STEEL STRAIN POLE NOTES

1) Designed in accordance with FDOT Structures Manual.

2) Perform all welding in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). No Field welding is permitted on any part of the pole.

3) See Standard Index No. 17727 for grounding and span wire details.

4) Foundation Materials:
   a. Reinforcing Steel: ASTM A615 Grade 60.
   b. Concrete: Class IV, (Drilled Shaft) 4,000 psi (f'c) minimum Compressive Strength at 28-days for all environmental classifications.
   c. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts and plate washers (all galvanized in accordance with ASTM F2329).

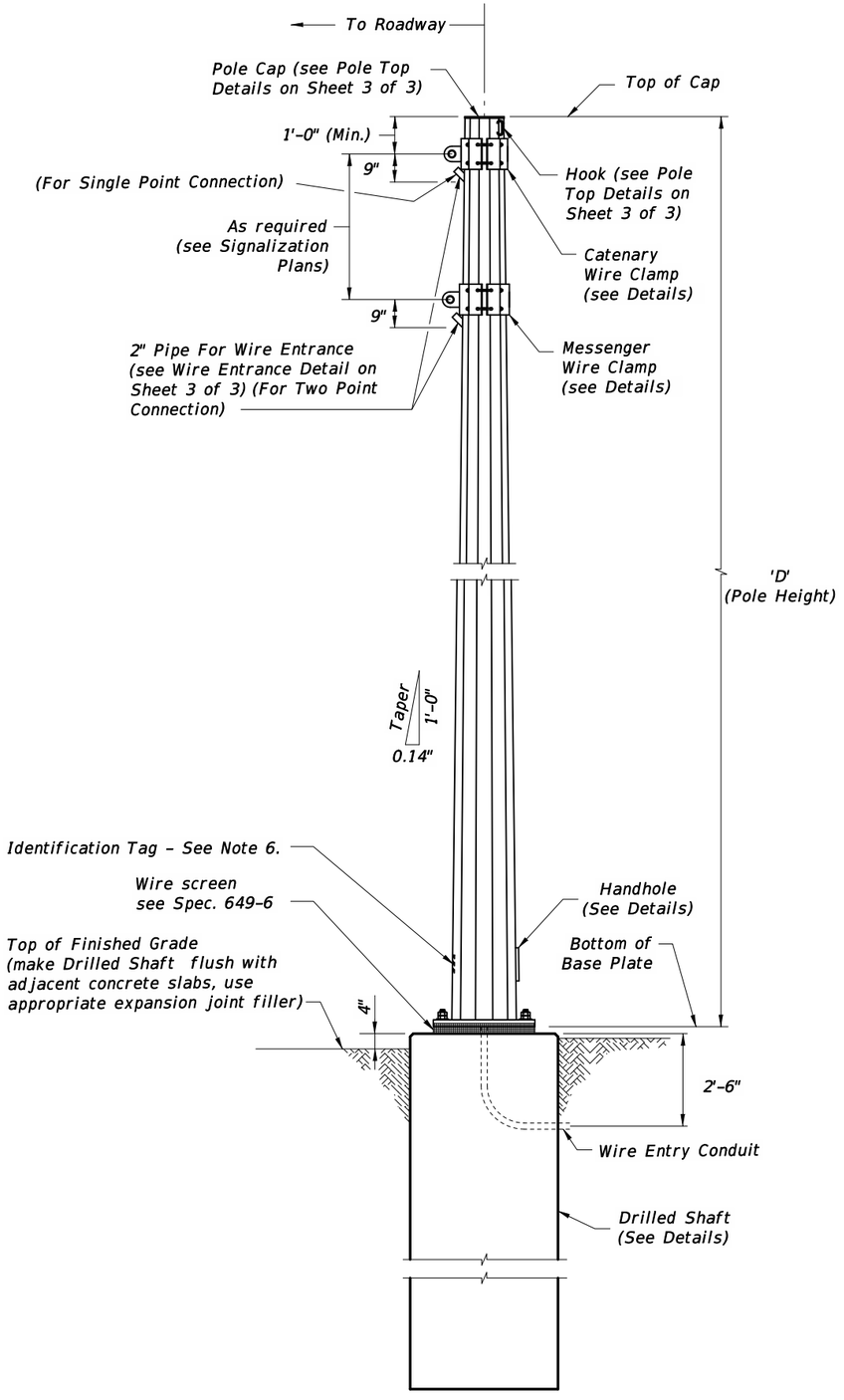
5) Strain Pole Specifications:
   a. Poles: ASTM A1011 Grade 50, 55, 60 or 65 (less than ¼") or ASTM A572 Grade 50, 55, 60, or 65 (1/4" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
   b. Steel Plates: ASTM A36.
   c. Weld Metal: E70XX.
   d. Bolts: A325, Type 1. Hole Diameter: Bolt diameter plus 1/16".
   e. Base Plate: Hole Diameter; anchor bolt diameter plus ½".
   f. Handhole: Frame; ASTM A709 Grade 36 or ASTM A36, Cover; ASTM A1011 Grade 50, 55, 60 or 65.
   g. Aluminum Caps and Covers: ASTM B-26 (319-F).
   h. Stainless Steel Screws: AISI Type 316.
   i. Galvanization: All nuts, bolts and washers; ASTM F2329, All other steel; ASTM A123.

