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: **18111**
Sheet Number (s): ALL SHEETS
Index Title: Steel 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	
☐	☐	Other Standard Plans –
☐	☐	FDOT Design Manual –
☐	☐	Basis of Estimates Manual –
☐	☐	Standard Specifications –
☐	☐	Approved Product List –
☐	☐	Construction –
☐	☐	Maintenance –

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

Yes	N/A	
☑	☐	Redline Mark-ups
☐	☑	Proposed Standard Plan Instructions (SPI)
☐	☑	Revised SPI
☐	☑	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

FOUNDATION NOTES:

1. Concrete: Class IV (Drilled Shaft) with a minimum 4,000 psi compressive strength at 28 days for all environment classifications.
2. Reinforcing Steel: ASTM A615 Grade 60.
3. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts and plate washers. ASTM F2329 galvanization.
4. Install Anchor Bolts in accordance with Section 649-5 of the Specifications.
5. Foundation applies to slopes 1:4 or flatter.
6. The foundation for the CCTV structure shall be constructed in accordance with Section 455 of the Specifications except that no payment for the foundation shall be made under Section 455.

INSTALLATION NOTES:

1. Cable Supports: Electrical Cable Guides and Eyebolts.
   a. Locate top and bottom cable guides within the pole aligned with each other.
   b. Position one cable guide 2" below the handhole.
   c. Position other cable guide 1" directly below the top of the tenon.
   d. Position Park Stands 2" below the top of the handhole.
2. Lowering Device Installation Notes:
   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 stands, etc.) with lowering device manufacturer.
3. Pole Installation Notes:
   a. Install pole plumb.
   b. The pole shall not be erected until the foundation concrete has achieved 70% of the minimum specified 28 day compressive strength.
4. Refer to Index No. 18108 for conduit and cabinet mounting details.

REDEVELOPED INDEX

POLE NOTES:

1. The pole shaft shall be round or 16 sided or more with a constant taper of 0.14 inches per foot.
2. Pole shaft may be either One or Two sections (with telescopic field splice).
3. Use only circumferential welds at base.
4. Up to two longitudinal seam welds are permitted.
5. Longitudinal seam welds within 6" of circumferential welds shall be complete penetration welds. Longitudinal seam welds on female section of telescopic field splices shall be complete penetration welds for the splice length plus six inches. All other areas, size the partial penetration welds to at least 60% of the pole tube thickness.
6. Perform all welding in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). For additional welding requirements see AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Section 5.15, Welded Connections.
7. Identification tag:
   Furnish each pole with a 2"x4" (max.) aluminum identification tag, secured to pole with stainless steel screws.
   Locate inside pole and visible from handhole.
   Provide Financial Project ID, pole height, manufacturer's name, yield strength (Fy of steel) and pole base wall thickness.
8. Except for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for anchor bolts shall not exceed the bolt diameter plus 1/2".
9. This Design Standard is considered fully detailed and no shop drawings are necessary. Submit Shop Drawings for minor modifications not detailed in the plans.
10. Pole Material Specifications:
    a. Pole:
       ASTM A1011 Grade 50, 55, 60 or 65 (less than 1/4") or
       ASTM A572 Grade 50, 60 or 65 (greater than or equal to 1/4") or
       ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
    b. Steel Plates and Pole Cap: ASTM A36 or ASTM A709 Grade 50.
    c. Weld Metal: E70XX.
    d. Bolts: ASTM F3125, Grade A325, Type 1.
       Nuts: ASTM A563.
       Washers: ASTM F-436.
    e. Handhole frame: ASTM A709 Grade 36 or ASTM A36.
    f. Handhole cover: ASTM A1011 Grade 50, 55, 60 or 65.
    g. Stainless steel screws: AISI Type 316.
    h. Galvanization:
       Nuts, bolts and washers: ASTM F2329.
       All other steel: ASTM A123.
11. Additional wire access holes not shown in this Design Standard shall not exceed 1½" in diameter.
12. 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.

RENUMBERED ALL

CHANGED ALL; 649-020

GENERAL NOTES

10/11/2016 8:34:27 AM

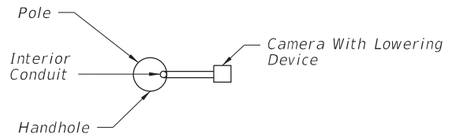
CHANGED ALL 11/01/17

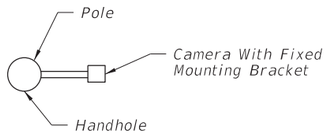
LAST REVISION	REVISION	DESCRIPTION:
~~11/01/16~~		

FDOT FY 2017-18 DESIGN STANDARDS

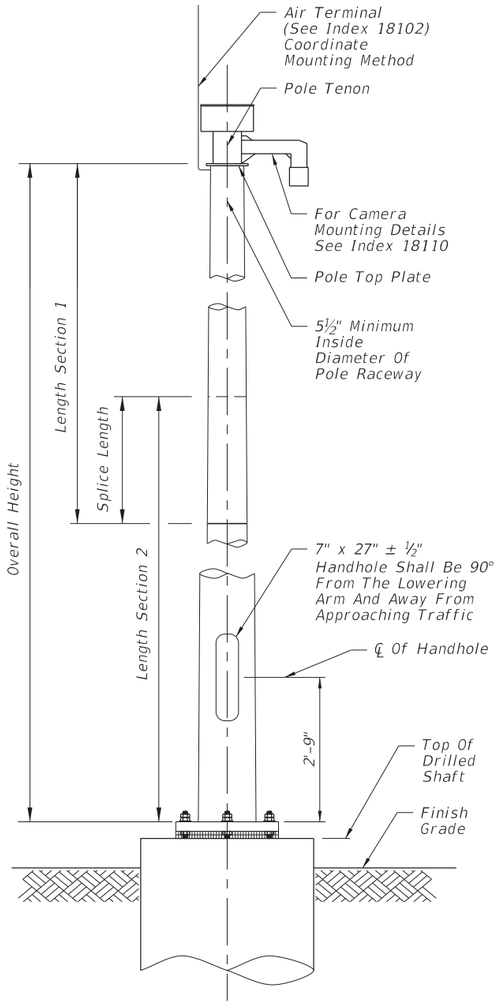
STEEL CCTV POLE

INDEX NO.	SHEET NO.
~~18111~~	~~1 of 4~~



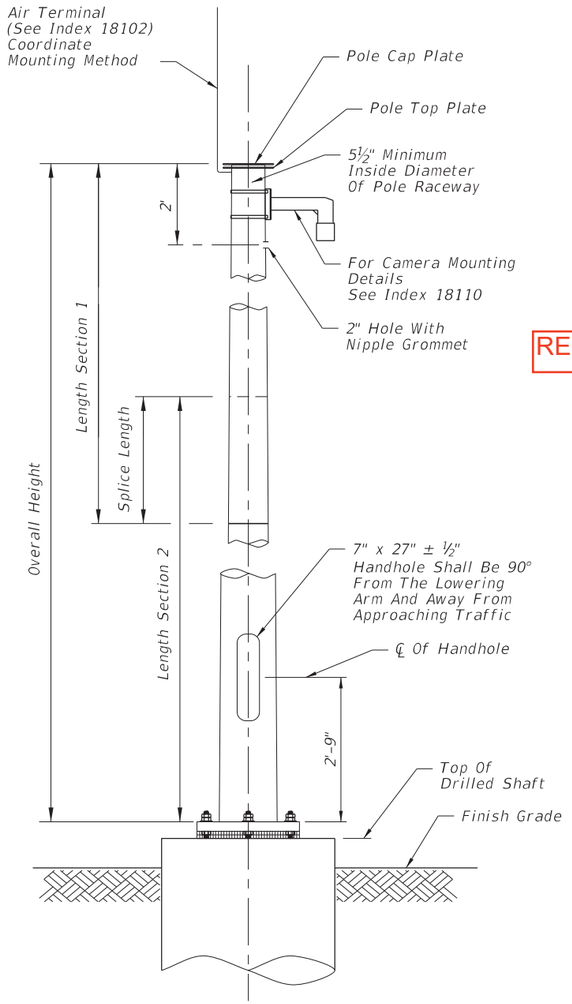


ORIENTATION VIEW



ELEVATION
WITH LOWERING DEVICE

ORIENTATION VIEW



ELEVATION
WITHOUT LOWERING DEVICE

REDEVELOPED INDEX

SHAFT DESIGN TABLE			
Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement
50	4'-0"	11'-0"	(14) #11
55	4'-0"	12'-0"	(14) #11
60	4'-6"	13'-0"	(16) #11
65	4'-6"	13'-0"	(16) #11
70	5'-0"	14'-0"	(18) #11

BASE PLATE AND ANCHOR BOLT DESIGN TABLE							
Pole Overall Height (ft)	Base Plate Diameter (in.)	Base Plate Thickness (in.)	Anchor Bolt Circle (in.)	No. Bolts	Anchor Bolt Diameter (in.)	Anchor Bolt Embedment (in.)	Minimum Anchor Bolt Projection (in.)
50	27	2.5	22	6	1.25	31	8.5
55	28	2.5	23	6	1.25	33	8.5
60	33	2.5	27	6	1.5	34	9.5
65	35	2.5	29	6	1.5	35	9.5
70	40	2.5	33	6	1.75	38	10.5

