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 ± 3".

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GENERAL NOTES

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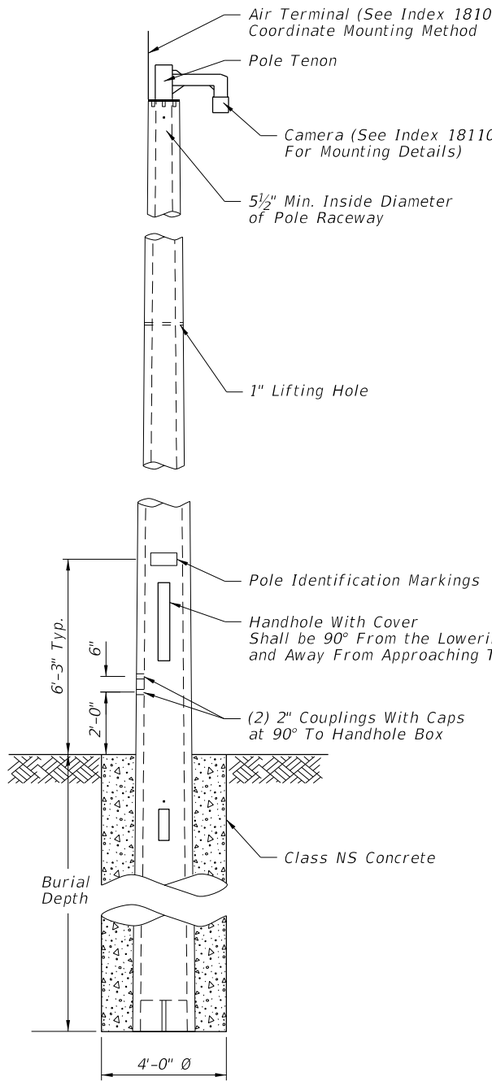
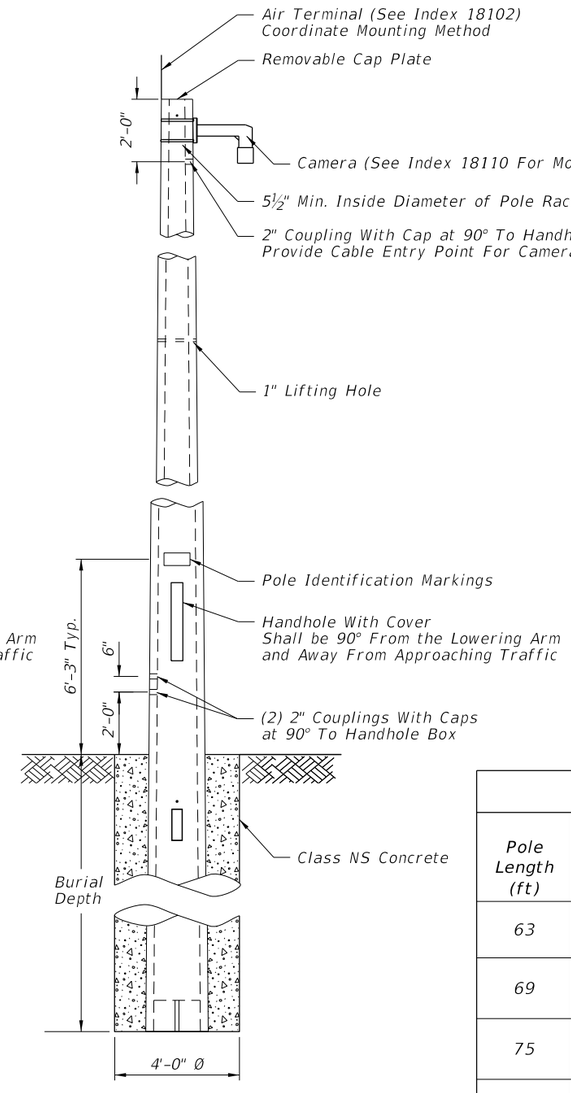
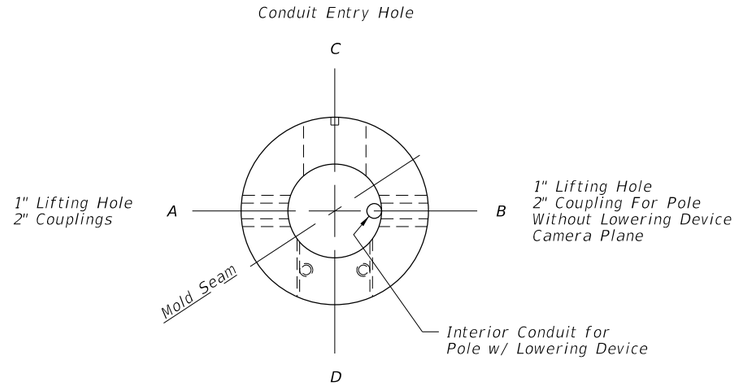


