HIGHMAST LIGHTING NOTES:

1. High Mast materials:
   a. Pole: ASTM A1011 Grade 50, 55, 60 or 65 (Less than ¼") or ASTM A572 Grade 50, 55, 60, or 65 (¼" and over) or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).

   b. Steel Plates: ASTM A709 Grade 36 or ASTM A36

   c. Weld Metal: E70XX

   d. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563, Grade A heavy-hex nuts and plate washer.

   e. Handhole: ASTM A709 Grade 36 or ASTM A36 Frame with ASTM A36 cover.

   f. Caps: ASTM A1011 Grade 50, 55, 60 or 65 or ASTM B209.

   g. Nut Covers: ASTM B26 (319-F)

   h. Stainless Steel Screws: AISI Type 316

2. Reinforcing steel: ASTM A615, Grade 60.

3. Concrete: Class IV (Drilled Shaft) with a minimum 4,000 psi compressive strength at 28 days for all environmental classifications.

4. Welding: American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 Current edition).

5. Galvanization:

   a. Nuts, Bolts, Washers and Threaded Bars/Studs: ASTM F2329.

   b. Other items (Including Pole): ASTM A123

6. Hole diameters for anchor bolts: not greater than the bolt diameter plus ½".

7. Poles: Tapered with the diameter changing at a rate of 0.14 inch per foot with a minimum 16-sided pole shaft and maximum of two longitudinal seam welds. Circumferentially welded pole shaft butt splices and laminated pole shafts are not permitted. Longitudinal seam welds within 6 inches of pole to base must be complete penetration welds. Longitudinal seam welds at telescopic field joints must be complete penetration welds for the splice length plus 6 inches.

8. 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.

9. Furnish each pole with a 2"x4" (Max.) aluminum identification tag. Submit details for approval. Secure to pole with 0.124" 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 Mounting Height, Manufacturer's Name, Fy of Steel, and Base Wall Thickness.

10. 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.

DESIGN CRITERIA:

1. Designed in accordance with the FDOT Structures Manual.

2. Poles are designed to support the following:
   a. (1) cylindrical head assembly with a maximum effective projected area of 6 SF (Cd=1) and 340 lbs (Max).
   b. (8) cylindrical luminaires with a maximum effective projected area of 3.0 SF (Cd=0.5) and 77 lbs. each.

3. Foundation design based upon the following soil criteria:
   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.

4. Foundation applies only to slopes of 1:4 or flatter. Provide a minimum 24" shaft projection on the high side.

5. Poles are designed for 6 mil galvanization thickness.

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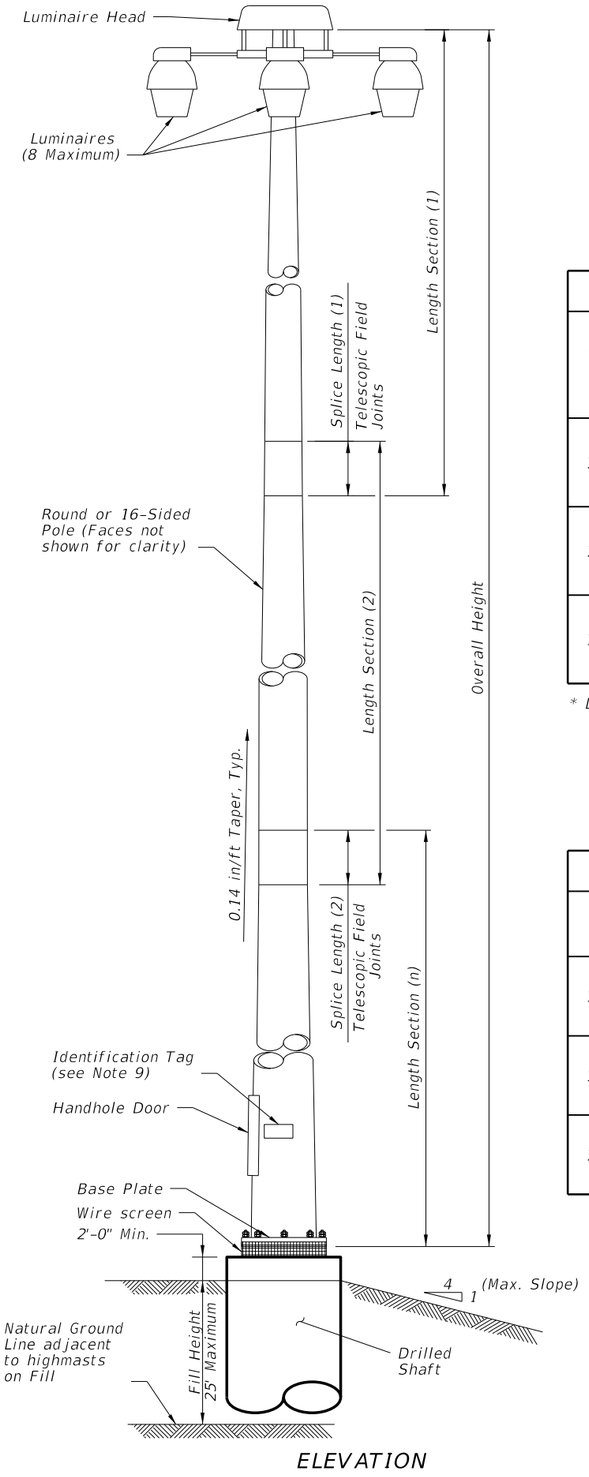
STANDARD POLE DESIGN NOTES