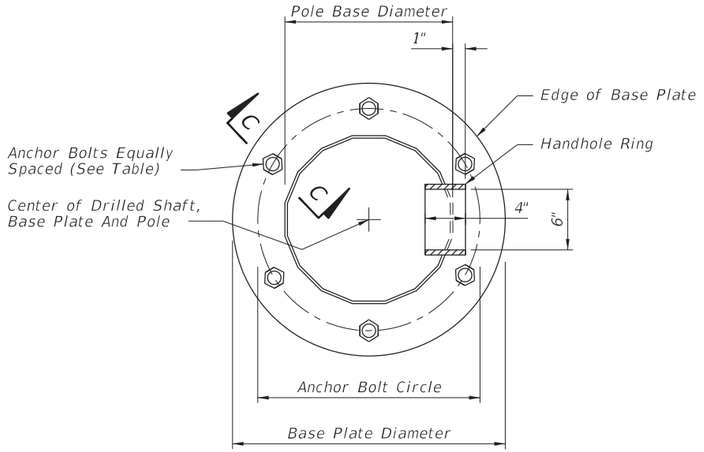
POLE DESIGN TABLE*							
	Section 1 (Top)			Section 2 (Bottom)			Joint
Pole Overall Height (ft)	Length	Wall Thickness (in.)	Base Dia. (in.)	Length	Wall Thickness (in.)	Base Dia. (in.)	Minimum Splice Length (in)
50	---	---	---	50'-0"	0.25	17	---
	25'-0"	0.25	14	28'-0"	0.25	17	27
55	30'-0"	0.25	15	28'-0"	0.3125	18	30
60	35'-0"	0.25	18	29'-0"	0.3125	21	33
65	33'-0"	0.25	19	36'-0"	0.3125	23	33
70	38'-0"	0.25	22	36'-0"	0.3125	26	39

* Diameter Measured Flat to Flat

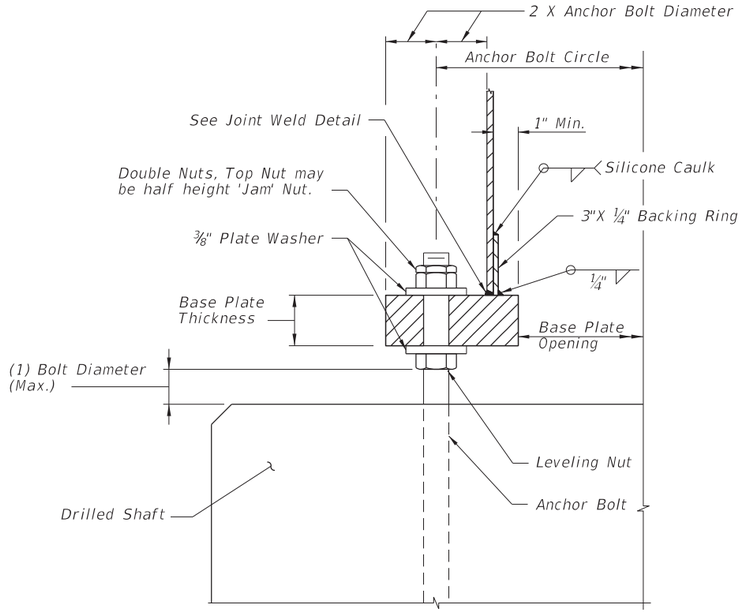
POLE DESIGN TABLES

10/11/2016 8:34:30 AM

LAST REVISION	REVISION	DESCRIPTION:			
~~11/01/16~~			FDOT FY 2017-18 DESIGN STANDARDS	STEEL CCTV POLE	INDEX NO. ~~18111~~	SHEET NO. ~~2 of 4~~



SECTION A-A



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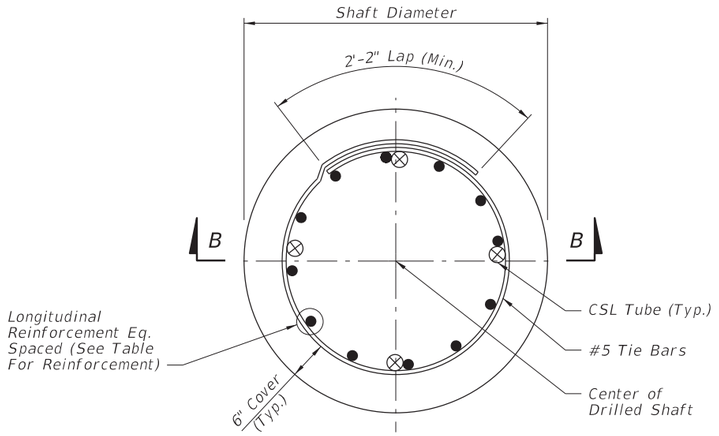
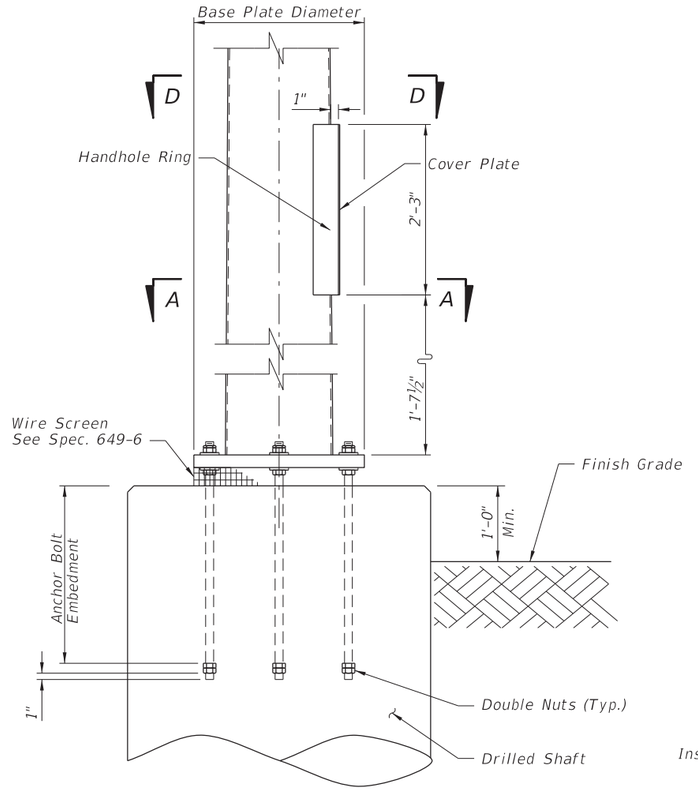


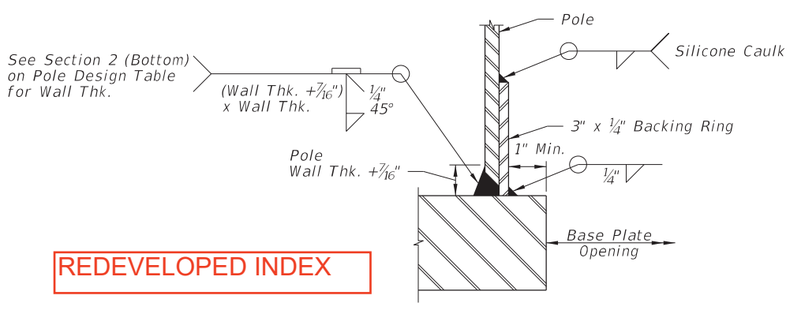
FOUNDATION PLAN

(Anchor Bolts and Conduits Not Shown)



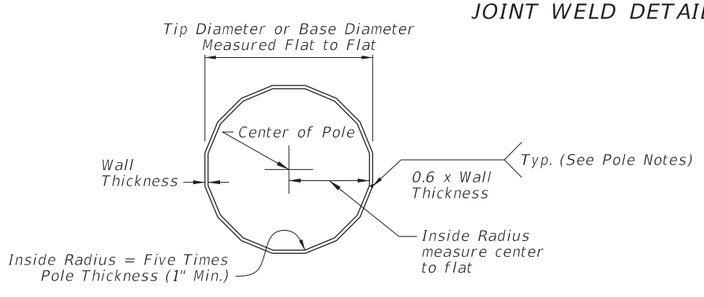
BASE PLATE AND ANCHORAGE ELEVATION

(Conduits, Reinforcement, and CSL Tubes Not Shown)



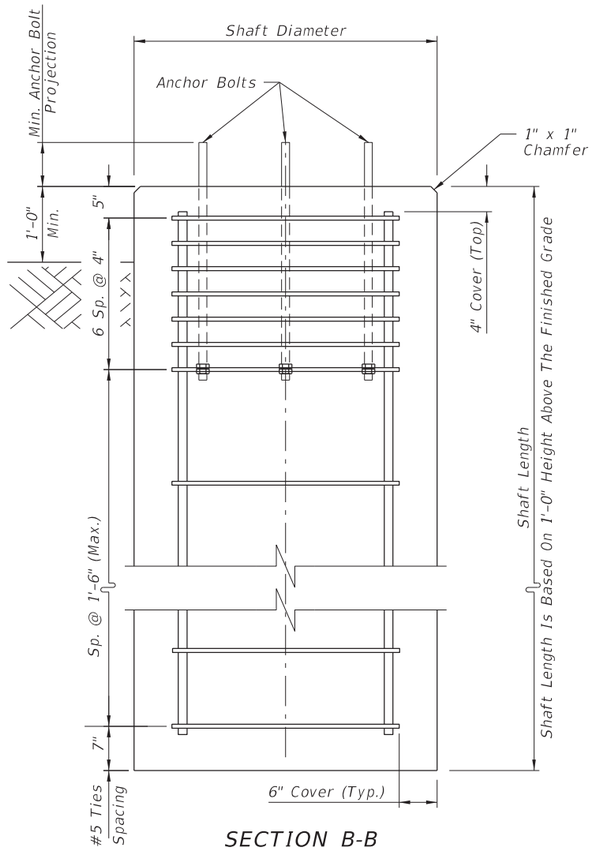
REDEVELOPED INDEX

JOINT WELD DETAIL



SECTION D-D

(16-Sided Pole Shown, 18-Sided and Round Pole Similar)



