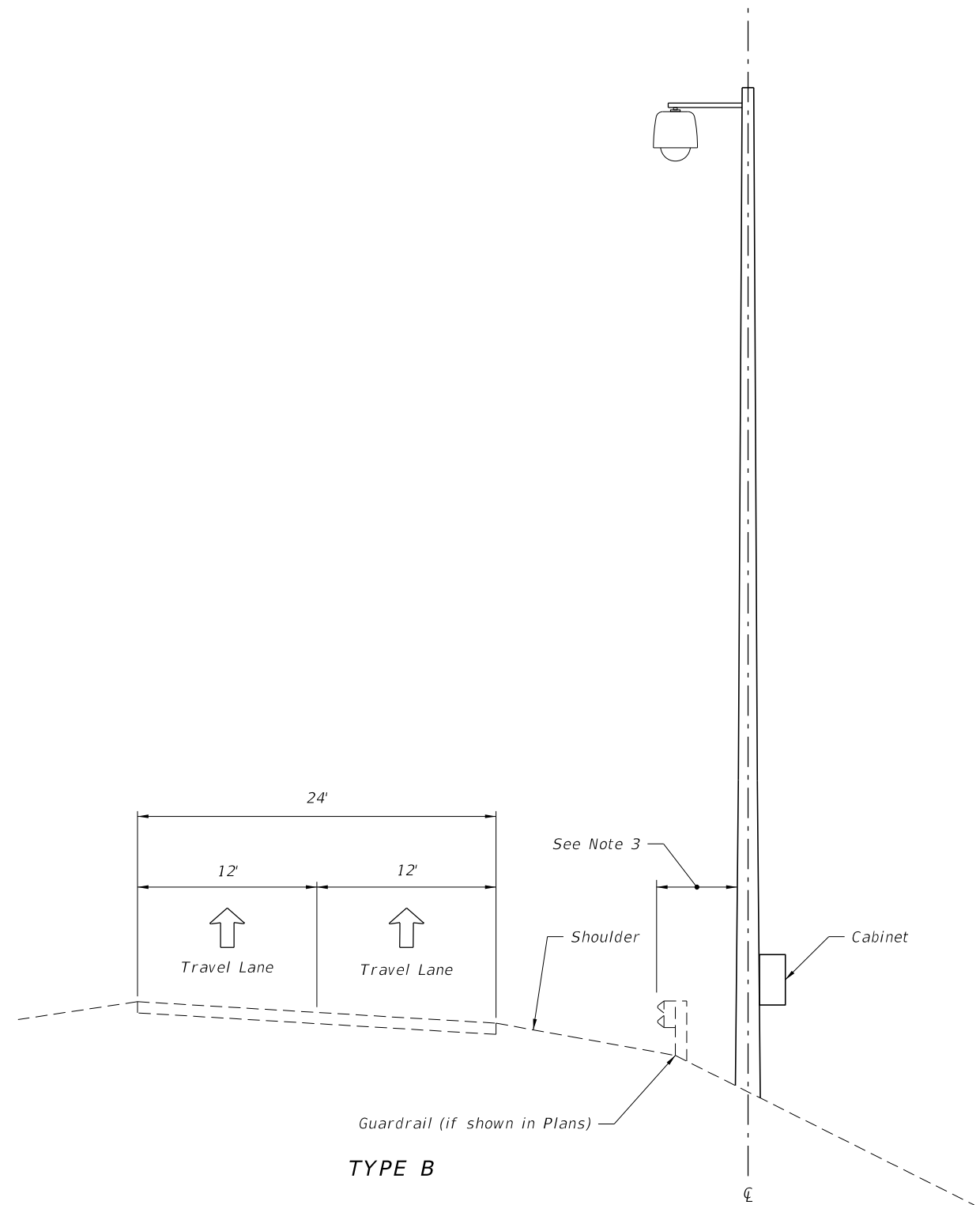


TYPE A



TYPE B

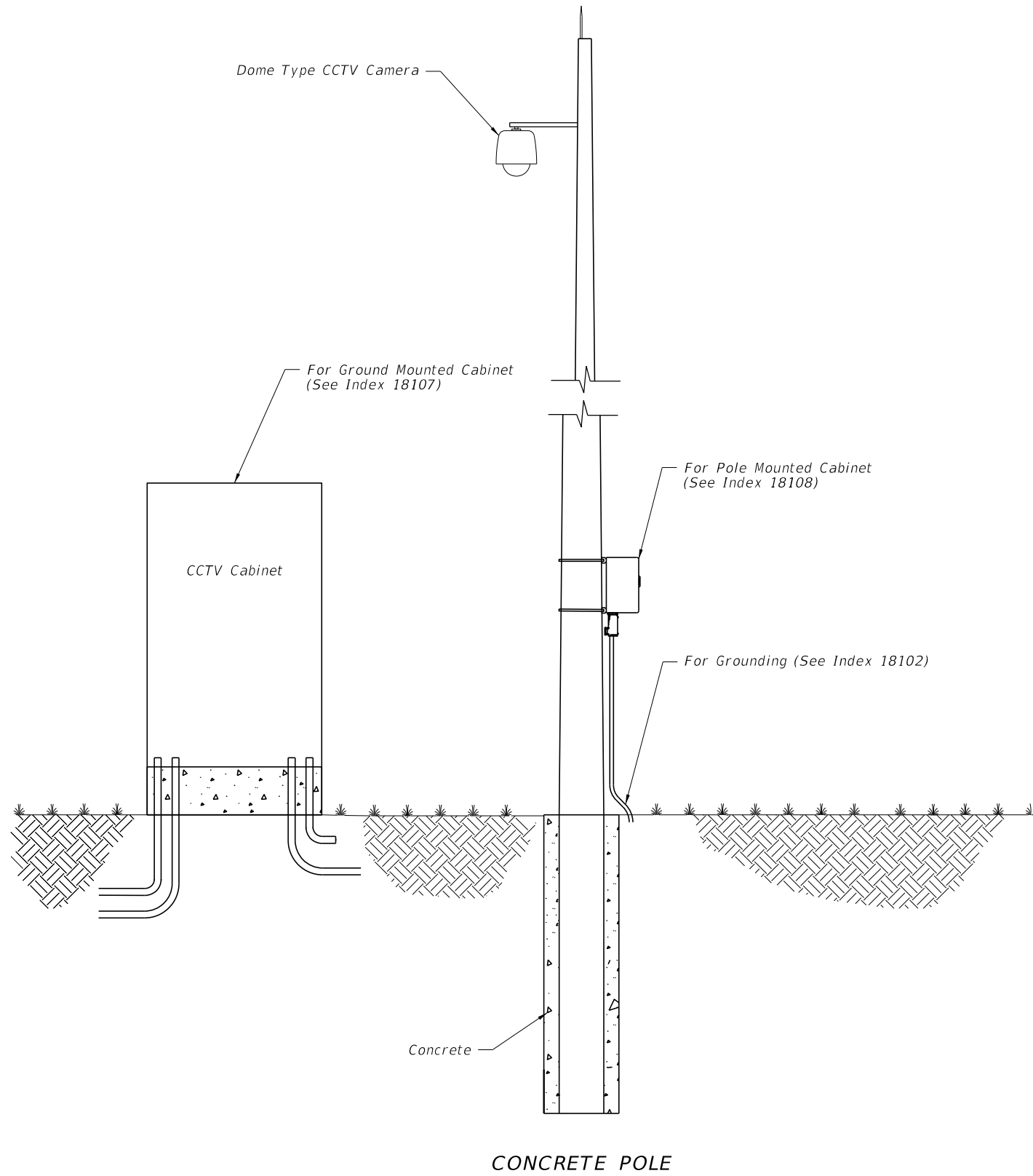
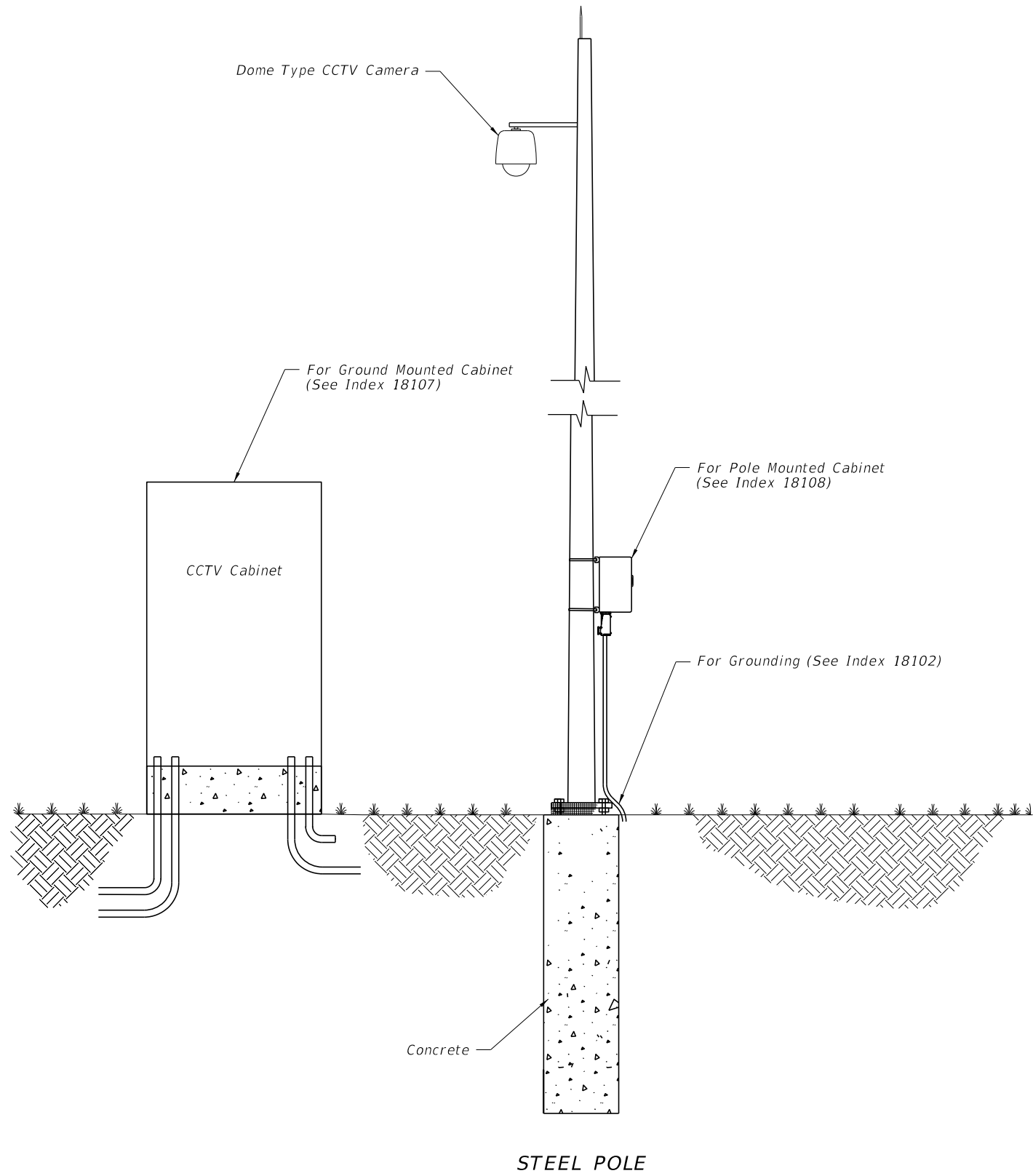
**GENERAL NOTES:**

1. For location where pole foundation is lower than roadway, mount CCTV cabinet on pole.
2. Install CCTV Pole at locaton shown in Plans.
3. If included, install guardrail at location shown in Plans and in accordance with Design Standards Index 400.

11/30/2015 11:36:56 AM

LAST REVISION	DESCRIPTION:
07/01/15	

11/30/2015 11:36:56 AM



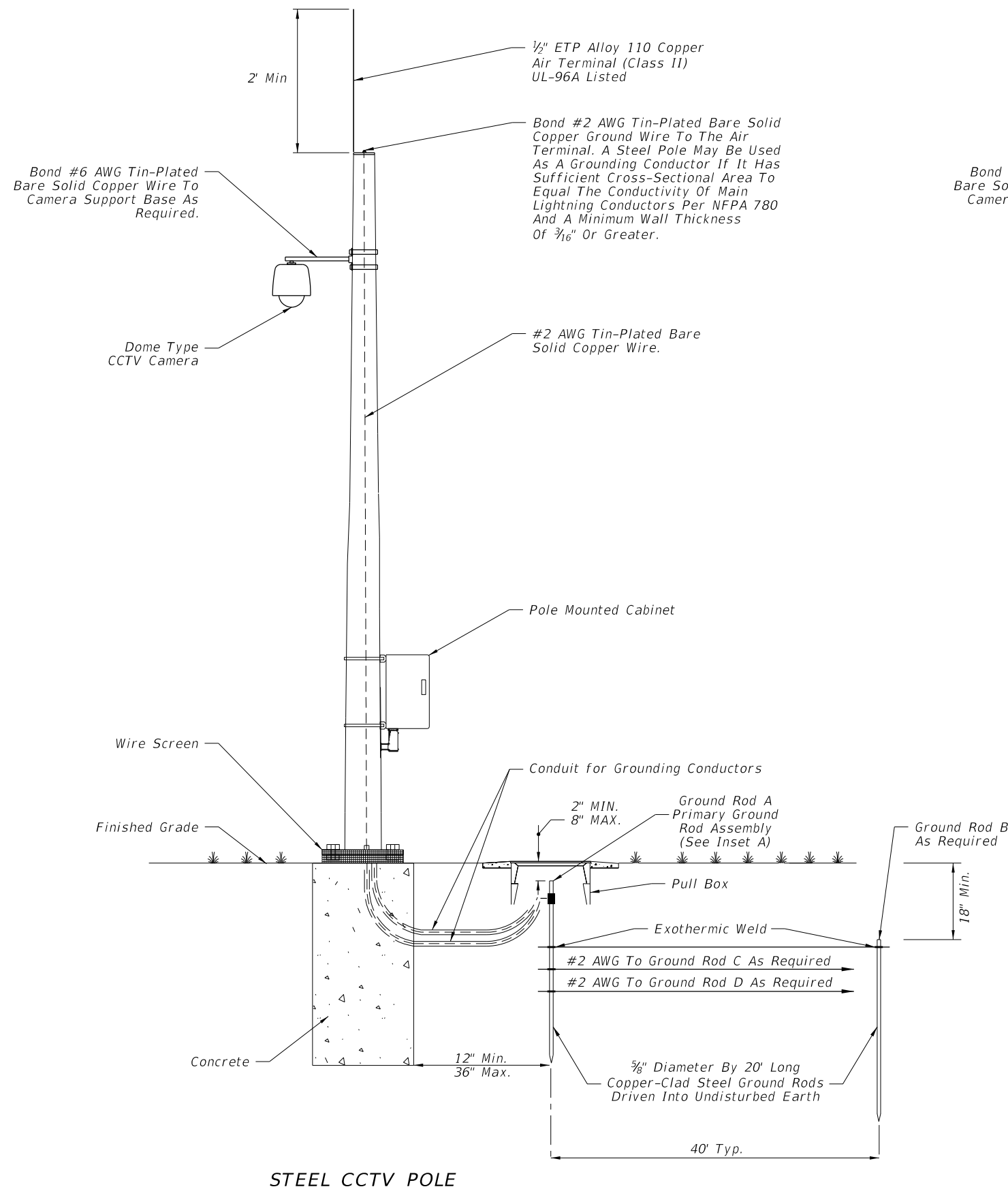
LAST REVISION 07/01/13	DESCRIPTION:
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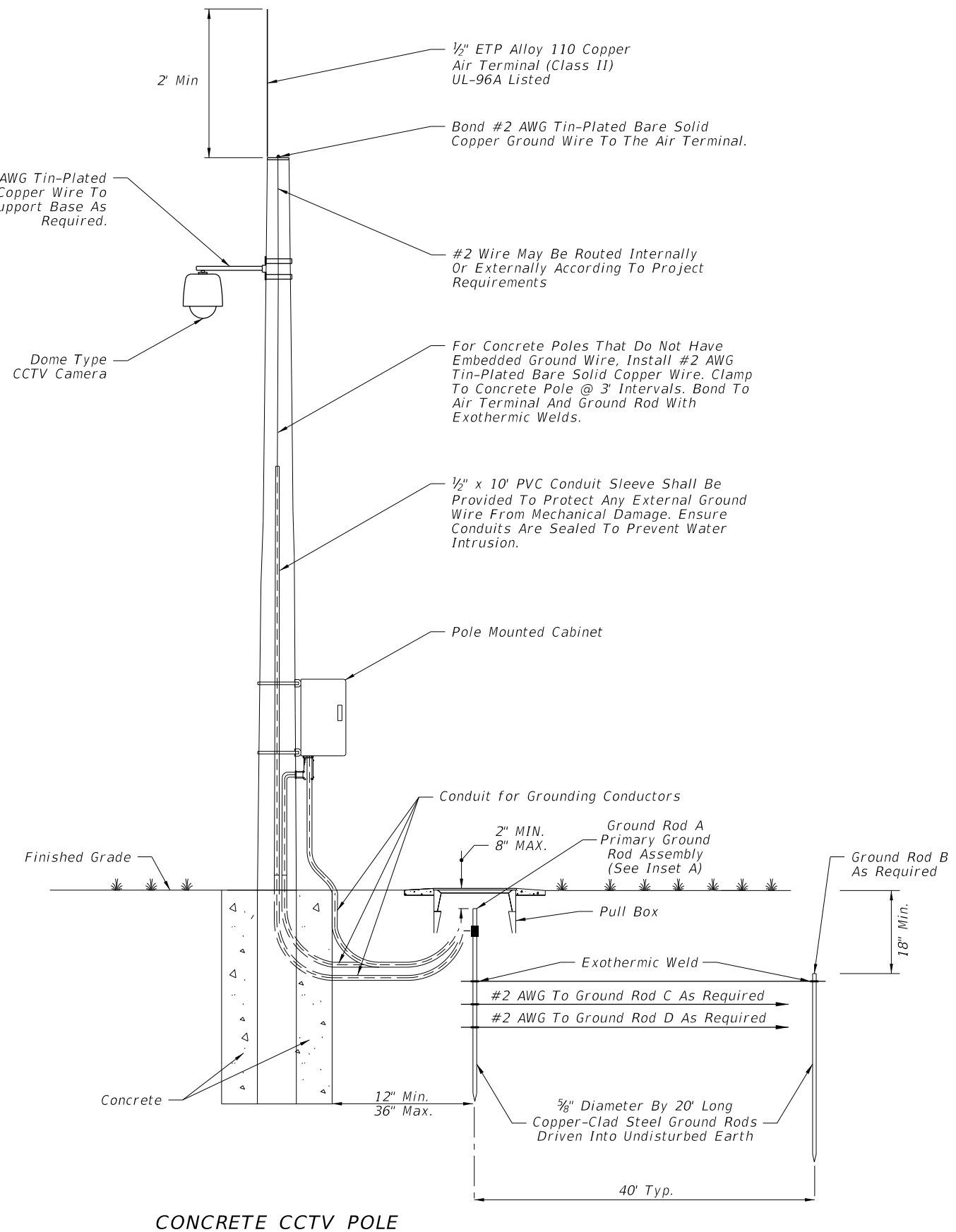
TYPICAL CCTV SITE

INDEX NO.  
18101

SHEET NO.  
1 of 1



STEEL CCTV POLE



CONCRETE CCTV POLE

11/30/2015 11:36:57 AM

LAST REVISION  
07/01/14

REVISION

DESCRIPTION:

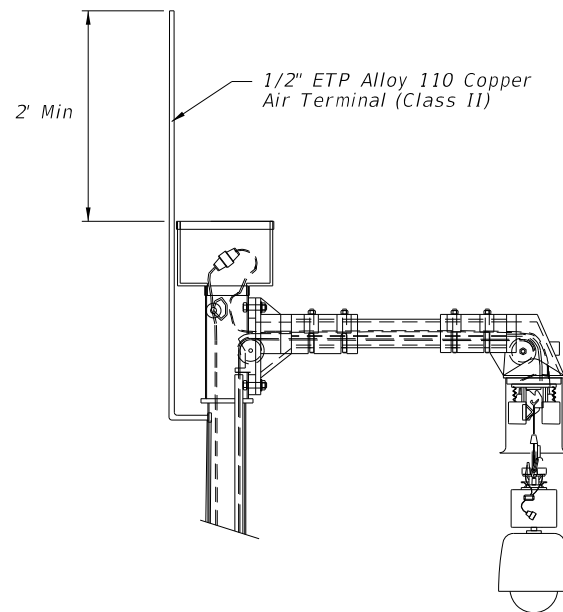


FY 2016-17  
DESIGN STANDARDS

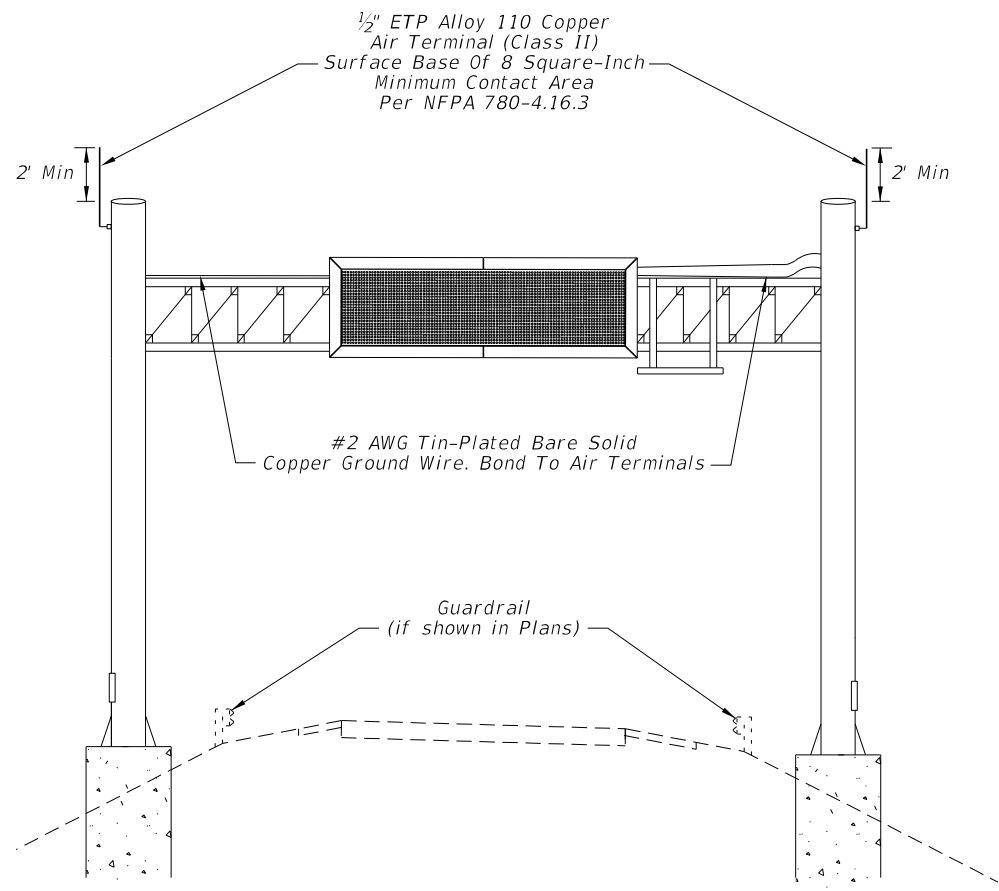
GROUNDING AND LIGHTNING PROTECTION

INDEX NO.  
18102

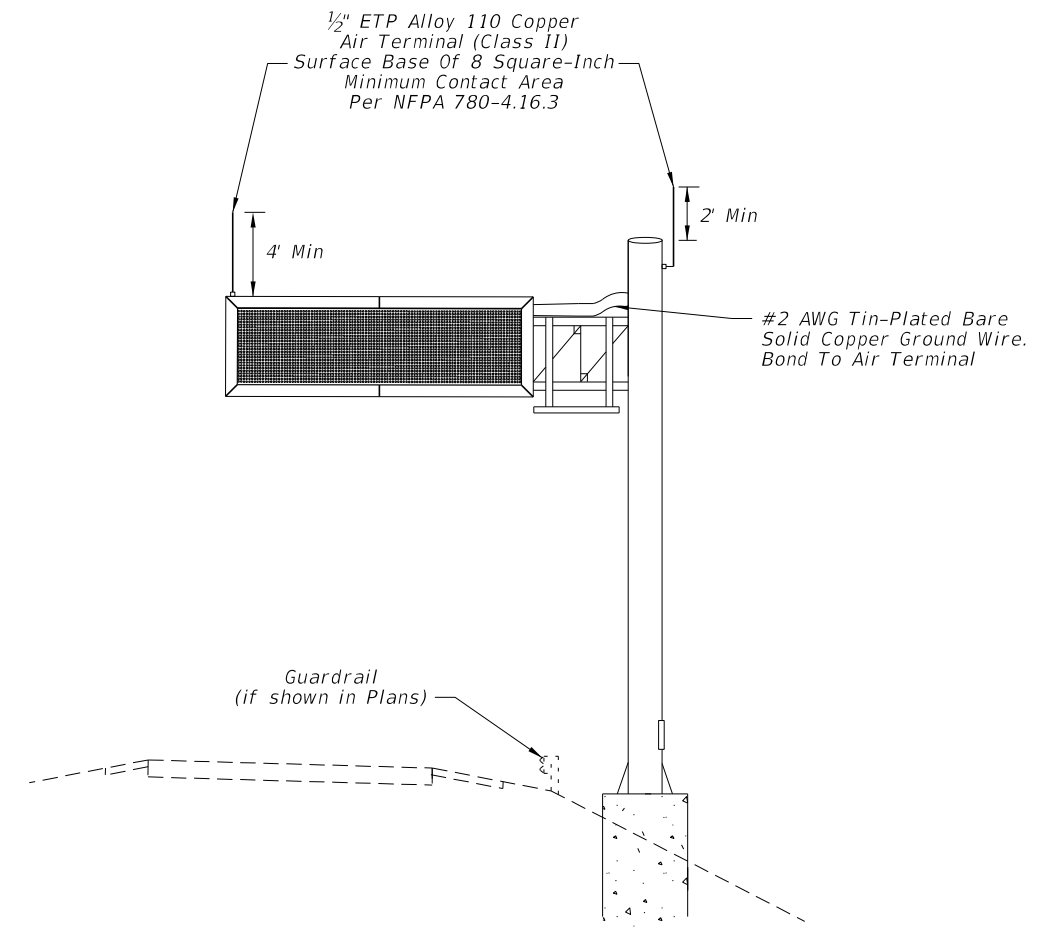
SHEET NO.  
1 of 4



AIR TERMINAL PLACEMENT  
(Lowering Device Pole)




