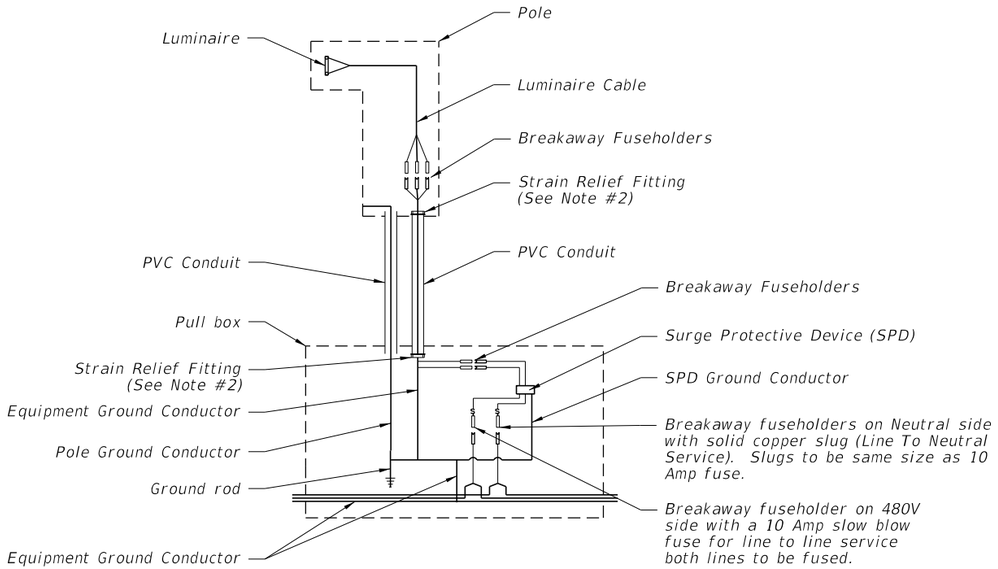
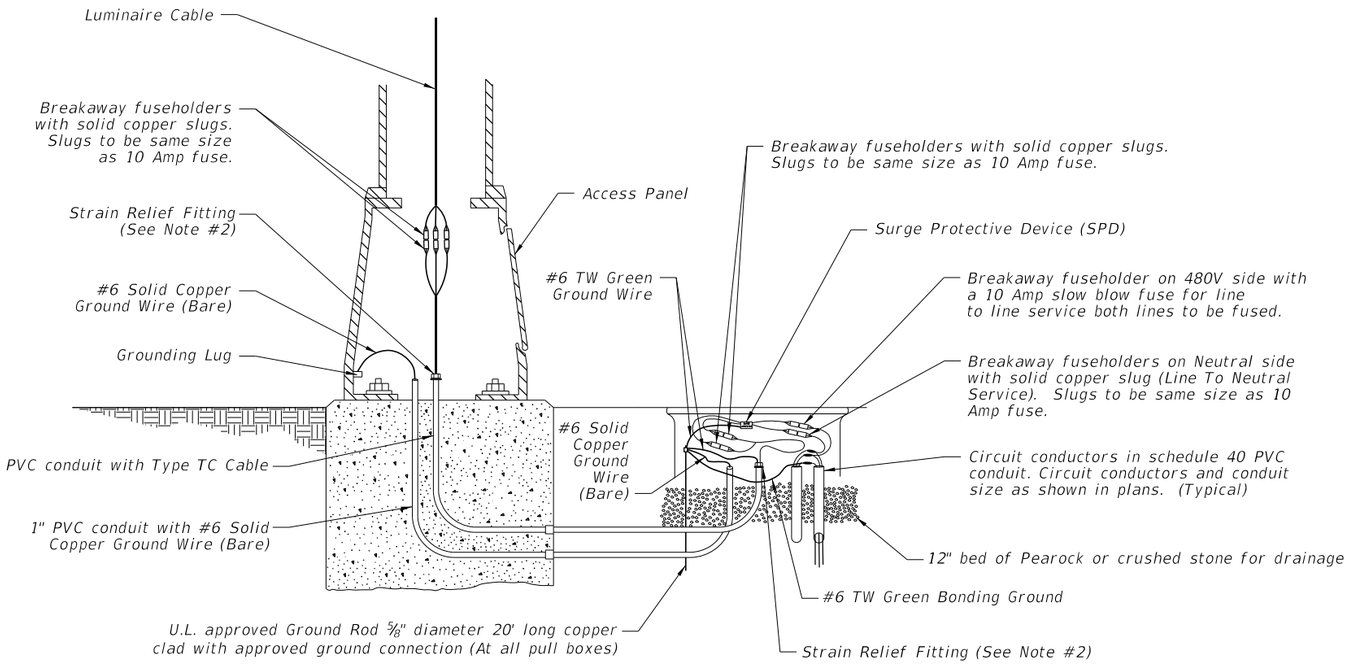
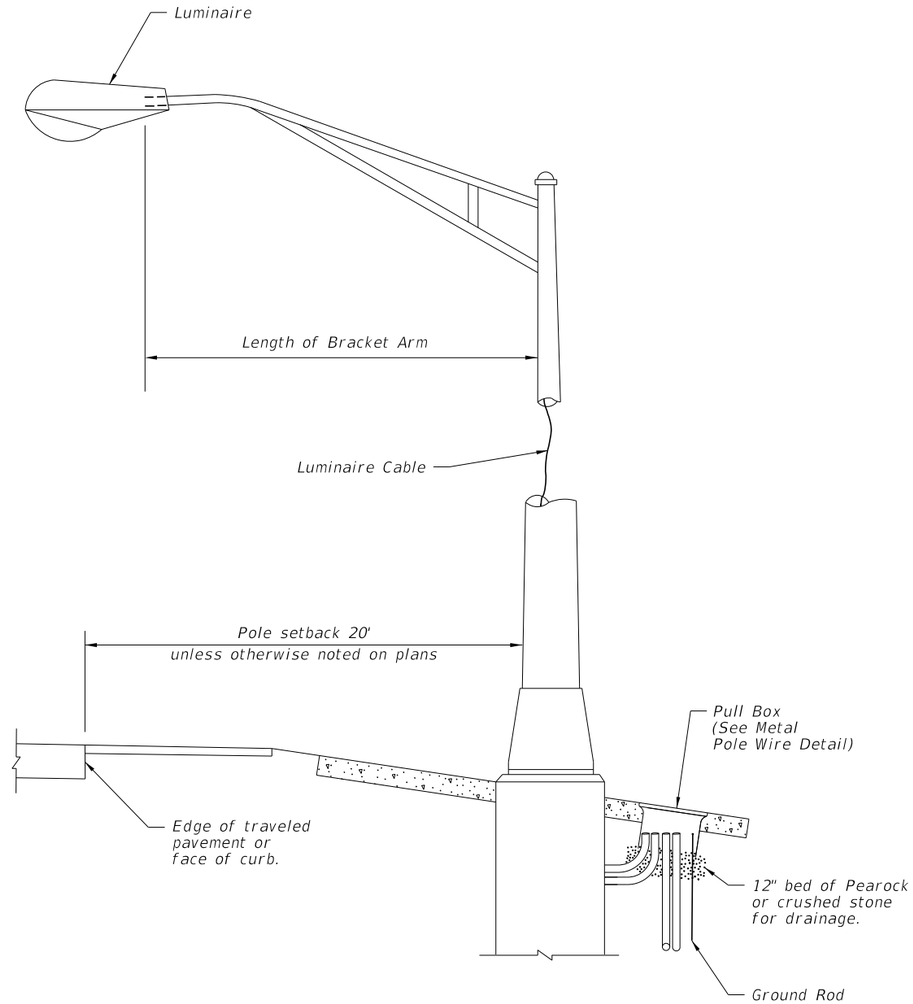



WIRING DIAGRAM




METAL POLE WIRING DETAIL




METAL POLE DETAIL

NOTES:

1. Barrier wall or bridge mounted poles: The wiring shall be in accordance with Section 992 of the Standard Specifications.

2. Provide cable length to remove fuseholders from transformer base, pole base or pullbox for maintenance. Remove slack from the luminaire cable to provide tension on the fuseholders if the pole breaks away. Pull excess cable into pull box tighten strain relief fittings or cable clamps at both ends of conduit to prevent cable from slipping.

# WIRING DETAILS

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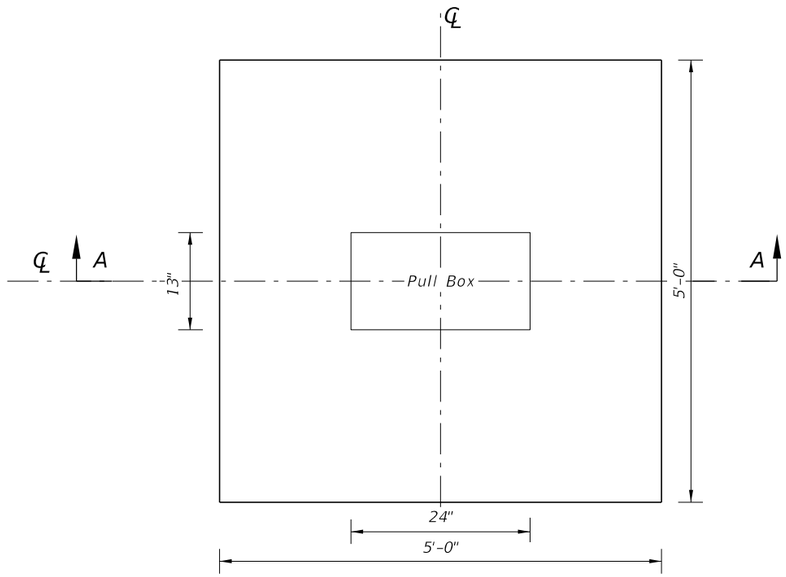
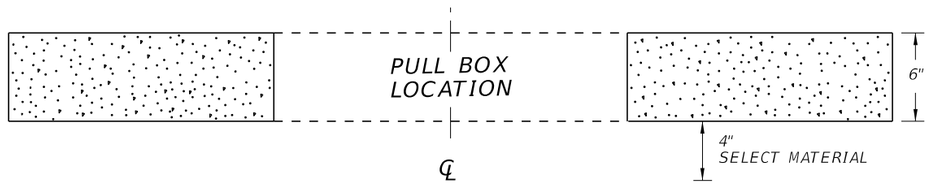
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | CONVENTIONAL LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 17500 | 1 of 3 |

## 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 rural locations. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
6. Concrete for slabs around pull boxes shall be included in the price of pull box.




SLAB DIMENSIONS




SECTION A-A

SLAB DETAILS FOR INTERMEDIATE PULLBOX LOCATIONS

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/12 | | | FDOT FY 2016-17 DESIGN STANDARDS | CONVENTIONAL LIGHTING | 17500 | 2 of 3 |

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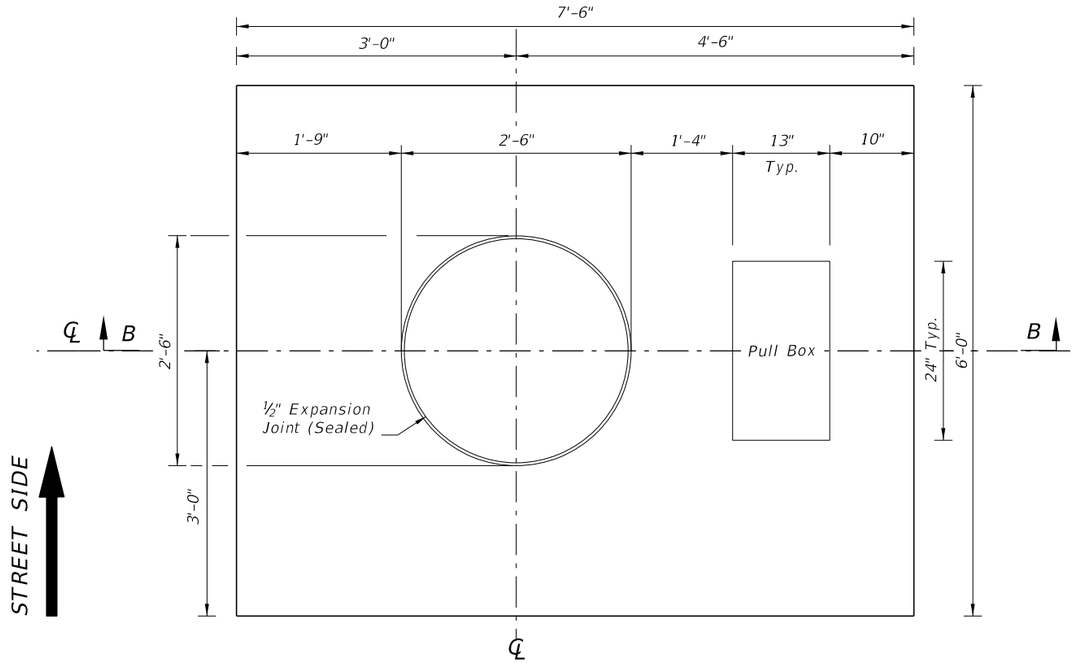
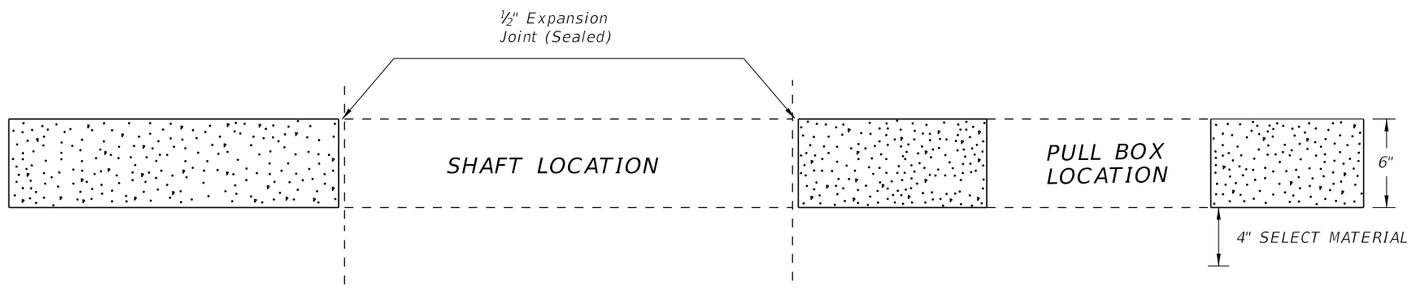
## NOTES:

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 an APL approved Type A sealant meeting the requirements of Section 932.




SLAB DIMENSIONS




SECTION B-B

# SLAB DETAILS FOR POLE AND PULL BOX LOCATIONS

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| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | CONVENTIONAL LIGHTING | 17500 | 3 of 3 |

## GENERAL NOTES

1. Exothermically welded all grounding system connections . This includes all cables, ground electrode and arrays. Do not exothermically bond grounding electrode to grounding electrode. Method of Measurement and Basis of Payment as per Standard Specifications 620.

2. Contact all utility companies prior to any underground work. The utility company are responsible for locating and identifying their facilities.

3. The contractor determines required date for the power company to install the power service at the pre-construction conference.

4. The power company reserves the right to install the riser, switch gear and weatherhead on power company poles at the expense of the contractor. Contact the power company for cost or for authorization for an alternate procedure.

5. Paint any damaged portions of galvanized steel poles and bracket arms in accordance with Standard Specifications 562.

6. Before final acceptance, contractor shall provide 2 sets of full size as built plans to the maintaining agency.

7. Route conduit pole to pole, maintaining pole setback distance from edge of pavement. Any cable routing in locations where guardrail is proposed shall be 2' in front of the standard guardrail position.

8. Where guardrail is constructed, placed poles, which are considered above ground hazard, a minimum of 5' behind the face of the guardrail.

9. Install pole foundations in accordance with Standard Specifications 715.

10. Make splices in pull boxes or the pole base, not inside the conduit. The wires at pull boxes must be long enough to remove connectors to the outside of pull boxes to make connectors accessible for changing fuses and trouble shooting the system.

11. Neutral wires to have white insulation. Do not use white or green insulated wires for ungrounded conductors.

12. Make exposed or surfaced mounted conduit out of be rigid or intermediate metal. Provide exposed runs of conduit within either expansion joints or flexible metal conduit sections adequate to take care of vibrations and thermal expansions. Ground all metal conduit. Hot-dip all steel conduit.

13. Mandrel test, clean inside and cap both ends of all conduit that remains empty as spares. Leave the corrosion resistant pull/drag wire and place pull boxes to mark the location of the ends of the conduits.

14. Located pull boxes at the end of conduits crossing roadways, and as necessary for the completion of the project.

15. These plans represent minimum acceptable criteria. The inspection per these drawings represent the minimum base of acceptance.

16. All material are Underwriters Laboratory approved, unless otherwise specified.

17. Install a pull box at each pole location. Place pull boxes at a maximum of 2' from pole unless otherwise directed by the project engineer. Ground metal pull box covers. See Standard Specifications 635.

18. At all pull boxes and pole bases, seal all ends of the conduit in accordance with Standard Specifications 630.

19. All mounting heights are ± 2'-6" unless otherwise noted in plans.

20. A handhole is required in all poles. Locate handhole on the opposite side of approaching traffic, with a cover fastened with stainless steel screws and at least 20 square inches at the opening of the handhole.

21. On joint use poles ground the luminaire and arm.

## BREAKAWAY FEATURE

All ground mounted metal light poles, 50 feet in height or less, shall be mounted on a frangible metal base. The base shall shall be one piece and be designed to breakaway without the aid of any slipping or sliding surfaces. The design of the breakaway feature shall be in accordance with the breakaway performance requirements of the AASHTO 'Standard Specifications For Structural Supports For Highway Signs, Luminaires and Traffic Signals'. The contractor (supplier) shall submit copies of test reports as evidence the breakaway feature meets the above specifications and calculations to verify the design will meet the AASHTO wind loading specified in the contract plans. No poles are to be installed prior to approval of submittal data.

Poles behind bridge rail or barrier wall mounted, shall be installed on non-frangible bases.

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| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | HIGHWAY LIGHTING GENERAL NOTES | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 17501 | 1 of 1 |

## HIGHMAST LIGHTING NOTES:

1. Poles are designed to support the following:
   A. One (1) cylindrical head assembly with a maximum effective projected area of 6 sf (cd=1) and 340 lbs (Max.)
   B. Eight (8) cylindrical luminaires with a maximum effective projected are of 3.0 sf (cd = 0.5) and 77 lbs each.

2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.

