STEEL STRAIN POLE NOTES

1) Designed in accordance with FDOT Structures Manual and the 2001 (4th) Edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interims.

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

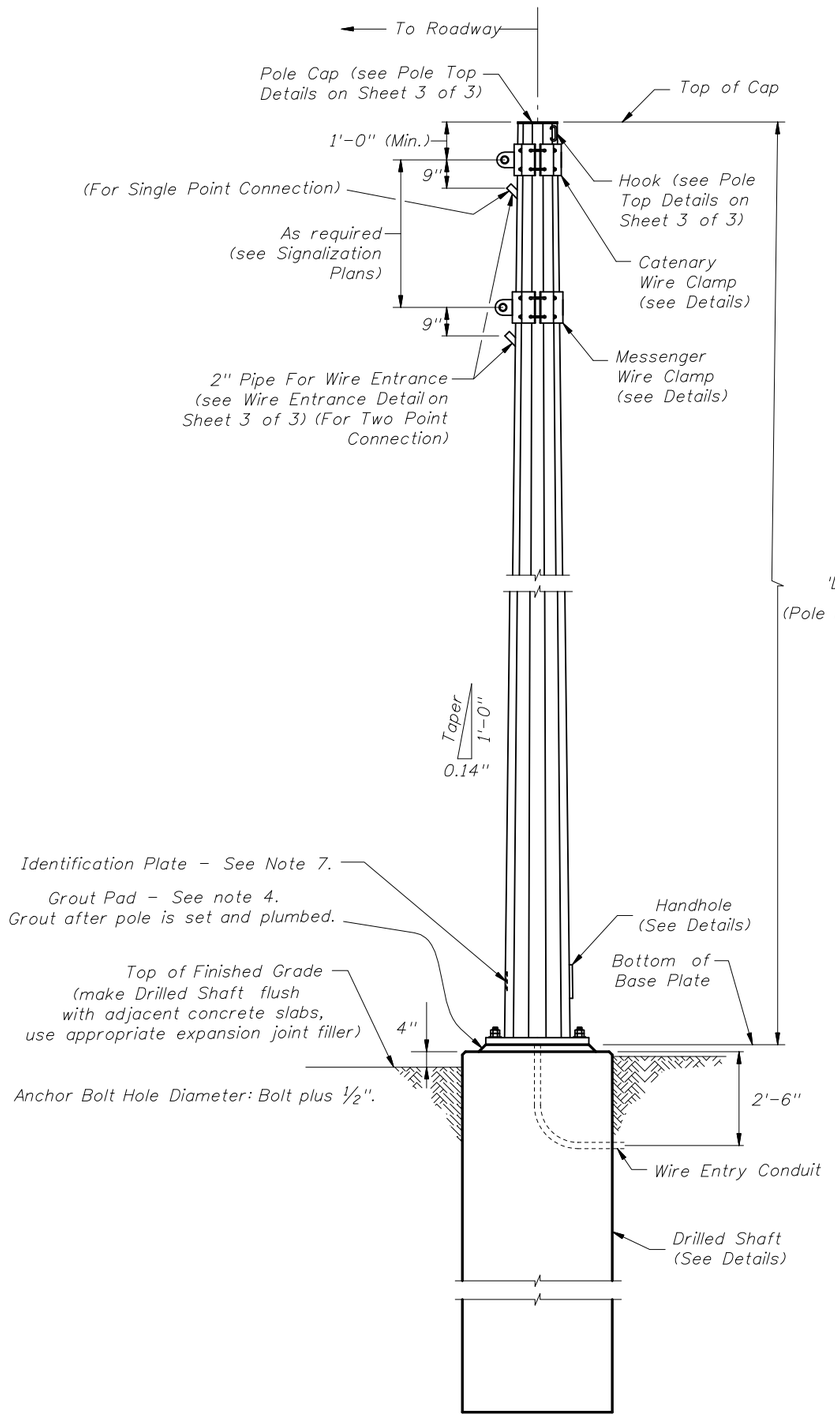
4) Foundation Materials:
   a. Reinforcing Steel: ASTM A615 Grade 60.
   b. Concrete: Class IV, (Drilled Shaft) 4,000 psi (f'c) minimum Compressive Strength at 28-days for all environmental classifications.
   c. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts and ASTM F436 Type 1 washers (all galvanized in accordance with ASTM F2329-05.)
   d. Grout: 5,000 psi compressive strength at 28-days and meeting the requirements of Section 934.

