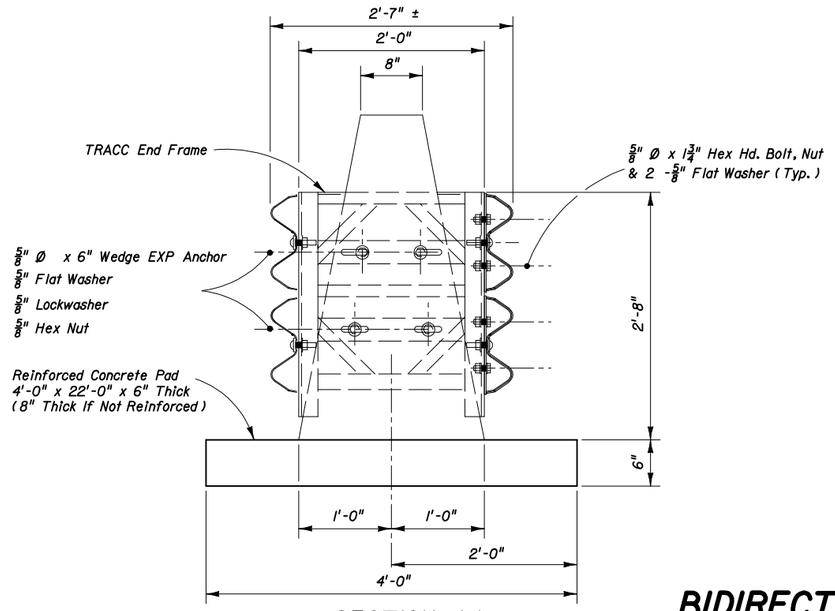

SECTION AA

BIDIRECTIONAL TRANSITION FOR CONNECTION TO TRAPEZOIDAL SHAPE CONCRETE BARRIER WALL

REVISED: 02-14-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRACC SYSTEMS

INTERIM STANDARD

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APPROVED BY
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00	5 of 5	0440

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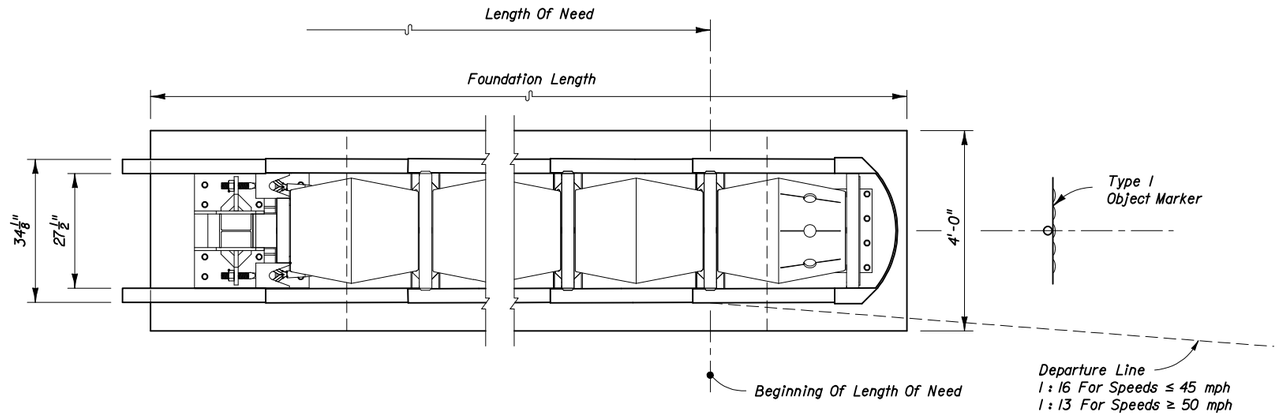
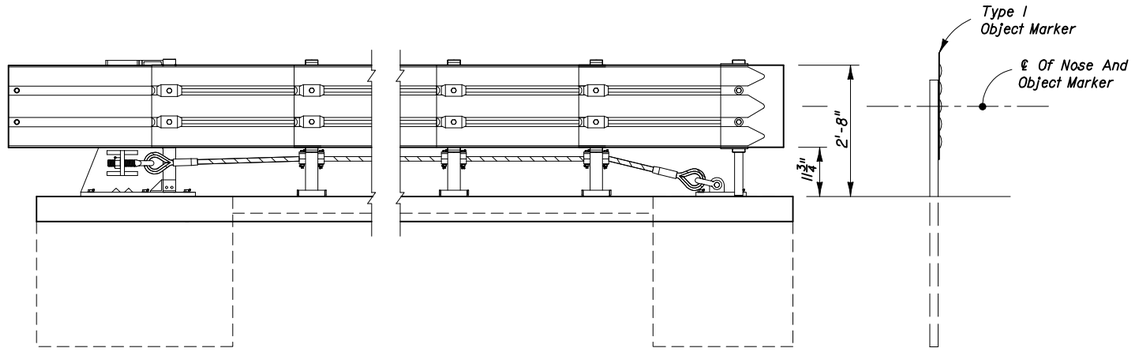


UNIT PLAN



UNIT ELEVATION

B B B A Nose

4 Bay Unit: ≤ 45 mph

B B B B B A A A Nose

8 Bay Unit: ≥ 50 mph

A = Type "A" EAC

B = Type "B" EAC

TAU-II CONFIGURATIONS

GENERAL SYSTEM FEATURES

GENERAL NOTES

1. The energy absorbing system represented on this standard is a proprietary design by Barrier Systems, Inc. and marketed under the trade name TAU-II. Any infringement on the rights of the designer shall be the sole responsibility of the user.

2. This standard is produced by the Florida Department of Transportation solely for use by the Department and its assignees.

3. The TAU-II is a redirective non-gating crash cushion produced in two models, each model designed to shield narrow hazards. The TAU-II TL-3 (8 bay model) may be used on Florida highways for all speeds. The TAU-II TL-2 (4 bay model) is limited to use on Florida highways with speeds of 45 mph or less.

4. The TAU-II is supplied in a single width of 27½".

5. There are two types of Energy Absorbing Cartridges (EAC) used in the TAU-II crash cushions. They are to be placed according to the manufacturer's specifications and in the configurations illustrated below.

6. Permanent and portable portland cement concrete foundations shall be constructed with 4000 psi minimum compressive strength concrete. Reinforcing steel shall be in accordance with the schedule on this index.

7. The TAU-II 'Compact Backup' is the primary backup to be used on Florida Department of Transportation projects. Use of concrete backups shall be called out in the plans for site specific construction; concrete backup connections shall meet the guidelines of this index and must meet manufacturer's specifications, installation guidelines and transition hardware requirements.

8. The TAU-II shall be constructed parallel to the approach travel lane and on cross slopes 1:10 or flatter.

9. All metallic components shall meet the galvanizing requirements for guardrail, Index No. 400.

10. A yellow Type I Object Marker shall be centered 3' in front of the nose of the TAU-II. Mounting hardware shall be in conformance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the TAU-II system.

11. Quantity for payment is based on each independent location as called for in the plans or as directed by the Engineer. The cost for manufacturer's transition hardware, foundations and subgrade preparation will be included in the cost for the TAU-II system.

    Permanent systems will be paid for under the contract unit price for Impact Attenuator Vehicular (TAU-II), EA; temporary units will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (TAU-II), LO, or when the TAU-II system is used as an option in accordance with Index No. 415, it will be paid for under the contract unit price for Vehicular Impact Attenuator (Temporary) (Redirective), LO.

DESIGN NOTES AND GUIDELINES

1. The beginning length of need shall be at the point of intersection between the face of the cushion and the transverse centerline of the diaphragm back of cartridge No. 1.

2. The TAU-II System is designed to cushion automobile end-on hits and to redirect automobiles from side hits. The TAU-II is designed to shield fixed hazards or the ends of other temporary and permanent barrier systems. The number of bays to be used in a specific unit will be determined by the design speed, except where the Engineer determines that another speed is more applicable.

3. The TAU-II is a restorable system that is particularly suited to shielding hazards subject to high speed traffic, high volume traffic, and/or traffic with a history of frequent errant vehicle departures from the roadway or the potential exists for such departures. The TAU-II is particularly suited to shielding hazards where the approach space is limited; and, is particularly suited to conditions where the terminal must be located close to the traffic lane.

4. Currently the Department does not recognize other proprietary items as being equally suitable alternatives to the TAU-II, and until such alternatives are available, the TAU-II need not be bid against other proprietary items. However, for temporary use where the TAU-II and other approved redirective crash cushions meet or exceed the minimum requirements for a specific location, the approved crash cushions will be considered optional systems and paid for as described in General Note 11 above.

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

INTERIM STANDARD

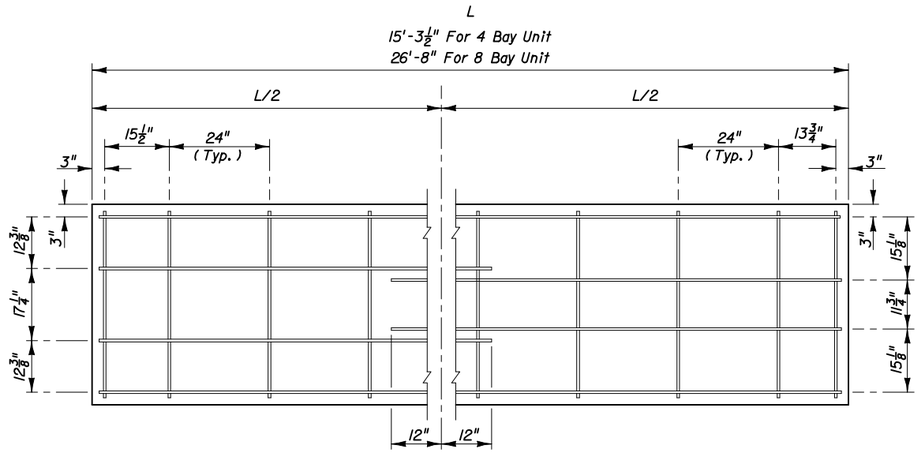
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

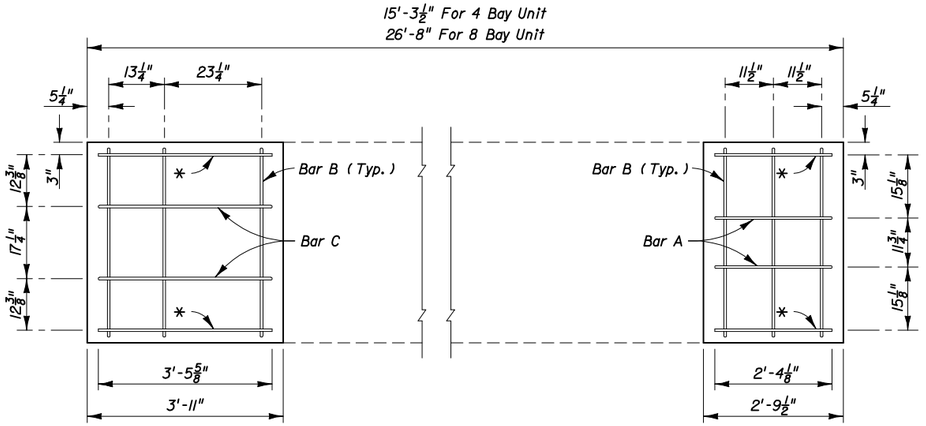
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

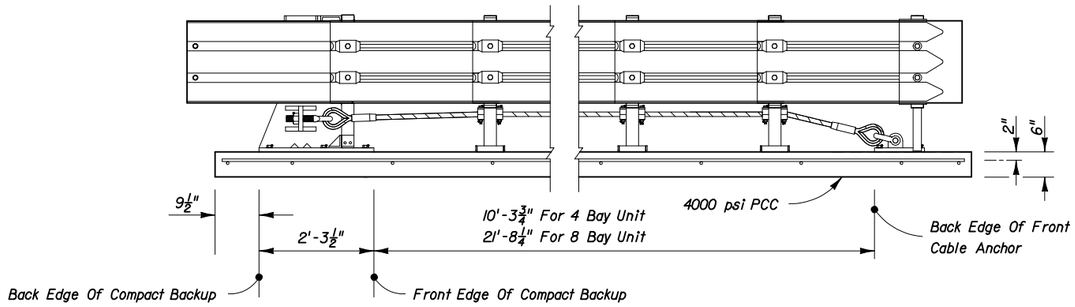


UNIT PLAN



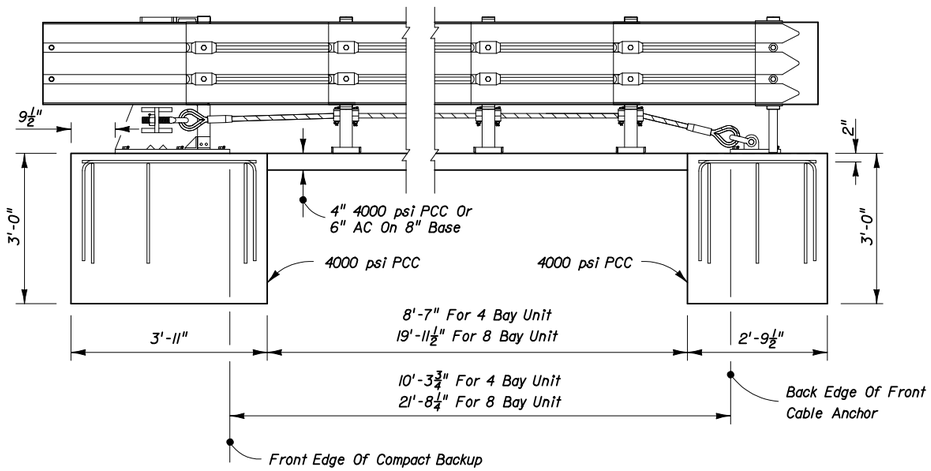
* Straight Bar

UNIT PLAN



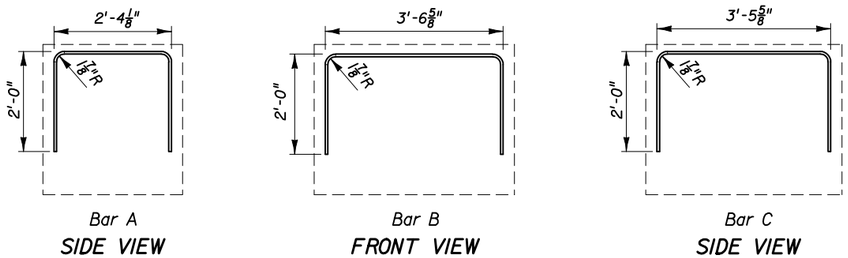
UNIT ELEVATION

REINFORCED CONCRETE PAD



UNIT ELEVATION

CONCRETE ANCHOR BLOCKS



Bar A
SIDE VIEW

Bar B
FRONT VIEW

Bar C
SIDE VIEW

Note: All reinforcement #5 bars. All dimensions out to out.

BENDING DIAGRAM

REINFORCED CONCRETE PAD OR ANCHOR BLOCKS OR CONCRETE ROADWAY PAVEMENT OR BRIDGE DECK

FOUNDATIONS

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

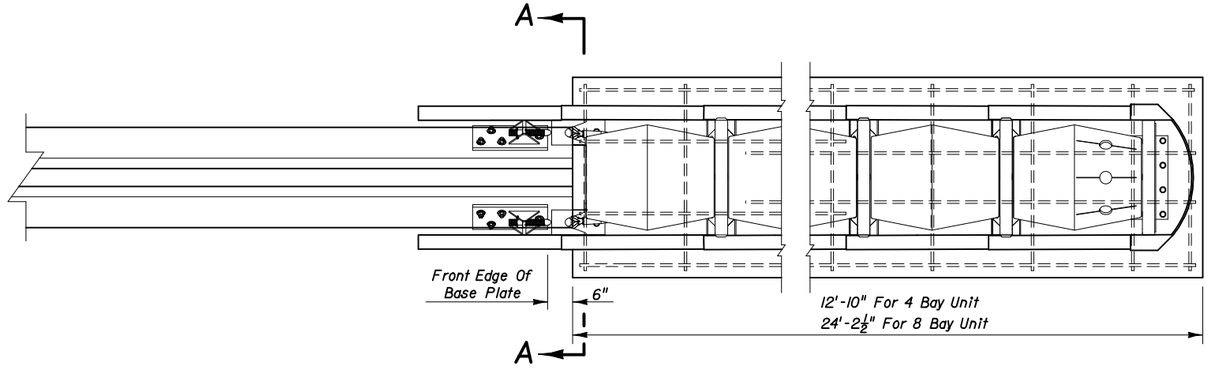
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

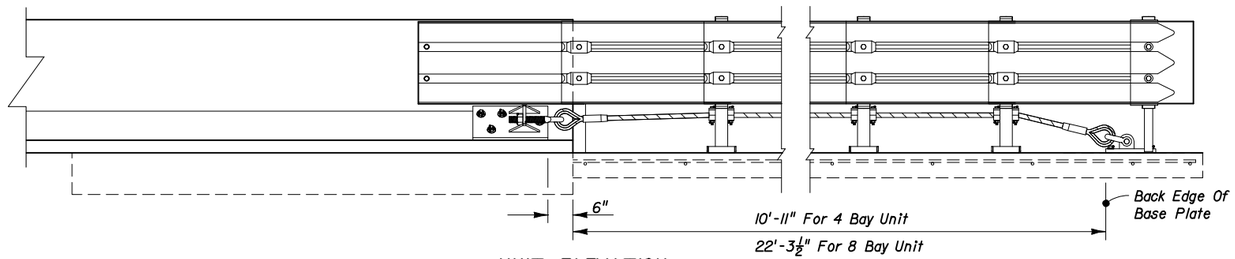
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

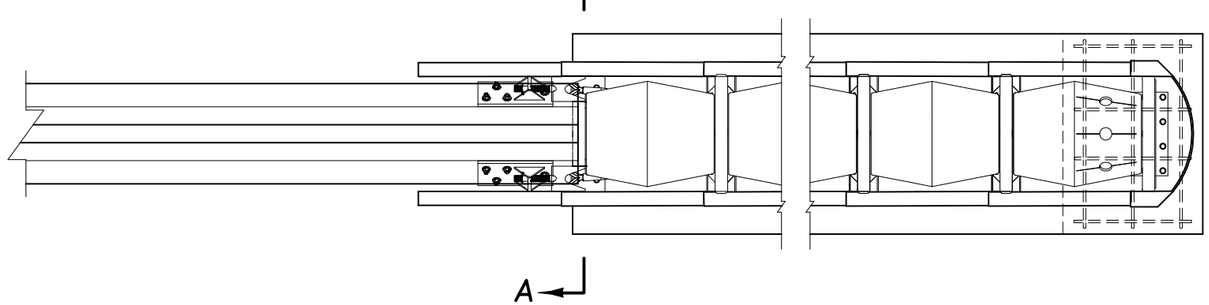


UNIT PLAN

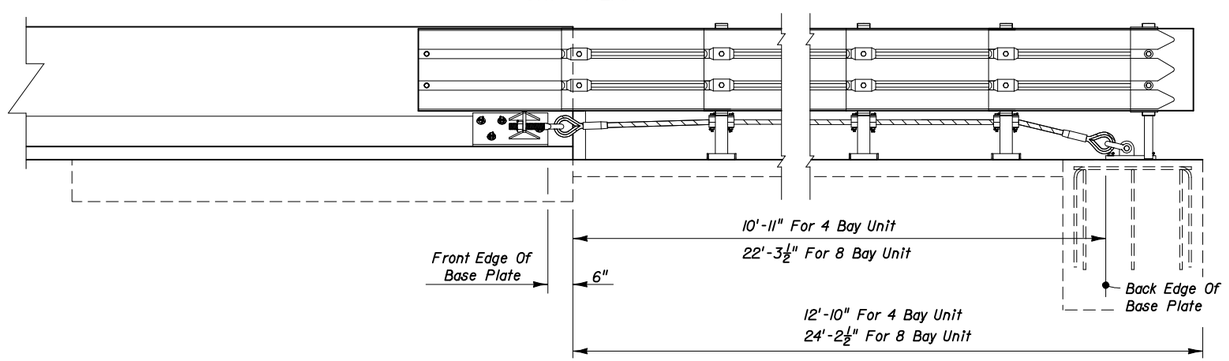


UNIT ELEVATION

CONCRETE PAD

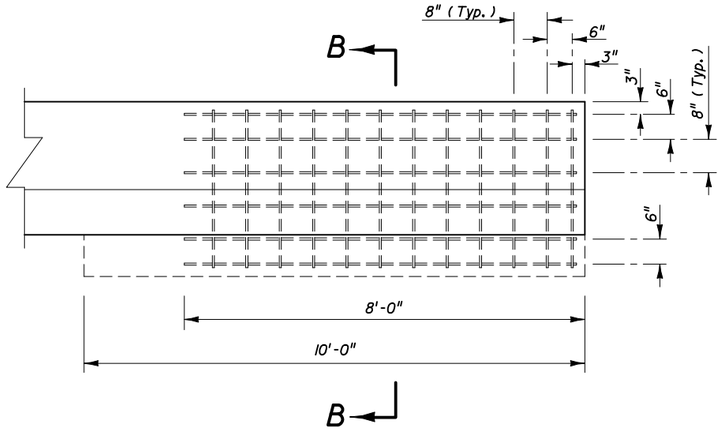


UNIT PLAN



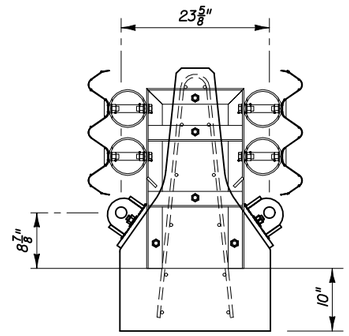
UNIT ELEVATION

CONCRETE ANCHOR BLOCK



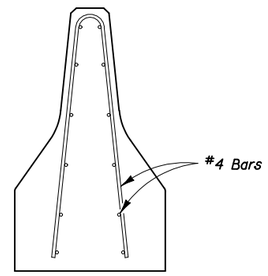
UNIT ELEVATION

WALL REINFORCEMENT



ENLARGED

SECTION AA



ENLARGED

SECTION BB

PERMANENT CONCRETE BARRIER WALL BACKUP

Date: 11-14-02

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

INTERIM STANDARD

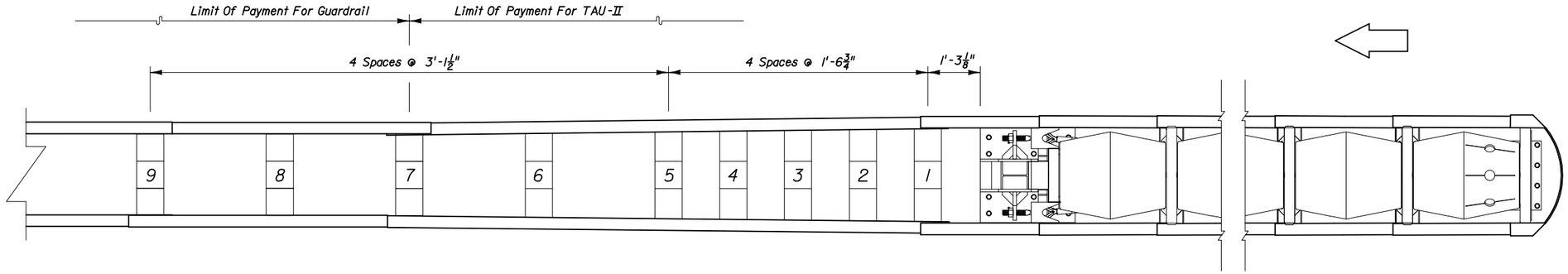
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

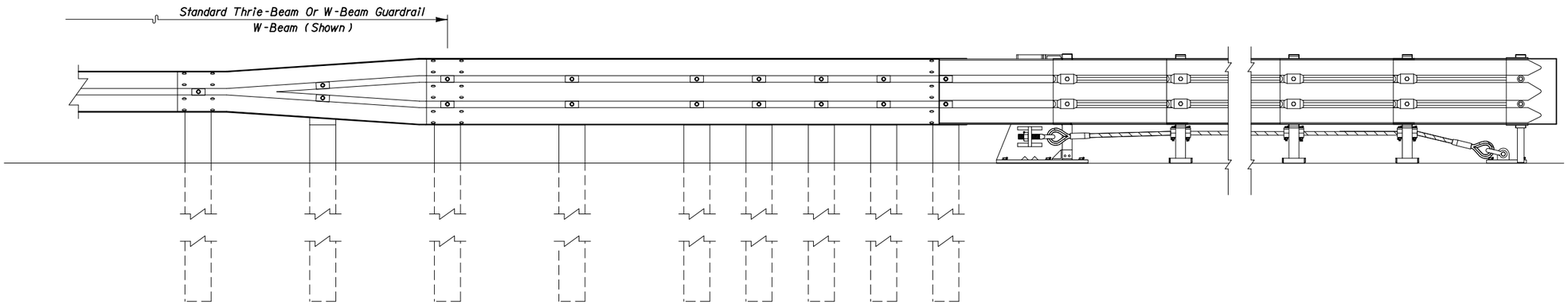
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



UNIT PLAN



UNIT ELEVATION

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

TRANSITION TO DOUBLE FACE GUARDRAIL

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

INTERIM STANDARD

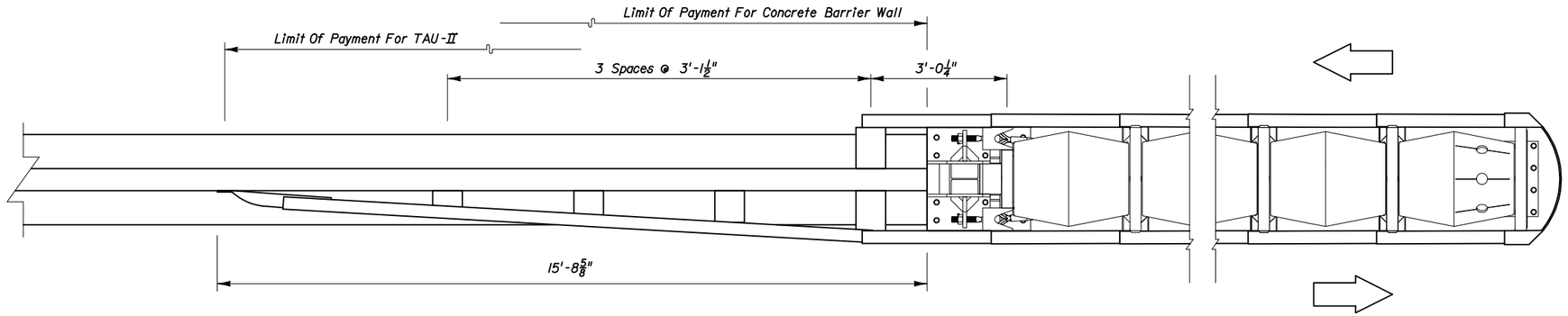
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

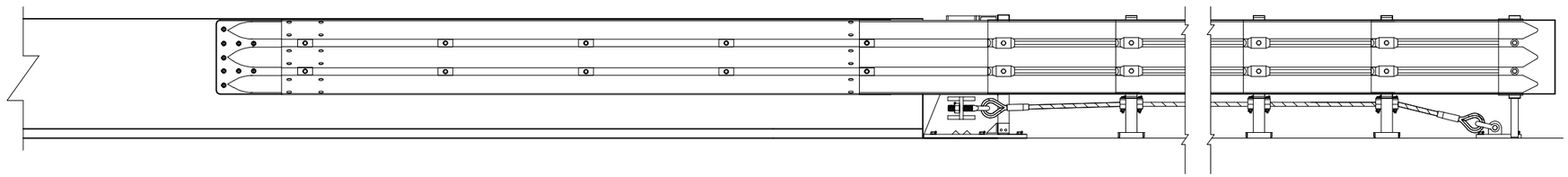
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



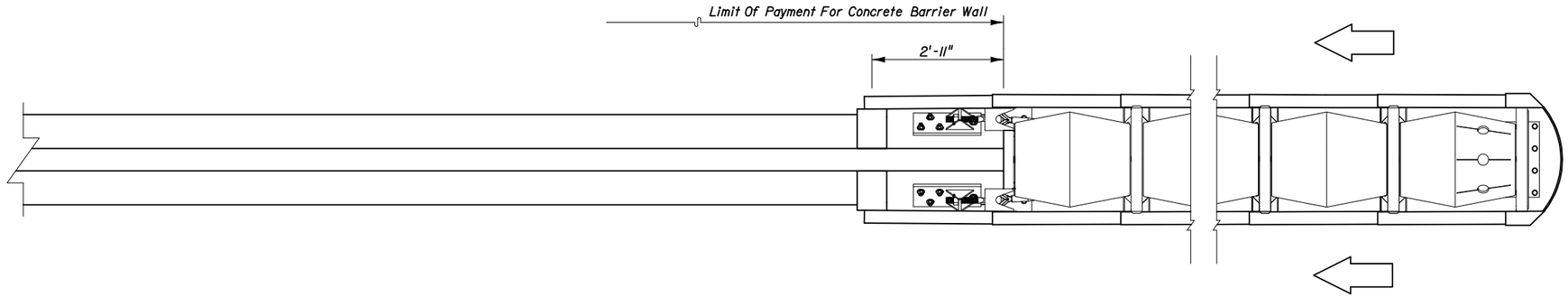
UNIT PLAN



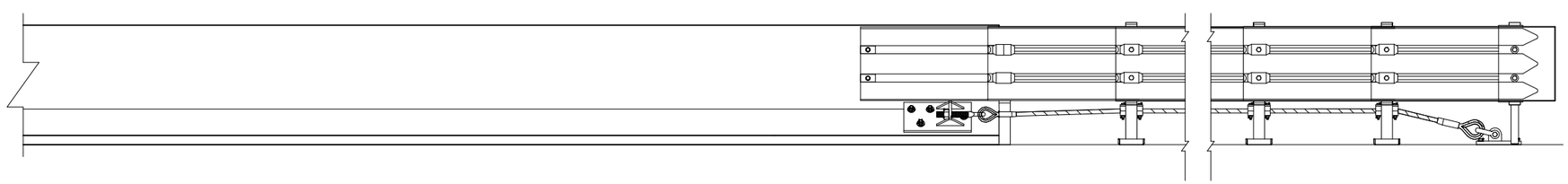
UNIT ELEVATION

COMPACT BACKUP

Approach Two-Way Traffic



UNIT PLAN



UNIT ELEVATION

WALL BACKUP

Approach One-Way Traffic

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

TRANSITION TO PERMANENT CONCRETE BARRIER WALL

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

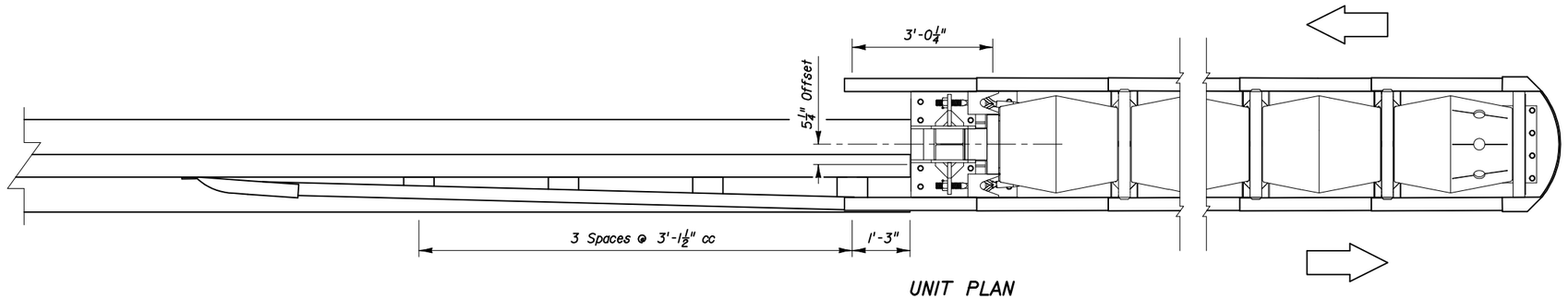
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

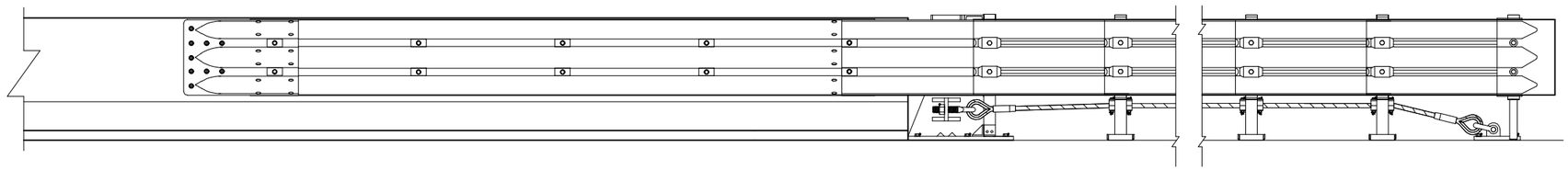
APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



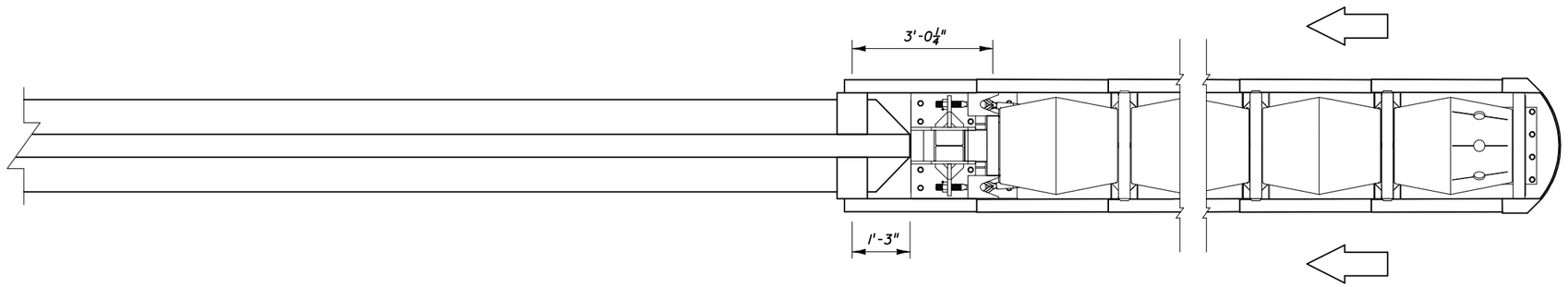
UNIT PLAN



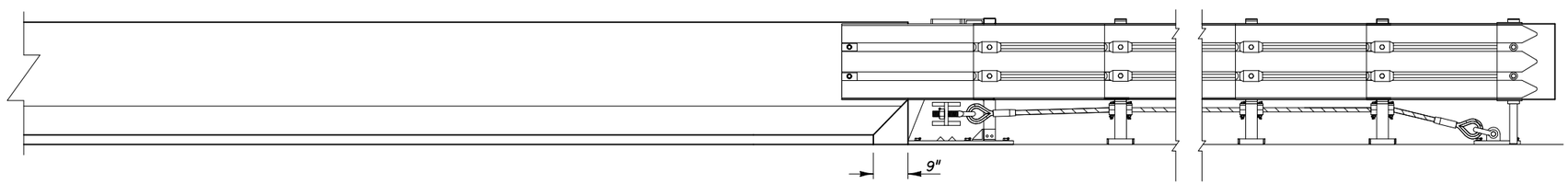
UNIT ELEVATION

COMPACT BACKUP, SYMMETRICAL OR OFFSET (OFFSET SHOWN)

Approach Two-Way Traffic



UNIT PLAN



UNIT ELEVATION

COMPACT BACKUP, CENTERED

Approach One-Way Traffic

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

TRANSITION TO SAFETY SHAPE PERMANENT CONCRETE BARRIER WALL

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

INTERIM STANDARD

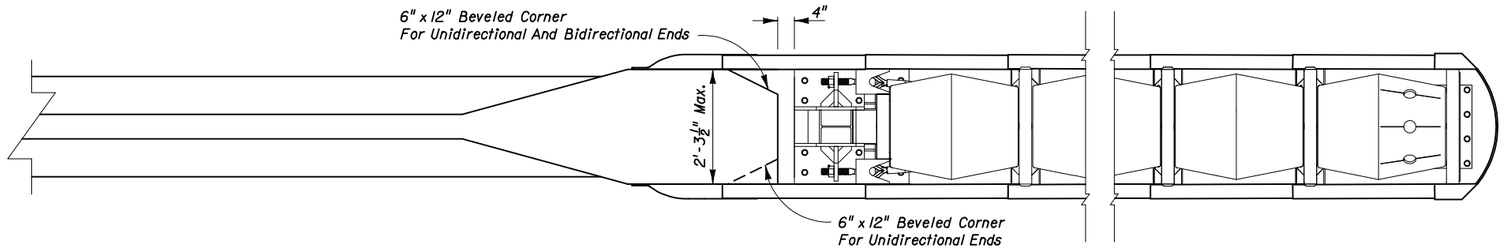
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

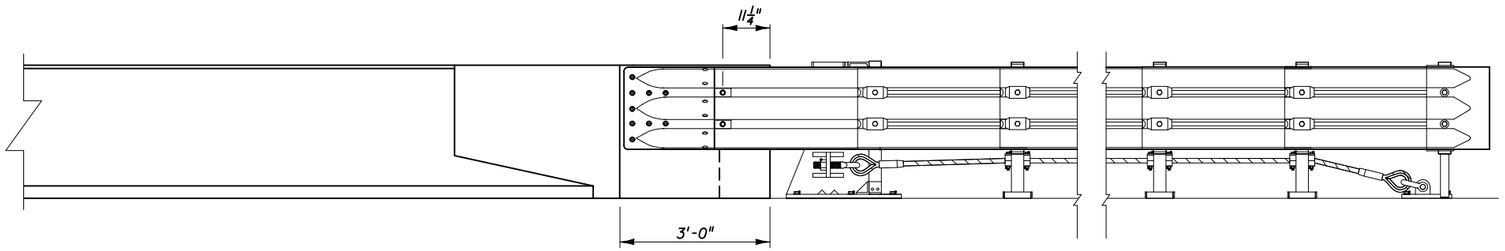
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



UNIT PLAN



UNIT ELEVATION

COMPACT BACKUP, CONCRETE END SHOE TO BULBED END BARRIER

TRANSITION TO PERMANENT CONCRETE BARRIER WALL

Date: 11-14-02

THE SEALED RECORD OF THIS SHEET IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

INTERIM STANDARD

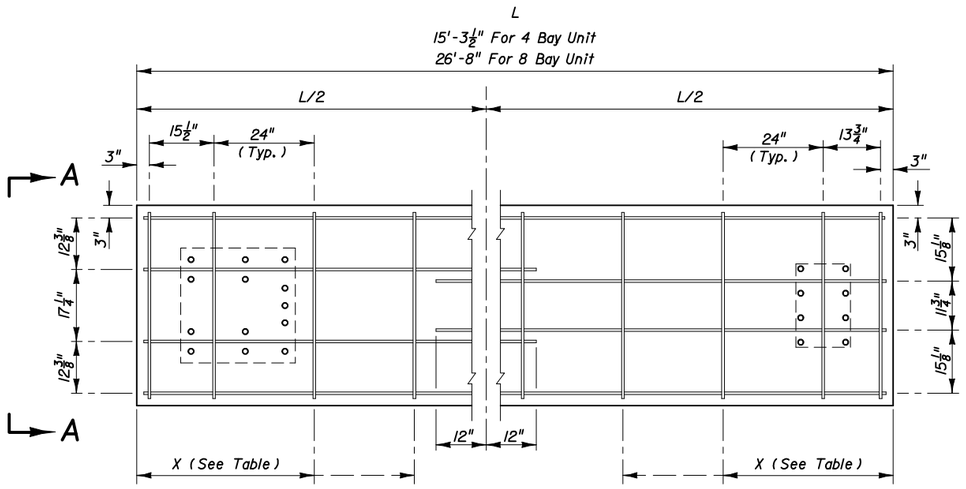
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 8	441

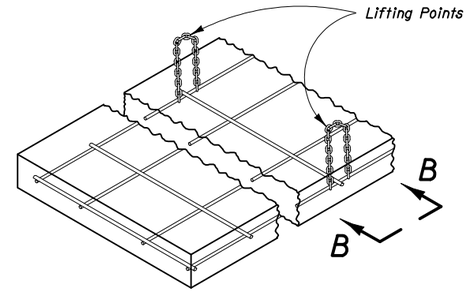
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



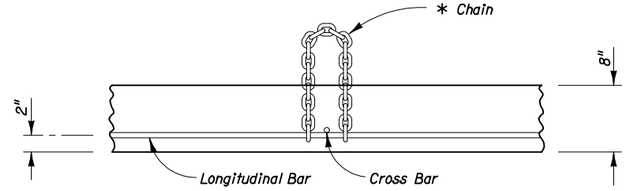
Note: All reinforcement #5 bars.

UNIT PLAN

PICKUP POINT LOCATIONS		
No. Of Bays	Pad Length, L	Pickup Points, X
4	15'-3½"	42" ± 2"
8	26'-8"	66" ± 2"



VIEW AA



* ½" Proof Coil Chain Must Meet The Requirements Of ASTM A413 Grade 28.
The Minimum Length Is 15 Links And The Rebar Will Be Inserted Through Both End Links As Shown.

ENLARGED
VIEW BB

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

PORTABLE REINFORCED CONCRETE PAD

Date: 11-14-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TAU-II

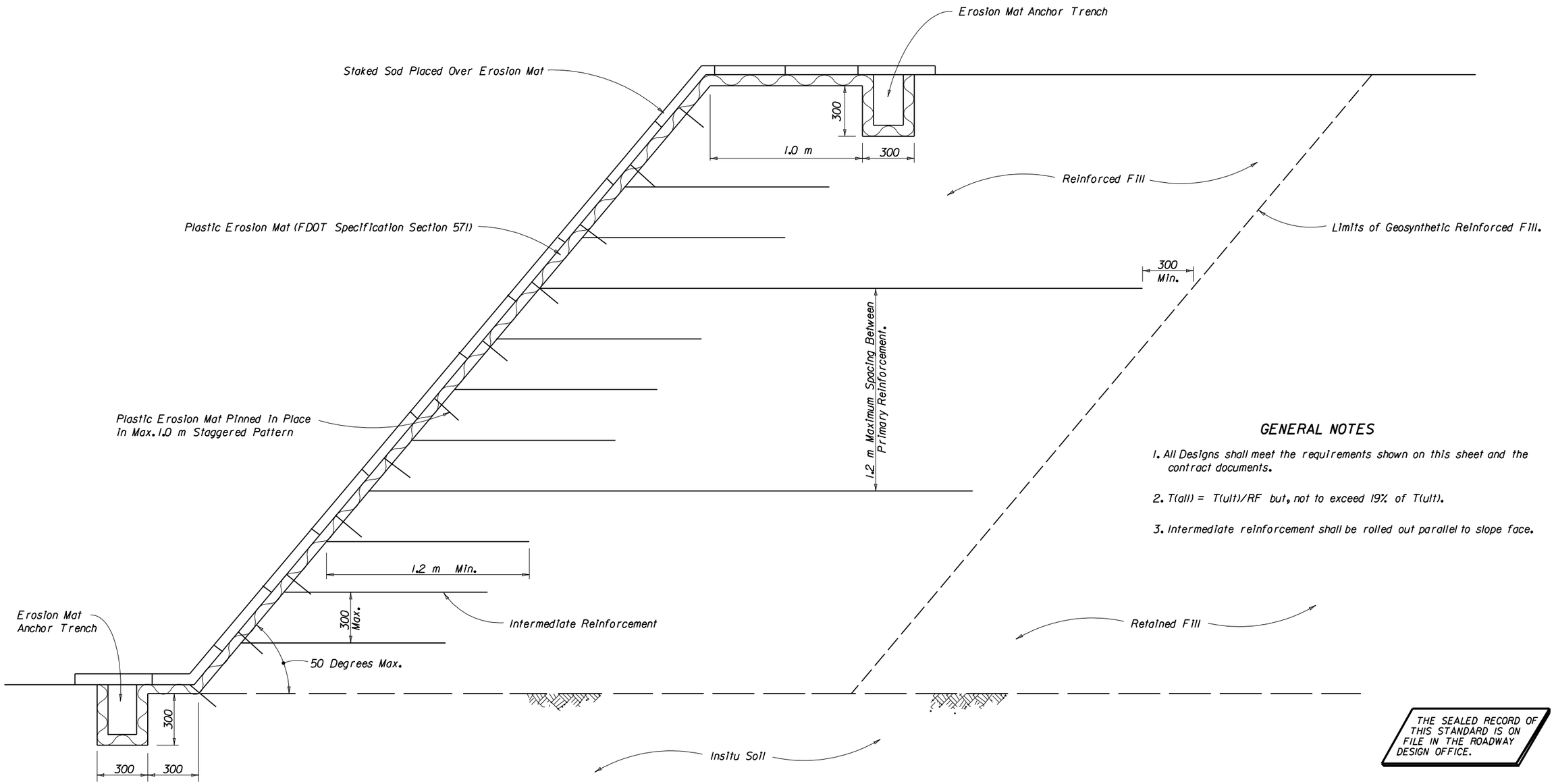
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	8 of 8	441

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



GENERAL NOTES

1. All Designs shall meet the requirements shown on this sheet and the contract documents.
2. T(all) = T(ult)/RF but, not to exceed 19% of T(ult).
3. Intermediate reinforcement shall be rolled out parallel to slope face.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

GEOSYNTHETIC REINFORCED SOIL SLOPES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 8	501

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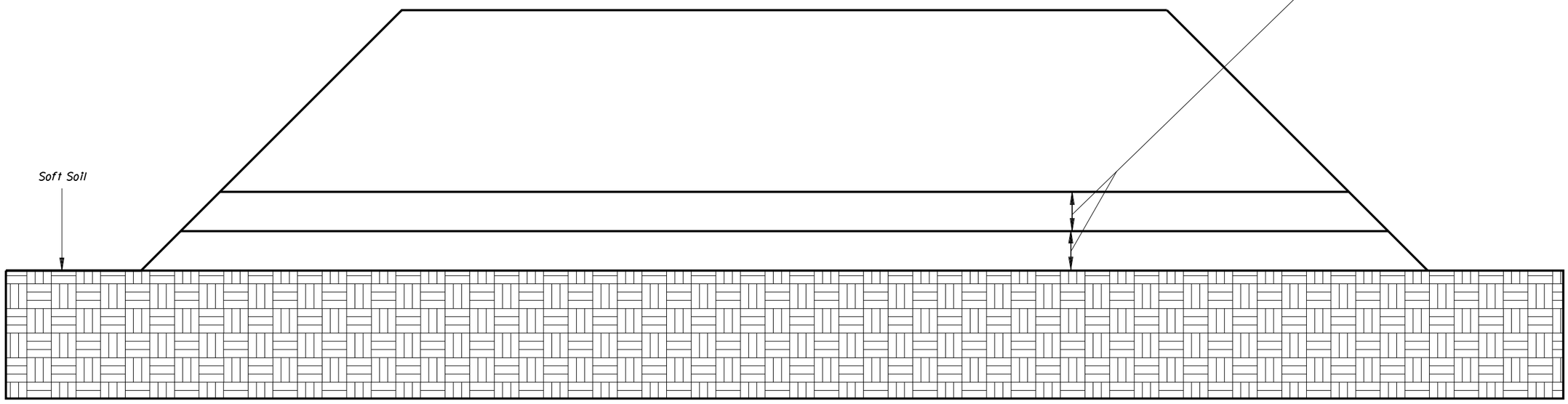
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

Soil Reinforcement
- Maximum vertical spacing between reinforcement layers is 300
- Minimum vertical spacing between reinforcement layers is 150.



THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

GEOSYNTHETIC REINFORCED FOUNDATIONS CONSTRUCTED ON SOFT SOILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

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APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOTEXTILE VALUES

PROPERTY		REQUIRED TEST METHOD	MIRAFI HP 370	MIRAFI HP 470	MIRAFI HP 570	MIRAFI HP 670	MIRAFI HP 770	MIRAFI HS 400	MIRAFI HS 600	MIRAFI HS 800	MIRAFI HS 1150	
Permittivity ($0.05\ sec^{-1}$ Min.)		ASTM D 4491	0.52	0.20	0.40	0.50	0.23	0.026	0.32	0.20	0.32	
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	
Burst Strength (kPa)		GRI : GSI	5,516	8,274	8,274	8,274	8,274	——	——	——	——	
Grab Strength (kN)		ASTM D 4632	1.78 x 1.31	1.69 x 1.56	2.31 x 1.96	2.89 x 2.00	2.67 x 2.45	——	——	——	——	
A.O.S. (mm)		ASTM D 4751	0.6	0.85	0.6	0.85	0.6	0.3	0.85	0.85	0.0236	
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		47.3	52.5	70.1	93.7	105.1	70.1	105.1	140.1	201.1	
	2% Ultimate		7.88	13.13	14.01	15.76	15.76	——	——	——	——	
	5% Ultimate		19.79	26.27	35.03	39.40	43.78	15.76	29.77	52.54	70.05	
Cross Direction	Ultimate		39.40	52.54	70.05	70.05	70.05	70.05	52.54	52.54	52.54	
	2% Ultimate		7.88	17.51	19.26	17.51	19.26	——	——	——	——	
	5% Ultimate		19.79	26.27	35.03	35.03	35.03	35.03	——	——	——	
Strain @ Ultimate Tensile Strength (kN/m)		ASTM D 4595	14%	10%	10%	14%	12%	15%	15%	10%	12%	
Secant Modulus @	2% strain		394	657	701	788	788	——	——	——	——	
	5% strain		396	525	701	788	876	315	595	1051	1401	
	10% strain		350	525	701	788	963	490	841	1401	1751	
Seam Breaking Strength (kN/m)		ASTM D 4884	21.02	26.27	43.78	52.54	17.51	35.03	35.03	35.03	35.03	
Puncture Resistance (kN)		ASTM D 4833	0.8	0.76	0.85	0.89	0.98	——	——	——	——	
Tear Strength (kN)	Machine Direction	ASTM D 4833	0.8	0.58	0.8	1.11	1.11	——	——	——	——	
	Cross Direction	ASTM D 4833	0.49	0.89	0.80	0.89	1.78	——	——	——	——	
Soil- Geosynthetic Friction		GRI : GG5, GT7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	
Creep Resistance- T_{creep} (kN/m)		ASTM D 5262	——	——	——	——	——	42.03	63.05	84.06	120.84	
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	5.0	5.0	5.0	5.0	5.0	1.67	1.67	1.67	1.67	
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.25	1.25	1.15	1.15	1.15	1.3	1.25	1.2	1.15	
	Limestone		1.5	1.5	1.35	1.35	1.35	5	3.5	1.85	1.7	
Durability (RF_D)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
	Biological	ASTM D1987, D3083, G21 & G22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Joint Strength (RF_J)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	——	——	——	——	——	——	——	——	——	
	Overlap	GRI : GG5 & GT6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Approved Application Usage			3	3	3	3	3	3	3	3	3	

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOTEXTILES) APPLICATION AND PROPERTIES

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOTEXTILE VALUES

PROPERTY		REQUIRED TEST METHOD	MIRIFI HS 1400	MIRIFI HS 1715	MIRIFI HS 2400	MIRIFI HS 3000	MIRIFI HS 3600	AMOCO 2006	AMOCO 2016	AMOCO 2044	COMTRAC 70/70	
Permittivity (0.05 sec^{-1} Min.)		ASTM D 4491	0.20	0.32	0.02	0.02	0.02	0.05	0.70	0.15	0.20	
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	
Burst Strength (kPa)		GRI : GS1	——	——	——	——	——	6894	6894	10341	——	
Grab Strength (kN)		ASTM D 4632	——	——	——	——	——	1.40	1.40	2.67/2.23	——	
A.O.S. (mm)		ASTM D 4751	0.85	0.85	0.30	0.30	0.30	0.42	0.42	0.60	0.85	
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		245.2	300.3	420.3	525.4	630.5	30.6	35.0	70.1	245.2	
	2% Ultimate		——	——	——	——	——	2.3	4.0	6.7	——	
	5% Ultimate		87.6	122.6	210.2	262.7	315.2	8.2	10.9	21.2	87.6	
Cross Direction	Ultimate		52.5	52.5	52.5	52.5	52.5	30.6	35.0	70.1	52.5	
	2% Ultimate		——	——	——	——	——	8.4	9.6	20.1	——	
	5% Ultimate		——	——	——	——	——	16.1	20.5	38.0	——	
Strain @ Ultimate Tensile Strength		ASTM D 4595	14%	14%	10%	10%	10%	8%	8%	8%	14%	
Secant Modulus @ (kN/m)	2% strain		——	——	——	——	——	113.8	201.4	332.7	——	
	5% strain		1751.3	2451.8	4203.0	5253.8	6304.6	164.6	217.2	423.8	1751.3	
	10% strain		1751.3	2364.2	4203.0	5253.8	6304.6	152.4	182.1	455.3	1751.3	
Seam Breaking Strength(kN/m)		ASTM D 4884	35.0	35.0	52.5	52.5	52.5	——	——	——	2,400	
Puncture Resistance (kN)		ASTM D 4833	——	——	——	——	——	0.53	0.53	0.76	——	
Tear Strength (kN)	Machine Direction	ASTM D 4833	——	——	——	——	——	0.53	0.53	1.11	——	
	Cross Direction	ASTM D 4833	——	——	——	——	——	0.53	0.53	1.11	——	
Soil- Geosynthetic Friction		GRI : GG5, GT7	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.9	
Creep Resistance-T_{creep} (kN/m)		ASTM D 5262	147.1	180.2	252.2	315.2	315.2	8.8	10.0	20.0	——	
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.67	1.67	1.67	1.67	1.67	3.5	3.5	3.5	1.67	
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.15	1.15	1.1	1.1	1.1	1.10	1.05	1.05	1.15	
	Limestone		1.5	1.35	1.25	1.25	1.25	1.20	1.20	1.10	1.5	
Durability (RF_D)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
	Biological	ASTM D1987, D3083, G21 & G22	1.0	1.0	1.0	1.0	1.0				1.0	
Joint Strength (RF_J)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	——	——	——	——	——	——	——	——	——	
	Overlap	GRI : GG5 & GT6	1.0	1.0	1.0	1.0	1.0	1.2	1.2	1.2	1.0	
Approved Application Usage			3	3	3	3	3	3	3	3	3	

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOTEXTILES) APPLICATION AND PROPERTIES

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	4 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	MIRIFI MG 2XT	MIRIFI MG 3XT	MIRIFI MG 5XT (Matrex 30)	MIRIFI MG 7XT	MIRIFI MG 8XT	MIRIFI MG 10XT (Matrex 60)	MIRIFI MG 18XT (Matrex 90)	MIRIFI MG 20XT (Matrex 120)	MIRIFI MG 22XT (Matrex 180)	MIRIFI MG 24XT (Matrex 240)
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (kN/m)												
Machine Direction	Ultimate	ASTM D 4595	29.2	40.9	52.4	63.5	90.9	121.1	136.6	181.3	259.2	370.4
	2% Ultimate		—	—	—	—	—	—	—	—	—	—
	5% Ultimate		17.5	15.4	25.4	31.5	36.8	45.5	64.2	77.9	104.2	146.2
Cross Direction	Ultimate		29.2	—	—	—	—	—	—	—	—	—
	2% Ultimate		—	—	—	—	—	—	—	—	—	—
	5% Ultimate		—	—	—	—	—	—	—	—	—	—
Strain @ Ultimate Tensile Strength		ASTM D 4595	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Secant Modulus @ (kN/m)	2% strain		—	—	—	—	—	—	—	—	—	—
	5% strain		—	308.2	507.9	630.5	735.5	910.7	1295.9	1558.6	2084.0	2924.6
	10% strain		—	—	—	—	—	—	—	—	—	—
Junction Strength (kN/m)		GRI : GG2	—	—	—	—	—	—	—	—	—	—
Soil- Geosynthetic Friction		GRI : GG5, GT7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Creep Resistance- T_{creep} (kN/m)		ASTM D 5262	17.5	24.5	31.4	38.1	54.6	72.7	82.0	105.4	150.7	215.3
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.25	1.20	1.15	1.15	1.15	1.1	1.1	1.1	1.1	1.1
	Limestone		Not Recommended	1.75	1.3	1.3	1.3	1.25	1.25	1.25	1.25	1.25
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987, D3083, G21 & G22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	—	—	—	—	—	—	—	—	—	—
	Overlap	GRI : GG5 & GT6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Approved Application Usage			3	3	3	3	3	3	3	3	3	3

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRIDS) APPLICATION AND PROPERTIES

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	5 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SYNTEEN SF 20	SYNTEEN SF 35	SYNTEEN SF 40	SYNTEEN SF 50	SYNTEEN SF 55	SYNTEEN SF 80	SYNTEEN SF 110			
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%			
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		26.4	38.3	44.5	54.4	55.1	81.5	118.6			
	2% Ultimate		5.4	6.7	7.1	11.5	10.7	14.8	17.3			
	5% Ultimate		9.8	10.6	14.2	13.5	16.9	18.6	24.6			
Cross Direction	Ultimate		26.4	37.3	44.5	57.4	36.5	32.2	31.2			
	2% Ultimate		5.4	5.8	7.1	11.5	8.8	12.9	18.6			
	5% Ultimate		9.8	8.5	14.2	13.5	11.6	22.8	23.1			
Strain @ Ultimate Tensile Strength		ASTM D 4595	9.4%	14.1%	9.9%	14.2%	11.5%	14.2%	18.8%			
Secant Modulus @ (kN/m)	2% strain		269.9	337.3	356.2	577.2	537.0	741.5	865.4			
	5% strain		195.5	211.6	283.2	269.0	338.2	371.5	481.5			
	10% strain		221.9	222.3	322.4	269.0	396.0	553.3	399.6			
Junction Strength (kN/m)		GRI : GG2	——	——	——	——	——	——	——			
Soil- Geosynthetic Friction		GRI : GG5, GT7	0.8	0.8	0.8	0.8	0.8	0.8	0.8			
Creep Resistance- T_{creep} (kN/m)		ASTM D 5262	14.7	22.2	22.3	32.1	33.1	46.4	58.8			
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.80	1.72	2.00	1.70	1.67	1.75	2.02			
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.05	1.15	1.15	1.08	1.08	1.08	1.08			
	Limestone		1.75	1.70	1.60	1.55	1.55	1.55	1.35			
Durability (RF_d)	Chemical	ASTM D 5322	1.10	1.10	1.10	1.10	1.10	1.10	1.10			
	Biological	ASTM D1987, D3083, G21 & G22	1.10	1.10	1.10	1.10	1.10	1.10	1.10			
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	——	——	——	——	——	——	——			
	Overlap	GRI : GG5 & GT6	1.10	1.10	1.10	1.10	1.10	1.10	1.10			
Approved Application Usage			3	3	3	3	3	3	3			

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRIDS) APPLICATION AND PROPERTIES

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	6 of 8	501

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FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	TENSAR BX 4100	TENSAR BX 4120	TENSAR BX 4200	TENSAR BX 4220	TENSAR UX 900 HS	TENSAR UX 1100 HS	TENSAR UX 1400 HS	TENSAR UX 1500 HS	TENSAR UX 1600 HS	TENSAR UX 1700 HS
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	——	90%	90%	90%	90%	90%	90%	90%	90%	90%
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		12.6	12.6	18.5	18.5	54.0	54.0	64.2	100.7	131.3	157.6
	2% Ultimate		3.5	3.5	5.4	5.4	12.3	12.3	14.6	26.3	34.0	40.0
	5% Ultimate		7.0	7.0	10.3	10.3	21.0	21.0	29.2	54.0	64.9	78.8
Cross Direction	Ultimate		12.8	12.8	20.0	20.0	——	——	——	——	——	——
	2% Ultimate		4.4	4.4	7.3	7.3	——	——	——	——	——	——
	5% Ultimate		9.3	9.3	14.0	14.0	——	——	——	——	——	——
Strain @ Ultimate Tensile Strength		ASTM D 4595	——	——	——	——	10%	10%	10%	10%	10%	10%
Secant Modulus @ (kN/m)	2% strain		175.1	175.1	270.1	270.1	613.2	613.2	729.7	1313.3	1700.5	1999.5
	5% strain		140.0	140.0	205.7	217.5	420.3	420.3	583.8	1079.9	1298.9	1576.2
	10% strain		——	——	——	——	——	——	——	——	——	——
Junction Strength (kN/m)		GRI : GG2	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Soil- Geosynthetic Friction		GRI : GG5, GT7	——	0.90	0.95	0.95	0.462	0.462	0.462	0.462	0.462	0.462
Creep Resistance-T_{creep} (kN/m)		ASTM D 5262	3.6	3.6	6.1	6.1	13.1	19.7	27.0	40.9	54.0	67.9
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	3.5	3.5	3.27	3.27	4.12	3.65	2.381	2.46	2.43	2.33
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Limestone		1.43	1.43	1.35	1.35	1.25	1.25	1.20	1.20	1.20	1.20
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987, D3083, G21 & G22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	——	——	——	——	1.0	1.0	1.0	1.0	1.0	1.0
	Overlap	GRI : GG5 & GT6	1.0	1.0	1.0	1.0	——	1.0	1.0	1.0	1.0	1.0
Approved Application Usage			3	3	3	3	3	3	3	3	3	3

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

APPROVED GEOSYNTHETIC PRODUCTS (EXTRUDED GEOGRID) APPLICATION AND PROPERTIES

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY _____
STATE GEOTECHNICAL ENGINEER

	SHEET NO.	INDEX NO.
	00	7 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	TENAX MS 220	TENAX MS 330								
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	85%	85%								
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		13.5	20.0								
	2% Ultimate		4.4	6.1								
	5% Ultimate		9.0	13.5								
Cross Direction	Ultimate		20.4	30.6								
	2% Ultimate		6.5	9.0								
	5% Ultimate		13.0	19.6								
Strain @ Ultimate Tensile Strength		ASTM D 4595	12%	12%								
Secant Modulus @ (kN/m)	2% strain		218.9	305.0								
	5% strain		179.9	270.0								
	10% strain		——	——								
Junction Strength (kN/m)		GRI : GG2	12.2	18.0								
Soil- Geosynthetic Friction		GRI : GG5, GT7	——	——								
Creep Resistance- T_{creep} (kN/m)		ASTM D 5262	——	——								
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	5.0	5.0								
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	3.0	3.0								
	Limestone		3.0	3.0								
Durability (RF_d)	Chemical	ASTM D 5322	2.0	2.0								
	Biological	ASTM D1987, D3083, G21 & G22										
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	——	——								
	Overlap	GRI : GG5 & GT6	——	——								
Approved Application Usage			2	2								

Approved Application Usage: 1 = Steepened Slopes
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APPROVED GEOSYNTHETIC PRODUCTS (EXTRUDED GEOGRID) APPLICATION AND PROPERTIES

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

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APPROVED BY

STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
00	8 of 8	501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	Raugrid 3/3	Raugrid 4/2	Raugrid 6/3	Raugrid 8/3	Raugrid 10/3					
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	95%	95%	95%	95%	95%					
Tensile Strength (kN/m)		ASTM D 4595										
Machine Direction	Ultimate		32.6	41.5	63.5	77.2	96.2					
	2% Ultimate		5.8	8.1	14.0	14.4	19.0					
	5% Ultimate		10.4	11.2	16.7	17.0	29.8					
Cross Direction	Ultimate		32.3	21.3	28.6	30.5	32.0					
	2% Ultimate		5.5	4.0	4.9	5.7	5.7					
	5% Ultimate		7.9	5.2	6.6	7.8	7.8					
Strain @ Ultimate Tensile Strength		ASTM D 4595	10.8	11.8	13.1	12.2	11.2					
Secant Modulus @ (kN/m)	2% strain		———	———	———	———	———					
	5% strain		———	———	———	———	———					
	10% strain		———	———	———	———	———					
Junction Strength (kN/m)		GRI : GG2	N/A	108	199	168	146					
Soil- Geosynthetic Friction		GRI : GG5, GT7	0.9	0.9	0.9	0.9	0.9					
Creep Resistance- T_{creep} (kN/m)		ASTM D 5262	21.4	27.3	41.7	50.8	63.3					
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.52	1.52	1.52	1.52	1.52					
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.10					
	Limestone		1.14	1.14	1.14	1.14	1.14					
Durability (RF_d)	Chemical	ASTM D 5322	1.15	1.15	1.15	1.15	1.15					
	Biological	ASTM D1987, D3083, G21 & G22	1.15	1.15	1.15	1.15	1.15					
Joint Strength (RF_J)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	———	———	———	———	———					
	Overlap	GRI : GG5 & GT6	———	———	———	———	———					
Approved Application Usage			3	3	3	3	3					

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRIDS) APPLICATION AND PROPERTIES

Revised: 02-02-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

INTERIM STANDARD

APPROVED BY
STATE GEOTECHNICAL ENGINEER

THIS SHEET IS A SUPPLEMENT TO THE INTERIM INDEX NO 501 SHEET 6 OF 8 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET IN METRIC UNITS, DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 1	0501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SYNTEEN SF 20	SYNTEEN SF 35	SYNTEEN SF 40	SYNTEEN SF 50	SYNTEEN SF 55	SYNTEEN SF 80	SYNTEEN SF 110	Raugrid 3/3	Raugrid 4/2	Raugrid 6/3	Raugrid 8/3	Raugrid 10/3
UV Stability (Retained 50% Strength Min. @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	95%	95%	95%	95%	95%
Tensile Strength (kN/m)		ASTM D 4595												
Machine Direction	Ultimate		24.4	38.3	44.5	54.5	55.1	81.5	108.9	32.6	41.5	63.5	77.2	96.2
	2% Ultimate		5.4	6.7	7.1	11.5	10.7	14.8	17.3	———	———	———	———	———
	5% Ultimate		9.8	10.6	14.2	13.5	16.9	18.6	24.6	10.4	11.2	16.7	17.0	23.1
Cross Direction	Ultimate		23.8	37.3	44.5	57.4	36.5	32.2	31.8	32.3	21.3	28.6	30.5	32.0
	2% Ultimate		5.4	5.8	6.3	9.2	8.8	12.9	18.6	———	———	———	———	———
	5% Ultimate		9.8	8.5	11.2	11.9	11.6	22.8	23.1	7.9	5.2	6.6	7.4	7.6
Strain @ Ultimate Tensile Strength		ASTM D 4595	9.4%	14.1%	9.9%	14.2%	11.5%	13.9%	18.8%	10.8%	11.8%	13.1%	12.2%	11.5%
Secant Modulus @ (kN/m)	2% strain		270	337	356	577	537	742	866	———	———	———	———	———
	5% strain		196	212	283	269	338	372	482	———	———	———	———	———
	10% strain		222	222	322	269	396	553	400	———	———	———	———	———
Junction Strength (kN/m)		GRI : GG2	———	———	———	———	———	———	———	N/A	108	199	168	146
Soil- Geosynthetic Friction		GRI : GG5, GT7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9
Creep Resistance-T_{creep} (kN/m)		ASTM D 5262	14.7	22.2	22.3	32.1	33.1	46.5	58.8	21.4	27.3	41.7	50.8	63.3
Creep Reduction Factor (T_{ult} / T_{creep})		GRI : GG3 & GT5	1.66	1.73	2.00	1.70	1.67	1.75	2.02	1.52	1.52	1.52	1.52	1.52
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.05	1.15	1.15	1.08	1.08	1.08	1.08	1.10	1.10	1.10	1.10	1.10
	Limestone		1.75	1.70	1.60	1.55	1.55	1.55	1.35	1.17	1.17	1.17	1.17	1.17
Durability (RF_d)	Chemical	ASTM D 5322	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15
	Biological	ASTM D1987, D3083, G21 & G22	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.15	1.15	1.15	1.15	1.15
Joint Strength (RF_j)	Mechanical	ASTM D 4595, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———	———	———
	Overlap	GRI : GG5 & GT6	1.10	1.10	1.10	1.10	1.10	1.10	1.10	———	———	———	———	———
Approved Application Usage			3	3	3	3	3	3	3	3	3	3	3	3

Approved Application Usage: 1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN METRIC UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET PUBLISHED IN METRIC UNITS.

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRIDS) APPLICATION AND PROPERTIES

Revised: 02-01-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

GEOSYNTHETIC REINFORCED SOILS

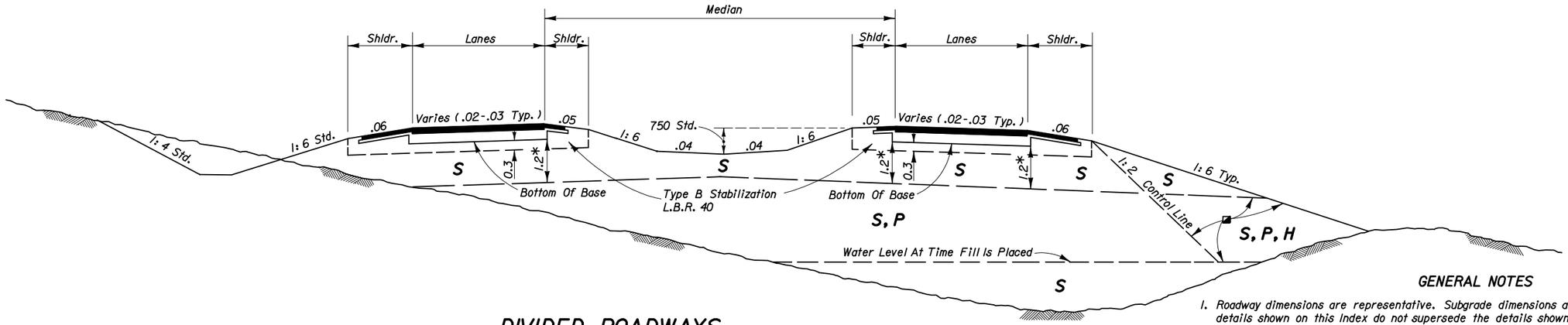
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 501 (SHEET 6 OF 8) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

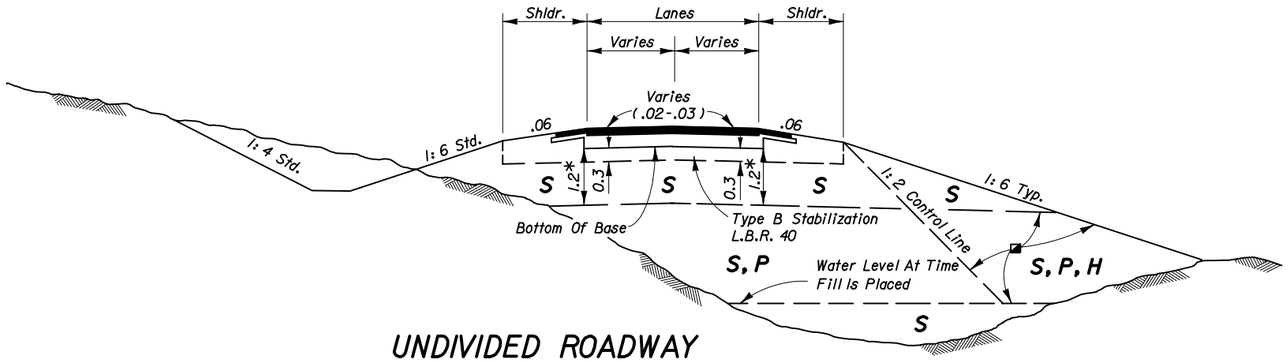
APPROVED BY
STATE GEOTECHNICAL ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 8	0501

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Geotechnical Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the 75 μm sieve.

* For cut sections this dimension may be reduced to 600 mm; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 450 mm.

FLEXIBLE PAVEMENT

GENERAL NOTES

1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this index do not supersede the details shown in the plans or on Index Nos. 500 or 506.
2. Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 1.2 m of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.
3. High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.
4. Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, shall not be used in the subgrade portion of the roadbed.

   Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, shall not be used in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the plans or otherwise specified in the plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer.

   Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the 4.75 mm sieve.
5. Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, shall be designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M).

   Highly organic soils shall not be used within the subgrade or embankment portion of the roadbed, with the exception of muck used as a supplement to construct a finish soil layer as described in Section 162 of the FDOT Standard Specifications.

DESIGN NOTE

1. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated, specify in the plans the utilization of Select (S), Plastic (P) and/or High Plastic (H) soils classified as organic material, in the embankment outside the control line.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Revised: 11-14-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

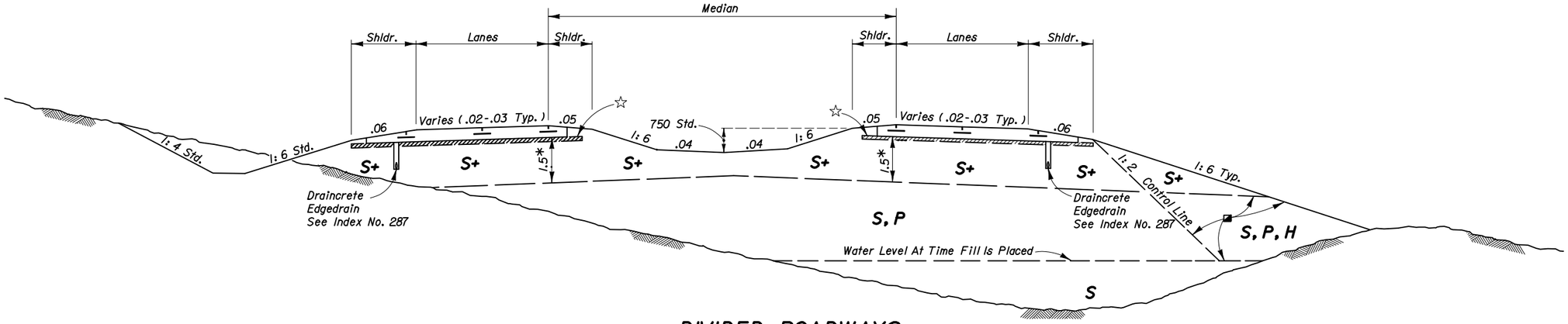
INTERIM STANDARD

SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

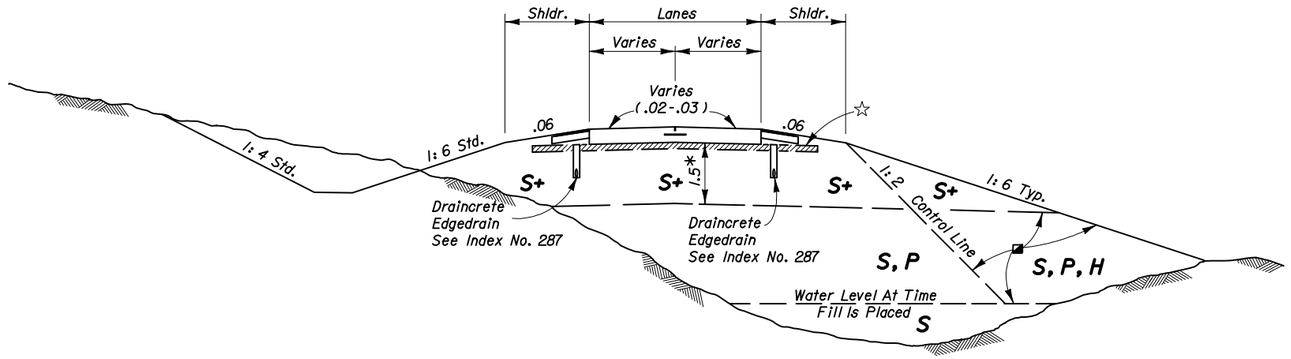
APPROVED BY
State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 3	0505

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of $5x10^{-5}$ cm/sec as per FM 1-T215
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

*** When allowed by the plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer. This material must meet the minimum lab permeability requirement, be non-plastic, and not exceed 12% passing the 75 µm sieve.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the 75 µm sieve.

* For cut sections this dimension may be reduced to 600 mm; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 450 mm.

☆ 75 mm of #57 Coarse Aggregate Mixed Into Top 150 mm.

RIGID PAVEMENT - ALTERNATE #1

Revised: 11-14-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

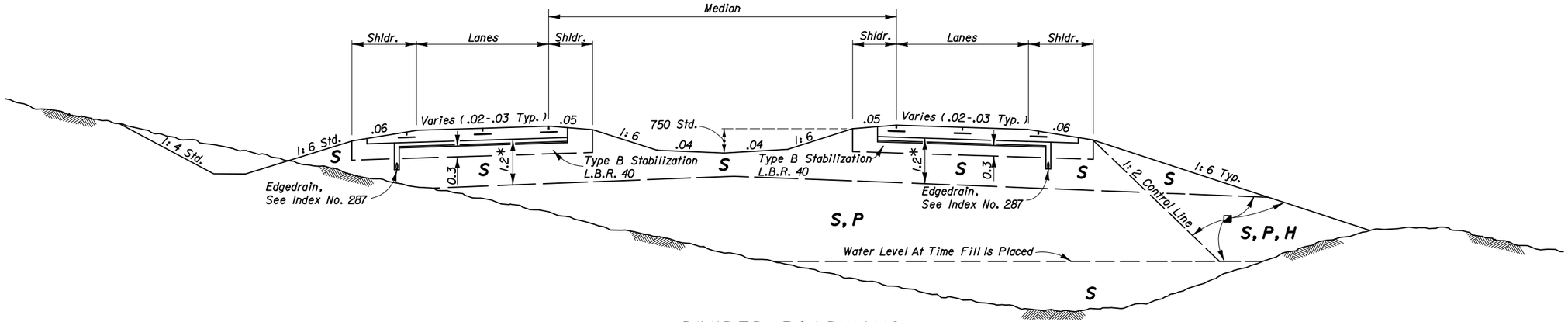
INTERIM STANDARD

APPROVED BY
State Geotechnical Engineer

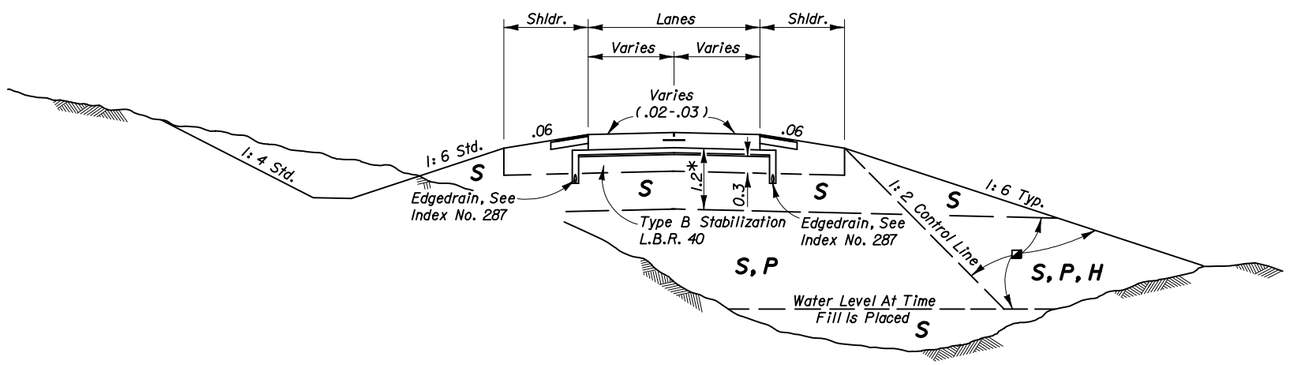
SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 3	0505

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Geotechnical Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the 75 μm sieve.

* For cut sections this dimension may be reduced to 600 mm; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 450 mm.

DESIGN NOTE

1. Concrete pavement is to be placed over 100 mm of Asphalt Treated Permeable Base (ATPB) or Cement Treated Permeable Base (CTPB) as identified in the plans. This will be placed on an aggregate separator layer using 20 mm of Type S-III Structural Course. This will be placed on a working platform using 300 mm of Type B Stabilization.

RIGID PAVEMENT - ALTERNATE #2

Revised: 11-14-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EMBANKMENT UTILIZATION

INTERIM STANDARD

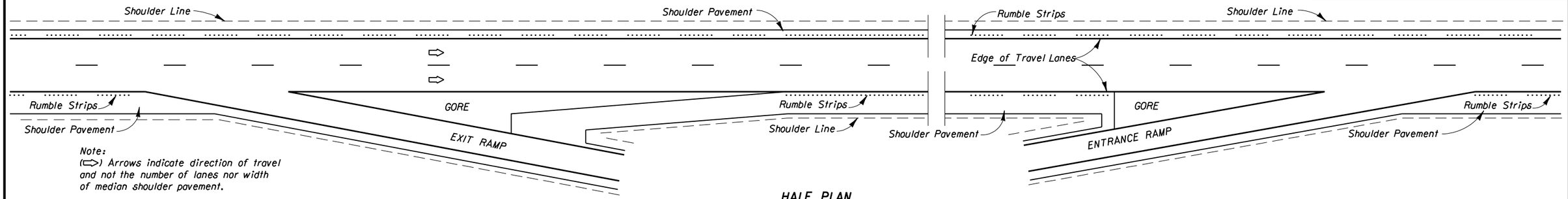
SHEETS 1-3 OF 3 ARE REPLACEMENTS FOR INDEX NO. 505 OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

State Geotechnical Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	3 of 3	0505

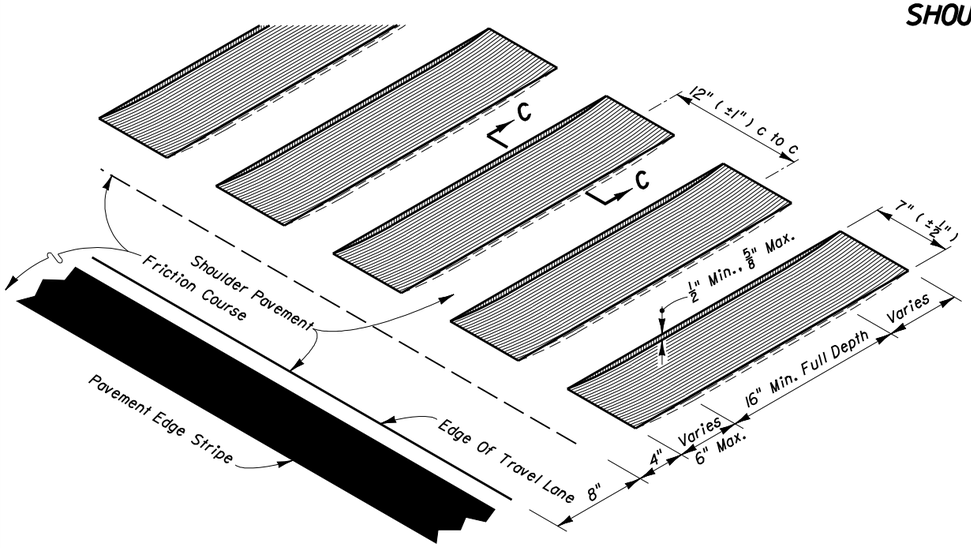
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



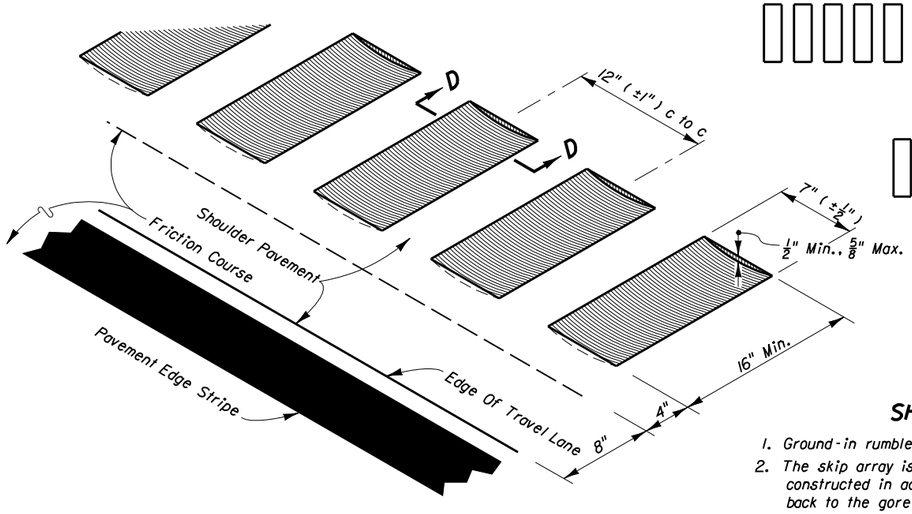
Note:
(⇨) Arrows indicate direction of travel and not the number of lanes nor width of median shoulder pavement.

HALF PLAN
LIMITED ACCESS FACILITIES

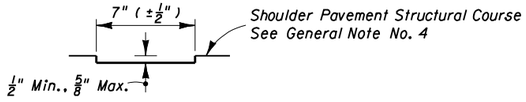
SHOULDER GROUND-IN RUMBLE STRIP PLACEMENT



ISOMETRIC - TRANSVERSE CUT

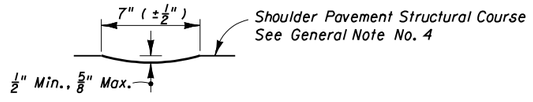


ISOMETRIC - LONGITUDINAL CUT



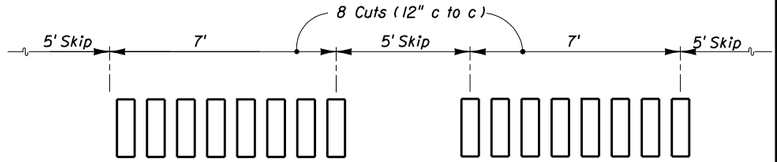
SECTION CC

TRANSVERSE CUT



SECTION DD

LONGITUDINAL CUT



SKIP ARRAY

Continuous Cuts (12" c to c)

CONTINUOUS ARRAY

ARRAYS

GENERAL NOTES FOR SHOULDER GROUND-IN RUMBLE STRIPS

1. Ground-in rumble strips shall be constructed on limited access facilities.
2. The skip array is the standard array. The continuous array shall be constructed in advance of bridge ends for a distance of 1000', or back to the gore recovery area for mainline interchange bridges; and constructed at other specific locations as called for in the plans.
3. Ground-in rumble strips are to be constructed in accordance with Section 546 of the Specifications.
4. When friction course extends more than 8" beyond the edge of the travel lane, the extended friction course shall be bladed off back to the 8" line, prior to rumble strip grinding.
5. Both arrays shall be paid for under the contract unit price for Rumble Strips (Ground-In), PM. Such price and payment shall be full compensation for all work and materials required.

DESIGN NOTE

1. The rumble strips described on this sheet are intended for use on flexible pavement shoulders. When constructing ground-in rumble strips on existing rigid (concrete) shoulders, no rumble strips shall be located closer than 6" from any pavement joint. When specifying ground-in rumble strips on existing rigid shoulders their location and array shall be detailed in the plans.
2. Other methods and types of applications shall not be used unless approved in writing by the State Roadway Design Engineer. Approval will be considered only with sufficient documented justification for variance from this standard.

LOCATION ALONG SHOULDER (FLEXIBLE PAVEMENT)

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

SHOULDER GROUND-IN RUMBLE STRIPS

REVISED 11/27/00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

RUMBLE STRIPS

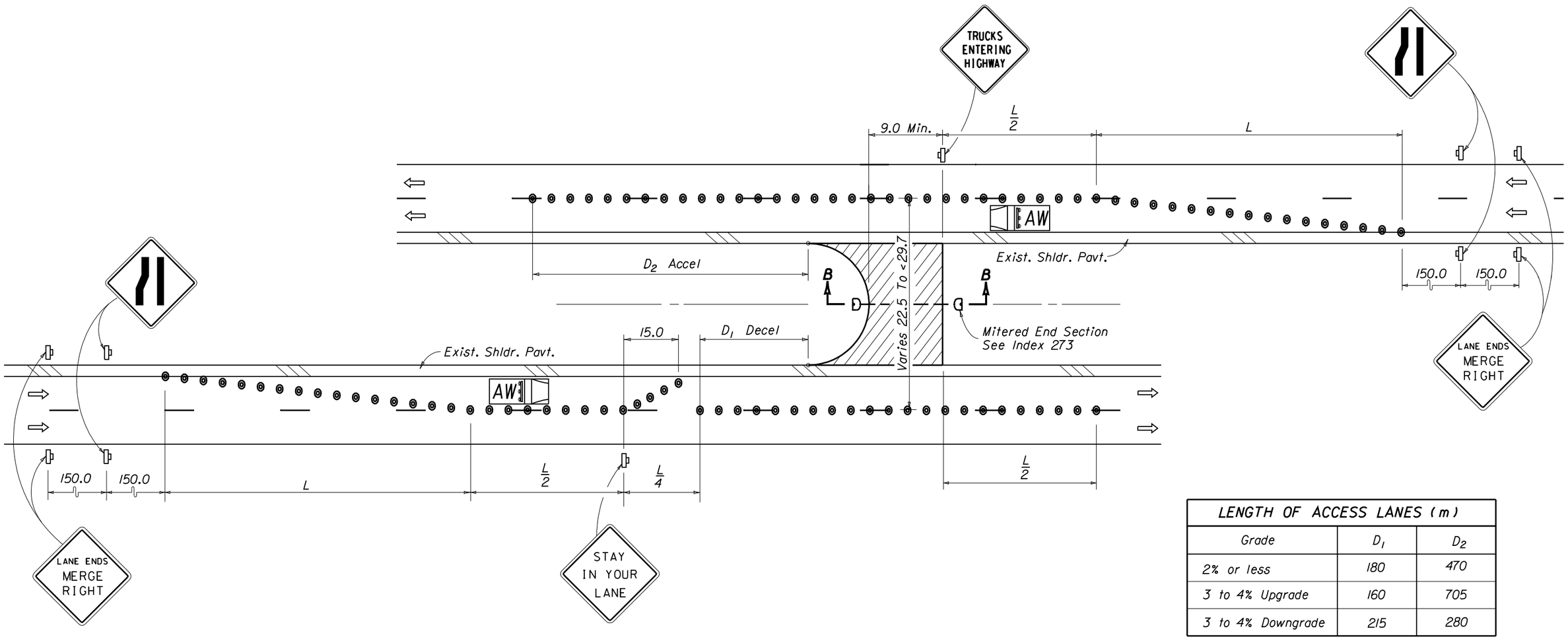
INTERIM STANDARD

THIS SHEET REPLACES SHEET 2 OF 2 OF INDEX 518 OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000

APPROVED BY _____
State Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 2	0518

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



LENGTH OF ACCESS LANES (m)		
Grade	D_1	D_2
2% or less	180	470
3 to 4% Upgrade	160	705
3 to 4% Downgrade	215	280

SYMBOLS

- Work Area
- Work Zone Sign
- Cone Or Tubular Marker
- AW — Advance Warning Vehicle

Maximum Spacing Between Cones And Tubular Markers Shall Be 7.5 m.

$$L\ (\text{Min.}) = \frac{WS}{1.6}$$

S = Existing Posted Speed (km/h)

NOTES

1. A lane closure analysis will be required to determine the times of day that this crossover can be in operation.
2. Arrows denote direction of traffic only and do not reflect pavement markings.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

TEMPORARY CROSSOVER FOR MEDIAN WIDTHS FROM 15.3 m TO < 22.5 m

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
605 SUWANNEE STREET
TALLAHASSEE, FLORIDA 32399-0450

TRAFFIC CONTROL THROUGH WORK ZONES

TEMPORARY CROSSOVER

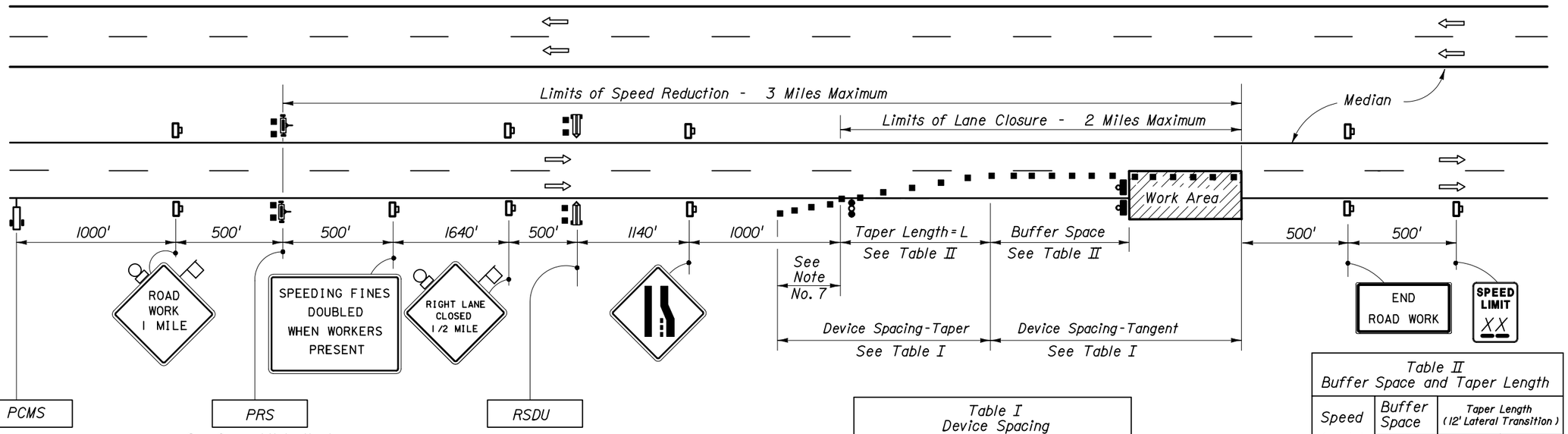
INTERIM STANDARD

THIS SHEET REPLACES INDEX NO. 631 (SHEET 2 OF 2) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY James A. Mills
James A. Mills, P. E. #16344

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 2	0631

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



See General Note No. 1

Typical PCMS Display

With speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: SPEED REDUCED NEXT 3MI

Without speed reduction:
Message 1: WORKERS PRESENT AHEAD
Message 2: NEXT 3 MILES

SLEO

Speed and Law Enforcement Officer
(Patroling The Active Work Area)

SYMBOLS

- Work Area
- Sign With 18"x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Flashing Light)
- Work Zone Sign
- Advance Warning Arrow Panel
- Lane Identification + Direction of Traffic
- (1) PCMS = Portable Changeable(Variable) Message Sign
- (2) PRS = Portable Regulatory Sign - Speed Limit When Flashing
- (2) RSDU = Radar Speed Display Unit
- (1) SLEO = Speed and Law Enforcement Officer (Do Not Bid)

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Buffer Space and Taper Length

Speed (mph)	Buffer Space Dist. (ft)	Taper Length (12' Lateral Transition) L (ft)	Notes (Merge)
25	155	125	$L=\frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	$L=WS$
50	425	600	
55	495	660	
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

GENERAL NOTES

1. At lane closures where workers are present, reduce the posted speed limit (speed limit that existed prior to construction) by 10 MPH using the Portable Regulatory Sign (PRS), but not less than 55 MPH or to a speed warranted by geometric condition, whichever is lower. Taper lengths, buffer space and device spacing shall be selected using the posted speed, not the reduced speed.
2. All Arrow Panels, Portable Changeable Message Signs, Portable Regulatory Signs and Radar Speed Display Trailers, shall be turned off and moved outside the clear zone or be shielded by a barrier or crash cushion when not in use.
3. Work operations shall be confined to one traffic lane, leaving the adjacent lane(s) open to traffic.
4. All vehicles, equipment, workers and their activities are restricted to one side of the roadway.
5. When work is performed in the median lane on divided highways the barricading plan is inverted and left lane closed and lane reduction signs substituted for the right lane closed and lane reduction signs.
6. When work is being performed on a multilane undivided roadway the signs and traffic control devices normally placed in the median (as shown) shall be omitted.
7. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index No. 612 for shoulder taper formulas.
8. For general TCZ requirements and additional information refer to Index No. 600.

CONDITIONS

The MAS is intended to be used on multilane facilities with posted speeds of 55 MPH or greater where the work operations require a lane closure and workers are present.

Date: 07-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MOTORIST AWARENESS SYSTEM

INTERIM STANDARD

THIS INDEX REPLACES INDEX NO. 670 OF THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2004.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 1	0670

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

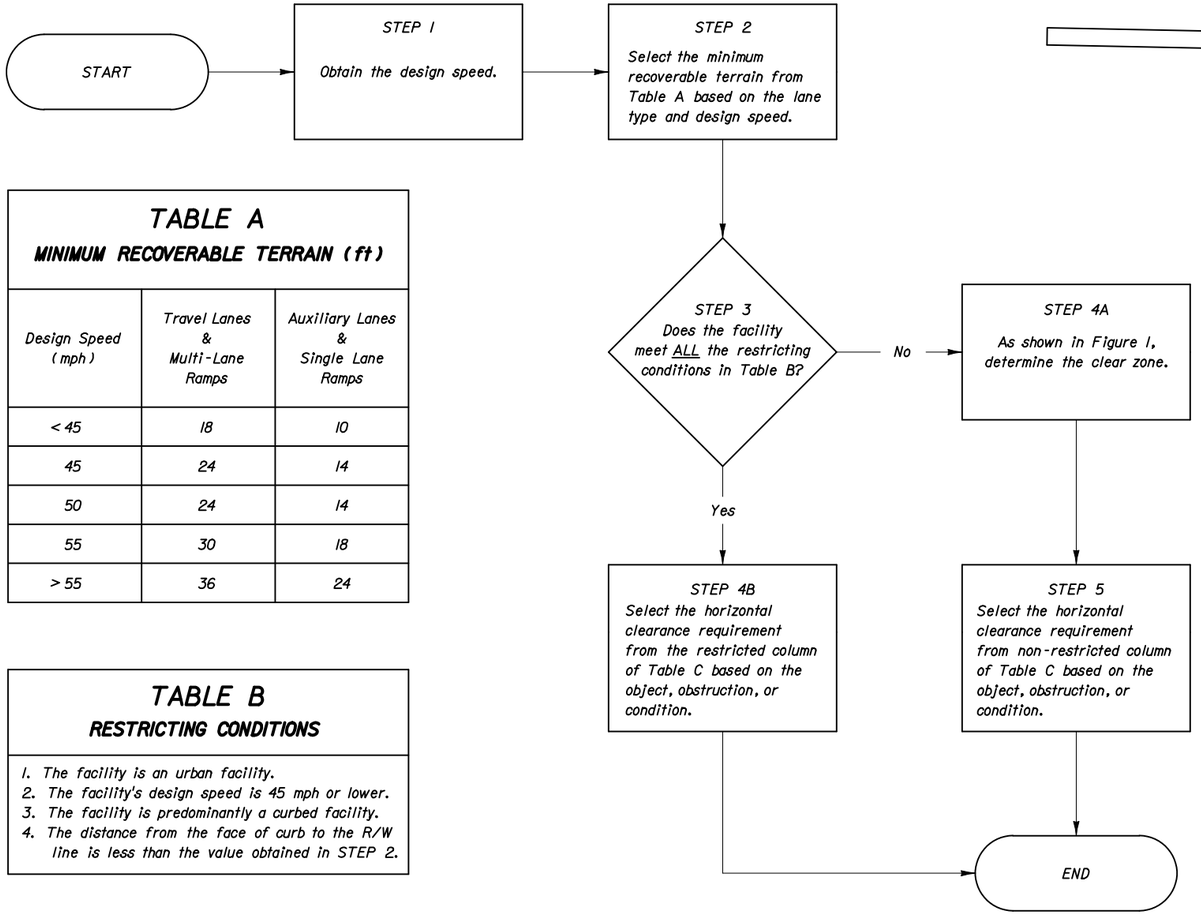
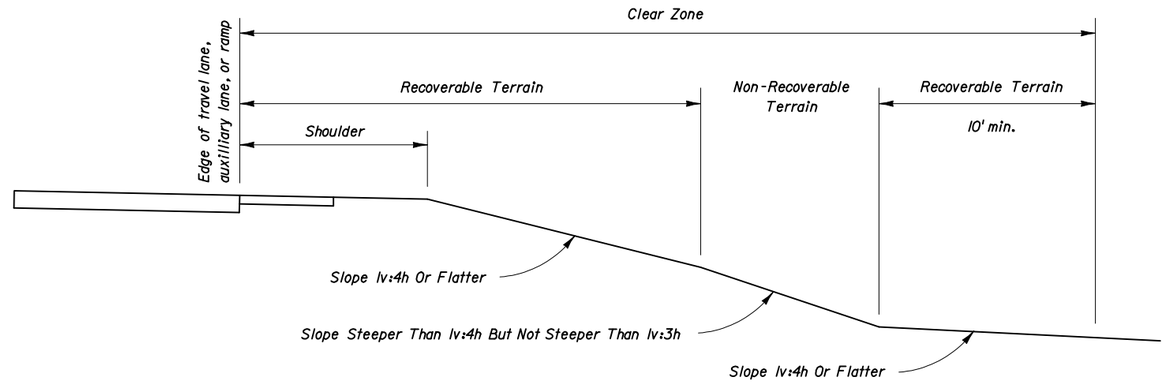


TABLE A
MINIMUM RECOVERABLE TERRAIN (ft)

Design Speed (mph)	Travel Lanes & Multi-Lane Ramps	Auxiliary Lanes & Single Lane Ramps
< 45	18	10
45	24	14
50	24	14
55	30	18
> 55	36	24

TABLE B
RESTRICTING CONDITIONS

1. The facility is an urban facility.
2. The facility's design speed is 45 mph or lower.
3. The facility is predominantly a curbed facility.
4. The distance from the face of curb to the R/W line is less than the value obtained in STEP 2.



Clear Zone is the relatively flat unobstructed area that is to be provided for safe use by errant vehicles, and must be wide enough so that the sum of all the recoverable terrain within is equal to or greater than the value obtained in STEP 2. Recoverable terrain provided beyond non-recoverable terrain must be a minimum of 10 feet. Areas beyond non-traversable and hazardous terrain cannot be used as recoverable or non-recoverable terrain.

Roadside Terrain includes all surfaces along the roadway other than travel lanes, auxiliary lanes, and ramps. For the purpose of establishing clear zones and horizontal clearance requirements, roadside terrain is defined as recoverable, non-recoverable, non-traversable, and hazardous as follows:

Recoverable when it is safely traversable and on a slope that is 1v:4h or flatter.
Non-recoverable when it is safely traversable and on a slope that is steeper than 1v:4h but not steeper than 1v:3h.
Non-traversable when it is not safely traversable or on a slope that is steeper than 1v:3h.
Hazardous when a slope is steeper than 1v:3h and deeper than 6 feet as shown in Figure 2.

Horizontal Clearance Requirements are shown in Table C and are the required offsets to an object from a specified point on the roadway.

ROADSIDE TERRAIN

FIGURE 1

PROCESS FOR DETERMINING HORIZONTAL CLEARANCE REQUIREMENTS AND CLEAR ZONES

Date: 11-22-02

THE SIGNED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ROADSIDE OFFSETS

INTERIM STANDARD

THIS SHEET IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	700

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

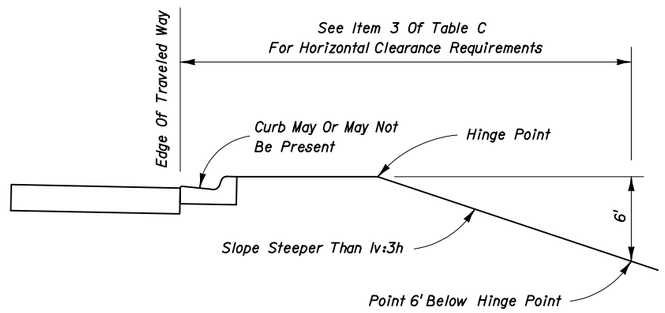
TABLE C

	Item No.	OBJECTS, OBSTRUCTIONS OR CONDITIONS	HORIZONTAL CLEARANCE REQUIREMENTS	
			Restricted	Non-Restricted
GENERAL	1	Above ground fixed hazards: All roadside objects, obstructions or conditions other than those listed below that exceed 4 inches in height and pose a hazard to errant vehicles and vehicle occupants.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb.	Locate outside the clear zone as close to the Right Of Way as practical.
ROADWAY	2	All FDOT approved guardrails, crash cushions, permanent or temporary concrete barriers, and guardrail end terminals.	Locate as shown in the Design Standards.	Locate as shown in the Design Standards.
	3	Drop-off hazards: Any point along a roadside slope steeper than 1v:3h that is deeper than 6 feet below the hinge point. See Figure 2.	Locate the point that is 6 feet below the hinge point no less than 22 feet from the traveled way.	Treat as roadside slopes in accordance with Design Standard 400.
	4	Mailboxes not shown in Design Standard 532.	Not to be used.	Not to be used.
	5	Mailboxes shown in Design Standard 532.	Locate in accordance with Design Standard 532.	Locate in accordance with Design Standard 532.
	6	Trees expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard 546.	Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard 546.
	7	Trees not expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Locate in accordance with Design Standard 546.	Locate in accordance with Design Standard 546.
	8	Canals behind guardrail.	Locate no less than 5 feet from the back of the guardrail post.	Locate no less than 5 feet from the back of the guardrail post.
	9	Canals without guardrail.	Locate as close to the Right Of Way as practical and not less than 40 feet from the traveled way.	Design speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the traveled way. Design speeds less that 50 mph: Locate as close to the Right Of Way as practical and not less than 50 feet from the traveled way.
DRAINAGE	10	Culvert wing wall, endwall, retaining walls and flared end sections less than 6 feet deep.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	11	Culvert wing wall, endwall, retaining walls and flared end sections 6 feet and greater in depth.	Treat as drop-off hazard; See Item No. 3.	Treat as drop-off hazard; See Item No. 3.
	12	Mitered end sections.	Locate as shown in Design Standards 272 and 273.	Locate as shown in Design Standards.
TRAFFIC CONTROL DEVICES	13	Frangible sign supports.	Locate no less than 4 feet from face of curb and in accordance with Design Standard 17302.	Locate in accordance with Design Standard 17302.
	14	Overhead sign supports and other non-frangible signs.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	15	Signal controller cabinets, signal poles, strain poles and mast arms.	Locate no less than 4 feet from face of curb and not in medians.	Locate outside the clear zone and not in medians.
LIGHTING	16	Conventional lighting (frangible and non-frangible).	Locate no less than 4 feet from face of curb and not in medians.	Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet.
	17	Highmast lighting.	Not applicable.	Locate outside the clear zone.
STRUCTURES	18	Bridge piers and abutments: Above ground vertical structures.	Locate not less than 16 feet from edge of travel lane.	Locate outside the clear zone.
UTILITIES	19	Fire hydrants with bases no higher than 4 inches above the ground.	Locate not less than 2 feet from face of curb.	Locate as close to the Right Of Way as practical.
	20	Utility installations: All above ground fixed objects.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb and not in medians.	Locate outside the clear zone as close to the Right Of Way as practical and not in medians and not within limited access facilities. May be placed 4 feet behind the back of shields that have been justified for other reasons.
RAILROADS	21	Railroad crossing traffic control devices.	Locate in accordance with Design Standard 17882.	Locate in accordance with Design Standard 17882.

GENERAL NOTES

1. When sidewalks are present, an unobstructed sidewalk width of at least 4 feet must be provided.

2. When site specific conditions prohibit meeting the horizontal clearance requirements in TABLE C, the object, obstruction or condition must be mitigated, possibly by shielding. Otherwise, the Plans Preparation Manual, Volume 1, Chapters 2, 4, 21 and 25, or Chapters 5 and 9 of the Utility Accommodation Manual must be researched to determine viable alternatives. The minimum requirements in these manuals can only be reduced when a Design Variation or Design Exception has been approved in accordance with Chapter 23 of the Plans Preparation Manual, Volume 1 or a Utility Exception has been approved in accordance with Chapter 13 of the Utility Accommodation Manual.



DROP-OFF HAZARDS

FIGURE 2

THE SIGNED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLET PUBLISHED IN METRIC UNITS.

Date: 11-22-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ROADSIDE OFFSETS

INTERIM STANDARD

THIS SHEET IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

Roadway Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	700

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

The Reinforced Earth Company

8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

DESIGN CRITERIA

1. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN THE REINFORCED EARTH VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE CONTRACTING AGENCY'S TECHNICAL SPECIFICATIONS (SECTION 548) FOR REINFORCED EARTH WALLS

2. SOIL PARAMETERS:

   SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM. THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON THE ACTUAL SOIL CHARACTERISTICS UTILIZED AT THE SITE. THE VALUES OF FRICTION ANGLE (ϕ), COHESION (c) AND TOTAL UNIT WEIGHT (γ) SHALL BE PROVIDED IN THE SHOP DRAWINGS.

3. THE MAXIMUM APPLIED BEARING PRESSURE AT THE FOUNDATION LEVEL IS AS SHOWN ON THE WALL ELEVATIONS FOR EACH DESIGN CASE. IT IS THE RESPONSIBILITY OF THE OWNER TO DETERMINE THAT THIS APPLIED BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.

4. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED EARTH VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.

5. REINFORCING STRIPS FOR REINFORCED EARTH WALLS SHALL BE 1 31/32" WIDE AND 5/32" THICK, AND SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-572 GRADE 65. GALVANIZATION SHALL BE APPLIED IN ACCORDANCE WITH ASTM A-123.

6. HA LADDERS SHALL BE SUPPLIED BY THE REINFORCED EARTH COMPANY, AND SHOP FABRICATED OF COLD DRAWN STEEL WIRE CONFORMING TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-82. ALL WELDING SHALL BE IN ACCORDANCE WITH ASTM A-185. GALVANIZING FOR PERMANENT WALL SYSTEMS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF ASTM A-123 OR AASHTO M111 (2 OZ/SQ. FT.). HA LADDER REINFORCEMENTS MAY BE USED ONLY ON WALLS WITH HEIGHTS 20 FT OR LESS.

7. THE MINIMUM FACTORS OF SAFETY REQUIRED FOR DESIGN

   OVERTURNING = 2.0
   SLIDING = 1.5
   INTERNAL PULLOUT = 1.5 (ALLOWABLE DEFORMATION = 0.75 INCH)
   BEARING CAPACITY = 2.5
   OVERALL STABILITY = 1.5
   STEEL SOIL REINFORCEMENT = 0.55Fy AT END OF DESIGN LIFE
   AND 0.50 F_u AT NET SECTION OF BOLTED CONNECTION
   MAXIMUM PULLOUT FACTOR f* (FOR SAND) = 1.5
   (FOR LIMEROCK) = 2.0

WALL CONSTRUCTION

8. REINFORCED EARTH WALLS IN CURVES WILL FORM A SERIES OF SHORT CHORDS OF 4'-11" EACH TO MATCH DESIRED WALL ALIGNMENT.

9. FOR LOCATION AND ALIGNMENT OF REINFORCED EARTH WALLS, SEE RETAINING WALL CONTROL PLANS.

10. IF MANHOLES AND DROP INLETS ARE PRESENT, THEY SHALL BE LOCATED AS SHOWN ON WALL ELEVATIONS.

11. IF PILES ARE LOCATED WITHIN THE REINFORCED EARTH VOLUME, THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE REINFORCED EARTH WALL UNLESS A METHOD TO PROTECT THE STRUCTURE, WHICH IS ACCEPTABLE TO THE ENGINEER AND THE REINFORCED EARTH COMPANY, AND IS PROPOSED AND APPROVED IN WRITING.

12. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH SEC 548 TO A LEVEL OF 2"* ABOVE THE TIE STRIPS EMBEDDED IN THE PANELS. INSTALLATION OF SOIL REINFORCEMENTS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL MATERIAL HAS REACHED THE REQUIRED LEVEL.

13. IF STRUCTURES IN EXCESS OF 20' IN HEIGHT OCCUR, THE FINISHED GRADE IN FRONT OF THE WALL SHALL BE PLACED AND COMPACTED BEFORE WALL CONSTRUCTION EXCEEDS A HEIGHT OF 20'. FINISHED GRADE BACKFILL SHALL BE COMPACTED TO 95% OF AASHTO T-180 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF ANY GUARDRAIL POSTS BEHIND THE REINFORCED EARTH PANELS PRIOR TO PLACEMENT OF THE TOP LAYER OF SOIL REINFORCEMENTS. INDIVIDUAL REINFORCEMENTS MAY BE SKEWED UP TO 15^ TO AVOID THE POST LOCATIONS IF AUTHORIZED BY THE ENGINEER. ANY DAMAGE DONE TO THE SOIL REINFORCEMENTS DUE TO THE INSTALLATION OF THE GUARDRAIL SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

15. IF EXISTING OR FUTURE STRUCTURES, PIPES, FOUNDATIONS OR GUARDRAIL POSTS WHICH ARE WITHIN THE REINFORCED EARTH VOLUME INTERFERE WITH THE NORMAL PLACEMENT OF SOIL REINFORCEMENTS AND SPECIFIC DIRECTION HAS NOT BEEN PROVIDED ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE WHAT COURSE OF ACTION SHOULD BE TAKEN.

16. TOP PANELS BENEATH COPING SHALL HAVE #4 DOWELS PROTRUDING FROM THEIR TOP EDGE.

17. FOR OTHER INFORMATION PERTAINING TO WALL CONSTRUCTION PLEASE REFER TO THE REINFORCED EARTH CONSTRUCTION MANUAL.

18. THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER SOIL REINFORCEMENTS DOWNWARD TO AVOID CONFLICTS WITH PAVING AND SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO SITUATIONS WHERE ROADWAY SUPERELEVATION AND/OR SOIL MIXING ARE ANTICIPATED.

MATERIALS NOTES

19. NOMINAL SOIL REINFORCEMENT LENGTHS

    THE SOIL REINFORCEMENT LENGTHS SHOWN ON THE PLANS, MEASURED FROM BACK FACE OF PANEL, ARE THE NOMINAL LENGTHS REQUIRED BY CALCULATION. THE ACTUAL FABRICATED REINFORCEMENT LENGTHS ARE OFTEN LONGER (UP TO 6") DUE TO MANUFACTURING TOLERANCES. THE REQUIRED HORIZONTAL LIMIT OF GRANULAR BACKFILL IS EQUAL TO THE NOMINAL SOIL REINFORCEMENT LENGTH.

20. PANEL FINISH

    THE PRECAST PANELS FOR THIS PROJECT SHALL HAVE A PLAIN STEEL FINISH UNLESS OTHERWISE SPECIFIED ON THE RETAINING WALL CONTROL PLANS.

21. NOTE TO CONTRACTORS

    ONLY THE FOLLOWING MATERIALS ARE SUPPLIED BY THE REINFORCED EARTH COMPANY:

    - PRECAST CONCRETE FACING PANELS
    - SOIL REINFORCEMENTS
    - BOLT SETS (FOR ATTACHING PANELS TO THE SOIL REINFORCEMENTS)
    - BEARING BLOCKS
    - RUBBER SHIMS
    - FILTER CLOTH AND ADHESIVE (FOR PANEL JOINTS ONLY)

    ANY OTHER MATERIALS CALLED FOR IN THE CONTRACT PLANS OR SPECIFICATIONS ARE TO BE SUPPLIED BY THE CONTRACTOR. ANY JOINT MATERIALS SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE STRUCTURES ARE TO BE SUPPLIED BY THE ERECTION CONTRACTOR. ALL SANDBLASTING, PAINTING, SEALERS OR OTHER SPECIAL APPLIED COATINGS ARE ALSO SUPPLIED/INSTALLED BY THE CONTRACTOR IN THE FIELD FOLLOWING PANEL ERECTION.

22. THE REINFORCED EARTH COMPANY SUPPLIES PRECAST CONCRETE FACING PANELS AND ACCESSORIES TO BE USED IN CONJUNCTION WITH OTHER MATERIALS IN THE CONSTRUCTION OF THE REINFORCED EARTH® RETAINING WALLS DETAILED HEREIN. THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL FURNISHED BY THE REINFORCED EARTH COMPANY IS INTENDED TO PROVIDE A GENERAL EXPLANATION OF THE SYSTEM. IT IS THE CONTRACTOR'S OBLIGATION TO DEVISE AND EXECUTE A PROJECT SPECIFIC ERECTION SEQUENCE, PANEL UNLOADING, HANDLING AND BRACING SYSTEM, AND FALL PROTECTION SYSTEM. THE BRACING SYSTEM SHOWN IN THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL IS GENERAL IN NATURE AND DOES NOT ACCOUNT FOR PROJECT SPECIFIC CRITERIA. COMPLIANCE WITH THE GUIDELINES IN THIS MANUAL DOES NOT RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY TO ADHERE TO THE PROJECT PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS OR COMPLIANCE WITH ALL FALL PROTECTION, SAFETY, LAWS, STANDARDS AND PROCEDURES AT THE JOBSITE. CONTRACTORS SHOULD TAKE SPECIAL PRECAUTIONS TO PREVENT THE PANELS FROM SHIFTING OR FALLING DURING THE ERECTION PROCESS.

23. THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, THE REINFORCED EARTH COMPANY IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY DESIGN INCLUDING FOUNDATION AND SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS.

24. THESE DRAWINGS ARE CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY.

25. THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO THE REINFORCED EARTH COMPANY, AND IS BEING FURNISHED FOR THE USE IN CONNECTION WITH FDOT PROJECTS ONLY, AND THE INFORMATION CONTAINED HEREIN IS NOT TO BE TRANSMITTED TO ANY OTHER ORGANIZATION UNLESS SPECIFICALLY AUTHORIZED IN WRITTING BY THE REINFORCED EARTH COMPANY. THE REINFORCED EARTH COMPANY IS EXCLUSIVE LICENSEE IN THE UNITED STATES UNDER PATENTS ISSUED TO HENRY VIDAL, AND THE FURNISHING OF THIS DRAWING DOES NOT CONSTITUTE AN EXPRESSED OR IMPLIED LICENSE UNDER THE VIDAL PATENTS.

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

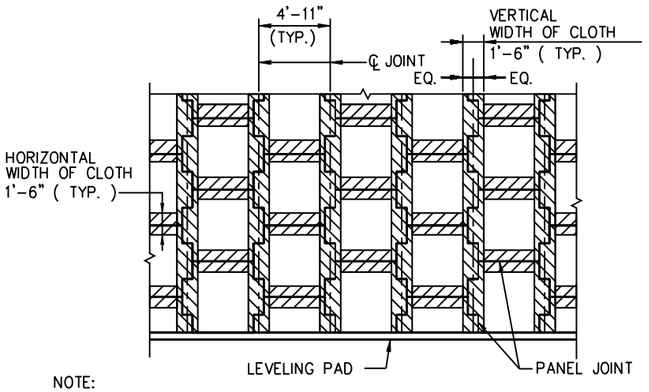
INTERIM STANDARD

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

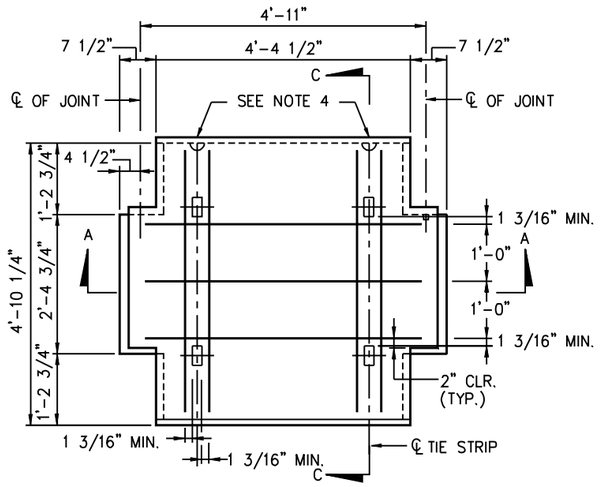
REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

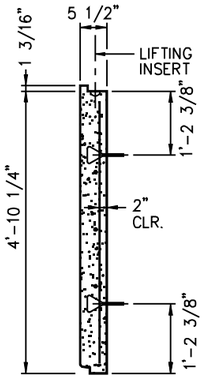


NOTE:
STRIPS OF FILTER CLOTH SHALL BE PLACED ON BACK FACE OF PANEL, OVER PANEL JOINTS. FILTER CLOTH SHALL BE ADHERED TO BACK FACE OF PANELS USING AN ADHESIVE COMPOUND SUPPLIED BY THE REINFORCED EARTH COMPANY. ADHESIVE SHALL BE APPLIED TO PANEL THEN FILTER CLOTH (CARTHAGE MILLS TYPE FX-45HS OR EQUAL) SHALL BE APPLIED TO PANELS.

FILTER CLOTH DETAIL
PARTIAL ELEVATION – BACK FACE



PANEL TYPE "A"
WITH R4 REINFORCEMENT
FRONT VIEW



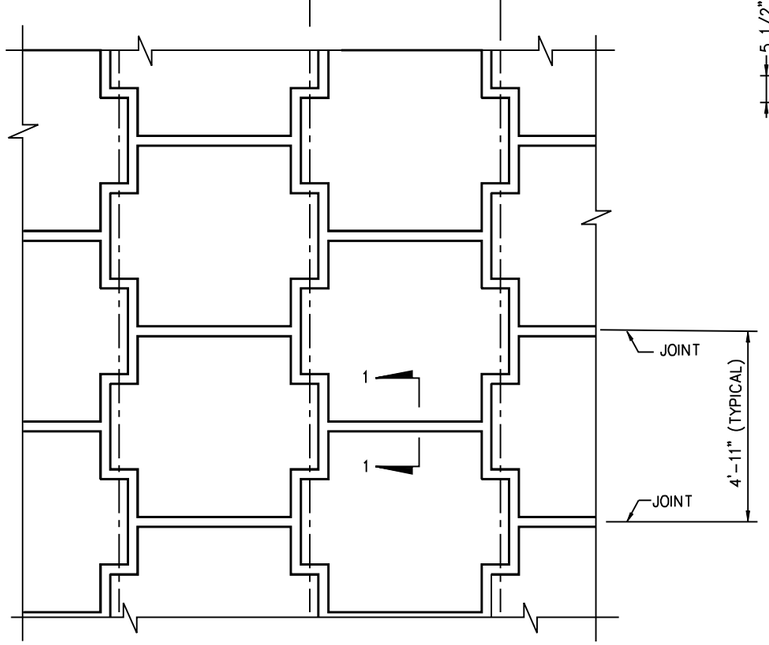
SECTION C–C

PANEL THICKNESS	REINFORCEMENT DESIGNATION	* PANEL REINFORCEMENT (IN2)	MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (kPa)
5 1/2"	R4	0.44 VERTICAL 0.58 HORIZONTAL	1.19
	R6	0.66 VERTICAL 0.78 HORIZONTAL	1.46
	R7	1.18 VERTICAL 1.78 HORIZONTAL	2.58

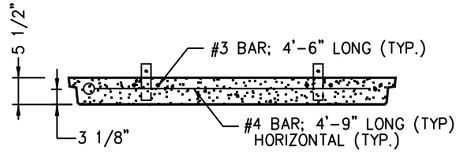
* TOTAL AREA OF STEEL REQUIRED PER "TYPE A" PANEL.

NOTES:

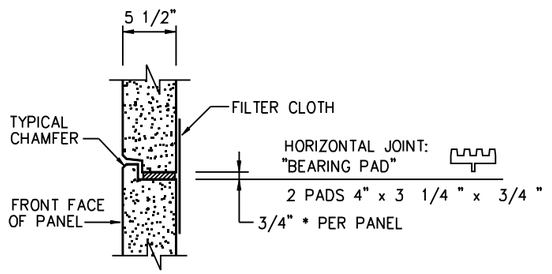
1. REINFORCING STEEL TO BE A615 GRADE 60.
2. 3/8" x 3/8" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
4. ALL PANELS SHALL HAVE TWO LIFTING INSERTS OF ONE TON CAPACITY EACH.
5. PANEL DESIGN THICKNESS IS 5 1/2". THICKNESS OF CONCRETE MUST INCREASE TO ACCOMMODATE ANY ARCHITECTURAL SURFACE FINISH THAT MAY BE SPECIFIED.
6. ACTUAL PANEL REINFORCEMENT FOR ALL PANEL TYPES ON THIS PROJECT IS DESIGNATED ABOVE. R4 ILLUSTRATED FOR INFORMATION ONLY.



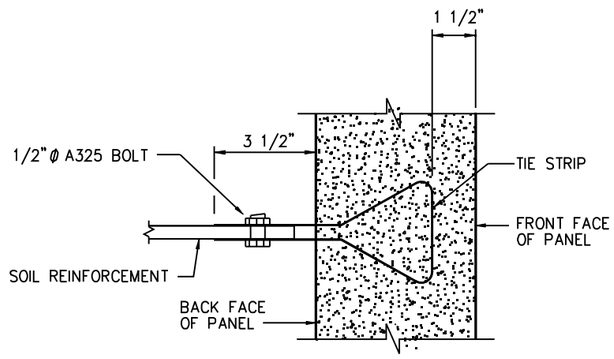
TYPICAL PANEL LAYOUT
PARTIAL ELEVATION – FRONT FACE



SECTION A–A



SECTION 1–1



CONNECTION DETAIL

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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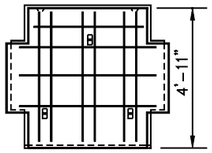
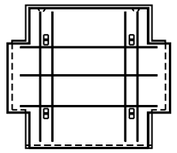
REVISION NO.	SHEET NO.	INDEX NO.
04	2 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



A-3-R5



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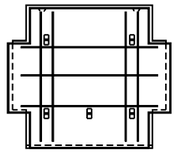

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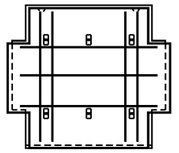

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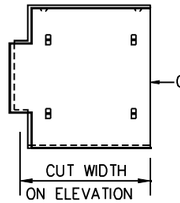
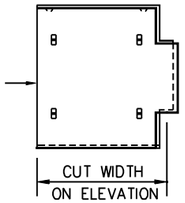
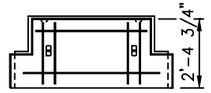


AL-4-R4



AR-4-R4



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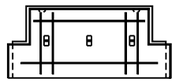
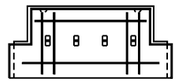


B-3-R4



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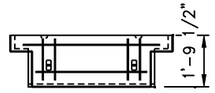
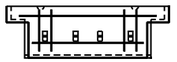


C-2-R4

C-3-R4



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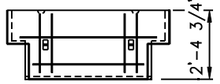

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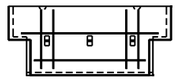

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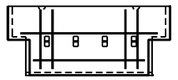

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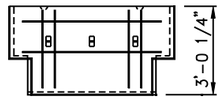

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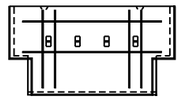

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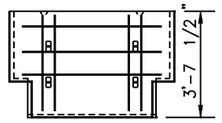
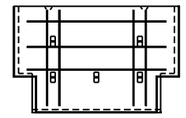


F-4-R4



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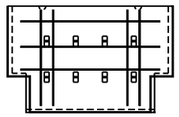
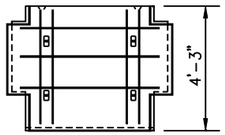
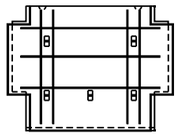


F-8-R4



G-4-R4



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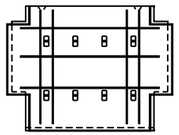

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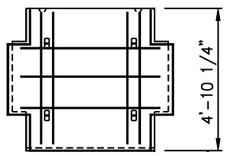
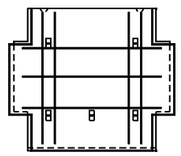


H-4-R4



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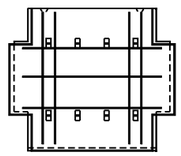

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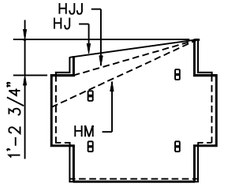
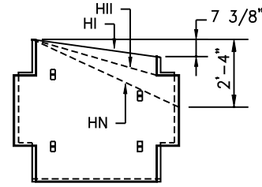
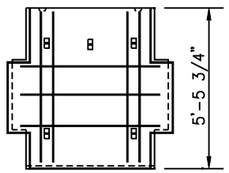


HJ-4-R4

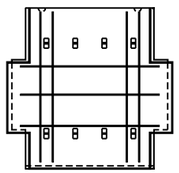


HI-4-R4

SLOPED TOP PANELS
"H" PANEL USED FOR ILLUSTRATION ONLY.



K-5-R4



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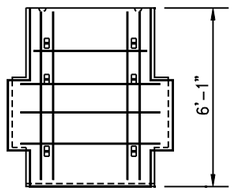

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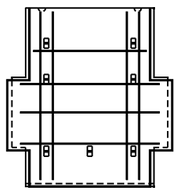

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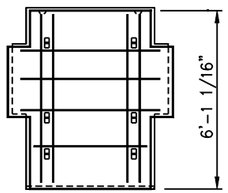
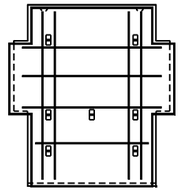
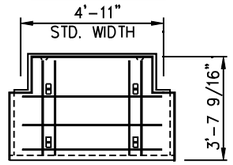


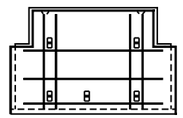
P-6-R4



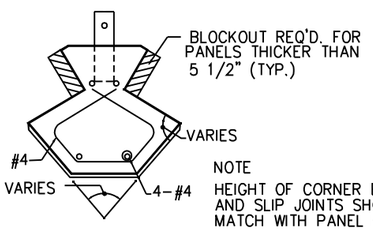
P-7-R4



Q-4-R4

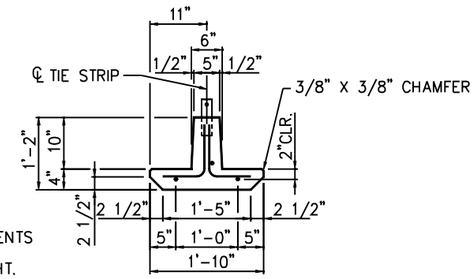


Q-5-R4



NOTE
HEIGHT OF CORNER ELEMENTS AND SLIP JOINTS SHOULD MATCH WITH PANEL HEIGHT.

CORNER ELEMENT
SIZE VARIES WITH ANGLES



SLIP JOINT

ALL PANELS ARE SHOWN BACK FACE VIEW

B TIE STRIP LOCATION

R4, R5 — VERTICAL BARS ARE #3 AS SHOWN
HORIZONTAL BARS ARE #4 AS SHOWN

R6 — VERTICAL BARS ARE 6-#3
HORIZONTAL BARS ARE 4-#4

R7 — VERTICAL BARS ARE 6-#4
HORIZONTAL BARS ARE 4-#6

SEE PANEL TYPE "A" WITH R4 REINFORCEMENT ON SHEET TITLED "PANEL DETAILS" FOR TYPICAL REINFORCEMENT SPACING

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

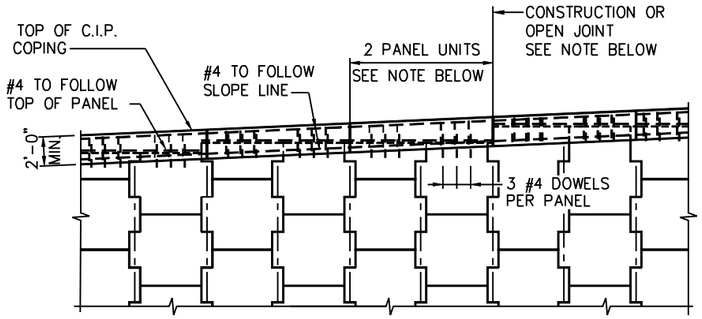
INTERIM STANDARD

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 16	05015

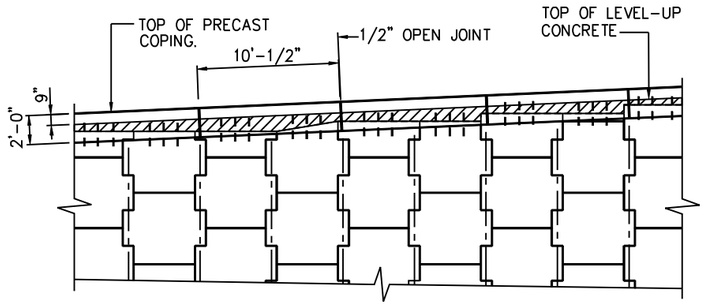
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



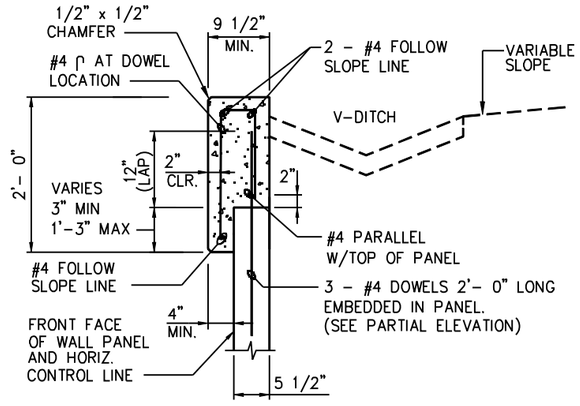
C.I.P. COPING – PARTIAL ELEVATION

NOTE:

1/2-INCH OPEN JOINTS IN COPING SHALL BE AT 6 PANEL INTERVALS AND COINCIDE APPROXIMATELY WITH ℄ OF PANEL JOINTS. REINFORCING STEEL SHALL BE STOPPED 2" SHORT OF EITHER SIDE OF THE JOINTS. CONSTRUCTION JOINTS IN BETWEEN THE OPEN JOINTS SHALL BE PROVIDED AT 2 PANELS INTERVALS.

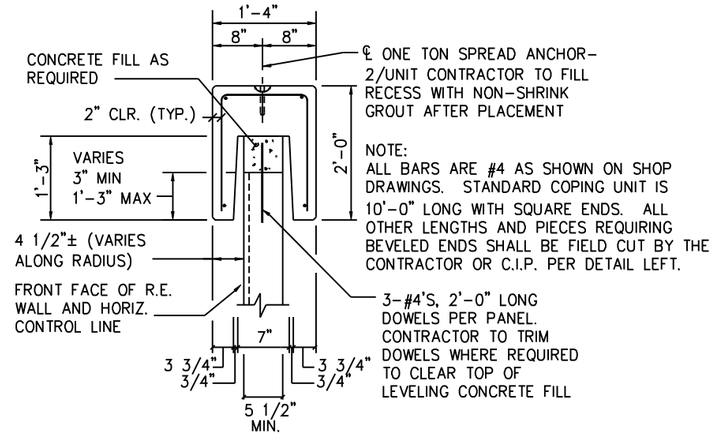


PRECAST COPING PARTIAL ELEVATION



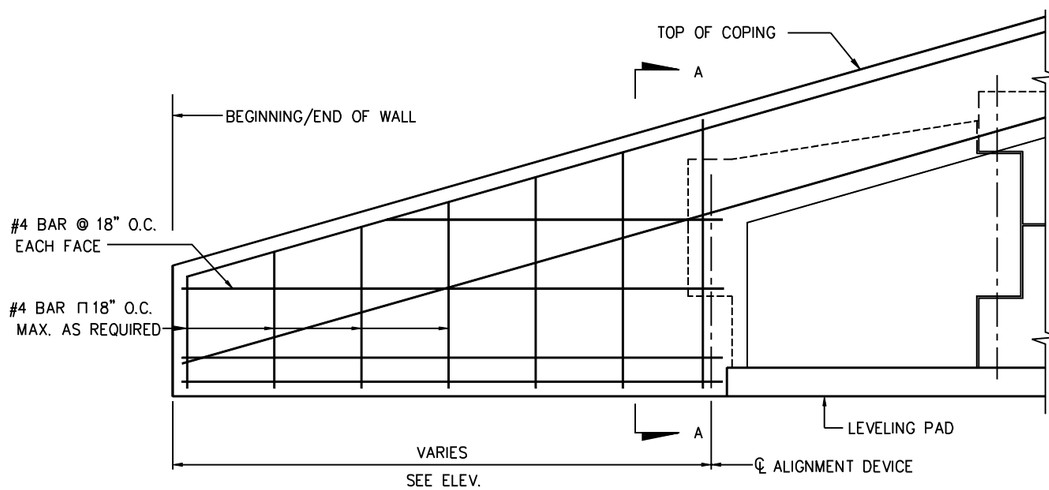
C.I.P. CONC. COPING W/DITCH

CLASS II CONC. (3400 PSI)



PRECAST COPING SECTION

CLASS IV CONC. (5500 PSI)



SECTION A–A

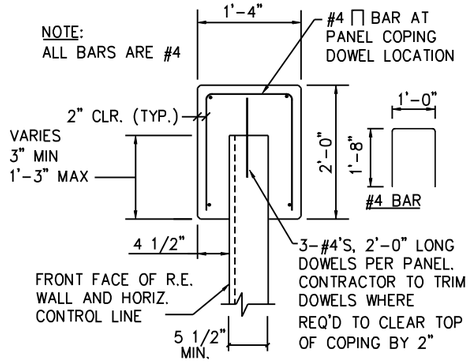
COPING ENCLOSURE DETAIL

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.



FOR ANY DESIRED SHORT PORTIONS OF C.I.P. CONC. COPING BETWEEN PRECAST CONC. COPING USE THIS SIMILAR C.I.P. CONC. SECTION. ALSO USE FOR VERTICAL COPING.

C.I.P. COPING SECTION

CLASS II CONC. (3400 PSI)

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

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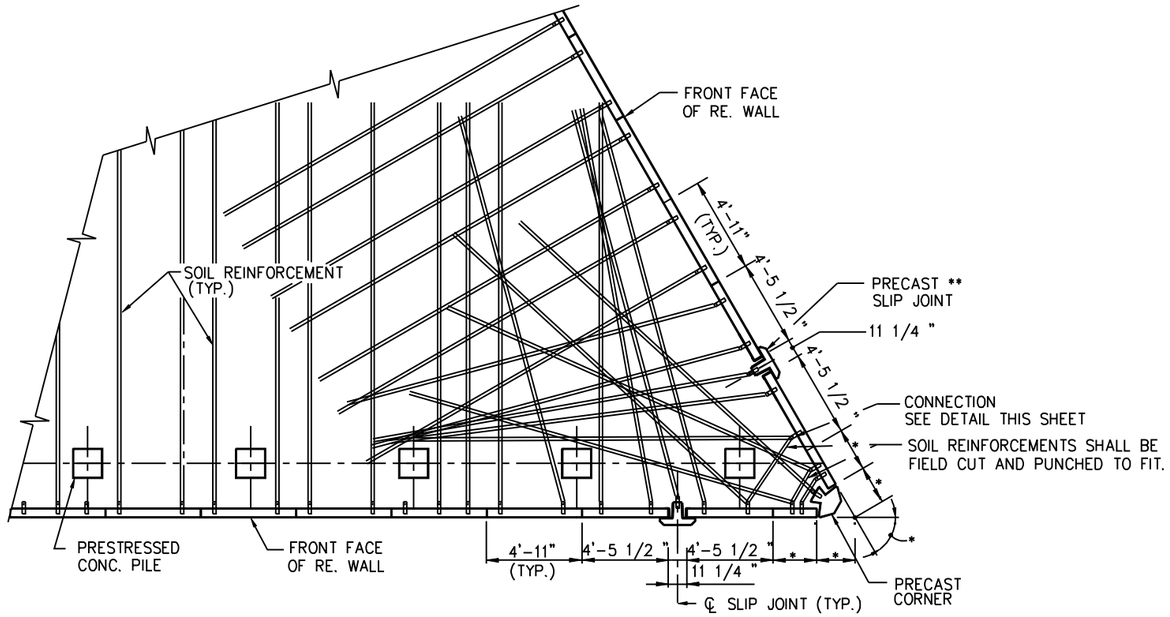
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	4 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

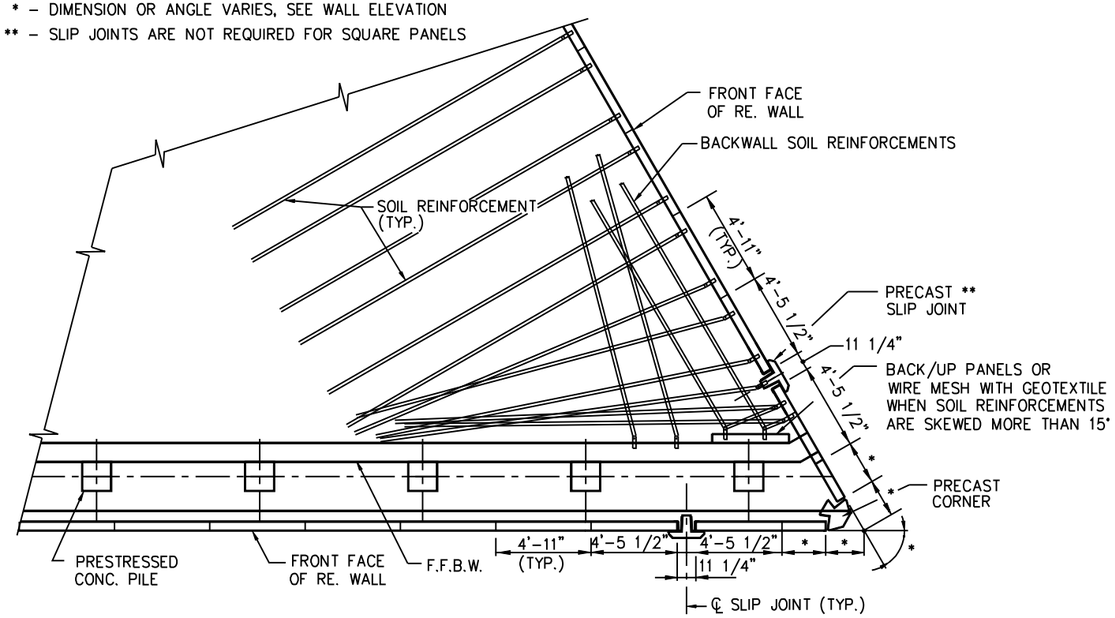


EXAMPLE ACUTE CORNER – SKEWED SOIL REINFORCEMENTS UNDER PILE CAP

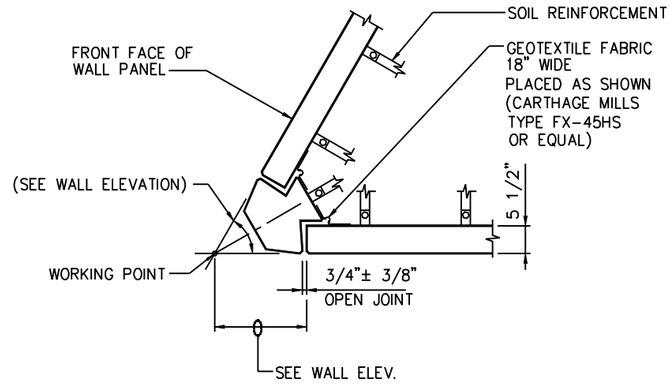
NOTE:

* – DIMENSION OR ANGLE VARIES, SEE WALL ELEVATION

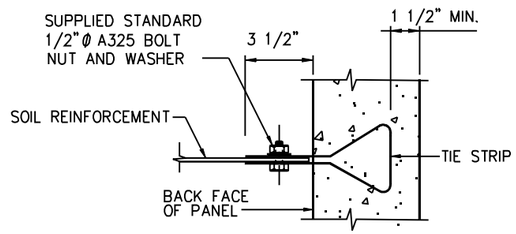
** – SLIP JOINTS ARE NOT REQUIRED FOR SQUARE PANELS



EXAMPLE ACUTE CORNER – SKEWED SOIL REINFORCEMENTS AT ABUTMENT LEVEL



ACUTE CORNER ELEMENT DETAIL



CONNECTION DETAIL

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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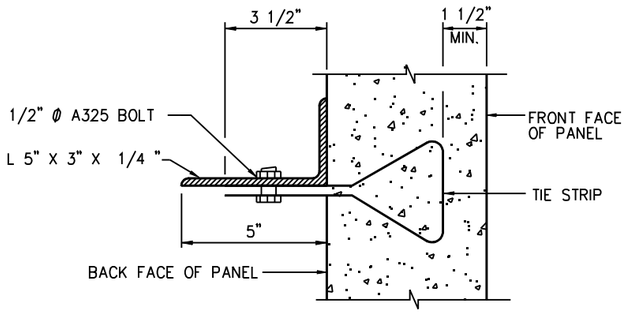
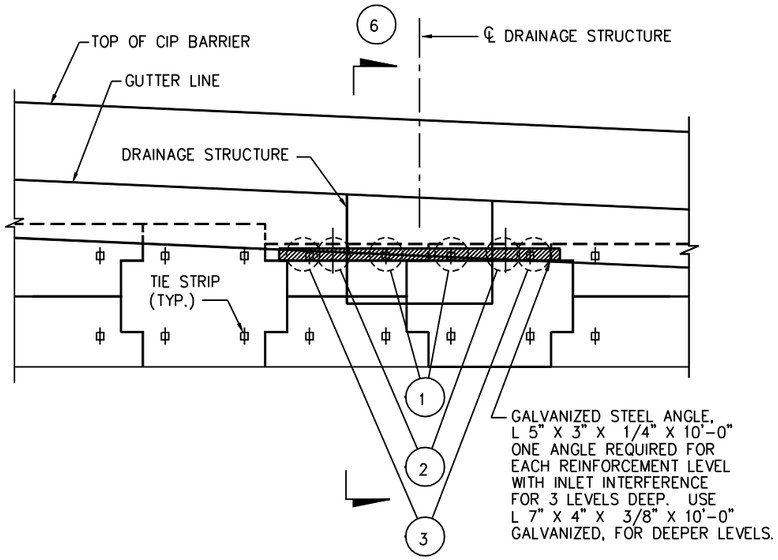
REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 16	05015

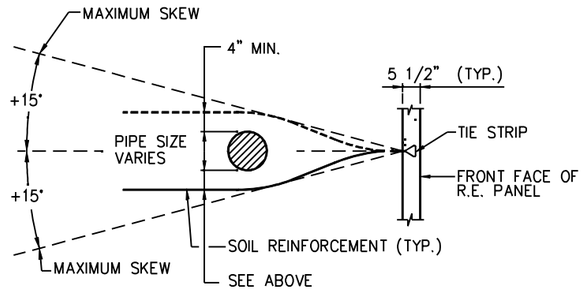
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



1 CONNECTION DETAIL
ANGLE BOLTED TO TIE STRIP

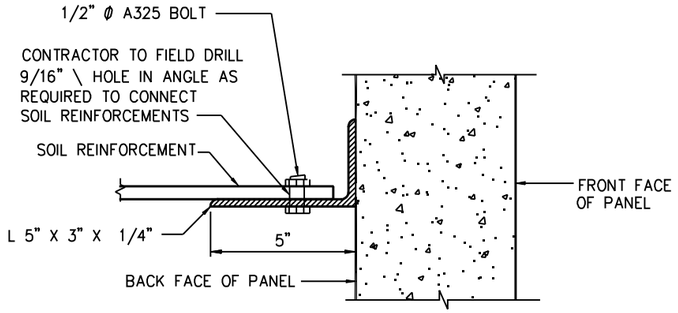


4 PARTIAL ELEVATION

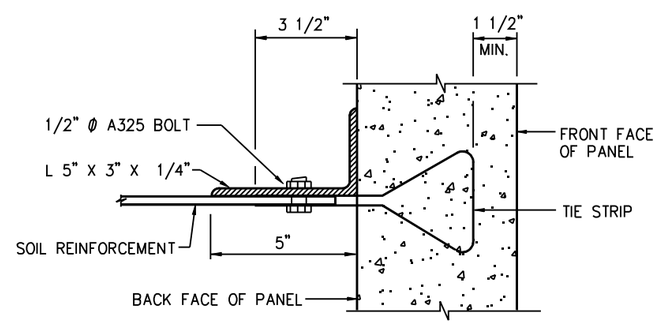


NOTE : BEND TO BE AS GRADUAL AS POSSIBLE.

