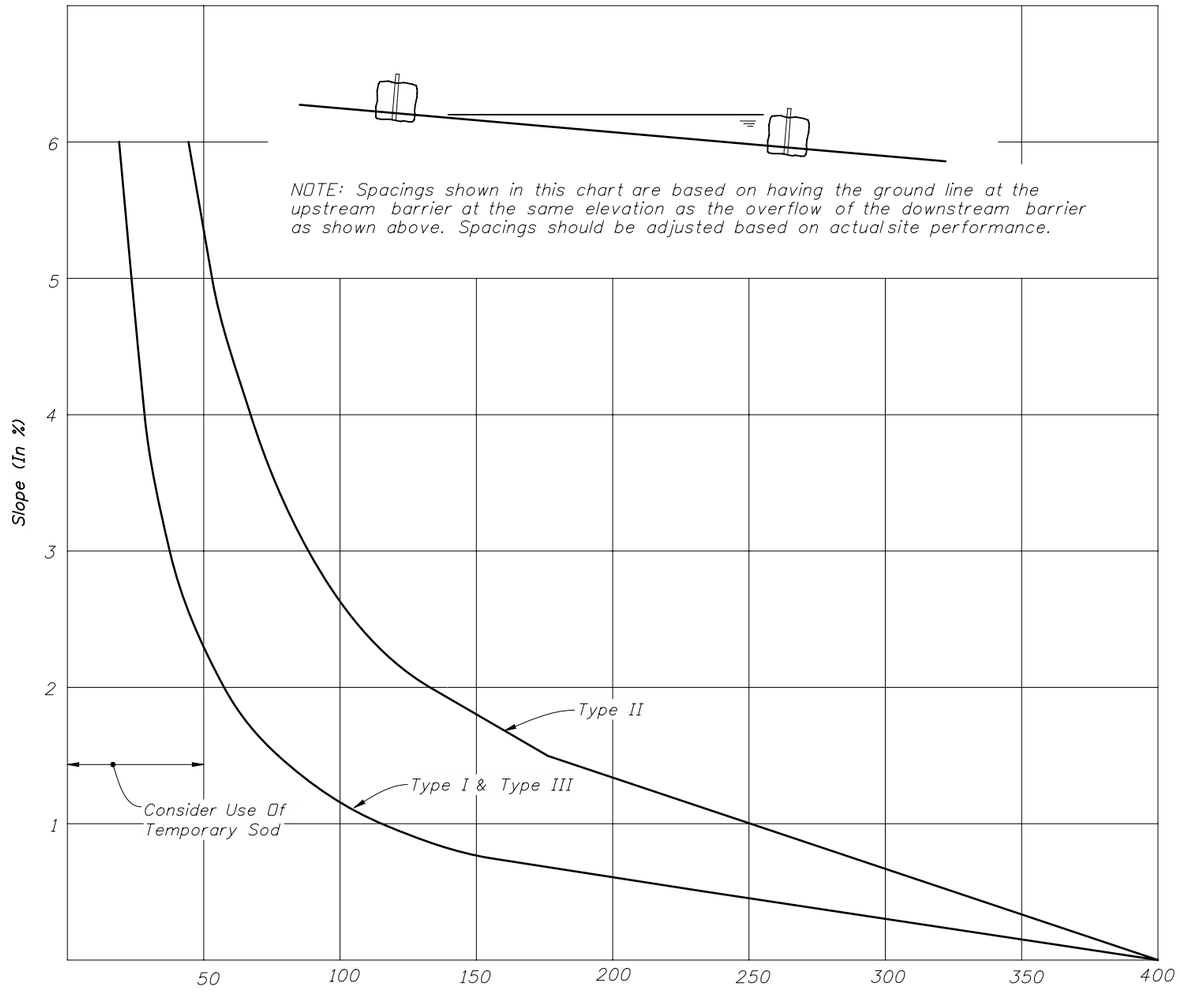
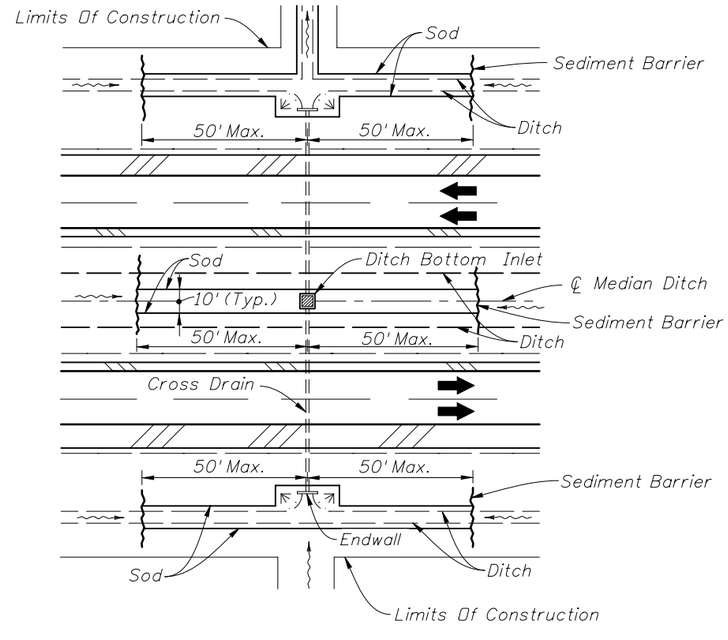


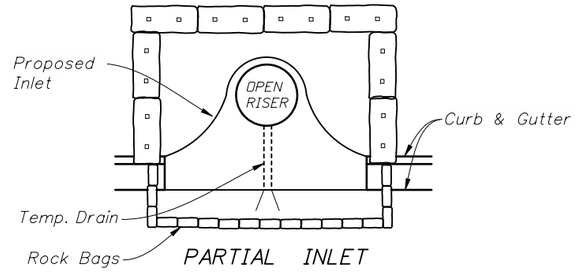
CHART I

RECOMMENDED SPACING FOR SEDIMENT BARRIERS

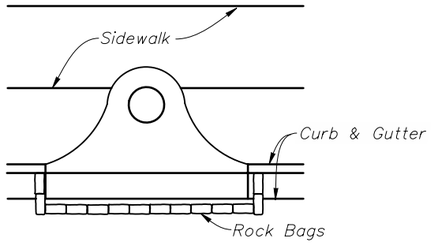


DITCH INSTALLATIONS AT DRAINAGE STRUCTURES

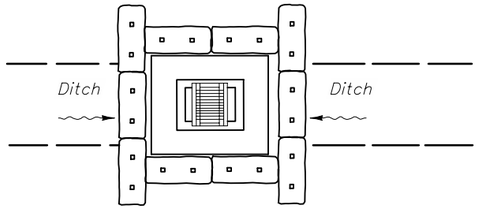
REVISIONS						2010 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	TEMPORARY EROSION AND SEDIMENT CONTROL	01/01/10	1 of 3
01/01/10	LLS	Changed CHART I title and replaced "Silt" with "Sediment"					Index No.	102



PARTIAL INLET

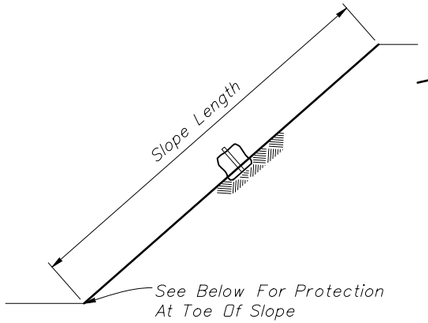


COMPLETED INLET

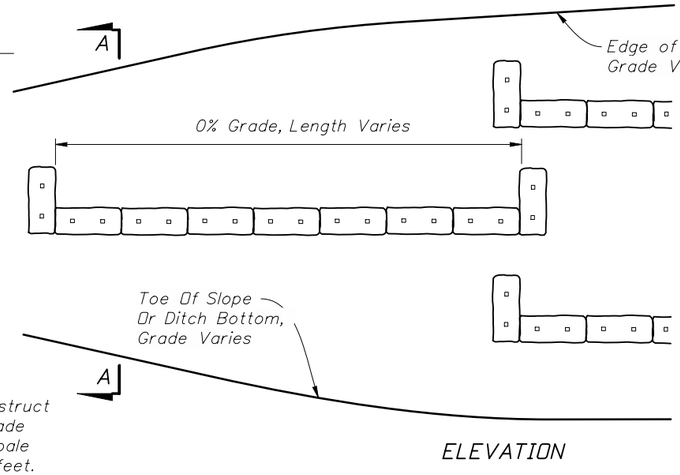


DITCH BOTTOM INLET

PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



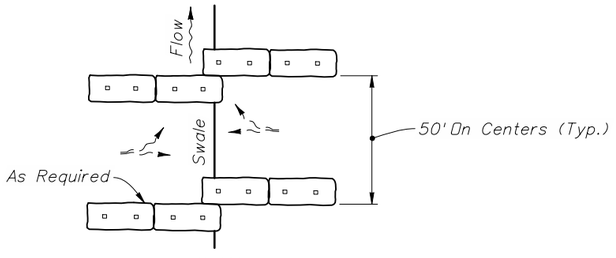
SECTION AA



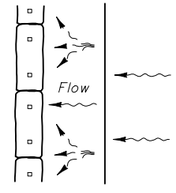
ELEVATION

Note:
Where the slope length exceeds 25 feet, construct one row of bale barriers at 0% longitudinal grade midway up the slope. Construct two rows of bale barriers where the slope length exceeds 50 feet.

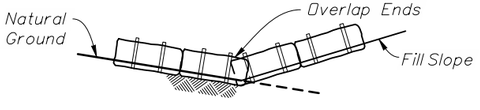
ALONG FILL SLOPE



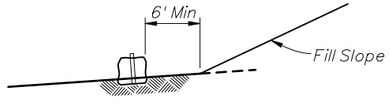
PLAN



PLAN

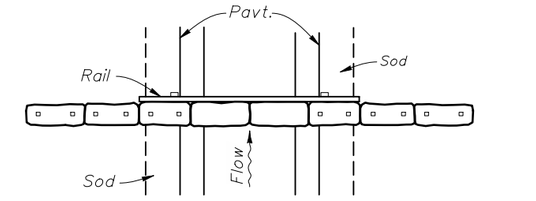


ELEVATION
TO BE USED WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE

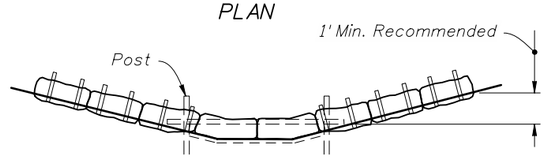


ELEVATION
TO BE USED WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

AT TOE OF SLOPE BARRIERS FOR FILL SLOPES

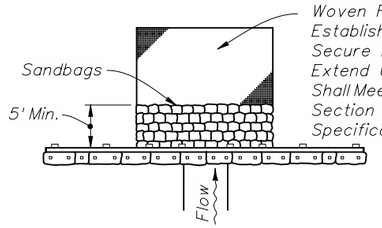


PLAN

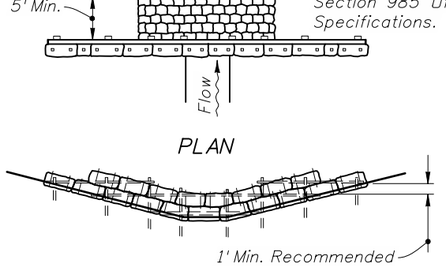


ELEVATION

SYNTHETIC BALES OR BALE TYPE BARRIERS FOR PAVED DITCHES

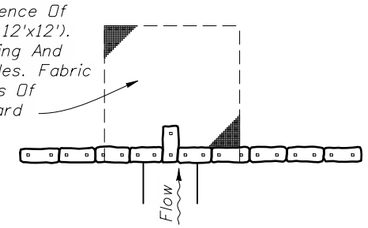


PLAN

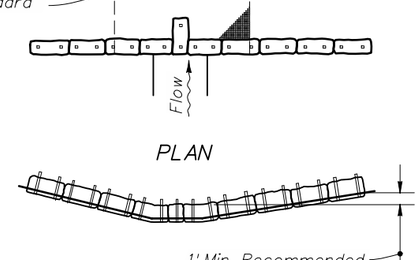


Anchor Top Bales To Lower Bales With 2 Stakes Per Bale.

ELEVATION
TYPE II



PLAN



ELEVATION
TYPE I

Woven Filter Fabric In Absence Of Established Grass (Approx. 12'x12'). Secure Edges By Entrenching And Extend Under Bags and Bales. Fabric Shall Meet The Requirements Of Section 985 Of The Standard Specifications.

SYNTHETIC BALES OR BALE TYPE BARRIERS FOR UNPAVED DITCHES

NOTES FOR SYNTHETIC BALES OR BALE TYPE BARRIERS

1. Type I and II Synthetic Barrier should be spaced in accordance with Chart 1, Sheet 1.
2. Bales shall be anchored with 2-1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivlalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together.
5. Where used in conjunction with silt fence, bales shall be placed on the upstream side of the fence.
6. Bales to be paid for under the contract unit price for Synthetic Bales, LF. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sandbags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LLS	Updating Index			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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TEMPORARY EROSION AND SEDIMENT CONTROL

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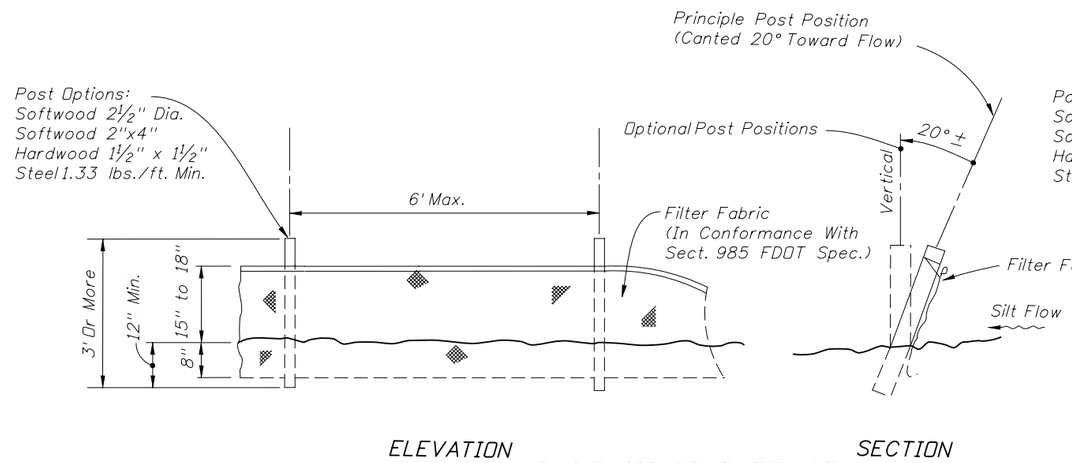
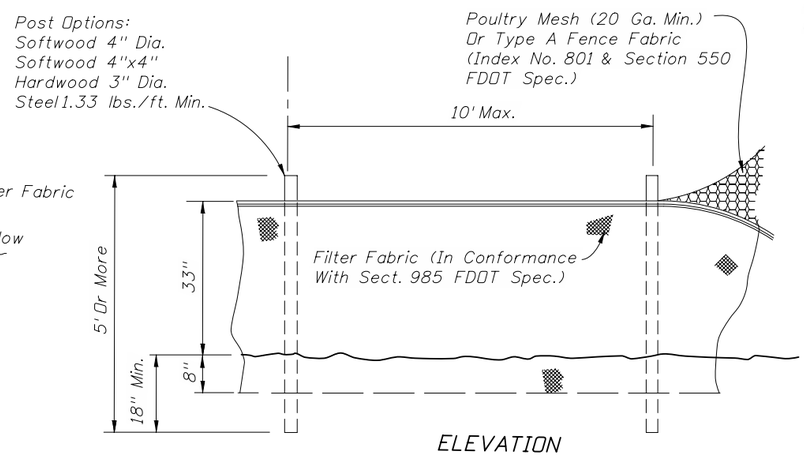
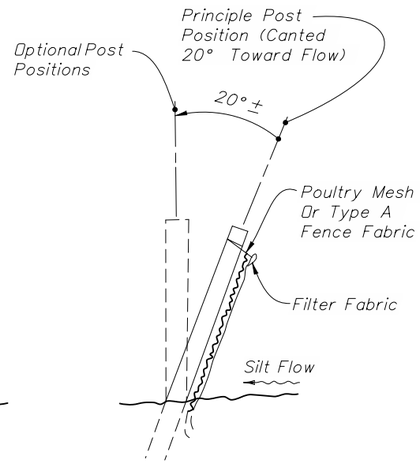


ELEVATION SECTION

TYPE III SILT FENCE

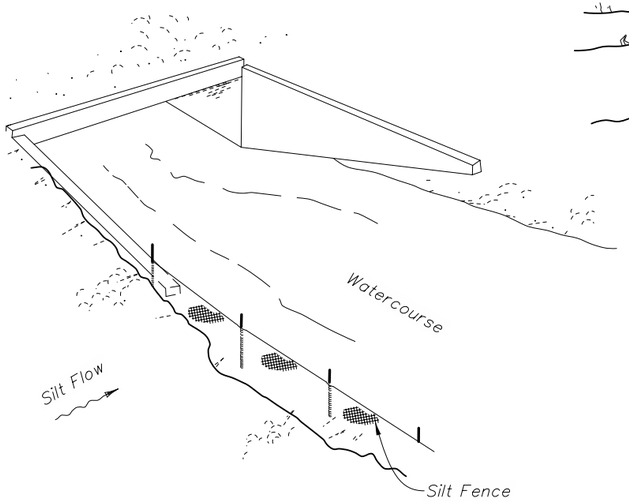


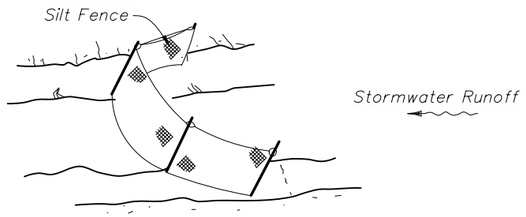
ELEVATION



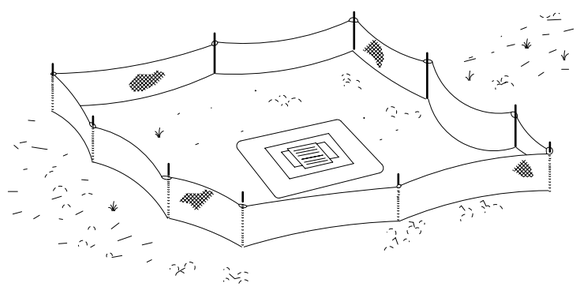
SECTION

TYPE IV SILT FENCE



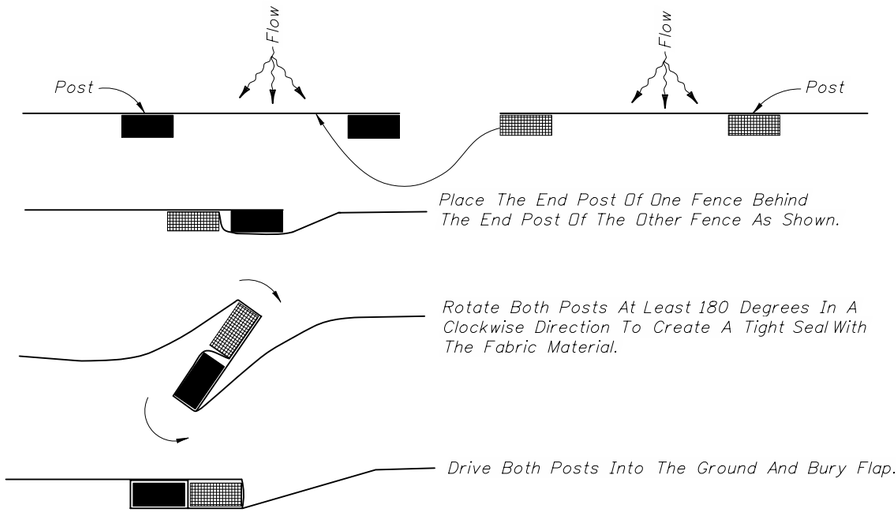


Silt Fence Protection In Ditches With Intermittent Flow



Silt Fence Protection Around Ditch Bottom Inlets

SILT FENCE APPLICATIONS



PLAN VIEW

JOINING TWO SILT FENCES

NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
5. Silt Fence to be paid for under the contract unit price for Sediment Barrier, (LF).

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LLS	Updated pay item name in Note 5.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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TEMPORARY EROSION AND SEDIMENT CONTROL

Interim Date 01/01/10

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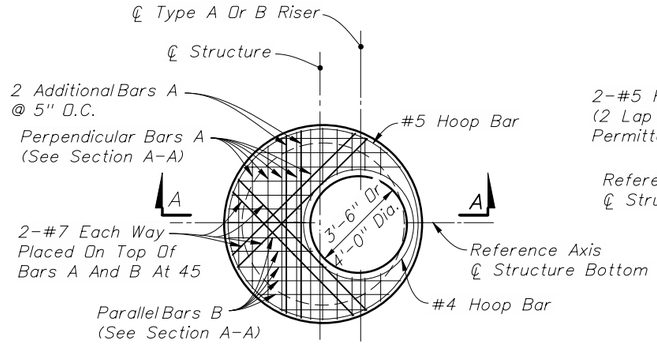
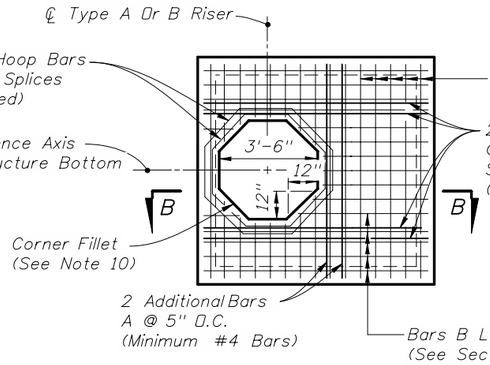
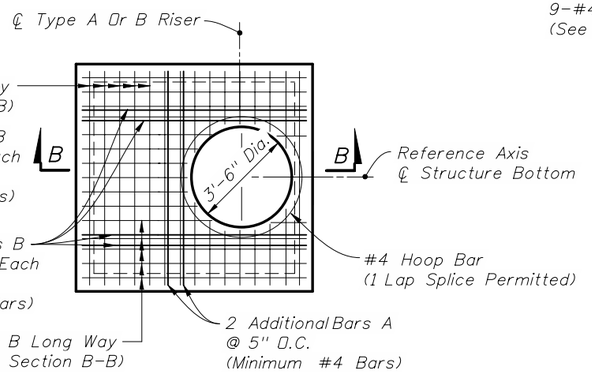


NOTE:
Not Applicable For Type A, B, C, D & E Ditch Bottom Inlets Or Type S & V Gutter Inlets. See Index Nos. 220, 221, 230, 231 & 232.

TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE A)

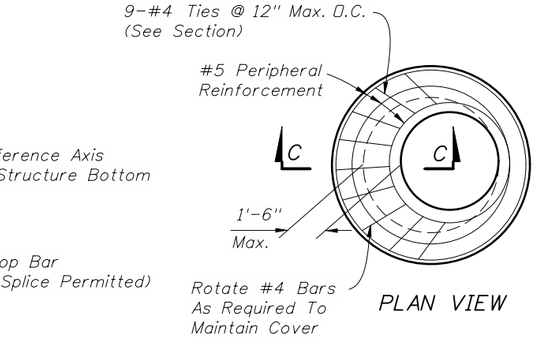


SQUARE OPENING WITH CORNER FILLETS



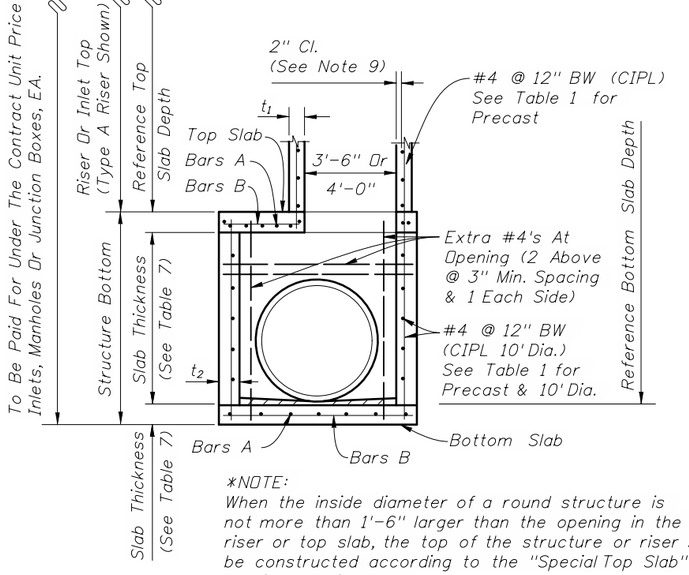
ROUND RISER OPENING

TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE B)



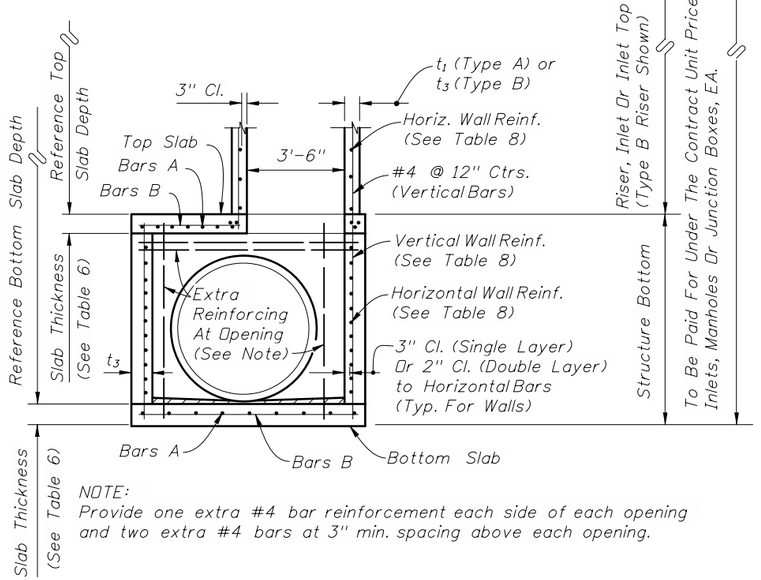
SECTION C-C

SPECIAL TOP SLAB*



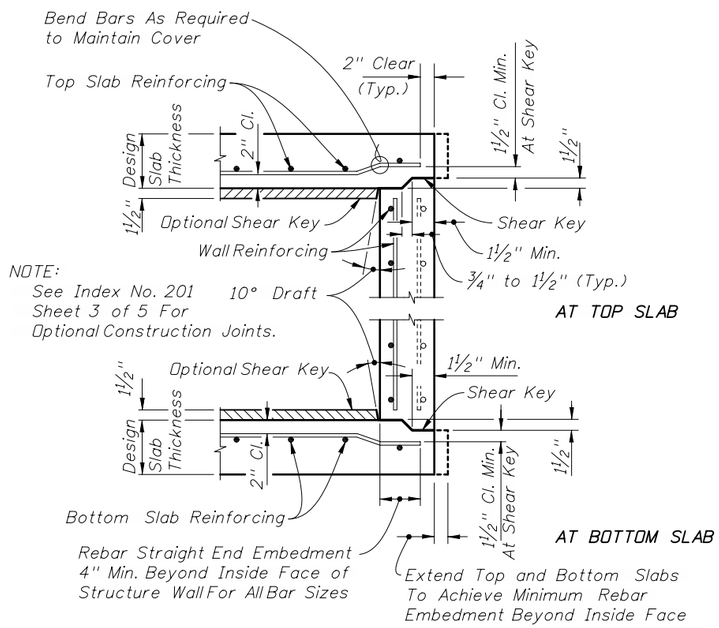
*NOTE:
When the inside diameter of a round structure is not more than 1'-6" larger than the opening in the riser or top slab, the top of the structure or riser shall be constructed according to the "Special Top Slab" details on this sheet.

SECTION A-A
(ALTERNATE A)



NOTE:
Provide one extra #4 bar reinforcement each side of each opening and two extra #4 bars at 3" min. spacing above each opening.

SECTION B-B
(ALTERNATE B)



TYPICAL SLAB TO WALL DETAILS FOR PRECAST STRUCTURES

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LLS	Raised Pipes to show grout under them.			

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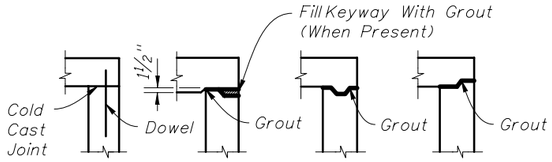
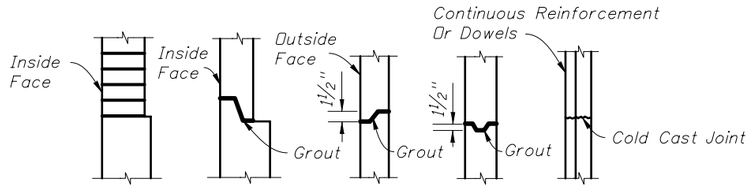
STRUCTURES BOTTOMS TYPE J AND P

Interim Date 01/01/10 | Sheet No. 1 of 5

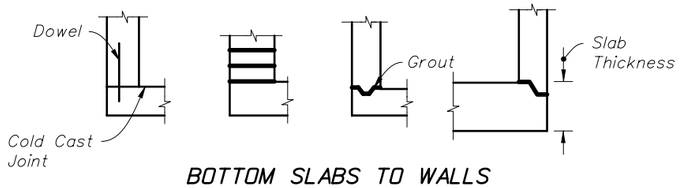
Index No. 200



TOP SLABS TO WALLS



WALL JOINTS



BOTTOM SLABS TO WALLS

1. One or more types of joints may be used in a single structure, except brick wall structure. Brick wall construction is permitted on circular units only.

2. All grouted joints are to have a maximum thickness of 1".

3. Keyways are to be a minimum of 1½" deep.

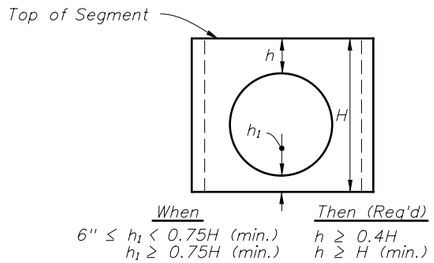
4. Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint approximately evenly spaced for circular structures or at maximum 12" spacing for rectangular structures. Bars may be either Adhesive Bonded Dowels in accordance with Specification Section 416, or placed approximately 6" into fresh concrete leaving the remainder to extend into the secondary cast. Welded wire fabric may be substituted for the dowel bar in accordance with the equivalent steel area table on Sheet 4.

5. Minimum cover on dowel reinforcing bars is 2" to outside face of structure.

6. Joints between wall segments and between wall segments and top or bottom slabs may be sealed either by preformed plastic gasket material using the procedures given in Section 430-7.3.1 of the Specifications or by non-shrink grout, in accordance with Section 934 of the Specifications.

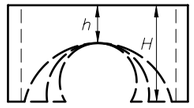
7. Approved product inserts may be used in lieu of dowel embedment.

OPTIONAL CONSTRUCTION JOINTS



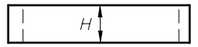
When: $6'' \le h_1 < 0.75H$ (min.), $h_1 \ge 0.75H$ (min.)

Then (Req'd): $h \ge 0.4H$, $h \ge H$ (min.)



H (min.) $\le h \ge 0.4H$

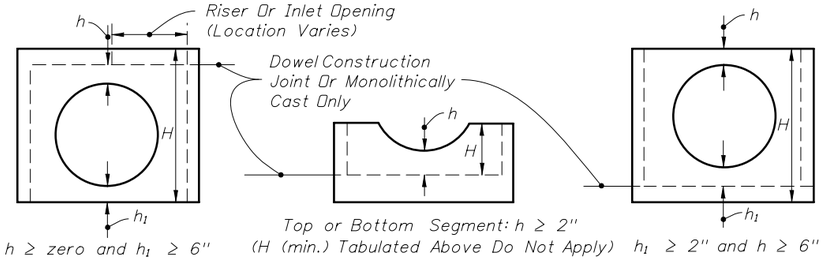
Segments may be inverted. Opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). If h can not be attained, then a top or bottom slab must be attached to the segment as shown below.



$H \ge H$ (min.)

Minimum Value For H	
H (min.)	Box Or Riser Diameter
1'-0" 1'-6" 2'-0"	3'-6" & 4'-0" 5'-0" & 6'-0" >6'-0"

SEPARATE RISER SEGMENTS WITH CONSTRUCTION JOINTS OTHER THAN DOWEL OPTION



$h \ge$ zero and $h_1 \ge 6''$

Top or Bottom Segment: $h \ge 2''$ (H (min.) Tabulated Above Do Not Apply)

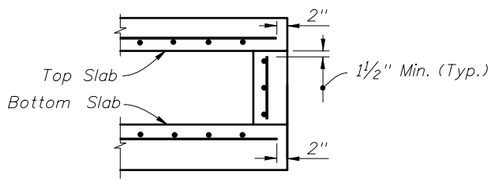
$h_1 \ge 2''$ and $h \ge 6''$

SEGMENTS FOR SLAB TO WALL DOWEL CONSTRUCTION JOINTS OR MONOLITHICALLY CAST SEGMENTS

NOTE: h may be less than 6" when approved by the Engineer, but not for inlet segments at finish grade elevation.

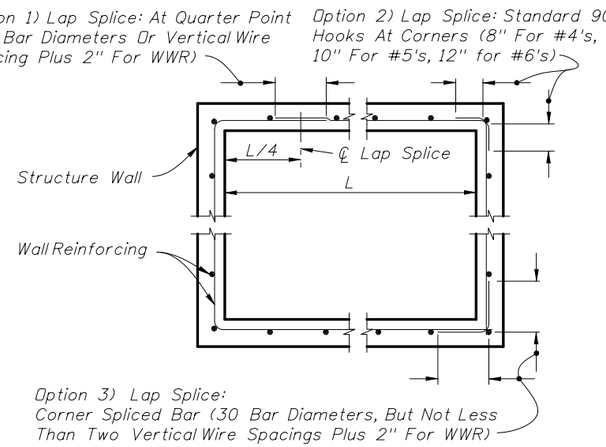
COMPARATIVE SIDE VIEWS

MINIMUM DIMENSIONS FOR BOX AND RISER SEGMENTS



(NOTE: NOT APPLICABLE AROUND MANHOLE AND RISER OPENINGS)

REBAR STRAIGHT END EMBEDMENT FOR TOP AND BOTTOM SLABS



WALL REINFORCING SPLICE DETAILS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LLS	SEGMENTS FOR SLAB TO WALL DOWEL CONSTRUCTION JOINTS OR MONOLITHICALLY CAST SEGMENTS, note changed "h≥ zero" to "h≥2"			

2010 Interim Design Standard

SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

Interim Date 01/01/10

Sheet No. 3 of 5

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EQUIVALENT STEEL AREA TABLE								
SCHEDULE	GRADE 60 REINFORCING BAR		EQUIVALENT GRADE 40 REINFORCING BAR		EQUIVALENT 65 KSI SMOOTH WELDED WIRE REINFORCEMENT		EQUIVALENT 70 KSI DEFORMED WELDED WIRE REINFORCEMENT	
	Bar Size & Spacing	Steel Area (in^2/ft)	Bar Size & Spacing	Min. Steel Area (in^2/ft)	Style Designation	Min. Steel Area (in^2/ft)	Style Designation	Min. Steel Area (in^2/ft)
A	#3 @ 6½" Ctrs. #4 @ 12" Ctrs.	0.20	#3 @ 4½" Ctrs. #4 @ 8" Ctrs. #5 @ 12" Ctrs.	0.30	3"x3"–W4.6xW4.6 4"x4"–W6.2xW6.2 6"x6"–W9.2xW9.2	0.1846	3"x3"–D4.3xD4.3 4"x4"–D5.7xD5.7 6"x6"–D8.6xD8.6	0.1714
B	#3 @ 5½" Ctrs. #4 @ 10" Ctrs.	0.24	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.36	3"x3"–W5.5xW5.5 4"x4"–W7.4xW7.4 6"x6"–W11.1xW11.1	0.2215	3"x3"–D5.1xD5.1 4"x4"–D6.9xD6.9 6"x6"–D10.3xD10.3	0.2057
Special 1	#3 @ 5" Ctrs. #4 @ 9" Ctrs.	0.267	#3 @ 3" Ctrs. #4 @ 6" Ctrs. #5 @ 9" Ctrs.	0.40	3"x3"–W6.2xW6.2 4"x4"–W8.2xW8.2 6"x6"–W12.3xW12.3	0.2465	3"x3"–D5.7xD5.7 4"x4"–D7.6xD7.6 6"x6"–D11.4xD11.4	0.2289
C	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.37	#4 @ 4" Ctrs. #5 @ 6½" Ctrs. #6 @ 9½" Ctrs.	0.555	3"x3"–W8.5xW8.5 4"x4"–W11.4xW11.4 6"x6"–W17.1xW17.1	0.3415	3"x3"–D7.9xD7.9 4"x4"–D10.6xD10.6 6"x6"–D15.9xD15.9	0.3171
D	#4 @ 4½" Ctrs. #5 @ 7" Ctrs. #6 @ 10" Ctrs.	0.53	#4 @ 3" Ctrs. #5 @ 4½" Ctrs. #6 @ 6½" Ctrs.	0.795	3"x3"–W12.2xW12.2 4"x4"–W16.3xW16.3 6"x6"–W24.5xW24.5	0.4892	3"x3"–D11.4xD11.4 4"x4"–D15.1xD15.1 6"x6"–D22.7xD22.7	0.4543
E	#4 @ 3" Ctrs. #5 @ 5" Ctrs. #6 @ 7" Ctrs.	0.73	#5 @ 3½" Ctrs. #6 @ 4½" Ctrs. #7 @ 6½" Ctrs.	1.095	3"x3"–W16.8xW16.8 4"x4"–W22.5xW22.5 6"x6"–W33.7xW33.7	0.6738	3"x3"–D15.6xD15.6 4"x4"–D20.9xD20.9 6"x6"–D31.3xD31.3	0.6257
F	#5 @ 3½" Ctrs. #6 @ 5" Ctrs. #7 @ 7" Ctrs.	1.06	#6 @ 3" Ctrs. #7 @ 4½" Ctrs. #8 @ 6" Ctrs.	1.59	3"x3"–W24.5xW24.5 4"x4"–W32.6xW32.6 6"x6"–W48.9xW48.9	0.9785	3"x3"–D22.7xD22.7 4"x4"–D30.3xD30.3 6"x6"–D45.4xD45.4	0.9086
Special 2	#5 @ 3" Ctrs. #6 @ 4" Ctrs. #7 @ 5½" Ctrs.	1.24	#7 @ 4" Ctrs. #8 @ 5" Ctrs.	1.86	3"x3"–W28.6xW28.6 4"x4"–W38.2xW38.2 6"x6"–W57.2xW57.2	1.1446	3"x3"–D26.6xD26.6 4"x4"–D35.4xD35.4 6"x6"–D53.1xD53.1	1.0629
G	#6 @ 3½" Ctrs. #7 @ 5" Ctrs.	1.46	#7 @ 3" Ctrs. #8 @ 4" Ctrs.	2.19	3"x3"–W33.7xW33.7 4"x4"–W44.9xW44.9	1.3477	3"x3"–D31.3xD31.3 4"x4"–D41.7xD41.7	1.2514

GENERAL NOTES

1. For square or rectangular precast drainage structures, either deformed or smooth welded wire reinforcement may be used provided:
   a) The smooth welded wire reinforcement shall comply with ASTM A185 and deformed welded wire reinforcement shall comply with ASTM A497.
   b) Width and length of the unit is four times the spacing of the cross wires.
   c) Wire reinforcement shall be continuous around the box, and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcing Splice Details.
2. Horizontal steel in the walls of rectangular structures shall be lap spliced in accordance with Option 1, 2 or 3 as shown in the Wall Reinforcing Splice Details.
3. Welding of splices and laps is permitted. The requirements and restrictions placed on welding in AASHTO M259 shall apply.
4. Rebar straight end embedment of peripheral reinforcement may be used in lieu of ACI standard hooks for top and bottom slabs except when hooks are specifically called for in the plans or standard drawings.
5. Concrete as specified in ASTM C478, (4000 psi) may be used in lieu of Class II concrete in precast items manufactured in plants which meet the requirements of Section 449 of the Specifications.
6. Precast opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). Mortar used to seal the pipe into the opening will be of such a mix that shrinkage will not cause leakage into or out of the structure. Dry-pack mortar may be used in lieu of brick and mortar construction to seal openings less than 2½" wide.
7. For pay item purposes, the height used to determine if a drainage structure is less than or greater than 10 feet shall be computed using
   (a) the elevation of the top of the manhole lid,
   (b) the grate elevation or the theoretical gutter grade elevation of an inlet, or
   (c) the outside top elevation of a junction box less the flow line elevation of the lowest pipe or to top of sump floor.

NOTES FOR PRECAST OPTIONS & EQUIVALENT REINFORCEMENT SUBSTITUTION

1. Details for optional precast inlet construction up to depths of 15' are shown on the inlet indexes.
2. When precast units are used in conjunction with Alt. "B" Structure Bottoms, Index No. 200, the interior dimensions of an Alt. "B" Bottom can be adjusted to reflect these inlet interior dimensions.
3. Concrete which meets the requirements of ASTM C478 or Class IV must be used for precast structures constructed with 6" wall or slab thickness.
4. Reinforcement can be either deformed bar reinforcement or welded wire reinforcement. Bar reinforcement other than 60 ksi may be used, however only two grades are recognized; Grade 40 and Grade 60. Smooth welded wire reinforcement, will be recognized as having a design strength of 65 ksi and deformed welded wire reinforcement will be recognized as having a design strength of 70 ksi. The area of reinforcement required may be adjusted in accordance with the Equivalent Steel Area Table provided. For bars and spacings not given, the steel area required can be determined by the following equations:

$$\text{Grade 40 Steel Area} = A_s40 = \frac{60}{40} \times A_s60$$

$$\text{Smooth Welded Wire Reinforcement Steel Area} = A_s65 = \frac{60}{65} \times A_s60$$

$$\text{Deformed Welded Wire Reinforcement Steel Area} = A_s70 = \frac{60}{70} \times A_s60$$

continued...

When a reduced area of reinforcement is provided, any maximum bar spacing shown must also be reduced as determined by the following equations, unless otherwise shown:

Max. Grade 40 Bar Spacing = Grade 60 Bar Spacing
Max. Smooth Welded Wire Spacing = Grade 60 Bar Spacing x 0.86
Max. Deformed Welded Wire Spacing = Grade 60 Bar Spacing x 0.74

When an increased area of reinforcing is provided, then the maximum bar spacing may be increased by the squared ratio of increased steel area, but not to exceed 12":

$$\text{Max. Bar Spacing Provided} \le \text{Max. Bar Spacing Required} \times \left(\frac{\text{Steel Area Provided}}{\text{Min. Steel Area Required}}\right)^2$$

In no case will reinforcement with wires smaller than W3.1 or D3.1, or spacings greater than 8" be permitted. Bar reinforcement shall show the minimum yield designation grade mark or either the number 60 or one (1) grade mark line to be acceptable at the higher value. Maximum bar spacing shall not be greater than two (2) times the slab thickness with a maximum spacing of 12" or three (3) times the wall thickness, with a maximum spacing of 18" for vertical bars and 12" for horizontal bars. Wires smaller than W3.1 or D3.1 are permitted in the walls of ASTM C 478 round structure bottoms and round risers.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Revised NOTES FOR PRECAST OPTIONS & WELDED WIRE REINFORCEMENT SUBSTITUTION FOR BAR REINFORCEMENT, Note 4.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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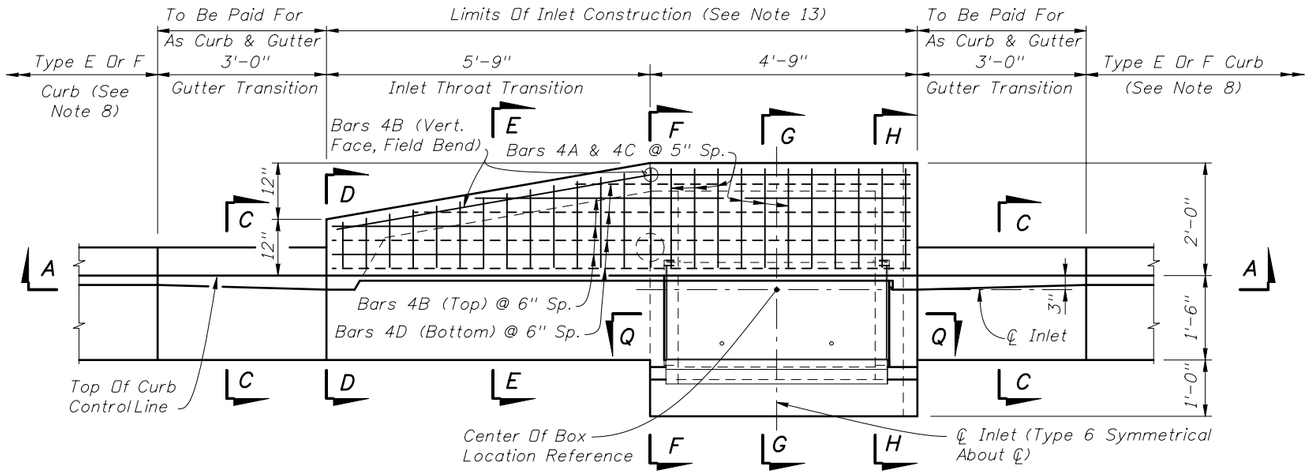
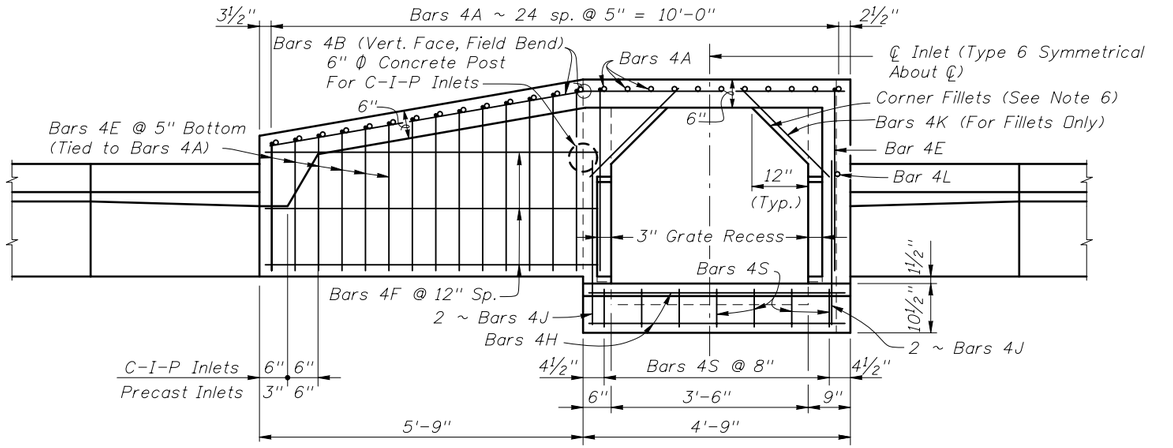
SUPPLEMENTARY DETAILS FOR MANHOLES AND INLETS

Interim Date 01/01/10

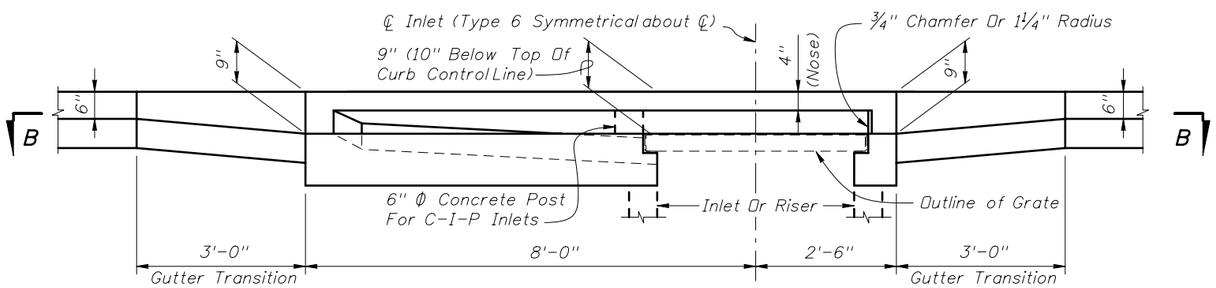
Index No. 201



TOP VIEW



SECTION BB

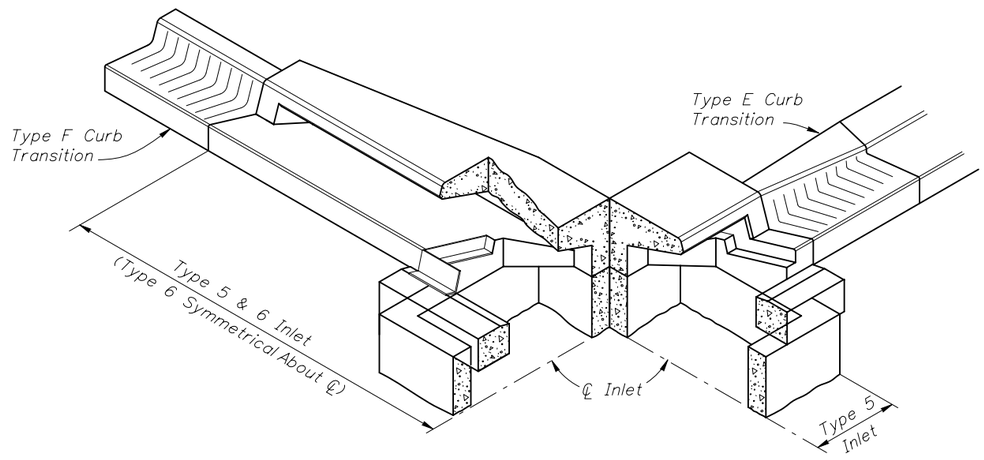


SECTION AA
(At ℄ Inlet)

INLET TYPE 5
(Curb Inlet Type 6 Symmetrical With Left Half)

GENERAL NOTES

1. The finished grade and slope of the inlet tops are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. For inlets constructed on a curve, refer to the plans to determine the radius, and modify the inlet details accordingly. Bend steel when necessary.
3. All reinforcing steel to be Grade 60 bars with 1¼" minimum cover unless otherwise shown, see Sheet 4 for equivalent area Welded Wire Reinforcement details.
4. Inlet tops shall be either cast-in-place or precast concrete. Precast units shall conform to the dimensions shown or in accordance with approved shop drawing's. Request for shop drawing approval shall be directed to the State Drainage Engineer.
5. Concrete meeting the requirements of ASTM C478 (4,000 psi) may be used in lieu of Class II concrete for precast units, manufactured in plants which meet the requirements of Section 449 of the Specifications.
6. Corner fillets are required at inlet opening for precast units or C-I-P units used in conjunction with circular inlet bottoms or skewed rectangular inlet boxes. Finish top of fillets flush with drain throat bottom and match slope.
7. For inlet bottoms see Index No. 200. Inlet tops are to be used with Type P bottoms, or Type J bottoms with 3'-6" square (Type B), 3'-6" or 4' round (Type A) risers or top slab openings.
8. These inlet tops are designed for use with standard curb and gutter Type E and Type F. Locate inlet outside of pedestrian crosswalks. For Type E curb, transition the shape of the curb over the gutter transition length to match the face of the inlet (Type F).
9. See Index No. 201 for supplemental details.
10. All steel used for frame and grate shall meet the requirements of ASTM A36/A36M.
11. Either cast iron grates or steel grates may be used.
12. When Alternate "G" grate is specified in the plans either the cast iron grate and galvanized steel frame or the the galvanized steel grate and frame must be used. Grates are to be grouted in accordance with the grouting detail shown on Sheet 5, in lieu of tack welding.
13. Inlet to be paid for under the contract unit price for Inlets (Curb) (Type _), Each.



SKETCH SHOWING FRAME SEAT AND THROAT RECESS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/16/09	JG	Added Center of Box Location Reference point for TOP VIEW.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

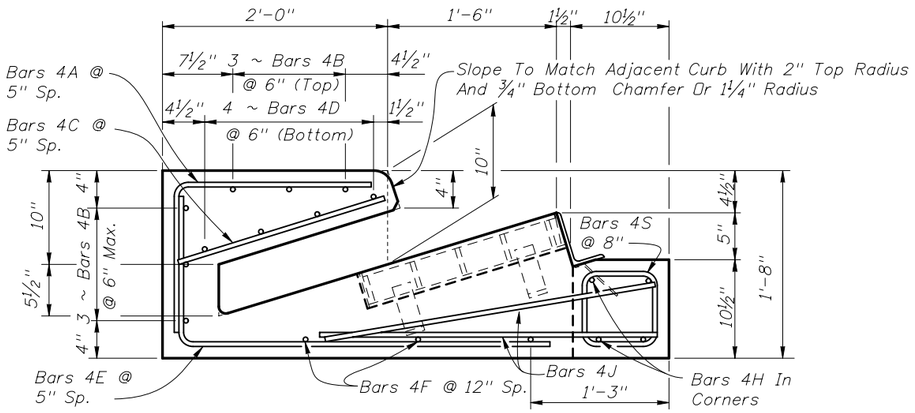
2010 Interim Design Standard

CURB INLET TOPS
TYPES 5 & 6

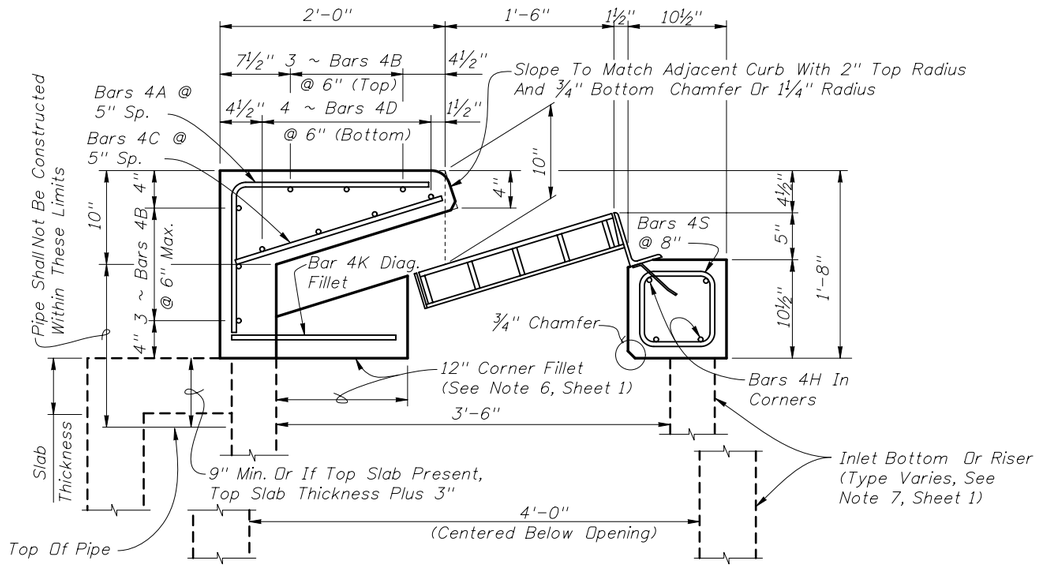
Interim Date 01/01/10

Sheet No. 1 of 5

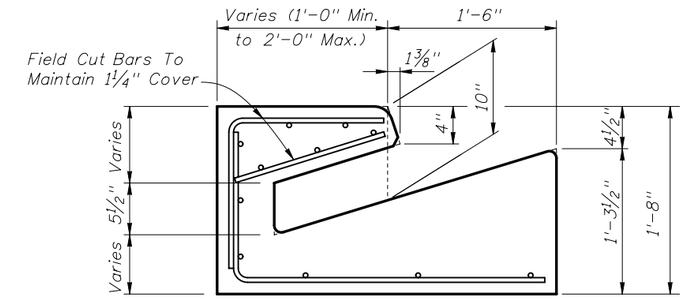
Index No. 211



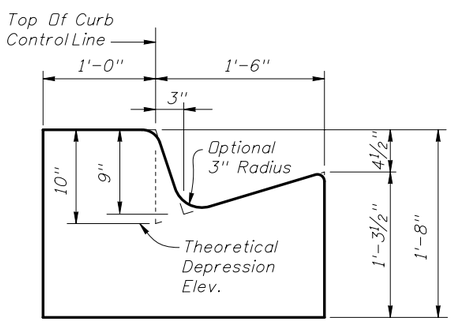
SECTION FF



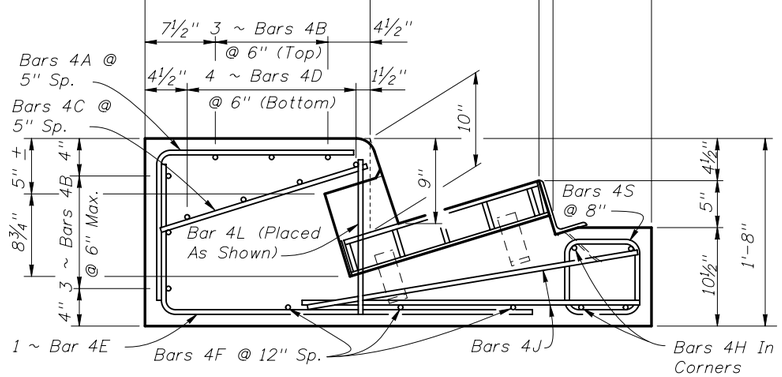
SECTION GG



SECTION EE



SECTION DD
(End View Of Inlet)



SECTION HH
(Type 5 Inlet Only)

CROSS REFRENCES:
For General Notes See Sheet 1.
For Location Of Sections DD Thru HH See Sheet 1.

PRECAST DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Revised Inlet Bottom/Riser details.			

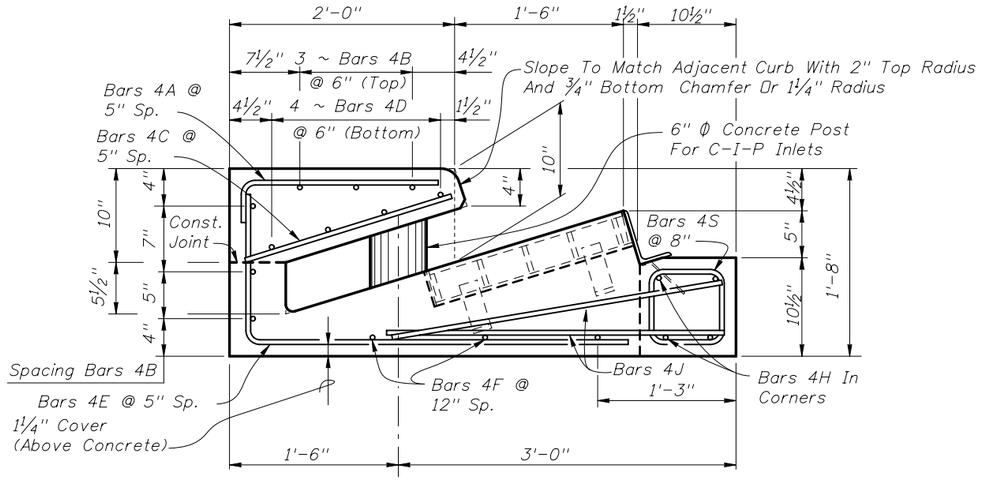
2010 Interim Design Standard

CURB INLETS TOPS TYPES 5 & 6

Interim Date 01/01/10

Sheet No. 2 of 5

Index No. 211



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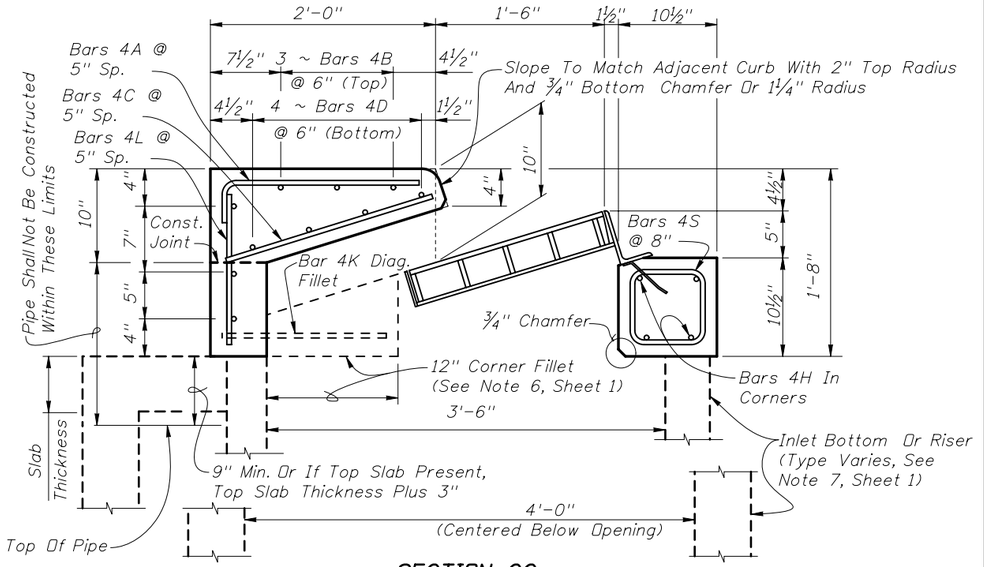
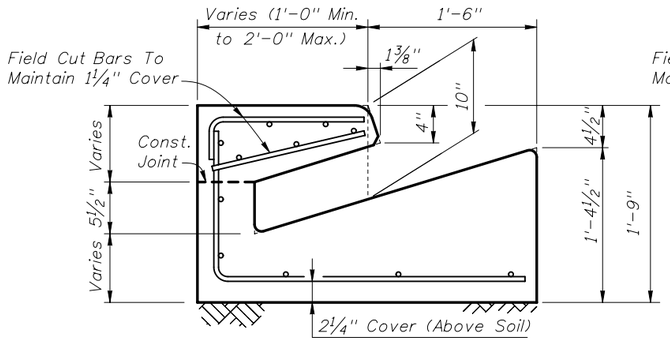
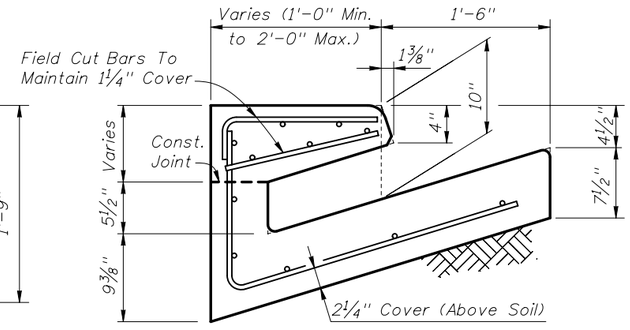


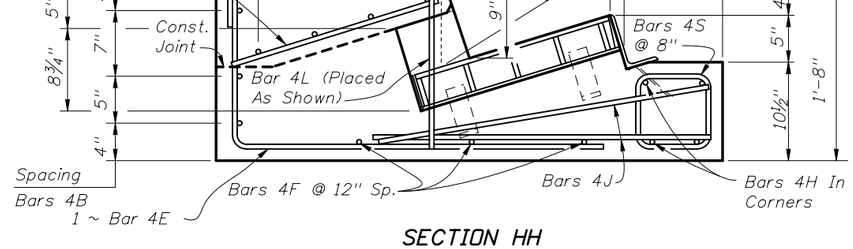
SECTION GG



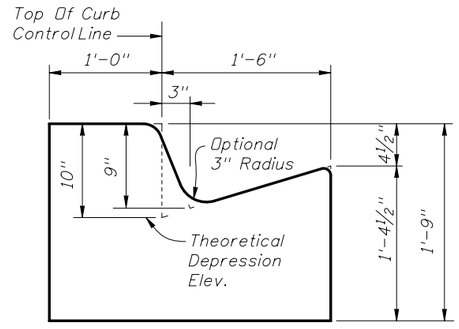
SECTION EE (OPTION A)



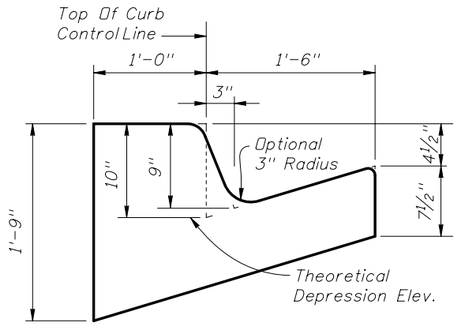
SECTION EE (OPTION B)



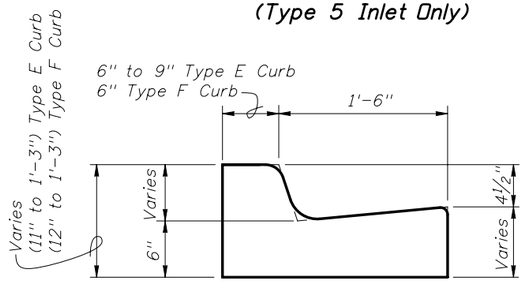
SECTION HH
(Type 5 Inlet Only)



SECTION DD (OPTION A)
(End View Of Inlet)



SECTION DD (OPTION B)
(End View Of Inlet)



SECTION CC
(Gutter Transition
Type F Shown, Type E Similar)

CROSS REFRENCES:
For General Notes See Sheet 1.
For Location Of Sections CC
Thru HH See Sheet 1.

CAST-IN-PLACE DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Revised Inlet Bottom/Riser details.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

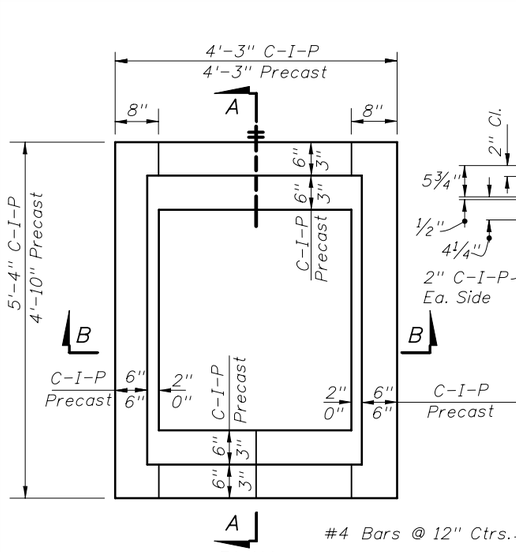
2010 Interim Design Standard

CURB INLETS TOPS
TYPES 5 & 6

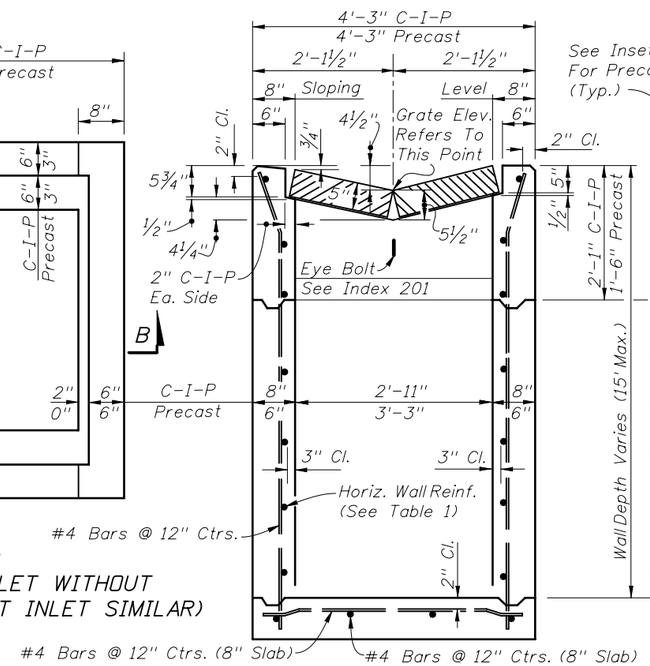
Interim Date 01/01/10

Sheet No. 3 of 5

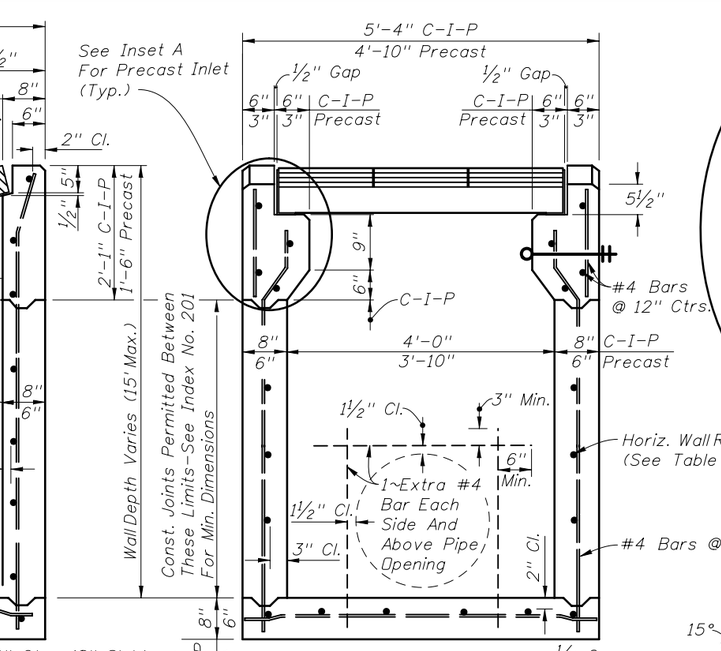
Index No. 211



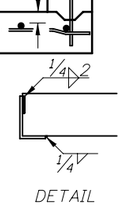
PLAN
(CAST-IN-PLACE INLET WITHOUT GRATE SHOWN, PRECAST INLET SIMILAR)

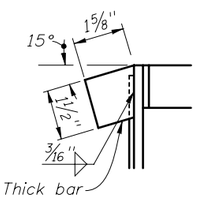


(Pipe Opening Not Shown)
SECTION BB

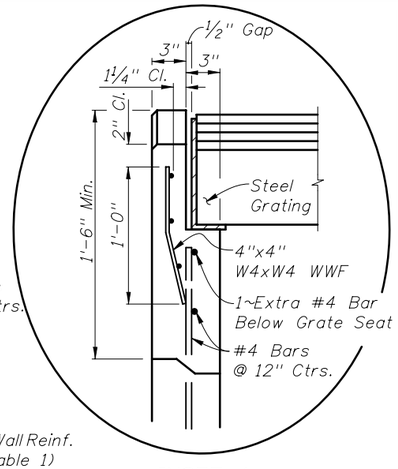


(Pipe Opening Shown)
SECTION AA





DETAIL OF BAR STUB



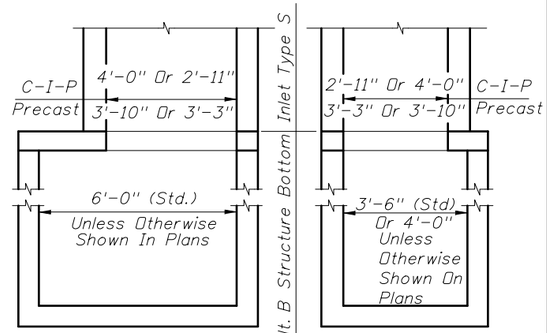
INSET A
(PRECAST OPTION)

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

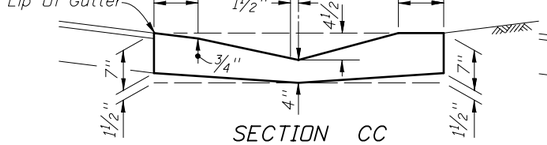
Note: Recommended sizes are for concrete pipe. Sizes for other types of pipe must be verified for fit in accordance with Index No. 201. For larger pipe see bottom detail below and Index No. 200.

HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)

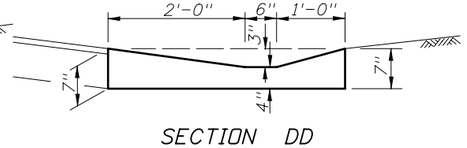
WALL DEPTH	SCHEDULE	AREA (in²/ft)	MAX. SPACING	
			BARS	WWF
0'-5'	A12	0.20	12"	8"
5'-9'	A6	0.20	6"	5"
9'-12'	A4	0.20	4"	3"
9'-15'	B5.5	0.24	5½"	5"



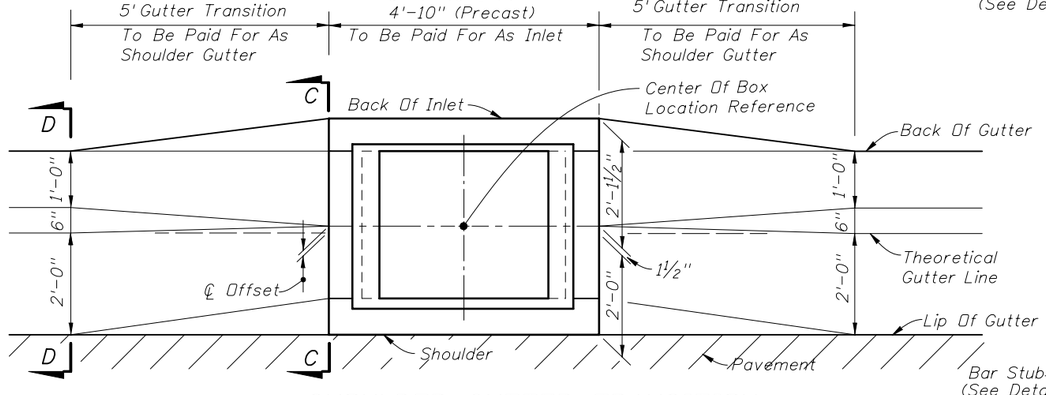
NOTE: Alt. B Structure Bottom Only. See Index No. 200 for structure bottom details and hole reinforcement.



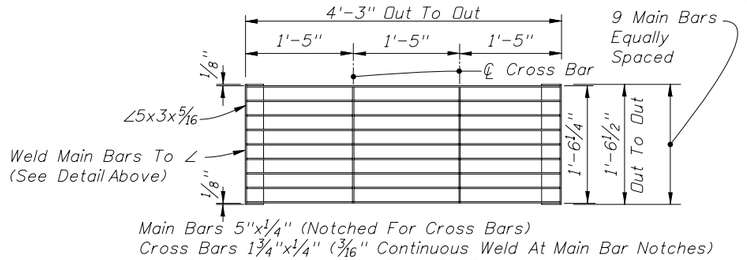
SECTION CC

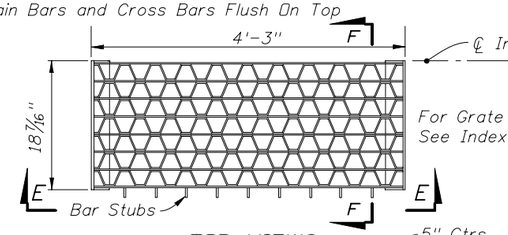


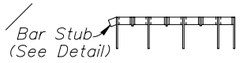
SECTION DD



SHOULDER GUTTER TRANSITION







SECTION FF

SECTION EE

STEEL GRATE

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.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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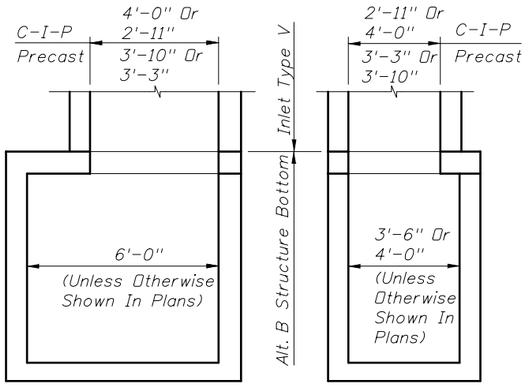
GUTTER INLET TYPE S

Interim Date 01/01/10

Sheet No. 1 of 3

Index No. 220

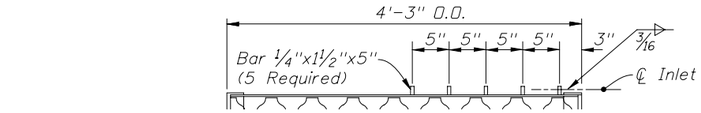


NOTE: Alt. B Structure Bottom Only. See Index No. 200 for structure bottom details and hole reinforcement. (For Pipes 30" Dia. And Larger)

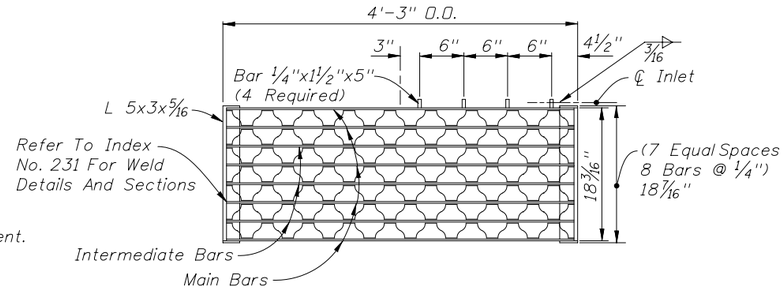
INLET WITH STRUCTURE BOTTOM

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.



OPTIMAL 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).

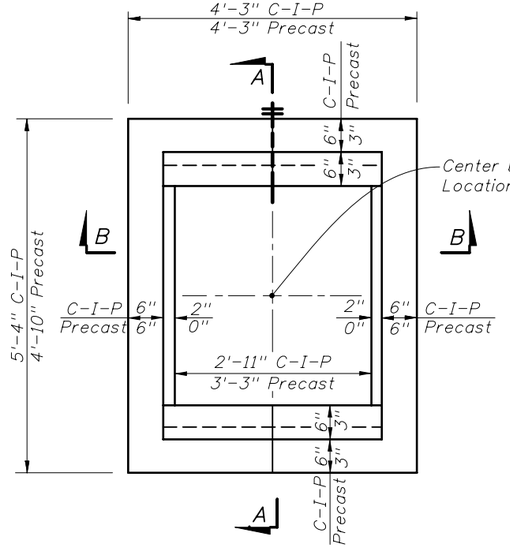
STEEL GRATE

GENERAL NOTES

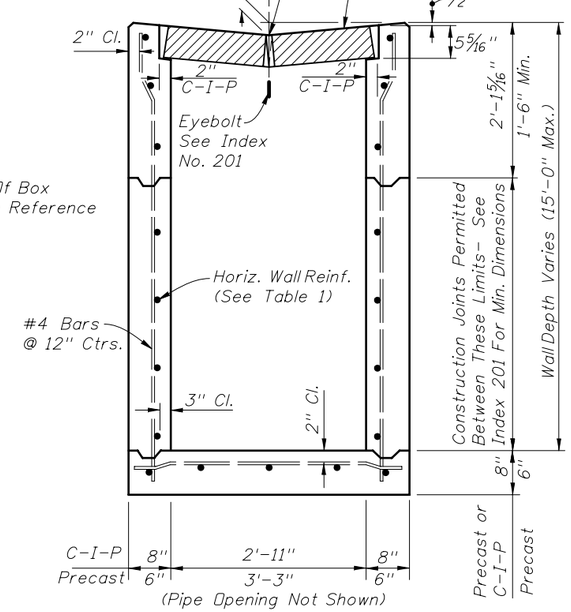
1. This inlet is suitable for village swales, ditches, or other areas subject to heavy wheel loads, minimum debris, and bicycle traffic. This inlet may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.
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"

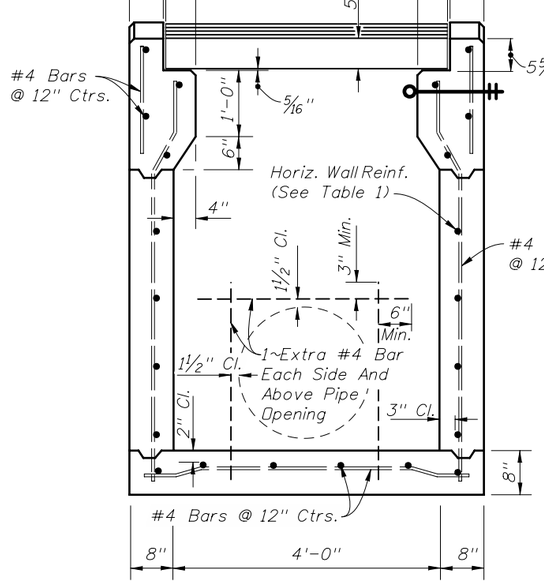
HORIZONTAL WALL REINFORCING SCHEDULE (TABLE 1)



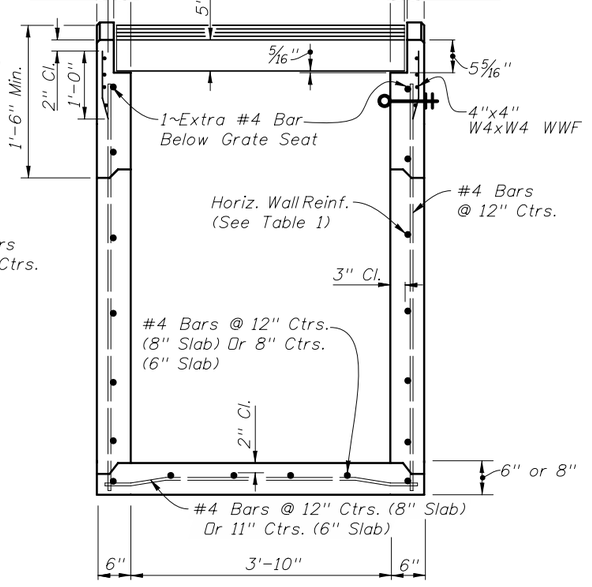
PLAN
(CAST-IN-PLACE INLET SHOWN WITHOUT GRATE; PRECAST INLET SIMILAR)



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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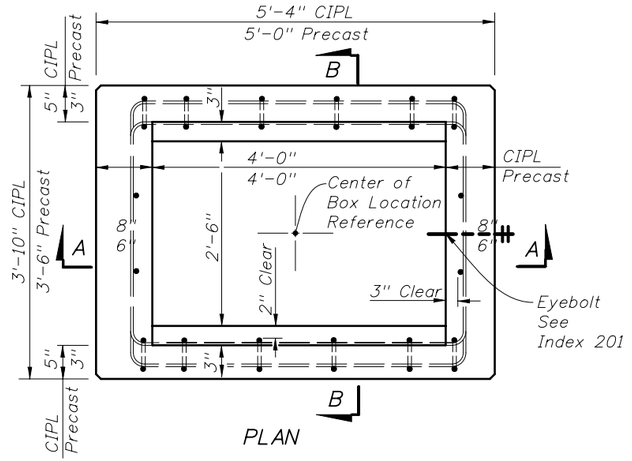
GUTTER INLET TYPE V

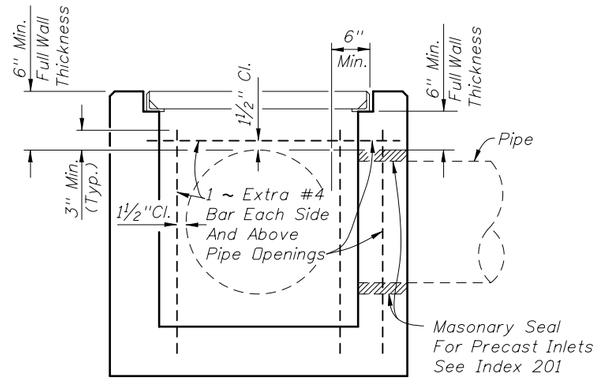
Interim Date 01/01/10

Sheet No. 1 of 2

Index No. 221

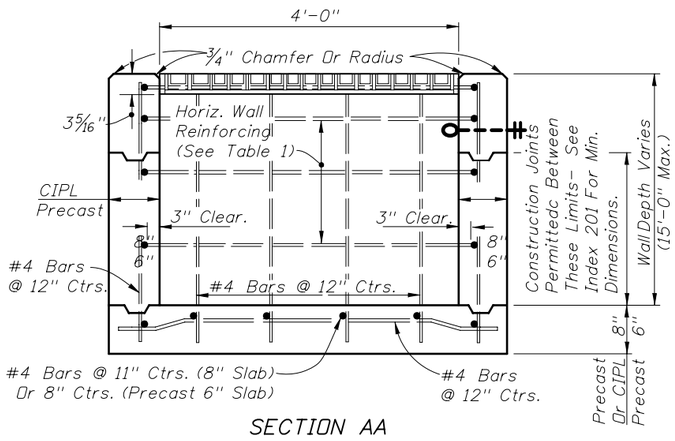


PLAN

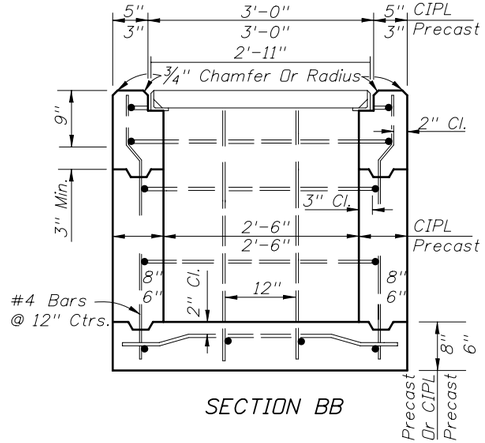


(TYPE F SHOWN, TYPE G SIMILAR)

PIPE OPENING SCHEMATIC

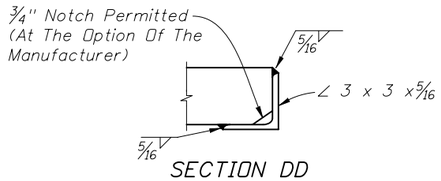


SECTION AA

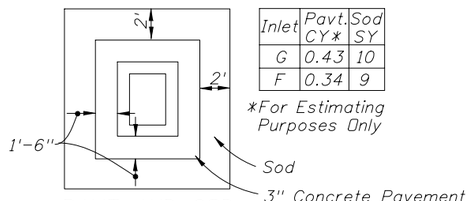


SECTION BB

SECTION CC



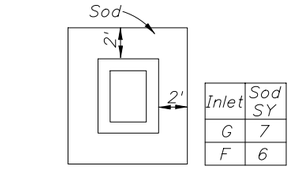
SECTION DD



Inlet	Pavt. CY*	Sod SY
G	0.43	10
F	0.34	9

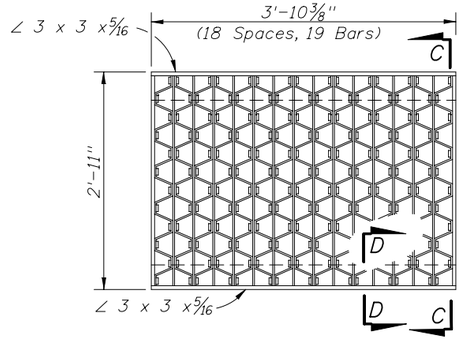
*For Estimating Purposes Only

PAVT. AND SOD



Inlet	Sod SY
G	7
F	6

SOD ONLY



STEEL GRATE

Steel Grating, Straight Bars 3"x ¼"
Reticuline Bars 2"x 3/16"

TYPE F

Notes:
1. Pavement and/or sod to be used only where called for in the plans.
2. Cost of paving to be included in cost of inlet.

PAVEMENT AND SODDING

HORIZONTAL WALL REINF. SCHEDULES
TYPE F INLET (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0' - 4'	A12	0.20	12"	8"
4' - 7'	A6	0.20	6"	5"
7' - 12'	B5.5	0.24	5½"	5"
12' - 15'	Special 1	0.267	5"	4"

GENERAL NOTES

1. These inlets are designed for use in ditches, medians, pavement areas, or other areas subject to heavy wheel loads, minimal 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. When inlet is placed in areas subject to bicycle traffic, install filler bar when clearance or gap is greater than 1" as shown in Index 218 Inset B.
2. When Alternate G grate is specified in plans, the grate is to be hot dip galvanized after fabrication.
3. These inlets may be used with Alternate B structure bottoms, Index 200. The inlet and bottom combinations are to be paid for under the contract unit price for inlets (DT Bot) (Type F (or G)) (J Bot, Depth), Ea.
4. All exposed edges and corners shall be ¾" chamfer or tooled to ¼" radius.
5. For supplemental details, see Index 201.
6. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. Bars to be cut or bent for 1½" clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening, as shown.
7. All dimensions are for both precast and cast-in-place inlets unless otherwise noted.

RECOMMENDED MAXIMUM PIPE SIZES	
INLET INSIDE WIDTH	PIPE SIZE
2'-6" (Type F)	18"
4'-0" (Type F)	30"
4'-10" / 5'-0" (Type G)	42"

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 sizes see Note 3.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/16/09	JG	Added Center of Box Location Reference point to PLAN detail.			

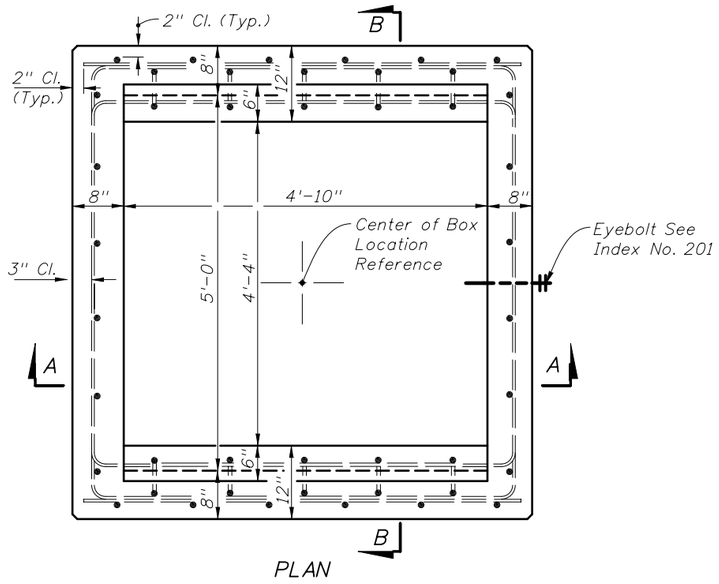
2010 Interim Design Standard

DITCH BOTTOM INLET
TYPES F & G

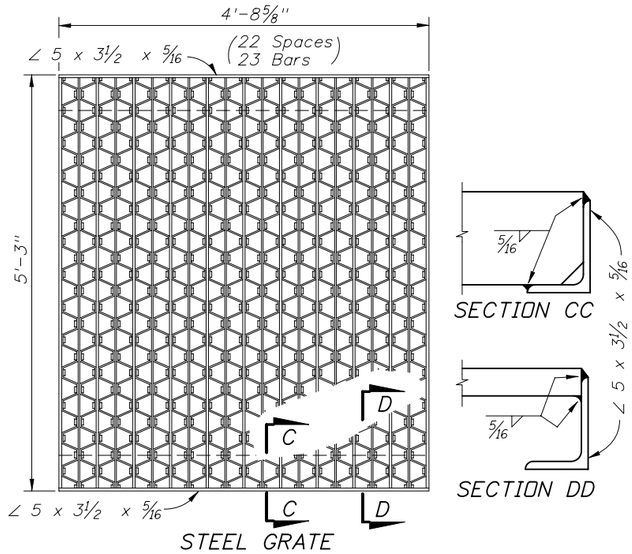
Interim Date 01/01/10

Sheet No. 1 of 2

Index No. 233



PLAN

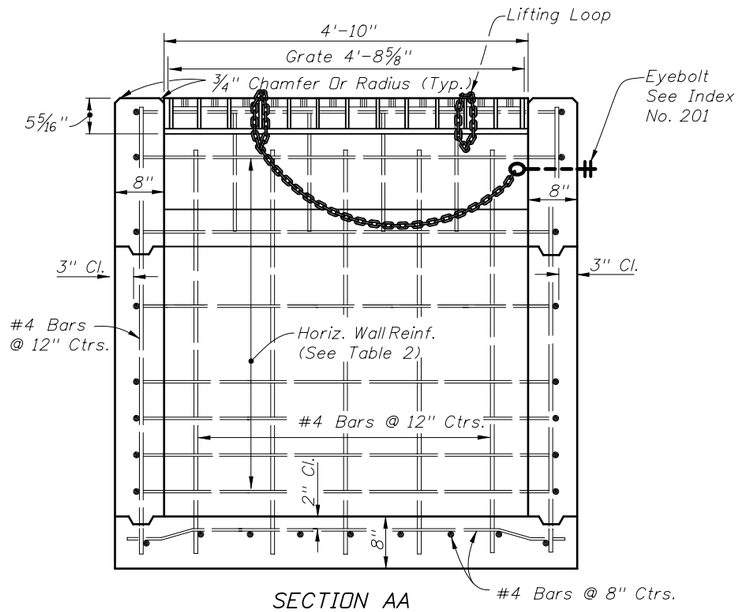


STEEL GRATE

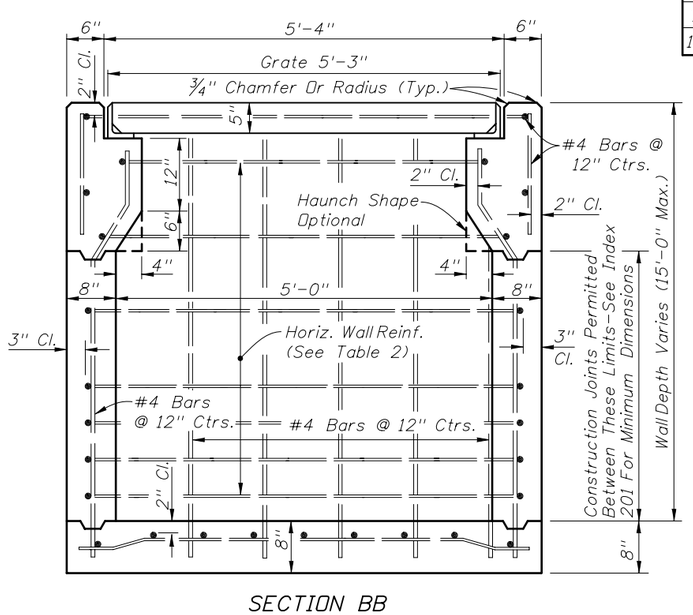
5" Steel Decking, Weight 630 Lbs. Main Bars 5" x ¼"
Intermediate Bars 1½" x¼", Reticuline Bars 1¼" x 3/16"

TYPE G INLET (TABLE 2)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING	
			BARS	WWF
0' - 3'	A12	0.20	12"	8"
3' - 7'	A6	0.20	6"	5"
7' - 10'	B5.5	0.24	5½"	5"
10' - 15'	C6.5	0.37	6½"	6"



SECTION AA



SECTION BB

TYPE G

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/15/09	JG	Added to PLAN detail Center of Box Location Reference point.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

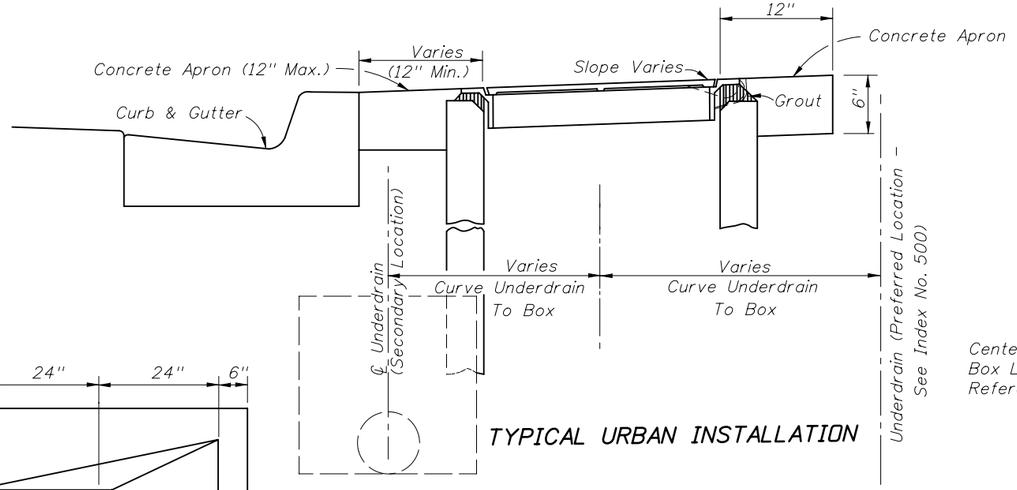
2010 Interim Design Standard

DITCH BOTTOM INLET TYPES F & G

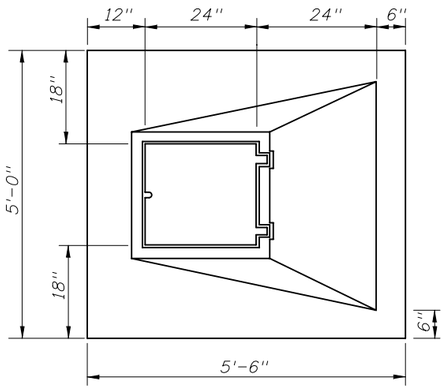
Interim Date 01/01/10

Sheet No. 2 of 2

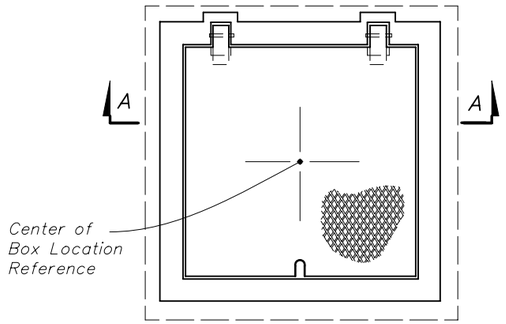
Index No. 233



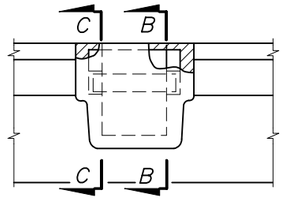
TYPICAL URBAN INSTALLATION



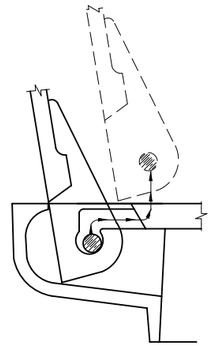
TOP VIEW



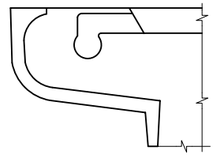
TOP VIEW



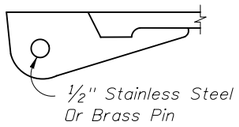
BACK VIEW



COVER REMOVAL

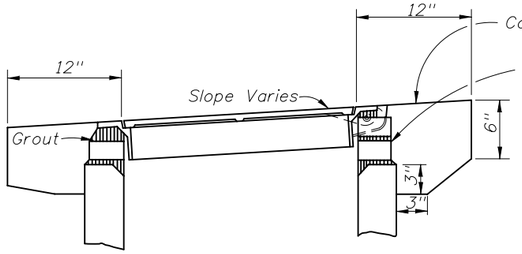


SECTION CC

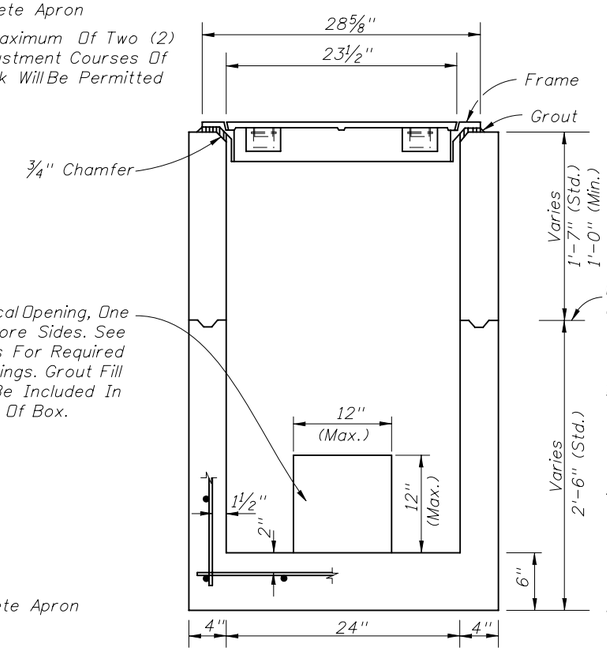


SECTION BB

HINGE DETAIL

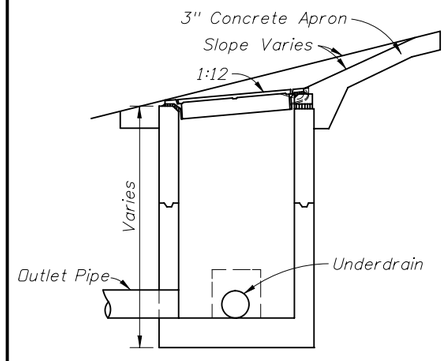


PERMISSIBLE TOP ADJUSTMENT



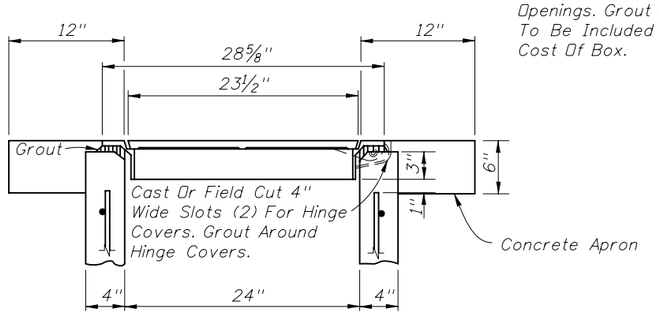
SECTION AA

BOX AND TOP



SECTION

TYPICAL INSTALLATION ON SLOPES



TYPICAL TOP AND APRON

GENERAL NOTES

1. Cast iron cover and frame to be Neenah Foundary Company R-6660-JH, U.S. Foundary & Manufacturing Corporation No. 7640-JK or equal. Neenah R-6660-JH detailed this index.
2. Concrete shall be Class I, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications. Box shall be reinforced with No. 3 bars (Grade 60) on 8" centers both ways, sides and bottom.
3. Concrete apron to be included in the contract unit price for Underdrain Inspection Box.
4. All covers shall be furnished with pick holes. Fitted lifts or handles are not permitted.
5. Manhole Type P Alternate A, Index No. 200, with Type I Frame and Cover, Index No. 201, may be used in lieu of the box detailed on this sheet, and is recommended when high ADT increases chance of the repeated vehicle loadings.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/16/09	JG	Added Center of Box Location Reference point to TOP VIEW.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

UNDERDRAIN INSPECTION BOX

Interim Date	Sheet No.
01/01/10	1 of 1
Index No.	
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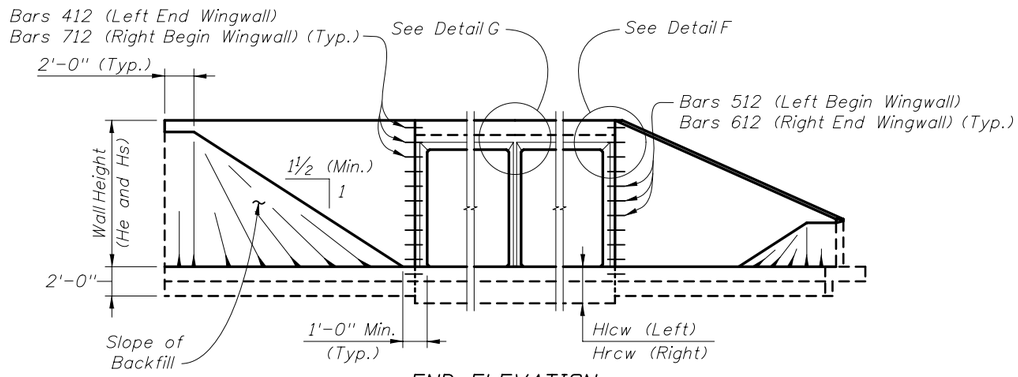
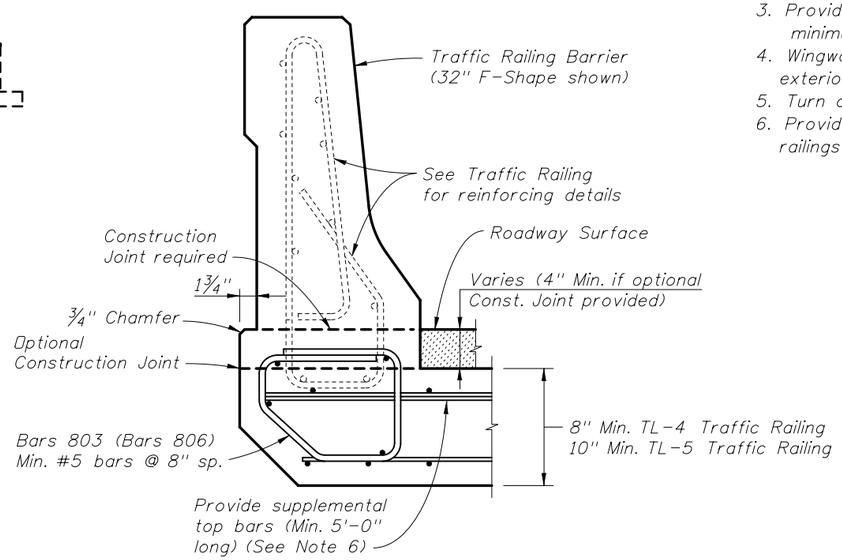


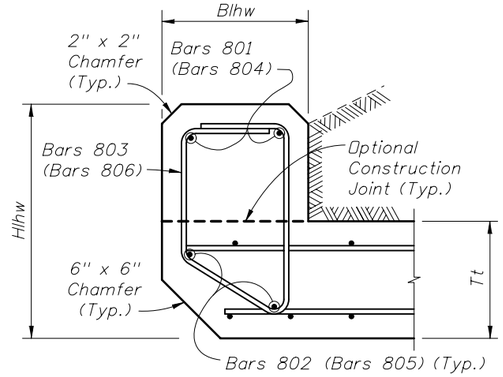
END ELEVATION
(Showing Constant Height And Variable Height Wingwalls)

NOTES:

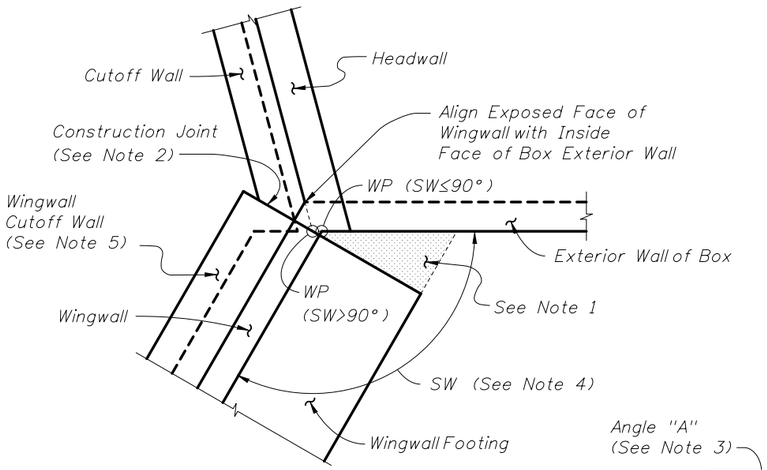
1. For small angles, the Contractor may elect to fill the area between the box and the wingwall footing with unreinforced concrete. For wingwall skew angles less then 90 degrees, field bend wingwall reinforcement as necessary while maintaining cover. No additional payment will be made for this work.
2. Location of Construction Joint determined by WP at theoretical intersection of:
   - Soil side face of Headwall and outside face of Box Exterior Wall, for SW≤90°;
   - Outside face of Wingwall and outside face of Box Exterior Wall, for SW>90°.
3. Provide 6" chamfer when angle "A" is greater than 45°. Maintain minimum wall thickness. Field adjust reinforcing to maintain cover.
4. Wingwall Skew Angles (SW) are measured from the adjacent box exterior wall to the wingwall.
5. Turn or extend Wingwall Cutoff Wall as necessary to meet Box Cutoff Wall.
6. Provide additional reinforcement in the top of the top slab below traffic railings to ensure a minimum area of 0.80 sq. in./ft. transverse reinforcing.