6) Pole Notes:
   a. See the Signalization Plans for clamp spacing, cable sizes and forces, signal and sign mounting locations and details.
   b. Tapered with the diameter changing at a rate of 0.14 inch per foot.
   c. Transverse welds are allowed only at the base.
   d. Fillet weld socket connections with unequal leg welds with the long weld leg along the shaft. Terminate the long weld leg along the shaft at approximately a 30 degree angle.
   e. Poles constructed out of two or more sections with overlapping splices are not permitted.
   f. Locate the handhole 180 degrees from 2-inch wire entrance pipe.
   g. Furnish each pole with a 2"x4" (max) aluminum identification tag. Submit details for approval. Secure to pole with 0.125" stainless steel rivets or screws. Locate Identification Tag on the inside of pole and visible from handhole. Include the following information:
      Financial Project ID, Pole Type, Pole Height,
      Manufacturer's Name, F_y of Steel and Base Wall Thickness.

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

8) Shop drawings are only required for additions, deletions, or modifications to this Design Standard.

9) Verify CSL access tubes will not interfere with anchor bolt installation before excavating the shaft. When CSL access tube locations conflict with anchor bolt locations, move the CSL access tube location ± two inches along the inner circumference of the reinforcing cage. Notify the Engineer before excavating the shaft if the CSL access tube locations cannot be moved out of conflict with anchor bolt locations.



ELEVATION

ELEVATION AND NOTES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/10	GJM	Added "(current edition)" and deleted edition number for Design Specification in Note 1.			
07/01/10	DYW	Modified washer specifications.			
01/01/11	DYW	Changed Notes 6 and 8.			

