

# ORIGINATION FORM

Proposed Revisions to a Standard Plans Index  
(Please provide all information – Incomplete forms will be returned)

## Contact Information:

Date: July 27, 2017  
Originator: **Derwood Sheppard**  
Phone: (850) 414-4334  
Email: Derwood.Sheppard@dot.state.fl

## Standard Plans:

Index Number: **18113**  
Sheet Number (s): All  
Index Title: Concrete CCTV Pole

## Summary of the changes:

All Sheets: Redeveloped Index.

## Commentary / Background:

Consolidated relevant information from Indexes 18100, 18101, 18102, 18104, 18105, 18107, and 18108, which were deleted for the Standards Plans for the FY 2018-19 release.

## Other Affected Offices / Documents: (Provide name of responsible personnel)

- | Yes                      | No                       |                             |
|--------------------------|--------------------------|-----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Other Standard Plans –      |
| <input type="checkbox"/> | <input type="checkbox"/> | FDOT Design Manual –        |
| <input type="checkbox"/> | <input type="checkbox"/> | Basis of Estimates Manual – |
| <input type="checkbox"/> | <input type="checkbox"/> | Standard Specifications –   |
| <input type="checkbox"/> | <input type="checkbox"/> | Approved Product List –     |
| <input type="checkbox"/> | <input type="checkbox"/> | Construction –              |
| <input type="checkbox"/> | <input type="checkbox"/> | Maintenance –               |

## Origination Package Includes: (Email or hand deliver package to Derwood Sheppard)

- | Yes                                 | N/A                                 |   |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Redline Mark-ups                          |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Proposed Standard Plan Instructions (SPI) |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Revised SPI                               |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Other Support Documents                   |

## Implementation:

- Design Bulletin (Interim)    DCE Memo    Program Mgmt. Bulletin    FY-Standard Plans (Next Release)

Contact the Roadway Design Office for assistance in completing this form

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**LOWERING DEVICE INSTALLATION NOTES:**

1. 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.
2. 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.
3. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stand, etc.) with lowering device manufacturer.

**POLE NOTES:**

1. Pole Material Specifications:
  - a. Pole: Use Class VI Concrete with 6 ksi minimum strength at transfer.
  - b. Prestressing Strands: ASTM A416 Grade 270 low relaxation.
  - c. Reinforcing Steel: ASTM A615 Grade 60.
  - d. Spiral Reinforcing: ASTM A1064 Cold-Drawn.
  - e. Bolts: ASTM F1554, Grade 55.  
Nuts: ASTM A563, Grade A Heavy Hex.  
Washers: ASTM F436.
  - f. Steel plates and Pole Cap: ASTM A36 or ASTM A709 Grade 50.
  - g. Galvanization: Bolts, nuts and washers: ASTM F2329  
All other steel: ASTM A123
2. The pole shall be round or 12-sided.
3. Cut the tip end of the prestressed strand first or simultaneously with the butt end.
4. For spiral reinforcing, one turn is required for spiral splices and two turns are required at the top and bottom of poles.
5. For Reinforcing Steel lap splice to consist of a 3'-0" lap length at each splice to be spliced at the same cross-section.
6. Provided a Class 3 surface finish in accordance with Specification Section 400.
7. Provide a 1" minimum cover.
8. Provide handhole and coupler cover plates made of non-corrosive materials. Attach cover plates to poles using lead anchors or threaded inserts embedded in the poles in conjunction with round headed chrome plated screws.
9. Provide Identification Markings on the poles where indicated on the following sheets. Include the following information using inset numerals with 1" height or as approved in the Producers' Quality Control Program:
  - Financial Project ID
  - Pole Manufacturer
  - Pole Length
10. Install pole plumb.
11. Tie ground wires to the interior of reinforcing steel as necessary to prevent displacement during concreting operations.
12. This Design Standard is considered fully detailed and no shop drawings are necessary. Submit Shop Drawings for minor modifications not detailed in the plans.
13. Storage, Handling and Erection locations shown may vary within ± 3".

REDEVELOPED INDEX

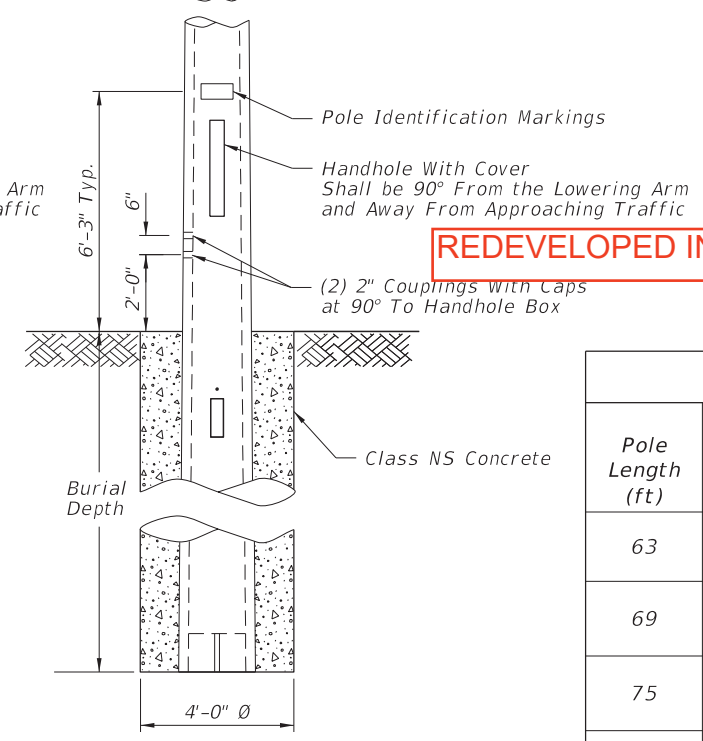
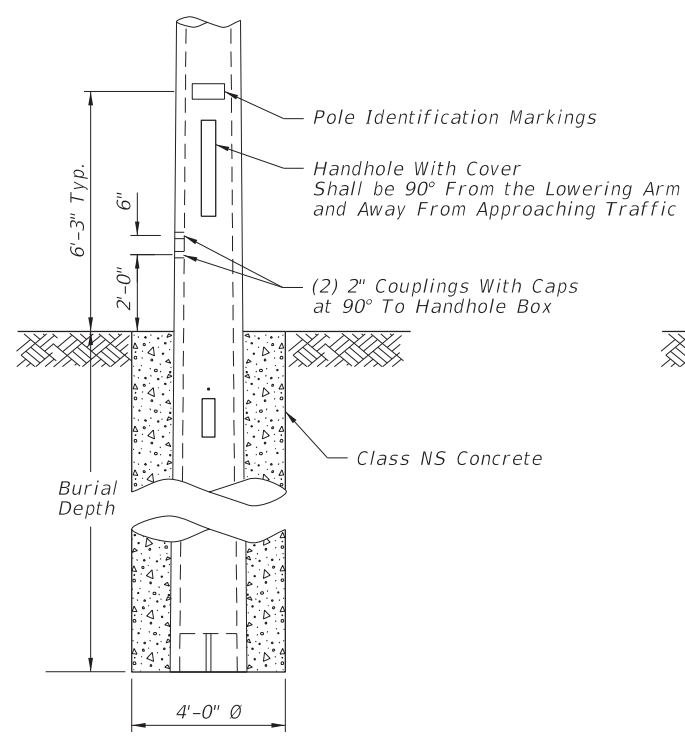
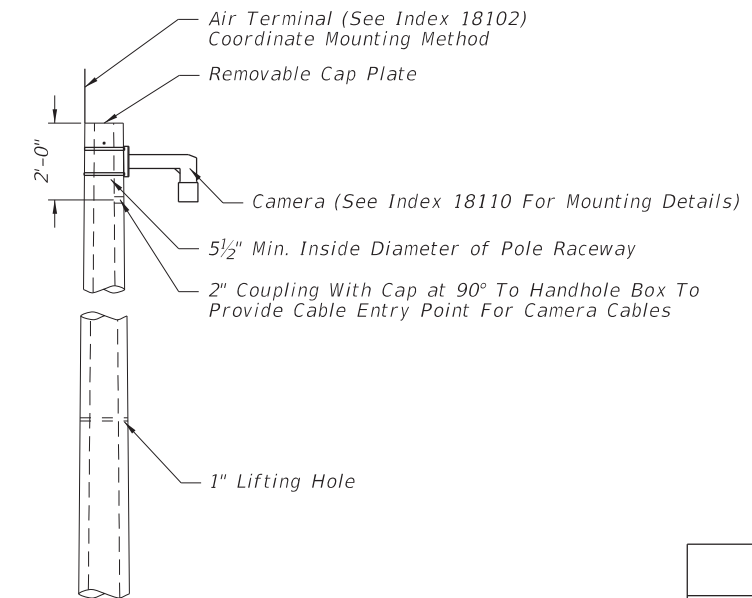
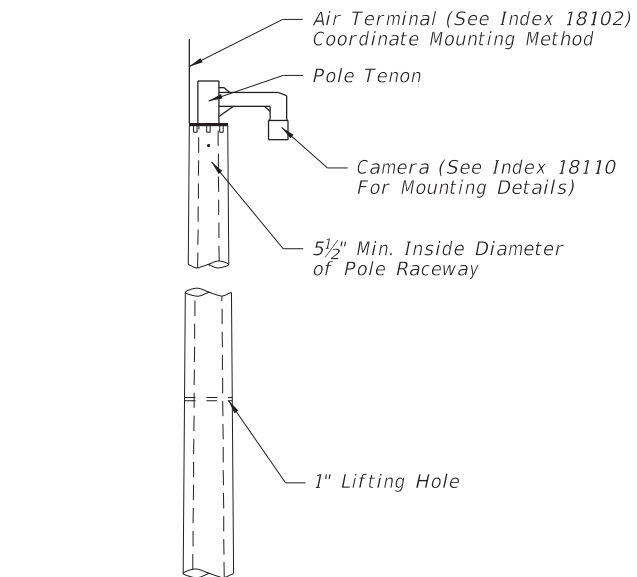
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11/01/17