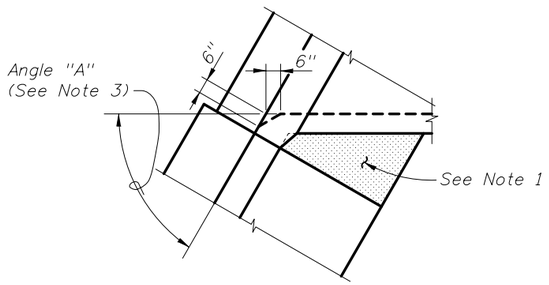
DETAIL I
TRAFFIC RAILING
ATTACHMENT TO HEADWALL



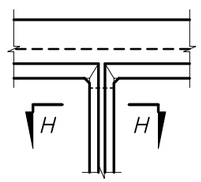
DETAIL J
LEFT HEADWALL SECTION
(Right Headwall similar)



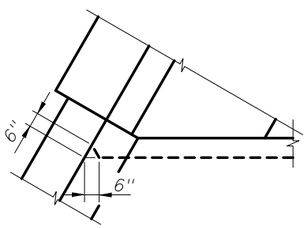
DETAIL C - PLAN VIEW
WINGWALL TO BOX CONNECTION
(Left Begin Corner Shown, Other Corners Similar)



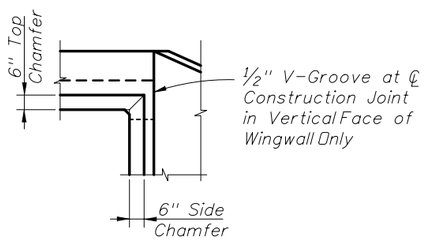
DETAIL E



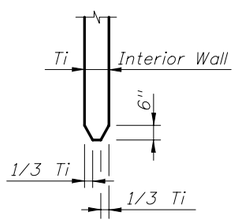
DETAIL G



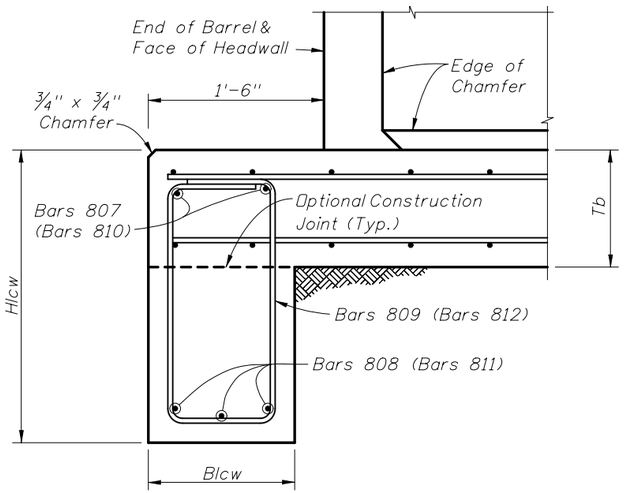
DETAIL D



DETAIL F



SECTION H-H



DETAIL K
LEFT CUTOFF WALL SECTION
(Right Cutoff Wall similar)

CROSS REFERENCE:
See Sheet 3 for locations of Details D, E, J & K.
See Sheet 4 for locations of Detail C.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added 1¾" offset to base of traffic railing in DETAIL I.			

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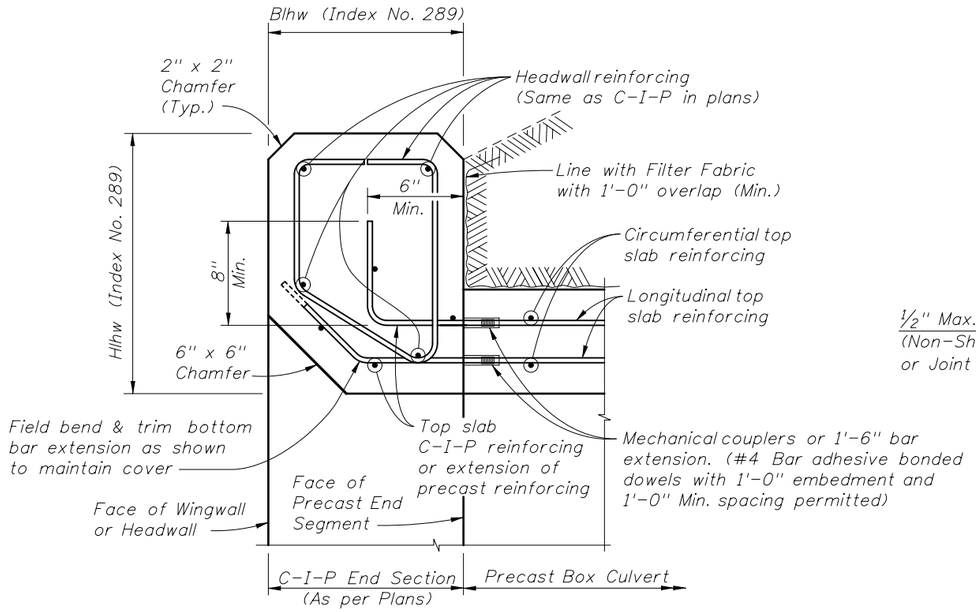
CONCRETE BOX CULVERT DETAILS (LRFD)

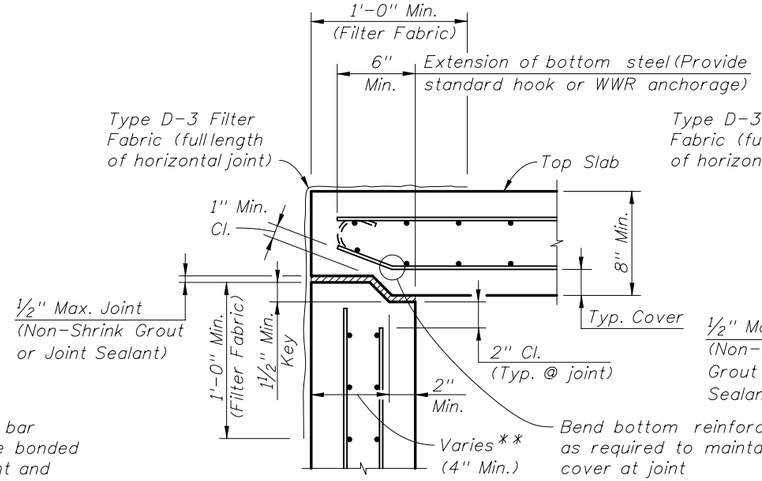
Interim Date 01/01/10

Sheet No. 5 of 7

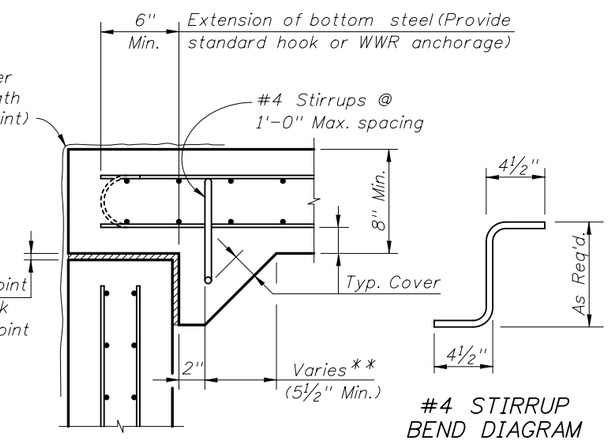
Index No. 289



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



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

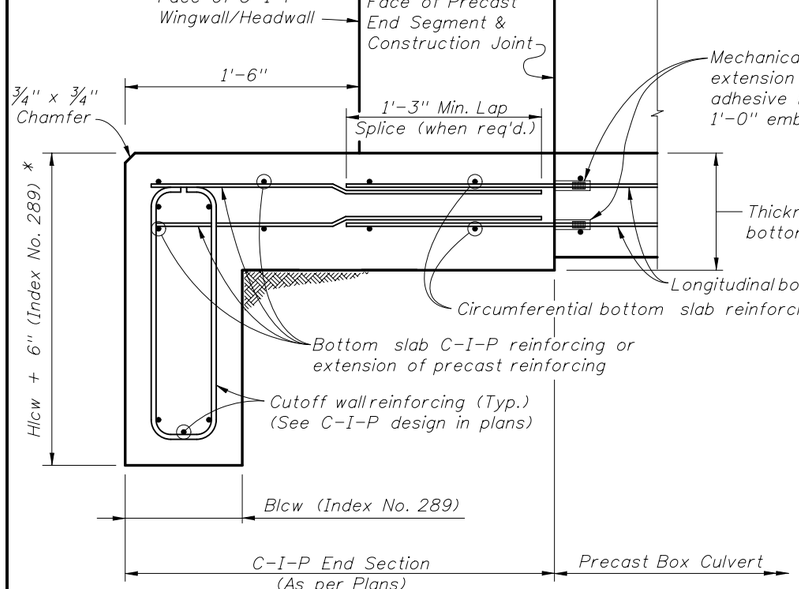


SECTION B-B
TOP SLAB TO WALL JOINT
(HAUNCHED JOINT)

#4 STIRRUP BEND DIAGRAM

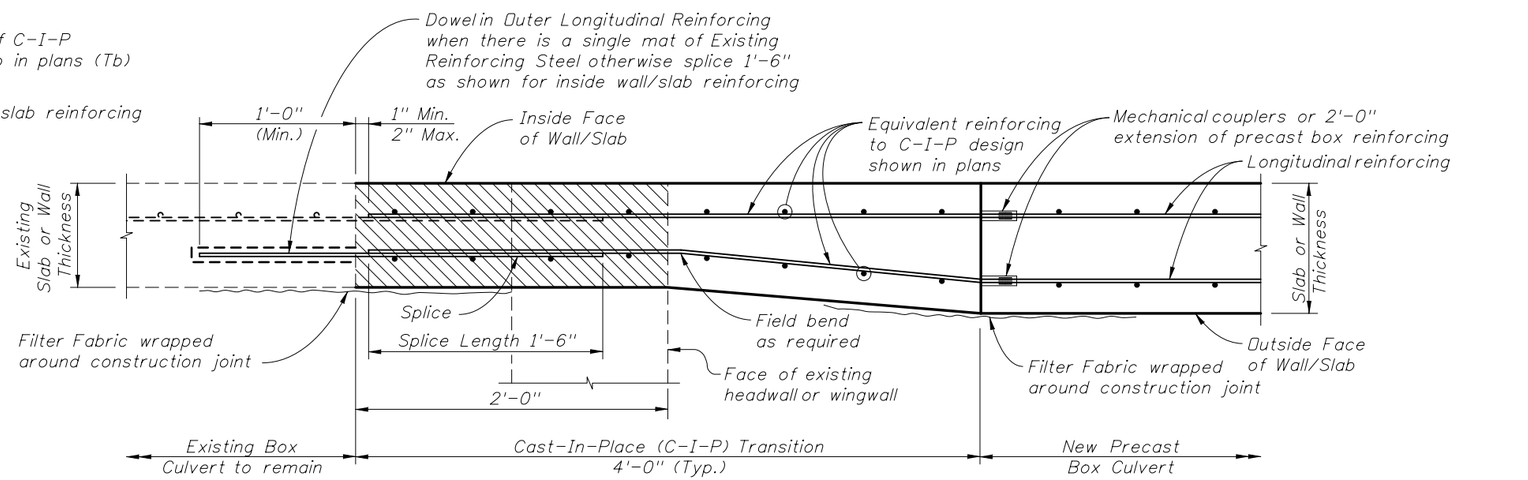
** Provide adequate width to satisfy shear strength requirements at joint

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

▨ Section of Existing Box Culvert to be removed and replaced.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added "or Joint Sealant" to ½" Joint in Section B-B.			

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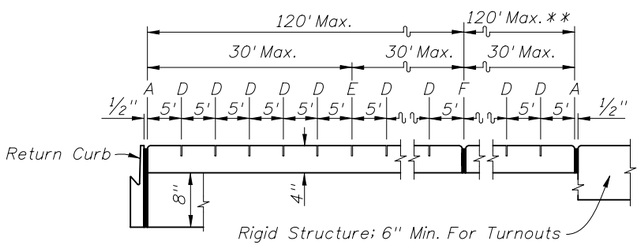
SUPPLEMENTAL DETAILS FOR PRECAST CONCRETE BOX CULVERTS

Interim Date 01/01/10

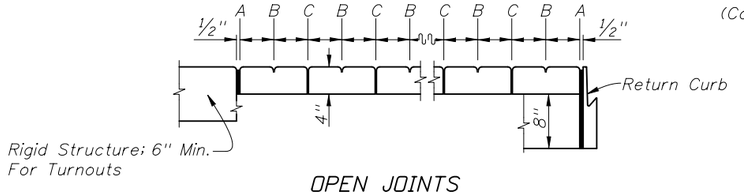
Sheet No. 3 of 5

Index No. 291



** "E" Joint(s) Required When Length Exceeds 30'

SAWED JOINTS

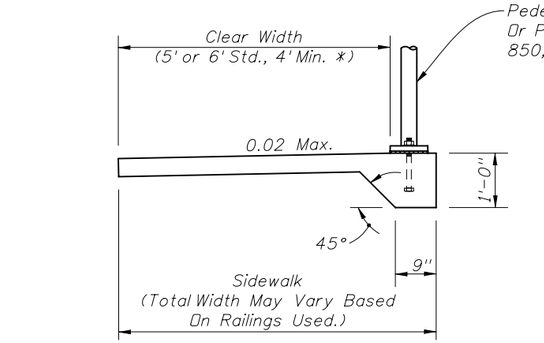


OPEN JOINTS

EXAGGERATED SCALE

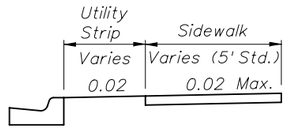
LONGITUDINAL SECTION

SIDEWALK JOINTS

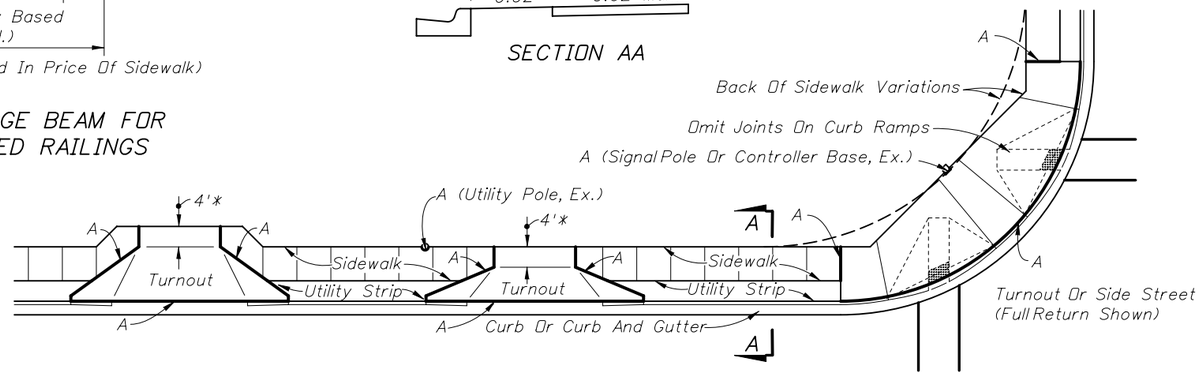


(Cost Of Edge Beam To Be Included In Price Of Sidewalk)

SIDEWALK WITH EDGE BEAM FOR SURFACE MOUNTED RAILINGS



SECTION AA



SIDEWALK WITH UTILITY STRIP

JOINT LEGEND

A- ½" Expansion Joints (Preformed Joint Filler)

B- ⅛" Dummy Joints, Tooled

C- ⅛" Formed Open Joints

D- 3/16" Saw Cut Joints, 1½" Deep (within 96 hours) Max. 5' Centers

E- 3/16" Saw Cut Joints, 1½" Deep (within 12 hours) Max. 30' Centers

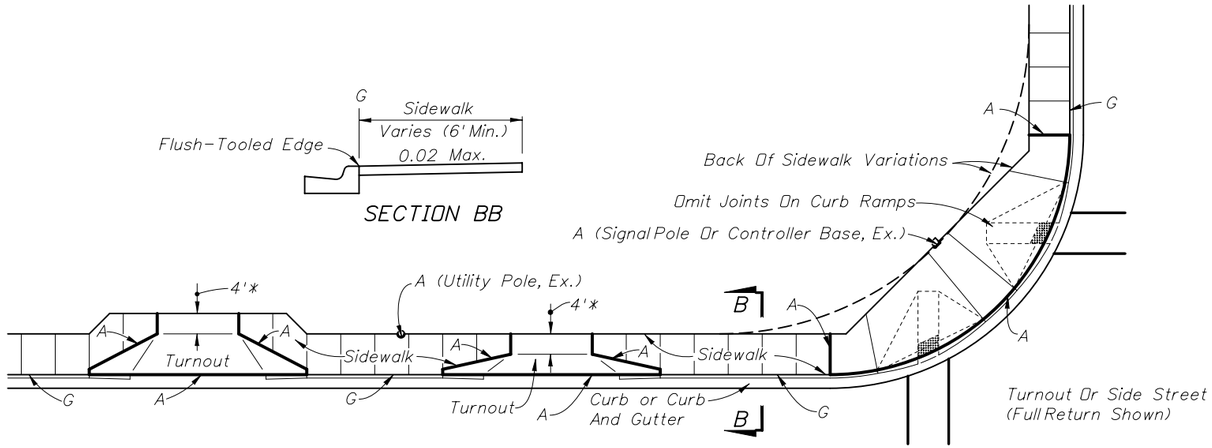
F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

G- Cold Joint With Bond Breaker, Tooled

NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications. Public sidewalk curb ramps shall include detectable warnings and be constructed in accordance with Index No. 304. Detectable warnings are not required where sidewalks intersect urban flared turnouts.
2. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than ½".
3. For turnouts see Index No. 515.
4. Construct sidewalks with 1' thick Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Picket Railing or Pipe Guiderail shown in the plans.
5. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___Thick), S.Y.

SECTION BB



SIDEWALK WITHOUT UTILITY STRIP

* 4', May Be Reduced To 3' In Restricted Conditions When Approved By The Engineer

CONCRETE SIDEWALK FOR CURBED ROADWAYS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
09/22/09	MTP	Offset the Driveway tapers 1 foot from the back of curb.			

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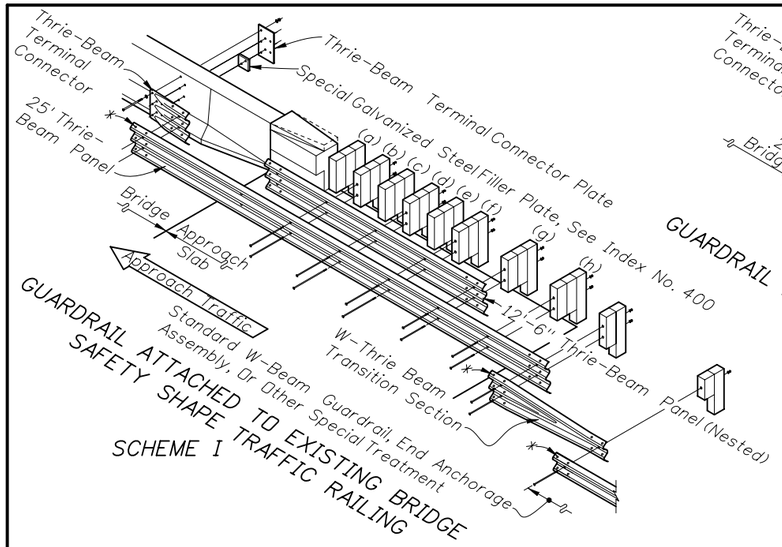
CONCRETE SIDEWALK

Interim Date 01/01/10

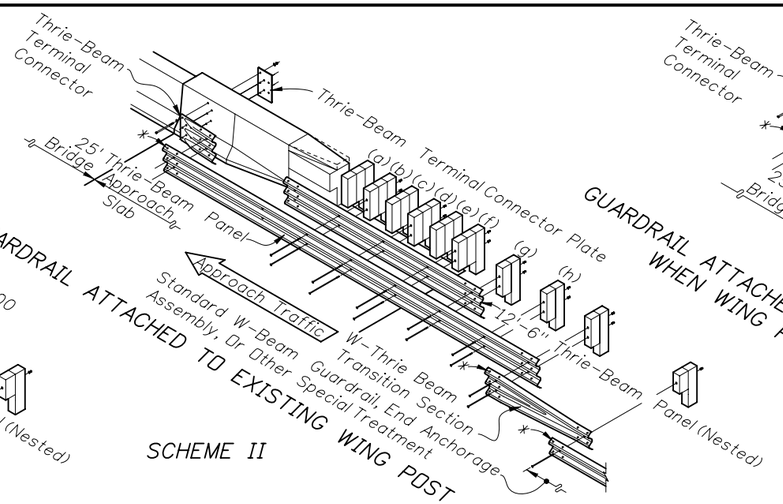
Sheet No. 1 of 2

Index No. 310



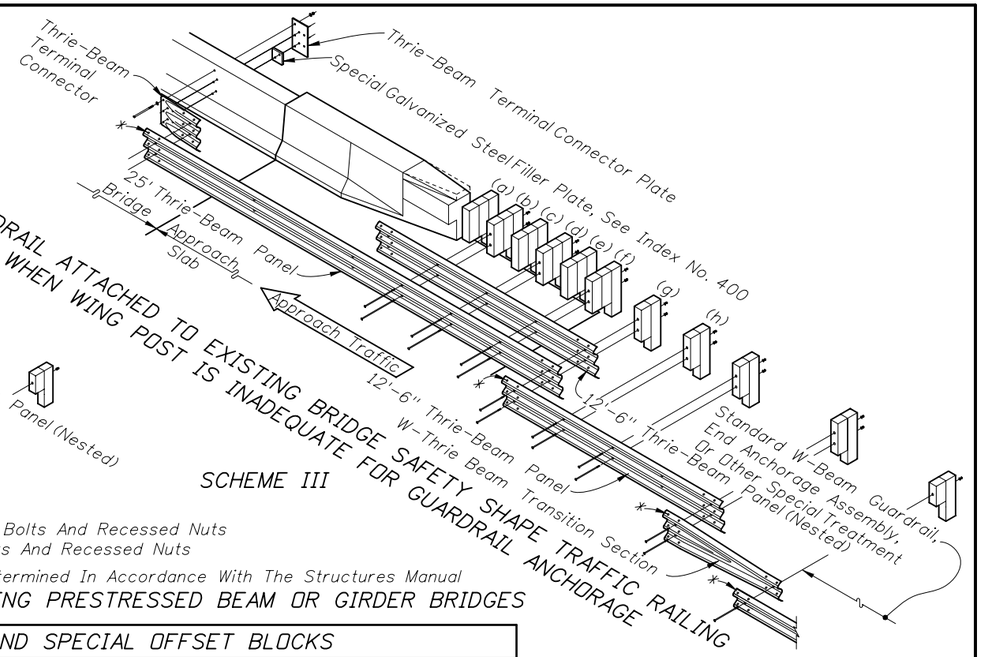
GUARDRAIL ATTACHED TO EXISTING BRIDGE SAFETY SHAPE TRAFFIC RAILING

SCHEME I



GUARDRAIL ATTACHED TO EXISTING WING POST

SCHEME II



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

SCHEME III

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

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

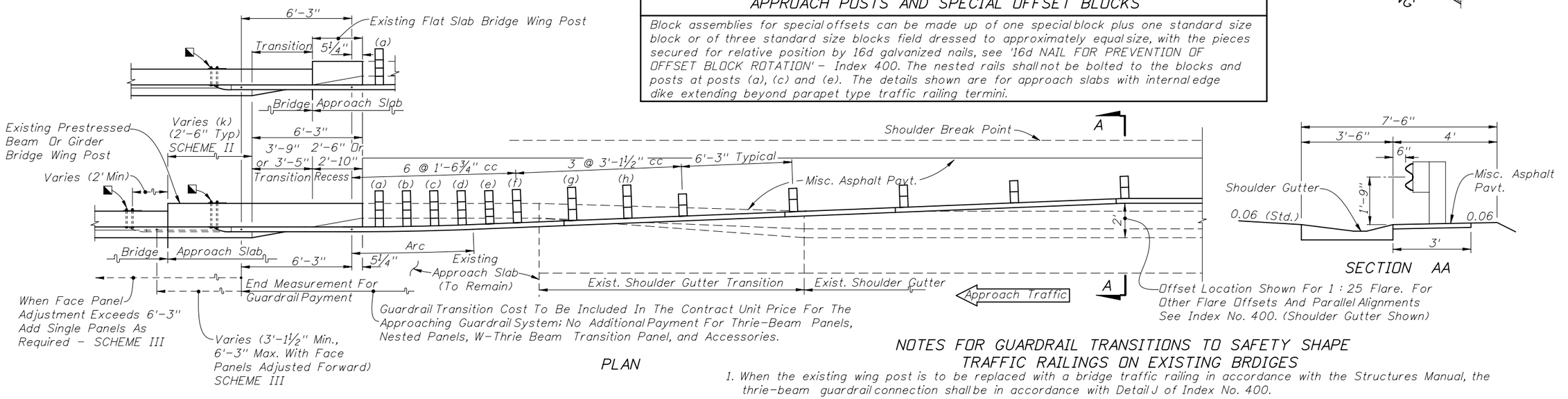
GUARDRAIL TRANSITIONS TO EXISTING PRESTRESSED BEAM OR GIRDER BRIDGES

Use Of Scheme I Shall Be Determined In Accordance With The Structures Manual

GUARDRAIL TRANSITION TO EXISTING FLAT SLAB 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

◥ 21"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 BRDIGES

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 a minimum 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. The cost of the sign panel shall be included in the cost of the Guardrail Bridge Anchorage Assembly.
3. When retrofitting thrie-beam guardrail to existing wing posts or existing bridge safety shape traffic railing, attachment construction to be paid for under the contract unit price for 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: Renumbered Note 2 as Note 3.			

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GUARDRAIL TRANSITIONS AND CONNECTIONS FOR EXISTING BRIDGES

Interim Date 01/01/10

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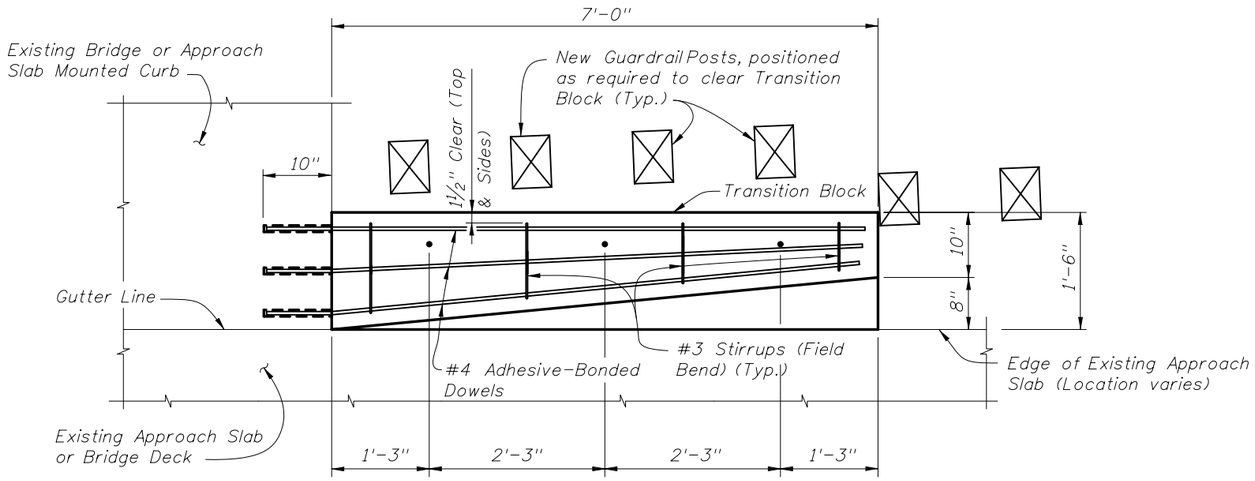
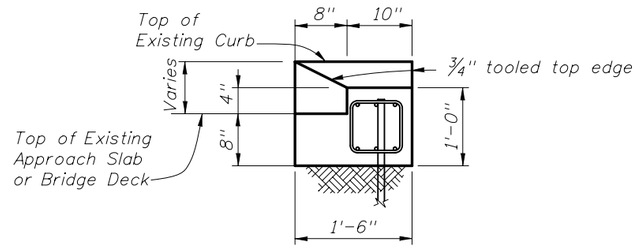
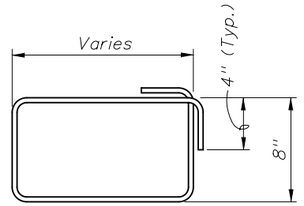
Index No. 402



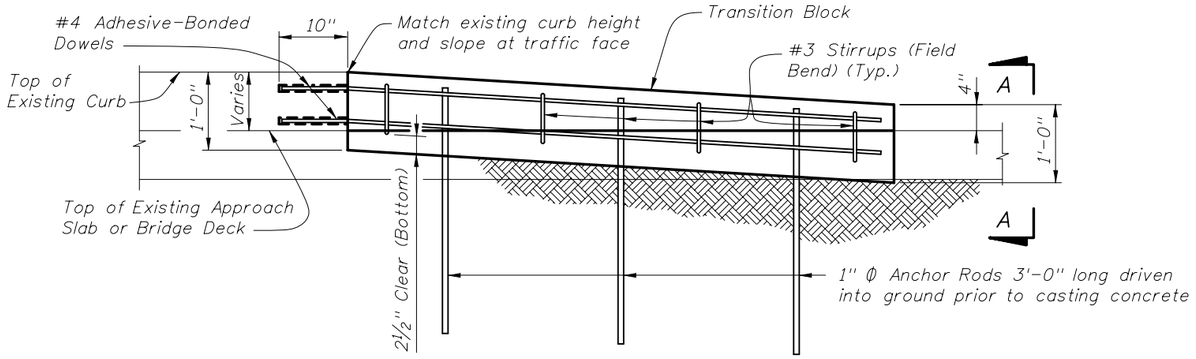
PLAN VIEW OF TRANSITION BLOCK
(GUARDRAIL NOT SHOWN FOR CLARITY)



END VIEW A-A



#3 STIRRUP (FIELD BEND)



ELEVATION OF TRANSITION BLOCK
(GUARDRAIL AND POSTS NOT
SHOWN FOR CLARITY)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Class NS	CY	0.4
Reinforcing Steel	LB	61
Guardrail (Reset)	LF	12.5

NOTES:

CONCRETE: Concrete for Transition Blocks shall be Class NS.

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60.

ANCHOR RODS: Steel Anchor Rods shall be ASTM A36, ASTM A709 Grade 36 or ASTM A615 Grade 60 hot-dip galvanized in accordance with Specification Section 962.

W BEAM GUARDRAIL: Guardrail components and installation shall be in accordance with Design Standards Index 400.

ADHESIVE-BONDED DOWELS: Adhesive Bonding Material Systems for Dowels shall comply with Specification Section 937 (Type HV) and be installed in accordance with Specification Section 416.

Adhesive Bonded Dowels are shown installed in an existing curb or sidewalk integrally reinforced with Approach Slab, Wingwall or Bridge Deck. For installations in existing detached curbs or sidewalks, install dowels in available sound concrete.

PAYMENT: Payment for Guardrail work will be made under Pay Item Guardrail (Reset) LF. Payment for Transition Block will be made under Pay Item Concrete Curb (Special), LF.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed Concrete Class to "NS". Payment for Transition Block changed to "Concrete Curb (Special), LF.			

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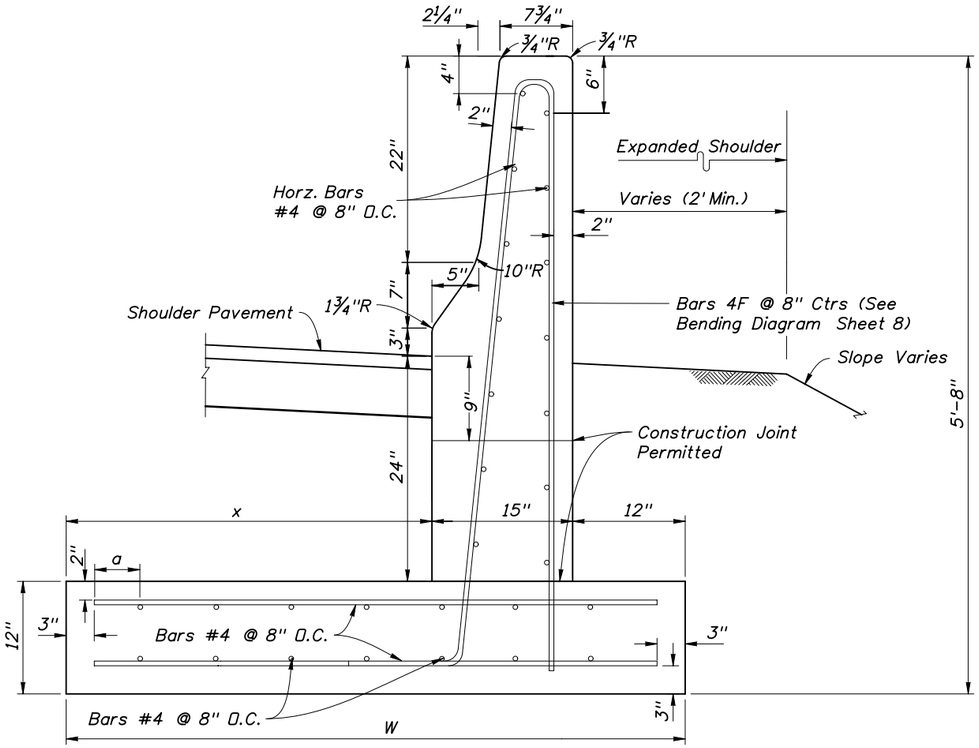
2010 Interim Design Standard

GUARDRAIL TRANSITIONS FOR EXISTING BRIDGE TRAFFIC RAILING RETROFITS

Interim Date 01/01/10

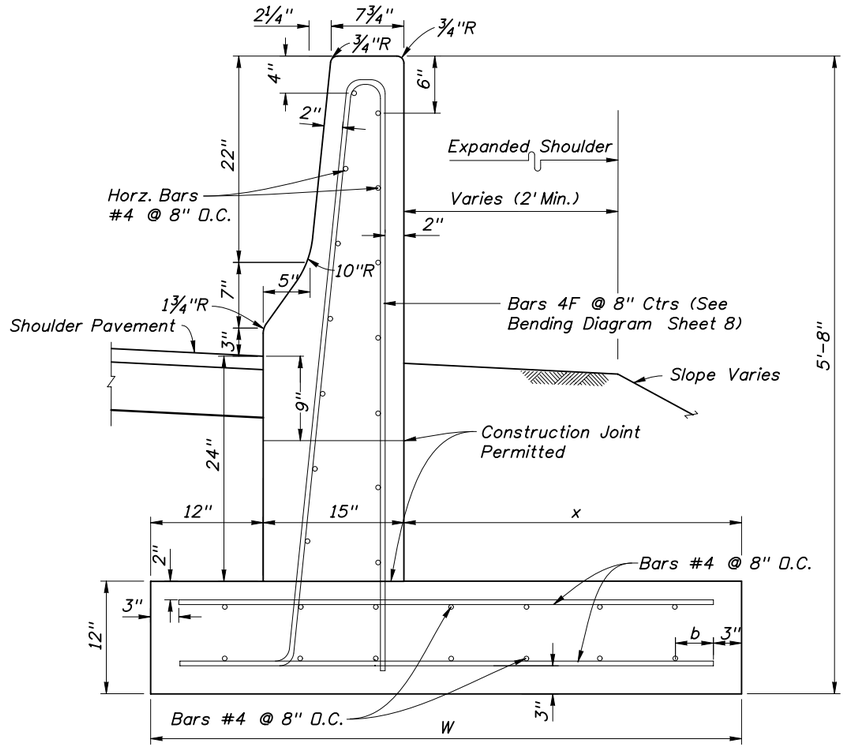
Sheet No. 3 of 3

Index No. 403



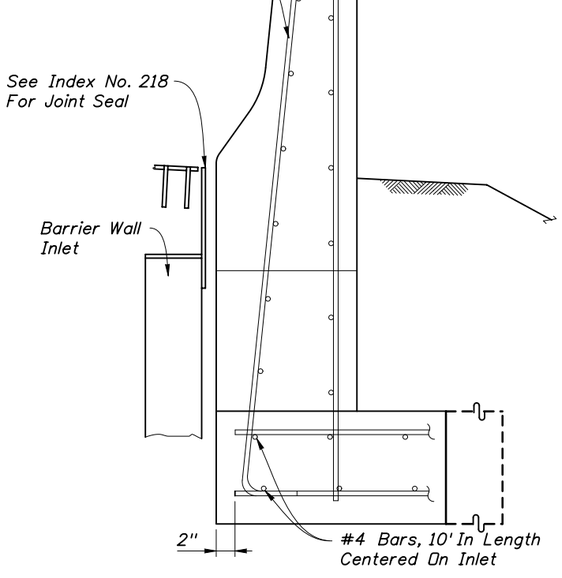
NOTE: All longitudinal reinforcement #4 bars.

CANTILEVER WALL



NOTE: All longitudinal reinforcement #4 bars.

L-WALL



REINFORCING STEEL MODIFICATIONS
AT BARRIER WALL INLETS (INDEX NO. 218)

DIMENSIONS AND QUANTITIES

CANTILEVER WALL						L-WALL					
Length* Of Barrier Wall	W	x	a	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.	Length* Of Barrier Wall	W	x	b	Class II Conc. CY Per Lin. Ft.	Rein. Steel Lbs. Per Lin. Ft.
≥ 65'	3'-3"	1'-0"	5"	0.30	31	≥ 60'	3'-6"	1'-3"	7"	0.31	32
57' to 64'	3'-9"	1'-6"	3"	0.32	34	50' to 59'	4'-0"	1'-9"	5"	0.33	34
50' to 56'	4'-3"	2'-0"	3"	0.33	36	40' to 49'	4'-9"	2'-6"	6"	0.35	37
41' to 49'	5'-0"	2'-9"	7"	0.36	38	35' to 39'	5'-3"	3'-0"	4"	0.37	39
36' to 40'	5'-6"	3'-3"	5"	0.38	40	30' to 34'	5'-9"	3'-6"	2"	0.39	42
28' to 35'	6'-6"	4'-3"	3"	0.42	45	25' to 29'	6'-6"	4'-3"	3"	0.42	45
25' to 27'	7'-0"	4'-9"	7"	0.44	46	20' to 24'	7'-6"	5'-3"	2"	0.45	49

Quantities shown are for information only. For method of payment see payment note. Barrier wall inlets (Index 218) shall be isolated from the barrier wall stem and footing by 1" expansion material.

* All walls may be made up of segments of 20' or more in length provided the segments are joined by a transverse joint in accordance with Detail B, Sheet 2. Segments shall have dimensions same as walls above.

REINFORCED CONCRETE BARRIER WALL (SHOULDER)

PAYMENT:

Wall to be paid for under the contract unit price for Shoulder Concrete Barrier Wall (Rigid-Shoulder), LF

DESIGN NOTES:

Reduce the vertical steel spacing to 4 inches O.C. a distance of 4 feet each side of all cold joints.

Use of this barrier wall should be limited to special applications such as hazard encroachment into the clear zone where barrier wall deflection, rotation or translation cannot be tolerated; example hazards to consider are as follows:

(a) Structure supporting piers, bents and pylons
(b) Pumping, metering, control or other similar critical stations
(c) Quarries
(d) Intolerable vertical drops
(e) Historic structures or monuments
(f) Rail transit travel way or passenger station
(g) Other similar occupancies

NCHRP report 350 Test Level (TL-4) Vehicle: 8000S, 50 mph, 25°.
Vehicle force applications:
18 kips Vertical at top of railing;
54 kips Horizontal at 32" above pavement.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	MTP	Added: The Text "Shoulder Pavement" Changed: The Expanded Shoulder to Match the Shoulder Pavement Elevation.			

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CONCRETE BARRIER WALL

Interim Date 01/01/10

Sheet No. 7 of 25

Index No. 410

TRAFFIC RAILING NOTES

This Traffic Railing Retrofit has been structurally evaluated to be equivalent or greater in strength to a design which has been successfully crash tested in accordance with NCHRP Report 350 TL-4 criteria.

CONCRETE: Concrete for Transition Blocks and Curbs shall be Class II (Bridge Deck).

REINFORCING STEEL: Reinforcing steel shall be ASTM A615, Grade 60.

THRIE-BEAM GUARDRAIL: Steel Thrie-Beam Elements shall meet the requirements for Class B (10 Gauge) Guardrail of AASHTO M 180, Type II (Zinc coated). The minimum panel length for Thrie-Beam Elements shall be 12'-6". Field drilled holes for Post connections shall be ¾" by 2½" slotted holes.

GUARDRAIL BOLTS: Guardrail bolts, nuts and washers shall be in accordance with AASHTO M180.

GUARDRAIL POSTS AND BASE PLATES: Posts and Base Plates shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

ANCHOR BOLTS, NUTS AND WASHERS: Adhesive-Bonded Anchors and Anchor Bolts shall be fully threaded rods in accordance with ASTM F1554 Grade 105 or ASTM A193 Grade B7. At the Contractor's option, Anchor Bolts for through bolting may be in accordance with ASTM 449. All Nuts shall be single self-locking hex nuts and in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436 and Plate Washers (for long slotted holes only) shall be in accordance with ASTM A36 or ASTM A709 Grade 36. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and the exposed trimmed ends of anchors shall be coated with a galvanizing compound in accordance with the Specifications.

COATINGS: All Nuts, Bolts, Anchors, Washers, Guardrail Posts, Anchor Plates and Base Plates shall be hot-dip galvanized in accordance with the Specifications. Guardrail Post Assemblies shall be hot-dip galvanized after fabrication.

ADHESIVE-BONDED ANCHORS AND DOWELS: Adhesive Bonding Material Systems for Anchors and Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 15,000 lbs. for ⅞" Ø anchor bolts; 55,000 lbs. for the 1¼" anchor bolts with 13" embedment; and 30,500 lbs. for the 1¼" Ø anchor bolts with 5" embedment.

BRIDGES ON CURVED ALIGNMENTS: The details presented in these Standards are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

POST SPACING: Posts shall be located along the length of the bridge at typical 6'-3" or 3'-1 ½" spaces. Utilize the Modified Post Spacing at Intermediate Deck Joints Details as required to clear deck joints. Establish post spacing along the bridge and Roadway Guardrail Transition beginning with the Key Post. The variable post spacings located near begin and end bridge may be utilized to optimize the typical post spacing. Variable lengths of guardrail overlap are also permitted to optimize the typical post spacing. Symmetry of post spacing is not necessary.

THRIE-BEAM EXPANSION SECTION: Thrie-Beam Expansion Sections shall be installed at locations shown in the Plans. Install nuts for splice bolts finger-tight at 2½" slots in thrie beam expansion sections. Nuts shall fully engage bolts with a minimum of one bolt thread extending beyond the nuts. Distort the first thread on the outside of the nut to prevent loosening. Tighten guardrail bolts in 3¾" slots at guardrail post(s) that lie between the slotted expansion splice and bridge deck joint so that the bolt heads are in full contact with thrie-beam elements, but not so tight as to impede movement due to expansion.

NEOPRENE PADS: Neoprene pads must be plain pads with a durometer hardness of 60 or 70 and meet the requirements of Specification Section 932, except that testing of the finished pad will not be required.

ELEVATION MARKERS: Elevation Markers shall be placed on the top surface of the end bents as directed by the Engineer when portions of the existing traffic railing carrying existing elevation markers are removed. Markers are to be furnished by the Florida Department of Transportation and installed by the Contractor.

REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall conform to Section 993 of the Specifications. Install markers at the top of the guardrail posts at the spacings shown in the table below. Reflector color (white or yellow) shall conform to the color of the near edgeline.

PEDESTRIAN SAFETY PIPE RAIL: Pedestrian Safety Pipe Rail is required when called for in the Plans. See Index No. 400 for details.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

PAYMENT: Payment will be made under Metal Traffic Railing (Thrie-Beam Retrofit) which shall include all materials and labor required to fabricate and install the barrier and lapped guardrail where necessary to maintain post spacing. The Pedestrian Safety Pipe Rail, Transition Blocks and Curbs, Bridge Name Plate, Reflective Railing Markers and installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

REFLECTIVE RAILING MARKER SPACING

Distance – Edge of Travel Lane to Face of Railing	Spacing (Ft.)
< 4'	40'
4' to 8'	80'
> than 8'	None Required

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed REFLECTIVE RAILING MARKERS Note.			

2010 Interim Design Standard

TRAFFIC-RAILING (THRIE-BEAM RETROFIT) GENERAL NOTES & DETAILS

Interim Date 01/01/10

Sheet No. 1 of 3

Index No. 470

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	DATE	BY	DESCRIPTION
01/01/10	LJ	Correct "MARAFI" to "MIRAFI".			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Sheet No. 5 of 10

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	DATE	BY	DESCRIPTION
01/01/10	LJ	Added Application Usage 2 for SYNTEEN SF 11 & SF 12.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Sheet No. 6 of 10

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	355	588
Creep Reduction Factor (T_{ult}/T_{creep})			1.52	1.52	1.52	1.52	1.52	3.5	3.5
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, 4, 5	2, 4, 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
01/01/10	LJ	Added FORNIT 30. Added Creep Resistance, Creep Reduction and Application Usage "4" to FORNIT 20.			

2010 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Index No. 501

TABLE OF WOVEN GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	STRATAGRID MICROGRID	STRATAGRID SG 150	STRATAGRID SG 200	STRATAGRID SG 350	STRATAGRID SG 500	STRATAGRID SG 550	STRATAGRID SG 600	STRATAGRID SG 700
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	70%	70%	70%	70%	70%	70%	70%	70%
Tensile Strength (lb./ft.)		ASTM D 6637	———	———	———	———	———	———	———	———
Machine Direction	Ultimate (T_{ult})		2,000	1,875	3,400	4,800	6,300	7,800	8,700	11,750
	2% Strain		———	———	———	———	———	———	———	———
	5% Strain		600	450	700	750	1,150	1,200	1,400	1,700
Cross Direction	Ultimate		2,000	1,875	———	———	———	———	———	———
	2% Strain		———	———	———	———	———	———	———	———
	5% Strain		450	———	———	———	———	———	———	———
Strain @ Ultimate Tensile Strength		ASTM D 6637	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	18.0%	18.0%
Secant Modulus @ (lb./ft.)	2% Strain		———	———	———	———	———	———	———	———
	5% Strain		12,000	9,000	14,000	15,000	23,000	24,000	24,000	34,000
	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
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	1,149	1,210	2,194	3,097	4,065	5,032	5,613	7,581
Creep Reduction Factor (T_{ult}/T_{creep})			1.74	1.55	1.55	1.55	1.55	1.55	1.55	1.55
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.20	1.10	1.10	1.05	1.05	1.05	1.05	1.05
	Limestone		1.90	1.20	1.20	1.20	1.15	1.15	1.15	1.15
Durability (RF_d)	Chemical	ASTM D 5322	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
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Approved Application Usage			3, 4, 5	3, 4, 5	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4

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
01/01/10	LJ	New Sheet Added			

2010 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Sheet No. 8 of 10

Index No. 501

TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	TENSAR BX 4100	TENSAR BX 4200	TENSAR BX 1100	TENSAR BX 1120	TENSAR BX 1200	TENSAR BX 1220	TENSAR BX 1500
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	90%	90%	90%	100%	90%	100%	90%
Tensile Strength (lb./ft.)		ASTM D 6637							
Machine Direction	Ultimate (T_{ult})		860	1,270	850	850	1,315	1,315	1,790
	2% Strain		240	370	280	280	410	410	580
	5% Strain		480	705	580	580	810	810	1,200
Cross Direction	Ultimate		875	1,370	1,300	1,300	1,975	1,975	2,055
	2% Strain		300	500	450	450	670	670	685
	5% Strain		635	960	920	920	1,360	1,360	1,370
Strain @ Ultimate Tensile Strength		ASTM D 6637	10%	10%	10%	10%	10%	10%	10%
Secant Modulus @ (lb./ft.)	2% Strain		11,995	18,506	14,000	14,000	20,500	20,500	29,000
	5% Strain		9,596	14,092	11,600	11,600	16,200	16,200	27,400
	10% Strain		———	———	———	———	———	———	———
Junction Strength (lb./ft.)		GRI : GG2	90%	90%	790/1,210	93%	93%	93%	93%
Soil-Geosynthetic Friction		ASTM D 6706	———	0.95	0.90	0.90	0.90	0.90	0.90
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	250	420	280	280	425	425	575
Creep Reduction Factor (T_{ult}/T_{creep})			3.5	3.27	3.1	3.1	3.1	3.1	3.1
Installation Damage (RF_c)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Limestone		1.43	1.35	1.35	1.35	1.35	1.35	1.35
Durability (RF_d)	Chemical	ASTM D 5322	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
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	———	———	———	———	———	———	———
	Overlap *	ASTM D 6706	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Approved Application Usage			3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 5	3, 4, 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
(EXTRUDED GEOGRID)
APPLICATION AND PROPERTIES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LJ	Changed Sheet No. from "8 of 9" to "9 of 10".			

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GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Sheet No. 9 of 10

Index No. 501

TABLE OF EXTRUDED GEOGRID VALUES

PROPERTY		REQUIRED TEST METHOD	TENSAR UX 1400 HS UX 1400 MSE UX MESA 3	TENSAR UX 1500 HS UX 1500 MSE UX MESA 4	TENSAR UX 1600 HS UX 1600 MSE UX MESA 5	TENSAR UX 1700 HS UX 1700 MSE UX MESA 6	TENAX MS 220	TENAX MS 330	COMBIGRID 30/30 Q1 151 GRK 3	SECUGRID 20/20 Q1	SECUGRID 30/30 Q1
UV Stability (Min. Retained Strength @ 500 hr.)		ASTM D 4355	90%	90%	90%	90%	85%	85%	90%	90%	90%
Tensile Strength (lb./ft.)		ASTM D 6637									
Machine Direction	Ultimate (T_{ult})		4,790	7810	9,860	11,980	925	1,370	2,055	1,646	2,055
	2% Strain		1,100	1,850	2,330	2,740	300	418	686	549	686
	5% Strain		2,130	3,560	3,980	5,140	615	925	1,475	1,029	1,475
Cross Direction	Ultimate		———	———	———	———	1,400	2,100	2,055	1,646	2,055
	2% Strain		———	———	———	———	445	616	686	549	686
	5% Strain		———	———	———	———	890	1,340	1,475	1,029	1,475
Strain @ Ultimate Tensile Strength		ASTM D 6637	10%	10%	10%	10%	12%	12%	8%	9%	7.5%
Secant Modulus @ (lb./ft.)	2% Strain		55,000	92,500	116,500	137,000	15,000	20,900	34,300	27,450	34,300
	5% Strain		42,600	71,200	79,600	102,800	12,330	18,500	29,500	20,580	29,500
	10% Strain		———	———	———	———	———	———	———	———	———
Junction Strength (lb./ft.)		GRI : GG2	90%	90%	90%	90%	835	1,230	337	549	617
Soil-Geosynthetic Friction		ASTM D 6706	0.462	0.462	0.462	0.462	———	———	0.65	0.93	0.93
Creep Resistance-T_{creep} (lb./ft.)		ASTM D 5262	1,970	3,000	3,960	4,975	———	———	726	581	726
Creep Reduction Factor (T_{ult}/T_{creep})			2.43	2.60	2.49	2.41	3.5	3.5	2.83	2.83	2.83
Installation Damage (RF_C)	Sand	GRI : GG4 & GT7	1.10	1.10	1.10	1.10	1.1	1.1	1.1	1.1	1.1
	Limestone		1.20	1.20	1.20	1.20	1.1	1.1	1.1	1.1	1.1
Durability (RF_d)	Chemical	ASTM D 5322	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Biological	ASTM D1987, D3083, G21 & G22	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Joint Strength (RF_j)	Mechanical	ASTM D 6637, GRI : GG4 & GT7	1.0	1.0	1.0	1.0	1.0	1.0	———	———	———
	Overlap *	ASTM D 6706	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Approved Application Usage			3	3	3	3	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
(EXTRUDED GEOGRID)
APPLICATION AND PROPERTIES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	LJ	Changed Sheet No. from "9 of 9" to "10 of 10".			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date 01/01/10

Sheet No. 10 of 10

Index No. 501

Footnotes:

All ½" joints shall be constructed with preformed joint filler.

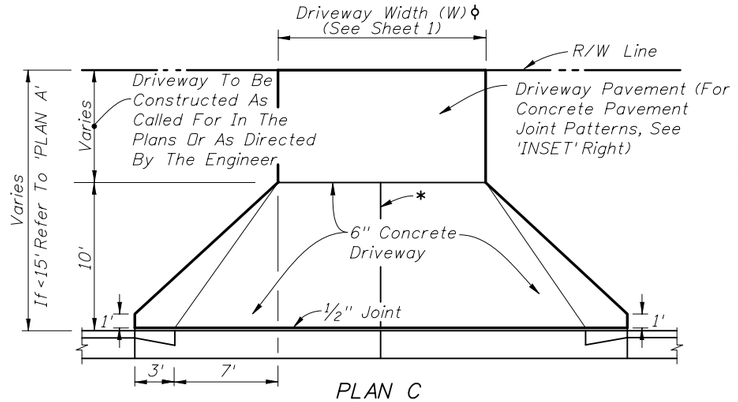
* ⅛" Open joints placed at equal (20' max.) intervals for driveways over 20' wide. Joints in curb and gutter to match joints in driveways.

△ When connecting to sidestreet curb and gutter sections, the no drop curb limits should extend back to the sidestreet radius point. With or without curb and gutter, no driveway should encroach on the corner radius.

ϕ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.

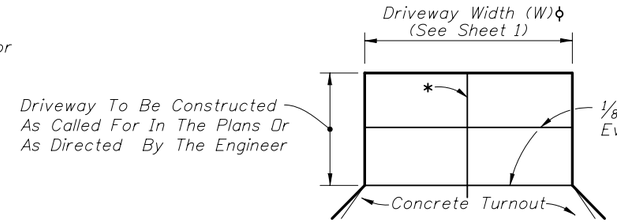
☆ 4' Min., May be reduced to 3' Min. in restricted conditions when approved by the Engineer.

(– –) Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.

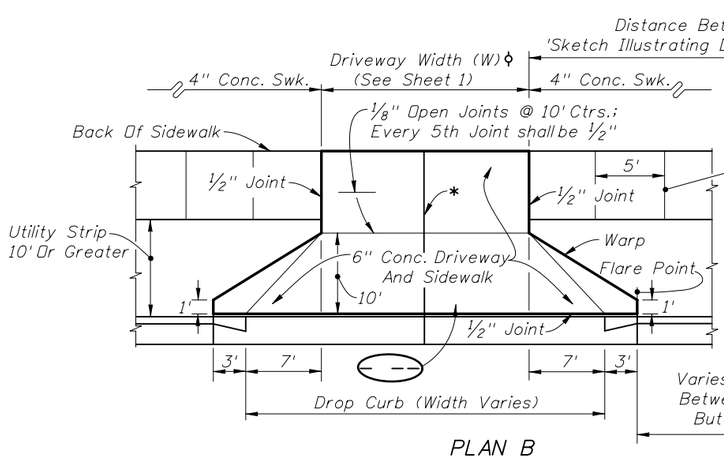


PLAN C

TURNOUT WITHOUT SIDEWALK

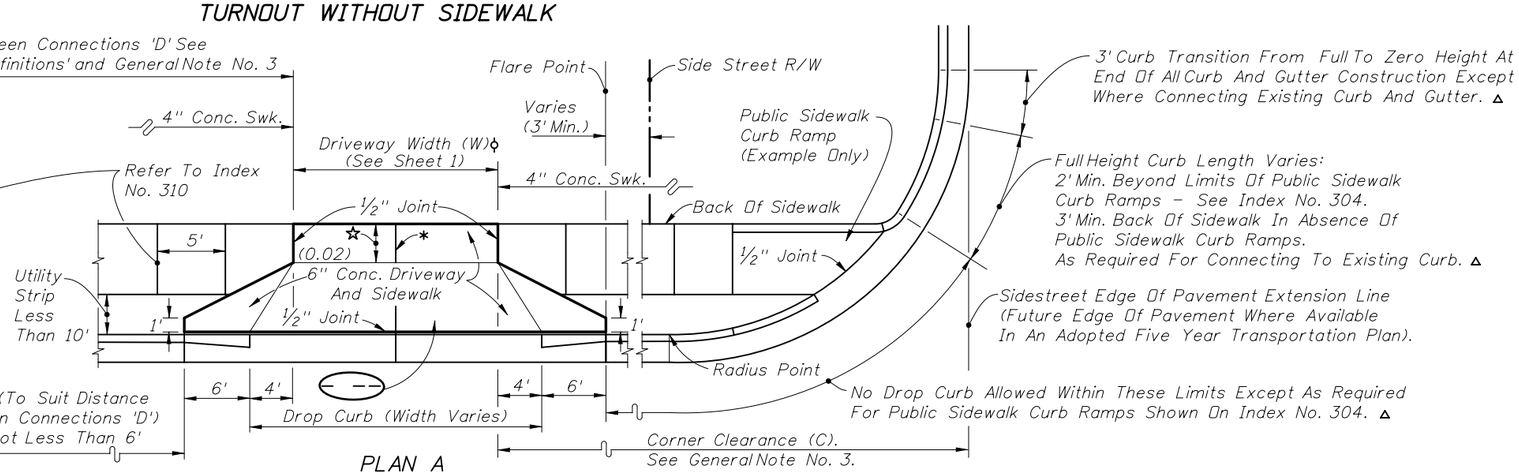


JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED INSET



PLAN B

TURNOUT WITH SIDEWALK AND UTILITY STRIP (10' OR GREATER)



PLAN A

TURNOUT WITH SIDEWALK AND UTILITY STRIP (LESS THAN 10')

SPECIAL NOTES FOR URBAN FLARED TURNOUTS

1. Driveway 6" concrete pavement and drop curb shall meet the material and construction requirements of Sections 522 and 520 respectively of the FDOT Standard Specifications. The driveway foundation shall meet the requirement of Subarticle 522-4.
2. For details of drop curb and public sidewalk curb ramps refer to Indexes Nos. 300 and 304 respectively.
3. Where turnouts are constructed within existing curb and gutter, the existing curb and gutter shall be removed either to the nearest joint beyond the flare point or to the extent that no remaining section is less than 5' long; and, drop curb constructed in accordance with Notes Nos. 1 and 2.
4. Cost for preformed joint filler shall be included in the cost for the concrete pavement (Concrete Sidewalk, 6" Thick).
5. For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Rural Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".
6. Department maintenance of pavement shall extend out to the right of way or 2' back of sidewalk, whichever distance is less.
7. The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
8. All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
9. All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.
10. Turnouts will be paid for under the contract unit price for Concrete Sidewalk (6" Thick), SY.
11. All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum.

Note: See sheet 1 for 'GENERAL NOTES'

DESIGN NOTES FOR URBAN FLARED TURNOUTS

1. Driveways indicated as 'Adverse Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions: or, those with slopes that can cause drivers who are leaving the roadway to slow or pause to the extent that traffic demand volumes will be impeded.

   Driveways indicated as 'Marginal Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions when the driveway is located on the low side of fully superelevated roadways.

   Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.
2. The standard flared driveways on this index may not accommodate vehicles with low beds, low undercarriage or low appendage features. Where such vehicles are design vehicles driveways are to have site specific flare designs or Catagory III designs.
3. When specific flare type driveways are to be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

URBAN FLARED TURNOUTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
09/17/09	MTP	Offset Driveway Taper 1 Foot From The Back Of Curb			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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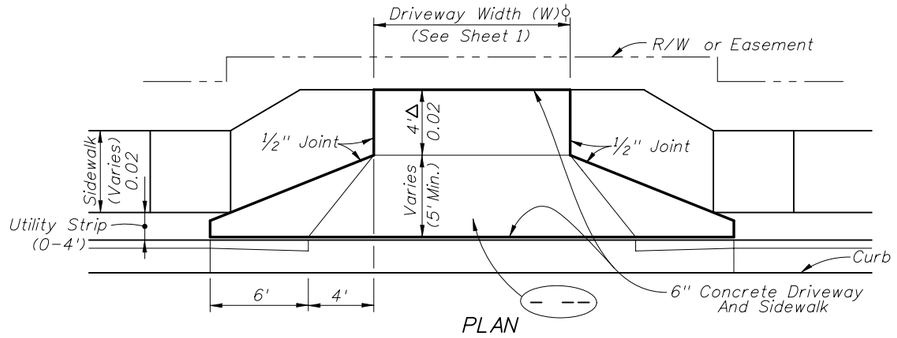
TURNOUTS

Interim Date 01/01/10

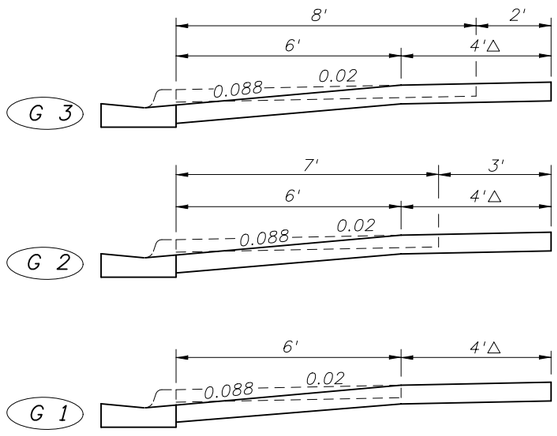
Sheet No. 2 of 7

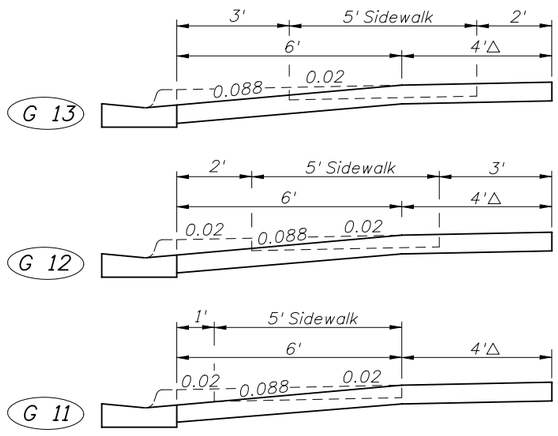
Index No. 515

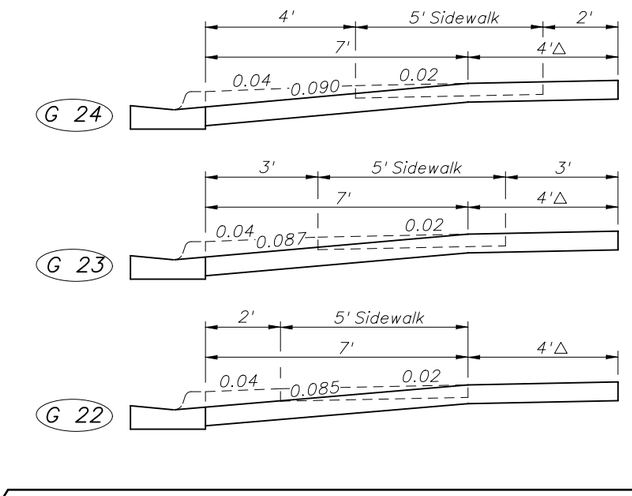


PLAN

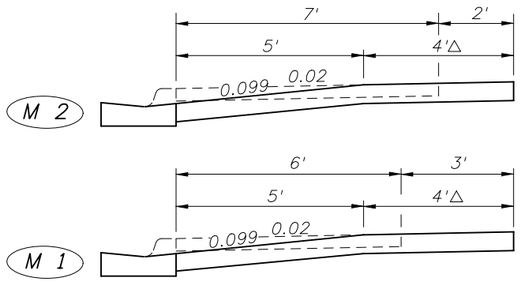
MODIFICATIONS OF 'ADVERSE' AND 'MARGINAL' APPLICATIONS



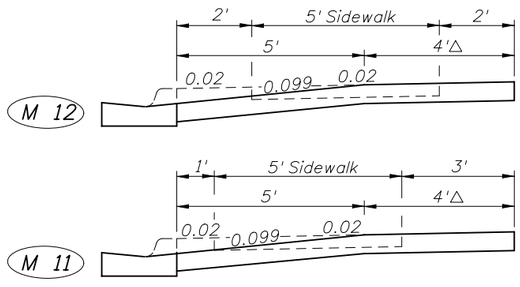




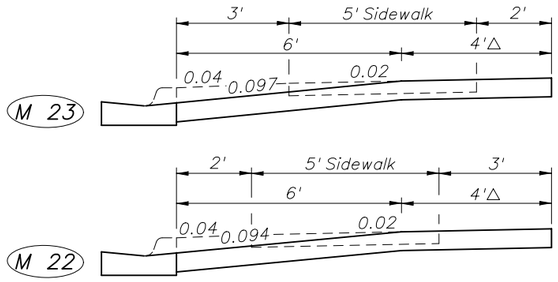
ADVERSE* AND MARGINAL* SECTIONS MODIFIED TO ACHIEVE GENERAL* APPLICATION



SIDEWALK ADJACENT TO CURB



SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE



ADVERSE* SECTIONS MODIFIED TO ACHIEVE MARGINAL* APPLICATION

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

* See 'DESIGN NOTES FOR URBAN FLARED TURNOUTS' On Sheet 2.

△ May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer. Depth Less Than 3' Allowable Only Under Findings Of Infeasibility.

MODIFICATIONS TO ADVERSE AND MARGINAL SECTIONS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/14/09	MTP	Offset Driveway Taper 1 foot.			

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TURNOUTS

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Sheet No. 4 of 7

Index No. 515

CROSSING SURFACES	
Type	Definition
C	Concrete
R	Rubber
RA	Rubber/Asphalt
TA	Timber/Asphalt

STOP ZONE FOR RUBBER CROSSING	
Design Speed (mph)	Zone Length (Distance From Stop)
45 Or Less	250'
50 - 55	350'
60 - 65	500'
70	600'

Notes:

1. Type R Crossings are NOT to be used for multiple track crossings within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.

2. Single track Type R Crossings within the zones on the chart may be used unless engineering or safety considerations dictate otherwise.

General Notes

1. The Railroad Company will furnish and install all track bed (ballast), crossties, rails, crossing surface panels and accessory components. All pavement material, including that through the crossing, will be furnished and installed by the Department or its Contractor, unless negotiated otherwise.

2. When a railroad grade crossing is located within the limits of a highway construction project, a transition pavement will be maintained at the approaches of the crossing to reduce vehicular impacts to the crossing. The transition pavement will be maintained as appropriate to protect the crossing from low clearance vehicles and vehicular impacts until the construction project is completed and the final highway surface is constructed.

3. The Central Rail Office will maintain a list of currently used Railroad Crossing Products and will periodically distribute the current list to the District Offices as the list is updated.

4. The Railroad Company shall submit engineering drawings for the proposed crossing surface type to the Construction Project Engineer and/or the District Rail Office for concurrence along with the List of Railroad Crossing Products. The approved engineering drawings of the crossing surface type shall be made a part of the installation agreement.

5. Sidewalks shall be constructed through the crossing between approach sidewalks of the crossing. Sidewalks shall be constructed with appropriate material to allow unobstructed travel through the crossing in accordance with ADA requirements.

6. All asphalt shall be installed in accordance with Index No. 514 and Section 300 of the Standard Specifications.

7. The Department will participate in crossing work, that requires adjustments to rail outside of the crossing, no more than 50 feet from the edge of the travel way.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/15/09	SA	Added TA-Timber/Asphalt to CROSSING SURFACES table and new note 7.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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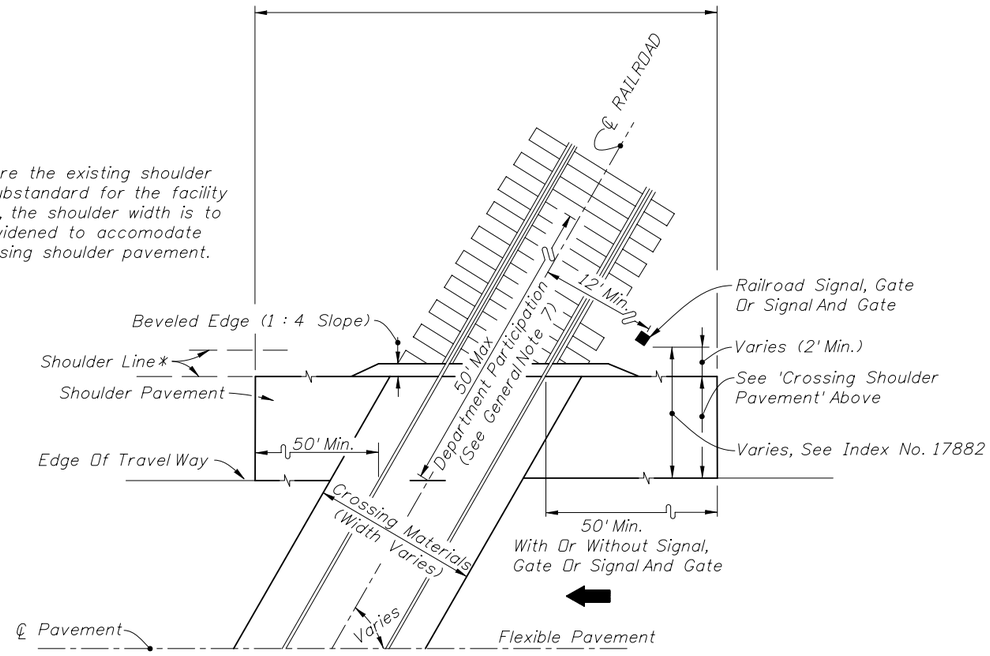
RAILROAD CROSSINGS

Interim Date 01/01/10

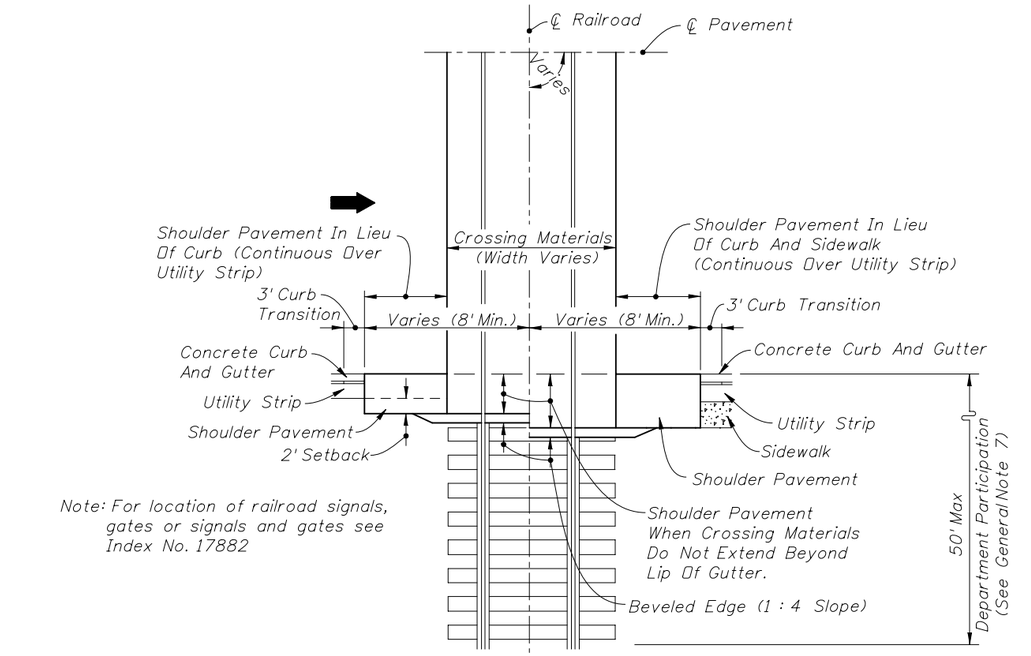
Index No. 560

Crossing Shoulder Pavement
(Except Area Occupied By Crossing Surfacing Material):
(a) To Shoulder Line For Outside Shoulders Less Than 8' Wide.
(b) To 8' Maximum Width For Outside Shoulders 8' Or Wider
(Regardless Of Approach Shoulder Pavement Width).
(c) 4' For Median Shoulders.



HALF PLAN

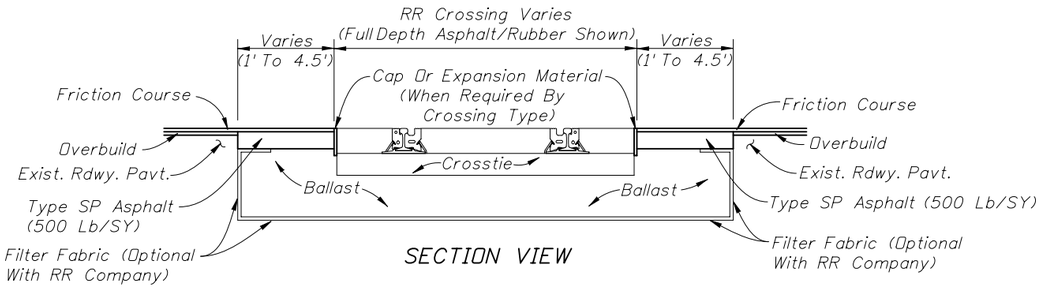
ROADWAYS WITH FLUSH SHOULDERS



Note: For location of railroad signals, gates or signals and gates see Index No. 17882

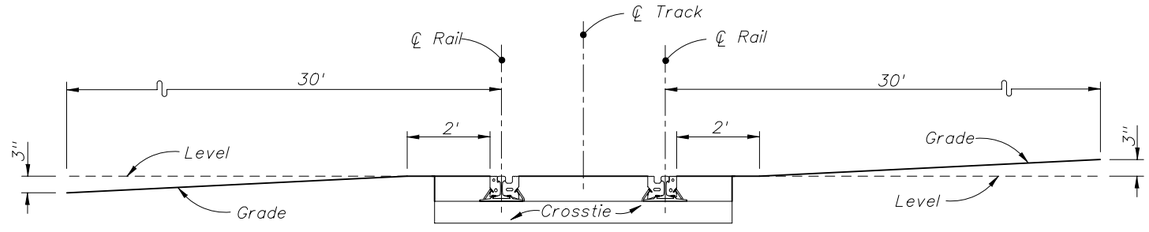
HALF PLAN

CURBED ROADWAYS



SECTION VIEW

TYPICAL CROSSING MATERIAL REPLACEMENT AT RR CROSSINGS



To prevent low-clearance vehicles from becoming caught on the tracks, the crossing surface should be at the same plane as the top of the rails for a distance of 2 feet outside the rails. The surface of the highway should also not be more than 3 inches higher or lower than the top of the nearest rail at a point 30 feet from the rail unless track superelevation makes a different level appropriate. Vertical curves should be used to traverse from the highway grade to a level plane at the elevation of the rails. Rails that are superelevated, or a roadway approach section that is not level, will necessitate a site specific analysis for rail clearances.

VERTICAL ROADWAY ALIGNMENT THROUGH A RAILROAD CROSSING

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/15/09	SA	Split into 2 sheets, added "50' Max Department Participation (See General Note 7) to details ROADWAYS WITH FLUSH SHOULDERS and CURBED ROADWAYS			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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RAILROAD CROSSINGS

Interim Date 01/01/10

Sheet No. 2 of 2

Index No. 560

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.

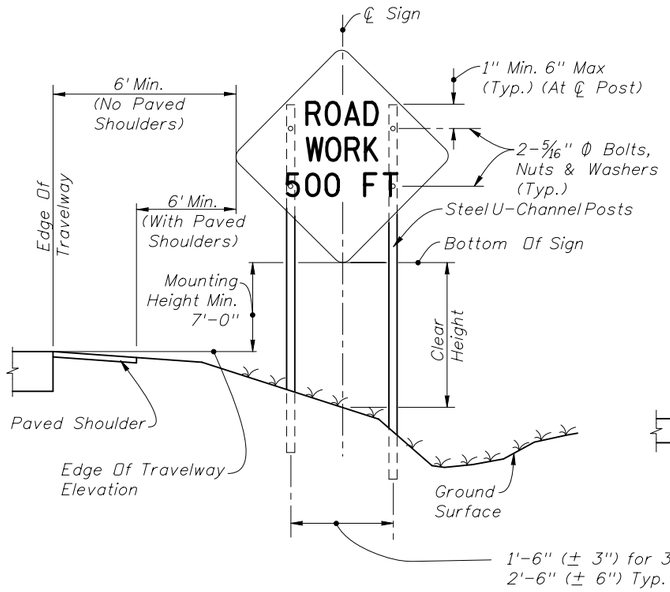
7. For diamond warning signs with supplement plaque (up to 3 ft^2 in area), use 4 lb/ft posts for up to 10 ft Clear Height (measure to the bottom of diamond warning sign).

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

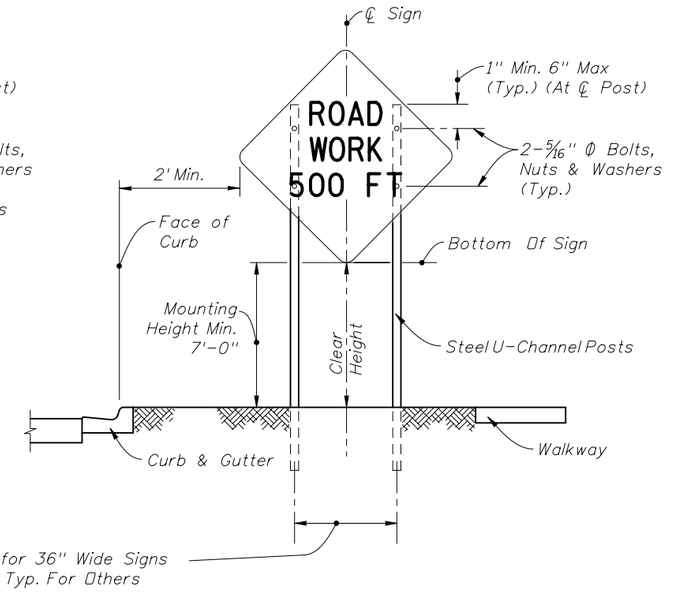
9. The contractor may install 3 lb/ft Steel U-Channel Posts with approved breakaway splice in accordance with the manufacturer's detail shown on the QPL.

10. Install all posts plumb.

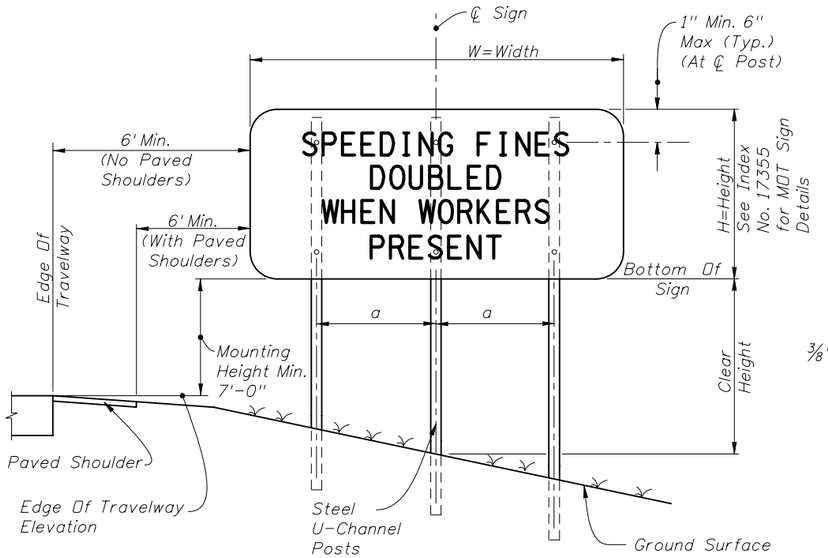
11. The contractor may set posts in preformed holes to the specified depth with suitable backfill tamped securely on all sides, or drive 3 lb/ft sign posts and any size base post in accordance with the manufacturer's detail shown on the QPL.



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



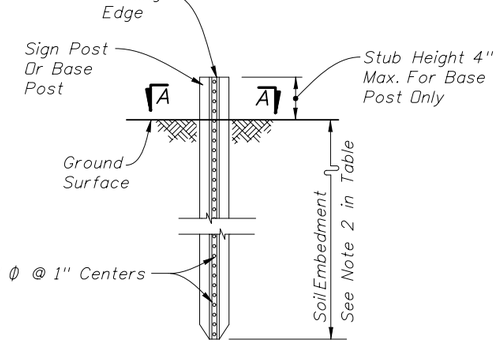
2 POST SIGN SUPPORT MOUNTING DETAILS
(SINGLE POST SIMILAR)
URBAN



3 POST SIGN SUPPORT MOUNTING DETAILS

Where W = 48": a = 1'- 4½" (± 1")
W = 60": a = 1'- 9" (± 1")
W = 72": a = 2'- 1" (± 1")

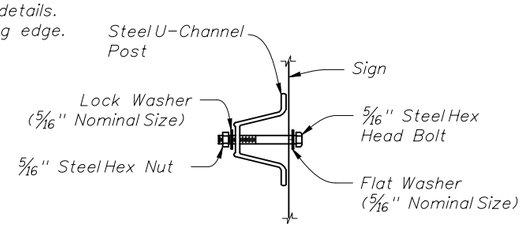
WORK ZONE SIGN SUPPORTS



TYPICAL FOUNDATION DETAIL

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

SECTION A-A
(SCHEMATIC)



SIGN ATTACHMENT DETAIL
(WITHOUT Z-BRACKET)

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
	60x54	3
	72x48	3
	120x60*	4*
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'.
*Use 4 lb/ft U-channel sign post with a mounting height of 7' min. and 8' max. Attach sign panel using Z-bracket detail on Sheet 7.

2. Minimum foundation depth is 4.0' for 3 lb/ft posts and 4.5' 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' 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, shoulder pavement or soil under sidewalk.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	MTP	Multiple revisions to notes, details and table.			
12/23/09	CA	Corrected TYPICAL FOUNDATION DETAIL to show only 4 holes above ground level, added to POST AND FOUNDATION TABLE FOR WORK ZONE SIGNS sign sizes 60x54 and 120x60 and changed notes 1 & 4 and added W=60" to 3 POST SIGN SUPPORT MOUNTING DETAILS.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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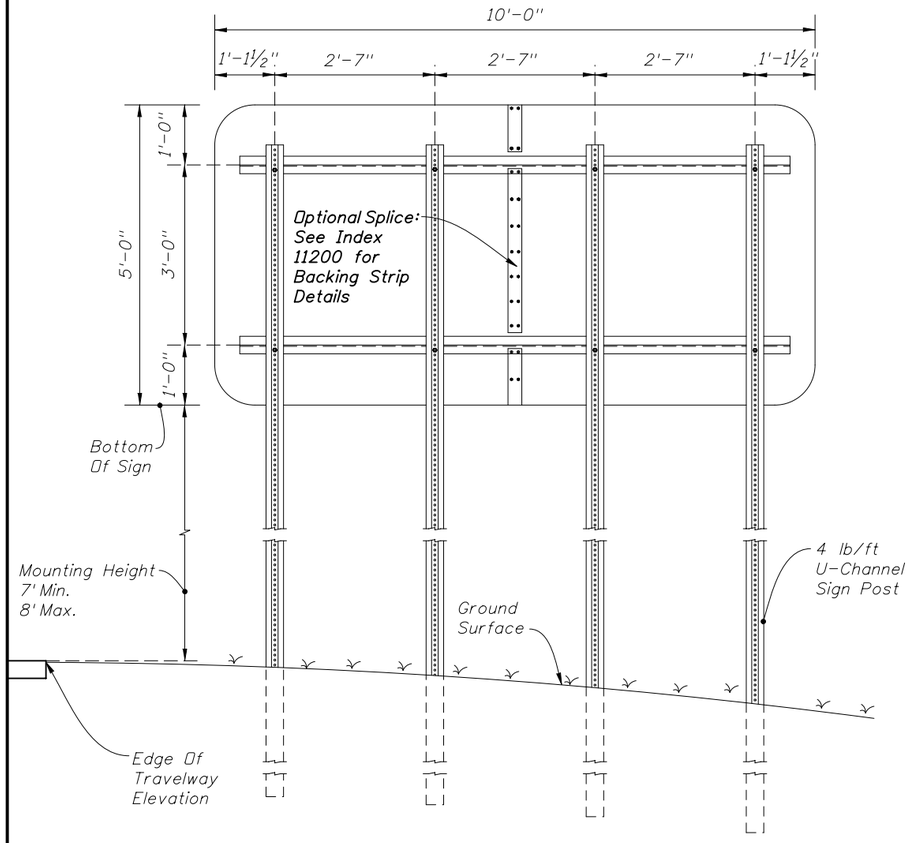
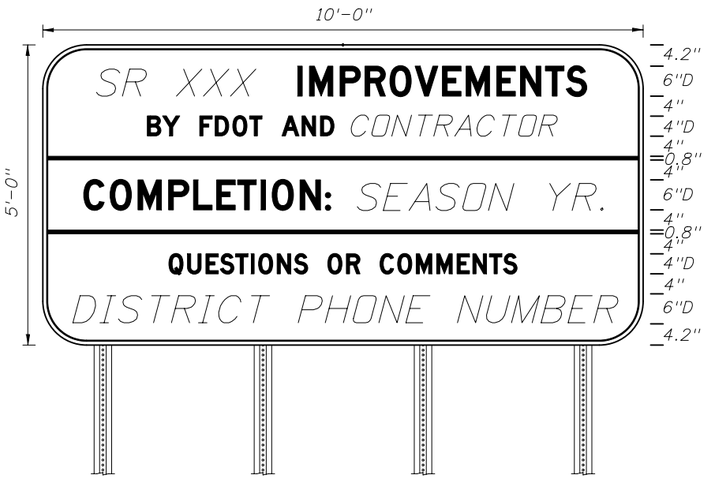
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

Interim Date 01/01/10

Index No. 600



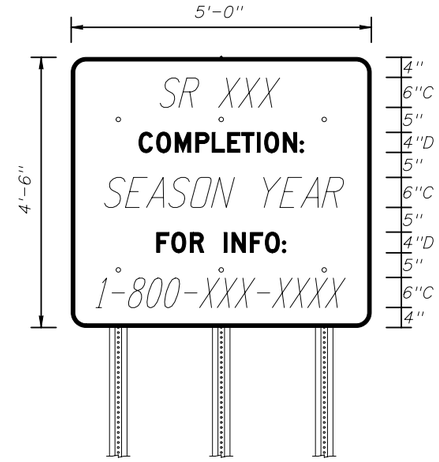
4 POST SIGN SUPPORT MOUNTING DETAIL



BORDER	10'-0"x 5'-0"
R=8"	8" Radii
TH=0.25"	4" and 6" series D Legend
IN=0.75"	Blue Background White Legend and Border

PROJECT INFORMATION SIGN DETAIL
50 MPH OR GREATER

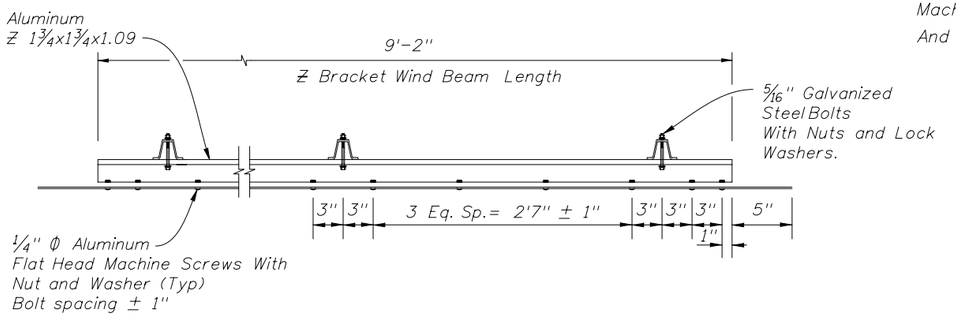
Use SIGN ATTACHMENT DETAIL (WITH Z-BRACKET).



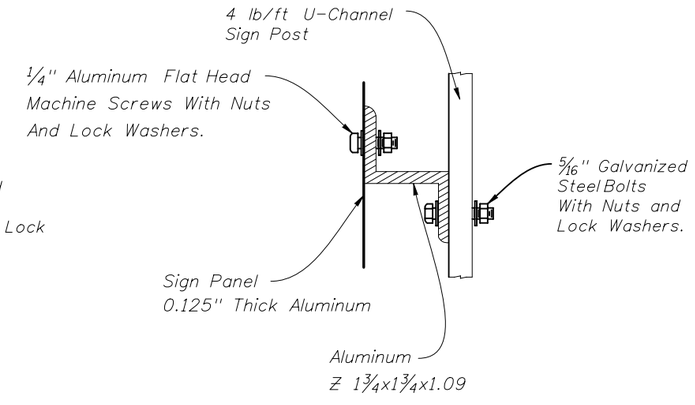
BORDER	5'-0"x 4'-6"
R=3"	3" Radii
TH=0.25"	4" series D Legend and
IN=0.75"	6" series C Legend Blue Background White Legend and Border

PROJECT INFORMATION SIGN DETAIL
45 MPH OR LESS

Use SIGN ATTACHMENT DETAIL (WITHOUT Z-BRACKET) On Sheet 6.



BRACKET DETAIL



SIGN ATTACHMENT DETAIL
(WITH Z-BRACKET)

PROJECT INFORMATION SIGN NOTES:

1. See sheet 6 for POST AND FOUNDATIONS TABLE FOR WORK ZONE SIGNS.
2. See sheet 6 for TYPICAL FOUNDATION DETAILS.

PROJECT INFORMATION SIGN

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/11/09	CA	Added PROJECT INFORMATION SIGN NOTES and PROJECT INFORMATION SIGN DETAIL-45 MPH OR LESS, changed PROJECT INFORMATION SIGN DETAIL to PROJECT INFORMATION SIGN DETAIL-50 MPH OR GREATER. Deleted TYPICAL FOUNDATION DETAIL.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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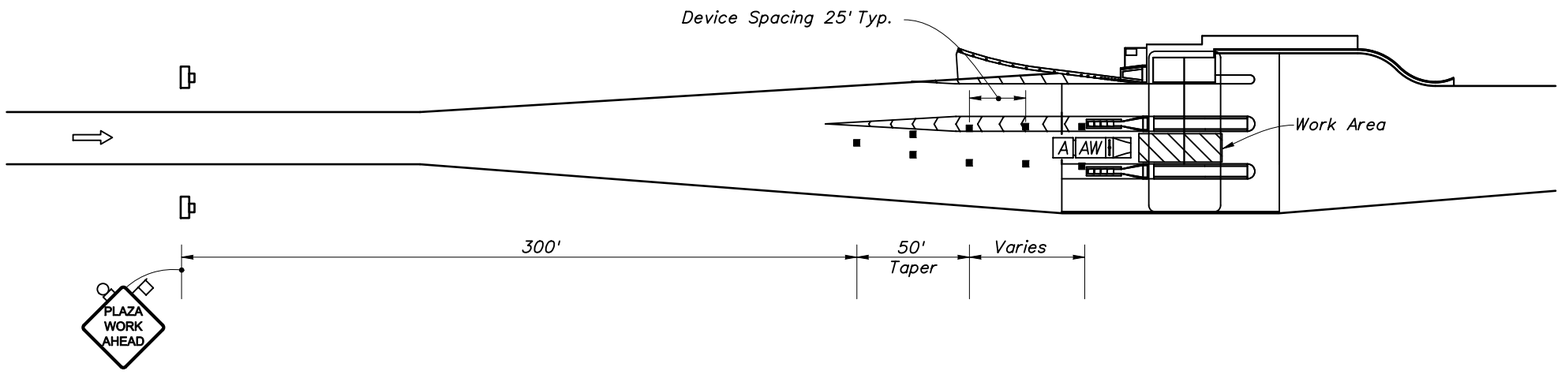
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

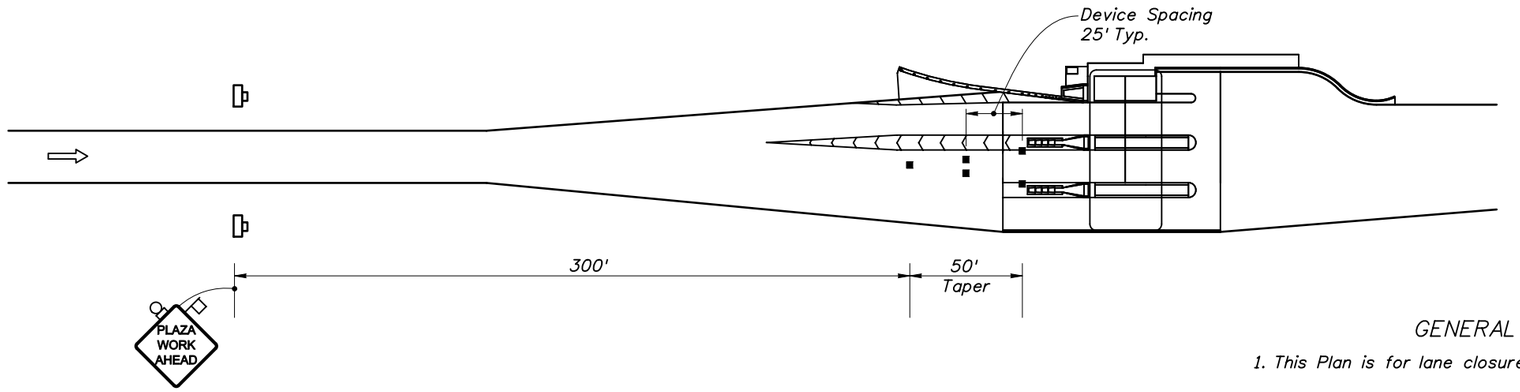
Interim Date 01/01/10

Sheet No. 7 of 13

Index No. 600



WORK DONE WITHIN TRAVEL LANE – ONE LANE CLOSED



WORK NOT DONE WITHIN TRAVEL LANE – ONE LANE CLOSED

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Lane Identification + Direction of Traffic
- A AW — Advance Warning Vehicle Equipped with Advance Warning Arrow Panel and Truck/Trailer Mounted Attenuator

GENERAL NOTES

1. This Plan is for lane closures that are three hours or less.
2. This Plan is to be used at Ramp or Mainline Plazas.
3. This plan can be used for any lane, with appropriate modifications, even if it is not in the center of the Plaza.
4. Lane use control lights, signs, or signals over toll lanes shall be switched to the appropriate symbol, message, or correct color prior to the start of any lane closure. They should also be switched at project completion.
5. At least 48 hours prior to any closure, other than emergencies, the plaza manager shall be notified for security and staffing.
6. A Truck/Trailer Mounted Attenuator is required for all aerial work operations (lift truck). For non-aerial operations, the Truck Mounted Attenuator or additional devices may be required by the Engineer based on the work being performed.

SHORT-TERM CLOSURES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
06/03/09	CA	Corrected 50' Taper and Channelizing Device number and spacing.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

TOLL PLAZA TRAFFIC CONTROL STANDARDS

Interim Date 01/01/10

Sheet No. 6 of 6

Index No. 667

GENERAL NOTES

1. This fence to be provided generally in rural areas. For supplemental information see Section 550 of the FDOT Specifications.

2. Fabric shall be woven wire, either galvanized steel, meeting the requirements of ASTM A116, No. 9 Farm, Design Number 1047-6-9, with Class 3 zinc coating, or aluminum coated steel, meeting the requirements of ASTM A584, No. 9 Farm, Design Number 1047-6-9, with a minimum coating weight of 0.40 oz./ft.^{2}. For additional information see payment note below.

3. Fence shall be installed with wire side to private property except on horizontal curves greater than 3° the fence shall be installed so as to pull against all posts.

4. Posts may be either timber, steel, recycled plastic or concrete. Unless a specific post material is called for in the plans, the Contractor may elect to use either a single material or a combination of timber, steel, recycled plastic or concrete materials. Line posts of one material may be used with corner, pull and end post assemblies of a different material. Line posts of only one optional material and pull post assemblies of only one optional material will be permitted between corner and end post assemblies. Within individual corner and end post assemblies only one optional material will be permitted.

5. Timber posts shall meet the material requirements of Specification Section 954. Timber line posts are to be minimum 4" diameter. Timber corner, pull, approach and end posts are to be a minimum 5" diameter. Timber braces are to be minimum 4" diameter.
   (A) Staples for line posts to be 1¼" minimum length; for approach, corner and pull posts 1½" minimum length. At approach, corner and pull posts, staple every line wire. At line posts, staple every line wire in top half and alternate line wires in bottom half. Staples shall be driven diagonally across the line wire with the points in separate grains.
   (B) Connections between timber posts and braces to be provided by dowels as shown in fastener details.
   (C) Wire to be wrapped and tied, as shown in the splice details, at the following locations:
   (a) All end posts, (b) Corner post, including the assemblies at vertical breaks of 15° or more and (c) Pull posts where the wire is not spliced and pulled through the assembly; see General Note 18.

6. Steel posts and braces shall be standard steel posts, galvanized at the rate of 2 oz./ft.^{2}, together with necessary hardware and wire clamps and meeting the following requirements:
   (A) Line posts: 8' long; 1.33 lbs./ft.; roll formed studding; anchor plate attached (23 in.^{2}).
   (B) Approach posts: 2½"x2½"x¼" angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
   (C) Pull, end and corner posts: 2½"x2½"x¼" angles, 8' long; fabricated for attaching brace; with necessary hardware, clamps, etc.
   (D) Braces: 2"x2"x¼" angles with necessary hardware and fabricated for attaching to post.
   (E) The pull, corner, approach and end posts are to be set in concrete as per detail. (Also see General Note No. 15)

7. Recycled plastic posts shall meet the following material requirements: Line posts shall have a minimum section of 4" round or 4" square. Plastic posts shall not be used as corner, pull, end or approach posts unless such use is specifically detailed in the plans. The straightness of the post shall comply with 954-5 for timber post. The flexural strength shall meet the requirements of the latest edition of the Southern Pine Inspection Bureau's Standard Grading Rules for Southern Pine Lumber for No. 2SR Stress Rated Grade Timber. Plastic posts can be set by either digging and tamped backfill or by driving into full depth preformed holes ¼" to ½" smaller than cross section of post. Staples for fabric and barbed wire connection to plastic line posts shall be the same size, count and location as that for timber posts.

8. The Contractor, at his option, may use any suitable precast or prestressed concrete posts; however, approval by the Engineer, of posts not shown on this index, will be required prior to construction of the fence. Precast posts shall be Class I concrete. Prestressed posts shall be Class III concrete. Lengths of concrete post to be as indicated for timber posts.

9. Aluminum post, braces and accessory framing hardware shall not be used unless the plans specifically detail their application or the Engineer specifically approves their incorporation in fence construction or repair. Aluminum framed gates are permitted as described in General Note 19.

10. The woven wire shall be attached to steel and concrete posts by a minimum of five tie wires. The single wire ties shall be applied to the top, bottom and three intermittent line wires. The ends of each tie wire shall have a minimum of two tight turns around the line wire. Tie wires shall be steel wire not less than 0.120" diameter, zinc coating Class 3, soft temper, in accordance with ASTM A641.

11. Steel Barbed Wire can be either of the following types:
    Type I: This type shall conform to the requirements of ASTM A121, with two strands of 12½ gage wire; four-point barbs, wire size 14 gage, twisted around both line wires; and, Class 3 coating.
    Type II: This type same as Type I except the two strand wires are twisted in alternating directions between consecutive barbs.
    Aluminum Barbed Wire shall be fabricated of two strands of 0.110-inch wire with 0.08-inch diameter four-point barbs spaced at approximately 5½", and at a maximum spacing of 6". The wire for the strands and for the barbs shall be of ASTM B211M Alloy 5052-H38 or equal.

12. The woven wire shall be stretched only until one-half the tension curl has been pulled out of the line wires.

13. Posts to be set by driving or digging. If by digging, the posts shall be set at the center of the hole and the soil tamped securely on all sides.

14. Longer posts than those indicated above may be required by the plans or for deeper installations.

15. Concrete bases for angular steel posts (pull, corner, end and approach) shall be Class NS as specified in Section 347. Materials for Class NS concrete may be proportioned by volume and/or by weight.

16. Pull post assemblies shall be installed at approximately 330' centers except that this maximum interval may be reduced by the Engineer on curves where the radius is less than 3°.

17. Corner post assemblies are to be installed at all horizontal and vertical breaks in fence of 15° or more.

18. A maximum length of 1320' of wire may be installed as a unit. For pulls through a pull post assembly the fabric shall be spliced by crimping sleeves only. Pulls through a corner post assembly will not be permitted.

19. Unless otherwise called for in the plans gates shall be commercially available metal swing gates assembled and installed in accordance with the manufacturer's specifications as approved by the Engineer. Chain link swing gates in accordance with Index No. 802 may be substituted for metal swing gates as approved by the Engineer. Gate size is full opening width whether single leaf or double leaves. Payment for gates shall include the gate, single or double, all necessary hardware for installation and any additional length and/or size for posts at the opening. Gates shall be paid for under the contract unit price for Fence Gates, EA.

20. For construction purposes, assemblies are defined as follows: End post assemblies shall consist of: one end post, one approach post, two braces, four diagonal tension wires and all necessary fittings and hardware. Pull post assemblies shall consist of: one pull post, two braces, four diagonal tension wires and necessary fittings and hardware. Corner post assemblies shall consist of: one corner post, two approach posts, four braces, eight diagonal tension wires and all necessary fittings and hardware.

21. All posts, braces, tension wires, fabric, tie wires, Class NS concrete, and all miscellaneous fittings and hardware to be included in the cost for Fencing, LF. Fencing shall be inclusive of the lengths of pull, end and corner post assemblies, but exclusive of gate widths.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10/14/09	CH	Under General Notes note 7 requirements for recycled plastic post were revised.			

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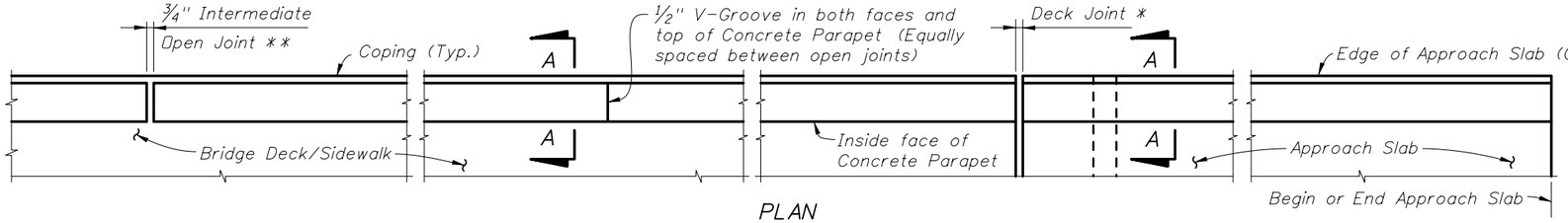
FENCE TYPE A

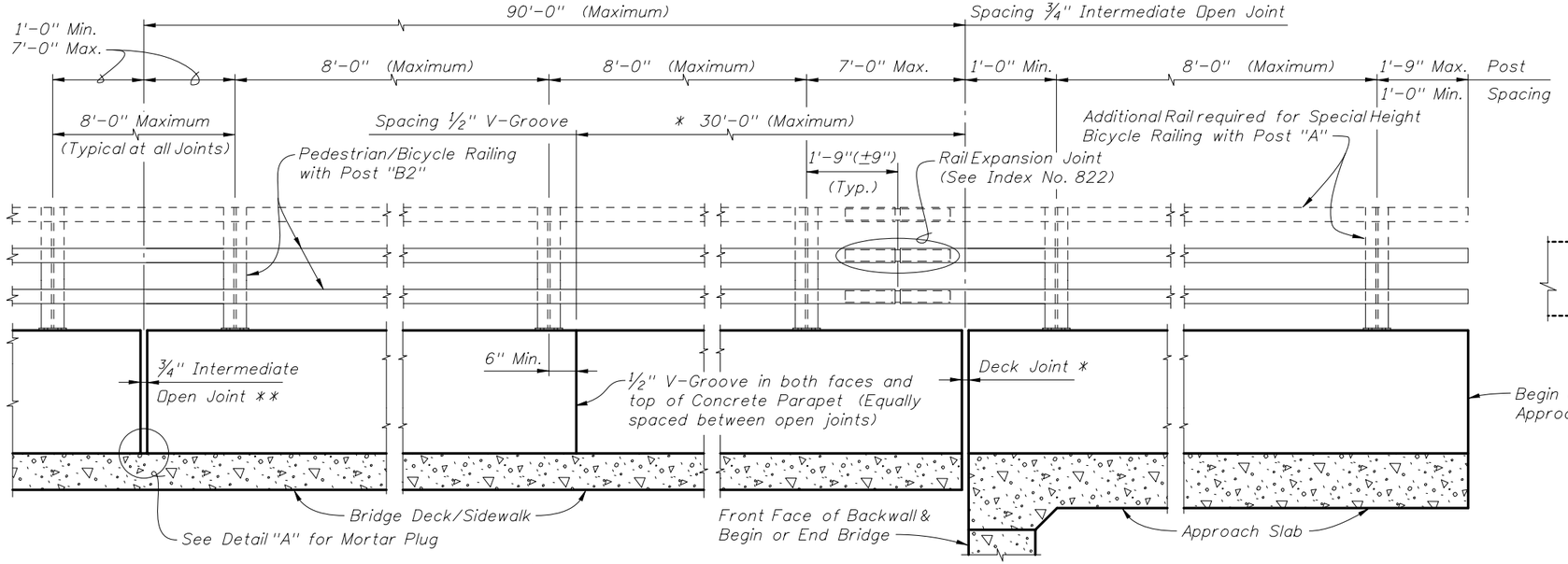
Interim Date 01/01/10

Index No. 801



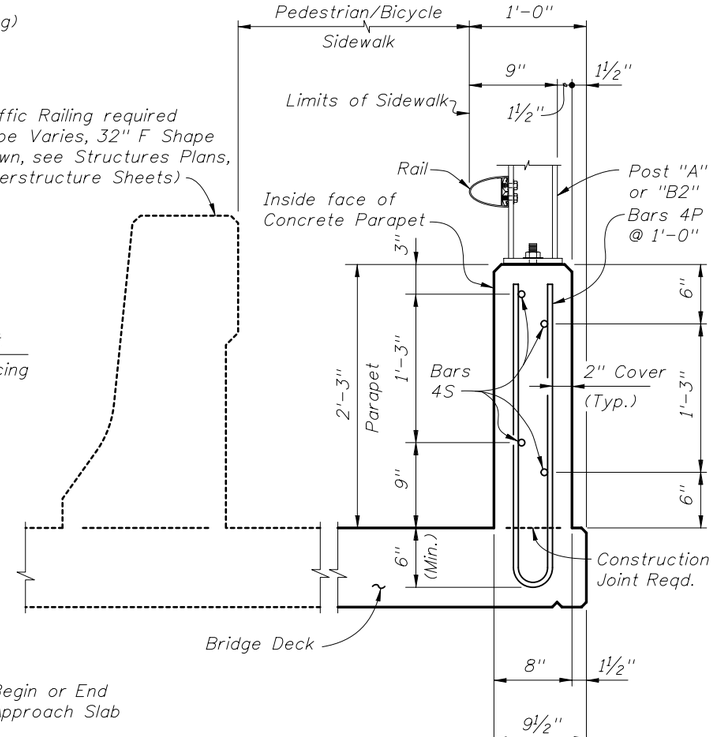
PLAN
(Rails, Posts & Reinforcing Steel not shown for clarity)

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



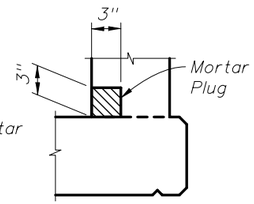
* See Structures Plans, Superstructure Sheets for actual dimensions and joint orientation. Open Parapet Joints at Deck Expansion Joint locations shall match the dimension of the Deck Joint. For treatment of Railings on skewed bridges see Index No. 490. Deck Joint at Begin Bridge or End Bridge shown.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

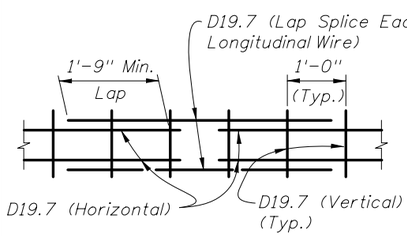
NOTE:
At Intermediate Open Joints, the lower 3" portion of the open joint shall be plugged by filling it with mortar in accordance with Section 400 of the Specifications.