ELEVATION

Pole Design Table*

Design Wind Speed	Pole Overall Height (ft)	Section 1 (Top)					Section 2					Section 3				
		Length	Wall Th.	Minimum Splice L.	Tip Dia.	Base Dia.	Length	Wall Th.	Minimum Splice L.	Tip Dia.	Base Dia.	Length	Wall Th.	Minimum Splice L.	Tip Dia.	Base Dia.
110 mph	80	42'-0"	0.250"	2'-0"	5.313"	11.219"	40'-0"	0.250"	---	10.375"	16.000"	---	---	---	---	---
	100	24'-6"	0.179"	2'-0"	6.406"	9.844"	40'-0"	0.250"	2'-6"	9.188"	14.781"	40'-0"	0.250"	---	13.875"	19.500"
	120	44'-9"	0.250"	2'-0"	6.250"	12.531"	40'-0"	0.250"	2'-9"	11.688"	17.313"	40'-0"	0.313"	---	16.375"	22.000"
130 mph	80	42'-0"	0.250"	2'-0"	5.281"	11.188"	40'-0"	0.313"	---	10.375"	16.000"	---	---	---	---	---
	100	24'-6"	0.179"	2'-0"	6.906"	10.344"	40'-0"	0.250"	2'-6"	9.656"	15.281"	40'-0"	0.313"	---	14.375"	20.000"
	120	45'-6"	0.250"	2'-6"	9.250"	15.625"	40'-0"	0.250"	3'-0"	14.719"	20.344"	40'-0"	0.313"	---	19.375"	25.000"
150 mph	80	42'-3"	0.250"	2'-3"	7.281"	13.219"	40'-0"	0.313"	---	12.375"	18.000"	---	---	---	---	---
	100	24'-6"	0.250"	2'-0"	8.188"	11.625"	40'-0"	0.313"	2'-6"	10.781"	16.406"	40'-0"	0.375"	---	15.375"	21.000"
	120	46'-6"	0.250"	3'-0"	12.406"	18.938"	40'-0"	0.313"	3'-6"	17.938"	23.563"	40'-0"	0.375"	---	22.375"	28.000"

* Diameter Measured Flat to Flat

Base Plate and Bolts Design Table

Design Wind Speed	Pole Overall Height (ft)	Base Plate Diameter	Base Plate Thickness	Bolt Circle	No. Bolts	Bolt Diameter	Bolt Embedment
110 mph	80	30.0"	2.500"	23.0"	8	1.75"	38"
	100	33.5"	2.500"	26.5"	8	1.75"	42"
	120	36.0"	2.750"	29.0"	8	1.75"	45"
130 mph	80	30.0"	2.500"	23.0"	8	1.75"	43"
	100	34.0"	2.750"	27.0"	8	1.75"	50"
	120	41.0"	3.250"	33.0"	8	2.00"	52"
150 mph	80	32.0"	2.750"	25.0"	8	1.75"	49"
	100	37.0"	3.000"	29.0"	8	2.00"	53"
	120	46.0"	3.250"	37.0"	10	2.25"	57"

Shaft Design Table

Design Wind Speed	Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement
110 mph	80	4'-0"	13'-0"	14 - # 11
	100	4'-0"	15'-0"	14 - # 11
	120	4'-6"	16'-0"	16 - # 11
130 mph	80	4'-0"	14'-0"	14 - # 11
	100	4'-0"	16'-0"	14 - # 11
	120	4'-6"	18'-0"	16 - # 11
150 mph	80	4'-0"	16'-0"	14 - # 11
	100	4'-6"	17'-0"	16 - # 11
	120	5'-0"	20'-0"	18 - # 11