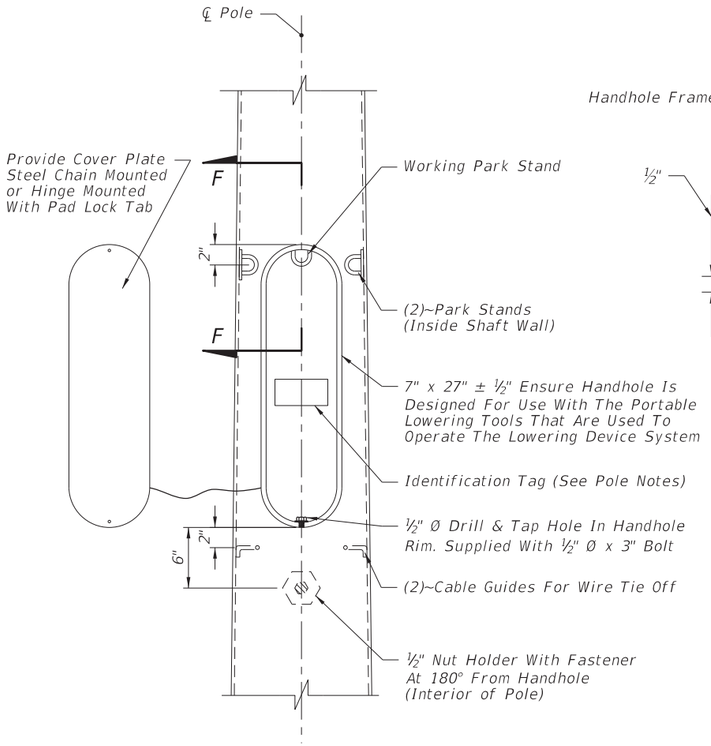
SECTION B-B

(Conduits and CSL Tubes Not Shown)

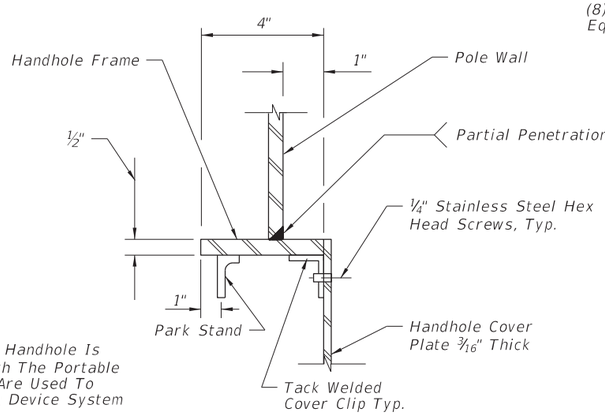
BASE PLATE AND FOUNDATION DETAILS

10/11/2016 8:34:34 AM

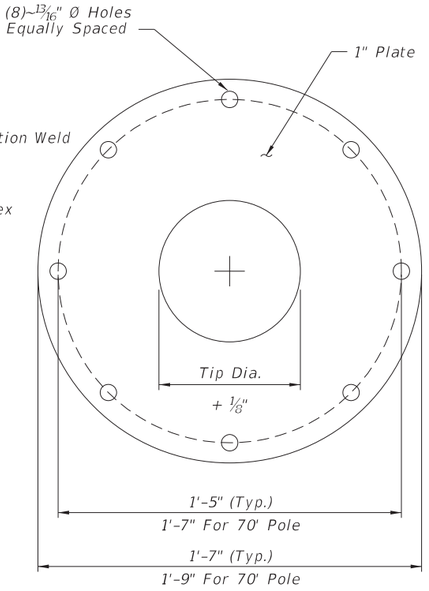
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2017-18 DESIGN STANDARDS	STEEL CCTV POLE	INDEX NO.	SHEET NO.
~~11/01/16~~					~~18111~~	~~3 of 4~~



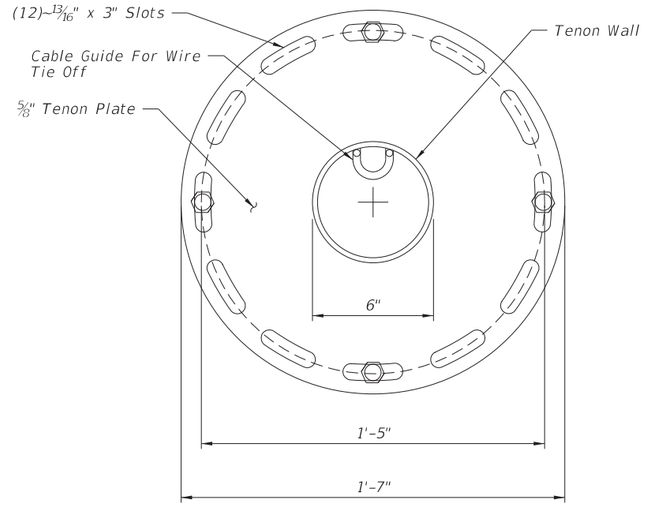
HANDHOLE DETAIL



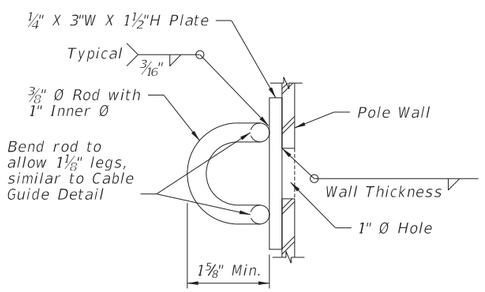
SECTION F-F



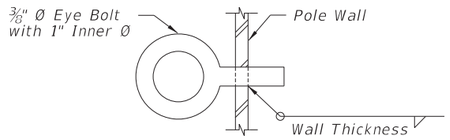
POLE TOP PLATE DETAIL



SECTION E-E

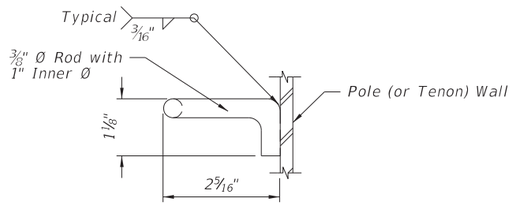


ROD OPTION



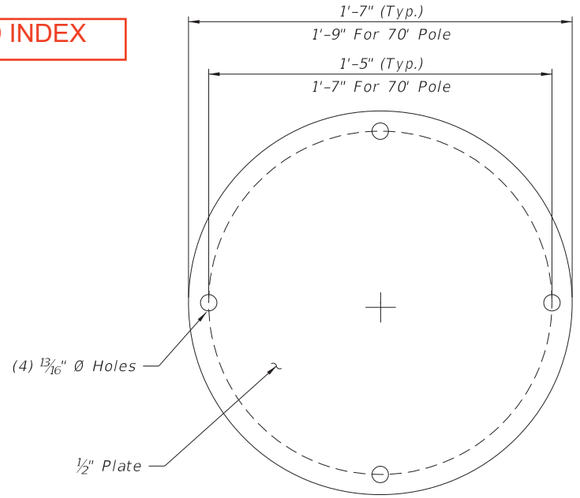
EYE BOLT OPTION

PARK STAND DETAIL



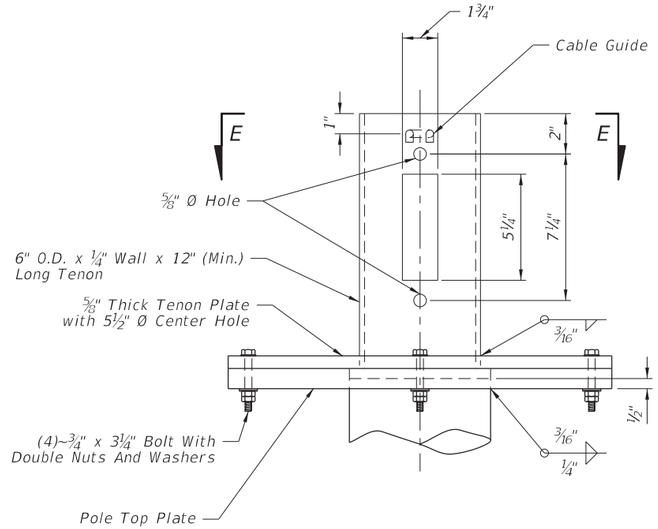
CABLE GUIDE DETAIL

REDEVELOPED INDEX



POLE CAP PLATE

(POLE WITHOUT LOWERING DEVICE)



POLE TENON ASSEMBLY DETAIL

(POLE WITH LOWERING DEVICE)

Note: Install all handhole and opening covers prior to shipping. For Poles with Lowering Device, install Pole Cap Plate when Tenon Assembly is not installed.

