GENERAL NOTES:

1. For location where pole foundation is lower than roadway, mount CCTV cabinet on pole. Clear zone shall be measured to the edge of drilled shaft if drilled shaft is more than 4" above adjacent grade.

2. Distance must be in accordance with project design documents and greater than or equal to minimum clear zone requirements.
DESCRIPTION:

TYPICAL CCTV SITE

For Ground Mounted Cabinet (See Index 18107)

For Pole Mounted Cabinet (See Index 18108)

For Grounding (See Index 18102)

Dome Type CCTV Camera

CCTV Cabinet

Concrete

STEEL POLE

CONCRETE POLE
Concrete Driven Into Undisturbed Earth
Copper-Clad Steel Ground Rods
" Diameter By 20' Long
Driven Into Undisturbed Earth

Steel Pole
Exothermic Weld
Ground Rod A See Inset "A"
Ground Rod B
6" Minimum
12" Min.
Conduit For Power
Ground Rod B
PVC Conduit
2" PVC Conduit
For Fiber Optic Cable
6" Minimum
Ground Rod A See Inset "A"
Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

CCTV Cabinet
As Required Per Plans
Wire Screen See Spec. 649-6
Ground Log
Finished Grade
Ground Rod B

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

Concrete

Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

Concrete

Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

Concrete

Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

Concrete

Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.

Ground Rod B
Finished Grade
CCTV Cabinet
As Required Per Plans

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

Concrete

Exothermic Weld
To Concrete Pole @ 3' Intervals Bond To Air Terminal And Ground Rod With Exothermic Weld.

40' Min.
Concrete

12" Min.
60 Max.
1/2" Conduit For Power

1/2 Diameter By 20' Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth

CCTV Camera
CCTV Cabinet
As Required Per Plans
CCTV Camera
Dome Type

Exothermic Weld
Attach To Camera Base Using A Stainless Steel Self-Tapping Screw. Remove Paint Or Protective Coating Where Attaching Lug. Bond #2 Wire To #2 Ground Wire.

Bond #2 AWG Tri-Plated Bare Solid Copper Wire To Camera Support Base With An Aluminum-To-Copper #2 x #4 AWG Lug. Ensure Conduits Are Sealed To Prevent Water Intrusion. 1/2" x 10 PVC Conduit Sleeve Shall Be Provided To Protect Any External Ground Wire From Mechanical Damage.
GENERAL NOTES:

1. Distance must be in accordance with project design documents and greater than or equal to minimum clear zone requirements.
2. Exothermically weld all connections to ground rods.
3. Install marker tape directly above all grounding electrodes and conductors at a depth of 6".
4. All data, coaxial and power cables to the camera shall be completely concealed.
5. All air terminals must meet UL-96A.
6. Ground rod A is required. Ground rods B, C and D will be required as necessary to meet the ground resistance requirements in the contract documents.
7. Place ground system within right of way.
8. Route all camera cables inside arm of mounting bracket.
9. Main ground rod to be placed immediately adjacent to pole.
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.
GENERAL NOTES:

1. Contractor shall splice fiber optic cables in cabinet to preterminator 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.

GROUND MOUNTED CCTV CABINET
Field adjust pole-mounted cabinet height to achieve best access for maintenance personnel given site conditions as directed by the Engineer. Avoid conflicts with handholes.

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.

GENERAL NOTES:

CONCRETE POLE

STEEL POLE

DETAIL A

POLE MOUNTED CCTV CABINET

FDOT 2014 DESIGN STANDARDS

INDEX NO. 18108

SHEET NO. 1 of 1

LAST REVISION: 07/01/07
**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 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.


5. Camera to be mounted to camera junction box and stabilizing weight via 1\(\frac{1}{2}\) 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\(\frac{1}{2}\) diameter PVC conduit.

8. All communication and power cables must be neatly bundled and secured.


10. See Index 18113 for concrete pole details and Index 18111 for steel pole details.

---

**CAMERA LOWERING DEVICE DETAIL**

- 1\(\frac{1}{2}\) ETP Alloy 110 Copper Air Terminal Class II
- EPDM O-Ring Seal
- Lower Contact Assembly
- Camera Connectors
- Camera Junction Box And Dome Flange
- EPDM 0-Ring Gasket
- 2-Way Tracking Guide And Support
- Cables stop block
- Ground Rod Base Mount To Side Of Pole
- U-Bolt Clamps
- Conduit To Be Bolted Here

---

**CAMERA MOUNTING WITH LOWERING DEVICE**

- 2\(\frac{1}{2}\) ETP Alloy 110 Copper Air Terminal Class II
- Camera Lowering Cable
- Contact Connector
- Camera Connectors
- Camera Mounting Bracket And Dome Flange
- Dome Type CCTV Camera (TPF)
- Camera Junction Box And Dome Flange
- Camera Mounting Bracket And Dome Flange
- Camera Connectors
- Camera Junction Box
- Camera Mounting Bracket
- Camera Connecting
- Camera Lowering Cable
- Camera Mounting With Lowering Device
- Camera Mounting Details
**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.