3. High Mast Structure Materials:
   A. Poles and Backing Rings:
      a. Less than 3/16": ASTM A1011 Grade 50, 55, 60 or 65
      b. Greater than or equal to 3/16": ASTM A572 Grade 50, 55, 60 or 65
      c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   B. Steel Plates: ASTM A709 or ASTM A36
   C. Pole Caps: ASTM A1011 Grade 50, 55, 60, or 65 or ASTM B209
   D. Weld Metal: E70XX
   E. Stainless Steel Screws: AISI 316
   F. Anchor Bolts, Nuts and Washers:
      a. Anchor Bolts: ASTM F1554 Grade 55
      b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
      c. Plate Washer: ASTM A36 (2 per anchor bolt)
   G. Nut Covers: ASTM B26 (319-F)
   H. Concrete: Class IV (Drilled Shaft)
   I. Reinforcing Steel: Specification Section 415

4. Fabrication:
   A. Welding: Specification Section 460-6.4
   B. Poles:
      a. Round or 16-Sided (Min.)
      b. Pole Taper: Diameter changing at 0.14 inches per foot.
      c. Two longitudinal seam welds (Max.).
      d. Longitudinal seam welds within 6" of pole to base must be complete penetration welds.
      e. Longitudinal seam welds at telescopic field joints must be complete penetration welds for the splice length plus 6".
      f. Circumferentially welded pole shaft, butt splices and laminated pole shafts are not permitted.
   C. Holes for Anchor Bolts: Anchor Bolt diameter plus 1/2" (Max.), prior to galvanizing.
   D. Hot Dip Galvanize after Fabrication.
   E. Identification Tag: (Submit details for approval.)
      a. 2"x 4" (Max.) aluminum identification tag.
      b. Locate on the inside of the pole and visible from the handhole.
      c. Secure to pole with 1/8" diameter stainless steel rivets or screws.
      d. Include the following information on the ID Tag:
         1. Financial Project ID
         2. Pole Type
         3. Pole height
         4. Manufacturers' Name
         5. Fy of Steel
         6. Base Wall Thickness

5. Coating:
   A. Galvanize Anchor Bolts, Nuts and Washers: ASTM F2329
   B. Hot Dip Galvanize all other steel items: ASTM A123

6. Construction:
   A. Foundation: Specification Section 455 Drilled Shaft, except that payment is included in the cost of the Structure.
   B. After Installation: Place wire screen between top of foundation and bottom of baseplate in accordance with Specification Section 649-6.

STANDARD POLE DESIGN NOTES

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | HIGH MAST LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/15 | | | | | 17502 | 1 of 6 |

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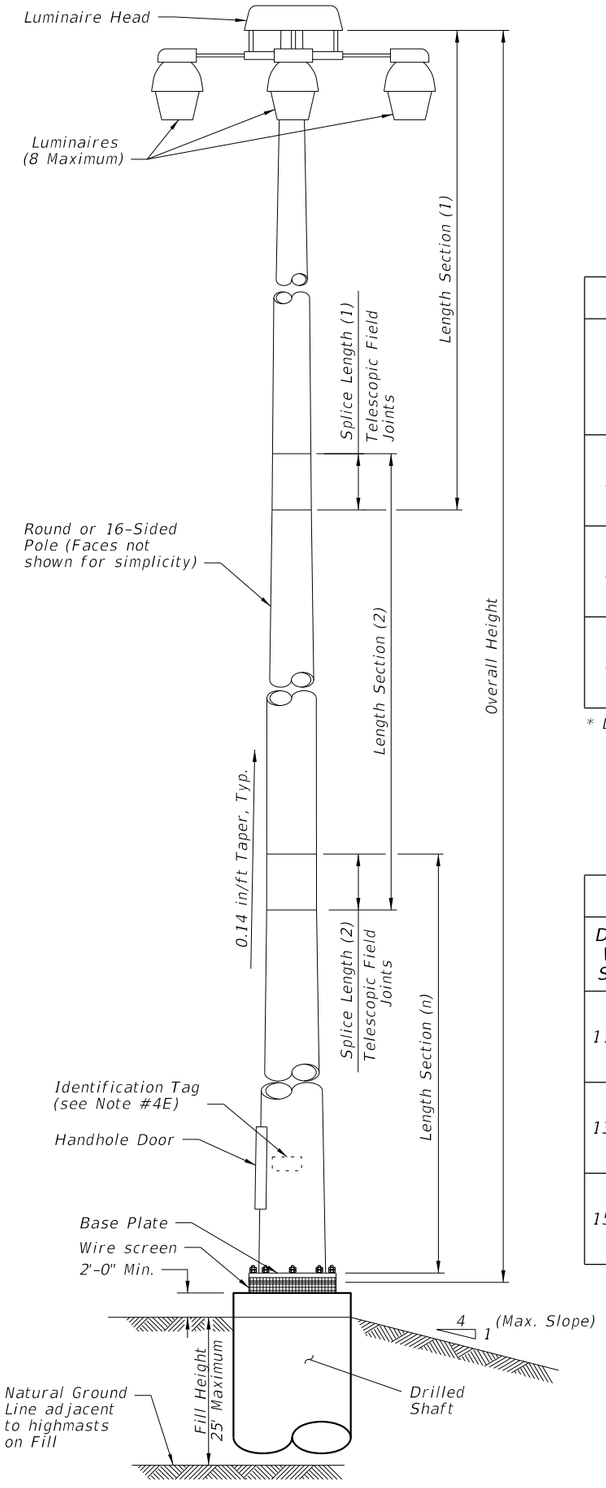


ELEVATION

| POLE DESIGN TABLE* | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design Wind Speed | Pole Overall Height (ft) | SECTION 1 (TOP) | | | | | SECTION 2 | | | | | SECTION 3 | | | | |
| | | Length | Wall Thickness (in.) | Minimum Splice L. | Tip Dia. (in.) | Base Dia. (in.) | Length | Wall Thickness (in.) | Minimum Splice L. | Tip Dia. (in.) | Base Dia. (in.) | Length | Wall Thickness (in.) | Minimum Splice L. | Tip Dia. (in.) | Base Dia. (in.) |
| 110 mph | 80 | 41'-9" | 0.250 | 2'-0" | 5.375 | 11.219 | 40'-0" | 0.250 | -- | 10.375 | 16.000 | — | — | — | — | — |
| | 100 | 24'-3" | 0.179 | 2'-0" | 6.438 | 9.844 | 40'-0" | 0.250 | 2'-6" | 9.188 | 14.781 | 40'-0" | 0.250 | — | 13.875 | 19.500 |
| | 120 | 44'-6" | 0.250 | 2'-0" | 6.313 | 12.531 | 40'-0" | 0.250 | 2'-9" | 11.688 | 17.313 | 40'-0" | 0.313 | — | 16.375 | 22.000 |
| 130 mph | 80 | 41'-9" | 0.250 | 2'-0" | 5.344 | 11.188 | 40'-0" | 0.313 | -- | 10.375 | 16.000 | — | — | — | — | — |
| | 100 | 24'-3" | 0.179 | 2'-0" | 6.938 | 10.344 | 40'-0" | 0.250 | 2'-6" | 9.656 | 15.281 | 40'-0" | 0.313 | — | 14.375 | 20.000 |
| | 120 | 45'-3" | 0.250 | 2'-6" | 9.281 | 15.625 | 40'-0" | 0.250 | 3'-0" | 14.719 | 20.344 | 40'-0" | 0.313 | — | 19.375 | 25.000 |
| 150 mph | 80 | 42'-0" | 0.250 | 2'-3" | 7.344 | 13.219 | 40'-0" | 0.313 | -- | 12.375 | 18.000 | -- | -- | -- | -- | — |
| | 100 | 24'-3" | 0.250 | 2'-0" | 8.219 | 11.625 | 40'-0" | 0.313 | 2'-6" | 10.781 | 16.406 | 40'-0" | 0.375 | -- | 15.375 | 21.000 |
| | 120 | 46'-3" | 0.250 | 3'-0" | 12.469 | 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 (in.) | Base Plate Thickness (in.) | Bolt Circle (in.) | No. Bolts | Bolt Diameter (in.) | Bolt Embedment (in.) |
| 110 mph | 80 | 30.0 | 3.0 | 23.0 | 8 | 1.75 | 38 |
| | 100 | 33.5 | 3.0 | 26.5 | 8 | 1.75 | 42 |
| | 120 | 36.0 | 3.0 | 29.0 | 8 | 1.75 | 45 |
| 130 mph | 80 | 30.0 | 3.0 | 23.0 | 8 | 1.75 | 43 |
| | 100 | 34.0 | 3.0 | 27.0 | 8 | 1.75 | 50 |
| | 120 | 41.0 | 3.5 | 33.0 | 8 | 2.00 | 52 |
| 150 mph | 80 | 32.0 | 3.0 | 25.0 | 8 | 1.75 | 49 |
| | 100 | 37.0 | 3.0 | 29.0 | 8 | 2.00 | 53 |
| | 120 | 46.0 | 3.5 | 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'-6" | 14'-0" | 16- #11 |
| | 120 | 4'-6" | 16'-0" | 16- #11 |
| 130 mph | 80 | 4'-0" | 14'-0" | 14- #11 |
| | 100 | 4'-6" | 16'-0" | 16- #11 |
| | 120 | 5'-0" | 17'-0" | 18- #11 |
| 150 mph | 80 | 4'-6" | 15'-0" | 16- #11 |
| | 100 | 4'-6" | 17'-0" | 16- #11 |
| | 120 | 5'-0" | 20'-0" | 18- #11 |

NOTE:
Foundation for slopes 1:4 or flatter. Provide a 2'-0" drilled shaft projection on the high side.

POLE DESIGN TABLES

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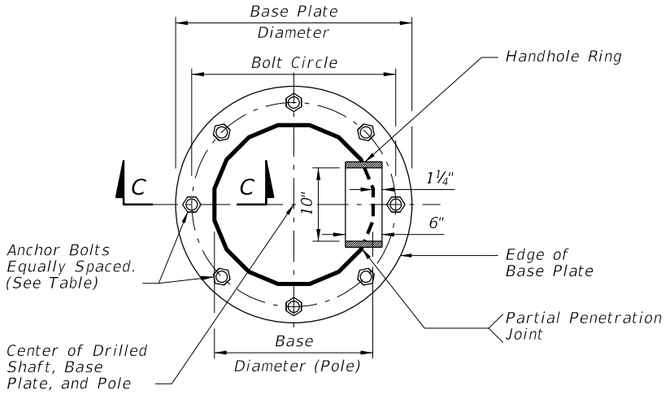
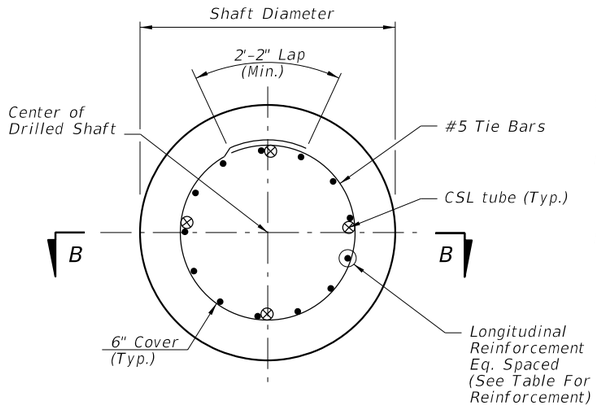


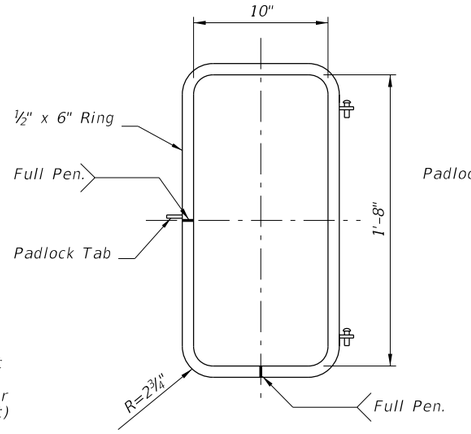

(T = Wall Thickness)

## SECTION A-A

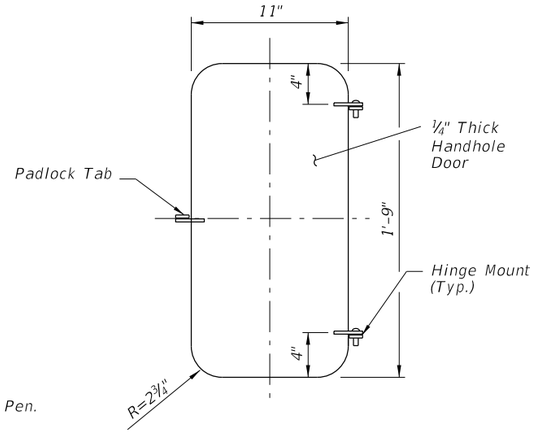



## FOUNDATION PLAN

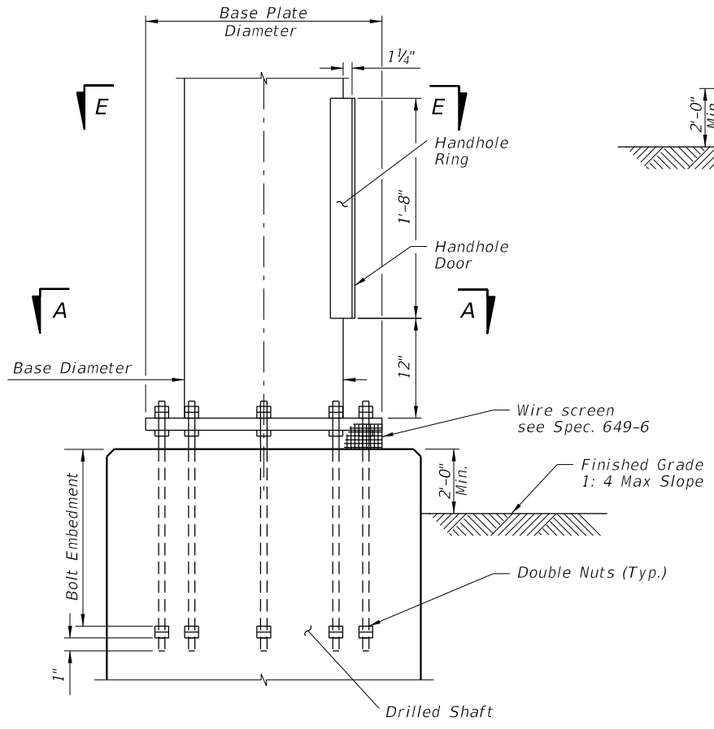
(Anchor Bolts and Conduits Not Shown)




## HANDHOLE RING

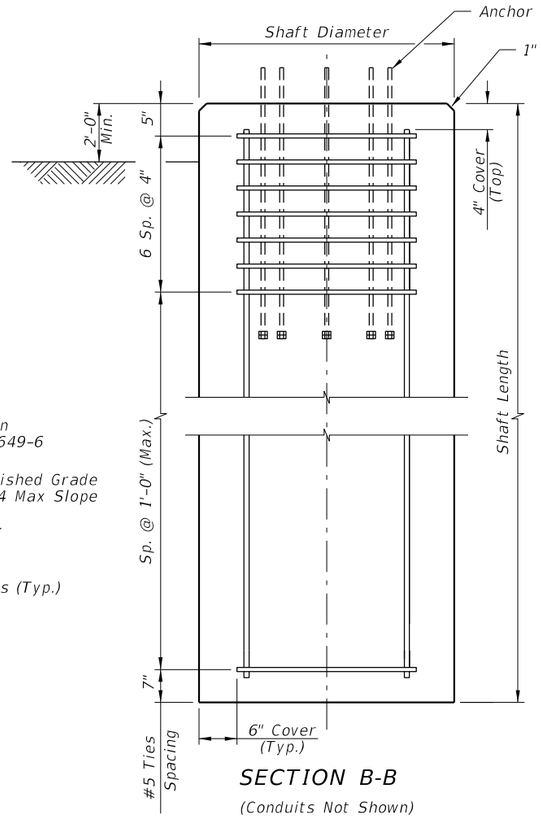



## HANDHOLE DOOR



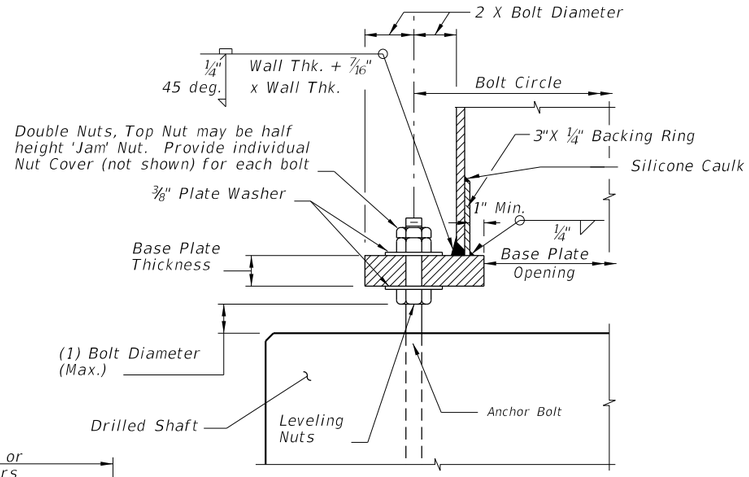

## BASE PLATE AND ANCHORAGE ELEVATION

(Conduits Not Shown)

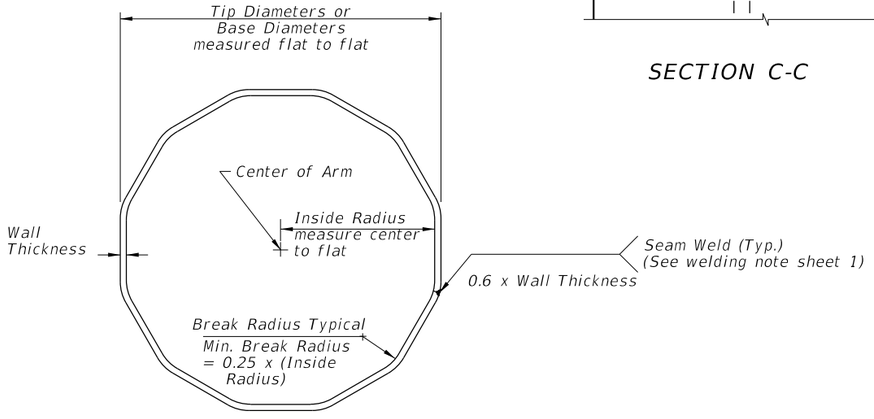



## SECTION B-B

(Conduits Not Shown)




