

**PUBLIC NOTICE
INVITATION TO BID # 1042**

The Springfield Electric Department will be accepting sealed bids for **Miscellaneous Materials for Springfield District – Mt. Denson 69kV Transmission Line Relocation Around North Industrial Park**. Specifications may be downloaded at www.springfield-tn.org. Call Nicky Pinson or Roland Streeter at (615)384-6770 with questions. Bids must be received in the Office of the City Recorder, 405 North Main Street, Springfield, TN 37172 by 2:15 pm local time, Wednesday, October 25, 2017. The City of Springfield reserves the right to reject any or all bids.

Lisa H. Crockett
City Recorder

**CITY OF SPRINGFIELD ELECTRIC DEPARTMENT
1000 CENTRAL AVENUE
SPRINGFIELD, TENNESSEE 37172**

PROPOSAL CONTRACT # 1042

**Miscellaneous Materials for Springfield District-Mt. Denson 69kV
Transmission Line Relocation Around North Industrial Park**

BID OPENING DATE: October 25, 2017

TIME: 2:15 PM CST

Contents:

- I. Proposal/Bid Preparation
- II. Base Bid
- III. Specifications
- IV. Non-Collusion Affidavit
- V. Business Relationships Affidavit
- VI. Iran Divestment Act

I. PROPOSAL

A. Preparation

BIDDER shall submit two (2) copies of bid proposal in a sealed envelope addressed to:

City Recorder
City of Springfield Department of Utilities
405 North Main Street
Springfield, TN 37172

Bids will open **October 25, 2017**, at **2:15 PM CST**. No telephone or faxed bids will be considered.

B. Pricing

The BIDDER declares that this proposal is made without connection with any other person or persons bidding for the same work. Bids shall not contain any unbalanced prices, unauthorized additions, alterations, limitations, conditions, or provisions. Non-Collusion Affidavit and Business Relationships Affidavit must be returned with bid.

BIDDER shall use Section II Base Bid of this document to list all prices, terms, conditions, exceptions, and warranties.

Springfield Electric reserves the right to reject any or all bids.

C. Inspections and Tests

Unless otherwise specified in the contract or purchase order, BIDDER shall be responsible for the performance of all inspection and test requirements necessary to insure compliance with this specification. This action does not preclude subsequent inspection and testing by OWNER to further determine conformance to specification requirements of quality standards of workmanship, material, and construction techniques.

D. Questions

Any questions concerning these specifications should be directed to:

Roland H. Streeter, Electrical Engineer
or Nicky Pinson, Electrical Operations Supt.
Springfield Electric Department
1000 Central Avenue
Springfield, Tennessee 37172
(615) 384-6770 ext. 119 (voice)
(615) 382-1642 (fax)
rstreeter@springfield-tn.org

II. BASE BID

Proposal of _____, herein called "BIDDER", to the City of Springfield Electric Department, herein called "OWNER":

That for and in consideration of the mutual agreements and covenants herein contained, the parties agree and bind themselves as set out below:

The BIDDER, in compliance with the invitation to bid for **Miscellaneous Materials for Springfield District-Mt. Denson 69kV Transmission Line Relocation Around North Industrial Park**, having examined the plans and specifications with the related documents, and being familiar with all the conditions surrounding the proposed project, hereby proposes to furnish all materials and supplies and equipment in accordance with the contract documents, within the time set forth therein, at the price stated therein.

Prior to award of bid, the successful bidder shall be required to provide OWNER the following:

- a. All executed documents related to this project returned to OWNER, and;
- b. Written guarantee of material and workmanship for all work to be performed under this contract including any terms and conditions of guarantee.

ALL MATERIAL TO BE DELIVERED TO MT. DENSON SUBSTATION, LOCATED AT HWY 161 AND CHARLES RALPH DRIVE.

ANY EXCEPTIONS OR SUBSTITUTIONS FROM THESE SPECIFICATIONS ARE TO BE NOTED AND EXPLAINED WITH ALL DOCUMENTATION SUPPLIED.

Miscellaneous Materials for Springfield District-Mt. Denson 69kV Transmission Line Relocation Around North Industrial Park

Bid Opening # 1042

Date: October 25, 2017 Time: 2:15 PM CST

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Quantity	Description	Price Each	Total
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All material shall be of the following type or equivalent. Specifications for certain materials are attached.

STEEL POLES:

46/69 CI 75FT. – 7 EA ‘VALMONT’	\$ _____	\$ _____
46/69 CI 80FT. – 9 EA ‘VALMONT’	\$ _____	\$ _____

INSULATORS: (SPECIFICATIONS ATTACHED OR EQUIV.)

HORIZ. LINE POST POLYMER 69KV-CLAMP TOP – 33 EA	\$ _____	\$ _____
HORIZ. LINE POST POLYMER 69KV		
– BLADE END FITTING – 12 EA	\$ _____	\$ _____
DEAD END POLYMER 69KV – 27 EA	\$ _____	\$ _____
PIN TYPE INSULATOR 13.2KV – MacLEAN #DP55-4 -60 EA	\$ _____	\$ _____
POLYMER D.E. 13.2KV		
– OHIO BRASS #401015-2015 *071Y* 24 EA	\$ _____	\$ _____

CONDUCTORS:

3/8” HSS STRAND WIRE 7-STRANDS – 6,500 FT	\$ _____	\$ _____
4/0 ACSR 6/1 PENGUIN – 18,000 FT	\$ _____	\$ _____
336.4 ACSR 18/1 MERLIN – 18,300 FT	\$ _____	\$ _____
CONDUCTOR TRUNION – TSC-106 – 39 EA	\$ _____	\$ _____
GROUND WIRE TRUNION – LPS – 57F – 12 EA	\$ _____	\$ _____
GROUND WIRE TRUNION – BRACKET		
– TWSB-55-6–12 EA	\$ _____	\$ _____
CONDUCTOR SUSPENSION SHOE		
– LS-2 MPS/BETHEA – 18 EA	\$ _____	\$ _____
D.E. CONNECTOR 4/0 ACSR 6/1 – 30 EA	\$ _____	\$ _____
D.E. CONNECTOR 336.4 ACSR 18/1 – 24 EA	\$ _____	\$ _____
PUPI ARMS – 10 FT – 40 EA (SPECIFICATION ATTACHED)	\$ _____	\$ _____

BOLTS & WASHERS -GALVANIZED STEEL

EYE BOLTS – 3/4” X 16” – 25 EA	\$ _____	\$ _____
D.A. BOLTS – 3/4” X 24” W/NUT 50 EA	\$ _____	\$ _____
MACHINE BOLTS 3/4” X 18” – 50 EA	\$ _____	\$ _____
MACHINE BOLTS 5/8” X 14” – 50 EA	\$ _____	\$ _____
WASHERS 2 1/4” X 2 1/4” X 13/16” HOLE – 150 EA	\$ _____	\$ _____
NUT LOCK HEXAGON, CARBON STEEL 5/8” – 50 EA	\$ _____	\$ _____
NUT LOCK HEXAGON, CARBON STEEL 3/4” – 150 EA	\$ _____	\$ _____

ANCHOR & ASSEMBLY (SCREW TYPE)

ANCHOR – TWIN HELIX: SPEC. ATTACHED – 28 EA

\$ _____ \$ _____

ROD – 7' X 3/4" WITH TRIPLEYE NUTS – 28 EA

\$ _____ \$ _____

TOTAL BID (all items): \$ _____

Delivery/Installation Date: _____

Terms and Length of Warranty/Guarantee: _____

Other Terms and Conditions: _____

Exceptions/Substitutions:

1. _____
2. _____
3. _____
4. _____

Notes:

1. Bidder must submit with bid proposal complete specifications, pictures, and literature describing and illustrating the proposed equipment.
2. Include all shipping charges with bid proposal. Pricing shall include delivery to Mt. Denson Substation, Hwy 161 & Charles Ralph Drive, Springfield, TN 37172.
3. Sales tax is not to be included. We are a tax-exempt local government agency.
4. Final payment shall be made to successful BIDDER by OWNER within thirty (30) days after:
 - a. Delivery of product, and assembly if applicable, and;
 - b. The approval by the OWNER of all work performed under the proposal, and;

- c. An affidavit has been submitted to OWNER by BIDDER stating that payment has been made for all labor, materials, and subcontractors under this proposal.
- 5. BIDDER agrees to be bound by the bid price in this proposal for a period of sixty (60) days from the date of the opening of the bid.
- 6. The OWNER reserves the right to reject any or all bids, to waive any informality in bids, and to accept in whole or part such bid or bids as may be deemed in the best interest of OWNER.

Signature – BIDDER

Date

Name (Printed)

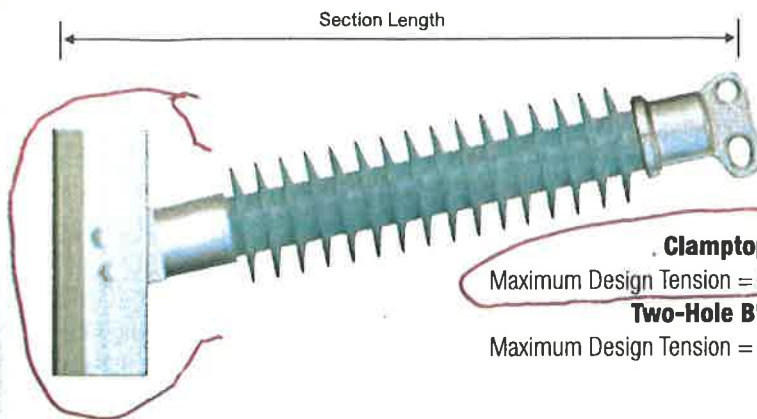
Company Name

Address

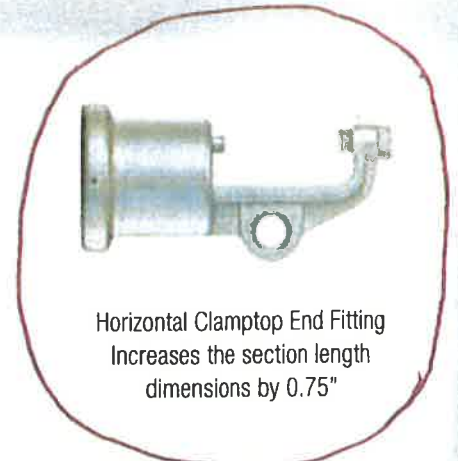
Telephone No.

_____ **SPECIFICATIONS FOLLOW THIS DOCUMENT** _____

Horizontal Line Post Insulators 2.5" (63.5 mm) Rod Diameter



Clamptop:
Maximum Design Tension = 2,500 lbs. (11.1 kN)
Two-Hole Blade:
Maximum Design Tension = 7,500 lbs. (33.4 kN)



Horizontal Clamptop End Fitting
Increases the section length
dimensions by 0.75"

Horizontal Line Post Insulators 2.5" (63.5 mm) Rod Diameter

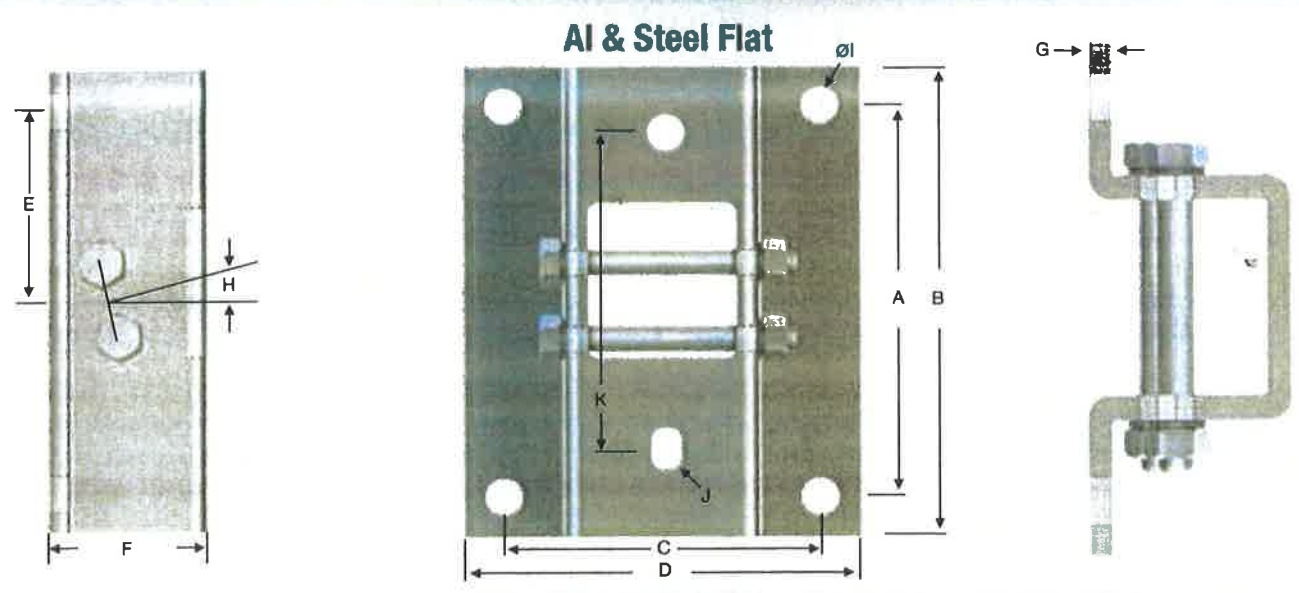
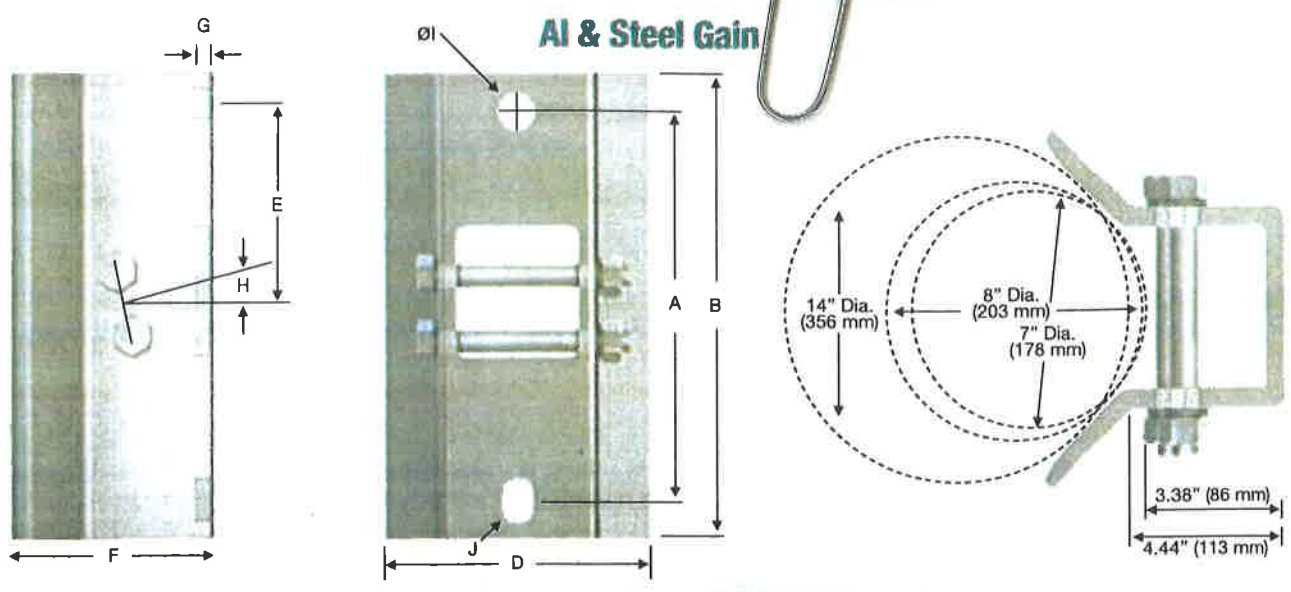
Selection Guide: Typical Line Voltage, kV ¹	Catalog Numbers ²	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)	
69 110 132 161 220 330	P250024S0020	024	36.9 (937)	25.0 (635)	63 (1600)	255	235	385	505	195	365	475	5000 (22.2)
	P250026S0020	026	39.3 (998)	27.4 (696)	69 (1753)	280	255	425	540	215	400	510	5000 (22.2)
	P250031S0020	031	44.0 (1117)	32.2 (818)	82 (2083)	330	300	510	615	255	480	580	4490 (20.0)
	P250036S0020	036	48.8 (1239)	37.1 (942)	95 (2413)	380	345	580	690	290	550	655	3950 (17.6)
	P250043S0020	043	55.9 (1419)	44.3 (1125)	113 (2870)	455	405	700	800	340	665	760	3340 (14.9)
	P250048S0020	048	60.6 (1539)	49.2 (1250)	126 (3200)	515	450	770	880	380	730	835	3030 (13.5)
	P250053S0020	053	65.3 (1658)	54.0 (1372)	139 (3531)	565	495	855	950	420	810	900	2770 (12.3)
	P250058S0020	058	70.1 (1780)	58.8 (1494)	151 (3835)	600	525	920	1025	445	870	970	2550 (11.3)
	P250060S0020	060	72.4 (1838)	61.3 (1557)	158 (4013)	625	540	955	1065	455	905	1010	2460 (10.9)
	P250065S0020	065	77.2 (1960)	66.1 (1679)	170 (4318)	675	580	1035	1140	490	980	1080	2280 (10.1)
	P250070S0020	070	81.9 (2080)	70.9 (1801)	183 (4648)	720	615	1115	1215	520	1055	1150	2130 (9.5)
	P250075S0020	075	86.6 (2199)	75.8 (1925)	196 (4978)	765	650	1190	1290	550	1130	1225	2000 (8.9)
	P250080S0020	080	91.4 (2321)	80.6 (2047)	208 (5283)	815	680	1265	1360	575	1200	1290	1890 (8.4)
	P250087S0020	087	98.5 (2501)	87.9 (2233)	227 (5766)	880	735	1380	1475	620	1310	1400	1740 (7.7)
	P250092S0020	092	103.2 (2621)	92.7 (2355)	240 (6096)	925	765	1455	1550	650	1380	1470	1650 (7.3)
	P250096S0020	096	107.9 (2740)	97.6 (2479)	252 (6401)	975	800	1535	1625	680	1455	1540	1570 (7.0)
	P250101S0020	101	112.7 (2862)	102.4 (2601)	265 (6731)	1015	830	1610	1700	705	1525	1615	1500 (6.7)
	P250104S0020	104	115.1 (2923)	104.8 (2662)	271 (6883)	1040	845	1650	1735	715	1565	1645	1460 (6.5)
	P250106S0020	106	117.4 (2981)	107.2 (2723)	278 (7061)	1060	860	1685	1770	730	1600	1680	1430 (6.4)
	P250109S0020	109	119.8 (3042)	109.7 (2786)	284 (7214)	1085	875	1725	1810	740	1635	1715	1400 (6.2)
	P250111S0020	111	122.2 (3103)	112.1 (2847)	290 (7366)	1105	890	1765	1850	755	1675	1755	1370 (6.1)

Notes:

- 1) For voltages above 330 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 20 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61952 and ANSI C29.17.
- 3) The catalog number shown in the table is for a 2.5" (63.5mm) rod diameter line post with a two hole blade on the line end and a gain base on the tower end. For other end fitting combinations, please refer to the Catalog Number Key on page 8.