ELEVATION
WITH LOWERING DEVICE



ELEVATION
WITHOUT LOWERING DEVICE



POLE CONFIGURATION
TOP VIEW

12-SIDED POLE DESIGN TABLE*										
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"

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

* Diameter Measured Flat to Flat

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

*** For 12-Sided Pole and Round Pole Option 2 Stress prestressed strand to 70% of Ultimate before Transfer.
For Round Pole, Option 1 Stress Prestressed strand to 60% of Ultimate before Transfer.

POLE DESIGN TABLES

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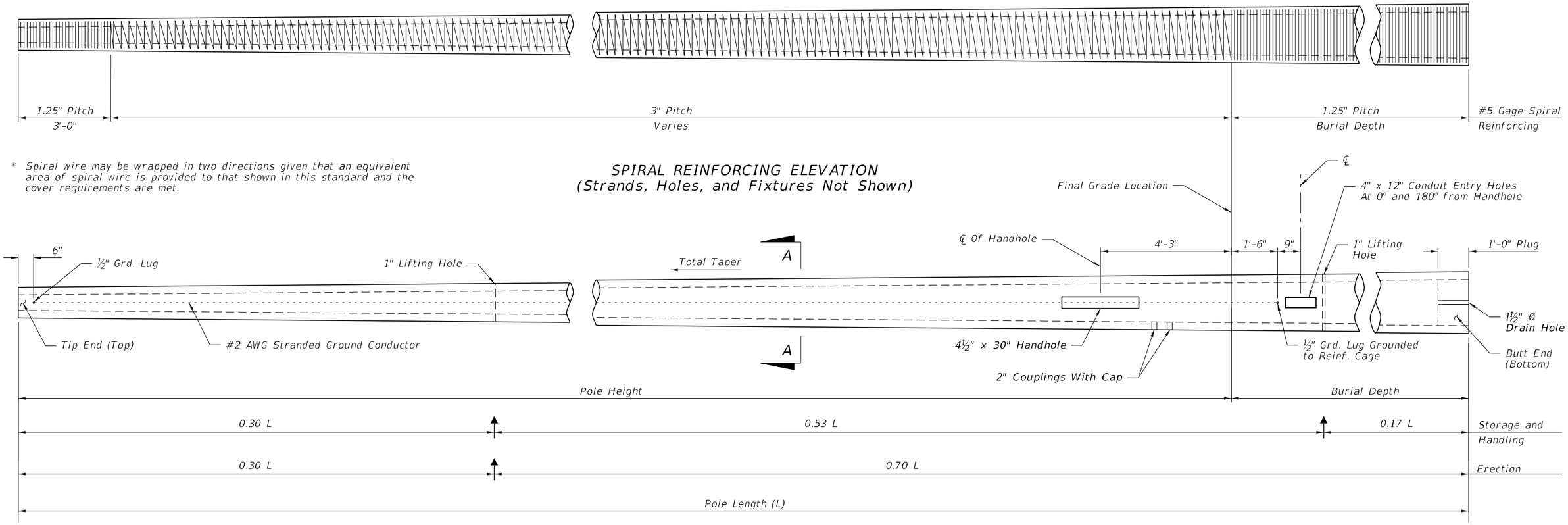


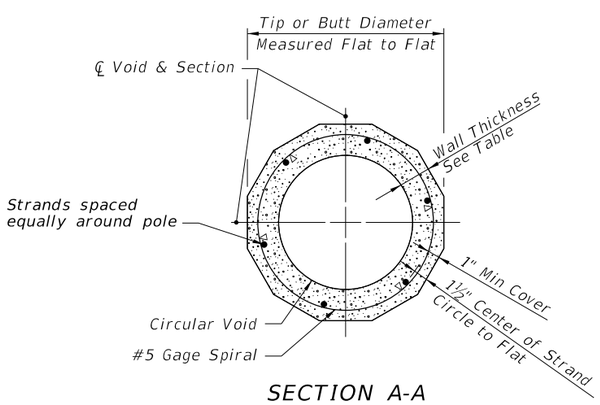
* Spiral wire may be wrapped in two directions given that an equivalent area of spiral wire is provided to that shown in this standard and the cover requirements are met.