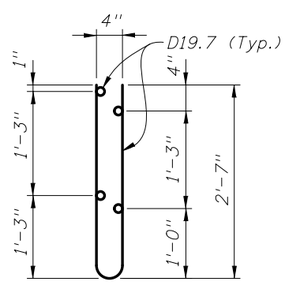
DETAIL "A" - SECTION
AT INTERMEDIATE OPEN JOINT

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)

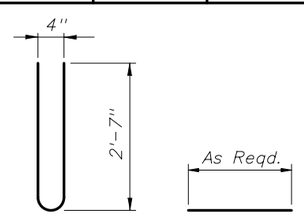


WELDED WIRE REINFORCEMENT
(WWR)

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
01/01/10	SJN	Changed Post offset dimensions to Joints.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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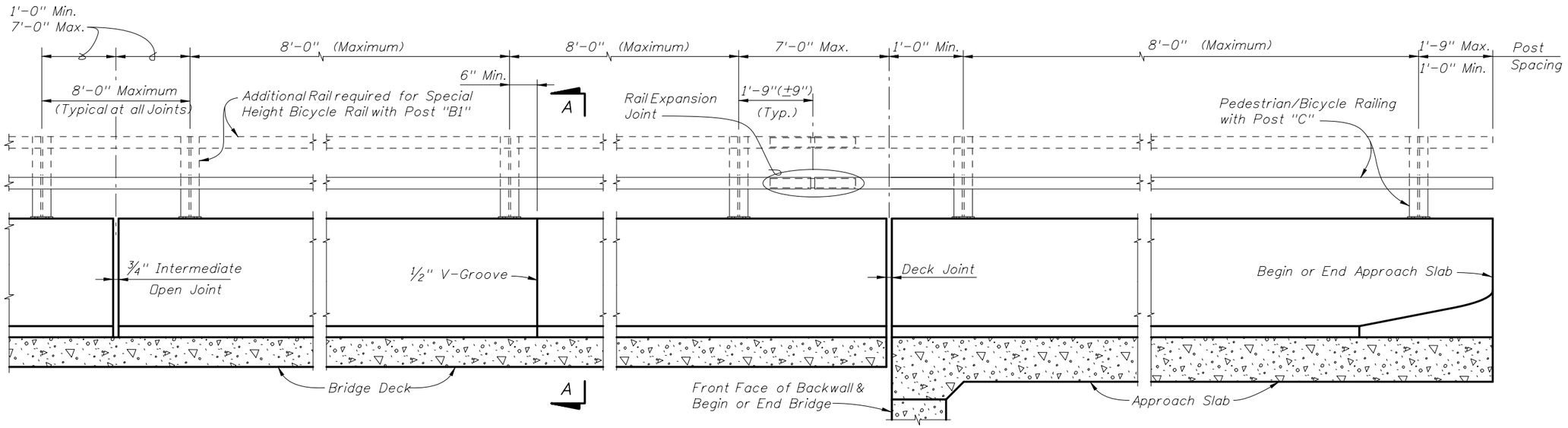
PEDESTRIAN/BICYCLE RAILING

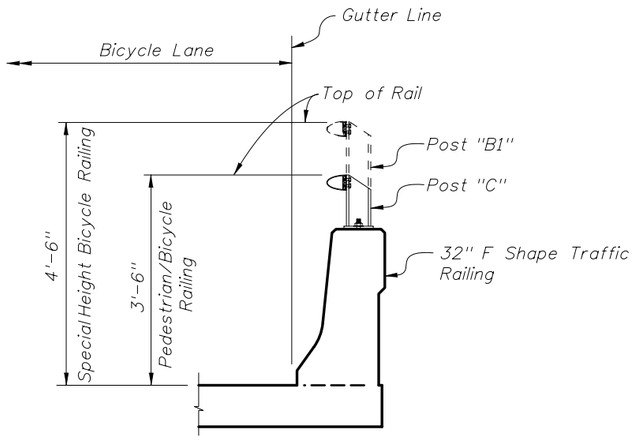
Interim Date 01/01/10

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
01/01/10	SJN	Changed Post offset dimensions to Joints.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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

Interim Date: 01/01/10

Sheet No.: 1 of 1

Index No.: 821

NOTES

DESIGN SPECIFICATIONS:

American Association of State Highway and Transportation Officials (AASHTO) "LRFD Bridge Design Specifications", Third Edition, 2004, including 75 year Design Life

Florida Department of Transportation (FDOT) "Structures Design Guidelines for Load and Resistance Factor Design", January 2006.

Florida Building Commission "Florida Building Code", 2004 Edition, except for Handrail diameter.

U.S. Access Board "ADA Accessibility Guidelines" July 2004 as adopted with amendments by the USDOT under 49CFR Part 37.

National Fire Protection Association (NFPA) 101, "Life Safety Code", 2003 Edition.

DESIGN LIVE LOADS:

Post and Base Plate: Equivalent point load = 200 lb. load + (50 lb./ft. x Post Spacing (ft.)) applied transversely at top rail connection.

Top & Bottom Rails: 50 lb./ft. uniform load applied simultaneously vertically and transversely + 200 lb. concentrated point load applied at midspan in the directions for both maximum stress and deflection.

Handrails: Maximum of either 50 lb./ft. uniform load applied in any direction or 250 lb. concentrated load applied in any direction at any point along the top.

Pickets: Concentrated 200 lb. load applied transversely over an area of 1.0 square foot.

GEOMETRY:

Clear Opening between Pickets: Shall reject the passage of a 4" diameter sphere below 42" height, and a 8" diameter sphere above 42" height.

Clear Opening under Bottom Rail: Shall reject the passage of a 2" diameter sphere.

ADA Handrail Height: 34"

Standard Pedestrian/Bicycle Railing Height: 42" minimum.

Special Height Bicycle Railing Height: 54" minimum.

DEFLECTION:

Total combined deflection of the railing system including the resilient or neoprene pads, due to the top rail design live loads, shall not exceed 1½" when measured at midspan of the top rail.

APPLICABILITY NOTE TO DESIGNER:

This railing is not applicable for shielding drop-off hazards for vehicular traffic. This railing is applicable for all cases where a pedestrian or bicyclist drop-off hazard exceeds 2'-6" or when a drop-off hazard is less than 2'-6" and is required by design. See Index No. 851 for special requirements and modifications for use on bridges. Adequate foundation support shall be provided for anchorage and stability against overturning. For unusual site conditions a site specific railing is to be designed by the responsible engineer. The railing shown on these drawings requires a handrail for ramps steeper than a 5% grade to conform with the requirements of the Americans with Disabilities Act (ADA). Refer to FDOT Plans Preparation Manual (Volume I) Chapters 4 & 8, for the definition of vehicular, pedestrian and bicyclist "drop-off hazards".

ALTERNATE DESIGN:

Manufacturers seeking approval of proprietary railing systems for inclusion on the Qualified Products List as pre-approved alternate designs must submit application along with design documentation showing the proprietary railing system is designed to meet the design life, live loads, geometry and deflection requirements specified herein. All fixed joints are to be either welded or commercially designed fixed joint systems. Each field section of railing must be identified with a permanently affixed label with the manufacturer's name and the FDOT QPL approval number. Labels must be a maximum of 1½" by 3" and located at the base of a post within the field section. Project specific shop drawings are required for QPL approved railings, see Shop Drawings note.

In lieu of design calculations, submit certified test reports from an approved independent testing agency. Test railing systems in accordance with ASTM E935 (Test Method A & C) using test loads at least 175% of the design load. Test proprietary or nonstandard anchorage systems in accordance with ASTM E894 (Flexural Test). Anchorage systems must resist the minimum of 175% of the design load for failure of the steel anchors or 220% of the design load for failure in the concrete foundation.

PAYMENT:

Railing shall be paid for per linear foot (Item No. 515-2-abb). Payment will be plan quantity measured as the length along the center line of the top rail, and includes rails, posts, pickets, rail splice assembly, base plates, anchor bolts, nuts, washers, resilient or neoprene pads and all incidental materials and labor required to complete installation of the railing.

RAILS, PICKETS & POSTS:

Pipe Rails and Pickets shall be in accordance with ASTM A500 Grade B, C or D, or ASTM A53 Grade B for standard weight pipe (Schedule 40) or ASTM A36 for bars. Structural Tube Posts shall be in accordance with ASTM A500 Grade A, B, C or D, or ASTM A501. Posts and End Rails shall be fabricated and installed plumb, ± 1" tolerance when measured at 3'-6" above the foundation. Pickets shall be fabricated parallel to the posts. Corners and changes in tangential longitudinal alignment shall be made continuous with a 9" bend radius or terminate at adjoining sections with mitered end sections when handrails are not required. For changes in tangential longitudinal alignment greater than 45°, posts shall be positioned at a maximum distance of 2'-0" each side of the corner and shall not be located at the corner apex. For curved longitudinal alignments the top and bottom rails and handrails shall be shop bent to match the alignment radius.

RAILING MEMBER DIMENSIONS TABLE

MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Posts	2" x 4" Rectangular Tube	2.00" x 4.00"	0.188"
Rails	2" NPS (Sch. 40)	2.375"	0.154"
Rail Joint/Splice Sleeves	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Joint/Splice Sleeves	1" NPS (Sch. 40)	1.315"	0.133"
Handrails	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	1" Ø Round Bar	1.000"	N/A
Pickets	½" NPS (Sch. 40)	0.840"	0.109"
	¾" Ø Round Bar	0.750"	N/A

BASE PLATES & POST CAPS:

Base Plates and Post Cap plates shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

SHIM PLATES:

Shim Plates shall be aluminum in accordance with ASTM B209, Alloy 6061 or 6063. Shim plates shall be used for foundation height adjustments greater than ¼" and localized irregularities greater than ⅛". Field trim shim plates when necessary to match the contours of the foundation. Beveled shim plates may be used in lieu of trimmed flat shim plates shown. Stacked shim plates must be bonded together with an adhesive bonding material and limited to a maximum total thickness of ½", unless longer anchor bolts are provided for the exposed thread length.

COATINGS:

The railing shall be hot-dip galvanized after fabrication in accordance with Section 962 of the Specifications. All nuts, bolts and washers shall be hot-dip galvanized in accordance with Section 962 of the Specifications.

ANCHOR BOLTS:

Anchor bolts shall be in accordance with ASTM F1554 Grade 36. Headless anchor bolts for Adhesive Anchors shall be threaded full length. Cutting of reinforcing steel is permitted for drilled hole installation. Expansion Anchors are not permitted. All anchor bolts shall have single self-locking hex nuts. Tack welding of the nut to the anchor bolt may be used in lieu of self-locking nuts. All nuts shall be in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436 and Plate Washers (for long slotted holes only), shall be in accordance with ASTM A36 or ASTM A709 Grade 36. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and tack welds shall be coated with a galvanizing compound in accordance with the Specifications.

RESILIENT AND NEOPRENE PADS:

Resilient and Neoprene pads shall be in accordance with Specification Section 932 except that testing of the finished pads shall not be required. Neoprene pads shall be PRESTRESSED hardness 60 or 70.

JOINTS:

All fixed joints are to be welded all around and ground smooth. Expansion joints shall be spaced at a maximum 40'-0". Field splices similar to the expansion joint detail may be approved by the Engineer to facilitate hot-dip galvanizing and handling, but railing must be continuous across a minimum of two posts. Only use the Continuity Field Splice (Detail "E") to make the railing continuous for unforeseen field adjustments. Metallize rail ends with a galvanizing compound when field adjustments are required.

WELDING:

All welding shall be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal shall be E60XX or E70XX. Nondestructive testing of welds is not required.

WEEP HOLES:

Weep holes shall be ¼" Ø and located at the low point between adjacent posts for both top and bottom rails. Holes shall be drilled through the underside of the rails prior to hot-dip galvanizing.

SHOP DRAWINGS:

Complete details addressing project specific geometry (line & grade) showing post and expansion joint locations, anchor bolt installation "Case" or lengths, and venting holes for galvanizing, must be submitted by the Contractor for the Engineer's approval prior to fabrication of the railing. Shop drawings shall be in accordance with the Specifications.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added "ASTM A500 Grade B, C or D" for Pipe Rails and Pickets in RAILS, PICKETS AND POSTS note.			

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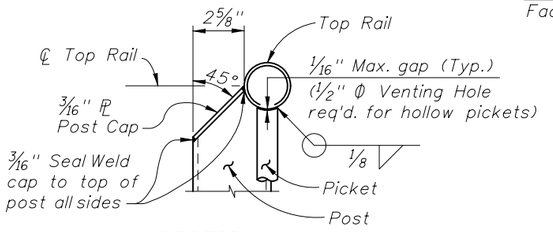
2010 Interim Design Standard

STEEL PEDESTRIAN/BICYCLE PICKET RAILING

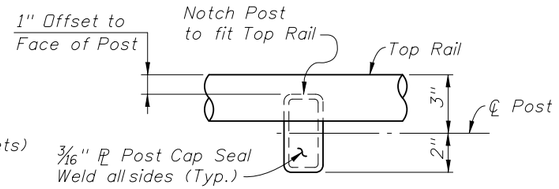
Interim Date 01/01/10

Sheet No. 1 of 5

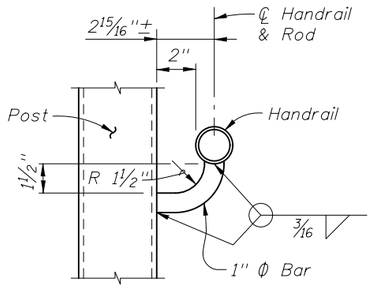
Index No. 850



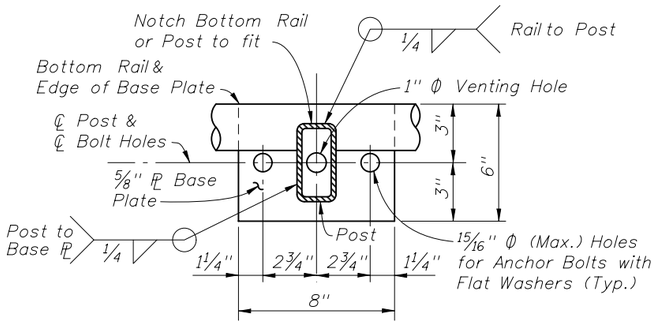
SECTION A-A
(Top of Picket Connection)



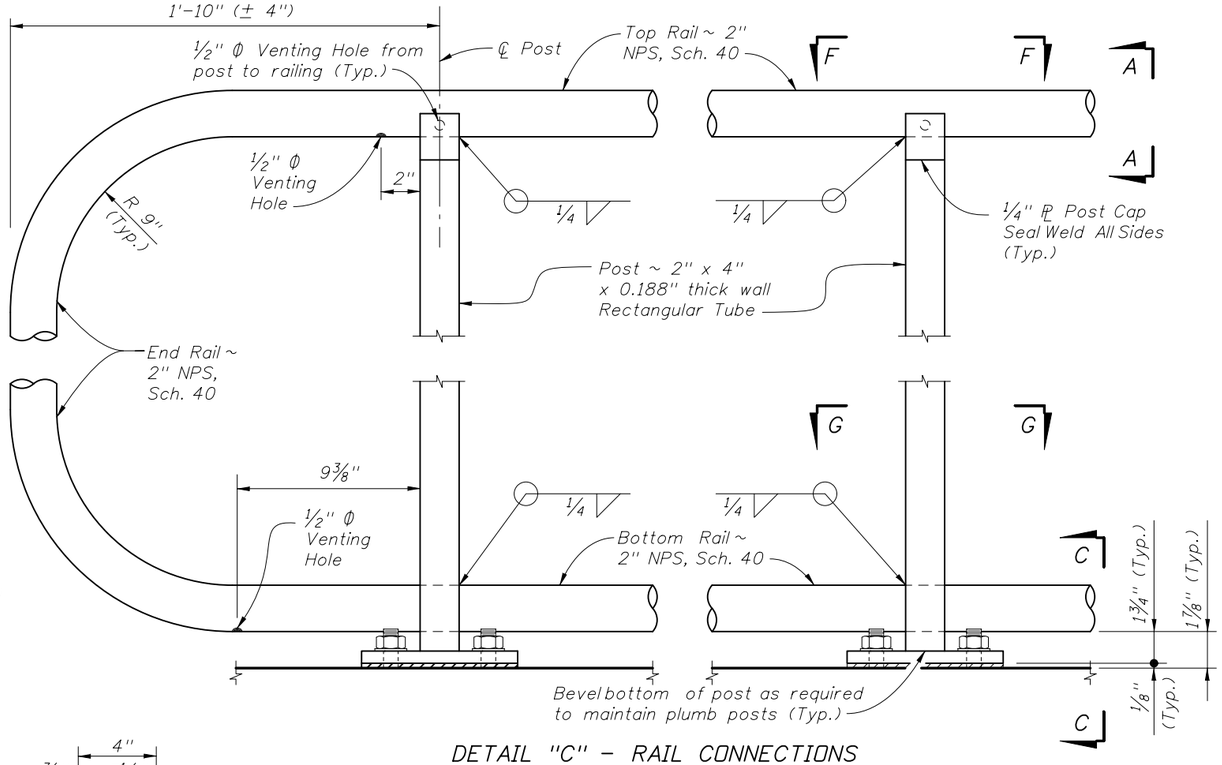
VIEW F-F
TOP RAIL CONNECTION
(Base Plate Not Shown for Clarity)



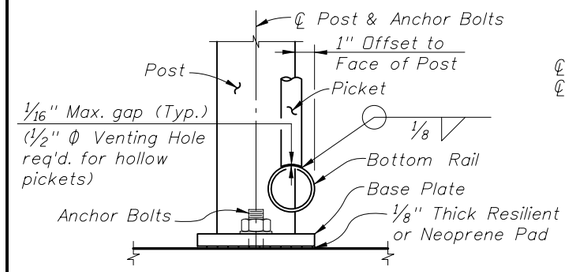
SECTION B-B
(Handrail Connection)



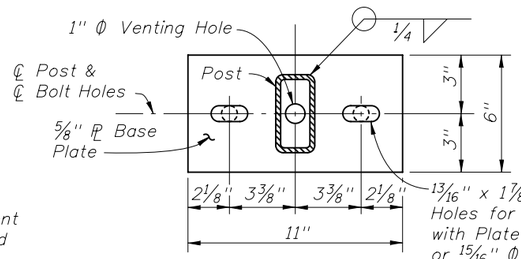
SECTION G-G
BASE PLATE & BOTTOM RAIL CONNECTION



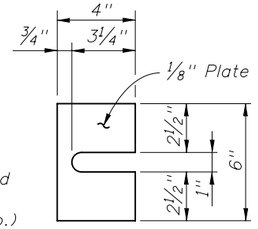
DETAIL "C" - RAIL CONNECTIONS
(Showing Outside Face of Structure and Railing, Pickets and Handrail Not Shown for Clarity)



SECTION C-C
(Bottom of Picket connection)



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



SHIM PLATE
DETAIL

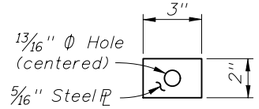
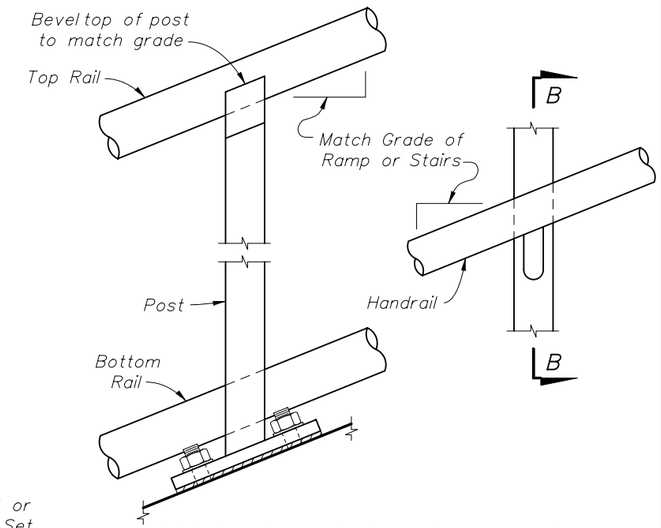
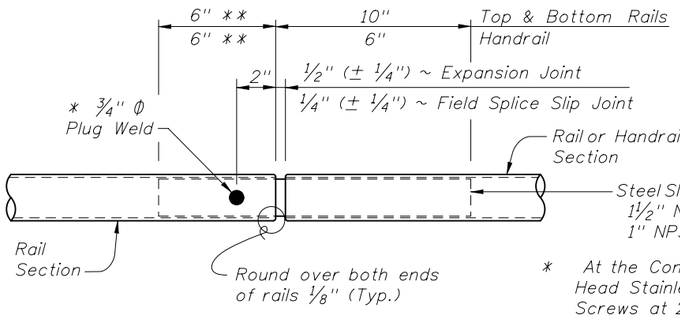


PLATE WASHER
DETAIL



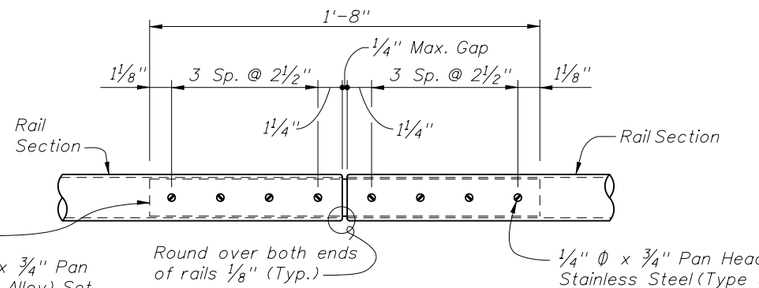
DETAIL "B" - RAIL AND HANDRAIL
(Showing Sloped Condition for Stairs or Ramp)



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

* At the Contractor's option 2 ~ 1/4" Ø x 3/4" Pan Head Stainless Steel (Type 316 or 18-8 Alloy) Set Screws at 2" spacing may be substituted for the 3/4" Ø plug weld. Set screws must be set flush against the outside face of rail and underside of handrail.

** Embedded length may be 4" for plug welded connection. Maintain venting of ends of pickets during galvanizing.



DETAIL "E" - CONTINUITY
FIELD SPLICE

1/4" Ø x 3/4" Pan Head 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.)

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

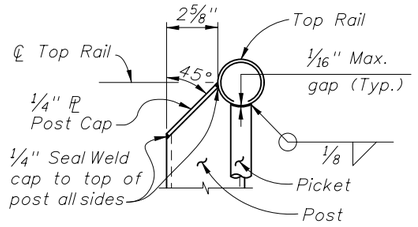
REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added (± 4") tolerance to End Hoop length in Detail "C".			

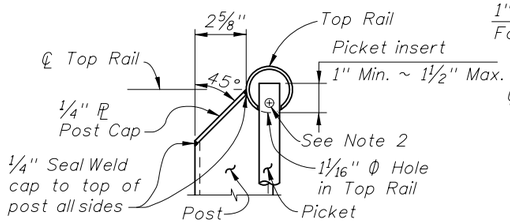
2010 Interim Design Standard

STEEL PEDESTRIAN/BICYCLE PICKET RAILING

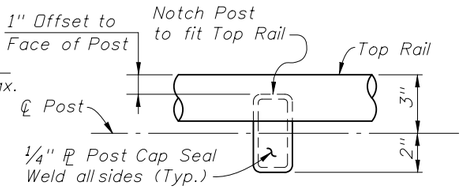
Interim Date: 01/01/10
Sheet No.: 4 of 5
Index No.: 850



TYPE A (WELDED)



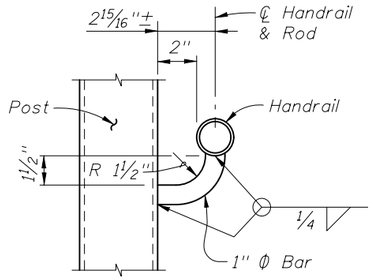
TYPE B (NONWELDED)



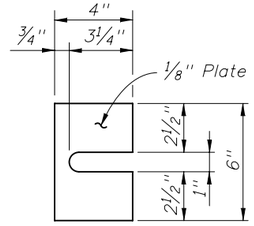
VIEW F-F
TOP RAIL CONNECTION
(Base Plate Not Shown for Clarity)

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

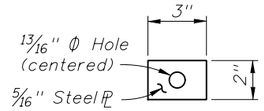
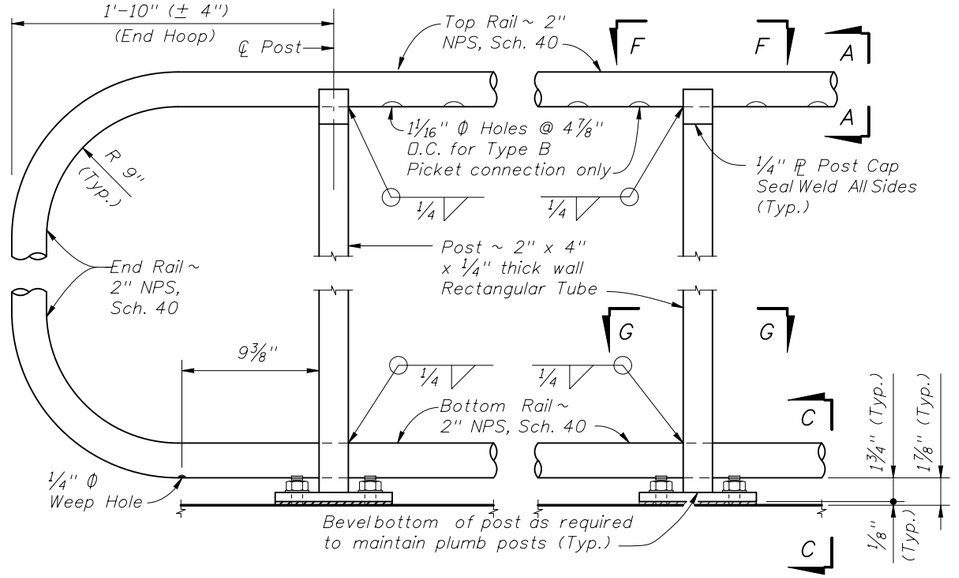
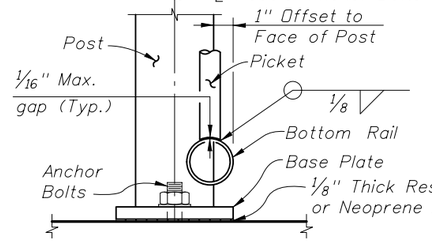


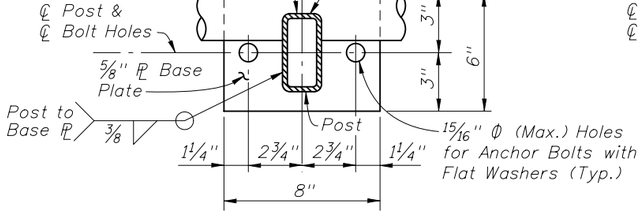
PLATE WASHER
DETAIL



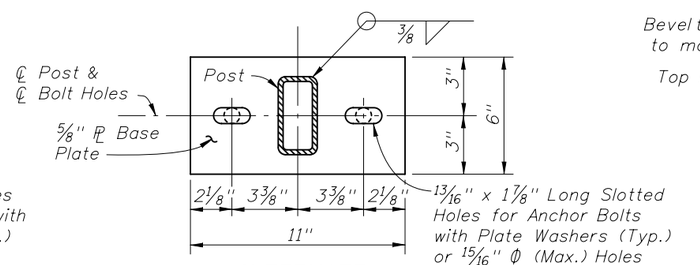
DETAIL "C" - RAIL CONNECTIONS
(Showing Outside Face of Structure and Railing,
Pickets and Handrail Not Shown for Clarity)



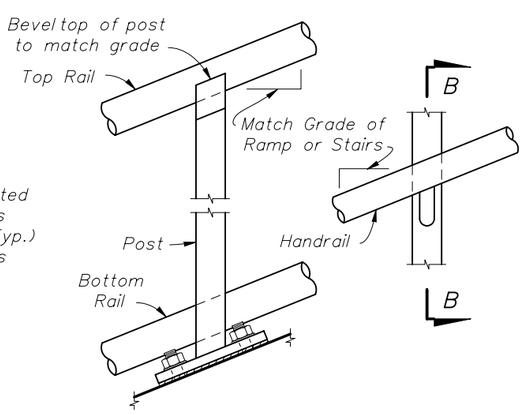
SECTION C-C
(Bottom of Picket connection)



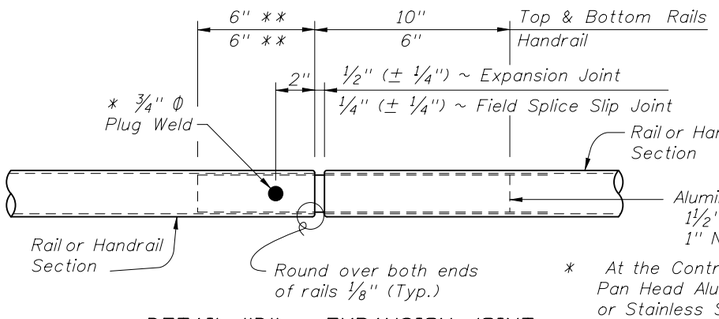
SECTION G-G
BASE PLATE & BOTTOM RAIL CONNECTION



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



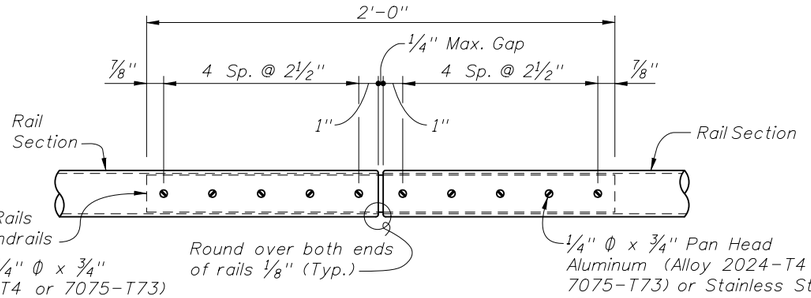
DETAIL "B" - RAIL AND HANDRAIL
(Showing Sloped Condition for Stairs or Ramp)



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

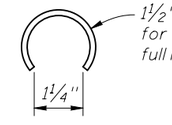
* At the Contractor's option 2 ~ ¼" Ø x ¾" Pan Head Aluminum (Alloy 2024-T4 or 7075-T73) or Stainless Steel (Type 316 or 18-8 Alloy) Set Screws at 2" spacing may be substituted for the ¾" Ø plug weld. Set screws must be set flush against the outside face of rails and underside of handrails.

** 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	DATE	BY	DESCRIPTION
01/01/10	SJN	Added (± 4") tolerance to End Hoop length in Detail "C".			

2010 Interim Design Standard

ALUMINUM PEDESTRIAN/BICYCLE PICKET RAILING

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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.

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.

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 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. The patents associated with Pile/Post Connection Option E, Index 5205 (Sheets 6 & 7 of 7), have an expiration date of August 10, 2010. Any use of Pile/Post Connection Option E on or before August 10, 2010 is subject to the rights of the patent holder (U.S. Patent Nos. 5,234,288 & 5,429,455) and all patent royalties or license fees shall be the sole responsibility of the user. To construct Pile/Post Connection Option E on or before the patent expiration date, contact:
   State Contracting and Engineering, Corp.
   3800 North 29th Street
   Hollywood, FL 33020
   Phone: (954) 923-4747
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.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Changed Note K. 4. Added patent information to Note K. 5.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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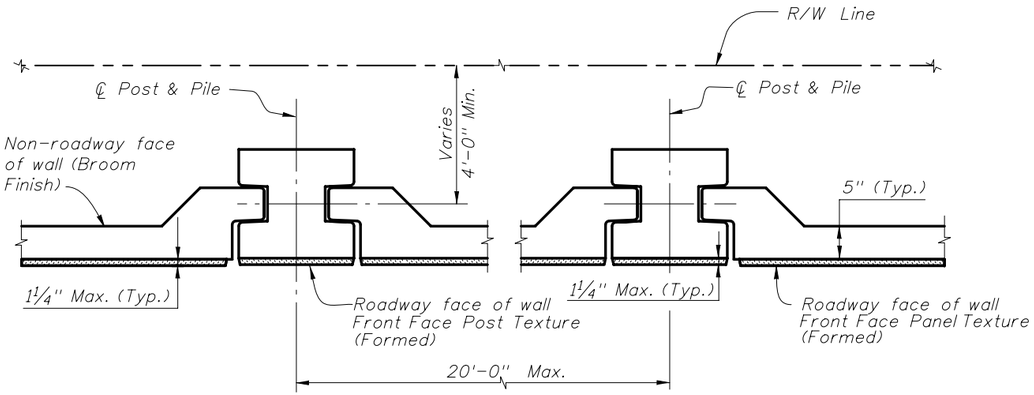
PRECAST SOUND BARRIERS - GENERAL NOTES

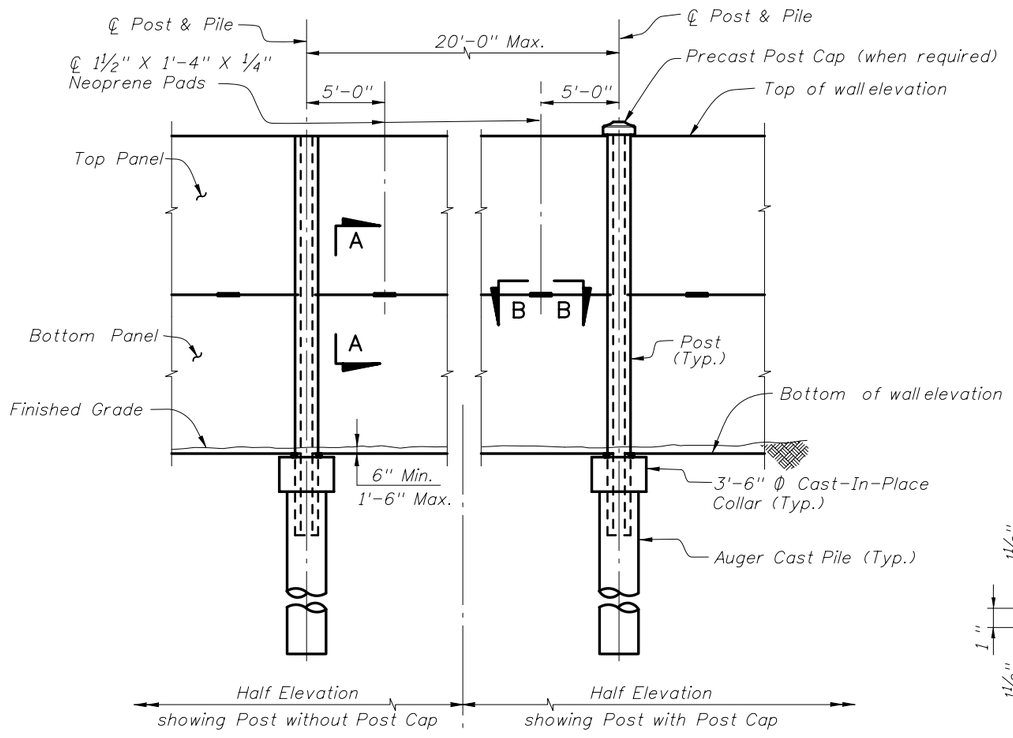
Interim Date: 01/01/10

Sheet No.: 1 of 1

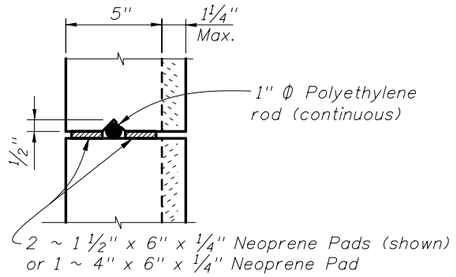
Index No.: 5200



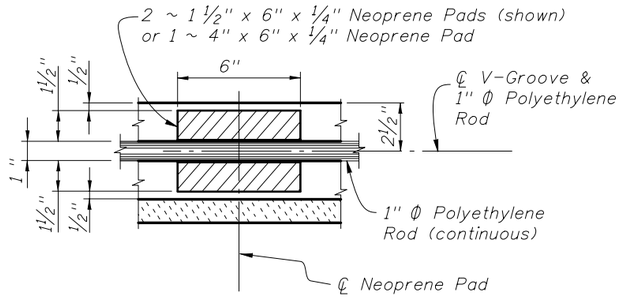
PLAN



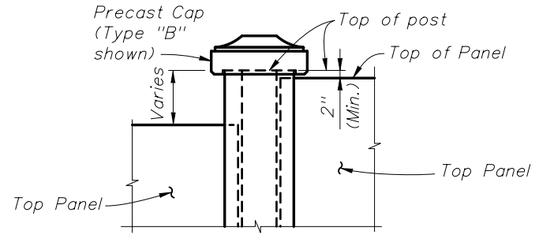
TYPICAL ELEVATION
(Pile/Post Connection Option A Shown)



SECTION A-A

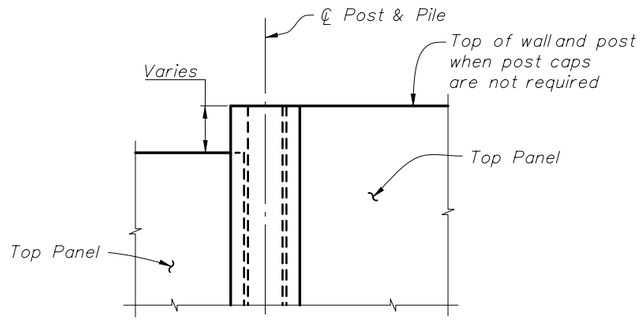


SECTION B-B

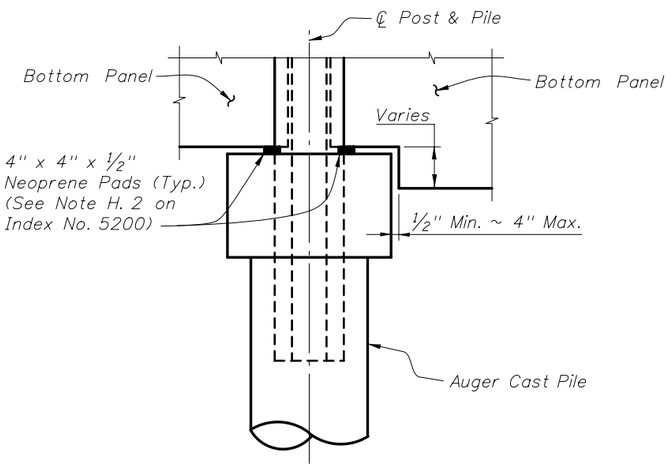


PRECAST POST CAP DETAIL

Note: See plans for Post Cap requirements.
See Index No. 5207 for Post Cap details.



ELEVATION STEP AT TOP OF WALL



ELEVATION STEP AT BOTTOM OF WALL
(Pile/Post Connection Option A Shown)

TYPICAL PANELS AND POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Changed Total Number of Sheets			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

PRECAST SOUND BARRIERS - FLUSH PANEL OPTION

Interim Date	Sheet No.
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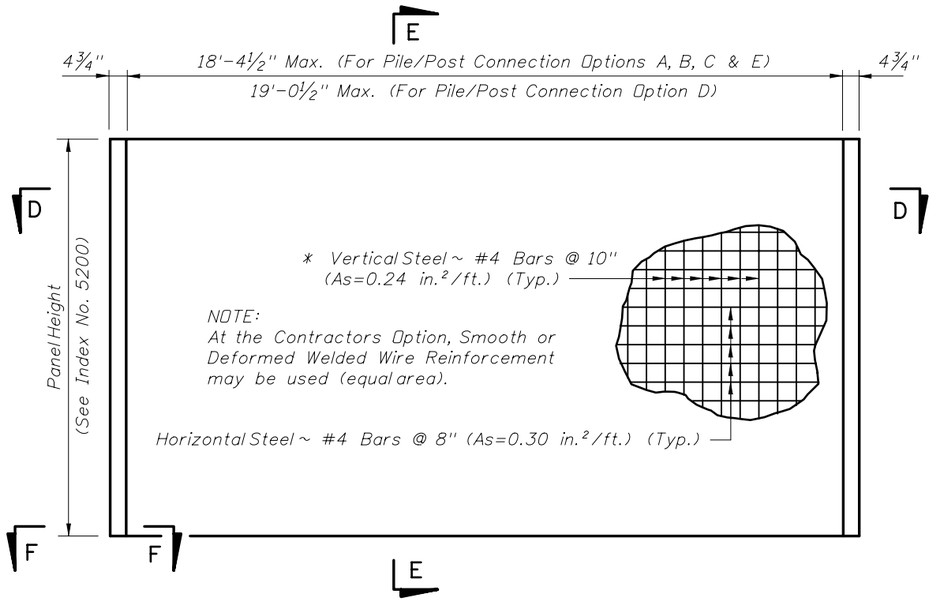
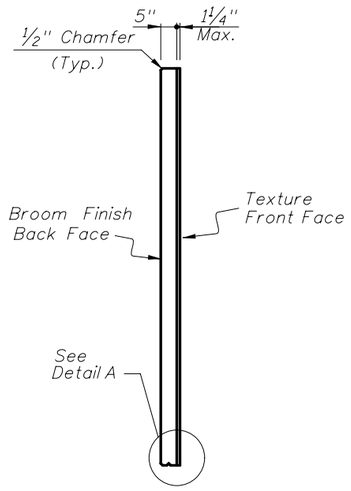
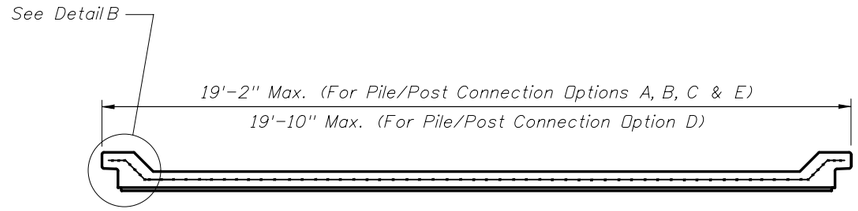
5202	



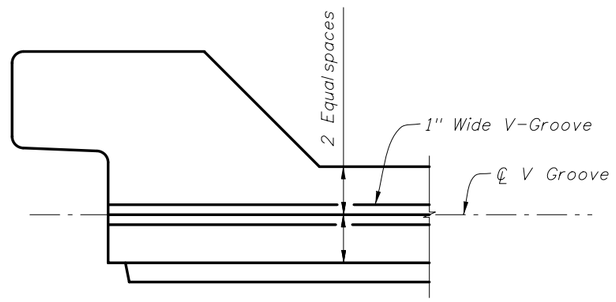
TYPICAL PANEL ELEVATION



SECTION E-E

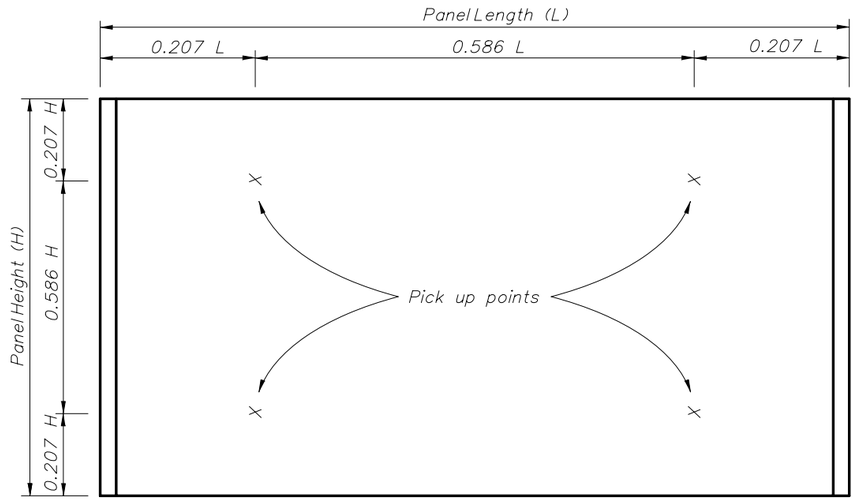


SECTION D-D

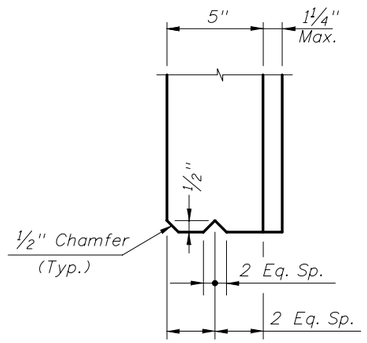


SECTION F-F

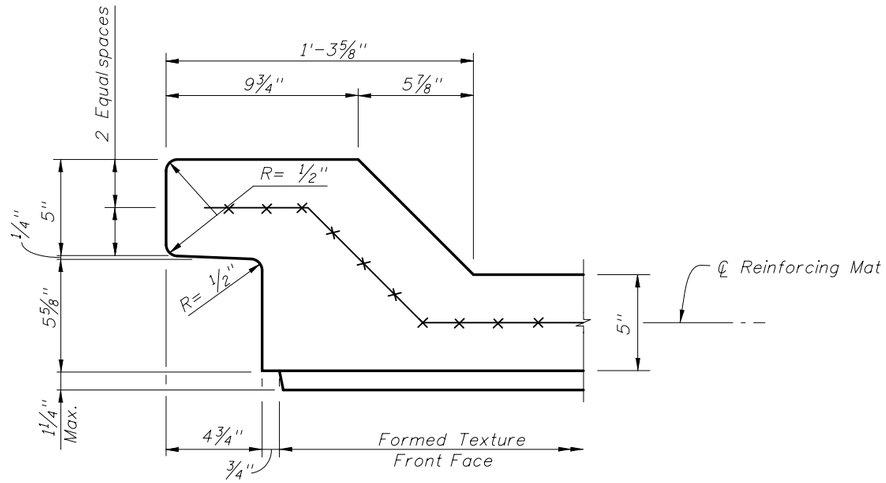
* In lieu of utilizing the pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.15 in.²/ft.).



REQUIRED PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)



DETAIL A



DETAIL B
(Typical both ends)

TYPICAL PANELS AND POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Changed Total Number of Sheets			

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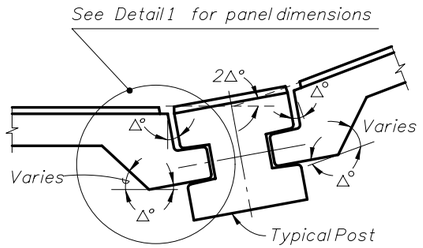
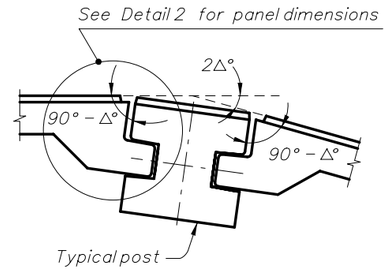
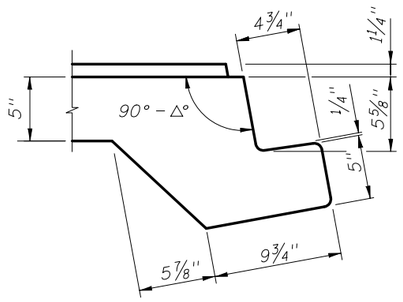


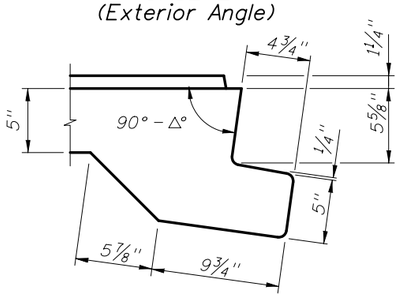
CASE 1
(Interior Angle)



CASE 2
(Exterior Angle)



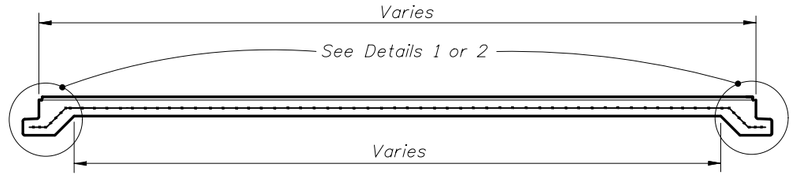
DETAIL 1



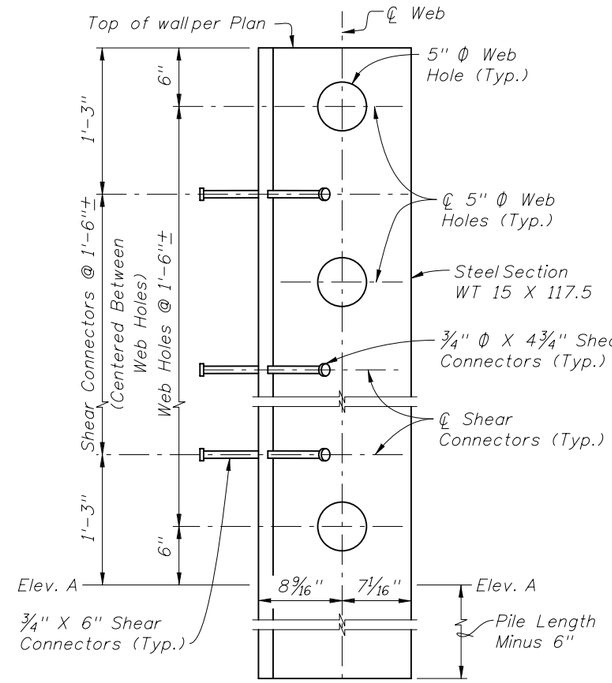
DETAIL 2

PIVOTING POINT DETAILS

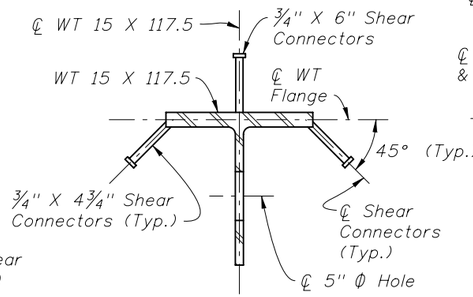
NOTE: The shop drawings shall include specific pivoting point details of panel ends at locations where the deflection angle (2△) between panels exceeds 7°.



PANEL PLAN

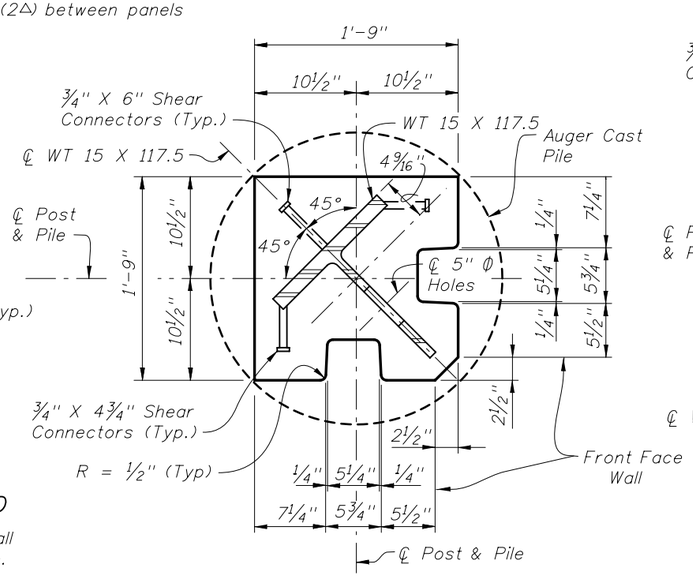


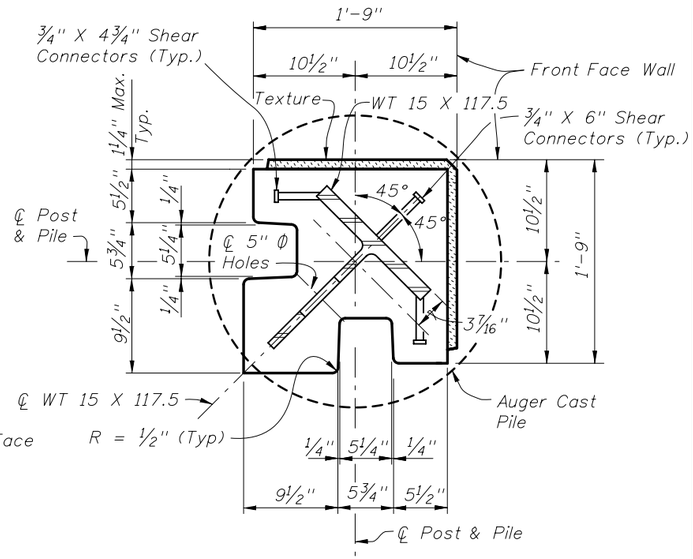
WEB HOLE & SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity. For limits of concrete see Index No. 5205, Sheet No. 4 of 7.)



WT 15 X 117.5 Post Detail For
Pile/Post Connection Options C & D

NOTE: The WT 15 X 117.5 Section shall extend into the Auger Cast Pile.





SPECIAL POSTS FOR 90° CORNERS FOR PILE/POST CONNECTION OPTIONS C & D
Collars for Special Posts shall be 3'-6" Ø

NOTES:
1. For Pile/Post Connection Options C & D, see Index No. 5205.
2. For Post & Pile Lengths, see Index No. 5206.

SPECIAL PANELS AND POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Removed Special Posts for 90° Corners Options A, B & E. Changed Total Number of Sheets. Revised Notes.			

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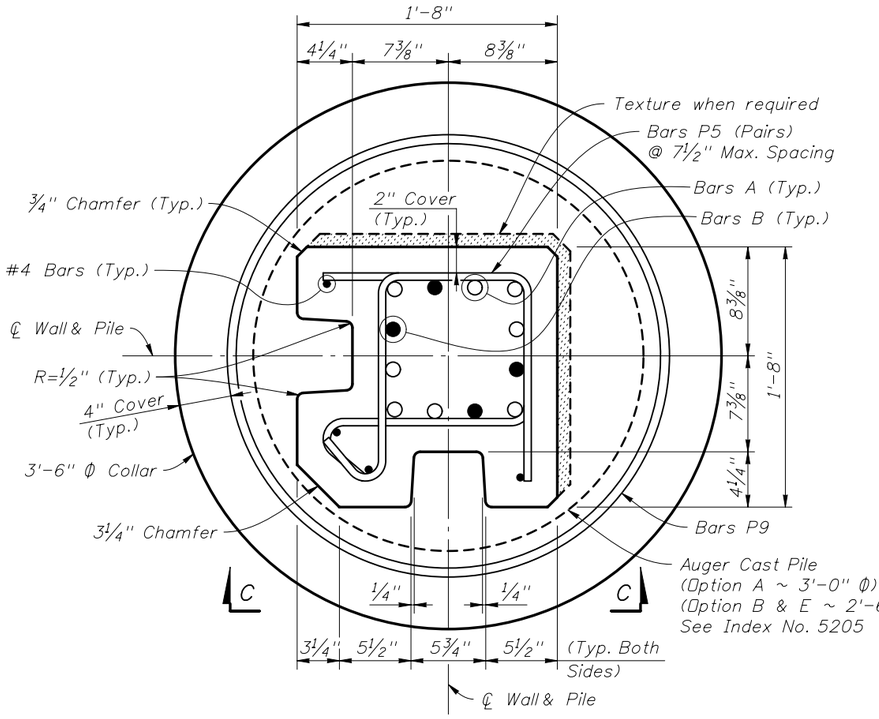
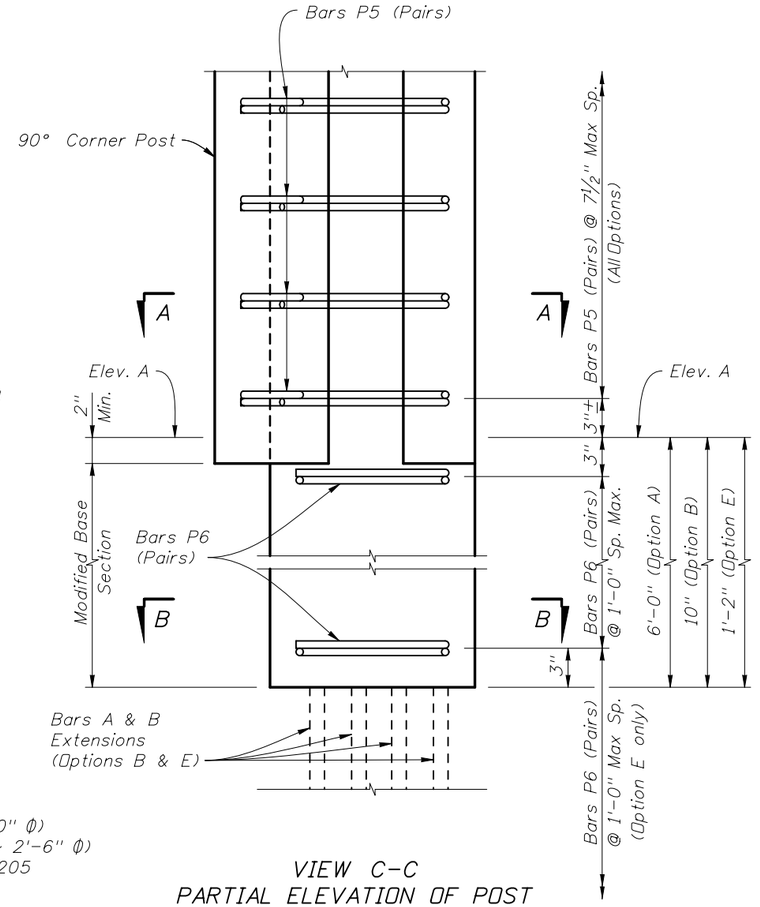
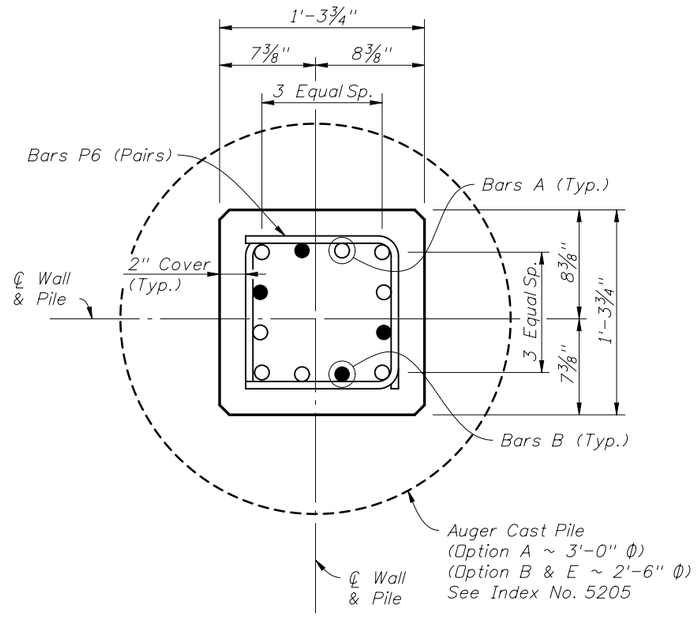


SECTION A-A
TYPICAL SECTION ABOVE PILE



VIEW C-C
PARTIAL ELEVATION OF POST
(Vertical Reinforcing & Pile not shown for clarity)



SECTION B-B
(Modified Base Section)

SPECIAL POSTS FOR 90° CORNERS FOR PILE/POST CONNECTION OPTIONS A, B & E

Collars for Special Posts shall be 3'-6" Ø

NOTES:
1. For Pile/Post Connection Options A, B & E, see Index No. 5205.
2. Use 3'-6" CIP Collar for all 90° corner posts.
3. For Post & Pile Lengths, see Index No. 5206.
4. For Table of Reinforcing Steel, see Index No. 5206. Bars P10 not required for corner pile.
5. Reduce standard panel length or adjust post spacing by 3½" at each 90° Corner Post to accommodate the Special Post dimensions.

SPECIAL 90° CORNER POST

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	New Sheet			

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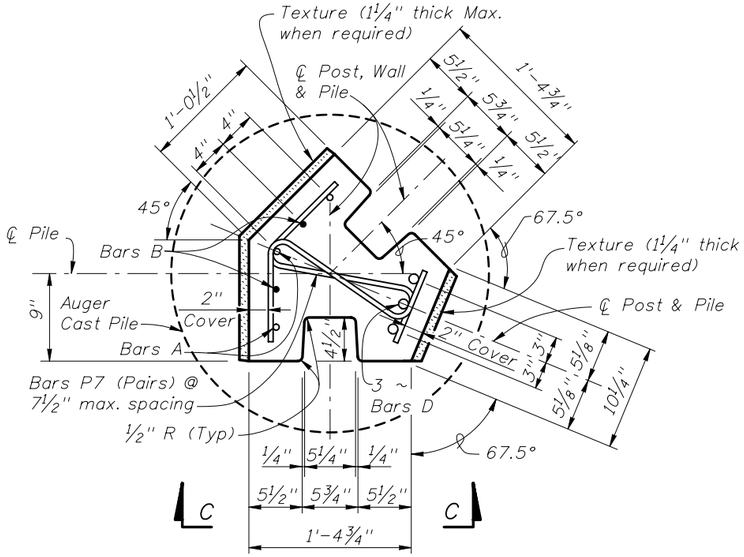
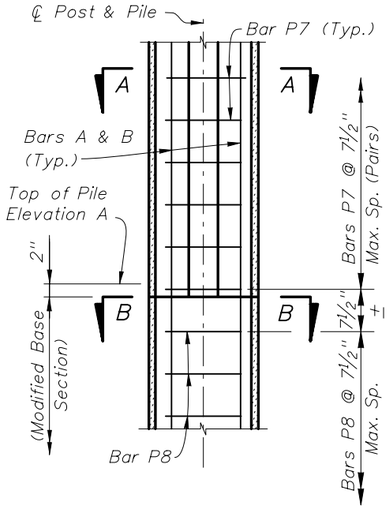
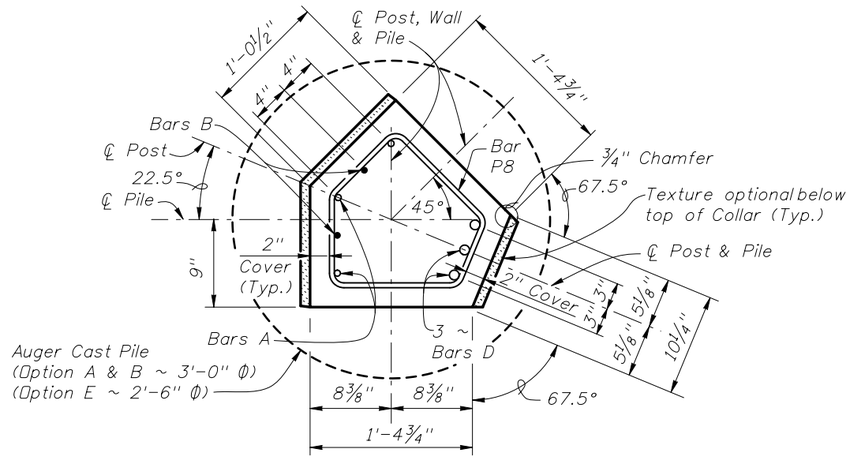


SECTION A-A
TYPICAL SECTION ABOVE PILE

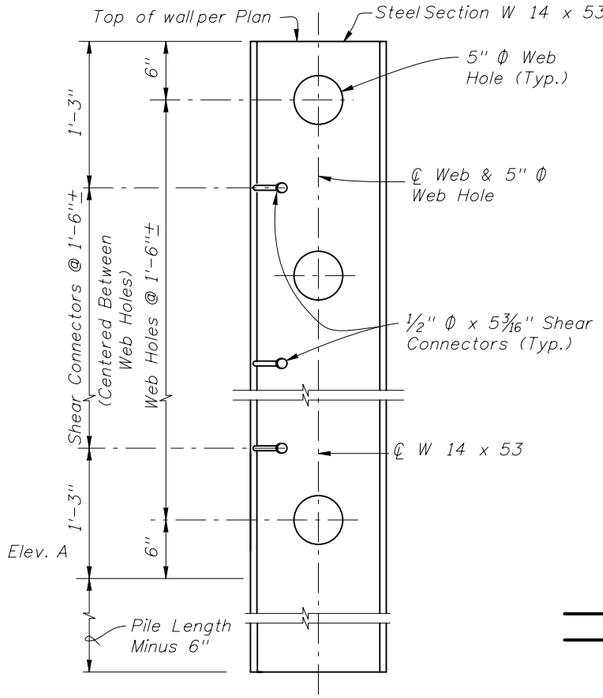


VIEW C-C (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)

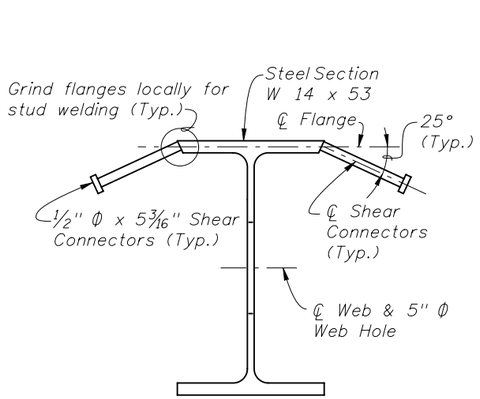


SECTION B-B
PRECAST COLLAR SECTION

SPECIAL POSTS FOR 45° CORNERS FOR PILE/POST CONNECTION OPTIONS A, B & E

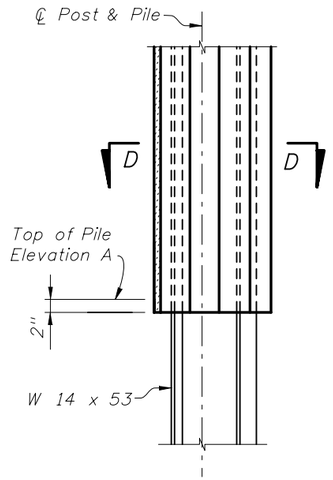


WEB HOLE AND SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity)

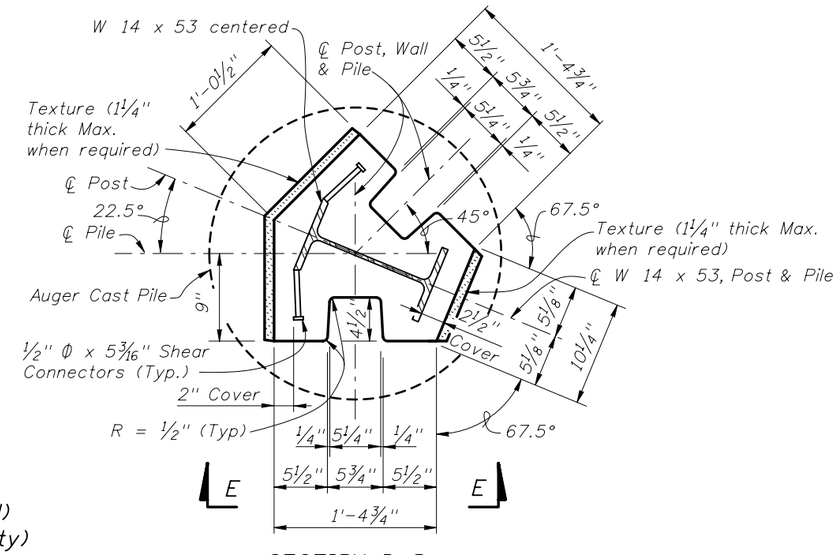


W 14 x 53 POST DETAIL

NOTE: The W 14 x 53 Section shall extend into the Auger Cast Pile.



VIEW E-E (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)



SECTION D-D
TYPICAL SECTION ABOVE PILE

SPECIAL POSTS FOR 45° CORNERS FOR PILE/POST CONNECTION OPTIONS C & D

NOTES:
1. For Table of Reinforcing Steel Sizes, see Index No. 5206.
2. For Pile/Post Connection Options A through E, see Index No. 5205.
3. For Post & Pile Lengths, see Index No. 5206.
4. Shear Connectors shall be 5" long after welding.

SPECIAL 45° CORNER POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	New Sheet			

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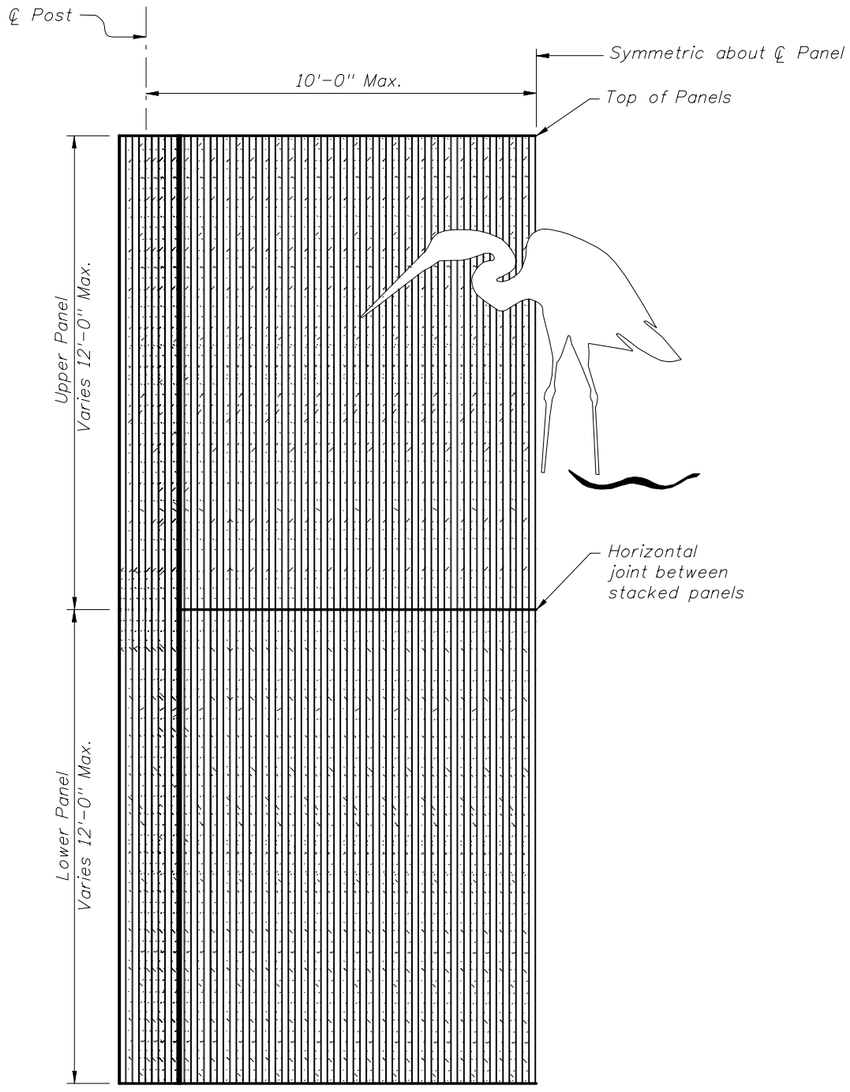
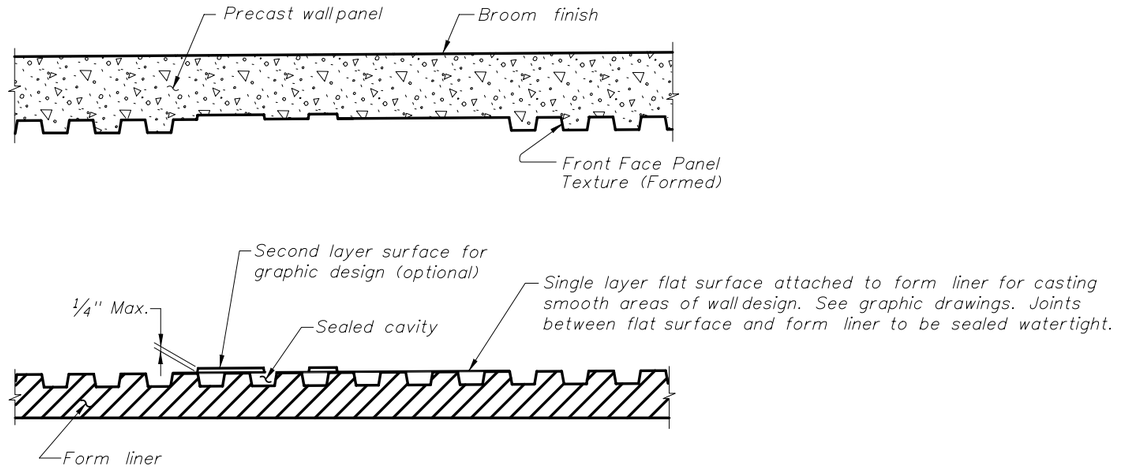


HALF ELEVATION
(Pile/Post Connection Options A, B, C and E Shown.)
(Front Face Panel Texture Type "H" and Front Face Post Texture Type "H" Shown.)
(Graphic Type SE-2 Shown.)



TYPICAL FORMING DETAIL
(Front Face Panel Texture Type "H" Shown.)

NOTES:

1. Broom finish shall be scored in plastic concrete on the back face of precast panels.
2. Contractor shall submit specific form liner samples for approval by the Engineer.
3. Textures and graphics shown are for demonstration purposes only. See Wall Control Drawings for project specific texture and graphic requirements.

GRAPHICS AND TEXTURE DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Sheet renumbered			

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PRECAST SOUND BARRIERS - FLUSH PANEL OPTION

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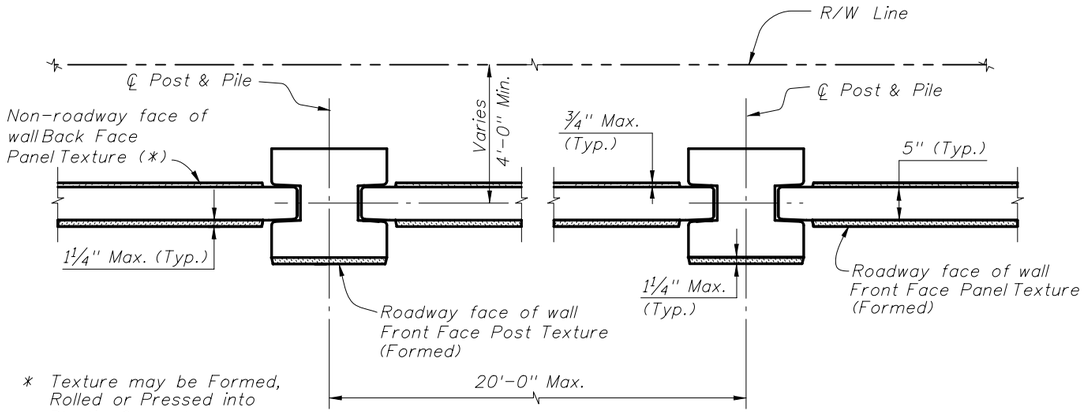
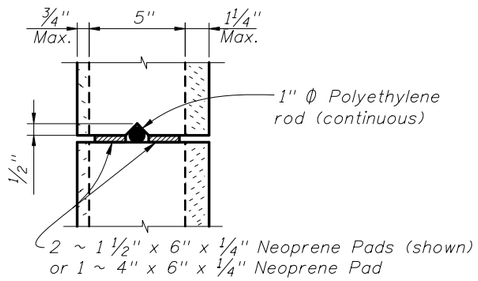
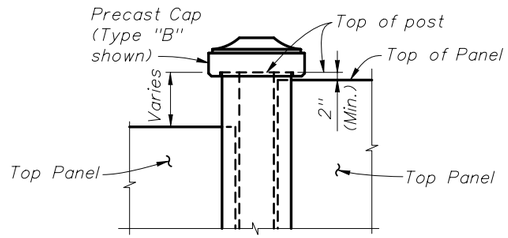


PLAN

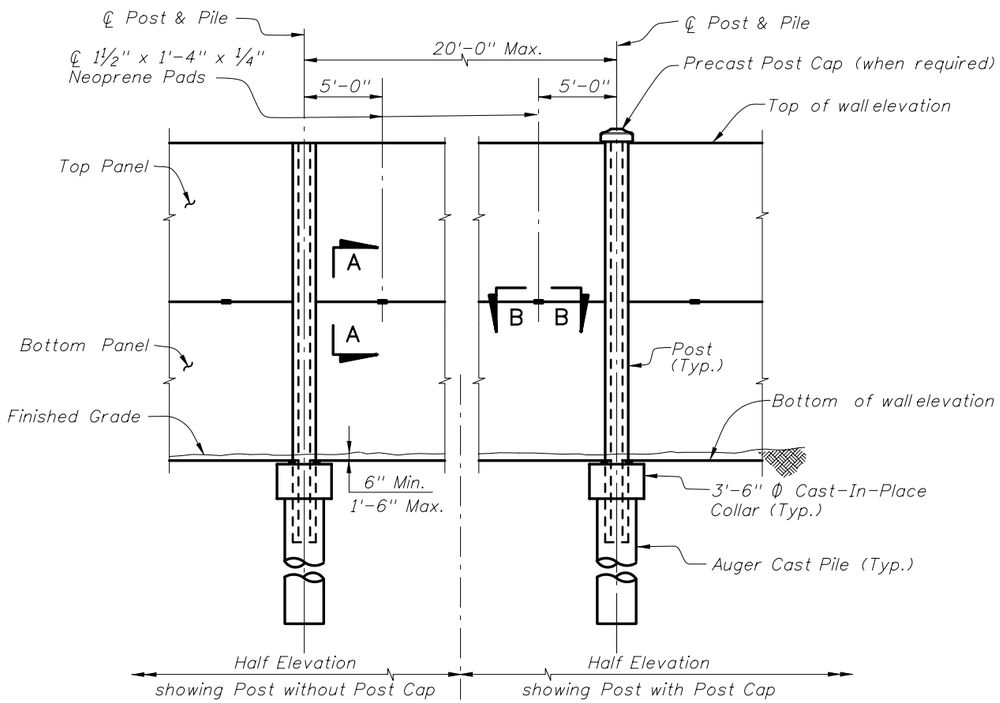


SECTION A-A

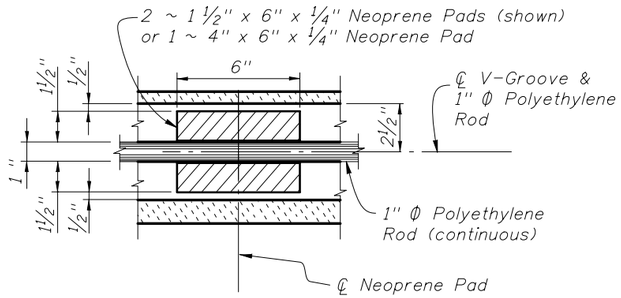


PRECAST POST CAP DETAIL

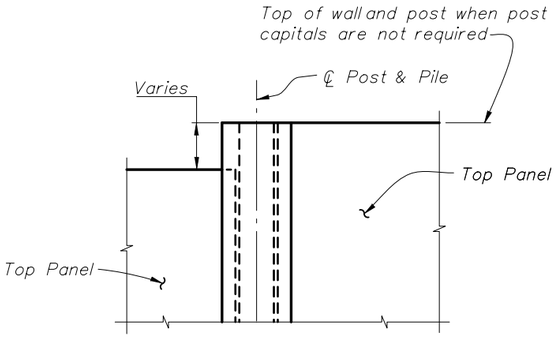
Note: See plans for Post Cap requirements.
See Index No. 5207 For Post Cap details.



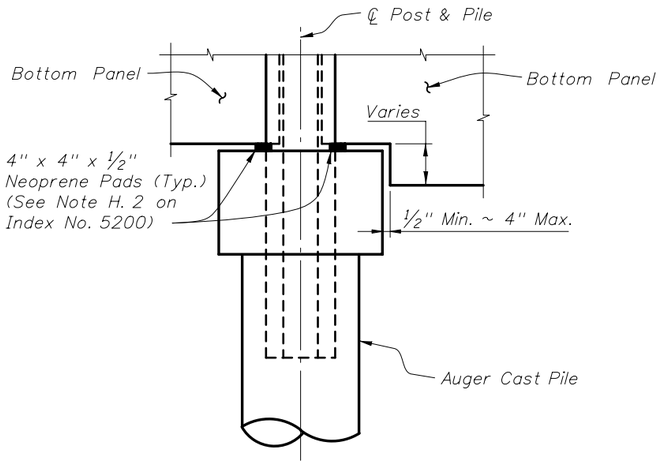
TYPICAL ELEVATION
(Textured Finish not Shown for Clarity)
(Pile/Post Connection Option A Shown)



SECTION B-B



ELEVATION STEP AT TOP OF WALL



ELEVATION STEP AT BOTTOM OF WALL
(Pile/Post Connection Option A Shown)

TYPICAL PANELS AND POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Changed Total Number of Sheets.			

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PRECAST SOUND BARRIERS - RECESSED PANEL OPTION

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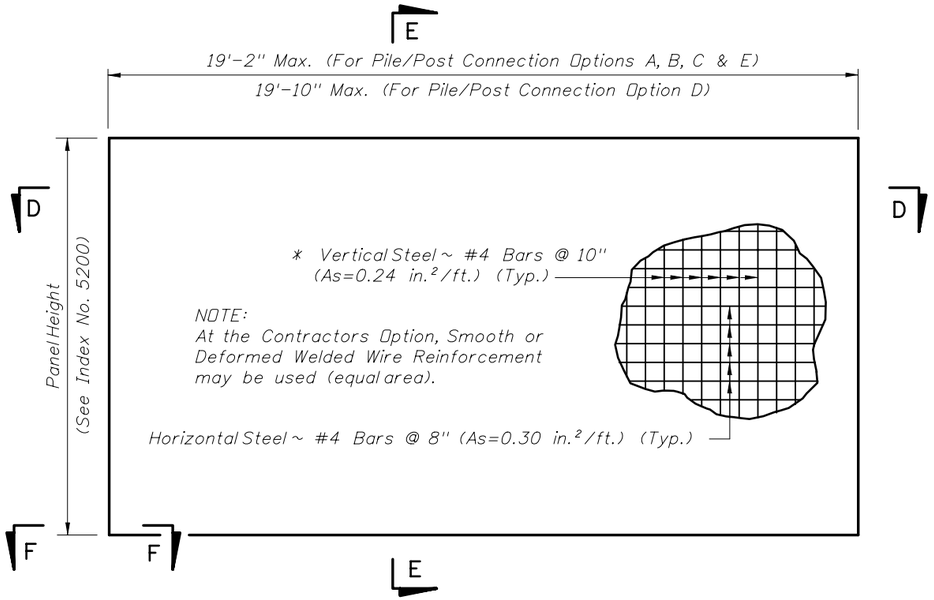
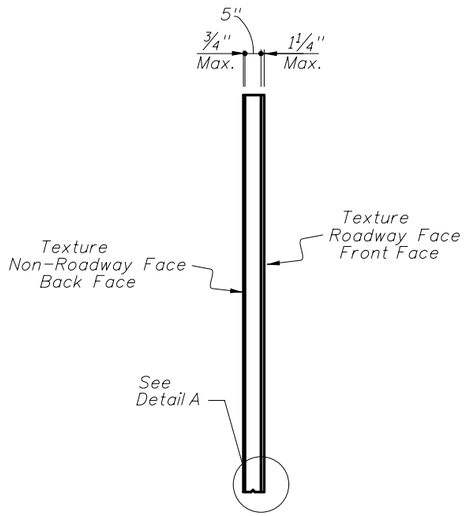
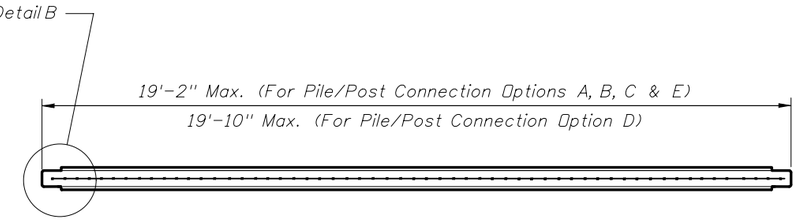


TYPICAL PANEL ELEVATION

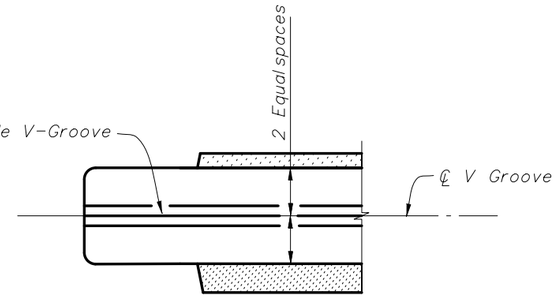
* In lieu of utilizing the pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.15 in.²/ft.).



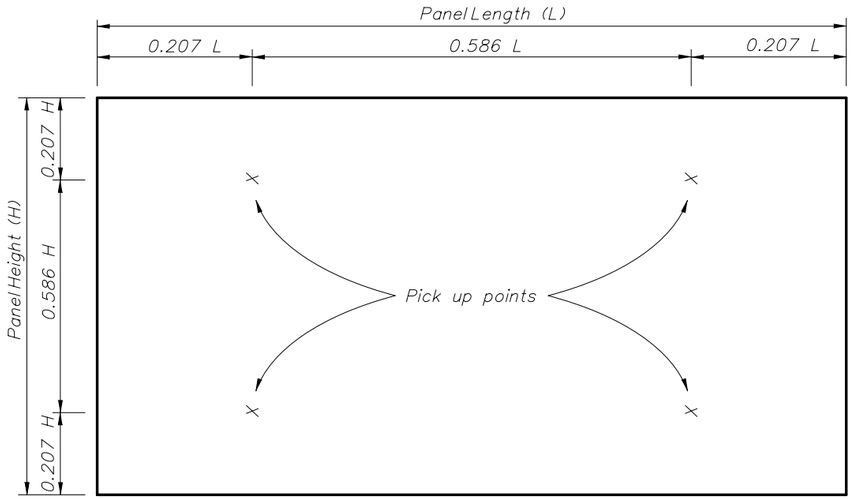
SECTION E-E



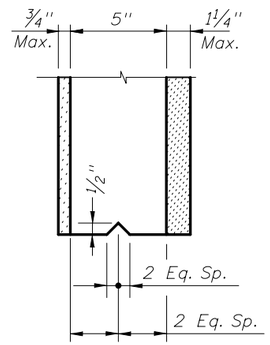
SECTION D-D



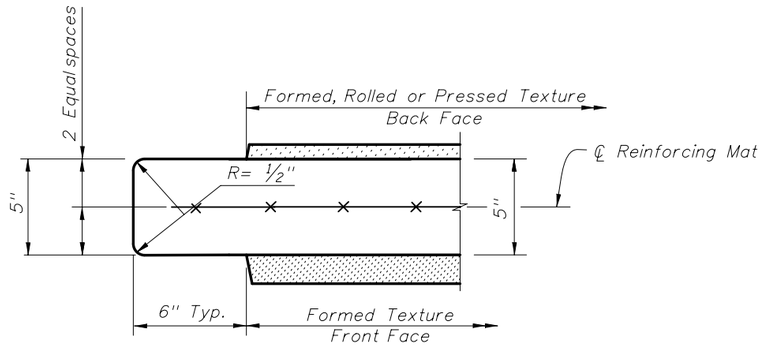
SECTION F-F



REQUIRED PICK UP POINTS FOR PANELS
(Panels shall be rotated about long axis only)



DETAIL A



DETAIL B
(Typical both ends)

TYPICAL PANELS AND POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Changed Total Number of Sheets.			

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PRECAST SOUND BARRIERS - RECESSED PANEL OPTION

Interim Date 01/01/10

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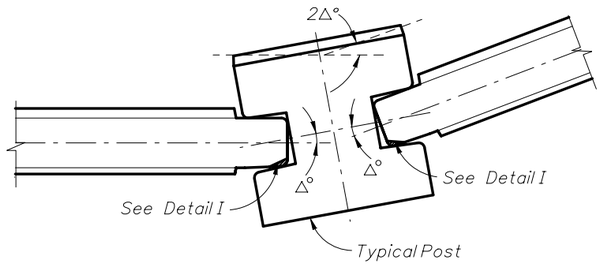
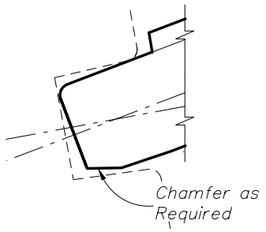
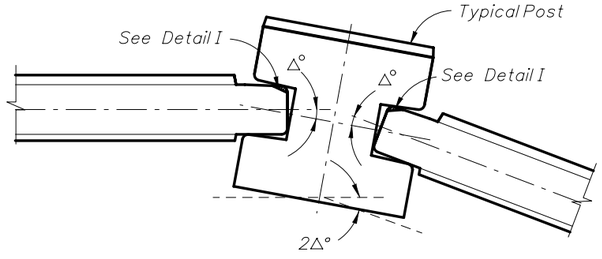


CASE 1
(Interior Angle)

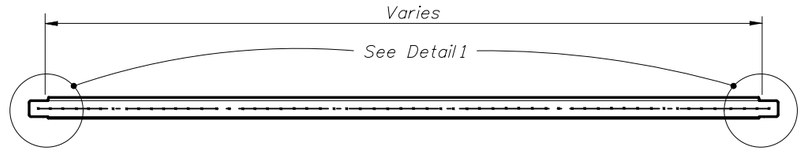


DETAIL I
(Back Face Chamfer Shown
Front Face Chamfer Similar)

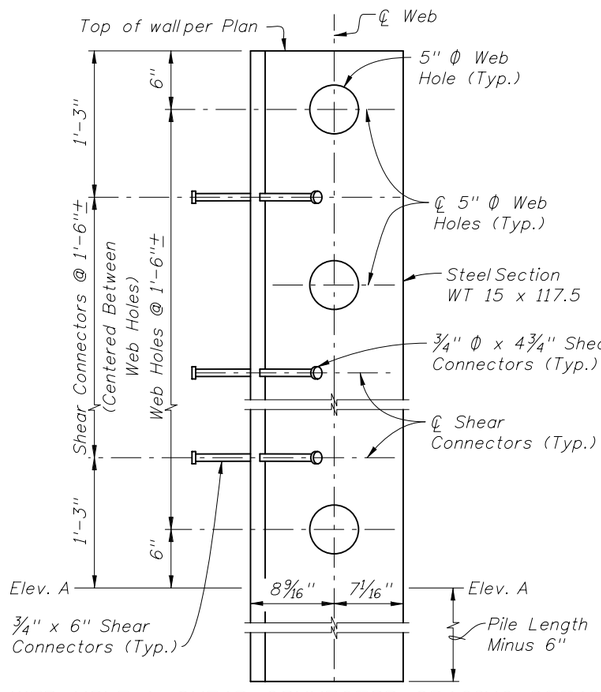


CASE 2
(Exterior Angle)
PIVOTING POINT DETAILS

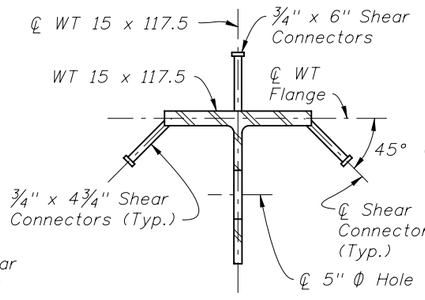
NOTE: The shop drawings shall include specific pivoting point details of panel ends at locations where the deflection angle (2△) between panels exceeds 20°.



PANEL PLAN

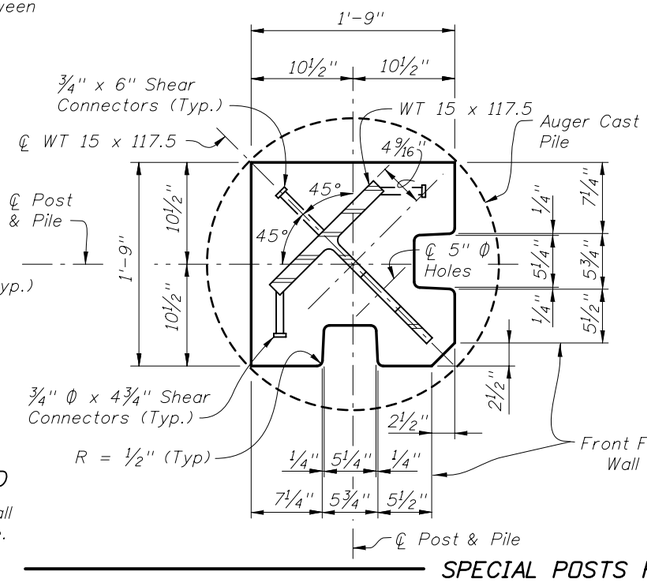


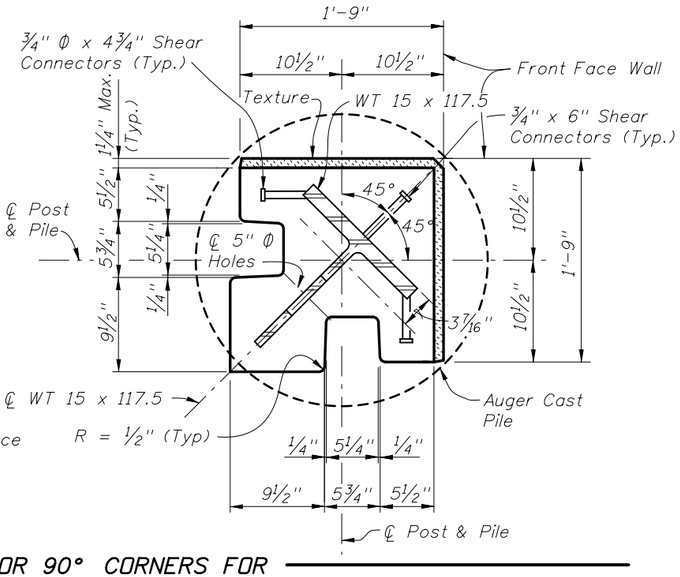
WEB HOLE & SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity. For limits of concrete see Index No. 5205, Sheet No. 4 of 7.)



WT 15 x 117.5 Post Detail For
Pile/Post Connection Options C & D

NOTE: The WT 15 x 117.5 Section shall extend into the Auger Cast Pile.



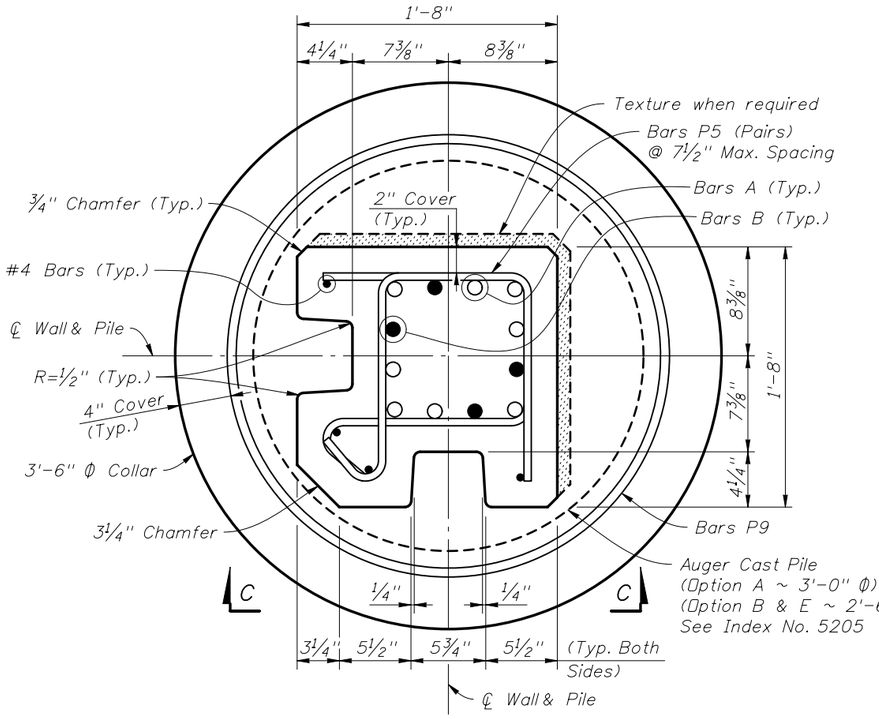


SPECIAL POSTS FOR 90° CORNERS FOR
PILE/POST CONNECTION OPTIONS C & D
Collars for Corner Posts shall be 3'-6" Ø

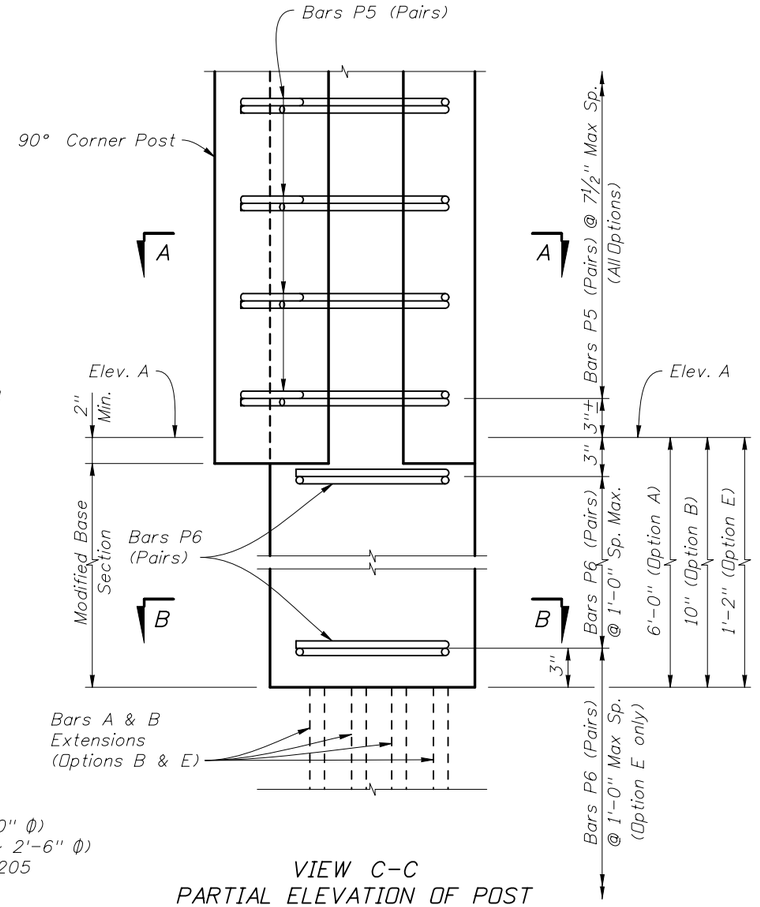
NOTES:
1. For Pile/Post Connection Options C & D, see Index No. 5205.
2. For Post & Pile Lengths, see Index No. 5206.

SPECIAL PANELS AND 90° CORNER POSTS

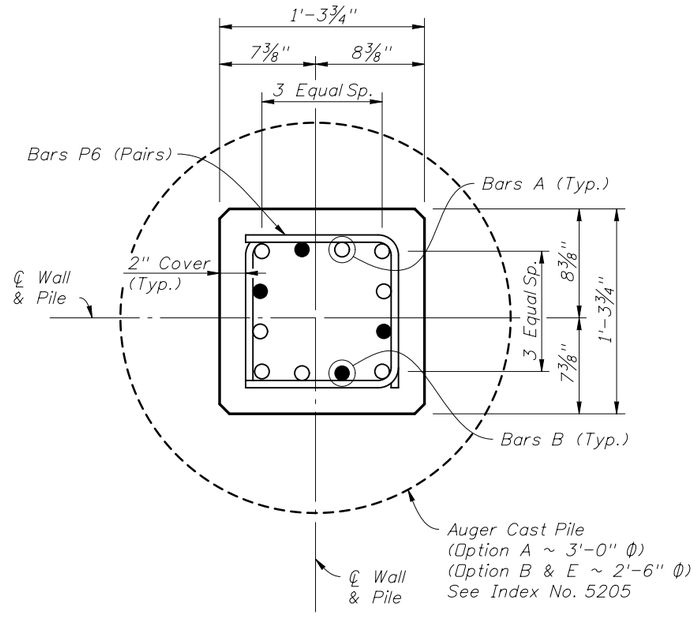
REVISIONS						2010 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	PRECAST SOUND BARRIERS - RECESSED PANEL OPTION	01/01/10	3 of 6
01/01/10	CMH	Removed Special Posts for 90° Corners for Options A, B & E. Changed Total Number of Sheets. Revised Notes.					Index No. 5203	



SECTION A-A
TYPICAL SECTION ABOVE PILE



VIEW C-C
PARTIAL ELEVATION OF POST
(Vertical Reinforcing & Pile not shown for clarity)



SECTION B-B
(Modified Base Section)

SPECIAL POSTS FOR 90° CORNERS FOR PILE/POST CONNECTION OPTIONS A, B & E

Collars for Special Posts shall be 3'-6" Ø

NOTES:
1. For Pile/Post Connection Options A, B & E, see Index No. 5205.
2. Use 3'-6" CIP Collar for all 90° corner posts.
3. For Post & Pile Lengths, see Index No. 5206.
4. For Table of Reinforcing Steel, see Index No. 5206. Bars P10 not required for corner pile.
5. Reduce standard panel length or adjust post spacing by 3½" at each 90° Corner Post to accommodate the Special Post dimensions.