Y

Base Fittings for 2.5" (63.5 mm) Rod Diameter



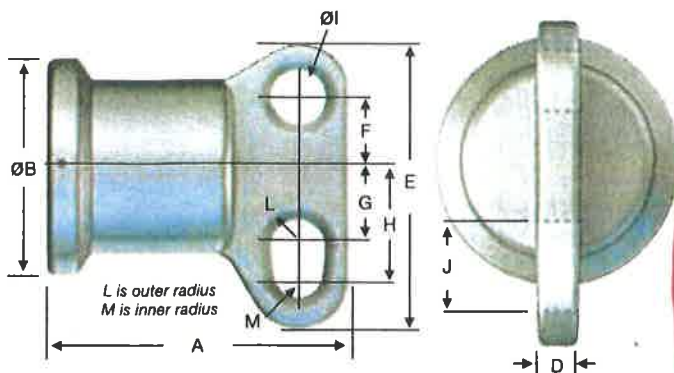
Horizontal & Vertical Bases inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	K	Material
5" Bolt Circle (15)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 (18)	-	-	60-40-18 D.I.
5" Bolt Circle (05)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8 - 11 UFS	-	-	60-40-18 D.I.
Aluminum Gain (02)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Aluminum Gain (12)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.81 (21)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Steel Gain (07)	12.0 (305)	15.0 (381)	-	8.33 (212)	6.5 (165)	6.04 (153)	0.38 (10)	12°	0.94 (24)	0.94 X 2.0 (24x51)	-	Low Carbon Steel
Aluminum Flat (03)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.94 (24)	-	-	6063 T5 AL
Aluminum Flat (13)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.81 (21)	-	-	6063 T5 AL
Steel Flat (08)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.38 (10)	12°	1.125 X 0.94 (26x24)	0.94 X 2.0 (24x51)	12.0 (305)	Low Carbon Steel
Aluminum Flat (04)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	12.0 (305)	6063 T5 AL
Aluminum Flat (14)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.81 (21)	0.81 X 1.31 (21x33)	12.0 (305)	6063 T5 AL

7

Line Fittings for 2.5" (63.5 mm) Rod Diameter

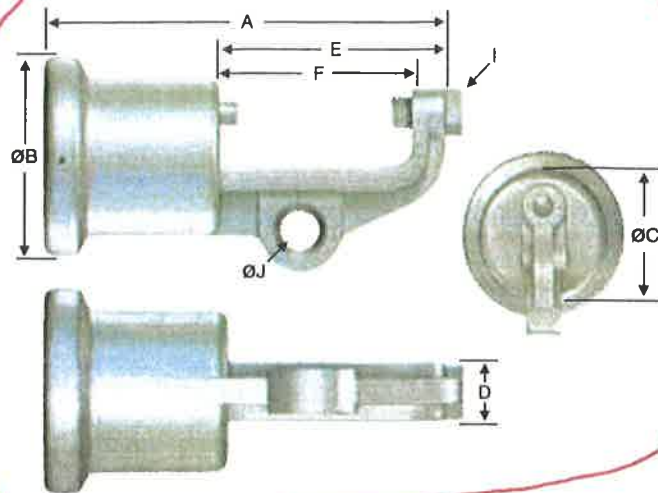
Two Hole Blade



Transverse Compressing Swing Angle for Conductor Suspension Clamp	
2 Hole Blade (std.)	2 Hole Long Blade
40 deg. max.	64 deg. max.

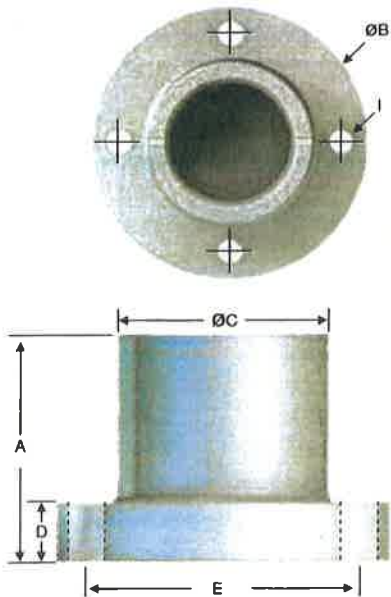
Note: 12° upsweep is already included

Horizontal Clamptop



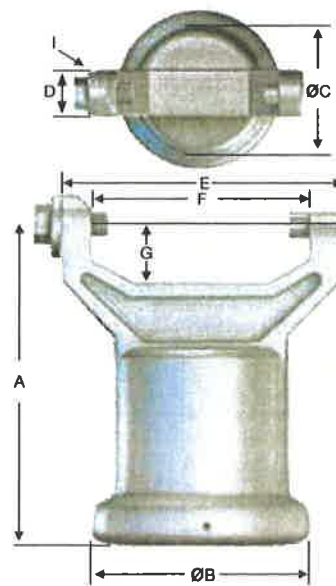
5" Bolt Circle

Line or Base Fitting



Vertical Clamptop

Part per ANSI C29.7



Horizontal & Vertical End Fittings inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73 (146)	4.0 (102)	-	0.75 (19)	5.25 (133)	1.25 (32)	1.50 (38)	2.00 (51)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
2 Hole Long Blade (9)	5.73 (146)	4.0 (102)	-	0.75 (19)	7.75 (197)	1.25 (32)	4.0 (102)	4.5 (114)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
H. Clamptop (1)	8.24 (209)	4.0 (102)	3.30 (84)	1.12 (28)	4.72 (120)	4.0 (102)	-	-	5/8 - 11 UFS	0.75 (19)	-	-	60-40-18 D.I.
5" Bolt Circle (3)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.
5" Bolt Circle (5)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 x Holes (18 x Holes)	-	-	-	60-40-18 D.I.
V. Clamptop (2)	5.88 (149)	4.0 (102)	3.30 (84)	1.12 (28)	5.37 (136)	4.0 (102)	1.06 (27)	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.

CATALOG NUMBER KEY

The QuadriSil® Insulators Numbering Scheme is organized according to a smart numbering system. Each group of digits defines a characteristic of the product you are ordering. To fill out this form, start on "a: Insulator Type." Then, fill in your selection in the box corresponding to the letter "a." Apply the same rule for all the other sections.

<p>a Insulator Type P — Post or S — Suspension</p> <p>a) Insulator Type. Defines your insulator type: Post or Suspension. Select "P" or "S" for Post or Suspension, respectively, and fill in your selection in the box designated for "a." In this example, we selected a suspension insulator.</p> <p style="text-align: center;"> S </p> <p style="text-align: center; margin-top: -5px;"> a b c d e f g </p>	<p>d Weathershed Profile</p> <p><i>Suspension</i> S — Standard Leakage Distance (2.5) H — High Leakage Distance (2.9 or 3.3)</p> <p><i>Post</i> S — Standard Leakage Distance</p> <p>d) Weathershed Profile. Defines the leakage distance design. For a suspension insulator with standard leakage distance, use "S." For a suspension insulator with high leakage distance, use "H." For a line post, only the standard leakage distance design is available. Fill in your selection in the box designated for "d." For example, if you want an insulator with high leakage distance, you would place an "H" in the box designated "d."</p> <p style="text-align: center;"> S 0 2 5 0 4 9 H </p> <p style="text-align: center; margin-top: -5px;"> a b c d e f g </p>																		
<p>b Mechanical Strength</p> <p><i>Suspension (SML), Rod Diameter</i> 025 — 25 kip, 5/8" (16 mm) 030 — 30 kip, 5/8" (16 mm) 050 — 50 kip, 7/8" (22 mm) 120 — 120 kN, 5/8" (16 mm) 160 — 160 kN, 7/8" (22 mm) 210 — 210 kN, 7/8" (22 mm)</p> <p><i>Post</i> 250 — Series 250, standard strength 2.5", (63.5 mm)</p> <p>b) Strength. Defines the mechanical strength of your insulator. Fill in your selection in the boxes designated for "b."</p> <p>Note: kip = Kilopound, kN = Kilonewton</p> <p>For example, if you want a Suspension insulator with 25 kip, this is what your form would look like so far:</p> <p style="text-align: center;"> S 0 2 5 </p> <p style="text-align: center; margin-top: -5px;"> a b c d e f g </p>	<p>e Top Fitting</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #ffffcc;">Suspension Insulators</th> <th style="background-color: #ffffcc;">Line Post Insulators</th> </tr> </thead> <tbody> <tr> <td>0 — Chain Eye</td> <td>0 — Tear Drop Blade</td> </tr> <tr> <td>1 — ANSI Ball</td> <td>1 — Horizontal Clamptop</td> </tr> <tr> <td>2 — Y-Clevis</td> <td>2 — Vertical Clamptop</td> </tr> <tr> <td>3 — ANSI Socket</td> <td>3 — 5" (127 mm) Bolt Circle 5/8" (16 mm) Tapped Hole</td> </tr> <tr> <td>4 — ANSI Straight Clevis</td> <td>5 — 5" (127 mm) Bolt Circle 5/8" (16 mm) Through Hole</td> </tr> <tr> <td>7 — IEC Ball Fitting 16 mm for 120 kN 20 mm for 160 kN and 210 kN</td> <td>9 — Long Tear Drop Blade</td> </tr> <tr> <td>8 — IEC Straight Clevis</td> <td></td> </tr> <tr> <td>A — IEC Socket 16 mm for 120 kN 20 mm for 160 kN and 210 kN</td> <td></td> </tr> </tbody> </table> <p>e) Top Fitting. Defines the top end fitting of your insulator. Fill in your selection in the box designated for "e." For example, if you want a suspension insulator with a Y-clevis top end fitting, you would place a "2" in the box designated for "e."</p> <p style="text-align: center;"> 2 </p> <p style="text-align: center; margin-top: -5px;"> a b c d e f g </p>	Suspension Insulators	Line Post Insulators	0 — Chain Eye	0 — Tear Drop Blade	1 — ANSI Ball	1 — Horizontal Clamptop	2 — Y-Clevis	2 — Vertical Clamptop	3 — ANSI Socket	3 — 5" (127 mm) Bolt Circle 5/8" (16 mm) Tapped Hole	4 — ANSI Straight Clevis	5 — 5" (127 mm) Bolt Circle 5/8" (16 mm) Through Hole	7 — IEC Ball Fitting 16 mm for 120 kN 20 mm for 160 kN and 210 kN	9 — Long Tear Drop Blade	8 — IEC Straight Clevis		A — IEC Socket 16 mm for 120 kN 20 mm for 160 kN and 210 kN	
Suspension Insulators	Line Post Insulators																		
0 — Chain Eye	0 — Tear Drop Blade																		
1 — ANSI Ball	1 — Horizontal Clamptop																		
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8 — IEC Straight Clevis																			
A — IEC Socket 16 mm for 120 kN 20 mm for 160 kN and 210 kN																			
<p>c Polymer Length</p> <p>3 digits for distance between metal parts, in inches</p> <p>c) Polymer Length. Defines the polymer length of the insulator (please use catalog tables for possible polymer lengths). Fill in your selection in the boxes designated for section "c." For example, if you want a 49-inch polymer length, enter:</p> <p style="text-align: center;"> 0 4 9 </p> <p style="text-align: center; margin-top: -5px;"> a b c d e f g </p>																			

f

Bottom Fitting

f) **Bottom Fitting.** Defines the bottom end fitting of your insulator. Fill in your selection in the boxes designated for "f." For example, if you want an ANSI ball bottom end-fitting, you would place "01" in the boxes designated for "f."

											0	1	
											f	f	

Suspension Insulators

- 00 - Chain Eye
- 01 - ANSI Ball
- 02 - Y-Clevis
- 03 - ANSI Socket
- 04 - ANSI Straight Clevis
- 07 - IEC Ball Fitting
16 mm for 120 kN or
20 mm for 160 kN and 210 kN
- 08 - IEC Straight Clevis
- 0A - IEC Socket
16 mm for 120 kN or
20 mm for 160 kN and 210 kN

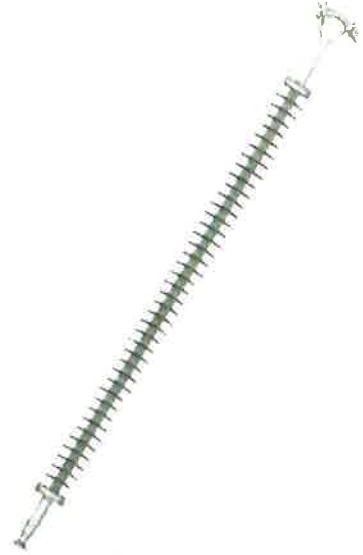
Line Post Insulators

- 02 - Aluminum Gain 12" (305 mm) CL¹ mounting
 - 03 - Aluminum Flat 8"x 10" (203 mm x 254 mm),
15/16" (24 mm) hole diameter
 - 04 - Aluminum Flat 8"x 13" (203 mm x 330 mm),
15/16" (24 mm) hole diameter
 - 05 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) tapped hole
 - 07 - Steel Gain 12" (305 mm) CL mounting,
15/16" (24 mm) hole diameter
 - 08 - Steel Flat 8"x 13" (203 mm x 330 mm) MS²,
15/16" (24 mm) hole diameter
 - 15 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) through hole
- Vertical Gain - See page 23 Table B

¹ Center Line
² Horizontal x Vertical
Mounting Pattern Spacing

Examples:

Suspension Insulator, 25 kip, 49" of Polymer Length, Standard Leakage Distance Profile (2.5), Top Fitting: Y-Clevis, Bottom Fitting: ANSI Ball, No Corona Ring
S025049S2010



Line Post Insulator, 2.5" (63.5 mm) Rod Diameter, 21.9" Polymer Length, Standard Leakage Distance, Top Fitting: Tear Drop Blade, Bottom Fitting: 2-Piece Aluminum Gain Base, No Corona Ring
P250021S0020



g

Rings

- .0 — No ring required
- A — ≥220 kV, 8" (203 mm) ring for suspension, 12" (305 mm) ring for series 250 post
- B — ≥330 kV, 12" (305 mm) ring for suspension, 15" (381 mm) ring for series 250 post
- C — ≥400 kV, 12" (305 mm) line end and 8" (203 mm) ground end ring for suspension
- D — ≥500 kV, 15" (381 mm) line end and 8" (203 mm) ground end ring for suspension
- E — ≥735 kV, 15" (381 mm) line end and 12" (305 mm) ground end ring for suspension

g) **Rings.** Defines your need for a Corona Ring. Fill in your selection in the box designated for "g." The example below shows a selection of a corona ring for 220 kV, 8" (203 mm) for a suspension insulator. Thus, "A" was placed in the box designated for "g."