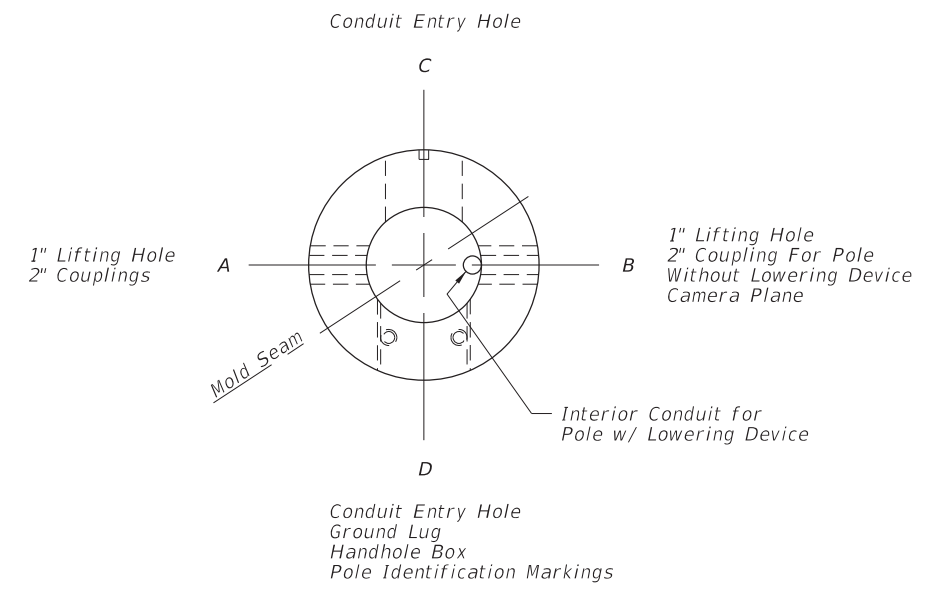
**GENERAL NOTES**

LAST REVISION 07/01/14	REVISION	DESC	FDOT	FY 2017-18 DESIGN STANDARDS	CONCRETE CCTV POLE	INDEX NO. 18113	SHEET NO. 1 of 4
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ELEVATION WITH LOWERING DEVICE

ELEVATION WITHOUT LOWERING DEVICE



POLE CONFIGURATION TOP VIEW

REDEVELOPED INDEX

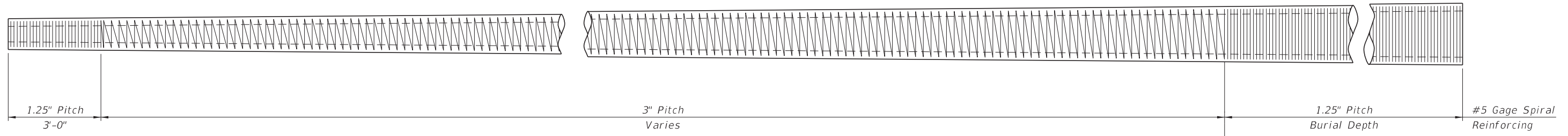
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Total Taper** (in/ft)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt End (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter***
63	50	13	0.18	0.18	3	3	12	23.34	1	0.6"
69	55	14	0.18	0.18	3	3	12	24.42	1	0.6"
75	60	15	0.18	0.18	3	3	12	25.5	2	0.6"
80	65	15	0.18	0.18	3	3	12	26.4	2	0.6"
86	70	16	0.18	0.18	3	3	12	27.48	2	0.6"

Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Design Option	Total Taper** (in/ft)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt End (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter***
63	50	13	Option 1	0.216	0.192	3	3.76	12.15	25.76	3	0.5"
			Option 2	0.18	0.172	3	3.5	12.0	23.34	4	0.5"
69	55	14	Option 1	0.216	0.192	3	3.83	12.15	27.05	3	0.5"
			Option 2	0.18	0.173	3	3.5	12.0	24.42	4	0.5"
75	60	15	Option 1	0.216	0.192	3	3.9	12.15	28.35	3	0.5"
			Option 2	0.18	0.173	3	3.5	12.0	25.5	4	0.5"
80	65	15	Option 1	0.216	0.192	3	3.96	12.15	29.43	3	0.5"
			Option 2	0.18	0.174	3	3.5	12.0	26.4	4	0.5"
86	70	16	Option 1	0.216	0.192	3	4.03	12.15	30.73	3	0.5"
			Option 2	0.18	0.174	3	3.5	13.0	28.48	4	0.5"

\* Diameter Measured Flat to Flat  
 \*\* Total taper applies to pole, strands, and reinforcing.  
 \*\*\* For 12-Sided Pole and Round Pole Option 2 Stress prestressed strand to 70% of Ultimate before Transfer.  
 For Round Pole, Option 1 Stress Prestressed strand to 60% of Ultimate before Transfer.

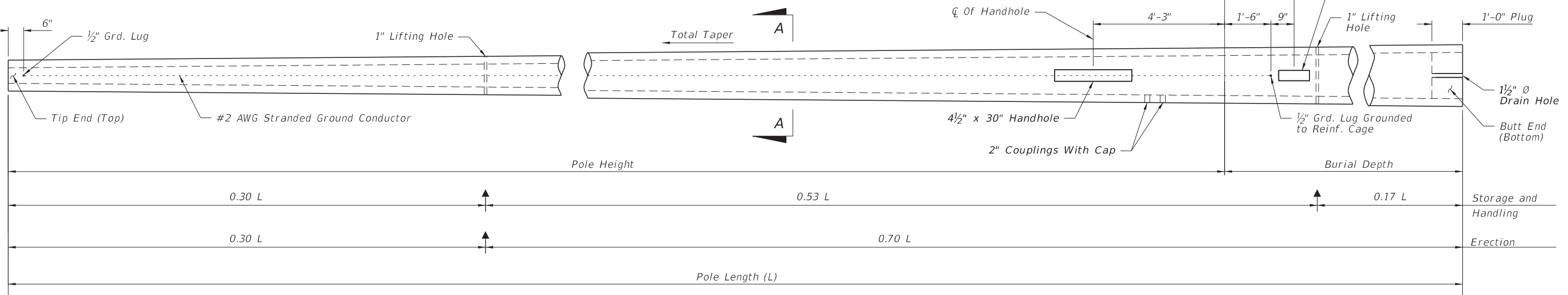
POLE DESIGN TABLES

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\* Spiral wire may be wrapped in two directions given that an equivalent area of spiral wire is provided to that shown in this standard and the cover requirements are met.