## SECTION C-C

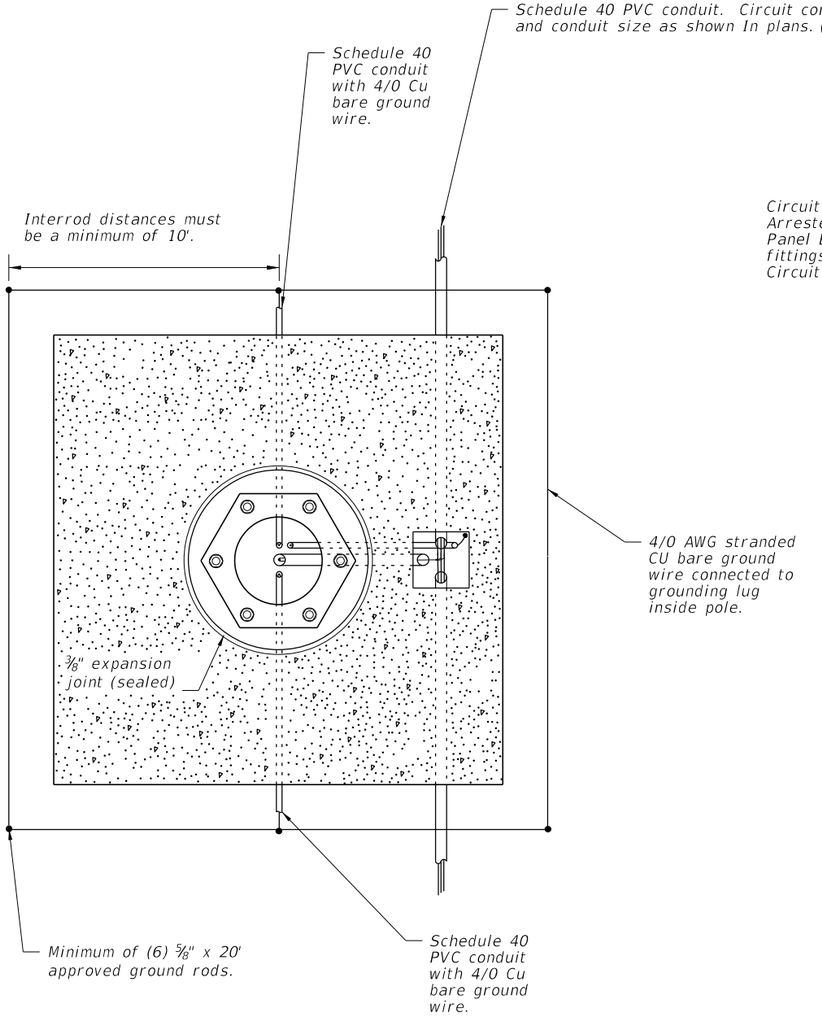


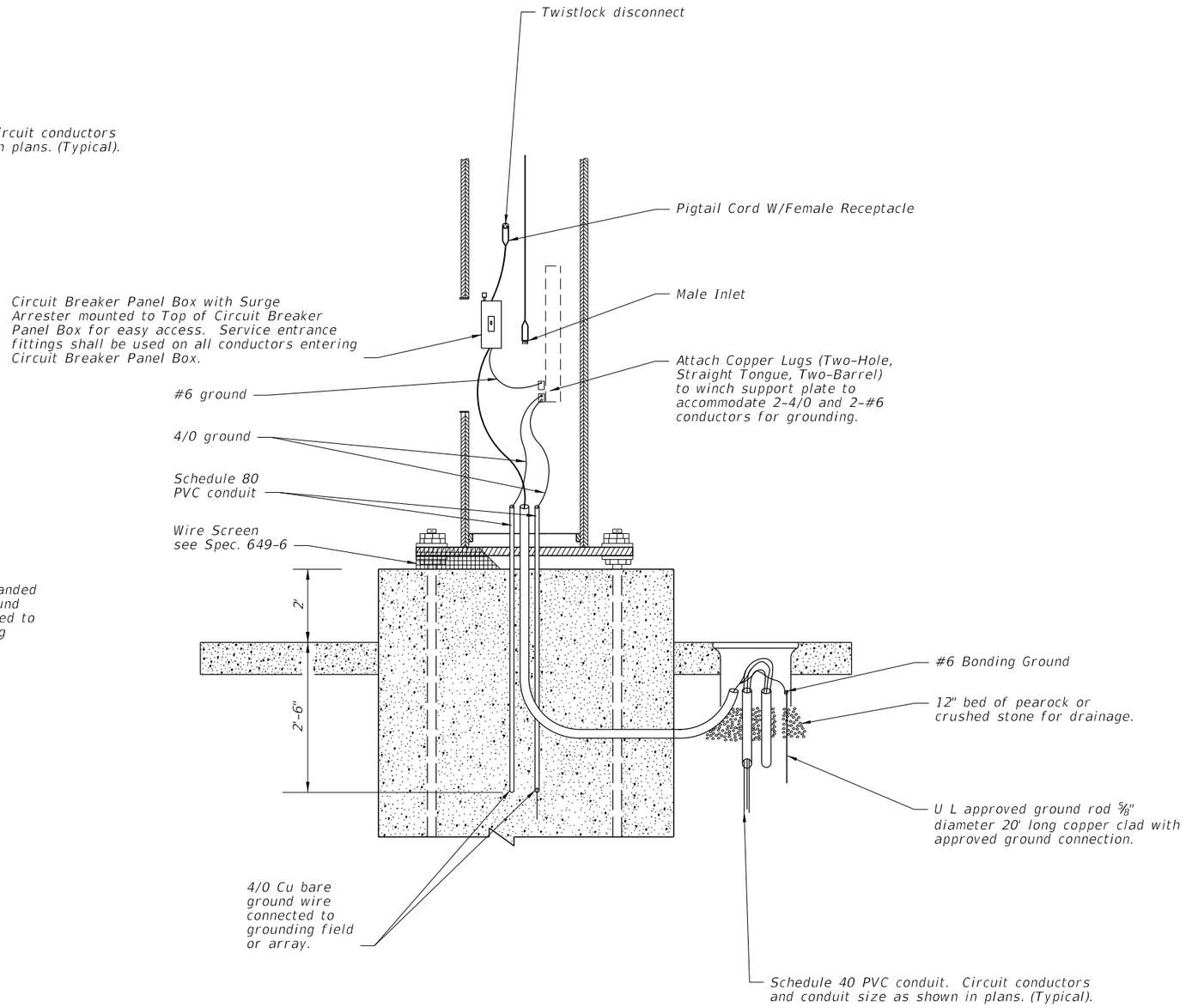

## SECTION E-E

# POLE FOUNDATION

12/3/2015 11:46:22 AM

| LAST REVISION | REVISION | DESCRIPTION: | FY 2016-17 DESIGN STANDARDS | HIGH MAST LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/13 | | | FDOT | | 17502 | 3 of 6 |




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 FY 2016-17 DESIGN STANDARDS | HIGH MAST LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/12 | | | | | 17502 | 4 of 6 |

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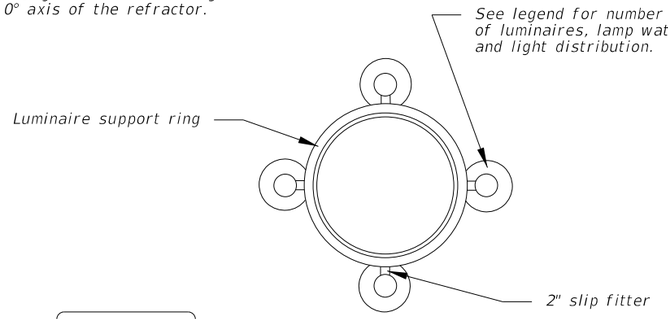
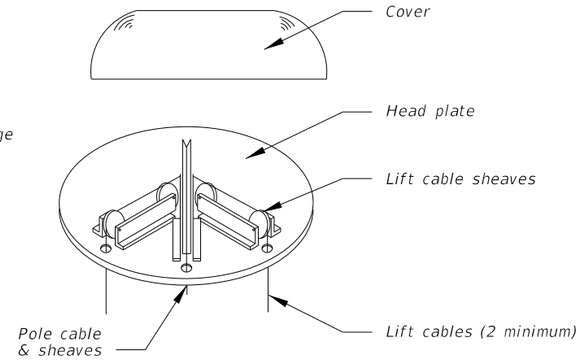
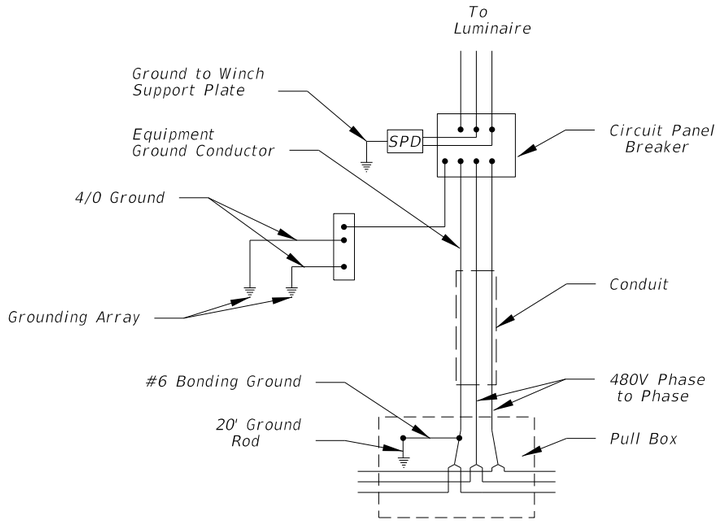
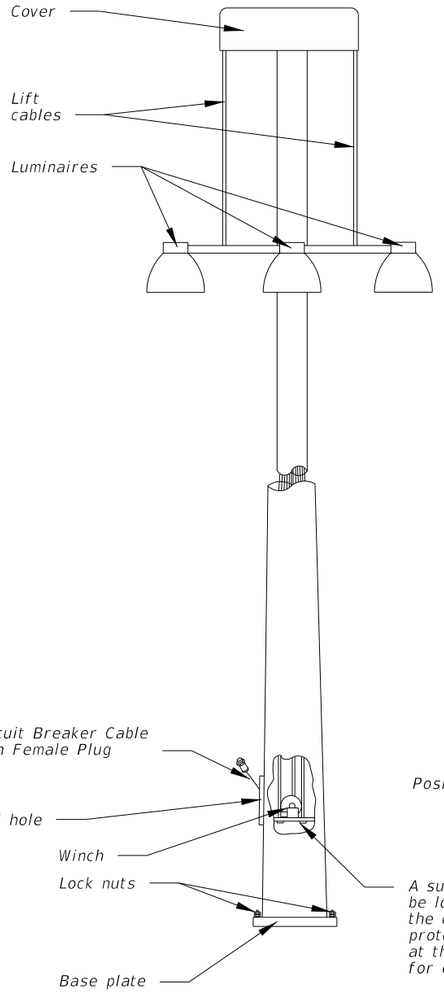
The contractor's attention is directed to those plan sheets detailing the mounting of luminaires at the pole top. Particular attention is directed to alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of these luminaires to ensure that the approved 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.

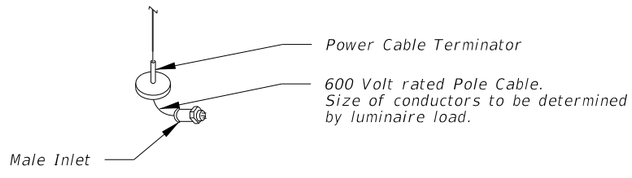


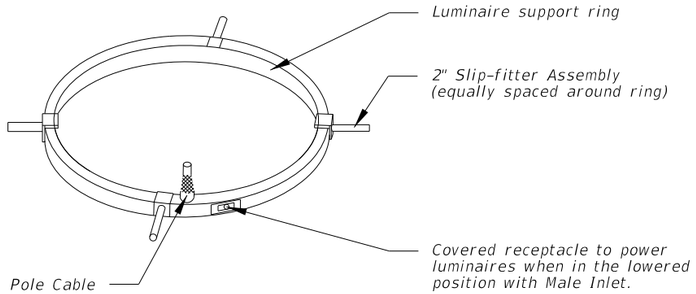



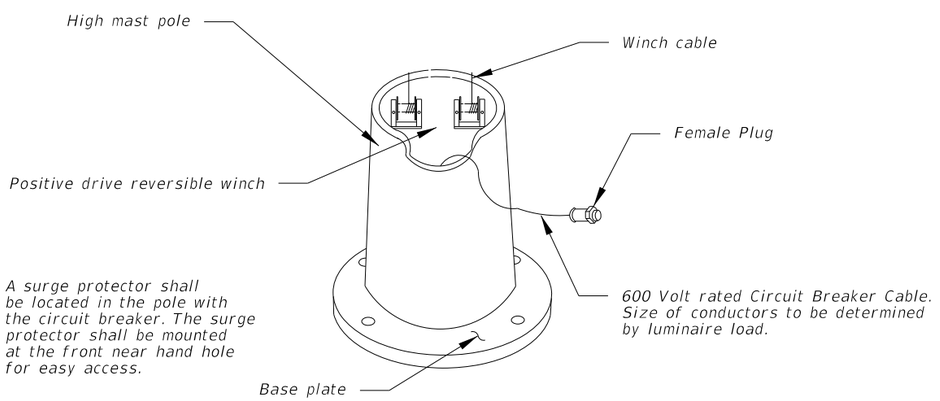



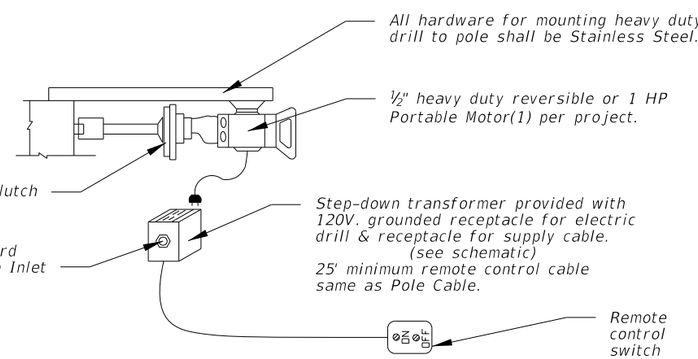

## HIGH MAST POLE WIRING DIAGRAM

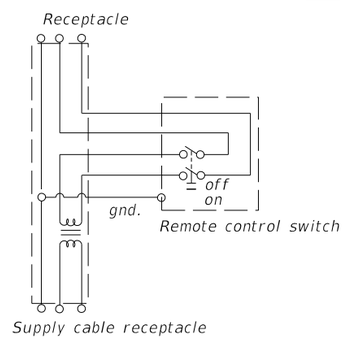


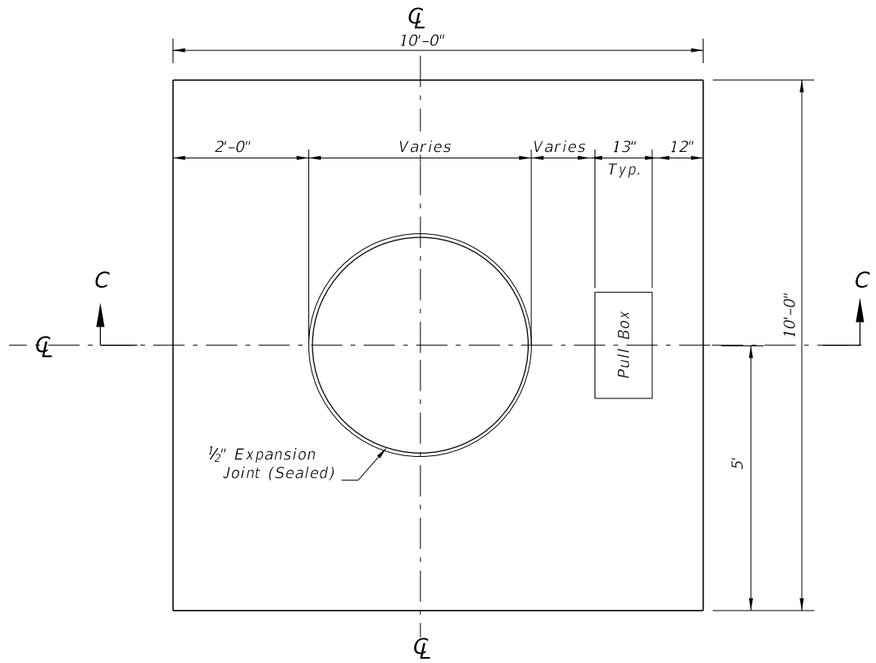




## SCHEMATIC OF REMOTE AUXILIARY POWER UNIT

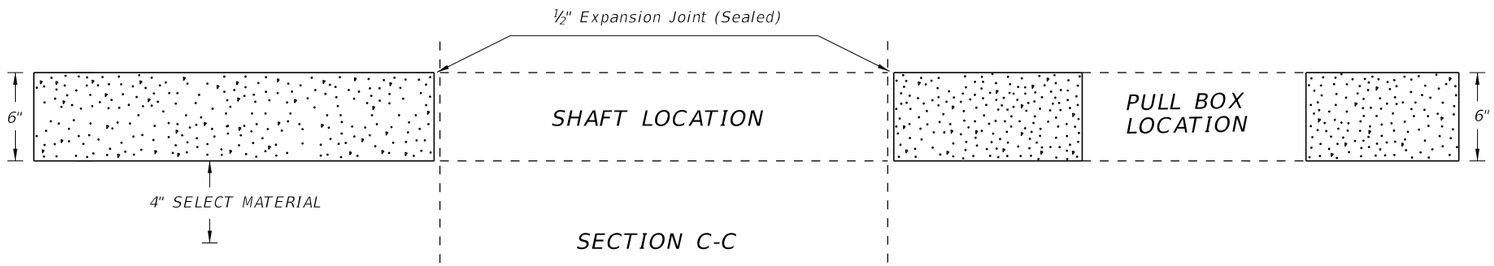
## LOWERING DETAILS

## 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 an APL approved Type A sealant meeting the requirements of Section 932.