SPECIAL 90° CORNER POST

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	New Sheet			

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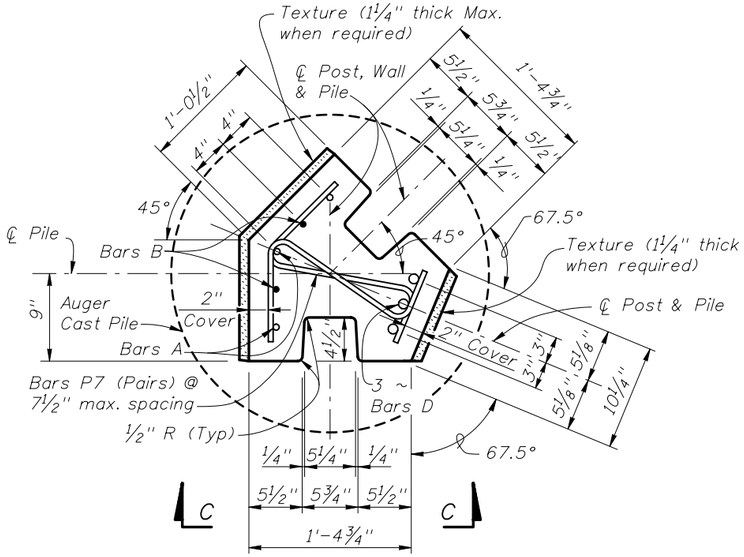
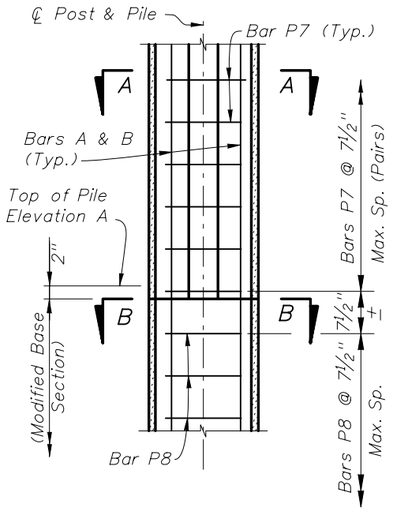
PRECAST SOUND BARRIERS - RECESSED PANEL OPTION

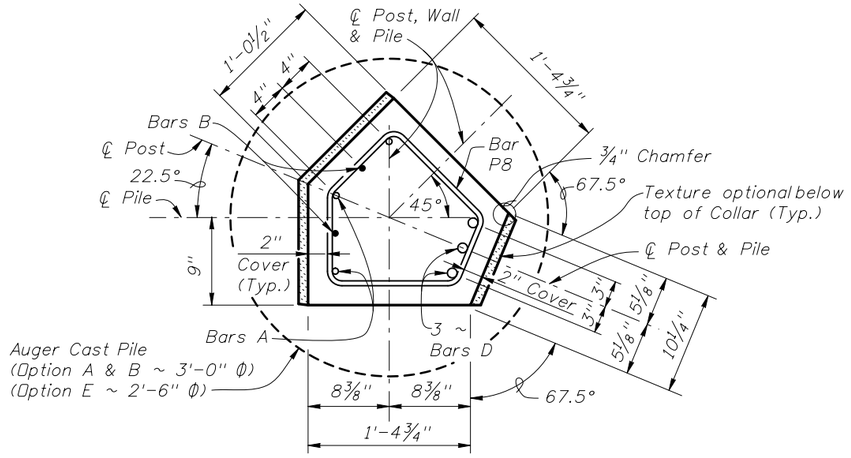
Interim Date: 01/01/10
Sheet No.: 4 of 6
Index No.: 5203



SECTION A-A
TYPICAL SECTION ABOVE PILE

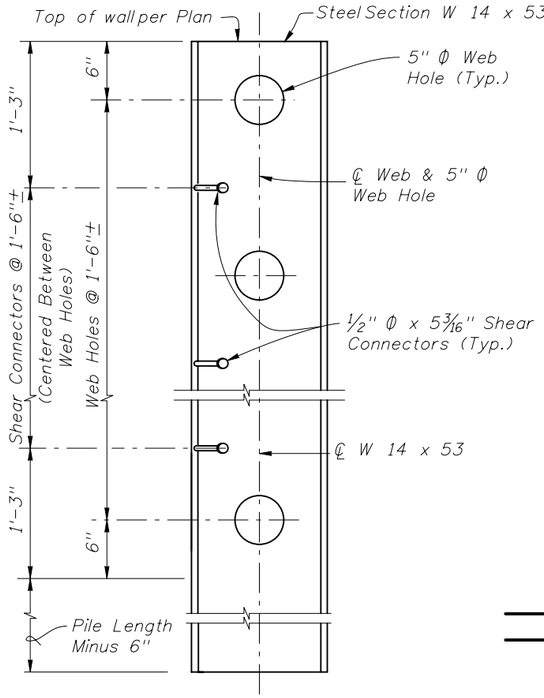


VIEW C-C (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)

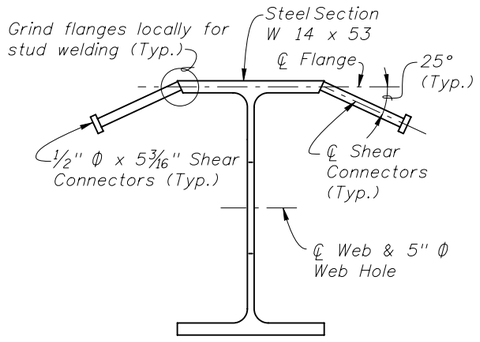


SECTION B-B
PRECAST COLLAR SECTION

SPECIAL POSTS FOR 45° CORNERS FOR PILE/POST CONNECTION OPTIONS A, B & E

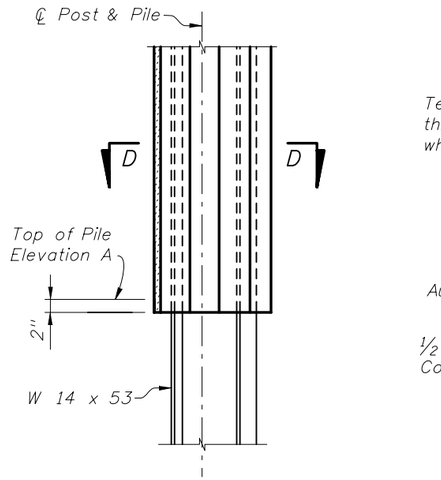


WEB HOLE AND SHEAR CONNECTOR SPACING DETAIL
(Concrete not shown for clarity)

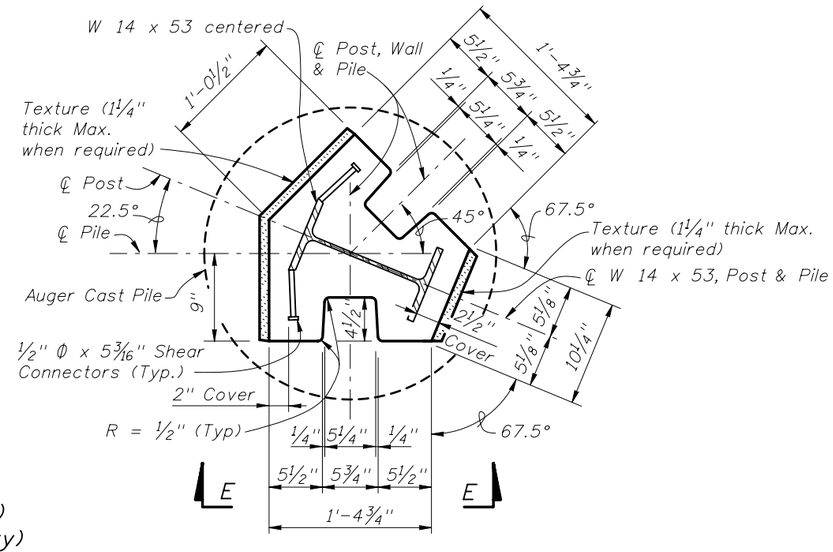


W 14 x 53 POST DETAIL

NOTE: The W 14 x 53 Section shall extend into the Auger Cast Pile.



VIEW E-E (PARTIAL ELEVATION)
(Only Front Faces Shown for Clarity)



SECTION D-D
TYPICAL SECTION ABOVE PILE

SPECIAL POSTS FOR 45° CORNERS FOR PILE/POST CONNECTION OPTIONS C & D

NOTES:
1. For Table of Reinforcing Steel Sizes, see Index No. 5206.
2. For Pile/Post Connection Options A through E, see Index No. 5205.
3. For Post & Pile Lengths, see Index No. 5206.
4. Shear Connectors shall be 5" long after welding.

SPECIAL 45° CORNER POSTS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Sheet renumbered. Corrected W Section Size in View E-E.			

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PRECAST SOUND BARRIERS - FLUSH PANEL OPTION

Interim Date	Sheet No.
01/01/10	5 of 6
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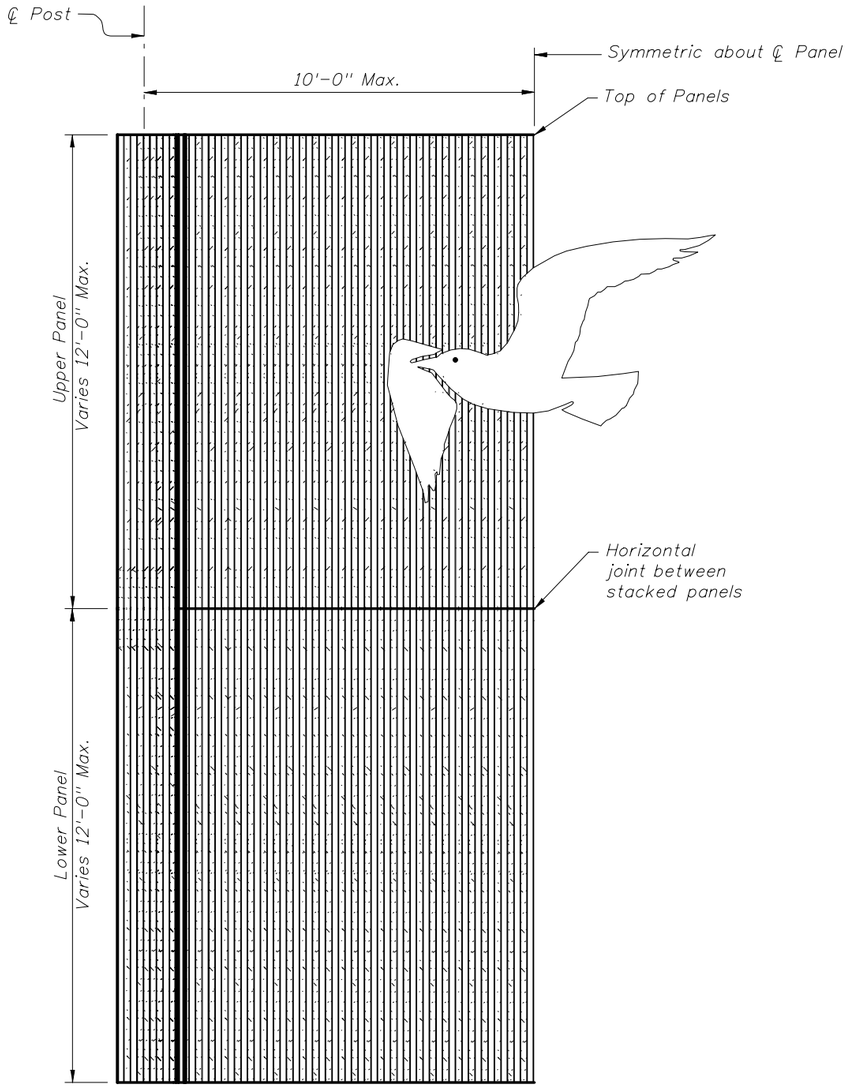
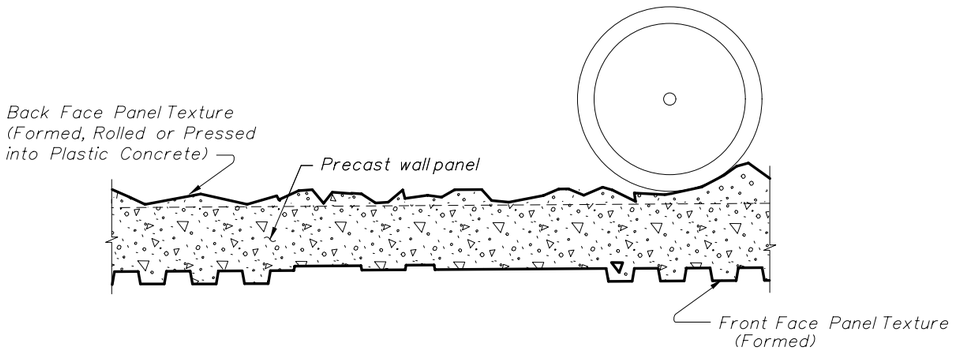
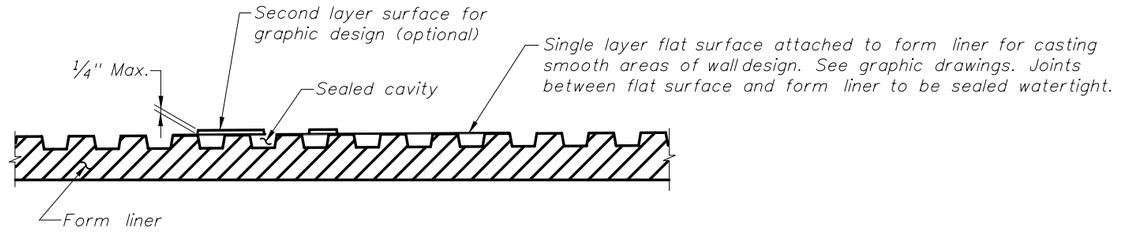
5203	



HALF ELEVATION
(Pile/Post Connection Options A, B, C and E Shown.)
(Front Face Panel Texture Type "H" and Front Face Post Texture Type "H" Shown.)
(Graphic Type LG-3 Shown.)





TYPICAL FORMING DETAIL
(Front Face Panel Texture Type "H" Shown.)
(Back Face Panel Texture Type "D" Shown.)

NOTES:

1. Contractor shall submit specific form liner samples for approval by the Engineer.
2. Textures and graphics shown are for demonstration purposes only. See Wall Control Drawings for project specific texture and graphic requirements.

GRAPHICS AND TEXTURE DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	CMH	Sheet renumbered.			

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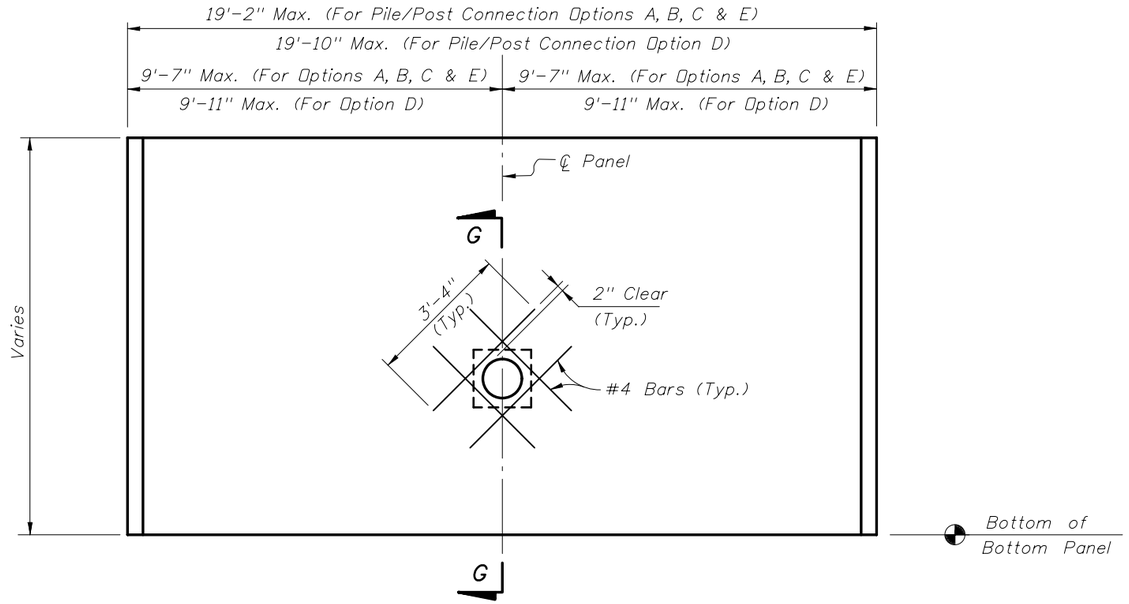
PRECAST SOUND BARRIERS - RECESSED PANEL OPTION

Interim Date 01/01/10

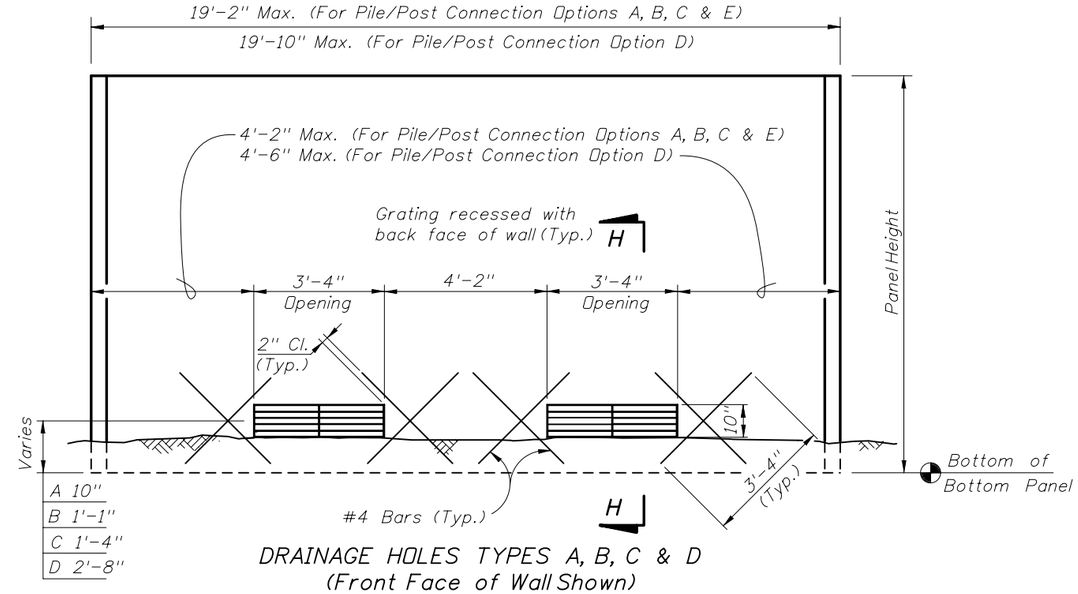
Sheet No. 6 of 6

Index No. 5203



FIRE HOSE ACCESS HOLE TYPICAL DETAIL
(Front Face of Wall Shown)
(Flush Panel Option Shown
Recessed Panel Option Similar)

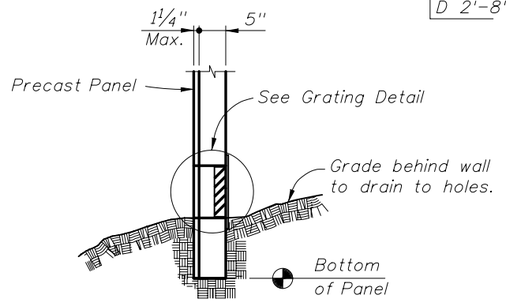
NOTE: Fire Hose Access Point to be located at or near fire hydrants



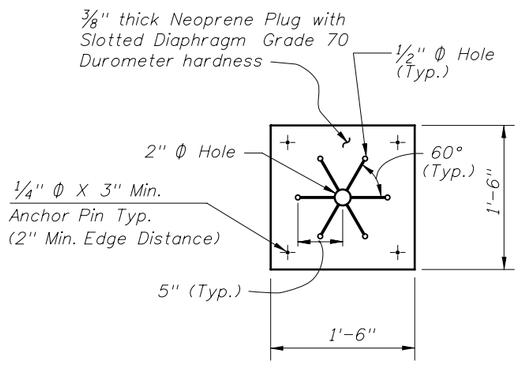
DRAINAGE HOLES TYPES A, B, C & D
(Front Face of Wall Shown)
(Flush Panel Option Shown
Recessed Panel Option Similar)

NOTE: Hole Types A, B, C and D refer to distance from bottom of panel to center of opening. See Wall Control Drawings.

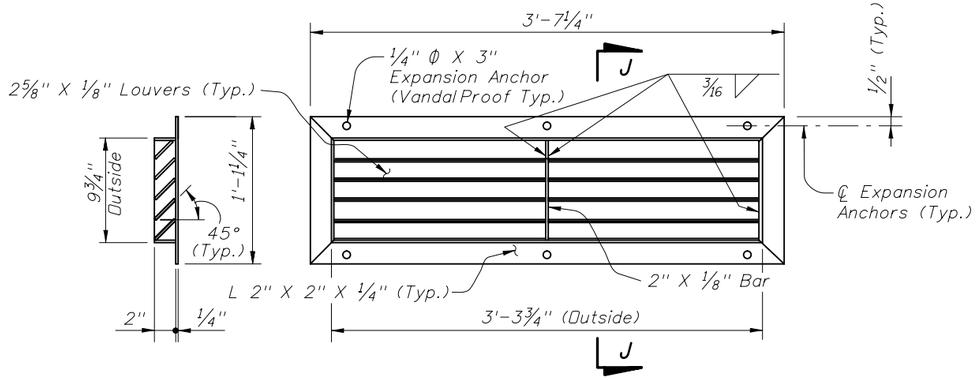
SECTION G-G
(Flush Panel Option Shown
Recessed Panel Option Similar)



SECTION H-H
(Flush Panel Option Shown
Recessed Panel Option Similar)



PLUG DETAIL



SECTION J-J

GRATING DETAIL

NOTES:
Grating shall be ASTM A 36 steel and shall be hot dip galvanized after assembly in accordance with ASTM Specification A 123.

Expansion anchors shall be in accordance with ASTM A 307 (Galvanized).

Welding shall be in accordance with the current edition of the ANSI/AWS D1.1 Welding Code.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Deleted 4¾" dimension at end of panels and note requiring double mat of WWR for panels with drainage holes.			

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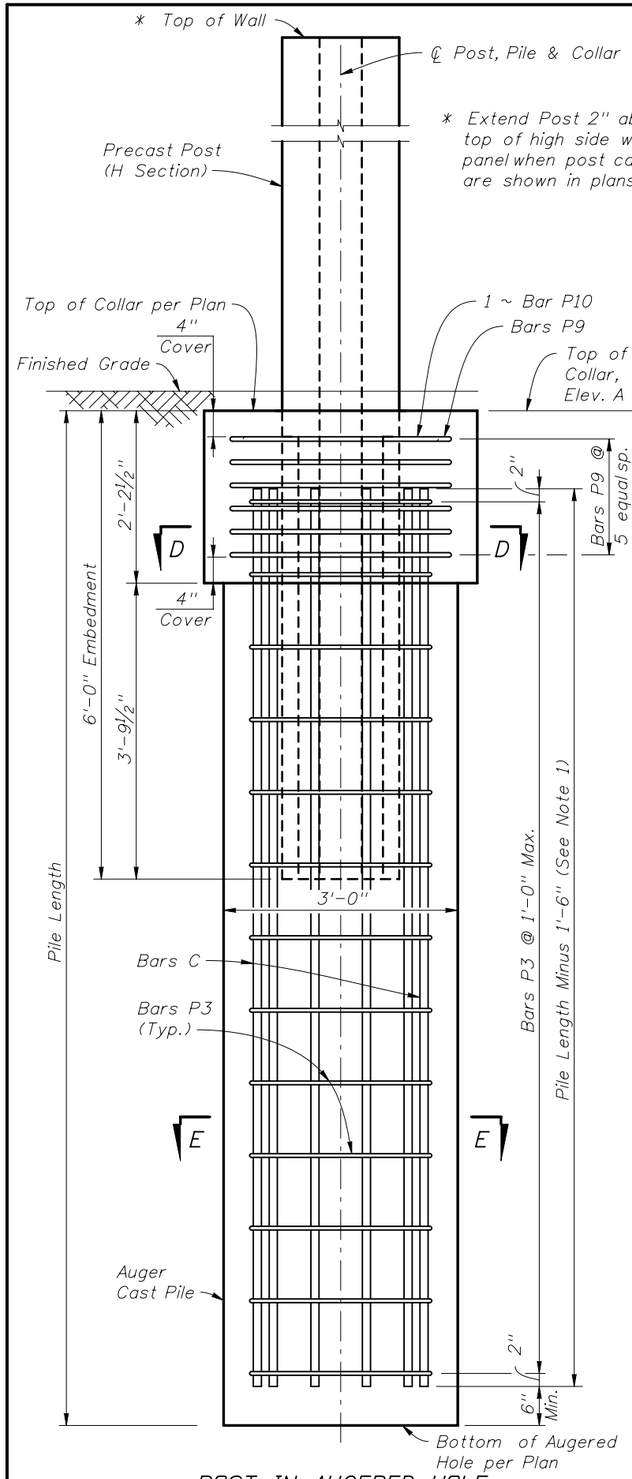
PRECAST SOUND BARRIERS - FIRE HOSE ACCESS HOLE & DRAINAGE DETAILS

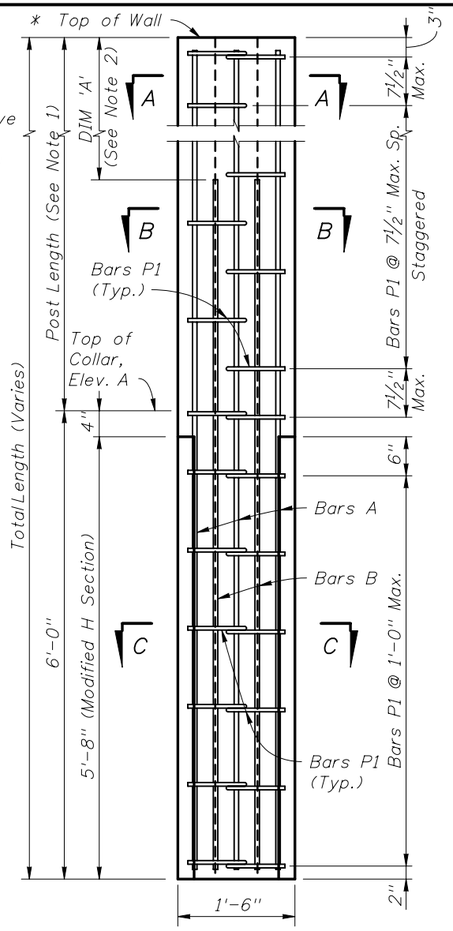
Interim Date 01/01/10

Sheet No. 1 of 1

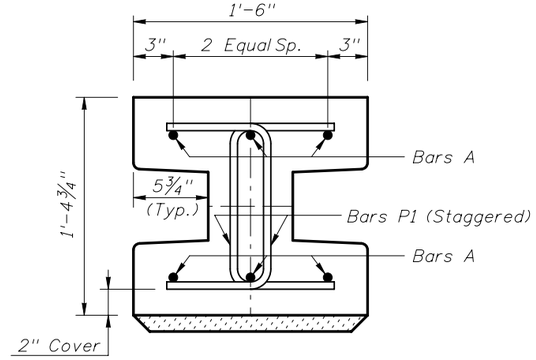
Index No. 5204



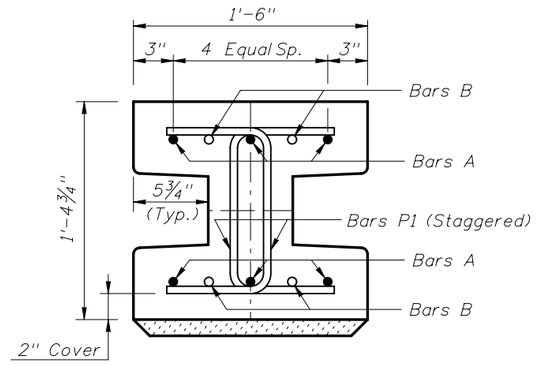
POST IN AUGERED HOLE
(Cast-In-Place Collar shown, Precast Collar similar)



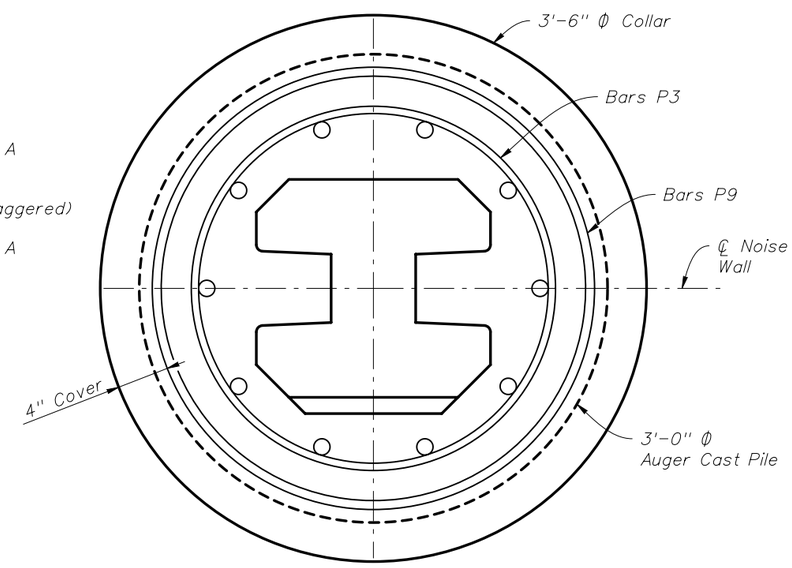
POST DETAIL WITH C-I-P COLLAR
(Prior to placement in augered hole)



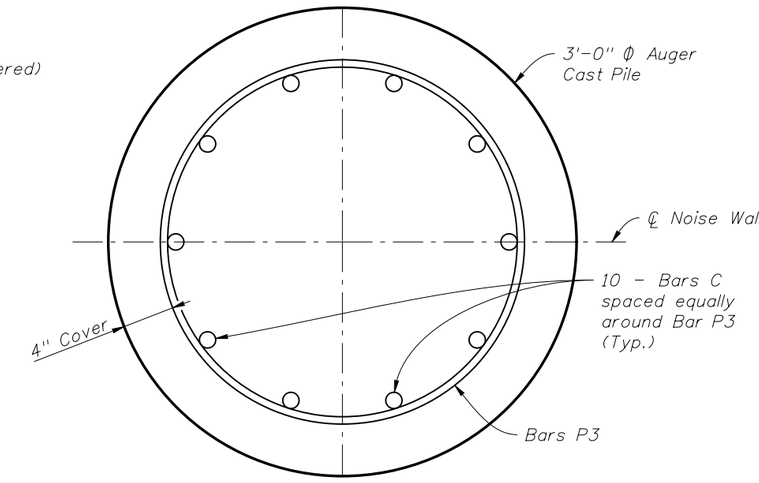
SECTION A-A
(H Section)



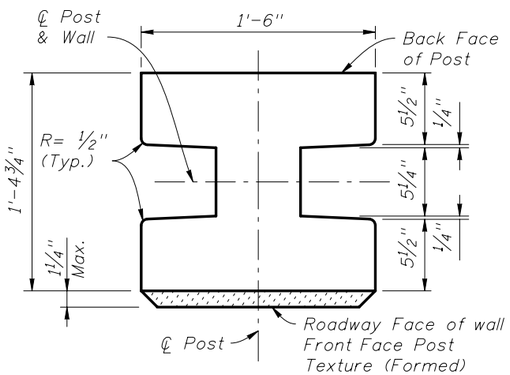
SECTION B-B
(H Section)



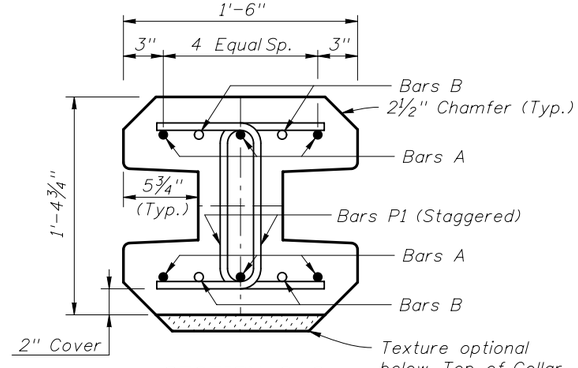
SECTION D-D



SECTION E-E



TYPICAL POST SECTION
(H Section)



SECTION C-C
(Modified H Section)

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
01/01/10	SJN	Side cover in auger cast piles changed to 4"; Sheet redrawn and Sections renamed.			

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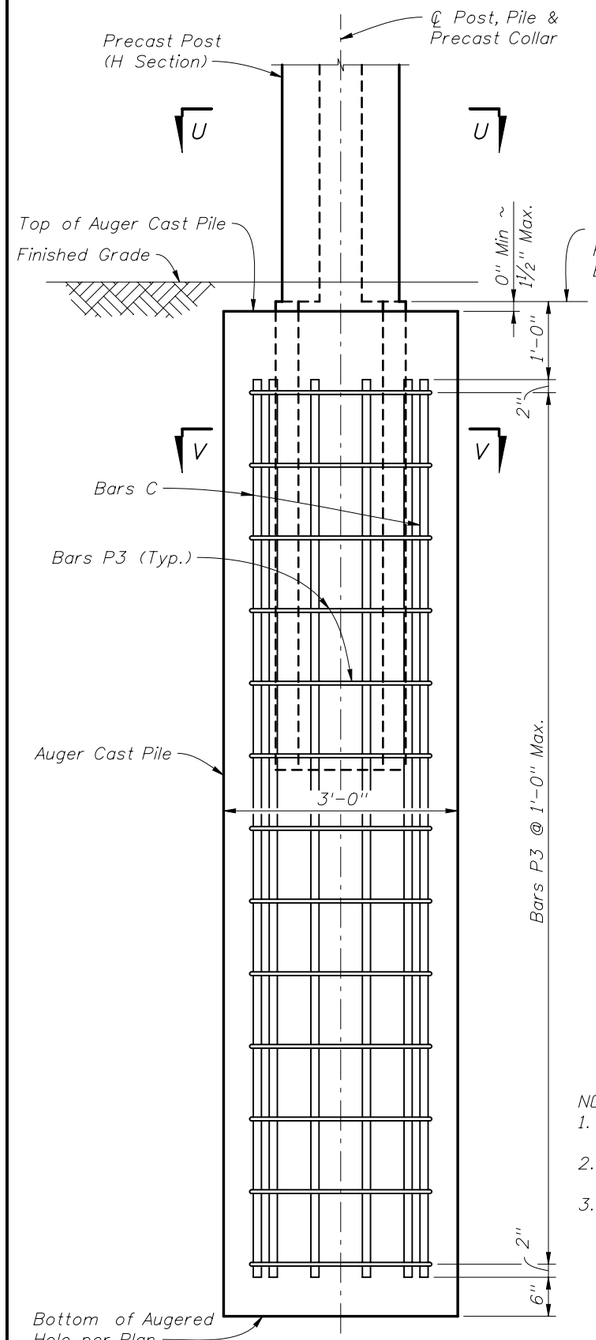
PRECAST SOUND BARRIERS - PILE AND POST REINFORCING STEEL

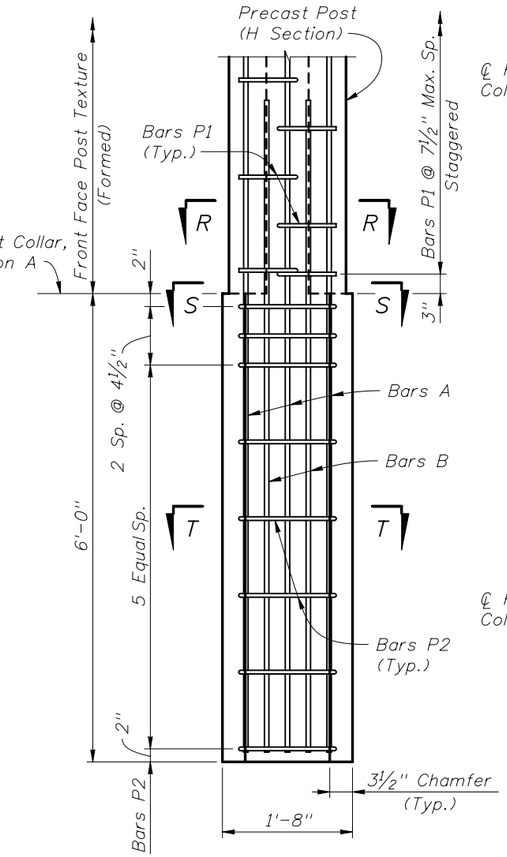
Interim Date: 01/01/10

Sheet No.: 1 of 7

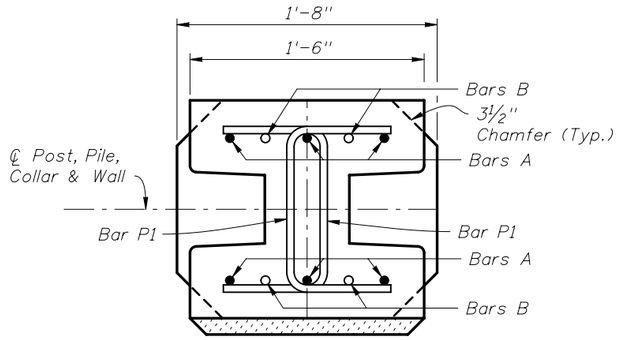
Index No.: 5205



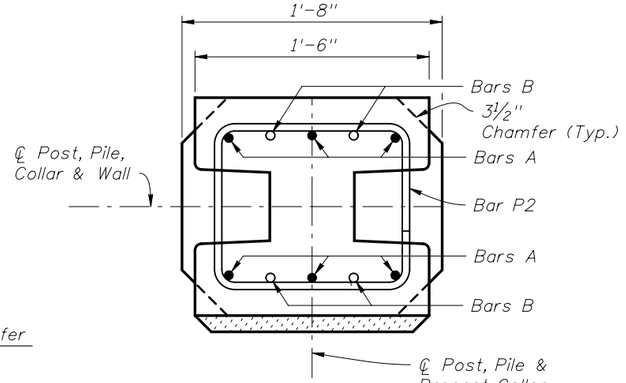
PRECAST COLLAR IN AUGER CAST PILE
(Collar and Post reinforcing steel not shown)



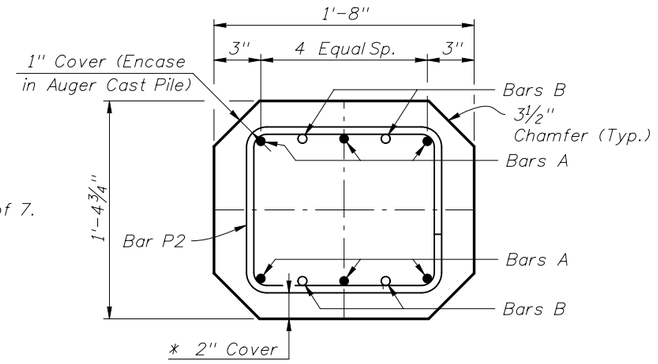
PRECAST COLLAR DETAIL



SECTION R-R

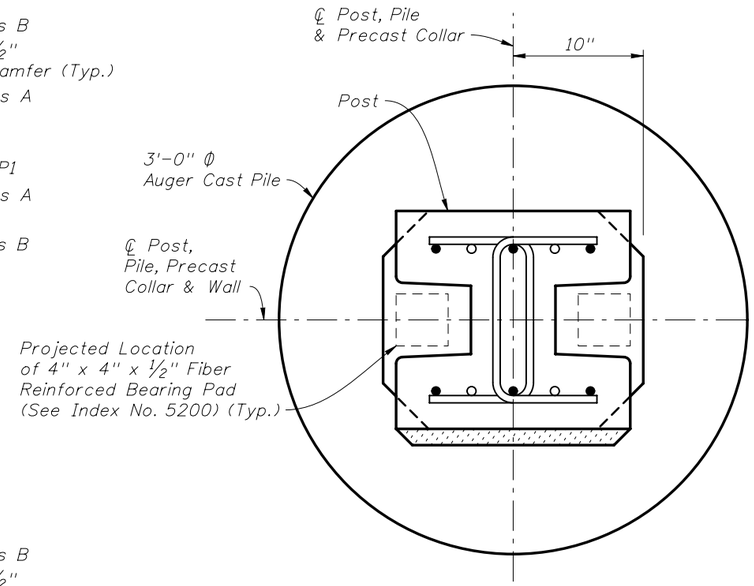


SECTION S-S

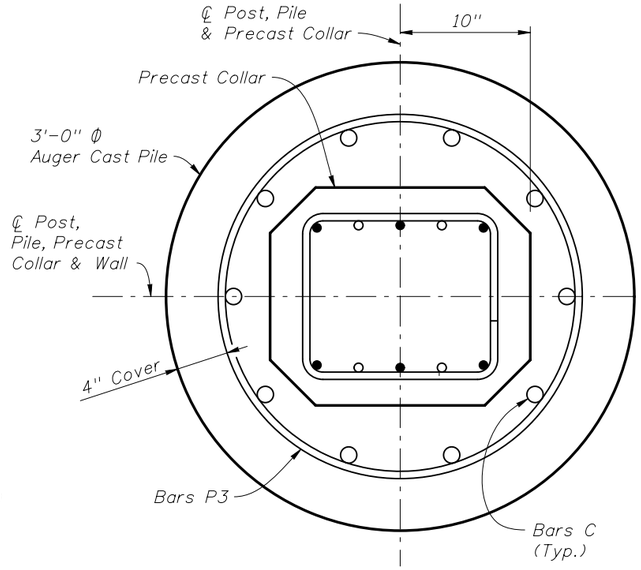


SECTION T-T
* - Unless Otherwise Noted

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 U-U



SECTION V-V

PRECAST COLLAR FOR PILE/POST CONNECTION OPTION A

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Side cover in auger cast piles reduced to 4"; Sheet redrawn and Sections renamed.			

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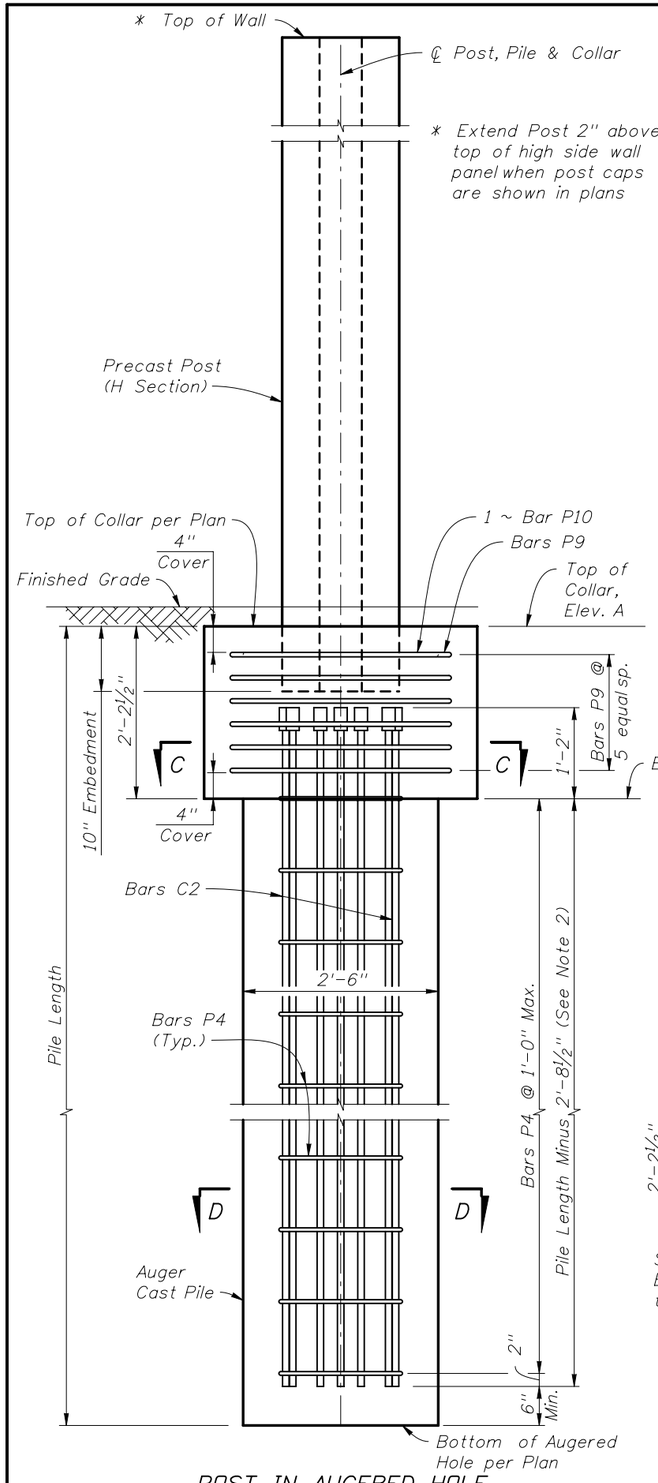
PRECAST SOUND BARRIERS - PILE AND POST REINFORCING STEEL

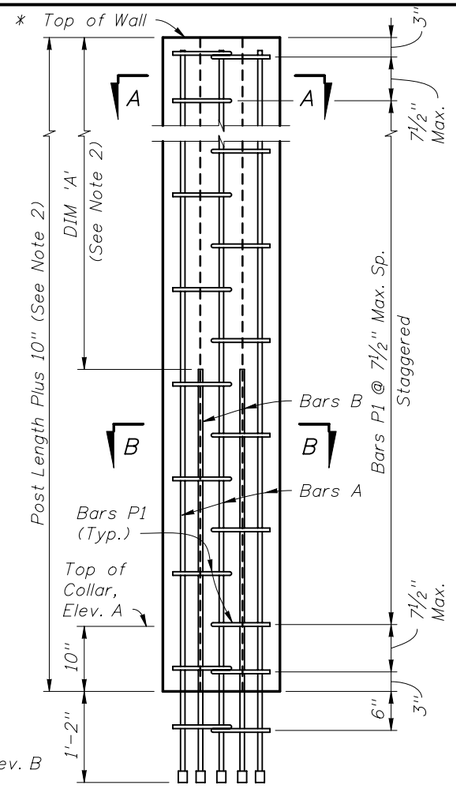
Interim Date 01/01/10

Sheet No. 2 of 7

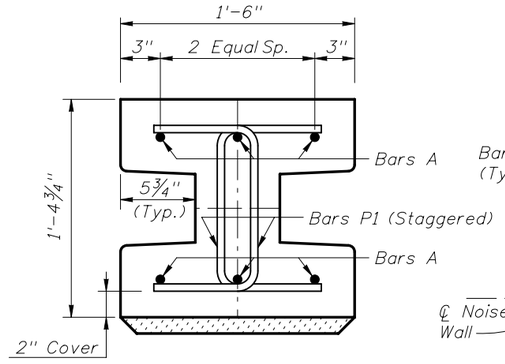
Index No. 5205



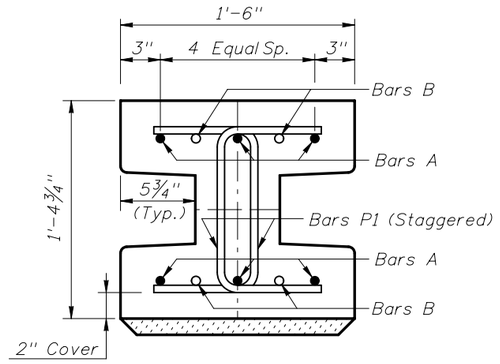
POST IN AUGERED HOLE



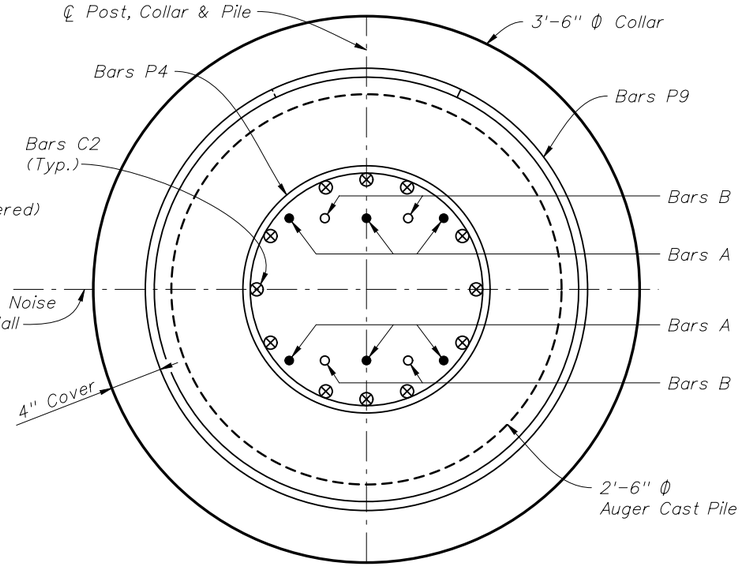
POST DETAIL



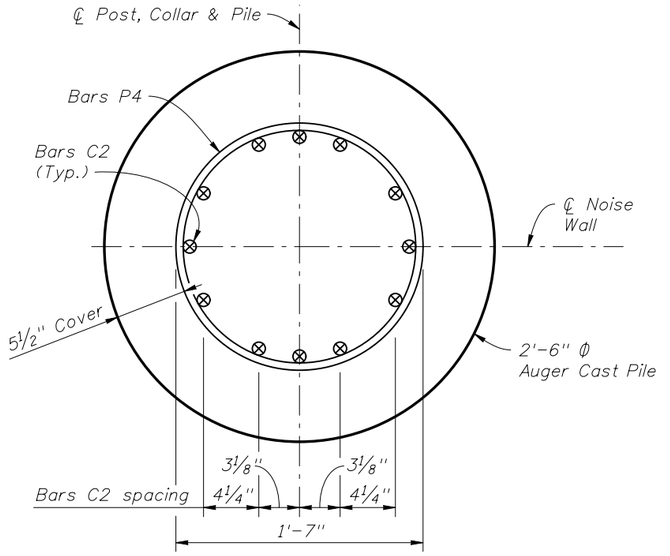
SECTION A-A
(H Section)



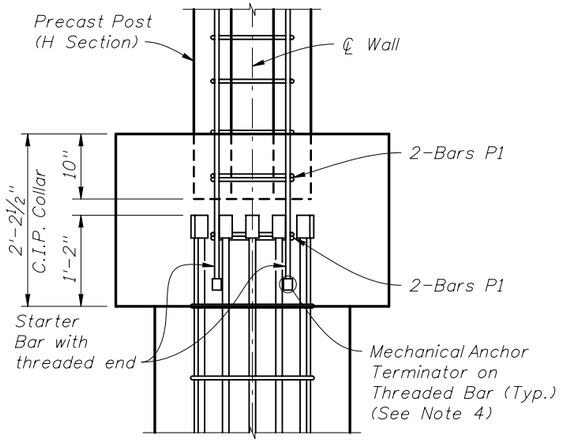
SECTION B-B
(H Section)



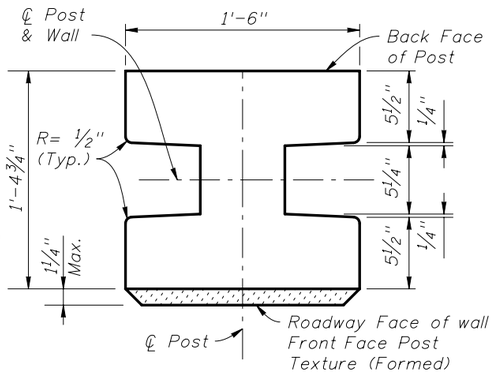
SECTION C-C



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
01/01/10	SJN	All details redrawn. Removed AUGERED PILE REINFORCEMENT DETAIL.			

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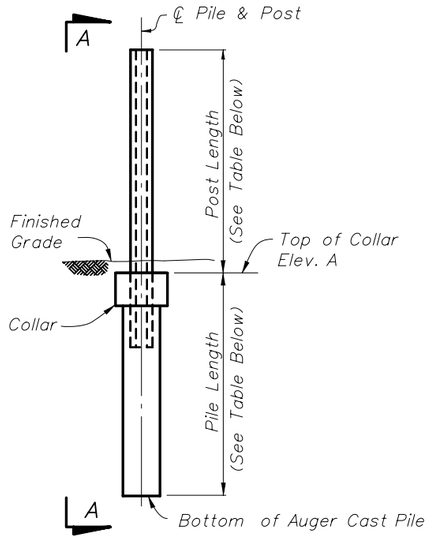
PRECAST SOUND BARRIERS - PILE AND POST REINFORCING STEEL

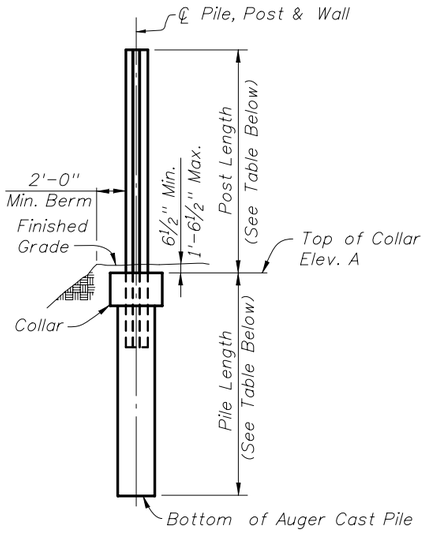
Interim Date 01/01/10

Sheet No. 3 of 7

Index No. 5205



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

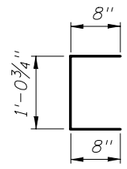


VIEW A-A
(Pile/Post Connection Option A Shown)

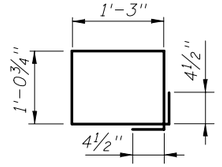
BAR BENDING DETAILS

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

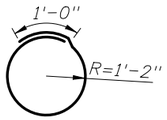
POST & PILE



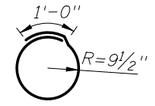
BAR P1
Bar Length = 2'-5"



BAR P2
Bar Length = 5'-5"

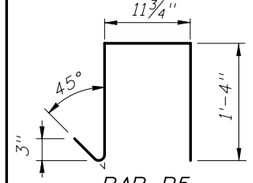


BAR P3
Bar Length = 8'-4"

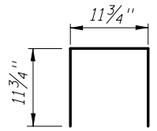


BAR P4
Bar Length = 6'-0"

90° CORNER POST & PILE

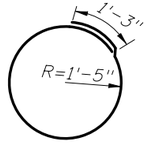


BAR P5
Bar Length = 4'-0"

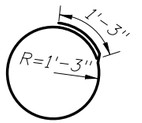


BAR P6
Bar Length = 2'-11¼"

CAST-IN-PLACE COLLAR

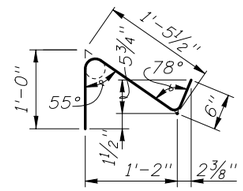


BAR P9
Bar Length = 10'-2"

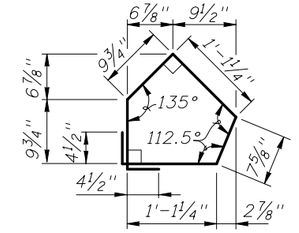


BAR P10
Bar Length = 9'-2"

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
01/01/10	CMH	Changed Bar P3 radius. Changed Bars P5 & P6.			

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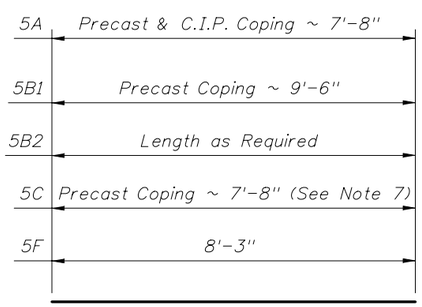
PRECAST SOUND BARRIERS - PILE DEPTH AND REINFORCING SUMMARY

Interim Date: 01/01/10
Sheet No.: 1 of 1
Index No.: 5206

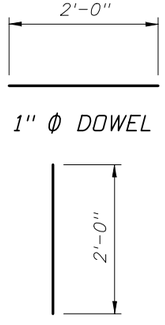
REINFORCING STEEL BENDING DIAGRAMS - JUNCTION SLAB

BILL OF REINFORCING STEEL

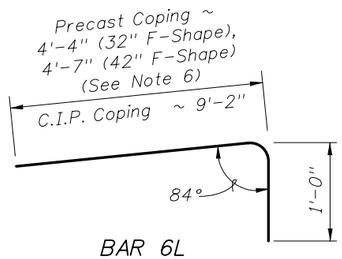
MARK	SIZE	LENGTH		
		PRECAST COPING		C.I.P. COPING
		(32" F-SHAPE)	(42" F-SHAPE)	
A	5	7'-8"	7'-8"	7'-8"
B1	5	9'-6"	9'-6"	N/A
B2	5	AS REQD.	AS REQD.	AS REQD.
C	5	7'-8"	7'-8"	N/A
D	4	2'-0"	2'-0"	N/A
F	5	8'-3"	8'-3"	8'-3"
L	6	5'-4"	5'-7"	10'-2"
U1	6	3'-8"	3'-8"	3'-8"
1" ϕ Dowel	Smooth Steel Bar	2'-0"	2'-0"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



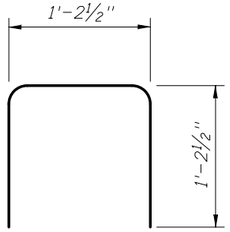
BARS 5A, 5B1, 5B2, 5C & F



DOWEL BAR 4D



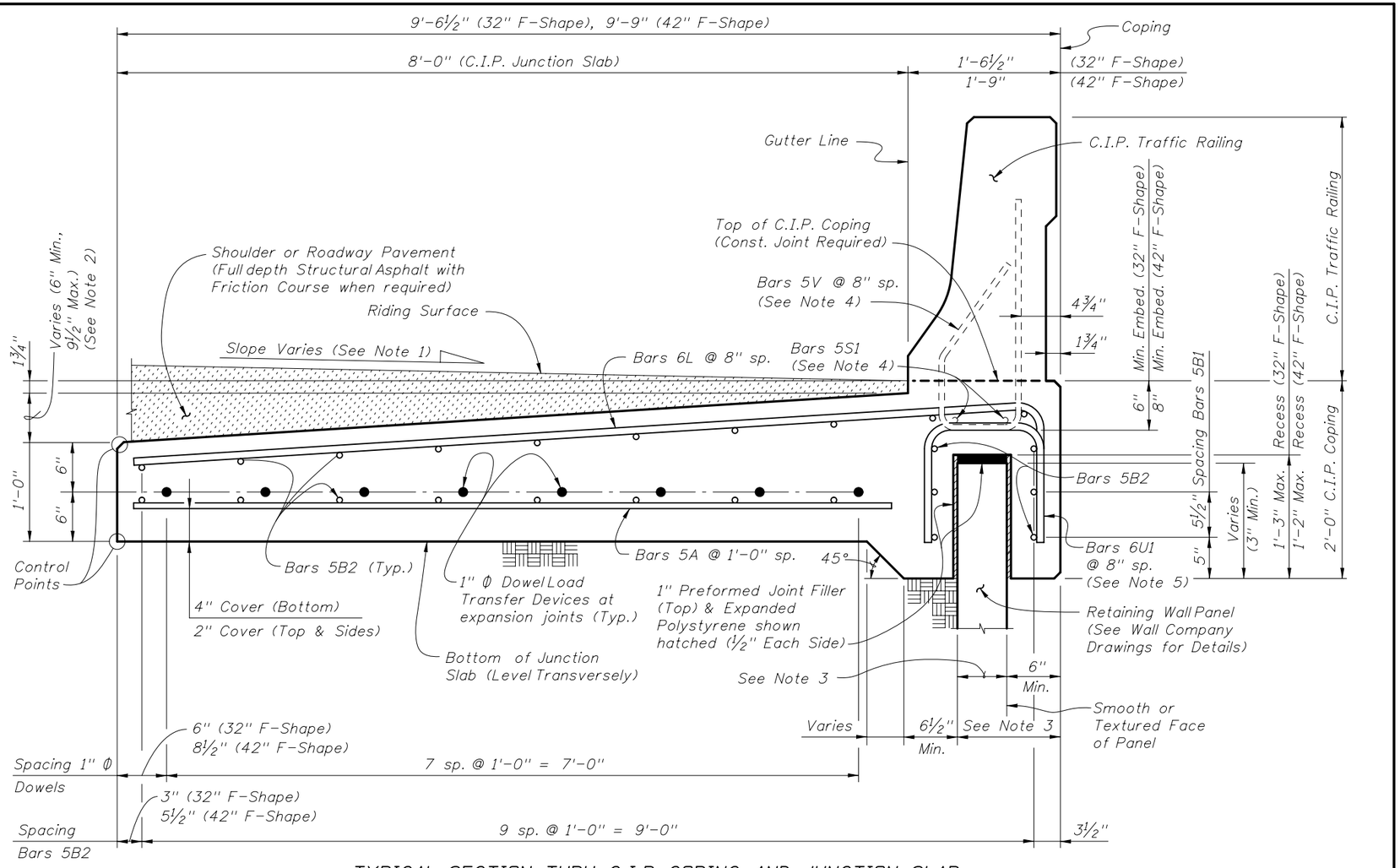
BAR 6L



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
01/01/10	SJN	Changed "Continuous Neoprene Strip" to "Preformed Joint Filler" in TYPICAL SECTION detail.			

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PERMANENT RETAINING WALL SYSTEMS

Interim Date 01/01/10

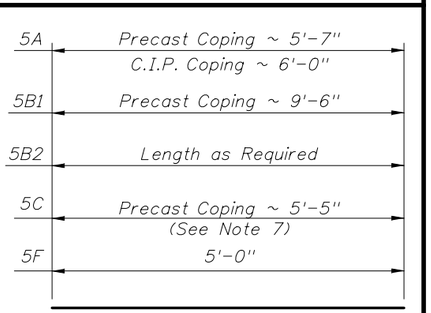
Sheet No. 7 of 19

Index No. 5300

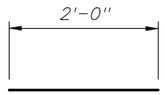
REINFORCING STEEL BENDING DIAGRAMS - RAISED SIDEWALK

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" ∅ Dowel	Smooth Steel Bar	2'-0"	2'-0"

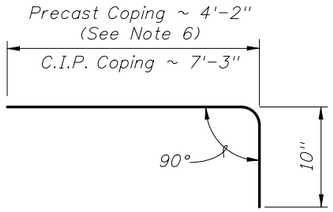


BARS 5A, 5B1, 5B2, 5C & 5F

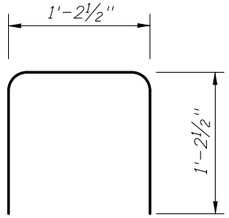


1" ∅ DOWEL

DOWEL BAR 4D



BAR 5L



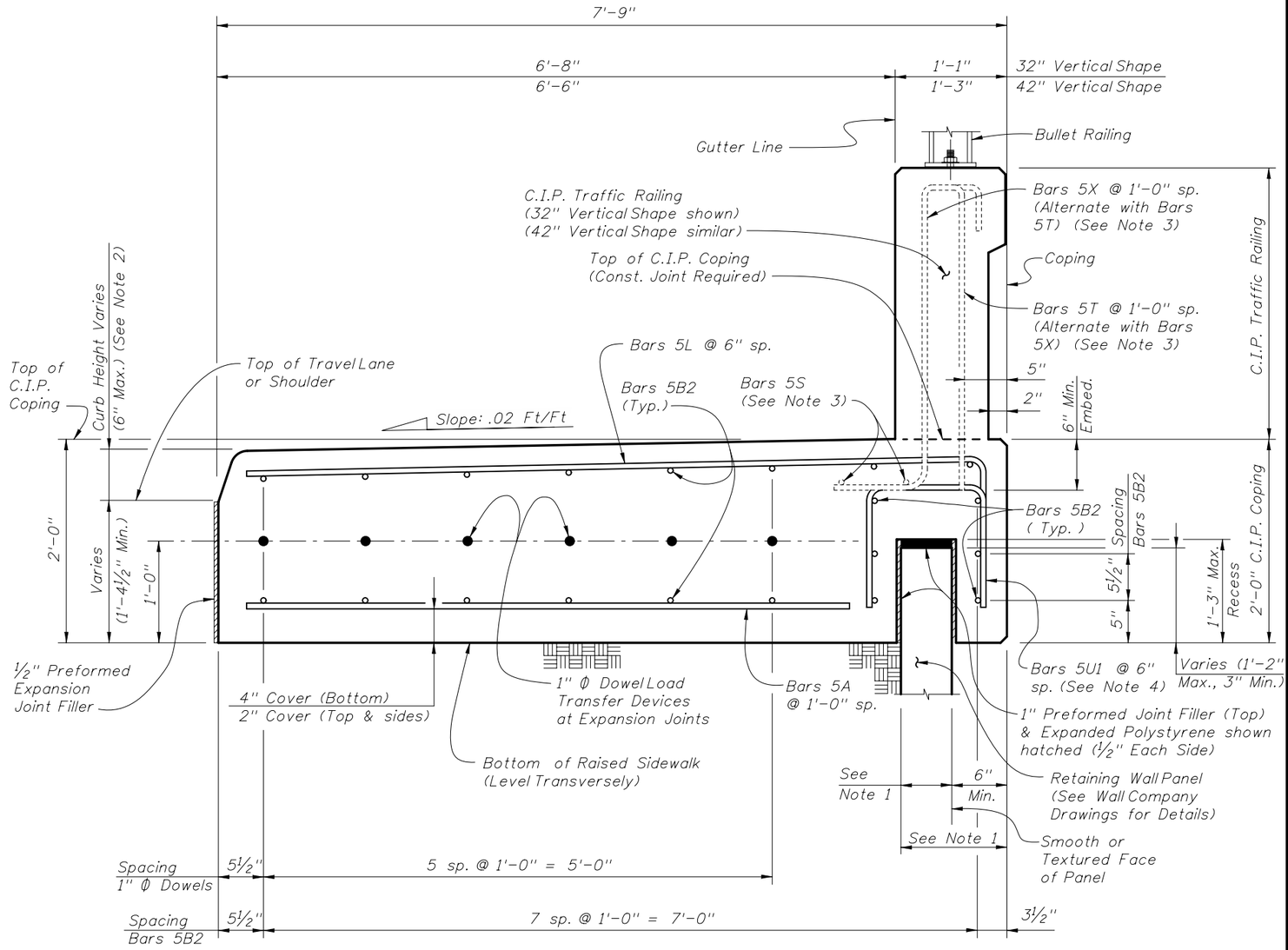
BAR 5U1

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
01/01/10	SJN	Changed "Continuous Neoprene Strip" to "Preformed Joint Filler" in TYPICAL SECTION detail.			

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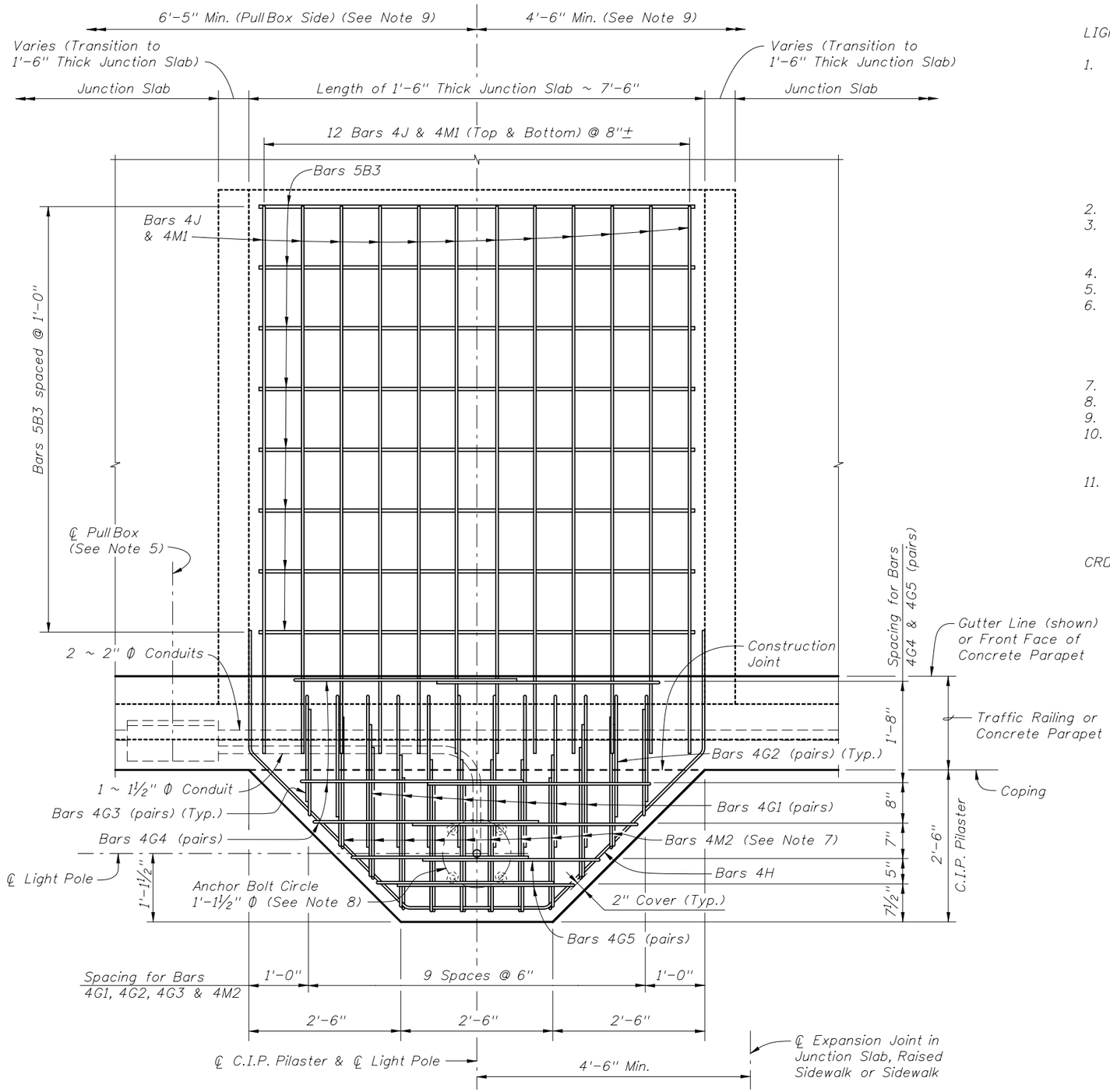
Index No. 5300



PLAN VIEW
(Junction Slab reinforcing not shown for clarity)
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

LIGHT PILASTER NOTES:

1. The pilaster and junction slab are designed to resist the following working loads from the light pole applied at the top of the Pilaster:

Axial Deadload	=	1.560 kip
Windload Moment about Transverse Axis (*)	=	40.60 kip-ft
Windload Moment about Longitudinal Axis (*)	=	28.30 kip-ft
Deadload Moment about Longitudinal Axis (*)	=	1.690 kip-ft
Maximum Shear	=	1.380 kip
Torsion about Pole Axis	=	3.560 kip-ft

   (*) - Axis refers to Bridge Axis.
2. See Index No. 21200 for anchor bolt design and notes.
3. The Contractor is responsible for ensuring the anchor bolt design is compatible with the light pole base plate. Modifications to the anchor bolt design must be signed and sealed by the Contractor's Specialty Engineer and submitted to the Engineer for approval prior to construction.
4. Install Anchor Bolts plumb.
5. For conduit, pull box and expansion/deflection fitting details, see Utility Conduit Detail Drawings.
6. The cost of wire screen, anchor bolts, nuts, washers and anchor plates will be included in the Bid Price for Light Poles. Include the cost of all labor, concrete and reinforcing steel required for construction of the pilasters, pull boxes and miscellaneous hardware required for the completion of the electrical system in the Bid Price for either the Traffic Railing or Concrete Parapet that the pilaster is behind.
7. Field Cut Bars 4M2 as required to maintain clearance.
8. Anchor Bolt pattern orientation will be as shown.
9. Slip Forming Method of construction requires the Engineer's approval within the limits shown.
10. Reinforcing shown for light pole pilasters is in addition to typical reinforcing for C.I.P. Junction Slabs and Raised Sidewalks (Bars 5A and 5B2). Omit Junction Slab Bars 6U1 and Raised Sidewalk Bars 5U1 within light pole pilaster limits.
11. Work this Sheet with the following as appropriate:
    Sheet Nos. 5 thru 10 of 19 - Precast or C.I.P. Coping with C.I.P. Junction Slab Details
    Sheet Nos. 11, 12 and 13 of 19 - Precast or C.I.P. Coping with C.I.P. Raised Sidewalk Details
    Sheet Nos. 14 and 15 of 19 - Precast Coping/Parapet or C.I.P. Coping with C.I.P. Sidewalk Details

CROSS REFERENCE: For Estimated Quantities, see Sheet No. 18 of 19.

C.I.P. LIGHT POLE PILASTER DETAILS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed Notes 2, 3, & 9, and Spacing of Bars 4G. Deleted 1" Ø PVC Conduit Weep Hole.			

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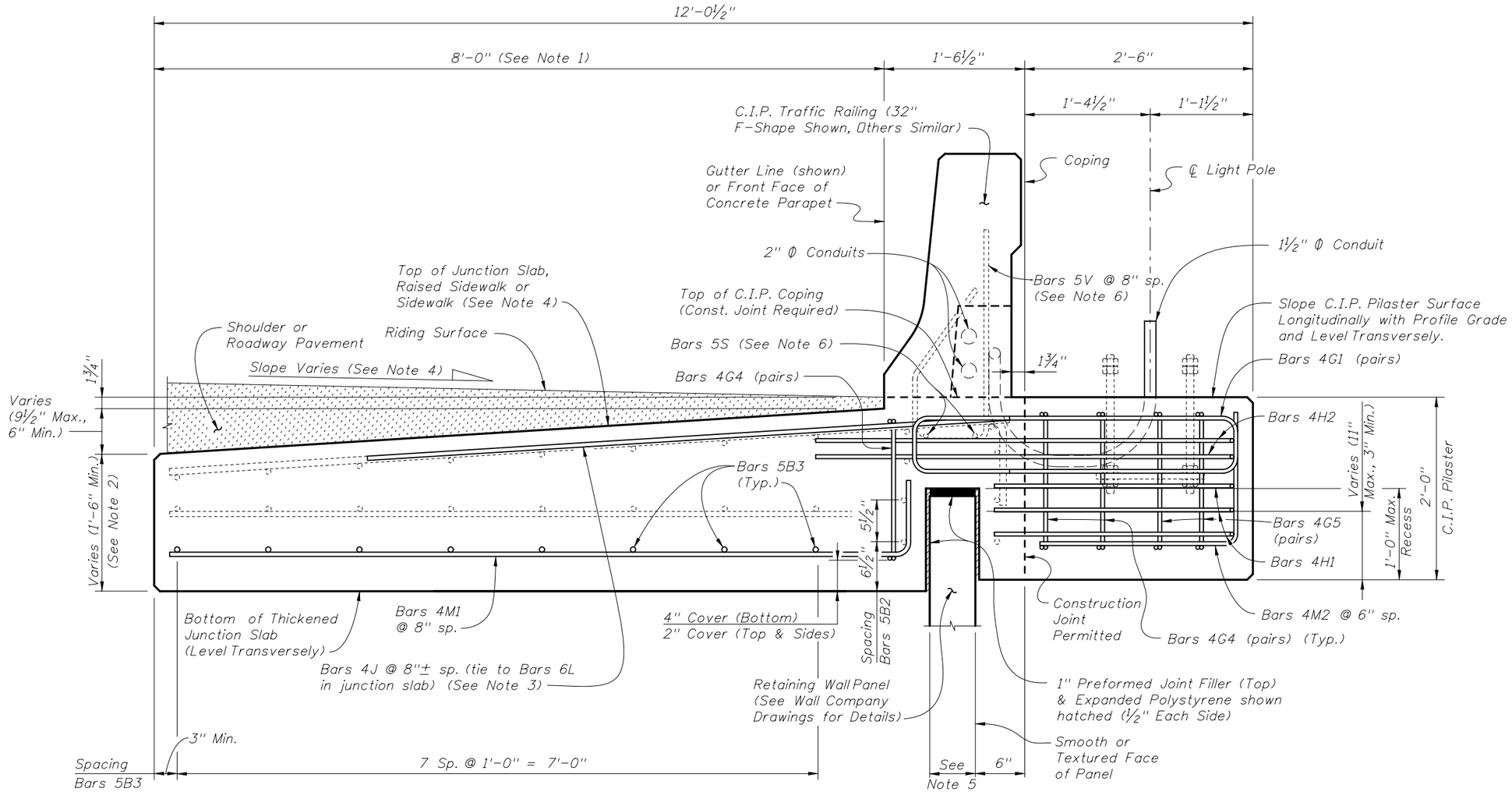
Index No. 5300



TYPICAL SECTION AT LIGHT POLE PILASTER
(Traffic Railing Shown, Concrete Parapet Similar)
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)

NOTES:
1. The 8'-0" dimension shown is for Junction Slabs. This dimension must be a minimum of 5'-0" for all applications.
2. For junction slabs, increase the 1'-0" depth dimension to 1'-6". For raised sidewalks, increase the 2'-0" depth dimension to 2'-6". For sidewalks, increase 6" depth dimension to 1'-6". The minimum length of the Junction Slabs, Raised sidewalks and Sidewalks is 50'-0", measured along the Gutter Line.
3. Bars 4J are only required when pilasters are behind a Traffic Railing.
4. Match the slope of the adjoining junction slab and shoulder or roadway pavement, raised sidewalk or sidewalk.
5. Actual width varies depending on type of Retaining Wall used.
6. See Index No. 420 for Bars 5V and 5S.

C.I.P. LIGHT POLE PILASTER DETAILS

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Deleted 1" Ø Weep Hole (PVC Conduit). Changed "Continuous Neoprene Strip" to "Preformed Joint Filler".			

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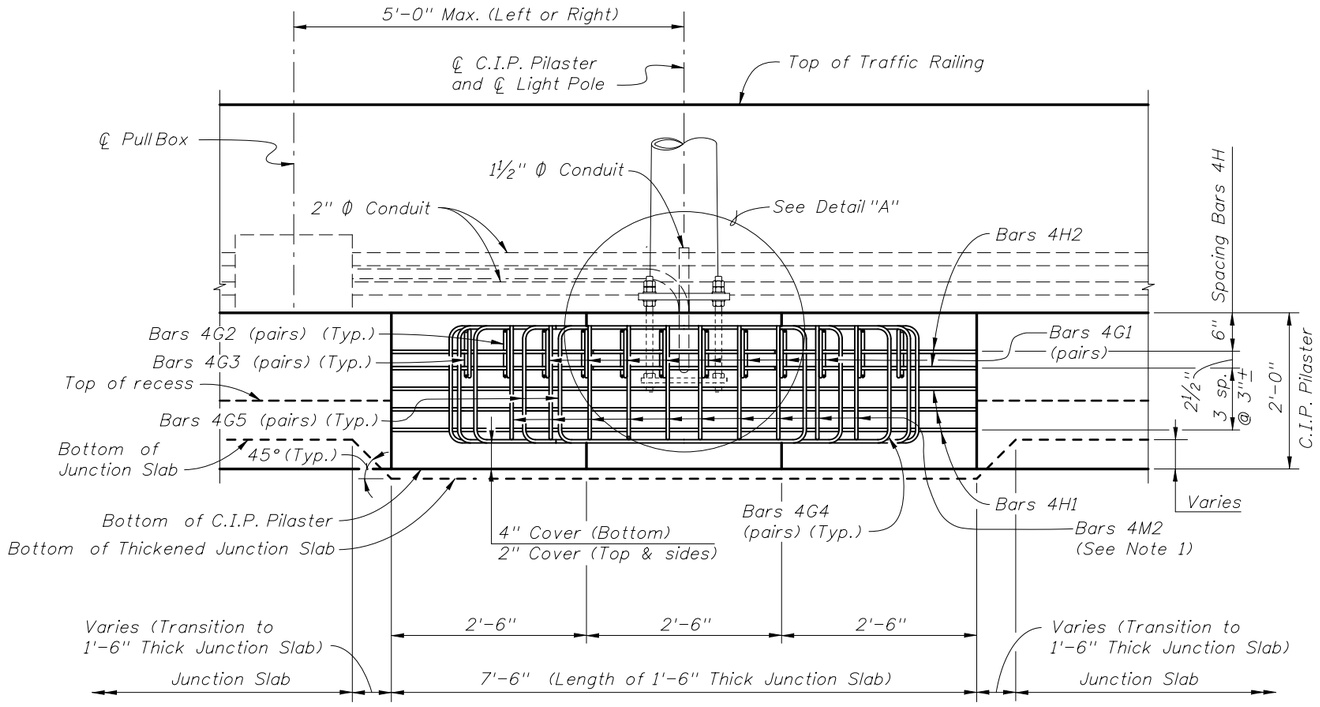
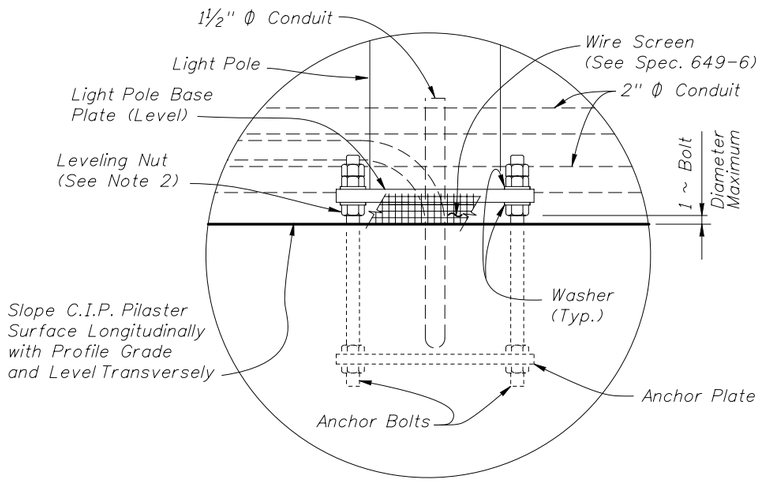


ELEVATION VIEW
(Junction Slab Reinforcing & Bars 4J not Shown for Clarity)
(Traffic Railing Shown, Concrete Parapet Similar)
(Junction Slab Shown, Raised Sidewalk or Sidewalk Similar)



DETAIL "A"

NOTES:
1. Field Cut Bars 4M2 as required to maintain minimum cover.
2. Maximum clearance between leveling nut and top of pilaster will not exceed anchor bolt diameter.

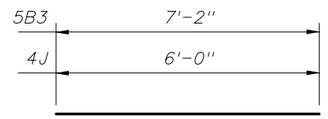
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete (Pilaster)	CY	0.926
Concrete (Thickened Junction Slab)	CY	1.180
Reinforcing Steel	Lb.	428

(The quantities above are for one C.I.P. Light Pole Pilaster. The concrete quantity for the thickened junction slab is based on a 6" increase in thickness and a 5" wide retaining wall panel. Adjust thickened concrete quantity as required for raised sidewalks and sidewalks.)

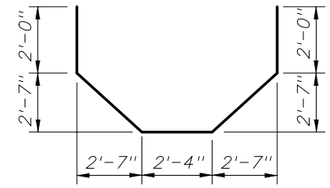
REINFORCING STEEL BENDING DIAGRAMS - LIGHT PILASTER

BILL OF REINFORCING STEEL

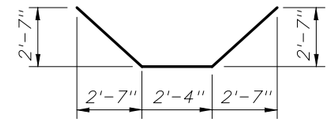
MARK	SIZE	NO. REQD.	LENGTH
B3	5	8	7'-2"
G1	4	16	5'-8"
G2	4	4	4'-8"
G3	4	4	4'-2"
G4	4	6	8'-10"
G5	4	4	7'-4"
H1	4	3	9'-8"
H2	4	2	13'-8"
J	4	24	6'-0"
M1	4	12	8'-10"
M2	4	10	3'-8"



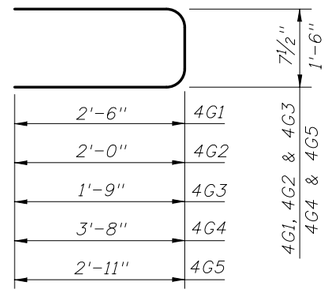
BARS 5B3 & 4J



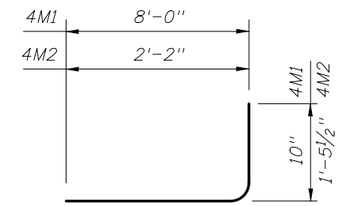
BAR 4H2



BAR 4H1



BARS 4G1, 4G2, 4G3, 4G4 & 4G5



BAR 4M1 & 4M2

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to out.
2. Lap splices for Bars 4G1, 4G2 & 4G3 will be a minimum of 1'-4". Lap splices for Bars 4G4 & 4G5 will be a minimum of 1'-8".
3. The Contractor may use Welded Wire Reinforcement when approved by the Engineer. Welded Wire Reinforcement will conform to ASTM A 497.

C.I.P. LIGHT POLE PILASTER DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Deleted Grout Pad and 1" Ø PVC Conduit Weep Hole in Detail "A" and ELEVATION VIEW. Changed Length of Bars 4G4 and 4G5.			

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2010 Interim Design Standard

PERMANENT RETAINING WALL SYSTEMS

Interim Date 01/01/10 | Sheet No. 18 of 19

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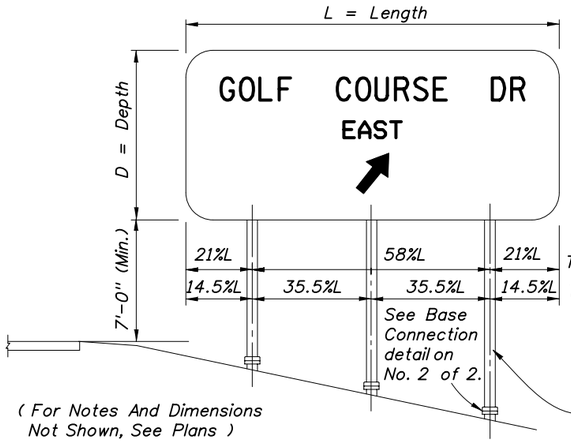
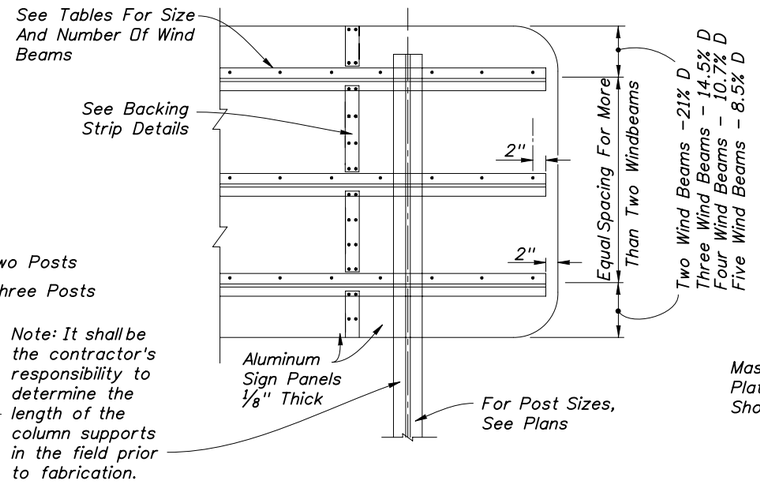
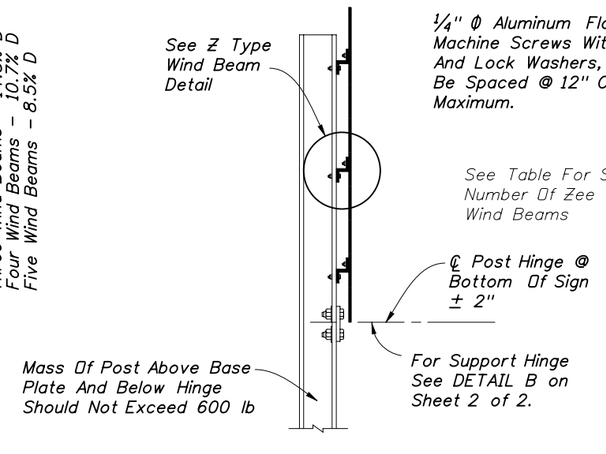


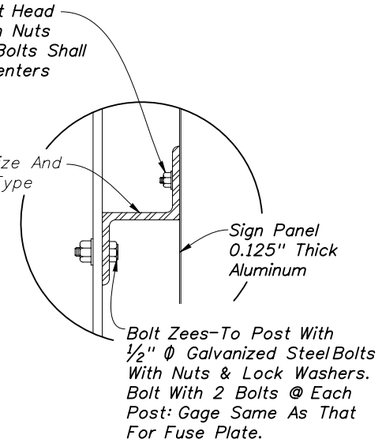
TYPICAL ELEVATION



PARTIAL REAR ELEVATION

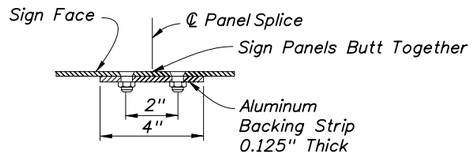


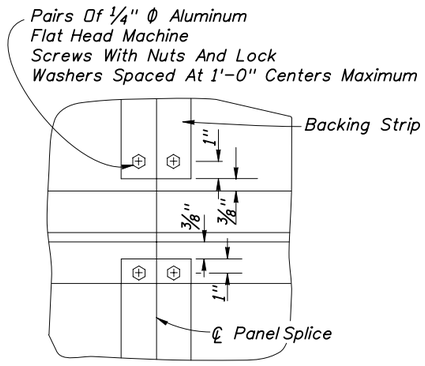
SIDE VIEW



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

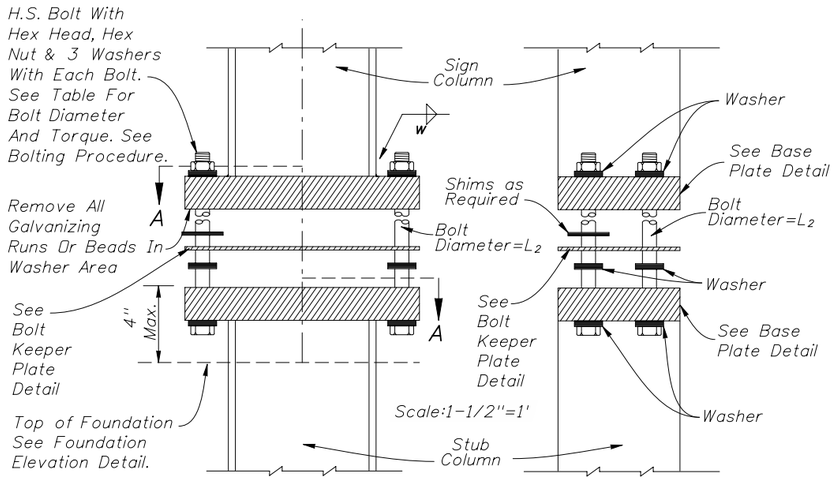
2010 Interim Design Standard

MULTI-COLUMN GROUND SIGN

Interim Date 01/01/10

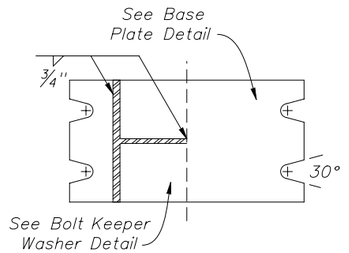
Sheet No. 1 of 2

Index No. 11200

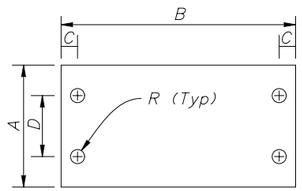


SIGN COLUMN & STUB COLUMN ELEVATION

BASE CONNECTION

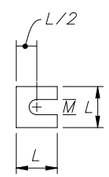


SECTION A-A

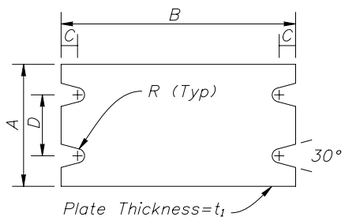


BOLT KEEPER PLATE

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



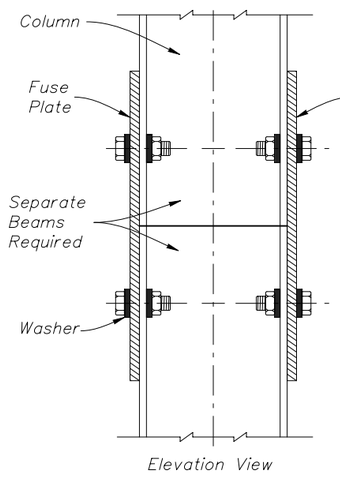
SHIM DETAIL



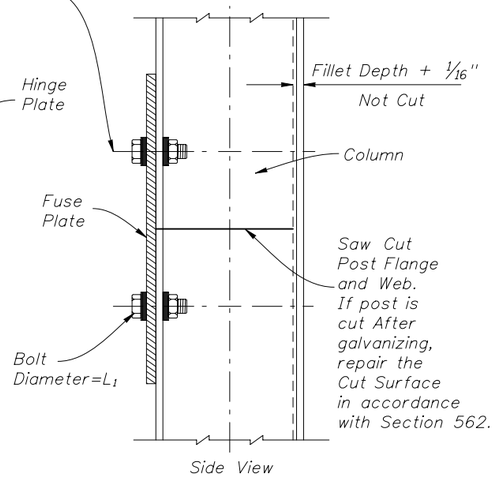
BASE PLATE

Direction of Traffic

Flange Holes For Fuse And Hinge Plate Shall Be Drilled Or Sub-Punched and Reamed. H.S. Bolts (See Table For Size), For Bolt Tension See the Specification. Flat Washers (Typ.)



OPTIONAL HINGE

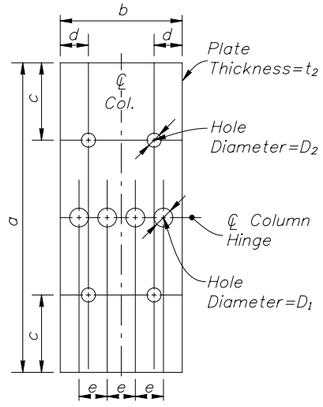


TYPICAL HINGE

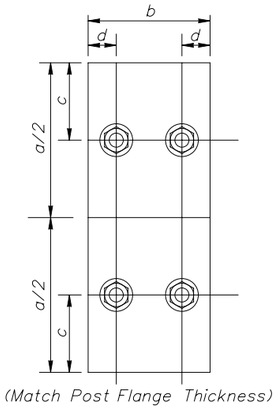
FUSE & HINGE PLATES

(See Fabricator Note on Sheet 1 of 2)

DETAIL B

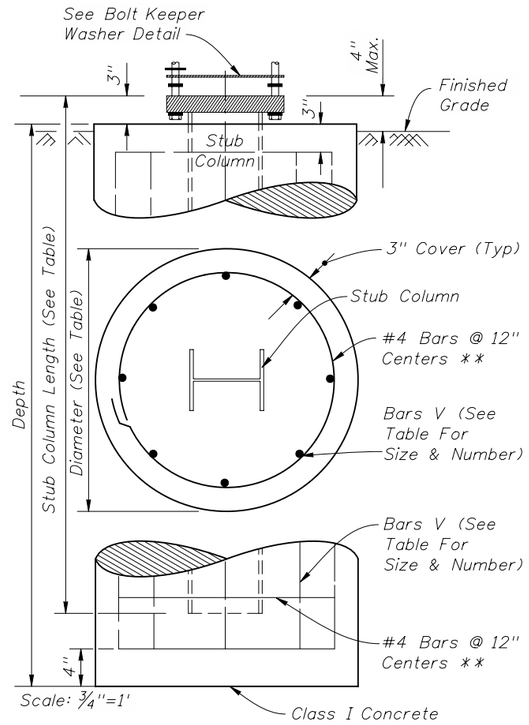


FUSE PLATE



(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.

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.
4. Burr threads at junction with nut using a center punch to prevent nut loosening.

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 1/8"	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.

STEEL POST, BASE, FOUNDATION & FUSE PLATE DETAILS

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

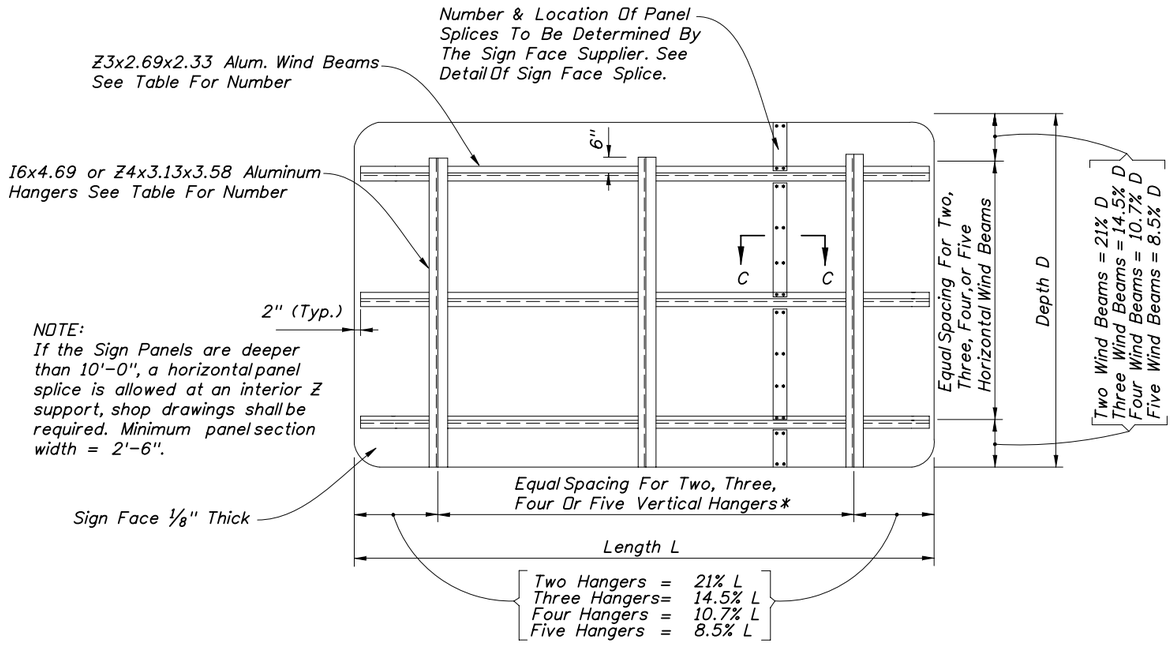
2010 Interim Design Standard

MULTI-COLUMN GROUND SIGN

Interim Date 01/01/10

Sheet No. 2 of 2

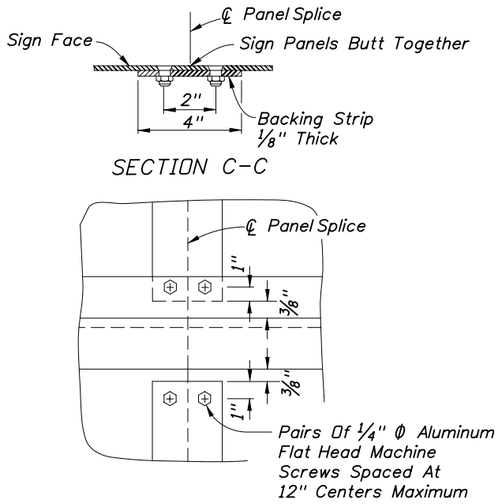
Index No. 11200



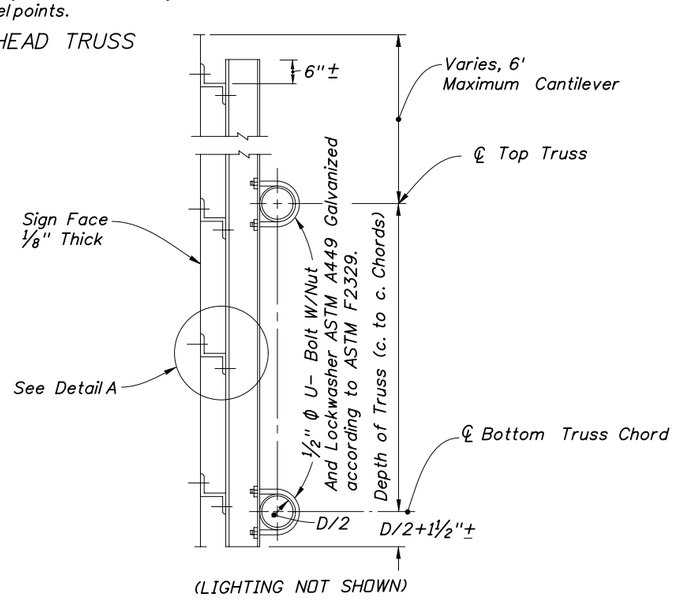
*Note: Spacing of vertical hangers may be varied slightly or as necessary to clear the truss struts and diagonals at panel points.

TYPICAL SIGN FACE ELEVATION FOR OVERHEAD TRUSS

Number Of Z3x2.69x2.33 Horiz. Wind Beams For Sign Depth And Wind			Number Of I6x4.69 or Z4x3.13x3.58 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"

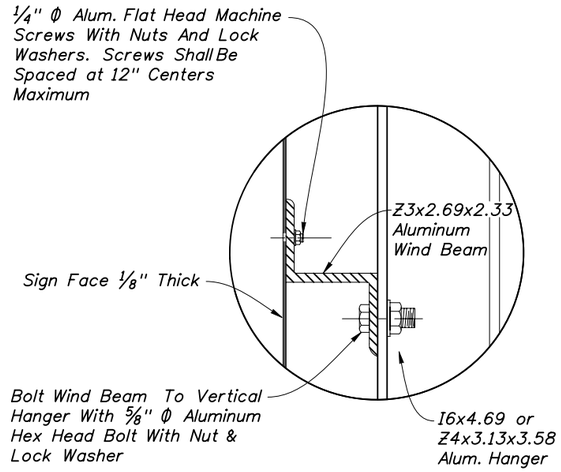


BACKING STRIP DETAIL



(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, Z 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
11-14-07	L.W.	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.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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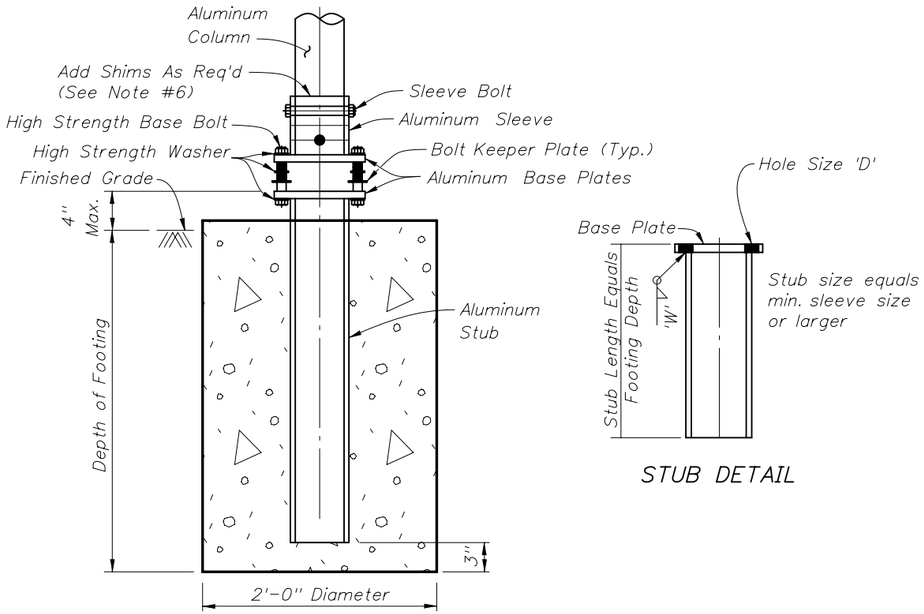
OVERHEAD SIGN STRUCTURES

Interim Date 01/01/10

Sheet No. 1 of 1

Index No. 11300

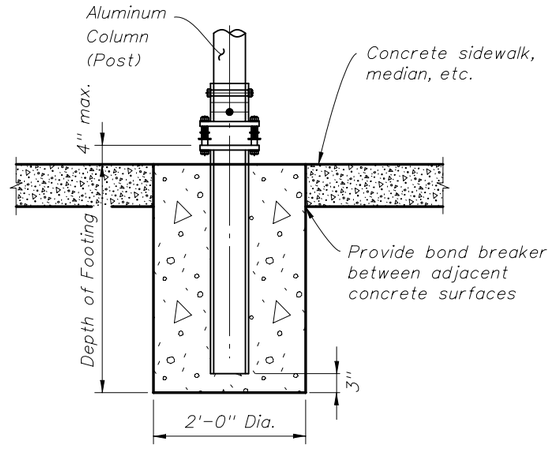


SLIP BASE AND FOOTING DETAIL
(non-frangible post)

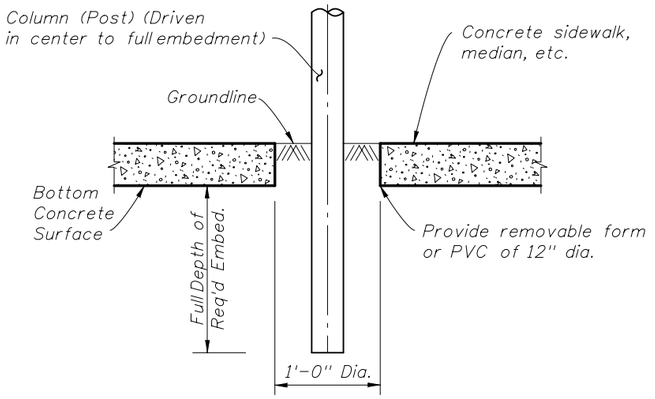
STUB DETAIL

SLIP BASE NOTES:

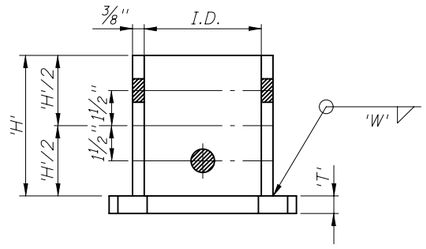
1. Use sleeves with an inside diameter (I.D.) no more than 1/16" larger than the outside diameter (O.D.) of the column.
2. Sleeve Bolts: ASTM A-307, 1/2" Ø galvanized steel bolt (with lock nuts) or Alloy 2024-T4 or 6061-T6 (ASTM B-211).
3. Base bolts, Nuts, and Washers: high strength ASTM A-325 with ASTM B633 SC3, Type II electroplated zinc coating.
4. Base plates may have either single or double beveled slots.
5. An alternate cast base plate of aluminum alloy 356 and T6 temper in lieu of the fabricated base plate may be submitted for approval. If a cast base plate is used, the stub will be the same size as the column and will be bolted to the casting.
6. Assemble the slip base connection in the following manner:
   a. Connect column to sleeve using two 1/2" Ø machine bolts.
   b. Assemble top base plate to stub base plate using high strength bolts with three hardened washers per bolt. One of the three washers per bolt and two bolt keeper plates go between the base plates. Orient the bolt keeper plates in the Directions of Traffic.
   c. Use shim stock as required to plumb the column.
   d. Tighten all bolts to the maximum possible with a 12" to 15" wrench. (This will bed the washers and shims and clear the bolt threads.)
   e. Loosen each bolt one turn and using a calibrated wrench retighten to the prescribed torque (see table) under the supervision of the Project Engineer.
   f. Burr threads at junction with nut using a center punch to prevent nut loosening.
7. Use galvanized steel shims to obtain a tight fit between the column face and the sleeve. Place shims in all quadrants between the 1/2" Ø sleeve bolts. Use shims that are 1" shorter than the height of the sleeve.
8. Both fabricated and cast base assemblies were impact tested by the Texas Transportation Institute, College Station, TX on February 10, 2003, and both alternate assemblies were determined to be compliant with the performance recommendations of the National Cooperative Highway Research Program (NCHRP) report 350.

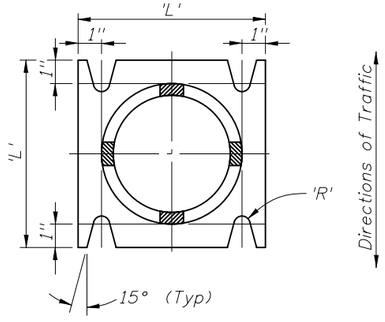


SLIP BASE AND FOOTING DETAIL IN CONCRETE
(non-frangible post in crossovers, medians, & sidewalks)

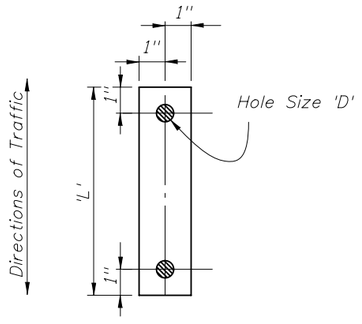


DRIVEN POST DETAIL IN CONCRETE
(frangible post in crossovers, medians, & sidewalks)





ALUMINUM SLEEVE & BASE PLATE DETAILS
(DOUBLE BEVELED SLOTS)



0.0149" Thick Alum. Strip - 2 Req'd Per Base

BOLT KEEPER PLATE DETAIL

SLIP BASE DETAILS

Column Size	Sleeve I.D. (Max)	Sleeve Height 'H'	Weld 'W'	Base Plate 'L'	Base Plate 'T'	Radius 'R'	Base Bolt Size	Base Bolt Length	Base Plate Torque Ft-lbs	Base Plate Torque In-lbs	Hole Size 'D'
4 x 1/4	4 1/16	6	5/8	8	3/4	11/32	5/8	3	29	345	11/16
4 1/2 x 1/4	4 9/16	6	5/8	8	7/8	11/32	5/8	3 1/4	29	345	11/16
5 x 1/4	5 1/16	7	5/8	8	7/8	11/32	5/8	3 1/4	29	345	11/16
6 x 1/4	6 1/16	8	11/16	9	1	13/32	3/4	3 1/2	46	554	13/16

Note: Unless notes otherwise, all dimensions are in inches.