POLE DESIGN TABLES

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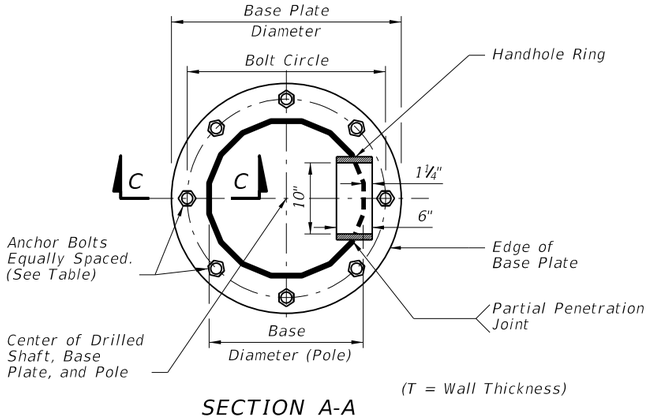
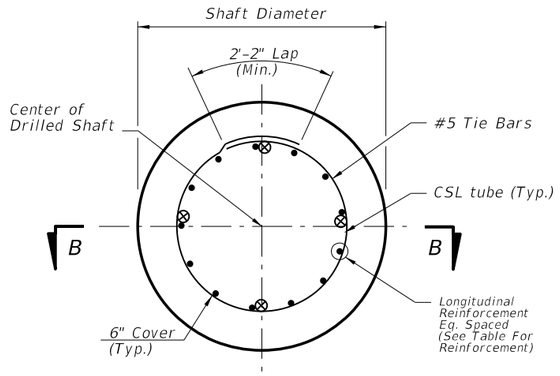
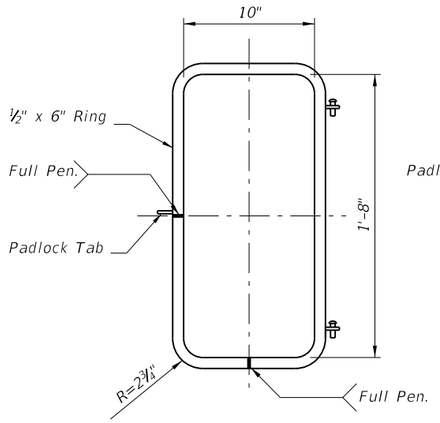


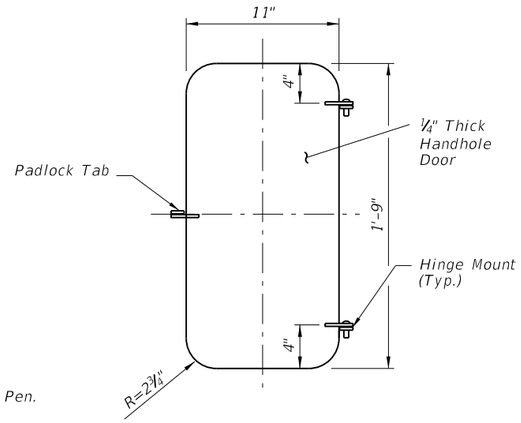
SECTION A-A



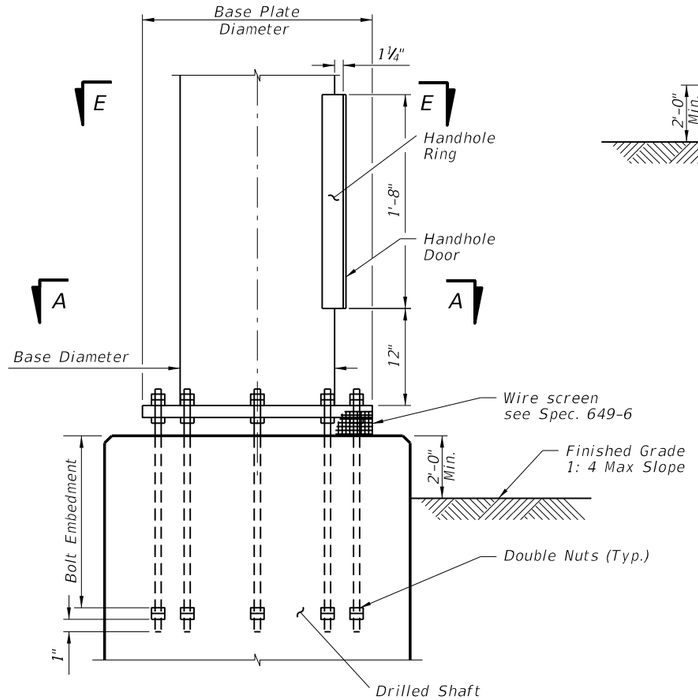
FOUNDATION PLAN
(Anchor Bolts and Conduits Not Shown)