POLE DETAILS

10/11/2016 8:34:39 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2017-18 DESIGN STANDARDS	STEEL CCTV POLE	INDEX NO.	SHEET NO.
~~11/01/16~~					~~18111~~	~~4 of 4~~

NEW SHEET

POLE TOP DETAILS

NEW SHEET

POLE GROUNDING DETAILS

GENERAL NOTES:

1. Work this Index with Specification 649.

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. Materials:

   B. Pole: ASTM A1011 Grade 50, 55, 60 or 65 (less than 1/4") or ASTM A572 Grade 50, 60 or 65 (greater than or equal to 1/4") or ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield).
   C. Steel Plates and Pole Cap: ASTM A36 or ASTM A709 Grade 50.
   D. Weld Metal: E70XX.
   E. Bolts: ASTM F3125, Grade A325, Type 1.
      Nuts: ASTM A563.
      Washers: ASTM F-436.
   F. Anchor Bolts: ASTM F1554 Grade 55 with ASTM A563 Grade A heavy-hex nuts and plate washers. ASTM F2329 galvanization.
   G. Handhole Frame: ASTM A709 Grade 36 or ASTM A36.
   H. Handhole Cover: ASTM A1011 Grade 50, 55, 60 or 65.
   I. Stainless Steel Screws: AISI Type 316.
   J. Reinforcing Steel: ASTM A615 Grade 60.
   K. Galvanization: Bolts, nuts and washers: ASTM F2329 All other steel: ASTM A123
   L. Concrete: Class IV (Drilled Shaft) for all environment classifications.

4. Pole Faberication:

   A. Provide either a round or 16 sided pole with a constant taper of 0.14 inches per foot
   B. Pole shaft may be either One or Two sections (with telescopic field splice)
   C. Up to two longitudinal seam welds are permitted.
   D. Use only circumferential welds at base.
   E. Use a complete penetraton weld for longitudinal seam welds within 6" of circumferential welds. Use a complete penetraton weld on female section of telescopic field splices, splice length plus six inches. All other areas, size the partial penetration welds to at least 60% of the pole tube thickness.
   F. Perform all welding in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). For additional welding requirements see AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Section 5.15, Welded Connections.
   G. Provide a 2"x4" (Max.) aluminum identification tag on the pole. Secured tag to pole with stainless steel screws. Locate the tag inside pole and visible from handhole. Include the following information:

      Financial Project ID,
      Pole Height
      Manufacturer's Name
      Yield Strength (Fy of Steel)
      Pole Base Wall Thickness

   H. Except for Anchor Bolts, all bolt hole diameters are equal to the bolt diameter plus 1/16", prior to galvanizing. Hole diameters for anchor bolts are not exceed the bolt diameter plus 1/2".

5. Pole Installation:

   A. Do not install additional wire access holes (not shown in this Index) with a diameter that exceeds 1½" in diameter.
   B. Install Anchor Bolts in accordance with Specification 649-5
   C. Cable Supports: Electrical Cable Guides and Eyebolts.

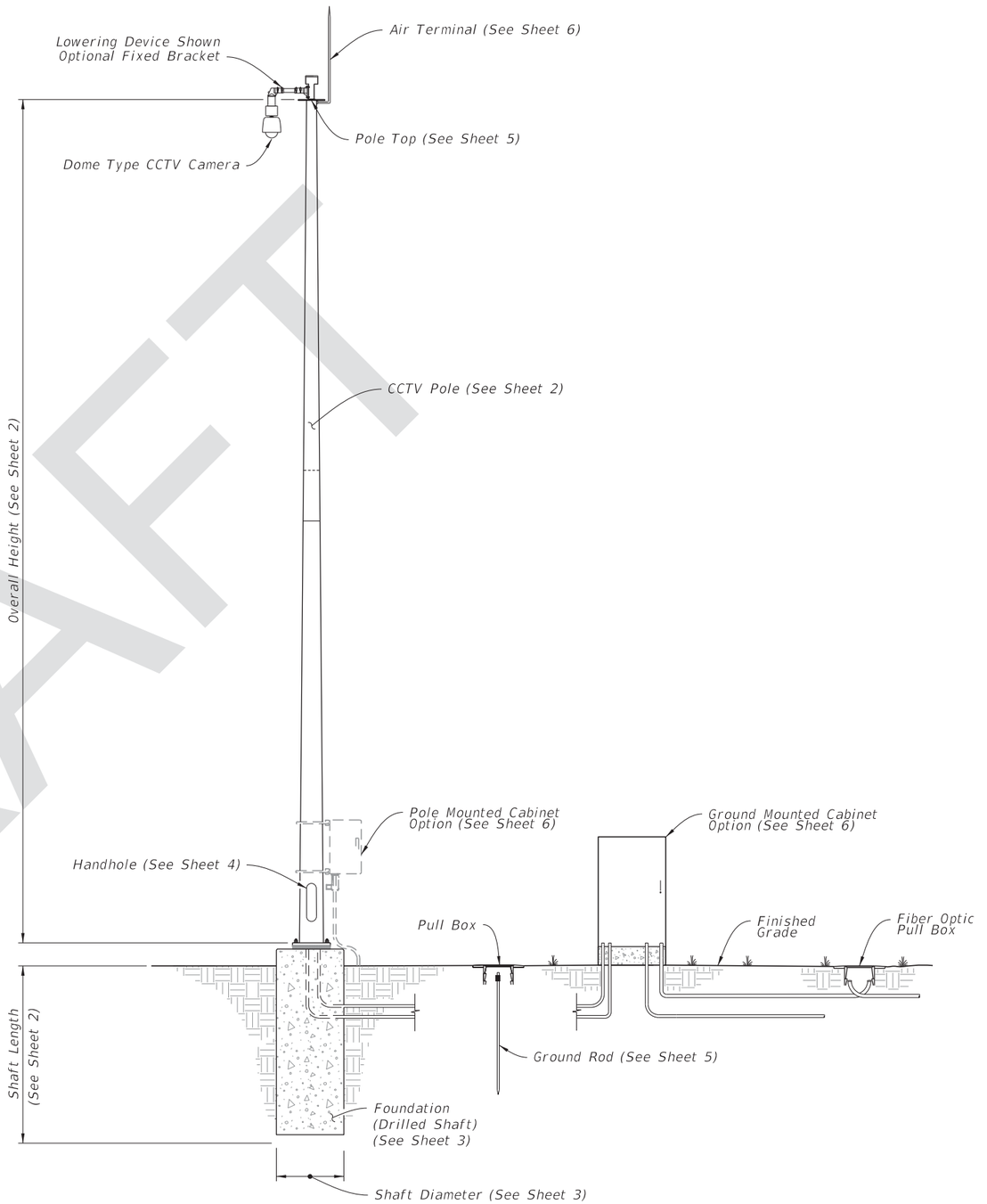
      a. Locate top and bottom cable guides within the pole aligned with each other.
      b. Position one cable guide 2" below the handhole.
      c. Position other cable guide 1" directly below the top of the tenon.
      d. Position Park Stands 2" below the top of the handhole.

6. 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.

7. Lowering Device Installation:

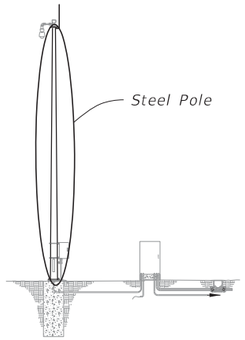
   A. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.
   B. Mount lowering device perpendicular to the 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 stands, etc.) with lowering device manufacturer.



STEEL CCTV POLE ASSEMBLY

8/28/2017 8:00:38 AM

LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	INDEX	SHEET
11/01/17					649-020	1 of 6