													A
													g

Your complete part number will be **S025049H201A**

Your final catalog number should look like this

Fill out boxes according to instructions

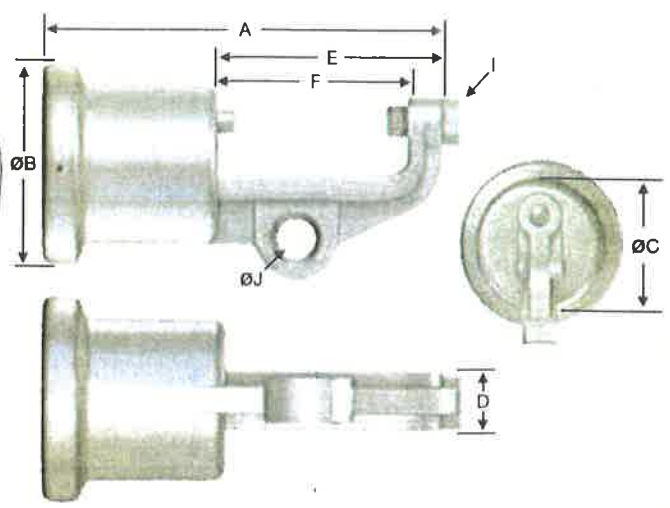
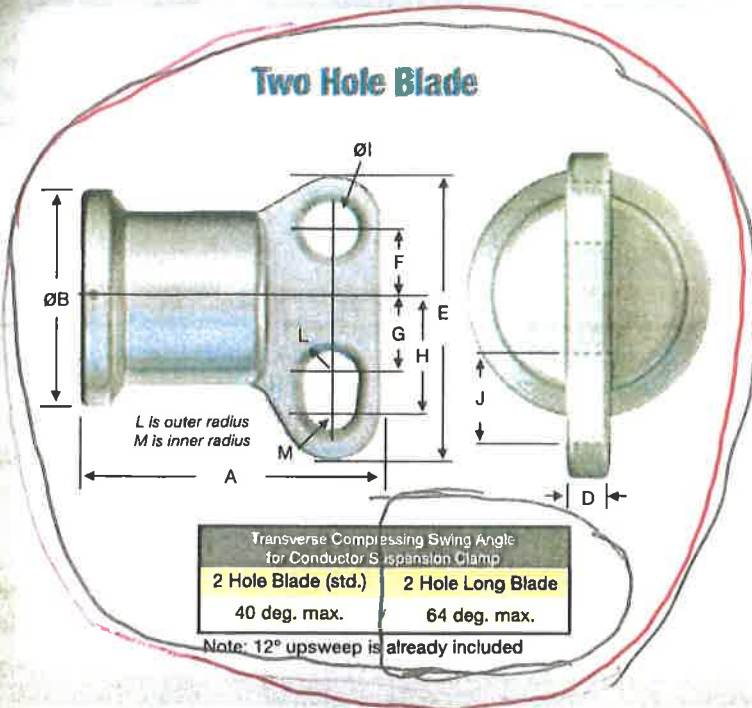
P	2	5	0	0	3	1	S	0	0	2	0
a	b	b	b	c	c	c	d	e	f	f	g

X/E

Line Fittings for 2.5" (63.5 mm) Rod Diameter

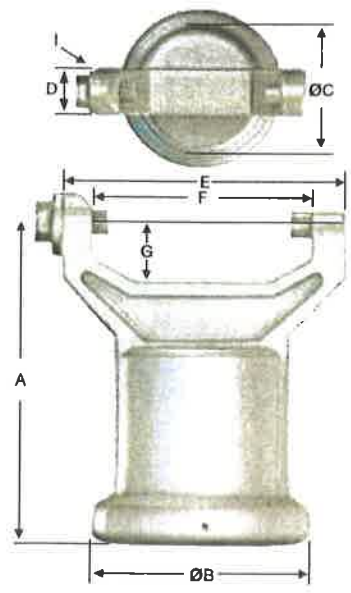
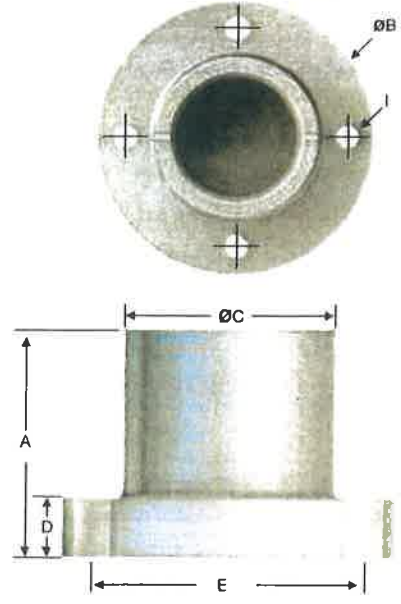
Two Hole Blade

Horizontal Clamptop



5" Bolt Circle
Line or Base Fitting

Vertical Clamptop
Part per ANSI C29.7



Horizontal & Vertical End Fittings inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73 (146)	4.0 (102)	-	0.75 (19)	5.25 (133)	1.25 (32)	1.50 (38)	2.00 (51)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
2 Hole Long Blade (9)	5.73 (146)	4.0 (102)	-	0.75 (19)	7.75 (197)	1.25 (32)	4.0 (102)	4.5 (114)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
H. Clamptop (1)	8.24 (209)	4.0 (102)	3.30 (84)	1.12 (28)	4.72 (120)	4.0 (102)	-	-	5/8 - 11 UFS	0.75 (19)	-	-	60-40-18 D.I.
5" Bolt Circle (3)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.
5" Bolt Circle (5)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 x Holes (18 x Holes)	-	-	-	60-40-18 D.I.
V. Clamptop (2)	5.88 (149)	4.0 (102)	3.30 (84)	1.12 (28)	5.37 (136)	4.0 (102)	1.06 (27)	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.

f Bottom Fitting

f) **Bottom Fitting.** Defines the bottom end fitting of your Insulator. Fill in your selection in the boxes designated for "f." For example, if you want an ANSI ball bottom end fitting, you would place "01" in the boxes designated for "f."

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	0	1	<input type="text"/>
											f	f	

Suspension Insulators

- 00 - Chain Eye
- 01 - ANSI Ball
- 02 - Y-Clevis
- 03 - ANSI Socket
- 04 - ANSI Straight Clevis
- 07 - IEC Ball Fitting
16 mm for 120 kN or
20 mm for 160 kN and 210 kN
- 08 - IEC Straight Clevis
- 0A - IEC Socket
16 mm for 120 kN or
20 mm for 160 kN and 210 kN

Line Post Insulators

- 02 - Aluminum Gain 12" (305 mm) CL¹ mounting
 - 03 - Aluminum Flat 8"x 10" (203 mm x 254 mm),
15/16" (24 mm) hole diameter
 - 04 - Aluminum Flat 8"x 13" (203 mm x 330 mm),
15/16" (24 mm) hole diameter
 - 05 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) tapped hole
 - 07 - Steel Gain 12" (305 mm) CL mounting,
15/16" (24 mm) hole diameter
 - 08 - Steel Flat 8"x 13" (203 mm x 330 mm) MS²,
15/16" (24 mm) hole diameter
 - 15 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) through hole
- Vertical Gain - See page 23 Table B

¹ Center Line
² Horizontal x Vertical
Mounting Pattern Spacing

Examples:

Suspension Insulator, 25 kip, 49" of
Polymer Length, Standard Leakage
Distance Profile (2.5), Top Fitting: Y-Clevis,
Bottom Fitting: ANSI Ball, No Corona Ring
S025049S2010



Line Post Insulator, 2.5" (63.5 mm) Rod
Diameter, 21.9" Polymer Length, Standard
Leakage Distance, Top Fitting: Tear Drop
Blade, Bottom Fitting: 2-Piece Aluminum
Gain Base, No Corona Ring
P250021S0020



g Rings

- .0 — No ring required
- A — ≥220 kV, 8" (203 mm) ring for suspension, 12" (305 mm) ring
for series 250 post
- B — ≥330 kV, 12" (305 mm) ring for suspension, 15" (381 mm) ring for
series 250 post
- C — ≥400 kV, 12" (305 mm) line end and 8" (203 mm) ground end ring
for suspension
- D — ≥500 kV, 15" (381 mm) line end and 8" (203 mm) ground end ring
for suspension
- E — ≥735 kV, 15" (381 mm) line end and 12" (305 mm) ground end ring
for suspension

g) **Rings.** Defines your need for a Corona Ring. Fill in your selection in the box designated for "g." The example below shows a selection of a corona ring for 220 kV, 8" (203 mm) for a suspension insulator. Thus, "A" was placed in the box designated for "g."

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	A
												g

Your complete part number will be S025049H201A

**Your final catalog number
should look like this**

Fill out boxes according to instructions

P	2	5	0	0	3	1	5	1	0	2	0
a	b	b	b	c	c	c	d	e	f	f	g

CATALOG NUMBER KEY

D. F. INSUL

The Quadri*Sil® Insulators Numbering Scheme is organized according to a smart numbering system. Each group of digits defines a characteristic of the product you are ordering. To fill out this form, start on "a: Insulator Type." Then, fill in your selection in the box corresponding to the letter "a." Apply the same rule for all the other sections.

a Insulator Type P — Post or S — Suspension

a) **Insulator Type.** Defines your insulator type: Post or Suspension. Select "P" or "S" for Post or Suspension, respectively, and fill in your selection in the box designated for "a." In this example, we selected a suspension insulator.

S										
a	b	b	b	c	c	d	d	e	e	f

b Mechanical Strength

Suspension (SML), Rod Diameter

- 025 — 25 kip, 5/8" (16 mm)
- 030 — 30 kip, 5/8" (16 mm)
- 050 — 50 kip, 7/8" (22 mm)
- 120 — 120 kN, 5/8" (16 mm)
- 160 — 160 kN, 7/8" (22 mm)
- 210 — 210 kN, 7/8" (22 mm)

Post

- 250 — Series 250, standard strength 2.5", (63.5 mm)

b) **Strength.** Defines the mechanical strength of your insulator. Fill in your selection in the boxes designated for "b."

Note: kip = Kilopound, kN = Kilonewton

For example, if you want a Suspension insulator with 25 kip, this is what your form would look like so far:

S	0	2	5							
a	b	b	b	c	c	d	d	e	e	f

c Polymer Length

3 digits for distance between metal parts, in inches

c) **Polymer Length.** Defines the polymer length of the insulator (please use catalog tables for possible polymer lengths). Fill in your selection in the boxes designated for section "c." For example, if you want a 49-inch polymer length, enter:

				0	4	9				
a	b	b	b	c	c	c	d	d	e	f

d Weathershed Profile

Suspension

- S — Standard Leakage Distance (2.5)
- H — High Leakage Distance (2.9 or 3.3)

Post

- S — Standard Leakage Distance

d) **Weathershed Profile.** Defines the leakage distance design. For a suspension insulator with standard leakage distance, use "S." For a suspension insulator with high leakage distance, use "H." For a line post, only the standard leakage distance design is available. Fill in your selection in the box designated for "d." For example, if you want an insulator with high leakage distance, you would place an "H" in the box designated "d."

S	0	2	5	0	4	9	H			
a	b	b	b	c	c	d	d	e	e	f

e Top Fitting

Suspension Insulators

- 0 — Chain Eye
- 1 — ANSI Ball
- 2 — Y-Clevis
- 3 — ANSI Socket
- 4 — ANSI Straight Clevis
- 7 — IEC Ball Fitting
16 mm for 120 kN
20 mm for 160 kN and 210 kN
- 8 — IEC Straight Clevis
- A — IEC Socket
16 mm for 120 kN
20 mm for 160 kN and 210 kN

Line Post Insulators

- 0 — Tear Drop Blade
- 1 — Horizontal Clamptop
- 2 — Vertical Clamptop
- 3 — 5" (127 mm) Bolt Circle
5/8" (16 mm) Tapped Hole
- 5 — 5" (127 mm) Bolt Circle
5/8" (16 mm) Through Hole
- 9 — Long Tear Drop Blade

e) **Top Fitting.** Defines the top end fitting of your insulator. Fill in your selection in the box designated for "e." For example, if you want a suspension insulator with a Y-clevis top end fitting, you would place a "2" in the box designated for "e."

								2		
a	b	b	b	c	c	d	d	e	e	f

4/0 6/1 ACSR
DEAD END



ANDERSON ADEZ-88 HPS ALUMINIUM DEADEND EASY ON CLEVIS CLAMP 44"-88" DIA

SKU : 1489611822-11583

QTY 1

ADD TO BAG

DESCRIPTION

MODEL: ADEZ-88

Item specifics

BRAND: ANDERSON



336.4 18/1 ACSR

SECTION DA

DISTRIBUTION CONNECTORS

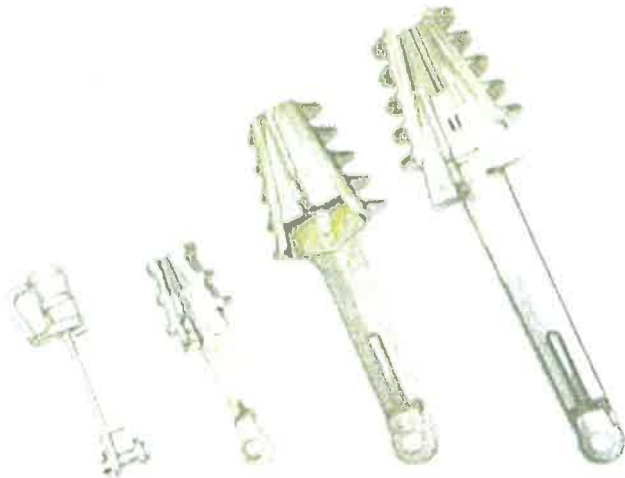


DEADENDS
AUTOMATIC
OVERHEAD SIDE-OPENING WEDGE
ALUMINUM

DEAD END

DA
4

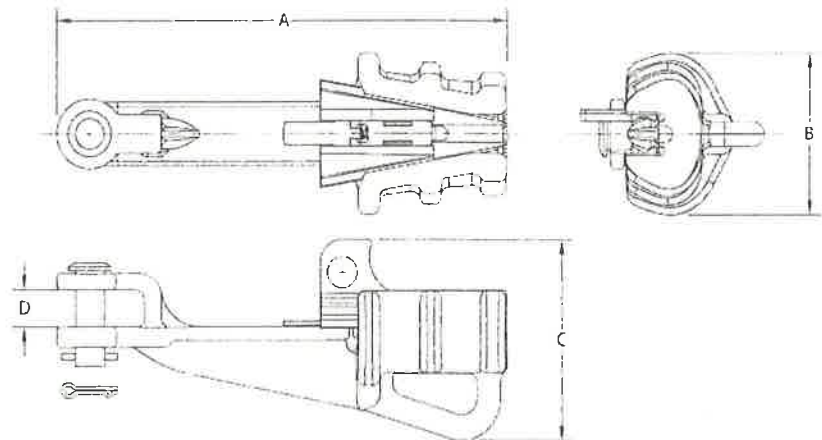
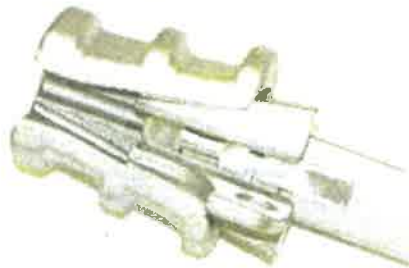
ALUMINUM
GDW



- Fastest method of deadending ACSR, AAAC, and AAC conductor.
- Accepts wide range of conductor sizes. High Strength Aluminum Alloy body and jaws.
- Requires no wrenches or special tools.
- Can be repositioned on conductor during installation.
- Rotated clevis eases placement of conductor.
- Plated jaws available to accommodate copper conductors.

Note: For plated jaws remove "A" suffix.
Example: GDW440

Material: Body and Jaws – High Strength Aluminum Alloy
Clevis Pin – Galvanized Steel
Cotter Pin – Stainless Steel



CATALOG NUMBER	CONDUCTOR RANGE		DECIMAL RANGE INCHES (MM)		ULTIMATE STRENGTH (LBS)		DIMENSIONS INCHES (MM)			
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	BODY	SAG EYE	A	B	C	D
GDW420A *GDW420	#4 str AAC #4 AAAC #4 ACSR #4 str CU	2/0 str AAC 2/0 AAAC 2/0 ACSR 2/0 str CU	.23 (5.8)	.45 (11.4)	6,000 (2,727)	4,000 (1,818)	9.45 (240.1)	296 (75.1)	3.97 (100.8)	0.75 (19.2)
GDW440A *GDW440	#4 str AAC #4 AAAC #4 ACSR #4 str CU	4/0 str AAC 4/0 AAAC 4/0 ACSR 3/0 str CU	.23 (5.8)	.57 (14.5)	9,000 (4,090)	6,000 (2,727)	9.84 (249.8)	3.31 (84)	4.08 (103.6)	0.76 (19.2)
GDW556A** *GDW556**	4/0 AAC 4/0 AAAC 4/0 ACSR 4/0 str CU	600 AAC 559.5 AAAC 556.5 ACSR 600 str CU	.52 (13.2)	.90 (22.8)	10,000 (4,545)	6,000 (2,727)	16.2 (335.3)	5.67 (144)	5.25 (133.4)	0.81 (20.6)
GDW795A	4/0 AAC 4/0 AAAC 4/0 ACSR	900 AAC 927.2 AAAC 795 ACSR	.52 (13.2)	1.11 (28.1)	15,000 (6,818)	6,000 (2,727)	20.2 (513)	5.90 (150)	5.78 (146.8)	0.71 (18)

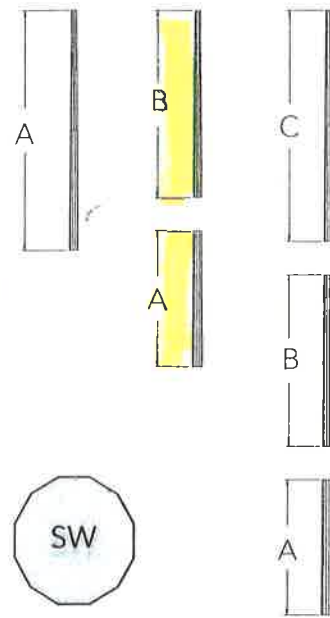
* Plated aluminum jaws provided to accommodate copper conductors.
** RUS Listed

Standard Pole Classification (Class 1, RUS S-02.9)



Valmont Newmark offers Steel (SW/SWR), Concrete and Hybrid (New Pole) poles that closely match standard wood pole classification and offer the best choice among all materials for new and replacement construction. Standardized poles are designed in accordance with ASCE/SEI 48-11 and the correlation of standardized Steel pole size to wood pole class is based on Grade B construction. Horizontal Tip Load = 2,925 lbs.