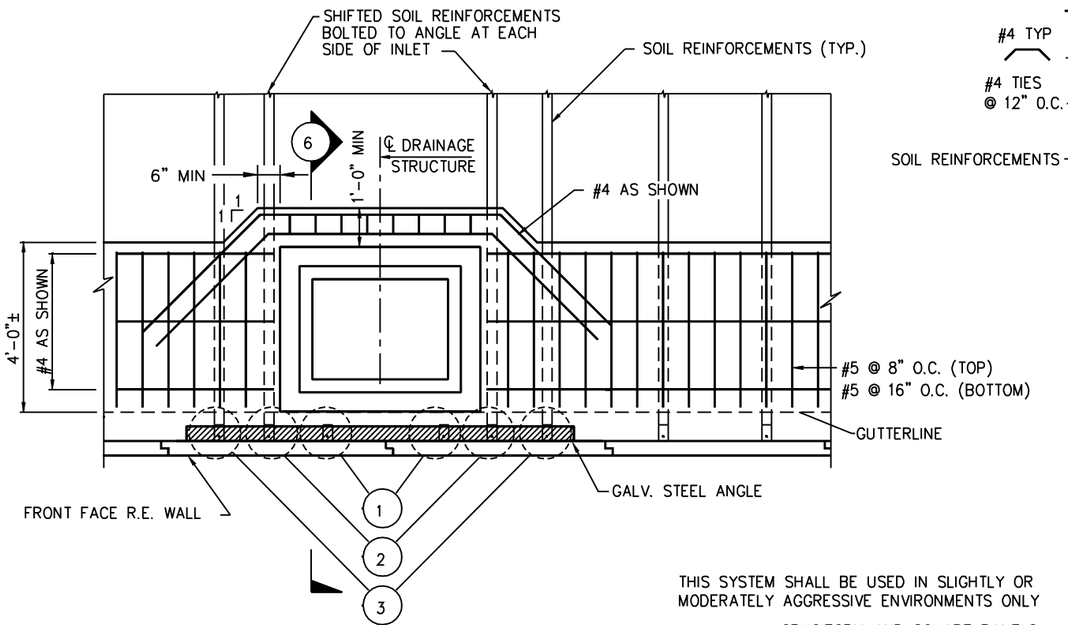
7 TYP. SOIL REINFORCEMENT BENDING DETAIL
AT ANY PROPOSED & EXISTING PIPES



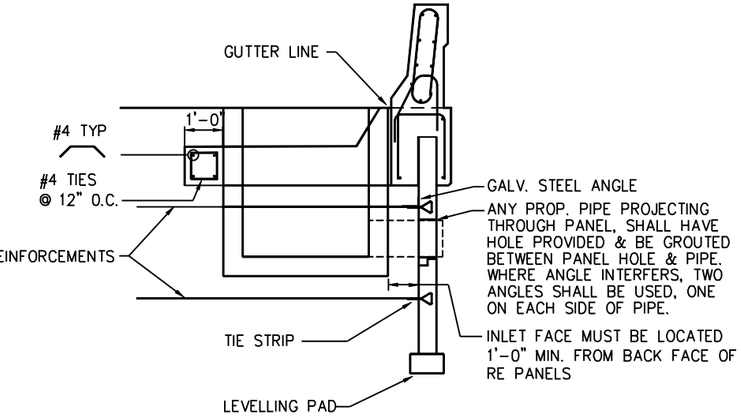
CONNECTION DETAIL
2 SHIFTED SOIL REINFORCEMENT
BOLTED TO ANGLE



CONNECTION DETAIL
3 ANGLE BOLTED TO TIE STRIP
WITH SOIL REINFORCEMENT



5 PARTIAL PLAN



6 SECTION AT INLET

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

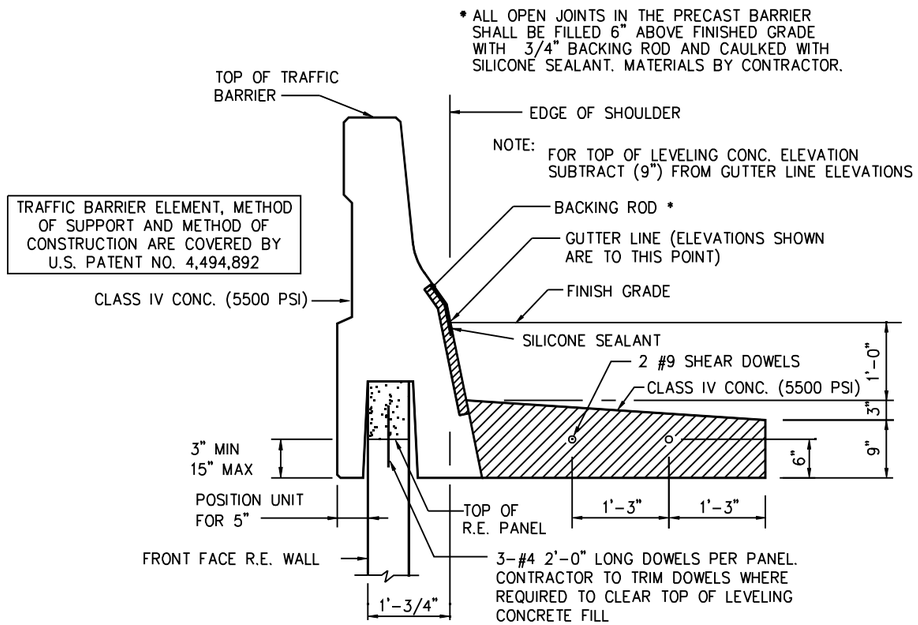
INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

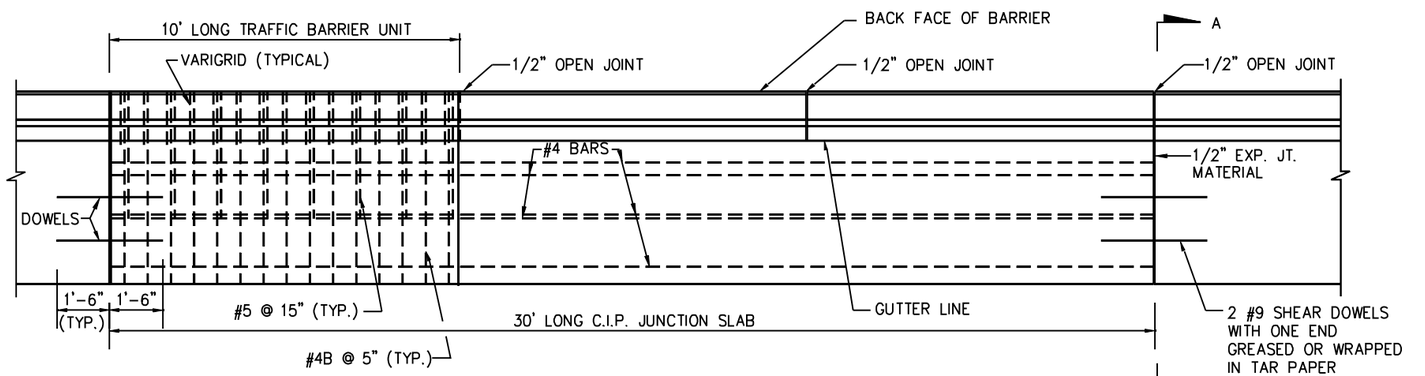
SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
04	6 of 16	05015

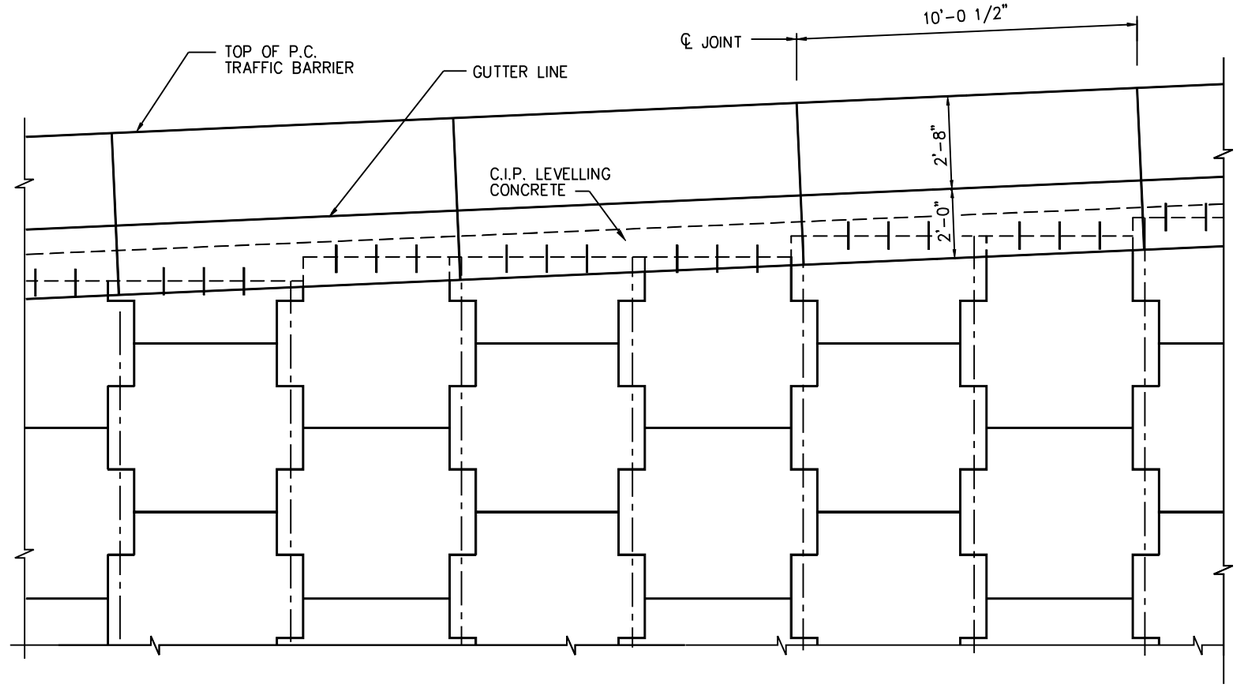
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



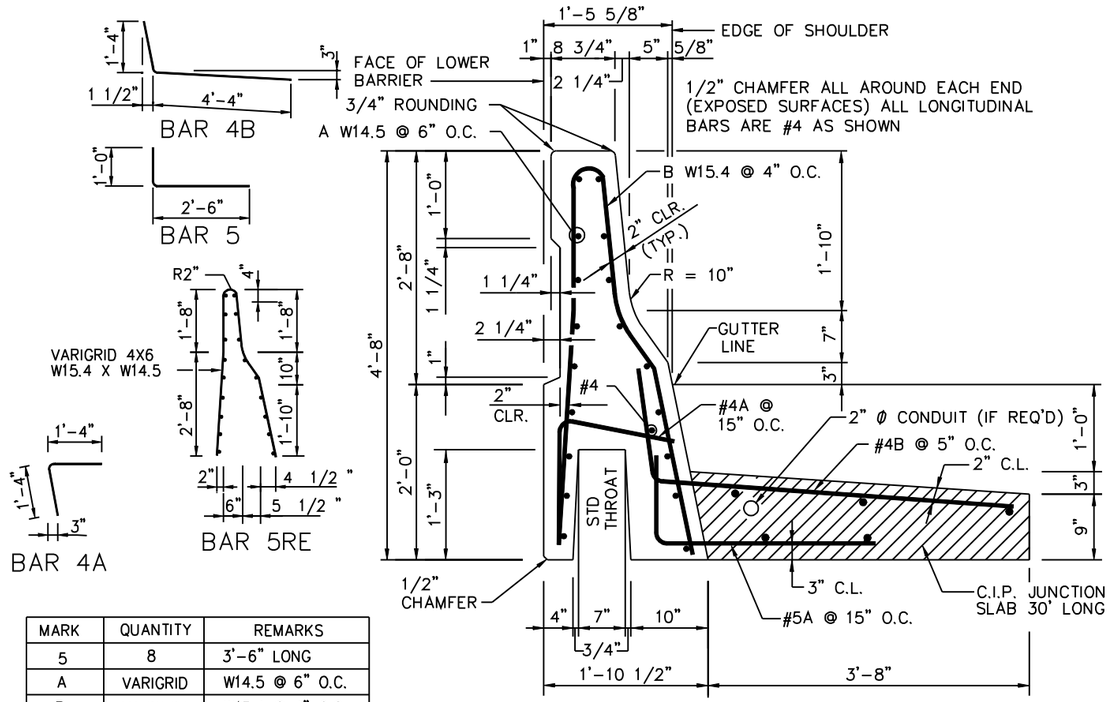
SECTION A–A



PRECAST TRAFFIC BARRIER
PLAN VIEW



PRECAST TRAFFIC BARRIER
PARTIAL ELEVATION



MARK	QUANTITY	REMARKS
5	8	3'–6" LONG
A	VARIGRID	W14.5 @ 6" O.C.
B	VARIGRID	W15.4 @ 4" O.C.
4A	8	2'–8" LONG
4B	24	5'–8" LONG

TRAFFIC BARRIER REINFORCEMENT
WITH STANDARD THROAT

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

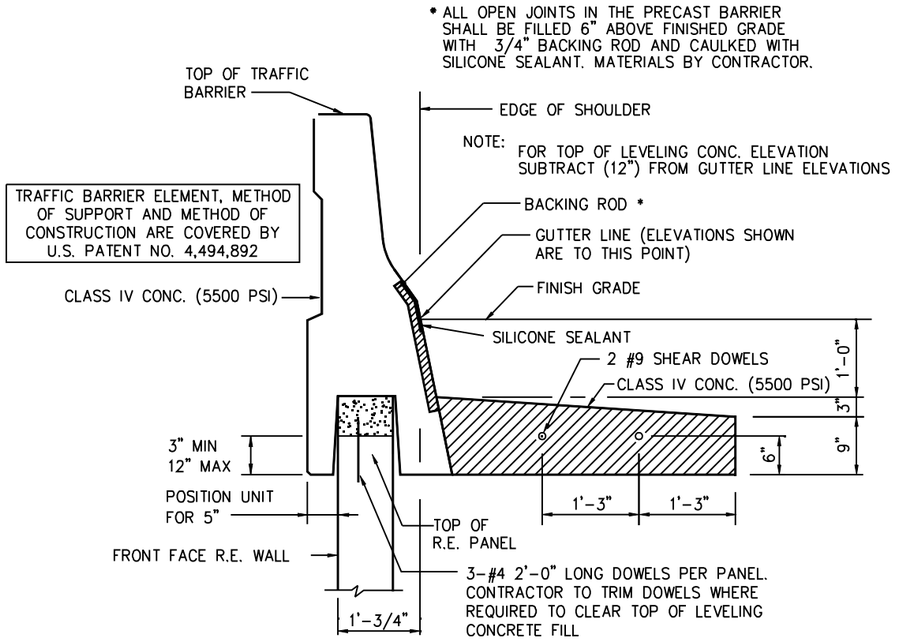
INTERIM STANDARD

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

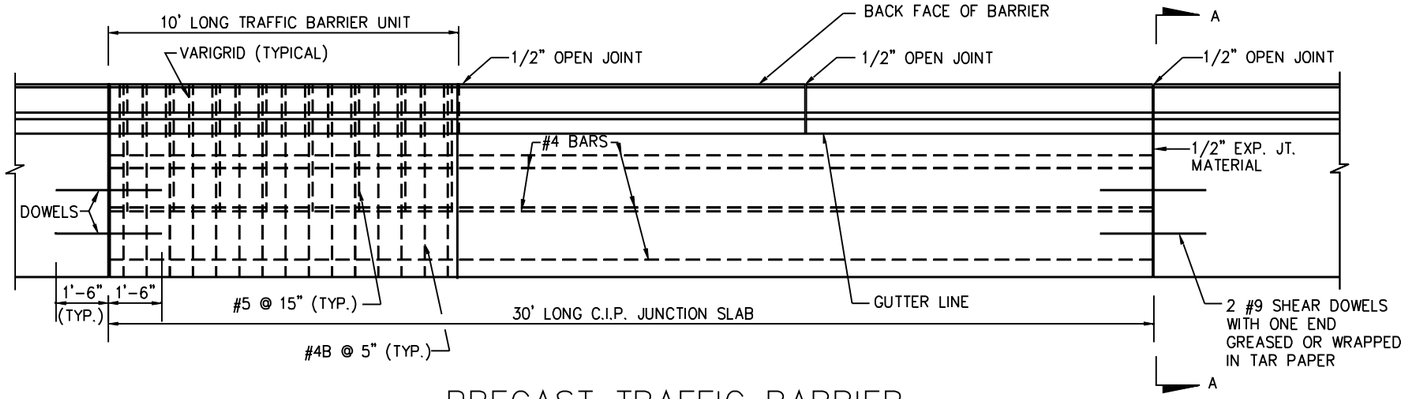
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	7 of 16	05015

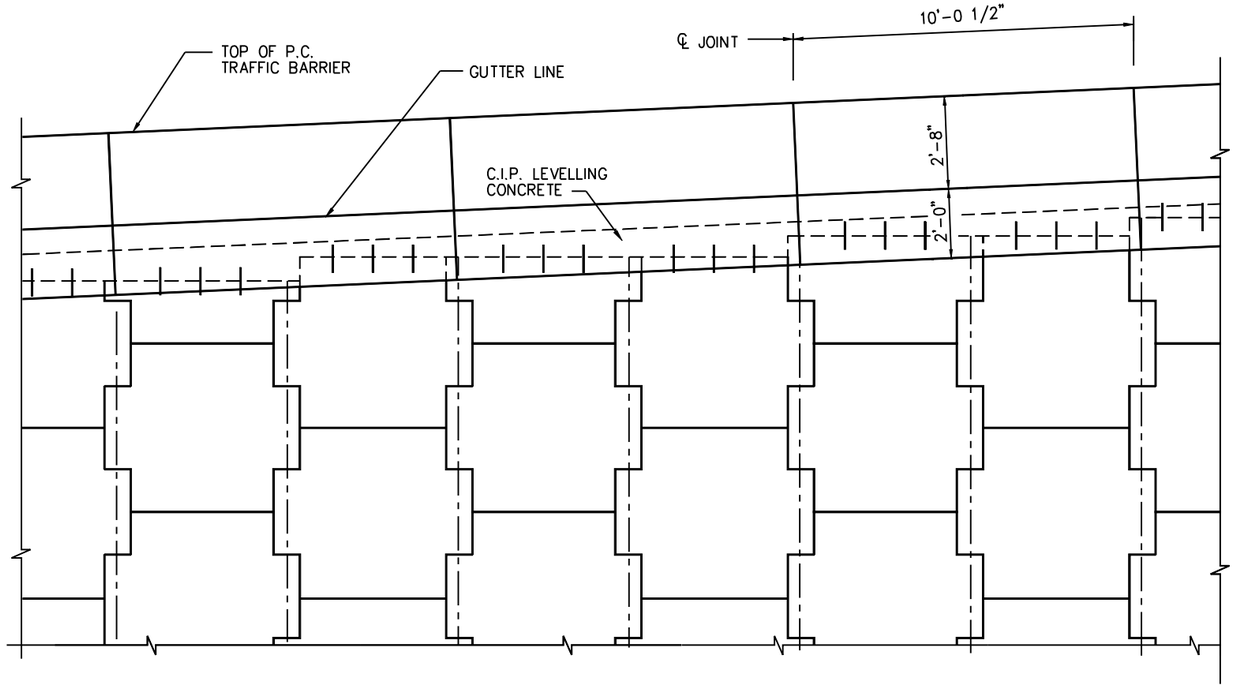
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



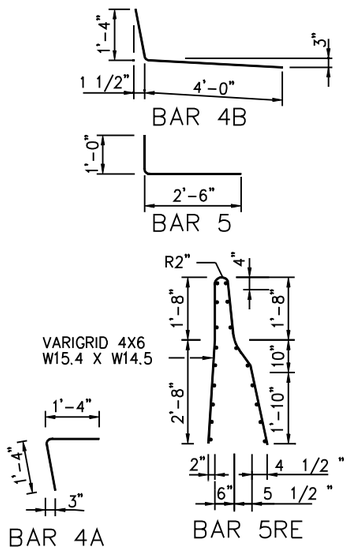
SECTION A-A

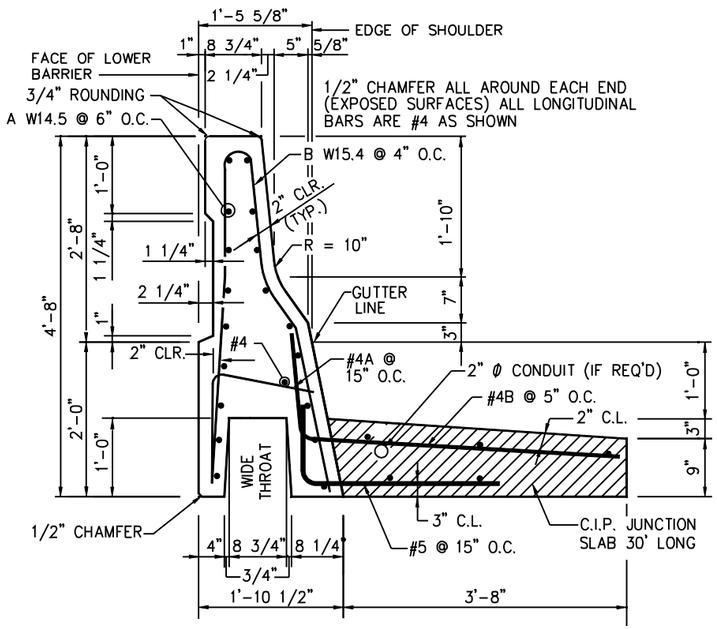


PRECAST TRAFFIC BARRIER
PLAN VIEW



PRECAST TRAFFIC BARRIER
PARTIAL ELEVATION





TRAFFIC BARRIER REINFORCEMENT
WITH WIDE THROAT

MARK	QUANTITY	REMARKS
5	8	3'-6" LONG
A	VARIGRID	W14.5 @ 6" O.C.
B	VARIGRID	W15.4 @ 4" O.C.
4A	8	2'-8" LONG
4B	24	5'-8" LONG

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

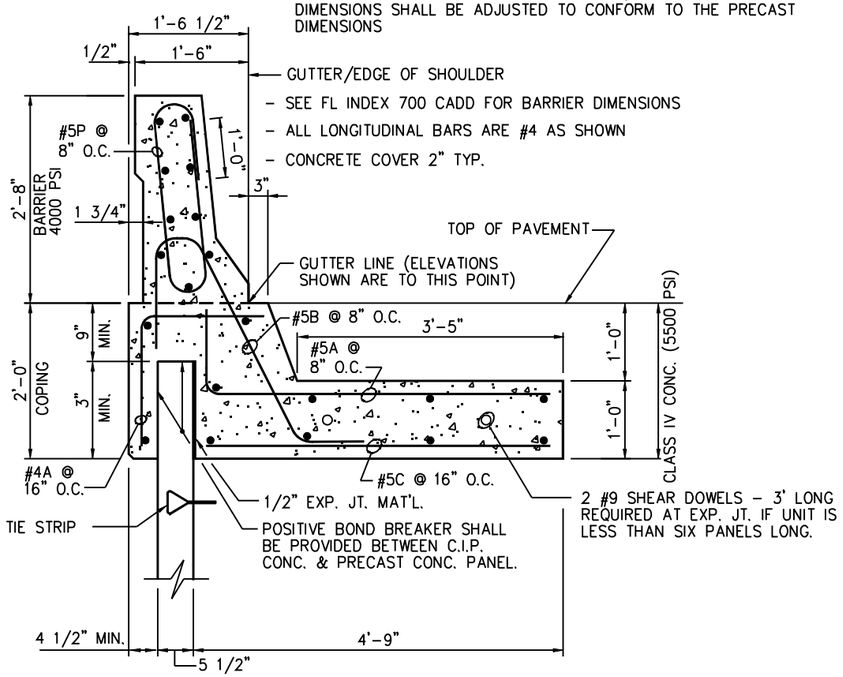
SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

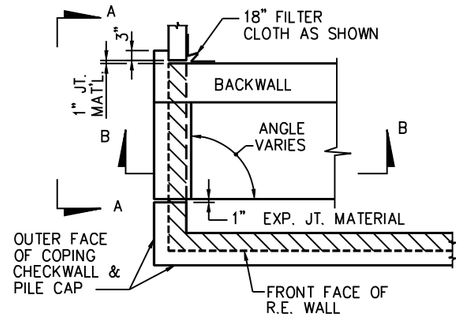
REVISION NO.	SHEET NO.	INDEX NO.
04	8 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

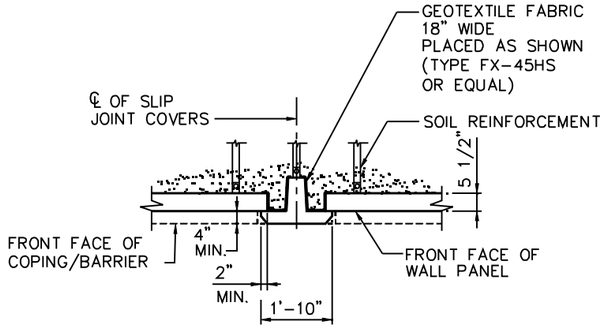
NOTE:
IF SHORT C.I.P. BARRIER SECTIONS ARE TO BE CONSTRUCTED ADJACENT TO PRECAST BARRIER SECTIONS, THEN THIS SECTION'S DIMENSIONS SHALL BE ADJUSTED TO CONFORM TO THE PRECAST DIMENSIONS



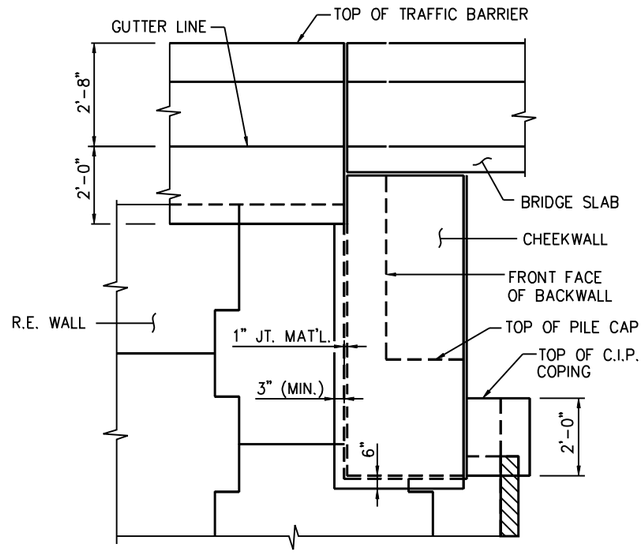
C.I.P. CONC. TRAFFIC BARRIER



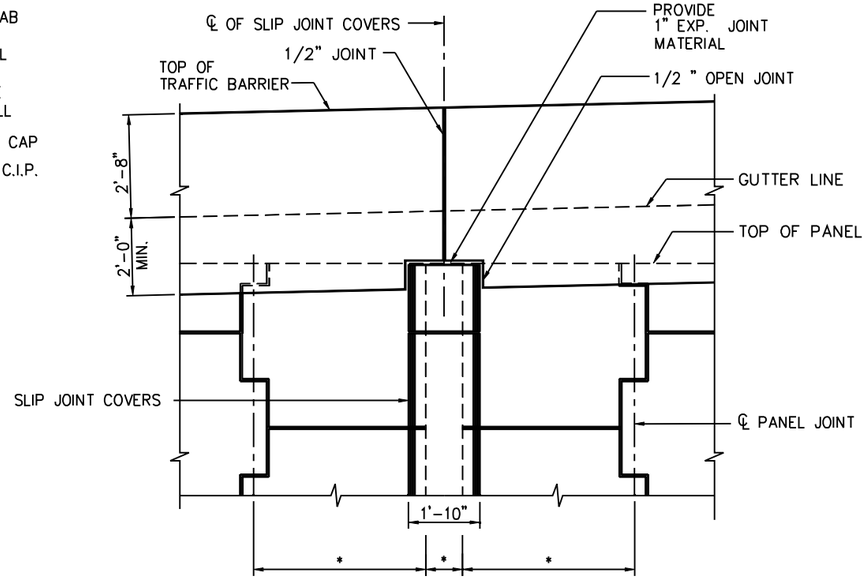
PLAN VIEW @ BEND (TYP.)



SLIP JOINT COVER DETAIL

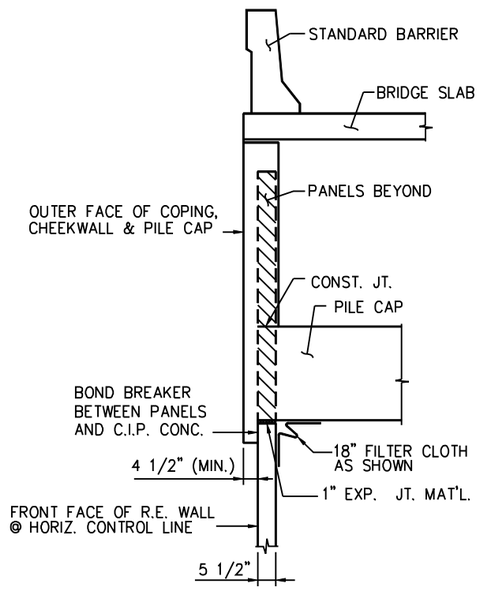


SECTION A-A

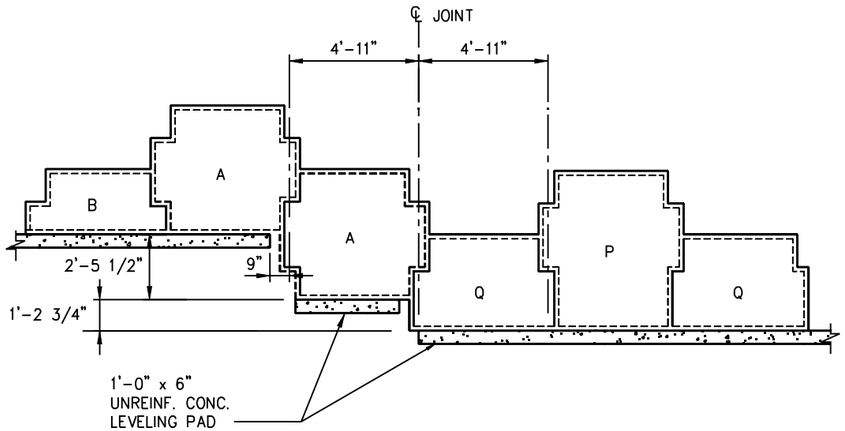


* SEE WALL ELEVATION

C.I.P. TRAFFIC BARRIER OVER SLIP JOINT COVER



SECTION B-B



TYPICAL LEVELING PAD STEP DETAIL

(LEVELING PAD DIMENSIONS ARE THE SAME FOR BOTH CRUCIFORM AND SQUARE PANELS, SEE WALL ELEVATIONS FOR PANEL TYPES AT STEPS)

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS THE REINFORCED EARTH COMPANY REINFORCED EARTH WALL

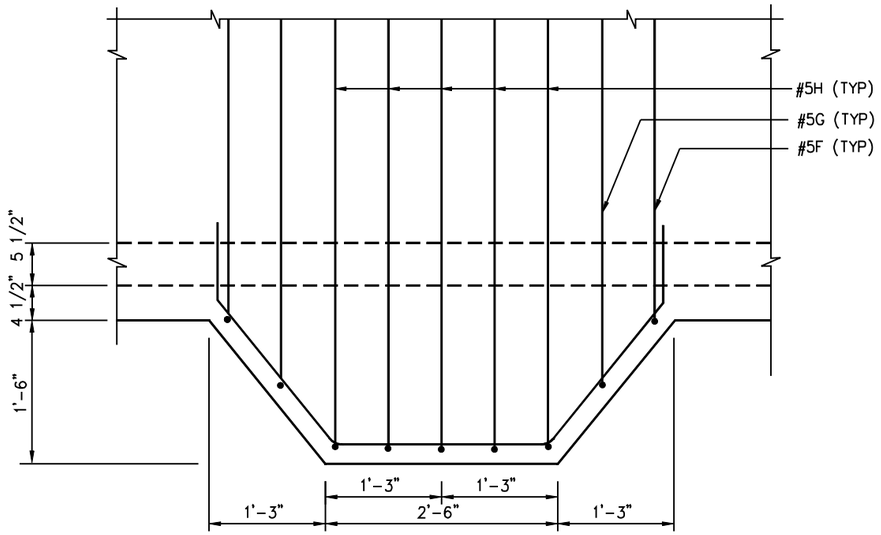
INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

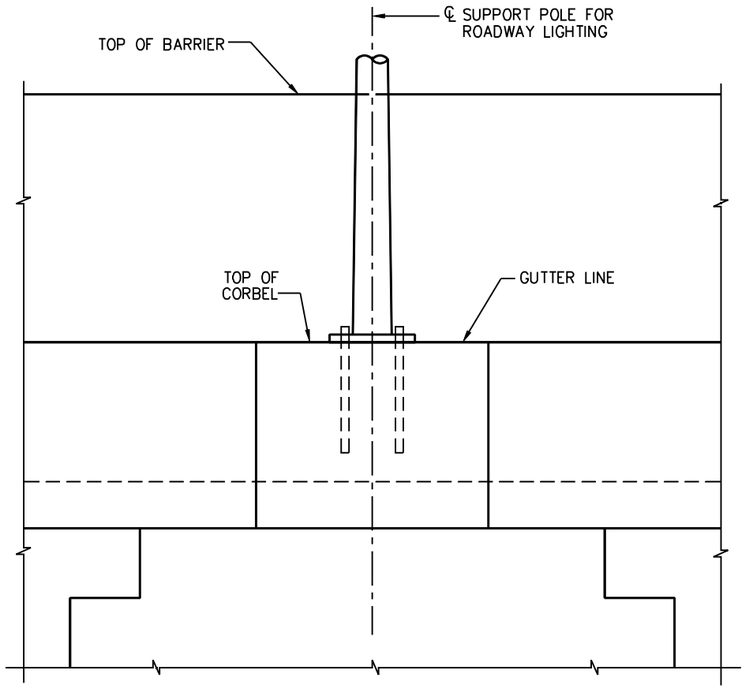
SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
04	9 of 16	05015

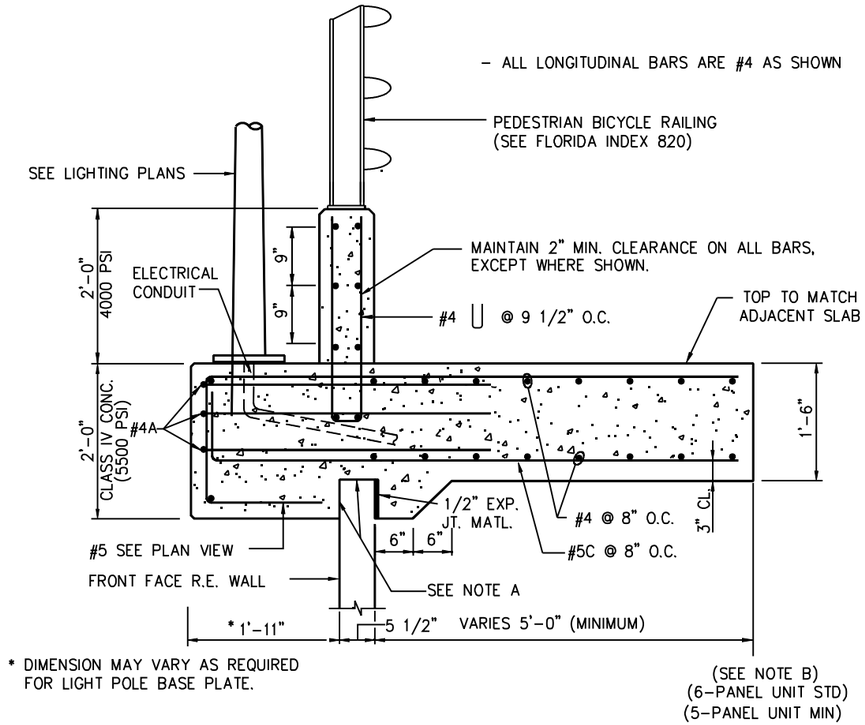
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



① PLAN



③ PARTIAL ELEVATION



* DIMENSION MAY VARY AS REQUIRED FOR LIGHT POLE BASE PLATE.

② BARRIER DETAIL @ LIGHT POLE

NOTE A:
POSITIVE BOND BREAKER SHALL BE PROVIDED BETWEEN C.I.P. CONCRETE AND CONCRETE PANEL

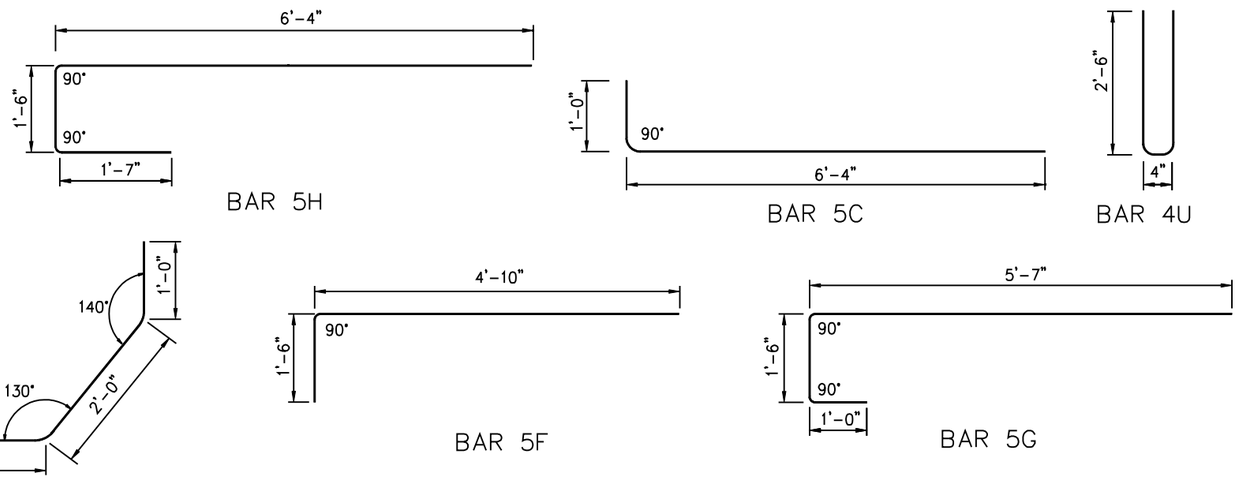
NOTE B:
THE BARRIER JUNCTION SLAB SHALL HAVE THESE DIMENSIONS FOR ONE PRECAST UNIT EITHER SIDE OF LIGHT POLE BARRIER LONGITUDINAL BARS SHALL BE AS SHOWN ABOVE

NOTE C:
2 – #9 SHEAR DOWELS 3'-0" LONG
REFER TO PRECAST BARRIER SHEET

NOTE D:
LIGHT POLE MANUFACTURER IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT LOADS TO THE PILASTER AND FIT THE REINFORCING CAGE.

NOTE E:
SEE STANDARD INDEX NO. 1200 FOR ADDITIONAL DETAILS.

REBAR SCHEDULE	
MARK	QTY.
4A	3
5C	8
5F	2
5G	2
5H	5
4U	6



④ BAR BENDING DETAILS

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

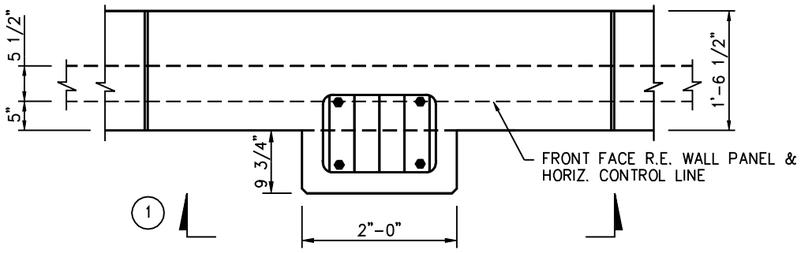
RETAINING WALL SYSTEMS THE REINFORCED EARTH COMPANY REINFORCED EARTH WALL

INTERIM STANDARD

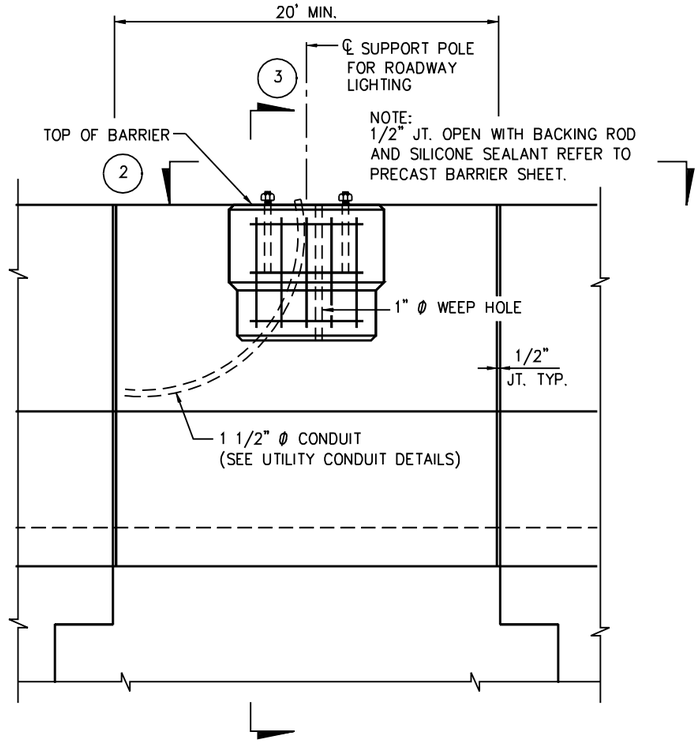
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	10 of 16	05015

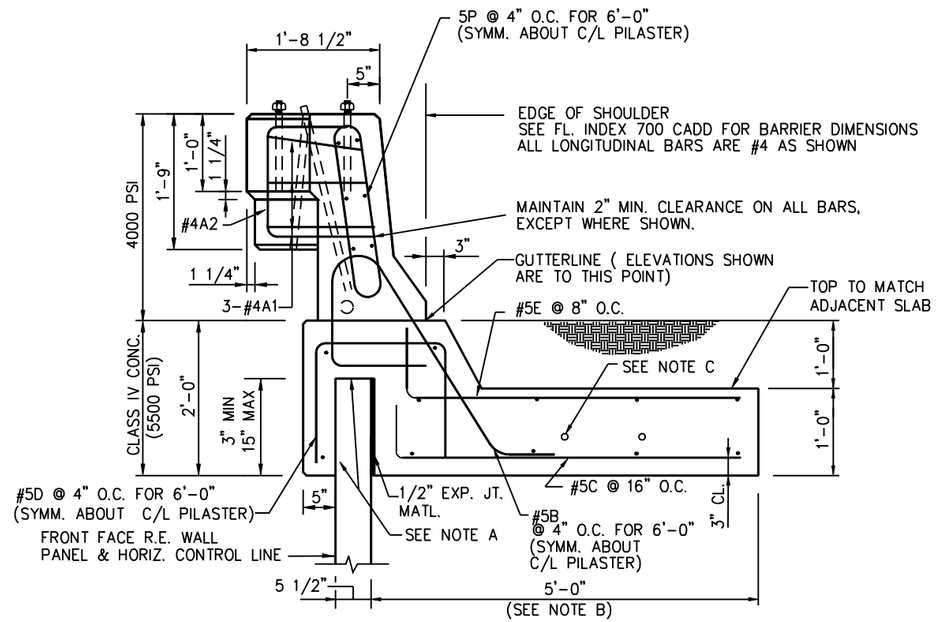
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



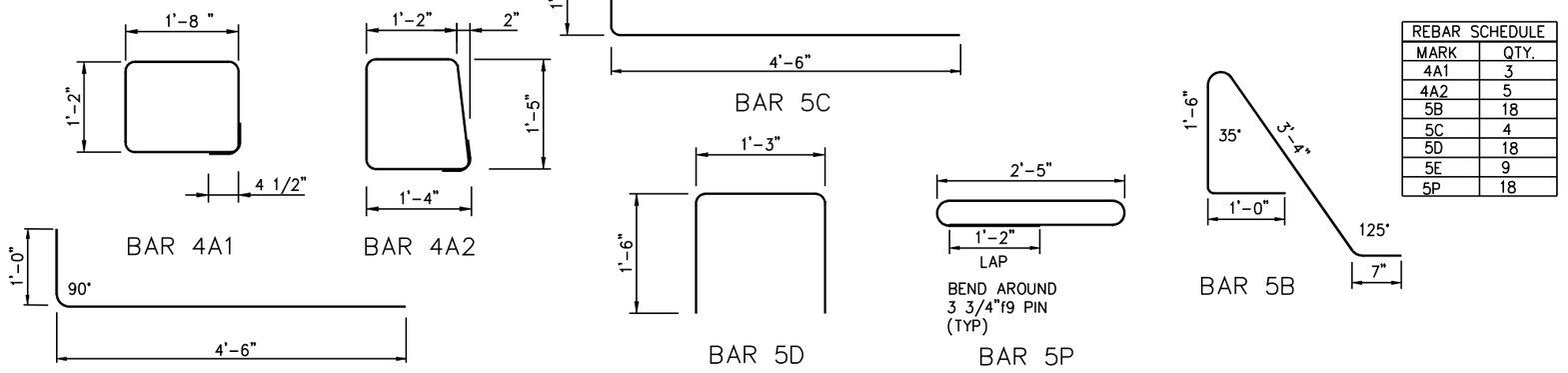
2 PLAN



1 PARTIAL ELEVATION



3 BARRIER DETAIL @ LIGHT POLE



REBAR SCHEDULE	
MARK	QTY.
4A1	3
4A2	5
5B	18
5C	4
5D	18
5E	9
5P	18

4 BAR BENDING DETAILS

NOTES:

A. POSITIVE BOND BREAKER SHALL BE PROVIDED BETWEEN CAST IN PLACE CONC. AND PRECAST CONC. PANEL.

B. THE BARRIER JUNCTION SLAB SHALL HAVE THESE DIMENSIONS FOR ONE PRECAST UNIT EITHER SIDE OF LIGHT POLE BARRIER LONGITUDINAL BARS SHALL BE AS SHOWN ABOVE.

C. 2 – #9 SHEAR DOWELS – 3'-0" LONG REFER TO PRECAST BARRIER SHEET

D. LIGHT POLE PILASTER AND ADJACENT TRAFFIC RAIL BARRIER AND MOMENT SLAB AREA SHOWN ON THIS SHEET ARE DESIGNED TO RESIST WORKING LOADS (IN ANY DIRECTION) FROM THE LIGHT POLE APPLIED AT THE TOP OF THE PILASTER AS FOLLOWS:
   LONGITUDINAL MOMENT = 30 KIP–FT
   TRANSVERSE MOMENT = 6 KIP–FT
   LONGITUDINAL SHEAR = 1 KIP
   TRANSVERSE SHEAR = 0.2 KIP
   TORSION = 3 KIP–FT
   AXIAL = 0.4 KIP
IF THE LIGHT POLE PROVIDED APPLIES LOADS THAT ARE IN EXCESS OF THOSE SHOWN ABOVE, THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT THE DESIGN TO THE DEPARTMENT FOR REVIEW. THE CONTRACTOR'S REDESIGN SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA, AND QUALIFIED TO PERFORM THIS WORK.

E. LIGHT POLE SUPPLIER IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND FIT THE REINFORCING CAGE.

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

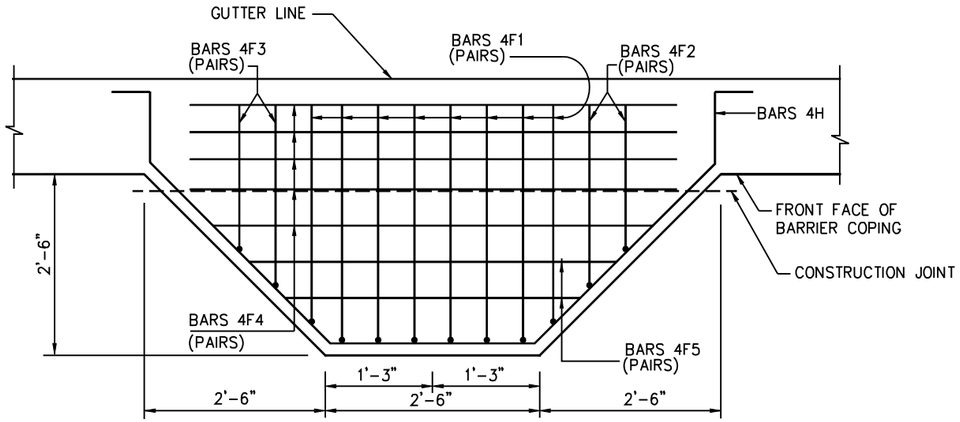
RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

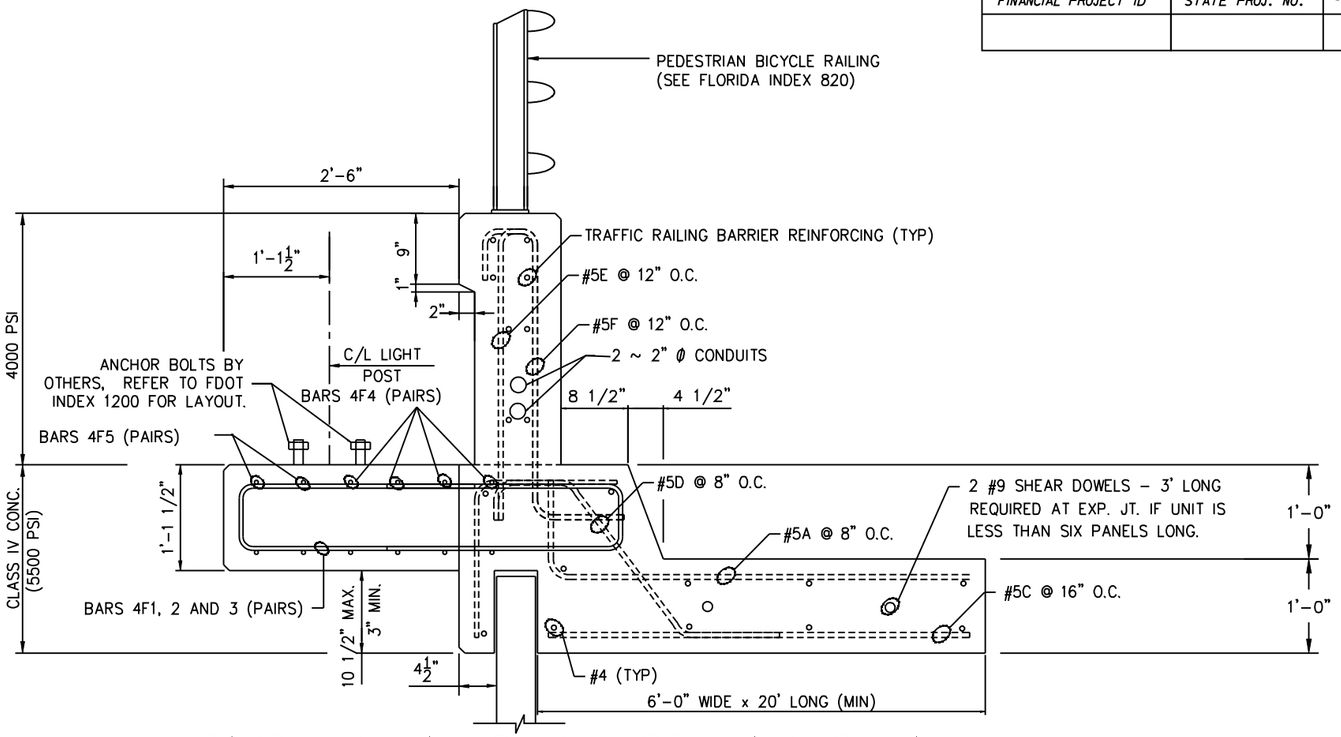
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	11 of 16	05015

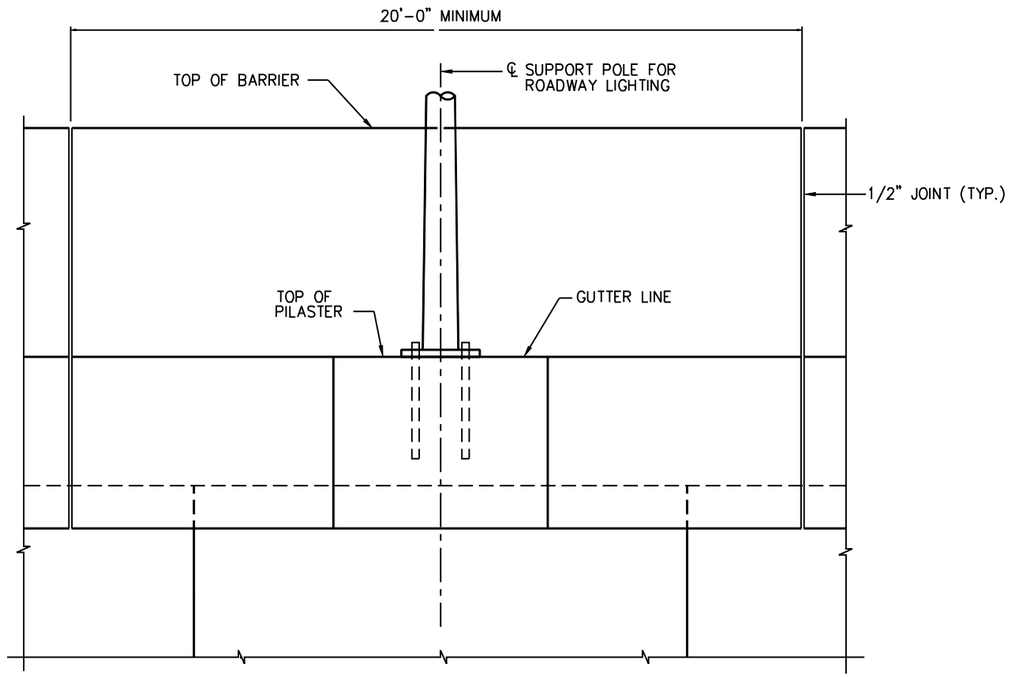
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PARTIAL PLAN VIEW

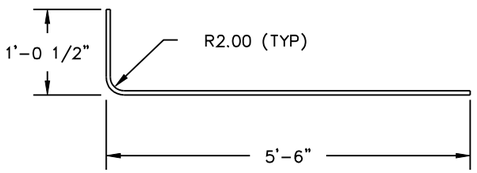


BARRIER DETAIL @ LIGHT POLE AND SIGNAL

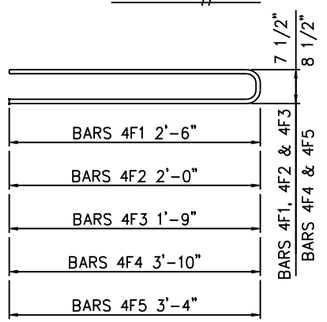


PARTIAL ELEVATION

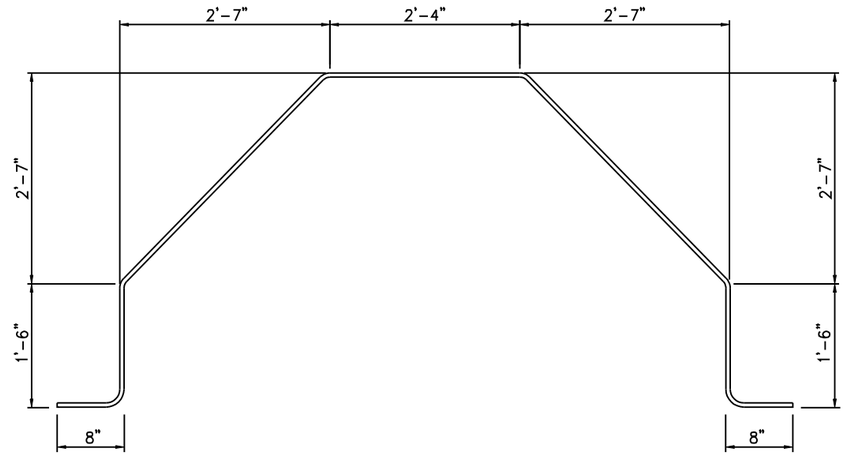
CONTRACTOR TO ADJUST LIGHT POLE LOCATION FROM THAT SHOWN ON PLANS TO THE CENTER OF THE 20'-0" LONG C.I.P. BARRIER.



BAR #5A



BARS 4F1,2,3,4 AND 5



BAR #4H

DATE : 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

APPROVED BY
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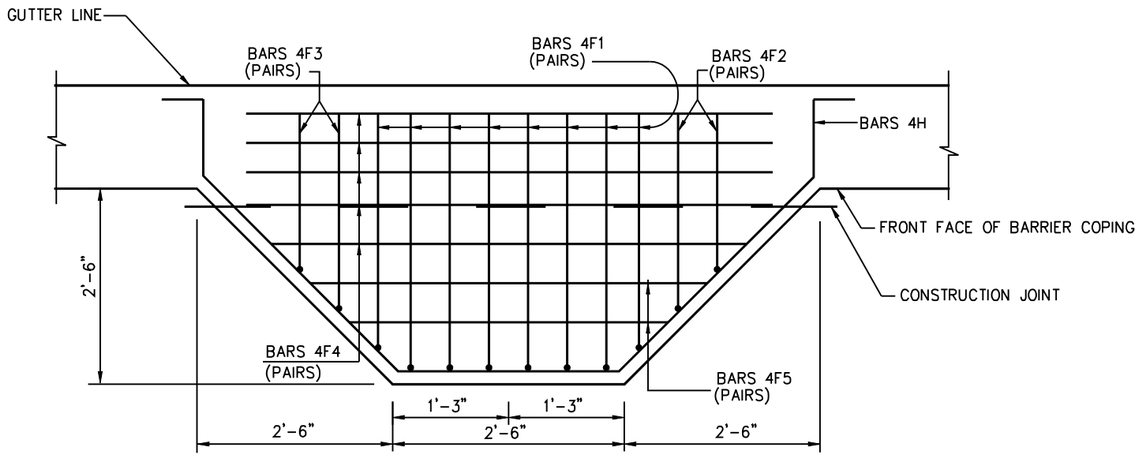
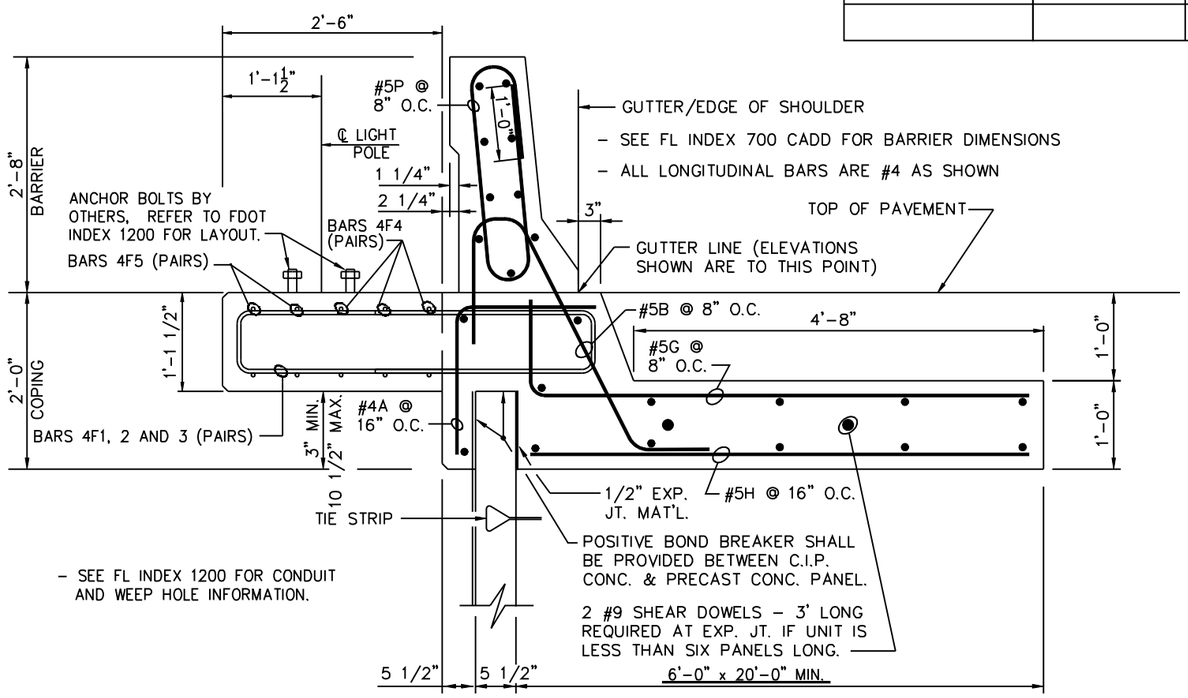
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	12 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

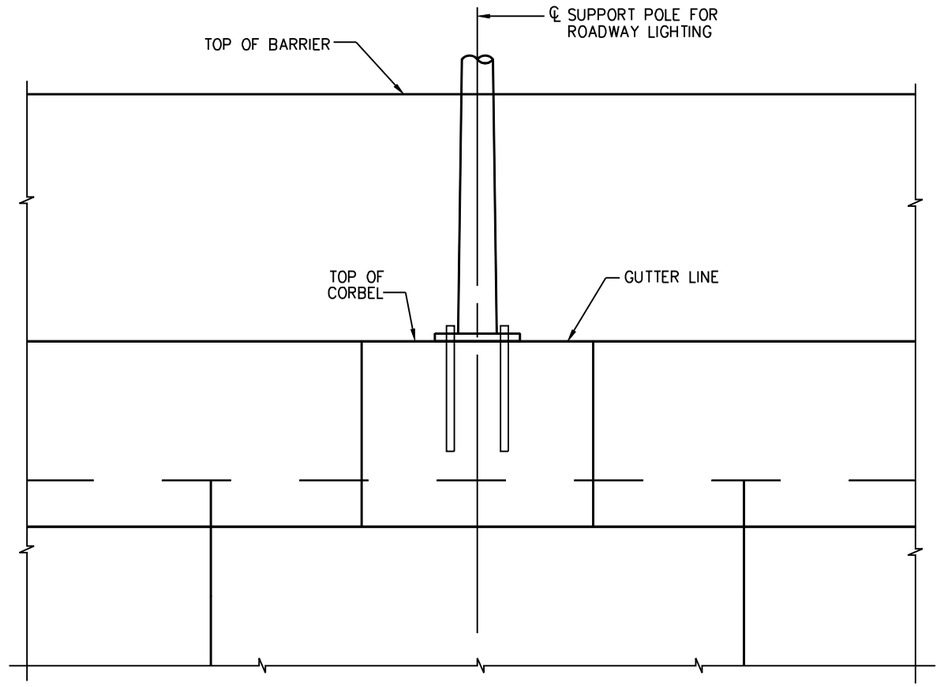


PARTIAL PLAN VIEW



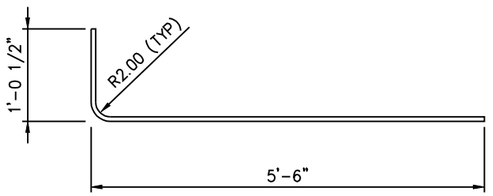
- SEE FL INDEX 1200 FOR CONDUIT AND WEEP HOLE INFORMATION.

BARRIER DETAIL @ LIGHT POLE AND SIGNAL

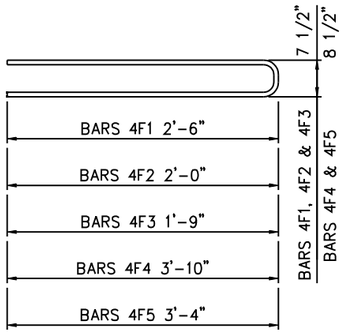


PARTIAL ELEVATION

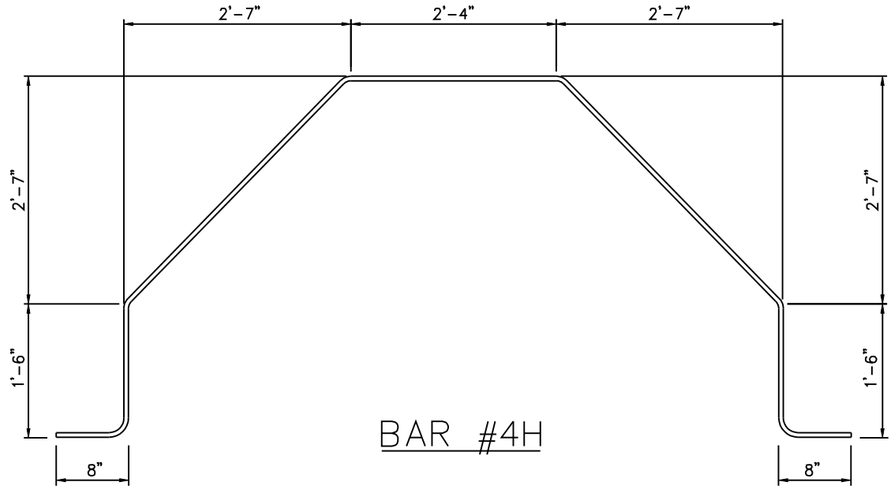
CONTRACTOR TO ADJUST LIGHT POLE LOCATION FROM THAT SHOWN ON PLANS TO THE CENTER OF THE 20'-0" LONG C.I.P. BARRIER.



BAR #5G



BARS 4F1,2,3,4 AND 5



BAR #4H

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS THE REINFORCED EARTH COMPANY REINFORCED EARTH WALL

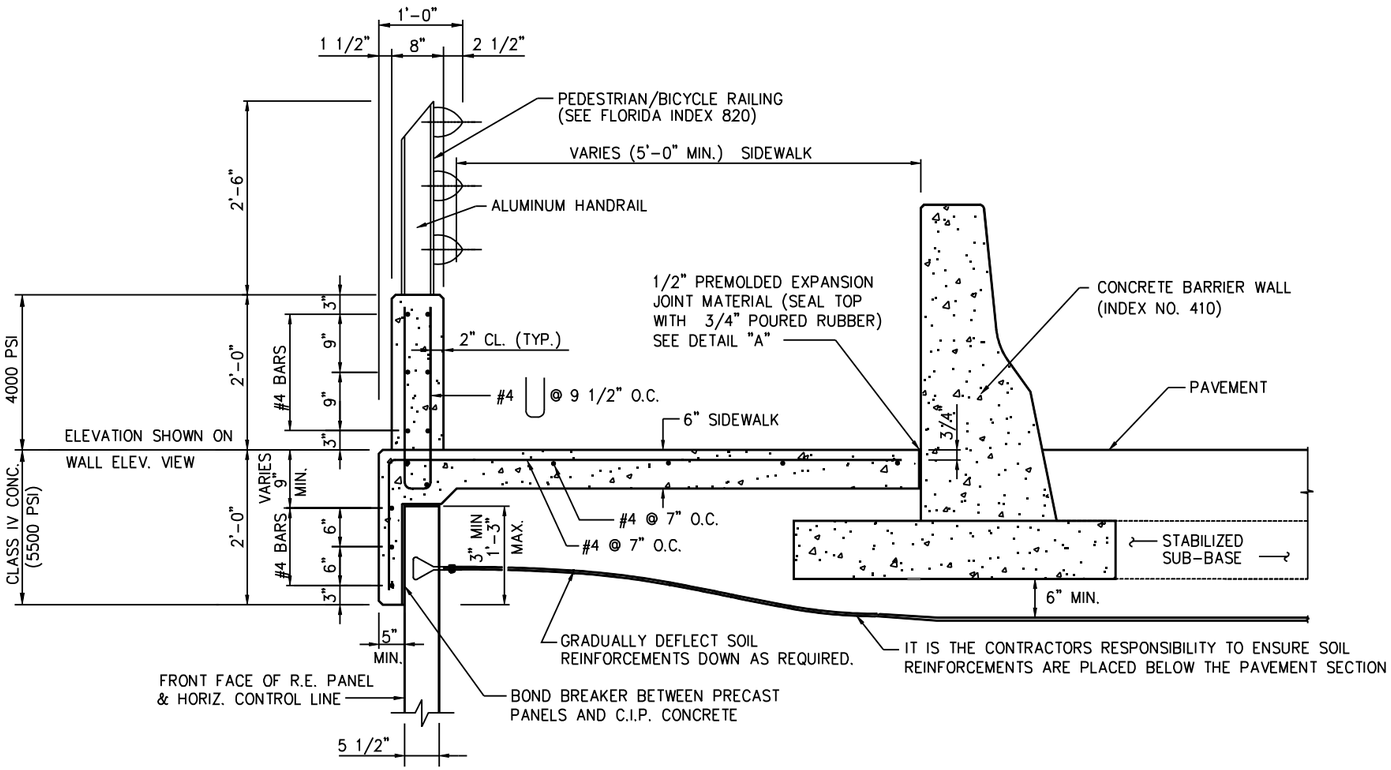
INTERIM STANDARD

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5015 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

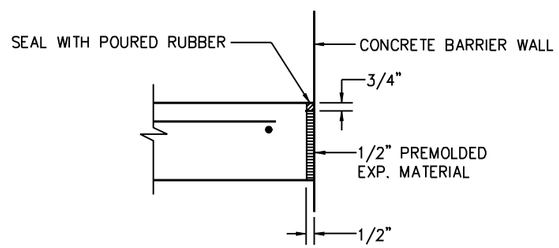
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	13 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



C.I.P. PARAPET DETAIL W/ HANDRAIL



DETAIL "A"

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

CRUCIFORM AND SQUARE PANELS

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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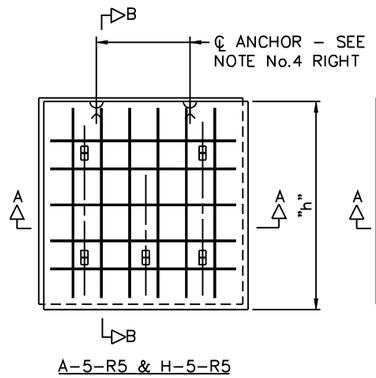
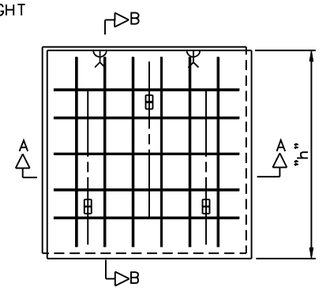
REVISION NO.	SHEET NO.	INDEX NO.
04	14 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TYPICAL PANELS



A-5-R5 & H-5-R5



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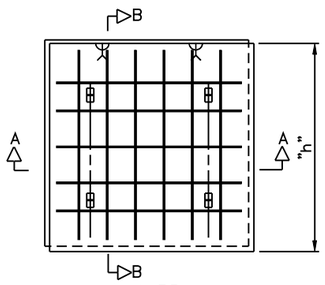

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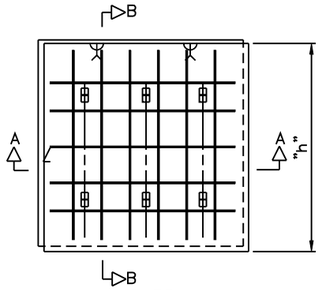
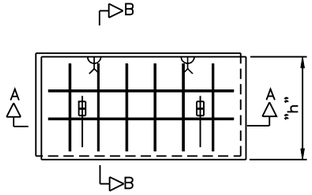
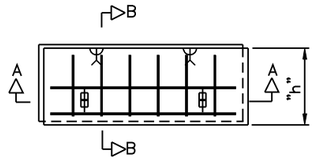


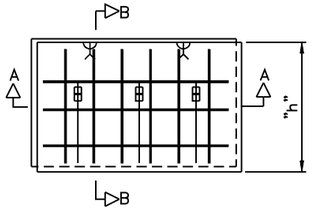
A-6-R5



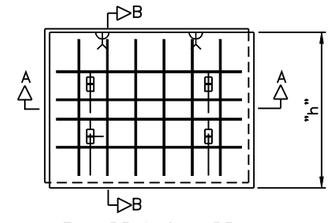
B-2-R5 & D-2-R5



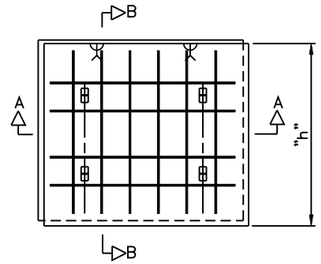
C-2-R5



E-3-R5



F-4-R5 & Q-4-R5



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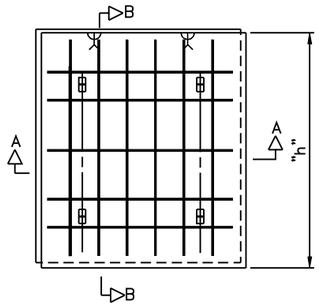

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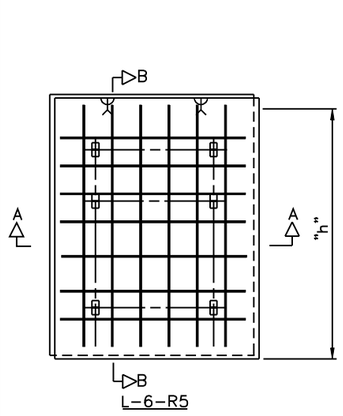
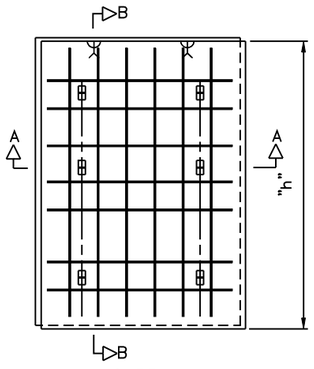
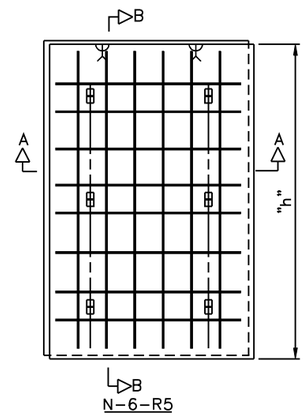


L-6-R5



M-6-R5



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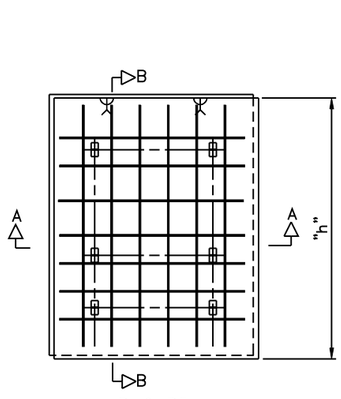
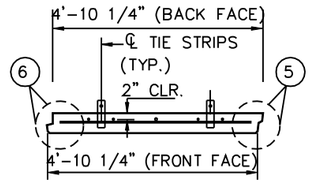


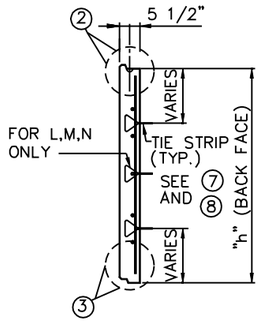
P-6-R5

NOTES:

1. REINFORCEMENT SHOWN SHALL COMPLY TO THE ASTM A615, GRADE 60 STANDARDS. ALTERNATE REINFORCEMENT MAY BE DEFORMED WELDED WIRE FABRIC AS INDICATED IN THE TABLE BELOW, THIS FABRIC SHALL COMPLY TO ASTM A497. REBAR LAYOUT WILL BE DETAILED AND SHOWN ON PANEL SHOP DRAWINGS, IF WELDED FABRIC IS TO BE USED THE SIZE SHOULD BE DETERMINED BASED ON THE PANEL SHAPE AND REQUIRED MINIMUM EDGE DISTANCE.
2. 1/2" x 1/2" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
4. ALL PANELS EXCEPT TYPES M, N, NII, NJJ, NI & NJ SHALL HAVE TWO BURKE 1-TON SPREAD ANCHORS. PANEL TYPES M, N, NII, NJJ, NI & NJ SHALL HAVE TWO BURKE 2-TON ERECTION HEAD ANCHORS WITH BOTH TENSION AND SHEAR BARS.
5. PANEL DESIGN STRUCTURAL THICKNESS IS 5 1/2" MINIMUM, THIS THICKNESS MUST INCREASE TO ACCOMMODATE ANY ARCHITECTURAL SCULPTURED FINISH.
6. ACTUAL LOCATION OF REBARS WILL BE ADJUSTED TO ACCOMMODATE PANEL CASTING.
7. PANEL REINFORCEMENT SHALL BE PLACED WITH A MINIMUM 1 3/16" CLEARANCE FROM THE TIE STRIPS.



SECTION A-A



SECTION B-B

PANEL THICKNESS	REINFORCEMENT DESIGNATION	PANEL REINFORCEMENT (FOR PANEL TYPE "A")	MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (KSF)
5 1/2" (MIN.)	R5	6-#3 VERTICAL 5-#3 HORIZONTAL	1.20
		WIRE MESH ALTERNATE: 6x6 D6.2xD6.2	
	R7	6-#4 VERTICAL 5-#4 HORIZONTAL	3.00

PANEL TYPE	"h"
A & H	4'-10 1/4"
B & D	2'-4 3/4"
C	1'-9 1/2"
E	3'-0 1/4"
F & Q	3'-7 1/2"
G	4'-3"
K	5'-5 3/4"
L & P	6'-1"
M	6'-8 1/2"
N	7'- 3 3/4"

NOTE:
CONCRETE COVER ON ALL REINFORCEMENT TO BE 2" MIN.

DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
REINFORCED EARTH WALL

INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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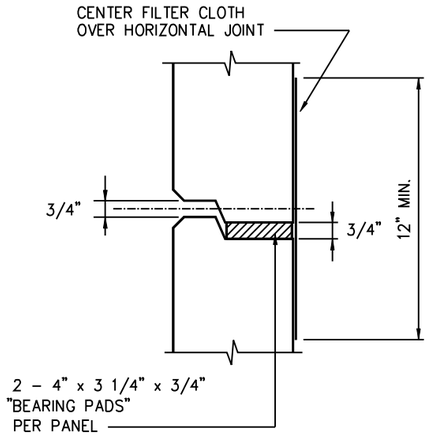
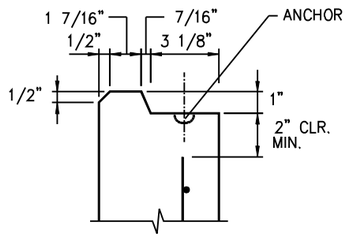
REVISION NO.	SHEET NO.	INDEX NO.
04	15 of 16	05015

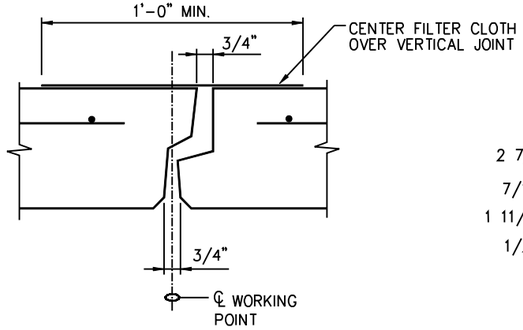
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



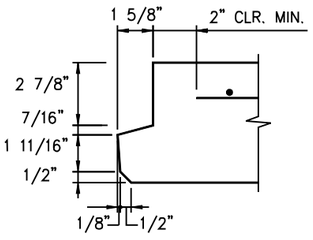
1 HORIZONTAL JOINT



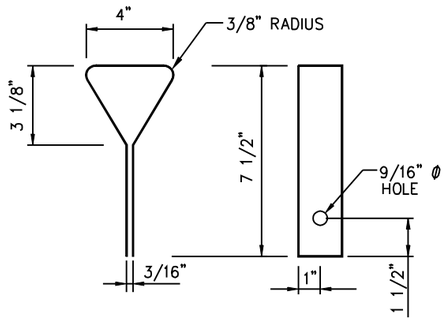
2 SECTION @ PANEL TOP



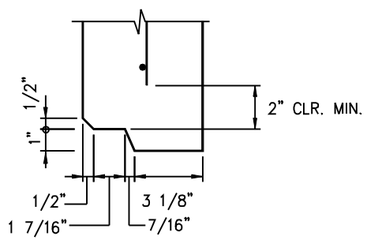
4 VERTICAL JOINT



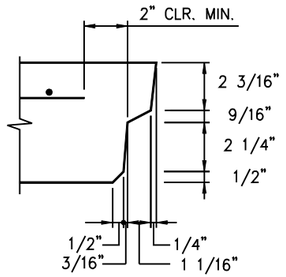
6 SECTION @ PANEL LEFT SIDE



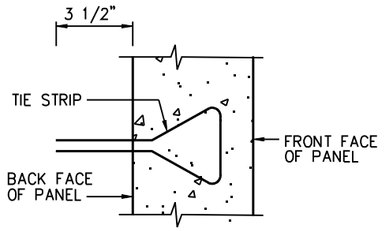
8 TIE STRIP DETAIL



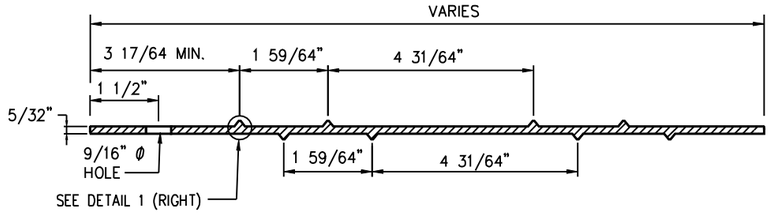
3 SECTION @ PANEL BOTTOM



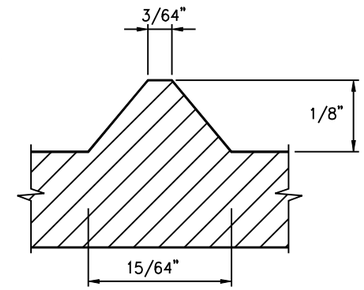
5 SECTION @ PANEL RIGHT SIDE



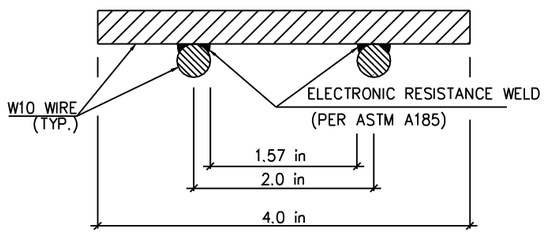
7 PARTIAL SECTION @ TIE STRIP



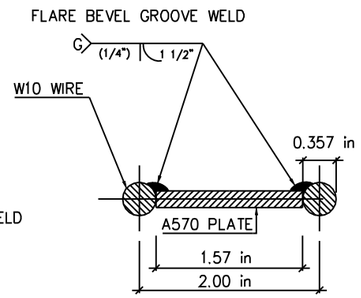
REINFORCING STRIP DETAIL



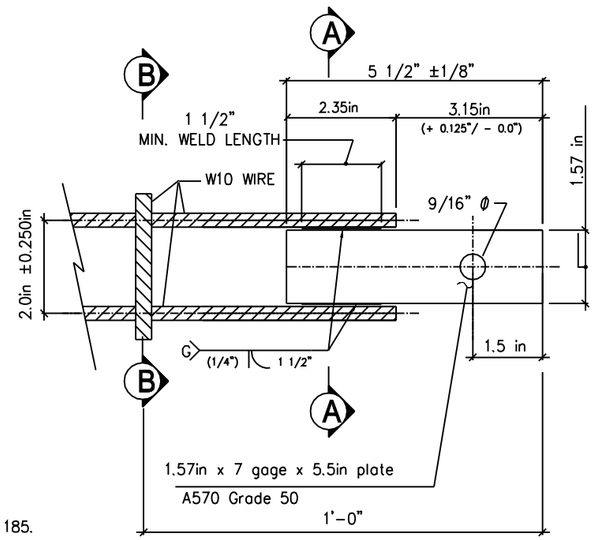
DETAIL 1



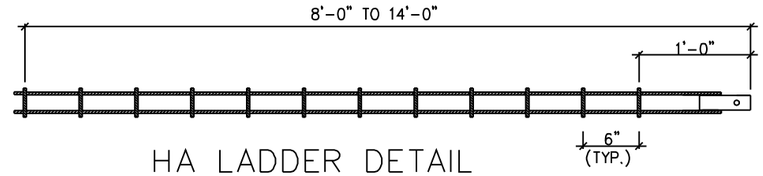
SECTION B–B



SECTION A–A



US PATENT # 5,807,030



HA LADDER DETAIL

NOTES:

1. PLATE = ASTM A570 GRADE 50 – 7 GAGE
2. ALL WIRE SIZES = W10 – ASTM A82 GRADE 65
3. ALL PARTS GALVANIZED TO ASTM A123
4. WELDING OF WIRE TO WIRE – AS PER ASTM A 185.
5. WELDING OF WIRE TO PLATE – AS PER AWS PARTIAL PENETRATION FLARE BEVEL GROOVE WELD

HIGH ADHERANCE (HA) LADDER DETAILS

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY

SQUARE PANELS

DATE : 01-01-05

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REINFORCED EARTH WALL

INTERIM STANDARD

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REVISION NO.	SHEET NO.	INDEX NO.
04	16 of 16	05015

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

CONSTRUCTION REQUIREMENTS FOR PLACEMENT OF TENSAR® GEOGRIDS AND BACKFILL SOILS FOR TENSAR PRECAST CONCRETE WALLS
TENSAR MSE RETAINING WALL SYSTEM

1.0 MATERIALS

1.1 GEOGRID REINFORCEMENT SHALL BE TENSAR UNIAXIAL GEOGRID MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.

1.2 BODKIN BARS SHALL BE 4 ½". x ¼" x 54" HDPE BARS MANUFACURED BY TENSAR CORPORATION, MORROW, GEORGIA.

1.3 GEOTEXTILE SHALL BE 6 OZ/SY NON-WOVEN NEEDLE PUNCHED POLYPROPYLENE GEOTEXTILE WITH MINIMUM PERMITIVITY OF 1.0sec^{-1}.

1.4 BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 548 OF STANDARD SPECIFICATIONS.

1.5 TENSAR EARTH TECHNOLOGIES, INC. SHALL PROVIDE TO THE CONTRACTOR THE FOLLOWING MATERIALS ONLY

- PRECAST CONCRETE FACING PANELS
- SOIL REINFORCING GEOGRIDS, ROLL FORM
- CONNECTION DEVICES
- BEARING PADS
- JOINT COVER FABRIC
- PRECAST COPING, PARAPET, OR TRAFFIC BARRIER (OPTIONAL)

2.0 TECHNICAL REQUIREMENTS

2.1 FILL MATERIALS SHALL FIRST BE PLACED FROM NEAR THE BACK FACE OF THE WALL AND THEN TOWARDS THE TAILS OF THE GEOGRID TO ENSURE TENSIONING.

2.2 FILL SHALL BE COMPACTED AS SPECIFIED IN SECTION 548 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

2.3 AN APPROVED SET OF SHOP DRAWINGS AND CONTRACT SPECIFICATIONS SHALL BE ON-SITE AT ALL TIMES DURING CONSTRUCTION OF THE TENSAR RETAINING WALL.

3.0 GEOGRID PLACEMENT

3.1 TENSAR GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE SHOP DRAWINGS.

3.2 TENSAR GEOGRID LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. REINFORCED FILL ZONE LENGTH IS MEASURED FROM THE FRONT FACE OF THE WALL, EXTENDING TO THE TAIL OF THE GEOGRIDS.

3.2.1 TENSAR GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH(S). THE BODKIN CONNECTION SHALL NOT BE UTILIZED FOR SPLICING GEOGRID UNLESS APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

3.2.2 IF PRE-APPROVED, TENSAR UNIAXIAL GEOGRIDS MAY BE SPLICED UTILIZING THE BODKIN CONNECTION DETAIL. NO MORE THAN ONE SPLICE SHALL BE ALLOWED IN ANY ONE LENGTH OF REINFORCEMENT AND NO SPLICE SHALL BE ALLOWED FOR GEOGRIDS LESS THAN 6 FEET IN LENGTH (EACH). NO SPLICE SHALL BE PLACED HORIZONTALLY OR VERTICALLY ADJACENT TO ANOTHER SPLICE.

3.3 PRIOR TO PLACING FILL ON THE GEOGRID, THE GEOGRID SHALL BE CONNECTED TO THE PANELS PER THE PANEL CONNECTION DETAIL (SEE TYPICAL DETAILS). IMMEDIATELY PRIOR TO AND DURING THE INITIAL PLACEMENT OF FILL ON EACH SECTION OF GEOGRID, THE GEOGRID SHALL BE PULLED TAUT TO REMOVE SLACK IN THE GEOGRID AND CONNECTION.

3.4 TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM BACKFILL THICKNESS OF 6 INCHES IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.

3.5 RUBBER-TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

3.6 TENSAR UNIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE.

4.0 CHANGES TO GEOGRID LAYOUT OR PLACEMENT

4.1 NO CHANGES TO THE TENSAR GEOGRID LAYOUT, INCLUDING, BUT NOT LIMITED TO, LENGTH, GEOGRID TYPE, OR ELEVATION SHALL BE MADE WITHOUT THE EXPRESSED PRIOR WRITTEN CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

5.0 DRAINAGE

5.1 AT THE END OF EACH WORK DAY, THE BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE AT A MINIMUM OF 2 PERCENT SLOPE AND A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE WALL CREST TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALL.

5.2 AT THE END OF EACH WORKDAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.

5.3 THE TENSAR REINFORCED WALL HAS BEEN DESIGNED ON THE ASSUMPTION THAT THE REINFORCED BACKFILL MATERIAL SHALL BE FREE OF SUBSURFACE SEEPAGE. PERMANENT SUBSURFACE WATER (SEEPAGE) COLLECTION AND DIVERSION SHALL BE THE RESPONSIBILITY OF OTHERS.

5.4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINAGE CONTROL AS NEEDED DURING CONSTRUCTION.

6.0 DESIGN PARAMETERS

6.1 SOIL PARAMETERS

SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM.

6.1.1 THE CONTRACTOR SHALL VERIFY THAT THE SOIL MATERIALS COMPLY WITH THE DESIGN PARAMETERS AS STATED IN THE CONTROL DRAWINGS.

6.2 DESIGN:

THE DESIGN CONTAINED ON THESE DRAWNGS IS BASED ON INFORMATION PROVIDED BY OTHERS. ON THE BASIS OF THIS INFORMATION, TENSAR EARTH TECHNOLOGIES, INC. IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR EXTERNAL STABILITY, GLOBAL STABILITY AND FOUNDATION.

6.2.1 FACTORS OF SAFETY:

6.2.1.1 INTERNAL STABILITY:

MAXIMUM GEOGRID DESIGN STRENGTH	= 0.19 ULT
MINIMUM FACTOR OF SAFETY FOR GEOGRID PULLOUT	= 1.5
MINIMUM FACTOR OF SAFETY FOR SLIDING AT LOWEST GEOGRID	= 1.5
SOIL-GEOGRID INTERACTION COEFFICIENT FOR UXMSE GEOGRID	= 0.55 - 0.8
PERCENT COVERAGE OF GEOGRID	= 89%

6.2.1.2 SLIDING AND OVERTURNING:

MINIMUM FACTOR OF SAFETY FOR SLIDING AT BASE	= 1.5
MINIMUM FACTOR OF SAFETY FOR OVERTURNING	= 2.0

SLIDING AND OVERTURNING ARE THE RESPONSIBILITY OF OTHERS. THE EVALUATION OF SLIDING AND OVERTURNING AND THEIR EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR SLIDING OR OVERTURNING.

6.2.1.3 GLOBAL STABILITY:

GLOBAL STABILITY INCLUDING SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS. THE EVALUATION OF GLOBAL STABILITY AND ITS EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR GLOBAL STABILITY.

6.2.1.4 FOUNDATION:

FOUNDATION INCLUDING FOUNDATION PREPARATION AND THE EVALUATION OF BEARING CAPACITY, TOTAL AND DIFFERENTIAL SETTLEMENT AND THEIR EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR FOUNDATION.

MINIMUM FACTOR OF SAFETY FOR BEARING = 2.5

6.3 SURCHARGE LOADING = 250 psf

6.4 HYDROSTATIC DESIGN = NONE

6.5 SEISMIC DESIGN = NONE

7.0 SPECIAL PROVISIONS

7.1 WALL ELEVATION VIEWS AND LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

7.2 TENSAR EARTH TECHNOLOGIES, INC. ASSUMES NO LIABILITY FOR INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS, SUITABILITY OF SOIL DESIGN PARAMETERS AND INTERPRETATION OF SUBSURFACE OF GROUND WATER CONDITIONS.

7.3 THE CONTRACTOR IS RESPOSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS ARE AS DESCRIBED IN SECTION 6.0 PRIOR TO AND DURING CONSTRUCTION. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE ON-SITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.

7.4 THE SOIL DESIGN PARAMETERS STATED IN SECTION 6.0 SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

7.5 ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 6.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

7.6 SEE CONTROL DRAWINGS, FDOT STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS FOR ADDITIONAL REQUIRED MATERIALS AND METHODS.

7.7 A COPY OF THE TENSAR EARTH TECHNOLOGIES, INC. "ARES RETAINING WALL SYSTEM INSTALLATION GUIDELINES" SHALL BE ON-SITE AT ALL TIMES DURING WALL CONSTRUCTION.

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DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

INTERIM STANDARD

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APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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04	1 of 16	05025

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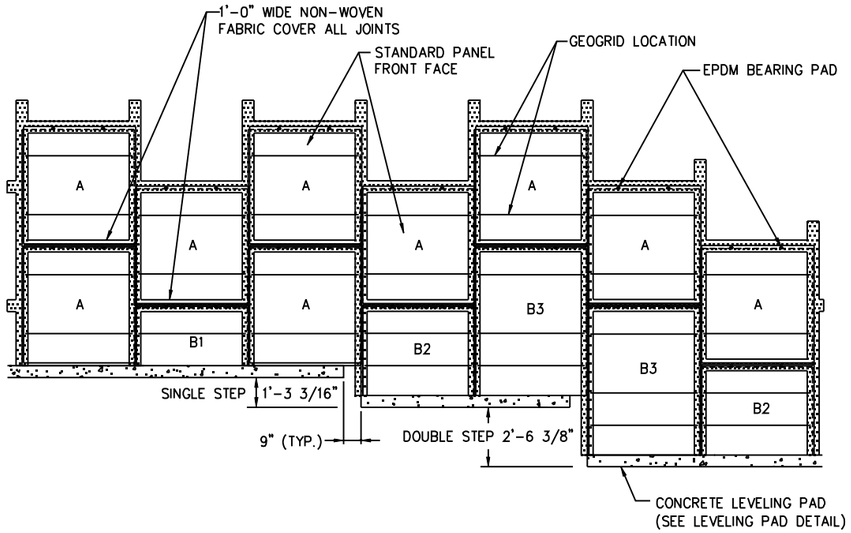
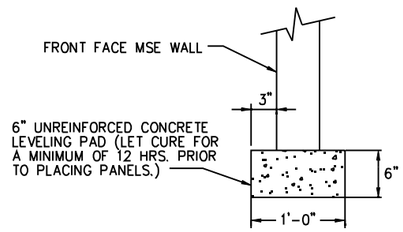


TYPICAL LEVELING PAD STEP AND FABRIC COVERAGE DETAIL

NOT TO SCALE



LEVELING PAD DETAIL

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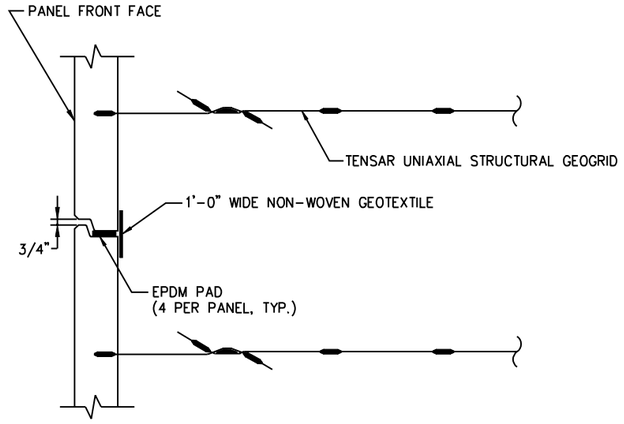
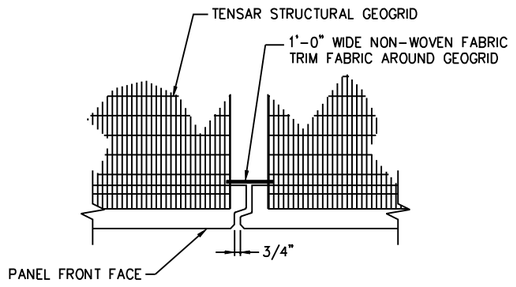


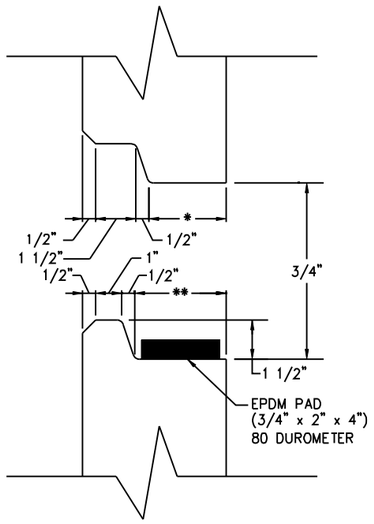
HORIZONTAL JOINT DETAIL

NOT TO SCALE



VERTICAL JOINT DETAIL

NOT TO SCALE



PANEL JOINT DETAIL

NOT TO SCALE

* – 3" FOR MODERATELY & SLIGHTLY AGGRESSIVE ENVIRONMENT
– 4 3/8" FOR EXTREMELY AGGRESSIVE ENVIRONMENT

** – 3 1/2" FOR MODERATELY & SLIGHTLY AGGRESSIVE ENVIRONMENT
– 4 7/8" FOR EXTREMELY AGGRESSIVE ENVIRONMENT

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

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APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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04	2 of 16	05025

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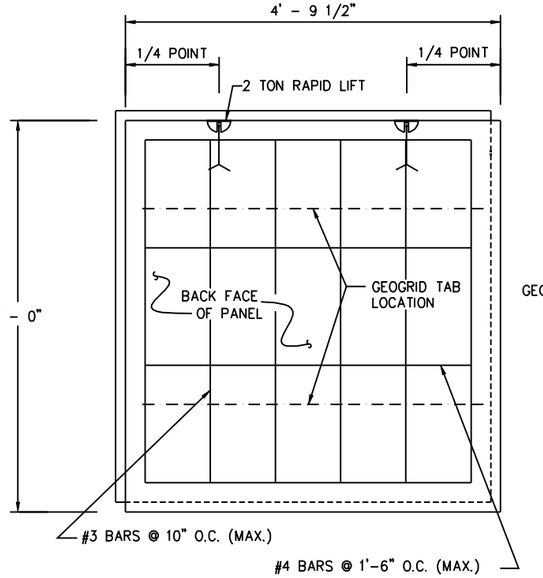
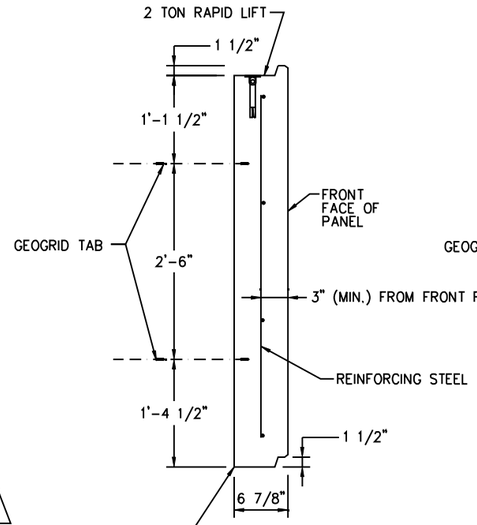
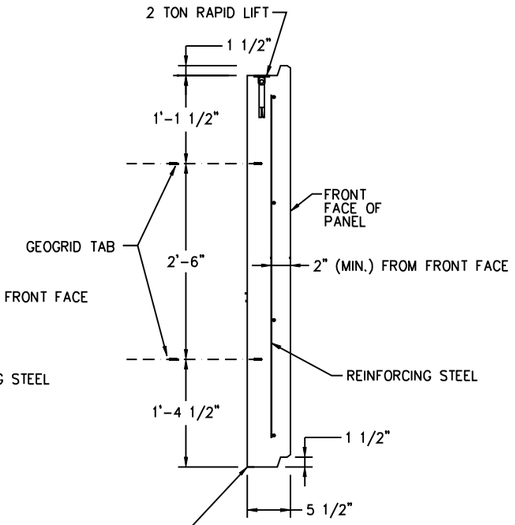


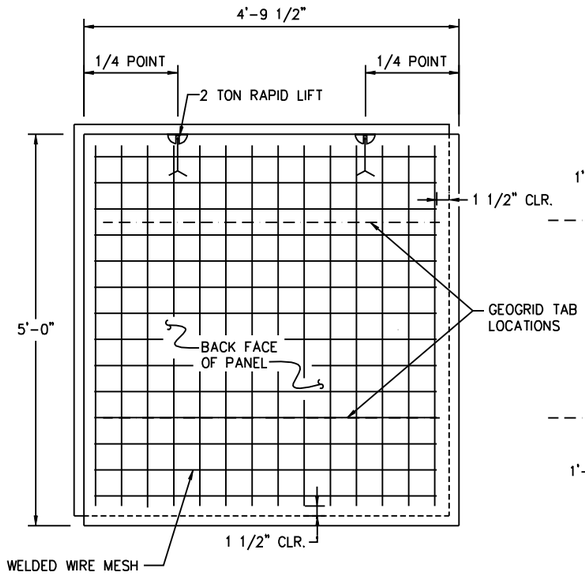


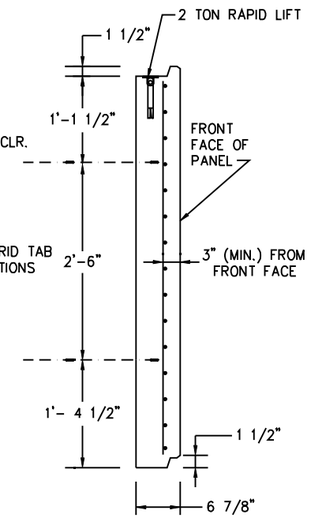


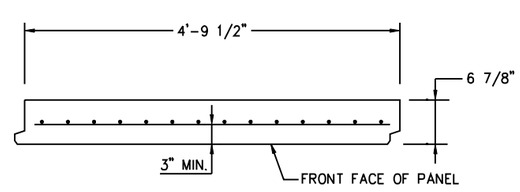
REINFORCING STEEL REQUIREMENTS:

HORIZONTAL: 4-#4 BARS @ 1'-6" O.C. (MAX.)
VERTICAL: 6-#3 BARS @ 10 " O.C. (MAX.)
OR
4"x4" - W4.0xW4.0 WELDED WIRE MESH
FABRICATION PER ASTM A-185

TYPICAL PANEL DETAILS - STANDARD A PANEL SHOWING BAR REINFORCING







TYPICAL PANEL DETAILS - STANDARD A PANEL SHOWING WELDED WIRE MESH REINFORCING

EXTREMELY AGRESSIVE PANEL SHOWN, MODERATELY AND SLIGHTLY AGRESSIVE PANEL SIMILAR

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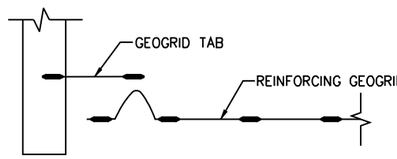
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 16	05025

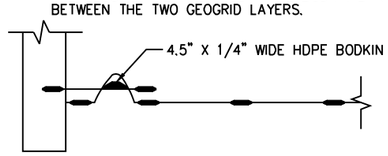
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TO FORM A PANEL BODKIN CONNECTION FOR CONNECTING TO FACING PANEL:

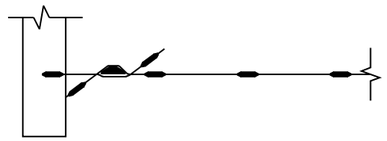
1. BEND THE LAST APERTURE OF REINFORCING GEOGRID AS SHOWN.



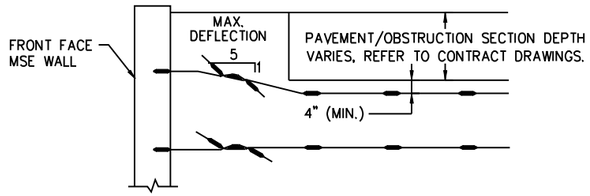
2. PASS THE RIBS OF THE BENT APERTURES THROUGH THE RIBS OF THE GEOGRID TAB AND INSERT THE BODKIN BAR INTO THE SPACE BETWEEN THE TWO GEOGRID LAYERS.



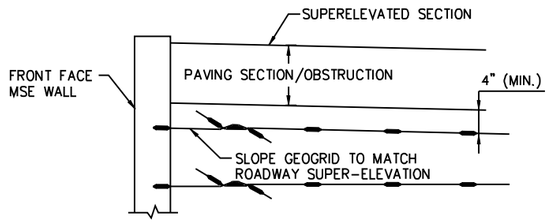
3. PULL REINFORCING GEOGRID TAUT TO TENSION CONNECTION.



PANEL BODKIN CONNECTION
NOT TO SCALE



HORIZONTAL PAVEMENT STRUCTURE



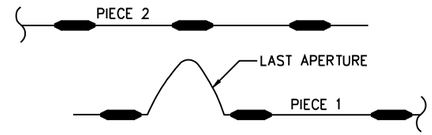
SUPER-ELEVATED PAVEMENT/OBSTRUCTION STRUCTURE

NOTE:
CONTRACTOR IS RESPONSIBLE TO COORDINATE THE PLACEMENT OF THE GEOGRID TO AVOID CONFLICT WITH THE CONTRACT PAVEMENT/OBSTRUCTION SECTION. GEOGRID MUST BE SEPARATED FROM THE PAVEMENT/OBSTRUCTION SECTION BY A MINIMUM OF 4".

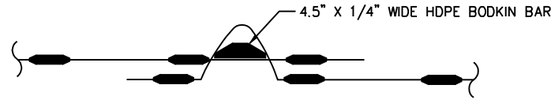
GEOGRID PLACEMENT AT PAVEMENT/OBSTRUCTION SECTION
NOT TO SCALE

TO FORM A BODKIN CONNECTION FOR SPLICING GEOGRID:

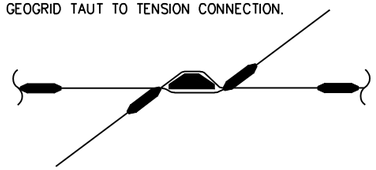
1. BEND THE LAST APERTURE OF ONE PIECE OF GEOGRID AS SHOWN.



2. PASS THE RIBS OF THE BENT APERTURES THROUGH THE RIBS OF THE SECOND PIECE OF GEOGRID AND INSERT THE BODKIN BAR INTO THE SPACE BETWEEN THE TWO GEOGRID LAYERS.

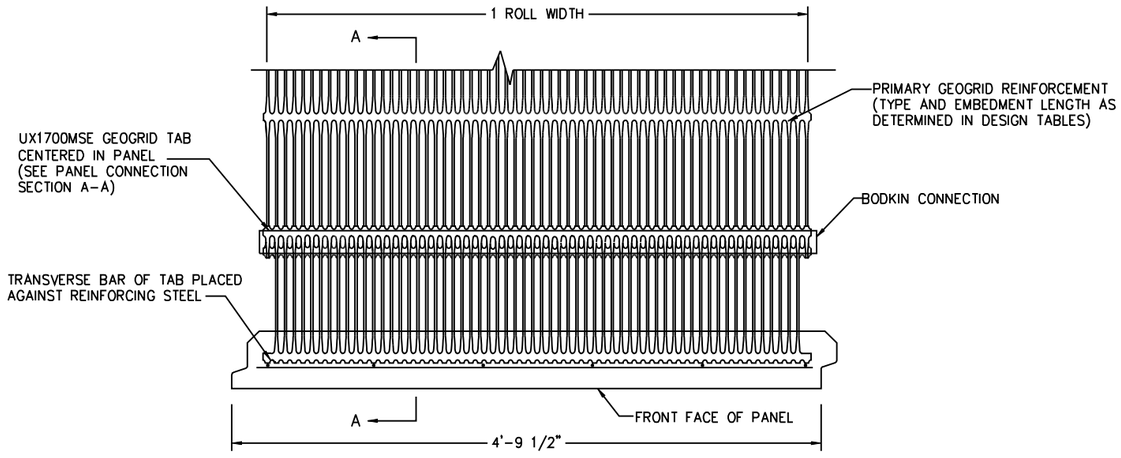


3. PULL GEOGRID TAUT TO TENSION CONNECTION.

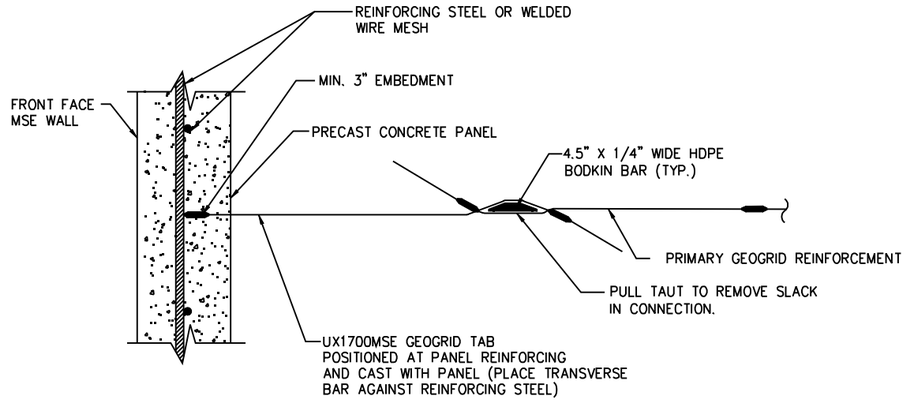


NOTE:
IT IS RECOMMENDED THAT THE SPLICED GEOGRID PIECE ON EITHER SIDE OF THE BODKIN CONNECTION BE AT LEAST 6 FEET LONG UNLESS THE GEOGRID TERMINATES IN A FIXED CONNECTION

GEOGRID SPLICE BODKIN CONNECTION
NOT TO SCALE



CONNECTION DETAIL PLAN VIEW (89% COVERAGE)
MAXIMUM COVERAGE
NOT TO SCALE



PANEL CONNECTION SECTION (A-A)
NOT TO SCALE

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State Structures Design Engineer

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04	4 of 16	05025

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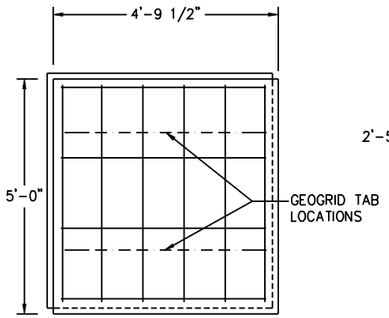
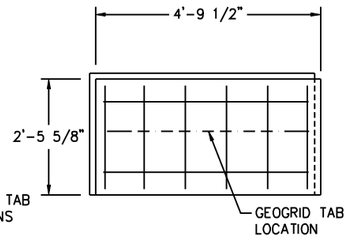
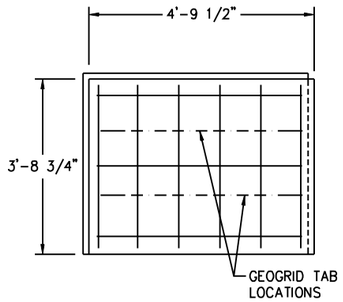


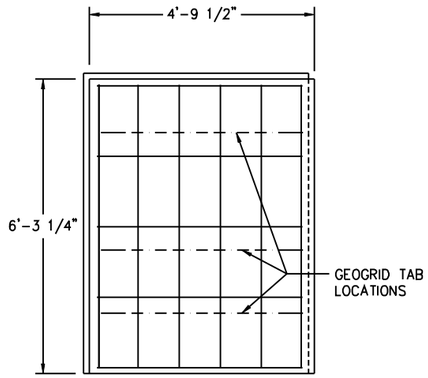
STANDARD A PANEL



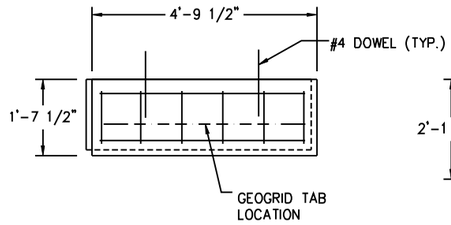
STANDARD B1 PANEL



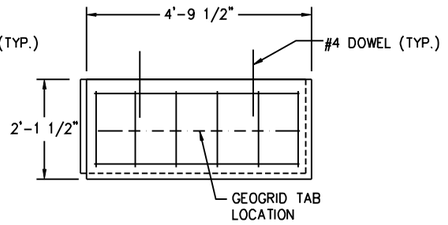
STANDARD B2 PANEL



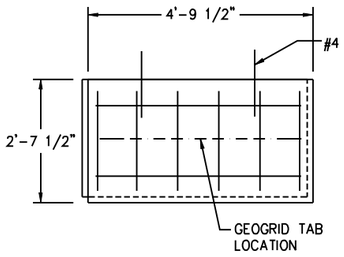
STANDARD B3 PANEL



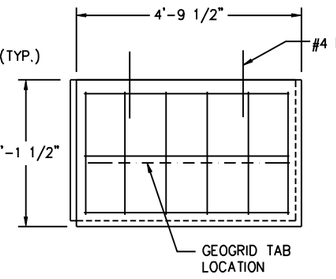
STANDARD T18 PANEL



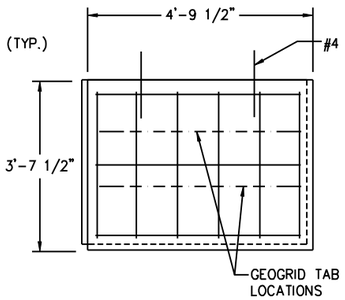
STANDARD T24 PANEL



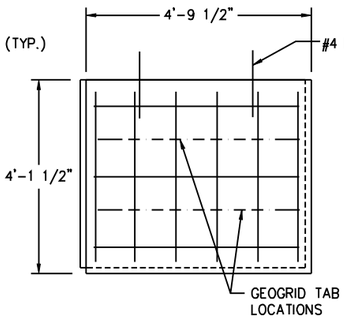
STANDARD T30 PANEL



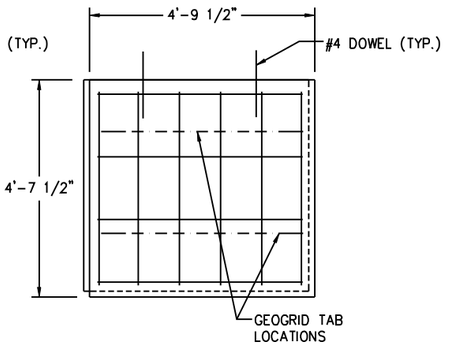
STANDARD T36 PANEL



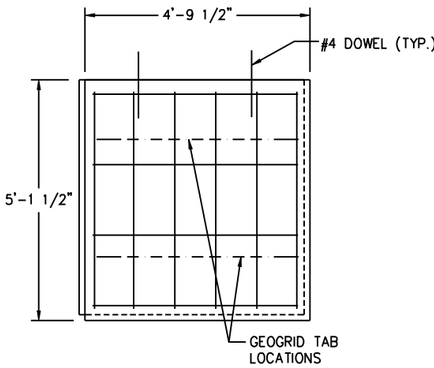
STANDARD T42 PANEL



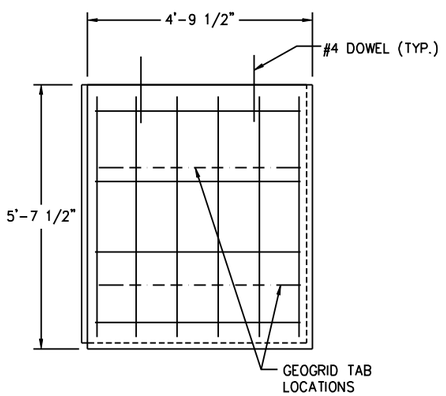
STANDARD T48 PANEL



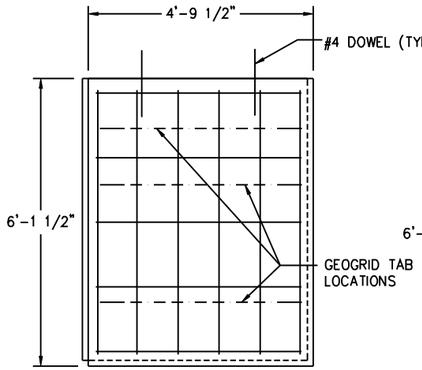
STANDARD T54 PANEL



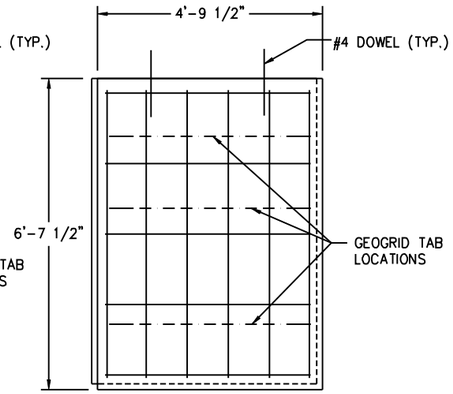
STANDARD T60 PANEL



STANDARD T66 PANEL



STANDARD T72 PANEL



STANDARD T78 PANEL

ALL PANELS ARE SHOWN BACK FACE VIEW

REINFORCING STEEL REQUIREMENTS
STANDARD STEEL LAYOUT
HORIZONTAL: #4 BARS (60 KSI) @ 1' - 6"O.C. (MAX.)
VERTICAL: #3 BARS (60 KSI) @ 10" O.C. (MAX.)
OR
STANDARD WWF LAYOUT
4X4-W4.0XW4.0 WELDED WIRE MESH
FABRICATION PER ASTM A-185

NOTE: ALL TOP PANELS WILL HAVE 2 #4 DOWELS CAST 6" INTO THE TOP OF EACH PANEL

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(404) 250-1290

DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5025 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 16	05025

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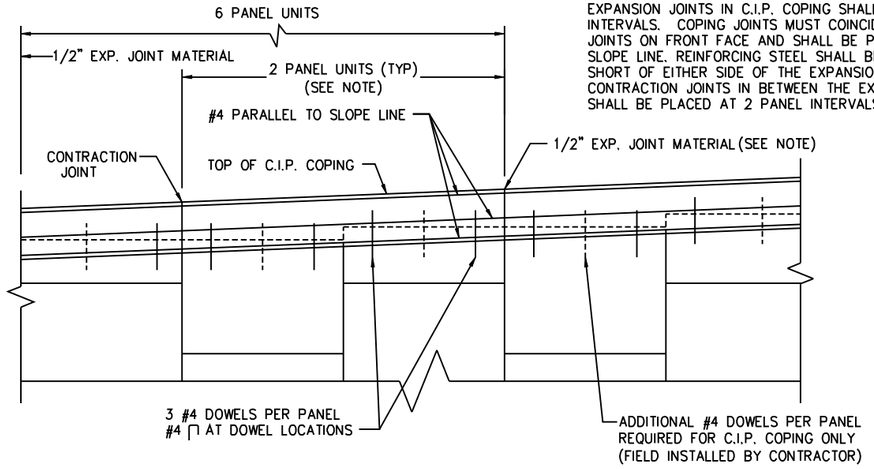
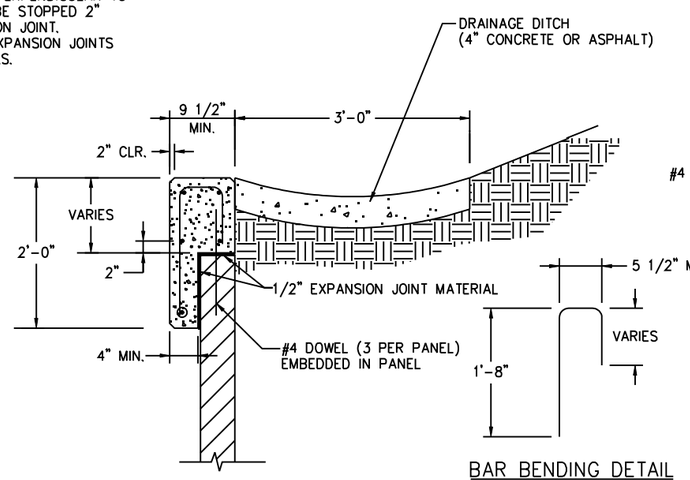


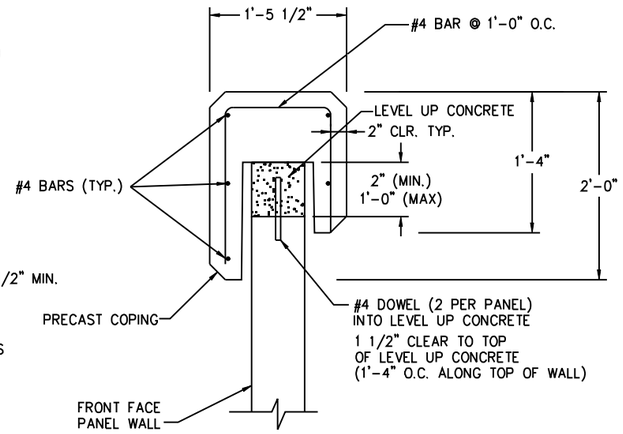
C.I.P. COPING PARTIAL ELEVATION VIEW
NOT TO SCALE

NOTE:
EXPANSION JOINTS IN C.I.P. COPING SHALL BE AT 6 PANEL INTERVALS. COPING JOINTS MUST COINCIDE WITH PANEL JOINTS ON FRONT FACE AND SHALL BE PERPENDICULAR TO SLOPE LINE. REINFORCING STEEL SHALL BE STOPPED 2" SHORT OF EITHER SIDE OF THE EXPANSION JOINT. CONTRACTION JOINTS IN BETWEEN THE EXPANSION JOINTS SHALL BE PLACED AT 2 PANEL INTERVALS.

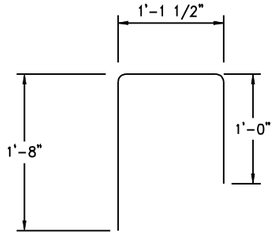


BAR BENDING DETAIL

C.I.P COPING WITH SWALE
NOT TO SCALE

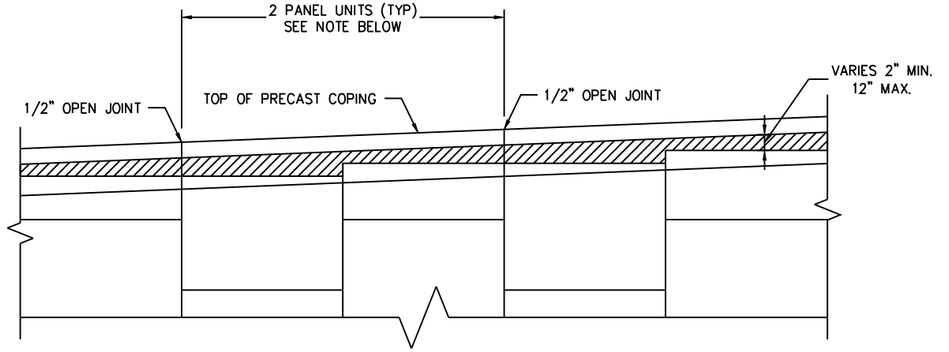


PRECAST COPING SECTION
NOT TO SCALE

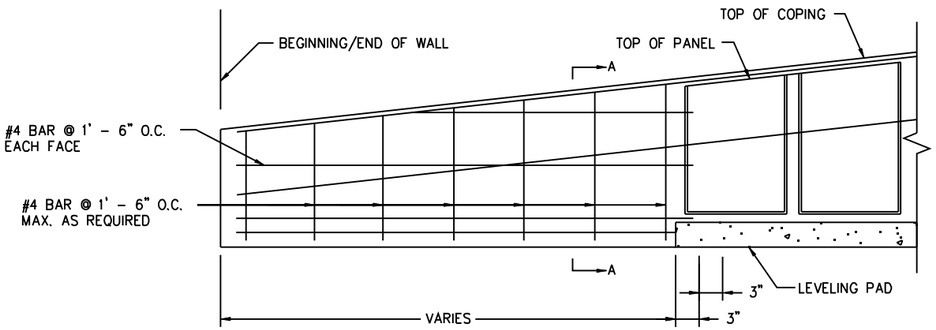


BAR BENDING DETAIL

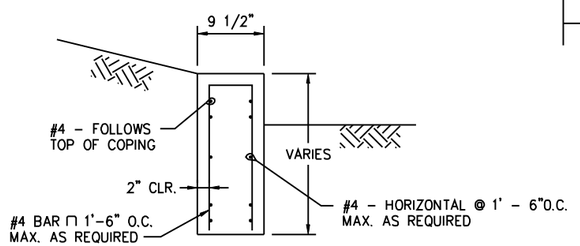
NOTE:
ALL OPEN JOINTS IN THE PRECAST COPING SHALL BE FILLED 3/4" BACKING PAD AND CAULKED WITH SILICONE SEALANT. MATERIALS BY CONTRACTOR.



PRECAST COPING PARTIAL ELEVATION VIEW
NOT TO SCALE



COPING ENCLOSURE DETAIL
NOT TO SCALE



SECTION A-A

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

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TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

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APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	6 of 16	05025

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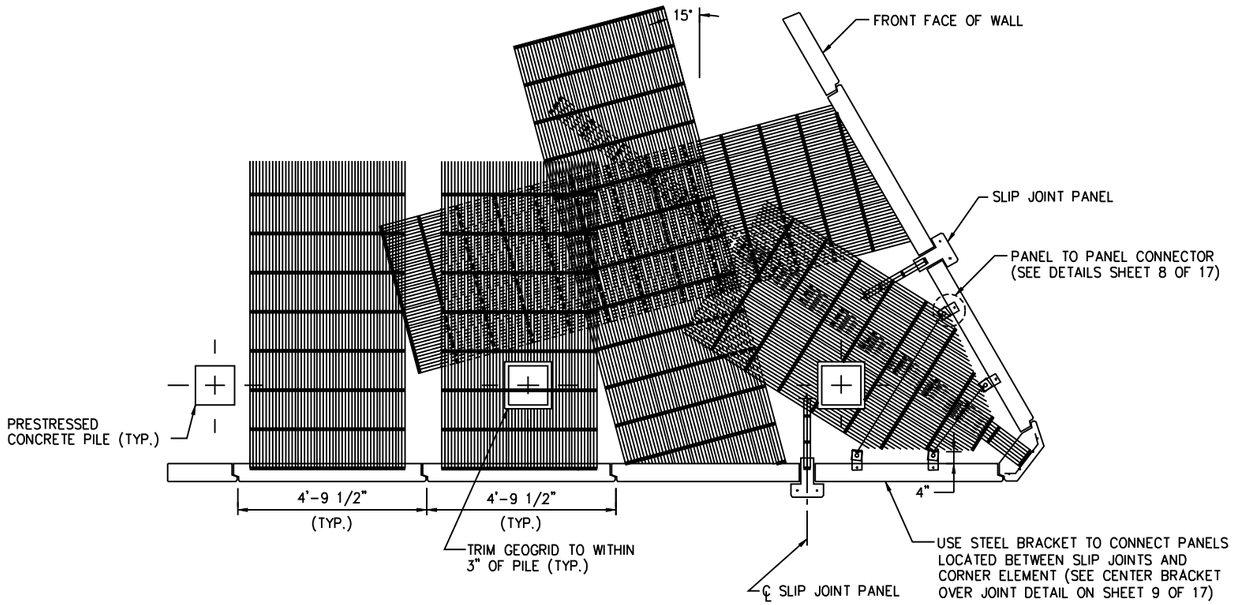
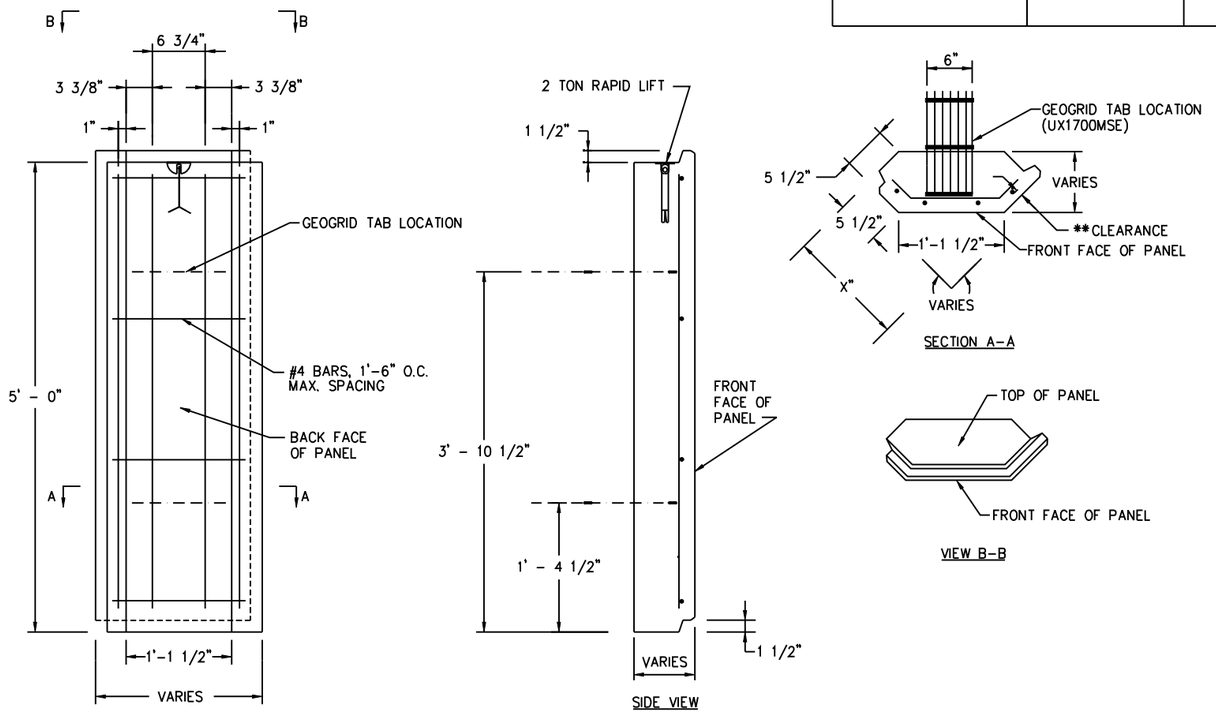
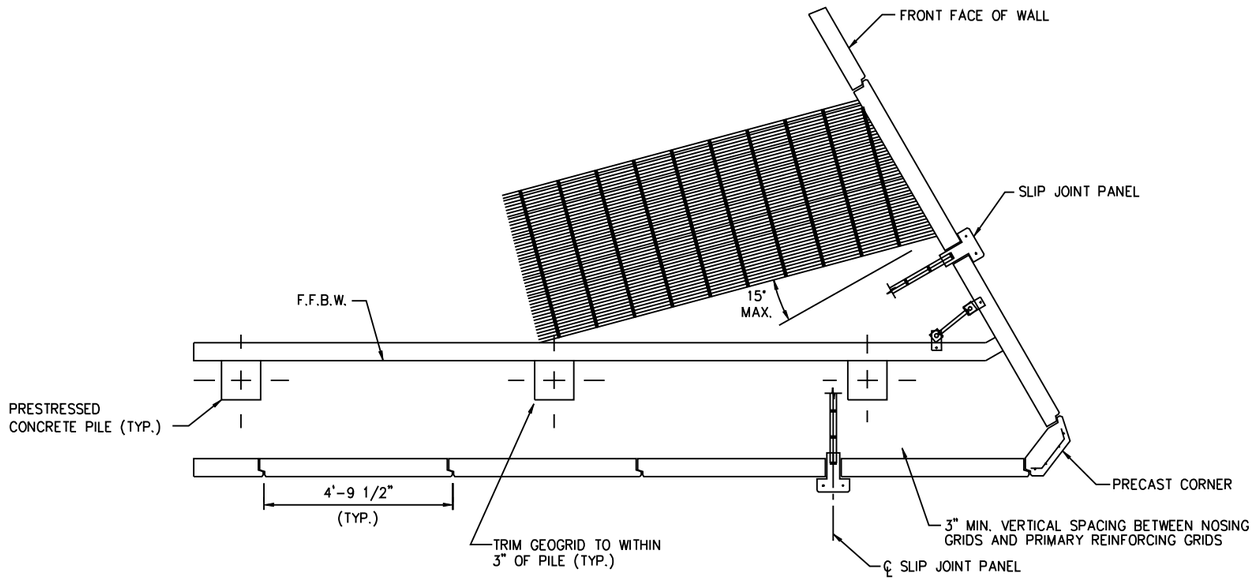


ACUTE CORNER LESS THAN 75° – SKEWED GEOGRID UNDER PILE CAP

(SEE DETAIL BELOW FOR BIN REINFORCEMENT)



TYPICAL CORNER ELEMENT DETAIL



EXAMPLE ACUTE CORNER – SKEWED GEOGRID AT ABUTMENT LEVEL

NOT TO SCALE

** VARIES
3" FOR EXTREMELY AGGRESSIVE ENVIRONMENTS
2" FOR MODERATELY OR SLIGHTLY AGGRESSIVE ENVIRONMENTS

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04	7 of 16	05025

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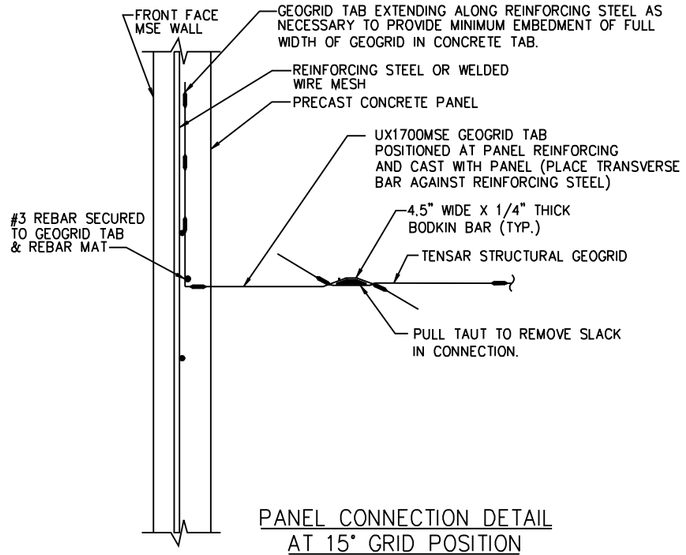
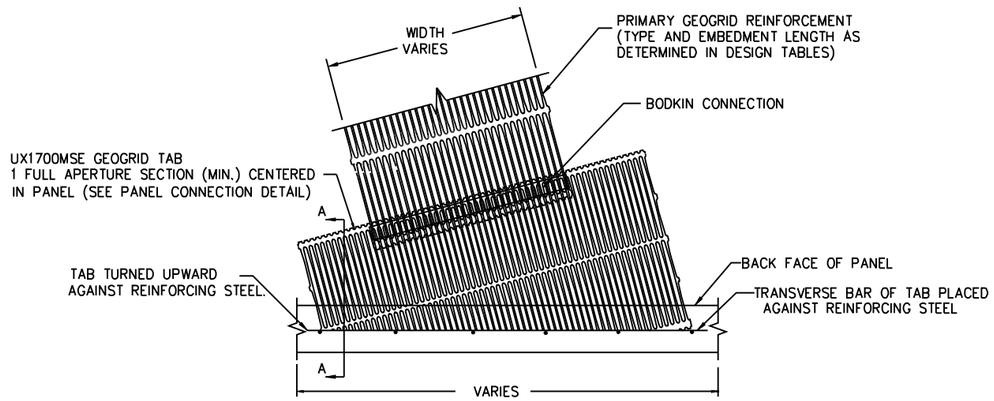
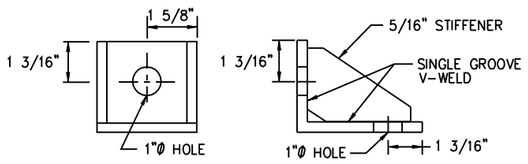


PANEL CONNECTION DETAIL
AT 15° GRID POSITION
(SECTION A–A)
NOT TO SCALE

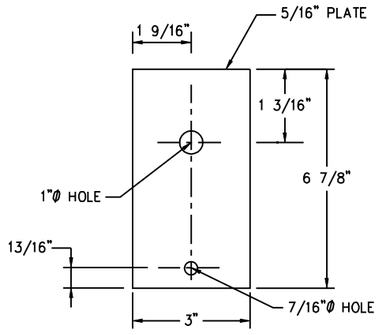


CONNECTION DETAIL PLAN VIEW AT 15° GRID POSITION
NOT TO SCALE

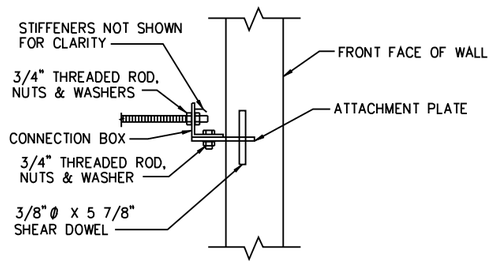


ANGLE: 3" X 4" X 1/4"

CONNECTION BOX
NOT TO SCALE



ATTACHMENT PLATE
NOT TO SCALE



PANEL TO PANEL ATTACHMENT

FABRICATION ATTACHMENT STEEL NOTES:

1. ALL FABRICATED STEEL PARTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION FOR MODERATELY OR SLIGHTLY AGGRESSIVE ENVIRONMENTS.
2. ALL FABRICATED STEEL PARTS SHALL BE FABRICATED FROM 316 L GRADE STAINLESS STEEL OR HOT DIP GALVANIZED AND FIELD COAL TAR EPOXY COATED FOR USE IN 100 YR FLOOD PLAIN + 2' (SALT WATER ZONE OF INFLUENCE)
3. ALL DIMENSIONS ARE MINIMUM REQUIRED

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04	8 of 16	05025

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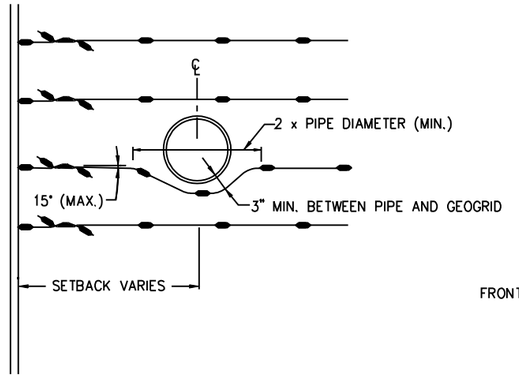
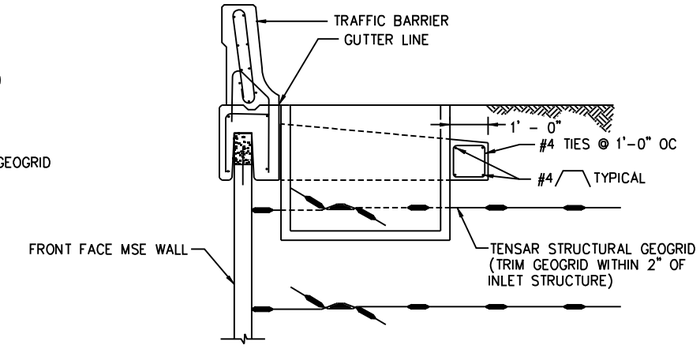
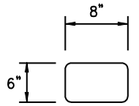


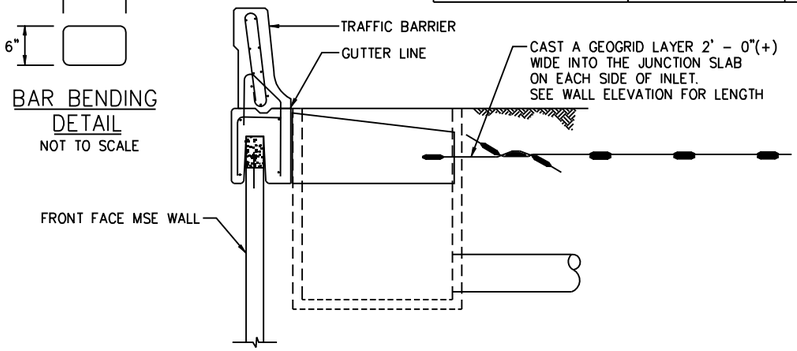
TYPICAL OBSTRUCTION AVOIDANCE DETAIL
NOT TO SCALE



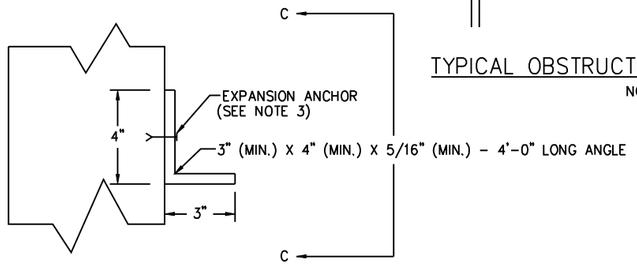
CONNECTION DETAILS
SECTION A–A
NOT TO SCALE

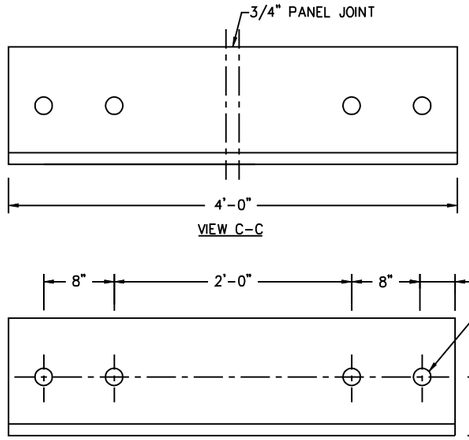


BAR BENDING
DETAIL
NOT TO SCALE

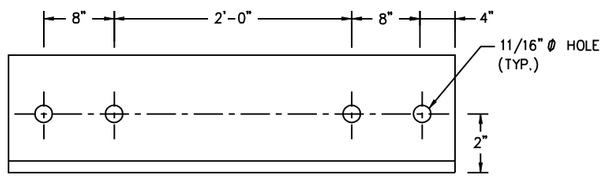


DETAIL OF TENSAR PANELS @ INLETS
SECTION B–B
NOT TO SCALE





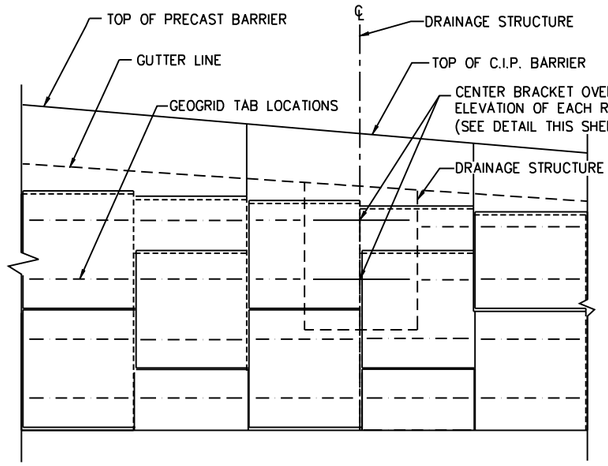
VIEW C–C



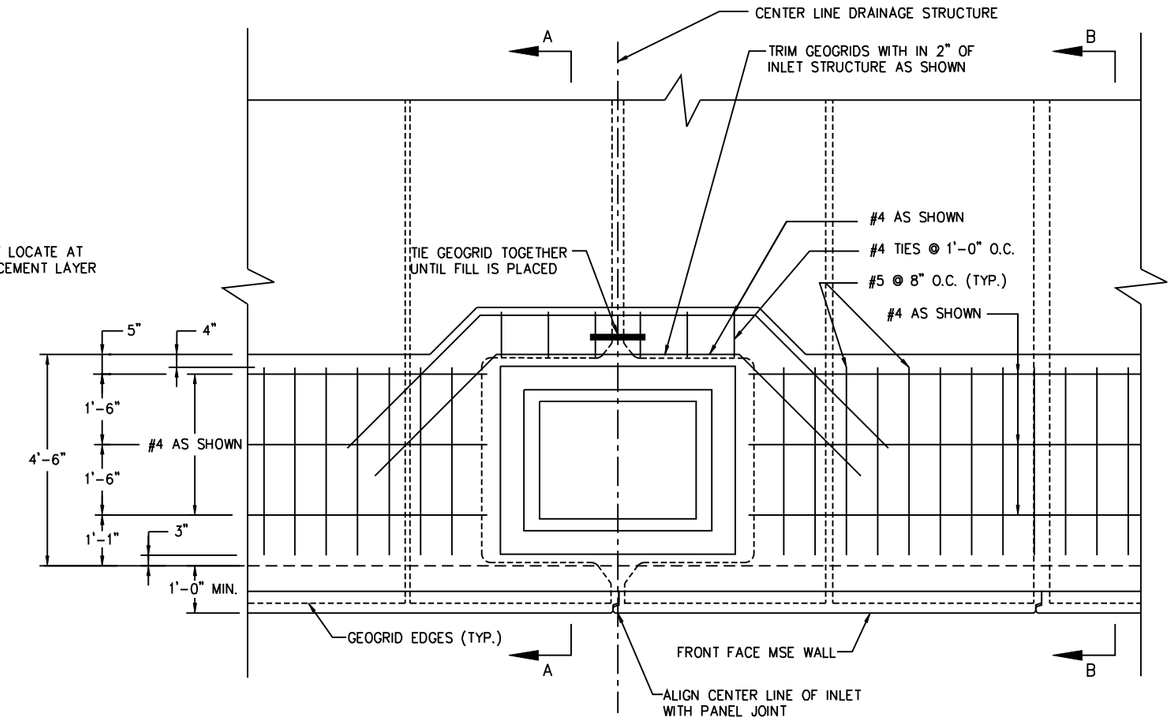
NOTES:

1. ALL FABRICATED STEEL PARTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION FOR MODERATELY OR SLIGHTLY AGGRESSIVE ENVIRONMENTS.
2. ALL FABRICATED STEEL PARTS SHALL BE FABRICATED FROM 316 L GRADE STAINLESS STEEL OR HOT DIP GALVANIZED AND FIELD COAL TAR EPOXY COATED FOR USE IN 100 YR FLOOD PLAIN + 2' (SALT WATER ZONE OF INFLUENCE).
3. ANCHOR SHALL BE HILTI HSLG RM 10/20 STAINLESS OR APPROVED EQUAL.