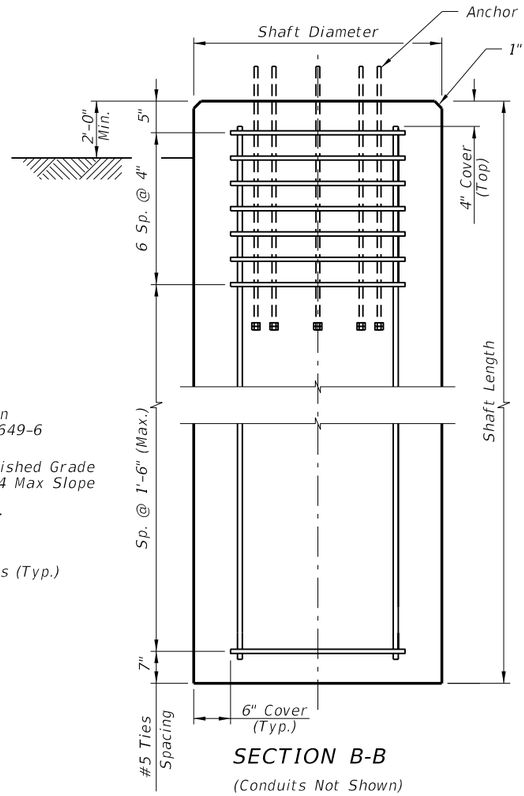
HANDHOLE RING



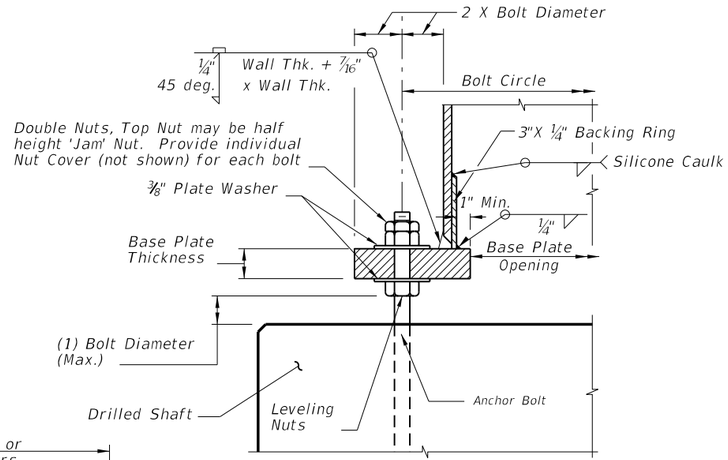
HANDHOLE DOOR



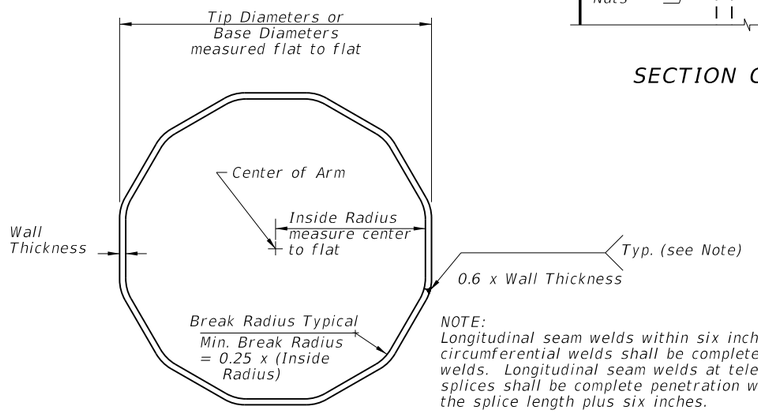
BASE PLATE AND ANCHORAGE ELEVATION
(Conduits Not Shown)



SECTION B-B
(Conduits Not Shown)