**SPIRAL REINFORCING ELEVATION**  
(Strands, Holes, and Fixtures Not Shown)

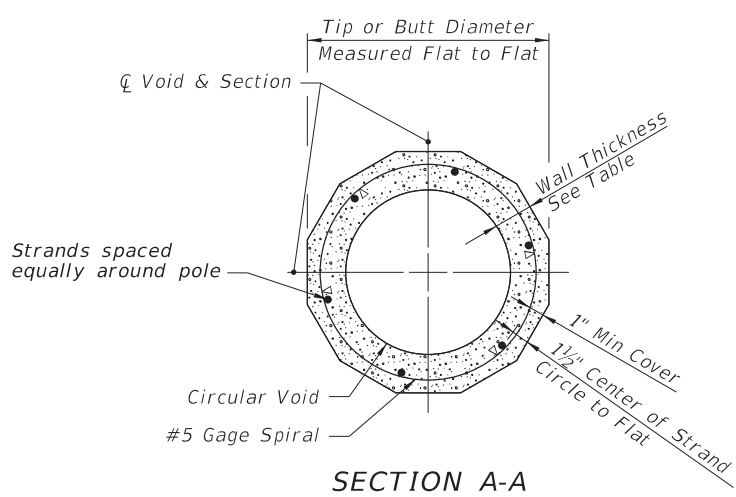


**POLE ELEVATION**  
(Strands and Reinforcing Not Shown)

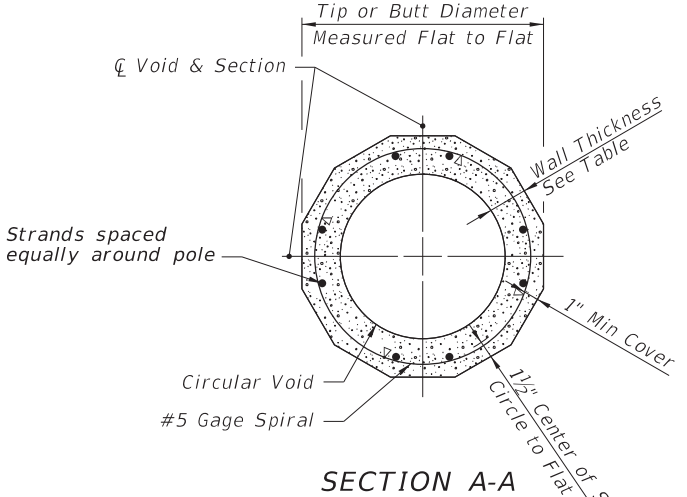
**REDEVELOPED INDEX**

**STRAND LEGEND**

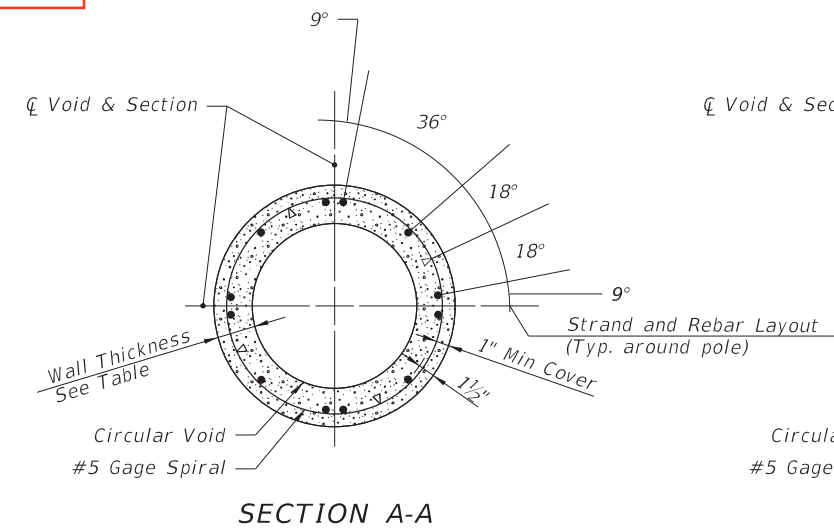
- - Prestressed Strand
- Δ - (4) #5 Rebar (Shown) or (6) #4 Rebar



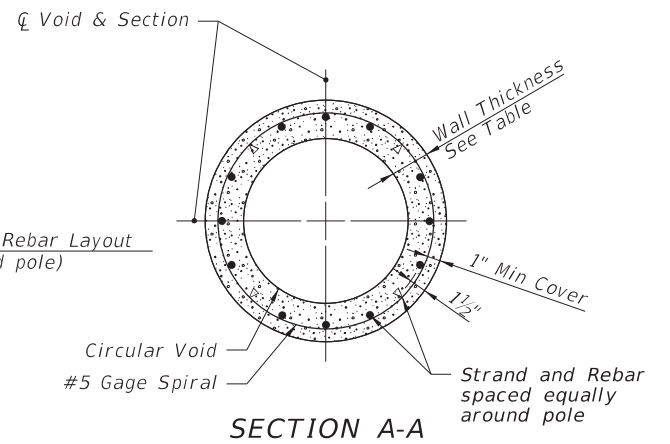
STRAND PATTERN 1  
(12 - SIDED)



STRAND PATTERN 2  
(12 - SIDED)



STRAND PATTERN 3  
(ROUND - OPTION 1)



STRAND PATTERN 4  
(ROUND - OPTION 2)

Note: Strands and Rebar shown are continuous from Tip End to Butt End.

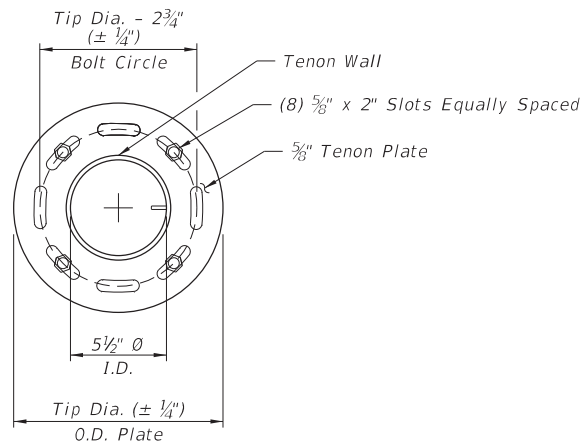
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LAST REVISION	DESCRIPTION:
01/01/16	