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

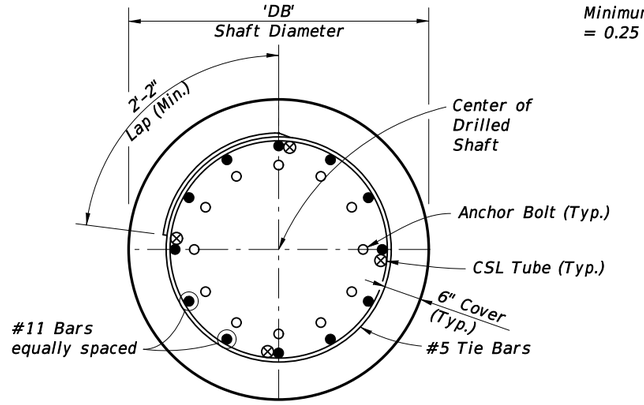
2010 Interim Design Standard

STEEL STRAIN POLE

Interim Date 01/01/11

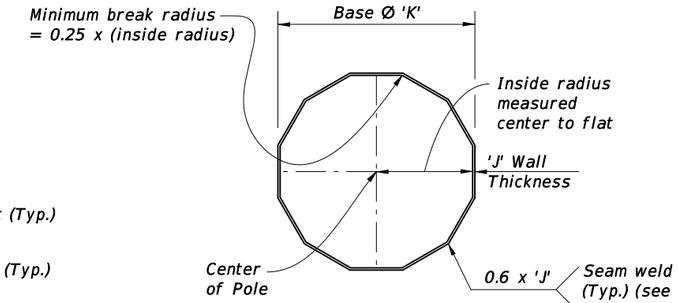
Sheet No. 1 of 3

Index No. 17723



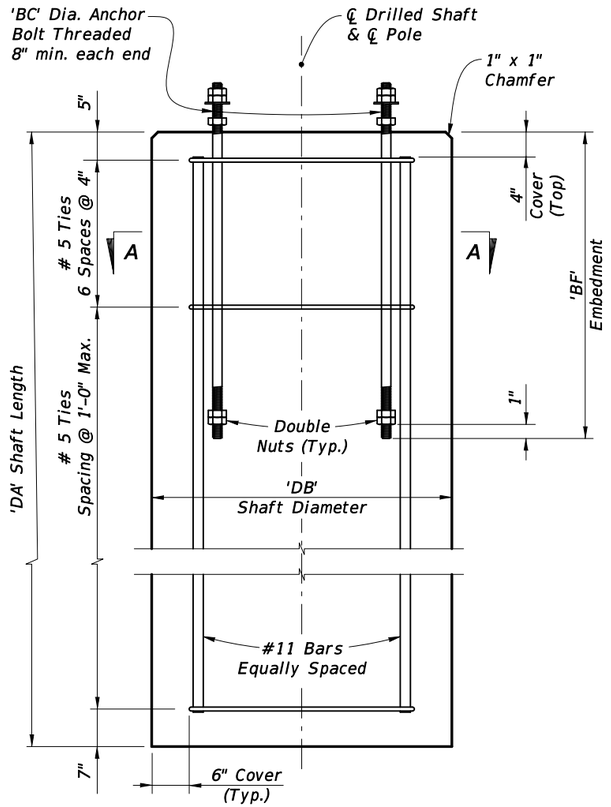
SECTION A-A

(Number of bars shown is for illustration purposes only)