SECTION C-C



SECTION E-E

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

POLE FOUNDATION

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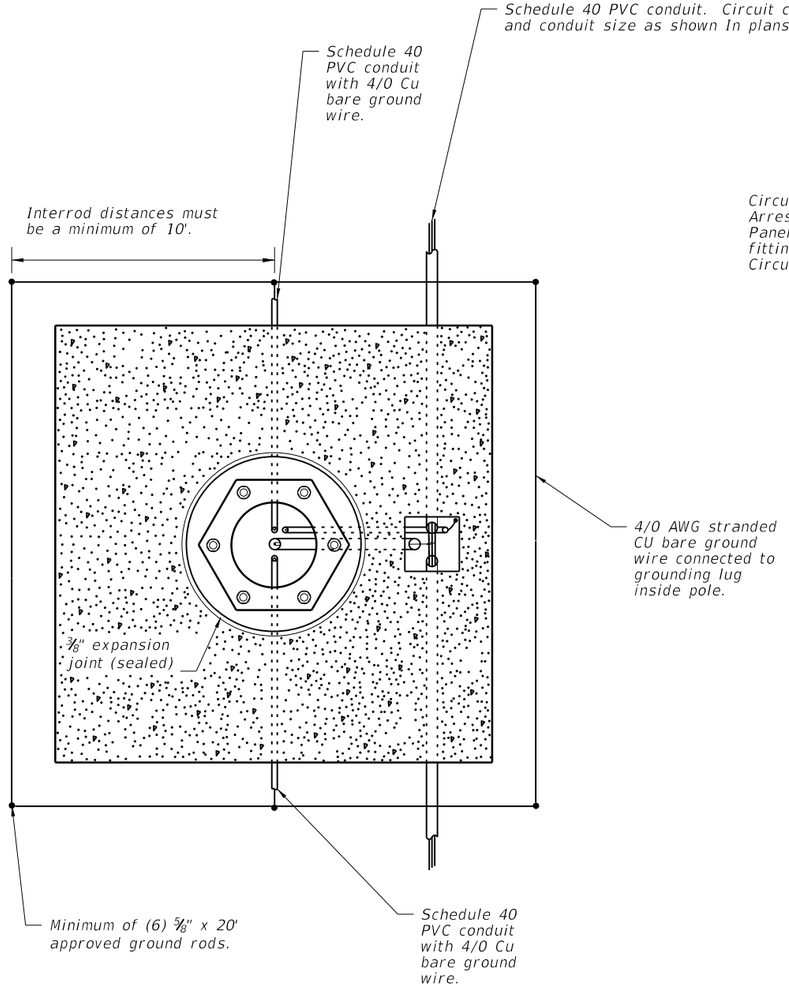