BASE AND FOUNDATION DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	DYW	Changed Note 6.b.			

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SINGLE COLUMN GROUND SIGNS

Interim Date 01/01/10

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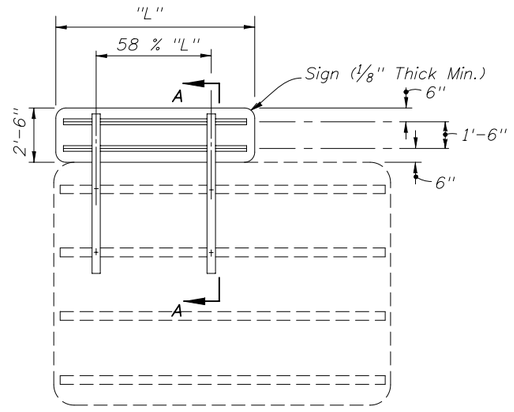
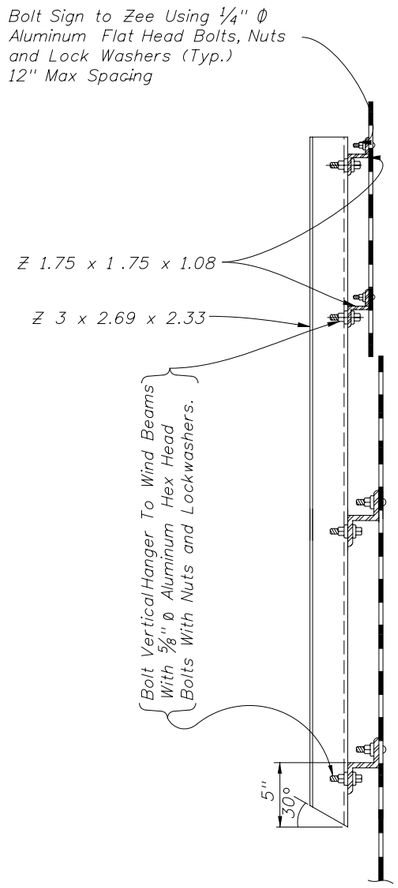


NOTE: Exit numbering panel shall be located to the right side for right exit and to the left for left exit.

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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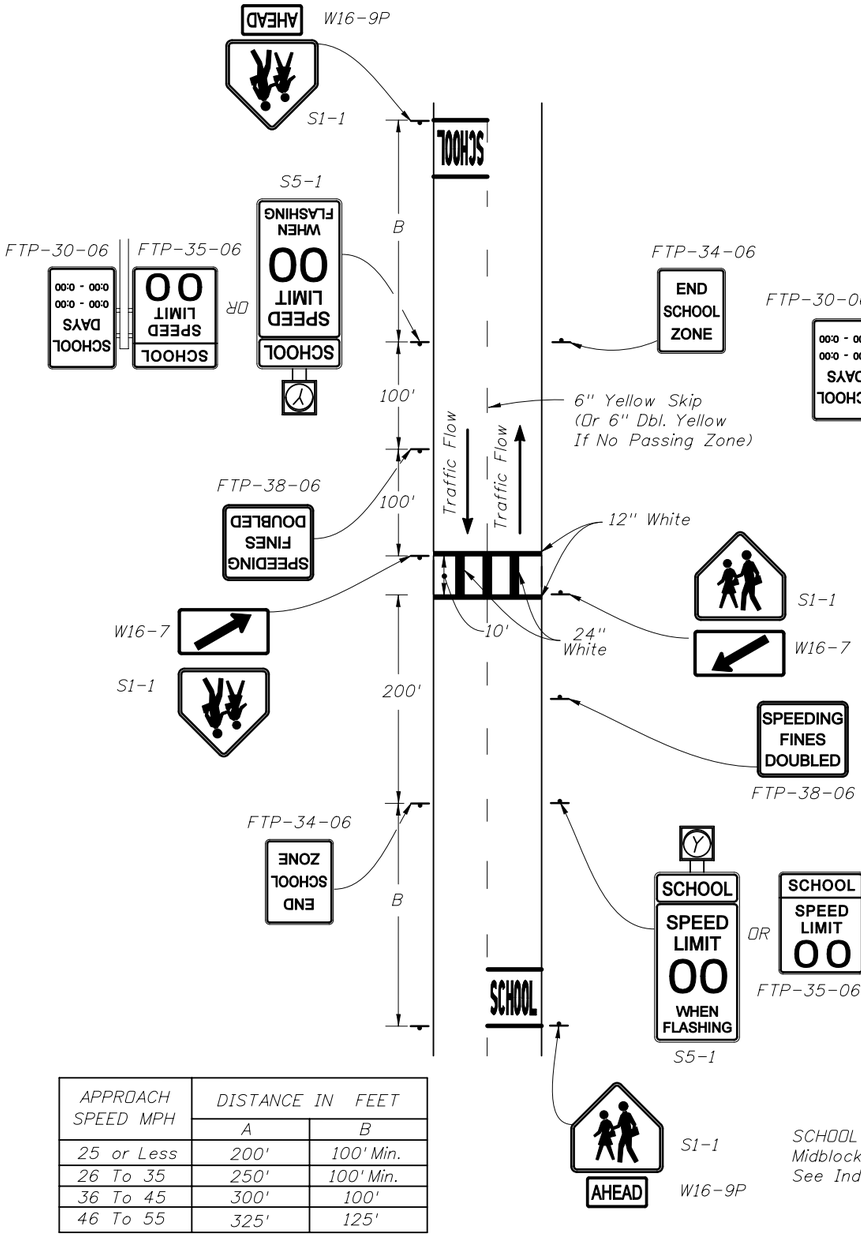
MOUNTING EXIT NUMBERING PANELS TO HIGHWAY SIGNS

Interim Date: 01/01/10

Sheet No.: 1 of 1

Index No.: 13417

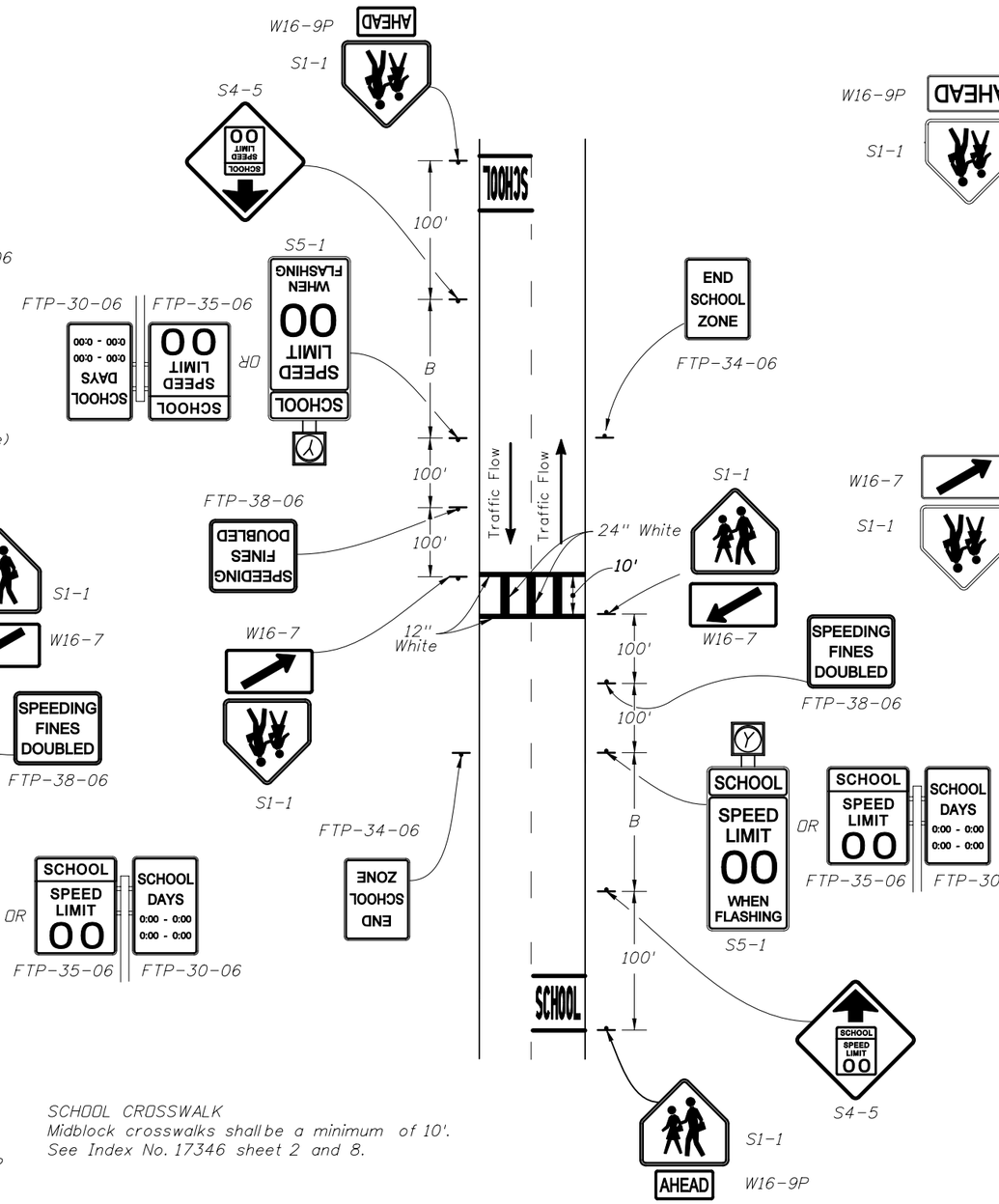
3. TRAFFIC CONTROL DEVICES FOR REDUCED SPEED ZONE AT A SCHOOL CROSSWALK 2 LANES-2 WAY TRAFFIC (40 MPH OR LESS) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



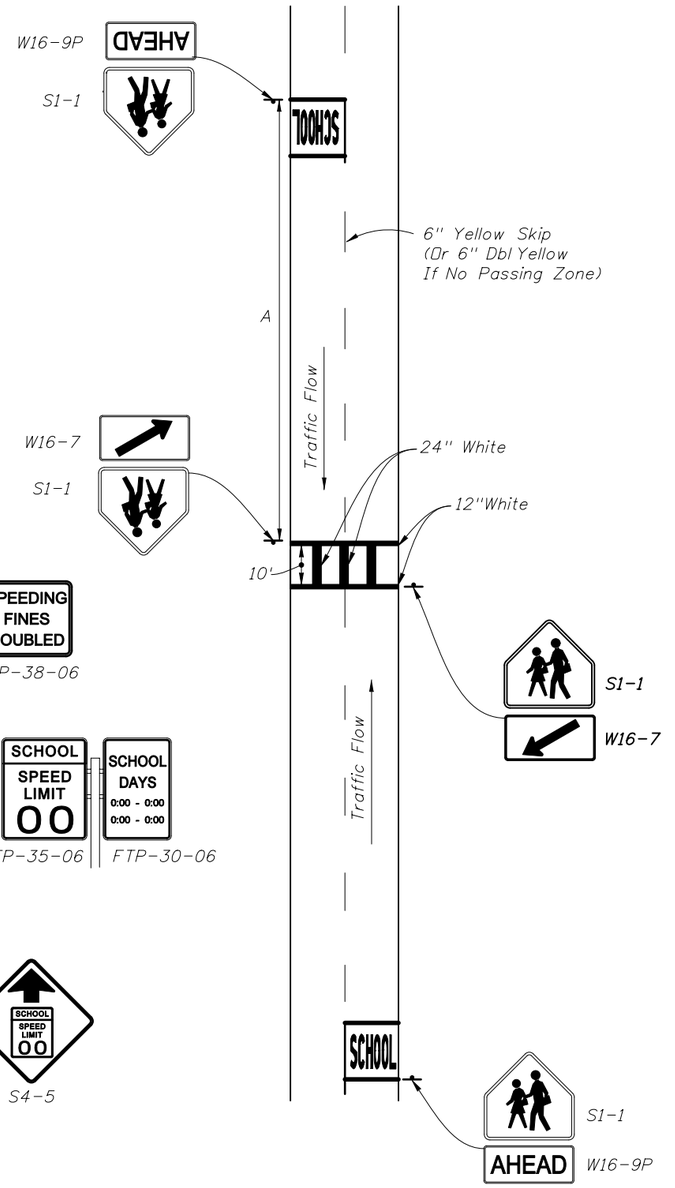
APPROACH SPEED MPH	DISTANCE IN FEET	
	A	B
25 or Less	200'	100' Min.
26 To 35	250'	100' Min.
36 To 45	300'	100'
46 To 55	325'	125'

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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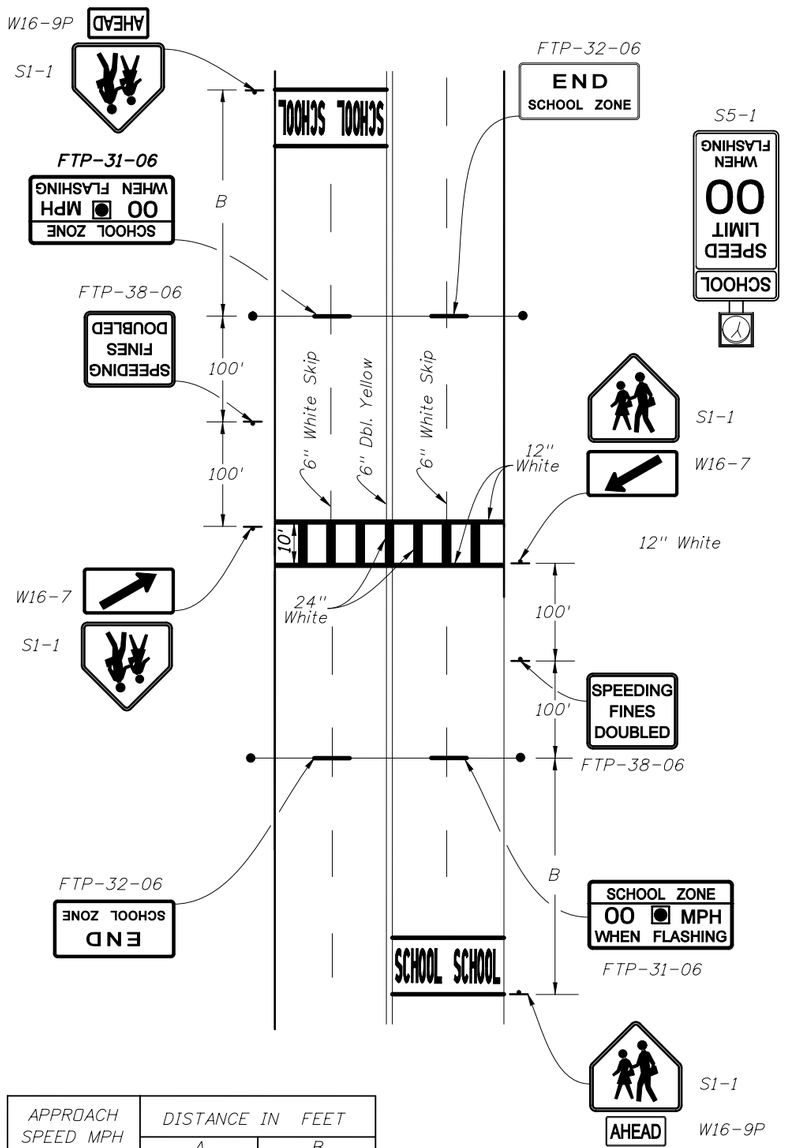
SCHOOL SIGNS & MARKINGS

Interim Date 01/01/10

Sheet No. 2 of 6

Index No. 17344

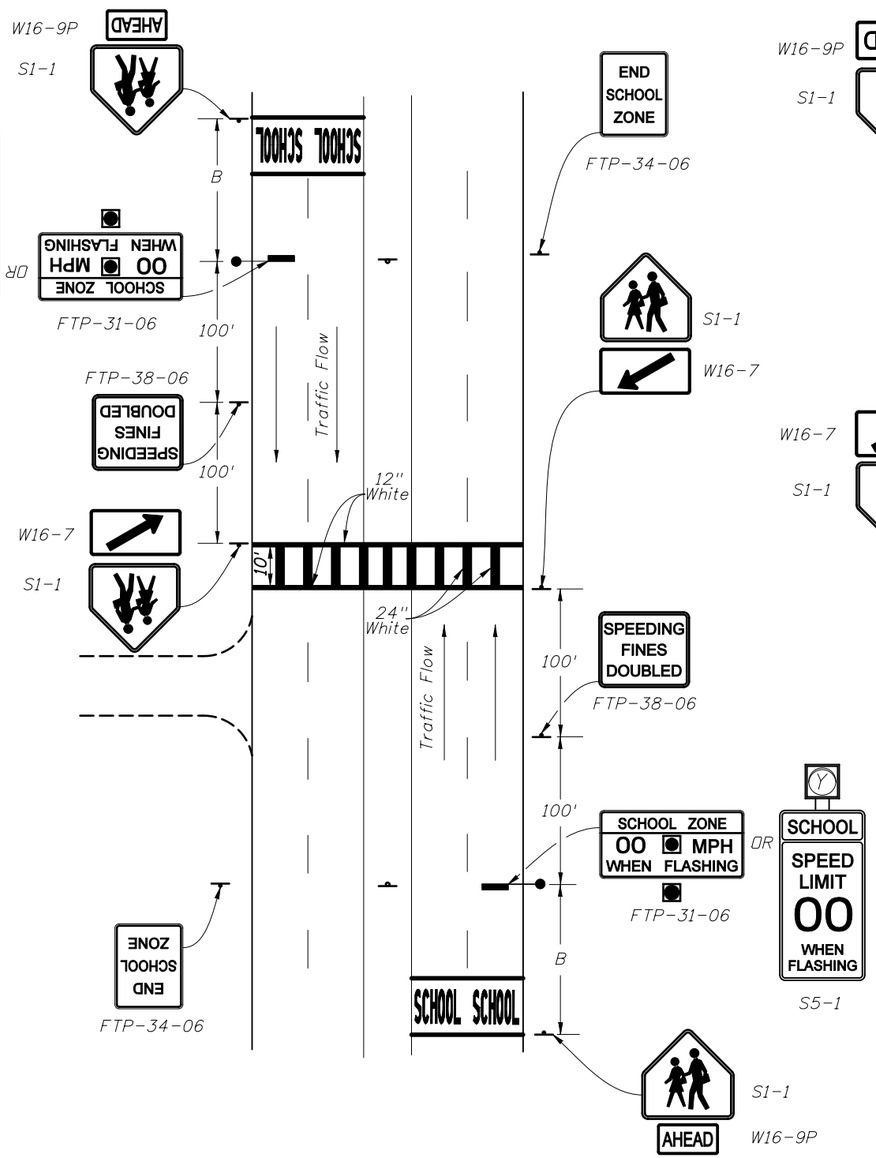
6. TRAFFIC CONTROL DEVICES FOR A REDUCED SPEED ZONE AT A SCHOOL CROSSWALK WITH OVERHEAD FLASHING BEACON SPEED LIMIT SIGNS (4 LANES UNDIVIDED-2 WAY TRAFFIC) (MIDBLOCK OR ON THRU STREET AT AN INTERSECTION)



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'

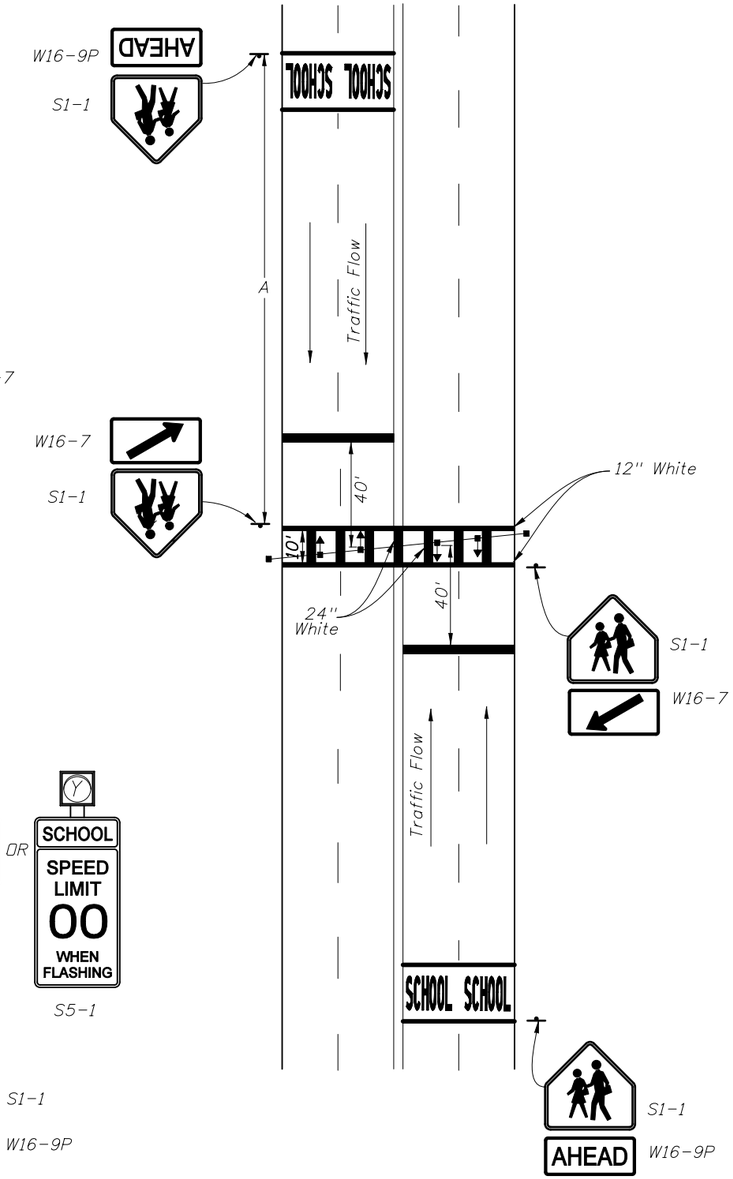
SCHOOL CROSSWALK
Midblock crosswalk shall be a minimum of 10'.
See Index No. 17346, Sheet 2 and 8.

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.	Revised Crosswalk Markings.			

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SCHOOL SIGNS & MARKINGS

Interim Date 01/01/10 | Sheet No. 3 of 6

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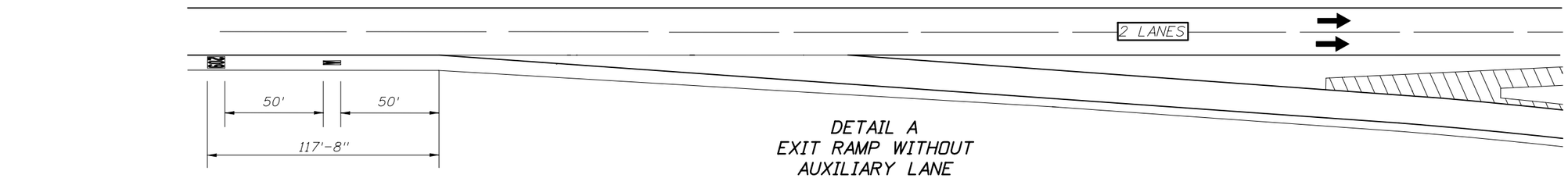
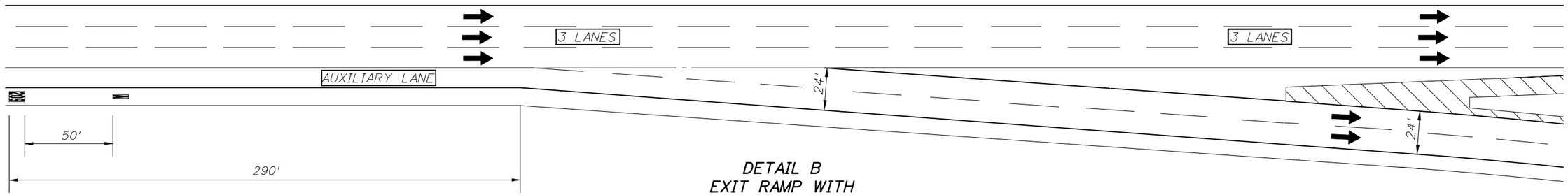
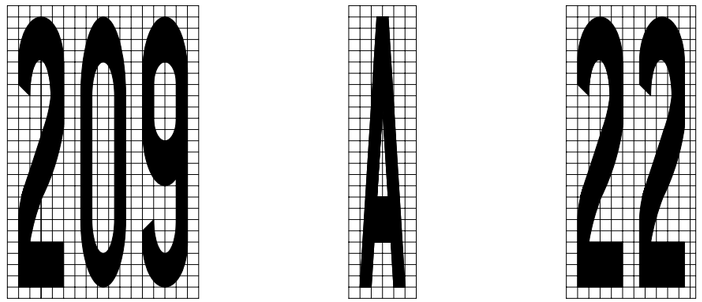


DETAIL A
EXIT RAMP WITHOUT
AUXILIARY LANE

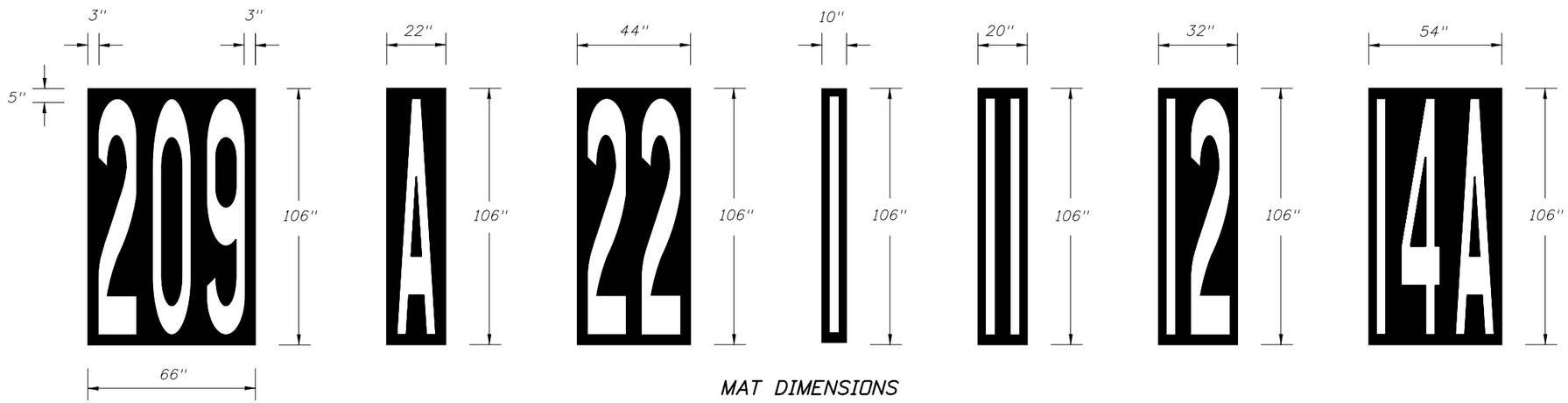
LAYOUT FOR 1, 2 AND 3 DIGIT NUMBERS AND LETTERS



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.			

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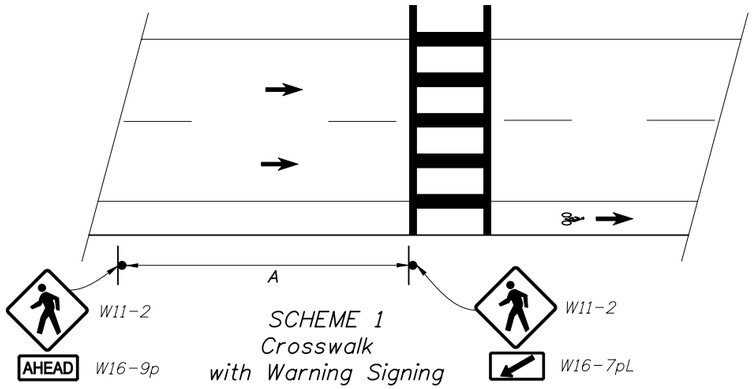
SPECIAL MARKING AREAS

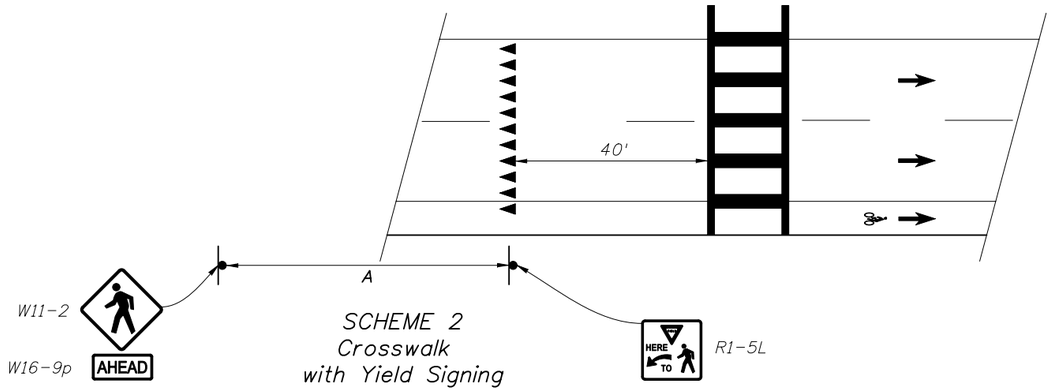
Interim Date 01/01/10

Sheet No. 7 of 14

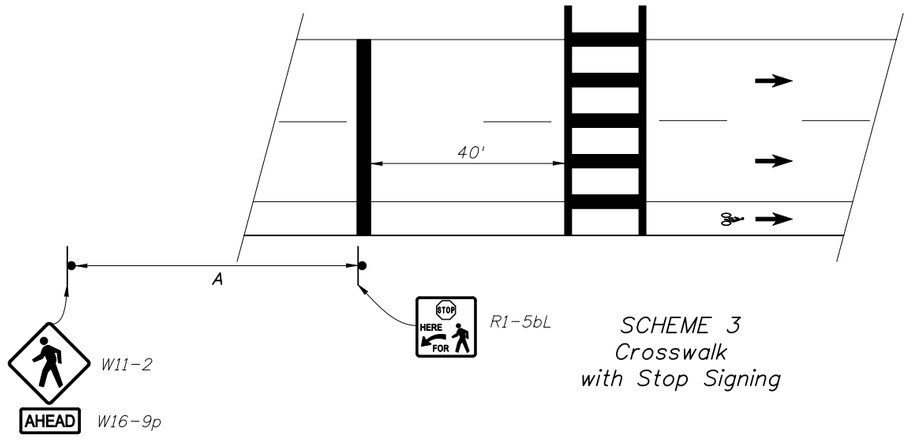
Index No. 17346



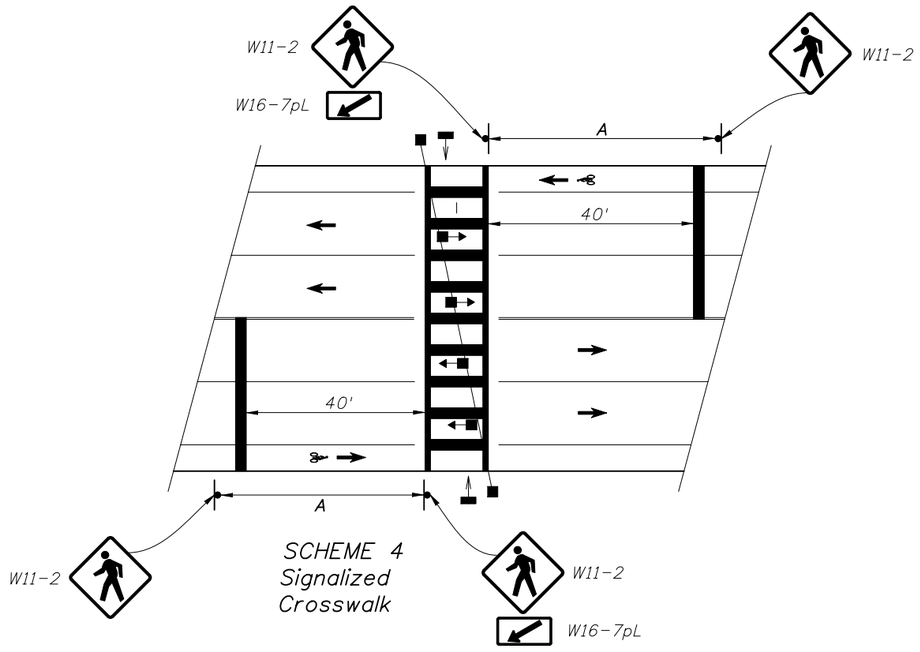
SCHEME 1
Crosswalk
with Warning Signing



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.			

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SPECIAL MARKING AREAS

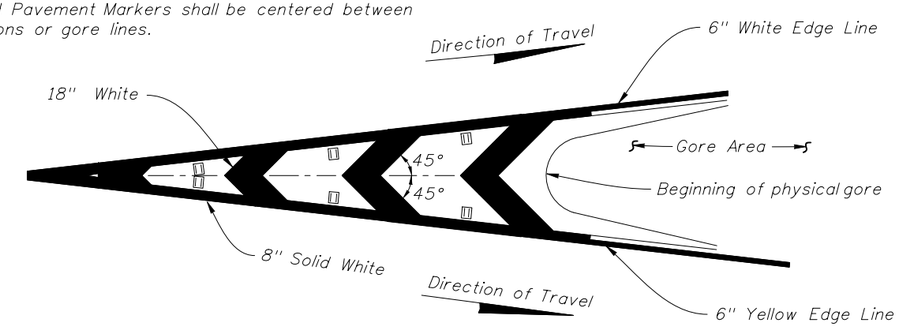
Interim Date 01/01/10

Sheet No. 10 of 14

Index No. 17346

NOTES

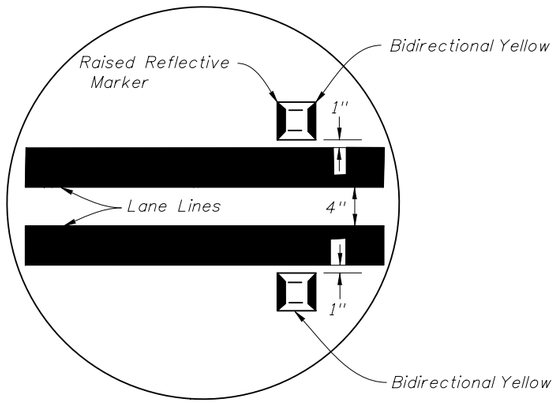
1. Raised pavement markers shall be set 1" from line.
2. Raised Pavement Markers shall be centered between chevrons or gore lines.

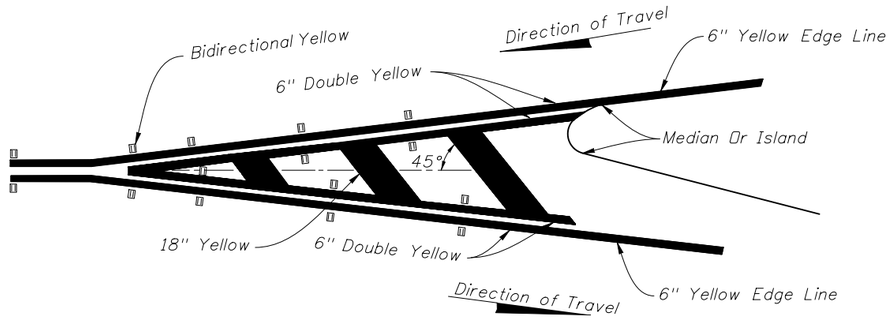


RPM PLACEMENT FOR TRAFFIC CHANNELIZATION AT GORE (TRAFFIC FLOWS IN SAME DIRECTION)

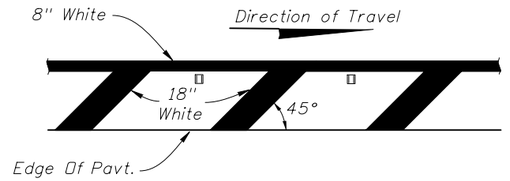
NOTE

Raised pavement markers (Bidirectional White/Red) should be used in all gores of this type





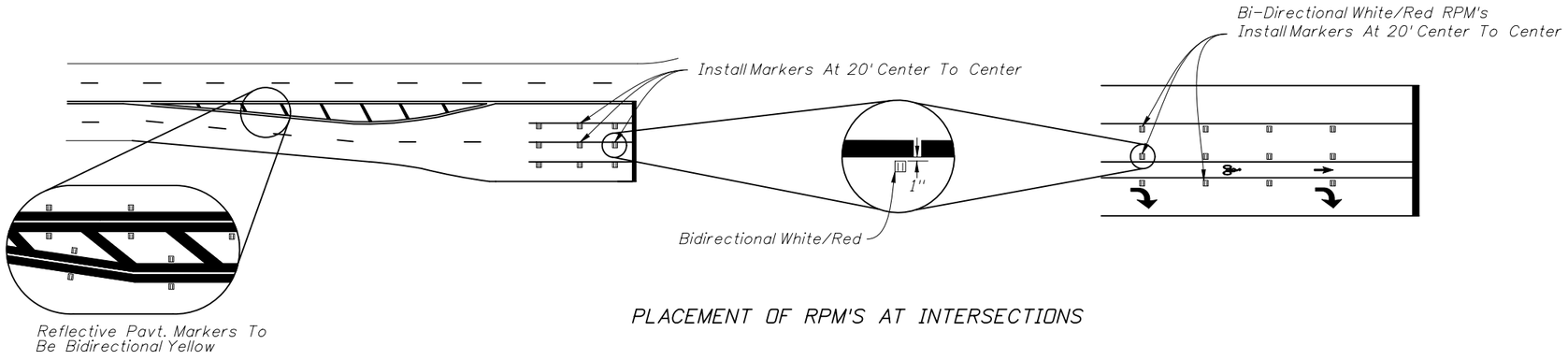
RPM PLACEMENT FOR TRAFFIC SEPARATION (TRAFFIC FLOWS IN OPPOSITE DIRECTION)



PLACEMENT OF RPM'S ON SHOULDER MARKINGS

For Left Side Of Roadway The Plan Is Opposite Hand And Markings Shall Be Yellow.

For Placement Of Rpm's On Ramps See Index 17345.



PLACEMENT OF RPM'S AT INTERSECTIONS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10/14/09	L.W.	Raised Reflective Markers moved to center of Chevrons in details and note 2 added to NOTES.			

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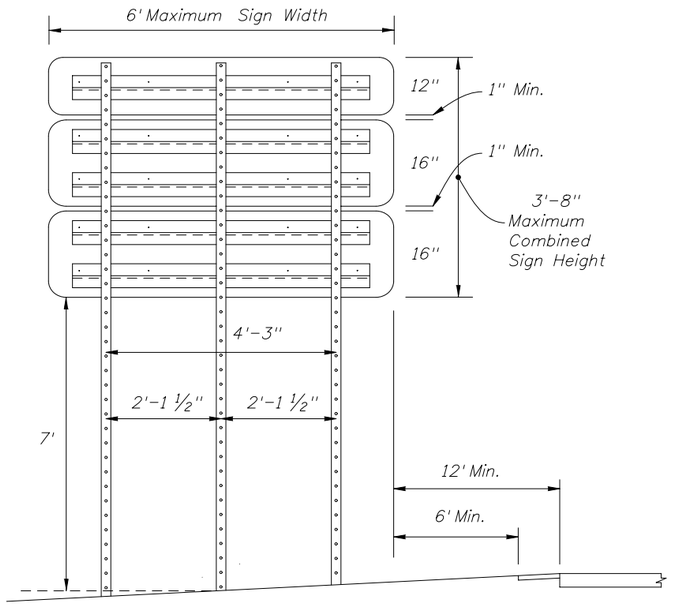
TYPICAL PLACEMENT OF REFLECTIVE PAVEMENT MARKERS

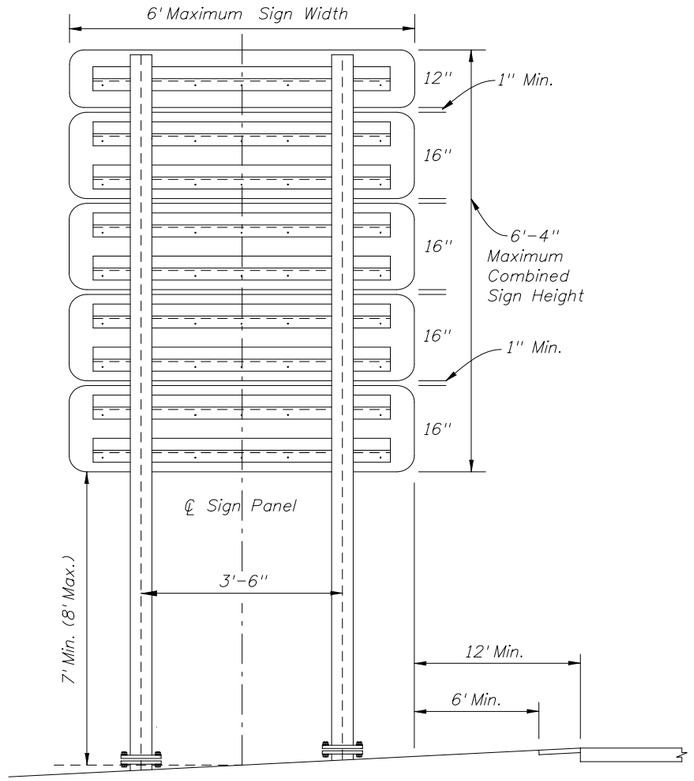
Interim Date 01/01/10

Sheet No. 2 of 2

Index No. 17352

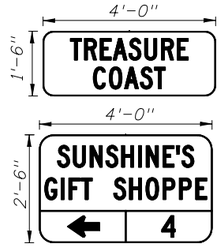


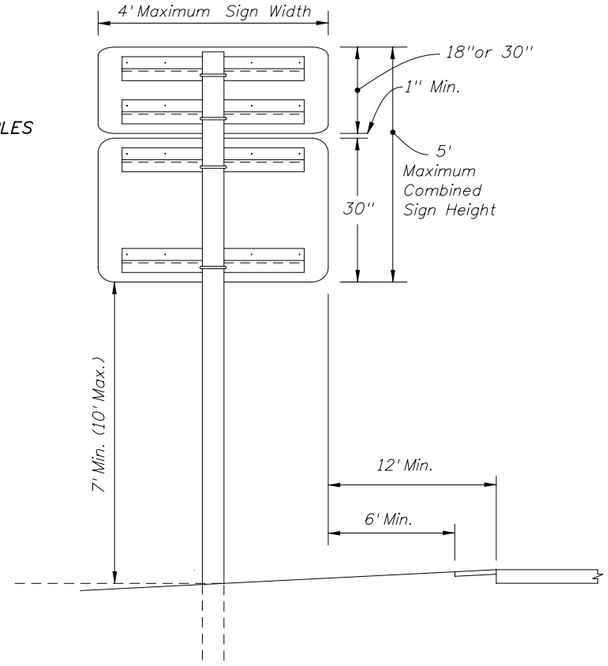
STEEL U-CHANNEL TRIPLE POST
DIRECT BURIAL



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.			

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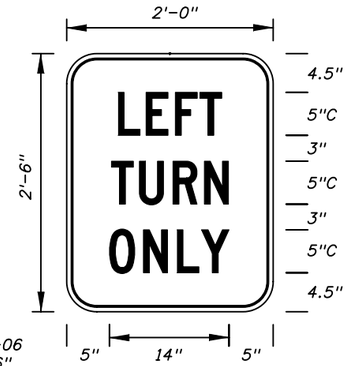
TOURIST ORIENTED DIRECTIONAL SIGNS

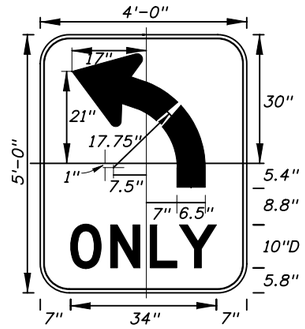
Interim Date 01/01/10

Sheet No. 1 of 1

Index No. 17354

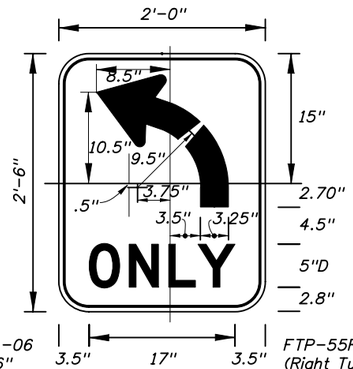


FTP-53-06
2' X 2'-6"
3" Radii 5/8" Border
5" Series C Legend
White Background
Black Legend and Border



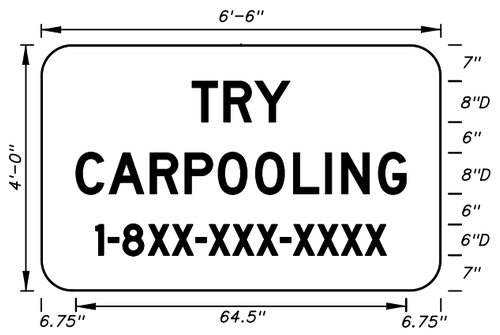
FTP-54L-06
4' X 5'
6" Radii 3/4" Border
10" Series D Legend
White Background
Black Legend and Border

FTP-54R-06 for (Right Turn Arrow)



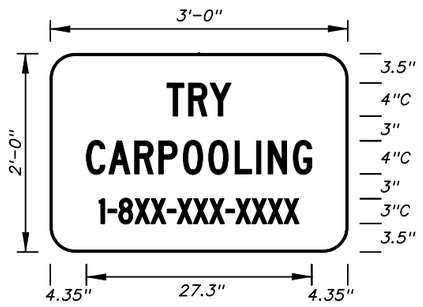
FTP-55L-06
2' X 2'-6"
3" Radii 3/8" Border
5" Series D Legend
White Background
Black Legend and Border

FTP-55R-06 for (Right Turn Arrow)



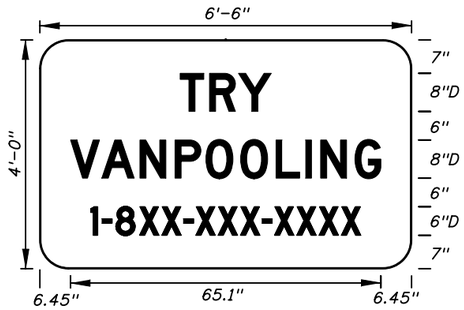
FTP-56-06
6'-6" X 4'
6" Radii 3/4" Border
8" and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.



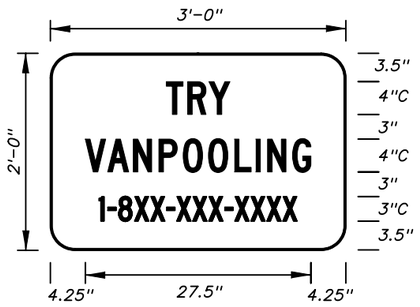
FTP-56A-06
3' X 2'
3" Radii
4" and 3" Series C Legend
Blue Background
White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.



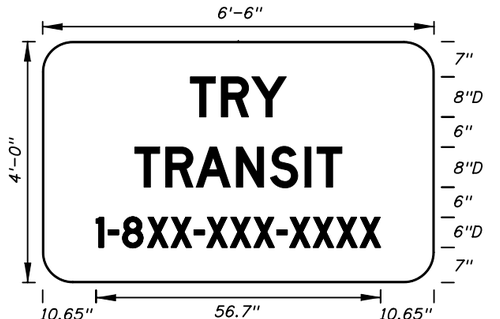
FTP-57-06
6'-6" X 4'
6" Radii
8"and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.



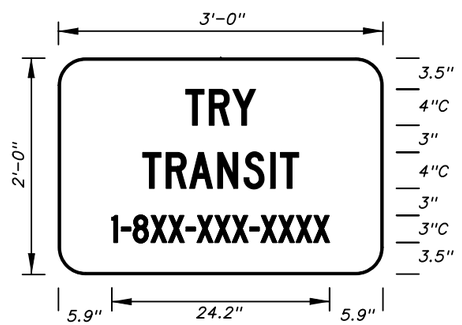
FTP-58-06
3' X 2'
3" Radii
4" and 3" Series C Legend
Blue Background
White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.



FTP-59-06
6'-6" X 4'
6" Radii
8" and 6" Series D Legend
Blue Background
White Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.

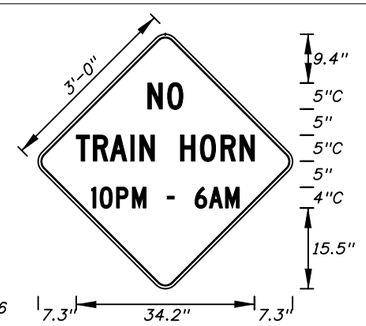


FTP-60-06
3' X 2'
3" Radii
4"and 3" Series C Legend
Blue Background
White Legend and Border

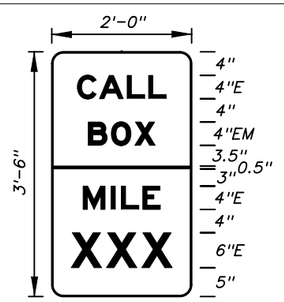
Design Project Manager or Transit Administrator will supply correct 1-8XX number.

FTP-61-06
3' X 2'
3" Radii 3/4" Border
4" and 3" Series C Legend
Yellow Background
Black Legend and Border

Design Project Manager or Transit Administrator will supply correct 1-8XX number.



FTP-62-06
3' X 3'
2" Radii 3/4" Border 4"and 5" Series C Legend
Yellow Background Black Legend and Border



FTP-63-06
2' X 3'-6"
2" Radii 4"and 6" Series E and EM Legend
Top Blue Background White Legend and Border
Bottom Green Background White Legend and Border

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10/02/09	LW	FTP-54-06 and FTP-55-06 were changed to FTP-54L-06 and FTP-55L-06 (Left Turn) and Note FTP-54R-06 and FTP-55R-06 for (Right Turn) added.			

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Interim Date 01/01/10

Sheet No. 7 of 11

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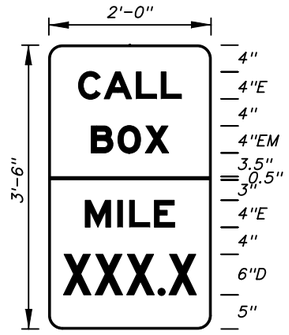
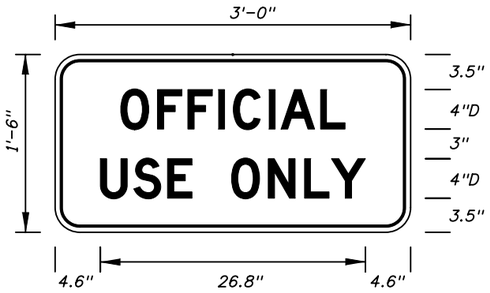


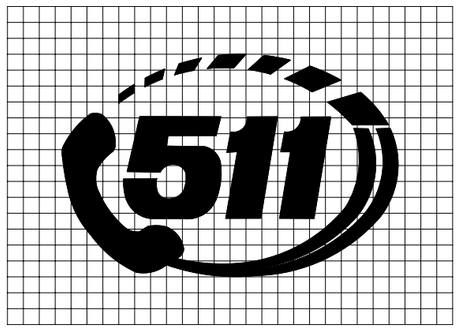
FTP-64-06
2'X 3'-6"
2" Radii
Top 4" Series E and 4" Series EM Legend
Blue Background White Legend and Border
Bottom 4" Series E and 6" Series D Legend
Green Background White Legend and Border



FTP-65-06
3'X 1'-6"
2" Radii 3/4" Border
4" Series D Legend
White Background
Black Legend and Border

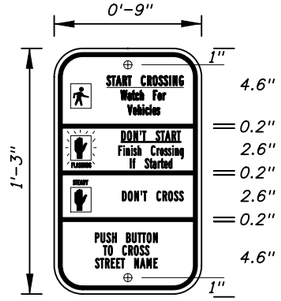
FTP-66-06
4'X 5'
2" Radii 3/4" Border
7" Series D Legend
Blue Background
White Legend and Border

FTP-67-06
3'X 4'
2" Radii 3/4" Border
5" Series D Legend
Blue Background
White Legend and Border



DETAIL for FTP-66 AND FTP-67

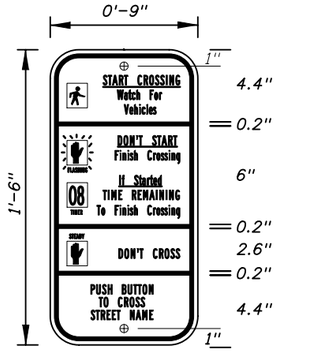
Sign Mounting Holes Can Be Punched Or Field Drilled With No Obstruction To Text Or Symbols From Holes Or Bolts.



FTP-68A-06
9" X 1'-3"
1.5" Radii 3/4" Border
Series B Legend
White Background
Black Legend and Border

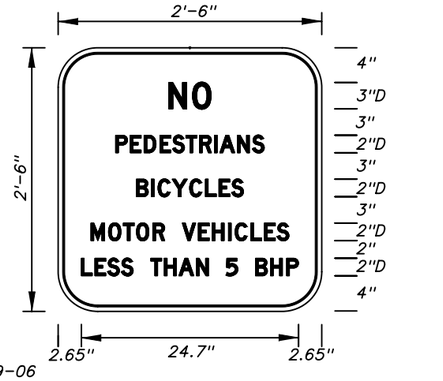
See Standard Highway Signs Manual, Sign R10-3b For Letter Size Spacing And Symbol Sizes.

Sign Mounting Holes Can Be Punched Or Field Drilled With No Obstruction To Text Or Symbols From Holes Or Bolts.

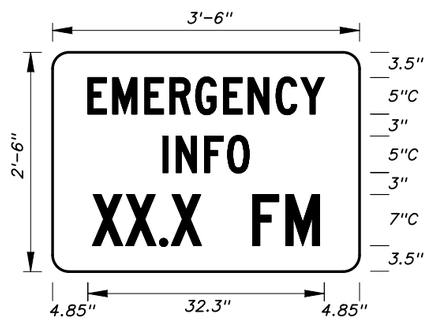


FTP-68B-06
9" X 1'-6"
1.5" Radii 3/4" Border
Series B Legend
White Background
Black Legend and Border

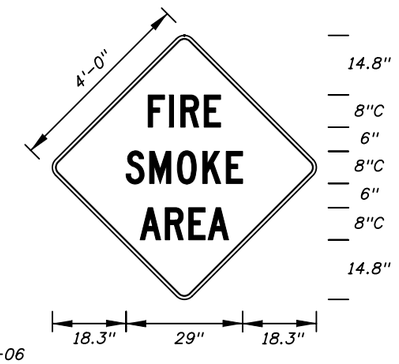
See Standard Highway Signs Manual, Sign R10-3b For Letter Size Spacing And Symbol Sizes.



FTP-69-06
2'-6" X 2'-6"
4" Radii 3/4" Border
2" and 3" Series D Legend
White Background
Black Legend and Border



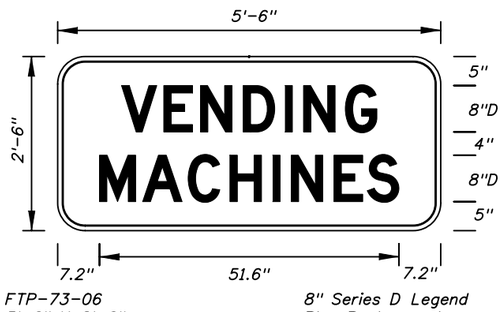
FTP-70-06
3'-6" X 2'-6"
2.25" Radii 3/4" Border
5" Series C and 7" Series C Legend
Blue Background
White Legend and Border



FTP-71-06
4'X 4'
2" Radii 3/4" Border
8" Series C Legend
Yellow Background
Black Legend and Border

FTP-72-06
3'X 3'
2" Radii 3/4" Border

6" Series C Legend
Yellow Background
Black Legend and Border



FTP-73-06
5'-6" X 2'-6"
4" Radii 3/4" Border

8" Series D Legend
Blue Background
White Legend and Border

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
10/20/09	LW	FTP-70-06 sign detail revised, dimensions and text size in line 3.			

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Interim Date 01/01/10

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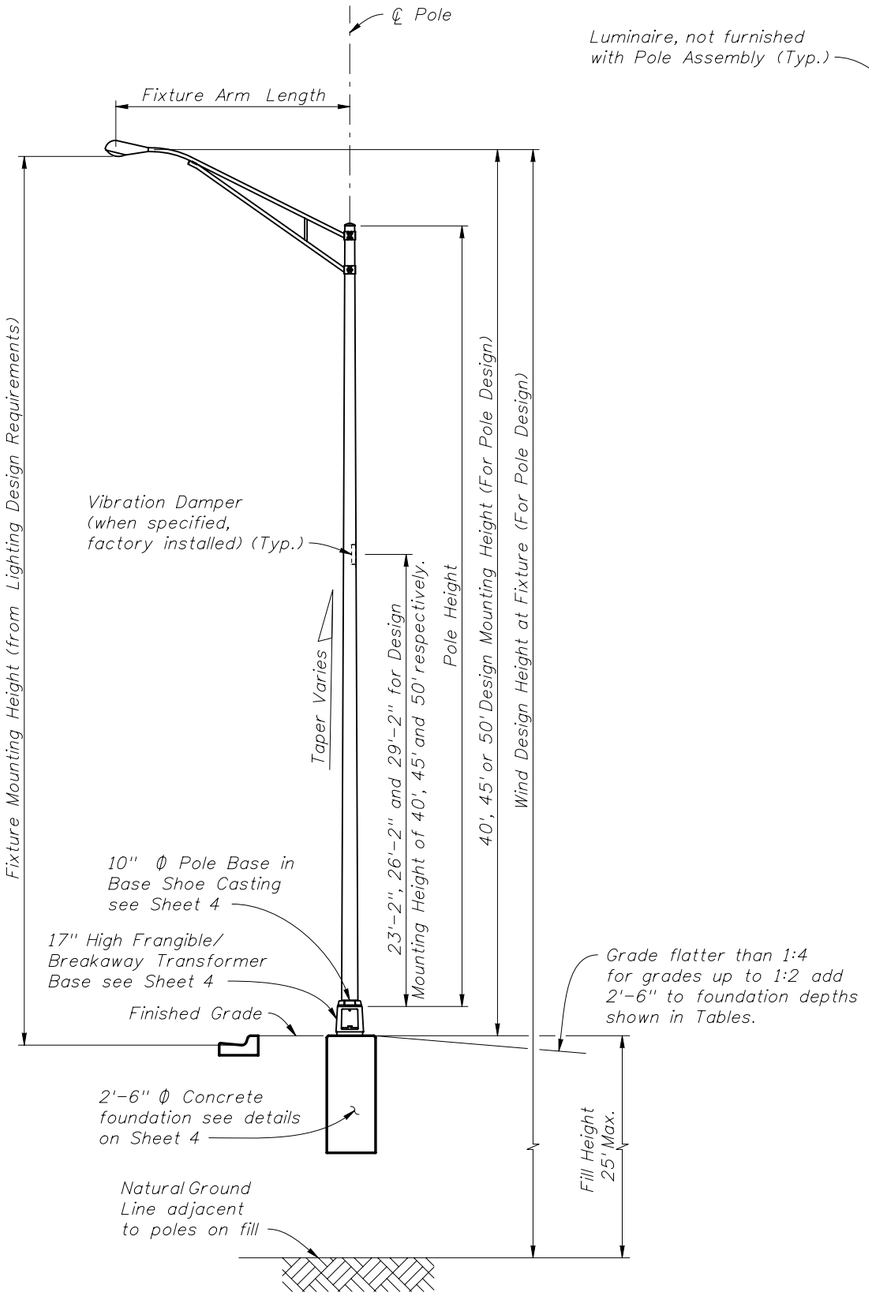
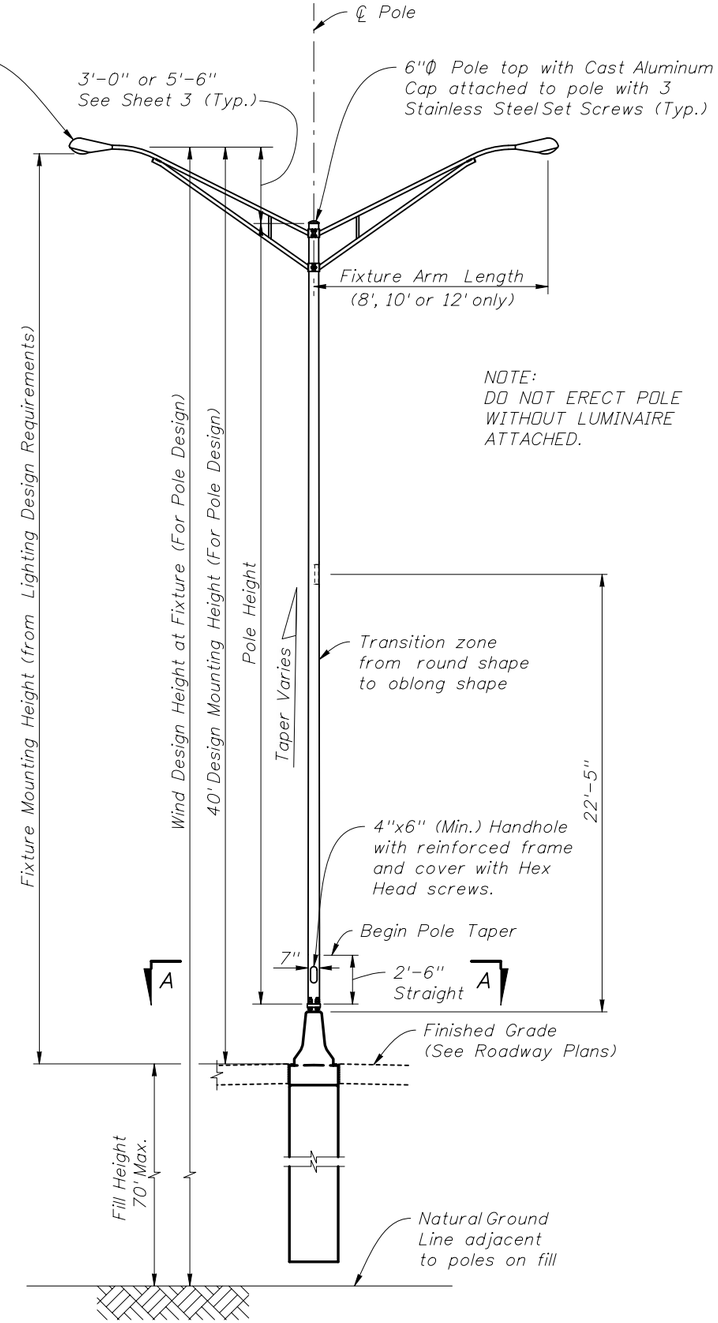
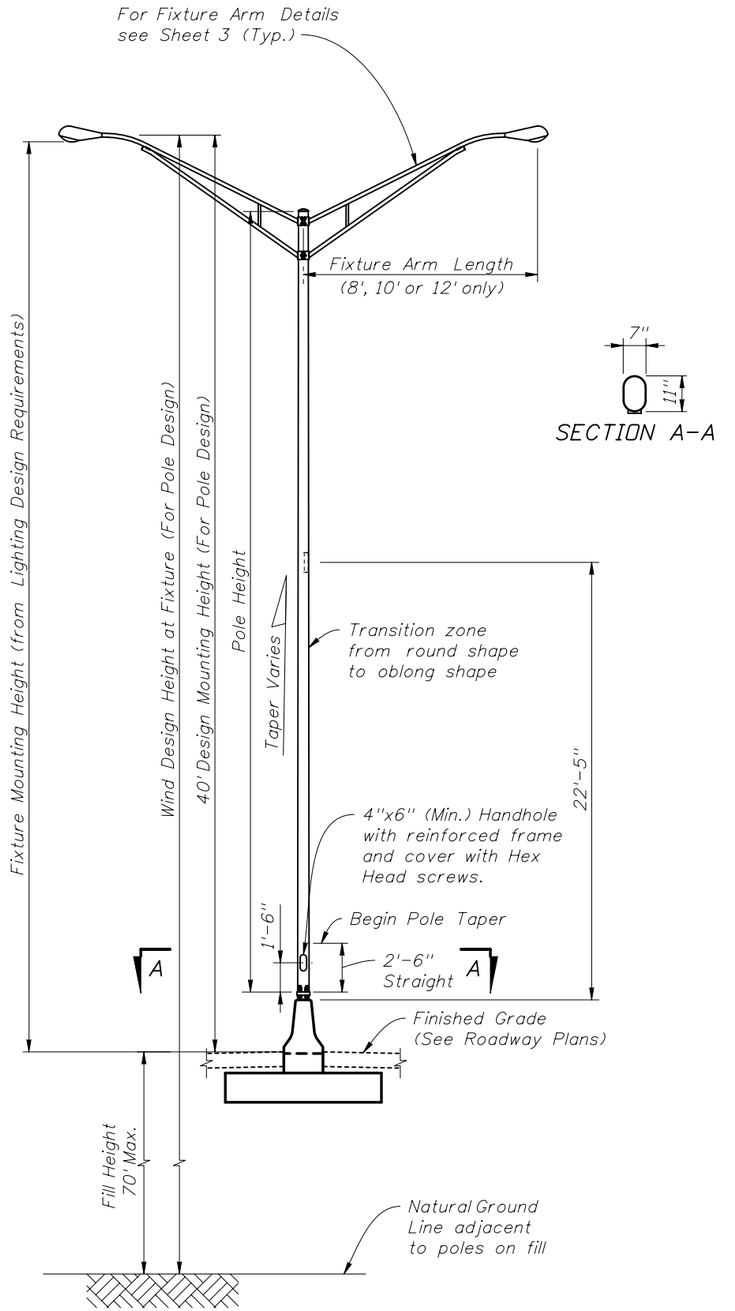


STANDARD ROADWAY
ALUMINUM LIGHT POLE



MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE
ON CYLINDRICAL FOUNDATION



MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE
ON SPREAD FOOTING FOUNDATION

ELEVATIONS

REVISIONS						2010 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			
01/01/10	DYW	Added Dampers.				STANDARD ALUMINUM LIGHTING	01/01/10	1 of 8
							Index No.	17515

ALUMINUM LIGHT POLE GENERAL NOTES

1) Designed in accordance with FDOT Structures Manual (current edition).

2) All tables were developed assuming the following Luminaire properties: Effective Projected Area of 1.55 ft. (includes wind drag coefficient) and 75 pounds (max.)

3) Perform all welding in accordance with the American Welding Society Structural Welding Code Aluminum ANSI/AWS D1.2 (current edition).

4) See Standard Index No. 17500 for grounding and wiring details.

5) Light Pole Specifications:
   a. Poles: ASTM B221, Alloy 6063-T6.
   b. Arm Tube Extrusions: ASTM B221 - Alloy 6063-T6.
   c. Finish: For pole and arms; 50 grit satin rubbed finish.
   d. Pole Connection Extrusions, Bars and Plates: ASTM B221 - Alloy 6063-T6.
   e. Aluminum Caps and Covers: ASTM B-26(319-F).
   f. Weld Metal: ER4043.
   g. Stainless Steel Fasteners and Hardware: AISI Grade 304.
   h. Aluminum alloy 6063: T4 condition and heat treated in accordance with ASTM B597 to T6.

6) Provide "J", "S" or "C" hook at top of pole for electrical cable.

7) Furnish each pole with a 2"x4" (max) aluminum identification tag. Submit details for approval. Secure to Transformer Base with 0.125" stainless steel rivets or screws. Locate Identification Tag on the inside of base and visible from the door opening. Include the following information: Financial Project ID, Pole Height, Manufacturer's Name, Certification number and QPL Number.

8) Manufacturers seeking approval of a Standard Roadway Aluminum Lighting Pole assembly 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 Index.
   a. For Clamp and Frangible Transformer Base Design, provide design calculation and/or test results indicating that the components are capable of providing the required capacity. Certify that the frangible Transformer Base conforms to the current FHWA required AASHTO Frangibility Requirements, tested under NCHRP Report 350 Guidelines.
   b. For Median Barrier Mounted Aluminum Light Pole design, provide test results showing that pole will not buckle at pole shape transition area. Demonstrate in the tests that the poles will achieve full ultimate moment capacity of 36 k-ft in the strong axis and 30 k-ft in the weak axis respectively for the 0.25" thick poles, and 44 k-ft in the strong axis and 37 k-ft in the weak axis respectively for the 0.313" thick poles. Submit complete details and calculations for the reinforced 4"x6" (min.) handhole located 1'-6" above the base plate.
   c. For Alternate foundations: Include design calculations and drawings showing that the product meets the requirements of this index, FDOT Structures Manual and Specification 715.

ROADWAY ALUMINUM LIGHTING POLE NOTES

1) Foundation Materials:
   a. Reinforcing Steel: ASTM A615 Grade 60.
   b. Concrete: Class I.
   c. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade DH nuts and ASTM F436 Type 1 washers (all galvanized in accordance with ASTM F2329).

2) Shoe Base and Frangible/Breakaway Transformer Base Casting Specifications.
   a. Shoe Base Casting: ASTM B26 - Alloy 356-T6 or ASTM B108 - Alloy 356-T6.
   b. Frangible/Breakaway Transformer Base Casting: ASTM B26 - Alloy 356-T6 or ASTM B108 - Alloy 356-T6.
   c. Shoe Base Connection Bolts: ASTM A325 Type 1 with ASTM A563 Grade DH nuts and ASTM F436 Type 1 washers (all galvanized in accordance with ASTM F2329).

3) Pole Notes:
   a. Tapered as required to provide a top outside diameter (O.D.) of 6" with a base O.D. of 10". Portions of the shaft near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication.
   b. Transverse welds are allowed only at the base.
   c. Poles constructed out of two or more sections with overlapping splices are not permitted.
   d. Equip poles with a vibration damper at locations per Specification Section 715.

MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

1) Foundation Materials:
   a. Reinforcing Steel: ASTM A615 Grade 60.
   b. Concrete: Class I.
   c. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade DH nuts and ASTM A36 Plate Washer or ASTM F436 Type 1 washers (all galvanized in accordance with ASTM F2329). Coupler shall be in accordance with AASHTO 5.11.5.2.2.

2) Base Connection Materials:
   a. Aluminum Base Plate and Stiffener: Alloy 6061-T6.
   b. Backer Ring: ASTM B221, Alloy 6063-T6.
   c. Bearing Plate for Anchor Bolts: ASTM A709 Grade 36 or ASTM A36.

3) Pole Notes:
   a. Tapered as required to provide a 6" (O.D.) round top with a 11"x7" (O.D.) oblong base. Portions of the shaft near the base and at the arm connections may be held constant at 11"x7" oblong and 6" round respectively to simplify fabrication.
   b. Transverse welds are allowed only at the base.
   c. Poles constructed out of two or more sections with overlapping splices are not permitted.
   d. Equip poles with a damping device.

FOUNDATION NOTES

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

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

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

PULL BOX NOTES

1. Fabricate pull boxes from ASTM A 36 steel and hot-dip galvanized in accordance with ASTM A 123 after fabrication. All seams shall be continuously welded and ground smooth. Provide watertight cover with neoprene gasket and secure cover with galvanized screws.
2. Completed pull box and conduit risers are incidental to the cost of concrete barrier wall.

NOTES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	DYW	Changed 'ROADWAY ALUMINUM LIGHTING POLE NOTES' Note 3) d.			

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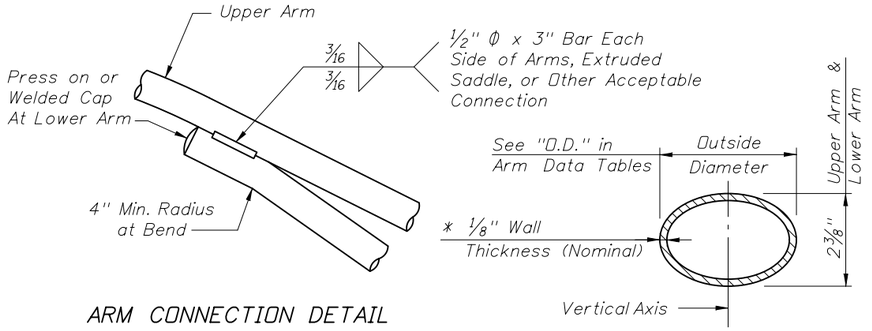
STANDARD ALUMINUM LIGHTING

Interim Date 01/01/10

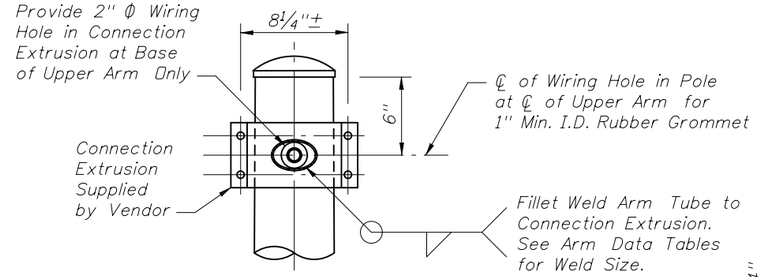
Sheet No. 2 of 8

Index No. 17515



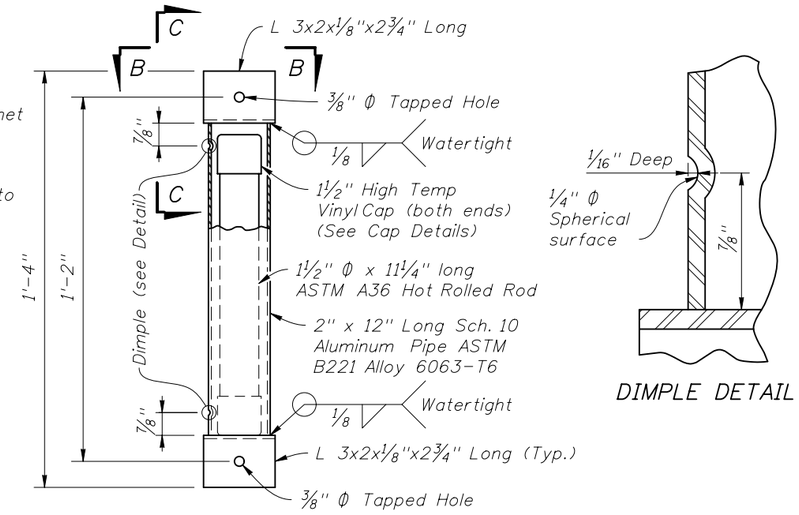
ARM CONNECTION DETAIL

ARM SECTION



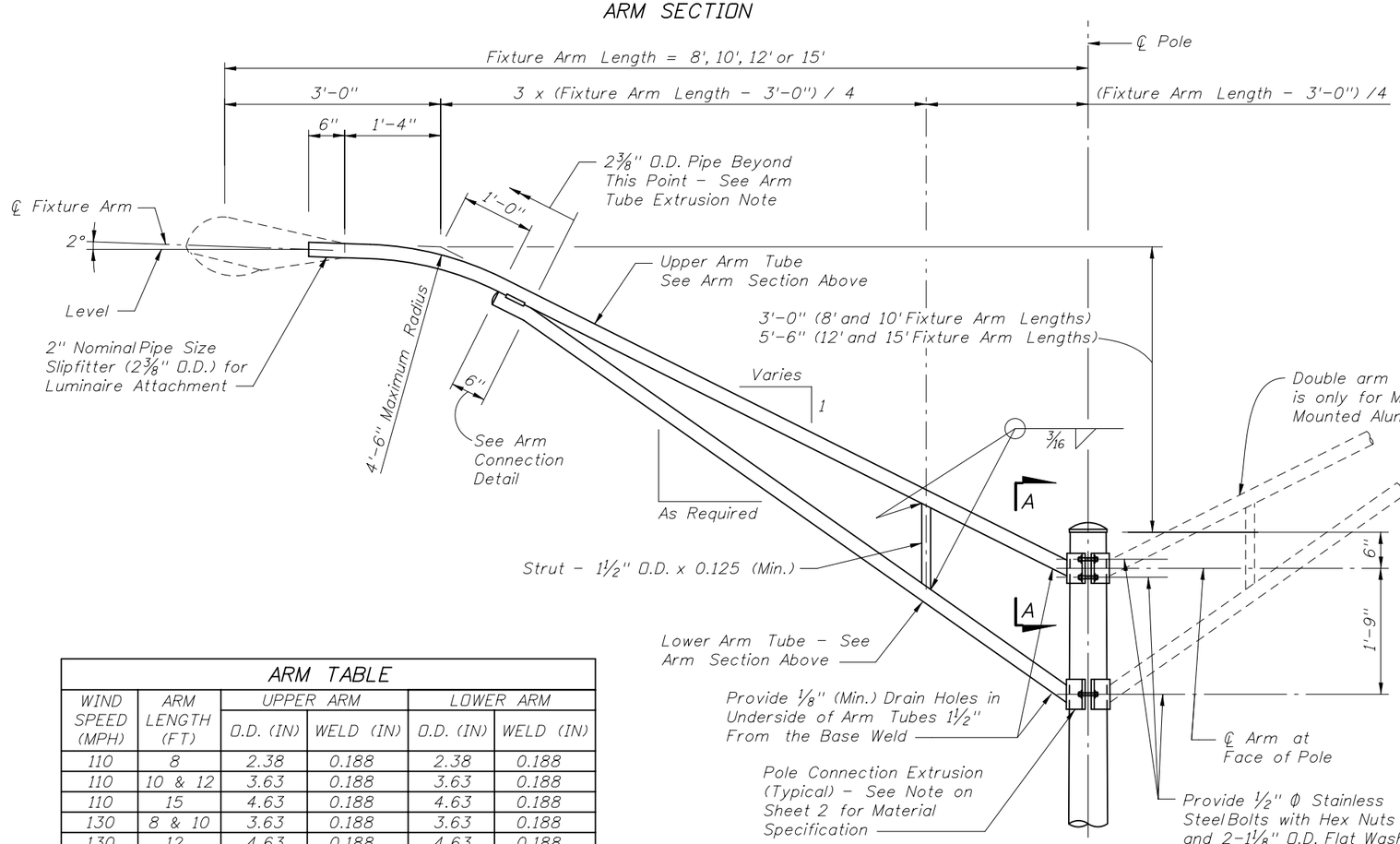
SECTION A-A

(Connection At Lower Arm Similar)

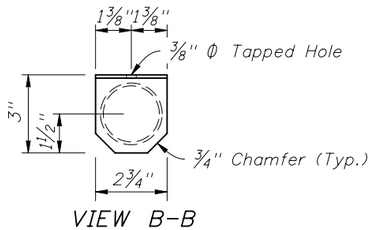


VIBRATION DAMPER ELEVATION

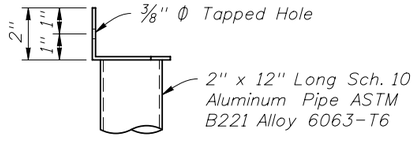
DIMPLE DETAIL



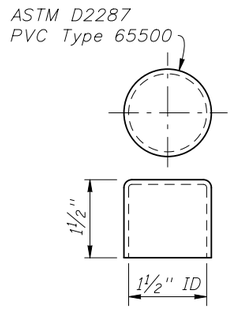
ARM ELEVATION



VIEW B-B



VIEW C-C



HIGH TEMP VINYL CAP DETAIL

Double arm configuration is only for Median Barrier Mounted Aluminum Light Poles

ARM TABLE					
WIND SPEED (MPH)	ARM LENGTH (FT)	UPPER ARM		LOWER ARM	
		O.D. (IN)	WELD (IN)	O.D. (IN)	WELD (IN)
110	8	2.38	0.188	2.38	0.188
110	10 & 12	3.63	0.188	3.63	0.188
110	15	4.63	0.188	4.63	0.188
130	8 & 10	3.63	0.188	3.63	0.188
130	12	4.63	0.188	4.63	0.188
130	15	4.63	0.25	4.63	0.25
150	8	3.63	0.188	3.63	0.188
150	10	3.63	0.250	3.63	0.250
150	12	4.63	0.250	4.63	0.250
150	15	4.63	0.313	4.63	0.313

* Increase Member Wall Thickness as Necessary to Meet Minimum Requirements of the Welding Code for the Connection Weld Sizes Shown in the Arm and Pole Tables.

ARM TUBE EXTRUSIONS NOTES:

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

The fabricator may substitute elliptical cross sections other than those tabulated, provided the section properties about the vertical axis and the area of the section equal or exceed that of the required section, and provide minimum wall thickness of 1/8" nominal and within the Aluminum Association Tolerances.

The outside diameter about the minor axis should be held at 2 3/8" at the upper and lower arms.

ARM & DAMPER DETAILS

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	DYW	Changed Fixture Arm Length and added Damper Details			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

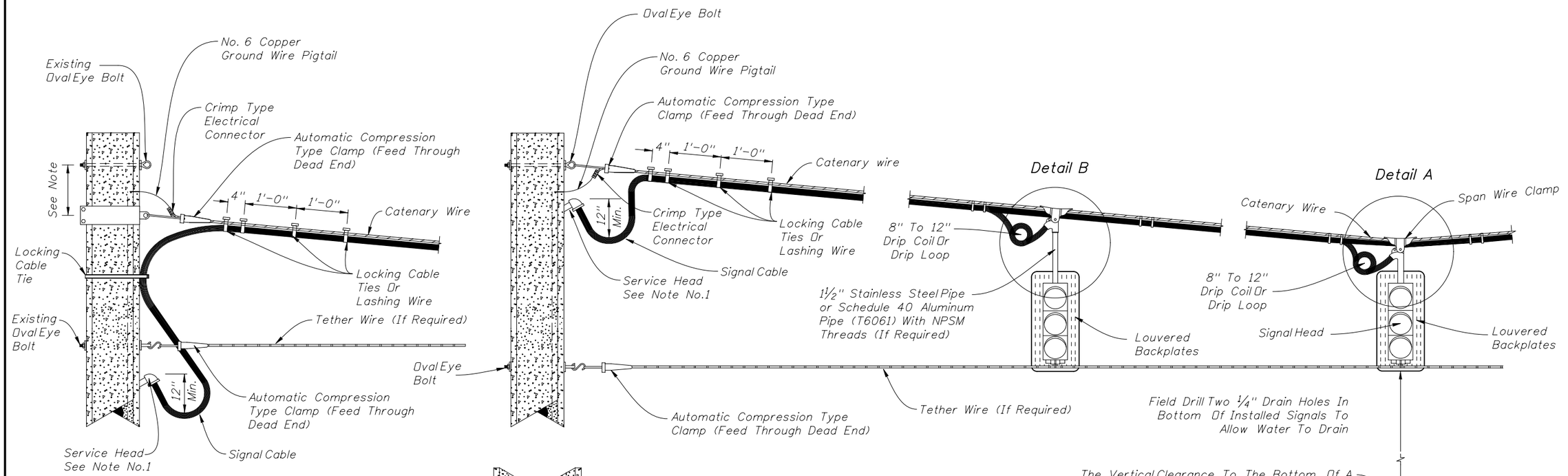
2010 Interim Design Standard

STANDARD ALUMINUM LIGHTING

Interim Date 01/01/10

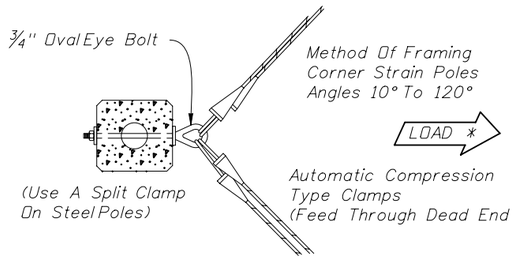
Sheet No. 3 of 8

Index No. 17515

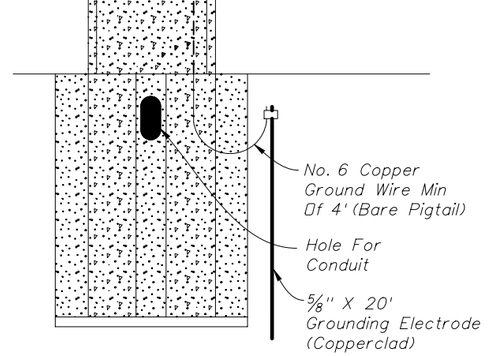


RETROFIT INSTALLATION

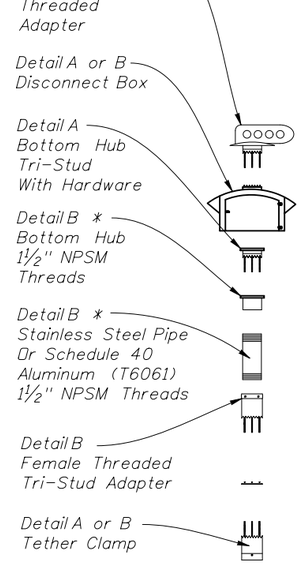
Note:
Clamp location shall be adjusted to compensate for reduced sag and vertical clearance to bottom of signal head.



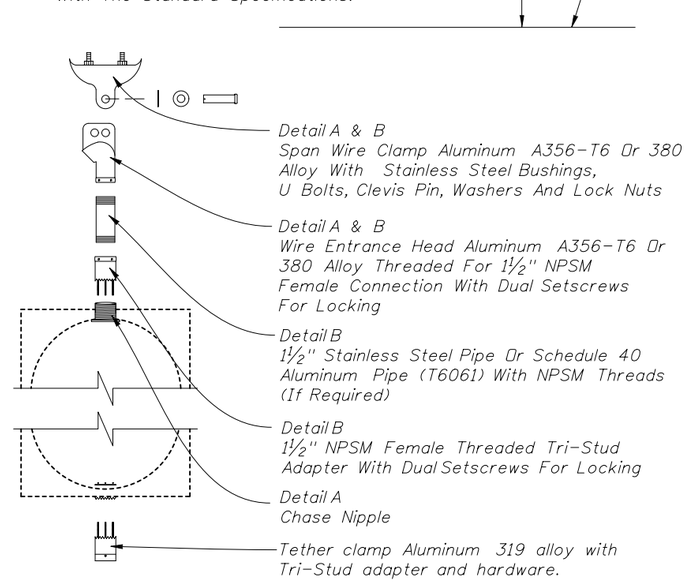
* The load face of pole shall be perpendicular to load.



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.			

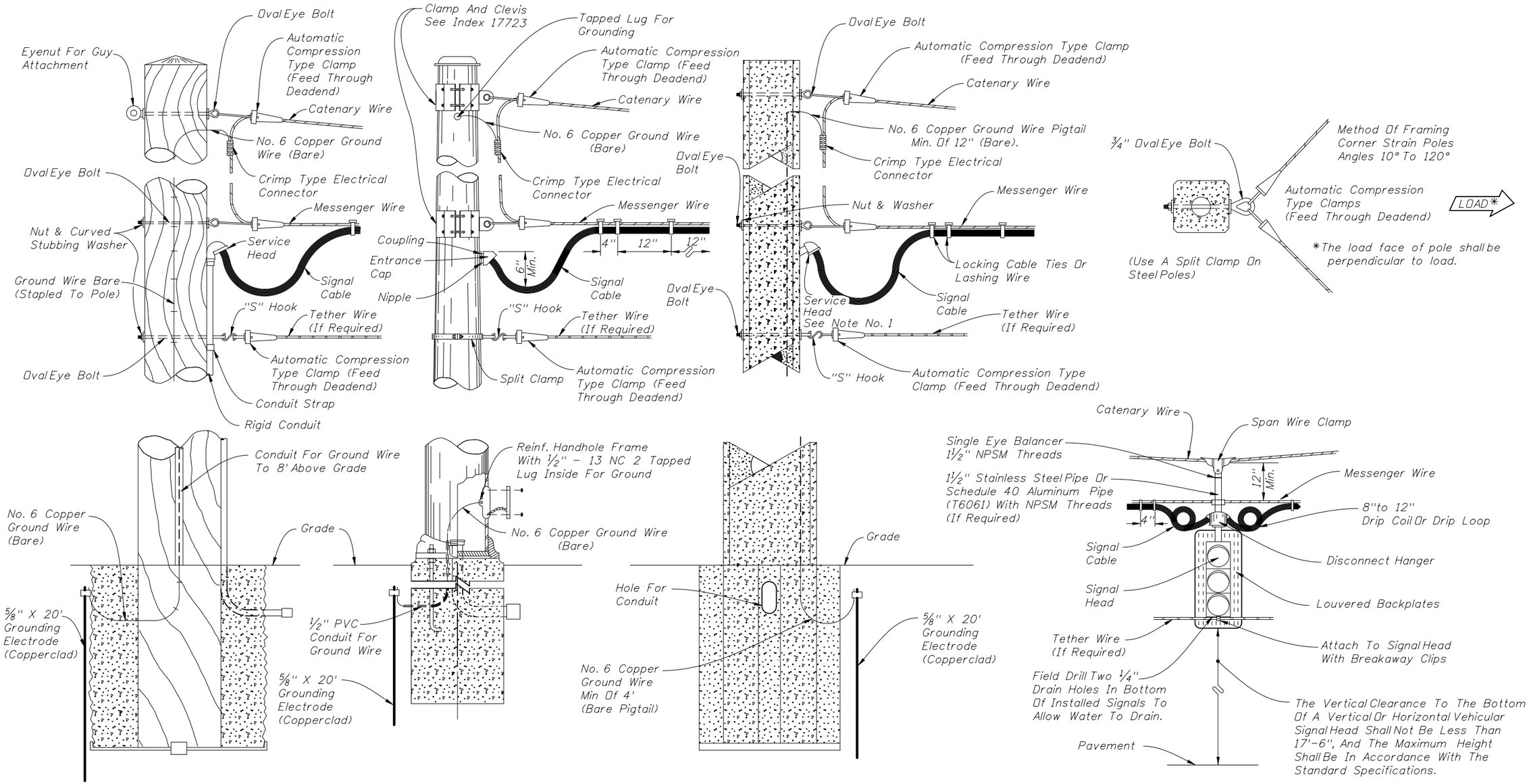
2010 Interim Design Standard

SIGNAL CABLE & SPAN WIRE INSTALLATION DETAILS

Interim Date 01/01/10

Sheet No. 1 of 2

Index No. 17727



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

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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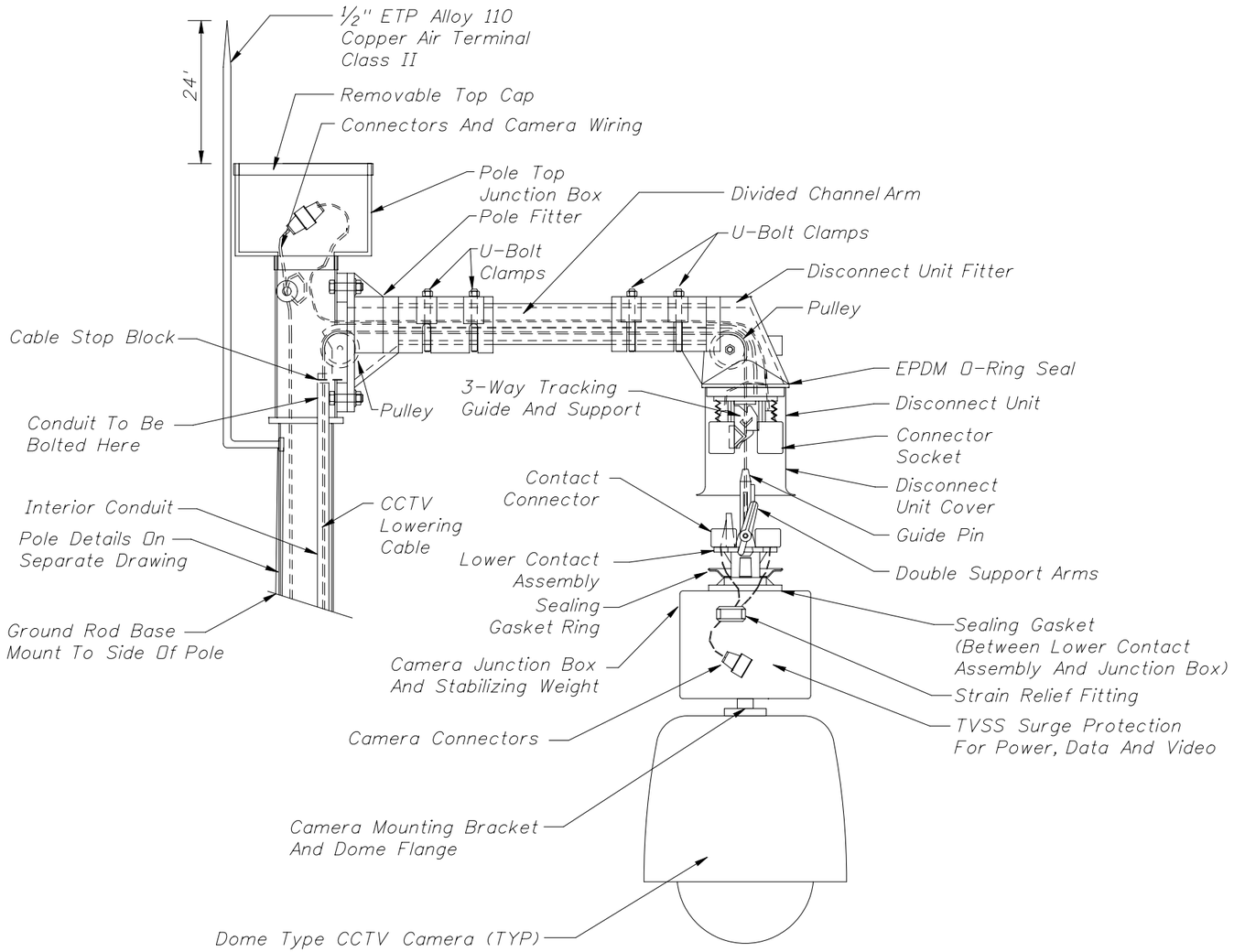
SIGNAL CABLE & SPAN WIRE INSTALLATION DETAILS

Interim Date 01/01/10

Sheet No. 2 of 2

Index No. 17727



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's 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

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			

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CAMERA MOUNTING DETAILS

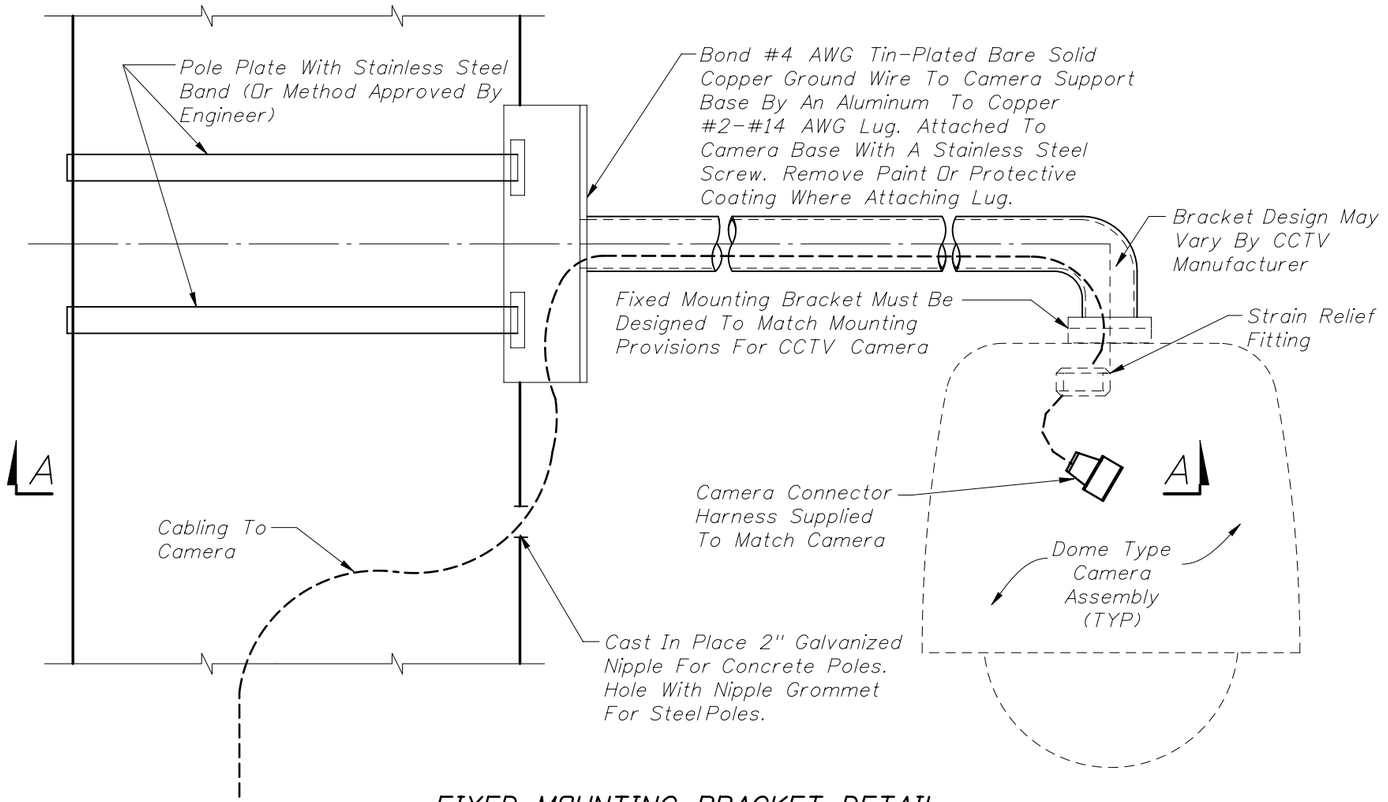
Interim Date: 01/01/10

Sheet No.: 1 of 2

Index No.: 18110

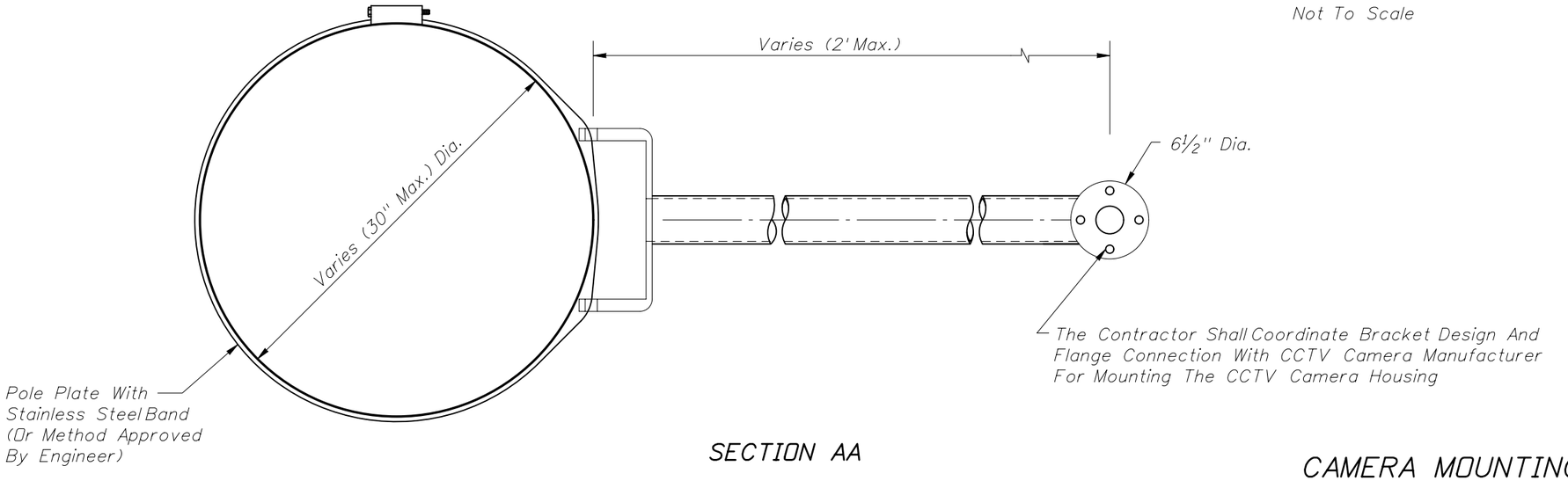
GENERAL NOTES:

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."			

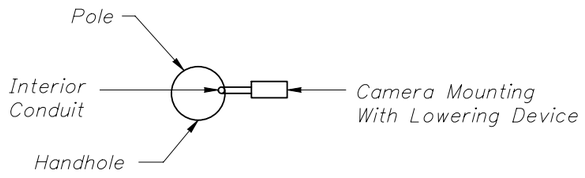
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

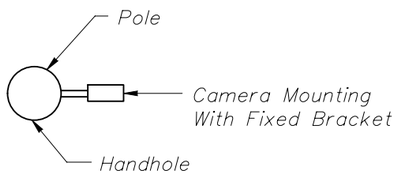
CAMERA MOUNTING DETAILS

Interim Date	Sheet No.
01/01/10	2 of 2

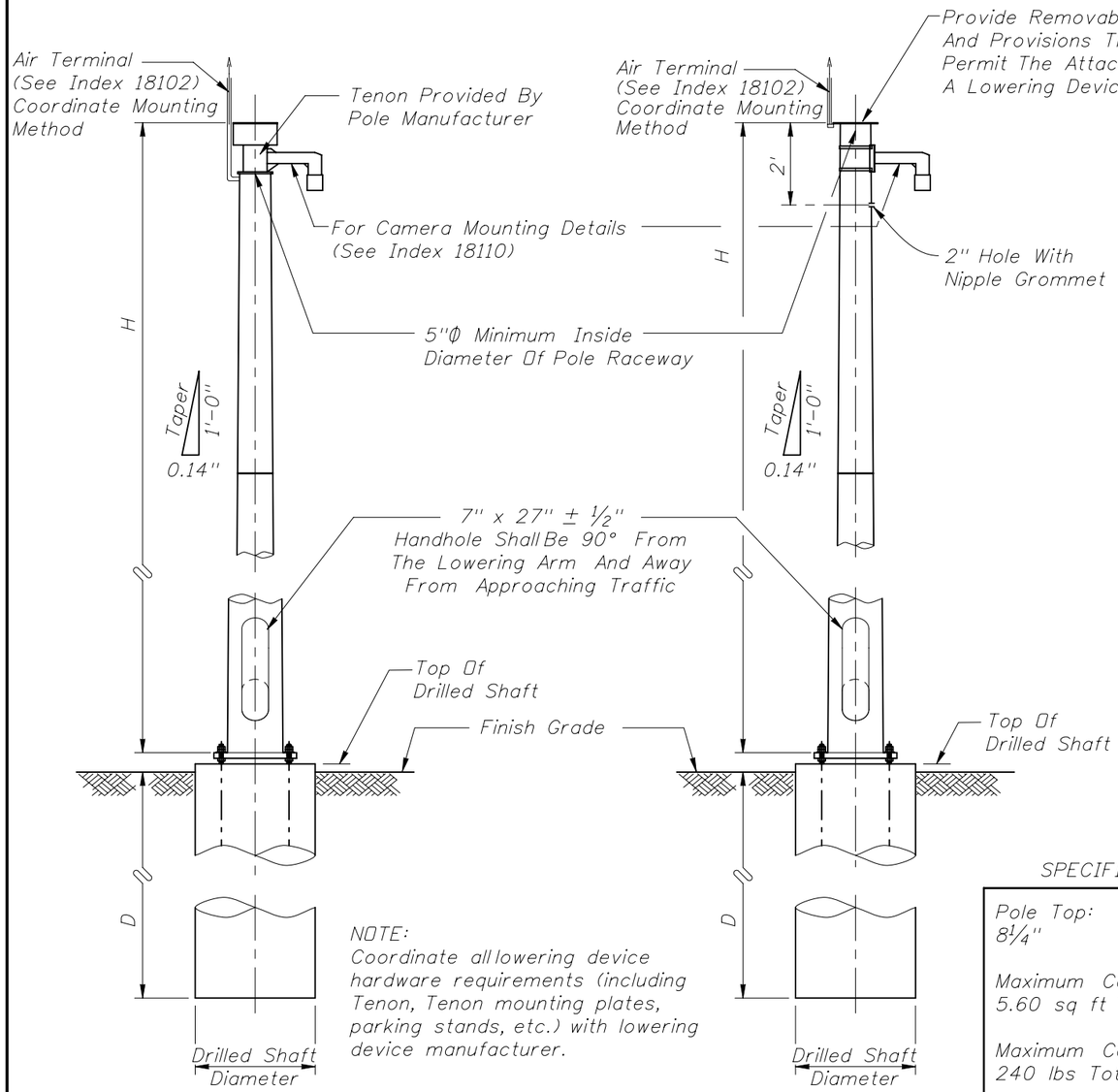
Index No. 18110



ORIENTATION VIEW



ORIENTATION VIEW



WITH LOWERING DEVICE

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

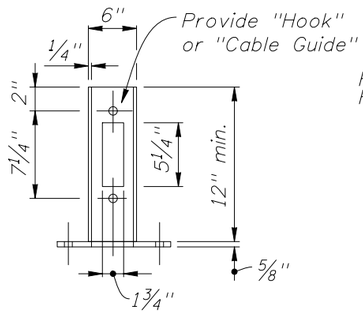
WITHOUT LOWERING DEVICE

SPECIFICATIONS:

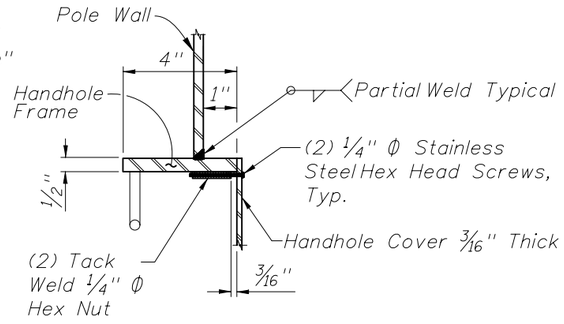
Pole Top:
8¼"

Maximum Camera EPA:
5.60 sq ft Total

Maximum Camera Weight:
240 lbs Total

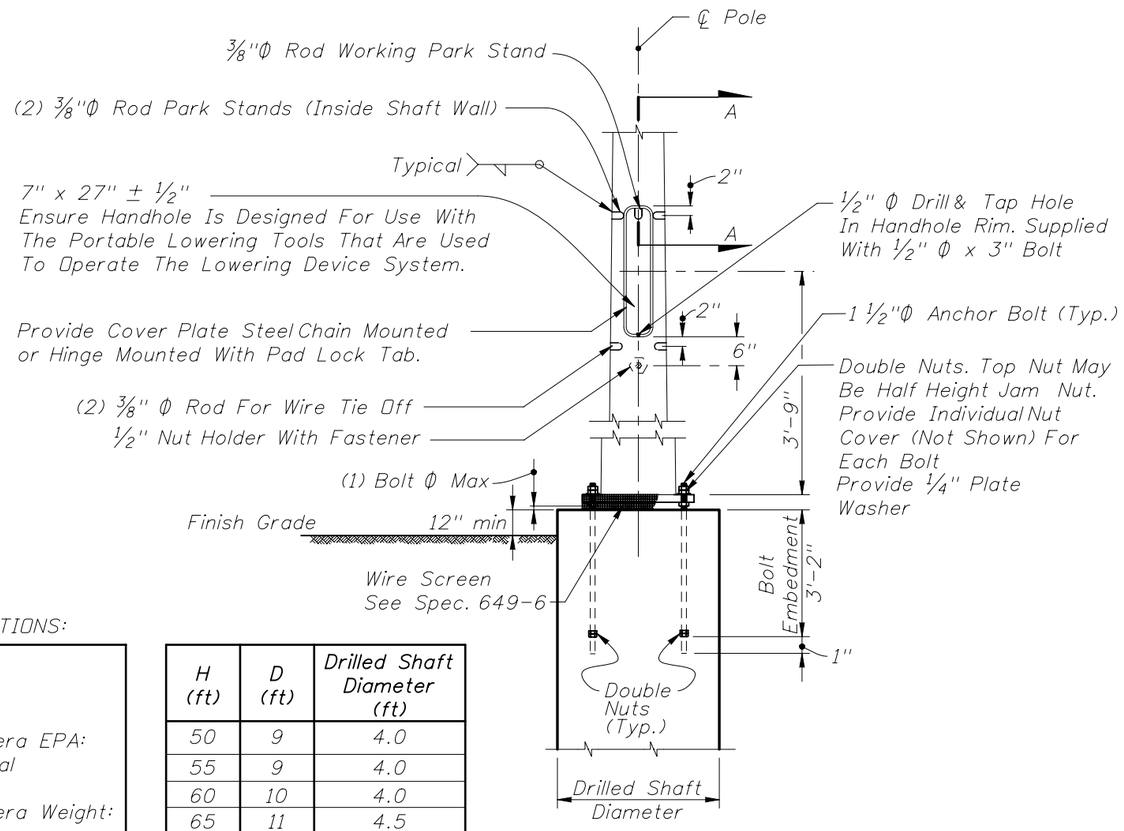


TENON DETAIL



SECTION A-A

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.			
12/15/09	DYW	FOUNDATION AND HANDHOLE DETAIL, added anchor bolt design.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

STEEL CCTV POLE

Interim Date: 01/01/10

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. All other areas, size the partial penetration welds to at least 60% of the pole tube thickness.
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 CSL 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.			
12/15/09	DYW	Updated pole seam weld requirements.			