---

**CAMERA MOUNTING WITH FIXED BRACKET**

**SECTION AA**

**FIXED MOUNTING BRACKET DETAIL**

Not To Scale

---

**Pole Plate With Stainless Steel Band**
(Or Method Approved By Engineer)

---

**Bend #4 AWG Tin-Plated Bare Solid Copper Ground Wire To Camera Support Base By An Aluminum To Copper #2-#14 AWG Lug, Attached To Camera Base With A Stainless Steel Screw. Remove Paint Or Protective Coating Where Attaching Lug.**

---

**Bracket Design May Vary By CCTV Manufacturer**

---

**Strain Relief Fitting**

---

**Camera Connector Harness Supplied To Match Camera**

---

**Cast-In Place 2" Galvanized Nipple For Concrete Poles, Hole With Nipple Grommet For Steel Poles.**

---

**Dome Type Camera Assembly (TYP)**

---

**Cabling To Camera**

---

**Mounting The CCTV Camera Housing With CCTV Camera Manufacturer For Bracket Design And Flange Connection**

---

**Fixed Mounting Bracket Must Be Designed To Match Mounting Provisions For CCTV Camera**

---

**The Contractor Shall Coordinate Assembly (TYP)**

---

**Nipple Grommet For Steel Poles.**

---

**Remove Paint Or Protective Coating Where Attaching Lug.**

---

**Lug. Attached To Camera Base With A Stainless Steel Screw.**

---

**Camera Support Base By An Aluminum To Copper #2-#14 AWG**

---

**Bond #4 AWG Tin-Plated Bare Solid Copper Ground Wire To Camera Support Base By An Aluminum To Copper #2-#14 AWG Lug, Attached To Camera Base With A Stainless Steel Screw. Remove Paint Or Protective Coating Where Attaching Lug.**

---

**Verifies (2 Max.)**

---

**The Contractor Shall Coordinate Mounting The CCTV Camera Housing**

---

**SECTION AA**

---

**Cast-In Place 2" Galvanized Nipple For Concrete Poles, Hole With Nipple Grommet For Steel Poles.**

---

**Pole Plate With Stainless Steel Band**
(Or Method Approved By Engineer)

---

**Mounting The CCTV Camera Housing With CCTV Camera Manufacturer For Bracket Design And Flange Connection**

---

**Fixed Mounting Bracket Must Be Designed To Match Mounting Provisions For CCTV Camera**

---

**The Contractor Shall Coordinate Assembly (TYP)**

---

**Nipple Grommet For Steel Poles.**

---

**Remove Paint Or Protective Coating Where Attaching Lug.**

---

**Lug. Attached To Camera Base With A Stainless Steel Screw.**

---

**Camera Support Base By An Aluminum To Copper #2-#14 AWG**

---

**Bond #4 AWG Tin-Plated Bare Solid Copper Ground Wire To Camera Support Base By An Aluminum To Copper #2-#14 AWG Lug, Attached To Camera Base With A Stainless Steel Screw. Remove Paint Or Protective Coating Where Attaching Lug.**

---

**Verifies (2 Max.)**

---

**The Contractor Shall Coordinate Mounting The CCTV Camera Housing**

---

**SECTION AA**
FOUNDATION NOTES:

1. Concrete: Class IV (Drilled Shaft) with a minimum 4000 psi compressive strength at 28 days for all environment classifications.
2. Reinforcing Steel: ASTM A615 Grade 60.
3. Anchor Bolts: ASTM F1554 Grade 5 with ASTM A563 Grade 56 hot-dip galvanized or 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 Foundation Notes.

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 handle.
   c. Position another cable guide 1" directly below the top of the handle.
   d. Position Park Stands 2" below the top of the handhole.
2. Lowering Device Installation Notes:
   a. Position 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.
   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 shall shall be round or 16 sided or more with a constant taper of 0.14 inches per foot.
2. Pole shall 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.
7. Identification Tag: Furnish each pole with a 2x4" (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. Fixed for Anchor Bolts, all bolt hole diameters shall be equal to the bolt diameter plus 1/16" prior to galvanizing. Bolt 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 A536 or ASTM A519 Grade 50.
   c. Weld Metal: E70XX.
   e. Handhole frame: ASTM A519 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 steels: ASTM A123.
11. Additional wire access holes not shown in this Design Standard shall not exceed 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 a two inches along the inner circumference of the reinforcing cage. Notify the Engineer before excavating the shaft if the CSL access tube cannot be moved out of conflict with anchor bolt locations.