CENTER BRACKET OVER JOINT DETAIL
NOT TO SCALE



PARTIAL ELEVATION – WALL @ DRAINAGE INLET
NOT TO SCALE



PARTIAL PLAN – WALL @ DRAINAGE INLET
NOT TO SCALE

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5883 Glenridge Drive, Ste 200
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(404) 250-1290

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

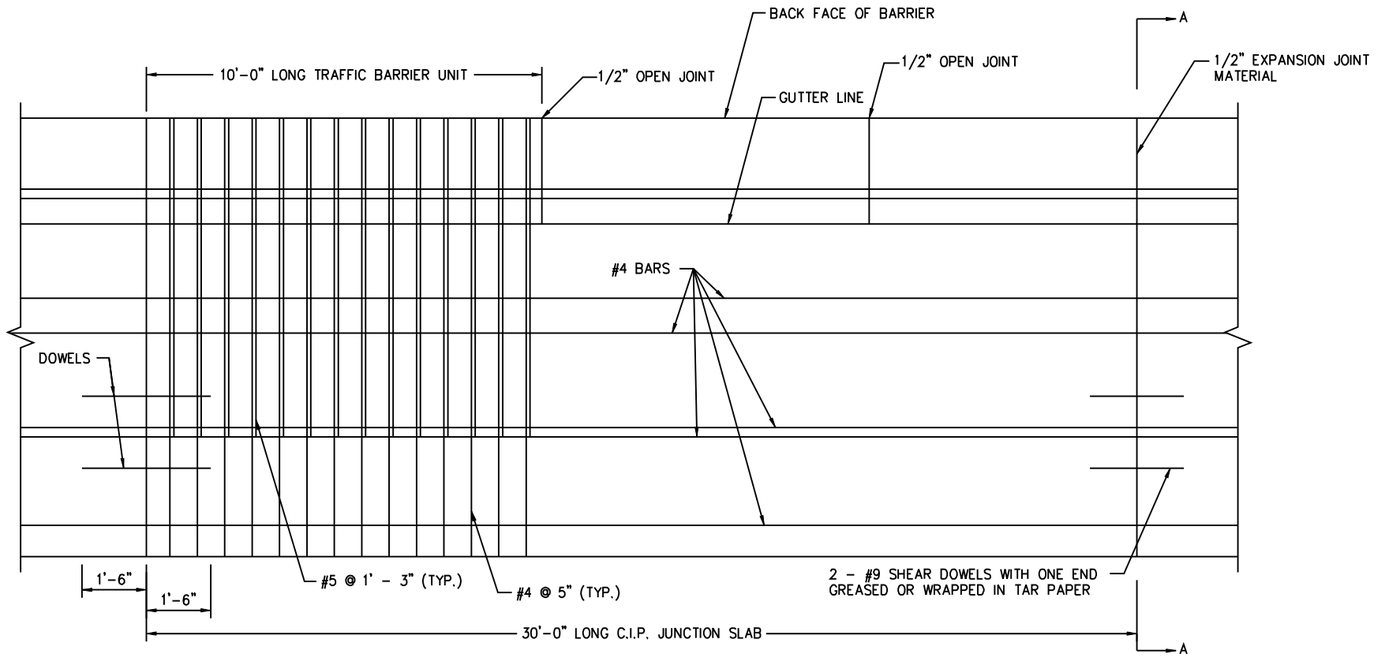
INTERIM STANDARD

SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5025 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

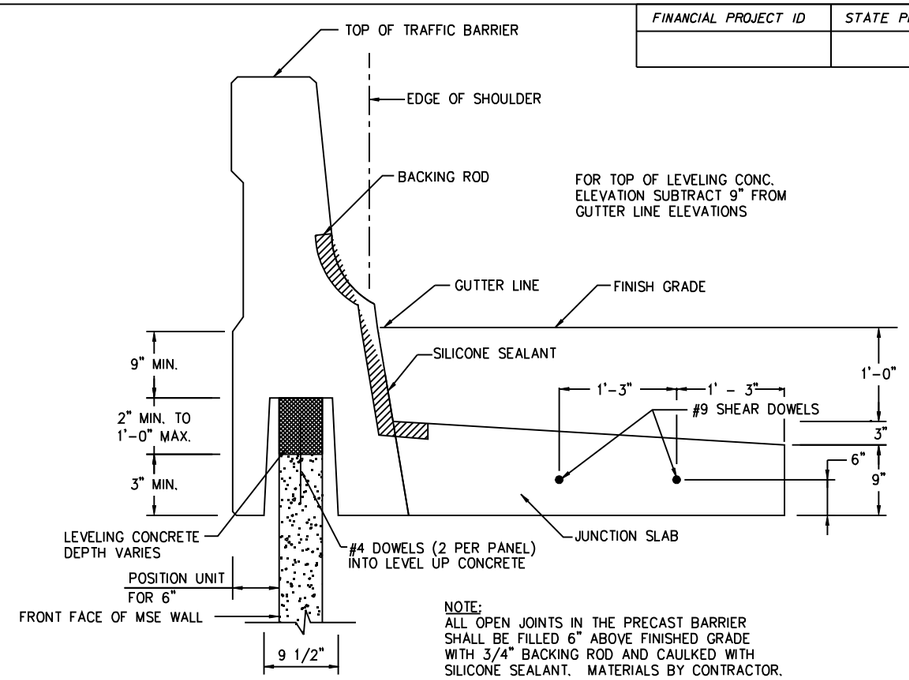
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	9 of 16	05025

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

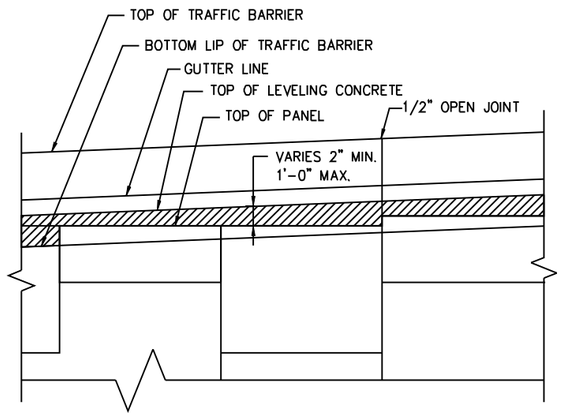


PLAN VIEW
PRECAST TRAFFIC BARRIER WITH C.I.P. JUNCTION SLAB
NOT TO SCALE



NOTE:
ALL OPEN JOINTS IN THE PRECAST BARRIER SHALL BE FILLED 6" ABOVE FINISHED GRADE WITH 3/4" BACKING ROD AND CAULKED WITH SILICONE SEALANT. MATERIALS BY CONTRACTOR.

SECTION A-A AT PRECAST TRAFFIC BARRIER WITH C.I.P JUNCTION SLAB
NOT TO SCALE



PRECAST TRAFFIC BARRIER PARTIAL ELEVATION VIEW
NOT TO SCALE

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

INTERIM STANDARD

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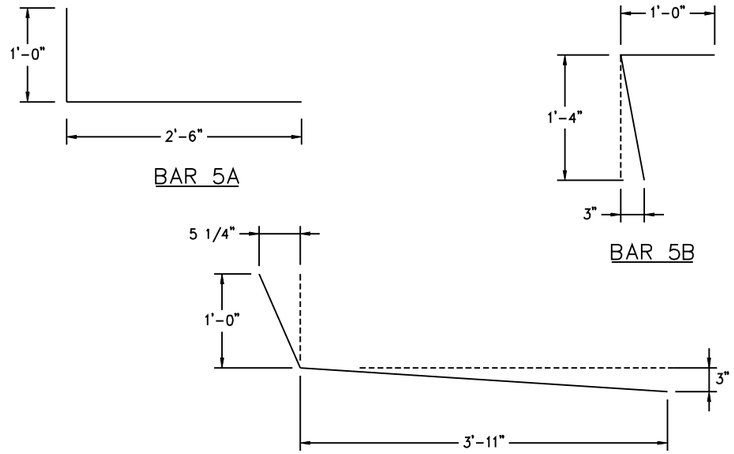
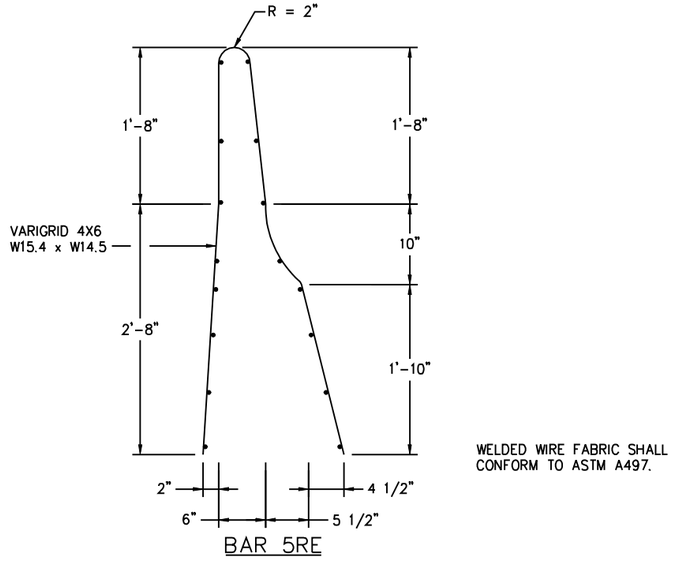
State Structures Design Engineer

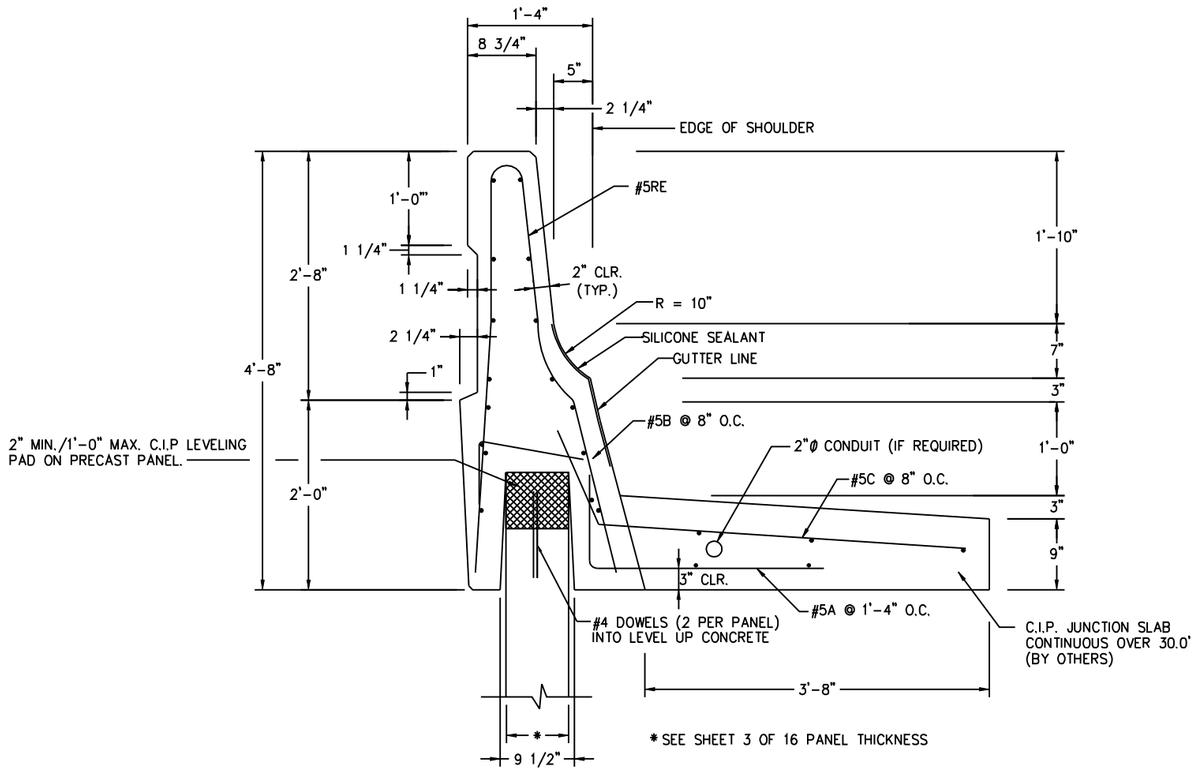
REVISION NO.	SHEET NO.	INDEX NO.
04	10 of 16	05025

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





WELDED WIRE FABRIC SHALL CONFORM TO ASTM A497.



MARK	QUANTITY	REMARKS
5A	8	3'-6" LONG
5B	16	2'-4" LONG
5C	16	5'-0" LONG
A	VARIGRID	W14.5 @ 6" O.C.
B	VARIGRID	W15.4 @ 4" O.C.

NOTES:

1. 1/2" CHAMFER ALL AROUND EACH FACE (EXPOSED SURFACES)
2. ALL LONGITUDINAL BARS IN THE MOMENT SLAB SHALL BE #4 WITH MAXIMUM SPACING OF 1'-6" O.C.

PRECAST BARRIER WITH C.I.P. SLAB – VARIGRID BARRIER REINFORCEMENT

NOT TO SCALE

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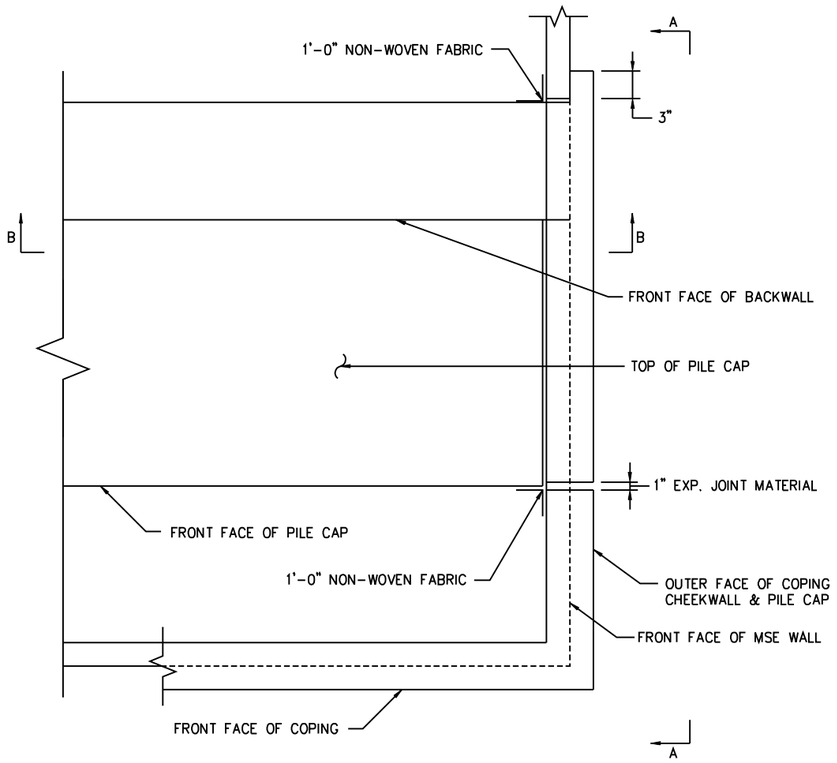
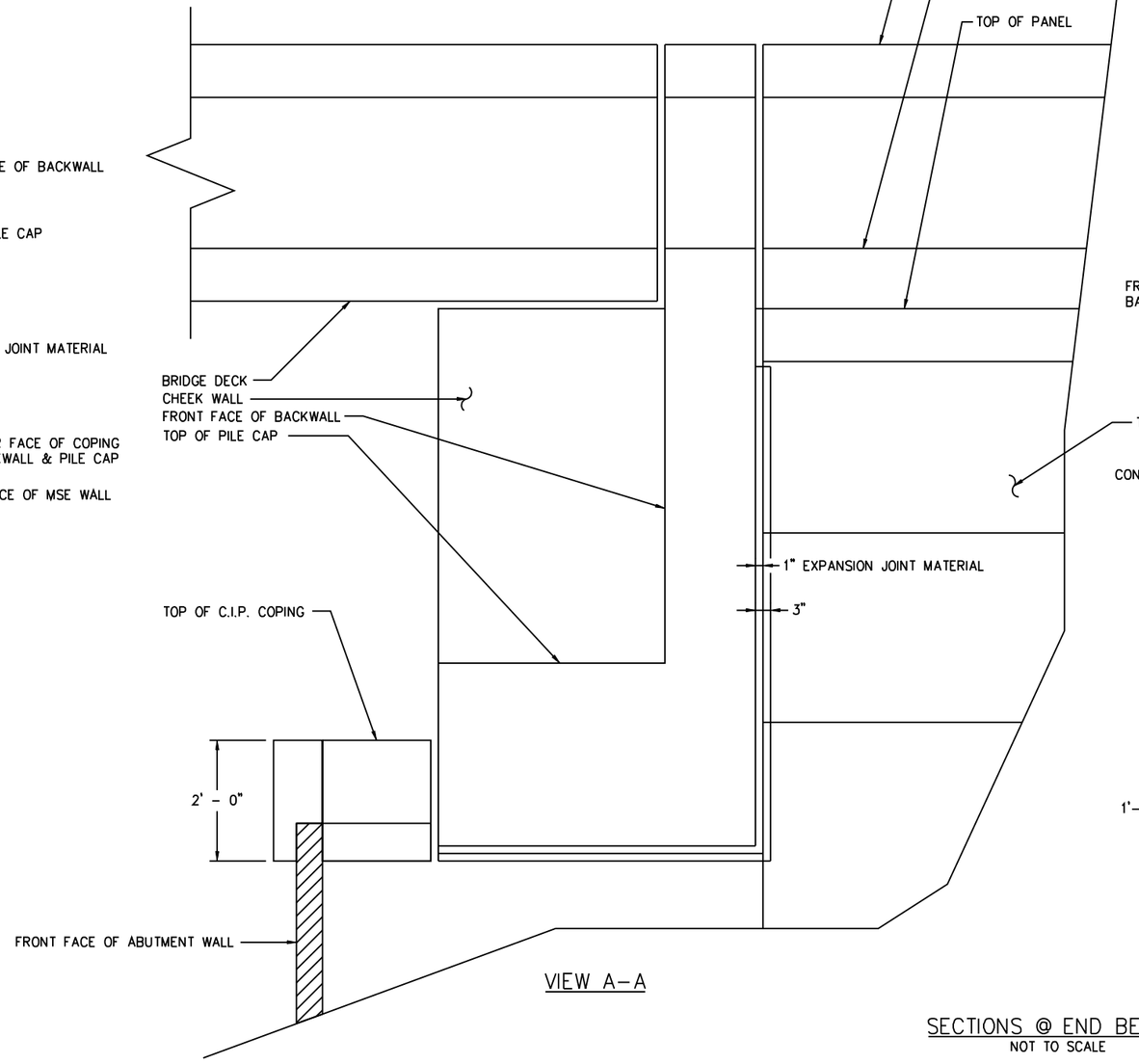
REVISION NO.	SHEET NO.	INDEX NO.
04	11 of 16	05025

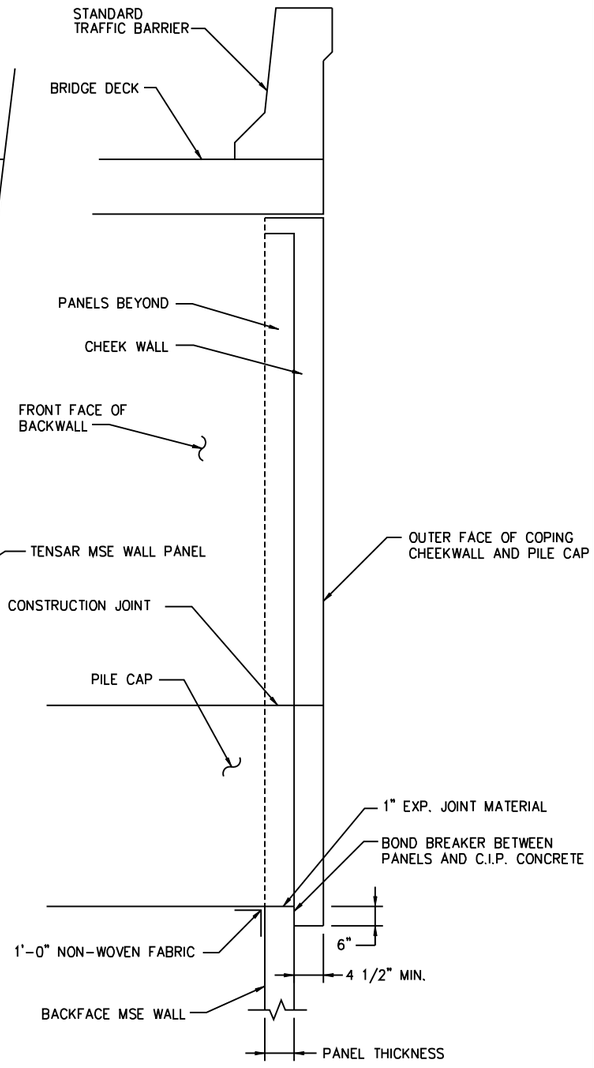
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW @ ENDBENT
NOT TO SCALE



VIEW A-A



SECTION B-B

SECTIONS @ END BENT
NOT TO SCALE

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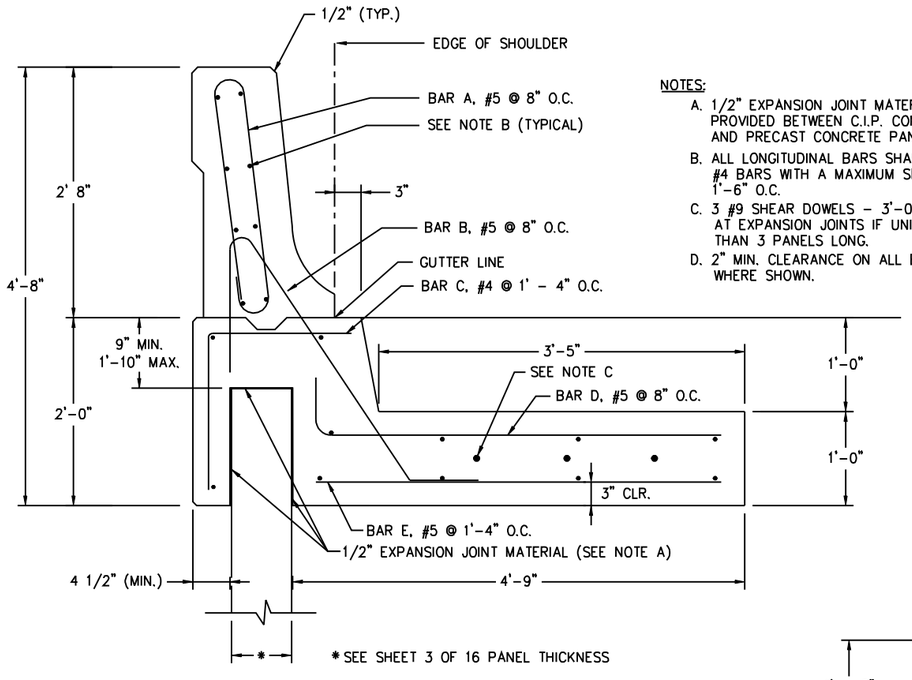
REVISION NO.	SHEET NO.	INDEX NO.
04	12 of 16	05025

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



NOTES:

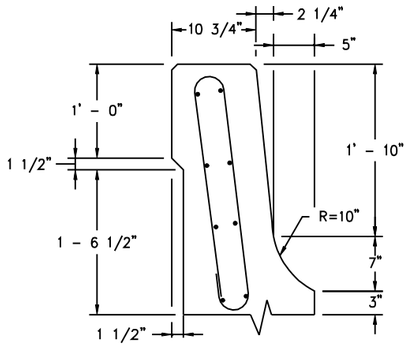
A. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED BETWEEN C.I.P. CONCRETE AND PRECAST CONCRETE PANEL.

B. ALL LONGITUDINAL BARS SHALL BE #4 BARS WITH A MAXIMUM SPACING 1'-6" O.C.

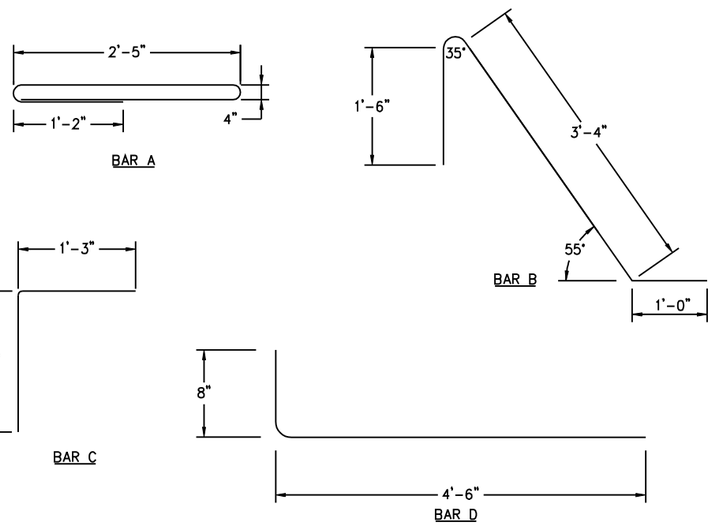
C. 3 #9 SHEAR DOWELS - 3'-0" LONG REQ'D AT EXPANSION JOINTS IF UNIT IS LESS THAN 3 PANELS LONG.

D. 2" MIN. CLEARANCE ON ALL BARS EXCEPT WHERE SHOWN.

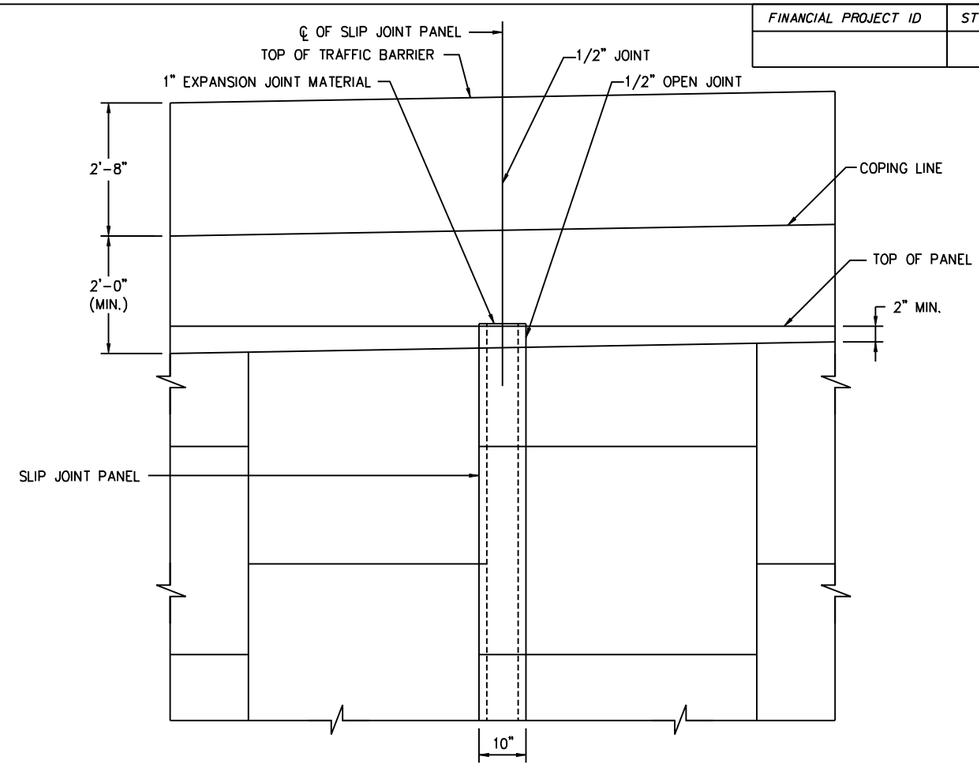
C.I.P. CONCRETE TRAFFIC BARRIER
NOT TO SCALE



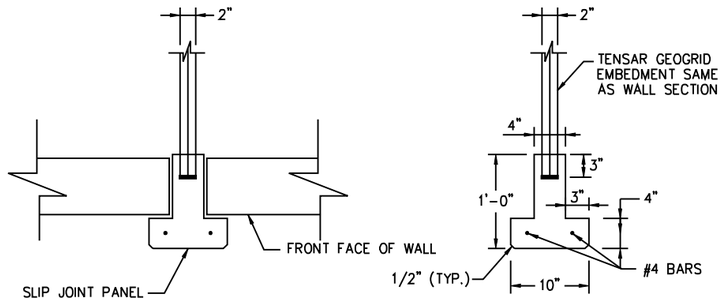
TRAFFIC BARRIER PARAPET DETAIL
NOT TO SCALE



BAR BENDING DETAIL
NOT TO SCALE



C.I.P. TRAFFIC BARRIER
OVER SLIP JOINT PANEL
NOT TO SCALE



SLIP JOINT DETAIL
NOT TO SCALE

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TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

INTERIM STANDARD

APPROVED BY
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State Structures Design Engineer

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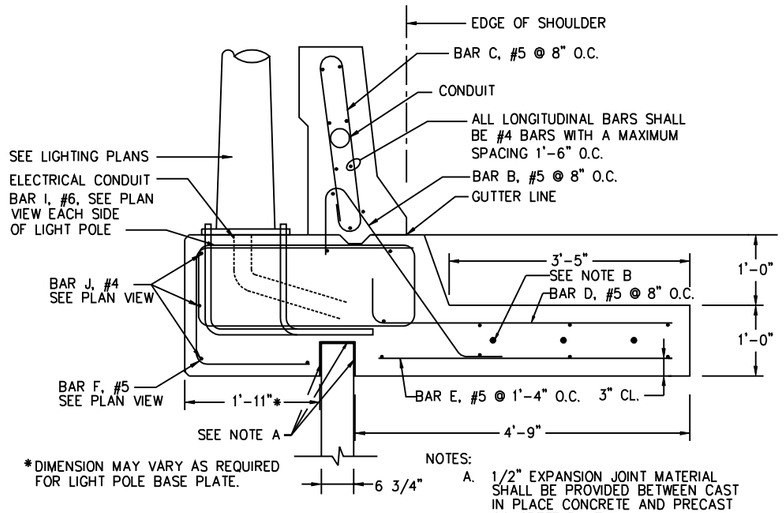
REVISION NO.	SHEET NO.	INDEX NO.
04	13 of 16	05025

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



NOTES:

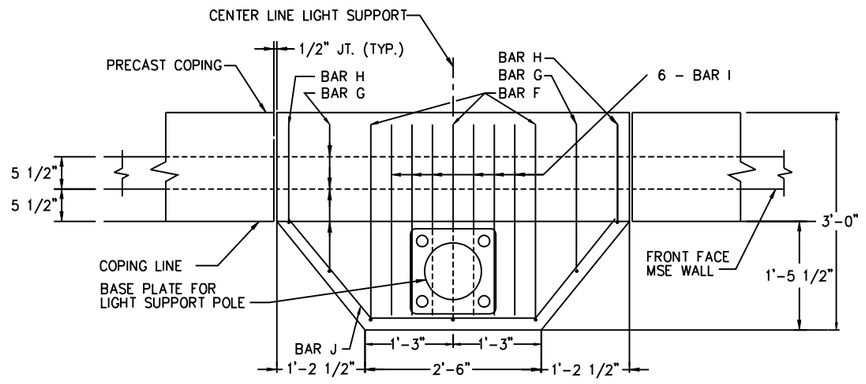
A. 1/2" EXPANSION JOINT MATERIAL SHALL BE PROVIDED BETWEEN CAST IN PLACE CONCRETE AND PRECAST CONCRETE PANEL.

B. 3 #9 SHEAR DOWELS – 3' LONG REQ'D AT EXPANSION JOINTS IF UNIT IS LESS THAN 3 PANELS LONG.

C. MAINTAIN A 2" MIN. CLEARANCE ON ALL BARS. EXCEPT WHERE NOTED OTHERWISE.

C.I.P. BARRIER AND JUNCTION SLAB DETAIL AT LIGHT POLE

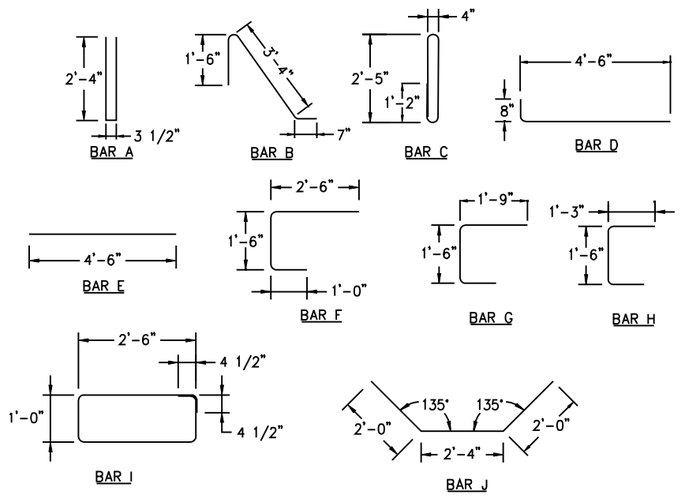
NOT TO SCALE



PLAN VIEW

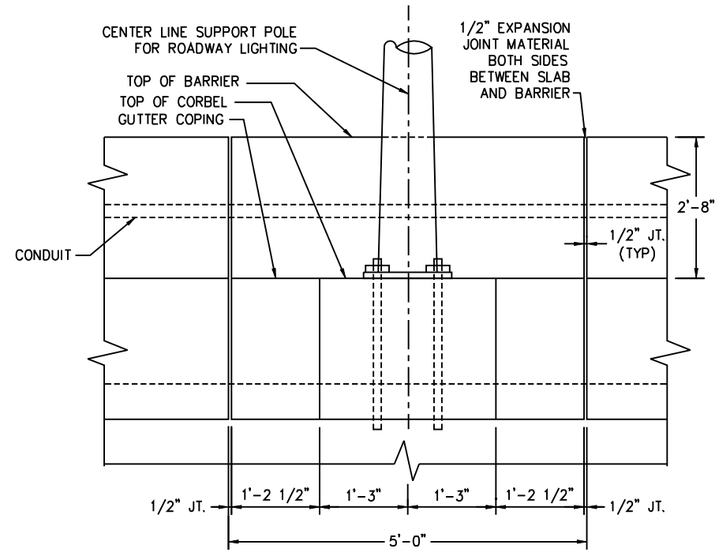
NOT TO SCALE

NOTE:
REBAR IN BARRIER AND JUNCTION SLAB NOT SHOWN FOR CLARITY



BAR BENDING DETAIL

NOT TO SCALE



NOTE:
REFER TO LIGHT POLE PILASTER DETAILS IN BRIDGE PLANS FOR NOTES AND ADDITIONAL DETAILS (ANCHOR BOLTS, CONDUIT, JUNCTION BOXES, ETC.)

PARTIAL ELEVATION

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REVISION NO.	SHEET NO.	INDEX NO.
04	14 of 16	05025

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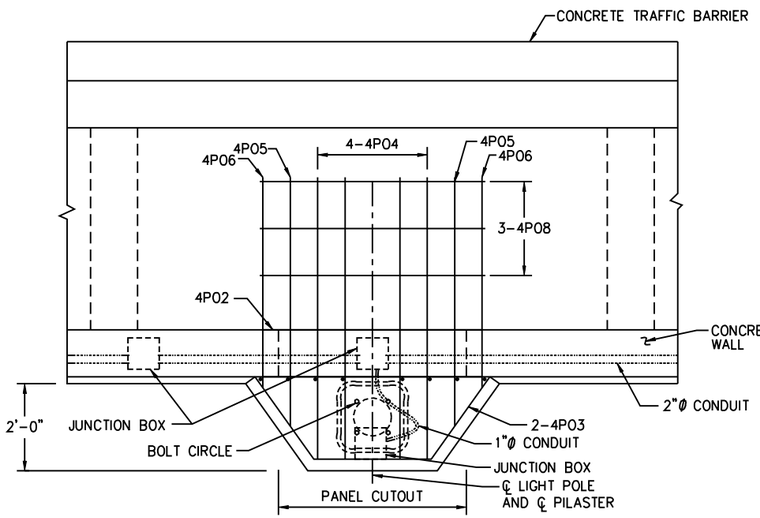
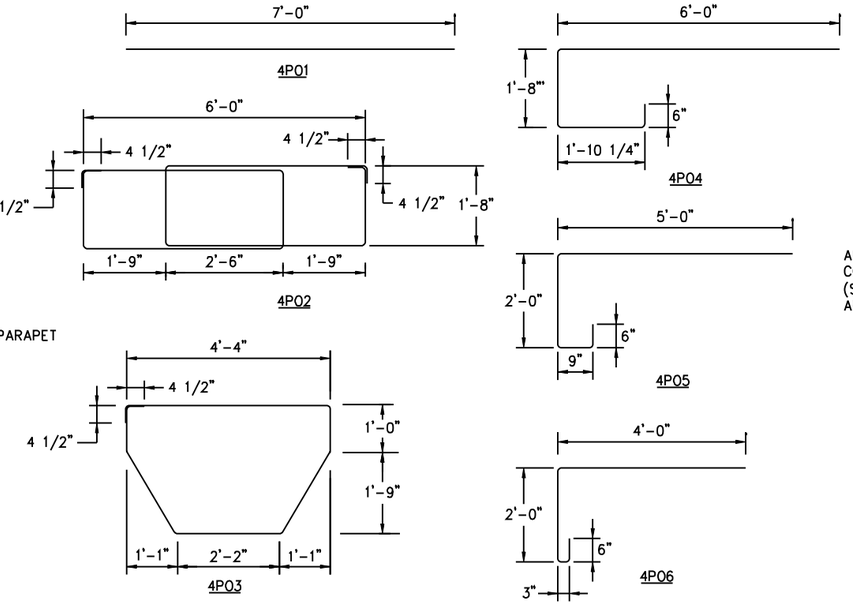
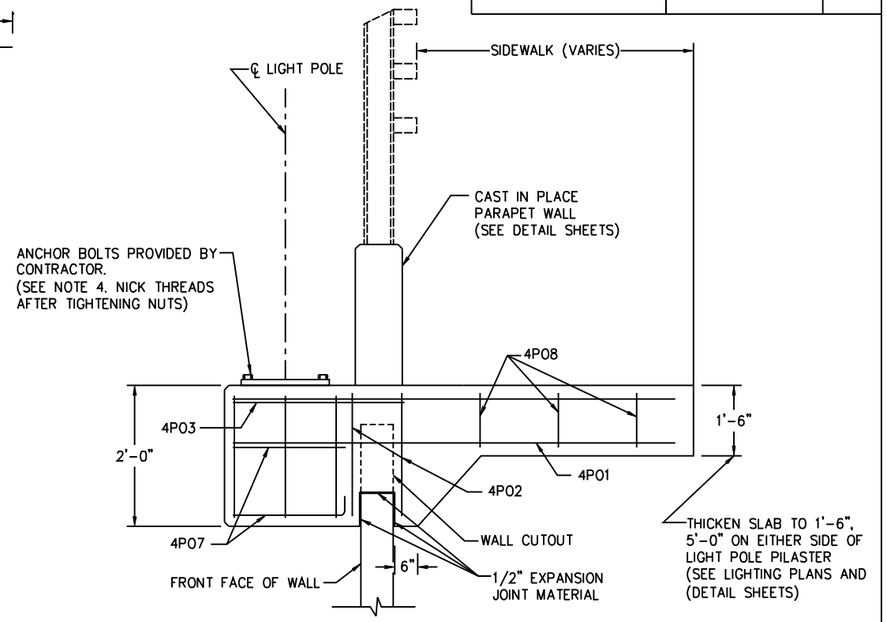
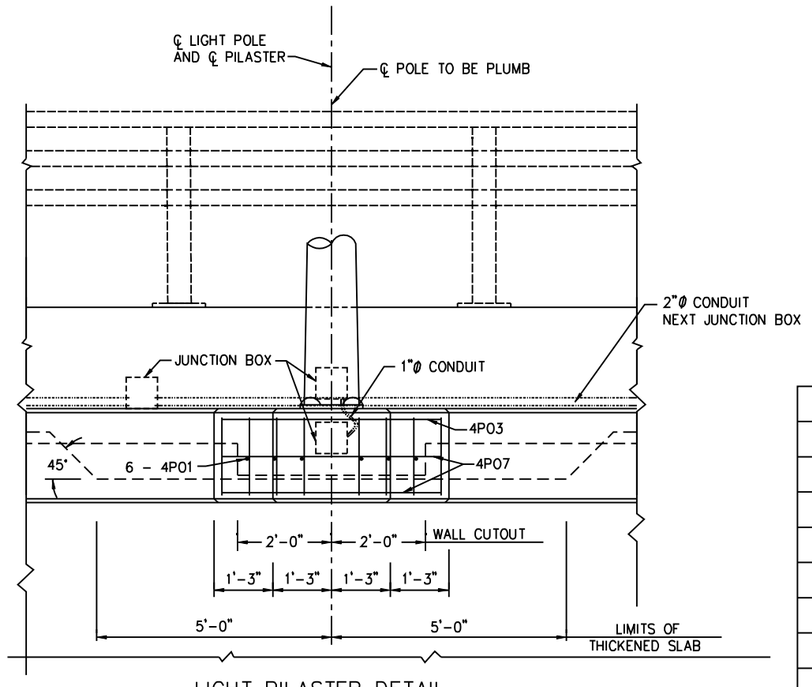


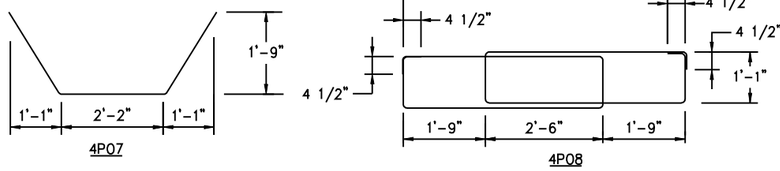
PLAN VIEW



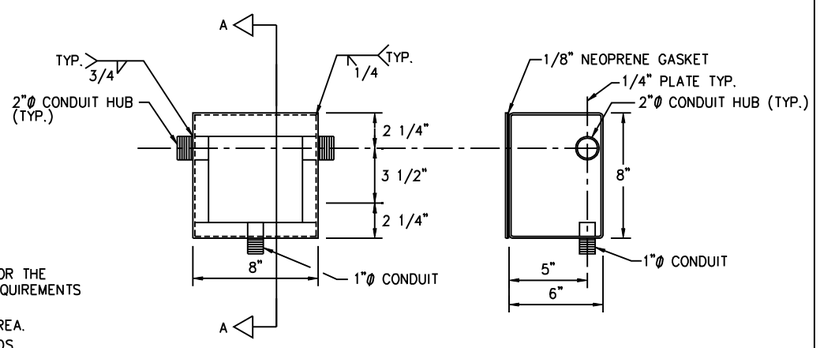




LIGHT PILASTER DETAIL



BAR BENDING DIAGRAM



FRONT VIEW JUNCTION BOX
(COVER REMOVED)

SECTION A-A

BILL OF REINFORCING STEEL			
MARK	SIZE	NO. REQUIRED	LENGTH
4P01	4	6	7'-0"
4P02	4	2	25-2"
4P03	4	1	13'-4 1/2"
4P04	4	4	10'-1/2"
4P05	4	2	8'-3"
4P06	4	2	6'-9"
4P07	4	2	6'-4"
4P08	4	3	22'-10"

1. ADDITIONAL CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTER SHALL MEET THE SAME REQUIREMENTS AS THAT OF THE PARAPET WALL.
2. TOP OF PILASTER SHALL BE FINISHED TO A TRULY LEVEL AREA.
3. LIGHT POLE PILASTER IS DESIGNED TO RESIST WORKING LOADS (IN ANT DIRECTION) FROM THE LIGHT POLE APPLIED AT THE TOP OF THE PILASTER AS FOLLOWS:

LONGITUDINAL MOMENT	=	30,000 FT. POUNDS
TRANSVERSE MOMENT	=	6,000 FT. POUNDS
LONGITUDINAL SHEAR	=	1,000 POUNDS
TRANSVERSE SHEAR	=	200 POUNDS
TORSION	=	3,000 FT. POUNDS
AXIAL	=	400 POUNDS

IF THE LIGHT POLE PROVIDED APPLIES LOADS THAT ARE IN EXCESS OF THOSE SHOWN ABOVE, THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT HIS DESIGN TO THE DEPARTMENT FOR REVIEW, THE CONTRACTOR'S REDESIGN SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA, AND QUALIFIED TO PERFORM THE WORK.

4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND THAT FIT THE REINFORCING CAGE, CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHALL BE SUBMITTED BY THE CONTRACTOR TO THE DEPARTMENT FOR REVIEW AND APPROVAL SHOWING THAT THESE REQUIREMENTS HAVE BEEN MET PRIOR TO CONSTRUCTION.
5. STEEL FOR JUNCTION BOXES SHALL CONFORM WITH ASTM-A36, THE BOXES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. IN LIEU OF STEEL BOXES THE CONTRACTOR MAY SUBMIT FOR APPROVAL MOLDED P.V.C. BOXES (SCHEDULE 80.)
6. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL OR SCHEDULE 80 P.V.C.
7. THE COST OF ANCHOR BOLTS SHALL BE INCLUDED IN THE BID PRICE FOR LIGHT POLES.
8. PAYMENT: THE COST OF ALL LABOR, CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTERS AND ALL CONDUITS. EXPANSION COUPLINGS, JUNCTION BOXES AND MISCELLANEOUS HARDWARE REQUIRED FOR COMPLETION OF THE ELECTRICAL INSTALLATION WITHIN THE LIMITS SHOWN ON THIS SHEET, SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE FOR THE MSE WALLS.

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

THIS DESIGN IS BASED UPON SPECIFIC PROPERTIES OF TENSAR PRODUCTS (GEOGRIDS, DRAINAGE COMPOSITES AND EROSION MEDIA), WHICH ARE PROPRIETARY TO THE TENSAR CORPORATION 1210 CITIZENS PARKWAY, MORROW GA. 30260. ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS WILL INVALIDATE THIS DESIGN. THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED WHOLE OR IN PART, NOR DISCLOSED TO OTHERS, WITHOUT THE CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

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5883 Glenridge Drive, Ste 200
Atlanta, Georgia 30328
(404) 250-1290

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

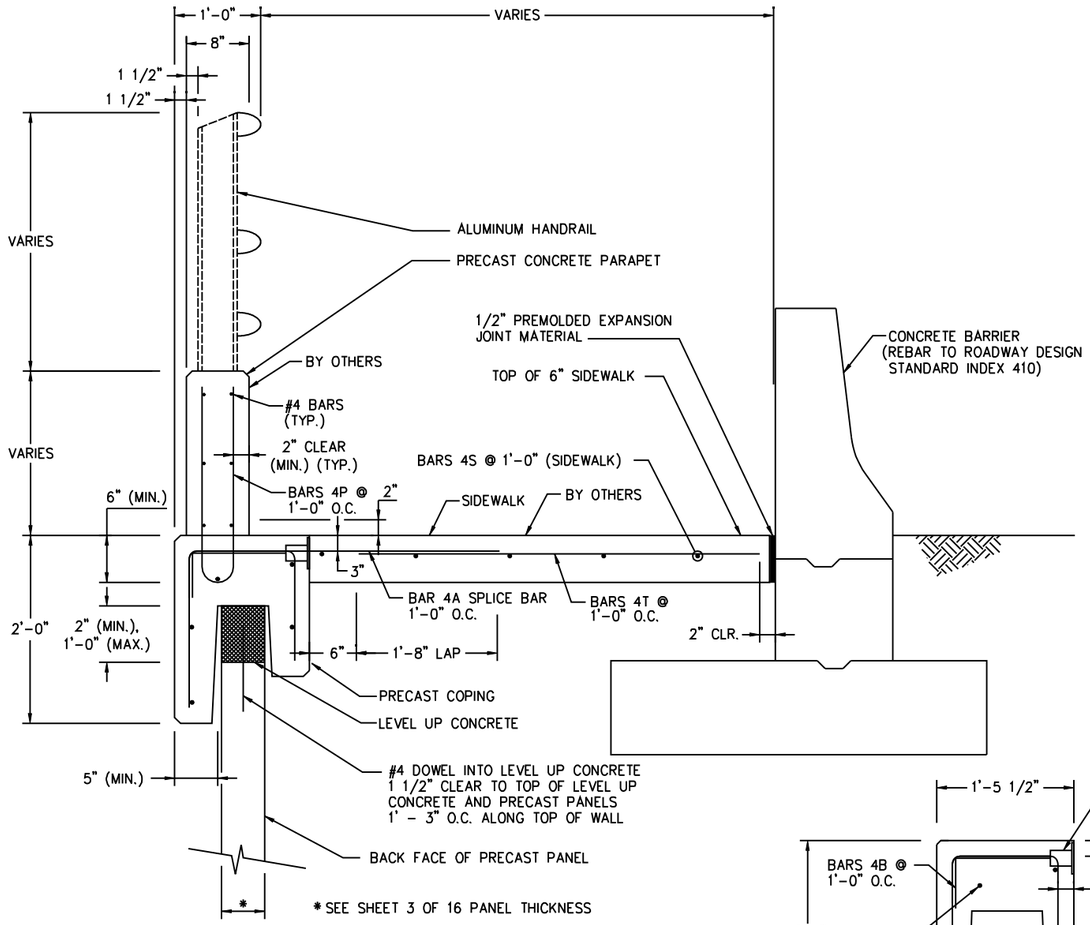
INTERIM STANDARD

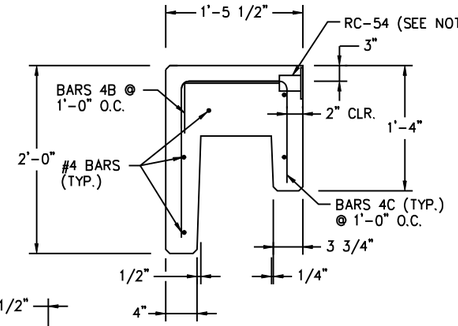
SHEET NOS. 1 - 16 OF 16 ARE A REPLACEMENT OF INDEX NO. 5025 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	15 of 16	05025

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





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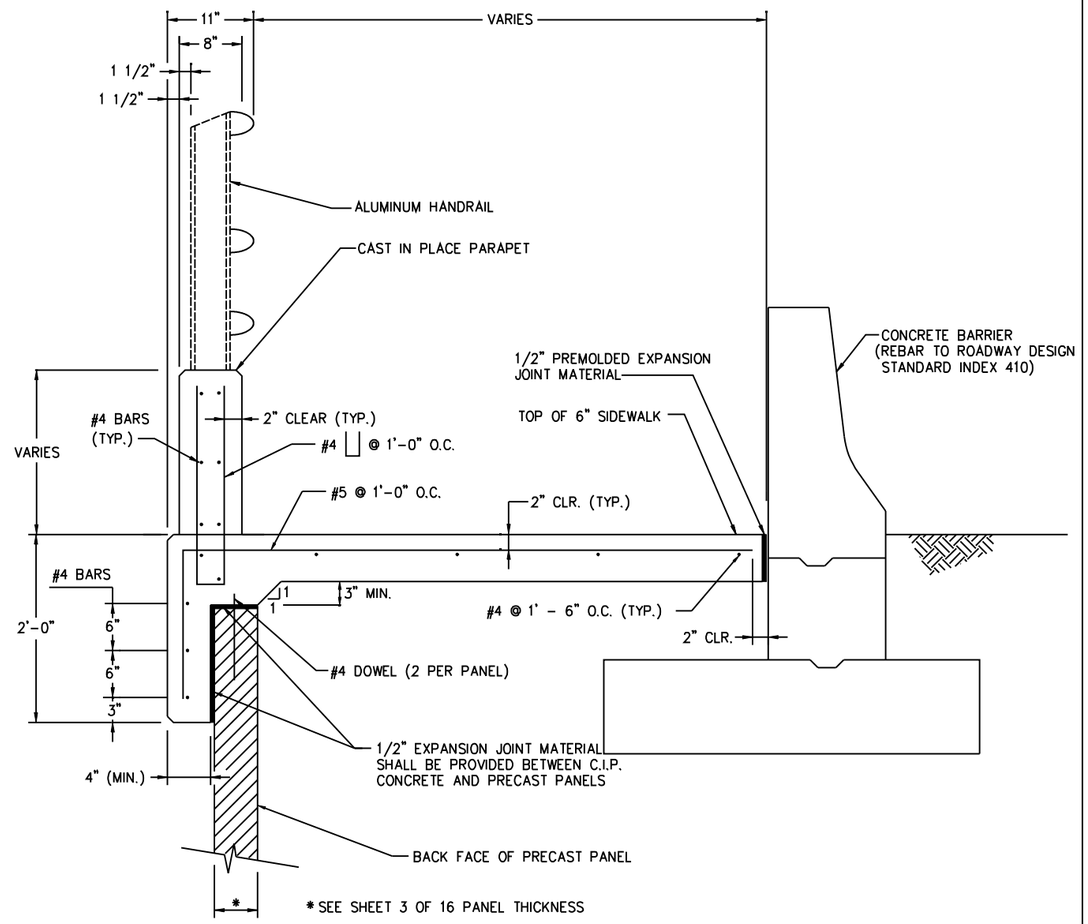
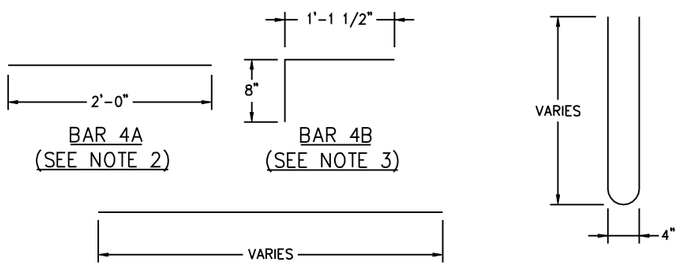


C.I.P. PARAPET DETAIL
NOT TO SCALE



BAR BENDING DETAIL

NOTES:
1. RC-54, MEADOW BURKE SMOOTH COUPLER/FLANGE.
2. BAR 4A, #4 MEADOW BURKE SPLICE BAR C = 2'.
3. BAR 4B, MEADOW BURKE SETTING BAR A = 1'-2", B = 8".
4. ALL BARS ARE #4 UNLESS OTHERWISE NOTED.
5. OVERALL LENGTH OF COPING PIECES WILL BE 9'-0"

PRECAST SADDLE WITH C.I.P. PARAPET AND SIDEWALK DETAIL
NOT TO SCALE

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

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RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

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04	16 of 16	05025

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SSL

Specializing in Construction Products

4740 Scotts Valley Drive, Suite "E"
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FAX 831/430-9340

GENERAL NOTES

DESIGN CRITERIA

1. DESIGN IS BASED ON THE ASSUMPTION THAT MATERIAL WITHIN THE REINFORCED SOIL VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE CONTRACING AGENCY'S TECHNICAL SPECIFICATIONS FOR MSE EARTH WALLS.

2. FACTORS OF SAFETY

   OVERTURNING = 2.0
   INTERNAL PULLOUT = 1.5 (ALLOW DEFORMATION OF 3/4")
   OVERAL STABILITY = 1.5
   SLIDING = 1.5
   BEARING = 2.5

   ALLOWABLE STRESS IN REINFORCING MESH AT END OF DESIGN LIFE = 0.47 Fy

3. SOIL CHARACTERISTICS ASSUMED FOR DESIGN:

   SOIL PARAMETERS:

   SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM, THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON THE ACTUAL SOIL CHARACTERISTICS UTILIZED AT THE SITE, THE VALUES OF ϕ, C, AND γ SHALL BE PROVIDED IN THE SHOP DRAWINGS.

4. THE MAXIMUM APPLIED BEARING PRESSURE AT THE FOUNDATION LEVEL IS AS SHOWN ON THE WALL ELEVATIONS FOR EACH DESIGN CASE. IT IS THE RESPOSIBILITY OF OTHERS TO DETERMINE THAT THIS APPLIED BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.

5. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED SOIL VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.

REINFORCING ELEMENTS

6. REINFORCING MESH ELEMENTS SHALL BE SHOP FABRICATED FROM COLD DRAWN STEEL ROD CONFORMING TO THE MINIMUM REQUIREMENTS OF ASTM A-82 AND SHALL BE WELDED AT THE JUNCTIONS BETWEEN LONGITUDINAL AND TRANSVERSE WIRES IN ACCORDANCE WITH ASTM A-185. GALVANIZATION SHALL BE APPLIED AFTER MESH FABRICATION AND BENDING AND SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF ASTM A-123.

DESIGN

7. THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS. ON THE BASIS OF THIS INFORMATION, SSL CONSTRUCTION IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY DESIGN INCLUDING FOUNDATION AND SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS.

WALL CONSTRUCTION

8. CURVES IN THE WALL WILL BE FORMED BY A SERIES OF SHORT CORDS, OF 4' - 11 1/4" EACH, TO MATCH THE DESIRED WALL ALIGNMENT.

9. FOR LOCATION AND ALIGNMENT OF MSE WALLS, SEE WALL CONTROL DRAWINGS.

10. IF MANHOLES AND DROP INLETS ARE PRESENT, THEY SHALL BE LOCATED AS SHOWN ON WALL ELEVATIONS.

11. IF PILES ARE LOCATED WITHIN THE REINFORCED SOIL VOLUME, THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE MSE WALL, UNLESS A METHOD TO PROTECT THE STRUCTURE, WHICH IS ACCEPTABLE TO SSL CONSTRUCTION AND THE ENGINEER, IS PROPOSED AND APPROVED IN WRITING.

12. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH SPECIFICATION SECTION 548 TO A LEVEL OF 2' (+/-) ABOVE THE MESH CONNECTION IN THE PANELS. INSTALLATION OF REINFORCING MESH SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL MATERIAL HAS REACHED THE REQURIED LEVEL.

13. WALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 548.

14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF ANY GUARDRAIL POSTS BEHIND THE MSE PANELS. PRIOR TO PLACEMENT OF THE TOP LAYER OF REINFORCING MESH, INDIVIDUAL REINFORMING MESH MAY BE CUT AND SKEWED TO AVOID THE POST LOCATIONS IF AUTHORIZED BY THE ENGINEER ON THE SHOP DRAWINGS. NO CUTTING OF REINFORCING MESH IS ALLOWED UNLESS SHOWN ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER. THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, SHALL REPAIR ANY DAMAGE DONE TO THE REINFORCING MESH DUE TO THE INSTALLATION OF GUARDRAIL POSTS.

WALL CONSTRUCITON CON'T

15. IF EXISTING STRUCTURES, PIPES, FOUNDATIONS, OR GUARDRAIL POSTS, WHICH ARE WITHIN THE REINFORCED SOIL VOLUME, INTERFERE WITH THE NORMAL PLACEMENT OF REINFORCING MESH AND SPECIFIC DIRECTION HAS NOT BEEN PROVIDED ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE WHAT COURSE OF ACTION SHOULD BE TAKEN.

16. TOP PANELS, BENEATH PRECAST COPING, SHALL BE CAST TO FOLLOW THE PROFILE OF THE WALL.

17. FOR ADDITIONAL INFORMATION PERTAINING TO WALL CONSTRUCITON PLEASE REFER TO THE SSL CONSTRUCTION MANUAL.

18. THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING MESH DOWNWARD TO AVOID CONFLICTS WITH PAVING AND SUBRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO SITUATIONS WHERE ROADWAY SUPERELEVATION AND/OR SOIL MIXING ARE ANTICIPATED.

19. IF WALL DESIGN HEIGHT IS IN EXCESS OF 20' - 0", THE FINISHED GRADE IN FRONT OF THE WALL SHALL BE PLACED AND COMPACTED BEFORE CONSTRUCTION OF THE WALL EXCEEDS 20/ - 0". FINISHED GRADE SHALL BE COMPACTED TO 95% OF T-180 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

MATERIALS NOTES

NOMINAL MESH LENGTHS

20. THE REINFORCING MESH LENGTH SHOWN ON THE PLANS, MEASURED FROM BACK FACE OF PANEL, ARE THE NOMINAL LENGTHS REQUIRED BY CALCULATIONS. THE ACTUAL FABRICATED REINFORMING MESH LENGTHS ARE OFTEN LONGER (UP TO 6") DUE TO MANUFACTURING TOLERANCES. THE REQUIRED HORIZONTAL LIMIT OF GRANULAR BACKFILL IS EQUAL TO THE NOMINAL REINFORCING MESH LENGTH. ADDITIONAL GRANULAR BACKFILL BEYOND THE NOMINAL REINFORCING MESH LENGTH IS NOT REQUIRED BY CALULATIONS.

REINFORCED BACKFILL QUANTITY

21. THE REINFORCED BACKFILL QUANTITIY INDICATED BY SSL CONSTRUCTION IS CALCULATED BY MULTIPLYING THE NOMINAL MESH LENGTHS SHOWN ON THE PLANS BY THEIR TRIBUTARY WALL SURFACE AREA AND CONVERTING THE RESULT TO A NEATER CUBIC FOOT QUANTITY. THIS INFORMATION IS FURNISHED FOR THE CONTRACTOR'S INFORMATION ONLY AND IS NOT INTENDED TO PRESENT THE ACTUAL QUANTITIES REQURED TO COMPLETE THE WORK. THE CONTRACTOR MUST CALCULATE HIS OWN EXCAVATION AND BACKFILL QUANTITIES BASED UPON THE SPECIFIC CONDITIONS OF THE PROJECT.

PANEL FINISH

22. THE FINISH OF THE PRECAST PANEL SHALL BE PLAIN STEEL FORM FINISH UNLESS OTHERWISE SPECIFIED ON THE WALL CONTROL DRAWINGS.

NOTE TO CONTRACTORS

23. ONLY THE FOLLOWING MATERIALS ARE SUPPLIED BY SSL CONSTRUCITON.

    PRECAST PANEL (PER SPECIFICATION SECTION 548)
    REINFORCING MESH & CONNECTION PIN
    HDPE BEARING PAD (NOMINAL 4.0 MELT / .950 DENSITY)
    NON-WOVEN FILTER CLOTH AND ADHESIVE (FOR PANEL JOINTS ONLY)

    ANY OTHER MATERIALS CALLED FOR IN THE CONTRACT PLANS OR SPECIFICATIONS ARE TO BE SUPPLIED BY THE CONTRACTOR. ANY JOINT MATERIALS SHOWN AT THE INTERFACE OF PRECAST PANELS AND CAST-IN-PLACE CONCRETE STRUCTURES ARE TO BE SUPPLIED BY THE ERECTION CONTRACTOR. ALL SANDBLASTING, PAINTING, SEALERS OR OTHER SPECIALLY APPLIED COATINGS ARE ALSO SUPPLIED / INSTALLED BY THE CONTRACTOR IN THE FIELD FOLLOWING PANEL ERECTION.

24. SSL CONSTRUCTION SUPPLIES PRECAST CONCRETE FACING PANELS AND ACCESSORIES TO BE USED IN CONJUNCTION WITH OTHER MATERIALS IN THE CONSTRUCTION OF THE MSE WALLS DETAILED HERIN. THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANAL FURNISHED BY SSL CONSTRUCITON IS INTEDED TO PROVIDE GENERAL EXPLANATION OF THE SYSTEM. IT IS THE CONTRACTOR'S OBLIGATION TO DEVISE AND EXECUTE A PROJECT SPECIFIC ERECTION SEQUENCE, PANEL UNLOADING, HANDLING AND BRACING SYSTEM, AND FALL PROTECTION SYSTEM. THE BRACING SYSTEM SHOWN IN THE CONSTRUCTION AND QUALITY CONTROL PROCEDURES MANUAL IS GENERAL IN NATURE AND DOES NOT ACCOUNT FOR PROJECT SPECIFIC CRITERIA. COMPLIANCE WITH THE GUIDELINES IN THIS MANUAL DOES NOT RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY TO ADHERE TO THE PROJECT PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS OR COMPLIANCE WITH ALL FALL PROTECTION, SAFETY, LAWS, STANDARDS, AND PROCEDURES AT THE JOB SITE. CONTRACTOR'S SHOULD TAKE SPECIAL PRECAUTIONS TO PREVENT THE PANELS FROM SHIFTING OR FALLING DURING THE ERECTION PROCESS.

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

THE DESIGN OF ALL MSE PLUS™ WALLS IS BASED ON THE ASSUMPTION THAT ALL MATERIALS, INCLUDING THE BACKFILL AND METHODS OF CONSTRUCTION, CONFORM TO THE SPECIFICATIONS FOR MSE PLUS™ RETAINING WALLS AND THE PROJECT BID DOCUMENTS

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DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
SSL
MSE PLUS WALL SYSTEM

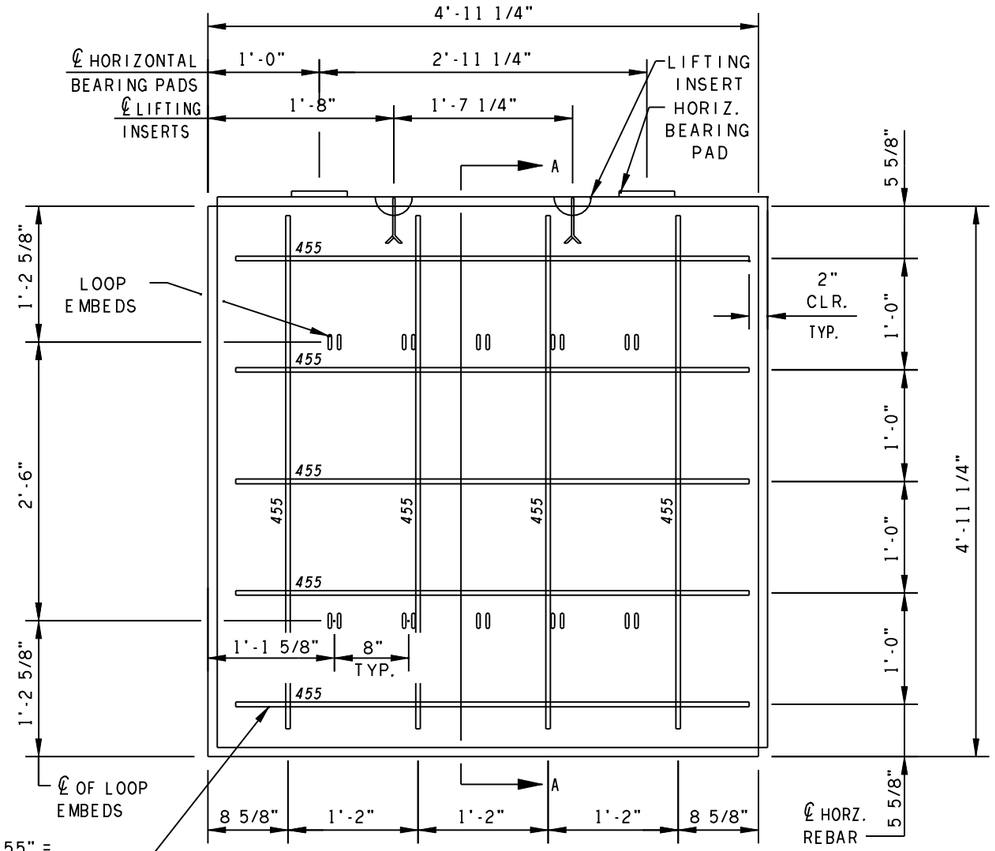
INTERIM STANDARD

Index No. 5035 (Sheets 1 - 14 of 14) is a supplement to the metric Roadway and Traffic Design Standards Booklet dated January 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

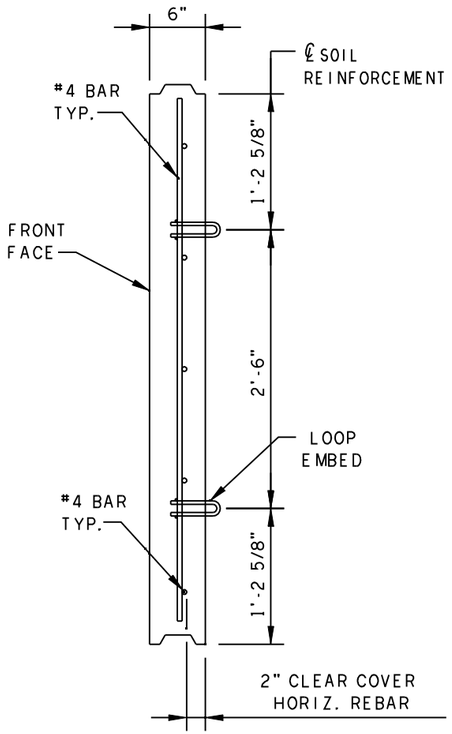
REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 14	5035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

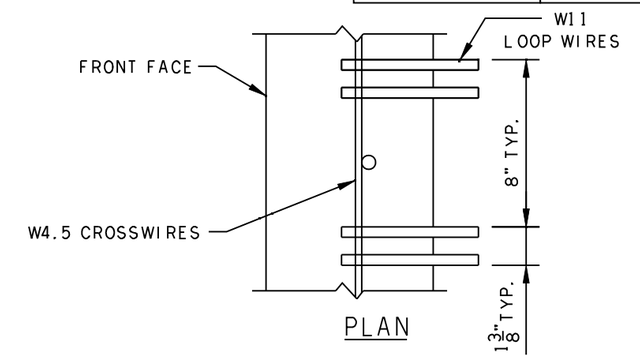


STANDARD PANEL
Back Face View

NOTE:
PANEL SHOWN FOR W11 WIRE ATTACHMENT ONLY. (SEE NOTE 6, SHEET 2 OF 2 FOR REINFORCEMENT OPTIONS)



SECTION A-A



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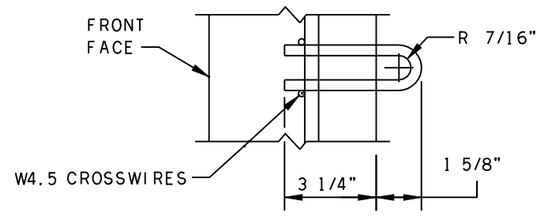
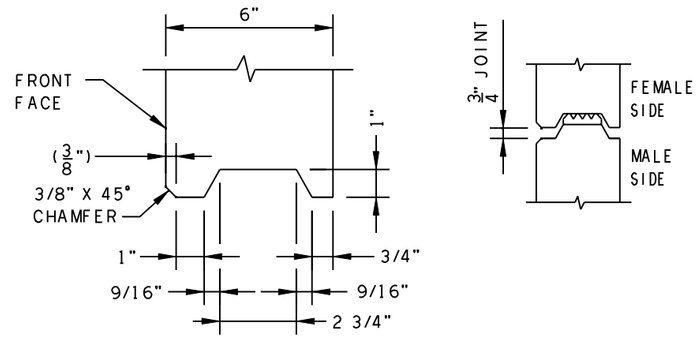
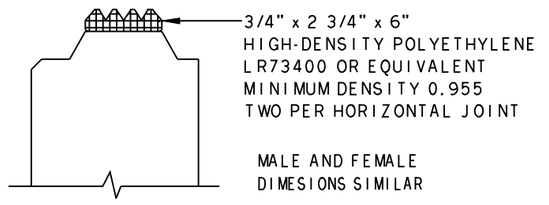


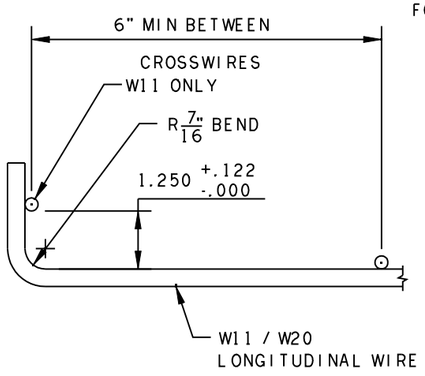
ELEV.

LOOP EMBED DETAIL

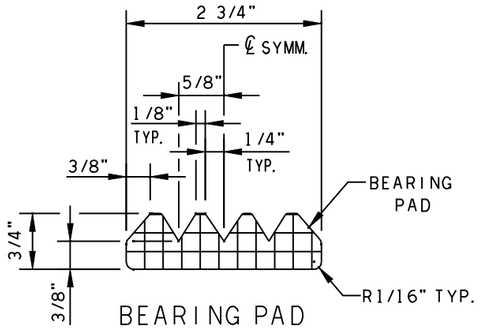




HORIZONTAL PANEL JOINT DETAIL



WIRE MESH LOOP DETAIL



BEARING PAD DETAIL

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APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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04	2 of 14	5035

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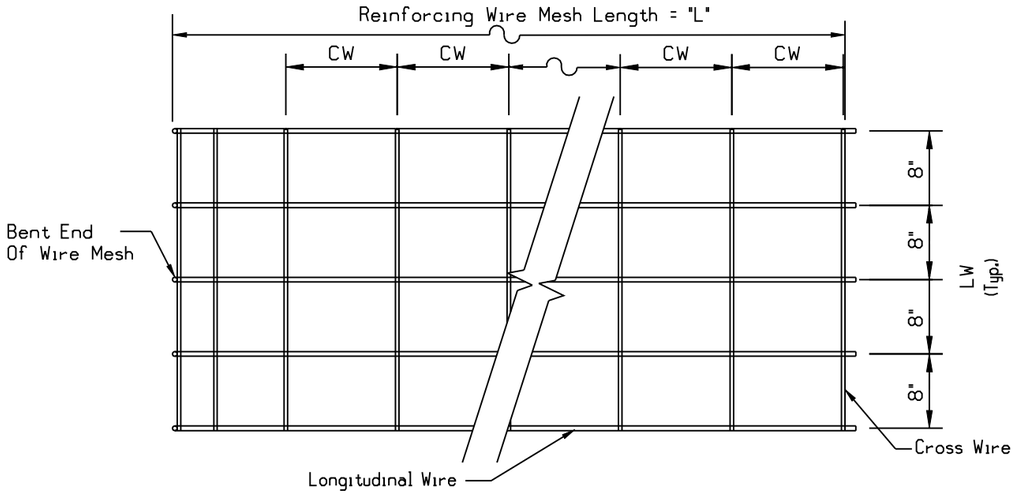
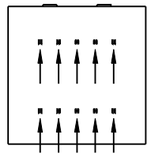
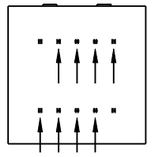




5-Wire Connection Panel



4-Wire Connection Panel

EXAMPLE WIRE MESH DESIGNATION: 4W11XW11X1.0

- Spacing (Ft.) Of Cross Wires (CW) (See Note)
- Size Of Cross Wires (CS)
- Size Of Longitudinal Wires (LS)
- No. Of Longitudinal Wires

NOTE: For Example Above,
Equivalent Wire Mesh
Designation = 8 x 12 - W11 x W11 x 24" x "L"
(LW) (CW) (LS) (CS)
- SHEET LENGTH
- SHEET WIDTH

NOTE:
Cross Wire Spacing Varies
6" to 3'-0" In 6" Increments.

REINFORCING MESH DETAIL

NOTES:

1. Panel Reinforcement Bars Shall Be Deformed Billet-Steel Bars For Concrete Reinforcement Conforming To The Specification Of ASTM Designation A615, Grade 60, Including Supplementary Requirement S1 Or Low Alloy Steel Deformed Bars Conforming To The Specifications Of ASTM Designation Designation A706.
2. W11 And W20 Steel Wire Shall Conform To The ASTM Designation A82. The Welded Wire Mat And Loop Embed Shall Be Welded In Accordance With ASTM Designation A185.
3. The Loop Embed, Reinforcing Mesh & Connector Bars Shall Be Galvanized In Accordance With ASTM Designation A123, After Bending.
4. Concrete Panels To Be Made With Class IV Concrete And Have A 28 Day Compressive Strength Of 5500psi.
5. All Panel Reinforcement Must Have A Minimum Of 2" Cover With Concrete On All Sides.
6. Concrete Panels With W11 Mesh Attached Shall Be Cast With 4 Vertical And 5 Horizontal Rebar. Panels With W20 Mesh Attached Shall Be Cast With 6 Vertical And 9 Horizontal Rebar.
7. When Cast In Place Coping Is Used In Conjunction With The MSE Wall, The Top Panels Shall Be Cast With 2 ea. #4 Dowel Bars At 2'-6" On Center, Embedded A Minimum Of 1'-3" Into The Top Surface Of The Panel For Attachment To The Coping Element.

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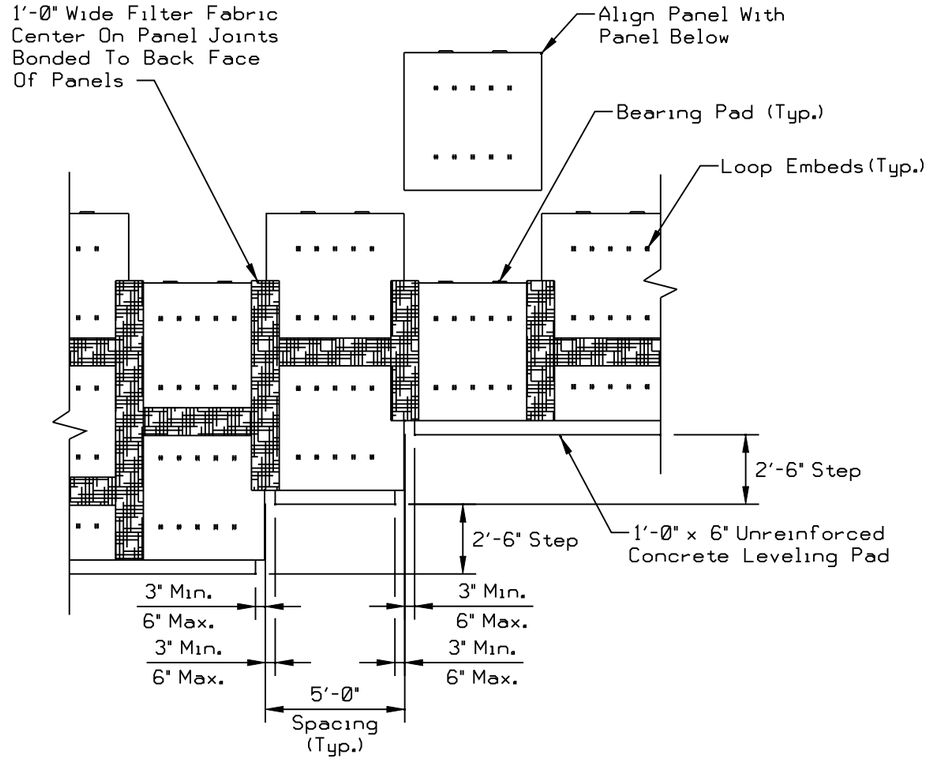
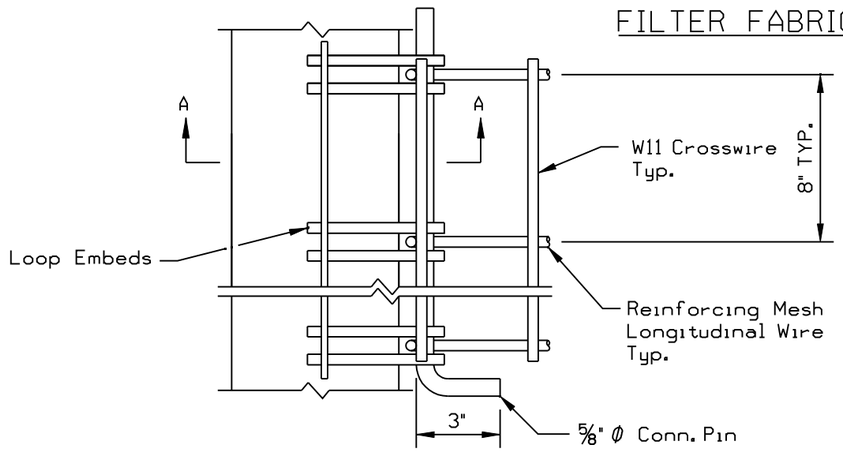
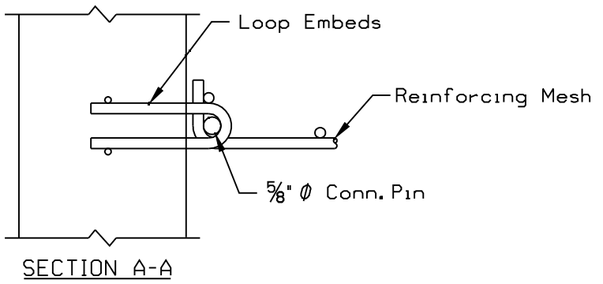


FILTER FABRIC DETAIL AND PANEL PLACEMENT

Back Face View





SECTION A-A

REINFORCING MESH CONNECTOR BAR DETAIL

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

DATE: 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
SSL
MSE PLUS WALL SYSTEM

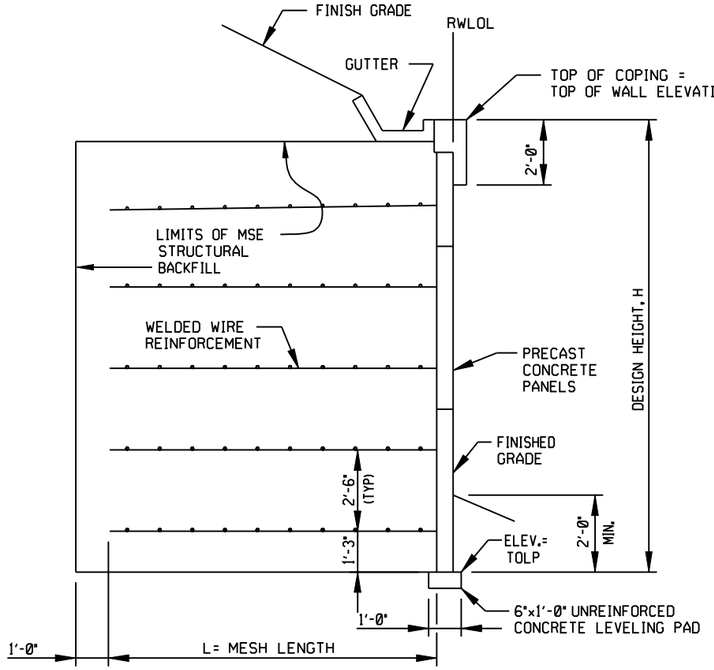
INTERIM STANDARD

Index No. 5035 (Sheets 1 - 14 of 14) is a supplement to the metric Roadway and Traffic Design Standards Booklet dated January 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 14	5035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



TYPICAL SECTION AT COPING

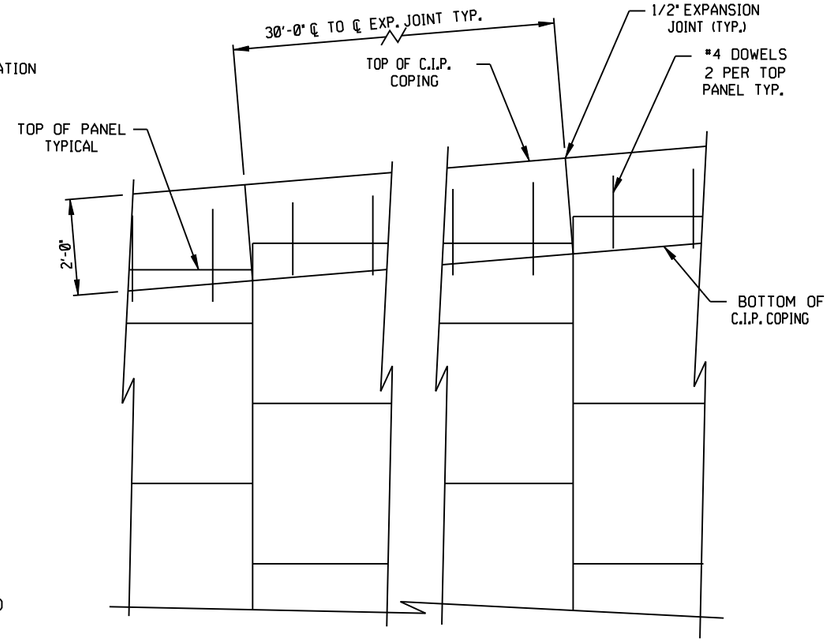
NOTE:

See Contract Plans For Details On Excavation Below The Wall and Underdrain Requierments.

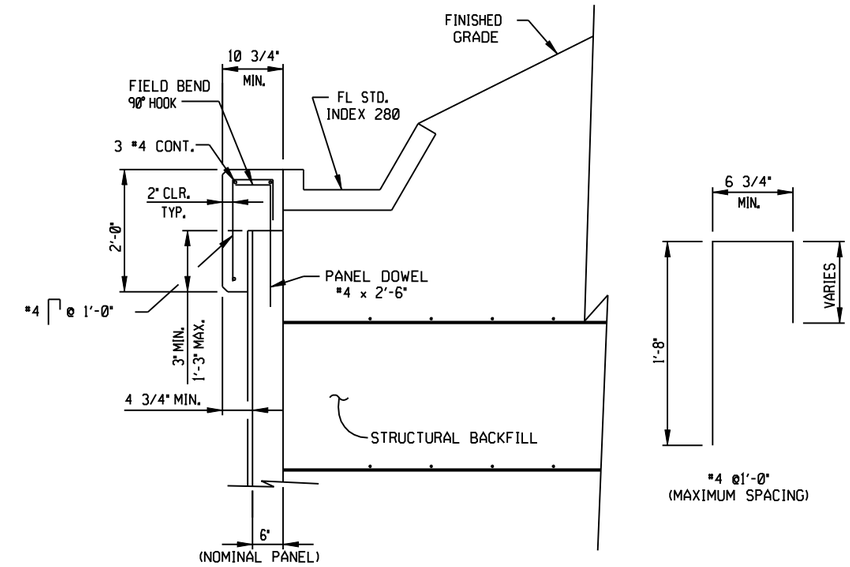
TOLP = TOP OF LEVELING PAD

RWLOL = Retaining Wall Layout Line

Layout Line = Front Face Of Nominal 6" Thick Panel

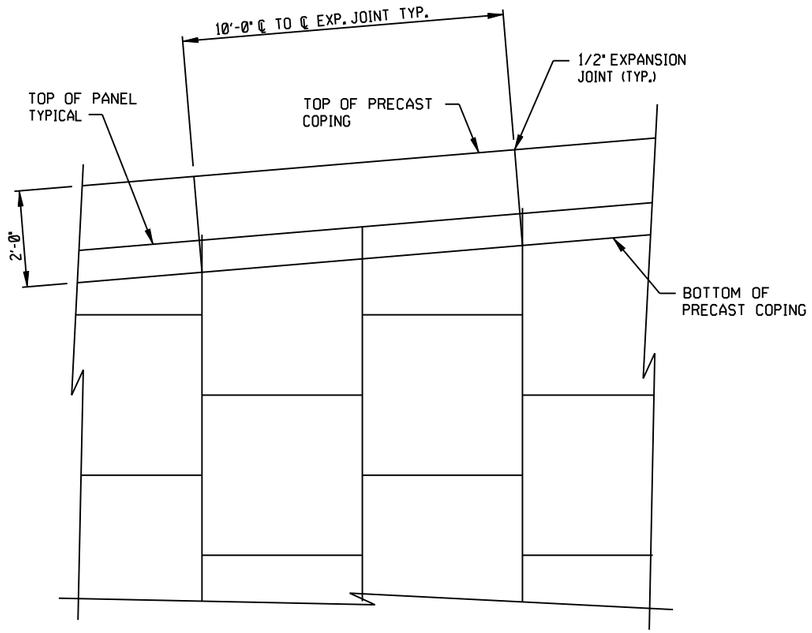


PARTIAL ELEVATION C.I.P. COPING

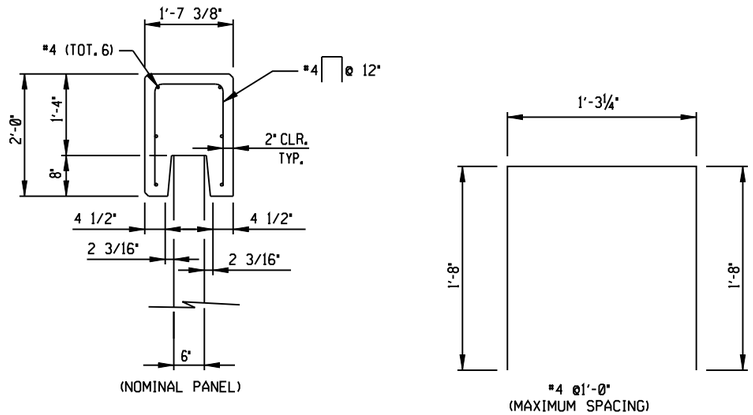


NOTES: PROVIDE 1/2" EXPANSION JOINT IN COPING AT 30'-0" MAXIMUM

C.I.P. COPING DETAIL



PARTIAL ELEVATION PRECAST COPING



NOTES; CAST UNIT 10'-0" LONG TYPICAL

PRECAST COPING DETAIL

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04	4 of 14	5035

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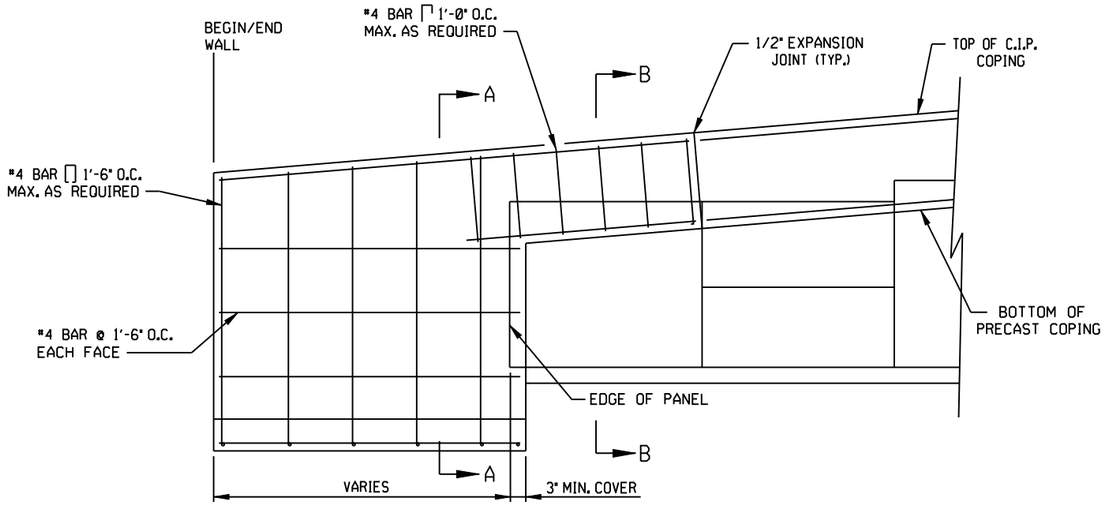
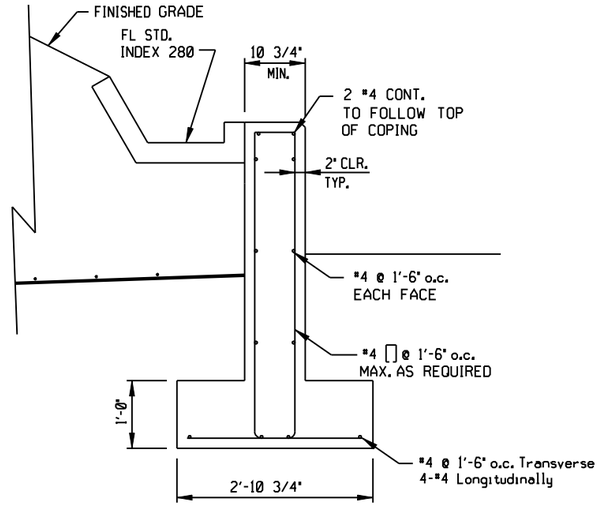
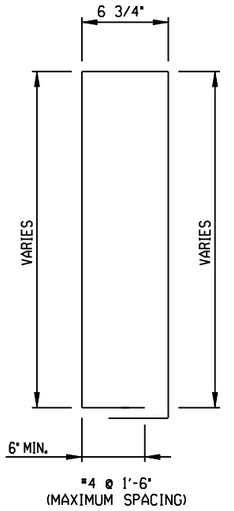
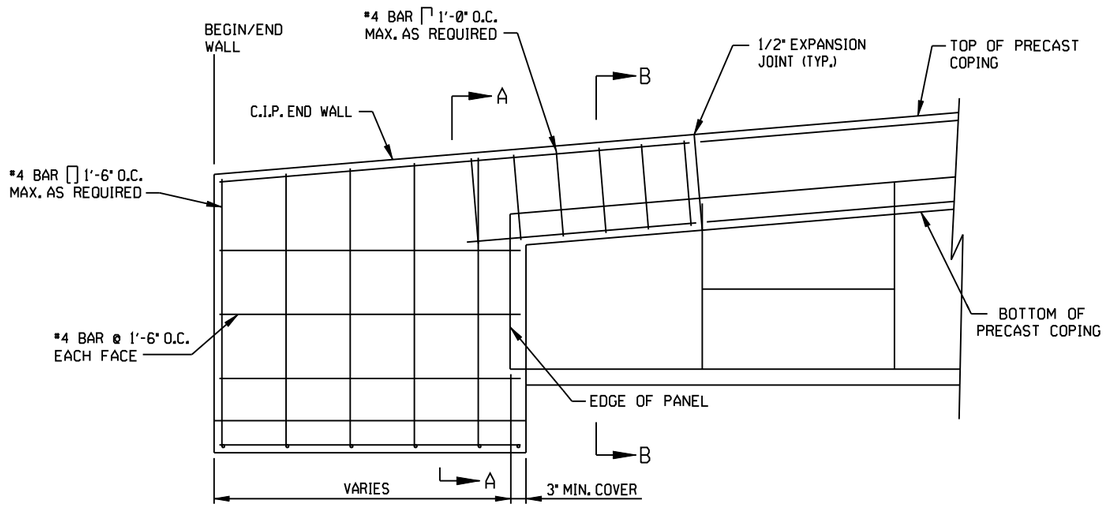


COPING END WALL AT C.I.P. COPING

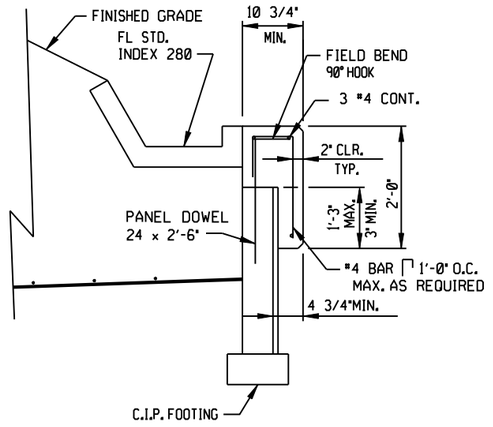


SECTION A-A

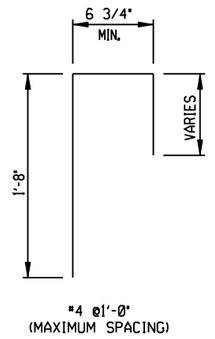




COPING END WALL AT PRECAST COPING



SECTION B-B



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04	5 of 14	5035

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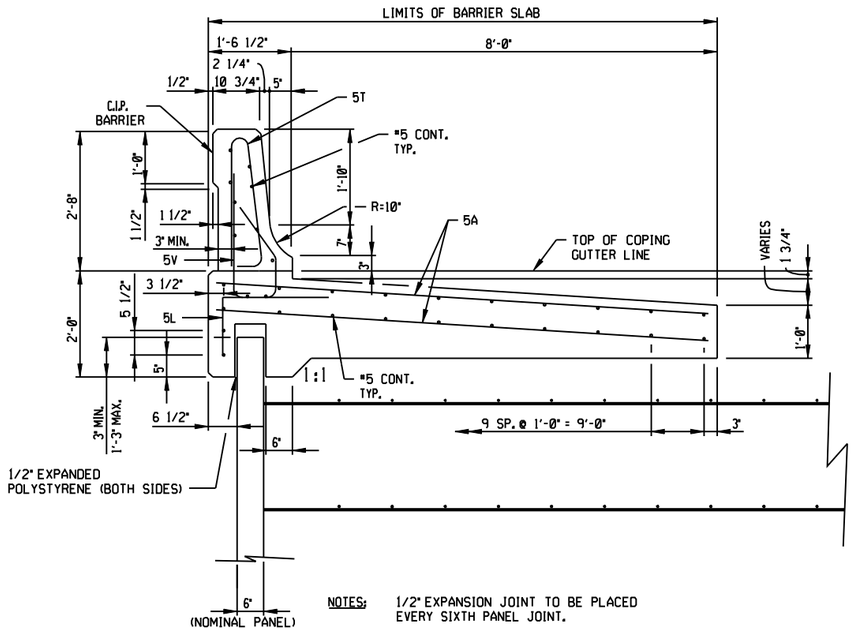
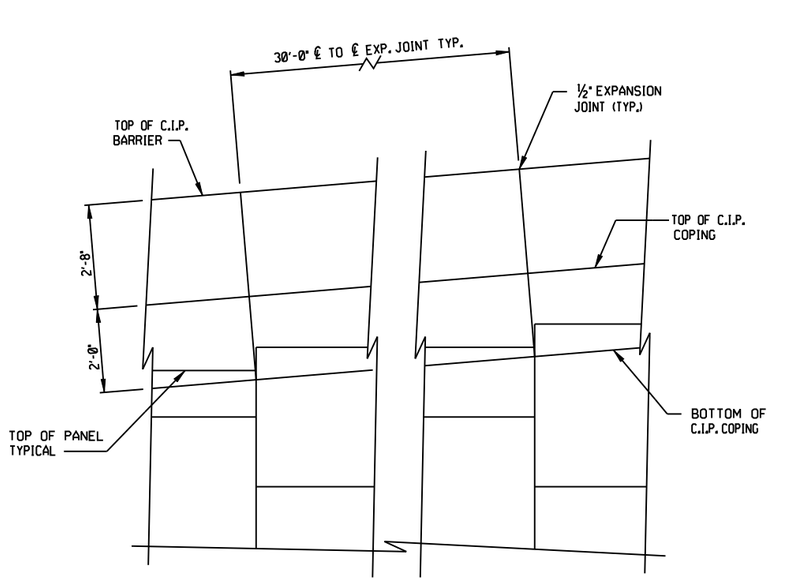


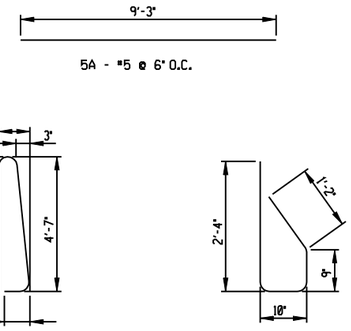
NOTES: 1/2" EXPANSION JOINT TO BE PLACED EVERY SIXTH PANEL JOINT.

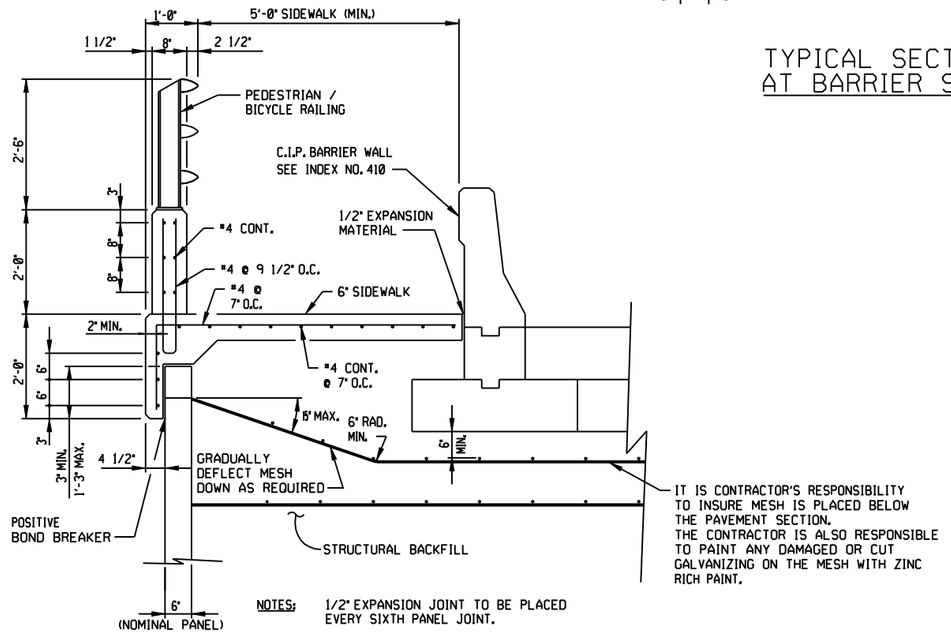
FOR ADDITIONAL C.I.P. BARRIER DETAILS SEE FDOT TRAFFIC RAILING STANDARD DRAWINGS

C.I.P. BARRIER SLAB



PARTIAL ELEVATION C.I.P. BARRIER

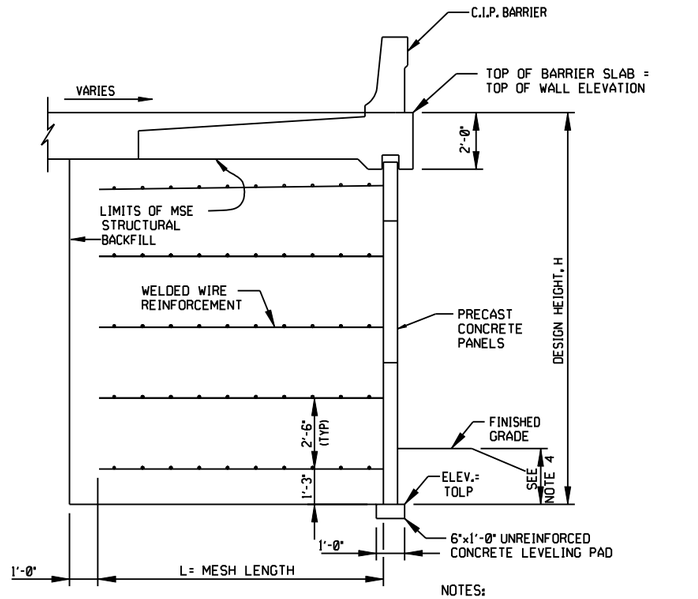




NOTES: 1/2" EXPANSION JOINT TO BE PLACED EVERY SIXTH PANEL JOINT.

MESH IS NOT TO BENT WITH LESS THAN A 6" RADIUS TO AVOID DAMAGE TO GALVANIZING.

C.I.P. PARAPET W/ HANDRAIL



TYPICAL SECTION AT BARRIER SLAB

NOTES:

1. See Contract Drawings For Any Additional Details Not Shown.
2. For Leveling Pad Details See Sheet FL3.
3. TOLP = Top Of Leveling Pad
4. Minimum Embedment Below Finished Grade At Bottom Of Wall To Be Determined By EOR And Shown On Contract Plans. Dimensions Shall Be 2'-0" Minimum.

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04	6 of 14	5035

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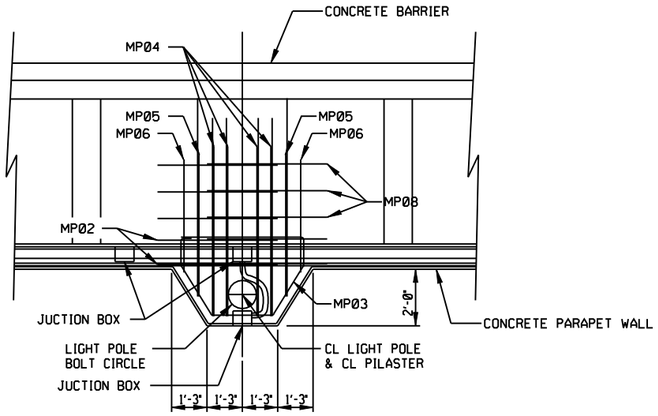


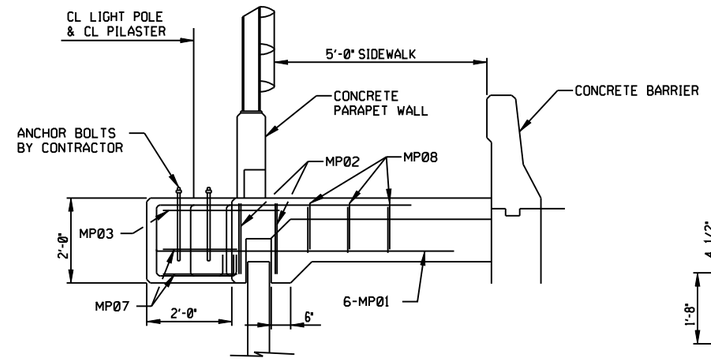
PLAN

NOTES:

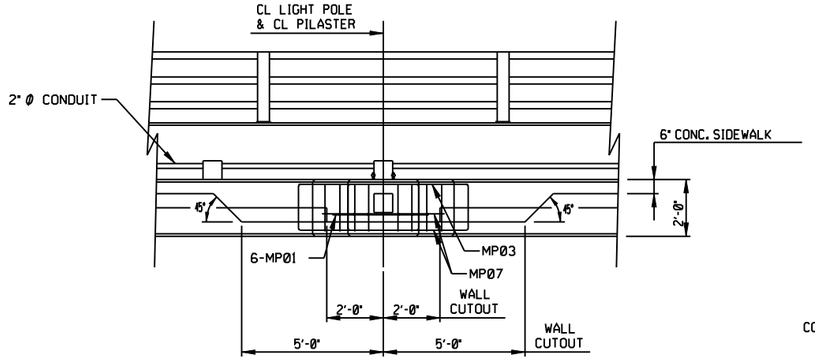
1. ADDITIONAL CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTER SHALL MEET THE SAME REQUIREMENTS AS THAT OF THE PARAPET WALL.
2. TOP OF PILASTER SHALL BE FINISHED TO A TRUE LEVEL AREA.
3. LIGHT POLE PILASTER IS DESIGNED TO RESIST WORKING LOADS (IN ANY DIRECTION) FROM THE LIGHT POLE APPLIED AT THE TOP OF THE PILASTER AS FOLLOWS:

LONGITUDINAL MOMENT	= 30,000 FT. - POUNDS
TRANSVERSE MOMENT	= 6000 FT. - POUNDS
LONGITUDINAL SHEAR	= 1000 POUNDS
TRANSVERSE SHEAR	= 200 POUNDS
TORSION	= 3,000 FT. - POUNDS
AXIAL	= 400 POUNDS

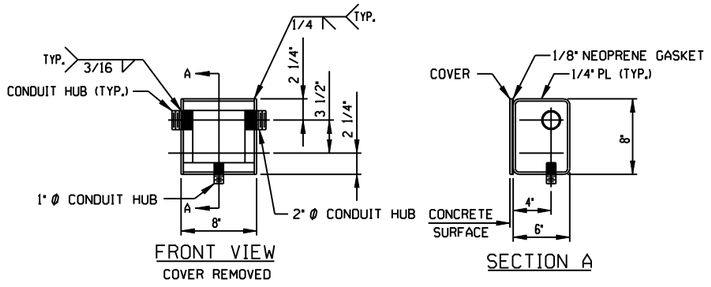
   IF THE LIGHT POLE PROVIDED APPLIES LOADS THAT ARE IN EXCESS OF THOSE SHOWN ABOVE, THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT HIS DESIGN TO THE DEPARTMENT FOR REVIEW. THE CONTRACTOR'S REDESIGN SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA QUALIFIED TO PERFORM THE WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND THAT FIT THE REINFORCING CAGE. CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHALL BE SUBMITTED BY THE CONTRACTOR TO THE DEPARTMENT FOR REVIEW AND APPROVAL SHOWING THAT THESE REQUIREMENTS HAVE BEEN MET PRIOR TO CONSTRUCTION.
5. STEEL FOR JUCTION BOXES SHALL CONFORM WITH ASTM-A36M. THE BOXES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. IN LIEU OF STEEL BOXES THE CONTRACTOR MAY SUBMIT FOR APPROVAL MOLDED P.V.C. BOXES (SCHEDULE 80).
6. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL OR SCHEDULE 80 P.V.C.
7. THE COST OF ANCHOR BOLTS SHALL BE INCLUDED IN THE BID PRICE FOR LIGHT POLES.
8. PAYMENT: THE COST OF ALL LABOR, CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTERS AND ALL CONDUITS. EXPANSION COUPLINGS, JUCTION BOXES AND MISCELLANEOUS HARDWARE REQUIRED FOR COMPLETION OF THE ELECTRICAL INSTALLATION SHALL BE WITHIN THE BID PRICE FOR THE MSE WALLS.



LIGHT PILASTER DETAILS



LIGHT PILASTER ELEVATION

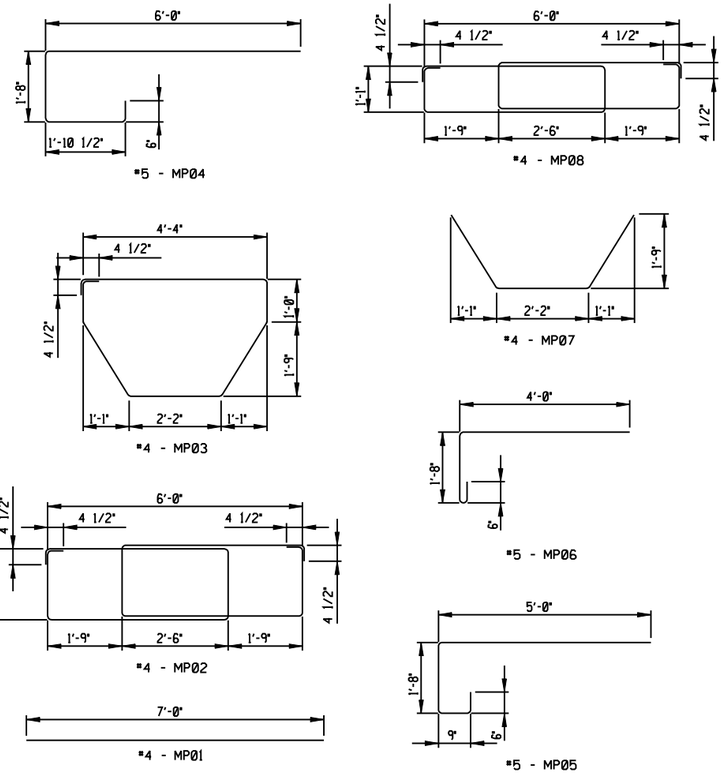


FRONT VIEW
COVER REMOVED

SECTION A

JUCTION BOX DETAILS

JUNCTION BOX TO BE MANUFACTURED BY OTHERS



REBAR DETAILS

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04	7 of 14	5035

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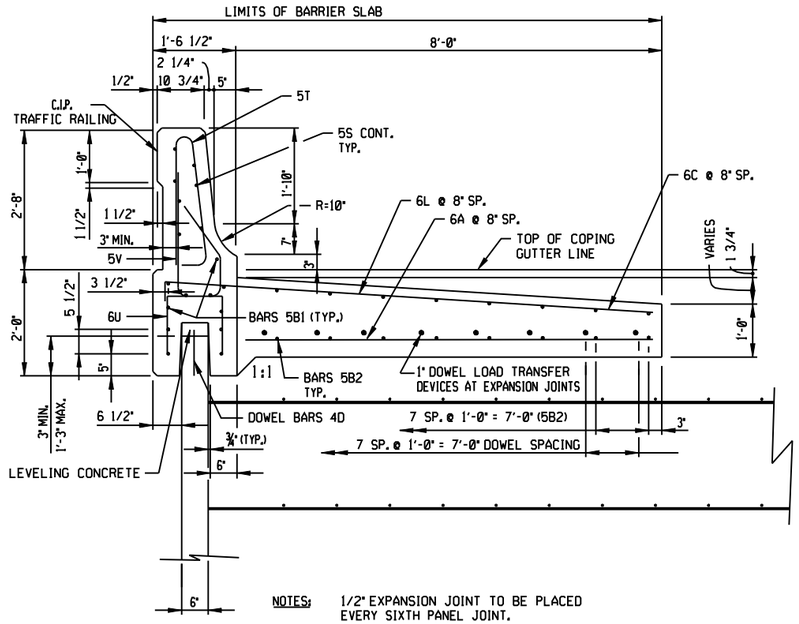
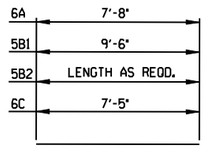


NOTES: 1/2" EXPANSION JOINT TO BE PLACED EVERY SIXTH PANEL JOINT.

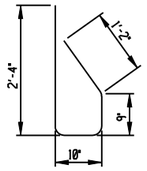
FOR ADDITIONAL DETAILS SEE FLORIDA STANDARD DRAWINGS

PRECAST BARRIER SLAB

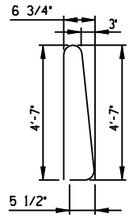


BARS 6A, 5BI, 5B2 & 6C

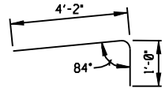
1" Ø DOWEL



5V - #5 @ 8" O.C.

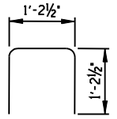


5T - #5 @ 8" O.C.

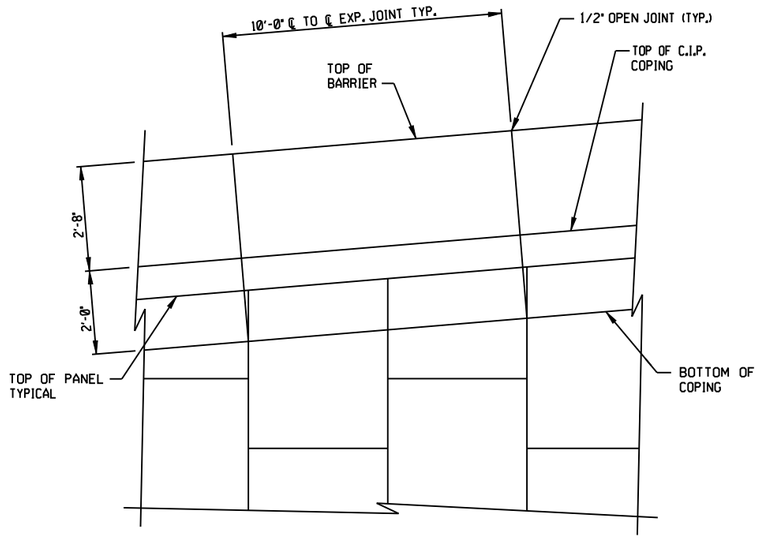


BARS 6L

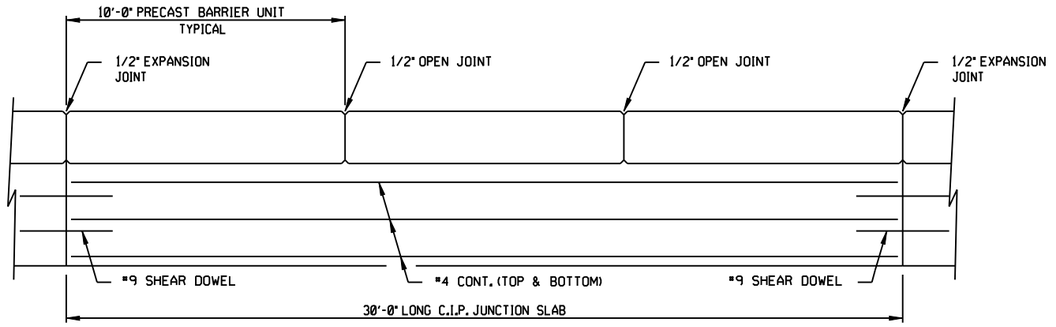
DOWEL BAR 4D



BARS 6U



PARTIAL ELEVATION PRECAST BARRIER



PRECAST BARRIER SLAB PLAN

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04	8 of 14	5035

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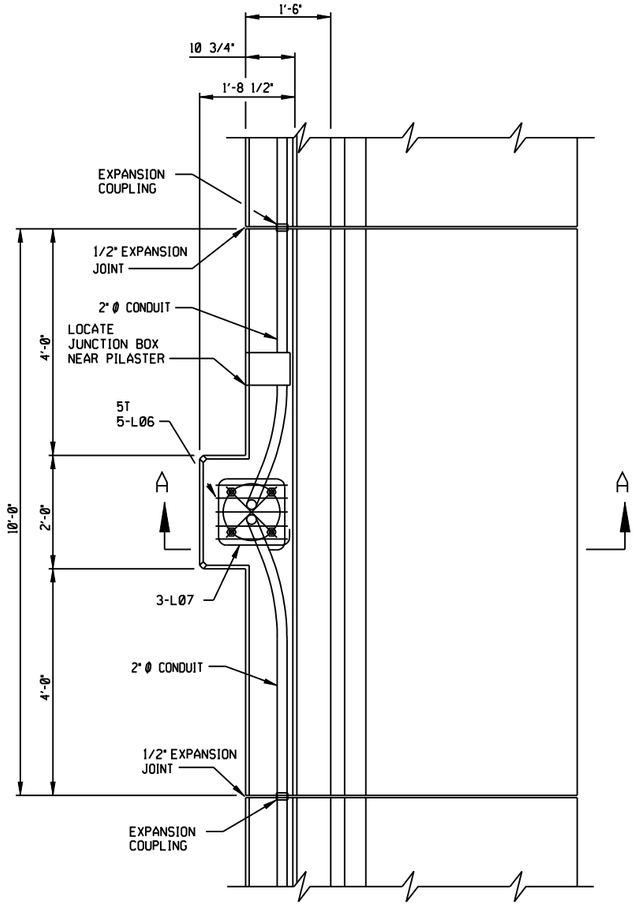
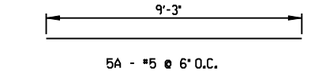
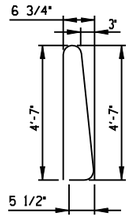


C.I.P. LIGHT POLE

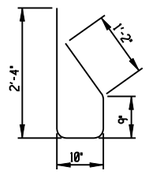
ALL REBAR BY OTHERS
LIGHT POLE/BARRIER COPING



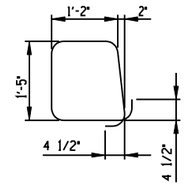
5A - #5 @ 6" O.C.



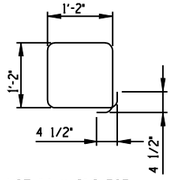
5T - #5 @ 8" O.C.



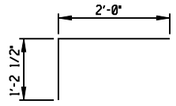
5V - #5 @ 8" O.C.



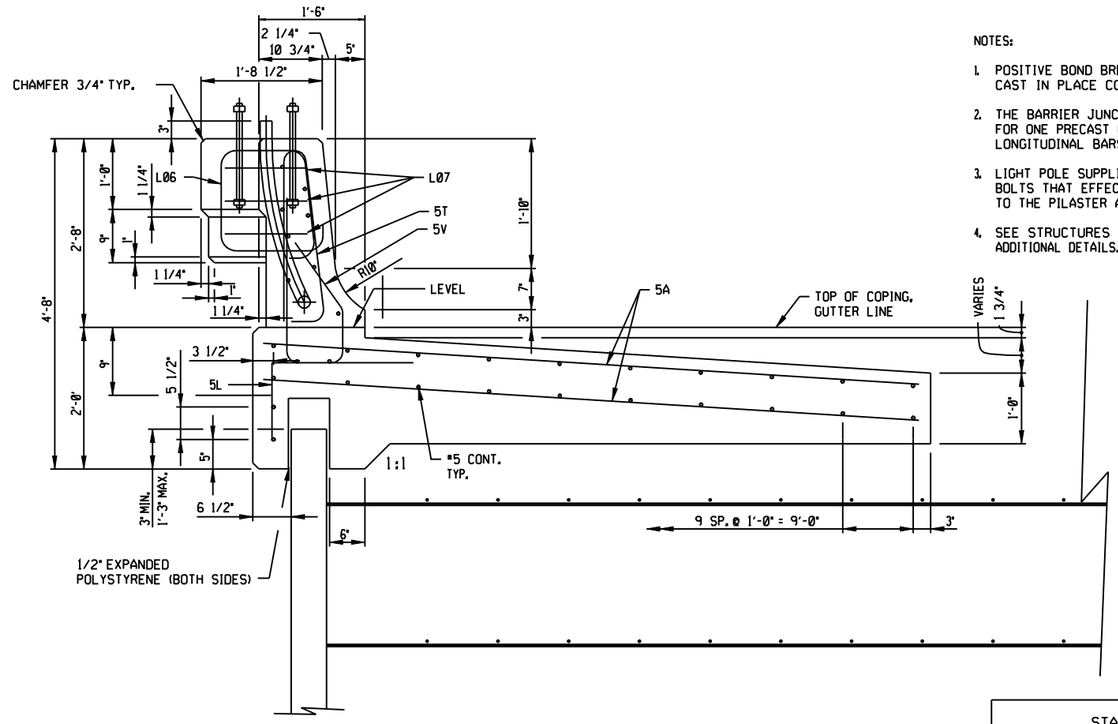
L06-#5 @ 3" 5-TOT.

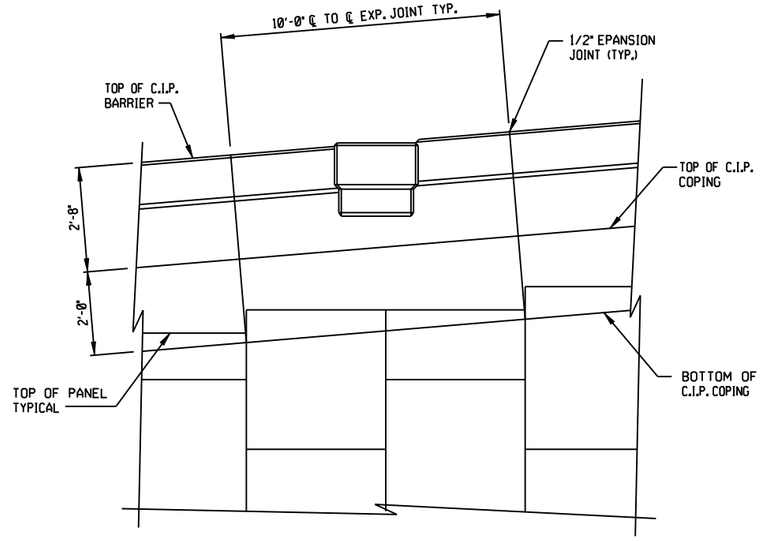


L07-#4 @ 6" 3-TOT.



5L - #5 @ 6" O.C.





PARTIAL ELEVATION AT LIGHT POLE

NOTES:

1. POSITIVE BOND BREAKER SHALL BE PROVIDED BETWEEN CAST IN PLACE CONCRETE AND PRECAST CONCRETE PANELS.
2. THE BARRIER JUNCTION SLAB SHALL HAVE THESE DIMENSIONS FOR ONE PRECAST UNIT EITHER SIDE OF LIGHT POLE BARRIER. LONGITUDINAL BARS SHALL BE AS SHOWN.
3. LIGHT POLE SUPPLIER IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND FIT THE REINFORCING CAGE.
4. SEE STRUCTURES STANDARD DRAWINGS FOR ADDITIONAL DETAILS.

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DATE : 01-01-05

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RETAINING WALL SYSTEMS SSL MSE PLUS WALL SYSTEM

INTERIM STANDARD

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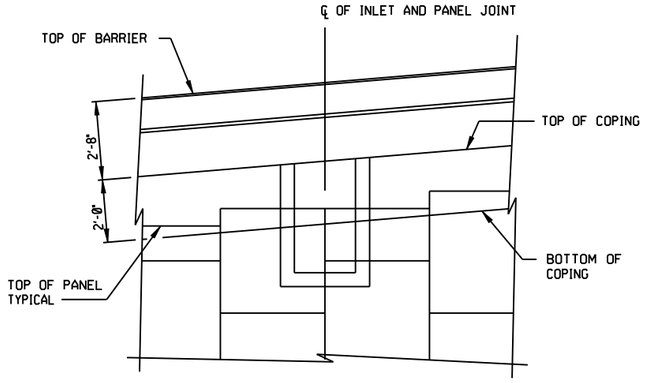
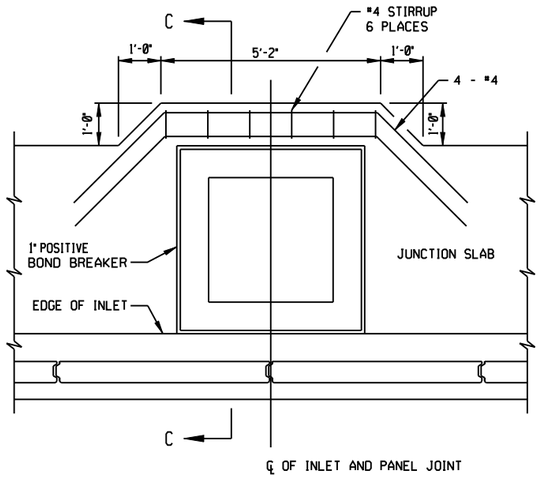
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	9 of 14	5035

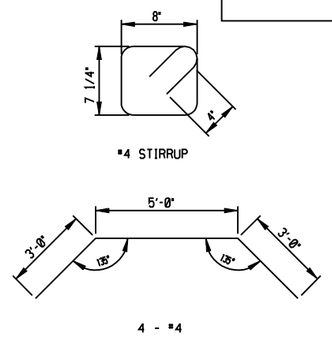
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PARTIAL ELEVATION AT DRAINAGE INLET



PARTIAL PLAN - JUNCTION SLAB AROUND INLET



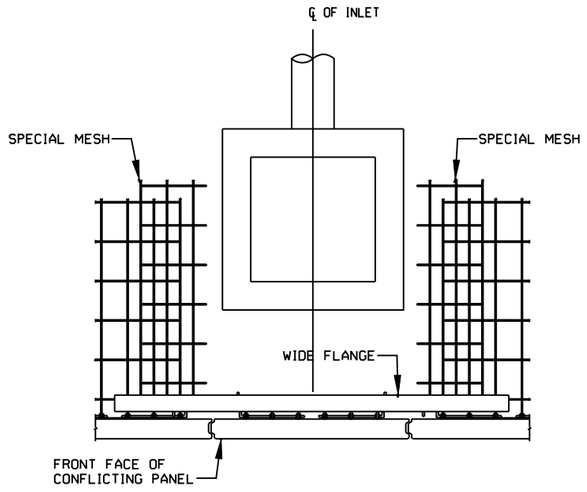
NOTES:

OBSTRUCTION SHALL BE CONSTRUCTED BEFORE WALL INSTALLATION OR, VOID FORMER SHALL BE INSTALLED DURING BACKFILL PLACEMENT. VOID FORMER NOT SUPPLIED BY SSL.

ALL OBSTRUCTIONS TO BE CONSTRUCTED OR PLACED PRIOR TO ANY CAST-IN-PLACE BARRIER OR COPING IS POURED.

DAMAGED GALV. SHALL BE COATED WITH ZINC RICH PAINT.

REVISED MESH TO BE SHOWN ON APPROVED SHOP DRAWINGS.

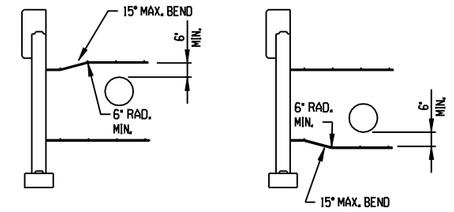


DRAINAGE INLET OBSTRUCTION DETAILS

NOTE:

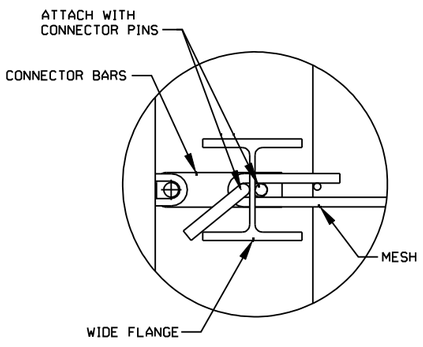
4" MIN. BACKFILL SHALL BE PLACED BETWEEN MESH CONNECTED TO PANELS AND THE STRUCTURAL FRAME.

SEE "END BENT AND CORNER DETAILS 2 OF 2" FOR STRUCTURAL FRAME DETAILS

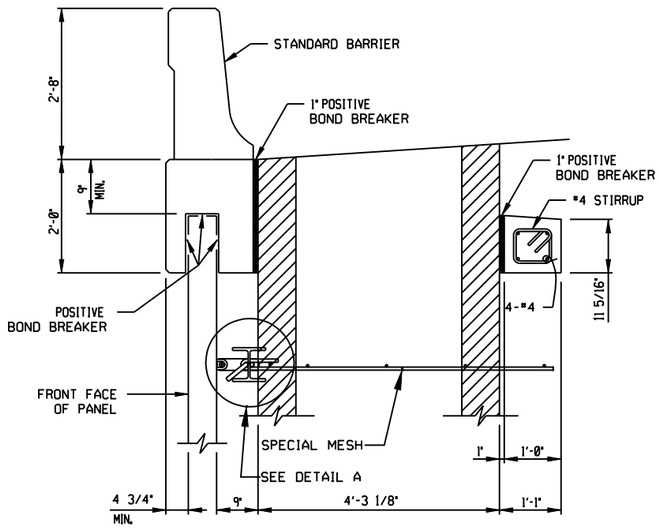


OBSTRUCTION DETAIL (HORIZONTAL)

MESH IS NOT TO BENT WITH LESS THAN A 6" RADIUS TO AVOID DAMAGE TO GALVANIZING.



DETAIL A



SECTION C-C

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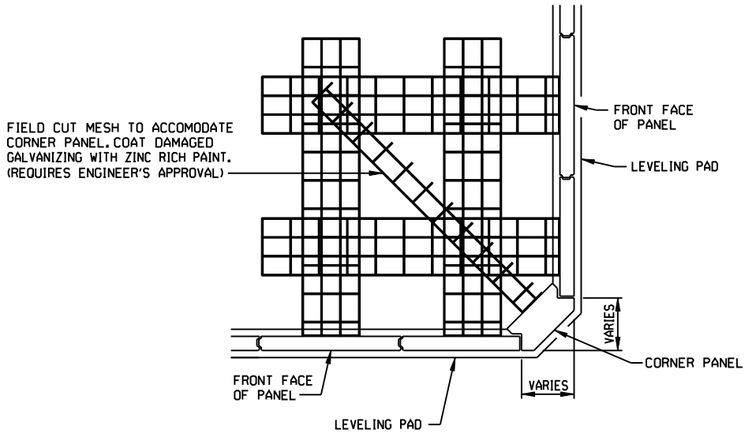
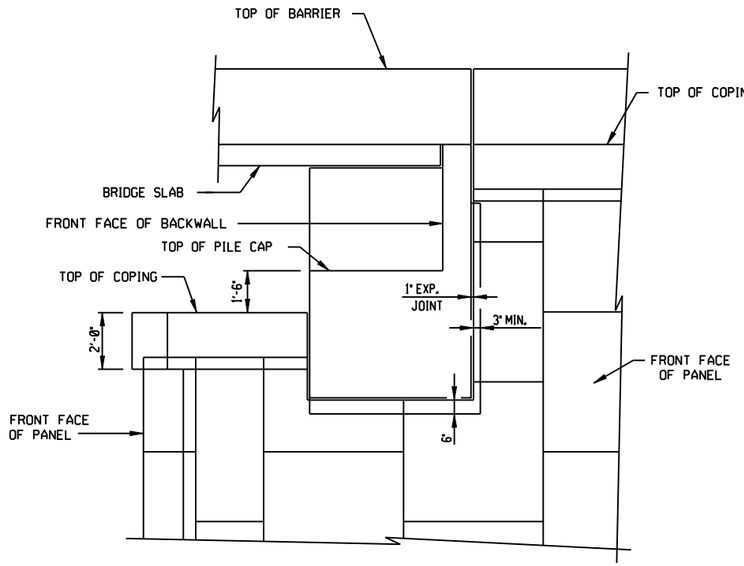
REVISION NO.	SHEET NO.	INDEX NO.
04	10 of 14	5035

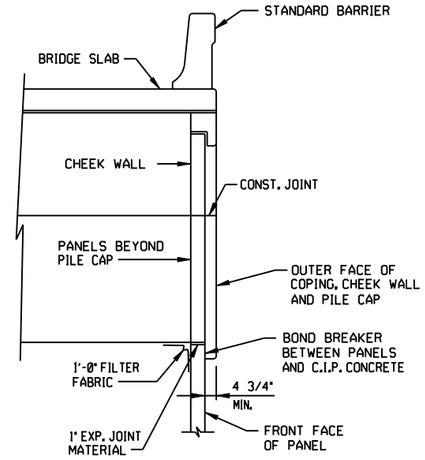
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



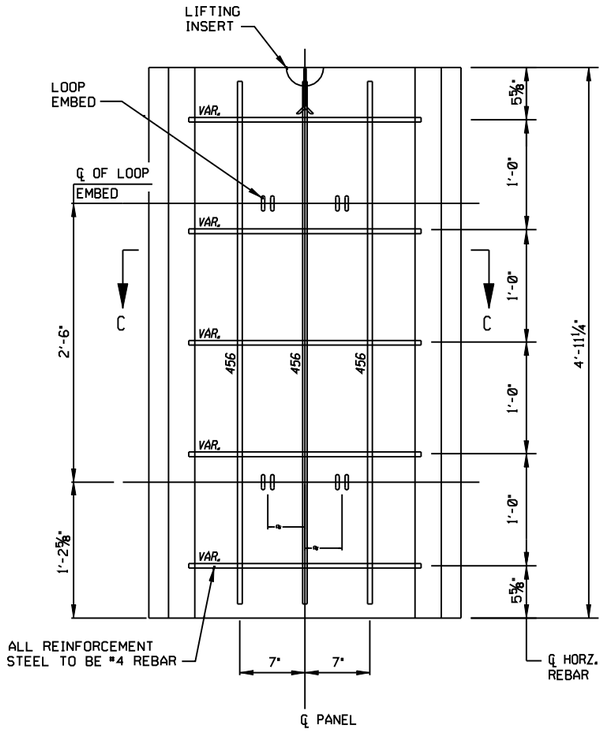
PLAN AT 90° OR GREATER CORNER



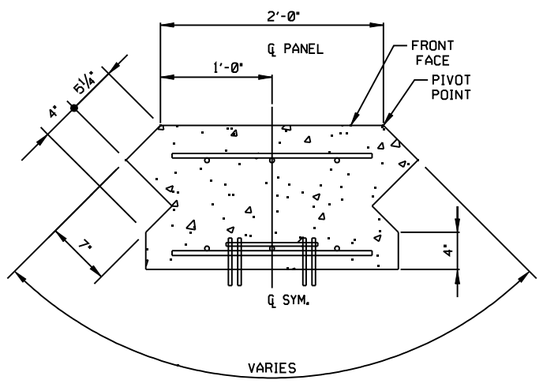
VIEW A-A



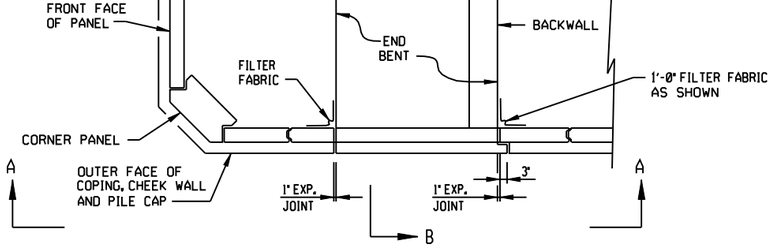
SECTION B-B



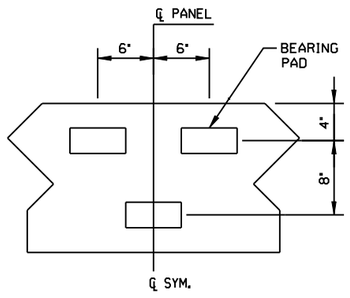
ELEVATION



SECTION C-C



PLAN VIEW AT END BENT



BEARING PAD PLACEMENT

CORNER PANEL DETAILS

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SSL
MSE PLUS WALL SYSTEM

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REVISION NO.	SHEET NO.	INDEX NO.
04	11 of 14	5035

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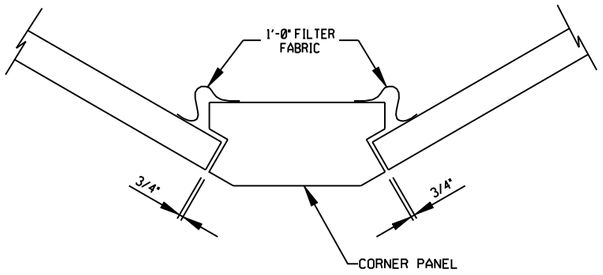
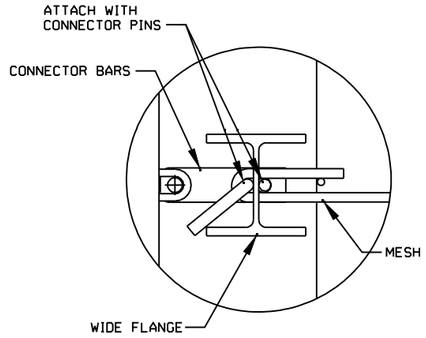
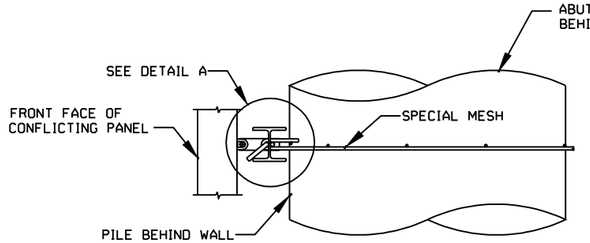


TYPICAL CORNER DETAIL



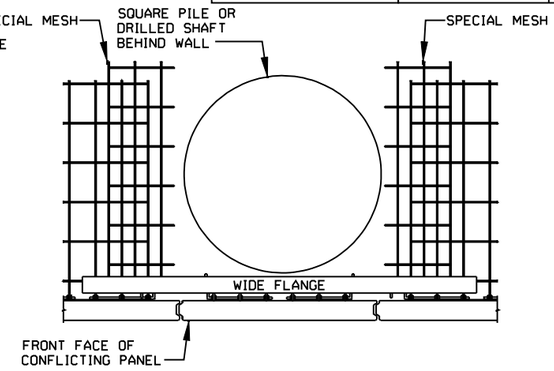
DETAIL A



STRUCTURAL FRAME SECTION

NOTE:

4" MIN. BACKFILL SHALL BE PLACED BETWEEN MESH CONNECTED TO PANELS AND THE STRUCTURAL FRAME.



STRUCTURAL FRAME

NOTES:

SEE APPROVED SHOP DRAWINGS FOR SPECIFIC CORNER PANEL DETAILS AND CONNECTING ROD DETAILS.

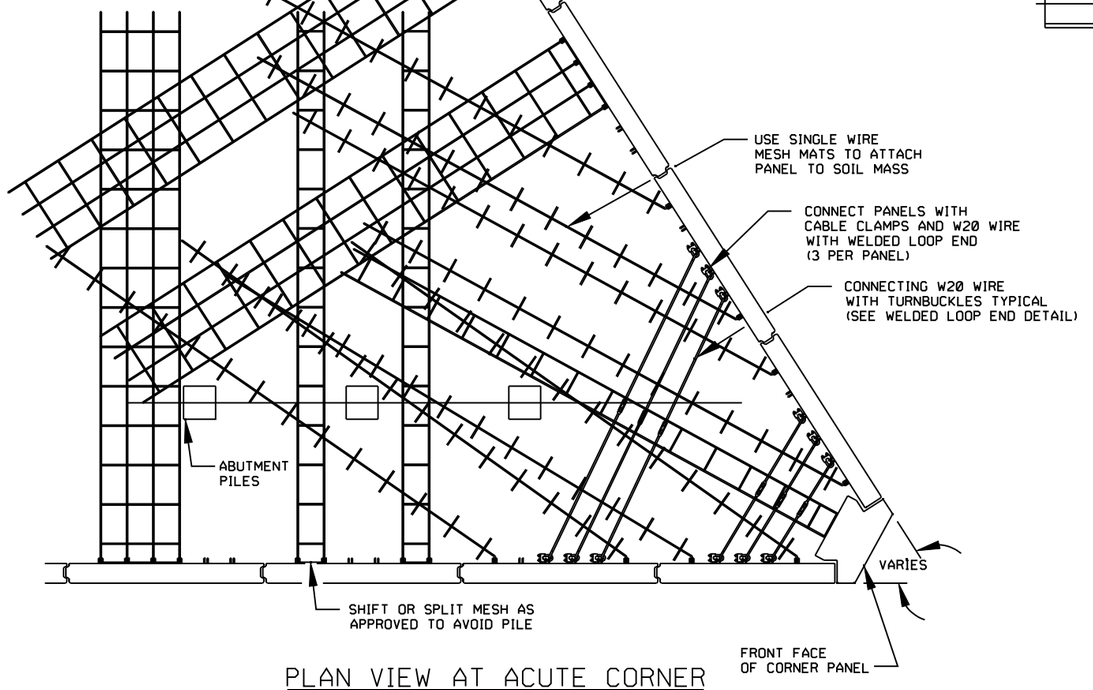
ANY CUTTING OF MESH MUST BE APPROVED BY ENGINEER AS SHOWN ON APPROVED SHOP DRAWINGS.

CUT MESH OR DAMAGED GALV. SHALL BE COATED WITH ZINC RICH PAINT.

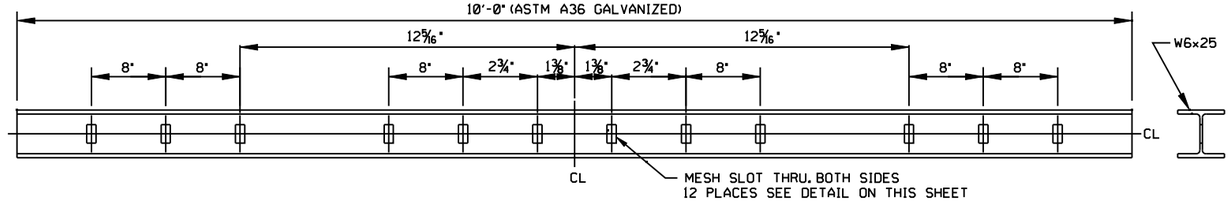
REVISED MESH TO BE SHOWN ON APPROVED SHOP DRAWINGS.