AIR TERMINAL PLACEMENT  
(Span DMS)

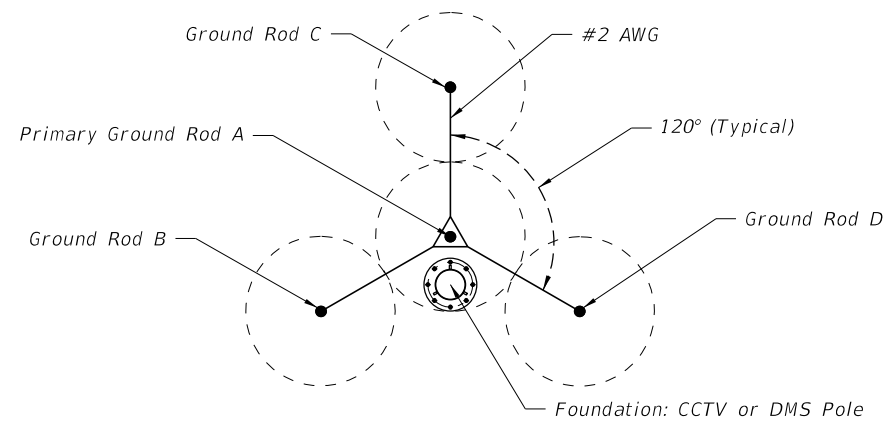


AIR TERMINAL PLACEMENT  
(Cantilever DMS)

11/30/2015 11:36:58 AM

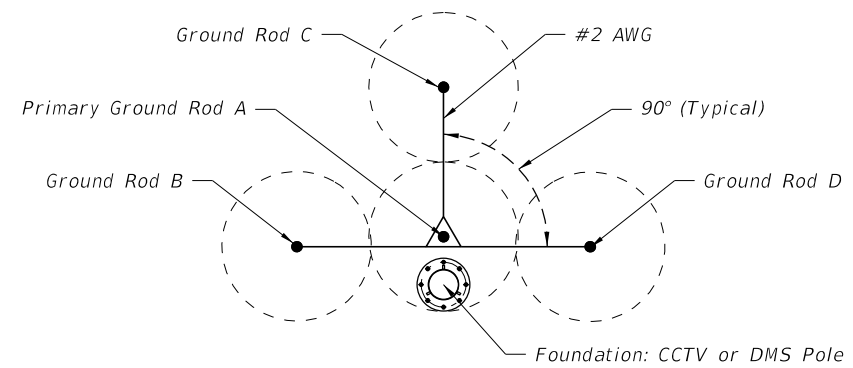
LAST REVISION 07/01/15	REVISION DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	GROUNDING AND LIGHTNING PROTECTION	INDEX NO. 18102	SHEET NO. 2 of 4
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"Sphere Of Influence: 120 Degree"

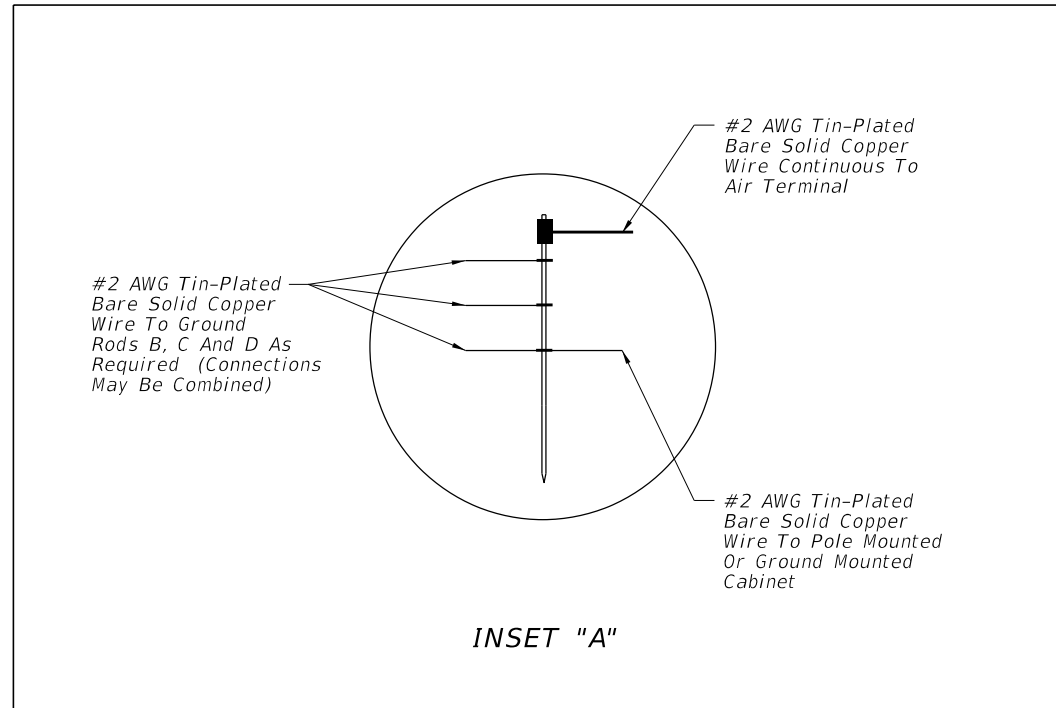


**GROUND ROD ARRAY PLACEMENT  
(Typical)  
20' RODS, 40' SPACING**

"Modified Sphere Of Influence: 90 Degree"




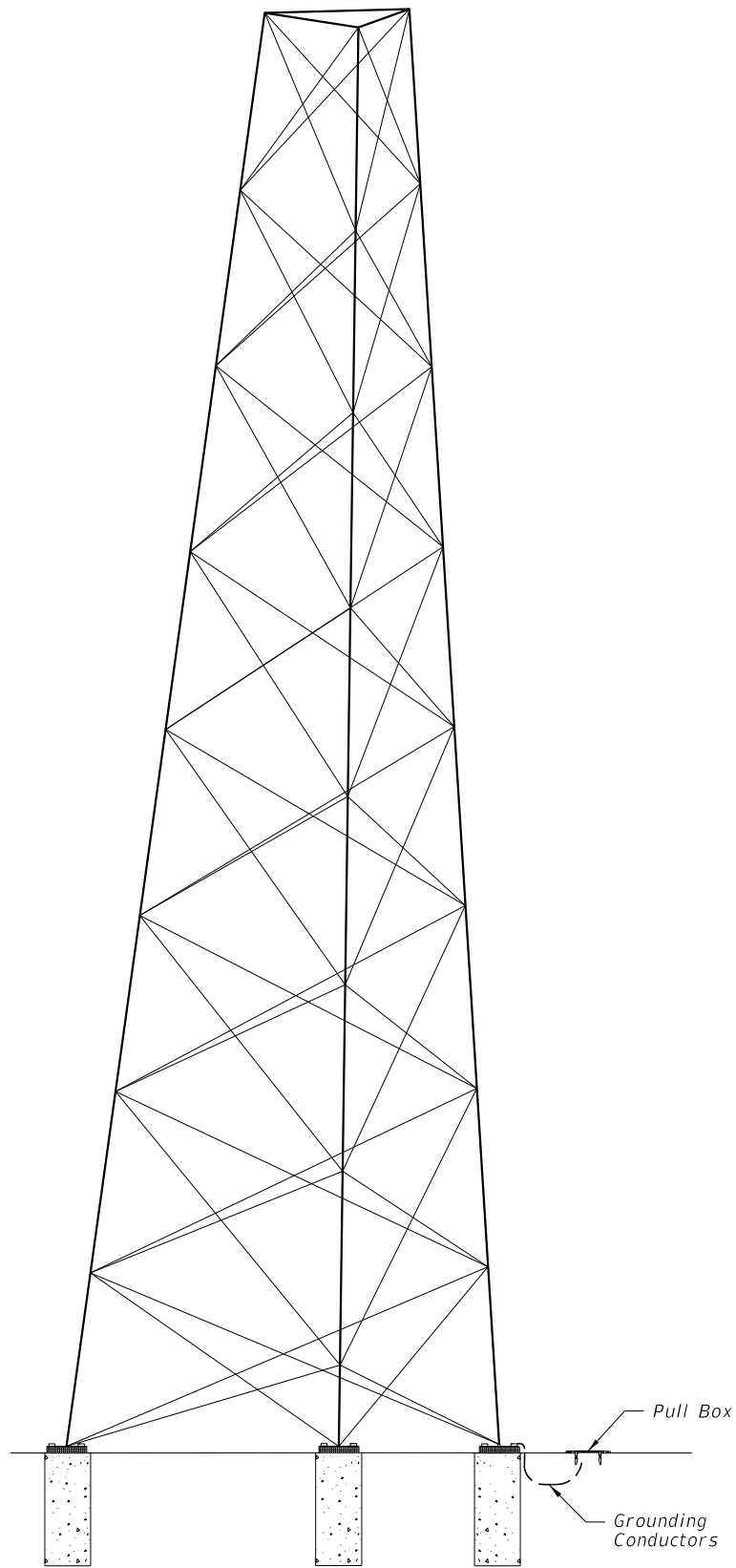
**GROUND ROD ARRAY PLACEMENT  
(Typical Modified)  
20' RODS, 40' SPACING**



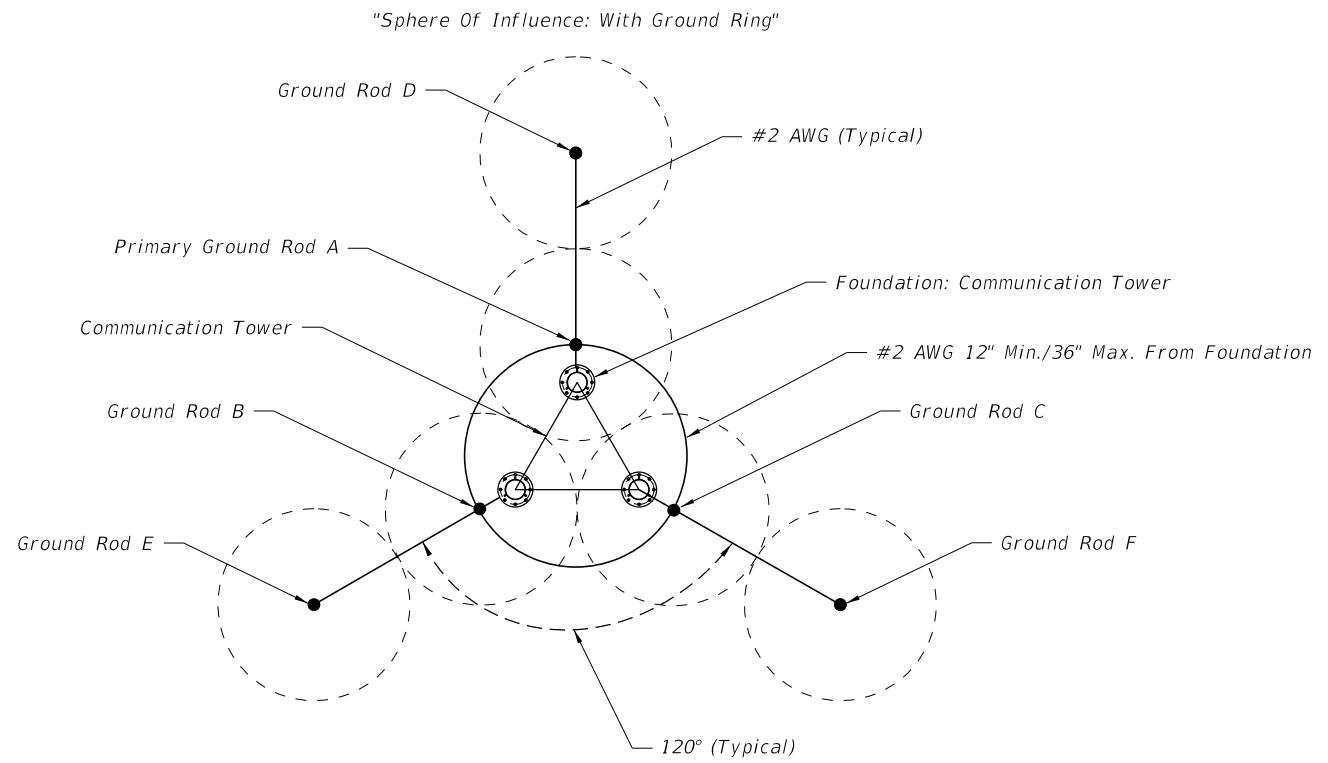
**INSET "A"**

11/30/2015 11:36:59 AM

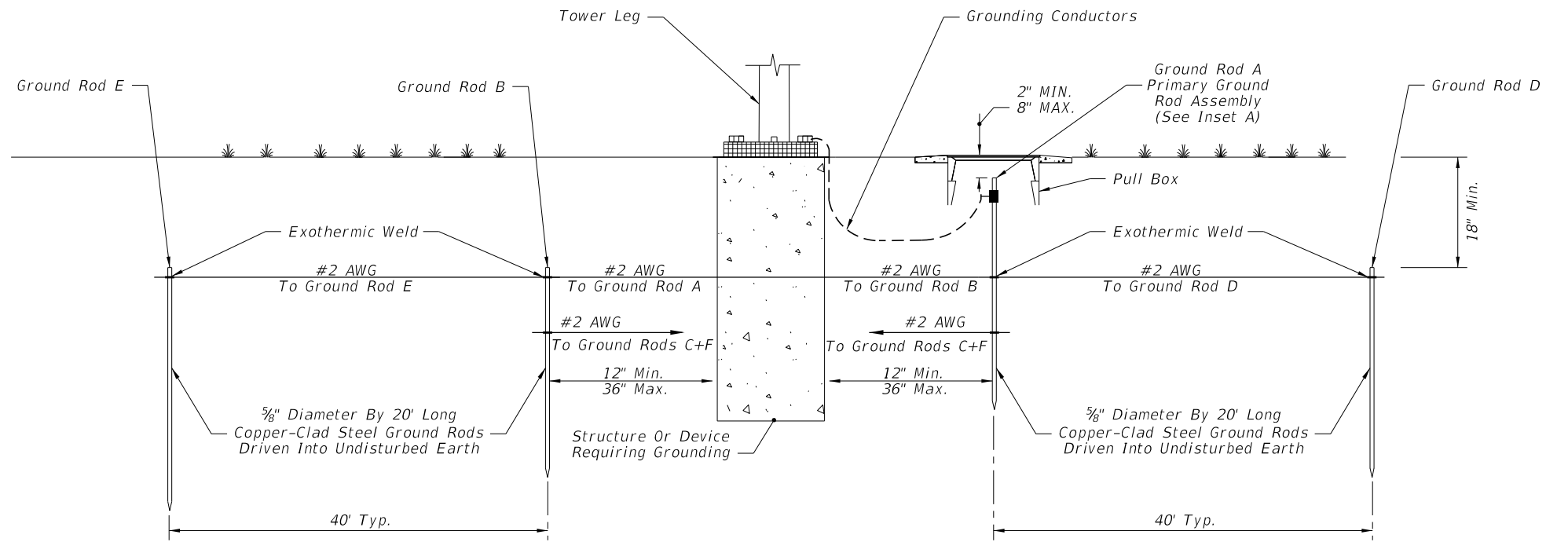
LAST REVISION 07/01/14	REVISION DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	GROUNDING AND LIGHTNING PROTECTION	INDEX NO. 18102	SHEET NO. 3 of 4
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COMMUNICATION TOWER



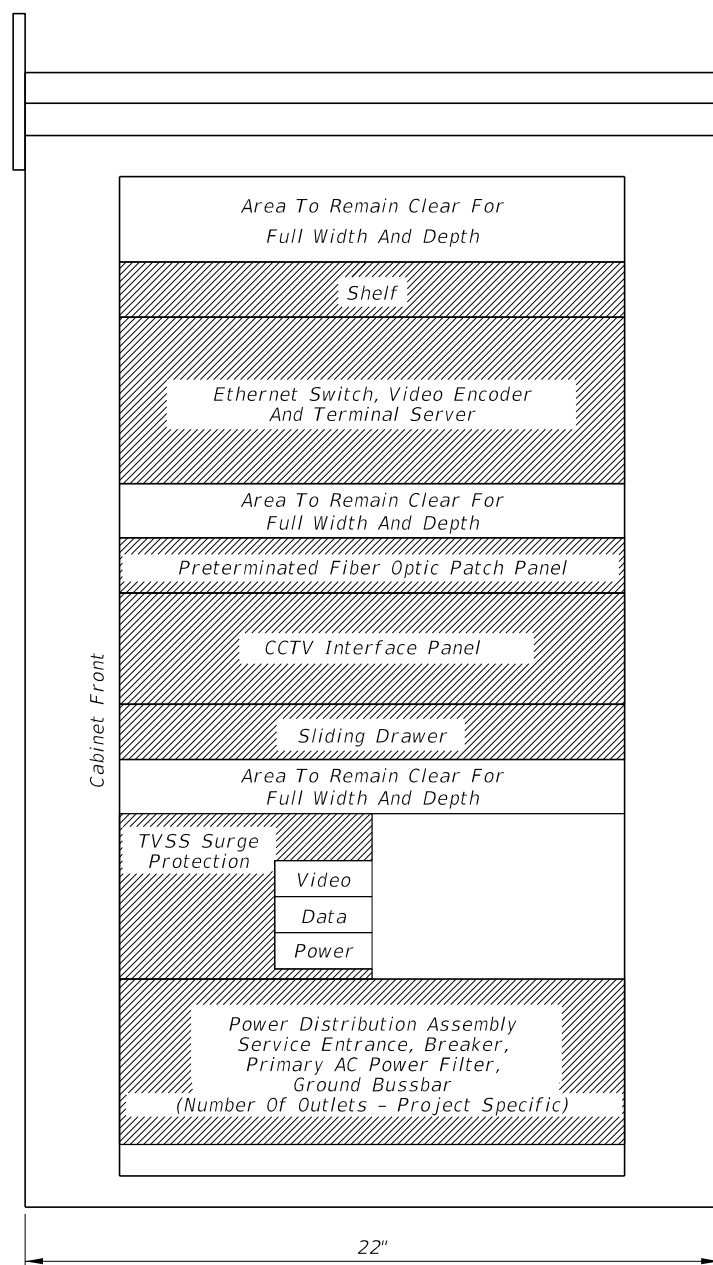
GROUND ROD ARRAY PLACEMENT  
(Communication Tower)  
20' RODS, 40' SPACING



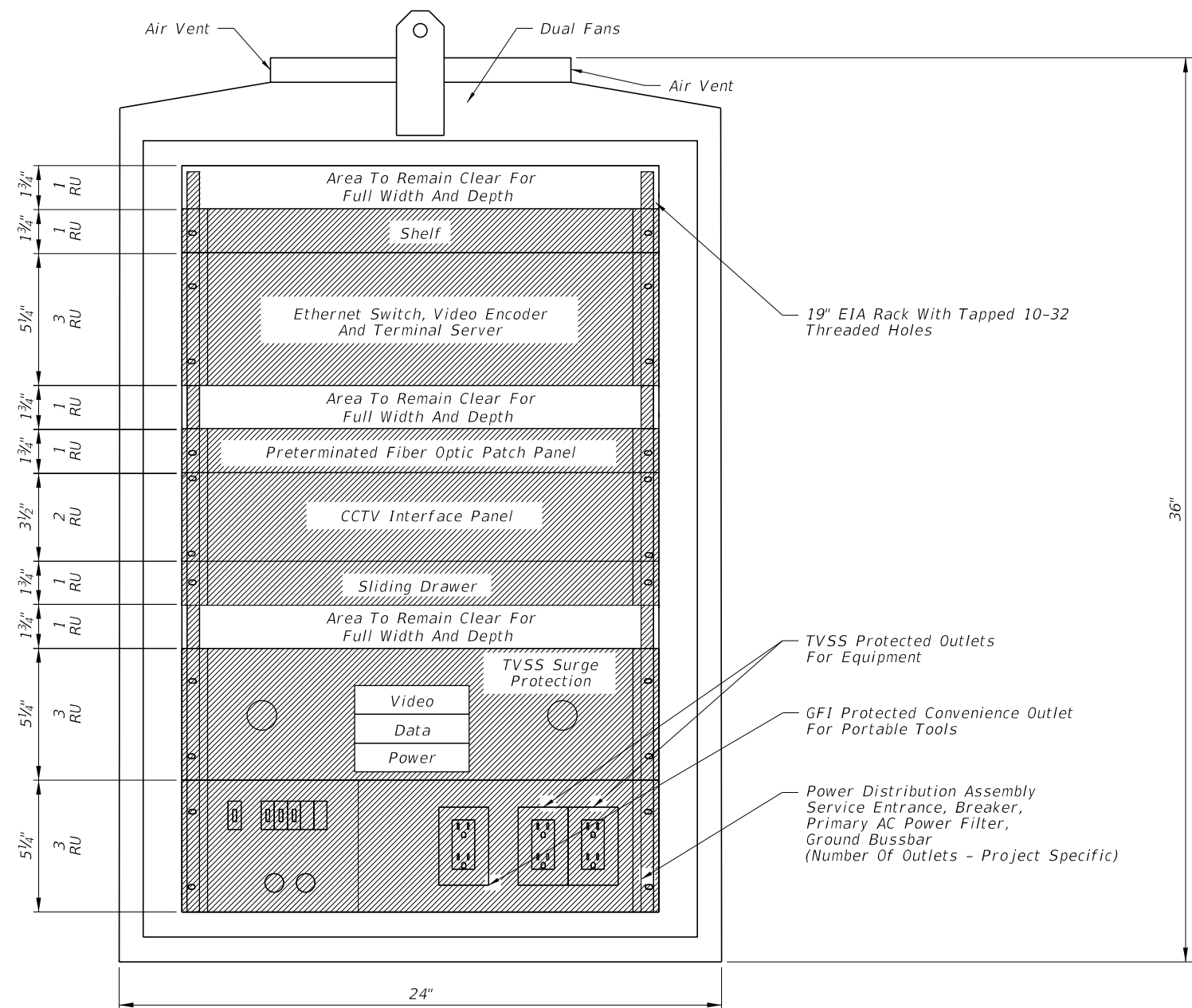
GROUND ROD ARRAY PROFILE  
(Communication Tower)

11/30/2015 11:36:59 AM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:
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SIDE VIEW



FRONT VIEW

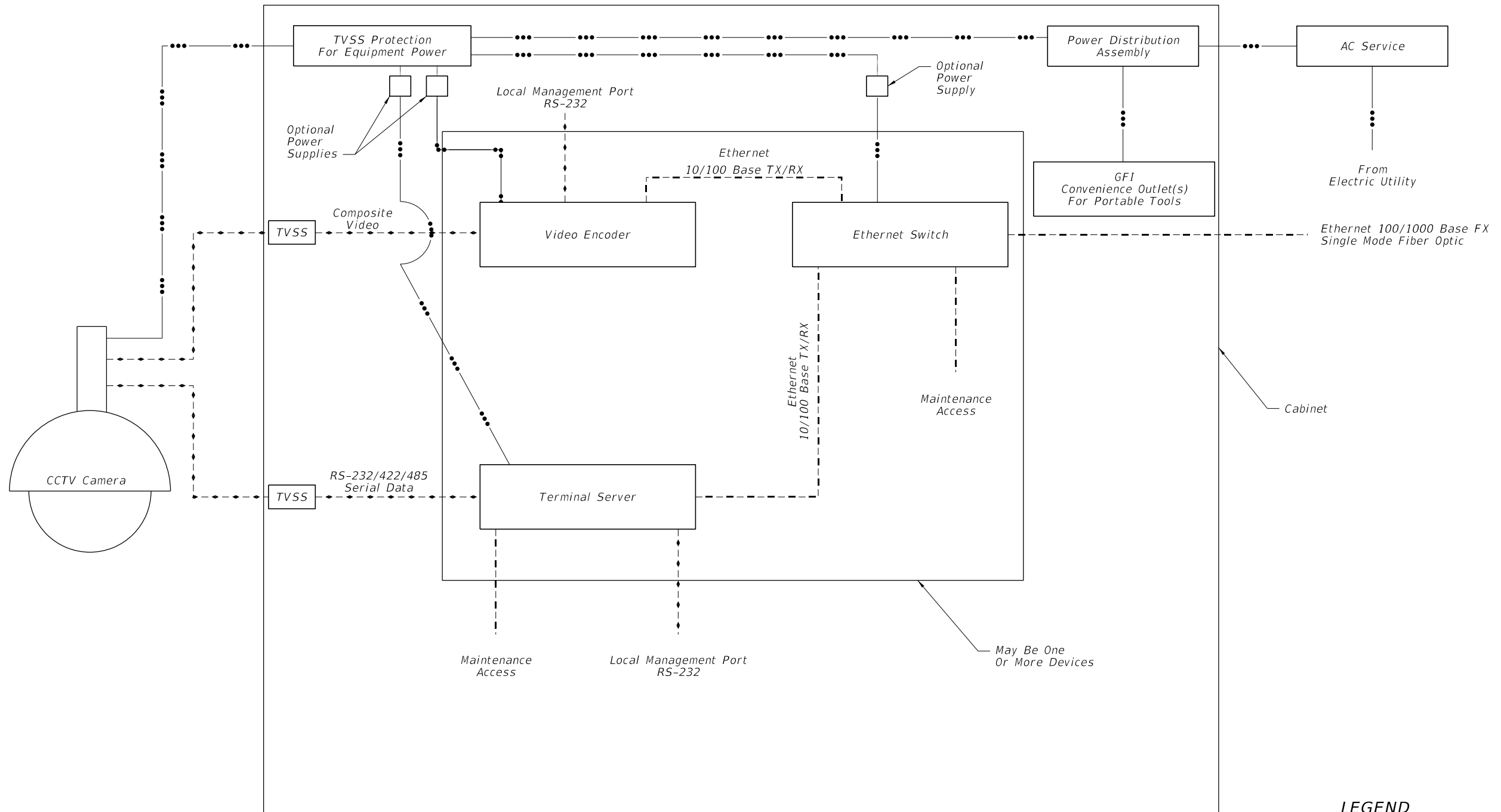
**GENERAL NOTES:**

1. Cabinet layout is for pole or base mounted installations.
2. All dimensions and scale are approximate.
3. The minimum CCTV cabinet dimensions shall be 36"H X 24"W X 22"D.
4. Conduit entrances are in bottom of cabinet.
5. There shall be front and rear doors. Both doors shall have the hinged side next to the pole when pole mounted.
6. Cabinet layout represents preferred placement of typical devices. Project-specific designs may not include all components illustrated here.