SLAB DIMENSIONS



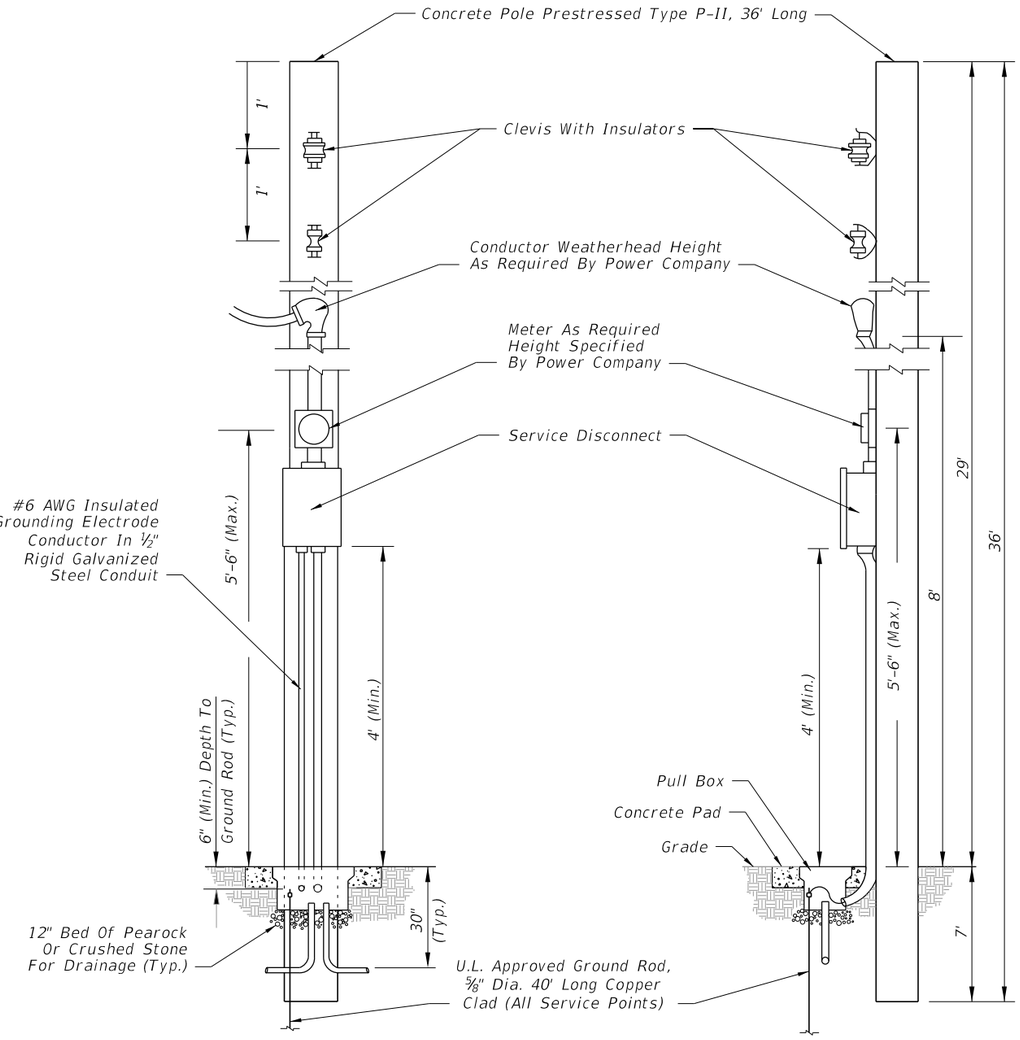

SLAB DETAILS

12/3/2015 11:46:25 AM

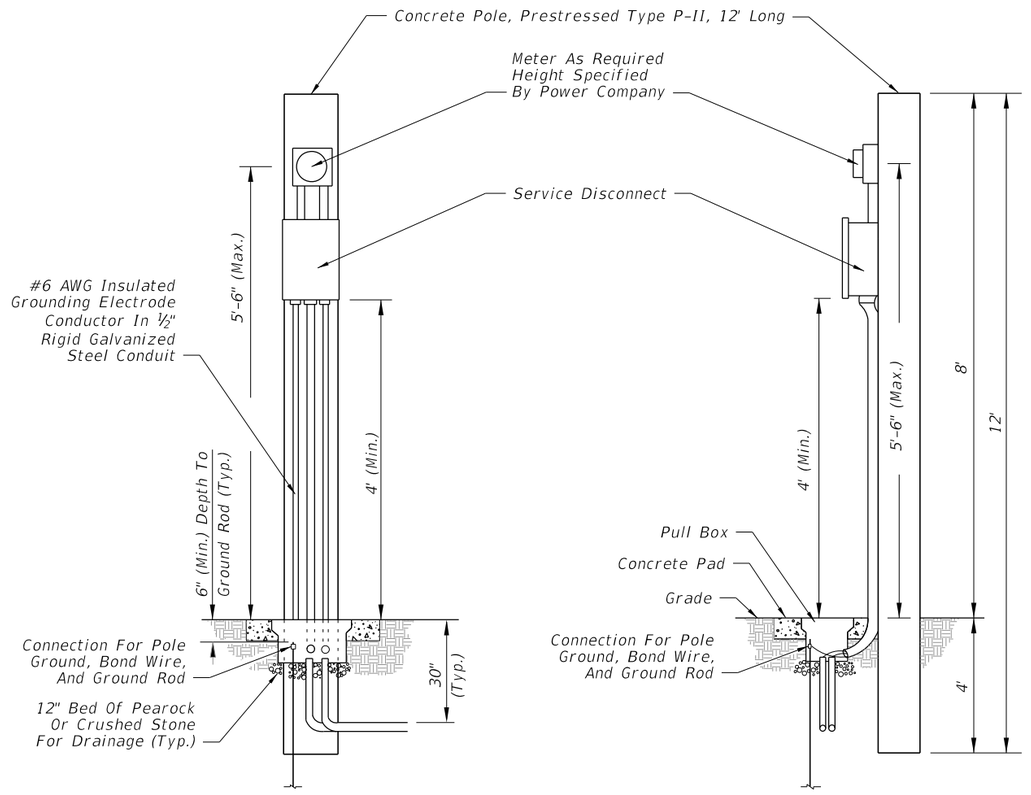
| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | HIGH MAST LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 07/01/14 | | | | | | 17502 | 6 of 6 |

## GENERAL NOTES:

1. It shall be the contractors responsibility to provide a complete service assembly as per the plans and service specifications.
2. The service installation shall meet the requirements of the national electric code and applicable local codes.
3. Shop drawings are not required for service equipment, unless noted in the plans.
4. A Pull Box is required at each service point, see Index 17700.




DETAIL A
AERIAL FEED



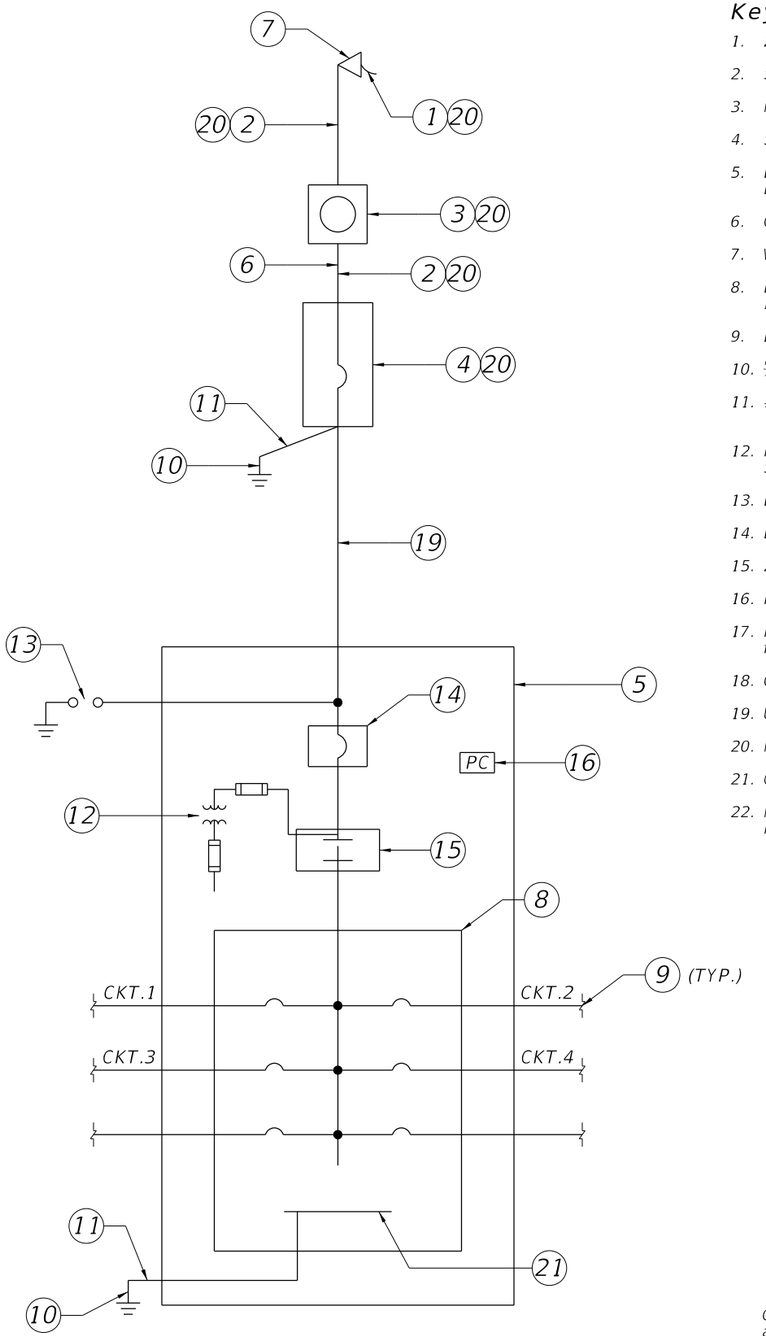

DETAIL B
UNDERGROUND FEED

12/3/2015 11:46:25 AM

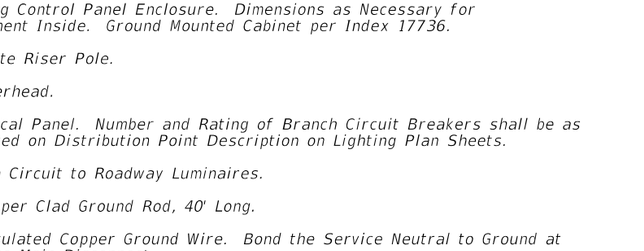
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SERVICE POINT DETAILS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/16 | | | | | 17504 | 1 of 2 |

## Keyed Notes:

1. 240/480V, Single Phase 3 Wire Electric Distribution Overhead Service Drop.
2. Service Feeder in Rigid Galvanized Steel Conduit.
3. Meter Socket by Contractor
4. Service Main Disconnect.
5. Lighting Control Panel Enclosure. Dimensions as Necessary for Equipment Inside. Ground Mounted Cabinet per Index 17736.
6. Concrete Riser Pole.
7. Weatherhead.
8. Electrical Panel. Number and Rating of Branch Circuit Breakers shall be as Indicated on Distribution Point Description on Lighting Plan Sheets.
9. Branch Circuit to Roadway Luminaires.
10. 5/8" Copper Clad Ground Rod, 40' Long.
11. #6 Insulated Copper Ground Wire. Bond the Service Neutral to Ground at Service Main Disconnect.
12. Fused Control Power Transformer 0.5 KVA, Single Phase, 480V Primary, 120V Secondary (Part of Lighting Contactor, Shown Outside for Clarity).
13. Lightning Arrester Mounted on Outside of Enclosure.
14. Lighting Control Panel Main Breaker.
15. 2 Pole Electrical Lighting Contactor.
16. Photo Electric Switch-120V Rated.
17. Hand-off Automatic Selector Switch (Part of Lighting Contactor, Shown Outside for Clarity).
18. Concrete Pad.
19. Underground Feeder Conduit.
20. Mount on Riser Pole.
21. Ground BUS.
22. NEMA 4X SST Ground Mounted Storage Cabinet with Two Shelves. Only Required for High Mast Lighting Systems.

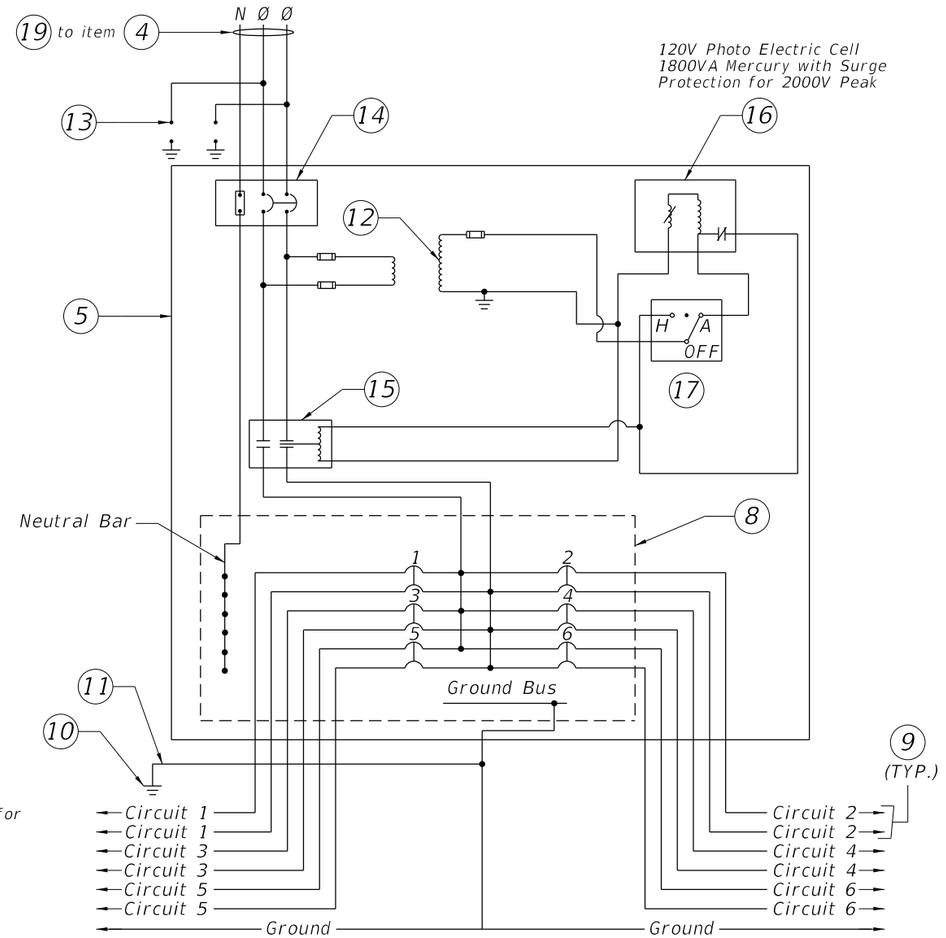



ONE LINE DIAGRAM DISTRIBUTION POINT

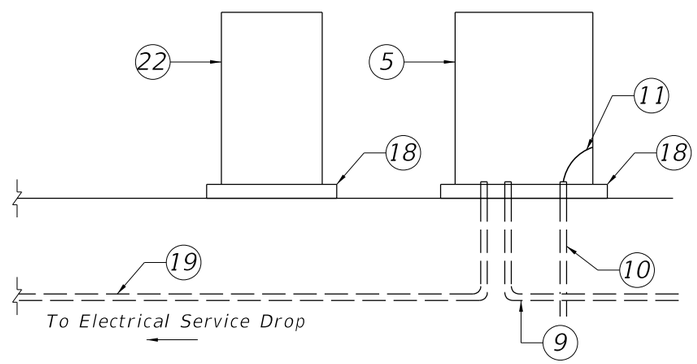



Cut a 2" hole in the side of the Lighting Control Panel enclosure for the operation and mounting of the P.E. controller. Use plexiglass and a clear silicone sealant to cover hole, install P.E. Controller.

PHOTO ELECTRIC CONTROLLER DETAIL




TYPICAL DISTRIBUTION POINT SCHEMATIC DETAIL




RISER DIAGRAM - TYPICAL DISTRIBUTION POINT

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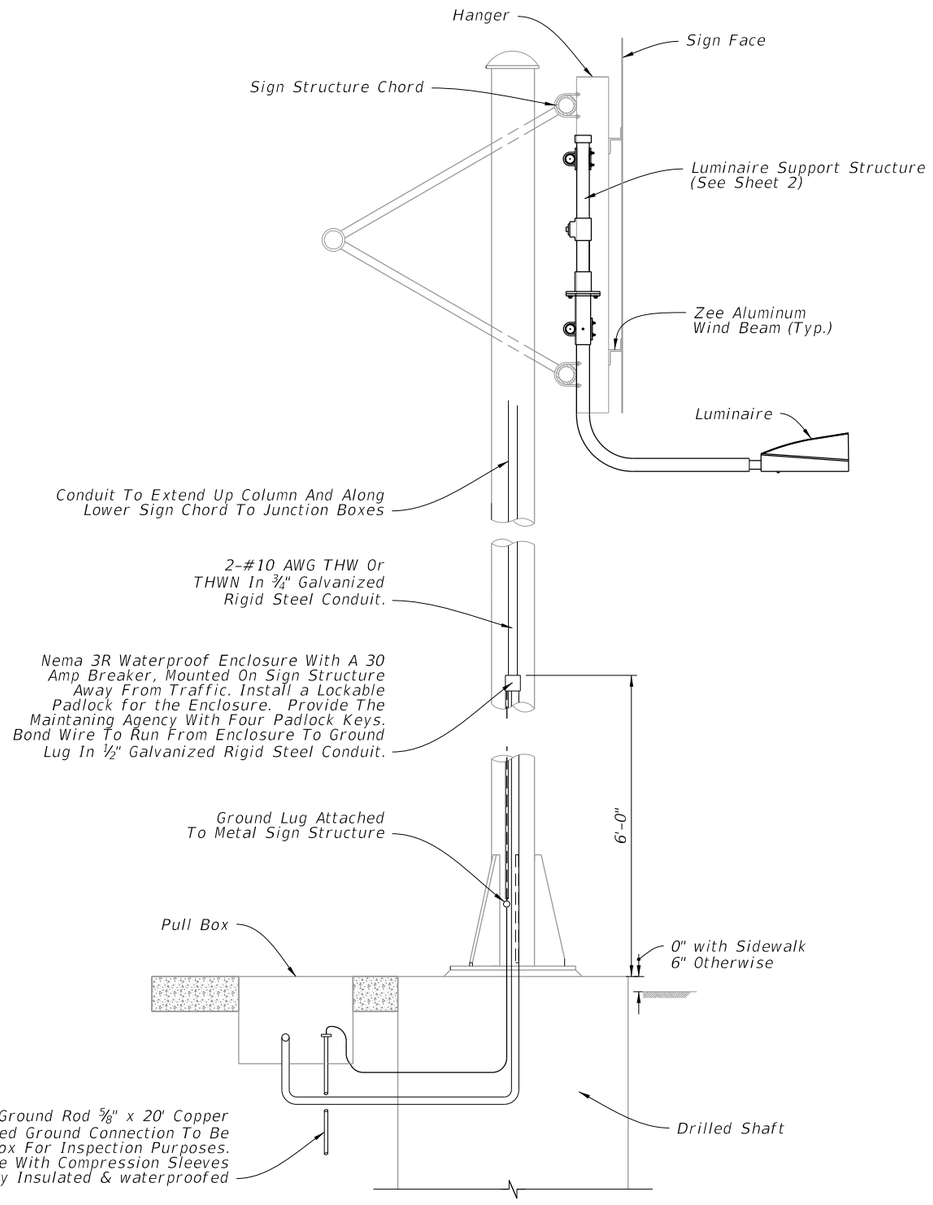
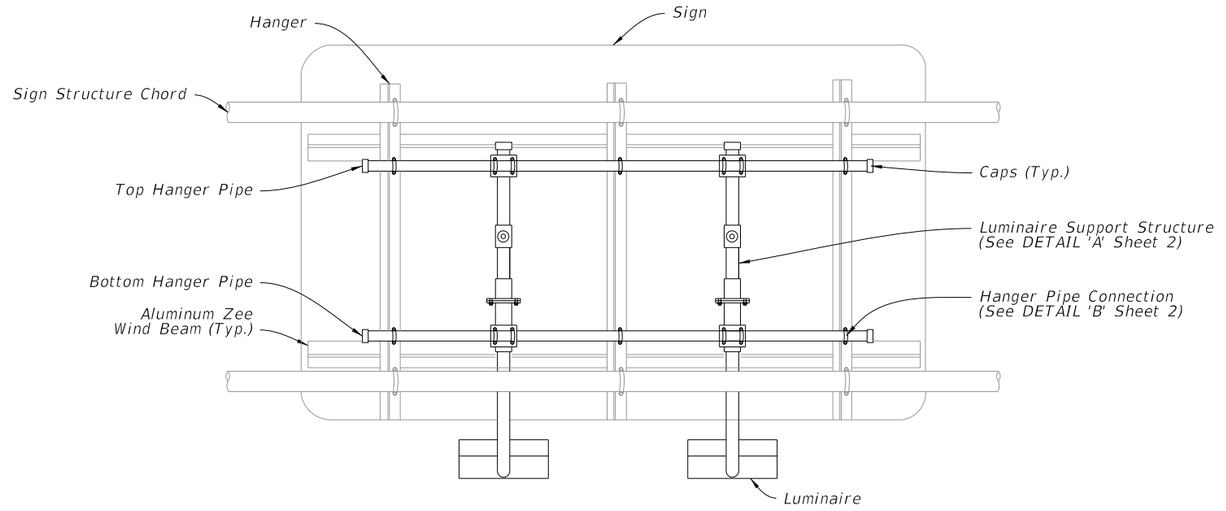
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SERVICE POINT DETAILS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 17504 | 2 of 2 |




SIDE VIEW




BACK VIEW

## PLACEMENT OF SIGN LIGHTS

1. This Index details a bottom luminaire support structure. For signs requiring top luminaire support structures, the detail can be reversed.
2. Luminaire spacing and arm length is shown on Guide Sign Worksheet.
3. The Guide Sign Worksheet indicates the sign luminaire used for basis of design. The contractor may propose a different luminaire by submitting photometric calculations for each lighted sign for review by the Engineer.