Class 1 12-Sided Steel Designs (SW) Top Diameter 8.18" Taper .120 (in/ft)						
Total Pole Length	Base OD in. (Across Flats)	Estimated Weight (Black) lbs.	Ultimate Moment (ft-kips)	Section Length (A)	Section Length (B)	Section Length (C)
30'	11.78	602	96.0	30.0'	----	----
35'	12.38	724	105.7	35.0'	----	----
40'	12.98	852	115.5	40.0'	----	----
45'	13.58	987	126.2	45.0'	----	----
50'	14.18	1127	137.3	50.0'	----	----
55'	14.78	1274	148.9	55.0'	----	----
60'	15.38	1426	161.0	60.0'	----	----
60' J	15.00	1494	152.5	22.8'	40.5'	----
65'	15.60	1647	164.7	28.3'	40.0'	----
70'	16.20	1808	177.4	33.3'	40.0'	----
75'	16.80	1998	190.6	25.5'	52.8'	----
80'	17.40	2171	204.2	30.5'	52.8'	----
85'	18.00	2351	218.3	35.5'	52.8'	----
90'	18.60	2537	232.8	40.5'	52.8'	----
95'	19.20	2729	247.9	45.5'	52.8'	----
100'	19.80	2927	263.4	50.5'	52.8'	----
105'	20.40	3131	279.3	55.5'	52.8'	----
110'	20.63	3465	284.3	22.8'	41.5'	52.8'
115'	21.23	3678	300.9	27.8'	41.5'	52.8'
120'	21.83	3897	317.9	32.8'	41.5'	52.8'
125'	22.43	4122	335.5	37.8'	41.5'	52.8'
130'	23.03	4353	353.5	42.8'	41.5'	52.8'
135'	23.63	4590	371.9	47.8'	41.5'	52.8'
140'	24.23	4834	390.9	52.8'	41.5'	52.8'

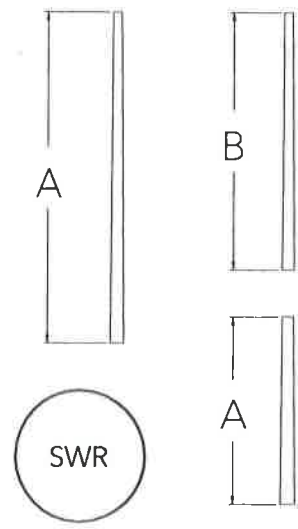


NOTE: Shaft thickness is .188" for A, B and C.

Concrete, Hybrid (NewPole™) & Steel Flanged designs available upon request.

Estimated Weight does not include any accessories. The moment capacities listed are based on an embedment depth of 10% of the total pole length + 2 ft. Actual embedment depth is dependent upon the soil and backfill conditions and it is the responsibility of the purchaser to define.

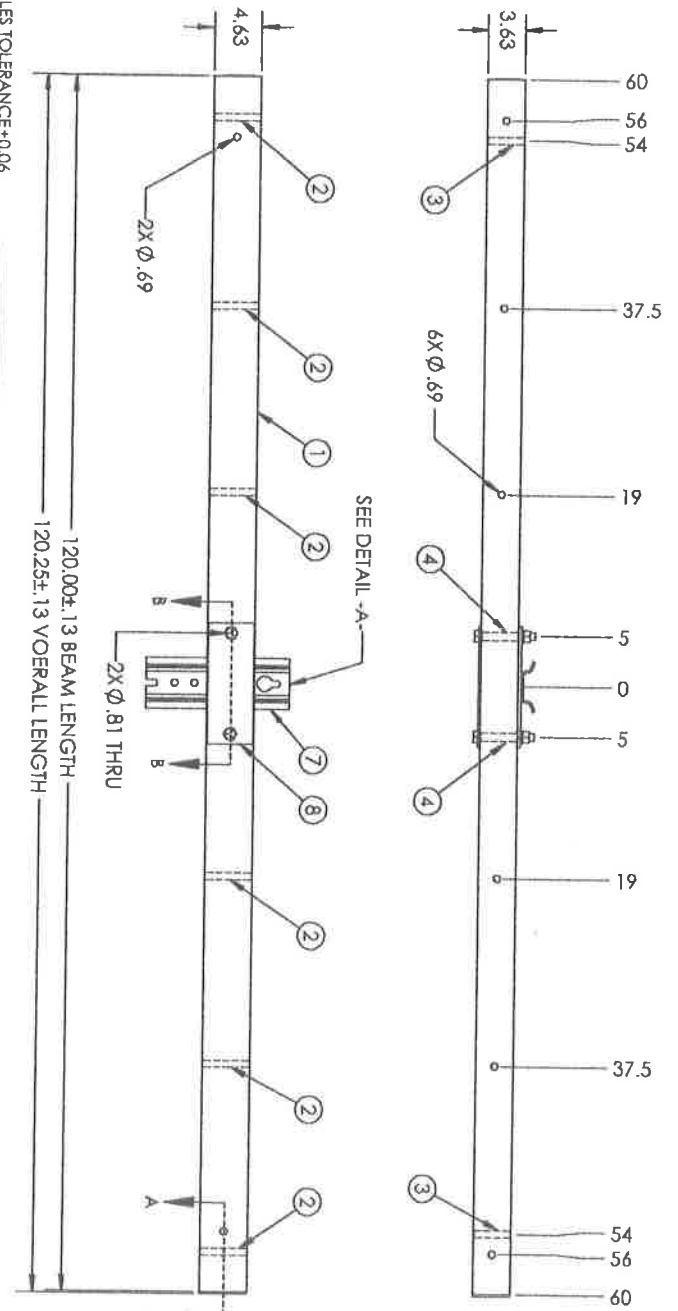
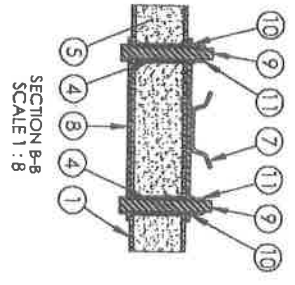
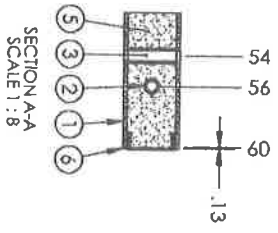
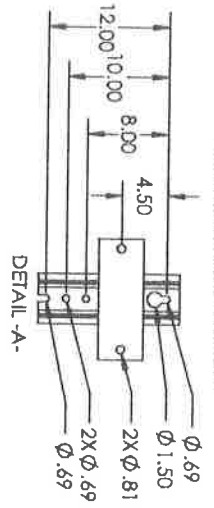
Class 1 Round Steel Designs (SWR): Top Diameter 6.5" Taper .172 (in/ft)						
Total Pole Length	Base OD in.	Estimated Weight (Black) lbs.	Ultimate Moment (ft-kips)	Section Length (A)	Section Length (B)	Est. Truckload Qty
30'	11.68	464	75.9	30.0'	----	65
35'	12.55	567	87.6	35.0'	----	65
40'	13.41	678	101.5	40.0'	----	60
45'	14.24	795	114.4	45.0'	----	52
50'	15.10	921	128.6	50.0'	----	44
55'	15.63	1116	137.1	12.9'	45.0'	37
60'	16.49	1254	152.1	17.9'	45.0'	30
65'	17.35	1399	165.9	22.9'	45.0'	28
70'	18.21	1551	180.2	27.9'	45.0'	18
75'	19.07	1711	195.2	32.9'	45.0'	18
80'	19.93	1879	210.7	37.9'	45.0'	16
85'	20.79	2054	226.8	42.9'	45.0'	15
90'	21.65	2236	243.5	47.9'	45.0'	14
95'	22.51	2433	260.8	47.9'	50.0'	13



NOTE: Shaft thickness is .162" for A and B.

Standard Pole Classification (Class 1, RUS S-02.9)

ITEM NO.	PART NUMBER	DESCRIPTION	DESCRIPTION 2	QTY
1	FR-120-2000-2	BEAM, PULTRUDED STOCK	SERIES 2000 X 120 IN. GRAY	1
2	TG0688-0003	BUSHING	11/16 IN X 4-1/16 IN	6
3	TG0688-0004	BUSHING	11/16 IN X 3-1/8 IN	2
4	TG0813-0006	BUSHING	13/16 IN X 3-1/8 IN	2
5	FOAM			1
6	EC28-0001-2	END CAP	SERIES 2000, GRAY	2
7	TM-0044	MOUNT ASSEMBLY, TANGENT	SD	1
8	PL-0037	PLATE FRONT		1
9	H80750-0001	HEX BOLT	3/4 IN - 10 X 5-1/2 IN	2
10	LM0750-0001	LOCK WASHER	3/4 IN	2
11	HN0750-0001	HEX NUT	3/4 IN - 10	2



NOTES:
1. CENTER OF MOUNT HOLES TO HOLES TOLERANCE ±0.06

UNLESS OTHERWISE SPECIFIED.....
DIMENSIONS ARE IN INCHES
INTERPRET DIM AND TOL PER ASME Y14.5-2009
ANGULAR: MACH+2°
BEND+2°
TWO PLACE DECIMAL ±0.02
THREE PLACE DECIMAL ±0.005

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF GEOTEK. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF GEOTEK IS PROHIBITED.

STATE:	RELEASED:	2013-03-06
DRAWN:	RAF	2013-02-06
CHECKED:	BRH	2013-03-06
APPROVED:	BRH	2013-03-06
MATERIAL:		
FINISH:		

REVISIONS:

REV	DESCRIPTION	DATE	INITIALS
1.0	ADDED REPLACES NOTE	2011-11-02	BRH
2.0	ADDED REPLACES PREVIOUS ITEM NOTE IN TITLE BLOCK	2011-11-02	EFH
2.1	REPLACES PREVIOUS ITEM NOTE IN TITLE BLOCK REDRAWN IN SOLIDWORKS	2013-02-06	RAF

DESCRIPTION:
TANGENT ASSEMBLY, SERIES 2000
120 in, RUS 05

SITE: DWG. NO.
B TB200012005X2

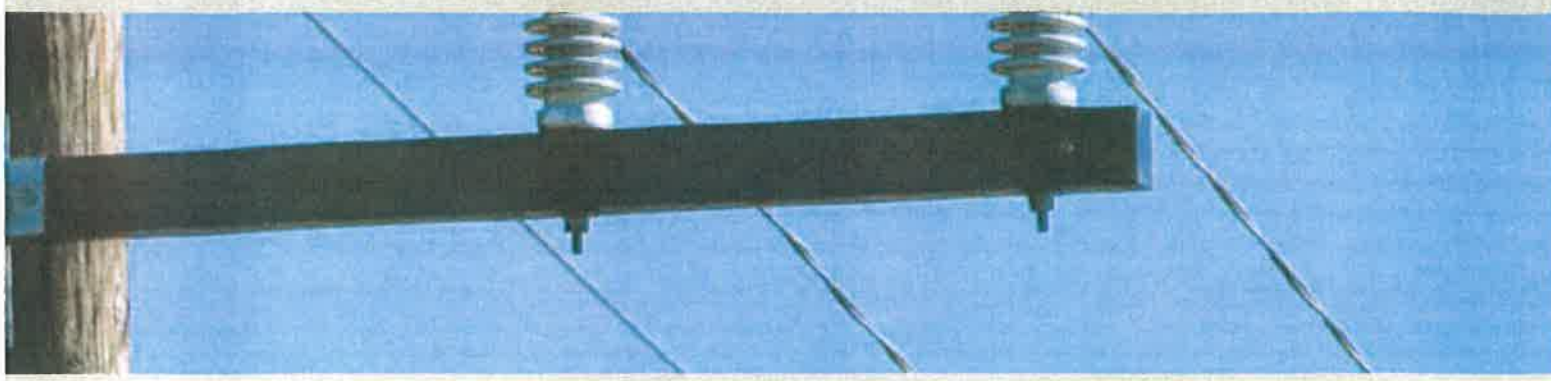
SCALE: 1:1/2 WEIGHT: 47.72 LBS

1421 SECOND AVE NW
STEWARTVILLE, MN 55976
(800) 533-1680
www.geotekinc.com

REV: 2.1
SHEET 1 OF 1

PUPI ARM

DISTRIBUTION PRODUCT CATALOG



TANGENT CROSSARMS

CENTER MOUNT

PUPI PRODUCT	LENGTH in ft.	ULTIMATE VERTICAL LOAD PER SIDE, lbs	DEFLECTION PER 1000lb PER SIDE, inches	WEIGHT in lbs.
SERIES 1000 (2" X 4")				
TB1000060	5	4,200	0.50	22
TB1000096	8	4,000	1.38	28
TB1000120	10	3,000	2.75	32
SERIES 2200 (3-5/8" X 4-5/8")				
TB2200096	8	3,500	0.76	34
TB2200120	10	2,750	1.34	39
SERIES 2000 (3-5/8" X 4-5/8")				
TB2000060	5	6,500	0.25	33
TB2000096	8	6,400	0.72	42
TB2000120	10	5,400	1.21	49
TB2000144	12	4,200	2.20	56
SERIES 2500 (3-5/8" X 4-5/8")				
TB2500096	8	7,500	0.55	44
TB2500120	10	6,000	0.95	51
TB2500144	12	5,500	1.31	58
SERIES 3000 (3-5/8" X 4-5/8")				
TB3000096	8	10,000	0.41	53
TB3000120	10	9,400	0.68	62
TB3000144	12	8,000	1.22	71

• PUPI crossarms are field-ready in standard sizes, or made-to-order and drilled to your specifications.

• Deflections are measured from center to phase attachment 4" from arm end.

• Drilling pattern, 8' arms: RUS 03, 04 or customer defined; 10' arms: RUS 05 or customer defined.

• Recommended maximum working load is 50% of ultimate strength.



OHIO BRASS®



4010150215
POLYMER DIST INSULATOR
PDI - 15



CN11061151

Designed by Hubbell in the USA

Made by Hubbell in China



30036359071755

25070186
QTY :
15

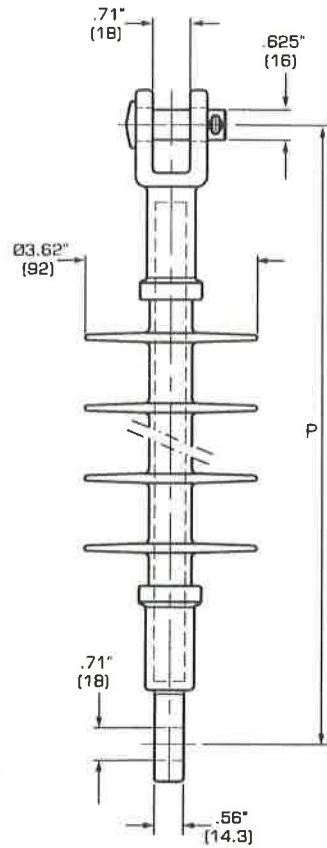


04/06/2017
WT:

35.6 LB

T&D Insulators

Polymer Deadend Insulators



Type PDEI 15

Type PDEI 25

Type PDEI 35

Mechanical & Electrical Characteristics

Catalog Number	PDEI-15	PDEI-25	PDEI-35
kV Rating	15kV	25kV	35kV
Dimensions inches (mm)			
Leakage Distance	16.0" (400)	30.5" (775)	34.4" (875)
Arc Distance	7.9" (200)	12.2" (310)	13.4" (340)
P - Connection Length, Between Centers	12.5" (320)	17.0" (430)	18.3" (465)
D - Shed Diameter	3.62" (92)	3.62" (92)	3.62" (92)
Minimum Housing Thickness	.118" (3)	.118" (3)	.118" (3)
Number of Sheds	4	8	9
Mechanical Values			
Mechanical Failing Load	15000 lbs.	15000 lbs.	15000 lbs.
Electrical Values			
Power Frequency Flashover Dry	90 kV	130 kV	145 kV
Power Frequency Flashover Wet (horizontal)	65 kV	100 kV	130 kV
C1FO (+)	140 kV	190 kV	250 kV
RIV (Test)	15 kV	20 kV	30 kV
RIV (Max)	<10 µV	<10 µV	<10 µV
Weight & Packaging			
Weight Per Carton	34.8 lbs.	41 lbs.	43.6 lbs.
Carton Quantity	15	15	15
Pallet Quantity	360	240	240

S&L = 15,000 lbs. (70kN)

RII = 7,500 lbs. (35kN)

Silicone Rubber, Excellent hydrophobicity, High performance in polluted environments and UV rays