5) Strain Pole Specifications:
   a. Poles: ASTM A1011 Grade 50, 55, 60 or 65 (less than 1/4") or ASTM A572 Grade 50, 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 1/2".
   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 F2329-05, 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. Poles constructed out of two or more sections with overlapping splices are not permitted.
   e. Locate the handhole 180 degrees from 2-inch wire entrance pipe.
   f. 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 & Certification number, Pay Item number.

7) If a grout pad is not installed, place wire cloth screen vertically between the base plate and top of foundation, wrap horizontally around the base plate with a 3" min. lap. Use standard grade, plain weave, 2x2 mesh, galvanized steel wire-cloth with 0.063" dia. wire. Attach the screen to the base plate with stainless steel self-tapping 1/4" screws and washers (spaced at 9" centers).

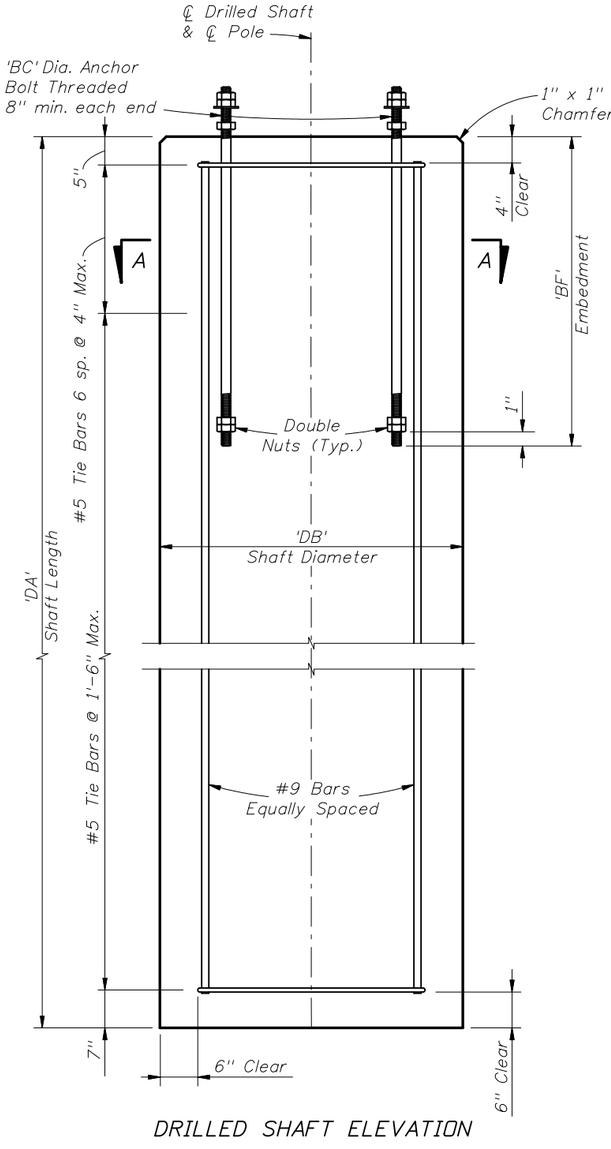
8) Manufacturers seeking approval of a steel strain pole assembly for inclusion on the Qualified Products List must submit a QPL Product Evaluation Application along with drawings showing the product meets all specified requirements of this Standard.



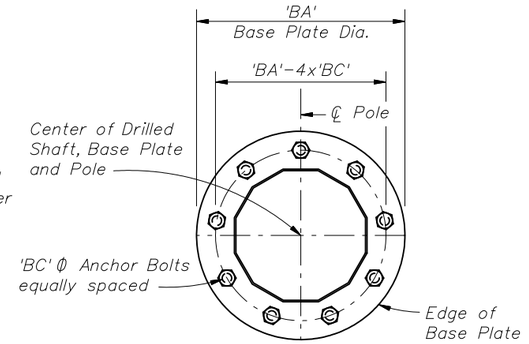
ELEVATION

ELEVATION AND NOTES

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	2008 FDOT Design Standards	Last Revision 01/01/07	Sheet No. 1 of 3
	STEEL STRAIN POLE		Index No. 17723