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

POLE ELEVATION
(Strands and Reinforcing Not Shown)

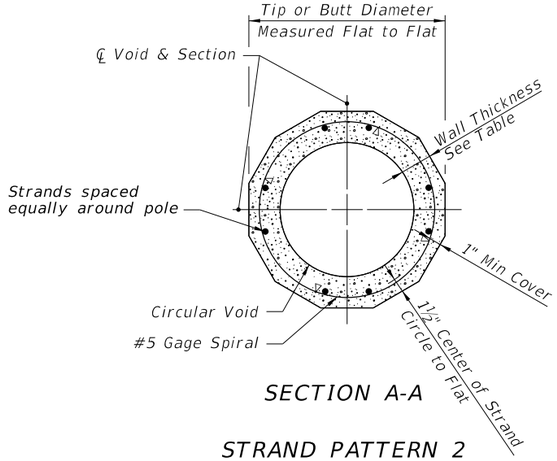
STRAND LEGEND

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



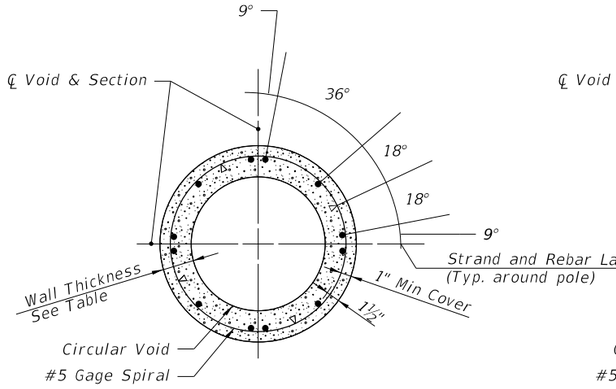
SECTION A-A

STRAND PATTERN 1
(12 - SIDED)



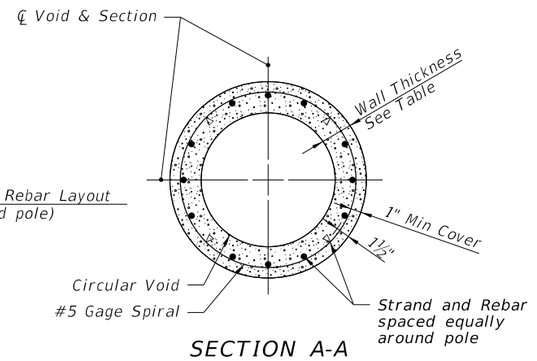
SECTION A-A

STRAND PATTERN 2
(12 - SIDED)



SECTION A-A

STRAND PATTERN 3
(ROUND - OPTION 1)



SECTION A-A

STRAND PATTERN 4
(ROUND - OPTION 2)

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

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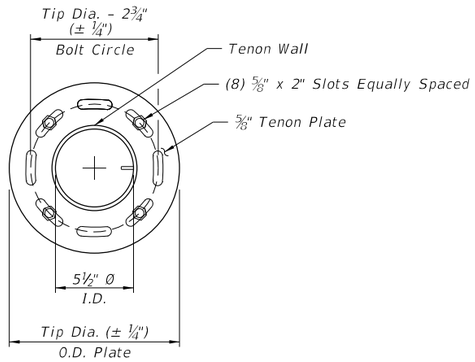
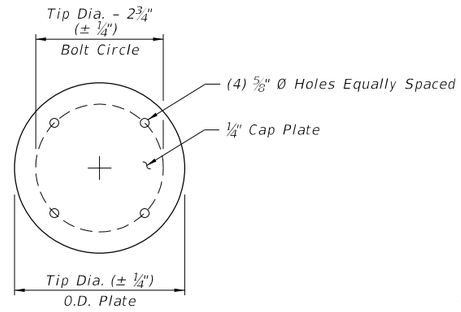
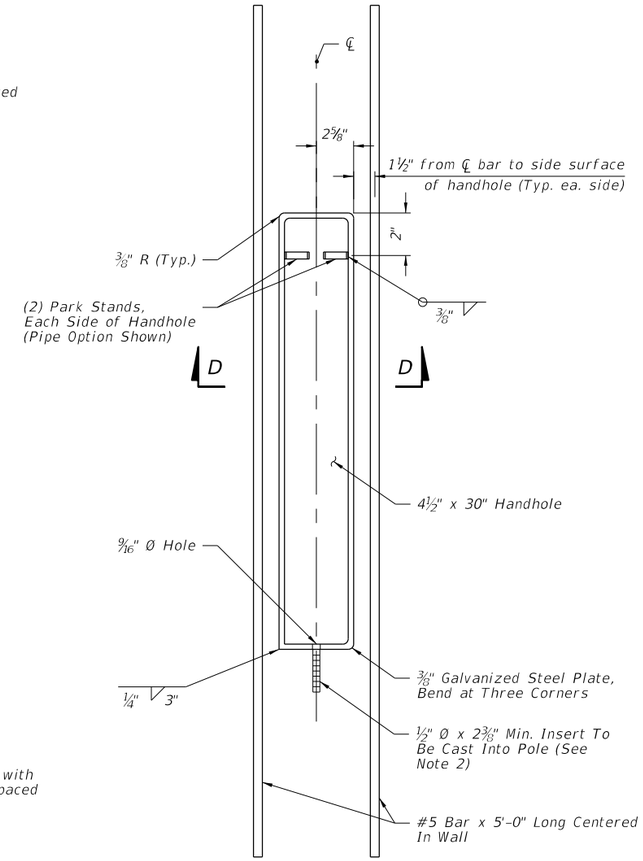