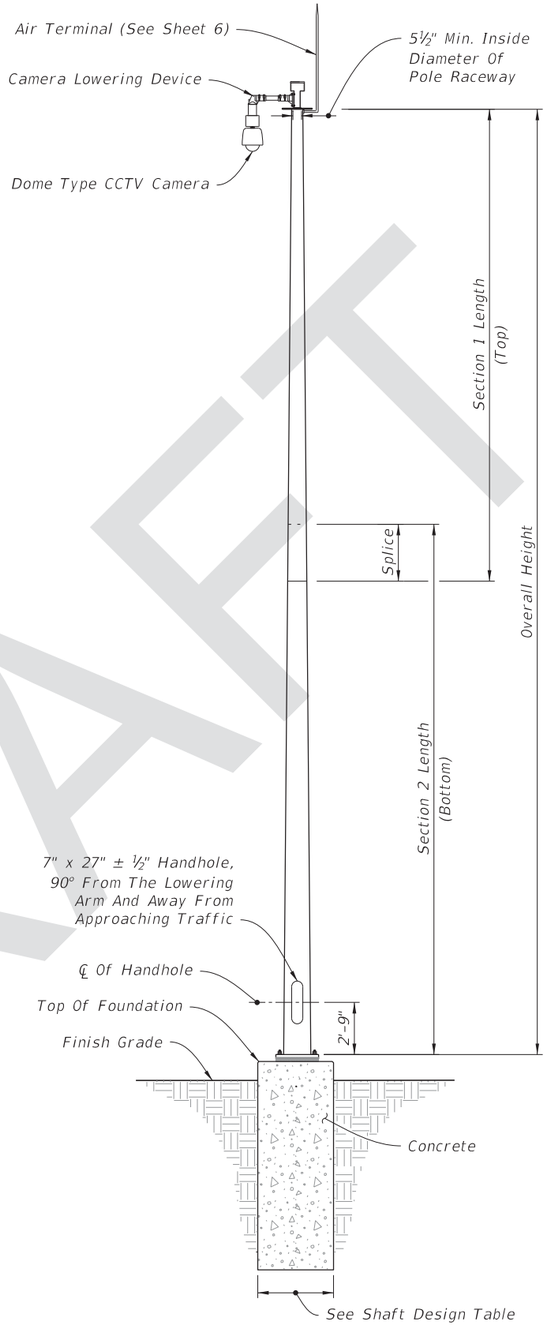


ASSEMBLY

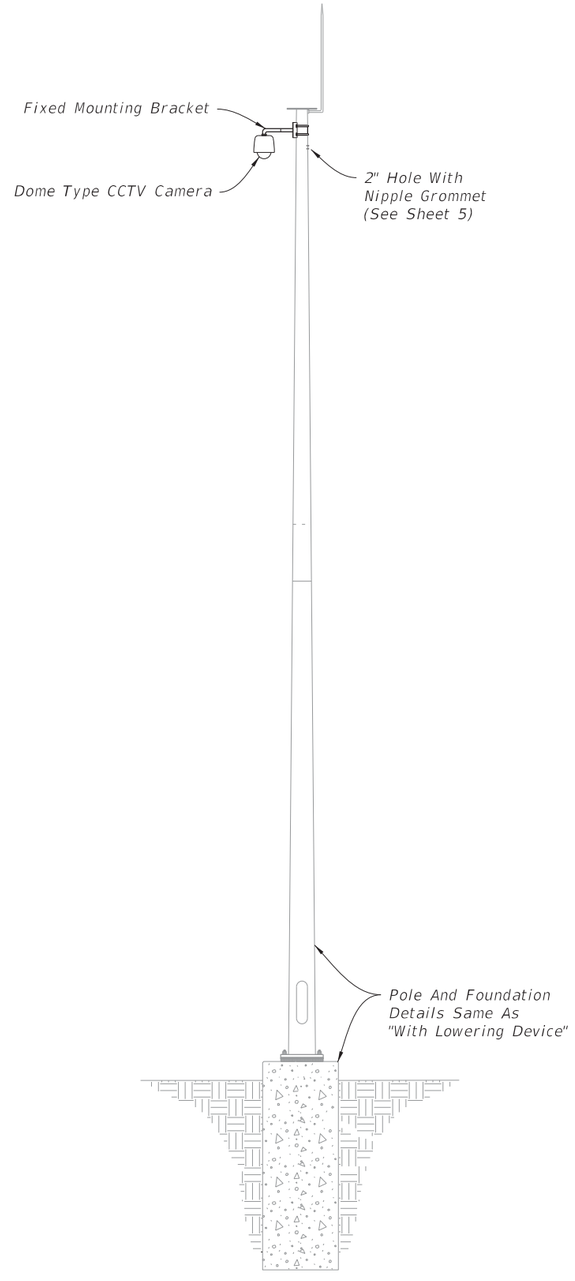
SHAFT DESIGN TABLE			
Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement
50	4'-0"	11'-0"	(14) #11
55	4'-0"	12'-0"	(14) #11
60	4'-6"	13'-0"	(16) #11
65	4'-6"	13'-0"	(16) #11
70	5'-0"	14'-0"	(18) #11

BASE PLATE AND ANCHOR BOLT DESIGN TABLE							
Pole Overall Height (ft)	Base Plate Diameter (in.)	Base Plate Thickness (in.)	Anchor Bolt Circle (in.)	Number of Bolts	Anchor Bolt Diameter (in.)	Anchor Bolt Embedment (in.)	Minimum Anchor Bolt Projection (in.)
50	27	2.5	22	6	1.25	31	8.5
55	28	2.5	23	6	1.25	33	8.5
60	33	2.5	27	6	1.50	34	9.5
65	35	2.5	29	6	1.50	35	9.5
70	40	2.5	33	6	1.75	38	10.5

POLE DESIGN TABLE							
Pole Overall Height (ft)	Section 1 (Top)			Section 2 (Bottom)			Joint
	Length	Wall Thickness (in.)	Base Diameter (in.)	Length	Wall Thickness (in.)	Base Diameter (in.)	Minimum Splice Length (in.)
50	---	---	---	50'-0"	0.25	17	---
	25'-0"	0.25	14	28'-0"	0.25	17	27
55	30'-0"	0.25	15	28'-0"	0.3125	18	30
60	35'-0"	0.25	18	29'-0"	0.3125	21	33
65	33'-0"	0.25	19	36'-0"	0.3125	23	33
70	38'-0"	0.25	22	36'-0"	0.3125	26	39



CAMERA LOWERING DEVICE



FIXED MOUNTING BRACKET

ELEVATION

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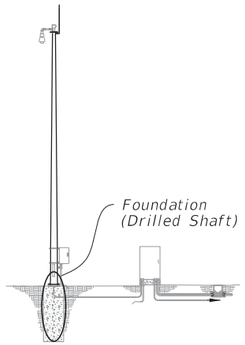
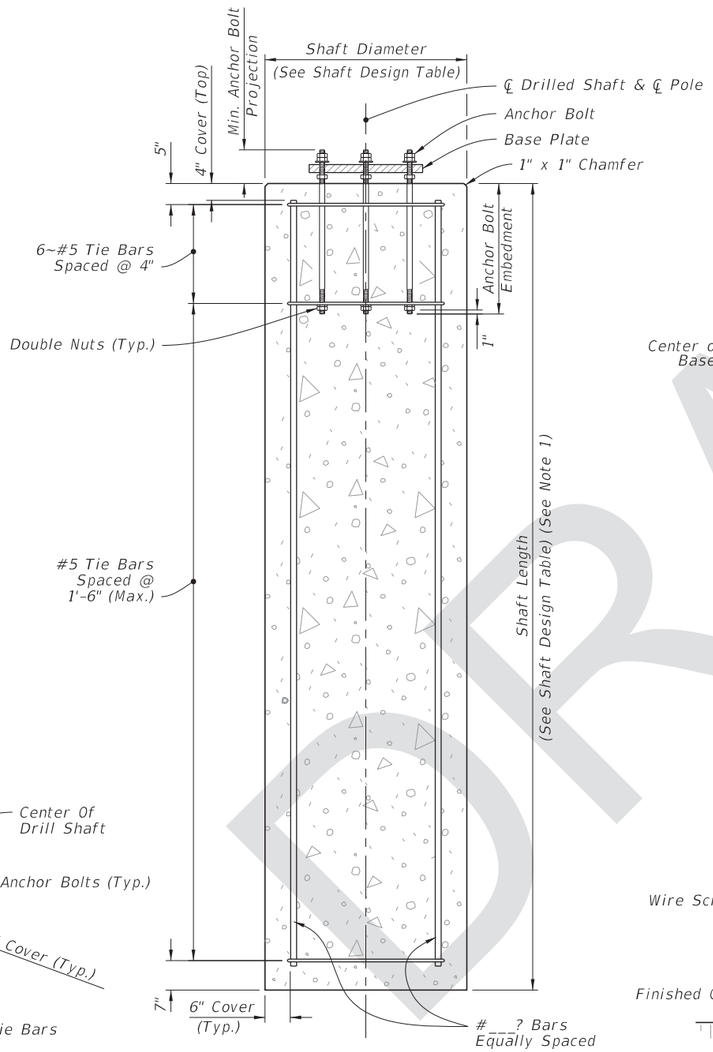
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	INDEX	SHEET
11/01/17					649-020	2 of 6



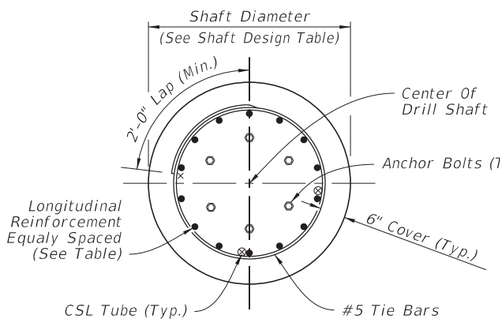
ASSEMBLY

NOTES:

1. Shaft Length is based on 1'-0" height above the finished grade.
2. Double nuts: Bottom nut may be half height 'Jam' Nut. Provide individual nut covers (Not Shown) for each bolt.
3. Conduit and CSL Tubes not shown for clarity.