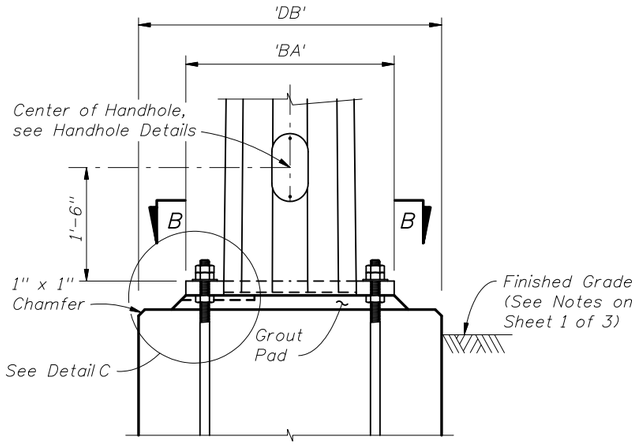


DRILLED SHAFT ELEVATION

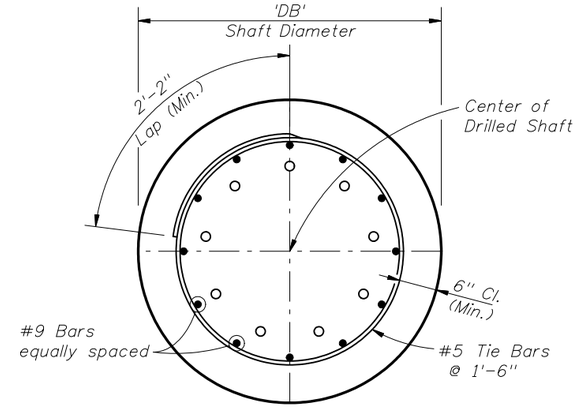


VIEW B-B

NOTE: Number of bolts shown for illustration purposes only.

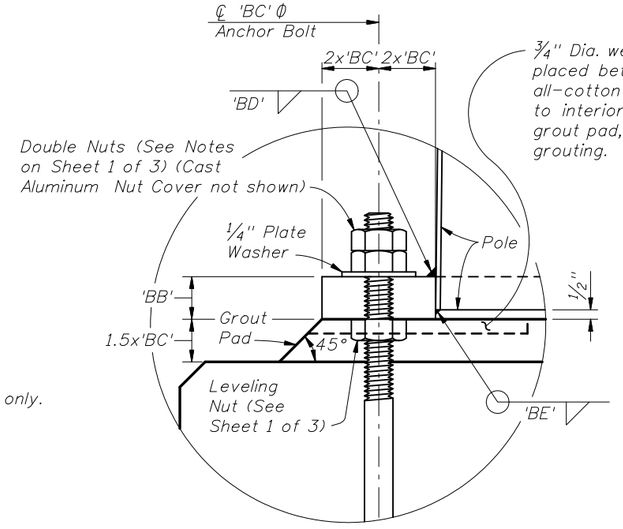


PARTIAL ELEVATION
(Showing Base Plate, Anchor bolts and Handhole)

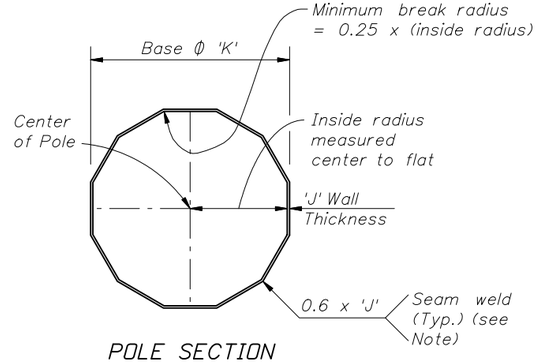


SECTION A-A

(Number of bars shown is for illustration purposes only)