Corrosion resistant braided fiber fiberglass core, 16mm diameter

ANSI 524 Clevis and Tongue End Fittings

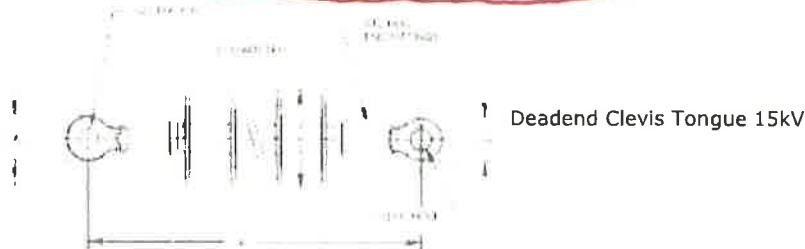


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Product Datasheet

OHIO/BRASS

4010150215 -- Veri*Lite PDI



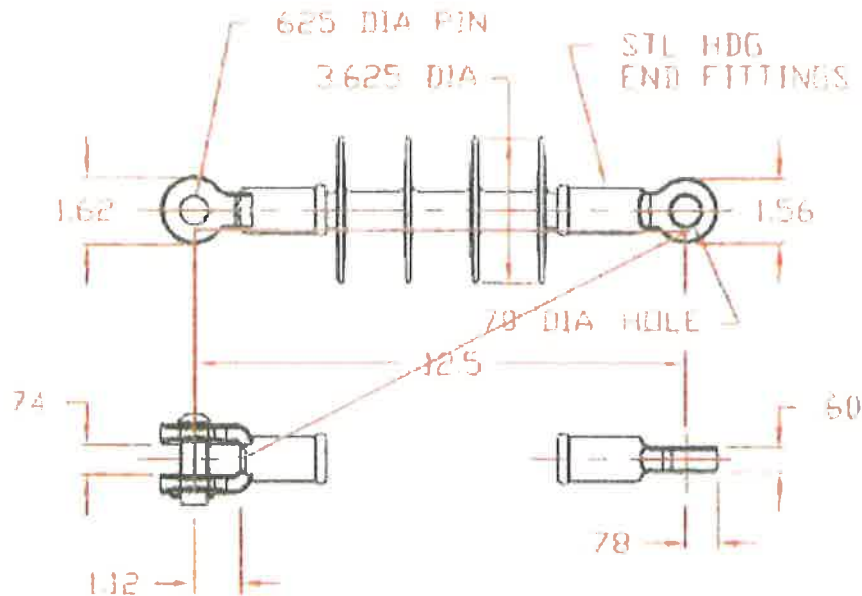
Product Specifications

Application	Deadend
Standard	ANSI
System Voltage (kV)	<=69 kV
Strength Class	15 K
Ground/Base Fitting	Clevis
Line Fitting	Tongue
Section Length	12.5 IN (318 mm)
Leakage Distance	16 IN (406 mm)
Housing Material	ESP
Working Load	7500
Dry Arc Distance	8
Number of Sheds	4
Shed Style	Uniform
Shed Diameter	3.6
Rod Diameter	0.625
Rod Type	Fiberglass
Thickness of housing over Rod	0.100
End Fitting Class	ANSI 52-6
End Fitting Material	Steel
Pin Material	1018 Steel
Cotter Material	Stainless
Dimension X	12.5
Torsion	37
SML	15000
RTL	7500
Proof Test	10000
ANSI 60Hz Dry FO	110
ANSI 60Hz Wet FO	75
ANSI Critical Impulse FO - Positive	140
ANSI Critical Impulse FO - Negative	160
RIV Test kV	15
Maximum RIV	<10 microvolts
Power Arc KA Cycles	150
Equivalent No. of 10" Bells	2

Typical P-P Line Voltage Application / Class	15 kV / DS-15
Industry Standard	ANSI DS-15
Material Type	Non-Standard
Standard Package	15
Standard Package Unit	Each
Pallet Quantity	180
Min Order Qty	15
Net Weight / Ea.	2.37 lbs
UPC Code	09635907175

Compressed Product Number

4010150215



DESIGN CHARACTERISTICS

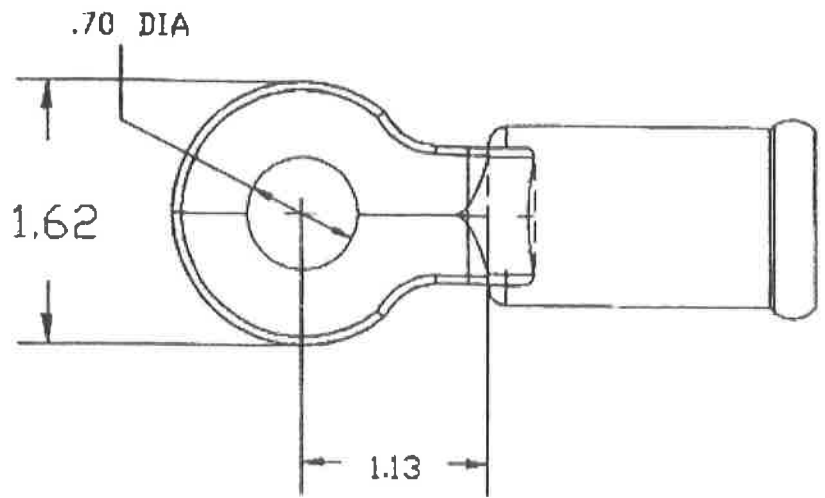
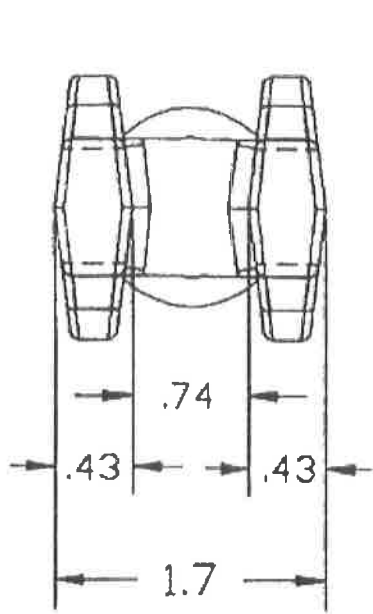
LEAKAGE DISTANCE	-----	16 IN.
60 Hz DRY FLASHOVER	-----	110 KV
60 Hz DRY WITHSTAND	-----	100 KV
60 Hz WET FLASHOVER	-----	75 KV
60 Hz WET WITHSTAND	-----	65 KV
IMPULSE CRITICAL POSITIVE	-----	140 KV
IMPULSE CRITICAL NEGATIVE	-----	160 KV
MAX. RIV AT 1000 kHz	-----	10 μ V
RIV TEST VOLTAGE	-----	15 KV
POWER ARC	-----	150 KA CYCLES
NET WEIGHT	-----	2.4 LBS
TENSION PROOF TEST	-----	10000 LB
ULTIMATE TENSION STRENGTH	-----	15000 LB
NO. OF WEATHERSHEDS	-----	4

HUBBELL / THE OHIO BRASS CO.

8711 WADSWORTH ROAD, WADSWORTH, OHIO

PART PDI-15 DIST DEAD END INS		SCALE	
PART 401015-0215 ALT 4		25=1	
DESIGN RAB	DATE 05/20/92	DWG NO S002116-00	REV NO 04
DRAWN JVR	DATE 01/20/95		

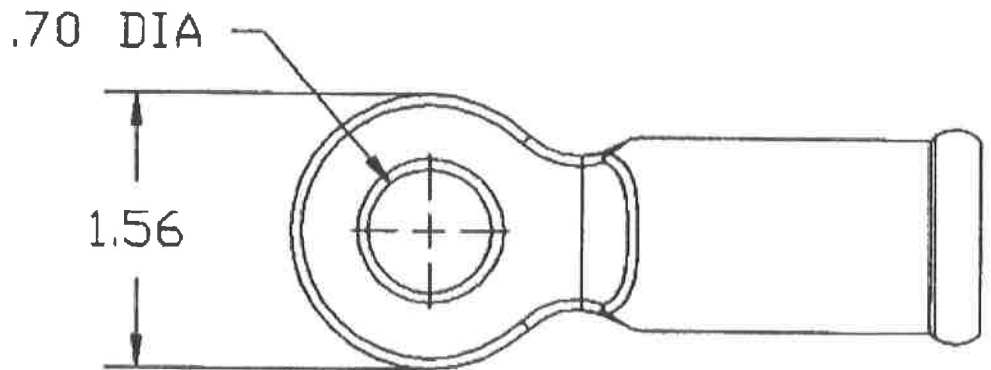
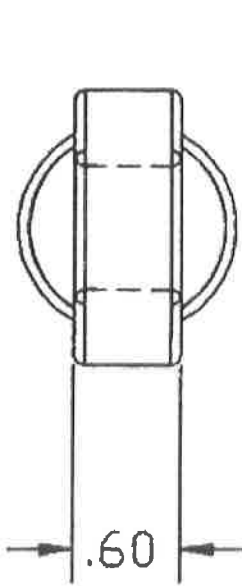
Approved 01-31-1995



PDI Clevis

Material: Steel

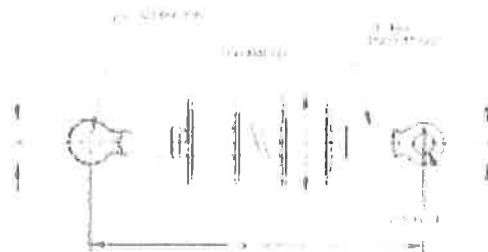
PDI Clevis



PDI Tongue

Material: Steel

PDI Tongue



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NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

Clamptop Clamps inches (mm)



Figure 1

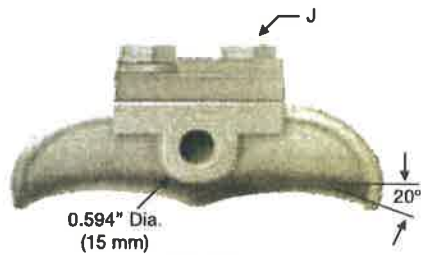
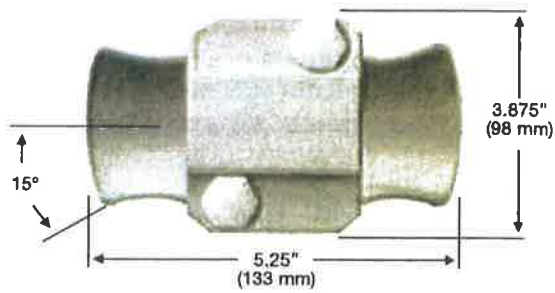


Figure 2

Fig. No.	Catalog Number	Body & Keeper Material	Clamping Range Inches (mm)	Ultimate Body Strength lbs. (kN)
1	TSC57	356-T6 AL	0.25 - 0.57 (6.3 - 14.4)	2800 (1.273)
1	TSC106	356-T6 AL	0.50 - 1.06 (12.7 - 26.9)	2800 (1.273)
1	TSC150	356-T6 AL	1.00 - 1.50 (25.4 - 38.1)	2800 (1.273)
2	TSC200	356-T6 AL	1.50 - 2.00 (38.1 - 50.8)	2800 (1.273)



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Application:

- Recommended torque values 40-45 ft/lbs

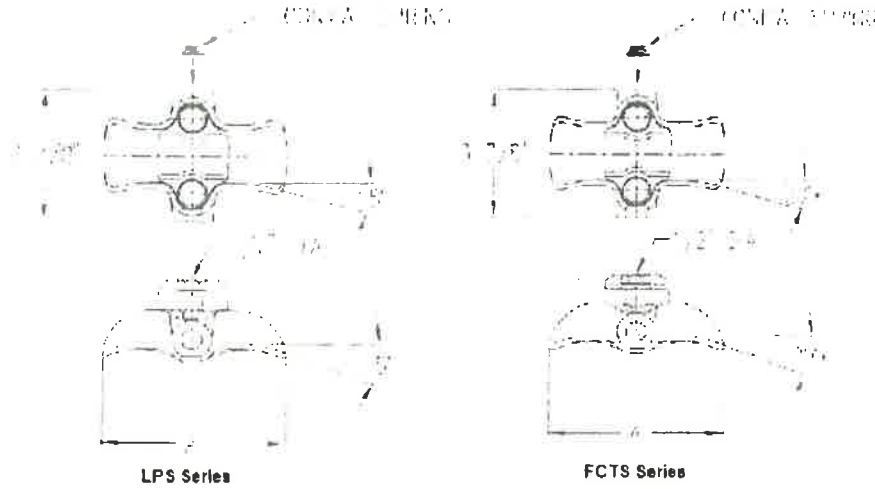
Material:

- Body and Keeper - Aluminum
- Body and Keeper - Hot Dip Galvanized (PAC and LPS series)
- Hardware - Hot Dip Galvanized
- Spring - Stainless Steel
- RIV Suppressor Spring - Stainless Steel (ULPS2 series)



Part #	QTY	Wt (lbs)	Wt (kg)	Wt (lbs)	Wt (kg)	Wt (lbs)
ACTS-057	1	5.25	4-4/0	.23-.57	4-4/0	82
ACTS-084	1	5.25	1-477	.35-.84	1/0-477	95
ACTS-118	1	5.25	3/0-795	.50-1.18	4/0-1033.5	117
ACTS-150	1	5.25	556.5-1510.5	.93-1.50	715.5-1590	127
ACTS-200	1	6.50	605-1113*	1.50-2.00	795-1192.5	225
ACTS-230	2	8.75	1033.5-1431*	1.90-2.30	1192.5-1510.5*	242
ACTS-270	2		1272* - 2167*	2.00 - 2.70		275

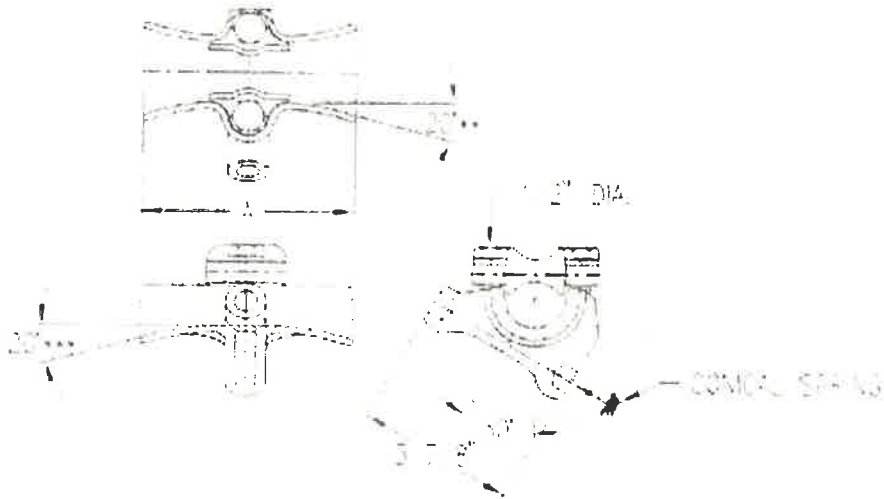
- Notes:
- 1) For spring in one trunnion, add suffix "-SL1"
 - 2) For spring in both trunnions, add suffix "-SL2"
 - 3) For stainless steel hardware, add suffix "-SS"
 - 4) "*" = over formed armor rods



Part No.	Material	Weight (lb)	Length (in)	Width (in)
LPS-57-F	Ductile Iron	5.13	.25-.57	200
LPS-57-B	Bronze	5.13	.25-.57	238
LPS-86-F	Ductile Iron	5.25	.35-.86	200
LPS-86-B	Bronze	5.25	.35-.86	232
LPS-118	Ductile Iron	5.50	.50-1.18	120
FCTS-150	Ductile Iron	5.25	.93-1.50	232

Notes:

- 1) LPS series supplied with spring in one trunnion. For FCTS series, add suffix "-SL1" for single spring
- 2) For spring in both trunnions, add suffix "-SL2"
- 3) For stainless steel hardware, add suffix "-SS"
- 4) Clamps are supplied with spring in one trunnion



Part No.	Weight (lb)	Length (in)	Width (in)	Height (in)	Width (in)
ACP-057	5.25	4-4/0	.23-.57	4-4/0	82
ACP-084	5.25	1-477	.35-.84	1/0-477	95
ACP-118	5.25	3/0-795	.50-1.18	4/0-1033.5	117
ACP-150	5.25	556.5-1510.5	.93-1.50	715.5-1590	127
ACP-165	5.75	636-1780	1.00-1.65	795-2000	133
ACP-200	6.50	605-1113*	1.50-2.00	795-1192.5	225

Notes:

- 1) For spring in one trunnion, add suffix "-SL1" -- ACP series only
- 2) For spring in both trunnions, add suffix "-SL2" -- ACP series only
- 3) "*" = over armor rods
- 4) "****" = 15 degree for ACP-165
- 5) "*****" = 30 degree for ACP-165



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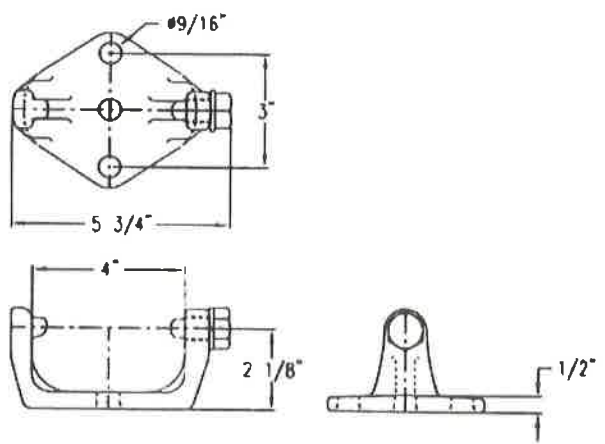
Features:

