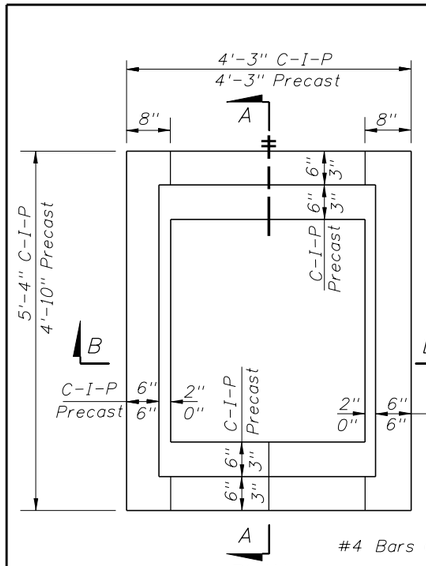
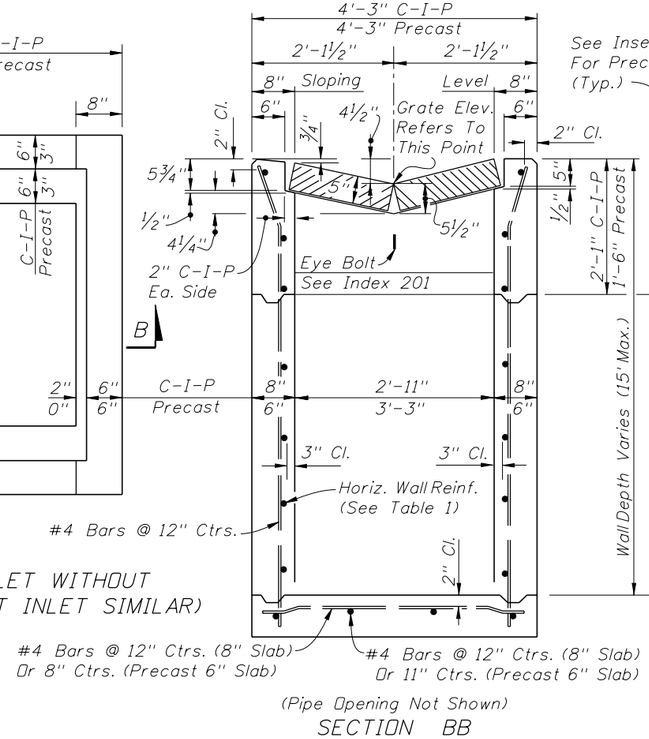
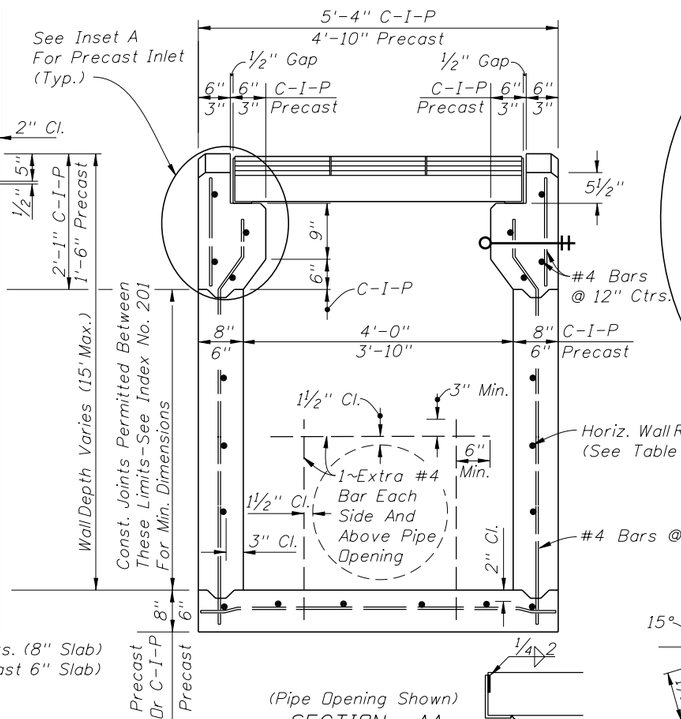


PLAN
(CAST-IN-PLACE INLET WITHOUT GRATE SHOWN, PRECAST INLET SIMILAR)

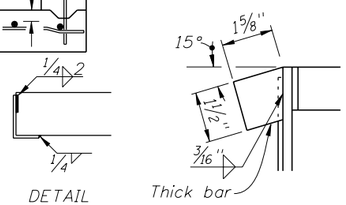


(Pipe Opening Not Shown)
SECTION BB

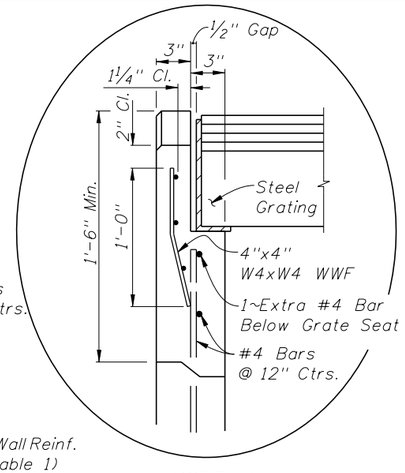


(Pipe Opening Shown)
SECTION AA

(CAST-IN-PLACE INLET SHOWN, PRECAST INLET SIMILAR)



DETAIL
DETAIL OF BAR STUB



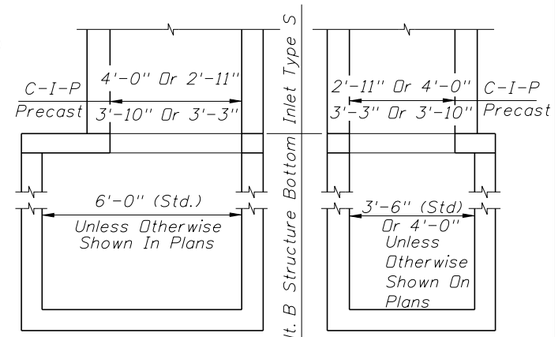
INSET A
(PRECAST OPTION)

RECOMMENDED MAXIMUM PIPE SIZES	
INLET INSIDE WIDTH	PIPE SIZE
2'-11" or 3'-3"	24"
4'-0" or 3'-10"	30"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index No. 201. For larger pipe see bottom detail below and Index No. 200.

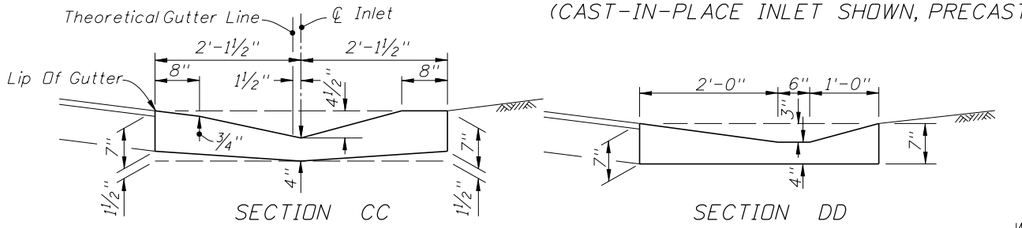
HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in²/ft)	MAX. SPACING	
			BARS	WWF
0'-5'	A12	0.20	12"	8"
5'-9'	A6	0.20	6"	5"
9'-12'	A4	0.20	4"	3"
9'-15'	B5.5	0.24	5½"	5"



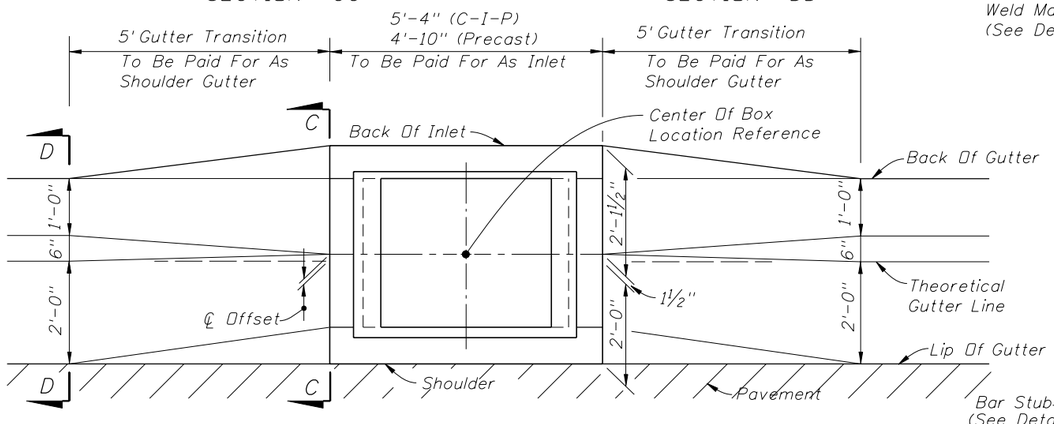
NOTE: Alt. B Structure Bottom Only. See Index No. 200 for structure bottom details and hole reinforcement.

INLET WITH STRUCTURE BOTTOM

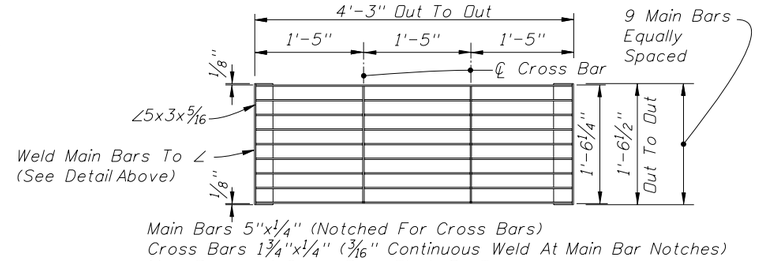


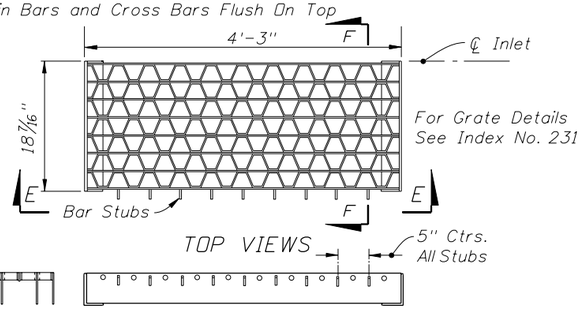
SECTION CC

SECTION DD



SHOULDER GUTTER TRANSITION





SECTION FF
SECTION EE
STEEL GRATE

NOTE: Alt. B Structure Bottom Only. See Index No. 200 for structure bottom details and hole reinforcement.

INLET WITH STRUCTURE BOTTOM

GENERAL NOTES

1. This inlet is intended for use in shoulder gutter on facilities subject to heavy wheel loads. The parallel bar grate shall be used on limited access facilities. On other facilities the reticuline grate shall be used. Locate inlet outside of designated pedestrian travel way.
2. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. See Index No. 201 for equivalent area of welded wire fabric. Bars to be cut or bent for 1½" minimum clearance around pipe.
3. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
4. When Alternate G grate is specified in plans, the grate is to be hot-dip galvanized after fabrication.
5. For supplementary details see Index Nos. 200 and 201.
6. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
7. Inlets to be paid for under the contract unit price for inlets (Gutter Type S), EA. Cost of concrete apron at terminal inlets to be included in the cost of the inlet.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
05/12/09	SJN	Clarify recess depth of top of inlet for steel grate.			

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GUTTER INLET TYPE S

Interim Date 07/01/09

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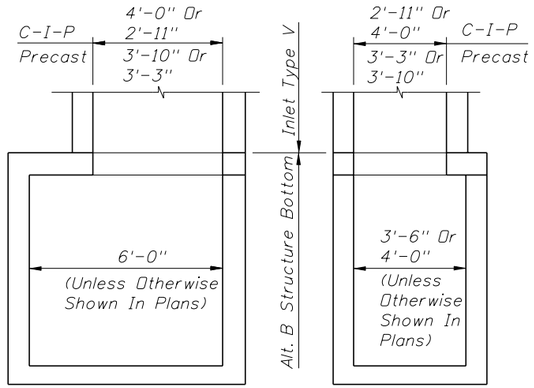
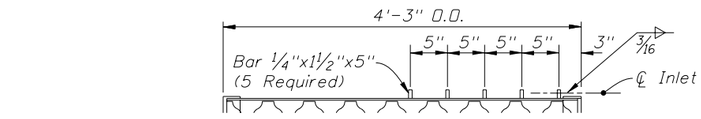


NOTE: Alt. B Structure Bottom Only. See Index No. 200 for structure bottom details and hole reinforcement. (For Pipes 30" Dia. And Larger)

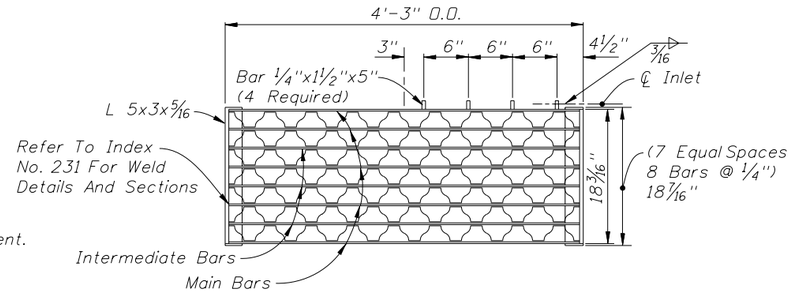
INLET WITH STRUCTURE BOTTOM

RECOMMENDED MAXIMUM PIPE SIZES	
Inlet Inside Width	Pipe Size
2'-11" Or 3'-3"	24"
4'-0" Or 3'-10"	30"

Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index No. 201. For larger pipe see bottom detail above and Index No. 200.



OPTIONAL BAR SPACING



TWO REQUIRED PER INLET

5" Steel Grate:
Main Bars 5"x1/4"
Intermediate Bars 1 1/2"x1/4"
Reticuline Bars 1 1/4"x3/16"

Steel Grate : Manufactured By Borden, Florida Steel, U.S. Foundry Irving, Reliance, Greulich (Or Equal).

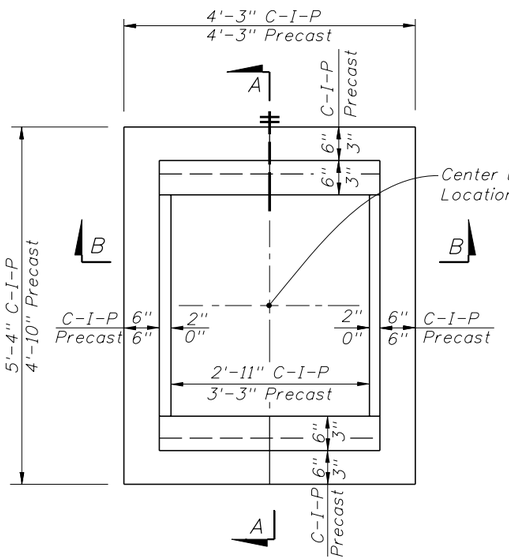
STEEL GRATE

GENERAL NOTES

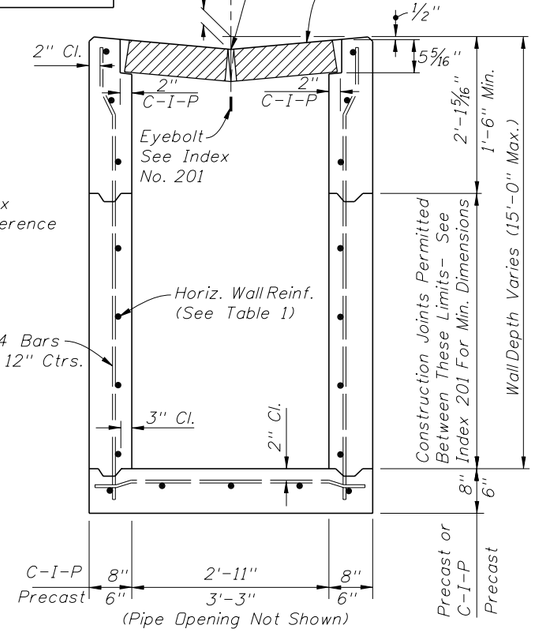
1. This inlet is suitable for village swales, ditches, or other areas subject to heavy wheel loads, minimum debris, and bicycle traffic. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.
2. When alternate "G" grate is specified in plans, the grate is to be hot dip galvanized after fabrication.
3. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. See Index No. 201 for equivalent area of welded wire fabric. Cut or bend bars out of way of pipe to clear pipe 1 1/2".
4. All exposed edges and corners shall be 3/4" chamfer or tooled to 1/4" radius.
5. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.
6. For supplementary details see Index No. 201.
7. Inlet to be paid for under the contract unit price for Inlets (Gutter Type V), EA

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWF
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 12'	A4	0.20	4"	3"
9' - 15'	B5.5	0.24	5 1/2"	5"

HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

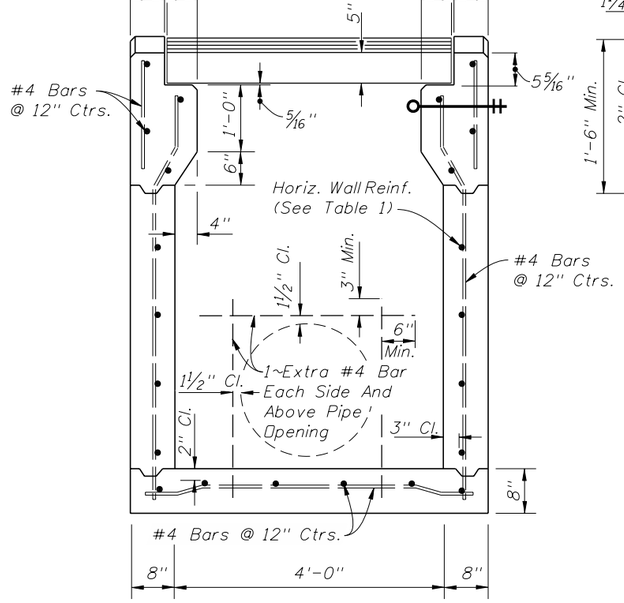


PLAN
(CAST-IN-PLACE INLET SHOWN WITHOUT GRATE; PRECAST INLET SIMILAR)



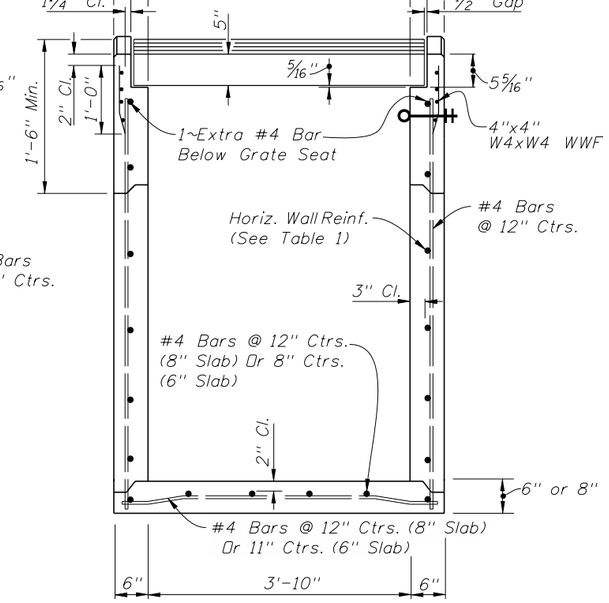
(Pipe Opening Not Shown)

SECTION BB
(CAST-IN-PLACE INLET SHOWN PRECAST INLET SIMILAR)



(Pipe Opening Shown)

SECTION AA
(CAST-IN-PLACE INLET)



(Pipe Opening Not Shown)

SECTION AA
(PRECAST INLET)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
05/12/09	SJN	Clarify recess depth of top of inlet for steel grate.			

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GUTTER INLET TYPE V

Interim Date 07/01/09

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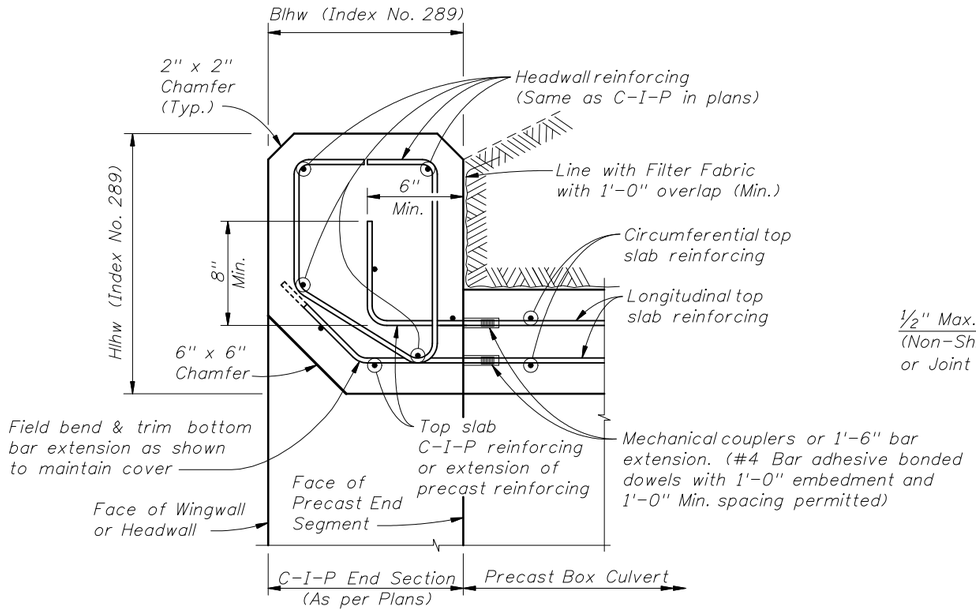
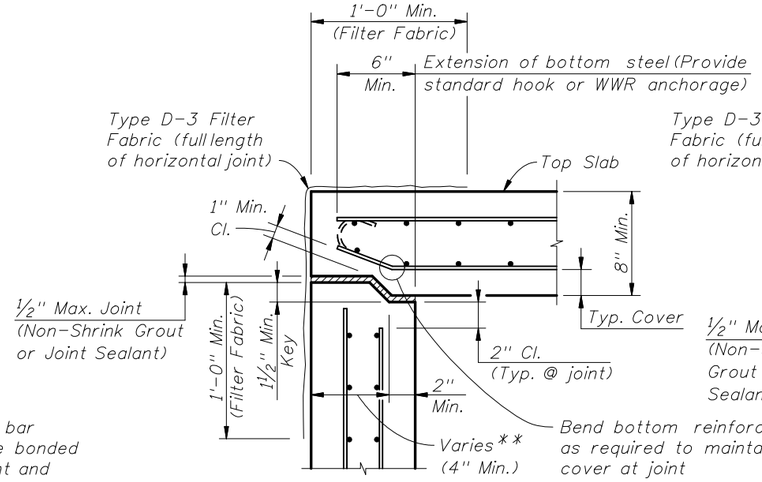
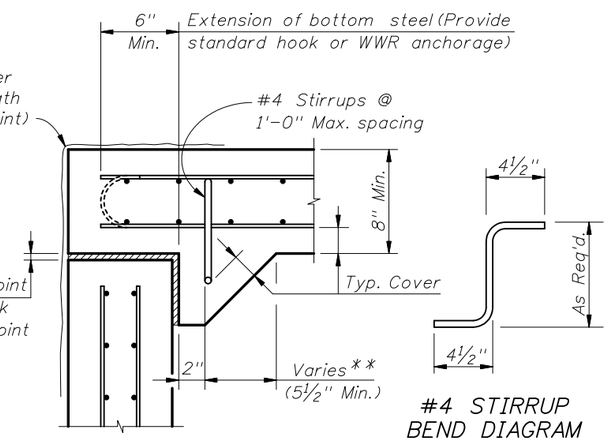


SECTION C-C
C-I-P HEADWALL DETAILS AND CONNECTION TO PRECAST BOX



SECTION B-B
TOP SLAB TO WALL JOINT
(KEYED JOINT)

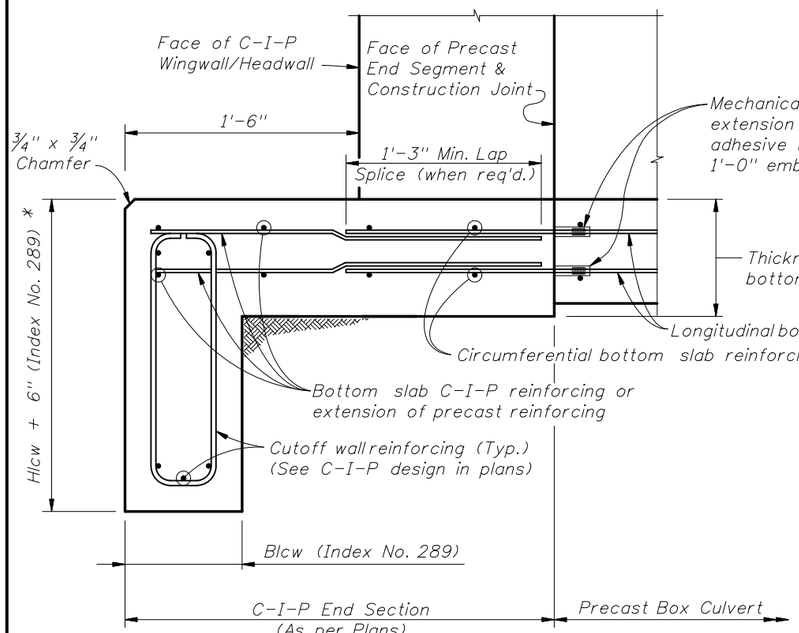


SECTION B-B
TOP SLAB TO WALL JOINT
(HAUNCHED JOINT)

#4 STIRRUP
BEND DIAGRAM

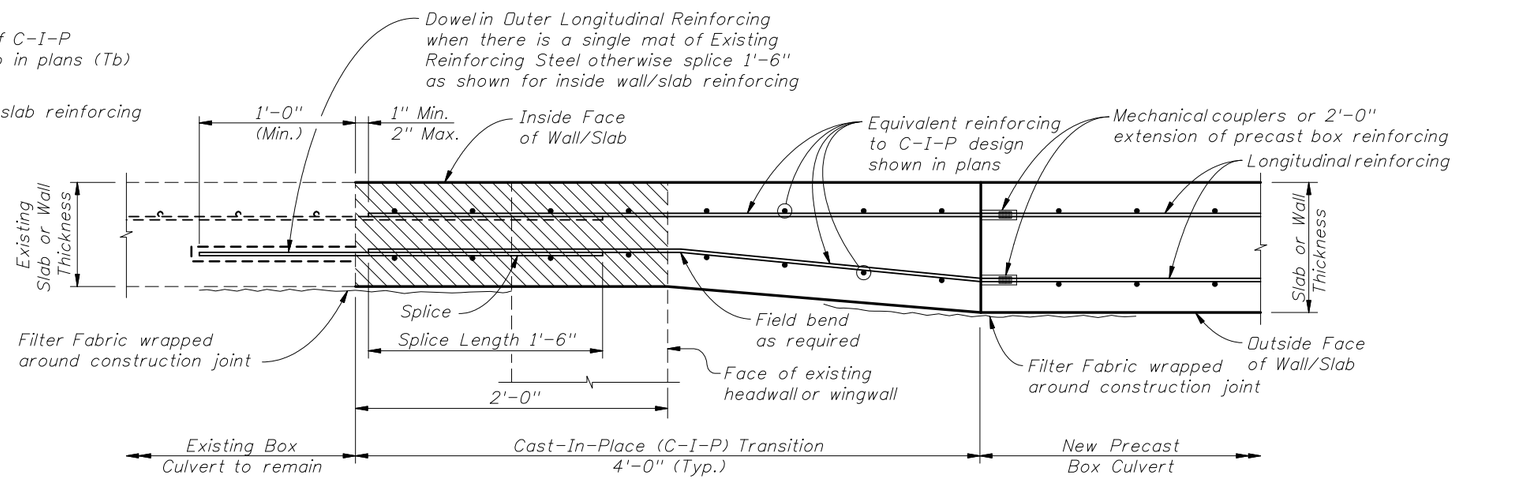
** Provide adequate width to satisfy shear strength requirements at joint

TYPE B BOX LONGITUDINAL JOINTS



SECTION D-D
C-I-P TOE SLAB & CUTOFF WALL DETAILS
AND CONNECTION TO PRECAST BOX

* Provide additional 6" depth of cutoff wall at no additional cost.



SECTION E-E
EXTERIOR WALL/SLAB TRANSITION DETAIL FOR PRECAST EXTENSION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	Added "or Joint Sealant" to ½" Joint in Section B-B.			

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SUPPLEMENTAL DETAILS FOR PRECAST CONCRETE BOX CULVERTS

Interim Date 07/01/09

Sheet No. 3 of 5

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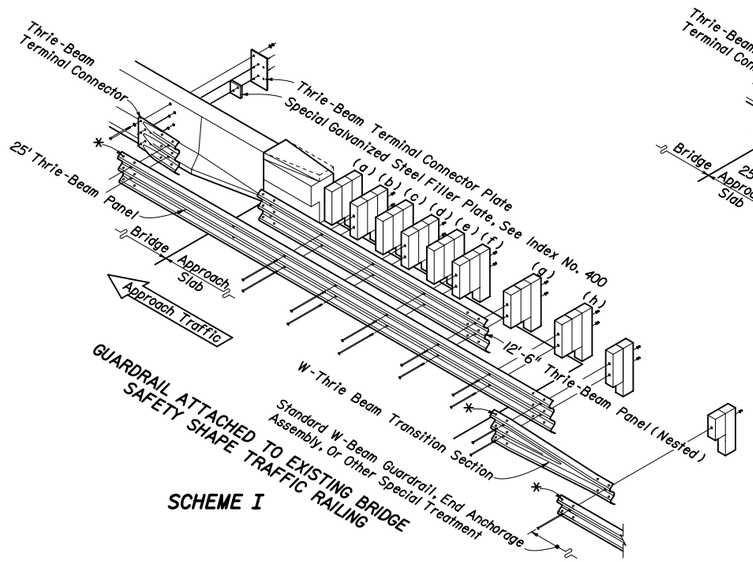
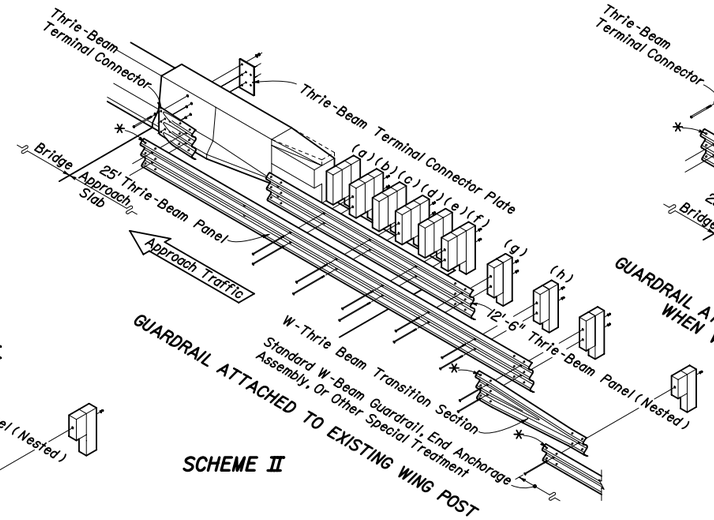


GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING

SCHEME I



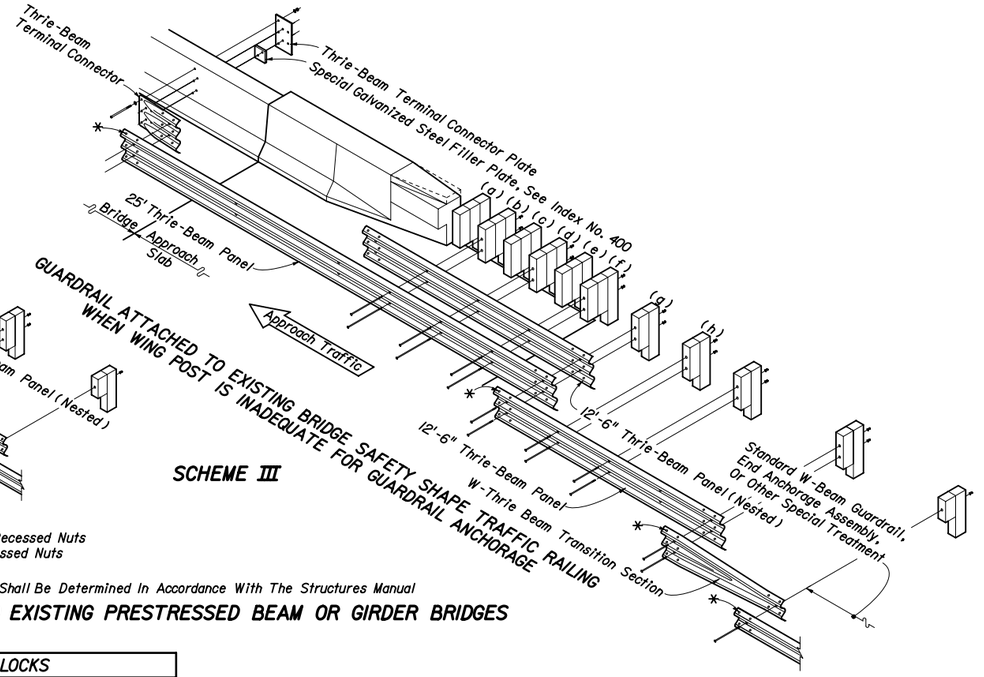
GUARDRAIL ATTACHED TO EXISTING WING POST

SCHEME II

* 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 The Structures Manual

GUARDRAIL TRANSITION TO EXISTING FLAT SLAB BRIDGES



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

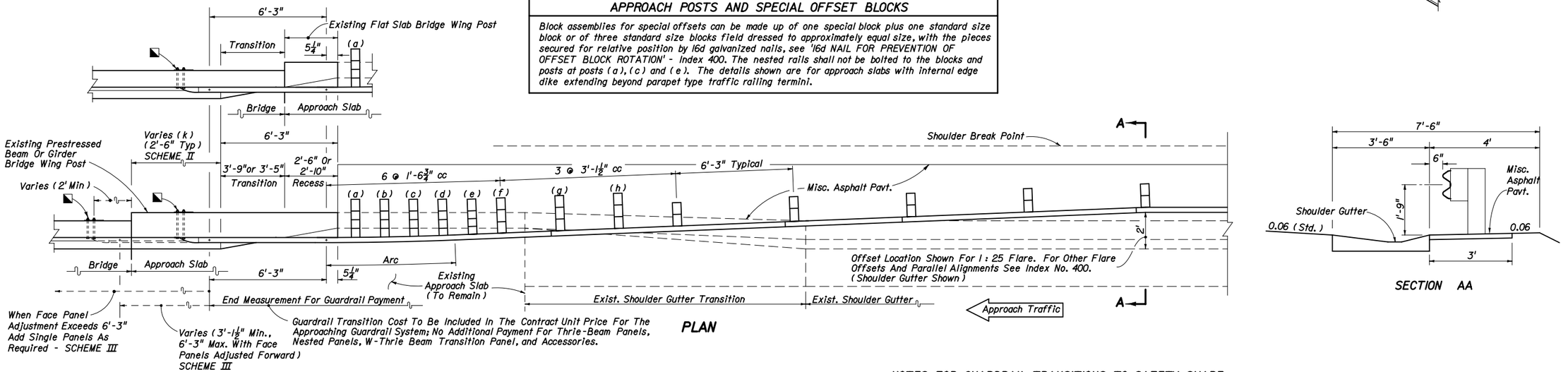
SCHEME III

Use Of Schemes II And III Shall Be Determined In Accordance With The Structures Manual

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' - Index 400. 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

■ 2"x12"x⅝" Thrie-Beam Terminal Connector Plate (Back-Up Plate), And ⅞" Ø x 18" Long [15" Long With 3½" Min. Thread Length 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 FOR GUARDRAIL TRANSITIONS TO SAFETY SHAPE TRAFFIC RAILINGS ON EXISTING BRIDGES

1. When the existing wing post is to be replaced with a bridge traffic railing in accordance with the Structures Manual, the thrie-beam guardrail connection shall be in accordance with Detail J of Index No. 400.
2. When the guardrail attachment overlays the Bridge Number, Bridge Name or Date on the traffic railing, provide an aluminum sign panel with the obscured information. Attach the sign panel to the face of the traffic railing adjacent to the Thrie-Beam Terminal Connector with ¼"Ø x 1" long concrete screws or expansion anchors at each corner, as approved by the Engineer. The sign panel shall be approximately 1/16" thick and meet the requirements of Specification Section 700 with a white background and 3" tall black letters and sized appropriately to contain the information required.
3. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction and Bridge Name Plate to be paid for under the contract unit price for Guardrail Bridge Anchorage Assembly, EA., and shall be full compensation for bolt hole construction, terminal connector, terminal connector plate(s) and bolts, nuts and washers.

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

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	MTP	Added: Note for Bridge Name Plates and renumbered as Note 2. Changed: Note 2 to Note 3.			

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GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

Interim Date 07/01/09

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Index No. 402

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	MIRAFI MG 2XT	MIRAFI MG 3XT	MIRAFI MG 5XT (Matrex 30)	MIRAFI MG 7XT	MIRAFI MG 8XT	MIRAFI MG 10XT (Matrex 60)	MIRAFI MG 18XT (Matrex 90)	MIRAFI MG 20XT (Matrex 120)	MIRAFI MG 22XT (Matrex 180)	MIRAFI MG 24XT (Matrex 240)
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (lb./ft.)		ASTM D 6637										
Machine Direction	Ultimate (T_{ult})		2,000	3,150	4,300	5,700	7,000	9,500	9,360	12,420	17,760	25,380
	2% Strain		———	———	———	———	———	———	———	———	———	———
	5% Strain		1,000	1,056	1,740	2,160	2,520	3,120	3,250	5,340	6,700	7,000
Cross Direction	Ultimate		2,000	———	———	———	———	———	———	———	———	———
	2% Strain		———	———	———	———	———	———	———	———	———	———
	5% Strain		———	———	———	———	———	———	———	———	———	———
Strain @ Ultimate Tensile Strength		ASTM D 6637	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Secant Modulus @ (lb./ft.)	2% Strain		———	———	———	———	———	———	———	———	———	———
	5% Strain		20,000	21,120	34,800	43,200	50,400	62,400	65,000	106,800	134,000	140,000
	10% Strain		———	———	———	———	———	———	———	———	———	———
Junction Strength (lb./ft.)		GRI : GG2	———	———	———	———	———	———	———	———	———	———
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	1,250	1,969	2,688	3,563	4,375	5,938	5,850	7,221	10,326	14,756
Creep Reduction Factor (T_{ult}/T_{creep})			1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.72	1.72	1.72
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	Limestone		1.5	1.25	1.25	1.25	1.25	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 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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
4 = Reinforced Embankment
5 = Construction Expedient
* Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRID) APPLICATION AND PROPERTIES

REVISIONS

DATE	BY	DESCRIPTION
07/01/08	LJ	Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength.
01/01/09	LJ	Changed Joint Strength Overlap value to 1.2 for all products.
07/01/09	LJ	Correct "MARAFI" to "MIRAFI".

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GEOSYNTHETIC REINFORCED SOILS

Interim Date 07/01/09

Sheet No. 5 of 9

Index No. 501

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	SYNTEEN SF 11	SYNTEEN SF 12	SYNTEEN SF 20	SYNTEEN SF 35	SYNTEEN SF 40	SYNTEEN SF 50	SYNTEEN SF 55	SYNTEEN SF 80	SYNTEEN SF 110
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (lb./ft.)		ASTM D 6637									
Machine Direction	Ultimate (T_{ult})		2,388	2,388	1,672	2,627	3,050	3,731	3,774	5,583	7,462
	2% Strain		526	526	370	462	488	791	736	1,016	1,186
	5% Strain		990	1,042	670	725	970	922	1,159	1,273	1,684
Cross Direction	Ultimate		3,870	5,268	1,630	2,556	3,050	3,933	2,499	2,206	2,179
	2% Strain		578	797	370	399	430	630	604	882	1,274
	5% Strain		792	1,129	670	583	765	815	796	1,563	1,581
Strain @ Ultimate Tensile Strength		ASTM D 6637	12.6%	13.0%	9.4%	14.1%	9.9%	14.2%	11.5%	13.9%	18.8%
Secant Modulus @ (lb./ft.)	2% Strain		26,300	26,300	18,494	23,114	24,408	39,551	36,799	50,807	59,298
	5% Strain		15,840	20,840	13,397	14,499	19,404	18,432	23,174	25,459	33,712
	10% Strain		———	———	15,206	15,234	22,089	18,432	27,137	37,910	27,380
Junction Strength (lb./ft.)		GRI : GG2	354	320	———	———	———	———	———	———	———
Soil-Geosynthetic Friction		ASTM D 6706	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	———	———	1,005	1,523	1,525	2,201	2,265	3,182	4,029
Creep Reduction Factor (T_{ult}/T_{creep})			———	———	1.66	1.73	2.00	1.70	1.67	1.75	2.02
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.18	1.06	1.05	1.15	1.15	1.08	1.08	1.08	1.08
	Limestone		1.31	1.20	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	1.10	1.10
	Biological	ASTM D1987, D3083, G21 & G22	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Approved Application Usage			2, 5	2, 5	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
4 = Reinforced Embankment
5 = Construction Expedient
* Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRID) APPLICATION AND PROPERTIES

REVISIONS

DATE	BY	DESCRIPTION
07/01/08	LJ	Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength.
01/01/09	LJ	Deleted Application Usage 3 & 4 for SYNTEEN SF 11 & SF 12.
07/01/09	LJ	Added Application Usage 2 for SYNTEEN SF 11 & SF 12.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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GEOSYNTHETIC REINFORCED SOILS

Interim Date 07/01/09

Sheet No. 6 of 9

Index No. 501

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	RAUGRID 3/3	RAUGRID 4/2	RAUGRID 6/3	RAUGRID 8/3	RAUGRID 10/3	FORNIT 20	FORNIT 30
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	95%	95%	95%	95%	95%	92%	92%
Tensile Strength (lb./ft.)		ASTM D 6637							
Machine Direction	Ultimate (T_{ult})		2,233	2,843	4,350	5,288	6,590	1,159	1,890
	2% Strain		———	———	———	———	———	360	600
	5% Strain		712	767	1,144	1,165	1,582	774	1,390
Cross Direction	Ultimate		2,213	1,459	1,959	2,089	2,192	1,641	2,466
	2% Strain		———	———	———	———	———	543	778
	5% Strain		541	356	452	507	521	1,111	1,719
Strain @ Ultimate Tensile Strength		ASTM D 6637	10.8%	11.8%	13.1%	12.2%	11.5%	6%	6%
Secant Modulus @ (lb./ft.)	2% Strain		———	———	———	———	———	18,000	30,000
	5% Strain		———	———	———	———	———	15,480	27,800
	10% Strain		———	———	———	———	———	———	———
Junction Strength (lb./ft.)		GRI : GG2	N/A	100%	100%	100%	100%	30	32.2
Soil-Geosynthetic Friction		ASTM D 6706	0.8	0.8	0.8	0.8	0.8	0.9	0.9
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	1,466	1,870	2,862	3,479	4,335	———	———
Creep Reduction Factor (T_{ult}/T_{creep})			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	1.10	1.10
	Limestone		1.17	1.17	1.17	1.17	1.17	1.10	1.10
Durability (RF_d)	Chemical	ASTM D 5322	1.15	1.15	1.15	1.15	1.15	1.10	1.10
	Biological	ASTM D1987, D3083, G21 & G22	1.15	1.15	1.15	1.15	1.15	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	———	———	———	———	———	1.0	1.1
Approved Application Usage			2, 5	2, 5	2, 5	2, 5	2, 5	2, 5	2, 5

Approved Application Usage:
1 = Steepened Slopes
2 = Reinforcement of Foundations over Soft Soils
3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
4 = Reinforced Embankment
5 = Construction Expedient
* Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS (WOVEN GEOGRID) APPLICATION AND PROPERTIES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/08	LJ	Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength.	01/01/09	LJ	Added FORNIT 20.
			07/01/09	LJ	Added FORNIT 30.

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GEOSYNTHETIC REINFORCED SOILS

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GENERAL NOTES:

1. All signs shall be post mounted when work operations exceed one day except for:
   a. Road closure signs mounted in accordance with the vendor drawing for the Type III Barricade shown on the QPL.

   b. Pedestrian advanced warning or regulatory signs mounted on sign supports in accordance with the vendor drawing shown on the QPL.

TEMPORARY SIGN SUPPORT NOTE:

1. Signs mounted on temporary supports or barricades, and barricade/sign combination shall be crashworthy in accordance with NCHRP 350 requirements and included on the Qualified Products List (QPL).

POST MOUNTED SIGN NOTES:

1. Use only approved systems listed on the Department's Qualified Products List.

2. Manufacturers seeking approval of U-Channel and steel square tube sign support assemblies for inclusion on the Qualified Products List (QPL) must submit a QPL application, design calculations (for square tube only), and detailed drawings showing the product meets all the requirements of this Index.

3. Provide 3 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.43 in^3 for 60 ksi steel, a minimum section modulus of 0.37 in^3 for 70 ksi steel, or a minimum section modulus of 0.34 in^3 for 80 ksi steel.

4. Provide 4 lb/ft Steel U-Channel Posts with a minimum section modulus of 0.56 in^3 for 60 ksi steel, or a minimum section modulus of 0.47 in^3 for 70 ksi or 80 ksi steel.

5. U-channel posts shall conform with ASTM A 499, Grade 60, or ASTM A 576, Grade 1080 (with a minimum yield strength of 60 ksi). Square tube posts shall conform with ASTM A 653, Grade 50, or ASTM A 1011, Grade 50.

6. Sign attachment bolts, washers, nuts and spacers shall conform with ASTM A307 or A 36.

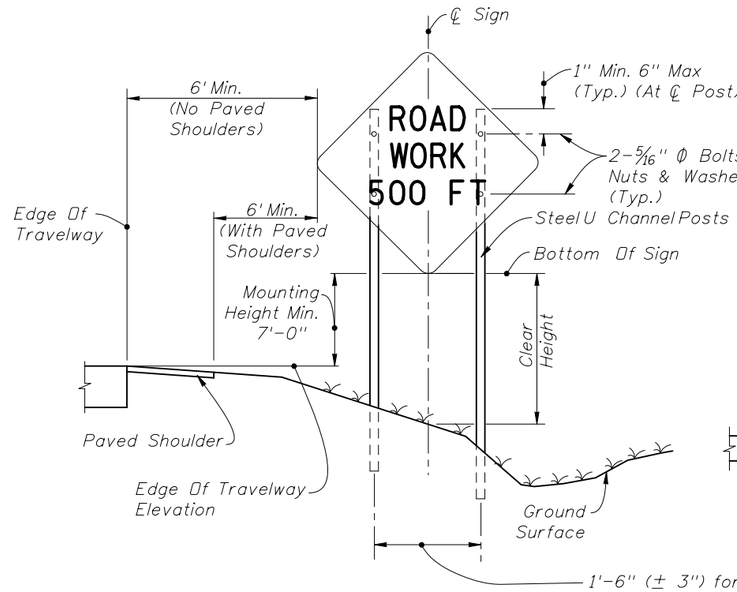
7. For diamond warning signs with supplement plaque (up to 3 ft^2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).

8. Install 4 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the QPL.

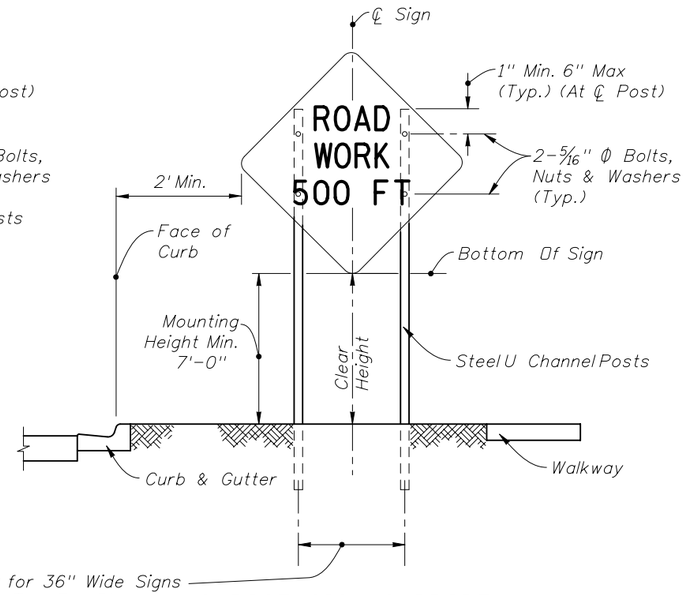
9. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the QPL.

10. Install all posts plumb.

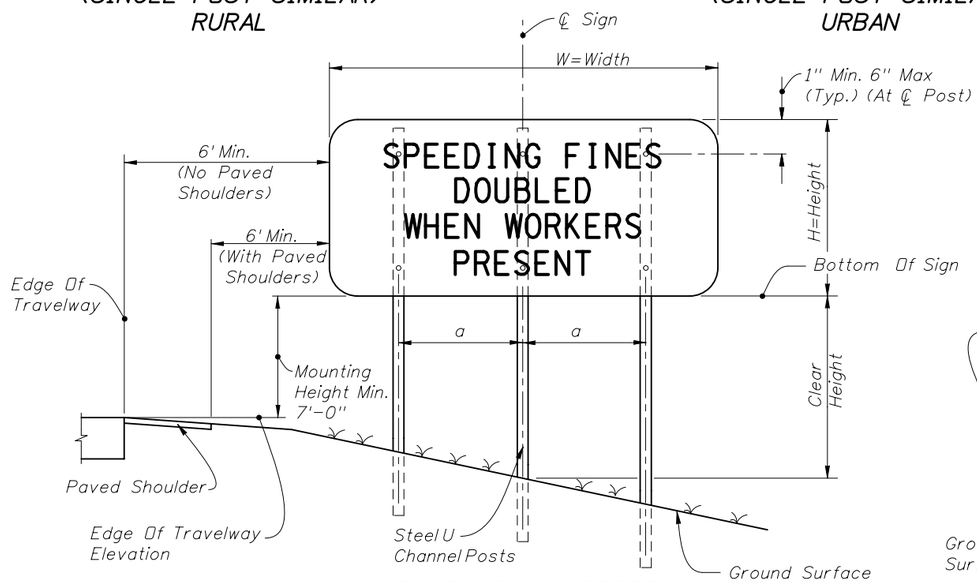
11. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the QPL.



2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) RURAL



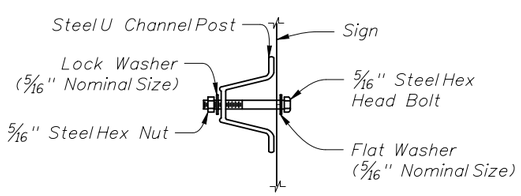
2 POST SIGN SUPPORT MOUNTING DETAILS (SINGLE POST SIMILAR) URBAN



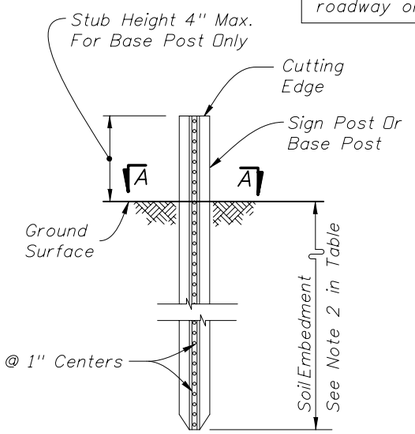
3 POST SIGN SUPPORT MOUNTING DETAILS

Where W = 48": a = 1' - 4½" (± 1")
W = 72": a = 2' - 1" (± 1")

WORK ZONE SIGN SUPPORTS



SIGN ATTACHMENT DETAIL



TYPICAL FOUNDATION DETAIL

See QPL for post, splice and connection details.
No bolts installed closer than 1" to cutting edge.

SECTION A-A (SCHEMATIC)

POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS

SIGN SHAPE	SIGN SIZE (inches)	NUMBER OF STEEL U CHANNEL POSTS
Octagon	30x30	1
Triangle	36x36x36	1
	48x48x48	1
	60x60x60	2
Rectangle (W x H)	24x18	1
	24x30	1
	30x24	1
	36x18	1
	36x24	1
	48x18	1
	36x48	2
	48x30	2
	48x36	2
	54x36	2
	48x60	3
	72x48	3
Square	30x30	1
	36x36	2
	48x48	2
Diamond (See Note 6)	48x48	2
Circle	36Ø	2

Notes For Table:

1. Use 3 lb/ft posts for Clear Height up to 10' and 4 lb/ft posts for Clear Height up to 12'.

2. Minimum foundation depth is 4.0 feet for 3 lb/ft posts and 4.5 feet for 4 lb/ft posts.

3. For both 3 lb/ft and 4 lb/ft base or sign posts installed in rock, a minimum cumulative depth of 2 feet of rock layer is required.

4. The soil plate as shown on the QPL vendor drawing is not required for base posts or sign posts installed in existing rock (as defined in note 3), asphalt roadway or shoulder pavement.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	MTP	Multiple revisions to notes, details and table.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

Interim Date 07/01/09

Sheet No. 6 of 12

Index No. 600

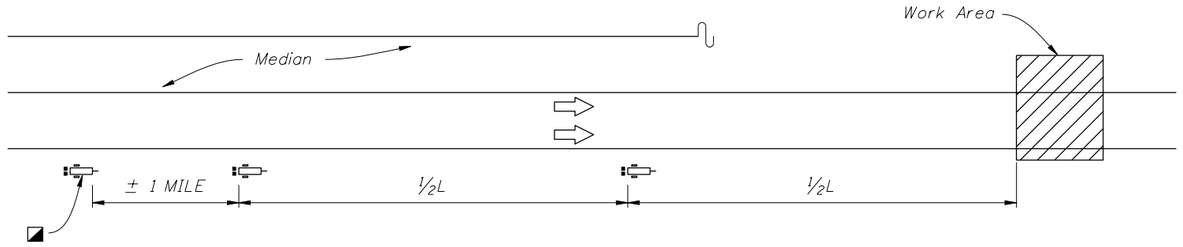
TRAFFIC PACING GUIDE

Traffic pacing is a traffic control technique to slow but not stop traffic to facilitate short duration work operations without an elaborate and difficult detour or diversion. Traffic Control Officers pace or slow the traffic to a speed that provides approximately 20-30 minutes to perform the overhead construction. The Department has frequently used this technique for setting bridge beams, overhead sign structures and replacing overhead sign panels.

The traffic pacing begins with approval of the exact date of the activity that shall be made two weeks in advance. The District Public Information Office, the District Traffic Operations Engineer, Local Emergency Management Agencies and Project Personnel shall be notified of the location, date and time. Advance notification to the public shall begin at least one week in advance by using Changeable Message Signs.

The day of the traffic pacing operation, the Changeable Message Sign messages shall be revised to indicate the activity will occur that night or day. The traffic pacing operation begins with a Traffic Control Officer Supervisor at the work site initiating the pacing operation in accordance with pacing details shown on sheet 2. The intent is to keep traffic moving unless there is an emergency.

CHANGEABLE MESSAGE SIGNS
(Typical Placement and Messages)



L = Length of Traffic Pacing Operation

Symbols

- Channelizing Device (See Index No. 600)
- Marked Police Vehicle with Flashing Blue Lights
- PCMS, Portable Changeable Message Sign
- To be placed the day of pacing operation
- Lane Identification and Direction of Traffic

CHANGEABLE MESSAGE SIGN MESSAGE
(MAINLINE AND RAMPS)

ONE WEEK PRIOR TO PACING OPERATION	EXPECT DELAYS ON	MMM DD-DD X AM - X AM
DURING DAY OF PACING OPERATION	ROAD WORK TONIGHT	EXPECT PERIODIC DELAYS
DURING PACING OPERATION	SLOW TRAFFIC AHEAD	BE PREPARED TO STOP

NOTICE

This Index applies to Limited Access Facilities.

This Index represents the minimum requirements for traffic pacing operations on the State Highway System.

A site specific traffic control plan shall be developed for each pacing operation.

TRAFFIC PACING GENERAL NOTES

1. Install ROAD CLOSED (W20-3) signs approximately 1000' prior to the work area. These signs shall remain covered until the pacing operation begins and covered when the pacing operation has ended.

2. Prior to requesting that the traffic control officer supervisor initiate the pacing operation, the contractor shall ensure that the necessary equipment is properly positioned (off the roadway) for the construction activity requiring the traffic pacing operation.

3. Truck mounted attenuator(s) with changeable message sign(s) are required to protect workers and/or equipment positioned in a travel lane(s) at the work area during the pacing operation from an errant vehicle. If no workers and/or equipment are positioned in a travel lane(s) at the work area, truck mounted attenuator(s) are not required.

4. A traffic control officer supervisor shall be stationed at the work area continuously throughout the pacing operation to insure radio communications between the contractor and/or the project administrator, and all the police vehicles involved in the pacing operation.

5. When more than one pacing operation is required in one work period the contractor shall allow sufficient time between pacing operations to permit traffic to return to normal speeds and flow. Additional time may be required between pacing operations to allow traffic to resume normal speeds and flow upstream of the work area as determined by the project administrator or traffic control officer supervisor.

TRAFFIC CONTROL PLANS OR TECHNICAL SPECIFICATION

1. The specific activities and locations, along with allowable times of day and days of the week, when pacing will be allowed should be clearly detailed in the traffic control plans or technical specification. If there are specific holiday or special event dates that, due to anticipated traffic congestion, pacing operations should not be allowed, these dates should also be spelled out in plans or specifications. When detailing the specific activities and locations of pacing activities, identify the minimum number of traffic control officers needed for each function and location of the pacing operation. If there are certain work activities that need to be completed prior to the contractor starting the work anticipated during the pacing operation, the activities should be clearly detailed in the plans or technical specification.

2. When developing a pacing plan, failsafe "stop points" should be identified for those work operations in which a construction problem could create a condition that could not be immediately cleared. A failsafe stop point is the last safe egress from the highway facility prior to traffic coming upon the work that is being completed during the operation. In the unlikely event that the work is not completed during the time estimated for the pacing, the plans or specification should direct the pacing to not proceed past the failsafe stop point until the highway is cleared. In the event of major construction problem that cannot be immediately cleared, traffic can then be diverted off the facility.

3. The traffic control plans or technical specification should require the contractor to submit a pacing plan in advance of the operation. The pacing plan should outline the contractors expected equipment and personnel, outline the operation, and include a contingency plan should any of the contractor's critical equipment break down. If the project includes a damage recovery clause, the traffic control plan or technical specification should be clear that the damage recovery applies to the pacing operation as well.

4. Changeable message signs shall be displayed one week prior to work using messages described in the traffic pacing plan. The number and location of changeable message signs shall be called out in the traffic control plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	CA	New Design Standard issued			

2008 Interim Design Standard

TRAFFIC PACING

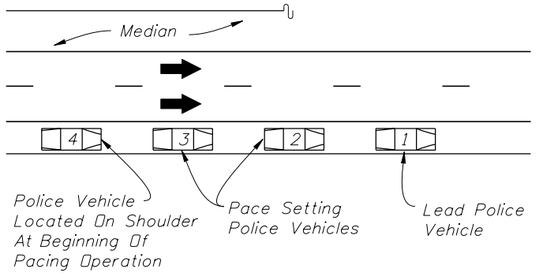
Interim Date 07/01/09

Sheet No. 1 of 3

Index No. 655

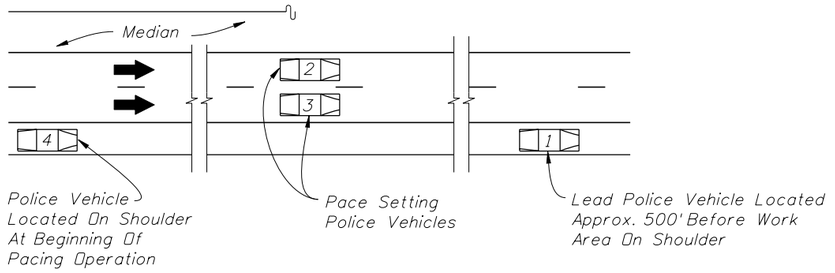
MAINLINE PACING DETAILS

(1 DIRECTION OF FOUR LANE ROADWAY EXAMPLE)



STAGE ONE

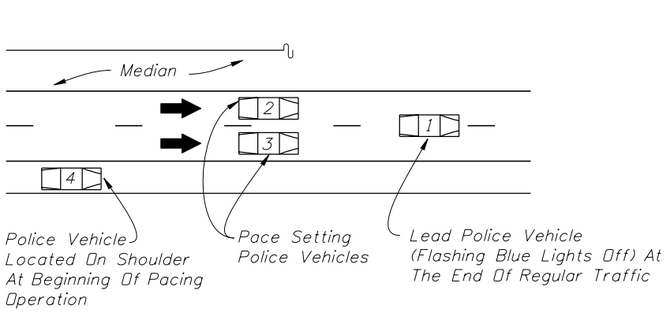
1. Four police vehicles located upstream of the work area at the beginning location of the traffic pacing operation with flashing blue lights off.



STAGE THREE

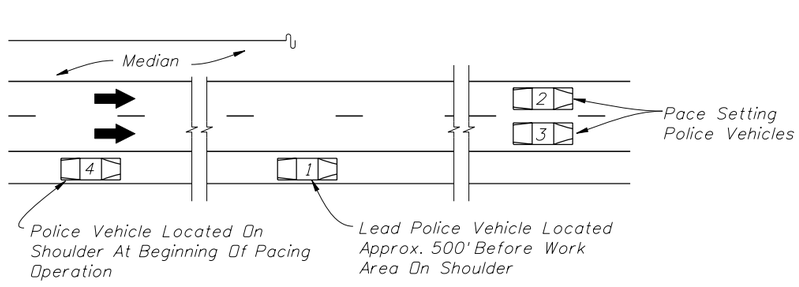
1. The two pace setting police vehicles shall begin to slow to the pacing speed (20 mph is preferred, 10 mph minimum), for the duration of the traffic pacing operation.

2. The lead police vehicle (flashing blue lights off) shall match the speed of the last vehicles ahead of the pacing vehicles and continue following traffic until a point approximately 500' in advance of the work area. The lead police vehicle shall then come to a complete stop on the right shoulder and turn on its flashing blue lights. If required, crash truck(s) with rear mounted impact attenuator(s) and changeable message sign(s) shall move into the travel lanes approximately 200 ft. upstream of the work area with the impact attenuators down and operating once traffic has cleared the work area.



STAGE TWO

1. Once the police vehicles are in place and the traffic control officer supervisor at the work area notifies all officers to begin the traffic pacing operation, the last three police vehicles shall turn on their flashing blue lights. The first three police vehicles shall enter the travel lanes with the second and third police vehicles immediately forming a side by side "pacing operation" of all lanes behind the lead police vehicle (flashing blue lights off).

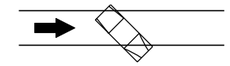


STAGE FOUR

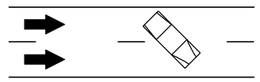
1. When the pace setting police vehicles are within approximately two miles of the work area they shall notify the onsite traffic control officer supervisor who will immediately inform the contractors on site supervisor of their location. Once the contractors on site supervisor has been notified of the pacing vehicles location, the contractor shall begin to clear the travel lanes of all equipment and debris in order to reopen all travel lanes.

2. In case of emergency the pace setting police vehicles shall come to a complete stop once they reach the lead police vehicle. If no emergency is encountered, the crash truck(s) shall be moved from the travel lanes and the two pace setting police vehicles shall clear the work area and immediately move to the right shoulder or an area designated by the traffic control officer supervisor and turn off the flashing blue lights. Once the two pace setting police vehicles pass the work area, the traffic control officer supervisor shall instruct the lead and last police vehicles to turn off their flashing blue lights.

RAMP PACING DETAILS



ONE LANE RAMP



TWO LANE RAMP

RAMP CLOSURE DETAIL

1. Once notified by the on site traffic control officer supervisor to begin the traffic pacing operation each police vehicle at the indicated ramp shall turn their flashing blue lights on and position the vehicle across the ramp lane(s) to close ramp access.

2. Once the pacing operation passes the closed on ramp the police vehicle on the ramp shall turn off the flashing blue lights and move from the ramp lane(s) to allow traffic to enter the mainline pacing operation.

GENERAL NOTES

1. Each Traffic Control Officer shall have a marked vehicle with flashing blue lights, for the pacing operation. The location and number of officers at each location will be as follows:

No. Of Traffic Control Officers With Vehicles	Function	Location
1 min.	Supervisor	Work Area
1 Lead Vehicle	Varies	Mobile operation
1 for each travel lane	Pacing Operation	Mobile operation beginning x miles upstream and terminating at the work area
1 Stationed at the Beginning of Pacing Operation	Advanced Warning to Motorist	Stationed at the Beginning of Pacing Operation
1 for each entrance ramp	Entrance Ramp Roadblocks	One at each of the entrance ramps upstream of the work area

REVISIONS

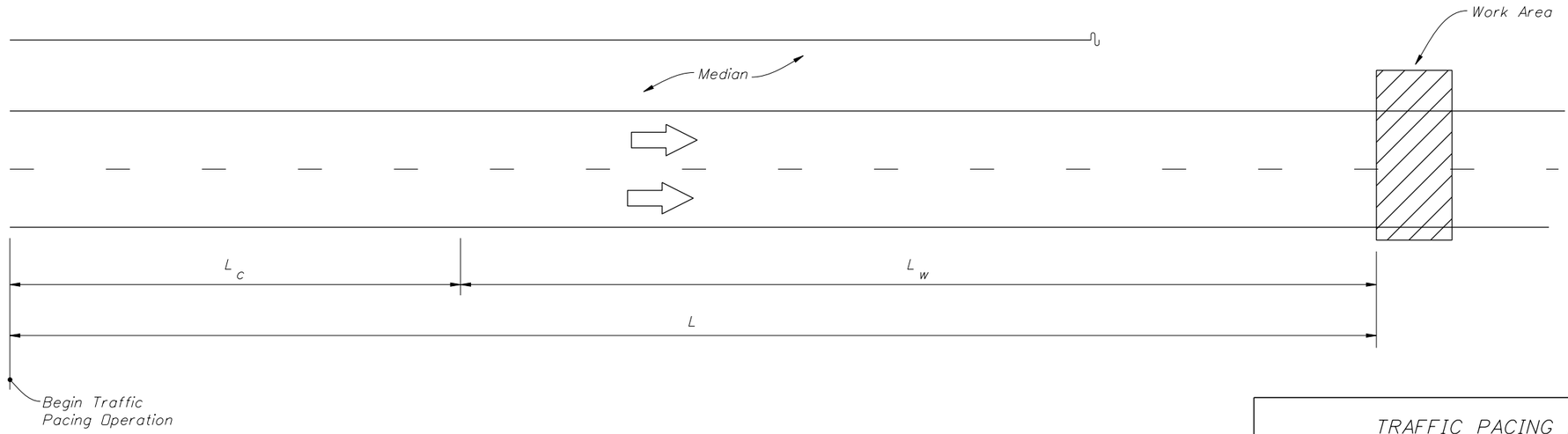
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	CA	New Design Standard issued			

2008 Interim Design Standard

TRAFFIC PACING

Interim Date 07/01/09

Index No. 655



DESIGN CONSIDERATIONS:

The design shall evaluate the actual distance required for the pacing operation based on site specific features such as: roadway geometrics, pacing speeds, regulatory speeds, interchange spacing, work duration, availability of traffic control officers, traffic volumes and maximum queue length.

The starting point of a traffic pacing operation must consider the following factors: the speed of the pacing vehicles, the location of entrance ramps, horizontal and vertical alignment of the facility.

In some instances, it may be necessary to close a lane at the work site to position a crane(s) and the materials to be lifted.

All material to be installed shall be on-site before the traffic pacing operation begins.

It may be necessary to install temporary barrier walls to protect pre-positioned and assembled materials in the right of way.

The minimum speed allowed for a pacing operation is 10 mph with 20 mph the preferred speed.

The maximum allowed work duration is ½ hour (30 min).

The maximum practical pacing operation length is 10 miles.

S_r = Regulatory speed (mph)

S_p = Pacing speed (mph)

t_w = Work duration (min)

L = Total pacing distance in miles

$$L = \frac{t_w}{60} S_p \left(\frac{S_p}{S_r - S_p} + 1 \right)$$

$$L = L_c + L_w$$

L_c = distance paced vehicles must travel before the vehicles at regulatory speed have cleared the work zone

$$L_c = \left(\frac{\frac{t_w}{60} \times S_p^2}{S_r - S_p} \right)$$

L_w = distance paced vehicles travel while work is performed

$$L_w = \left(\frac{t_w}{60} \times S_p \right)$$

F_{HV} = Heavy Vehicle Factor

$$F_{HV} = 1 + \left(\frac{P_t}{100} \times 0.5 \right)$$

P_t = % Trucks

TRAFFIC PACING DISTANCES
(L) miles

$S_p = 20$; pcphpl ≤ 1,750

S_r	t_w (min)					
	5	10	15	20	25	30
70	2.3	4.7	7.0	9.3	*	*
65	2.4	4.8	7.2	9.6	*	*
60	2.5	5.0	7.5	10.0	*	*
55	2.6	5.2	7.9	*	*	*
50	2.8	5.6	8.3	*	*	*

* Site Specific design required.

NOTES FOR TABLE:

t_w is the total time allowed for work activity in minutes. This time starts just after the last vehicle traveling at the pre-pacing regulatory speed clears the work area and ends just as the pacing operation reaches the work area. t_w must include the time required to clear the roadway of equipment, materials, and personnel.