## SIGN LIGHTING INSTALLATION

### Roadway Lighting included in contract:

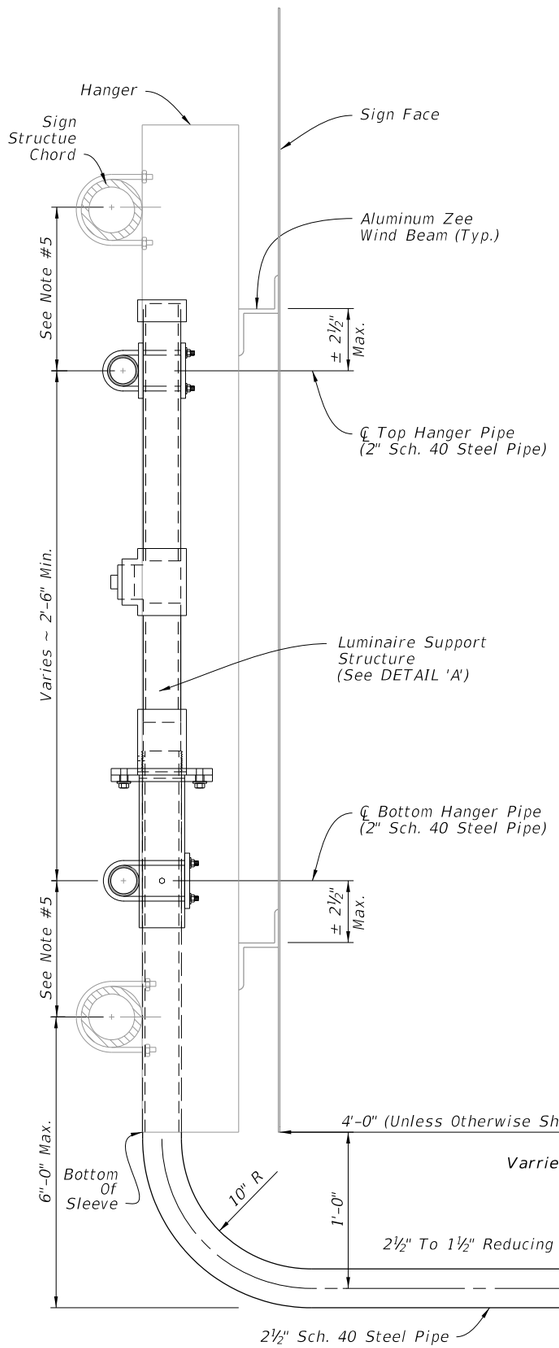
1. Power for the sign lighting provided from the roadway lighting circuit.
2. Indicate sign location and a pull box location for connection to the sign lights in the lighting plans.
3. Lighting contractor installs pull box and loop 2' of lighting circuit conductors in the pull box for connection by the signing contractor.
4. Signing contractor furnishes and installs the Luminaires, Nema 3R enclosure, 30 amp breaker, conduit, conductors and all other electrical equipment necessary for connection to the lighting circuit.

### Roadway Lighting not included in contract:

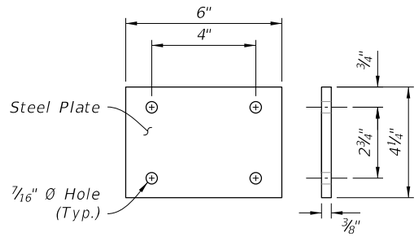
1. Signing plans include the pay item numbers to furnish and install conduit, conductors, ground rods, pull boxes and service point equipment.
2. Signing plans indicate the location of the service point equipment and circuit runs.
3. Signing contractor provides all electrical equipment necessary for connection of the sign lights.

12/3/2015 11:46:27 AM

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | EXTERNAL LIGHTING FOR SIGNS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/16 | | | | | 17505 | 1 of 2 |



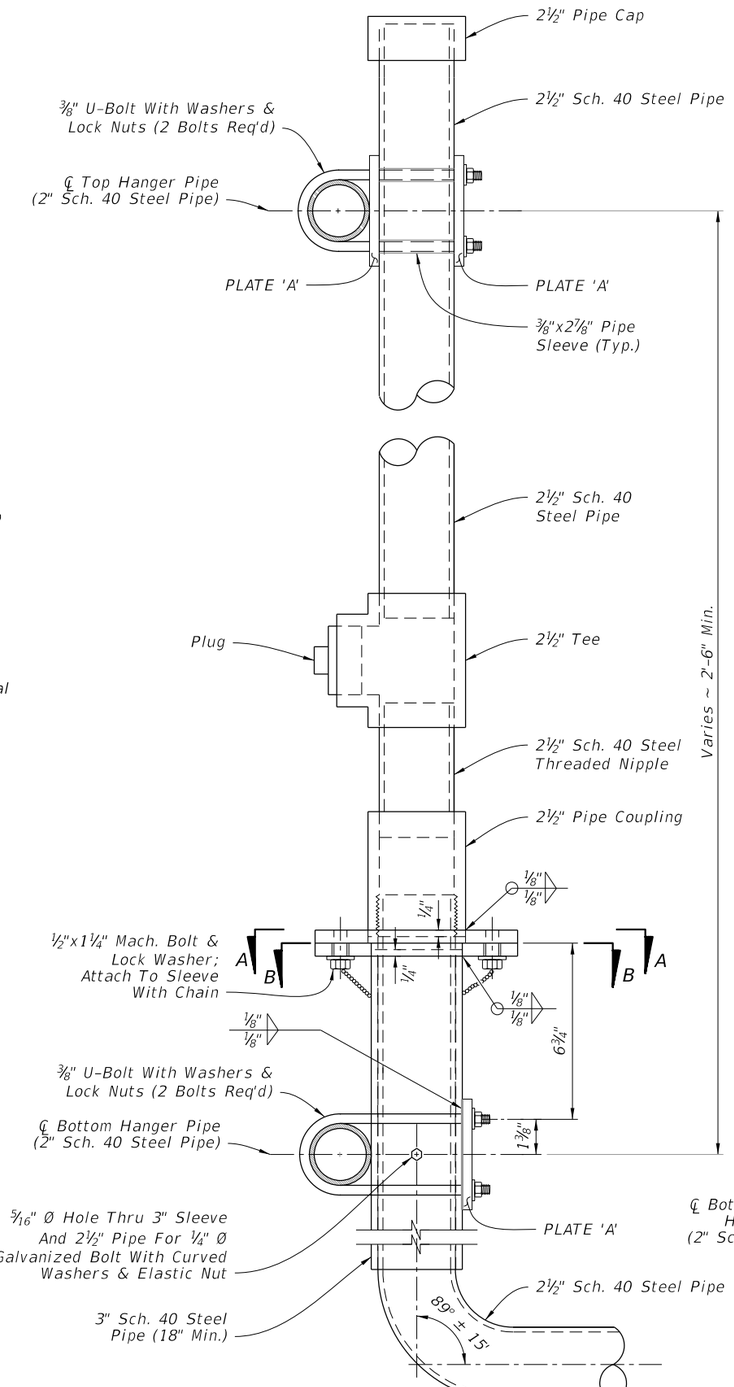

## LUMINAIRE SUPPORT STRUCTURE



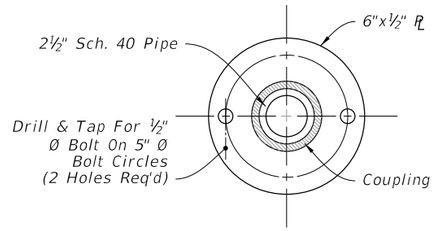

## PLATE 'A'

## NOTES

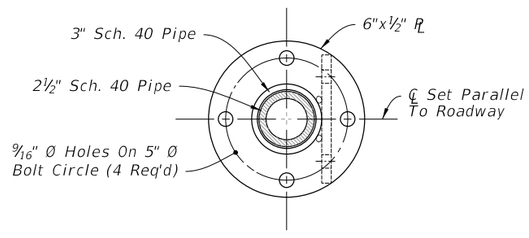
1. Install hanger pipe to each vertical beam crossed with a ⅜" U-Bolt, lock washers and hex nuts. Cap both ends of the horizontal pipe.
2. Materials;
   A. Steel Pipe: ASTM A53 (Grade A or B)
   B. Steel Plate: ASTM A36
   C. Bolts: ASTM A307
   D. Hex Nuts: ASTM A563
   E. Washers: ASTM F436
3. Coating: Hot-Dip Galvanize pipes, plates, structural shapes: ASTM A123, Fasteners and hardware: ASTM A153.
4. All pipe dimensions are NPS.
5. $\frac{\text{Chord O.D.}}{2}$ + 5" (Min.)



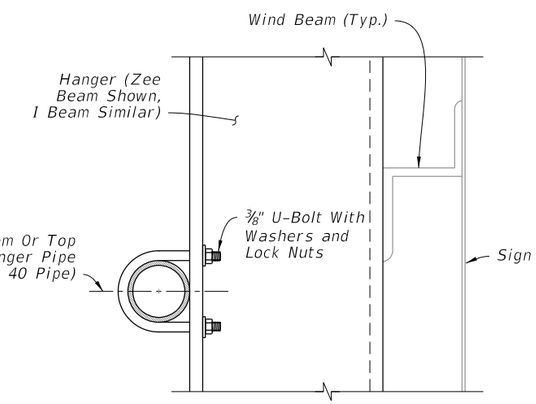

## DETAIL 'A'
(Luminaire Support Structure)




## SECTION A-A




## SECTION B-B




## DETAIL 'B'
(Hanger Pipe Connection)

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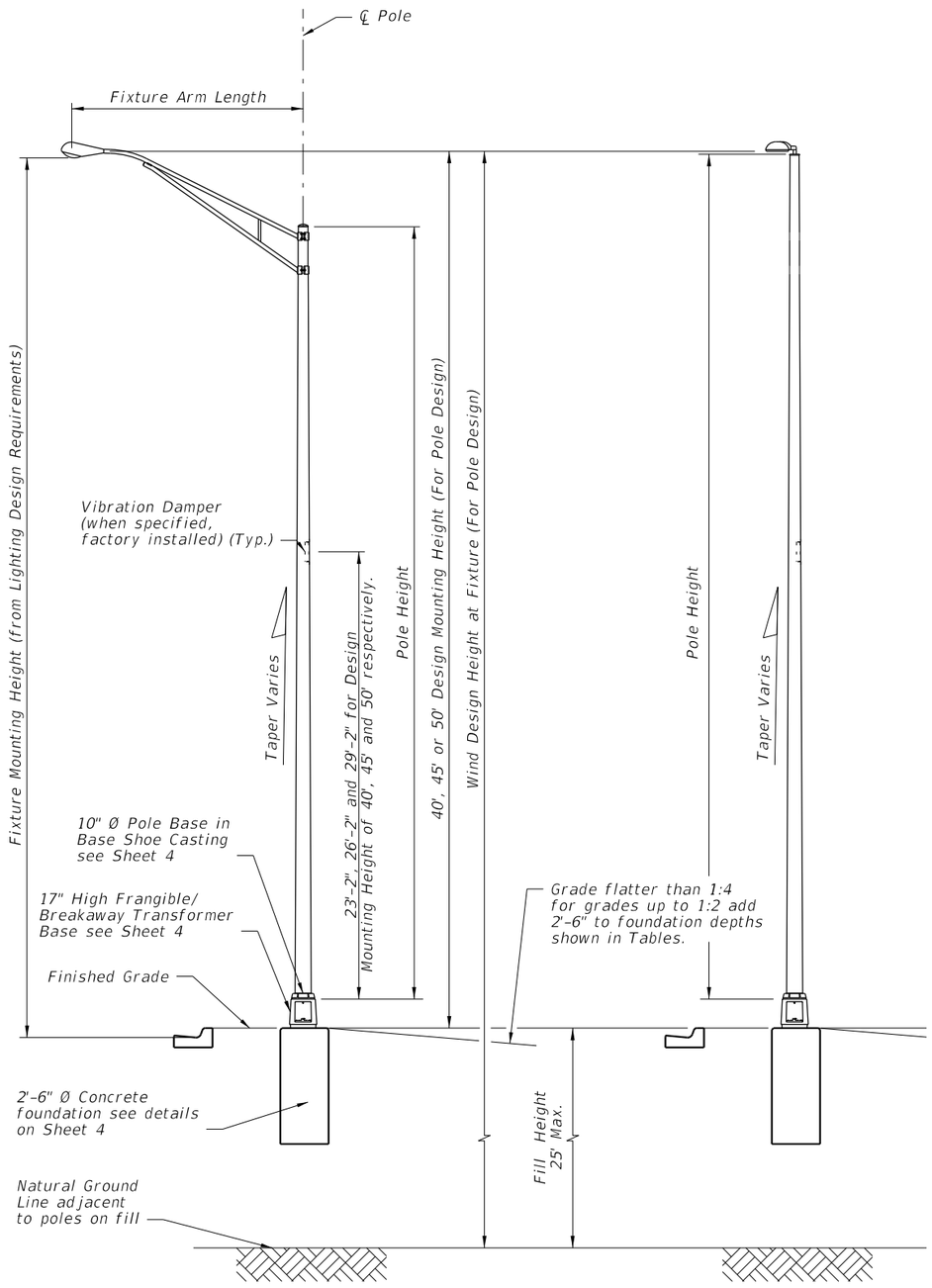
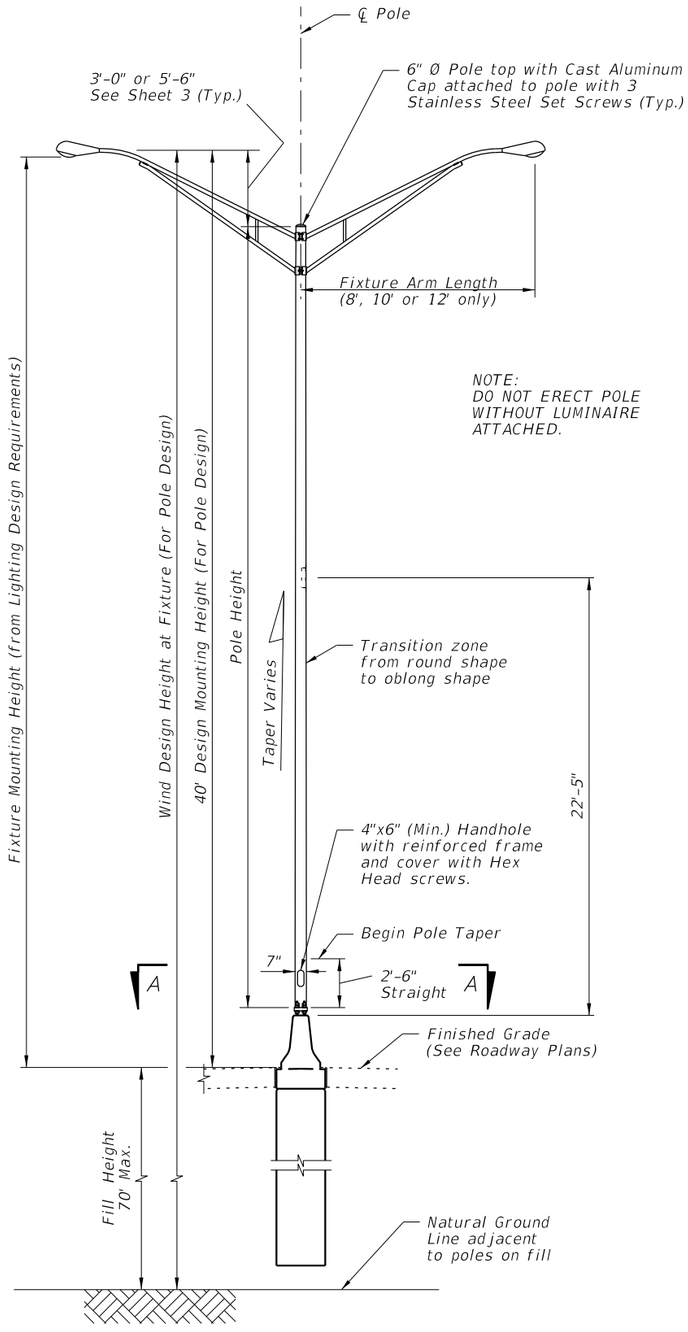
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/16 | | | FY 2016-17 DESIGN STANDARDS | EXTERNAL LIGHTING FOR SIGNS | 17505 | 2 of 2 |

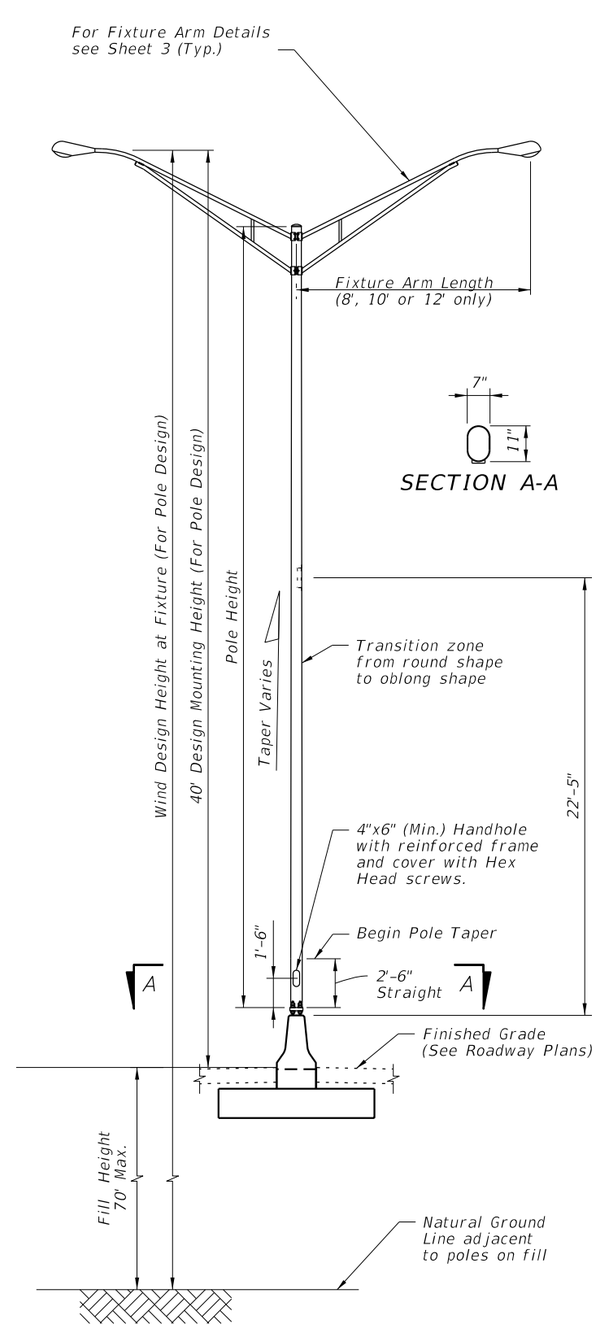



STANDARD ROADWAY ALUMINUM LIGHT POLE W/ARM

STANDARD ROADWAY ALUMINUM LIGHT POLE W/TOP MOUNT




MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE ON CYLINDRICAL FOUNDATION




MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE ON SPREAD FOOTING FOUNDATION

ELEVATIONS

12/3/2015 11:46:28 AM

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | STANDARD ALUMINUM LIGHTING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 17515 | 1 of 8 |

## GENERAL NOTES

1. Poles are designed to support the following:
   A. Luminaire Effective Projected Area (EPA): 1.55 SF
   B. Weight: 75 lb.