ABUTMENT PILE OBSTRUCTION DETAILS

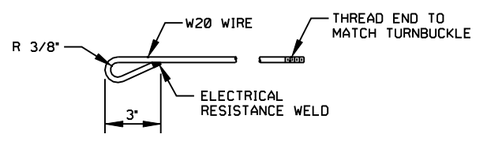
FOR ABUTMENT DRILL SHAFTS AND SQUARE PILES THAT ARE 36" IN DIAMETER OR LARGER



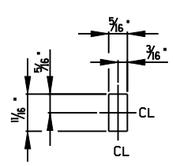
PLAN VIEW AT ACUTE CORNER



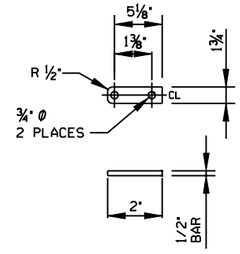
SPLICE FLANGE



WELDED LOOP END DETAIL

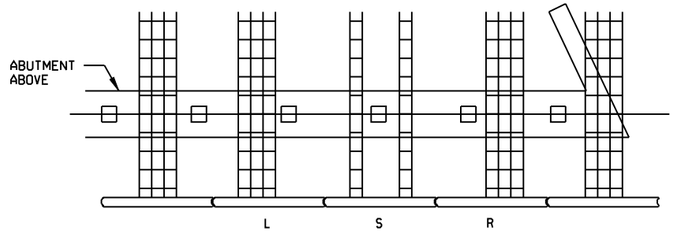


MESH SLOT DETAIL



CONNECTOR BAR

ASTM A36 GALVANIZED



PLAN VIEW AT PILE BENT

FOR BENT DRILL SHAFTS THAT ARE LESS THAN 36" IN DIAMETER AND 18" AND 24" AND SQUARE PILES

LEGEND

L = SHIFT MESH TO THE LEFT TO AVOID PILE
R = SHIFT MESH TO THE RIGHT TO AVOID PILE
S = SPLIT MESH AND SHIFT TO THE OUTSIDE TO AVOID PILE

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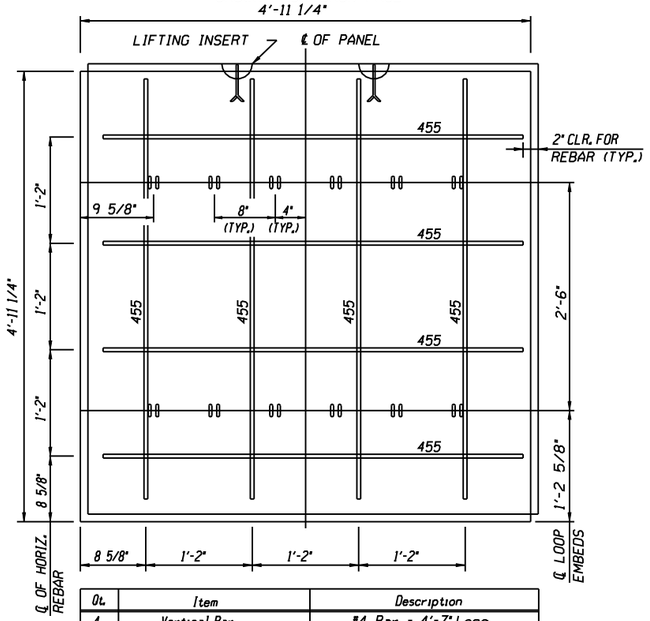
REVISION NO.	SHEET NO.	INDEX NO.
04	12 of 14	5035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TYPE-A

SHOWN FROM BACK FACE

4'-11 1/4"

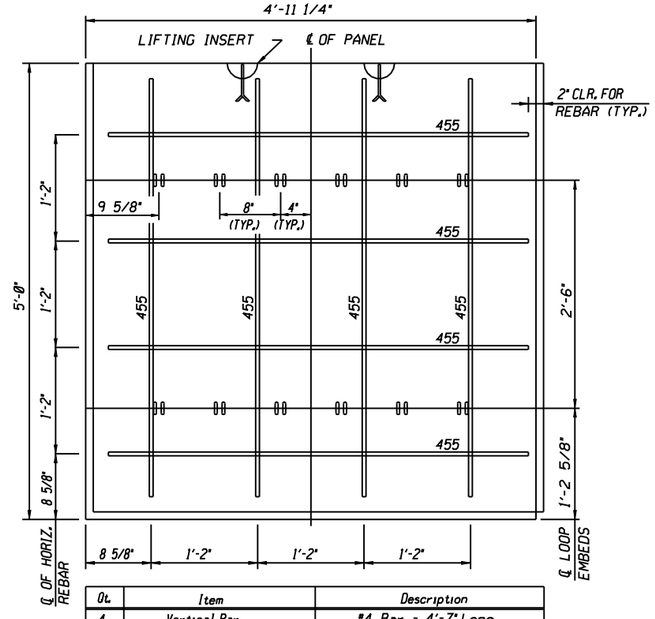


Qt.	Item	Description
4	Vertical Bar	#4 Bar - 4'-7" Long
4	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
2	Loop Embeds	6 Connection Embed

TYPE-T1

SHOWN FROM BACK FACE

4'-11 1/4"

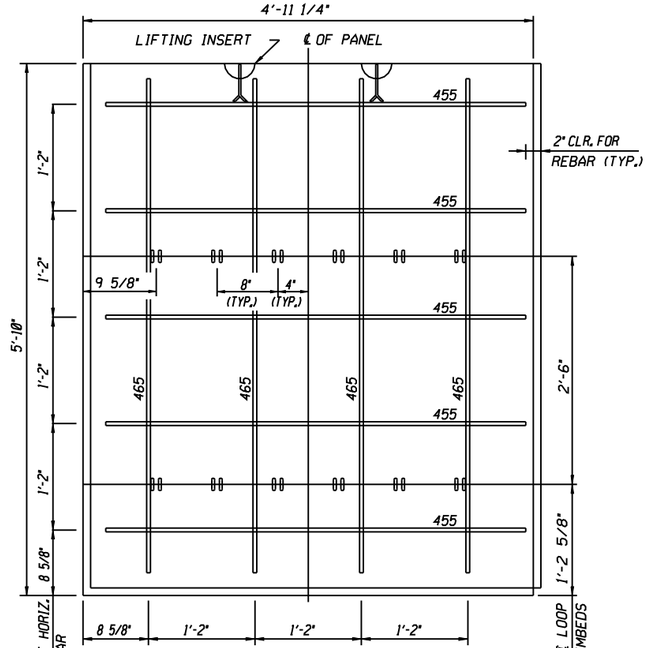


Qt.	Item	Description
4	Vertical Bar	#4 Bar - 4'-7" Long
4	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
2	Loop Embeds	6 Connection Embed

TYPE-T

SHOWN FROM BACK FACE

4'-11 1/4"

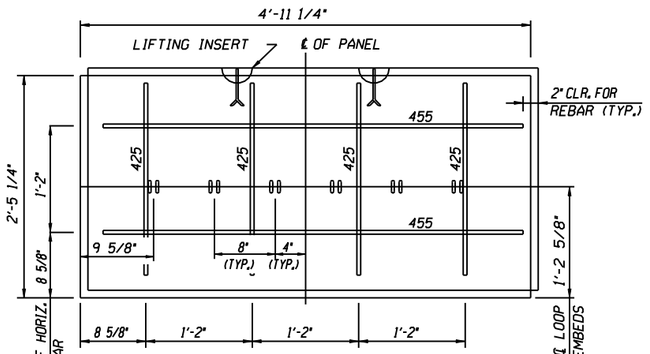


Qt.	Item	Description
4	Vertical Bar	#4 Bar - 5'-5" Long
5	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
2	Loop Embeds	6 Connection Embed

TYPE-A2

SHOWN FROM BACK FACE

4'-11 1/4"

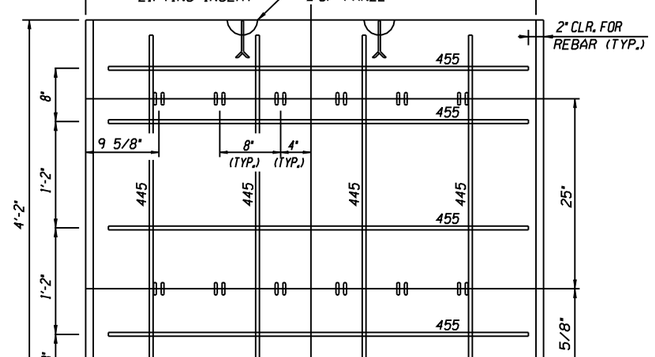


Qt.	Item	Description
4	Vertical Bar	#4 Bar - 2'-1" Long
2	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
1	Loop Embeds	6 Connection Embed

TYPE-T2

SHOWN FROM BACK FACE

4'-11 1/4"



Qt.	Item	Description
4	Vertical Bar	#4 Bar - 3'-9" Long
4	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
2	Loop Embeds	6 Connection Embed

THIS SYSTEM SHALL BE USED IN SLIGHTLY OR MODERATELY AGGRESSIVE ENVIRONMENTS ONLY.

THE DESIGN OF ALL MSE PLUS™ WALLS IS BASED ON THE ASSUMPTION THAT ALL MATERIALS, INCLUDING THE BACKFILL AND METHODS OF CONSTRUCTION, CONFORM TO THE SPECIFICATIONS FOR MSE PLUS™ RETAINING WALLS AND THE PROJECT BID DOCUMENTS

THESE DRAWINGS, AS WELL AS THE DESIGN, ARE CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF THE MSE PLUS™ STRUCTURES ONLY. EXTERNAL STABILITY INCLUDING, BUT NOT LIMITED TO, SLOPE AND FOUNDATION STABILITY IS THE RESPONSIBILITY OF THE OWNER AND THE ENGINEER FOR THE OWNER.

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
SSL
MSE PLUS WALL SYSTEM

INTERIM STANDARD

Index No. 5035 (Sheets 1 - 14 of 14) is a supplement to the metric Roadway and Traffic Design Standards Booklet dated January 2000.

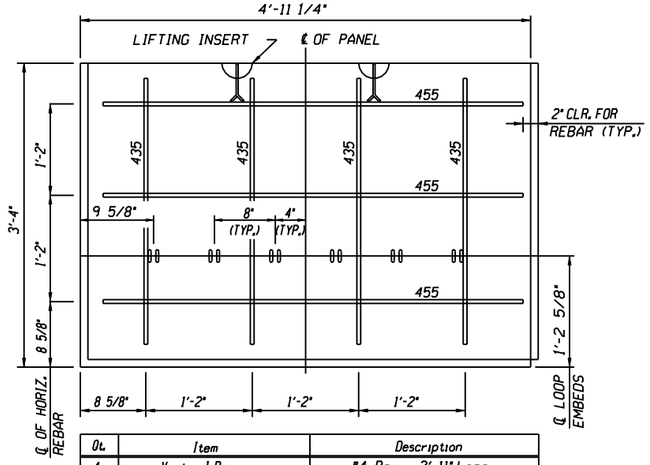
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	13 of 14	5035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

TYPE-T3

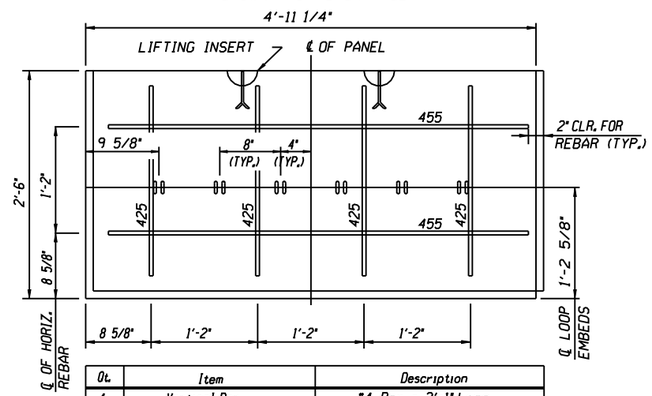
SHOWN FROM BACK FACE



Qt.	Item	Description
4	Vertical Bar	#4 Bar - 2'-11" Long
3	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
1	Loop Embeds	6 Connection Embed

TYPE-T4

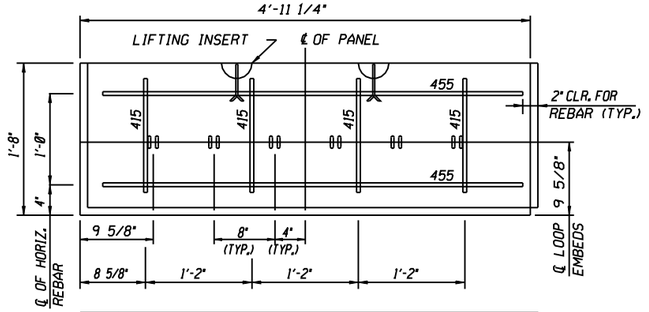
SHOWN FROM BACK FACE



Qt.	Item	Description
4	Vertical Bar	#4 Bar - 2'-1" Long
2	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
1	Loop Embeds	6 Connection Embed

TYPE-T5

SHOWN FROM BACK FACE



Qt.	Item	Description
4	Vertical Bar	#4 Bar - 1'-3" Long
2	Horizontal Bar	#4 Bar - 4'-7" Long
2	Lifting Insert	1 Ton Burke
1	Loop Embeds	6 Connection Embed

NOTES :

1. All Panel Reinforcing Steel To Be #4 Bars.
2. All Dimensions Shown Are To Front Face Of Panel, Unless Otherwise Noted.
3. Reinforcement For Partial Panels To Be Proportional To Full Panels.
4. All Reinforcing Bars Are To Be 2" Minimum Clear To The Sides Of The Panel.
5. All Panels Are To Be Properly Marked On The Back Face As Shown.
6. Reinforcement Lables Indicate Bar Size And Length.

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RETAINING WALL SYSTEMS SSL MSE PLUS WALL SYSTEM

INTERIM STANDARD

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REVISION NO.	SHEET NO.	INDEX NO.
04	14 of 14	5035

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

The Reinforced Earth Company

8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

TERRATREL™ A WIRE FACED MSE WALL SYSTEM

GENERAL NOTES

1. DESIGN IS BASED ON THE ASSUMPTION THAT THE MATERIAL WITHIN, BEHIND AND BENEATH THE REINFORCED VOLUME; METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED MATERIALS SHALL CONFORM TO THE TO SPECIFICATION SECTION 54B.

2. SOIL PARAMETERS:
   SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE SYSTEM. THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON THE ACTUAL SOIL CHARACTERISTIC UTILIZED AT THE SITE. THE VALUES OF FRICTION ANGLE (ϕ), COHESION (c), AND TOTAL UNIT WEIGHT (γ) SHALL BE PROVIDED IN THE SHOP DRAWINGS.

3. REINFORCING STRIPS FOR REINFORCED EARTH WALLS SHALL BE 1 31/32" WIDE AND 5/32" THICK, AND SHALL CONFORM TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-572 GRADE 65. GALVANIZATION SHALL BE APPLIED IN ACCORDANCE WITH ASTM A-123.

4. HA LADDERS SHALL BE SUPPLIED BY THE REINFORCED EARTH COMPANY, AND SHOP FABRICATED OF COLD DRAWN STEEL WIRE CONFORMING TO THE PHYSICAL AND MECHANICAL PROPERTIES OF ASTM A-82. ALL WELDING SHALL BE IN ACCORDANCE WITH ASTM A-185. GALVANIZING FOR PERMANENT WALL SYSTEMS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF ASTM A-123 OR AASHTO M111 (2 OZ/SQ. FT.). HA LADDER REINFORCEMENTS MAY BE USED ONLY ON WALLS WITH HEIGHTS 20 FT OR LESS.

5. THE MAXIMUM APPLIED BEARING PRESSURE AT THE FOUNDATION LEVEL IS AS SHOWN ON THE WALL ELEVATIONS FOR EACH DESIGN CASE. IT IS THE RESPONSIBILITY OF THE ENGINEER TO DETERMINE THAT THIS APPLIED BEARING PRESSURE IS ALLOWABLE FOR A SPECIFIC SITE.

6. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED VOLUME, AS DETERMINED BY THE ENGINEER, SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL OR OTHERWISE STABILIZED AS DIRECTED BY THE ENGINEER.

7. THE MINIMUM FACTORS OF SAFETY REQUIRED FOR DESIGN:

   OVERTURNING = 2.0
   SLIDING = 1.5
   INTERNAL PULLOUT = 1.5 (ALLOWABLE DEFORMATION = 0.75 INCH)
   BEARING CAPACITY = 2.5
   OVERALL STABILITY = 1.5
   STEEL SOIL REINFORCEMENT (AT END OF DESIGN LIFE)
   = 0.55Fy
   = 0.50Fu (AT NET SECTION OF BOLTED CONNECTION)
   WIRE FACING (AT END OF DESIGN LIFE) = 0.48Fy
   MAXIMUM PULLOUT FACTOR
   f* = 1.5 (FOR SAND)
   f* = 2.0 (FOR LIMEROCK)

LAYOUT

8. FOR LAYOUT OF THE WALLS, SEE RETAINING WALL CONTROL PLANS.

CONSTRUCTION

9. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 548. INSTALLATION OF REINFORCING LADDERS AND/OR STRIPS SHALL BE PERMITTED ONLY AFTER PLACEMENT AND COMPACTION OF THE BACKFILL MATERIAL HAS REACHED THE REQUIRED LEVEL.

10. FOR STRUCTURES IN EXCESS OF 20' IN HEIGHT OCCUR, THE FINISHED GRADE IN FRONT OF THE WALL SHALL BE PLACED AND COMPACTED BEFORE WALL CONSTRUCTION EXCEEDS A HEIGHT OF 20'. FINISHED GRADE BACKFILL SHALL BE COMPACTED TO 95% OF AASHTO T-180 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONFLICTING STRUCTURES

11. IF MANHOLES AND DROP INLETS ARE PRESENT, THEY SHALL BE LOCATED AS SHOWN ON THE WALL ELEVATIONS.

12. IF PILES ARE LOCATED WITHIN THE REINFORCED VOLUME, THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE WALL UNLESS A METHOD TO PROTECT THE STRUCTURE, WHICH IS ACCEPTABLE TO THE ENGINEER AND THE REINFORCED EARTH COMPANY, IS PROPOSED AND APPROVED IN WRITING.

13. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE LOCATION OF ANY GUARDRAIL POSTS WITHIN THE REINFORCED VOLUME. PRIOR TO PLACEMENT OF THE TOP LAYERS OF REINFORCEMENTS, INDIVIDUAL REINFORCING LADDERS AND/OR STRIPS MAY BE SYSTEMATICALLY SHIFTED TO AVOID THE POST LOCATIONS IF AUTHORIZED BY THE REINFORCED EARTH COMPANY. ANY DAMAGE DONE TO THE REINFORCING LADDERS AND/OR STRIPS DUE TO INSTALLATION OF GUARDRAIL POSTS SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

14. IF EXISTING OR FUTURE STRUCTURES, PIPES, FOUNDATIONS OR GUARDRAIL POSTS WHICH ARE WITHIN THE REINFORCED VOLUME INTERFERE WITH THE NORMAL PLACEMENT OF REINFORCING LADDERS AND/OR STRIPS AND SPECIFIC DIRECTION HAS NOT BEEN PROVIDED ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE REINFORCED EARTH COMPANY TO DETERMINE WHAT COURSE OF ACTION SHOULD BE TAKEN, UNLESS SHOWN OTHERWISE.

15. THE CONTRACTOR IS RESPONSIBLE FOR GRADUALLY DEFLECTING UPPER REINFORCING LADDERS AND/OR STRIPS DOWNWARD TO AVOID CONFLICTS WITH PAVING AND SUBGRADE PREPARATION. THE CONTRACTOR'S ATTENTION IS DIRECTED ESPECIALLY TO SITUATIONS WHERE ROADWAY SUPERELEVATION AND/OR SOIL MIXING ARE ANTICIPATED.

MATERIALS NOTES

16. SUPPLIES

    ONLY THE FOLLOWING MATERIALS ARE SUPPLIED BY THE REINFORCED EARTH COMPANY:

    - PREFABRICATED WIRE FACINGS
    - REINFORCING LADDERS AND/OR STRIPS
    - HAIRPIN CONNECTORS
    - BOLT SETS
    - CONNECTOR RODS
    - SOIL RETENTION FABRIC

    ANY OTHER MATERIALS CALLED FOR IN THE CONTRACT PLANS OR SPECIFICATIONS ARE TO BE SUPPLIED BY THE CONTRACTOR.

17. LADDER AND/OR STRIP LENGTHS

    THE REINFORCING LADDER AND/OR STRIP LENGTHS SHOWN ON THE PLANS ARE MEASURED FROM THE BACK FACE OF THE WIRE FACING PANELS TO THE LIMIT OF OF THE SELECT BACKFILL MATERIAL, AND ARE THE LENGTHS USED IN THE LADDER AND STRIP REINFORCEMENT CALCULATIONS.

18. THE REINFORCED EARTH COMPANY SUPPLIES WIRE FACINGS AND ACCESSORIES TO BE USED IN CONJUNCTION WITH OTHER MATERIALS IN THE CONSTRUCTION OF THE REINFORCED EARTH® RETAINING WALLS DETAILED HEREIN. THE WALL CONSTRUCTION PROCEDURES FURNISHED BY THE REINFORCED EARTH COMPANY IN ITS SPECIFICATIONS ARE INTENDED TO PROVIDE A GENERAL EXPLANATION OF THE SYSTEM. IT IS THE CONTRACTOR'S OBLIGATION TO DEVISE AND EXECUTE A PROJECT SPECIFIC ERECTION SEQUENCE, FACING UNLOADING, HANDLING SYSTEM, AND FALL PROTECTION SYSTEM. COMPLIANCE WITH THE GUIDELINES IN THE SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR OF ITS RESPONSIBILITY TO ADHERE TO THE PROJECT PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS OR COMPLIANCE WITH ALL FALL PROTECTION, SAFETY, LAWS, STANDARDS AND PROCEDURES AT THE JOB SITE. CONTRACTORS SHOULD TAKE SPECIAL PRECAUTIONS TO PREVENT THE FACINGS FROM SHIFTING OR FALLING DURING THE ERECTION PROCESS.

19. THE REINFORCED EARTH COMPANY IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY DESIGN INCLUDING FOUNDATION AND SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS.

20. THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO THE REINFORCED EARTH COMPANY, AND IS BEING FURNISHED FOR THE USE OF THE FLORIDA DEPARTMENT OF TRANSPORTATION ONLY IN CONNECTION WITH FDOT PROJECTS, AND THE INFORMATION CONTAINED HEREIN IS NOT TO BE TRANSMITTED TO ANY OTHER ORGANIZATION UNLESS SPECIFICALLY AUTHORIZED IN WRITING BY THE REINFORCED EARTH COMPANY. THE REINFORCED EARTH COMPANY IS EXCLUSIVE LICENSEE IN THE UNITED STATES UNDER PATIENTS ISSUED TO HENRI VIDAL, AND THE FURNISHING OF THESE DRAWINGS DOES NOT CONSTITUTE AN EXPRESSED OR IMPLIED LICENSE UNDER THE VIDAL PATENTS.

21. THESE DRAWINGS ARE CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF REINFORCED EARTH STRUCTURES ONLY.

DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
TERRATREL WIRE WALL

INTERIM STANDARD

SHEET NOS. 1 - 6 OF 6 ARE A REPLACEMENT OF INDEX NO. 5115 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

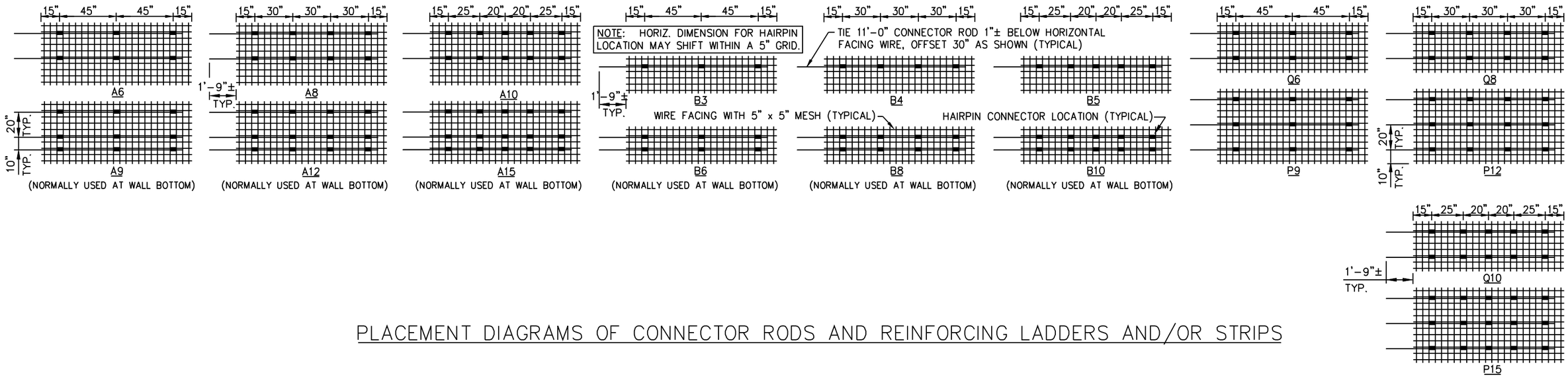
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 6	05115

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

KEY:

TYPE OF WIRE FACING SUPPLIED — A 8 — DESIGNATION FOR LADDER OR STRIP PLACEMENT (SEE PLACEMENT DIAGRAMS BELOW); NUMBER OF REINFORCING LADDERS OR STRIPS



PLACEMENT DIAGRAMS OF CONNECTOR RODS AND REINFORCING LADDERS AND/OR STRIPS

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04	2 of 6	05115

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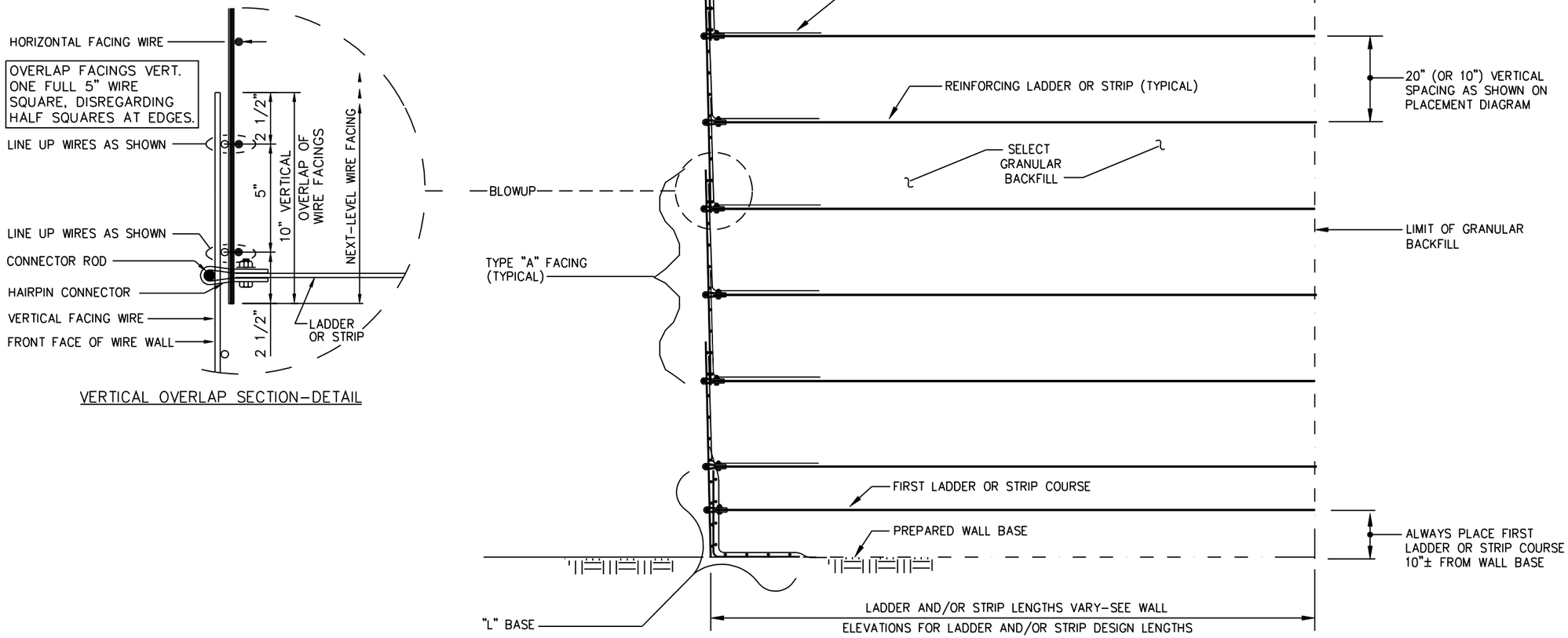

VERTICAL OVERLAP SECTION-DETAIL

TYPICAL TEMPORARY WIRE WALL SECTION

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REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 6	05115

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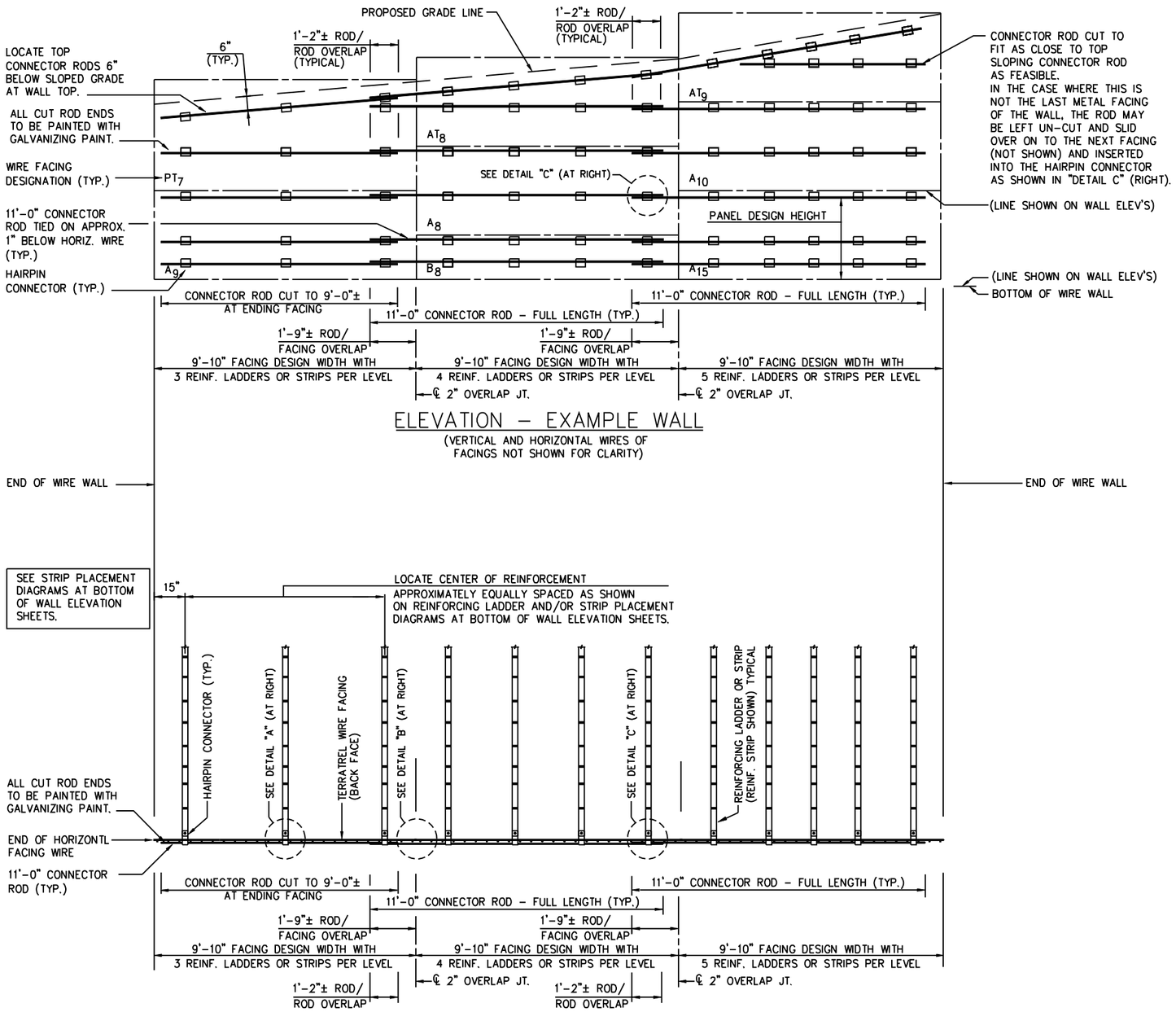
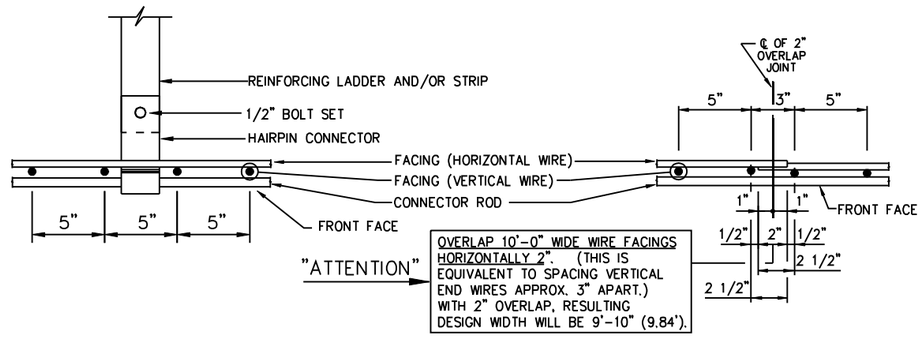


ELEVATION - EXAMPLE WALL

(VERTICAL AND HORIZONTAL WIRES OF FACINGS NOT SHOWN FOR CLARITY)

PLAN - EXAMPLE WALL



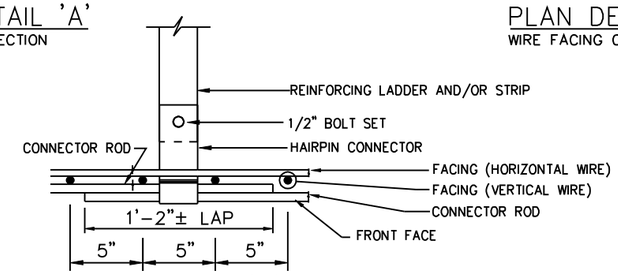
"ATTENTION" OVERLAP 10'-0" WIDE WIRE FACINGS HORIZONTALLY 2". (THIS IS EQUIVALENT TO SPACING VERTICAL END WIRES APPROX. 3" APART.) WITH 2" OVERLAP, RESULTING DESIGN WIDTH WILL BE 9'-10" (9.84').

PLAN DETAIL 'A'

STRIP CONNECTION

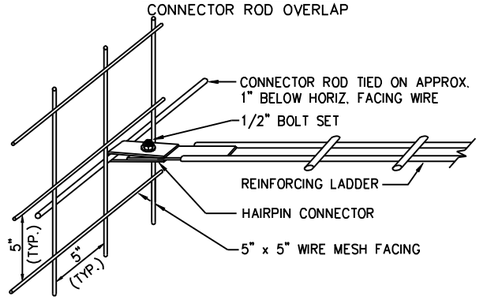
PLAN DETAIL 'B'

WIRE FACING OVERLAP JOINT

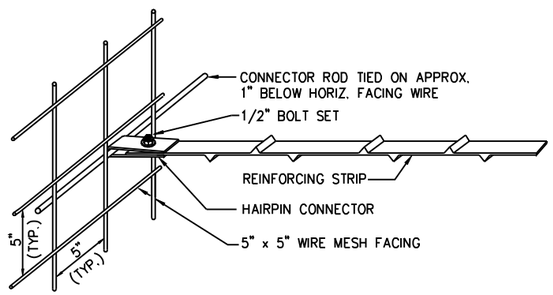


PLAN DETAIL 'C'

CONNECTOR ROD OVERLAP



CONNECTION OF LADDER TO FACING IN PERSPECTIVE



CONNECTION OF STRIP TO FACING IN PERSPECTIVE

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04	4 of 6	05115

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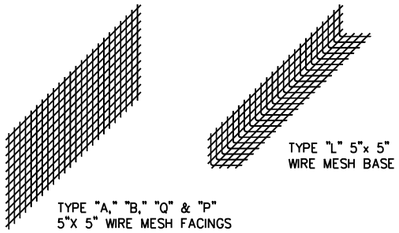
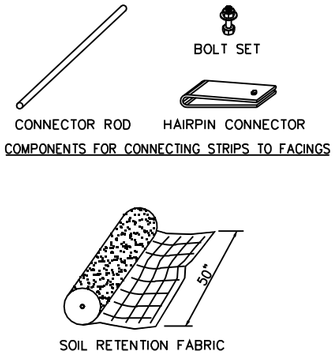
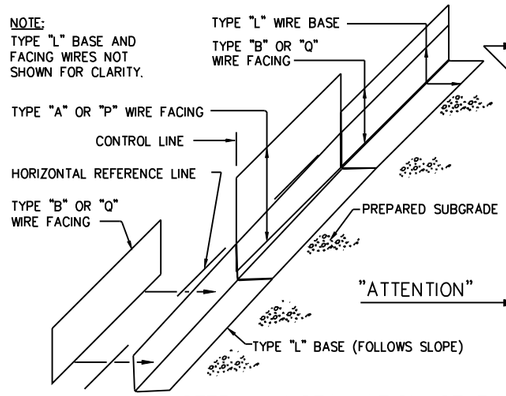




COMPONENTS FOR CONNECTING STRIPS TO FACINGS

TERRATREL WIRE WALL COMPONENTS



- SET TYPE "L" BASES DIRECTLY ON SUBGRADE (FOLLOW SLOPE OR BOTTOM OF WALL ELEVATION SHOWN ON WALL ELEV. SHEETS). OVERLAP EACH BASE 2" HORIZ. (OR ALONG SLOPE) AS SHOWN ON THE "EXAMPLE WALL" SHEET OF THESE PLANS.

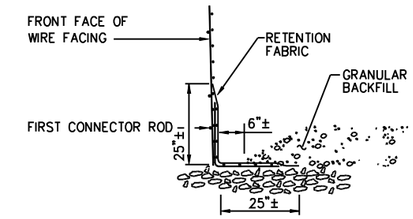
"ATTENTION"

- NOTE FACING DESIGNATION ("A_6" FOR EXAMPLE) ON WALL ELEVATION AND THEN REFER TO FACING DIAGRAMS AT THE BOTTOM OF THE SAME SHEET TO FIND ARRANGEMENT OF THE HAIRPIN CONNECTORS FOR THE REINFORCEMENTS (LADDERS AND/OR STRIPS).
- PLACE THE NUMBER OF REQUIRED HAIRPIN CONNECTORS (AS INDICATED ON IN FACING DIAGRAM AT BOTTOM OF EACH ELEVATION SHEET) ON TO CONNECTOR ROD, AND TIE-WIRE THE ROD TO THE FACING WHERE SHOWN IN FACING DIAGRAM AND PER THE "EXAMPLE WALL" SHEET.

"ATTENTION"

- TIE-WIRE BOTTOM FACINGS SECURELY TO TYPE "L" BASES, OVERLAPPING EACH FACING 2" HORIZONTALLY, SETTING THEM HORIZONTALLY TO THE PROPER DESIGN ELEVATION PER THE WALL ELEVATION SHEETS (EXCEPT WHEN NOTE ON ELEVATION SHEETS REQURE FACINGS TO FOLLOW SLOPE), AND MAKING SURE HORIZONTAL WIRES OF FACINGS ARE LOCATED ON THE FILL SIDE OF THE WALL.

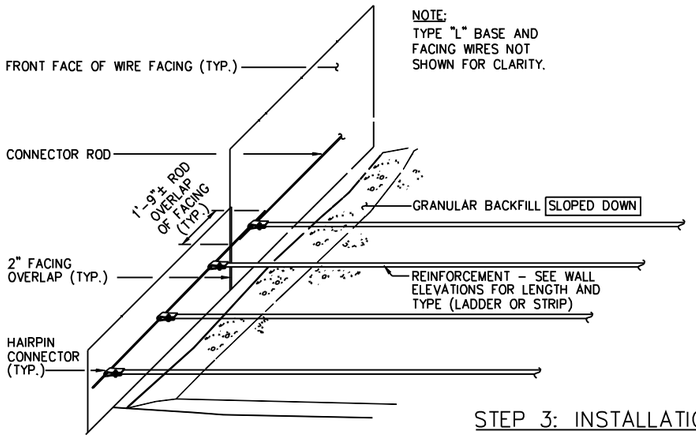
STEP 1: INSTALLATION OF BASES & 1st. FACINGS



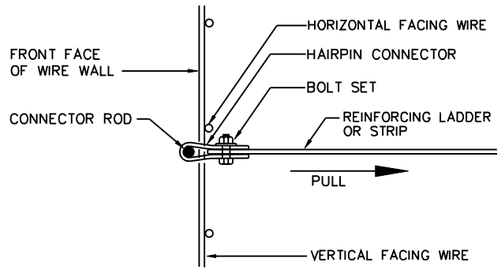
- PLACE 50"-WIDE RETENTION FABRIC AS SHOWN.
- PLACE AND COMPACT FIRST GRANULAR BACKFILL LIFT TO LEVEL OF FIRST CONNECTOR ROD LOCATION.

CAUTION ► FILL MUST BE SLOPED DOWN AS SHOWN TO PREVENT HORIZONTAL DISPLACEMENT OF FACING PRIOR TO CONNECTION OF LADDERS AND/OR STRIPS.

STEP 2: 1st. BACKFILL LIFT

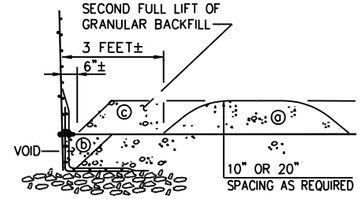


- BOLT REINFORCING LADDER AND/OR STRIPS TO HAIRPIN CONNECTORS.
- FIRMLY PULL ON EACH REINFORCING LADDER AND/OR STRIP UNTIL ASSEMBLY IS TIGHT.



SECTION DETAIL

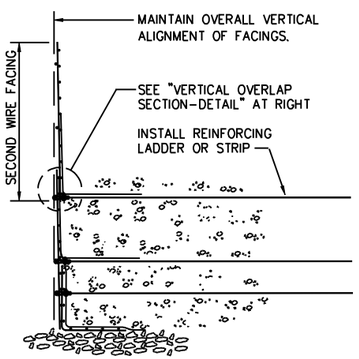
STEP 3: INSTALLATION OF 1st. REINFORCING LADDERS AND/OR STRIPS



- ⓐ PLACE ENOUGH BACKFILL OVER REINFORCING LADDERS AND/OR STRIPS TO SECURE POSITION AS SHOWN.
- ⓑ THEN FILL VOID UNDER STRIPS NEAR FACING.
- ⓒ THEN PLACE AND COMPACT SECOND GRANULAR BACKFILL LIFT TO (10" MAX.) LEVEL OF NEXT CONNECTOR ROD LOCATION.

CAUTION ► FILL MUST BE SLOPED DOWN AS SHOWN TO PREVENT HORIZONTAL DISPLACEMENT OF FACING PRIOR TO CONNECTION OF LADDERS AND/OR STRIPS.

STEP 4: 2nd. BACKFILL LIFT

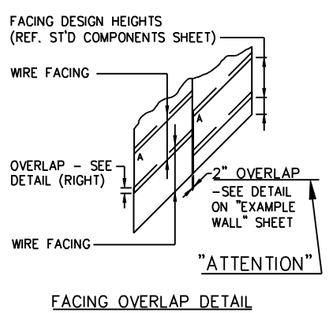


SECTION

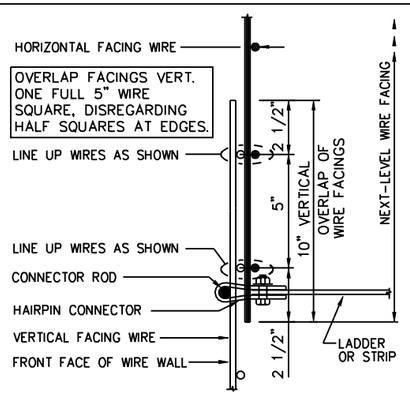
- POSITION SECOND FACING DIRECTLY BEHIND AND OVERLAP LOWER FACING AS SHOWN IN DETAIL (RIGHT). TIE-WIRE THE LOWER PORTION OF SECOND FACING TO ADJACENT FACINGS.
- PLACE STRIPS AS PER "STEP 3."
- BACKFILL AS PER "STEP 4a AND 4b."
- PLACE 50"-WIDE RETENTION FABRIC AS SHOWN IN "STEP 2."

  NOTE: FABRIC MUST ALWAYS BE APPROX. 25" VERTICAL, ALLOWING 5"± OVERLAP ON ADJACENT LAYERS. WHEN WALL ELEVATIONS CALL FOR 10" SPACING BETWEEN LADDERS AND/OR STRIPS, FABRIC MUST BE SLIT FOR PENETRATION OF MID-LEVEL LADDERS AND/OR STRIPS.
- BACKFILL AS PER "STEP 4c."

NOTES



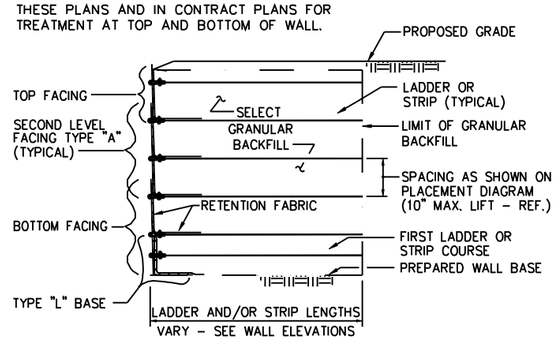
FACING OVERLAP DETAIL



VERTICAL OVERLAP SECTION-DETAIL

STEP 5: INSTALLATION OF 2nd. FACING UNITS

NOTE:
SEE "TYPICAL WALL SECTION" IN THESE PLANS AND IN CONTRACT PLANS FOR TREATMENT AT TOP AND BOTTOM OF WALL.



- REPEAT "STEP 5" UNTIL WALL IS TOPPED OUT AS SHOWN ABOVE.

COMPLETED TERRATREL WALL SECTION

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
TERRATREL WIRE WALL

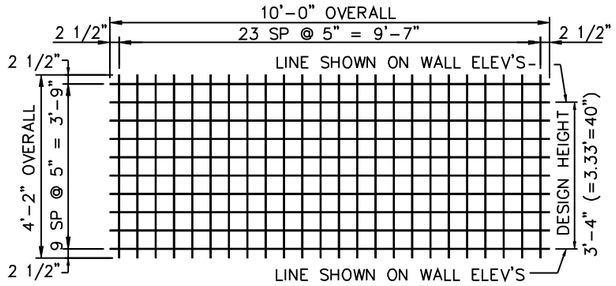
INTERIM STANDARD

SHEET NOS. 1 - 6 OF 6 ARE A REPLACEMENT OF INDEX NO. 5115 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

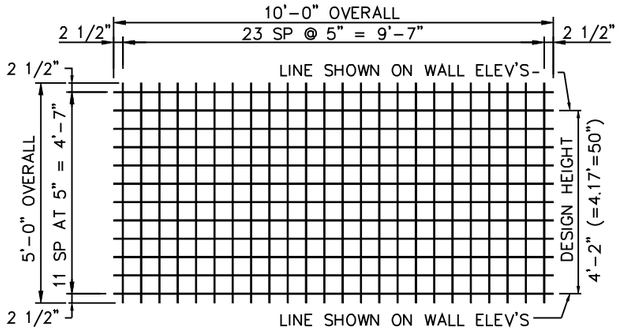
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 6	05115

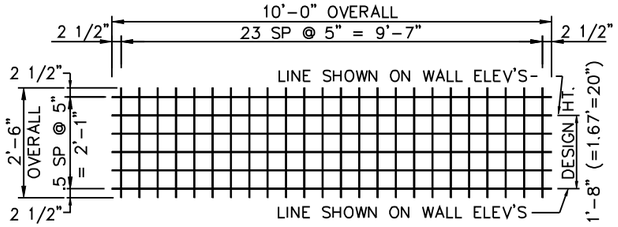
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



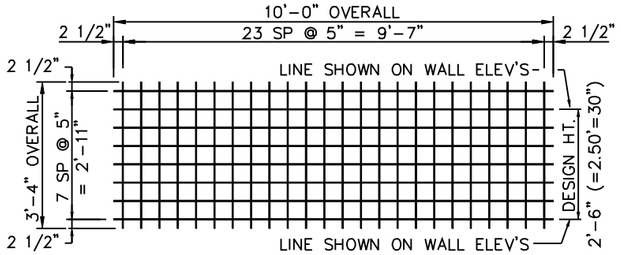
ELEVATION – TYPE "A"
5"x 5" WIRE MESH FACING



ELEVATION – TYPE "P"
5"x 5" WIRE MESH FACING



ELEVATION – TYPE "B"
5"x 5" WIRE MESH FACING



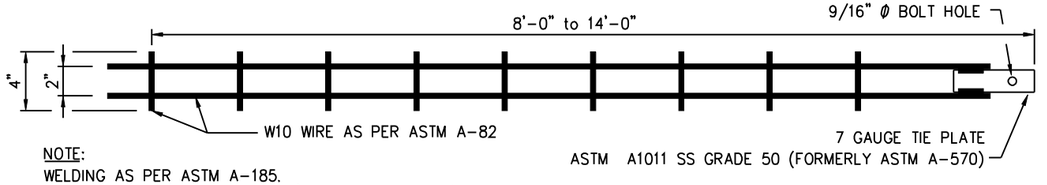
ELEVATION – TYPE "Q"
5"x 5" WIRE MESH FACING

FACINGS MESH (TYPES A, B, P & Q): 5" x 5" – W8 x W8 WWF

BASE MESH (TYPE L): 5" x 5" – W5 x W5 WWF

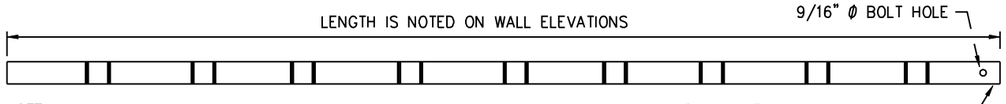
COMPONENTS FOR THIS PROJECT MAY BE BLACK OR GALVANIZED STEEL AS SPECIFIED.

NOTE: EVEN WHEN BLACK STEEL IS SPECIFIED, SOME OR ALL ELEMENTS MAY BE GALVANIZED AT THE DISCRETION OF RECO.



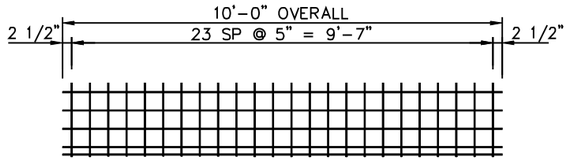
NOTE:
WELDING AS PER ASTM A-185.
GALVANIZATION (WHEN SPECIFIED) AS PER ASTM A-123.

HA REINFORCING LADDER

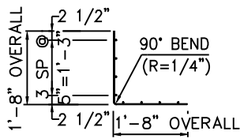


NOTE:
GALVANIZATION (WHEN SPECIFIED) AS PER ASTM A-123.

HA REINFORCING STRIP – 2" x 5/32"

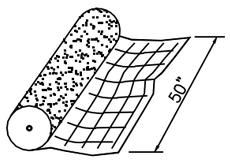


ELEVATION



SECTION

ELEVATION – TYPE "L"
5"x 5" WIRE MESH BASE



SOIL RETENTION FABRIC –
CARTHAGE MILLS 15% WOVEN
FILTER CLOTH OR EQUAL

NOTES FOR WIRE FACINGS AND BASE

1) WIRE FACINGS AND BASE SHALL BE SHOP FABRICATED OF COLD DRAWN STEEL WIRE CONFORMING TO THE MINIMUM REQUIREMENTS OF ASTM A-82 (AASHTO M 32) AND WELDED INTO THE FINISHED CONFIGURATION IN ACCORDANCE WITH ASTM A-185 (AASHTO M55).
2) DIMENSIONAL TOLERANCE = ±1/4".
3) DESIGN LENGTH = 9'-10" (FACINGS & BASE OVERLAPPED 2").
4) DESIGN HEIGHT AS SHOWN (FACINGS OVERLAPPED 10" OR TWO 5" WIRE SQUARES.)

ASTM A615 GRADE 60
GALVANIZATION (WHEN SPECIFIED)
AS PER ASTM-123
1/2" Ø ROD (SMOOTH OR DEFORMED)

CONNECTOR ROD

(TO BE TIED ON TO WIRE FACINGS IN FIELD)

1/2" Ø ASTM A325M BOLT
WITH NUT & WASHER
GALVANIZATION (WHEN SPECIFIED)
AS PER ASTM 153, CLASS C

BOLT SET

ASTM A1011 SS GRADE 50 (FORMERLY ASTM A-570)
GALVANIZATION (WHEN SPECIFIED) AS PER ASTM A153

HAIRPIN CONNECTOR

COMPONENTS FOR CONNECTING REINFORCING LADDERS AND/OR STRIPS TO WIRE FACINGS

DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
THE REINFORCED EARTH COMPANY
TERRATREL WIRE WALL

INTERIM STANDARD

SHEET NOS. 1 - 6 OF 6 ARE A REPLACEMENT OF INDEX NO. 5115 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	6 of 6	05115

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

CONSTRUCTION REQUIREMENTS FOR PLACEMENT OF TENSAR GEOGRIDS AND BACKFILL SOILS FOR TENSAR WELDED WIRE FORM REINFORCED RETAINING WALLS

1.0 MATERIALS

1.1 GEOGRID REINFORCEMENT SHALL BE TENSAR UNIAXIAL AND BIAXIAL GEOGRIDS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.

1.2 BODKIN BARS SHALL BE 4½" x ¼" HDPE BARS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.

1.2.1 CONNECTION ROD SHALL BE 4'-6" x 3/8" ∅ (25% GLASS FILLED HDPE.)

1.3 GEOTEXTILE FABRIC SHALL BE 8 oz/SY (MIN.) NON-WOVEN, NEEDLE-PUNCHED POLYPROPYLENE WITH MIN. PERMITTIVITY OF 1.0 SEC^{-1}.

1.4 BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 548 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

1.5 FACING SHALL BE PRE-FABRICATED BLACK STEEL WELDED WIRE FORMS TOGETHER WITH EITHER BIAXIAL GEOGRID WRAP OR OPTIONAL MECHANICAL CONNECTION SYSTEM. WIRE FORM GEOMETRY SHALL BE AS DETAILED IN THE CONSTRUCTION DRAWINGS.

1.6 TENSAR EARTH TECHNOLOGIES, INC. SHALL PROVIDE TO THE CONTRACTOR THE FOLLOWING MATERIALS ONLY:

WWF FACING FORMS AND STRUTS
FILTER FABRIC
GEOGRID
GEOGRID CONNECTOR, AS APPLICABLE

2.0 TECHNICAL REQUIREMENTS

2.1 FILL MATERIALS SHALL BE PLACED FROM THE BACK OF THE WELDED WIRE FORMS TOWARDS THE ENDS OF THE GEOGRID TO ENSURE FURTHER TENSIONING.

2.2 WELDED WIRE FACING SHALL BE MONITORED FOR DEFORMATION AND COMPLIANCE TO FDOT STANDARD SPECIFICATIONS SECTION 548 DURING FILL PLACEMENT AND COMPACTION. COMPACTION EQUIPMENT AND OPERATION PROCEDURES MAY HAVE TO BE MODIFIED TO PREVENT EXCESSIVE DEFORMATION OF THE FLEXIBLE WELDED WIRE FACING.

2.3 TIE WIRES OR HOG RINGS MAY BE REQUIRED IF WWF FACING MOVES DURING BACKFILL OPERATIONS.

3.0 TENSAR GEOGRID PLACEMENT

3.1 TENSAR GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE SHOP DRAWINGS.

3.2 TENSAR GEOGRID REINFORCEMENTS SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH(S). THE BODKIN CONNECTION SHALL NOT BE UTILIZED FOR SPLICING GEOGRID UNLESS PRE-APPROVED BY THE ENGINEER.

3.2.1 IF PRE-APPROVED, TENSAR UNIAXIAL GEOGRIDS MAY BE SPLICED UTILIZING THE BODKIN CONNECTION DETAIL. NO MORE THAN ONE SPLICE SHALL BE ALLOWED IN ANY ONE LENGTH OF REINFORCEMENT AND NO SPLICES SHALL BE ALLOWED FOR GEOGRIDS LESS THAN 6 FEET IN LENGTH (EACH). NO SPLICE SHALL BE PLACED HORIZONTALLY OR VERTICALLY ADJACENT TO ANOTHER SPLICE.

3.3 PRIOR TO PLACING FILL, THE GEOGRID MATERIALS SHALL BE PLACED TO LAY FLAT AND PULLED TAUT TO REMOVE SLACK IN THE GEOGRIDS.

3.4 TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM BACKFILL THICKNESS OF 6 INCHES IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.

3.5 RUBBER-TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

3.6 TENSAR UNIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE. TENSAR BIAXIAL GEOGRID SHALL BE ROLLED OUT ALONG THE WALL FACE (MACHINE DIRECTION PARELLEL TO WALL FACE).

3.6.1 UNIAXIAL (UX) GEOGRIDS SHALL BE CUT NEXT TO THE CROSS-MACHINE DIRECTION (TRANSVERSE) BAR. BIAXIAL (BX) GEOGRIDS SHALL BE CUT NEXT TO THE MACHINE DIRECTION BAR (LONGITUDINAL RIB).

3.7 FOR THE BIAXIAL GEOGRID WRAP FACING OPTION, THE UNIAXIAL GEOGRIDS, SHALL BE CUT AND PLACED SO THAT A TRANSVERSE BAR IS EXTENDED TO THE VERTICAL LEG OF THE WELDED WIRE FORM.

3.8 A MINIMUM OF 3 INCHES OF FILL MATERIAL SHALL BE REQUIRED BETWEEN LAYERS OF BIAXIAL AND UNIAXIAL GEOGRIDS, UNLESS OTHERWISE SHOWN.

4.0 CHANGES TO GEOGRID LAYOUT OR PLACEMENT

4.1 NO CHANGES TO THE TENSAR GEOGRID LAYOUT, INCLUDING, BUT NOT LIMITED TO, LENGTH, GEOGRID TYPE, OR ELEVATION, SHALL BE MADE WITHOUT THE EXPRESS, WRITTEN CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

5.0 DRAINAGE

5.1 THE TENSAR REINFORCED WALL HAS BEEN DESIGNED ON THE ASSUMPTION THAT THE REINFORCED BACKFILL MATERIAL SHALL BE FREE OF SUBSURFACE SEEPAGE. PERMANENT SUBSURFACE WATER (SEEPAGE) COLLECTION AND DIVERSION SHALL BE THE RESPONSIBILITY OF OTHERS.

5.2 AT THE END OF EACH WORK DAY, THE BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE AT A MINIMUM OF 2 PERCENT SLOPE AND A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE WALL CREST TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALL.

5.3 AT THE END OF EACH WORK DAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.

5.4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR DRAINAGE CONTROL AS NEEDED DURING CONSTRUCTION.

6.0 DESIGN PARAMETERS

6.1 SOIL PARAMETERS

SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM. IF SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL ARE PROVIDED IN THE WALL CONTROL DRAWINGS, THEN THE CONTRACTOR SHALL VERIFY THAT THE SOIL MATERIALS COMPLY WITH THOSE GIVEN PARAMETERS. IF SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL ARE NOT PROVIDED IN THE WALL CONTROL DRAWINGS, THEN THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON THE ACTUAL SOIL TO BE UTILIZED IN THE CONSTRUCTION. THE VALUES OF FRICTION ANGLE, APPARENT COHESION AND UNIT WEIGHT SHALL BE SHOWN ON THE SHOP DRAWINGS.

6.2 DESIGN

THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS. ON THE BASIS OF THIS INFORMATION, TENSAR EARTH TECHNOLOGIES, INC. IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR EXTERNAL STABILITY, GLOBAL STABILITY AND FOUNDATION.

6.2.1 FACTORS OF SAFETY:

6.2.1.1 INTERNAL STABILITY

MAXIMUM GEOGRID DESIGN STRENGTH	= 0.29 ULT
MINIMUM FACTOR OF SAFETY FOR GEOGRID PULLOUT	= 1.5
MINIMUM FACTOR OF SAFETY FOR SLIDING AT LOWEST GEOGRID	= 1.5
GEOGRID-SOIL INTERACTION COEFFICIENT FOR:	
UXMSE GEOGRID	= 0.55 – 0.8
BX GEOGRID	= 0.8
PERCENT COVERAGE OF GEOGRID	= VARIES

6.2.1.2 SLIDING AND OVERTURNING:

MINIMUM FACTOR OF SAFETY FOR SLIDING	= 1.5
MINIMUM FACTOR OF SAFETY FOR OVERTURNING	= 2.0

SLIDING AND OVERTURNING ARE THE RESPONSIBILITY OF OTHERS. THE EVALUATION OF SLIDING AND OVERTURNING AND THEIR EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR SLIDING OR OVERTURNING.

6.2.1.3 GLOBAL STABILITY:

GLOBAL STABILITY INCLUDING SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS. THE EVALUATION OF GLOBAL STABILITY AND ITS EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR GLOBAL STABILITY.

6.2.1.4 FOUNDATION:

FOUNDATION, INCLUDING FOUNDATION PREPARATION AND THE EVALUATION OF BEARING CAPACITY, TOTAL AND DIFFERENTIAL SETTLEMENT ARE THE RESPONSIBILITY OF OTHERS. SETTLEMENT AND ITS EFFECT ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILTY FOR FOUNDATION.

7.0 SPECIAL PROVISIONS

7.1 WALL ELEVATION VIEWS AND LOCATIONS, AND GEOMETRY OF EXISTING AND PROPOSED STRUCTURES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO THE PREPARATION OF THE SHOP DRAWINGS.

7.2 TENSAR EARTH TECHNOLOGIES, INC. ASSUMES NO LIABILITY FOR INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS, SUITABILITY OF SOIL DESIGN PARAMETERS AND INTERPRETATION OF SUBSURFACE GROUNDWATER CONDITIONS.

7.3 ANY REVISIONS TO STRUCTURE GEOMETRY OR THE STATED DESIGN PARAMETERS ON THE WALL CONTROL DRAWINGS OR SHOP DRAWINGS SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

7.4 PRIOR TO AND DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS ARE AS SHOWN ON THE SHOP DRAWINGS. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE ONSITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.

7.5 THE SOIL DESIGN PARAMETERS SHOWN ON THE SHOP DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

7.6 SEE CONTROL DRAWINGS, FDOT STANDARD SPECIFICATIONS AND PROJECT SPECIAL PROVISIONS FOR ADDITIONAL REQUIRED MATERIALS AND METHODS.

7.7 A COPY OF THE TENSAR EARTH TECHNOLOGIES, INC. TEMPORARY RETAINING WALL SYSTEM INSTALLATION GUIDELINES MUST BE ON SITE AT ALL TIMES DURING WALL CONSTRUCTION.

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

THIS DESIGN IS BASED UPON SPECIFIC PROPERTIES OF TENSAR PRODUCTS (GEOGRIDS, DRAINAGE COMPOSITES AND EROSION MEDIA), WHICH ARE PROPRIETARY TO THE TENSAR CORPORATION 1210 CITIZENS PARKWAY, MORROW GA. 30260. ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS WILL INVALIDATE THIS DESIGN. THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED WHOLE OR IN PART, NOR DISCLOSED TO OTHERS, WITHOUT THE CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

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Tensar •
Tensar Earth Technologies, Inc.
5883 Glenridge Drive, Ste 200
Atlanta, Georgia 30328
(404) 250-1290

DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES
TEMPORAY RETAINING WALL

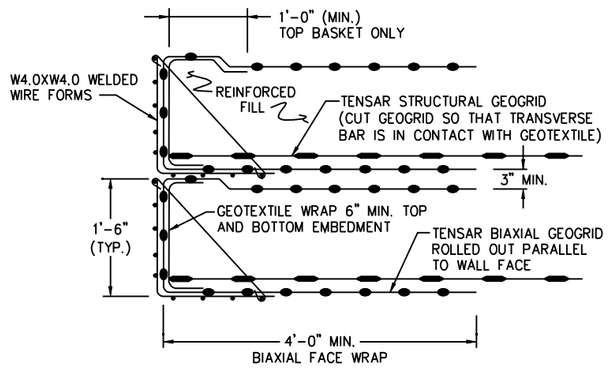
INTERIM STANDARD

SHEET NOS. 1 - 5 OF 5 ARE A REPLACEMENT OF INDEX NO. 5125 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

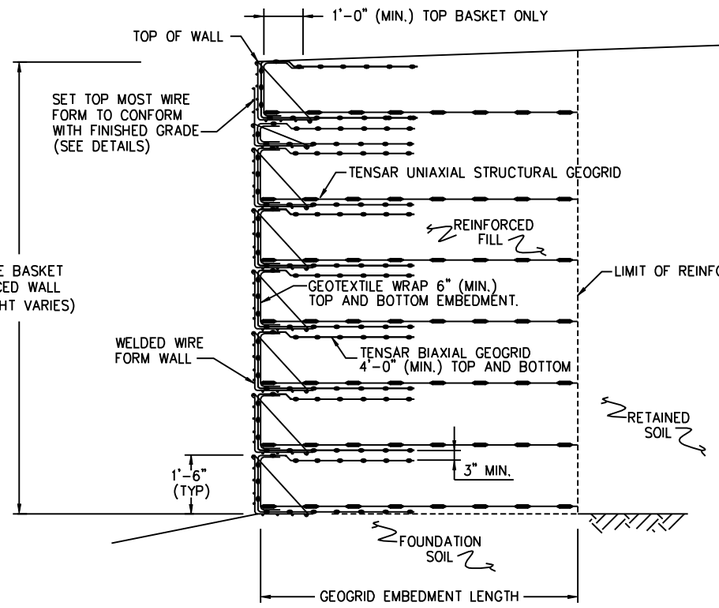
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 5	05125

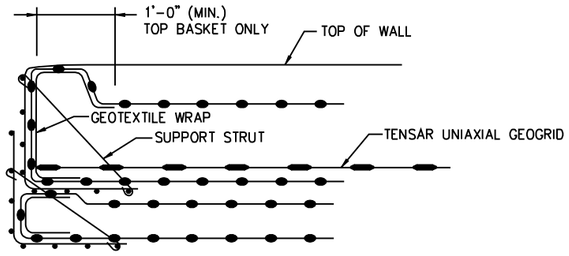
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



WALL FACE DETAIL
NOT TO SCALE

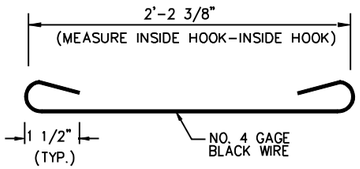


TYPICAL CROSS-SECTION
NOT TO SCALE

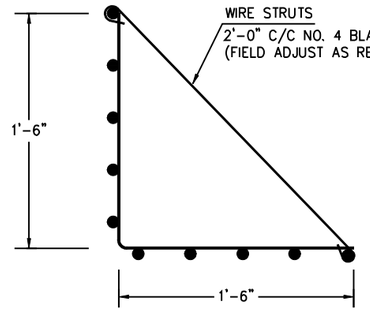


SET TOP MOST WIRE FORM INSIDE WIRE FORM BELOW TO FOLLOW GRADE. ALTERNATIVELY, CONTRACTOR MAY CUT OR BEND TOP BASKET TO MATCH DESIRED GRADE.

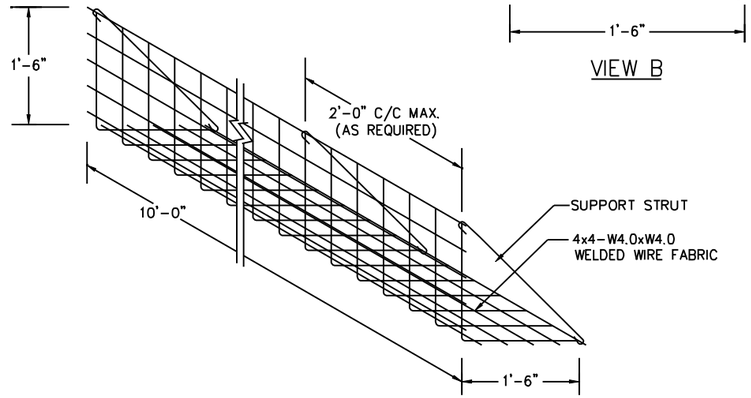
TOP WIRE BASKET DETAIL
NOT TO SCALE



SUPPORT STRUT

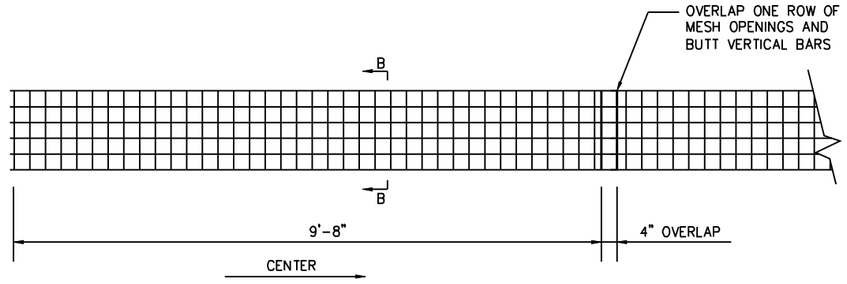


VIEW B



NOTES:

1. FACING TO CONSIST OF PREFABRICATED WWF 4x4-W4.0xW4.0 FORMS PER ASTM A497.
2. ALL FORMS AND STRUTS WILL BE FABRICATED WITH BLACK WIRE.
3. OVERALL LENGTH OF WIRE FORMS IS 10'-0". EFFECTIVE CONSTRUCTED WIDTH IS 9'-8" WITH 4" OVER LAPPING AT ENDS.



WELDED WIRE FORM DETAIL
FOR BIAXIAL GEOGRID WRAP FACING
NOT TO SCALE

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

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DATE : 01-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS TENSAR EARTH TECHNOLOGIES TEMPORAY RETAINING WALL

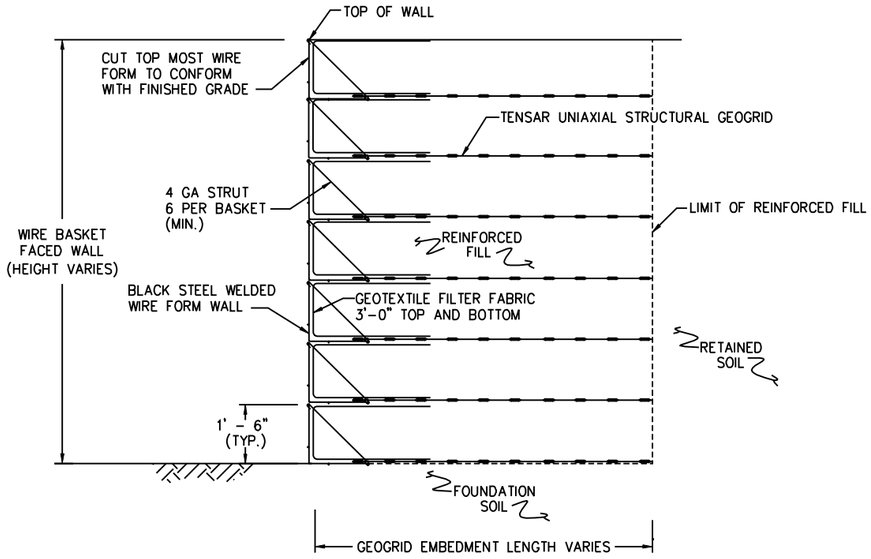
INTERIM STANDARD

SHEET NOS. 1 - 5 OF 5 ARE A REPLACEMENT OF INDEX NO. 5125 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

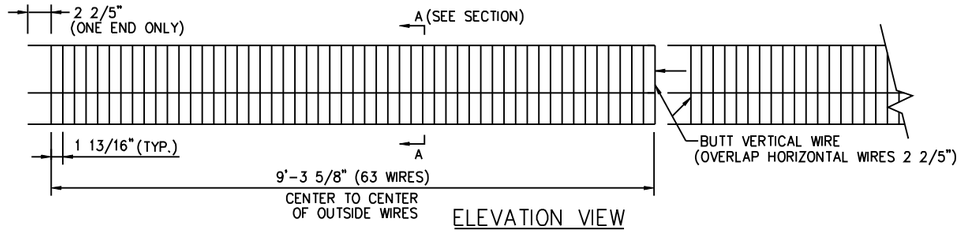
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	2 of 5	05125

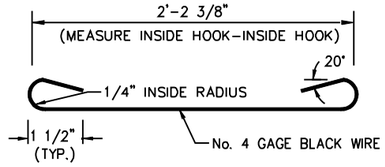
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



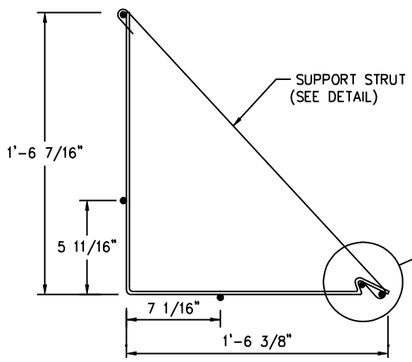
OPTIONAL TYPICAL CROSS-SECTION
NOT TO SCALE



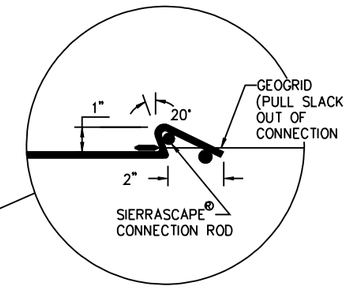
ELEVATION VIEW



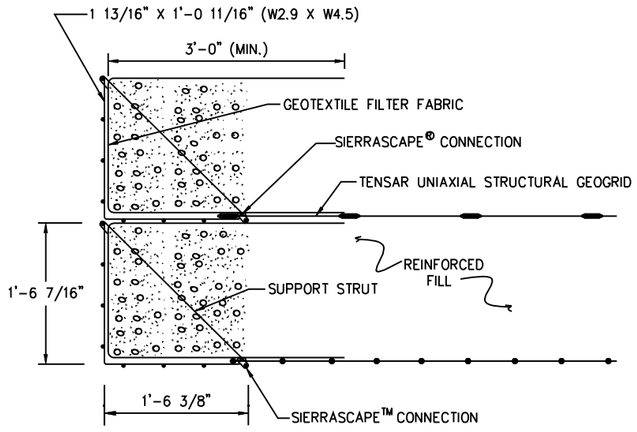
SUPPORT STRUT DETAIL



SECTION A-A



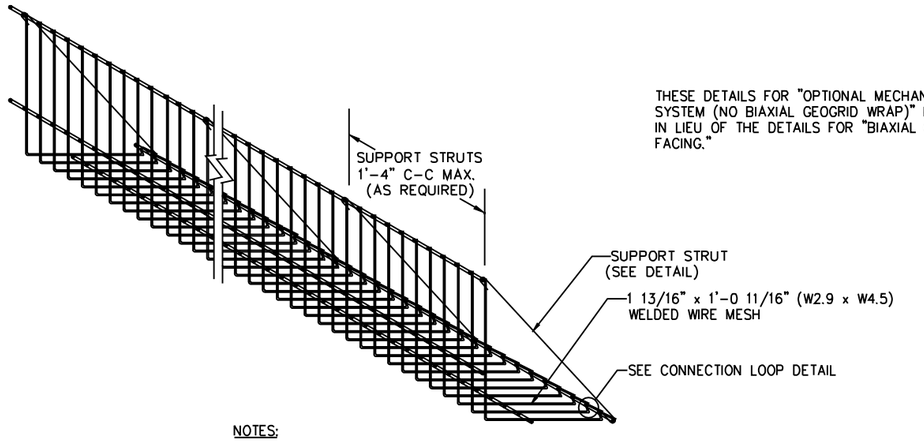
CONNECTION LOOP DETAIL



NOTES:

1. FACING TO CONSIST OF PREFABRICATED WWM 1 13/16" x 1'-0 11/16" (W2.9 X W4.5) FORMS, PER ASTM A497.
2. ALL FORMS AND STRUTS WILL BE FABRICATED WITH BLACK WIRE.

OPTIONAL WALL FACE DETAIL
NOT TO SCALE



THESE DETAILS FOR "OPTIONAL MECHANICAL CONNECTION SYSTEM (NO BIAXIAL GEOGRID WRAP)" MAY BE USED IN LIEU OF THE DETAILS FOR "BIAXIAL GEOGRID WRAP FACING."

NOTES:

1. FACING TO CONSIST OF PREFABRICATED WWF 1 13/16" x 1'-0 11/16" (W2.9 x W4.5) FORMS, PER ASTM A497.
2. ALL FORMS AND STRUTS WILL BE FABRICATED WITH BLACK WIRE.
3. OVERALL LENGTH OF WIRE FORMS IS 9'-3 5/8".

SIERRASCAPE® FACING UNIT
NOT TO SCALE

OPTIONAL MECHANICAL CONNECTION SYSTEM (NO BIAXIAL GEOGRID WRAP)

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
TENSAR EARTH TECHNOLOGIES
TEMPORAY RETAINING WALL

INTERIM STANDARD

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

SHEET NOS. 1 - 5 OF 5 ARE A REPLACEMENT OF INDEX NO. 5125 OF THE DESIGN STANDARDS BOOKLET DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
04	3 of 5	05125

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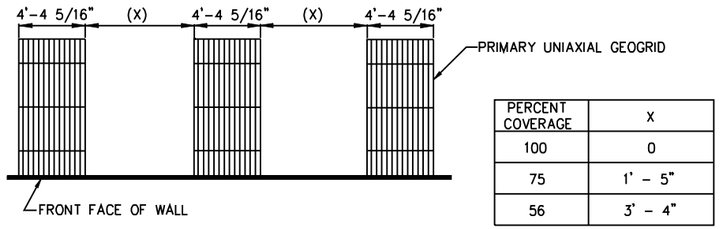


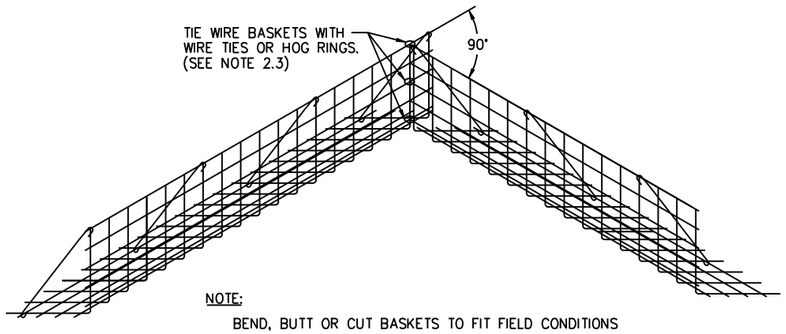
PERCENT COVERAGE	X
100	0
75	1' - 5"
56	3' - 4"

NOTE:

ALTERNATE LAYERS OF UNIAXIAL PRIMARY REINFORCEMENT SHALL BE PLACED IN STAGGERED PATTERN SUCH THAT THE LAYER ABOVE IS CENTERED ON SPACE BELOW.

TYPICAL GEOGRID COVERAGE

NOT TO SCALE

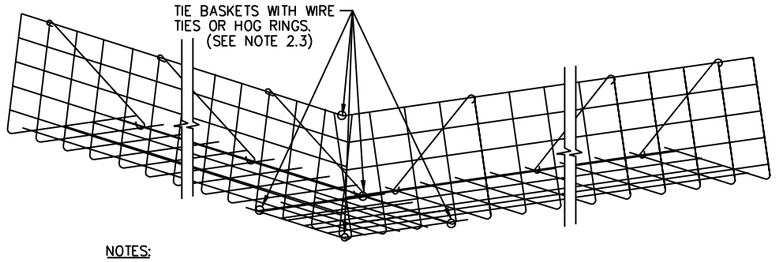


NOTE:

BEND, BUTT OR CUT BASKETS TO FIT FIELD CONDITIONS

INSIDE CORNER DETAIL

NOT TO SCALE



NOTES:

BEND OR CUT BASKETS TO FIT FIELD CONDITIONS AND ENSURE THAT GEOTEXTILE FILTER FABRIC OVERLAP 1'-0" MINIMUM

OUTSIDE CORNER DETAIL

NOT TO SCALE

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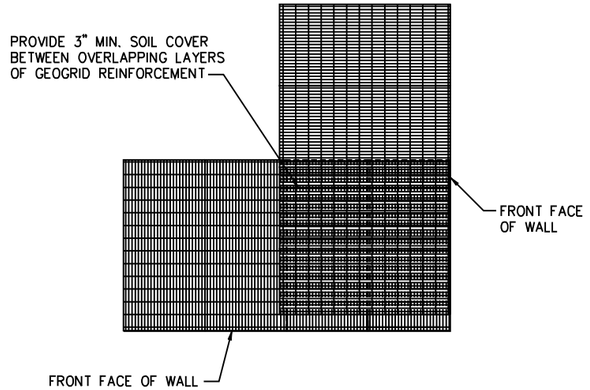
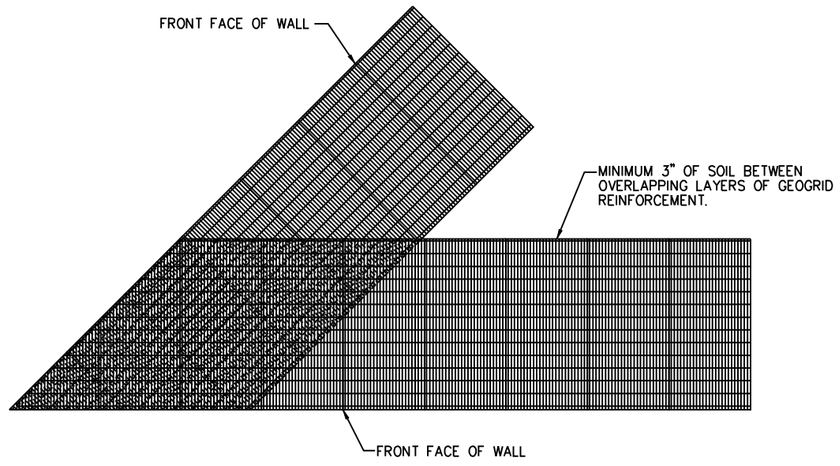


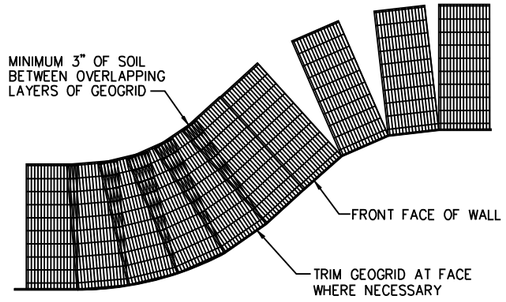
GEOGRID 90° CORNER DETAIL

NOT TO SCALE



GEOGRID ACUTE CORNER DETAIL

NOT TO SCALE



GEOGRID PLACEMENT ON CURVES

NOT TO SCALE

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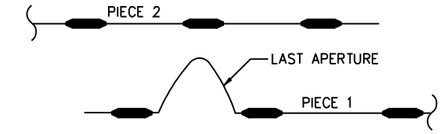
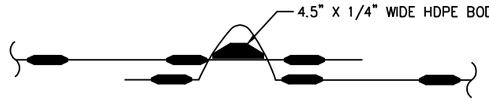
TO FORM A BODKIN CONNECTION FOR SPLICING GEOGRID:

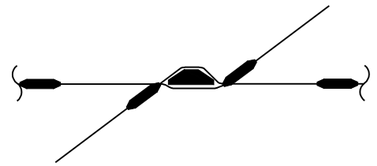
1. BEND THE LAST APERTURE OF ONE PIECE OF GEOGRID AS SHOWN.



2. PASS THE RIBS OF THE BENT APERTURES THROUGH THE RIBS OF THE SECOND PIECE OF GEOGRID AND INSERT THE BODKIN BAR INTO THE SPACE BETWEEN THE TWO GEOGRID LAYERS.



3. PULL GEOGRID TAUT TO TENSION CONNECTION.

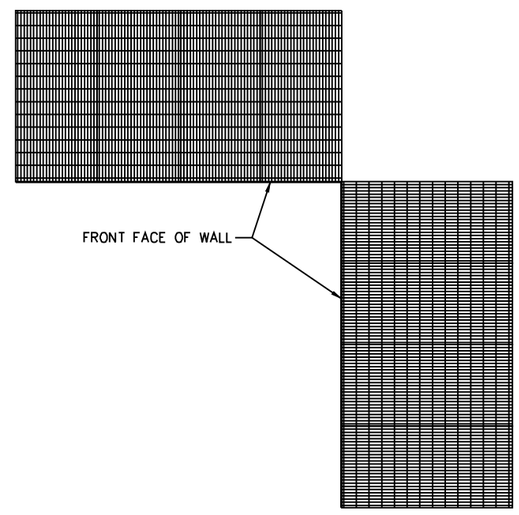


NOTE:

IT IS RECOMMENDED THAT THE SPLICED GEOGRID PIECE ON EITHER SIDE OF THE BODKIN CONNECTION BE AT LEAST 6 FEET LONG UNLESS THE GEOGRID TERMINATES IN A FIXED CONNECTION

GEOGRID SPLICE BODKIN CONNECTION

NOT TO SCALE



GEOGRID 90° INSIDE CORNER DETAIL

NOT TO SCALE

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS

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APPROVED BY
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State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	4 of 5	05125

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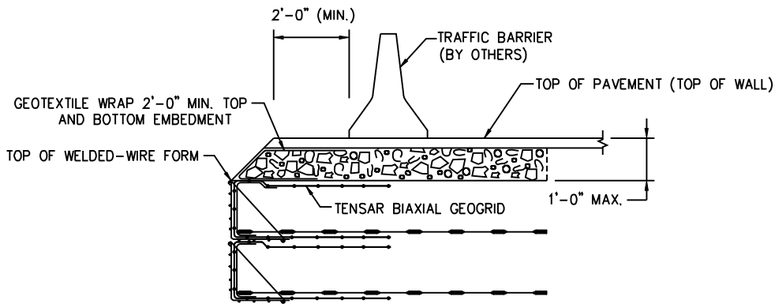
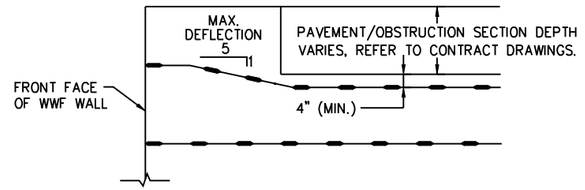
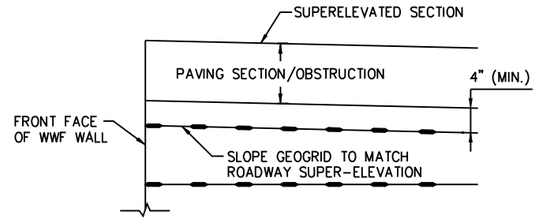


TYPICAL DETAIL FOR TOP OF
WALL WITH FLEXIBLE PAVEMENT
NOT TO SCALE



HORIZONTAL PAVEMENT STRUCTURE



SUPER-ELEVATED PAVEMENT/OBSTRUCTION STRUCTURE

NOTE;

CONTRACTOR IS RESPONSIBLE TO COORDINATE THE PLACEMENT OF THE GEOGRID TO AVOID CONFLICT WITH THE CONTRACT PAVEMENT/OBSTRUCTION SECTION. GEOGRID MUST BE SEPARATED FROM THE PAVEMENT/OBSTRUCTION SECTION BY A MINIMUM OF 4".

GEOGRID PLACEMENT AT PAVEMENT/OBSTRUCTION SECTION
NOT TO SCALE

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS TENSAR EARTH TECHNOLOGIES TEMPORAY RETAINING WALL

INTERIM STANDARD

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APPROVED BY
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State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 5	05125

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

T & B STRUCTURAL SYSTEMS
GABION WIRE WALL SYSTEM

GENERAL NOTES

DESIGN CRITERIA

1. THE ATTACHED DETAILS ARE BASED ON THE ASSUMPTIONS THAT THE MATERIAL WITHIN THE REINFORCED VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED COMPONENTS MEET T&B STRUCTURAL SYSTEMS SPECIFICATION FOR RETAINING WALL SYSTEMS

2. MINIMUM DESIGN PARAMETERS

   REFERENCE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM. THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON ACTUAL SOIL CHARACTERISTICS UTILIZED AT THE SITE. THE VALUES OF THE INTERNAL FRICTION ANGLE ,PHI, THE COHESION, C, AND THE UNIT WEIGHT, GAMMA, SHALL BE PROVIDED IN THE SHOP DRAWINGS.

   FACTORS OF SAFTEY

   EXTERNAL STABILITY

OVERTURNING	≥ 2.0
SLIDING	≥ 1.5
BEARING PRESSURE	≥ 2.5
OVERALL STABILITY	≥ 1.5

   INTERNAL STABILITY

PULLOUT	≥ 1.5
STEEL YIELD STRESS	$= 0.48\ F_y$
SERVICE LIFE	= GREATER OF 3 YEARS OR DURATION OF CONTRACT
LIVE LOAD SURCHARGE	= 250 PSF

3. THE MAXIMUM APPLIED BEARING PRESSURE AT THE INTERFACE OF THE FOUNDATION AND SELECT BACKFILL MATERIAL IS SHOWN IN THE CALCULATIONS. THE BEARING PRESSURE SHOWN IS THE MAXIMUM FOR THE GIVEN BASE MAT LENGTH. IT IS THE RESPONSIBILITY OF OTHERS TO DETERMINE THAT THE BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.

4. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED VOLUME AS DETERMINED BY THE ENGINEER SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER.

5. THE DESIGN CONTAINED ON THESE DRAWINGS ARE BASED ON INFORMATION PROVIDED BY OTHERS. ON THE BASIS OF THIS INFORMATION, T&B STRUCTURAL SYSTEMS IS RESPONSIBLE FOR THE INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS.

WALL CONSTRUCTION

1. WALLS FOUNDED ON CURVES SHALL HAVE THEIR PANELS DIMENSIONED AS A SERIES OF SHORT CORDS (AS DIMENSIONED) IN ORDER TO MATCH THE REQUIRED WALL RADIUS.

2. FOR LOCATION AND ALIGNMENT OF THE MSE STRUCTURES REFERENCE THE RETAINING WALL CONTROL PLANS.

3. IF MANHOLE AND DROP INLETS ARE REQUIRED, THEY SHALL BE LOCATED AS SHOWN ON THE RETAINING WALL ELEVATION DRAWINGS.

4. IF PILES ARE LOCATED WITHIN THE REINFORCED VOLUME THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE WALL UNLESS AN ALTERNATE METHOD IS USED TO ISOLATE THE COLUMNS FROM THE REINFORCED VOLUME AS APPROVED BY THE ENGINEER.

5. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 548
   NO SOIL REINFORCEMENT SHALL BE ATTACHED TO ANY PANEL BEFORE THE BACKFILL IS PLACED AT THE REQUIRED ELEVATION AND IS COMPACTED.

6. STRUCTURES GREATER THAN 20 FEET SHALL HAVE THE FINISHED GRADE PLACED AND COMPACTED AT THE FRONT FACE OF THE STRUCTURE BEFORE THE STRUCTURE HEIGHT EXCEEDS 20 FEET. THE FINISH GRADE SHALL BE COMPACTED TO 95 PERCENT OF AASHTO T-180 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ANY GUARDRAIL POSTS PRIOR TO PLACING THE TOP ROW OF SOIL REINFORCEMENT. THE POST SPACING SHALL BE ADJUSTED TO AVOID CONFLICTS WITH THE LONGITUDINAL SOIL REINFORCING WIRE. CUTTING OF THE LONGITUDINAL WIRE SHALL BE ALLOWED ONLY AS DIRECTED BY THE ENGINEER.

8. IF EXISTING OR FUTURE STRUCTURES ARE TO BE PLACED IN THE REINFORCED VOLUME THAT INTERFERE WITH THE PROPER PLACEMENT OF THE SOIL REINFORCEMENT THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR A COURSE OF ACTION.

9. THE CAP MAT SHALL BE PLACED AS CLOSE TO THE TOP OF WALL LOCATION AS POSSIBLE THE REMAINING FACE PANEL ABOVE THE CAP MAT MAY BE CUT FREE

10. FOR OTHER INFORMATION PERTAINING TO THE CONSTRUCTION OF THE TBSS RETAINING WALL PLEASE REFER TO T&B STRUCTURAL SYSTEMS ERECTION MANUAL.

11. IT IS THE RESPONSIBILITY OF THE THE CONTRACTOR TO DEFLECT THE TOP CAP MAT OF THE SOIL REINFORCEMENT DOWNWARD SO AS TO AVOID CONFLICT WITH ROADWAY MIXING OPERATIONS AND/OR ROADWAY CONSTRUCTION OPERATIONS. ANY SOIL REINFORCING MATERIAL THAT IS DAMAGED SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

CONSTRUCTION NOTES

1. NOMINAL SOIL REINFORCING GRID LENGTH

   THE WELDED WIRE MESH IS MANUFACTURED IN LENGTHS CORRESPONDING TO THE DIMENSION "B" AS GIVEN IN THE RETAINING WALL ELEVATIONS. THE ACTUAL LENGTH FROM THE FRONT FACE OF THE PANEL TO THE TAIL OF THE SOIL REINFORCING GRID IS PLUS 2"-4" THE FOUNDATION SHALL BE EXCAVATED TO AN EXTENT OF "B" PLUS 6".

2 THE FOLLOWING MATERIALS ARE SUPPLIED BY T&B STRUCTURAL SYSTEMS INC.

- WELDED WIRE FACING PANEL AND SOIL REINFORCING GRID
- BACKING PANEL
- CAP MATS
- HOG RINGS AND PLIERS
- NONWOVEN GEOTEXTILE FILTER FABRIC

ANY OTHER MATERIAL REQUIRED TO BUILD THE MSE STRUCTURES ACCORDING TO THE GOVERNING SPECIFICATION SHALL BE SUPPLIED BY THE CONTRACTOR.

3. T&B STRUCTURAL SYSTEMS INC. SUPPLIES MECHANICALLY STABILIZED EARTH STRUCTURAL COMPONENTS FOR USE WITH THE TBSS WELDED WIRE WALL SYSTEM FOR THE STRUCTURES DETAILED HEREIN. THE ERECTION MANUAL PROVIDED BY T&B STRUCTURAL SYSTEMS IS A GENERAL GUIDELINE FOR ERECTING THE TBSS WELDED WIRE WALL SYSTEM. ALL QUALITY CONTROL PROCEDURES, STAGING PROCEDURES, MATERIAL HANDLING, AND SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE OBLIGATION TO CONSTRUCT THE RETAINING WALL ACCORDING TO THE PROJECT PLANS AND SPECIFICATIONS AND ALL LAWS OF THE GOVERNING STATE.

TBSS CLAIMS ALL PROPRIETARY RIGHTS TO ALL DRAWINGS, SPECIFICATIONS AND METHODOLOGIES CONTAINED HEREIN. THE USE OF THIS INFORMATION IS RESTRICTED TO APPROPRIATE PROJECTS THAT IT WAS PREPARED FOR. NO REPRODUCTION, IN PART, OR IN WHOLE, MAY BE MADE WITHOUT WRITTEN INSTRUCTION FROM TBSS.

T&B STRUCTURAL SYSTEMS, INC
ENGINEERED STRUCTURES
637 WEST HURST BLVD.
HURST, TEXAS 76053
(817) 280-9858 • (FAX) 280-9864

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
T&B STRUCTURAL SYSTEMS, INC.
GABION WIRE WALL

INTERIM STANDARD

Index No. 5130 (Sheets 1-5 of 5 is a supplement to the metric Roadway and Traffic Design Standards Booklet dated January 2000.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

Revision No.	Sheet No.	Index No.
04	1 of 5	5110

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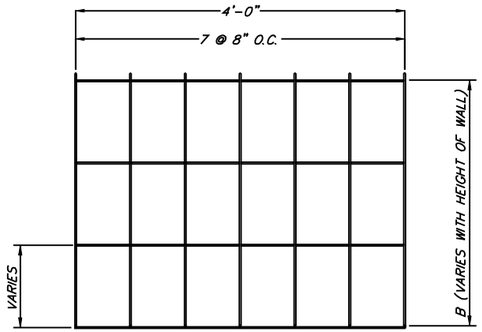
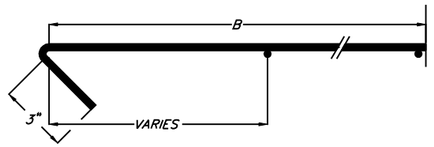
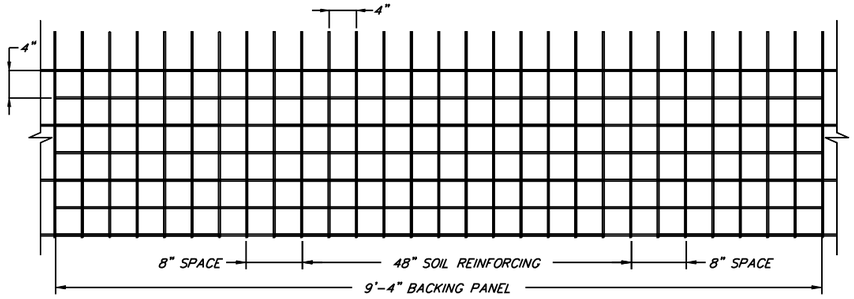


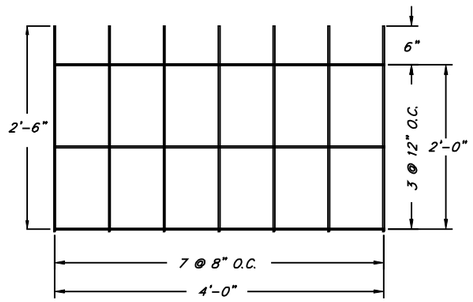
A/2 **PLAN VIEW SOIL REINFORCING**
N.T.S



D/2 **SECTION CAP MAT**
N.T.S



G/2 **ASSEMBLED WALL ELEVATION**
N.T.S.



B/2 **ELEVATION SOIL REINFORCING**
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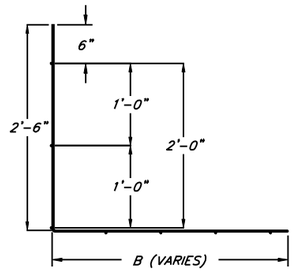

E/2 **SECTION SOIL REINFORCING**
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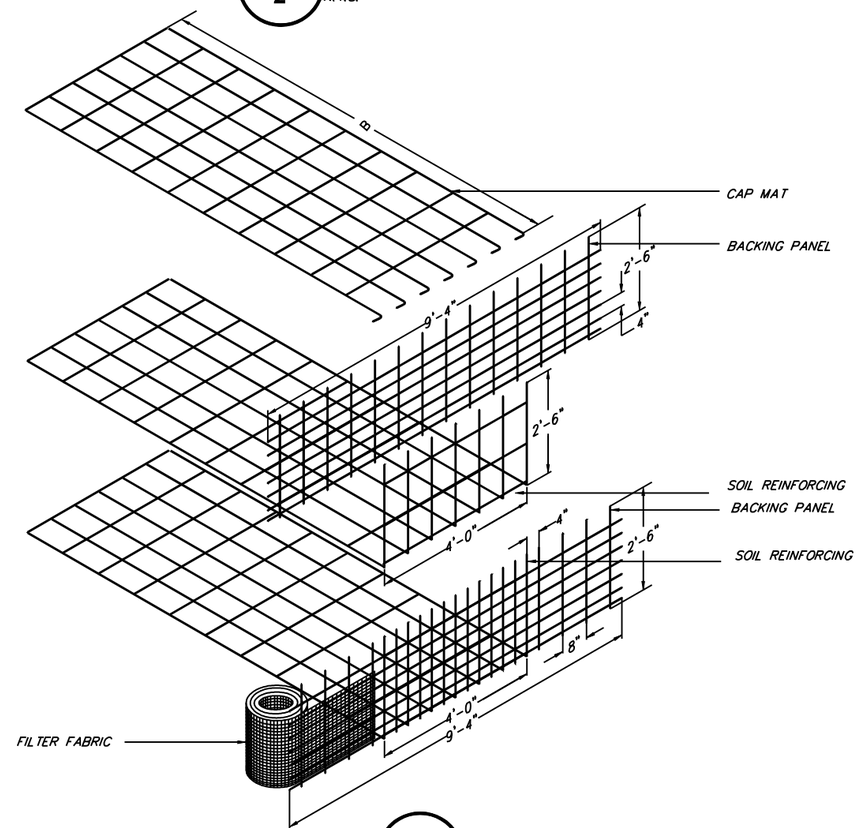
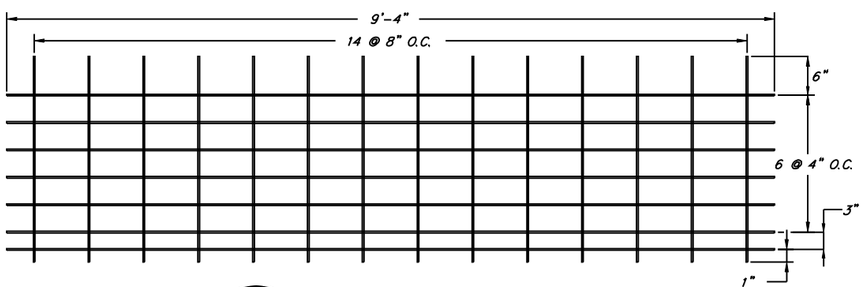
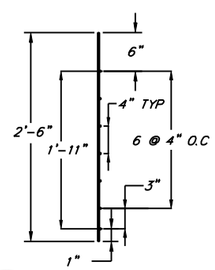


H/2 **COMPONENT ISOMETRIC**
N.T.S



C/2 **ELEVATION BACKING PANEL**
MINIMUM WIRE SIZE IS W4.5 BOTH DIRECTIONS



F/2 **SECTION BACKING PANEL**
N.T.S.

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HURST, TEXAS 76053
(817) 280-9858 • (FAX) 280-9864

DATE : 01-01-05

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEMS
T&B STRUCTURAL SYSTEMS, INC.
GABION WIRE WALL

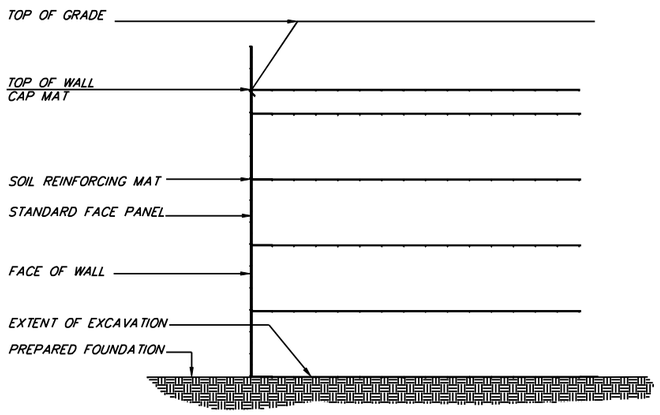
INTERIM STANDARD

Index No. 5130 (Sheets 1-5 of 5 is a supplement to the metric Roadway and Traffic Design Standards Booklet dated January 2000.

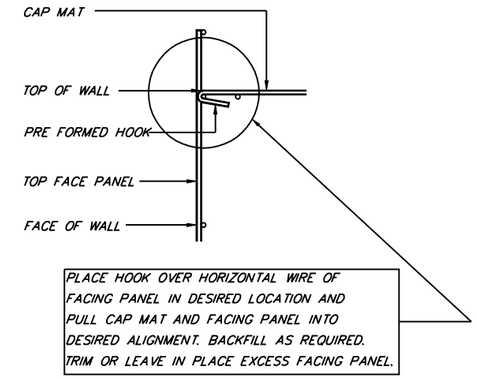
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

Revision No.	Sheet No.	Index No.
04	2 of 5	5110

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

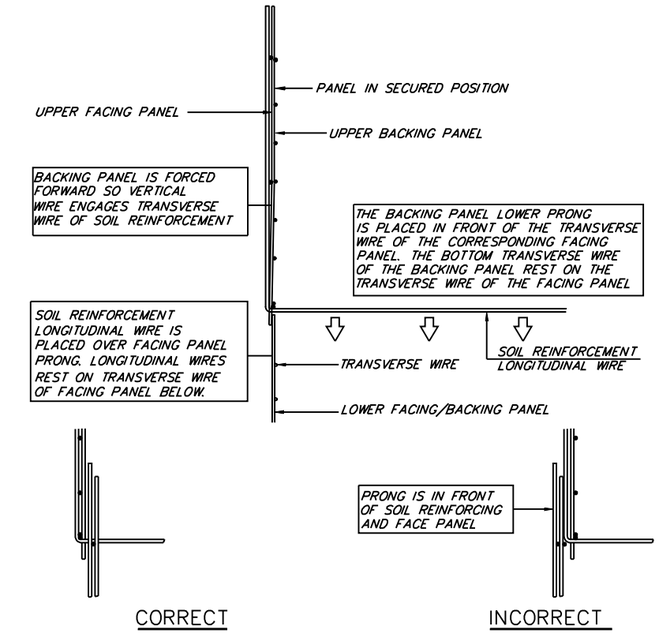


A/3 TYPICAL SECTION WELDED WIRE WALL

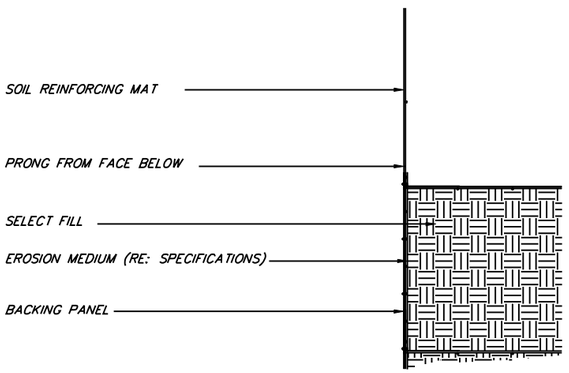


NOTE: PLACE FILTER FABRIC AT DESIRED LOCATION AND SECURE WITH HOG RINGS. TRIM AS IS REQUIRED

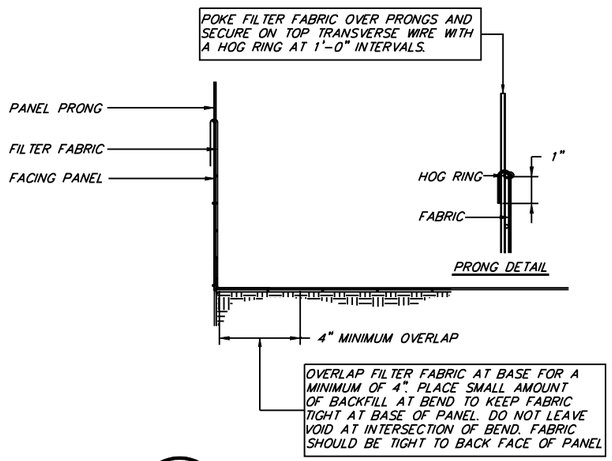
C/3 CAP MAT CONNECTION DETAIL



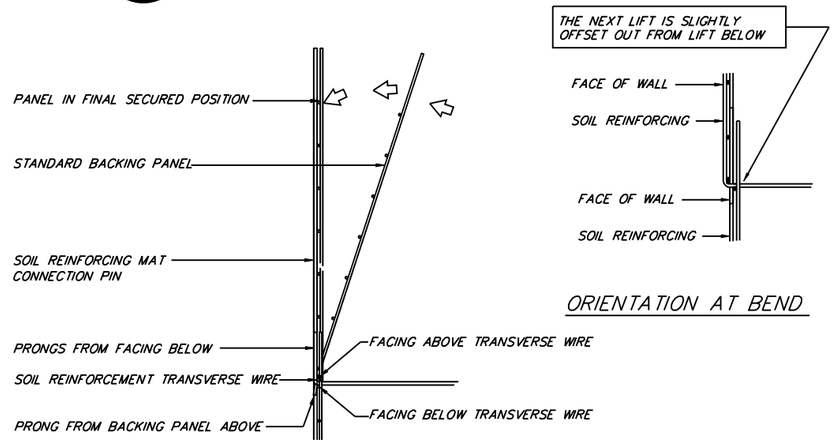
E/3 SOIL REINFORCEMENT CONNECTION SEQUENCE



B/3 WELDED WIRE WALL LIFT SECTION



D/3 FILTER FABRIC PLACEMENT



F/3 SOIL REINFORCEMENT CONNECTION SEQUENCE

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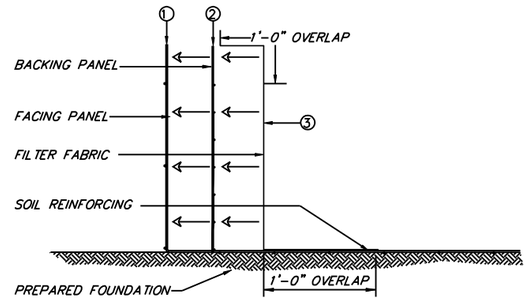
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

Revision No.	Sheet No.	Index No.
04	3 of 5	5110

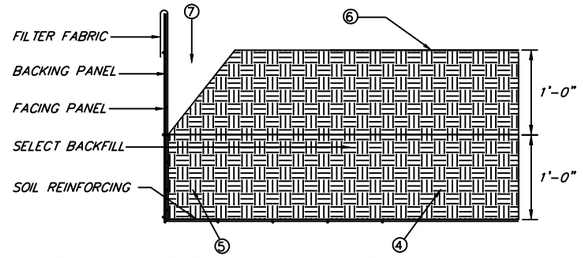
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

STEP 1 - SOIL REINFORCING PLACEMENT

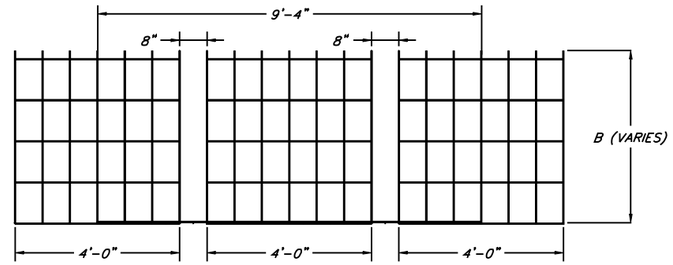


1. PLACE BOTTOM SOIL REINFORCING GRID ON PREPARED FOUNDATION
2. PLACE BACKING PANEL AT BACK FACE OF SOIL REINFORCING FACING PANEL AND SECURE WITH HOG RINGS.
3. PLACE FILTER FABRIC ON BACK FACE OF BACK BACKING PANEL AND SECURE WITH HOG RINGS

STEP 2 - BACKFILL PLACEMENT

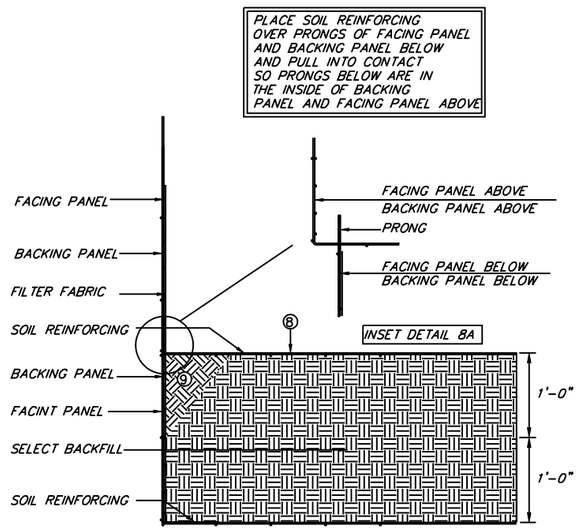


4. PLACE AND COMPACT MAXIMUM OF 1'-0" OF SELECT BACKFILL ON TOP OF SOIL REINFORCING GRID
5. TAKE CARE PLACING MATERIAL AT FACE OF WALL PAYING ATTENTION TO FACING ALIGNMENT.
6. PLACE AND COMPACT 1'-0" OF SELECT BACKFILL TO BRING BACKFILL LEVEL WITH NEXT LIFT ELEVATION
7. LEAVE VOID AT FACE OF WALL UNTIL NEXT SOIL REINFORCING ELEMENT IS PLACED



B / 4 — **PLAN VIEW SOIL REINFORCING**
SOIL REINFORCING LAYOUT

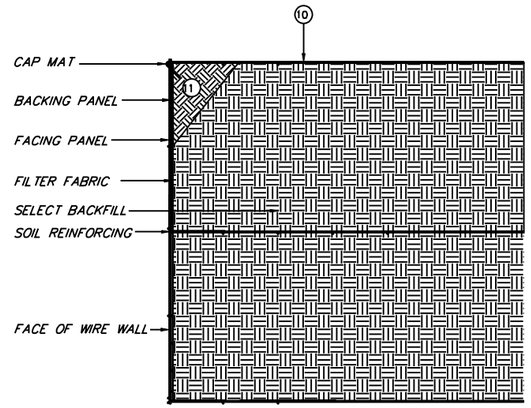
STEP 3 - NEXT SOIL REINFORCING LIFT



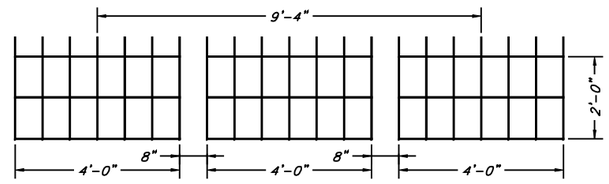
8. PLACE NEXT LAYER OF SOIL REINFORCING GRIDS ON COMPACTED FILL AND SECURE TO FACING PANEL WITH HOG RING. PULL WALL FACE INTO ALIGNMENT. (REFERENCE INSET DETAIL 8A)
9. PLACE BACKFILL IN VOID BELOW. MOUND ON TOP AND COMPACT

A / 4 — **ERECTION SEQUENCE STEPS**
RECOMMENDED INSTALLATION PROCEDURE

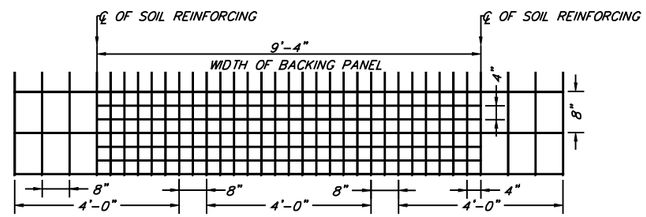
STEP 4 - CAP MAT



10. PLACE CAP MAT AT TOP OF WALL ELEVATION AND PULL FACE INTO ALIGNMENT
11. PLACE BACKFILL IN VOID BELOW. MOUND ON TOP AND COMPACT



C / 4 — **ELEVATION FACING PANEL**
SOIL REINFORCING FACING PANEL



NOTE:
1. BACKING PANEL SHALL BE PLACED SO IT IS AT THE CENTER LINE OF THE SOIL REINFORCING FACING PANEL.
2. BACKING PANEL SHALL BE PLACED AT BACK FACE OF SOIL REINFORCING FACING PANEL IN MANNER THAT VERTICAL AND HORIZONTAL PATTERN MAINTAINS A 4" X 4" APPERANT OPENING AS VIEWED FROM FRONT FACE OF STRUCTURE

D / 4 — **FACING ELEVATION**

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RETAINING WALL SYSTEMS
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GABION WIRE WALL

INTERIM STANDARD

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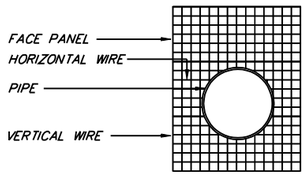
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

Revision No.	Sheet No.	Index No.
04	4 of 5	5110

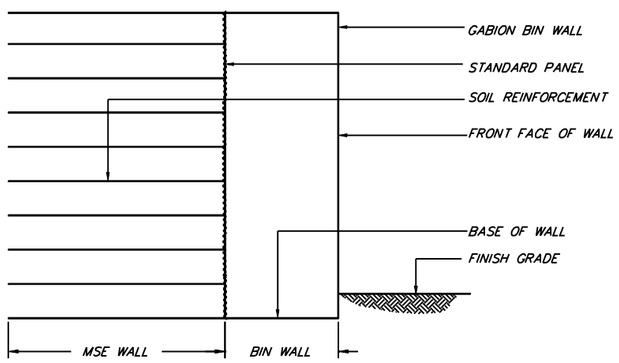
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



NOTE:
TRIM PROTRUSION AREA FROM FACING PANEL BY CUTTING HORIZONTAL WIRE BETWEEN EACH VERTICAL WIRE. BEND WIRES BACK INTO MSE MASS AND AS CLOSE TO PROTRUSION AS POSSIBLE. APPLY FILTER FABRIC OVER AND AROUND PROTRUSION MAKING SURE FACING PANEL IS COVERED. MAKE SURE THAT ALL GAPS BETWEEN FACE AND PROTRUSION ARE COVERED WITH FILTER FABRIC. IF PROTRUSION INTERFERES WITH SOIL REINFORCING MAT CUT TRANSVERSE WIRES OF MAT AND BEND LONGITUDINAL WIRE TO PASS PROTRUSION AND CONFORM TO THE PROTRUSIONS SHAPE.

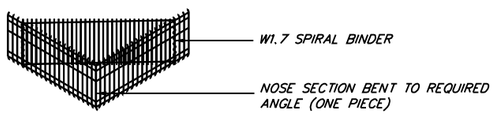
A/5 TYPICAL ELEVATION THROUGH PENETRATION

RECOMMENDED INSTALLATION PROCEDURE



B/5 TYPICAL SECTION THROUGH BIN

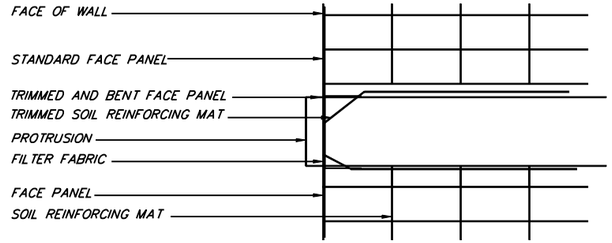
RECOMMENDED INSTALLATION PROCEDURE



NOTE: 12 GAUGE GALVANIZED STEEL HOG RING MAY BE SUBSTITUTED FOR SPIRAL BINDER. HOG RINGS TO BE ATTACHED AT 3" CENTERS TOP TO BOTTOM.

C/5 ISOMETRIC OF BIN GABION NOSE SECTION

RECOMMENDED INSTALLATION PROCEDURE



NOTE:
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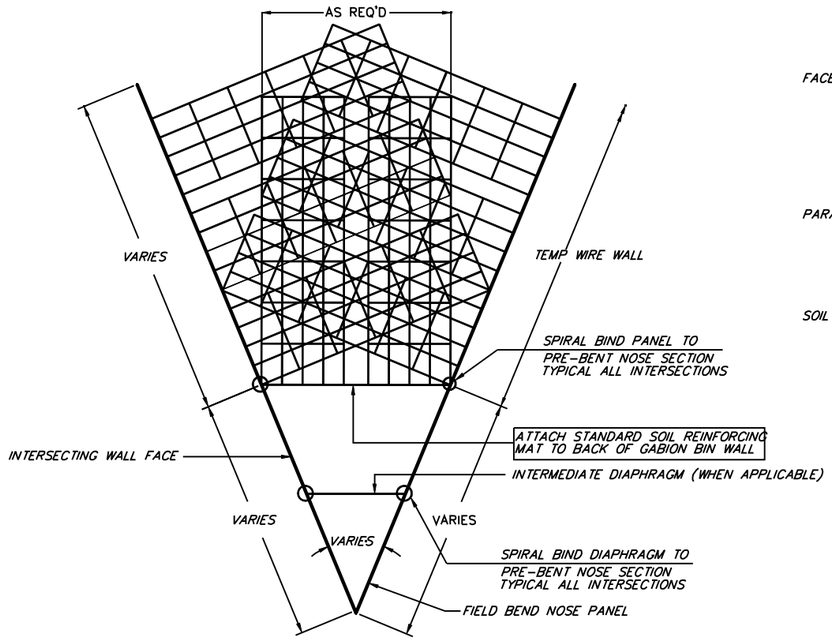
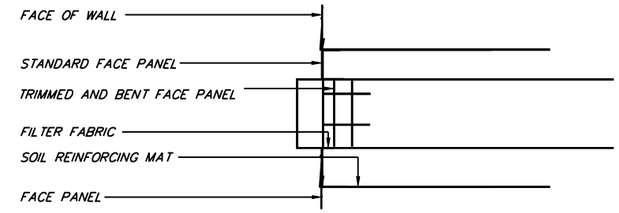
D/5 TYPICAL PLAN VIEW THROUGH PENETRATION

RECOMMENDED INSTALLATION PROCEDURE



E/5 TYPICAL PLAN VIEW AT BIN

RECOMMENDED INSTALLATION PROCEDURE



NOTE:
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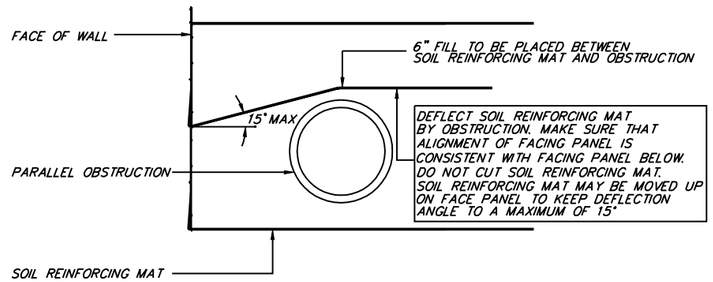
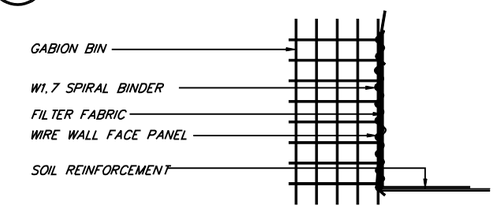
F/5 TYPICAL SECTION THROUGH PENETRATION

RECOMMENDED INSTALLATION PROCEDURE



G/5 TYPICAL SECTION AT PARALLEL OBSTRUCTION

RECOMMENDED INSTALLATION PROCEDURE



NOTE: 12 GAUGE GALVANIZED STEEL HOG RING MAY BE SUBSTITUTED FOR SPIRAL BINDER. HOG RINGS TO BE ATTACHED AT 3" CENTERS

H/5 TYPICAL SECTION AT GABION SPIRAL TIE

RECOMMENDED INSTALLATION PROCEDURE

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State Structures Design Engineer

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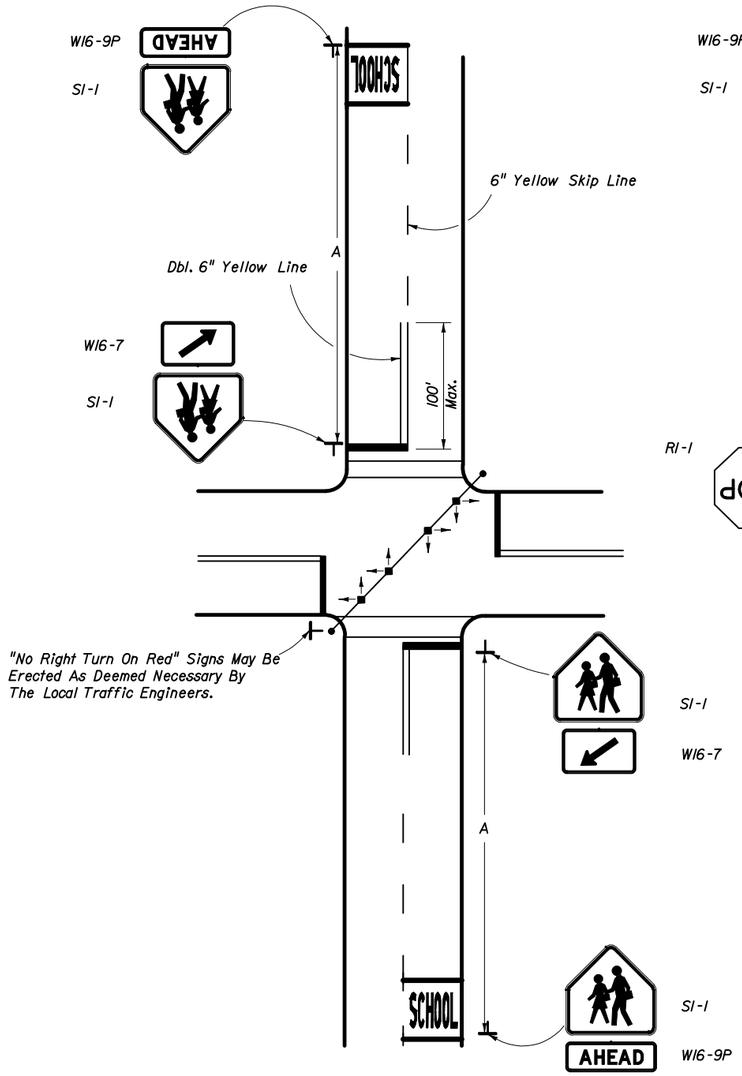
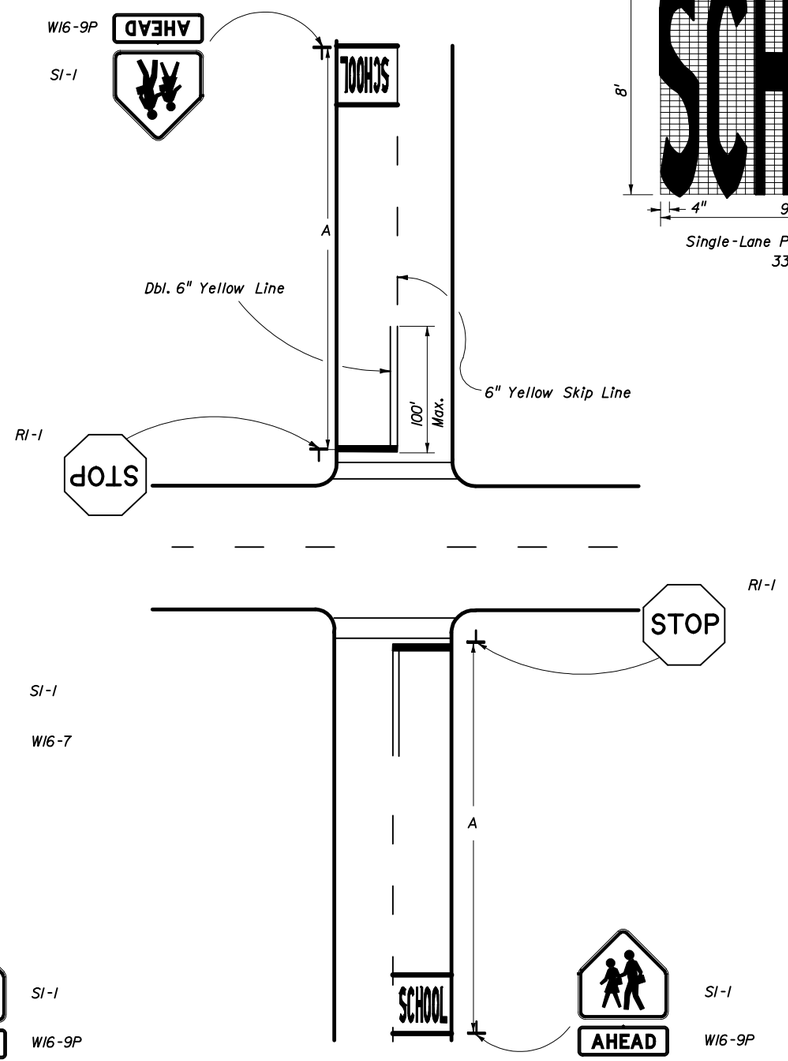
04	5 of 5	5110

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

Approach Speed (MPH)	Distance A (FT)
25 To 35	200
36 To 45	350
46 To 55	500

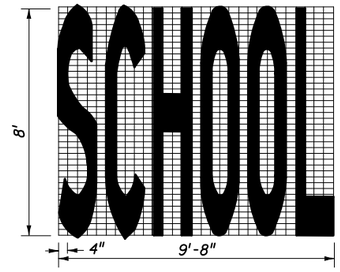


1. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK AT A SIGNALIZED INTERSECTION

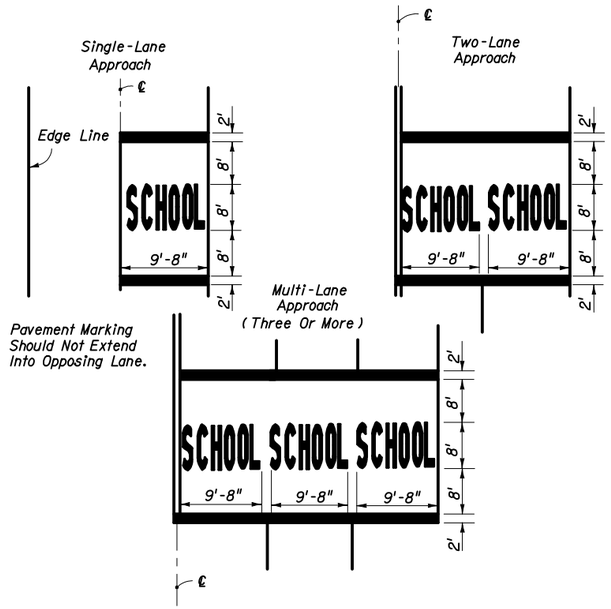


2. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK AT A STOP CONTROLLED INTERSECTION

Note:
Special speed restrictions are not normally applicable to these two cases.



Single-Lane Pavement Marking
33 s.f.



PAVEMENT MARKINGS

Notes

Signs shall be erected in accordance with Index No. 17302.

When computing pavement messages quantities do not include transverse lines.

All school signs shall be reflective.

School crosswalk width shall be 6' min. 10' std. without public sidewalk curb ramps 10' min. with public sidewwalk curb ramps. See Index No. 17346 Sheets 2 and 7 of 13.

For signalized intersections or mid-block signalized crossings where flashing beacon speed limit signs (post mounted or overhead) are installed, the minimum distance from the speed limit sign to the stop line shall be 100'. The sign shall not block the view of the signal.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SCHOOL SIGNS & MARKINGS

INTERIM STANDARD

SHEETS NOS. 1-3 OF 6 REPLACE INDEX NO. 17344 (SHEETS 1-3 OF 6) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

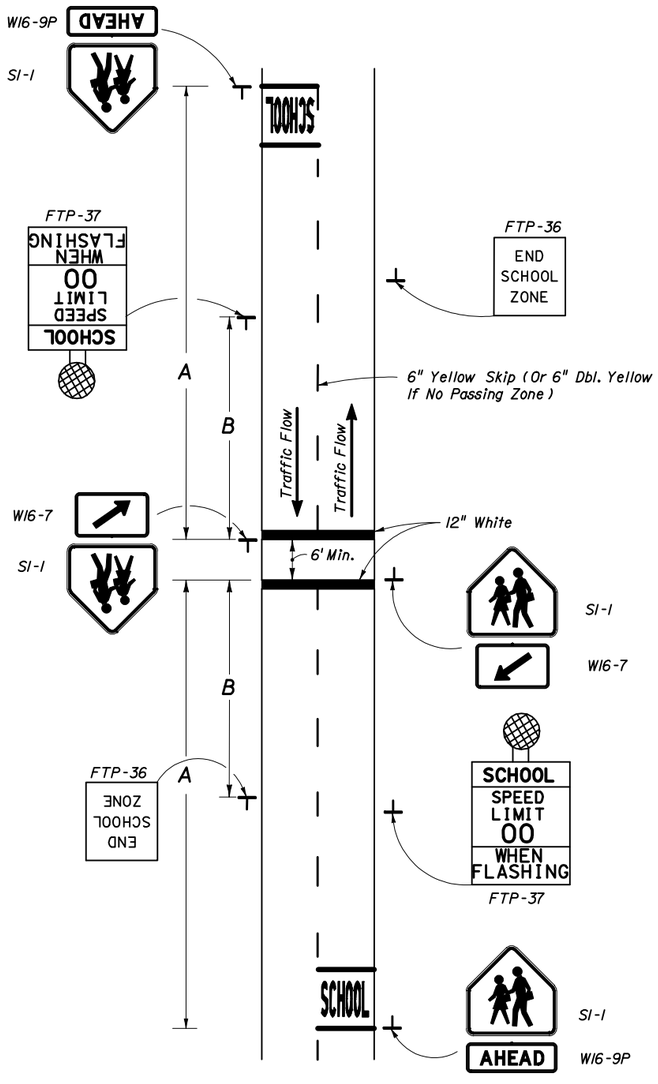
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 6	017344

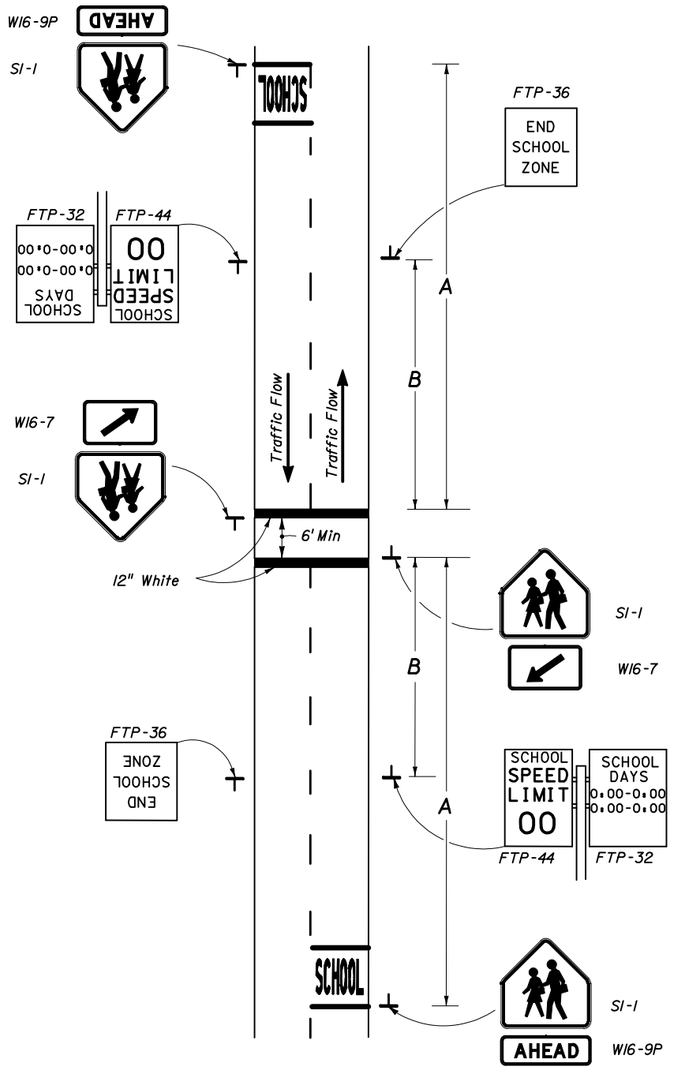
Revised: 12-26-01

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

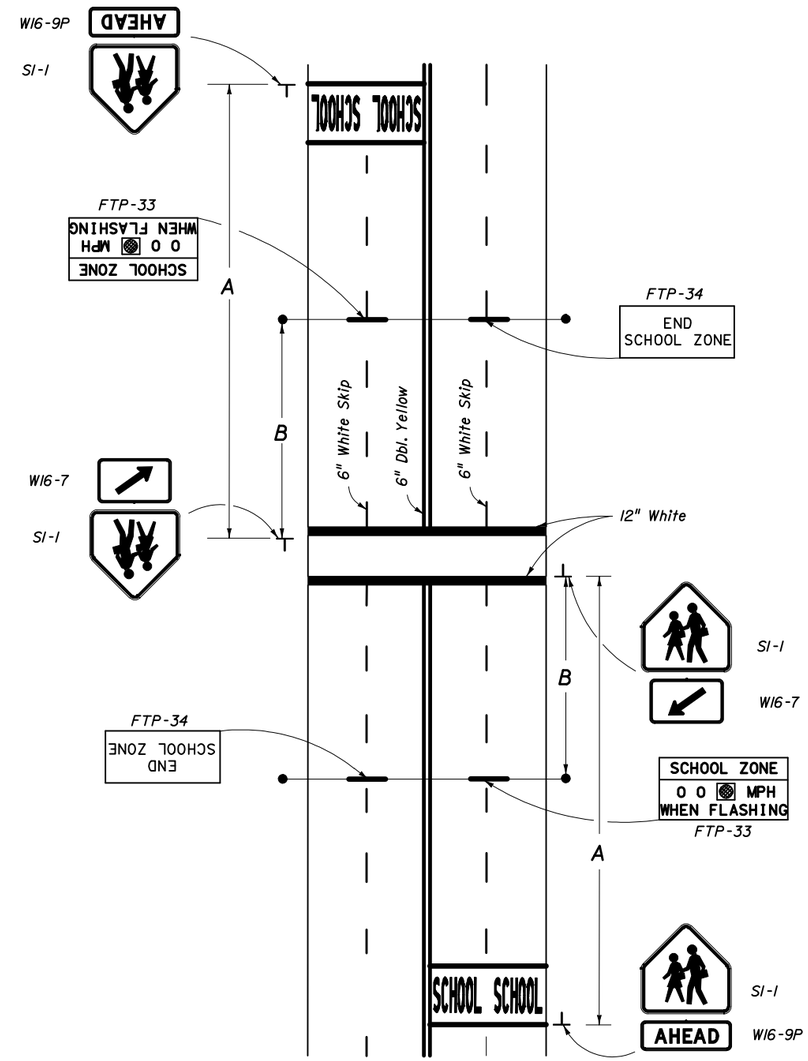
3. TRAFFIC CONTROL DEVICES WITH FLASHING BEACON FOR REDUCED SPEED ZONE AT A SCHOOL CROSSWALK (2 LANES - 2 WAY TRAFFIC) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



4. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK (NO FLASHING BEACON) (2 LANES - 2 WAY TRAFFIC) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



5. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS (4 LANES UNDIVIDED - 2 WAY TRAFFIC) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



APPROACH SPEED MPH	SUGGESTED DISTANCE IN FEET	
	A	B
25 To 35	200	50
36 To 45	350	65
46 To 55	500	80

School crosswalk width shall be 6' min.
10' std. without public sidewalk curb ramps.
10' min. with public sidewalk curb ramps.
See Index No. 17346 sheet 9 of 13.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SCHOOL SIGNS & MARKINGS

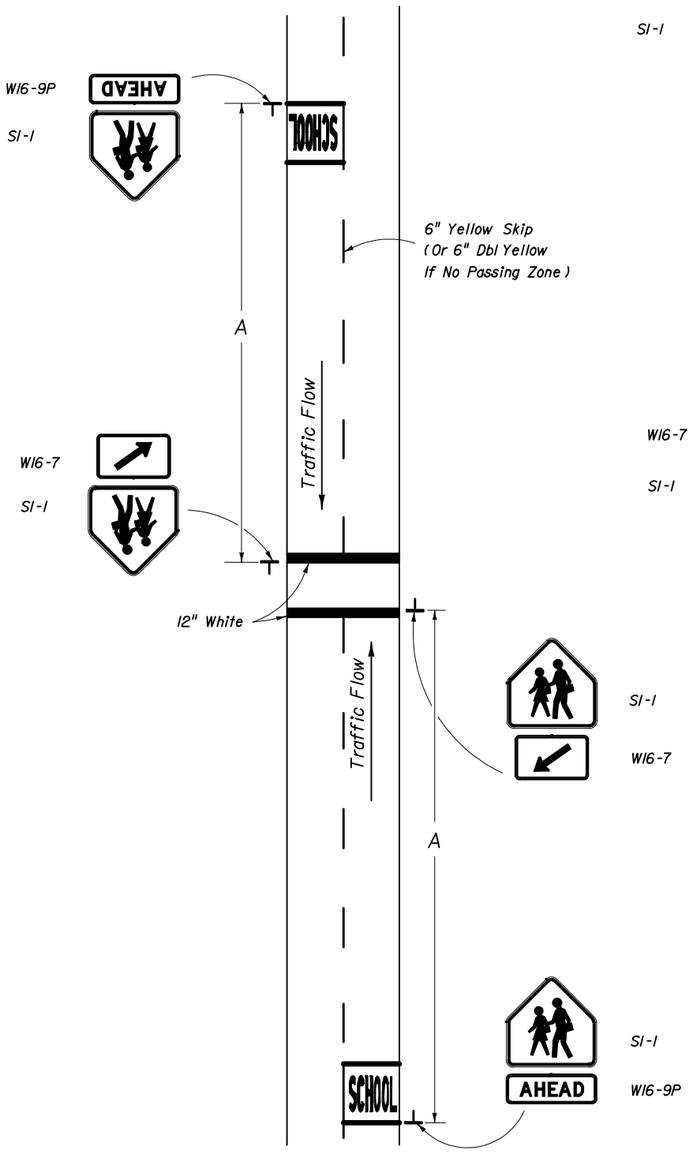
INTERIM STANDARD

SHEETS NOS. 1-3 OF 6 REPLACE INDEX NO. 17344 (SHEETS 1-3 OF 6) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

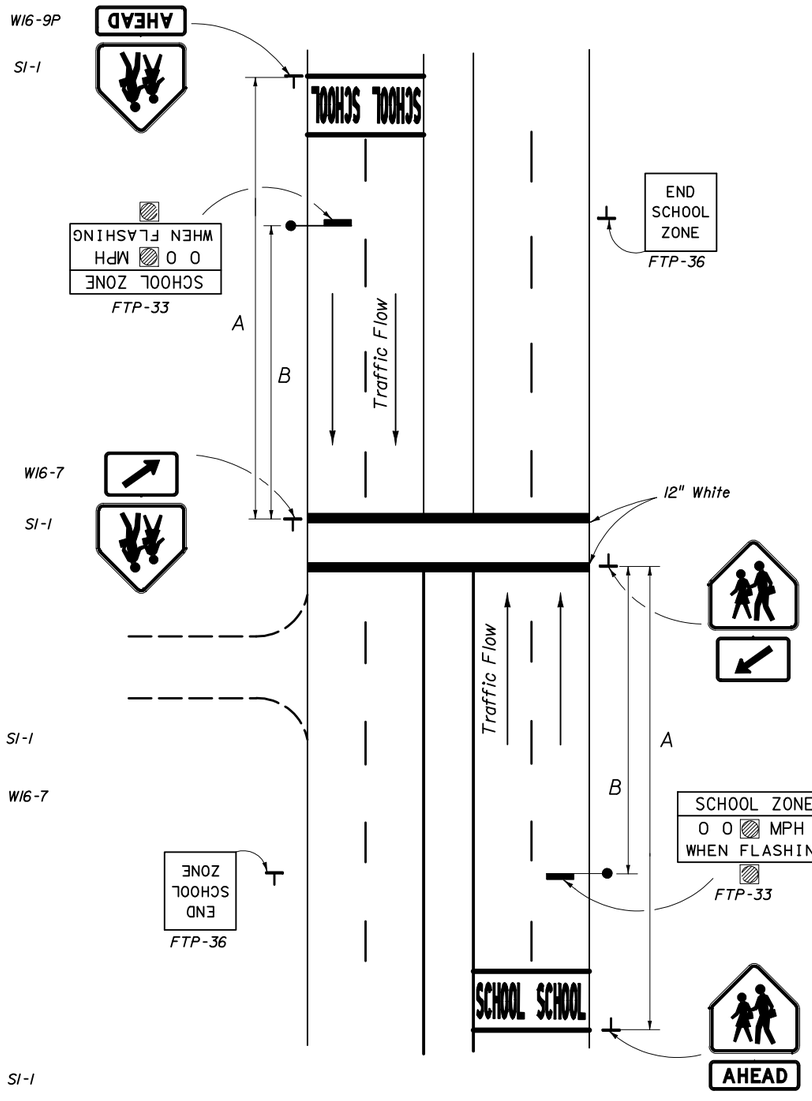
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 6	017344

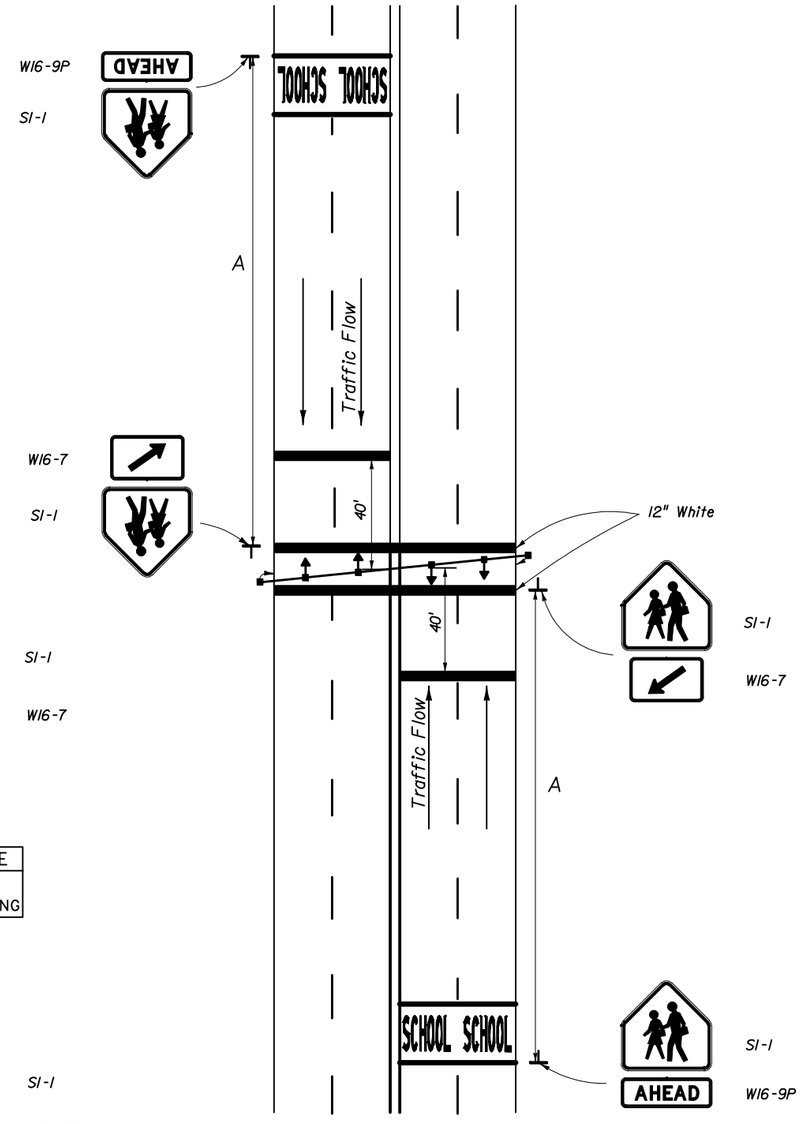
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



6. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK
WITHOUT A SPEED REDUCTION
(2 LANES - 2 WAY TRAFFIC)



7. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK
WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS
(4 LANES DIVIDED - 2 WAY TRAFFIC)



8. TRAFFIC CONTROL DEVICES FOR SIGNALIZED MIDBLOCK
SCHOOL CROSSWALK

APPROACH SPEED MPH	SUGGESTED DISTANCE IN FEET	
	A	B
25 To 35	200	50
36 To 45	350	65
46 To 55	500	80

School crosswalk width shall be 6' min.
10' std. without public sidewalk curb ramps.
10' min. with public sidewalk curb ramps.
See Index No. 17346 sheet 9 of 13.