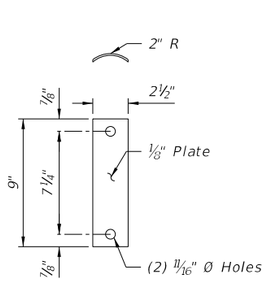
SECTION B-B



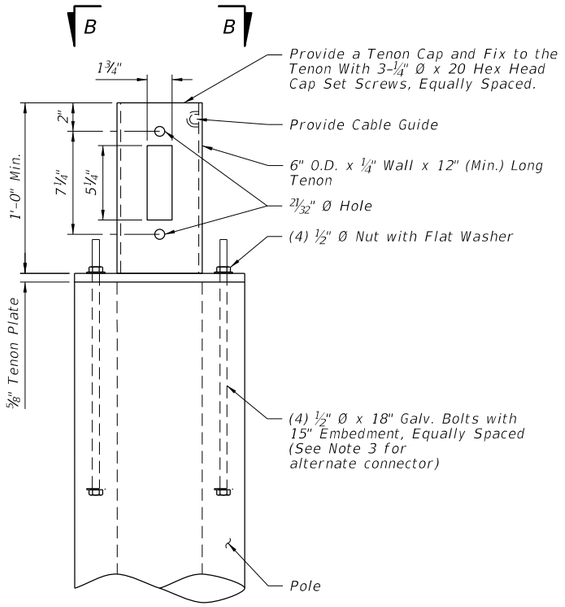
CAP PLATE DETAIL



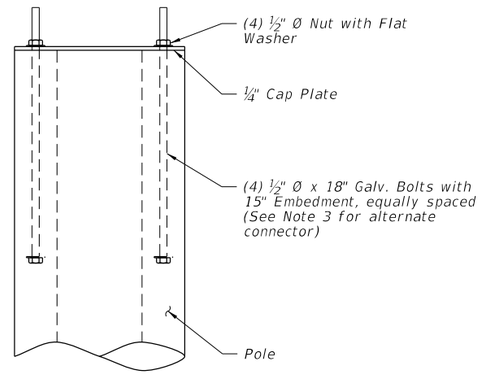
HANDHOLE DETAIL



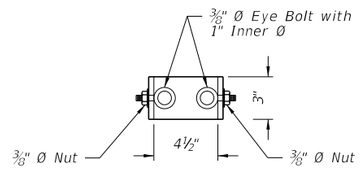
TENON COVER



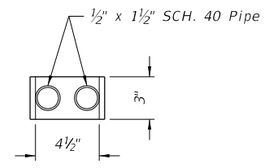
TOP OF POLE DETAIL WITH LOWERING DEVICE



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 ½" Ø x 5" long stud with hex nut in insert before shipment.
3. As an alternate, embed (4) ½" ø x 18" stainless steel threaded rods with a threaded nut. At top of rod, thread a coupling nut to attach plate w/ (4) ½" x 1¾" stainless steel bolts.
4. Handhole frame may be Cast Aluminum 356.2.

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