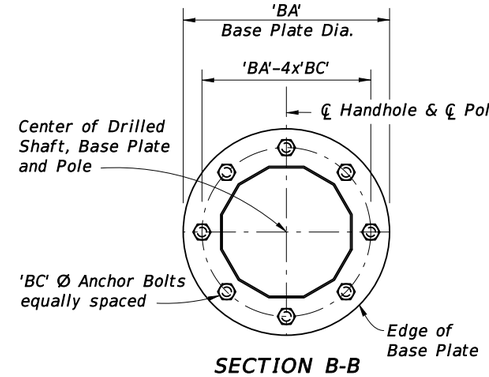


POLE SECTION

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

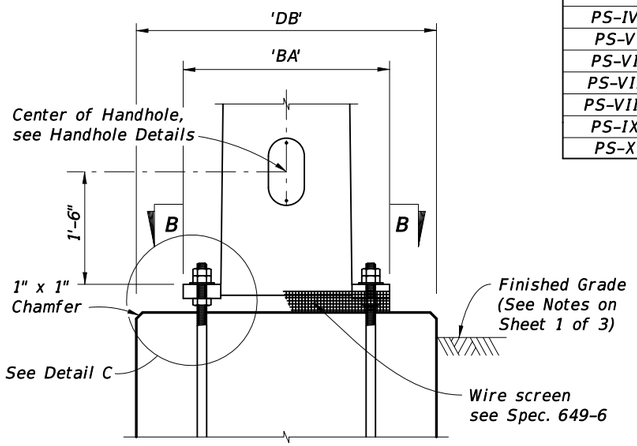


DRILLED SHAFT ELEVATION



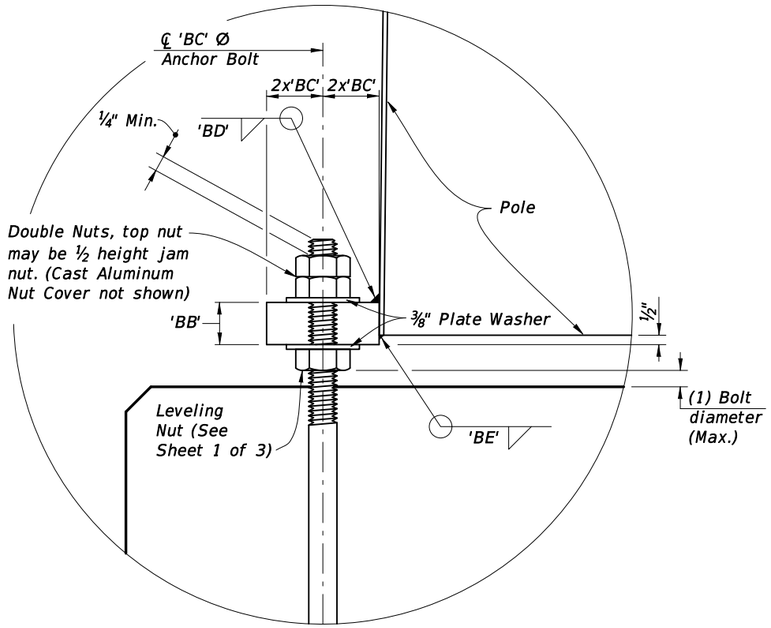
SECTION B-B

NOTE:
Number of bolts shown for illustration purposes only.



PARTIAL ELEVATION

(Showing Base Plate, Anchor bolts and Handhole)



DETAIL C

TABLE OF STRAIN POLE VARIABLES

POLE TYPE	MAXIMUM ALLOWABLE MOMENT (kip-ft)	POLE		BASE CONNECTION							SHAFT		
		J (in)	K (in)	No. of Bolts	BA (in)	BB (in)	BC (in)	BD (in)	BE (in)	BF (in)	DA (FT)	DB (FT)	No. of #11 bars
PS-IV	95.4	0.250	14	8	25	2.50	1 3/8	7/16	3/16	60	14	4	14
PS-V	158.9	0.313	16	10	28	2.50	1 1/2	1/2	1/4	60	15	4	14
PS-VI	203.6	0.313	18	12	30	2.50	1 1/2	1/2	1/4	60	16	4	14
PS-VII	280.3	0.313	21	14	33	2.50	1 1/2	9/16	1/4	60	16	4.5	16
PS-VIII	338.0	0.313	23	16	35	2.50	1 1/2	9/16	1/4	60	17	4.5	16
PS-IX	400.9	0.313	25	12	39	3.00	1 3/4	9/16	1/4	60	17	5	18
PS-X	469.1	0.313	27	14	41	3.00	1.75	9/16	1/4	60	18	5	18

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

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 pcf (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.

BASE AND FOUNDATION DETAILS AND TABLE OF VARIABLES

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
07/01/10	DYW	Revised ℄ washer thickness.			
01/01/11	CBH	Revised Table Of Strain Pole Variables and in DRILLED SHAFT ELEVATION Detail Tie Spacing			

2010 Interim Design Standard

STEEL STRAIN POLE

Interim Date 01/01/11

Sheet No. 2 of 3

Index No. 17723