11/30/2015 11:37:00 AM

LAST REVISION	DESCRIPTION:
07/01/07	

11/30/2015 11:37:00 AM

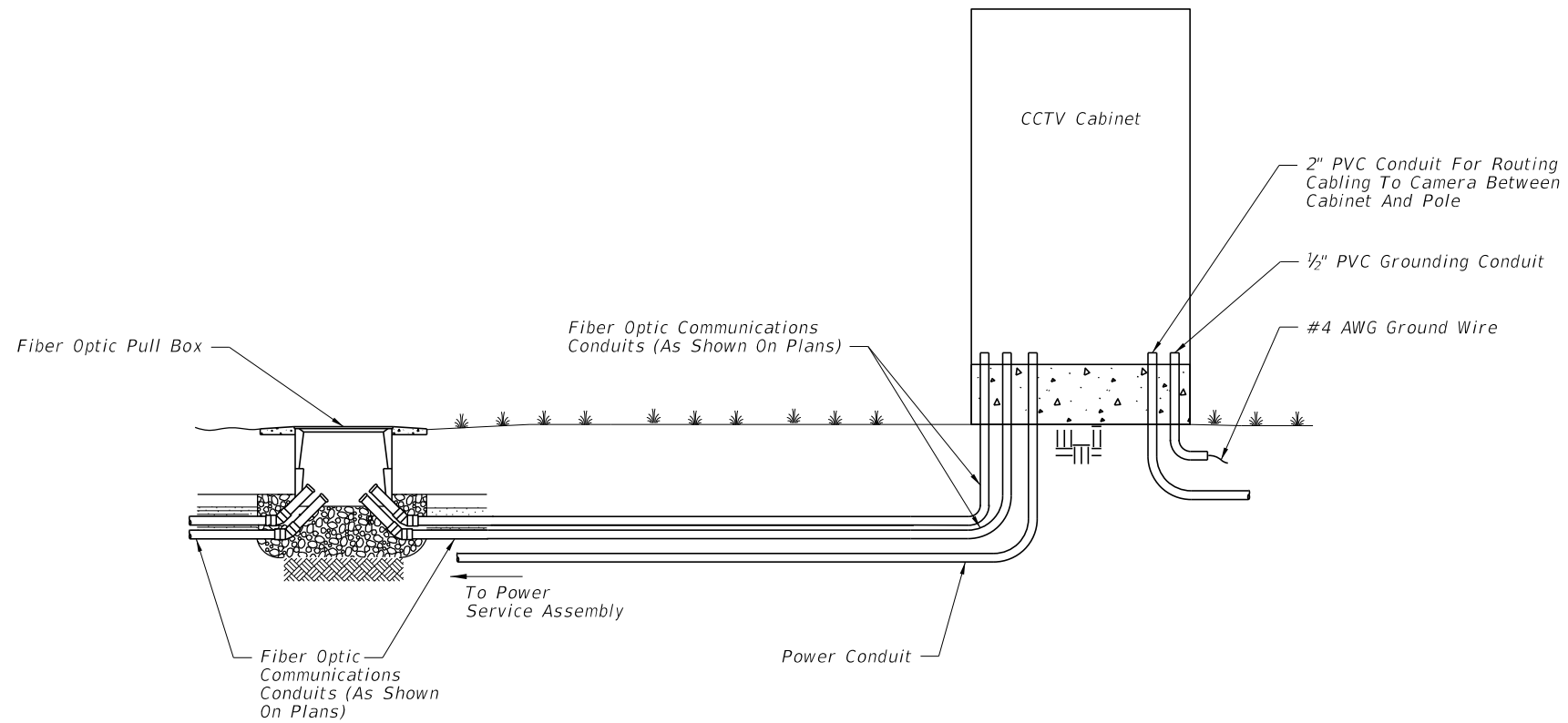


**LEGEND**

- Data
- - - Ethernet
- Power
- TVSS Transient Voltage Surge Suppressor

LAST REVISION 07/01/07	REVISION	DESCRIPTION:
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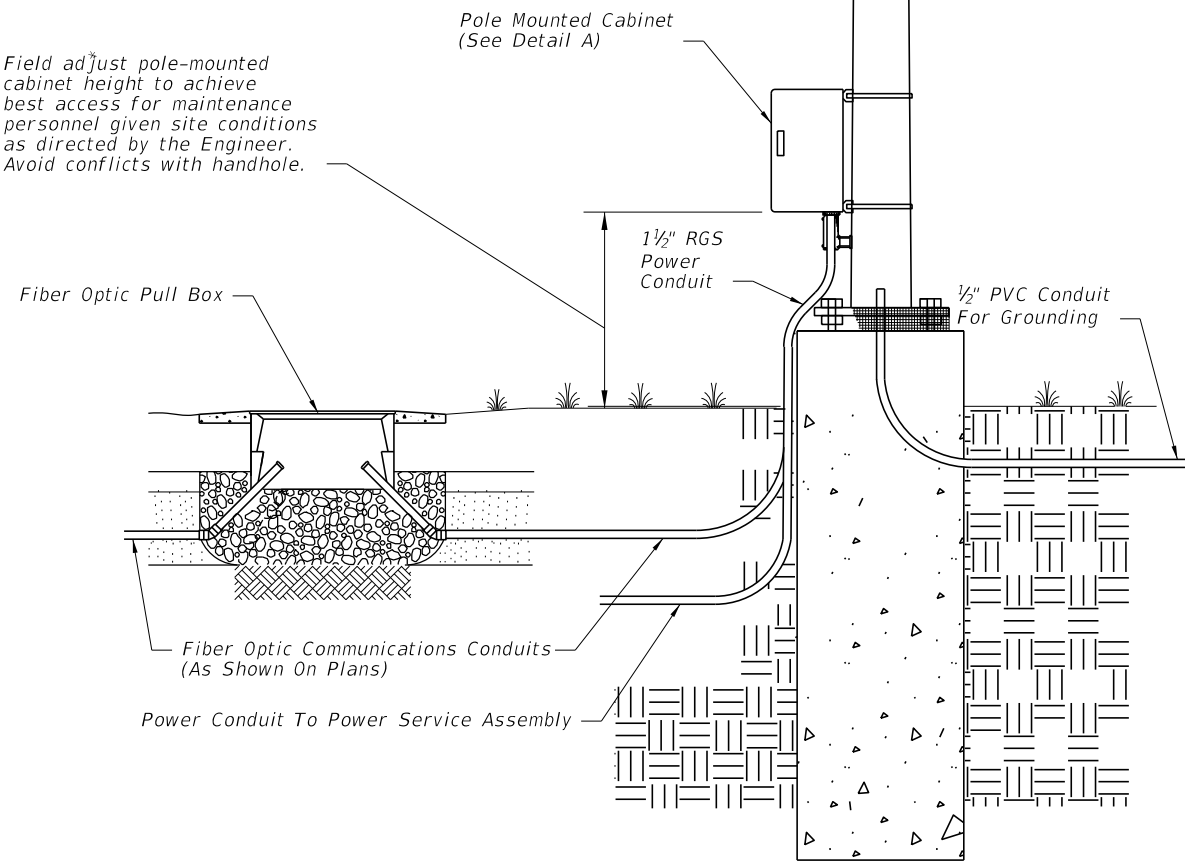
**GENERAL NOTES:**

1. Contractor shall splice fiber optic cables in cabinet to preterminater patch panel.
2. Furnish and install TVSS protection on all video, data, and power cabling in cabinet.
3. Ensure that all electronic equipment power is protected and conditioned with TVSS devices.
4. Sizes and types of conduits and innerducts for network communications between the pullbox and cabinet are stated in the contract documents.
5. See Index 18102 for grounding requirements.
6. All network communications conduits and ducts shall be sealed with approved waterproof duct plugs and seals.

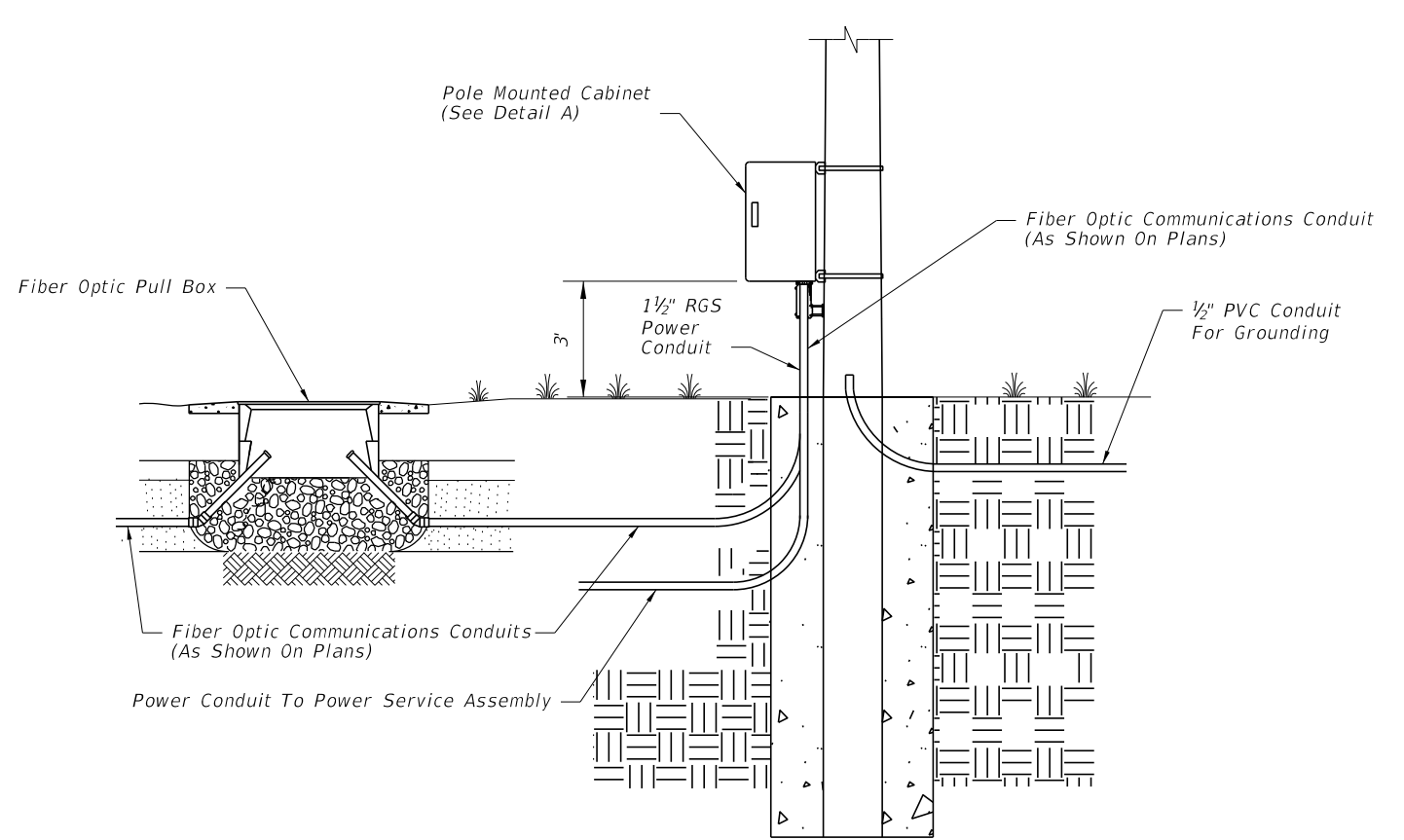
11/30/2015 11:37:01 AM

LAST REVISION 07/01/13	REVISION	DESCRIPTION:	 <b>FY 2016-17 DESIGN STANDARDS</b>	<b>GROUND MOUNTED CCTV CABINET</b>	INDEX NO. <b>18107</b>	SHEET NO. <b>1 of 1</b>
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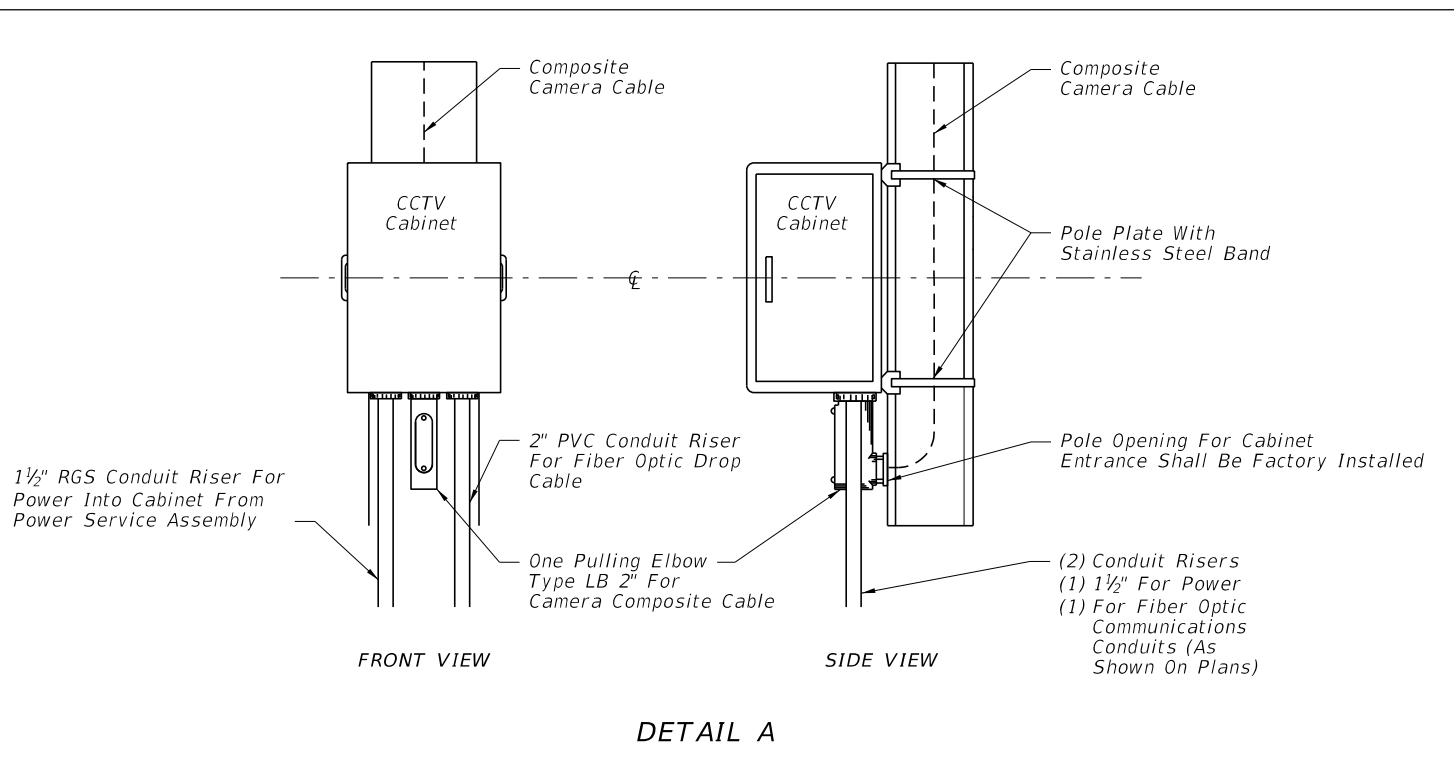
Field adjust pole-mounted cabinet height to achieve best access for maintenance personnel given site conditions as directed by the Engineer. Avoid conflicts with handhole.



STEEL POLE



CONCRETE POLE



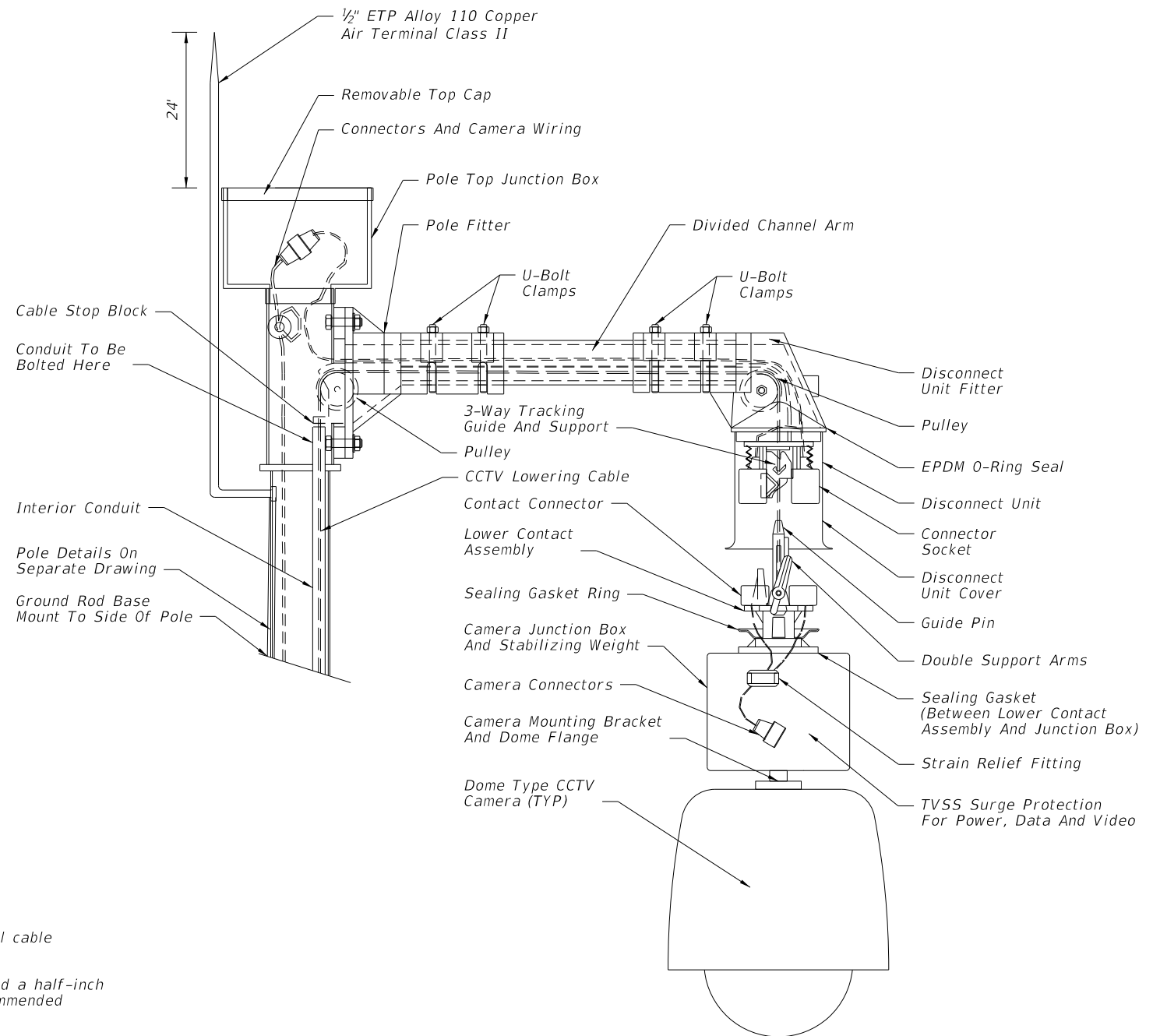
DETAIL A

**GENERAL NOTES:**

1. Contractor shall splice fiber optic cables in cabinet to preterminated patch panel.
2. Furnish and install TVSS protection on all cabling in cabinet.
3. Furnish and install secondary TVSS protection on outlets for equipment in cabinet.
4. Sizes and types of conduits and innerducts for network communications between the pull box and cabinet are stated in the contract documents.
5. Ensure that equipment cabinet is bonded to CCTV pole grounding system.
6. All network communications conduits and ducts shall be sealed with approved waterproof duct plugs and seals.
7. Pole mounted cabinets shall be mounted with hinges next to the pole.

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LAST REVISION	DESCRIPTION:
07/01/07	



CAMERA LOWERING DEVICE DETAIL


**GENERAL NOTES:**

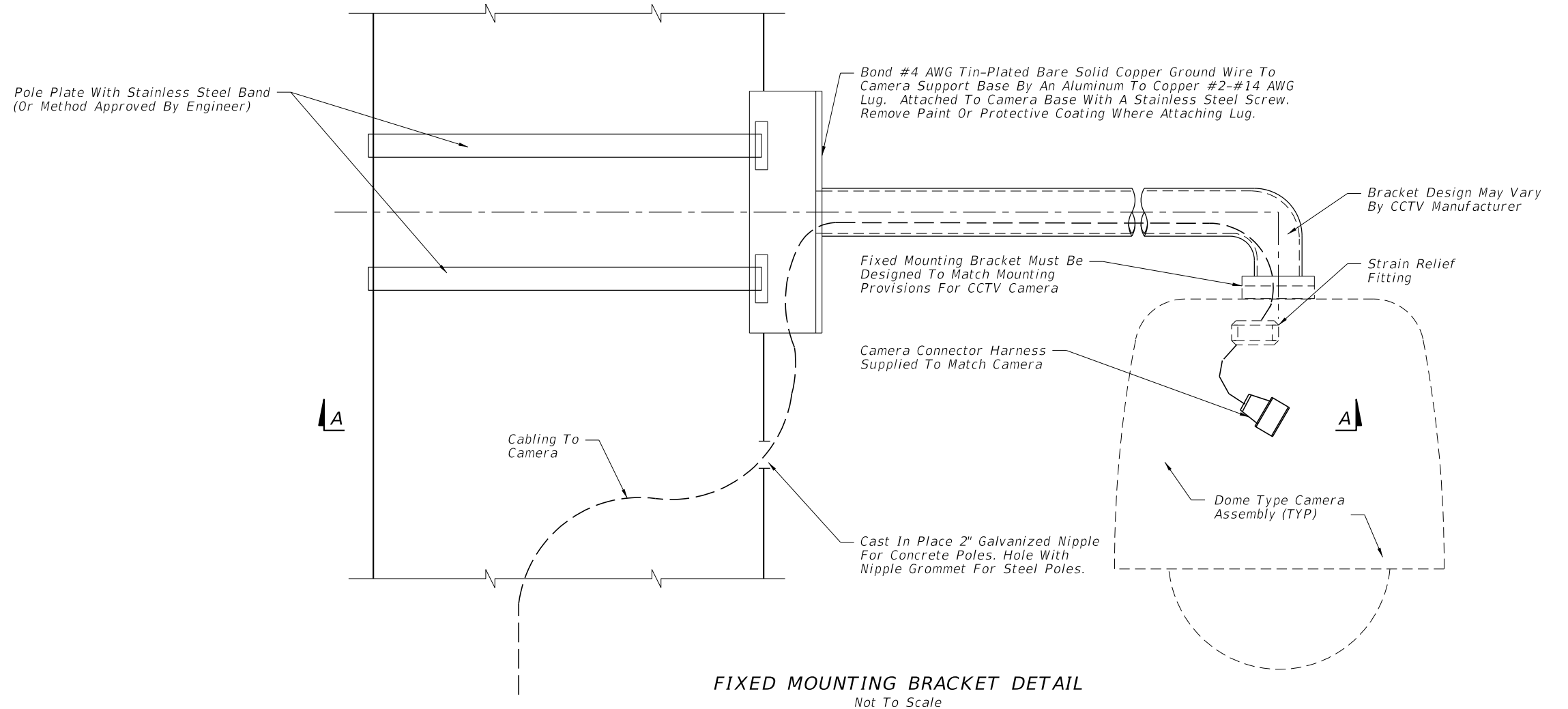
1. Lowering device to be shipped ready for pole attachment to include 100 ft. of composite power and signal cable prewired to lowering device at the factory.
2. The lowering device manufacturer shall supply both a portable lowering tool with a manual hand crank and a half-inch chuck variable-speed reversible industrial-duty electric drill that matches the winch's manufacturer-recommended revolutions per minute. One lowering tool per every 10 lowering devices is required.
3. The lowering device manufacturer shall provide an on-site installation inspection and operator instruction and certification. This ensures the product is assembled correctly and that all necessary persons are trained in the proper, safe operation of the system. Before erecting the first pole the contractor must contact the lowering device supplier and schedule a manufacturer's representative to be on-site.
4. Design camera mounting arm and connection to tenon according to FDOT Structures Manual (current edition).
5. Camera to be mounted to camera junction box and stabilizing weight via 1/2" Standard NPT Pipe Thread.
6. Use air terminal extension when the pole top junction box is wider than top of pole.
7. The stainless steel device lowering cable shall be installed inside the pole within a 1 1/4" diameter PVC conduit.
8. All communication and power cables must be neatly bundled and secured.
9. Use a Camera Lowering Device listed on the Approved Product List (APL).
10. See Index 18113 for concrete pole details and Index 18111 for steel pole details.