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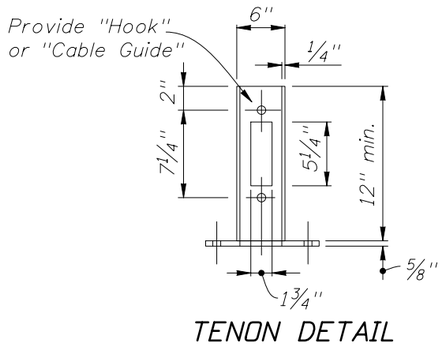
STEEL CCTV POLE

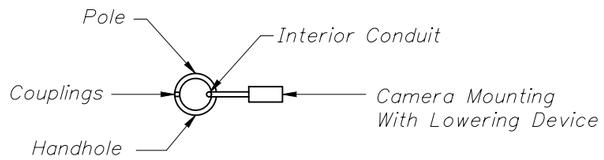
Interim Date 01/01/10

Sheet No. 2 of 2

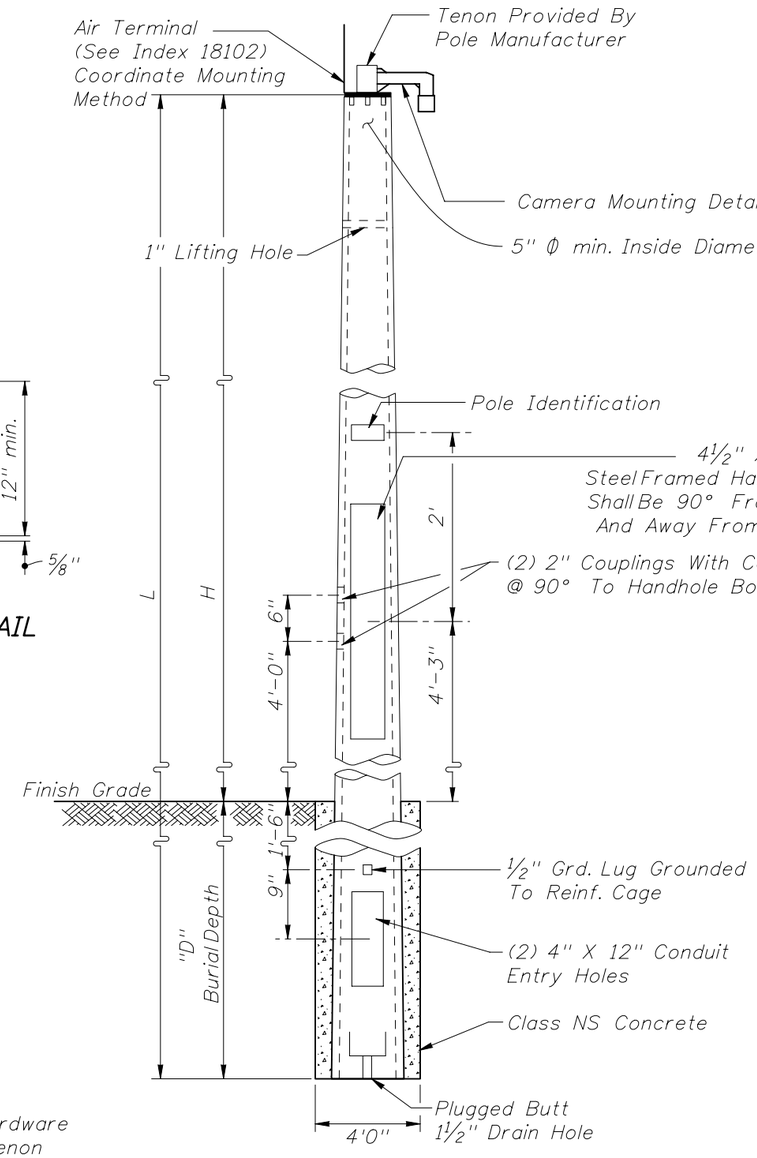
Index No. 18111



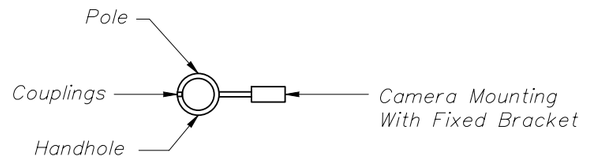
TENON DETAIL



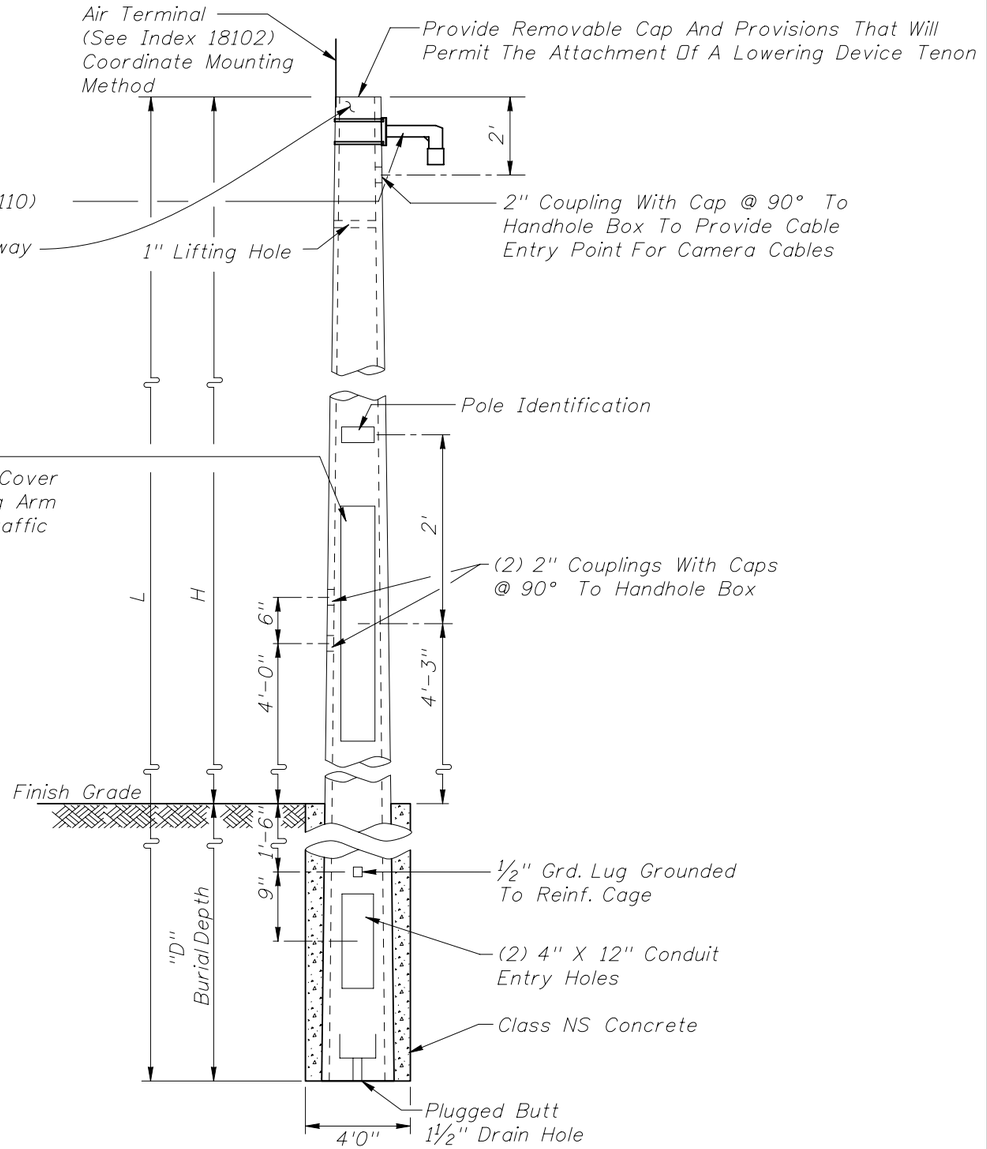
ORIENTATION VIEW



WITH LOWERING DEVICE



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.			

2010 Interim Design Standard

CONCRETE CCTV POLE

Interim Date 01/01/10

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:

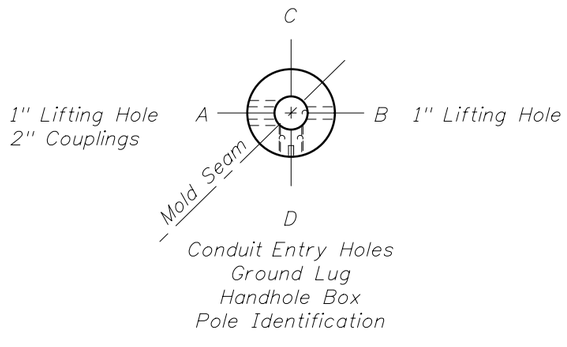
Design tenon dimensions to facilitate lowering device component installation. Locate slots parallel to the pole centerline for mounting the lowering device. Bolt a tenon to the pole top with mounting holes and slot as required for the mounting of the lowering device.

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.

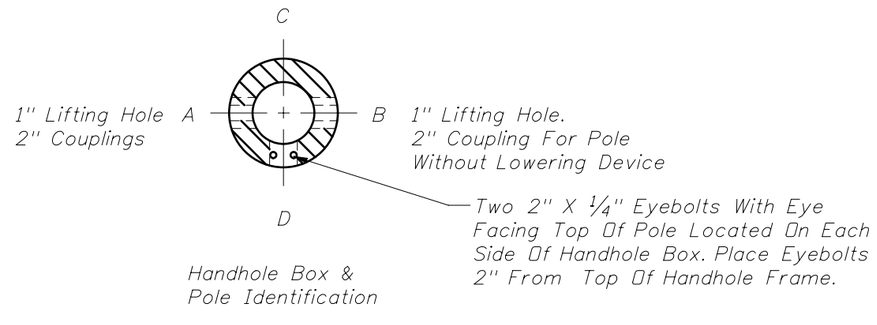
Mount lowering arm perpendicular to the roadway or as shown in the plans. Position CCTV pole so that the camera can be safely lowered without requiring lane closures.

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

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/09	RM	Sheet competely revised			

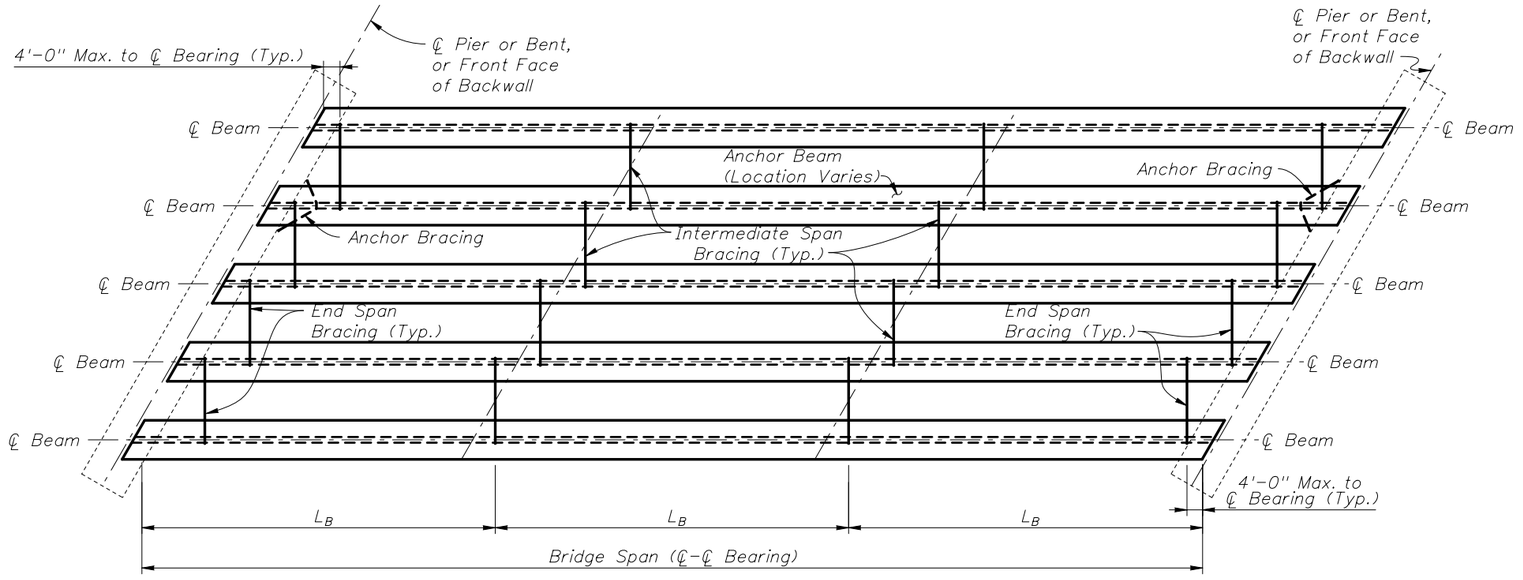
2010 Interim Design Standard

CONCRETE CCTV POLE

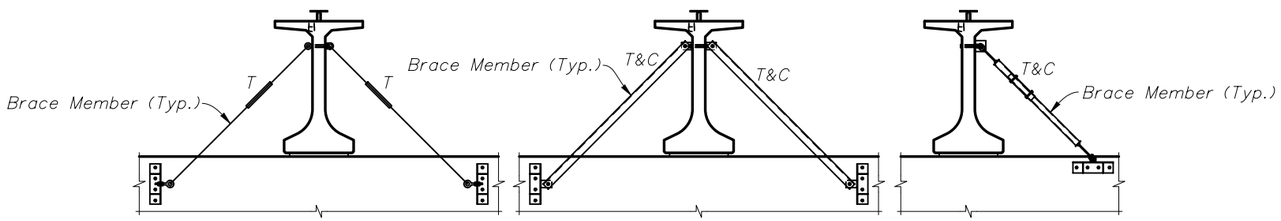
Interim Date 01/01/10

Sheet No. 2 of 2

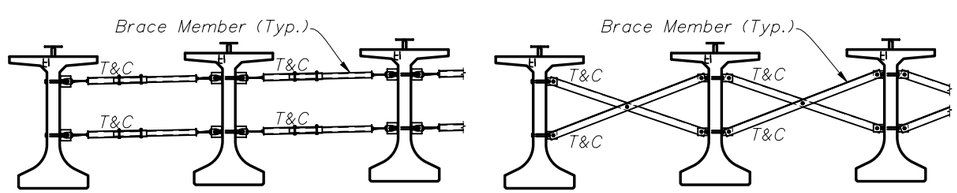
Index No. 18113



PRESTRESSED BEAM TEMPORARY BRACING PLAN VIEW
(Skewed Condition Shown, Non-skewed Condition Similar)



EXAMPLE ANCHOR BRACING TYPICAL SECTIONS
(Beam Ends Only)



EXAMPLE END SPAN/INTERMEDIATE BRACING TYPICAL SECTIONS

NOTES:

1. *The 'PRESTRESSED BEAM TEMPORARY BRACING PLAN' is to be used in conjunction with the 'TABLE OF TEMPORARY BRACING VARIABLES' in the Structures Plans. The brace locations and quantities shown in the plan view are schematic only, and the actual brace locations and quantities should be determined from the 'TABLE OF TEMPORARY BRACING VARIABLES' in the Structures Plans.*

2. *The bracing members shown in the sections are schematic only, and are meant to show geometry in which bracing should be placed. The bracing members and connections shall be designed and detailed by the Contractor. Any of the geometric configurations shown in the bracing sections are acceptable. The bracing may be attached through the web or to the flanges of the beam, as necessary. The bracing shall be positively and securely connected to each beam, and shall not be designed to exert any vertical force on the outer edge of the top flange. All bolt holes in beams are to be preformed and filled after use. All bracing is to be placed perpendicular to beams.*

3. *The anchor beam is a beam which has anchor bracing at its support locations. It is to be set first, and its location may vary. All subsequent beams are to be braced against the Anchor Beam sequentially. The Anchor brace may be located at an exterior girder provided that all required bolt clear distances are met and overhang bracing is not impacted. Anchor bracing may be inclined, as shown in the plan view, or may be installed vertically.*

4. *Overhang bracing requirements are neither specified here nor in the 'TABLE OF TEMPORARY BRACING VARIABLES.' It is the Contractor's responsibility to design overhang bracing which does not cause excessive deflection or rotation of the exterior girder, or cause the girder stresses to exceed stress limits per the FDOT Structures Manual.*

5. *The Contractor shall submit documentation required by the Specifications for Road and Bridge Construction, Section 5 for 'Beam and Girder Temporary Bracing.' If the Contractor elects to use the bracing requirements shown in the 'TABLE OF TEMPORARY BRACING VARIABLES,' the documentation shall include signed and sealed certification that the construction loads do not exceed those shown in the 'TABLE OF ASSUMED CONSTRUCTION LOADS' and signed and sealed design of bracing members and connections. If the Contractor elects to use a bracing scheme different from those shown in the 'TABLE OF TEMPORARY BRACING VARIABLES,' the documentation shall include signed and sealed calculation of the bracing requirements and design of bracing members and connections.*

LEGEND:

T = Tension Member
T&C = Tension & Compression Member

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

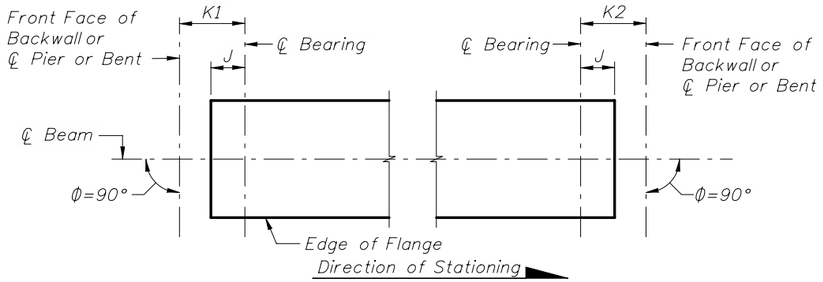
2010 Interim Design Standard

PRESTRESSED BEAM TEMPORARY BRACING

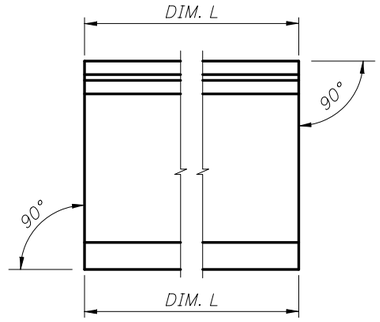
Interim Date 01/01/10

Sheet No. 1 of 1

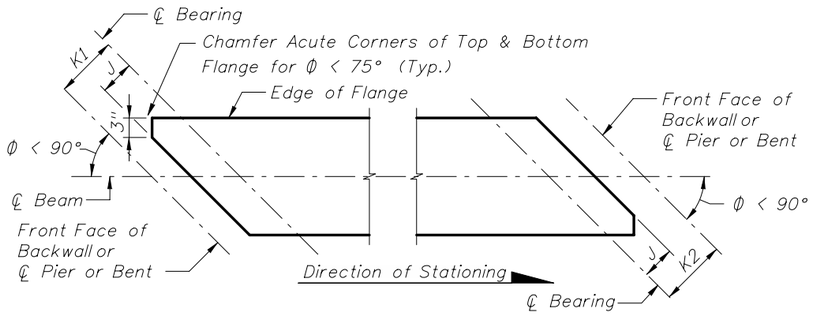
Index No. 20005



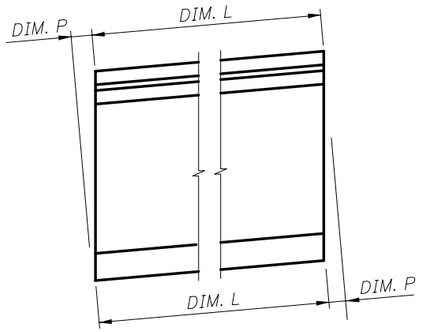
CASE 1



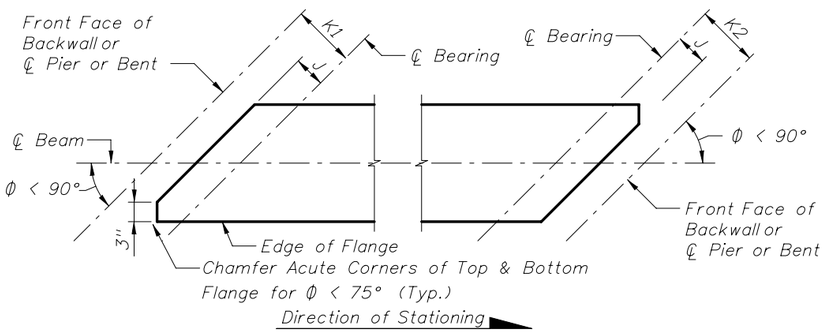
CONDITION 1
(P = 0.0)



CASE 2

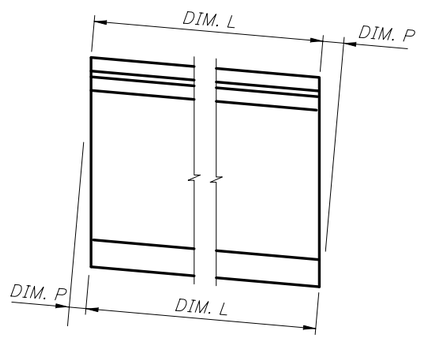


CONDITION 2



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 or later
Florida-I 45	1670 Kips	20045	07/01/09 or later
Florida-I 54	1740 Kips	20054	07/01/09 or later
Florida-I 63	1740 Kips	20063	07/01/09 or later
Florida-I 72	1980 Kips	20072	07/01/09 or later
Florida-I 78	2230 Kips	20078	07/01/09 or later

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
01/01/10	SJN	New Design Standard			

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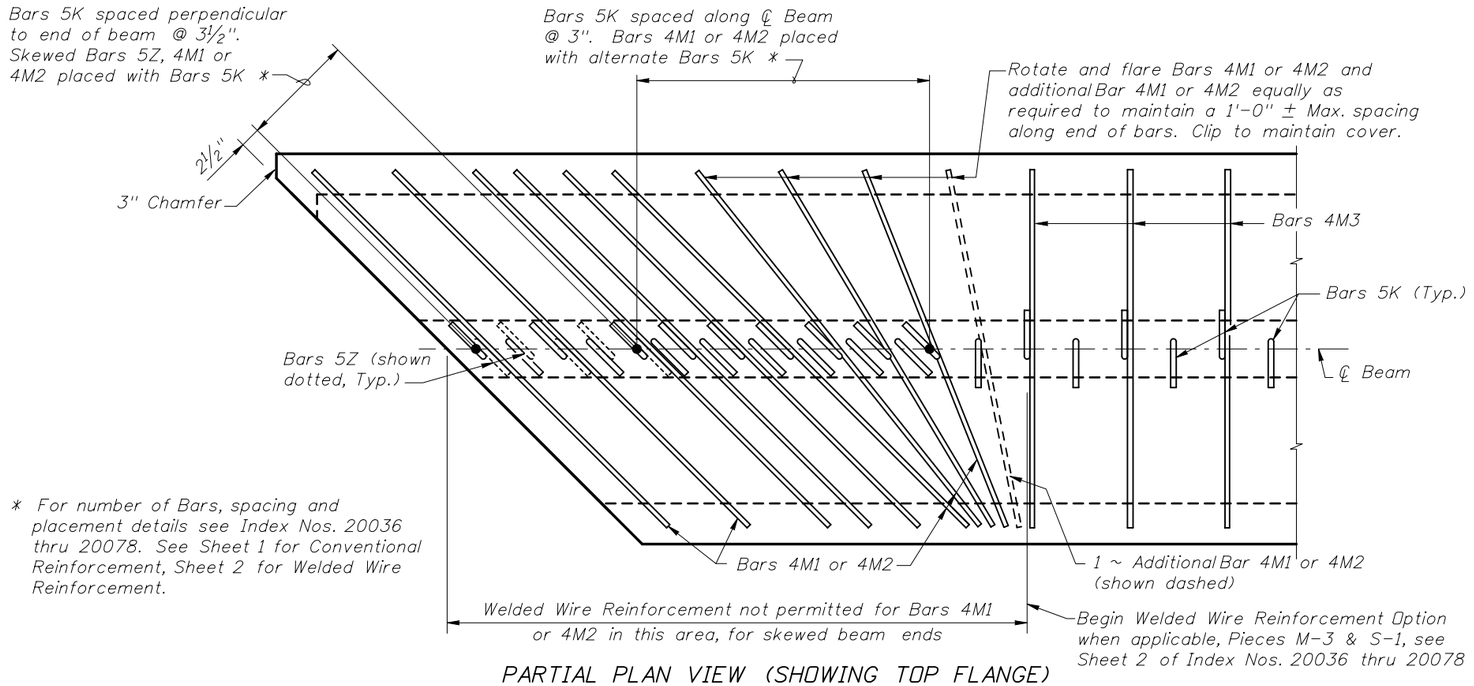
TYPICAL FLORIDA-I BEAM DETAILS AND NOTES

Interim Date 01/01/10

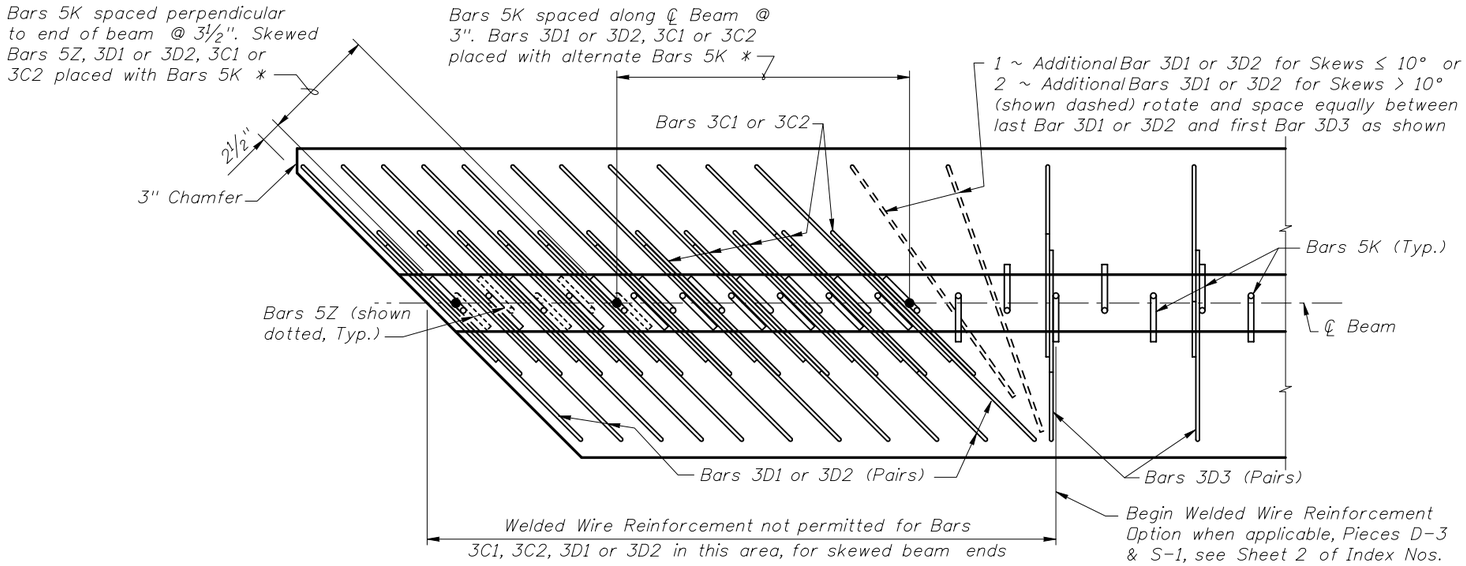
Sheet No. 1 of 2

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.

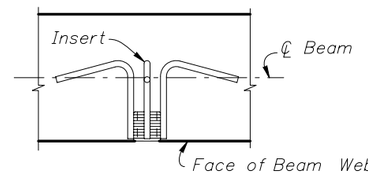
PARTIAL PLAN VIEW (SHOWING TOP FLANGE)
(End 1 Shown, End 2 Similar)
(Bars 5A, 4L, 5Y & Strands N not shown for clarity)



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
01/01/10	SJN	New Design Standard			

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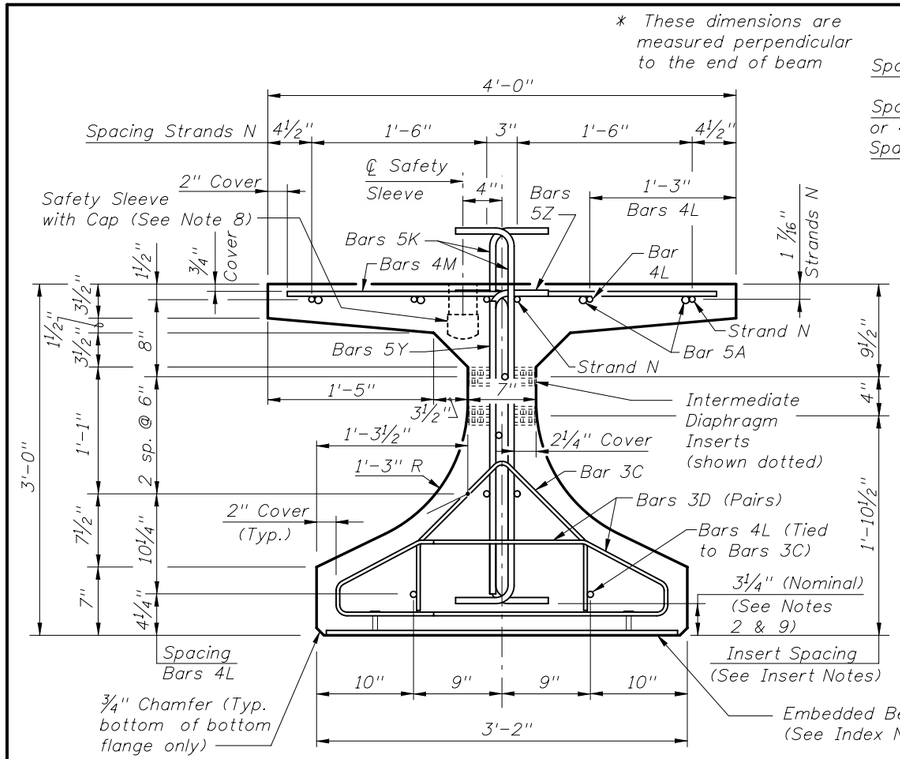
TYPICAL FLORIDA-I BEAM DETAILS AND NOTES

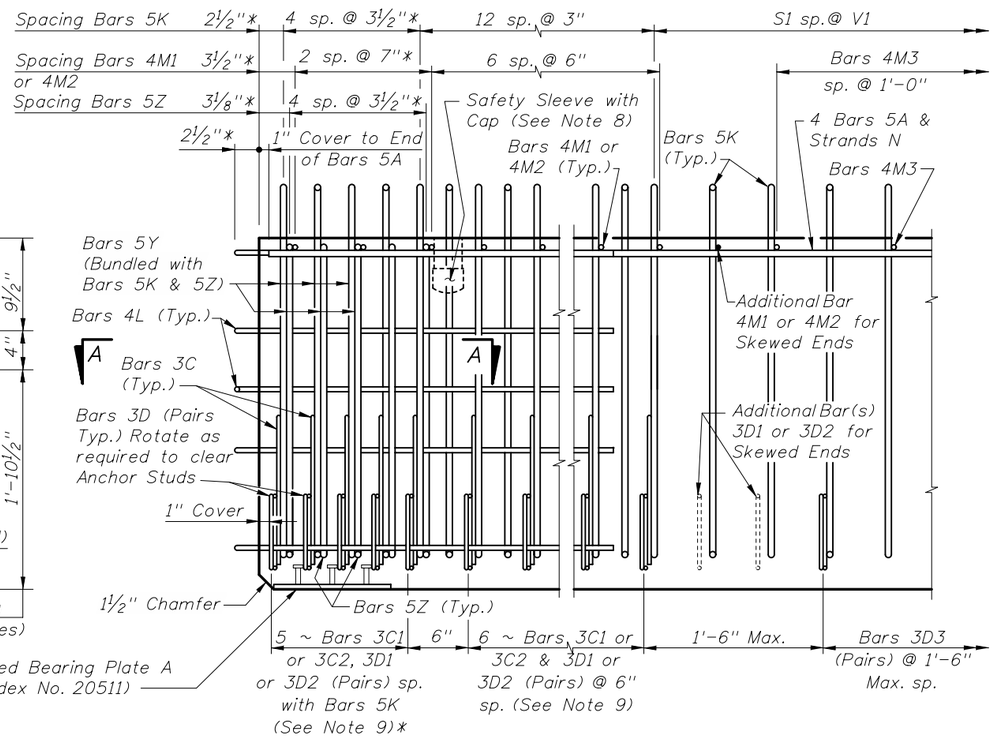
Interim Date 01/01/10

Sheet No. 2 of 2

Index No. 20010



END VIEW



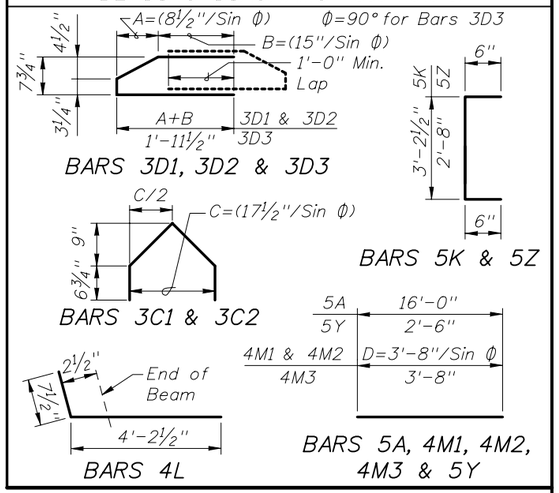
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

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)

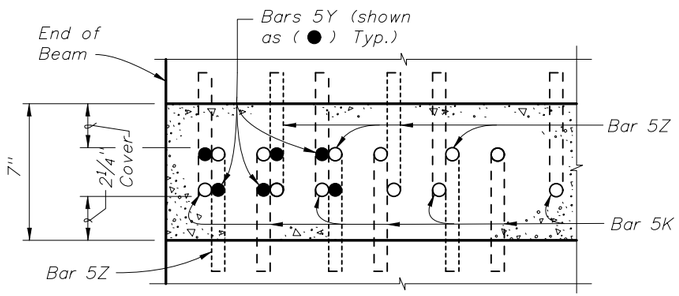


NOTES:

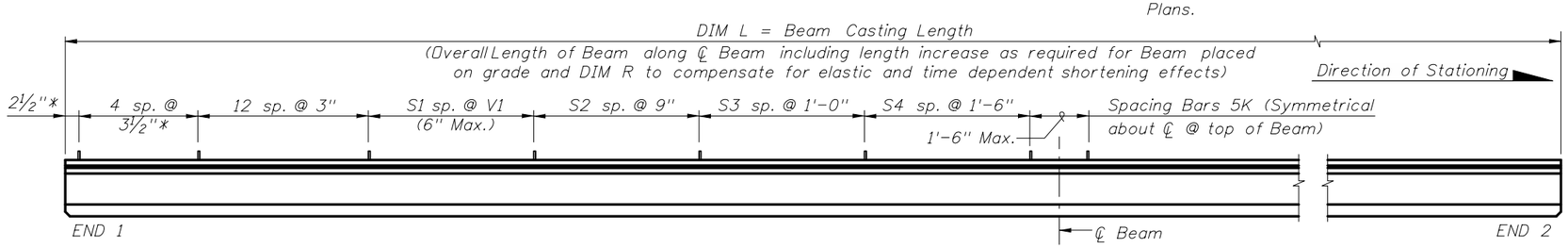
A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.

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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

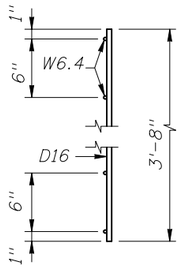
FLORIDA-I 36 BEAM - STANDARD DETAILS

Interim Date 01/01/10

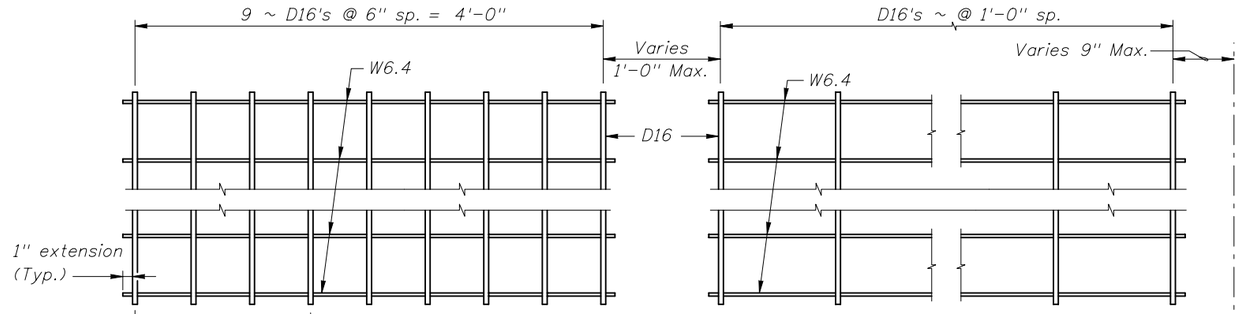
Sheet No. 1 of 2

Index No. 20036

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

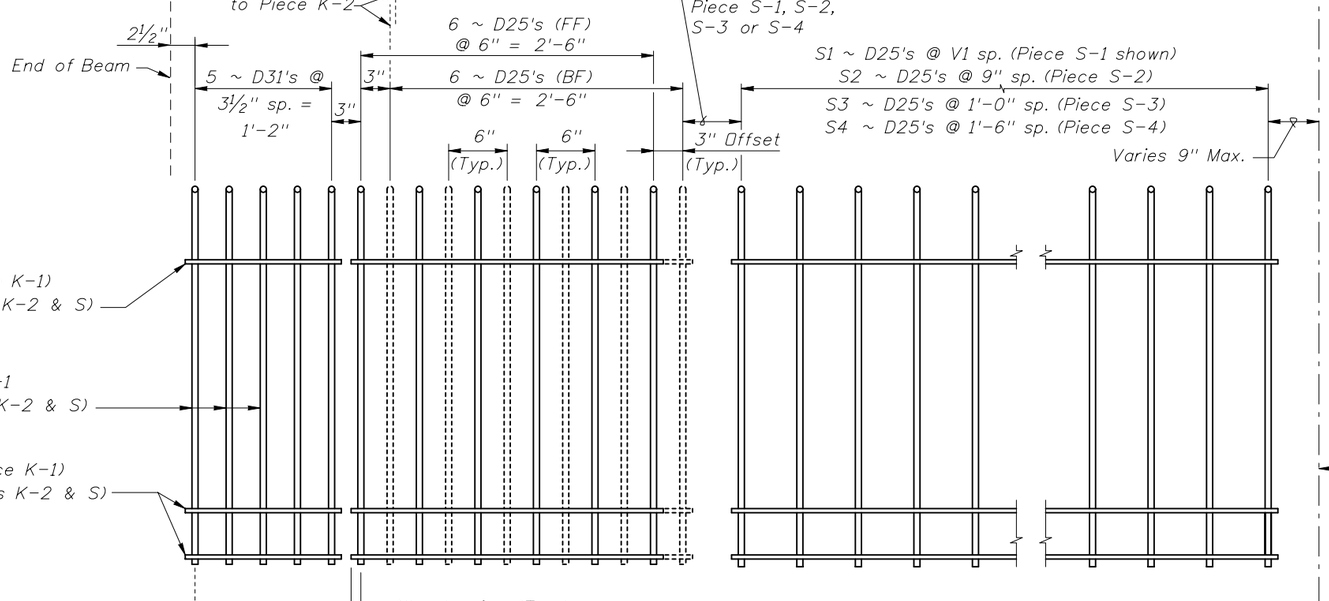


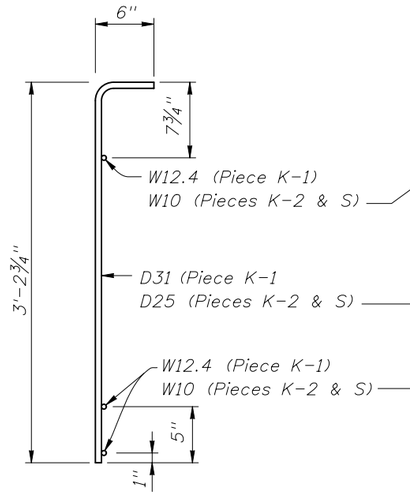
PIECES M
END VIEW



PLAN VIEW
PIECE M-1
(2 Required)

PLAN VIEW
PIECE M-3
(2 Required)



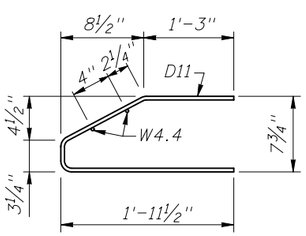


PIECES K & S
END VIEW

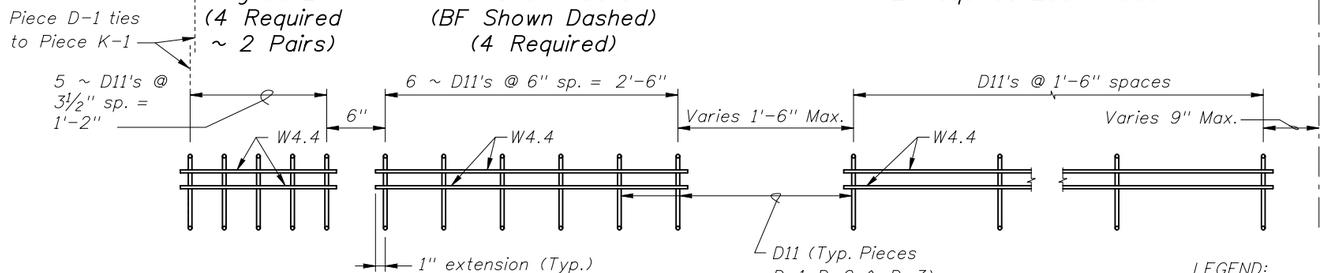
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

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

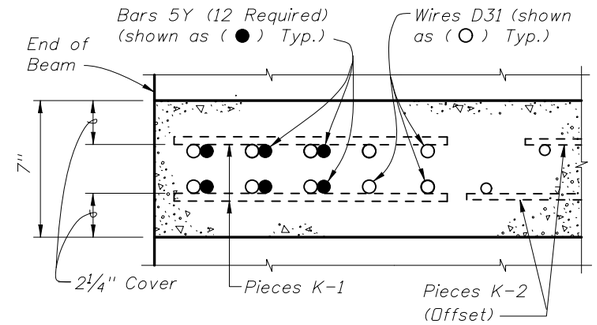


PIECE D-1
(4 Required ~ 2 Pairs)

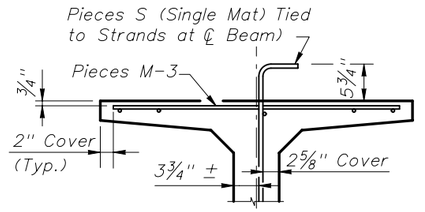
PIECE D-2
(4 Required ~ 2 Pairs)

PIECE D-3
(4 Required ~ 2 Pairs)

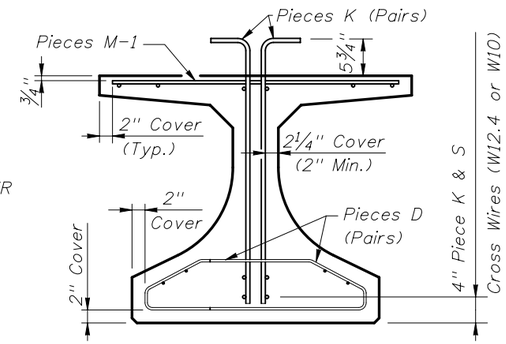
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face



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
01/01/10	RMS	New Design Standard			

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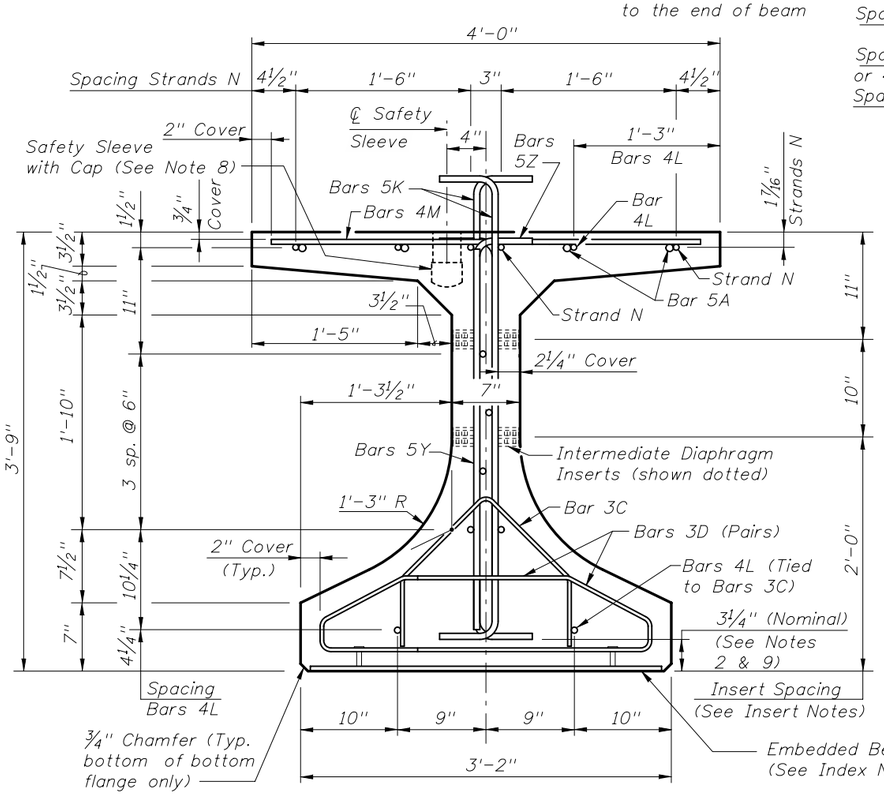
FLORIDA-I 36 BEAM - STANDARD DETAILS

Interim Date 01/01/10

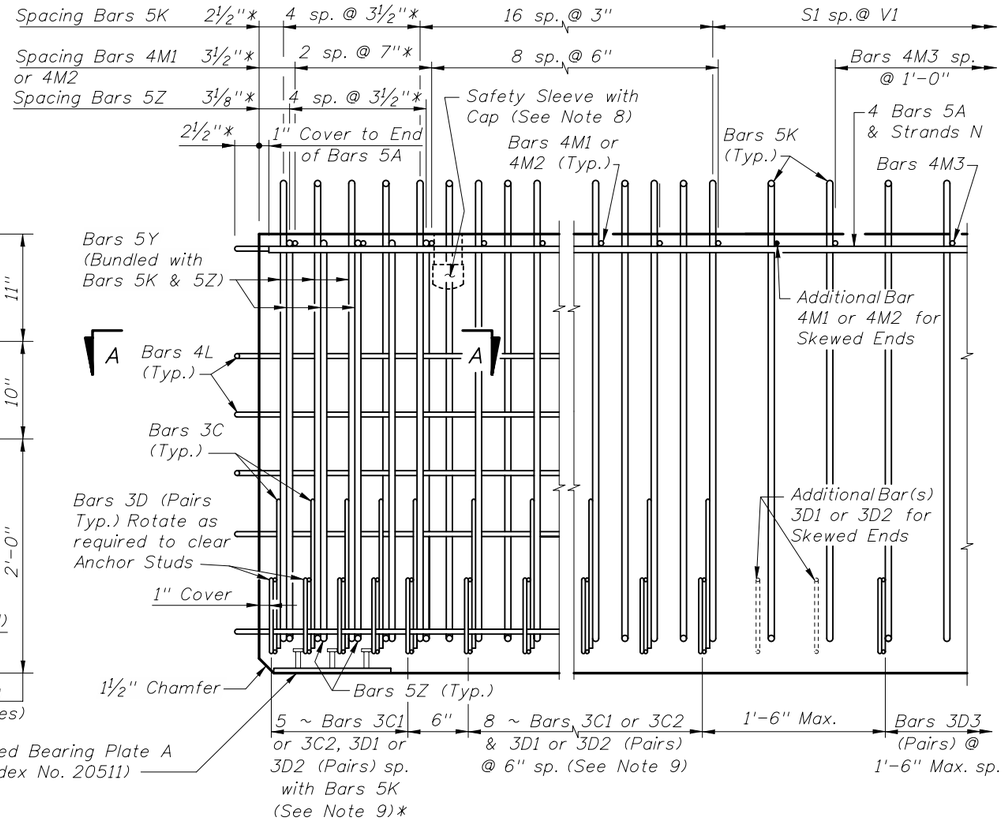
Sheet No. 2 of 2

Index No. 20036

* These dimensions are measured perpendicular to the end of beam



END VIEW



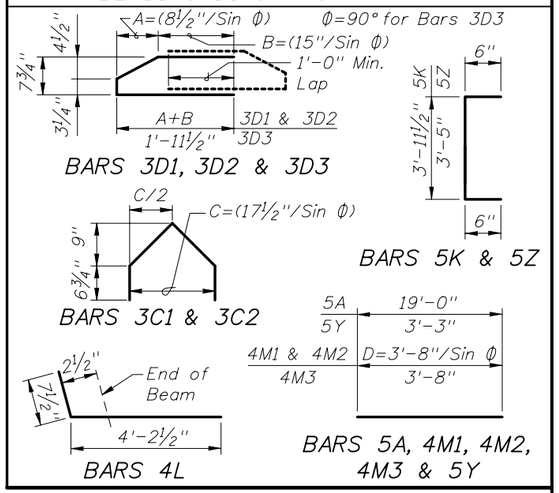
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

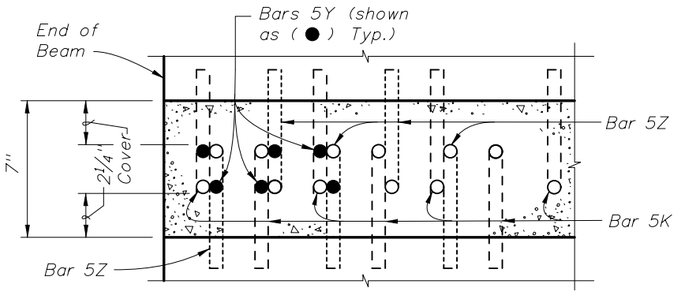
BILL OF REINFORCING STEEL

MARK	NOTE NUMBERS	SIZE	NUMBER REQUIRED	LENGTH (NOTE 1)
A	—	5	8	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"

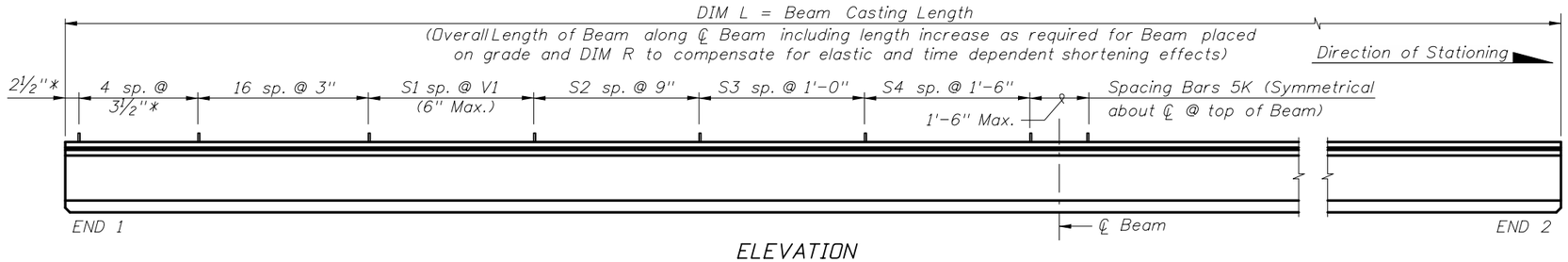
BENDING DIAGRAMS (See Note 1)



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
01/01/10	RMS	New Design Standard			

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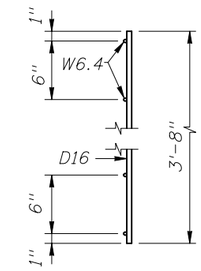
FLORIDA-I 45 BEAM - STANDARD DETAILS

Interim Date 01/01/10

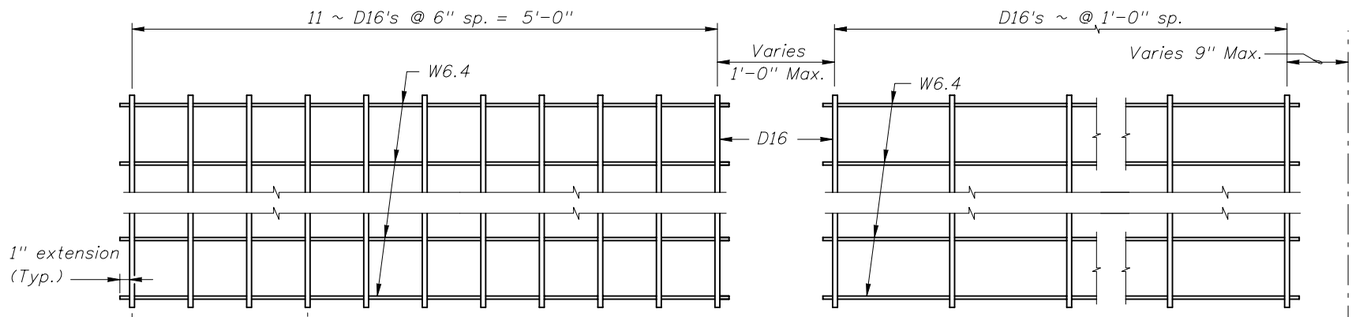
Sheet No. 1 of 2

Index No. 20045

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

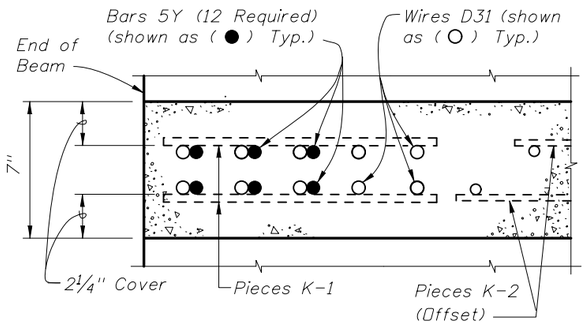


PIECES M
END VIEW

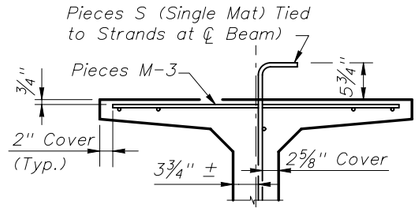


PLAN VIEW
PIECE M-1
(2 Required)

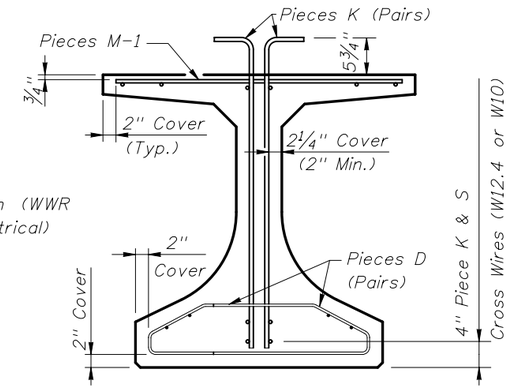
PLAN VIEW
PIECE M-3
(2 Required)



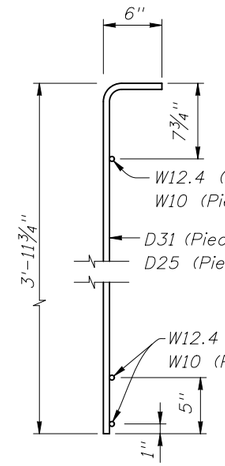
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



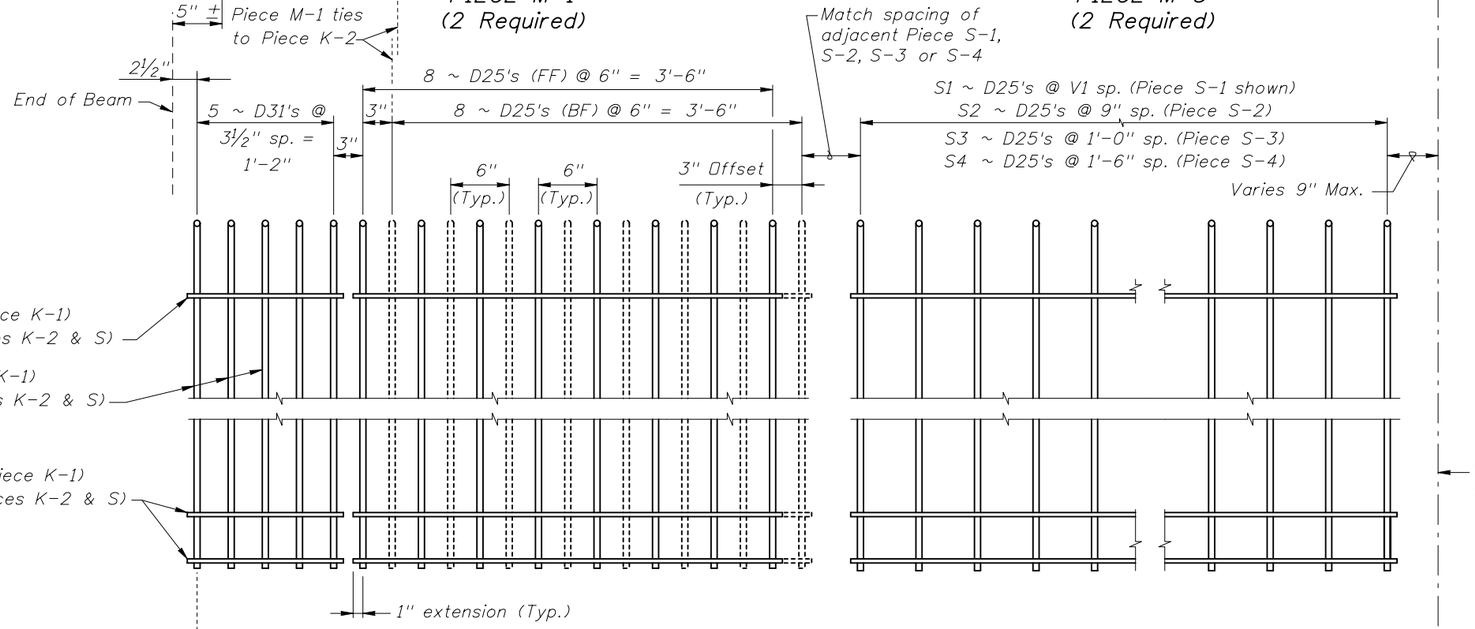
PARTIAL SECTION AT CENTER BEAM



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



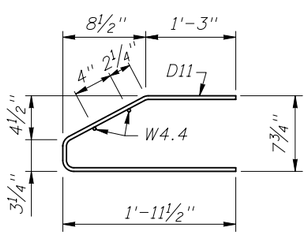
PIECES K & S
END VIEW



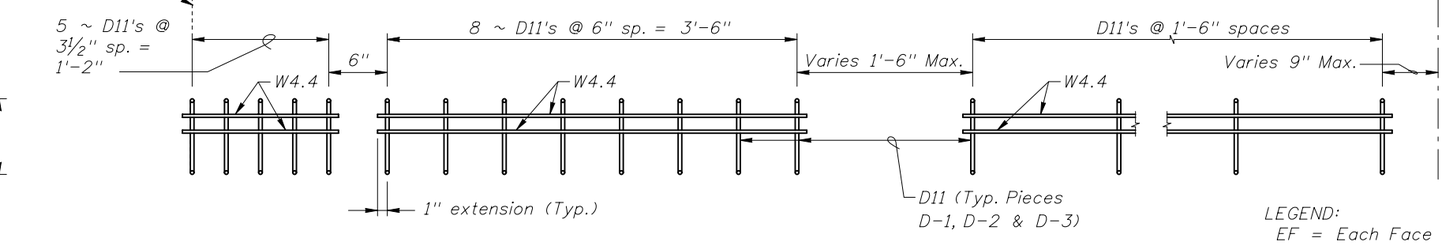
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

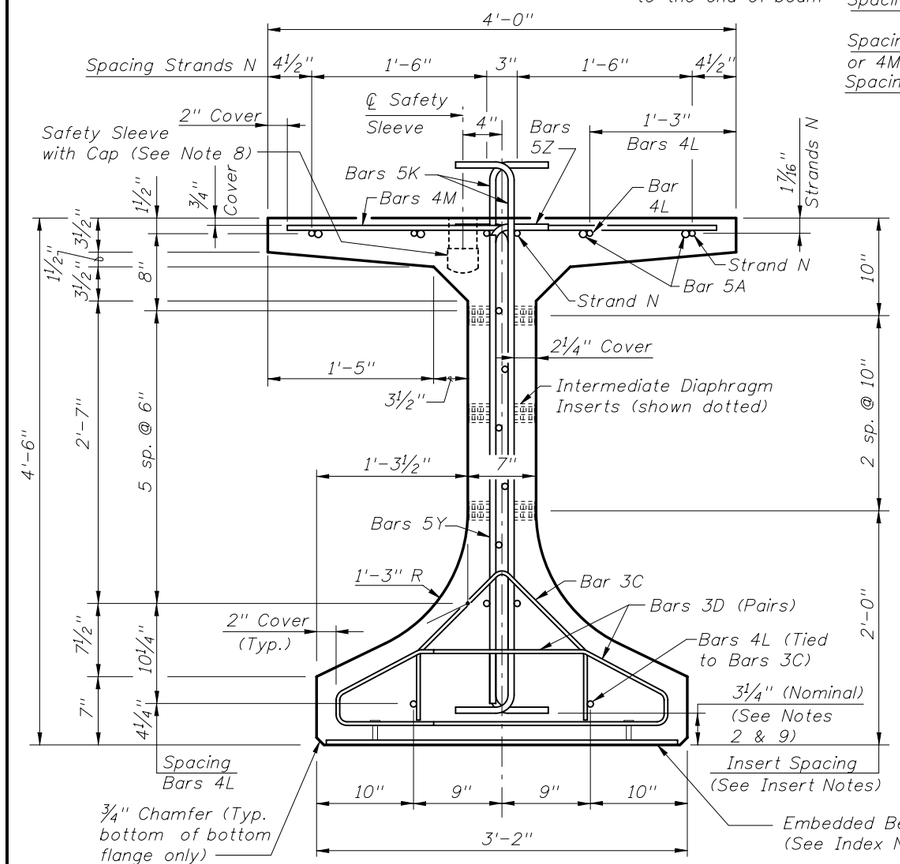
FLORIDA-I 45 BEAM - STANDARD DETAILS

Interim Date 01/01/10

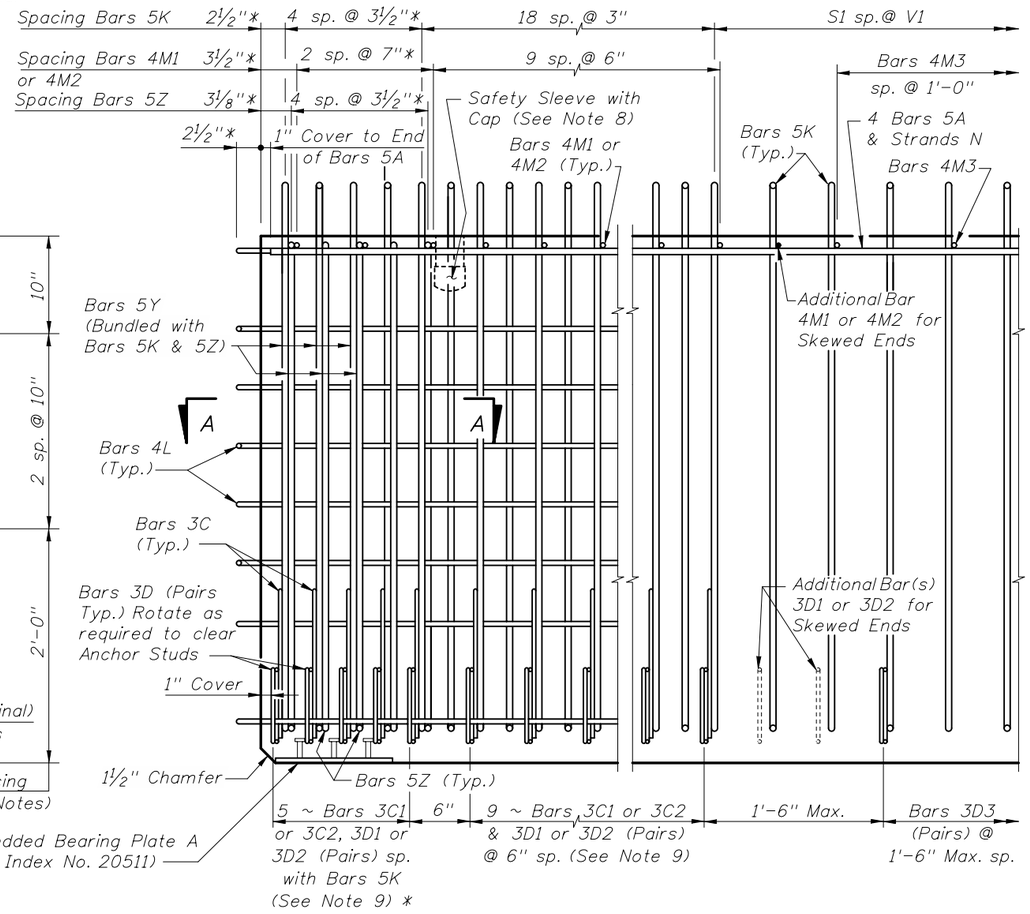
Sheet No. 2 of 2

Index No. 20045

* These dimensions are measured perpendicular to the end of beam



END VIEW



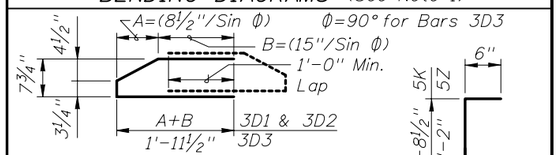
ELEVATION AT END OF BEAM
(Flanges Not Shown For Clarity)
(End 1 Shown, End 2 Similar)

CONVENTIONAL REINFORCING BAR BENDING DETAILS

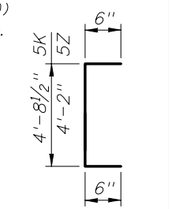
BILL OF REINFORCING STEEL

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"

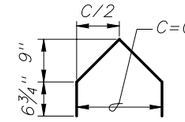
BENDING DIAGRAMS (See Note 1)



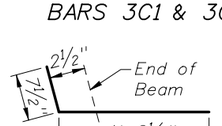
BARS 3D1, 3D2 & 3D3



BARS 5K & 5Z



BARS 3C1 & 3C2



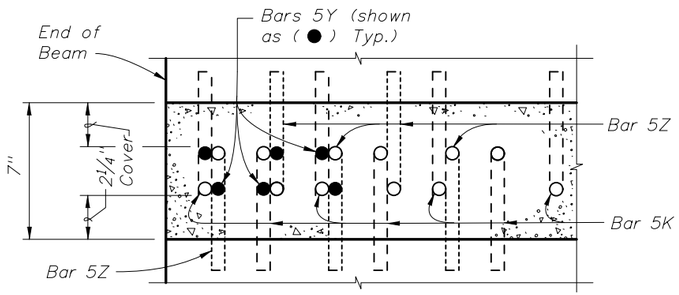
BARS 4L

5A 5Y	22'-0" 4'-0"
4M1 & 4M2 4M3	D=3'-8"/Sin ℄ 3'-8"

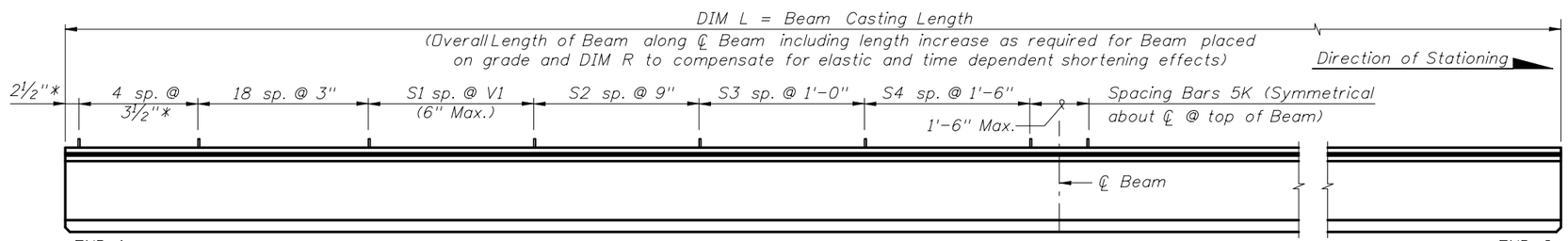
BARS 5A, 4M1, 4M2, 4M3 & 5Y

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.



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



ELEVATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	RMS	New Design Standard			

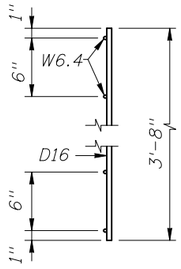
2010 Interim Design Standard

FLORIDA-I 54 BEAM - STANDARD DETAILS

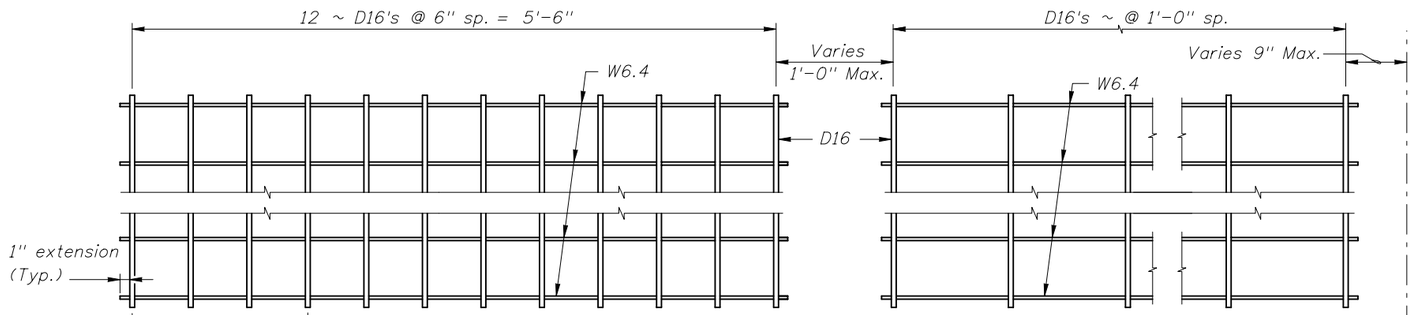
Interim Date 01/01/10

Index No. 20054

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

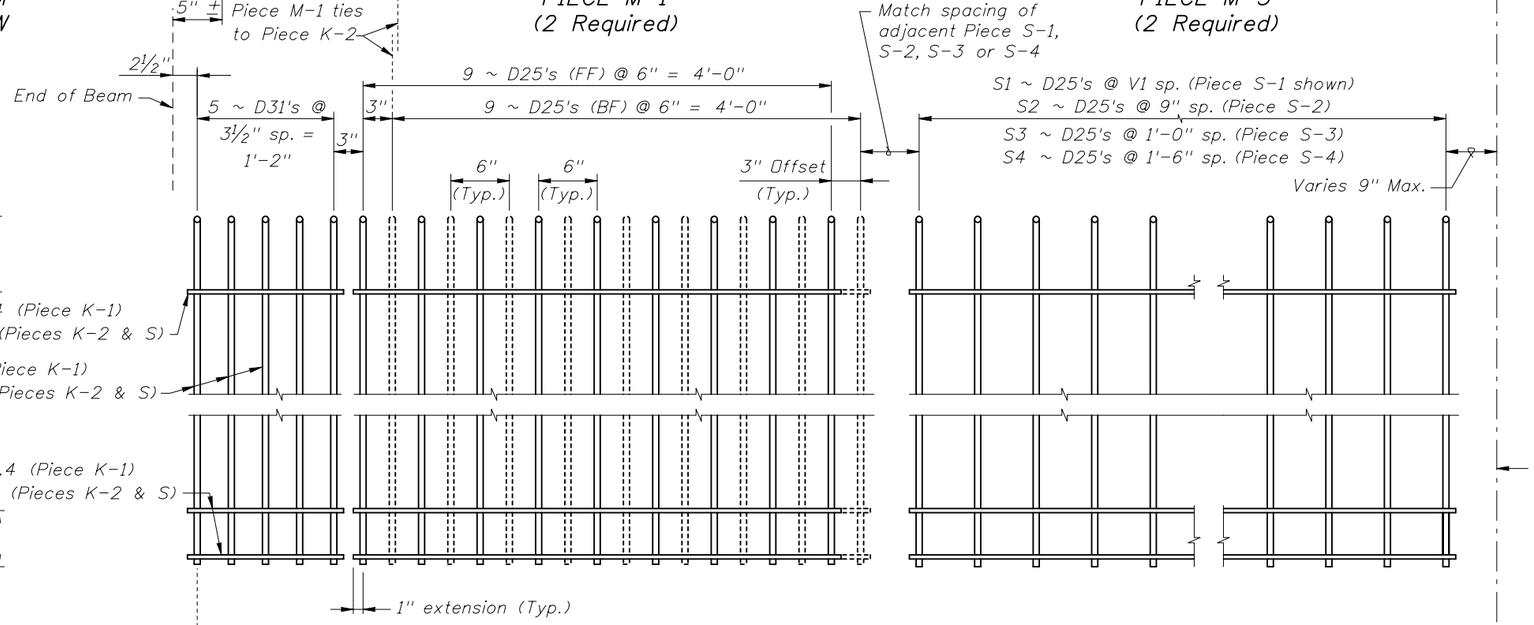


PIECES M
END VIEW



PLAN VIEW
PIECE M-1
(2 Required)

PLAN VIEW
PIECE M-3
(2 Required)

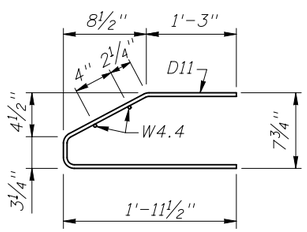


PIECES K & S
END VIEW

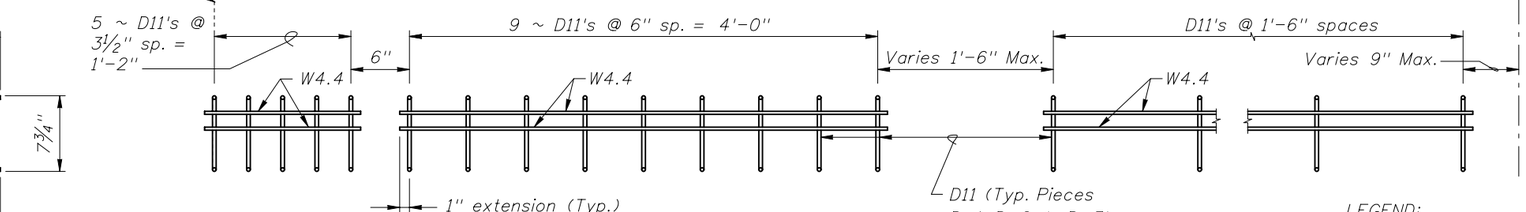
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

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

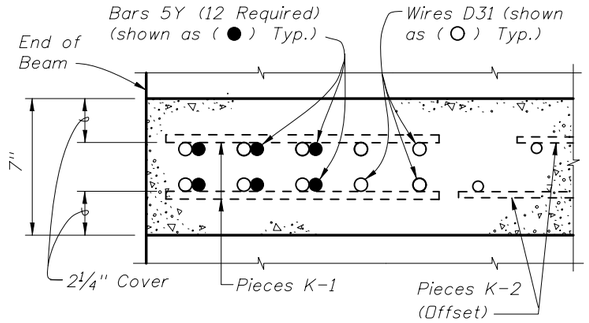


PIECE D-1
(4 Required) ~ 2 Pairs)

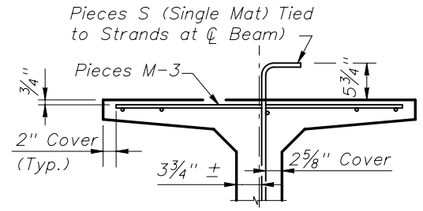
PIECE D-2
(4 Required) ~ 2 Pairs)

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

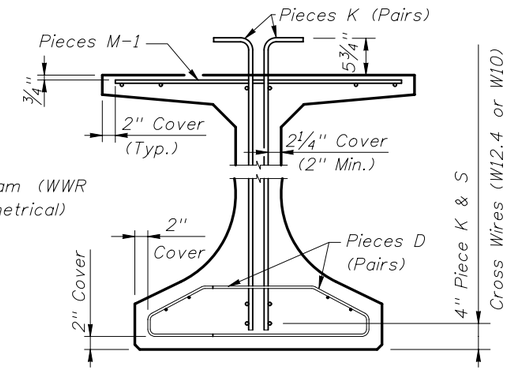
LEGEND:
EF = Each Face
FF = Front Face
BF = Back Face



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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

FLORIDA-I 54 BEAM - STANDARD DETAILS

Interim Date 01/01/10

Sheet No. 2 of 2

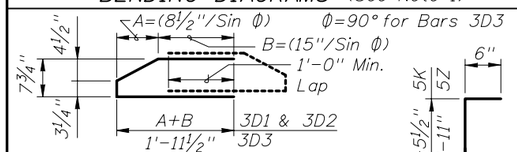
Index No. 20054

CONVENTIONAL REINFORCING BAR BENDING DETAILS

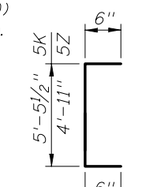
BILL OF REINFORCING STEEL

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	3/8" ϕ Strand	4	DIM L+5"
Y	9 & 11	5	12	4'-9"
Z	2, 9, 11 & 13	5	10	5'-11"

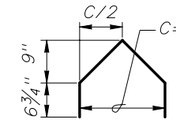
BENDING DIAGRAMS (See Note 1)



BARS 3D1, 3D2 & 3D3

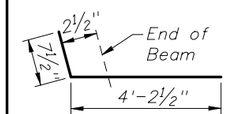


BARS 5K & 5Z



BARS 3C1 & 3C2

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

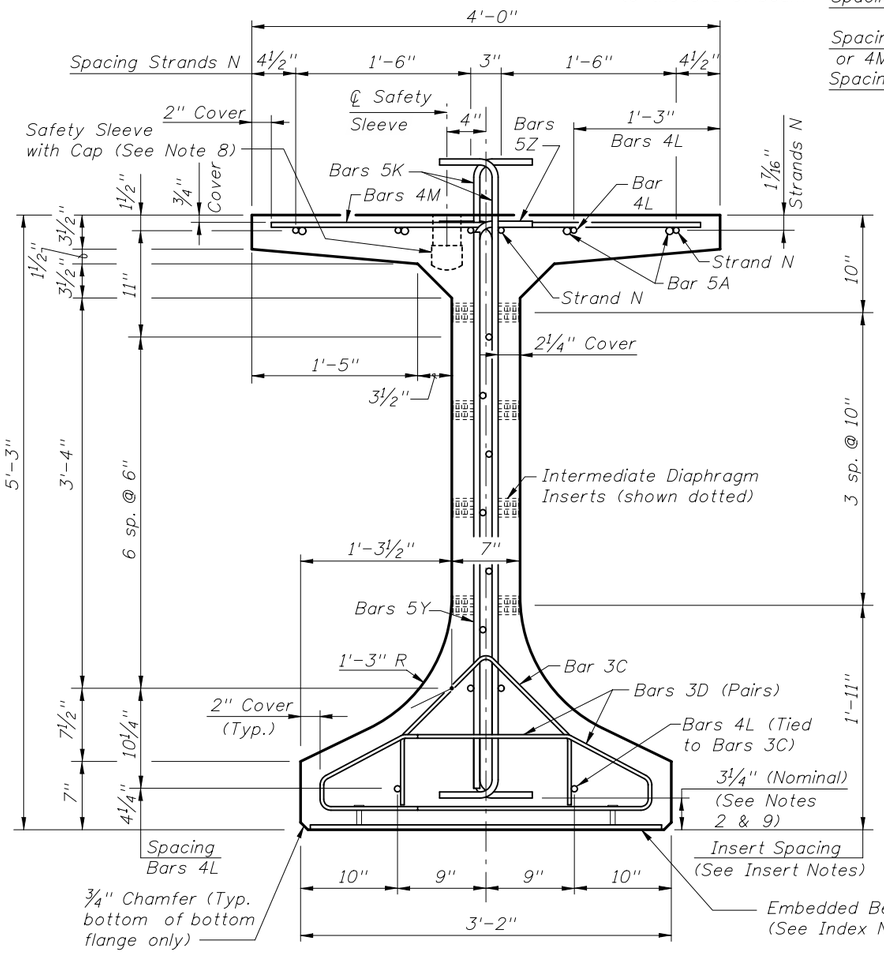


BARS 4L

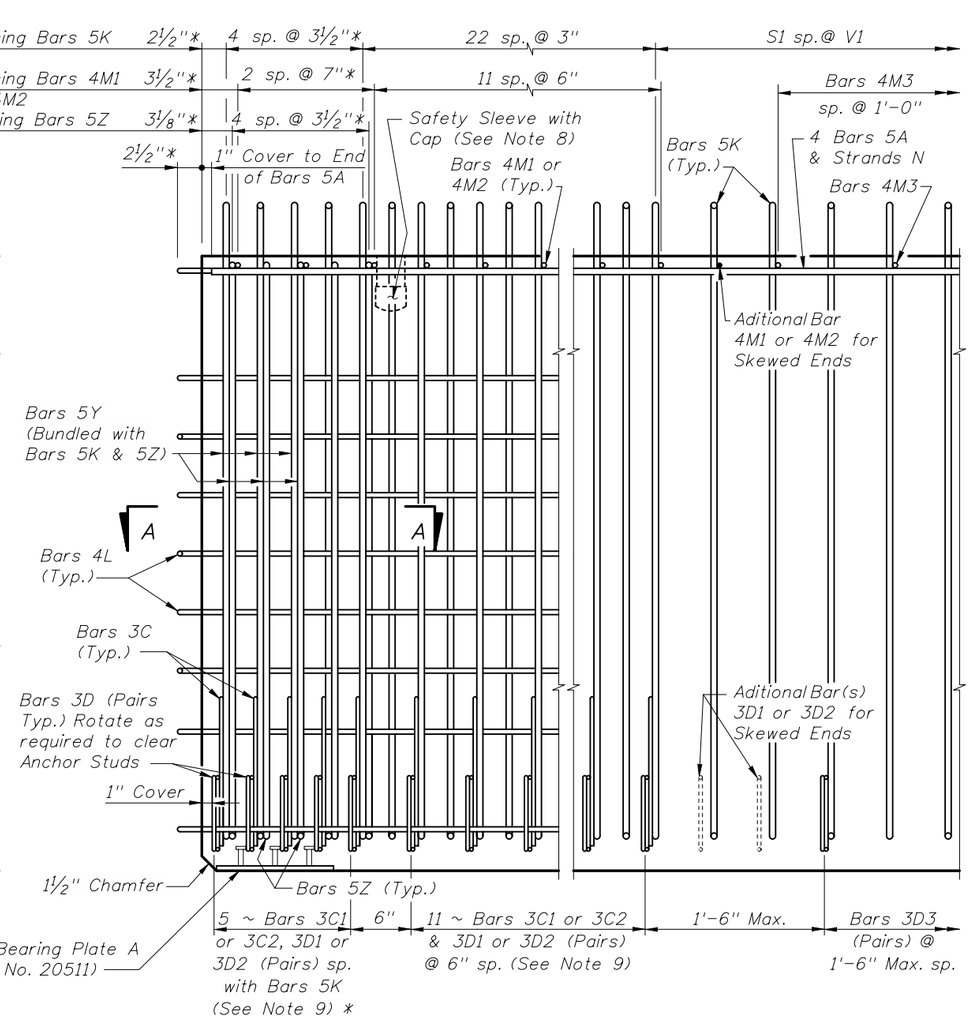
BARS 5A, 4M1, 4M2, 4M3 & 5Y

NOTES:

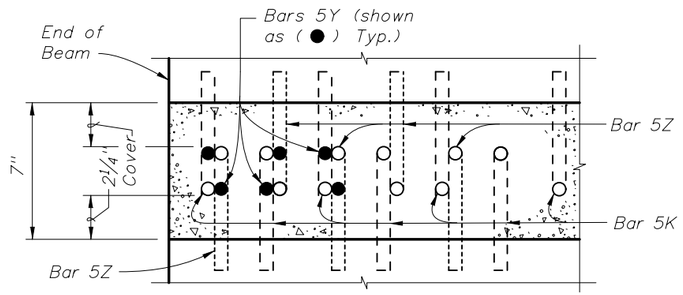
A. Work this Index with Index No. 20010 - Typical Florida-I Beam Details and Notes and the Florida-I Beam - Table of Beam Variables in Structures Plans.
B. For referenced notes, see Index No. 20010.
C. For Dimensions A, B, C, D, L, R & V1 and number of spaces S1 thru S4, see Florida-I Beam - Table of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



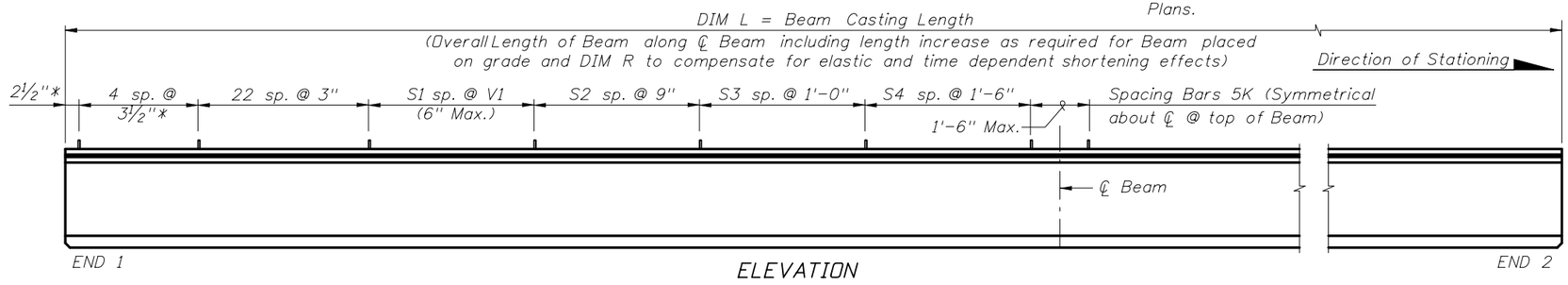
END VIEW



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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

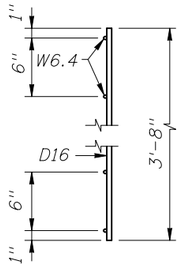
FLORIDA-I 63 BEAM - STANDARD DETAILS

Interim Date 01/01/10

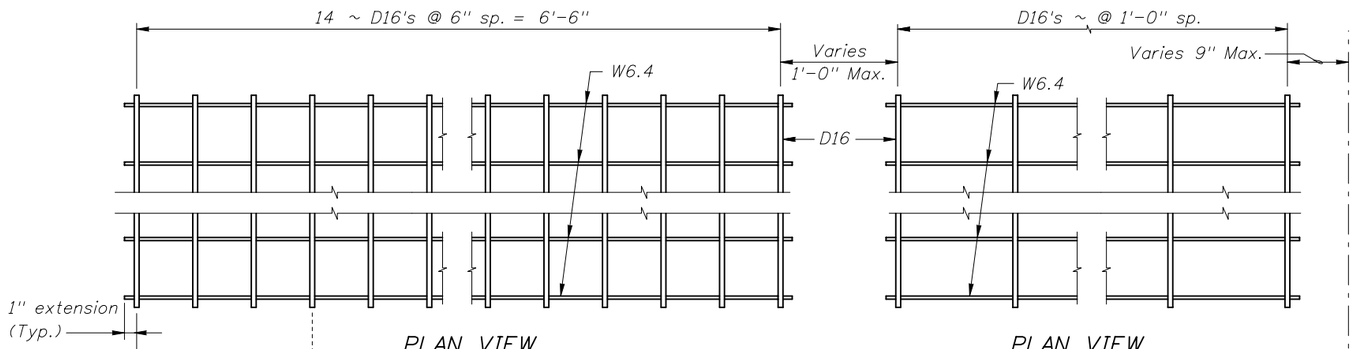
Sheet No. 1 of 2

Index No. 20063

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

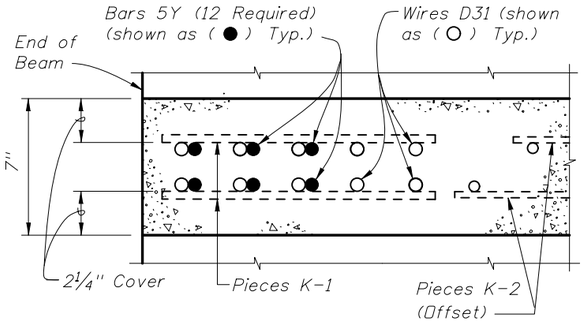


PIECES M
END VIEW

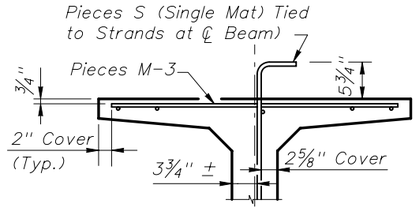


PLAN VIEW
PIECE M-1
(2 Required)

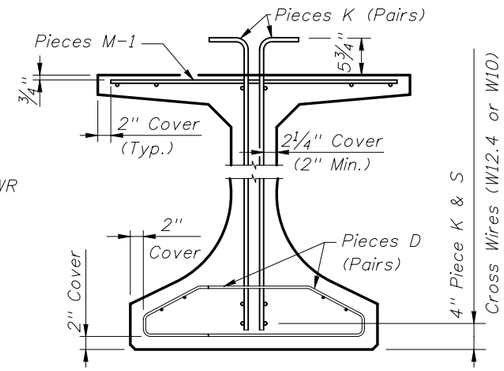
PLAN VIEW
PIECE M-3
(2 Required)



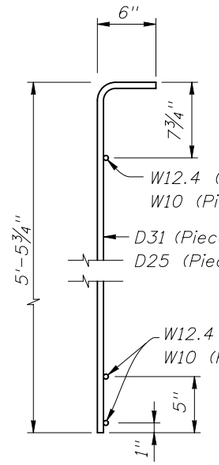
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



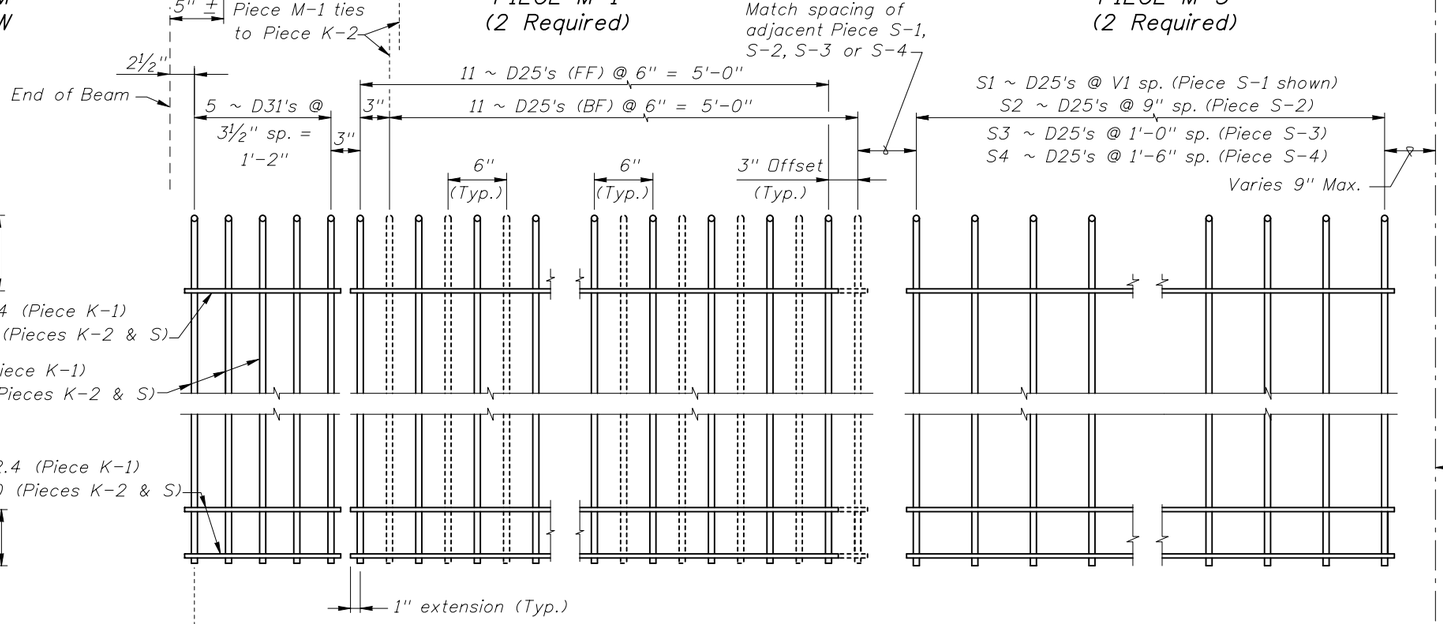
PARTIAL SECTION AT CENTER BEAM



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



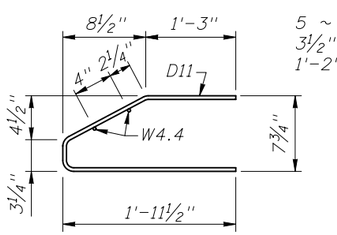
PIECES K & S
END VIEW



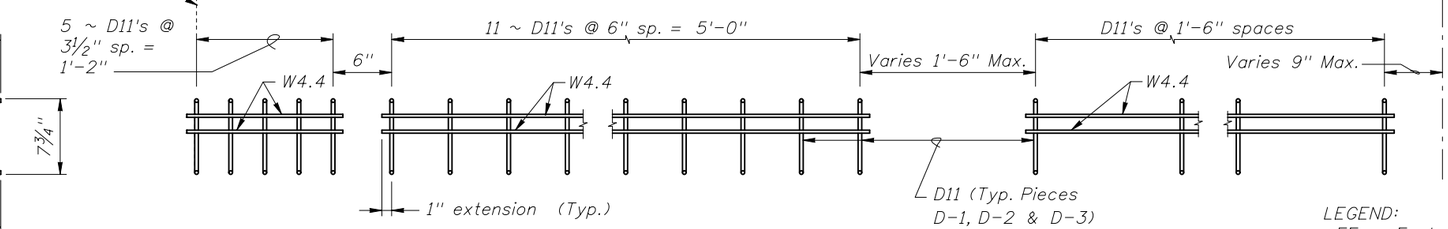
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

FLORIDA-I 63 BEAM - STANDARD DETAILS

Interim Date 01/01/10

Sheet No. 2 of 2

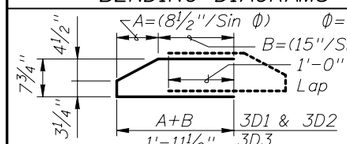
Index No. 20063

CONVENTIONAL REINFORCING BAR BENDING DETAILS

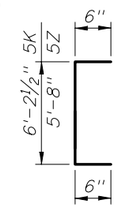
BILL OF REINFORCING STEEL

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"

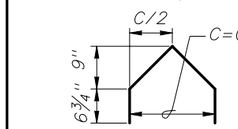
BENDING DIAGRAMS (See Note 1)



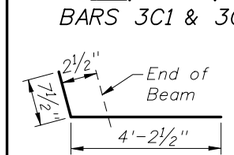
BARS 3D1, 3D2 & 3D3



BARS 5K & 5Z



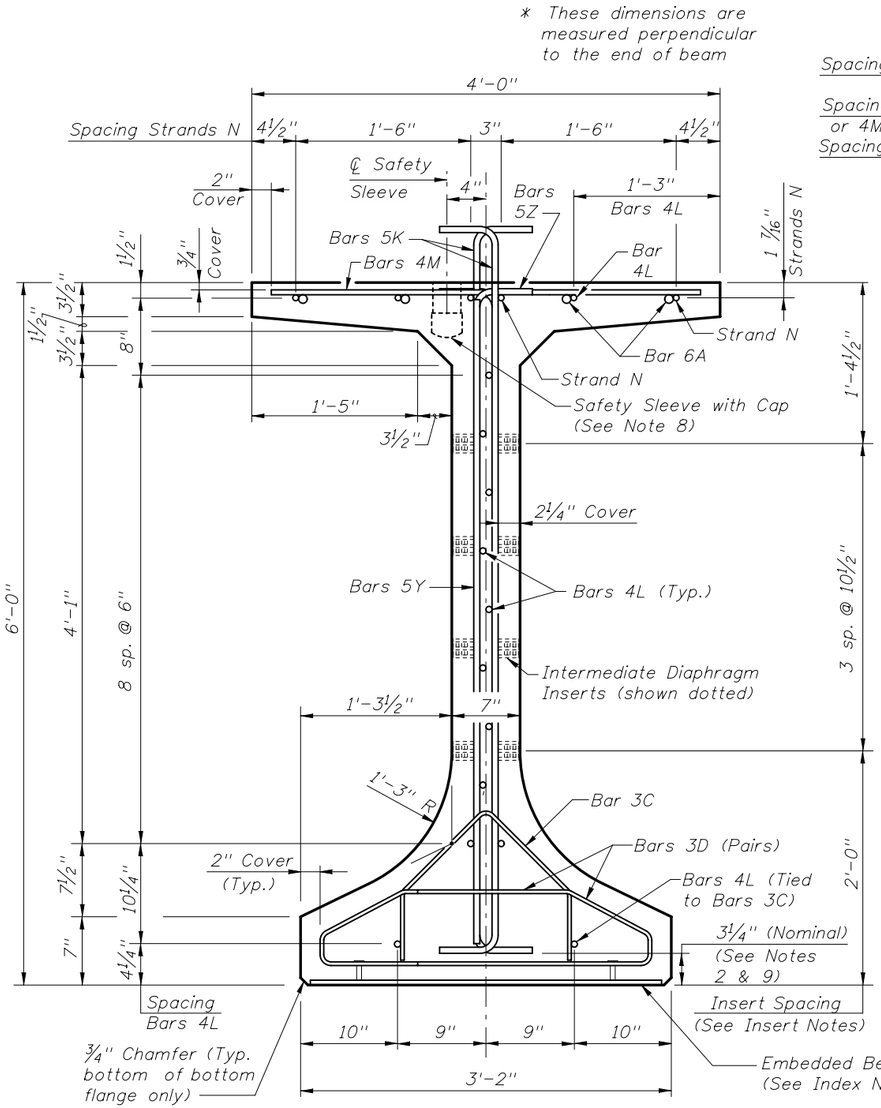
BARS 3C1 & 3C2



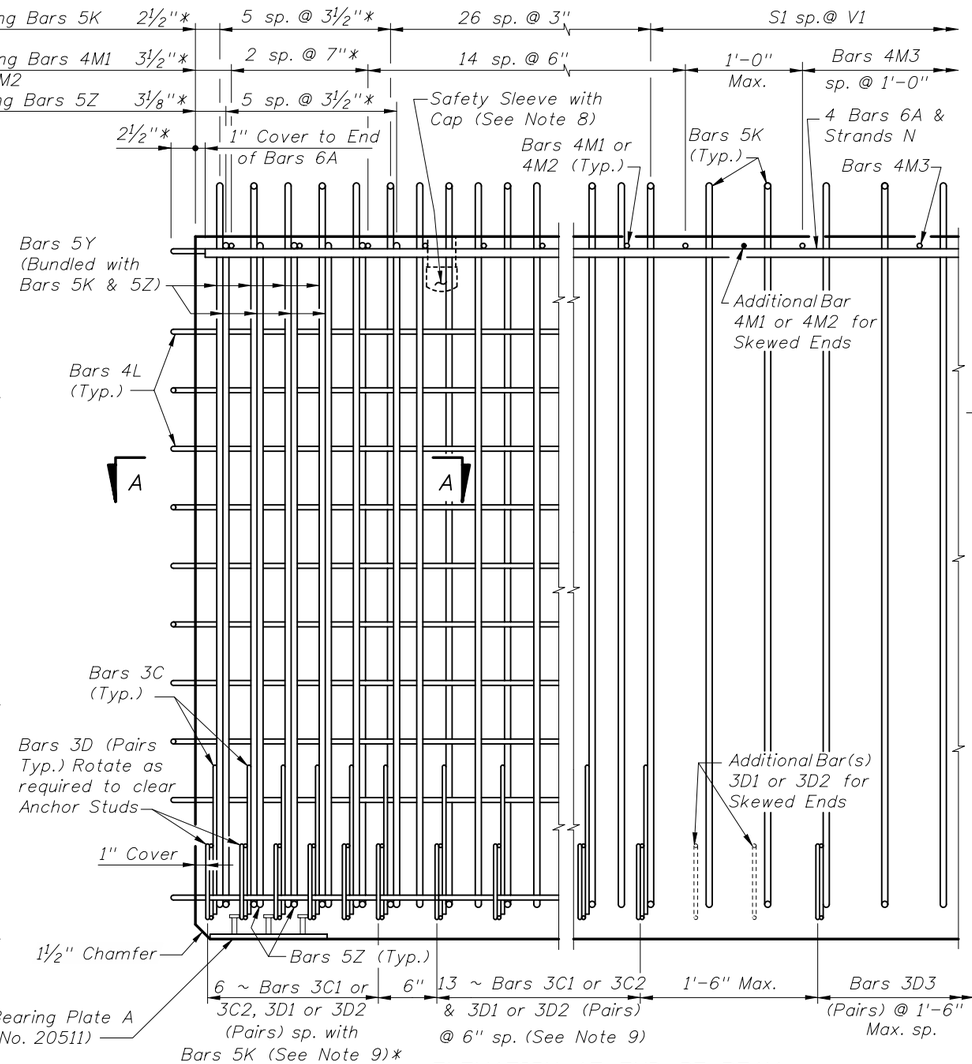
BARS 4L

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

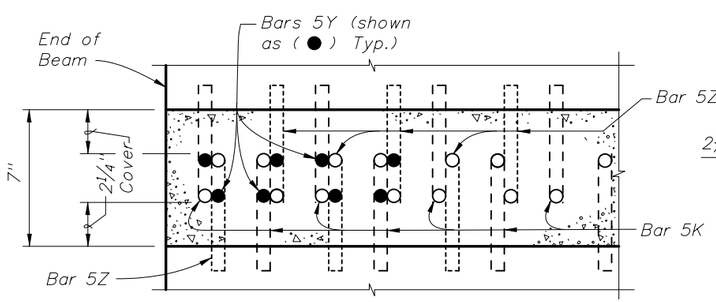
BARS 5A, 4M1, 4M2, 4M3 & 5Y



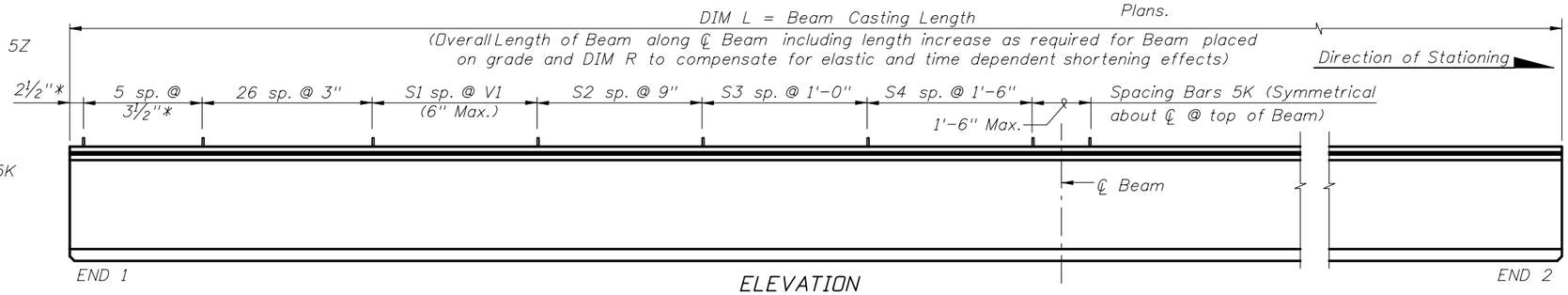
END VIEW



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

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
01/01/10	RMS	New Design Standard			