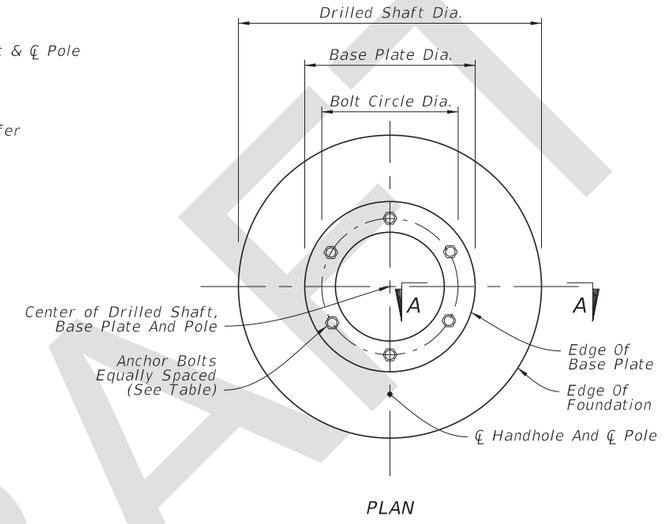


ELEVATION

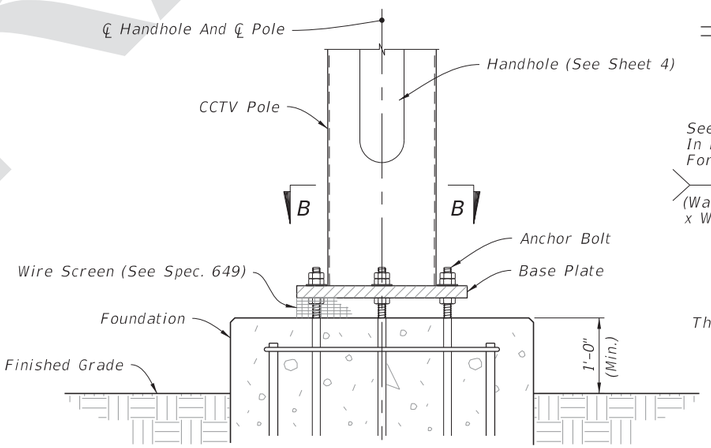


PLAN

FOUNDATION

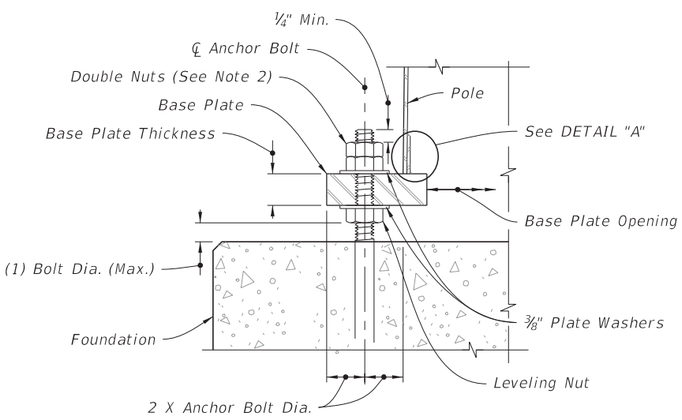


PLAN

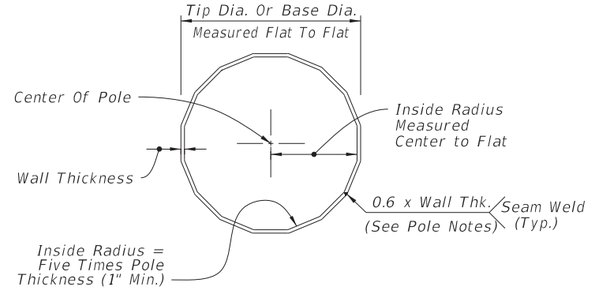


ELEVATION

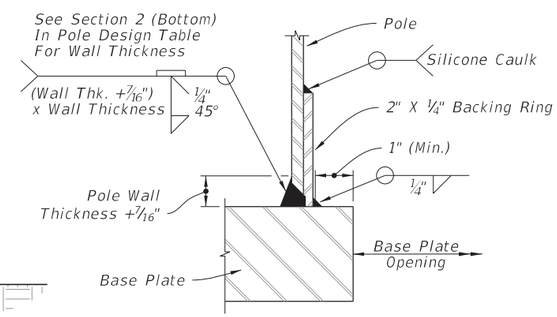
BASE PLATE



SECTION A-A



SECTION B-B

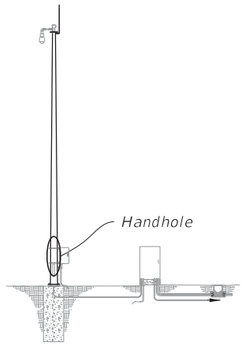


JOINT WELD DETAIL

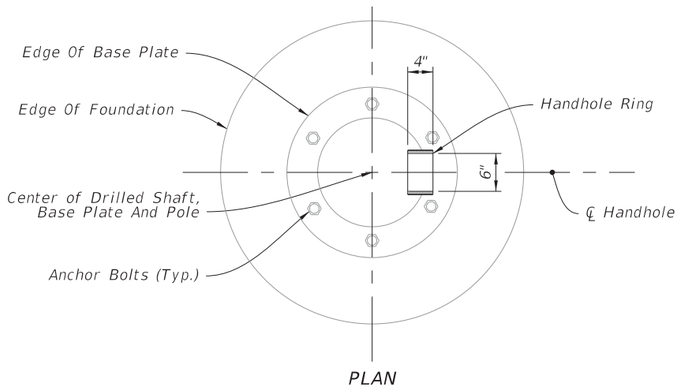
DETAIL "A"

8:00:39 AM
8/28/2017

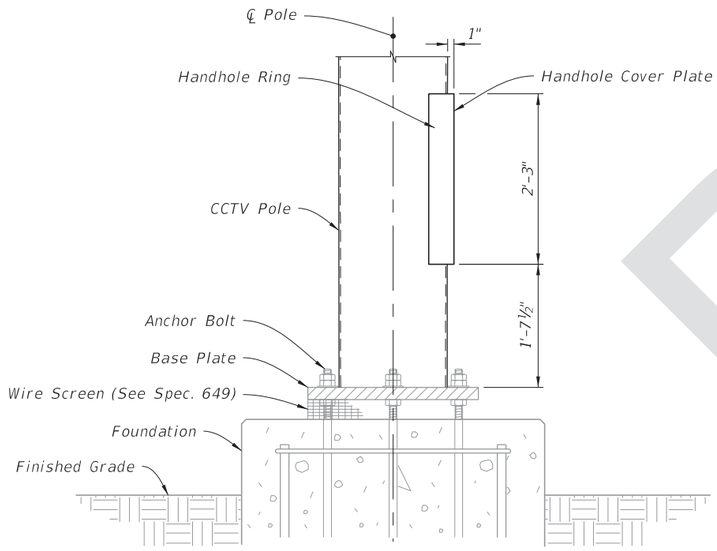
LAST REVISION	REVISION	DESCRIPTION:	FDOT	FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	INDEX	SHEET
11/01/17						649-020	3 of 6