**CAMERA MOUNTING WITH LOWERING DEVICE**

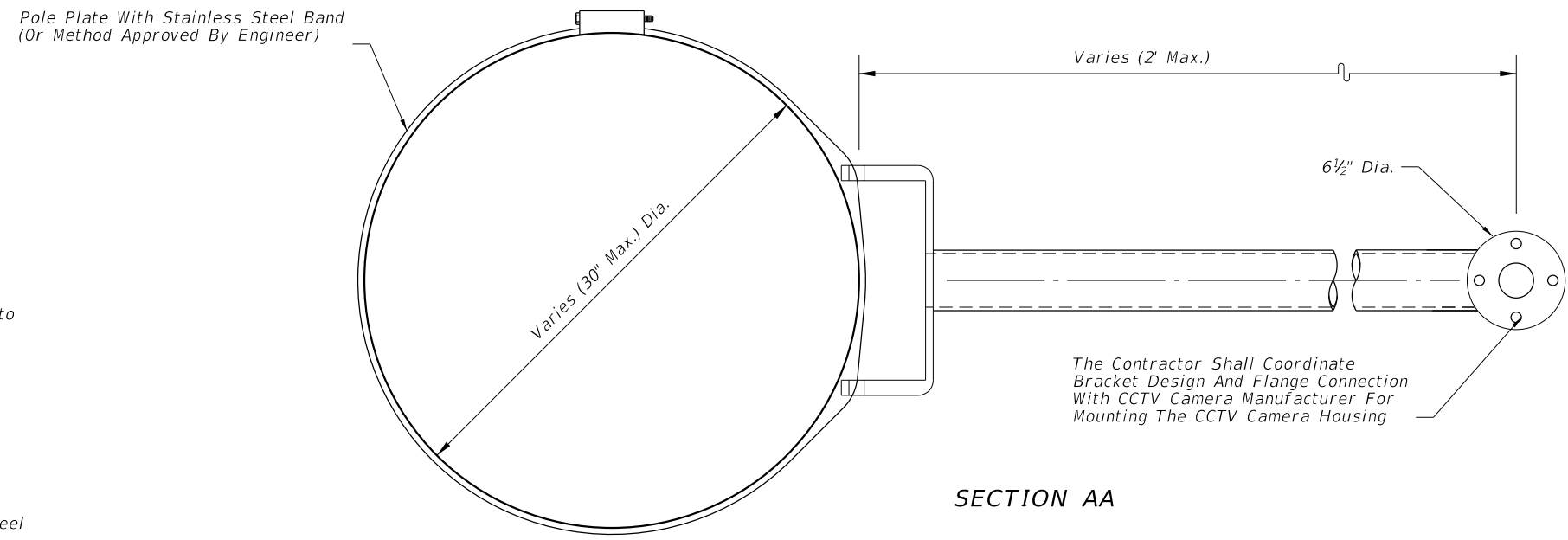
**CAMERA MOUNTING DETAILS**

11/30/2015 11:37:02 AM

LAST REVISION 01/01/10	REVISION	DESCRIPTION:	 <b>FY 2016-17 DESIGN STANDARDS</b>	<b>CAMERA MOUNTING DETAILS</b>	INDEX NO. <b>18110</b>	SHEET NO. <b>1 of 2</b>
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**FIXED MOUNTING BRACKET DETAIL**  
Not To Scale




**SECTION AA**

**CAMERA MOUNTING WITH FIXED BRACKET**

**GENERAL NOTES:**

1. Verify the pole type, the dimensions of the pole at the point of installation of the camera mount, and angle with respect to the roadway before manufacturing camera mount assembly.
2. Design camera mounting arm and connection to the pole according to FDOT Structures Manual (current edition).
3. No field welding shall be permitted.
4. Mounting bracket arm shall be level after installation.
5. The contractor shall submit shop drawings for the proposed fixed mounting arm, signed and sealed by a Professional Engineer registered in the State of Florida, to the Engineer for review and approval.
6. See Index 18113 for concrete pole details and Index 18111 for steel pole details.
7. Galvanized pipe connections and conduit entry points shall be sealed in accordance with Section 630 of the Standard Specifications.

11/30/2015 11:37:03 AM

LAST REVISION 01/01/10	DESCRIPTION:	 <b>FY 2016-17 DESIGN STANDARDS</b>	<b>CAMERA MOUNTING DETAILS</b>	INDEX NO. <b>18110</b>	SHEET NO. <b>2 of 2</b>
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**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.

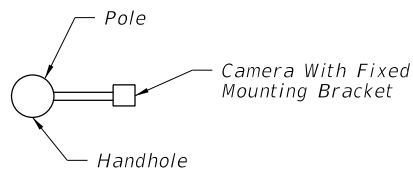
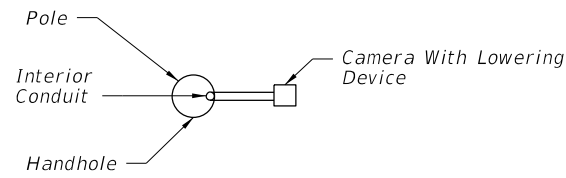
**POLE NOTES:**

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 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 1 1/2" 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.

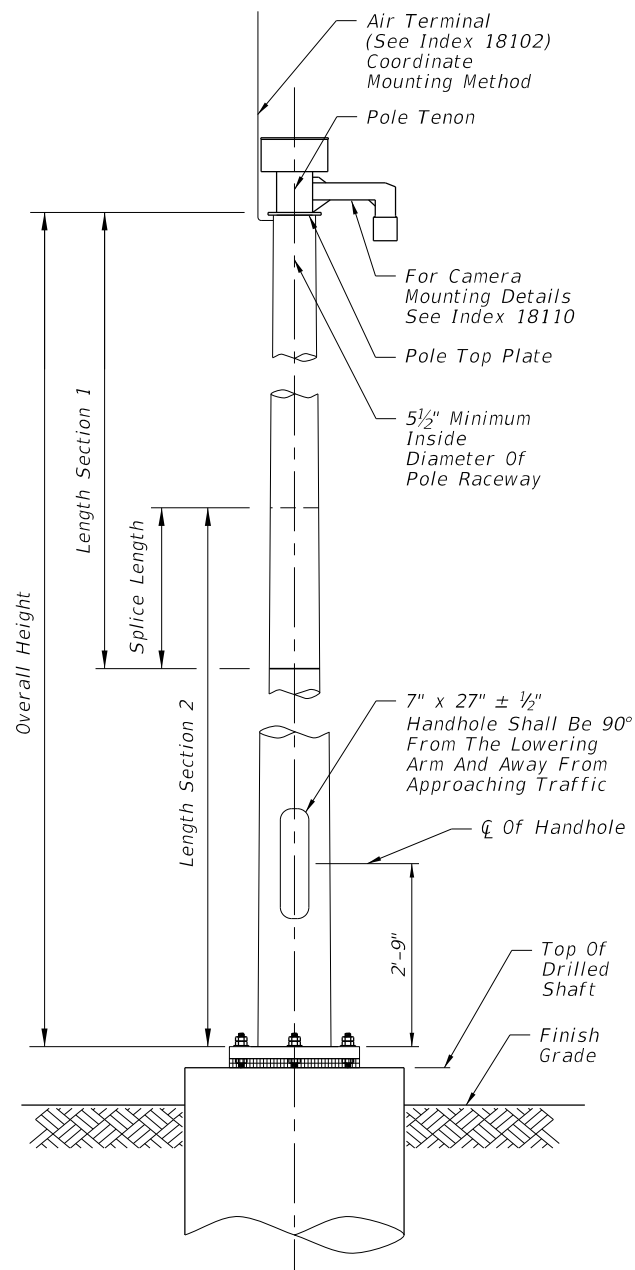
**GENERAL NOTES**

11/30/2015 11:37:03 AM

LAST REVISION 07/01/13	REVISION	DESCRIPTION:	 <b>FY 2016-17 DESIGN STANDARDS</b>	<b>STEEL CCTV POLE</b>	INDEX NO. <b>18111</b>	SHEET NO. <b>1 of 4</b>
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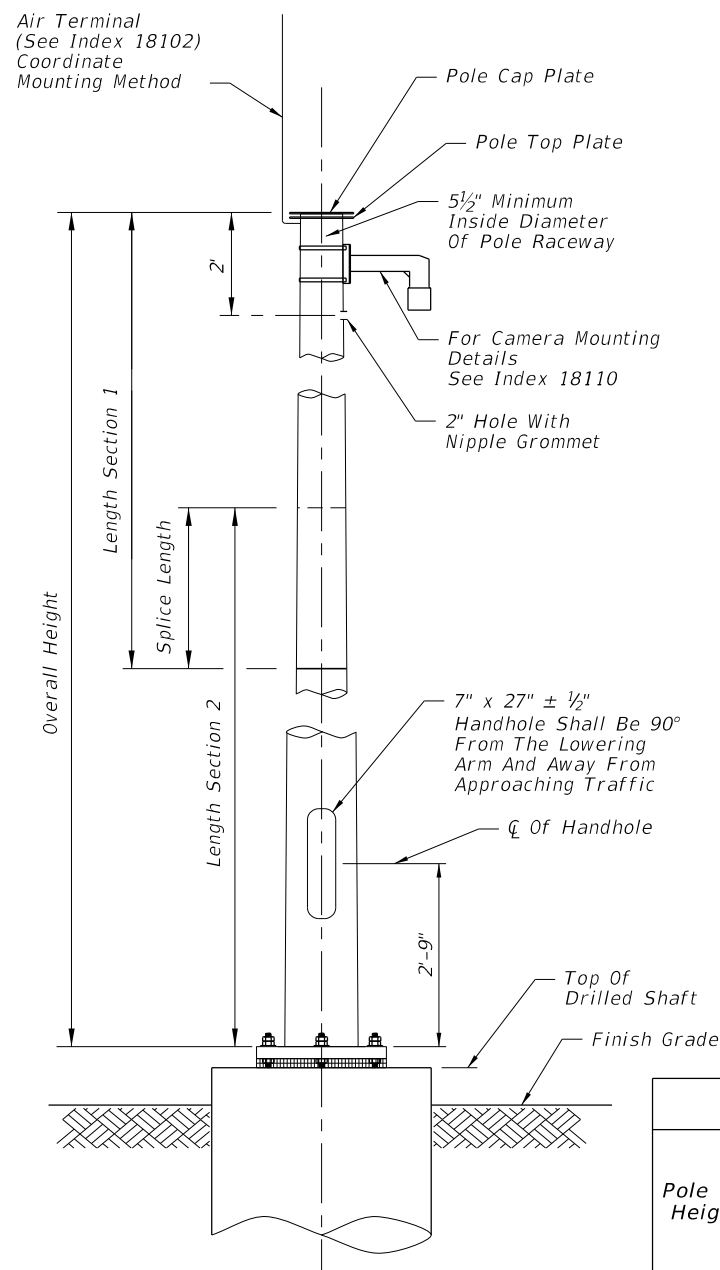


**ORIENTATION VIEW**



**ELEVATION WITH LOWERING DEVICE**

**ORIENTATION VIEW**



**ELEVATION WITHOUT LOWERING DEVICE**

**SHAFT DESIGN TABLE**

Pole Overall Height (ft)	Shaft Diameter	Shaft Length	Longitudinal Reinforcement
50	4'-0"	10'-0"	(12) #11
55	4'-0"	10'-6"	(12) #11
60	4'-6"	11'-0"	(16) #11
65	4'-6"	12'-0"	(16) #11
70	5'-0"	12'-6"	(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\***

Pole Overall Height (ft)	Section 1 (Top)				Section 2 (Bottom)				Joint
	Length	Wall Thickness (in.)	Tip Dia. (in.)	Base Dia. (in.)	Length	Wall Thickness (in.)	Tip Dia. (in.)	Base Dia. (in.)	Minimum Splice Length (in)
50	---	---	---	---	50'-0"	0.25	10	17	---
	24'-0"	0.25	10.5	13.875	28'-3"	0.25	13.031	17	21
55	30'-0"	0.25	10.781	15	27'-6"	0.3125	14.125	18	24
60	35'-0"	0.25	13.094	18	27'-9"	0.3125	17.094	21	27
65	34'-0"	0.25	14.406	19.188	34'-0"	0.3125	18.219	23	30
70	33'-3"	0.25	16.719	21.375	40'-0"	0.3125	20.375	26	33

\* Diameter Measured Flat to Flat

**POLE DESIGN TABLES**

11/30/2015 11:37:04 AM

LAST REVISION 07/01/13	DESCRIPTION:
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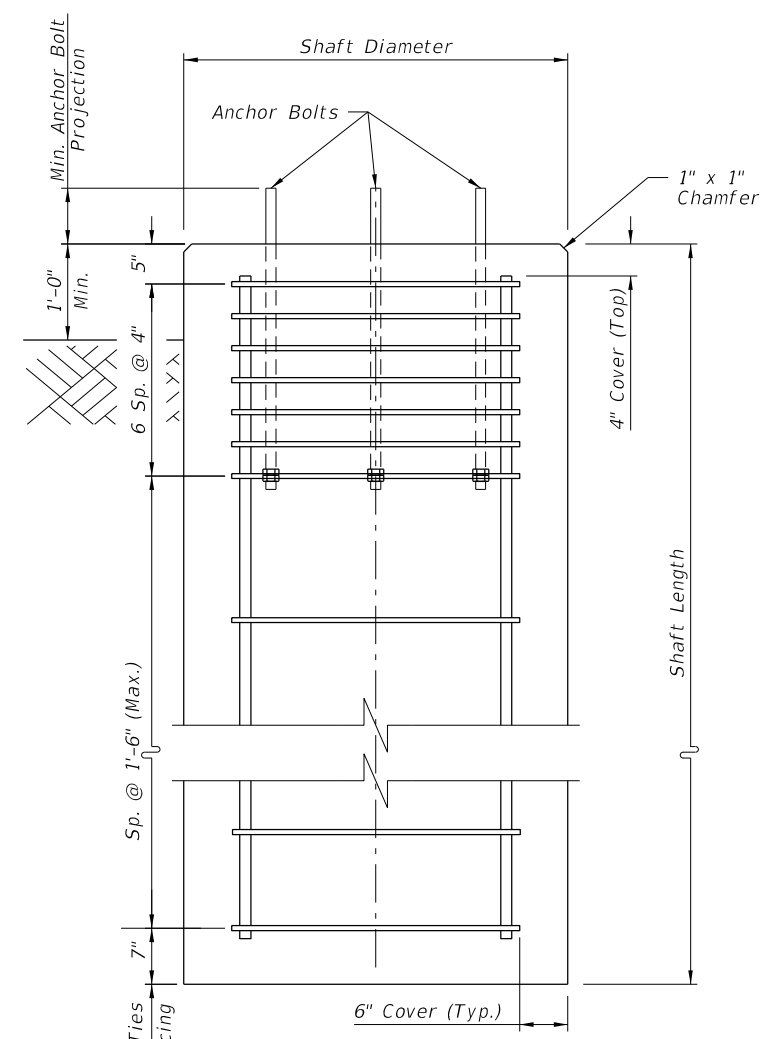
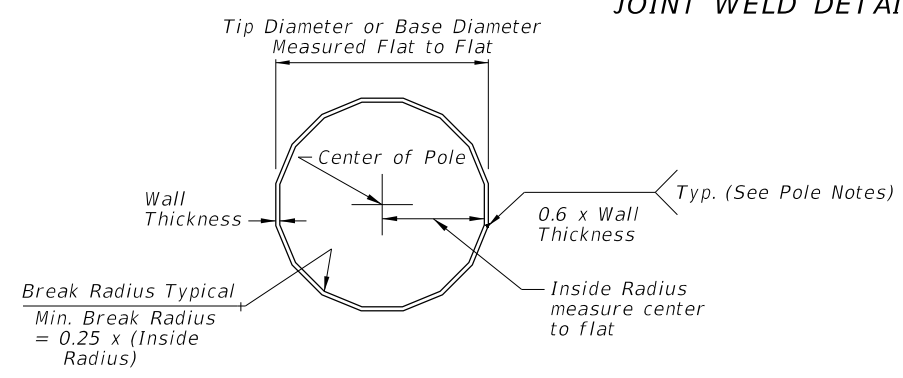
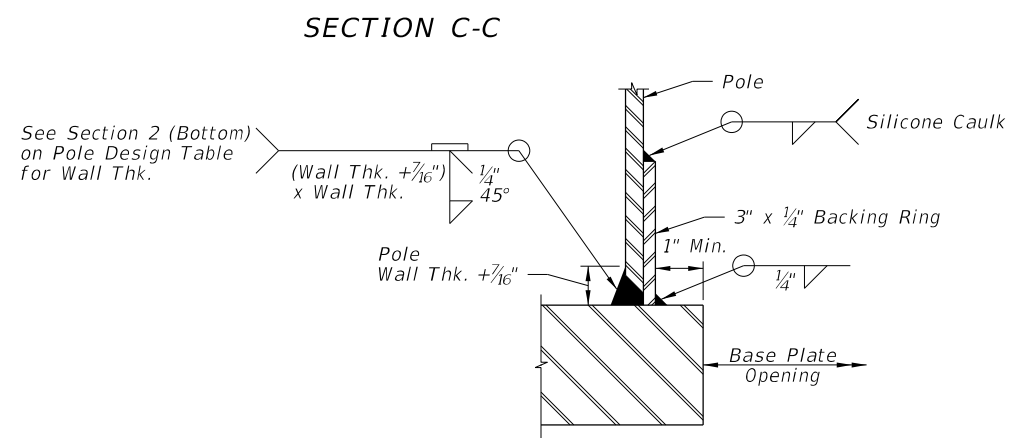
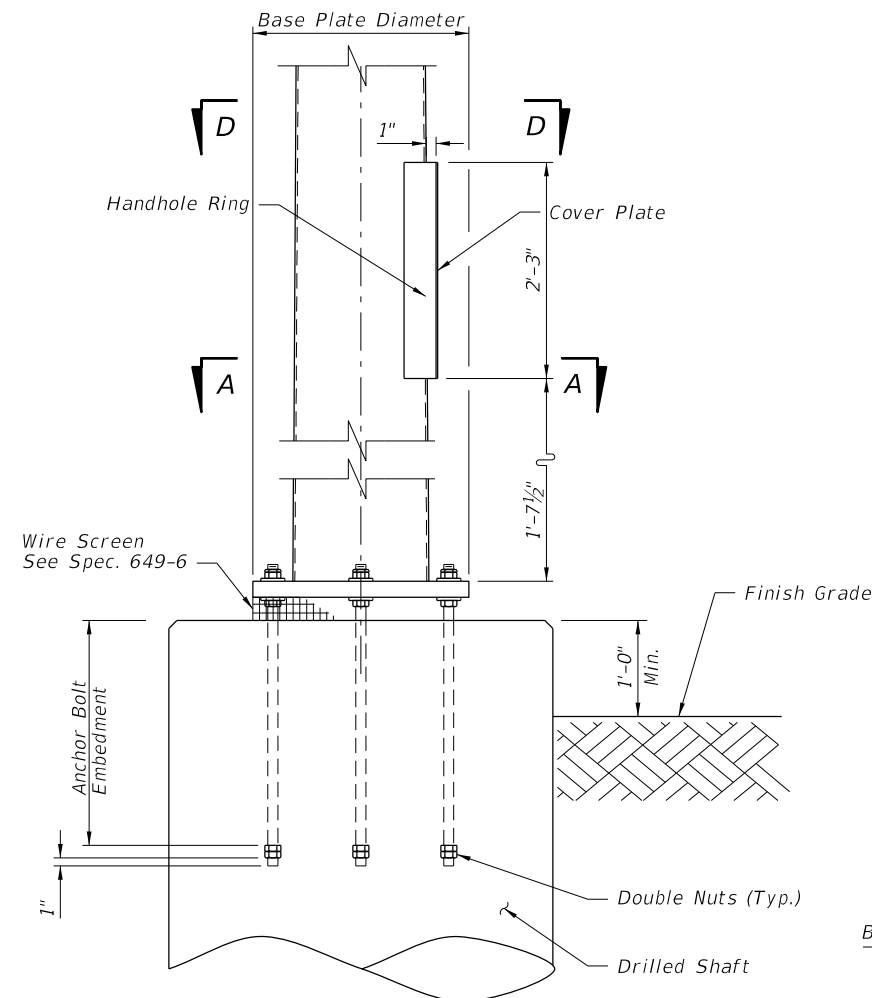
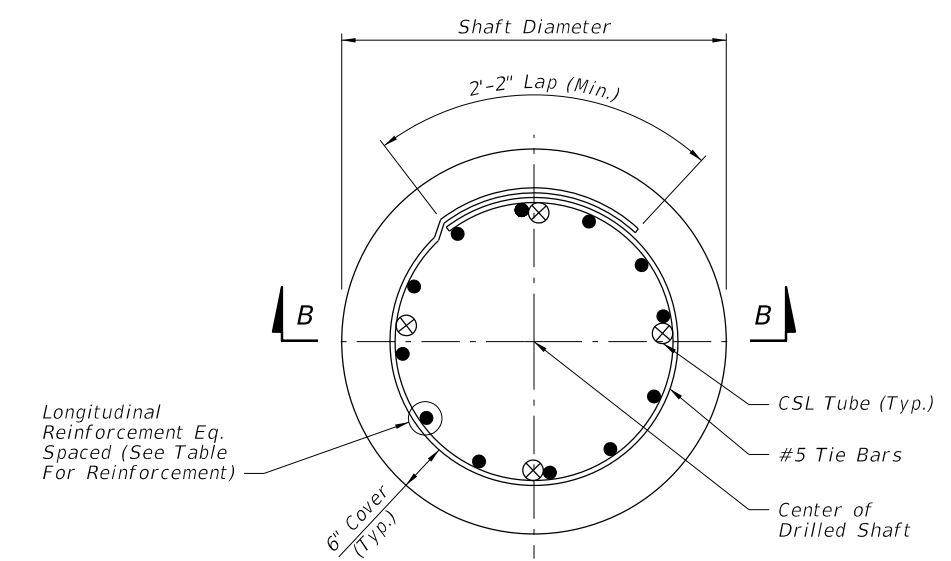
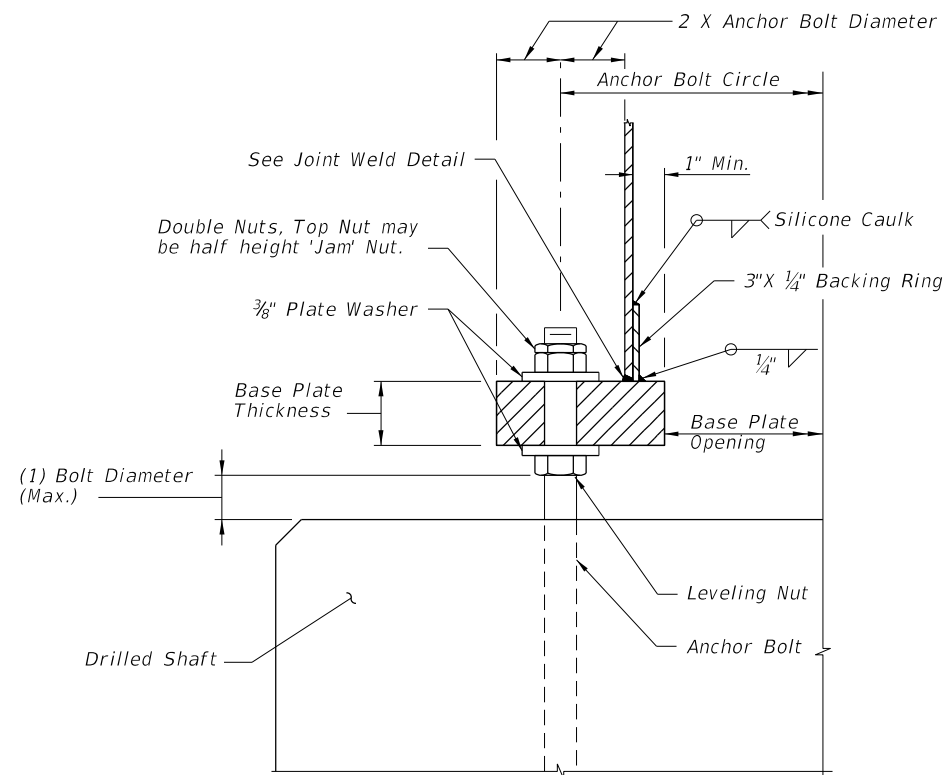
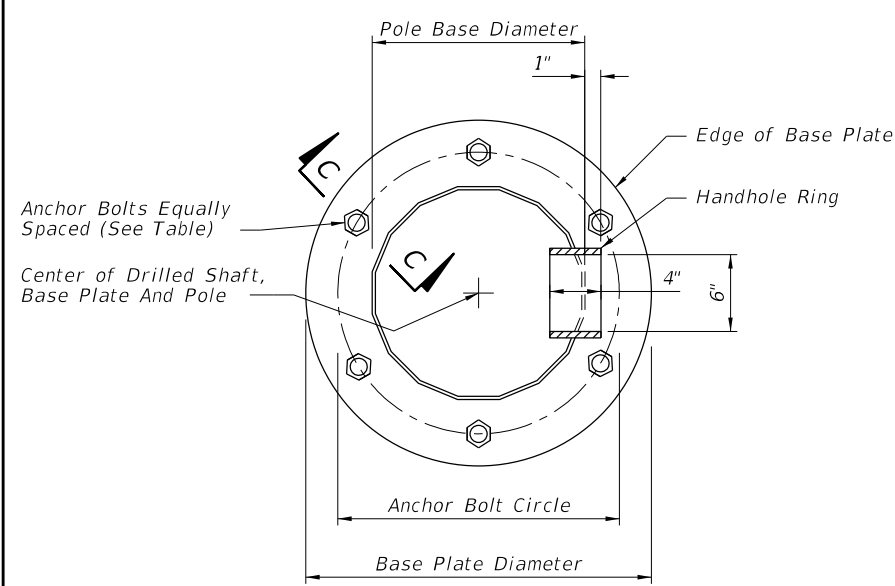