Demand volume may not exceed 1,750 pcphpl (passenger cars per hour per lane) without a site specific design. Traffic counts can be obtained from the Office of Planning, or you may need to collect traffic counts. Hourly directional traffic volumes must be converted to pcphpl using the following:

$$pcphpl = \left(\frac{\text{Hourly Directional Volume}}{\text{\# Lanes (each direction)}} \right) \times \text{Heavy Vehicle Factor}$$

For additional guidance for site specific designs refer to the Plans Preparation Manual, Volume 1 Chapter 10.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	CA	New Design Standard issued			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

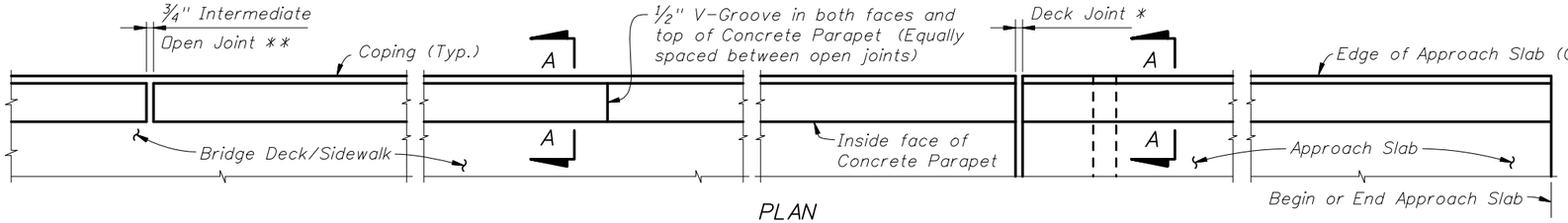
20008 Interim Design Standard

Traffic Pacing

Interim Date 07/01/09

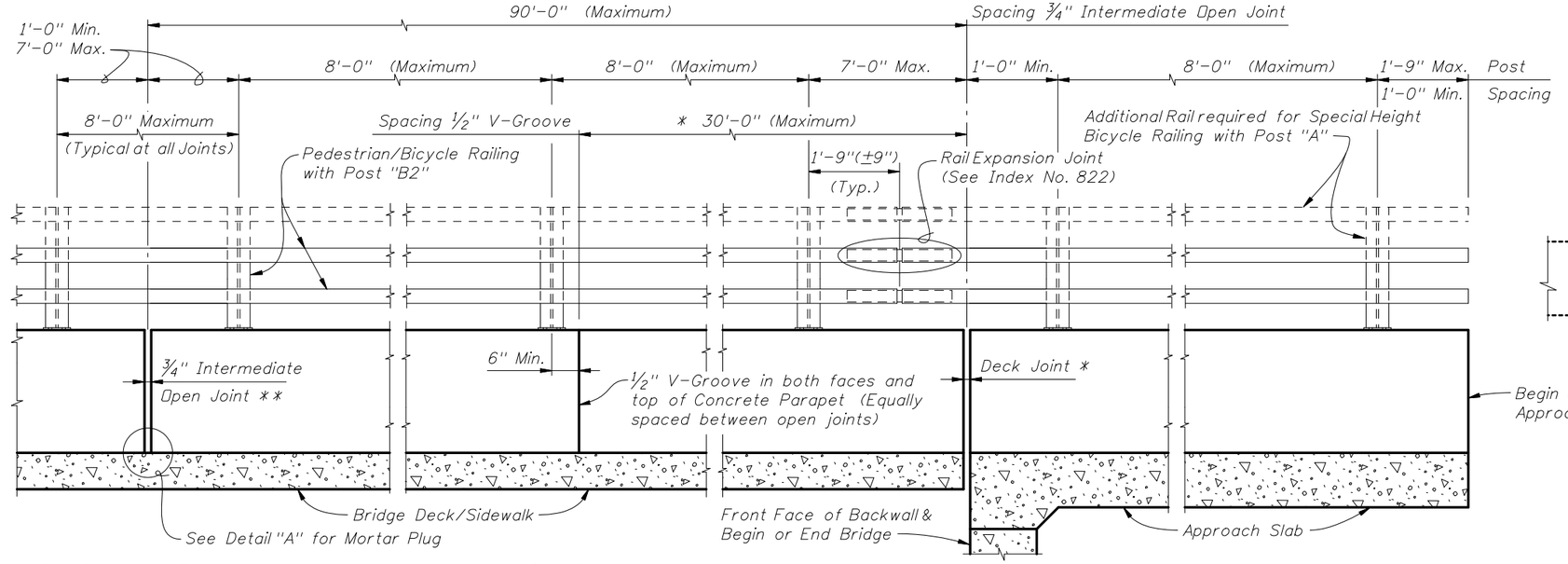
Sheet No. 3 of 3

Index No. 655



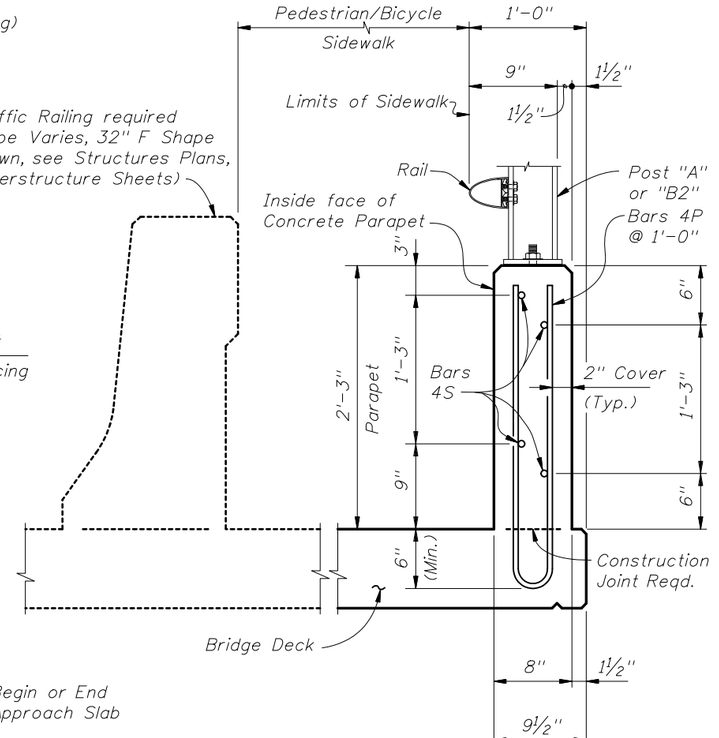
PLAN
(Rails, Posts & Reinforcing Steel not shown for clarity)

** ¾" Intermediate Open Joints shall be provided at locations coinciding with ¾" Joints for the Traffic Railing.



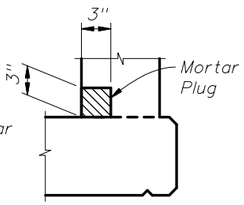
* See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation. Open Parapet Joints at Deck Expansion Joint locations shall match the dimension of the Deck Joint. For treatment of Railings on skewed bridges see Index No. 490. Deck Joint at Begin Bridge or End Bridge shown. Deck Joint at ℄ Pier or Intermediate Bent similar.

ELEVATION OF INSIDE FACE OF RAILING
(Reinforcing Steel not shown for clarity)
(Aluminum Bullet Railing Shown, For Bridge Fencing see Index Nos. 810, 811 or 812)



SECTION A-A
(Typical Section Thru Bridge Deck Shown, Section Thru Approach Slab Similar)
(Aluminum Bullet Railing Shown, For Bridge Fencing see Index Nos. 810, 811 or 812)

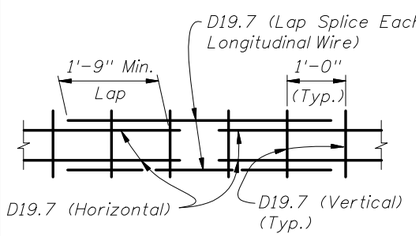
NOTE:
At Intermediate Open Joints, the lower 3" portion of the open joint shall be plugged by filling it with mortar in accordance with Section 400 of the Specifications.



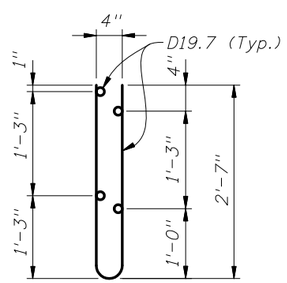
DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

ALTERNATE REINFORCING (WELDED WIRE REINF.) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



SPLICE DETAIL
(Between WWR Sections)

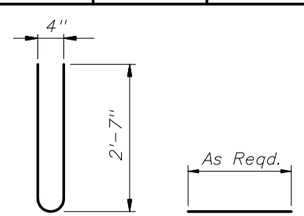


WELDED WIRE REINFORCEMENT
(WWR)

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
P	4	5'-5"
S	4	As Reqd.



BAR 4P BAR 4S

ESTIMATED CONCRETE PARAPET QUANTITIES

ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.056
Reinforcing Steel	LB/LF	6.29

(The above quantities are based on a deck with a 2% cross slope)

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the parapet on a retaining wall shall be the same as detailed above for a 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-9".
5. At the option of the Contractor Welded Wire Reinforcement (WWR) may be used in lieu of all Bars 4P and 4S. Welded Wire Reinforcement shall conform to ASTM A497.

PEDESTRIAN/BICYCLE RAILING NOTES:

CONCRETE PARAPET: Concrete parapet shall be placed vertical and top surface shall be level transversely.
RAIL AND POST DETAILS: For Rail, Post, Rail Expansion Joint fabrication and installation details and notes see Index No. 822.
BRIDGE FENCING: For Bridge Fencing see Index Nos. 810, 811 or 812 in lieu of Posts and Rails on Index No. 822.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJN	Changed Top Rail to Special Height Bicycle Railing and added new Post "B2" designation in Elevation and Section A-A.			
07/01/09	SJN	Changed Post offset dimensions to Joints.			

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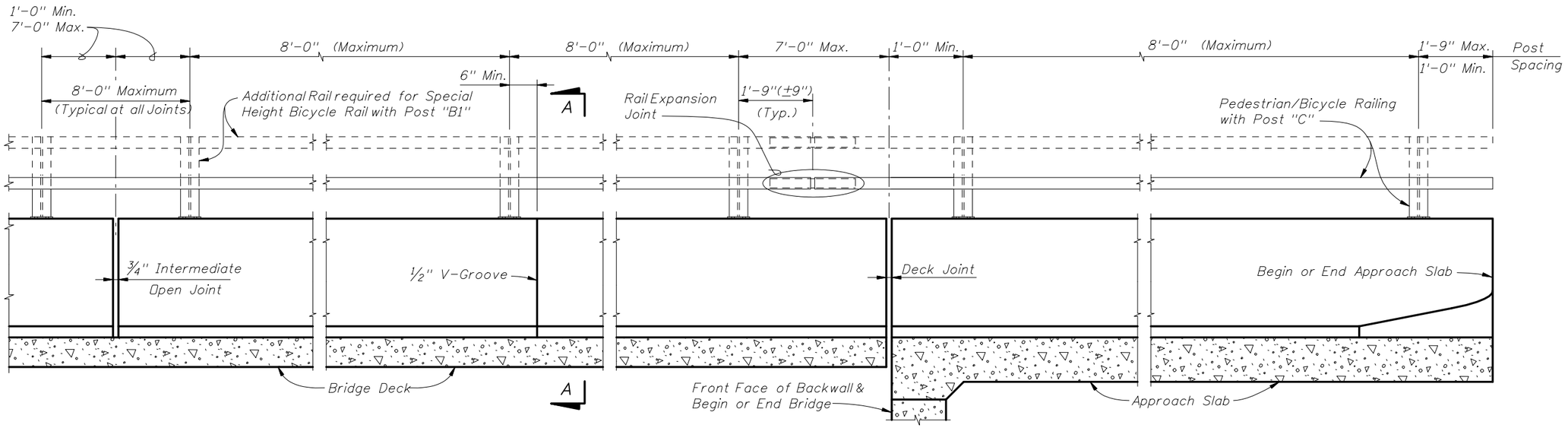
PEDESTRIAN/BICYCLE RAILING

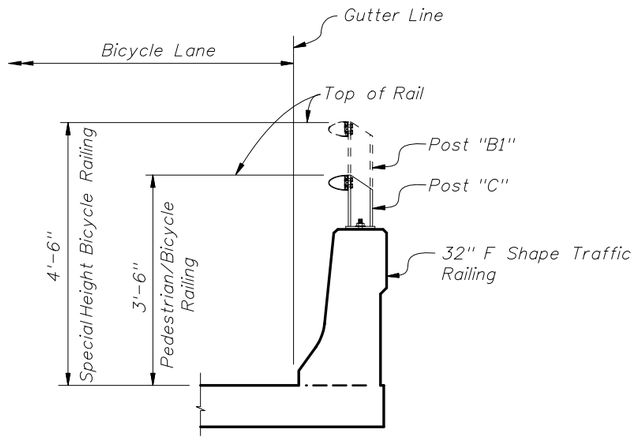
Interim Date 07/01/09

Sheet No. 1 of 1

Index No. 820



ELEVATION OF INSIDE FACE OF TRAFFIC RAILING WITH PEDESTRIAN/BICYCLE BULLET RAILING



SECTION A-A
TYPICAL SECTION THRU BRIDGE DECK
(APPROACH SLAB SIMILAR)

NOTES:

RAIL AND POST DETAILS: For Post, Rail and Rail Expansion Joint fabrication and installation Details and Notes see Index No. 822.

TRAFFIC RAILING DETAILS: For Traffic Railing Details, Reinforcement and Notes see Index No. 420.

INSTRUCTIONS TO DESIGNER:
This railing is intended for use when a Bicycle Lane is required and a raised pedestrian sidewalk is not provided. See Index No. 422 and 423 for railings on a raised pedestrian sidewalk.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJN	Changed Top Rail to Special Height Bicycle Railing and added new Post "B1" and "C" designation in Elevation and Section A-A and NOTES. Added dimension to Section A-A and INSTRUCTIONS TO DESIGNER.	07/01/09	SJN	Changed Post offset dimensions to Joints.

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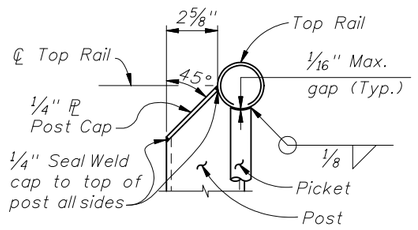
ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING FOR TRAFFIC RAILING (32" F SHAPE)

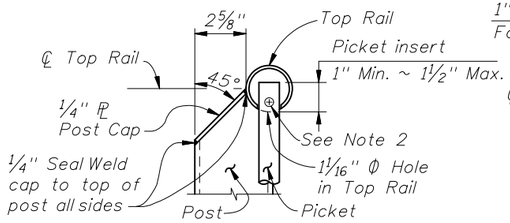
Interim Date: 07/01/09

Sheet No.: 1 of 1

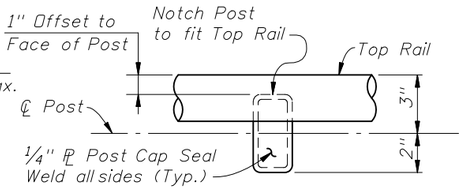
Index No.: 821



TYPE A (WELDED)



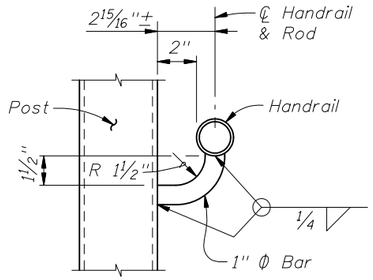
TYPE B (NONWELDED)



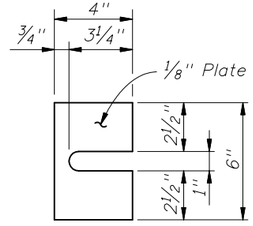
VIEW F-F
TOP RAIL CONNECTION
(Base Plate Not Shown for Clarity)

SECTION A-A
(Top of Picket Connection)

Notes:
1. Type B connection is required for use with Index No. 861 on bridges, except End Hoops may use Type A connections. Optional for other installations and for connection to bottom rail.
2. Provide #10 x ½" Pan Head Stainless Steel (316 or 18-8 Alloy) Screw in the last picket at each expansion or field splice joint to secure the end of the top rail.



SECTION B-B
(Handrail Connection)



SHIM PLATE
DETAIL

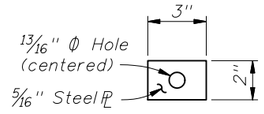
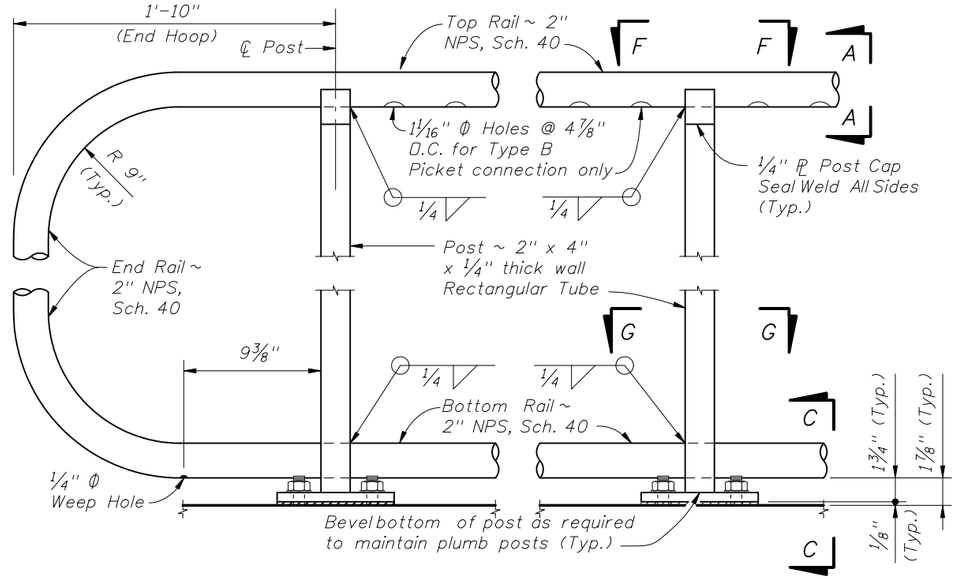
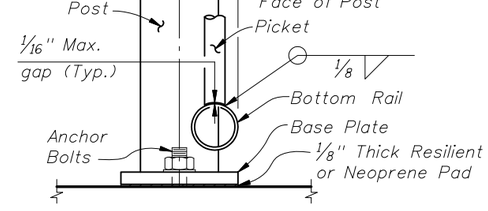


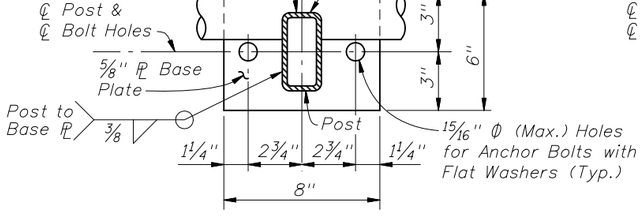
PLATE WASHER
DETAIL



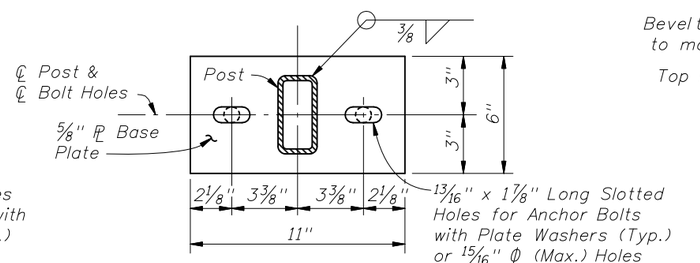
DETAIL "C" - RAIL CONNECTIONS
(Showing Outside Face of Structure and Railing,
Pickets and Handrail Not Shown for Clarity)



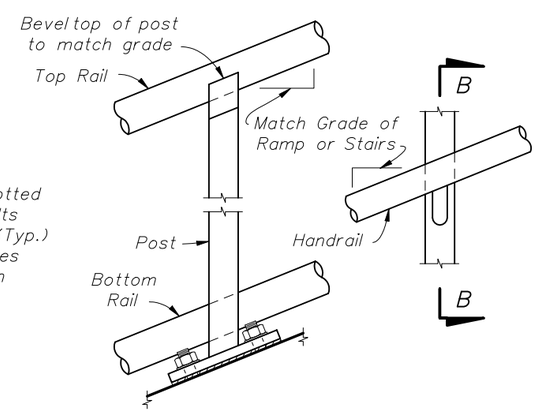
SECTION C-C
(Bottom of Picket connection)



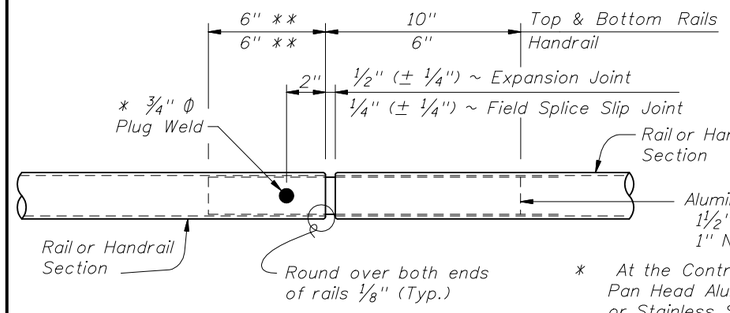
SECTION G-G
BASE PLATE & BOTTOM RAIL CONNECTION



ALTERNATE
BASE PLATE DETAIL
(Recommended for Top of Step Cheekwalls)



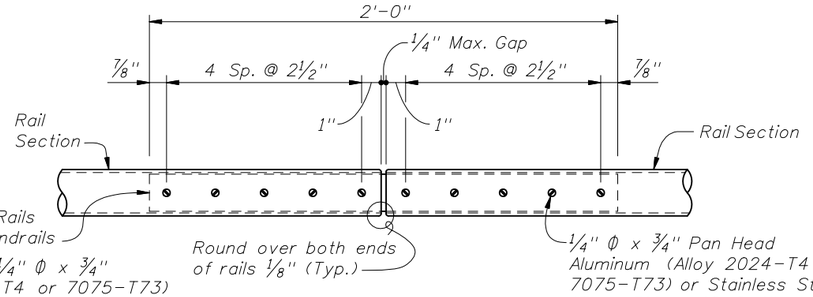
DETAIL "B" - RAIL AND HANDRAIL
(Showing Sloped Condition for Stairs or Ramp)



DETAIL "D" - EXPANSION JOINT
(FIELD SPLICE SLIP JOINT SIMILAR)

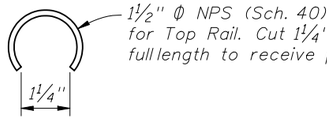
* At the Contractor's option 2 ~ ¼" Ø x ¾" Pan Head Aluminum (Alloy 2024-T4 or 7075-T73) or Stainless Steel (Type 316 or 18-8 Alloy) Set Screws at 2" spacing may be substituted for the ¾" Ø plug weld. Set screws must be set flush against the outside face of rails and underside of handrails.

** Embedded length may be 4" for plug welded connection.



DETAIL "E" - CONTINUITY
FIELD SPLICE

¼" Ø x ¾" Pan Head Aluminum (Alloy 2024-T4 or 7075-T73) or Stainless Steel (Type 316 or 18-8 Alloy) Set Screws. Set Screws must penetrate the full wall thickness of the inner sleeve and be set flush against the outside face of rail. (Typ.)



SLEEVE MODIFICATION FOR
TOP RAIL TYPE B CONNECTION

CROSS REFERENCE:
For locations of Details "C", "D" and "E", see Sheet 2 of 5.

REVISIONS

DATE	BY	DESCRIPTION
01/01/08	SJN	Added requirement for set screw to be set flush against outside face of rail, 18-8 Alloy option in DETAILS "D" & "E" and TYPE B (NONWELDED) Detail, and ¼" joint tolerance in Detail "D". --- Continued ---
07/01/09	SJN	Changed 1'-0" embedment of Rail Expansion Joint Sleeve to 10". Changed picket weld size to ⅛", bottom rail weld size to ¼", base plate weld size to ⅜" and note 1.

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2008 Interim Design Standard

ALUMINUM PEDESTRIAN/BICYCLE PICKET RAILING

Interim Date	Sheet No.
07/01/09	4 of 5
Index No.	
860	

NOTES

A. DESIGN SPECIFICATIONS:
1. AASHTO Standard Specifications for Highway Bridges (Current Edition),
2. AASHTO Guide Specifications for Structural Design of Sound Barriers (Current Edition)
3. Florida Department of Transportation's Plans Preparation Manual, Volume I (Current Edition).

B. DESIGN CRITERIA:
The Precast Sound Barriers are pre-designed and based on the criteria in the Plans Preparation Manual, Volume I and the following soil conditions: Sites with soil SPT N values between 10 and 40.

C. CONCRETE AND GROUT:
1. Concrete Class and Compressive Strength:
   a. Cast-in-Place Collars: Class IV (f'c = 5500 psi)
   b. Precast Panels, Collars and Post Caps: Class IV (f'c = 5500 psi)
   c. Posts: Class IV (f'c = 5500 psi)
2. Grout for Auger Cast Piling:
   a. Maximum Working Compressive Strength = 2200 psi
   b. Minimum 28 Day Strength = 5500 psi
3. Minimum Compressive Strength for Form Removal and Handling of Posts and Panels:
   a. 2,500 psi for horizontally cast post and panels.
   b. 2,000 psi for vertically cast panels or when tilt-up form tables are used for horizontally cast panels.

D. REINFORCING STEEL:
1. Reinforcing steel shall conform to ASTM A 615, Grade 60.
2. Welded wire fabric shall conform to ASTM A 185 (smooth wire) or ASTM A497 (deformed wire).
3. Concrete Cover of 2" shall be provided, unless otherwise noted.
4. In addition to the requirements of Specification Section 415, tie post and pile stirrups at the following locations as a minimum:
   a. Post Stirrups - Tie at all four corner bars and at every third interior bar intersection.
   b. Pile Stirrups - Tie to the main vertical reinforcing at alternate intersections for circular configurations and for rectangular configurations at the four corners and at every third interior bar intersection.

E. SURFACE FINISHES:
Provide a Class 5 Finish in accordance with Specification Section 400, unless otherwise shown on the Wall Control Drawings. See Index No. 5201 for texture finish options.

F. PILING:
Construct Auger Cast Piling in accordance with the Plans and Specification Section 455.

G. UTILITIES:
Field verify the locations of all overhead and underground utilities shown in the Wall Control Drawings.

H. NEOPRENE PADS AND RESILIENT PADS:
1. Neoprene Pads for Panel Bearing Points Between the Stacked Panels:
The Neoprene pads for the panel bearing points shall be Plain Pads, Grade 50 durometer hardness in accordance with Specifications Sections 932-2.1.
2. Neoprene Pads for Collar Bearing Points:
Neoprene Pads shall be Fiber Reinforced Pads, Grade 50, 60 or 70 durometer hardness in accordance with Specification Section 932-2.1. Plain Pads may be substituted for Fiber Reinforced Pads when sufficient bearing area is available on the concrete collar, as follows:
   a. 10' post spacing: 4" x 4" x ½" Plain Pads, Grade 50 durometer hardness.
   b. 20' post spacing and < 18' wall height: 4" x 4" x ½" Plain Pads, Grade 50 durometer hardness.
   c. 20' post spacing and ≥ 18' wall height: 4" x 5" x ½" Plain Pads, Grade 50 durometer hardness.

J. CASTING TOLERANCES:
1. Overall Height & Width: +/- ¼"
2. Thickness: +/- ¼"
3. Plane of side mold: +/- 1/16"
4. Openings: +/- ½"
5. Out of Square: ⅛" per 6 ft., but not more than ⅜" total along any side
6. Warping: 1/16" per foot distance to nearest corner
7. Bowing: 1/240 panel dimension
8. Surface Smoothness for Type "A" (Smooth) Surface Texture Option: +/- 1/16" along a 10 ft. straightedge.

K. SOUND BARRIER WALL NOTES:
1. Distance between piles shall be a maximum of 20 ft. from centerline to centerline. These Sound Barrier Wall Standard Indexes allow for 5 Pile/Post connection options based on either 10 or 20 ft. post spacing. The panel system depicted in Index Nos. 5202 through 5204 is based on a 20 ft. post spacing.
2. Walls greater than 12 ft. in height shall consist of 2 or 3 stacked panels (upper and lower), each less than 12 ft. in height. The height of the upper panel shall be a minimum 8 ft. or greater as necessary to accomodate any graphic relief (if applicable). The lower panel(s) shall be not less than 4 ft. in height. Walls equal to or less than 12 ft. in height shall consist of either a single panel or 2 stacked panels with an 8 ft. upper panel provided that any graphic relief (if applicable) will fit within the upper panel.
3. Horizontal panel joints shall be located outside of the graphic relief (if applicable). Horizontal panel joints shall be held at a constant elevation for a given wall, where possible.
4. Posts shall be "H" type cross-section with panels installed from above.
5. See Index No. 5205 for the five pile/post connection options. The Contractor may choose any of these options, unless specifically excluded in the Wall Control Drawings.
6. All posts shall be held plumb in auger cast piles with an installation template. The template shall be adjustable for horizontal placement, vertical placement and plumbness of posts. The template shall be such that the installation tolerances can be held. Template shall remain in place for a minimum of 12 hours after post installation.
7. The Contractor shall be responsible for meeting OSHA requirements. Any utility adjustments, charges for power stoppages, all realignments, special erection methods, etc. to meet these requirements shall be included in bid.
8. Structural Steel shall be in accordance with ASTM A 36.
9. Structural Steel - Pile/Post Connection Option D: Post assemblies shall be shop fabricated in accordance with Specification Section 460. Welding details and welding operations shall be in accordance with the current edition of ANSI/AWS D1.1 Welding Code. Field welding is not permitted.
10. Structural Steel with Concrete Casting - Pile/Post Connection Option C: Store steel posts in a location protected against environmental conditions. Prior to pouring the concrete around the structural post, post shall be free of loose rust, scale, dirt, paint, oil and foreign material.
11. Shimming of wall panels above the pile collar, beneath the bearing pads is permitted up to a maximum of 1½" height. Shims must be either stainless steel (Type 304 or 316) or engineered polymer (copolymer or multipolymer) plastic. Plastic shims must have a minimum compressive strength of 8,000 psi without any fractures. Stacking of shims is permitted as follows:
   a. For shimming height of 1" or less, provide up to 4 ~ ¼" shims;
   b. For shimming heights greater than 1", use a minimum ¾" thick single shim and up to 3 ~ ¼" shims.
Stacked shim plates must be bonded together with a compatible epoxy adhesive.

L. VECP OR CONTRACTOR REDESIGN:
1. In no case will VECP's or Contractor Redesigns be allowed to modify foundation designs, or post spacing.
2. Substitution of proprietary panels or systems not listed in the Wall Control Drawings will not be allowed.

M. QUALIFIED PRODUCTS LIST:
Manufacturers seeking approval of proprietary sound barrier panels, posts and foundations or systems for inclusion on the Qualified Products List as pre-approved suppliers must submit a QPL Product Evaluation Application along with design documentation, vendor drawings and other information as required in the Sound Barrier QPL Acceptance Criteria showing the proprietary product is designed to meet all specified requirements. Project specific Shop Drawings are required for sound barrier projects in accordance with Specification Section 534.

N. ALTERNATES
The Contractor shall construct the standard precast 20'-0" panel option depicted in the plans or shall construct one of the proprietary sound barrier panel or proprietary system options (panel and foundation) listed in the Wall Control Drawings.

O. FINISH COATING:
1. All wall areas not shown to receive an anti-graffiti coating shall be coated in accordance with Specification Section 400 of the Specifications with a Class 5 Applied Finish Coating. The color of the system shall be same as the anti-graffiti system or as directed by the Engineer.
2. Structural Steel Post Assembly Coating System - Pile/Post Connection Option D: The steel post assembly shall receive a shop applied three-coat system comprised of one coat of inorganic zinc primer and two coats of Type M coal tar-epoxy in accordance with Specifications Section 560. The limits of the coating system shall be the exposed surface area of the post assembly from the top of post to 2'-0" below Top of Collar (Elev. A). After the post assembly is installed, it shall be coated with an approved compatible Class 5 Applied Finish Coating in accordance with Specification Section 400 or an anti-graffiti coating. The color of the Class 5 Coating shall match the color of the panel unless otherwise noted in the plans. All components of coating system shall be on the Department's Qualified Products List. The material supplier shall certify compatibility of paint system.

P. TEST WALL:
The Contractor shall construct a test wall at the beginning of the project consistent with Specification Section 534. The Contractor shall demonstrate that all casting and erection tolerances can be met in order to assure that the prefabricated elements fit together as intended.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJN	Added note K. 11. Changed note H. 1, H. 2 and O. 2. Deleted General Specifications and note H. 3.	07/01/09	CMH	Changed Note K. 4.
07/01/08	SJN	Added "and Post Caps" to note C.1.b. Changed note K. 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

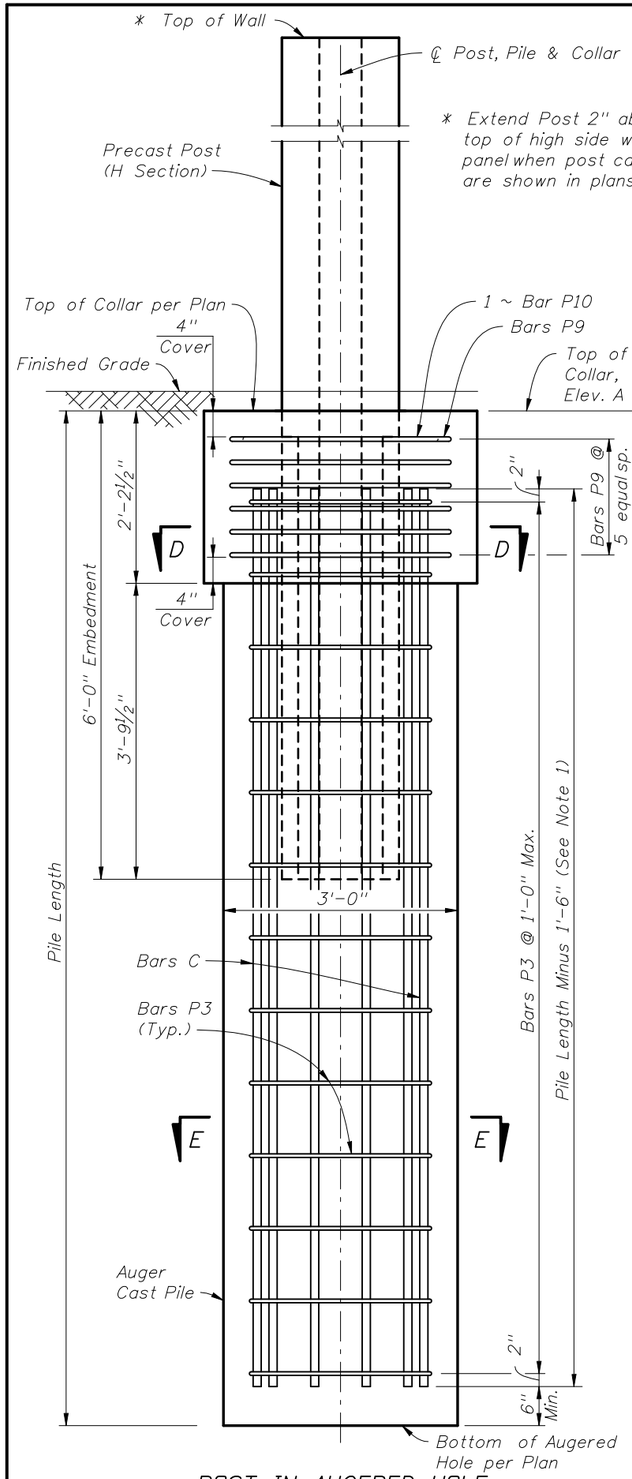
2008 Interim Design Standard

PRECAST SOUND BARRIERS - GENERAL NOTES

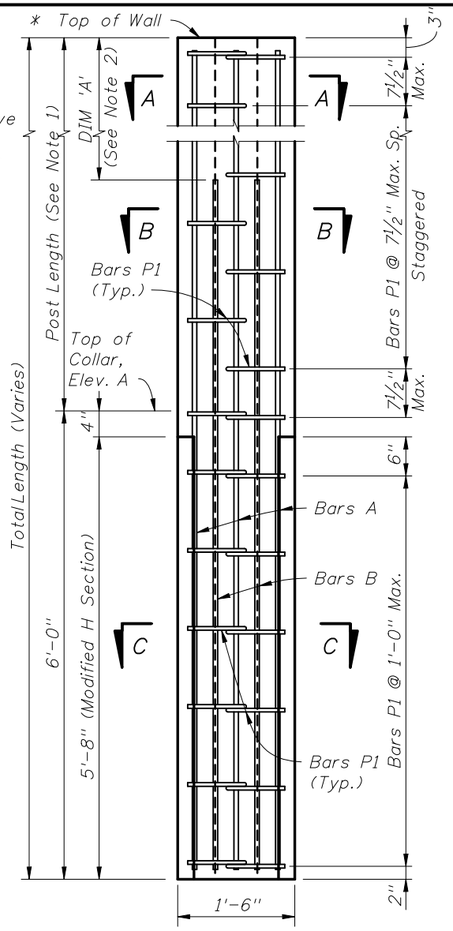
Interim Date 07/01/09

Sheet No. 1 of 1

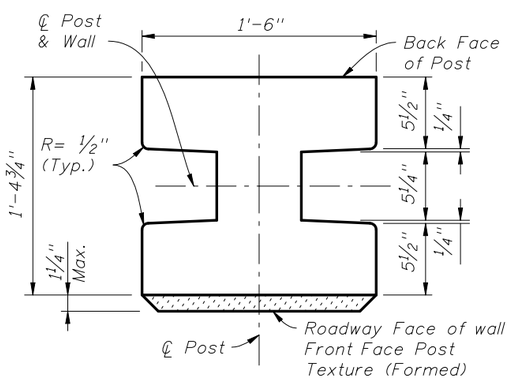
Index No. 5200



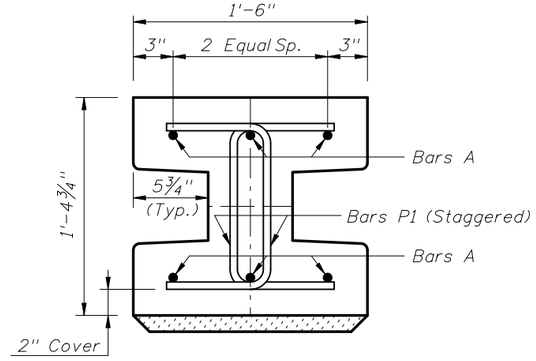
POST IN AUGERED HOLE
(Cast-In-Place Collar shown, Precast Collar similar)



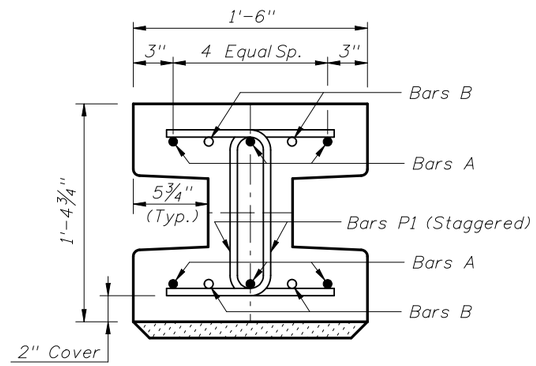
POST DETAIL WITH C-I-P COLLAR
(Prior to placement in augered hole)



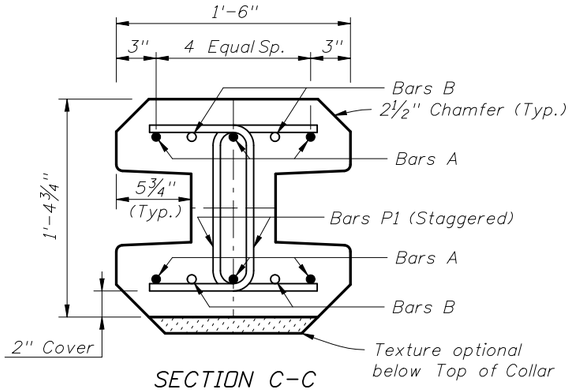
TYPICAL POST SECTION
(H Section)



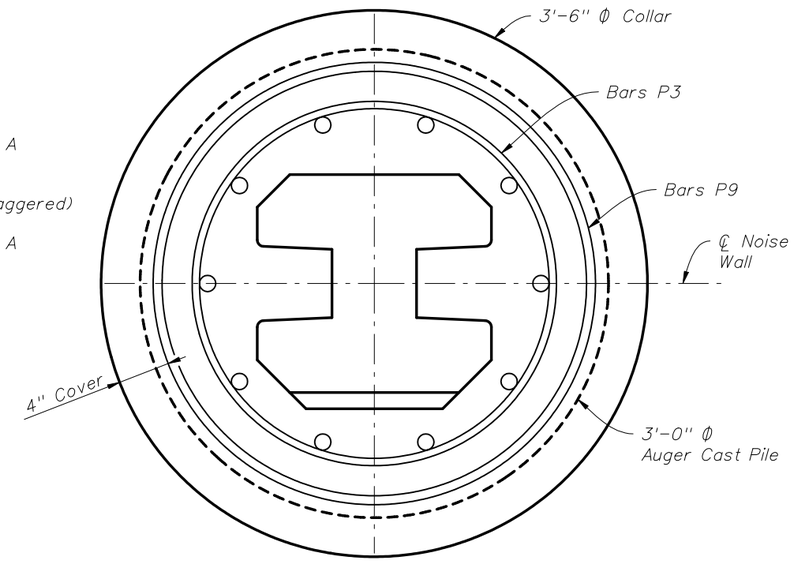
SECTION A-A
(H Section)



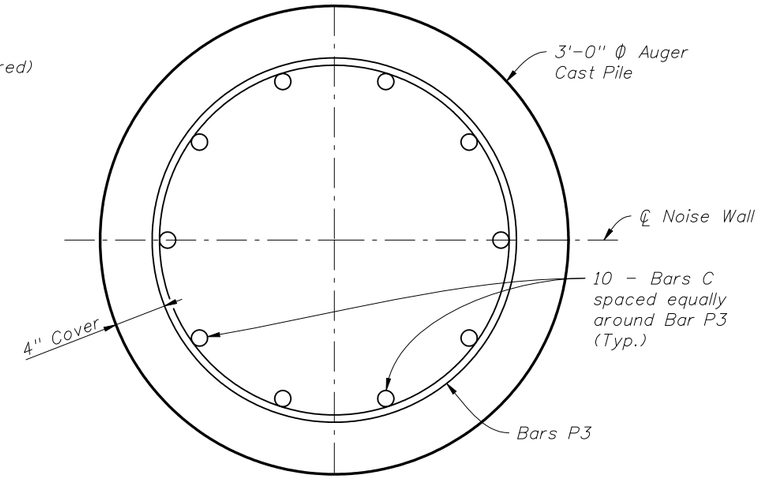
SECTION B-B
(H Section)



SECTION C-C
(Modified H Section)



SECTION D-D



SECTION E-E

NOTES:
1. For Post and Pile Lengths, see Index No. 5206.
2. For Table of Reinforcing Steel Sizes and DIM 'A' see Index No. 5206.
3. For Precast Collar Option see Sheet 2 of 7.

PILE/POST CONNECTION OPTION A

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	Added * note for 2" post extension when post caps are required; Side cover in auger cast piles changed to 4"; Sheet redrawn and Sections renamed.			

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PRECAST SOUND BARRIERS - PILE AND POST REINFORCING STEEL

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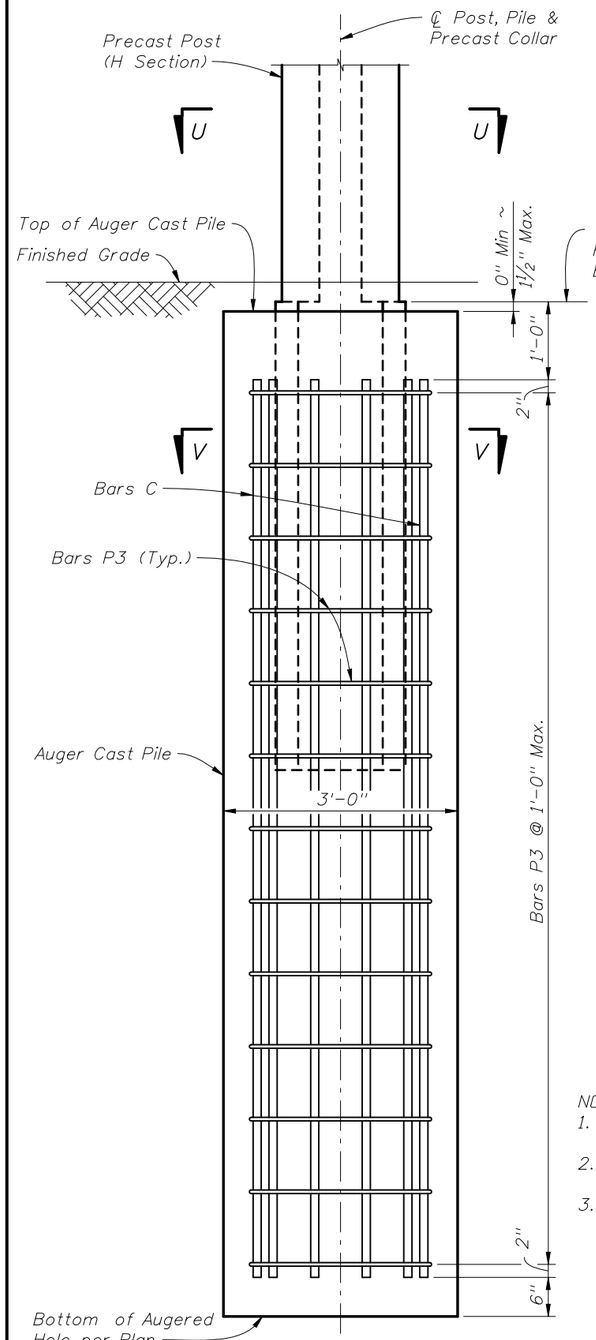
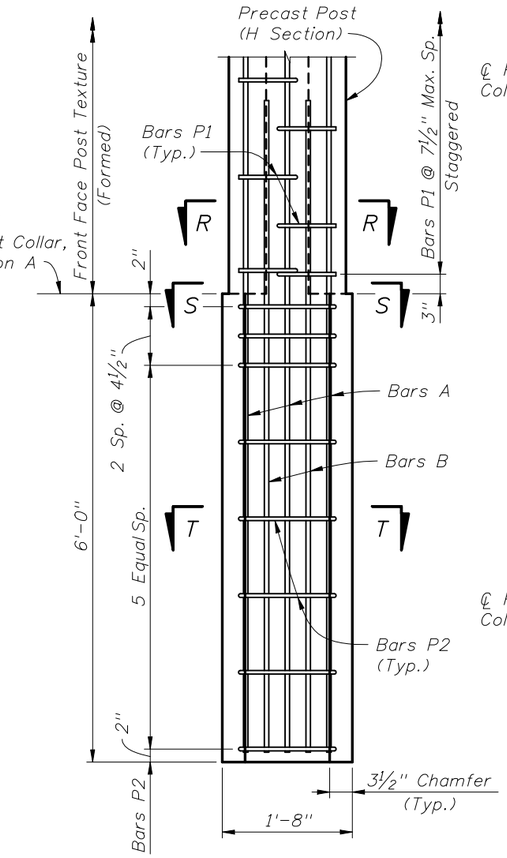
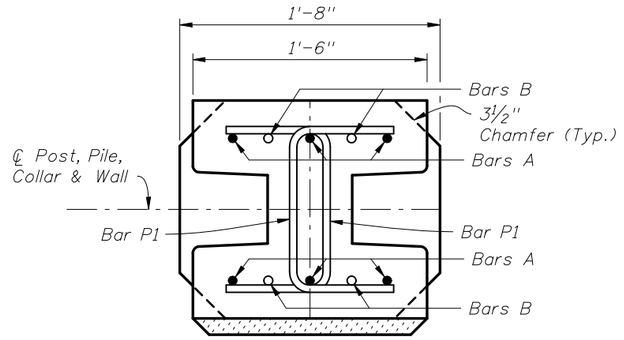
Index No. 5205



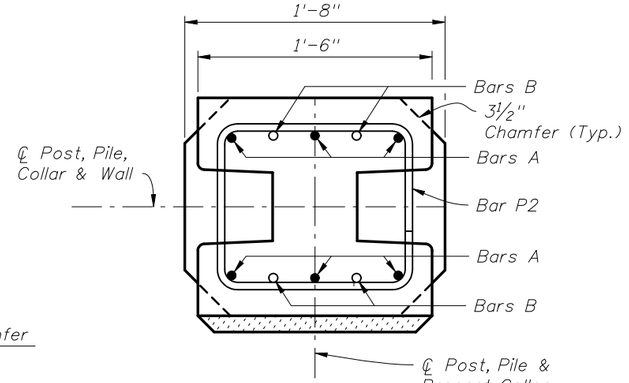
PRECAST COLLAR IN AUGER CAST PILE
(Collar and Post reinforcing steel not shown)



PRECAST COLLAR DETAIL

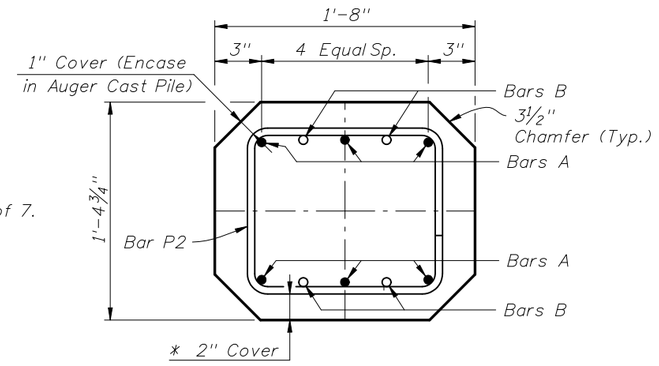


SECTION R-R

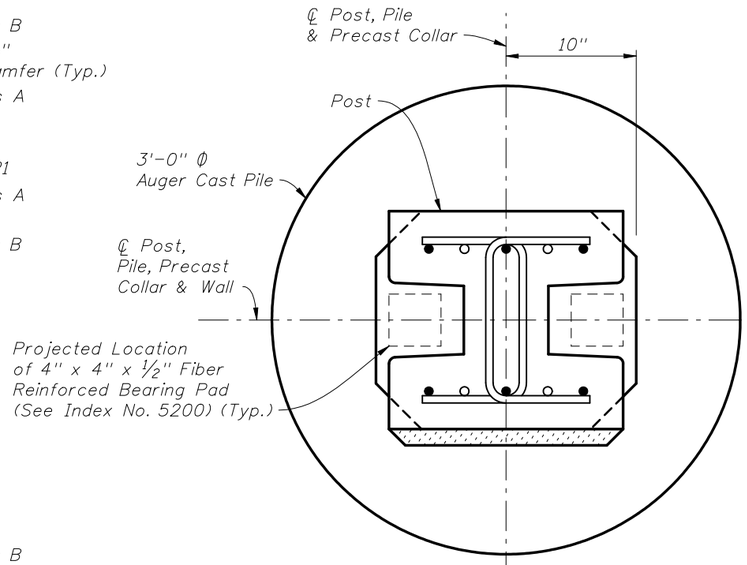


SECTION S-S

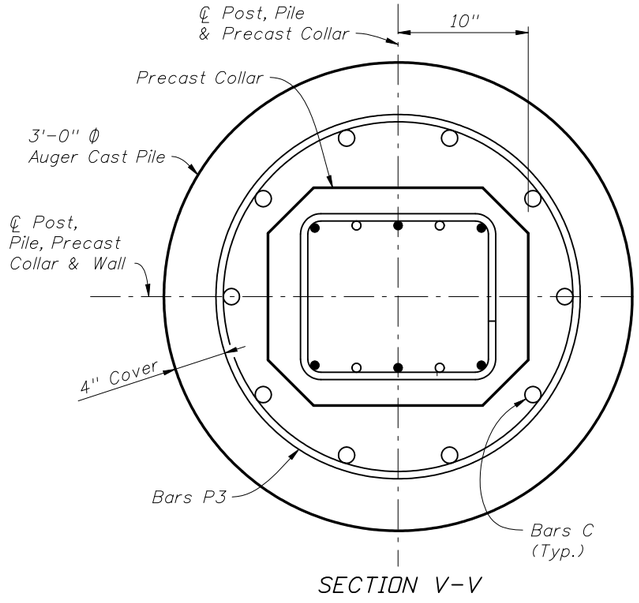
NOTES:
1. For Post and Pile Lengths, see Index No. 5206.
2. For Reinforcing Steel Sizes, see Index No. 5206.
3. For Pile/Post Connection Option A, see Sheet No. 1 of 7.



SECTION T-T
* - Unless Otherwise Noted



SECTION U-U



SECTION V-V

PRECAST COLLAR FOR PILE/POST CONNECTION OPTION A

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/08	SJN	Changed "Composite" to "Fiber Reinforced" in Section T-T. Added tolerance for distance between Top of Precast Collar and Auger Cast Pile.	07/01/09	SJN	Side cover in auger cast piles reduced to 4"; Sheet redrawn and Sections renamed.

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PRECAST SOUND BARRIERS - PILE AND POST REINFORCING STEEL

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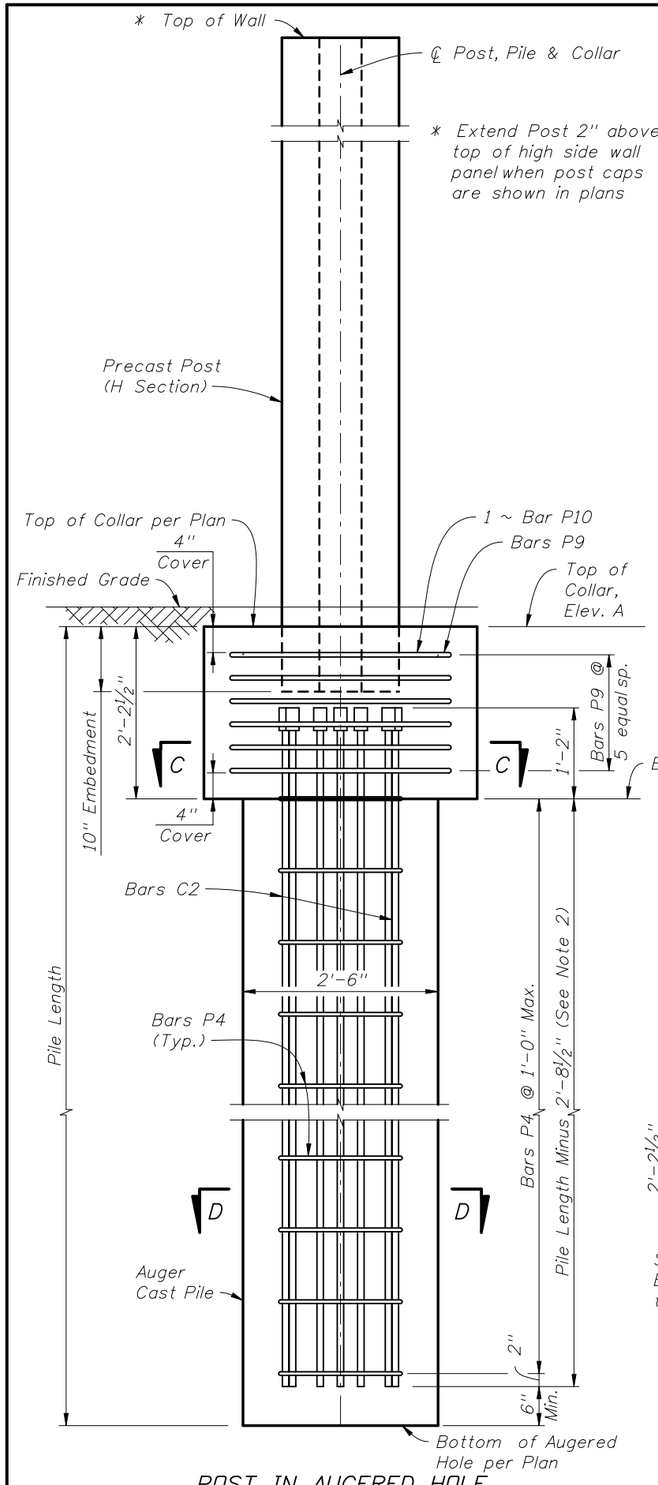
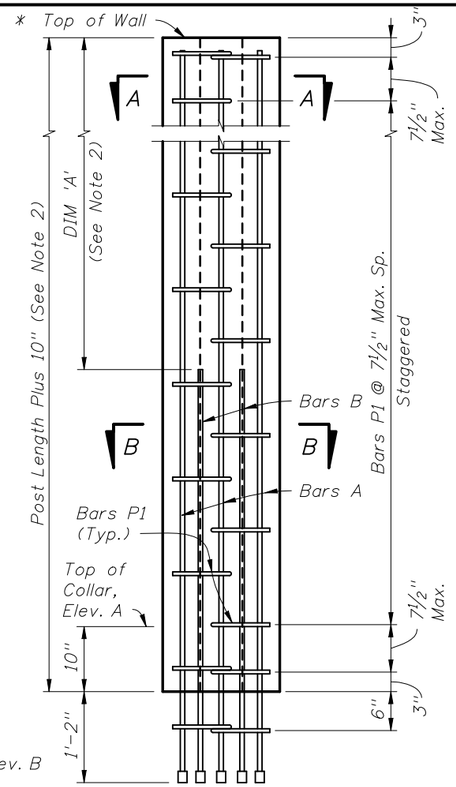
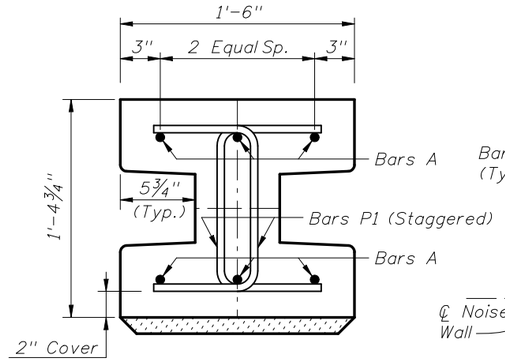
Index No. 5205



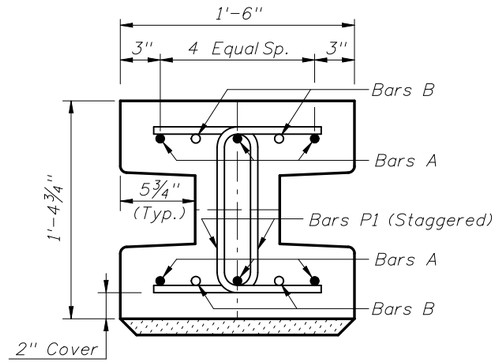
POST IN AUGERED HOLE



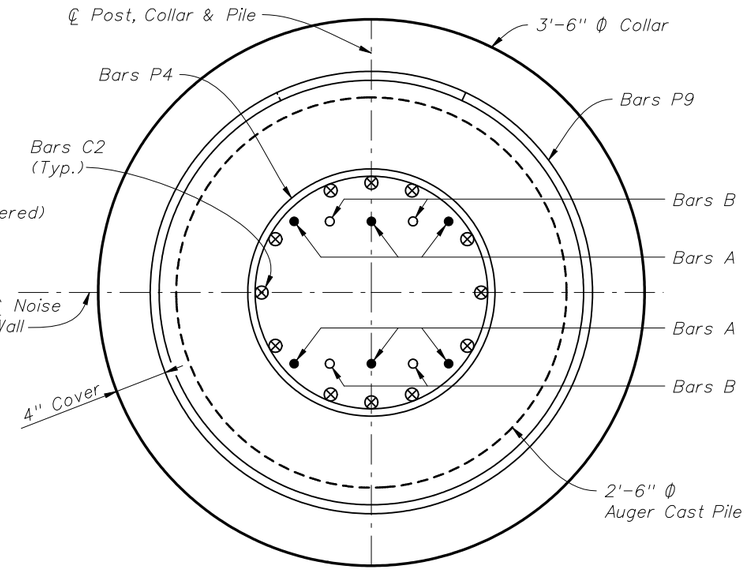
POST DETAIL



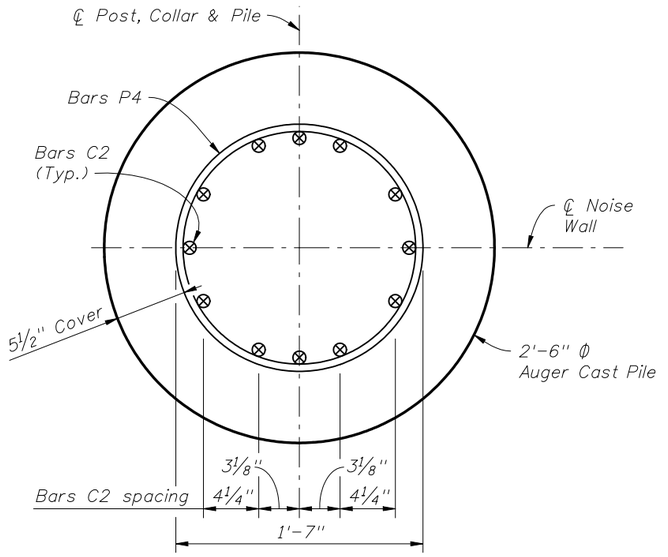
SECTION A-A
(H Section)



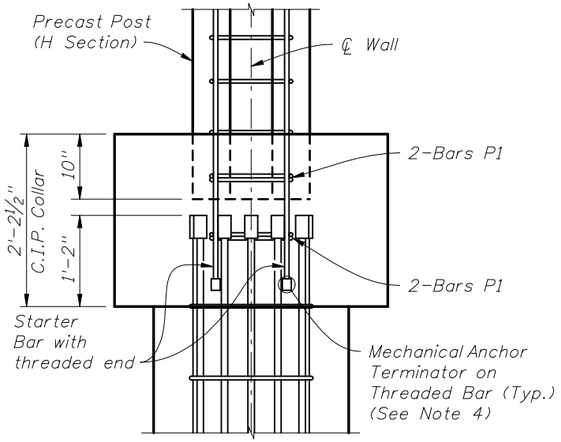
SECTION B-B
(H Section)



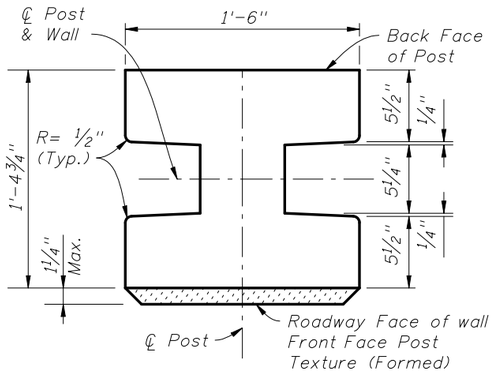
SECTION C-C



SECTION D-D



LAP AND COLLAR DETAIL
(Looking down the wall,
Bars P9 & P10 not shown)



TYPICAL POST SECTION
(H Section)

NOTES:

1. A precast collar shall not be permitted with this Pile/Post Connection Option.
2. For Post and Pile Lengths see Index No. 5206.
3. For Table of Reinforcing Steel Sizes and DIM 'A' see Index No. 5206.
4. Mechanical Anchor Terminators shall develop 125% of the specified yield strength of the bar.

PILE/POST CONNECTION OPTION B

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	Added * note for 2" post extension when post caps are required; Length of Bars C2 corrected; Sheet redrawn.			

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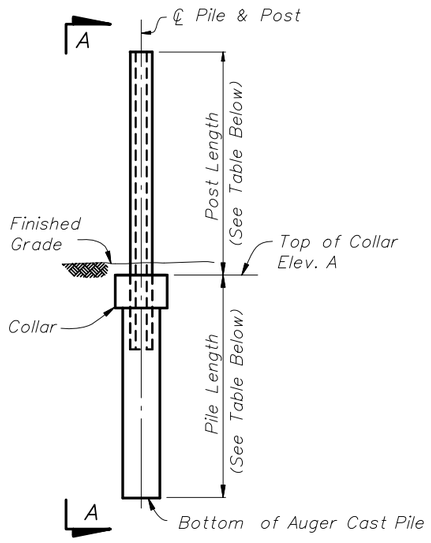
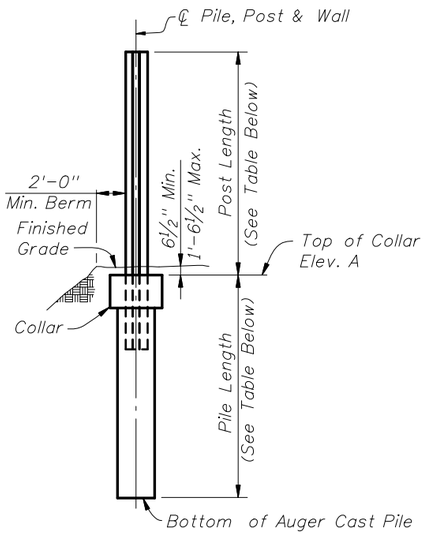
Index No. 5205



PILE/POST ELEVATION
(Pile/Post Connection Option A Shown)

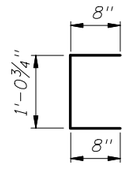


VIEW A-A
(Pile/Post Connection Option A Shown)

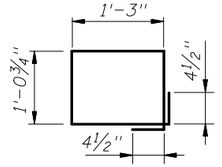
BAR BENDING DETAILS

All bar dimensions in bending diagrams are out-to-out. All bars not shown in the bending diagrams are straight.

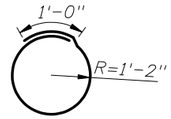
POST & PILE



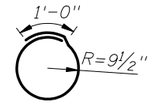
BAR P1
Bar Length = 2'-5"



BAR P2
Bar Length = 5'-5"

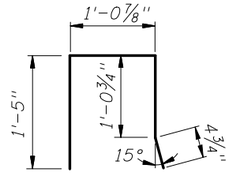


BAR P3
Bar Length = 7'-4"

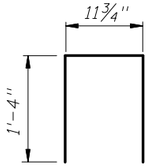


BAR P4
Bar Length = 6'-0"

90° CORNER POST & PILE

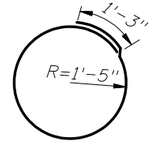


BAR P5
Bar Length = 3'-9¼"

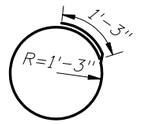


BAR P6
Bar Length = 3'-5½"

CAST-IN-PLACE COLLAR

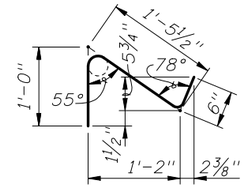


BAR P9
Bar Length = 10'-2"

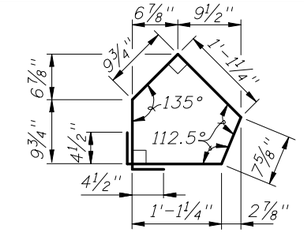


BAR P10
Bar Length = 9'-2"

45° CORNER POST & PILE



BAR P7 (POST)
Bar Length = 2'-8"



BAR P8 (PILE)
Bar Length = 5'-0¼"

NOTES:
Bars A, B & P1 are used in Options A, B & E.
Bars C are only used in Option A.
Bars C2 are only used in Option B.
Bars P2 are used in Options A & E.
Bars P3 are only used in Option A.
Bars P4 are only used in Option B.
Bars P5 & P6 are only used in 90° Corner Posts.
Bars P7 & P8 are only used in 45° Corner Posts.
Bars P9 & P10 are used in the Cast-In-Place Collar Options.

For Bar Designations, See Index No. 5205.

POST AND PILE DIMENSIONS / TABLE OF REINFORCING STEEL

WALL TYPE	POST LENGTH WITHOUT CAP	POST LENGTH WITH CAP	PILE LENGTH OPTION A		PILE LENGTH OPTIONS B, C, D & E		PILE/POST REINFORCING									CAST-IN-PLACE COLLAR	
			10'-0" POST SPACING	20'-0" POST SPACING	10'-0" POST SPACING	20'-0" POST SPACING	10'-0" POST SPACING				20'-0" POST SPACING				BARS C	BARS C2	BARS P1, P2, P3, P4, P5, P6, P7 & P8	BARS P9	BARS P10
							BARS A	BARS B		BARS D	BARS A	BARS B		BARS D					
							SIZE	SIZE	DIM 'A'	SIZE	SIZE	SIZE	DIM 'A'	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE
A	12'-0½"	12'-2½"	11'-0"	14'-0"	12'-0"	15'-0"	#4	#4	10'-0"	#4	#5	#5	9'-0"	#6	#9	#7	#4	#5	#5
B	13'-0½"	13'-2½"	11'-0"	15'-0"	12'-0"	16'-0"	#4	#4	10'-7"	#5	#5	#5	8'-10"	#7	#9	#7	#4	#5	#5
C	14'-0½"	14'-2½"	12'-0"	16'-0"	13'-0"	17'-0"	#4	#4	10-5"	#5	#6	#6	10'-4"	#7	#9	#7	#4	#5	#5
D	15'-0½"	15'-2½"	12'-0"	17'-0"	13'-0"	18'-0"	#5	#5	12'-11"	#6	#6	#6	10'-3"	#8	#9	#7	#4	#5	#5
E	16'-0½"	16'-2½"	13'-0"	17'-0"	14'-0"	18'-0"	#5	#5	12'-9"	#6	#7	#7	11'-10"	#8	#9	#7	#4	#5	#5
F	17'-0½"	17'-2½"	14'-0"	18'-0"	14'-0"	19'-0"	#5	#5	12'-7"	#6	#7	#7	11'-8"	#9	#9	#7	#4	#5	#5
G	18'-0½"	18'-2½"	14'-0"	19'-0"	15'-0"	20'-0"	#6	#6	14'-11"	#7	#8	#8	13'-1"	#10	#9	#7	#4	#5	#5
H	19'-0½"	19'-2½"	15'-0"	20'-0"	15'-0"	21'-0"	#6	#6	14'-10"	#7	#8	#8	13'-0"	#10	#9	#7	#4	#5	#5
I	20'-0½"	20'-2½"	15'-0"	21'-0"	16'-0"	22'-0"	#6	#6	14'-9"	#8	#9	#9	14'-3"	#11	#9	#7	#4	#5	#5
J	21'-0½"	21'-2½"	16'-0"	22'-0"	16'-0"	24'-0"	#6	#6	14'-8"	#8	#9	#9	14'-2"	#11	#9	#7	#4	#5	#5
K	22'-0½"	22'-2½"	16'-0"	23'-0"	17'-0"	26'-0" *	#7	#7	17'-1"	#8	#9	#9	14'-1"	2~ #14 & 1 ~ #9	#9	#7	#4	#5	#5

* For Steel Post Option "D", use 30'-0".