DETAIL C



POLE SECTION

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

TABLE OF STRAIN POLE VARIABLES

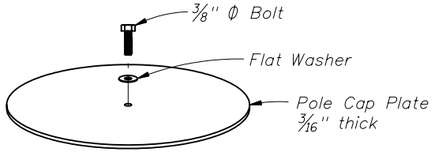
POLE TYPE	MAXIMUM ALLOWABLE MOMENT (kip-ft)	POLE		BASE CONNECTION							SHAFT		
		J (in.)	K (in.)	No. of Bolts	BA (in.)	BB (in.)	BC (in.)	BD (in.)	BE (in.)	BF (in.)	DA (ft)	DB (ft)	No. of #9 bars
PS-IV	95.4	J = 0.250	14	8	25	2.25	1⅜	7/16	3/16	57	15.0	3.5	14
PS-V	127.4		16	10	27	2.25	1⅜	7/16	3/16	56	15.5	3.5	14
PS-VI	163.4		18	10	30	2.50	1½	7/16	3/16	55	16.5	3.5	14
PS-VII	225.0		21	12	33	2.50	1½	7/16	3/16	56	16.5	4.0	20
PS-VIII	271.2		23	16	34	2.50	1⅜	7/16	3/16	56	17.0	4.0	20
PS-IX	321.6		25	14	37	2.50	1½	7/16	3/16	57	17.0	4.5	24
PS-X	376.2		27	16	39	2.50	1½	7/16	3/16	56	17.5	4.5	24
PS-V	158.9	J = 0.313	16	10	28	2.50	1½	½	¼	56	16.5	3.5	14
PS-VI	203.6		18	12	30	2.50	1½	½	¼	55	17.0	3.5	14
PS-VII	280.3		21	14	33	2.50	1½	9/16	¼	56	17.0	4.0	20
PS-VIII	338.0		23	16	35	2.50	1½	9/16	¼	55	18.0	4.0	20
PS-IX	400.9		25	12	39	2.75	1¾	9/16	¼	57	17.5	4.5	24
PS-X	469.1		27	14	41	2.75	1¾	9/16	¼	56	18.5	4.5	24

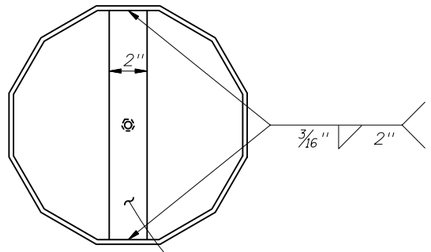
FOUNDATION NOTES:
The foundations for Steel Strain Poles are designed based upon the following conservative soil criteria which covers the great majority of soil types found in Florida:

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

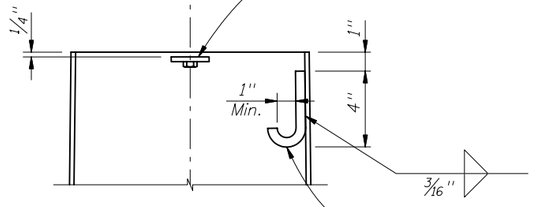
BASE AND FOUNDATION DETAILS AND TABLE OF VARIABLES





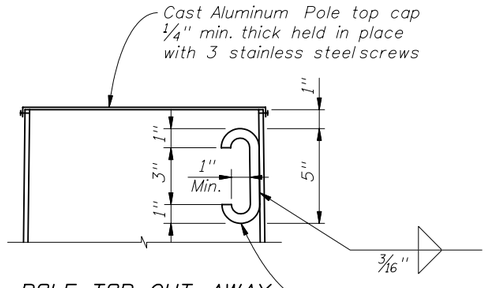
TOP VIEW

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



POLE TOP CUT-AWAY
(Option 'a')

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

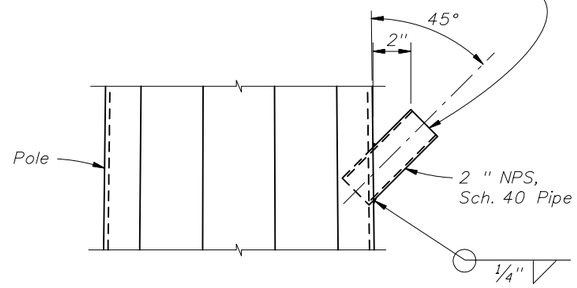


POLE TOP CUT-AWAY
(Option 'b')

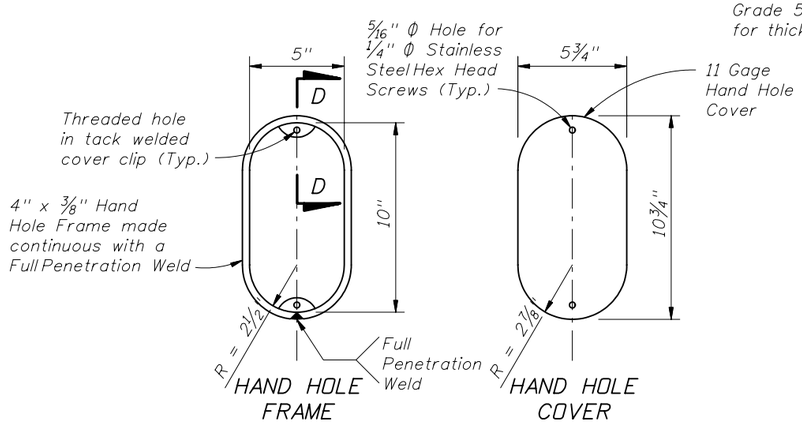
'C' Hook for wiring and lifting, 1/2" Ø commercial grade hot rolled bar welded to inside of pole.