FY 2016-17

STEEL CCTV POLE

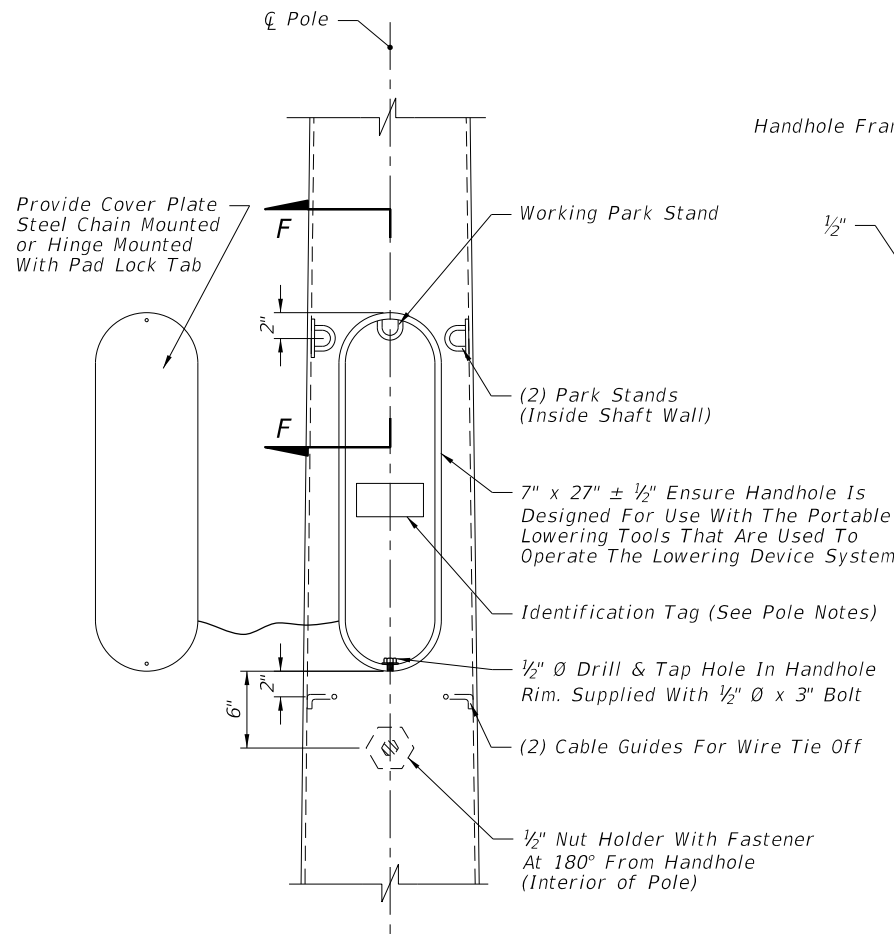
INDEX NO.  
18111

SHEET NO.  
2 of 4

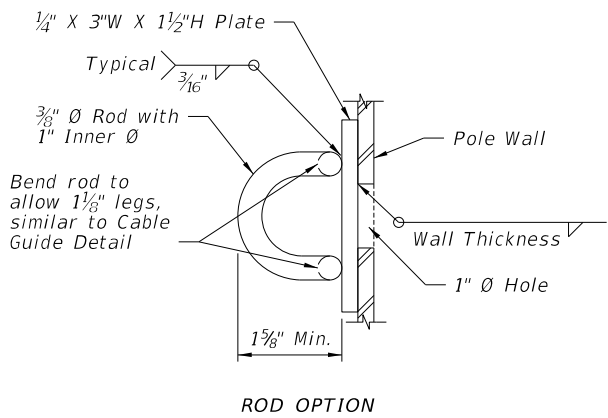


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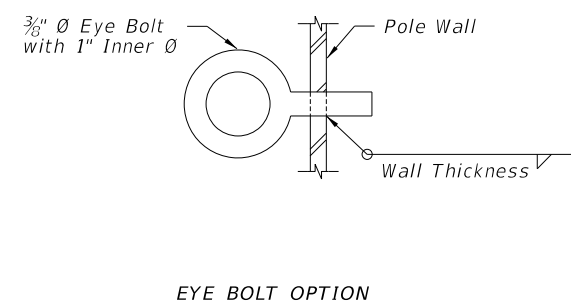
LAST REVISION 07/01/13	REVISION	DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	STEEL CCTV POLE	INDEX NO. 18111	SHEET NO. 3 of 4
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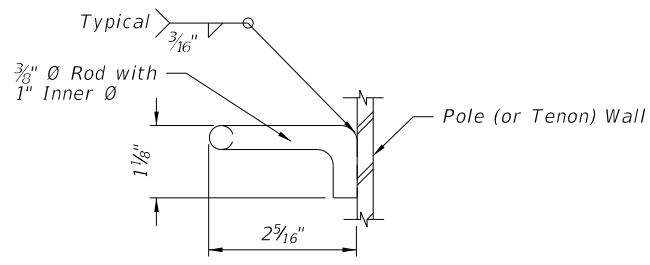
**HANDHOLE DETAIL**



**ROD OPTION**

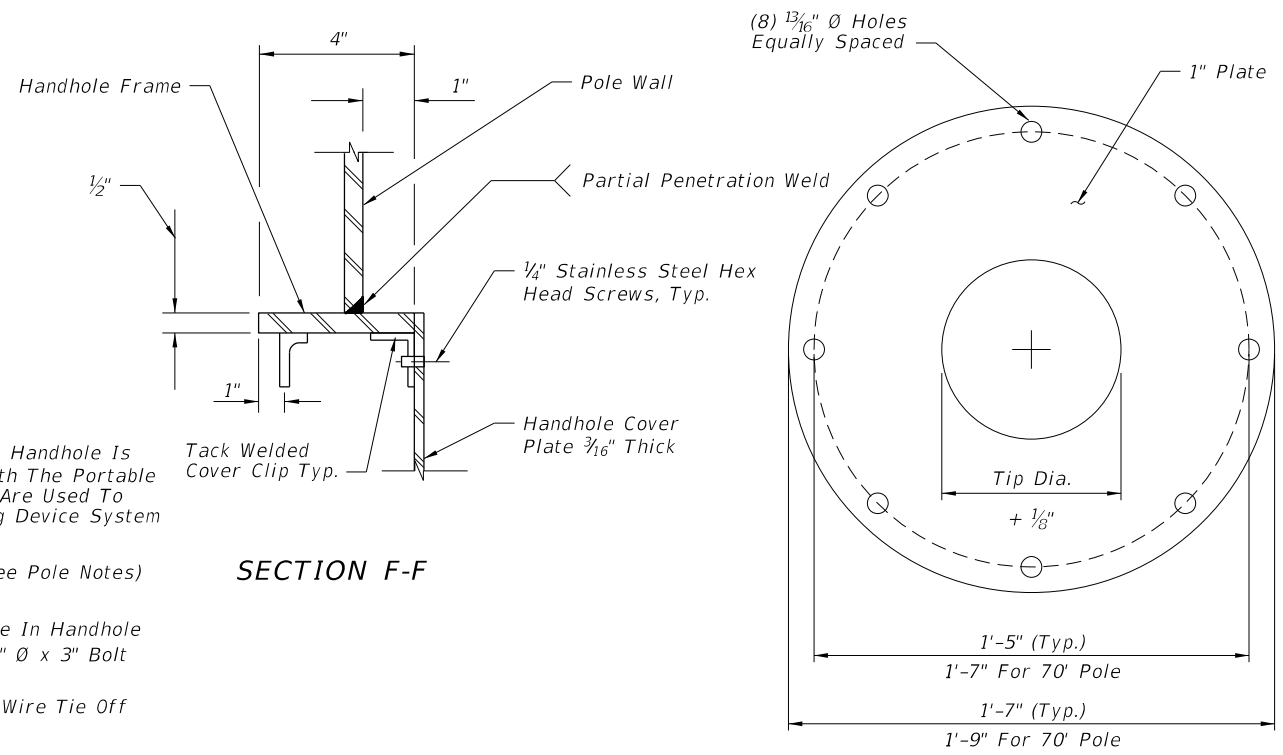


**EYE BOLT OPTION**



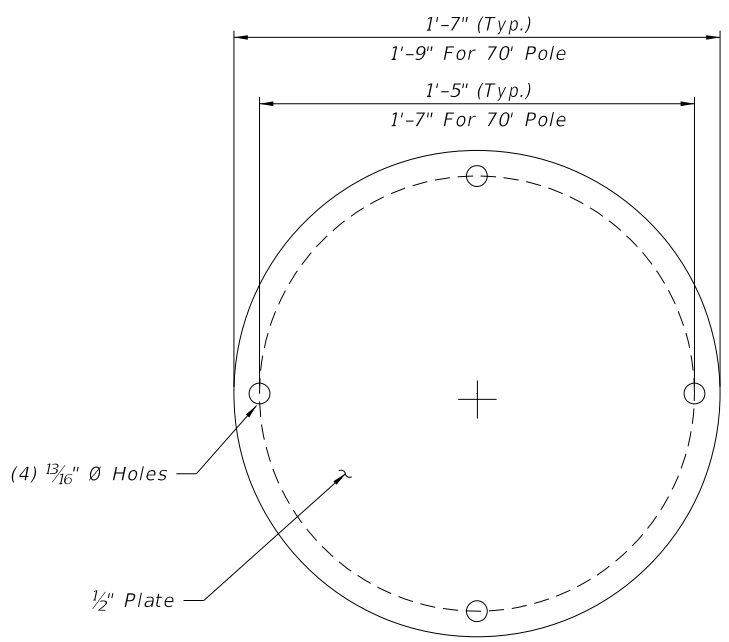
**CABLE GUIDE DETAIL**

**PARK STAND DETAIL**

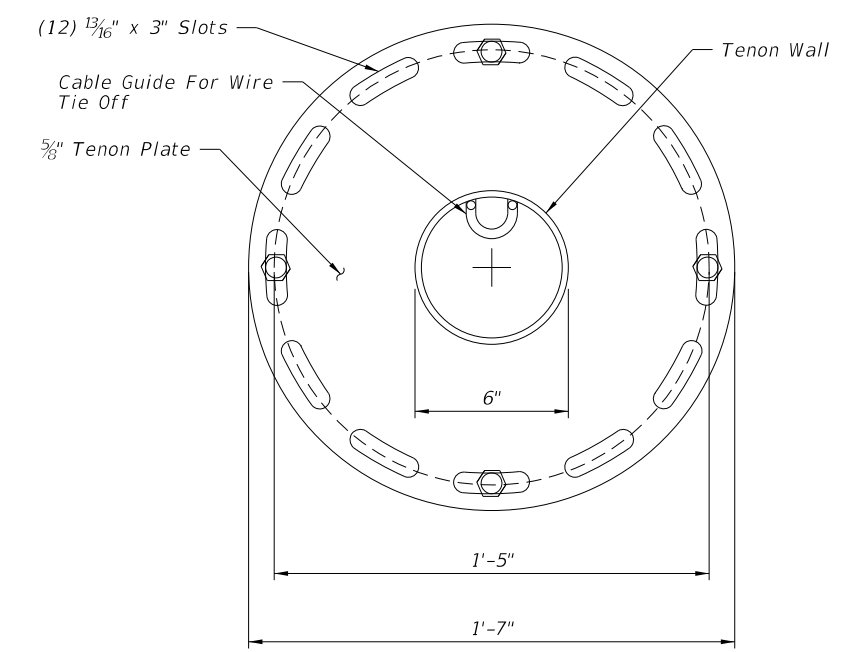


**SECTION F-F**

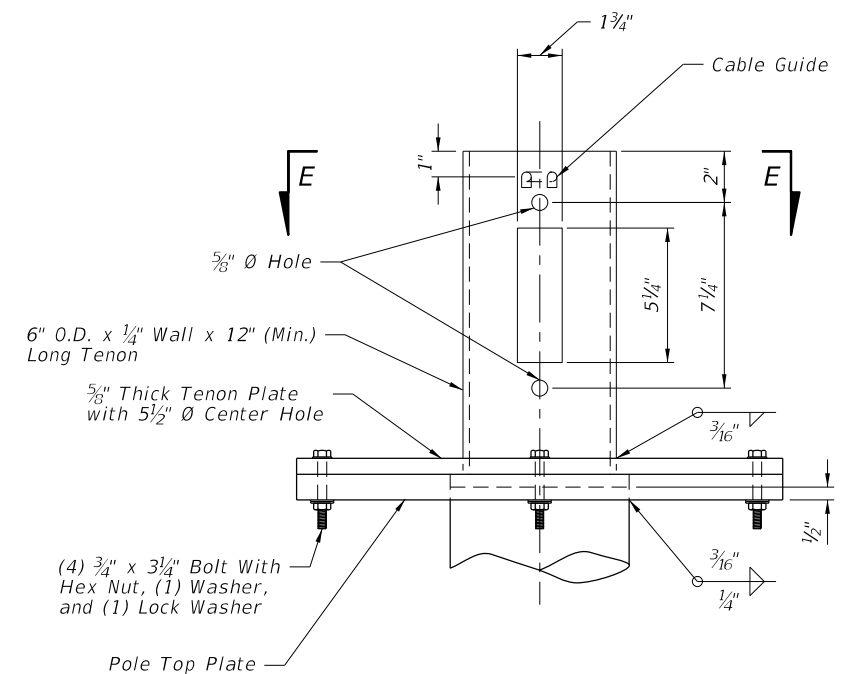
**POLE TOP PLATE DETAIL**



**POLE CAP PLATE  
(POLE WITHOUT LOWERING DEVICE)**



**SECTION E-E**



**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**

11/30/2015 11:37:08 AM

LAST REVISION 01/01/16	REVISION	DESCRIPTION:	<b>FY 2016-17 DESIGN STANDARDS</b>	<b>STEEL CCTV POLE</b>	INDEX NO. <b>18111</b>	SHEET NO. <b>4 of 4</b>
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11/30/2015 11:37:09 AM


**LOWERING DEVICE INSTALLATION NOTES:**

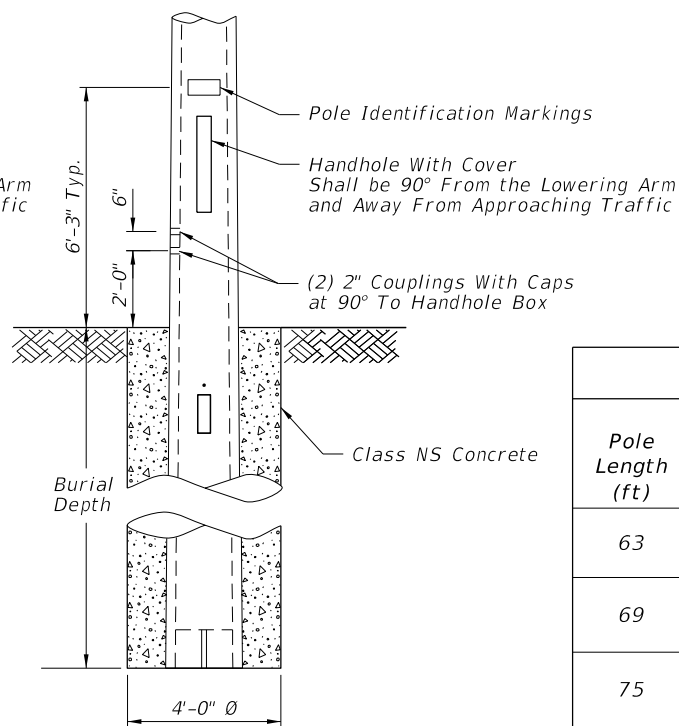
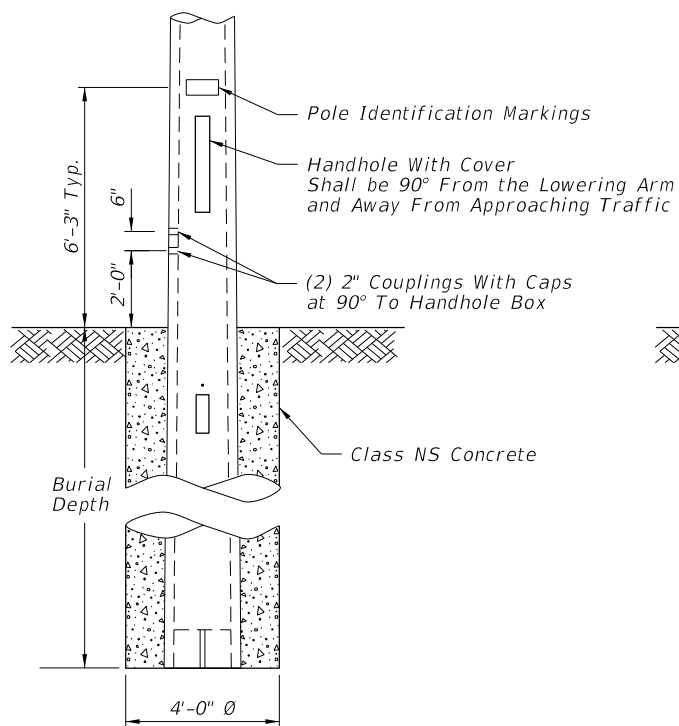
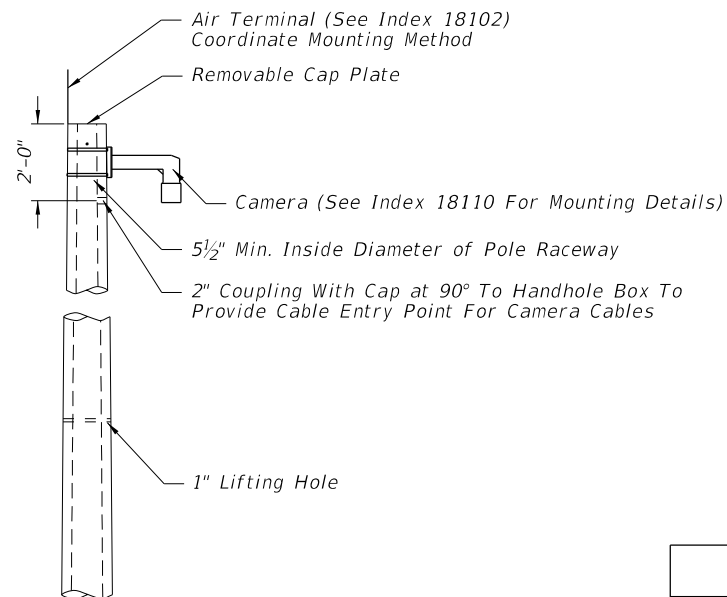
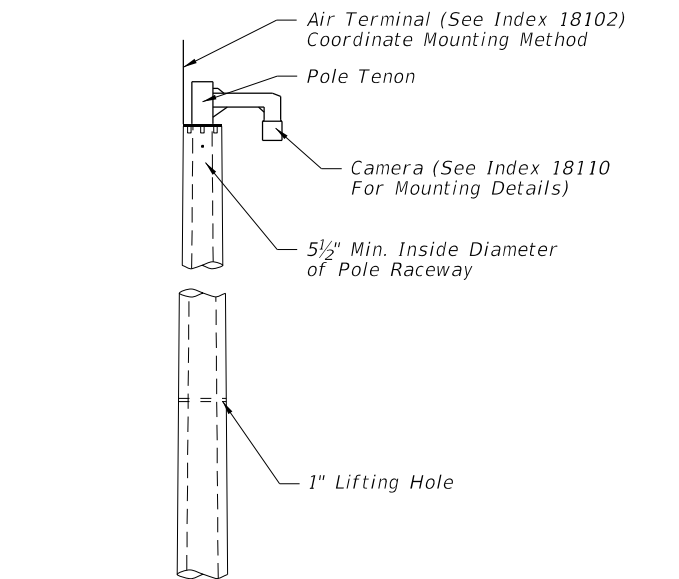
1. Place the lowering cable that moves within the pole in an interior conduit to prevent it from tangling or interfering with any electrical wire that is in the pole. Ensure that any electrical wire within the pole is routed securely and free from slack.
2. Mount lowering arm perpendicular to the roadway 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. No more than two opposing rebar to be spliced at the same cross section. Stagger lap splices as needed.
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  $\pm 3'$ .

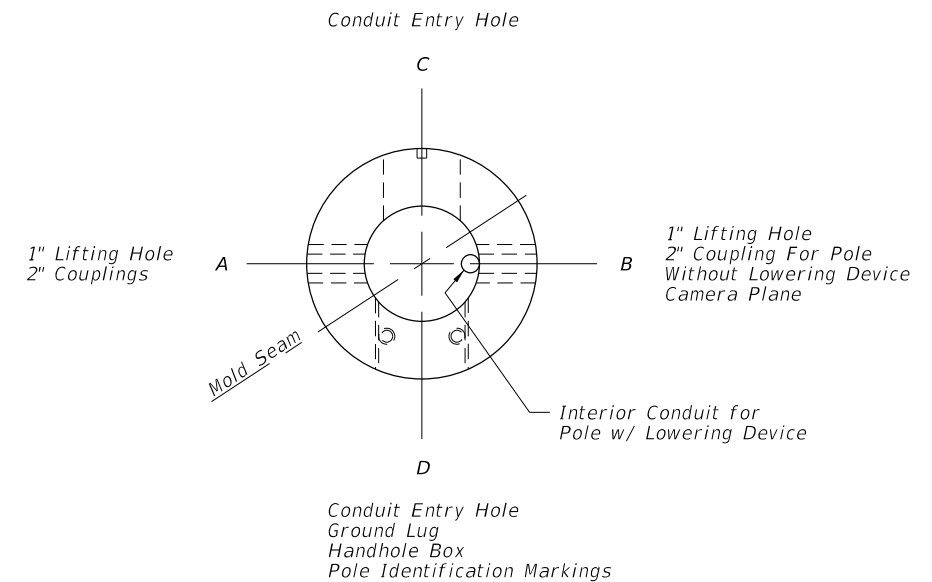
**GENERAL NOTES**

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	 <b>FY 2016-17 DESIGN STANDARDS</b>	<b>CONCRETE CCTV POLE</b>	INDEX NO. <b>18113</b>	SHEET NO. <b>1 of 4</b>
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**ELEVATION WITH LOWERING DEVICE**

**ELEVATION WITHOUT LOWERING DEVICE**



**POLE CONFIGURATION TOP VIEW**

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

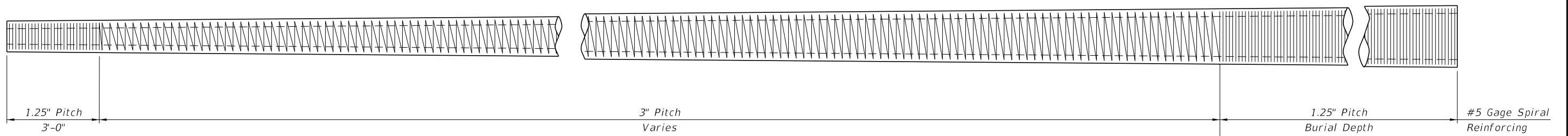
\*\* Total taper applies to pole, strands, and reinforcing.