NOTE: USE THIS INDEX ONLY WHEN SOIL SPT N VALUES ARE BETWEEN 10 AND 40

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/08	SJN	Added "POST LENGTH WITH CAP" column, Bars D & Bars P5 thru P8 in Post and Pile Dimension table, and added Bars P5 thru P8 in Bar Bending Details.			
07/01/09	CMH	Changed Bar P3 radius.			

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PRECAST SOUND BARRIERS - PILE DEPTH AND REINFORCING SUMMARY

Interim Date 07/01/09

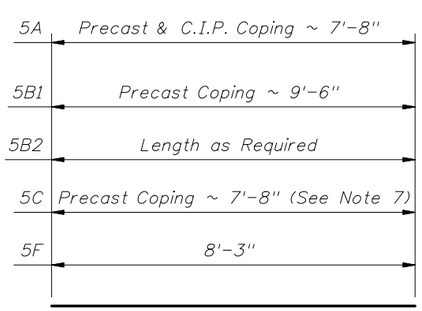
Sheet No. 1 of 1

Index No. 5206

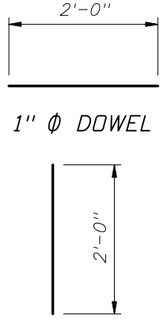
REINFORCING STEEL BENDING DIAGRAMS - JUNCTION SLAB

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH		
		PRECAST COPING		C.I.P. COPING
		(32" F-SHAPE)	(42" F-SHAPE)	
A	5	7'-8"	7'-8"	7'-8"
B1	5	9'-6"	9'-6"	N/A
B2	5	AS REQD.	AS REQD.	AS REQD.
C	5	7'-8"	7'-8"	N/A
D	4	2'-0"	2'-0"	N/A
F	5	8'-3"	8'-3"	8'-3"
L	6	5'-4"	5'-7"	10'-2"
U1	6	3'-8"	3'-8"	3'-8"
1" ϕ Dowel	Smooth Steel Bar	2'-0"	2'-0"	2'-0"

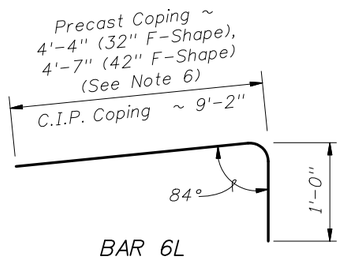


BARS 5A, 5B1, 5B2, 5C & F

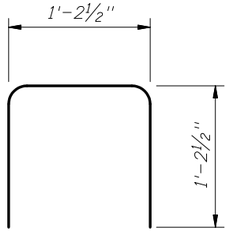


1" ϕ DOWEL

DOWEL BAR 4D



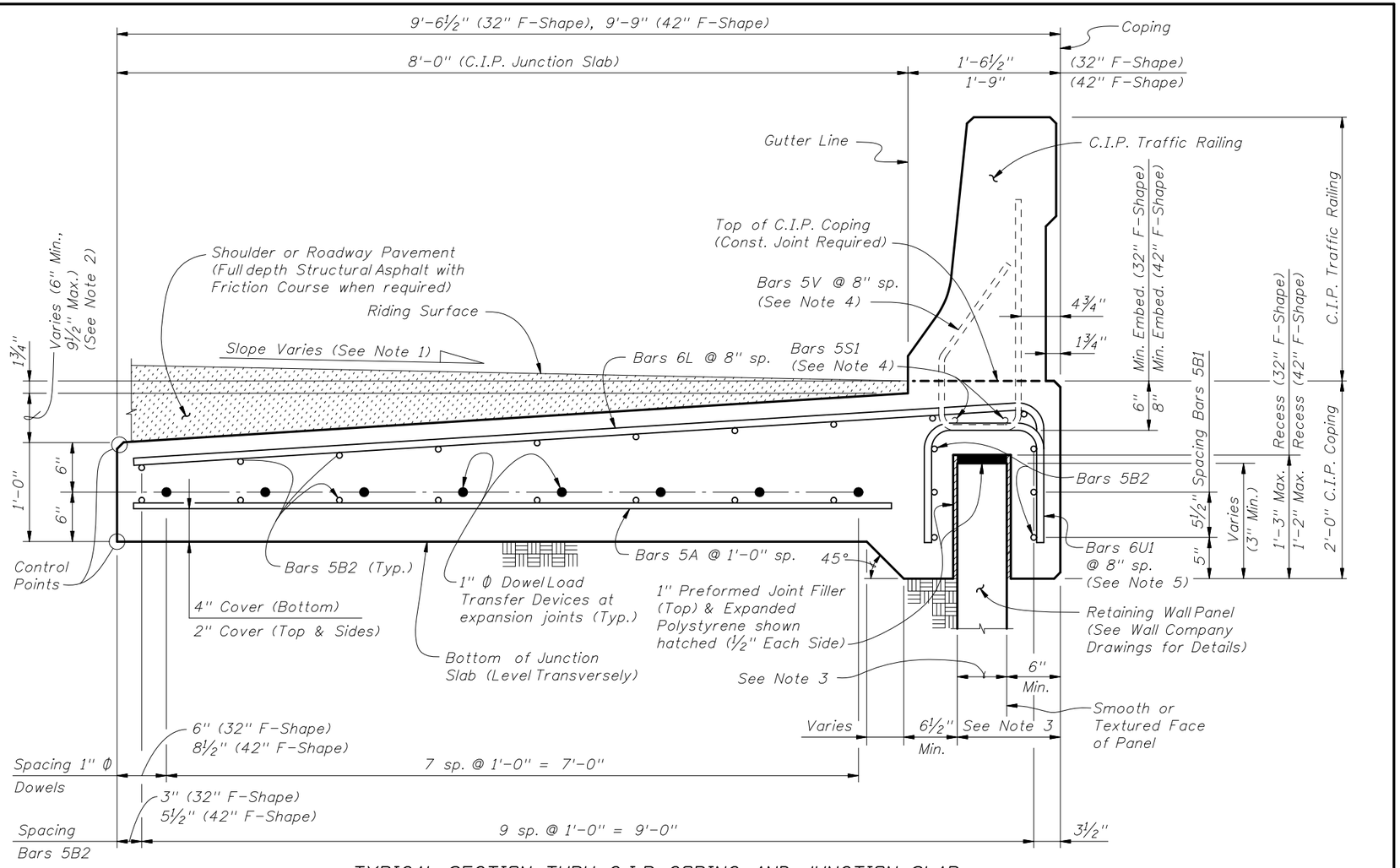
BAR 6L



BAR 6U1

REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B2 will be a minimum of 2'-2".
4. For Precast Coping only, lap splice Bars 6L with Bars 5C. Lap splices will be a minimum of 2'-9".
5. See Index No. 420 and Index No. 425 for Bars 5S and 5V.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-4½" (32" F-Shape) or 1'-7" (42" F-Shape).
7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 7'-9".
8. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.



TYPICAL SECTION THRU C.I.P. COPING AND JUNCTION SLAB AND RETAINING WALL AT EXPANSION JOINTS

ESTIMATED QUANTITIES FOR C.I.P. COPING

ITEM	UNIT	QUANTITY
Concrete	CY/Ft.	0.468
Reinforcing Steel (Typical) excluding Bars 5V and 5S (Typ.)	Lb./Ft.	64.20
Additional Reinf. @ Expansion Joint	Lb./Ft.	42.72

(The above concrete quantities are based on a superelevation of 6.25% and a 5" wide retaining wall panel, beneath a 32" F-Shape Traffic Railing).

JUNCTION SLAB NOTES:

1. Match Cross Slope of Travel Lane or Shoulder.
2. The minimum dimension of 6" corresponds to a superelevation of 6.25%. For superelevations exceeding 6.25%, increase this dimension (i.e., shift control points down) as required to match roadway superelevation.
3. Actual width varies depending on type of Retaining Wall used.
4. See Index No. 420 and Index No. 425 for Bars 5S and 5V.
5. Increase the width (1'-2½") of Bars 6U1 as required to maintain 2" minimum cover when recess width exceeds 8".

PRECAST OR C.I.P. COPING WITH C.I.P. JUNCTION SLAB DETAILS (F-SHAPE TRAFFIC RAILINGS)

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJN	Changed "Shoulder or Roadway Pavement" note; and "6"" to "6" Min." in TYPICAL SECTION detail.			
07/01/09	SJN	Changed "Continuous Neoprene Strip" to "Preformed Joint Filler" in TYPICAL SECTION detail.			

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PERMANENT RETAINING WALL SYSTEMS

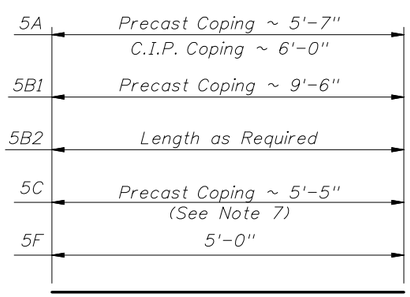
Interim Date 07/01/09

Index No. 5300

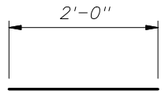
REINFORCING STEEL BENDING DIAGRAMS - RAISED SIDEWALK

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH	
		PRECAST COPING	C.I.P. COPING
A	5	5'-7"	6'-0"
B1	5	9'-6"	N/A
B2	5	AS REQD.	AS REQD.
C	5	5'-5"	N/A
D	4	2'-0"	N/A
F	5	5'-0"	5'-0"
L	5	5'-0"	8'-1"
U1	5	3'-8"	3'-8"
1" Ø Dowel	Smooth Steel Bar	2'-0"	2'-0"

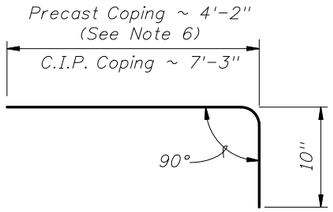


BARS 5A, 5B1, 5B2, 5C & 5F

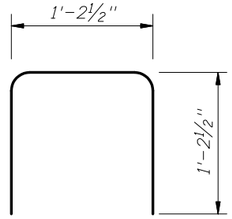


1" Ø DOWEL

DOWEL BAR 4D



BAR 5L



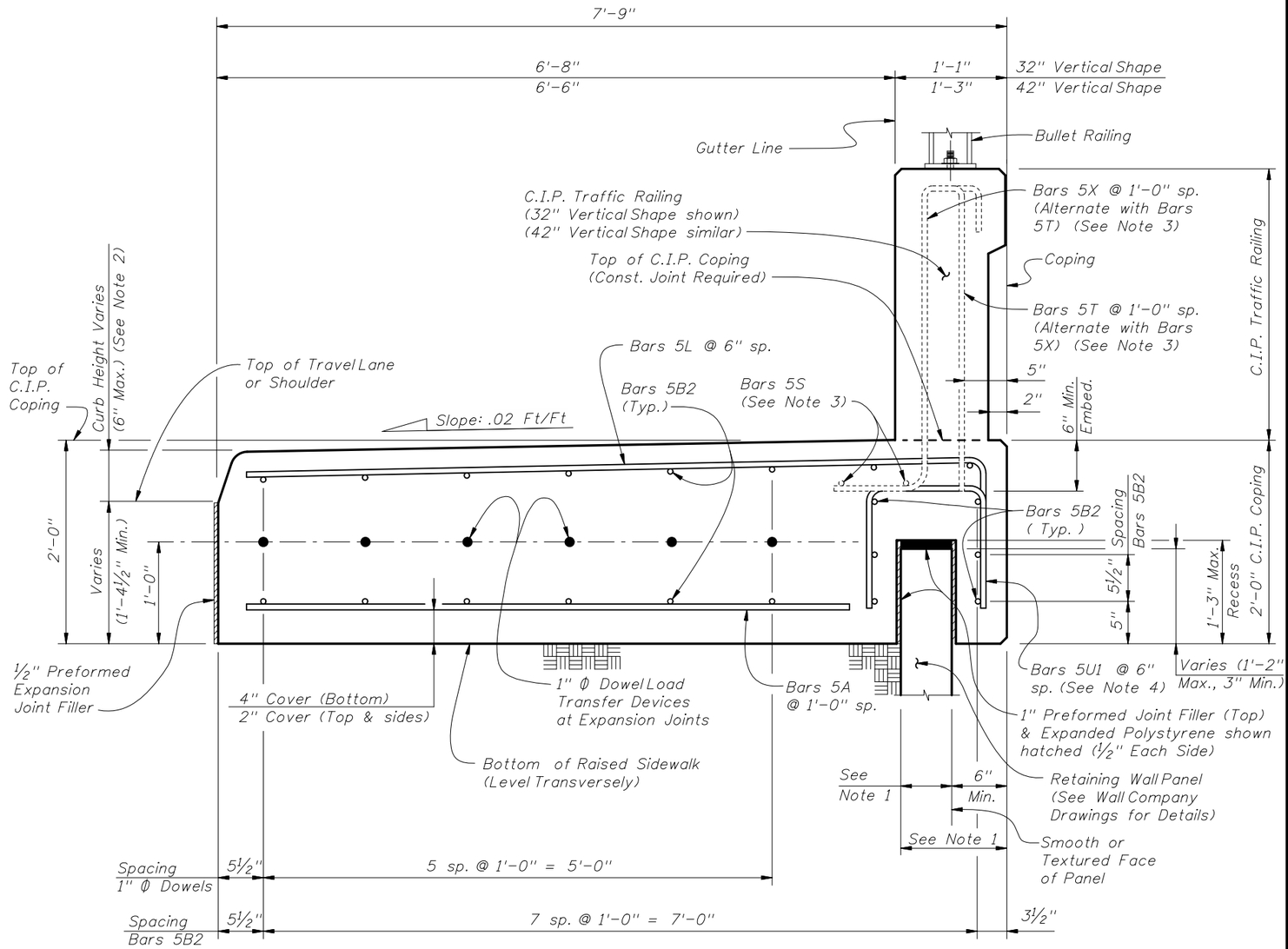
BAR 5U1

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at expansion joints will have a 2" minimum cover.
3. Lap splices for Bars 5B will be a minimum of 2'-2".
4. Lap splice Bars 5L with Bars 5C. Lap splices will be a minimum of 2'-2".
5. See Index No. 422 and Index No. 423 for Bars 5S, 5T and 5X. Adjust vertical dimensions of Stirrup Bars 5T and 5X to 3'-0" for 32" Vertical Shape or 3'-10" for 42" Vertical Shape.
6. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 1'-8".
7. Dimension shown is for lap splice option. For mechanical coupler option, this dimension is 5'-8".
8. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

ESTIMATED QUANTITIES FOR C.I.P. COPING

ITEM	UNIT	QUANTITY
Concrete	CY/Ft.	0.538
Reinforcing Steel (Typical) excluding Bars 5T, 5X and 5S (Typ.)	Lb./Ft.	51.63
Additional Reinf. @ Expansion Joints	Lb.	32.04

The above concrete quantities are based on a 5" wide retaining wall panel and a Type D Concrete Curb (See Note 2).



TYPICAL SECTION THRU C.I.P. COPING AND RAISED SIDEWALK AND RETAINING WALL AT EXPANSION JOINTS

RAISED SIDEWALK NOTES:
1. Actual width varies depending on type of Retaining Wall used.
2. Match roadway curb shape (Type) and height. See Roadway Plans and Index No. 300. 6'-8" dimension is based on a 32" Vertical Shape Traffic Railing with a Type D curb adjacent to a 6'-0" wide sidewalk. Adjust this dimension as required for other curb types or transitions at Begin or End Retaining Wall.
3. See Index No. 422 and Index No. 423 for Bars 5S, 5T & 5X and Bullet Railing details. Adjust vertical dimension of Bars 5T and 5X, see Reinforcing Steel Note 5.
4. Increase the width (1'-2½") of Bars 5U1 as required to maintain 2" minimum cover when recess width exceeds 8".

PRECAST OR C.I.P. COPING WITH C.I.P. RAISED SIDEWALK DETAILS (VERTICAL SHAPE TRAFFIC RAILINGS)

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	TJB	Changed "6"" to "6" Min." in TYPICAL SECTION detail.			
07/01/09	SJN	Changed "Continuous Neoprene Strip" to "Preformed Joint Filler" in TYPICAL SECTION detail.			

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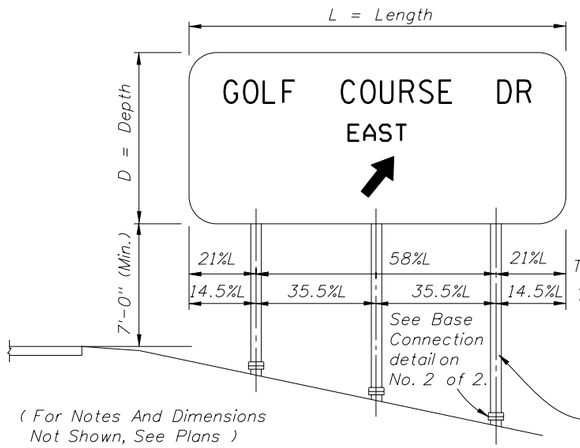
PERMANENT RETAINING WALL SYSTEMS

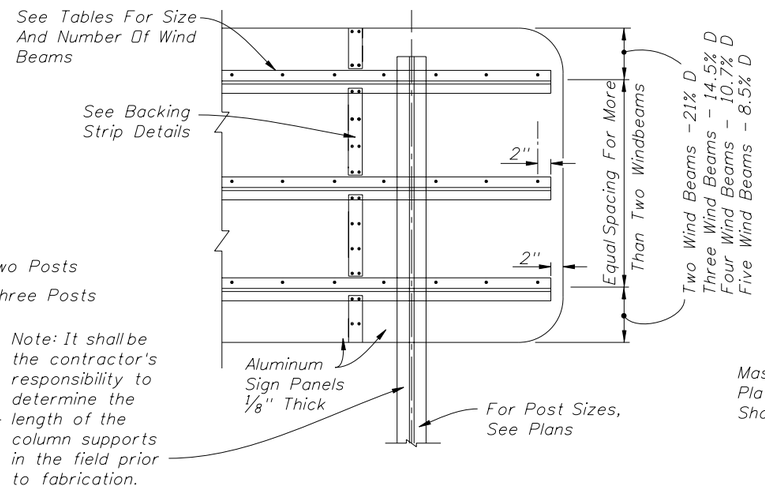
Interim Date 07/01/09

Sheet No. 13 of 19

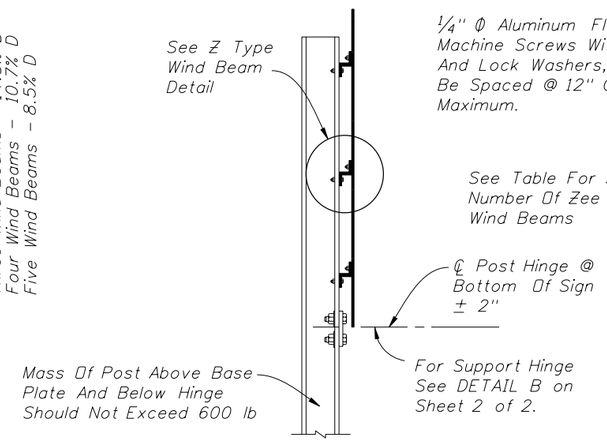
Index No. 5300



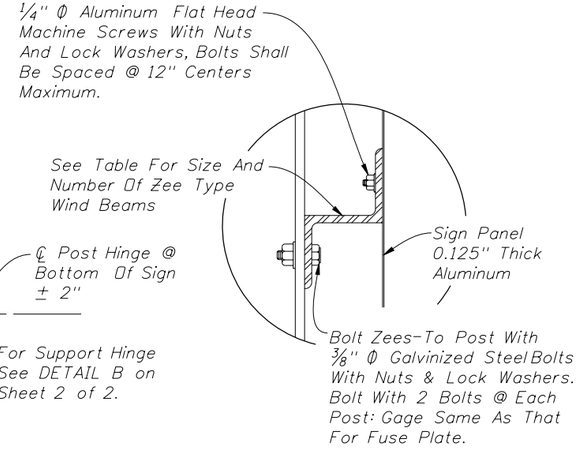
TYPICAL ELEVATION



PARTIAL REAR ELEVATION

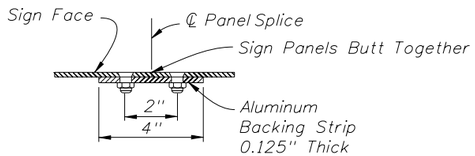


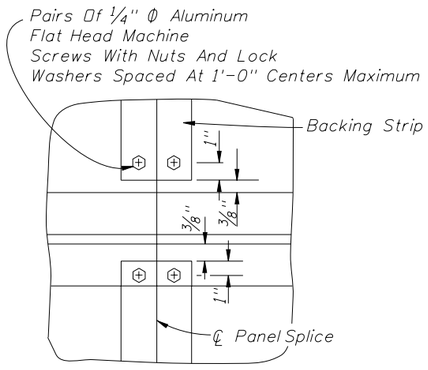
SIDE VIEW



Z TYPE WIND BEAM

Note: If the sign panels are deeper than 10', a Horizontal Panel Splice is allowed at an interior Z bar support, shop drawings shall be required. Minimum panel section width =2'-6".





BACKING STRIP DETAILS

NUMBER OF WIND BEAMS FOR GIVEN DEPTH & WIND					
Wind	No. Beams	Max. Depth	Wind	No. Beams	Max. Depth
110	2	7'-0"	150	2	6'-0"
110	3	12'-0"	150	3	10'-4"
110	4	16'-4"	150	4	14'-0"
110	5	20'-8"	150	5	17'-8"
130	2	6'-8"			
130	3	11'-4"			
130	4	15'-4"			
130	5	19'-0"			

SIZE OF WIND BEAMS		
Size Of Zee*	Length Of Sign (Feet)	
	2 Posts	3 Posts
Z 1.75 x 1.75 x 1.08	0 - 11'-0"	0 - 17'-4"
Z 3 x 2.69 x 2.33	11'-1"-19'-0"	17'-5"-29'-6"
Z 3 x 2.69 x 3.38	19'-1"- 20'-8"	29'-7"-31'-6"

*Note: Zees Are Aluminum - No Steel Equivalent Available Designation Gives (Member Depth) x (Flange=Width) x (lb/ft)

DESIGN WIND SPEEDS BY COUNTY

110 mph Alachua, Baker, Bradford, Clay, Columbia, Gadsden, Gilchrist, Hamilton, Hardee, Jackson, Jefferson, Lafayette, Lake, Leon, Madison, Marion, Polk, Putnam, Sumter, Suwannee, and Union Counties.

130 mph Bay, Brevard, Calhoun, Charlotte, Citrus, DeSoto, Dixie, Duval, Flagler, Franklin, Glades, Gulf, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lee, Levy, Liberty, Manatee, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Sarasota, Seminole, St. Johns, Taylor, Volusia, Wakulla, Walton, and Washington Counties.

150 mph Broward, Collier, Escambia, Indian River, Martin, Miami-Dade, Monroe, Palm Beach, Santa Rosa, and St.Lucie Counties.

GENERAL NOTES

DESIGN SPECIFICATIONS: Design according to FDOT Structures Manual (current edition).
WELDING: For welding refer to the latest editions of the AWS Structural Welding Codes for Steel and Aluminum, the AASHTO Standard Specifications for Welding Structural Steel Highway Bridges.
ALUMINUM MATERIALS: All aluminum materials shall meet the requirements of the Aluminum Association's Alloy 6061-T6 and also the following ASTM specifications: Sheets and plates, B209; extruded tube, bars, rods & shapes, B221; and standard structural shapes, B308. No stenciling permitted on sheets. Aluminum welding rods shall meet the requirements of Aluminum Association Alloy No. 5556 filler wire.
ALTERNATE MATERIAL: Material meeting the requirements of ASTM B209 or Aluminum Association Alloys 5154-H38 or 5052-H38 may be used for sheet and plate. Material meeting the requirements of Aluminum Association Alloy 6351-T5 and ASTM B221 may be used for extruded bars, rods, shapes and tubes.
SIGN FACE: All sign face corners shall be rounded.
STRUCTURAL STEEL: All structural steel shall meet the requirements of ASTM A36.
ALUMINUM BOLTS, NUTS, & LOCK WASHERS: Aluminum bolts shall meet the requirements of Aluminum Association Alloy 2024-T4 (ASTM F468). The bolts shall have an anodic coating at least 0.0002" thick and be Chromate sealed. Lock washers shall meet the requirements of Aluminum Association Alloy 7075-T6 (ASTM B221). Nuts shall meet the requirements of Aluminum Association Alloy 6061-T6 or 6262-T9 (ASTM F467).
STEEL BOLTS, NUTS, & WASHERS: All steel bolts, nuts and washers shall meet the requirements of ASTM A325.
TOLERANCES: All above materials shall be in accordance with the governing ASTM specifications.
GALVANIZED: All steel shapes, angles, tees, plates, bolts, nuts and washers shall be galvanized in accordance with ASTM F2329.
BASE CONNECTION: High strength bolts L_2 in the base connection shall be tightened only to the torque shown in the table on sheet 2 of 2. Overtightened base connections will not be accepted.
FUSE PLATE: All holes in fuse plates shall be drilled. All plate cuts shall, preferably, be saw cuts; however, flame cutting will be permitted provided all edges are round. Metal projecting beyond the plane of the plate face will not be allowed.
BRASS SHIM: Provide shim plate per ASTM B36.
SHOP DRAWINGS: When ground sign supports are fabricated in accordance with these plans no shop drawings are required. Shop drawings will be required for approval when the column length exceeds the length shown in the plans by more than 2'-0". However, shop drawings for sign panels, messages, lettering and quantities shall be submitted to the Engineer of Record for approval.
FABRICATOR NOTE: All bolts, except L_2 bolts and zee to post bolts, shall be tightened in accordance with Section 700 of the Specifications.
FOUNDATION: Contractor may use precast foundations in pre-drilled holes a minimum of 12" larger than the foundation indicated on the plans in either wet or dry conditions. The holes shall be clean and without loose material. Temporary casing shall be required if the soil is unstable. Fill the void around the precast foundation with flowable fill meeting the requirements of Section 121 or clean sand placed using hydraulic methods. The cost of flowable fill, installing and removal of casing shall be included in the unit price of Sign Multi-Post.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/07	L.W.	Delete High Strength Bolt Table A-325. Note revised to 10' instead of 12' in BACKING STRIP DETAIL.	06/03/09	DWY.	Under General Notes-GALVANIZED: Note Changed. Brass Shim note added. Sign Face note moved.
07/01/08	DYW.	Provided Specifications reference for tightening. Changed bolt keeper plate, base connection and shim details. Index Completely revised changed from three sheets to two sheets.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

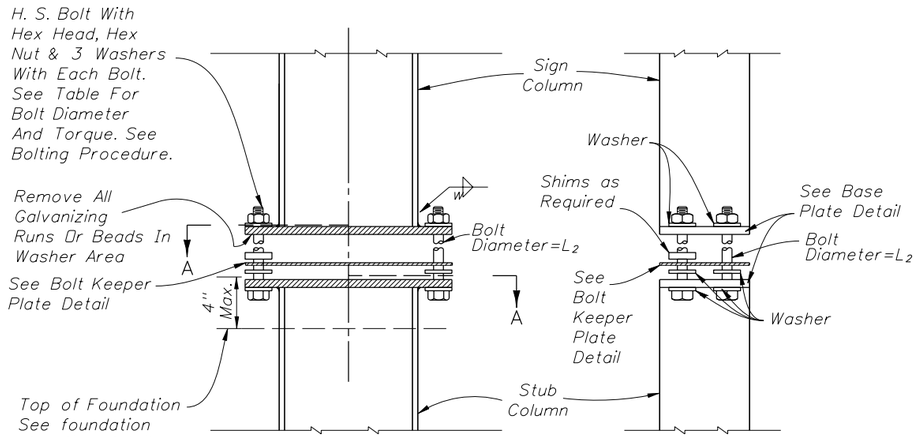
2008 Interim Design Standard

MULTI-COLUMN GROUND SIGN

Interim Date 07/01/09

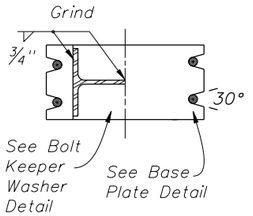
Sheet No. 1 of 2

Index No. 11200

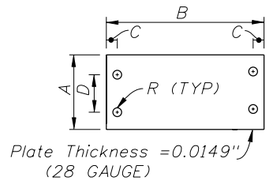


SIGN COLUMN & STUB COLUMN ELEVATION

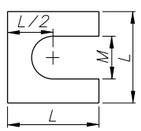
BASE CONNECTION



SECTION A-A

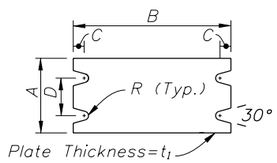


BOLT KEEPER PLATE

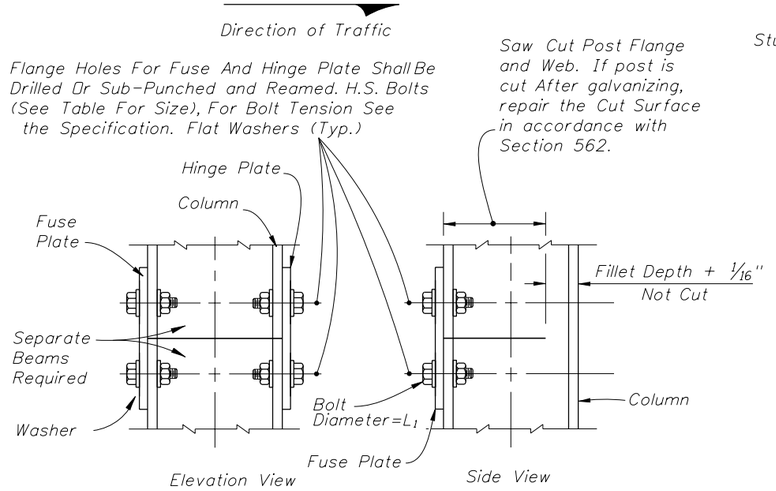


Provide 2 - 0.0149" Thick (28 guage) and 2 - 0.0329" Thick (21 guage) Per Post

SHIM DETAIL



BASE PLATE

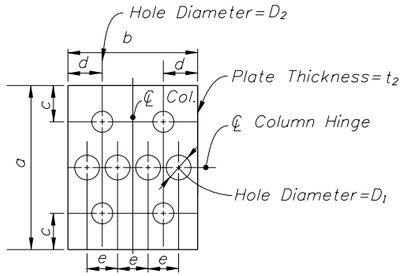


OPTIONAL HINGE TYPICAL HINGE

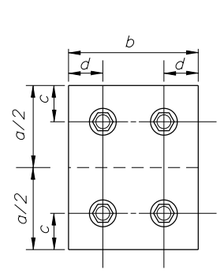
FUSE & HINGE PLATES

(See Fabricator Note on Sheet 1 of 2)

DETAIL B

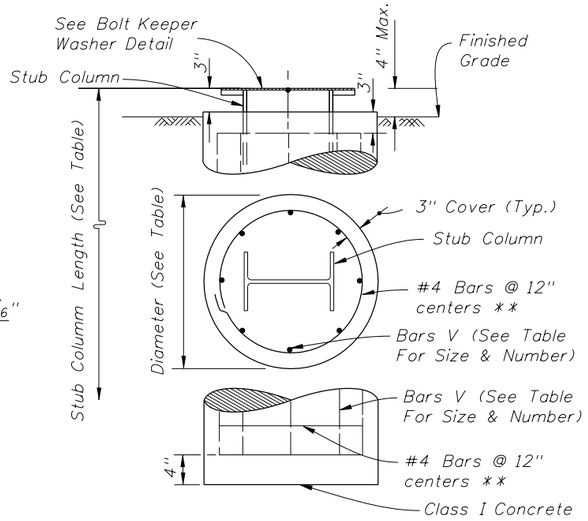


FUSE PLATE



(Match Post Flange Thickness)

HINGE PLATE



FOUNDATION ELEVATION

NOTE: All Reinforcing To Be Grade 60.

** At the Option of the Contractor, D10 Spiral Wire @ 6" Pitch, Three Flat Turns Top and One Flat Turn Bottom may be Utilized in Lieu of Specified.

Shop-weld assemblies of foundation stirrup reinforcing bars are permitted in reinforced concrete foundation provided that:

1. The reinforcing bars conform to ASTM Specification A706/706M.
2. The holding wires conform to ASTM Specification A82 or A496.
3. The Shop welding is performed by machines under a continuous, controlled process, approved by the Engineer.
4. Quality control test are preformed on shop-welded specimens and the test results are available, upon request, to the Engineer.

BASE CONNECTION DATA									FUSE (HINGE) PLATE DATA									SHIM		FOUNDATION DATA			
Section *	A	B	C	D	R	t_1	L_2	Torque (lbf*in)	a	b	c	d	e	t_2	D_1	D_2	L_1	L	M	Dia.	Depth	Stub Length	Reinf. Bars V
S 3x5.7	4"	7"	3/4"	2"	5/16"	1"	1/2"	90±20	14 1/2"	2 3/8"	3 5/8"	7/16"	9/16"	7/16"	7/16"	9/16"	1/2"	1 9/16"	9/16"	2'-0"	5'-6"	3'-3"	10-#6
W 6x12	4"	10"	3/4"	2"	3/8"	1 5/8"	5/8"	270±45	14 1/2"	4"	3 5/8"	7/8"	15/16"	7/16"	13/16"	11/16"	5/8"	1 13/16"	11/16"	2'-0"	7'-6"	4'-3"	10-#6
W 8x24	6 1/2"	12 1/2"	7/8"	3 1/4"	7/16"	1 3/4"	3/4"	445±75	16 1/2"	6 1/2"	4 1/2"	1 1/2"	1 1/2"	1/2"	1"	13/16"	3/4"	2 3/16"	13/16"	2'-4"	8'-6"	6'-3"	8-#8
W 10x33	8"	16"	1 1/4"	4 3/4"	9/16"	2"	1"	580±90	18 1/2"	8"	4 5/8"	1 1/4"	1 3/4"	5/8"	1 1/8"	1 1/16"	1"	2 3/8"	1 1/16"	2'-4"	10'-3"	8'-3"	8-#8
W 12x45	10"	18"	1 1/4"	6"	9/16"	2"	1"	580±90	22"	10"	5 1/2"	2 1/4"	2 1/4"	3/4"	1 5/16"	1 1/16"	1"	2 3/4"	1 1/16"	2'-8"	11'-3"	8'-3"	10-#8

* Designations: Normal Depth in inches and weight in pounds per linear foot.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. Assemble post to stub with bolts and flat washers as shown.
2. Shim as required to plumb post (see shim detail).
3. Tighten all L_2 bolts the maximum possible with 1'-0" to 1'-3" wrench to bed washers and shims and to clean bolt threads. Then loosen each bolt in turn and retighten in a systematic order to the torque specified in the table.
4. Burr threads at junction with nut using a center punch to prevent nut loosening.

STEEL POST, BASE, FOUNDATION & FUSE PLATE DETAILS

REVISIONS

DATE	BY	DESCRIPTION
11/27/07	L.W.	Notes added to FOUNDATION DETAIL.
07/01/08	D.Y.W.	Provided Specification reference for bolt tightening. Changed bolt keeper plate, base connection and shims detail. Index Completely revised changed from three sheets to two sheets.
06/09/09	D.Y.W.	Configuration revised and S3X5.7 Post added.

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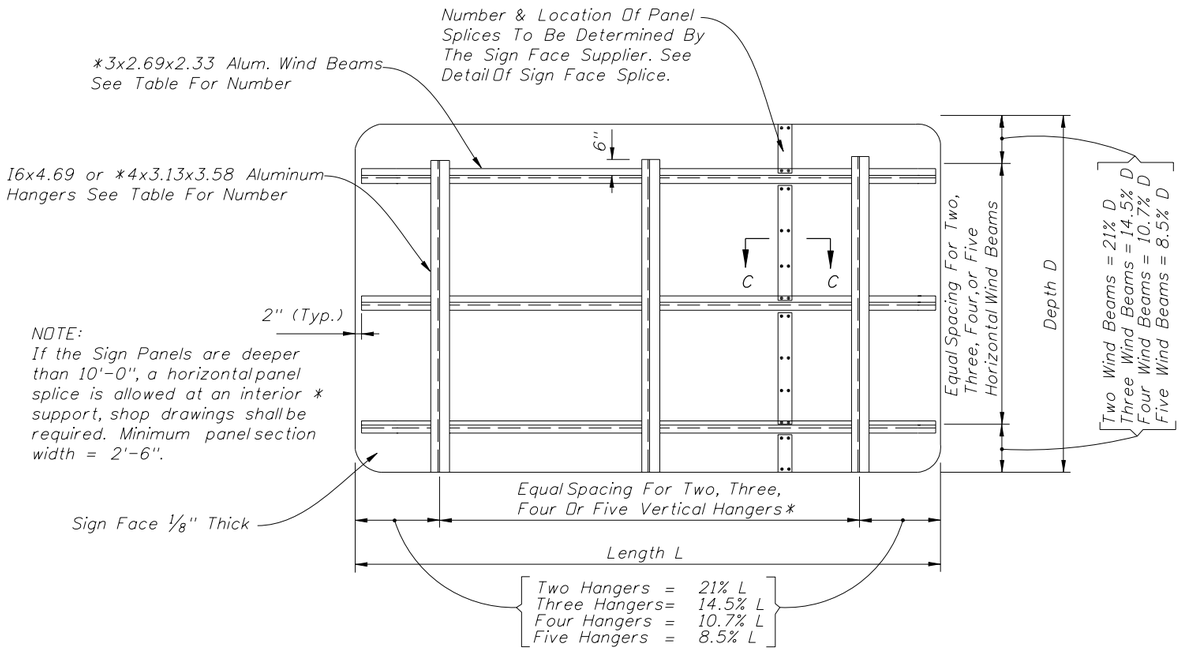
MULTI-COLUMN GROUND SIGN

Interim Date 07/01/09

Sheet No. 2 of 2

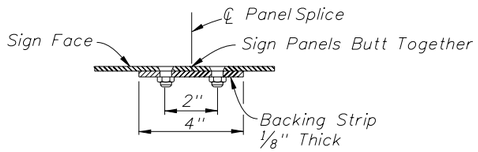
Index No. 11200



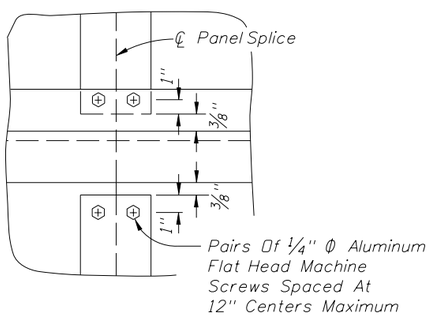
*Note: Spacing of vertical hangers may be varied slightly or as necessary to clear the truss struts and diagonals at panel points.

TYPICAL SIGN FACE ELEVATION FOR OVERHEAD TRUSS

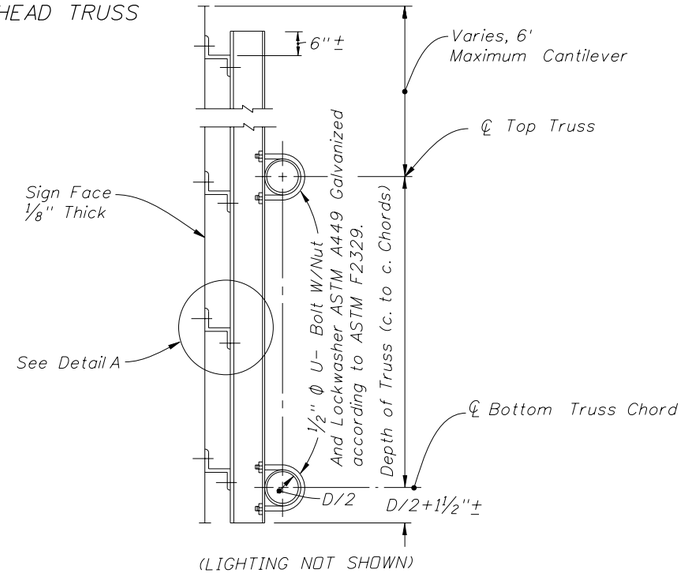
Number Of *3x2.69x2.33 Horiz. Wind Beams For Sign Depth And Wind			Number Of 16x4.69 or *4x3.13x3.58 Vertical Hanger Beams For Sign Length			
Wind M.P.H.	No. Beams	Max. Depth	2 Hangers	3 Hangers	4 Hangers	5 Hangers
			Sign Length	Sign Length	Sign Length	Sign Length
150	2	5'-0"	0 to 15'-0"	15'-1" to 30'-0"	30'-1" to 45'-0"	
150	3	8'-6"	0 to 15'-0"	15'-1" to 30'-0"	30'-1" to 45'-0"	
150	4	11'-6"	0 to 13'-0"	13'-1" to 18'-3"	18'-4" to 24'-9"	24'-10" to 31'-4"
150	5	14'-0"	0 to 13'-0"	13'-1" to 18'-3"	18'-4" to 24'-9"	24'-10" to 31'-4"
130	2	5'-3"	0 to 15'-0"	15'-1" to 30'-0"	30'-1" to 45'-0"	
130	3	8'-10"	0 to 15'-0"	15'-1" to 22'-3"	22'-4" to 30'-0"	30'-1" to 45'-0"
130	4	12'-0"	0 to 15'-0"	15'-1" to 22'-3"	22'-4" to 30'-0"	30'-1" to 38'-0"
130	5	15'-0"	0 to 11'-7"	11'-8" to 16'-4"	16'-5" to 22'-2"	22'-3" to 28'-0"
110	2	5'-6"	0 to 15'-0"	15'-1" to 30'-0"	30'-1" to 45'-0"	
110	3	9'-6"	0 to 15'-0"	15'-1" to 27'-3"	27'-4" to 37'-0"	37'-1" to 45'-0"
110	4	12'-9"	0 to 15'-0"	15'-1" to 27'-3"	27'-4" to 37'-0"	37'-1" to 45'-0"
110	5	16'-0"	0 to 14'-3"	14'-4" to 20'-0"	20'-1" to 27'-0"	27'-1" to 34'-3"



SECTION C-C

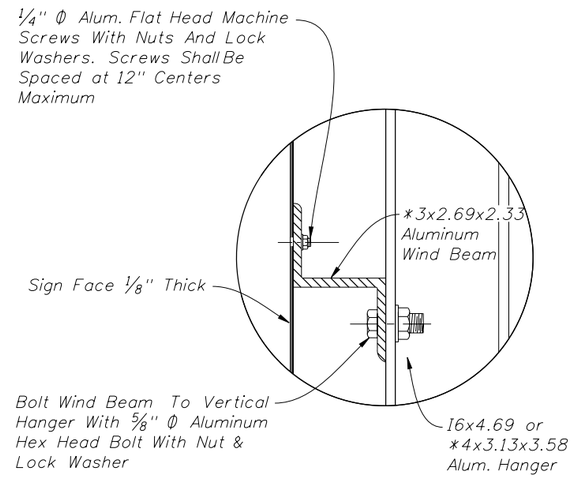


BACKING STRIP DETAIL



(LIGHTING NOT SHOWN)

TYPICAL DETAIL OF SIGN & TRUSS CONNECTION



(SHOWING ATTACHMENT OF SIGN FACE PANEL TO VERTICAL HANGER SUPPORTS, VERTICAL I SHAPE HANGER AS SHOWN, * SHAPE OPTIONAL)

DETAIL A

GENERAL NOTES
(1) For "General Notes" covering Material Specifications see Index 11200.
(2) Design based on 32 ft. maximum height to centroid of sign panel.
(3) The Design Wind Speed shall conform to Wind Speed by County shown on Index 11200, Sheet 1 of 2.

DETAILS OF SIGN FACE & TRUSS CONNECTION

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
~~mm/dd/yy~~	~~K.XX~~	130mph-3 b3ams-5 hangers table values change max value from 38'-0" to 45'-0" Detail A Changed wind beam to Vertical Hanger aluminum hex head connection bolt from 3/8" to 5/8".	11-14-07	L.W.	If the Sign Panels are deeper than 12' has been changed to deeper than 10'.
			06-01-08	C.H.	Added U-Bolt material spec.
			07/01/09	D.Y.W.	Modified U-Bolt material spec.

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OVERHEAD SIGN STRUCTURES

Interim Date 07/01/09

Sheet No. 1 of 1

Index No. 11300

SINGLE COLUMN GROUND SIGN NOTES:

1) DESIGN WIND SPEED: See Wind Speeds by County.

2) GENERAL SPECIFICATIONS: Current FDOT Standard Specifications for Road and Bridge Construction and supplements thereto.

3) DESIGN SPECIFICATIONS: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, as modified by the FDOT Structures Manual.

4) ALUMINUM: Aluminum Materials shall meet the requirements of Aluminum Association Alloy 6061-T6 (ASTM B209, B221, or B308), except as noted below.

5) CONCRETE: Class I.

6) SIGN PANELS: 0.08 inches min. thick Aluminum Plate with all corners rounded.

7) ALUMINUM BOLTS, NUTS, AND LOCK WASHERS:
   a. Aluminum bolts: ASTM F468, Alloy 2042-T4 with at least 0.0002 inches thick anodic coating and chromate sealed.
   b. Nuts: ASTM F467, Alloy 6061-T6 or 6262-T9.
   c. Lockwashers: ASTM B221, Alloy 7075-T6.

8) STAINLESS STEEL BOLTS, NUTS, AND LOCKWASHERS:
   Stainless Steel Bolts, Nuts, and Lockwashers: ASTM F593 and ASTM F594, Alloy Group 2. Condition A, CW2, or SH4 may be provided in lieu of Aluminum Bolts, Nuts, and Washers.

9) U-BOLTS, NUTS, AND LOCKWASHERS:
   U-bolts, Nuts, and Lockwashers: ASTM A307, Grade A, galvanized in accordance with ASTM F2329.

10) BREAKAWAY SUPPORTS REQUIREMENTS: Install non-frangible aluminum column (post) (larger than 3½") with breakaway supports as shown on Sheet 5 of 8. Signs shielded by barrier wall or guardrail do not require breakaway support.

11) QPL: Manufacturers seeking approval of alternates to aluminum round tube, such as steel U-channel and steel square tube single post ground sign assemblies for inclusion on the Qualified Products List (QPL), must submit a QPL application, design calculations, detailed drawings and design tables showing the product meets all the requirements.

WIND SPEEDS BY COUNTY:

110 MPH
Alachua, Baker, Bradford, Clay, Columbia, Gadsden, Gilchrist, Hamilton, Hardee, Jackson, Jefferson, Lafayette, Lake, Leon, Madison, Marion, Polk, Putnam, Sumter, Suwannee and Union counties.

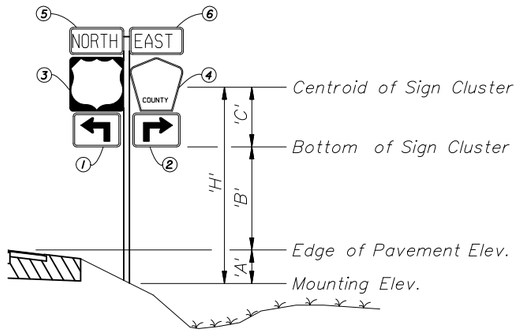
130 MPH
Bay, Brevard, Calhoun, Charlotte, Citrus, De Soto, Dixie, Duval, Flagler, Franklin, Glades, Gulf, Hendry, Hernando, Highlands, Hillsborough, Holmes, Lee, Levy, Liberty, Manatee, Nassau, Okaloosa, Okeechobee, Orange, Osceola, Pasco, Pinellas, Sarasota, Seminole, St Johns, Taylor, Volusia, Wakulla, Walton and Washington counties.

150 MPH
Broward, Collier, Dade, Escambia, Indian River, Martin, Monroe, Palm Beach, Santa Rosa and St. Lucie counties.

GUIDE TO USE THIS STANDARD:

1. Calculate the area and the centroid for an individual sign or a sign cluster. Note that the centroid and areas have been calculated for frequently used sign clusters. These are shown on Sheet No. 6, 7 & 8 of 8.
2. Determine the height 'H' from groundline for the individual sign or the cluster.
3. Select the appropriate Column (Post) Selection Tables by Wind Speed and find the intersection point.
4. Design the post and the foundation according to the dark-bold lines or shaded area (if cantilever sign) in the Column (Post) Selection Tables and Post and Foundation Table. For sign posts with signs oriented in two directions, only the sign with the largest area should be analyzed to determine the post requirements.

EXAMPLE:



	Size H x V	Centroid: local $'Y_n'$	Centroid: global $'X_n'$	Centroid: global $'Y_n'$	$'A_n'$	$'X_n' \times 'A'_n$	$'Y_n' \times 'A'_n$	
	(IN x IN)	(IN)	(IN)	(IN)	(IN^2)	(IN^3)	(IN^3)	
①	21 x 15	7.5	-10.5-1.5-1.5 = -13.5	7.5	315	-4,252.5	2,362.5	
②	21 x 15	7.5	10.5+1.5+1.5 = 13.5	7.5	315	+4,252.5	2,362.5	
③	24 x 24	12	-12-1.5 = -13.5	15+1+12= 28	576	-7,776	16,128	
④	24 x 24	12	12+1.5 = 13.5	15+1+12= 28	436	5,886	12,208	
⑤	24 x 12	6	-12-1.5 = -13.5	15+1+24+ 1+6=47	288	-3,888	13,536	
⑥	24 x 12	6	12+1.5 = 13.5	15+1+24+ 1+6=47	288	3,888	13,536	
					2,218	-1,890	60,133	TOTALS

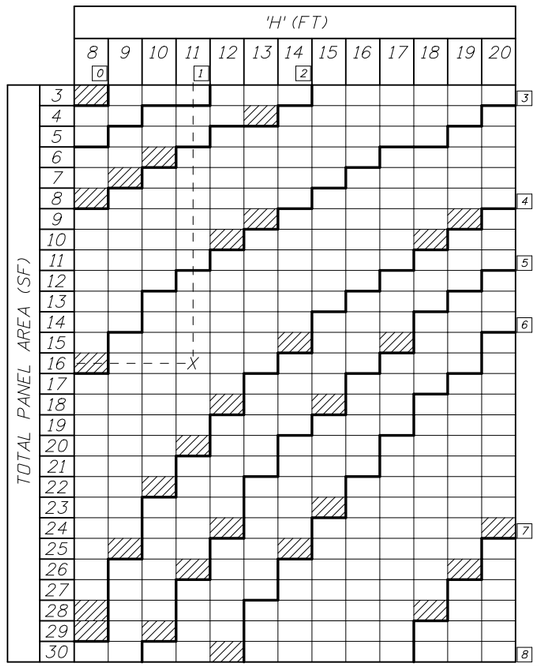
$\Sigma('A_n') = 2{,}218\ IN^2 = 15.4\ FT^2$ $\quad \Sigma('X_n' \times 'A_n') = -1{,}890\ IN^3 = -1.09\ FT^3$ $\quad \Sigma('Y_n' \times 'A_n') = 60{,}133\ IN^3 = 34.8\ FT^3$

$'X'_c = \frac{\Sigma('X'_n \times 'A'_n)}{\Sigma'A'_n} = -0.1\ FT$ $\quad 'Y'_c = \frac{\Sigma('Y'_n \times 'A'_n)}{\Sigma'A'_n} = 2.26\ FT$

Assume: Bay County, 'A' = 1 FT, 'B' = 7 FT
Calculated: $'X'_c = -0.1$ FT 'C' = $'Y'_c = 2.26$ FT
Since $'X'_c < 6''$, it is not a cantilever sign, only dark-bold lines in the table will be referenced to.

'H' = 'A' + 'B' + 'C' = 10.26 FT ==> USE 11 FT $\quad \Sigma('A_n') = 15.4\ FT^2$ ==> USE 16 FT^2

ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 130 MPH)



For WIND SPEED = 130 MPH,
'H' = 11 FT, Area = 16 FT^2

- Refer to the 130 mph Column (Post) Selection Table, as copied from Sheet 3 of 8 and shown here.
- Using the 16 ft^2 area on the left hand side of the table, go across to the 11 ft height and find the cell marked with X.
- find the symbol [4] which the dark-bold line under the X cell leads to.
- In the Post and Foundation Table, the symbol [4] concludes that the design requires a 4.0" diameter and 0.25" thick Aluminum Column (Post) and a 2.0' diameter and 4.0' deep Concrete Foundation.

▨ = If CANTILEVER SIGN configuration (see Cantilever Sign Details) falls in this region, use next larger post size than that indicated.

NOTES AND EXAMPLE

REVISIONS

DATE	BY	DESCRIPTION
01/01/08	DYW	Changed SINGLE COLUMN GROUND SIGN NOTES Note 11 and GUIDE TO USE THIS STANDARD Note 4. Changed '5.0"' to '4.0"'.
01/01/09	DYW	Modified concrete classification.
07/01/09	DYW	Modified 'Aluminum Column (Post) Selection Table' in Example.

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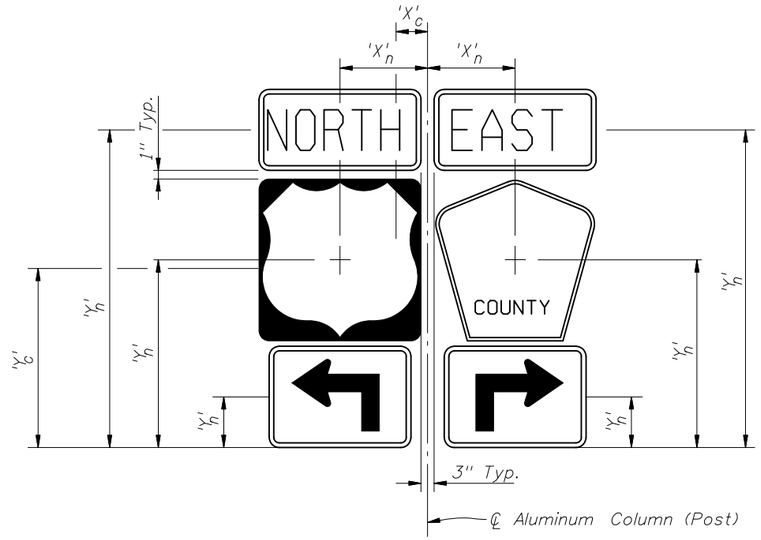
SINGLE COLUMN GROUND SIGNS

Interim Date 07/01/09 | Sheet No. 1 of 8

Index No. 11860



SIGN CLUSTER

CALCULATION OF SIGN CLUSTER CENTROID:

$$'X'_c = \frac{\Sigma('X'_n \times 'A'_n)}{\Sigma'A'_n}$$

$$'C' = 'Y'_c = \frac{\Sigma('Y'_n \times 'A'_n)}{\Sigma'A'_n}$$

'X'_c = Centroid horizontal location of sign or cluster from ℄ Column (post)

'Y'_c = Centroid height of sign or cluster from bottommost edge

'H' = Height of sign or cluster centroid from groundline

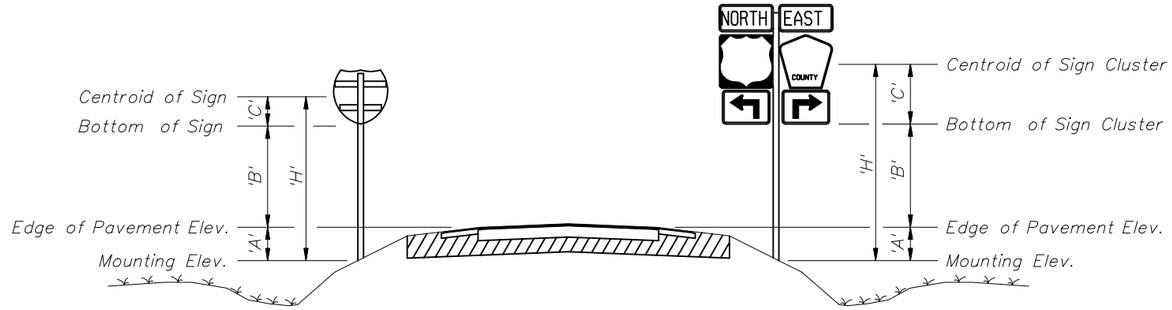
'X'_n = Individual sign centroid horizontal location from ℄ Column (post)

'Y'_n = Individual sign centroid height from bottommost edge

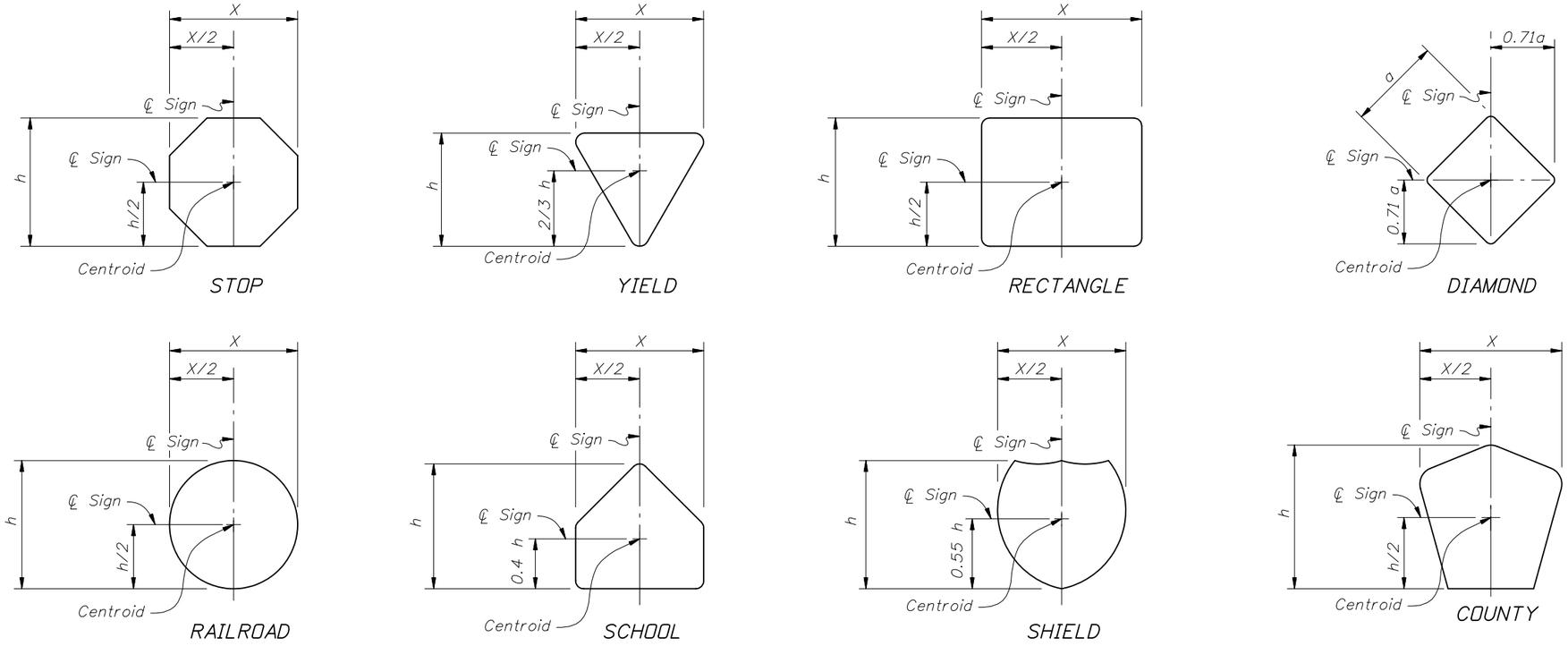
'A'_n = Area of individual sign

For 'A' & 'B' see Index No. 17302 and Roadway Plans.

NOTE:
No sign or sign cluster area shall exceed 30 SF nor shall any sign or sign cluster have a total width exceeding 60 inches.



TYPICAL SECTION



CENTROID AND HEIGHT

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	DYW	Changed "horizontal" to "size" in NOTE.			
07/01/09	DYW	Changed maximum limits of sign cluster area and width in NOTE.			

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SINGLE COLUMN GROUND SIGNS

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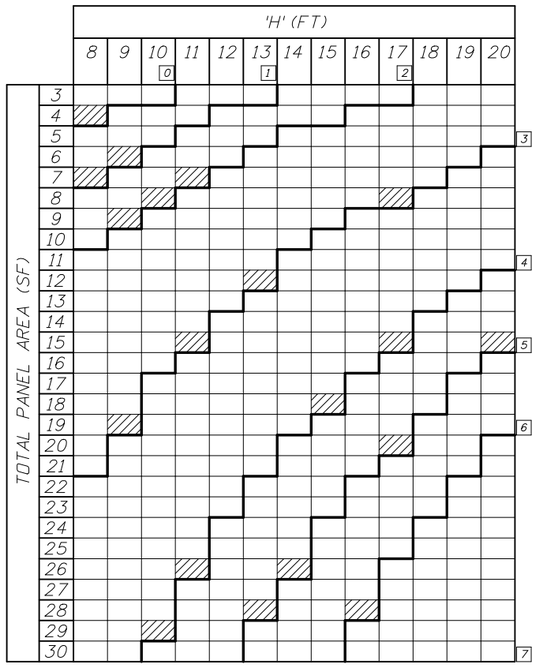
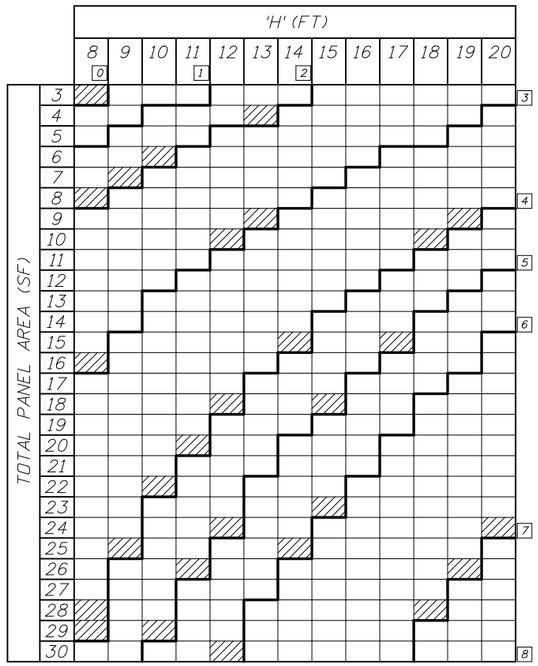
Sheet No. 2 of 8

Index No. 11860

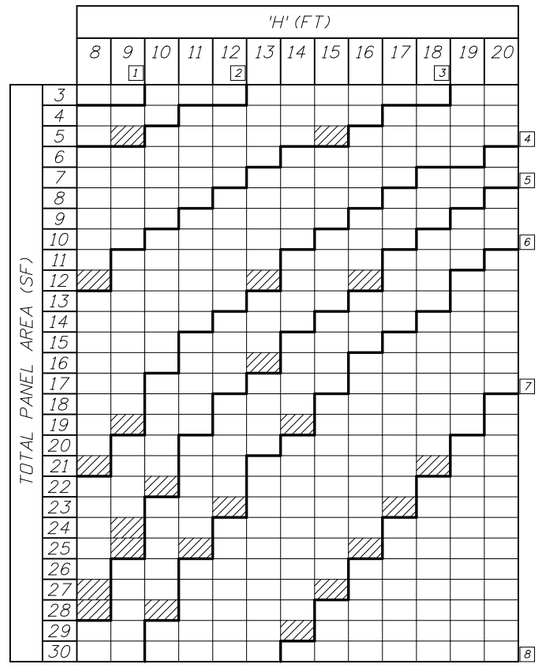
ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 110 MPH)

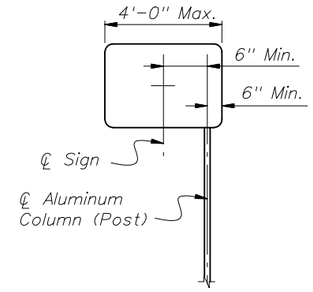


ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 130 MPH)



ALUMINUM COLUMN (POST) SELECTION TABLE (WIND SPEED = 150 MPH)





CANTILEVER SIGN

NOTE:
All cantilever sign installations shall comply with Standard Index 17302.

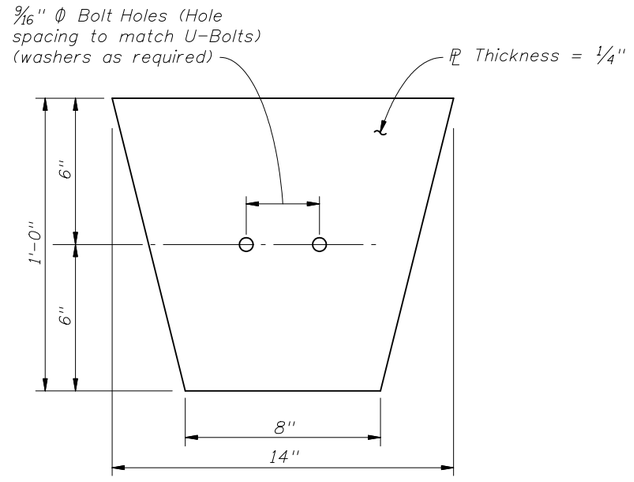
/////// = If CANTILEVER SIGN configuration (see Cantilever Sign Details) falls in this region, use next larger post size than that indicated.

POST AND FOUNDATION TABLE

	Foundation Alternatives					
	Post Size		Driven Post *		Concrete **	
			Depth (FT)			
	Diameter (IN)	Wall (IN)	without Soil Plate	with Soil Plate	Diameter (FT)	Depth (FT)
0	2.0	1/8	4.5	2.5	2.0	2.0
1	2.5	1/8	5	3	2.0	2.0
2	3.0	1/8	5	3.5	2.0	2.5
3	3.5	3/16	6	4.5	2.0	3.0
4	4.0	1/4	---	---	2.0	4.0
5	4.5	1/4	---	---	2.0	4.0
6	5.0	1/4	---	---	2.0	4.5
7	6.0	1/4	---	---	2.0	5.0
8	8.0	5/16	---	---	2.0	5.5

* INSTALLING FRANGIBLE COLUMN SUPPORTS:
Columns (posts) may be installed by driving the columns in accordance with this Index, or as an alternate method, the columns (posts) may be set to the depth indicated in preformed holes backfilled with suitable material tamped in layers not thicker than 6" to provide adequate compaction or filled with flowable fill or bagged concrete.

** See Note 5 on Sheet 1 of 8.



ALUMINUM SOIL PLATE DETAILS

NOTES: 1. Align Soil Plate bottom at 2/3 of foundation depth.
2. Slot up to 15/16" long is allowed to accommodate various post sizes.

POST AND FOUNDATION TABLES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	DYW	Changed plate dimensions and notes.			
07/01/08	DYW	Changed soil plate details.			
07/01/09	DYW	Modified 'Aluminum Column (Post)Selection Tables'.			

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SINGLE COLUMN GROUND SIGNS

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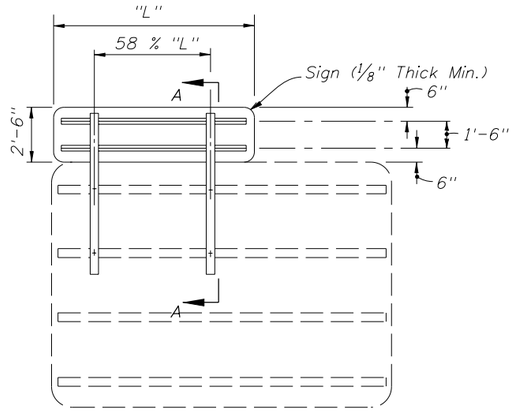
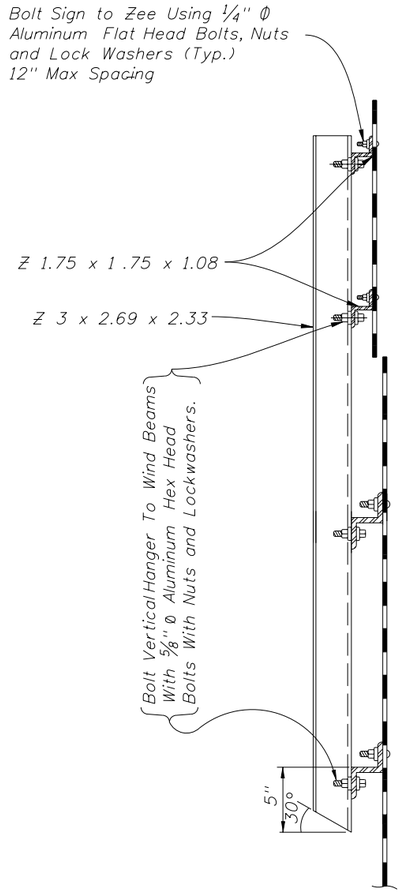
Index No. 11860



NOTE: Exit numbering panel shall be located to the right side for right exit and to the left for left exit.

Mounting of Exit Numbering Panels To Highway Signs

ELEVATION



SECTION AA

GENERAL NOTES

DESIGN SPECIFICATION: Design according to FDOT Structures Manual (current edition) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, AASHTO 2001.
SHEETS AND PLATES: Material used shall meet the requirements of Aluminum Association Alloy 6061-T6 and ASTM B209.
MATERIALS: All aluminum materials shall meet the requirements of the Aluminum Association Alloy 6061-T6 and also the following ASTM specifications for the following: Sheets and plates B209; extruded shapes B221 and standard structural shapes B308.
ALUMINUM BOLTS, NUTS & LOCK WASHERS: Aluminum bolts shall meet the requirements of the Aluminum Association Alloy 2024-T4 (ASTM F468). The bolts shall have an anodic coating of at least .0002" thick and be chromate sealed. Lockwashers shall meet the requirement of Aluminum Association Alloy 7075-T6 (ASTM B221). Nuts shall meet the requirement of Aluminum Association Alloy 6262-T9 (ASTM F467) or 6061-T6.
SIGN FACE: All sign face corners shall be rounded . See sign layout sheet for dimension "L" and sign face details. For mounting details refer to Index No. 11300.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/05/08	C.H.	3/8" Bolt size Changed to 5/8" in Section AA.			
4/07/09	C.H.	Guage and dimension lines removed from SECTION AA.			