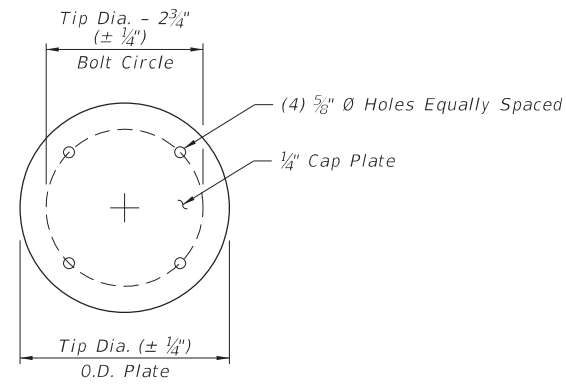
**FDOT** FY 2017-18 DESIGN STANDARDS

**CONCRETE CCTV POLE**

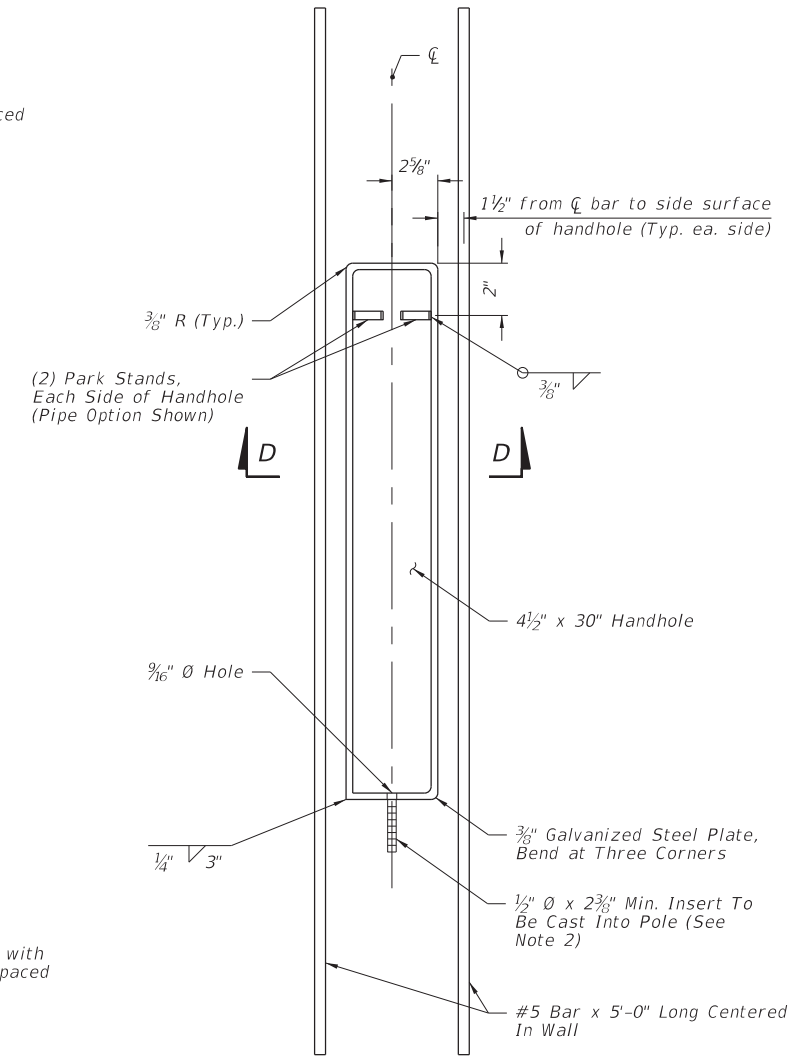
INDEX NO.	SHEET NO.
18113	3 of 4



SECTION B-B

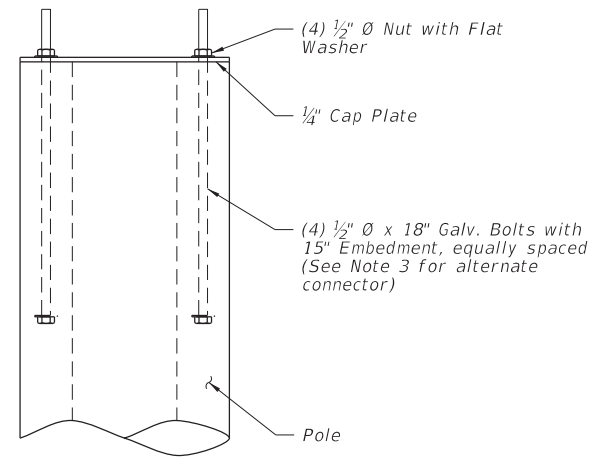


CAP PLATE DETAIL

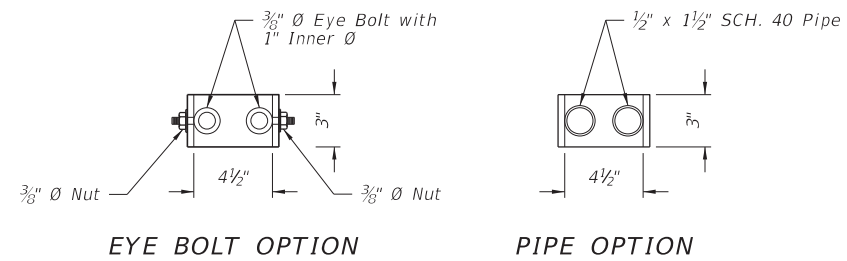


HANDHOLE DETAIL

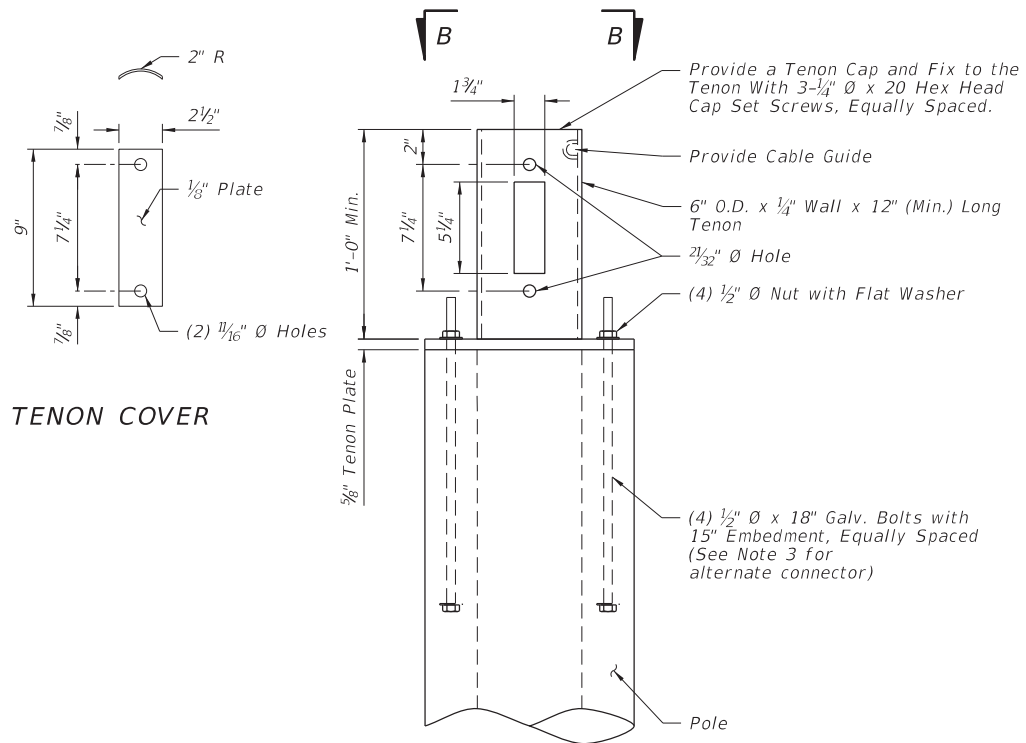
**REDEVELOPED INDEX**



TOP OF POLE DETAIL WITHOUT LOWERING DEVICE




SECTION D-D - PARK STAND DETAIL



TOP OF POLE DETAIL WITH LOWERING DEVICE

- Notes:
1. Install all handhole and opening covers prior to shipping.
  2. Install 1/2 inch diameter x 5 inch long stud with hex nut in insert before shipment.
  3. As an alternate, embed (4) 1/2 inch diameter x 18 inch stainless steel threaded rods with a threaded nut. At top of rod, thread a coupling nut to attach plate w/ (4) 1/2 inch x 1 3/4 inch stainless steel bolts.
  4. Handhole frame may be Cast Aluminum 356.2.

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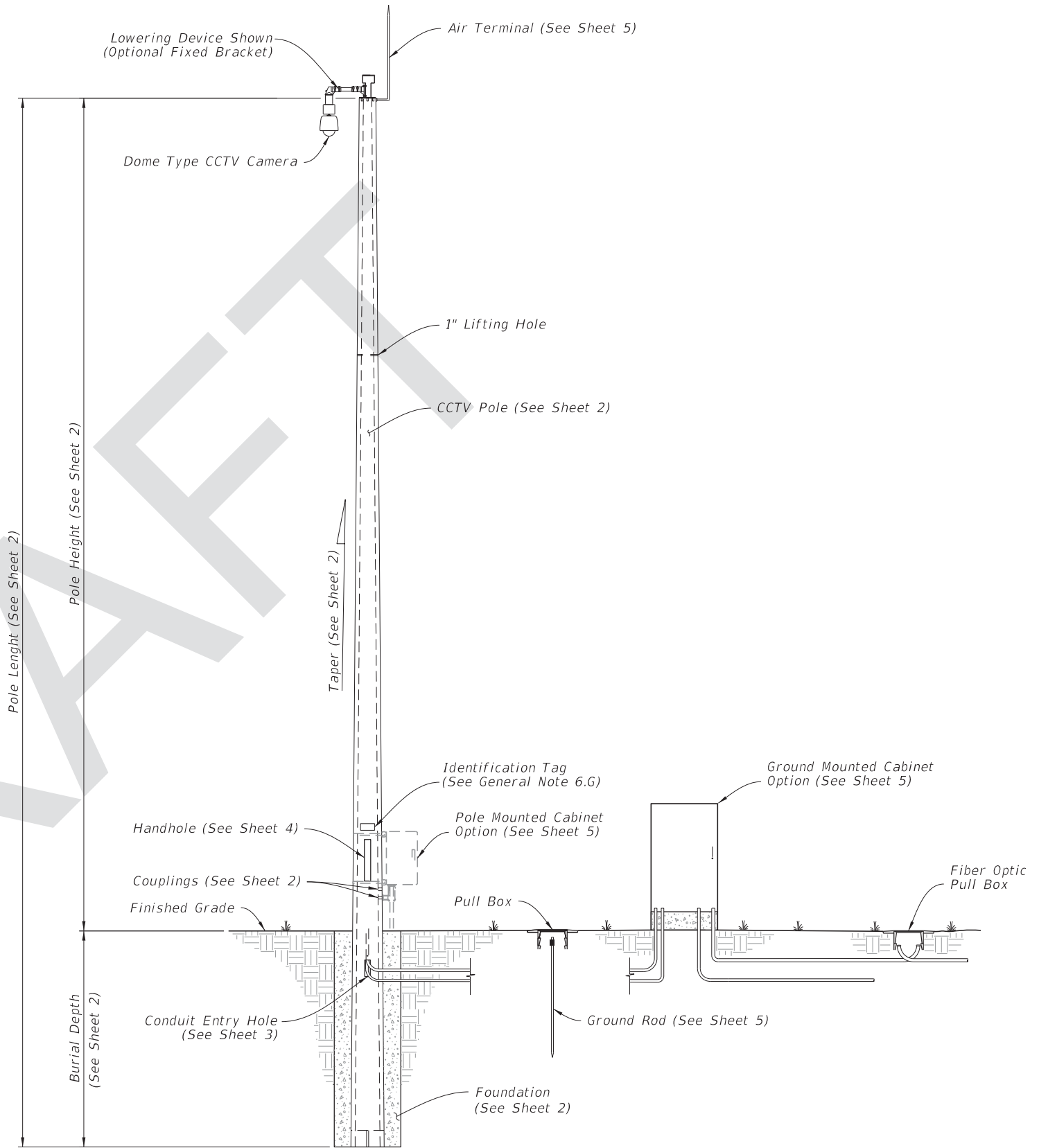
LAST REVISION <b>07/01/13</b>	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>CONCRETE CCTV POLE</b>	INDEX NO. <del>18113</del>	SHEET NO. <del>4 of 4</del>
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NEW SHEET

POLE GROUNDING DETAILS


**GENERAL NOTES:**

1. Work this Index with Specifications 641.
2. This Index is considered fully detailed and no shop drawings are necessary. Submit Shop Drawings for minor modifications not detailed in the Plans.
3. Install pole plumb.
4. Provide either round or 12-sided Poles.
5. See Index 635-001 for additional details for Pull Boxes.
6. Materials:
  - A. Pole: Use Class VI concrete with 6 ksi minimum strength at transfer.
  - B. Prestressing Strands: ASTM A416, Grade 270 low relaxation.
  - C. Reinforcing Steel: ASTM A615, Grade 60
  - D. Spiral Reinforcing: ASTM A1064 Cold-Drawn
  - E. Bolts: ASTM F1554, Grade 55  
Nuts: ASTM A563, Grade A Heavy Hex  
Washers: ASTM F436
  - F. Steel plates and Pole Cap: ASTM A36 or ASTM A709, Grade 50
  - G. Galvanization: Bolts, nuts and washers : ASTM F2329  
All other steel: ASTM A123
7. Pole Fabrication:
  - A. Cut the tip end of the prestressed strand first or simultaneously with the butt end.
  - B. For spiral reinforcing, one turn is required for spiral splices and two turns are required at the top and bottom of poles.
  - C. For Reinforcing Steel, lap splice to consist of a 3'-0" lap length at each splice. No more than two opposing rebar to be spliced at the same cross section. Stagger lap splices as needed.
  - D. Provide a Class 3 surface finish in accordance with Specification 400.
  - E. Provide a 1" minimum cover.
  - F. Provide handhole and coupler cover plates made of non-corrosive materials. Attach cover plates to poles using lead anchors or threaded inserts embedded in the poles in conjunction with round headed chrome plated screws.
  - G. Provide Identification Markings on the poles where indicated on the following sheets. Include the following information using inset numerals with 1" height or as approved in the Producers' Quality Control Program:  
  
Financial Project ID  
Pole Manufacturer  
Pole Length
  - H. Tie ground wires to the interior of reinforcing steel as necessary to prevent displacement during concreting operations.
  - I. Storage, Handling and Erection locations shown may vary within  $\pm 3"$ .
8. Cabinet Installation:
  - A. Splice fiber optic cables in cabinet to preterminater patch panel.
  - B. Furnish and install TVSS protection on all cabling in cabinet.
  - C. Furnish and install secondary TVSS protection on outlets for equipment in cabinet.
  - D. Ensure that all electronic equipment power is protected and conditioned with TVSS devices.
  - E. Ensure that equipment cabinet is bonded to CCTV pole grounding system.
  - F. Install the pole mounted cabinet with the hinges next to the pole.
  - G. Sizes and types of conduits and innerducts for network communications between the pullbox and cabinet are stated in the Contract Documents.
9. Lowering Device Installation:
  - A. 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.
  - B. 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.
  - C. Coordinate all lowering device hardware requirements (including Tenon, Tenon mounting plates, parking stand, etc.) with lowering device manufacturer.