\*\*\* 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**

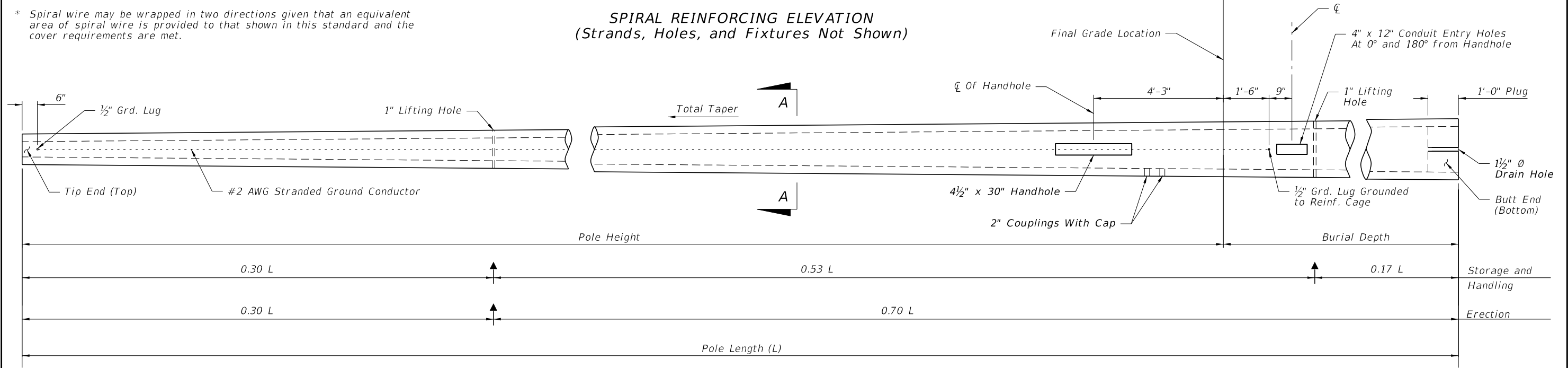
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LAST REVISION 07/01/13	REVISION	DESCRIPTION:
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\* Spiral wire may be wrapped in two directions given that an equivalent area of spiral wire is provided to that shown in this standard and the cover requirements are met.

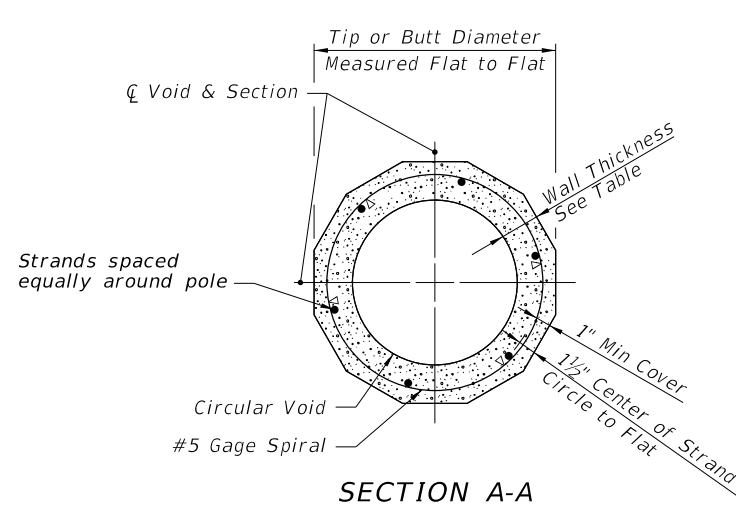
**SPIRAL REINFORCING ELEVATION**  
(Strands, Holes, and Fixtures Not Shown)



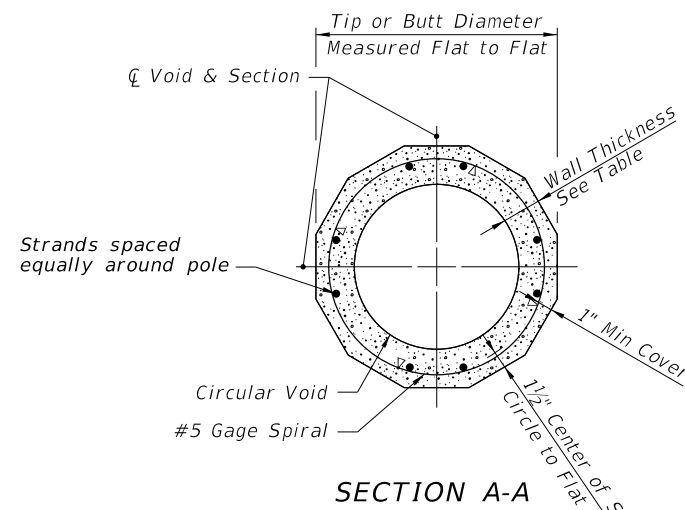
**POLE ELEVATION**  
(Strands and Reinforcing Not Shown)

**STRAND LEGEND**

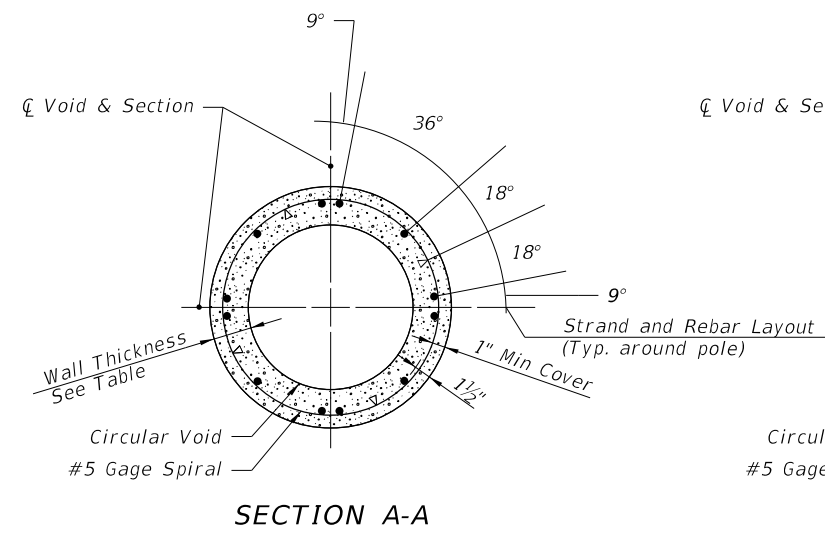
- - Prestressed Strand
- Δ - (4) #5 Rebar (Shown) or (6) #4 Rebar



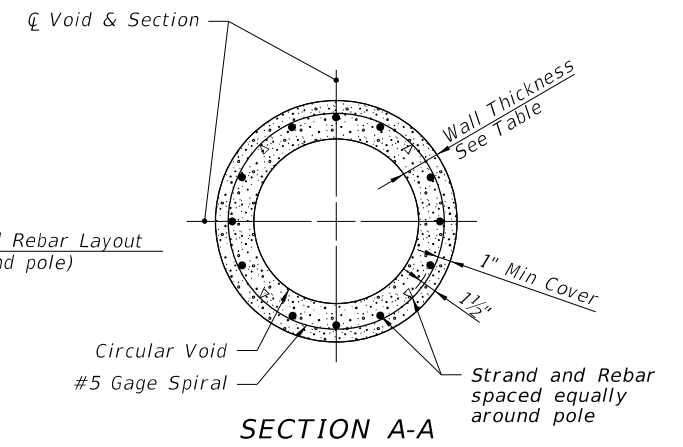
**STRAND PATTERN 1**  
(12 - SIDED)



**STRAND PATTERN 2**  
(12 - SIDED)




**STRAND PATTERN 3**  
(ROUND - OPTION 1)

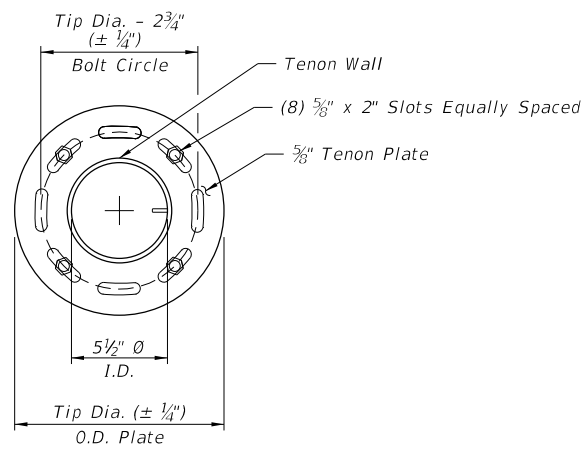


**STRAND PATTERN 4**  
(ROUND - OPTION 2)

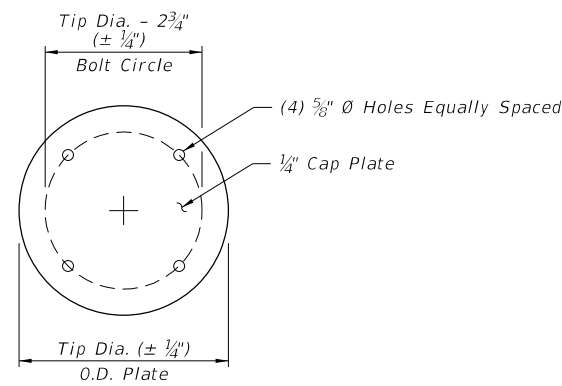
Note:  
Strands and Rebar shown are continuous from Tip End to Butt End.

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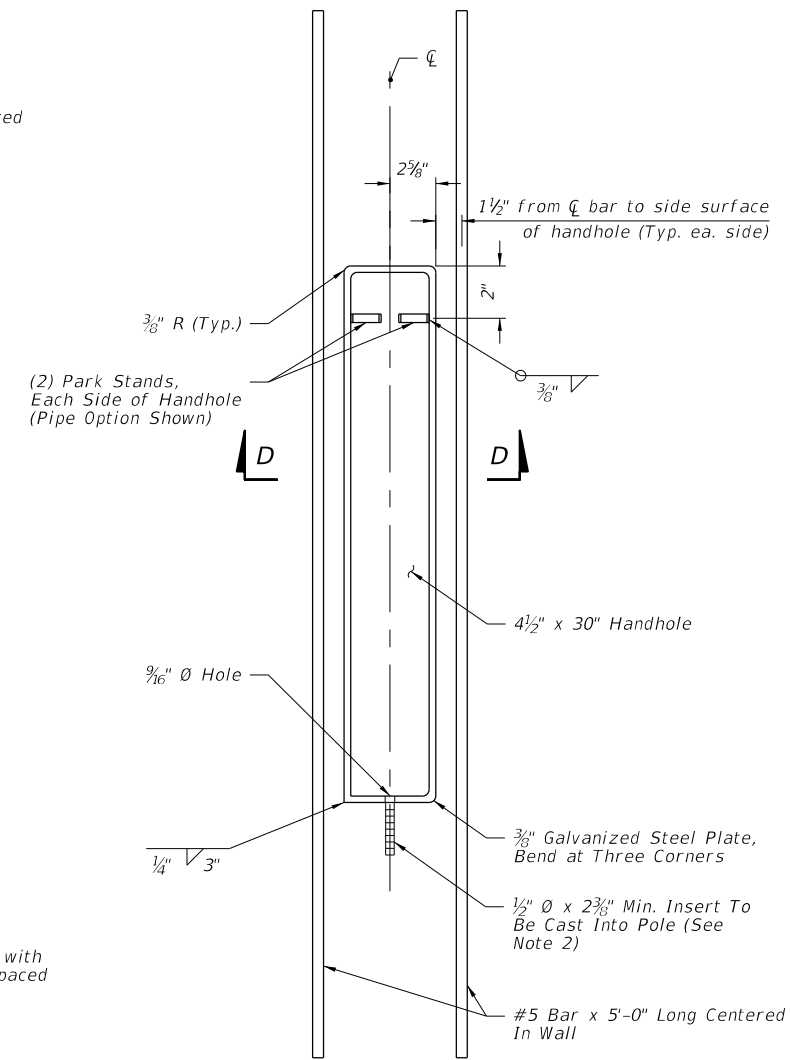
LAST REVISION 01/01/16	REVISION	DESCRIPTION:	 <b>FY 2016-17</b> <b>DESIGN STANDARDS</b>	<b>CONCRETE CCTV POLE</b>	INDEX NO. <b>18113</b>	SHEET NO. <b>3 of 4</b>
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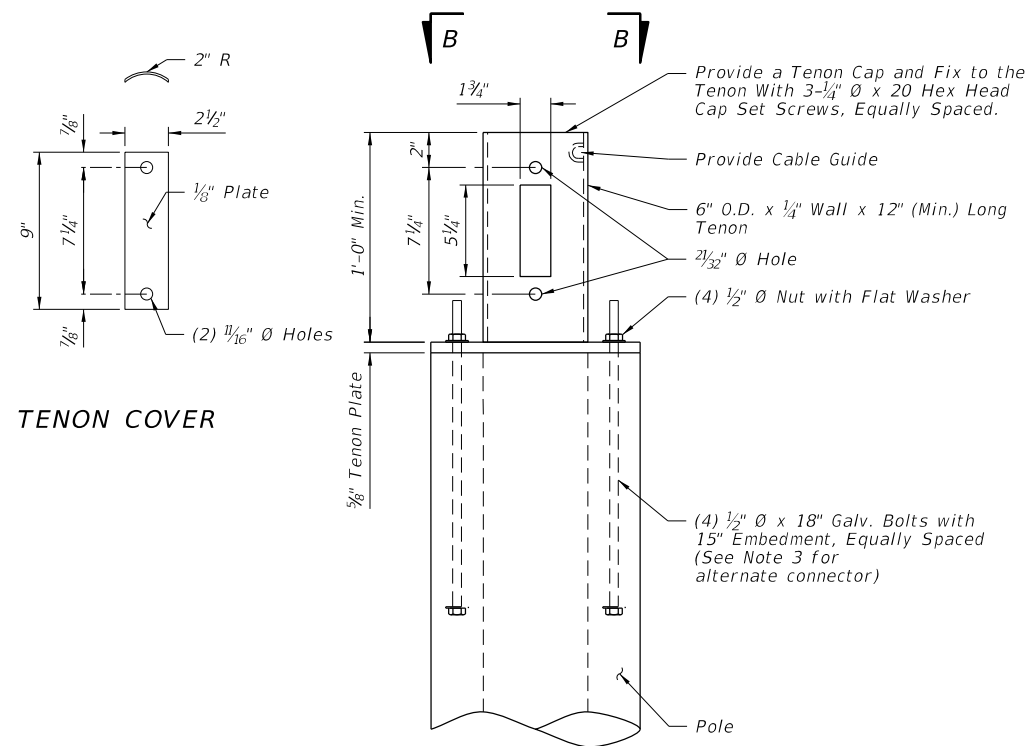
SECTION B-B



CAP PLATE DETAIL

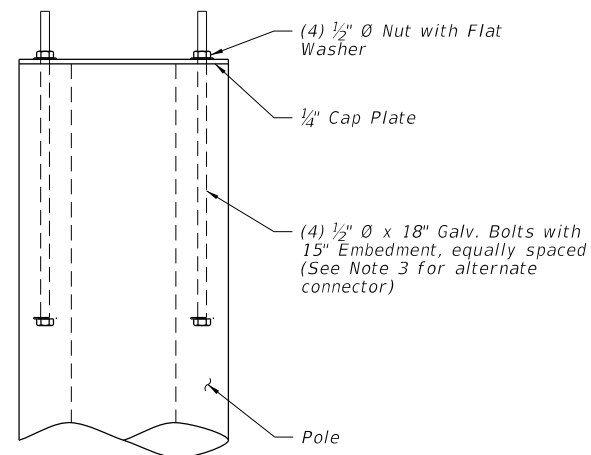


HANDHOLE DETAIL

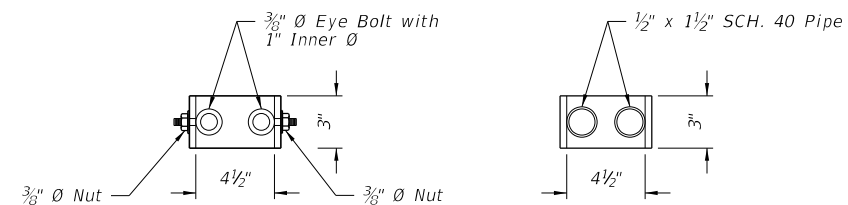


TENON COVER

TOP OF POLE DETAIL WITH LOWERING DEVICE



TOP OF POLE DETAIL WITHOUT LOWERING DEVICE



EYE BOLT OPTION

PIPE OPTION

SECTION D-D - PARK STAND DETAIL

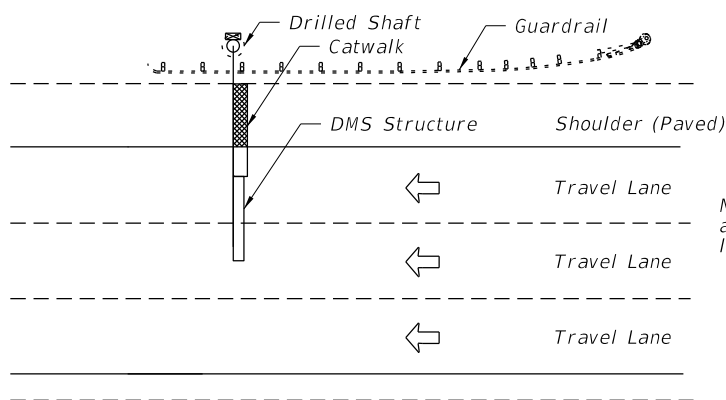
- Notes:
1. Install all handhole and opening covers prior to shipping.
  2. Install  $\frac{1}{2}$ "  $\emptyset$  x 5" long stud with hex nut in insert before shipment.
  3. As an alternate, embed (4)  $\frac{1}{2}$ "  $\emptyset$  x 18" stainless steel threaded rods with a threaded nut. At top of rod,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

11/30/2015 11:37:13 AM

LAST REVISION 07/01/13	REVISION	DESCRIPTION:	FY 2016-17 DESIGN STANDARDS	CONCRETE CCTV POLE	INDEX NO. 18113	SHEET NO. 4 of 4
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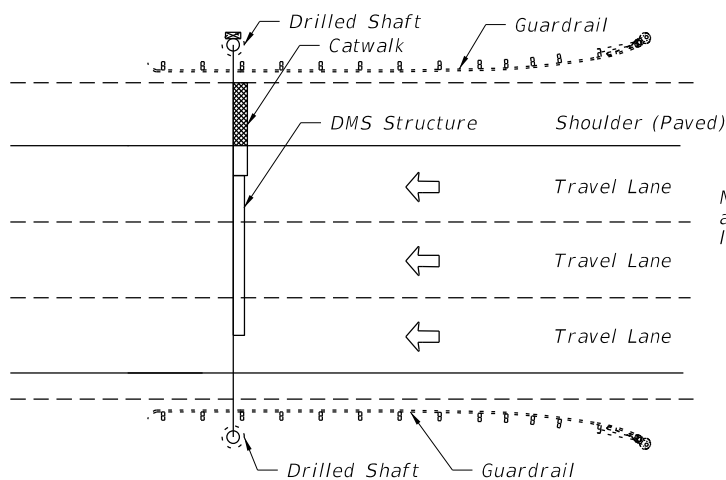
**NOTES:**

1. Install DMS Foundation at location shown in Plans.
2. Extend Catwalk from DMS to outer edge of paved shoulder but not less than four feet in length.
3. If included, Install guardrail at location show in Plans and in accordance with Design Standards Index 400.



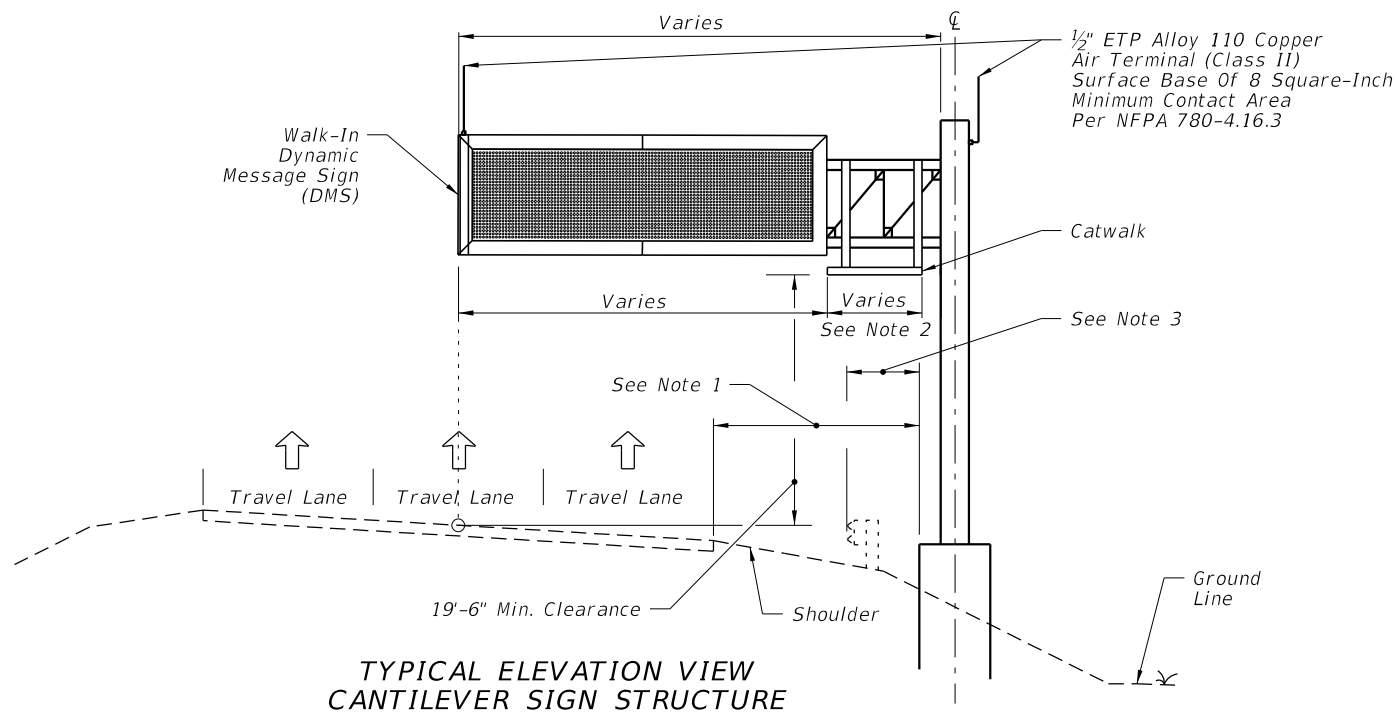
Note: Actual number and direction of travel lanes varies.

**TYPICAL PLAN VIEW  
DMS CANTILEVER SIGN STRUCTURE**

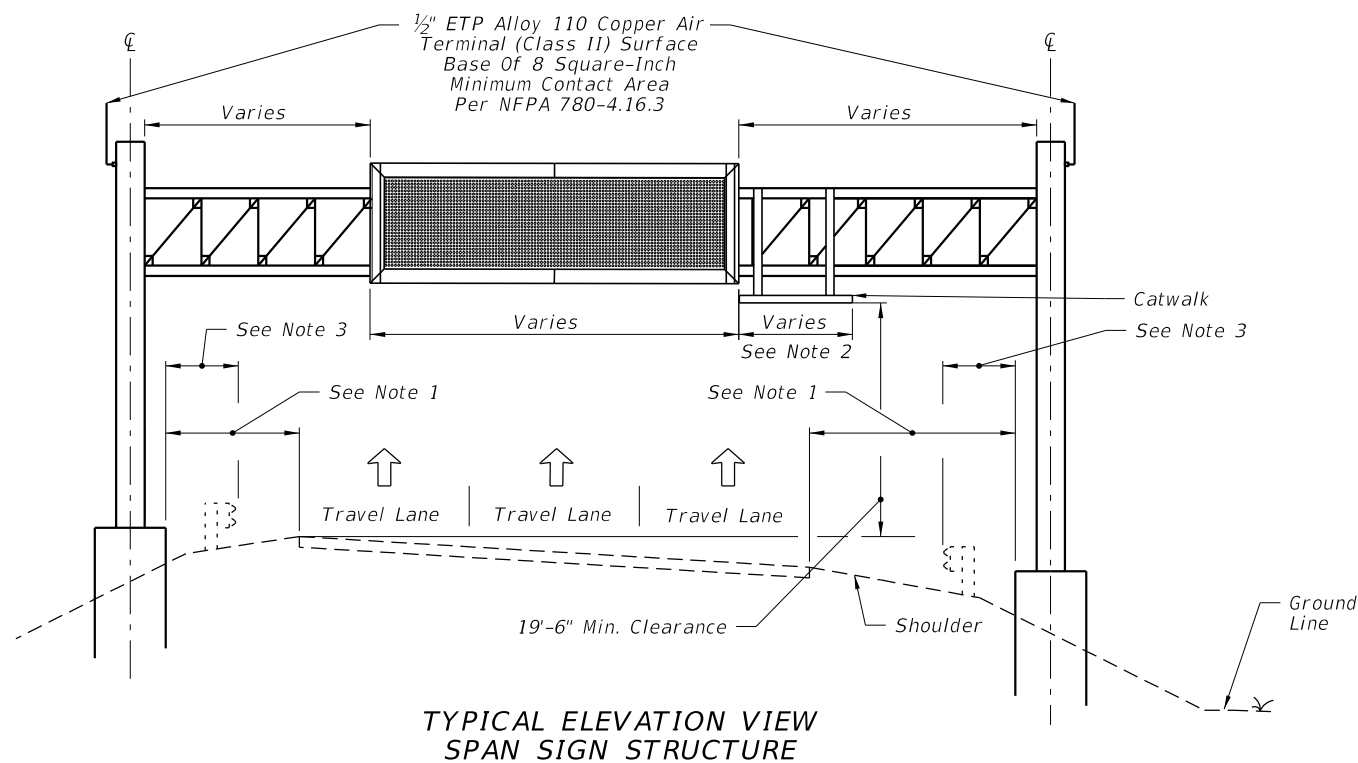


Note: Actual number and direction of travel lanes varies.