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MOUNTING EXIT NUMBERING PANELS TO HIGHWAY SIGNS

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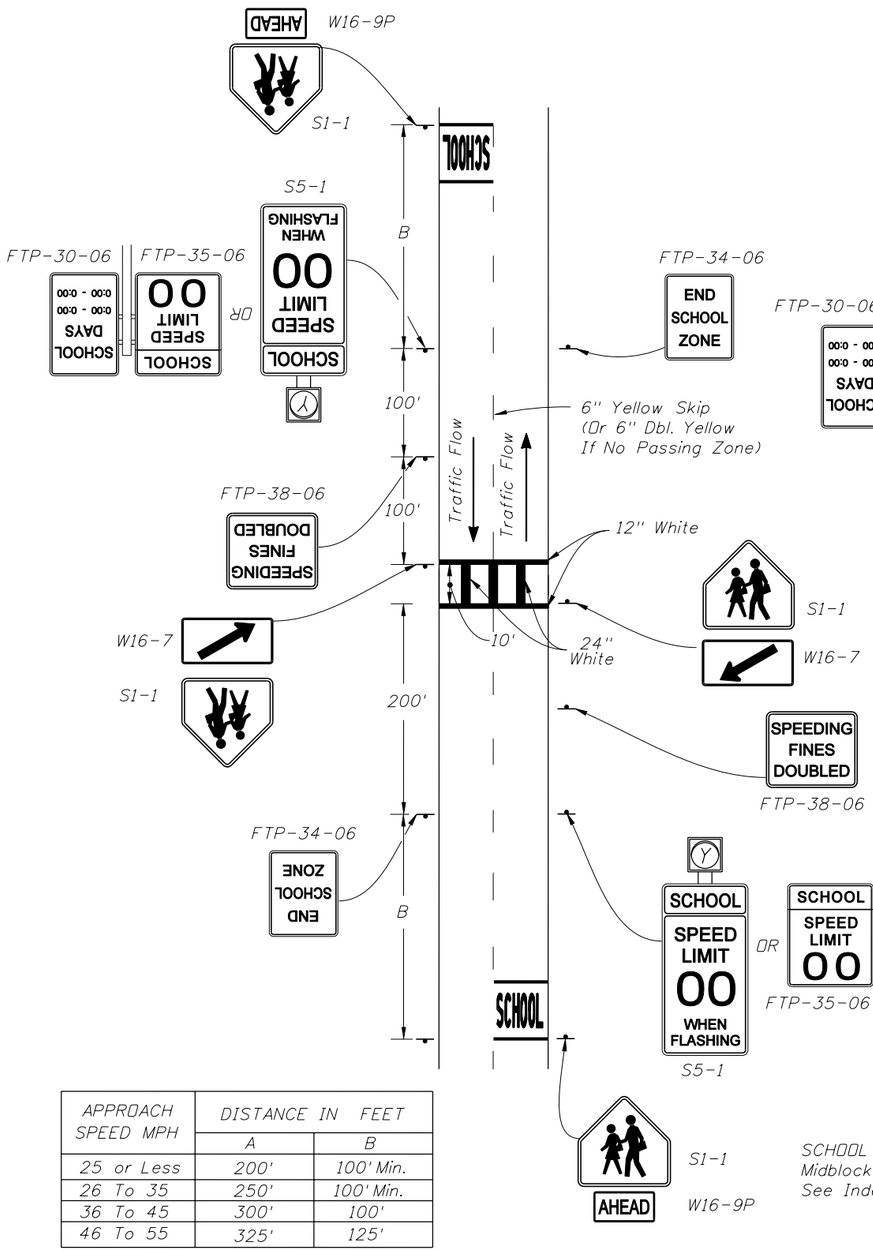
Sheet No. 1 of 1

Index No. 13417

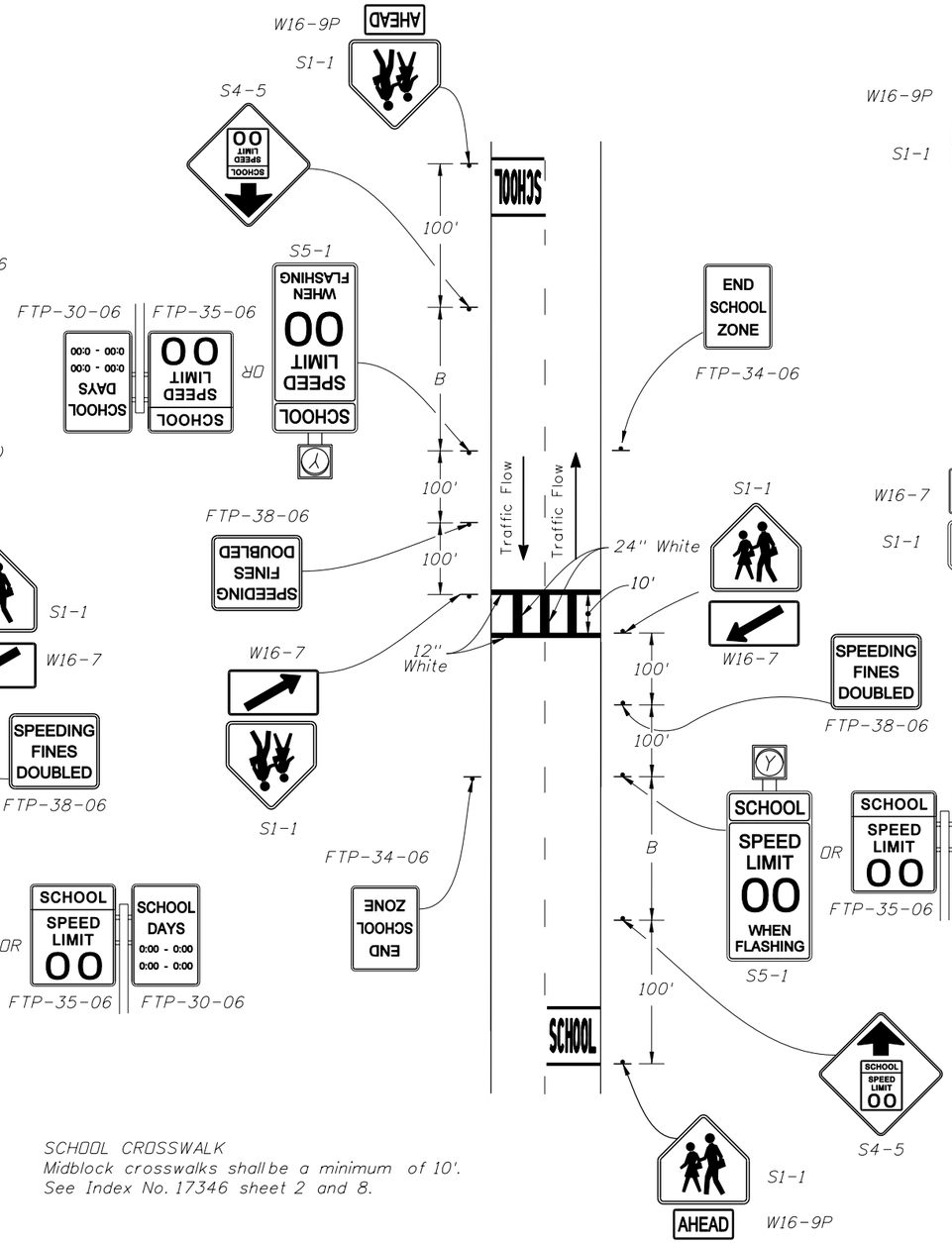
3. TRAFFIC CONTROL DEVICES FOR REDUCED SPEED ZONE AT A SCHOOL CROSSWALK 2 LANES-2 WAY TRAFFIC (40 MPH OR LESS) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



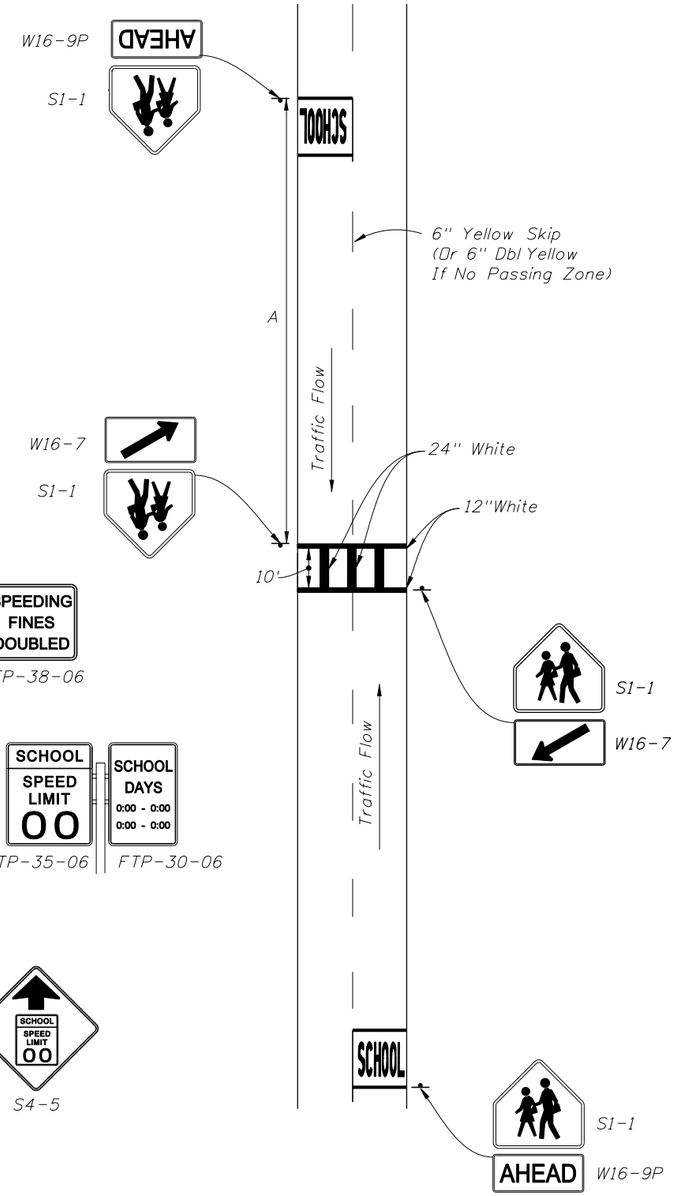
APPROACH SPEED MPH	DISTANCE IN FEET	
	A	B
25 or Less	200'	100' Min.
26 To 35	250'	100' Min.
36 To 45	300'	100'
46 To 55	325'	125'

SCHOOL CROSSWALK
Midblock crosswalks shall be a minimum of 10'.
See Index No. 17346 sheet 2 and 8.

4. TRAFFIC CONTROL DEVICES FOR REDUCED SPEED ZONE AT A SCHOOL CROSSWALK 2 LANES-2 WAY TRAFFIC (45 MPH OR GREATER) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



5. TRAFFIC CONTROL DEVICES FOR A SCHOOL CROSSWALK WITHOUT A SPEED REDUCTION (2 LANE-2 WAY TRAFFIC)



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/05/08	C.H.	Sheet completely revised signs and spacing added, revised notes.			
4/07/09	C.H.	Crosswalk Markings Revised.			

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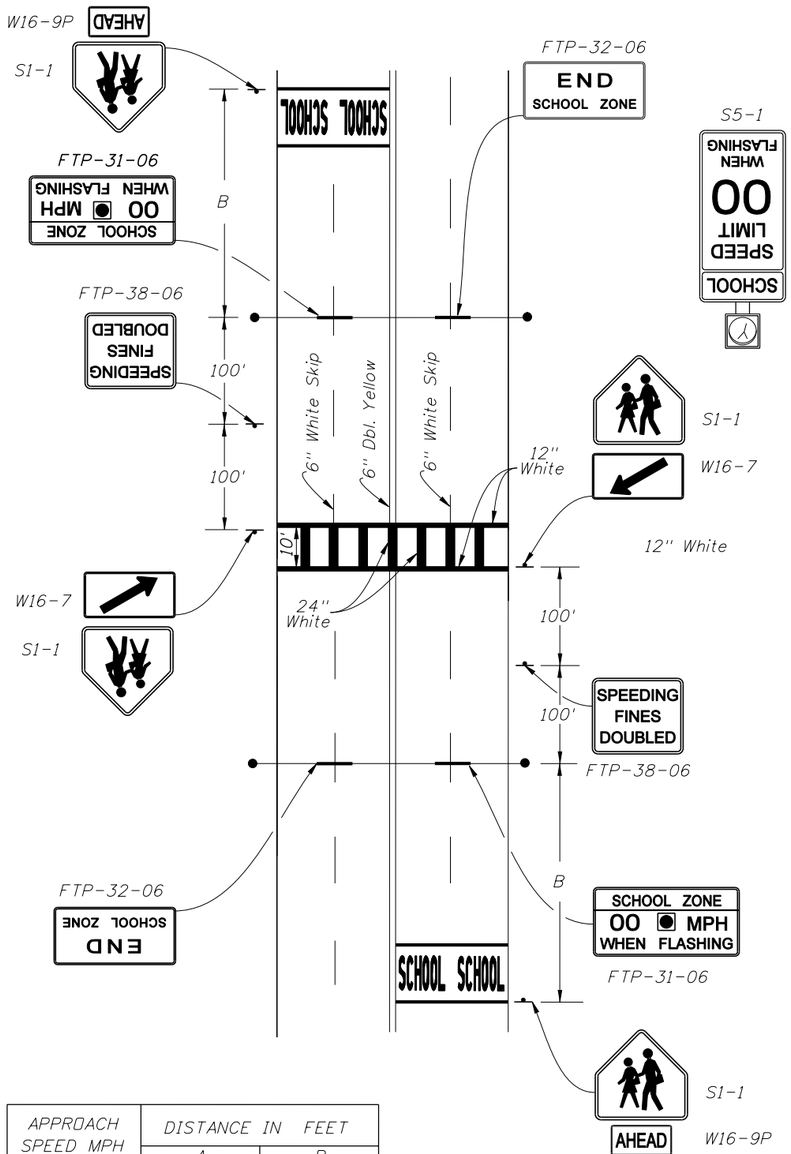
SCHOOL SIGNS & MARKINGS

Interim Date 07/01/09

Sheet No. 2 of 6

Index No. 17344

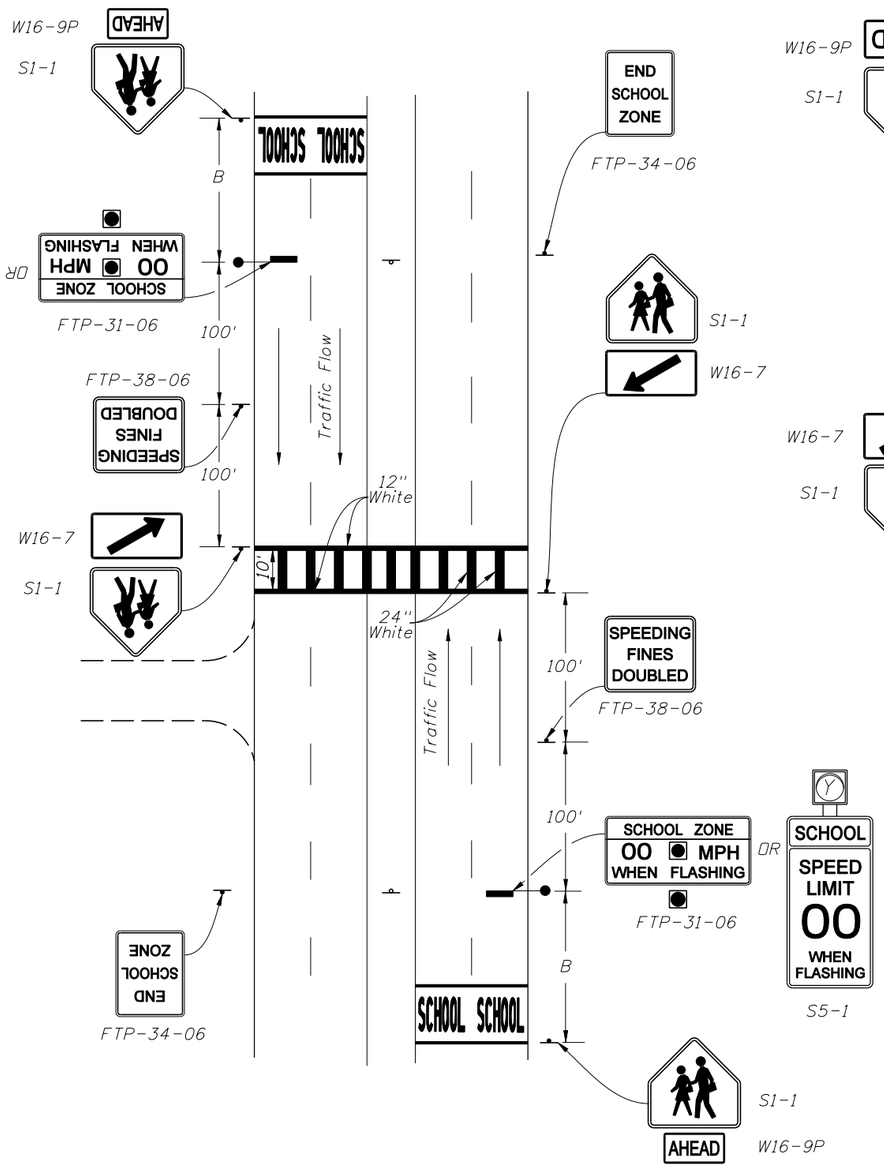
6. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS (4 LANES UNDIVIDED-2 WAY TRAFFIC) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



APPROACH SPEED MPH	DISTANCE IN FEET	
	A	B
25 or Less	200'	100' Min.
26 To 35	250'	100' Min.
36 To 45	300'	100'
46 To 55	325'	125'

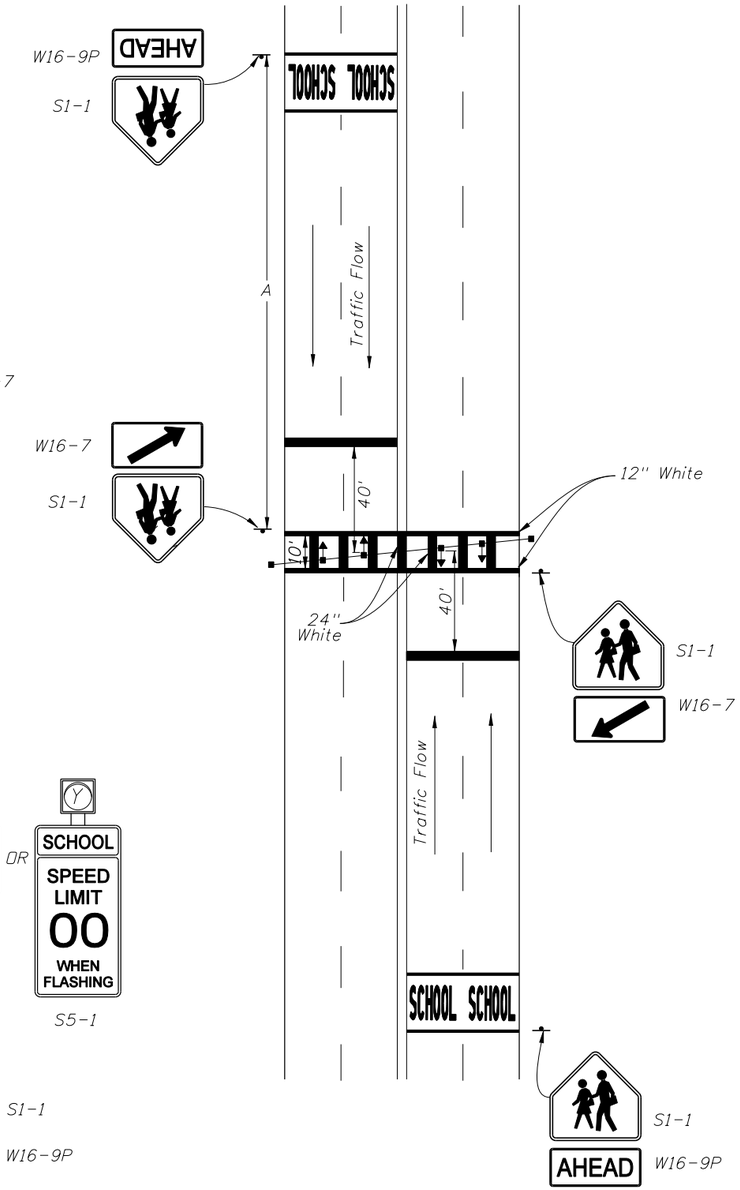
SCHOOL CROSSWALK
Midblock crosswalk shall be a minimum of 10'.
See Index No. 17346, Sheet 2 and 8.

7. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK WITH OVERHEAD OR GROUND MOUNTED FLASHING BEACON SPEED LIMIT SIGNS (4 LANES DIVIDED-2 WAY TRAFFIC)



NOTE- CONDITION 7:
Where engineering judgement determines the overhead structure is not suitable or cannot be installed due to site restrictions, S5-1 with flashing beacons on each side of the road may be substituted for the overhead structure.

8. TRAFFIC CONTROL DEVICES FOR SIGNALIZED MIDBLOCK SCHOOL CROSSWALK



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/05/08	C.H.	Sheet completely revised.			
4/07/09	C.H.	Crosswalk Markings Revised.			

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SCHOOL SIGNS & MARKINGS

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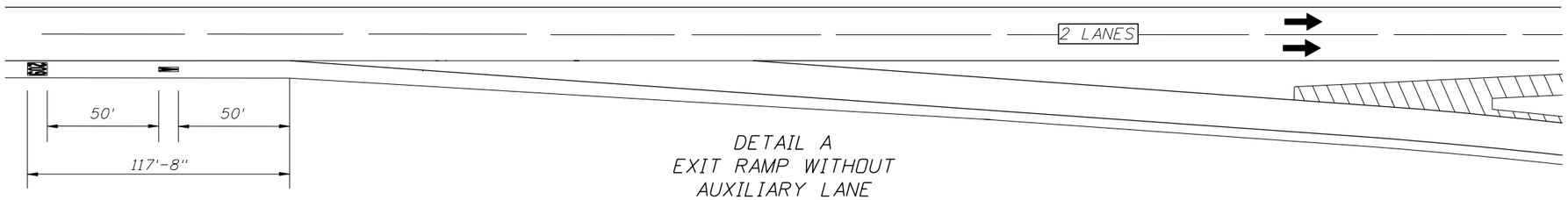
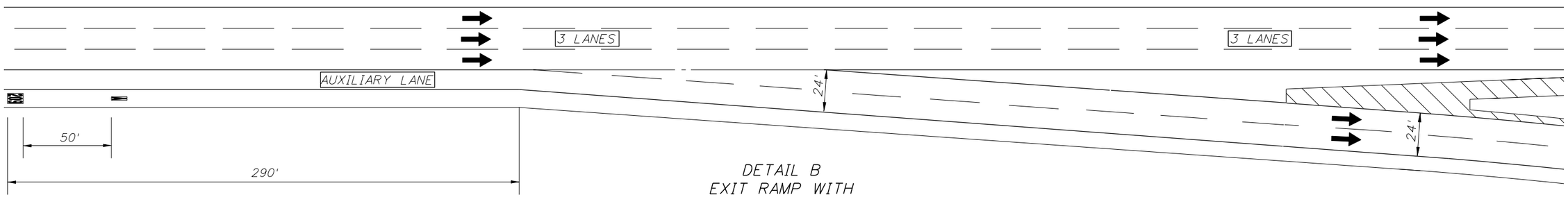
Index No. 17344

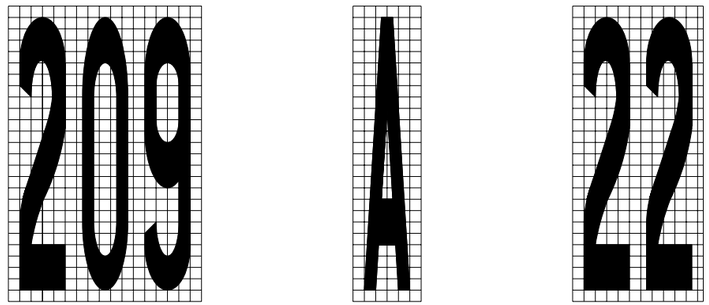


DETAIL A
EXIT RAMP WITHOUT
AUXILIARY LANE

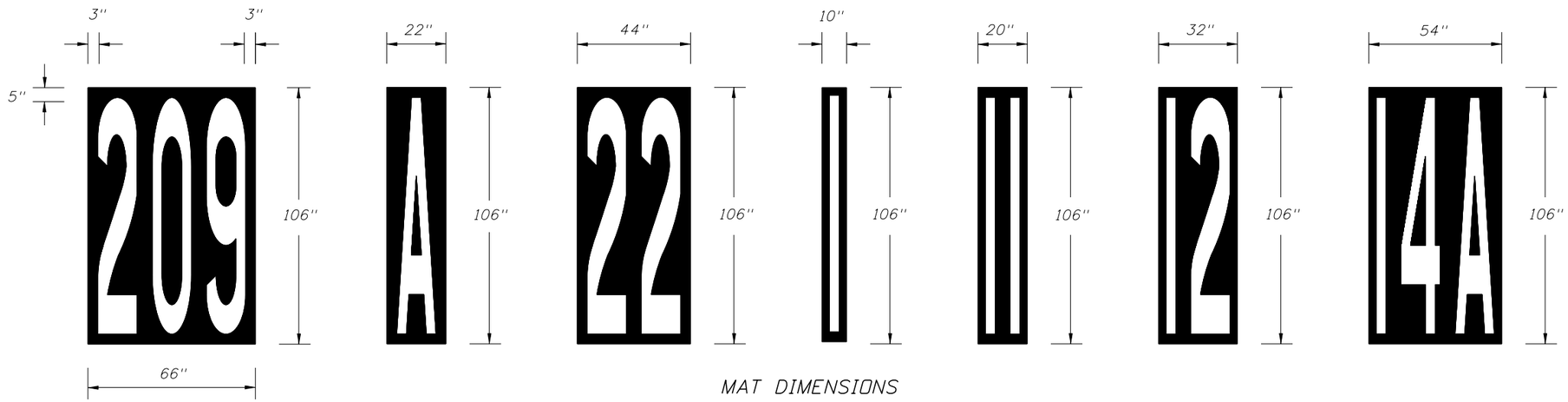
LAYOUT FOR 1, 2 AND 3 DIGIT NUMBERS AND LETTERS



DETAIL B
EXIT RAMP WITH
AUXILIARY LANE



MESSAGE SIZE AND SPACING
4" X 4" squares



MAT DIMENSIONS

NOTES:

1. Messages shall meet requirements of Specification Section 971-6 and Section 711.
2. The thickness of the preformed message shall be 125 mils.
3. The message shall consist of white letters and numbers with black contrasting material. The black material shall meet the mat dimensions shown and have a minimum skid resistance value of 55 BPN.
4. The "EXIT NUMBER" position remains the same distance from the beginning of taper regardless of the number of lines of information.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
06/02/09	L.W.	Added New Detail B-Exit Ramp with Auxiliary Lane. Note 1, and 4 Revised.			

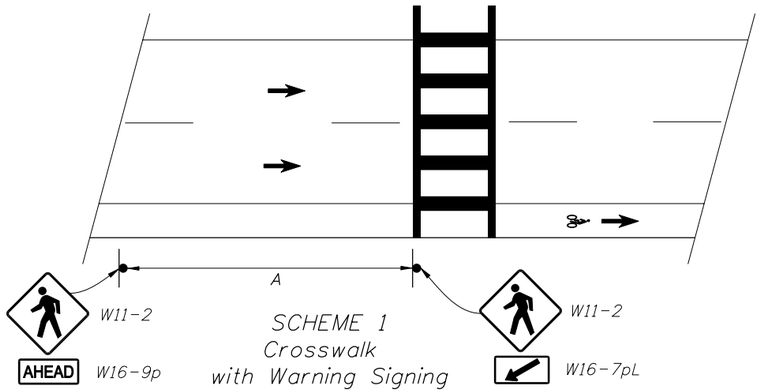
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

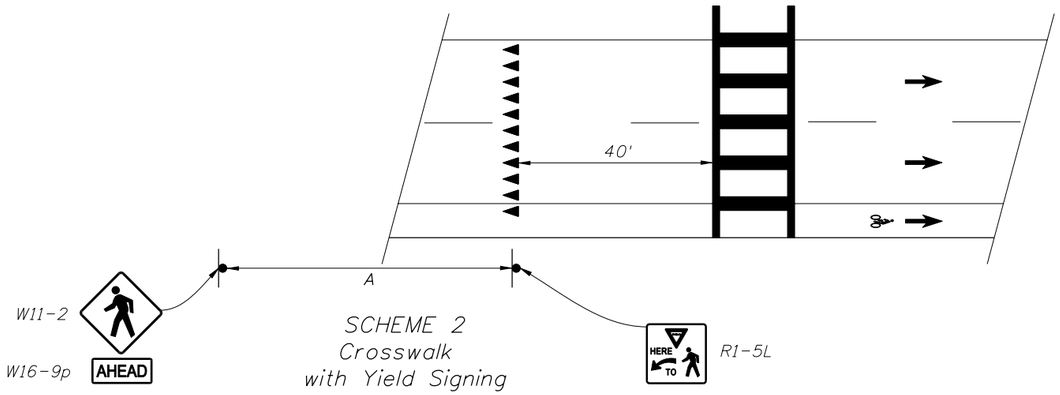
SPECIAL MARKING AREAS

Interim Date 07/01/09

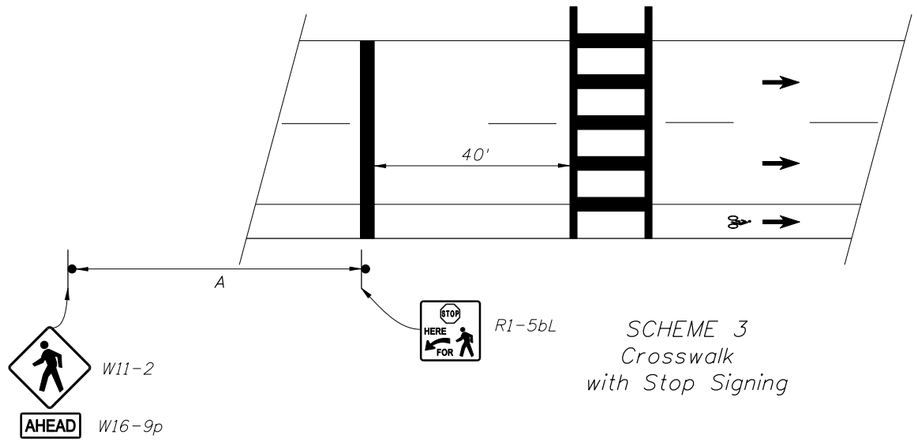
Index No. 17346



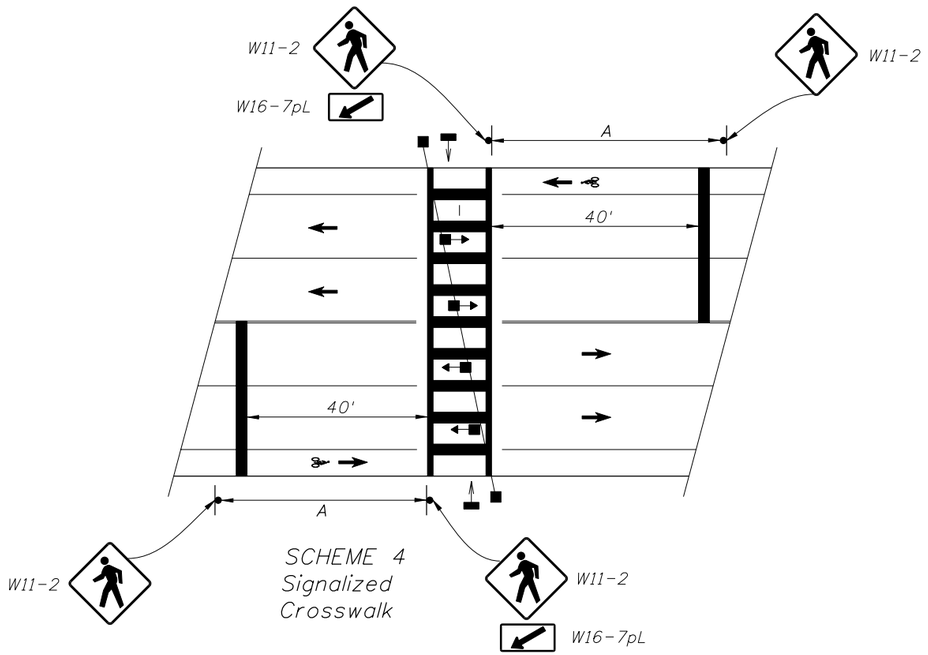
SCHEME 1
Crosswalk
with Warning Signing



SCHEME 2
Crosswalk
with Yield Signing



SCHEME 3
Crosswalk
with Stop Signing



SCHEME 4
Signalized
Crosswalk

APPROACH SPEED MPH	A-SUGGESTED DISTANCE (Ft.)
25 Or Less	200
26 To 35	250
36 To 45	300
46 To 55	325

1. Plans shall indicate which crosswalk scheme is to be used.
2. The details shown do not depict the signing and markings for multi-lane roadways with divided medians. For these applications, additional signs shall be installed on the median side.
3. All mid-block crosswalks shall use high emphasis crosswalk markings.
4. Crosswalk marking should utilize preformed marking materials.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/05/08	C.H.	New sheet added to Special Markings Areas.			
06/15/09	C.H.	Sign text revised in SCHEME 3 RI-5bL with MUTCD changes.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

SPECIAL MARKING AREAS

Interim Date 07/01/09

Sheet No. 10 of 14

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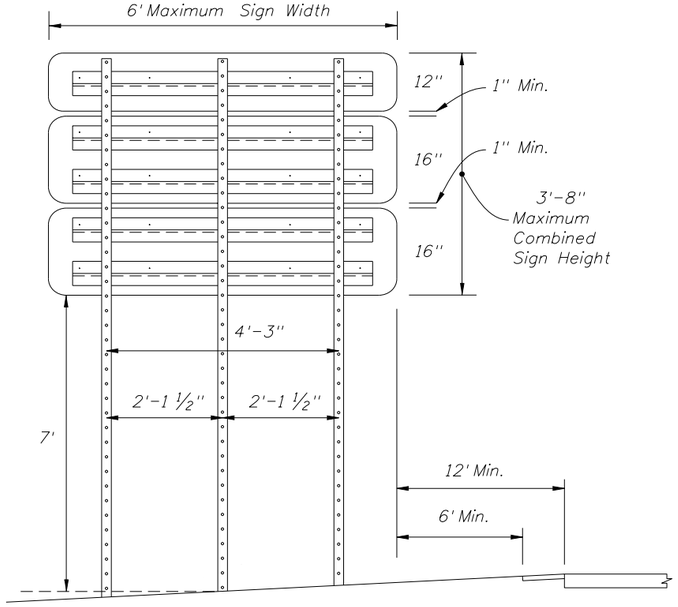
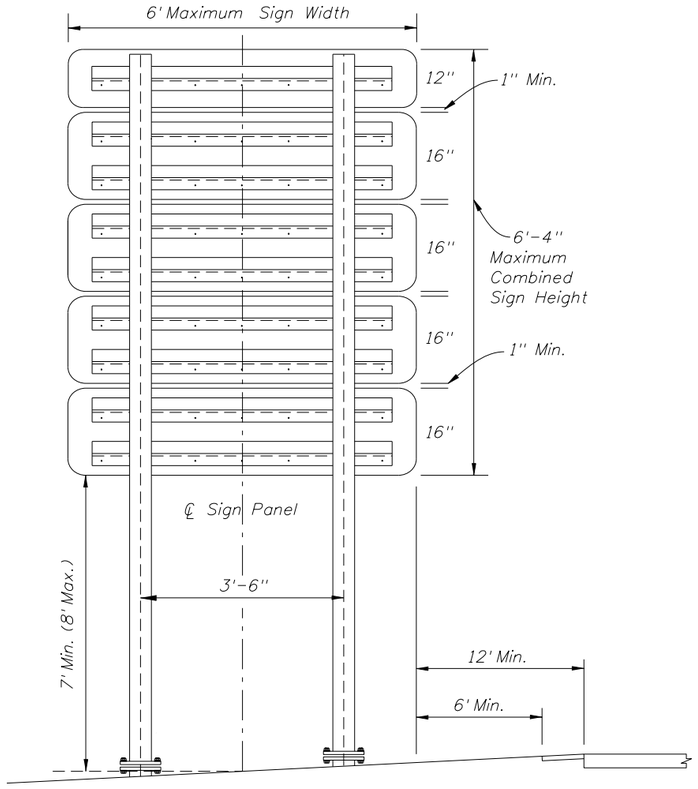
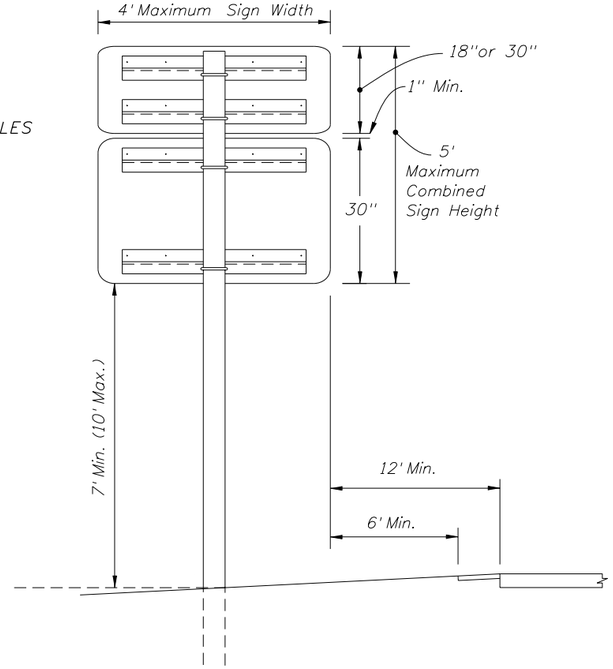


STEEL U-CHANNEL TRIPLE POST
DIRECT BURIAL



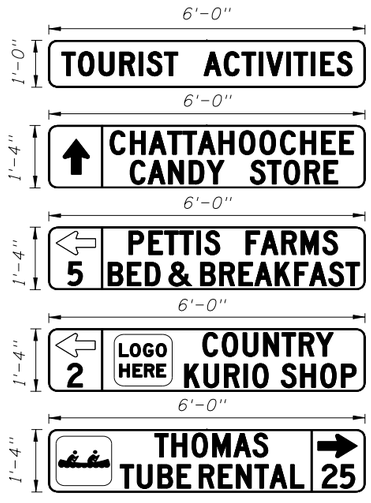
TWO POST STEEL I BEAM
WITH SLIP BASE

SINGLE POST SIGN EXAMPLES



SINGLE POST
ALUMINUM
ROUND TUBE

MULTIPOST SIGN EXAMPLES



General Notes:

1. Signs Must Comply With Rule 14-51, Florida Administrative Code.
2. Text for Signs Shall Be 6" Type C Lettering.
3. For Aluminum Round Tube Assembly and Foundation Detail, see Index 11860.
4. For Steel I Beam Assembly and Foundation Detail, see Index 11200.
5. For Steel U-Channel Assembly and Foundation Detail, See Index 600 Sheet 6 of 12. Galvanize Steel U-Channel in accordance with ASTM 123.

DESIGN FOR TOURIST ORIENTED DIRECTIONAL SIGNS
(Options for Aluminum Round Tube, Steel I Beam and Steel U-Channel.)

No. of Signs (Total Area)	Single Post Configuration		Two Post Configuration		Three Post Configuration	
	3-1/2" X 0.125" Aluminum Tube Direct Burial	4" X 0.125" Aluminum Tube Slip Base	S3X5.7 Steel I Beam Slip Base	W6X12 Steel I Beam Slip Base	3 lb/ft Steel U-Channel Direct Burial	4 lb/ft Steel U-Channel Lap Splice
10	OK	OK	NA	NA	NA	NA
16-20	NA	OK	NA	NA	NA	NA
14-16	NA	NA	OK	OK	OK	OK
22-24	NA	NA	OK	OK	NA	OK *
30-32	NA	NA	NA	OK	NA	NA
38	NA	NA	NA	OK	NA	NA

* Limited to 22 s.f. Total Sign Area.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
06/29/09	L.W.	New Index Added to The Design Standards.			

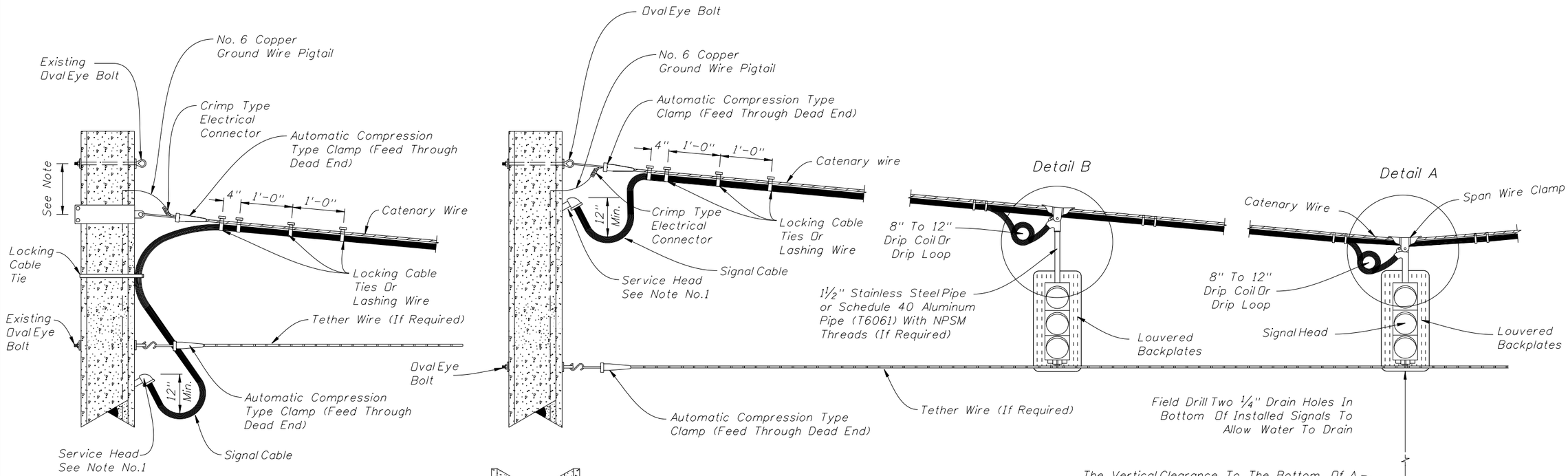
2008 Interim Design Standard

TOURIST ORIENTED DIRECTIONAL SIGNS

Interim Date 07/01/09

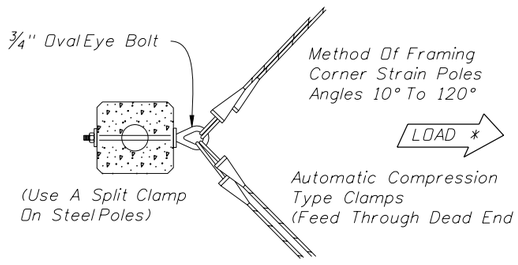
Sheet No. 1 of 1

Index No. 17354

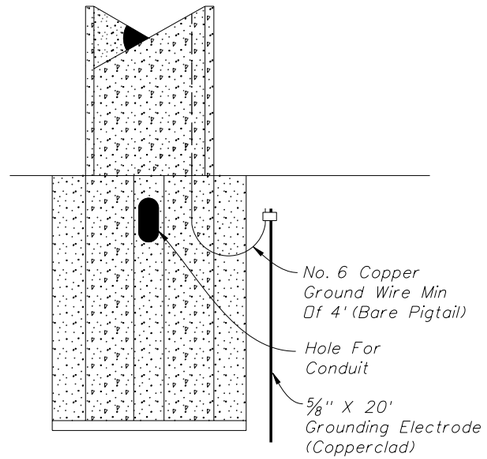


RETROFIT INSTALLATION

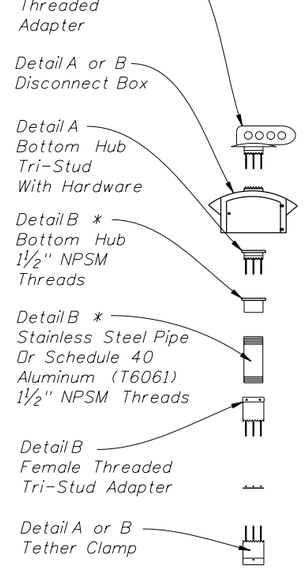
Note:
Clamp location shall be adjusted to compensate for reduced sag and vertical clearance to bottom of signal head.

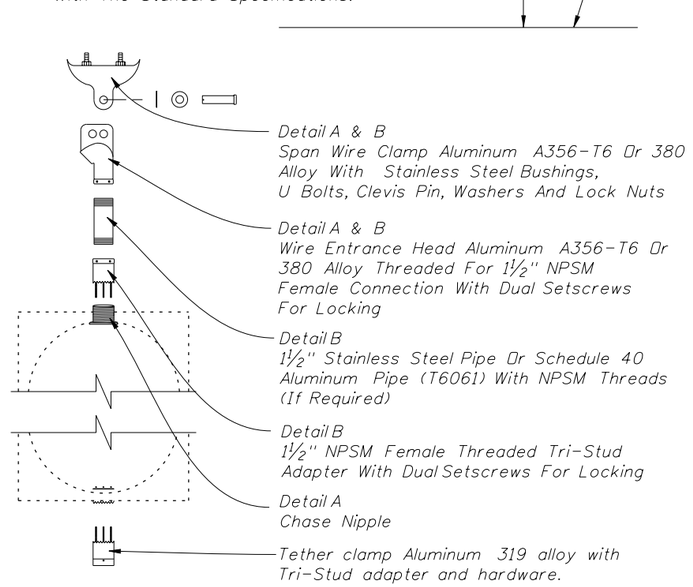


* The load face of pole shall be perpendicular to load.



PRESTRESSED CONCRETE POLE
NEW CONSTRUCTION





* For long pipe hangers a wire entrance head may be substituted for balancer and the drop pipe installed above the disconnect box.

SINGLE POINT ATTACHMENT

Notes:

1. With the approval of the resident engineer, the service head hole for joint use poles may be drilled by the utility company at an angle of 90° but not less than 45° to the face of the pole.
2. Lashing wire should normally be used for distances of 12' or greater.
3. All hardware for signal attachment shall be stainless steel.
4. Meet all grounding requirements of Section 620 of the Standard Specifications.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/08	C.H.	Schedule 40 aluminum pipe (T6061) added as alternate to stainless steel pipe on assembly details and signal head notes.	06/15/09	C.H.	Vertical Clearance Note Revised.
11/05/08	C.H.	Back Plates added to Signal Head Detail. Vertical clearance note Revised.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

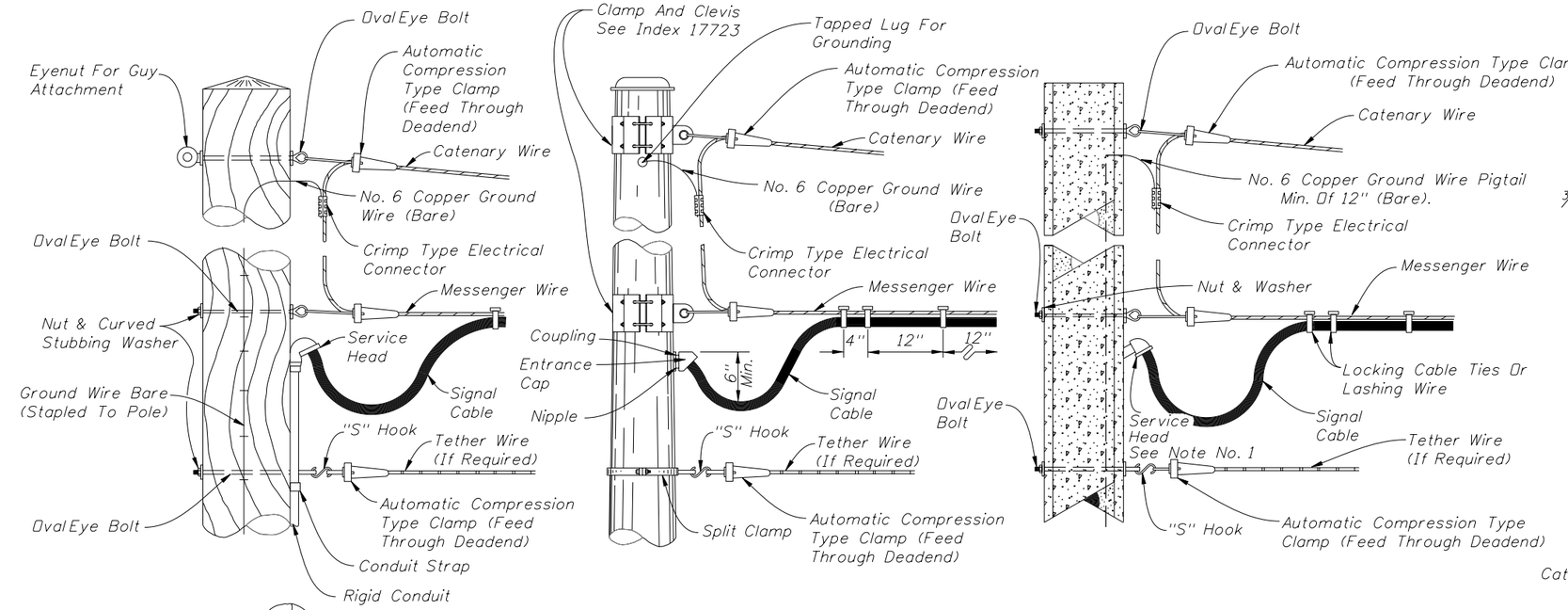
2008 Interim Design Standard

SIGNAL CABLE & SPAN WIRE INSTALLATION DETAILS

Interim Date 07/01/09

Sheet No. 1 of 2

Index No. 17727



WOOD POLE

STEEL POLE

PRESTRESSED CONCRETE POLE

Notes:

1. With the approval of the resident engineer, the service head hole for joint use poles may be drilled by the utility company at an angle of 90° but not less than 45° to the face of the pole.
2. Lashing wire should normally be used for distances of 12' or greater.
3. The overlapped connection of adjustable hangers shall use a minimum of 2 bolts with a minimum spacing of 2" between bolts.
4. Meet all grounding requirements of Section 620 of the Standard Specifications.

TWO POINT ATTACHMENT

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/08	C.H.	Schedule 40 aluminum pipe (T6061) added as alternate to Stainless Steel pipe on assembly details and signal head notes.	06/15/09	C.H.	Vertical Clearance Note Revised.
07/01/08	C.H.	Back Plates added to Signal Head details. Vertical Clearance note Revised.			

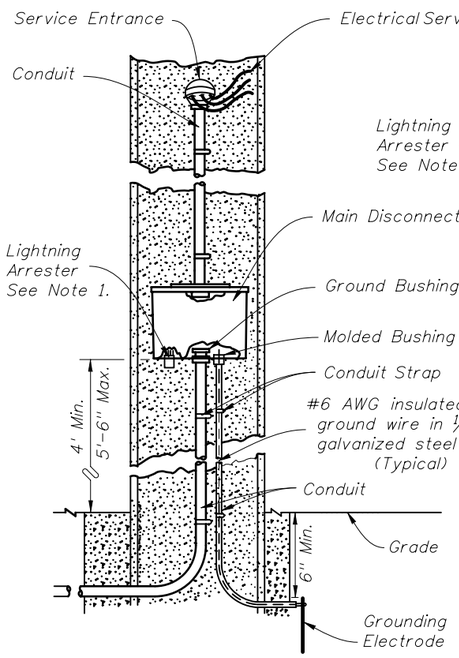
2008 Interim Design Standard

SIGNAL CABLE & SPAN WIRE INSTALLATION DETAILS

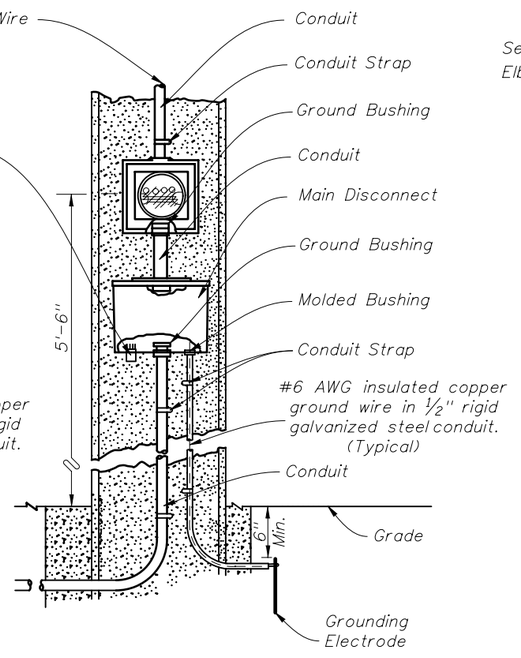
Interim Date 07/01/09

Sheet No. 2 of 2

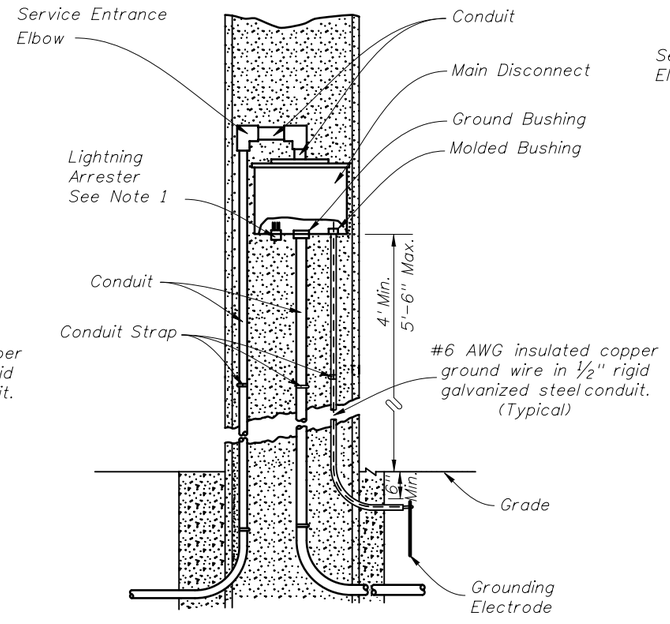
Index No. 17727



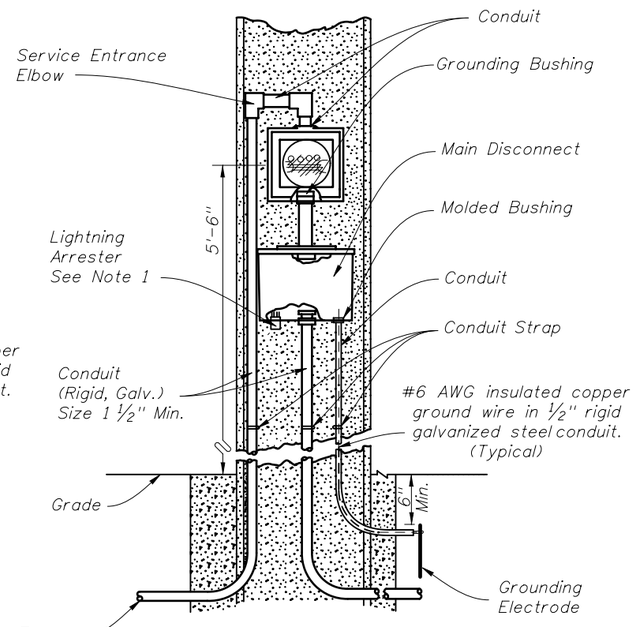
AERIAL FEED
(NO METER USED)
FIGURE A



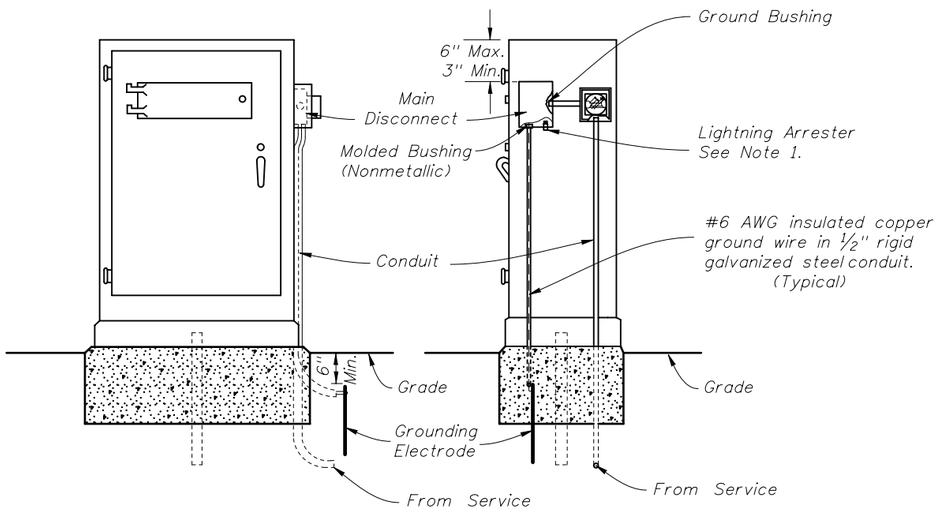
AERIAL FEED
(METER USED)
FIGURE B



UNDERGROUND FEED
(NO METER USED)
FIGURE C



TYPE "B" UNDERGROUND FEED
(METER USED)
FIGURE D



UNDERGROUND CABINET MOUNTED
(METER USED)
FIGURE E

NOTES:

1. The lightning arrester can be located on the side or bottom of the main disconnect enclosure at the Contractor's Option.
2. Liquidtight flexible conduit is approved for use from the electrical disconnect to the cabinet when both are installed on the same pole.
3. Bond all elements together to form an Intersection Grounding Network in accordance with Section 620 of the Department's current Standard Specifications for Road and Bridge Construction. The bond wire shall be run in conduit with the Electrical Service Wire or Signal Cable.
4. Meet all grounding requirements of Section 620 of the Standard Specifications.
5. The Main Disconnect shall be lockable by padlock and four keys provided to the maintaining agency. The door shall have a minimum of three hinges and be lockable. No screws to be used to attach door.
6. The Main Disconnect shall be Nema 3R or better.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
11/05/08	C.H.	Notes 5 and 6 added to notes.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

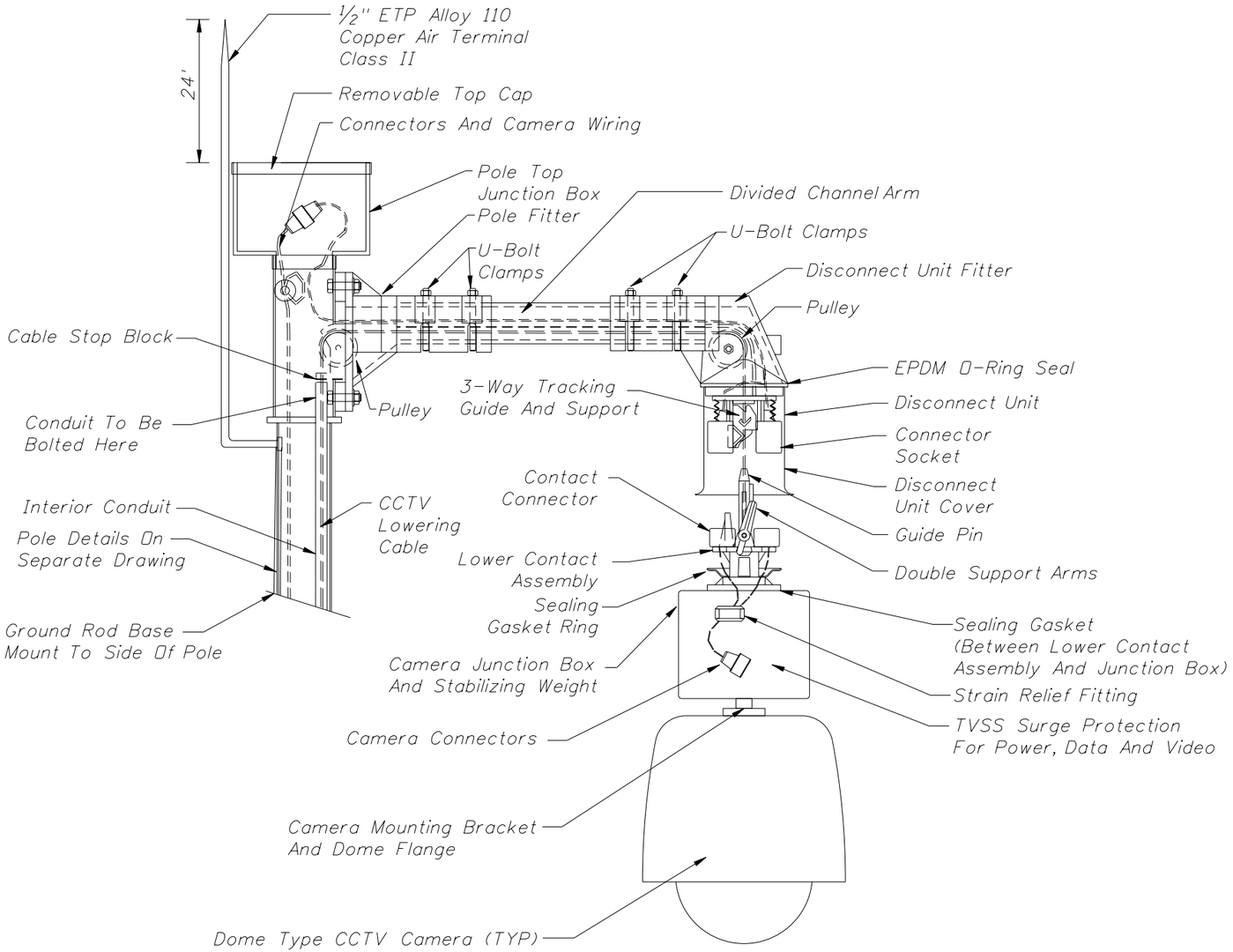
2008 Interim Design Standard

ELECTRIC POWER SERVICE

Interim Date: 01/01/09

Sheet No.: 1 of 1

Index No.: 17736



CAMERA LOWERING DEVICE DETAIL

Not To Scale

GENERAL NOTES:

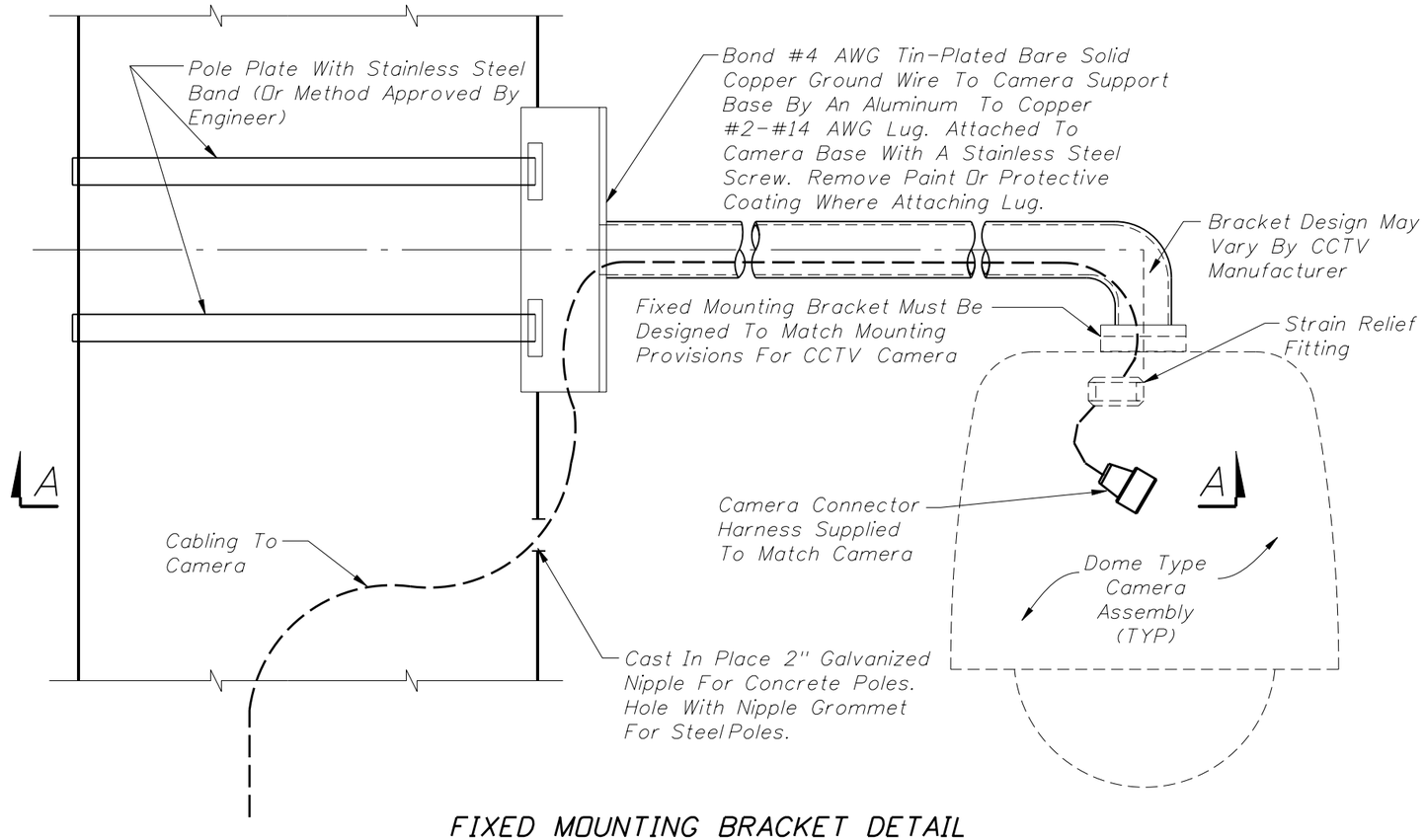
1. Lowering device to be shipped ready for pole attachment to include 100 ft. of composite power and signal cable prewired to lowering device at the factory.
2. The lowering device manufacturer shall supply both a portable lowering tool with a manual hand crank and a half-inch chuck variable-speed reversible industrial-duty electric drill that matches the winch manufacturer-recommended revolutions per minute. One lowering tool per every 10 lowering devices is required.
3. The lowering device manufacturer shall provide an on-site installation inspection and operator instruction and certification. This ensures the product is assembled correctly and that all necessary persons are trained in the proper, safe operation of the system. Before erecting the first pole the contractor must contact the lowering device supplier and schedule a manufacturer's representative to be on-site.
4. Design camera mounting arm and connection to tenon according to FDOT Structures Manual (current edition).
5. Camera to be mounted to camera junction box and stabilizing weight via 1½" Standard NPT Pipe Thread.
6. Use air terminal extension when the pole top junction box is wider than top of pole.
7. The stainless steel device lowering cable shall be installed inside the pole within a 1 ¼" diameter PVC conduit.
8. All communication and power cables must be neatly bundled and secured.
9. Use a Camera Lowering Device listed on the Approved Product List (APL).
10. See Index 18113 for concrete pole details and Index 18111 for steel pole details.

CAMERA MOUNTING WITH LOWERING DEVICE

REVISIONS						2008 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			
07/01/09	RM	Revised Note 2 and 3; Added Notes 7, 8 and 9. Changed Detail title and moved conduit to encase CCTV Lowering Cable				**CAMERA MOUNTING DETAILS**	07/01/09	1 of 2
							Index No.	18110

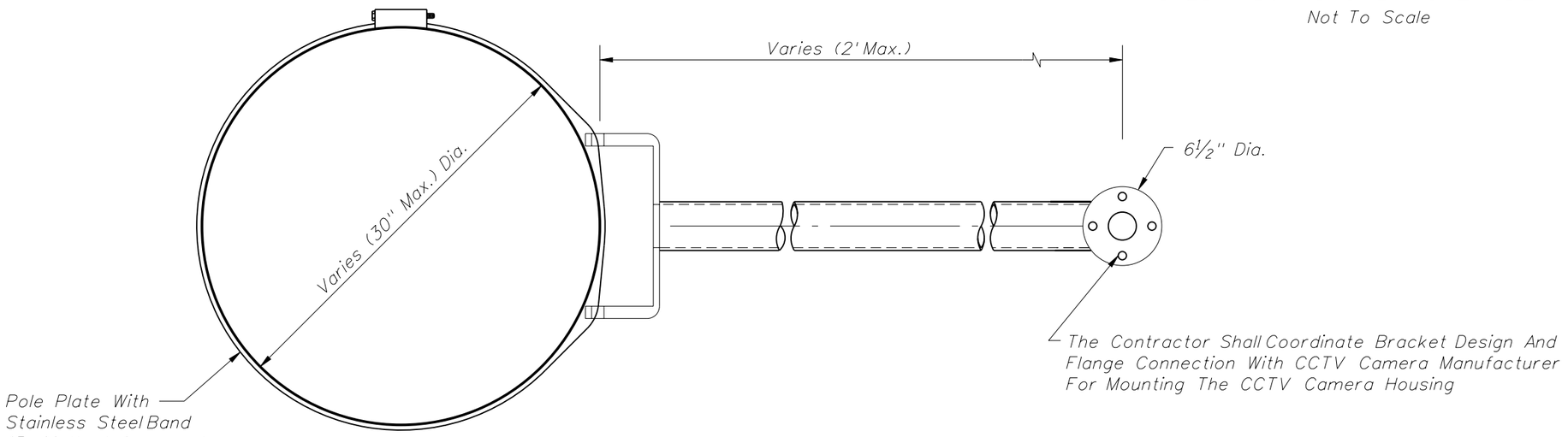
GENERAL NOTES:

1. Verify the pole type, the dimensions of the pole at the point of installation of the camera mount, and angle with respect to the roadway before manufacturing camera mount assembly.
2. Design camera mounting arm and connection to the pole according to FDOT Structures Manual (current edition).
3. No field welding shall be permitted.
4. Mounting bracket arm shall be level after installation.
5. The contractor shall submit shop drawings for the proposed fixed mounting arm, signed and sealed by a Professional Engineer registered in the State of Florida, to the Engineer for review and approval.
6. See Index 18113 for concrete pole details and Index 18111 for steel pole details.
7. Galvanized pipe connections and conduit entry points shall be sealed in accordance with Section 630 of the Standard Specifications.