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Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SCHOOL SIGNS & MARKINGS

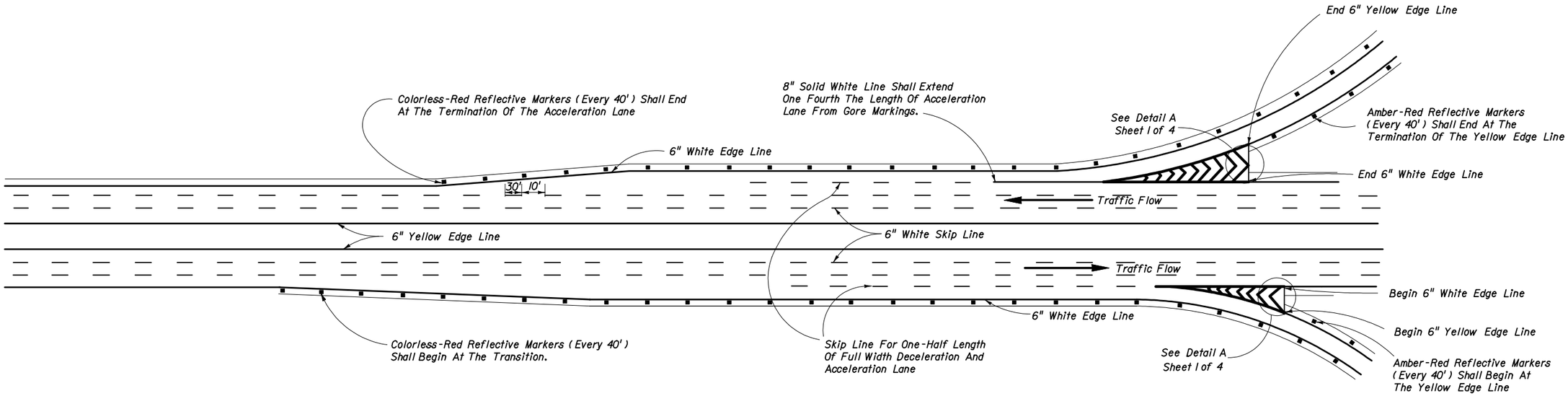
INTERIM STANDARD

SHEETS NOS. 1-3 OF 6 REPLACE INDEX NO. 17344 (SHEETS 1-3 OF 6) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

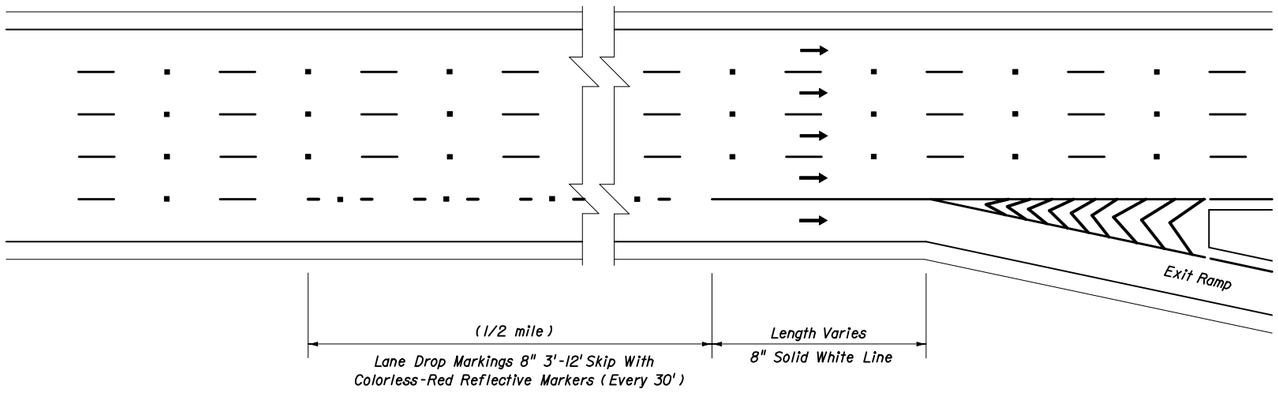
APPROVED BY Clarke A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 6	017344

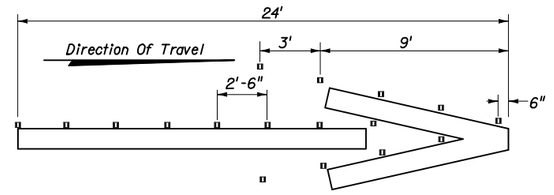
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PARALLEL ACCELERATION AND DECELERATION LANE



TYPICAL LANE DROP MARKINGS AT EXIT RAMPS



White Arrow With
Colorless-Red Reflective Markers
For Arrow details see Index No. 17346 sheet 1 of 13.

WRONG WAY ARROW

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INTERCHANGE MARKINGS

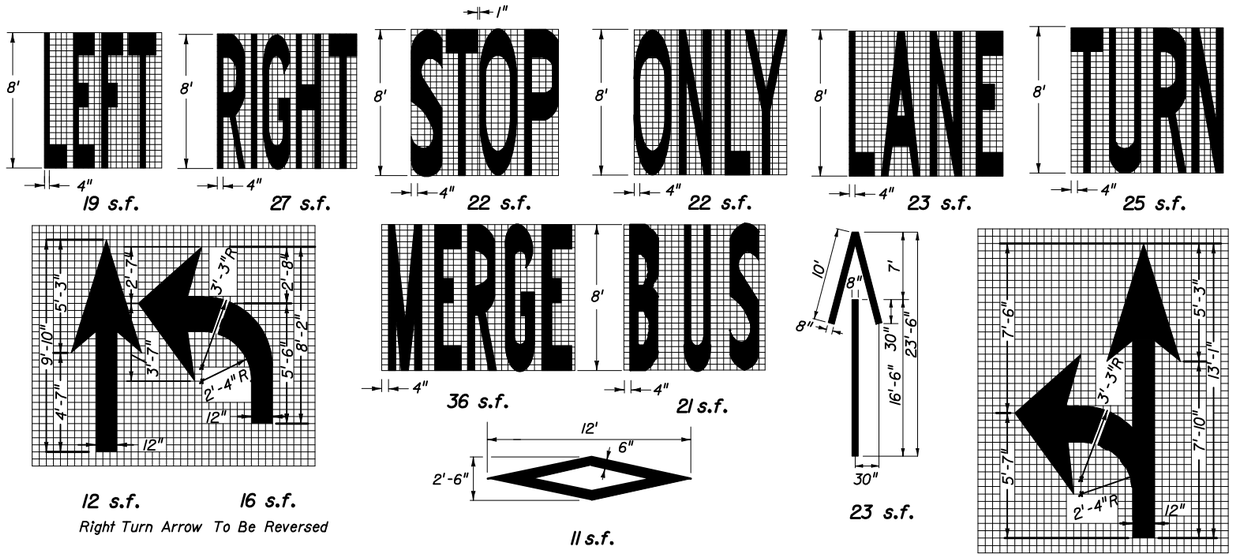
INTERIM STANDARD

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 17345 (SHEET 3 OF 4) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY Clarke A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 4	017345

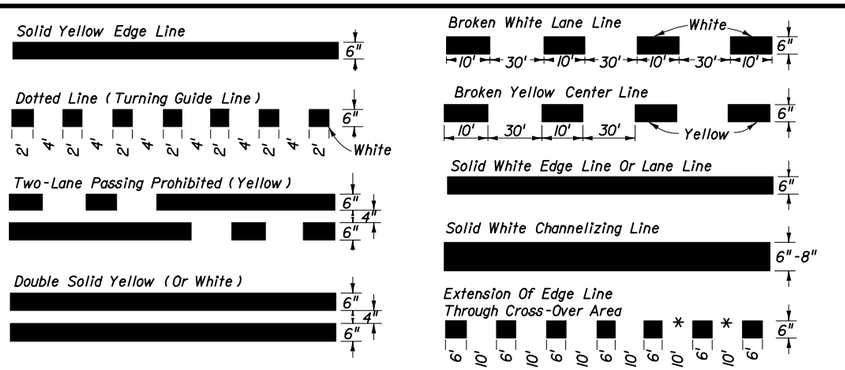
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



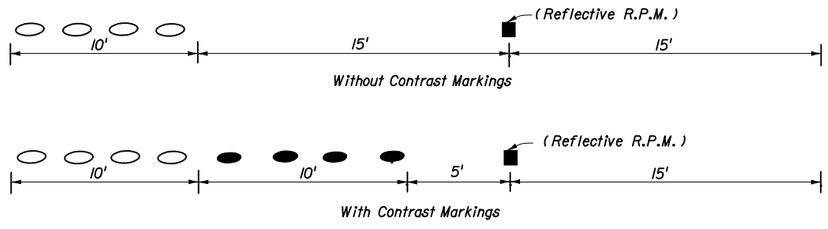
NOTE: When arrow and pavement message are used together, the arrow shall be located down stream of the pavement message and shall be separated from the pavement message by a distance of 25' (Base of the arrow to the base of the message).

DIMENSIONS ARE WITHIN 1" ±

PAVEMENT ARROW AND MESSAGE DETAILS

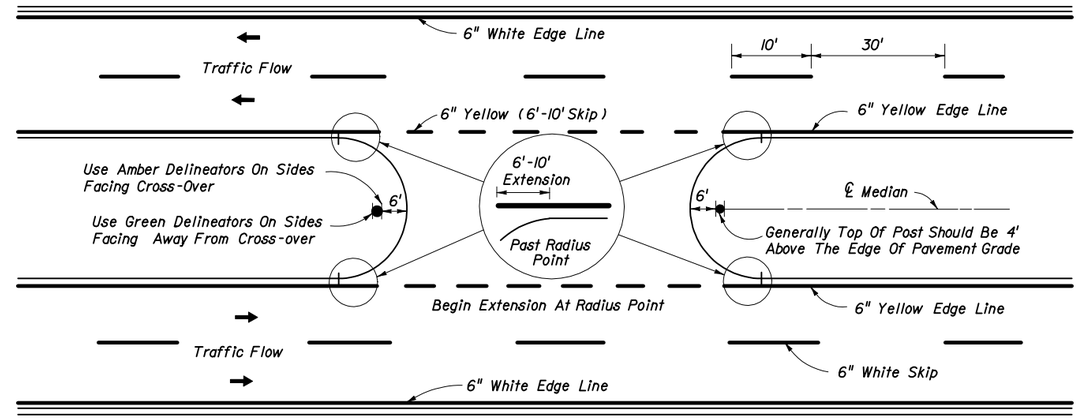


TYPES OF PERMANENT LONGITUDINAL LINES



NOTE: Ceramic Markers should not be installed unless specifically called for in the plans. Use is limited to high volume sections with ADT's greater than 50,000 where lane changing is to be discouraged or other areas where channelization is required.

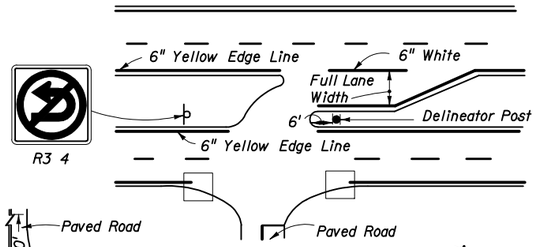
NON-REFLECTIVE CERAMIC PAVEMENT MARKER PLACEMENT



PAVEMENT MARKINGS AND DELINEATORS FOR MEDIAN CROSS-OVER

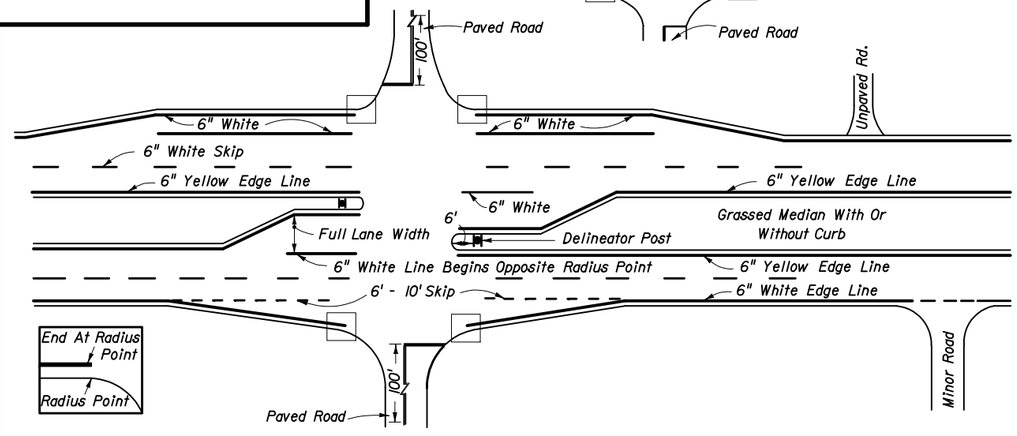
NOTE:

Markings applied to median noses shall be yellow in color.

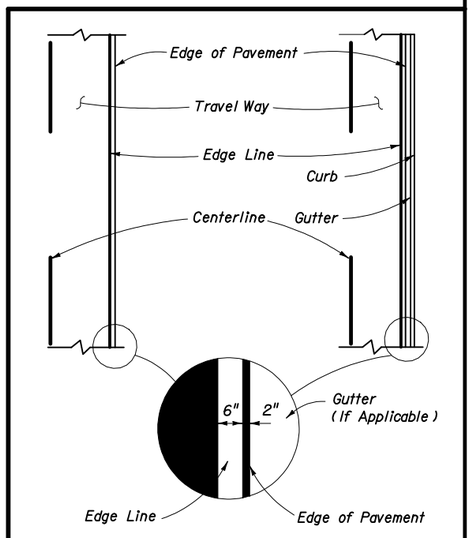


BASIC COLOR RULE

White lines separate traffic in the same direction.
Yellow lines separate traffic in opposing directions.
Yellow dotted lines may be used in special cases.



PAVEMENT MARKINGS FOR INTERSECTIONS WITH MAJOR AND MINOR ROADS



PLACEMENT OF EDGE LINES

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Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

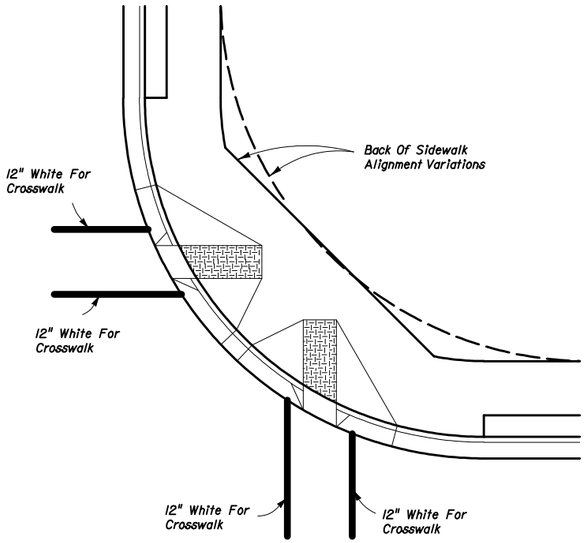
INTERIM STANDARD

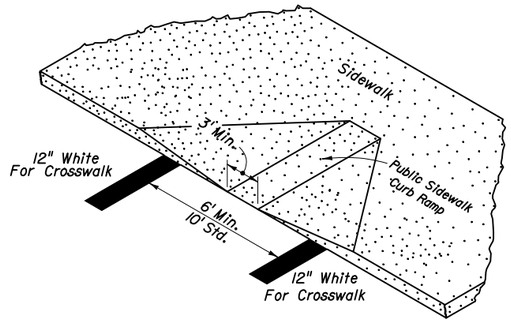
SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

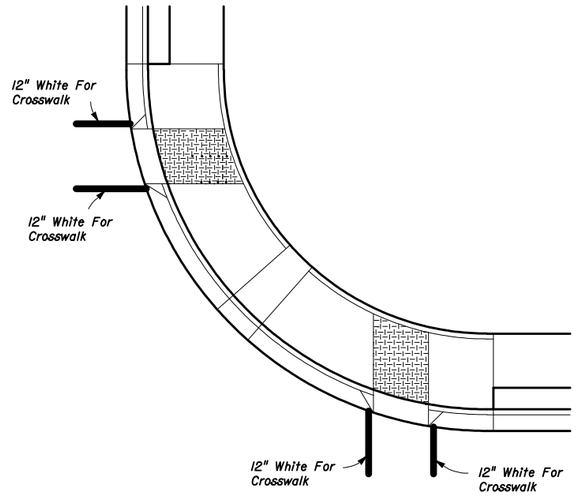
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 13	017346

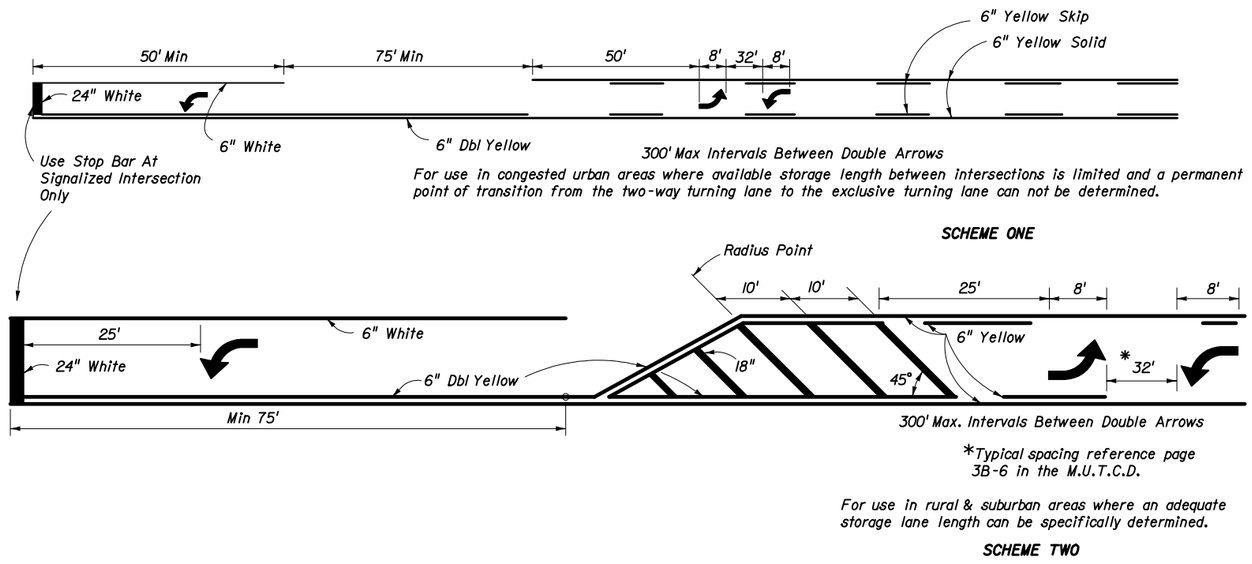
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.







TYPICAL CROSSWALK MARKINGS FOR CURB RAMPS



(WITH SINGLE LANE LEFT TURN CHANNELIZATION)

TWO WAY LEFT TURN LANE

Revised: 12-26-01

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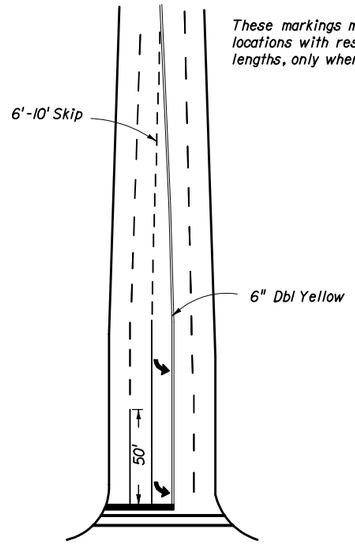
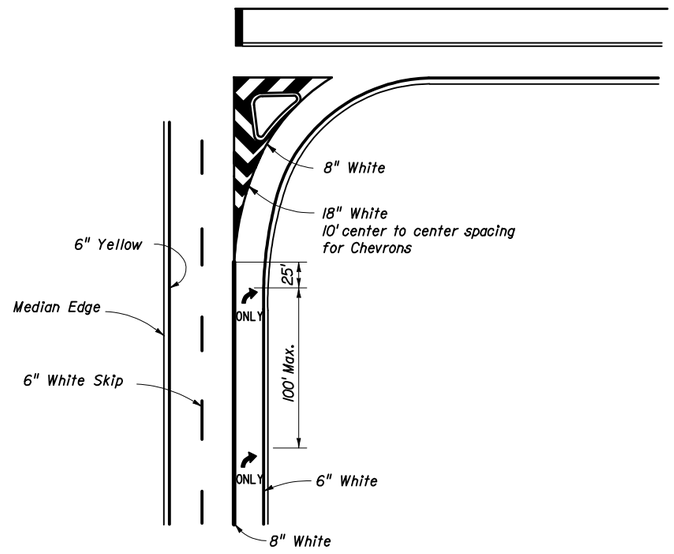
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 13	017346

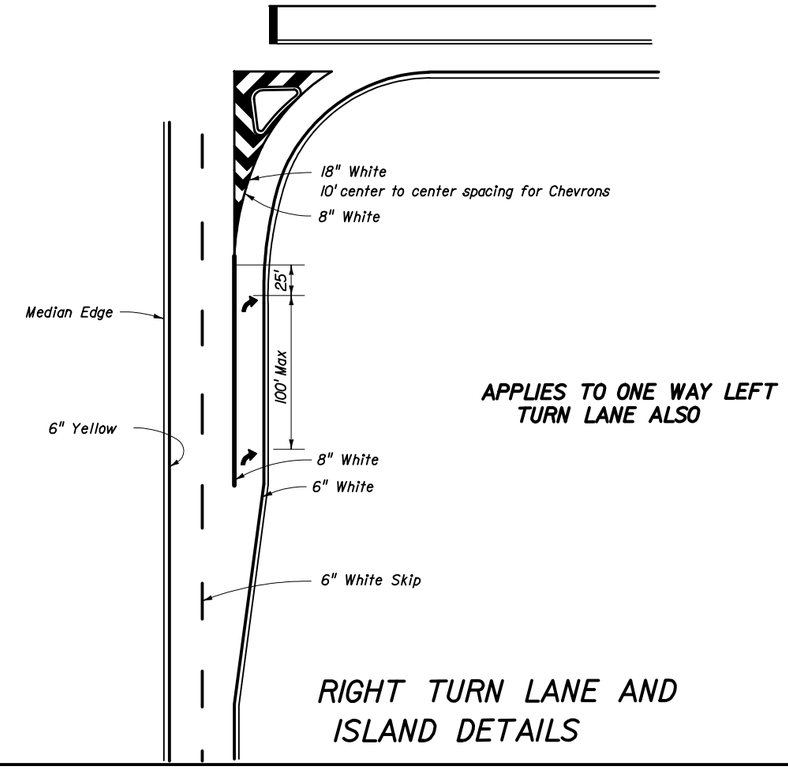
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



RESTRICTED LEFT TURN MARKING



RIGHT TURN LANE DROP AND ISLAND DETAILS
LEFT TURN LANE DROP IS MIRROR IMAGE

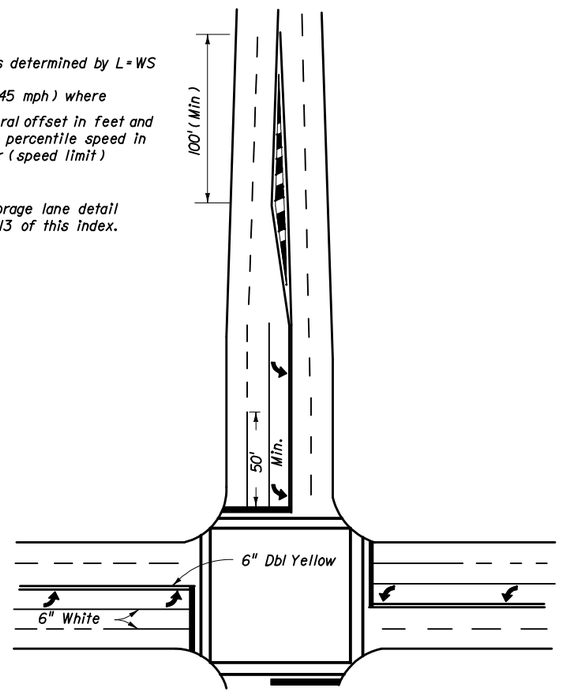


APPLIES TO ONE WAY LEFT TURN LANE ALSO

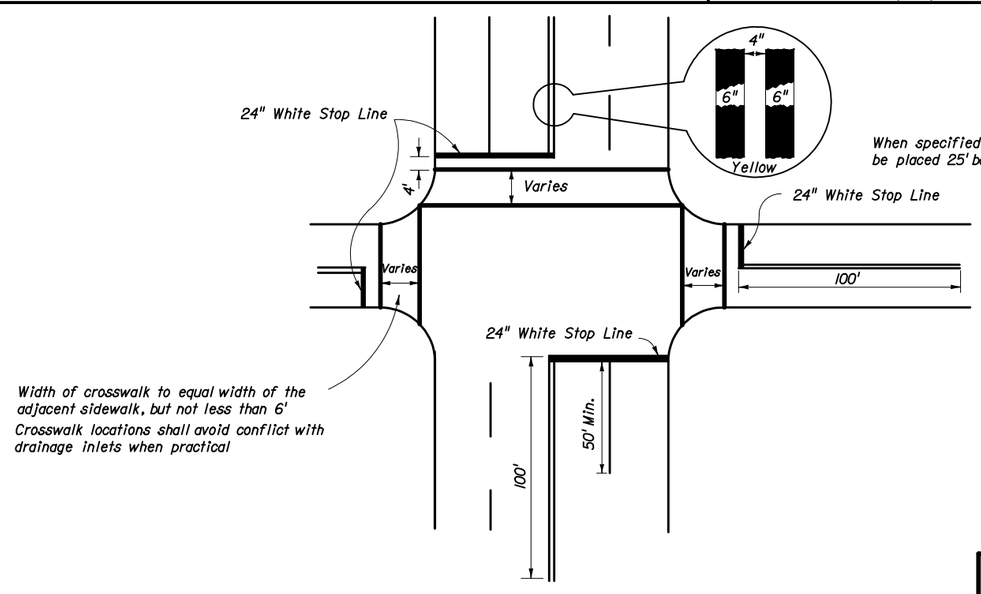
RIGHT TURN LANE AND ISLAND DETAILS

100' Minimum or as determined by $L = \frac{WS^2}{60}$ ($L < 45$ mph) where
W is the lateral offset in feet and
S is the 85th percentile speed in miles per hour (speed limit)

For left turn storage lane detail see sheet 2 of 13 of this index.



TYPICAL INTERSECTION 2 THRU LANES PLUS LEFT TURN LANE, WITH CROSSWALK



STOP BARS, CROSSWALKS AND DOUBLE CENTER LINE DETAILS

NOTES:

1. When public sidewalk curb ramps are present, refer to sheet 2 of 13 & 7 of 13 of this Index 17346 and Index No. 304 for crosswalk widths.
2. Double yellow longitudinal center lines on all roadway approaches shall be extended back 100' for projects involving intersection improvements only.

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SPECIAL MARKING AREAS

INTERIM STANDARD

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	3 of 13	017346

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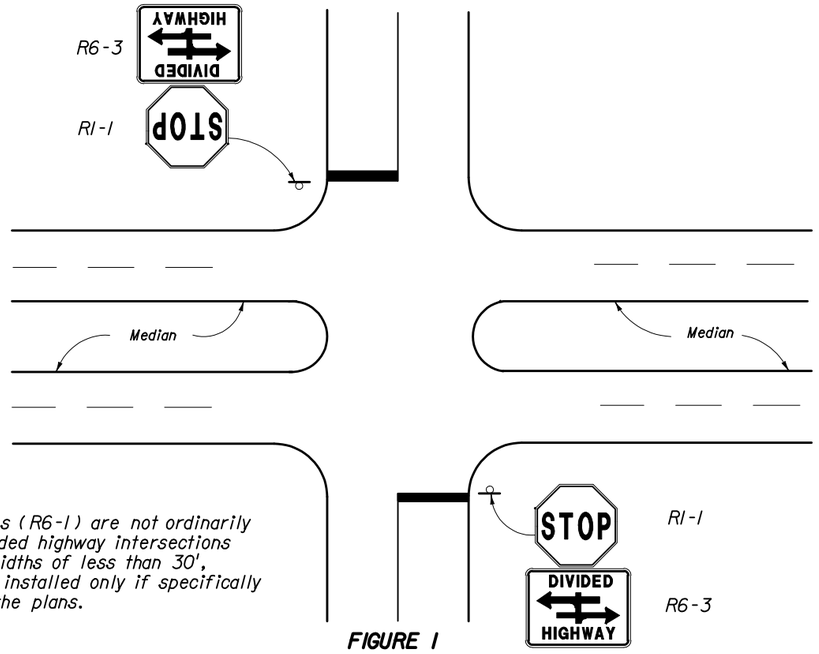


ONE WAY signs (R6-1) are not ordinarily needed at divided highway intersections with median widths of less than 30', and should be installed only if specifically called for in the plans.

FIGURE 1
MEDIAN WIDTHS UNDER 30'

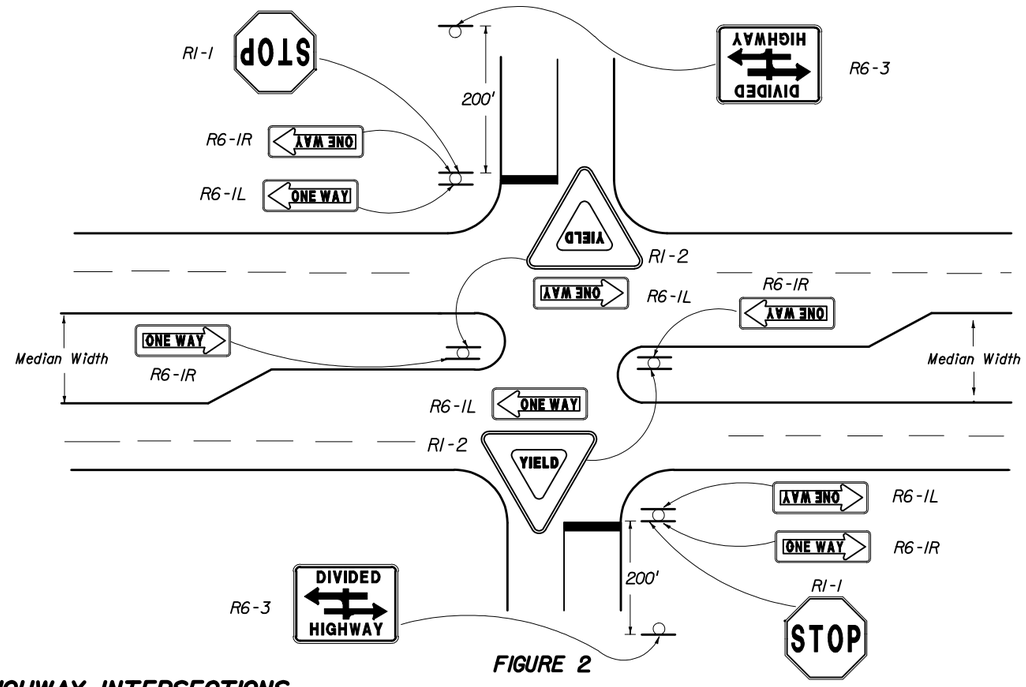
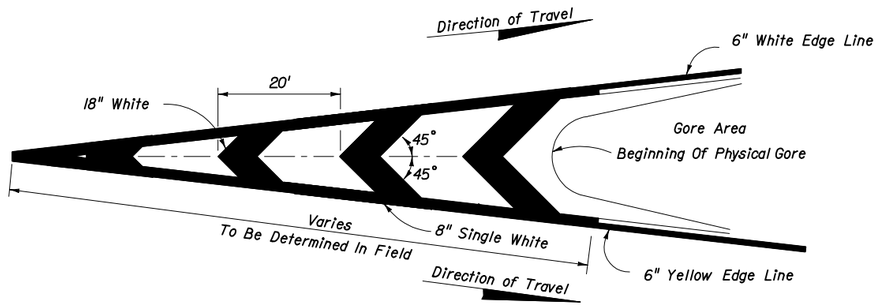
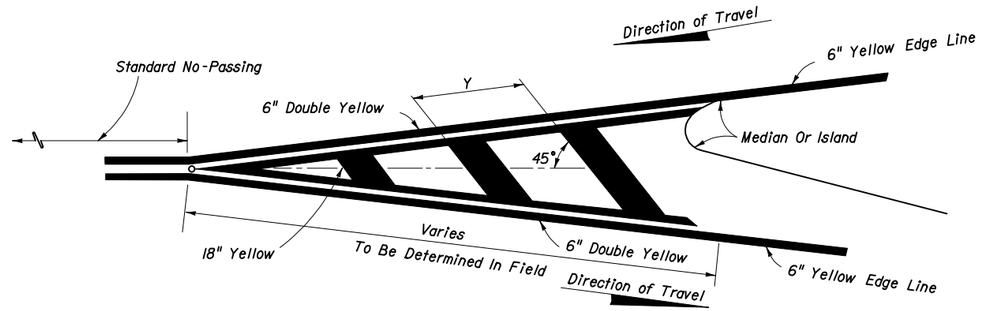


FIGURE 2
MEDIAN WIDTHS 30' AND GREATER

ONE-WAY SIGNS ON DIVIDED HIGHWAY INTERSECTIONS



PAVEMENT MARKINGS FOR TRAFFIC CHANNELIZATION AT GORE
(TRAFFIC FLOWS IN SAME DIRECTION)



PAVEMENT MARKING FOR TRAFFIC SEPARATION
(TRAFFIC FLOWS IN OPPOSING DIRECTIONS)

POSTED (DAY) SPEED LIMIT M.P.H.	"Y" ft
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

INTERIM STANDARD

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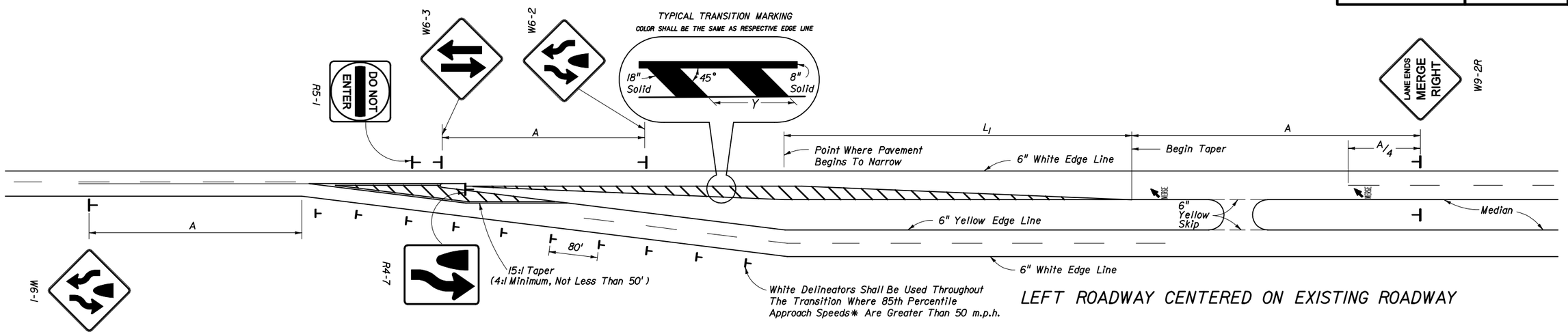
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 13	017346

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



LEFT ROADWAY CENTERED ON EXISTING ROADWAY

* S \ **W	TRANSITION DISTANCE L_l (FEET)						
MPH	8	9	10	11	12	13	14
30	120	135	150	165	180	195	210
35	165	185	205	225	245	265	285
40	215	240	270	295	320	350	375
45	360	405	450	495	540	585	630
50	400	450	500	550	600	650	700
55	440	495	550	605	660	715	770
60	480	540	600	660	720	780	840
65	520	585	650	715	780	845	910

$L_l = WS$

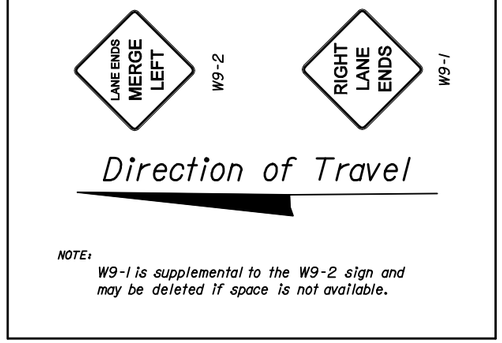
$(L_l = \frac{WS^2}{60} < 45\ MPH)$

* Posted speed or 85th percentile (Use Higher Value)

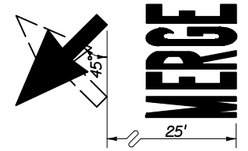
** Lateral offset

SPEED* M.P.H.	"A" (FT.)
55	700
50	625
45	550
40	475
30	325

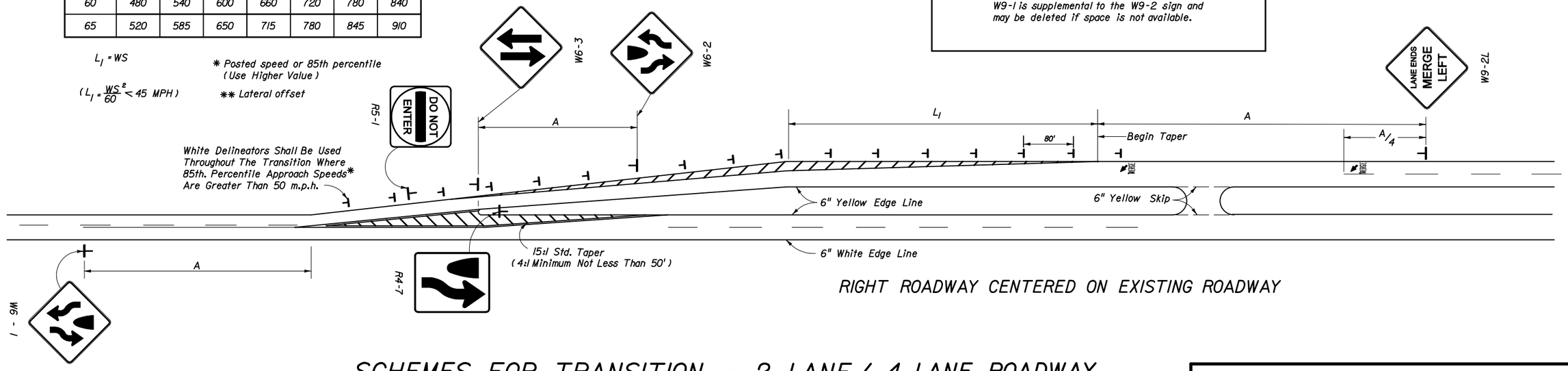
POSTED (DAY) SPEED LIMIT M.P.H.	"Y" (FT.)
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40



NOTE:
W9-1 is supplemental to the W9-2 sign and may be deleted if space is not available.



PAVEMENT MARKING DETAIL



RIGHT ROADWAY CENTERED ON EXISTING ROADWAY

SCHEMES FOR TRANSITION - 2 LANE / 4 LANE ROADWAY

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

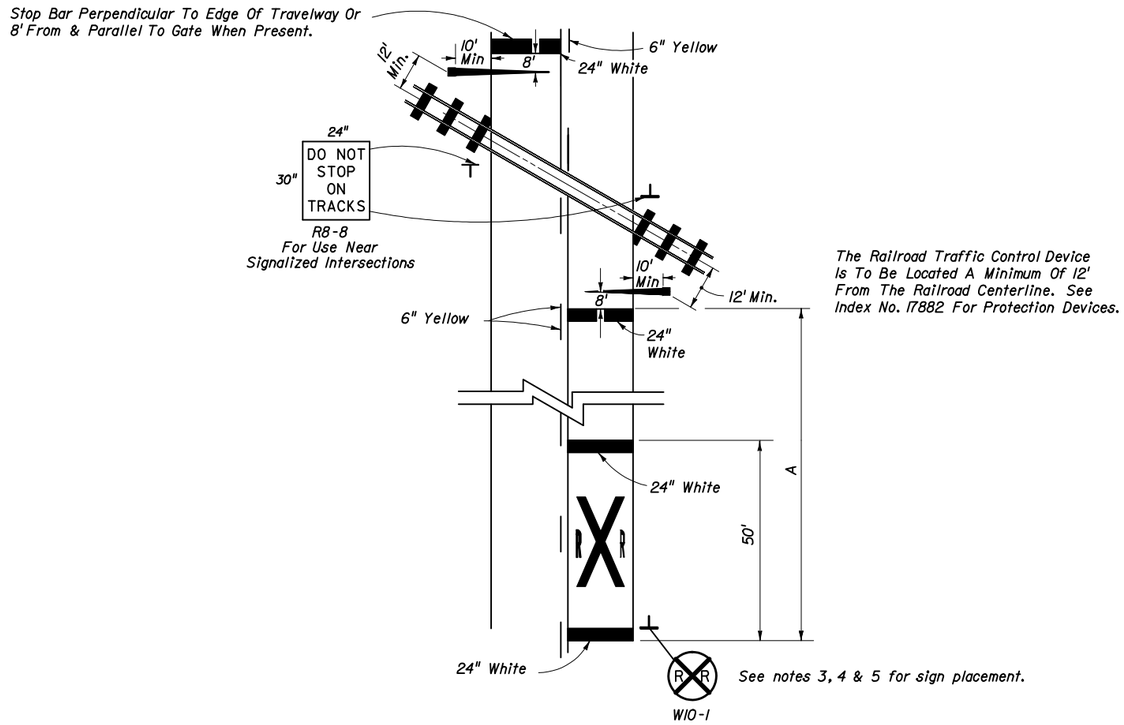
INTERIM STANDARD

SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

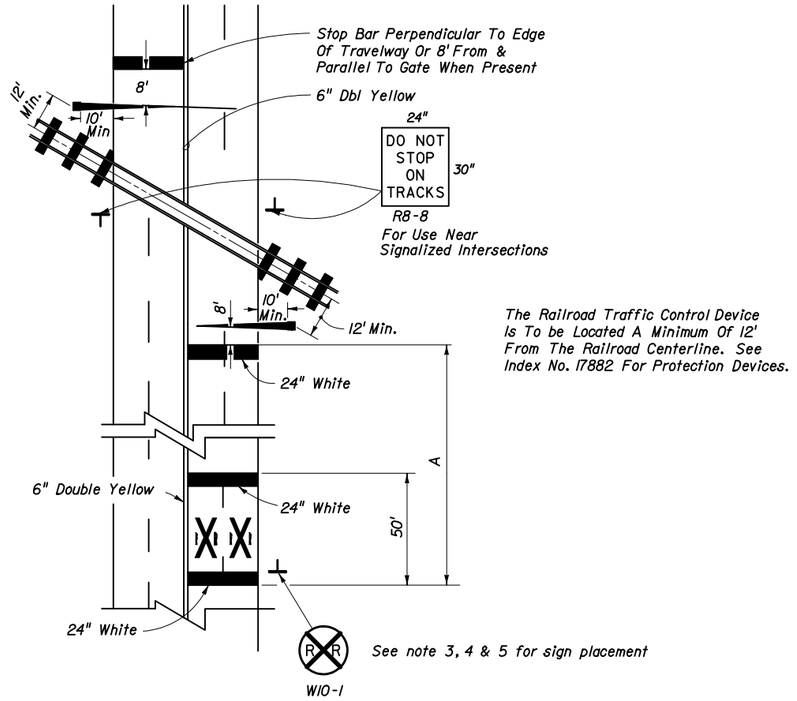
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 13	017346

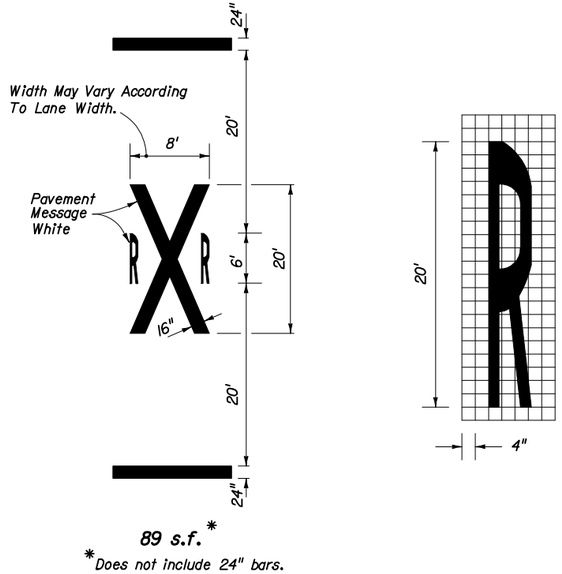
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



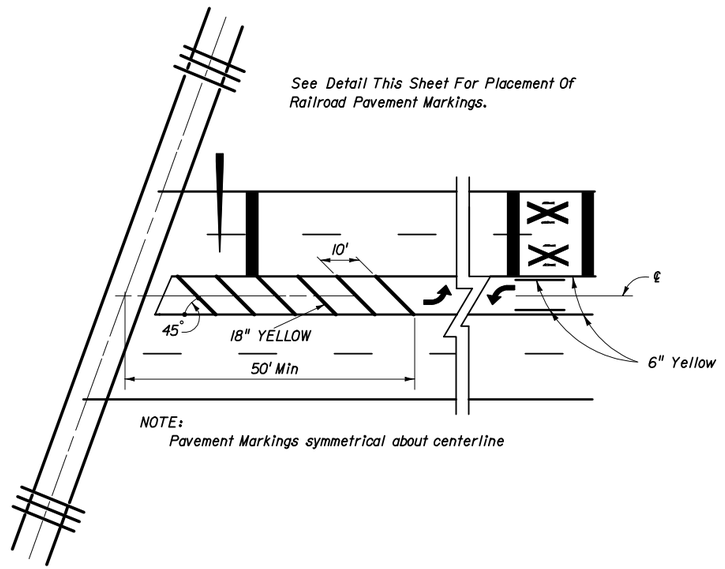
RAILROAD CROSSING AT 2-LANE ROADWAY



RAILROAD CROSSING AT 4-LANE ROADWAY



TYPICAL PAVEMENT MARKINGS FOR R/R CROSSING



PAVEMENT MARKINGS FOR TERMINATION OF TWO WAY LEFT TURN AT R/R CROSSINGS

NOTES:

1. When computing pavement messages, quantities do not include transverse lines.
2. When dynamic devices are not present or are to be installed, the crossbuck shall be located at the future location of the RR gate or signal and gate in accordance with Index No. 17882.
3. Placement of sign W10-1 in a residential or business district, where low speeds are prevalent, the W10-1 sign may be placed a minimum distance of 100' from the crossing. Where street intersections occur between the RR pavement message and the tracks an additional W10-1 sign & additional pavement message should be used.
4. Recommended location for FTP-38 or FTP 38B sign, 100' urban & 300' rural in advanced of the crossing.
5. A portion of the pavement marking symbol should be directly opposite the W10-1 sign.

SPEED MPH	A (Ft)
65	650
60	550
55	450
50	375
45	300
40	225
35	150
30	100
Urban	50 Min.

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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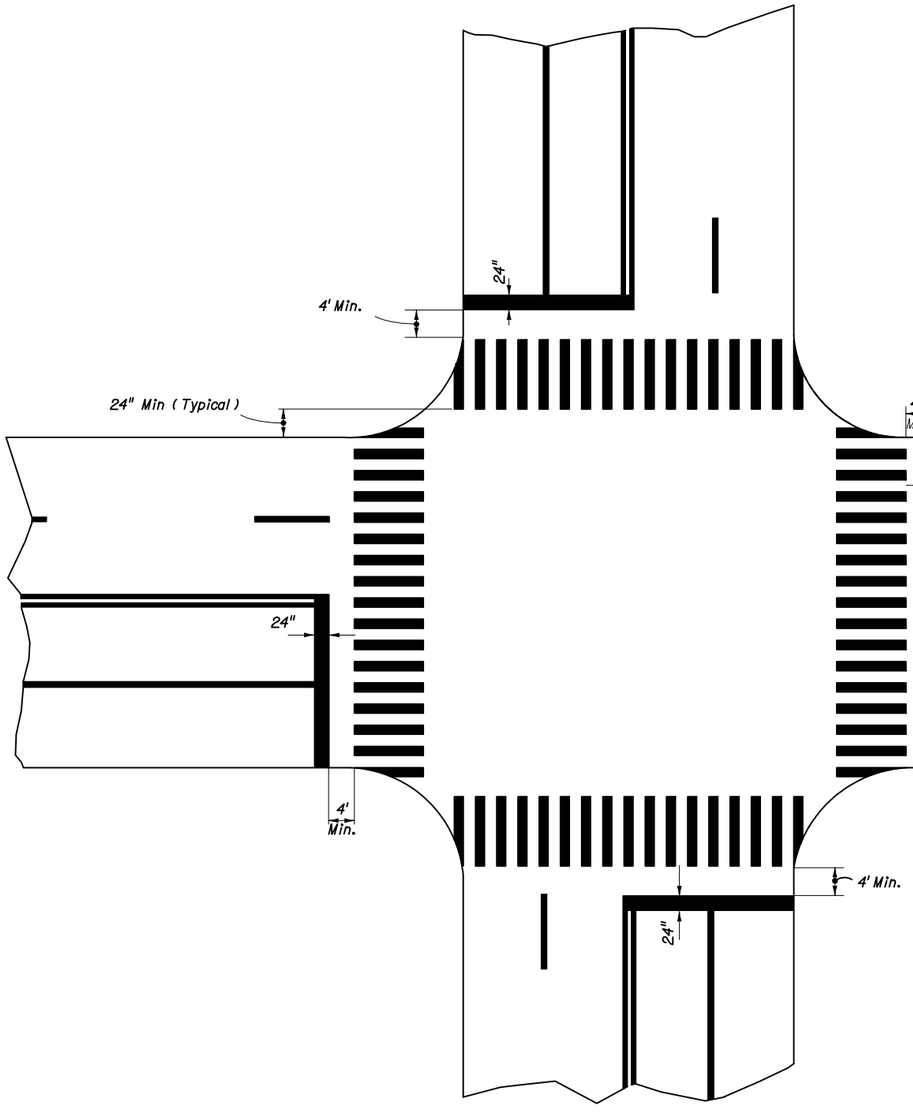
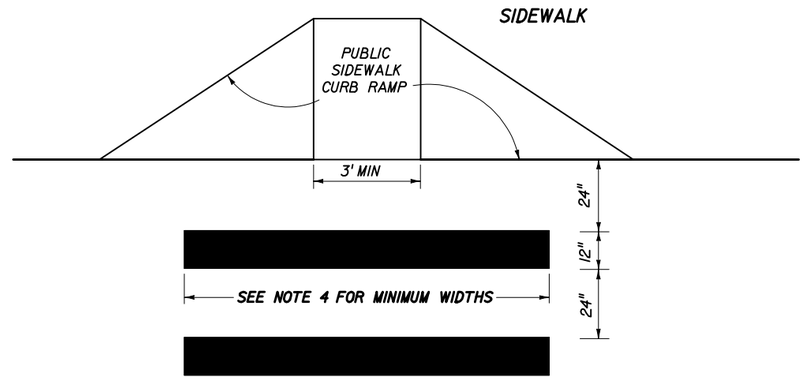
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 13	017346

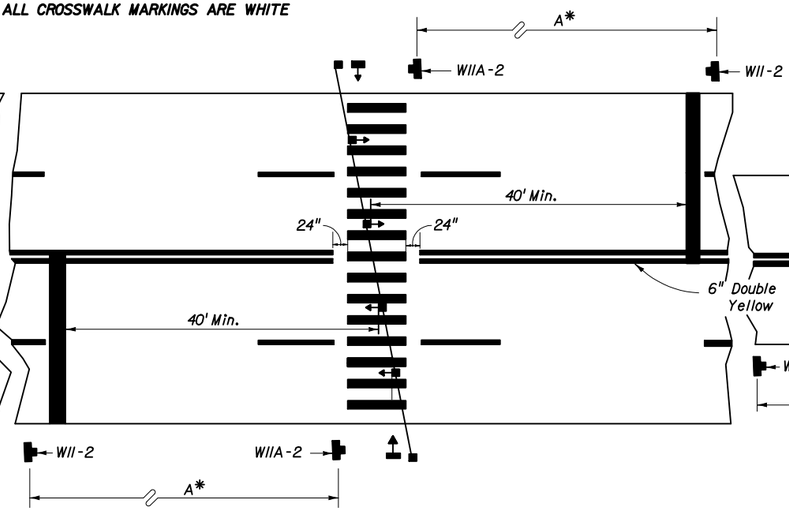
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



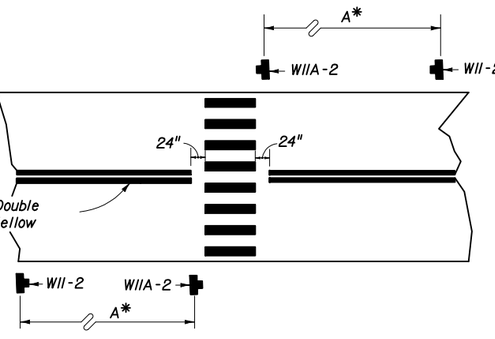
SPECIAL EMPHASIS CROSSWALK
SIGNALIZED OR STOP SIGN CONTROLLED INTERSECTION



ALL CROSSWALK MARKINGS ARE WHITE



SPECIAL EMPHASIS CROSSWALK
MID BLOCK-SIGNALIZED



SPECIAL EMPHASIS CROSSWALK
TWO LANE NON-SIGNALIZED

GENERAL NOTES

1. For traffic and pedestrian signal installation, refer to Index No. 17721 through 17890.
2. For public sidewalk curb ramps, refer to Index No. 304.
3. For pavement marking and sign installation, refer to Indexes 9535 through 17356.
4. Crosswalk minimum widths:
   Intersection Crosswalk 6'
   Mid Block Crosswalk 10'

APPROACH SPEED MPH	A* SUGGESTED DISTANCE (Ft)
25 To 35	275
36 To 45	350
46 To 55	500

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

INTERIM STANDARD

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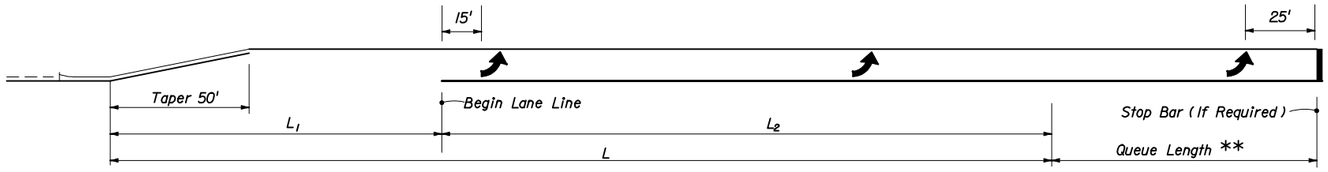
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 13	017346

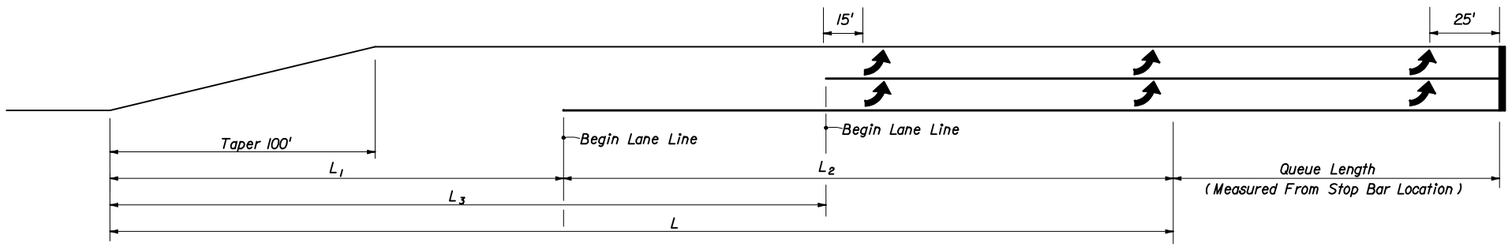
Revised: 12-26-01

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



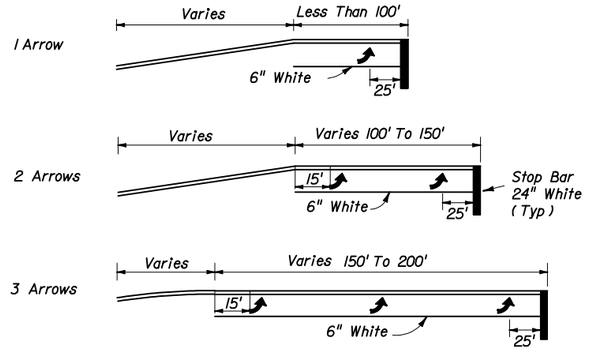
SINGLE LEFT TURNS

** Queue Length Is Measured From The Median Nose Radial Point Or, When A Stop Bar Is Required, From The Stop Bar.



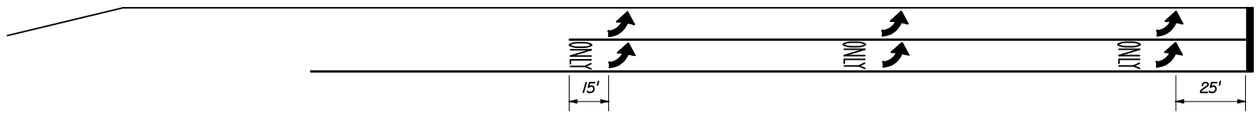
DOUBLE LEFT TURNS

	TURN LANES ○ CURBED AND UNCURBED MEDIANS						
		URBAN CONDITIONS			RURAL CONDITIONS		
Design Speed (mph)	Clearance Distance L_1	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_3
35	70'	75'	145'	110'	— —	— —	— —
40	80'	75'	155'	120'	— —	— —	— —
45	85'	100'	185'	135'	— —	— —	— —
50	105'	135'	240'	160'	215'	320'	160'
55	125'	— —	— —	— —	260'	385'	195'
60	145'	— —	— —	— —	310'	455'	230'
65	170'	— —	— —	— —	350'	520'	270'



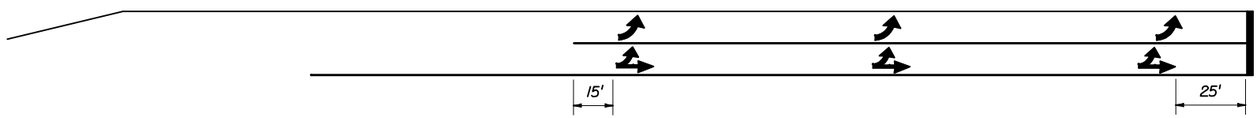
Arrow should be evenly spaced between first and last arrow. Turn lanes longer than 200' add one arrow for each 100' additional length.

ARROW SPACING



Through Lane Becomes Exclusive Left Turn

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.



Through Lane Becomes Optional Left Turn

DOUBLE LEFT TURN MARKINGS

NOTES:

1. The "Begin Lane Line" locations are based on the standard lengths shown in Design Standard 301. These locations must be adjusted on a case by case basis for turn lanes not meeting the standard lengths.
2. Yellow left turn edge marking may be used adjacent to raised curb or grass medians if lane use is not readily apparent to drivers approaching a left turn storage lane.

Refer to Design Standard 301 for Roadway Details.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

INTERIM STANDARD

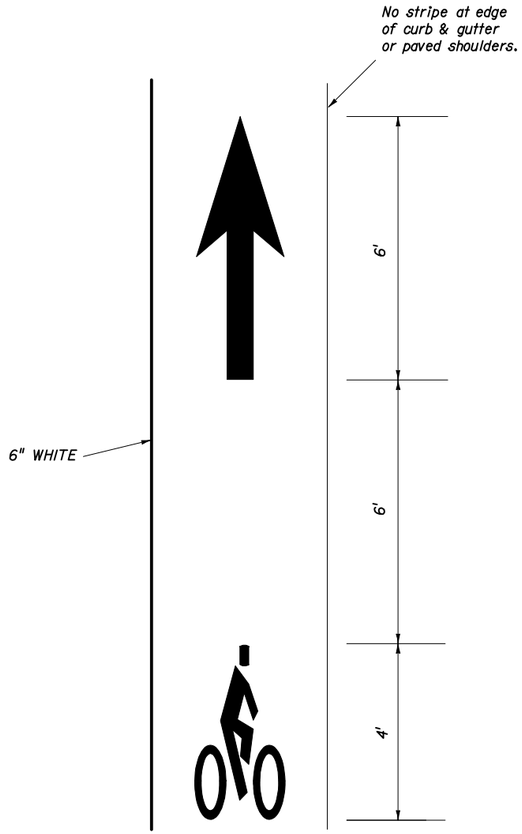
SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY Clarke A Scott
State Traffic Plans Engineer

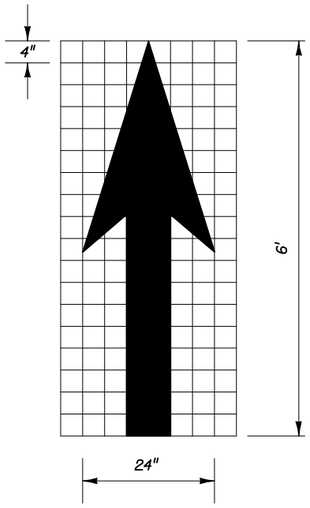
REVISION NO.	SHEET NO.	INDEX NO.
	8 of 13	017346

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

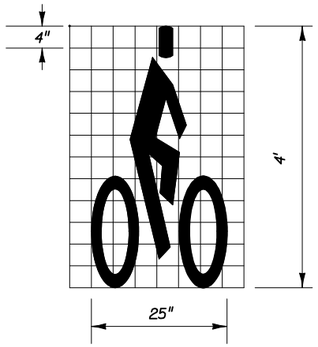
1. Recommended spacing of symbols: Immediately after intersections and major driveways and at a maximum spacing of 600 feet for urban sections and 1320 feet for rural sections.
2. Raised pavement markings and raised barriers can cause steering difficulties and should not be used to delineate bicycle lanes. All pavement markings and pavement messages shall be white.



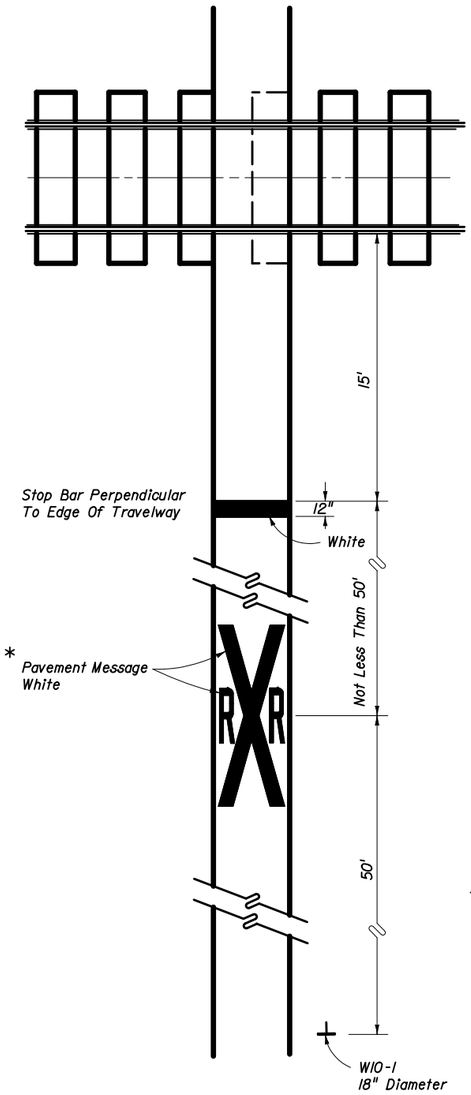
DETAIL OF BIKE LANE MARKINGS

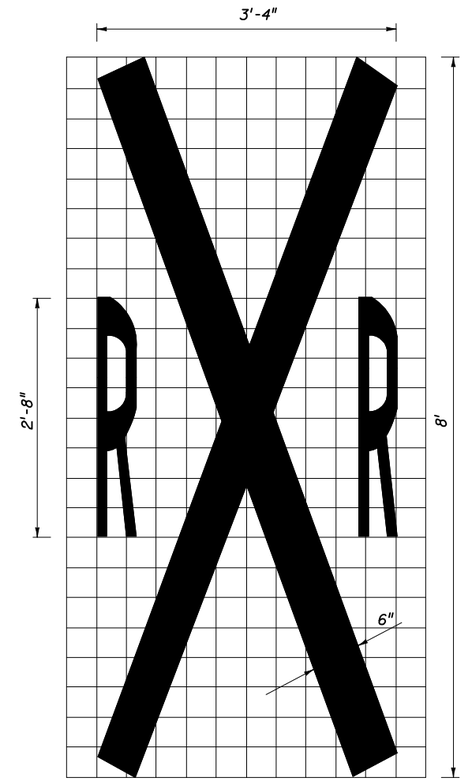


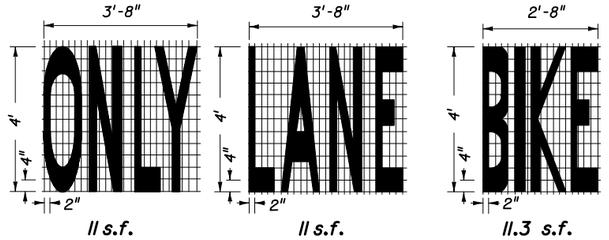
4.2 s.f.



2.3 s.f.







PAVEMENT MESSAGE DETAILS

*NOTE

3. When used on a bike lane (adjacent to vehicle lane) markings shall be placed adjacent to markings for vehicles & W10-1 sign shall be sized and placed for vehicles.

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

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REVISION NO.	SHEET NO.	INDEX NO.
	9 of 13	017346

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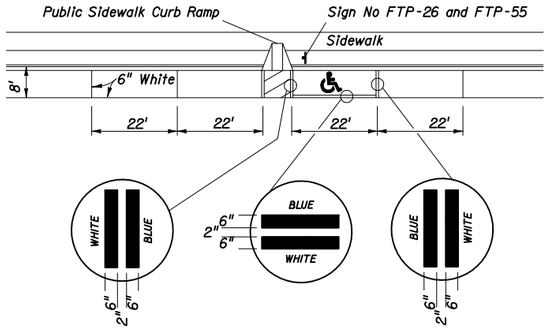
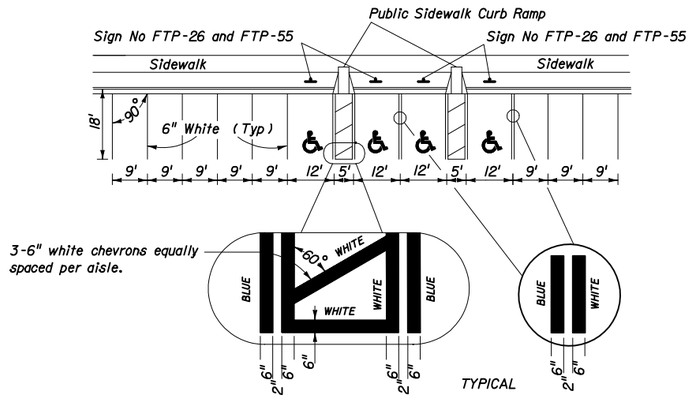
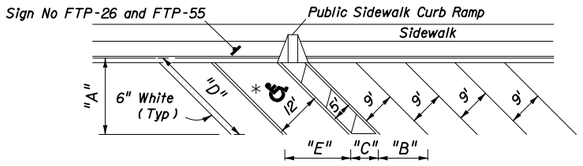






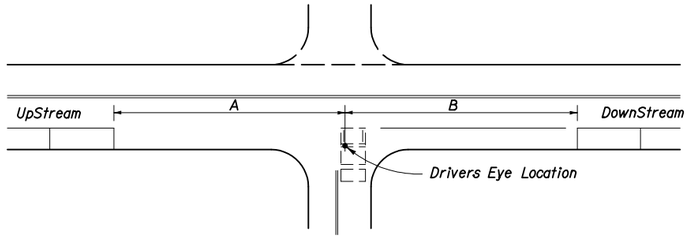
* FOR ACCESSIBLE MARKINGS - SEE ABOVE

∠	"DIMENSIONS"				
	"A"	"B"	"C"	"D"	"E"
45°	19'-1"	12'-9"	7'-0"	27'-0"	17'-0"
60°	20'-1"	10'-5"	5'-9"	23'-2"	13'-10"

NOTES:

1. Dimensions are to the centerline of markings.
2. An Access Aisle is required for each accessible space when angle parking is used.
3. Criteria for pavement markings only, not public sidewalk curb ramp locations. For ramp locations refer to plans.
4. Blue pavement markings shall be tinted to match shade 15180 of Federal Standards 595a.
5. The FTP-55 panel shall be mounted below the FTP-26 sign.

PAVEMENT MARKING FOR PUBLIC SIDEWALK CURB RAMPS IN REST AREAS

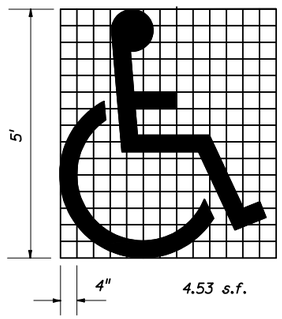


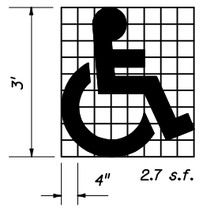
SPEED MPH	UP STREAM (A)	DOWN STREAM (B)	
		2 LANE	4 LANE
0-30	85'	60'	45'
35	100'	70'	50'

NOTES

1. Distances measured longitudinally along the street from driver location of entering vehicle to end of parking restriction.
2. Distances applicable to intersecting street, major driveways and other driveways to the extent practical.
3. For non-signalized intersections, the values above shall be compared with the values for signalized intersections and the maximum restrictions implemented. These restrictions apply to both accessible and non-accessible parking.

MINIMUM PARKING RESTRICTION FOR NON-SIGNALIZED INTERSECTIONS





♿ Use of pavement symbol in accessible parking spaces is optional, when used the symbol shall be 3' or 5' high and white in color.

"UNIVERSAL SYMBOL OF ACCESSIBILITY"

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

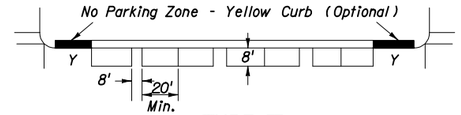
INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

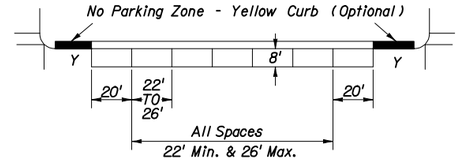
GENERAL NOTES (Signalized & Non-signalized)

1. For entrances to a one-way street, the downstream restriction may be reduced to 20'.
2. Parking shall not be allowed within 20' of a crosswalk.
3. All parking lane markings shall be 6" white.
4. Parking lane lines shall be broken at driveways.
5. Refer to Chapter 316, Fla. statutes, for laws governing parking spaces.
6. Where curb and gutter is used, the gutter pan width may be included as part of the minimum width of parking lane, but desirably the lane width should be in addition to that of the gutter pan.

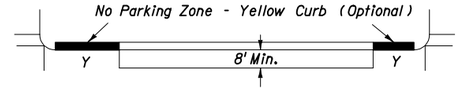
TYPE I



TYPE II



TYPE III



SPEED LIMIT MPH	SIGNALIZED INTERSECTIONS	
0 - 30	30	DISTANCE FROM CURB RADIUS (Y)
35	50	

PARKING RESTRICTION (FT.) FOR SIGNALIZED INTERSECTION

NOTES:

1. Parking restrictions measured from curb radius point.
2. Restrictions for accessible parking are the same as those applied to non-signalized intersections.

MINIMUM PARKING RESTRICTION FOR SIGNALIZED INTERSECTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

INTERIM STANDARD

SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

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REVISION NO.	SHEET NO.	INDEX NO.
	10 of 13	017346

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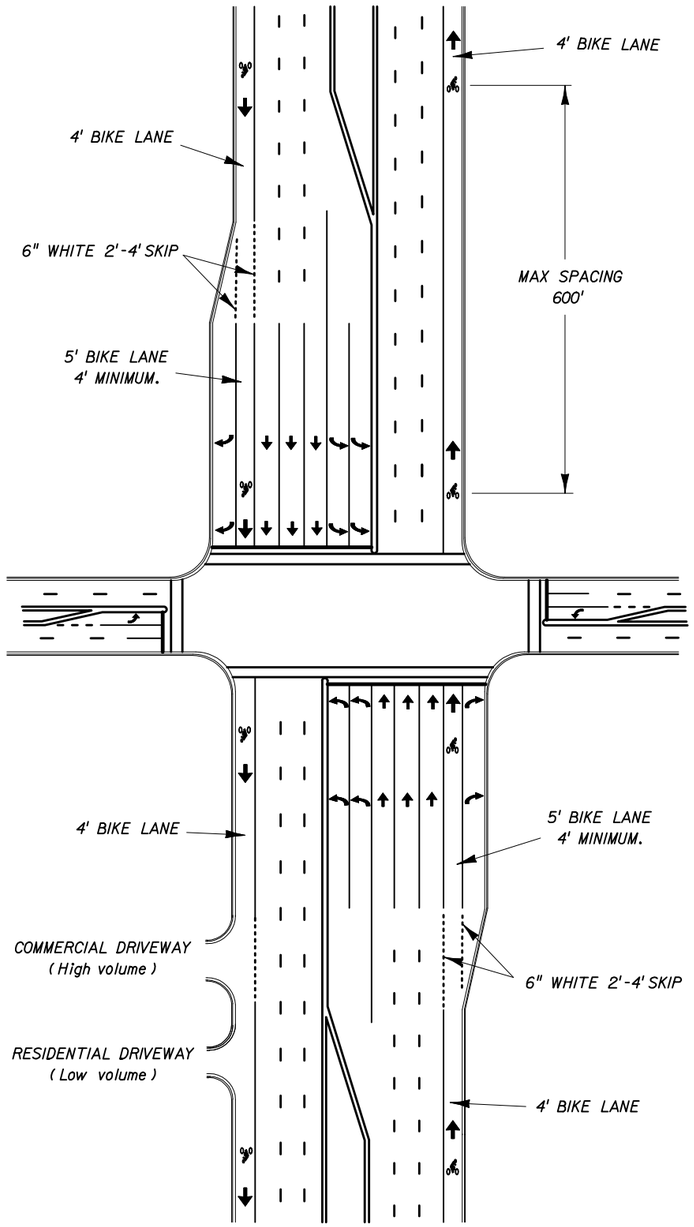
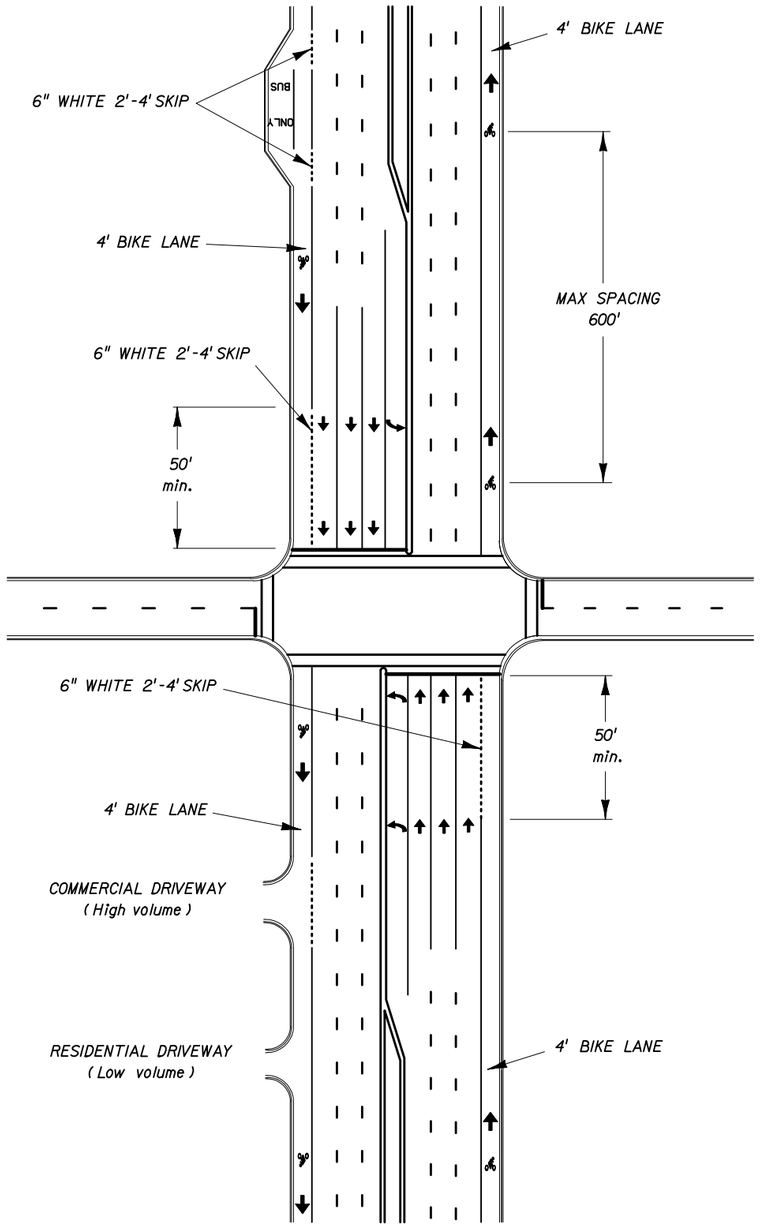
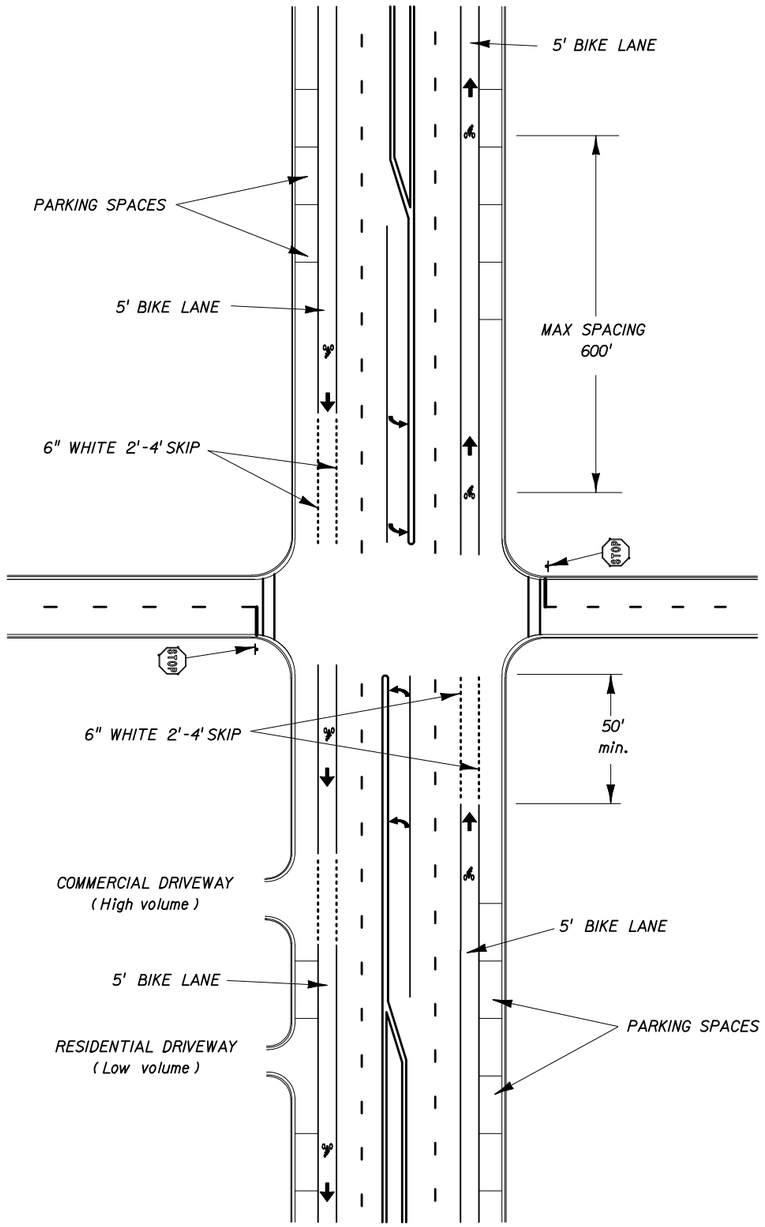


MAJOR INTERSECTION WITH SEPARATE RIGHT TURN LANE URBAN TYPICAL SECTION (CURB AND GUTTER)



MAJOR INTERSECTION, NO RIGHT TURN LANE PLUS BUSBAY URBAN TYPICAL SECTION (CURB AND GUTTER)



MAJOR WITH LOCAL STREET INTERSECTION, NO RIGHT TURN LANE, ON STREET PARKING URBAN TYPICAL SECTION (CURB AND GUTTER)

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

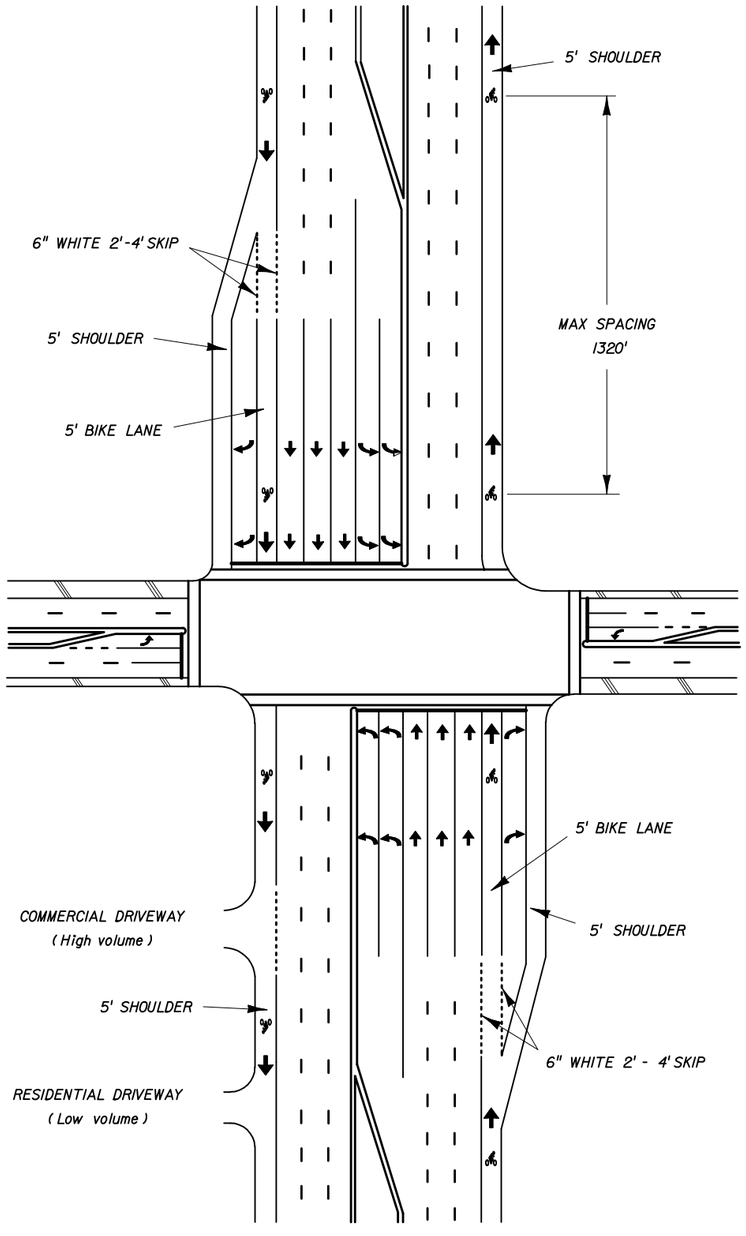
INTERIM STANDARD

SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

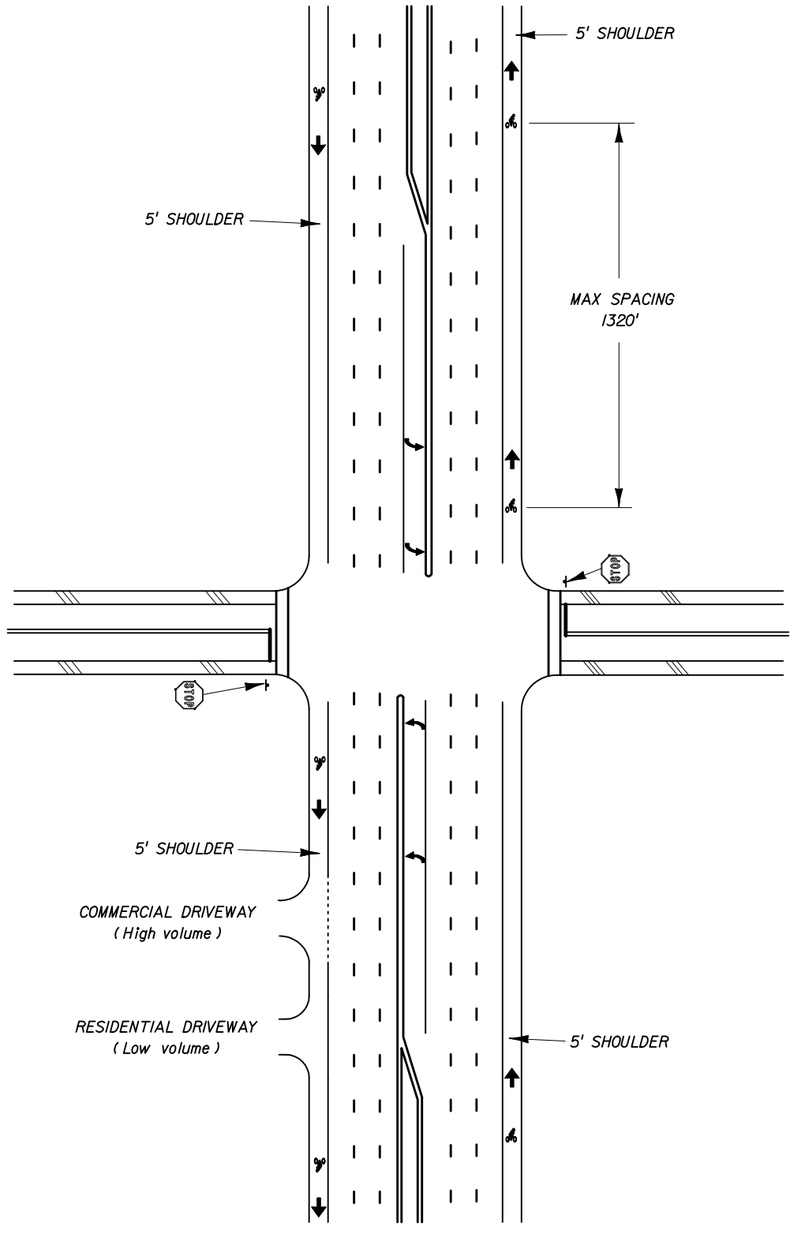
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	11 of 13	017346

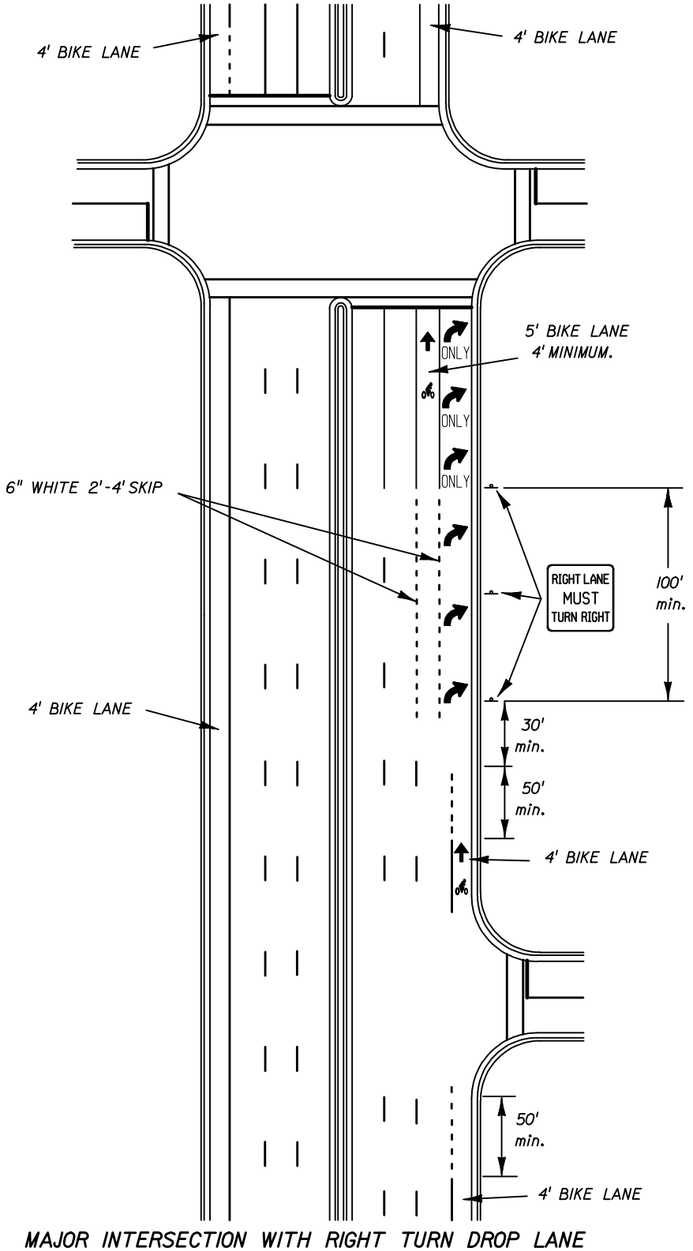
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



MAJOR INTERSECTION WITH DESIGNATED SHOULDER, AND SEPARATE RIGHT TURN LANE RURAL TYPICAL SECTION (PAVED SHOULDER)



MAJOR WITH LOCAL STREET INTERSECTION, DESIGNATED SHOULDER, AND NO RIGHT TURN LANE RURAL TYPICAL SECTION (PAVED SHOULDER)



MAJOR INTERSECTION WITH RIGHT TURN DROP LANE AND DESIGNATED OR UNDESIGNATED BIKE LANE URBAN TYPICAL SECTION (CURB AND GUTTER)

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

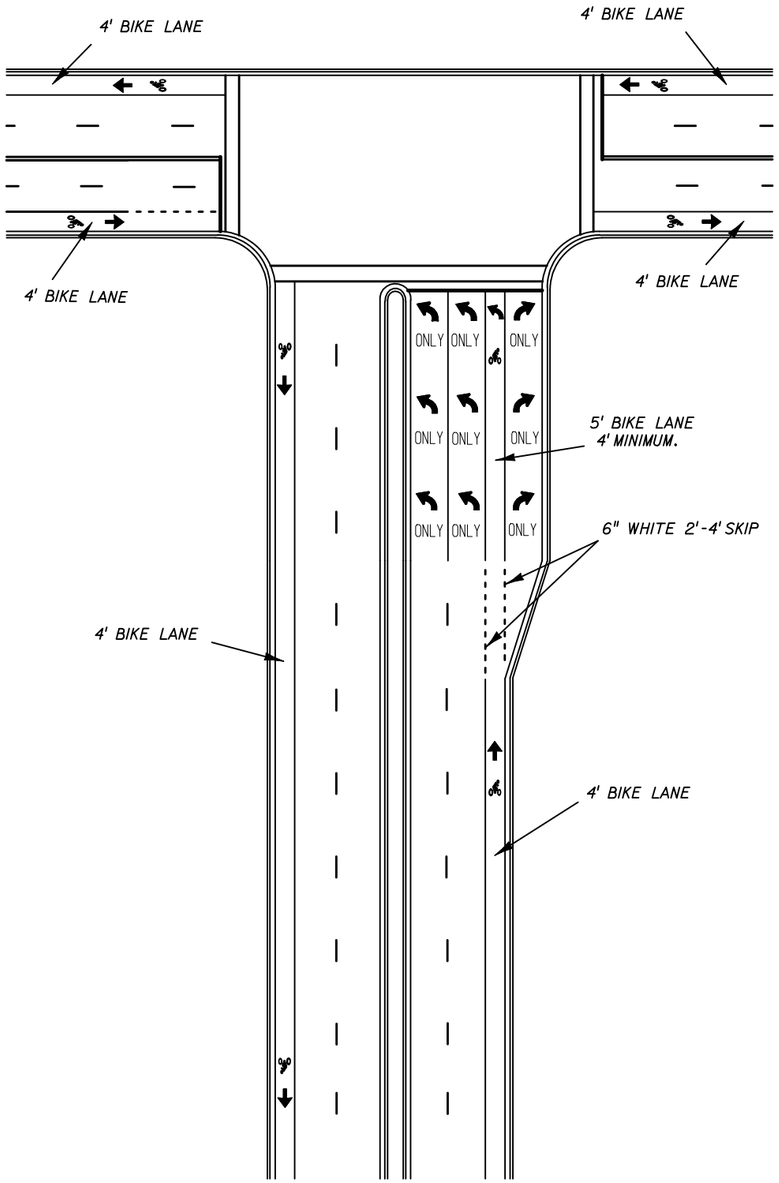
INTERIM STANDARD

SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

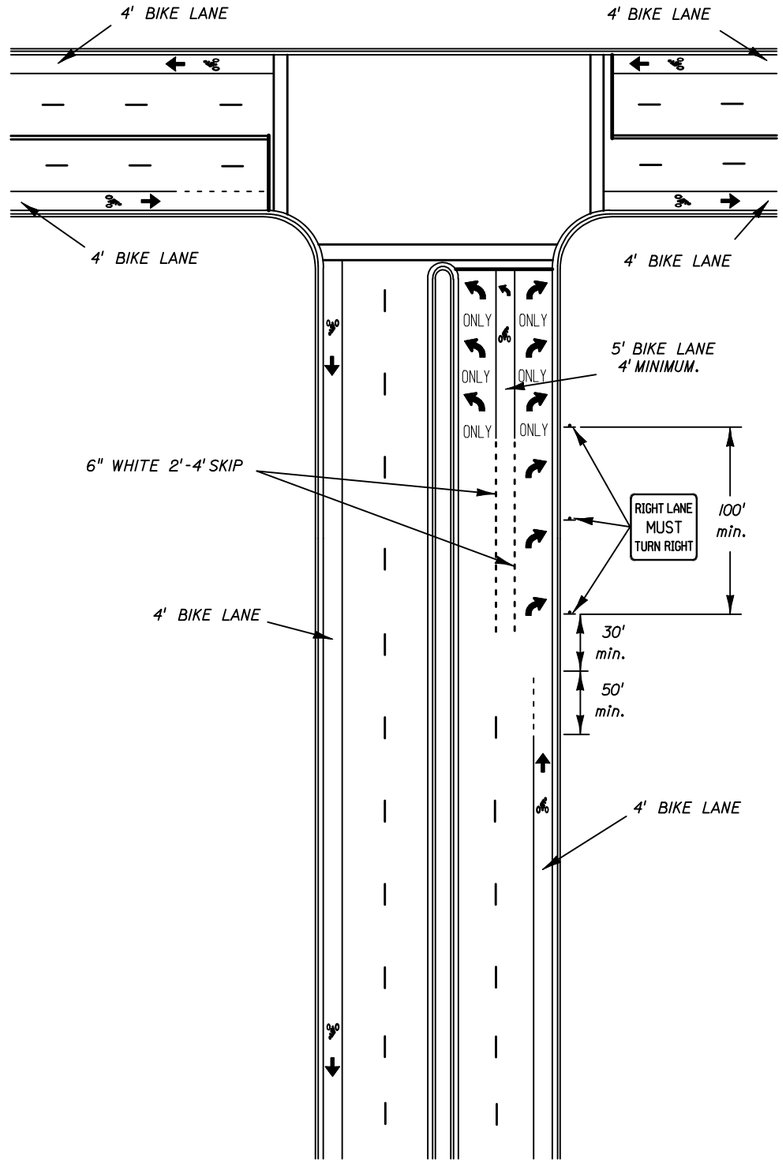
APPROVED BY Clarke A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	12 of 13	017346

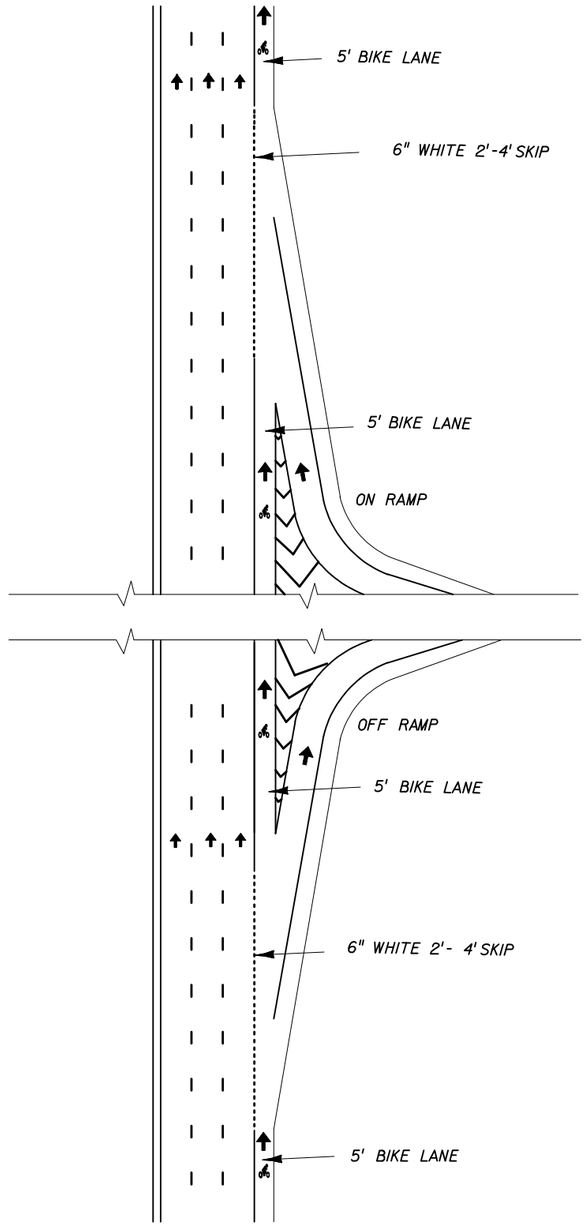
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



"TEE" INTERSECTION WITH SEPARATE RIGHT TURN LANE URBAN TYPICAL SECTION (CURB & GUTTER)



"TEE" INTERSECTION WITH RIGHT TURN DROP LANE URBAN TYPICAL SECTION (CURB & GUTTER)



INTERCHANGE RAMPS
RURAL TYPICAL SECTION (PAVED SHOULDER)

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-26-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

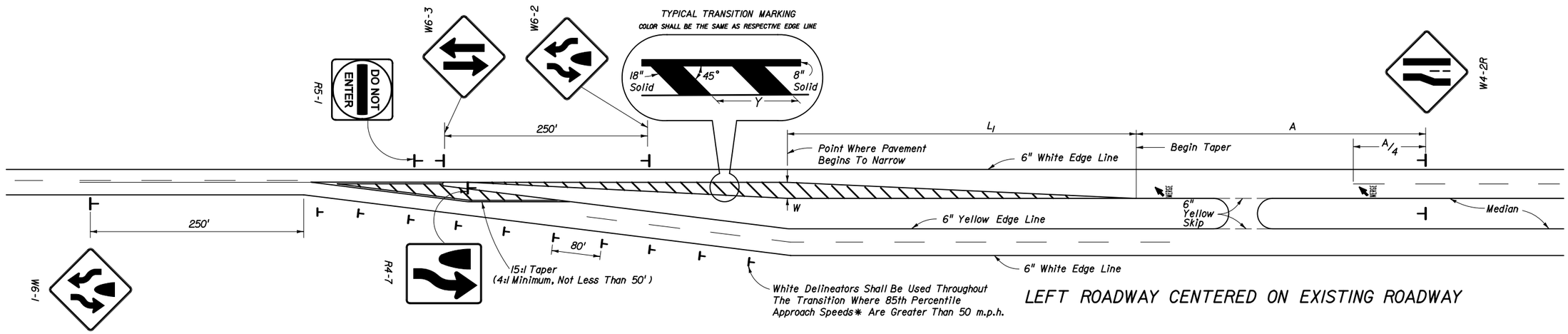
INTERIM STANDARD

SHEETS NOS. 1-13 OF 13 REPLACE INDEX NO. 17346 (SHEETS 1-9 OF 9) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY Clarke A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	13 of 13	017346

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



LEFT ROADWAY CENTERED ON EXISTING ROADWAY

S* \ W**	TRANSITION DISTANCE L_1 (FEET)						
MPH	8	9	10	11	12	13	14
30	120	135	150	165	180	195	210
35	165	185	205	225	245	265	285
40	215	240	270	295	320	350	375
45	360	405	450	495	540	585	630
50	400	450	500	550	600	650	700
55	440	495	550	605	660	715	770
60	480	540	600	660	720	780	840
65	520	585	650	715	780	845	910

$L_1 = WS$ (45 MPH or Greater)

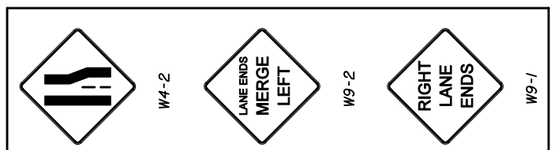
$(L_1 = \frac{WS^2}{60} \leq 40$ MPH)

* Design Speed

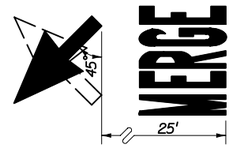
** Lateral offset

SPEED* M.P.H.	"A" (FT.)
55	950
50	850
45	750
40	650
30	450

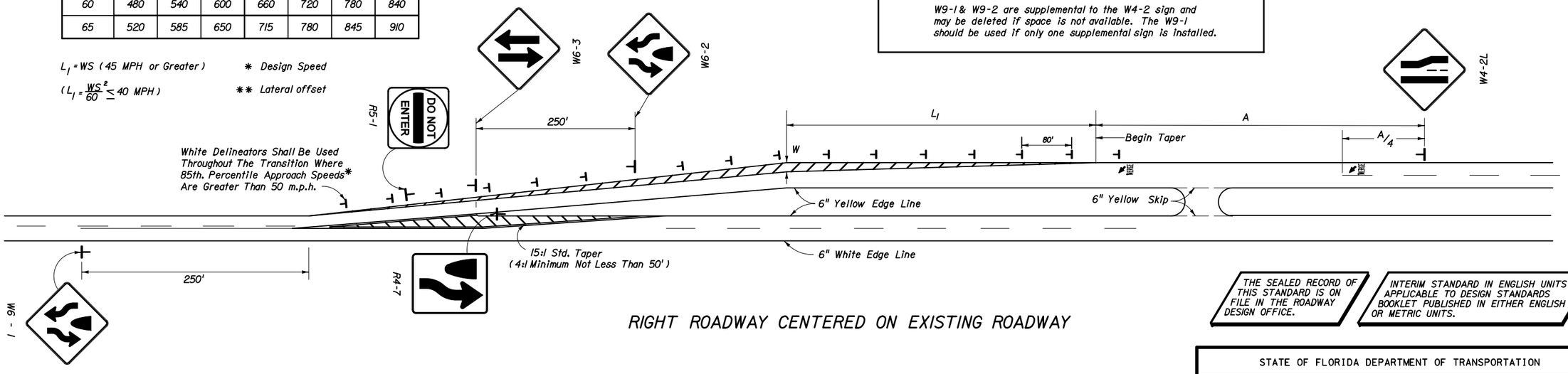
POSTED (DAY) SPEED LIMIT M.P.H.	"Y" (FT.)
30 OR LESS	10
35	20
40	20
45	30
50 OR MORE	40



NOTE:
W9-1 & W9-2 are supplemental to the W4-2 sign and may be deleted if space is not available. The W9-1 should be used if only one supplemental sign is installed.



PAVEMENT MARKING DETAIL



RIGHT ROADWAY CENTERED ON EXISTING ROADWAY

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

SCHEMES FOR TRANSITION - 2 LANE / 4 LANE ROADWAY

Revised: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL MARKING AREAS

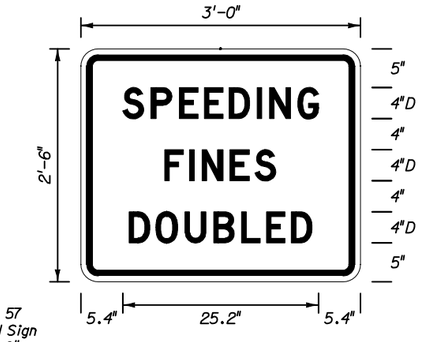
INTERIM STANDARD

SHEET 5 OF 13 IS A REPLACEMENT SHEET 5 OF 13 OF THE INTERIM INDEX ISSUED 12/26/01

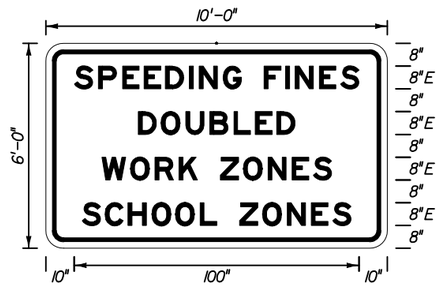
APPROVED BY
State Traffic Standards Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 13	017346

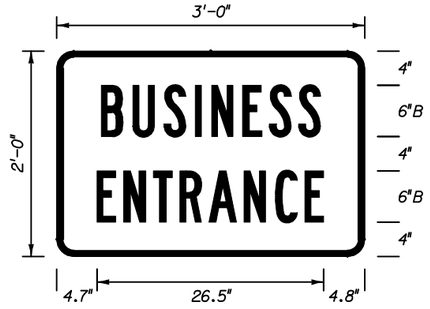
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



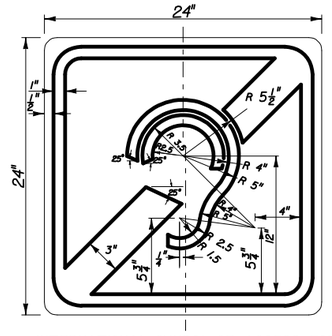
FTP - 57
Arterial Sign
3'X 2'-6"
2" Radii ¾" Border
4" Series D
White Background
Black Legend & Border



FTP - 58
State Line Sign
10'X 6'
3" Radii 2" Border
8" Series E
White Background
Black Legend & Border

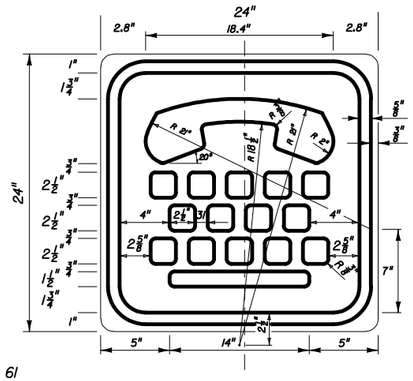


FTP - 59
3'X 2'
1½" Radii ¾" Border
6" Series B
Blue Background
White Legend & Border



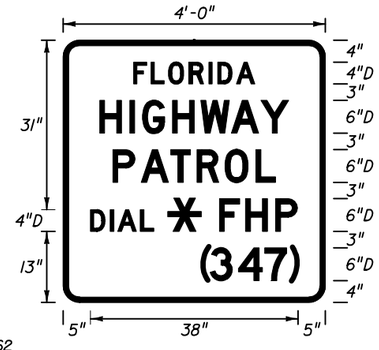
FTP - 60
24" X 24"
1½" Radii ¾" Border
Blue Background
White Legend & Border

INTERNATIONAL SYMBOL OF ACCESS FOR HEARING LOSS

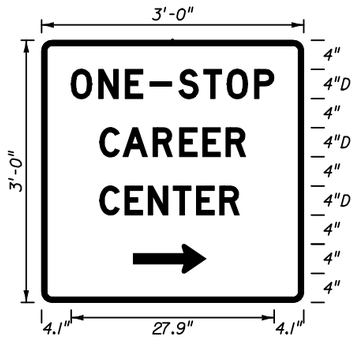


FTP - 61
2'X 2'
1½" Radii ¾" Border
Blue Background
White Legend & Border

INTERNATIONAL TDD SYMBOL

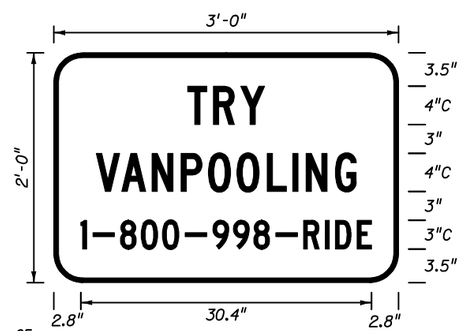


FTP - 62
4'X 4'
3" Radii 1" Border
Series D
Blue Background
White Legend & Border

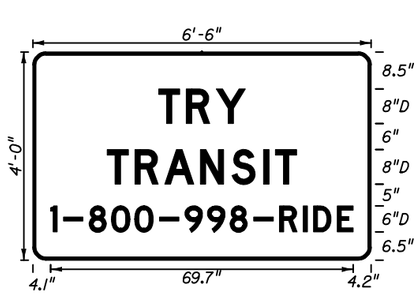


FTP - 63
3'X 3'
1½" Radii
4" Series D
Green Background
White Legend & Border

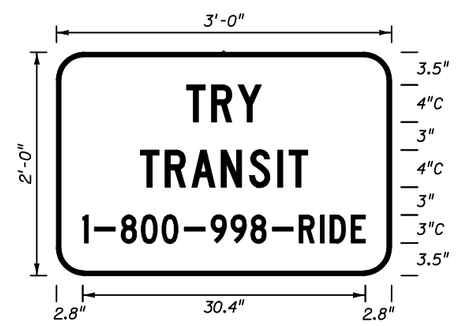
FTP - 64
6'-6" X 4'
3" Radii
8" Series D
6" Series D
Blue Background
White Legend & Border



FTP - 65
3'X 2'
3" Radii
4" Series C
3" Series C
Blue Background
White Legend & Border



FTP - 66
6'-6" X 4'
3" Radii
8" Series D
6" Series D
Blue Background
White Legend & Border



FTP - 67
3'X 2'
3" Radii
4" Series C
3" Series C
Blue Background
White Legend & Border

Revised: 12-27-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

INTERIM STANDARD

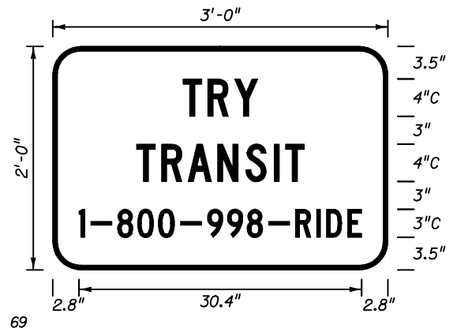
SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	8 of 14	017355

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

FTP - 68
6'-6" X 4'
3" Radii
8" Series D
6" Series D
Blue Background
White Legend & Border



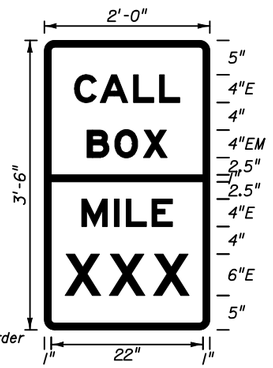
FTP - 69
3'X 2'
3" Radii
4" Series C
3" Series C
Blue Background
White Legend & Border

FTP - 70
3'-6" X 4'
1½" Radii ¾" Border
3" Series C
6" Series C
White Background
Black Legend & Border

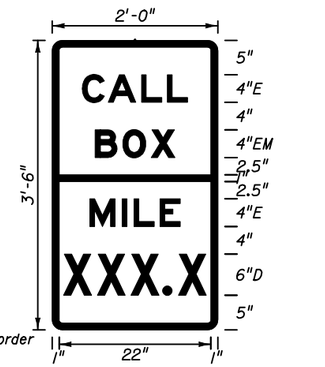
FTP - 71
2'-6" X 3'
1½" Radii ¾" Border
2" Series C
4" Series C
White Background
Black Legend & Border

FTP - 72
9' X 6'
9 " Radii ¾" Border
8" Series D
White Background
Black Legend & Border

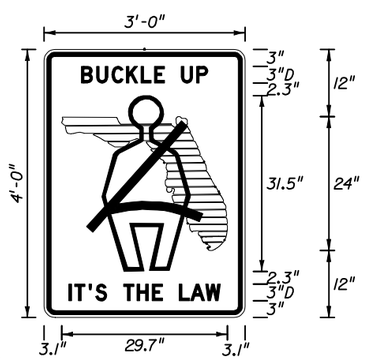
FTP - 73
4' X 3'
1½" Radii ¾" Border
4" Series C
White Background
Black Legend & Border



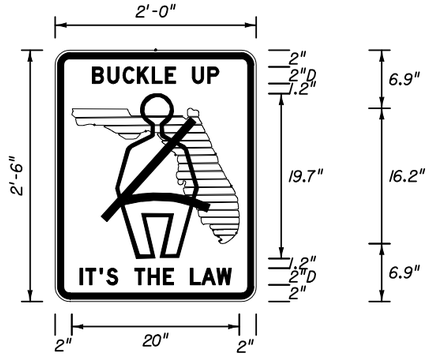
FTP -74
2' X 3'-6"
1½" Radii
Top
4" Series E
4" Series EM
Blue Background
White legend & Border
Bottom
4" Series E
6" Series E
Green Background
White Legend & Border



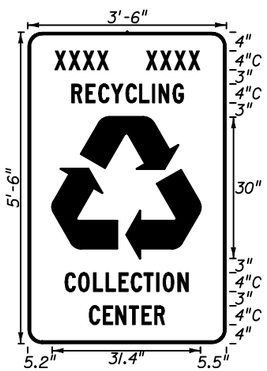
FTP - 75
2' X 3'-6"
1½" Radii
Top
4" Series E
4" Series EM
Blue Background
White legend & Border
Bottom
4" Series E
6" Series D
Green Background
White Legend & Border



FTP - 76
3' X 4'
1½" Radii ¾" Border
3" Series D
White Background
Black Legend, Border & Man Belt Symbol
Florida Shield Green



FTP - 77
3' X 4'
1½" Radii ¾" Border
2" Series D
White Background
Black Legend, Border & Man Belt Symbol
Florida Shield Green



FTP - 78
3'-6" X 5'-6"
3" Radii
4" Series C
Green Background
White Legend, Border & Symbol
Municipality Name Optional

Revised: 12-27-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

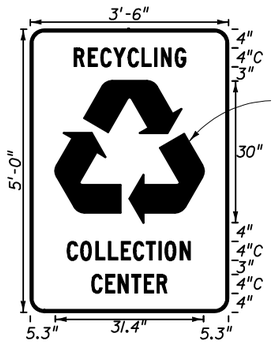
INTERIM STANDARD

SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

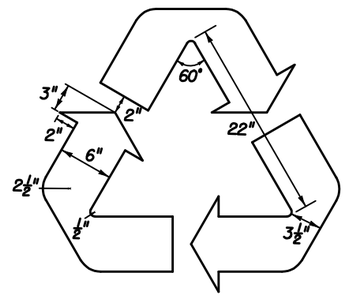
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	9 of 14	017355

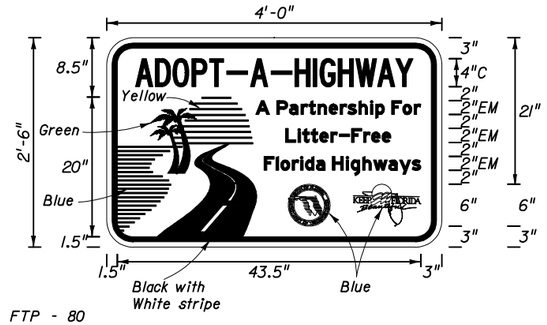
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FTP - 79
3'-6" X 5'
3" Radii
4" Series C
Green Background
White Legend, Border & Symbol



DETAIL 'B 'for FTP - 79



FTP - 80
4" X 2'-6"
3" Radii
4" Series C
2" Series EM
White Background
Blue Legend & Border

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

INTERIM STANDARD

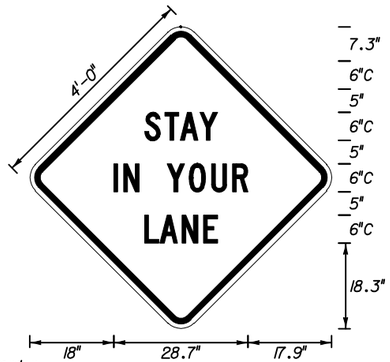
SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Clark A Scott
State Traffic Plans Engineer

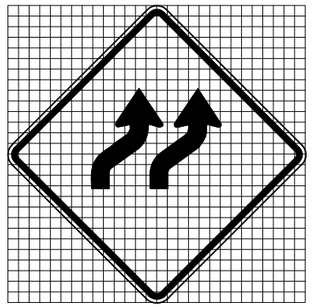
REVISION NO.	SHEET NO.	INDEX NO.
	10 of 14	017355

Revised: 12-27-01

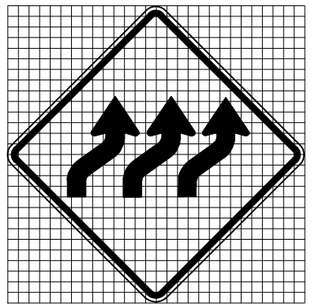
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



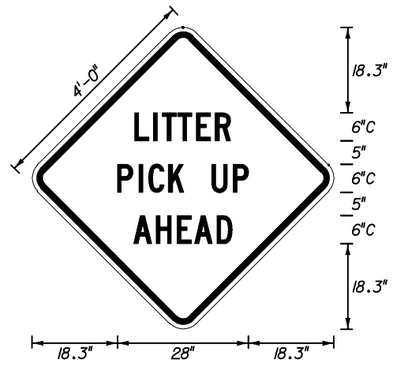
MOT - 1
4' X 4'
3" Radii ¾" Border
6" Series C Legend
Orange Background
Black Legend & Border



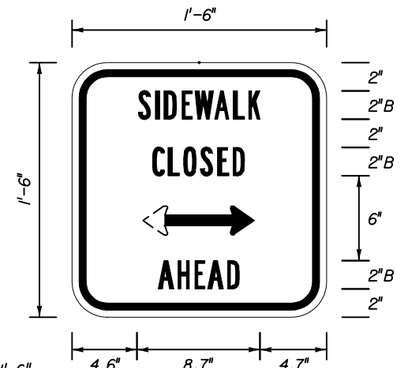
MOT - 2
4' X 4'
3" Radii ¾" Border
Grid = 2" X 2"
Orange Background
Black Arrows & Border



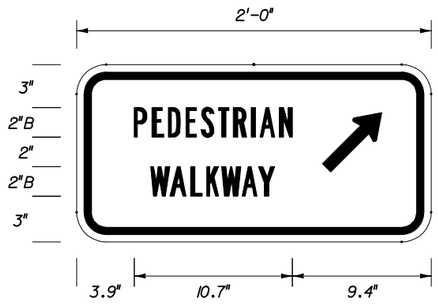
MOT - 3
4' X 4'
3" Radii ¾" Border
Grid = 2" X 2"
Orange Background
Black Arrows & Border



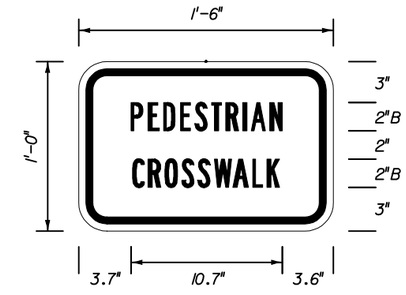
MOT - 4
4' X 4'
3" Radii ¾" Border
Orange Background
Black Arrows & Border



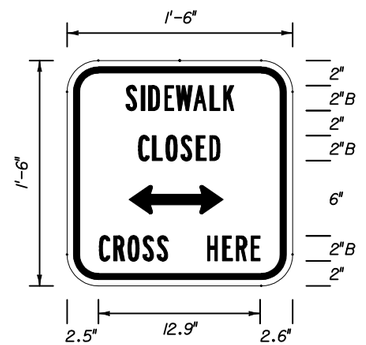
MOT -5
1'-6" X 1'-6"
2" Radii ¾" Border
2" Series B Legend
White Background
Black Legend & Border



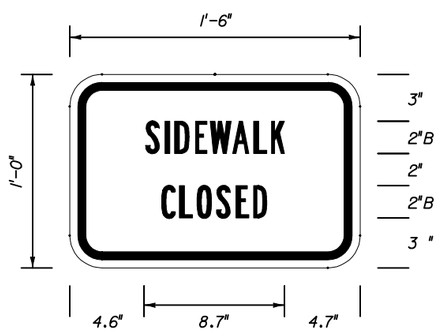
MOT - 6
2' X 1'
1½" Radii ¾" Border
2" Series B Legend
White Background
Black Legend & Border



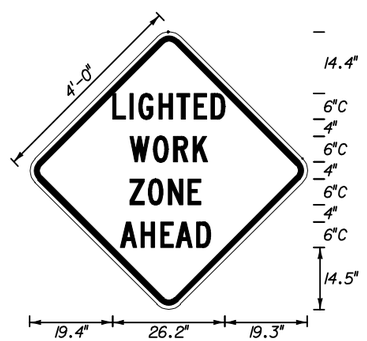
MOT - 7
1'-6" X 1'
1½" Radii ¾" Border
2" Series B Legend
White Background
Black Legend & Border



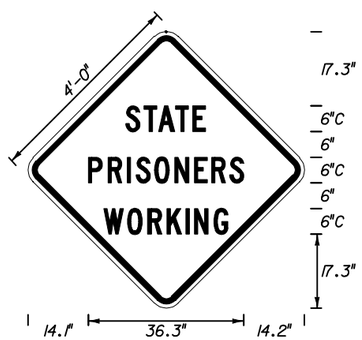
MOT - 8
1'-6" X 1'-6"
2¼" Radii ¾" Border
2" Series B Legend
White Background
Black Legend & Border



MOT - 9
1'-6" X 1'
1½" Radii ¾" Border
2" Series B Legend
White Background
Black Legend & Border



MOT - 10
4' X 4'
3" Radii ¾" Border
6" Series C Legend
Orange Background
Black Legend & Border



MOT - 11
4' X 4'
3" Radii ¾" Border
6" Series C Legend
Orange Background
Black Legend & Border

Revised: 12-27-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

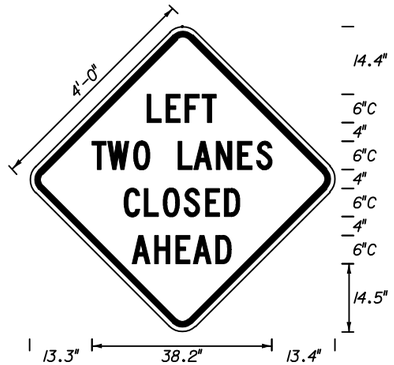
INTERIM STANDARD

SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

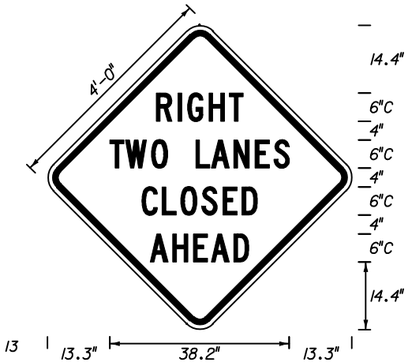
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	11 of 14	017355

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



MOT - 12
4' X 4'
3" Radii $\frac{3}{4}$" Border
6" Series C Legend
Orange Background
Black Legend & Border



MOT - 13
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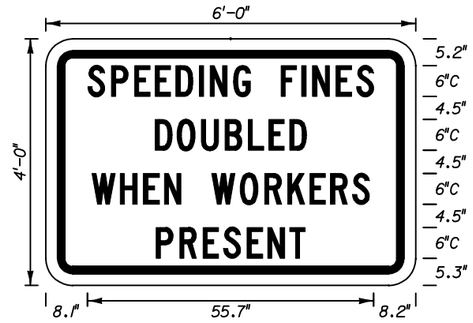
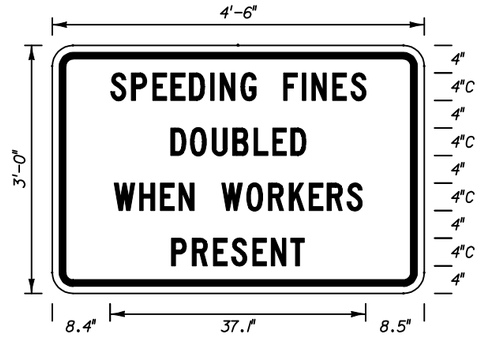
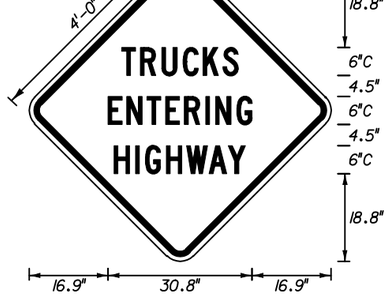
3" Radii $\frac{3}{4}$" Border
6" Series C Legend
Orange Background
Black Legend & Border



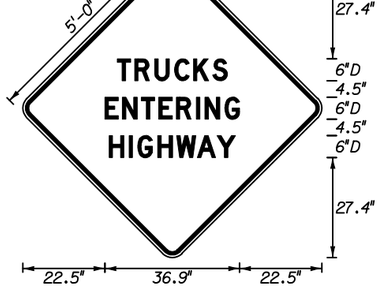
MOT - 14
6' X 4'
3" Radii $\frac{3}{4}$" Border
6" Series C Legend
White Background
Black Legend & Border



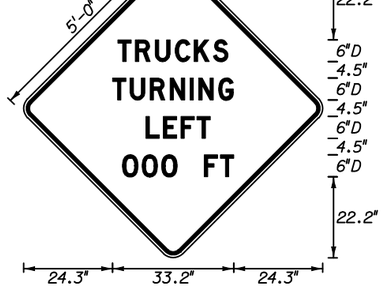
MOT - 15
4'-6" X 3'
3" Radii $\frac{3}{4}$" Border
4" Series C Legend
White Background
Black Legend & Border



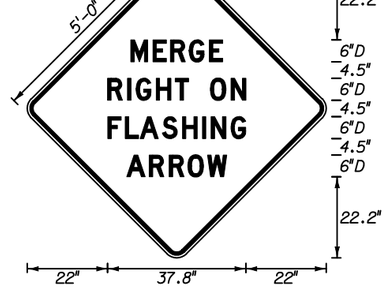
MOT - 16
4' X 4'
3" Radii $\frac{3}{4}$" Border
6" Series C Legend
Orange Background
Black Legend & Border



MOT - 17
5' X 5'
3" Radii 1" Border
6" Series D Legend
Orange Background
Black Legend & Border



MOT - 18
5' X 5'
3" Radii 1" Border
6" Series D Legend
Orange Background
Black Legend & Border



MOT - 19
5' X 5'
3" Radii 1" Border
6" Series D Legend
Orange Background
Black Legend & Border

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

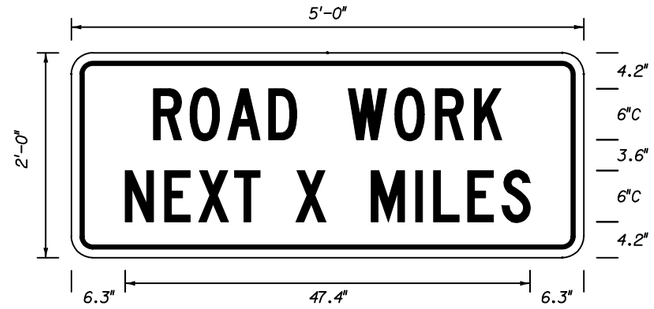
INTERIM STANDARD

SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

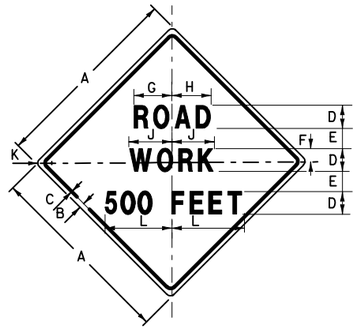
APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	12 of 14	017355

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

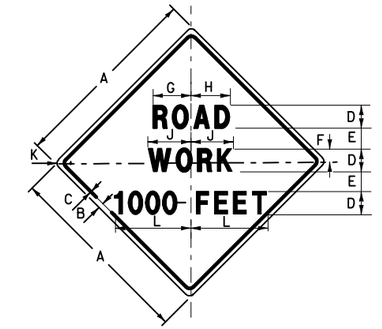


G20-1
5' X 2'
1.5 Radii .75 Border
6" Series C Legend
Orange Background
Black Legend & Border



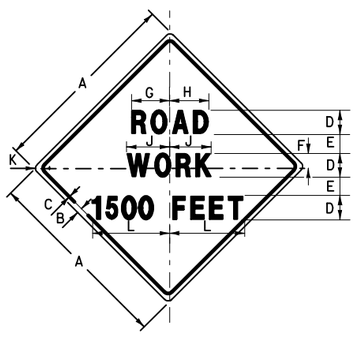
W20-1A
LEGEND AND BORDER: BLACK
BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	5/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4	17 1/4
48	3/4	1 1/4	7D	4 3/4	4 1/2	11 11/16	12 7/16	12 5/8	3	24



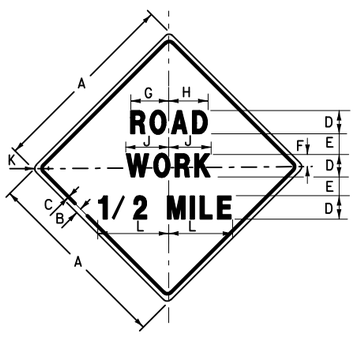
W20-1B
LEGEND AND BORDER: BLACK
BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	5/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4	18 3/8
48	3/4	1 1/4	7D	4 3/4	4 1/2	11 11/16	12 5/8	12 5/8	3	25 7/8



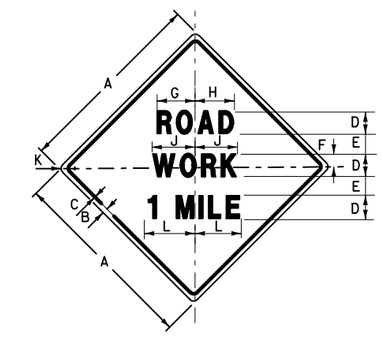
W20-1C
LEGEND AND BORDER: BLACK
BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	5/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4	18 3/8
48	3/4	1 1/4	7D	4 3/4	4 1/2	11 11/16	12 7/16	12 5/8	3	25 3/4



W20-1D
LEGEND AND BORDER: BLACK
BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	5/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4	16 3/4
48	3/4	1 1/4	7D	4 3/4	4 1/2	11 11/16	12 7/16	12 5/8	3	22



W20-1E
LEGEND AND BORDER: BLACK
BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	5/8	7/8	5D	3 1/2	3 1/4	8 3/8	8 7/8	9	2 1/4	11 3/8
48	3/4	1 1/4	7D	4 3/4	4 1/2	11 11/16	12 5/8	12 5/8	3	15 7/8

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

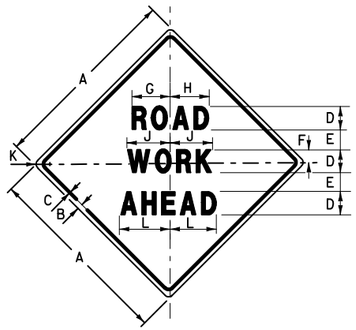
INTERIM STANDARD

SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY Clark A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	13 of 14	017355

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



W20-1F

LEGEND AND BORDER: BLACK

BACKGROUND: ORANGE

DIMENSIONS IN INCHES										
A	B	C	D	E	F	G	H	J	K	L
36	$\frac{5}{8}$	$\frac{7}{8}$	5D	$3\frac{1}{2}$	$3\frac{1}{4}$	$8\frac{3}{8}$	$8\frac{7}{8}$	9	$2\frac{1}{4}$	11
48	$\frac{3}{4}$	$1\frac{1}{4}$	7D	$4\frac{3}{4}$	$4\frac{1}{2}$	$11\frac{11}{16}$	$12\frac{7}{16}$	$12\frac{5}{8}$	3	$15\frac{1}{4}$

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SPECIAL SIGN DETAILS

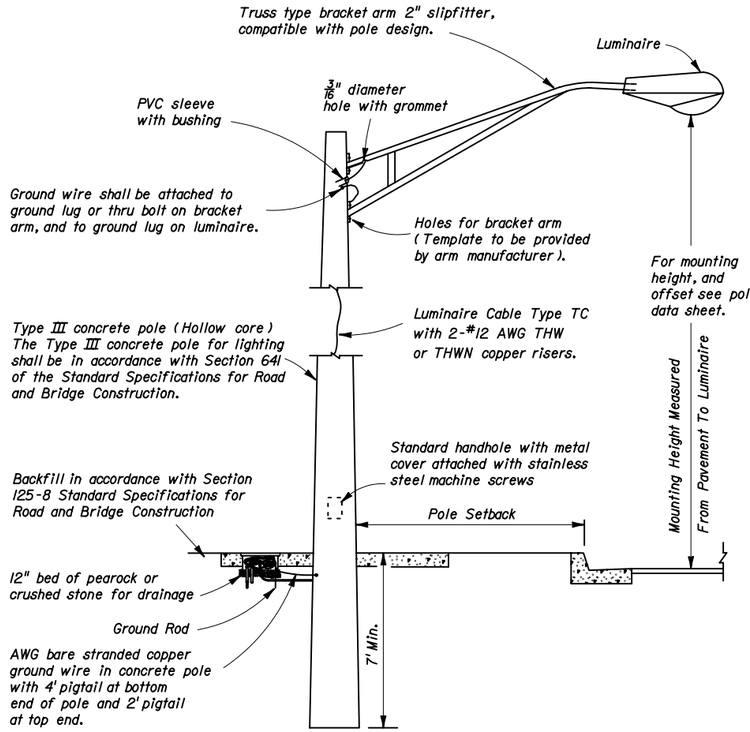
INTERIM STANDARD

SHEETS NOS. 8-14 OF 14 REPLACE INDEX NO. 17355 (SHEETS 8-12 OF 12) OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

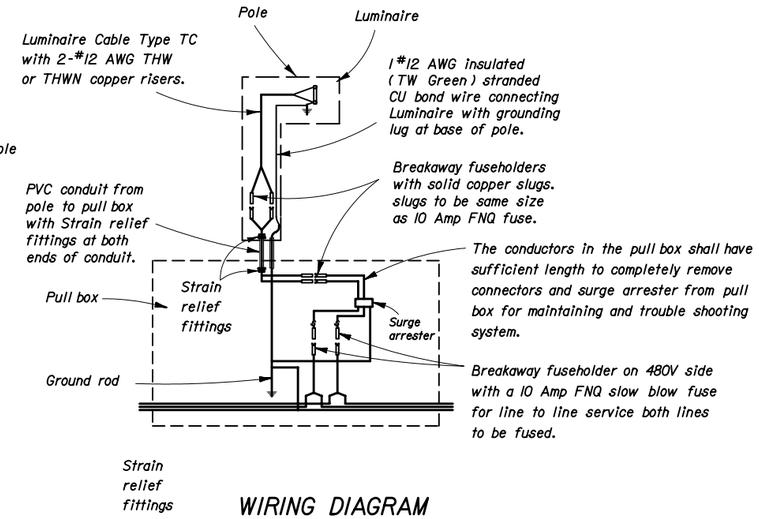
APPROVED BY
Charles A Scott
State Traffic Plans Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	14 of 14	017355

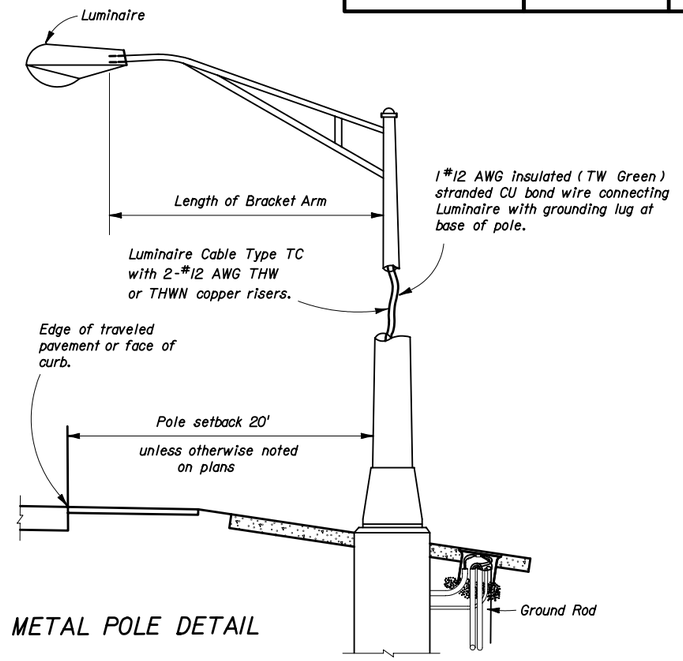
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



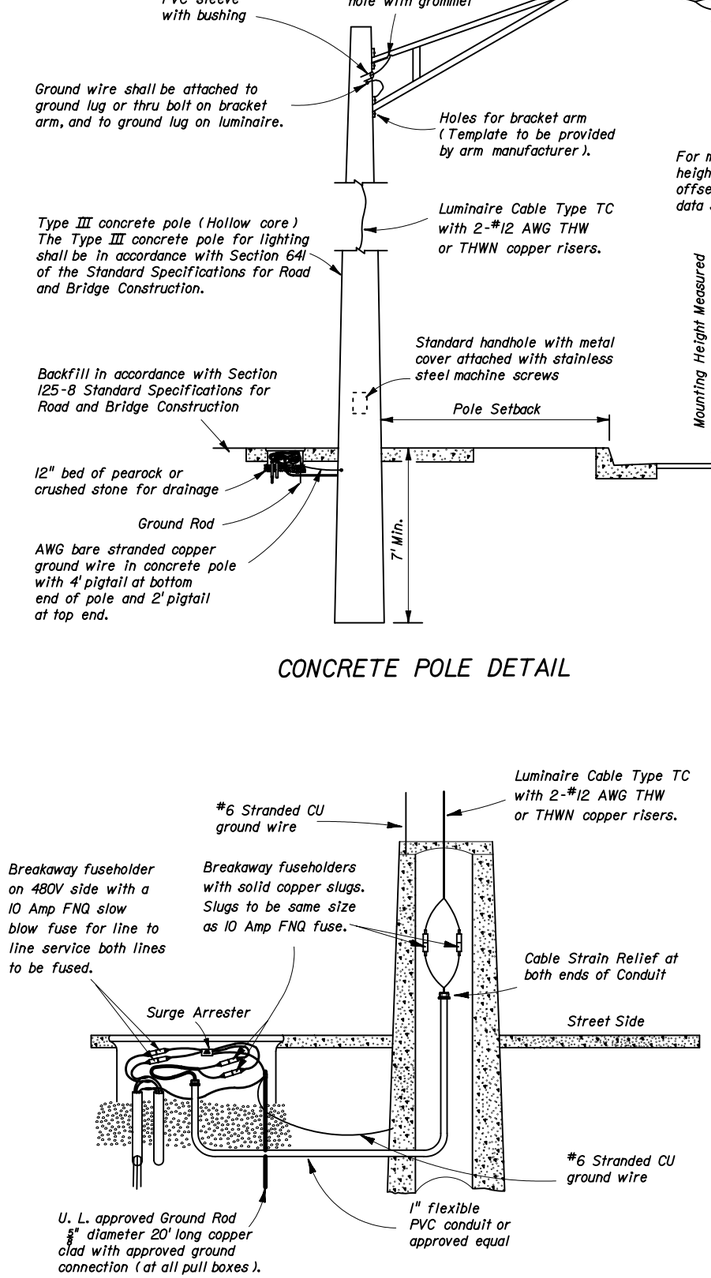
CONCRETE POLE DETAIL



WIRING DIAGRAM



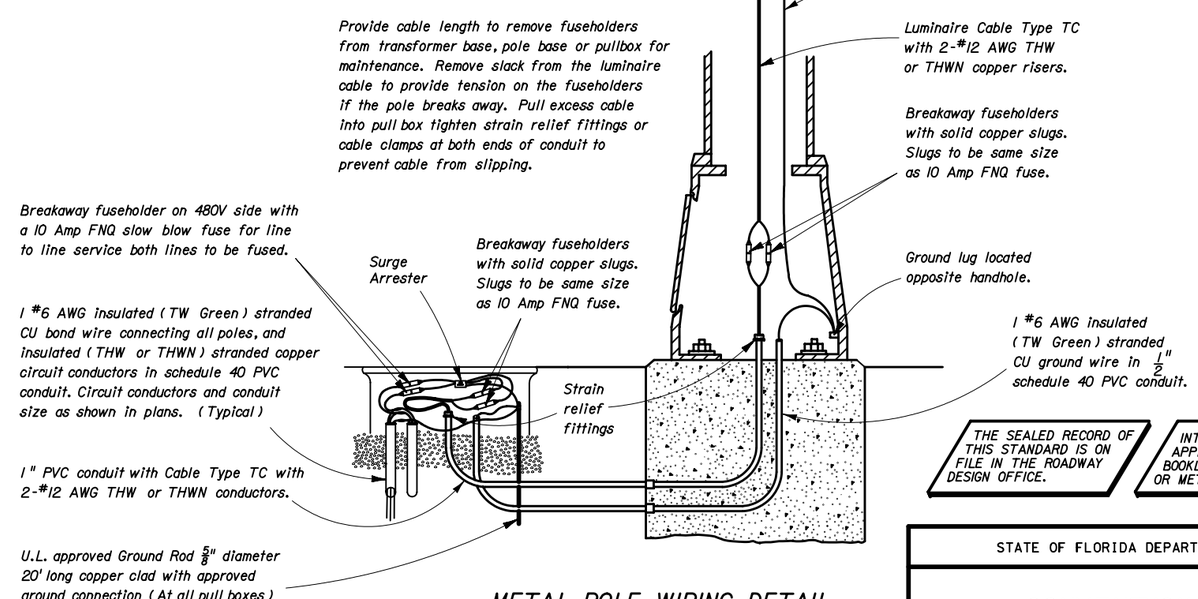
METAL POLE DETAIL



CONCRETE POLE WIRING DETAIL

NOTES:

1. Barrier wall or bridge mounted poles: The wiring shall be in accordance with Section 992 of the Standard Specifications.