GENERAL NOTES
POLE DETAILS

POLE CAP PLATE

(POLE WITHOUT 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 TENON ASSEMBLY DETAIL

(POLE WITH LOWERING DEVICE)

HANDHOLE DETAIL

ROD OPTION

EYE BOLT OPTION

CABLE GUIDE DETAIL

POLE DETAILS

FDOT 2014 DESIGN STANDARDS

STEEL CCTV POLE

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EYE BOLT OPTION

POLE WALL

Wall Thickness

1 1/2" Hole

1 1/2" Rod with 1 1/2" Inner Ø

EYE BOLT OPTION

POLE WALL

Wall Thickness

1 1/2" Hole

1 1/2" Rod with 1 1/2" Inner Ø

CABLE GUIDE DETAIL

POLE CAP PLATE

(POLE WITHOUT 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 TENON ASSEMBLY DETAIL

(POLE WITH LOWERING DEVICE)

HANDHOLE DETAIL

ROD OPTION

EYE BOLT OPTION

CABLE GUIDE DETAIL

POLE DETAILS

FDOT 2014 DESIGN STANDARDS

STEEL CCTV POLE

INDEX NO. 18111

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EYE BOLT OPTION

POLE WALL

Wall Thickness

1 1/2" Hole

1 1/2" Rod with 1 1/2" Inner Ø

EYE BOLT OPTION

POLE WALL

Wall Thickness

1 1/2" Hole

1 1/2" Rod with 1 1/2" Inner Ø

CABLE GUIDE DETAIL

POLE CAP PLATE

(POLE WITHOUT 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 TENON ASSEMBLY DETAIL

(POLE WITH LOWERING DEVICE)
LOWERED 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 states.

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 A16 Grade 270 low relaxation.
   c. Reinforcing Steel: ASTM A615 Grade 60.
   d. Spiral Reinforcing: ASTM A82 Cold-Drawn.
   e. Bolts: ASTM F3554, Grade 55.
   f. Steel plates: ASTMA 36 or ASTM A709 Grade 50.
   h. Washers: ASTM A563, Grade A Heavy Hex.
   i. Nuts: ASTM A563, Grade A Heavy Hex.
   j. Spray: Use primer and approved sealant.
   k. Roofing: Use shingles or other approved roofing materials.

2. The pole shall be round or 12-sided.

3. Flush cut prestressing strands and epoxy coat tip and butt surfaces in accordance with Section 450-11.6 of the Standard Specifications. 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 rebars to be spliced at the same cross section. Stagger lap splices as needed.

6. Provide a Class 3 surface finish as specified in Section 400-15 of the Standard Specifications.

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 pole where indicated on the following sheets. Include the following information using inset numerals with 1" height or as approved in the Producer's Quality Control Program.

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".

GENERAL NOTES
For Round Pole, Option 1 Stress Prestressed strand to 60% of Ultimate before Transfer.

For 12-Sided Pole and Round Pole Option 2 Stress prestressed strand to 70% of Ultimate before Transfer.

** 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.
**Spiral Reinforcing Elevation**

(Strands, Holes, and Fixtures Not Shown)

**Pole Elevation**

(Strands and Reinforcing Not Shown)

**Strand Legend**

- Prestressed Strand
- Dormant Strand 0.6 in.
- (4) #5 Rebar (Shown) or
- (6) #4 Rebar

---

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

---

Note:

- Strands spaced equally around pole.
- Circular Void:
- #5 Gage Spiral
- Tip or Butt Diameter:
- Measured Flat to Flat
SECTION B-B

TENON COVER

- Provide a Tenon Cap and Fix to the Tenon Wall with 3-½" Ø x 35 Hex Head Cap Set Screws, Equally Spaced.
- Provide Cable Guide:
  - Ø ½" x ½" Wall x 12" (Min.) Long Tenon
  - ⅜" Ø Hole
  - (4) ⅝" Cap Plate with Flat Washer
  - (4) ½" Ø x 18" Galv. Bolts with ½" Cap Plate
- Tie Rod Diameter - 2¾" Tip Dia.