FIXED MOUNTING BRACKET DETAIL

Not To Scale



SECTION AA

CAMERA MOUNTING WITH FIXED BRACKET

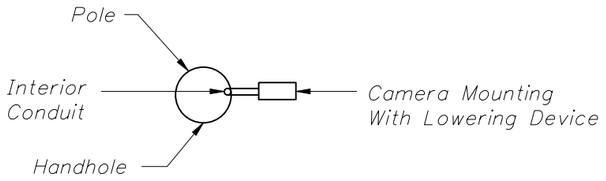
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RM	Added Sheet Title: Changed Detail Title: GENERAL NOTES, Note 2 replaced, Note 6 added "... and Index 18111 for steel pole details."			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

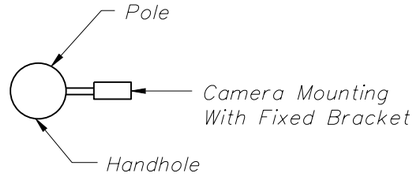
2008 Interim Design Standard

CAMERA MOUNTING DETAILS

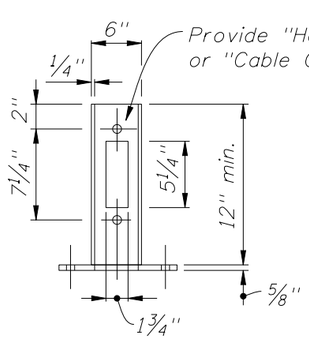
Interim Date	Sheet No.
07/01/09	2 of 2
Index No.	
18110	



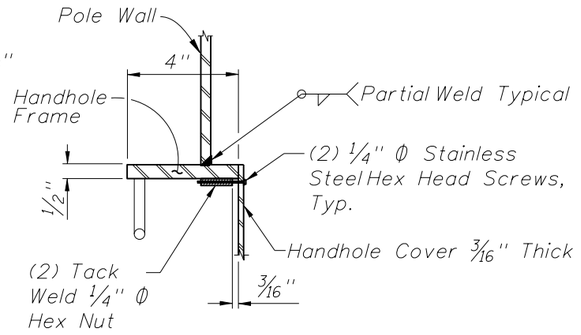
ORIENTATION VIEW



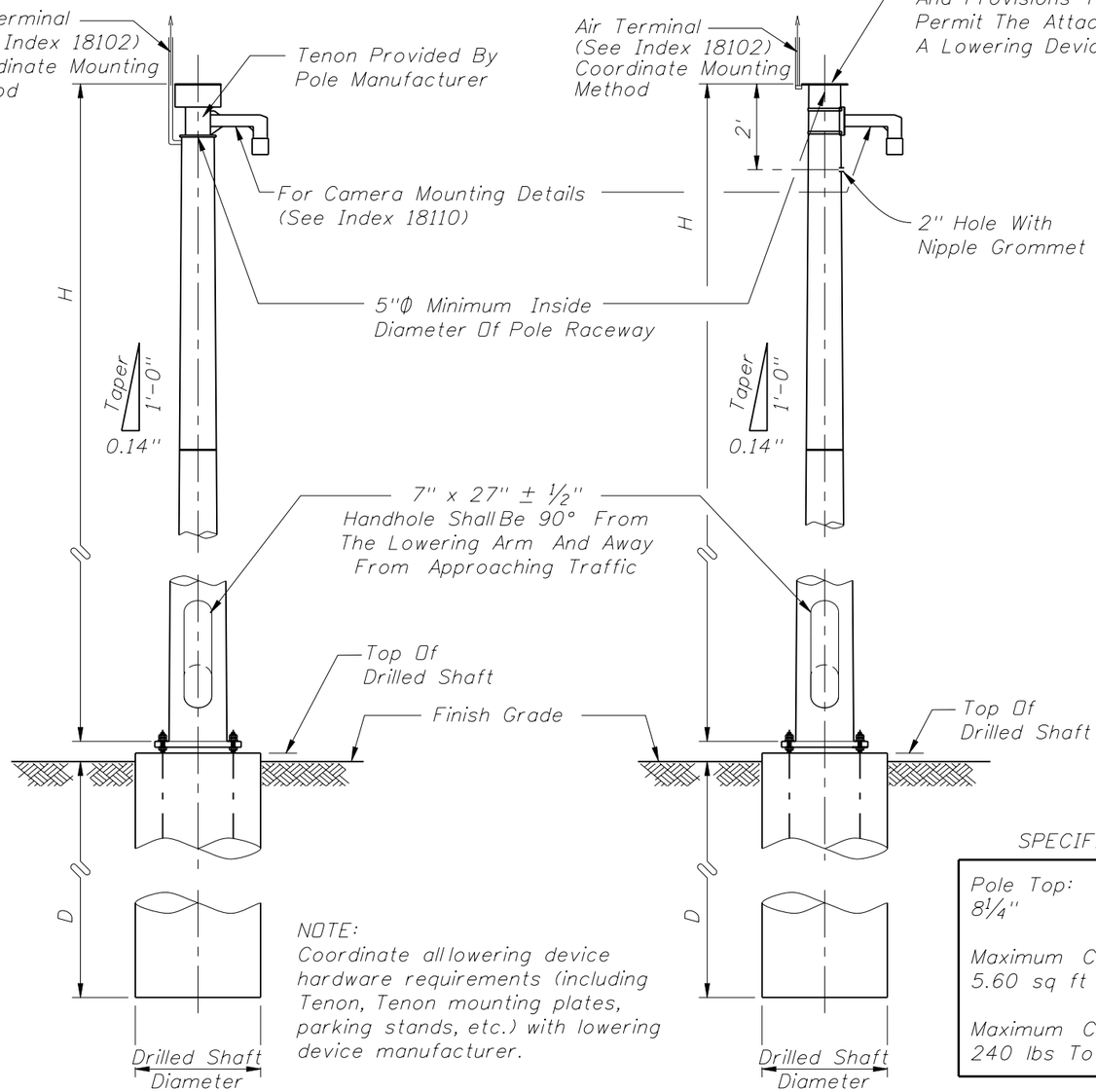
ORIENTATION VIEW



TENON DETAIL



SECTION A-A



WITH LOWERING DEVICE

WITHOUT LOWERING DEVICE

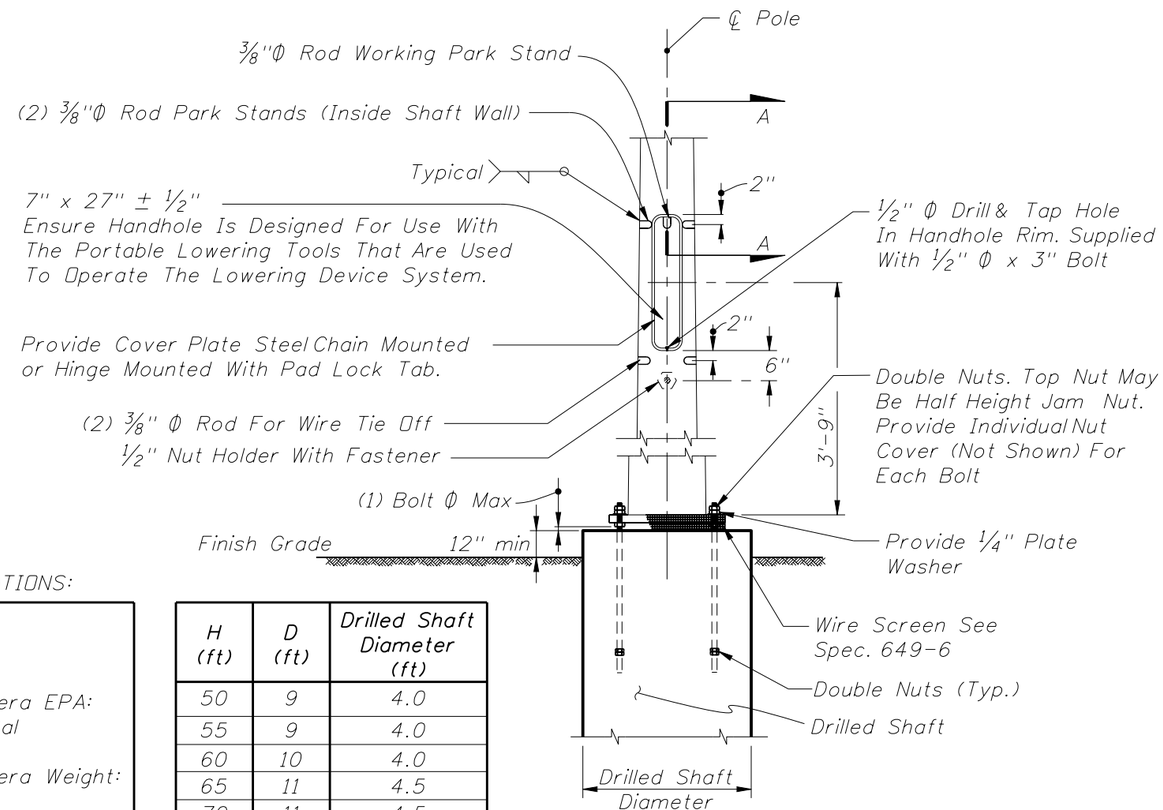
SPECIFICATIONS:

Pole Top:
8 1/4"

Maximum Camera EPA:
5.60 sq ft Total

Maximum Camera Weight:
240 lbs Total

H (ft)	D (ft)	Drilled Shaft Diameter (ft)
50	9	4.0
55	9	4.0
60	10	4.0
65	11	4.5
70	11	4.5



FOUNDATION AND HANDHOLE DETAIL

Not To Scale

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RM	Sheet completely revised.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

STEEL CCTV POLE

Interim Date 07/01/09

Sheet No. 1 of 2

Index No. 18111

DESIGN NOTES:

Design according to FDOT Structures Manual (current edition).

Maximum 1" deflection in 40mph wind (3 second gust).

Manufacturers seeking approval for inclusion on the Qualified Products List must submit a QPL Production Evaluation Application along with design documentation and drawings showing pole and foundation meet all specified requirements of this Standard. Provide documentation that certifies and demonstrates that pole is designed to accommodate and be compatible with a lowering device listed on the Approved Product List.

Perform all welding in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

Foundation Materials:

Reinforcing Steel: ASTM A615 Grade 60
Concrete: Class IV (Drilled Shaft) with a minimum 4,000 psi compressive strength at 28 days for all environment classifications.
Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts.
ASTM F436 Type 1 washers.
ASTM F2329 galvanization.

Foundation design based upon the following soil criteria:
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.

INSTALLATION NOTES:

Cable Supports: Electrical Cable Guides and Eyebolts.
Locate top and bottom electrical guides within the pole aligned with each other.
Position one cable guide 2" below the handhole.
Position other cable guide 1" directly below the top of the tenon.
Position eyebolt 2-3/4" below the top of the handhole.
Install pole plumb.

Lowering Device Installation Notes:

Design tenon dimensions to facilitate lowering device component installation. Locate slots parallel to the pole centerline for mounting the lowering device. Bolt a tenon to the pole top with mounting holes and slot as required for the mounting of the lowering device.

Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.

Mount lowering arm perpendicular to the roadway or as shown in the plans. Position CCTV pole so that the camera can be safely lowered without requiring lane closures.

POLE GENERAL NOTES:

16 sided or more or round.
Tapered 0.14 inches per foot.
Transverse welds only allowed at the base.
One or Two sections (with telescopic field splice) is allowed.
No laminated tubes.
Only one longitudinal seam weld permitted.
Longitudinal seam welds within 6" 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.
Identification tag:
Aluminum, secured to pole with stainless steel screws.
Locate inside pole and visible from handhole.
Provide Financial Project ID, pole height, manufacturer's name & certification number, and QPL number.

Perform all welding in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition).

Refer to Index No. 18108 for conduit and cabinet mounting details.

Provide fourteen #11 longitudinal bars for 4'-0" diameter drilled shafts and sixteen #11 longitudinal bars for 4'-6" diameter drilled shafts. Provide seven #5 stirrups spaced at 4" from the top of the drilled shaft and #5 stirrups spaced at 1'-6" (max.) for the rest of drilled shaft. Provide 4" cover for the top of drilled shaft and 6" cover for sides and bottom. Coordinate anchor bolt design with the shaft reinforcement and CLS tube details.

POLE SPECIFICATIONS:

ASTM A1011 Grade 50, 55, 60 or 65 (less than ¼")or
ASTM A572 Grade 50, 60 or 65 (greater than ¼")or
ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
Steel Plates and Pole Cap: ASTM A36.
Weld Metal: E70XX.
Bolts: ASTM A325, Type 1.
Handhole frame: ASTM A709 Grade 36 or ASTM A36.
Handhole cover: ASTM A1011 Grade 50, 55, 60 or 65.
Stainless steel screws: AISI Type 316.
Galvanization:
Nuts, bolts and washers: ASTM F2329.
All other steel: ASTM A123.

One hundred percent of full-penetration groove welds and a random 25% of partial penetration groove welds shall be inspected. Full-penetration groove weld inspection shall be performed by nondestructive methods of radiography or ultrasonics.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RM	Sheet completely revised.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

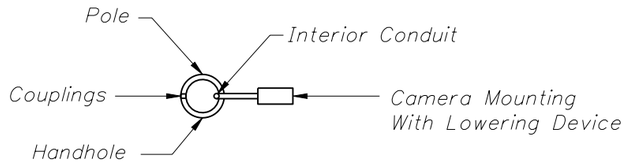
2008 Interim Design Standard

STEEL CCTV POLE

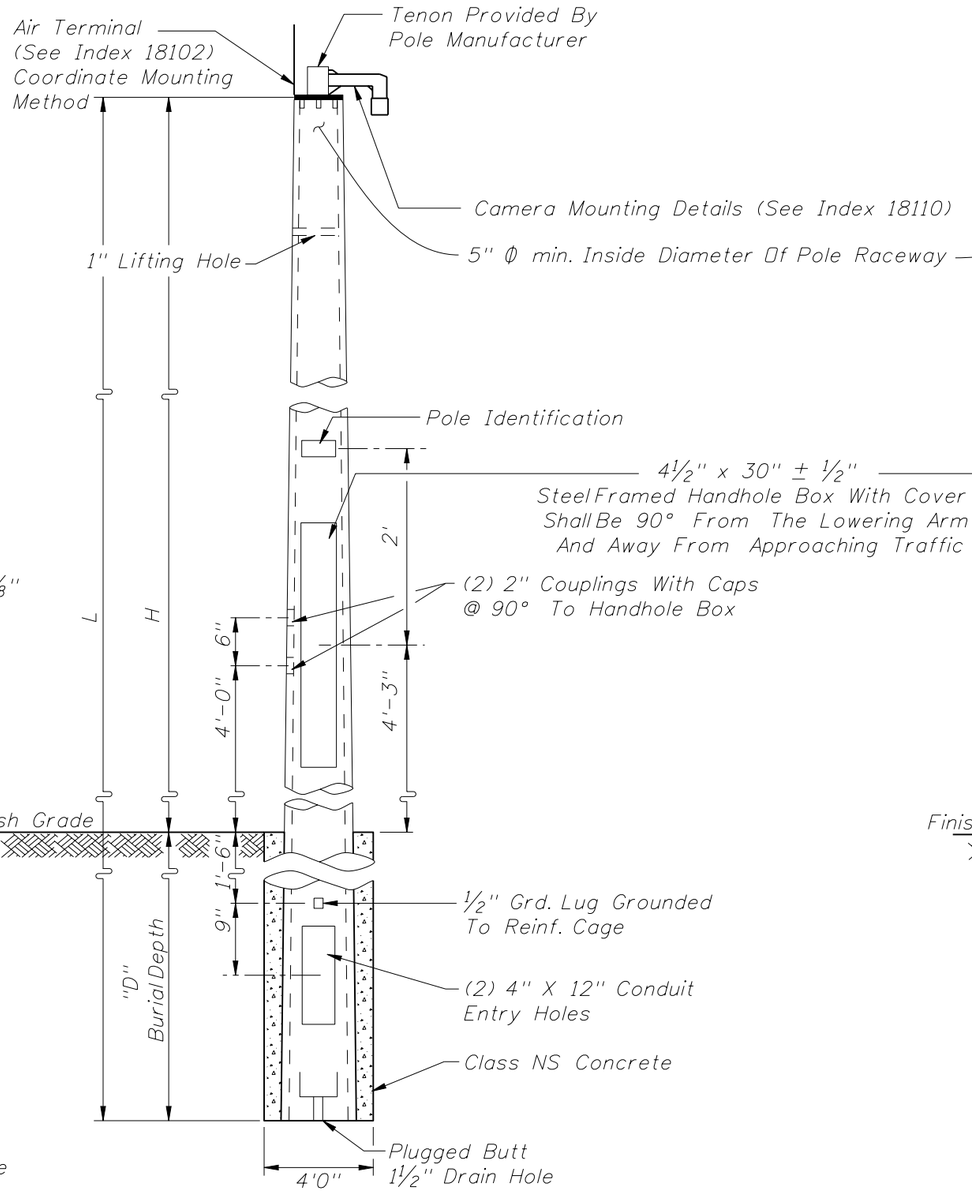
Interim Date 07/01/09

Sheet No. 2 of 2

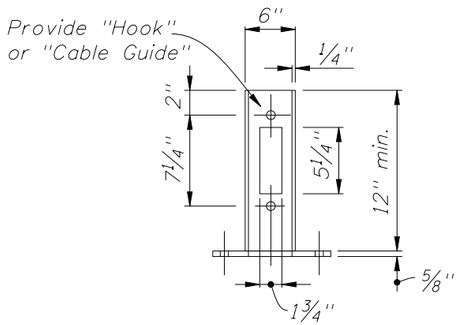
Index No. 18111



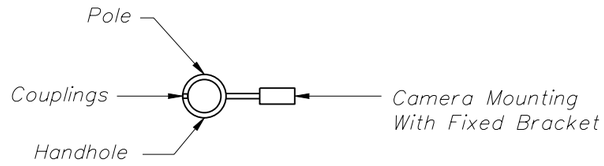
ORIENTATION VIEW



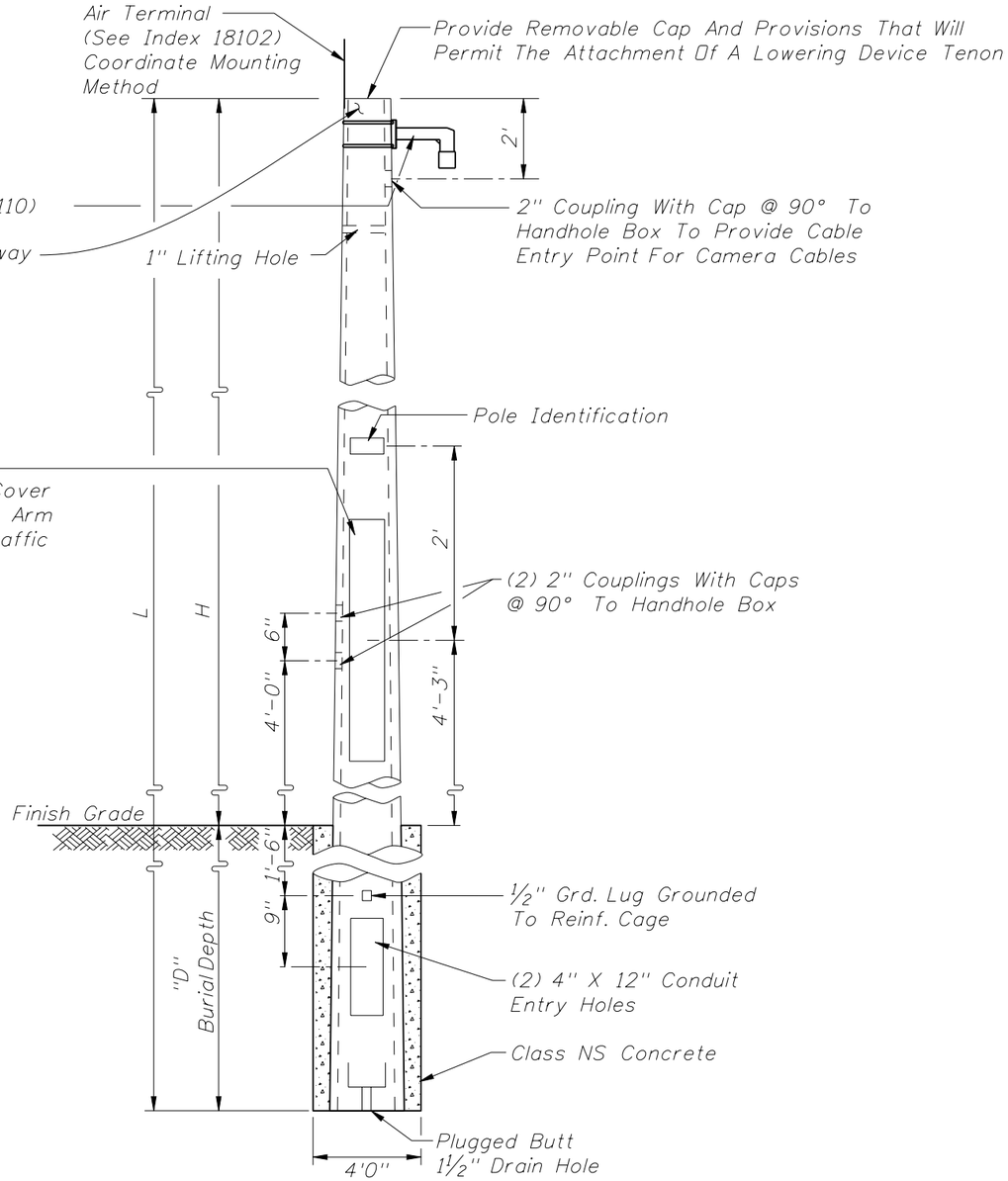
WITH LOWERING DEVICE



TENON DETAIL



ORIENTATION VIEW



WITHOUT LOWERING DEVICE

NOTE:
Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stand, etc.) with lowering device manufacturer.

Not To Scale

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RM	Sheet completely revised.			

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CONCRETE CCTV POLE

Interim Date 07/01/09

Sheet No. 1 of 2

Index No. 18113

GENERAL NOTES:

Design according to FDOT Structures Manual current edition.

Manufacturers seeking approval for inclusion on the Qualified Products List must submit a QPL Product Evaluation Application along with design documentation and drawings showing the product meets all specified requirements of this Standard. Provide documentation that certifies and demonstrates that the pole is designed to accommodate and be compatible with a lowering device listed on the Approved Product List.

Place prestressing symmetrically about both axis.

Use Class V Special Concrete or Class VI Concrete with 4 ksi minimum strength of transfer.

Use ASTM A615 Grade 60 reinforcing steel. Provide a minimum of non-prestressed reinforcement equal to 0.33% of the concrete area.

Use ASTM A416 Grade 270 stress relieved or low-lax prestressing strands.

One turn required for spiral splices and two turns required at the top and bottom of poles. Manufacture spirals from cold-drawn ASTM A82 steel wire.

Identify poles as to manufacturer, pole length, certification number and QPL 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.

Provide a 1" minimum cover.

Foundation design based upon the following soil criteria:

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.

LOWERING DEVICE INSTALLATION NOTES:

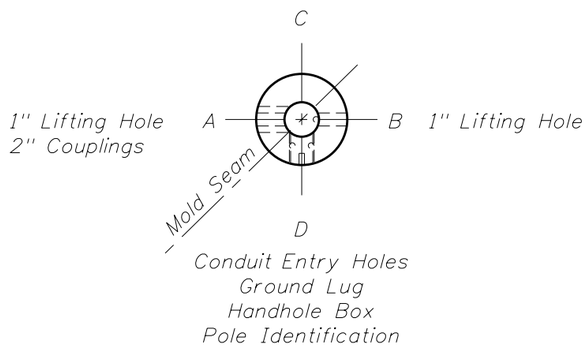
Design tenon dimensions to facilitate lowering device component installation. Locate slots parallel to the pole centerline for mounting the lowering device. Bolt a tenon to the pole top with mounting holes and slot as required for the mounting of the lowering device.

Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.

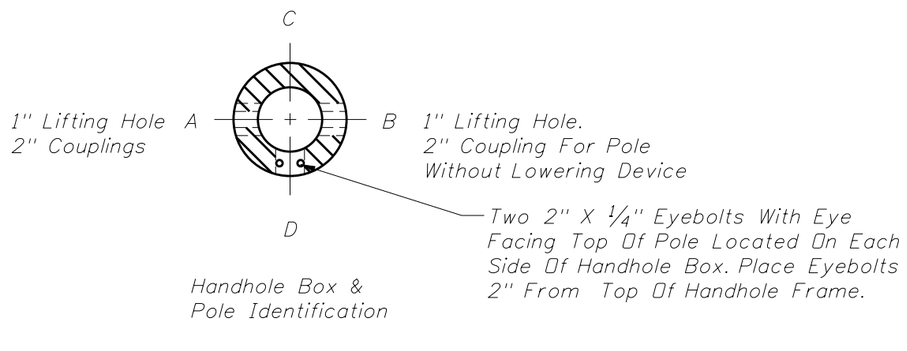
Mount lowering arm perpendicular to the roadway or as shown in the plans. Position CCTV pole so that the camera can be safely lowered without requiring lane closures.

SPECIFICATIONS:

Pole Top:	10 ½" Diameter minimum
Pole Taper:	0.2 in./ft. nominal
Defl Spec:	1" max. In 40 mph Wind (3 second gust)
Max. Camera EPA:	5.60 sq. ft. Total
Max. Camera Wgt:	240 lbs. Total



TOP VIEW

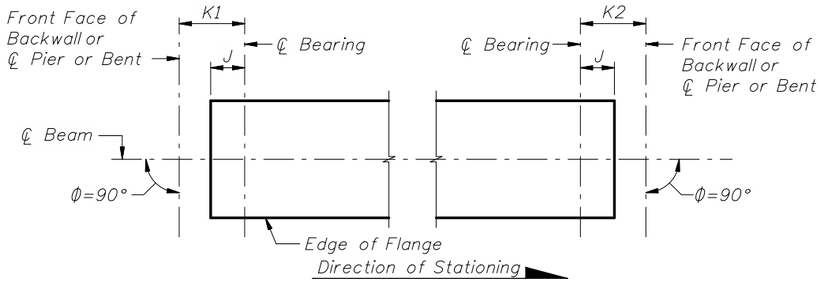


SECTIONAL VIEW THROUGH HAND HOLE BOX

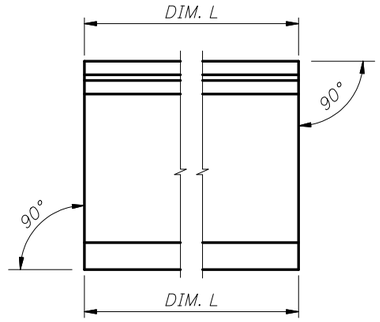
L (ft)	H (ft)	D (ft)
58	50	8
64	55	9
69	60	9
75	65	10
80	70	10

Not To Scale

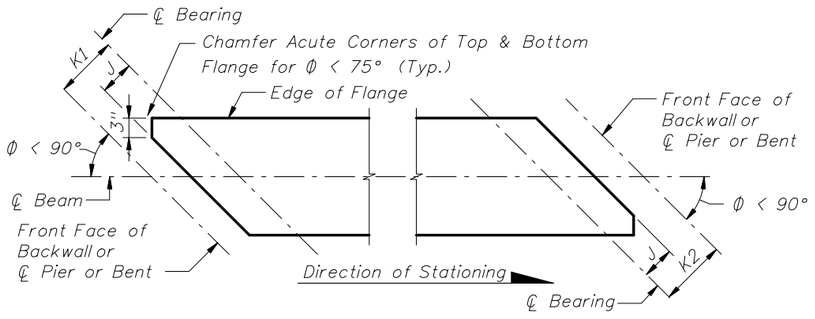
REVISIONS						2008 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	CONCRETE CCTV POLE	07/01/09	2 of 2
07/01/09	RM	Sheet competely revised					Index No. 18113	



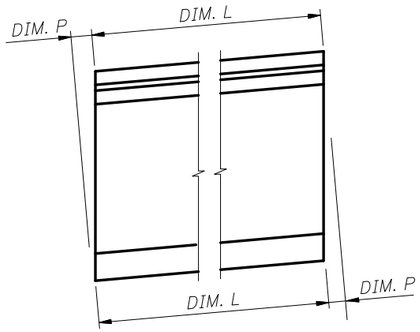
CASE 1



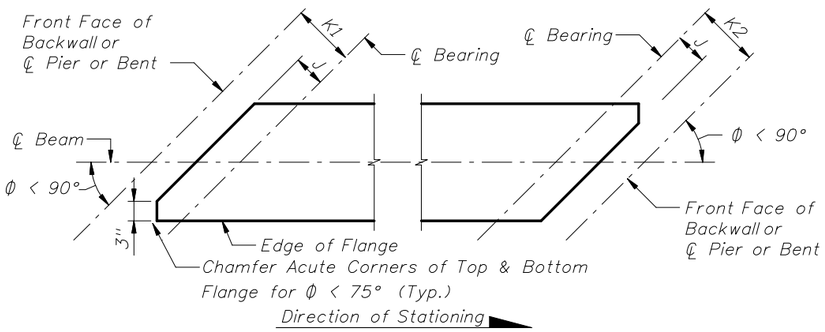
CONDITION 1
(P = 0.0)



CASE 2

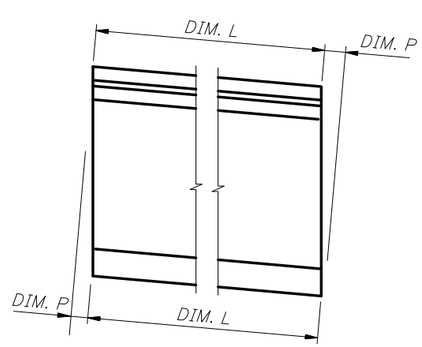


CONDITION 2



CASE 3

SCHEMATIC PLAN VIEWS AT BEAM ENDS



CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS
(Showing Vertical Bevel of Beam End)

BEAM NOTES

1. All bar dimensions are out-to-out.
2. Place one (1) Bar 5K or 5Z at each location as detailed alternating the direction of the ends for each bar (see "ELEVATION AT END OF BEAM", Index Nos. 20036, 20045, 20054, 20063, 20072 and 20078).
3. Bars 4L shall be bent prior to the beam leaving the prestressing yard. Bars 4L shall be bent parallel to the ends of the beams.
4. Caution should be used with Bars 4L in the ends of exterior beams to assure the bent portion of the bar is properly oriented so that the bar will be embedded in the diaphragm concrete.
5. Strands N shall be either ASTM A416, Grade 250 or Grade 270, seven-wire strands ⅜" ϕ or larger, stressed to 10,000 lbs. each.
6. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
7. At the Contractors option, welded deformed wire reinforcement may be used in lieu of Bars 3D, 5K, 4M, and 5Z as shown on the Standard Details for each beam size. Welded deformed wire reinforcement shall conform to AASHTO M221, with a minimum yield strength of 75 ksi.
8. Install Safety Sleeves approximately 2'-0" from ends of beam and spaced on 8'-0" (Max.) centers. Safety Sleeves shall be 2½" NPS x 5" Sch. 40 PVC Pipe with Cap. Holes shall be free of debris and water prior to casting deck.
9. For beams with skewed end conditions, the end reinforcement, defined as Bars 3C1, 3C2, 3D1, 3D2, 5K, 4M1, 4M2, 5Y and 5Z placed within the limits of the spacing for Bars 3C in "ELEVATION AT END OF BEAM", shall be placed parallel to the skewed end of the beam. Bars 3D3, 5K and 4M3 located beyond the limits of Bars 3C shall be placed perpendicular to the longitudinal axis of the beam. Fan Bars as needed to avoid overlapping bars at the transition to Bars 3D3 and 4M3, and field cut to maintain minimum cover. Provide additional Bars 4M1, 4M2, 3D1 and 3D2 as required; additional bars are not included in the Number Required on the "BILL OF REINFORCING STEEL". For placement locations, see "SKEWED BEAM END DETAILS". Adjust the dimensions of Bars 3C1, 3C2, 3D1, 3D2, 4M1 and 4M2 as shown on the "BENDING DIAGRAM" for skewed end conditions.
10. Placement of Bars 3C1, 3D1 and 4M1 correspond to END 1, and Bars 3C2, 3D2 and 4M2 correspond to END 2. END 1 and END 2 are shown on the beam "ELEVATION".
11. For Beams with vertically beveled end conditions, place first row of Bars 3C1, 3C2, 3D1, 3D2, 5K, 5Y and 5Z parallel to the end of the beam. Progressively rotate remaining bars within the limits of Bars 5Z until vertical by adjusting the spacing at the top of beam up to a maximum of 1". For welded deformed wire reinforcement, cut top cross wire and rotate bars as required or reduce end cover at top of the beam to minimum 1".
12. For beams with skewed end conditions, welded deformed wire reinforcement shall not be used for end reinforcement (Bars 3D1, 3D2, 4M1 and 4M2) .
13. Bars 5K and 5Z shall be placed and tied to the fully bonded strands in the bottom or center row (see "STRAND PATTERN" on the Table of Beam Variables in Structures Plans). For welded deformed wire reinforcement, supplemental transverse #4 bars are permitted to support Pieces K & S under the cross wires on the bottom row of strands.
14. At the Contractor's option, Bars 3D1, 3D2 and 3D3 may be fabricated as a single bar with a 1'-0" minimum lap splice of the top legs.
15. For referenced Dimensions, Angles and Case Numbers, see the Table of Beam Variables in Structures Plans.

INSTRUCTIONS TO DESIGNER:

To limit vertical splitting forces in the webs of beams, the maximum prestress force at the beam ends from fully bonded strands must be limited to the following:

Beam Type	Max. Bonded Prestress Force	Index No.	Last Revision Date
Florida-I 36	1450 Kips	20036	07/01/09
Florida-I 45	1670 Kips	20045	07/01/09
Florida-I 54	1740 Kips	20054	07/01/09
Florida-I 63	1740 Kips	20063	07/01/09
Florida-I 72	1980 Kips	20072	07/01/09
Florida-I 78	2230 Kips	20078	07/01/09

No losses shall be applied when calculating the Bonded Prestress Force. The reinforcing in the ends of the beams must not be modified without the approval of the State Structures Design Engineer.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	New Design Standard			

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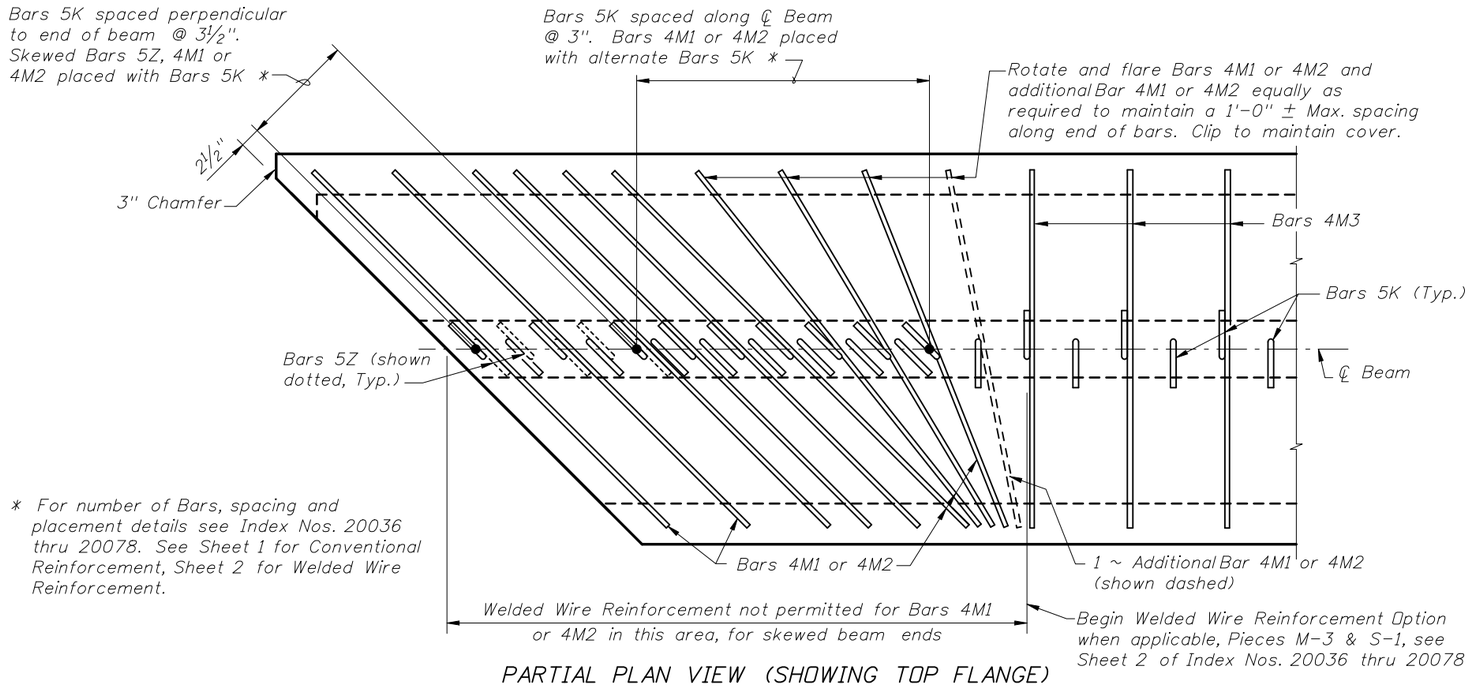
TYPICAL FLORIDA-I BEAM DETAILS AND NOTES

Interim Date 07/01/09

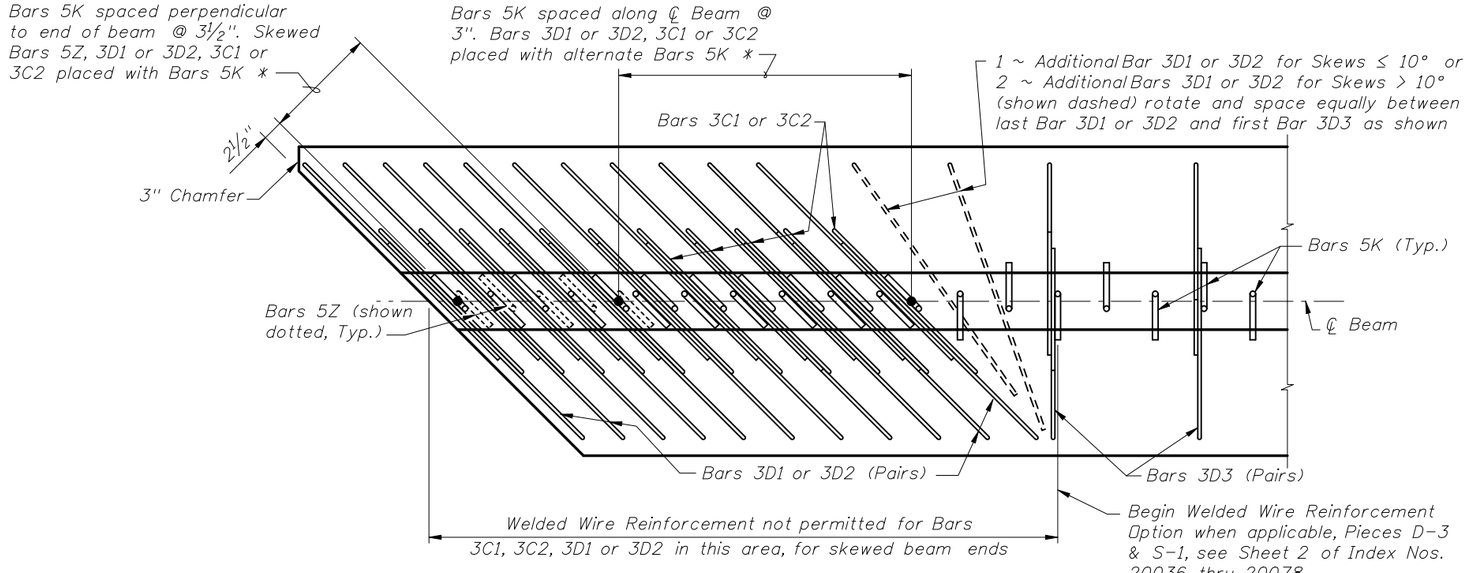
Sheet No. 1 of 2

Index No. 20010



* For number of Bars, spacing and placement details see Index Nos. 20036 thru 20078. See Sheet 1 for Conventional Reinforcement, Sheet 2 for Welded Wire Reinforcement.

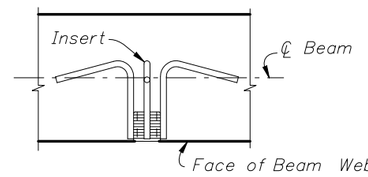
PARTIAL PLAN VIEW (SHOWING TOP FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 5A, 4L, 5Y & Strands N not shown for clarity)



PARTIAL SECTION THRU WEB (SHOWING BOTTOM FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 4L, Bars 5Y & Strands not shown for clarity)

SKEWED BEAM END DETAILS

(Florida-I 36 Beam shown, others similar)



PLAN SECTION THRU BEAM WEB AT INSERT FOR DIAPHRAGM REINFORCING
(When Intermediate Diaphragms are Required by Design)

INSERT NOTES

1. Provide 1" Ø, zinc-electroplated, ferrule wing nut or coil inserts, UNC threads, 1/0 minimum gage wire, not more than 4" in depth with a minimum ultimate tensile strength of 11,400 lbs. in 4,000 p.s.i. concrete.
2. If inserts are needed on both sides (faces) of beam webs, an assembly as long as the thickness of the beam web, consisting of two (2) ferrule or coil inserts attached by two (2) or more struts may be utilized. The connecting struts shall have a minimum ultimate tensile strength of 11,400 lbs.
3. Inserts for diaphragm reinforcing are required at each end of each intermediate diaphragm shown on the Beam Framing Plan. See Superstructure and Beam Framing Plans for longitudinal location of inserts for each face of beam.

INSERT DETAIL

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	New Design Standard			

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TYPICAL FLORIDA-I BEAM DETAILS AND NOTES

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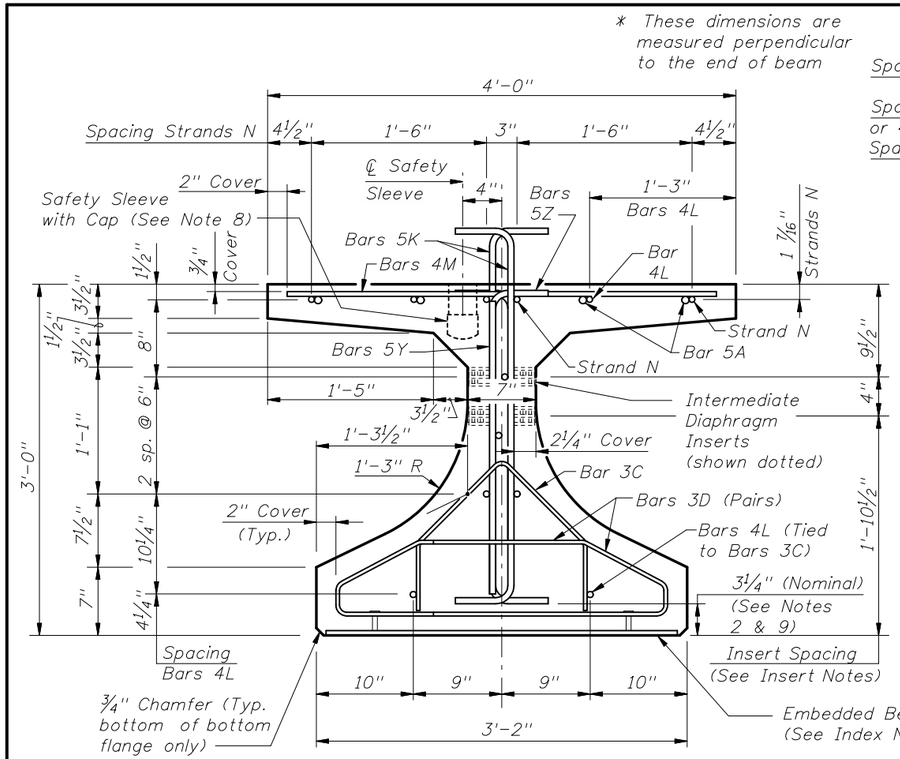
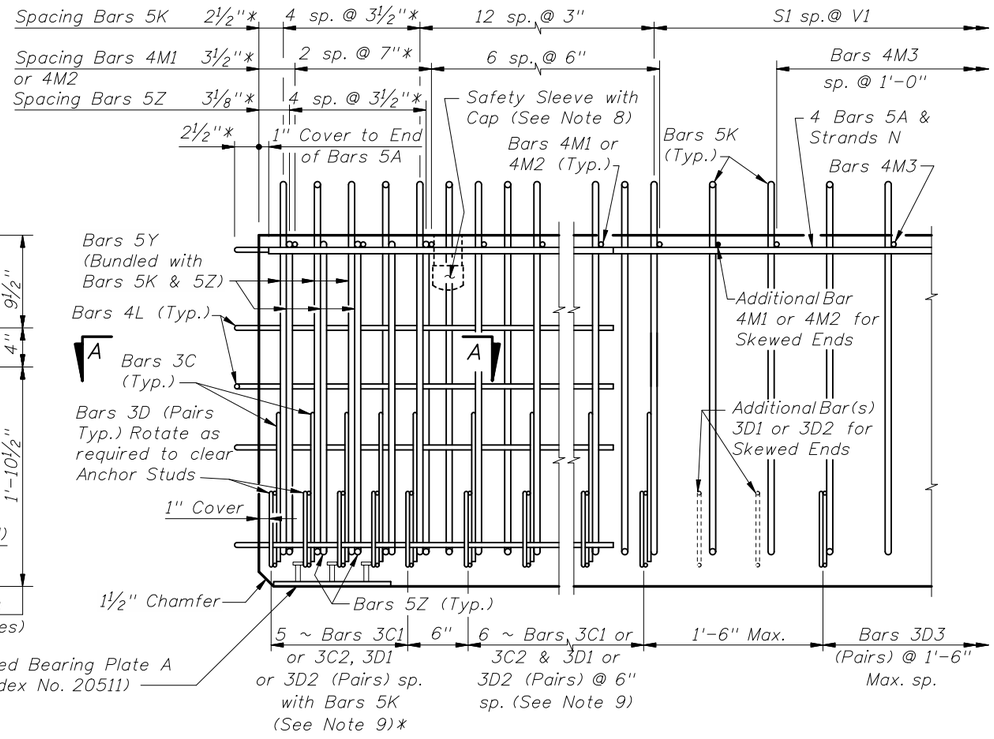


END VIEW



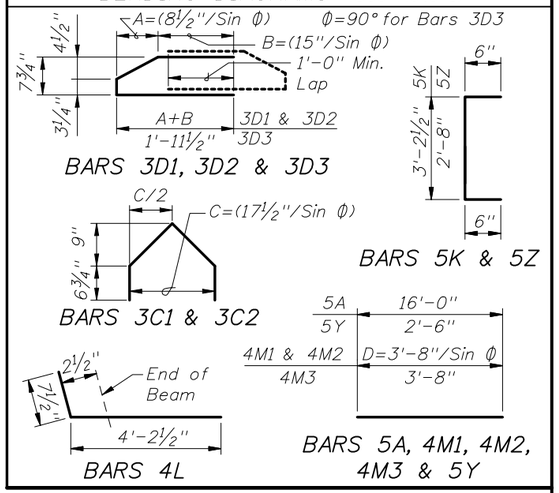
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

BILL OF REINFORCING STEEL

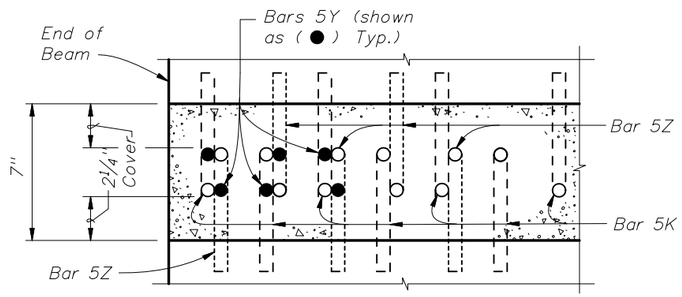
MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	8	16'-0"
C1	9, 10 & 11	3	11 (End 1)	Varies
C2	9, 10 & 11	3	11 (End 2)	Varies
D1	9, 10, 11 & 14	3	22 (End 1)	Varies
D2	9, 10, 11 & 14	3	22 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	4'-2"
L	3 & 4	4	16	4'-10"
M1	9 & 10	4	9 (End 1)	Varies
M2	9 & 10	4	9 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	⅜" ℄ Strand	4	DIM L+5"
Y	9 & 11	5	12	2'-6"
Z	2, 9, 11 & 13	5	10	3'-8"

BENDING DIAGRAMS (See Note 1)

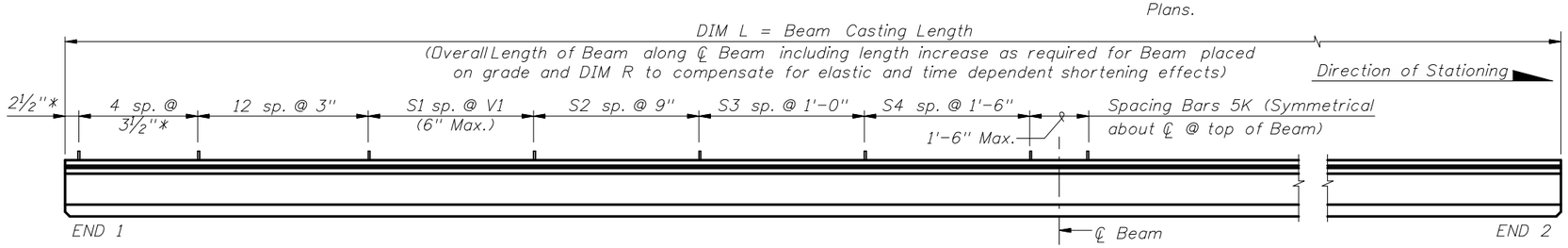


NOTES:

A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



ELEVATION

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

2008 Interim Design Standard

FLORIDA-I 36 BEAM - STANDARD DETAILS

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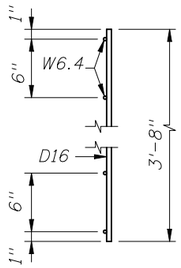
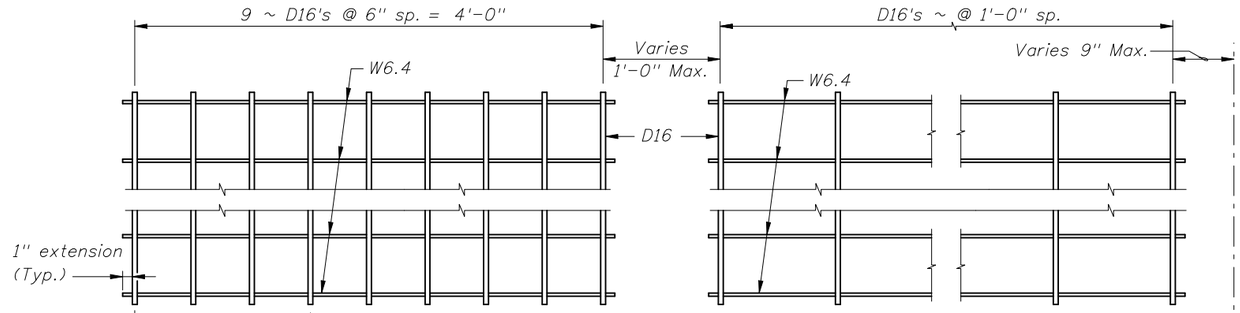
Index No. 20036

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

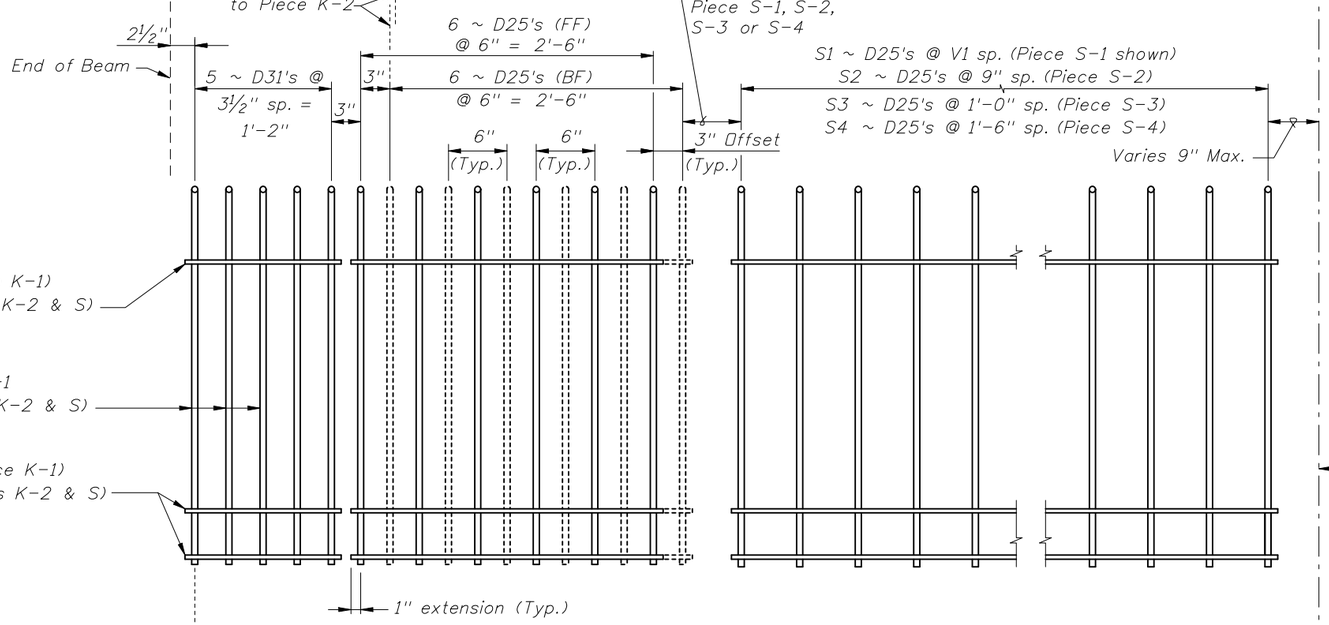


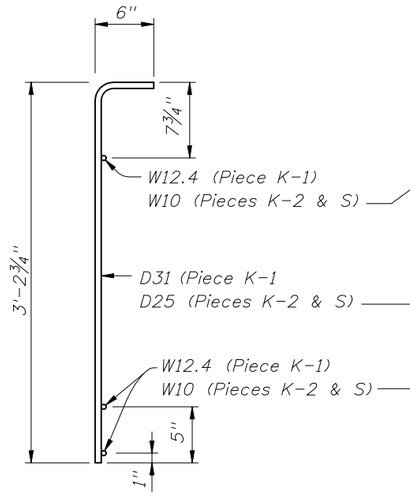
PIECES M
END VIEW



PLAN VIEW
PIECE M-1
(2 Required)

PLAN VIEW
PIECE M-3
(2 Required)



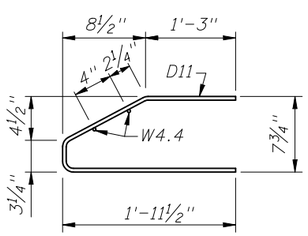


PIECES K & S
END VIEW

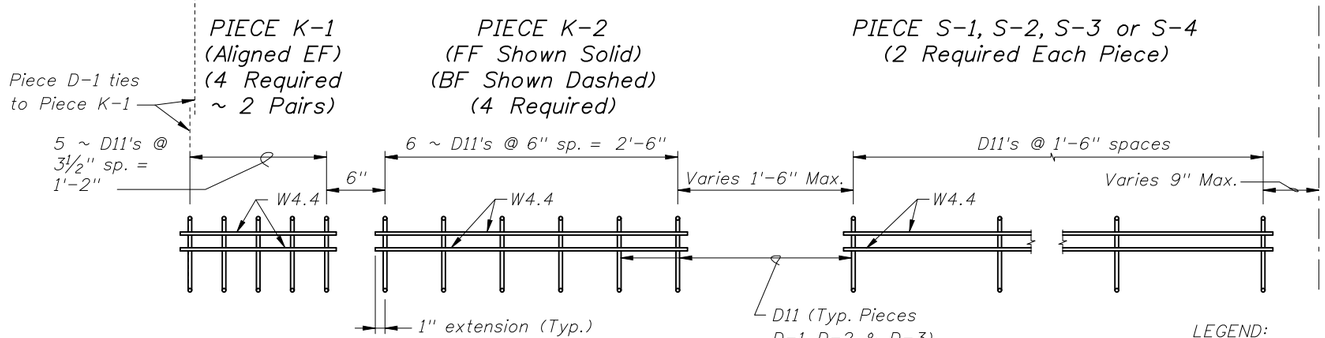
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW

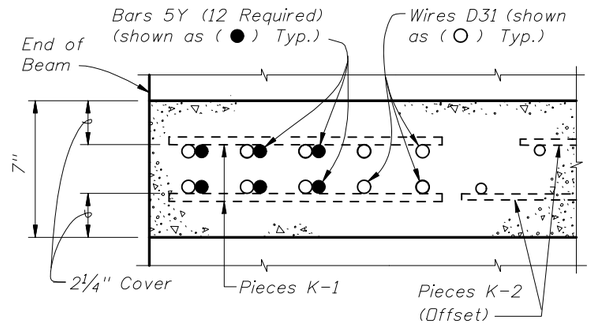


PIECE D-1
(4 Required ~ 2 Pairs)

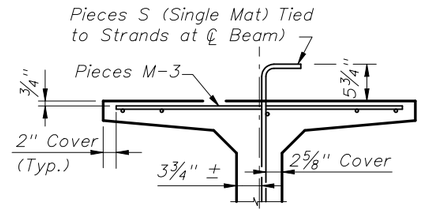
PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

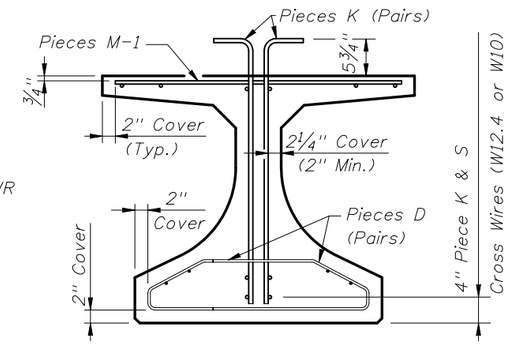
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face



SECTION A-A
FOR WELDED WIRE REINFORCEMENT



PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands not Shown for Clarity)

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

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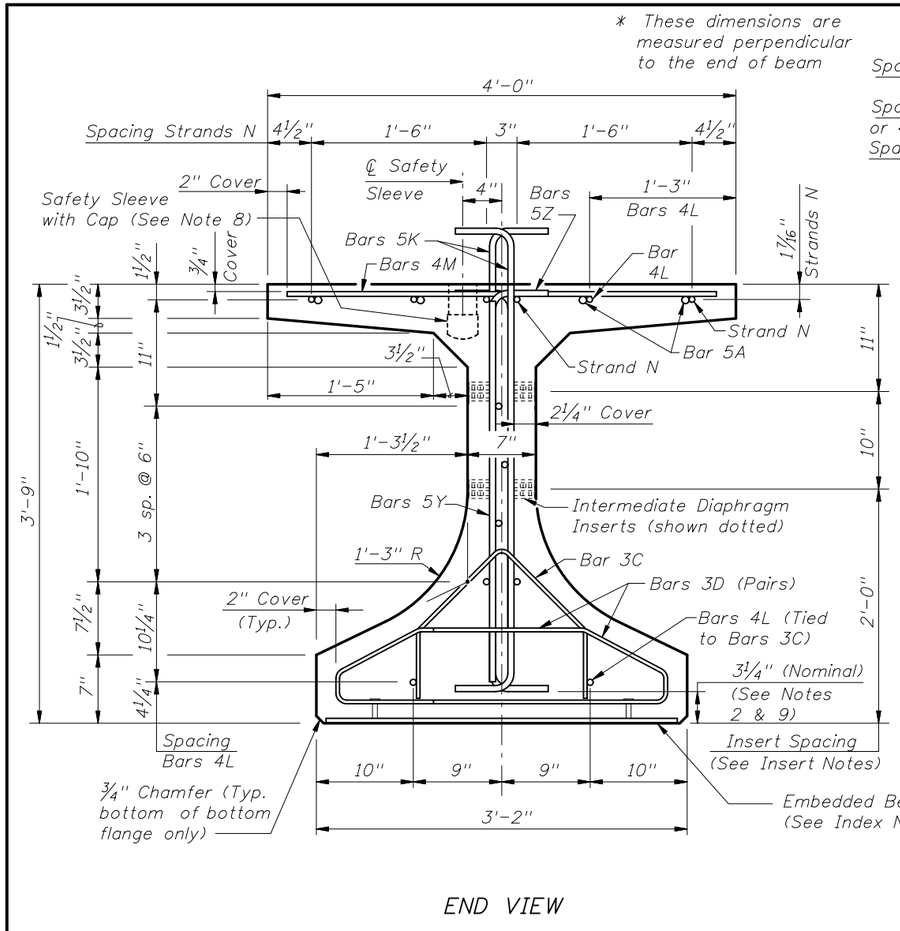
FLORIDA-I 36 BEAM - STANDARD DETAILS

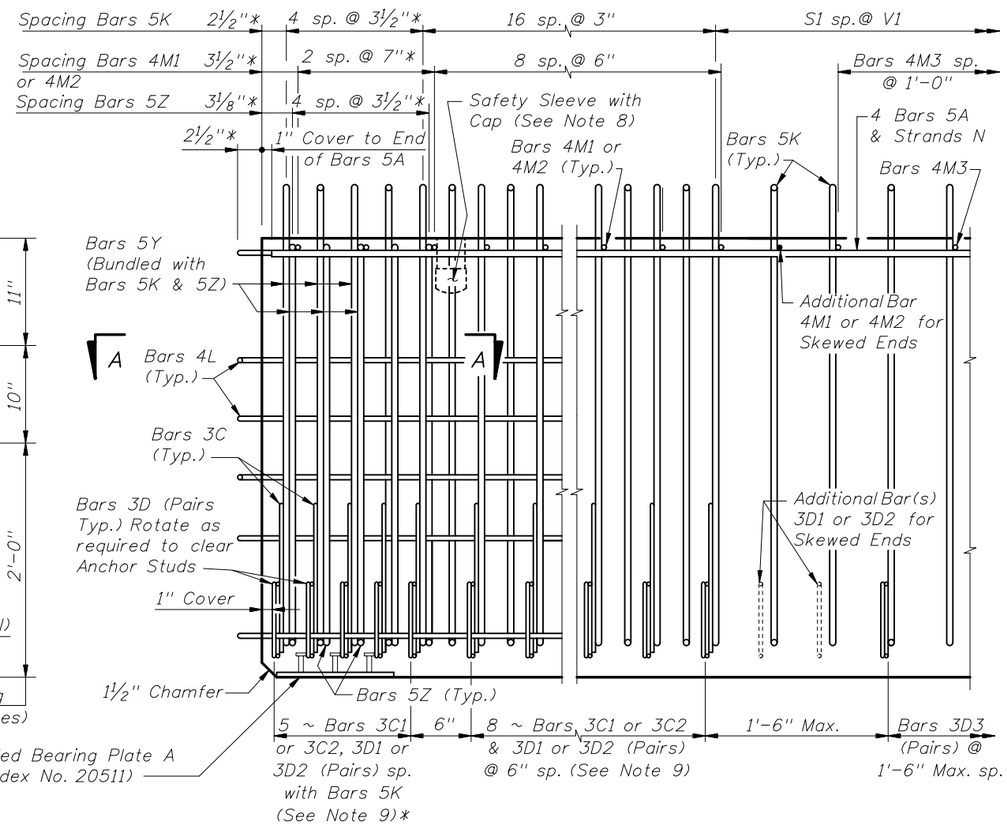
Interim Date 07/01/09

Sheet No. 2 of 2

Index No. 20036



END VIEW



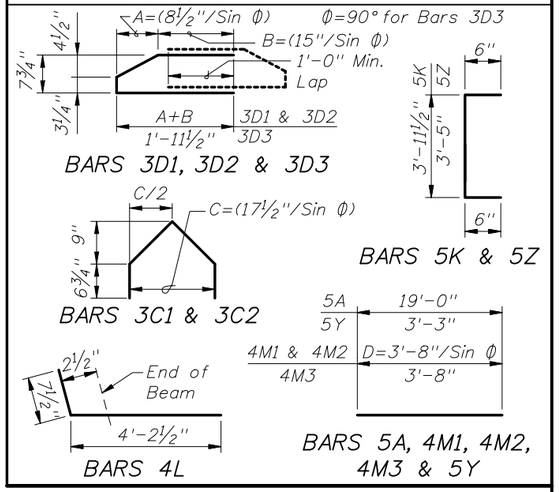
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

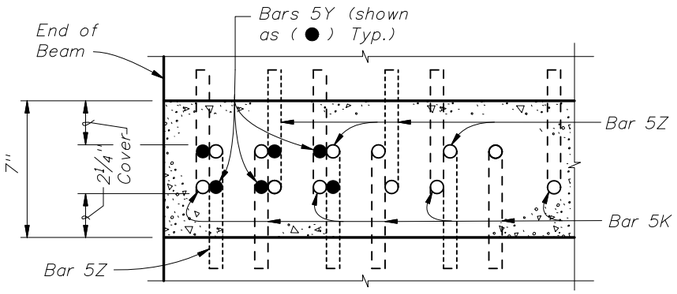
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	8	19'-0"
C1	9, 10 & 11	3	13 (End 1)	Varies
C2	9, 10 & 11	3	13 (End 2)	Varies
D1	9, 10, 11 & 14	3	26 (End 1)	Varies
D2	9, 10, 11 & 14	3	26 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	4'-11"
L	3 & 4	4	18	4'-10"
M1	9 & 10	4	11 (End 1)	Varies
M2	9 & 10	4	11 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	⅜" ℄ Strand	4	DIM L+5"
Y	9 & 11	5	12	3'-3"
Z	2, 9, 11 & 13	5	10	4'-5"

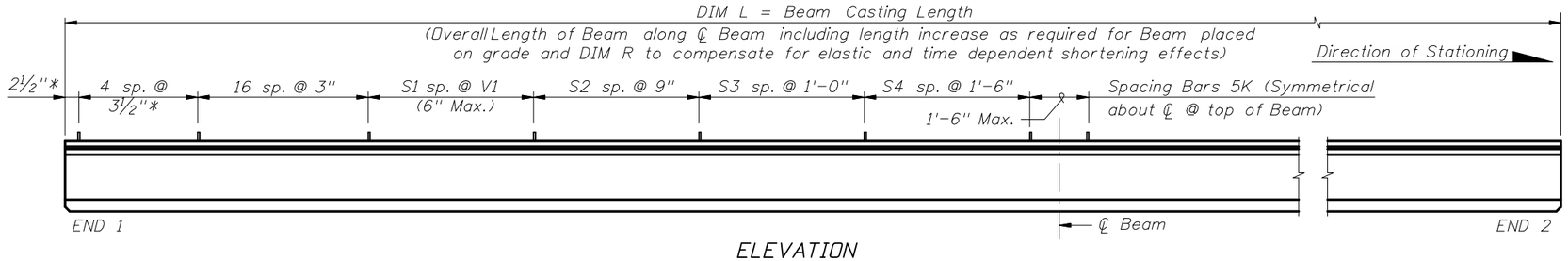
BENDING DIAGRAMS (See Note 1)



NOTES:
A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



ELEVATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

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FLORIDA-I 45 BEAM - STANDARD DETAILS

Interim Date 07/01/09

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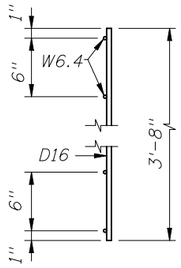
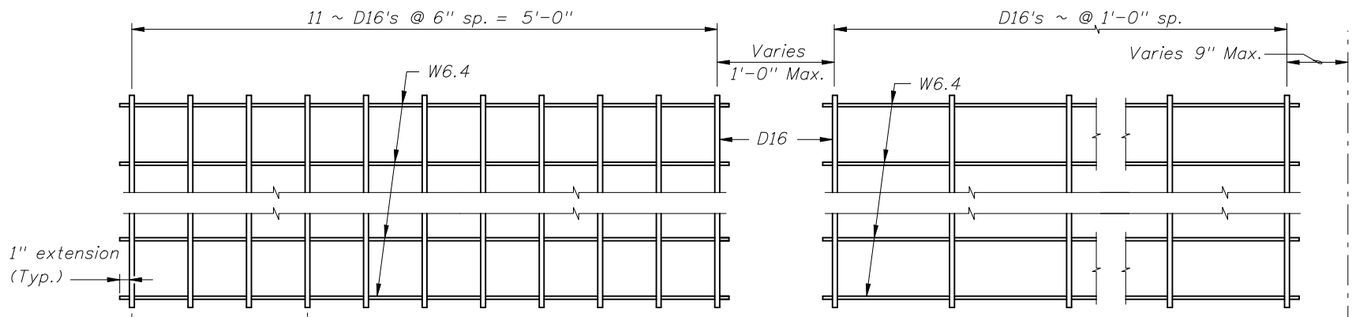
Index No. 20045