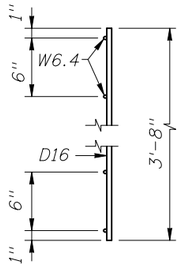
2010 Interim Design Standard

FLORIDA-I 72 BEAM - STANDARD DETAILS

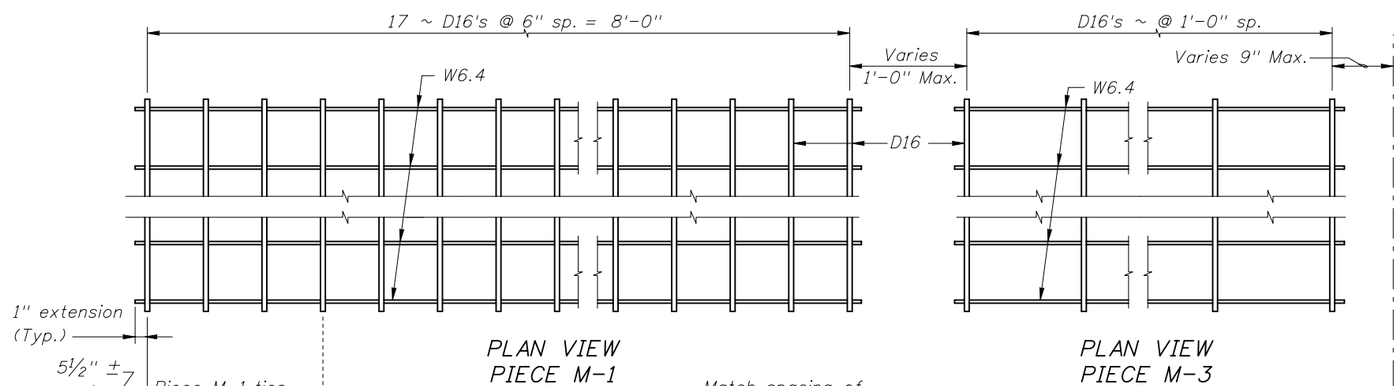
Interim Date 01/01/10

Index No. 20072

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

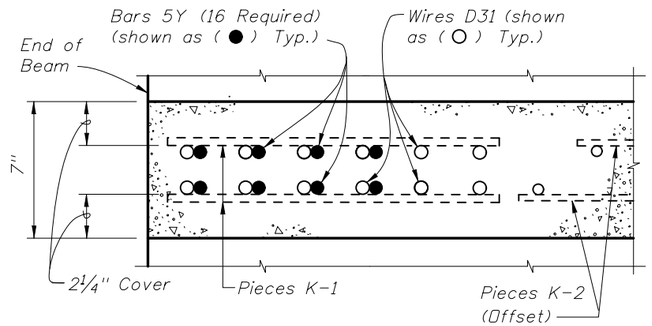


PIECES M
END VIEW

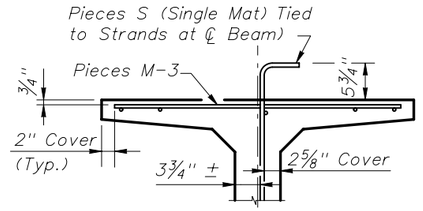


PLAN VIEW
PIECE M-1
(2 Required)

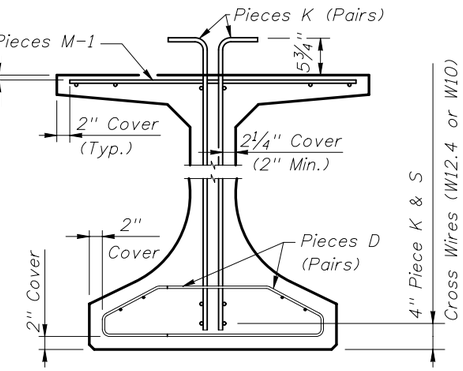
PLAN VIEW
PIECE M-3
(2 Required)



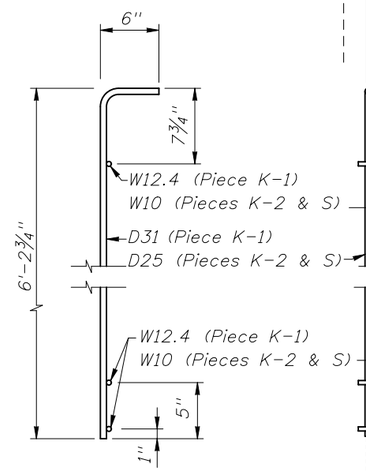
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



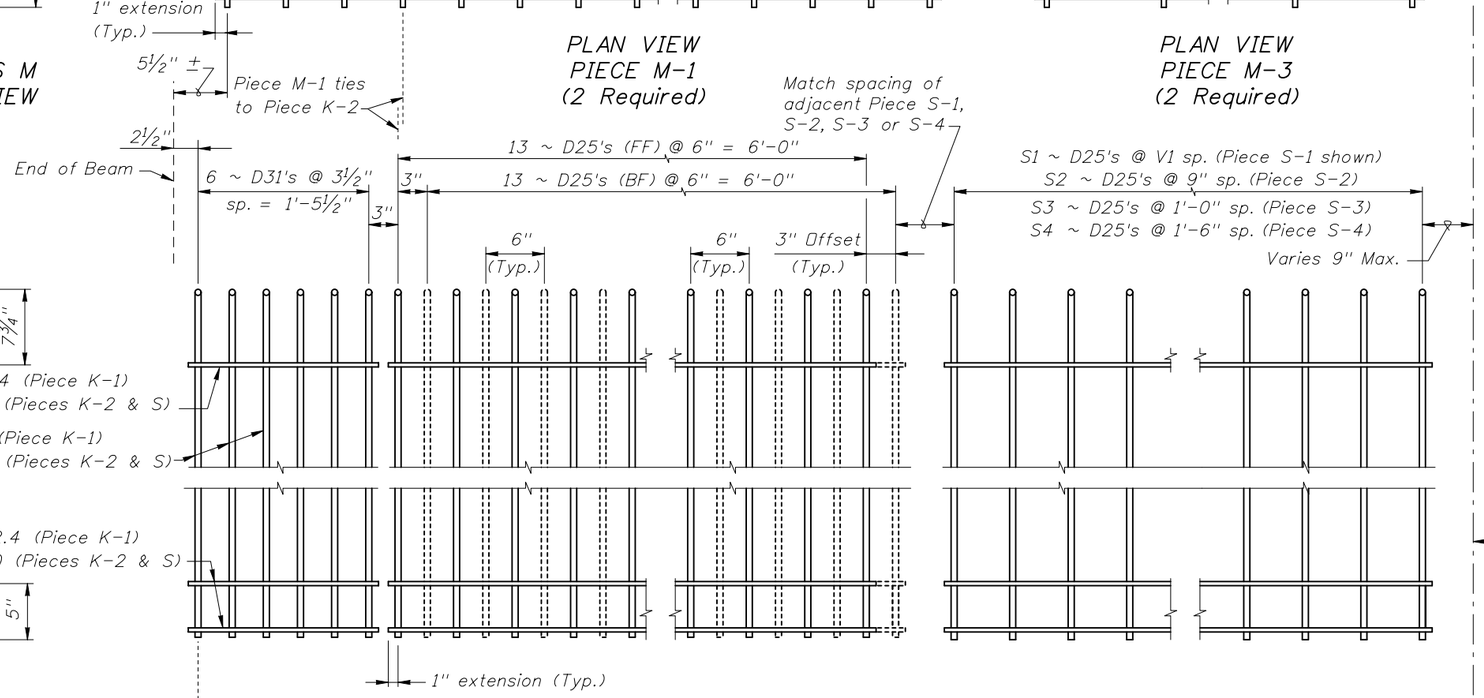
PARTIAL SECTION AT CENTER BEAM



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



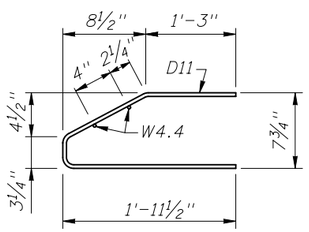
PIECES K & S
END VIEW



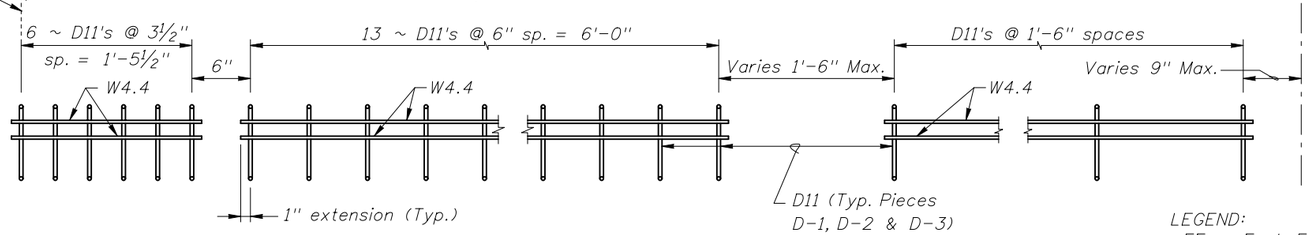
PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

FLORIDA-I 72 BEAM - STANDARD DETAILS

Interim Date 01/01/10

Sheet No. 2 of 2

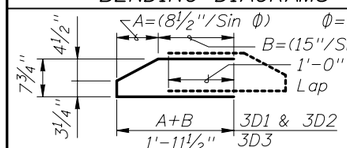
Index No. 20072

CONVENTIONAL REINFORCING BAR BENDING DETAILS

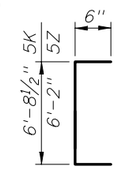
BILL OF REINFORCING STEEL

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	3/8" ϕ Strand	4	DIM L+5"
Y	9 & 11	5	16	6'-0"
Z	2, 9, 11 & 13	5	12	7'-2"

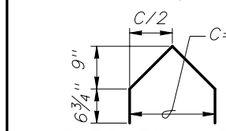
BENDING DIAGRAMS (See Note 1)



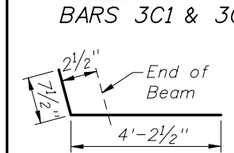
BARS 3D1, 3D2 & 3D3



BARS 5K & 5Z



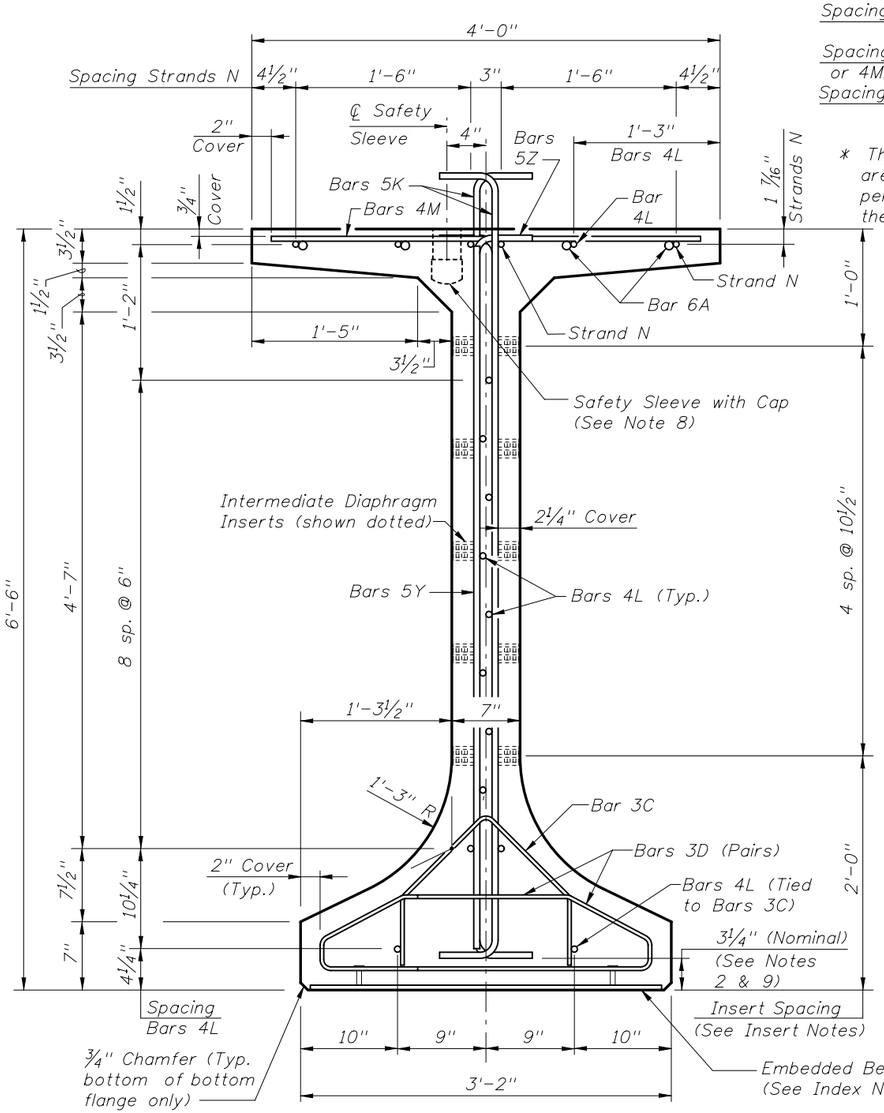
BARS 3C1 & 3C2



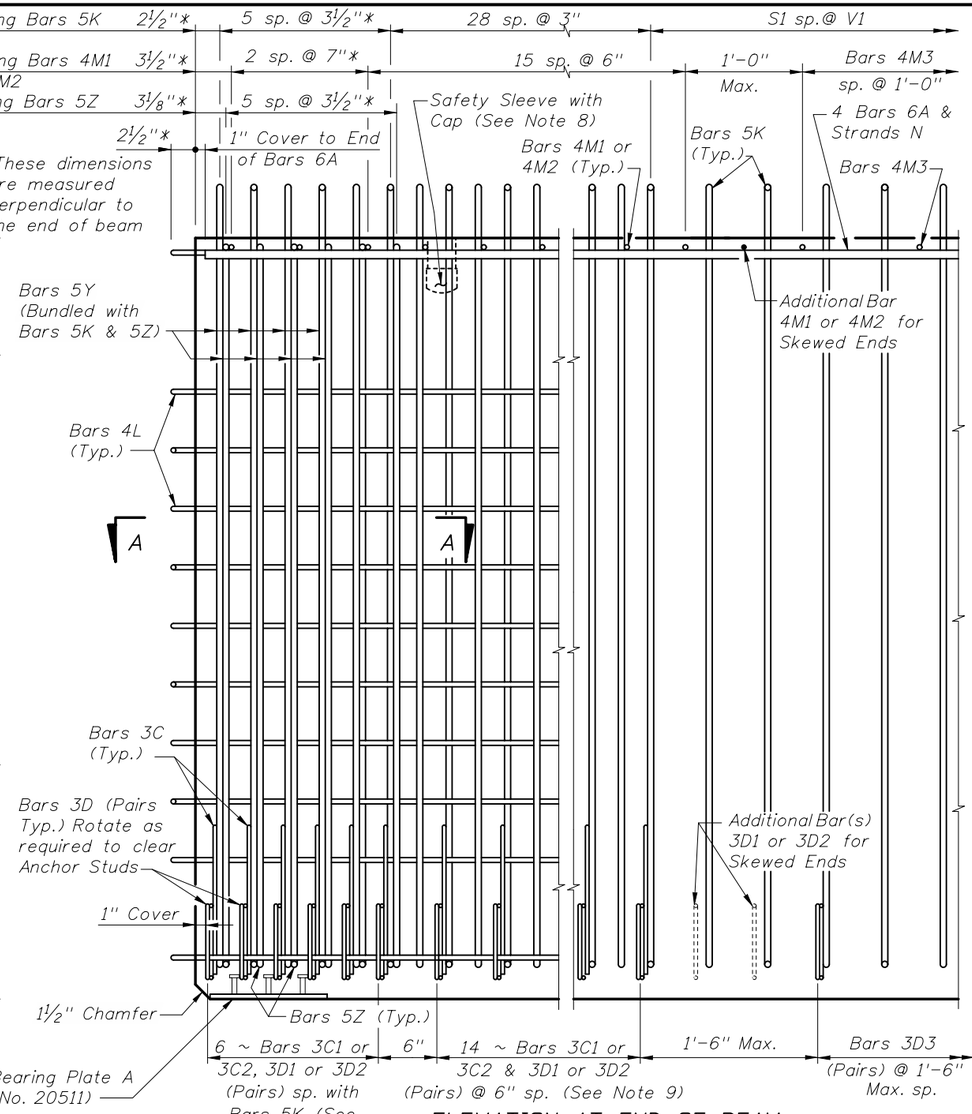
BARS 4L

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

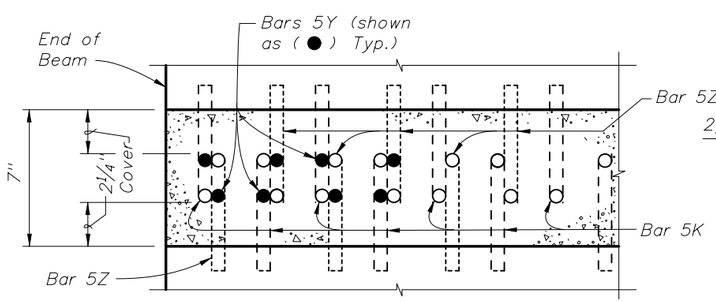
BARS 5A, 4M1, 4M2, 4M3 & 5Y



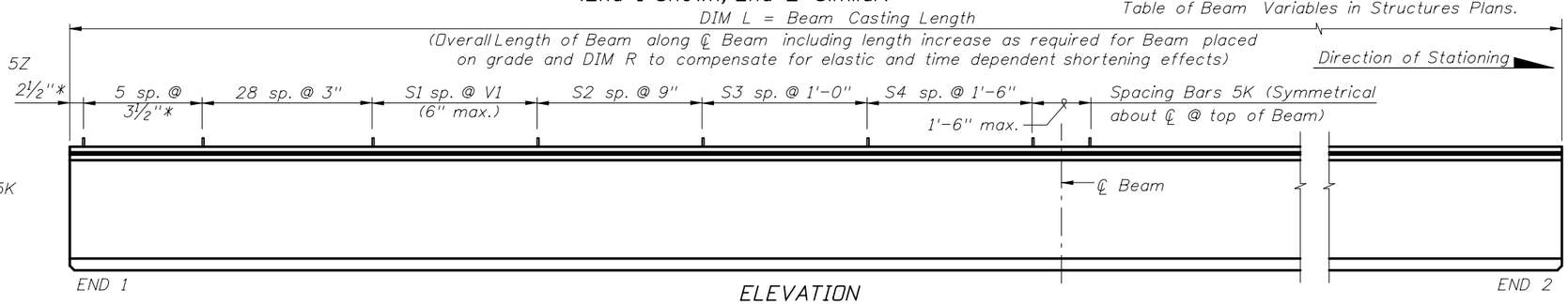
END VIEW



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

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
01/01/10	RMS	New Design Standard			

2010 Interim Design Standard

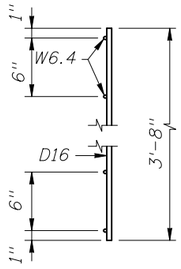
FLORIDA-I 78 BEAM - STANDARD DETAILS

Interim Date 01/01/10

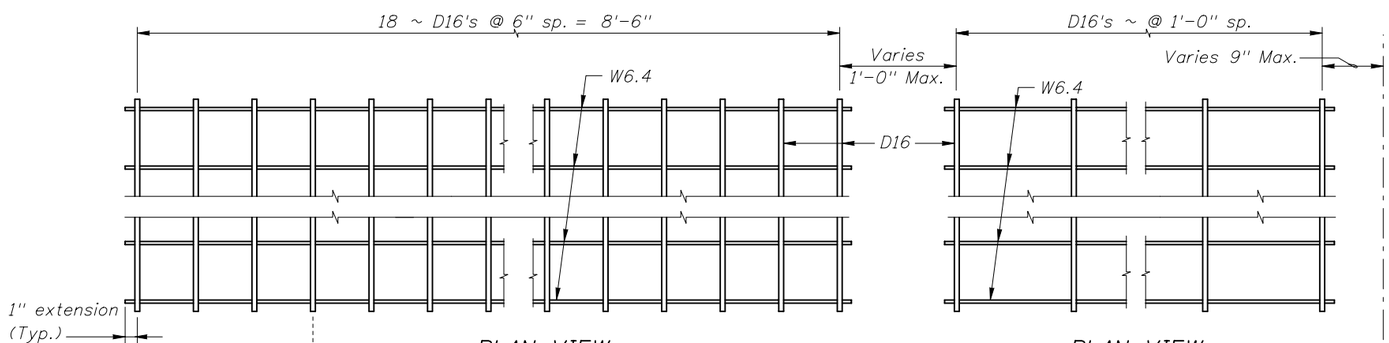
Sheet No. 1 of 2

Index No. 20078

ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS

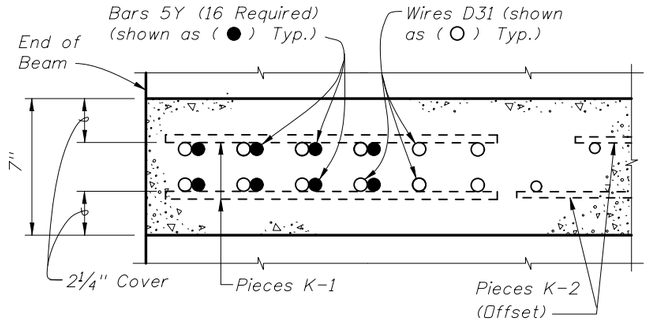


PIECES M
END VIEW

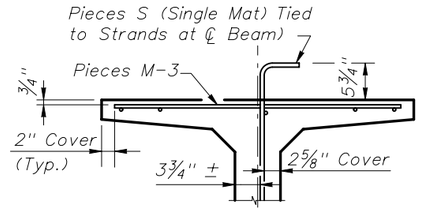


PLAN VIEW
PIECE M-1
(2 Required)

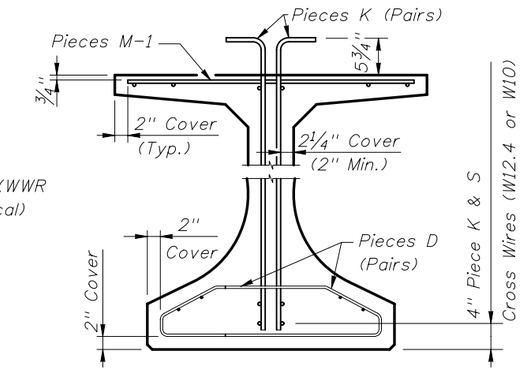
PLAN VIEW
PIECE M-3
(2 Required)



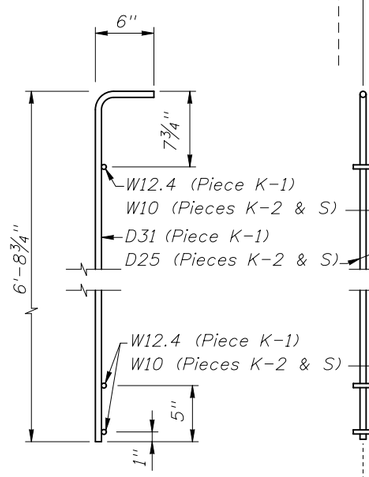
SECTION A-A
FOR WELDED WIRE REINFORCEMENT



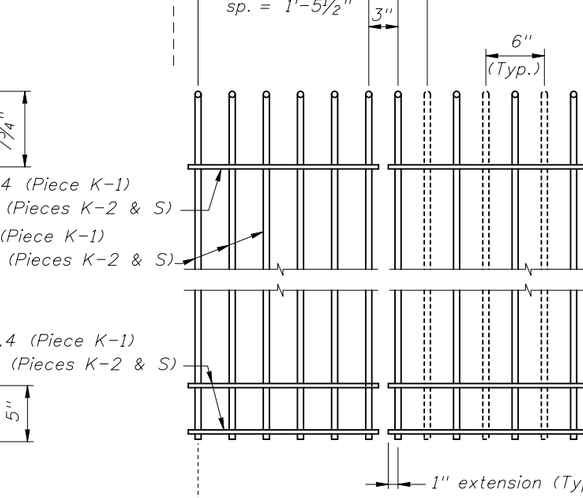
PARTIAL SECTION AT CENTER BEAM



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



PIECES K & S
END VIEW

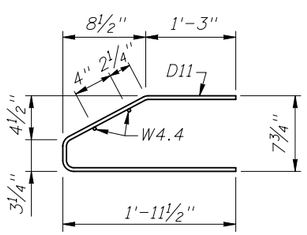


PIECE K-1
(Aligned EF)
(4 Required
~ 2 Pairs)

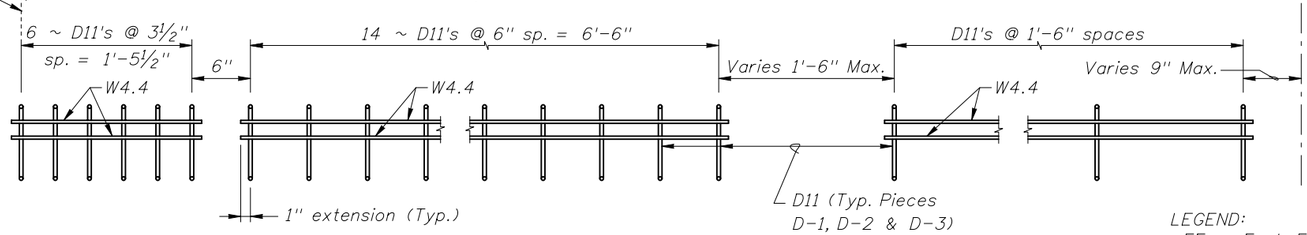
PIECE K-2
(FF Shown Solid)
(BF Shown Dashed)
(4 Required)

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

℄ Beam (WWR
Symmetrical)



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
01/01/10	RMS	New Design Standard			

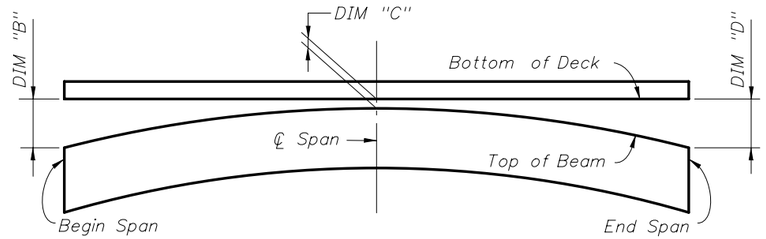
2010 Interim Design Standard

FLORIDA-I 78 BEAM - STANDARD DETAILS

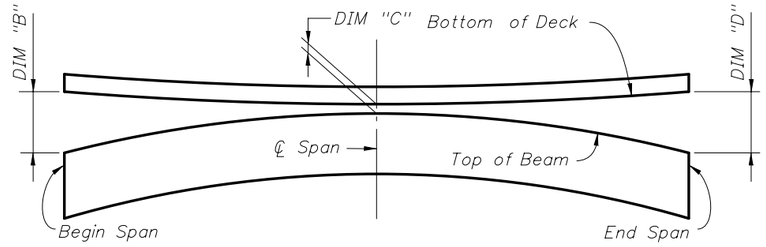
Interim Date 01/01/10

Sheet No. 2 of 2

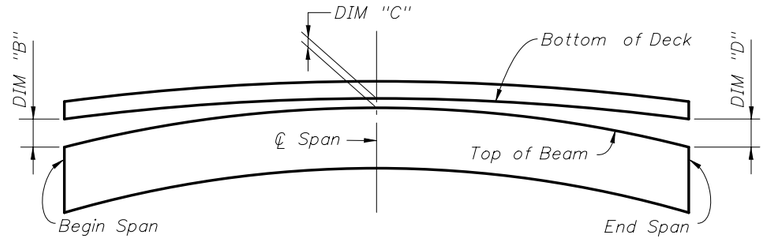
Index No. 20078



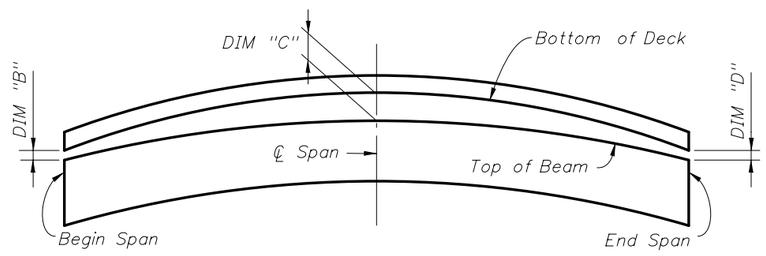
BUILD-UP DIAGRAM FOR TANGENT SPANS
(ALONG ℄ BEAM) (CASE 1)



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)

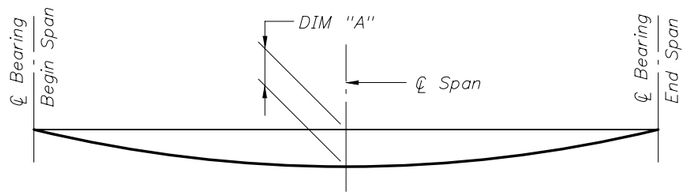


BUILD-UP DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT BEGIN OR END SPAN
(ALONG ℄ BEAM) (CASE 4)

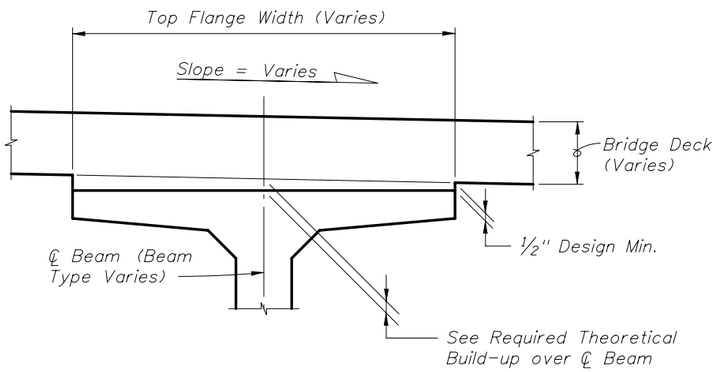
BEAM CAMBER AND BUILD-UP NOTES:

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
01/01/10	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.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

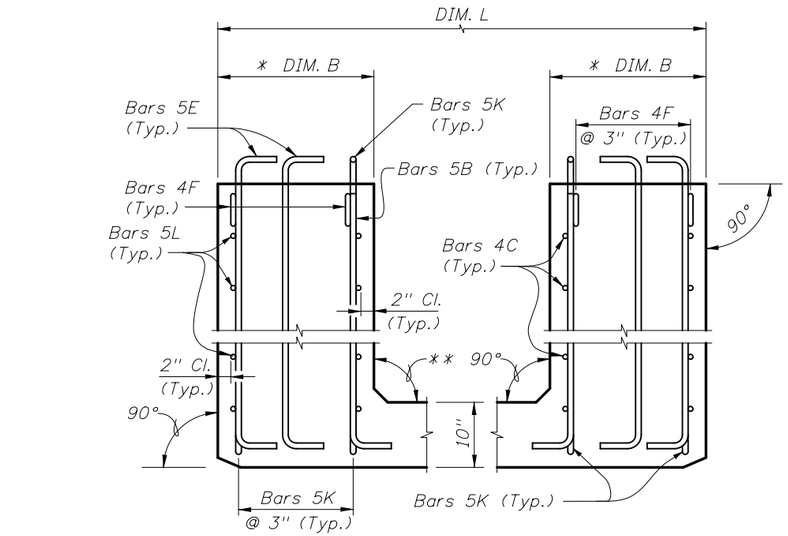
2010 Interim Design Standard

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

Interim Date 01/01/10

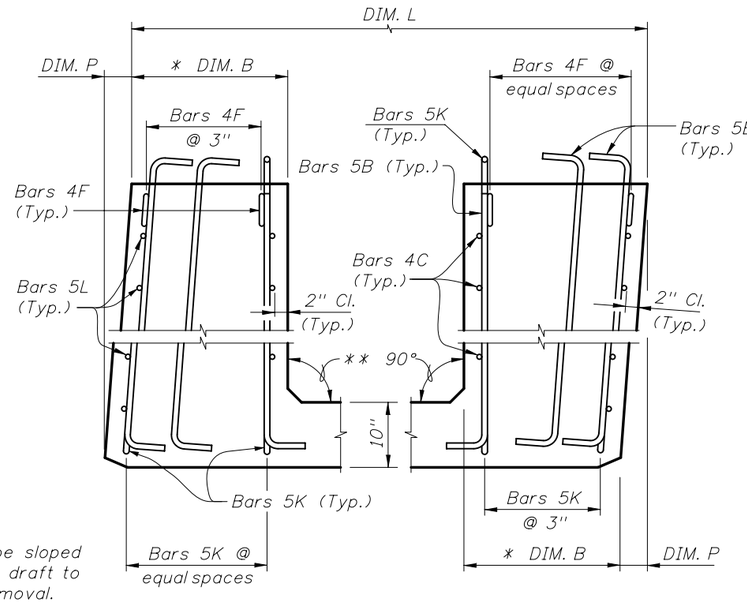
Sheet No. 1 of 1

Index No. 20199



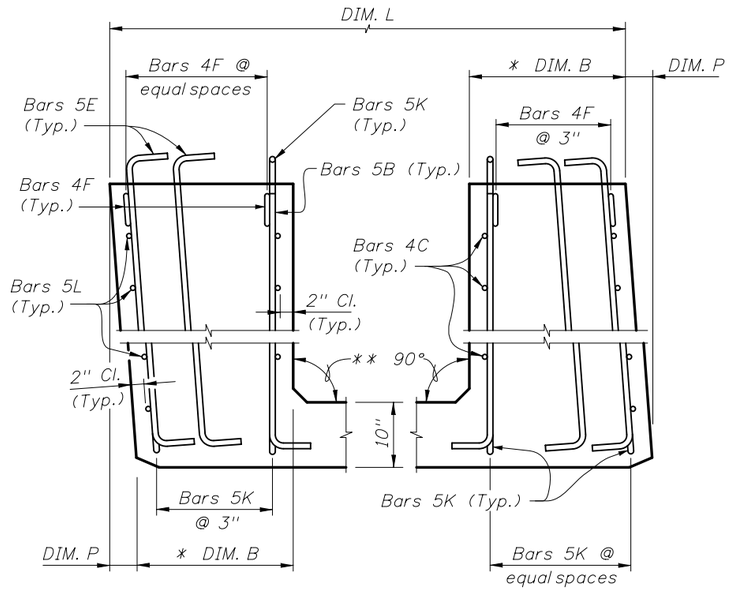
* DIM. B is 1'-6" for Florida U 48 and 54 Beams and 2'-0" for Florida U 63 and 72 Beams.

CONDITION 1
(P = 0.0)



** Concrete face may be sloped with a maximum 1:24 draft to facilitate formwork removal.

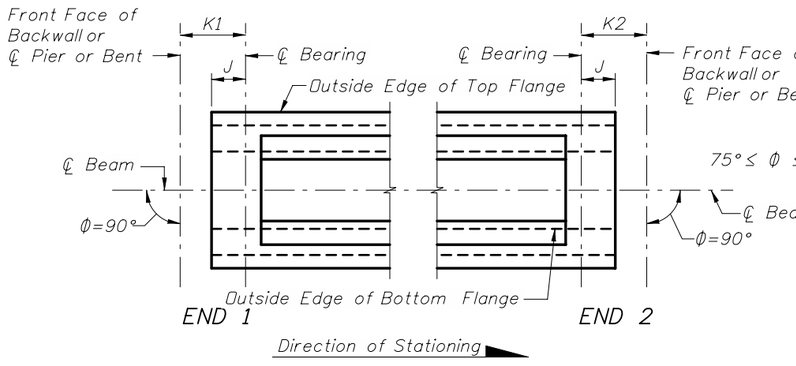
CONDITION 2



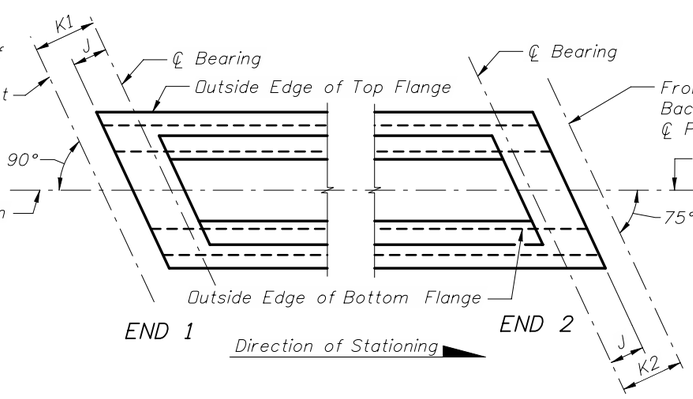
CONDITION 3

SCHEMATIC END ELEVATIONS OF BEAMS

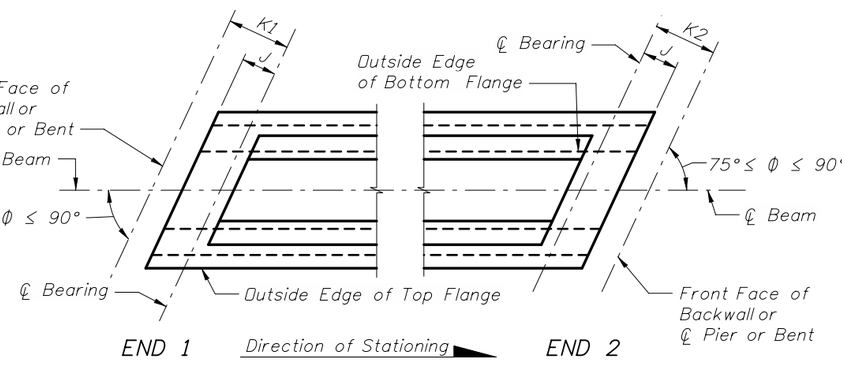
(Showing Vertical Bevel of Beam End)



CASE 1



CASE 2



CASE 3

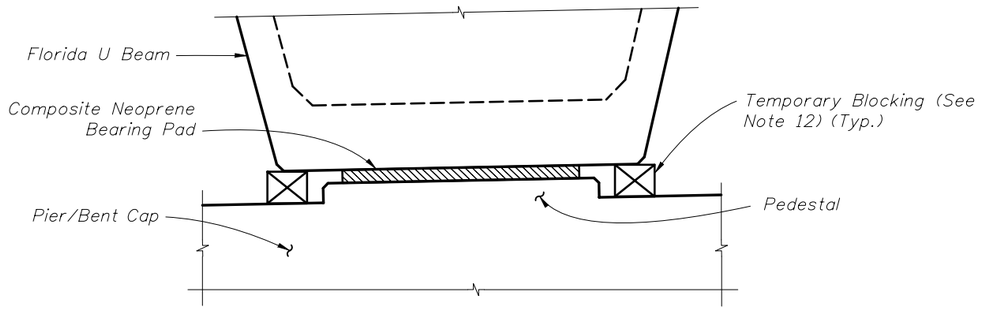
SCHEMATIC PLAN VIEWS AT BEAM ENDS

NOTE:
Work this Index with Florida U Beam - Table of Beam Variables in Structures Plans.

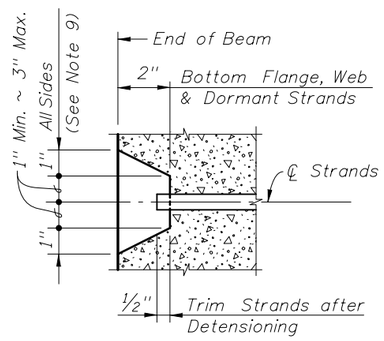
2010 FDOT Design Standards

TYPICAL FLORIDA-U BEAM DETAILS AND NOTES

Last Revision	Sheet No.
07/01/05	1 of 2
Index No.	
20210	



TEMPORARY BLOCKING OF BEAM ENDS



TYPICAL STRAND BLOCKOUT DETAIL

BEAM NOTES

1. All bar dimensions are out-to-out.
2. Strands N (Dormant Strands) shall be either ASTM A416, Grade 250 or Grade 270, seven-wire strands ⅜" ϕ or larger, stressed to 10,000 lbs. each.
3. Unless otherwise noted in Structures Plans, the minimum concrete cover for reinforcing steel shall be 2".
4. At the option of the Contractor and with the Engineer's Approval, deformed welded wire reinforcement may be used in lieu of Bars 6A1, 4A2, 5B, 4C, 3D, 5E, 4F, 4G, 4H, 5K, 5L and 4M except as noted below in note 7, provided the wire sizes and spacing match those shown on the Standard Beam Detail sheets for these bars. Welded wire reinforcement shall conform to ASTM A497.
5. Place 2½" NPS x 5" PVC Sch. 40 Safety Sleeve with cap in both top flanges spaced on 8'-0" (Max.) centers. Shift Bars 5K & 4M locally to allow placement. Holes shall be free of debris and water prior to casting deck.
6. For Beams with vertically beveled end conditions when "DIM. P" exceeds 1", Bars 5E and the first Bars 4F and 5K shall be placed parallel to the end of the beam. The remaining Bars 4F and 5K within the limits of "DIM. B" shall be fanned at equal spaces.
7. Welded deformed wire reinforcement shall not be used for the end reinforcement (Bars 5B, 4C, 3D, 5E, 4F, 5K, and 5L) for beams with skewed end conditions or vertically beveled end conditions when "DIM. P" exceeds 1".
8. Bars 5K shall be placed and tied to the fully bonded strands in the bottom row (see "STRAND PATTERN" in Structures Plans).
9. Strand Protection at beam ends shall consist of a 2" deep recess formed around all strands (including dormant) or strand groups. Extend recess to face of web and bottom of flange for bottom row of strands. After detensioning, cut strands ½" from recessed surface and fill the recess with a Type F-2 or Q Epoxy Compound in accordance with Section 926 of the Specifications.
10. Use Size No. 67 maximum sized aggregate.
11. Use Stay-in-Place metal deck forms inside the beams.
12. Prior to deck placement, based on the deck forming system and deck placement sequence, evaluate and provide, if necessary, temporary bracing between the U Beams. Also, prior to deck placement, provide temporary blocking under each web at both ends of every beam. Ensure the temporary blocking is adequate to resist movements and rotations that occur during placement of the deck. Leave temporary blocking and bracing in place for a minimum of four days after the deck placement.
13. For referenced Dimensions, Angles and Case Numbers see Table of Beam Variables in Structures Plans.

INSTRUCTIONS TO DESIGNER:

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

Beam Type	Max. Bonded Prestress Force	Index No.	Issue Date
Florida U48 & U54	2790 Kips	20248 & 20254	07/01/05
Florida U63 & U72	3070 Kips	20263 & 20272	07/01/05

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.

NOTE:
Work this Index with Florida U Beam – Table of Beam Variables in Structures Plans.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed Note 12 and "Timber" to "Temporary" in Blocking Detail.			

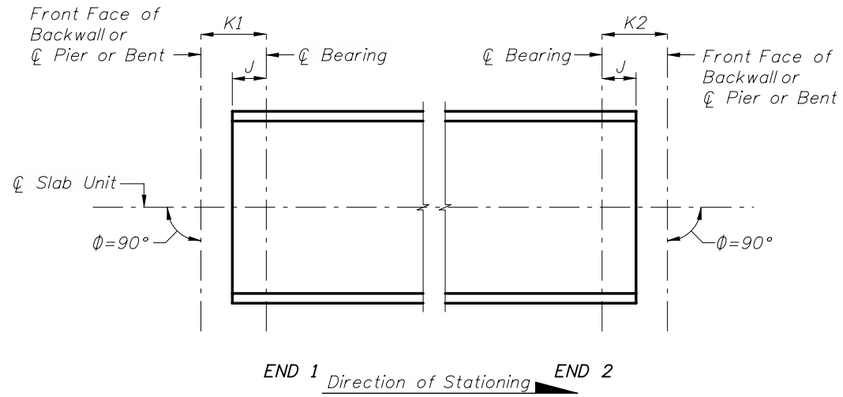
2010 Interim Design Standard

TYPICAL FLORIDA-U BEAM DETAILS AND NOTES

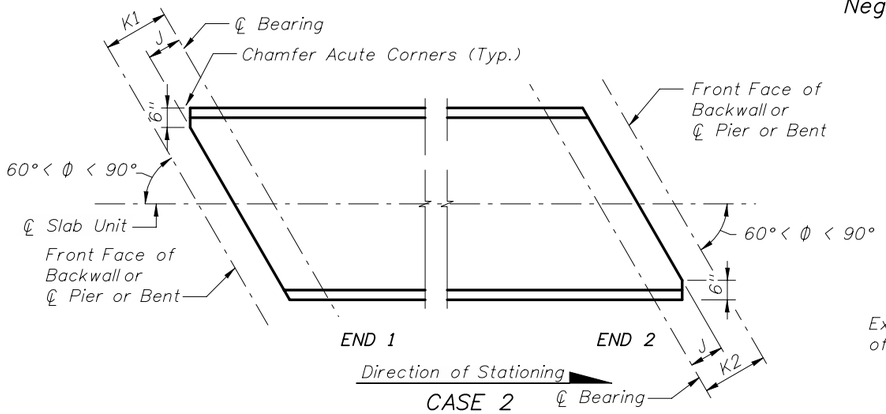
Interim Date 01/01/10

Sheet No. 2 of 2

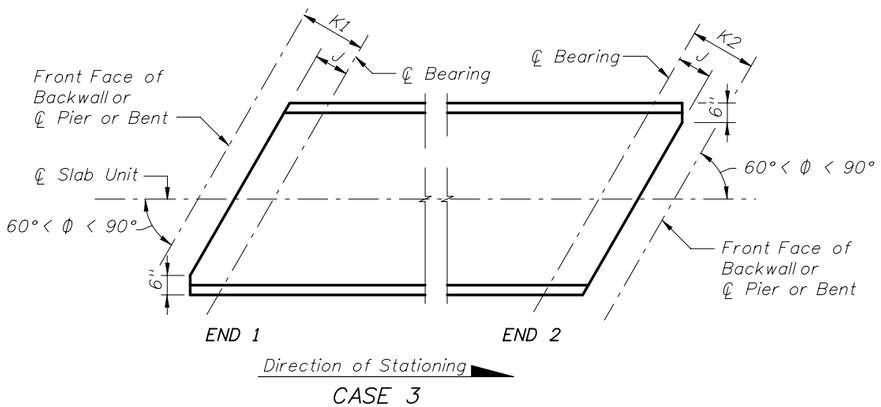
Index No. 20210



CASE 1

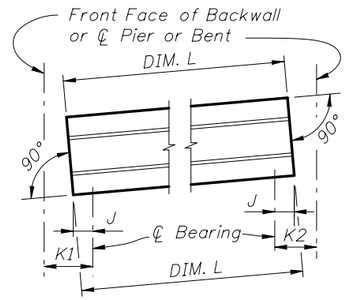


CASE 2

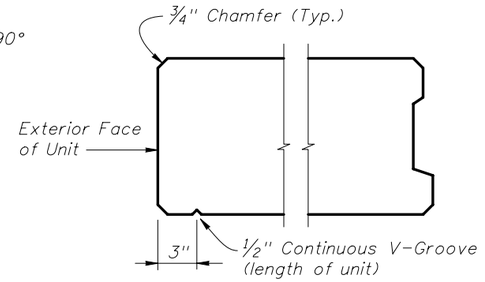


CASE 3

SCHEMATIC PLAN VIEWS AT SLAB ENDS



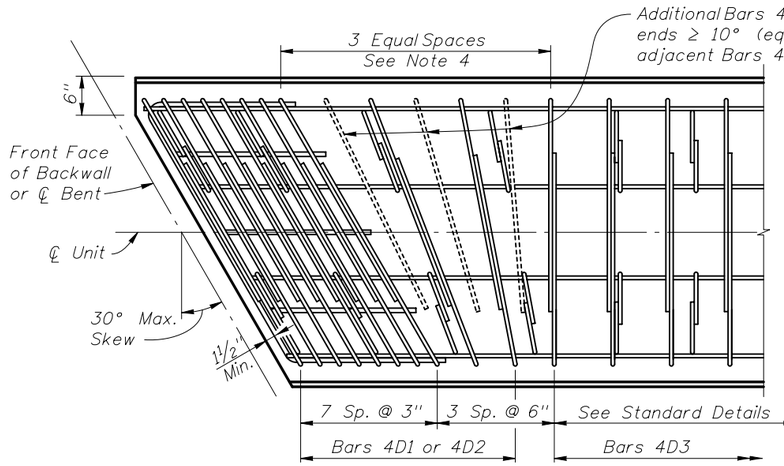
SCHEMATIC SIDE ELEVATION OF SLAB UNITS
(Positive Grade shown, Negative Grade or Horizontal Grade similar)



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
01/01/10	TJB	New Design Standard			

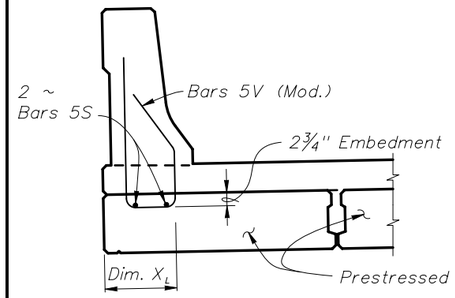
2010 Interim Design Standard

PRESTRESSED SLAB UNITS DETAILS AND NOTES

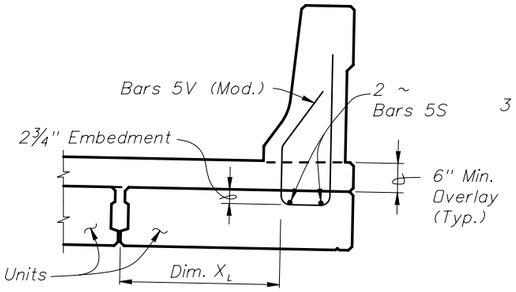
Interim Date 01/01/10

Sheet No. 1 of 3

Index No. 20350

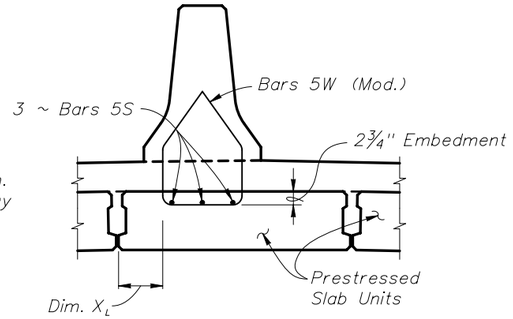


CASE "LEFT"



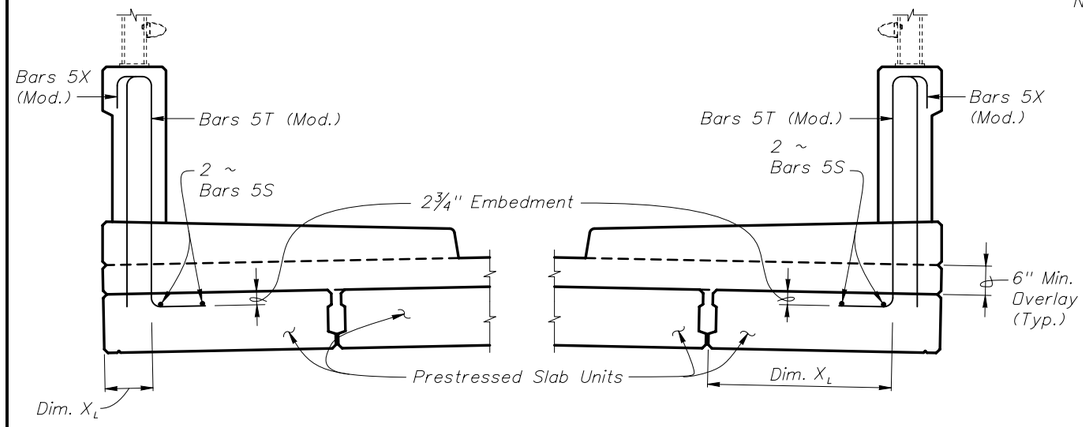
CASE "RIGHT"

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:

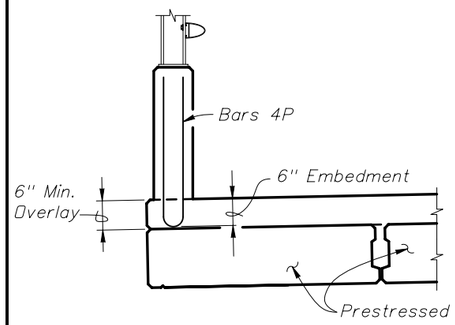
Work this sheet with the Prestressed Slab Unit - Table of Variables and Prestressed Slab Unit - Traffic Railing Reinforcement Layout Table (if required) in the Structures Plans.

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.

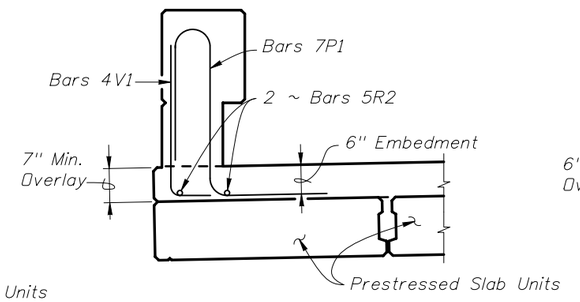
Modified Bars 5T & 5X for Index Nos. 422 & 423 shall be placed vertical (plumb).

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.

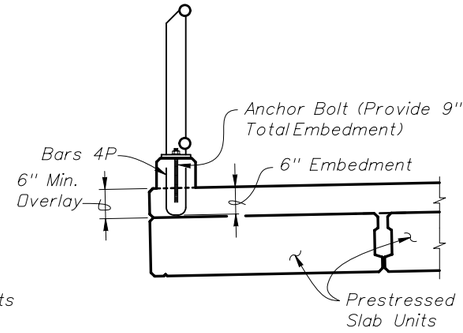
Concrete cover at top of railings may be increased up to 1" to accommodate camber of prestressed slab units.



PEDESTRIAN/BICYCLE RAILING DETAIL
(Index No. 820)

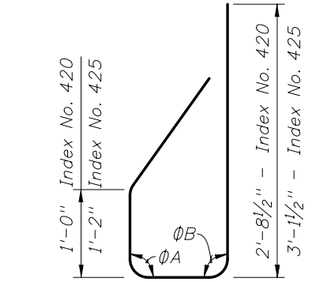


TRAFFIC RAILING - (CORRAL SHAPE)
(Index No. 424)

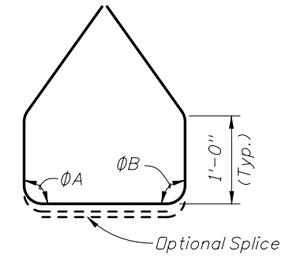


BRIDGE PEDESTRIAN/BICYCLE PICKET RAILING
(Index Nos. 851 & 861)

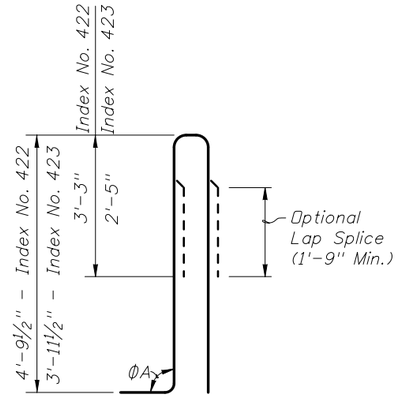
RAILING REINFORCING MODIFIED BAR LAYOUT



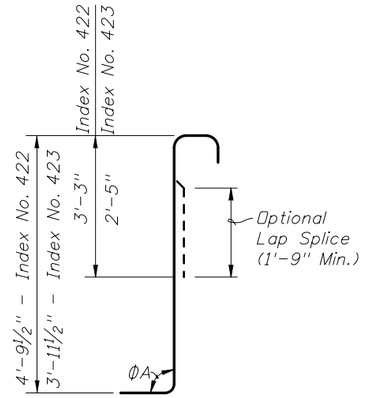
STIRRUP
BAR 5V (MOD.)
INDEX NOS. 420 OR 425



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
01/01/10	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

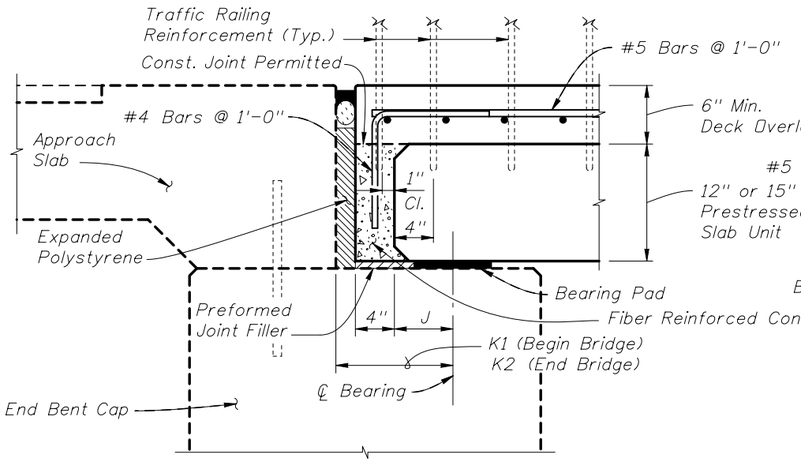
2010 Interim Design Standard

PRESTRESSED SLAB UNITS DETAILS AND NOTES

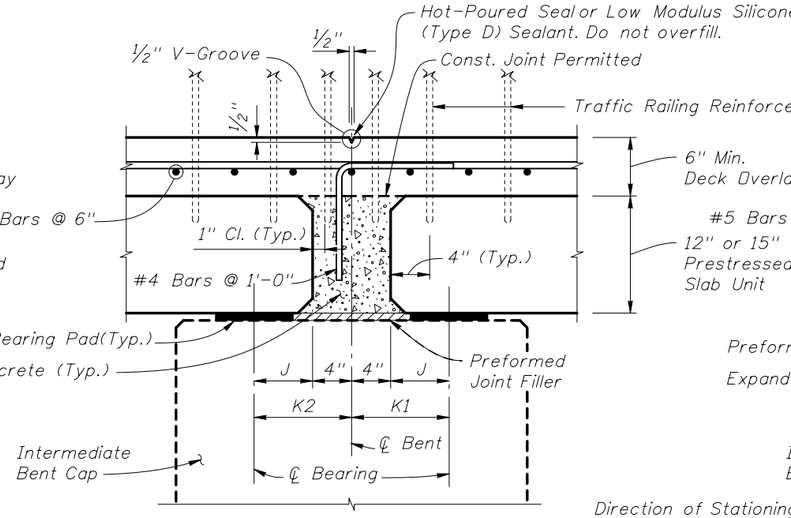
Interim Date 01/01/10

Sheet No. 2 of 3

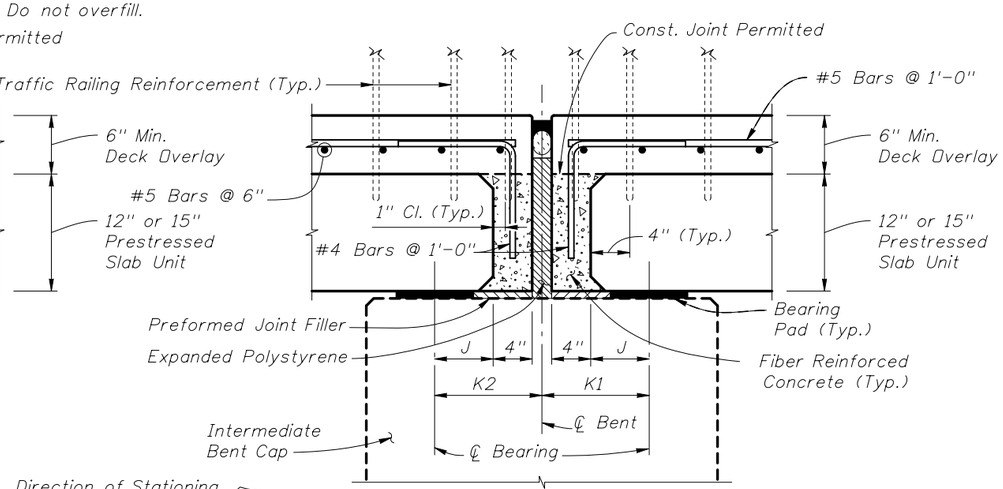
Index No. 20350



JOINT DETAIL AT
BEGIN/END BRIDGE

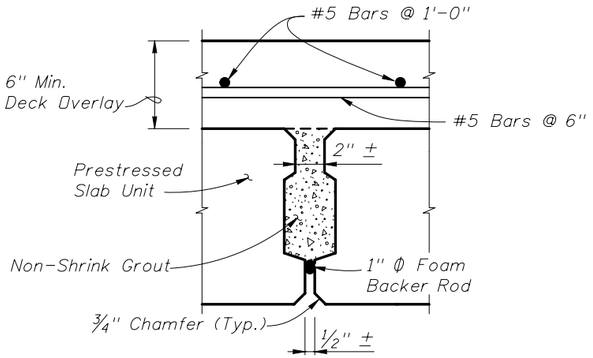


JOINT DETAIL AT
INTERMEDIATE BENTS ON CONTINUOUS UNITS

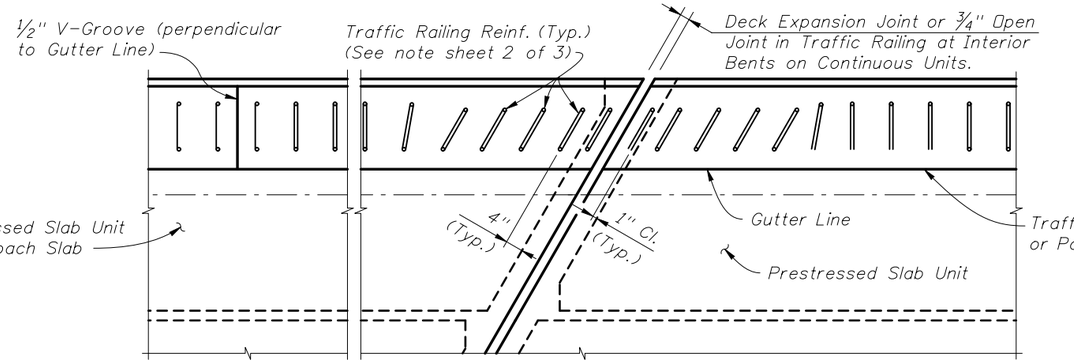


JOINT DETAIL AT
EXPANSION INTERMEDIATE BENTS

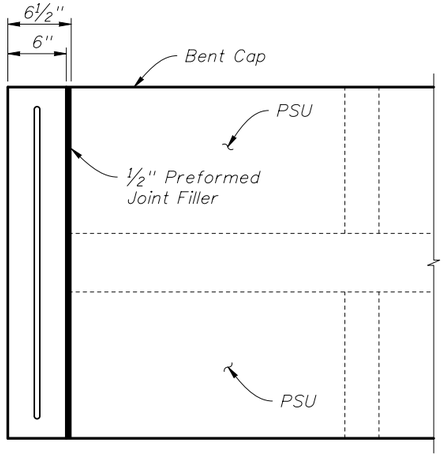
NOTE:
Deck overlay reinforcing is shown at nominal spacing. See Structures Plans for actual spacing and orientation on skewed bridges.



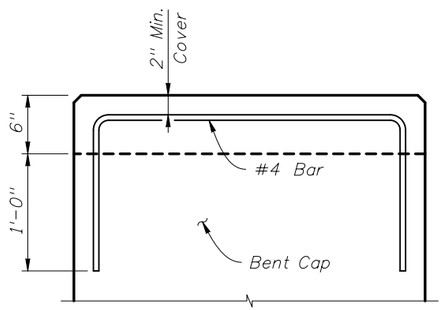
KEYWAY DETAIL



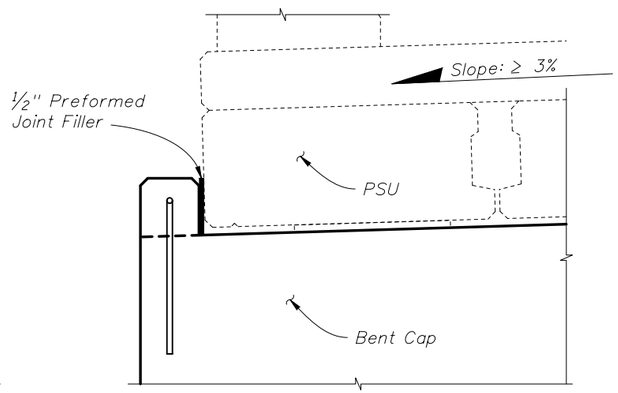
PARTIAL PLAN VIEW OF JOINTS ON SKEWED BRIDGES
(EXPANSION JOINT SHOWN, INTERMEDIATE JOINT SIMILAR)



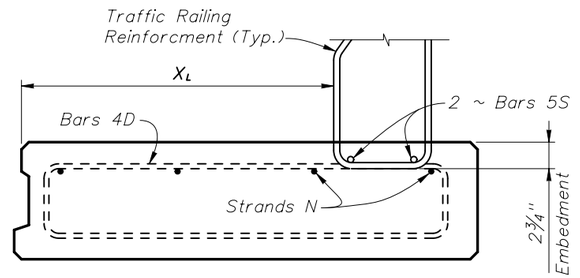
PARTIAL PLAN



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
01/01/10	TJB	New Design Standard			

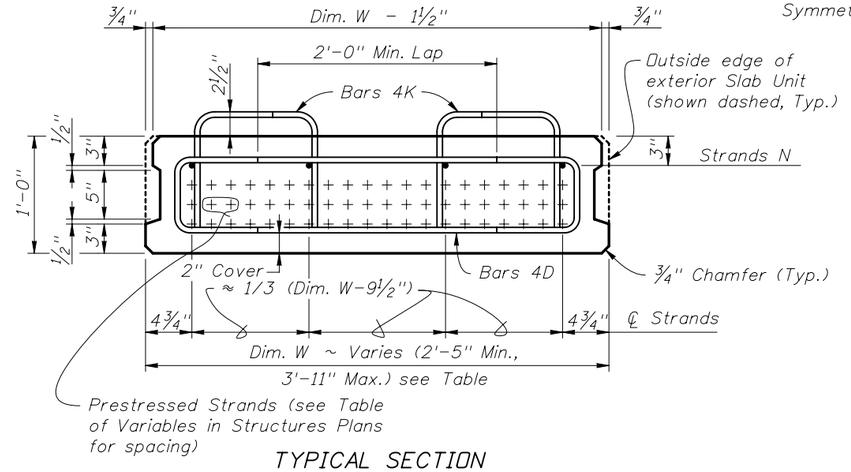
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

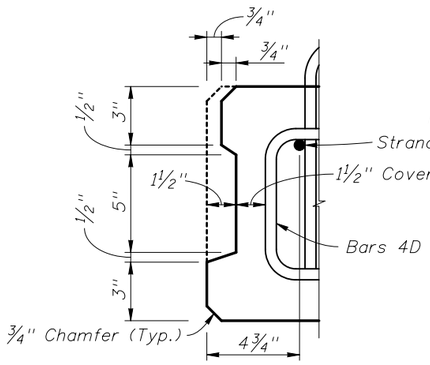
PRESTRESSED SLAB UNITS DETAILS AND NOTES

Interim Date	Sheet No.
01/01/10	3 of 3

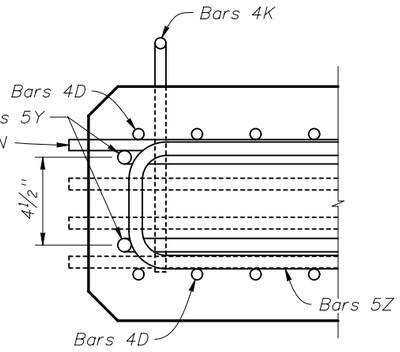
Index No. 20350



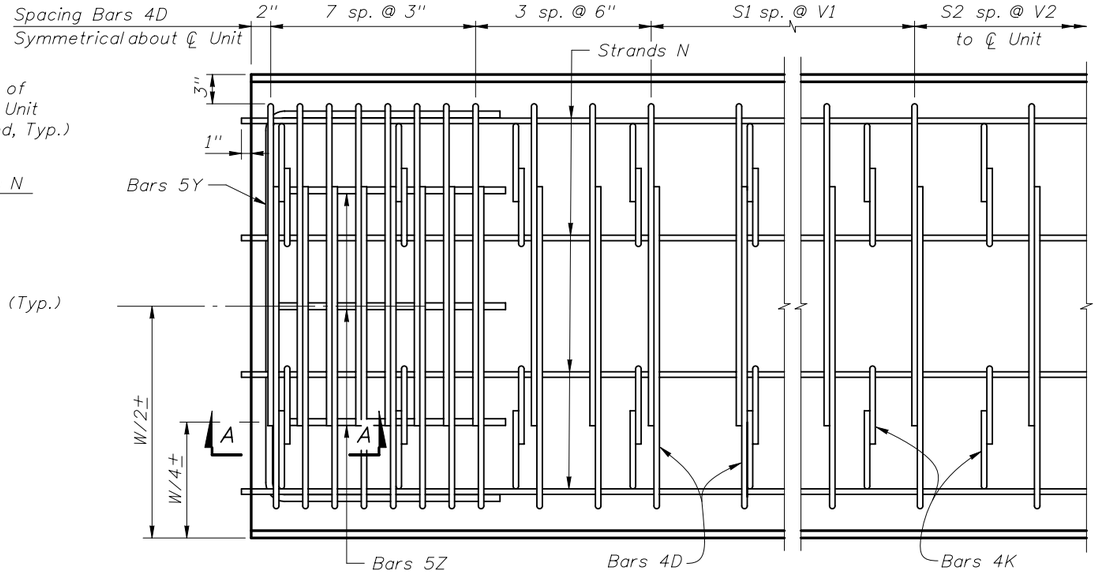
TYPICAL SECTION



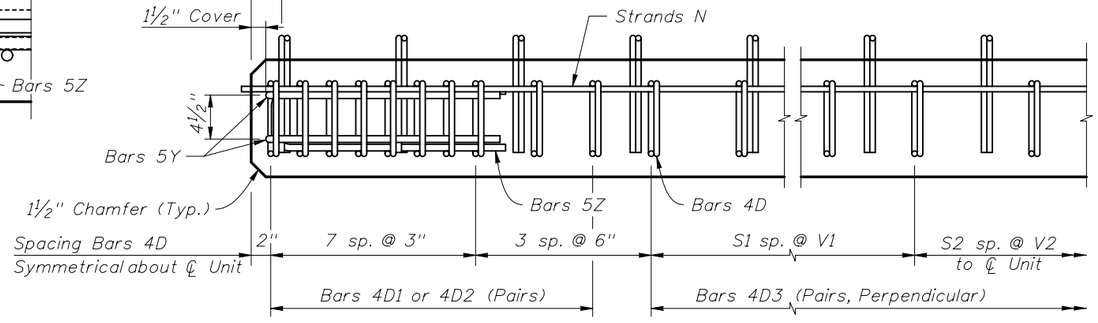
KEYWAY DETAIL



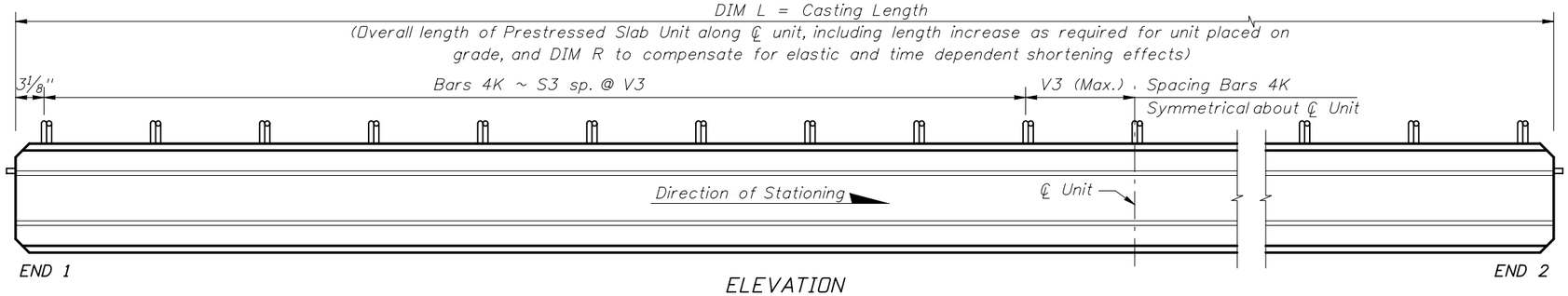
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

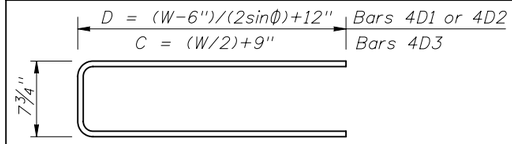


ELEVATION

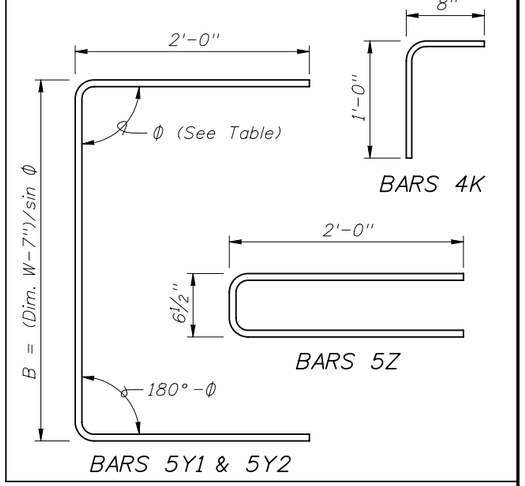
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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" 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'-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
01/01/10	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

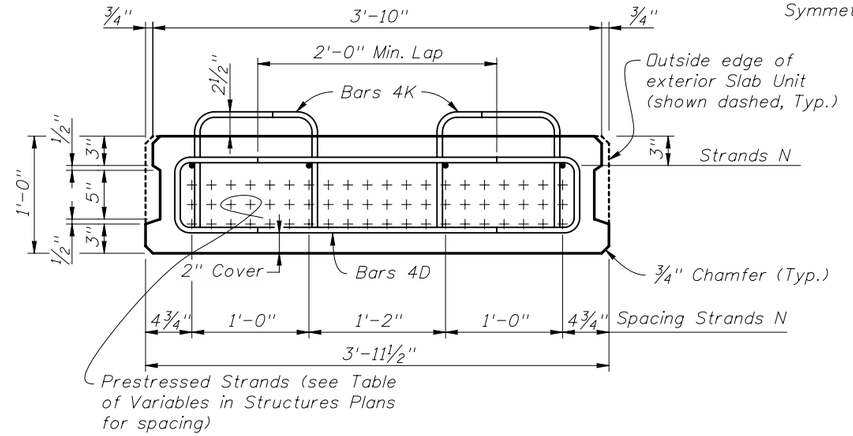
2010 Interim Design Standard

12" CUSTOM WIDTH PRESTRESSED SLAB UNIT - STANDARD DETAILS

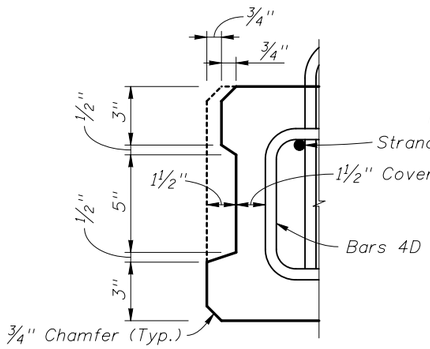
Interim Date 01/01/10

Sheet No. 1 of 1

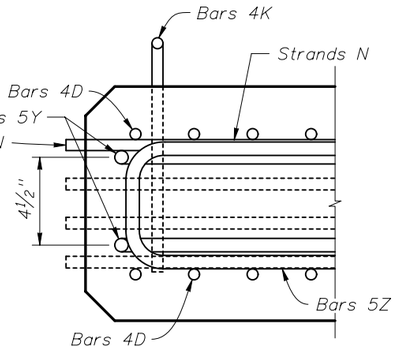
Index No. 20353



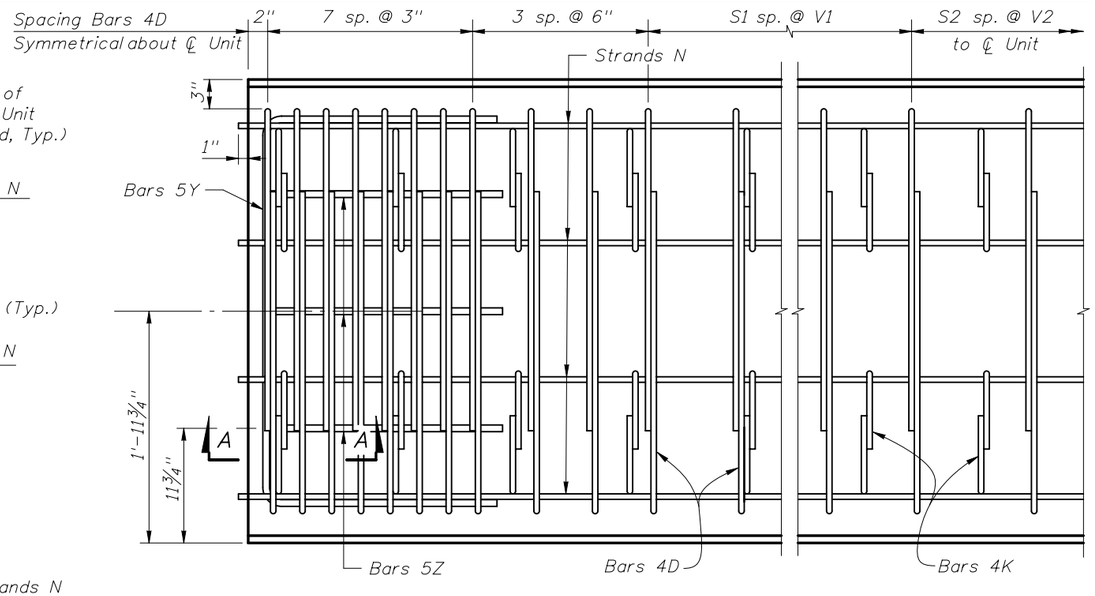
TYPICAL SECTION



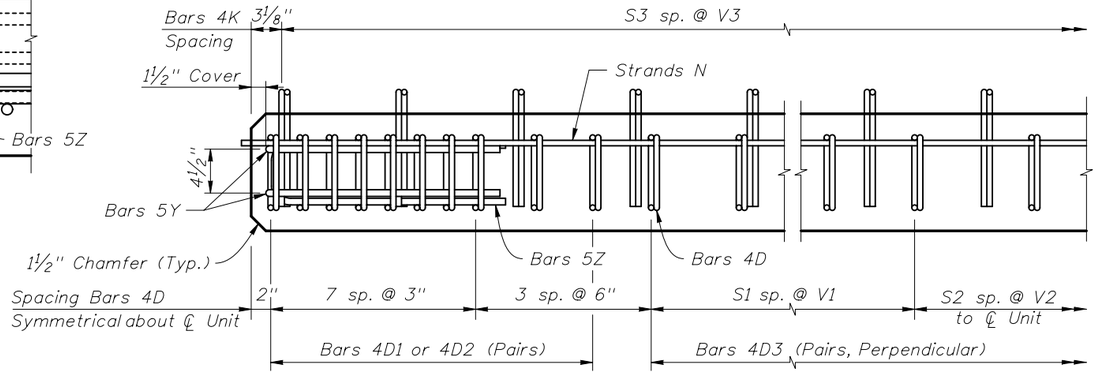
KEYWAY DETAIL



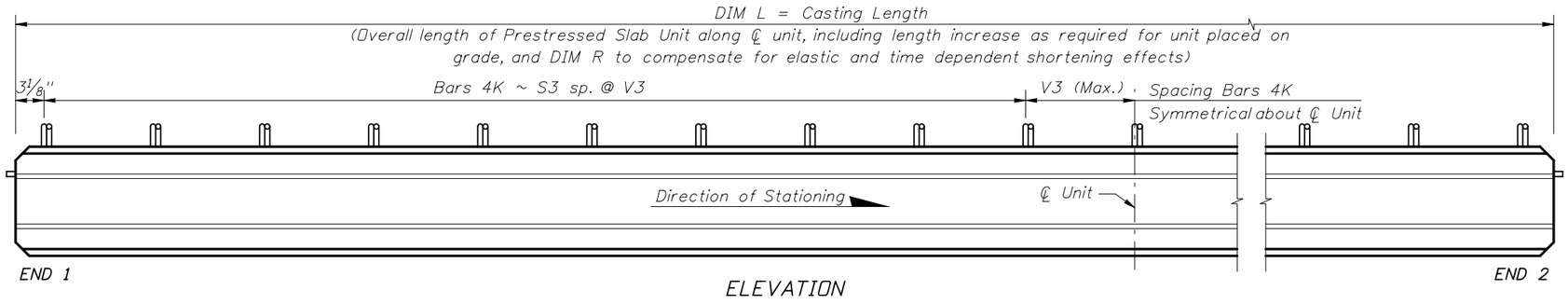
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

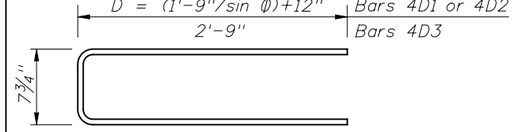


ELEVATION

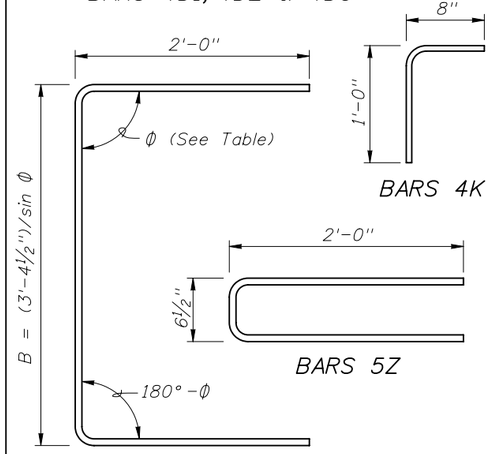
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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
01/01/10	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

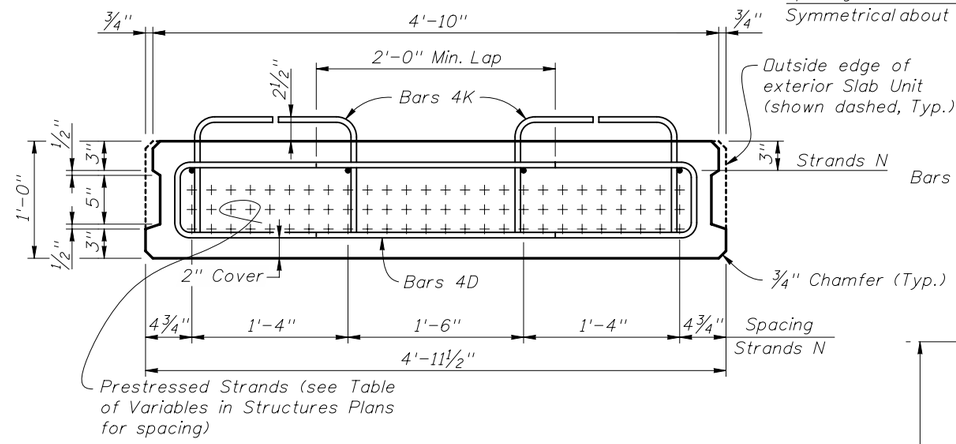
2010 Interim Design Standard

12"x48" PRESTRESSED SLAB UNIT - STANDARD DETAILS

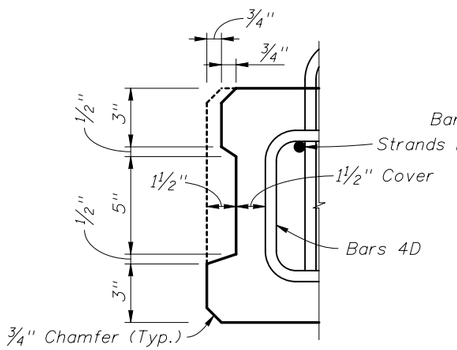
Interim Date 01/01/10

Sheet No. 1 of 1

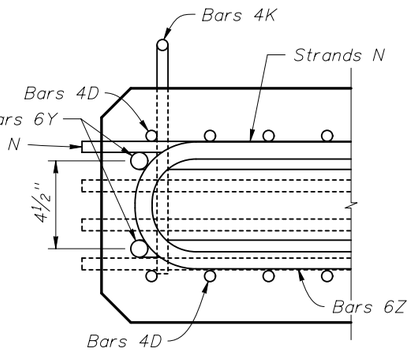
Index No. 20354



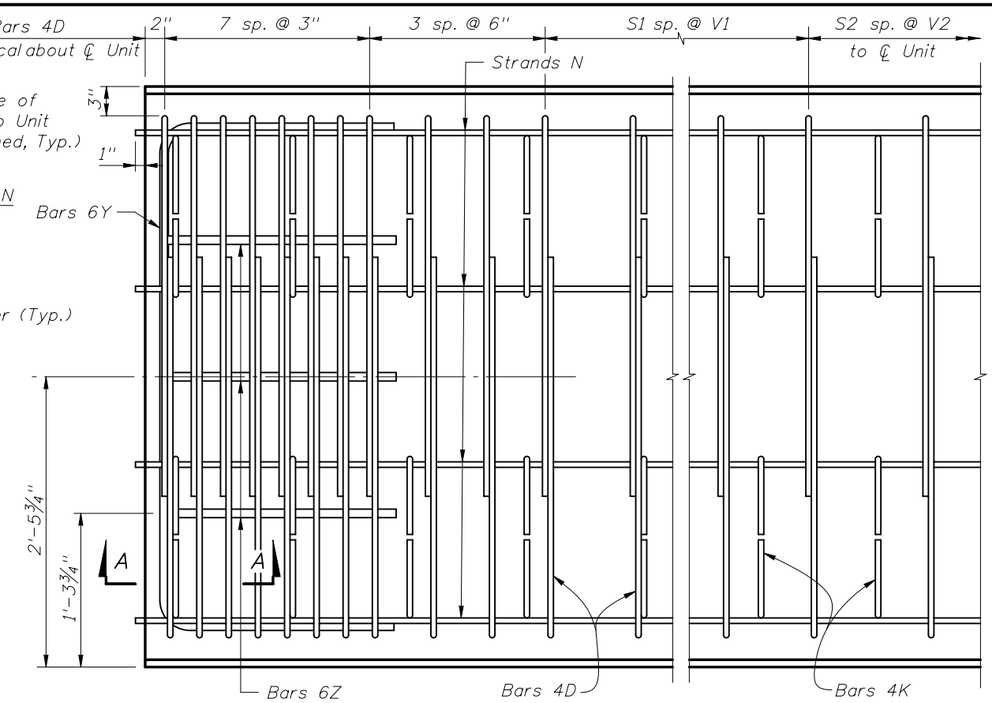
TYPICAL SECTION



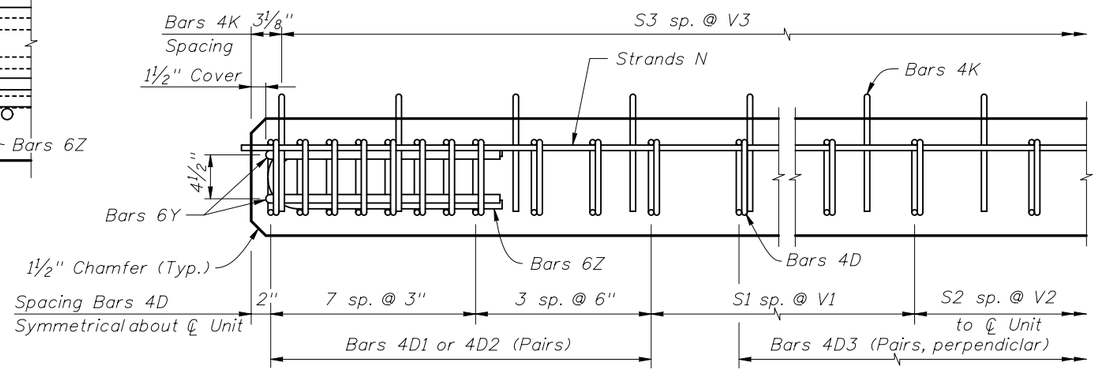
KEYWAY DETAIL



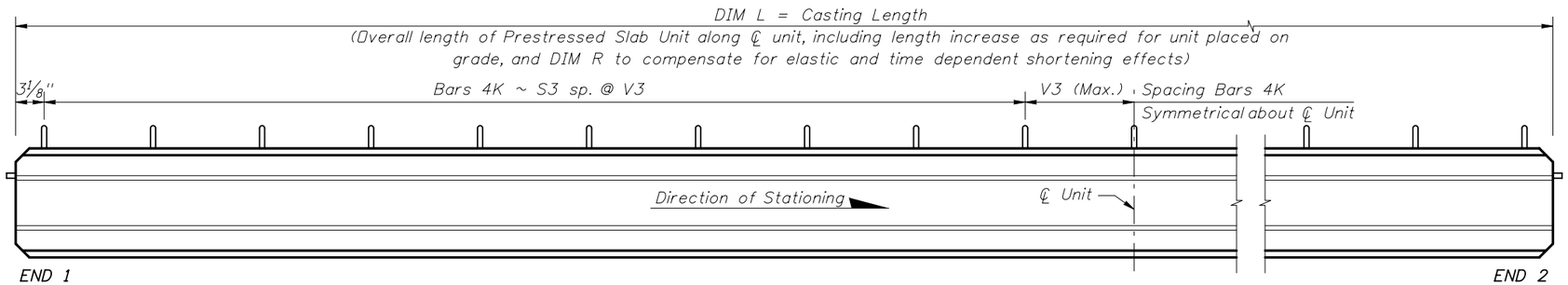
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

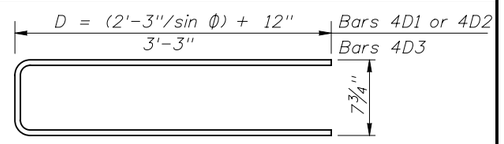


ELEVATION

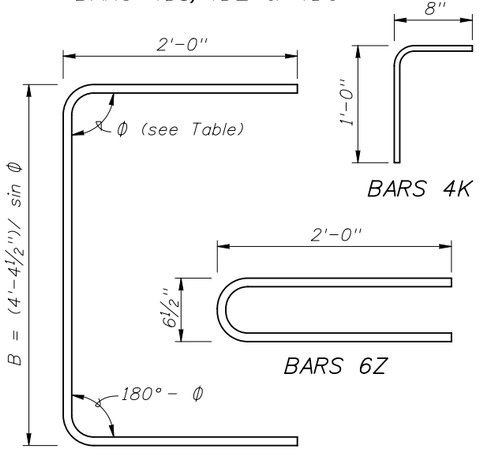
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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
01/01/10	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

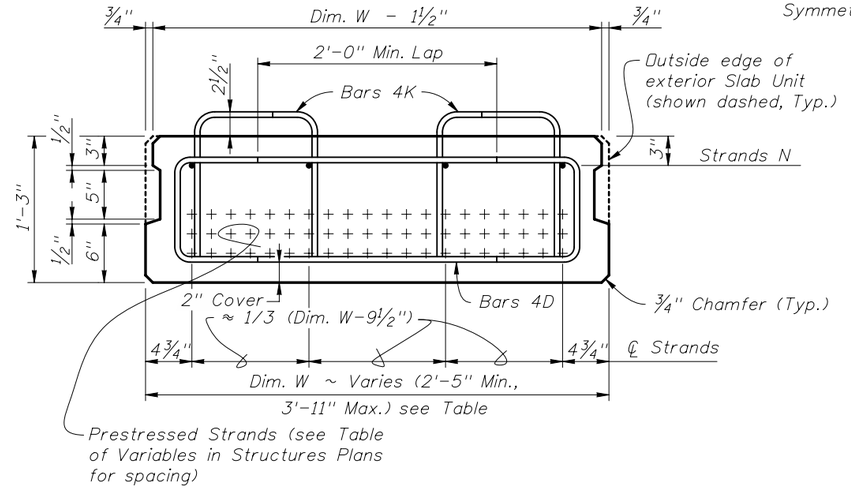
2010 Interim Design Standard

12"x60" PRESTRESSED SLAB UNIT - STANDARD DETAILS

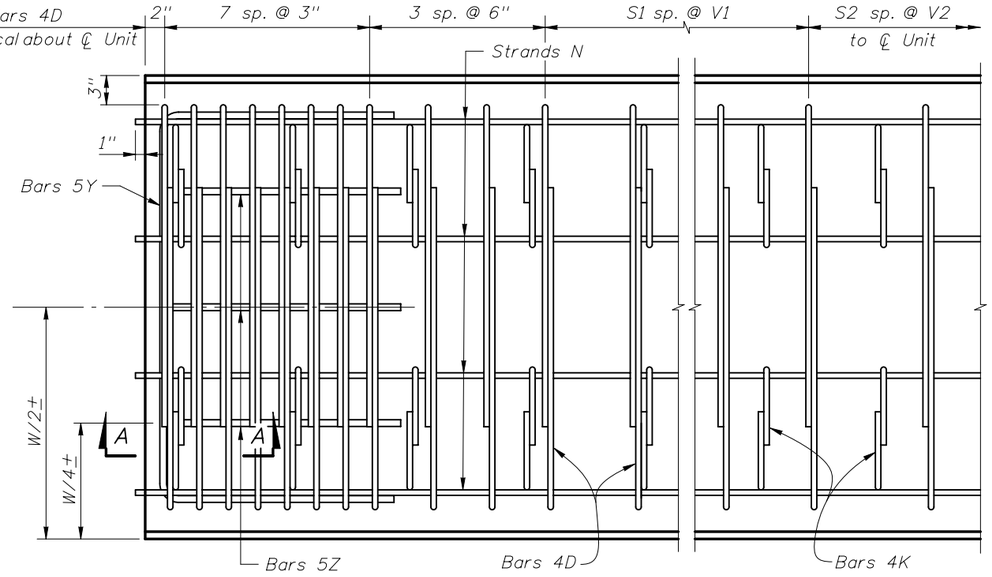
Interim Date 01/01/10

Sheet No. 1 of 1

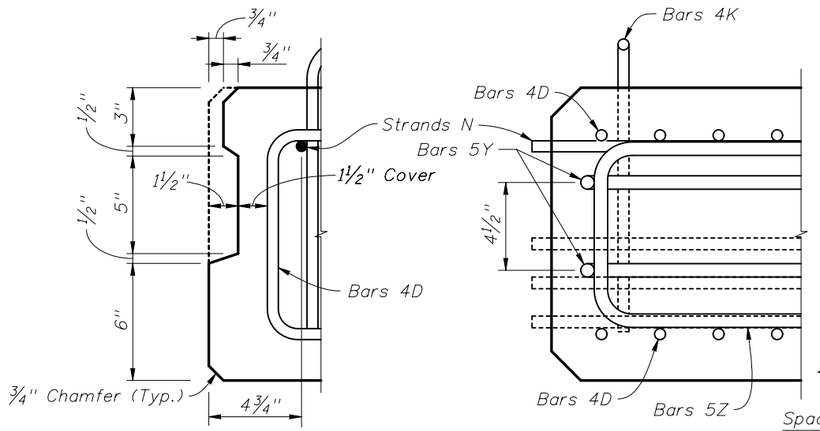
Index No. 20355



TYPICAL SECTION

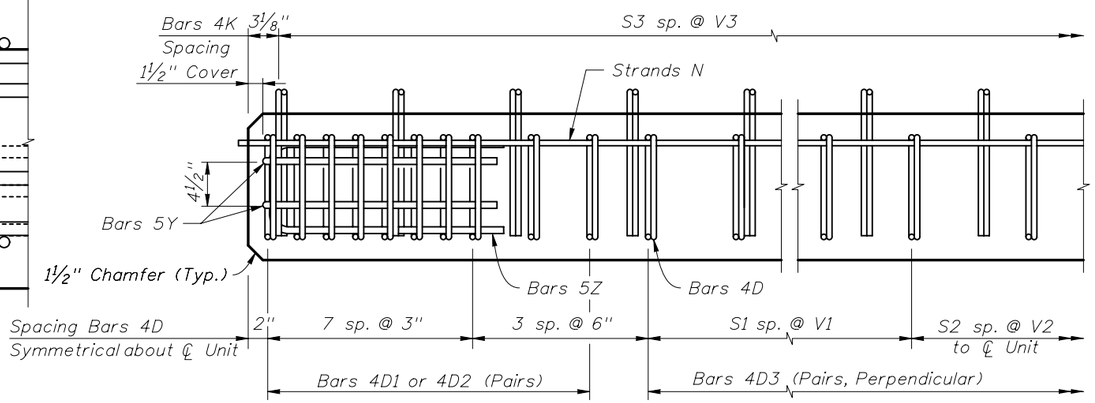


PLAN AT END OF PRESTRESSED SLAB UNIT

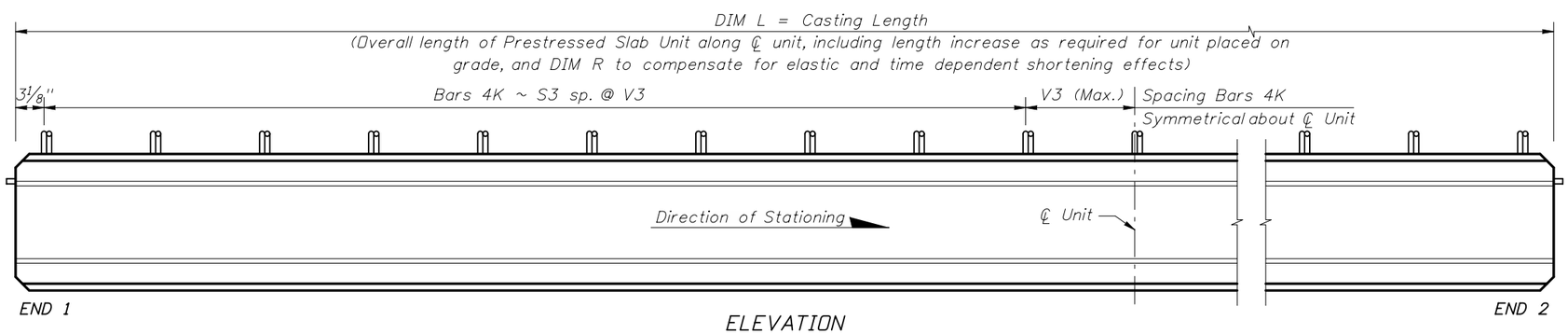


KEYWAY DETAIL

SECTION A-A



ELEVATION AT END OF PRESTRESSED SLAB UNIT

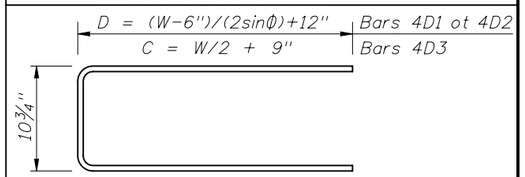


ELEVATION

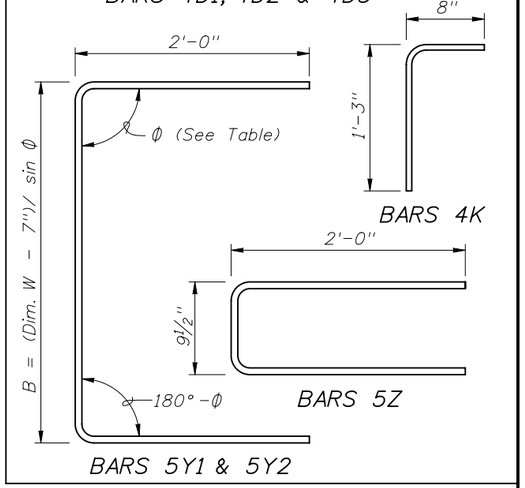
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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" ϕ 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
01/01/10	TJB	New Design Standard			

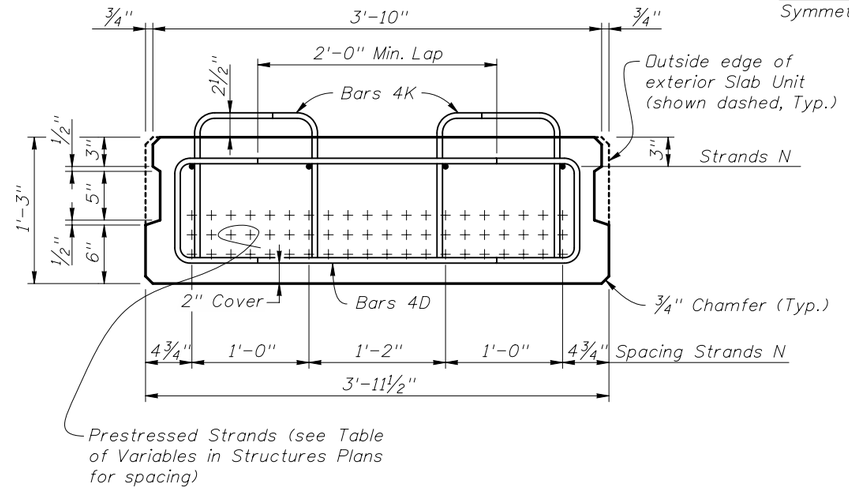
2010 Interim Design Standard

15" CUSTOM WIDTH PRESTRESSED SLAB UNIT - STANDARD DETAILS

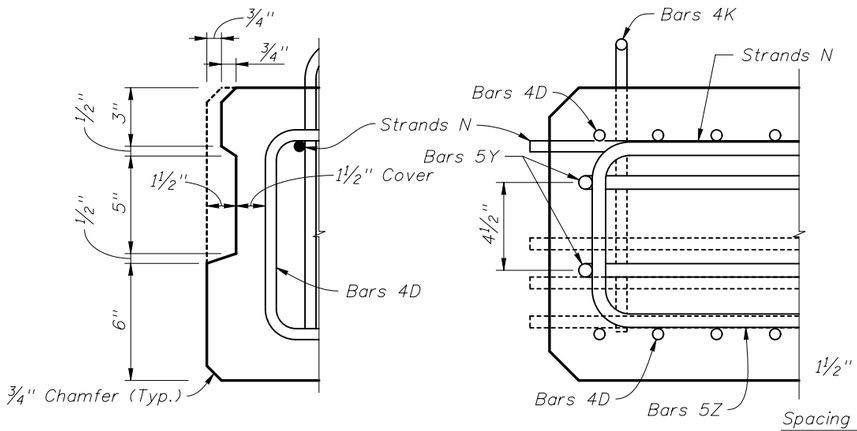
Interim Date 01/01/10

Sheet No. 1 of 1

Index No. 20363

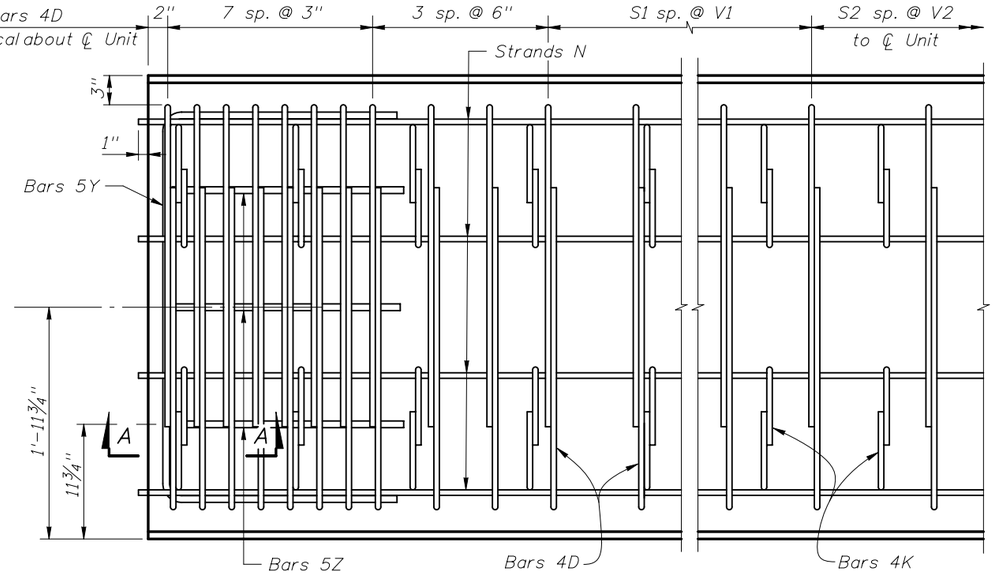


TYPICAL SECTION

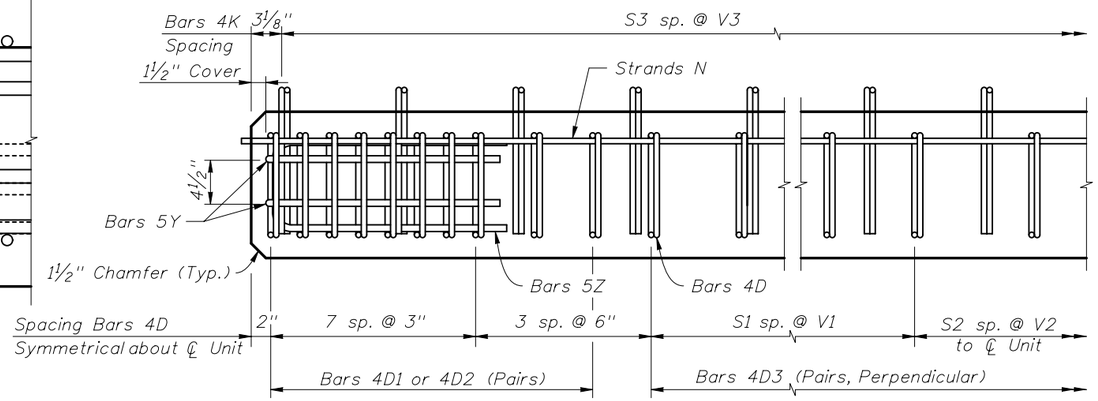


KEYWAY DETAIL

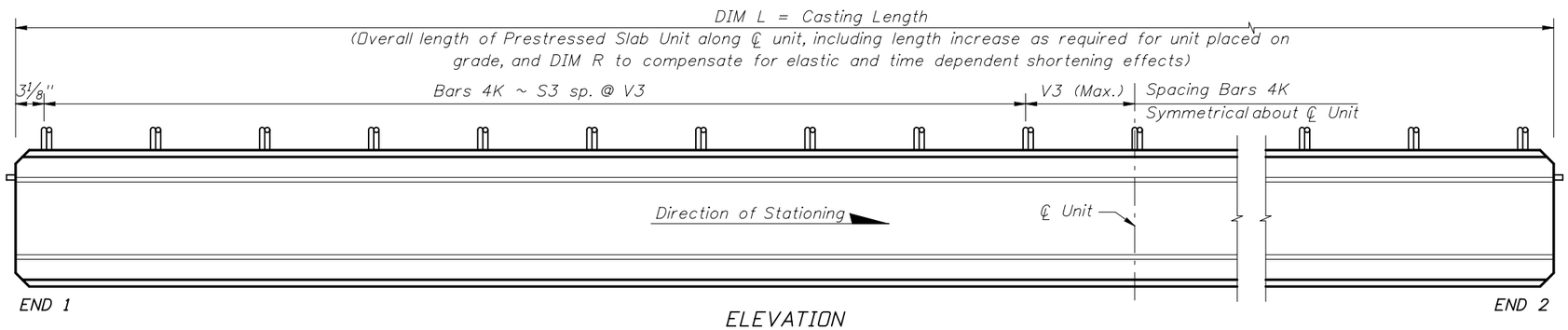
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