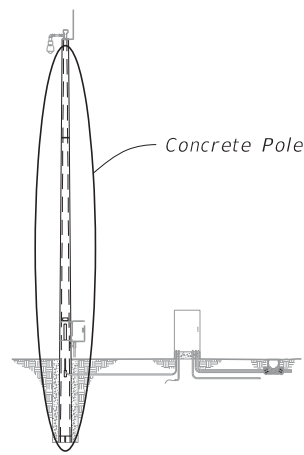


CCTV POLE ASSEMBLY

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LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	CONCRETE CCTV POLE	INDEX 641-020	SHEET 1 of 5
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Concrete Pole

**NOTES:**

1. Diameter of 12-sided poles are measured flat to flat.
2. Total Taper applies to pole, strands and reinforcing.
3. For 12-Sided Pole and Round Roles Option 2, Stress prestressed strand to 70% of Ultimate before transfer. For Round Pole Option 1, stress prestressed strand to 60% of Ultimate before transfer.

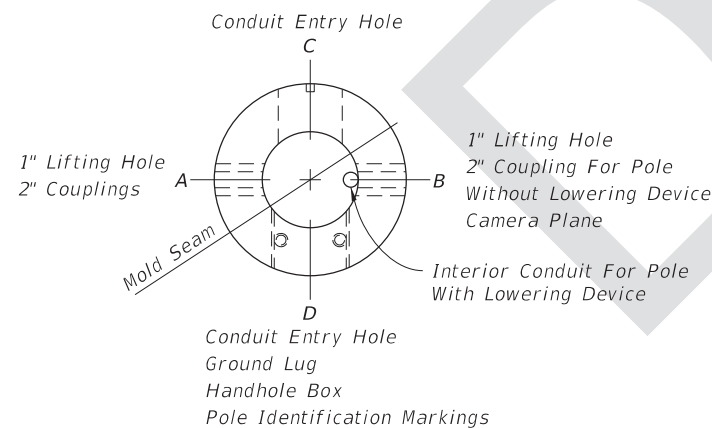
**ASSEMBLY**

**12-SIDED POLE DESIGN TABLE** (See Note 1)

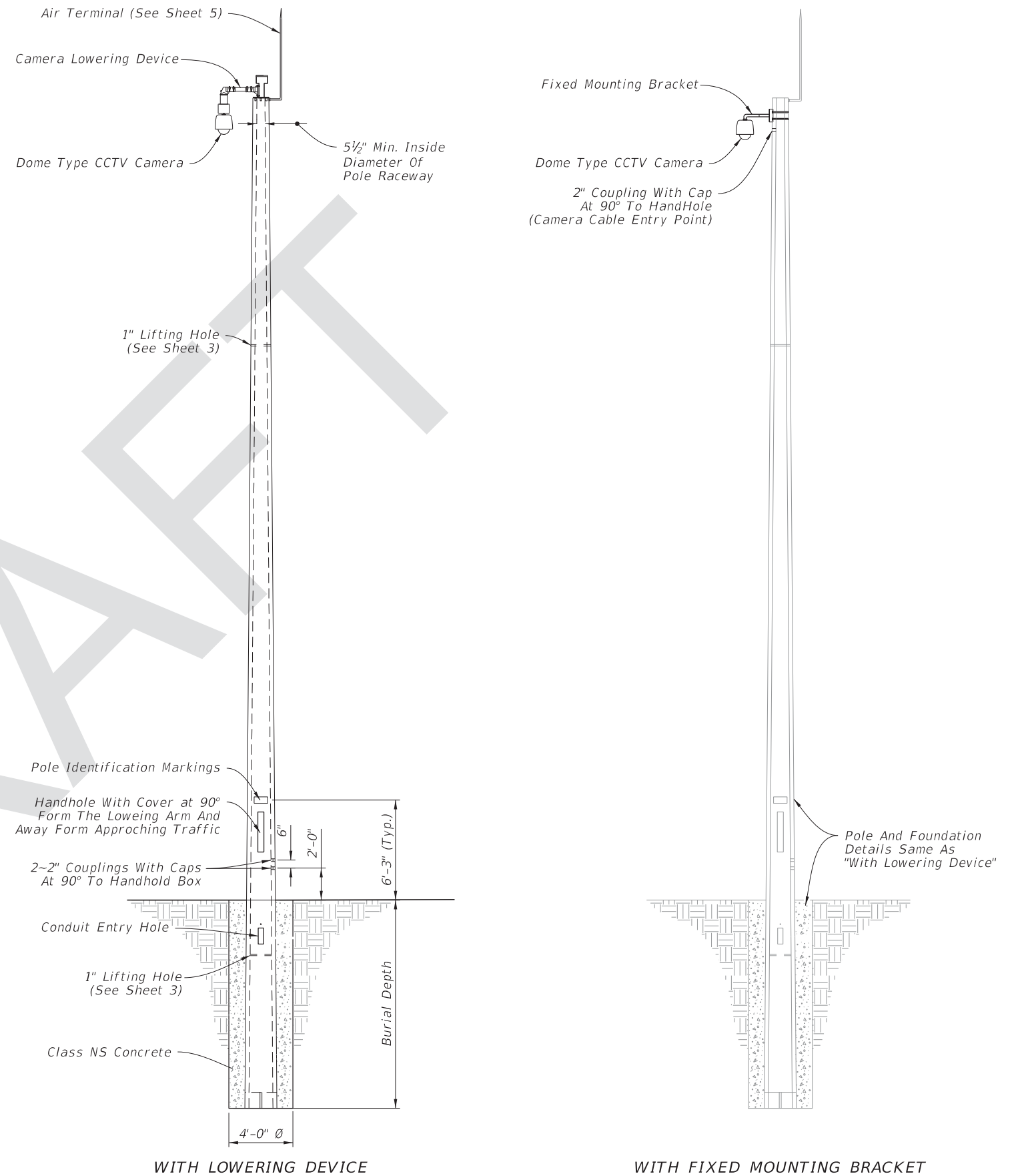
Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Total Taper (in/ft) (See Note 2)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter
63	50	13	0.18	0.18	3	3	12	23.34	1	0.6"
69	55	14	0.18	0.18	3	3	12	24.42	1	0.6"
75	60	15	0.18	0.18	3	3	12	25.50	2	0.6"
80	65	15	0.18	0.18	3	3	12	26.40	2	0.6"
86	70	16	0.18	0.18	3	3	12	27.48	2	0.6"

**ROUND POLE DESIGN TABLE**

Pole Length (ft)	Pole Height (ft)	Burial Depth (ft)	Design Option	Total Taper (in/ft) (See Note 2)	Void Taper (in/ft)	Min. Wall Thickness Tip (in)	Min. Wall Thickness Butt (in)	Tip Diameter (in)	Butt Diameter (in)	Strand Pattern	Strand Diameter
63	50	13	Option 1	0.216	0.192	3	3.76	12.15	25.76	3	0.5"
			Option 2	0.180	0.172	3	3.50	12.00	23.34	4	0.5"
69	55	14	Option 1	0.216	0.192	3	3.83	12.15	27.05	3	0.5"
			Option 2	0.180	0.173	3	3.50	12.00	24.42	4	0.5"
75	60	15	Option 1	0.216	0.192	3	3.90	12.15	28.35	3	0.5"
			Option 2	0.180	0.173	3	3.50	12.00	25.50	4	0.5"
80	65	15	Option 1	0.216	0.192	3	3.96	12.15	29.43	3	0.5"
			Option 2	0.180	0.174	3	3.50	12.00	26.40	4	0.5"
86	70	16	Option 1	0.216	0.192	3	4.03	12.15	30.73	3	0.5"
			Option 2	0.180	0.174	3	3.50	13.00	28.48	4	0.5"