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

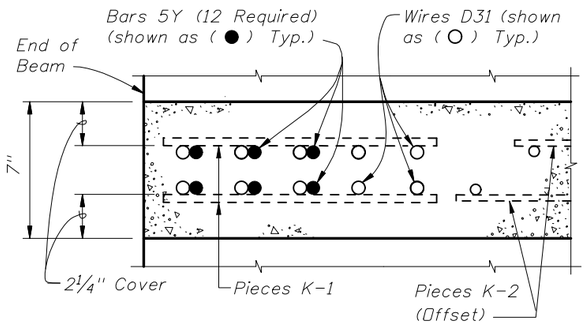


PIECES M
END VIEW

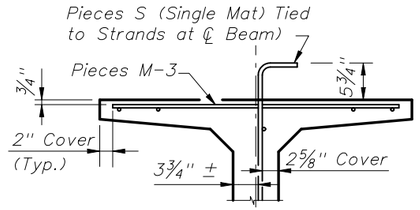


PLAN VIEW
PIECE M-1
(2 Required)

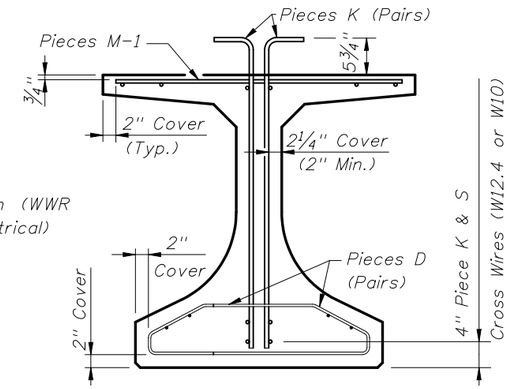
PLAN VIEW
PIECE M-3
(2 Required)



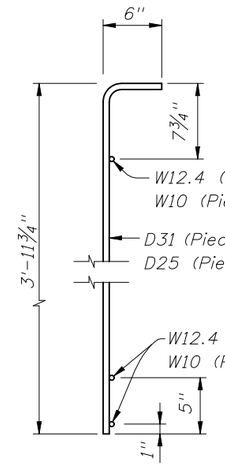
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



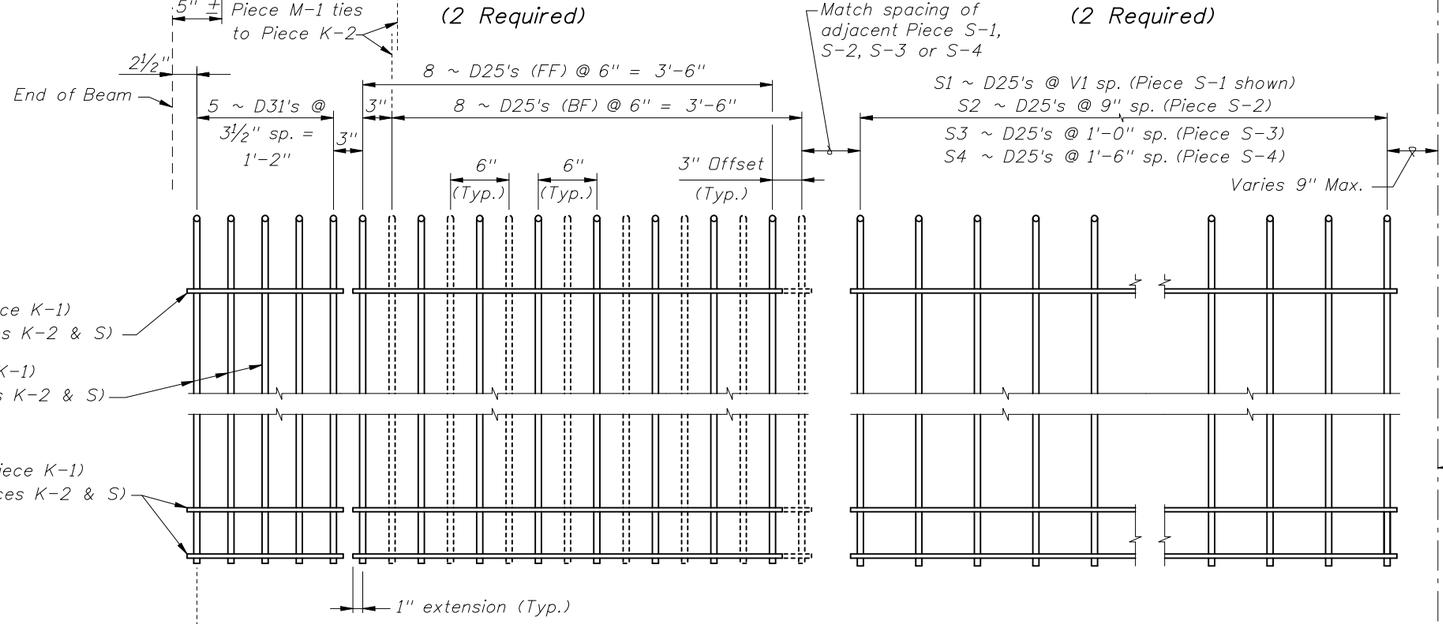
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands not Shown for Clarity)



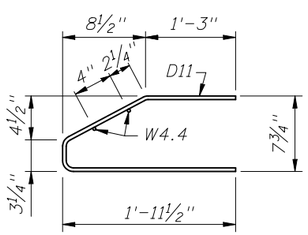
PIECES K & S
END VIEW



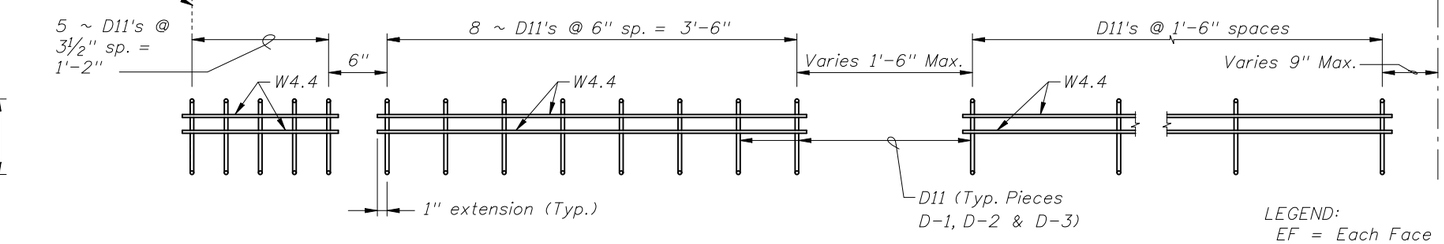
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
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FLORIDA-I 45 BEAM - STANDARD DETAILS

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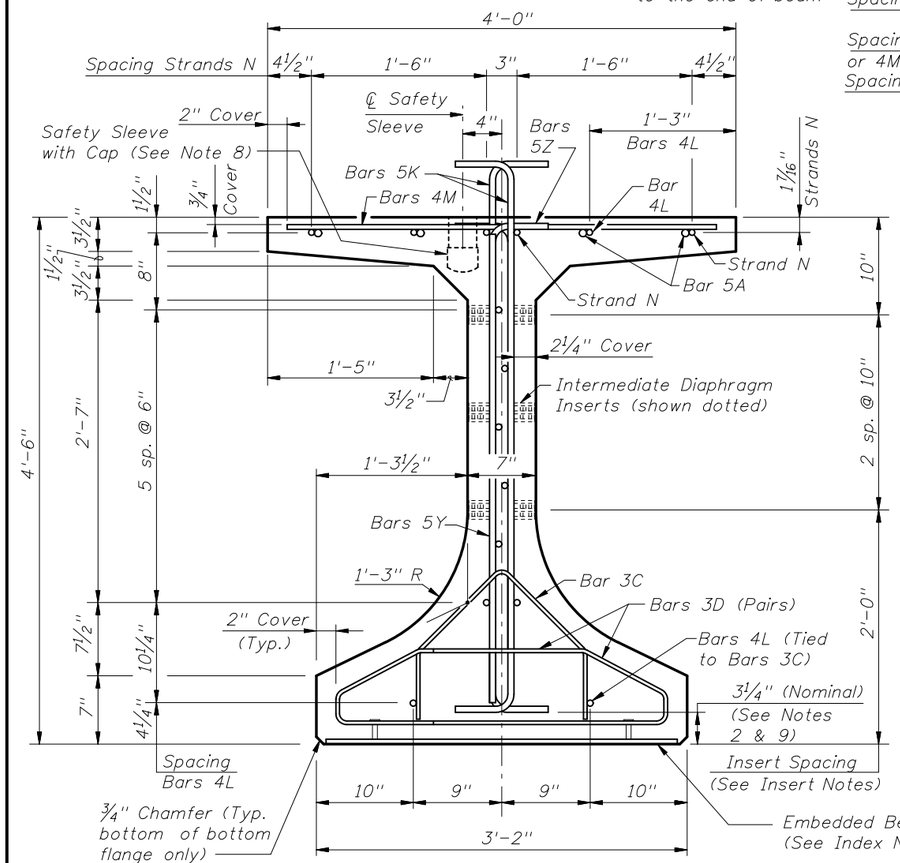
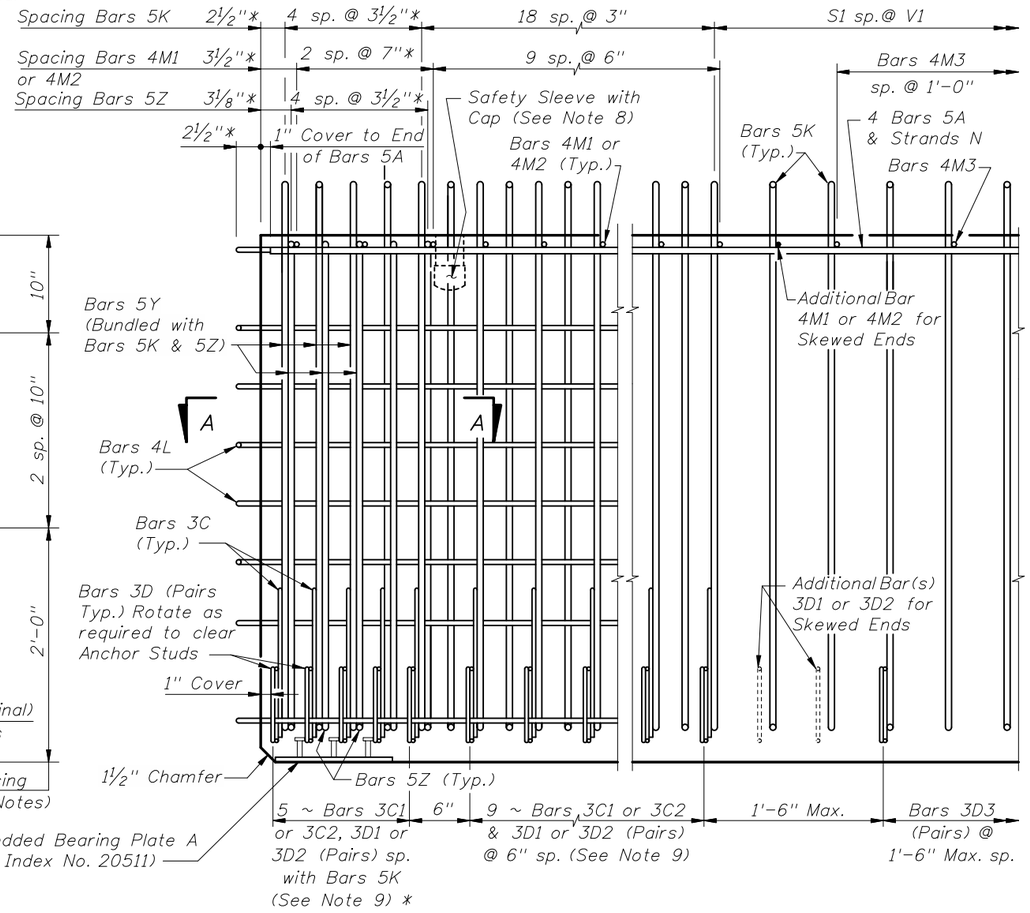
Index No. 20045

* These dimensions are measured perpendicular to the end of beam



END VIEW



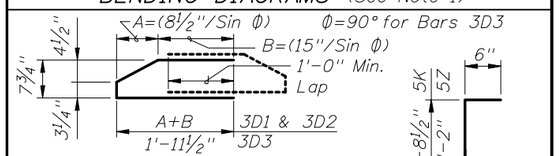
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

BILL OF REINFORCING STEEL

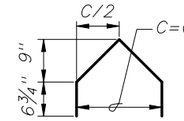
MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	8	22'-0"
C1	9, 10 & 11	3	14 (End 1)	Varies
C2	9, 10 & 11	3	14 (End 2)	Varies
D1	9, 10, 11 & 14	3	28 (End 1)	Varies
D2	9, 10, 11 & 14	3	28 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	5'-8"
L	3 & 4	4	22	4'-10"
M1	9 & 10	4	12 (End 1)	Varies
M2	9 & 10	4	12 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	⅜" ℄ Strand	4	DIM L+5"
Y	9 & 11	5	12	4'-0"
Z	2, 9, 11 & 13	5	10	5'-2"

BENDING DIAGRAMS (See Note 1)

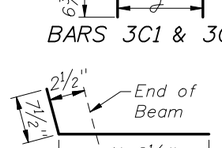


BARS 3D1, 3D2 & 3D3

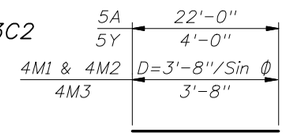
BARS 5K & 5Z



BARS 3C1 & 3C2

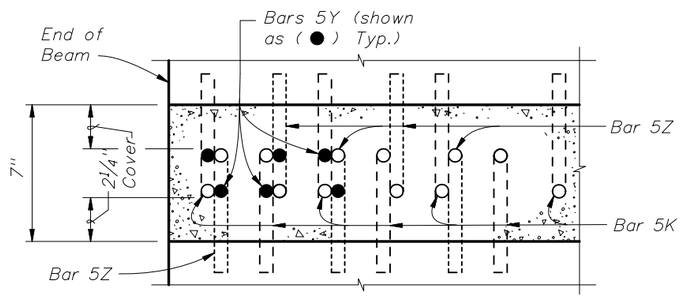


BARS 4L

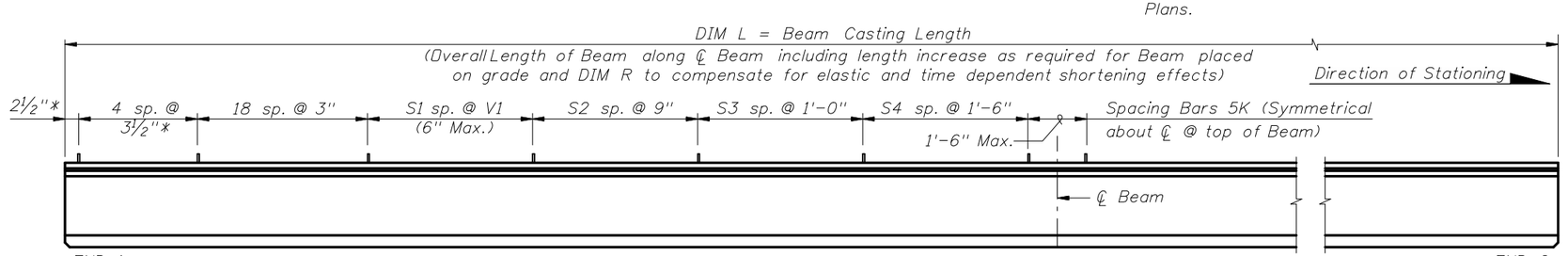


BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:
A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



ELEVATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

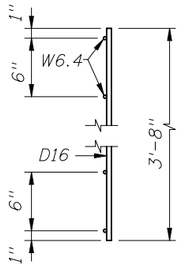
FLORIDA-I 54 BEAM - STANDARD DETAILS

Interim Date 07/01/09

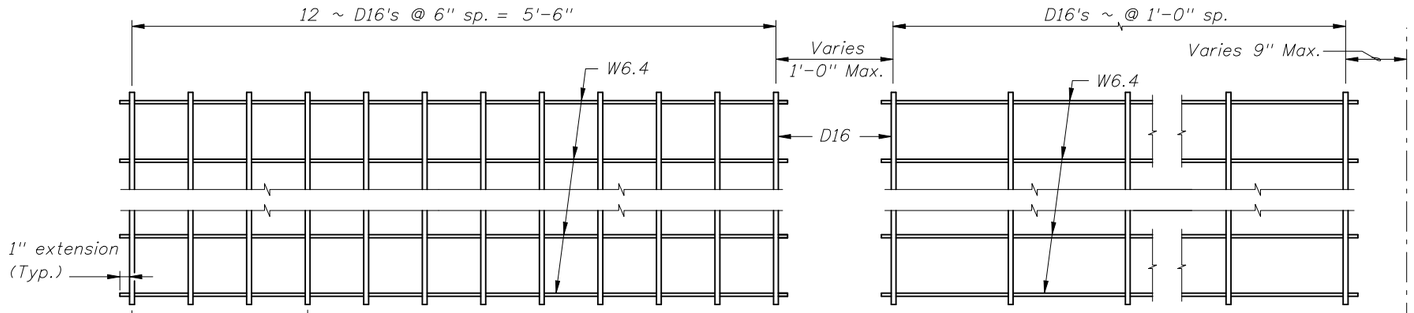
Sheet No. 1 of 2

Index No. 20054

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

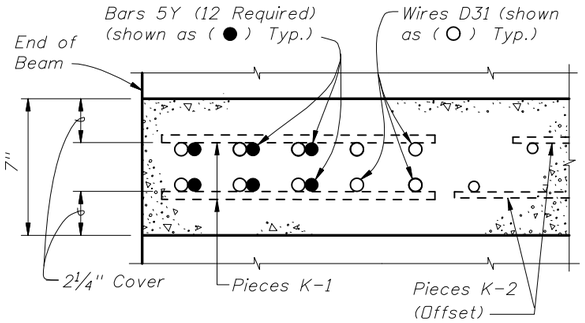


PIECES M
END VIEW

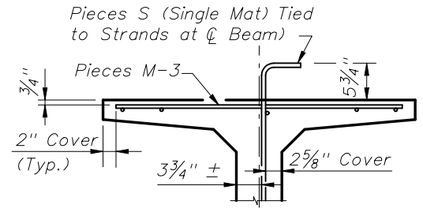


PLAN VIEW
PIECE M-1
(2 Required)

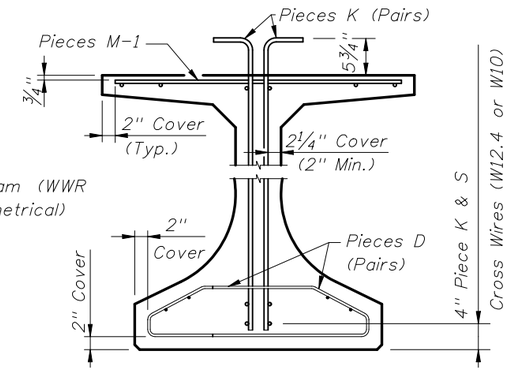
PLAN VIEW
PIECE M-3
(2 Required)



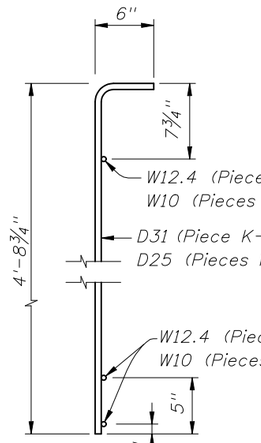
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



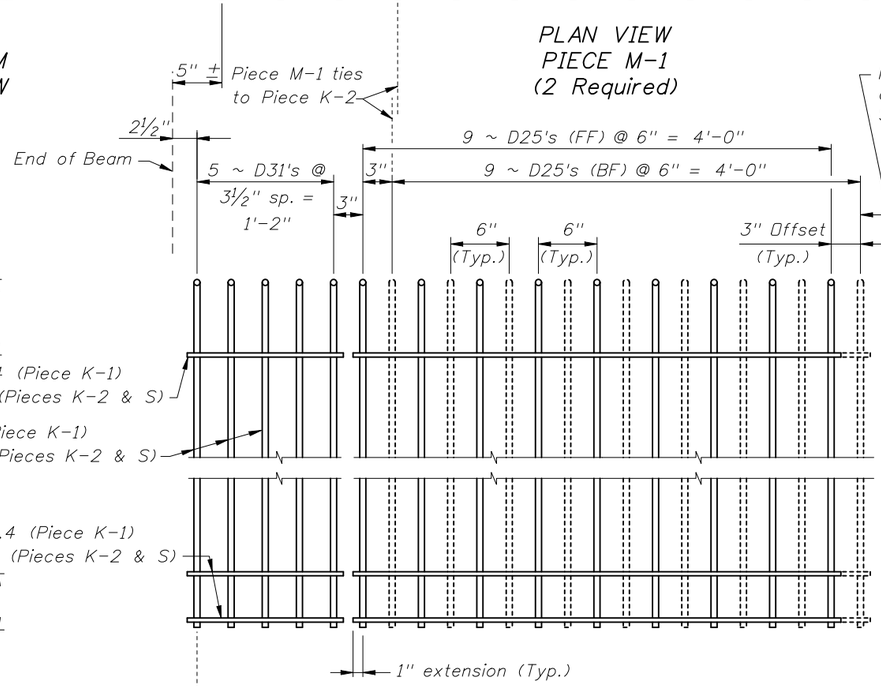
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands not Shown for Clarity)



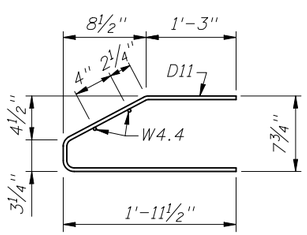
PIECES K & S
END VIEW



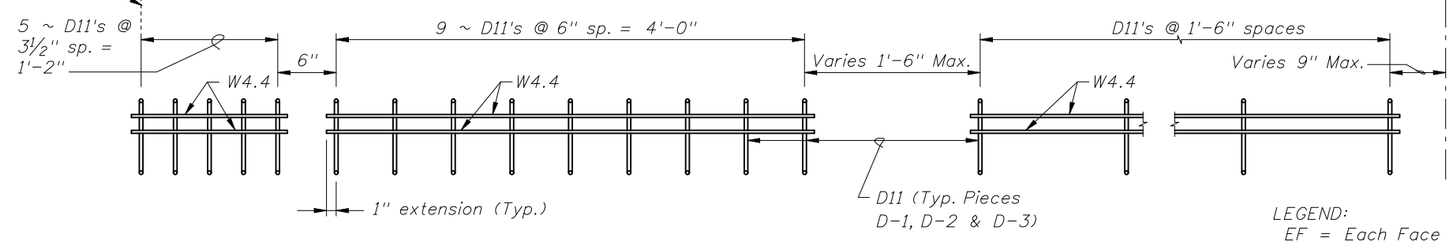
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required) ~ 2 Pairs)

PIECE D-2
(4 Required) ~ 2 Pairs)

PIECE D-3
(4 Required) ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

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FLORIDA-I 54 BEAM - STANDARD DETAILS

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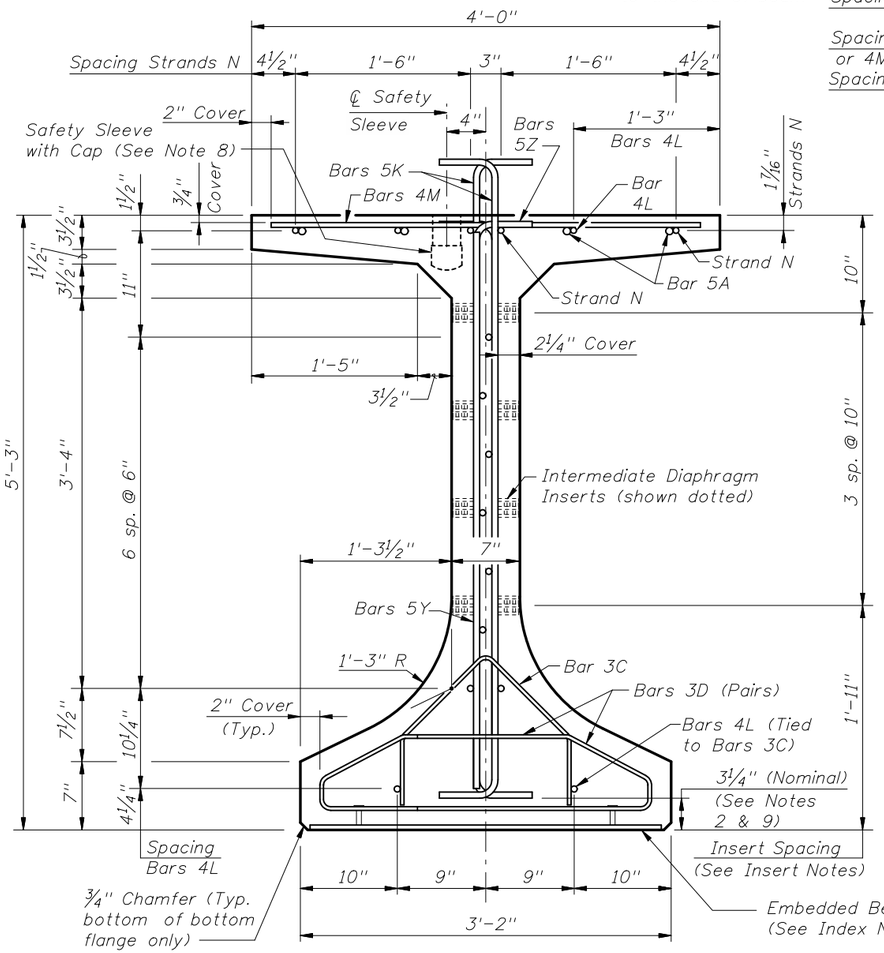
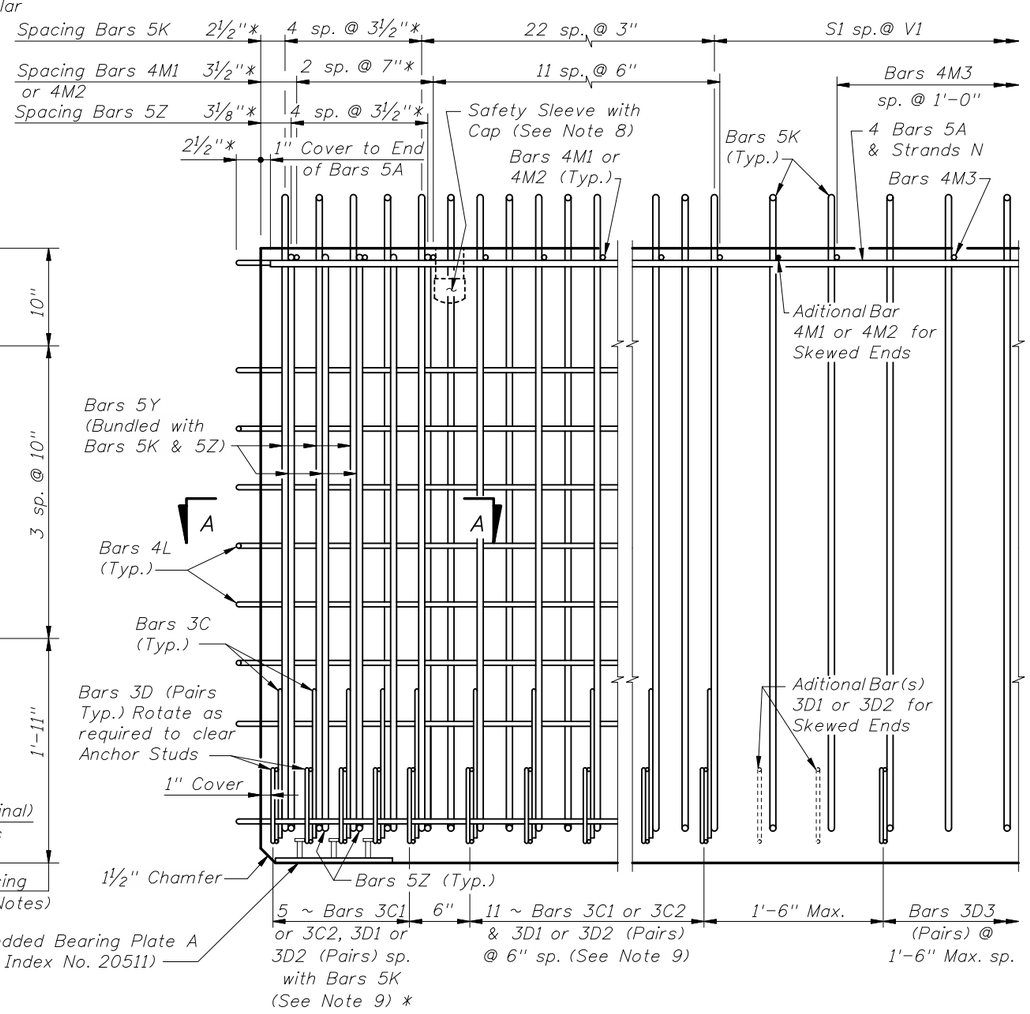
Index No. 20054

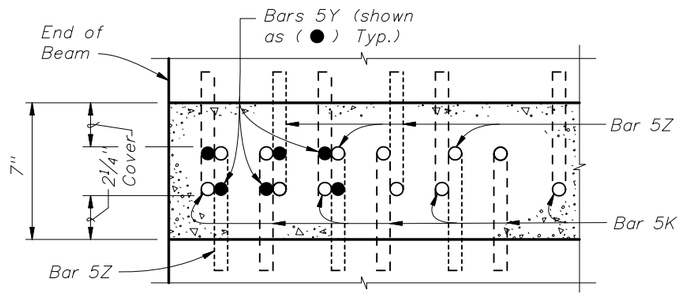
* These dimensions are measured perpendicular to the end of beam



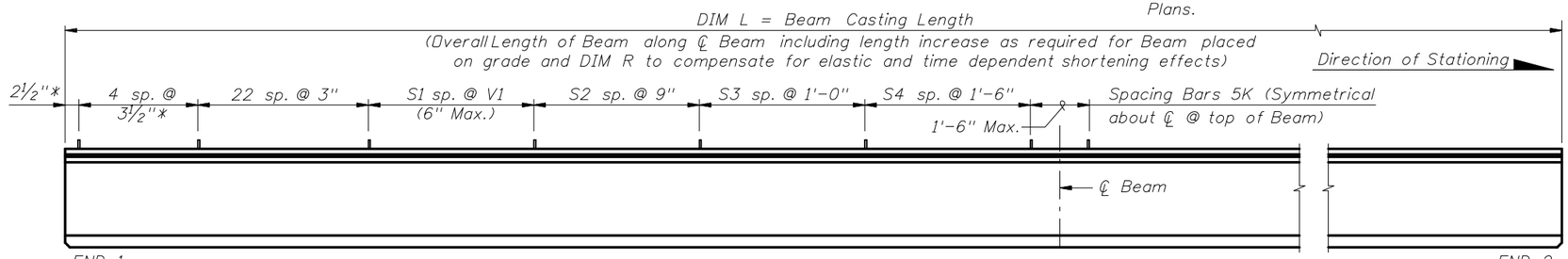
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



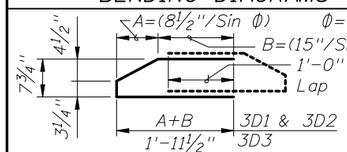
ELEVATION

CONVENTIONAL REINFORCING BAR BENDING DETAILS

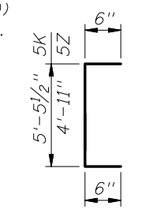
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	8	24'-0"
C1	9, 10 & 11	3	16 (End 1)	Varies
C2	9, 10 & 11	3	16 (End 2)	Varies
D1	9, 10, 11 & 14	3	32 (End 1)	Varies
D2	9, 10, 11 & 14	3	32 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	6'-5"
L	3 & 4	4	24	4'-10"
M1	9 & 10	4	14 (End 1)	Varies
M2	9 & 10	4	14 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	⅜" ℄ Strand	4	DIM L+5"
Y	9 & 11	5	12	4'-9"
Z	2, 9, 11 & 13	5	10	5'-11"

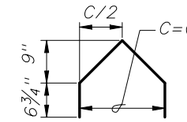
BENDING DIAGRAMS (See Note 1)



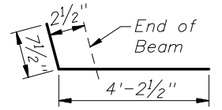
BARS 3D1, 3D2 & 3D3



BARS 5K & 5Z



BARS 3C1 & 3C2



BARS 4L

5A, 5Y	24'-0" / 4'-9"
4M1 & 4M2, 4M3	D=3'-8"/Sin ℄ / 3'-8"

BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:

A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

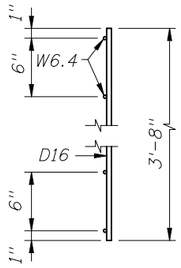
2008 Interim Design Standard

FLORIDA-I 63 BEAM - STANDARD DETAILS

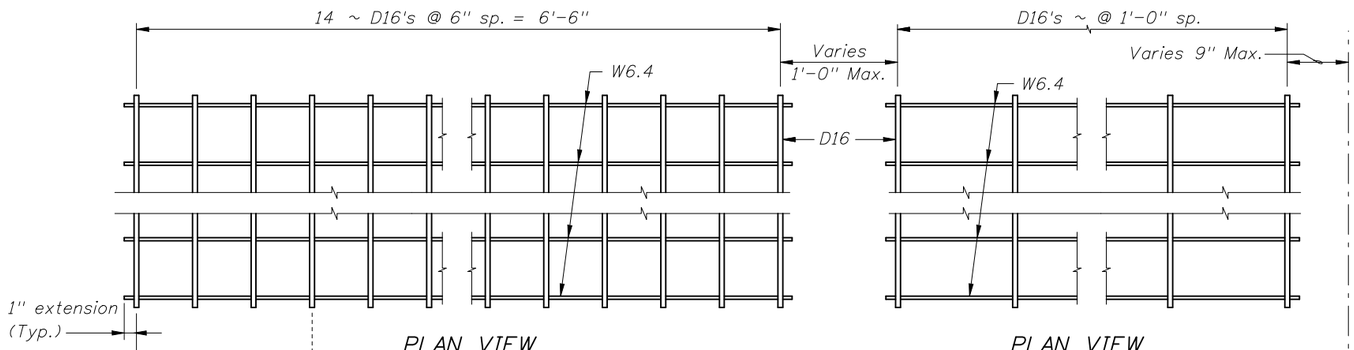
Interim Date 07/01/09

Index No. 20063

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

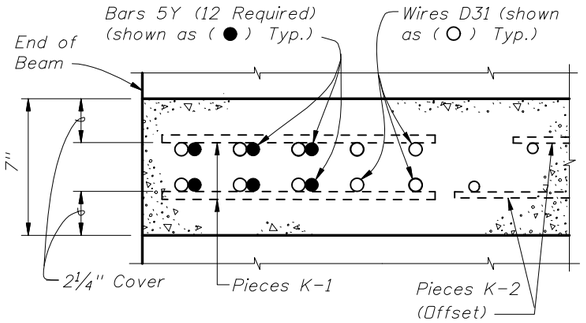


PIECES M
END VIEW

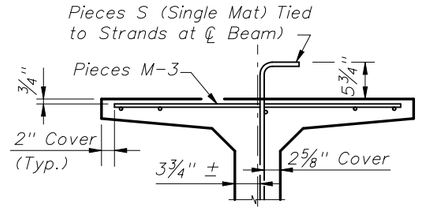


PLAN VIEW
PIECE M-1
(2 Required)

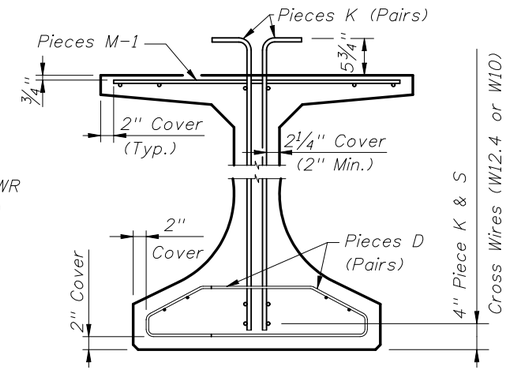
PLAN VIEW
PIECE M-3
(2 Required)



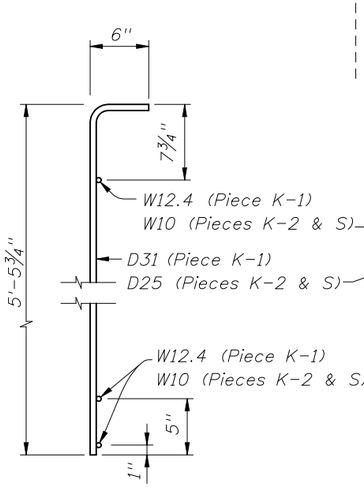
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



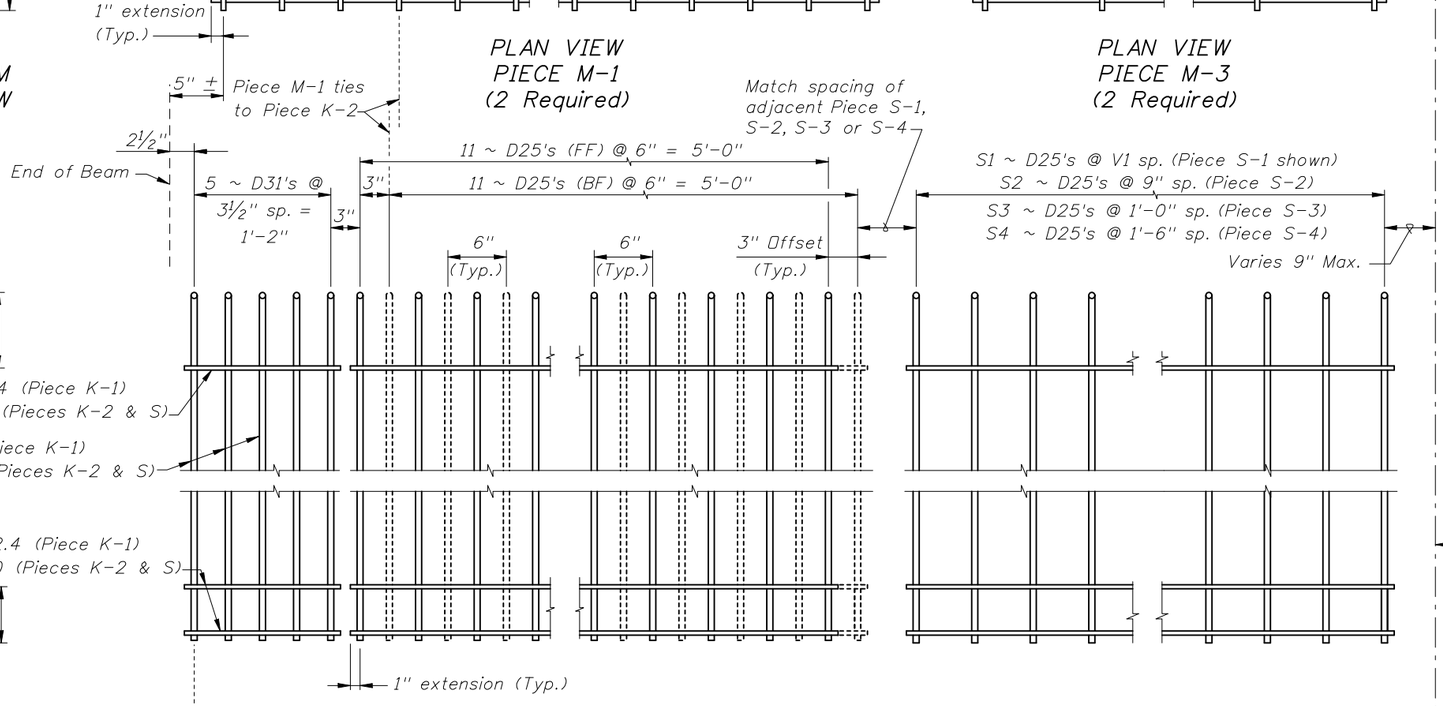
PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands not Shown for Clarity)



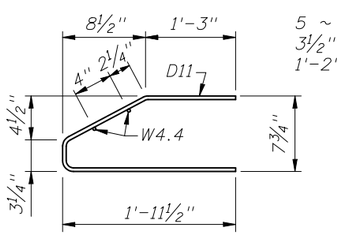
PIECES K & S
END VIEW



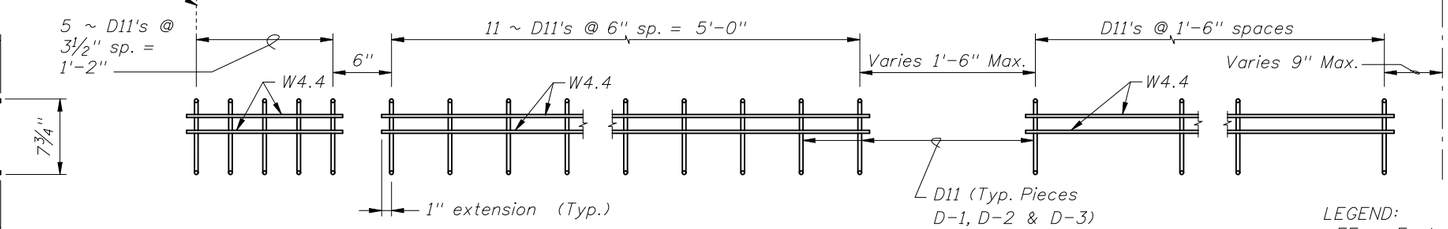
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 5A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

FLORIDA-I 63 BEAM - STANDARD DETAILS

Interim Date 07/01/09

Sheet No. 2 of 2

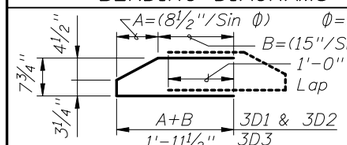
Index No. 20063

CONVENTIONAL REINFORCING BAR BENDING DETAILS

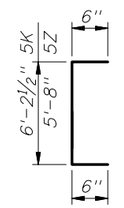
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	6	8	26'-0"
C1	9, 10 & 11	3	19 (End 1)	Varies
C2	9, 10 & 11	3	19 (End 2)	Varies
D1	9, 10, 11 & 14	3	38 (End 1)	Varies
D2	9, 10, 11 & 14	3	38 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	7'-2"
L	3 & 4	4	28	4'-10"
M1	9 & 10	4	17 (End 1)	Varies
M2	9 & 10	4	17 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	3/8" ϕ Strand	4	DIM L+5"
Y	9 & 11	5	16	5'-6"
Z	2, 9, 11 & 13	5	12	6'-8"

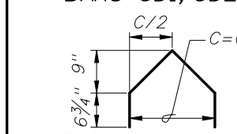
BENDING DIAGRAMS (See Note 1)



BARS 3D1, 3D2 & 3D3

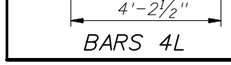


BARS 5K & 5Z



BARS 3C1 & 3C2

5A	26'-0"
5Y	5'-6"
4M1 & 4M2	D=3'-8"/Sin ϕ
4M3	3'-8"



BARS 4L

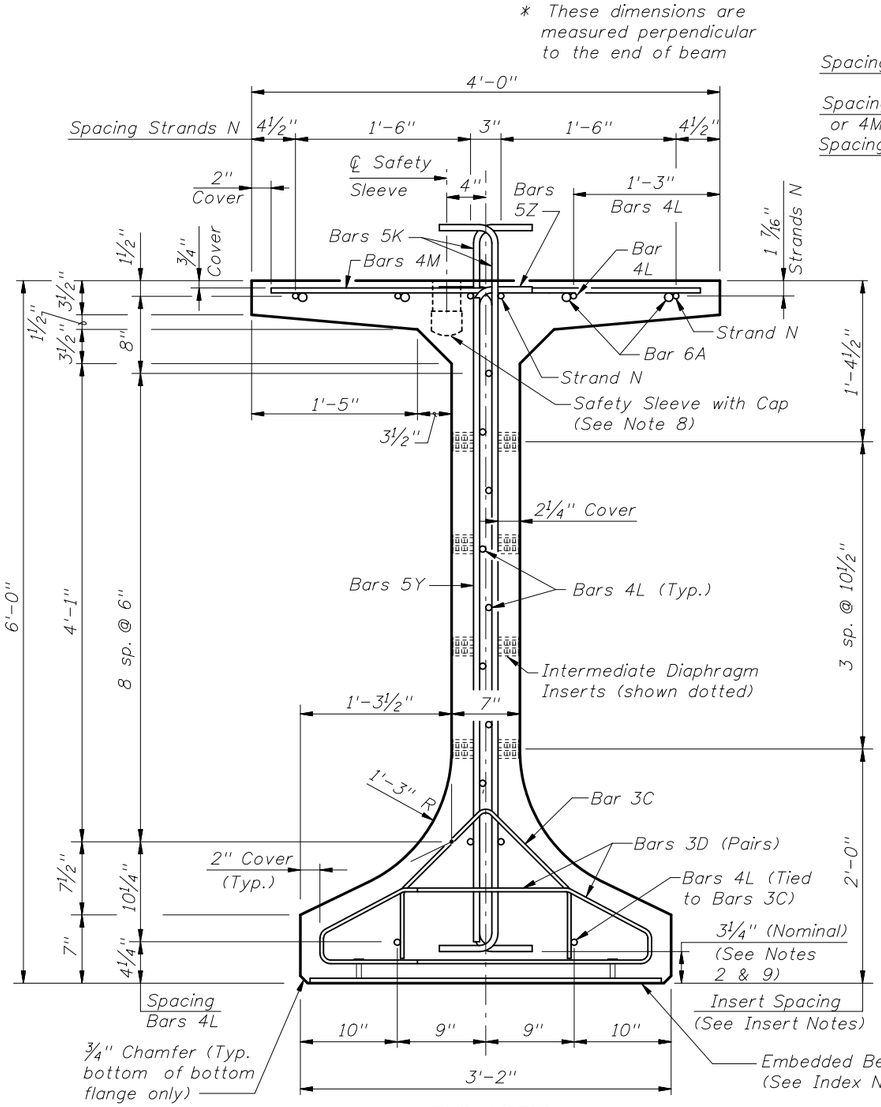
BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:

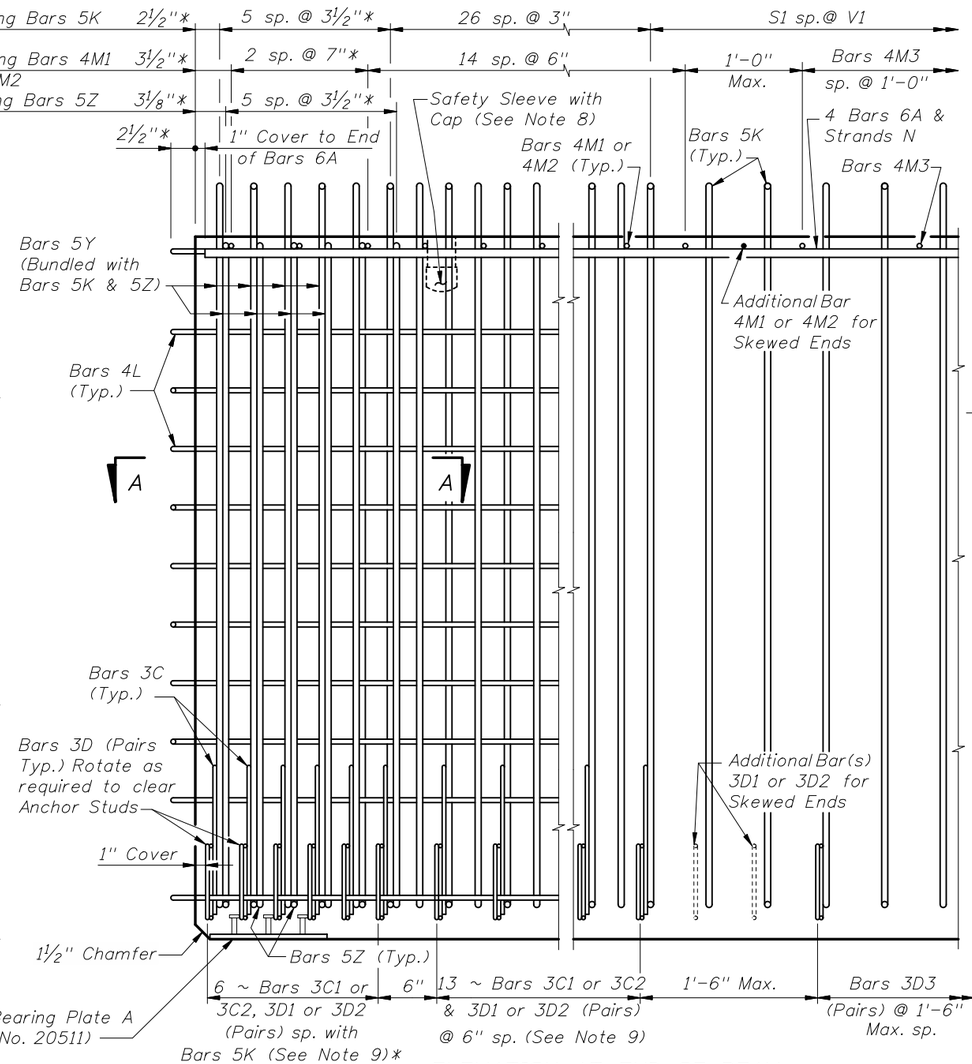
A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.

B. For referenced notes, see Index No. 20010.

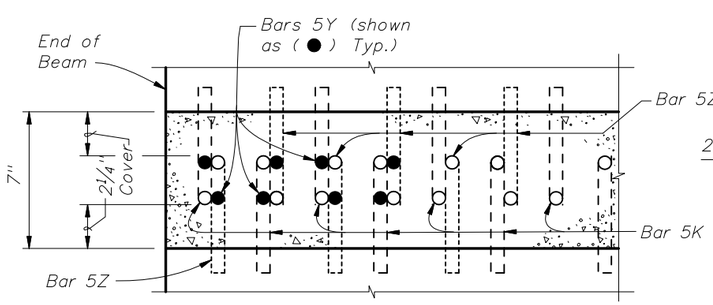
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.



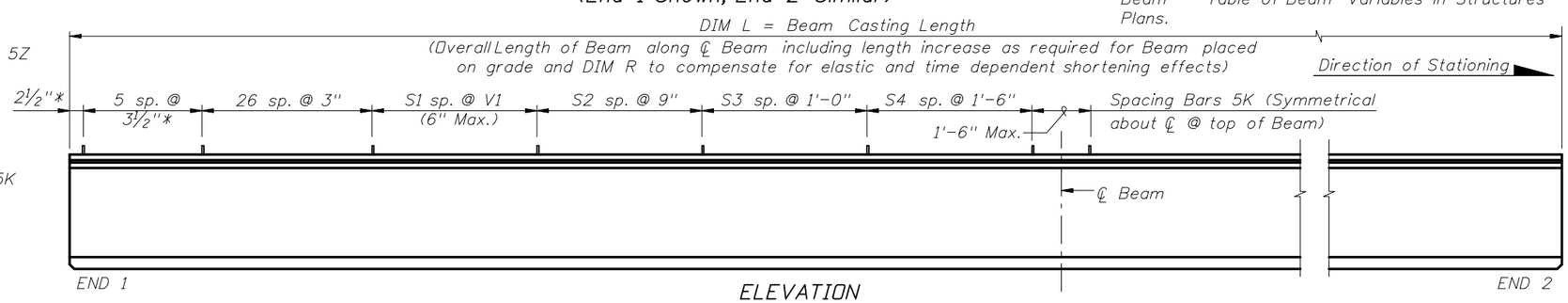
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



ELEVATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

2008 Interim Design Standard

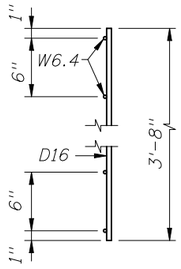
FLORIDA-I 72 BEAM - STANDARD DETAILS

Interim Date 07/01/09

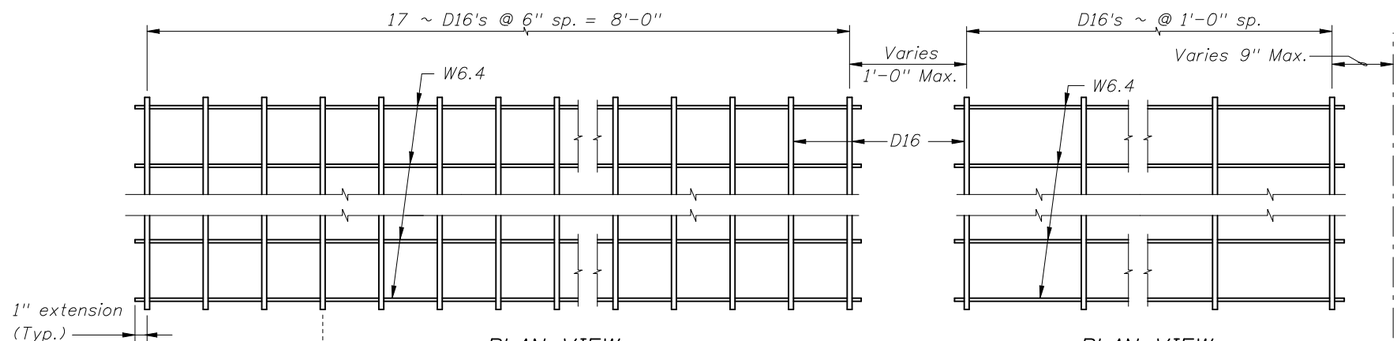
Sheet No. 1 of 2

Index No. 20072

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

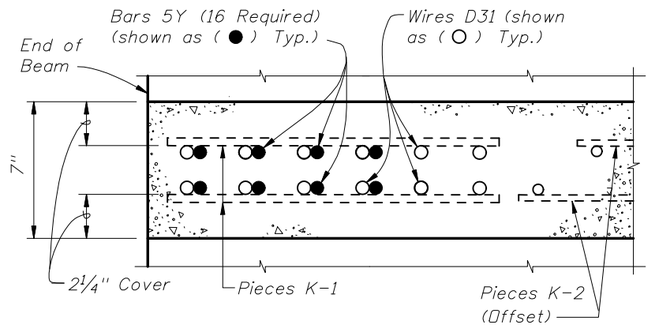


PIECES M
END VIEW

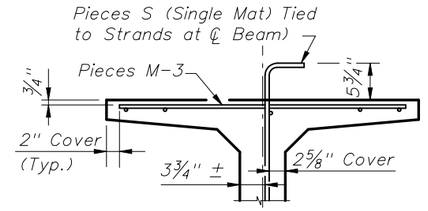


PLAN VIEW
PIECE M-1
(2 Required)

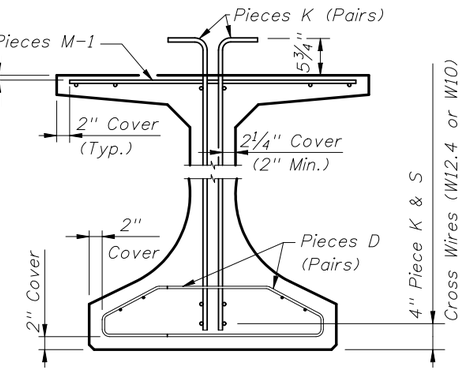
PLAN VIEW
PIECE M-3
(2 Required)



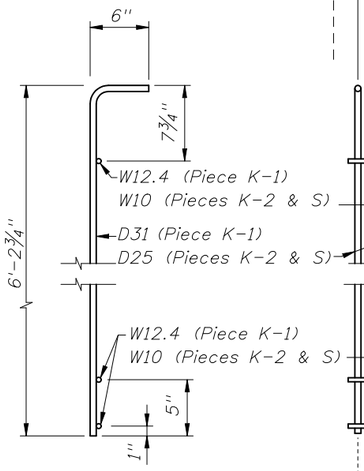
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands not Shown for Clarity)

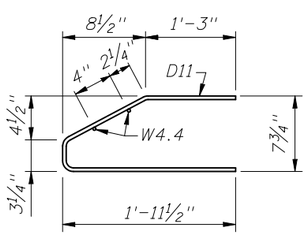


PIECES K & S
END VIEW

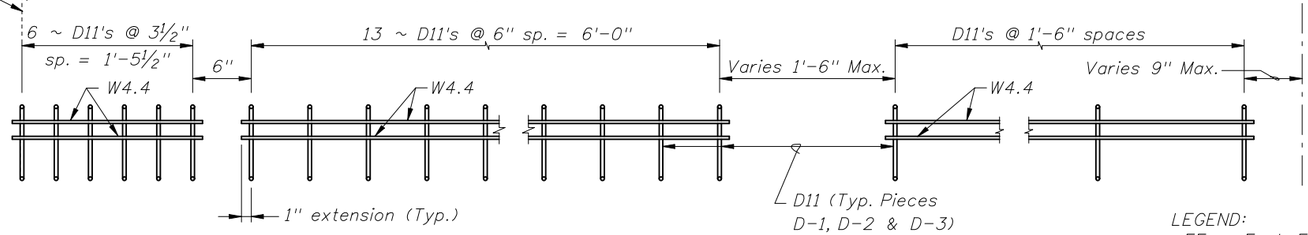
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

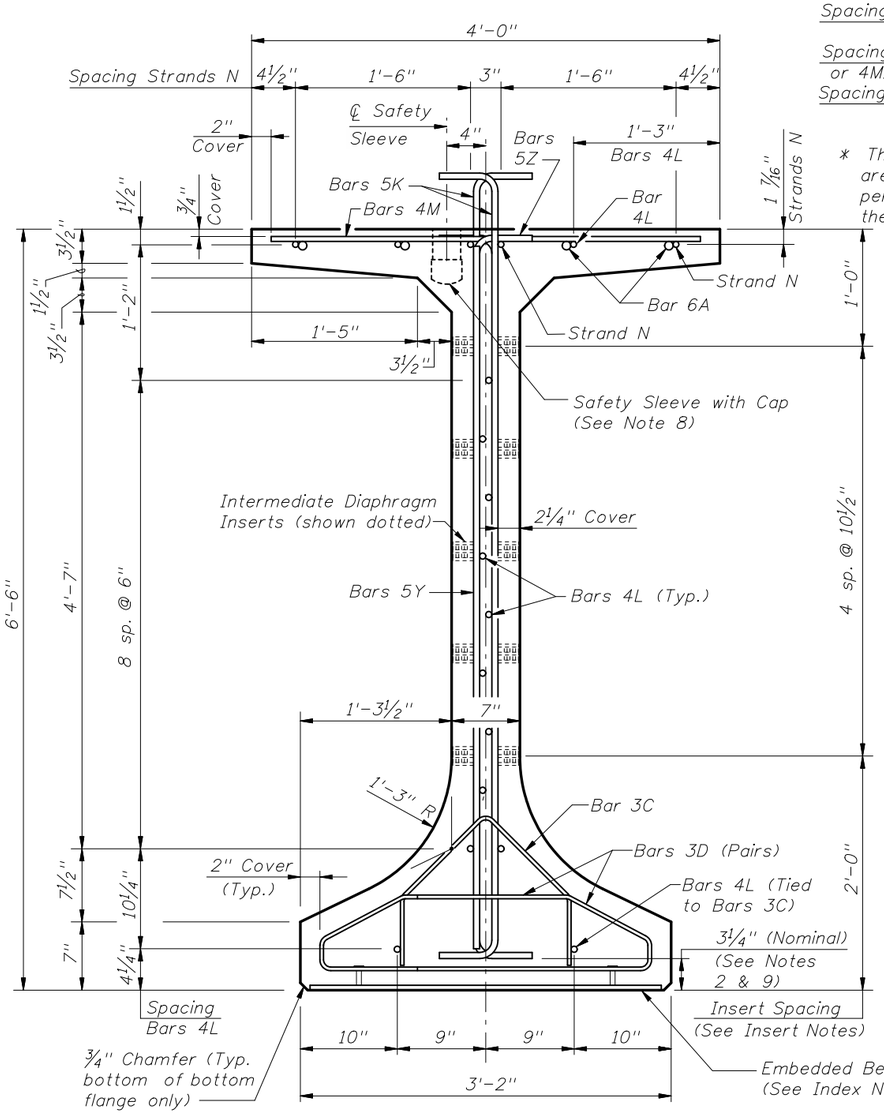
2008 Interim Design Standard

FLORIDA-I 72 BEAM - STANDARD DETAILS

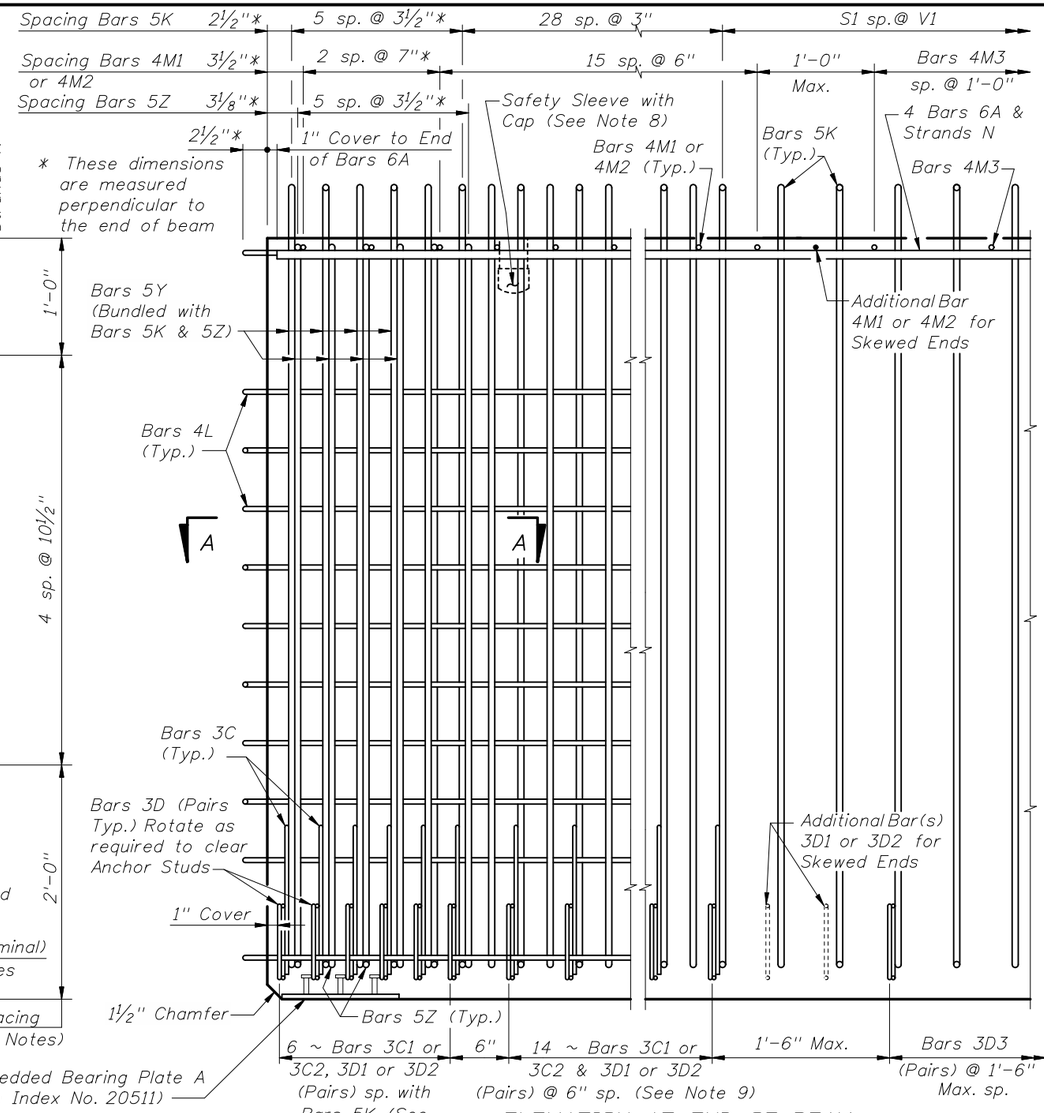
Interim Date 07/01/09

Sheet No. 2 of 2

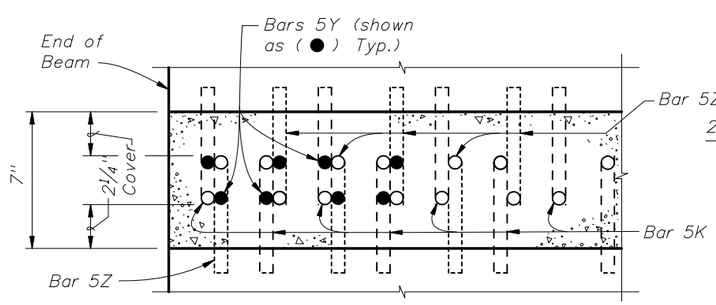
Index No. 20072



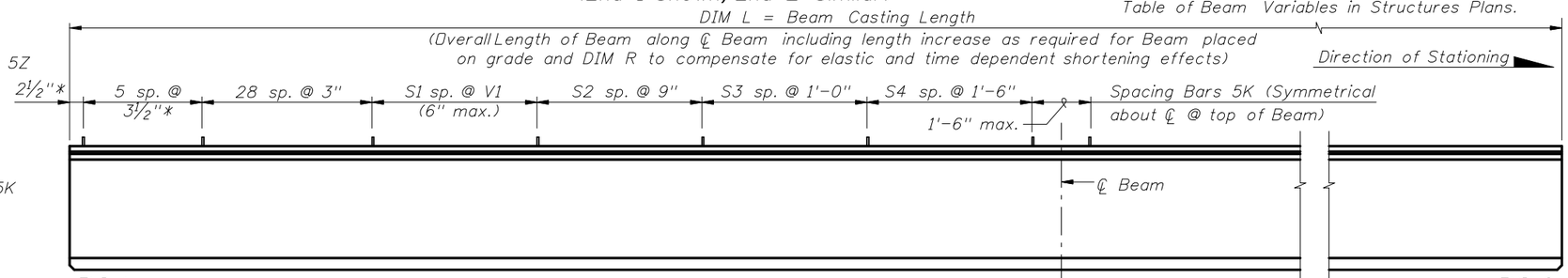
END VIEW



ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)



SECTION A-A FOR CONVENTIONAL REINFORCING
(Showing Bars 5K, 5Y & 5Z Only)



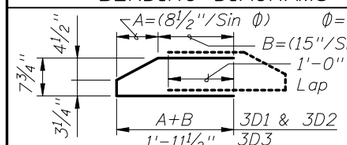
ELEVATION

CONVENTIONAL REINFORCING BAR BENDING DETAILS

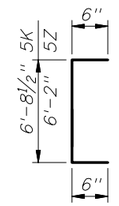
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	6	8	28'-0"
C1	9, 10 & 11	3	20 (End 1)	Varies
C2	9, 10 & 11	3	20 (End 2)	Varies
D1	9, 10, 11 & 14	3	40 (End 1)	Varies
D2	9, 10, 11 & 14	3	40 (End 2)	Varies
D3	9 & 14	3	See Table	4'-3"
K	2, 9, 11 & 13	5	See Table	7'-8"
L	3 & 4	4	28	4'-10"
M1	9 & 10	4	18 (End 1)	Varies
M2	9 & 10	4	18 (End 2)	Varies
M3	9	4	See Table	3'-8"
N	5	⅜" ℄ Strand	4	DIM L+5"
Y	9 & 11	5	16	6'-0"
Z	2, 9, 11 & 13	5	12	7'-2"

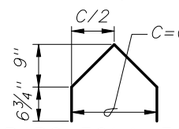
BENDING DIAGRAMS (See Note 1)



BARS 3D1, 3D2 & 3D3



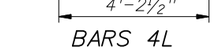
BARS 5K & 5Z



BARS 3C1 & 3C2

5A	28'-0"
5Y	6'-0"
4M1 & 4M2	3'-8"/Sin ℄
4M3	3'-8"

BARS 5A, 4M1, 4M2, 4M3 & 5Y



BARS 4L

NOTES:

A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of Beam Variables in Structures Plans.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

2008 Interim Design Standard

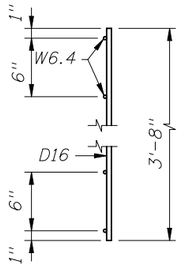
FLORIDA-I 78 BEAM - STANDARD DETAILS

Interim Date 07/01/09

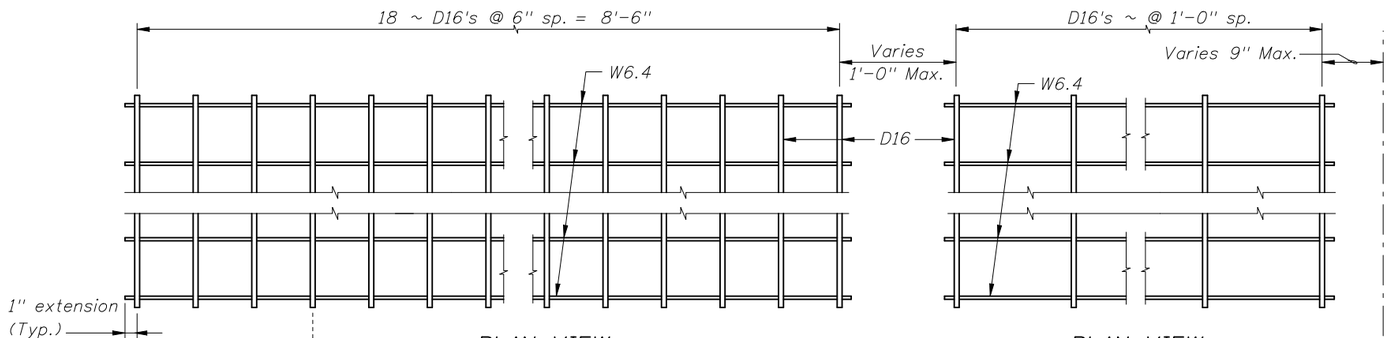
Sheet No. 1 of 2

Index No. 20078

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

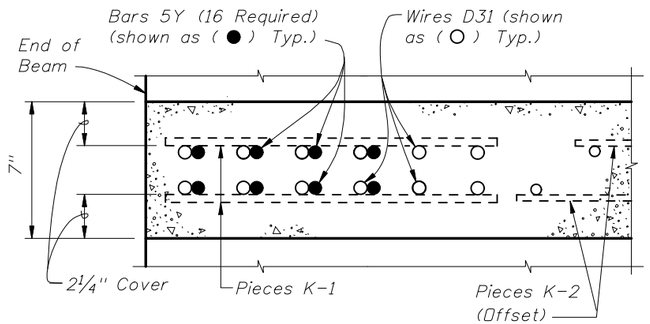


PIECES M
END VIEW

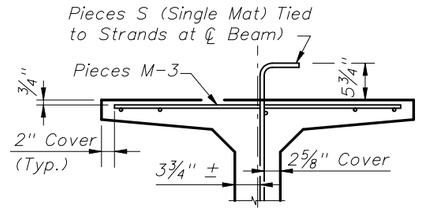


PLAN VIEW
PIECE M-1
(2 Required)

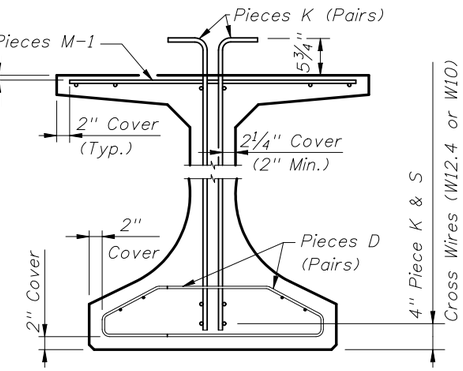
PLAN VIEW
PIECE M-3
(2 Required)



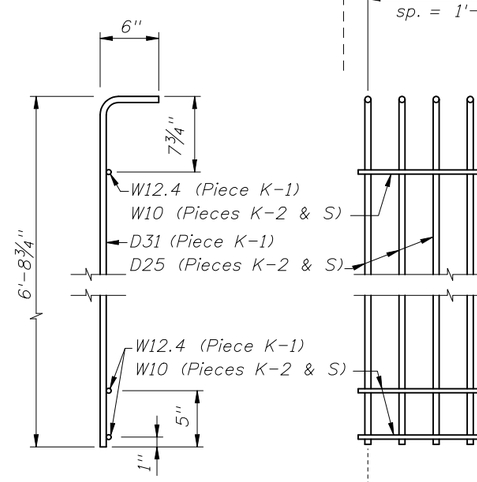
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



PARTIAL SECTION AT CENTER BEAM



PARTIAL BEAM END VIEW
(Conventional Reinforcing Bars A, C, L, Y
and Strands N not Shown for Clarity)

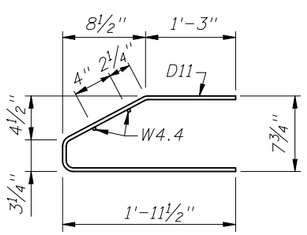


PIECES K & S
END VIEW

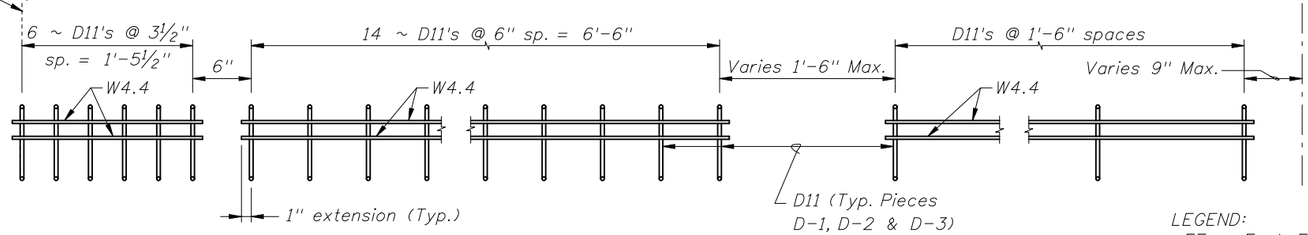
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

PIECE S-1, S-2, S-3 or S-4
(2 Required Each Piece)



PIECES D
END VIEW



PIECE D-1
(4 Required ~ 2 Pairs)

PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face

NOTES:

a. See Sheet 1 for placement details & Table of Beam Variables in Structures Plans for variables S1, S2, S3, S4 & V1.
b. Place Conventional Reinforcement Bars 6A, 3C & 4L as shown on Sheet 1. Place additional Bars 5Y as shown in Section A-A for Welded Wire Reinforcement. Bars 5Z will not be used with the WWR Option.
c. Pieces may be fabricated in multiple length sections.
d. For beams with skewed end conditions, Pieces D-1, D-2 & M-1 shall not be used; Conventional Reinforcement Bars D1, D2, C1, C2, M1 & M2 shall be used. See Index No. 20010 Skew Details and Note 9 for placement details. Shift Pieces K & Bars 5Y to accommodate skewed end conditions and align with Bars C and D.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RMS	New Design Standard			

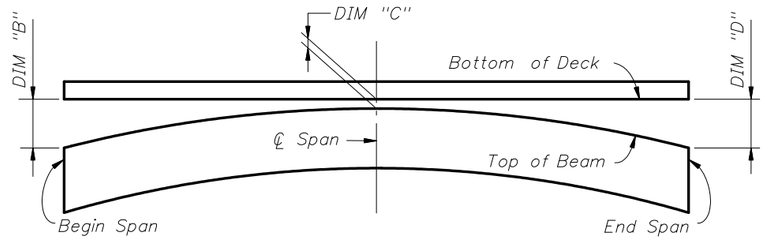
2008 Interim Design Standard

FLORIDA-I 78 BEAM - STANDARD DETAILS

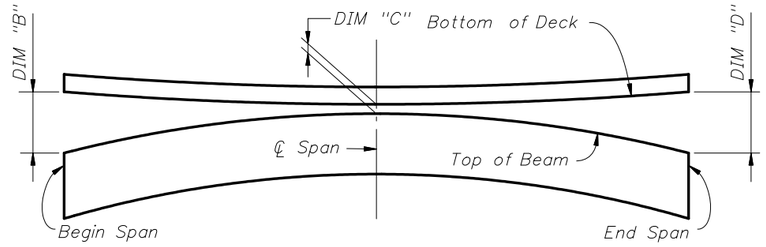
Interim Date 07/01/09

Sheet No. 2 of 2

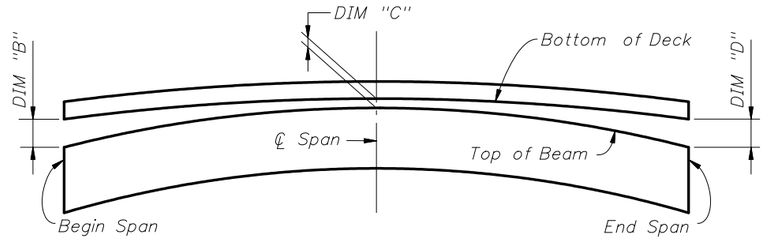
Index No. 20078



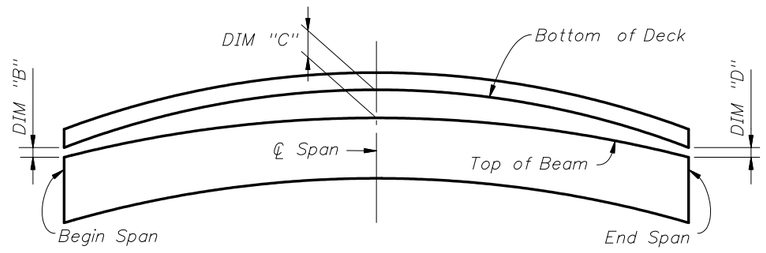
BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ BEAM) (CASE 1)



BUILD-UP DIAGRAM FOR SAG VERTICAL CURVE SPANS
(ALONG ℄ BEAM) (CASE 2)



BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT ℄ SPAN
(ALONG ℄ BEAM) (CASE 3)

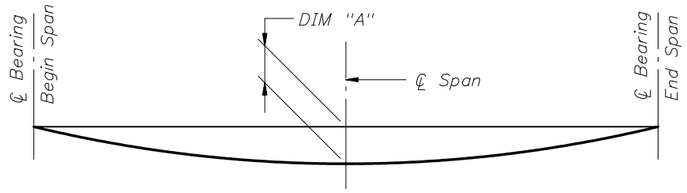


BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT BEGIN OR END SPAN
(ALONG ℄ BEAM) (CASE 4)

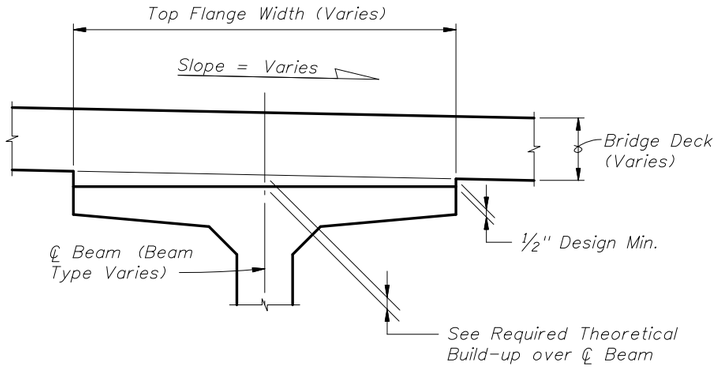
BEAM CAMBER AND BUILD-UP NOTES:

The build-up values given in the table are based on theoretical beam cambers. The Contractor shall monitor beam cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than +/- ½" from the theoretical "Net Beam Camber @ 120 Days" shown in the Data Table, obtain approval from the Engineer to modify the build-up dimensions as required. When the measured beam cambers create a conflict with the bottom mat of deck steel, notify the Engineer a minimum of 21 days prior to casting.