- Generally used on top of transmission towers and pole tops for supporting clamps (or equivalents) holding overhead ground wires

Material:

- Bracket: Ductile Iron, Hot Dip Galvanized
- Trunnion Bolt: Steel, Hot Dip Galvanized

TMB-1

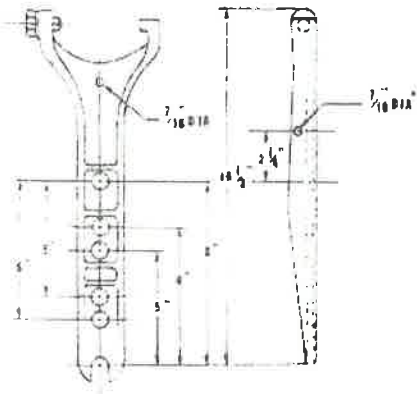


TMB-1	12500 lbs.	240
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BTA-55

Material:

- Ductile Iron: Hot Dip Galvanized



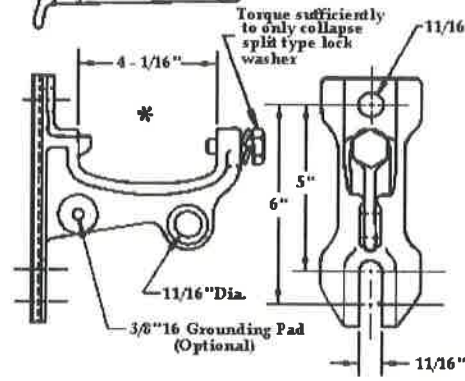
BTA-55	5/8"	5", 6", or 8"	500
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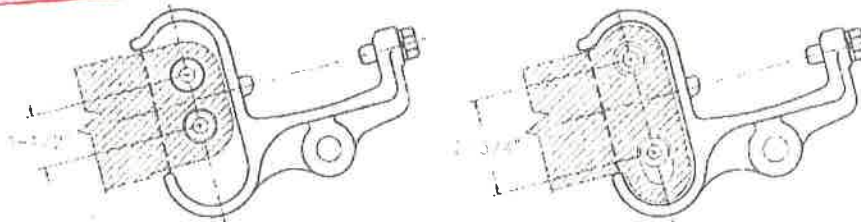
TSWB-55-6

Material:

- Body: Ductile Iron -Hot Dip Galvanized
- Hardware: Steel Hot Dip Galvanized



TSWB-55-6	400
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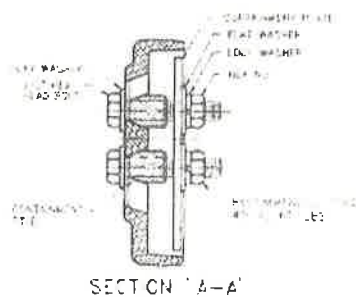
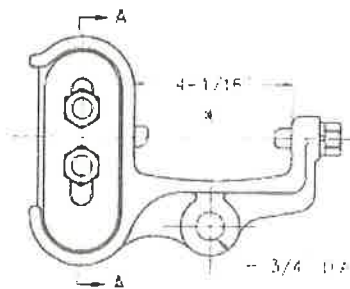
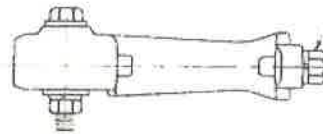


PITA-250

Features:

- Minimum Ultimate Strength is 2800 lbs
- Containment studs will adjust to fit insulators being used. Trunnion adapter fits standard 2-1/2" diameter Polymer Post Insulators.

3/8" 16" FOLD OVER WITH SPLIT LOCK WASHER



Material:

- Body: Aluminum Alloy
- Stud: Aluminum Alloy
- Plate: Aluminum Alloy
- Hardware: Hot Dip Galvanized

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9/5/2017

MacLean Power Systems - Pole Line Hardware A-E - Brackets - Trunnion

C

PITA-250	263
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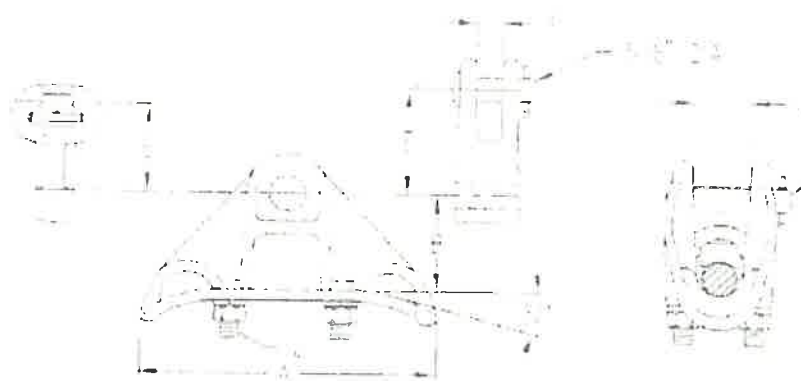
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Features:

- Recommended torque on U-bolts: 1/2"= 40-45 ft/lbs, 5/8"=65-70 ft/lbs

Material:

- Body and Keeper - Aluminum Alloy
- Hardware - Steel, Hot Dip Galvanized
- Cotter Pin - Stainless Steel
- Hardware - Ductile Iron, Hot Dip Galvanized



Part Number	W	H	D	U-Bolt Dia	U-Bolt Length	U-Bolt Spacing	U-Bolt Qty	U-Bolt Dia	U-Bolt Length	U-Bolt Spacing	U-Bolt Qty	Weight (lbs)	Material	Part #
LS-0-N	6.44	2.13	0.84	5/8	--	--	1/2	.20-.70	17000				None	180
LS-0-S	6.44	2.13	0.84	5/8	2 3/16	--	1/2	.20-.70	17000				SI-625	307
LS-0-C	6.44	2.13	0.84	5/8	2 7/8	11/16	1/2	.20-.70	17000				SCE-55-625	307
LS-1-N	7.44	2.31	1.00	5/8	--	--	1/2	.40-.87	18000				None	253
LS-1-S	7.44	2.31	1.00	5/8	2 3/16	--	1/2	.40-.87	18000				SI-875	411
LS-1-C	7.44	2.31	1.00	5/8	2 7/8	11/16	1/2	.40-.87	18000				SCE-55-875	411
LS-2-N	7.50	2.50	1.25	5/8	--	--	1/2	.40-1.05	25000				None	273
LS-2-S	7.50	2.50	1.25	5/8	2 3/16	--	1/2	.40-1.05	25000				SI-1125	424
LS-2-C	7.50	2.50	1.25	5/8	2 7/8	13/16	1/2	.40-1.05	25000				SCE-55-1125	424
LS-3-N	7.88	2.63	1.38	5/8	--	--	1/2	.75-1.19	25000				None	329
LS-3-S	7.88	2.63	1.38	5/8	2 3/16	--	1/2	.75-1.19	25000				SI-1375	488
LS-3-C	7.88	2.63	1.38	5/8	2 7/8	11/16	1/2	.75-1.19	25000				SCE-55-1375A	488
LS-4-N	7.88	2.75	1.56	5/8	--	--	1/2	.87-1.37	25000				None	346
LS-4-S	7.88	2.75	1.56	5/8	2 3/16	--	1/2	.87-1.37	25000				SI-1375	514
LS-4-C	7.88	2.75	1.56	5/8	2 7/8	11/16	1/2	.87-1.37	25000				SCE-55-1375A	514
LS-6-N	8.56	3.00	1.63	5/8	--	--	1/2	1.00-1.49	25000				None	376
LS-6-S	8.56	3.00	1.63	5/8	2 3/16	--	1/2	1.00-1.49	25000				SI-1375	544
LS-6-C	8.56	3.00	1.63	5/8	2 7/8	11/16	1/2	1.00-1.49	25000				SCE-55-1375A	544
LS-7-N	9.88	3.25	2.00	5/8	--	--	1/2	1.10-1.77	25000				None	461
LS-7-S	9.88	3.25	2.00	5/8	2 3/16	--	1/2	1.10-1.77	25000				SI-1750	633
LS-7-C	9.88	3.25	2.00	5/8	2 7/8	11/16	1/2	1.10-1.77	25000				SCE-55-1750	633
LS-8-N	9.88	3.50	2.13	5/8	--	--	1/2	1.25-1.92	25000				None	486
LS-8-S	9.88	3.50	2.13	5/8	2 3/16	--	1/2	1.25-1.92	25000				SI-1750	657
LS-8-C	9.88	3.50	2.13	5/8	2 7/8	11/16	1/2	1.25-1.92	25000				SCE-55-1750	657
LS-9-N	10.00	3.81	2.25	5/8	--	--	1/2	1.40-2.18	25000				None	686
LS-9-S	10.00	3.81	2.25	5/8	2 3/16	--	1/2	1.40-2.18	25000				SI-2000	875
LS-9-C	10.00	3.81	2.25	5/8	2 7/8	11/16	1/2	1.40-2.18	25000				SCE-55-2000	875
ASC-10-N	10.38	3.88	2.31	5/8	--	--	5/8	1.75-2.33	25000				None	705
ASC-10-S*	10.38	3.88	2.31	5/8	2 3/16	--	5/8	1.75-2.33	25000				SI-2187	919
ASC-10-C**	10.38	3.88	2.31	5/8	2 7/8	11/16	5/8	1.75-2.33	25000				SCE-55-2187	919

MacLean Power Systems - Conductor Hardware - Clamps, Suspension - Suspension, Standard

ASC-11-N	11.00	4.13	2.63	5/8	--	--	5/8	2.00-2.55	25000	None	894
ASC-11-S*	11.00	4.13	2.63	5/8	2 3/16	--	5/8	2.00-2.55	25000	SI-2500	1115
ASC-11-C**	11.00	4.13	2.63	5/8	2 7/8	11/16	5/8	2.00-2.55	25000	SCE-55-2500	1115
ASC-12-N	14.00	5.00	3.00	3/4	--	--	5/8	2.35-2.85	40000	None	1280
ASC-12-S*	14.00	5.00	3.00	3/4	2 3/16	--	5/8	2.35-2.85	40000	SE-2750-6	1500

Notes:

- 1) *-N* suffix indicates no fitting
- 2) *-S* suffix indicates socket fitting for use with Class 52-3 or 52-5 insulators
- 3) *-C* suffix indicates straight clevis for use with Class 52-1, 52-2, 52-4 or 52-6 insulators
- 4) *** = Socket fitting for Class 52-8 insulators available. Specify by adding suffix *-S8* instead of *-S*
- 5) **** = Clevis fitting for Class 52-7 insulators available. Specify by adding suffix *-C7* instead of *-C*

Features:

- Recommended Torque on U-bolts = 40-45 ft/lbs.

Material:

- Body and Keeper: Ductile Iron, Hot Dip Galvanized
- Hardware: Hot Dip Galvanized
- Cotter Pin: Stainless Steel

FSC-46	NONE	.16-.46	5-5/8	11/16	2	16,000
FSC-46-S	SI-500	.16-.46	5-5/8	11/16	2	16,000
FSC-46-C	CE-55-4	.16-.46	5-5/8	11/16	2	16,000
FSC-60	NONE	.20-.60	6-3/8	7/8	2	17,000
FSC-60-S	SI-625	.20-.60	6-3/8	7/8	2	17,000
FSC-60-C	CE-55-6	.20-.60	6-3/8	7/8	2	17,000
FSC-70	NONE	.30-.70	6-3/8	15/16	2-3/8	18,000
FSC-70-S	SI-625	.30-.70	6-3/8	15/16	2-3/8	18,000
FSC-70-C	CE-55-6	.30-.70	6-3/8	15/16	2-3/8	18,000
FSC-83	NONE	.40-.83	6-3/4	1	2-3/8	18,000
FSC-83-S	SI-875	.40-.83	6-3/4	1	2-3/8	18,000
FSC-83-C	CE-55-7	.40-.83	6-3/4	1	2-3/8	18,000

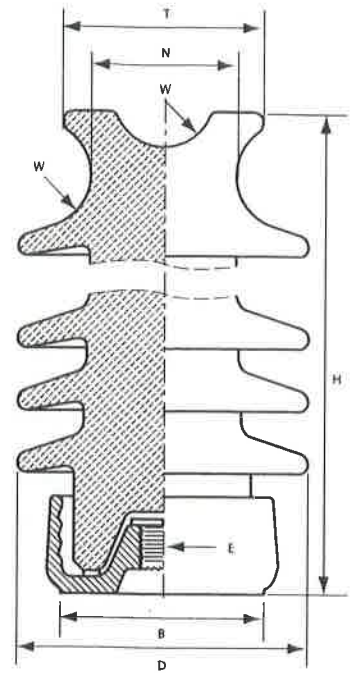
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T&D Insulators

Tie Top Line Post Insulators



Mechanical & Electrical Characteristics

Catalog Number	5115	5120	5125	5127	5135	5145
ANSI Technical Reference Number			57-1		57-2	57-3
Type "Neck"	F	F	F	F	F	F
Dimensions (inches)						
Leakage Distance	7.5"	11"	14"	16"	22"	29"
Dry Arcing Distance	5"	5.75"	6.5"	7.6"	9.5"	12.25"
H - Height	7.75"	8.75"	9"	9.875"	12"	15"
D - Diameter	4.75"	5.25"	5.5"	5.25"	6"	6.5"
N - Neck Diameter ($\pm 1/8"$)	2.875"	2.875"	2.875"	2.875"	2.875"	2.875"
W - Wire Grooves Radius	1"	1"	1"	1"	1"	1"
T - Top Diameter Maximum	3.9"	3.9"	3.9"	3.9"	3.9"	3.9"
B - Base Diameter	3.5"	3.5"	4"	4"	4.5"	4.5"
E - Bolt Thread	3/4" - 10*	3/4" - 10*	3/4" - 10*	3/4" - 10*	3/4" - 10*	3/4" - 10*
Mechanical Values						
Cantilever Strength	2000 lbs.	2000 lbs.	2800 lbs.	1500 lbs.	2800 lbs.	2800 lbs.
Cantilever Proof Load	800 lbs.	800 lbs.	1100 lbs.	800 lbs.	1120 lbs.	1120 lbs.
Electrical Values						
Low Frequency Flashover Dry	65 kV	80 kV	80 kV	95 kV	110 kV	125 kV
Low Frequency Flashover Wet	40 kV	55 kV	60 kV	65 kV	85 kV	100 kV
Impulse Flashover Positive	100 kV	110 kV	130 kV	140 kV	180 kV	210 kV
Impulse Flashover Negative	130 kV	140 kV	155 kV	190 kV	205 kV	260 kV
Radio Influence Low Frequency Test Voltage Data						
Test Voltage, Rms to Ground, KV	10 kV	15 kV	15 kV	20 kV	22 kV	30 kV
Maximum RIV at 1000 kHz - V	50	50	100	50	100	200
Weight & Packaging						
Weight Per Unit	7.5 lbs.	10.3 lbs.	11.2 lbs.	10.8 lbs.	16.3 lbs.	23.1 lbs.
Weight Per Package	42.0 lbs.	45.6 lbs.	37.5 lbs.	36.9 lbs.	36.6 lbs.	46.3 lbs.
Package Quantity	5	4	3	3	2	2

Standard Gleze: ANSI B70. Munzell 5, BG 7.0/0.4
 * 3/4" - 10. Oversize -0.015 ; 7/8" Thread Depth.

SEVES



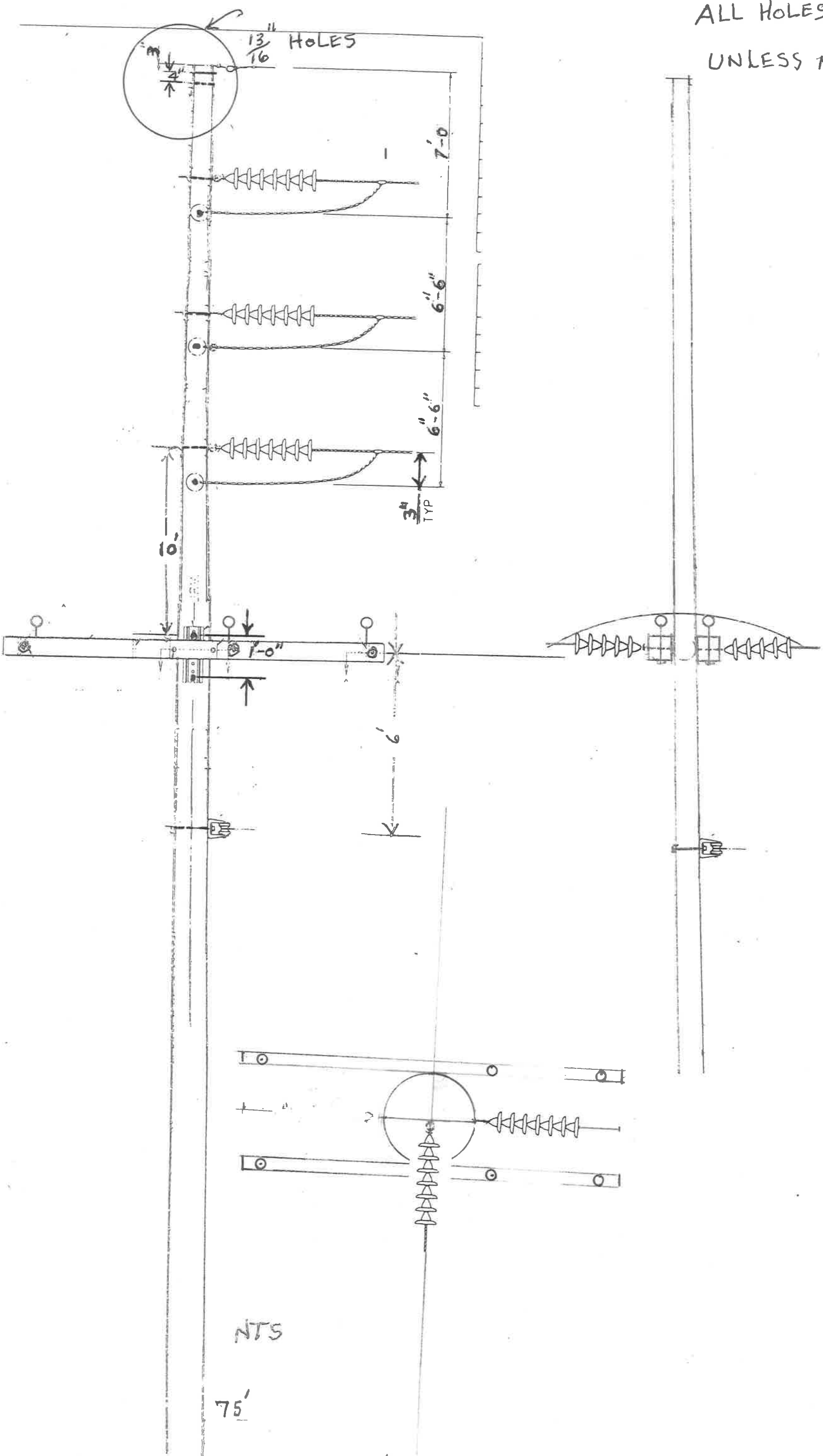
PART NUMBER : 5127
DESCRIPTION:
QTY PER CARTON: 3 PCS
WEIGHT: 35.7 LBS
VENDOR CODE: V-2001
MADE IN CHINA

12.16

Provide quote for 16 steel poles for 69KV construction. Pole must be Valmont or equivalent, of various height and drill patterns, tubular steel and shipped in two (2) sections each and consist of 12-sides.