2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not included in the Plans.

3. Materials:
   A. Pole and Arm Extrusions: ASTM B221, Alloy 6063–T6; Pole Connection Extrusions: ASTM B221, Alloy 6063–T6 or Alloy 6061–T6
   B. Bars, Plates, Stiffeners and Backer Ring: ASTM B221, Alloy 6063–T6
   C. Caps and Covers: ASTM B–26, Alloy 319–F
   D. Steel Bearing Plate: ASTM A709 or ASTM A36 Grade 36
   E. Aluminum Weld Material: ER 4043
   F. Transformer and Frangible Base Materials: ASTM B26 or ASTM B108, Alloy 356–T6
   G. Bolts, Nuts and Washers:
      a. Shoe Base Bolts: ASTM A325 Type 1
      b. Nuts: ASTM A563 Grade DH Heavy–Hex
      c. Washer: ASTM F436 Type 1
   H. Anchor Bolts, Nuts, and Washers:
      a. Anchor Bolts: ASTM F1554 Grade 55
      b. Nuts: ASTM A563 Grade A Heavy–Hex
      c. Plate Washer: ASTM A36
   I. Stainless Steel Fasteners: AISI 316
   J. Nut Covers: ASTM B26 (319–F)
   K. Concrete: Class 1
   L. Reinforcing Steel: Specification Section 415

4. Fabrication:
   A. Upright Splices: Not Allowed. Transverse welds are only allowed at the base.
   B. Roadway Light Pole Taper: Taper as required to provide a round top O.D. of 6" and a base O.D. of 10". Portions of the pole near the base shoe and at the arm connections may be held constant at 10" and 6" respectively to simplify fabrication.
   C. Median Barrier Mounted Light Pole Taper: Taper as required to provide a 6" O.D. round top with an 11" x 7" O.D. oblong base. Portions of the pole near the base and at the arm connections may be held constant at 11"x 7" oblong and 6" round respectively to simplify fabrication.
   D. Provide 'J', 'S' or 'C' hook at top of pole for electrical wires.
   E. Equip poles located on bridges, walls and concrete median barriers/Traffic Railings with a vibration damper.
   F. Perform all welding in accordance with Specification Secion 460–6.4.
   G. Embedded Junction Boxes (EJB):
      a. Weld all seams continuously and grind smooth.
      b. Hot Dip Galvanize after Fabrication.
      c. Provide a watertight cover with neoprene gasket and secure cover with galvanized screws.
   H. For Median Barrier Mounted Aluminum Light Poles, the fabricator must demonstrate the ability to produce a crack free pole. The fabricator's Department–approved QC Plan must contain the following information prior to fabrication:
      a. Tests demonstrating a pole with a 1#4" wall thickness achieves and ultimate moment capacity of 36 kip*ft in the strong axis and 30 kip*ft in the weak axis.
      b. Tests demonstrating a pole with a 5#16"wall thickness achieves an ultimate moment capacity of 44 kip*ft in the strong axis and 37 kip*ft in the weak axis.
      c. Test results showing the pole does not buckle at the shape transition area under the ultimate moment capacity loads.
      d. Complete details and calculations for the reinforced 4"x 6" (Min.) handhole located 1'–6" above the base plate.
   I. Identification Tag: (Submit details for approval.)
      a. 2" x 4" (Max.) aluminum identification tag.
      b. Locate on the inside of the transformer base and visible from the door opening.
      c. Secure to transformer base with 1#8" diameter stainless steel rivets or screws.
      d. Include the following information on the ID Tag:
         1. Financial Project ID
         2. Pole Height
         3. Manufacturer's Name

5. Coatings/Finish:
   A. Pole and Arm Finish: 50 grit satin rubbed.
   B. Galvanize Steel Bolts, Screws, Nuts and Washers: ASTM F2329
   C. Hot Dip Galvanize EJB and other steel items including poles: ASTM A123

6. Construction:
   A. Foundation: Specification Section 455, except payment for the foundation is included in the cost of the pole.
   B. Frangible Base and Clamp:
      a. Certify that the Clamp and Frangible Transformer Base Design are capable of providing the required capacity.
      b. Certify the Base conforms to the current FHWA required AASHTO Frangibility Requirements, tested under NCHRP Report 350 Guidelines (e.g. Akron Foundry TB1–17).
   C. Do not erect pole without Luminaire attached.

7. Payment Note: Include the cost of the EJB in the cost of the median barrier or Traffic Railing it is embedded in.

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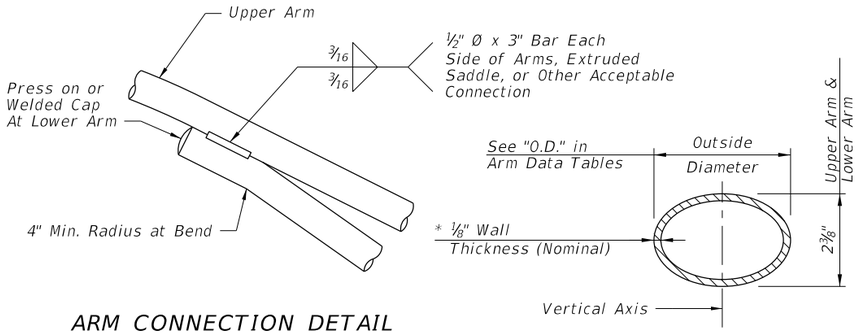
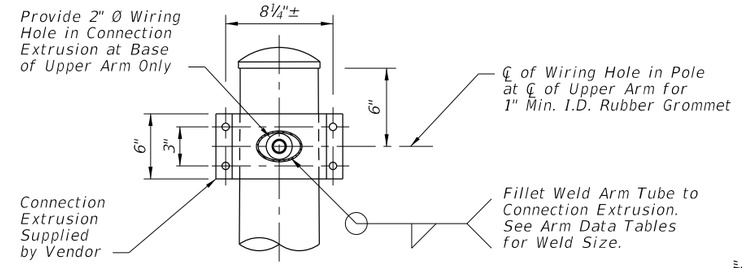
NOTES

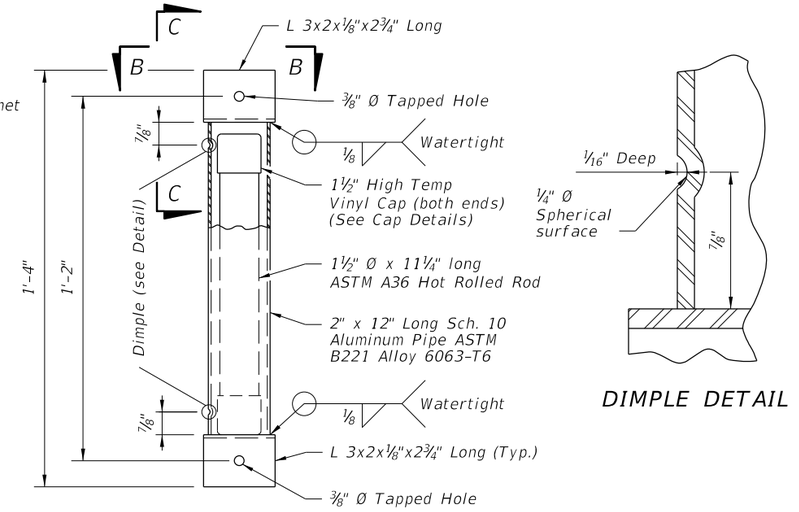



ARM CONNECTION DETAIL

ARM SECTION



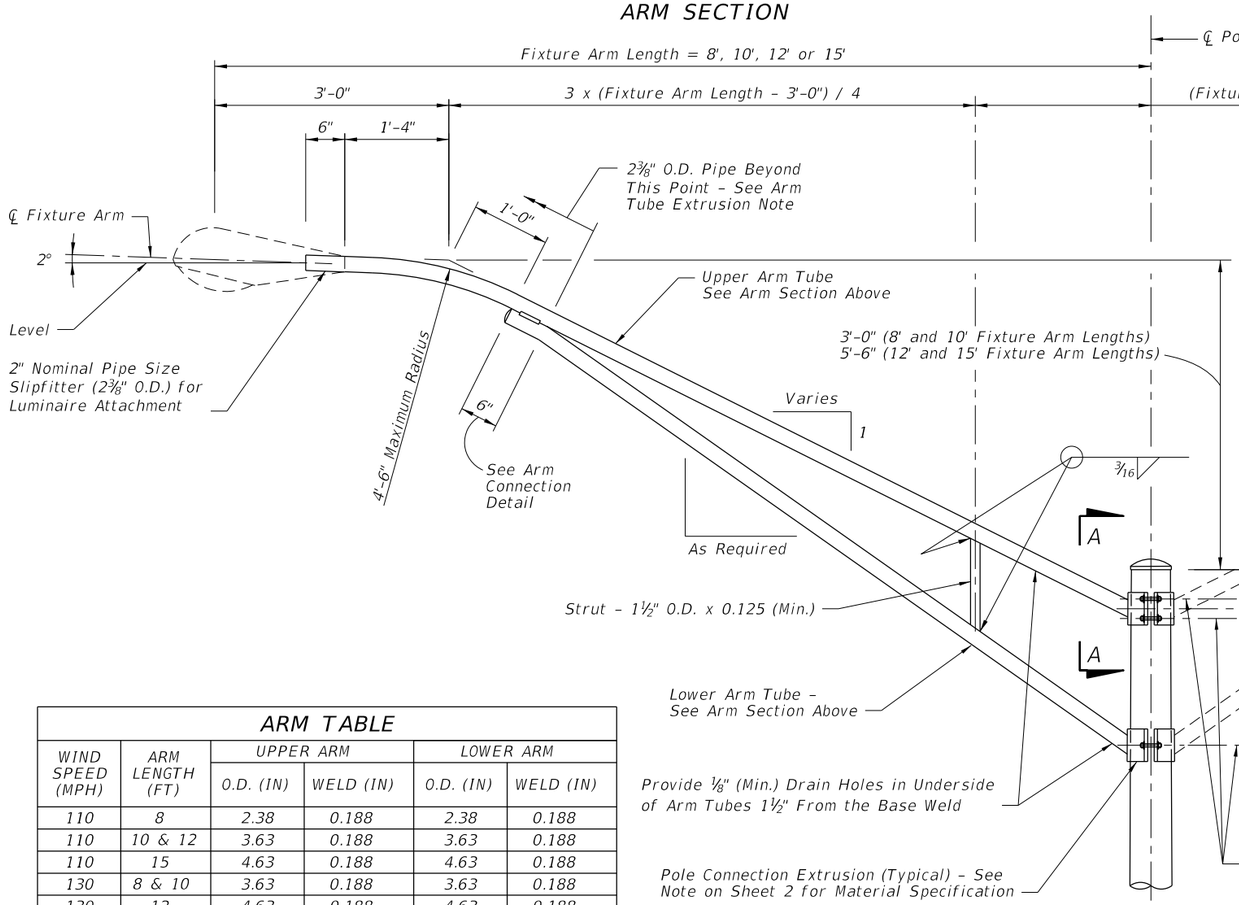

SECTION A-A
(Connection At Lower Arm Similar)



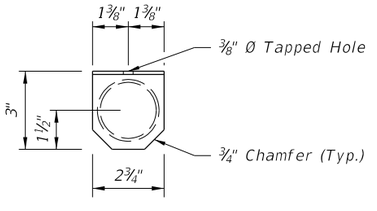

VIBRATION DAMPER ELEVATION



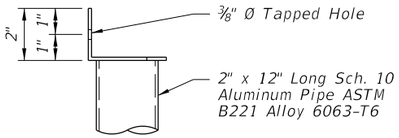

DIMPLE DETAIL



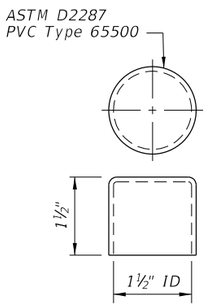

ARM ELEVATION




VIEW B-B




VIEW C-C




HIGH TEMP VINYL CAP DETAIL

| 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 ⅛" nominal and within the Aluminum Association Tolerances.

The outside diameter about the minor axis should be held at 2⅜" at the upper and lower arms.

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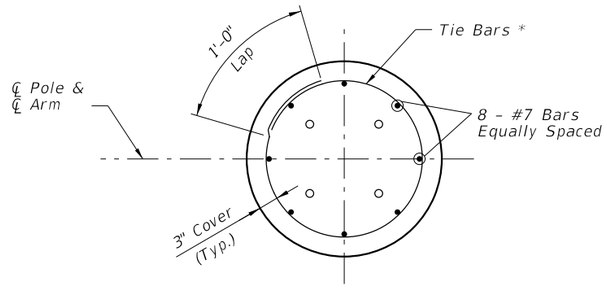
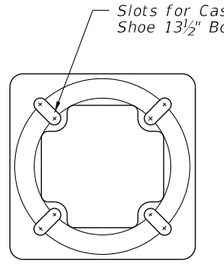
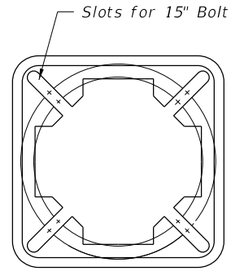
# ARM & DAMPER DETAILS



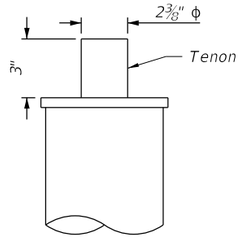

SECTION C-C




TOP VIEW TRANSFORMER BASE

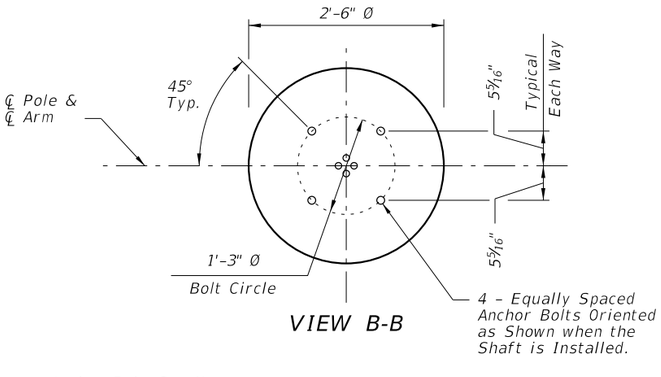



BOTTOM VIEW TRANSFORMER BASE




TOP MOUNT TENON

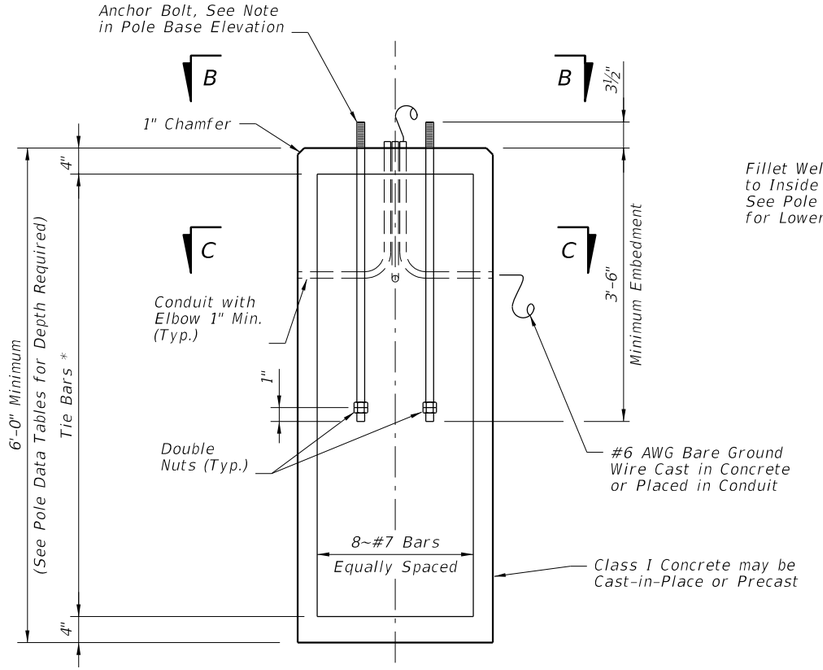
| POLE TABLE W/ARM | | | | | |
|---|---|---|---|---|---|
| WIND SPEED (MPH) | ARM LENGTH (FT) | DESIGN MOUNTING HEIGHT (FT) | POLE WALL (IN) | UPPER WELD (IN) | LOWER WELD (IN) |
| 110 | 8, 10, 12 & 15 | 40 & 45 | 0.156 | 0.156 | 0.156 |
| 110 | 8, 10, 12 & 15 | 50 | 0.188 | 0.188 | 0.188 |
| 130 | 8, 10 & 12 | 40 | 0.156 | 0.156 | 0.156 |
| 130 | 15 | 40 | 0.188 | 0.188 | 0.188 |
| 130 | 8, 10, & 12 | 45 | 0.188 | 0.188 | 0.188 |
| 130 | 15 | 45 | 0.250 | 0.250 | 0.250 |
| 130 | 8, 10, 12 & 15 | 50 | 0.250 | 0.250 | 0.250 |
| 150 | 8, 10, & 12 | 40 | 0.188 | 0.188 | 0.188 |
| 150 | 15 | 40 | 0.250 | 0.250 | 0.250 |
| 150 | 8, 10, 12 & 15 | 45 | 0.250 | 0.250 | 0.250 |
| 150 | 8, 10, 12 & 15 | 50 | 0.313 | 0.313 | 0.313 |



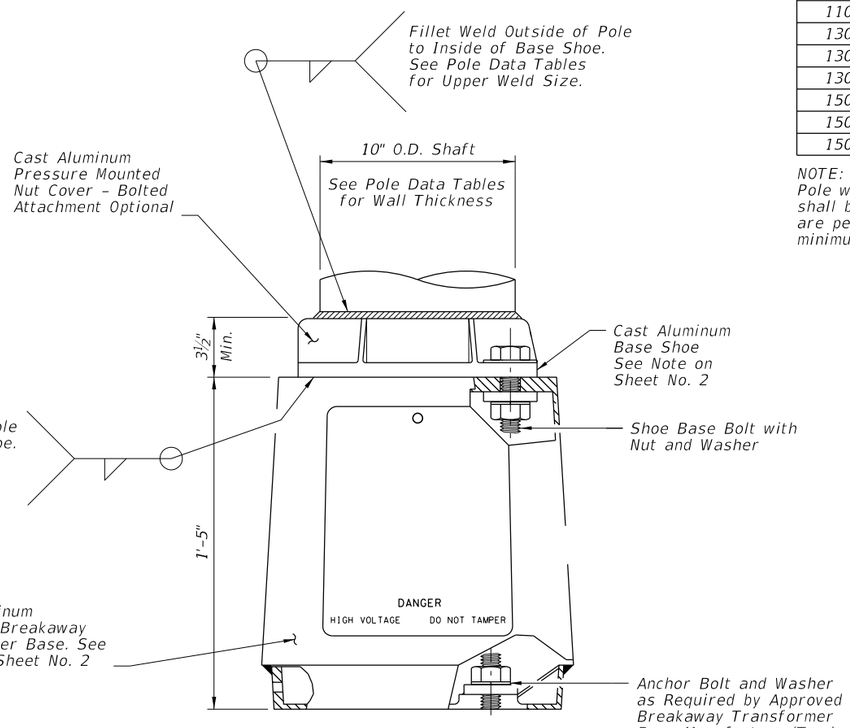

VIEW B-B

| POLE TABLE W/TOP MOUNT | | | | |
|---|---|---|---|---|
| WIND SPEED (MPH) | DESIGN MOUNTING HEIGHT (FT) | POLE WALL (IN) | UPPER WELD (IN) | LOWER WELD (IN) |
| 110 | 40 & 45 | 0.125 | 0.125 | 0.125 |
| 110 | 50 | 0.156 | 0.156 | 0.156 |
| 130 | 40 | 0.125 | 0.125 | 0.125 |
| 130 | 45 | 0.156 | 0.156 | 0.156 |
| 130 | 50 | 0.188 | 0.188 | 0.188 |
| 150 | 40 | 0.156 | 0.156 | 0.156 |
| 150 | 45 | 0.188 | 0.188 | 0.188 |
| 150 | 50 | 0.250 | 0.250 | 0.250 |

NOTE:
Pole wall thicknesses shown in the POLE TABLE are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.