DIM "A" includes the weight of the Stay-In-Place Formwork.



DEAD LOAD DEFLECTION DIAGRAM



BUILD-UP OVER BEAMS

INSTRUCTIONS TO DESIGNER:

Although not shown here in the Diagrams or Notes, the effect of Horizontal Curvature, when present, needs to be considered for the Build-up Calculations.

NOTE:
Work this Index with the Build-up and Deflection Data Table for AASHTO, Bulb-T and Florida-I Beams in Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	Added FLORIDA-I BEAMS to the Standard Title Block and Note. Changed the beam section to Florida-I Beam in the BUILD UP OVER BEAMS detail. Changed third sentence in BEAM CAMBER AND BUILD-UP NOTES.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

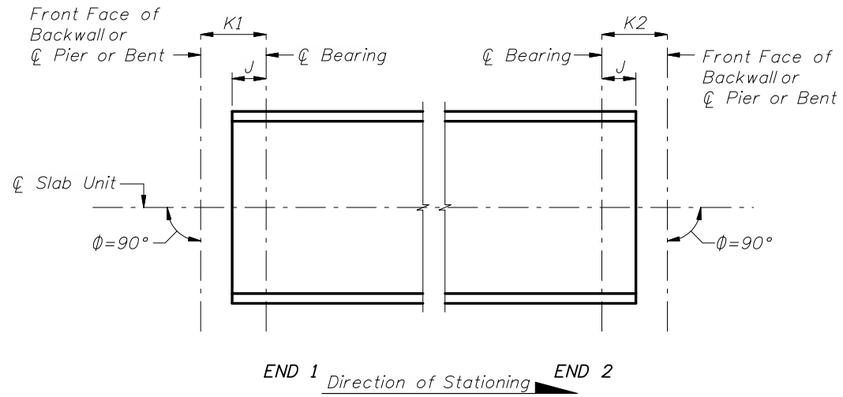
2008 Interim Design Standard

BUILD-UP & DEFLECTION DATA FOR AASHTO, BULB-T AND FLORIDA-I BEAMS

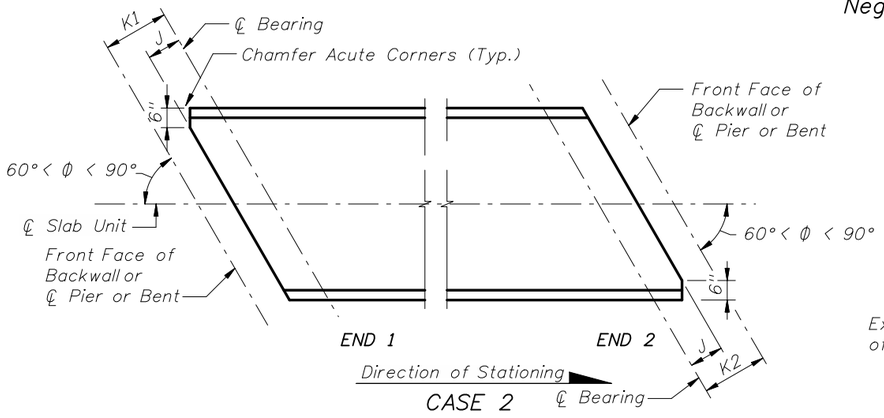
Interim Date 07/01/09

Sheet No. 1 of 1

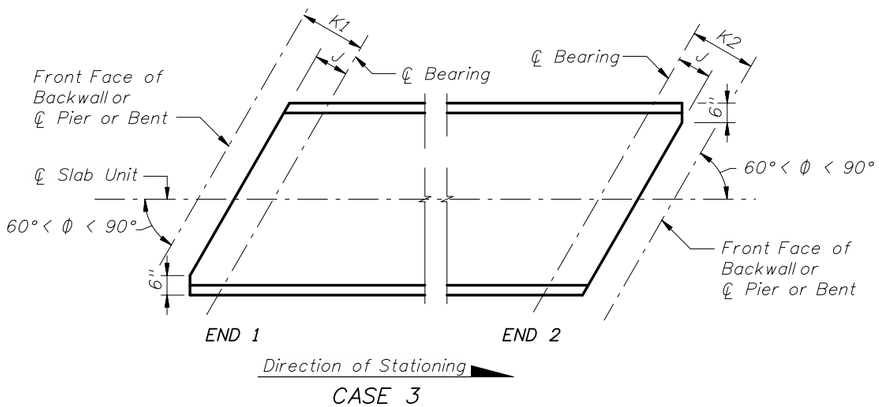
Index No. 20199



CASE 1

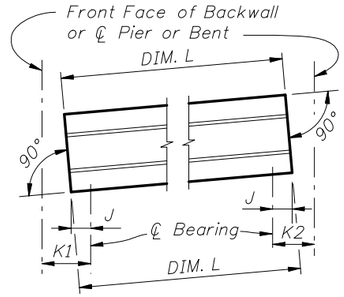


CASE 2

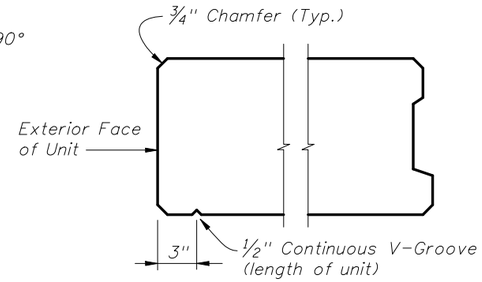


CASE 3

SCHEMATIC PLAN VIEWS AT SLAB ENDS



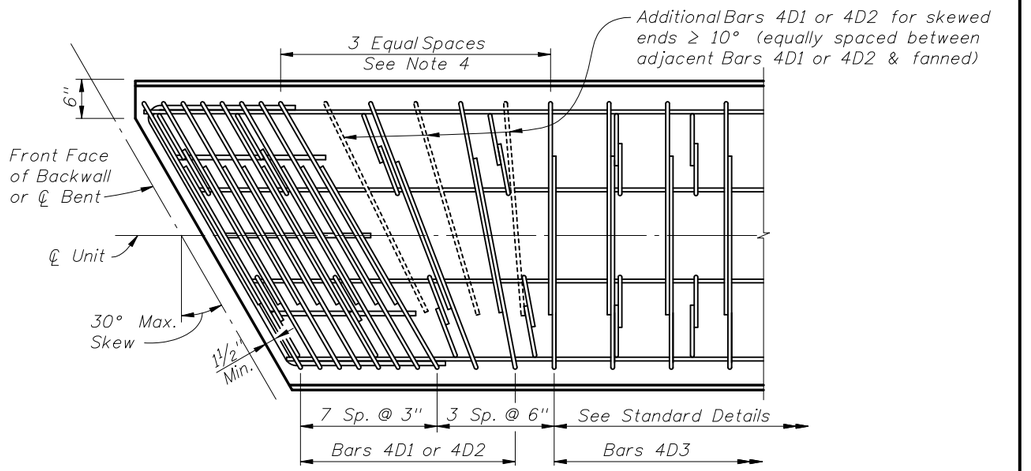
SCHEMATIC SIDE ELEVATION OF SLAB UNITS
(Positive Grade shown, Negative Grade or Horizontal Grade similar)



V-GROOVE DETAIL
(Exterior Units)

GENERAL NOTES

1. All bar dimensions are out-to-out.
2. Strands N shall be ASTM A416, Grade 250 or 270, ⅜" ϕ or larger, stressed to 10,000 lbs. each.
3. Unless otherwise noted, the minimum concrete cover for reinforcing steel shall be 2".
4. For slab units with skewed end conditions, the end reinforcement, defined as Bars 4D1, 4D2, 4K and Y within the limits of the first 2'-0", shall be placed parallel to the skewed ends of the slab unit. The next two sets of Bars 4D1 or 4D2 & 4K shall be fanned to provide equal spacing. Provide additional Bars 4D1 or 4D2 for end skews ≥ 10°. See "SKEWED END TREATMENT DETAIL".
5. Bars 4D1, 4D2, 4D3 & 4K shall be placed and tied to Strands N and a fully bonded strand in the bottom row. See "STRAND PATTERNS".
6. At the Contractor's option, deformed welded wire reinforcement may be used in lieu of Bars 4D and 4K. Submit details to the Engineer for approval.
7. For referenced Dimensions, Angles and Case Numbers, see Table of Variables in Structures Plans.
8. Top surface of the slab units shall be raked transversely to provide a roughened surface with ¼" amplitude. For proper bonding of the deck overlay, clean the top surface of the Prestressed Slab Units and thoroughly soak with potable water for a minimum of 4 hrs. then remove all excess surface water immediately prior to placement of the overlay.
9. Cut strands 1" beyond the face of the slab unit.
10. Bars 4D1, 5Y1 & 6Y1 correspond to END 1, and 4D2, 5Y2 & 6Y2 correspond to END 2.



SKEWED END TREATMENT DETAIL

INSTRUCTIONS TO DESIGNER:

1. To limit horizontal splitting forces, the maximum prestress force at the slab unit ends from fully bonded strands must be limited to the following:

Slab Unit Type	Max. Bonded Prestress Force	Index No.	Last Revision Date
12" or 15" X Custom Width	910 Kips	20353 & 20363	01/01/09 or later
12" or 15" X 48"	1110 Kips	20354 & 20364	01/01/09 or later
12" or 15" X 60"	1440 Kips	20355 & 20365	01/01/09 or later

No losses shall be applied when calculating the Bonded Prestress Force. The reinforcing in the ends of the slabs must not be modified without the approval of the State Structures Design Engineer.

2. Use the same thickness of slab units within each span.
3. If the cross slope of the slab exceeds 3%, provide a project specific keeper block design for the low side of the slabs to prevent sliding. See "KEEPER BLOCK DETAILS" on Sheet 3.
4. If the grade of the slab exceeds 3%, provide a project specific design in the Structures Plans to prevent sliding.
5. Avoid placing slab units within the limits of superelevation transitions, because the cross slope for individual and adjacent slab units must be constant from begin span to end span. Slight superelevation transitions may be accommodated by increasing the slab overlay thickness across the width of the span.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Changed "SKEWED END TREATMENT DETAIL", "GENERAL NOTES" and "INSTRUCTIONS TO DESIGNER".			

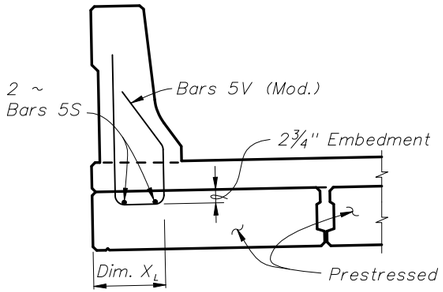
2008 Interim Design Standard

PRESTRESSED SLAB UNITS DETAILS AND NOTES

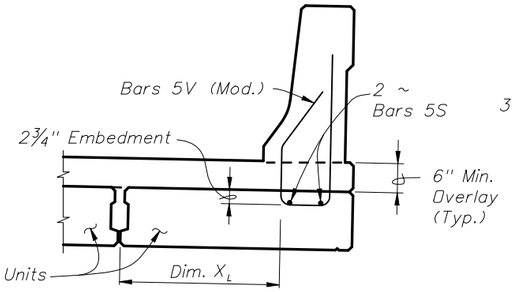
Interim Date 07/01/09

Sheet No. 1 of 3

Index No. 20350

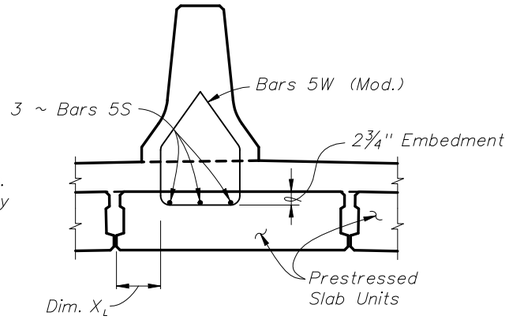


CASE "LEFT"



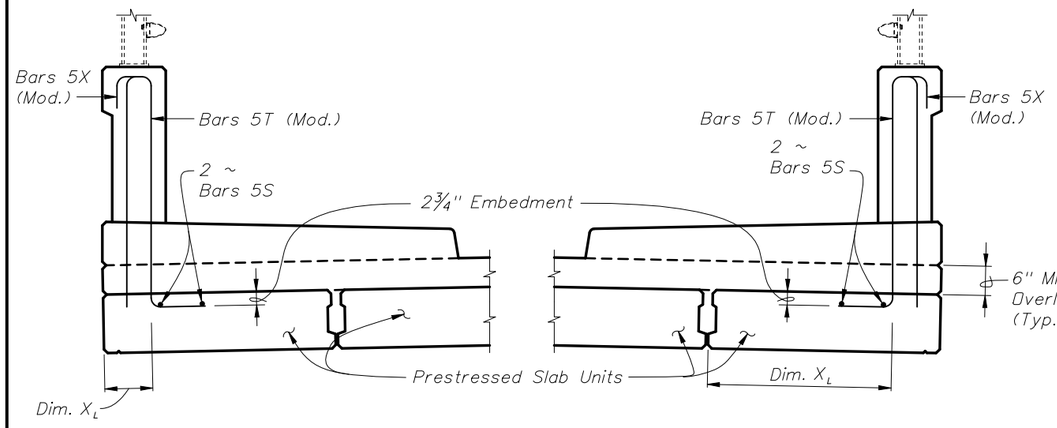
CASE "RIGHT"

F SHAPE TRAFFIC RAILING (LOOKING AHEAD STATION)
(Index No. 420 - 32" F Shape shown)
(Index No. 425 - 42" F Shape similar)
(Railing on Exterior Units shown, Railing on Interior Units similar)



CASE "INTERIOR"

TRAFFIC RAILING (MEDIAN 32" F SHAPE)
(Index No. 421)



CASE "LEFT" CASE "RIGHT"

VERTICAL SHAPE TRAFFIC RAILING (LOOKING AHEAD STATION)
(Index No. 423 - 32" Vertical Shape shown)
(Index No. 422 - 42" Vertical Shape similar)

NOTES:

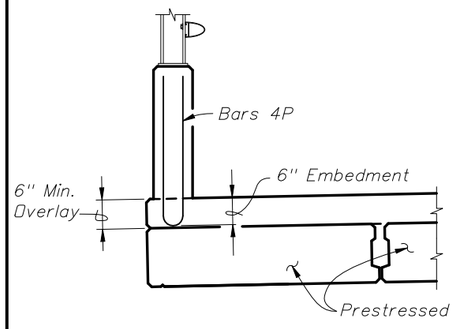
Work this sheet with the Prestressed Slab Unit - Table of Variables and Prestressed Slab Unit - Traffic Railing Reinforcement Layout Table (if required) in the Structures Plans.

Contractor shall direct the Precaster on how the Traffic Railing bars are to be placed, either vertical (plumb) or perpendicular to the cross slope to allow proper placement of the modified railing bars.

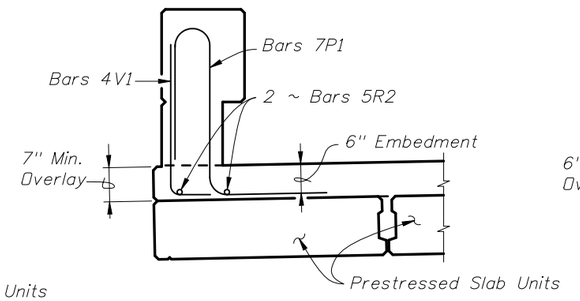
Modified Bars 5T & 5X for Index Nos. 422 & 423 shall be placed vertical (plumb).

For skewed Prestressed Slab Units, place the bottom leg of vertical railing bars parallel to transverse slab reinforcement bars at unit ends. See Partial Plan View on Sheet 3.

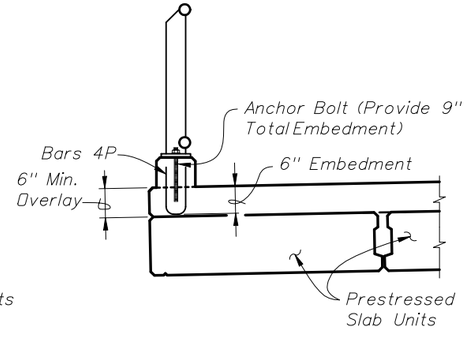
Concrete cover at top of railings may be increased up to 1" to accommodate camber of prestressed slab units.



PEDESTRIAN/BICYCLE RAILING DETAIL
(Index No. 820)

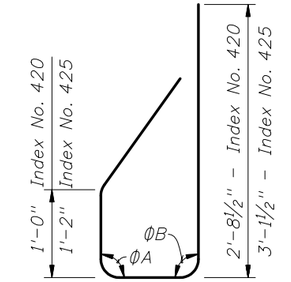


TRAFFIC RAILING - (CORRAL SHAPE)
(Index No. 424)

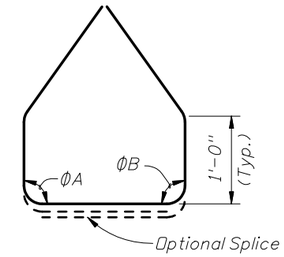


BRIDGE PEDESTRIAN/BICYCLE PICKET RAILING
(Index Nos. 851 & 861)

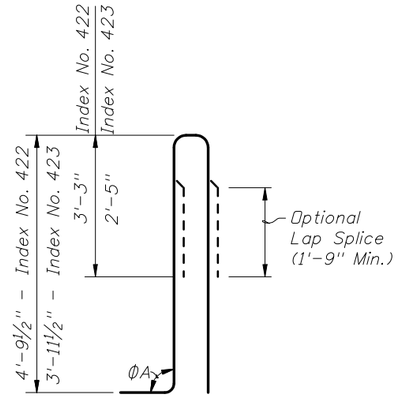
RAILING REINFORCING MODIFIED BAR LAYOUT



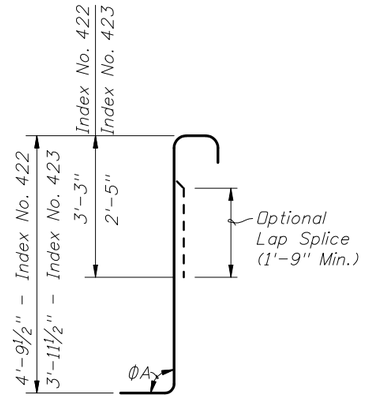
STIRRUP
BAR 5V (MOD.)
INDEX NOS. 420 OR 425



STIRRUP
BAR 5W (MOD.)
INDEX NO. 421



STIRRUP
BAR 5T (MOD.)
INDEX NOS. 422 OR 423



STIRRUP
BAR 5X (MOD.)
INDEX NOS. 422 OR 423

REINFORCING STEEL NOTES:

1. Bar dimensions shown are out to out.
2. For the other dimensions and angles ϕA and ϕB, see the referenced Index.
3. Adjust the dimension shown for Bars 5V, 5T, 5W, 5X, 4V & 7P as required when the 6" Min. Overlay is thickened to accommodate superelevation transition.
4. The 4'-9" (Index No. 422), 3'-11½" (Index No. 423) vertical dimension shown for Bars 5T and 5X is based on a 6" thick deck overlay with a 6" thick x 6' wide raised sidewalk on low side of the deck with a 2% deck cross slope and a counter 2% raised sidewalk cross slope. If the raised sidewalk thickness, width, or cross slope varies from the above amounts, adjust this dimension accordingly to achieve a 2¾" embedment (± ½") into the slab units. See Structures Plans, Superstructure and Approach Slab Sheets.
5. All reinforcing steel at the open joints shall have a 2" minimum cover.
6. Bars 5S may be continuous or spliced at the mid point of the slab unit. Bar splices for Bars 5S shall be a minimum of 2'-0".
7. Welded Wire Reinforcement is not permitted for Bars 5W (Mod.) on precast slab units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Changed "NOTES", lengths and embedment of Bars 5T, 5V, 5X & 5W. Added "Optional Lap Splice" detail to Bars 5T & 5X.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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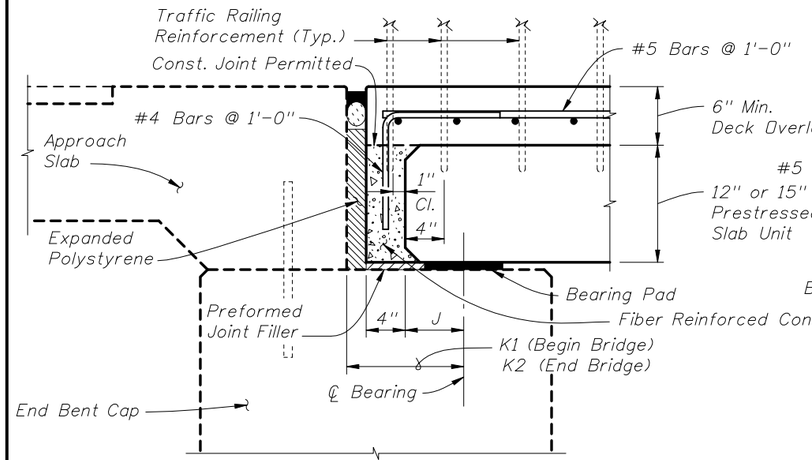
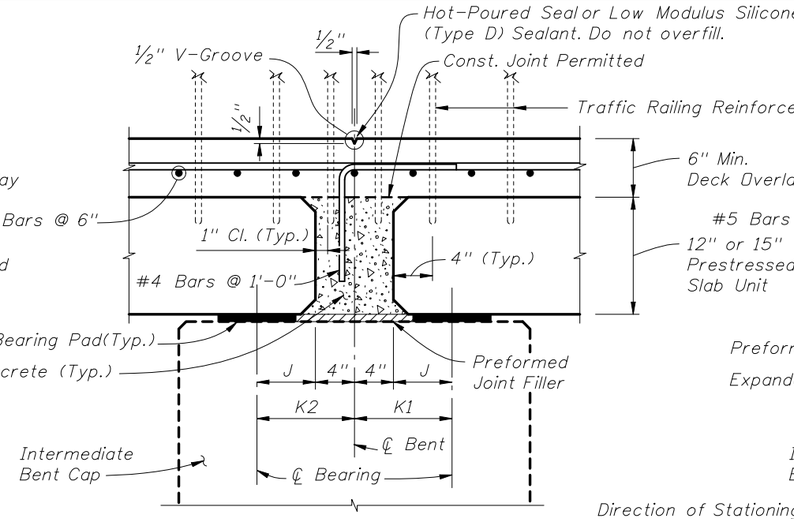
PRESTRESSED SLAB UNITS DETAILS AND NOTES

Interim Date 07/01/09

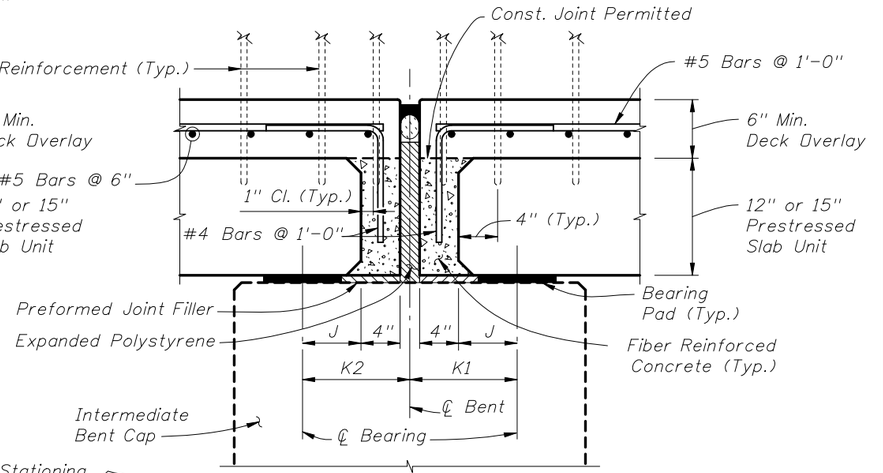
Index No. 20350



JOINT DETAIL AT
BEGIN/END BRIDGE

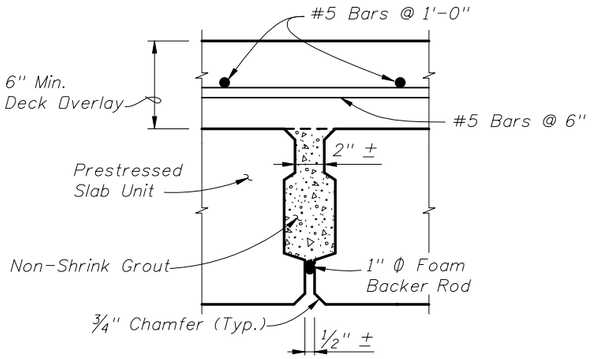


JOINT DETAIL AT
INTERMEDIATE BENTS ON CONTINUOUS UNITS

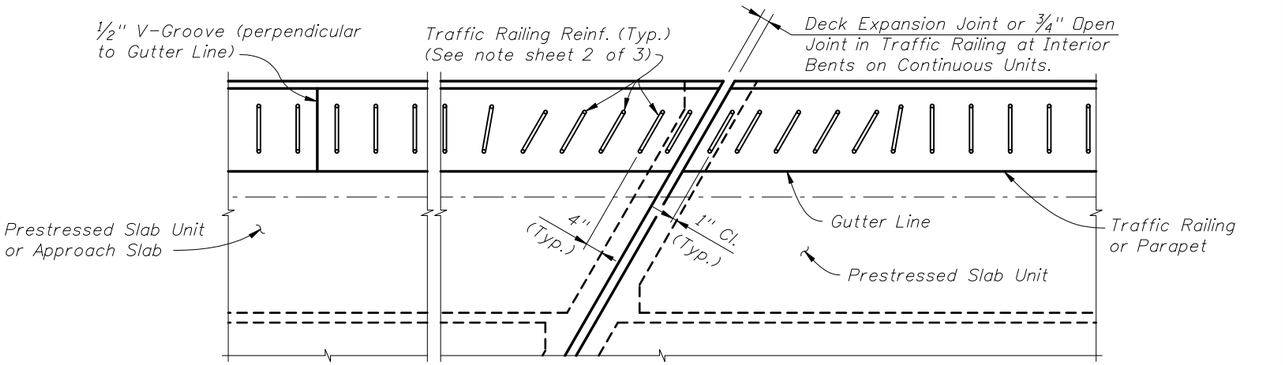


JOINT DETAIL AT
EXPANSION INTERMEDIATE BENTS

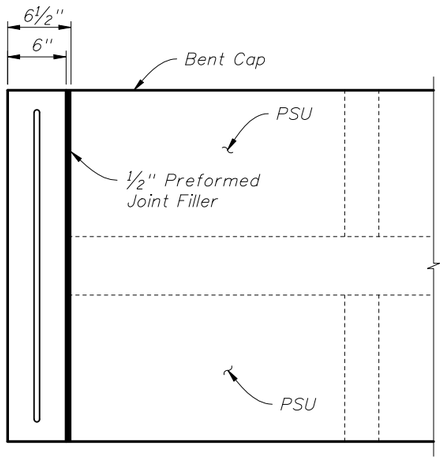
NOTE:
Deck overlay reinforcing is shown at nominal spacing. See Structures Plans for actual spacing and orientation on skewed bridges.



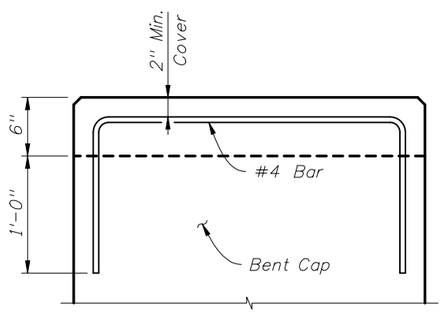
KEYWAY DETAIL



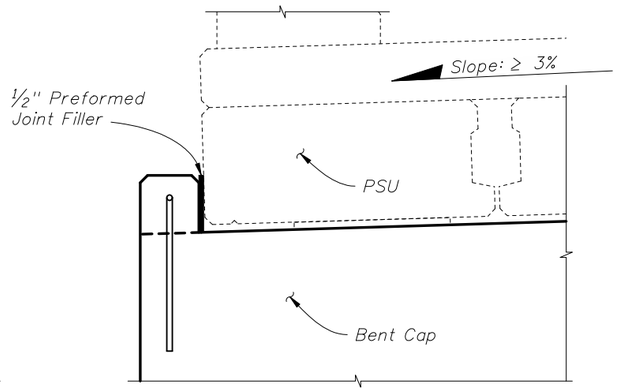
PARTIAL PLAN VIEW OF JOINTS ON SKEWED BRIDGES
(EXPANSION JOINT SHOWN, INTERMEDIATE JOINT SIMILAR)



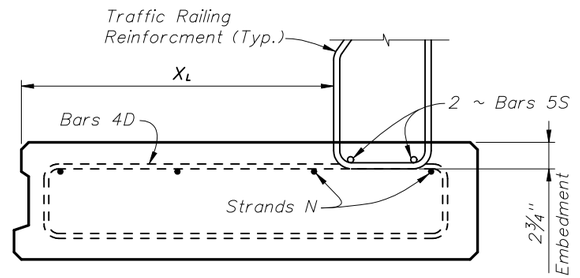
PARTIAL PLAN



END VIEW



PARTIAL ELEVATION



TRAFFIC RAILING REINFORCMENT
EMBEDMENT DETAIL
(Bars 5V Shown, Bars 5T, 5X & 5W Similar)

KEEPER BLOCK DETAILS

Use keeper blocks on low end of bent caps when cross slope is ≥ 3%.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Changed Joint Details, added "KEYWAY DETAIL", deleted "TEMPORARY BLOCKING" detail.			

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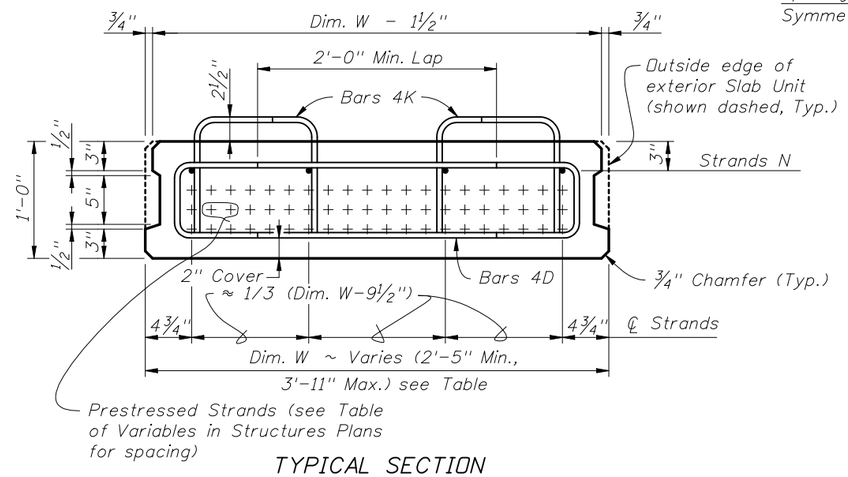
PRESTRESSED SLAB UNITS DETAILS AND NOTES

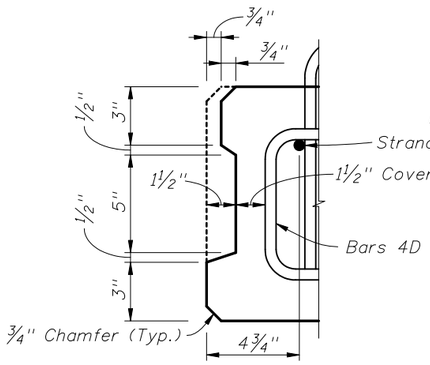
Interim Date 07/01/09

Sheet No. 3 of 3

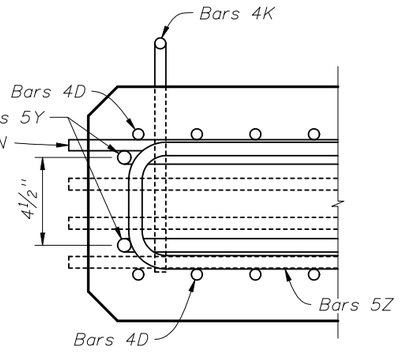
Index No. 20350



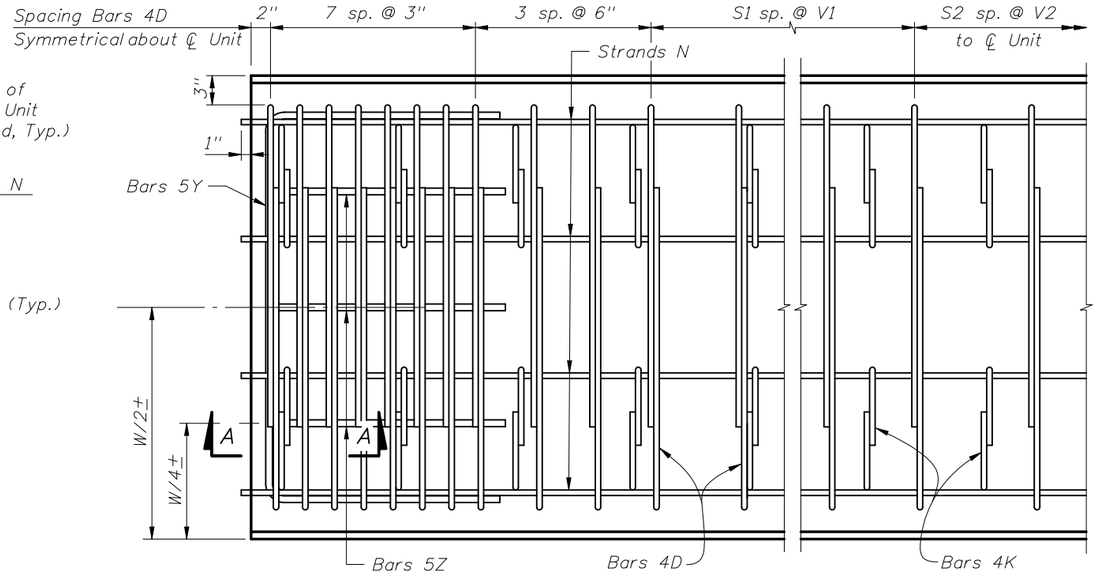
TYPICAL SECTION



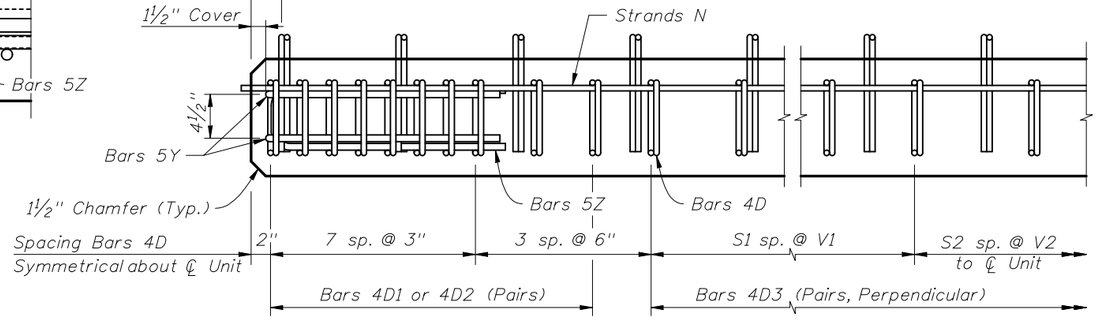
KEYWAY DETAIL



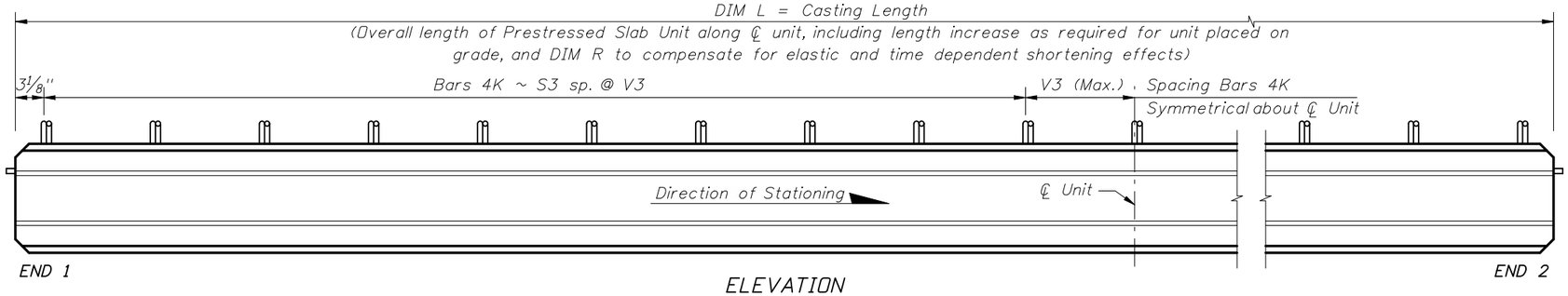
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

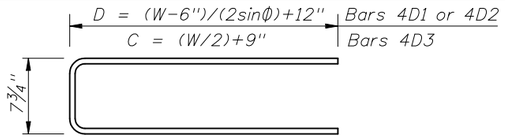


ELEVATION

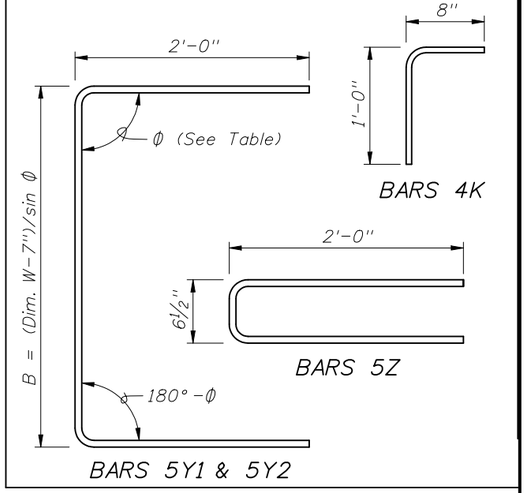
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5, 10	4	20 (End 1)*	Varies
D2	4, 5, 10	4	20 (End 2)*	Varies
D3	5	4	See Table	Varies
K	4, 5	4	See Table	1'-8"
N	2, 8	⅜" ℗ Strands	4	Dim. L + 2"
Y1	4, 10	5	2 (End 1)	Varies
Y2	4, 10	5	2 (End 2)	Varies
Z	−	5	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 4K

BARS 5Z

BARS 5Y1 & 5Y2

NOTES:

Work this Index with Index No. 20350 and Prestressed Custom Width Slab Units − Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, D, L, R, W, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Custom Width Slab Units − Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 or 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 5Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

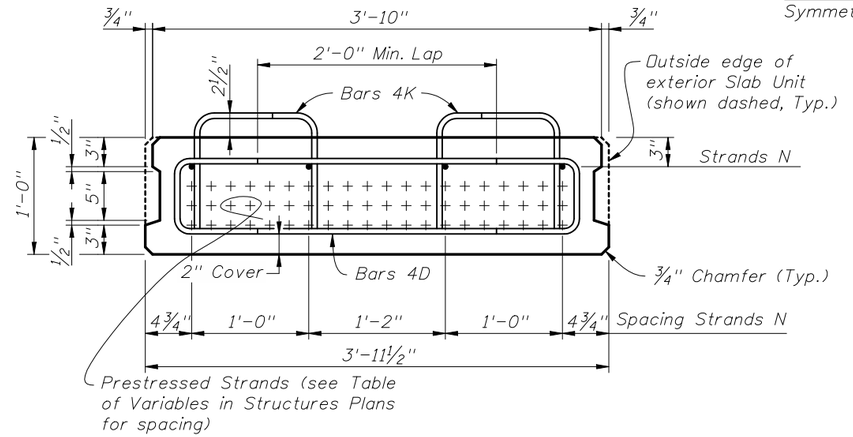
2008 Interim Design Standard

12" CUSTOM WIDTH PRESTRESSED SLAB UNIT - STANDARD DETAILS

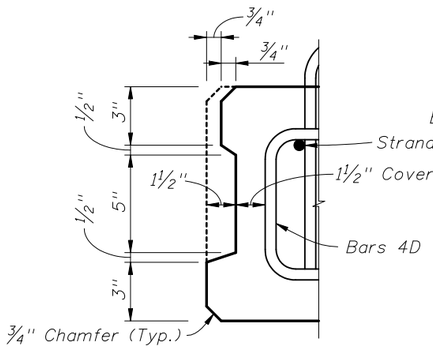
Interim Date 07/01/09

Sheet No. 1 of 1

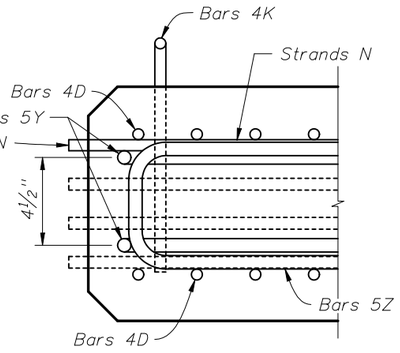
Index No. 20353



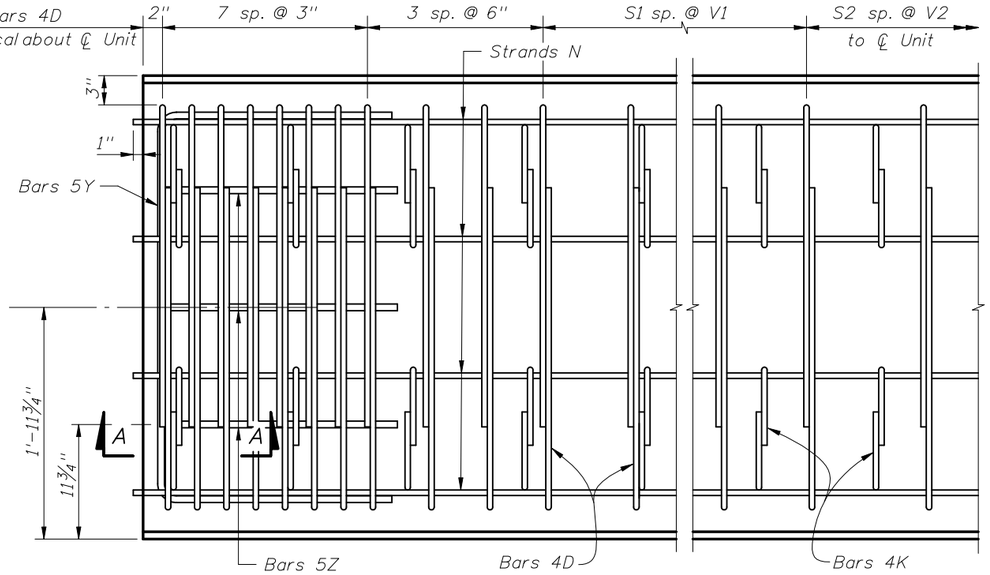
TYPICAL SECTION



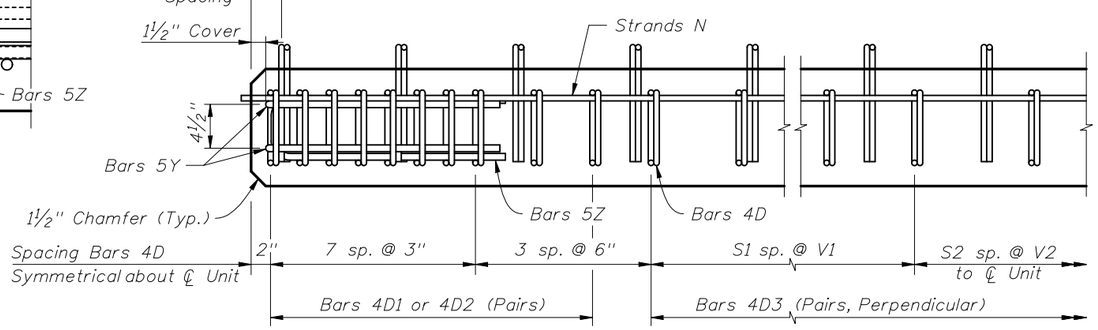
KEYWAY DETAIL



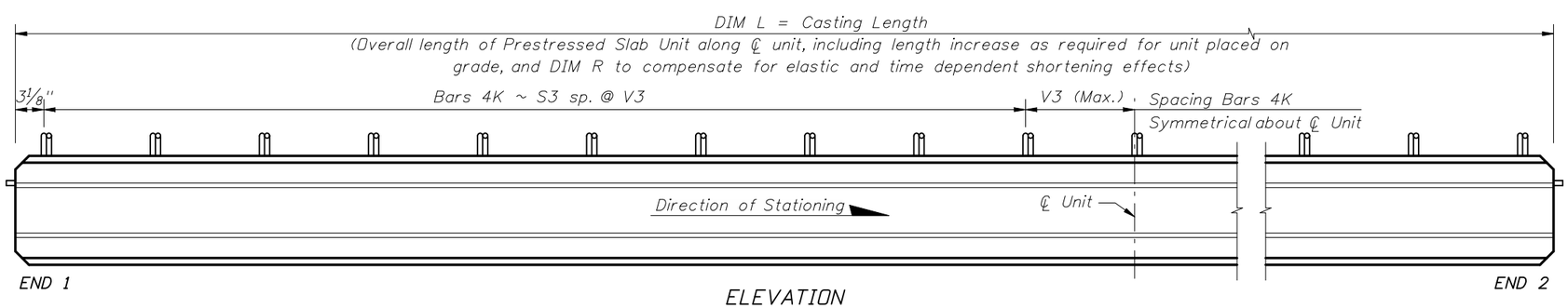
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

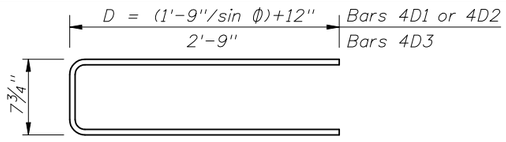


ELEVATION

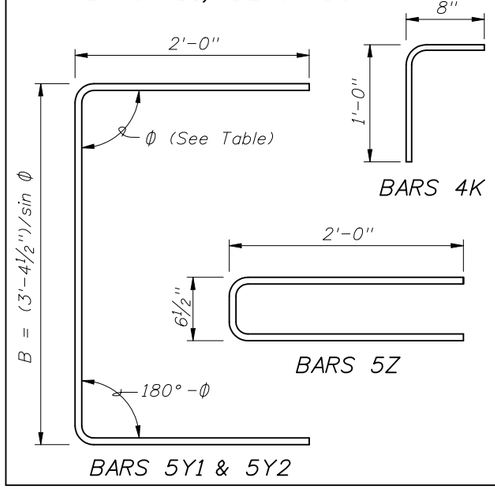
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5 & 10	4	20 (End 1)*	Varies
D2	4, 5 & 10	4	20 (End 2)*	Varies
D3	5	4	See Table	6'-2"
K	4, 5	4	See Table	1'-8"
N	2, 8	3/8" ϕ Strands	4	Dim. L + 2"
Y1	4, 10	5	2 (End 1)	Varies
Y2	4, 10	4	2 (End 2)	Varies
Z	-	5	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 4K

BARS 5Z

BARS 5Y1 & 5Y2

NOTES:

Work this Index with Index No. 20350. and Prestressed Standard Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, D, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Standard Slab Units - Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 & 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 5Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

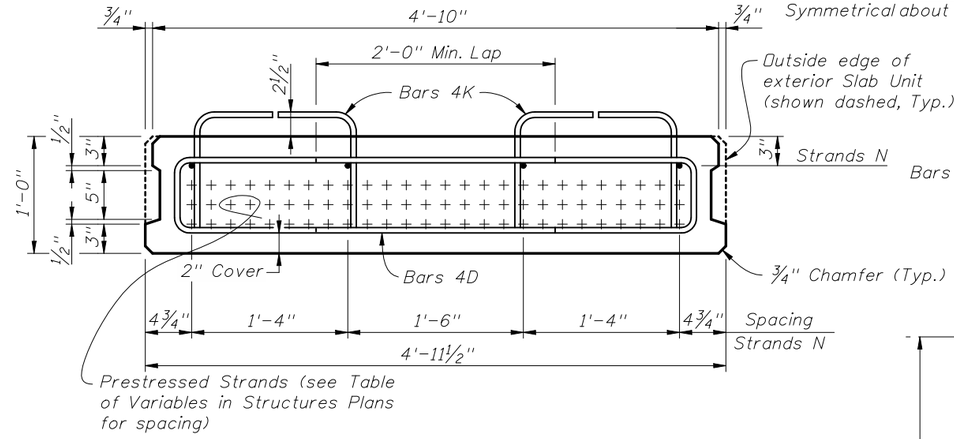
2008 Interim Design Standard

12"x48" PRESTRESSED SLAB UNIT - STANDARD DETAILS

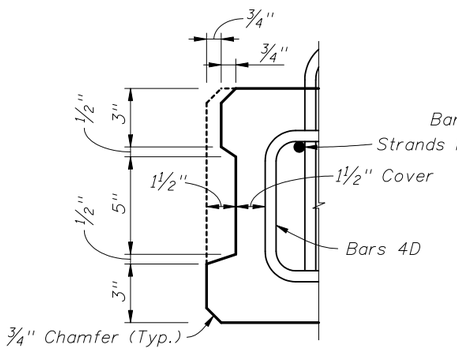
Interim Date 07/01/09

Sheet No. 1 of 1

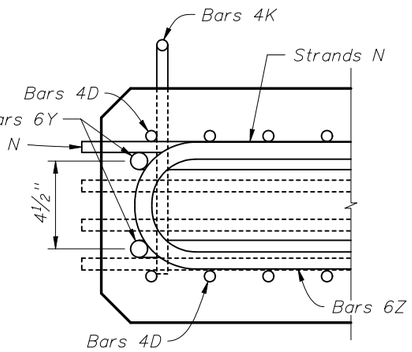
Index No. 20354



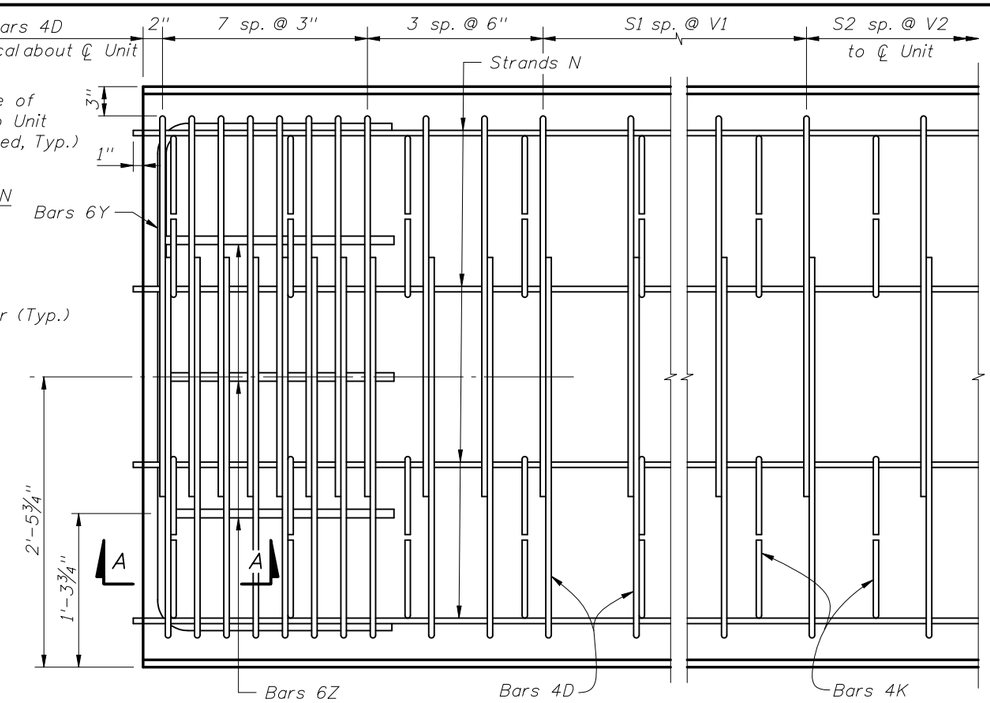
TYPICAL SECTION



KEYWAY DETAIL



SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT

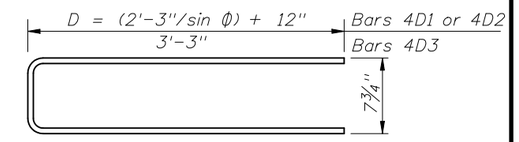
ELEVATION AT END OF PRESTRESSED SLAB UNIT

ELEVATION

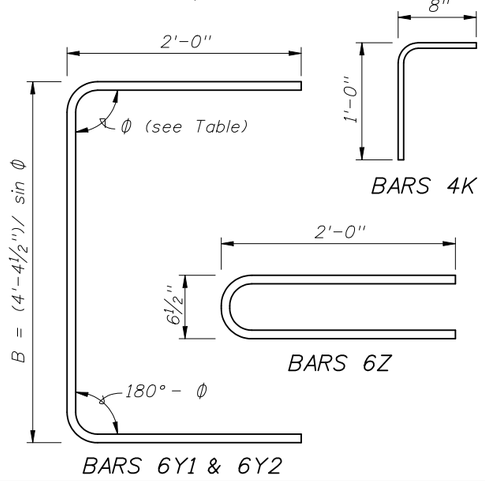
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5, 10	4	20 (End 1)*	Varies
D2	4, 5, 10	4	20 (End 2)*	Varies
D3	5	4	See Table	7'-2"
K	4, 5	4	See Table	1'-8"
N	2, 8	⅜" ϕ Strands	4	Dim. L + 2"
Y1	4, 10	6	2 (End 1)	Varies
Y2	4, 10	6	2 (End 2)	Varies
Z	–	6	6	4'-7"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 4K

BARS 6Z

BARS 6Y1 & 6Y2

NOTES:

Work this Index with Index No. 20350 and Prestressed Standard Slab Units – Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, D, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Standard Slab Units – Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 or 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 6Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

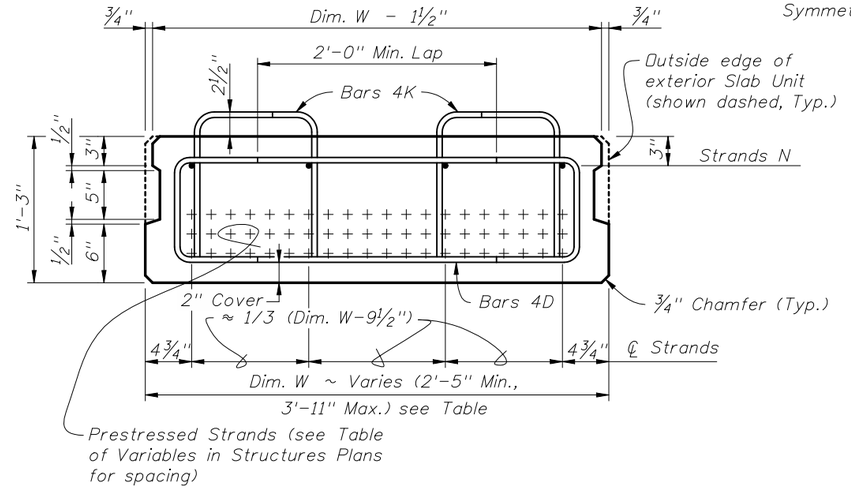
2008 Interim Design Standard

12"x60" PRESTRESSED SLAB UNIT - STANDARD DETAILS

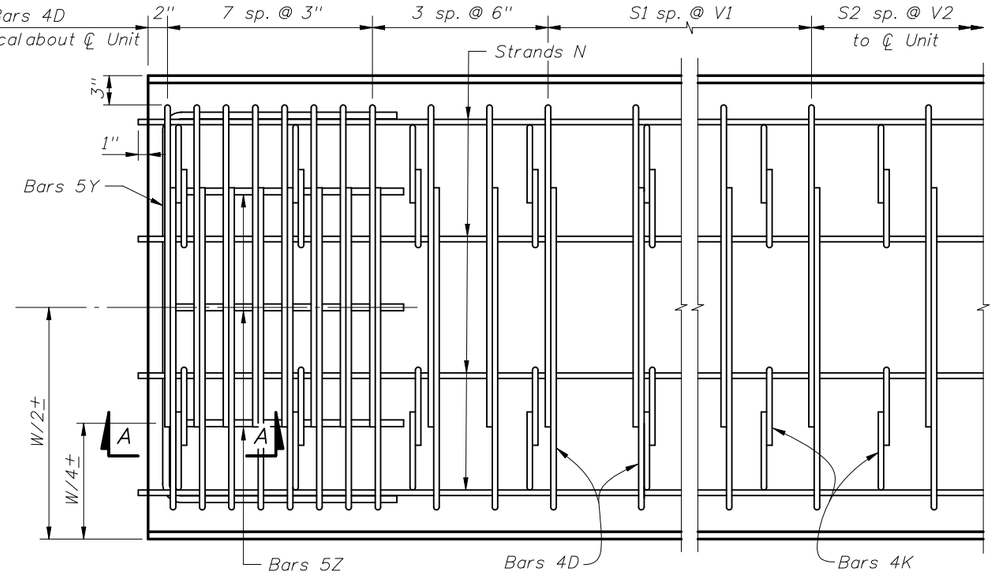
Interim Date 07/01/09

Sheet No. 1 of 1

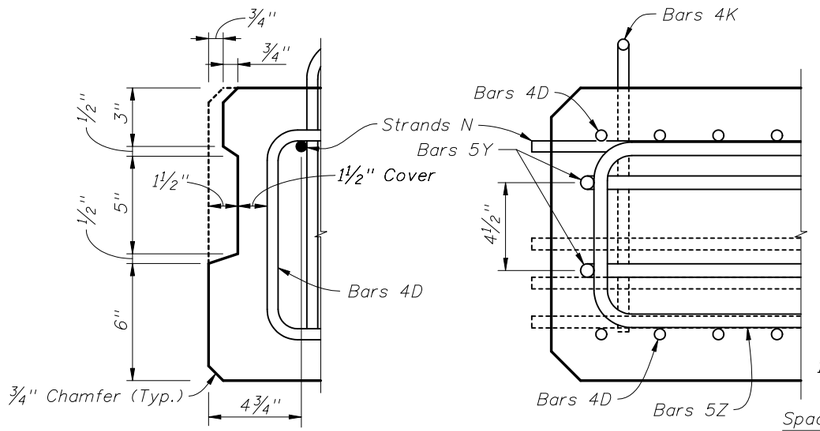
Index No. 20355



TYPICAL SECTION

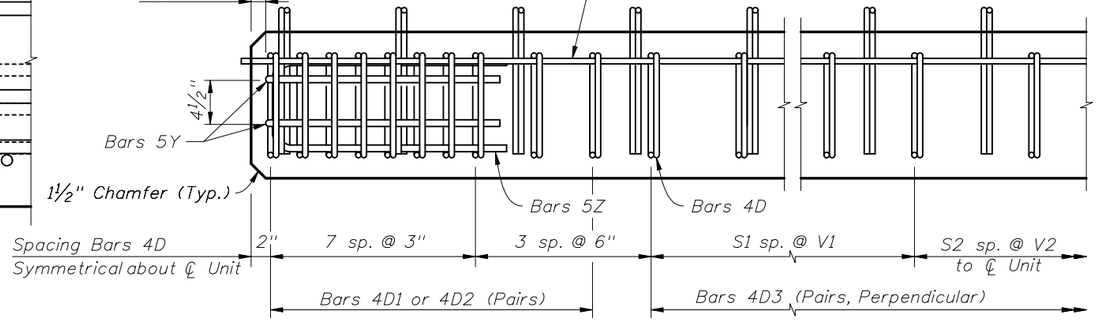


PLAN AT END OF PRESTRESSED SLAB UNIT

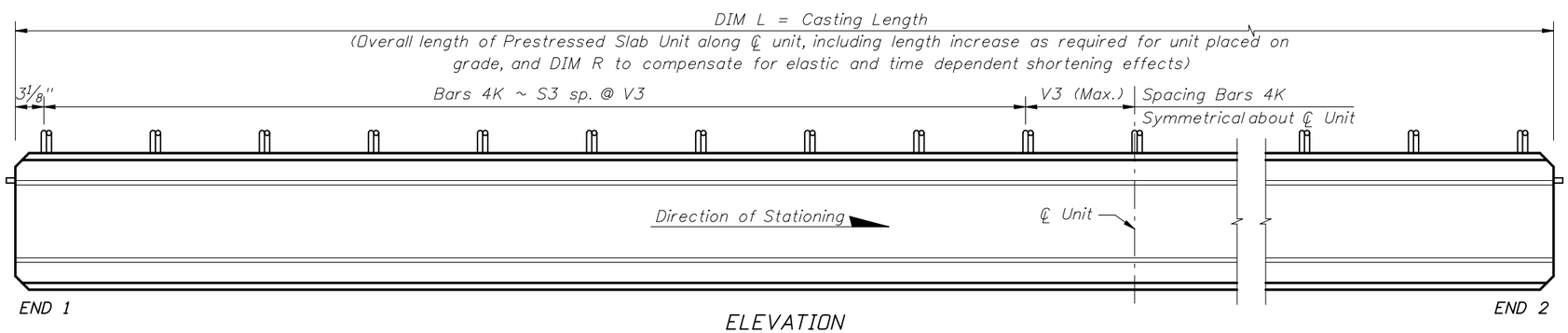


KEYWAY DETAIL

SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

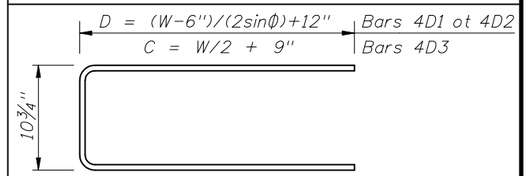


ELEVATION

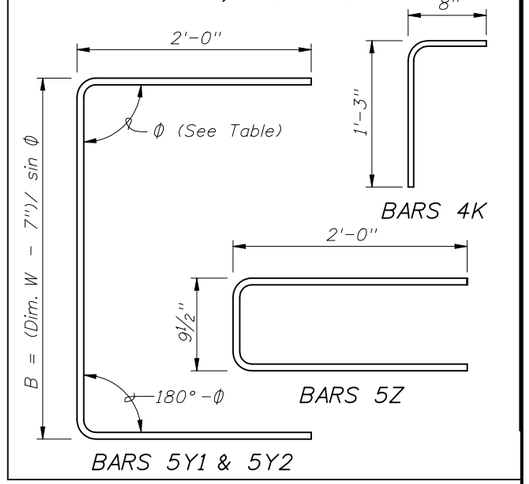
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5, 10	4	20 (End 1)*	Varies
D2	4, 5, 10	4	20 (End 2)*	Varies
D3	5	4	See Table	Varies
K	4, 5	4	See Table	1'-11"
N	2, 8	⅜" ℗ Strands	4	Dim. L + 2"
Y1	4, 10	5	2 (End 1)	See Table
Y2	4, 10	5	2 (End 2)	See Table
Z	−	5	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 5Y1 & 5Y2