CAP PLATE DETAIL

- Provide Cable Guide:
  - ⅜" Ø Hole
  - (4) ⅝" Cap Plate with Flat Washer
  - ⅝" Ø x 18" Galv. Bolts with ⅝" Cap Plate

TOP OF POLE DETAIL WITHOUT LOWERING DEVICE

- As an alternate, embed (4) ½" Ø x 18" stainless steel threaded rods with a threaded nut. Attach plate with (4) ½" Ø x 18" stainless steel bolts.

Notes:
1. Install all handhole and opening covers prior to shipment.
2. Install ½" Ø x 5" long stud with hex nut in insert before shipment.
3. As an alternate, embed (4) ⅝" Ø x 18" stainless steel threaded rods with a threaded nut. Attach plate with (4) ¼" Ø x 18" Stainless Steel bolts.
4. Handhole frame may be Cast Aluminum 356.2.
GENERAL NOTES:
1. If no guardrail or barrier wall exists, structure shall be outside the clear zone. Clear zone shall be measured to edge of the drilled shaft if drilled shaft is more than 4' above adjacent grade.
2. Extend Catwalk from DMS to outer edge of paved shoulder but not less than 4' in length.
3. Clear zone distance and setbacks from edge of travel lane shall be in accordance with Plans Preparation Manual Volume I, Chapters 2 and 4.

See Sheet 6 For Grounding And Lightning Protection
GENERAL NOTES:

1. Conductors for grounding shall be connected to steel framework that have been cleaned to base metal, by use of bonding straps 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 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 cable 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.

SPAN DMS

CANTILEVER DMS
GENERAL NOTES:

1. DMS Cabinet may be pole or ground mounted depending on project requirements.

2. See sheet 2 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. Cabinet height is controlled by the Engineer. Avoid conflicts with stiffeners, hand-hole and maintenance of anchor bolts.

4. See sheet 7 for additional conduits for grounding. The number and placement of conduits are approximate.

5. Depending on project requirements, DMS Cabinet may be pole or ground mounted.

6. Field adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel. Cabinet height is controlled by the Engineer. Avoid conflicts with stiffeners, hand-hole and maintenance of anchor bolts.

7. See sheet 7 for additional conduits for grounding. The number and placement of conduits are approximate.

8. Depending on project requirements, DMS Cabinet may be pole or ground mounted.

9. Field adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel. Cabinet height is controlled by the Engineer. Avoid conflicts with stiffeners, hand-hole and maintenance of anchor bolts.

10. See sheet 7 for additional conduits for grounding. The number and placement of conduits are approximate.

11. Depending on project requirements, DMS Cabinet may be pole or ground mounted.

12. Field adjust pole-mounted DMS cabinet height to achieve best access for maintenance personnel. Cabinet height is controlled by the Engineer. Avoid conflicts with stiffeners, hand-hole and maintenance of anchor bolts.
GENERAL NOTES


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 laterally 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 location for field drilling the 1 1/2" bolt holes in the vertical hanger plates. The eye bolts shall be 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 3/16", 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.
D M S Sign Enclosure

ASTM A709, Gr.36 Steel W6x9 Hanger @ 9 (Max.) Spacing

2-½" Ø U-Bolts

2-½" Ø U-Bolts

2-½" Ø ASTM A325 U-Bolts Galv. With Matching Lock Nuts

2-½" Ø ASTM A325 U-Bolts

Hanger

Back Face Of DMS Sign Enclosure

Truss Chord

2-½" Ø U-Bolts

Hanger

Truss Chord

2-½" Ø U-Bolts

END VIEW

SECTION A-A

SECTION B-B

SECTION C-C

6061-T6 Structural Aluminum Zee 4x3.13x3.58 Horizontal Member Attached To The Internal Framework And Included With The DMS Sign

FIELD DRILL HOLES AND PROVIDE 2-½" Ø ASTM A325 BOLTS Galv. With Matching Lock Nuts

LOCK NUTS GALV. WITH MATCHING 2-½" Ø U-BOLTS

TRUSS CHORD W6x9

ALUMINUM ZEE 4x3.13x3.58
Ground Rod With Exothermic Weld Bond To All Air Terminals And Solid Copper Ground Wire. #2 AWG Tin-Plated Bare

See Detail B (typ.)