FOUNDATION




POLE BASE ELEVATION

* #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.

| FOUNDATION TABLE W/ARM | | |
|---|---|---|
| WIND SPEED (MPH) | DESIGN MOUNTING HEIGHT (FT) | TOTAL DEPTH (FT) ** |
| 110 | 40 | 7 |
| 110 | 45 & 50 | 8 |
| 130 | 40 & 45 | 8 |
| 130 | 50 | 9 |
| 150 | 40 & 45 | 9 |
| 150 | 50 | 10 |

| FOUNDATION TABLE W/TOP MOUNT | | |
|---|---|---|
| WIND SPEED (MPH) | DESIGN MOUNTING HEIGHT (FT) | TOTAL DEPTH (FT) ** |
| 110 | 40 | 6 |
| 110 | 45 & 50 | 7 |
| 130 | 40 | 6 |
| 130 | 45 & 50 | 7 |
| 150 | 40 & 45 | 7 |
| 150 | 50 | 8 |

** Depths shown in table are for grades flatter than 1:4, for grades up to 1:2 add 2'-6" to foundation depths shown in table.

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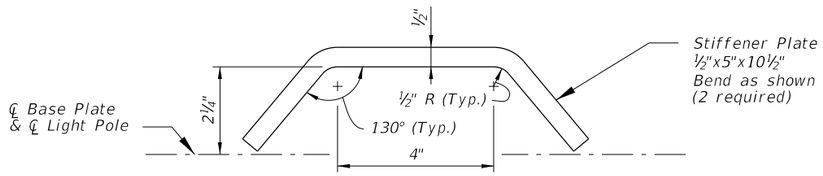
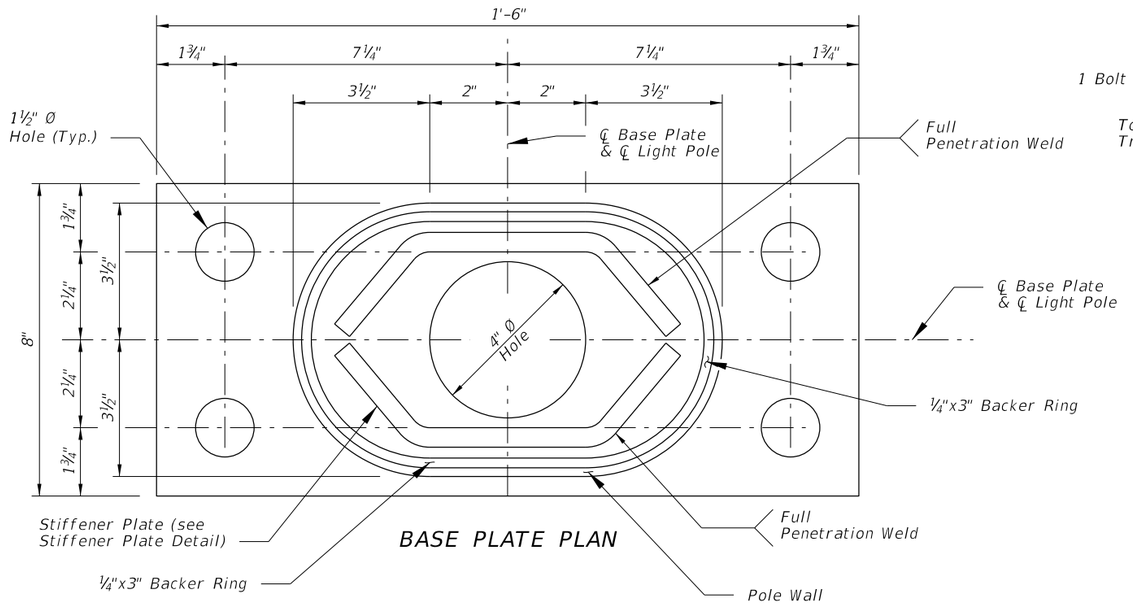
# POLE AND BASE DETAILS FOR ROADWAY ALUMINUM LIGHT POLE

| LAST REVISION | REVISION | DESCRIPTION: | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|
| 07/01/15 | | | FY 2016-17 DESIGN STANDARDS | 17515 | 4 of 8 |

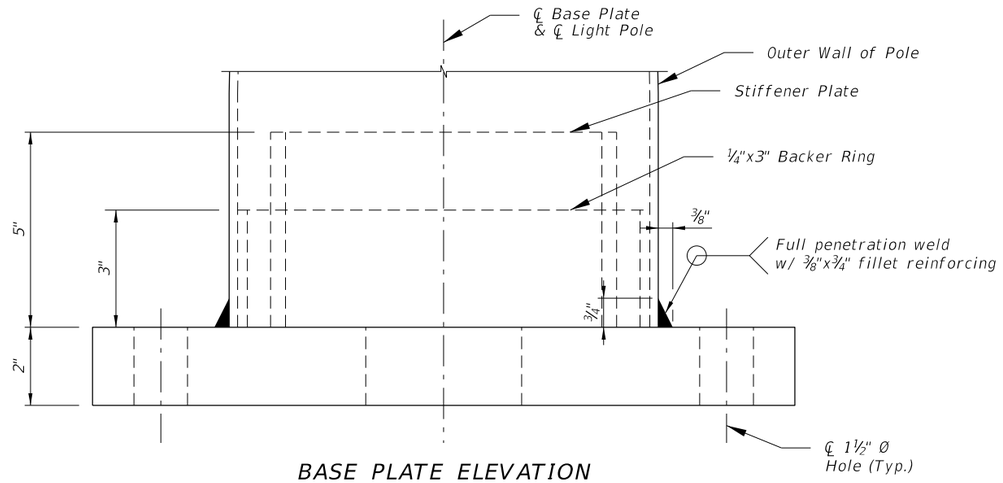
STANDARD ALUMINUM LIGHTING



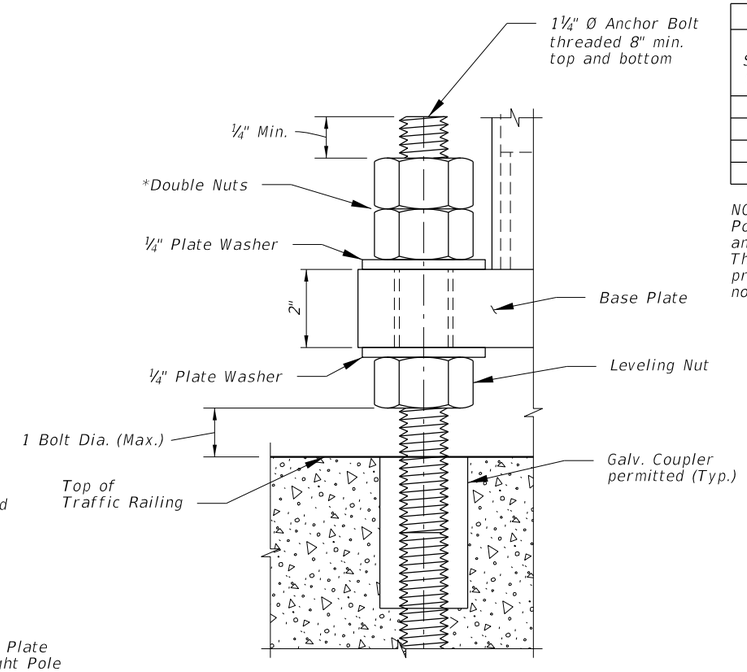

STIFFENER PLATE DETAIL




BASE PLATE PLAN




BASE PLATE ELEVATION



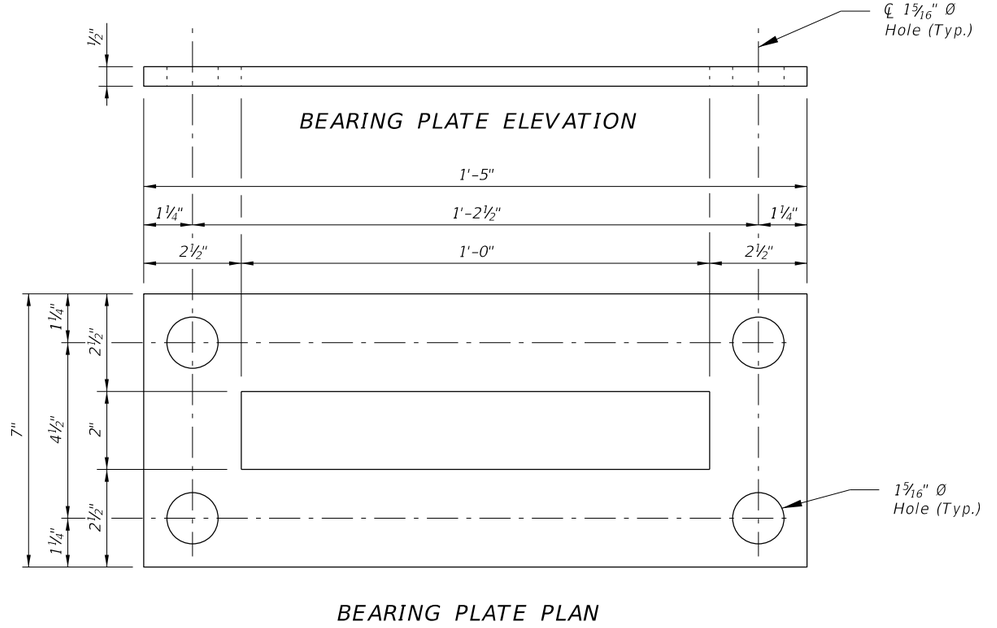

DETAIL 'A'

*Top nut may be ½ height
Jam Nut. Provide individual nut
cover (not shown) for each bolt.

| POLE TABLE | | | | |
|---|---|---|---|---|
| WIND SPEED (MPH) | ARM LENGTH (FT) | DESIGN MOUNTING HEIGHT (FT) | POLE WALL (IN) | FILL HEIGHT (FT) |
| 110 | 8, 10, 12 | 40 | 0.25 | Up to 70' |
| 130 | 8, 10, 12 | 40 | 0.25 | Up to 70' |
| 150 | 8, 10, 12 | 40 | 0.25 | Up to 20' |
| 150 | 8, 10, 12 | 40 | 0.313 | >20' to 70' |

NOTE:
Pole wall thicknesses shown in the POLE TABLE are nominals and shall be within the Aluminum Association Tolerances. Thicker walls are permitted and tapered walls may be used provided the minimum Aluminum Association thicknesses are not violated.

NOTE:
For locations of Bearing Plates, Base Plates and Detail 'A' see Sheets 6 & 7.




BEARING PLATE PLAN

# BASE PLATE DETAILS FOR MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FDOT FY 2016-17 DESIGN STANDARDS | STANDARD ALUMINUM LIGHTING | INDEX NO. 17515 | SHEET NO. 5 of 8 |

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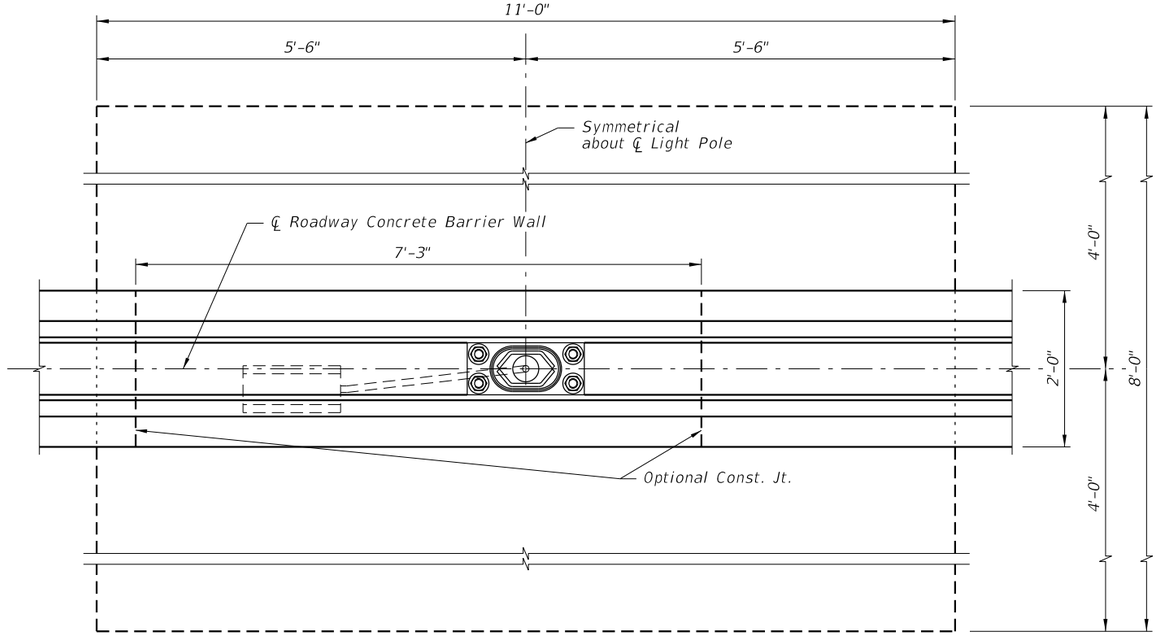
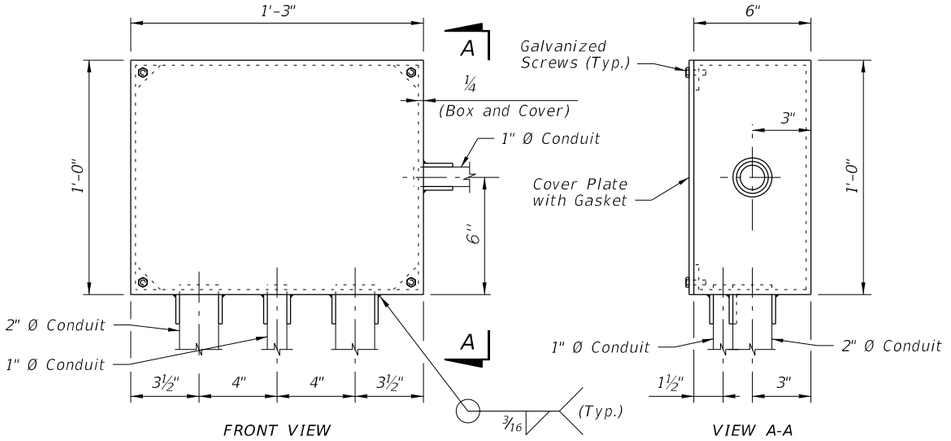


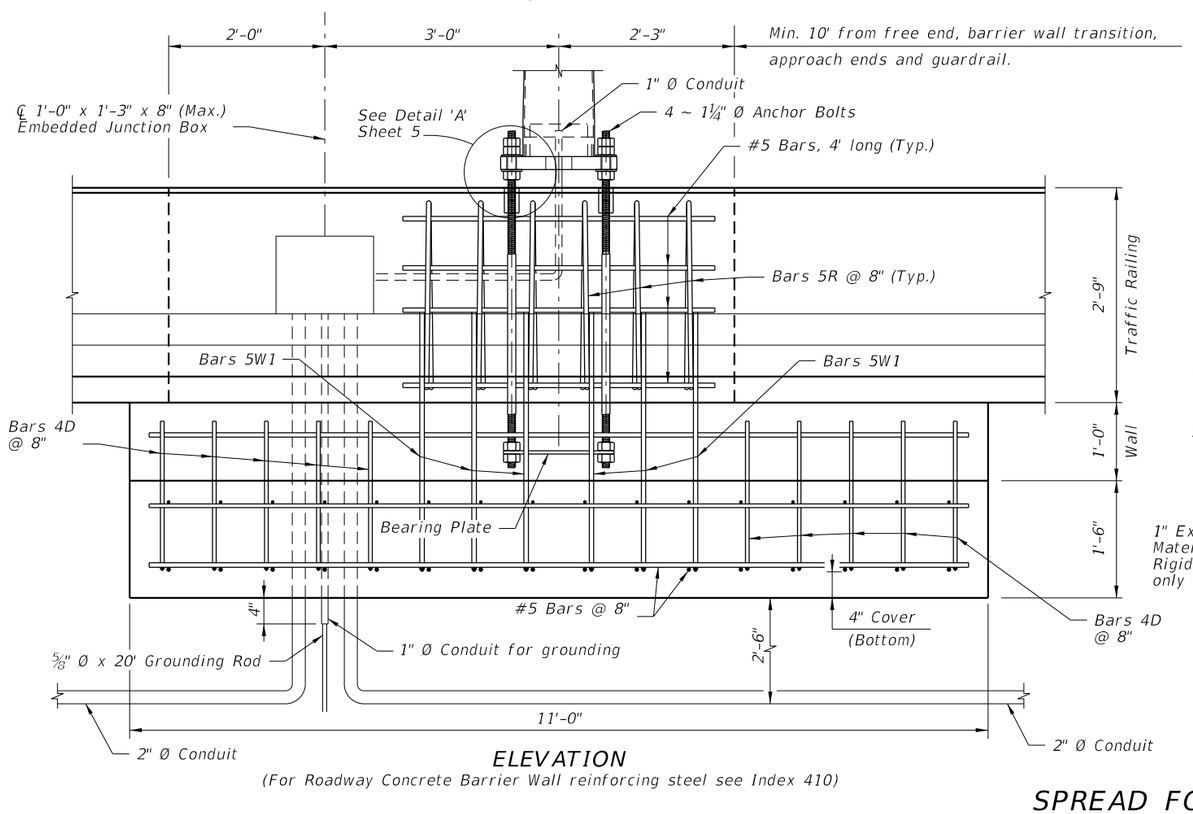

Provide dowel bars @ construction joint

## PLAN

(Reinforcing steel not shown)

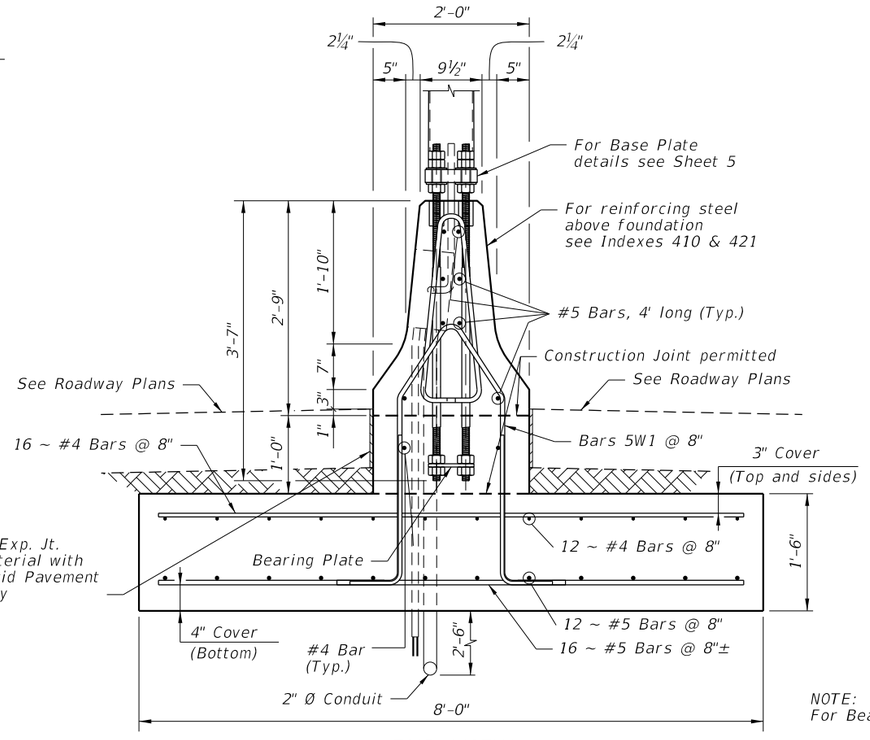



## EMBEDDED JUNCTION BOX DETAILS



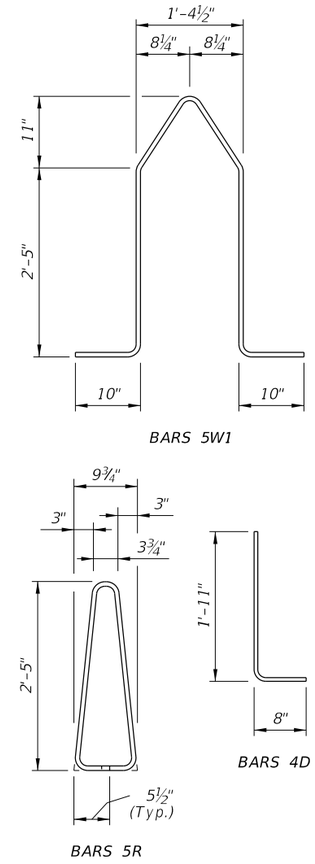

## ELEVATION

(For Roadway Concrete Barrier Wall reinforcing steel see Index 410)




## END VIEW

NOTE:
For Bearing Plate Details see Sheet 5.