NOTES:

Work this Index with Index No. 20350 and Prestressed Custom Width Slab Units − Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, C, D, L, R, W, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Custom Width Slab Units − Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 or 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 5Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

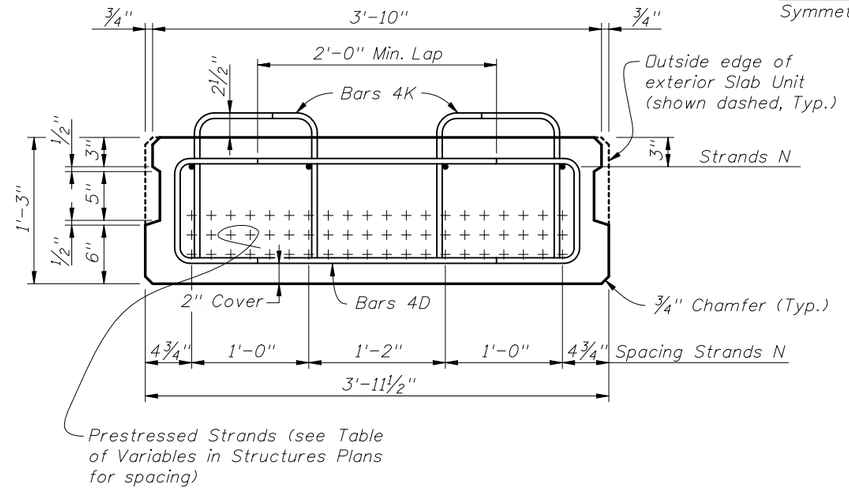
2008 Interim Design Standard

15" CUSTOM WIDTH PRESTRESSED SLAB UNIT - STANDARD DETAILS

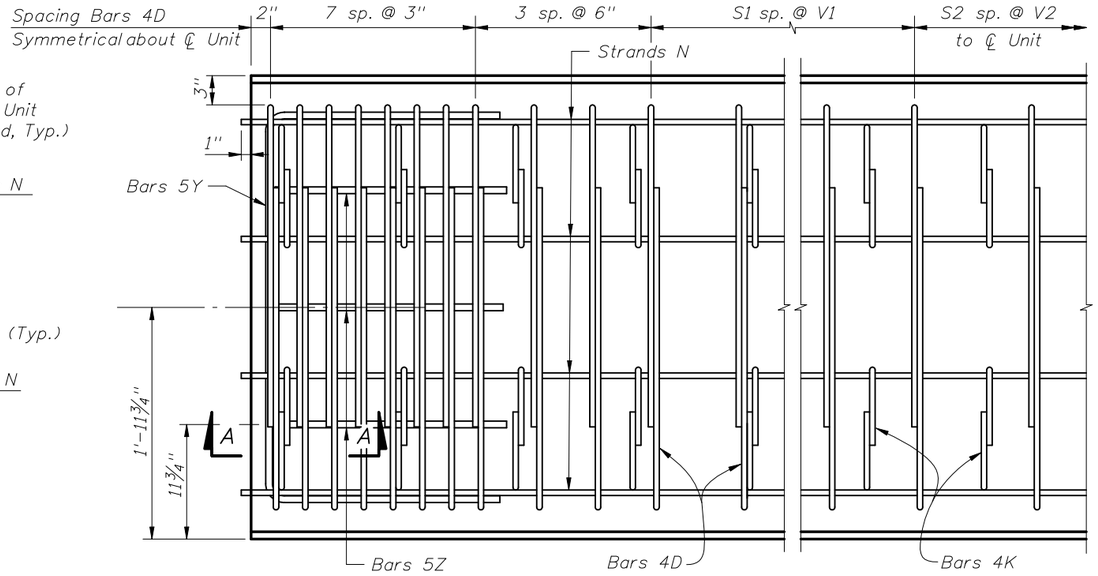
Interim Date 07/01/09

Sheet No. 1 of 1

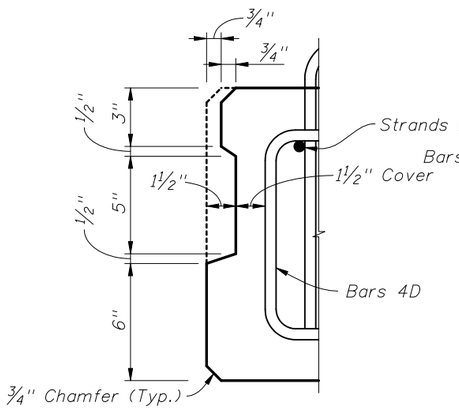
Index No. 20363



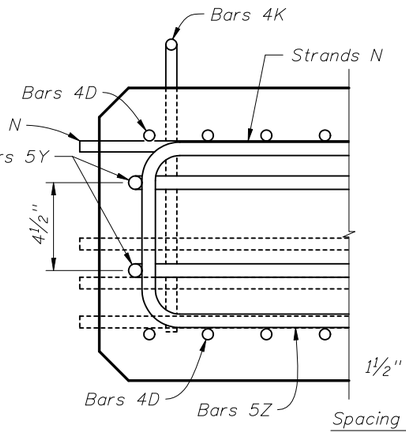
TYPICAL SECTION



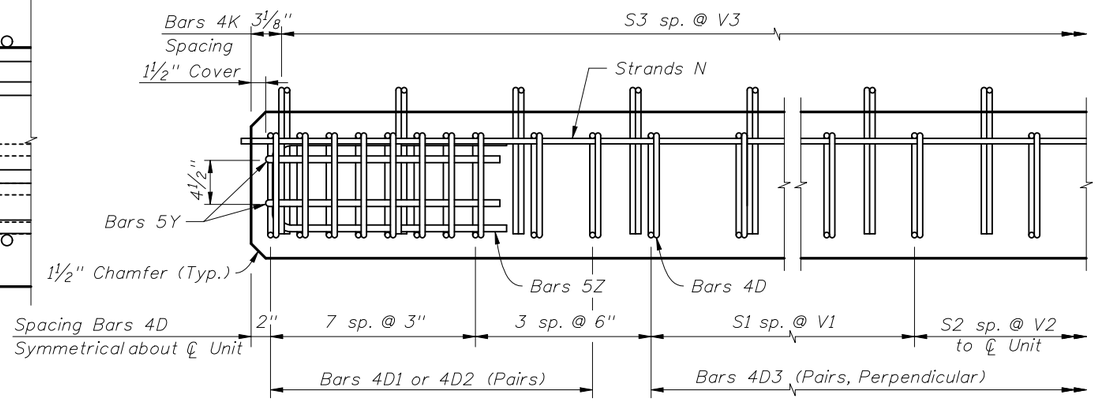
PLAN AT END OF PRESTRESSED SLAB UNIT



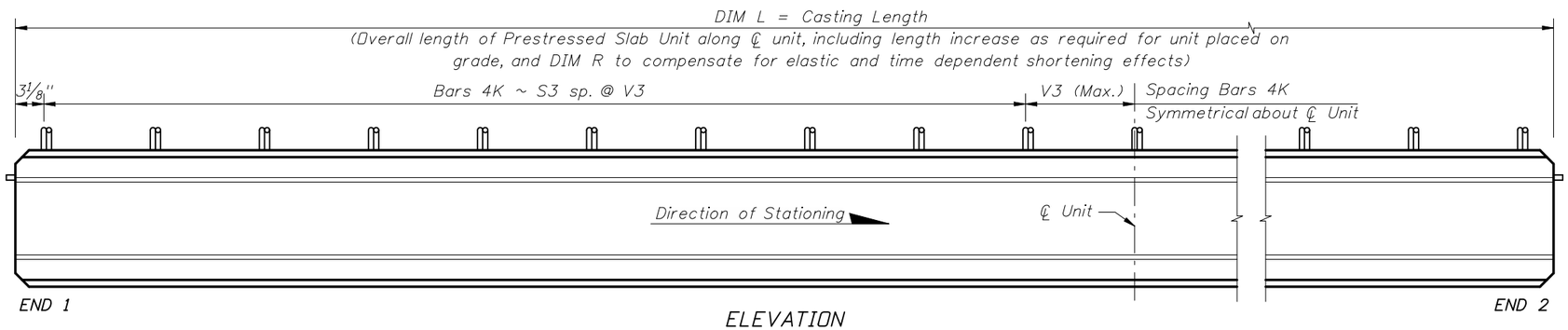
KEYWAY DETAIL



SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

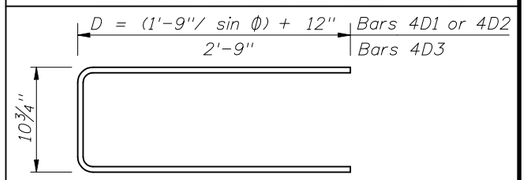


ELEVATION

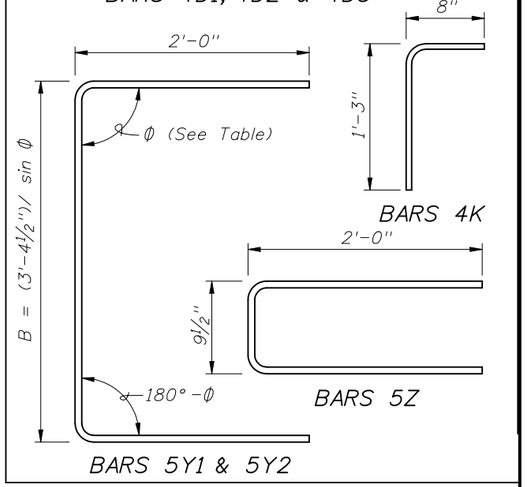
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5, 10	4	20 (End 1)*	Varies
D2	4, 5, 10	4	20 (End 2)*	Varies
D3	5	4	See Table	6'-5"
K	4, 5	4	See Table	1'-11"
N	2, 8	3/8" ϕ Strands	4	Dim. L + 2"
Y1	4, 10	5	2 (End 1)	Varies
Y2	4, 10	5	2 (End 2)	Varies
Z	-	5	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 4K

BARS 5Z

BARS 5Y1 & 5Y2

NOTES:

Work this Index with Index No. 20350. and Prestressed Standard Slab Units - Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, D, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Standard Slab Units - Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 or 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 5Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

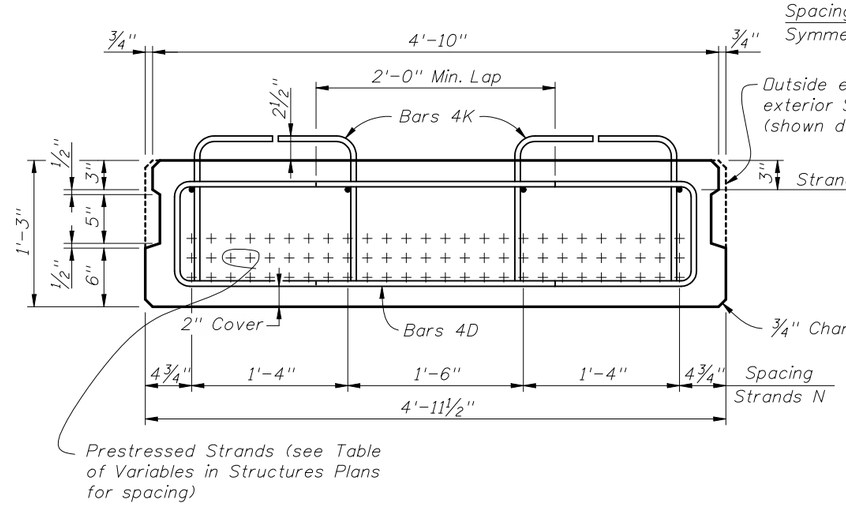
2008 Interim Design Standard

15"x48" PRESTRESSED SLAB UNIT - STANDARD DETAILS

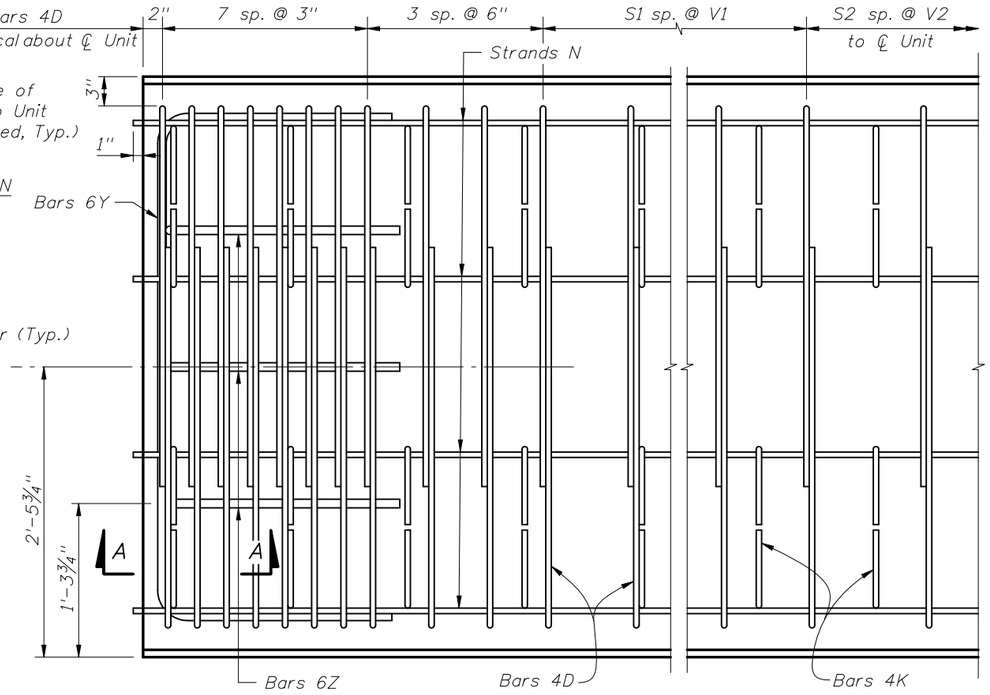
Interim Date 07/01/09

Sheet No. 1 of 1

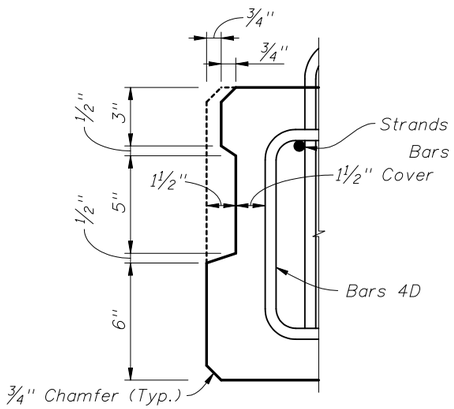
Index No. 20364



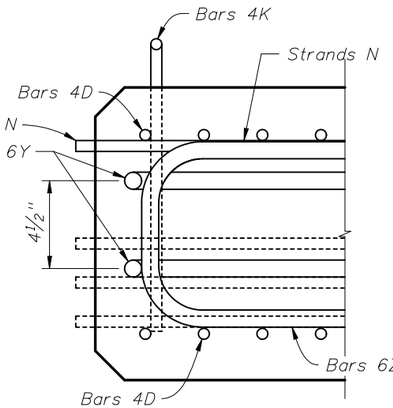
TYPICAL SECTION



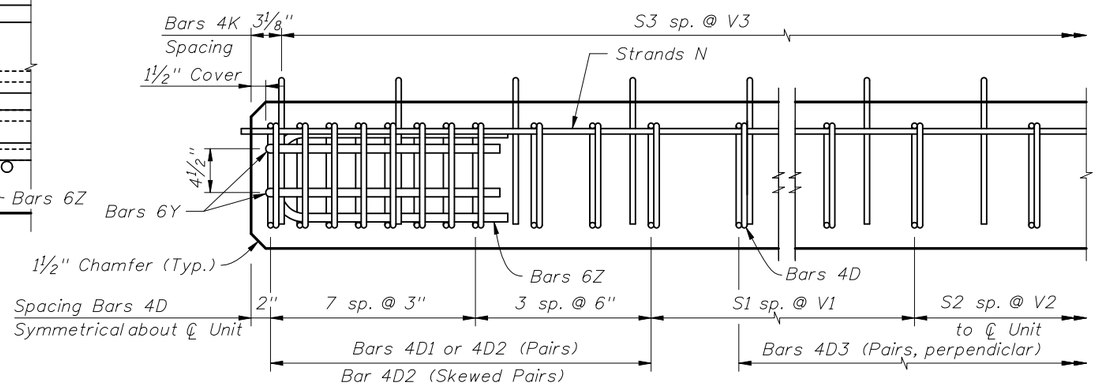
PLAN AT END OF PRESTRESSED SLAB UNIT



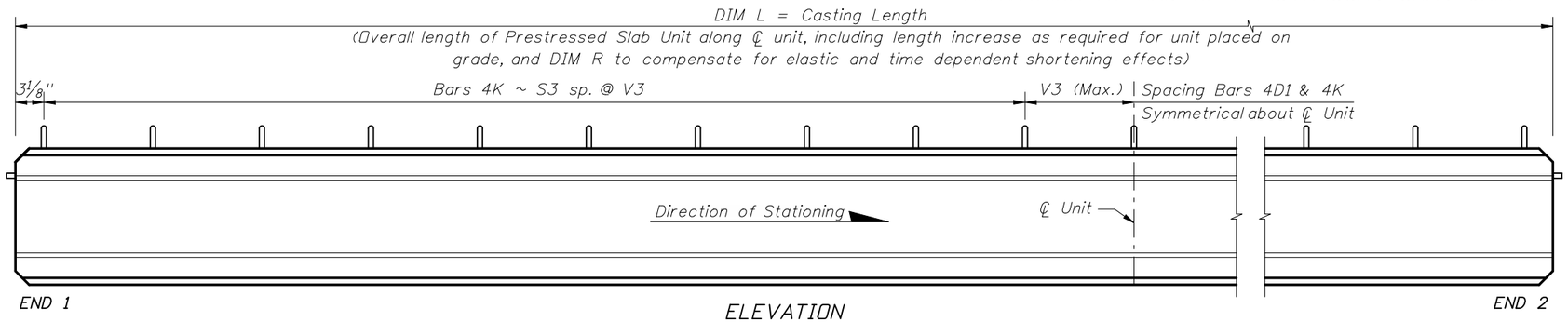
KEYWAY DETAIL



SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

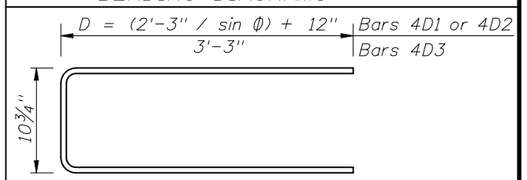


ELEVATION

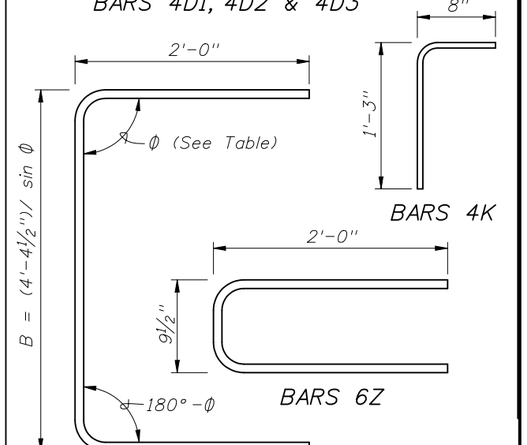
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
D1	4, 5, 10	4	20 (End 1)*	Varies
D2	4, 5, 10	4	20 (End 2)*	Varies
D3	5	4	See Table	7'-5"
K	4, 5	4	See Table	1'-11"
N	2, 8	⅜" ℗ Strands	4	Dim. L + 2"
Y1	4, 10	6	2 (End 1)	Varies
Y2	4, 10	6	2 (End 2)	Varies
Z	–	6	6	4'-10"

BENDING DIAGRAMS (See Note 1)



BARS 4D1, 4D2 & 4D3



BARS 4K

BARS 6Z

BARS 6Y1 & 6Y2

NOTES:

Work this Index with Index No. 20350 and Prestressed Standard Slab Units – Table of Variables in Structures Plans.

For referenced notes, see Index No. 20350.

For Dimensions B, D, L, R, V1 thru V3 and number of spaces S1 thru S3, see Prestressed Standard Slab Units – Table of Variables in Structures Plans.

* See Note 4 for additional Bars 4D1 or 4D2 for skewed units.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Added Bars 4D3 & 6Y2; changed location of Bars 4D1 to End 1 & 4D2 to End 2.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

15"x60" PRESTRESSED SLAB UNIT - STANDARD DETAILS

Interim Date 07/01/09

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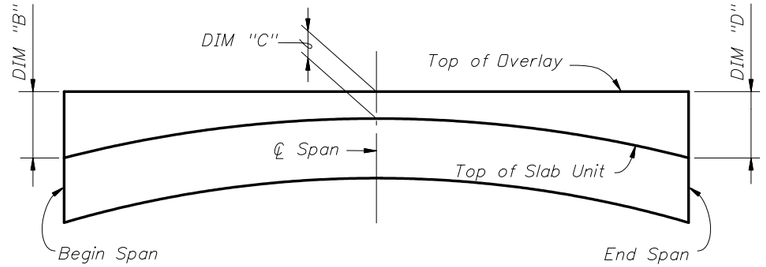
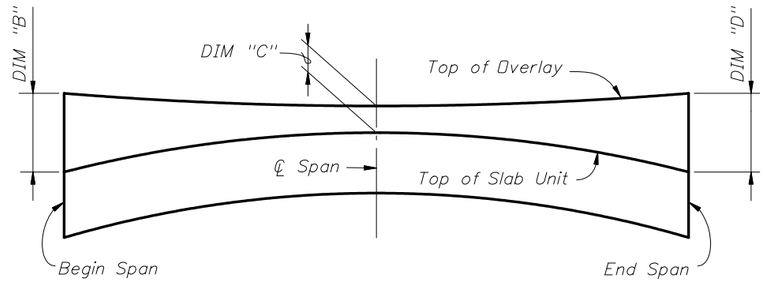
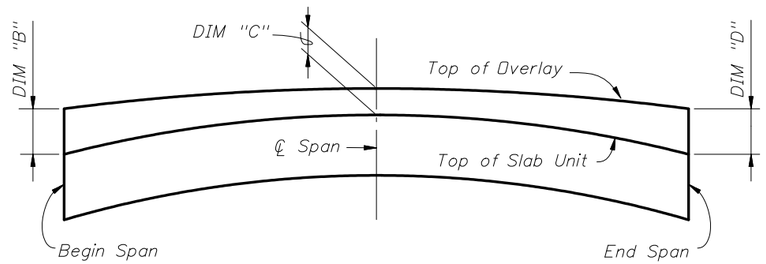
Index No. 20365



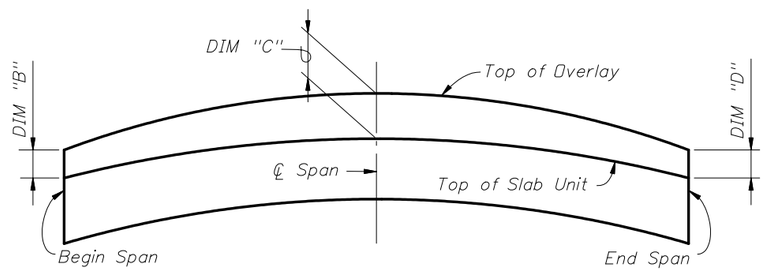
OVERLAY DIAGRAM FOR TANGENT SPANS
(ALONG ℄ SLAB UNIT) (CASE 1)



OVERLAY DIAGRAM FOR SAG VERTICAL CURVE SPANS
– CONTROL AT ℄ SPAN
(ALONG ℄ SLAB UNIT) (CASE 2)



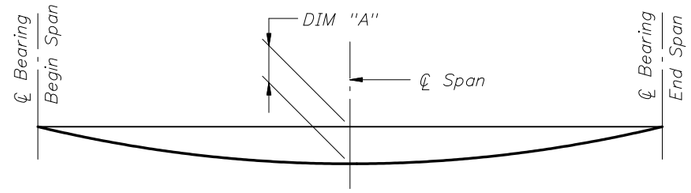
OVERLAY DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT ℄ SPAN
(ALONG ℄ SLAB UNIT) (CASE 3)



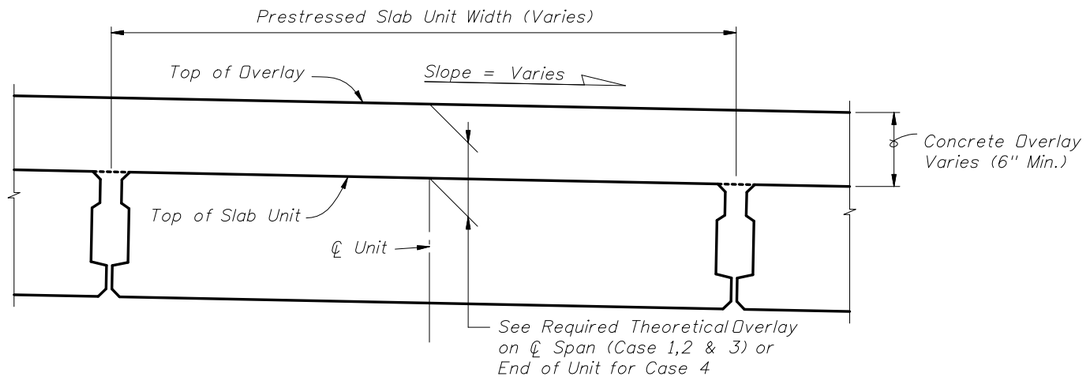
OVERLAY DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT BEGIN OR END SPAN
(ALONG ℄ SLAB UNIT) (CASE 4)

PRESTRESSED SLAB UNIT CAMBER AND OVERLAY NOTES:

The overlay values given in the table are based on theoretical unit cambers. The Contractor shall monitor unit cambers for the purpose of predicting camber values at the time of the deck pour. If the predicted cambers based on field measurements differ more than ± ½" from the theoretical "Net Unit Camber @ 120 Days" shown in the table, propose modifed overlay dimensions as required and submit to the Engineer for approval a minimum of 21 days prior to casting overlay concrete.



DEAD LOAD DEFLECTION DIAGRAM



OVERLAY ON SLAB UNITS

INSTRUCTIONS TO DESIGNER:

Although not shown here in the Diagrams or Notes, the effect of Horizontal Curvature, when present, needs to be considered for the Overlay Calculations.

NOTE:
Work this Index with the Overlay and Deflection Data Table for Prestressed Slab Units in Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/09	TJB	New Design Standard			
07/01/09	RMS	Changed "Build-up" to " Overlay", deleted "KEYWAY DETAIL".			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

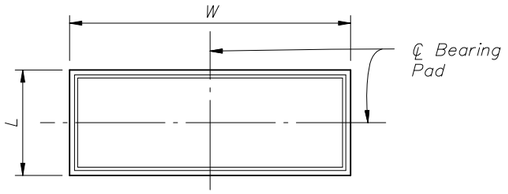
2008 Interim Design Standard

OVERLAY & DEFLECTION DATA FOR PRESTRESSED SLAB UNITS

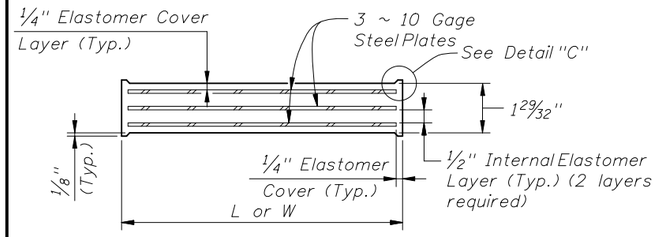
Interim Date 07/01/09

Sheet No. 1 of 1

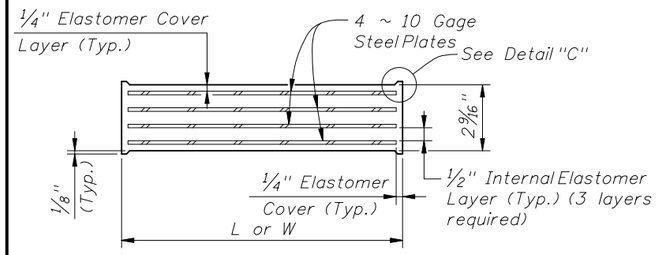
Index No. 20399



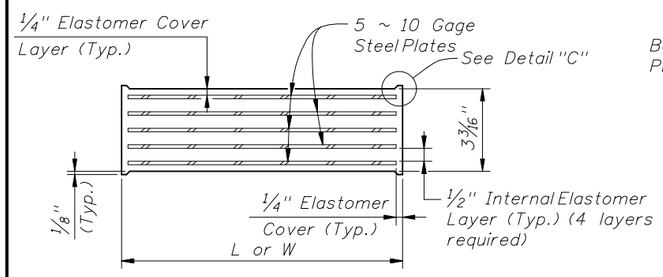
PLAN



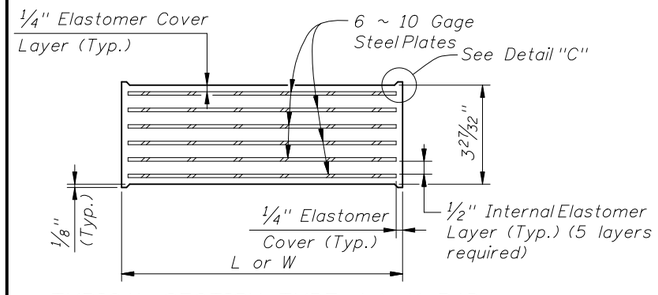
TYPICAL SECTION TYPE D & E PAD



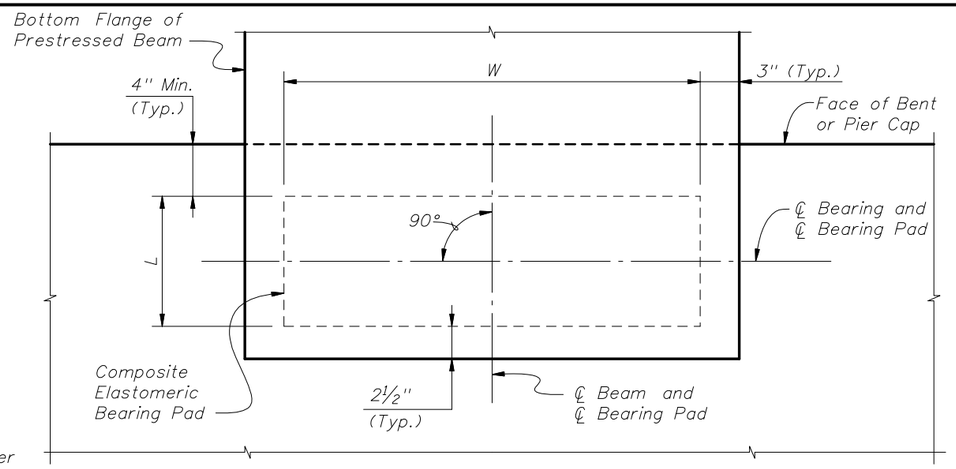
TYPICAL SECTION TYPE F & G PAD



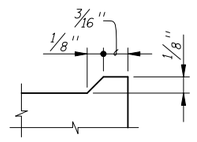
TYPICAL SECTION TYPE H PAD



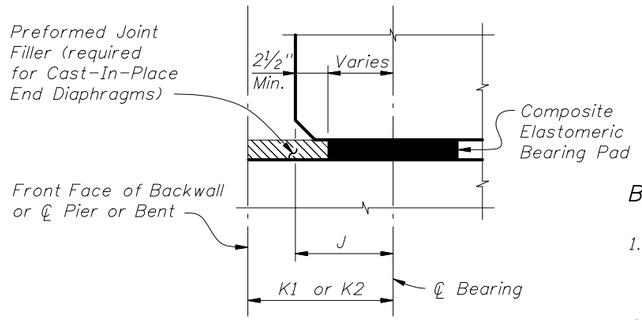
TYPICAL SECTION TYPE J & K PAD



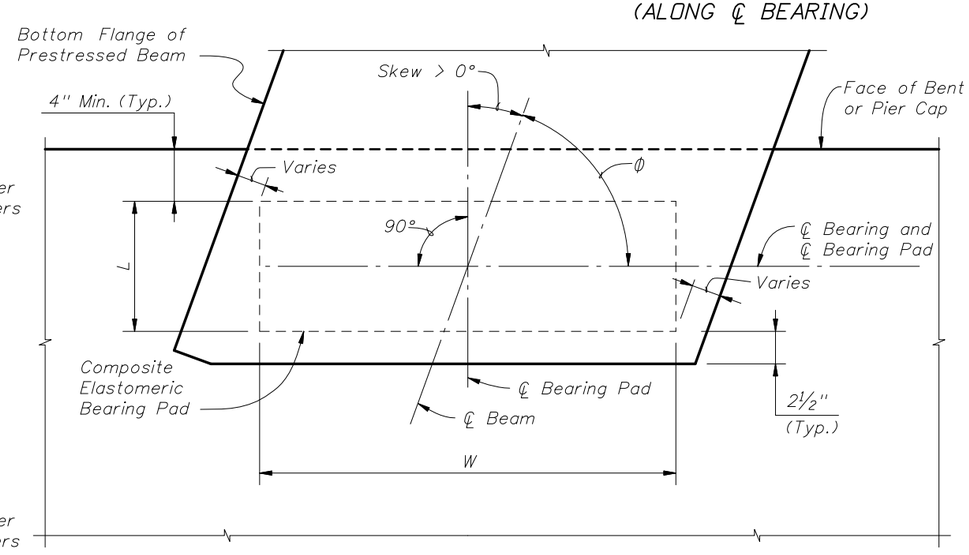
PARTIAL PLAN
(Skew = 0°)



DETAIL "C"



PARTIAL SIDE ELEVATION
(ALONG ℄ BEARING)



PARTIAL PLAN
(Skew > 0°)

	BEARING PAD DIMENSIONS		*BEARING PLATE DIMENSIONS	
PAD TYPE (See Note 1)	L	W	C	D
D (G=110psi)	8"	32"	12"	36"
E (G=110psi)	10"	32"	12"	36"
F (G=110psi)	10"	32"	12"	36"
G (G=150psi)	10"	32"	12"	36"
H (G=150psi)	10"	32"	12"	36"
J (G=150psi)	10"	32"	12"	36"
K (G=150psi)	12"	32"	14"	36"

* Work this sheet with Index No. 20511 – Bearing Plate Details and BEARING PAD DATA TABLE in the Structures Plans. See TABLE OF BEAM VARIABLES and BEARING PLATE DATA TABLE in the Structures Plans for locations where beveled bearing plates are required.

BEARING PAD NOTES:

1. Neoprene in Type D, E & F bearing pads shall have a shear modulus (G) of 110 psi. Neoprene in Type G, H, J & K bearing pads shall have a shear modulus (G) of 150 psi.
2. Steel Plates in bearing pads shall conform to ASTM A1011 Grade 36, Type 1.
3. Unless otherwise shown in the Structures Plans:
   (a) For beam grades less than 0.5%, finish the Beam Seat level.
   (b) For beam grades between 0.5% and 2%, finish the Beam Seat parallel to the bottom of the beam in both transverse and longitudinal directions.
   (c) For beam grades greater than 2% finish the Beam Seat level and provide Beveled Bearing Plates.
4. See Bearing Pad Data Table in Structures Plans for quantities of Type D, E, F, G, H, J and/or K Bearing Pads.

INSTRUCTIONS TO DESIGNER:
See the Structures Manual – Instructions For Design Standards, for bearing pad design loads and limitations.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	New Design Standard.			

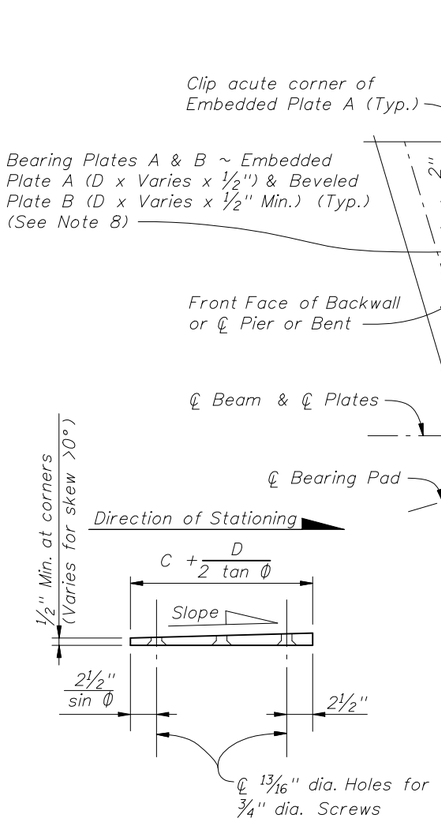
2008 Interim Design Standard

COMPOSITE ELASTOMERIC BEARING PADS PRESTRESSED FLORIDA-I BEAMS

Interim Date 07/01/09

Sheet No. 1 of 1

Index No. 20510

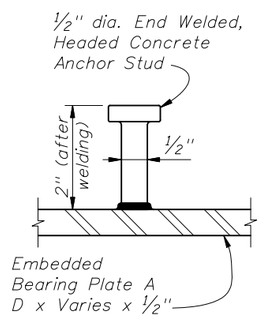


BEVELED BEARING PLATE B
(Along ℄ Beam)
(Positive Slope, Begin Bearing shown; Negative Slope, End Bearing similar)

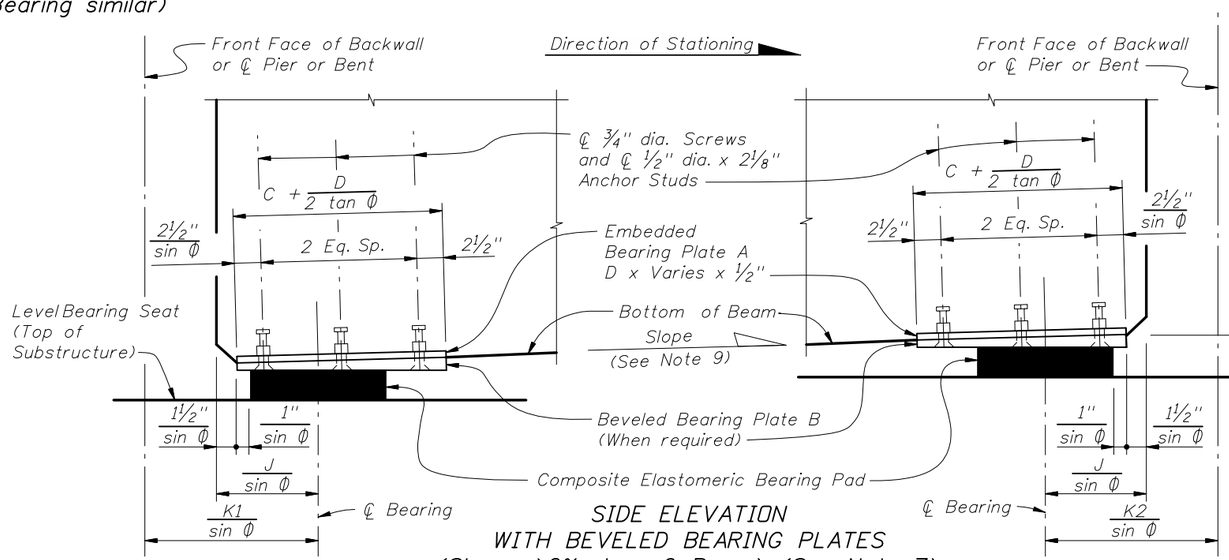
PLAN
(0° < Skew ≤ 45° shown, Skew = 0° Similar)

NOTES:

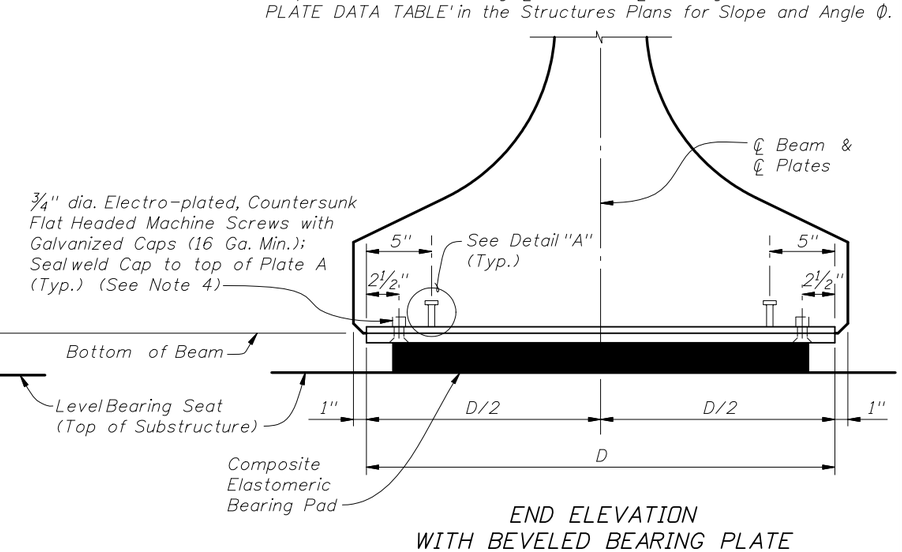
1. Work this sheet with Index No. 20510 - Composite Elastomeric Bearing Pads, and 'BEARING PLATE DATA TABLE' in the Structures Plans.
2. Embedded Bearing Plates A are required for all Florida-I beams. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams as scheduled in the 'BEARING PLATE DATA TABLE' in the Structures Plans.
3. Bearing plate material shall conform to ASTM A36 or ASTM A709 (Grade 36 or 50). Headed Concrete Anchor Studs shall conform to Specification Section 502. Hot-dip galvanize Bearing Plates A & B after fabrication except that Galvanized Caps may be welded in place after hot-dip galvanizing. Drill Bearing Plates A and B as an assembled unit, thread Bearing Plate A only. Holes are not required in Plate A when Plate B is not required. Drill and thread holes perpendicular to the bottom of Plate B and prior to plates being galvanized (ASTM A 123).
4. Provide Electroplated, Flat Countersunk Head Cap Screws in accordance with ASTM F 835. Electroplating shall be ASTM B633, SC 2, Type 1. Provide screws long enough to maintain a ¾" minimum embedment into Embedded Bearing Plate A and Galvanized Cap. Provide steel Galvanized Caps with ½" min. to 1½" max. height and nominal 1" inside diameter.
5. Include the cost of Bearing Plates in the pay item for Prestressed Beams.
6. For Dimensions C and D, see 'BEARING PLATE DIMENSIONS' on Index No. 20510 and the 'BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' in the Structures Plans.
7. All details and dimensions shown are along ℄ Beam, except for dimensions to ¾" dia. Screws and ½" dia. x 2⅛" Anchor Studs, which are along ℄ Screws or ℄ Anchor Studs. Positive Slope shown, Negative Slope similar.
8. When Skew = 0°, dimensions for Embedded Bearing Plate A are D x C x ½" and for Beveled Plate B are D x C x ½" Min.
9. Slope is determined along ℄ Beam at ℄ Bearing. See 'BEARING PLATE DATA TABLE' in the Structures Plans for Slope and Angle Φ.



DETAIL "A"



SIDE ELEVATION
WITH BEVELED BEARING PLATES
(Slopes >2% along ℄ Beam) (See Note 7)



END ELEVATION
WITH BEVELED BEARING PLATE

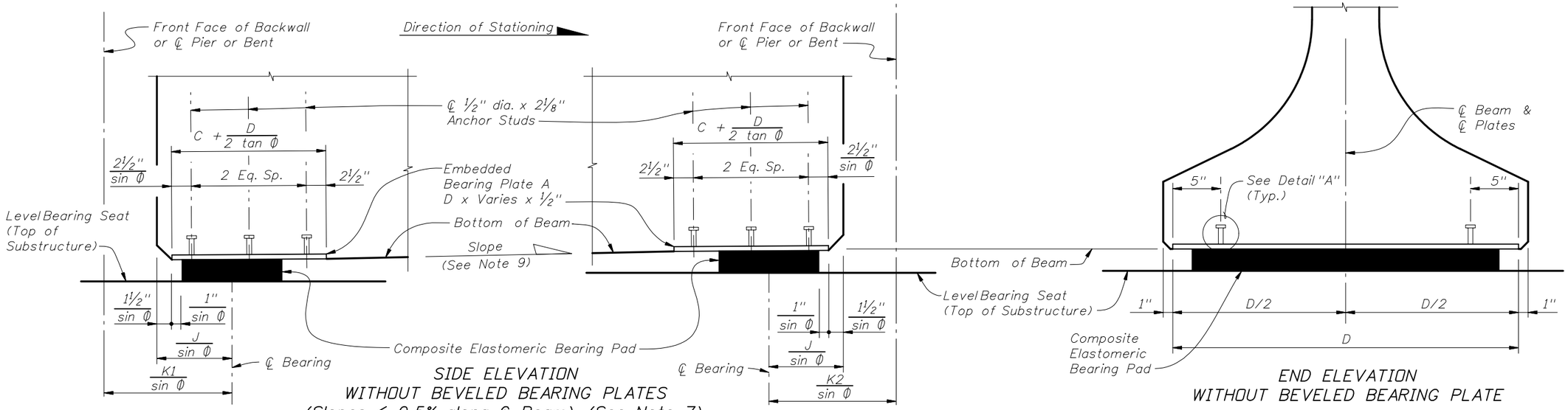
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	New Design Standard.			

2008 Interim Design Standard

BEARING PLATE DETAILS PRESTRESSED FLORIDA-I BEAMS

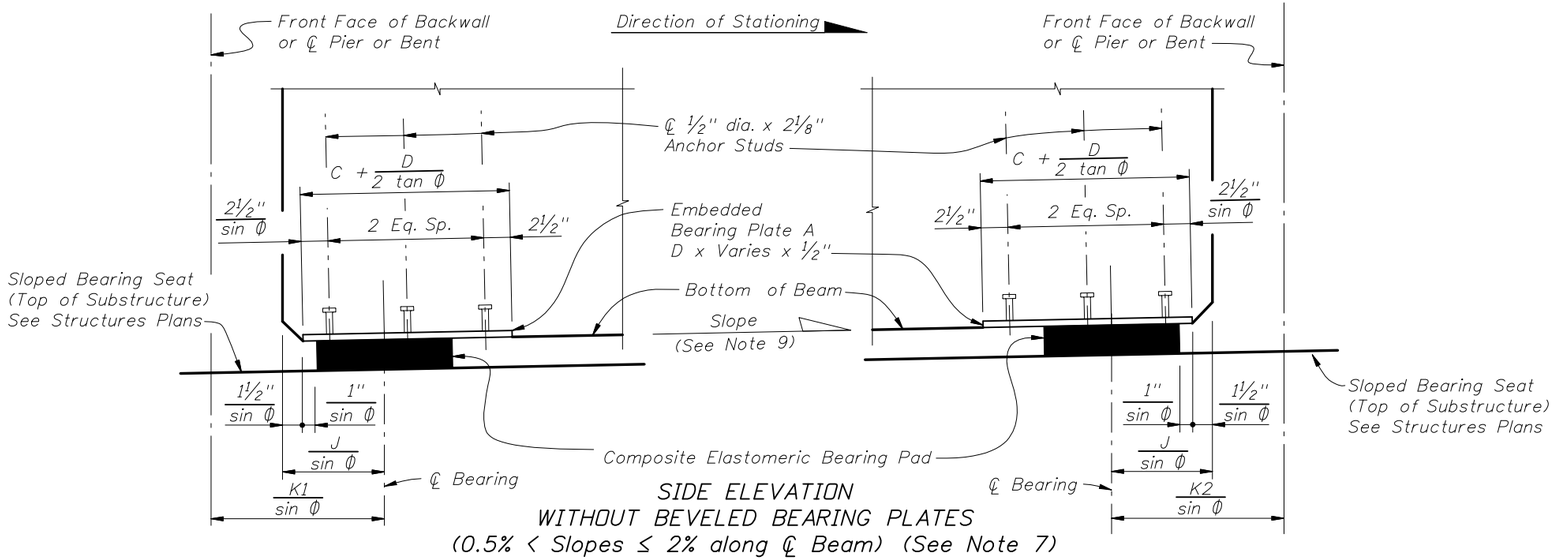
Interim Date	Sheet No.
07/01/09	1 of 2

Index No. 20511



SIDE ELEVATION
WITHOUT BEVELED BEARING PLATES
(Slopes ≤ 0.5% along ℄ Beam) (See Note 7)

END ELEVATION
WITHOUT BEVELED BEARING PLATE



SIDE ELEVATION
WITHOUT BEVELED BEARING PLATES
(0.5% < Slopes ≤ 2% along ℄ Beam) (See Note 7)

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	New Design Standard.			

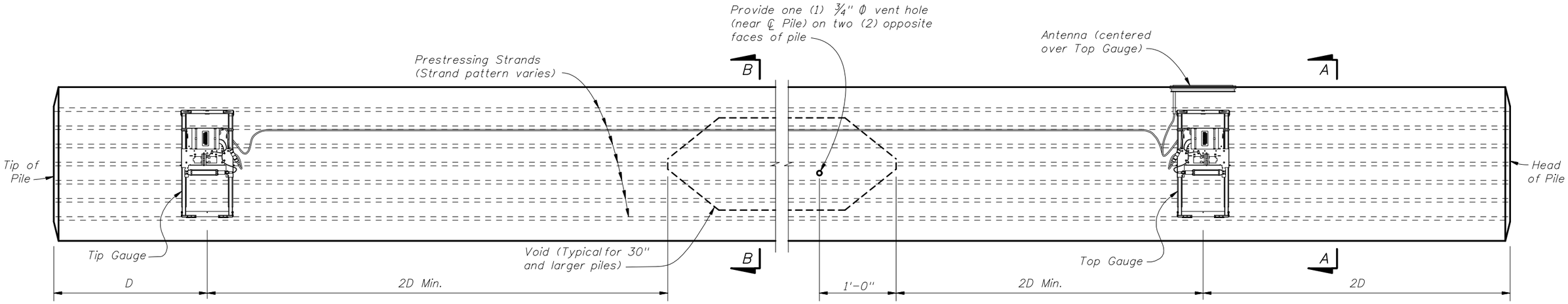
2008 Interim Design Standard

BEARING PLATE DETAILS PRESTRESSED FLORIDA-I BEAMS

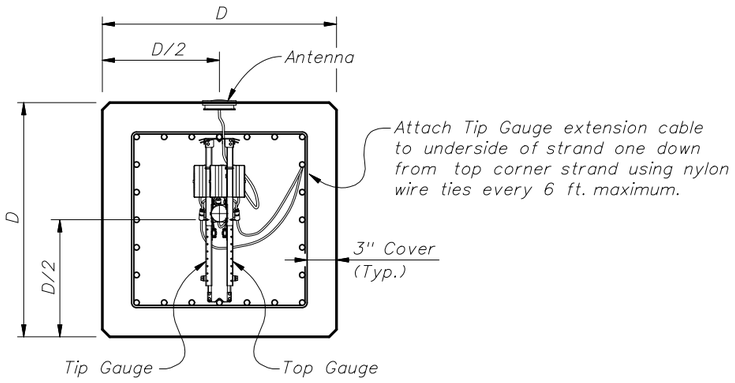
Interim Date: 07/01/09

Sheet No.: 2 of 2

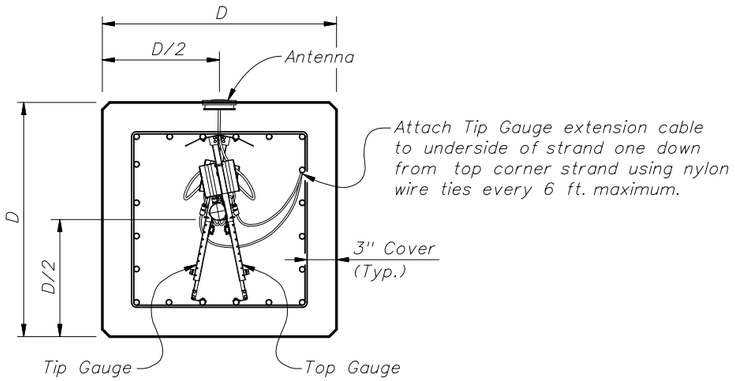
Index No.: 20511



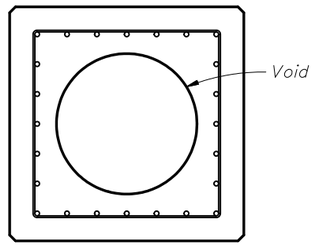
ELEVATION



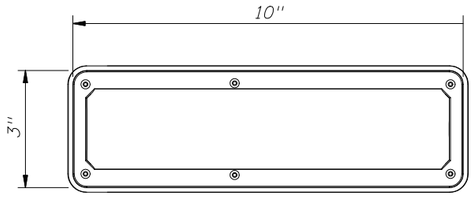
SECTION A-A
(Strand Pattern with odd number of strands per face)



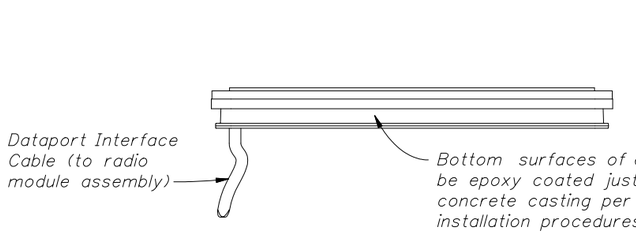
SECTION A-A
(Strand Pattern with even number of strands per face)



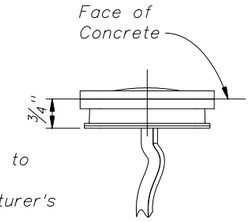
SECTION B-B
(Showing Voided Pile, Solid Pile Similar)



ANTENNA TOP VIEW



ANTENNA SIDE VIEW



ANTENNA END VIEW

NOTE:
Provide EDC Instrumentation in square prestressed concrete piles (18" and larger) in accordance with Specification Section 455 for all bridge foundations.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/08	SJN	Moved location of EDC tip Gauge to distance "D" from tip of pile.			
07/01/09	SJN	Changed NOTE: Deleted 30" pile dimensions & void size.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

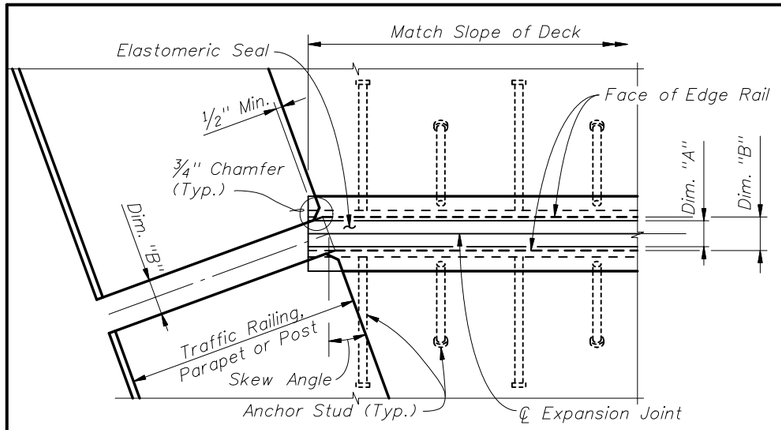
2008 Interim Design Standard

EDC INSTRUMENTATION FOR SQUARE PRESTRESSED CONCRETE PILES

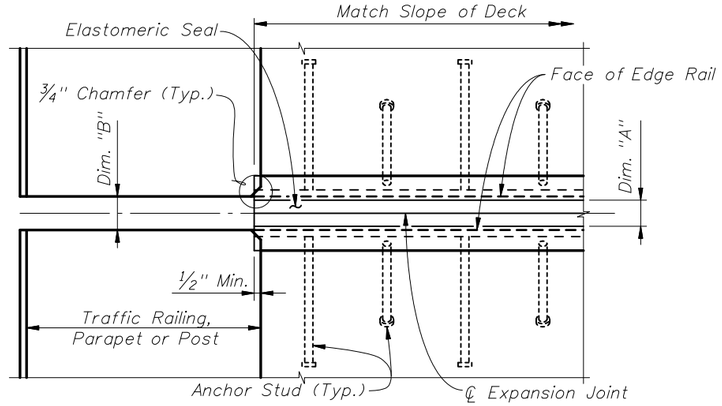
Interim Date 07/01/09

Sheet No. 1 of 1

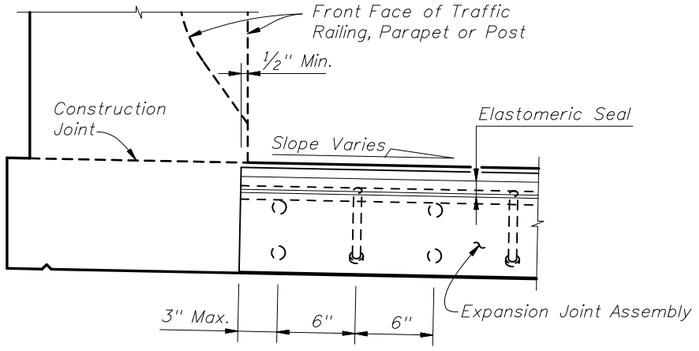
Index No. 20602



PARTIAL PLAN VIEW OF SKEWED JOINTS



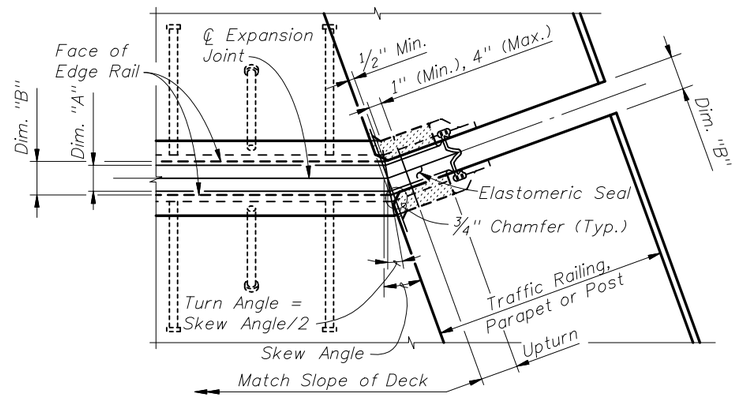
PARTIAL PLAN VIEW OF NONSKEWED JOINTS



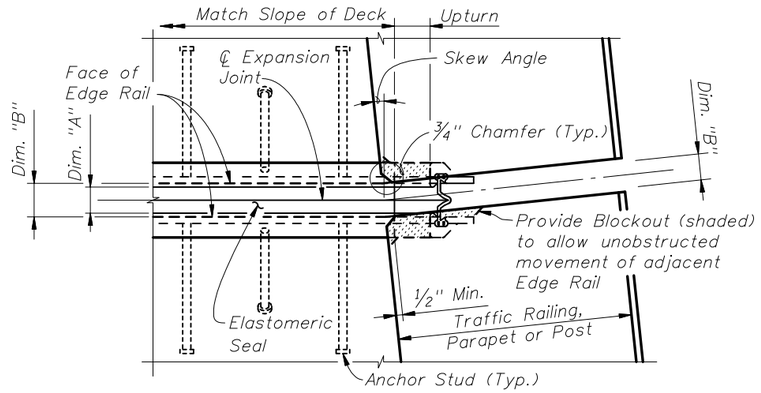
PARTIAL SECTION ALONG ℄ JOINT

JOINT TREATMENT AT HIGH SIDE OF DECK WITH SLOPE ≥ 2%

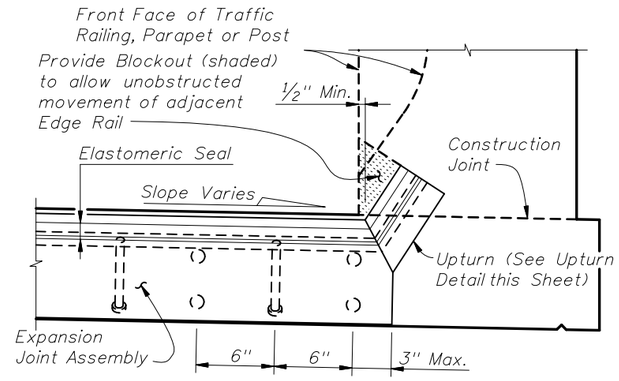
(Sidewalk Cover Plate where applicable not shown for clarity)



PARTIAL PLAN VIEW OF JOINTS SKEWED GREATER THAN 6°



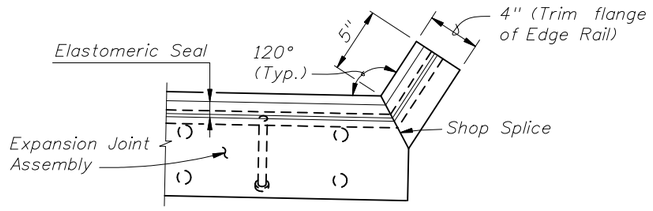
PARTIAL PLAN VIEW OF NONSKEWED JOINTS & JOINTS SKEWED 6° OR LESS



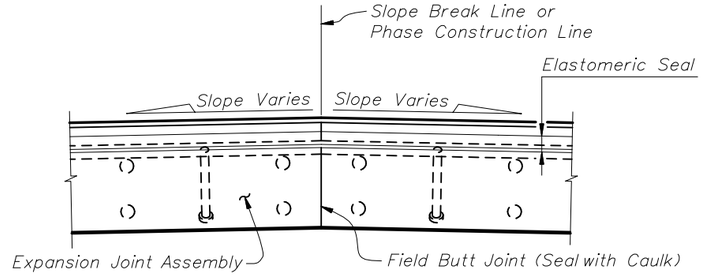
PARTIAL SECTION ALONG ℄ JOINT

JOINT TREATMENT AT LOW SIDE OF DECK & HIGH SIDE OF DECK WITH SLOPE < 2%

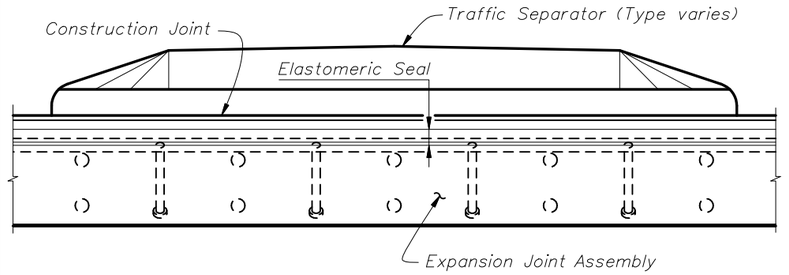
(Sidewalk Cover Plate where applicable not shown for clarity)



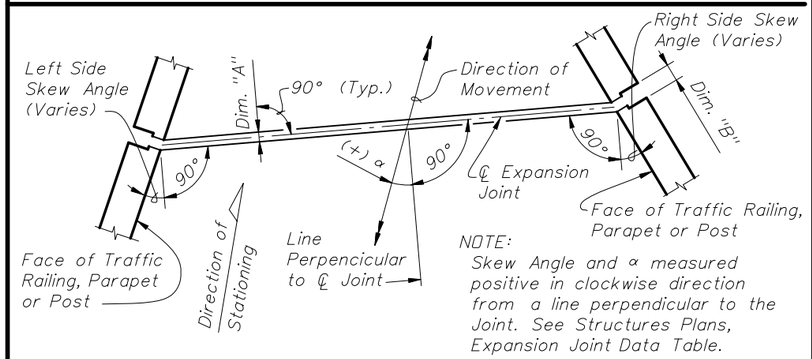
UPTURN DETAIL
(TYPICAL AT TRAFFIC BARRIERS AND PARAPETS)



PARTIAL SECTION ALONG ℄ JOINT AT FIELD BUTT JOINT LOCATION
(CROWNED DECK OR SLAB SHOWN)



PARTIAL SECTION ALONG ℄ JOINT THRU TRAFFIC SEPARATOR



MOVEMENT SCHEMATIC

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	SJN	Changed MOVEMENT SCHEMATIC detail .			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2008 Interim Design Standard

STRIP SEAL EXPANSION JOINT

Interim Date 07/01/09

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BOX GIRDER MAINTENANCE LIGHTING NOTES:

1. Submit shop drawings to the Engineer detailing the layout of the maintenance lighting system for the entire structure. The shop drawings must include, but not be limited to, the following items:
   a. Conduit layout and installation details through diaphragms, around post-tensioning (PT) ducts, lateral bracing and cross frames as necessary.
   b. Conduit access through box girder end diaphragms with minimum 1" clearance in all directions.
   c. Conduit expansion fitting details.
   d. Fastener details for the interior electrical system.
   e. Single line diagram showing mini power centers, switches, contactors, timers, etc.
   f. Mini power center details including circuit breaker details.
   g. Mini power center mounting details if required.
   h. Feeder schedule.
2. Ensure installation meets all requirements of the latest edition of the National Electrical Code (NEC) and local ordinances. Install grounding in accordance with NEC Article 250. Maintain separation between 480V and 120V Conductors / Conduits throughout.
3. Furnish all labor, equipment, materials, and incidentals required for a complete and functional installation.
4. Use only new, unused and Underwriters Laboratories (UL) listed equipment and materials for outdoor use.
5. Furnish and install polyvinyl chloride (PVC) conduit in conformance with UL Section 651, NEC Section 347 and NEMA TC-2, UV-resistant and schedule 80. Bend conduits as necessary to connect to loads.
6. Provide PVC sleeve 2" bigger in diameter than conduit to accommodate construction tolerance.
7. Install a UL labeled expansion fitting for specified PVC conduit at all structure expansion joints. Provide certification that the expansion fitting meets the following minimum requirements: Compatibility with the connected conduits, waterproof, UV protected and allows longitudinal movement equal to that of the Expansion Joint.
8. Use only Alloy 316 stainless steel supporting hardware. Provide minimum $\frac{3}{16}$" Ø fasteners. For concrete or SIP form mounting, provide anchor bolts (expansion, drop-in or adhesive) suitable for dynamic loading (due to vibration caused by traffic). Install fasteners to avoid conflicts with reinforcing steel and PT ducts. For structural steel mounting, do not attach fasteners to main members, i.e. webs and flanges.
9. Furnish power distribution at 480V AC, 1 phase, with step down transformers at regular intervals. Furnish 7.5 KVA mini power center with eight 20A breakers as the step down transformer, feeding a maximum of 20 lamps and 20 receptacles. Each mini power center will provide power to no more than 1000' of bridge, preferably 500' on each side of the mini power center. 480V top feed, 120V bottom feed to maintain separation.
10. Furnish and install lighting contactors to switch the 480V AC feeding the mini power centers.
11. Furnish and install copper conductors, Type XHHW. Do not use any conductor larger than #4 AWG.
12. Provide enough slack in all interior cable terminations to allow for minor shifting of the structure.
13. Furnish and install National Electric Manufacturers Association (NEMA) Type 4X (non-metallic) surface mounted boxes sized in conformance with the NEC.
14. Furnish and install 120V duplex receptacles (GFI, NEMA Type 5-20R), in non-metallic outlet boxes at 50' maximum on centers. Provide each receptacle with a gasketed weather-protective outdoor plate. Maximum wire size to connect to receptacles is #12 AWG.
15. Furnish and install surface mounted, fully enclosed, incandescent light fixtures with gasketed clear globes and wire guards at 50' maximum on centers. Provide 100 watt, 130 volt, vibration resistant and brass base incandescent lamps.
16. Locate switches at each end of each span and at every access door.
17. Provide six hour reset timers for each circuit to turn off the lighting system automatically.
18. Include the cost of the box maintenance lighting system in the pay item for Lighting - Inside Box Girder (LS).

INSTRUCTIONS TO DESIGNER:

1. This Standard does not show all structure elements and is not intended to show the exact location of conduit runs. Coordinate these with the other trades to avoid conflicts. Coordinate all lighting fixtures and equipment locations with the Structure Plans.
2. Tabulate quantities of contactors, light fixtures, receptacles, timers, boxes, switches, power centers, pull boxes, conduit and conductors required for the Maintenance Lighting System within the box girder system. Place this table in the plans. Include pay item 715-50 Lighting - Inside Box Girder (LS) in TRANS*PORT.

CROSS REFERENCES:
1. For Maintenance Light Details, see Sheet 2.
2. For actual bridge section, see Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07-01-09	CMH	Updated Note 18 to new LS pay item, updated Instructions to Designer to list items previously under several pay item numbers.			

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MAINTENANCE LIGHTING FOR BOX GIRDERS

Interim Date 07/01/09

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