METAL POLE WIRING DETAIL

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONVENTIONAL LIGHTING

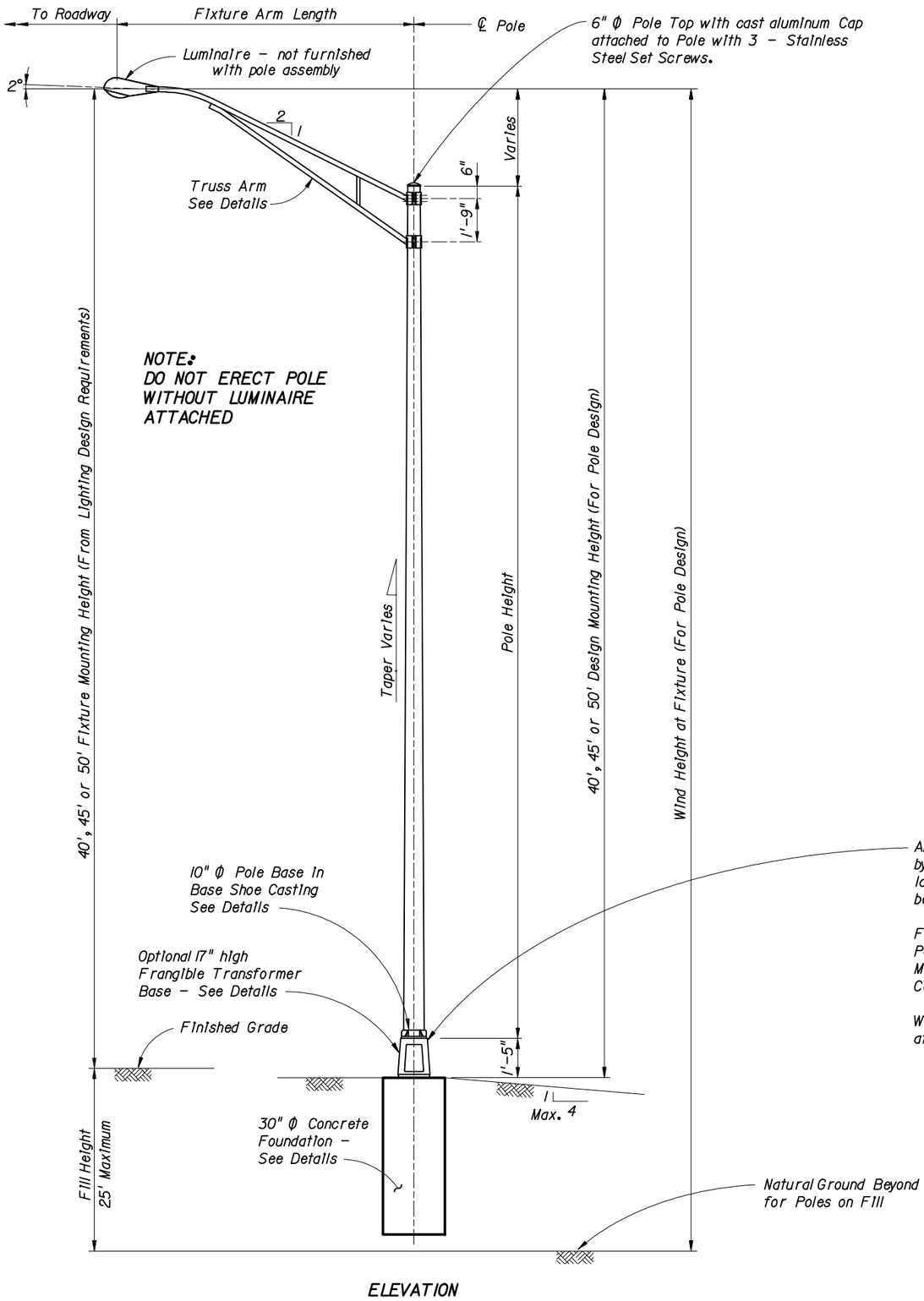
INTERIM STANDARD

THIS IS A REPLACEMENT SHEET FOR EXISTING SHEET 1 TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Traffic Standards Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 3	017500

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

ALUMINUM LIGHT POLE NOTES

1. Light Pole Materials shall be as follows:

Poles	->	ASTM B221 - ALLOY 6063-T6
Arm Pipes or Pipe Extrusions	->	ASTM B221 - ALLOY 6063-T6
Arm Connection Extrusions, Bars and Plates	->	ASTM B221 - ALLOY 6061-T6
Shoe Base Casting	->	ASTM B26 - ALLOY 356-T6
Aluminum Caps and Covers	->	ASTM B26 - ALLOY 356-T6
Frangible Transformer Base Casting	->	ASTM B26 - ALLOY 356-T6
Weld Metal	->	ER4043
Shoe Base Connection Bolts and Anchor Bolts	->	ASTM F1554 Grade 55
Nuts for Connection Bolts and Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Connection Bolts and Anchor Bolts	->	ASTM F436 Type 1
Stainless Steel Fasteners and Hardware	->	A.I.S.I. Grade 316

2. Aluminum alloys 6063, 6061 and 356 are to be furnished in T4 condition and heat treated to T6 condition after welding
3. Shoe Base Connection Bolts, Anchor Bolts, Nuts and Washers shall be galvanized in accordance with ASTM A153.
4. Foundation concrete shall be Class I (Special) with a minimum 28-day Compressive Strength (f'c) of 3,000 psi for all environmental classifications.
5. Reinforcing Steel shall be ASTM A615-96 Grade 60.
6. A design wind speed of 80, 100 or 110 mph with a 30% gust factor for wind loading on the pole is included in the design.
7. The pole shall be tapered as required to provide a top outside diameter (O.D.) of 6" with a base O.D. of 10". Portions of the shaft near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication .
8. All bolt hole diameters shall be equal to the bolt diameter plus $1/16$".
9. The pole shall be free of transverse welds except at the base.
10. Poles constructed out of two or more sections with overlapping splices are not permitted.
11. All welding shall conform to American Welding Society Structural Welding Code (Aluminum) ANSI/AWS D1.2 (current edition).
12. See Standard Index No. 17500 for grounding and wiring details.
13. The pole and arms shall be furnished with a 100 grit satin rubbed finish.
14. All designs to be in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs , Luminaires and Traffic Signals.
15. The optional Transformer Base is to be a Certified FHWA approved breakaway device meeting the requirements of Section 7 of the 1994 issue of the referenced AASHTO Specifications.

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Transformer Base by 0.125" Stainless Steel rivets or screws. Fabricator to provide details for approval. Identification Tag Located on inside of base visible from door opening. Tag to be stamped with the following information :

Financial Project ID
Pole Design Designation (ie. Pole Pay Item Number)
Manufacturer's Name
Certification No.

Where the optional Transformer Base is omitted, the Identification Tag shall be attached to the Pole Base. Fabricator to provide details for approval.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

ELEVATION AND NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

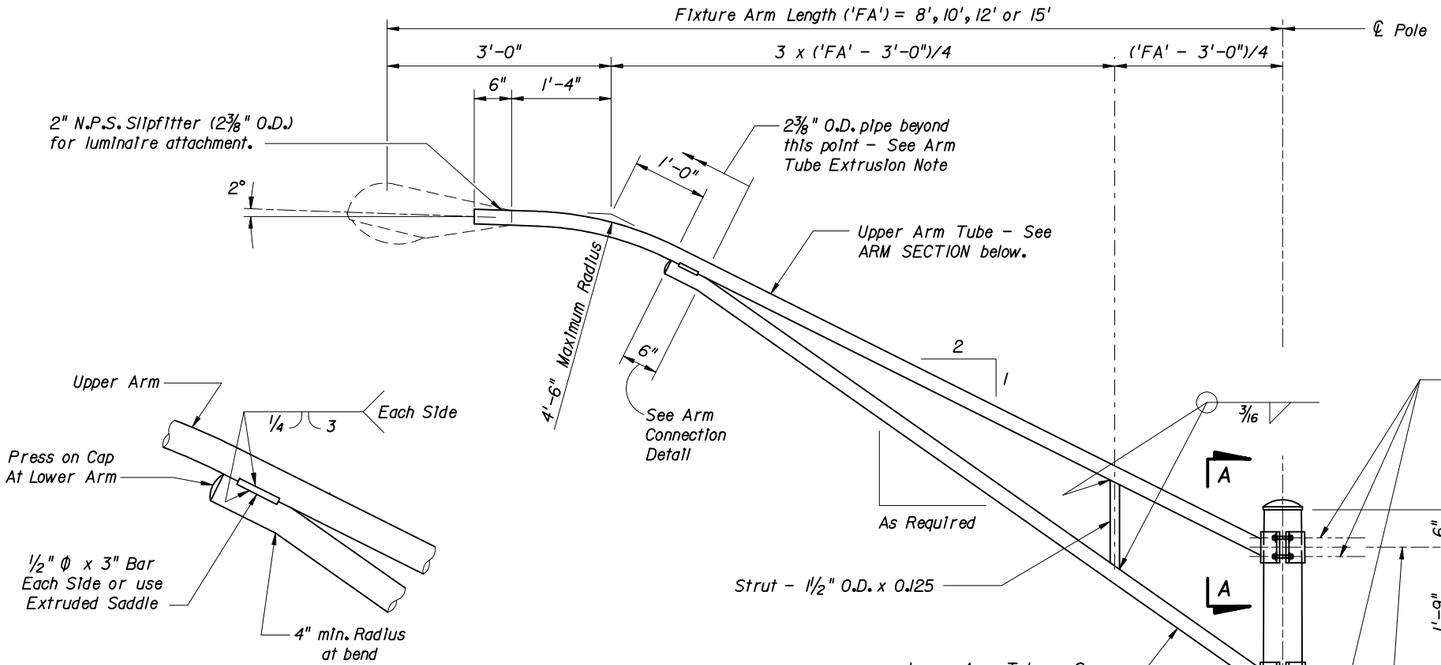
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

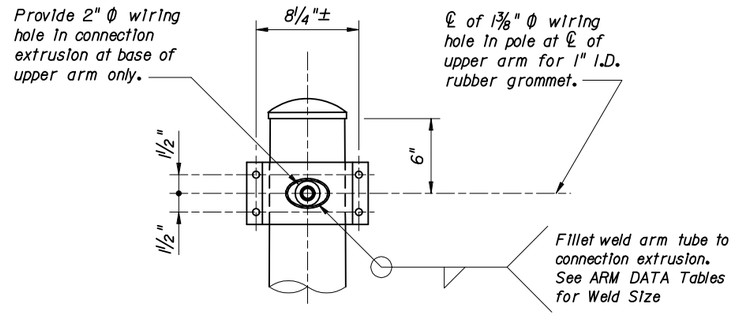


Provide ½" ϕ S.S. H.H. Bolts with 2- 1¼" O.D. flat washers and a split lockwasher each side of pole where shown.

ARM CONNECTION DETAIL

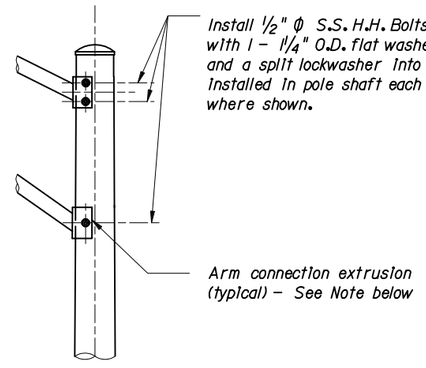
Note:
Provide 3/16" ϕ drain holes in underside of arm tubes 1½" from the base weld.

ARM ELEVATION



SECTION A-A

(Connection At Lower Arm Similar)



ALTERNATE ARM TO POLE CONNECTION

(See Section A-A for holes in pole and arm connection extrusion and vertical spacing of bolts at the upper arm)

ARM TUBE EXTRUSIONS:

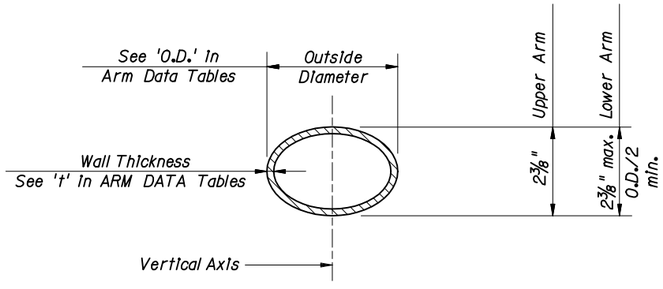
At the pole connection provide elliptical arm extrusions with dimensions as shown in the ARM SECTION and as tabulated in the ARM DATA Tables. Uniformly transition elliptical extrusions to a cylindrical section at the arm connection.

The pole fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equals or exceeds that of the required section, and provided the wall thickness is a minimum of ⅛".

The outside diameter about the minor axis should be held at 2⅜" at the upper arm and should not exceed 2⅜" at the lower arm.

ARM CONNECTION EXTRUSIONS:

Arm connection extrusions furnished by the pole fabricator are to be certified to be capable of transfering the arm connection forces shown in the ARM DATA Table for the required arm.



ARM SECTION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 9-26-00

ARM DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

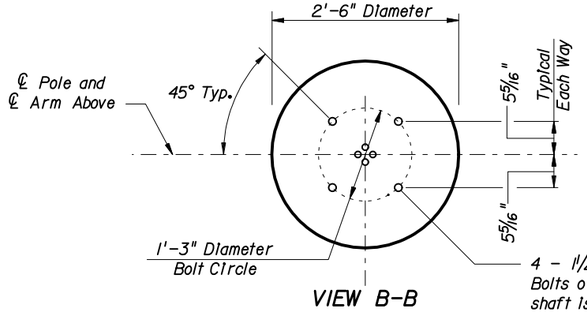
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

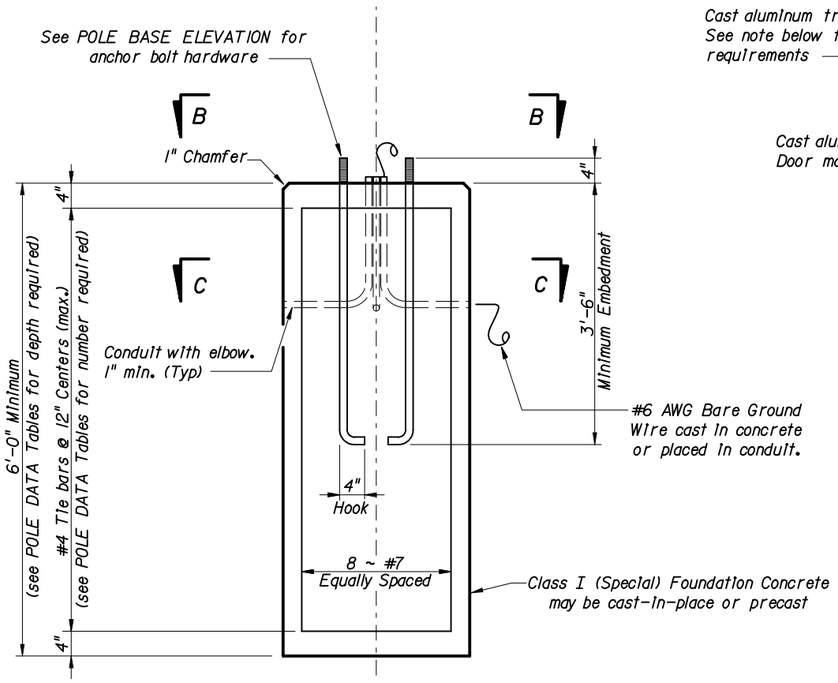
APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 7	17515

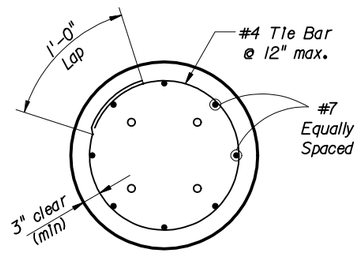
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



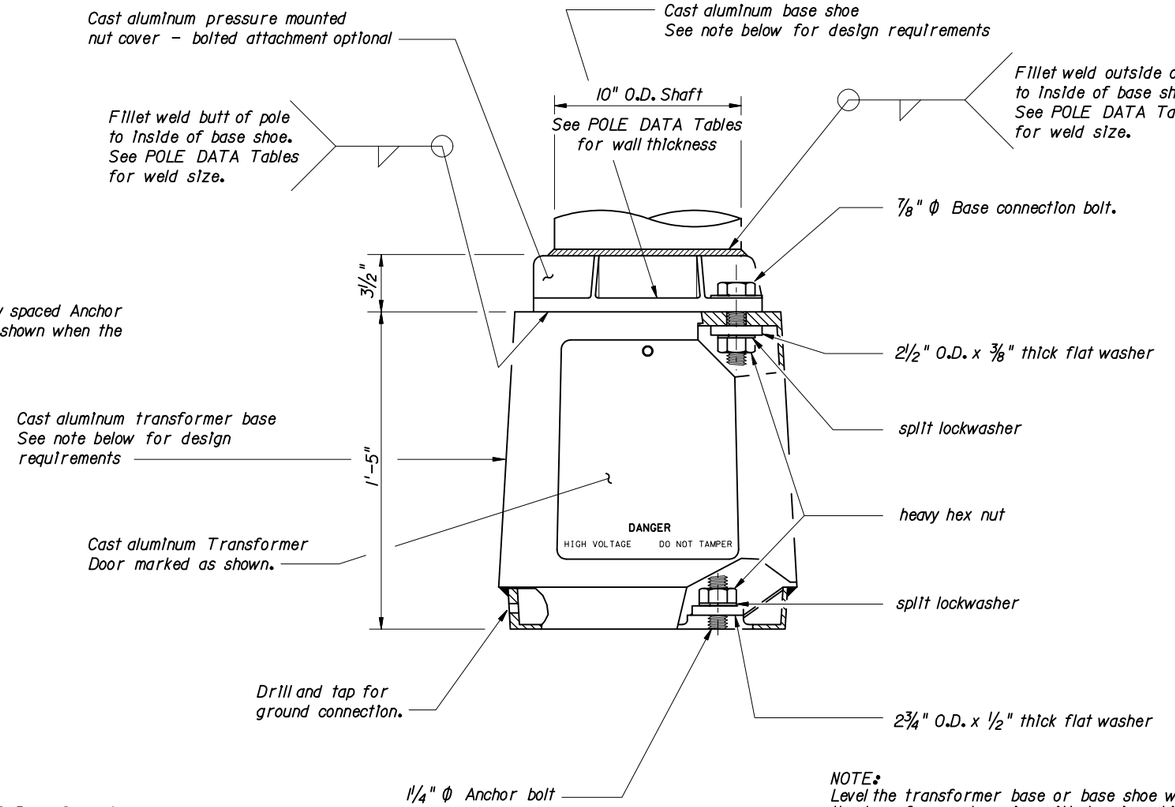
VIEW B-B



FOUNDATION

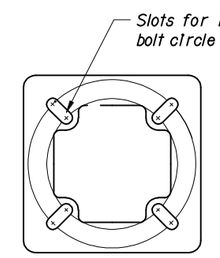


SECTION C-C

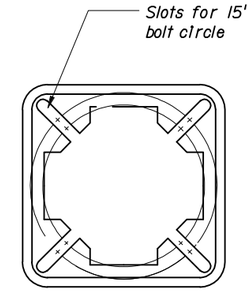


NOTE:
Level the transformer base or base shoe when the transformer base is omitted, using shims provide by the Pole Supplier.
Do not use leveling nuts.

POLE BASE ELEVATION



TOP VIEW
TRANSFORMER BASE



BOTTOM VIEW
TRANSFORMER BASE

BASE SHOE and TRANSFORMER BASE:
The fabricator shall provide a base shoe casting and transformer base casting capable of transmitting the design forces shown in the POLE DATA Tables.

The base shoe height shown is the minimum permitted.

Where the optional Transformer Base is omitted, the Base Shoe shall accommodate the 1'-3" bolt circle and 1¼" ϕ anchor bolts.

FOUNDATION NOTES:
The foundations for Aluminum Light Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated)
Unit Weight	=	112 lbs./cu. ft (assumed dry) for pole on fill.

Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties. In any event only the soil identification is required.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

BASE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

Date: 9-26-00

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

8 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.125	0.250	0.429	0.107	0.253	2.375	0.125	0.250	0.160	0.040	0.253
2	40	100	2.375	0.125	0.375	0.671	0.158	0.253	2.375	0.125	0.250	0.250	0.059	0.253
3	45	80	2.375	0.125	0.250	0.437	0.109	0.253	2.375	0.125	0.250	0.163	0.041	0.253
4	45	100	2.375	0.125	0.375	0.682	0.160	0.253	2.375	0.125	0.250	0.255	0.060	0.253
5	50	80	2.375	0.125	0.250	0.443	0.110	0.253	2.375	0.125	0.250	0.166	0.041	0.253
6	50	100	2.375	0.125	0.375	0.693	0.163	0.253	2.375	0.125	0.250	0.259	0.061	0.253
7	55	110	3.125	0.125	0.375	0.940	0.212	0.255	2.375	0.125	0.250	0.182	0.041	0.255
8	60	110	3.125	0.125	0.375	0.952	0.214	0.255	2.375	0.125	0.250	0.185	0.042	0.255
9	65	110	3.125	0.125	0.375	0.963	0.217	0.255	2.375	0.125	0.250	0.187	0.042	0.255
10	70	110	3.125	0.125	0.375	0.973	0.219	0.255	2.375	0.125	0.250	0.189	0.042	0.255
11	75	110	3.125	0.125	0.375	0.983	0.221	0.255	2.375	0.125	0.250	0.191	0.043	0.255

10 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.125	0.375	0.605	0.121	0.327	2.375	0.125	0.250	0.262	0.052	0.327
2	40	100	3.000	0.125	0.375	0.798	0.146	0.334	3.000	0.125	0.250	0.415	0.076	0.334
3	45	80	2.375	0.125	0.375	0.616	0.123	0.327	2.375	0.125	0.250	0.266	0.053	0.327
4	45	100	3.000	0.125	0.375	0.812	0.148	0.334	3.000	0.125	0.250	0.422	0.077	0.334
5	50	80	2.375	0.125	0.375	0.625	0.125	0.327	2.375	0.125	0.250	0.270	0.054	0.327
6	50	100	3.000	0.125	0.375	0.824	0.150	0.334	3.000	0.125	0.250	0.429	0.078	0.334
7	55	110	3.125	0.125	0.438	1.042	0.186	0.335	3.000	0.125	0.313	0.492	0.088	0.335
8	60	110	3.125	0.125	0.438	1.055	0.188	0.335	3.000	0.125	0.313	0.498	0.089	0.335
9	65	110	3.125	0.125	0.438	1.068	0.191	0.335	3.000	0.125	0.313	0.504	0.090	0.335
10	70	110	3.125	0.125	0.438	1.079	0.192	0.335	3.000	0.125	0.313	0.509	0.091	0.335
11	75	110	3.125	0.125	0.438	1.090	0.194	0.335	3.000	0.125	0.313	0.514	0.092	0.335

12 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.000	0.125	0.375	0.673	0.110	0.416	3.000	0.125	0.250	0.379	0.062	0.416
2	40	100	3.125	0.125	0.438	1.033	0.159	0.419	3.125	0.125	0.313	0.600	0.092	0.419
3	45	80	3.000	0.125	0.313	0.685	0.112	0.416	3.000	0.125	0.250	0.386	0.063	0.416
4	45	100	3.125	0.125	0.438	1.051	0.161	0.419	3.125	0.125	0.313	0.611	0.094	0.419
5	50	80	3.000	0.125	0.313	0.695	0.113	0.416	3.000	0.125	0.250	0.392	0.064	0.416
6	50	100	3.125	0.125	0.438	1.068	0.164	0.419	3.125	0.125	0.313	0.620	0.095	0.419
7	55	110	3.500	0.125	0.438	1.250	0.188	0.425	3.500	0.125	0.313	0.789	0.119	0.425
8	60	110	3.500	0.125	0.438	1.266	0.190	0.425	3.500	0.125	0.313	0.799	0.120	0.425
9	65	110	3.500	0.125	0.438	1.280	0.192	0.425	3.500	0.125	0.375	0.808	0.121	0.425
10	70	110	3.500	0.125	0.438	1.294	0.194	0.425	3.500	0.125	0.375	0.817	0.123	0.425
11	75	110	3.500	0.125	0.438	1.307	0.196	0.425	3.500	0.125	0.375	0.825	0.124	0.425

15 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM t (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT. KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM t (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT. KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.500	0.125	0.313	0.896	0.119	0.565	3.500	0.125	0.250	0.605	0.080	0.565
2	40	100	4.000	0.125	0.375	1.322	0.165	0.580	4.000	0.125	0.313	0.979	0.122	0.580
3	45	80	3.500	0.125	0.313	0.912	0.120	0.565	3.500	0.125	0.250	0.616	0.081	0.565
4	45	100	4.000	0.125	0.375	1.345	0.167	0.580	4.000	0.125	0.313	0.996	0.124	0.580
5	50	80	3.500	0.125	0.313	0.927	0.122	0.565	3.500	0.125	0.250	0.625	0.082	0.565
6	50	100	4.000	0.125	0.375	1.366	0.170	0.580	4.000	0.125	0.313	1.012	0.126	0.580
7	55	110	4.500	0.125	0.375	1.596	0.195	0.595	4.500	0.125	0.313	1.278	0.156	0.595
8	60	110	4.500	0.125	0.375	1.617	0.197	0.595	4.500	0.125	0.313	1.294	0.158	0.595
9	65	110	4.500	0.125	0.375	1.636	0.199	0.595	4.500	0.125	0.313	1.309	0.159	0.595
10	70	110	4.500	0.125	0.375	1.654	0.201	0.595	4.500	0.125	0.313	1.324	0.161	0.595
11	75	110	4.500	0.125	0.375	1.670	0.203	0.595	4.500	0.125	0.313	1.337	0.163	0.595

* 'N' equals force normal to face of connection due to axial force in the arm - tension upper arm - compression lower arm.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

ARM DATA

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Blank
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.259	0.508	0.590	0.199	6.000	7
2	40	100	0.156	0.250	0.250	17.946	0.689	0.921	0.231	6.333	7
3	45	80	0.125	0.250	0.250	13.573	0.529	0.600	0.199	6.000	7
4	45	100	0.156	0.250	0.250	18.401	0.719	0.937	0.231	6.333	7
5	50	80	0.125	0.250	0.250	13.845	0.544	0.609	0.199	6.000	7
6	50	100	0.156	0.250	0.250	18.762	0.740	0.951	0.231	6.000	7
7	55	110	0.188	0.250	0.250	21.571	0.873	1.122	0.265	6.000	7
8	60	110	0.188	0.250	0.250	21.901	0.890	1.136	0.265	6.000	7
9	65	110	0.188	0.250	0.250	22.209	0.906	1.149	0.265	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.898	0.525	0.867	0.199	6.000	7
2	40	100	0.156	0.250	0.250	17.512	0.677	1.213	0.234	6.333	7
3	45	80	0.140	0.250	0.250	14.243	0.547	0.882	0.214	6.333	7
4	45	100	0.156	0.250	0.250	17.919	0.707	1.234	0.234	6.333	7
5	50	80	0.140	0.250	0.250	14.508	0.561	0.896	0.214	6.000	7
6	50	100	0.156	0.250	0.250	18.308	0.728	1.253	0.234	6.000	7
7	55	110	0.188	0.250	0.250	21.718	0.876	1.534	0.267	6.000	7
8	60	110	0.188	0.250	0.250	22.039	0.893	1.553	0.267	6.000	7
9	65	110	0.188	0.250	0.250	22.338	0.908	1.571	0.267	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.268	0.508	1.052	0.203	6.000	7
2	40	100	0.156	0.250	0.250	18.120	0.693	1.633	0.234	6.333	7
3	45	80	0.125	0.250	0.250	13.566	0.529	1.071	0.203	6.000	7
4	45	100	0.156	0.250	0.250	18.592	0.724	1.662	0.234	6.333	7
5	50	80	0.125	0.250	0.250	13.861	0.545	1.087	0.203	6.000	7
6	50	100	0.156	0.250	0.250	18.935	0.744	1.688	0.234	6.000	7
7	55	110	0.188	0.250	0.250	22.294	0.890	2.038	0.269	6.000	7
8	60	110	0.188	0.250	0.250	22.644	0.908	2.064	0.269	6.000	7
9	65	110	0.188	0.250	0.250	22.973	0.924	2.088	0.269	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	40	80	0.125	0.250	0.250	13.584	0.516	1.501	0.209	6.000	7
2	40	100	0.156	0.250	0.250	18.612	0.705	2.300	0.243	6.333	7
3	45	80	0.140	0.250	0.250	13.907	0.538	1.528	0.224	6.333	7
4	45	100	0.156	0.250	0.250	19.069	0.736	2.341	0.243	6.333	7
5	50	80	0.140	0.250	0.250	14.190	0.553	1.552	0.224	6.000	7
6	50	100	0.188	0.250	0.250	19.435	0.757	2.378	0.273	6.000	7
7	55	110	0.188	0.250	0.250	22.933	0.906	2.874	0.277	6.000	7
8	60	110	0.188	0.250	0.250	23.305	0.924	2.911	0.277	6.000	7
9	65	110	0.250	0.250	0.250	23.622	0.940	2.945	0.335	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA - 40 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Phillips
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	16.364	0.567	0.600	0.234	6.000	7
2	45	100	0.188	0.250	0.250	22.019	0.765	0.937	0.291	6.667	7
3	50	80	0.140	0.250	0.250	16.727	0.589	0.609	0.234	6.333	7
4	50	100	0.188	0.250	0.250	22.500	0.796	0.951	0.291	7.000	8
5	55	110	0.250	0.250	0.250	25.899	0.944	1.122	0.364	6.000	7
6	60	110	0.250	0.250	0.250	26.318	0.965	1.136	0.364	6.000	7
7	65	110	0.250	0.250	0.250	26.705	0.983	1.149	0.364	6.000	7
8	70	110	0.250	0.250	0.250	27.024	0.998	1.162	0.364	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	17.118	0.584	0.882	0.234	6.333	7
2	45	100	0.188	0.250	0.250	21.476	0.753	1.234	0.293	6.667	7
3	50	80	0.156	0.250	0.250	17.473	0.606	0.896	0.253	6.333	7
4	50	100	0.188	0.250	0.250	21.988	0.784	1.253	0.293	6.667	7
5	55	110	0.250	0.250	0.250	26.065	0.947	1.534	0.364	6.000	7
6	60	110	0.250	0.250	0.250	26.474	0.967	1.553	0.364	6.000	7
7	65	110	0.250	0.250	0.250	26.852	0.985	1.571	0.364	6.000	7
8	70	110	0.250	0.250	0.250	27.206	1.002	1.588	0.364	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.156	0.250	0.250	13.366	0.567	1.071	0.256	6.333	7
2	45	100	0.188	0.250	0.250	22.236	0.770	1.662	0.293	7.000	8
3	50	80	0.156	0.250	0.250	16.740	0.589	1.087	0.256	6.333	7
4	50	100	0.188	0.250	0.250	22.697	0.800	1.688	0.293	7.000	8
5	55	110	0.250	0.250	0.250	26.717	0.961	2.038	0.365	6.000	7
6	60	110	0.250	0.250	0.250	27.159	0.982	2.064	0.365	6.000	7
7	65	110	0.250	0.250	0.250	27.571	1.001	2.088	0.365	6.000	7
8	70	110	0.250	0.250	0.250	27.917	1.017	2.111	0.365	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	45	80	0.140	0.250	0.250	16.731	0.575	1.528	0.243	6.333	7
2	45	100	0.250	0.250	0.250	22.775	0.782	2.341	0.366	7.000	8
3	50	80	0.156	0.250	0.250	17.106	0.597	1.552	0.261	6.333	7
4	50	100	0.250	0.250	0.250	23.262	0.813	2.378	0.366	7.000	8
5	55	110	0.250	0.250	0.250	27.441	0.977	2.874	0.370	6.000	7
6	60	110	0.250	0.250	0.250	27.909	0.999	2.911	0.370	6.000	7
7	65	110	0.250	0.250	0.250	28.307	1.017	2.945	0.370	6.000	7
8	70	110	0.250	0.313	0.313	28.682	1.034	2.977	0.370	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA-45 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Blank
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	19.823	0.627	0.609	0.318	6.333	7
2	50	100	0.250	0.250	0.250	26.487	0.842	0.951	0.399	7.333	8
3	55	110	0.250	0.313	0.313	30.543	1.008	1.122	0.399	7.667	8
4	60	110	0.313	0.313	0.313	31.073	1.035	1.136	0.480	6.000	7
5	65	110	0.313	0.313	0.313	31.556	1.057	1.149	0.480	6.000	7
6	70	110	0.313	0.313	0.313	31.954	1.076	1.162	0.480	6.000	7
7	75	110	0.313	0.313	0.313	32.373	1.093	1.173	0.480	6.000	7

DATA FOR POLE WITH 10 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	20.652	0.644	0.896	0.316	6.667	7
2	50	100	0.250	0.250	0.250	25.919	0.830	1.253	0.399	7.000	8
3	55	110	0.250	0.313	0.313	30.729	1.011	1.534	0.399	7.667	8
4	60	110	0.313	0.313	0.313	31.248	1.038	1.553	0.478	6.000	7
5	65	110	0.313	0.313	0.313	31.720	1.060	1.571	0.478	6.000	7
6	70	110	0.313	0.313	0.313	32.158	1.079	1.588	0.478	6.000	7
7	75	110	0.313	0.313	0.313	32.568	1.096	1.604	0.478	6.000	7

DATA FOR POLE WITH 12 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	19.834	0.627	1.087	0.318	6.667	7
2	50	100	0.250	0.250	0.250	26.709	0.846	1.688	0.397	7.333	8
3	55	110	0.313	0.313	0.313	31.457	1.026	2.038	0.477	7.667	8
4	60	110	0.313	0.313	0.313	32.013	1.053	2.064	0.477	6.000	7
5	65	110	0.313	0.313	0.313	32.523	1.075	2.088	0.477	6.000	7
6	70	110	0.313	0.313	0.313	32.951	1.094	2.111	0.477	6.000	7
7	75	110	0.313	0.313	0.313	33.353	1.111	2.132	0.477	6.000	7

DATA FOR POLE WITH 15 FT. ARM

CASE No.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUNDATION	
						MOMENT (FT.-KIP)	SHEAR (KIP)	TORSION (FT.-KIP)	AXIAL (KIP)	DEPTH (FT.)	#4 BAR (No.)
1	50	80	0.188	0.250	0.250	20.238	0.635	1.552	0.322	6.667	7
2	50	100	0.250	0.250	0.250	27.340	0.859	2.378	0.401	7.333	8
3	55	110	0.313	0.313	0.313	32.267	1.041	2.874	0.480	7.667	8
4	60	110	0.313	0.313	0.313	32.852	1.069	2.911	0.480	6.000	7
5	65	110	0.313	0.313	0.313	33.346	1.091	2.945	0.480	6.000	7
6	70	110	0.313	0.313	0.313	33.807	1.111	2.977	0.480	6.000	7
7	75	110	0.313	0.313	0.313	34.197	1.128	3.008	0.480	6.000	7

NOTE:
Pole wall thicknesses shown in the POLE DATA Tables are minimums. Thicker walls are permitted and tapered walls may be used provided the minimum thickness is not violated.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

POLE DATA - 50 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

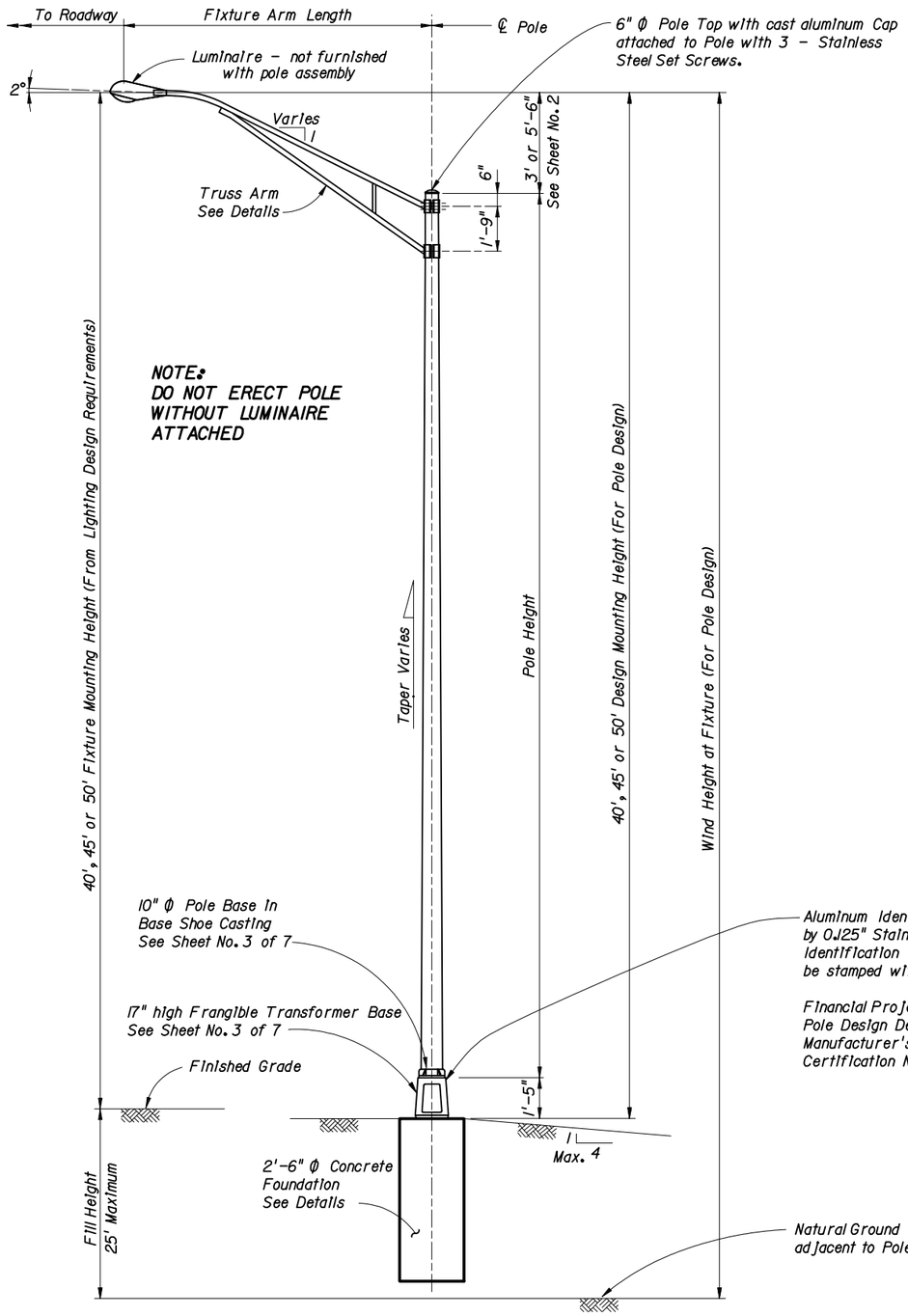
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-7 OF 7 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. M. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 7	17515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

ALUMINUM LIGHT POLE NOTES

1. Light Pole Materials shall be as follows:

Poles	->	ASTM B221 - ALLOY 6063-T6
Arm Pipes or Pipe Extrusions	->	ASTM B221 - ALLOY 6063-T6
Arm Connection Extrusions, Bars and Plates	->	ASTM B221 - ALLOY 6061-T6
Shoe Base Casting	->	ASTM B26 - ALLOY 356-T6 or ASTM B108 - ALLOY 356-T6
Aluminum Caps and Covers	->	ASTM B26
Frangible Transformer Base Casting	->	ASTM B26 - ALLOY 356-T6 or ASTM B108 - ALLOY 356-T6
Weld Metal	->	ER4043
Anchor Bolts	->	ASTM F1554 Grade 55
Shoe Base Connection Bolts	->	ASTM A325 Type 1
Nuts for Connection Bolts and Anchor Bolts	->	ASTM A563 Grade DH
Washers for Connection Bolts and Anchor Bolts	->	ASTM F436 Type 1
Stainless Steel Fasteners and Hardware	->	A.I.S.I. Grade 304

2. Aluminum alloy 6063 is to be furnished in T4 condition and heat treated in accordance with ASTM B597.
3. Shoe Base Connection Bolts, Anchor Bolts, Nuts and Washers shall be galvanized in accordance with ASTM A153. Lock Washers shall galvanized in accordance with ASTM B695 Class 50
4. Foundation concrete shall be Class I (Special) with a minimum 28-day Compressive Strength (f'c) of 3,000 psi for all environmental classifications.
5. Reinforcing Steel shall be ASTM A615-96 Grade 60.
6. A design wind speed of 80 or 100 mph with a 30% gust factor for wind loading on the pole is included in the design.
7. The pole shall be tapered as required to provide a top outside diameter (O.D.) of 6" with a base O.D. of 10". Portions of the shaft near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication .
8. The pole shall be free of transverse welds except at the base.
9. Poles constructed out of two or more sections with overlapping splices are not permitted.
10. All welding shall conform to American Welding Society Structural Welding Code (Aluminum) ANSI/AWS D1.2 (current edition).
11. See Standard Index No. 17500 for grounding and wiring details.
12. The pole and arms shall be furnished with a 50 grit satin rubbed finish.
13. All designs to be in accordance with the 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs , Luminaires and Traffic Signals.
14. All Light Poles within 5 miles of the coastline shall be equipped with a damping device. Information, details and performance data on the damping device shall be included with the Manufacturer's Qualified Products List (QPL) application.
15. The manufacturer's Qualified Product List (QPL) application shall include test reports certifying that the Arm and Base Connection components, including the breakaway transformer base, are capable of resisting the forces (axial, shear, torsion, and moment, as applicable) shown in the data tables for the arm and pole.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

ELEVATION AND NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

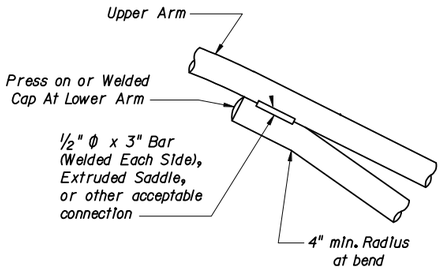
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Watts
State Structures Design Engineer

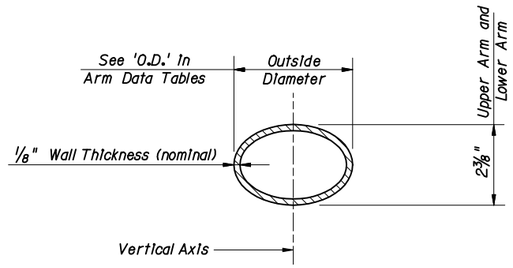
REVISION NO.	SHEET NO.	INDEX NO.
	1 of 7	017515

Revised: 7-10-01

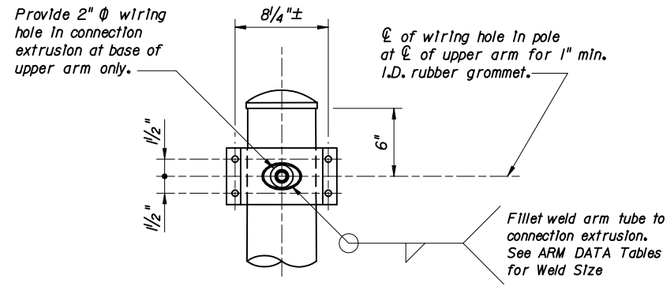
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ARM CONNECTION DETAIL

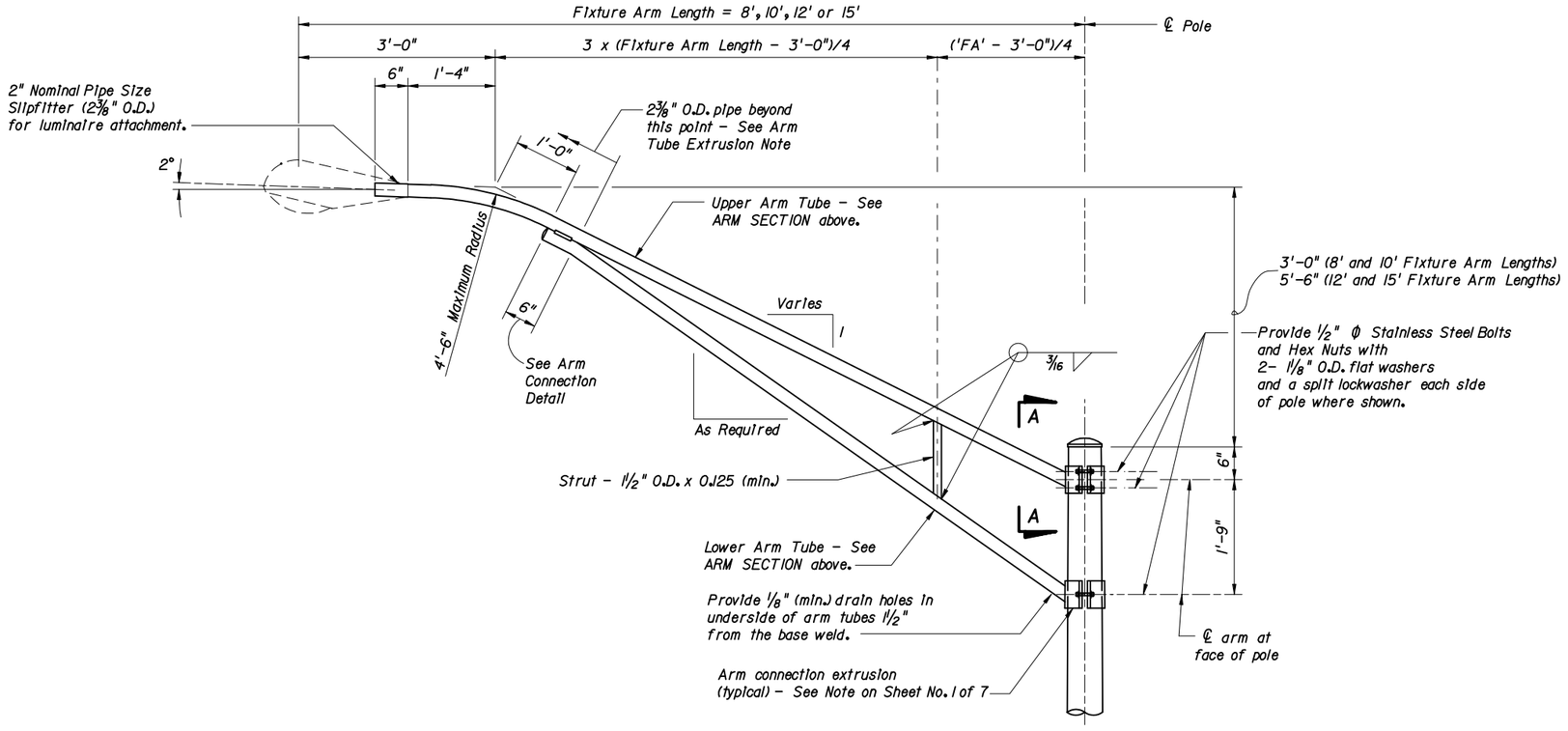


ARM SECTION



SECTION A-A

(Connection At Lower Arm Similar)



ARM ELEVATION

ARM TUBE EXTRUSIONS NOTES:

At the pole connection, provide arm extrusions with dimensions as shown in the ARM SECTION and as tabulated in the ARM DATA Tables. Uniformly transition elliptical extrusions to a cylindrical section at the arm connection.

The pole fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equal or exceed that of the required section, and provided the wall thickness is a minimum of ⅛" nominal and within the Aluminum Association Tolerances.

The outside diameter about the minor axis should be held at 2⅜" at the upper and lower arms.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

ARM DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

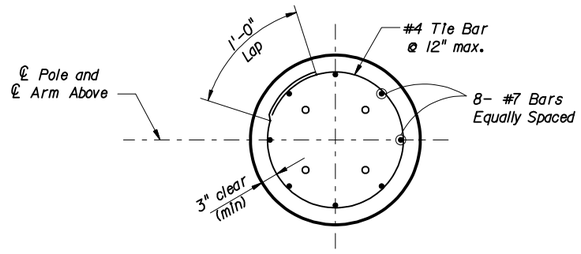
THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

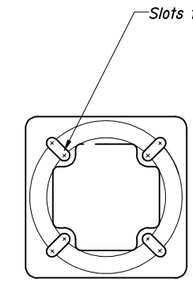
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 7	017515

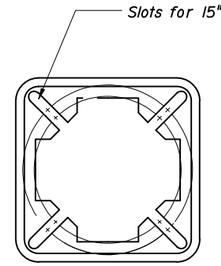
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION C-C



TOP VIEW
TRANSFORMER BASE

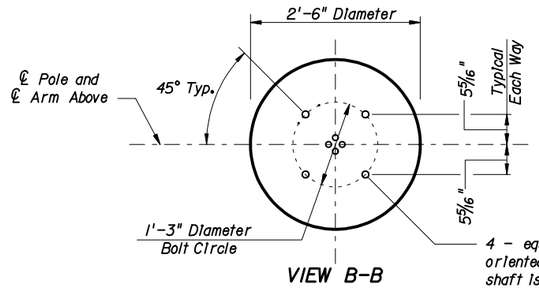


BOTTOM VIEW
TRANSFORMER BASE

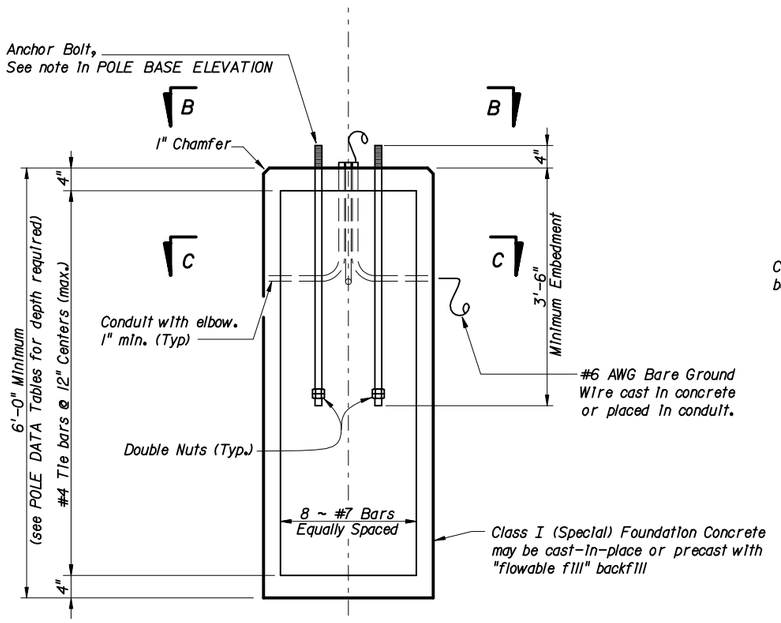
FOUNDATION NOTES:
The foundations for Aluminum Light Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated) for poles on fill ≤ 6 feet.
Unit Weight	=	112 lbs./cu. ft (assumed dry) for poles on fill > 6 feet.

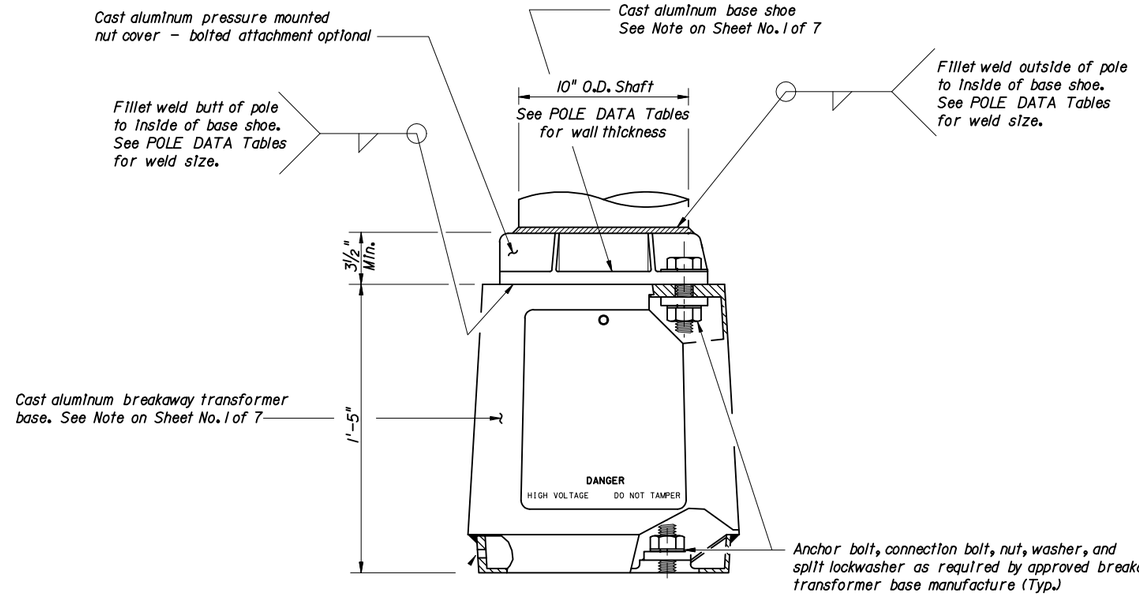
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties. In any event only the soil identification is required.



VIEW B-B



FOUNDATION



POLE BASE ELEVATION

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

BASE DETAILS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

8 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	2.375	0.250	0.392	0.100	0.162	2.375	0.188	0.218	0.056	0.090
2	40	100	3.625	0.250	0.755	0.178	0.212	2.375	0.188	0.152	0.036	0.043
3	45	80	2.375	0.250	0.392	0.100	0.162	2.375	0.188	0.218	0.056	0.090
4	45	100	3.625	0.250	0.755	0.178	0.212	2.375	0.188	0.152	0.036	0.043
5	50	80	2.375	0.250	0.424	0.104	0.162	2.375	0.250	0.236	0.058	0.090
6	50	100	3.625	0.250	0.819	0.186	0.212	2.375	0.188	0.165	0.037	0.043
7	55	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
8	60	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
9	65	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
10	70	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043
11	75	100	3.625	0.250	0.857	0.200	0.212	2.375	0.188	0.173	0.040	0.043

10 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.625	0.188	0.669	0.134	0.269	2.375	0.188	0.150	0.030	0.060
2	40	100	3.625	0.188	0.651	0.118	0.182	3.625	0.188	0.556	0.101	0.155
3	45	80	3.625	0.188	0.669	0.134	0.269	2.375	0.188	0.150	0.030	0.060
4	45	100	3.625	0.188	0.651	0.118	0.182	3.625	0.188	0.556	0.101	0.155
5	50	80	3.625	0.250	0.720	0.138	0.269	2.375	0.188	0.161	0.031	0.060
6	50	100	3.625	0.250	0.703	0.123	0.182	3.625	0.250	0.601	0.105	0.155
7	55	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
8	60	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
9	65	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
10	70	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155
11	75	100	3.625	0.250	0.739	0.133	0.182	3.625	0.250	0.632	0.114	0.155

12 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	3.625	0.188	0.593	0.099	0.235	3.625	0.188	0.486	0.081	0.192
2	40	100	4.625	0.250	1.150	0.179	0.299	3.625	0.188	0.518	0.081	0.135
3	45	80	3.625	0.188	0.593	0.099	0.235	3.625	0.188	0.486	0.081	0.192
4	45	100	4.625	0.250	1.150	0.179	0.299	3.625	0.188	0.518	0.081	0.135
5	50	80	3.625	0.188	0.634	0.102	0.235	3.625	0.188	0.520	0.084	0.192
6	50	100	4.625	0.250	1.230	0.185	0.299	3.625	0.188	0.554	0.084	0.135
7	55	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
8	60	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
9	65	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
10	70	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135
11	75	100	4.625	0.313	1.300	0.201	0.299	3.625	0.250	0.588	0.091	0.135

15 FT. ARM DATA

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	UPPER ARM O.D. (IN.)	UPPER ARM WELD (IN.)	UPPER ARM MOMENT (FT.KIP)	UPPER ARM SHEAR (KIP)	UPPER ARM N * (KIP)	LOWER ARM O.D. (IN.)	LOWER ARM WELD (IN.)	LOWER ARM MOMENT (FT.KIP)	LOWER ARM SHEAR (KIP)	LOWER ARM N * (KIP)
1	40	80	4.625	0.250	1.02	0.137	0.388	3.625	0.188	0.484	0.065	0.184
2	40	100	4.625	0.250	1.15	0.145	0.293	4.625	0.250	1.170	0.146	0.296
3	45	80	4.625	0.250	1.02	0.137	0.388	3.625	0.188	0.484	0.065	0.184
4	45	100	4.625	0.250	1.15	0.145	0.293	4.625	0.250	1.170	0.146	0.296
5	50	80	4.625	0.250	1.09	0.140	0.388	3.625	0.188	0.514	0.066	0.184
6	50	100	4.625	0.250	1.23	0.149	0.293	4.625	0.313	1.240	0.151	0.296
7	55	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
8	60	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
9	65	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
10	70	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296
11	75	100	4.625	0.313	1.31	0.162	0.293	4.625	0.313	1.330	0.164	0.296

Note:
All tables were developed assuming the following Luminaire properties:
Area = 1.5 ft^2 (Includes wind drag coefficient)
Weight = 51 pounds

** 'N' equals force normal to face of connection due to axial force in the arm - tension upper arm - compression lower arm.*

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

ARM DATA

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.5	0.522	0.611	0.227	6
2	40	100	0.156	0.188	0.156	17.6	0.690	0.907	0.229	7
3	45	80	0.156	0.188	0.156	13.8	0.539	0.611	0.227	6
4	45	100	0.156	0.188	0.156	18.0	0.713	0.907	0.229	7
5	50	80	0.156	0.188	0.156	14.3	0.563	0.660	0.227	6
6	50	100	0.156	0.188	0.156	18.6	0.747	0.985	0.229	6
7	55	100	0.156	0.188	0.156	19.7	0.790	1.030	0.229	6
8	60	100	0.188	0.188	0.188	20.1	0.805	1.030	0.261	6
9	65	100	0.188	0.188	0.188	20.4	0.825	1.030	0.261	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.7	0.528	0.819	0.233	6
2	40	100	0.156	0.188	0.156	17.8	0.694	1.210	0.236	7
3	45	80	0.156	0.188	0.156	14.0	0.545	0.819	0.233	6
4	45	100	0.156	0.188	0.156	18.2	0.717	1.210	0.236	7
5	50	80	0.156	0.188	0.156	14.5	0.569	0.881	0.233	6
6	50	100	0.156	0.188	0.156	18.8	0.751	1.300	0.236	6
7	55	100	0.188	0.188	0.188	19.9	0.795	1.370	0.268	6
8	60	100	0.188	0.188	0.188	20.3	0.810	1.370	0.268	6
9	65	100	0.188	0.188	0.188	20.6	0.830	1.370	0.268	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.1	0.514	1.08	0.232	6
2	40	100	0.156	0.188	0.156	17.9	0.699	1.66	0.235	7
3	45	80	0.156	0.188	0.156	13.4	0.530	1.08	0.232	6
4	45	100	0.156	0.188	0.156	18.2	0.721	1.66	0.235	7
5	50	80	0.156	0.188	0.156	13.8	0.553	1.15	0.232	6
6	50	100	0.156	0.188	0.156	18.9	0.753	1.78	0.235	6
7	55	100	0.188	0.188	0.188	19.9	0.796	1.89	0.265	6
8	60	100	0.188	0.188	0.188	20.4	0.814	1.89	0.265	6
9	65	100	0.188	0.188	0.188	20.7	0.832	1.89	0.265	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	40	80	0.156	0.188	0.156	13.9	0.533	1.51	0.242	6
2	40	100	0.156	0.188	0.156	19.1	0.728	2.32	0.246	7
3	45	80	0.156	0.188	0.156	14.2	0.550	1.51	0.242	6
4	45	100	0.188	0.188	0.188	19.4	0.750	2.32	0.276	7
5	50	80	0.156	0.188	0.156	14.6	0.572	1.60	0.242	6
6	50	100	0.188	0.188	0.188	20.1	0.782	2.46	0.276	6
7	55	100	0.188	0.188	0.188	21.3	0.829	2.63	0.276	6
8	60	100	0.188	0.188	0.188	21.7	0.847	2.63	0.276	6
9	65	100	0.188	0.188	0.188	22.0	0.865	2.63	0.276	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 40 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.6	0.582	0.611	0.249	6
2	45	100	0.188	0.188	0.188	21.5	0.767	0.907	0.288	7
3	50	80	0.156	0.188	0.156	17.2	0.608	0.660	0.249	7
4	50	100	0.188	0.188	0.188	22.4	0.803	0.985	0.288	7
5	55	100	0.250	0.188	0.250	23.6	0.844	1.030	0.359	6
6	60	100	0.250	0.188	0.250	24.2	0.876	1.030	0.359	6
7	65	100	0.250	0.188	0.250	24.6	0.894	1.030	0.359	6
8	70	100	0.250	0.188	0.250	24.9	0.913	1.030	0.359	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.9	0.588	0.819	0.255	7
2	45	100	0.188	0.188	0.188	21.8	0.771	1.210	0.294	7
3	50	80	0.156	0.188	0.156	17.5	0.614	0.881	0.255	7
4	50	100	0.250	0.188	0.250	22.6	0.807	1.300	0.366	7
5	55	100	0.250	0.188	0.250	23.9	0.849	1.370	0.366	6
6	60	100	0.250	0.188	0.250	24.4	0.881	1.370	0.366	6
7	65	100	0.250	0.188	0.250	24.8	0.899	1.370	0.366	6
8	70	100	0.250	0.188	0.250	25.2	0.917	1.370	0.366	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	16.2	0.573	1.08	0.255	6
2	45	100	0.188	0.188	0.188	21.9	0.775	1.66	0.291	7
3	50	80	0.156	0.188	0.156	16.7	0.594	1.15	0.255	7
4	50	100	0.250	0.188	0.250	22.7	0.804	1.78	0.358	7
5	55	100	0.250	0.188	0.250	23.9	0.851	1.89	0.358	6
6	60	100	0.250	0.188	0.250	24.5	0.884	1.89	0.358	6
7	65	100	0.250	0.188	0.250	24.9	0.898	1.89	0.358	6
8	70	100	0.250	0.188	0.250	25.2	0.918	1.89	0.358	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES				FOUND. DEPTH (FT.)
						MOMENT (FT.KIP)	SHEAR (KIP)	TORSION (FT.KIP)	AXIAL (KIP)	
1	45	80	0.156	0.188	0.156	17.1	0.592	1.51	0.264	7
2	45	100	0.250	0.188	0.250	23.2	0.804	2.32	0.370	7
3	50	80	0.156	0.188	0.156	17.6	0.613	1.60	0.264	7
4	50	100	0.250	0.188	0.250	24.0	0.833	2.46	0.370	7
5	55	100	0.250	0.188	0.250	25.4	0.885	2.63	0.370	6
6	60	100	0.250	0.250	0.250	26.0	0.918	2.63	0.370	6
7	65	100	0.250	0.250	0.250	26.4	0.931	2.63	0.370	6
8	70	100	0.250	0.250	0.250	26.7	0.952	2.63	0.370	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 45 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Bitter
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	6 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

DATA FOR POLE WITH 8 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.4	0.650	0.660	0.312	7
2	50	100	0.250	0.250	0.250	26.4	0.856	0.985	0.394	8
3	55	100	0.250	0.250	0.250	27.9	0.899	1.030	0.394	8
4	60	100	0.250	0.250	0.250	28.5	0.930	1.030	0.394	6
5	65	100	0.250	0.250	0.250	29.1	0.965	1.030	0.394	6
6	70	100	0.250	0.250	0.250	29.5	0.981	1.030	0.394	6
7	75	100	0.250	0.250	0.250	29.8	0.998	1.030	0.394	6

DATA FOR POLE WITH 10 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.7	0.656	0.881	0.317	7
2	50	100	0.250	0.250	0.250	26.7	0.860	1.300	0.400	8
3	55	100	0.250	0.250	0.250	28.1	0.904	1.370	0.400	8
4	60	100	0.250	0.250	0.250	28.8	0.934	1.370	0.400	6
5	65	100	0.250	0.250	0.250	29.4	0.970	1.370	0.400	6
6	70	100	0.250	0.250	0.250	29.8	0.986	1.370	0.400	6
7	75	100	0.250	0.250	0.250	30.1	1.000	1.370	0.400	6

DATA FOR POLE WITH 12 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	19.9	0.640	1.15	0.315	7
2	50	100	0.250	0.250	0.250	26.8	0.863	1.78	0.393	8
3	55	100	0.250	0.250	0.250	28.2	0.906	1.89	0.393	8
4	60	100	0.250	0.250	0.250	28.8	0.935	1.89	0.393	6
5	65	100	0.250	0.250	0.250	29.5	0.972	1.89	0.393	6
6	70	100	0.250	0.250	0.250	29.9	0.987	1.89	0.393	6
7	75	100	0.250	0.250	0.250	30.1	1.000	1.89	0.393	6

DATA FOR POLE WITH 15 FT. ARM

CASE NO.	WIND HEIGHT (FT.)	WIND SPEED (MPH)	POLE WALL (IN.)	UPPER WELD (IN.)	LOWER WELD (IN.)	BASE FORCES MOMENT (FT.KIP)	BASE FORCES SHEAR (KIP)	BASE FORCES TORSION (FT.KIP)	BASE FORCES AXIAL (KIP)	FOUND. DEPTH (FT.)
1	50	80	0.188	0.188	0.188	20.9	0.660	1.60	0.324	7
2	50	100	0.250	0.250	0.250	28.2	0.892	2.46	0.404	8
3	55	100	0.250	0.250	0.250	29.9	0.940	2.63	0.404	8
4	60	100	0.313	0.250	0.313	30.5	0.968	2.63	0.479	6
5	65	100	0.313	0.250	0.313	31.2	1.000	2.63	0.479	6
6	70	100	0.313	0.250	0.313	31.5	1.020	2.63	0.479	6
7	75	100	0.313	0.250	0.313	31.8	1.040	2.63	0.479	6

NOTE:
Pole wall thicknesses shown in the POLE DATA TABLES are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

POLE DATA - 50 FT. MOUNTING HEIGHT

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE

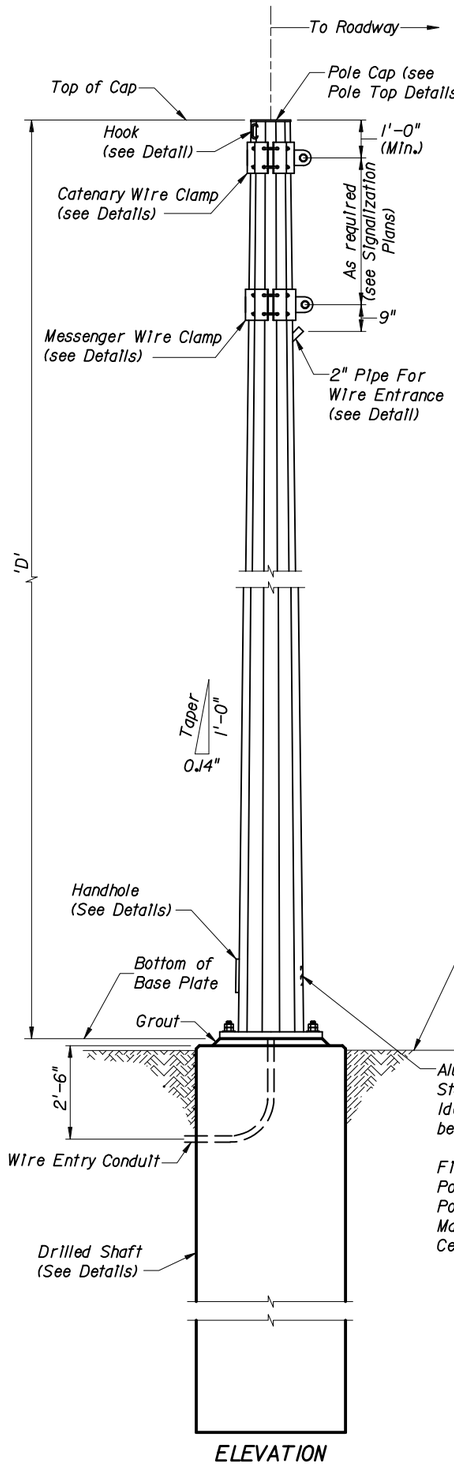
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY *W. N. Bhatt*
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	7 of 7	017515

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on Inside of Pole visible from handhole. Tag to be stamped with the following information :

Financial Project ID
Pole Type
Pole Height
Manufacturer's Name
Certification No.

SELECTION PROCEDURE

1. Determine the required pole height and bending moment at the pole base using a design wind speed in conformance with the "Plans Preparation Manual", Chapter 29, with a 30 percent gust factor.
2. Enter the Pole Moment Capacity Table, and determine the required Pole Type and wall thickness.
3. Enter the Pole Type and height designation in the signalization Plans for each strain pole.
   Example: From design: required height = 23'-6",
   base moment = 198.0 kip-ft
   From table: use NS-VII-24
4. Refer to the Table of Variables for the required pole diameter, base plate and drilled shaft dimensions.

MINIMUM REQUIRED MOMENT CAPACITY (kip-ft)

	TYPE OF POLE						
D (ft.)	NS-IV	NS-V	NS-VI	NS-VII	NS-VIII	NS-IX	NS-X
20	33.0	106.0	152.0	210.0	266.0	330.0	390.0
22	36.8	111.2	158.7	218.0	274.9	340.3	401.7
24	40.6	116.4	165.3	226.0	283.9	350.7	413.3
26	44.4	121.6	172.0	234.0	292.8	361.0	425.0
28	48.2	126.8	178.7	242.0	301.7	371.3	436.7
30	52.0	132.0	185.3	250.0	310.7	381.7	448.3
32	55.8	137.2	192.0	258.0	319.6	392.0	460.0
34	59.6	142.4	198.7	266.0	328.5	402.3	471.7
36	63.4	147.6	205.3	274.0	337.5	412.7	483.3
38	67.2	152.8	212.0	282.0	346.4	423.0	495.0
40	71.0	158.0	218.7	290.0	355.3	433.3	506.7
42	74.8	163.2	225.3	298.0	364.3	443.7	518.3
44	78.6	168.4	232.0	306.0	373.2	454.0	530.0
46	82.4	173.6	238.7	314.0	382.1	464.3	541.7
48	86.2	178.8	245.3	322.0	391.1	474.7	553.3
50	90.0	184.0	252.0	330.0	400.0	485.0	565.0

0.239 Inch Wall Thickness

0.313 Inch Wall Thickness

STEEL STRAIN POLE NOTES

1. Signal Structure Materials shall be as follows:
   Poles --> ASTM A607 Grade 50, 55 or 60 (less than 1/4") or ASTM A572 Grade 50 or 60 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   Steel Plates -> ASTM A709 Grade 36
   Weld Metal -> E70XX
   Bolts (except Anchor Bolts) -> ASTM A325, Type I
   Anchor Bolts -> ASTM F1554 Grade 55
   Nuts for Anchor Bolts -> ASTM A563 Grade A Heavy Hex
   Washers for Anchor Bolts -> ASTM F436 Type I
   Handhole Frame -> ASTM A709 Grade 36
   Handhole Cover -> ASTM A607 Grade 50, 55 or 60
   Aluminum Caps and Covers -> ASTM B26 (356-T6)
   Stainless Steel Screws -> AISI Type 316
2. All Steel Items shall be Galvanized as follows:
   All Nuts, Bolts and Washers -> ASTM A153 Class C or D depending on size
   All other Steel Items -> ASTM A123
3. Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day Compressive Strength (f'c) of 4,000 psi for all environmental classifications.
4. Reinforcing Steel shall be ASTM A615-96 Grade 60.
5. Grout shall have a minimum 28-day Compressive Strength of 5,000 psi and shall meet the requirements of Section 934. Grout after pole is set and properly plumbed.
6. A design wind speed of 100 mph with a 30% gust factor for wind loading on the pole was included in the design.
7. The Pole shall be tapered with the diameter changing at a rate of 0.14 inch per foot.
8. Except for anchor bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for anchor bolts shall not exceed the bolt diameter plus 1/2".
9. The foundation for the Strain Pole Structure shall be constructed in accordance with Section 455 of the FDOT Specifications except that no payment for the foundation shall be made under Section 455. The cost of providing the foundation shall be included in the pay item for providing the complete Strain Pole Structure. For foundation design assumptions, refer to the Foundation Notes
10. The pole shall be free of transverse welds except at the base.
11. Poles constructed out of two or more sections with overlapping splices are not permitted.
12. The strain pole shall not be erected until the foundation concrete has been allowed to cure for a minimum of seven days.
13. No field welding on any part of the pole is permitted.
14. For clamp spacing, cable sizes and forces, signal and sign mounting locations and details see the Signalization Plans.
15. All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).
16. See Standard Index No. 17727 for grounding detail and span wire installation details.
17. Locate handhole 180° from 2 inch wire entrance pipe.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE ELEVATION AND NOTES

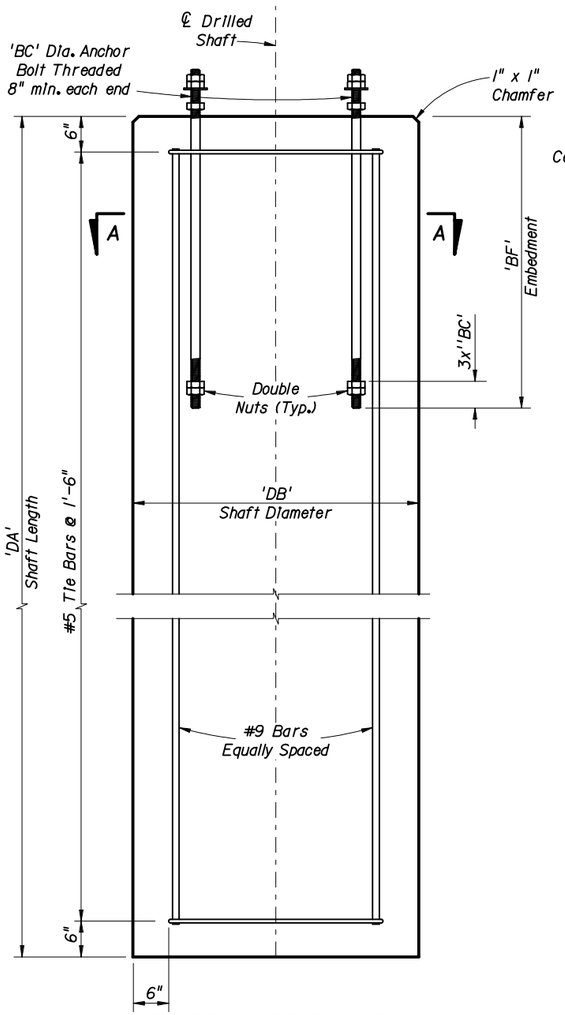
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

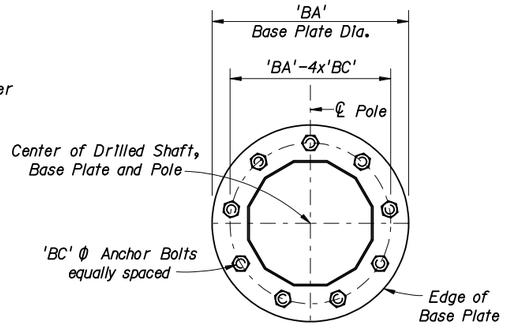
APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 3	17723

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

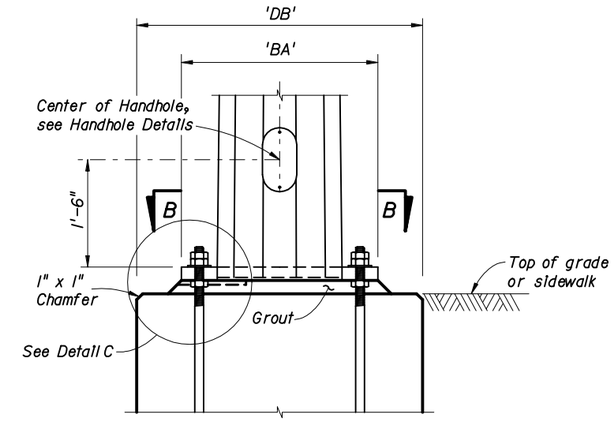


DRILLED SHAFT ELEVATION
(See Table for number of #9 bars.)

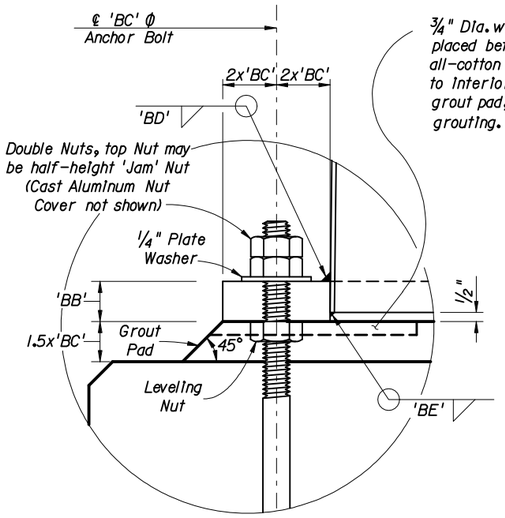


VIEW B-B

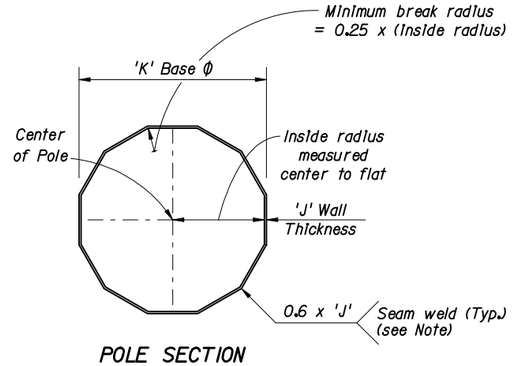
NOTE: Number of bolts shown for illustration purposes only. (See Tabel for actual quantity)



PARTIAL ELEVATION
(Showing Base Plate, Anchor bolts and Handhole)

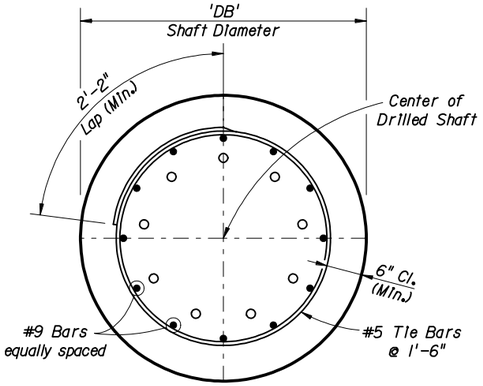


DETAIL C



POLE SECTION

NOTE: Longitudinal seam welds within 6" of circumferential welds shall be complete penetration welds.



SECTION A-A

FOUNDATION NOTES:
The foundations for Steel Strain Poles are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification	=	Cohesionless (Fine Sand)
Friction Angle	=	30 Degrees (30°)
Unit Weight	=	50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.

TABLE OF STRAIN POLE VARIABLES

POLE TYPE	POLE		BASE CONNECTION							SHAFT		
	J (In.)	K (In.)	No. of Bolts	BA (In.)	BB (In.)	BC (In.)	BD (In.)	BE (In.)	BF (In.)	DA (ft)	DB (ft)	No. of #9 bars
NS-IV	J = 0.239	14	6	25	2.125	1.375	0.313	0.188	36	10	3.5	14
NS-V		16	8	27	2.250	1.375	0.375	0.188	47	12.5	3.5	14
NS-VI		18	8	30	2.375	1.500	0.438	0.188	54	14	3.5	14
NS-VII		21	10	33	2.250	1.500	0.375	0.188	49	15	4	19
NS-VIII		23	12	34	2.250	1.375	0.375	0.188	52	16	4	19
NS-IX		25	12	37	2.250	1.500	0.375	0.188	50	16	4.5	23
NS-X		27	12	39	2.375	1.500	0.375	0.188	52	17	4.5	23
NS-V	J = 0.313	16	8	28	2.375	1.500	0.438	0.250	47	12.5	3.5	14
NS-VI		18	10	30	2.375	1.500	0.500	0.250	54	14	3.5	14
NS-VII		21	12	33	2.375	1.500	0.500	0.250	49	15	4	19
NS-VIII		23	12	35	2.500	1.500	0.500	0.250	52	16	4	19
NS-IX		25	12	39	2.625	1.750	0.500	0.250	50	16	4.5	23
NS-X		27	12	41	2.750	1.750	0.500	0.250	52	17	4.5	23

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE
BASE DETAILS AND TABLE OF VARIABLES

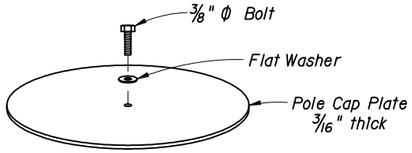
INTERIM STANDARD

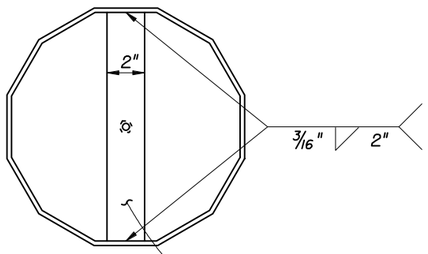
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 3	17723

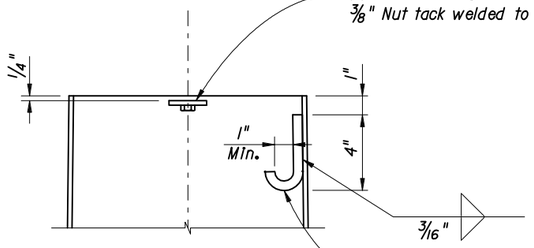
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





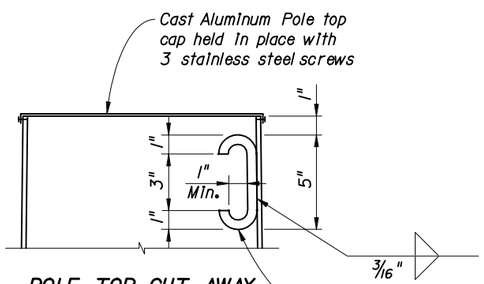
TOP VIEW

1/4" x 2" Lifting Bar with 5/16" ϕ hole and 3/8" Nut tack welded to underside of bar



POLE TOP CUT-AWAY
(Option 'a')

'J' Hook for wiring, 1/2" ϕ commercial grade hot rolled bar welded to inside of pole.

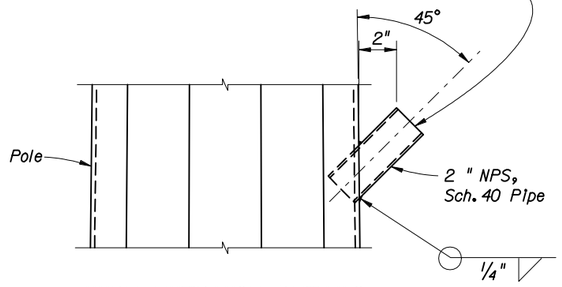


POLE TOP CUT-AWAY
(Option 'b')

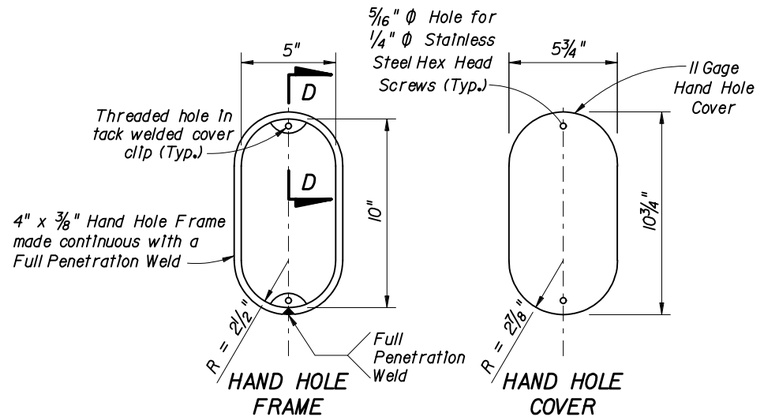
'C' Hook for wiring and lifting, 1/2" ϕ commercial grade hot rolled bar welded to inside of pole.

POLE TOP NOTE:
Any combination of the above two options may be used, provided both lifting and wiring is accommodated.

NOTE: A properly sized Service Head (Weather Head), shall be installed and fastened securely on to the standard pipe for each pole location. At locations other than service entrance, the service head face is to be left closed to outside atmosphere. Service entrance installation per Index No. 17727.

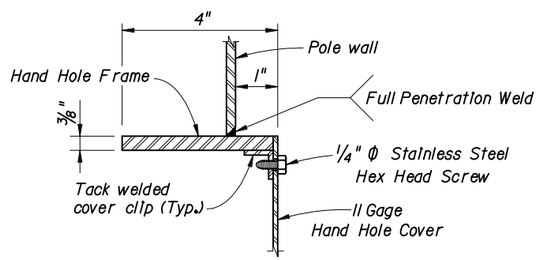


WIRE ENTRANCE DETAILS

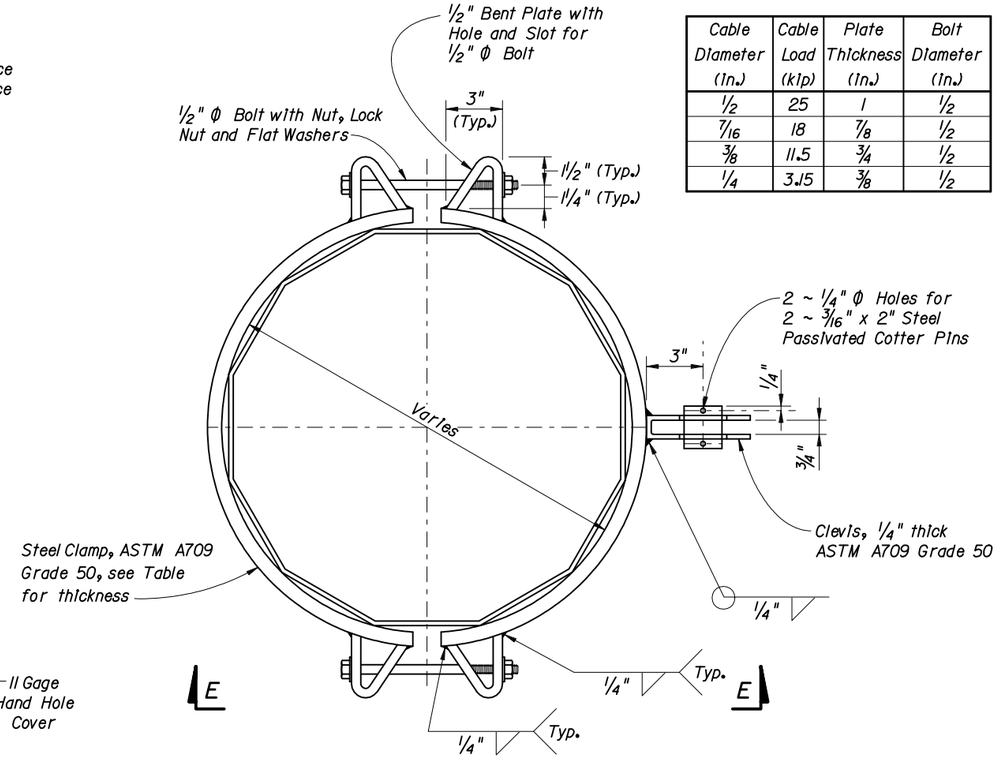


HAND HOLE FRAME

HAND HOLE COVER



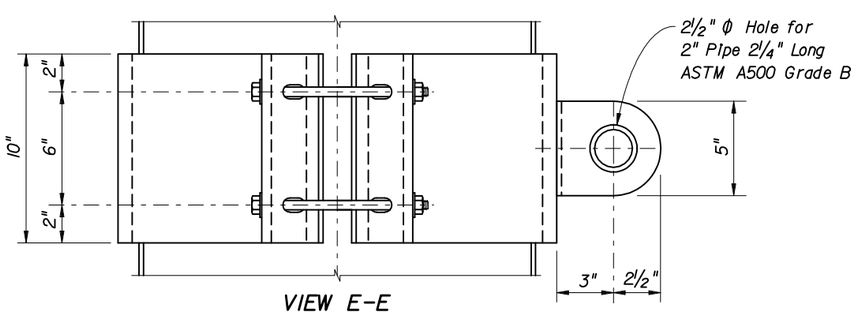
SECTION D-D
(thru Hand Hole)



Cable Diameter (In.)	Cable Load (klp)	Plate Thickness (In.)	Bolt Diameter (In.)
1/2	25	1	1/2
7/16	18	7/8	1/2
3/8	11.5	3/4	1/2
1/4	3.15	3/8	1/2

CATENARY AND MESSENGER WIRE CLAMPS

NOTE: Clamps have been sized for Design Cable Loads shown in the Table, and a Maximum Pole Diameter at the Clamp location of 2'-1".



VIEW E-E

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

Date: 9-26-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

STEEL STRAIN POLE ATTACHMENT DETAILS

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-3 OF 3 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. H. Boyle
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 3	17723

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

NOTES:

Design Poles (Concrete and Strain Poles) in accordance with the latest edition of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and Supplement thereto. For allowable unit stresses, meet the requirements of Section 6.

Place the prestressing symmetrically. Supply a sufficient amount of prestressing to provide a calculated compressive stress of 2.2 ksi for Type N-II and 3 ksi for Type N-III at the top of pole after all losses.

Concrete Strength shall be 6 ksi minimum at 28 days and 4 ksi minimum at transfer of the Prestressing force.

Reinforcing steel shall be A615 Grade 60. Provide a minimum area of non-prestressed reinforcement equal to 0.33% of the concrete area.

Prestressed Strands shall be A416 Grade 270 stress relieved or low relaxation.

One turn required for spiral splices and two turns required at the top and bottom of poles. Spiral shall be manufactured from cold-drawn steel wire meeting the requirements of ASTM A82.

Attach span wire assemblies (consisting of the catenary wire, the messenger wire, and the tether wire) to the concrete poles in accordance with Section 634.

If a two point attachment is required by the plans, provide an eye bolt hole for the messenger wire, or field drill one at the location indicated in the plans. Field drill the eyebolt hole for the tether wire, when required, prior to installation.

Use cover plates made of non-corrosive materials and attached to the pole using lead anchors or threaded inserts embedded in the pole and round head chrome plated screws.

Attach ground wires to the reinforcing steel in the pole as necessary to prevent the ground wire from being displaced during concreting operations.

Identify concrete poles as to pole manufacturer, Department's pole type, length and Qualified Product List qualification number by inset numerals 1" in height inscribed on the same face of the pole as the handhole and ground wire.

Provide a Class 3 Surface Finish as Specified in 400-15.2.4.

Provide a minimum cover of 1".

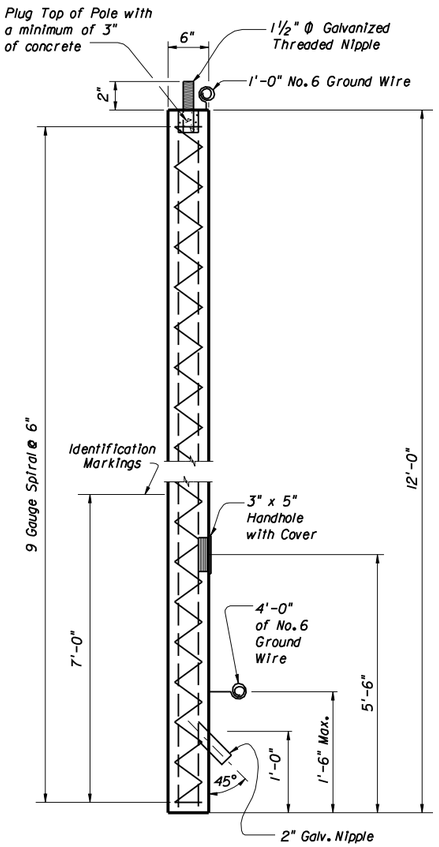
Provide all poles with total taper of 0.052 IN/FT.

**MINIMUM REQUIRED MOMENT CAPACITY					
D (feet)	TYPE OF POLE				
	N-IV (k-ft)	N-V (k-ft)	N-VI (k-ft)	N-VII (k-ft)	N-VIII (k-ft)
20	33	106	152	210	266
22	37	111	159	218	275
24	41	116	163	226	284
26	44	121	172	234	293
28	48	127	179	242	302
30	52	132	185	250	311
32	56	137	192	258	320
34	60	142	199	266	329
36	63	148	205	274	338
38	67	153	212	282	346
40	71	158	219	290	355
42	75	163	225	298	364
44	79	168	232	306	373
46	82	173	239	314	382
48	86	177	245	322	391
50	90	180	252	330	400

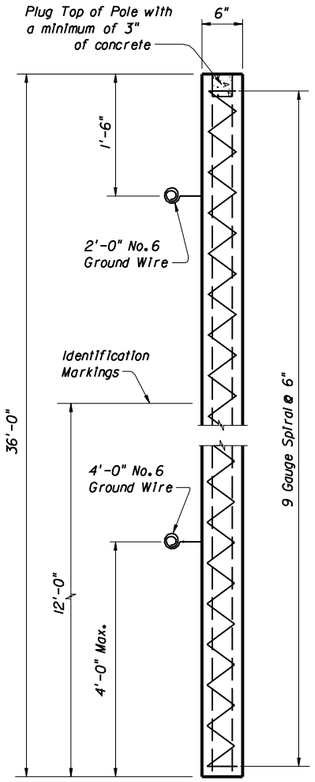
** Service Conditions: Design poles to carry the "Minimum Required Moment Capacity." These moments are based on a dead load plus wind load combinations, therefore obtain the allowable stresses by multiplying those for normal exposure conditions given in Section 6 by the applicable factor from Section 2 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The ultimate moment capacity of each pole shall be a minimum of 1.3 times the "Minimum Required Moment Capacity."

TYPE OF POLE	CONCRETE POLE	
	SIZE AT TOP (T)	SHEAR REINFORCING
Type II	6" x 6"	9 Gauge Spiral @ 6"
Type III	6" x 6"	6 Gauge Spiral @ 6"
Type IV	8" x 8"	5 Gauge Spiral @ 6"
Type V	10" x 10"	5 Gauge Spiral @ 6"
Type VI	12" x 12"	5 Gauge Spiral @ 6"
Type VII	14" x 14"	5 Gauge Spiral @ 6"
Type VIII	16" x 16"	5 Gauge Spiral @ 6"

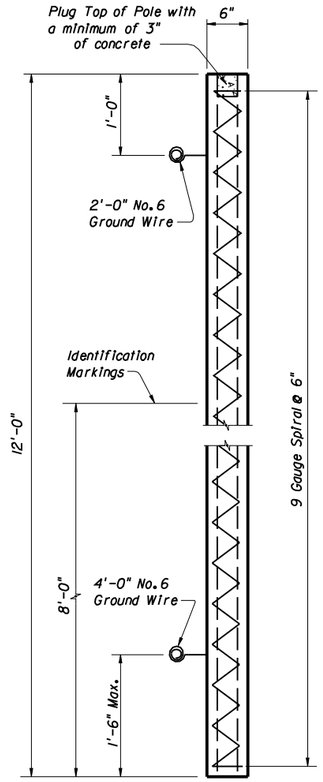


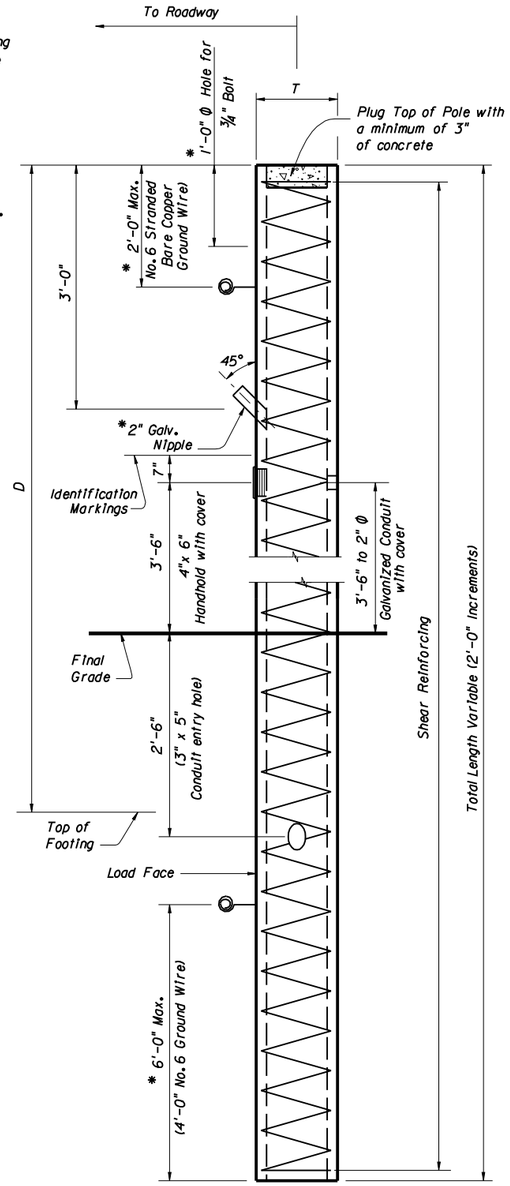
TYPE N-II POLE ON CONCRETE PEDESTAL



SERVICE POLES - TYPE N-II

(For Installation, refer to Roadway and Traffic Design Standard, Index No. 17504)





POLE TYPES N-III THROUGH N-VIII

* Do not apply these items to Type N-III. Establish bolt hole locations, ground wire location and conduit location as shown in the plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

CONCRETE POLES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET REPLACES SHEET NO. 1 OF 1 OF INDEX NO. 17725 OF THE ENGLISH ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	017725

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

NOTES:

Design Poles (Concrete and Strain Poles) in accordance with the latest edition of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and Supplement thereto. For allowable unit stresses, meet the requirements of Section 6.

Place the prestressing symmetrically. Supply a sufficient amount of prestressing to provide a calculated compressive stress of 2.2 ksi for Type N-II and 3 ksi for Type N-III at the top of pole after all losses.

Concrete Strength shall be 6 ksi minimum at 28 days and 4 ksi minimum at transfer of the Prestressing force.

Reinforcing steel shall be A615 Grade 60. Provide a minimum area of non-prestressed reinforcement equal to 0.33% of the concrete area.

Prestressed Strands shall be A416 Grade 270 stress relieved or low relaxation.

One turn required for spiral splices and two turns required at the top and bottom of poles. Spiral shall be manufactured from cold-drawn steel wire meeting the requirements of ASTM A82.

Attach span wire assemblies (consisting of the catenary wire, the messenger wire, and the tether wire) to the concrete poles in accordance with Section 634.

If a two point attachment is required by the plans, provide an eye bolt hole for the messenger wire, or field drill one at the location indicated in the plans. Field drill the eyebolt hole for the tether wire, when required, prior to installation.

Use cover plates made of non-corrosive materials and attached to the pole using lead anchors or threaded inserts embedded in the pole and round head chrome plated screws.

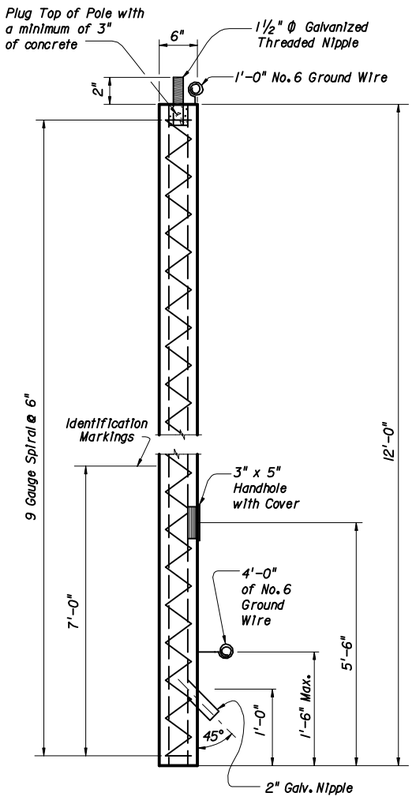
Attach ground wires to the reinforcing steel in the pole as necessary to prevent the ground wire from being displaced during concreting operations.

Identify concrete poles as to pole manufacturer, Department's pole type, length and Qualified Product List qualification number by inset numerals 1" in height inscribed on the same face of the pole as the handhole and ground wire.

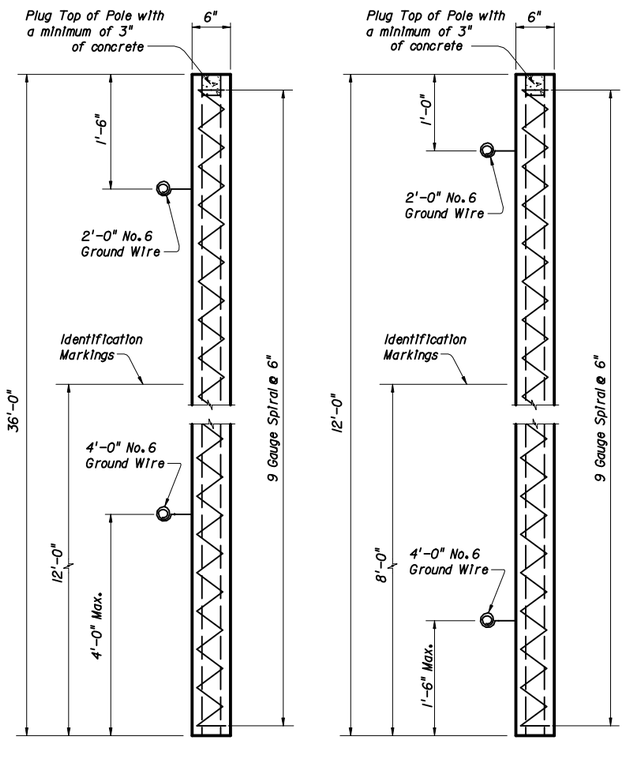
Provide a Class 3 Surface Finish as Specified in 400-15.2.4.

Provide a minimum cover of 1".

Provide all poles with total taper of 0.152 IN/FT.

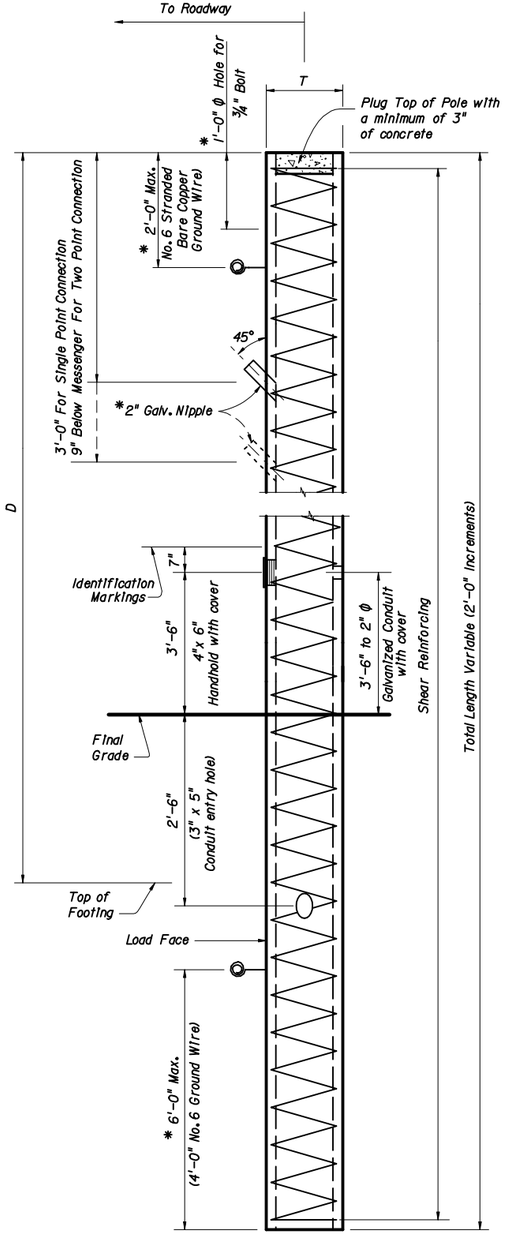


TYPE N-II POLE ON CONCRETE PEDESTAL



SERVICE POLES - TYPE N-II

(For Installation, refer to Roadway and Traffic Design Standard, Index No. 17504)



POLE TYPES N-III THROUGH N-VIII

* Do not apply these items to Type N-III Establish bolt hole locations, ground wire location and conduit location as shown in the plans.

Ref. Index 17900 and Sec. 744 for modifications to Type N-III poles used at traffic monitoring sites.

**MINIMUM REQUIRED MOMENT CAPACITY					
D (feet)	TYPE OF POLE				
	N-IV (k-ft)	N-V (k-ft)	N-VI (k-ft)	N-VII (k-ft)	N-VIII (k-ft)
20	33	106	152	210	266
22	37	111	159	218	275
24	41	116	163	226	284
26	44	121	172	234	293
28	48	127	179	242	302
30	52	132	185	250	311
32	56	137	192	258	320
34	60	142	199	266	329
36	63	148	205	274	338
38	67	153	212	282	346
40	71	158	219	290	355
42	75	163	225	298	364
44	79	168	232	306	373
46	82	173	239	314	382
48	86	177	245	322	391
50	90	180	252	330	400

** Service Conditions: Design poles to carry the "Minimum Required Moment Capacity." These moments are based on a dead load plus wind load combinations, therefore obtain the allowable stresses by multiplying those for normal exposure conditions given in Section 6 by the applicable factor from Section 2 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The ultimate moment capacity of each pole shall be a minimum of 1.3 times the "Minimum Required Moment Capacity."

TYPE OF POLE	CONCRETE POLE	
	SIZE AT TOP (T)	SHEAR REINFORCING
Type II	6" x 6"	9 Gauge Spiral @ 6"
Type III	6" x 6"	6 Gauge Spiral @ 6"
Type IV	8" x 8"	5 Gauge Spiral @ 6"
Type V	10" x 10"	5 Gauge Spiral @ 6"
Type VI	12" x 12"	5 Gauge Spiral @ 6"
Type VII	14" x 14"	5 Gauge Spiral @ 6"
Type VIII	16" x 16"	5 Gauge Spiral @ 6"

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE POLES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	017725

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

1. This Index, 17740, is for use in preparing signalization plans when single arm and double arm mast arm assemblies are required. This standard establishes the requirements of mast arm components listed on the Qualified Products List (QPL). When using components on the QPL, the "Mast Arm Assemblies Design Table", will be the only information required in the Contract Plans, and shop drawings are not required.

2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

4. The Data for Standard Mast Arm Assemblies on Index No. 17742, includes four different mast arm types and eleven different pole types. The arm classes are used regardless of single or double arm configurations. The poles are for either single or double arm configurations without luminaires or single arm configurations with luminaires.

5. Four standard arm configurations are provided. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required. The Arm Design Table on Index No. 17742 shows the variables for standard arm types A1 through A4.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Eleven standard poles are provided. Pole types P1 through P7 may be used with both single arm and double arm structures without luminaires. Pole types P21 Lum through P24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17742.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles P1 through P7 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles P21 Lum through P24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Differing arm configurations or pole mounting heights will require a Special Pole Design.

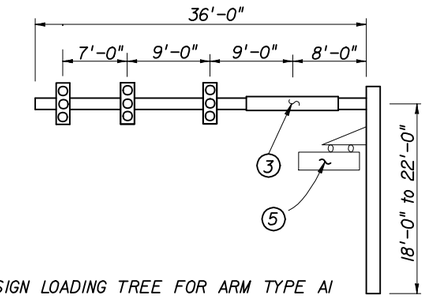
12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm: A#-P# = Arm Type - Pole Type
Double Arm: A#-A#-P# = First Arm Type - Second Arm Type - Pole Type

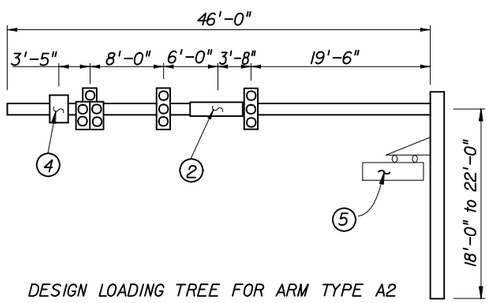
13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degress (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

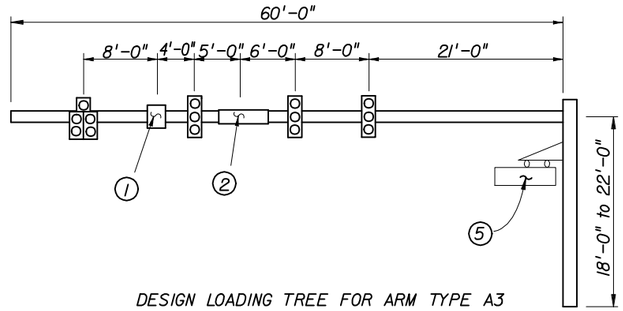
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT brings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.



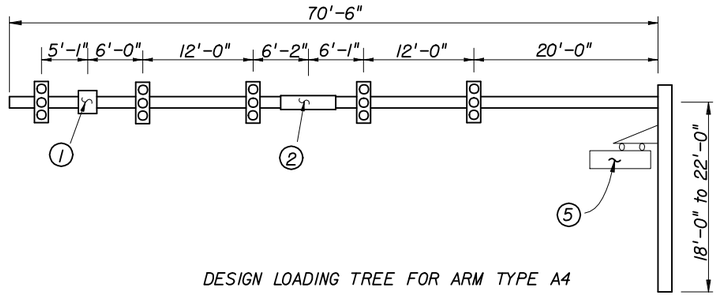
DESIGN LOADING TREE FOR ARM TYPE A1



DESIGN LOADING TREE FOR ARM TYPE A2



DESIGN LOADING TREE FOR ARM TYPE A3



DESIGN LOADING TREE FOR ARM TYPE A4

(1) Denotes a 2'-0" x 2'-6" Sign.

(2) Denotes a 1'-6" x 6'-0" Sign.

(3) Denotes a 1'-6" x 10'-0" Sign.

(4) Denotes a 2'-0" x 3'-0" Sign.

(5) Denotes a 2'-0" x 6'-0" max Internally Illuminated sign on a hinged bracket attached to pole.

Signal Notes:

1. Signal Backplates are included in the design of Standard Arms

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1 & 2 OF 2 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

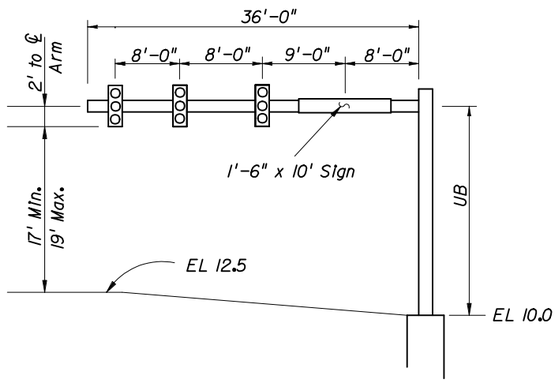
Date: 8-24-00

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 2	17740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown

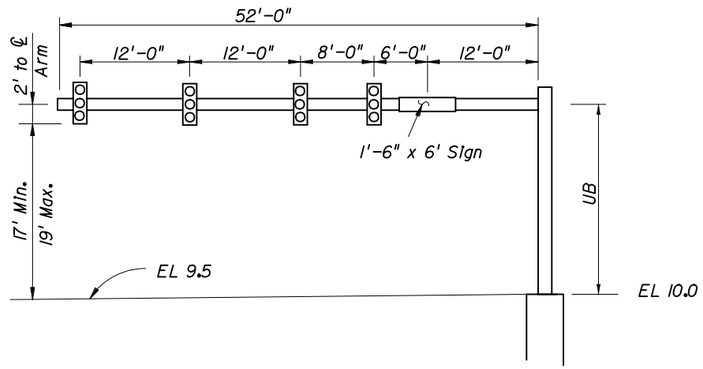


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the loading tree. A 36' Arm is adequate. Enter Arm Type A1 in the "Standard Mast Arm Assemblies Design Table" on Index No. 17742.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) with Arm Type A1, and select Pole Type 'P1'. Enter Pole Type 'P1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17' (Min.) + 2'
   'UB' = 21.5' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   A1 - P1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown
Second Arm same as Example 1



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, Investigate Arm A3 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type A3 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Index No. 17742.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'A3' is not required, enter the actual length of 52' under 'FAA' for the first Arm.
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 9.75" + 8' (0.14"/ft) = 10.87"
   Enter 10.87" for FBA under First Arm.
3. Select Second Arm Type - See Example Arm.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) with Arm Types 'A3' and 'A1', and select Pole Type 'P3'. Enter Pole Type 'P3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17' (Min.) + 2'
   'UB' = 18.5' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'P3' Pole.
   UCA = 17.75" - (24' - 22')X0.14"/ft.) = 17.47"
   Enter 17.47 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   A3 - A1 - P3
   First Arm Type - Second Arm Type - Pole Type

EXAMPLE SEE CONTRACT PLANS

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (in.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	A1 - P1	A1	.	.	.	.	.	.	P1	.	22	.	.	.	.	.
Example 2	A3 - A1 - P3	A3	52	10.87	A1	.	.	270	P3	22	20	17.47	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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TABLE NOTES:

(1) Assembly Number Legend
   Single Arm
   A# - P# = Arm Number - Pole Number
   Double Arm
   A# - P# = First Arm Number - Second Arm Number - Pole Number

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the are tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

   Classification = Cohesionless (Fine Sand)
   Friction Angle = 30 Degrees (30°)
   Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Date: 8-24-00

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1 & 2 OF 2 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY W. H. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	2 of 2	17740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

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2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

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5. Four standard arm configurations are provided. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required. The Arm Design Table on Index No. 17742 shows the variables for standard arm types A1 through A4.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Eleven standard poles are provided. Pole types P1 through P7 may be used with both single arm and double arm structures without luminaires. Pole types P21 Lum through P24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17742.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles P1 through P7 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles P21 Lum through P24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Differing arm configurations or pole mounting heights will require a Special Pole Design.

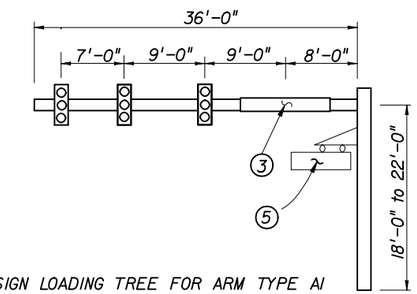
12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm: A#-P# = Arm Type - Pole Type
Double Arm: A#-A#-P# = First Arm Type - Second Arm Type - Pole Type

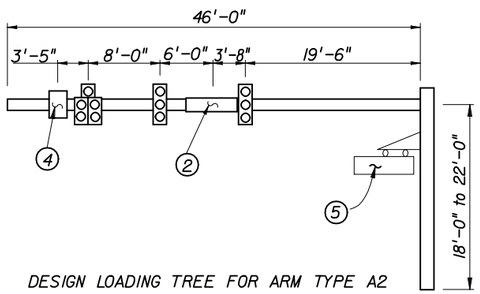
13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degress (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

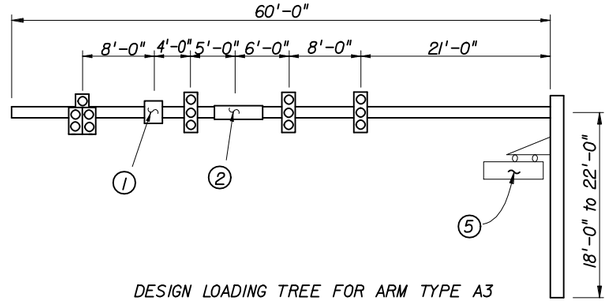
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT brings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.



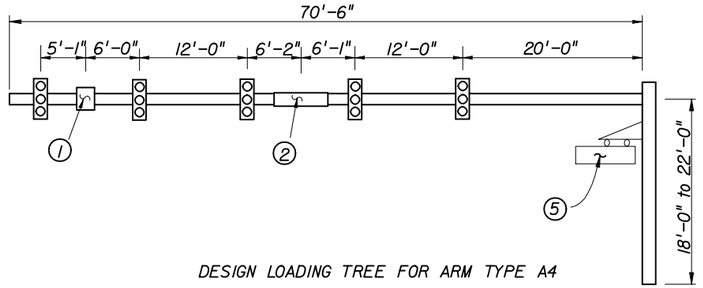
DESIGN LOADING TREE FOR ARM TYPE A1



DESIGN LOADING TREE FOR ARM TYPE A2



DESIGN LOADING TREE FOR ARM TYPE A3



DESIGN LOADING TREE FOR ARM TYPE A4

1. Denotes a 2'-0" x 2'-6" Sign.
2. Denotes a 1'-6" x 6'-0" Sign.
3. Denotes a 1'-6" x 10'-0" Sign.
4. Denotes a 2'-0" x 3'-0" Sign.
5. Denotes a 12 sq. ft. (max) internally illuminated sign on a hinged bracket attached to pole. See Index 17744, Sheet No. 1 of 5, for limitations on use.

Signal Notes:

1. Signal Backplates are included in the design of Standard Arms

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

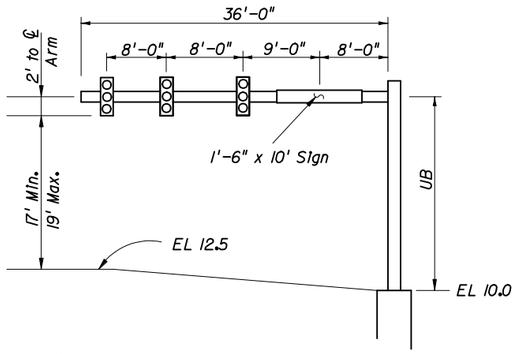
APPROVED BY W. V. Bhat
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown

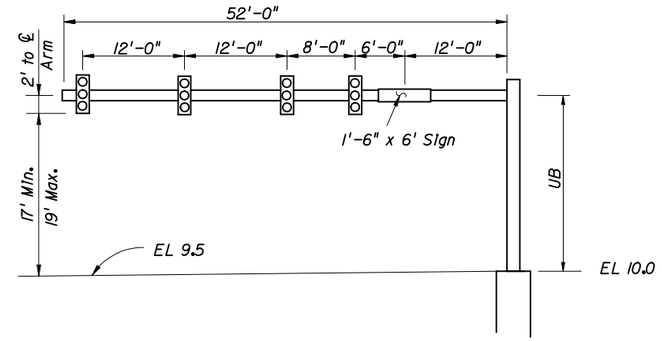


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the loading tree. A 36' Arm is adequate. Enter Arm Type A1 in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) with Arm Type A1, and select Pole Type 'P1'. Enter Pole Type 'P1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17' (Min.) + 2'
   'UB' = 21.5' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   A1 - P1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown
Second Arm same as Example 1



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, investigate Arm A3 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type A3 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'A3' is not required, provide the required 52' arm by entering an actual length of 28' under 'FAA' for the first Arm ('FAA' + 'FE'-Splice = 28' + 26'-2'=52').
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 9.75" + 8' (0.14"/ft) = 10.87"
   Enter 10.87" for FBA under First Arm.
3. Select Second Arm Type - See Example Arm.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) with Arm Types 'A3' and 'A1', and select Pole Type 'P3'. Enter Pole Type 'P3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17' (Min.) + 2'
   'UB' = 18.5' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'P3' Pole.
   UCA = 17.75" + (24' - 22')X0.14"/ft.) = 18.03"
   Enter 18.03 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   A3 - A1 - P3
   First Arm Type - Second Arm Type - Pole Type

EXAMPLE
SEE CONTRACT
PLANS

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (in.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	A1 - P1	A1			·	·	·	·	P1	·	22	·	·	·	·	·
Example 2	A3 - A1 - P3	A3	28	10.87	A1	·	·	270	P3	22	20	18.03	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·

TABLE NOTES:

(1) Assembly Number Legend
   Single Arm
   A# - P# = Arm Number - Pole Number
   Double Arm
   A# - P# = First Arm Number - Second Arm Number - Pole Number

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the are tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

   Classification = Cohesioless (Fine Sand)
   Friction Angle = 30 Decrees (30°)
   Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

APPROVED BY W. N. [illegible]
State Structures Design Engineer

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

1. This Index, 17740, is for use in preparing signalization plans when single arm and double arm mast arm assemblies are required. This standard establishes the requirements for mast arm components listed on the Qualified Products List (QPL). When using components on the QPL, the "Standard Mast Arm Assemblies Design Table", will be the only information required in the Contract Plans, and shop drawings are not required.

2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

4. The Data for Standard Mast Arm Assemblies on Index No. 17742, includes four different mast arm types and eleven different pole types. The arm classes are used regardless of single or double arm configurations. The poles are for either single or double arm configurations without luminaires or single arm configurations with luminaires.

5. Four standard arm configurations are provided. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required. The Arm Design Table on Index No. 17742 shows the variables for standard arm types A1 through A4.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Eleven standard poles are provided. Pole types P1 through P7 may be used with both single arm and double arm structures without luminaires. Pole types P21 Lum through P24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17742.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles P1 through P7 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles P21 Lum through P24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Differing arm configurations or pole mounting heights will require a Special Pole Design.

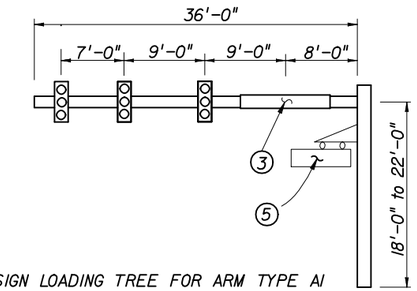
12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm: A#-P# = Arm Type - Pole Type
Double Arm: A#-A#-P# = First Arm Type - Second Arm Type - Pole Type

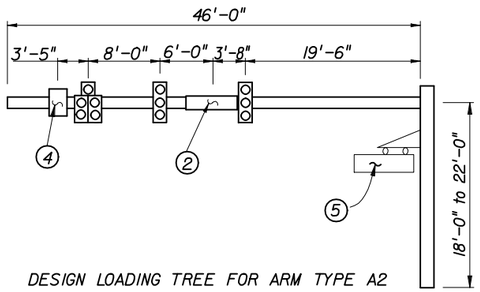
13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degress (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

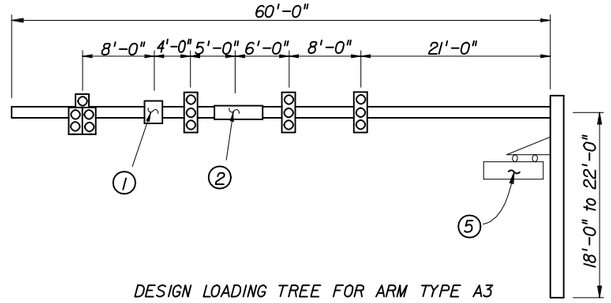
Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT brings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for the other purposes may be used to confirm the assumed soil properties.



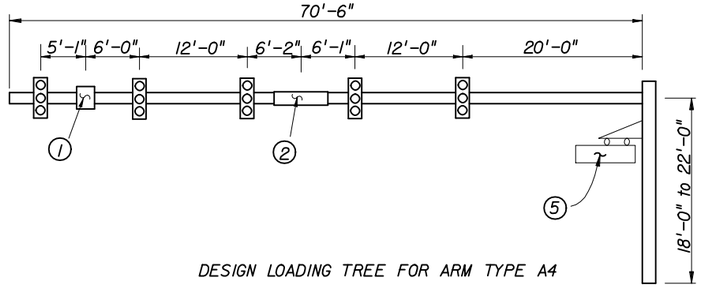
DESIGN LOADING TREE FOR ARM TYPE A1



DESIGN LOADING TREE FOR ARM TYPE A2



DESIGN LOADING TREE FOR ARM TYPE A3



DESIGN LOADING TREE FOR ARM TYPE A4

1. Denotes a 2'-0" x 2'-6" Sign.
2. Denotes a 1'-6" x 6'-0" Sign.
3. Denotes a 1'-6" x 10'-0" Sign.
4. Denotes a 2'-0" x 3'-0" Sign.
5. Denotes a 12 sq. ft. (max) internally illuminated sign on a hinged bracket attached to pole. See Index 17744, Sheet No. 1 of 5, for limitations on use.

Signal Notes:

1. Signal Backplates are included in the design of Standard Arms

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

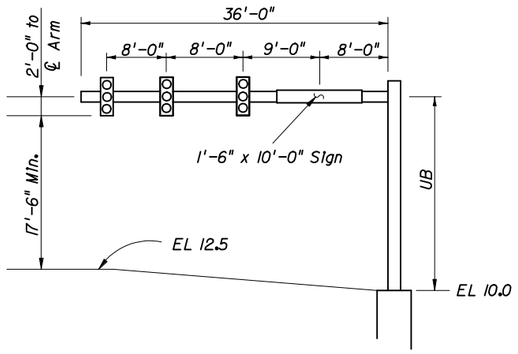
APPROVED BY Robert E. Nichols
Assistant State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown

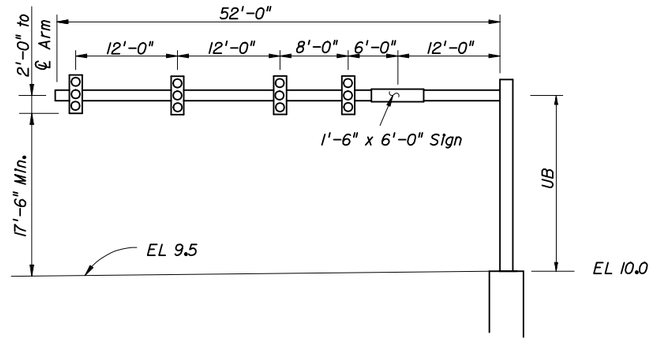


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the loading tree. A 36' Arm is adequate. Enter Arm Type A1 in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) with Arm Type A1, and select Pole Type 'P1'. Enter Pole Type 'P1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17.5' (Min.) + 2'
   'UB' = 22.0' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   A1 - P1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown
Second Arm same as Example 1



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, investigate Arm A3 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type A3 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Index No. S-1700.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'A3' is not required, provide the required 52' arm by entering an actual length of 28' under 'FAA' for the first Arm ('FAA' + 'FE'-Splice = 28' + 26'-2'=52').
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 9.75" + 8' (0.14"/ft) = 10.87"
   Enter 10.87" for FBA under First Arm.
3. Select Second Arm Type - See Example Arm.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) with Arm Types 'A3' and 'A1', and select Pole Type 'P3'. Enter Pole Type 'P3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17.5' (Min.) + 2'
   'UB' = 19.0' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'P3' Pole.
   UCA = 17.75" + (24' - 22')(0.14"/ft.) = 18.03"
   Enter 18.03 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   A3 - A1 - P3
   First Arm Type - Second Arm Type - Pole Type

EXAMPLE SEE CONTRACT PLANS

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (in.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (in.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	A1 - P1	A1							P1		22					
Example 2	A3 - A1 - P3	A3	28	10.87	A1			270	P3	22	20	18.03				

TABLE NOTES:

(1) Assembly Number Legend
   Single Arm
   A# - P# = Arm Number - Pole Number
   Double Arm
   A# - P# = First Arm Number - Second Arm Number - Pole Number

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the are tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

   Classification = Cohesioless (Fine Sand)
   Friction Angle = 30 Decrees (30°)
   Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Revised: 10-12-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY Robert E. Nichols
Assistant State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	017740

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

INSTRUCTIONAL NOTES FOR DESIGNERS AND FABRICATORS

1. This Index, 17741, is for use in preparing signalization plans when single arm and double arm mast arm assemblies are required. This standard establishes the requirements of mast arm components listed on the Qualified Products List (QPL). When using components on the QPL, the "Mast Arm Assemblies Design Table", will be the only information required in the Contract Plans, and shop drawings are not required.

2. If a mast arm configuration does not meet the requirements stated below, a special design and shop drawing submittal is required. For Special Designs, Structures Standard Drawing S-1710 must be completed and included in the Contract Plans.

3. The "Standard Mast Arm Assemblies Design Table" on Structures Standard Drawing S-1700 is to be filled out in accordance with the following instructions and examples on Sheet No. 2 of 2 and included in the Contract Plans.

4. The Data for Standard Mast Arm Assemblies are on Index No. 17743. The arm classes are used regardless of single or double arm configurations. The poles are for either single or double arm configurations without luminaires or single arm configurations with luminaires.

5. The standard arm lengths and the signal and sign locations used for design of the arm are shown on the mast arm design loading trees on this sheet. If the same arrangement of signals and signs is used with one or more signals or signs closer to the pole, the standard arm may be used. If the same arrangement is used but one or more signals or signs are further from the pole, or if a different configuration of signals and signs is used, a special design is required.

6. The arm types shall be specified in the "Standard Mast Arm Assemblies Design Table". If the standard arm length is used, no further entries are required under the arm columns. If necessary, a shorter arm length may be obtained by removing length from the arm tip. In this case, enter the actual arm length (FAA) and actual tip diameter (FBA) under the appropriate arm in the "Standard Mast Arm Assemblies Design Table".

7. If a double arm structure is required, both arm types and the angle between the arms (UF) shall be entered in the "Standard Mast Arm Assemblies Design Table". The angle between arms is measured counterclockwise from the first arm and shall be either 90° or 270°. If the angle between the arms is not 90° or 270°, a special design is required.

8. Pole types Q1 thru Q6 and R1 thru R6 may be used with both single arm and double arm structures without luminaires. Pole types Q21 Lum thru Q24 Lum and R21 Lum thru R24 Lum are intended for single arm structures with luminaires. Use the Pole Selection Table to select the pole type to be used with any combination of arm types. The pole, connection plate, base plate variables and drilled shaft variables are shown in the "Pole, Connection and Shaft Design Table" on Index No. 17743.

9. The connection plate variables are constant for all arms used with each pole type. If a double arm structure is used, the same connection plate variables are to be used for each arm.

10. The pole type and arm mounting height (UB) shall be specified in the "Standard Mast Arm Assemblies Design Table". The arm mounting height (UB) shall be between 18' and 22'. A Special Design is required for arm mounting heights greater than 22'. Standard poles Q1 thru Q6 and R1 thru R6 are available in the 24 foot height. If the standard height is used, no further entries are required under the pole information. If necessary, a shorter pole may be obtained by removing height from the pole tip. In this case, enter the actual pole height (UAA) and the actual pole tip diameter (UCA) in the "Standard Mast Arm Assemblies Design Table".

11. Poles Q21 Lum thru Q24 Lum and R21 Lum thru R24 Lum are designed for a luminaire mounted 10 feet off the face of upright at a 40 foot mounting height with a 37.5 foot arm connection height. Luminaire is 2.4 sq. ft. (max) and 45 lbs. (max). Differing arm configurations, pole mounting heights or luminaire will require a Special Pole Design.

12. Component type numbers shall be entered in the Assembly Numbers column using the following format:

Single Arm:
Arm Type - Pole Type = B# - Q#
= C# - R#

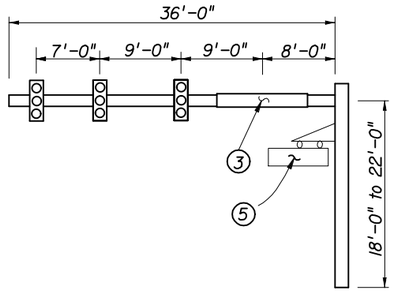
Double Arm:
First Arm Type - Second Arm Type - Pole Type = B# - B# - Q#
= C# - C# - R#

13. The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

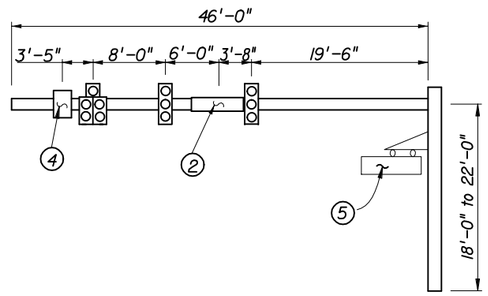
Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types at the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilized as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several foundations. Furthermore, borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.

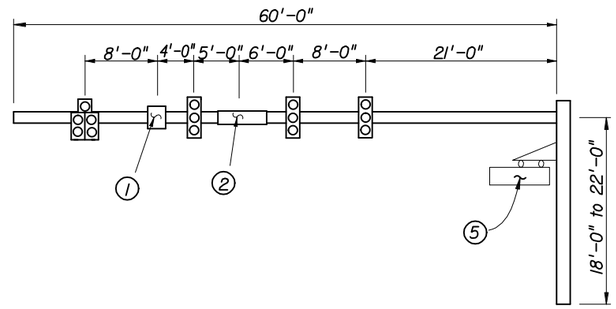
14. Standard Mast Arm Assemblies may be placed on existing foundations with notations to Structures Standard Drawings S-1700 or S-1710 as necessary to implement installation. Anchor installation shall be in accordance with Sections 416 and 937 of the Specifications and in accordance with manufacturer's recommendations. Anchors may be offset from center but must be placed such that all Anchors are within the Foundation reinforcing cage. Remove existing grout pad. Cut existing Anchor Bolts flush with top of Foundation. Replace damaged or removed portions of Foundation, using epoxy bonding compound as necessary, according to Section 400 of the Specifications. Replace grout pad according to Section 934 of the Specifications.



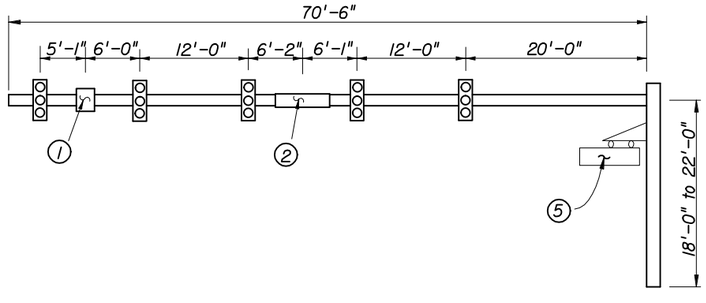
DESIGN LOADING TREE FOR ARM TYPES B1, B2, C1 & C2



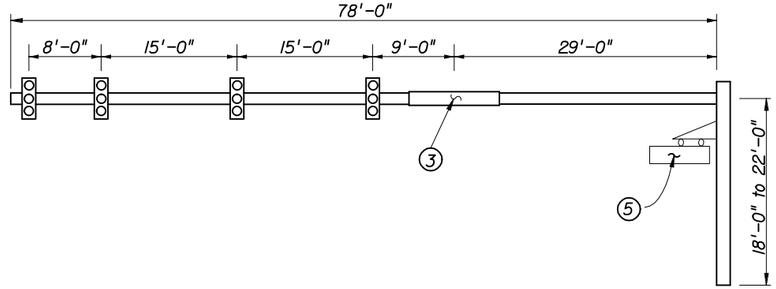
DESIGN LOADING TREE FOR ARM TYPES B3, B4, C3 & C4



DESIGN LOADING TREE FOR ARM TYPES B5 & C5



DESIGN LOADING TREE FOR ARM TYPES B6 & C6



DESIGN LOADING TREE FOR ARM TYPES B7 & C7

NOTES:

1. Standard Mast Arm Assemblies are designed for the following criteria:

Arm Type B - 110 mph Wind Speed with Signal Backplates
Arm Type C - 90 mph Wind Speed with Signal Backplates
or 110 mph Wind Speed without Signal Backplates

2. Signal Heads are shown mounted vertically; however, heads may be mounted horizontally when so indicated in the plans.

(1) Denotes a 2'-0" x 2'-6" Sign.
(2) Denotes a 1'-6" x 6'-0" Sign.
(3) Denotes a 1'-6" x 10'-0" Sign.
(4) Denotes a 2'-0" x 3'-0" Sign.
(5) Denotes a 12 sq. ft. (max), 75 lbs. (max) internally illuminated sign on a hinged bracket attached to pole which is acceptable by Contractor Certification provided it meets applicable requirements of Specification Section 699.

Date: 7-17-02

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM "B" & "C" ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

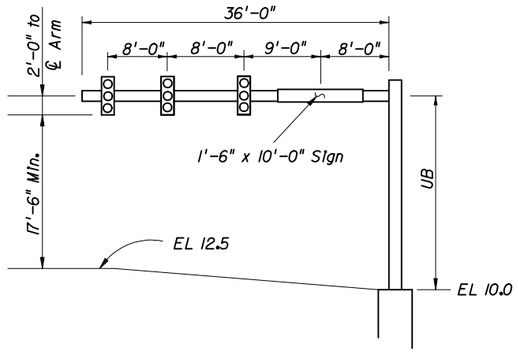
APPROVED BY Robert E. Nicholas Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	017741

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

EXAMPLE 1

Single Arm Structure as shown,
90 mph Wind Speed with Signal Backplates.

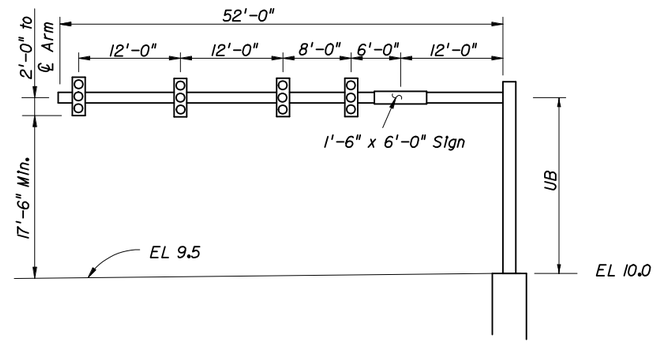


EXAMPLE 1 INSTRUCTIONS

1. Select Arm Type
   Compare attachment sizes and locations with design loading trees. In this case, all signals and signs are no farther from the pole than shown in the 36' Arm loading tree. Enter Arm Type C1 in the "Standard Mast Arm Assemblies Design Table" on Structures Standard No. S-17700.
2. Select Pole Type
   Use Pole Selection Table (Single Arm) on Index No. 17743 (2 of 2) with Arm Type C1 and select Pole Type 'R1'. Enter Pole Type 'R1' in the "Mast Arm Assemblies Design Table".
3. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 12.5' +17.5' (Min.) + 2'
   'UB' = 22.0' Min. Use 22'
   Enter UB = 22'-0" in the "Standard Mast Arm Assemblies Design Table"
4. Enter Assembly Numbers
   C1 - R1
   Arm Type - Pole Type

EXAMPLE 2

First Arm Structure as shown, Second Arm same as Example 1 except 110 mph Wind Speed with Signal Backplates.



EXAMPLE 2 INSTRUCTIONS

1. Select First Arm Type
   Designate longest Arm as First Arm. For a 52' Arm, investigate Arm B5 (Maximum Arm Length = 60') As in Example 1, compare attachment sizes and locations with design loading tree. In this case, all attachments are no larger than and are closer to the pole than shown in the design loading tree. Select and enter Arm Type B5 under the First Arm in the "Standard Mast Arm Assemblies Design Table" on Structures Standard No. S-17700.
2. Specify shorter Arm.
   Since the full 60' of Standard Arm 'B5' is not required, provide the required 52' arm by entering an actual length of 28' under 'FAA' for the first Arm ('FAA' + 'FE'-Splice = 28' + 26'-2'=52').
   Determine actual tip diameter 'FBA' for Arm shortened by 8'.
   FBA = FB + (60' - 52')(0.14"/ft)
   FBA = 7.96" + 8'(0.14"/ft) = 9.08"
   Enter 9.08" for FBA under First Arm.
3. Select Second Arm Type - choose B2.
4. Enter angle between arms as 'UF' in "Standard Mast Arm Assemblies Design Table". The angle is measured counter-clockwise from the First Arm and must be either 90° or 270°.
5. Select Pole Type
   Use Pole Selection Table (Double Arm) on Index No. 17743 (1 of 2) with Arm Types 'B5' and 'B2', and select Pole Type 'Q3'. Enter Pole Type 'Q3' in the "Standard Mast Arm Assemblies Design Table".
6. Determine Arm Mounting Height 'UB'.
   'UB' + 10' = 9.5' +17.5' (Min.) + 2'
   'UB' = 19.0' Min. Use 20'
   Enter UB = 20'-0" in the "Standard Mast Arm Assemblies Design Table"
7. Specify shorter Pole height.
   This procedure is similar to specifying a shorter Arm. Select actual height of 22' and enter under 'UAA' in the "Mast Arm Assemblies Design Table".
   Determine actual tip diameter 'UCA' for shortened Type 'Q3' Pole.
   UCA = 18.64" + (24' - 22')(0.14"/ft.) = 18.92"
   Enter 18.92 under "UCA" in the "Standard Mast Arm Assemblies Design Table".
8. Enter Assembly Numbers
   B5 - B2 - Q3
   First Arm Type - Second Arm Type - Pole Type

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE

STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS (1)	FIRST ARM			SECOND ARM			UF (deg)	POLE				SPECIAL DRILLED SHAFT DATA(4)			
		ARM TYPE	FAA (ft.)(2)	FBA (In.)(2)	ARM TYPE	FAA (ft.)(2)	FBA (In.)(2)		POLE TYPE	UAA (ft.)(3)	UB (ft.)	UCA (In.)(3)	DA (ft.)	DB (ft.)	RA	RB
Example 1	C1 - R1	C1			·		·	·	R1	·	22	·	·	·	·	·
Example 2	B5 - B2 - Q3	B5	28	9.08	B2	·	·	270	Q3	22	20	18.92	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·

TABLE NOTES:

(1) Assembly Number Legend

Single Arm:
Arm Type - Pole Type = B# - Q#
= C# - R#

Double Arm:
First Arm Type - Second Arm Type - Pole Type = B# - B# - Q#
= C# - C# - R#

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts with additional foundation capacity.

Classification = Cohesioless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Date: 7-17-02

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

INSTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST ARM "B" & "C" ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY Robert E. Nicholson
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	017741

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE				
Arm Length	A1	A2	A3	A4
Pole Type	P1 & P21 Lum	P2 & P22 Lum	P3 & P23 Lum	P4 & P24 Lum

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths *	A1 - A1	A2 - A1	A3 - A1	A4 - A1	A2 - A2	A3 - A2	A4 - A2	A3 - A3	A4 - A3	A4 - A4
Pole Type	P1	P2	P3	P5	P3	P4	P5	P5	P6	P7

* Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES											
		MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS	
ARM TYPE	ARM LENGTH	FA(ft)	FB(In)	FC(In)	FD(In)	FE(ft)	FF(In)	FG(In)	FH(In)	FM/SM(In)	FQ/SQ(In)
A1	36'-0"	36	7.5	12.5	0.1793	0	0	0	0	0.125	0.313
A2	46'-0"	36	7.9	13	0.1793	12	12.38	14	0.2391	0.188	0.438
A3	60'-0"	36	9.75	14.75	0.1793	26	14.12	17.75	0.25	0.188	0.438
A4	70'-6"	39.5	9.25	14.88	0.1793	33	14.25	18.75	0.313	0.313	0.438

Arm Camber Angle = 2 degrees.

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																								
POLE TYPE	UA(ft)	UC(In)	UD(In)	UE(In)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA									DRILLED SHAFT DATA			
						No. Bolts	BA (In)	BB (In)	BC (In)	BD (In)	BE (In)	BF (In)	HT (In)	FJ/SJ (In)	FK/SK (In)	FL/SL (In)	FN/SN (In)	FO/SO (In)	FP/SP (In)	FR/SR (In)	FS/SS (In)	FT/ST (In)	DA(ft)	DB(ft)	RA	RB
P1	24	13.75	17	0.2391	-	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P2	24	15.75	19	0.2391	-	6	33	2.375	1.75	0.25	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P3	24	17.75	21	0.313	-	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P4	24	19.75	23	0.313	-	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19
P5	24	20.75	24	0.313	-	8	38	2.125	1.75	0.375	0.313	36	30	33	2.75	0.563	0.438	18.75	1.25	1.75	12.5	0.438	17	4.5	9	23
P6	24	21.75	25	0.313	-	8	39	2.125	1.75	0.375	0.313	36	30	34	2.375	0.625	0.375	19.25	1.25	1.75	12.5	0.375	18	4.5	9	23
P7	24	23.75	27	0.313	-	8	41	2.125	1.75	0.375	0.313	36	30	36	2.5	0.625	0.375	20.75	1.25	1.75	12.5	0.375	19	4.5	9	23
P21 Lum	39	11.625	17	0.2391	37.5	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P22 Lum	39	13.625	19	0.2391	37.5	6	33	2.375	1.75	0.25	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P23 Lum	39	15.625	21	0.313	37.5	6	35	2.25	1.75	0.375	0.375	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P24 Lum	39	17.625	23	0.313	37.5	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19

LUMINAIRE AND LUMINAIRE CONNECTION										
LA(ft)	LB(ft)	LC(In)	LD(In)	LE	LF(ft)	LG(In)	LH(In)	LJ(In)	LK(In)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.375	0.625	0.250	0.188	37.5

GENERAL NOTE

1. Work this Index with Index No. 17744.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

REVISED: 5-5-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	17742

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE				
Arm Length	A1	A2	A3	A4
Pole Type	P1 & P21 Lum	P2 & P22 Lum	P3 & P23 Lum	P4 & P24 Lum

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths *	A1 - A1	A2 - A1	A3 - A1	A4 - A1	A2 - A2	A3 - A2	A4 - A2	A3 - A3	A4 - A3	A4 - A4
Pole Type	P1	P2	P3	P5	P3	P4	P5	P5	P6	P7

* Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES											
		MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS	
ARM TYPE	ARM LENGTH	FA(ft)	FB(In)	FC(In)	FD(In)	FE(ft)	FF(In)	FG(In)	FH(In)	FM/SM(In)	FQ/SQ(In)
A1	36'-0"	36	7.5	12.5	0.1793	0	0	0	0	0.125	0.313
A2	46'-0"	36	7.9	13	0.1793	12	12.38	14	0.2391	0.188	0.438
A3	60'-0"	36	9.75	14.75	0.1793	26	14.12	17.75	0.25	0.188	0.438
A4	70'-6"	39.5	9.25	14.88	0.1793	33	14.25	18.75	0.313	0.313	0.438

Arm Camber Angle = 2 degrees.