## BAR BENDING DIAGRAMS

# SPREAD FOOTING DETAILS FOR MEDIAN BARRIER MOUNTED ALUMIMUM LIGHT POLE

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FY 2016-17 DESIGN STANDARDS | STANDARD ALUMINUM LIGHTING | 17515 | 6 of 8 |

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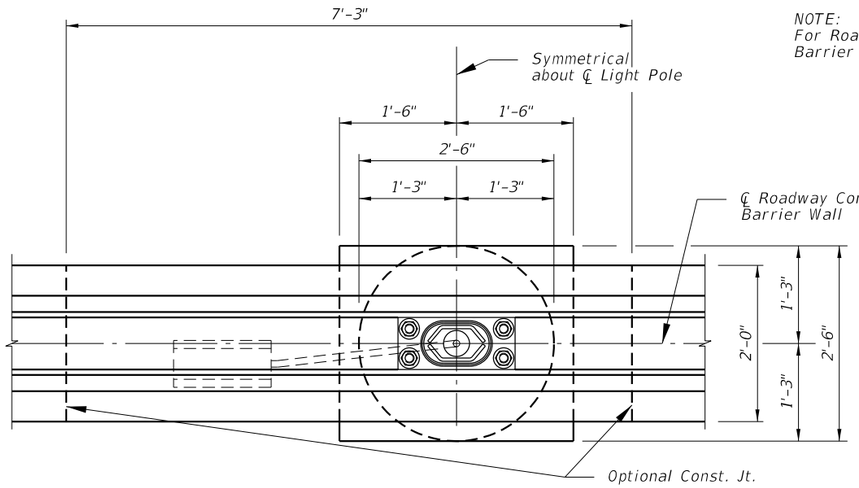
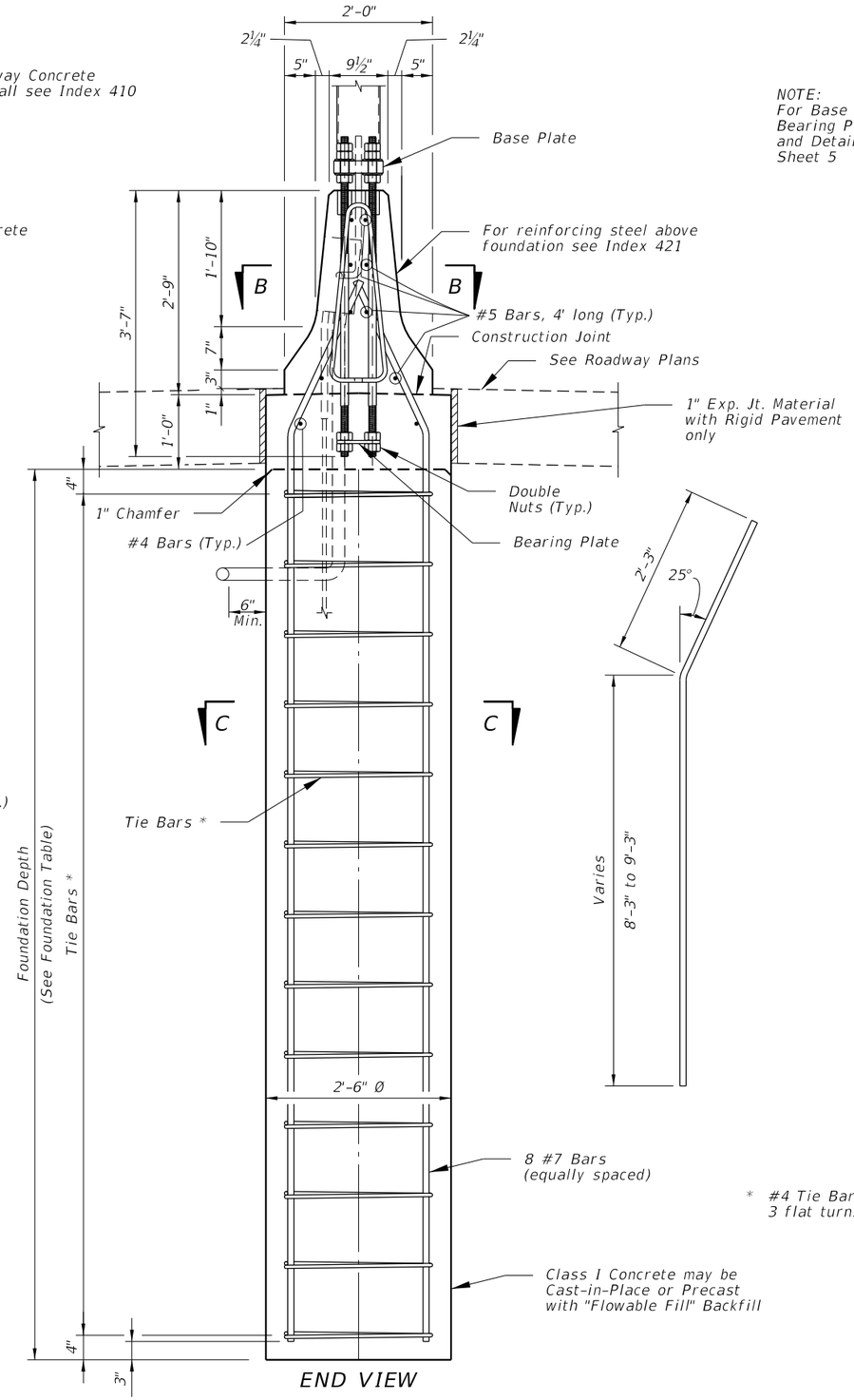
| FOUNDATION TABLE | | |
|---|---|---|
| WIND SPEED (MPH) | DESIGN MOUNTING HEIGHT (FT) | FOUNDATION DEPTH (FT) |
| 110 | 40 | 8 |
| 130 | 40 | 9 |
| 150 | 40 | 9 |

NOTE:
For Roadway Concrete Barrier Wall see Index 410

NOTE:
For Base Plate Details, Bearing Plate Detail and Detail 'A' see Sheet 5

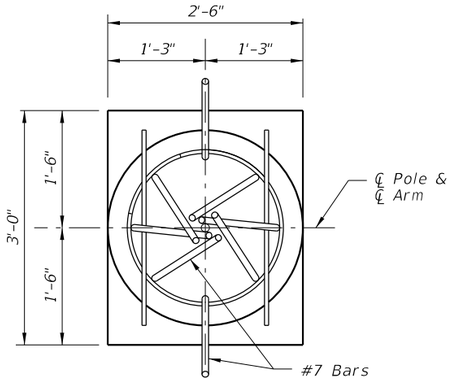



PLAN
(Reinforcing steel not shown)
Provide dowel bars @ construction joint

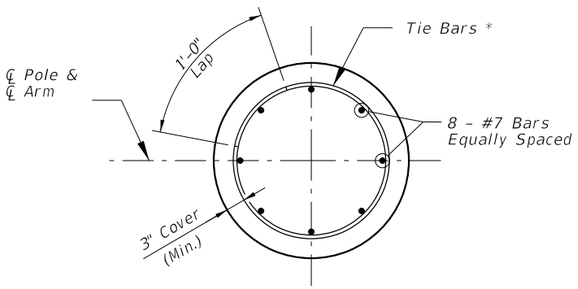






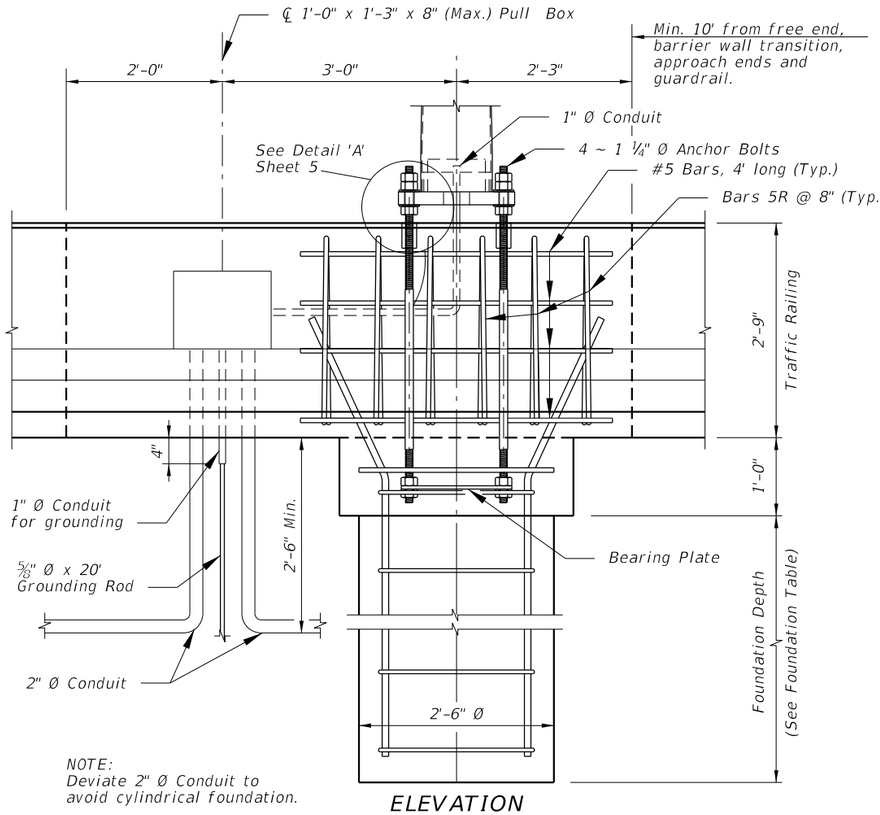



VIEW B-B




SECTION C-C

* #4 Tie Bars @ 12" centers (max.) or D10 (or W10) spiral @ 6" pitch, 3 flat turns top and 1 flat turn bottom.




NOTE:
Deviate 2" Ø Conduit to avoid cylindrical foundation.

ELEVATION

(For Roadway Concrete Barrier Wall reinforcing steel see Index 410)

# CYLINDRICAL FOUNDATION DETAILS FOR MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE

| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FY 2016-17 DESIGN STANDARDS | STANDARD ALUMINUM LIGHTING | INDEX NO. 17515 | SHEET NO. 7 of 8 |

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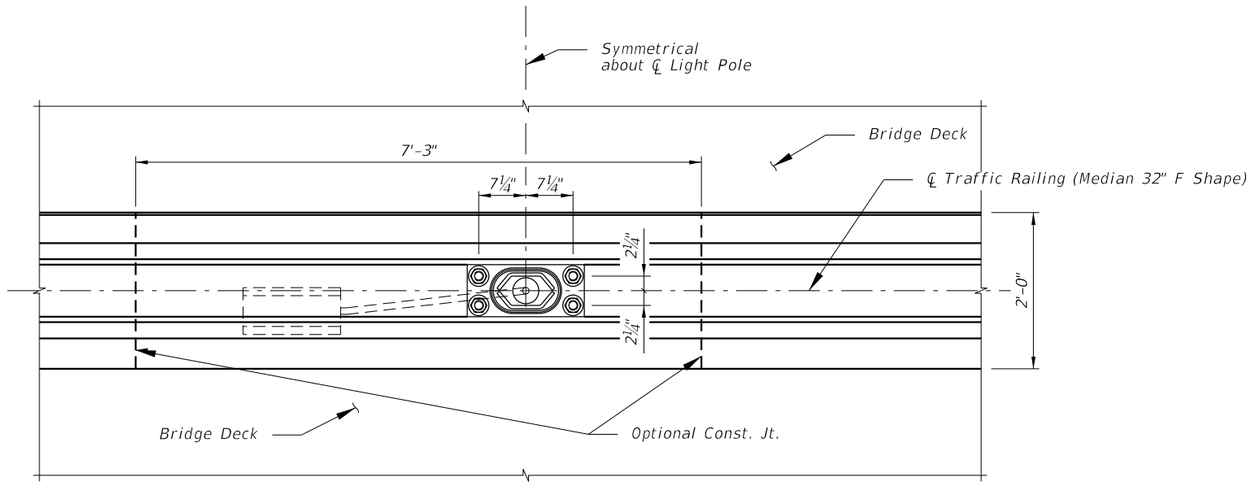
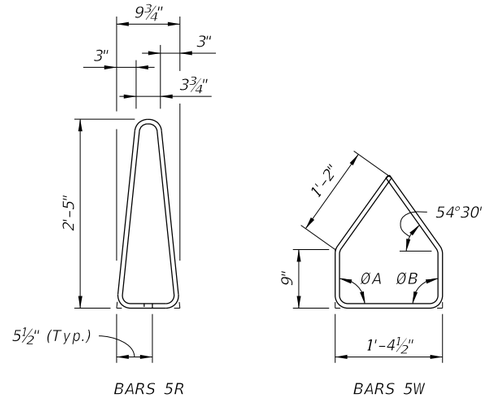
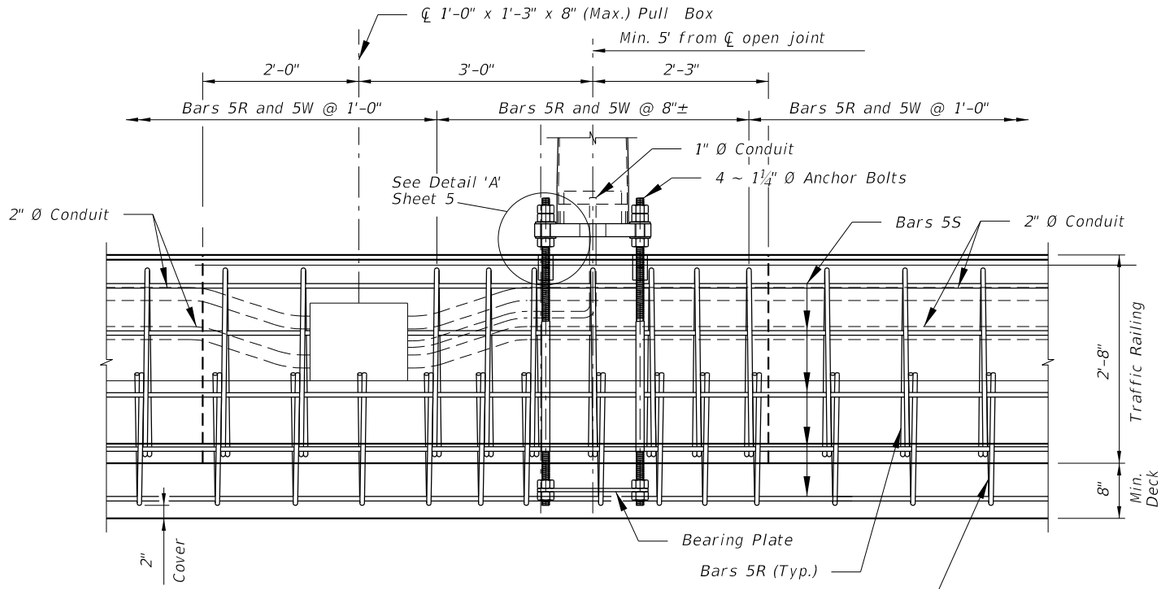



PLAN

(Reinforcing steel not shown)

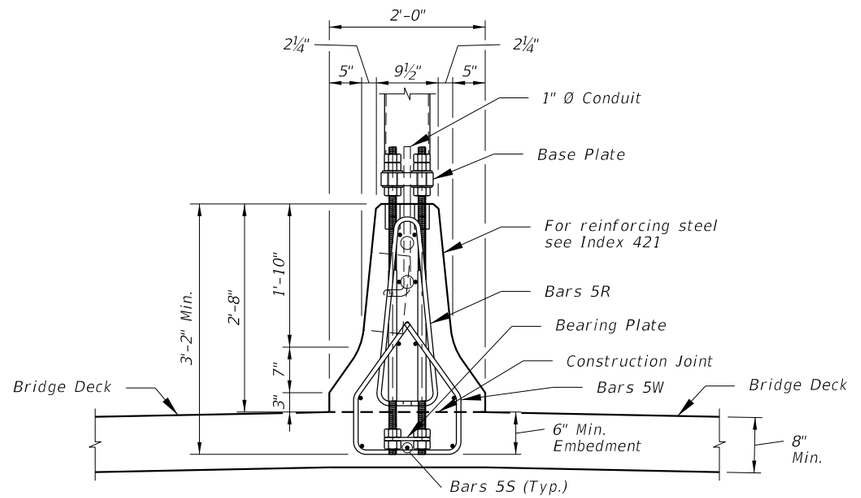



BAR BENDING DIAGRAMS




ELEVATION

(Longitudinal and transverse deck reinforcing steel not shown)




END VIEW

(Longitudinal and transverse deck reinforcing steel not shown)

NOTES:
1. For Base Plate Details, Bearing Plate Details and Detail 'A' see sheet 5.
2. See Index 421 for details of Traffic Railing (Median 32" F Shape) and angles ∠A and ∠B.

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# DETAILS FOR TRAFFIC RAILING (MEDIAN 32" F SHAPE) MOUNTED ALUMIMUM LIGHT POLE

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FY 2016-17 DESIGN STANDARDS | STANDARD ALUMINUM LIGHTING | 17515 | 8 of 8 |