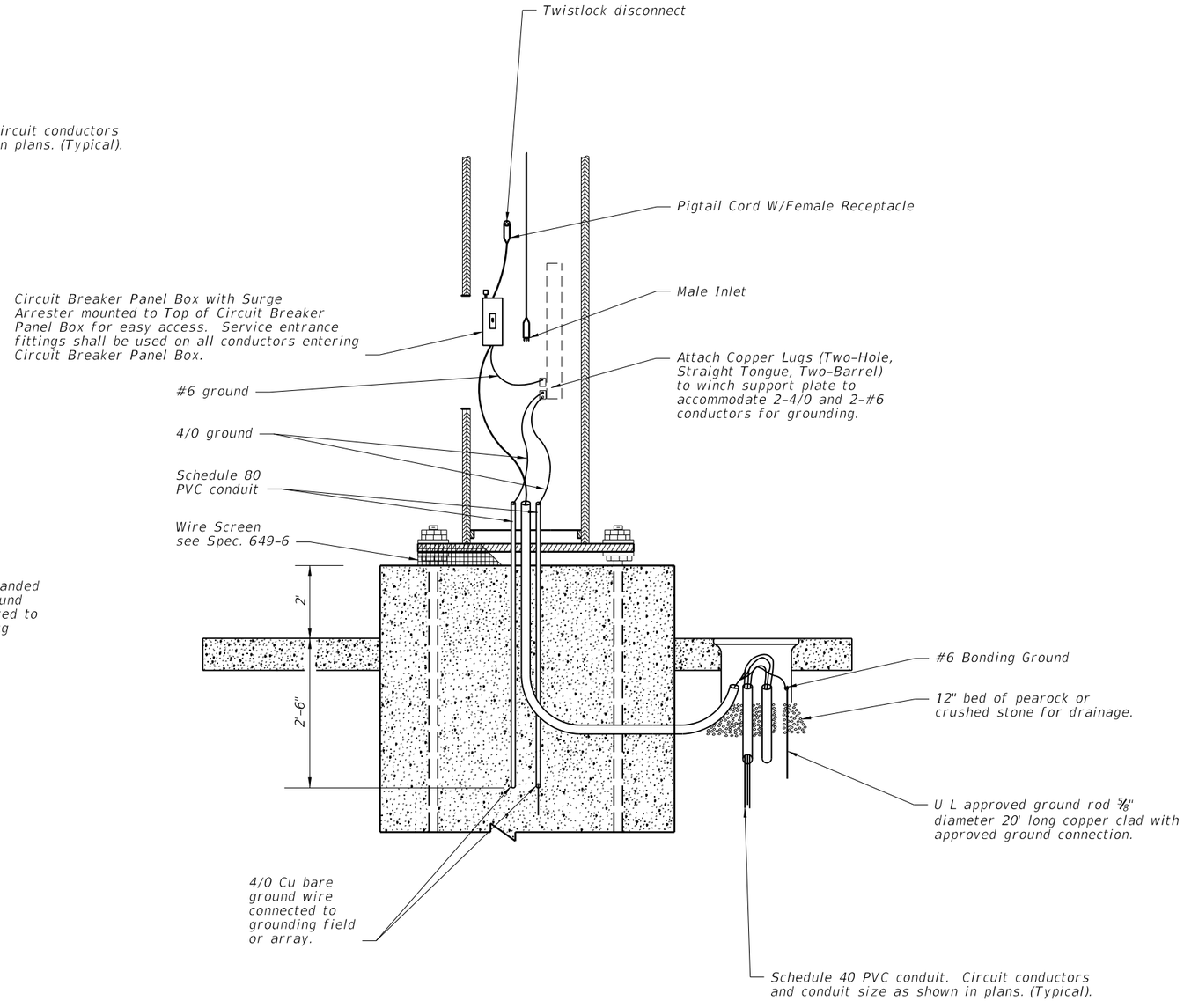

NOTES:

1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Section 630 of the Standard Specifications For Road And Bridge Construction.
2. Slabs to be placed around all Poles and Pull Boxes.
3. For Pull Boxes between Poles refer to Index 17500.

WIRING DETAILS

LAST REVISION	REVISION	DESCRIPTION:		FDOT DESIGN STANDARDS 2013	HIGHMAST LIGHTING	INDEX NO.	SHEET NO.
01/01/12						17502	4

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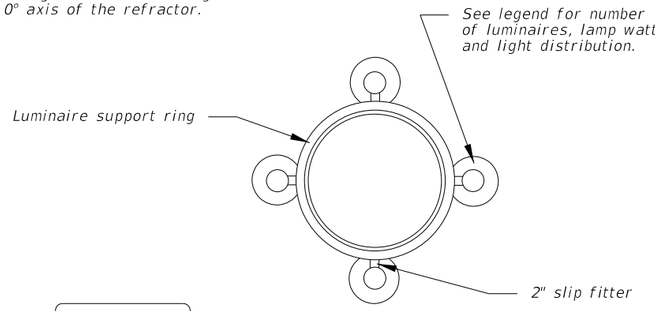
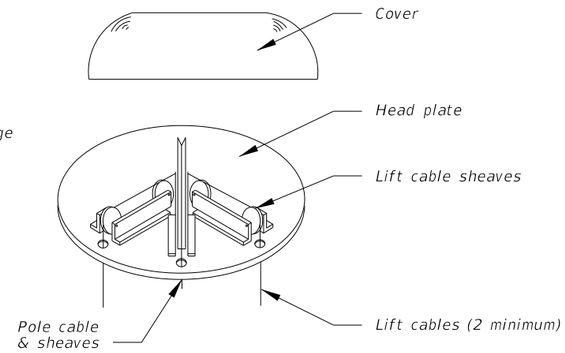