**TYPICAL PLAN VIEW  
DMS SPAN SIGN STRUCTURE**



**TYPICAL ELEVATION VIEW  
CANTILEVER SIGN STRUCTURE**

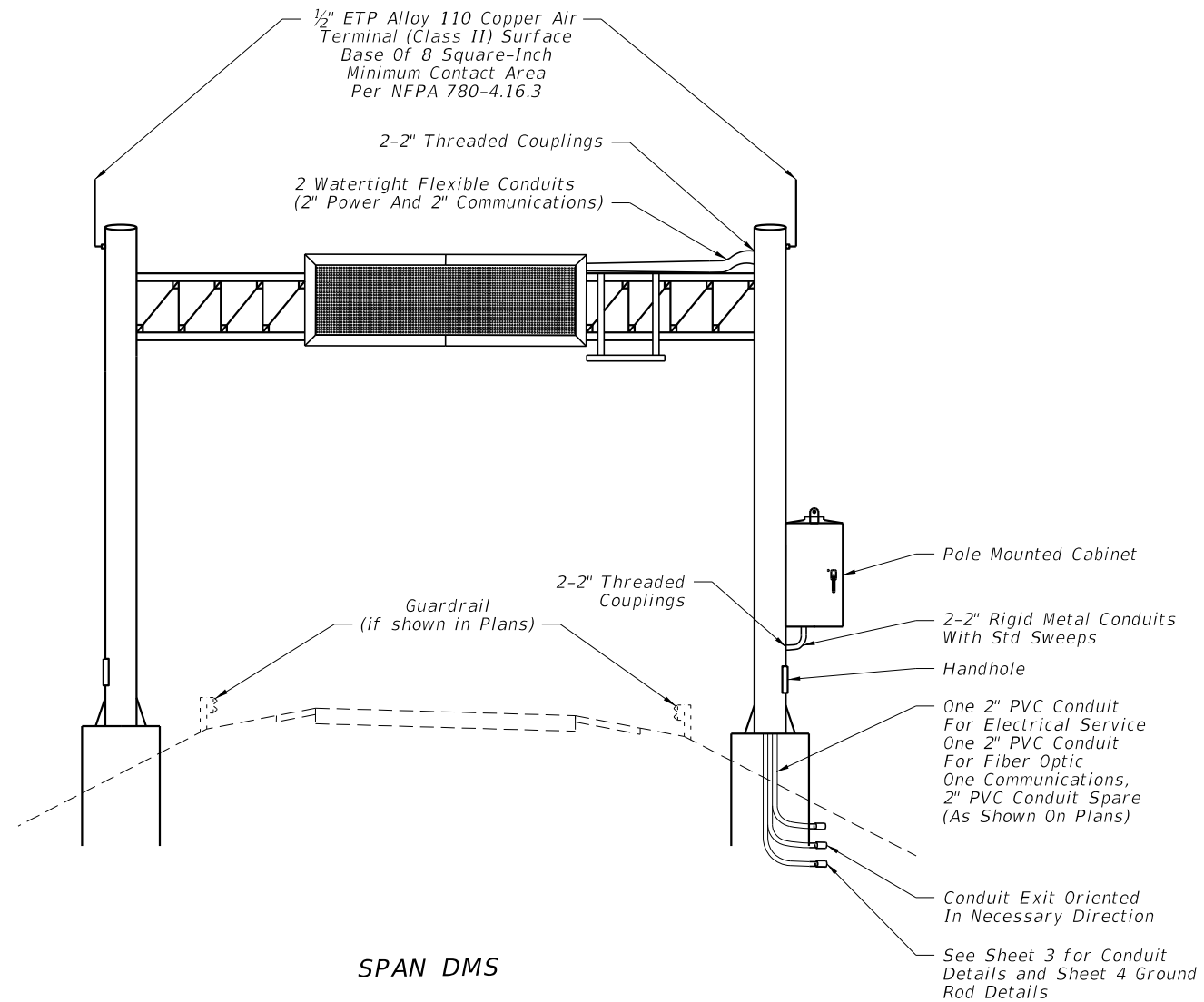


**TYPICAL ELEVATION VIEW  
SPAN SIGN STRUCTURE**

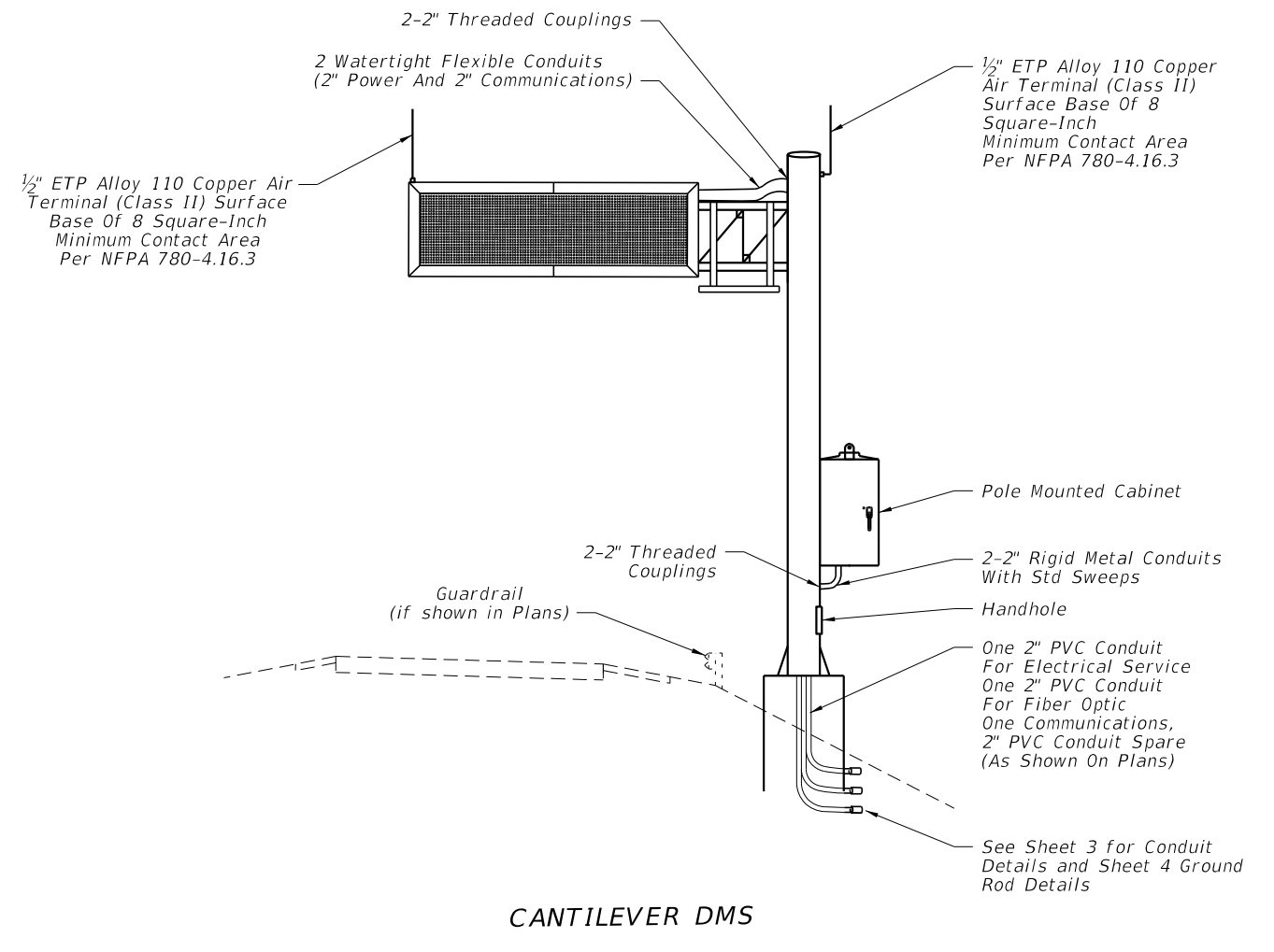
**GENERAL LAYOUT**

11/30/2015 11:37:14 AM

LAST REVISION 07/01/15	DESCRIPTION:		FY 2016-17 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 1 of 9
REVISION						



SPAN DMS




CANTILEVER DMS

**NOTES:**

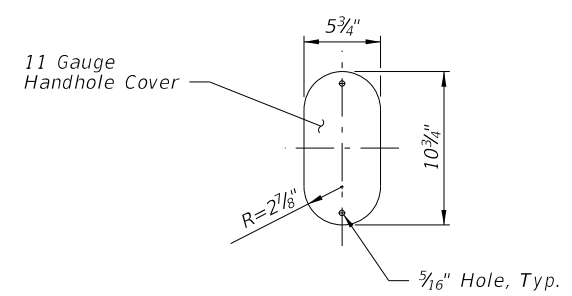
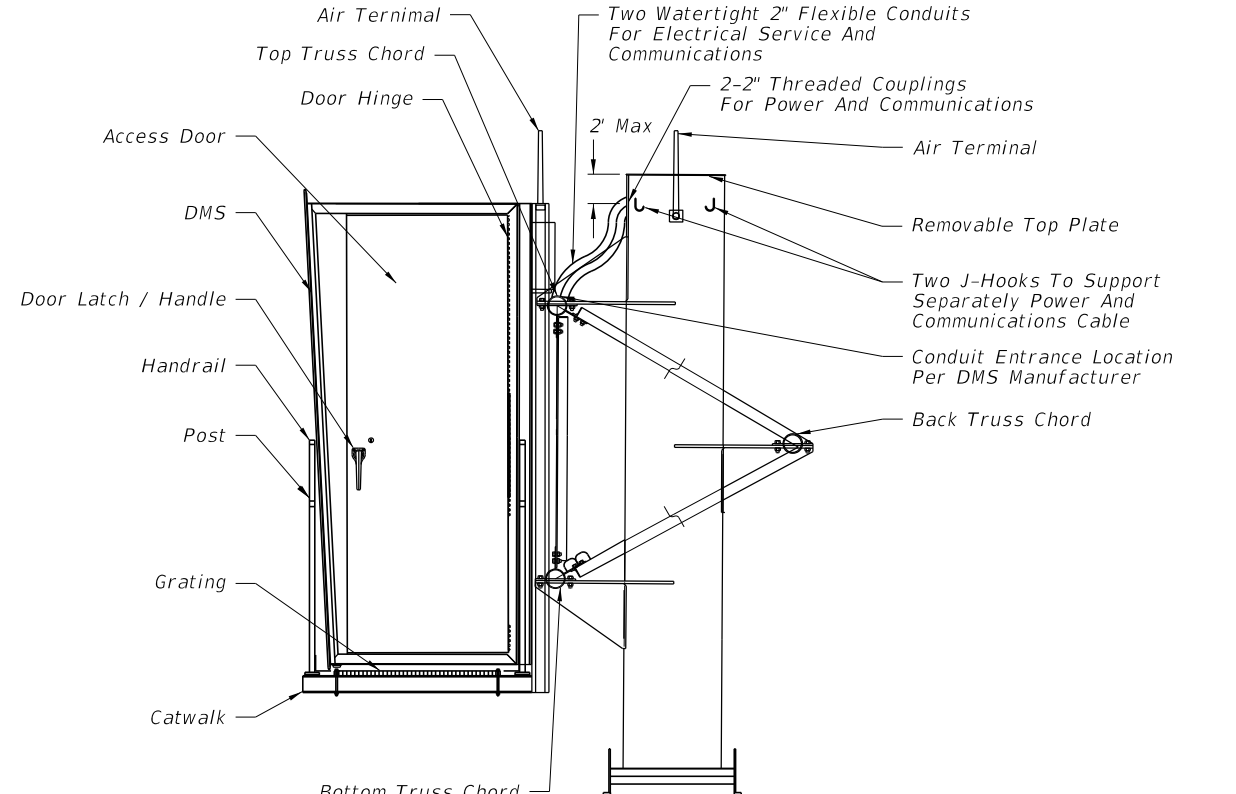
1. Conductors for grounding shall be connected to steel framework that has been cleaned to base metal by use of bonding plates having contact area of not less than 8 square inches or by welding or brazing. Drilling and tapping the steel structure to accept a threaded connector is also an acceptable method.
2. If steel framework is to be drilled and tapped to accept threaded connector, the threaded connector shall be galvanized and have at least 5 threads fully engaged and secured with a jam nut to the steel framework.
3. Bends in the conduit shall not be less than the minimum bending radius for the cable contained in the conduit.
4. Catwalk and handrail design and installation shall comply with AISC, AASHTO, and OSHA requirements as applicable.
5. All data, fiber optic and power cables for the DMS shall be completely encased within the sign structure or in conduit.
6. Permanently stamp/mark foundation to conduit locations.
7. Transition conduit in foundation to underground conduit with appropriate reducer outside the limits of the foundation.

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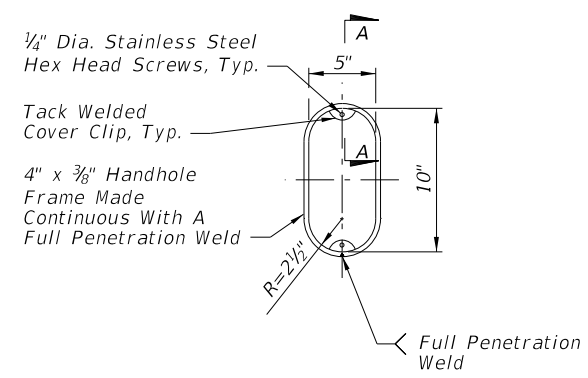
LAST REVISION 07/01/15	REVISION	DESCRIPTION:	 <b>FY 2016-17</b> <b>DESIGN STANDARDS</b>	<b>DYNAMIC MESSAGE SIGN WALK-IN</b>	INDEX NO. <b>18300</b>	SHEET NO. <b>2 of 9</b>
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**NOTES:**

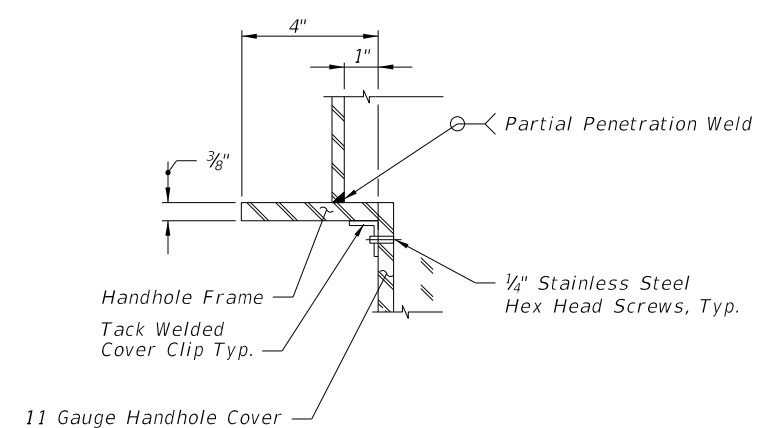
1. DMS Cabinet may be pole or ground mounted depending on project requirements.
2. See sheet 4 for additional conduits for grounding. The number and placement of conduits are approximate.
3. Field adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel given site conditions as directed by the Engineer. Avoid conflicts with stiffeners, handhole and maintenance of anchor bolts.



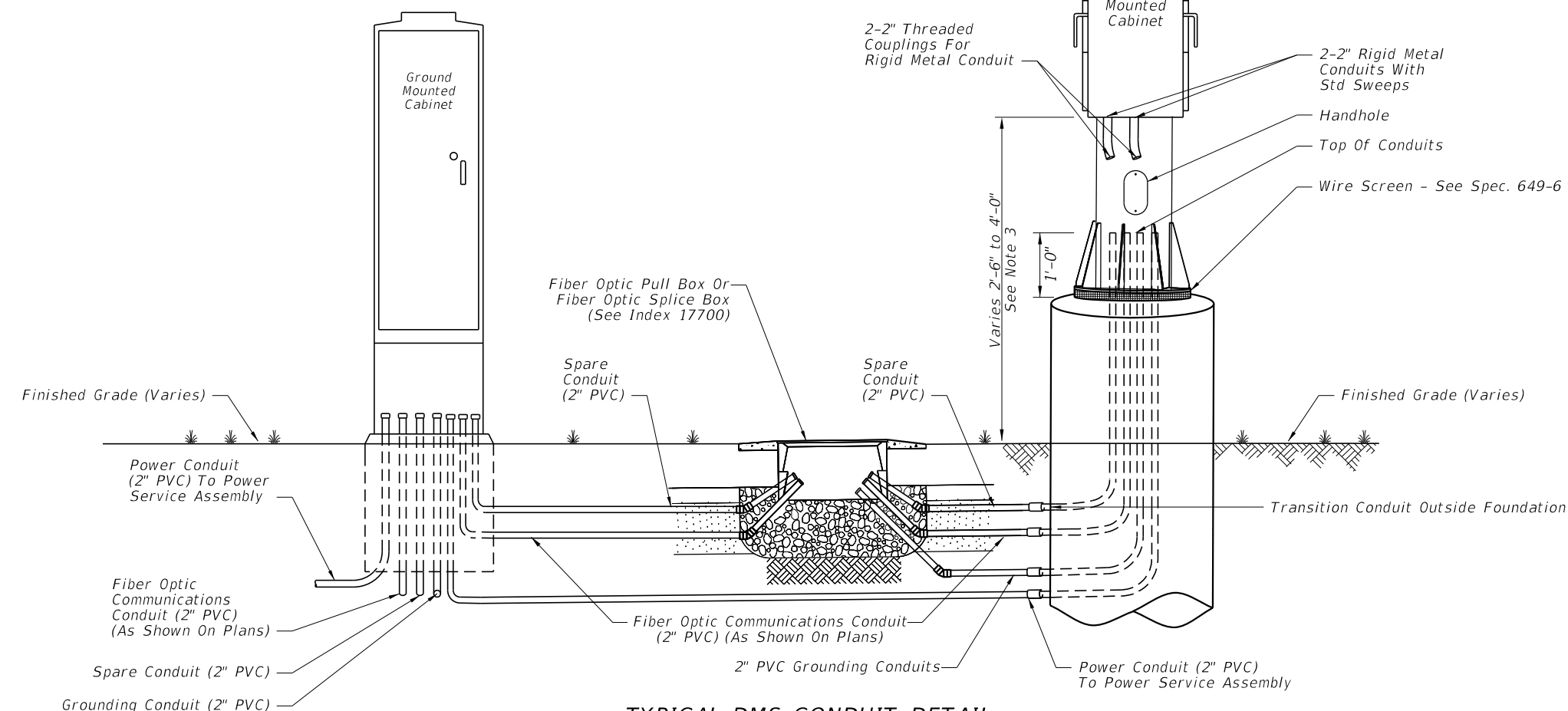
**HANDHOLE COVER**



**HANDHOLE FRAME**



**SECTION A-A  
(Thru Handhole)**

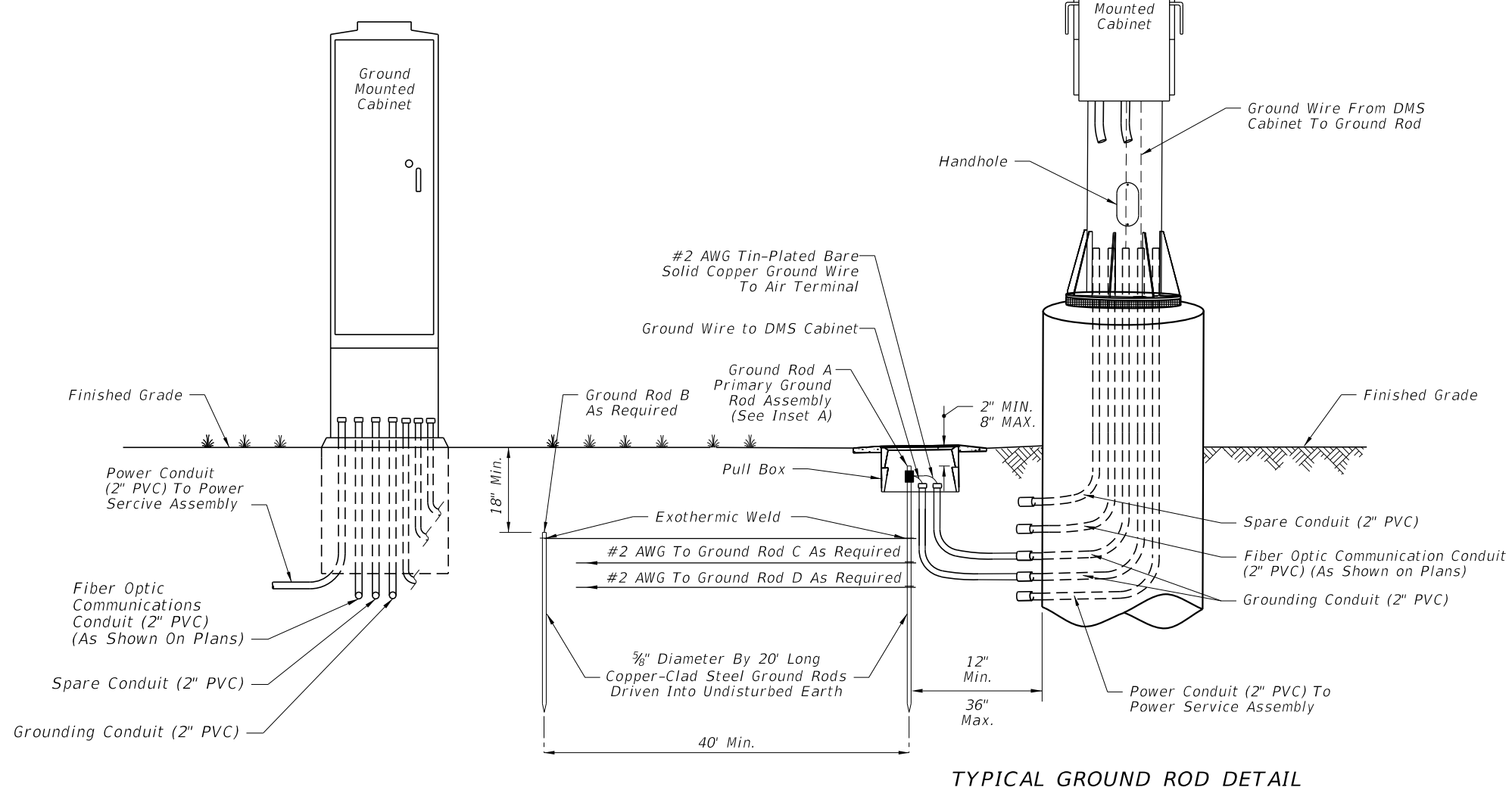
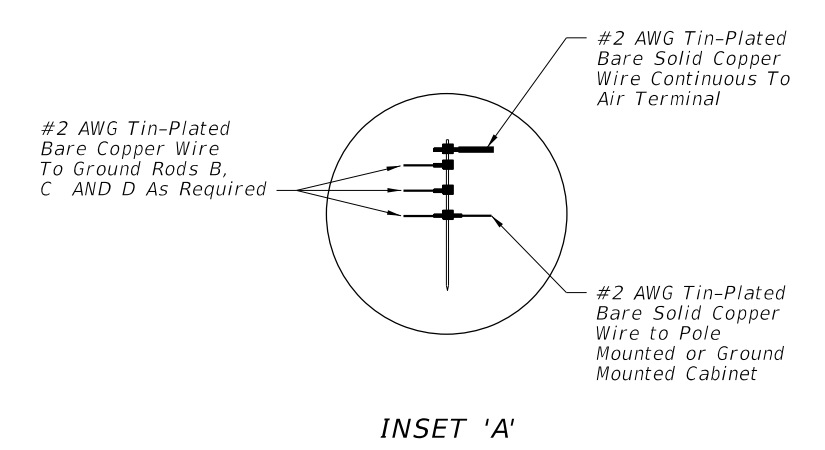
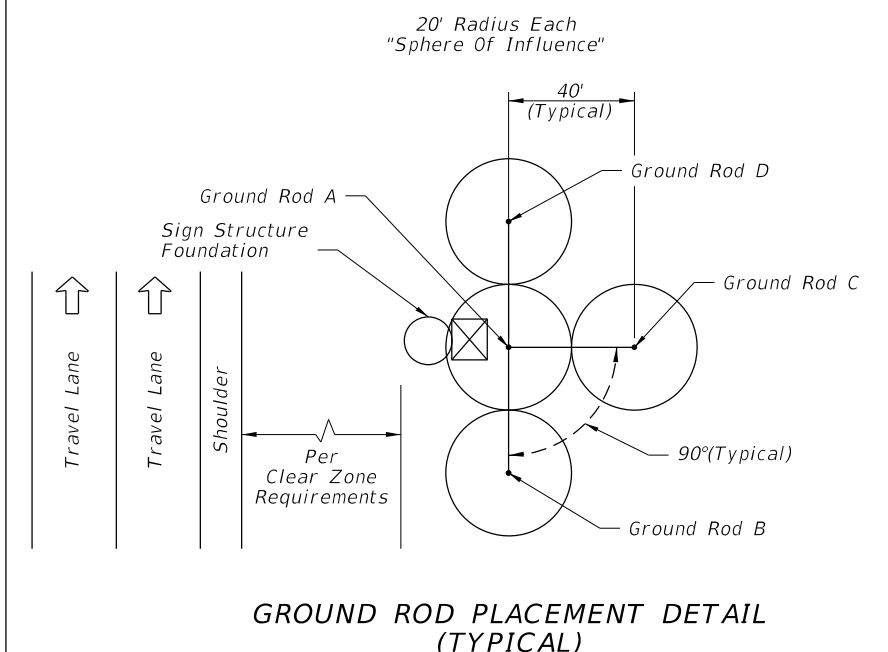
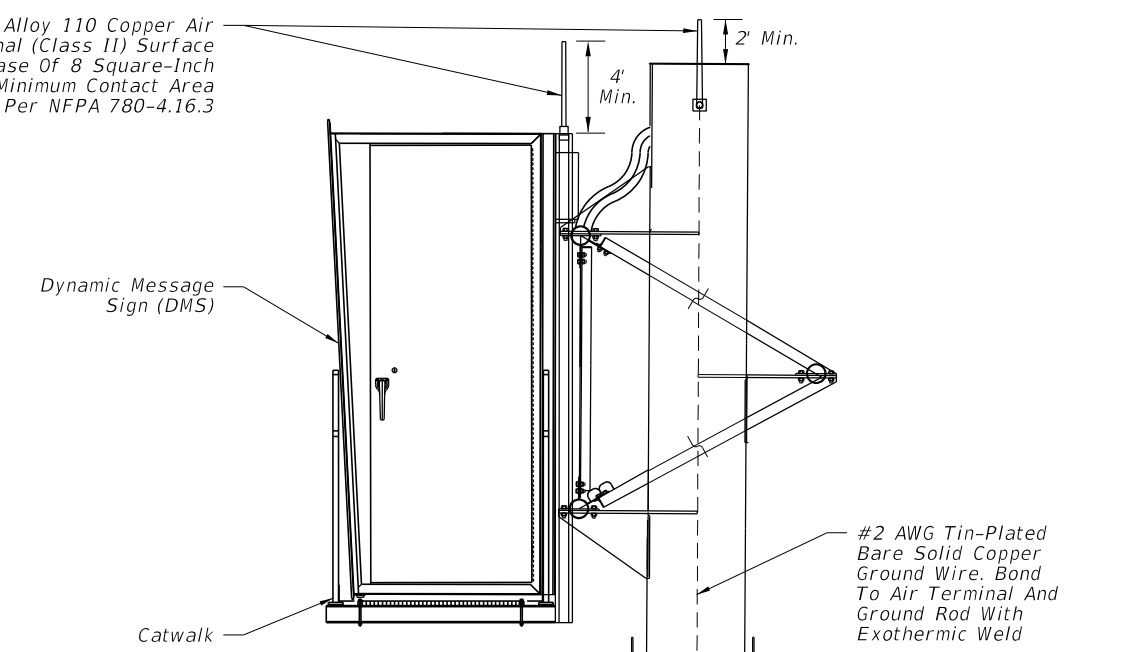