ASSEMBLY

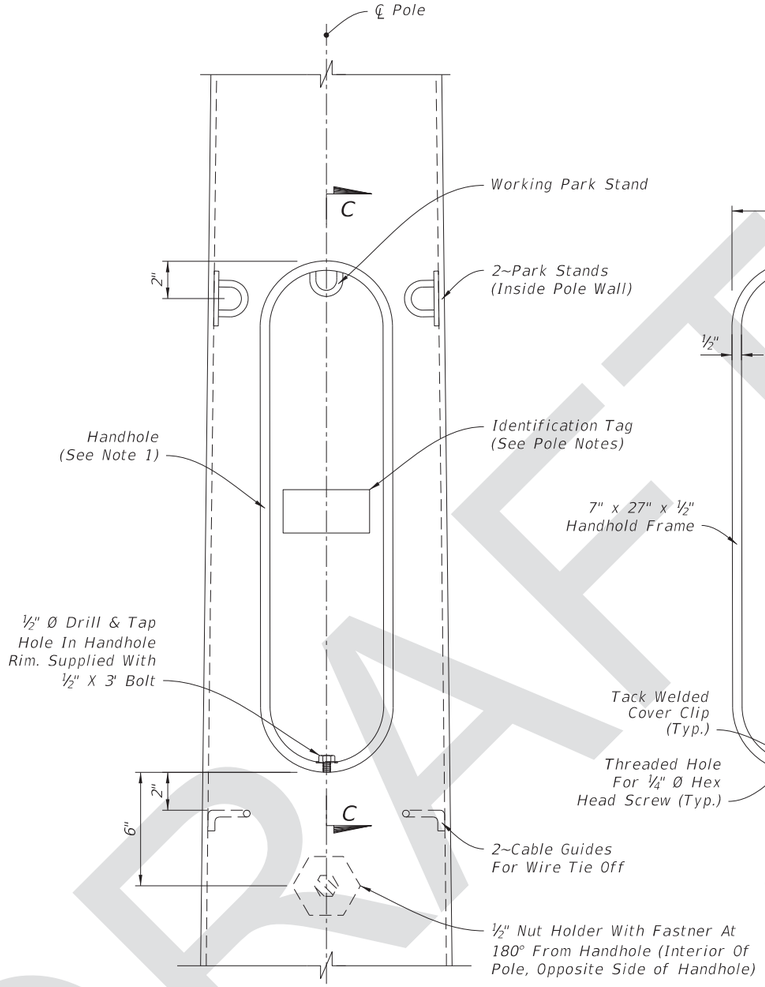


PLAN

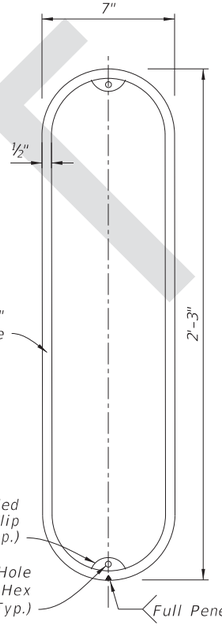


ELEVATION

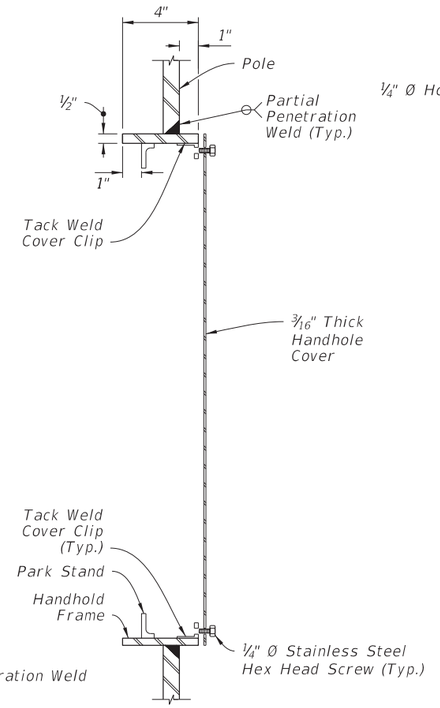
HANDHOLE LOCATION



ELEVATION



FRAME



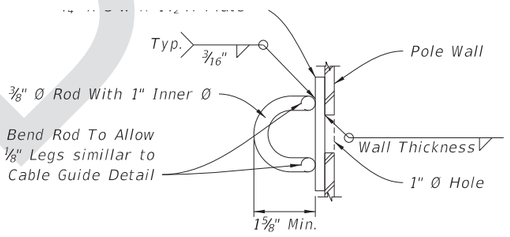
SECTION C-C

COVER PLATE

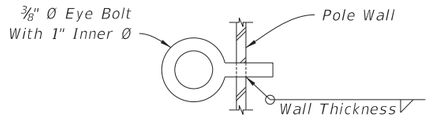
NOTE:

To secure the cover plate, install a steel chain from the cover to the pole or by mounting the cover with hinges and install a pad lock tab.

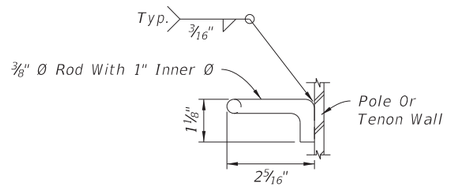
HANDHOLE DETAIL



Rod Option



Eye Bolt Option

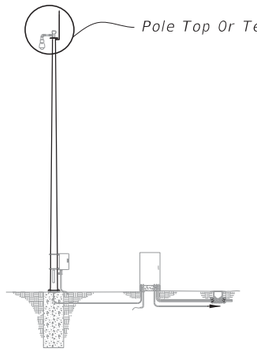


PARK STAND DETAILS

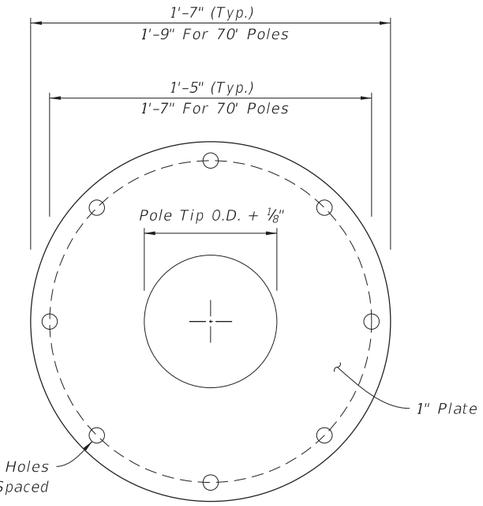
CABLE GUIDE DETAIL

8/28/2017 8:00:40 AM

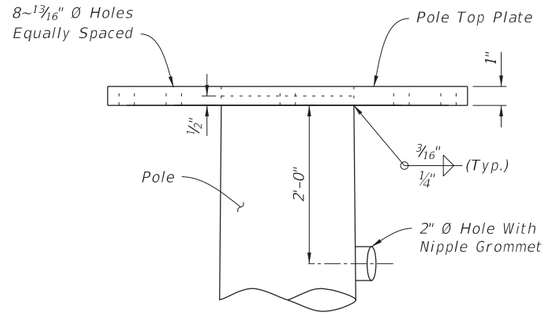
LAST REVISION	REVISION	DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	INDEX	SHEET
11/01/17					649-020	4 of 6