- Plate thickness 0.1875"
- Minimum ground plate diameter 16.60"
- Ground line protective sleeve 3" / 16 x 5" - 0" or protective coating
- Manufacturers will be welded or die stamped on pole with date, pole height, class and voltage.
- Pole specifications must be submitted.
- Equivalent pole/ specifications will be accepted.

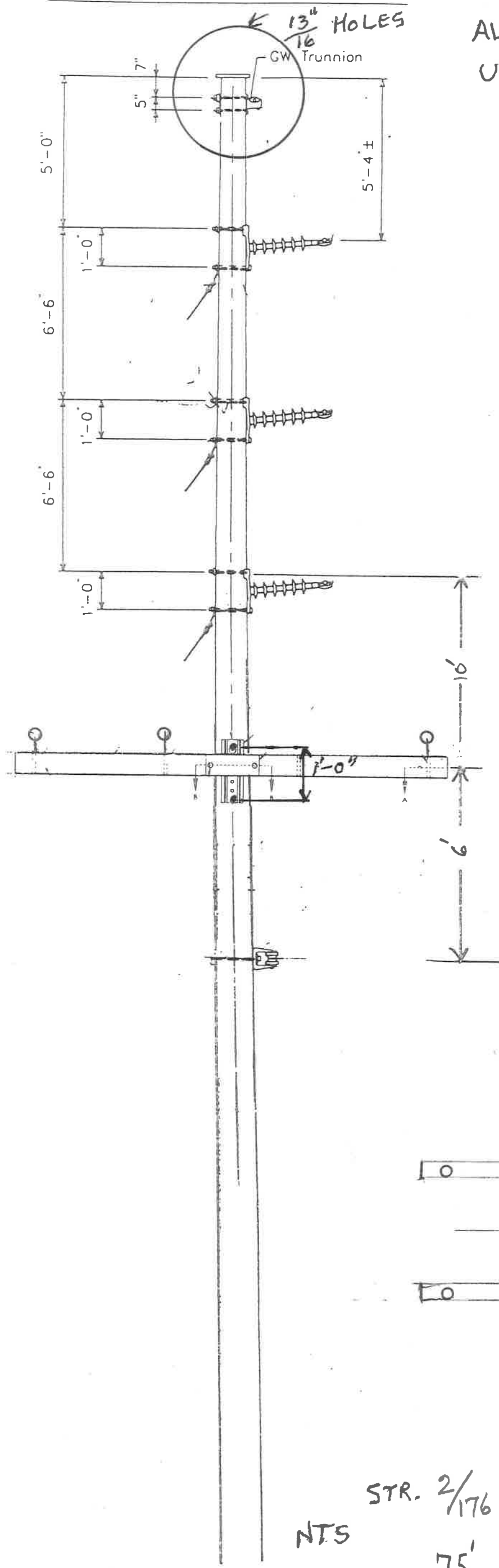
ALL HOLES ARE $1\frac{1}{8}$ " ϕ
UNLESS NOTED



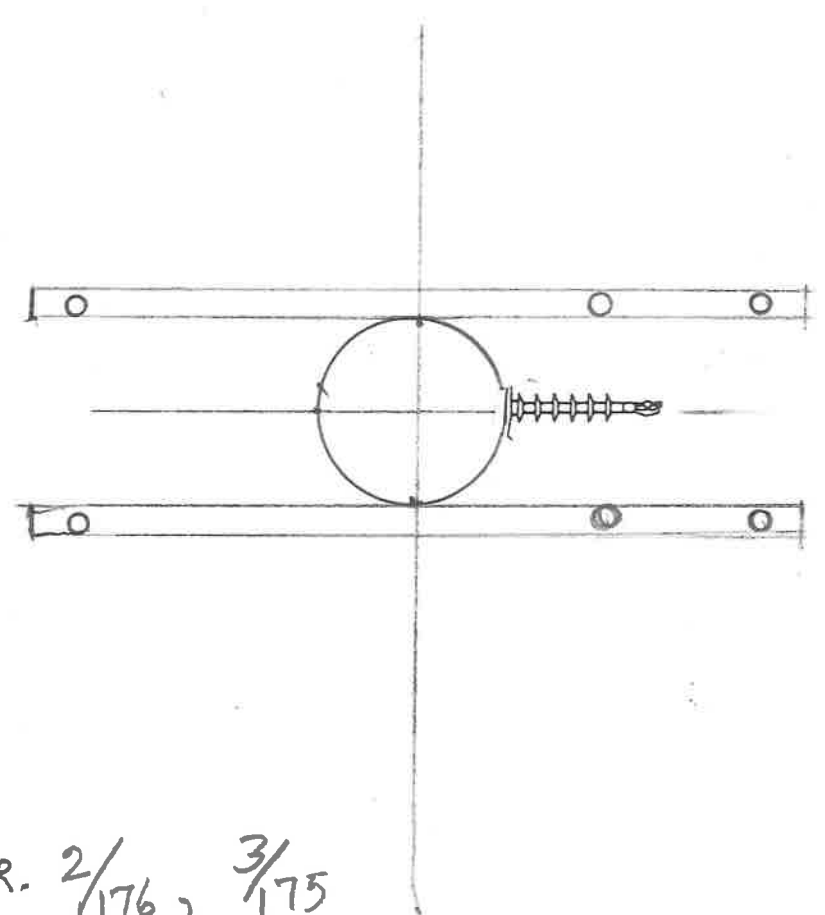
NTS

75'

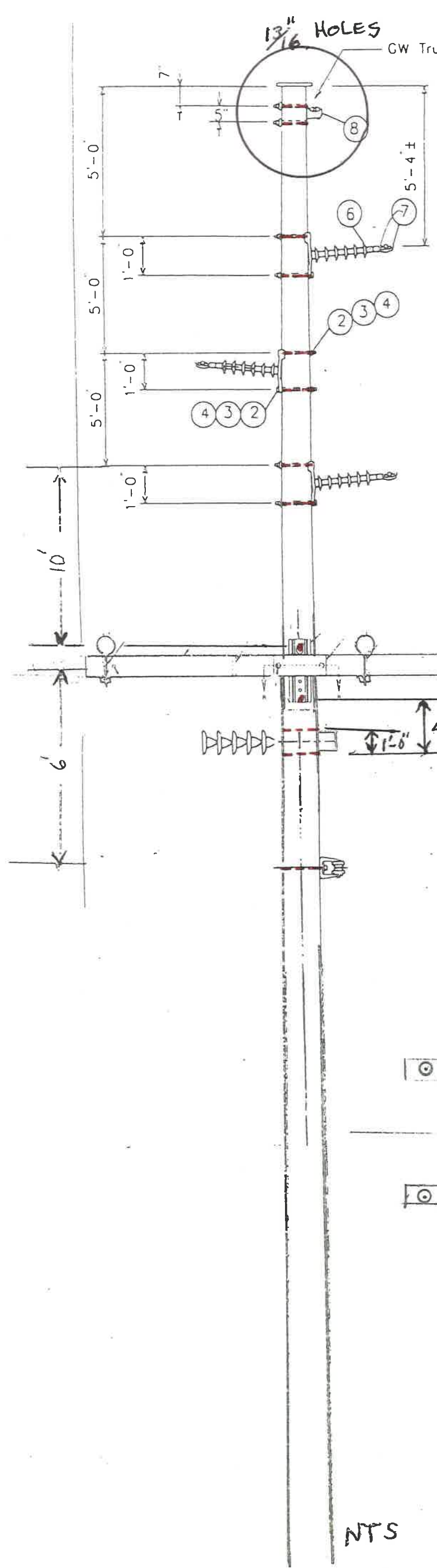
STR. 1/177



ALL HOLES ARE 1¹/₈" Ø UNLESS NOTED

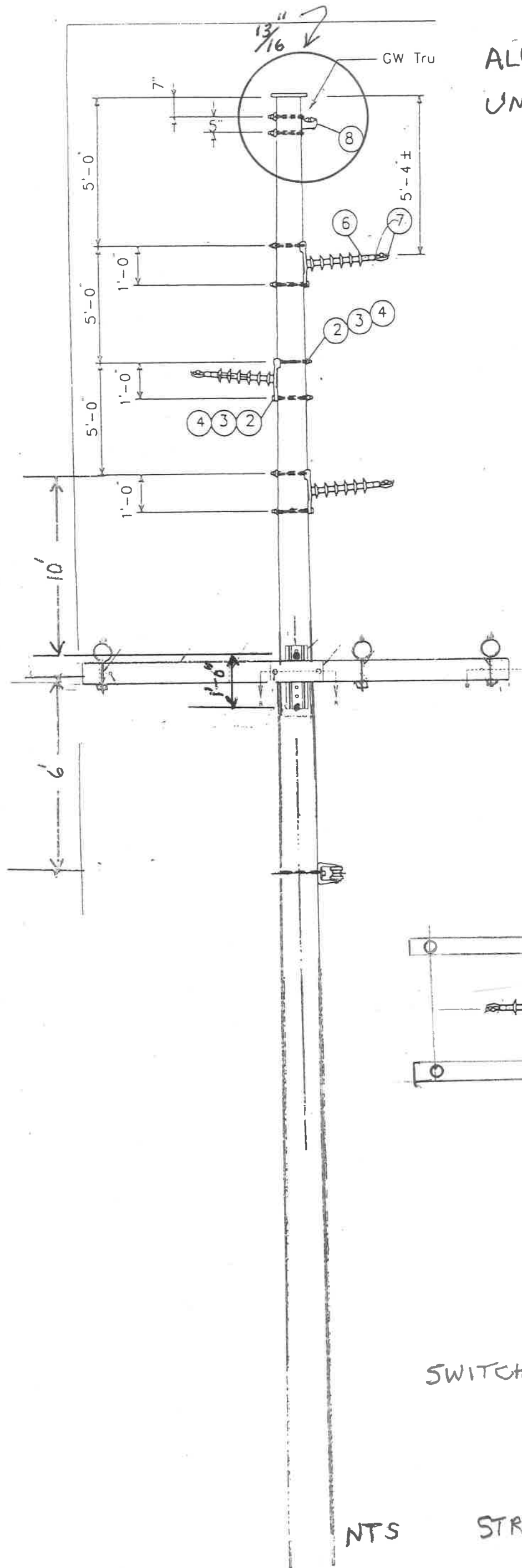


NTS STR. 2/176, 3/175
 75' & 75'

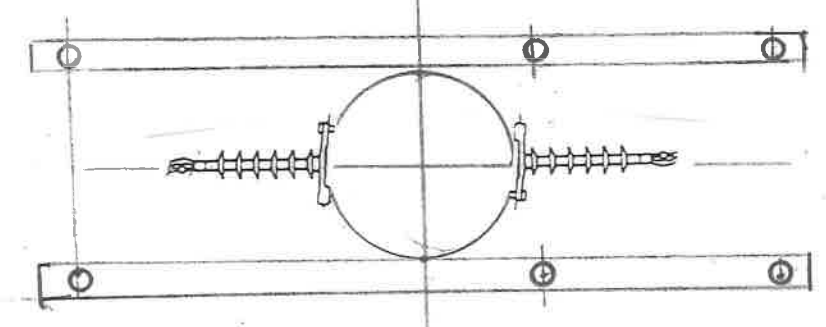


ALL HOLES ARE $1\frac{1}{8}$ " \varnothing
 UNLESS NOTED

STRS. $\frac{4}{174}$, $\frac{5}{173}$
 NTS
 $75' \neq 75'$



ALL HOLES ARE $1\frac{1}{8}$ " \varnothing
UNLESS NOTED



SWITCHES ON BOTH

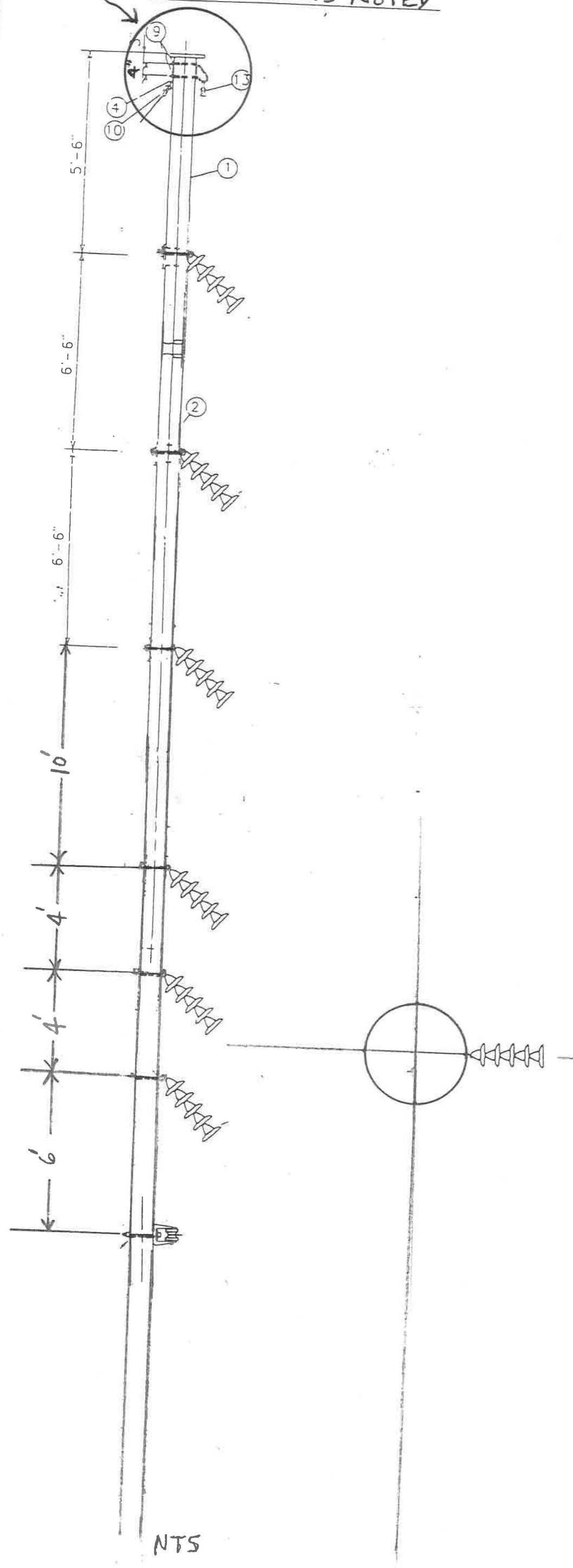
NTS

STR $\frac{6}{172}$ $\frac{14}{164}$
75' 80'