Minimum Contact Area Surface Base Of 8 Square-Inch Air Terminal (Class II) 

ETP Alloy 110 Copper

20'

20'

4'

4'

20'

20'

GENERAL NOTES:
1. All grounding materials shall meet the requirements of Section 620.
2. Exothermically weld all connections to ground rods.
3. Lightning protection shall conform to NFPA 780. Spacing between air terminals shall not exceed 20 feet.
4. Install marker tape directly above all grounding electrodes and conductors.
5. Copper flat surfaces shall be bolted, welded, or brazed securely to framework to maintain electrical continuity.
6. All air terminals must meet UL-96A.
7. Grounding system shall be placed within right of way.
8. See Sheet 7 for ground rod placement detail.
9. Lightning protection shall conform to NFPA 780. Spacing between air terminals shall not exceed 20 feet.
DYNAMIC MESSAGE SIGN WALK-IN

DESCRIPTION:

- Ground Rod D
- Ground Rod C
- Ground Rod B
- Foundation
- Sign Structure
- Ground Wire In Structure
- Grounding Conduit (2" PVC)
- #6 AWG Tin-Plated Bare Solid Copper Wire To Electrical Service Ground
- #6 AWG Tin-Plated Bare Solid Copper Ground Wire To Ground Rods B, C, and D

NOTES:

- #2 AWG Tin-Plated Bare Solid Copper Ground Wire To All Air Terminals And Ground Rod With Exothermic Weld
- #2 AWG Tin-Plated Bare Solid Copper Wire Continuously To Air Terminal
- Tin-Plated Bare Solid Copper Wire To Ground Rods B, C, and D As Required
- Exothermic Weld
- To Ground Rod D
- To Ground Rod C
- To Ground Rod B
- 2" PVC Grounding Conduits
- 5/8 Diameter By 20 Long Copper-Clad Steel Ground Rods Driven Into Undisturbed Earth
- Main Ground Rod To Be Placed Immediately Adjacent To Pole
- See Notes 3 On Sheet B
- See Sheet 3 for Conduit Uses and Sizes
- See Inset A
- Hand Hole
- Finished Grade
- Transition Conduit Outside Foundation
- Exothermic Weld
- To Electrical Service
- 6" Min.
- 30" Max.
- 40" Min.

INSET 'A' (TYPICAL)

GROUND ROD PLACEMENT DETAIL

**Typical**

- #2 AWG Tin-Plated Bare Solid Copper Wire Continuous To Air Terminal
- #2 AWG Tin-Plated Bare Solid Copper Wire To Ground Rods B, C, and D
- #6 AWG Tin-Plated Bare Solid Copper Wire To Electrical Service Ground
- See Note 3
- Finished Grade
- 4' Min.
- 40' Max.
- "Sphere Of Influence" 20' Radius Each
- Shoulder
- Per Clear Zone Requirements
GENERAL NOTES:

1. Provide single ethernet connection from managed field ethernet switch to either the sign controller interface in cabinet or sign controller in sign enclosure.
2. Locate cabinet as shown in plans.
3. SP/DP line is for communications directly to the DMS controller.
4. Cabinet must include at least one breaker to control all cabinet power.
5. AC service entrance may be located in cabinet or sign housing.
6. UPS equipment location may vary. Diagram indicates functional requirements that uninterruptible power must be available in cabinet and sign housing.

LEGEND

- Data
- Ethernet
- Power
- SPD Surge Protection Device

SIGN AND CABINET WIRING DIAGRAM

LANT/WAN

Equipment Cabinet

Convenience Outlets

Equipment Power with SPD

UPS

Electrical Breaker

See Note 6

See Note 4

Managed Field Ethernet Switch

Managed Field Ethernet Switch

See Note 1

See Note 1

Managed Field Ethernet Switch

See Note 1

Sign Controller Interface

Managed Field Ethernet Switch

See Note 1

See Note 3

See Note 3

Field Tech Computer (Temporary Service Connection)

Display Modules

DMS Enclosure

Lighting

Power Distribution, Breakers, and UPS

See Note 1

See Note 1

See Note 1

See Note 1

See Note 1

Field Tech Computer (Temporary Service Connection)

Voltage, Opto, Temp, Air Flow, Humidity and Filter Sensors

Climate & Temperature Control

Display Modules

SHEET NO. 8 of 10
INDEX NO. 18300
DYNAMIC MESSAGE SIGN WALK-IN
FDOT 2014 DESIGN STANDARDS

LAST REVISION 07/01/10
DESCRIPTION: DYNAMIC MESSAGE SIGN WALK-IN
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) SPDs protected and (1) GFI protected.
5. Either an access controller or local access panel shall be provided to provide full access to DMS sign 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.

GENERAL NOTES:

LEFT SIDE VIEW
POLE MOUNTED DMS CABINET

RIGHT SIDE VIEW

FRONT VIEW