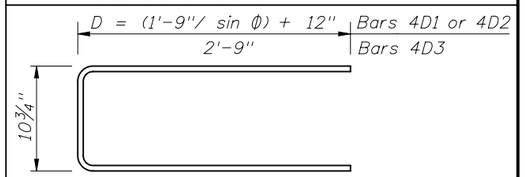


ELEVATION

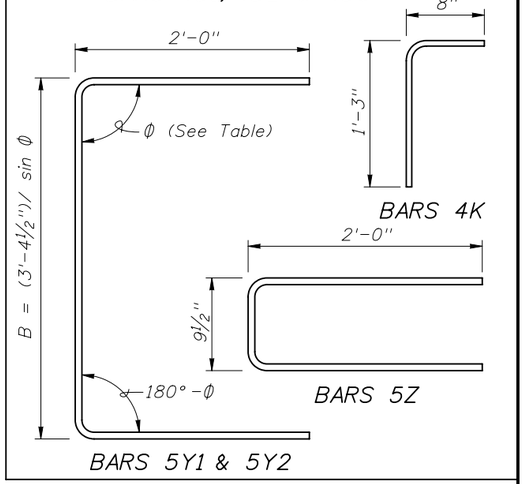
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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'-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 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
01/01/10	TJB	New Design Standard			

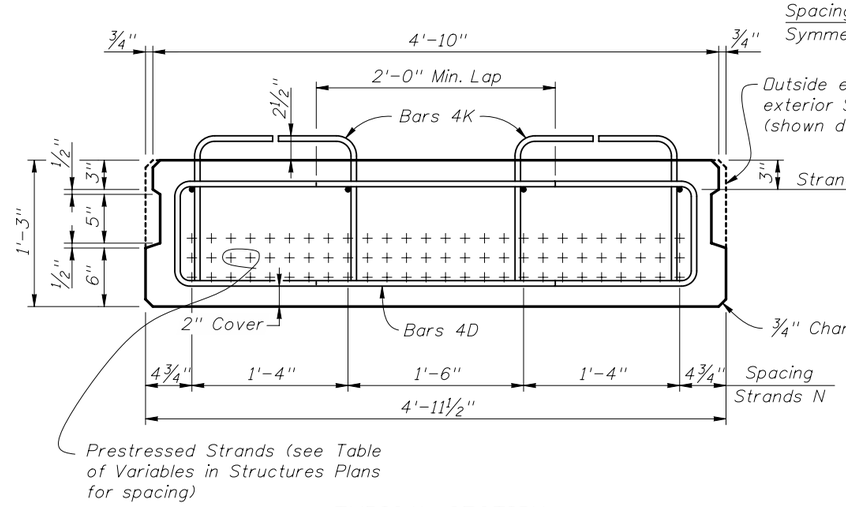
2010 Interim Design Standard

15"x48" PRESTRESSED SLAB UNIT - STANDARD DETAILS

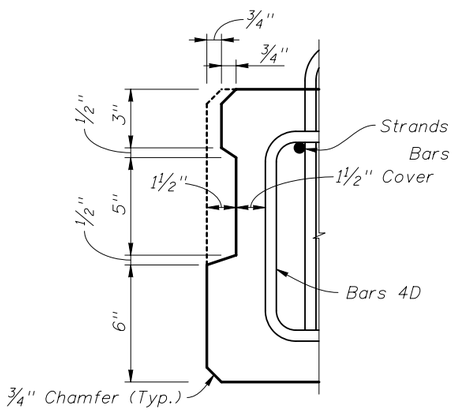
Interim Date 01/01/10

Sheet No. 1 of 1

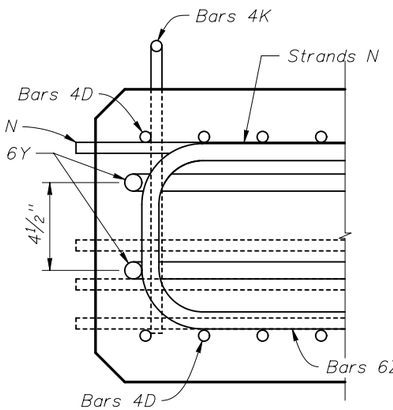
Index No. 20364



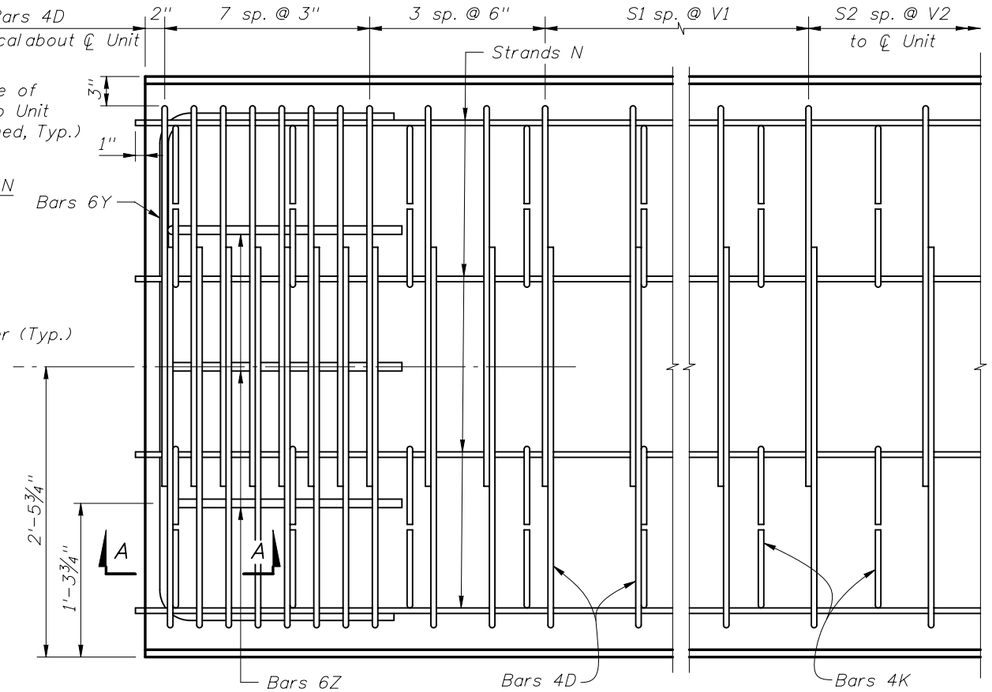
TYPICAL SECTION



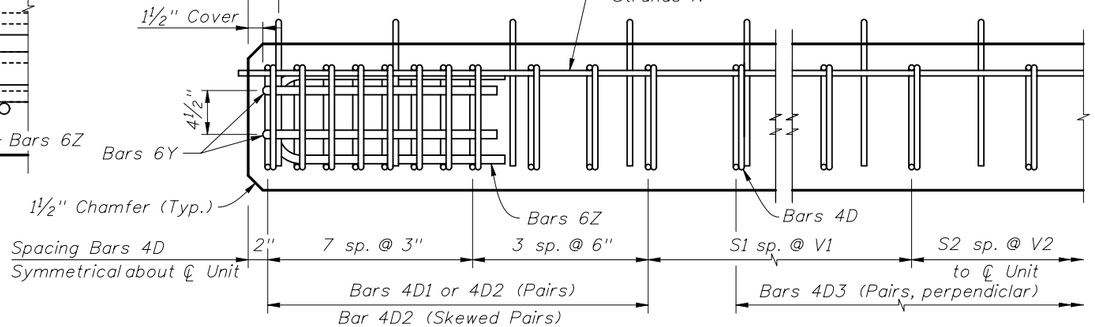
KEYWAY DETAIL



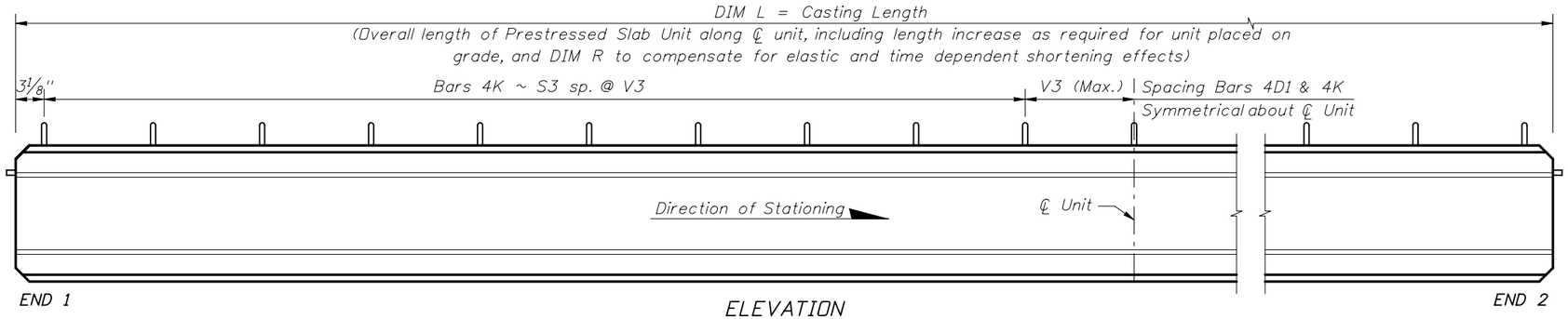
SECTION A-A



PLAN AT END OF PRESTRESSED SLAB UNIT



ELEVATION AT END OF PRESTRESSED SLAB UNIT

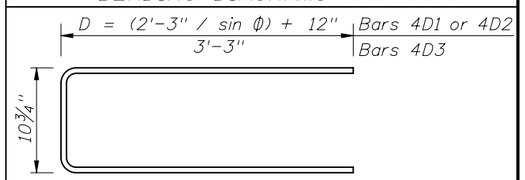


ELEVATION

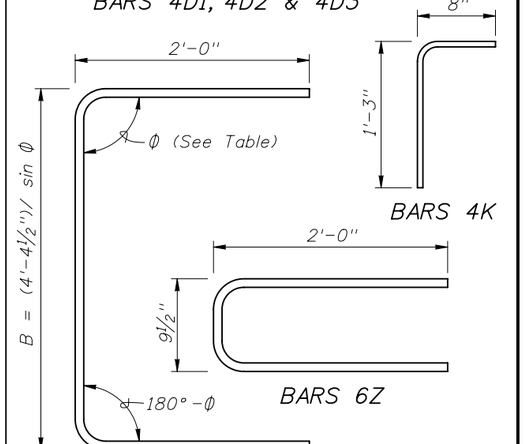
BILL OF REINFORCING STEEL FOR ONE UNIT ONLY

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'-5"
K	4, 5	4	See Table	1'-11"
N	2, 8	3/8" 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'-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
01/01/10	TJB	New Design Standard			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

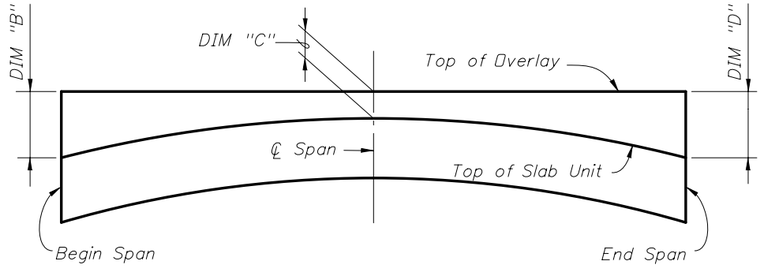
2010 Interim Design Standard

15"x60" PRESTRESSED SLAB UNIT - STANDARD DETAILS

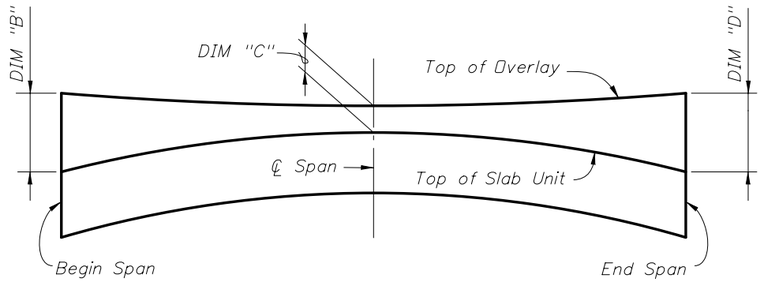
Interim Date 01/01/10

Sheet No. 1 of 1

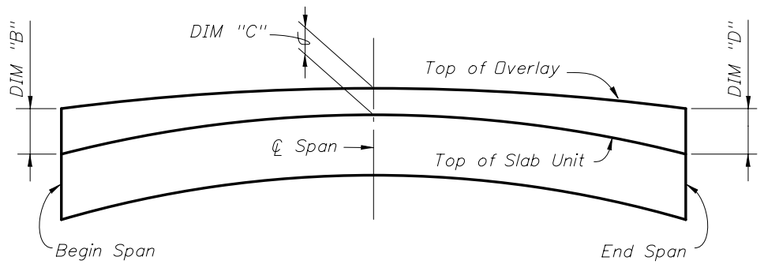
Index No. 20365



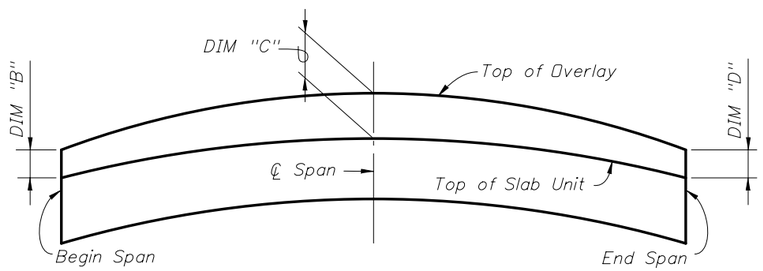
OVERLAY DIAGRAM FOR TANGENT SPANS
(ALONG ℄ SLAB UNIT) (CASE 1)



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



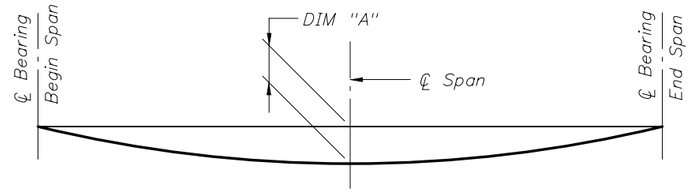
OVERLAY DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT ℄ SPAN
(ALONG ℄ SLAB UNIT) (CASE 3)



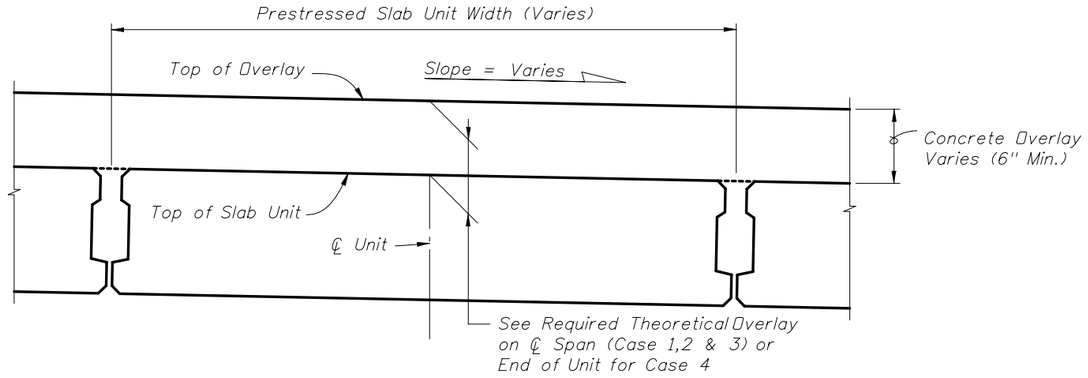
OVERLAY DIAGRAM FOR CREST VERTICAL CURVE SPANS
– CONTROL AT BEGIN OR END SPAN
(ALONG ℄ SLAB UNIT) (CASE 4)

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
01/01/10	TJB	New Design Standard			

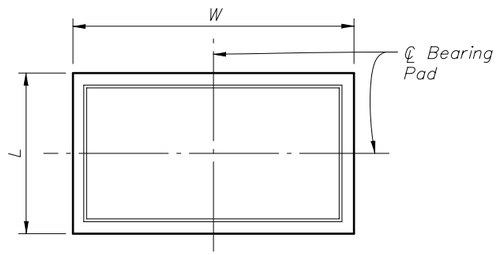
2010 Interim Design Standard

OVERLAY & DEFLECTION DATA FOR PRESTRESSED SLAB UNITS

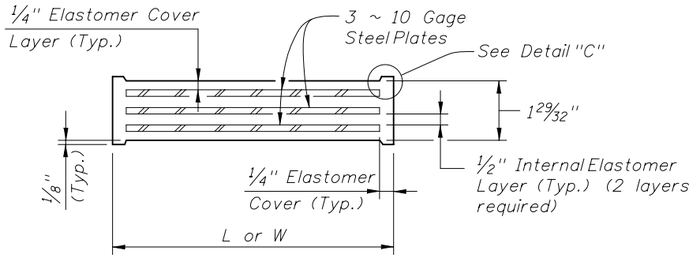
Interim Date 01/01/10

Sheet No. 1 of 1

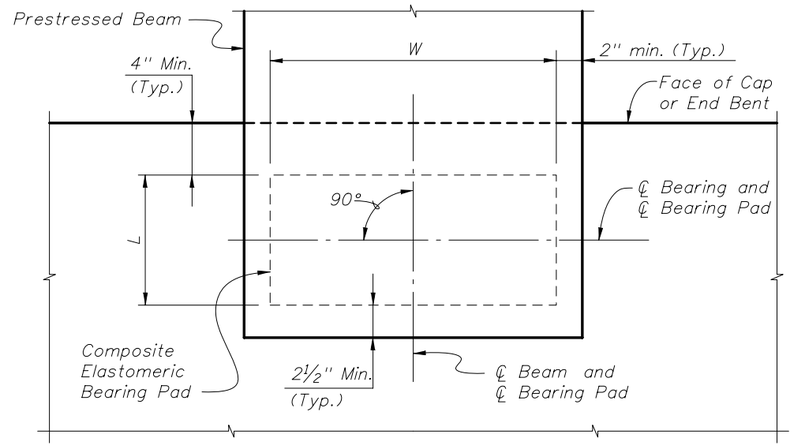
Index No. 20399



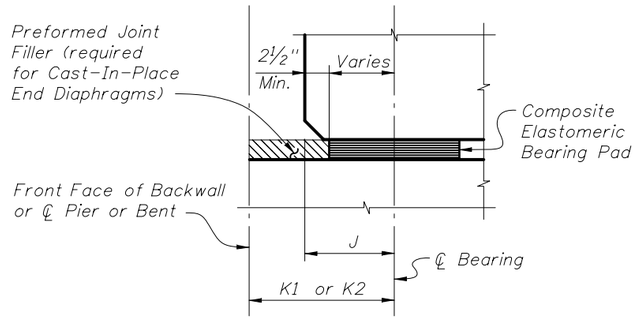
PLAN



TYPICAL SECTION
TYPE A PAD



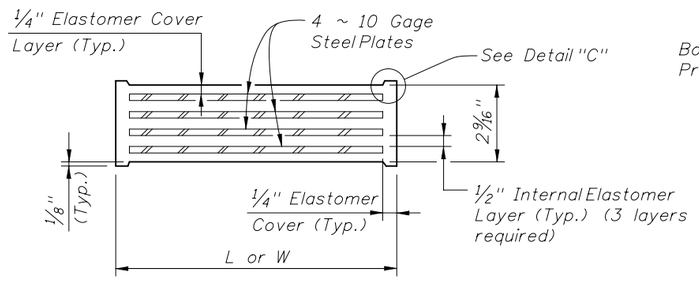
PARTIAL PLAN
(Skew = 0°)



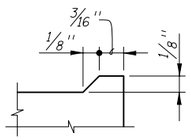
PARTIAL SIDE ELEVATION
(ALONG ℄ BEARING)

		BEARING PAD DIMENSIONS		*BEARING PLATE DIMENSIONS	
PAD TYPE (See Note 1)	BEAM TYPE	L	W	C	D
A (G=110psi)	II (AASHTO)	1'-0"	1'-2"	1'-2"	1'-4"
	III (AASHTO)	10"	1'-6"	1'-0"	1'-8"
	IV AASHTO)	10"	1'-10"	1'-0"	2'-0"
	V & VI (AASHTO) & FLORIDA BULB-T 78	11"	2'-0"	1'-1"	2'-2"
	FLORIDA BULB-T 72			1'-1"	2'-4"
B (G=110psi)	II (AASHTO)	1'-4"	1'-2"	1'-6"	1'-4"
	III (AASHTO)	1'-2"	1'-6"	1'-4"	1'-8"
	IV AASHTO)	1'-0"	1'-10"	1'-2"	2'-0"
	V & VI (AASHTO) & FLORIDA BULB-T 78	1'-2"	2'-0"	1'-4"	2'-2"
	FLORIDA BULB-T 72			1'-4"	2'-4"
C (G=150psi)	II (AASHTO)	1'-0"	1'-0"	1'-2"	1'-4"
	III (AASHTO)	1'-0"	1'-4"	1'-2"	1'-8"
	IV AASHTO)	10"	1'-9"	1'-0"	2'-0"
	V & VI (AASHTO) & FLORIDA BULB-T 78	1'-0"	1'-11"	1'-2"	2'-2"
	FLORIDA BULB-T 72			1'-2"	2'-4"

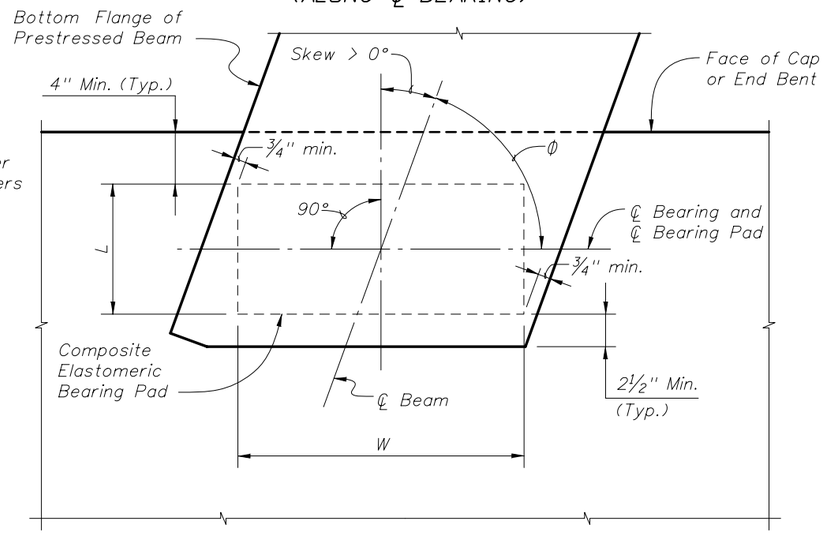
* Work this sheet with Index No. 20501 - Bearing Plate Details when beveled or embedded bearing plates are required. See 'TABLE OF BEAM VARIABLES' on Beam Sheets for locations where bearing plates are required.



TYPICAL SECTION
TYPE B AND TYPE C PAD



DETAIL "C"



PARTIAL PLAN
(Skew > 0°)

BEARING PAD NOTES:

1. Neoprene in Type A or B bearing pads shall have a shear modulus (G) of 110 psi. Neoprene in Type C 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. Variations in pad dimensions will be allowed provided the revised pads meet the Specifications, meet the requirements of this index, and are approved by the Engineer.
4. For beam grades less than or equal to 2% finish the Beam Seat parallel to the bottom of the beam. For beam grades greater than 2% finish the Beam Seat level and provide Beveled Bearing Plates.
5. See Bid Item Notes for quantities of Type A, B, and/or C Bearing Pads.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed Index Title.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

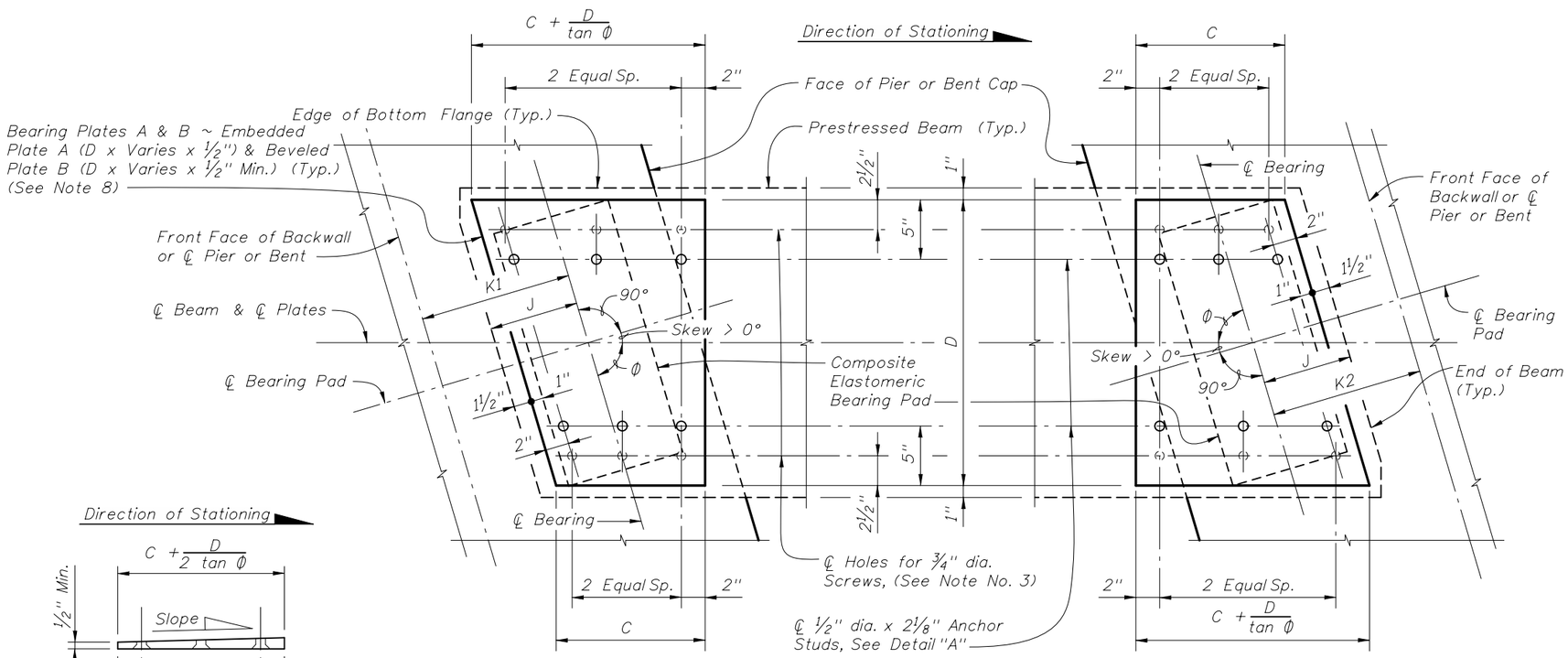
2010 Interim Design Standard

COMPOSITE ELASTOMERIC BEARING PADS - PRESTRESSED AASHTO AND BULB-T BEAMS

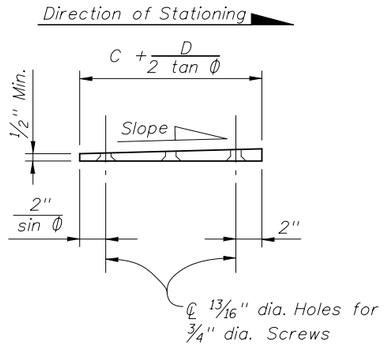
Interim Date 01/01/10

Sheet No. 1 of 1

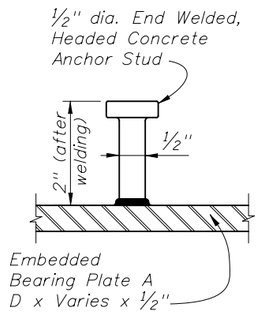
Index No. 20500



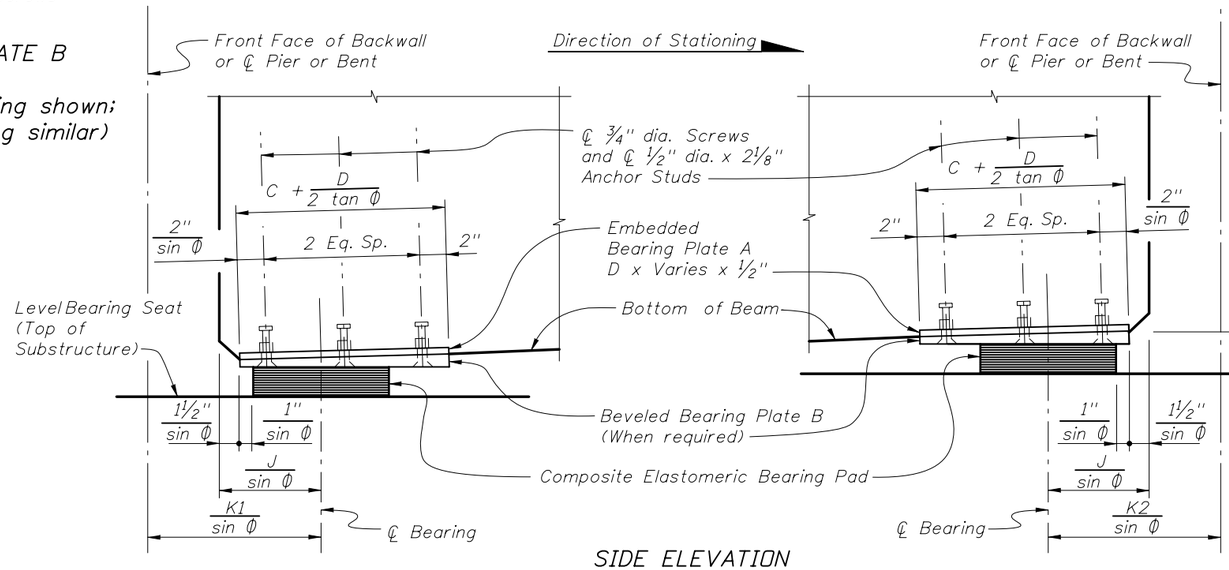
PLAN
(0° < Skew ≤ 30° shown, Skew = 0° Similar)



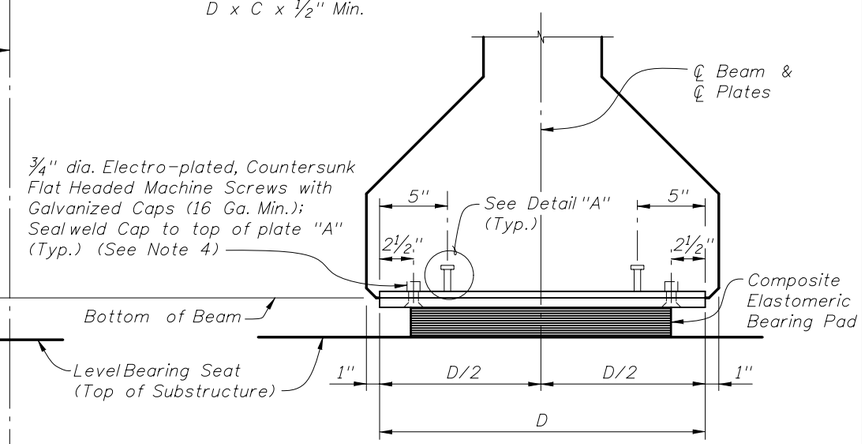
BEVELED BEARING PLATE B
(Along ℄ Beam)
(Positive Slope, Begin Bearing shown; Negative Slope, End Bearing similar)



DETAIL "A"



SIDE ELEVATION
(Along ℄ Beam) (See Note 7)



END ELEVATION

NOTES:

1. Work this sheet with the following drawings: Index No. 20500 - Composite Elastomeric Bearing Pads.
2. Embedded Bearing Plates A are required for all AASHTO Type V, VI and Florida Bulb-T beams. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams only as scheduled in the 'TABLE OF BEAM VARIABLES' on Beam Sheets.
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 galvanized 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 B 633, 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 Beveled Bearing Plates in the pay item for Prestressed Concrete Beams.
6. For Dimensions C and D, see 'BEARING PLATE DIMENSIONS' on Index No. 20500 and the 'BEVELED BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' on Beam Sheets.
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.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added material specifications to Note 3.			

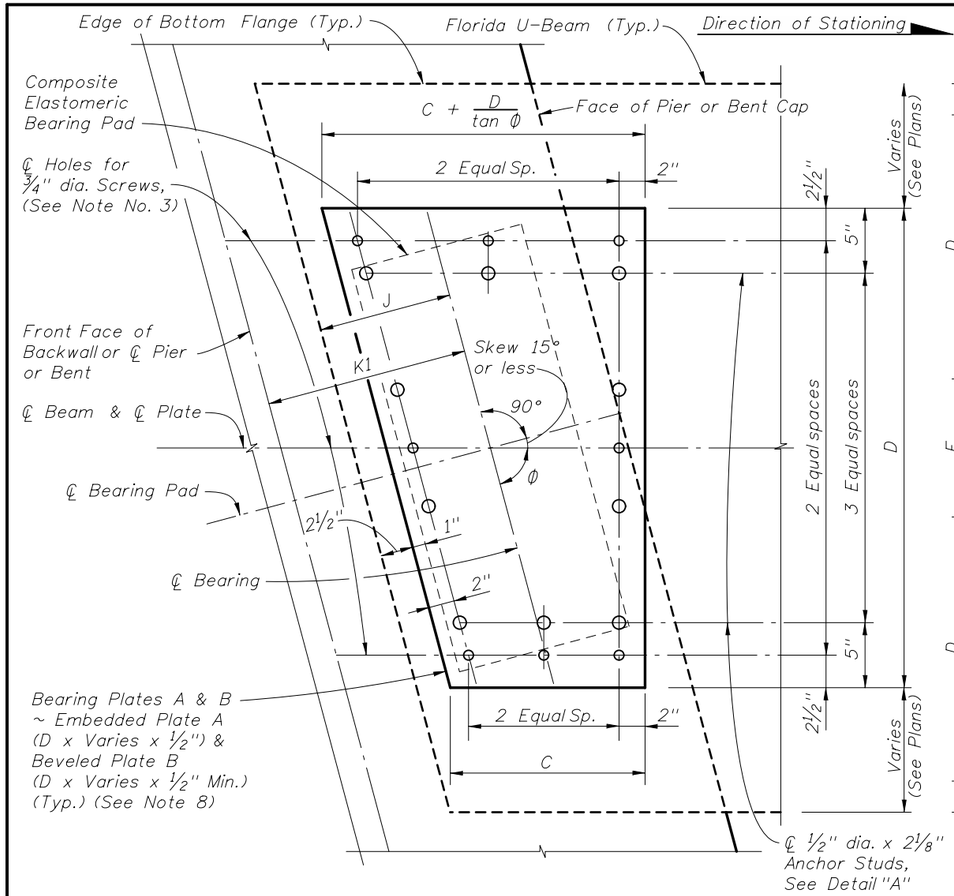
2010 Interim Design Standard

BEVELED BEARING PLATE DETAILS - PRESTRESSED AASHTO AND BULB-T BEAMS

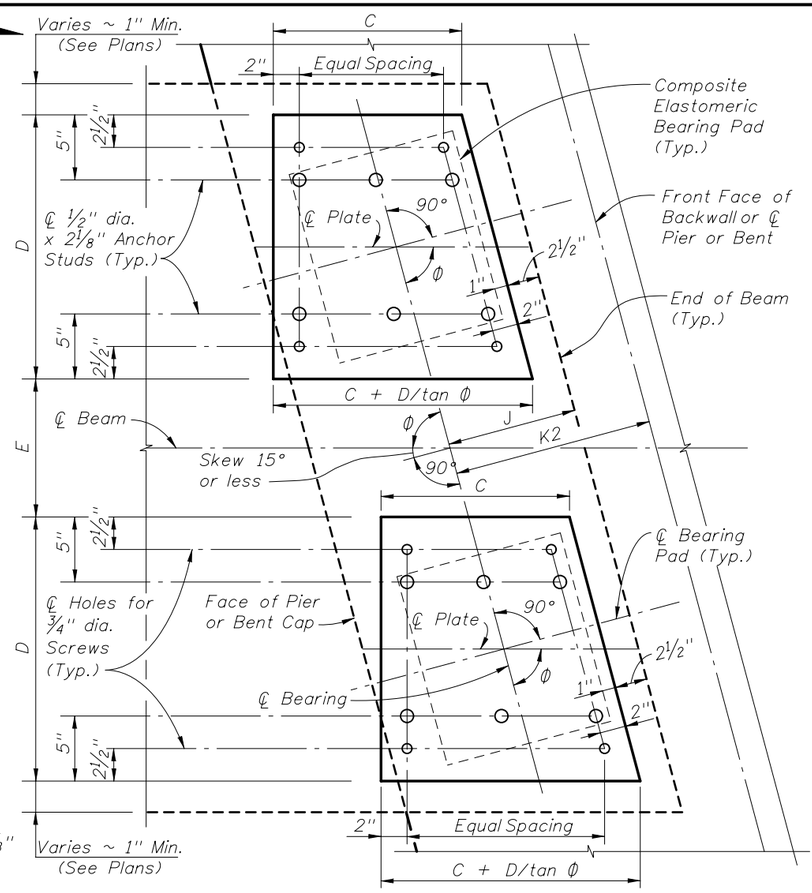
Interim Date 01/01/10

Sheet No. 1 of 1

Index No. 20501



PLAN VIEW OF TYPICAL SINGLE BEARING

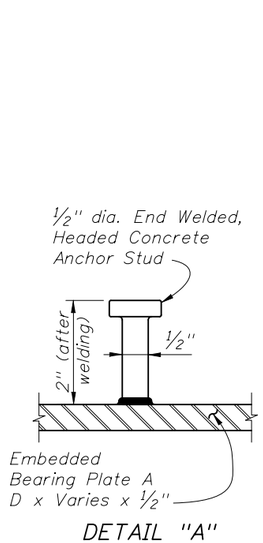


PLAN VIEW OF TYPICAL DOUBLE BEARING

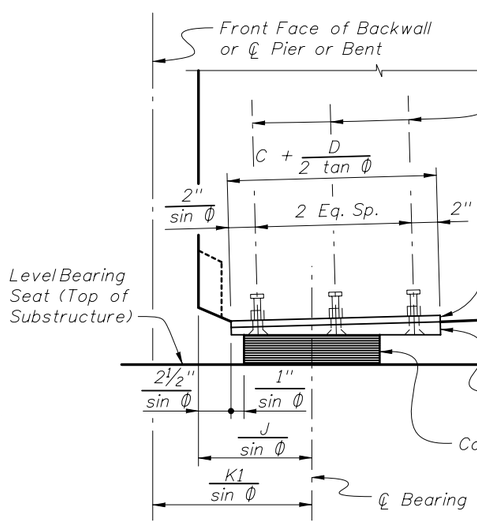
NOTES:

1. Work this sheet with the 'BEVELED BEARING PLATE DATA TABLE' in the plans.
2. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams only as scheduled in the 'TABLE OF BEAM VARIABLES' on Beam Sheets.
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 galvanized Bearing Plates A & B after fabrication except 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. Drill and thread holes perpendicular to 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 B 633, 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 Beveled Bearing Plates in the pay item for Prestressed Beams (Florida U-Beams).
6. For Dimensions C and D, see 'BEVELED BEARING PLATE DATA TABLE' in the Structures Plans. For Dimensions J, K1 and K2, see 'TABLE OF BEAM VARIABLES' on Beam Sheets.
7. All details and dimensions shown are along ℄ Beam for single bearings or ℄ Plate parallel to ℄ Beam for double bearings, 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.

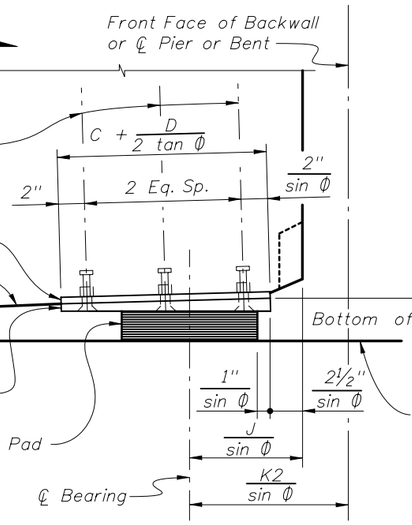
PLAN
(0° < Skew ≤ 15° shown, Skew = 0° Similar)

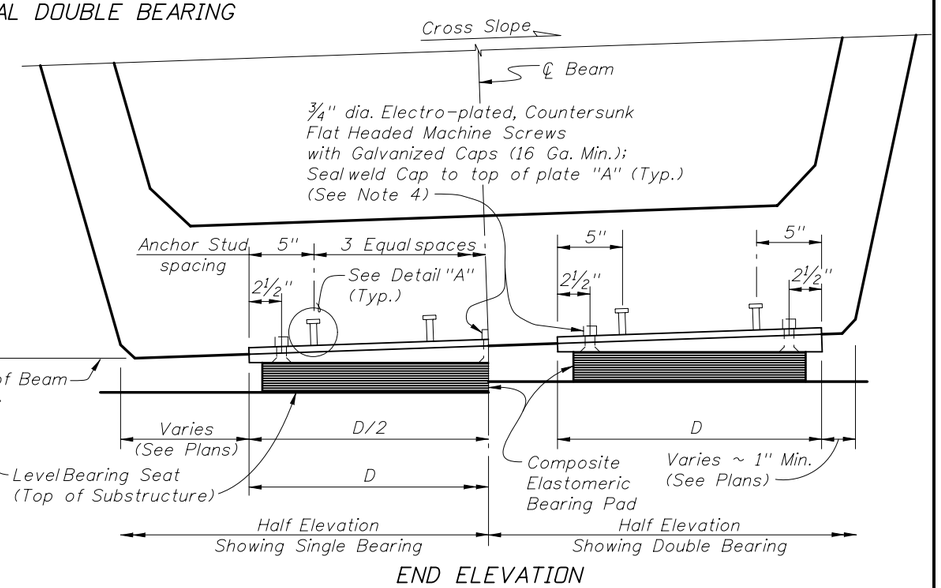


DETAIL "A"



SIDE ELEVATION
(See Note 7)





END ELEVATION
(Positive Cross Slope shown, Negative Cross Slope similar)

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Added material specification to Note 3.			

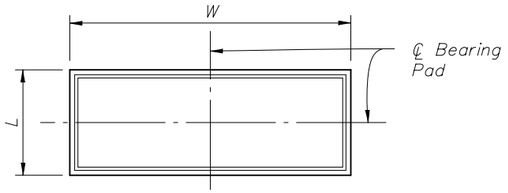
2010 Interim Design Standard

BEVELED BEARING PLATE DETAILS - PRESTRESSED FLORIDA-U BEAMS

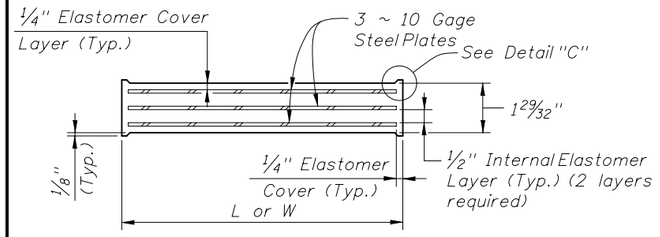
Interim Date: 01/01/10

Sheet No.: 1 of 1

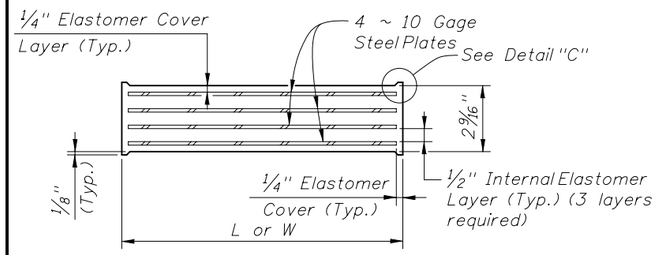
Index No.: 20502



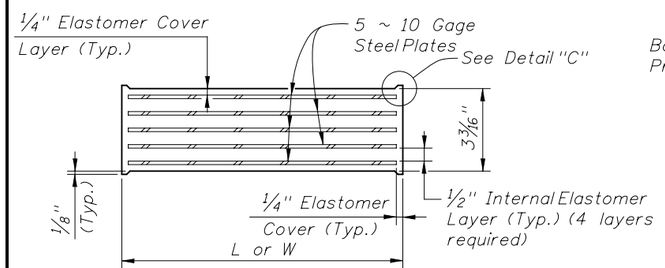
PLAN



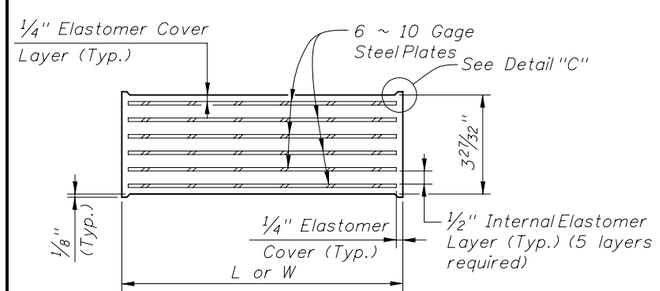
TYPICAL SECTION TYPE D & E PAD



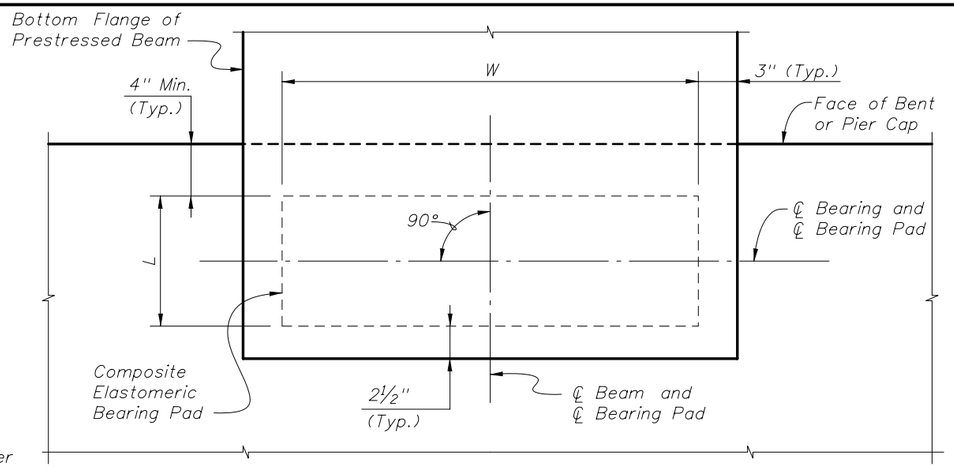
TYPICAL SECTION TYPE F & G PAD



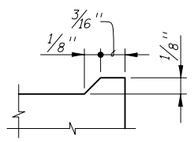
TYPICAL SECTION TYPE H PAD



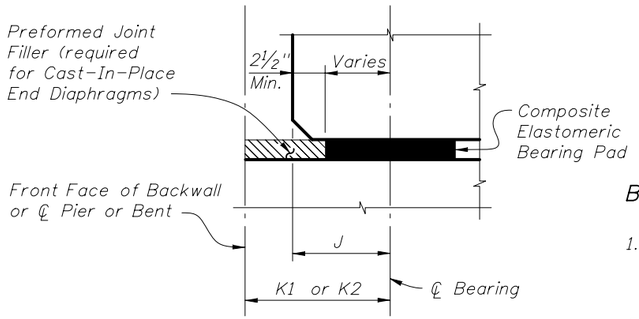
TYPICAL SECTION TYPE J & K PAD



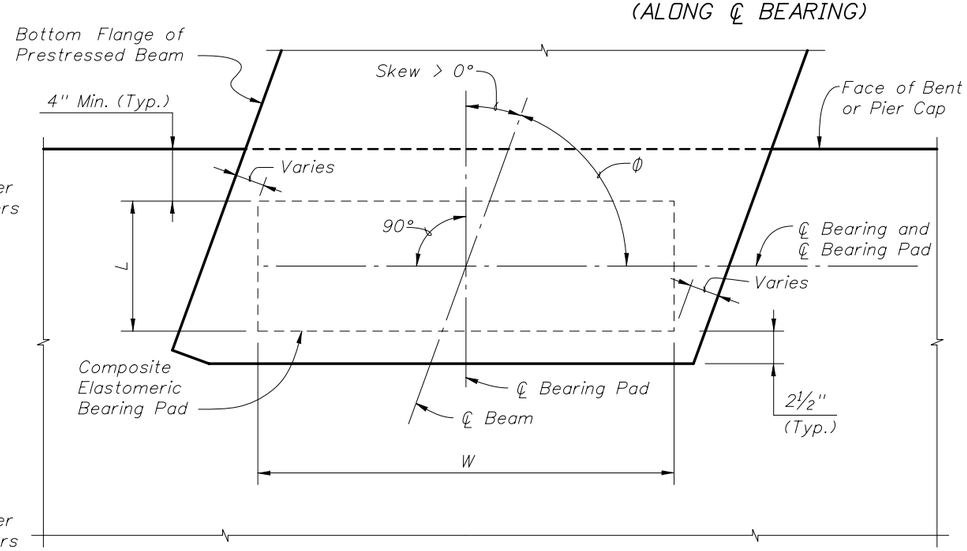
PARTIAL PLAN
(Skew = 0°)



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
01/01/10	SJN	New Design Standard.			

2010 Interim Design Standard

COMPOSITE ELASTOMERIC BEARING PADS - PRESTRESSED FLORIDA-I BEAMS

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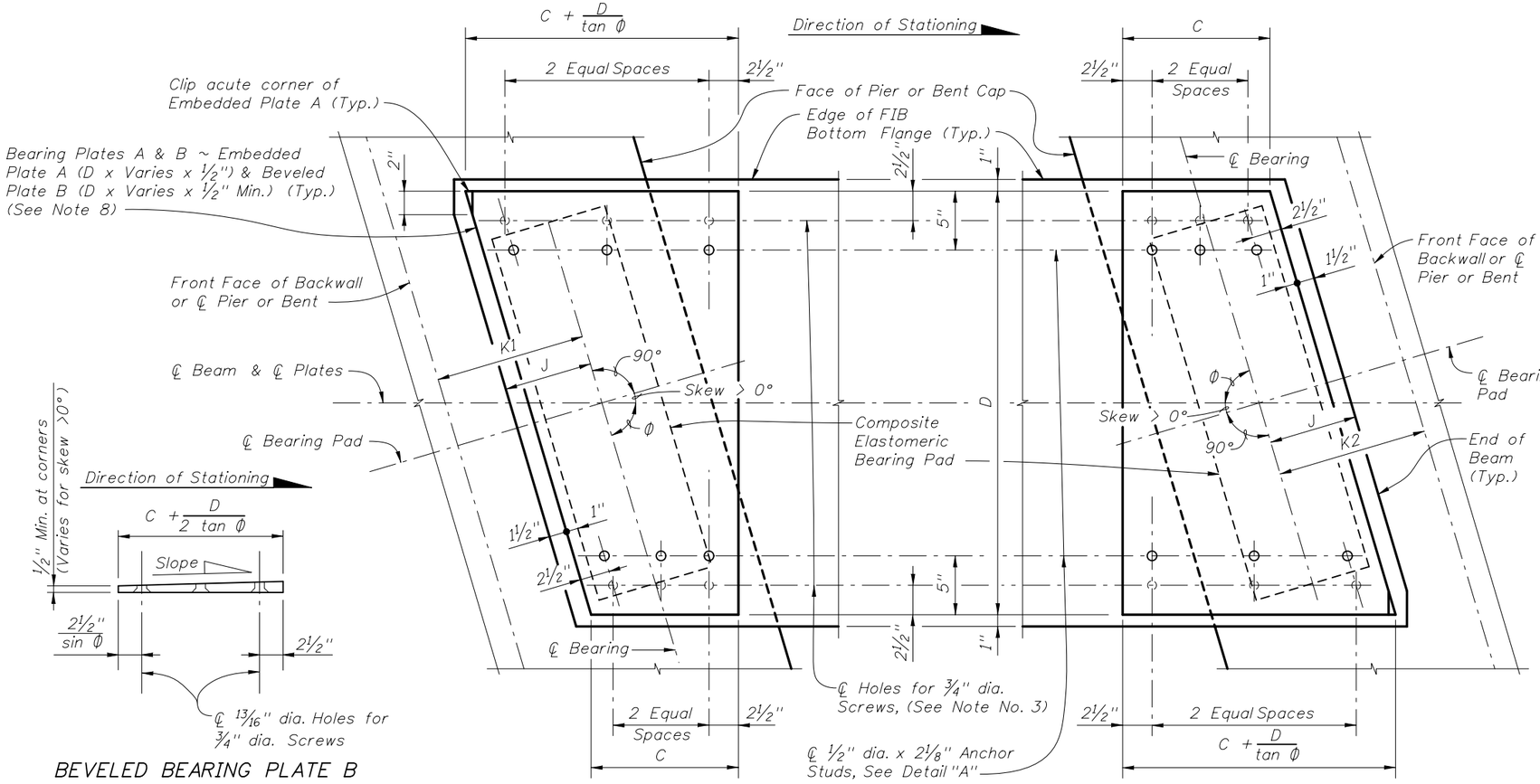
Index No. 20510

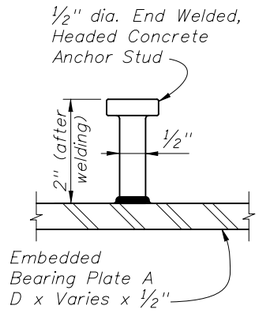
BEVELED BEARING PLATE B
(Along ℄ Beam)
(Positive Slope, Begin Bearing shown; Negative Slope, End Bearing similar)



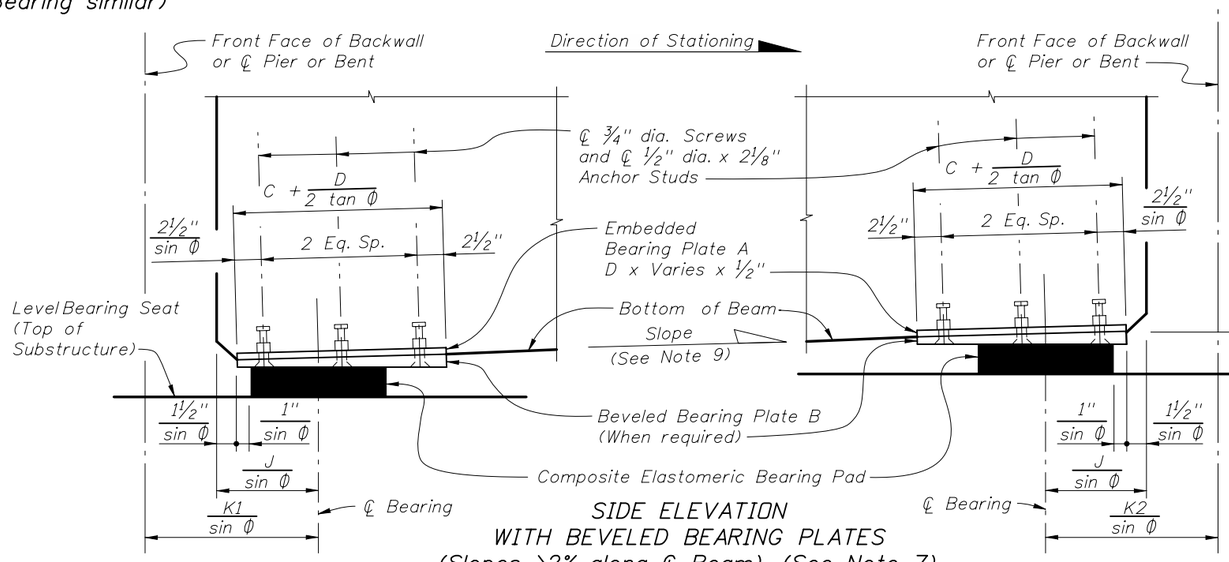
PLAN
(0° < Skew ≤ 45° shown, Skew = 0° Similar)

NOTES:

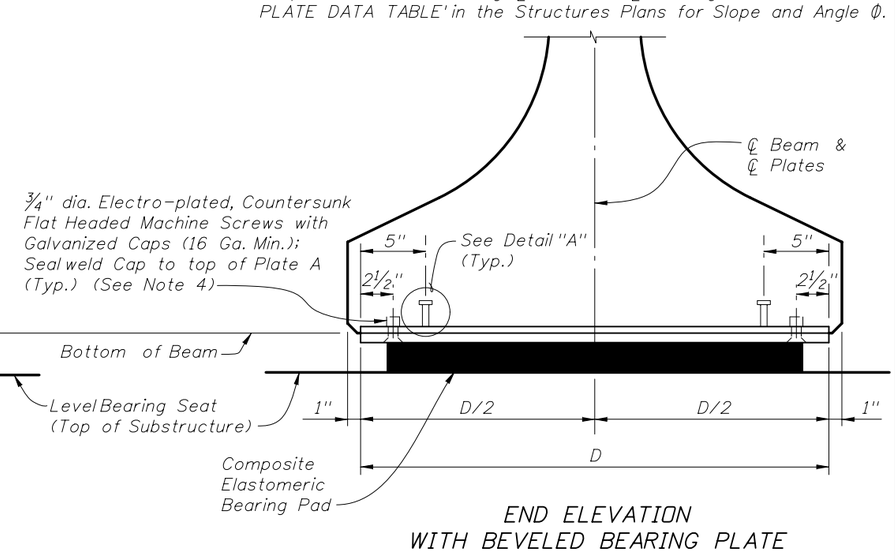
1. Work this sheet with Index No. 20510 - Composite Elastomeric Bearing Pads, and 'BEARING PLATE DATA TABLE' in the Structures Plans.
2. Embedded Bearing Plates A are required for all Florida-I beams. Beveled Bearing Plates B with Embedded Bearing Plates A are required for beams as scheduled in the 'BEARING 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
01/01/10	SJN	New Design Standard.			

2010 Interim Design Standard

BEARING PLATE DETAILS - PRESTRESSED FLORIDA-I BEAMS

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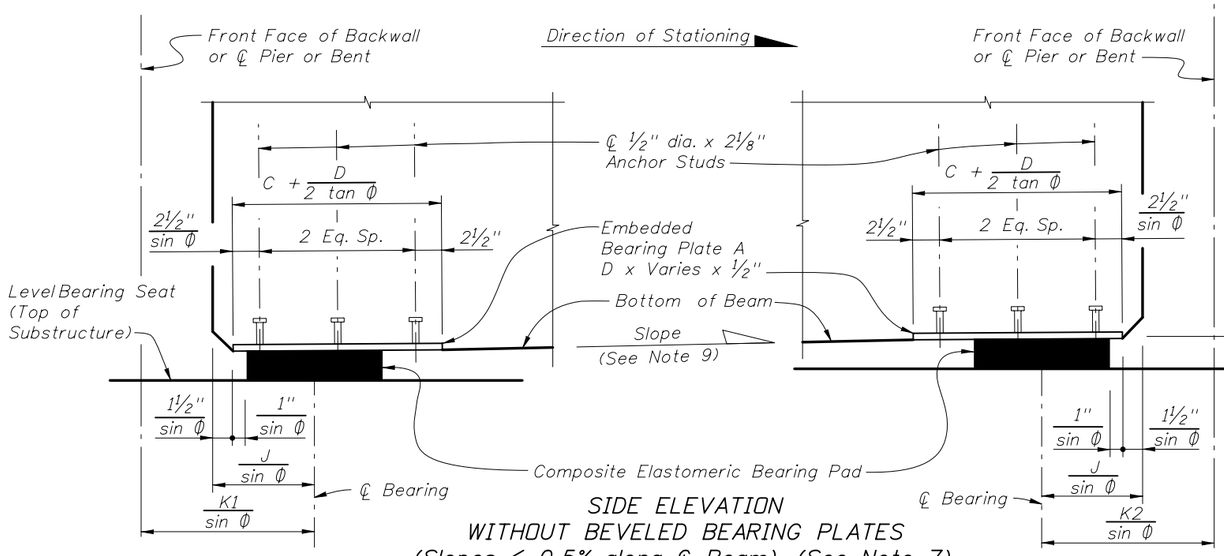
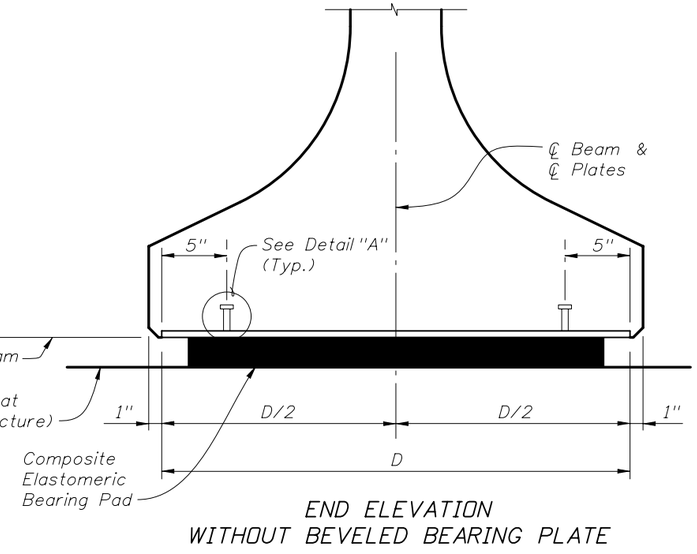
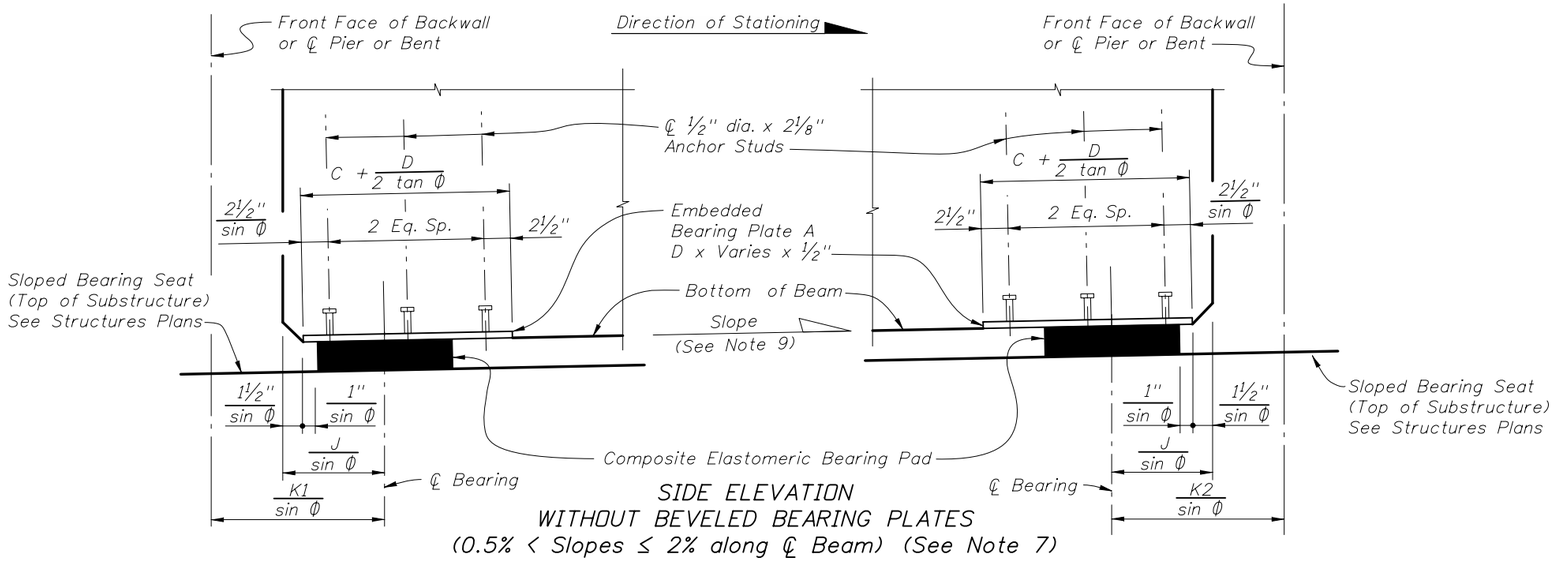
20511	



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
01/01/10	SJN	New Design Standard.			

2010 Interim Design Standard

BEARING PLATE DETAILS - PRESTRESSED FLORIDA-I BEAMS

Interim Date	Sheet No.
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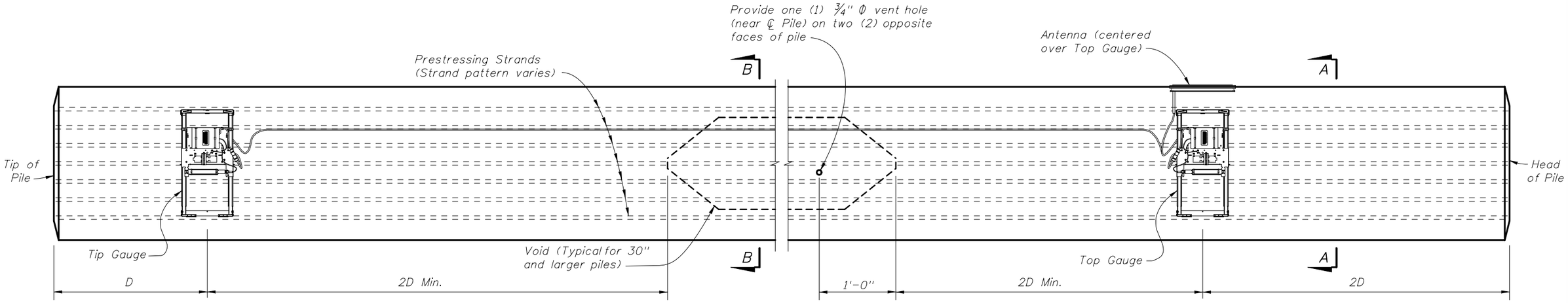
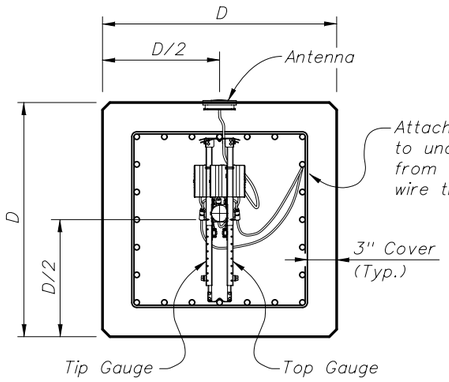
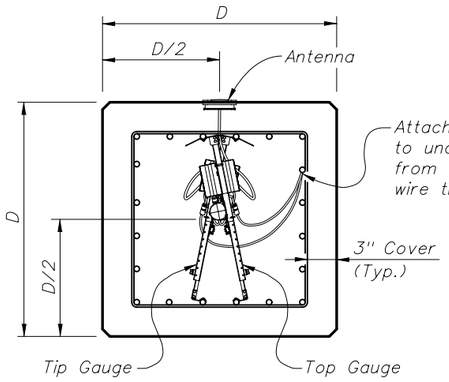
20511	



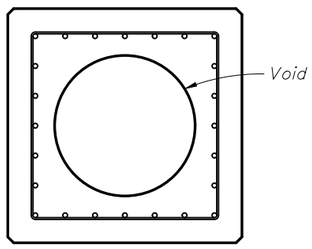
ELEVATION



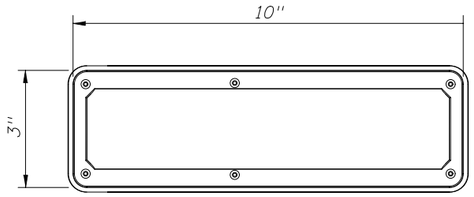
SECTION A-A
(Strand Pattern with odd number of strands per face)



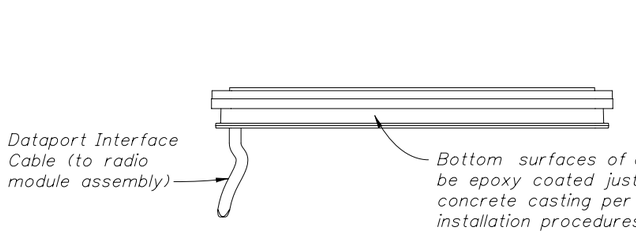
SECTION A-A
(Strand Pattern with even number of strands per face)



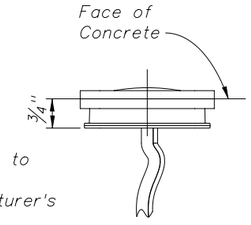
SECTION B-B
(Showing Voided Pile, Solid Pile Similar)



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
01/01/10	SJN	Changed NOTE; Deleted 30" pile dimensions & void size.			

2010 Interim Design Standard

EDC INSTRUMENTATION FOR SQUARE PRESTRESSED CONCRETE PILES

Interim Date 01/01/10

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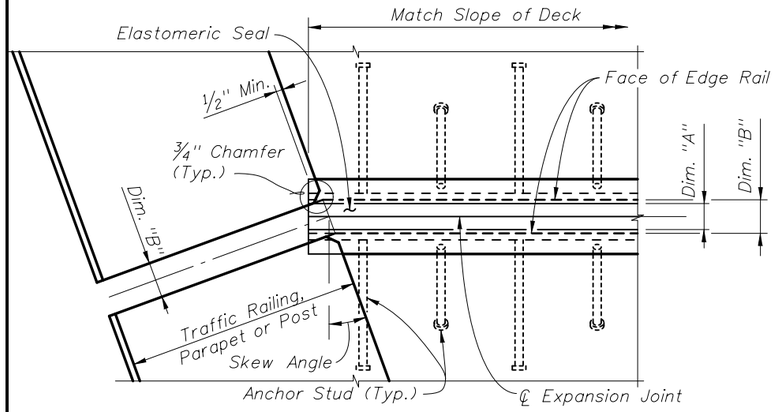
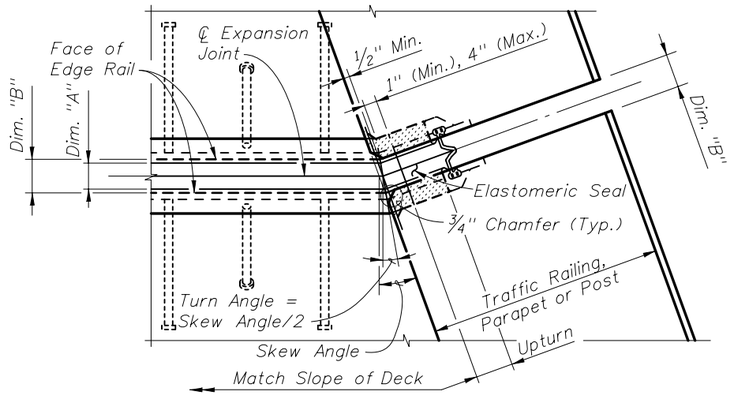
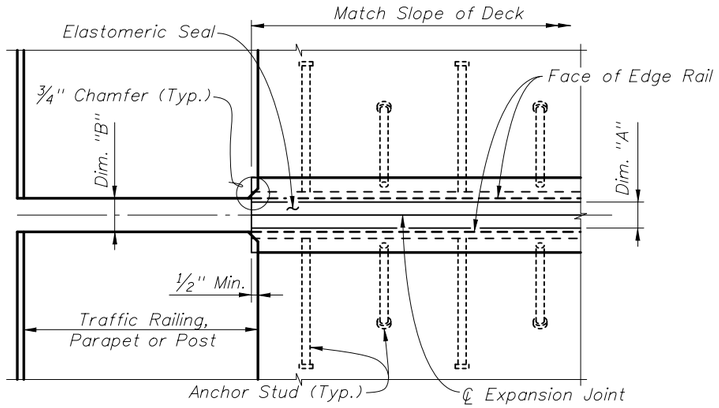


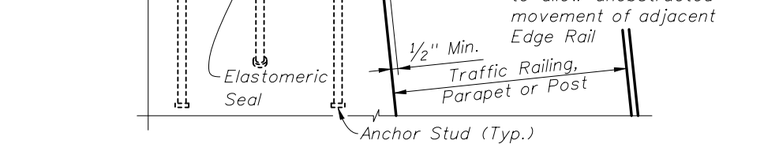
PARTIAL PLAN VIEW OF SKEWED JOINTS



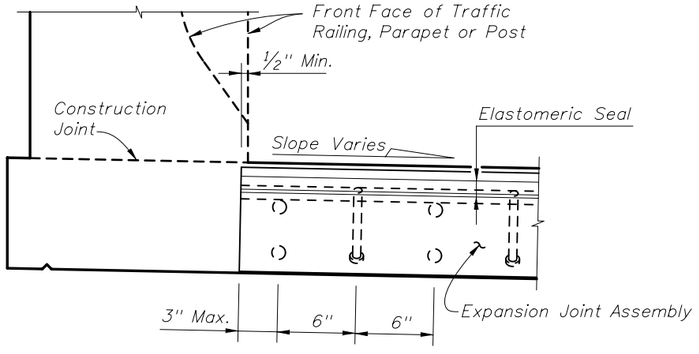
PARTIAL PLAN VIEW OF JOINTS SKEWED GREATER THAN 6°



PARTIAL PLAN VIEW OF NONSKEWED JOINTS



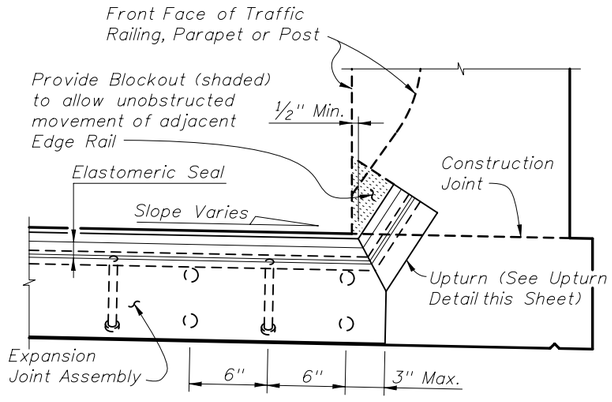
PARTIAL PLAN VIEW OF NONSKEWED JOINTS & JOINTS SKEWED 6° OR LESS



PARTIAL SECTION ALONG ℄ JOINT

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

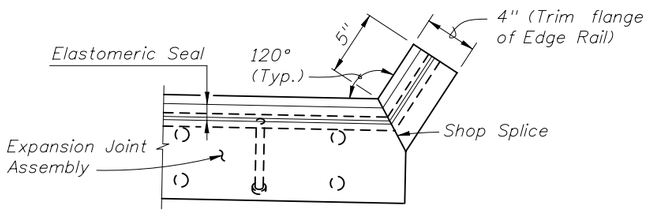
(Sidewalk Cover Plate where applicable not shown for clarity)



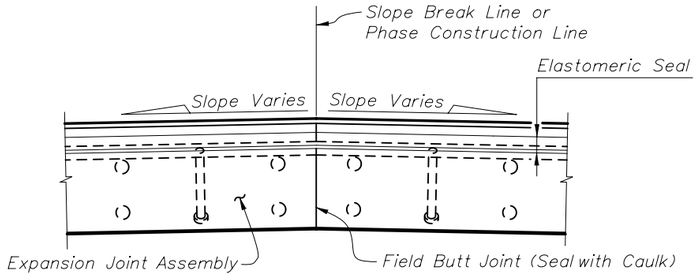
PARTIAL SECTION ALONG ℄ JOINT

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

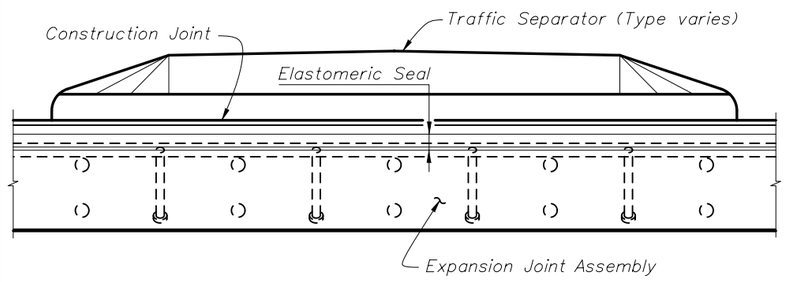
(Sidewalk Cover Plate where applicable not shown for clarity)



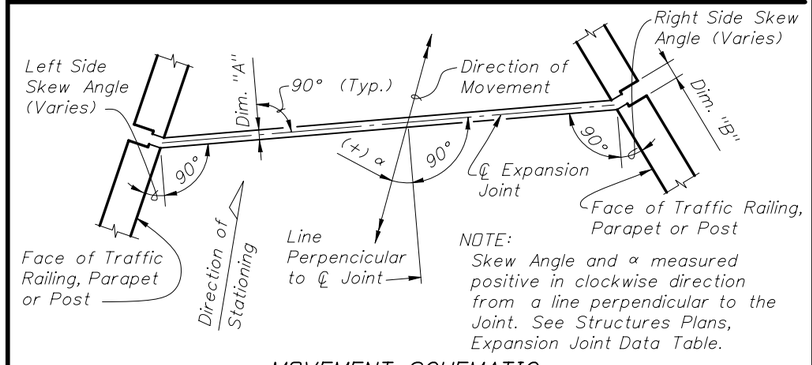
UPTURN DETAIL
(TYPICAL AT TRAFFIC BARRIERS AND PARAPETS)



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



PARTIAL SECTION ALONG ℄ JOINT THRU TRAFFIC SEPARATOR



MOVEMENT SCHEMATIC

REVISIONS

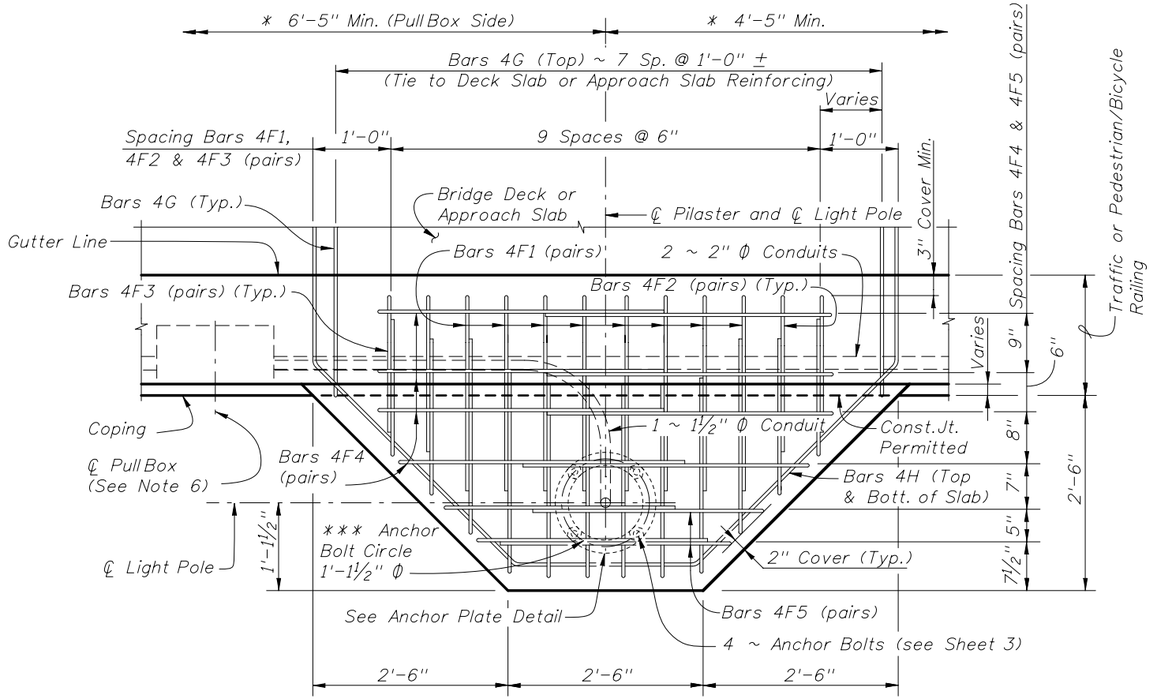
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Changed MOVEMENT SCHEMATIC detail			

2010 Interim Design Standard

STRIP SEAL EXPANSION JOINT

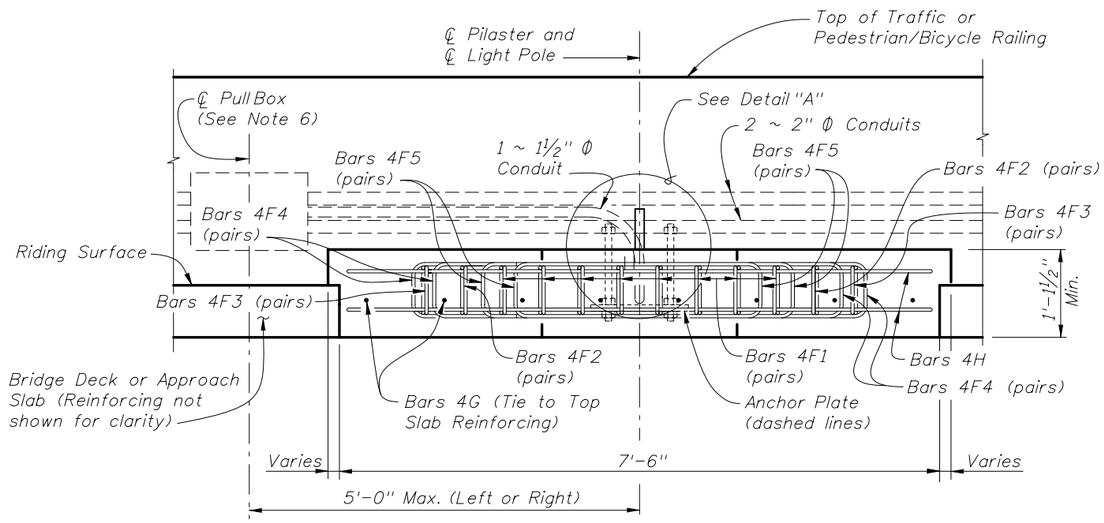
Interim Date 01/01/10

Index No. 21100

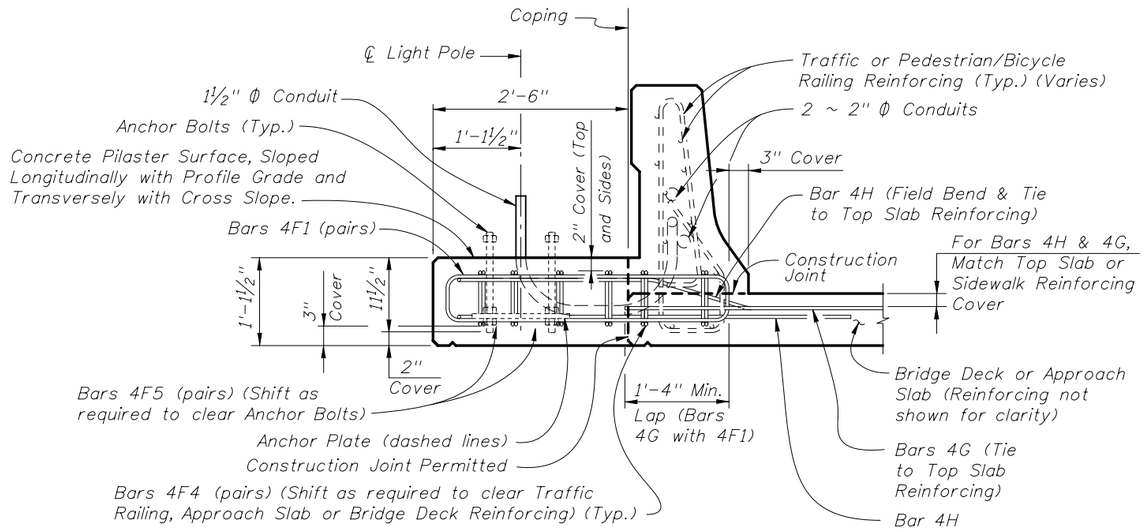


* Slip Forming Method of Construction requires the Engineer's approval within the limits shown.
** For Index No. 820 – Pedestrian/Bicycle Railing, this dimension is 3½". For all other Railings, this dimension is 1'-0" Max.
*** Anchor Bolt pattern orientation shall be as shown.

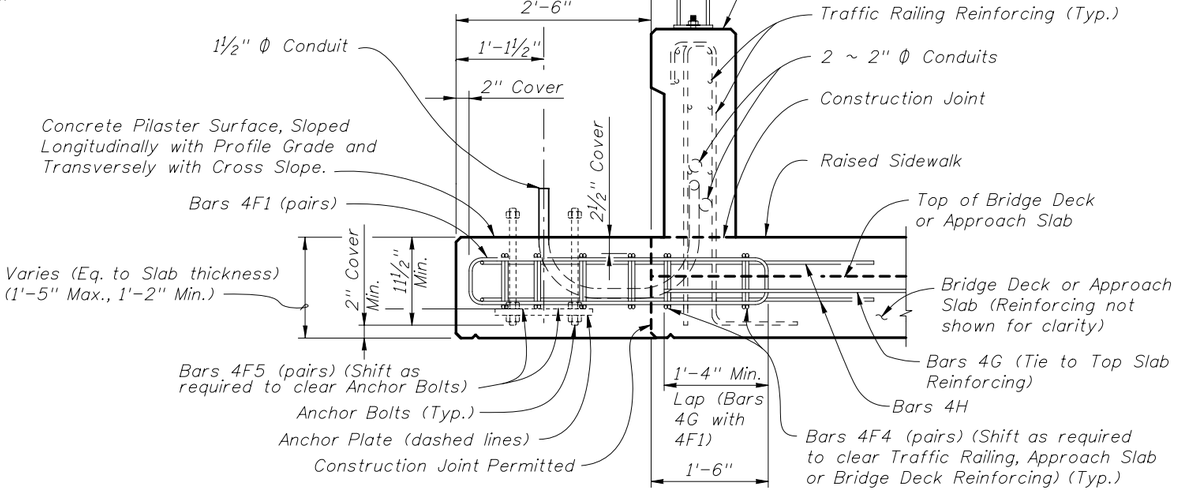
PLAN VIEW



ELEVATION VIEW



TYPICAL SECTION AT LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE DECK THICKNESS LESS THAN 1'-1½" AT COPING



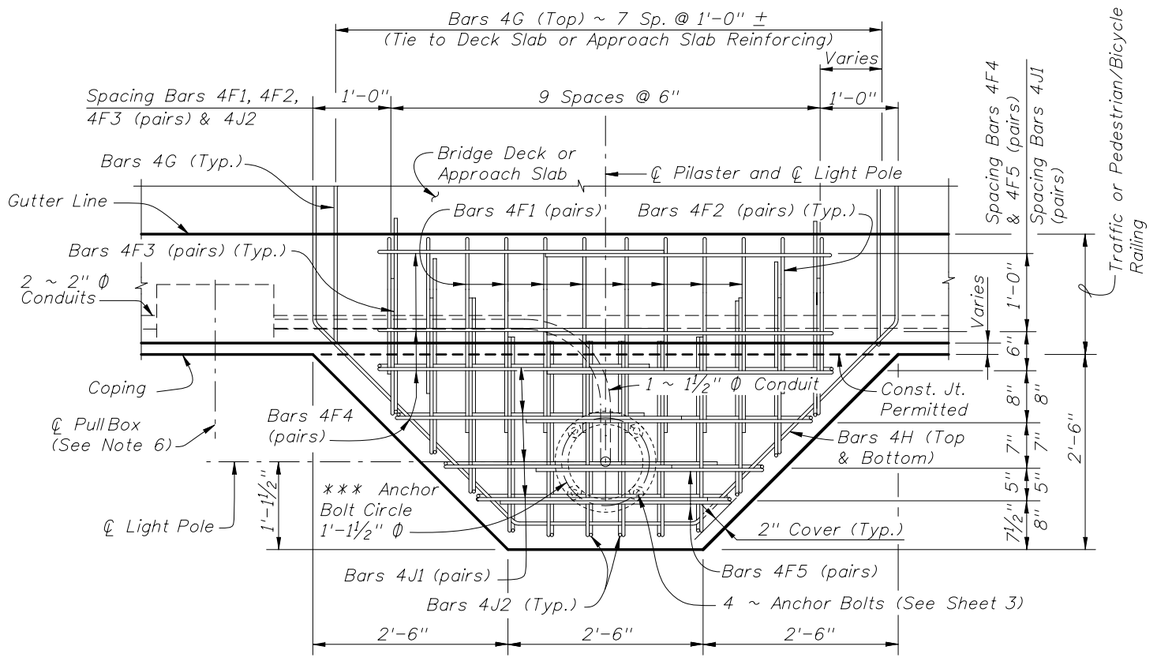
TYPICAL SECTION AT LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE THICKNESS LESS THAN 1'-5½" AT COPING

CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pilaster Notes, see Sheet 3.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

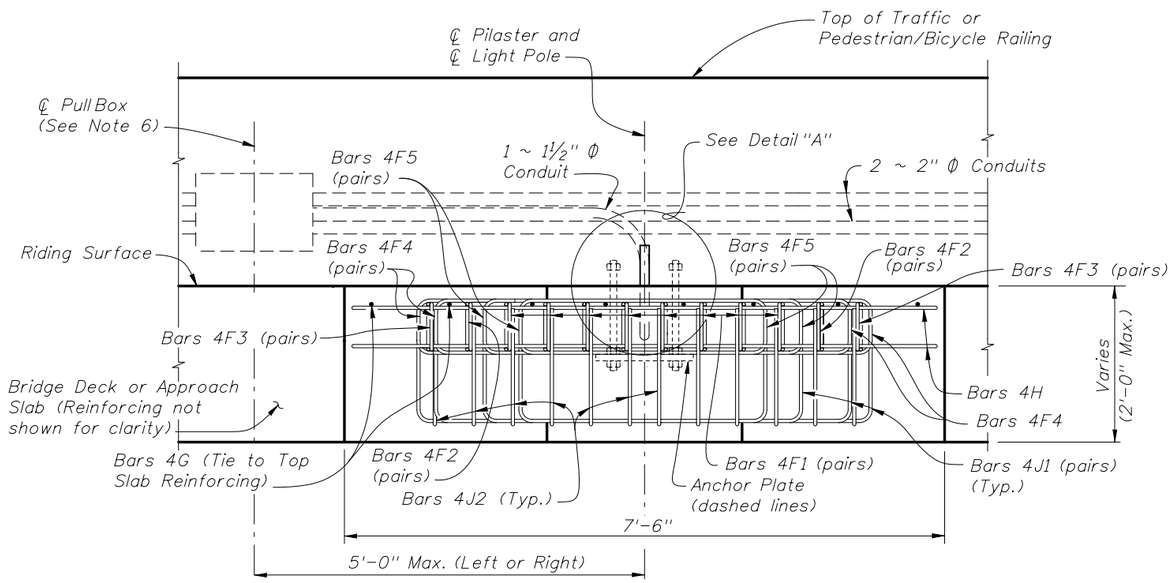
LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE DECK THICKNESS LESS THAN 1'-5½" AT COPING

REVISIONS						2010 Interim Design Standard	Interim Date	Sheet No.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		01/01/10	1 of 3
01/01/10	SJN	Revised Typical Sections and "*" Slip Form Note. Deleted 1" Ø Weep Hole (PVC Conduit), Anchor Bolt size, 2 ~ Bars 4F4, and Bars 4G in bottom of deck slab. Changed spacing of Bars 4F. Added Lap Length for Bars 4G with 4F1.				LIGHT POLE PILASTER	Index No.	21200

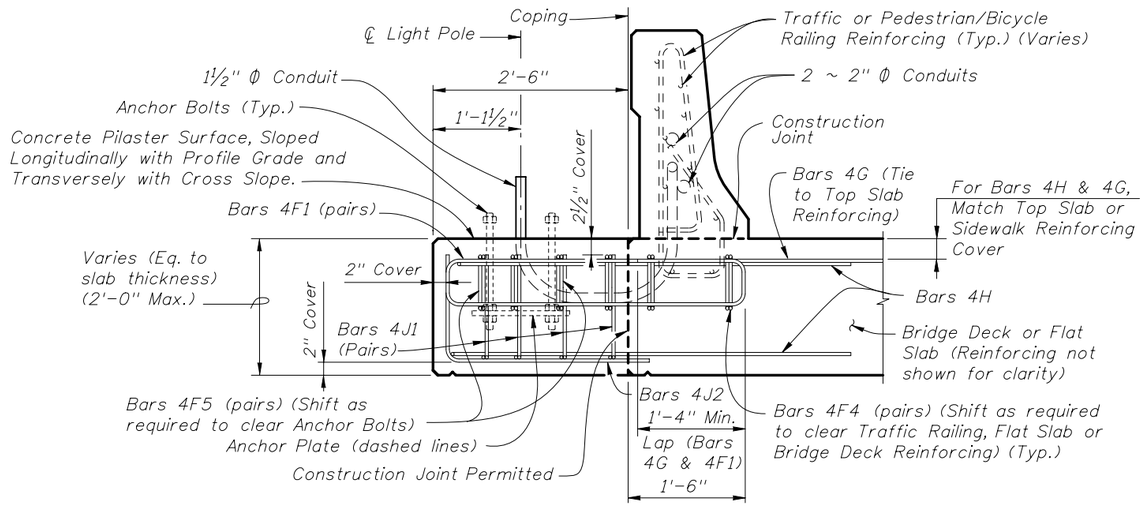


*** Anchor Bolt pattern orientation shall be as shown.

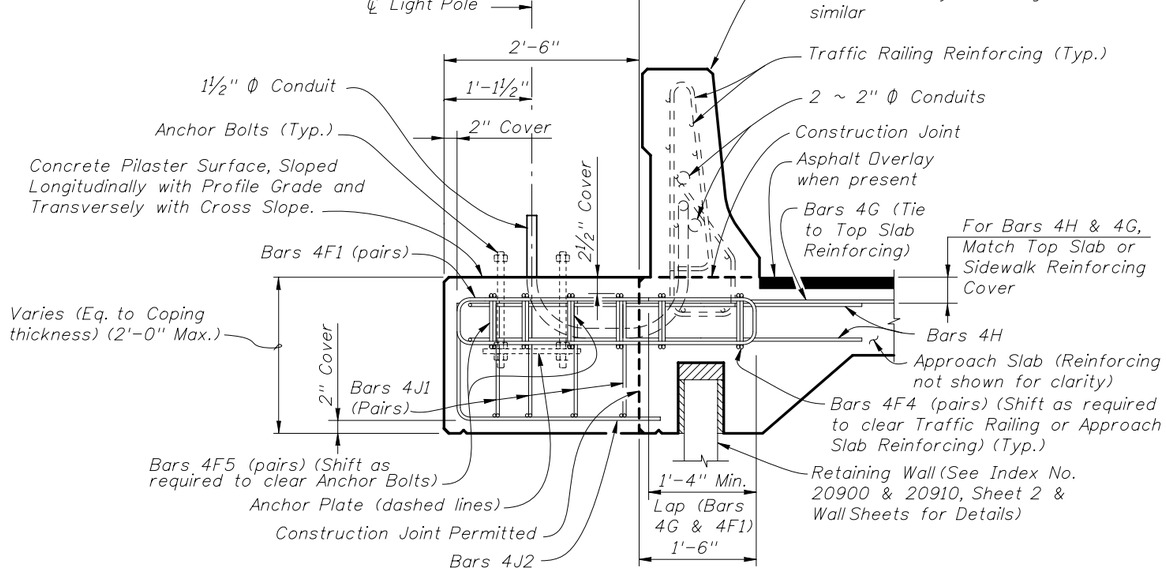
PLAN VIEW



ELEVATION VIEW



TYPICAL SECTION AT LIGHT POLE PILASTER FOR FLAT SLAB OR BRIDGE DECK THICKNESS AT COPING 1'-5½" OR GREATER



TYPICAL SECTION AT LIGHT POLE PILASTER FOR APPROACH SLAB ON RETAINING WALL

CROSS REFERENCE:
For Detail "A", Anchor Plate Detail and Light Pole Pilaster Notes, see Sheet 3.

NOTE: Anchor Bolt, Nuts, Washers and Anchor Plate are dashed for clarity.

LIGHT POLE PILASTER FOR APPROACH SLAB OR BRIDGE DECK THICKNESS AT COPING 1'-5½" OR GREATER

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	New Sheet Added			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

LIGHT POLE PILASTER

Interim Date 01/01/10

Sheet No. 2 of 3

Index No. 21200

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

REINFORCING STEEL NOTES:

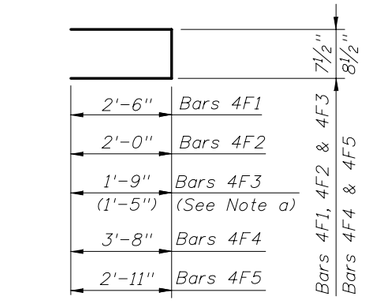
a. When Pilaster is attached to Pedestrian/Bicycle Railing - Index No. 820 and the Bridge Deck or Approach Slab thickness is less than 1'-1½", Bars 4F3 shall have leg length and bar length shown in parentheses.

b. The number of bars shown in parentheses is for Bars 4F4 when Pilaster is attached to Pedestrian/Bicycle Railing - Index No. 820, and the Bridge Deck or Approach Slab thickness is less than 1'-1½".

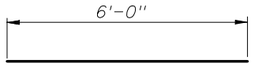
c. Lap Splices for Bars 4F1, 4F2 & 4F3 shall be a minimum of 1'-4". Lap Splices for Bars 4F4 & 4F5 shall be minimum of 1'-8".

d. Bars 4J1 and 4J2 are not required when Pilaster thickness is less than 1'-5½". Field trim height of bars to maintain cover when Pilaster thickness is less than 2'-0". Field trim length of Bars 4J2 on Retaining Wall Coping to maintain cover.

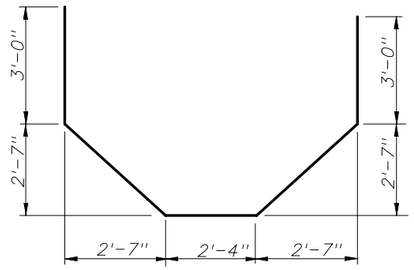
e. All bar dimensions in the bending diagrams are out to out.



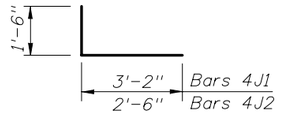
BARS 4F1, 4F2, 4F3, 4F4 & 4F5



BAR 4G



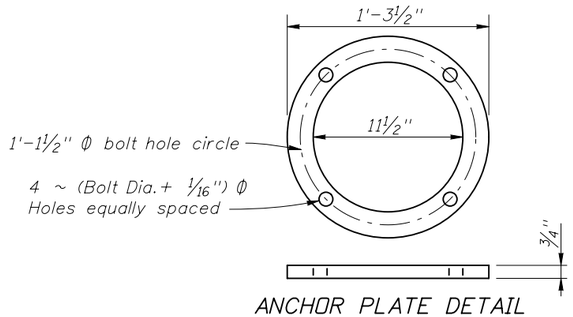
BAR 4H



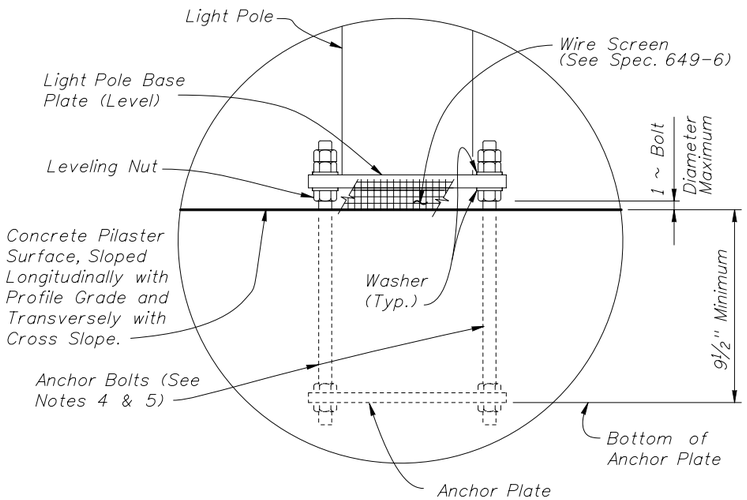
BARS 4J1 & 4J2

BILL OF REINFORCING STEEL

MARK	SIZE	NO. REQD.	LENGTH	NOTES
F1	4	16	5'-8"	c
F2	4	4	4'-8"	c
F3	4	4	4'-2" (3'-6")	a, c
F4	4	8 (6)	8'-3"	b, c
F5	4	4	6'-7"	c
G	4	8	6'-0"	-
H	4	2	15'-8"	-
J1	4	8	4'-8"	d
J2	4	12	4'-0"	d



ANCHOR PLATE DETAIL



DETAIL "A"

CROSS REFERENCE:
For location of Detail "A" see Sheets 1 and 2.

LIGHT POLE PILASTER NOTES

1. Concrete and Reinforcing Steel required for the construction of the Pilaster shall meet the same requirements as the Traffic Railing or Pedestrian/Bicycle Railing the Pilaster is attached to.

2. Light Pole Pilaster may be used with the following:
   Index No. 420 - Traffic Railing (32" F Shape),
   Index No. 422 - Traffic Railing (42" Vertical Shape),
   Index No. 423 - Traffic Railing (32" Vertical Shape),
   Index No. 424 - Traffic Railing (Corral Shape),
   Index No. 425 - Traffic Railing (42" F Shape),
   Index No. 820 - Pedestrian/Bicycle Railing,
   Index No. 821 - Aluminum Pedestrian/Bicycle Bullet Railing for Traffic Railing (32" F Shape), or
   Index No. 5210 - Traffic Railing /Sound Barrier (Bridge).
   Unless otherwise noted, Traffic Railing (32" F Shape) is shown in all Views and Sections. The Pilaster details for other Traffic Railings or Pedestrian/Bicycle Railing are similar.

3. The Pilaster and Deck are designed to resist the following Working Loads from the Light Pole applied at the top of the Pilaster:

Axial Dead Load	=	1.56 Kip
Wind Load Moment about Transverse Axis	=	40.60 Kip-Ft.
Wind Load Moment about Longitudinal Axis	=	28.30 Kip-Ft.
Deadload Moment about Longitudinal Axis	=	1.69 Kip-Ft.
Maximum Shear	=	1.38 Kip
Torsion about Pole Axis	=	3.56 Kip-Ft.

TABLE 1 - DESIGN LIMITATIONS FOR 1" Ø ANCHOR BOLTS (LOAD CASE 1)

WIND SPEED (MPH)	ARM LENGTH (Ft.)	BRIDGE DECK HEIGHT (Ft.)* DESIGN MOUNTING HEIGHT 40 Ft.	45 Ft.	50 Ft.
110	≤ 15	75	75	75
130	8 & 10	75	75	75
130	12	75	75	70
130	15	75	75	40
150	8	75	75	10
150	10	75	50	n/a
150	12	75	45	n/a
150	15	75	30	n/a

* Above natural ground or MLW.

4. ANCHOR BOLT DESIGN:
   Anchor Bolt design is based on the standard Roadway Aluminum Light Pole configurations shown on Index No. 17515 and the following design limitations:
   Load Case 1: See Table 1
   Load Case 2: 150 mph Design Wind Speed, 15' arm length, 50' Design Mounting Height with a 75' bridge deck height above natural ground, or MLW.

   Anchor Bolt Diameter: 1" Ø (Load Case 1), 1 ¼" Ø (Load Case 2).
   Anchor Bolts: ASTM F1554 Grade 55.
   Nuts: ASTM A563 Grade A, Heavy-Hex.
   Washers: ASTM F436 Type 1.
   Anchor Plate: ASTM A709 (Grade 36) or ASTM A36.
   All Nuts, Bolts and Washes shall be galvanized by ASTM F2329.

   The Contractor is responsible for ensuring the anchor bolt configuation is compatible with the light pole base plate. Submit modifications of the anchor bolt design to the Engineer for approval.

5. Anchor Bolts must be installed plumb.

6. For Conduit, Pull Box, Expansion/Deflection Fitting and adjacent Reinforcing Steel Details, see Utility Conduit Detail Sheets.

7. PAYMENT: The cost of Wire Screen, Anchor Bolts, Nuts, Washers and Anchor Plates shall be included in the Bid Price for Light Poles. The cost of all Labor, Concrete and Reinforcing Steel required for the Construction of the Pilasters, Pull Boxes, and Miscellaneous Hardware required for the completion of the Electrical System, shall be included in the Bid Price for the Traffic Railing or Pedestrian/Bicycle Railing the Pilaster is attached to.

ESTIMATED LIGHT POLE PILASTER QUANTITIES PER LIGHT POLE PILASTER

ITEM	UNIT	QUANTITY
Concrete Per Pilaster Thickness	CY/In.	0.040
Reinforcing Steel	Lb.	195 (182)

(The Reinforcing Steel quantity shown in parenthesis is for a Pilaster attached to Pedestrian/Bicycle Railing - Index No. 820 with Bridge Deck or Approach Slab thinner than 1'-1½". Add 59 Lbs. for Bars 4J1 & 4J2 when Pilaster Thickness is greater than 1'-5")

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
01/01/10	SJN	Deleted Grout Pad and 1" Ø Weep Hole in Detail "A". Changed No. of Bars 4H & 4F4, length of Bars 4F4 & 4F5, and Light Pole Pilaster Notes. Added Bars 4J1 & 4J2, Reinforcing Steel Note d, Wire Screen and Table 1.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

2010 Interim Design Standard

LIGHT POLE PILASTER

Interim Date 01/01/10 | Sheet No. 3 of 3

Index No. 21200

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
01-01-10	CMH	Updated Note 18 to new LS pay item, updated Instructions to Designer to list items previously under several pay item numbers.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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MAINTENANCE LIGHTING FOR BOX GIRDERS

Interim Date 01/01/10

Sheet No. 1 of 2

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