**TYPICAL DMS CONDUIT DETAIL  
CANTILEVER/SPAN SIGN STRUCTURE**

11/30/2015 11:37:16 AM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 3 of 9
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1/2" ETP Alloy 110 Copper Air Terminal (Class II) Surface Base Of 8 Square-Inch Minimum Contact Area Per NFPA 780-4.16.3

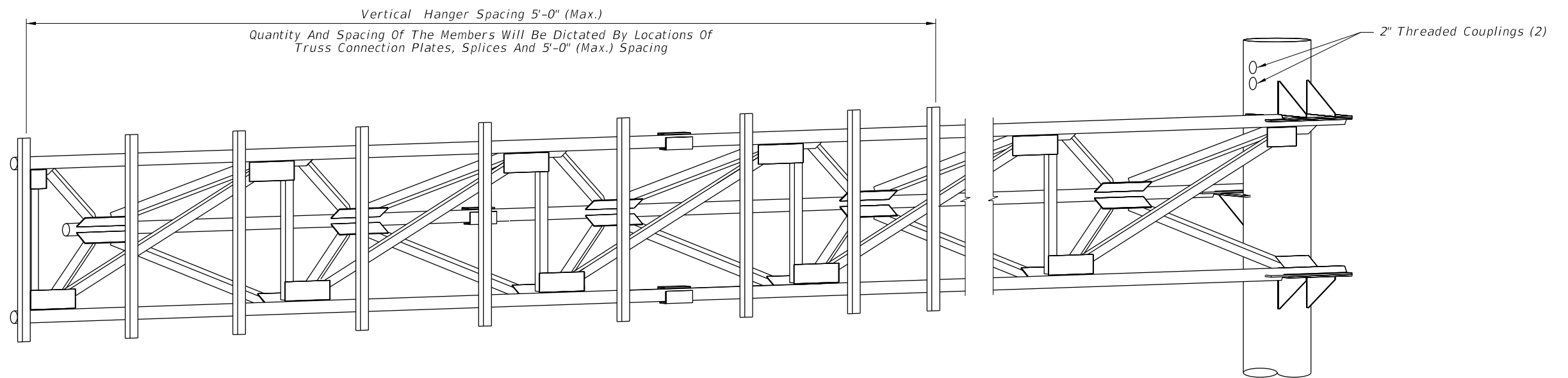


TYPICAL GROUND ROD DETAIL

11/30/2015 11:37:17 AM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 4 of 9
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### HANGER LOCATION DETAIL

(Cantilever Sign Structure Shown, Span Sign Structure Similar)

#### NOTES

1. Design Specifications: FDOT Structures Manual (current edition) and AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.
2. DMS and Hanger Design Wind Speed: 150 miles per hour. Maximum DMS weight for design: 4500 lb.
3. Shop drawings including the DMS connection are required and fabrication shall not begin until these shop drawings are approved.
4. Locate the sign horizontal on the structure as shown in the plans. Vertically center the sign enclosure with the centerline of the truss.
5. Before erection, after both the delivery of the DMS and the steel truss, the contractor shall carefully measure the exact locations for field drilling the  $\frac{1}{2}$ " bolt holes in the vertical hangers and horizontal mounting member attached to the sign enclosure. Field locate holes to allow vertical hanger placement as shown on the plans with no conflicts with gusset or splice plates.
6. All steel items shall be galvanized as follows:  
All nuts, bolts and washers ASTM F2329  
All other steel items ASTM A123
7. All bolt holes shall be equal to the bolt diameter plus  $\frac{1}{16}$ ", prior to galvanizing.
8. All bolts shall have single self-locking nuts, or locking nut system, installed in accordance with the manufacturer's recommendations.
9. Cost of the installation of the DMS on truss including the vertical hanger, associated members, and hardware shall be incidental to the cost of the sign structure.
10. Threaded couplings shall be located on sign side of column above the sign truss.

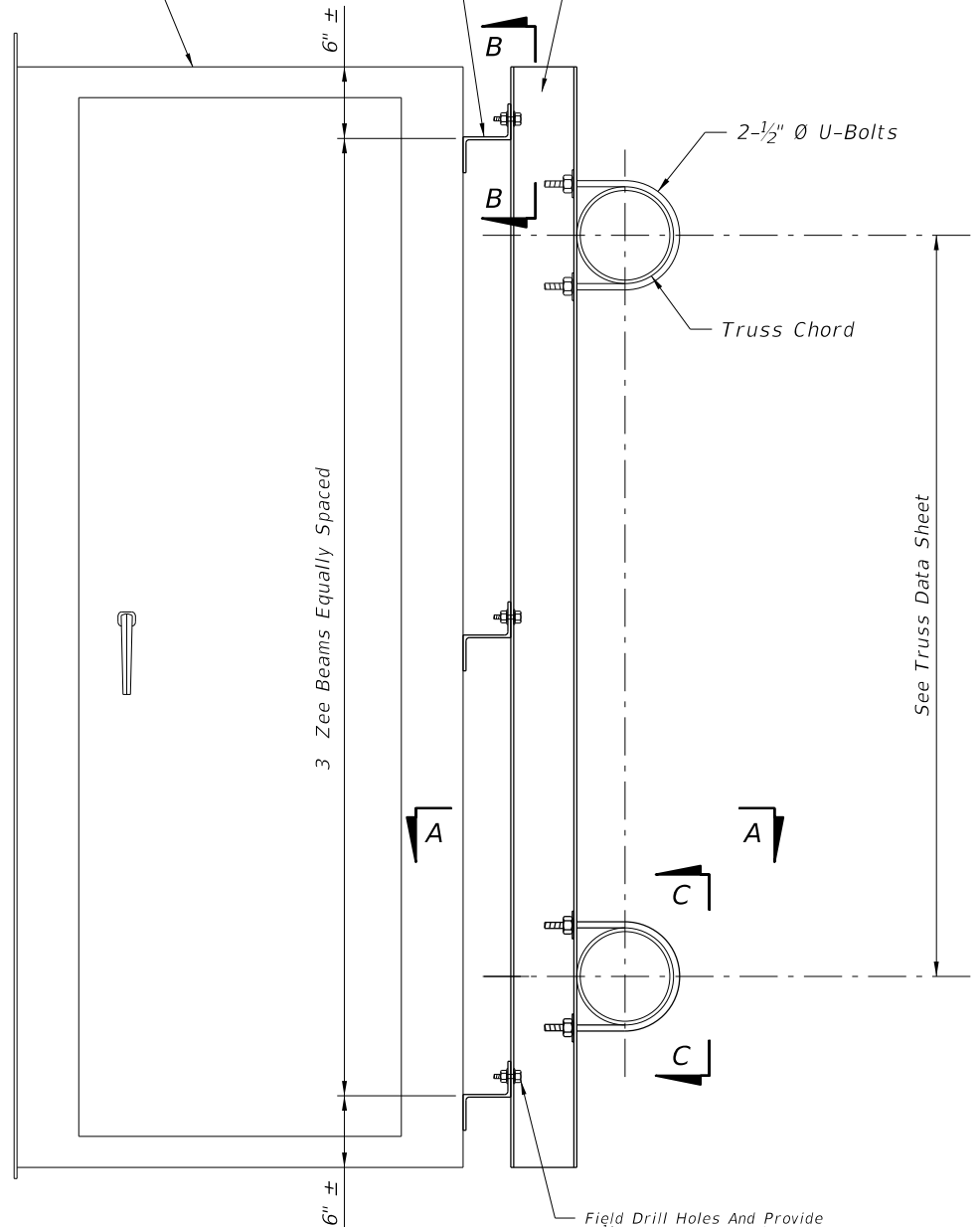
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LAST REVISION 07/01/14	REVISION	DESCRIPTION:	<b>FY 2016-17 DESIGN STANDARDS</b>	<b>DYNAMIC MESSAGE SIGN WALK-IN</b>	INDEX NO. <b>18300</b>	SHEET NO. <b>5 of 9</b>
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6061-T6 Structural  
Aluminum Zee 4x3.13x3.58  
Horizontal Member  
Attached To The Internal  
Framework And Included  
With The DMS Sign

DMS Sign Enclosure

ASTM A709, Gr.36 Steel W6x9  
Hanger @ 5' (Max.) Spacing

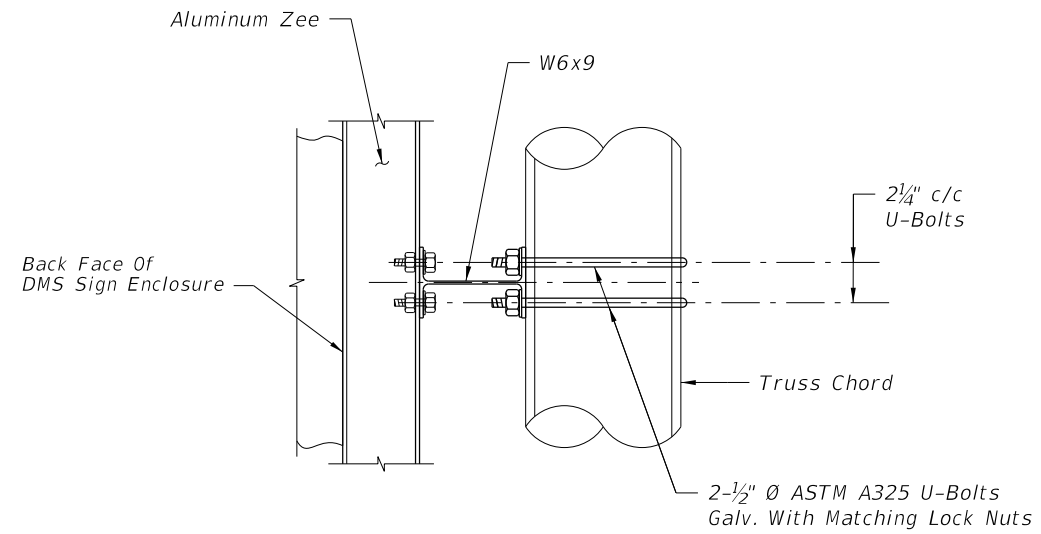


3 Zee Beams Equally Spaced

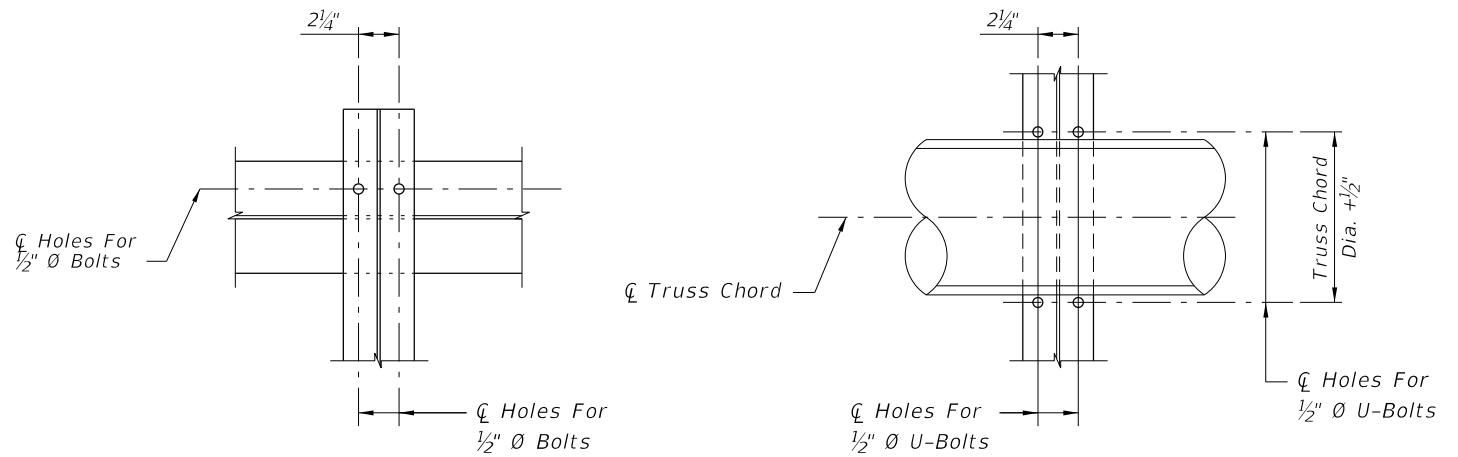
See Truss Data Sheet

Field Drill Holes And Provide  
2-1/2" Ø ASTM A325 Bolts  
Galvanized With Matching  
Lock Nuts

END VIEW



SECTION A-A



SECTION B-B

SECTION C-C

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LAST REVISION 07/01/14	REVISION	DESCRIPTION:
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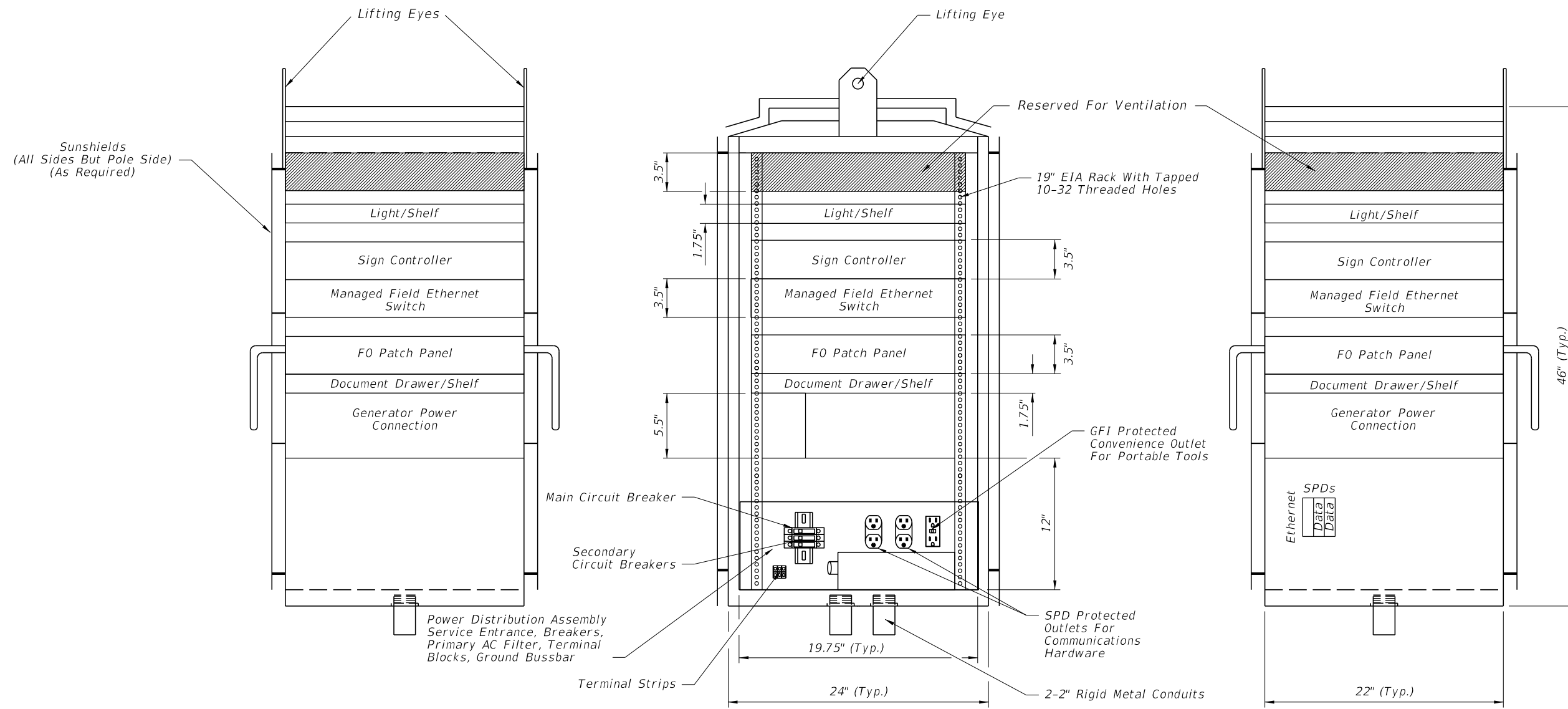
FDOT  
FY 2016-17  
DESIGN STANDARDS

DYNAMIC MESSAGE SIGN WALK-IN

INDEX NO.  
18300

SHEET NO.  
6 of 9





LEFT SIDE VIEW

FRONT VIEW  
POLE MOUNTED CABINET

RIGHT SIDE VIEW

**NOTES:**

1. Cabinet layout is for pole or ground mounted installations.
2. All dimensions and equipment locations are approximate.
3. Conduit entrances are at bottom of cabinet.
4. Minimum number of duplex outlets is three, (2) SPD protected and (1) GFI protected.
5. Either an access controller or local access panel shall be provided to provide full access to DMS for control, programming and troubleshooting.
6. Load center shall be sized for connected equipment and convenience outlets with at least one main disconnect and three circuit breakers.
7. Batteries and UPS may be located in sign housing or cabinet.
8. Power Distribution Assembly component layout, orientation and location may vary.

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**CABINET LAYOUT 1**

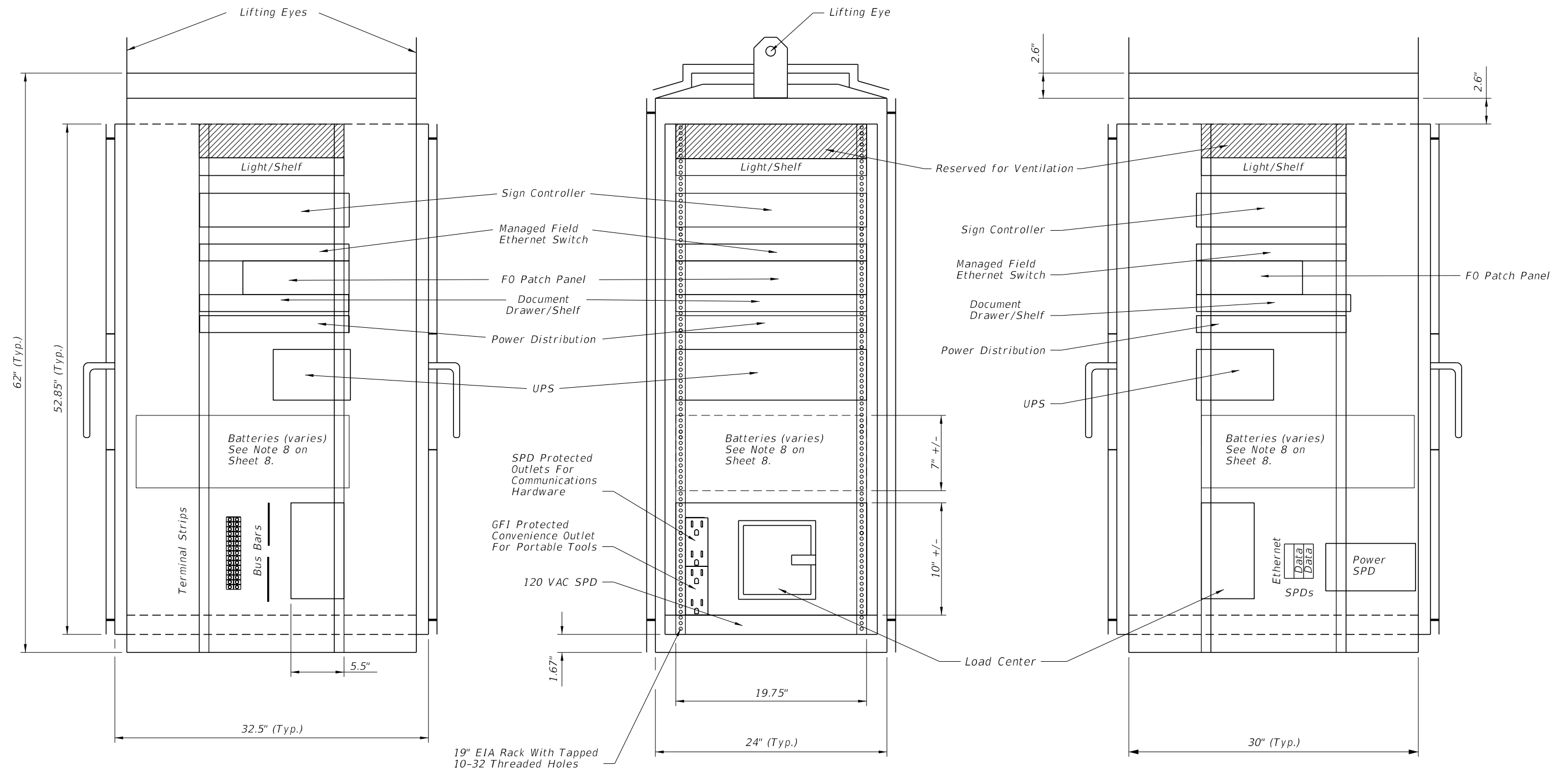
LAST REVISION	07/01/14	REVISION	DESCRIPTION:
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**DYNAMIC MESSAGE SIGN WALK-IN**


INDEX NO.  
**18300**

SHEET NO.  
**8 of 9**



**CABINET LAYOUT 2**

11/30/2015 11:37:22 AM

LAST REVISION 07/01/14	REVISION DESCRIPTION:	 FY 2016-17 DESIGN STANDARDS	DYNAMIC MESSAGE SIGN WALK-IN	INDEX NO. 18300	SHEET NO. 9 of 9
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