**PLAN VIEW**



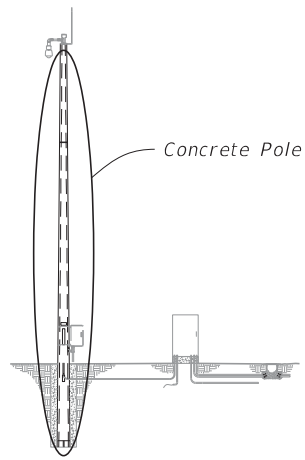
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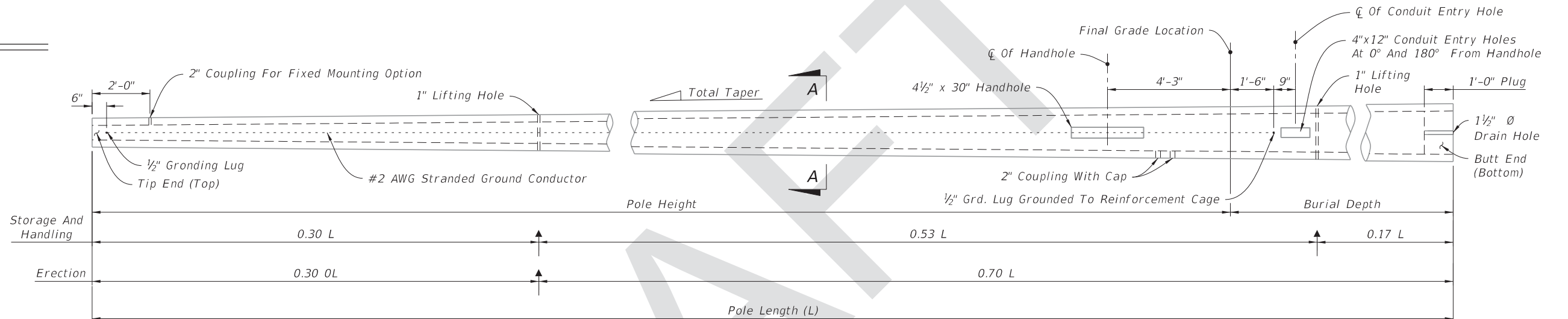
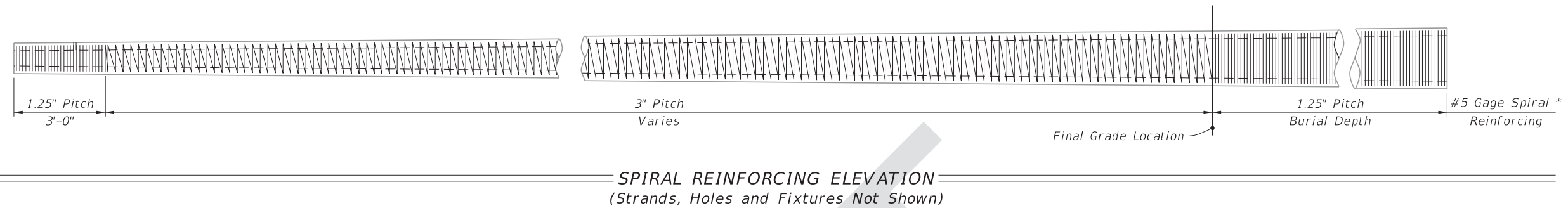
LAST REVISION 11/01/17	REVISION	DESCRIPTION:		FY 2018-19 STANDARD PLANS	CONCRETE CCTV POLE	INDEX 641-020	SHEET 2 of 5
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\*Spiral wire may be wrapped in two directions given that an equivalent area of spiral wire is provided to that shown in this Index and the cover requirements are met.



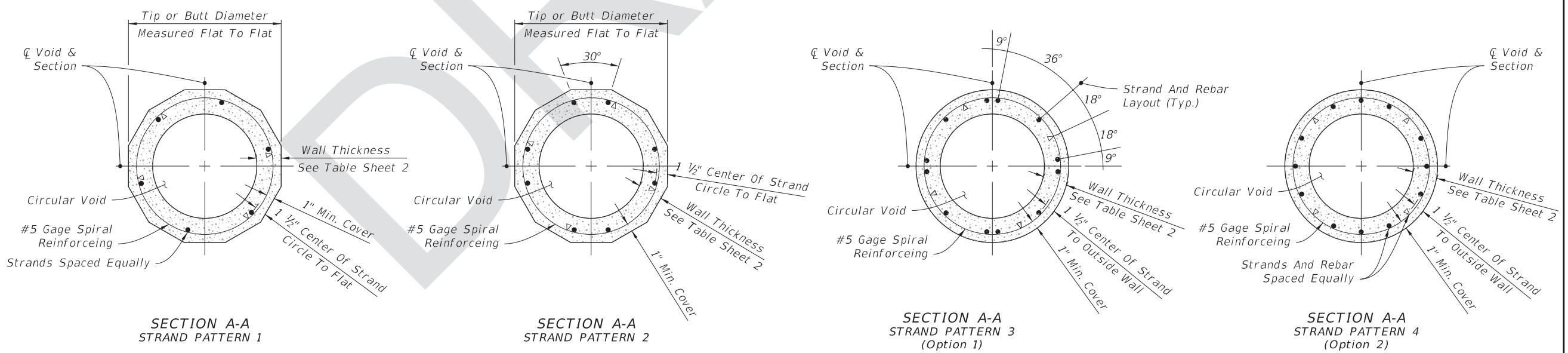
ASSEMBLY



LEGEND:

- Prestressed Strand
- △ (4) #5 Rebar (Shown) or (6) #4 Rebar
- ↑ Lift Points

NOTE:  
Strands and rebar shown are continuous from Tip End To Butt End.

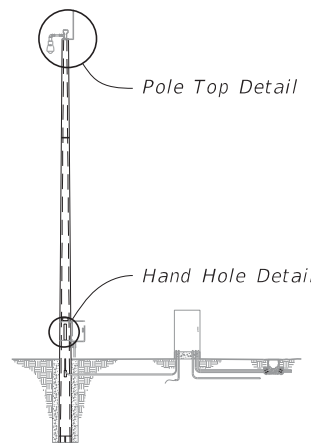


12 - SIDED CONCRETE POLE

ROUND CONCRETE POLE

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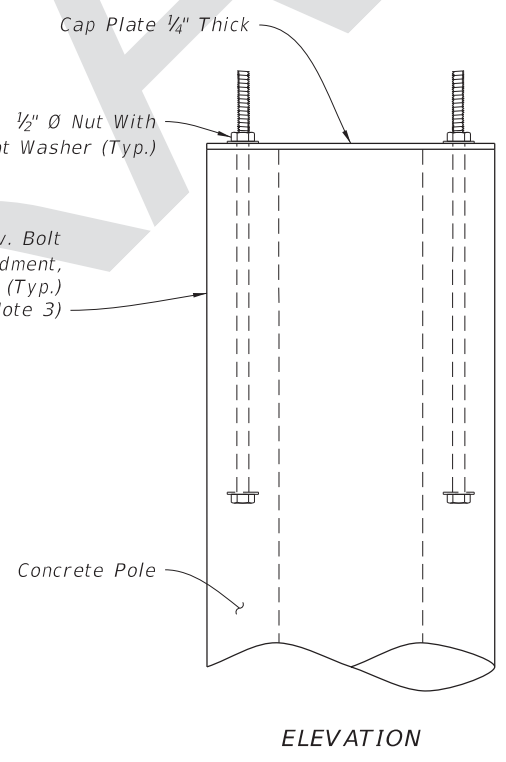
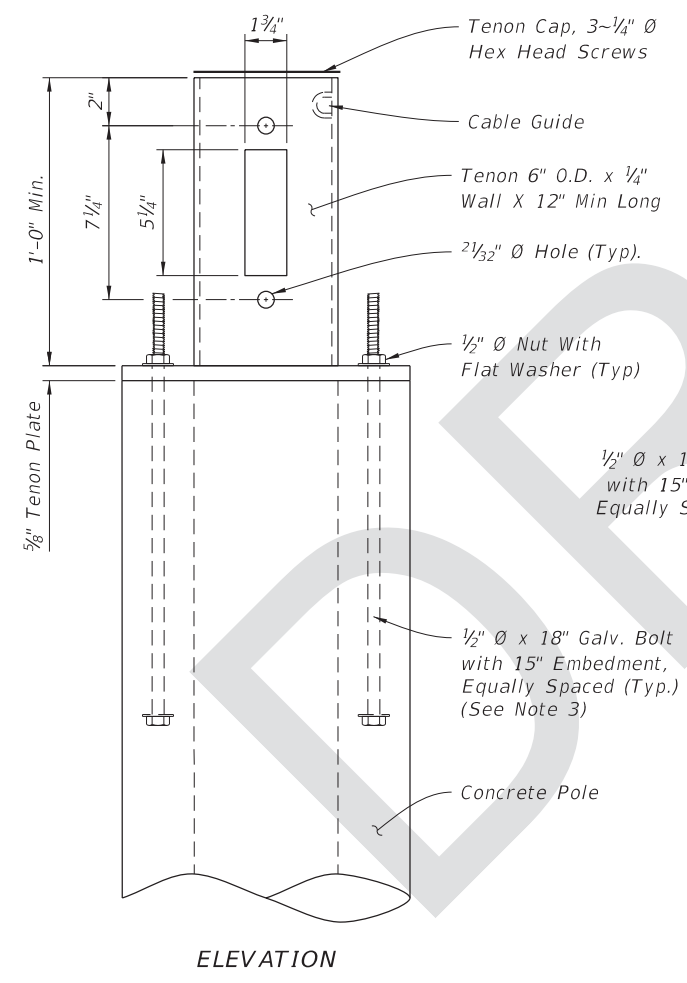
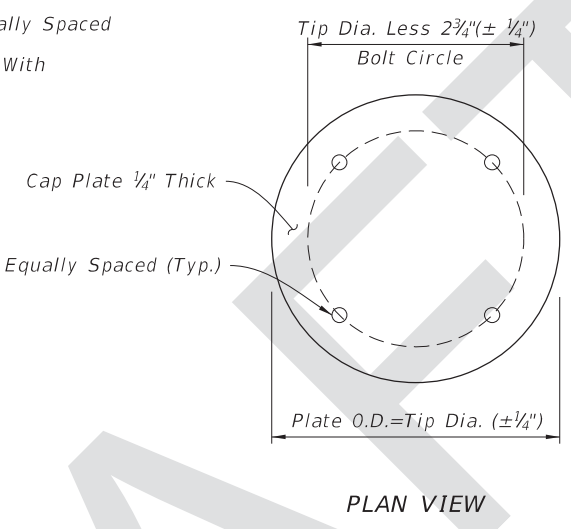
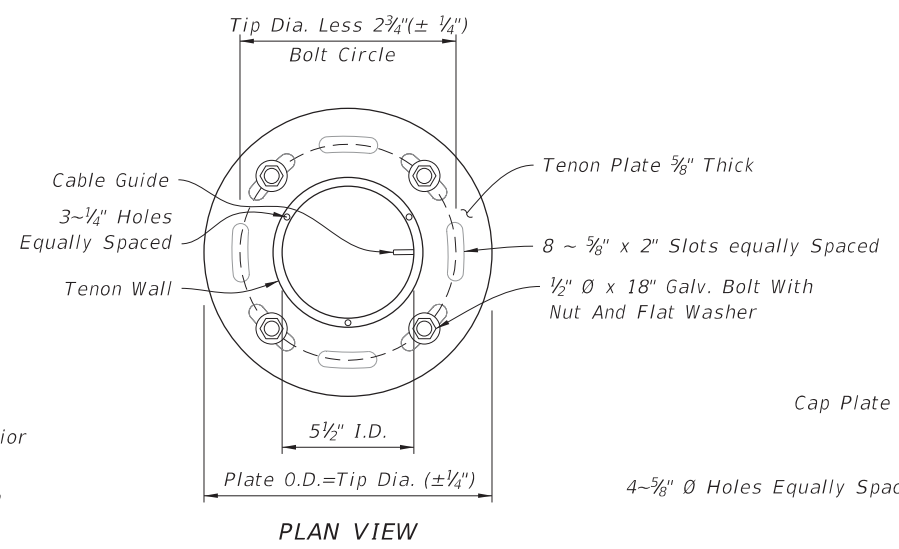
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**ASSEMBLY**