ASSEMBLY

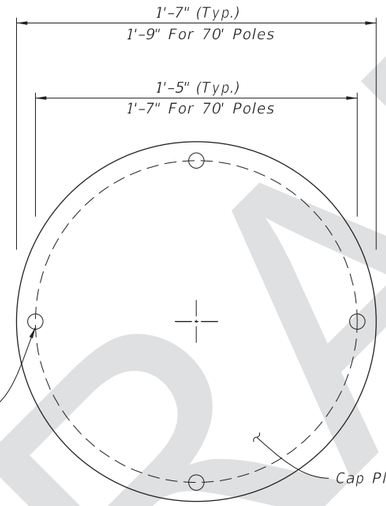


PLAN VIEW

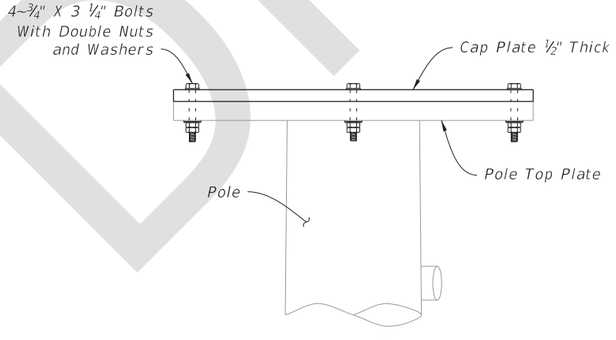


ELEVATION

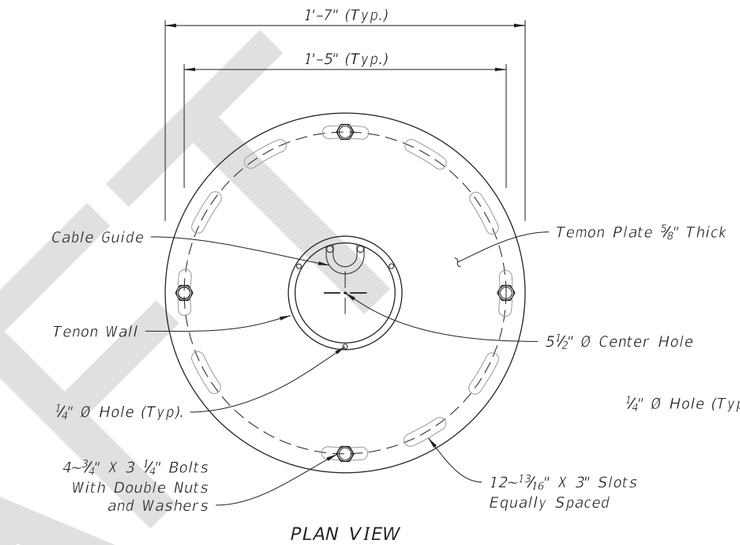
POLE TOP PLATE



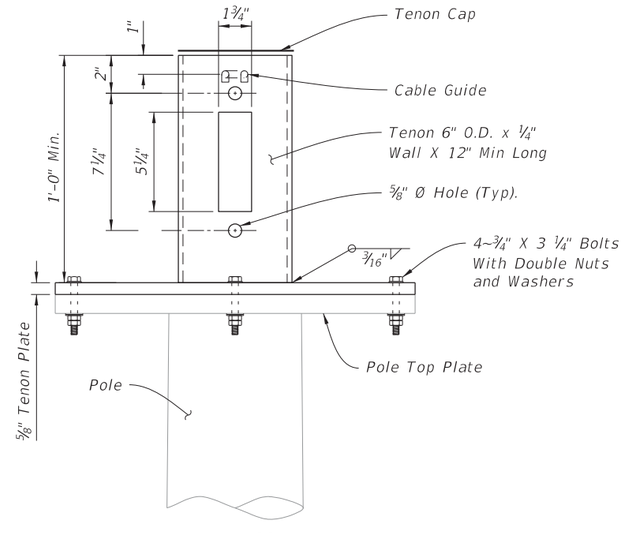
PLAN VIEW



ELEVATION
CAP PLATE DETAIL

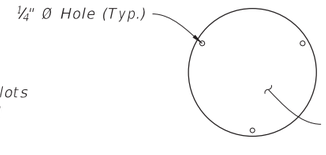


PLAN VIEW

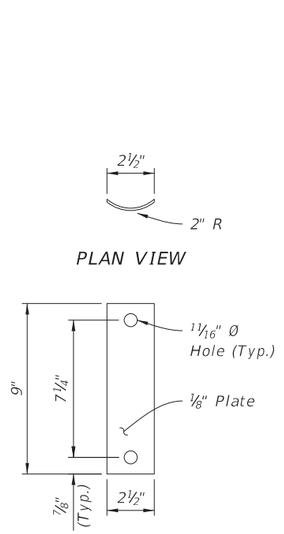


ELEVATION
LOWERING DEVICE TENON

POLE TOP DETAIL



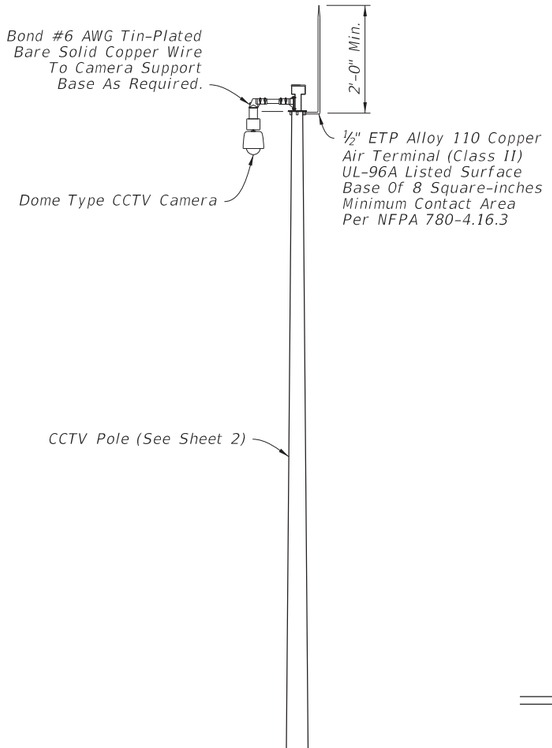
TENON CAP

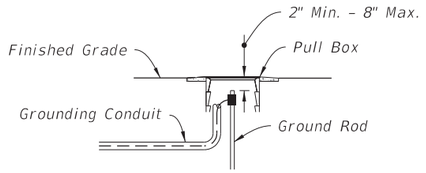


TENON COVER

8/28/2017 8:00:40 AM

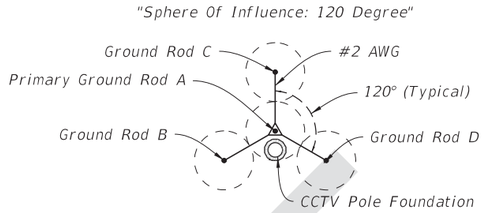
LAST REVISION 11/01/17	REVISION	DESCRIPTION:	FDOT FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	INDEX 649-020	SHEET 5 of 6



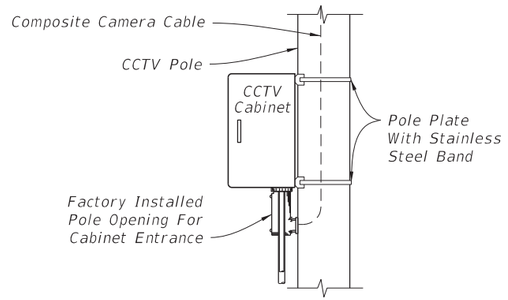


(Pole Mounted Cabinet Configuration Shown)

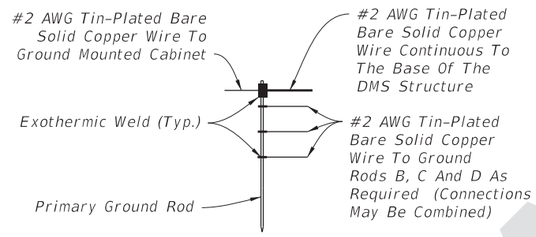
DETAIL "B"



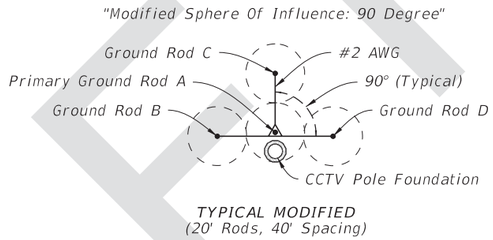
TYPICAL
(20' Rods, 40' Spacing)



SIDE VIEW



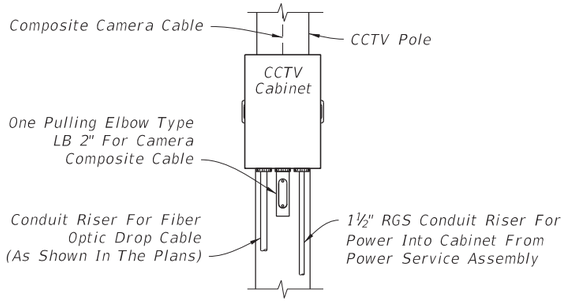
DETAIL "C"



TYPICAL MODIFIED
(20' Rods, 40' Spacing)

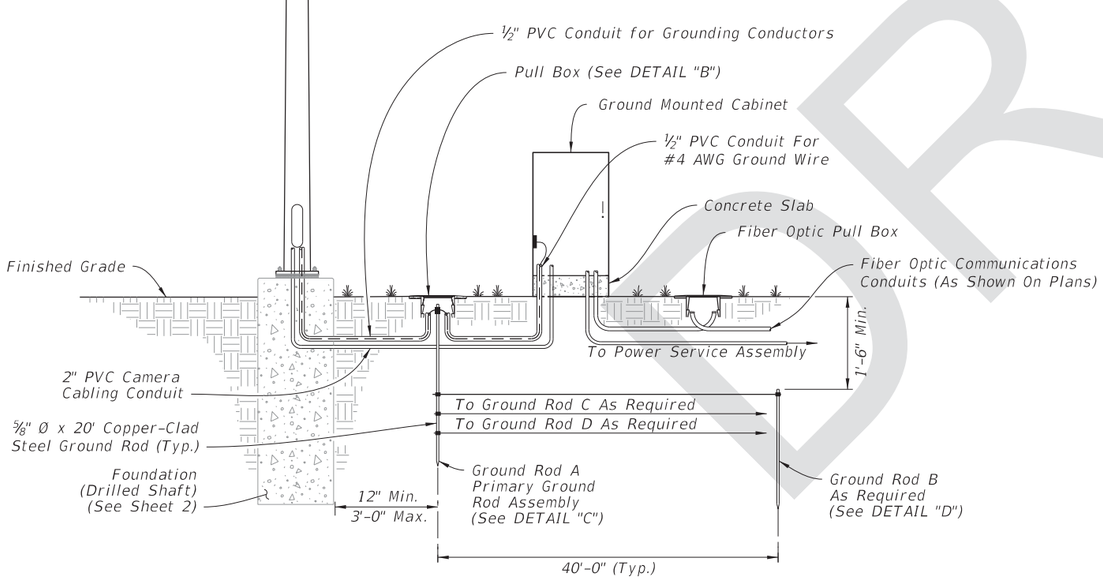
GROUND ROD ARRAY PLACEMENT

DETAIL "D"

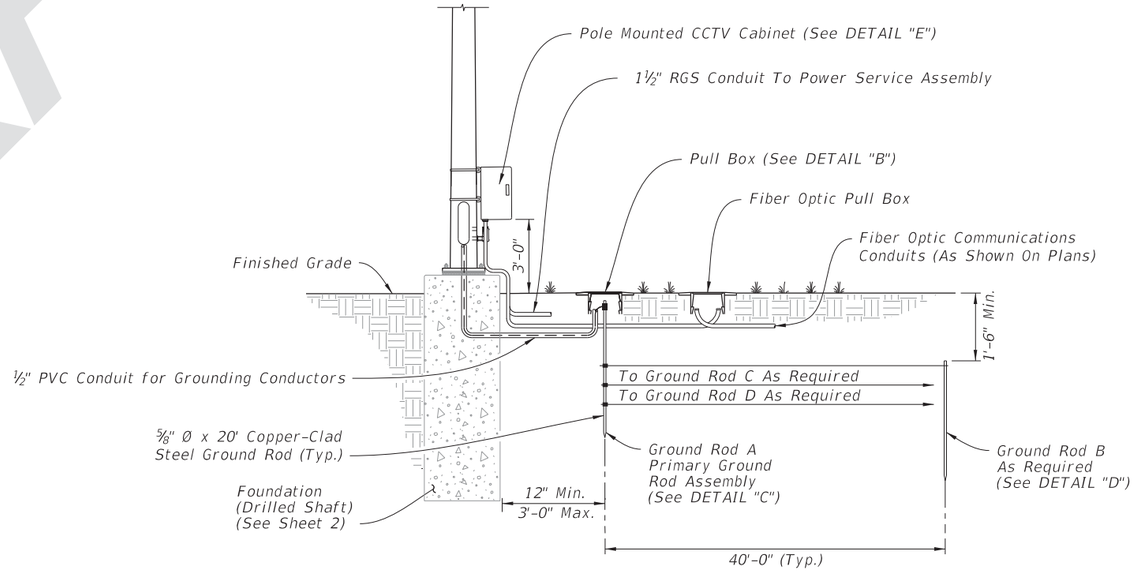


FRONT VIEW

DETAIL "E"



GROUND MOUNTED CABINET



POLE MOUNTED CABINET

STEEL CCTV POLE GROUNDING

8/28/2017 8:00:41 AM

LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/17			FDOT FY 2018-19 STANDARD PLANS	STEEL CCTV POLE	649-020	6 of 6