60579-1

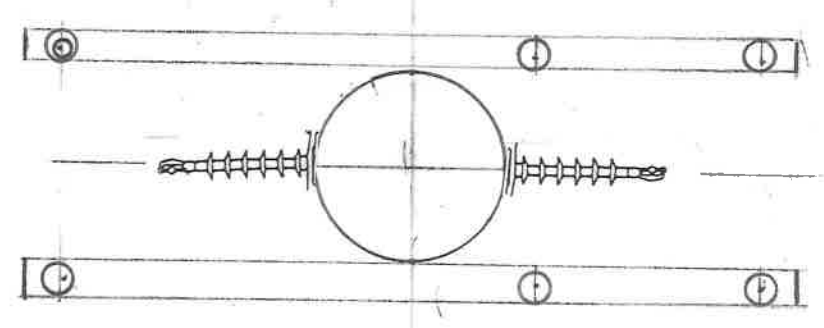
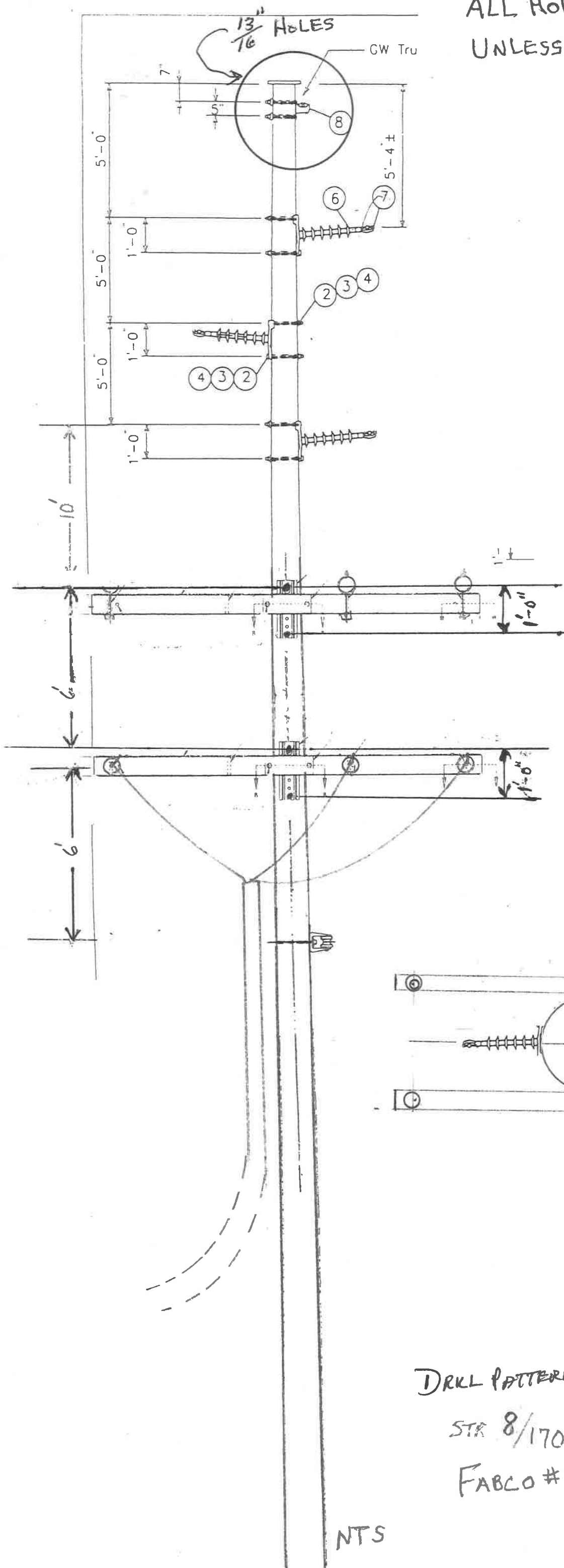
13/16 HOLES

ALL HOLES ARE 1 1/8" Ø UNLESS NOTED



STR. 7/171
75'

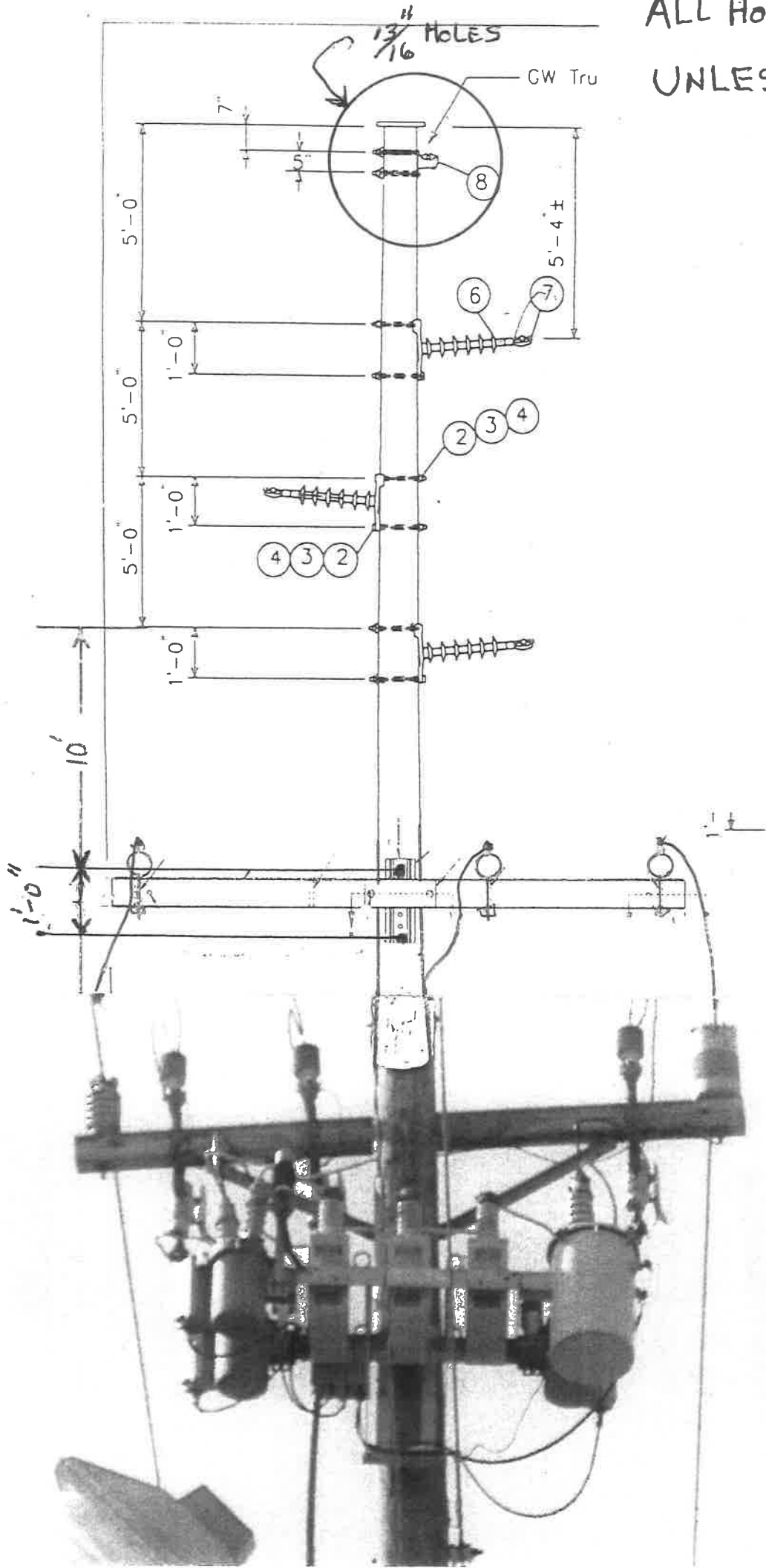
ALL HOLES ARE $1\frac{1}{8}$ " \varnothing
UNLESS NOTED



DRILL PATTERN FOR STR 8, 9, 10, 11, 12
STR 8/170
FABCO #1
ALL 80'

10
10
10

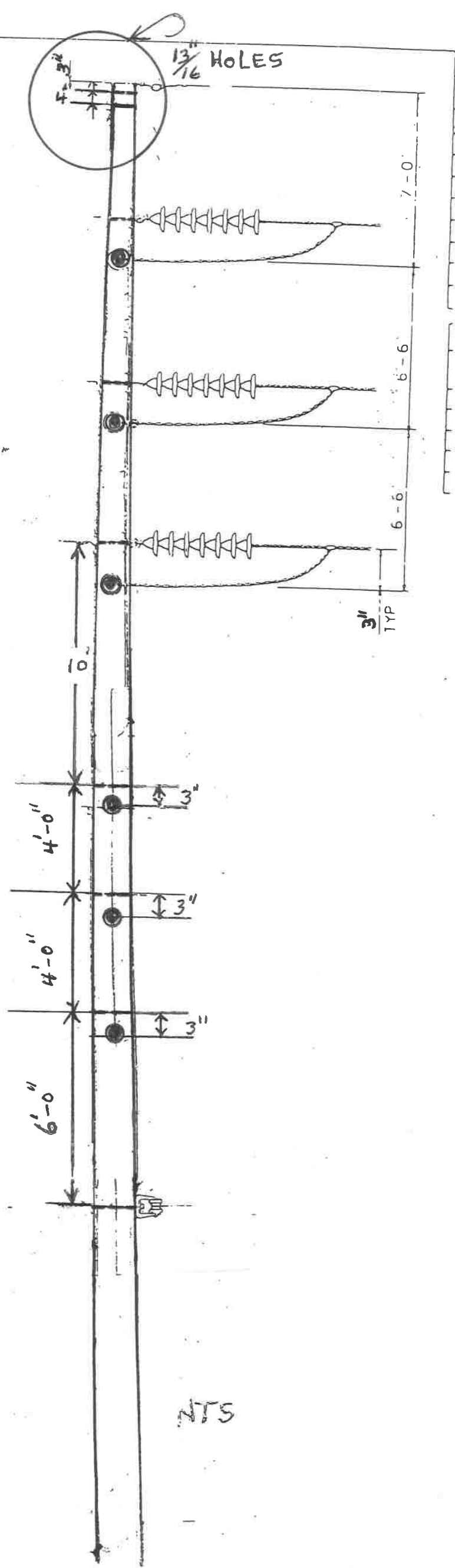
ALL HOLES ARE $1\frac{1}{8}$ " \varnothing
UNLESS NOTED



NTS

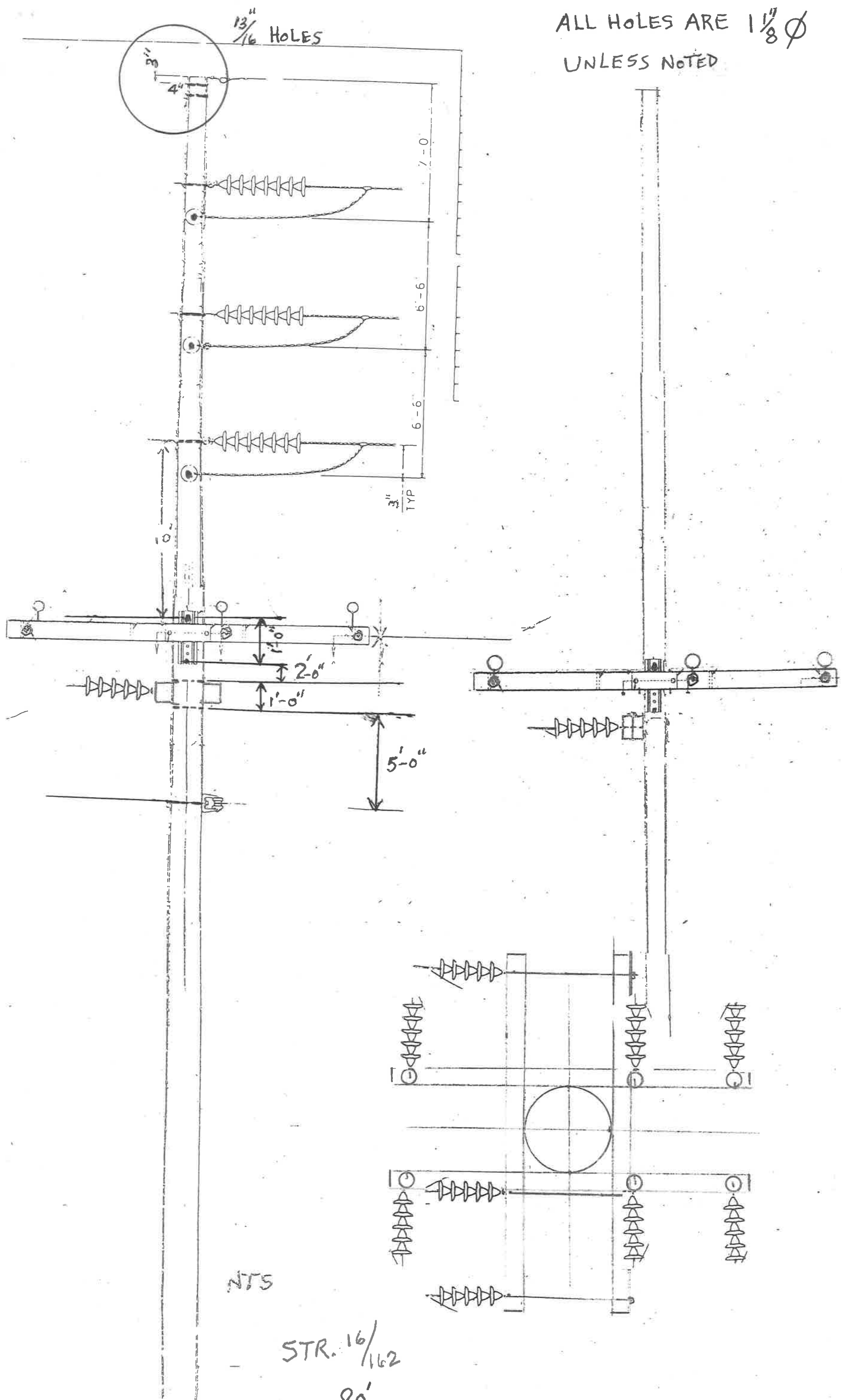
STR. 13/165
80'

ALL HOLES ARE $1\frac{1}{8}$ " \varnothing
UNLESS NOTED



STR. 15
80'

ALL HOLES ARE $1\frac{1}{8}$ " ϕ
UNLESS NOTED



IRAN DIVESTMENT ACT NOTICE

Tenn. Code Ann. § 12-12-106 requires the chief procurement officer to publish, using credible information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105.

For these purposes, the State intends to use the attached list of “Entities Ineligible to Contract with the State of South Carolina or any Political Subdivision of the State per the Iran Divestment Act of 2014, S.C. Code Ann §§ 11-57-10, et. Seq.”

While in conclusion on the list would make a person ineligible to contract with the state of Tennessee, if a person ceases its engagement in investment activities in Iran, it may be removed from the list.

If you feel as though you have been erroneously included on this list, please contact the Central Procurement Office at CPO.Website@tn.gov.

NIKKI R. HALEY, CHAIR
GOVERNOR

CURTIS M. LOFTIS, JR.
STATE TREASURER

RICHARD ECKSTROM, CPA
COMPTROLLER GENERAL



OFFICE OF THE EXECUTIVE DIRECTOR

HUGH K. LEATHERMAN, SR.
CHAIRMAN, SENATE FINANCE COMMITTEE

W. BRIAN WHITE
CHAIRMAN, HOUSE WAYS AND MEANS
COMMITTEE

List Date: July 1, 2016

**Entities Ineligible to Contract with the State of South Carolina or any
Political Subdivision of the State per the Iran Divestment Act of 2014, S.C.
Code Ann. §§ 11-57-10, et seq.**

- | | |
|--|--|
| 1. Abadan Petrochemical Co. | 36. Petro China Co. Ltd. |
| 2. Alsan Offshore Ltd. | 37. Polskie Gornictwo Naftowe i Gazownictwo SA |
| 3. Arak Petrochemical Co. | 38. Royal Dutch Shell Plc |
| 4. Arvandan Oil & Gas | 39. Sepehr Energy |
| 5. Behran Oil Co. | 40. Shiraz Petrochemical Co |
| 6. Bharat Petroleum Corporation Ltd. | 41. Showa Shell Sekiyu K K |
| 7. China National Petroleum Corp. (CNPC) | 42. Tabriz Oil Refining Co. |
| 8. China Petroleum & Chemical Corp | 43. Total S.A. |
| 9. Cosmo Energy Holdings Company Limited | 44. Toyota Tsusho Corporation |
| 10. Dragon Oil Plc | 45. Tupras Turkiye Petrol Rafinerileri AS |
| 11. Eni Spa | |
| 12. Esfahan Oil Refining Co. | |
| 13. Essar Oil Ltd. | |
| 14. Fanavaran Petrochemical Co. | |
| 15. Farahi Petrochemical Co. | |
| 16. Gail (India) Ltd. | |
| 17. Gazprom OAO | |
| 18. Gubre Fabrikalan T.A.S. | |
| 19. Hindustan Petroleum Corporation Ltd. | |
| 20. Hyundai Heavy Industries | |
| 21. Idemitsu Kosan Co. Ltd. | |
| 22. Indian Oil Corporation Ltd. | |
| 23. JX Holdings, Inc | |
| 24. Koc Holding A.S. | |
| 25. Lukoil Oil Co. | |
| 26. Maire Tecnimont S.P.A. | |
| 27. Mangalore Refinery & Petrochemicals Ltd. | |
| 28. Mitsubishi Corporation | |
| 29. Mitsui & Co. Ltd. | |
| 30. National Iranian Oil Co. | |
| 31. National Iranian South Oil Co. | |
| 32. Oil & Natural Gas Corporation Ltd. | |
| 33. Pardis Petrochemical Co. | |
| 34. Pars Oil Co. | |
| 35. Parsian Oil and Gas Development Co. | |

Contact irandivestment@mmo.sc.gov with questions regarding this list.

IRAN DIVESTMENT ACT

“By the submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each of a joint bid each party thereto certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not a person included within the list created pursuant to § 12-12-106.”

Signature: _____

Date: _____

Title: _____