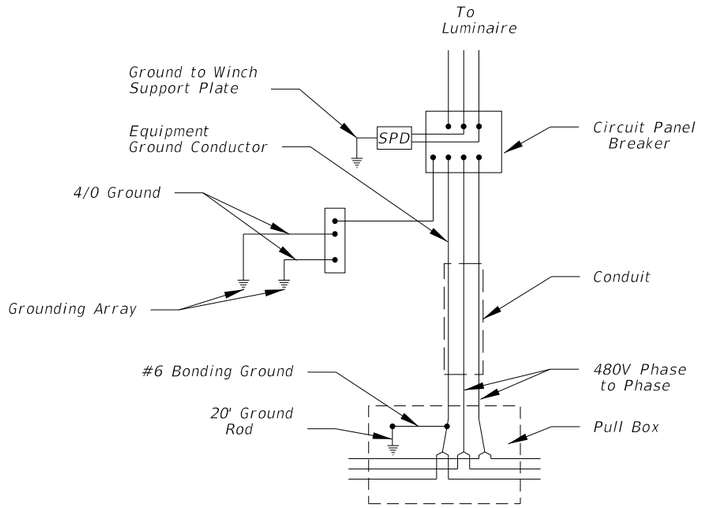
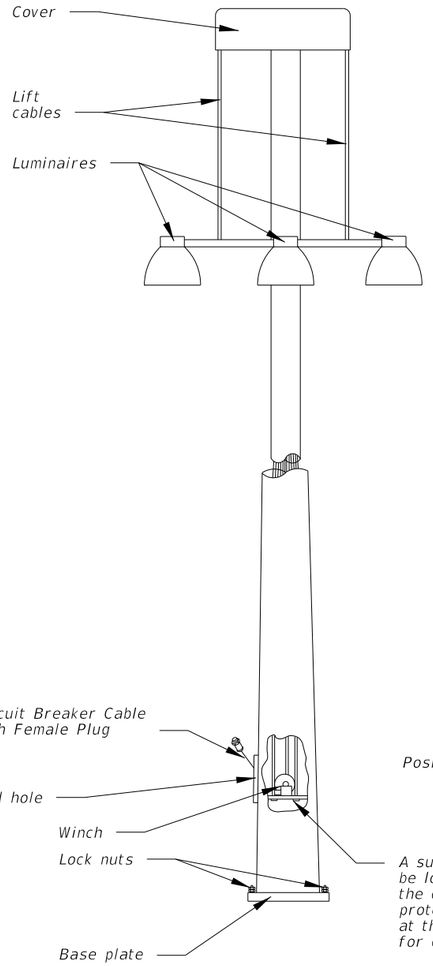
The contractor's attention is directed to those plan sheets detailing the mounting of luminaires at the pole top. Particular attention is directed to alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of these luminaires to ensure that the approved photometric layout is physically produced at each lighting standard in the field. A marking shall be placed on the external face of the refractor to allow visual inspection of alignment. The marking shall correspond to the 0° axis of the refractor.