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

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

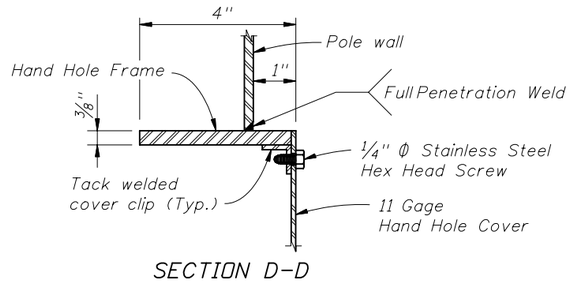


WIRE ENTRANCE DETAILS



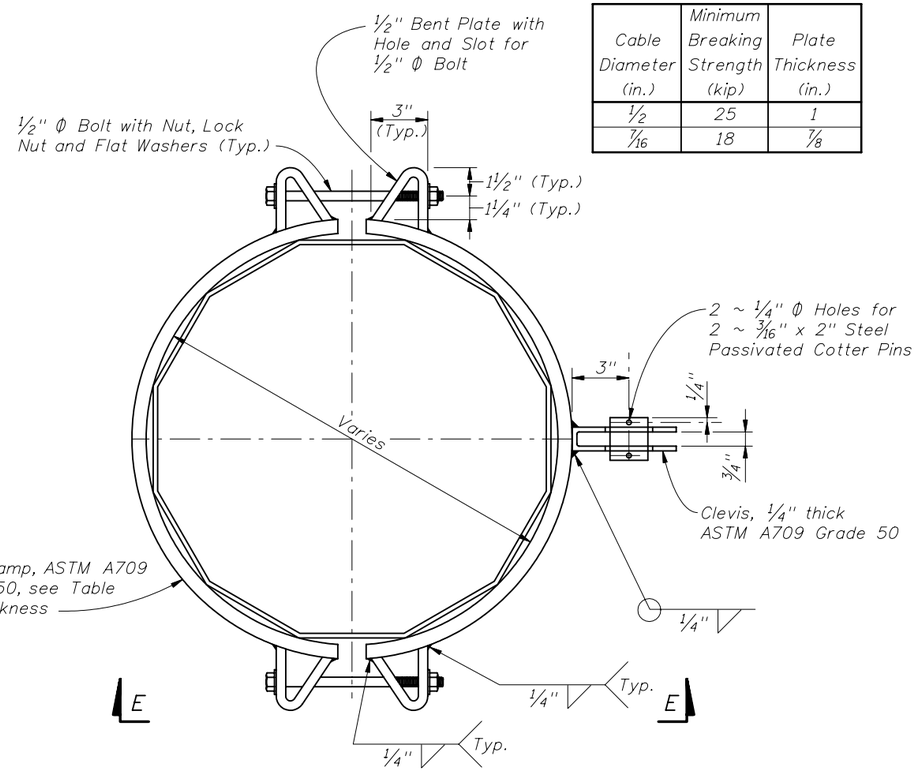
HAND HOLE FRAME

HAND HOLE COVER



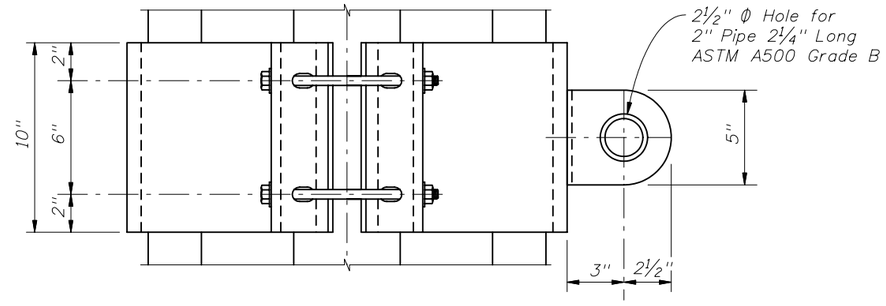
SECTION D-D
(thru Hand Hole)

Cable Diameter (in.)	Minimum Breaking Strength (kip)	Plate Thickness (in.)
1/2	25	1
7/16	18	7/8



CATENARY AND MESSENGER WIRE CLAMPS

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



VIEW E-E

ATTACHMENT DETAILS

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STEEL STRAIN POLE

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