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																									
POLE TYPE	UA(ft)	UC(In)	UD(In)	UE(In)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA										DRILLED SHAFT DATA			
						No. Bolts	BA (In)	BB (In)	BC (In)	BD (In)	BE (In)	BF (In)	HT (In)	FJ/SJ (In)	FK/SK (In)	FL/SL (In)	FN/SN (In)	FO/SO (In)	FP/SP (In)	FR/SR (In)	FS/SS (In)	FT/ST (In)	DA(ft)	DB(ft)	RA	RB
P1	24	13.75	17	0.2391	-	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P2	24	15.75	19	0.2391	-	6	33	2.25	1.75	0.313	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P3	24	17.75	21	0.313	-	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P4	24	19.75	23	0.313	-	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19
P5	24	20.75	24	0.313	-	8	38	2.125	1.75	0.375	0.313	36	30	33	2.75	0.563	0.438	18.75	1.25	1.75	12.5	0.438	17	4.5	9	23
P6	24	21.75	25	0.313	-	8	39	2.125	1.75	0.375	0.313	36	30	34	2.375	0.625	0.375	19.25	1.25	1.75	12.5	0.375	18	4.5	9	23
P7	24	23.75	27	0.313	-	8	41	2.125	1.75	0.375	0.313	36	30	36	2.5	0.625	0.375	20.75	1.25	1.75	12.5	0.375	19	4.5	9	23
P21 Lum	39	11.625	17	0.2391	37.5	6	29	2.25	1.5	0.313	0.188	36	17.5	22	1.5	0.375	0.25	13.00	0.75	1.25	7.25	0.313	13	4	9	19
P22 Lum	39	13.625	19	0.2391	37.5	6	33	2.25	1.75	0.313	0.188	36	23.5	26	2.125	0.438	0.313	15.25	1	1.625	9.75	0.313	13	4	9	19
P23 Lum	39	15.625	21	0.313	37.5	6	35	2.25	1.75	0.375	0.313	36	26	30	2.375	0.563	0.375	17.00	1.125	1.625	10.5	0.375	16	4	9	19
P24 Lum	39	17.625	23	0.313	37.5	8	37	2.375	1.75	0.375	0.313	36	30	32	2.5	0.563	0.438	18.25	1.25	1.75	12.5	0.438	19	4	9	19

LUMINAIRE AND LUMINAIRE CONNECTION										
LA(ft)	LB(ft)	LC(In)	LD(In)	LE	LF(ft)	LG(In)	LH(In)	LJ(In)	LK(In)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.375	0.625	0.250	0.188	37.5

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

GENERAL NOTE

1. Work this Index with Index No. 17744.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY

State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	017742

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE					
Arm Length	B1	B3	B5	B6	B7
Pole Type	Q1 & Q21 Lum	Q2 & Q22 Lum	Q3 & Q23 Lum	Q4 & Q24 Lum	Q6

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths	B1 - B1	B3 - B1	B5 - B2	B6 - B2	B4 - B4	B5 - B4	B6 - B4	B5 - B5	B6 - B5	B6 - B6
Pole Type	Q1	Q2	Q3	Q4	Q3	Q4	Q4	Q4	Q4	Q5

Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES														
ARM TYPE	ARM LENGTH	MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS				
		FA(ft)	FB(in)	FC(in)	FD(in)	FE(ft)	FF(in)	FG(in)	FH(in)	HT(in)	FJ/SJ(in)	FK/SK(in)	FM/SM(in)	FQ/SQ(in)
B1	36'-0"	36	7.96	13	0.1793	-	-	-	-	20	25	2.25	0.1125	0.3113
B2	36'-0"	36	7.96	13	0.1793	-	-	-	-	30	36	3	0.1125	0.3113
B3	46'-0"	36.3	7.92	13	0.1793	11.7	12.36	14	0.25	20	25	2.25	0.1188	0.438
B4	46'-0"	36.3	7.92	13	0.1793	11.7	12.36	14	0.25	30	36	3	0.1188	0.438
B5	60'-0"	36	7.96	13	0.1793	26	12.36	16	0.3113	30	36	3	0.25	0.5
B6	70'-6"	39.4	9.49	15	0.1793	33.1	14.36	19	0.3113	30	36	3	0.25	0.5
B7	78'-0"	40	8.44	14	0.1793	40	13.40	19	0.3113	30	36	3	0.25	0.563

Arm Camber Angle = 2 degrees

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																									
POLE TYPE	UA(ft)	UC(in)	UD(in)	UE(in)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA									DRILLED SHAFT DATA			
						No. Bolts	BA (in)	BB (in)	BC (in)	BD (in)	BE (in)	BF (in)	HT (in)	FJ/SJ (in)	FL/SL (in)	FN/SN (in)	FO/SO (in)	FP/SP (in)	FR/SR (in)	FS/SS (in)	FT/ST (in)	DA (ft)	DB (ft)	RA	RB
Q1	24	12.64	16	0.313	-	6	30	1.5	1.75	0.313	0.25	36	20	25	0.75	0.438	15.5	1	2	8	0.438	13	3.5	9	14
Q2	24	14.64	18	0.313	-	6	32	1.5	1.75	0.313	0.25	36	20	25	0.75	0.438	15.5	1	2	8	0.438	13	4	9	19
Q3	24	18.64	22	0.313	-	6	38	1.5	2	0.313	0.25	42	30	36	0.75	0.438	21.5	1.25	2.25	12.5	0.438	13	4.5	9	23
Q4	24	21.64	25	0.313	-	6	41	1.5	2	0.313	0.25	42	30	36	0.75	0.438	21.5	1.25	2.25	12.5	0.438	18	4.5	9	23
Q5	24	23.64	27	0.313	-	6	43	1.5	2	0.313	0.25	42	30	36	0.75	0.438	21.5	1.25	2.25	12.5	0.438	19	4.5	9	23
Q6	24	21.64	25	0.313	-	6	41	1.5	2	0.313	0.25	42	30	36	0.75	0.438	16	1.25	2.25	12.5	0.438	16	4.5	9	23
Q21 Lum	39	10.54	16	0.313	37.5	6	30	1.75	1.75	0.313	0.25	36	20	25	0.75	0.438	11.5	1	2	8	0.438	12	3.5	9	14
Q22 Lum	39	12.54	18	0.313	37.5	6	32	1.75	1.75	0.313	0.25	36	20	25	0.75	0.438	12.5	1	2	8	0.438	12	4	9	19
Q23 Lum	39	16.54	22	0.313	37.5	6	38	1.75	2	0.313	0.25	42	30	36	0.75	0.438	14.5	1.25	2.25	12.5	0.438	13	4.5	9	23
Q24 Lum	39	19.54	25	0.313	37.5	6	41	1.75	2	0.313	0.25	42	30	36	0.75	0.438	16	1.25	2.25	12.5	0.438	16	4.5	9	23

LUMINAIRE AND LUMINAIRE CONNECTION											
LA(ft)	LB(ft)	LC(in)	LD(in)	LE	LF(ft)	LG(in)	LH(in)	LJ(in)	LK(in)	LL(deg)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.5	0.75	0.25	0.188	0	37.5

NOTES:

1. Work this Index with Index No. 17745.
2. Standard Mast Arm "B" Assemblies are designed to Loading Trees as indicated in Index No. 17741 for Design Wind Speed = 110 mph with Signal Backplates.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 7-17-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM "B" ASSEMBLIES

INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY Robert E. Nichols Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 2	017743

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

POLE SELECTION TABLE - SINGLE ARM - WITH & WITHOUT LUMINAIRE					
Arm Length	C1	C3	C5	C6	C7
Pole Type	R1 & R21 Lum	R2 & R22 Lum	R3 & R23 Lum	R4 & R24 Lum	R6

POLE SELECTION TABLE - DOUBLE ARM - WITHOUT LUMINAIRE										
Arm Lengths	C1 - C1	C3 - C1	C5 - C2	C6 - C2	C4 - C4	C5 - C4	C6 - C4	C5 - C5	C6 - C5	C6 - C6
Pole Type	R1	R2	R3	R4	R3	R4	R4	R4	R4	R5

Arm 1 is listed first

ARM DESIGN TABLE - ALL CASES														
ARM TYPE	ARM LENGTH	MAST ARM				ARM EXTENSION				ARM CONNECTION & WELDS				
		FA(ft)	FB(In)	FC(In)	FD(In)	FE(ft)	FF(In)	FG(In)	FH(In)	HT(In)	FJ/SJ(In)	FK/SK(In)	FM/SM(In)	FQ/SQ(In)
C1	36'-0"	36	5.96	11	0.1793	-	-	-	-	20	20	2	0.125	0.25
C2	36'-0"	36	5.96	11	0.1793	-	-	-	-	29	29	2.25	0.125	0.25
C3	46'-0"	36.3	5.92	11	0.1793	11.7	10.36	12	0.25	20	20	2	0.188	0.375
C4	46'-0"	36.3	5.92	11	0.1793	11.7	10.36	12	0.25	29	29	2.25	0.188	0.375
C5	60'-0"	36	5.96	11	0.1793	26	10.36	14	0.313	29	29	2.25	0.25	0.438
C6	70'-6"	39.4	5.49	11	0.1793	33.1	10.36	15	0.313	29	29	2.25	0.25	0.5
C7	78'-0"	40	6.44	12	0.1793	40	11.40	17	0.313	30	30	2.25	0.25	0.5

Arm Camber Angle = 2 degrees

*See Note 3

POLE, CONNECTION AND SHAFT DESIGN TABLE - SINGLE & DOUBLE ARM																							
POLE TYPE	UA(ft)	UC(In)	UD(In)	UE(In)	UG(ft)	UPRIGHT BASE CONNECTION							CONNECTION PLATE DATA									DRILLED SHAFT DATA				
						No. Bolts	BA (In)	BB (In)	BC (In)	BD (In)	BE (In)	BF (In)	HT (In)	FJ/SJ (In)	FL/SL (In)	FN/SN (In)	FO/SO (In)	FP/SP (In)	FR/SR (In)	FS/SS (In)	FT/ST (In)	DA (ft)	*DA(D6) (ft)	DB (ft)	RA	RB
R1	24	9.64	13	0.313	-	6	25	1.5	1.5	0.313	0.25	36	20	20	0.5	0.313	13	0.75	1.75	8.5	0.313	12	10	3.5	9	14
R2	24	11.64	15	0.313	-	6	27	1.5	1.5	0.313	0.25	36	20	20	0.5	0.313	13	0.75	1.75	8.5	0.313	15	12	3.5	9	14
R3	24	14.64	18	0.313	-	6	32	1.5	1.75	0.313	0.25	36	29	29	0.5	0.313	17.5	1	1.75	12.5	0.313	15	12	4	9	19
R4	24	17.64	21	0.313	-	6	35	1.5	1.75	0.313	0.25	36	29	29	0.5	0.313	17.5	1	1.75	12.5	0.313	20	16	4	9	19
R5	24	18.64	22	0.313	-	6	36	1.5	1.75	0.313	0.25	36	29	29	0.5	0.313	17.5	1	1.75	12.5	0.313	21	17	4	9	19
R6	24	17.64	21	0.313	-	6	35	1.5	1.75	0.313	0.25	36	30	30	0.5	0.375	14	1.25	1.75	12.5	0.375	18	15	4	9	19
R21 Lum	39	7.54	13	0.313	37.5	6	25	1.75	1.5	0.313	0.25	36	20	20	0.5	0.313	10	0.75	1.75	8.5	0.313	11	11	3.5	9	14
R22 Lum	39	9.54	15	0.313	37.5	6	27	1.75	1.5	0.313	0.25	36	20	20	0.5	0.313	11	0.75	1.75	8.5	0.313	14	12	3.5	9	14
R23 Lum	39	12.54	18	0.313	37.5	6	32	1.75	1.75	0.313	0.25	36	29	29	0.5	0.313	12.5	1	1.75	12.5	0.313	15	12	4	9	19
R24 Lum	39	15.54	21	0.313	37.5	6	35	1.75	1.75	0.313	0.25	36	29	29	0.5	0.313	14	1	1.75	12.5	0.313	17	14	4	9	19

LUMINAIRE AND LUMINAIRE CONNECTION											
LA(ft)	LB(ft)	LC(In)	LD(In)	LE	LF(ft)	LG(In)	LH(In)	LJ(In)	LK(In)	LL(deg)	UG(ft)
40.0	10.0	3.0	0.125	0.50	8.0	0.5	0.75	0.25	0.188	0	37.5

NOTES:

1. Work this Index with Index No. 17745.
2. Standard Mast Arm "C" Assemblies are designed to Loading Trees as indicated in Index No. 17741 for either; Design Wind Speed = 90 mph with Signal Backplates or Design Wind Speed = 110 mph without Signal Backplates.
3. DA(D6) indicates shaft depth for District 6.

Date: 7-17-02

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

COMPONENT DATA FOR STANDARD MAST ARM "C" ASSEMBLIES

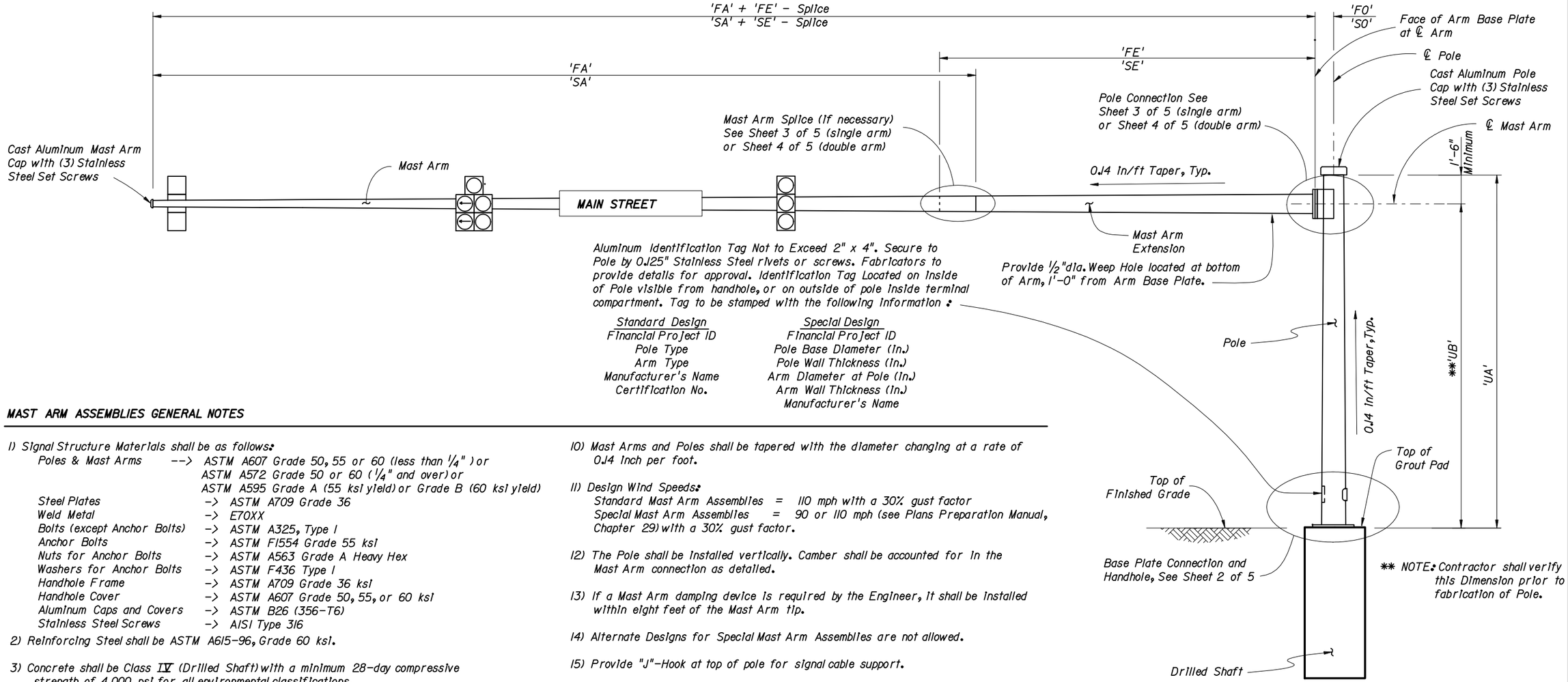
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY: Robert E. Nicholas Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 2	017743

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Pole by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Pole Base Diameter (in.)
Arm Type	Pole Wall Thickness (in.)
Manufacturer's Name	Arm Diameter at Pole (in.)
Certification No.	Arm Wall Thickness (in.)
	Manufacturer's Name

MAST ARM ASSEMBLIES GENERAL NOTES

1) Signal Structure Materials shall be as follows:

Poles & Mast Arms	-->	ASTM A607 Grade 50, 55 or 60 (less than 1/4") or ASTM A572 Grade 50 or 60 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
Steel Plates	->	ASTM A709 Grade 36
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325, Type 1
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type 1
Handhole Frame	->	ASTM A709 Grade 36 ksi
Handhole Cover	->	ASTM A607 Grade 50, 55, or 60 ksi
Aluminum Caps and Covers	->	ASTM B26 (356-T6)
Stainless Steel Screws	->	AISI Type 316

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All steel items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Mast Arm)	->	ASTM A123

7) Locate handhole 180° from arm on single arm poles or 180° from first arm of double arm poles or see special Instructions on Mast Arm Tabulation Sheet.

8) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" , prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

9) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed 3/4" in diameter.

10) Mast Arms and Poles shall be tapered with the diameter changing at a rate of 0.14 inch per foot.

11) Design Wind Speeds:
Standard Mast Arm Assemblies = 110 mph with a 30% gust factor
Special Mast Arm Assemblies = 90 or 110 mph (see Plans Preparation Manual, Chapter 29) with a 30% gust factor.

12) The Pole shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

13) If a Mast Arm damping device is required by the Engineer, it shall be installed within eight feet of the Mast Arm tip.

14) Alternate Designs for Special Mast Arm Assemblies are not allowed.

15) Provide "J"-Hook at top of pole for signal cable support.

16) Do not erect pole until foundation concrete has cured for a minimum of seven days.

17) First and Second Arm Camber Angle = 2°.

18) Each standard Mast Arm pole has been designed for one free swinging internally illuminated street sign which is acceptable by Contractor Certification provided it meets the applicable requirements of Specification Section 699, weighs no more than 75 lbs. and is no more than 12 Sq. Ft. in area.

Note: Details for the Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit are not shown for clarity.

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 2 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 2, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL ELEVATION AND NOTES

REVISED: 01/03/01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

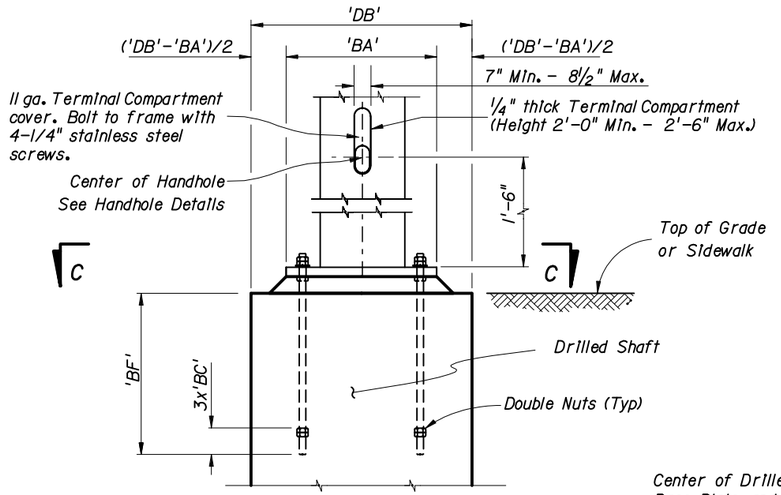
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000. THIS SHEET REPLACES SHEET NO. 1 OF 5 DATED 'REVISED 6/19/00'.

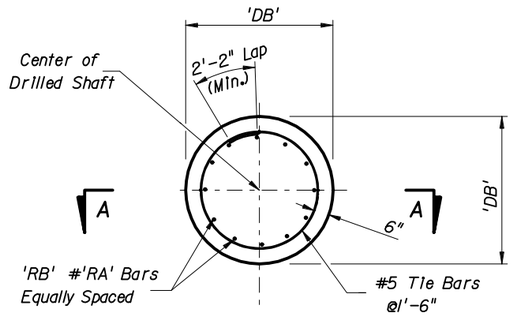
APPROVED BY W. V. Bane
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	1 of 5	17744

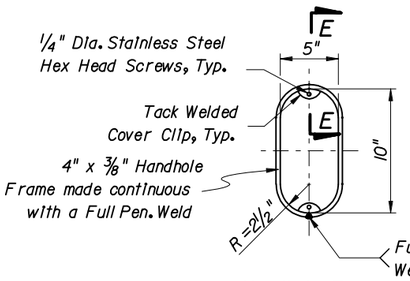
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



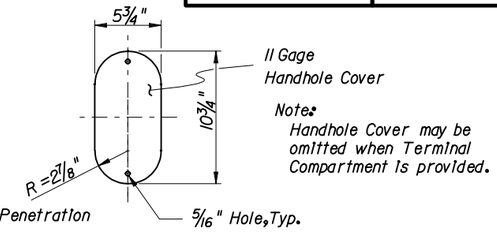
BASE PLATE AND ANCHORAGE ELEVATION
(Reinforcement Not Shown)



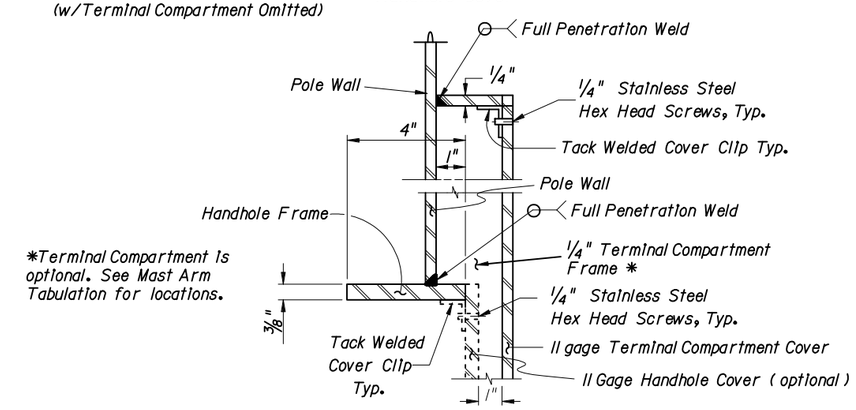
FOUNDATION PLAN
Note: 6" min. cover on Shaft Reinforcement



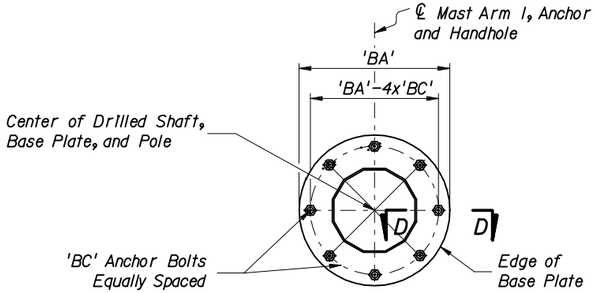
Handhole Frame
(w/Terminal Compartment Omitted)



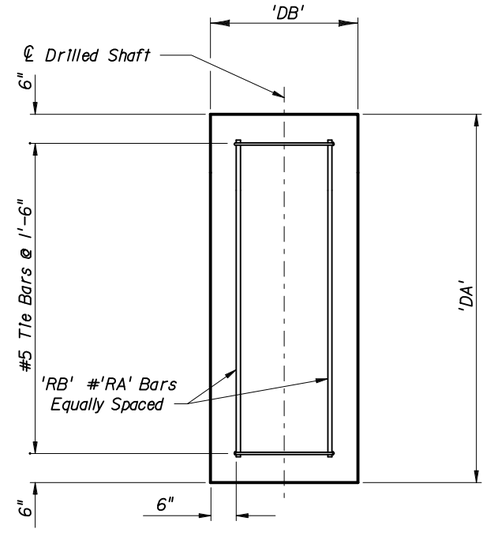
Handhole Cover



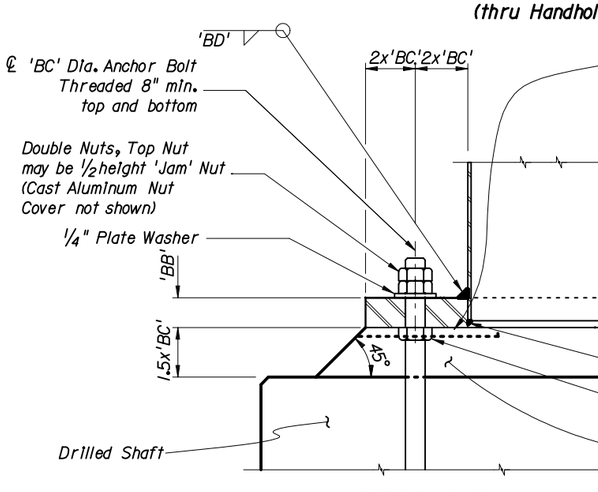
SECTION E-E
(thru Handhole & Terminal Compartment)



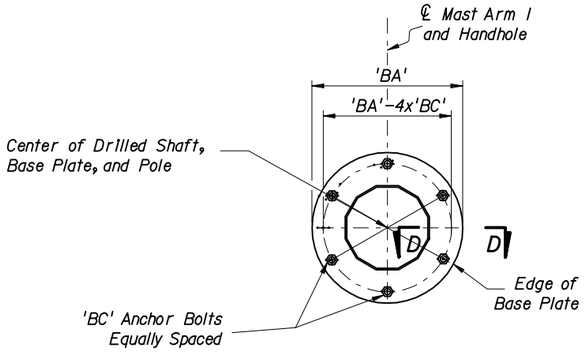
SECTION C-C
(8 Anchor Bolts shown, See Structures Standard Drawings S-1700 or S-1710 for actual quantity of bolts)



SECTION A-A



SECTION D-D



SECTION C-C
(6 Anchor Bolts)

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 1 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 1, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL FOUNDATION AND BASE PLATE DETAILS

REVISED: 2-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

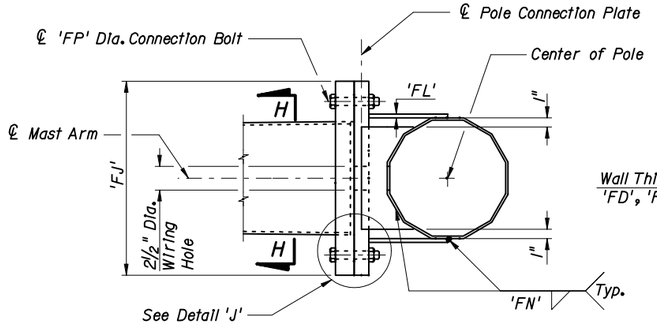
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000. THIS SHEET REPLACES SHEET NO. 2 OF 5.

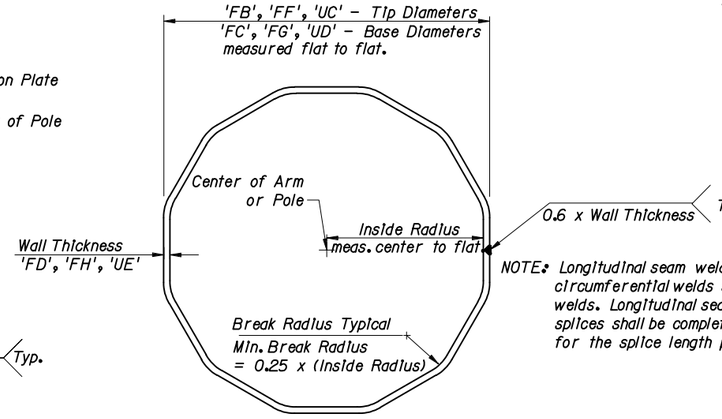
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	2 of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

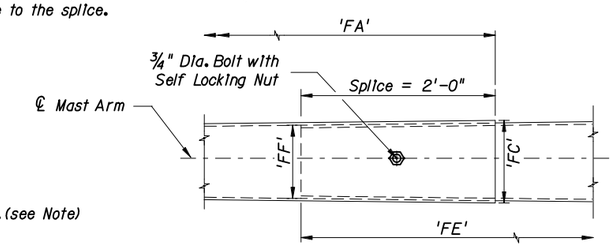


SECTION F-F



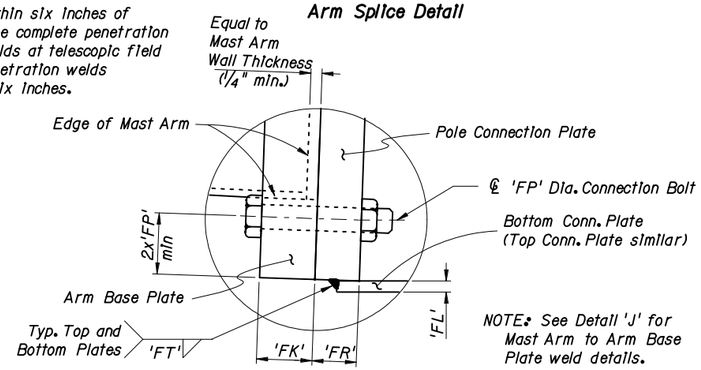
SECTION H-H

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.



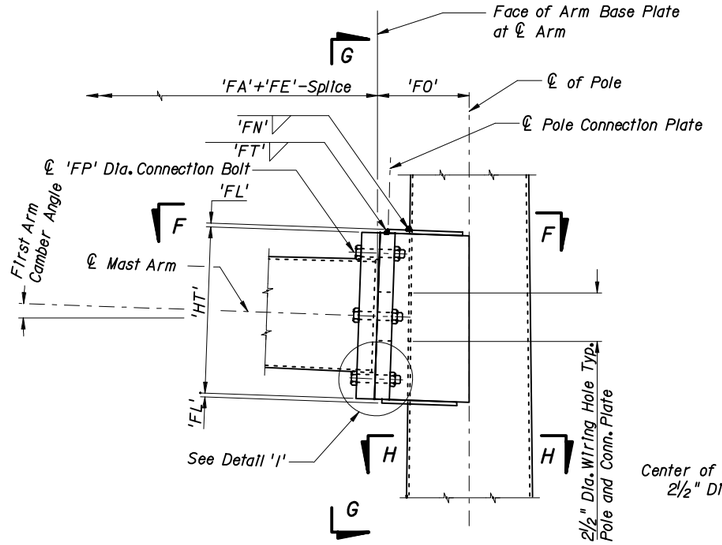
Arm Splice Detail

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

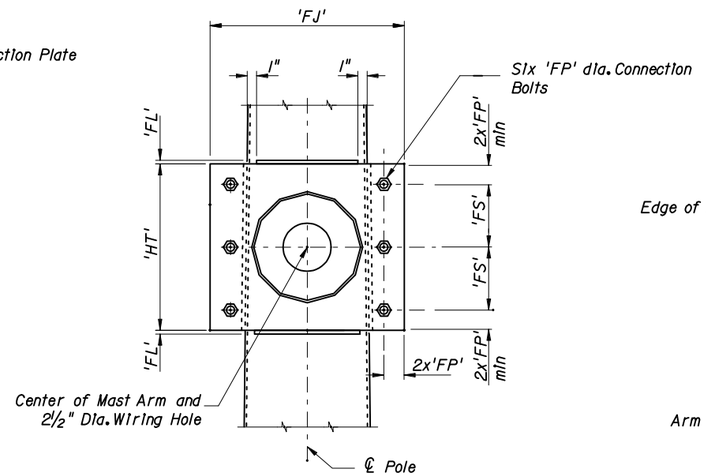


DETAIL 'I'

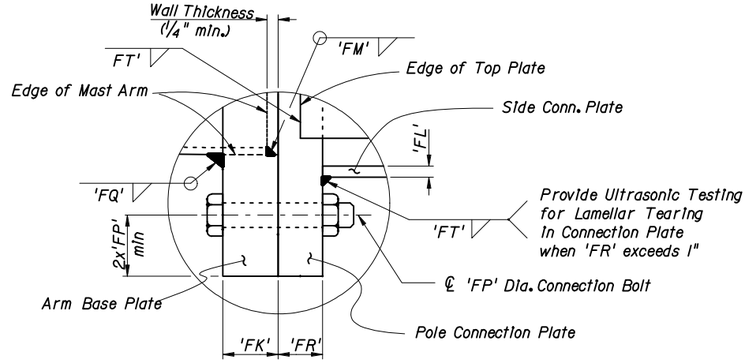
NOTE: See Detail 'J' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Single Arm Connection)



SECTION G-G



DETAIL 'J'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR SINGLE MAST ARMS WITH LUMINAIRES:

Work this Drawing with Sheets Nos. 1, 2 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

TYPICAL SINGLE ARM CONNECTION DETAILS

Date: 4-20-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

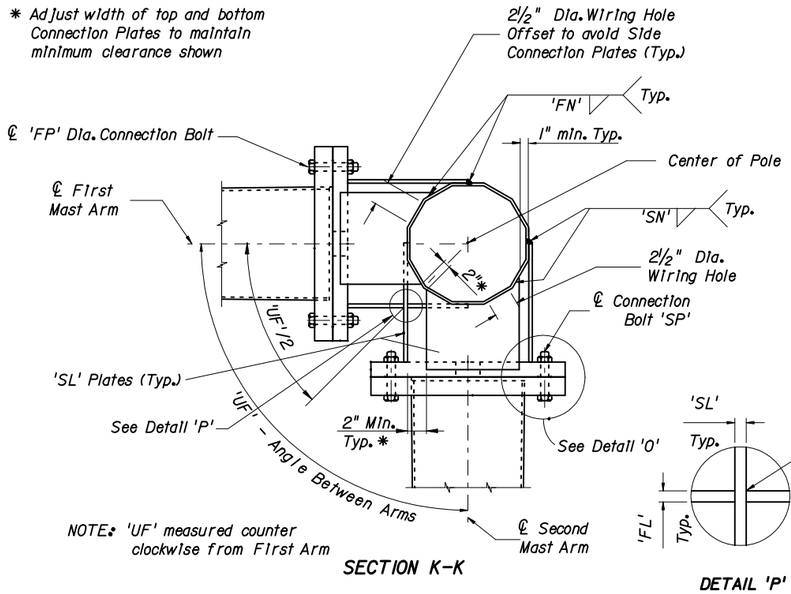
INTERIM STANDARD

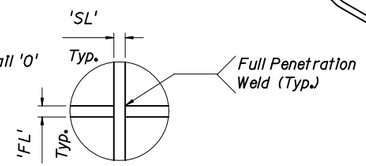
SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

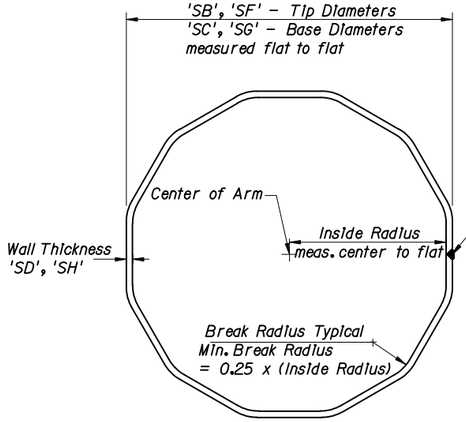
REVISION NO.	SHEET NO.	INDEX NO.
00	3 Of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.





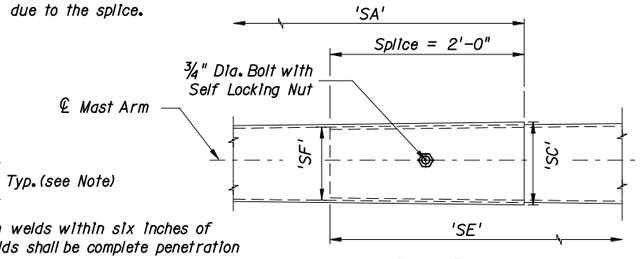
DETAIL 'P'



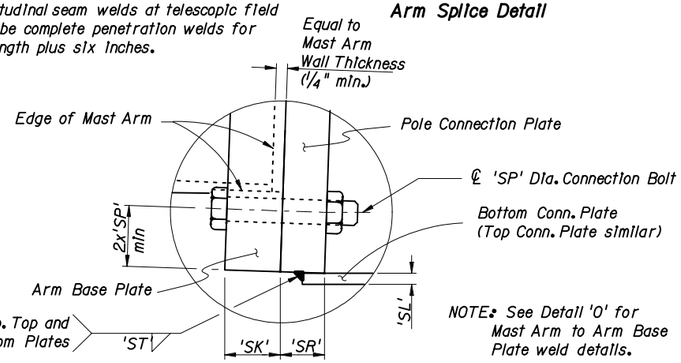
SECTION M-M

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.

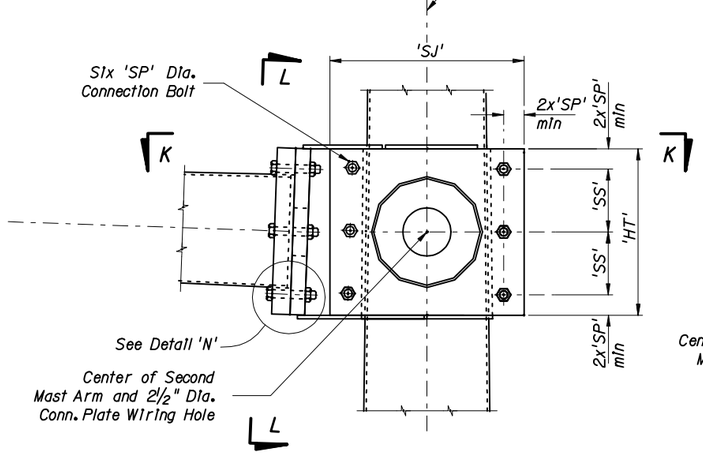


Arm Splice Detail

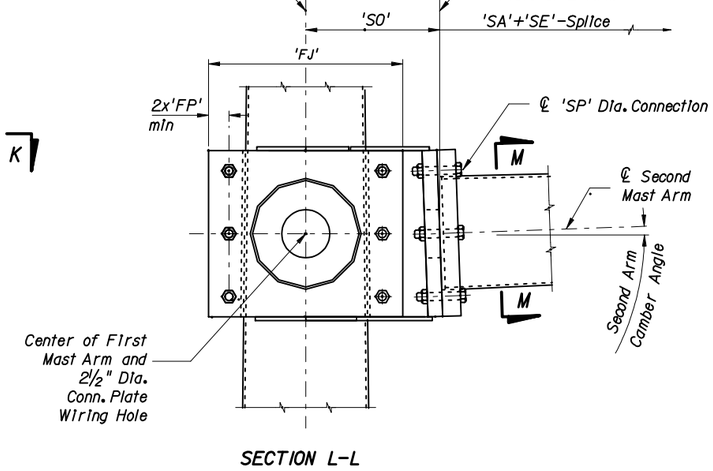


DETAIL 'N'

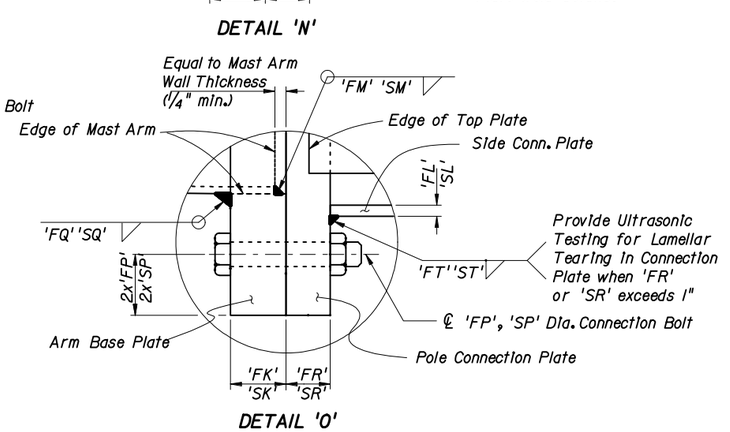
NOTE: See Detail 'O' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Double Arm Connection)



SECTION L-L



DETAIL 'O'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR DOUBLE MAST ARMS:

Work this Drawing with Sheets Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL DOUBLE ARM CONNECTION DETAILS

REVISED: 02-13-01

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

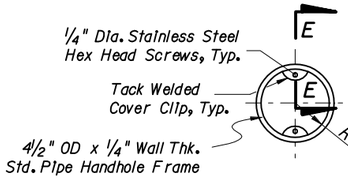
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

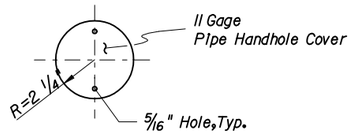
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
01	4 of 5	17744

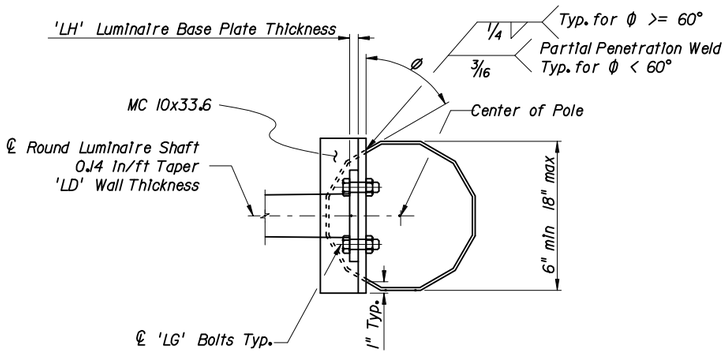
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



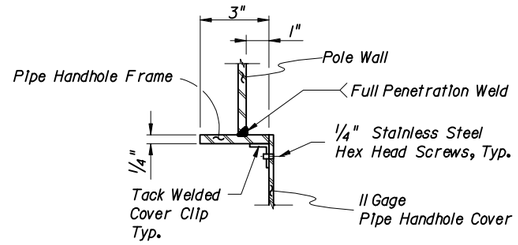
Pipe Handhole Frame



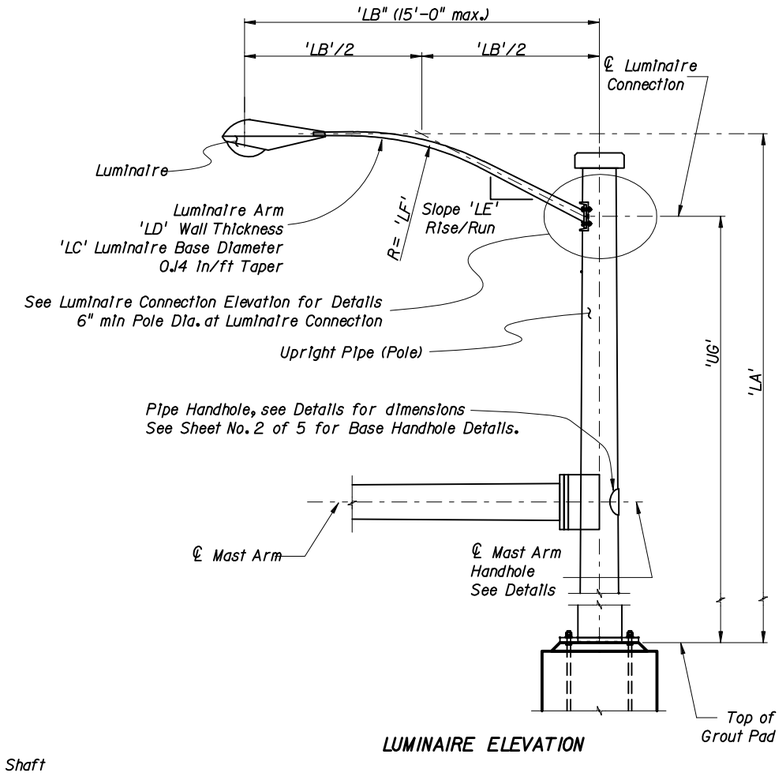
Pipe Handhole Cover



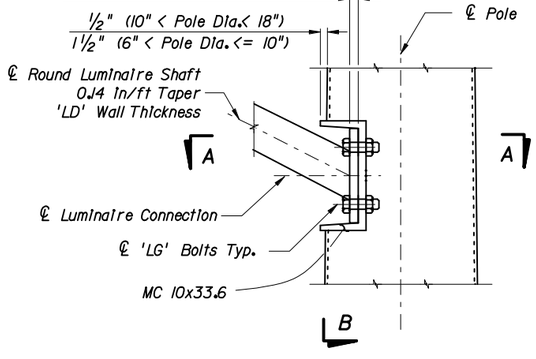
SECTION A-A



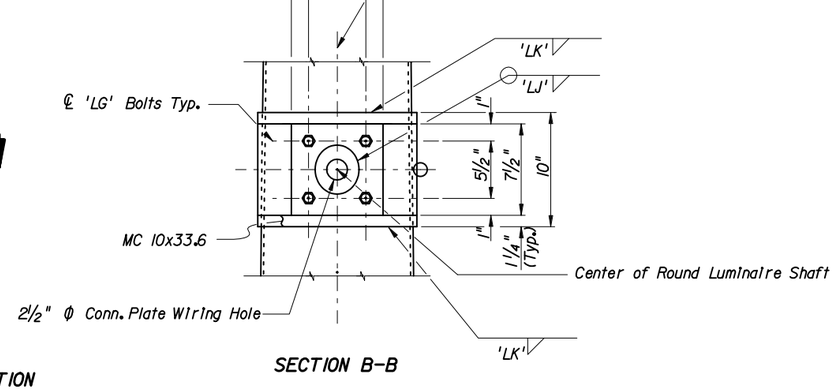
SECTION E-E
(thru Pipe Handhole)



LUMINAIRE ELEVATION



LUMINAIRE CONNECTION ELEVATION



SECTION B-B

NOTE: The Pole shown on this sheet is a 12 sided section. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced

NOTE: The Fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.

NOTES:

1. Work this Drawing with Sheet Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.
2. Luminaire type and Luminaire to Arm Connection Details can be found elsewhere.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

TYPICAL LUMINAIRE ARM AND CONNECTION DETAILS

Date: 4-20-00

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

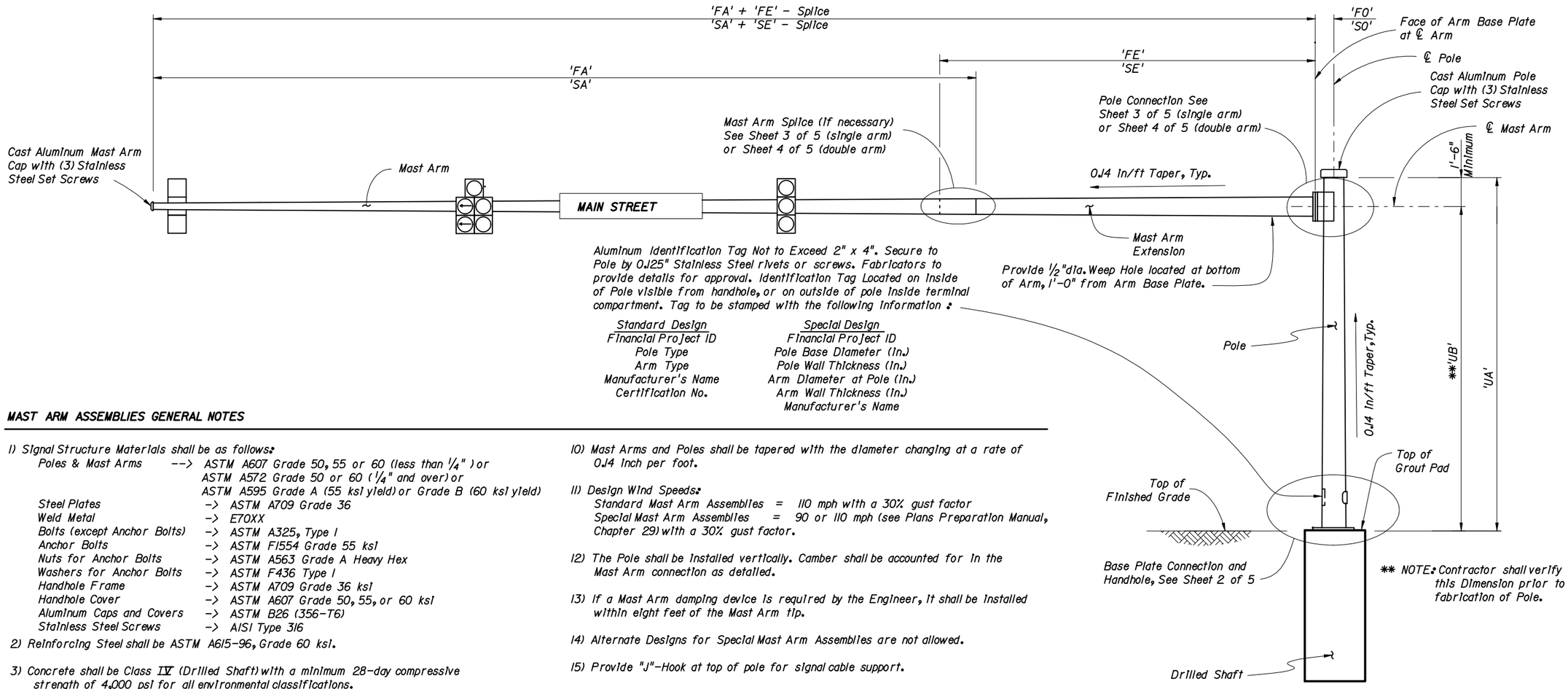
INTERIM STANDARD

SHEETS 1-5 OF 5 ARE SUPPLEMENTS TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
00	5 of 5	17744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Pole by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Pole Base Diameter (In.)
Arm Type	Pole Wall Thickness (In.)
Manufacturer's Name	Arm Diameter at Pole (In.)
Certification No.	Arm Wall Thickness (In.)
	Manufacturer's Name

MAST ARM ASSEMBLIES GENERAL NOTES

1) Signal Structure Materials shall be as follows:

Poles & Mast Arms	-->	ASTM A607 Grade 50, 55 or 60 (less than ¼") or ASTM A572 Grade 50 or 60 (¼" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
Steel Plates	->	ASTM A709 Grade 36
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325, Type 1
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type 1
Handhole Frame	->	ASTM A709 Grade 36 ksi
Handhole Cover	->	ASTM A607 Grade 50, 55, or 60 ksi
Aluminum Caps and Covers	->	ASTM B26 (356-T6)
Stainless Steel Screws	->	AISI Type 316

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All steel items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Mast Arm)	->	ASTM A123

7) Locate handhole 180° from arm on single arm poles or 180° from first arm of double arm poles or see special instructions on Mast Arm Tabulation Sheet.

8) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" , prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus ½".

9) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed ¾" in diameter.

10) Mast Arms and Poles shall be tapered with the diameter changing at a rate of 0.14 inch per foot.

11) Design Wind Speeds:
Standard Mast Arm Assemblies = 110 mph with a 30% gust factor
Special Mast Arm Assemblies = 90 or 110 mph (see Plans Preparation Manual, Chapter 29) with a 30% gust factor.

12) The Pole shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

13) If a Mast Arm damping device is required by the Engineer, it shall be installed within eight feet of the Mast Arm tip.

14) Alternate Designs for Special Mast Arm Assemblies are not allowed.

15) Provide "J"-Hook at top of pole for signal cable support.

16) Do not erect pole until foundation concrete has cured for a minimum of seven days.

17) First and Second Arm Camber Angle = 2°.

18) Each standard Mast Arm pole has been designed for one free swinging internally illuminated street sign which is acceptable by Contractor Certification provided it meets the applicable requirements of Specification Section 699, weighs no more than 75 lbs. and is no more than 12 Sq. Ft. in area.

Note: Details for the Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit are not shown for clarity.

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 2 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 2, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL ELEVATION AND NOTES

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

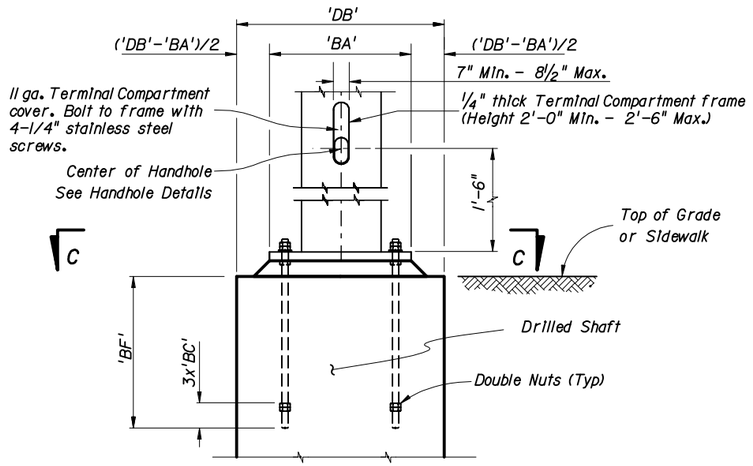
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

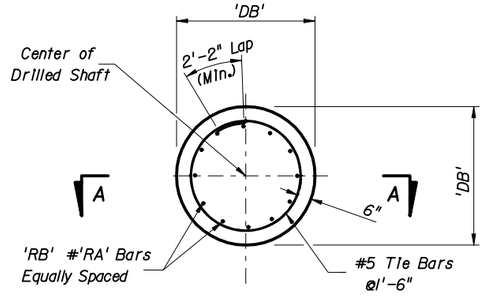
APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	017744

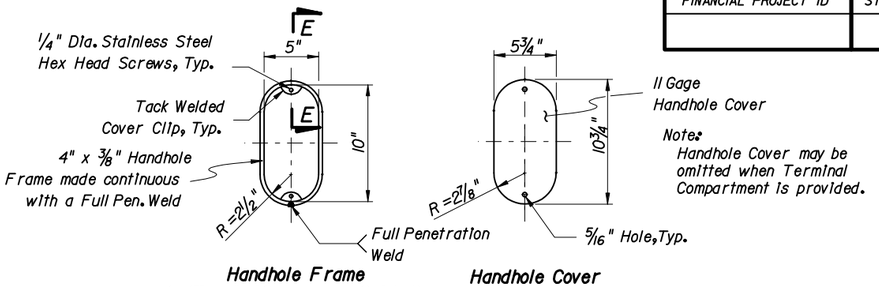
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



BASE PLATE AND ANCHORAGE ELEVATION
(Reinforcement Not Shown)

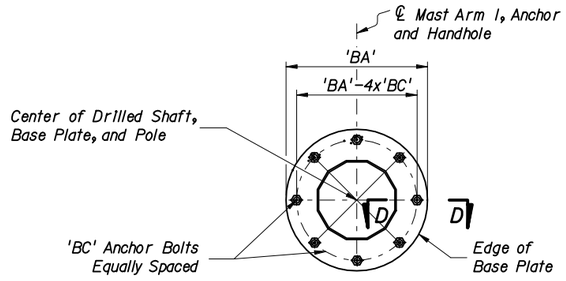


FOUNDATION PLAN
Note: 6" min. cover on Shaft Reinforcement

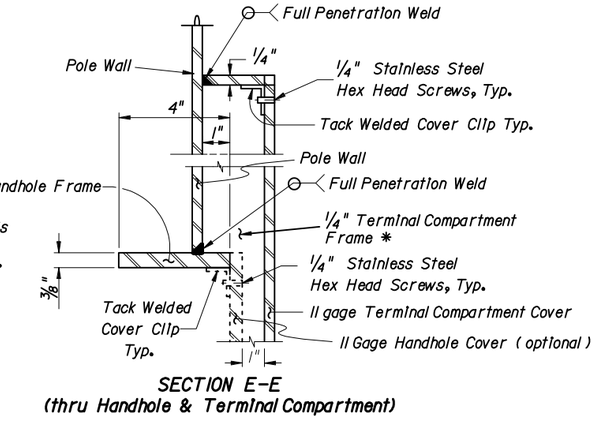


Handhole Frame
(w/Terminal Compartment Omitted)

Handhole Cover

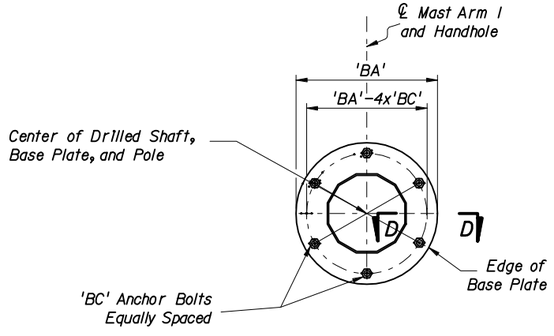


SECTION C-C
(8 Anchor Bolts shown, See Structures Standard Drawings S-1700 or S-1710 for actual quantity of bolts)

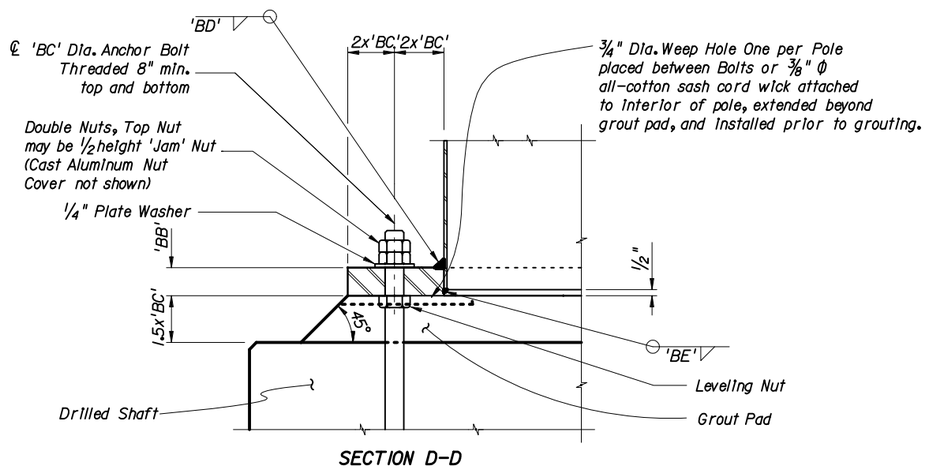


SECTION E-E
(thru Handhole & Terminal Compartment)

SECTION A-A



SECTION C-C
(6 Anchor Bolts)



SECTION D-D

NOTES FOR DOUBLE MAST ARMS

1. Work this Drawing with Sheets Nos. 1 and 4 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

NOTES FOR SINGLE MAST ARMS WITH LUMINAIRE

1. Work this Drawing with Sheets Nos. 1, 3 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL FOUNDATION AND BASE PLATE DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

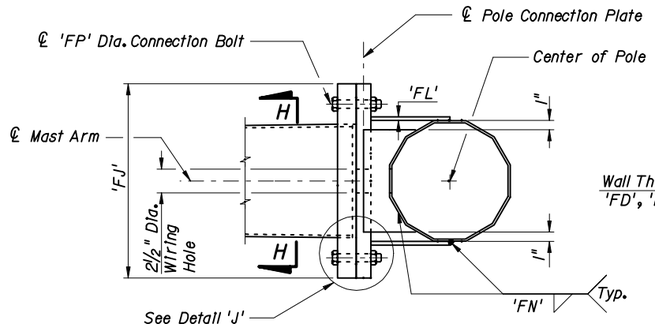
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

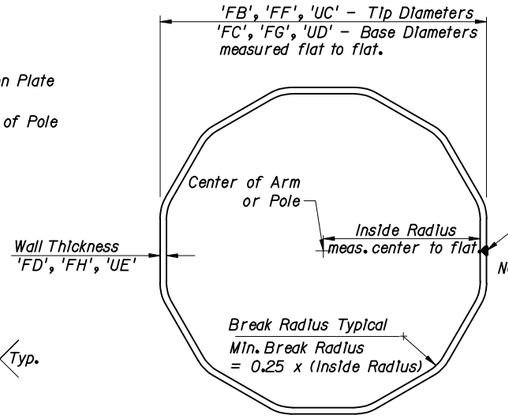
APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	017744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



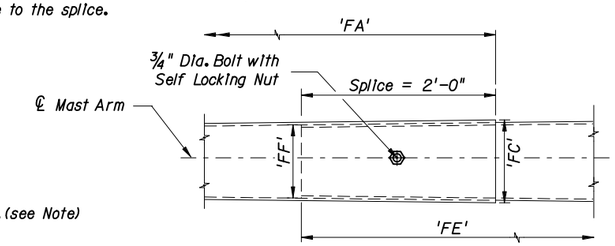
SECTION F-F



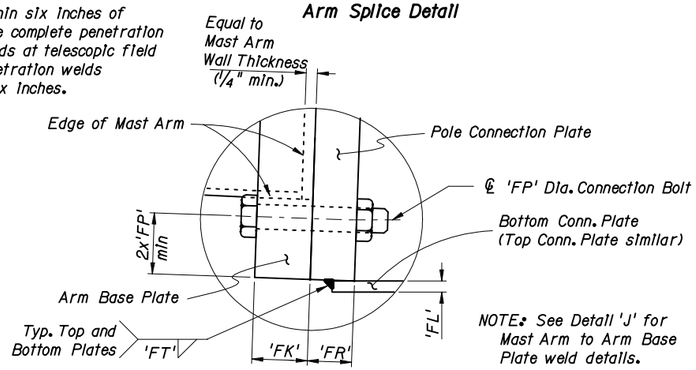
SECTION H-H

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.

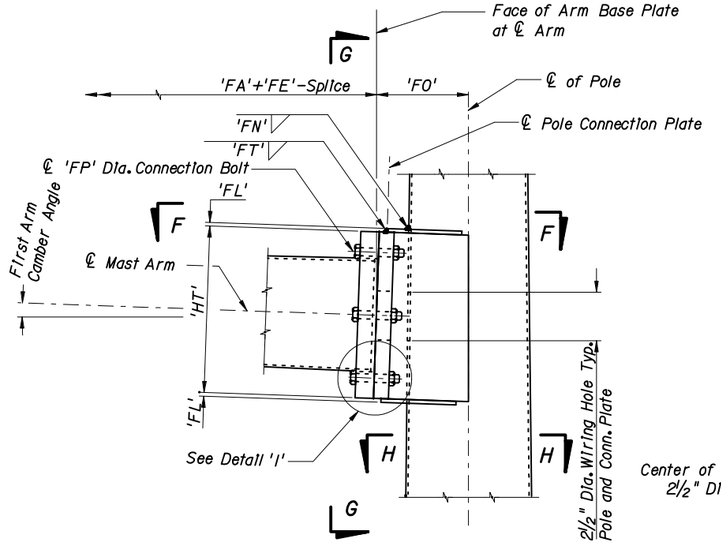


Arm Splice Detail

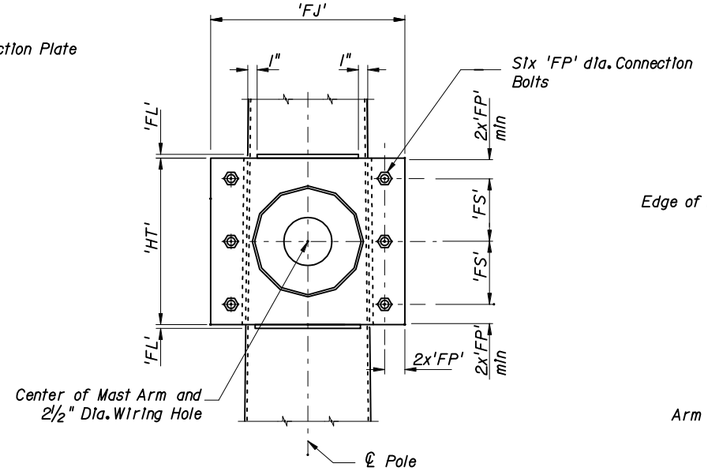


NOTE: See Detail 'J' for Mast Arm to Arm Base Plate weld details.

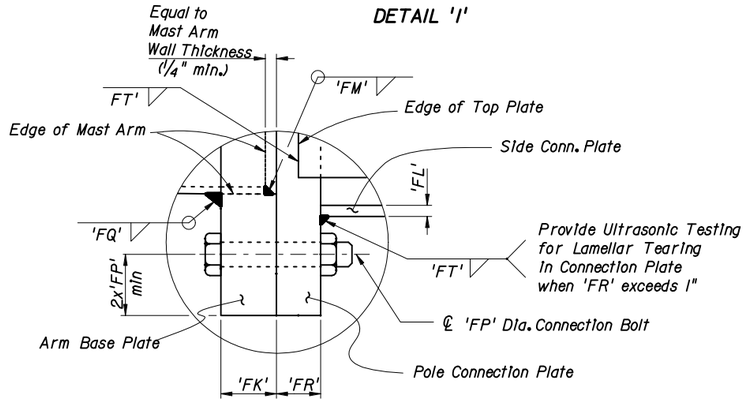
DETAIL 'I'



ELEVATION
(Single Arm Connection)



SECTION G-G



DETAIL 'J'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR SINGLE MAST ARMS WITH LUMINAIRES:

Work this Drawing with Sheets Nos. 1, 2 and 5 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL SINGLE ARM CONNECTION DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

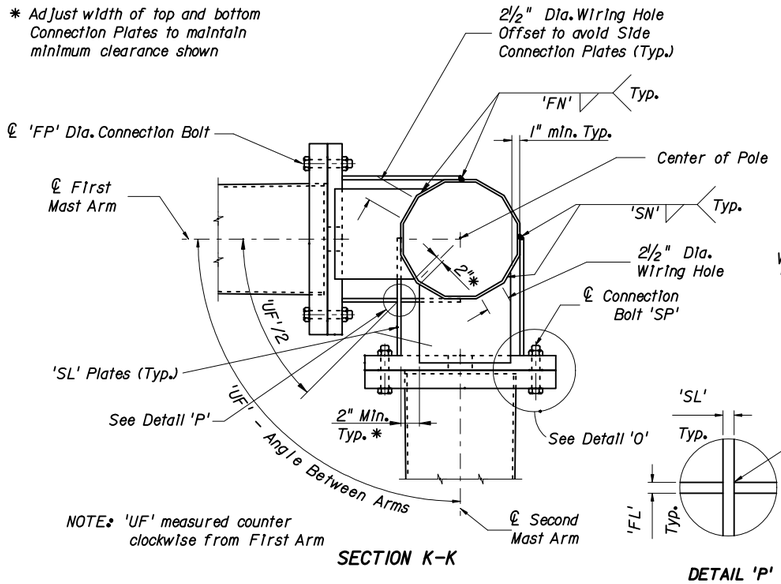
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

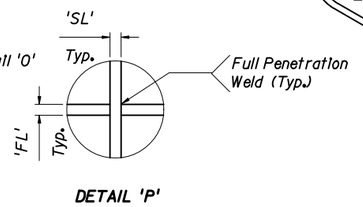
APPROVED BY W. N. Blatt
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 5	017744

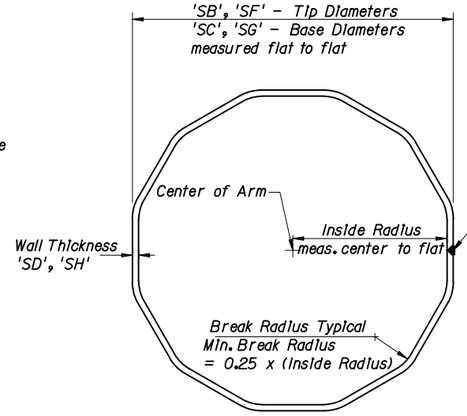
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



SECTION K-K

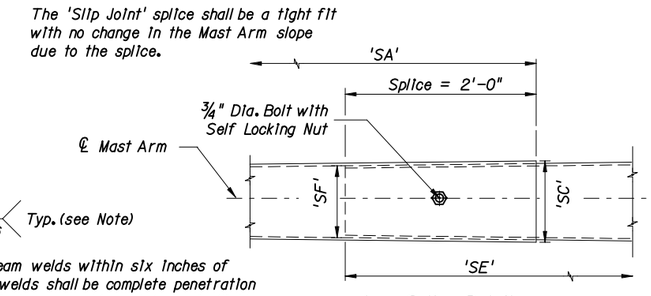


DETAIL 'P'

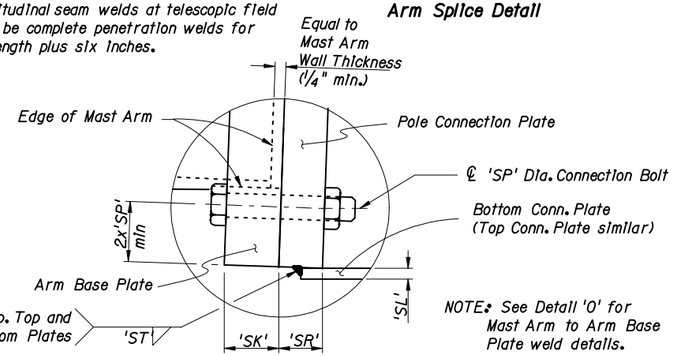


SECTION M-M

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

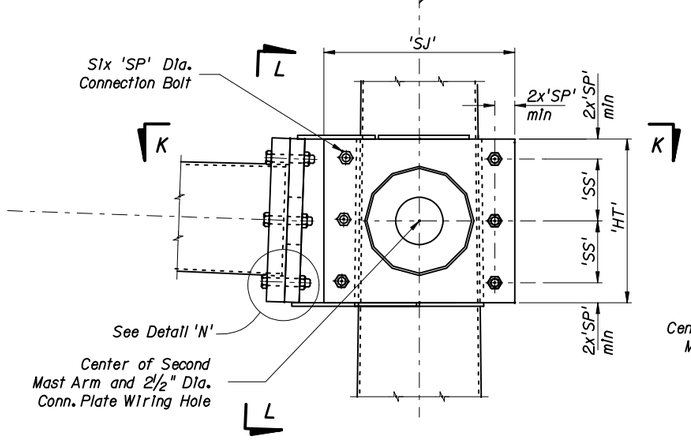


Arm Splice Detail

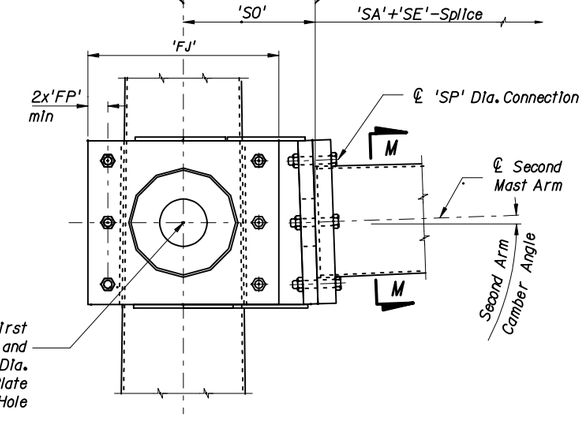


DETAIL 'N'

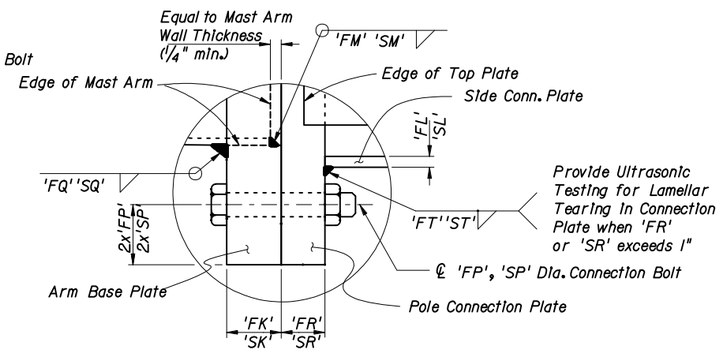
NOTE: See Detail 'O' for Mast Arm to Arm Base Plate weld details.



ELEVATION
(Double Arm Connection)



SECTION L-L



DETAIL 'O'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

NOTE FOR DOUBLE MAST ARMS:

Work this Drawing with Sheets Nos. 1, 2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.

TYPICAL DOUBLE ARM CONNECTION DETAILS

Revised: 7-10-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

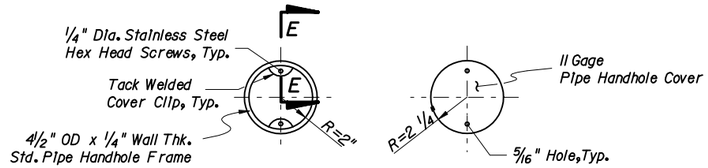
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

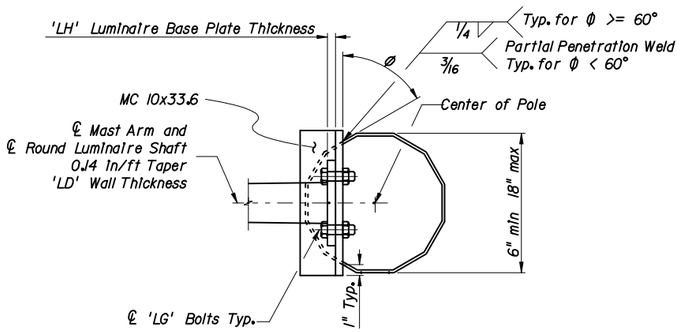
APPROVED BY W. N. Blatt
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 5	017744

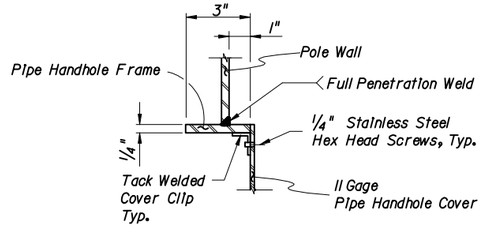
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



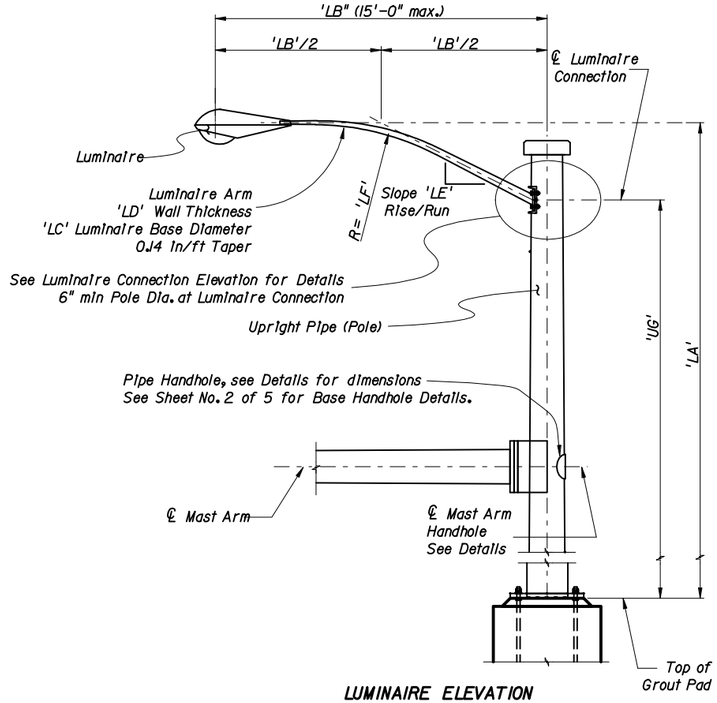
Pipe Handhole Frame **Pipe Handhole Cover**



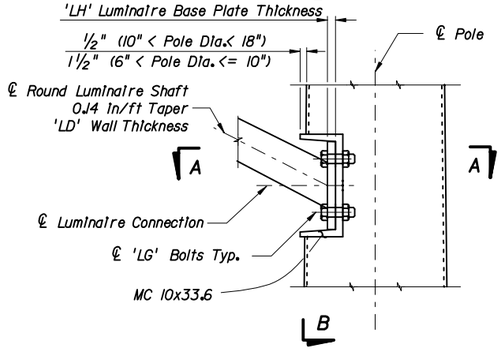
SECTION A-A



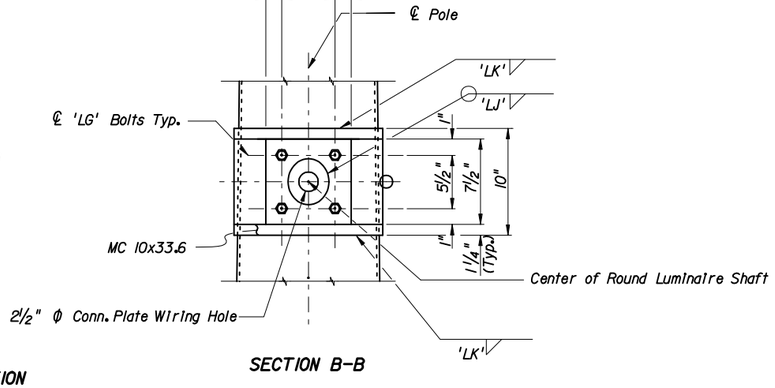
SECTION E-E
(thru Pipe Handhole)



LUMINAIRE ELEVATION



LUMINAIRE CONNECTION ELEVATION



SECTION B-B

NOTE: The Pole shown on this sheet is a 12 sided section. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced

NOTE: The Fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.

NOTES:

1. Work this Drawing with Sheet Nos. 1,2 and 3 of 5, Indices 17740 and 17742, and Structures Standard Drawings S-1700 and S-1710 as necessary.
2. Luminaire type and Luminaire to Arm Connection Details can be found elsewhere.
3. Align Luminaire Arm with single Mast Arm or Primary Arm of Double Mast Arm Assembly.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL LUMINAIRE ARM AND CONNECTION DETAILS

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

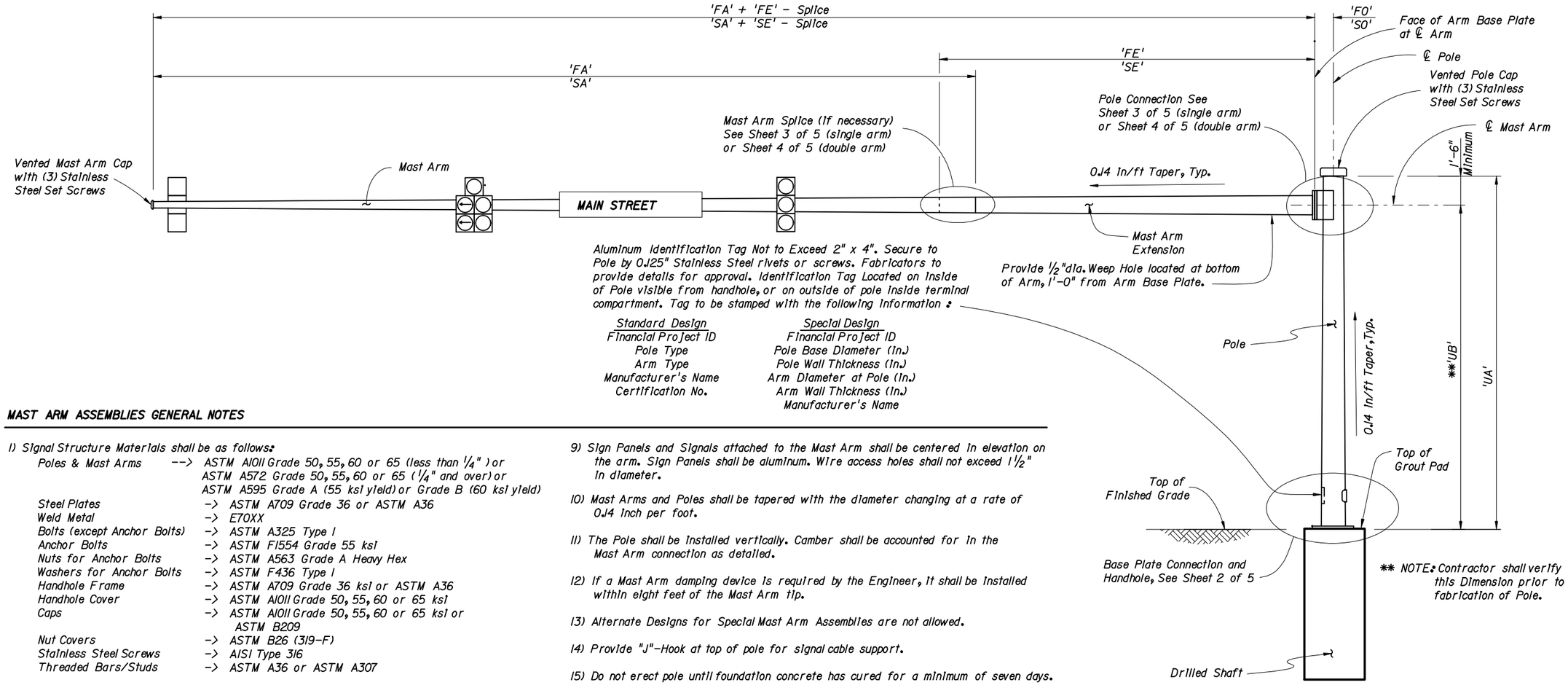
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 5	017744

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



ELEVATION VIEW

(Single Arm Shown, Double Arm Similar)
(Luminaire Arm Not Shown)

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Pole by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Pole Type	Pole Base Diameter (In.)
Arm Type	Pole Wall Thickness (In.)
Manufacturer's Name	Arm Diameter at Pole (In.)
Certification No.	Arm Wall Thickness (In.)
	Manufacturer's Name

MAST ARM ASSEMBLIES GENERAL NOTES

1) Signal Structure Materials shall be as follows:

Poles & Mast Arms	-->	ASTM A1011 Grade 50, 55, 60 or 65 (less than 1/4") or ASTM A572 Grade 50, 55, 60 or 65 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
Steel Plates	->	ASTM A709 Grade 36 or ASTM A36
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325 Type 1
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type 1
Handhole Frame	->	ASTM A709 Grade 36 ksi or ASTM A36
Handhole Cover	->	ASTM A1011 Grade 50, 55, 60 or 65 ksi
Caps	->	ASTM A1011 Grade 50, 55, 60 or 65 ksi or ASTM B209
Nut Covers	->	ASTM B26 (319-F)
Stainless Steel Screws	->	AISI Type 316
Threaded Bars/Studs	->	ASTM A36 or ASTM A307

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All steel items shall be galvanized as follows:

All Nuts, Bolts, Washers and Threaded Bars/Studs	->	ASTM A153 Class C or D depending on size
All other steel items (including Pole & Mast Arm)	->	ASTM A123

7) Locate handhole 180° from arm on single arm poles or 180° from first arm of double arm poles or see special instructions on Mast Arm Tabulation Sheet.

8) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" , prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

9) Sign Panels and Signals attached to the Mast Arm shall be centered in elevation on the arm. Sign Panels shall be aluminum. Wire access holes shall not exceed 1 1/2" in diameter.

10) Mast Arms and Poles shall be tapered with the diameter changing at a rate of 0.14 inch per foot.

11) The Pole shall be installed vertically. Camber shall be accounted for in the Mast Arm connection as detailed.

12) If a Mast Arm damping device is required by the Engineer, it shall be installed within eight feet of the Mast Arm tip.

13) Alternate Designs for Special Mast Arm Assemblies are not allowed.

14) Provide "J"-Hook at top of pole for signal cable support.

15) Do not erect pole until foundation concrete has cured for a minimum of seven days.

16) First and Second Arm Camber Angle = 2°.

17) Details for the Ground Rod, Signal and Sign Locations, Signal Head Attachment, Sign Attachment, Pedestrian Head Attachment, and Foundation Conduit are not shown for clarity.

18) Work this Index with Structures Standard Nos. S-1700 and S-1710 as necessary.

TYPICAL ELEVATION AND NOTES

Date: 7-17-02

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

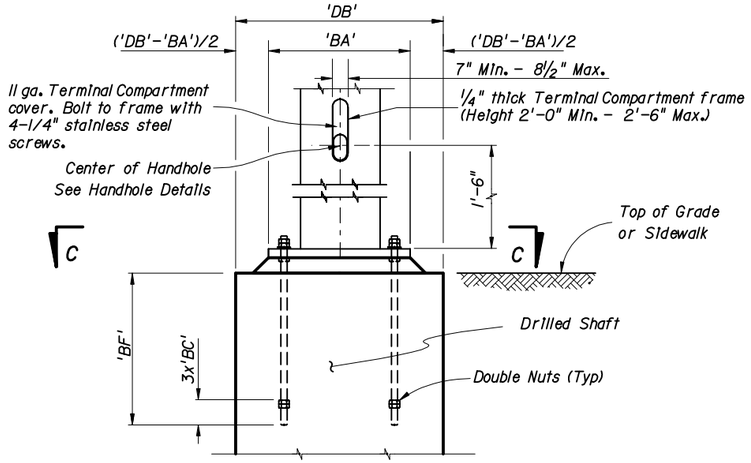
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

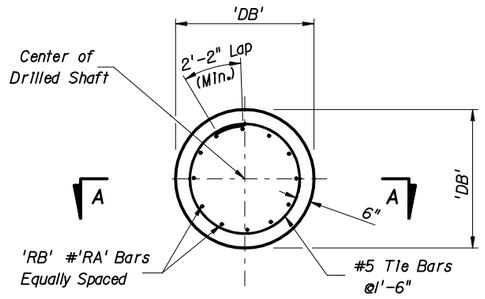
APPROVED BY Robert E. Nicholson Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 5	017745

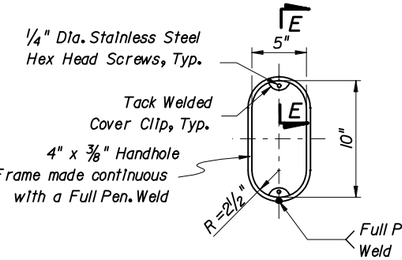
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



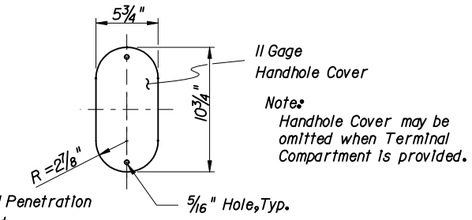
BASE PLATE AND ANCHORAGE ELEVATION
(Reinforcement Not Shown)



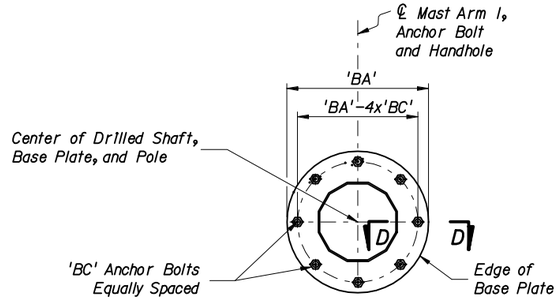
FOUNDATION PLAN
Note: 6" min. cover on Shaft Reinforcement



Handhole Frame
(w/Terminal Compartment Omitted)

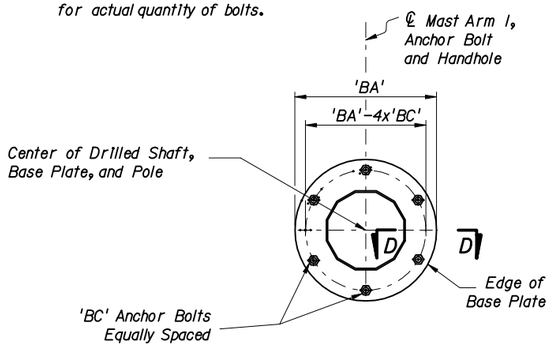


Handhole Cover

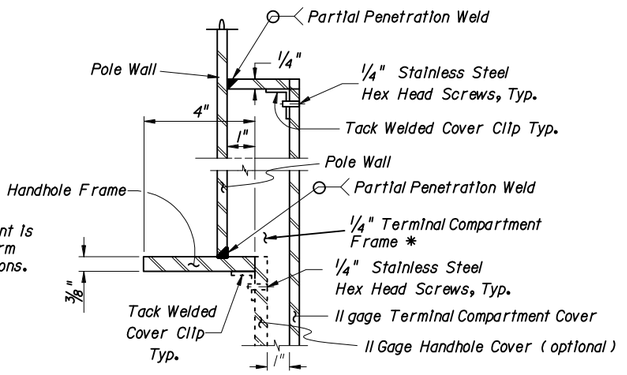


SECTION C-C
(8 Anchor Bolts)

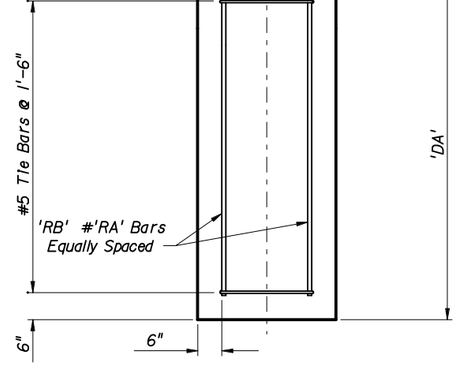
NOTE: See Index Nos. 17742 and 17743 and Structures Standard Drawing S-1710 for actual quantity of bolts.



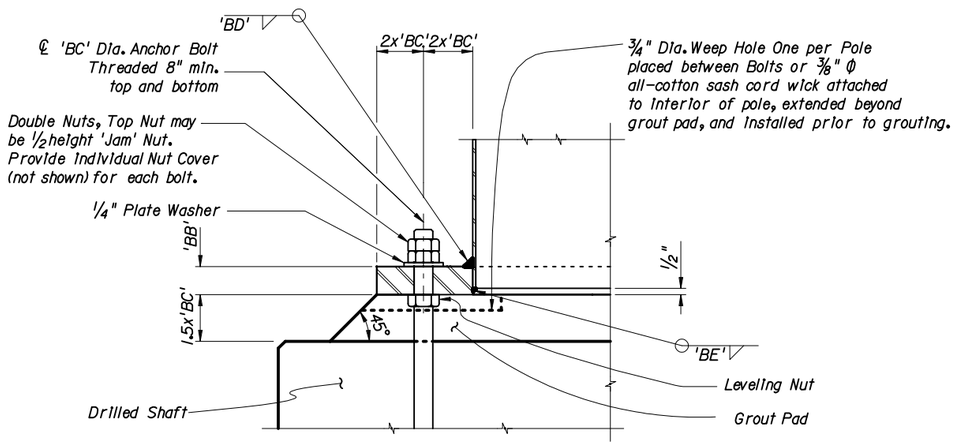
SECTION C-C
(6 Anchor Bolts)



SECTION E-E
(thru Handhole & Terminal Compartment)



SECTION A-A



SECTION D-D

TYPICAL FOUNDATION AND BASE PLATE DETAILS

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 7-17-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

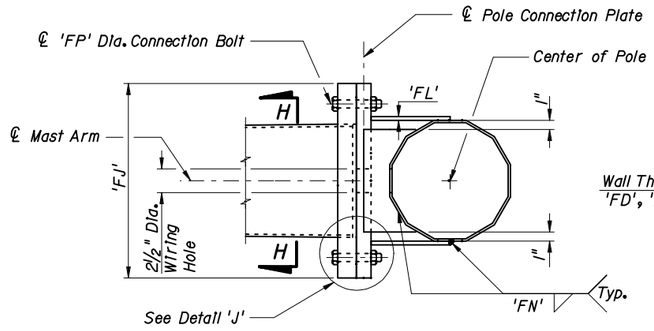
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

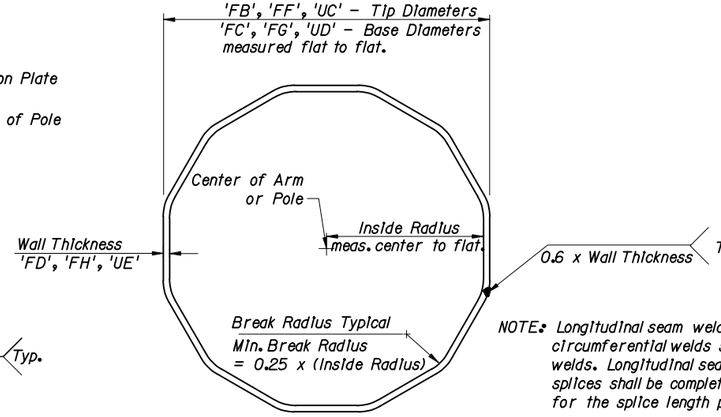
APPROVED BY Robert E. Nicholz Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	2 of 5	017745

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

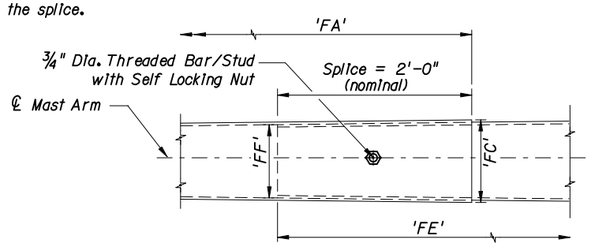


SECTION F-F



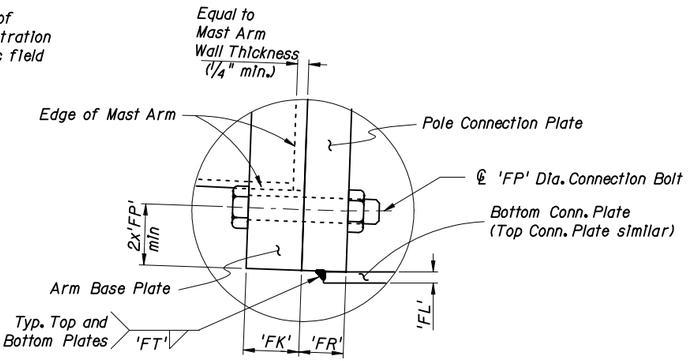
SECTION H-H

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.

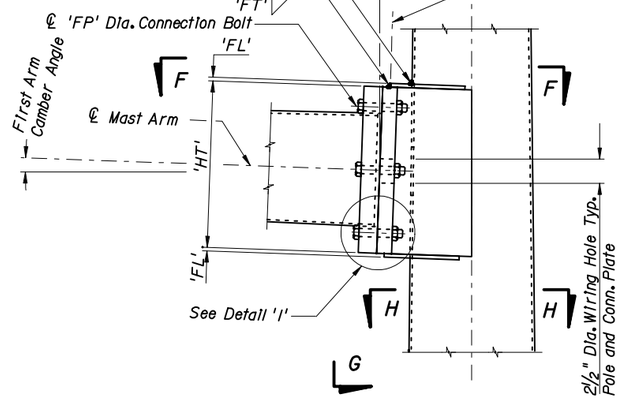


Arm Splice Detail

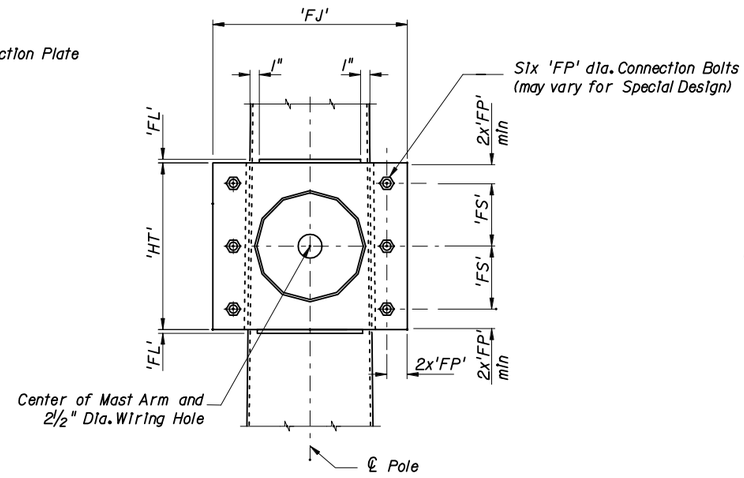
NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.



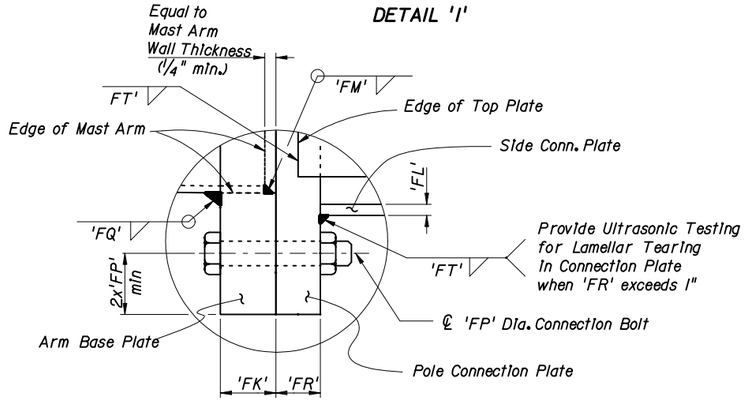
DETAIL 'I'



ELEVATION
(Single Arm Connection)



SECTION G-G



DETAIL 'J'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL SINGLE ARM CONNECTION DETAILS

Date: 7-17-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

INTERIM STANDARD

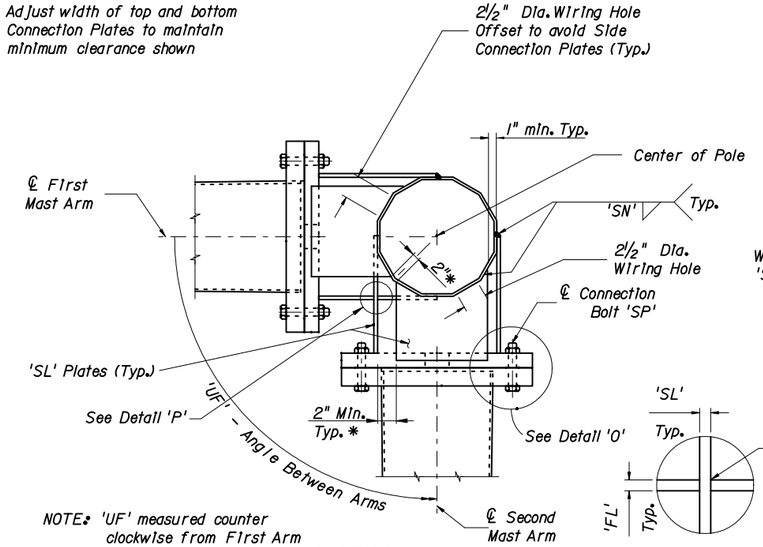
THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY Robert E. Nichols Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 5	017745

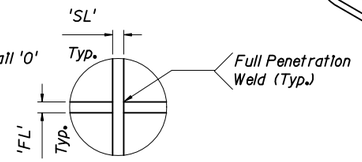
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

* Adjust width of top and bottom Connection Plates to maintain minimum clearance shown

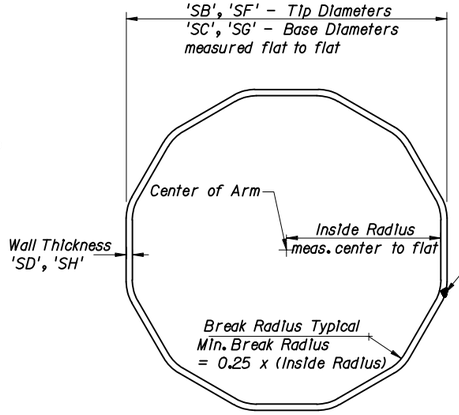


NOTE: 'UF' measured counter clockwise from First Arm

SECTION K-K



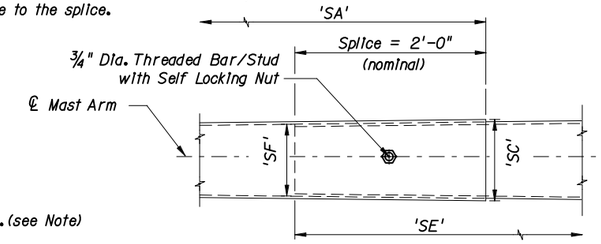
DETAIL 'P'



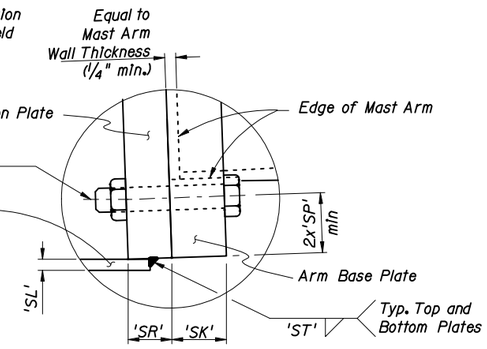
SECTION M-M

NOTE: Longitudinal seam welds within six inches of circumferential welds shall be complete penetration welds. Longitudinal seam welds at telescopic field splices shall be complete penetration welds for the splice length plus six inches.

The 'Slip Joint' splice shall be a tight fit with no change in the Mast Arm slope due to the splice.



Arm Splice Detail



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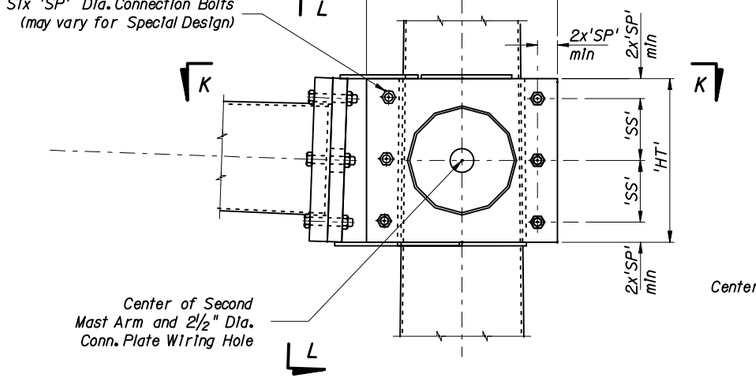
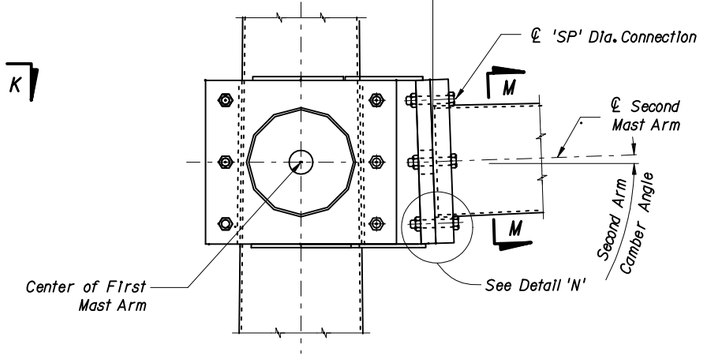
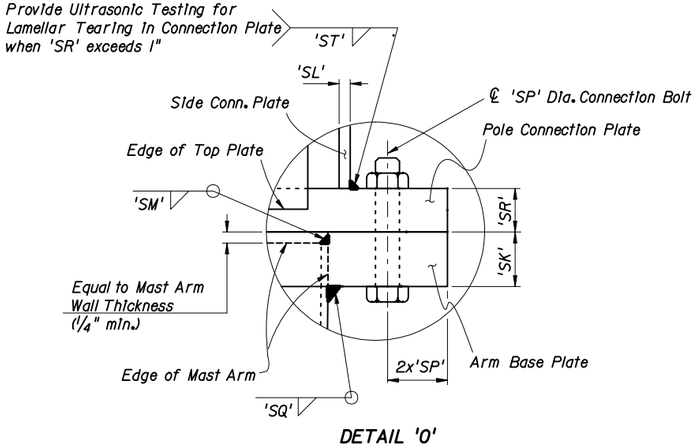


ELEVATION
(Double Arm Connection)



SECTION L-L

Provide Ultrasonic Testing for Lamellar Tearing in Connection Plate when 'SR' exceeds 1"



DETAIL 'O'

NOTE:
1. Details shown on this sheet are for 12 sided pole sections. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced.
2. Mast Arm and Connection Plates shall be match marked to ensure proper assembly.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL DOUBLE ARM CONNECTION DETAILS

Date: 7-17-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

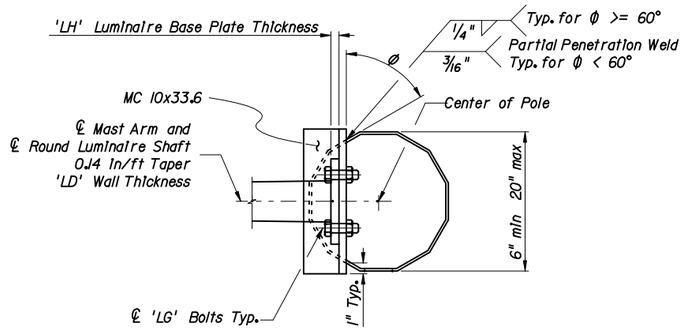
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

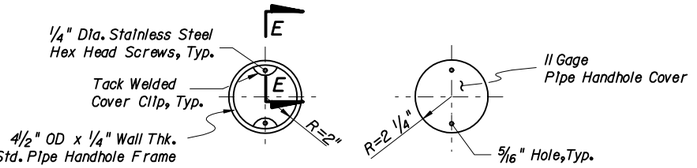
APPROVED BY Robert E. Nicholas Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 5	017745

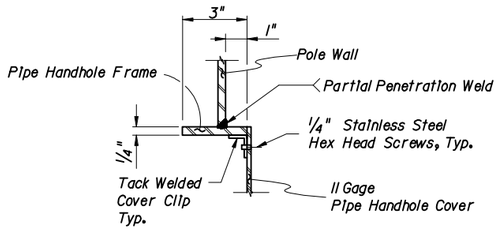
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



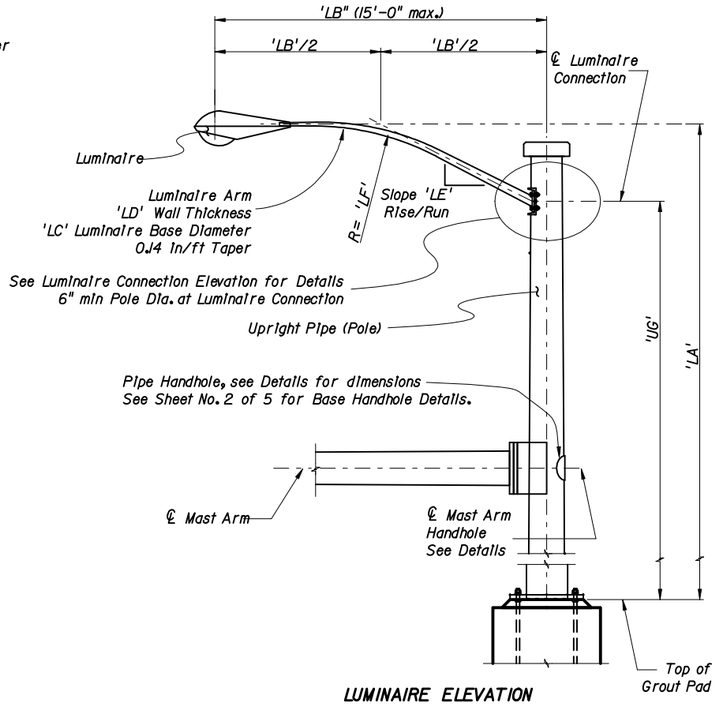
SECTION A-A



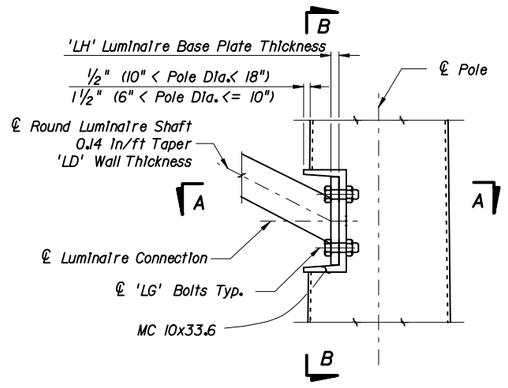
Pipe Handhole Frame Pipe Handhole Cover



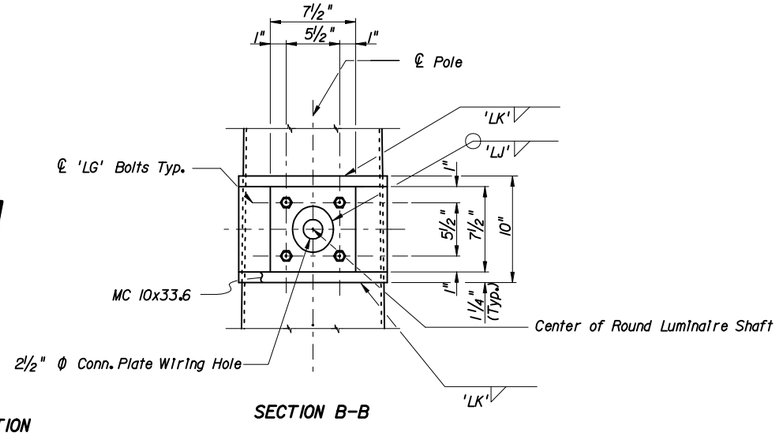
SECTION E-E
(thru Pipe Handhole)



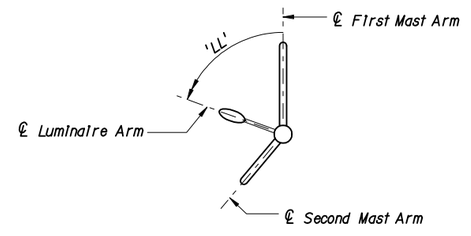
LUMINAIRE ELEVATION



LUMINAIRE CONNECTION ELEVATION



SECTION B-B



LUMINAIRE ORIENTATION

NOTE: The Pole shown on this sheet is a 12 sided section. However, sections with more than 12 sides and round sections are permitted provided outside diameter and wall thickness are not reduced

NOTE: The Fabricator may substitute a 1/2" thick bent plate with the same flange width, height, and length as the MC 10x33.6 Channel section.

NOTES:

1. Luminaire type and Luminaire to Arm Connection Details can be found elsewhere.
2. Align Luminaire Arm with single Mast Arm or first Arm of Double Mast Arm unless indicated otherwise in plans.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

TYPICAL LUMINAIRE ARM AND CONNECTION DETAILS

Date: 7-17-02

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MAST ARM ASSEMBLIES

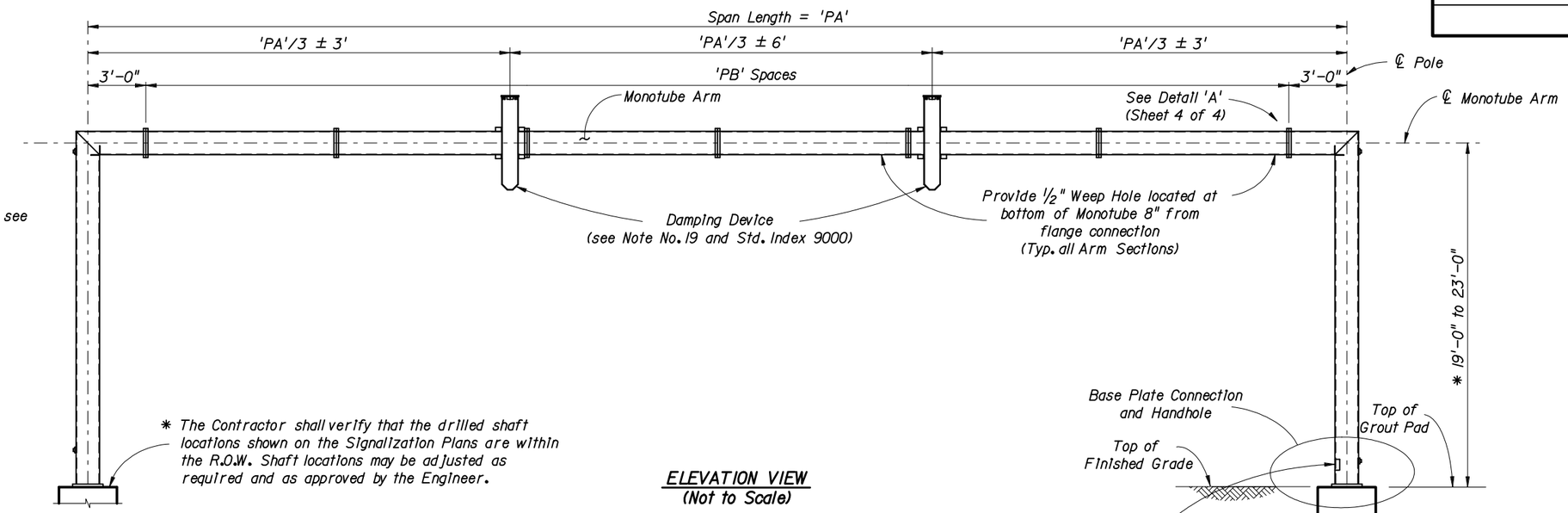
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2002.

APPROVED BY Robert E. Nichols Jr.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 5	017745

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

* The Contractor shall verify that the drilled shaft locations shown on the Signalization Plans are within the R.O.W. Shaft locations may be adjusted as required and as approved by the Engineer.

ELEVATION VIEW
(Not to Scale)

* NOTE: Contractor shall verify these Dimensions Prior to Fabrication of Pole.

Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on Inside of Pole visible from handhole, or on outside of pole Inside terminal compartment. Tag to be stamped with the following Information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Span Length	Pole Diameter (In.)
Manufacturer's Name	Pole Wall Thickness (In.)
Certification No.	Arm Diameter (In.)
	Arm Wall Thickness (In.)
	Manufacturer's Name

MONOTUBE SIGNAL STRUCTURE NOTES

1) Signal Structure Materials shall be as follows:

Poles & Monotube Arm	->	API-5L-X42 (42 ksi yield) or ASTM A618 Grade II
Handhole Frame	->	ASTM A709 Grade 36
Handhole Cover	->	ASTM A607, Grade 50, 55 or 60 ksi
Steel Plates	->	ASTM A709 Grade 50
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325 Type I
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type I
Stainless Steel Screws	->	AISI Type 316
Aluminum Nut Cover	->	ASTM B26 (356-T6)

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934 of the Specifications. Grout at the base of uprights shall be installed a minimum of 7 days prior to the installation of signals or sign panels.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Monotube Arm)	->	ASTM A123

7) The Design Wind Speed is 110mph with a 30 percent gust factor.

8) Alternate Designs for this Structure are not allowed.

9) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

10) Sign Panels and Signals attached to the Monotube shall be located as shown on the Traffic Signal Plans. Wire access holes shall not exceed 3/4" in diameter.

11) The Pole shall be installed vertically. Arm Camber shall be accounted for in the Flange Connections.

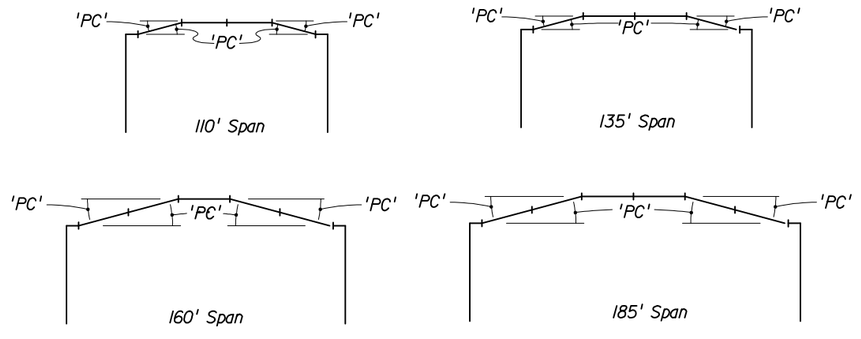
12) Locate handhole 180° from monotube arm.

13) All signals shall be installed vertically.

14) Monotube Arm & Poles shall be fabricated from round pipe.

15) If damping devices are required by the Engineer, they shall be installed within 3'-0" ± of the third points of the Span Length.

16) Each Standard Monotube Signal Structure has been designed for two free swinging Internally Illuminated street signs, per pole, which are acceptable by Contractor certification provided they meet the applicable requirements of Specification Section 699, weigh no more than 75 lbs. (each) and are no more than 12 sq. ft. in area (each).



CAMBER DETAILS

Note: Fabricate with rolling camber up.

REVISED: 2-20-01

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ELEVATION, NOTES AND CAMBER DETAILS

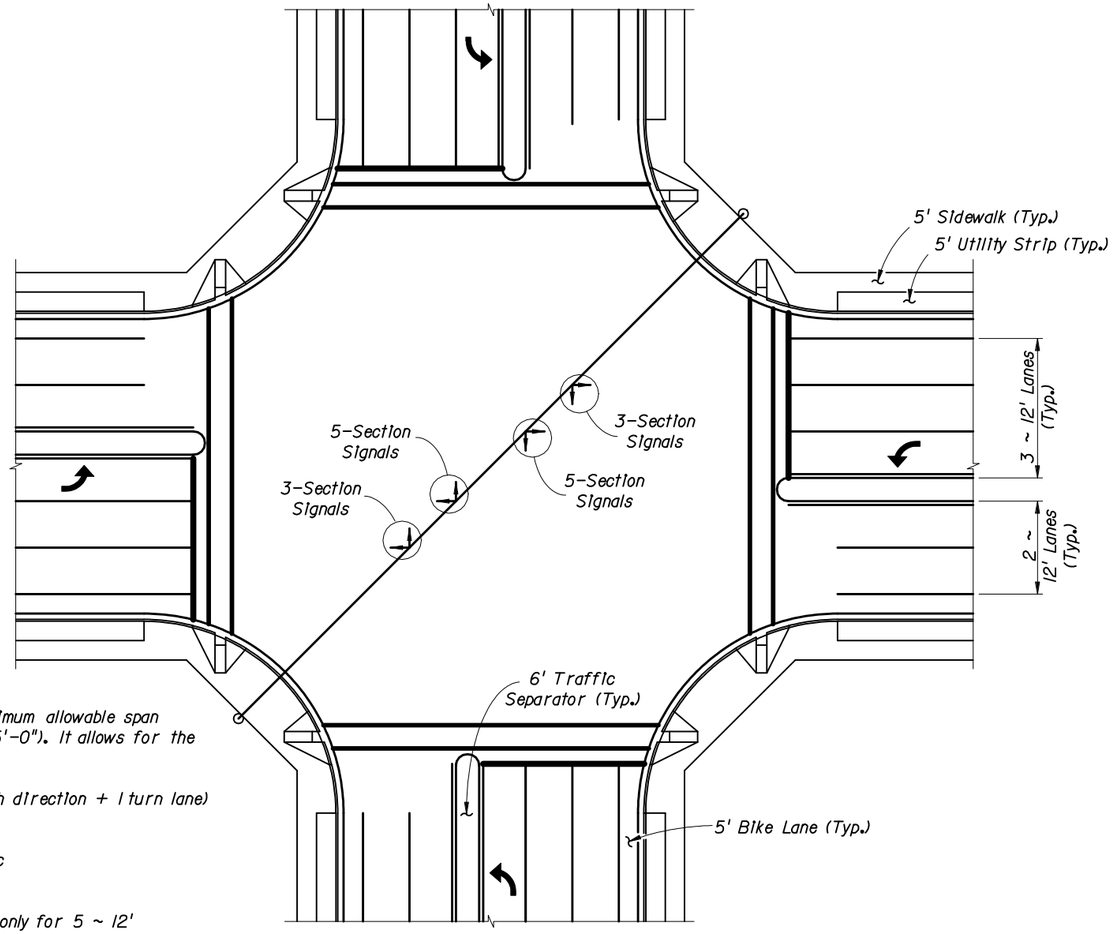
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. V. [signature]
STATE STRUCTURES DESIGN ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 4	17746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW - MONOTUBE DESIGN INTERSECTION

Note:

The signal configuration shown represents the maximum allowable span for which this monotube standard is applicable (185'-0"). It allows for the following components:

a. 5 ~ 12' traffic lanes (2 thru lanes in each direction + 1 turn lane)
b. 1 ~ 6' traffic separator
c. 1 ~ 5' bike lane per direction of traffic
d. 1 ~ 5' utility strip per direction of traffic
e. 1 ~ 5' sidewalk per direction of traffic

The minimum monotube design span (110'-0") allows only for 5 ~ 12' traffic lanes (item "a" above). It is assumed that for this case there are no traffic separators, bike lanes, utility strips or sidewalks.

INSTRUCTIONAL NOTES:

1. This Index, 17746, is for use in preparing signalization plans when monotube assemblies are required. This standard establishes the requirements of monotube components listed on on the Qualified Products List (QPL). When using components on the QPL, the span length and heights of each pole will be the only information required in the Contract Plans, and Shop Drawings are not required.

2. If a monotube configuration does not meet the requirements stated below, a special design and shop drawing submittal is required.

3. Four standard monotube configurations are provided. The standard arm length and the signal locations used for design of the arm are shown on the monotube design loading tree on this sheet. If the same arrangement of signals is used with one or more signals closer to the nearest pole, the standard monotube may be used. If the same arrangement is used but one or more signals are further from the nearest pole, or if a different configuration of signals is used, a special design is required. If any signs are to be attached to the monotube arm, a special design is required.

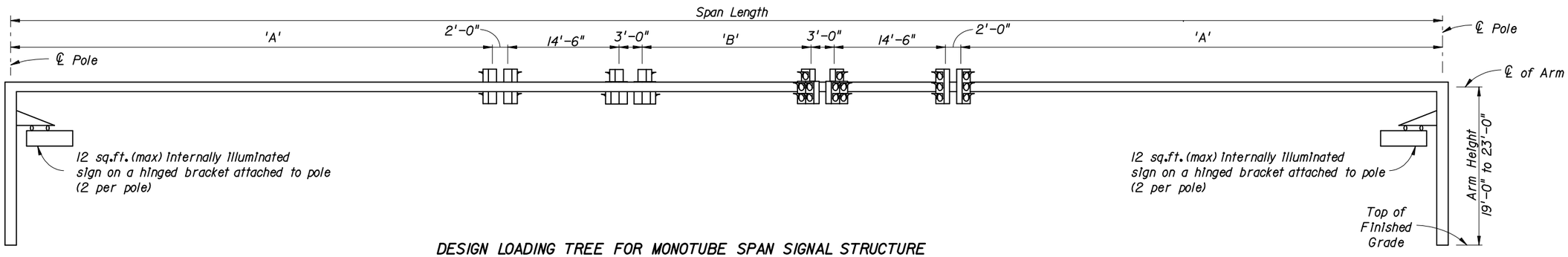
4. Standard monotube span lengths of 110'-0", 135'-0", 160'-0" and 185'-0" are shown. For other required span lengths with the same configuration of signals in the same loations or closer to the poles, the standard monotube design with the next largest standard span length may be used. The difference in length shall be removed from the center horizontal segment(s) of the span. If a span longer than 185'-0" is to be used, a special design is required.

5. The standard monotube is valid for an arm heights between 19' and 23', inclusive. A special design is required for all heights greater than 23'. If an arm height of less than 19' is to be utilized with the same configuration of signals in the same locations or closer to the poles, the standard monotube may be used, provided that minimum required clearances to the roadway are maintained.

6. The foundations for the standard monotube are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types of the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilitzed as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several founations. Furthermore, borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.



DESIGN LOADING TREE FOR MONOTUBE SPAN SIGNAL STRUCTURE

Note: Signal Backplates on 4 of the 8 signals are included in the design of Standard Arms.

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

REVISED: 2-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE DESIGN INTERSECTION AND DESIGN LOAD TREE

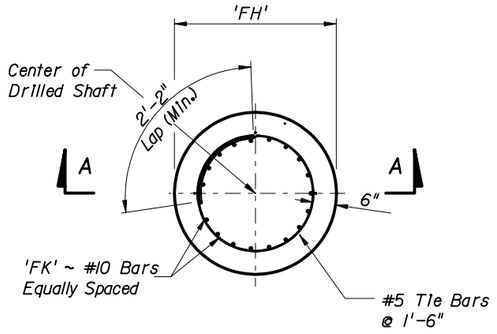
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. Thomas
STATE STRUCTURES DESIGN ENGINEER

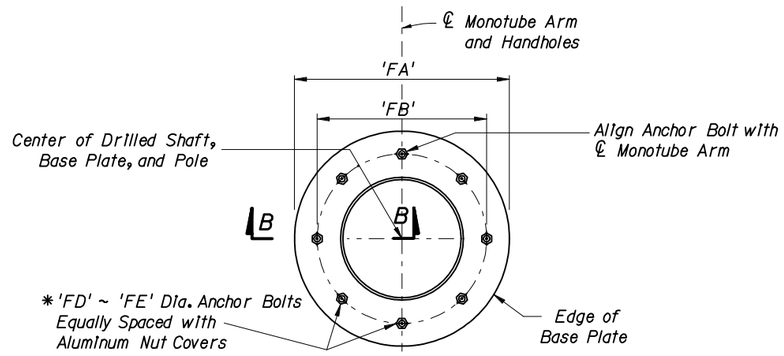
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 4	17746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FOUNDATION PLAN

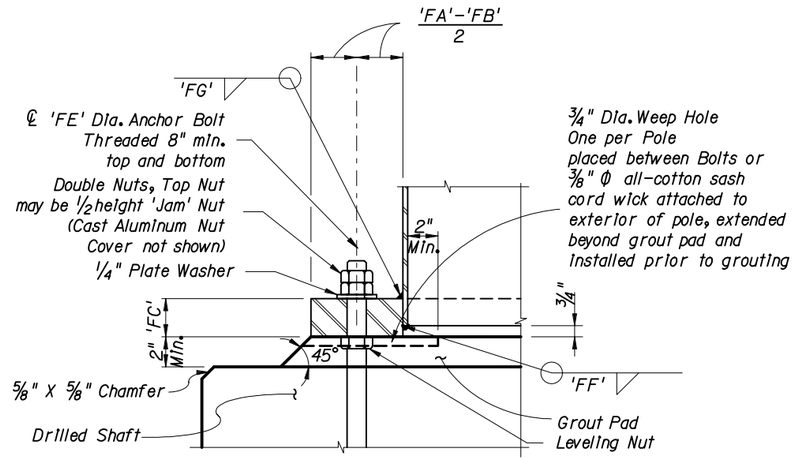
Note: 6" min. cover on Shaft Reinforcement



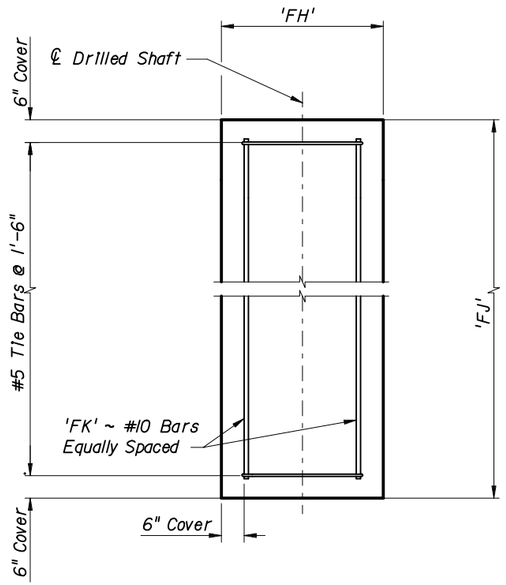
SECTION C-C

Note: Concrete and Reinforcement not shown.

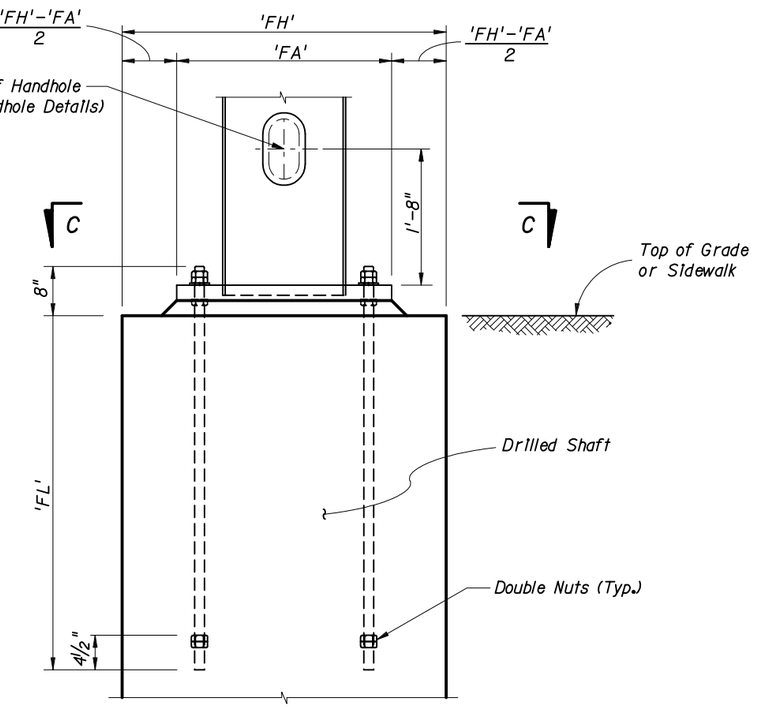
* Anchor Bolt Group locations may be ± ½" in the direction of the span



SECTION B-B



SECTION A-A



BASE PLATE AND ANCHORAGE ELEVATION

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE FOUNDATION AND BASE PLATE DETAILS

INTERIM STANDARD

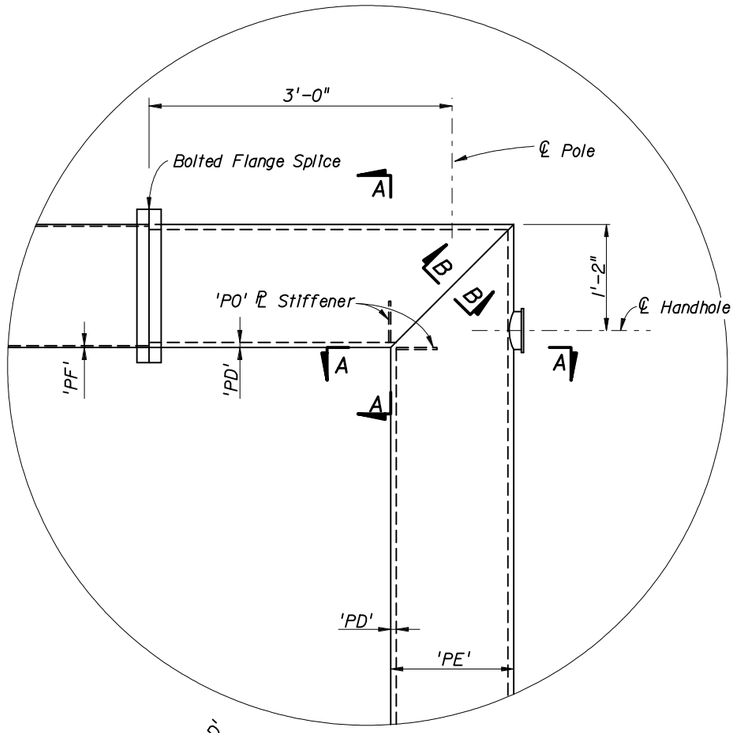
WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. V. Stanley
STATE STRUCTURES DESIGN ENGINEER

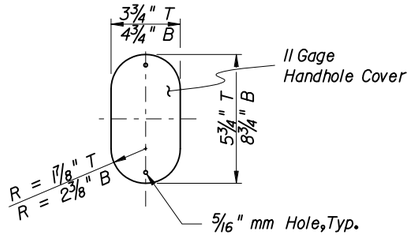
REVISION NO.	SHEET NO.	INDEX NO.
	3 of 4	17746

Date: 9-26-00

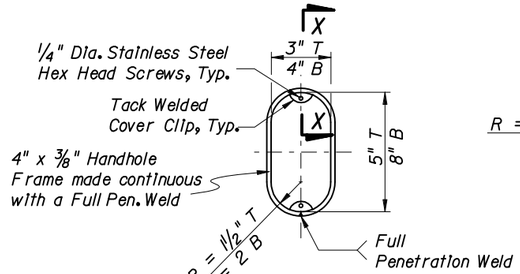
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DETAIL 'A'

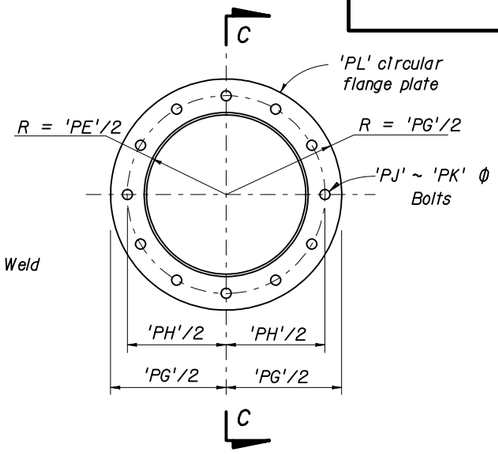


HANDHOLE COVER

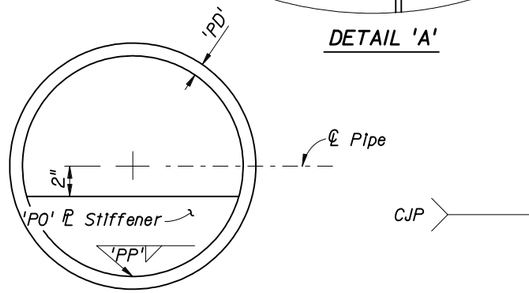


HANDHOLE FRAME

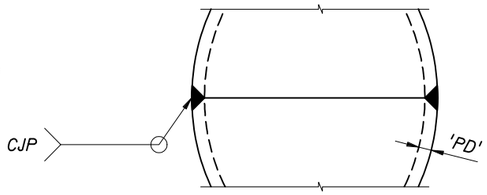
T - denotes top 3" x 5" handhole
B - denotes bottom 4" x 8" handhole



FLANGE SPLICE DETAILS

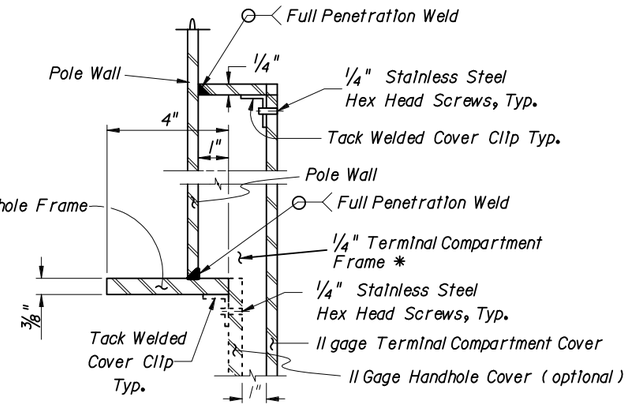


SECTION A-A

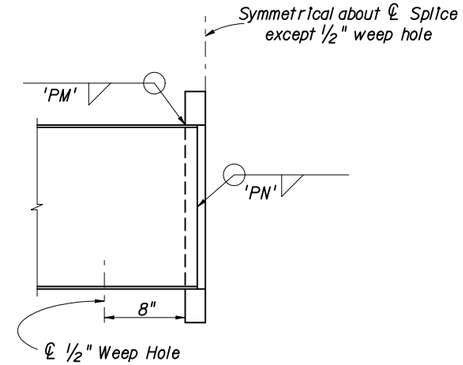


SECTION B-B

*Terminal Compartment is optional. See Mast Arm Tabulation for locations.



SECTION E-E
(thru Handhole & Terminal Compartment)



SECTION C-C

TABLE OF MONOTUBE VARIABLES

MONOTUBE ARM & POLES															FOUNDATION & BASE PLATE										SIGNAL LAYOUT	
'PA' (ft)	'PB'	'PC' (deg)	'PD' (In)	'PE' (In)	'PF' (In)	'PG' (In)	'PH' (In)	'PJ'	'PK' (In)	'PL' (In)	'PM' (In)	'PN' (In)	'PO' (In)	'PP' (In)	'FA' (In)	'FB' (In)	'FC' (In)	'FD'	'FE' (In)	'FF' (In)	'FG' (In)	'FH' (ft)	'FJ' (ft)	'FK'	'FL' (In)	Dim. 'A' (ft)	Dim. 'B' (ft)
110	4	1.5	1.093	14	⅜	21 ½	17¾	8	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	21 ½	17¾	1 ⅞	8	1 ½"	5/16"	5/16"	3	12	10	45	29	13
135	4	1.5	1.031	16	⅜	23 ½	19¾	10	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	23 ½	19¾	2	8	1 ½"	5/16"	5/16"	3.5	13	12	45	40	16
160	5	1.25	1.156	18	⅜	25 ½	21¾	12	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	25 ½	21¾	2⅛	8	1 ½"	5/16"	5/16"	3.5	14	12	45	51	19
185	6	1.75	1.125	22	⅜	29 ½	25¾	14	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	29 ½	25¾	2¼	10	1 ½"	5/16"	5/16"	4	16	16	45	62	22

Note: For additional variable definitions see Sheets 1 and 3 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

REVISED: 02-20-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ARM CONNECTION DETAILS & TABLE OF VARIABLES

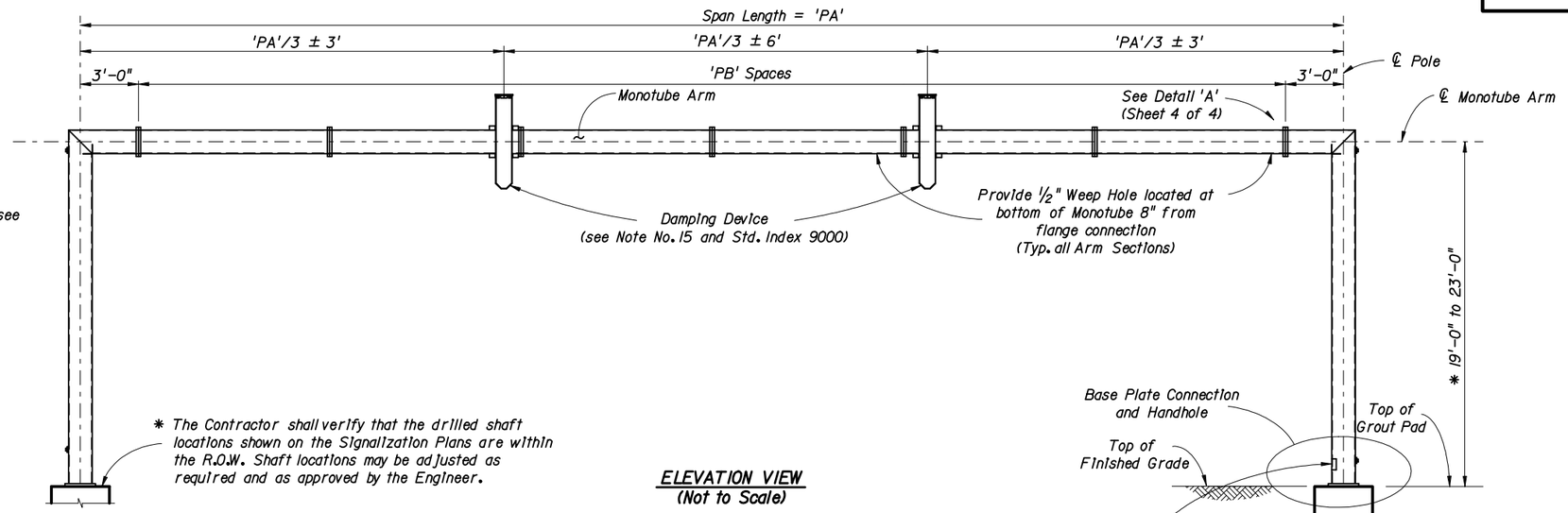
INTERIM STANDARD

WHEN INCLUDED IN THE PLANS SHEET NOS. 1-4 OF 4 ARE A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS. ENGLISH AND METRIC BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [illegible]
STATE STRUCTURES DESIGN ENGINEER

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 4	17746

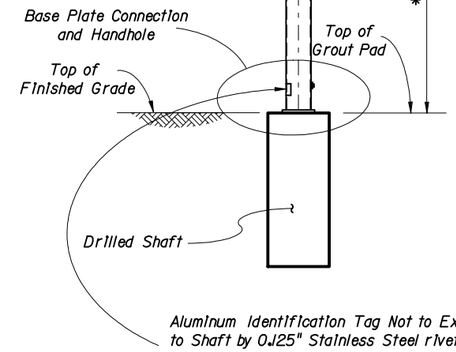
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

ELEVATION VIEW
(Not to Scale)

* NOTE: Contractor shall verify these Dimensions Prior to Fabrication of Pole.



Aluminum Identification Tag Not to Exceed 2" x 4". Secure to Shaft by 0.125" Stainless Steel rivets or screws. Fabricators to provide details for approval. Identification Tag Located on inside of Pole visible from handhole, or on outside of pole inside terminal compartment. Tag to be stamped with the following information :

Standard Design	Special Design
Financial Project ID	Financial Project ID
Span Length	Pole Diameter (In.)
Manufacturer's Name	Pole Wall Thickness (In.)
Certification No.	Arm Diameter (In.)
	Arm Wall Thickness (In.)
	Manufacturer's Name

MONOTUBE SIGNAL STRUCTURE NOTES

1) Signal Structure Materials shall be as follows:

Poles & Monotube Arm	->	API-5L-X42 (42 ksi yield) or ASTM A618 Grade II
Handhole Frame	->	ASTM A709 Grade 36
Handhole Cover	->	ASTM A607, Grade 50, 55 or 60 ksi
Steel Plates	->	ASTM A709 Grade 50
Weld Metal	->	E70XX
Bolts (except Anchor Bolts)	->	ASTM A325 Type I
Anchor Bolts	->	ASTM F1554 Grade 55 ksi
Nuts for Anchor Bolts	->	ASTM A563 Grade A Heavy Hex
Washers for Anchor Bolts	->	ASTM F436 Type I
Stainless Steel Screws	->	AISI Type 316
Aluminum Nut Cover	->	ASTM B26 (356-T6)

2) Reinforcing Steel shall be ASTM A615-96, Grade 60 ksi.

3) Concrete shall be Class IV (Drilled Shaft) with a minimum 28-day compressive strength of 4,000 psi for all environmental classifications.

4) Grout shall have a minimum 28-day compressive strength of 5,000 psi and shall meet the requirements of Section 934 of the Specifications. Grout at the base of uprights shall be installed a minimum of 7 days prior to the installation of signals or sign panels.

5) All welding shall conform to American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

6) All Steel Items shall be galvanized as follows:

All Nuts, Bolts and Washers	->	ASTM A153 Class C or D depending on size
All other steel items (Including Pole & Monotube Arm)	->	ASTM A123

7) The Design Wind Speed is 110mph with a 30 percent gust factor.

8) Alternate Designs for this Structure are not allowed.

9) Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for Anchor Bolts shall not exceed the bolt diameter plus 1/2".

10) Sign Panels and Signals attached to the Monotube shall be located as shown on the Traffic Signal Plans. Wire access holes shall not exceed 3/4" in diameter.

11) The Pole shall be installed vertically. Arm Camber shall be accounted for in the Flange Connections.

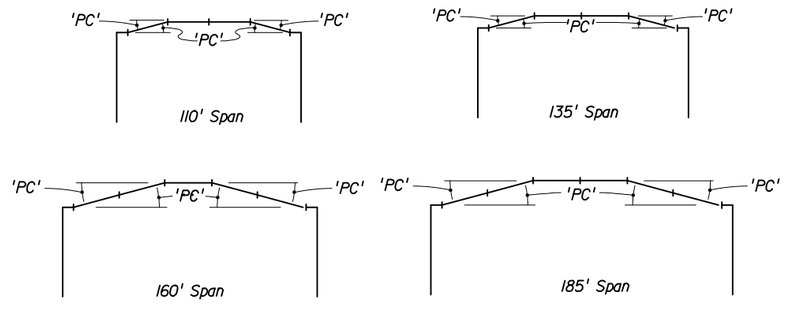
12) Locate handhole 180° from monotube arm.

13) All signals shall be installed vertically.

14) Monotube Arm & Poles shall be fabricated from round pipe.

15) If damping devices are required by the Engineer, they shall be installed within 3'-0" ± of the third points of the Span Length.

16) Each Standard Monotube Signal Structure has been designed for two free swinging internally illuminated street signs, per pole, which are acceptable by Contractor Certification provided they meet the applicable requirements of Specification Section 699, weigh no more than 75 lbs. (each) and are no more than 12 sq. ft in area (each).



CAMBER DETAILS

Note: Fabricate with rolling camber up.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ELEVATION, NOTES AND CAMBER DETAILS

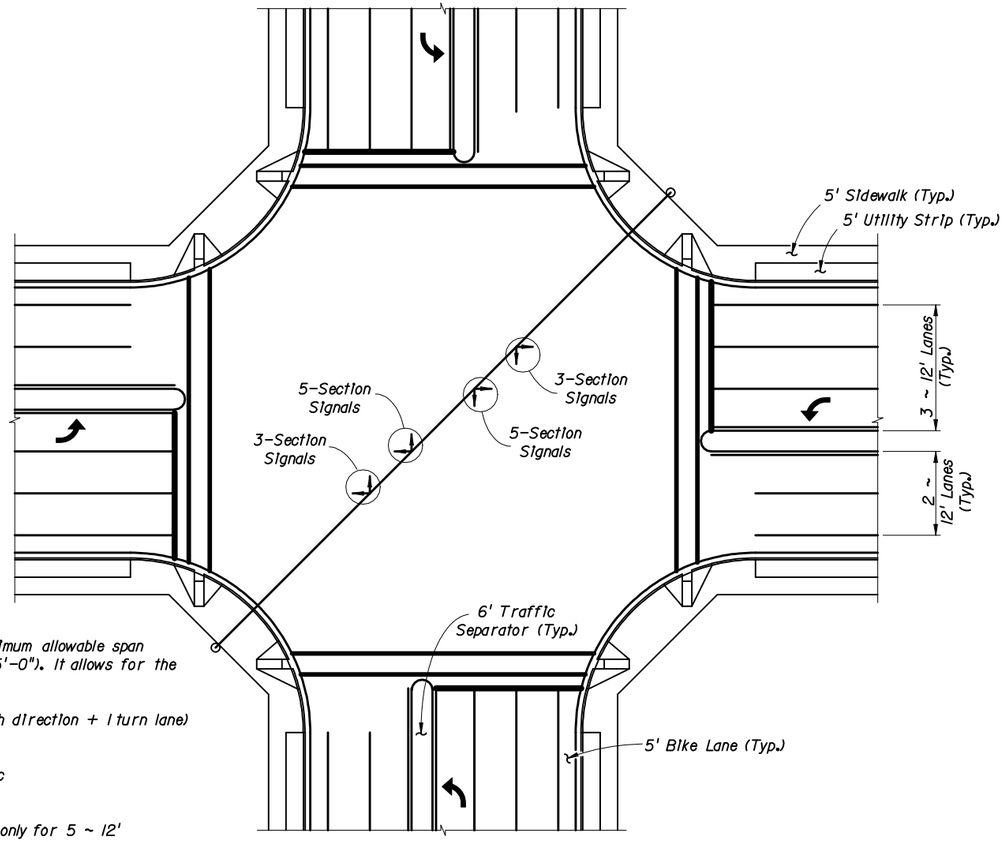
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY W. N. [signature]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 4	017746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW - MONOTUBE DESIGN INTERSECTION

Note:

The signal configuration shown represents the maximum allowable span for which this monotube standard is applicable (185'-0"). It allows for the following components:

a. 5 ~ 12' traffic lanes (2 thru lanes in each direction + 1 turn lane)
b. 1 ~ 6' traffic separator
c. 1 ~ 5' bike lane per direction of traffic
d. 1 ~ 5' utility strip per direction of traffic
e. 1 ~ 5' sidewalk per direction of traffic

The minimum monotube design span (110'-0") allows only for 5 ~ 12' traffic lanes (item "a" above). It is assumed that for this case there are no traffic separators,bike lanes, utility strips or sidewalks.

INSTRUCTIONAL NOTES:

1. This Index, 17746, is for use in preparing signalization plans when monotube assemblies are required. This standard establishes the requirements of monotube components listed on on the Qualified Products List (QPL). When using components on the QPL, the span length and heights of each pole will be the only information required in the Contract Plans, and Shop Drawings are not required.

2. If a monotube configuration does not meet the requirements stated below, a special design and shop drawing submittal is required.

3. Four standard monotube configurations are provided. The standard arm length and the signal locations used for design of the arm are shown on the monotube design loading tree on this sheet. If the same arrangement of signals is used with one or more signals closer to the nearest pole, the standard monotube may be used. If the same arrangement is used but one or more signals are further from the nearest pole, or if a different configuration of signals is used, a special design is required. If any signs are to be attached to the monotube arm, a special design is required.

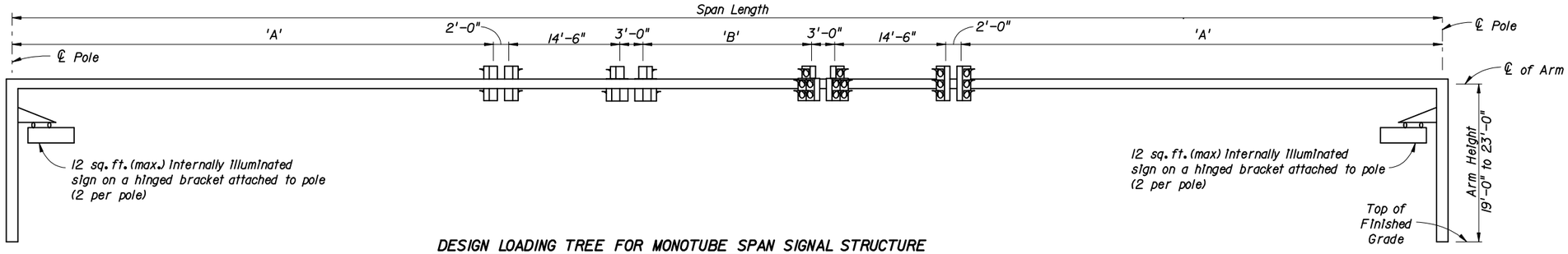
4. Standard monotube span lengths of 110'-0", 135'-0", 160'-0" and 185'-0" are shown. For other required span lengths with the same configuration of signals in the same loations or closer to the poles, the standard monotube design with the next largest standard span length may be used. The difference in length shall be removed from the center horizontal segment(s) of the span. If a span longer than 185'-0" is to be used, a special design is required.