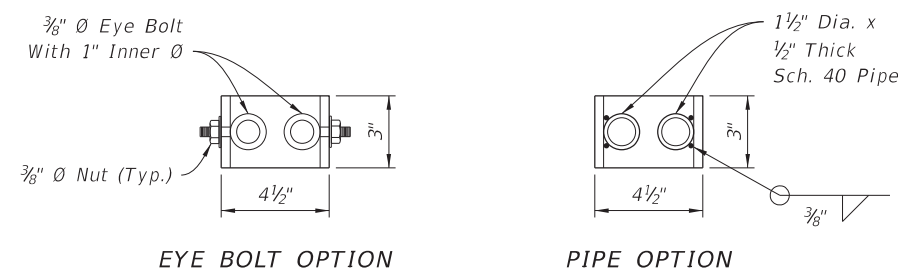
**Notes:**

1. Install all handhole and opening covers prior to shipping.
2. Install 1/2" Ø x 5" long stud with hex nut in insert before shipment.
3. As an alternate, embed 4-1/2" Ø x 18" stainless steel threaded rods with a threaded nut. At top of rod, thread a coupling nut to attach plate w/ 4-1/2" x 1-3/4" stainless steel bolts.
4. Handhole frame may be Cast Aluminum 356.2.

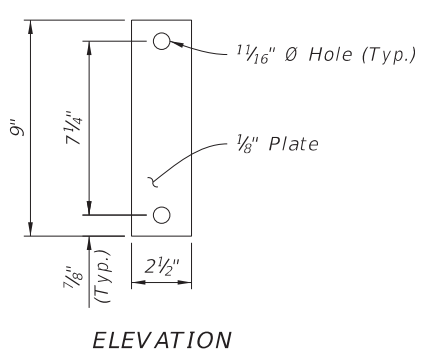
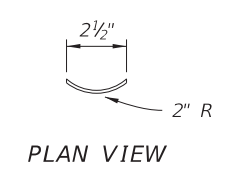
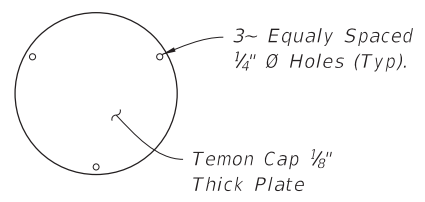
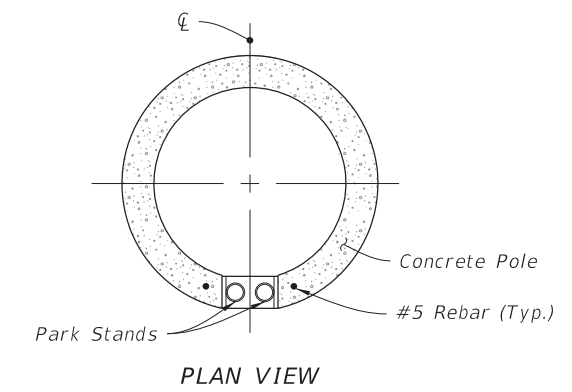


LOWERING DEVICE TENON

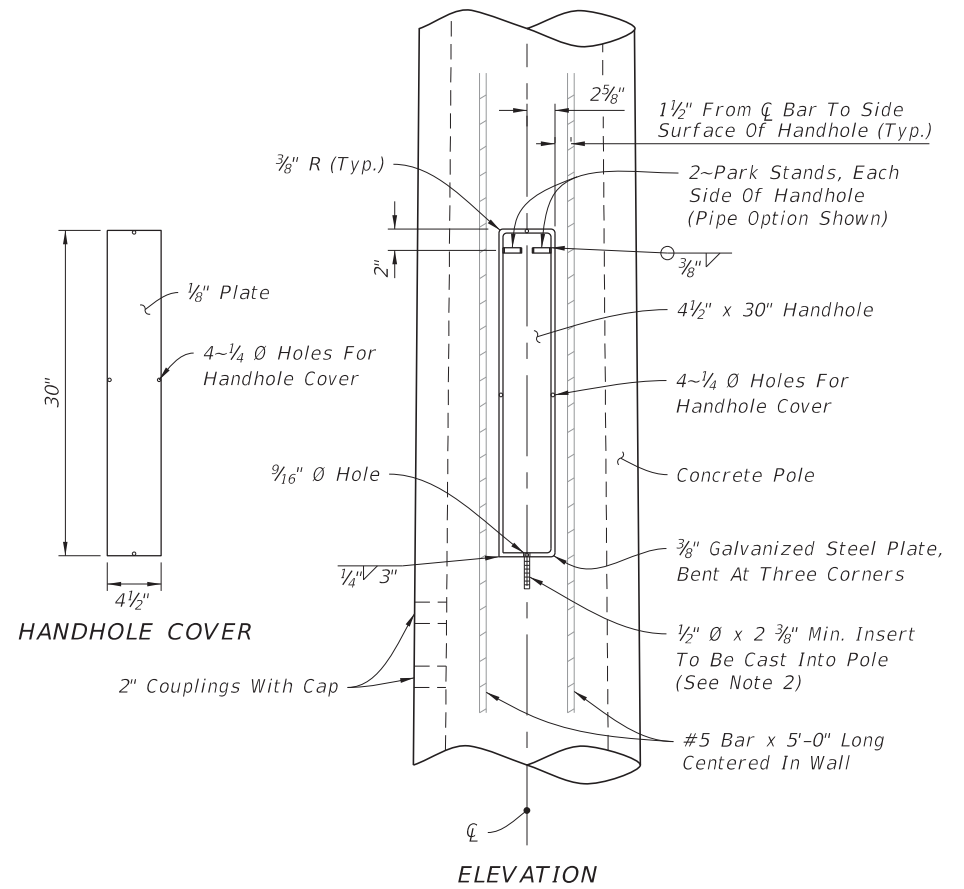
CAP PLATE DETAIL (Without Lowering Device)