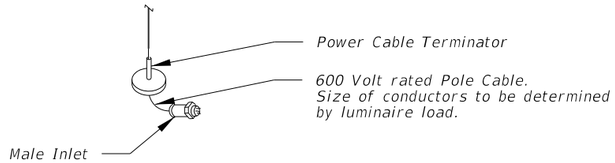


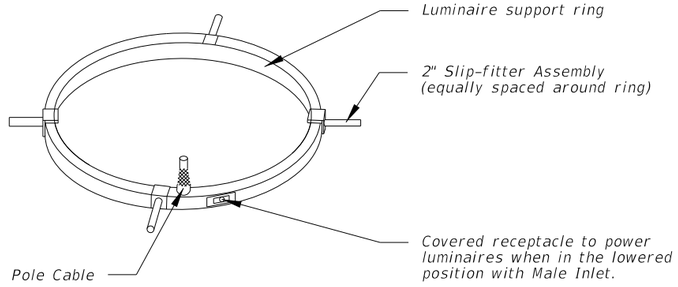


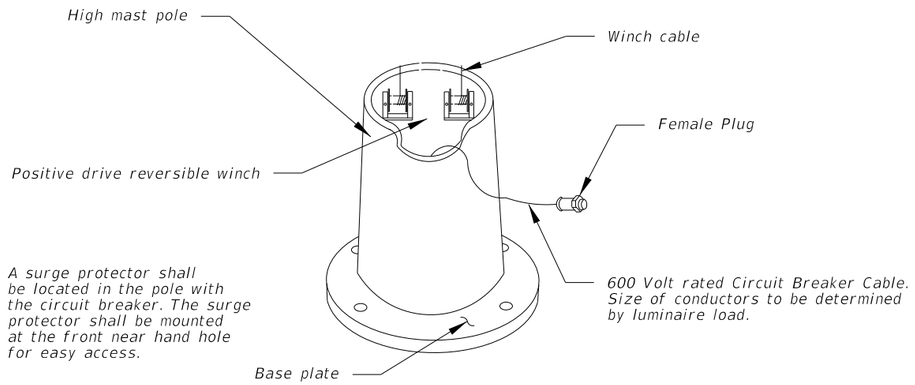


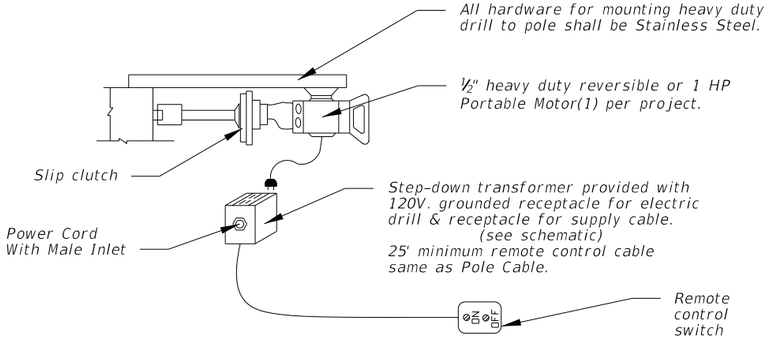
HIGH MAST POLE WIRING DIAGRAM











SCHEMATIC OF REMOTE AUXILIARY POWER UNIT

LOWERING DETAILS

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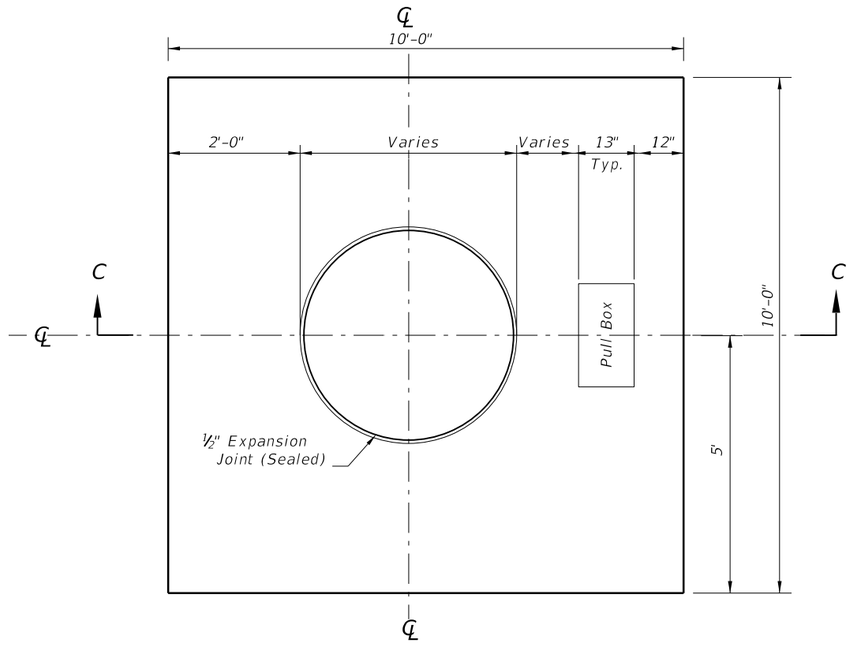
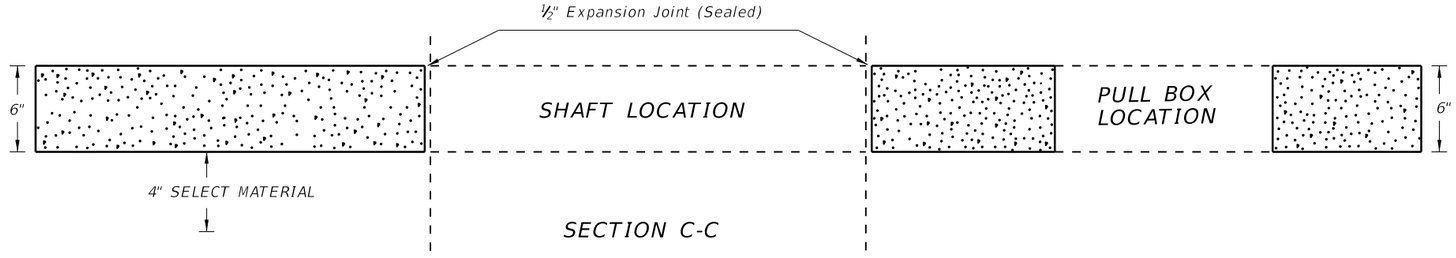
NOTES:

1. Use compacted select material in accordance with Index 505.
2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
3. Outside edge of slab shall be cast against formwork.
4. The pull box shown is 13" x 24"; others approved under Section 635 of the Standard Specifications may be used.
5. Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
6. Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.
7. The expansion joint shall consist of ½" of closed-cell polyethelene foam expansion material. The top ½" of expansion material shall be removed after pouring the slab and sealed with a QPL approved Type A sealant meeting the requirements of Section 932.



SLAB DIMENSIONS



SLAB DETAILS

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07/01/12						17502	6