5. The standard monotube is valid for an arm heights between 19' and 23', inclusive. A special design is required for all heights greater than 23'. If an arm height of less than 19' is to be utilized with the same configuration of signals in the same locations or closer to the poles, the standard monotube may be used, provided that minimum required clearances to the roadway are maintained.

6. The foundations for the standard monotube are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Only in cases where the Designer considers the soil types of the specific site location to be of lesser strength properties should an analysis be required. Auger borings, SPT borings or CPT soundings may be utilitzed as needed to verify the assumed soil properties, and at relatively uniform sites, a single boring or sounding may cover several founations. Furthermore, borings in the area that were performed for other purposes may be used to confirm the assumed soil properties.



DESIGN LOADING TREE FOR MONOTUBE SPAN SIGNAL STRUCTURE

Note: Signal Backplates on 4 of the 8 signals are included in the design of Standard Arms.

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE DESIGN INTERSECTION AND DESIGN LOAD TREE

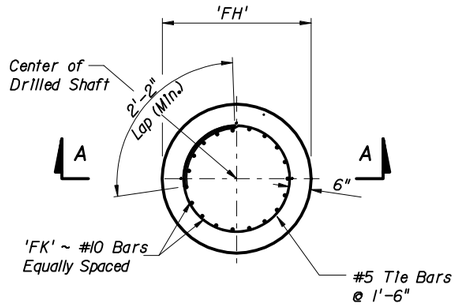
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
State Structures Design Engineer

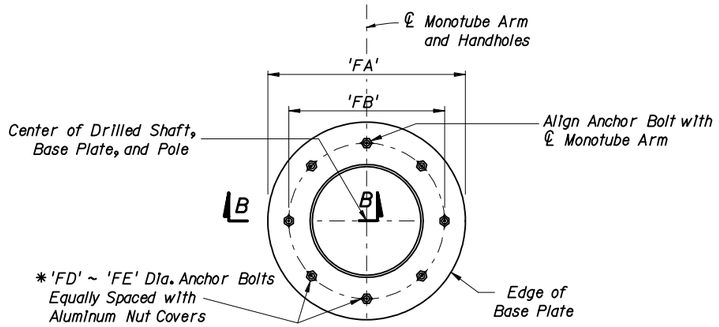
REVISION NO.	SHEET NO.	INDEX NO.
	2 of 4	017746

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



FOUNDATION PLAN

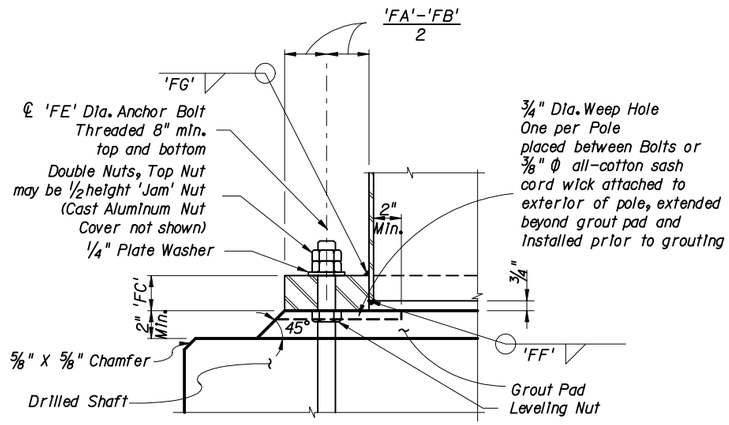
Note: 6" min. cover on Shaft Reinforcement



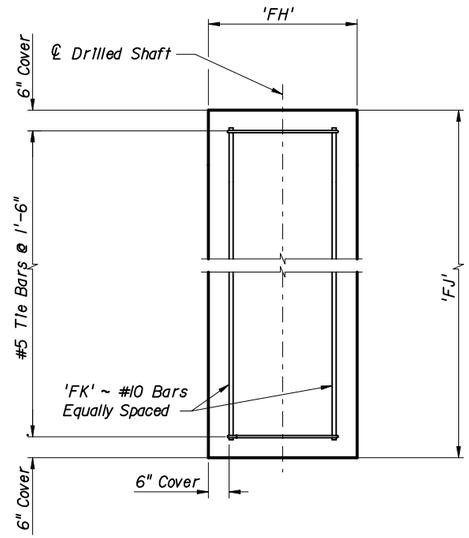
SECTION C-C

Note: Concrete and Reinforcement not shown.

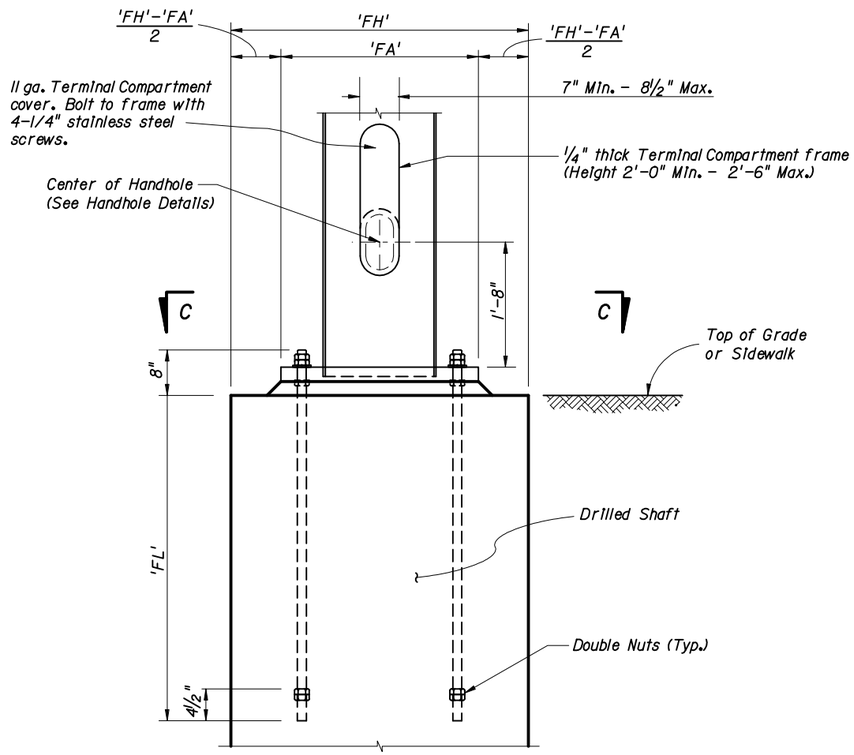
* Anchor Bolt Group locations may be ± ½" in the direction of the span



SECTION B-B



SECTION A-A



BASE PLATE AND ANCHORAGE ELEVATION

Note: For referenced dimensions see Index 17746 Sheet 4 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE FOUNDATION AND BASE PLATE DETAILS

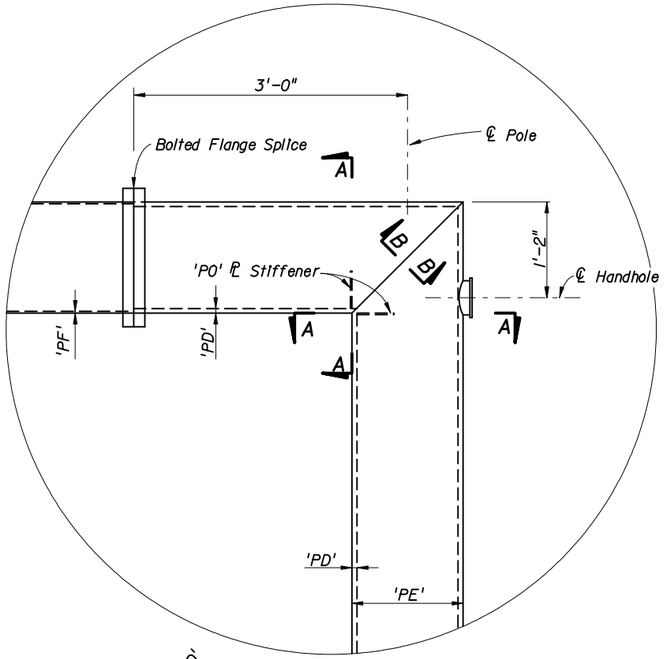
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

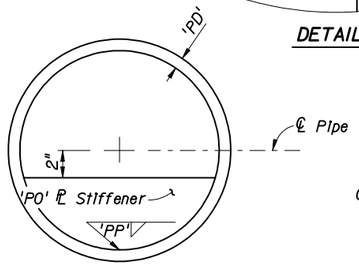
APPROVED BY W. W. Hall
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 4	017746

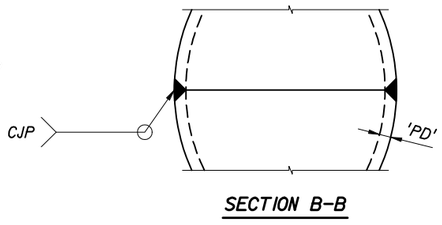
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



DETAIL 'A'

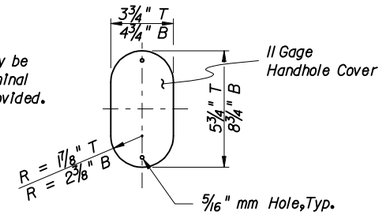


SECTION A-A

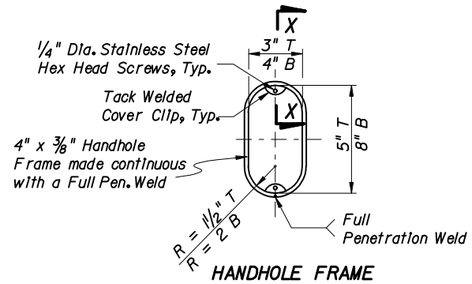


SECTION B-B

Note:
Handhole Cover may be omitted when Terminal Compartment is provided.

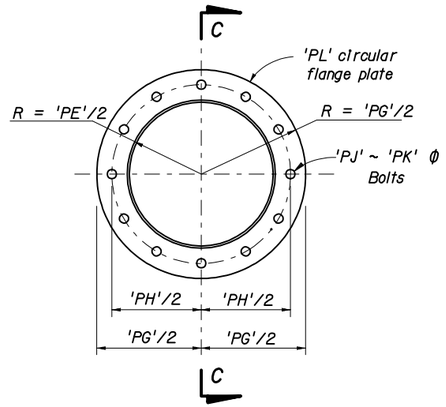


HANDHOLE COVER

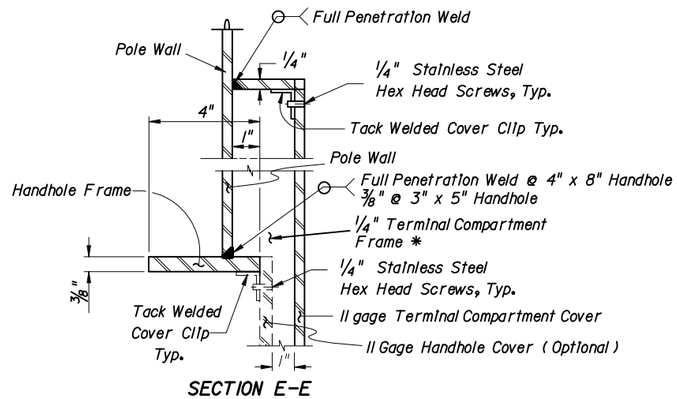


HANDHOLE FRAME
(w/Terminal Compartment omitted)

T - denotes top 3" x 5" handhole
B - denotes bottom 4" x 8" handhole

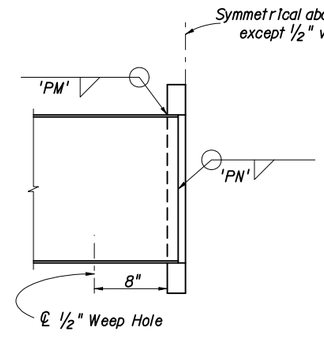


FLANGE SPLICE DETAILS



SECTION E-E
(thru Handhole & Terminal Compartment)

*Terminal Compartment is optional. See Monotube Tabulation for locations.



SECTION C-C

TABLE OF MONOTUBE VARIABLES

MONOTUBE ARM & POLES															FOUNDATION & BASE PLATE											SIGNAL LAYOUT	
'PA' (ft)	'PB'	'PC' (deg)	'PD' (In)	'PE' (In)	'PF' (In)	'PG' (In)	'PH' (In)	'PJ'	'PK' (In)	'PL' (In)	'PM' (In)	'PN' (In)	'PO' (In)	'PP' (In)	'FA' (In)	'FB' (In)	'FC' (In)	'FD'	'FE' (In)	'FF' (In)	'FG' (In)	'FH' (ft)	'FJ' (ft)	'FK'	'FL' (In)	Dim. 'A' (ft)	Dim. 'B' (ft)
110	4	1.5	1.093	14	⅜	21 ½	17¾	8	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	21 ½	17¾	1 7/8	8	1 ½"	5/16"	5/16"	3	12	10	45	29	13
135	4	1.5	1.031	16	⅜	23 ½	19¾	10	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	23 ½	19¾	2	8	1 ½"	5/16"	5/16"	3.5	13	12	45	40	16
160	5	1.25	1.156	18	⅜	25 ½	21¾	12	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	25 ½	21¾	2⅛	8	1 ½"	5/16"	5/16"	3.5	14	12	45	51	19
185	6	1.75	1.125	22	⅜	29 ½	25¾	14	1 ¼	2¼	5/16"	5/16"	¼"	3/16"	29 ½	25¾	2¼	10	1 ½"	5/16"	5/16"	4	16	16	45	62	22

Note: For additional variable definitions see Sheets 1 and 3 of 4.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 7-10-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

MONOTUBE SIGNAL STRUCTURE ARM CONNECTION DETAILS & TABLE OF VARIABLES

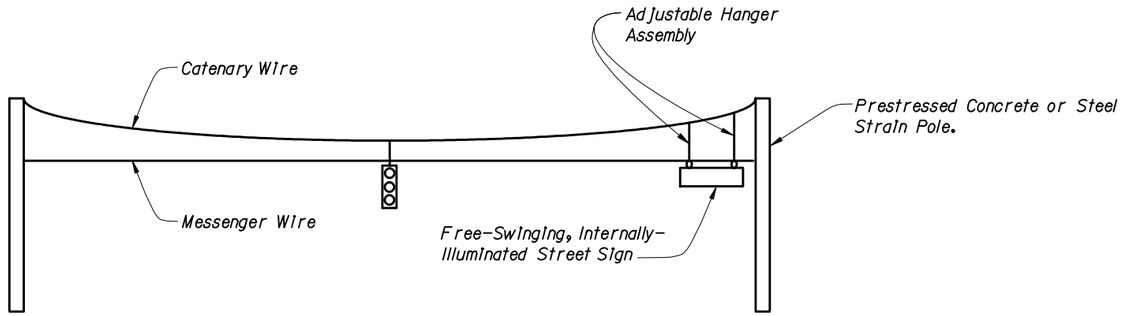
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

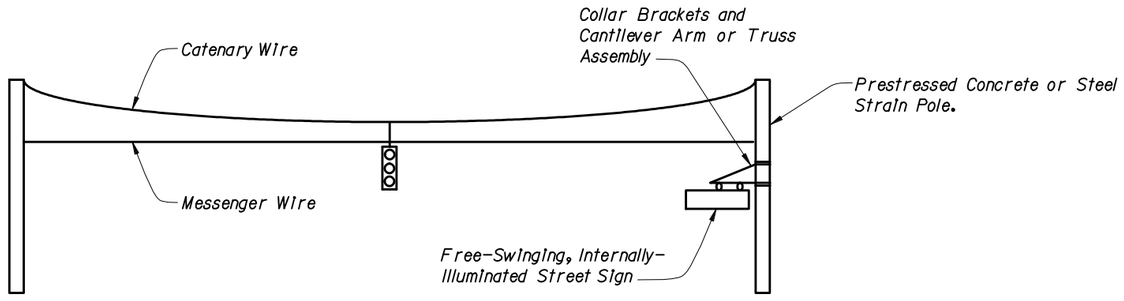
APPROVED BY W. N. Watts
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	4 of 4	017746

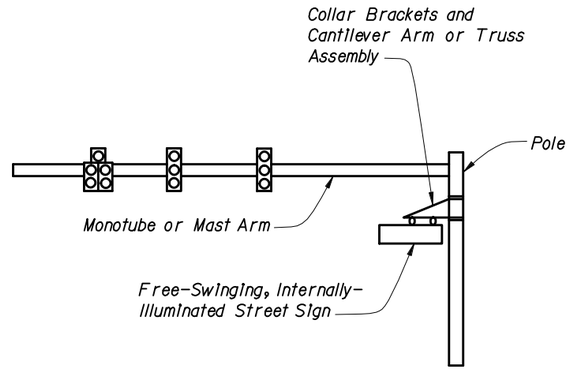
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



OPTION 1
(For Span Wire Assembly)



OPTION 2
(For Span Wire Assembly)



OPTION 3
(For Mast Arm Assembly and Monotube Signal Structure)

NOTES:

1. Free-swinging, internally-illuminated street signs shall be installed on signal structures only at one of the optional locations shown on this drawing, unless a special design is completed for the support structure.
2. Free-swinging, internally-illuminated street signs shall meet the requirements of Section 699 of the Standard Specifications for Road and Bridge Construction.
3. Pole attachments and cantilever arm (or truss) assemblies may be accepted by Contractor certification provided the signs being supported meet the weight and area limitations included in Section 699 for "Acceptance by Certification".
4. Pole attachments and cantilever arm (or truss) assemblies supporting signs not meeting the weight or area limitations included in Section 699 for "Acceptance by Certification" require the submittal of structural calculations and Shop Drawings that have been prepared by and sealed by the Specialty Engineer.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Date: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

FREE-SWINGING, INTERNALLY-ILLUMINATED STREET SIGN ASSEMBLIES

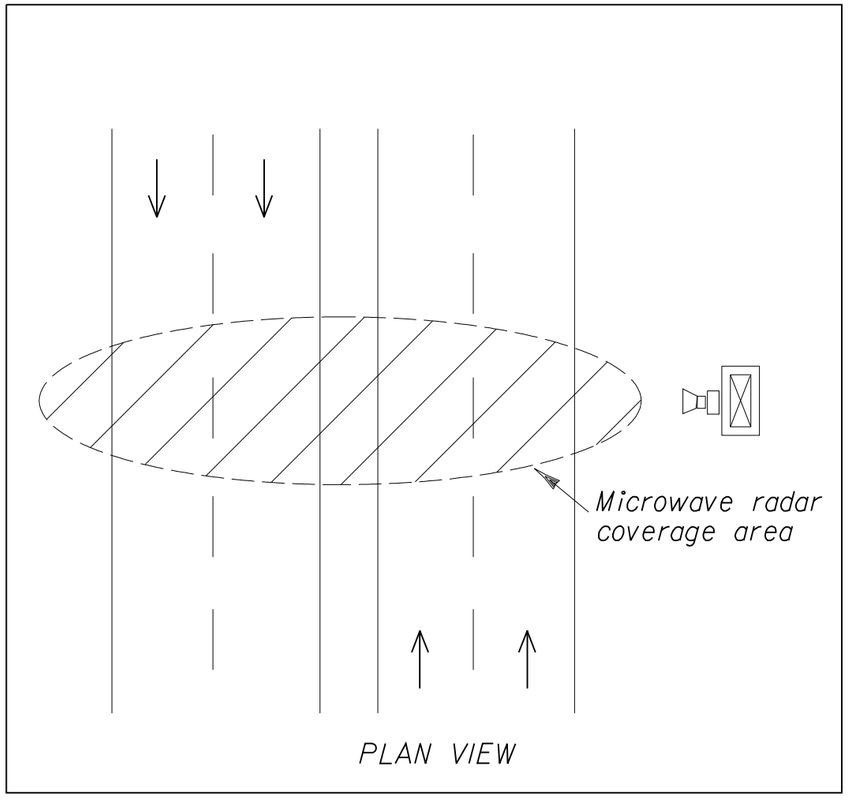
INTERIM STANDARD

THIS INDEX IS A SUPPLEMENT TO THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

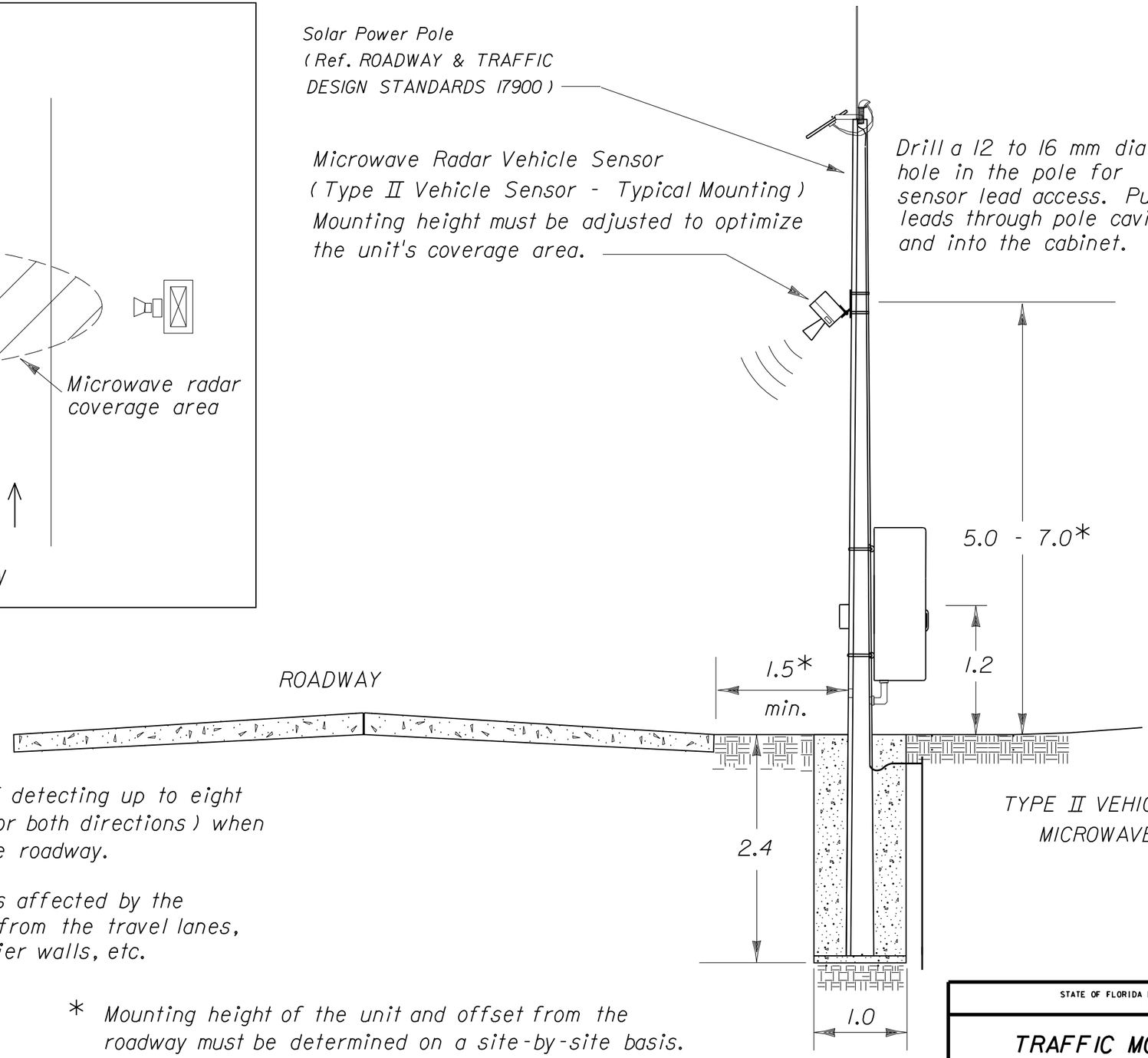
APPROVED BY W. N. [illegible]
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
	1 of 1	17748

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



PLAN VIEW



TYPE II VEHICLE SENSOR
MICROWAVE RADAR

The unit must be capable of detecting up to eight lanes of traffic (in either or both directions) when mounted perpindicular to the roadway.

Coverage area of the unit is affected by the roadway geometry: distance from the travel lanes, median type and width, barrier walls, etc.

* Mounting height of the unit and offset from the roadway must be determined on a site-by-site basis. 1.5 m is the minimum operable offset and not a standard.

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
ROAD DESIGN

TRAFFIC MONITORING SITE

INTERIM STANDARD

WHEN INCLUDED IN THE PLANS THIS SHEET IS A SUPPLEMENT TO INDEX NO. 17900 OF THE METRIC ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
MGR OF TRANSPORTATION STATISTICS

REVISION NO.	SHEET NO.	INDEX NO.
00	1 of 1	017900

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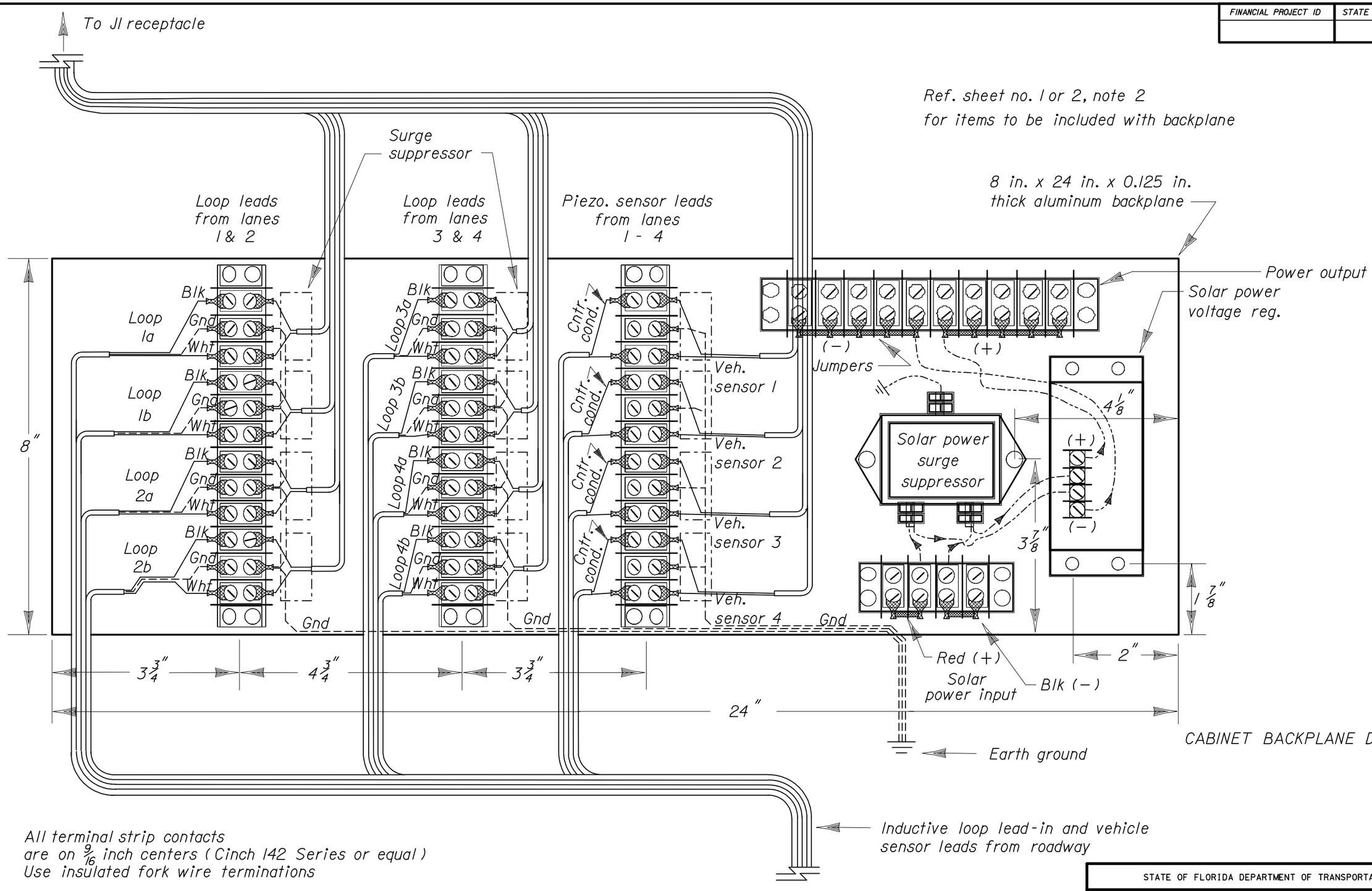
FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.



All terminal strip contacts
are on 9/16 inch centers (Cinch 142 Series or equal)
Use insulated fork wire terminations

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC MONITORING SITE

INTERIM STANDARD

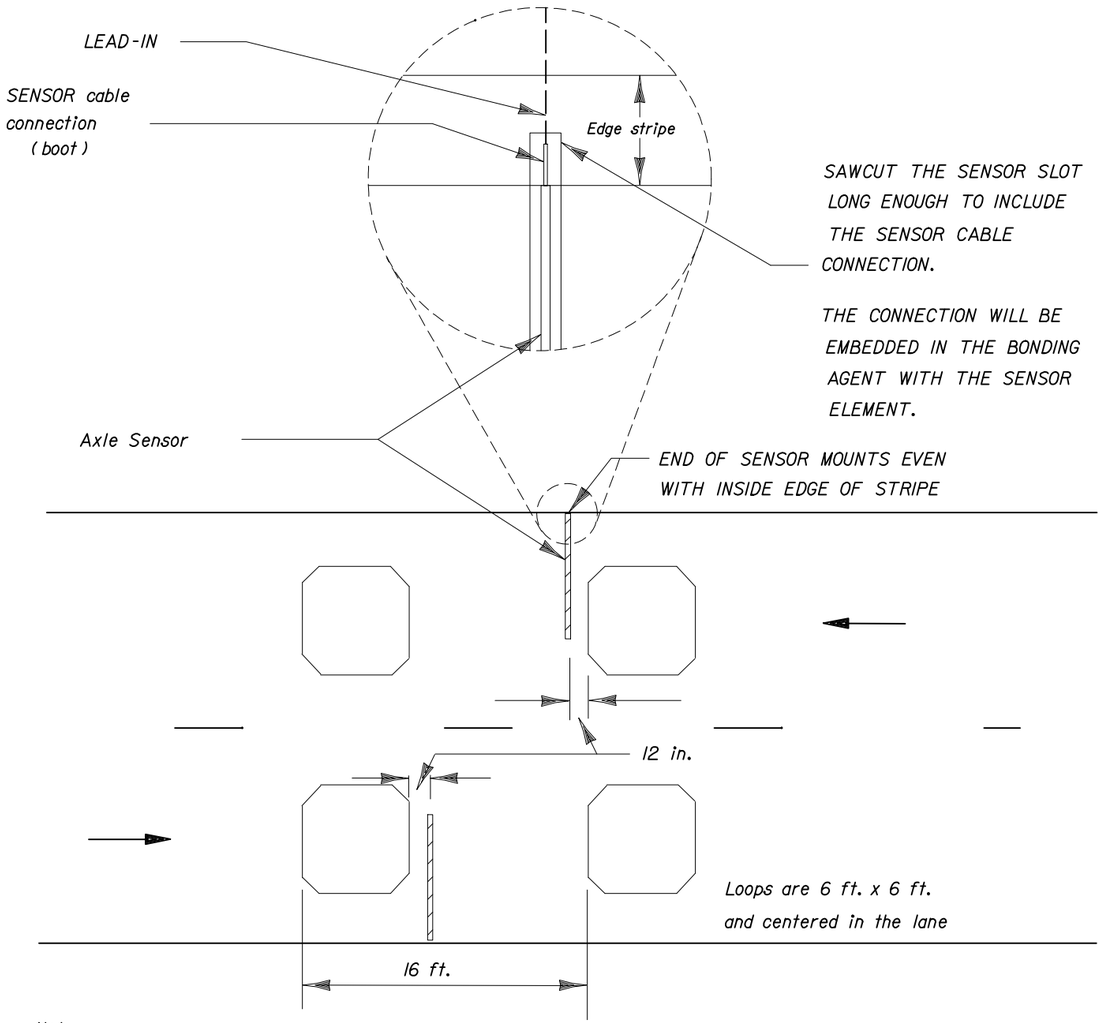
THIS SHEET IS A REPLACEMENT FOR INDEX NO. 17900 (SHEET 3 OF 9) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

APPROVED BY
Manager Of Transportation Statistics

REVISION NO.	SHEET NO.	INDEX NO.
	3 of 9	017900

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

SPEED/CLASSIFICATION LOOP ASSEMBLY WITH AXLE SENSORS PLACEMENT DETAIL



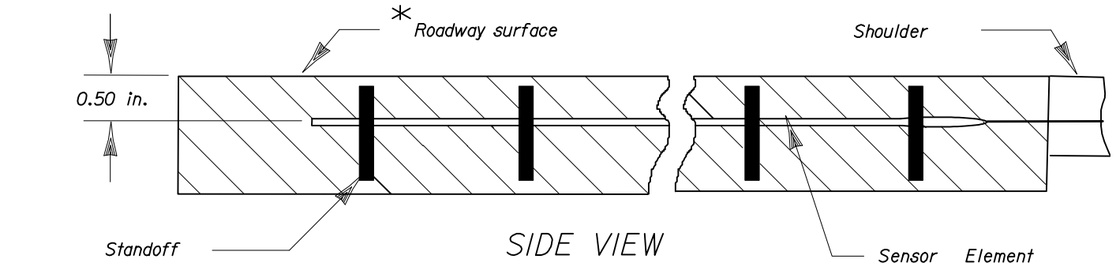
Note:

Loop slots shall be 0.25 inches wide (max.) by 1.5 inches to 2 inches deep. Four turns of #12 AWG, type XHHW stranded copper wire shall be placed in the slot. Backer rod shall be used to hold the loop wire in the bottom of the slot.

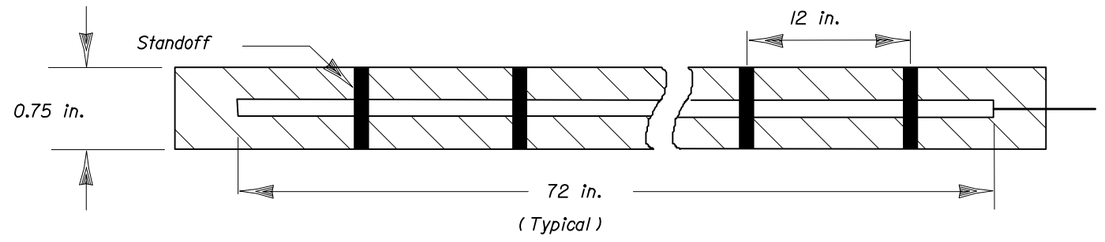
Loop leads shall be twisted at the rate of 10 to 12 twists per foot. The twisted pair shall extend to the pull box with three feet of spare length coiled in the pull box.

All leads (inductive loop & vehicle sensor) shall be identified according to the lane numbering convention shown on sheet 8 and 9.

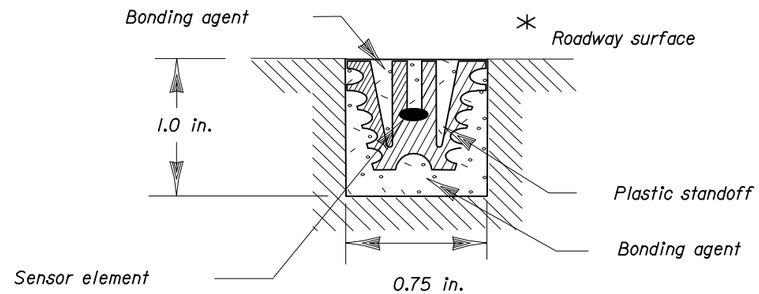
TYPICAL UNENCAPSULATED CLASS II VEHICLE SENSOR



SIDE VIEW



TOP VIEW



END VIEW

* Some installations may require axle sensors to be placed in the structural course, prior to placement of the friction course.

Note:

These are typical dimensions. actual dimensions, element cross-sections and standoffs may vary depending on manufacturer and model.

LOOP AND PIEZOELECTRIC VEHICLE SENSOR DETAIL

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO ROADWAY AND TRAFFIC DESIGN STANDARD BOOKLETS PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 12-27-01

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC MONITORING SITE

INTERIM STANDARD

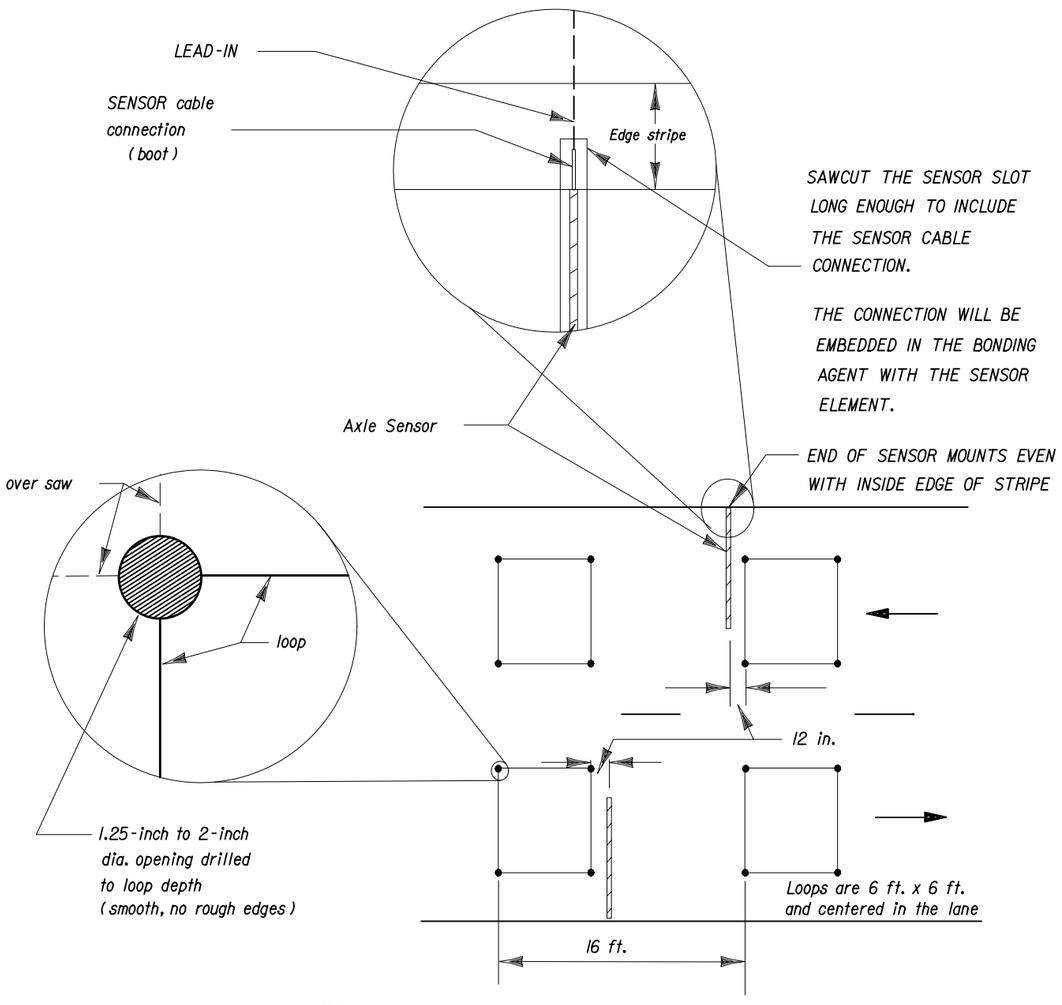
APPROVED BY
Manager Of Transportation Statistics

THIS SHEET IS A REPLACEMENT FOR INDEX NO. 17900 (SHEET 5 OF 9) OF THE ROADWAY AND TRAFFIC DESIGN STANDARDS, BOOKLETS DATED JANUARY 2000.

REVISION NO.	SHEET NO.	INDEX NO.
	5 of 9	017900

FINANCIAL PROJECT ID	STATE PROJ. NO.	SHEET NO.

SPEED/CLASSIFICATION LOOP ASSEMBLY WITH AXLE SENSORS PLACEMENT DETAIL



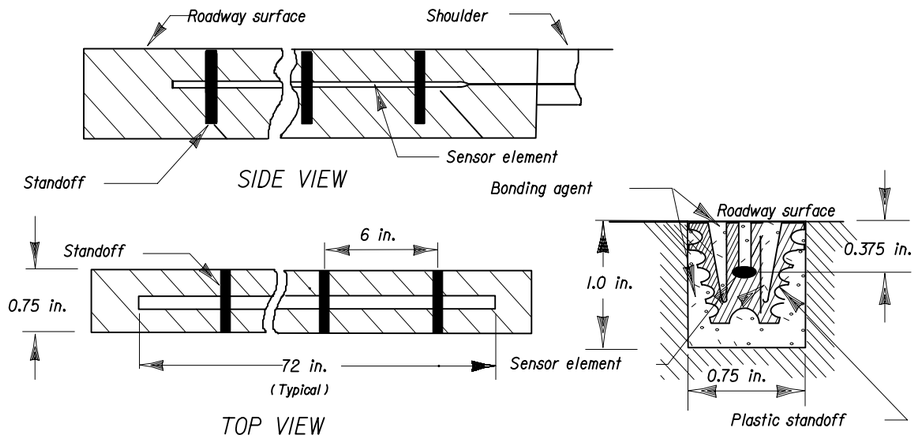
Note:

Loop slots shall be 0.25 inches wide (max.) by 1.5 inches to 2 inches deep. Four turns of #12 AWG, type XHHW stranded copper wire shall be placed in the slot. Backer rod shall be used to hold the loop wire in the bottom of the slot.

Loop leads shall be twisted at the rate of 10 to 12 twists per foot. The twisted pair shall extend to the pull box with three feet of spare length coiled in the pull box.

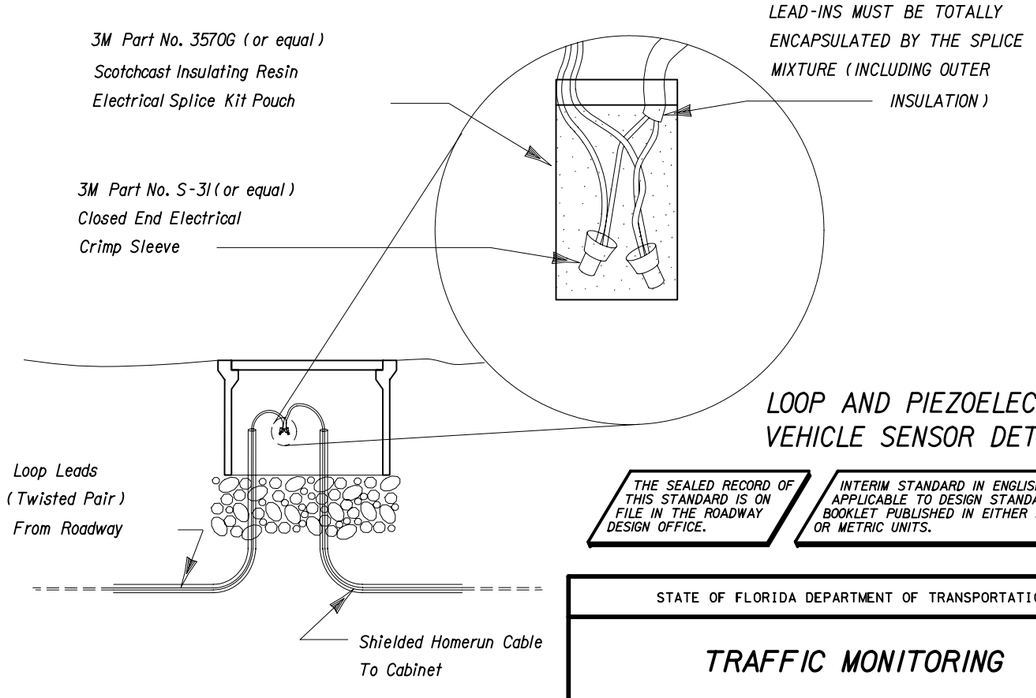
All leads (inductive loop & vehicle sensor) shall be identified according to the lane numbering convention shown on sheet 8 and 9.

TYPICAL UNENCAPSULATED CLASS II VEHICLE SENSOR



Note:
These are typical dimensions. actual dimensions, element cross-sections and standoffs may vary depending on manufacturer and model.

LOOP WIRE / HOMERUN CABLE SPLICES



LOOP AND PIEZOELECTRIC VEHICLE SENSOR DETAIL

THE SEALED RECORD OF THIS STANDARD IS ON FILE IN THE ROADWAY DESIGN OFFICE.

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN EITHER ENGLISH OR METRIC UNITS.

Revised: 01-01-05

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TRAFFIC MONITORING

INTERIM STANDARD

THIS SHEET REPLACES EXISTING SHEET 5 OF 9 TO THE DESIGN STANDARDS, BOOKLET DATED JANUARY 2000.

APPROVED BY
Manager Traffic Data Section

REVISION NO.	SHEET NO.	INDEX NO.
04	5 of 9	017900

DESIGN STANDARDS MODIFICATIONS

(2000 Booklet)
(Metric Units)

Effective Date: July 1, 2005

NOTE: Interim Indexes listed in these Modifications may be viewed by going to www.dot.state.fl.us/rddesign and clicking on "Design Standards".

(NOTE: A typographical error was corrected 4/29/05. See Interim Index No. 5110.)

Index No. 001 (Sheets 1 and 2 of 2) – Abbreviation listing expanded to include the following: FRP Fiber Reinforced Pipe; HAR Highway Advisory Radio; LEO Law Enforcement With Flashing Light and Radar; PRS Portable Regulatory Sign; RSDU Radar Speed Display Unit.

Index No. 102 (Sheet 3 of 3), "TYPE IV SILT FENCE", "ELEVATION", notation tagged to fence; "Line 3", text "Sec. 966" – Text "Sec. 966" deleted and text "Sec. 550" substituted.

Index No.104 (Sheets 1-2 of 2) "PERMANENT EROSION CONTROL", is deleted and Interim Index No. 0104, Dated 12-14-01, is substituted.

Index No. 105 (Sheet 1 of 1), "SEEDING RATES (kg/ha)" table, footnotes, "Note:" – Second sentence added that states 'Wildflowers destroyed by shoulder reworking are to be re-established under the seeding rates prescribed for permanent wildflower #2 Group shown by table on Index No. 104."

Index No. 199 (Sheet 1 of 1) "GEOTEXTILE CRITERIA", is deleted and Interim Index No. 0199, Dated 8-24-00, is substituted.

Index No. 201 (Sheet 2 of 6), "TEMPORARY DRAINS FOR SUBGRADE AND BASE", "Note:", Second sentence –Second sentence deleted and sentence "See Index No. 102 for sediment control at inlet." substituted.

Index No. 205 (Sheet 2 of 5) "COVER HEIGHT", is deleted and Interim Index No. 0205 Dated 12-05-00, is substituted.

Interim Index No. 216 (Sheets 1-3 of 3) "CLOSED FLUME INLET", Dated 12-04-00, is added.

Index No. 219 (Sheet 1 of 2), “GENERAL NOTES”, Note 5 – Text “209” deleted.

Index No. 220 (Sheet 1 of 1) – Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” – Size “900” deleted and size “750” substituted. “GENERAL NOTES” – Note 6 added as follows: “Inlets to be paid for under the contract unit price for Inlets (Gutter Type S), EA.”

Index No. 221 (Sheet 1 of 1), “RECOMMENDED MAXIMUM PIPE SIZE” – Size “940” deleted and size “750” substituted. “GENERAL NOTES” – Note 7 added as follows: “7. Inlet to be paid for under the contract unit price for Inlets (Gutter Type V), EA.”

Index No. 230 (Sheet 1 of 1), Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” – Size “600” deleted and size “450” substituted. “GENERAL NOTES” – Note 7 added as follows: “7. Inlets to be paid for under the contract unit price for Inlets (Dt Bot Type A), EA.”

Index No. 231 (Sheet 2 of 2), “GENERAL NOTES”, note 7-Note deleted.

Index No. 232 (Sheet 1 of 5), “INLETS”, “TYPE C”, “940 Wall – 600 Pipe” footnote – Added text as follows: “(450 where an 450 pipe enters a 600 wall)”; also, “TYPE E’, “1370 Wall – 1050 Pipe” footnote – “1050 Pipe” deleted and “900 Pipe” substituted.

Index No. 232 (Sheet 4 of 5), “METHOD OF PAYMENT FOR TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS”, Note 3 – Note 3 deleted and the following substituted: “3. Concrete inlet pavement and sodding shall be in accordance with the sections on this detail and with the plan on Sheet 2 and Sections AA, BB and CC (as Case 1) and tabular quantities on Sheet 3.”

Index No. 234 (Sheet 1 of 1), Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” - Size “900” deleted and size “750” substituted.

Index No. 251 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” - Quantities “495” deleted and “315” substituted.

Index No. 251 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “587” deleted and “374” substituted.

Index No. 252 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “660” deleted and “531” substituted.

Index No. 252 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “797” deleted and “638” substituted.

Index No. 253 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “704” deleted and “567” substituted.

Index No. 253 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “864” deleted and “689” substituted.

Index No 260 (Sheet 1 of 1), “GENERAL NOTES’, Note 4 - Text “With Grate” deleted from the first sentence.

Index No. 261 (Sheet 1 of 3), “GENERAL NOTES”, Note 9 deleted and the following note substituted:”9. Endwall to be paid for under the contract unit price for U-Endwall, Each. Payment shall include cost of concrete, reinforcing steel, and when called for in the plans, steel grating and accessories. Quantities shown are for estimating purposes only.”

Index No. 280 (Sheet 2 of 4) “GUARD AT PIPE ENDS”, “Note” text “for Endwall Grate, LB” deleted and “Reinforcing Steel (Miscellaneous)” substituted. “CONCRETE GUTTER AND DRAINS AT RETAINING WALLS”-“Note:” deleted and the following note substituted: “PVC pipe, Schedule 40, to be paid for under the contract unit price for Polyvinyl Chloride Pipe Culvert (100mm) M1.”

Index No. 282 (Sheet 1 of 1), Handrail notations referring to ‘Index No. 520’ – ‘Index No. 520’ text deleted and text “See Plans For Handrail Requirements” substituted.

Index No. 286 (Sheet 1 of 2), “DESIGN NOTES”, “Note 6”-text deleted and the following note substituted:

“The designer should detail in the plans, the location of: (a) Type V underdrain, (b) non-standard locations of Type I, II, and III underdrain, (c) underdrain inspection boxes, (d) cleanouts for Type V underdrain, and (e) underdrain outlet pipes.”

“Note 7” – text deleted and the following text substituted:

“The designer should specify the flow line elevations at the beginning, bends, junctions, and ends of underdrain pipes and outlet pipes.”

“Note 8” added “The designer should evaluate whether an external filter fabric envelope is required around underdrain Types I and III. When required, fabric shall be specified in the plans.”

“GENERAL NOTES”, “Note 10” text deleted and the following text substituted:

“10. Pay Item shall be based on the size of the smooth interior products. The contract unit price for Underdrain, M1, shall include the cost of pipe, fittings, aggregate, sock, filter fabric, underdrain cleanouts, and concrete aprons.

The contract unit price for Underdrain Outlet Pipe, M1, shall be full compensation for trench excavation, pipe and fittings, concrete aprons, hardware cloth for concrete aprons, stubbing into drainage structures, backfill in place, and disposal of excess materials. The contract unit price for Underdrain Inspection Box, EA. shall be for the number completed and accepted.”

Index No. 287 (Sheet 2 and 3 of 3) - All surfaces tagged ‘Type S’ and references to ‘Type S’ are deleted and Type SP substituted.

"NOTES FOR DRAINCRETE PAVEMENT SUBDRAINAGE", Note 1 – Text "Alteration #1" deleted. "FOR REHABILITATION:", Note 1, paragraph 3 – text "Concrete apron shall be paid for under the contract unit price for Class I Concrete (Miscellaneous), M3 " deleted and paragraph 6 - Text "Tack coat shall be paid for under the contact unit price for Bit Mat'l (Tack Coat), GA." deleted.

Index No. 290 (Sheet 1 of 5), 'TABLE OF MINIMUM BAR SPLICE LENGTHS' – All tabulated values deleted and the following tabular values substituted:

Bar Size	Splice	Bar Size	Splice
#13	690	#25	1.700
#16	850	#29	1.920
#19	1.020	#32	2.160
#22	1.500	#36	2.400

Index No. 301 (Sheet 1 of 1) "TURN LANES", is deleted and Interim Index No. 0301, Dated 12-06-02, is substituted.

Index No. 302 (Sheet 1 of 1), "TYPE IV CONCRETE TRAFFIC SEPARATOR", "OPTION II", and "TYPE I CONCRETE TRAFFIC SEPARATOR", "OPTION II", Notations "No Extra Payment For Pavement" – Notations deleted and the following notations substituted: "Cost Of The Flexible Pavement Under The Option II Separator Included In The Cost Of The Separator."

Index No. 304 (Sheets 1 thru 5 of 5), "PUBLIC SIDEWALK CURB RAMPS" is deleted and Interim Index No. 0304 (Sheets 1 thru 6 of 6) Dated 01-01-05 is substituted.

Index No.305 (Sheet 5 of 5), joints labeled "Expansion Joint" – "Expansion Joint" deleted and label "Contraction Joint (Typ)" substituted.

Index No. 310 (Sheets 1-2 of 2), "CONCRETE SIDEWALK" is deleted and Interim Index No. 0310, Dated 07-24-02 is substituted.

Interim Index No. 0310 (Sheet 1 of 2) Revised 7-24-02, "SECTION AA" Sidewalk surface cross slope "0.02" deleted and "0.02 Max" substituted.
"SECTION BB" Sidewalk surface cross slope "0.02" deleted and "0.02 Max" substituted.

Interim Index No. 0310 (Sheet 2 of 2) Revised 7-24-02, "SECTION CC" Sidewalk surface cross slope "0.02" deleted and "0.02 Max" substituted.

Interim Index No. 0400 "GUARDRAIL" with the following Index Dates is added (see Interim listing on webpage for details.) 12-18-01, 12-28-01, 05-05-00, 01-30-02, and 03-26-01.

Index No.400 (Sheet 1 of 31), “GENERAL NOTES”, Note 6, add the following text: “Guardrail end anchorage assemblies shall be of the type called for in the plans. If the plans call for end anchorage assembly “flared” and does not identify the specific system(s) to be used, the contractor has the option to construct any FDOT approved flared assembly provided in this Index or identified on the Qualified Products List (QPL), subject to the conditions identified in the approved Index drawings, or QPL drawings if applicable.

If the plans call for end anchorage assembly “parallel” and does not identify the specific system(s) to be used, the contractor has the option to construct any FDOT approved parallel assembly provided in this Index or identified on the QPL, subject to the conditions identified in the approved Index drawings, or QPL drawings if applicable.

If the plans call for a specific end anchorage assembly, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. Approved substitutions will not be eligible for VECP consideration.

Proprietary end anchorage systems must be identified on the QPL. Manufacturers seeking approval of proprietary end anchorage systems for inclusion on the QPL must submit application along with design documentation showing the end anchorage system is crash tested to NCHRP Report 350 Test Level 3 criteria, is accepted by FHWA for use as a guardrail end anchorage system, and is compatible with FDOT guardrail systems. System approvals will be contingent on FDOT’s evaluation of crash test performance results for consistency with FDOT guardrail application and use. If approved, installation drawings signed and sealed by a professional engineer licensed in the State of Florida will be required.”

Note 8 – Word “curved” in second line deleted and word “curbed” substituted.

Note 20 added as follows:
“20. On roadways designated for reverse laning, all downstream ends of guardrail that are not shielded or that are not designed as approach end terminals shall be marked with post-mounted Type 3 Object Markers. Trailing bridge ends and trailing shoulder concrete barrier wall ends shall be marked with Type 3 Object Markers except where there is trailing end guardrail. Object markers to be installed facing reverse laning traffic.”

Index No. 400 (Sheet 4 of 31), “GUARDRAIL APPLICATION FOR ROADSIDE HAZARD”, “Notes For Details B & C:”, text “When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage.” - Text deleted.

Index No. 400 (Sheet 5 of 31), “GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING FULL LENGTH OF APPROACH SLAB”, “Notes for Details O & P:”, text “When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage.”- Text deleted.

Index No. 400 (Sheet 6 of 31), “GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH”, “Notes for Details H&I:” and “GUARDRAIL APPLICATIONS FOR BRIDGES WITH LESS THAN FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH”, “Notes for Details S&T:”, text “When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage.”- Text deleted.

Index No. 400 (Sheet 16 of 31), “PERMISSIBLE POST AND OFFSET BLOCK COMBINATION”, table -all references to “554” for length of steel modified offset block – “554” deleted and “432” substituted. Text "M14x17.2" deleted and "M14x18" substituted.
Table footnotes – “Notes”– Note 4 added, stating: “Recycled plastic offset blocks included on the Qualified Products List that have width dimensions ≥4” ≤6” and which have molded protrusions from the back along each side to prevent rotation can be used with standard steel guardrail posts.”
“SPECIAL SAFETY PIPE RAIL’ – Subtitle deleted and subtitle ‘PEDESTRIAN SAFETY TREATMENT” substituted. “STEEL MODIFIED THRIE-BEAM OFFSET BLOCK”, height dimension “554” – “554” deleted and “432” substituted; all hole sizes and locations remain the same and the v-notch size, shape and position remain the same but in location relative to the bottom of the 432mm block.

Index No. 400 (Sheet 18 of 31), “M16 OVAL SHOULDER BUTTON HEAD BOLT” table, footnotes – Inserted between the upper and lower footnotes is a footnote stating “For applications where special bolts having lengths greater than 640 mm are required, the Contractor may use a M16 Ø threaded rod (field cut to length). A hex nut and beam washer shall be used at the guardrail face with no more than 19 of the threaded rod projecting beyond the top of the nut. The projecting thread on both ends shall be distorted to forbid removal of the nuts, and both ends of the threaded rod metalized with organic zinc-rich coating.”
Note above table title is deleted.
“HEX BOLTS AND NUTS” bracketed text – The text is deleted and the following text substituted: “HS Hex bolts for THRIE – BEAM TERMINAL CONNECTORS shall conform to the requirements of ASTM A449 (Type 1) with heavy hex nuts and washers. All other hex bolts shall conform to the requirements of ASTM A563. Bolts, nuts and washers shall be hot dip galvanized. Heavy hex nut may be used in lieu of hex nuts and hex nuts used for jam nuts.”

Index No. 400 (Sheet 19 of 31), “THRIE-BEAM TERMINAL CONNECTOR” – The six (6) interior 24 by 45 mm slots rotated to match the orientation of the six (6) end slots.

Index No. 400 (Sheet 20 of 32), “GUARDRAIL POSTS”, “SPECIAL STEEL GUARDRAIL POSTS”, “FOR MOUNTING GUARDRAIL ON EXISTING APPROACH SLABS AND BRIDGE SIDEWALKS”, “TOP VIEW” – Additional 24 Ø holes to be located

front, back and each side of the base plate at mid points between existing corner holes, to accommodate anchor bolt placement where corner anchor bolt edge clearance can not be achieved; one front hole anchor bolt required with any combination of three other anchor bolts (total 4 bolts required); refer to Structures Index series 770 and 780 for guidelines to post location and anchor bolt orientation.
"FOR CONSTRUCTION OF GUARDRAIL WHERE CULVERT, PIER FOOTING OR OTHER STRUCTURE PRECLUDES NORMAL POST INSTALLATION", "SIDE VIEW", "22 mm Ø" dimension – "22 mm Ø" deleted and "19 mm Ø" substituted.

Index No. 400 (Sheet 24 of 31), 'CONTROLLED RELEASE RETURN NOTES', note 1, last line-Insert SKT.

Index No. 400 (Sheet 25 of 31), "ET 2000 NOTES" - Note 6 deleted and the following text substituted:
"Post Options:
(a) Posts at location Nos 1, 2, 3 and 4 are timber breakaway posts with steel foundation tubes. The breakaway posts at location Nos. 5, 6, 7 and 8 may be constructed as shown in Section CC or may utilize timber breakaway posts with steel foundation tubes as shown in Section BB.
(b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by one 3" x 3" x 1/4" steel angle on the back side between Post No. 1 and No. 2." Post No 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification of HBA Post Type J2."

Index No. 400 (Sheet 28 of 31), "LET NOTES" - Note 6 deleted and the following text substituted:
"Post Options:
(a) Posts at location Nos 1, and 2 are timber breakaway posts with special length steel foundations tubes without soil plates. Posts at locations Nos. 3, 4, 5, 6 and 7 are CRT timber posts.
(b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by one 3" x 3" x 1/4" steel angle on the back side between Post No. 1 and No. 2." Post No 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification of HBA Post Type J2."

Index No. 400 (Sheet 29 of 31), "END ANCHORAGE ASSEMBLY TYPE SKT-350", "ELEVATION" view and footnote "Do Not Attach Rail To Block At Post Locations 3, 5 and 7, and, Rail To Post At Post No. 1. " – Post bolts required and to be indicated at Posts Nos. 3, 5 and 7; the text in the footnote to be deleted and text "Do Not Attach Rail To Post At Post No. 1." substituted.

"SECTION BB", "Note: Do not attach rail to block at post locations 3, 5 and 7." – Note deleted.

Index No. 400 (Sheet 31 of 31), "END ANCHORAGE ASSEMBLY TYPE REGENT" is deleted and Interim Index No. 0400, Sheet 1 of 1, dated 08-21-03 is substituted.

Index No. 410 (Sheets 1-22 of 22), – All reinforcing steel with undesignated size shall be #13 bars.

Interim Index No 412 (Sheets 1-5 of 5), "PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY", dated 9-29-03 is added.

Interim Index 412 (Sheet 1 of 5), - Dated 09-29-03 Sheet 1 of 5 "GENERAL NOTES", Note 3, second paragraph, first sentence, text deleted and the following substituted: "Barrier wall units shall conform to Section 521 of the Standard Specifications and produced in Department approved plants with quality control plans for precasting concrete barrier wall."

Interim Index No. 412 (Sheet 1 of 5), Dated 09-29-03, "General Notes", Note 4, The following added as paragraph 2: "Low profile barrier wall units shall be installed so as to be in firm contact with adjoining units. Nuts and tensioning rods shall be installed snug tight".

Interim Index No.412 (Sheet 1 of 5), Dated 09-29-03 Sheet 1 of 5 "GENERAL NOTES", Note 6, the following sentence added: "The cost of the tubular markers and Type 1 object marker shall be included in the cost of the low profile barrier."

Interim Index No. 413 (Sheet 1 of 1) "PROPRIETARY TEMPORARY CONCRETE BARRIER", Dated 07-01-03, is added.

Interim Index No. 413 (Sheet 1 of 1), "GNERAL NOTES", Note 4 added as follows: "4. Barrier wall units shall conform to Section 521 of the Standard Specifications and produced in Department approved plants with quality control plans for precasting concrete barrier wall."

Index No. 415 (Sheet 1-10 of 10), "TEMPORARY CONCRETE BARRIER", is deleted and Interim Index No. 0415, Dated 07-01-03, is substituted.

Interim Index No. 0416 (Sheet 1 of 1), "TEMPORARY WATER FILLED BARRIERS", Dated 03-31-03, is added.

Index No. 416 (Sheet 1 of 5), "GENERAL NOTES", Note 10, lines two and three, text "or Barrier (Temporary) (Optional, LF)". "If the plans specify Barrier (Temporary) (Optional), the Contractor has the option to furnish either concrete or water filled barriers." – text deleted.

"SUPPLEMENTAL GENERAL NOTES FOR THE TRITON BARRIER", Note 7, line two, text "or Barrier (Temporary) (Optional), M1" – text deleted.

Index No. 416 (Sheet 5 of 5), "SUPPLEMENTAL GENERAL NOTES FRO THE GUARDIAN BARRIER", Note 7, line two, text "or Barrier (Temporary) (Optional), M1" – text deleted.

Index No. 417 (Sheet 1 of 1), "NOTES FOR TEMPORARY INERTIAL CRASH CUSHIONS" - Note 1 deleted and the following note substituted:

"1. The crash cushion arrays shown on this Index can be used on the State Highway System only when all of the following conditions are met:

a. Use is limited to shielding temporary concrete barrier wall approach ends.
b. Use only when a temporary gating crash cushion or inertial crash cushion is specifically called for in the plans.
c. Use is limited to installations that will not exceed 30 calendar days in duration, unless otherwise called for in the plans.
When the plans do not specifically call for a temporary gating crash cushion, and/or when the installation will exceed 30 days in duration, a redirective crash cushion system in accordance with Index 415 is required."

Note 5 deleted and the following note substituted:
"5. A yellow post mounted Type 1 Object Marker shall be centered 1.0 m in front of the nose of all crash cushion arrays. Mounting hardware shall be in accordance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the array."
Note 6 deleted and the following note substituted:
"6. Temporary gating crash cushion systems listed on the Department's Qualified Products List (QPL) may be substituted for the crash cushion arrays shown in this Index, provided a configuration using the system for this substitution has been detailed in the approved QPL drawings. Manufacturers seeking approval of temporary gating crash cushions for inclusion on the QPL must submit application along with design documentation showing the crash cushion system is crash tested to NCHRP Report 350 Test Level 3 criteria, is accepted by FHWA and is compatible with FDOT temporary barrier wall systems. System approvals will be contingent on FDOT's evaluation of crash test performance results for consistency with FDOT temporary barrier wall end shielding applications and uses. If approved, installation drawings signed and sealed by a professional engineer licensed in the State of Florida will be required.
"Note 7 added as follows: "7. Temporary crash cushions (gating) are to be paid per array for under the contract unit price for Vehicular Impact Attenuator/Crash Cushion (Gating) (Temporary), LO."

Index No. 435, "QUADGUARD" – Note that details for the QuarGuard HS are posted on the Qualified Products List.

Index No. 435 (Sheet 2 of 6), “QUARDGUARD”, is deleted and Interim Index No. 0435, Dated 7-10-01, is substituted.

Index No. 435 (Sheet 3 of 6), “ASPHALTIC CONCRETE FOUNDATIONS”, “PLAN” – detail deleted.

Index No. 436 (Sheet 1 of 1), “DESIGN AND MAINTENANCE NOTES AND GUIDELINES”, note 5, last line, reference to “general Note 12” – Text “12” deleted and text “13” substituted.

Index No. 440, “TRACC SYSTEMS” – Note that details for the WideTRACC and the TRACC Modular Base are posted on the Qualified Products List.

Index No. 440 (Sheet 1-2 of 2), “TRACC SYSTEMS”, is deleted and Interim Index No. 0440 (Sheet 1-5 of 5), “, Dated 05-04-01, is substituted.

Interim Index No. 0440 (Sheet 1 of 5), “GENERAL NOTES”, Note 7, the text is deleted and the following substituted: “All permanent units shall be factory new at completion of construction. Temporary construction units and units under Maintenance responsibility may be shop repaired units utilizing new or salvaged parts which will produce condition new units.”

Interim Index No. 0440 (Sheet 1 of 5), “DESIGN NOTES AND GUIDELINES”, Note 2, The text is deleted and the following substituted: “When equipped with the modular base, the TRACC is a restorable system that is well suited to shielding hazards subject to high speed traffic with a history of frequent errant vehicle departures from the roadway or the potential exists for such departures. The TRACC is also well suited to shielding hazards where the approach space is limited; and for conditions where the terminal must be located close to the traffic lane.”

Index No. 441, “TAU-II” – Note that details for the TAU-II Revised and Universal TAU-II are posted on the Qualified Products List.

Index No. 441 (Sheets 1-8 of 8), “TAU-II”, is deleted and Interim Index No. 0441 Dated 11-14-02, is substituted.

Index No. 451 Sheet 1of 2, “GENERAL NOTES”, Note 19 - text last sentence “Type A” deleted.

Note 20 - text first sentence “and pay” deleted.

Note 21- Note deleted and the following substituted: “This index details fencing that is constructed with farm fabric 1.18 (1.2 nominal) in height and with specific ground clearance and specific barbed wire spacings.”

Note 22 added with the following text- “22. All posts, braces, tension wires, fabric, tie wires, Class 1 concrete and all miscellaneous fittings and hardware to be included in the cost for Fencing, M1. Fencing shall be inclusive of the lengths of pull, end and corner post assemblies, but exclusive of gate widths.”

Index No. 452 (Sheet 1 of 2), notations tagged to “14 Ga. Tension Bands”-Spacing dimension “(≤180)” deleted and dimension “(≤380)” substituted.
“GENERAL NOTES”, notes “7(c)” and “7(d)” – Note “7(c)” deleted and note “7(d)” redesignated note “7(c)”. Table “TYPE IV VINYL COATED FABRIC”, subheading “Specification Section 966 And AASHTO M181 Table 4 Redefined As Follows” – Text “Specification Section 966 And” deleted.
Note 11- text last sentence “Type B,” deleted.
Note 12-text deleted and the following substituted: “For construction purposes, corner post assemblies shall consist of one corner post, two braces, two truss rods, and all necessary fittings and hardware as detailed above. End Post assemblies shall consist of one end post, one brace, one truss rod and all necessary fittings and hardware as detailed above.”
“Note 13” added with the following text: “All posts, tension wires, chain link fabric, tie wires, Class I concrete, and all miscellaneous fittings and hardware to be included in the cost for Fencing, M1.”

Index No. 452 (Sheet 2 of 2), “BARB WIRE ATTACHMENT”, “NOTES”, - text “Attachments to be paid for under the contract unit price for Fencing, Type B (With Barb Wire Attachment) M1.” deleted.

Index No. 461 (Sheet 1 of 1), “GENERAL NOTES”, note 2, end of line three “(3)-16mm” added.

Interim Index No. 0501 (Sheets 1-8 of 8), “GEOSYNTHETIC REINFORCED SOILS”, Dated 08-24-00, and (Sheet 6 of 8) Dated 02-28-02, is added.

Index No. 505 (Sheets 1-3 of 3), “EMBANKMENT UTILIZATION”, is deleted and Interim Index No. 0505, Dated 11-14-01 is substituted.

Index No. 510 (Sheet 2 of 3), “SHOULDER CONSTRUCTION WITH SUPERELEVATION”, notation “SHOULDER ON HIGH SIDE:”, Second paragraph-Paragraph deleted.

Index No. 514 (Sheet 1 of 2), base group table, column 7 – “ABC-3 (Min. Marshall Stability 4500N)” heading deleted and heading “Type B-12.5 (ABC-3)” substituted; and, column 8 – “ABC-3 and 100 mm Granular Base, LBR-100*”- heading deleted and heading “Type B-12.5 (ABC-3) and 100mm Granular subbase, LBR 100*” substituted. “GENERAL NOTES”, note 4; and; asterisk (*) notation, line one(1) and line four (4) – text “ABC-3” deleted and text “Type B-12.5 (ABC-3)” substituted.

Index No. 515 (Sheet 1 of 6), table “SUMMARY OF GEOMETRIC REQUIREMENTS FOR TURNOUTS’, line ‘CONNECTION WIDTH W”, columns indicating “36’ Max.” – A superscript ✯ symbol added for footnote reference. Table footnotes –✯symbol and footnote added with the following text: “✯When more than 2 lanes in the turnout connection are required, the 36’ max. width may be increased to relieve interference

between entering and exiting traffic which adversely affects traffic flow. These cases require documented site specific study and design."

Index No. 515 (Sheet 2 of 6), "SPECIAL NOTES FOR URBAN FLARED TURNOUTS", Note 11 is added as follows:" All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum".

Index No. 515 (Sheet 6 of 6), "URBAN TURNOUT PROFILES" and "RURAL TURNOUT PROFILES" "Maximum Grades", "Commercial =10%' – A □ superscript add to each "Commercial= 10% entry for footnote reference. The □ symbol and footnote added with the following text:
"□ When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create any adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and be supported by documented site specific findings."

Index No. 516 (Sheet 1 of 1), "GENERAL NOTES", note 6 last line, "FC-2" – "FC-2" deleted and "FC-5" substituted.

Index No. 518 (Sheet 2 of 2), "GROUND-IN RUMBLE STRIPS", is deleted and Interim Index No. 0518, Dated 11-28-00 is substituted.

Index No. 520 (Sheet 2 of 2), Sheet deleted.

Index No. 525 (Sheet 1 of 5), "THREE APPROACH LANES – TWO THRU LANES, DETAIL B", traffic directional arrow shown in recovery area (taper beyond nose) – Arrow deleted.

Index No. 525 (Sheet 4 of 5), Subtitle and header – Word "EXPRESSWAY" deleted and word "FREEWAY" substituted. Sketches for "ACCELERATION LANE WITH SHOULDER GUTTER" and "DECELARATION LANE WITH SHOULDER GUTTER" – Shoulder pavement width 1.2 deleted and width "2.4" substituted. Sketches for "ACCELERATION LANE WITHOUT SHOULDER GUTTER" AND "DECELARATION LANE WITHOUT SHOULDER GUTTER" – Shoulder pavement width "1.8" deleted and width "3.0" substituted.

Index No. 600 (Sheet 1of 11), "PREFACE" first paragraph, 3rd sentence - Text deleted and the following text substituted: - "This index contains information specific to Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD."

Index No. 600 (Sheet 2 of 11), Add new heading "OVERHEAD WORK" – Add the following text:

"Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)
Overhead work using a modified lane closure is allowed if all of the following conditions are met:

a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
e. Aerial lift equipment is placed directly below the work area to close the lane.
f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 30m foot taper.
g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)
Overhead work above a open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within an area bounded by 0.6m feet outside the edge of travel way and 5.5m high.
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK USING A STANDARD LANE CLOSURE)
The lane directly below the overhead work is closed in accordance with the appropriate standard index drawing or detailed in the plans."

Index 600 Sheet 2 of 11, add new heading "TEMPORARY TRAFFIC CONTROL DEVICES" – Add text:

"All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered. Arrow Panels, Portable Changeable Message Signs, Radar Speed Display Trailers, Portable Regulatory Signs, and any other NCHRP 350 Category 4 devices shall be delineated with retroreflective TTC devices when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use."

Index No. 600 (Sheet 4 of 11), Add New Heading - "GROOVED PAVEMENT AHEAD SIGN" and text "The GROOVED PAVEMENT AHEAD sign is required 500' in advance of a milled or grooved surface open to traffic."

Add Heading - "Utility Work Sign" with note "THE UTILITY WORK (W21-7) sign may be used as an alternate to the ROAD (STREET) WORK (W20-1) sign for utility operations on or adjacent to a highway.

Index No. 600 (Sheet 5 of 11), "SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN", second paragraph-Paragraph deleted and the following text substituted: "The placement should be 150 meters downstream of the first ROAD WORK AHEAD sign or midway to the next sign whichever is less."

Add "TRANSVERSE JOINTS to existing header "MANHOLES/CROSSWALKS" – Add the following text after the first paragraph – "All transverse joints that have any difference in elevation shall have a temporary asphalt apron constructed as shown in the diagram below."

Index No. 600 (Sheet 6 of 11), "DROPOFF NOTES", Note "3(c)" deleted. DROPOFF DETAIL Top center, delete text "For concrete barrier wall, 0.6 min" and substitute text "Min. 0.6 m on 1:10 slope or flatter for concrete barrier wall on roadways. For concrete barrier wall on bridges see Structures Design Standard No. 715."

Index No. 600 (Sheet 7 of 11), Sheet deleted.

Index No. 600 (Sheet 8 of 11), "CHANNELIZING AND LIGHTING DEVICE NOTES," note 9.3.-Word "sole" deleted.

Index No. 600 (Sheet 9 of 11), subtitle "LANE DROP AND LANE SHIFTS-PLAN SHOWN FOR RIGHT LANE MERGE LEFT-INVERTED PLAN FOR LEFT LANE MERGE RIGHT", notation right hand top "Reflectorized Pavement Markings:," last line-Text "Or, Lane Line (No Passing)" deleted.

Index No. 600 (Sheet 11 of 11), "NOTES", note 1, second sentence-Sentence extended by the following text: "with the exception that Class D markers be placed at a maximum spacing of 1.5' center to center."

Index No. 602 (Sheet 1 of 1), “GENERAL NOTES,” note 3, line one-Delete word “vehicles” and substitute “work vehicles”

Index No. 609 (Sheet 1 of 1), “GENERAL NOTES”, note “9”; tag line notation upper left; and, “CONDITIONS” – All words “detour” and “DETOUR” changed to “diversion” and “DIVERSION”.

Index No. 612 (Sheet 1 of 1), Upper right hand drawing, mark “L/2” – “Mark L/2” deleted mark “L” substituted.

Index No. 614 (Sheet 1 of 2), “Notes:” note “(a)”, last line – Text “22.5” deleted and text “24.6” substituted. ‘GENERAL NOTES’, note ‘12.’ Second line, word ‘approved’ – Word ‘approved’ deleted and word ‘qualified’ substituted.

Index No. 628 (Sheet 1 of 1), “GENERAL NOTES,” note 1.-Text “one traffic lane’ deleted and text ‘two-way left turn” substituted.

Index No. 631 (Sheet 2 of 2), “TEMPORARY CROSSOVER”, is deleted and Interim Index No. 0631, Dated 08-24-00 is substituted.

Index No. 640 (Sheet 2 of 2),”GENERAL NOTES,” note 5-Note text deleted and the following text substituted: “Warning devices shall be in conformance with ‘DROPOFFS IN WORK ZONES’, Index No. 600.”
In the plan view, notation ‘White Reflectorized Pavement Markings’, ‘Yellow Reflectorized Markings’-Text in parenthesis deleted and the text “(Double Line Reflectorized Marking In No-Passing Zones As Directed By The Engineer)” substituted.

Index No. 650 (Sheet 1 of 2), “PHASE I”, note 2.-Text deleted and text “Construct temporary structure, approaches and guardrail; and, construct crash cushions at each end of truss if center truss constructed.” substituted.
Notation tagged to “END ROAD WORK” sign, line 3-Kilometer value “3.2” deleted and value “1.6” substituted.
‘Phase II’, notation tagged to R4 7 sign-Text ‘To Protect Center Truss’ is deleted and text ‘If Center Truss Constructed’ substituted.

Signing for “Temporary Structure” – Legend sign for “Slippery When Wet”, designation “W8-5” shall be placed in advance of bridges with steel decks.

Index No. 650 (Sheet 2 of 2), “GENERAL NOTES”, note “4”, last line – Word “detour” deleted and word “diversion” substituted; note “5” – Note expanded by the following text: “Cost of temporary guardrail systems, including end anchorage assemblies, transitions and attachment to temporary structures, are to be included in the contract unit price for guardrail (temporary), M1.”; note “7” – Note deleted and the following note substituted:

"7. Only temporary crash cushions approved by the Department shall be used unless specified devices called for in the plans."

'GENERAL NOTES', Note 4, Line 3, text "detour" – Text deleted and text "diversion" substituted.

Index No. 670 (Sheet 1 0f 1), "MOTORIST AWARENESS SYSTEM", Dated 11-28-00, is added.

Index No. 700 (Sheet 1-2 of 2), "ROADSIDE OFFSETS", Dated 11-22-02 is added.

Index No. 5000 (Sheet 1 of 1) "RETAINING WALL SYSTEM GENERAL NOTES" is deleted and Interim Index No. 05000, (Sheet 1 of 1) Dated 08-21-03 is substituted.

Index No. 5012 (Sheet 20 of 20), X-5, Superimposed sheet image-Image deleted.

Index No. 5015 (Sheets 1-14 of 14), "RETAINING WALL SYSTEM, REINFORCED EARTH COMPANY, REINFORCED EARTH WALL" is deleted and Interim Index No. 05015 (Sheets 1-16 of 16) Dated01-01-05 is substituted.

Index No. 5021 (Sheets 1-13 of 13), - Index Deleted.

Index No. 5025 (Sheets 1-17 of 17), "RETAINING WALL SYSTEM, TENSAR EARTH TECHNOLOGIES, MSE RETAINING WALL" is deleted and Interim Index No. 05025 (Sheets 1-16 of 16) Dated 01-01-05 is substituted.

Interim Index No. 5035 (Sheets 1-14 of 14), "RETAINING WALL SYSTEM, SSL, MSE PLUS WALL SYSTEM" Dated 01-01-05 is added.

Interim Index No. 5110 (Sheets 1-5 of 5), "RETAINING WALL SYSTEMS, T & B STRUCTURAL SYSTEMS, INC., GABION WIRE WALL", Dated 01-01-05 is added. (This Interim was previously incorrectly listed as No. 5130. Error corrected 4/29/05.)

Index No 5115 (Sheets 1-4 of 4), "RETAINING WALL SYSTEM, THE REINFORCED EARTH COMPANY, TERRATREL WIRE WALL" is deleted and Interim Index No. 05115 (Sheets 1-6 of 6) Dated 01-01-05 is substituted.

Index No. 5120 (Sheets 1-4 of 4), - Index Deleted.

Index No. 5125 (Sheets 1-3 of 3), "RETAINING WALL SYSTEM, TENSAR EARTH TECHNOLOGIES, TEMPORARY RETAINING WALL" is deleted and Interim Index 05125 (Sheets 1-5 of 5) Dated 01-01-05 is substituted.

Index No. 11860 (Sheet 1 of 3), table, sign number “88”, “TYPE OF SIGN BRACKET” text “DO NOT USE SINGLE COLUMN” – Text deleted and the following text substituted: “SEE NOTES”, “NOTE:”, note “5”. – Note text deleted and the following text substituted: “Footing shall be 600Ø by 1500 deep.”
Note 6 added as follows: “Slip Base Details, see Index No. 11863”.

Index No. 11860 (Sheet 2 of 3), note “SIGN PANEL”, text “3 mm” – “3 mm” deleted and 2 mm substituted.

Index No. 11861 (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11861 (Sheet 2 of 2), table, sign number ‘88’ ‘HEIGHT’- Line text ‘SEE NOTE INDEX NO 11860’ added.

Index No. 11862 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11862 No. (Sheet 2 of 2), table, sign number “88”, “HEIGHT” – Line text “SEE NOTE INDEX NO. 11860” added.

Index No. 11863 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11863 No. (Sheet 2 of 2), table, sign number “88”, “HEIGHT” – Line text “SEE NOTE INDEX No. 11860” added.

Index No. 11864 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground

to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign."

Index No. 11864 No. (Sheet 2 of 2), table, sign number "88", "HEIGHT" – Line text "SEE NOTE INDEX No. 11860" added.

Index No. 11865 No. (Sheet 1 of 2), "NOTES", note "4", second line, dimension "4.0" – "4.0" deleted and "4" substituted; (i.e. 4 mm). Note "1d" – note text deleted and the following text substituted: "Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign."

Index No. 11865 No. (Sheet 2 of 2), "ELEVATION" detail top center of page – Detail deleted and a detail substituted to accommodate placement of sign in concrete surfaces. The replacement detail is subtitled "SIGN POST IN CONCRETE (CROSSOVERS, MEDIANS & SIDEWALKS)". The replacement detail is described as follows: A PVC Sch. 40 Sleeve W/UV Inhibiter, 300 in length is installed with its top flush with the concrete surface. The sleeve is 19 larger in diameter than the frangible tube post that is to be installed through the sleeve and imbedded in the soil to the depth required for a specified sign.

"STEEL FLANGED CHANNEL POST DETAILS", "SIGN ATTACHMENT DETAIL", "Bearing Plate" – Bearing Plate deleted.

Index No. 17344 (Sheets 1-3 of 6), "SCHOOL SIGNS AND MARKINGS", are deleted and Interim Index No. 017344, Dated 12-26-01 is substituted.

Index No. 17345 (Sheet 3 of 4), "INTERCHANGE MARKING", is deleted and Interim Index No. 017345, Dated 12-26-01 is substituted.

Index No. 17346 (Sheets 1-9 of 9) "SPECIAL MARKING AREAS", is deleted and Interim Index No. 017346, (Sheets 1-13 of 13), Dated 12-26-01 is substituted.

Interim Index No. 17346 (Sheet 5 of 13) "SPECIAL MARKING AREAS" is deleted and Interim Index No. 017346 (Sheet 5 of 13) Dated 01-01-05 is substituted.

Index No. 17352 (Sheet 2 of 2), 'TRAFFIC LINES', inset-The color of the RPM's on the lane lines at the stop line is changed from "Mono-Colorless" to "Bi-directional white/Red".

Index No. 17355 "SPECIAL SIGN DETAILS", is expanded by the addition on Interim Index No.017355, (Sheets 8-14 of 14), Dated 12-27-01.

Index No. 17355 (Sheet 7 of 12), Sign FTP -49- Symbol text replace by international symbols.

Index No. 17357 (Sheet 1of 1), note “4.” –Words “to route” inserted between words “detour” and “around”.

Index No. 17500 (Sheet 1 of 3) “CONVENTIONAL LIGHTING” is deleted and Interim Index No. 017500 (Sheet 1 of 3) Dated 01-01-05 is substituted.

Index No. 17500 (Sheet 2 of 3), “GENERAL NOTES:” and “SURGE PROTECTOR SPECIFICATIONS” – General notes and surge protector specifications deleted.

Index No. 17501 (Sheet 1 of 1), General notes (24) through (28) and SURGE PROTECTOR SPECIFICATIONS added with the following text:

24) Luminaire shall be supplied with a regulator type ballast mounted on a hinged door or panel. The unit shall swing open to provide access to the ballast assembly by release of captive screws. The electrical connector shall be a quick disconnect plug. The unit shall be easily removed from the luminaire after release of the captive screws and disconnect plug.

25) All mounting heights are ±0.75 meter unless otherwise noted in plans.

26) A handhole is required in all poles. Handhole should be located opposite approaching traffic with cover fastened with Stainless Steel Screw. The handhole opening shall be at least 20 square inches.

27) The luminaire and arm on JOINT USE POLES shall be grounded.

28) Concrete slabs around poles and pull boxes shall be paid for under the contract unit price for Class I Concrete (Miscellaneous): the cost of reinforcing steel fabric shall be included in the price for Class I Concrete (Miscellaneous).

SURGE PROTECTOR SPECIFICATIONS

1. The unit shall withstand a surge current up to 20,000 Amps, and repetitive surges of 200 Amps for a minimum of 10,000 occurences.
2. The unit shall respond in less than 50 nanoseconds and within this time have a peak clamping voltage better than 1,100 Vrms.
3. The maximum allowable voltage that can pass continuously through the hot leg of the protector must be less than 550 Vrms.
4. The current drain shall be less than 100 microamps.
5. The unit shall be insulated 600 V to ground and shall be weatherproof.
6. The unit shall not allow holdover current or conduction to ground after the surge ends.

7. Protection shall be achieved for both the 480 V and neutral conductors with the surges being passed to ground and NOT to neutral.
8. There shall be no discharge lag in the protection of the 480 V conductor over the neutral conductor.
9. Underwriters Laboratory approval not required.

Index No. 17502 (Sheet 2 of 4), Add the following heading and text: "ALTERNATE POLE: A spun high mast prestressed concrete pole listed on the Qualified Products List may be substituted for a steel pole with approved shop drawing and calculations. If the concrete pole is provided as a substitute for the steel pole, payment will be made under the items bid for steel poles and associated foundations and plan quantity of these items will be the basis for payment."

Index No. 17502 (Sheet 3 of 4), Sectional View, Ground rod tagged notation – Length "3.0 long" deleted and "6.0 long": substituted; and, text "(resistance to ground not to exceed 25 OHMS.)" deleted.

Index No. 17503 (Sheet 1 of 1), "METAL POLE CONCRETE FOUNDATION DETAIL", tag notation "#13 Bars @1300 mm" – "1300" deleted and "300" substituted.

Index No. 17504 (Sheet 1 of 1), 'DETAIL A', Ground rod tag notation, "6.0 m long" – "6.0 m long" deleted and "12.0 m long" substituted.

Index No. 17505 (Sheet 1 of 2), "PLAN", Ground rod tag notation, "3.0 m long" –"3.0"m long" deleted and "6.0 m long" substituted.

Index No. 17515 (Sheets 1-7 of 7), "ALUMINUM LIGHT POLE", is deleted and Interim Index No. 017515, Dated 7-10-01 is substituted.

Index No. 17600 (Sheet 1 of 2), "CALL BOX DETAIL BEHIND GUARDRAIL", Plan View- The following notation added below the plan view: "A 760x1200 MANUEVERING SPACE WITH A 2% MAX SLOPE IN ANY DIRECTION, CENTERED IMMEDIATELY IN FRONT OF THE CALL BOX AND MEASUSRED FROM THE GRIP POINT OF THE UNIT IS REQUIRED."

Side View- Height dimension of "1350" deleted and height to handle dimension of "1170" substituted. Horizontal dimension of "600" deleted and offset from face of rail to face of box dimension equal "355" substituted. The following notation, tagged to the concrete pad surface, "NO MORE THAN 2% SLOPE IN ANY DIRECTION".

Interim Index No. 17723 (Sheets 1-3 of 3), "STEEL STRAIN POLE", Dated 09-26-00 is added.

Interim Index No.017725 (Sheet 1 of 1). "CONCRETE POLES", Dated 07-10-01 is added.

Index No. 17727 (Sheets 1 and 2 of 2), signal height tagged notation in lower right center details- Notations deleted and the following notations substituted: “The vertical clearance to the bottom of a vertical or horizontal vehicular signal head shall not be less than 5.33 m and the maximum height shall be in accordance with the 2000 MUTCD.”

Interim Index No. 17741 (Sheets 1-2 of 2), “ISTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST AREM B & C ASSEMBLIES”, Dated 07-17-02 is added.

Interim Index 17743 (Sheet 1-2 of 2), “COMPONENT DATA FOR STANDARD MAST ARM B & C ASSEMBLIES”, Dated 07-17-02 is added.

Interim Index No. 17745 (Sheets 1-5 of 5), “MAST ARM ASSEMBLIES”, Dated 07-17-02 is added.

Interim Index No. 017746 Sheets 1-4 of 4), “MONOTUBE SIGNAL STRUCTURE”, Dated 07-10-01 is added.

Interim Index No. 017748 (Sheet 1 of 1), “FREE-SWINGING, INTERNALLY ILLUMINATED STREET SIGH ASSEMBLIES”, Dated 12-27-01, is added.

Index No 17764 (Sheet 1 of 1), Pedestrian signal assemblies-Assembly legends deleted and international symbols substituted.

Index No. 17781 (Sheet 1 of 2), “DETAILS FOR SPLICING LOOP WIRE TO LEAD-IN WIRE”- Detail deleted. “GENERAL NOTES”,- Note “6” text deleted and the following text substituted:

“6. Splice Connections in pull boxes with U.L. listed, watertight, insulated enclosures. Place one enclosure over the end of each conductor and place a third enclosure over the exposed end of the shielded cable.”

Notes “7” and “8”added with the following text:

“7. As an alternate, a larger diameter enclosure that will accommodate both the splices of the conductors and the exposed end of the shielded cable may be used.”

“8. The maximum area of asphalt to be disturbed shall be 6”x6”. This area shall be restored as directed by the Engineer.”

Detail drawings-A reference note “See General Note #8” is tagged to the access through the roadway pavement for the upper reach of the “Rigid Conduit” and the “PVC Coated Flexible Conduit”.

Index No. 17784 (Sheet 1 of 2), “FIGURE C”, “(Aerial Feed)”- Pedestrian signal assembly legends deleted and international symbols substituted.

Index No. 17784 (Sheet 2 of 2), Pedestrian assembly “FTP-49”-Legends deleted and international symbols substituted. Footnotes deleted and the following footnotes substituted:

"SIGN COLORS WHITE BACKGROUND WITH BLACK LEGEND AND BORDER"
"INTERNATIONAL WALK SYMBOL WHITE ON BLACK BACKGROUND"
"INTERNATIONAL DON'T WALK SYMBOL ORANGE ON BLACK BACKGROUND"

Index No. 17841 (Sheet 1 of 1), "INTERCONNECT JUNCTION BOX", "BASE MOUNTED", "6.0m (Min.) Ground Rod"-"6.0m (Min.)" deleted and "12.0 (Min.)" substituted.

Index No. 17870 (Sheet 1 of 2), "SIGNAL CLEARANCE TABLE", "SIGNAL INDICATIONS", column four – Indications in column deleted; asterisk in column five deleted; and, asterisk footnote below table deleted.

Index No. 17890 (Sheet 1 of 3), The following design note is added: "In accordance with Traffic Engineering Manual (Topic Number 750-00-005) Section 2.1, Slippery when wet signs shall be placed in advance of all movable and non-movable steel deck bridges."

Index No. 17900, "TRAFFIC MONITORING SITE", is expanded by Interim Index No. 017900 (Sheet 1 of 1) Dated 08-24-00. (Sheet 3 of 9) is deleted and Interim Index No 017900 (Sheet 3 of 9) Dated 12-27-02, is substituted. (Sheet 5 of 9) is deleted and Interim Index No. 017900 (Sheet 5 of 9) Dated 01-01-05 is substituted.

DESIGN STANDARDS MODIFICATIONS

(2000 Booklet)
(Metric Units)

Effective Date: January 1, 2006

NOTE: Interim Indexes listed in these Modifications may be viewed by going to www.dot.state.fl.us/rddesign and clicking on "Design Standards".

Index No. 001 (Sheets 1 and 2 of 2) – Abbreviation listing expanded to include the following: FRP Fiber Reinforced Pipe; HAR Highway Advisory Radio; LEO Law Enforcement With Flashing Light and Radar; PRS Portable Regulatory Sign; RSDU Radar Speed Display Unit.

Index No. 102 (Sheet 3 of 3), "TYPE IV SILT FENCE", "ELEVATION", notation tagged to fence; "Line 3", text "Sec. 966" – Text "Sec. 966" deleted and text "Sec. 550" substituted.

Index No.104 (Sheets 1-2 of 2) "PERMANENT EROSION CONTROL", is deleted and Interim Index No. 0104, Dated 12-14-01, is substituted.

Interim Index No. 0104 (Sheet 1 of 2), under the "WILDFLOWERS SEEDING RATE" chart add the following footnote: "Wildflower seeding rates are for restoring impacted wildflower areas."

Index No. 105 (Sheet 1 of 1), "SEEDING RATES (kg/ha)" table, footnotes, "Note:" – Second sentence added that states 'Wildflowers destroyed by shoulder reworking are to be re-established under the seeding rates prescribed for permanent wildflower #2 Group shown by table on Index No. 104."

Index No. 199 (Sheet 1 of 1) "GEOTEXTILE CRITERIA", is deleted and Interim Index No. 0199, Dated 8-24-00, is substituted.

Index No. 201 (Sheet 2 of 6), "TEMPORARY DRAINS FOR SUBGRADE AND BASE", "Note:", Second sentence –Second sentence deleted and sentence "See Index No. 102 for sediment control at inlet." substituted.

Index No. 201 (Sheets 4 & 5 of 6) are deleted and Interim Index No. 0201 (Sheets 4 & 5 of 6), Dated 07-01-05 are substituted.

Index No. 205 (Sheet 2 of 5) “COVER HEIGHT”, is deleted and Interim Index No. 0205 Dated 12-05-00, is substituted.

Interim Index No. 216 (Sheets 1-3 of 3) “CLOSED FLUME INLET”, Dated 12-04-00, is added.

Index No. 219 (Sheet 1 of 2), “GENERAL NOTES”, Note 5 – Text “209” deleted.

Index No. 220 (Sheet 1 of 1) – Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” – Size “900” deleted and size “750” substituted. “GENERAL NOTES” – Note 6 added as follows: “Inlets to be paid for under the contract unit price for Inlets (Gutter Type S), EA.”

Index No. 221 (Sheet 1 of 1), “RECOMMENDED MAXIMUM PIPE SIZE” – Size “940” deleted and size “750” substituted. “GENERAL NOTES” – Note 7 added as follows: “7. Inlet to be paid for under the contract unit price for Inlets (Gutter Type V), EA.”

Index No. 230 (Sheet 1 of 1), Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” – Size “600” deleted and size “450” substituted. “GENERAL NOTES” – Note 7 added as follows: “7. Inlets to be paid for under the contract unit price for Inlets (Dt Bot Type A), EA.”

Index No. 231 (Sheet 2 of 2), “GENERAL NOTES”, note 7-Note deleted.

Index No. 232 (Sheet 1 of 5), “INLETS”, “TYPE C”, “940 Wall – 600 Pipe” footnote – Added text as follows: “(450 where an 450 pipe enters a 600 wall)”; also, “TYPE E’, “1370 Wall – 1050 Pipe” footnote – “1050 Pipe” deleted and “900 Pipe” substituted.

Index No. 232 (Sheet 1 of 5) is deleted and Interim Index No. 0232 (Sheet 1 of 5) Dated 07-01-05 is substituted.

Index No. 232 (Sheet 4 of 5), “METHOD OF PAYMENT FOR TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS”, Note 3 – Note 3 deleted and the following substituted: “3. Concrete inlet pavement and sodding shall be in accordance with the sections on this detail and with the plan on Sheet 2 and Sections AA, BB and CC (as Case 1) and tabular quantities on Sheet 3.”

Index No. 234 (Sheet 1 of 1), Table “RECOMMENDED MAXIMUM PIPE SIZE”, “PIPE SIZE” - Size “900” deleted and size “750” substituted.

Index No. 251 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” - Quantities “495” deleted and “315” substituted.

Index No. 251 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “587” deleted and “374” substituted.

Index No. 252 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “660” deleted and “531” substituted.

Index No. 252 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “797” deleted and “638” substituted.

Index No. 253 (Sheet 1 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “704” deleted and “567” substituted.

Index No. 253 (Sheet 2 of 2), “ESTIMATED QUANTITIES”, “Reinforcing Steel”, “kg”, “RCP” & “CMP” – Quantities “864” deleted and “689” substituted.

Index No 260 (Sheet 1 of 1), “GENERAL NOTES’, Note 4 - Text “With Grate” deleted from the first sentence.

Index No. 261 (Sheet 1 of 3), “GENERAL NOTES”, Note 9 deleted and the following note substituted:”9. Endwall to be paid for under the contract unit price for U-Endwall, Each. Payment shall include cost of concrete, reinforcing steel, and when called for in the plans, steel grating and accessories. Quantities shown are for estimating purposes only.”

Index No. 280 (Sheet 2 of 4) “GUARD AT PIPE ENDS”, “Note” text “for Endwall Grate, LB” deleted and “Reinforcing Steel (Miscellaneous)” substituted. “CONCRETE GUTTER AND DRAINS AT RETAINING WALLS”-“Note:” deleted and the following note substituted: “PVC pipe, Schedule 40, to be paid for under the contract unit price for Polyvinyl Chloride Pipe Culvert (100mm) M1.”

Index No. 282 (Sheet 1 of 1), Handrail notations referring to ‘Index No. 520’ – ‘Index No. 520’ text deleted and text “See Plans For Handrail Requirements” substituted.

Index No. 286 (Sheet 1 of 2), “DESIGN NOTES”, “Note 6”-text deleted and the following note substituted:

“The designer should detail in the plans, the location of: (a) Type V underdrain, (b) non-standard locations of Type I, II, and III underdrain, (c) underdrain inspection boxes, (d) cleanouts for Type V underdrain, and (e) underdrain outlet pipes.”

“Note 7” – text deleted and the following text substituted:

“The designer should specify the flow line elevations at the beginning, bends, junctions, and ends of underdrain pipes and outlet pipes.”

“Note 8” added “The designer should evaluate whether an external filter fabric envelope is required around underdrain Types I and III. When required, fabric shall be specified in the plans.”

“GENERAL NOTES”, “Note 10” text deleted and the following text substituted:

“10. Pay Item shall be based on the size of the smooth interior products. The contract unit price for Underdrain, M1, shall include the cost of pipe, fittings, aggregate, sock, filter fabric, underdrain cleanouts, and concrete aprons.

The contract unit price for Underdrain Outlet Pipe, M1, shall be full compensation for trench excavation, pipe and fittings, concrete aprons, hardware cloth for concrete aprons, stubbing into drainage structures, backfill in place, and disposal of excess materials. The contract unit price for Underdrain Inspection Box, EA. shall be for the number completed and accepted."

Index No. 287 (Sheet 2 and 3 of 3) - All surfaces tagged 'Type S' and references to 'Type S' are deleted and Type SP substituted.

"NOTES FOR DRAINCRETE PAVEMENT SUBDRAINAGE", Note 1 – Text "Alteration #1" deleted. "FOR REHABILITATION:", Note 1, paragraph 3 – text "Concrete apron shall be paid for under the contract unit price for Class I Concrete (Miscellaneous), M3 " deleted and paragraph 6 - Text "Tack coat shall be paid for under the contact unit price for Bit Mat'l (Tack Coat), GA." deleted.

Index No. 290 (Sheet 1 of 5), 'TABLE OF MINIMUM BAR SPLICE LENGTHS' – All tabulated values deleted and the following tabular values substituted:

Bar Size	Splice	Bar Size	Splice
#13	690	#25	1.700
#16	850	#29	1.920
#19	1.020	#32	2.160
#22	1.500	#36	2.400

Index No. 301 (Sheet 1 of 1) "TURN LANES", is deleted and Interim Index No. 0301, Dated 12-06-02, is substituted.

Index No. 302 (Sheet 1 of 1), "TYPE IV CONCRETE TRAFFIC SEPARATOR", "OPTION II", and "TYPE I CONCRETE TRAFFIC SEPARATOR", "OPTION II", Notations "No Extra Payment For Pavement" – Notations deleted and the following notations substituted: "Cost Of The Flexible Pavement Under The Option II Separator Included In The Cost Of The Separator."

Index No. 304 (Sheets 1 thru 5 of 5), "PUBLIC SIDEWALK CURB RAMPS" is deleted and Interim Index No. 0304 (Sheets 1 thru 6 of 6) Dated 01-01-05 is substituted.

Interim Index No. 0304 (Sheet 1 of 6), Detail in the lower left corner, the note "When crosswalk markings - -" is deleted and the following note substituted: "When crosswalk markings are required, ramp runs must fall within crosswalk limits and where practical, be parallel with the projected crosswalk alignment. The bottom of the ramp beyond the curb line shall have a clear space 48" minimum with the markings of a marked crosswalk. If no crosswalk markings are present, the bottom of the ramp beyond the curb ramp shall have a clear space 48" minimum outside active traffic lanes."

Index No.305 (Sheet 5 of 5), joints labeled “Expansion Joint” – “Expansion Joint” deleted and label “Contraction Joint (Typ)” substituted.

Index No. 310 (Sheets 1-2 of 2), “CONCRETE SIDEWALK” is deleted and Interim Index No. 0310, Dated 07-24-02 is substituted.

Interim Index No. 0310 (Sheet 1 of 2) Revised 7-24-02, “SECTION AA” Sidewalk surface cross slope “0.02” deleted and “0.02 Max” substituted.
“SECTION BB” Sidewalk surface cross slope “0.02” deleted and “0.02 Max” substituted.

Interim Index No. 0301 (Sheet 1 & 2 of 2), under Note 5, Sheet 1 and under Note 4, Sheet 2, add the following: “When the plans show construction of handrail on a sidewalk and requires the construction of an edge beam for attachment of the handrail, cost of the edge beam is to be included in the price of the sidewalk.”

Interim Index No. 0310 (Sheet 2 of 2) Revised 7-24-02, “SECTION CC” Sidewalk surface cross slope “0.02” deleted and “0.02 Max” substituted.

Interim Index No. 0400 “GUARDRAIL” with the following Index Dates is added (see Interim listing on webpage for details.) 12-18-01, 12-28-01, 05-05-00, 01-30-02, and 03-26-01.

Index No.400 (Sheet 1 of 31), “GENERAL NOTES”, Note 6, add the following text: “Guardrail end anchorage assemblies shall be of the type called for in the plans. If the plans call for end anchorage assembly “flared” and does not identify the specific system(s) to be used, the contractor has the option to construct any FDOT approved flared assembly provided in this Index or identified on the Qualified Products List (QPL), subject to the conditions identified in the approved Index drawings, or QPL drawings if applicable.

If the plans call for end anchorage assembly “parallel” and does not identify the specific system(s) to be used, the contractor has the option to construct any FDOT approved parallel assembly provided in this Index or identified on the QPL, subject to the conditions identified in the approved Index drawings, or QPL drawings if applicable.

If the plans call for a specific end anchorage assembly, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. Approved substitutions will not be eligible for VECP consideration.

When an end treatment is attached to guardrail with Pedestrian Safety Treatment, only end treatment systems with timber posts are to be used.

Proprietary end anchorage systems must be identified on the QPL. Manufacturers seeking approval of proprietary end anchorage systems for inclusion on the QPL must submit application along with design documentation showing the end anchorage system is crash tested to NCHRP Report 350 Test Level 3 criteria, is accepted by FHWA for use as a

guardrail end anchorage system, and is compatible with FDOT guardrail systems. System approvals will be contingent on FDOT's evaluation of crash test performance results for consistency with FDOT guardrail application and use. If approved, installation drawings signed and sealed by a professional engineer licensed in the State of Florida will be required."

Note 8 – Word "curved" in second line deleted and word "curbed" substituted.

Note 20 added as follows:
"20. On roadways designated for reverse laning, all downstream ends of guardrail that are not shielded or that are not designed as approach end terminals shall be marked with post-mounted Type 3 Object Markers. Trailing bridge ends and trailing shoulder concrete barrier wall ends shall be marked with Type 3 Object Markers except where there is trailing end guardrail. Object markers to be installed facing reverse laning traffic."

Index No. 400 (Sheet 4 of 31), "GUARDRAIL APPLICATION FOR ROADSIDE HAZARD", "Notes For Details B & C:", text "When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage." - Text deleted.

Index No. 400 (Sheet 5 of 31), "GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING FULL LENGTH OF APPROACH SLAB", "Notes for Details O & P:", text "When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage."- Text deleted.

Index No. 400 (Sheet 6 of 31), "GUARDRAIL APPLICATIONS FOR BRIDGES WITH FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH", "Notes for Details H&I:" and "GUARDRAIL APPLICATIONS FOR BRIDGES WITH LESS THAN FULL WIDTH SHOULDERS AND SAFETY SHAPE TRAFFIC RAILING BARRIER EXTENDING LESS THAN FULL APPROACH SLAB LENGTH", "Notes for Details S&T:", text "When divided roadways are designated evacuation routes, approach end anchorage assemblies should be used for trailing end anchorage."- Text deleted.

Index No. 400 (Sheet 16 of 31), "PERMISSIBLE POST AND OFFSET BLOCK COMBINATION", table -all references to "554" for length of steel modified offset block – "554" deleted and "432" substituted. Text "M14x17.2" deleted and "M14x18" substituted. Table footnotes – "Notes"– Note 4 added, stating: "Recycled plastic offset blocks included on the Qualified Products List that have width dimensions ≥4" ≤6" and which have molded protrusions from the back along each side to prevent rotation can be used with standard steel guardrail posts."
"SPECIAL SAFETY PIPE RAIL' – Subtitle deleted and subtitle 'PEDESTRIAN SAFETY TREATMENT" substituted. "STEEL MODIFIED THRIE-BEAM OFFSET BLOCK", height dimension "554" – "554" deleted and "432" substituted; all hole sizes

and locations remain the same and the v-notch size, shape and position remain the same but in location relative to the bottom of the 432mm block.

"PEDESTRIAN SAFETY TREATMENT", under Note 1 add the following: "Refer to Sheet 1, Note 6 for end treatment requirements."

Index No. 400 (Sheet 18 of 31), "M16 OVAL SHOULDER BUTTON HEAD BOLT" table, footnotes – Inserted between the upper and lower footnotes is a footnote stating "For applications where special bolts having lengths greater than 640 mm are required, the Contractor may use a M16 Ø threaded rod (field cut to length). A hex nut and beam washer shall be used at the guardrail face with no more than 19 of the threaded rod projecting beyond the top of the nut. The projecting thread on both ends shall be distorted to forbid removal of the nuts, and both ends of the threaded rod metalized with organic zinc-rich coating."
Note above table title is deleted.
"HEX BOLTS AND NUTS" bracketed text – The text is deleted and the following text substituted: "HS Hex bolts for THRIE – BEAM TERMINAL CONNECTORS shall conform to the requirements of ASTM A449 (Type 1) with heavy hex nuts and washers. All other hex bolts shall conform to the requirements of ASTM A563. Bolts, nuts and washers shall be hot dip galvanized. Heavy hex nut may be used in lieu of hex nuts and hex nuts used for jam nuts."

"5/8" STEEL WASHER", at the end of the second sentence of the note add: "and under hex nut for connecting rubrail to wood and steel posts."

Index No. 400 (Sheet 19 of 31), "THRIE-BEAM TERMINAL CONNECTOR" – The six (6) interior 24 by 45 mm slots rotated to match the orientation of the six (6) end slots.

Index No. 400 (Sheet 20 of 32), "GUARDRAIL POSTS", "SPECIAL STEEL GUARDRAIL POSTS", "FOR MOUNTING GUARDRAIL ON EXISTING APPROACH SLABS AND BRIDGE SIDEWALKS", "TOP VIEW" – Additional 24 Ø holes to be located front, back and each side of the base plate at mid points between existing corner holes, to accommodate anchor bolt placement where corner anchor bolt edge clearance can not be achieved; one front hole anchor bolt required with any combination of three other anchor bolts (total 4 bolts required); refer to Structures Index series 770 and 780 for guidelines to post location and anchor bolt orientation.
"FOR CONSTRUCTION OF GUARDRAIL WHERE CULVERT, PIER FOOTING OR OTHER STRUCTURE PRECLUDES NORMAL POST INSTALLATION", "SIDE VIEW", "22 mm Ø" dimension – "22 mm Ø" deleted and "19 mm Ø" substituted.

Index No. 400 (Sheet 24 of 31), 'CONTROLLED RELEASE RETURN NOTES', note 1, last line-Insert SKT.

Index No. 400 (Sheet 25 of 31), "ET 2000 NOTES" - Note 6 deleted and the following text substituted:

"Post Options:
(a) Posts at location Nos 1, 2, 3 and 4 are timber breakaway posts with steel foundation tubes. The breakaway posts at location Nos. 5, 6, 7 and 8 may be constructed as shown in Section CC or may utilize timber breakaway posts with steel foundation tubes as shown in Section BB.
(b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by one 3" x 3" x 1/4" steel angle on the back side between Post No. 1 and No. 2." Post No 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification of HBA Post Type J2."

Index No. 400 (Sheet 28 of 31), "LET NOTES" - Note 6 deleted and the following text substituted:
"Post Options:
(a) Posts at location Nos 1, and 2 are timber breakaway posts with special length steel foundations tubes without soil plates. Posts at locations Nos. 3, 4, 5, 6 and 7 are CRT timber posts.
(b) Posts shown in Option (a) can be replaced by hinged steel breakaway posts and the steel channel offset strut can be replaced by one 3" x 3" x 1/4" steel angle on the back side between Post No. 1 and No. 2." Post No 1 can be replaced by the steel hinged post with the manufacturer's identification of HBA Post Type J1, and Post Nos. 2 through 8 can be replaced by steel hinged posts with the manufacturer's identification of HBA Post Type J2."

Index No. 400 (Sheet 29 of 31), "END ANCHORAGE ASSEMBLY TYPE SKT-350", "ELEVATION" view and footnote "Do Not Attach Rail To Block At Post Locations 3, 5 and 7, and, Rail To Post At Post No. 1. " – Post bolts required and to be indicated at Posts Nos. 3, 5 and 7; the text in the footnote to be deleted and text "Do Not Attach Rail To Post At Post No. 1." substituted.
"SECTION BB", "Note: Do not attach rail to block at post locations 3, 5 and 7." – Note deleted.

Index No. 400 (Sheet 31 of 31), "END ANCHORAGE ASSEMBLY TYPE REGENT" is deleted and Interim Index No. 0400, Sheet 1 of 1, dated 08-21-03 is substituted.

Interim Index No. 403 (Sheets 1 thru 2 of 2), Dated 07-01-05, "GUARDRAIL TRANSITIONS FOR EXISTING BRIDGE TRAFFIC RAILING RETROFITS" is added.

Index No. 410 (Sheets 1-22 of 22), – All reinforcing steel with undesignated size shall be #13 bars.

Index No. 410 (Sheet 6 of 22), QUANTITIES, "24 kg/m" is deleted and "31 kg/m" is substituted.

Interim Index No 412 (Sheets 1-5 of 5), “PORTABLE TEMPORARY LOW PROFILE BARRIER FOR ROADSIDE SAFETY”, dated 9-29-03 is added.

Interim Index 412 (Sheet 1 of 5), - Dated 09-29-03 Sheet 1 of 5 “GENERAL NOTES”, Note 3, second paragraph, first sentence, text deleted and the following substituted: “Barrier wall units shall conform to Section 521 of the Standard Specifications and produced in Department approved plants with quality control plans for precasting concrete barrier wall.”

Interim Index No. 412 (Sheet 1 of 5), Dated 09-29-03, “General Notes”, Note 4, The following added as paragraph 2: “Low profile barrier wall units shall be installed so as to be in firm contact with adjoining units. Nuts and tensioning rods shall be installed snug tight”.

Interim Index No.412 (Sheet 1 of 5), Dated 09-29-03 Sheet 1 of 5 “GENERAL NOTES”, Note 6, the following sentence added: “The cost of the tubular markers and Type 1 object marker shall be included in the cost of the low profile barrier.”

Interim Index No. 413 (Sheet 1 of 1) “PROPRIETARY TEMPORARY CONCRETE BARRIER”, Dated 07-01-03, is added.

Interim Index No. 413 (Sheet 1 of 1), “GNERAL NOTES”, Note 4 added as follows: “4. Barrier wall units shall conform to Section 521 of the Standard Specifications and produced in Department approved plants with quality control plans for precasting concrete barrier wall.”

Index No. 415 (Sheet 1-10 of 10), “TEMPORARY CONCRETE BARRIER”, is deleted and Interim Index No. 0415, Dated 07-01-03, is substituted.

Interim Index No. 0416 (Sheet 1 of 1), “TEMPORARY WATER FILLED BARRIERS”, Dated 03-31-03, is added.

Index No. 416 (Sheet 1 of 5), “GENERAL NOTES”, Note 10, lines two and three, text “or Barrier (Temporary) (Optional, LF)”. “If the plans specify Barrier (Temporary) (Optional), the Contractor has the option to furnish either concrete or water filled barriers.” – text deleted.

“SUPPLEMENTAL GENERAL NOTES FOR THE TRITON BARRIER”, Note 7, line two, text “or Barrier (Temporary) (Optional), M1” – text deleted.

Index No. 416 (Sheet 5 of 5), “SUPPLEMENTAL GENERAL NOTES FRO THE GUARDIAN BARRIER”, Note 7, line two, text “or Barrier (Temporary) (Optional), M1” – text deleted.

Index No. 417 (Sheet 1 of 1), “NOTES FOR TEMPORARY INERTIAL CRASH CUSHIONS” -

Note 1 deleted and the following note substituted:

"1. The crash cushion arrays shown on this Index can be used on the State Highway System only when all of the following conditions are met:

a. Use is limited to shielding temporary concrete barrier wall approach ends.
b. Use only when a temporary gating crash cushion or inertial crash cushion is specifically called for in the plans.
c. Use is limited to installations that will not exceed 30 calendar days in duration, unless otherwise called for in the plans.
When the plans do not specifically call for a temporary gating crash cushion, and/or when the installation will exceed 30 days in duration, a redirective crash cushion system in accordance with Index 415 is required."

Note 5 deleted and the following note substituted:
"5. A yellow post mounted Type 1 Object Marker shall be centered 1.0 m in front of the nose of all crash cushion arrays. Mounting hardware shall be in accordance with Index Nos. 11860 and 11865. The cost of the Object Marker shall be included in the cost of the array."
Note 6 deleted and the following note substituted:
"6. Temporary gating crash cushion systems listed on the Department's Qualified Products List (QPL) may be substituted for the crash cushion arrays shown in this Index, provided a configuration using the system for this substitution has been detailed in the approved QPL drawings. Manufacturers seeking approval of temporary gating crash cushions for inclusion on the QPL must submit application along with design documentation showing the crash cushion system is crash tested to NCHRP Report 350 Test Level 3 criteria, is accepted by FHWA and is compatible with FDOT temporary barrier wall systems. System approvals will be contingent on FDOT's evaluation of crash test performance results for consistency with FDOT temporary barrier wall end shielding applications and uses. If approved, installation drawings signed and sealed by a professional engineer licensed in the State of Florida will be required.
"Note 7 added as follows: "7. Temporary crash cushions (gating) are to be paid per array for under the contract unit price for Vehicular Impact Attenuator/Crash Cushion (Gating) (Temporary), LO."

Interim Index No. 430 (Sheets 1 thru 2 of 2), Dated 07-01-05, "OPTIONAL CRASH CUSHION DETAILS" is added.

Index No. 435, "QUADGUARD" – Note that details for the QuarGuard HS are posted on the Qualified Products List.

Index No. 435 (Sheet 2 of 6), "QUARDGUARD", is deleted and Interim Index No. 0435, Dated 7-10-01, is substituted.

Index No. 435 (Sheet 3 of 6), "ASPHALTIC CONCRETE FOUNDATIONS", "PLAN" – detail deleted.

Index No. 436 (Sheet 1 of 1), “DESIGN AND MAINTENANCE NOTES AND GUIDELINES”, note 5, last line, reference to “general Note 12” – Text “12” deleted and text “13” substituted.

Index No. 440, “TRACC SYSTEMS” – Note that details for the WideTRACC and the TRACC Modular Base are posted on the Qualified Products List.

Index No. 440 (Sheet 1-2 of 2), “TRACC SYSTEMS”, is deleted and Interim Index No. 0440 (Sheet 1-5 of 5), “, Dated 05-04-01, is substituted.

Interim Index No. 0440 (Sheet 1 of 5), “GENERAL NOTES”, Note 7, the text is deleted and the following substituted: “All permanent units shall be factory new at completion of construction. Temporary construction units and units under Maintenance responsibility may be shop repaired units utilizing new or salvaged parts which will produce condition new units.”

Interim Index No. 0440 (Sheet 1 of 5), “DESIGN NOTES AND GUIDELINES”, Note 2, The text is deleted and the following substituted: “When equipped with the modular base, the TRACC is a restorable system that is well suited to shielding hazards subject to high speed traffic with a history of frequent errant vehicle departures from the roadway or the potential exists for such departures. The TRACC is also well suited to shielding hazards where the approach space is limited; and for conditions where the terminal must be located close to the traffic lane.”

Index No. 441, “TAU-II” – Note that details for the TAU-II Revised and Universal TAU-II are posted on the Qualified Products List.

Index No. 441 (Sheets 1-8 of 8), “TAU-II”, is deleted and Interim Index No. 0441 Dated 11-14-02, is substituted.

Index No. 451 Sheet 1of 2, “GENERAL NOTES”, Note 19 - text last sentence “Type A” deleted.
Note 20 - text first sentence “and pay” deleted.
Note 21- Note deleted and the following substituted: “This index details fencing that is constructed with farm fabric 1.18 (1.2 nominal) in height and with specific ground clearance and specific barbed wire spacings.”
Note 22 added with the following text- “22. All posts, braces, tension wires, fabric, tie wires, Class 1 concrete and all miscellaneous fittings and hardware to be included in the cost for Fencing, M1. Fencing shall be inclusive of the lengths of pull, end and corner post assemblies, but exclusive of gate widths.”

Index No. 452 (Sheet 1 of 2), notations tagged to “14 Ga. Tension Bands”-Spacing dimension “(≤180)” deleted and dimension “(≤380)” substituted.
“GENERAL NOTES”, Note 7(b) is deleted and the following note substituted: “(b) In accordance with ASTM F567 Subsections 5.4 through 5.10 as approved by the engineer.” notes “7(c)” and “7(d)” – Note “7(c)” deleted and note “7(d)” redesignated note “7(c)”. [Redesignated] Note 7(c) “4.5” deleted and “5.5” substituted Table “TYPE IV VINYL

COATED FABRIC", subheading "Specification Section 966 And AASHTO M181 Table 4 Redefined As Follows" – Text "Specification Section 966 And" deleted.
Note 11- text last sentence "Type B," deleted.
Note 12-text deleted and the following substituted: "For construction purposes, corner post assemblies shall consist of one corner post, two braces, two truss rods, and all necessary fittings and hardware as detailed above. End Post assemblies shall consist of one end post, one brace, one truss rod and all necessary fittings and hardware as detailed above."
"Note 13" added with the following text: "All posts, tension wires, chain link fabric, tie wires, Class I concrete, and all miscellaneous fittings and hardware to be included in the cost for Fencing, M1."

Index No. 452 (Sheet 2 of 2), "BARB WIRE ATTACHMENT", "NOTES", - text "Attachments to be paid for under the contract unit price for Fencing, Type B (With Barb Wire Attachment) M1." deleted.

Index No. 461 (Sheet 1 of 1), "GENERAL NOTES", note 2, end of line three "(3)-16mm" added.

Interim Index No. 0501 (Sheets 1-8 of 8), "GEOSYNTHETIC REINFORCED SOILS", Dated 08-24-00, and (Sheet 6 of 8) Dated 02-28-02, is added.

Index No. 505 (Sheets 1-3 of 3), "EMBANKMENT UTILIZATION", is deleted and Interim Index No. 0505, Dated 11-14-01 is substituted.

Index No. 510 (Sheet 2 of 3), "SHOULDER CONSTRUCTION WITH SUPERELEVATION", notation "SHOULDER ON HIGH SIDE:", Second paragraph-Paragraph deleted.

Index No. 514 (Sheet 1 of 2), base group table, column 7 – "ABC-3 (Min. Marshall Stability 4500N)" heading deleted and heading "Type B-12.5 (ABC-3)" substituted; and, column 8 – "ABC-3 and 100 mm Granular Base, LBR-100*"- heading deleted and heading "Type B-12.5 (ABC-3) and 100mm Granular subbase, LBR 100*" substituted. "GENERAL NOTES", note 4; and; asterisk (*) notation, line one(1) and line four (4) – text "ABC-3" deleted and text "Type B-12.5 (ABC-3)" substituted.

Index No. 515 (Sheet 1 of 6), table "SUMMARY OF GEOMETRIC REQUIREMENTS FOR TURNOUTS', line 'CONNECTION WIDTH W", columns indicating "36' Max." – A superscript ✯ symbol added for footnote reference. Table footnotes –✯symbol and footnote added with the following text: "✯When more than 2 lanes in the turnout connection are required, the 36' max. width may be increased to relieve interference between entering and exiting traffic which adversely affects traffic flow. These cases require documented site specific study and design."

Index No. 515 (Sheet 2 of 6), “SPECIAL NOTES FOR URBAN FLARED TURNOUTS”, Note 11 is added as follows:“ All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum”.

Index No. 515 (Sheet 6 of 6), “URBAN TURNOUT PROFILES” and “RURAL TURNOUT PROFILES” “Maximum Grades”, “Commercial =10%’ – A ☐ superscript add to each “Commercial= 10% entry for footnote reference. The ☐ symbol and footnote added with the following text:
“☐ When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create any adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and be supported by documented site specific findings.”

Index No. 516 (Sheet 1 of 1), “GENERAL NOTES”, note 6 last line, “FC-2” – “FC-2” deleted and “FC-5” substituted.

Index No. 518 (Sheet 2 of 2), “GROUND-IN RUMBLE STRIPS”, is deleted and Interim Index No. 0518, Dated 11-28-00 is substituted.

Index No. 520 (Sheet 1 of 1), KEY DETAIL, (TOP VIEW), reference to roofing weight is changed to: “30#”
SECTION details, below the reference “#13 Bars @ 450 Ctrs. (Max)” add “(Grade 40 or Grade 60)”.

Index No. 520 (Sheet 2 of 2), Sheet deleted.

Index No. 525 (Sheet 1 of 5), “THREE APPROACH LANES – TWO THRU LANES, DETAIL B”, traffic directional arrow shown in recovery area (taper beyond nose) – Arrow deleted.

Index No. 525 (Sheet 4 of 5), Subtitle and header – Word “EXPRESSWAY” deleted and word “FREEWAY” substituted. Sketches for “ACCELERATION LANE WITH SHOULDER GUTTER” and “DECELARATION LANE WITH SHOULDER GUTTER” – Shoulder pavement width 1.2 deleted and width “2.4” substituted. Sketches for “ACCELERATION LANE WITHOUT SHOULDER GUTTER” AND “DECELARATION LANE WITHOUT SHOULDER GUTTER” – Shoulder pavement width “1.8” deleted and width “3.0” substituted.

Index No. 532 (Sheet 1 of 3), GENERAL NOTES, Note 4, the first paragraph is deleted and the following substituted: “Mailboxes shall be light sheet metal or plastic construction, in traditional style only, and only Size 1 as prescribed by the Domestic Mail Manual of the U. S. Postal Service (DMM).”

Index No. 600 (Sheet 1of 11), "PREFACE" first paragraph, 3rd sentence - Text deleted and the following text substituted: - “This index contains information specific to Federal and

State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD."

Index No. 600 (Sheet 2 of 11), Add new heading "OVERHEAD WORK" – Add the following text:

"Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)
Overhead work using a modified lane closure is allowed if all of the following conditions are met:

a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
e. Aerial lift equipment is placed directly below the work area to close the lane.
f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 30m foot taper.
g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)
Overhead work above a open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within an area bounded by 0.6m feet outside the edge of travel way and 5.5m high.
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK USING A STANDARD LANE CLOSURE)
The lane directly below the overhead work is closed in accordance with the appropriate standard index drawing or detailed in the plans."

Index 600 Sheet 2 of 11, add new heading "TEMPORARY TRAFFIC CONTROL DEVICES" – Add text:

"All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered. Arrow Panels, Portable Changeable Message Signs, Radar Speed Display Trailers, Portable Regulatory Signs, and any other NCHRP 350 Category 4 devices shall be delineated with retroreflective TTC devices when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use."

Index No. 600 (Sheet 4 of 11), Add New Heading - "GROOVED PAVEMENT AHEAD SIGN" and text "The GROOVED PAVEMENT AHEAD sign is required 500' in advance of a milled or grooved surface open to traffic."

Add Heading - "Utility Work Sign" with note "THE UTILITY WORK (W21-7) sign may be used as an alternate to the ROAD (STREET) WORK (W20-1) sign for utility operations on or adjacent to a highway.

Index No. 600 (Sheet 5 of 11), "SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN", second paragraph-Paragraph deleted and the following text substituted: "The placement should be 150 meters downstream of the first ROAD WORK AHEAD sign or midway to the next sign whichever is less."

Add "TRANSVERSE JOINTS to existing header "MANHOLES/CROSSWALKS" – Add the following text after the first paragraph – "All transverse joints that have any difference in elevation shall have a temporary asphalt apron constructed as shown in the diagram below."

Index No. 600 (Sheet 6 of 11), "DROPOFF NOTES", Note "3(c)" deleted. DROPOFF DETAIL Top center, delete text "For concrete barrier wall, 0.6 min" and substitute text "Min. 0.6 m on 1:10 slope or flatter for concrete barrier wall on roadways. For concrete barrier wall on bridges see Structures Design Standard No. 715."

Index No. 600 (Sheet 7 of 11), Sheet deleted.

Index No. 600 (Sheet 8 of 11), "CHANNELIZING AND LIGHTING DEVICE NOTES," note 9.3.-Word "sole" deleted.

Index No. 600 (Sheet 9 of 11), subtitle “LANE DROP AND LANE SHIFTS-PLAN SHOWN FOR RIGHT LANE MERGE LEFT-INVERTED PLAN FOR LEFT LANE MERGE RIGHT”, notation right hand top “Reflectorized Pavement Markings:,” last line-Text “Or, Lane Line (No Passing)” deleted.

Index No. 600 (Sheet 11 of 11), “NOTES”, note 1, second sentence-Sentence extended by the following text: “with the exception that Class D markers be placed at a maximum spacing of 1.5’ center to center.”

Index No. 602 (Sheet 1 of 1), “GENERAL NOTES,” note 3, line one-Delete word “vehicles” and substitute “work vehicles”

Index No. 609 (Sheet 1 of 1), “GENERAL NOTES”, note “9”; tag line notation upper left; and, “CONDITIONS” – All words “detour” and “DETOUR” changed to “diversion” and “DIVERSION”.

Index No. 612 (Sheet 1 of 1), Upper right hand drawing, mark “L/2” – “Mark L/2” deleted mark “L” substituted.

Index No. 614 (Sheet 1 of 2), “Notes:” note “(a)”, last line – Text “22.5” deleted and text “24.6” substituted. ‘GENERAL NOTES’, note ‘12.’ Second line, word ‘approved’ – Word ‘approved’ deleted and word ‘qualified’ substituted.

Index No. 628 (Sheet 1 of 1), “GENERAL NOTES,” note 1.-Text “one traffic lane’ deleted and text ‘two-way left turn” substituted.

Index No. 631 (Sheet 2 of 2), “TEMPORARY CROSSOVER”, is deleted and Interim Index No. 0631, Dated 08-24-00 is substituted.

Index No. 640 (Sheet 2 of 2),”GENERAL NOTES,” note 5-Note text deleted and the following text substituted: “Warning devices shall be in conformance with ‘DROPOFFS IN WORK ZONES’, Index No. 600.”
In the plan view, notation ‘White Reflectorized Pavement Markings’, ‘Yellow Reflectorized Markings’-Text in parenthesis deleted and the text “(Double Line Reflectorized Marking In No-Passing Zones As Directed By The Engineer)” substituted.

Index No. 650 (Sheet 1 of 2), “PHASE I”, note 2.-Text deleted and text “Construct temporary structure, approaches and guardrail; and, construct crash cushions at each end of truss if center truss constructed.” substituted.
Notation tagged to “END ROAD WORK” sign, line 3-Kilometer value “3.2” deleted and value “1.6” substituted.
‘Phase II’, notation tagged to R4 7 sign-Text ‘To Protect Center Truss’ is deleted and text ‘If Center Truss Constructed’ substituted.

Signing for “Temporary Structure” – Legend sign for “Slippery When Wet”, designation “W8-5” shall be placed in advance of bridges with steel decks.

Index No. 650 (Sheet 2 of 2), “GENERAL NOTES”, note “4”, last line – Word “detour” deleted and word “diversion” substituted; note “5” – Note expanded by the following text: “Cost of temporary guardrail systems, including end anchorage assemblies, transitions and attachment to temporary structures, are to be included in the contract unit price for guardrail (temporary), M1.”; note “7” – Note deleted and the following note substituted: “7. Only temporary crash cushions approved by the Department shall be used unless specified devices called for in the plans.”

‘GENERAL NOTES’, Note 4, Line 3, text “detour” – Text deleted and text “diversion” substituted.

Interim Index No. 0670 (sheet 1 of 1), Dated 07-01-05, “MOTORIST AWARENESS SYSTEM” is added.

Index No. 700 (Sheet 1-2 of 2), “ROADSIDE OFFSETS”, Dated 11-22-02 is added.

Index No. 5000 (Sheet 1 of 1) “RETAINING WALL SYSTEM GENERAL NOTES” is deleted and Interim Index No. 05000, (Sheet 1 of 1) Dated 08-21-03 is substituted.

Index No. 5012 (Sheet 20 of 20), X-5, Superimposed sheet image-Image deleted.

Index No. 5015 (Sheets 1-14 of 14), “RETAINING WALL SYSTEM, REINFORCED EARTH COMPANY, REINFORCED EARTH WALL” is deleted and Interim Index No. 05015 (Sheets 1-16 of 16) Dated01-01-05 is substituted.

Index No. 5021 (Sheets 1-13 of 13), - Index Deleted.

Index No. 5025 (Sheets 1-17 of 17), “RETAINING WALL SYSTEM, TENSAR EARTH TECHNOLOGIES, MSE RETAINING WALL” is deleted and Interim Index No. 05025 (Sheets 1-16 of 16) Dated 01-01-05 is substituted.

Interim Index No. 5035 (Sheets 1-14 of 14), “RETAINING WALL SYSTEM, SSL, MSE PLUS WALL SYSTEM” Dated 01-01-05 is added.

Interim Index No. 5040 (Sheets 1 thru 13 of 13) Dated 07-01-05, “RETAINING WALL SYSTEM, HILFIKER SQUARE PANEL”, is added.

Interim Index No. 5045 (Sheets 1 thru 13 of 13) Dated 07-01-05, “RETAINING WALL SYSTEM, T & B SQUARE PANEL” is added.

Interim Index No. 5110 (Sheets 1-5 of 5), “RETAINING WALL SYSTEMS, T & B STRUCTURAL SYSTEMS, INC., GABION WIRE WALL”, Dated 01-01-05 is added.

Index No 5115 (Sheets 1-4 of 4), “RETAINING WALL SYSTEM, THE REINFORCED EARTH COMPANY, TERRATREL WIRE WALL” is deleted and Interim Index No. 05115 (Sheets 1-6 of 6) Dated 01-01-05 is substituted.

Index No. 5120 (Sheets 1-4 of 4), - Index Deleted.

Index No. 5125 (Sheets 1-3 of 3), “RETAINING WALL SYSTEM, TENSAR EARTH TECHNOLOGIES, TEMPORARY RETAINING WALL” is deleted and Interim Index 05125 (Sheets 1-5 of 5) Dated 01-01-05 is substituted.

Interim Index No. 5140 (Sheets 1 thru 5 of 5) Dated 07-01-05, “RETAINING WALL SYSTEM, HILFIKER TEMPORARY WIRE WALL”, is added.

Index No. 11860 (Sheet 1 of 3), table, sign number “88”, “TYPE OF SIGN BRACKET” text “DO NOT USE SINGLE COLUMN” – Text deleted and the following text substituted: “SEE NOTES”, “NOTE:”, note “5”. – Note text deleted and the following text substituted: “Footing shall be 600Ø by 1500 deep.”
Note 6 added as follows: “Slip Base Details, see Index No. 11863”.

Index No. 11860 (Sheet 2 of 3), note “SIGN PANEL”, text “3 mm” – “3 mm” deleted and 2 mm substituted.

Index No. 11861 (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11861 (Sheet 2 of 2), table, sign number ‘88’ ‘HEIGHT’- Line text ‘SEE NOTE INDEX NO 11860’ added.

Index No. 11862 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11862 No. (Sheet 2 of 2), table, sign number “88”, “HEIGHT” – Line text “SEE NOTE INDEX NO. 11860” added.

Index No. 11863 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11863 No. (Sheet 2 of 2), table, sign number “88”, “HEIGHT” – Line text “SEE NOTE INDEX No. 11860” added.

Index No. 11864 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “5a” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11864 No. (Sheet 2 of 2), table, sign number “88”, “HEIGHT” – Line text “SEE NOTE INDEX No. 11860” added.

Index No. 11865 No. (Sheet 1 of 2), “NOTES”, note “4”, second line, dimension “4.0” – “4.0” deleted and “4” substituted; (i.e. 4 mm). Note “1d” – note text deleted and the following text substituted: “Frangible Supports: The Column (Post) shall be driven into the ground to the depth indicated or set into preformed holes to the specified depth with suitable backfill tamped into compacted layers not exceeding 0.15 m or filled with flowable fill or bagged concrete. The cost of the flowable fill or bagged concrete shall be included in the cost of the sign.”

Index No. 11865 No. (Sheet 2 of 2), “ELEVATION” detail top center of page – Detail deleted and a detail substituted to accommodate placement of sign in concrete surfaces. The replacement detail is subtitled “SIGN POST IN CONCRETE (CROSSOVERS, MEDIANS & SIDEWALKS)”. The replacement detail is described as follows: A PVC Sch. 40 Sleeve W/UV Inhibiter, 300 in length is installed with its top flush with the concrete surface. The sleeve is 19 larger in diameter than the frangible tube post that is to be installed through the sleeve and imbedded in the soil to the depth required for a specified sign.

“STEEL FLANGED CHANNEL POST DETAILS”, “SIGN ATTACHMENT DETAIL”, “Bearing Plate” – Bearing Plate deleted.

Index No. 17344 (Sheets 1-3 of 6), “SCHOOL SIGNS AND MARKINGS”, are deleted and Interim Index No. 017344, Dated 12-26-01 is substituted.

Index No. 17345 (Sheet 3 of 4), “INTERCHANGE MARKING”, is deleted and Interim Index No. 017345, Dated 12-26-01 is substituted.

Index No. 17346 (Sheets 1-9 of 9) “SPECIAL MARKING AREAS”, is deleted and Interim Index No. 017346, (Sheets 1-13 of 13), Dated 12-26-01 is substituted.

Interim Index No. 17346 (Sheet 5 of 13) “SPECIAL MARKING AREAS” is deleted and Interim Index No. 017346 (Sheet 5 of 13) Dated 01-01-05 is substituted.

Index No. 17352 (Sheet 2 of 2), ‘TRAFFIC LINES’, inset-The color of the RPM’s on the lane lines at the stop line is changed from “Mono-Colorless” to “Bi-directional white/Red”.

Index No. 17355 “SPECIAL SIGN DETAILS”, is expanded by the addition on Interim Index No.017355, (Sheets 8-14 of 14), Dated 12-27-01.

Index No. 17355 (Sheet 7 of 12), Sign FTP -49- Symbol text replace by international symbols.

Index No. 17357 (Sheet 1of 1), note “4.” –Words “to route” inserted between words “detour” and “around”.

Index No. 17500 (Sheet 1 of 3) “CONVENTIONAL LIGHTING” is deleted and Interim Index No. 017500 (Sheet 1 of 3) Dated 01-01-05 is substituted.

Index No. 17500 (Sheet 2 of 3), “GENERAL NOTES:” and “SURGE PROTECTOR SPECIFICATIONS” – General notes and surge protector specifications deleted.

Index No. 17501 (Sheet 1 of 1), General notes (24) through (28) and SURGE PROTECTOR SPECIFICATIONS added with the following text:

24) Luminaire shall be supplied with a regulator type ballast mounted on a hinged door or panel. The unit shall swing open to provide access to the ballast assembly by release of captive screws. The electrical connector shall be a quick disconnect plug. The unit shall be easily removed from the luminaire after release of the captive screws and disconnect plug.

25) All mounting heights are ±0.75 meter unless otherwise noted in plans.

26) A handhole is required in all poles. Handhole should be located opposite approaching traffic with cover fastened with Stainless Steel Screw. The handhole opening shall be at least 20 square inches.

27) The luminaire and arm on JOINT USE POLES shall be grounded.

28) Concrete slabs around poles and pull boxes shall be paid for under the contract unit price for Class I Concrete (Miscellaneous): the cost of reinforcing steel fabric shall be included in the price for Class I Concrete (Miscellaneous).

SURGE PROTECTOR SPECIFICATIONS

1. The unit shall withstand a surge current up to 20,000 Amps, and repetitive surges of 200 Amps for a minimum of 10,000 occurences.
2. The unit shall respond in less than 50 nanoseconds and within this time have a peak clamping voltage better than 1,100 Vrms.
3. The maximum allowable voltage that can pass continuously through the hot leg of the protector must be less than 550 Vrms.
4. The current drain shall be less than 100 microamps.
5. The unit shall be insulated 600 V to ground and shall be weatherproof.
6. The unit shall not allow holdover current or conduction to ground after the surge ends.
7. Protection shall be achieved for both the 480 V and neutral conductors with the surges being passed to ground and NOT to neutral.
8. There shall be no discharge lag in the protection of the 480 V conductor over the neutral conductor.
9. Underwriters Laboratory approval not required.

Index No. 17502 (Sheet 2 of 4), Add the following heading and text: “ALTERNATE POLE: A spun high mast prestressed concrete pole listed on the Qualified Products List may be substituted for a steel pole with approved shop drawing and calculations. If the concrete pole is provided as a substitute for the steel pole, payment will be made under the items bid for steel poles and associated foundations and plan quantity of these items will be the basis for payment.”

Index No. 17502 (Sheet 3 of 4), Sectional View, Ground rod tagged notation – Length “3.0 long” deleted and “6.0 long”: substituted; and, text “(resistance to ground not to exceed 25 OHMS.)” deleted.

Index No. 17503 (Sheet 1 of 1), “METAL POLE CONCRETE FOUNDATION DETAIL”, tag notation “#13 Bars @1300 mm” – “1300” deleted and “300” substituted.

Index No. 17504 (Sheet 1 of 1), ‘DETAIL A’, Ground rod tag notation, “6.0 m long” – “6.0 m long” deleted and “12.0 m long” substituted.

Index No. 17505 (Sheet 1 of 2), “PLAN”, Ground rod tag notation, “3.0 m long” –“3.0”m long” deleted and “6.0 m long” substituted.

Index No. 17515 (Sheets 1-7 of 7), “ALUMINUM LIGHT POLE”, is deleted and Interim Index No. 017515, Dated 7-10-01 is substituted.

Index No. 17600 (Sheet 1 of 2), “CALL BOX DETAIL BEHIND GUARDRAIL”, Plan View- The following notation added below the plan view: “A 760x1200 MANUEVERING

SPACE WITH A 2% MAX SLOPE IN ANY DIRECTION, CENTERED IMMEDIATELY IN FRONT OF THE CALL BOX AND MEASUSRED FROM THE GRIP POINT OF THE UNIT IS REQUIRED."

Side View- Height dimension of "1350" deleted and height to handle dimension of "1170" substituted. Horizontal dimension of "600" deleted and offset from face of rail to face of box dimension equal "355" substituted. The following notation, tagged to the concrete pad surface, "NO MORE THAN 2% SLOPE IN ANY DIRECTION".

Interim Index No. 17723 (Sheets 1-3 of 3), "STEEL STRAIN POLE", Dated 09-26-00 is added.

Interim Index No.017725 (Sheet 1 of 1). "CONCRETE POLES", Dated 07-10-01 is added.

Index No. 17727 (Sheets 1 and 2 of 2), signal height tagged notation in lower right center details- Notations deleted and the following notations substituted: "The vertical clearance to the bottom of a vertical or horizontal vehicular signal head shall not be less than 5.33 m and the maximum height shall be in accordance with the 2000 MUTCD."

Interim Index No. 17741 (Sheets 1-2 of 2), "ISTRUCTIONS AND EXAMPLES FOR DESIGNERS AND FABRICATORS OF STANDARD MAST AREM B & C ASSEMBLIES", Dated 07-17-02 is added.

Interim Index 17743 (Sheet 1-2 of 2), "COMPONENT DATA FOR STANDARD MAST ARM B & C ASSEMBLIES", Dated 07-17-02 is added.

Interim Index No. 17745 (Sheets 1-5 of 5), "MAST ARM ASSEMBLIES", Dated 07-17-02 is added.

Interim Index No. 017746 Sheets 1-4 of 4), "MONOTUBE SIGNAL STRUCTURE", Dated 07-10-01 is added.

Interim Index No. 017748 (Sheet 1 of 1), "FREE-SWINGING, INTERNALLY ILLUMINATED STREET SIGH ASSEMBLIES", Dated 12-27-01, is added.

Index No 17764 (Sheet 1 of 1), Pedestrian signal assemblies-Assembly legends deleted and international symbols substituted.

Index No. 17781 (Sheet 1 of 2), "DETAILS FOR SPLICING LOOP WIRE TO LEAD-IN WIRE"- Detail deleted. "GENERAL NOTES",- Note "6" text deleted and the following text substituted:

"6. Splice Connections in pull boxes with U.L. listed, watertight, insulated enclosures. Place one enclosure over the end of each conductor and place a third enclosure over the exposed end of the shielded cable."

Notes "7" and "8"added with the following text:

"7. As an alternate, a larger diameter enclosure that will accommodate both the splices of the conductors and the exposed end of the shielded cable may be used."

"8. The maximum area of asphalt to be disturbed shall be 6"x6". This area shall be restored as directed by the Engineer."

Detail drawings-A reference note "See General Note #8" is tagged to the access through the roadway pavement for the upper reach of the "Rigid Conduit" and the "PVC Coated Flexible Conduit".

Index No. 17784 (Sheet 1 of 2), "FIGURE C", "(Aerial Feed)"- Pedestrian signal assembly legends deleted and international symbols substituted.

Index No. 17784 (Sheet 2 of 2), Pedestrian assembly "FTP-49"-Legends deleted and international symbols substituted. Footnotes deleted and the following footnotes substituted:

"SIGN COLORS WHITE BACKGROUND WITH BLACK LEGEND AND BORDER"

"INTERNATIONAL WALK SYMBOL WHITE ON BLACK BACKGROUND"

"INTERNATIONAL DON'T WALK SYMBOL ORANGE ON BLACK BACKGROUND"

Index No. 17841 (Sheet 1 of 1), "INTERCONNECT JUNCTION BOX", "BASE MOUNTED", "6.0m (Min.) Ground Rod"-"6.0m (Min.)" deleted and "12.0 (Min.)" substituted.

Index No. 17870 (Sheet 1 of 2), "SIGNAL CLEARANCE TABLE", "SIGNAL INDICATIONS", column four – Indications in column deleted; asterisk in column five deleted; and, asterisk footnote below table deleted.

Index No. 17890 (Sheet 1 of 3), The following design note is added: "In accordance with Traffic Engineering Manual (Topic Number 750-00-005) Section 2.1, Slippery when wet signs shall be placed in advance of all movable and non-movable steel deck bridges."

Index No. 17900, "TRAFFIC MONITORING SITE", is expanded by Interim Index No. 017900 (Sheet 1 of 1) Dated 08-24-00. (Sheet 3 of 9) is deleted and Interim Index No 017900 (Sheet 3 of 9) Dated 12-27-02, is substituted. (Sheet 5 of 9) is deleted and Interim Index No. 017900 (Sheet 5 of 9) Dated 01-01-05 is substituted.