**PARK STAND DETAIL**



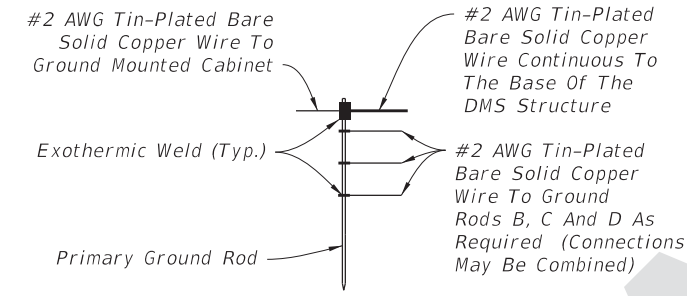
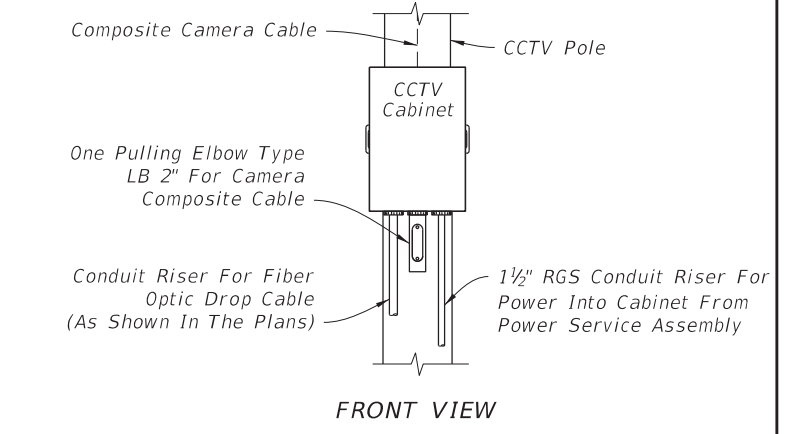
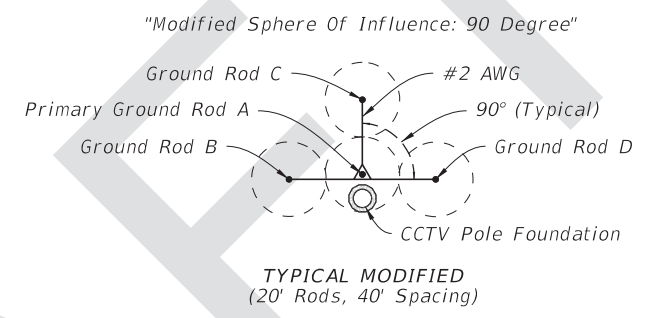
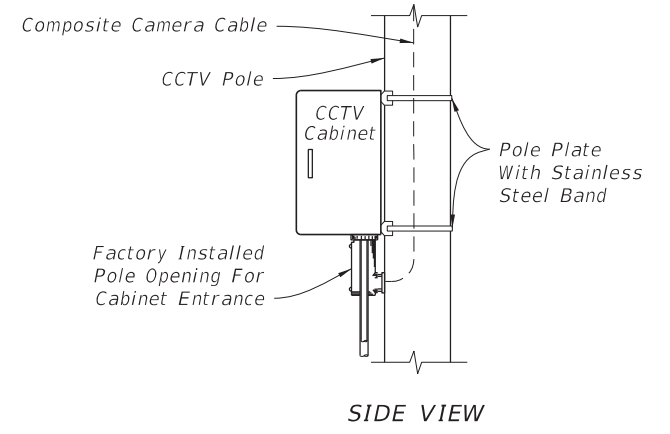
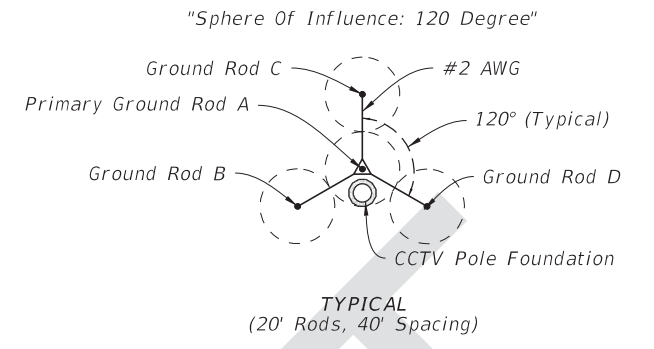
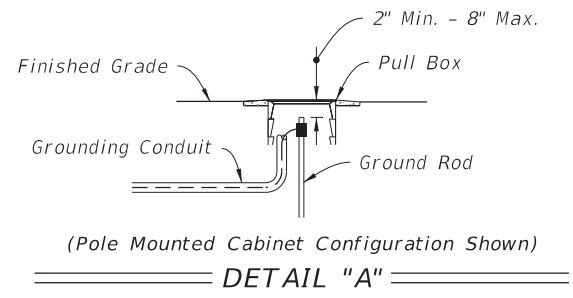
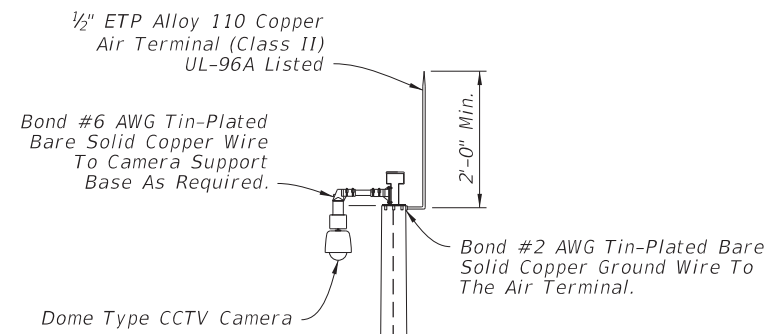
TENON COVER



HANDHOLE DETAIL

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LAST REVISION 11/01/17	REVISION	DESCRIPTION:		FY 2018-19 STANDARD PLANS	CONCRETE CCTV POLE	INDEX 641-020	SHEET 4 of 5
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GROUND ROD ARRAY PLACEMENT

CCTV Pole (See Sheet 3)  
 #2 Wire Maybe Routed Internally Or Externally In Accordance With The Plans

1/2" X 10' PVC Conduit Sleeve To Protect Any External Ground Wire From Mechanical Damage. Ensure Conduits Are Sealed To Prevent Water Intrusion.

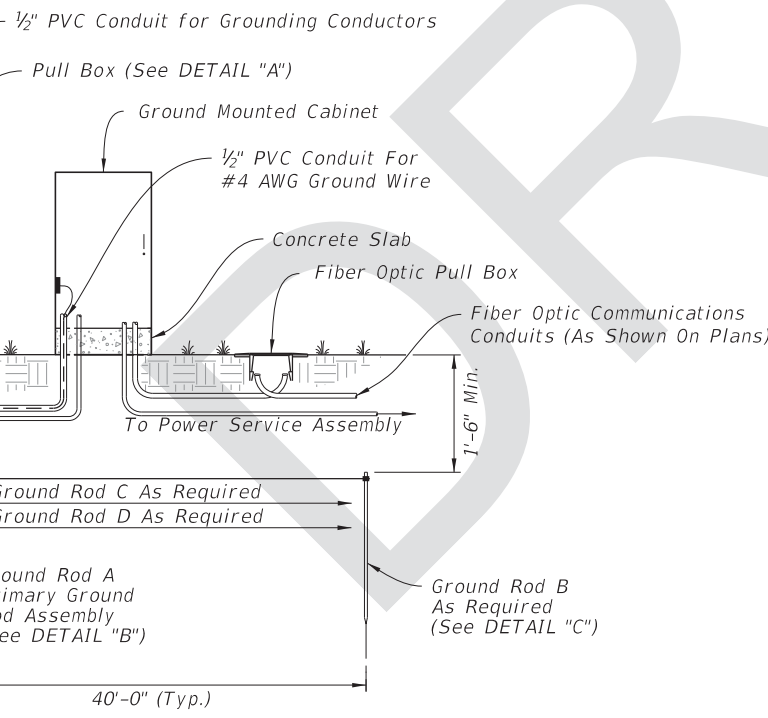
Conduit Entry Hole (See Sheet 3)

Conduit Entry Hole (See Sheet 5)

2" PVC Camera Cabling Conduit

5/8" Ø x 20' Copper-Clad Steel Ground Rod (Typ.)

Foundation (See Sheet 2)



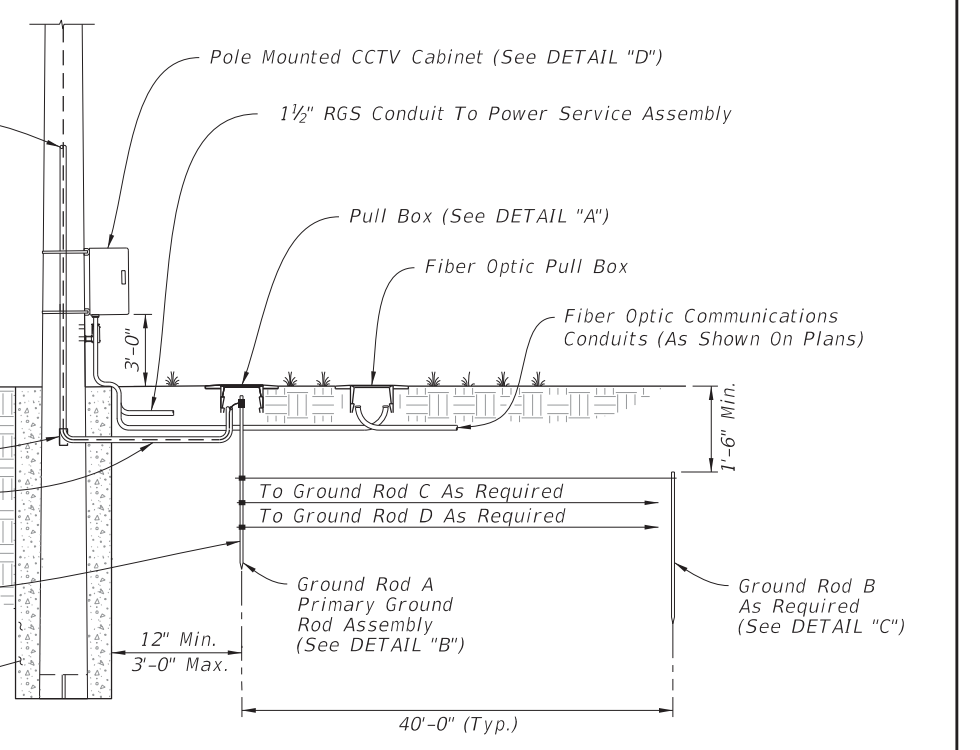
1/2" X 10' PVC Conduit Sleeve To Protect Any External Ground Wire From Mechanical Damage. Ensure Conduits Are Sealed To Prevent Water Intrusion.

Conduit Entry Hole (See Sheet 3)

1/2" PVC Conduit for Grounding Conductors

5/8" Ø x 20' Copper-Clad Steel Ground Rod (Typ.)

Foundation (See Sheet 2)



GROUND MOUNTED CABINET

POLE MOUNTED CABINET

CONCRETE CCTV POLE GROUNDING

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